City of Fort Lupton
City Council
REGULAR MEETING AGENDA
Tuesday, December 1, 2020
7:00 PM
130 South McKinley Avenue

Zo Stieber, Mayor
Shannon Rhoda, Ward 1
Chris Ceretto, Ward 2
Mike Sanchez, Ward 3
David Crespin, Ward 1
Tommy Holton, Ward 2
Bruce Fitzgerald, Ward 3

You May Join in Person or Join Remotely by Registering at:
https://attendee.gotowebinar.com/register/3302585894167381776

Pledge of Allegiance

Call to Order - Roll Call

Persons to Address Council - This portion of the Agenda is provided to allow members of the audience to present comments to the City Council. The City Council may not respond to your comments this evening, rather they may take your comments and suggestions under advisement or your question may be directed to the appropriate staff member for follow-up. Please limit the time of your comments to three (3) minutes - Mayor Stieber

Approval of Agenda

Review of Accounts Payables

a. 12012020 Accounts Payable

Consent Agenda - Consent Agenda items are considered to be routine and will be enacted by one motion and vote. There will be no separate discussion of Consent Agenda items unless a Councilmember so requests, in which case the item may be removed/moved from the Consent Agenda.

a. 11172020 City Council Meeting Minutes

Public Hearings - Public Hearings allow members of the audience to present comments and questions to the City Council on the item being presented. Comments and questions may be limited to three (3) minutes- Mayor Stieber

a. AM 2020-201 Approving a Resolution for the McDonald's Restaurant Site Plan

b. AM 2020-202 Approve a Resolution Accepting the Willow Bend (F/K/A Fulton Ranch) Subdivision Preliminary Plat and Preliminary PUD Plan

Action Memorandum

a. AM 2020-194 Amend the Agreement with Tyler Technologies Making the City of Fort Lupton Responsible for Online Payment Fees

b. AM 2020-195 Approve Purchase of 140M3 Motor Grader for Public Works Streets From Wagner Equipment Co. for Not to Exceed $198,900.00 from the General Fund Public Works Streets Budget

c. AM 2020-196 Approve Change Order Number 2 to JBS Pipeline Contractors Contract for the Kahil Street Project, for Not to Exceed $223,844.75 from Utility Fund - Water Lines

d. AM 2020-197 Purchase of a Tow Behind Aerator at Coyote Creek Golf Course

e. AM 2020-198 Purchase of a Broadcast Topdresser at Coyote Creek Golf Course

f. AM 2020-199 Purchase of a Deeptine Aerator at Coyote Creek Golf Course

g. AM 2020-200 Purchase of a Compact Utility Loader at Coyote Creek Golf Course

h. AM 2020-203 Approve Amended Employee Handbook and City Compensation Policy for a Total Estimated Cost of $XXX Per Year (Pending Documentation)

Staff Reports

Mayor/Council Reports

Future City Events

a. 12012020 Upcoming Events

Adjourn

Check Report

City of Fort Lupton

By Check Number

Date Range: 11/17/2020 - 11/30/2020

Vendor Number / Payable #	Vendor Name / Payable Type	Post Date	Payment Date / Payable Description	Payment Type	Discount Amount / Discount Amount	Payment Amount / Payable Amount	Number
Bank Code: Golf Course-Golf Course							
000024	ACE HARDWARE OF FORT LUPTON		11/23/2020	Regular	0.00	263.19	84090
85863	Invoice	11/20/2020	GOLF-CLEANING SUPPLIES, BULBS-MAINT		0.00	53.14	
85944	Invoice	11/20/2020	GOLF-QUIKCRETE-MAINT		0.00	47.92	
86028	Invoice	11/20/2020	GOLF-CAT LITTER, GLOVES, ICE MELT-MAINT		0.00	79.95	
86039	Invoice	11/20/2020	GOLF-FILE-MAINT		0.00	7.99	
86053	Invoice	11/20/2020	GOLF-VELCRO-PRO SHOP		0.00	4.90	
86118	Invoice	11/20/2020	GOLF-FASTENERS-MAINT		0.00	3.98	
86130	Invoice	11/20/2020	GOLF-DISH SOAP,STAR DRIVE, SHELF BRACK...		0.00	65.31	
000073	AMERICAN EAGLE DISTRIBUTING CO		11/23/2020	Regular	0.00	190.30	84091
157500	Invoice	11/20/2020	GOLF-BEVERAGES-PRO SHOP		0.00	190.30	
000307	COMCAST CABLE COMM, LLC		11/23/2020	Regular	0.00	244.19	84092
606460120790 N...	Invoice	11/20/2020	GOLF-NOV20 INTERNET/VOICE SERVICES-PR...		0.00	244.19	
000417	EASY PICKER GOLF PRODUCTS		11/23/2020	Regular	0.00	389.00	84093
151733-IN	Invoice	11/20/2020	GOLF-SUPPLIES-PRO SHOP		0.00	389.00	
000512	FUZION FIELD SERVICES LLC		11/23/2020	Regular	0.00	304.00	84094
197670	Invoice	11/20/2020	GOLF-DEL/SET UP RENTAL-MAINT		0.00	304.00	
000567	HIGH COUNTRY BEVERAGE CORP		11/23/2020	Regular	0.00	755.05	84095
W-3243807	Invoice	11/20/2020	GOLF-BEVERAGES-PRO SHOP		0.00	140.70	
W-3246803	Invoice	11/20/2020	GOLF-BEVERAGES-PRO SHOP		0.00	614.35	
000736	LOCKETT REFRIGERATION, LLC		11/23/2020	Regular	0.00	2,290.37	84096
05500	Invoice	11/20/2020	GOLF-BOTTLE COOLER SET UP W/DIVIDERS-...		0.00	2,290.37	
000768	MASEK GOLF CAR OF COLORADO		11/23/2020	Regular	0.00	1,760.83	84097
1-64246	Invoice	11/20/2020	GOLF-REPAIR PARTS-PRO SHOP		0.00	27.88	
1-64254	Invoice	11/20/2020	GOLF-REPAIR PARTS-PRO SHOP		0.00	1,732.95	
000795	MILE HIGH TURFGRASS, LLC		11/23/2020	Regular	0.00	2,867.50	84098
7881	Invoice	11/20/2020	GOLF-TURF SUPPLIES-MAINT		0.00	597.70	
7911	Invoice	11/20/2020	GOLF-TURF SUPPLIES-MAINT		0.00	2,269.80	
000862	O'REILLY AUTO PARTS		11/23/2020	Regular	0.00	133.99	84099
4489-244076	Invoice	11/20/2020	GOLF-PRESS-MAINT		0.00	147.99	
4489-244112	Credit Memo	11/20/2020	GOLF-PRESS-MAINT		0.00	-147.99	
4489-250740	Invoice	11/20/2020	GOLF-BATTERY/CORE CHARGE-MAINT		0.00	109.00	
4489-251523	Invoice	11/20/2020	GOLF-IMPACT GLOVES-MAINT		0.00	24.99	
000974	SAFE SYSTEMS INC		11/23/2020	Regular	0.00	131.69	84100
870192-1047	Invoice	11/20/2020	GOLF-DEC20 SECURITY MONITORING		0.00	131.69	
000999	SHAMROCK FOODS COMPANY		11/23/2020	Regular	0.00	842.33	84101
21646540	Invoice	11/20/2020	GOLF-FOOD/SNACKS/SUPPLIES		0.00	842.33	
001026	SPECIALTY CIGARS INTERNATIONAL INC		11/23/2020	Regular	0.00	196.75	84102
2086512	Invoice	11/20/2020	GOLF-CIGARS-PRO SHOP		0.00	196.75	
001052	SWIRE COCA-COLA, USA		11/23/2020	Regular	0.00	251.62	84103
13923209884	Invoice	11/20/2020	GOLF-BEVERAGES-PRO SHOP		0.00	251.62	
001183	WAXIE SANITARY SUPPLY		11/23/2020	Regular	0.00	68.50	84104
79622247	Invoice	11/20/2020	GOLF-SUPPLIES-PRO SHOP		0.00	68.50	
001301	AAA AUTO PARTS INC		11/30/2020	Regular	0.00	17.98	84105

Vendor Number / Payable #	Vendor Name / Payable Type	Post Date	Payment Date / Payable Description	Payment Type	Discount Amount / Discount Amount	Payment Amount / Payable Amount	Number
100425	Invoice	11/24/2020	GOLF-ANTIFREEZE-MAINT		0.00	17.98	
000024	ACE HARDWARE OF FORT LUPTON		11/30/2020	Regular	0.00	88.21	84106
86131	Invoice	11/24/2020	GOLF-HAMMER DRILL BIT,FASTENERS,ANCH ...		0.00	24.25	
86169	Invoice	11/24/2020	GOLF-COWHIDE GLOVES-MAINT		0.00	22.99	
86173	Invoice	11/24/2020	GOLF-SEAFOAM, TP,STRIPPER-MAINT		0.00	40.97	
000229	CINTAS FIRE PROTECTION		11/30/2020	Regular	0.00	424.01	84107
D51646453	Invoice	11/24/2020	GOLF-EQUIPMENT MAINTENANCE-PRO SHOP		0.00	424.01	
000417	EASY PICKER GOLF PRODUCTS		11/30/2020	Regular	0.00	689.35	84108
151937-IN	Invoice	11/24/2020	GOLF-BASKETS-PRO SHOP		0.00	689.35	
000487	FORT LUPTON PACKING & SHIPPING		11/30/2020	Regular	0.00	190.67	84109
52735.	Invoice	11/24/2020	GOLF-CALLAWAY RETURNS-PRO SHOP		0.00	190.67	
000536	GOLF AND SPORT SOLUTIONS LLC		11/30/2020	Regular	0.00	620.19	84110
36382	Invoice	11/24/2020	GOLF-BUNKER SAND-MAINT		0.00	620.19	
000795	MILE HIGH TURFGRASS, LLC		11/30/2020	Regular	0.00	2,012.63	84111
7913	Invoice	11/24/2020	GOLF-TURF SUPPLIES-MAINT		0.00	2,012.63	
002661	OZTEK COMMERCIAL SERVICES LLC		11/30/2020	Regular	0.00	296.13	84112
13737	Invoice	11/24/2020	GOLF-ICE MACHINE REPAIRS-PRO SHOP		0.00	296.13	
002075	PARTSMASTER		11/30/2020	Regular	0.00	326.38	84113
23608788	Invoice	11/24/2020	GOLF-CRYOBITS WITH FLATS 29PC-MAINT		0.00	326.38	
000944	REPUBLIC NATIONAL DISTRIBUTING CO LLC		11/30/2020	Regular	0.00	214.85	84114
5913825	Invoice	11/23/2020	GOLF-BEVERAGES-PRO SHOP		0.00	174.90	
5913826	Invoice	11/24/2020	GOLF-BEVERAGES-PRO SHOP		0.00	39.95	
001022	SOUTHERN GLAZER'S OF CO		11/30/2020	Regular	0.00	210.45	84115
2394496	Invoice	11/23/2020	GOLF-BEVERAGES-PRO SHOP		0.00	210.45	
001105	TOSHIBA FINANCIAL SERVICES		11/30/2020	Regular	0.00	235.16	84116
428993091	Invoice	11/24/2020	Golf Copier Lease		0.00	235.16	
001963	WASTE CONNECTIONS OF COLO, INC		11/30/2020	Regular	0.00	305.96	84117
31174343-001 NO...	Invoice	11/24/2020	GOLF-DEC20 TRASH SERVICES-PRO SHOP		0.00	180.25	
31174344 NOV20	Invoice	11/24/2020	GOLF-DEC20 TRASH SERVICES-MAINT		0.00	125.71	
001183	WAXIE SANITARY SUPPLY		11/30/2020	Regular	0.00	40.00	84118
79626830	Invoice	11/24/2020	GOLF-CLEAN TOUCH LX FREE-PRO SHOP		0.00	40.00	
001224	XCEL ENERGY-GAS		11/30/2020	Regular	0.00	197.45	84119
5322229501 NOV...	Invoice	11/24/2020	GOLF-NOV20 GAS BILL-PRO SHOP		0.00	197.45	
000285	COLORADO DEPARTMENT OF REVENUE		11/23/2020	Bank Draft	0.00	1,954.78	DFT0001455
103120 GOLF	Invoice	11/23/2020	GOLF-OCT20 SALES TAX		0.00	1,954.78	

Bank Code Golf Course Summary

Payment Type	Payable Count	Payment Count	Discount	Payment
Regular Checks	46	30	0.00	16,558.73
Manual Checks	0	0	0.00	0.00
Voided Checks	0	0	0.00	0.00
Bank Drafts	1	1	0.00	1,954.78
EFT's	0	0	0.00	0.00
	47	**31**	**0.00**	**18,513.51**

Vendor Number / Payable #	Vendor Name / Payable Type	Post Date	Payment Date / Payable Description	Payment Type	Discount Amount / Discount Amount	Payment Amount / Payable Amount	Number
Bank Code: Pooled Cash-Pooled Cash							
001998	PEAK PERFORMANCE COPIER AND SUPPLY INC		11/18/2020	Regular	0.00	11,360.00	68560
60234	Invoice	11/18/2020	Laserfiche to Cloud		0.00	11,360.00	
001301	AAA AUTO PARTS INC		11/23/2020	Regular	0.00	63.41	68561
99145	Invoice	11/19/2020	GF-BATTERY/CORE DEPOSIT-PARKS		0.00	47.89	
99496	Invoice	11/19/2020	GF-HALOGEN CAPSULE-PARKS		0.00	15.52	
002444	ACCURATE JANITORIAL SERVICES		11/23/2020	Regular	0.00	1,098.00	68562
7110	Invoice	11/19/2020	GF-FOGGING DISINFECTANT CITY HALL/PD-M..		0.00	1,098.00	
000031	ADAMSON POLICE PRODUCTS		11/23/2020	Regular	0.00	14.00	68563
INV339174	Invoice	11/19/2020	GF-SAFARILAND ARMOR PATCH-PD		0.00	14.00	
000037	ADVANCED URGENT CARE AND OCC MED		11/23/2020	Regular	0.00	105.00	68564
57738	Invoice	11/19/2020	GF-HEP B VACCINE MIRAGLIA-PD		0.00	105.00	
002607	AIS SPECIALTY PRODUCTS INC		11/23/2020	Regular	0.00	100.00	68565
PSI369991	Invoice	11/19/2020	GF-NITRILE GLOVES 5MIL LG-MISC		0.00	100.00	
002257	ANACONDA NETWORKS INC		11/23/2020	Regular	0.00	1,450.00	68566
3326	Invoice	11/20/2020	Cradlepoint +NetCloud (3yrs)		0.00	1,450.00	
000104	ASSOCIATED POOL BUILDERS, INC		11/23/2020	Regular	0.00	2,841.75	68567
42258	Invoice	11/19/2020	REC-UV LIGHT DISPLAY SCREEN REPLACED		0.00	685.55	
42262	Invoice	11/19/2020	REC-UV LIGHT (POOL) ANNUAL SERVICE & R...		0.00	2,156.20	
000182	CEM SALES & SERVICE INC		11/23/2020	Regular	0.00	730.00	68568
153198	Invoice	11/19/2020	REC-SPA HEATER BOOSTER PUMP		0.00	730.00	
000232	CIRSA		11/23/2020	Regular	0.00	2,865.20	68569
201848	Invoice	11/19/2020	GF-OCT20 DEDUCTIBLES-MISC		0.00	2,865.20	
002651	COLORADO COMMUNITY MEDIA		11/23/2020	Regular	0.00	873.40	68570
202010 25401951	Invoice	11/19/2020	GF-LEGAL PUBLICATIONS/NOTICES		0.00	873.40	
000296	COLORADO MUNICIPAL LEAGUE		11/23/2020	Regular	0.00	6,059.00	68571
110420	Invoice	11/19/2020	GF-ANNUAL MEMBERSHIP DUES-LEGIS		0.00	6,059.00	
002094	DOOLEY ENTERPRISES INC		11/23/2020	Regular	0.00	1,569.36	68572
58932	Invoice	11/20/2020	Rifle Ammo Change Out		0.00	1,569.36	
000431	EMPLOYERS COUNCIL SERVICES, INC		11/23/2020	Regular	0.00	150.00	68573
360117	Invoice	11/19/2020	GF-ACCT II EXCEL TEST-FIN		0.00	150.00	
002655	FRONT RANGE LANDFILL INC		11/23/2020	Regular	0.00	4,899.00	68574
58720	Invoice	11/19/2020	GF-2020 CLEAN UP DAY-LEGIS		0.00	4,899.00	
002589	JACK'S TIRE & OIL		11/23/2020	Regular	0.00	272.50	68575
844504-81	Invoice	11/19/2020	OTR SERVICE CALL 2014 924K CAT LOADER		0.00	272.50	
001799	MAC EQUIPMENT INC		11/23/2020	Regular	0.00	202.40	68576
324765	Invoice	11/19/2020	GF-CUTTING EDGE-PARKS		0.00	202.40	
002027	MURRAYSMITH INC		11/23/2020	Regular	0.00	10,606.00	68577
20-2746.00-10	Invoice	11/20/2020	WST- Non-Pot Pumphouse Engineering- WTP		0.00	10,606.00	
000865	OFFICE DEPOT		11/23/2020	Regular	0.00	143.37	68578
134354181001	Invoice	11/19/2020	GF-LETTER FOLDERS-COURT		0.00	143.37	
000869	OPERATIONS MANAGEMENT INT		11/23/2020	Regular	0.00	117,136.34	68579
351230-21-12	Invoice	12/01/2020	UF-DEC20 OMI MONTHLY BILLING		0.00	117,136.34	
001289	PAUL GROSSMAN		11/23/2020	Regular	0.00	145.45	68580
111020	Invoice	11/19/2020	GF-FTO SCHOOL TRAINING MILEAGE-PD		0.00	145.45	
000916	PRAIRIE MOUNTAIN PUBLISHING LLP		11/23/2020	Regular	0.00	14.08	68581

Vendor Number / Payable #	Vendor Name / Payable Type	Post Date	Payment Date / Payable Description	Payment Type	Discount Amount / Discount Amount	Payment Amount / Payable Amount	Number
251092	Invoice	11/19/2020	GF-PUBLIC HEARING NOTICE-CITY CLK		0.00	14.08	
002070	QUICKSAND DESIGN		11/23/2020	Regular	0.00	175.00	68582
1119	Invoice	11/19/2020	CPR-FIELD OF HONOR PHOTOGRAPHY-COM ...		0.00	175.00	
000932	R & M SERVICES		11/23/2020	Regular	0.00	477.34	68583
10546	Invoice	11/19/2020	GF-DIAGNOSTIC SCAN CODE TRUCK-PD		0.00	50.00	
10551	Invoice	11/19/2020	GF-TIRE REPAIR UNIT2007-PD		0.00	10.00	
10552	Invoice	11/19/2020	GF-O2 SENSOR REPLACEMENT-PD		0.00	194.39	
10553	Invoice	11/19/2020	GF-BATTERY-PD		0.00	222.95	
000942	RENEWABLE FIBER INC		11/23/2020	Regular	0.00	102.40	68584
INV0758809	Invoice	11/19/2020	GF-SCREENED TOP SOIL-PARKS		0.00	102.40	
001008	SHRED-IT USA LLC		11/23/2020	Regular	0.00	30.00	68585
8180838377	Invoice	11/19/2020	GF-ON SITE SHREDDING SERVICES-CITY CLK		0.00	30.00	
001014	SIRIUS XM RADIO INC		11/23/2020	Regular	0.00	171.60	68586
X6-1350822395	Invoice	11/20/2020	SiriusXM Annual Renewal		0.00	171.60	
001126	TYLER TECHNOLOGIES		11/23/2020	Regular	0.00	450.00	68587
25-313408	Invoice	11/19/2020	UF-UB INSITE CONFIGURATION-UB		0.00	125.00	
25-313409	Invoice	11/19/2020	UF-NEW METER READING INTERFACE-UB		0.00	325.00	
001128	ULINE INC		11/23/2020	Regular	0.00	1,004.42	68588
125735363	Invoice	11/19/2020	GF-METAL SIGN STANDS ALL EVENTS-		0.00	1,004.42	
001137	UNITED POWER		11/23/2020	Regular	0.00	75.21	68589
21675200 NOV20	Invoice	11/19/2020	UF-NOV20 ELECTRIC 2414 HORSE SHOE CIR...		0.00	41.03	
21675300 NOV20	Invoice	11/19/2020	UF-NOV20 ELECTRIC 1912 WAGONWHEEL-...		0.00	34.18	
002604	UPSTATE CO/WELD CNTY BUSINESS RECOVERY PR		11/23/2020	Regular	0.00	29,026.72	68590
FTLCVRF-2	Invoice	11/20/2020	GF-CARES ACT 2ND ALLOCATION-MISC		0.00	29,026.72	
001174	WAGNER EQUIPMENT CO.		11/23/2020	Regular	0.00	7,846.39	68591
P00C2302479	Invoice	11/19/2020	GF-CUTTING EDGES-STREETS		0.00	921.50	
S00W1669422	Invoice	11/20/2020	Front End Loader Repairs		0.00	4,740.13	
S00W1669422 2	Invoice	11/20/2020	FEL Injectors - Parts for repairs		0.00	2,184.76	
001963	WASTE CONNECTIONS OF COLO, INC		11/23/2020	Regular	0.00	381.09	68592
31172871 NOV20	Invoice	11/19/2020	UF-OCT20 TRASH SERVICES-ADMIN		0.00	235.89	
31174336 NOV20	Invoice	11/19/2020	GF-OCT20 TRASH SERVICES-PW SHOP		0.00	145.20	
002660	WHITESIDE'S BOOTS AND CLOTHING		11/23/2020	Regular	0.00	175.00	68593
362848	Invoice	11/19/2020	GF-UNIFORM CLOTHING DAVENPORT-PARKS		0.00	175.00	
000037	ADVANCED URGENT CARE AND OCC MED		11/23/2020	Regular	0.00	190.00	68594
60561	Invoice	11/20/2020	GF-DOT PHYSICAL/VACCINE-CARBAJAL-HR		0.00	190.00	
000306	COMCAST BUSINESS		11/23/2020	Regular	0.00	2,199.82	68595
110733749	Invoice	11/20/2020	Comcast Acct 930000301		0.00	2,199.82	
000442	ESRI INC		11/23/2020	Regular	0.00	15,000.00	68596
93925630	Invoice	11/20/2020	ESRI Maintenance		0.00	15,000.00	
002493	QUADIENT LEASING USA INC		11/23/2020	Regular	0.00	454.80	68597
H8573496	Invoice	11/20/2020	GF-POSTAGE MACHINE LEASE-9/8-12/7-ADM..		0.00	454.80	
000935	RAQUEL FERSZT		11/23/2020	Regular	0.00	538.79	68598
892344	Invoice	11/20/2020	GF-OCT20 TRANSLATION SERVICES-COURT		0.00	538.79	
001079	THE EMPLOYMENT FIRM		11/23/2020	Regular	0.00	430.11	68599
32244	Invoice	11/20/2020	GF-NOV9 TEMP EMPLOYEE-FIN		0.00	430.11	
001635	THE TALLENT COMPANY		11/23/2020	Regular	0.00	2,750.00	68600

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1129	Invoice	11/20/2020	GF-NOV20 COMPLETE COMMUNICATION-CI...		0.00	2,750.00	
001126	TYLER TECHNOLOGIES		11/23/2020	Regular	0.00	3,750.00	68601
25-314024	Invoice	11/20/2020	UF-Handheld Meter Interface-Admin		0.00	3,696.00	
25-314024 2	Invoice	11/20/2020	UF-ADDT'L HANDHELD METER INTERFACE-A...		0.00	54.00	
000040	AFLAC		11/30/2020	Regular	0.00	1,889.62	68602
243912	Invoice	11/24/2020	GF-NOV20 AFLAC		0.00	1,889.62	
001646	BANK OF COLORADO		11/30/2020	Regular	0.00	177.58	68603
6682 NOV20	Invoice	11/24/2020	PW CNG GAS PURCHASES		0.00	177.58	
002600	BEARCOM		11/30/2020	Regular	0.00	375.00	68604
5102952	Invoice	11/24/2020	GF-VEHICLE REPAIRS UNIT2003-PD		0.00	375.00	
002122	BURNS & MCDONNELL ENGINEERING CO INC		11/30/2020	Regular	0.00	71,191.62	68605
122081-8	Invoice	11/24/2020	UF- WWTP Improvement Design- WWTP		0.00	71,191.62	
000227	CHURCHICH RECREATION LLC		11/30/2020	Regular	0.00	6,160.00	68606
20-0117	Invoice	11/23/2020	Fix Rock Wall Flooring		0.00	6,160.00	
000306	COMCAST BUSINESS		11/30/2020	Regular	0.00	3,250.68	68607
111695780	Invoice	11/24/2020	Comcast Phones		0.00	3,250.68	
000307	COMCAST CABLE COMM, LLC		11/30/2020	Regular	0.00	230.62	68608
60460164533 NO...	Invoice	11/23/2020	GF-NOV20 CABLE/INTERNET SERVICES-PW S...		0.00	230.62	
000429	EMPIRE PORTABLE RESTROOMS		11/30/2020	Regular	0.00	125.15	68609
53611	Invoice	11/23/2020	GF-PORTABLE RESTROOM 11/10-12/07-PAR...		0.00	125.15	
000491	FORT LUPTON VETERINARY		11/30/2020	Regular	0.00	1,140.00	68610
866802	Invoice	11/24/2020	GF-OCT20 PET BOARDING SERVICES-COM S...		0.00	450.00	
866803	Invoice	11/24/2020	GF-NOV20 PET BOARDING SERVICES TO 11/...		0.00	690.00	
001930	HUMANA HEALTH PLAN INC		11/30/2020	Regular	0.00	78,626.39	68611
379450819	Invoice	12/01/2020	GF-DEC20 HEALTH, DENTAL, VISION		0.00	78,626.39	
002663	LANDMARK MONUMENTS LLC		11/30/2020	Regular	0.00	106.90	68612
6658	Invoice	11/24/2020	CEM-VASE FOR MADRIGAL MONUMENT		0.00	106.90	
002662	LAT40, INC		11/30/2020	Regular	0.00	4,500.00	68613
10672	Invoice	11/24/2020	GF-LAND PURCHASE SURVEY PARCEL 14710...		0.00	4,500.00	
001799	MAC EQUIPMENT INC		11/30/2020	Regular	0.00	222.40	68614
325848	Invoice	11/23/2020	GF-CUTTING EDGE-PARKS		0.00	222.40	
001926	MAMMOTH CREATIVE		11/30/2020	Regular	0.00	207.00	68615
12GR-8136	Invoice	11/23/2020	GF-SAFETY FLOOR DECALS-MISC		0.00	207.00	
000847	NORMAN'S MEMORIALS INC.		11/30/2020	Regular	0.00	85.00	68616
111920 GURULE	Invoice	11/23/2020	CEM-ENGRAVING GURULE		0.00	85.00	
001943	PINNACOL ASSURANCE		11/30/2020	Regular	0.00	419.17	68617
20248096	Invoice	11/23/2020	GF-PARKS WC DEDUCTILBE-PARKS		0.00	419.17	
000901	PLAINS EAST MECHANICAL SERVICES LLC		11/30/2020	Regular	0.00	54,370.00	68618
3013-1087	Invoice	11/24/2020	GF-IONIZERS-MISC		0.00	54,370.00	
002265	QUADIENT FINANCE USA INC		11/30/2020	Regular	0.00	483.00	68619
103120	Invoice	10/24/2020	GF-OCT20 POSTAGE		0.00	483.00	
001101	TODD HODGES DESIGN LLC		11/30/2020	Regular	0.00	8,295.00	68620
3274	Invoice	11/24/2020	GF-PLANNING SERVICES 11/09-11/22-PLAN		0.00	8,295.00	
001105	TOSHIBA FINANCIAL SERVICES		11/30/2020	Regular	0.00	2,538.58	68621
429595630	Invoice	11/24/2020	Copier Lease		0.00	2,538.58	

Vendor Number / Payable #	Vendor Name / Payable Type	Post Date	Payment Date / Payable Description	Payment Type	Discount Amount / Discount Amount	Payment Amount / Payable Amount	Number
001126	TYLER TECHNOLOGIES		11/30/2020	Regular	0.00	630.00	68622
25-314905	Invoice	11/23/2020	UF-METER INTERFACE TESTING-ADMIN		0.00	130.00	
25-315597	Invoice	11/23/2020	Incode Court Online Component - Annual Fee		0.00	500.00	
001215	WAC-BEARCOM		11/30/2020	Regular	0.00	37,650.02	68623
505216	Invoice	11/24/2020	Patrol Vehicle Upfitting (2020)		0.00	18,825.01	
505217	Invoice	11/24/2020	Patrol Vehicle Upfitting (2020)		0.00	18,825.01	
001963	WASTE CONNECTIONS OF COLO, INC		11/30/2020	Regular	0.00	193.34	68624
31175457 NOV20	Invoice	11/23/2020	GF-DEC20 TRASH SERVICES-PARKS		0.00	102.55	
31177334 NOV20	Invoice	11/23/2020	CEM-DEC20 TRASH SERVICE		0.00	90.79	
001183	WAXIE SANITARY SUPPLY		11/30/2020	Regular	0.00	124.88	68625
79619598	Invoice	11/23/2020	GF-TORK UNIVERSAL WHITE-PARKS		0.00	124.88	
002665	WHEELERS PHCC		11/30/2020	Regular	0.00	300.64	68626
112420	Invoice	11/24/2020	GF-DUPLICAT CHARGE REFUND WHEELERS		0.00	300.64	
001224	XCEL ENERGY-GAS		11/30/2020	Regular	0.00	381.84	68627
5320352370 OCT20	Invoice	11/24/2020	GF-OCT20 GAS BILL		0.00	381.84	
001130	UMB BANK NA		11/26/2020	Bank Draft	0.00	459,237.50	DFT0001434
100920	Invoice	11/26/2020	REC-FLII BOND PYMT		0.00	459,237.50	
001130	UMB BANK NA		11/26/2020	Bank Draft	0.00	586,975.00	DFT0001435
100920 FL17	Invoice	11/26/2020	UF-REC CENTER FL17 PMT-ADMIN		0.00	586,975.00	
000119	BANK OF COLORADO		11/20/2020	Bank Draft	0.00	5,257.56	DFT0001449
INV0000897	Invoice	11/20/2020	HSA DISTRIBUTION		0.00	5,257.56	
000119	BANK OF COLORADO		11/20/2020	Bank Draft	0.00	469.91	DFT0001450
INV0000898	Invoice	11/20/2020	HSA DISTRIBUTION		0.00	469.91	
001416	VALIC_1		11/20/2020	Bank Draft	0.00	26,893.10	DFT0001451
INV0000899	Invoice	11/20/2020	VALIC - 457(b) $ Contributions		0.00	26,893.10	
001265	IRS		11/20/2020	Bank Draft	0.00	43,856.02	DFT0001452
INV0000900	Invoice	11/20/2020	Federal Withholding		0.00	43,856.02	
001418	CO DEPARTMENT OF REVENUE		11/20/2020	Bank Draft	0.00	7,147.27	DFT0001453
INV0000901	Invoice	11/20/2020	CO Withholding		0.00	7,147.27	
000285	COLORADO DEPARTMENT OF REVENUE		11/23/2020	Bank Draft	0.00	1.79	DFT0001454
103120 REC	Invoice	11/23/2020	REC CENTER OCT20 SALES TAX		0.00	1.79	

Bank Code Pooled Cash Summary

Payment Type	Payable Count	Payment Count	Discount	Payment
Regular Checks	83	68	0.00	501,601.38
Manual Checks	0	0	0.00	0.00
Voided Checks	0	0	0.00	0.00
Bank Drafts	8	8	0.00	1,129,838.15
EFT's	0	0	0.00	0.00
	91	**76**	**0.00**	**1,631,439.53**

All Bank Codes Check Summary

Payment Type	Payable Count	Payment Count	Discount	Payment
Regular Checks	129	98	0.00	518,160.11
Manual Checks	0	0	0.00	0.00
Voided Checks	0	0	0.00	0.00
Bank Drafts	9	9	0.00	1,131,792.93
EFT's	0	0	0.00	0.00
	138	**107**	**0.00**	**1,649,953.04**

Fund Summary

Fund	Name	Period	Amount
600	GOLF ENTERPRISE FUND	11/2020	18,513.51
999	POOLED CASH/CONSOLIDATED CASH	11/2020	1,631,439.53
			1,649,953.04

RECORD OF PROCEEDINGS
FORT LUPTON CITY COUNCIL/ENTERPRISE BOARDS
November 3, 2020

The City Council of the City of Fort Lupton met in a regular session at the City Complex, 130 South McKinley Avenue, the regular meeting place of the City Council, on Tuesday, November 17, 2020. Due to the COVID-19 virus, the meeting was held with remote access provided through GoToWebinar. Mayor Zo Stieber called the meeting to order at 7:00 p.m. and invited everyone to join her in the Pledge of Allegiance.

ROLL CALL

Mari Peña, City Clerk, called the roll. Those present were Mayor Zo Stieber, Councilmembers Shannon Rhoda, Chris Ceretto, David Crespin, Tommy Holton, Michael Sanchez and Bruce Fitzgerald.

Also present were City Administrator, Chris Cross, City Clerk, Mari Pena, City Attorney, Andy Ausmus, and Chief John Fryar.

Assistant City Administrator, Glenda Aretxuloeta, and Finance Director, Leann Perino participated remotely through GoToWebinar.

PERSONS TO ADDRESS COUNCIL

There was no one to address the Council.

APPROVAL OF AGENDA

It was moved by Tommy Holton and seconded by Bruce Fitzgerald to amend the Agenda by adding an Executive Session "to consider personnel matters pursuant to CRS 24-6-402(4)(f)" Administration. The Executive Session was placed following the approval of the amended agenda. Motion passed unanimously on roll call vote.

EXECUTIVE SESSION

It was moved by Tommy Holton and seconded by Bruce Fitzgerald to move into Executive Session "To consider personnel matters, pursuant to C.R.S. § 24-6-402(4)(f)." Administration.

The following entered into executive session at 7:03 p.m.: Mayor Stieber, Councilmembers Shannon Rhoda, Michael Sanchez, Chris Ceretto, Tommy Holton, David Crespin, Bruce Fitzgerald, and Michael Sanchez. Also City Administrator, Chris Cross.

The executive session ended at 8:32 p.m. The regular meeting reconvened at 8:32 p.m.

REVIEW OF ACCOUNTS PAYABLES

Council reviewed the November 17, 2020 payables; there were no questions or comments from the Mayor or Council.

CONSENT AGENDA

It was moved by Bruce Fitzgerald and seconded by Tommy Holton to approve the Consent Agenda as presented. The following item were part of the Consent Agenda: 11032020 City Council Meeting Minutes. Motion passed unanimously on voice vote.

ACTION MEMORANDUM

AM 2020-189 Approve a Resolution Re-appointing Chris Cross as the City Administrator for the City of Fort Lupton for a Term to Expire November 2022

Section 2-51 of the Fort Lupton Municipal Code indicates the City Administrator shall be appointed by majority vote of all members of the City Council. The appointment is for a two-year period and may be reappointed for subsequent terms. The appointed officers shall take and subscribe to an oath to support the Constitution and laws of the United States and the Ordinances of the City.

It was moved by Chris Ceretto and seconded by Tommy Holton to approve Resolution 2020R075 A RESOLUTION APPROVING THE RE-APPOINTMENT OF CHRIS CROSS AS THE CITY ADMINISTRATOR FOR A TERM TO EXPIRE NOVEMBER 2022. Motion passed unanimously on roll call vote.

AM 2020-190 Approving a Resolution Re-appointing Maricela Peña as the City Clerk for the City of Fort Lupton for a Term to Expire November 2022

Section 2-51, of the Fort Lupton Municipal Code indicates the City Clerk, along with other appointed officials shall be appointed by majority vote of all members of the City Council. The appointments are every two years. The appointed officers shall take and subscribe to an oath to support the Constitution and laws of the United States and the ordinances of the City.

It was moved by Tommy Holton and seconded by Bruce Fitzgerald to approve Resolution 2020R076 A RESOLUTION APPROVING THE RE-APPOINTMENT OF MARICELA PEÑA AS THE CITY CLERK FOR A TERM TO EXPIRE NOVEMBER 2022. Motion passed unanimously on roll call vote.

AM 2020-191 Approve Resolution 2020Rxxx Appointing Louis A. Gresh as the Presiding Municipal Judge for the City of Fort Lupton and Authorizing the Mayor to Sign the Service Agreement on Behalf of the City

Section 2-51 of the Fort Lupton Municipal Code indicates the Municipal Judge shall be appointed by majority vote of all members of the City Council. The appointment is for a two-year period and may be reappointed for subsequent terms. This appointment will be for 2020 to 2022. This agreement coincides with the appointment.

It was moved by Shannon Rhoda and seconded by Chris Ceretto to approve resolution 2020R077 A RESOLUTION APPOINTING LOUIS A. GRESH AS THE PRESIDING MUNICIPAL JUDGE AND AUTHORIZING THE MAYOR TO SIGN THE SERVICE AGREEMENT ON BEHALF OF THE CITY. Motion passed unanimously on roll call vote.

AM 2020-192 Approve Resolution 2020Rxxx Appointing Ausmus Law Firm, P.C. as the City Attorney for the City of Fort Lupton and Authorizing the Mayor to Sign the Service Agreement on Behalf of the City

Section 2-51 of the Fort Lupton Municipal Code indicates the City Attorney shall be appointed by majority vote of all members of the City Council. The appointment is for a two-year period and may be reappointed for subsequent terms. This will be for 2020 to 2022. This agreement coincides with the appointment.

It was moved by Tommy Holton and seconded by Bruce Fitzgerald to approve Resolution 2020R078 A RESOLUTION APPOINTING AUSMUS LAW FIRM, P.C. AS THE CITY ATTORNEY FOR THE CITY OF FORT LUPTON AND AUTHORIZING THE MAYOR TO SIGN THE SERVICE AGREEMENT ON BEHALF OF THE CITY. Motion passed unanimously on roll call vote.

AM 2020-193 Award the Contract for Harrison Avenue/4th Street Engineering Design Services to Tait & Associates, Inc. for an Amount not to Exceed $96,691.00 from Street Sales Tax

Harrison Avenue has been plagued with drainage issues, deteriorating pavement and broken sidewalks needing repair.

City staff has scheduled and budgeted for 2021 reconstruction of the portion from 1st Street to 4th Street. Beginning design now will allow us to bid the project out in early 2021 in time for construction season. Tait & Associates, Inc. is on the City's engineering services list and provides engineering services for multiple upper front range municipalities.

It was moved by Tommy Holton and seconded by Bruce Fitzgerald to award the contract for Harrison Avenue/4th Street Engineering Design Services to Tait & Associates, Inc. for an amount not to exceed $96,691.00 from the Street Sales Tax. Motion passed unanimously on roll call vote.

STAFF

Assistant City Administrator, Glenda Aretxuloeta, provided an update on the Covid-19 Grant. She indicated that distribution of the grant will be held on December 2, 2020 with a "drive up" style format. Two-hundred six (206) application were approved.

City Clerk, Mari Pena, thanked the Council for her reappointment to another 2-year term.

City Attorney, Andy Ausmus thanked the Council for his reappointment to another 2-year term.

Public Works Director, Roy Vestal, provided an update on the Kahil Storm Drainage Project and the scheduling of community meetings.

Chris Cross

MAYOR/COUNCIL REPORTS

Mayor Stieber thanked all City staff and volunteers that were involved in the Field of Honor. The display was extraordinary and brought much emotion to all, recognizing veterans, law enforcement officers and first responders. The Field of Honor brought the community together.

FUTURE CITY EVENTS

November 7-14th	Field of Honor, Pearson Park
November 24th	Town Hall Meeting, 130 S. McKinley Ave. 6:30 p.m.
November 26-27th	City Offices Closed in Observance of the Thanksgiving Holiday
December 1st	City Council Meeting, 130 S. McKinley Ave. 7:00 p.m.

ADJOURNMENT

Mayor Stieber adjourned the meeting at 7:48 p.m.

Respectfully Submitted,

_____
Maricela Peña, City Clerk

Approved by City Council

_____
Zo Stieber, Mayor

DRAFT

CITY OF FORT LUPTON
CITY COUNCIL

Zo Stieber, Mayor

Shannon Rhoda, Ward 1
Chris Ceretto, Ward 2
Michael Sanchez, Ward 3

David Crespin, Ward 1
Tommy Holton, Ward 2
Bruce Fitzgerald, Ward 3

AM 2020-201

APPROVING A RESOLUTION FOR THE MCDONALD'S RESTAURANT SITE PLAN

I. Agenda Date: Council Meeting – December 1, 2020

II. Attachments:

a. Proposed Resolution
b. Planning Commission Staff Report
c. Planning Commission Resolution
d. Planning Commission Minutes
e. Land Use Applications
f. Project Narrative
g. Site Plan Maps & Drawings
h. Building Elevations
i. Traffic Narrative
j. Alleyway Easement Good Faith Letter
k. Drainage Report
l. Storm water Management Report
m. Referral Responses
n. Legal Notifications

III. Summary Statement:

An application has been submitted for site plan known as the McDonald's Restaurant Site Plan by Strategic Land Solutions – Agent for McDonald's Corporation (applicant). The Site Plan includes a 3,915 square foot building that will serve as a fast-food style restaurant with a drive-thru. The Property includes two parcels located at the northeast corner of 1st Street and Grand Avenue.

IV. Submitted by: _____
Planner

V. Finance Reviewed _____
Finance Director

VI. Approved for Presentation: _____
City Administrator

VII. Attorney Reviewed _____ Approved _____ Pending Approval

VIII. Certification of Council Approval: _____ _____
City Clerk Date

IX. Detail of Issue/Request:

An application has been submitted for site plan known as the McDonald's Restaurant Site Plan by Strategic Land Solutions – Agent for McDonald's Corporation (applicant). The Site Plan includes a 3,915 square foot building that will serve as a fast-food style restaurant with a drive-thru. The Property includes two parcels located at the northeast corner of 1st Street and Grand Avenue.

The property is located within the C-1 General Commercial Zone District, which restaurants as a permitted use. The proposed site plan complies with this zone district.

Additional information on this application can be found in the enclosed packet materials included with this Action Memorandum.

X. Legal/Political Considerations:

Site Plan Review is governed by Section 16-170 of the Code and its intent is to promote orderly and sound development standards as they apply to the City. Site plans are required as a step in the building permit review process for all multi-family, commercial or industrial development and a public hearing before Planning Commission and City Council is required.

The Applicants have submitted all required documents pursuant to the Code. All public notification requirements have been met pursuant to the Zoning Regulations, including: published notice of the hearings at least fifteen (15) days prior to the hearings. The hearings were published in the Fort Lupton Press on October 28, 2020; and notice of the public hearings were posted on the Property on October 28, 2020, pursuant to the Zoning Regulations, which require the Applicant post the Property with notice of the hearings at least fifteen (15) days prior to the hearings; and notice was mailed to neighbors within one-hundred (100) feet of the Property on October 28, 2020.

XI. Alternatives/Options:

The City Council has the following options for this request:

a) Approve the final site plan application;
b) Approve the final site plan with conditions;
c) Disapprove the final site plan application; or
d) Refer the application back to Planning Commission for further study.

XII. Financial Considerations:

The Applicants have paid all applicable land use application fees and are covering ongoing review expenses.

XIII. Staff Recommendation:

Staff recommends conditional approval of the Resolution for a final site plan known as the McDonald's Restaurant Site Plan.

RESOLUTION NO. 2020Rxxx

A RESOLUTION OF THE CITY COUNCIL OF FORT LUPTON APPROVING THE MCDONALD'S RESTAURANT SITE PLAN LOCATED IN A PART OF THE WEST HALF OF THE NORTHEAST QUARTER OF SECTION 6, TOWNSHIP 1 NORTH, RANGE 66 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF FORT LUPTON, COUNTY OF WELD, STATE OF COLORADO.

WHEREAS, the Planning Commission held a public hearing on November 12, 2020 for the purpose of reviewing the McDonald's Restaurant Site Plan; and

WHERAS, the McDonald's Restaurant Site Plan will include a fast-food restaurant and drive-thru; and

WHEREAS, after review of the application and supporting documentation, find the request for the site plan application generally conforms with City codes and requirements and policies therein; and

WHEREAS, the City Council held a public hearing to consider and review the request for a site plan on December 1, 2020; and

WHEREAS, all legal requirements for the public hearing have been met, including publication of the legal notice in the Fort Lupton Press, mailing of public hearing notices to adjacent property owners within 100 feet, and posting of the hearing on the site; and

NOW THEREFORE BE IT RESOLVED, the Fort Lupton City Council has taken into consideration the supporting documentation and staff comments, all referral comments and any citizen testimony in response to this application. Based on the facts presented on this date, the City Council hereby approves the McDonald's Restaurant Site Plan to include a fast-food restaurant and drive-thru located in a Part of the West Half of the Northeast Quarter of Section 6, Township 1 North, Range 66 West of the Sixth Principal Meridian, Fort Lupton, Colorado with the following conditions:

I. Prior to recording the site plan map:

A. The title of the special use permit map shall include the Project No.: LUP2020-0032 & Plan No. SPR2020-0013.

B. Any redline comments provided by staff shall be made to the site plan map.

C. An amended plat shall be submitted for review and approval by the Planning Department, and recorded with the Weld County Clerk and Recorder prior to recording of the site plan.

D. Applicant shall submit a separate plan review application to the Fort Lupton Fire Protection District, and provide written evidence that any comments from the Fire District have been adequately addressed.

E. Applicant shall submit written evidence that any comments from the Public Works Director have been adequately addressed.

F. Applicant shall submit written evidence that CDOT has approved the access from the site to Highway 52 / 1st Street.

G. Applicant shall provide a truck routing plan to include additional details pertaining to delivery trucks.

H. Applicant shall submit written evidence that the comments from the Weld County Department of Public Health and Environment have been adequately addressed.

I. Applicant shall provide written acknowledgement of the comments from the Fort Lupton Police Department.

J. Applicant shall submit the finalized agreement with Fort Lupton Housing Authority confirming the access easement along the northern portion of the site.

K. Applicate shall evaluate trees on eastern side of property to ensure that accessibility on the adjacent site is not impacted.

L. The following notes shall be added to the site plan map:

1. The property shall be maintained to the curb, or roadway if no curb exists.

2. Dead and dying landscaping material shall be replaced by a date chosen by the Planning Department staff.

3. Lighting on the site shall be maintained so that light is directed downward and shall not spill onto adjacent properties.

4. Any change of use of the property, or continued use if there is a change of ownership of the tenant/occupant shall be submitted to the City for review prior to the start of operations.

5. The City reserves the right to re-evaluate traffic impacts in the future if there is an increase from what was represented to the City in evaluating the site plan.

M. Applicant shall provide written acknowledgement of the comments from Xcel Energy.

II. Prior to release of building permits:

A. A set of Mylars of the site plan map shall be submitted for recording.

III. Prior to Certificate of Occupancy:

A. Applicant shall have all inspections completed.

APPROVED AND PASSED BY A MAJORITY VOTE OF THOSE ELECTED TO THE CITY COUNCIL THIS 1st DAY OF DECEMBER 2020.

City of Fort Lupton, Colorado

_____
Zo Stieber, Mayor

Attest:

_____
Maricela Peña, City Clerk

Approved as to Form:

_____
Andy Ausmus, City Attorney

MCDONALD'S RESTAURANT SITE PLAN
STAFF REPORT
PROJECT NO. LUP2020-0032 / PLAN NO. SPR2020-0013

PROJECT DESCRIPTION

Project No.: LUP2020-0032 / Plan No. SPR2020-0013

Project Name: McDonald's Restaurant Site Plan

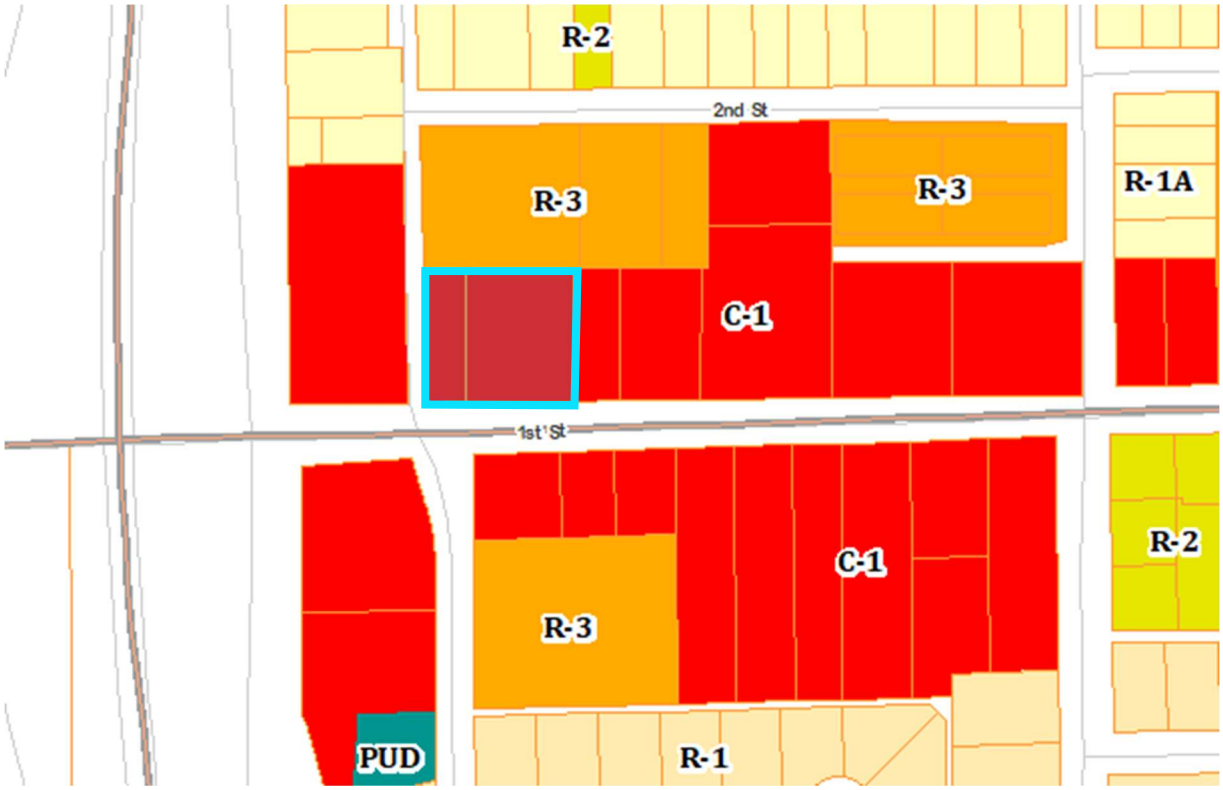
Owner: Luis A. Guzman and Peerless Tyre Company

Applicant: Strategic Land Solutions – Agent for McDonald's Corporation (represented by Robert Palmer)

Location of Request:

The site is located in a Part of the West Half of the Northeast Quarter of Section 6, Township 1 North, Range 66 West of the Sixth Principal Meridian, City of Fort Lupton, County of Weld, State of Colorado. It is located at the northeast corner of Highway52/1st Street and Grand Avenue ("Property").

The Property is directly surrounded by R-3 High Density Residential to the north, and C-1 Commercial zoning to the east, west and south. The current uses include multifamily residential to the north, Wendy's to the west, Highway 52 directly adjacent along the southern boundary, and a Mexican restaurant to the east.



Nature of Request:

The Applicant has submitted a site plan application for a fast-food restaurant with a drive-thru. The restaurant will be approximately 3,915 square feet, and the site will also include associated parking, landscaping, LED lighting, and utility connections.

The restaurant drive thru will be open 24 hours per day, seven days per week. The dining room will be open from 5:00 AM to 11:00 PM. McDonald's expects to employ approximately 60 people, with the largest shift having 13 employees.

The site consists of two parcels. A currently vacant gas station is located on the western parcel, and a liquor store, house and shed on the eastern parcel. These buildings would be demolished and the site redeveloped. Tanks from the vacant gas station have already been removed. As a condition of approval, the Applicant will be submitting a request for an amended plat to vacate the existing parcel line that separates the two parcels. This request will be reviewed administratively, pursuant to the Municipal Code.

Site Size: The Property is 0.764 acres, more or less.

Zone District: C-1 General Commercial District.

Proposed Use: Fast-food restaurant with drive-thru.

Existing Use: Vacant gas station, liquor store & house.

Hearing Dates: Planning Commission – Thursday, November 12, 2020 at 6:00 PM; and
City Council – Tuesday, December 1, 2020 at 7:00 PM.

Hearing Location: Fort Lupton City Hall – Council Chambers, 130 S. McKinley Ave., Fort Lupton, Colorado.

Staff Recommendation: Approval with conditions listed in the proposed resolution.

APPLICATION PROCESS

The Applicant is requesting approval of a site plan. The site plan application is processed under Section 16-170 of the Fort Lupton Municipal Code ("Code"), which states that site plans are required as follows:

1) Site plans are required as a step in the building permit review process for multi-family, commercial or industrial development.
2) Site plans are required for development which, in the opinion of the Planning Department, would have an adverse environmental impact upon the surrounding area or would have a major community land use impact.
3) To change an approved site plan when the change involves additional land use, including but not limited to:
    a. Additional buildings.
    b. Increase in the size of any building as shown on an approved site plan by more than ten percent (10%) over such approved building size.
    c. Outside storage and/or display.
    d. Vacation or dedication of easements or rights-of-way.

After required public notice of the site plan application, the Planning Commission shall consider the application, referral comments and any public testimony at a public hearing and make a recommendation to City Council to approve, approve with conditions or deny the site plan. The Planning Commission's comments shall be based on the evidence presented, conformance with the Comprehensive Plan and compliance with the City's standards, regulations and policies.

The City Council shall then conduct a public hearing and evaluate the application, referral agency comments, Planning Commission recommendation and any public testimony, and shall approve, conditionally approve, continue for additional information or for further study or deny the application based on the evidence presented and compliance with the City's standards, regulations and policies and other guidelines.

NOTIFICATION REQUIREMENTS

The Zoning Regulations require published notice of the hearings at least fifteen (15) days prior to the hearings. The Planning Commission and City Council hearings were published in the Fort Lupton Press October 28, 2020.

Notice of the public hearings were posted on the Property pursuant to the Zoning Regulations, which require the Applicant post the Property with notice of the hearings at least fifteen (15) days prior to the hearings.

Notice was mailed to neighbors within one-hundred (100) feet of the Property on October 28, 2020.

CONFORMANCE WITH CITY STANDARDS, REGULATIONS AND POLICIES

The property is located within the C-1 General Commercial Zone District, which lists restaurants, cafes and other places serving food (including drive-ins) as a permitted use.

Section 16-170 states that site plans are required as a step in the building permit review process for all multi-family, commercial and industrial development. A site plan review requires a public hearing before Planning Commission and City Council. The intent of the site plan review is to promote orderly and sound development standards as they apply to the City and enhance and protect the community's natural as well as man-made environments.

CONFORMANCE WITH THE COMPREHENSIVE PLAN

The Fort Lupton Comprehensive Plan designates this area for general commercial land uses. This designation allows for commercial businesses that offer residents basic goods and services. This supports a range of development styles, including stand-alone businesses on smaller properties as well as commercial shopping centers with multiple tenants. Primarily located along the City's major corridors, expansion of general commercial will offer residents greater shopping options within Fort Lupton and contribute to increased local commerce. In addition to commercial, these areas can include small office buildings, medical practices, and public and semi-public uses.

The property is surrounded by uses that are similar or compatible to the proposed use. The proposed use also conforms to the designated land use type and zoning.

REFERRALS

Referrals were provided to the list below. Any comments received are enclosed with the Planning Commission packet.

Building Inspector	CDOT	CenturyLink
City Attorney	Comcast	Fort Lupton Fire Protection District
GIS Specialist	NCWCD	OMI
Police Chief	Postmaster	Public Works Director
United Power	Weld County Dept. Of Public Health & Env.	Xcel Energy

For more information on this development, please refer to the Planning Commission packet provided. Additional documents may be available for review at the Fort Lupton City Hall.

RESOLUTION NO. P2020-025

A RESOLUTION OF THE PLANNING COMMISSION OF FORT LUPTON RECOMMENDING TO CITY COUNCIL APPROVAL OF THE MCDONALD'S RESTAURANT SITE PLAN LOCATED IN A PART OF THE WEST HALF OF THE NORTHEAST QUARTER OF SECTION 6, TOWNSHIP 1 NORTH, RANGE 66 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF FORT LUPTON, COUNTY OF WELD, STATE OF COLORADO.

WHEREAS, the Planning Commission held a public hearing on November 12, 2020, for the purpose of reviewing the McDonald's Restaurant Site Plan; and

WHEREAS, the McDonald's Restaurant Site Plan will include a fast-food restaurant with a drive-thru; and

WHEREAS, after review of the application and supporting documentation, the Planning Commission finds the request for the site plan application generally conforms with City codes and requirements and policies therein; and

WHEREAS, all legal requirements for the public hearing have been met including publication of the legal notice in the Fort Lupton Press, mailing of public hearing notices to adjacent property owners within 100 feet and posting of the hearing on the site; and

NOW THEREFORE BE IT RESOLVED, the Planning Commission has considered the application and has taken into consideration all referral comments and any citizen testimony in response to this application. Based upon the facts presented on this date, the Planning Commission hereby recommends approval of the McDonald's Restaurant Site Plan to include a fast-food restaurant with a drive-thru for a property located in a Part of the West Half of the Northeast Quarter of Section 6, Township 1 North, Range 66 West of the Sixth Principal Meridian, Fort Lupton, Colorado with the following conditions:

I. Prior to recording the site plan map:

A. The title of the special use permit map shall include the Project No.: LUP2020-0032 & Plan No. SPR2020-0013.

B. Any redline comments provided by staff shall be made to the site plan map.

C. An amended plat shall be submitted for review and approval by the Planning Department, and recorded with the Weld County Clerk and Recorder prior to recording of the site plan.

D. Applicant shall submit a separate plan review application to the Fort Lupton Fire Protection District, and provide written evidence that any comments from the Fire District have been adequately addressed.

E. Applicant shall submit written evidence that any comments from the Public Works Director have been adequately addressed.

F. Applicant shall submit written evidence that CDOT has approved the access from the site to Highway 52 / 1st Street.

G. Applicant shall provide a truck routing plan to include additional details pertaining to delivery trucks.

H. Applicant shall submit written evidence that the comments from the Weld County Department of Public Health and Environment have been adequately addressed.

I. Applicant shall provide written acknowledgement of the comments from the Fort Lupton Police Department.

J. Applicant shall submit the finalized agreement with Fort Lupton Housing Authority confirming the access easement along the northern portion of the site.

K. Applicate shall evaluate trees on eastern side of property to ensure that accessibility on the adjacent site is not impacted.

L. The following notes shall be added to the site plan map:

1. The property shall be maintained to the curb, or roadway if no curb exists.

2. Dead and dying landscaping material shall be replaced by a date chosen by the Planning Department staff.

3. Lighting on the site shall be maintained so that light is directed downward and shall not spill onto adjacent properties.

4. Any change of use of the property, or continued use if there is a change of ownership of the tenant/occupant shall be submitted to the City for review prior to the start of operations.

5. The City reserves the right to re-evaluate traffic impacts in the future if there is an increase from what was represented to the City in evaluating the site plan.

M. Applicant shall provide written acknowledgement of the comments from Xcel Energy.

II. Prior to release of building permits:

A. A set of Mylars of the site plan map shall be submitted for recording.

III. Prior to Certificate of Occupancy:

A. Applicant shall have all inspections completed.

DONE THIS 12th DAY OF NOVEMBER, 2020 BY THE PLANNING COMMISSION FOR THE CITY OF FORT LUPTON, COLORADO.

Vice-Chairman

ATTEST:

Planning Director

This resolution was approved by Planning Commission at the November 12, 2020 public hearing. Due to virtual attendance of the Planning Commission, a signed copy is not yet on file. A signed copy of this resolution will be added to the file once it is received.

RECORD OF PROCEEDINGS
FORT LUPTON PLANNING COMMISSION
November 12, 2020

The Planning Commission of the City of Fort Lupton met in session virtually via GoToMeeting, on Thursday, November 12, 2020.

City Attorney Andy Ausmus gave the following advisement:

> Tonight's meeting shall be held virtually so as to ensure the health and safety of the general public and the City of Fort Lupton City Council, Planning Commission and staff.
>
> The intent and purpose of the virtual appearance options is to allow the City to be innovative in providing the general public the most meaningful access possible in light of the current challenges present as a result of the Covid-19 pandemic. Therefore, subject to social distancing and public health orders, members of the general public will be offered the opportunity to be electronically present for meetings at the City, subject to existing health conditions.
>
> An electronic link has been made available for tonight's meeting on the City's website and social media platforms and as posted at City Hall, so that the general public, Planning Commission and staff may participate electronically via the internet or on the phone.

Vice-Chair Bushrod White called the meeting to order at 6:06 p.m.

ROLL CALL

Roll was taken and those present were Vice-Chair Bushrod White and Commission Members Kathy Kvasnicka, Lynne Derby, Paul Weber, Mark Grajeda, and Thomas Meyers. Also in attendance were Planning Director Todd Hodges, City Planner II Alyssa Knutson and City Planner I Maria Lancto.

APPROVAL OF AGENDA

Vice-Chair White called for a motion to approve the agenda. It was moved by Member Paul Weber and seconded by Member Kathy Kvasnicka.

CONSENT AGENDA

Vice-Chair White called for a motion to approve the consent agenda. It was moved by Member Paul Weber and seconded by Member Kathy Kvasnicka.

PUBLIC COMMENT

Vice-Chair White asked if there was anyone who would like to comment on an item not on the agenda tonight. Seeing none, he closed Public Comment.

ACTION ITEMS

Willow Bend Subdivision Preliminary Plat & Preliminary PUD Plan

City Planner II Alyssa Knutson introduced the project. She stated that the project before Planning Commission is the Willow Bend Subdivision Preliminary Plat & Preliminary PUD Plan. She stated that the proposed subdivision is located east of Northrup Avenue and south of 14st street. She stated that the plat is a single lot subdivision with 449 lease spaces for single family manufactured homes on approximately 127.42 acres. She stated that the plans comply with the Comprehensive Plan. She Stated that zoning is currently PUD and that the proposed use complies with this zoning. She stated that the specific zoning regulations that differ from the City's standard zoning are included in the PUD plan that was provided Planning Commission and posted on the website. She stated that all notification requirements have been met, and the applicant does have a presentation for the Planning Commission tonight.

Nikki Jeffries with Sun Land Development introduced the representatives on the line with the project.

City Attorney Andy Ausmus addressed the representative for the applicant, John McLaren, President of Sunrise Land Group. He asked if Mr. McLaren, on behalf of the applicant, understood that Members of the Planning Commission may be appearing tonight via virtual connection and may not be appearing in-person.

Mr. McLaren stated yes.

Mr. Ausmus asked if he consented to the applicable members voting on their submittal, even though said members are not present in person.

Mr. McLaren stated yes.

Mr. Ausmus asked if he understood that they have the right to continue this public hearing to such a date to allow a full in-person public hearing.

Mr. McLaren stated yes.

Mr. Ausmus asked if he has agreed to voluntarily waive that right on behalf of the applicant or themselves by proceeding tonight electronically.

Mr. McLaren stated yes.

Mr. Ausmus asked if he voluntarily signed and submitted the written waiver and consent to proceed electronically tonight.

Mr. McLaren stated yes.

Mr. Ausmus asked if they waived their right to proceed in an in-person public hearing and have consented to proceed forward voluntarily tonight in this virtual planning commission meeting, is that correct.

Mr. McLaren stated yes.

Mr. McLaren stated that he had previously spoken to Planning Commission regarding his company and the project at the Sketch Plat Phase of this development at a Public Hearing in February 2020. He stated that the company has grown since that time. He stated that he previously discussed the positive culture of Sun Communities, and wanted to touch on that and what the company has done through the pandemic. He stated Sun Communities provided hardship supports to their residents to the tune of nearly 5 million dollars in way of rent support. He stated that they have also allowed vacant vacation rentals to be used by healthcare workers and first responders to stay close to hospitals free of charge. He stated that they have also provided PPE to hospitals. He stated that they also opened up the River Run vacation rentals in Granby during the East Troublesome Fire. He stated that this has been provided as a free command center for the fire fighters. He stated that he is bringing these up to give the Planning Commission a real example of how the company stands by their policies and culture.

Mr. McLaren indicated to images of four new prototypes of manufactured homes that can be expected in the Willow Bend community. He stated that all these prototypes are also located a few miles from his own house. He indicated to a slide that showed a representation of some possible interiors. He turned over the presentation to Bill Anderson.

Mr. Anderson stated that the property is 127 acres and located at Northrup Avenue and 14th Street. He stated that the Fulton Ditch runs along the eastern boundary. He stated that Cottonwood Greens development is proposed south of the property. He indicated to a graphic of the current site plan. He stated that there will be 449 home sites with a density of 3.5 units per acre. He stated that the permitted density is about 6.5 units per acre, therefore the proposal is lower in density than maximum permitted. He stated that key features include an amenity center, 5.5 acres of pocket parks, and trail systems. He stated that this plan is about 34% open space.

Mr. Anderson walked through the proposed site plan. He stated that the primary entrance is off Northrup Avenue with a nice boulevard entry. He stated that a detention basin is located north and along Northrup. He stated that as you continue on the main road, you terminate right into the 3-acre amenity center. He stated that north of the amenity center is a secondary entrance drive that will connect into 14th street once 14th street is built. He stated that if you

continue east there is a trail and road network into a significant community park. He stated there are also two pocket parks. He stated that there are two trail connections, one on the east and one on the south to the Fulton Regional Trail. He stated that they are proposing bridge crossings over the Fulton Ditch.

Mr. Anderson indicated to a graphic of two standard home sites, one that is 58' wide and another that is 110' wide. He stated that each home site has 3 parking spaces and concrete walks.

Mr. Anderson stated that changes from the sketch plat include added detention basins, 14th street realignment, an additional emergency access, centralized 14th street access, expanded trail system to the north, bridge connections across Fulton Ditch, and relocation of the maintenance facility. He indicated to a graphic of the proposed amenity center and discussed the fire pits, patios, pools, open play area, play equipment, sports courts, and maintenance facility. He stated that they are very excited about this plan. He stated that they have been working with staff and referral agencies and understand the conditions of approval that are proposed.

Vice-Chair White opened the Public Comment portion of the hearing. Seeing none, public comment was closed.

Ms. Knutson stated that staff received a comment from Kerr-McGee after the Planning Commission Packet was sent out. She stated that they would like their pipeline easements taken into considerations. She stated that they should updated the resolution to include a condition on that.

Mr. Ausmus asked Mr. McLaren if he has had a full and fair opportunity to present all facts, submittals, documents, testimony and presentations in support of the Applicant's application before the City Council and or Planning Commission tonight?

Mr. McLaren stated yes.

Mr. Ausmus asked Mr. McLaren if there has there been anything that he or the Applicant would have liked to have presented in support of Applicant's application that he felt he was prevented from doing so?

Mr. McLaren stated no.

Vice-Chair White asked the Commissioners if they had any questions.

Member Lynne Derby asked if people would be purchasing the land under the modular home as well as the home, or if the land was leased.

Mr. McLaren clarified that the land was leased from Sun Communities.

Member Kathy Kvasnicka asked who was responsible for maintenance.

Mr. McLaren stated that the maintenance of the home and the home site would be the home owner, but all other common areas, roads, etc. would be maintained by Sun Communities.

Member Mark Grajeda asked when construction would begin.

Mr. McLaren stated that typically they start with building a first phase of 200-250 home sites. He stated that they expected to move pretty quickly through the phases, but didn't have an exact time line. He stated that the first phase would also include the amenity core.

Mr. Anderson stated that 219 home sites would be built in the first phase. He stated that detailed engineering and final approvals still need to be completed, but they hoped to begin in the June / July time frame.

Member Paul Weber complimented Sun Communities for addressing drainage, which was an issue discussed at the Sketch Plat hearing.

Vice-Chair White asked the Commissioners if they had any more questions; seeing none, he requested a motion to approve Resolution P2020-024. Mr. Ausmus confirmed that every Commissioner was able to see and hear the entire presentation. Ms. Knutson reminded Commissioners that staff was recommended that the resolution be updated to include an addition to Item 2.L. that oil and gas easements would be addressed.

It was moved by Member Paul Weber to approve Resolution P2020-024 as amended and Member Lynne Derby seconded.

Motion carried by unanimous roll call vote.

McDonald's Restaurant Site Plan

City Planner I Maria Lancto introduced the project. She stated that the application before Planning Commission is for the McDonald's Site Plan. She stated that the site is located at the northeast corner of Highway 52 and Grand Avenue. She stated that the site is approximately 0.764 acres in size. She stated that the application is requesting approval of a site plan for a fast-food restaurant with a drive-thru. She stated that the site plan includes a 3,915 square foot building with associated parking and landscaping. She stated that current zoning for this property is C-1 General Commercial, and restaurants are a use by right in this zone district. She stated that currently the proposed site plan spans across two parcels and that a condition of approval would be for the applicant to work with staff to complete an amended plat to combine these parcels. She stated that all notification requirements have been met and that staff is recommending conditional approval. She reminded Commissioners and attendees that this is a public hearing for the site plan only and that the applicant has also applied for

a variance that will be heard later in the evening at the Board of Adjustments public hearing. She stated that the representative for the project does have a brief presentation.

City Attorney Andy Ausmus addressed the representative for the applicant, Robert Palmer. He asked if he, on behalf of the applicant, understood that Members of the Planning Commission may be appearing tonight via virtual connection and may not be appearing in-person.

Mr. Palmer stated yes.

Mr. Ausmus asked if he consented to the applicable members voting on their submittal, even though said members are not present in person.

Mr. Palmer stated yes.

Mr. Ausmus asked if he understood that they have the right to continue this public hearing to such a date to allow a full in-person public hearing.

Mr. Palmer stated yes.

Mr. Ausmus asked if he has agreed to voluntarily waive that right on behalf of the applicant or themselves by proceeding tonight electronically.

Mr. Palmer stated yes.

Mr. Ausmus asked if he waived his right to proceed in an in-person public hearing and have consented to proceed forward voluntarily tonight in this virtual planning commission meeting, is that correct.

Mr. Palmer stated yes.

Mr. Palmer stated that they are excited about this project and has appreciated staff input through this process. He indicated to the site plan map and stated that the restaurant is oriented towards 1st street. Mr. Palmer stated that currently there is vacant gas station, liquor store and single family residence at the site. He stated that the site would be scraped and existing utilities removed. He stated that the accesses to the property would also be reconfigured. He stated that they are applying for an access permit from CDOT for the access form Highway 52. He stated that they are working with the Fort Lupton Housing Authority for access on what they are currently labeling as the alley. He stated that that agreement is currently being reviewed by HUD. He stated that the site generally flows counter clock wise. He stated that new utilities are being proposed with this development. He stated that Commissioners are likely familiar with what this site will look like. He discussed the landscaping throughout that will be used to soften the site. He stated that the ADA parking will be located attached the building. He stated that all sidewalks will be ADA.

Vice-Chair Bushrod White opened the Public Comment portion of the hearing.

Rachel Wells, 150 1st Street – Ms. Wells said that she is with Santiago's, the business located across the street from the proposed plan. She stated that she is concerned with the traffic flow. She stated that the road is already very congested and it is already difficult to turn left into her property. She stated that she and her customers are very concerned. She stated that the semi-traffic is an added challenge on Highway 52. She asked what the City and McDonald's have thought about doing to address traffic flow.

Vice-Chair asked if there was anyone else who wished to comment. Hearing no one, Public Comment was closed.

Vice-Chair White asked Mr. Palmer if he would like to respond to the Public Comment.

Mr. Palmer stated that they are also concerned with the traffic impact to surrounding businesses and their own business. He stated this was the driving factor for the alley / easement access located north of the site. He stated that the site would not work without that. He stated that the double drive-thru should also help. He stated that people should access from Grand Avenue rather than 1st street.

Vice-Chair White asked the Commissioners if they had any questions.

Member Mark Grajeda verified that McDonald's is still waiting for responses from CDOT.

Mr. Palmer stated yes and they were going through the normal access permit process. He stated that CDOT usually takes a little longer, and they don't anticipate any issues.

Member Thomas Meyers asked for clarification on if this was a conditional request.

Ms. Knutson stated that staff was recommended conditional approval.

Member Meyers asked if the alley access was guaranteed with the Housing Authority.

Mr. Palmer stated that the Housing Authority is supporting the easement. He stated that HUD has to approve it and the agreement is currently in that process. He stated that this would be a condition of approval that the easement was in place.

Member Meyers stated that he sympathizes with the traffic issues in this area. He asked what would happen if the alley access was not approved.

Mr. Palmer stated that this plan would not work without the alley and they would have to come back with a different site plan.

Planning Director Todd Hodges confirmed that a new site plan would be brought back to Planning Commission for re-review.

Member Paul Weber asked who would be maintaining the alley.

Mr. Palmer confirmed that McDonald's would maintain the alley.

Member Weber stated that he understands the concern with the traffic. He asked Public Works Director Roy Vestal if there were any plans from CDOT on this area.

Roy Vestal stated that CDOT is in the process of conducting the PEL Study which is looking at access control through the corridor. He stated that there are a couple options being looked at included right-in-right-out on both sides of Grand Avenue. He stated that this is a troubling intersection that will only get worse. He stated that reducing the current access is an improvement.

Mr. Ausmus asked Mr. Palmer if he has had a full and fair opportunity to present all facts, submittals, documents, testimony and presentations in support of the Applicant's application before the City Council and or Planning Commission tonight?

Mr. Palmer stated yes.

Mr. Ausmus confirmed that all Commissioners were able to see and hear the entire presentation. This was confirmed through a roll call tally.

Vice-Chair White asked the Commissioners if they had any more questions; seeing none, he requested a motion to approve Resolution P2020-025. It was moved by Thomas Meyer and Member Kathy Kvasnicka seconded.

Motion carried by unanimous roll call vote

DISCUSSION ITEMS

Review of Meeting Discussion
A review of meeting discussions took place.

Development Code Update
A discussion of the Development Code Update took place.

FUTURE BUSINESS

Next Meeting of the Planning Commission

The next meeting of the Planning Commission is scheduled for December 10, 2020 at 6:00 PM.

The Board of Adjustment will be held immediately after this Planning Commission meeting.

ADJOURNMENT

It was moved by Member Kathy Kvasnicka and seconded by Member Lynn Derby to adjourn the November 12, 2020 Planning Commission Meeting.

Motion carried unanimously by voice vote.

_____
Maria Lancto, Planner I

Approved by Planning Commission

_____
Mike Simone, Chair

DRAFT

Form PLAN002

CITY OF

Fort Lupton

EST 1836

Planning & Building

130 S. McKinley Avenue
Fort Lupton, CO 80621

Phone: 303.857.6694
Fax: 303.857.0351

www.fortluptonco.gov

Project No. _____

Land Use Application Form

A. CONTACT INFORMATION

1) Property Owner Name: Peerless Tyre Company

Company: Peerless Tyre Company

Phone: 720-274-0612 Email: d.cannon@peerlesstyreco.com

Address: 5000 Kingston St. Denver, CO 80239

Preferred method of contact? Email: Phone: Mail:

2) Representative Name: Robert Palmer, P.E.

Company: Strategic Land Solutions - Agent for McDonald's Corporation

Phone: 720-384-7661 Email: rpalmer@strategicls.net

Address: 2595 Ponderosa Road Franktown, CO 80116

Preferred method of contact? Email: X Phone: Mail:

3) Billing Contact *(where invoices should be directed to)*: Robert Palmer, PE

Billing Company: Strategic Land Solutions, Inc.

Phone: 720-384-7661 Email: rpalmer@strategicls.net

Address: 2595 Ponderosa Road Franktown, CO 80116

B. SITE DESCRIPTION

Site Address: 105 1st Street

Parcel Number: 147106100021

Existing Zone Classification: C-1 Proposed Zone Classification: C-1

Water Type: Municipal Name: Fort Lupton

Sewage Type: Municipal District Name or Location Hauled to: _____

C. APPLICATION TYPE (CHECK ALL THAT APPLY)

Sketch Plat	Administrative Site Plan	PUD Plan (Preliminary & Final)
Preliminary Plat	Special Use Permit	Variance
Final Plat	Oil & Gas Permit	Administrative Variance
Minor Subdivision	Annexation & Initial Zone	Appeal
X Amended Plat	Change of Zone	Other: _____
X Site Plan	Comp Plan Amendment	

Project No. _____

D. PROJECT DESCRIPTION

Project Name: McDonald's Restaurant

Please provide a short description of the proposed project in the space provided below:

A new 3,915 S.F. McDonald's Restaurant with landscaping, parking, drives, ligthing, and utilities.

E. REQUIRED DOCUMENTS

For an application to be considered complete, and for planning staff to begin review and schedule any applicable public hearings, this Land Use Application Form must be fully completed and all required attachments included. Planning staff will review the application for completeness and will provide notice to the representative and/or owner whether the application has been deemed complete.

F. CERTIFICATIONS

Representative Certification

By signing this application, I attest that I am acting with the knowledge and consent of all owners of the property that is the subject of this application, and that I have been designated to act as the representative for the project described in this land use application. I further certify that all information submitted with this application is true and accurate to the best of my knowledge.

Representative: Robert J Pal Date: 09/11/2020

Owner Certification

I hereby certify that I am the legal owner of record of the property that is the subject of this application. I authorize the representative listed on this application, if any, to communicate directly with City officials and to submit documentation and information regarding this application on my behalf.

Owner: _____ Date: 9/18/20

For Office Use Only

Received Date: _____

If the application is not complete, state reasons why it is incomplete:

_____

_____

_____

Deemed Complete Date: _____

Fees Submitted: _____ Escrow Submitted: _____

Instructions for Submitting the Land Use Application Form

DEFINITIONS

Words in the singular include the plural and words in the plural include the singular.

Application refers to the official submittal to the City of Fort Lupton's Planning Department for review of the proposed land use development identified in the land use application form. The application includes the form, all materials submitted for review of the project, including those documents required under the Land Use Regulations of the Municipal Code, and any additional information provided.

Project refers to the land use development identified on the land use application form and application materials.

Property refers to the land that is being proposed for development as described in the land use application form and application materials.

A. CONTACT INFORMATION

1) Provide contact information for all owners of any property that is the subject of the application. If the contact information for all property owners will not fit on the space provided, submit a separate sheet for the additional owners.
2) Provide contact information for all persons, firms or businesses that are authorized by the owners identified in Section A(1) to work on the land use application, including, but not limited to, discussing the project, submitting application materials, and attending meeting and hearings. If the contact information for all representatives will not fit on the space provided, submit a separate sheet for the additional representatives.
3) Provide contact and mailing information for the person that should receive all invoices for the project. If this person changes at any time, contact the Planning Department immediately to update this information.

B. SITE DESCRIPTION

Provide all information requested. Parcel numbers and address information may be found at the Weld County Property Portal at https://www.co.weld.co.us/maps1/propertyportal/. Current zoning can be found at https://www.fortluptonco.gov/405/Zoning.

C. APPLICATION TYPE

Select the land use application that is applicable to the project. If there are multiple land use application types being submitted to run concurrently, select all that apply. The land use application types will be identified during the required pre-application meeting. If you have any questions about this, please contact the Planning Department at 303.857.6694 or planningdept@fortluptonco.gov.

D. PROJECT DESCRIPTION

Please select a project name that will be referenced throughout the project and a description of what the project entails. If you need more space for the project description, please attach a separate sheet.

E. REQUIRED DOCUMENTS

Required documents will be discussed during the pre-application meeting with the Planning Department. If any documents are missing, the acceptance of the application may be delayed until the submittal is complete.

F. CERTIFICATIONS

Representative Certification. Provide the signature of all authorized representatives in this section.
Owner Certification. Provide the signature of all owners of properties included in the application in this section.

For any other questions, please contact the Planning Department at 303.857.6694 or planningdept@fortluptonco.gov.

CITY OF Fort Lupton EST 1836

Planning & Building

130 S. McKinley Avenue
Fort Lupton, CO 80621
Phone: 303.857.6694
Fax: 303.857.0351
www.fortluptonco.gov

Project No. _____

Land Use Application Form

A. CONTACT INFORMATION

1) Property Owner Name: Luis A. Guzman

Company: Columbia Reality, Inc.

Phone: 720-486-5769 Email: luis.guzman@columbiareality.com

Address: 115 1st Street Fort Lupton, CO 80621

Preferred method of contact? Email: Phone: Mail:

2) Representative Name: Robert Palmer, P.E.

Company: Strategic Land Solutions - Agent for McDonald's Corporation

Phone: 720-384-7661 Email: rpalmer@strategicls.net

Address: 2595 Ponderosa Road Franktown, CO 80116

Preferred method of contact? Email: X Phone: Mail:

3) Billing Contact *(where invoices should be directed to)*: Robert Palmer, PE

Billing Company: Strategic Land Solutions, Inc.

Phone: 720-384-7661 Email: rpalmer@strategicls.net

Address: 2595 Ponderosa Road Franktown, CO 80116

B. SITE DESCRIPTION

Site Address: 105 1st Street

Parcel Number: 147106100021

Existing Zone Classification: C-1 Proposed Zone Classification: C-1

Water Type: Municipal Name: Fort Lupton

Sewage Type: Municipal District Name or Location Hauled to: _____

C. APPLICATION TYPE (CHECK ALL THAT APPLY)

Sketch Plat	Administrative Site Plan	PUD Plan (Preliminary & Final)
Preliminary Plat	Special Use Permit	Variance
Final Plat	Oil & Gas Permit	Administrative Variance
Minor Subdivision	Annexation & Initial Zone	Appeal
X Amended Plat	Change of Zone	Other: _____
X Site Plan	Comp Plan Amendment	

Project No. _____

D. PROJECT DESCRIPTION

Project Name: McDonald's Restaurant

Please provide a short description of the proposed project in the space provided below:

A new 3,915 S.F. McDonald's Restaurant with landscaping, parking, drives, ligthing, and utilities.

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F. CERTIFICATIONS

Representative Certification

By signing this application, I attest that I am acting with the knowledge and consent of all owners of the property that is the subject of this application, and that I have been designated to act as the representative for the project described in this land use application. I further certify that all information submitted with this application is true and accurate to the best of my knowledge.

Representative: Robert J Pal _____ Date: 09/11/2020

Owner Certification

I hereby certify that I am the legal owner of record of the property that is the subject of this application. I authorize the representative listed on this application, if any, to communicate directly with City officials and to submit documentation and information regarding this application on my behalf.

Owner: Luis A. Guzman
Luis A. Guzman (Sep 18, 2020 16:05 MDT) _____ Date: 09/08/2020

For Office Use Only

Received Date: _____

If the application is not complete, state reasons why it is incomplete:

_____

_____

_____

Deemed Complete Date: _____

Fees Submitted: _____ Escrow Submitted: _____

Instructions for Submitting the Land Use Application Form

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Project refers to the land use development identified on the land use application form and application materials.

Property refers to the land that is being proposed for development as described in the land use application form and application materials.

A. CONTACT INFORMATION

1) Provide contact information for all owners of any property that is the subject of the application. If the contact information for all property owners will not fit on the space provided, submit a separate sheet for the additional owners.
2) Provide contact information for all persons, firms or businesses that are authorized by the owners identified in Section A(1) to work on the land use application, including, but not limited to, discussing the project, submitting application materials, and attending meeting and hearings. If the contact information for all representatives will not fit on the space provided, submit a separate sheet for the additional representatives.
3) Provide contact and mailing information for the person that should receive all invoices for the project. If this person changes at any time, contact the Planning Department immediately to update this information.

B. SITE DESCRIPTION

Provide all information requested. Parcel numbers and address information may be found at the Weld County Property Portal at https://www.co.weld.co.us/maps1/propertyportal/. Current zoning can be found at https://www.fortluptonco.gov/405/Zoning.

C. APPLICATION TYPE

Select the land use application that is applicable to the project. If there are multiple land use application types being submitted to run concurrently, select all that apply. The land use application types will be identified during the required pre-application meeting. If you have any questions about this, please contact the Planning Department at 303.857.6694 or planningdept@fortluptonco.gov.

D. PROJECT DESCRIPTION

Please select a project name that will be referenced throughout the project and a description of what the project entails. If you need more space for the project description, please attach a separate sheet.

E. REQUIRED DOCUMENTS

Required documents will be discussed during the pre-application meeting with the Planning Department. If any documents are missing, the acceptance of the application may be delayed until the submittal is complete.

F. CERTIFICATIONS

Representative Certification. Provide the signature of all authorized representatives in this section.
Owner Certification. Provide the signature of all owners of properties included in the application in this section.

For any other questions, please contact the Planning Department at 303.857.6694 or planningdept@fortluptonco.gov.

Columbia Reality, Inc. Land Use Application[2]

Final Audit Report 2020-09-18

Created:	2020-09-18
By:	Leonard Abels (len@msbba.com)
Status:	Signed
Transaction ID:	CBJCHBCAABAAXV8CLkEv9fpmHyzZuX253OiWXHDRZgGy

"Columbia Reality, Inc. Land Use Application[2]" History

Document created by Leonard Abels (len@msbba.com)
2020-09-18 - 9:37:22 PM GMT- IP address: 73.203.55.136

Document emailed to Luis A. Guzman (luis.guzman16180@gmail.com) for signature
2020-09-18 - 9:38:18 PM GMT

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Document e-signed by Luis A. Guzman (luis.guzman16180@gmail.com)
Signature Date: 2020-09-18 - 10:05:12 PM GMT - Time Source: server- IP address: 76.25.91.137

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Adobe Sign

Strategic Land Solutions, Inc.
Civil Engineering • Land Planning • Entitlements

Friday – October 16, 2020

Sent Via: ☐ 1st Class ☐ FedEx ☐ Courier ☐ Hand Deliver
☐ Facsimile to: ☒ **EMAIL TO:** thodges@fortluptonco.gov

CITY OF FORT LUPTON
Community Development Department
Planning Division
130 S. McKinley Avenue
Fort Lupton, CO 80621

Attention: Mr. Todd Hodges

Re: **MCDONALD'S RESTAURANT LETTER OF INTENT**
105 1ST Street
Fort Lupton, CO

SLS JN: 20-0001-149

Dear Mr. Hodges:

As you are aware McDonald's plans to redevelop the existing gas station and liquor store parcel at the northeast corner of 1st Street (Highway 52) and Grand Avenue. As part of the proposed development McDonald's plans to raze the existing site and build a new McDonald's facility including a 3,915 S.F. building with associated parking, landscaping, LED lighting, and utility connections.

McDonald's is currently moving forward with a private easement over the alley area north of the site. McDonald's plans to record a private access easement with the Fort Lupton Housing Authority, and improve the alley as shown on the attached plans. McDonald's has a general agreement with the Housing Authority, which is currently being reviewed by HUD. A letter of understanding is included with this submittal. With use of the alley McDonald's expects to take traffic from 1st Street and Grand Street. approximately 70% of customers are expected to use the drive thru.

McDonald's expects to employ approximately 60 people at this restaurant, with the largest shift having 13-employees working at one time. The proposed restaurant drive thru will be open 24 hours a day seven days a week. The dining room will be open from 5:00 am until 11:00 pm. McDonald's expects to serve approximately 1,790 customers a day, with approximately 153 customers during the peak hour.

As you are aware McDonald's direct competition in the area is Burger King and Wendy's. Both Burger King and Wendy's are located within the State Highway Sign district which allows a larger and higher sign giving them a competitive advantage or McDonald's. Therefore, McDonald's is requesting a variance with this project to allow a sign conforming to the Highway 85 Sign District allowances, and a variance to allow their sign to be located within 200-feet of the existing Wendy's sign. McDonald's believes the additional sign area and height, along with the placement of the sign, are necessary for this site to be profitable.

If you have questions regarding what is proposed, please feel free to call me. Thank you!

Sincerely,

STRATEGIC LAND SOLUTIONS, INC.

Robert J. Palmer, PE *(CO, NM, AZ, WY, MT)*
President for SLS, Inc. A Colorado Corporation

Attachments: As noted above.

cc: Mr. Trevor Prophet, McDonald's via: trevor.prophet@us.mcd.com

Front Elevation

Rear Elevation

Non-Drive-Thru Side Elevation

Materials Legend

- Brick (Main Building) *"Slate Gray"*
- Metal Wall Panels (Main Building) *"Weatherd Zinc"*
- Alpolic (Feature Wall) *"RAL 7022"*
- Aluminum Battens *Wood grain*
- Hollow Metal Doors *"Gauntlet Grey"*
- Aluminum Canopy (Prefinished Metal) *White*
- Aluminum Trellis (Prefinished Metal) *RAL 7022*
- Aluminum Trellis (Prefinished Metal) *Gold*
- Metal Fascia *"Weathered Zinc"*
- Metal Fascia *"RAL 7022"*

Drive-Thru Side Elevation

CORE STATES GROUP

Proposed McDonald's Restaurant #005-0763
105 1st Street
Ft. Lupton, CO
September 3, 2020

Strategic Land Solutions, Inc.
Civil Engineering • Land Planning • Entitlements

Friday – October 16, 2020

Sent Via: ☐ 1st Class ☐ FedEx ☐ Courier ☐ Hand Deliver
☐ Facsimile to:
☒ **EMAIL TO:** thodges@fortluptonco.gov

CITY OF FORT LUPTON
Community Development Department
Planning Division
130 S. McKinley Avenue
Fort Lupton, CO 80621

Attention: Mr. Todd Hodges

Re: **MCDONALD'S RESTAURANT TRAFFIC LETTER**
105 1ST Street
Fort Lupton, CO

SLS JN: 20-0001-149

Dear Mr. Hodges:

As you are aware McDonald's plans to redevelop the existing gas station and liquor store parcel at the northeast corner of 1st Street (Highway 52) and Grand Avenue. As part of the proposed development McDonald's plans to raze the existing site and build a new McDonald's facility including a 3,915 S.F. building.

Based on the Institute of Traffic Engineers (ITE) ITE Trip Generation Manual, 10th Edition Code 934, Fast Food Restaurant with a Drive Thru Window, this project is expected to generate 1790 Average Daily Trips, 153 Peak AM trips, and 124 Peak PM trips.

Trip Generation Worksheet

ITE Code	Land Use	Unit	Quantity	ADT	AM In	AM Out	AM Total	PM In	PM Out	PM Total
934	Fast Food Restaurant	KSF	4	*470.95*	*20.50*	*19.69*		*16.99*	*15.68*	
	W/Drive Thru Window			**1790**	**78**	**75**	**153**	**65**	**60**	**124**
	Total Trips			**1790**	**78**	**75**	**153**	**65**	**60**	**124**

Furthermore, McDonald's plans to remove the three existing access points to 1st Street and replace them with a single access point located at the east side of the property as far away from the intersection as possible. Currently access from Grand Avenue is afford along the entire length of the site due to the lack of a curb or any other type of physical barrier. As part of this project McDonald's plans to install new curb and gutter along the length of Grand Avenue removing all access from the street directly to the site. McDonald's is in the process of procuring an access easement over the alley area north of the site, where traffic from Grand Avenue will be routed through the alley onto the McDonald's site.

In addition to the proposed access changes McDonald's will install new ADA compliant sidewalks, curb ramps, and driveway entrances along 1st Street and Grand Avenue increasing safety for pedestrians and bicycles. Combined with the well-defined entry areas, the new sidewalks will reduce the vehicle/pedestrian interaction along the property creating a much safer situation for both vehicles and pedestrians.

2595 Ponderosa Rd – Franktown, CO 80116
Robert Palmer: 720.384.7661 phone • rpalmer@strategicls.net • **WEBSITE**: http://www.strategicls.net

Strategic Land Solutions, Inc.
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As described in this letter, McDonald's plans to remove most access to the site and establish a well-defined path of travel from 1st Street and Grand Avenue, significantly improving traffic impacts to the adjacent streets. The proposed improvements will also create a safer environment for pedestrians and bicyclists. Therefore, this project should not have an adverse impact on the adjacent streets.

If you have questions regarding what is proposed, please feel free to call me. Thank you!

Sincerely,

STRATEGIC LAND SOLUTIONS, INC.

Robert J. Palmer, PE *(CO, NM, AZ, WY, MT)*
President for SLS, Inc. A Colorado Corporation

Attachments: As noted above.

cc: Mr. Trevor Prophet, McDonald's via: trevor.prophet@us.mcd.com

8/4/2020

RE: New McDonald's store to be located at the NEC of 1st and Grand, Fort Lupton Colorado.

Project Summary: Flatirons Capital LLC ("Flatirons") is currently under contract purchase the properties at 105 & 115 1st Avenue, Fort Lupton, Colorado. Flatirons and McDonald's USA, LLC ("McDonald's") intend to enter into a lease agreement for McDonald's to build a new store at the NEC of 1st and Grand in Fort Lupton, Colorado.

As part of the McDonald's development, the City of Fort Lupton, in order to accept, review, and approve McDonald's design and plans, is requiring an easement in place with the Fort Lupton Housing Authority. ("Housing Authority").

Therefore, this letter will serve as notice to the City of Fort Lupton that the three parties agree to work together in good faith to prepare and formalize an easement over the alleyway, which is owned by the Housing Authority (exhibits and exact legal descriptions to be finalized in the easement) that will be required for this project to proceed.

8/4/2020

Vincent Ornelas
Fort Lupton Housing Authority

Date

8/7/2020

Nate Hansen
Flatirons Capital LLC

Date

8/6/20

Darla Bowen
McDonald's USA, LLC

Date

MCDONALD'S RESTAURANT

105 1st Street
Fort Lupton, CO
STORE ID # 05-0763

DRAINAGE REPORT

Strategic Land Solutions, Inc. JN: 20-0001-149
Report Date/History: September 11, 2020

Prepared for:
MCDONALD'S USA, LLC
Mr. Trevor Prophet, Area Construction Manager
Rocky Mountain Region
4643 S. Ulster Street, Suite 1300
Denver, CO 80237-2868
Phone (303) 519-4001
Fax (303) 773-6960
Email Trevor.prophet@us.mcd.com

Prepared by:
Robert J. Palmer, P.E., as President
Strategic Land Solutions, Inc.
2595 Ponderosa Road
Franktown, CO 80116
Phone (720) 384-7661
Email rpalmer@strategicls.net

Strategic Land Solutions, Inc.
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ENGINEER'S CERTIFICATION

This **STORMWATER MANAGEMENT REPORT** was prepared by me or under my direct supervision in accordance with the provisions of the City of Fort Lupton, Storm Drainage Design and Technical for the owners thereof. It is understood that the City of Fort Lupton does not and will not assume liability for the drainage facilities designed by others.

SIGNATURE: _____
Robert J. Palmer, PE
CO PE #36320

COLORADO REGISTERED
ROBERT J. PALMER
36320
PROFESSIONAL ENGINEER

DEVELOPER'S CERTIFICATION

MCDONALD'S CORPORATION (hereinafter **DEVELOPER**) hereby certifies that the drainage facilities for the project detailed within this Report will be constructed according to the design presented. It is understood that the City of Fort Lupton does not and will not assume liability for the drainage facilities designed and/or certified by my engineer and that the City of Fort Lupton reviews drainage plans pursuant to Colorado Revised Statutes, Title 24, Article 28; but cannot, on behalf of **DEVELOPER**, guarantee that final drainage design review will absolve **DEVELOPER** and/or their successor and/or assigns of future liability for improper design.

SIGNATURE: _____

_____
Printed Name –

_____
Title –

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1. GENERAL LOCATION AND DESCRIPTION

1.1. LOCATION

The planned **McDonald's Restaurant** will consist of a single building located at 105 1st Street, within the Northeast ¼ of Section 6, Township 1 North, Range 66 West of the 6th Principal Meridian, City of Fort Lupton, County of Weld, State of Colorado.

The site is bounded on the west by Grand Avenue, on the south by 1st Street (State Highway 52), on the east by existing retail/commercial, and on the north by an affordable housing project.

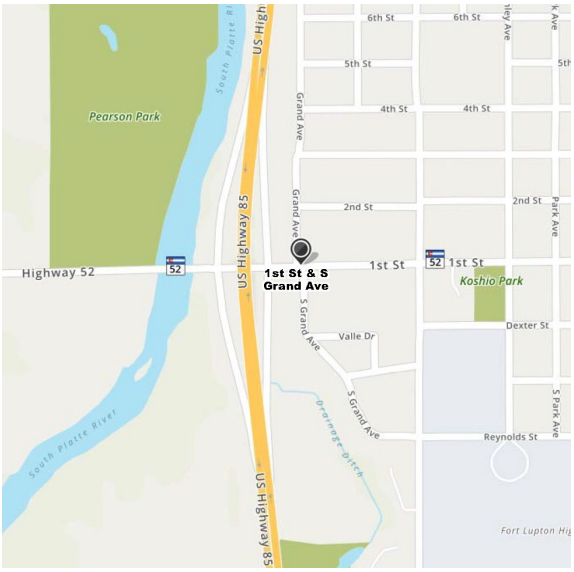

Figure 1 - SITE LOCATION MAP

Figure 2 - SITE LOCATION ENLARGEMENT

1.2. DESCRIPTION OF PROPERTY

The site currently encompasses approximately 0.765-acres of developed land. The existing site contains a closed service station with the fuel storage tanks and pumps removed, an operational liquor store, and small single-family home behind the liquor store. The State of Colorado has issued a "No Further Action Required" letter regarding petroleum mitigation. The project consists demolishing the existing buildings, and the construction of a single restaurant building, parking, associated drive lanes, landscaping, LED lighting, and new utility services.

2. DRAINAGE BASINS AND SUB-BASINS

2.1. MAJOR BASIN DESCRIPTION

The site lies within the South Plat River basin. Runoff from the site flows south to 1st Street. The site runoff is then conveyed west in a gutter along 1st Street to a catch basin located at highway 85, where it is captured and conveyed underground to the South Plat River.

There are no adjacent major irrigation facilities. However, the South Plat River is located near the site.

<u>The project is located within Flood Zone X</u>, as shown on the National Flood Insurance Program's Flood Insurance Rate Map (FIRM), Weld County Community Panel Number 08123C2104E, Effective Date January 20, 2016.

According the National Resource Council Soil (NRCS) web site, the site soil is Altvan 0 to 1 percent slope (hydrologic soil group B). Hydrologic soil group B was used in the calculations for this report.

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2.2. SUB-BASIN DESCRIPTION

Under proposed conditions, the site is roughly divided into 4-drainage sub-basins.

The following is a description of the 5 proposed sub-basins A, B, C, and D.

Basin A contains approximately 0.21 acre, is comprised of half of the building roof, and the westerly parking lot. Runoff from this area sheet flows west, where it is captured in a proposed curb and gutter and conveyed through a sidewalk chase at Design Point 1 near the southwest corner of the site.

Basin B contains approximately 0.25 acre, and is comprised of half of the building roof, and the easterly parking lot. Runoff from this area sheet flows east, where it is captured in a proposed cross-pan where it is conveyed to 1st Street at Design Point 2.

Basin C contains approximately 0.23 acre and is comprised of a portion of the easterly parking lot and landscaping and the drive thru area at the north side of the site. Runoff from this area sheet flows north to the proposed cross-pan in the alley, where it is captured and conveyed west to Grand Avenue at Design Point 3.

Basin D contains approximately 0.07 acre and is comprised of the landscaping and sidewalks along Grand Avenue and 1st Street. Runoff form this area sheet flows south and west directly to Grand Avenue and 1st Street at Design Point 4.

3. DRAINAGE DESIGN CRITERIA

3.1. REGULATIONS

This drainage report was prepared in compliance with the following criteria:

- City of Fort Lupton, *Storm Drainage Design and Technical Criteria*
- Urban Drainage and Flood Control District (UDFCD) *Urban Storm Drainage Criteria Manual*

During construction, disturbed areas will be stabilized for erosion and sediment control in accordance with City of Fort Lupton and UDFCD *Criteria*. The methods used to control erosion and sediment during construction of this project will comply with the non-structural and structural Best Management Practices (BMPs) described within the City of Fort Lupton and UDFCD manuals.

No deviation from the City of Fort Lupton *Criteria* is being requested

3.2. DEVELOPMENT RESTRAINTS

The site is located in a developed area with existing development or streets on all sides of the development, which limits the ability to change grading on the site.

3.3. HYDROLOGIC CRITERIA

Runoff was calculated per the UDFCD. Rainfall intensity was taken from the table in Section 5.3 of the City of Fort Lupton Storm Drainage Design and Technical Criteria. Runoff coefficients were taken from UDFCD Table RO-3 utilizing soil type "B". The rational method was used to calculate runoff from the proposed development. The following formula was used to determine the runoff values:

$Q=CIA$

Where Q = Storm runoff, cubic feet per second (CFS)
C = Runoff coefficient
I = Storm intensity, inches per hour
A = Drainage area, acres

3.4. HYDRAULIC CRITERIA

There are no pipe hydraulics or storm drain inlets associated with this project, and therefore no Hydraulic calculations are included with this project.

3.5. WATER QUALITY REQUIREMENTS

No stormwater quality enhancements are proposed for this site.

3.6. WAIVERS FROM CRITERIA

No deviation from the City of Fort Lupton *Criteria* or the UDFCD manuals is being requested.

4. DRAINAGE FACILITY DESIGN

4.1. GENERAL CONCEPT

Runoff from the project will drain to shallow gutters and catch basins, where it will be captured and conveyed directly to the South Plat River through an existing Catch Basin located at 1ST Street and Highway 85. The runoff intensity and volume are expected to be reduced with this project by the addition of landscaping to the site. No formal water quality or detention are being proposed because this is a raze and rebuild of an existing development, and the proposed project will reduce the existing runoff volume and intensity to the adjacent drainage facilities.

4.2. SPECIFIC DETAILS

As shown in the appendix of this report, the proposed development is expected to reduce the peak runoff from the site, as well as to existing catch basin in 1ST Street. The runoff reduction is being achieved by increasing the pervious area of the existing McDonald's site. The following table illustrated the expected runoff from the existing and proposed sites.

DESCRIPTION	EXITING	PROPOSED
AREA	0.765 ACRE	0.765 ACRE
PERCENT IMPERVIOUS	75.7%	78.5%
5-YEAR PEAK RUNOFF	2.33 CFS	2.00 CFS
100-YEAR PEAK RUNOFF	5.47 CFS	4.58 CFS

Based on the current FEMA mapping, the site is located within flood Zone X is defined as areas being outside of the 100-year flood plain.

5. CONCLUSIONS

5.1. COMPLIANCE WITH STANDARDS

This Drainage Report was prepared in compliance with the City of Fort Lupton *Storm Drainage Design and Technical Criteria* and the UDFCD *Urban Storm Drainage Criteria Manual*. No variances will be requested.

5.2. MAINTENANCE

All proposed drainage facilities are private and will be maintained by the property owner.

5.3. DESIGN

This project meets the requirements of the City of Fort Lupton *Storm Drainage Design and Technical Criteria* and the UDFCD *Urban Storm Drainage Criteria Manual. Furthermore, the site is designed to match the existing drainage pattern and reduce the intensity of the existing runoff*. As such, this project should not have a negative impact on the surrounding developments and existing drainage facilities.

6. REFERENCES

1. Flood Insurance Rate Map – Weld County, Colorado, Community Panel Number 08123C2104E, Effective Date January 20, 2016.

2. Urban Storm Drainage Criteria Manual (Volumes 1, 2, and 3); Urban Drainage and Flood Control District, 2001 (latest revision).

APPENDIX

A Hydrologic Computations

Appendix A – Hydrologic Computations

105 1ST Street Fort Lupton, CO - Proposed Drainage Calculations

LAND USAGE FOR EACH SUB-BASIN

LAND USAGE	PERCENT IMPERVIOUS (%)	5-YR RUNOFF COEFF. C_5	100-YR RUNOFF COEFF. C_{100}	AREA A	B	C	D	E	O1	O2	SUM OF AREA (ACRE)
LANDSCAPE	2	0.08	0.35	0.002	0.020	0.050	0.053				0.125
ROOF	90	0.73	0.81	0.045	0.045						0.090
DRIVES AND WALKS (IMPERVIOUS)	90	0.90	0.96	0.1669	0.184	0.179	0.020				0.550
Total				0.2142	0.2492	0.2286	0.0733	0.0000	0.0000	0.0000	0.765

COMPOSITE % IMPERVIOUSNESS AND RUNOFF COEFFICIENTS

SUB-BASIN	EFFECTIVE % IMPERVIOUS	COMPOSITE C_2	COMPOSITE C_5	COMPOSITE C_{100}	AREA acres
A	89.25				0.214
B	84.38				0.249
C	74.69				0.229
D	39.39				0.073
TOTAL SITE (A-D)	78.54				0.765

105 1ST Street Fort Lupton, CO - Existing Drainage Calculations

LAND USAGE FOR EACH EXISTING SUB-BASIN

LAND USAGE	PERCENT IMPERVIOUS (%)	5-YR RUNOFF COEFF. C_5	100-YR RUNOFF COEFF. C_{100}	AREA						SUM OF AREA (ACRE)
				E1						
LANDSCAPE	2	0.08	0.35	0.220						0.220
ROOF	90	0.73	0.81	0.100						0.100
DRIVES AND WALKS (IMPERVIOUS)	100	0.90	0.96	0.4450						0.445
Total				0.7654	0.0000	0.0000	0.0000	0.0000	0.0000	0.765

COMPOSITE % IMPERVIOUSNESS AND RUNOFF COEFFICIENTS

SUB-BASIN	EFFECTIVE % IMPERVIOUS		COMPOSITE C_5	COMPOSITE C_{100}	AREA acres
E1	75.69		0.64	0.76	0.765
TOTAL EXISTIGN SITE	75.69		0.64	0.76	0.765

Calculation of Peak Runoff using Rational Method

Designer: Robert Palmer P.E.
Company: Strategic Land Solutions, Inc.
Date: 9/17/2020
Project: Allison Village
Location: 5351 Allison Street Arvada

Version 2.00 released May 2017

Cells of this color are for required user-input
Cells of this color are for optional override values
Cells of this color are for calculated results based on overrides.

$$t_i = \frac{0.395(1.1 - C_5)\sqrt{L_i}}{S^{0.33}}$$

$$t_t = \frac{L_t}{60K\sqrt{S_t}} = \frac{L_t}{60V_t}$$

$$\text{Computed } t_c = t_i + t_t$$

$$\text{Regional } t_c = (26 - 17i) + \frac{L_t}{60(14i + 9)\sqrt{S_t}}$$

$t_{minimum} = 5$ (urban)
$t_{minimum} = 10$ (non-urban)

$$\text{Selected } t_c = \max\{t_{minimum}, \min(\text{Computed } t_c, \text{Regional } t_c)\}$$

Select UDFCD location for NOAA Atlas 14 Rainfall Depths from the pulldown list OR enter your own depths obtained from the NOAA website (click this link)

	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	500-yr
1-hour rainfall depth, P1 (in) =	1.00	1.42	1.68	1.93	2.35	2.71	3.08

	a	b	c
Rainfall Intensity Equation Coefficients =	28.50	10.00	0.786

$$I(in/hr) = \frac{a + P_1}{(b + t_c)^c}$$

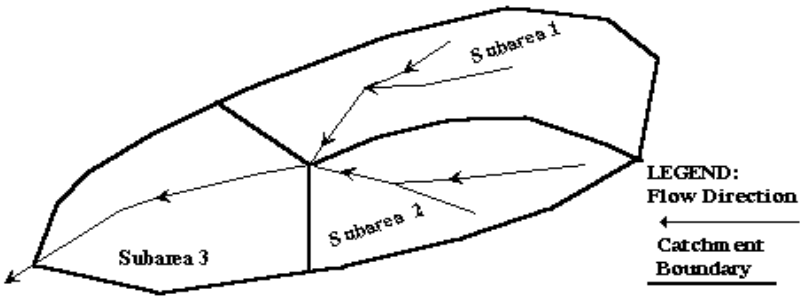
$$Q(cfs) = CIA$$

Subcatchment Name	Area (ac)	NRCS Hydrologic Soil Group	Percent Imperviousness	Runoff Coefficient, C							Overland (Initial) Flow Time					Channelized (Travel) Flow Time							Time of Concentration			Rainfall Intensity, I (in/hr)							Peak Flow, Q (cfs)						
				2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	500-yr	Overland Flow Length L_i (ft)	U/S Elevation (ft) (Optional)	D/S Elevation (ft) (Optional)	Overland Flow Slope S_i (ft/ft)	Overland Flow Time t_i (min)	Channelized Flow Length L_t (ft)	U/S Elevation (ft) (Optional)	D/S Elevation (ft) (Optional)	Channelized Flow Slope S_t (ft/ft)	NRCS Conveyance Factor K	Channelized Flow Velocity V_t (ft/sec)	Channelized Flow Time t_t (min)	Computed t_c (min)	Regional t_c (min)	Selected t_c (min)	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	500-yr	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	500-yr
A	0.21	B	89.3	0.73	0.76	0.78	0.81	0.83	0.84	0.86	99.00			0.020	4.90	155.00			0.010	20	2.00	1.29	6.19	12.03	6.19	3.19	4.54	5.37	6.17	7.51	8.66	9.84	0.50	0.74	0.89	1.07	1.33	1.56	1.82
B	0.25	B	84.4	0.68	0.71	0.74	0.78	0.80	0.82	0.84	66.00			0.020	4.52	180.00			0.010	20	2.00	1.50	6.02	13.10	6.02	3.22	4.57	5.41	6.22	7.57	8.73	9.92	0.55	0.81	0.99	1.21	1.51	1.78	2.09
C	0.23	B	74.7	0.59	0.62	0.66	0.72	0.74	0.77	0.81	81.00			0.023	5.88	268.00			0.005	20	1.44	3.10	8.97	16.49	8.97	2.82	4.00	4.74	5.44	6.63	7.64	8.68	0.38	0.57	0.71	0.89	1.13	1.35	1.61
D	0.07	B	39.4	0.28	0.31	0.37	0.50	0.55	0.61	0.68	23.00			0.020	5.43	168.00			0.001	20	0.75	3.74	9.18	24.46	9.18	2.80	3.97	4.70	5.40	6.57	7.58	8.61	0.06	0.09	0.13	0.20	0.26	0.34	0.43
A-D (Total)	0.77	B	78.5	0.63	0.66	0.69	0.74	0.77	0.79	0.82	81.00			0.023	5.44	168.00			0.001	20	0.75	3.74	9.19	16.39	9.19	2.80	3.97	4.70	5.39	6.57	7.57	8.61	1.35	2.00	2.48	3.06	3.85	4.58	5.42
EXISTING	0.77	B	75.7	0.60	0.63	0.67	0.72	0.75	0.78	0.81	43.00			3.340	0.81	234.00			0.007	20	1.70	2.30	3.11	15.48	5.00	3.39	4.82	5.70	6.55	7.97	9.19	10.45	1.56	2.33	2.91	3.63	4.58	5.47	6.50

Area-Weighted Runoff Coefficient Calculations

Version 2.00 released May 2017

Designer: Robert Palmer P.E.
Company: Strategic Land Solutions, Inc.
Date: 9/17/2020
Project: Allison Village
Location: 5351 Allison Street Arvada



Subcatchment Name

Cells of this color are for required user-input
Cells of this color are for optional override values
Cells of this color are for calculated results based on overrides

See sheet "Design Info" for imperviousness-based runoff coefficient values.

Sub-Area ID	Area (ac)	NRCS Hydrologic Soil Group	Percent Imperviousness	Runoff Coefficient, C						
				2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	500-yr
A		C	90.0	0.74	0.77	0.79	0.82	0.84	0.85	0.87
B		C	74.8	0.60	0.64	0.68	0.74	0.76	0.79	0.82
C		C	69.3	0.55	0.60	0.64	0.71	0.74	0.77	0.81
D		C	68.6	0.55	0.59	0.64	0.70	0.73	0.76	0.80
E		C	74.3	0.60	0.64	0.68	0.73	0.76	0.79	0.82
O1		C	87.2	0.71	0.75	0.77	0.81	0.82	0.84	0.86
O2		C	55.5	0.43	0.49	0.54	0.63	0.67	0.71	0.76
A-E (POND)		C	81.4	0.66	0.70	0.73	0.77	0.79	0.82	0.84
A-O2 (TOTAL)		C	81.0	0.66	0.69	0.73	0.77	0.79	0.82	0.84
Total Area (ac)			Area-Weighted C							
			Area-Weighted Override C							

SECTION 5 RAINFALL

5.1 INTRODUCTION

Presented in this section is the design rainfall data to be used with the Rational Method and the Colorado Urban Hydrograph Procedure (CUHP). All hydrological analysis within the jurisdiction of these CRITERIA shall utilize the rainfall data presented herein for calculating storm runoff.

The design storms and Time-Intensity-Frequency curves for the CITY were developed using the rainfall data and procedures presented in the MANUAL and are presented herein for convenience.

5.2 COLORADO URBAN HYDROGRAPH PROCEDURE DESIGN STORMS

For drainage basins less than five square miles, a two-hour storm distribution without area adjustment of the point rainfall values shall be used for the Colorado Urban Hydrograph Procedure (CUHP). For drainage basins between five and ten square miles, a two-hour storm distribution shall be used with the incremental rainfall values adjusted for the large basin area in accordance with suggested procedures in the NOAA Atlas for Colorado. The adjustment is an attempt to relate the average of all point values for a given duration and frequency within a basin to the average depth over the basin for the same duration and frequency. For drainage basins between ten and twenty square miles, a three-hour storm duration with adjustment for area shall be used. The distribution for the last hour was obtained by uniformly distributing the difference between the two-hour and three-hour point rainfall values. The adjustment for the basin area was obtained from the NOAA Atlas for Colorado. The incremental rainfall distributions for all basin areas up to 20 square miles are presented in Table 501.

5.3 TIME-INTENSITY-FREQUENCY CURVES FOR THE RATIONAL METHOD

The one-hour design point rainfall values obtained from the NOAA Atlas for Colorado area are as follows:

ONE-HOUR POINT RAINFALL (IN.)

2-YEAR	5-YEAR	10-YEAR	50-YEAR	100-YEAR
1.00	1.42	1.68	2.35	2.71

The Time-Intensity-Frequency curves were developed by distributing the one-hour point rainfall values using the factors obtained from the NOAA Atlas presented below:

B. Map Pocket

Appendix B – Map Pocket

National Flood Hazard Layer FIRMette

FEMA

104°49'24"W 40°5'4"N

104°48'46"W 40°4'36"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- B 20.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- 8 Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 9/17/2020 at 2:51 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Hydrologic Soil Group—Weld County, Colorado, Southern Part

Map Scale: 1:465 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 5 10 20 30

Feet: 0 20 40 80 120

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Weld County, Colorado, Southern Part
Survey Area Data: Version 19, Jun 5, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 19, 2018—Aug 10, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
1	Altvan loam, 0 to 1 percent slopes	B	0.8	100.0%
Totals for Area of Interest			**0.8**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

PROPOSED SUMMARY RUNOFF TABLE

DESIGN PT	CONTRIBUTING BASINS / AREA (acres)	5-YEAR RUNOFF (cfs)	100-YEAR PEAK RUNOFF (cfs)
1	A/0.21	0.74	1.56
2	B/0.25	0.81	1.78
3	C/0.23	0.57	1.35
4	D/0.07	0.09	0.34
5	TOTAL SITE/0.765	2.00	4.58
E1	TOTAL EX./0.765	2.33	5.47

LEGEND

TC CALCULATIONS

BASIN LIMITS

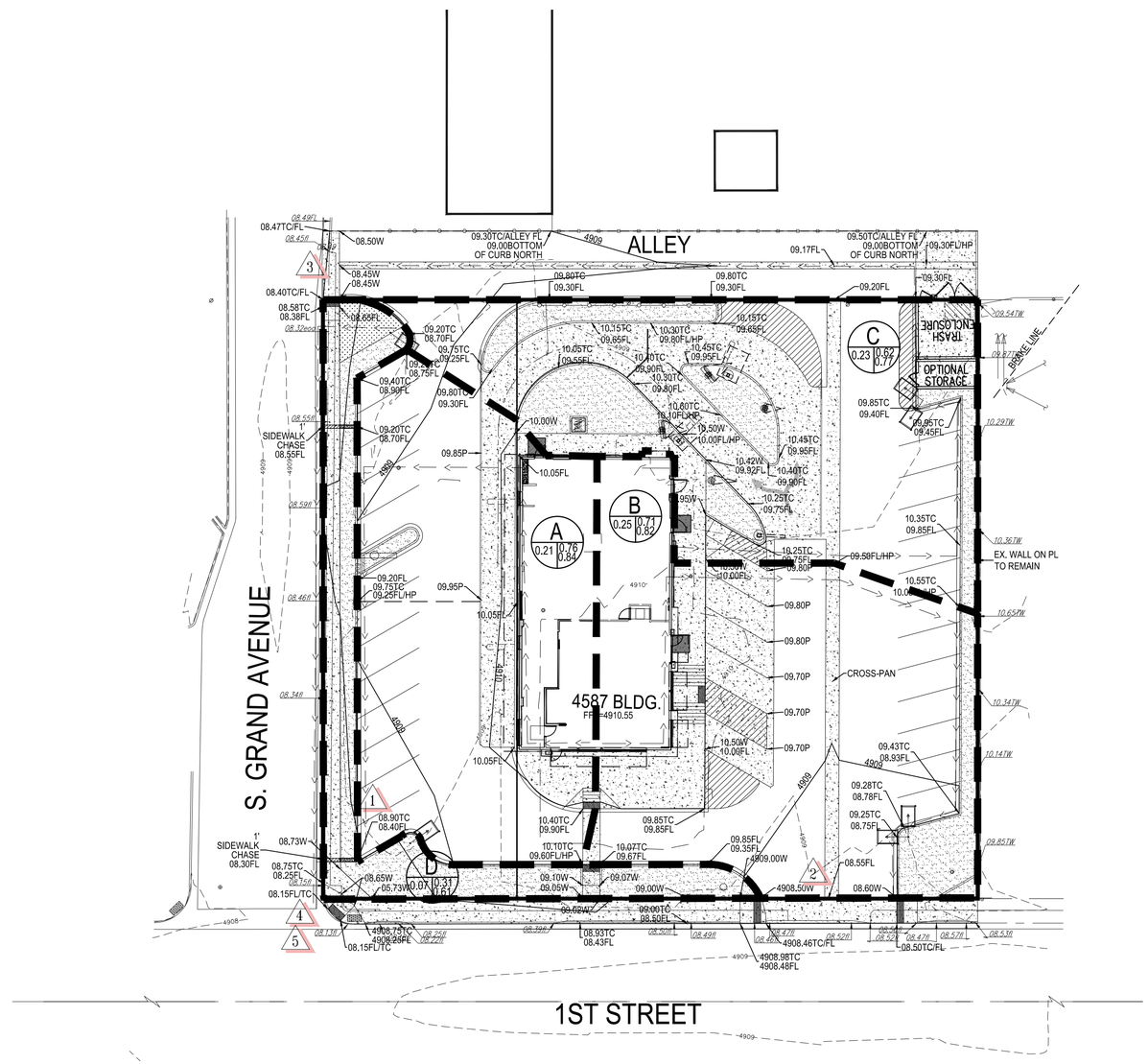
DESIGN POINT

BASIN DESIGNATION

BASIN AREA

10YR COMPOSITE 'C'

100YR COMPOSITE 'C'



20 0 10 20

PLAN SCALE: 1" = 20'

Know what's **below.** **Call** before you dig.

NO.	DATE	REVISION DESCRIPTION

CIVIL ENGINEERING CONSULTANT:

Strategic Land Solutions, Inc.
Civil Engineering • Land Planning • Entitlements
2595 PONDEROSA ROAD
FRANKTOWN, CO 80116
720.384.7661 Phone
rpalmer@strategicls.net
Robert J. Palmer, PE
President

PREPARED UNDER THE DIRECT SUPERVISION OF:

SEAL: COLORADO REGISTERED ROBERT J. PALMER 36320 PROFESSIONAL ENGINEER

BY Robert J. Palmer, PE
Licensed Professional Engineer (CO PE #36320),
AS PRESIDENT FOR STRATEGIC LAND SOLUTIONS, INC.

McDonald's®

THESE PLANS AND SPECIFICATIONS ARE THE PROPERTY OF McDONALD'S CORPORATION AND SHALL NOT BE REPRODUCED WITHOUT THEIR WRITTEN PERMISSION.

OFFICE: ROCKY MOUNTAIN REGION

ADDRESS: 4643 S. ULSTER STREET, SUITE 1300, DENVER, COLORADO 80237

STREET ADDRESS: 1ST STREET & GRAND AVENUE

CITY: FORT LUPTON

STATE: COLORADO

COUNTY: WELD

STATE STORE #(if): TBD

NATIONAL #(if): XXXXX

REGIONAL DWG. NO: -

SCALE:	AS NOTED	McD RE:	BOWAN
DATE:	09/11/2020	McD P/CM:	PROPHET
DESIGNED BY:	RJP		
DRAWN BY:	RJP	FILE NAME:	CURRENT.DWG
CHECKED BY:	RJP	SLS Jb: 14-001-47	

DRAWING TITLE: PROPOSED DRAINAGE PLAN

SHEET NO: DR-1

PROPOSED SUMMARY RUNOFF TABLE

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E1	TOTAL EX./0.765	2.33	5.47

LEGEND

TC CALCULATIONS

BASIN LIMITS

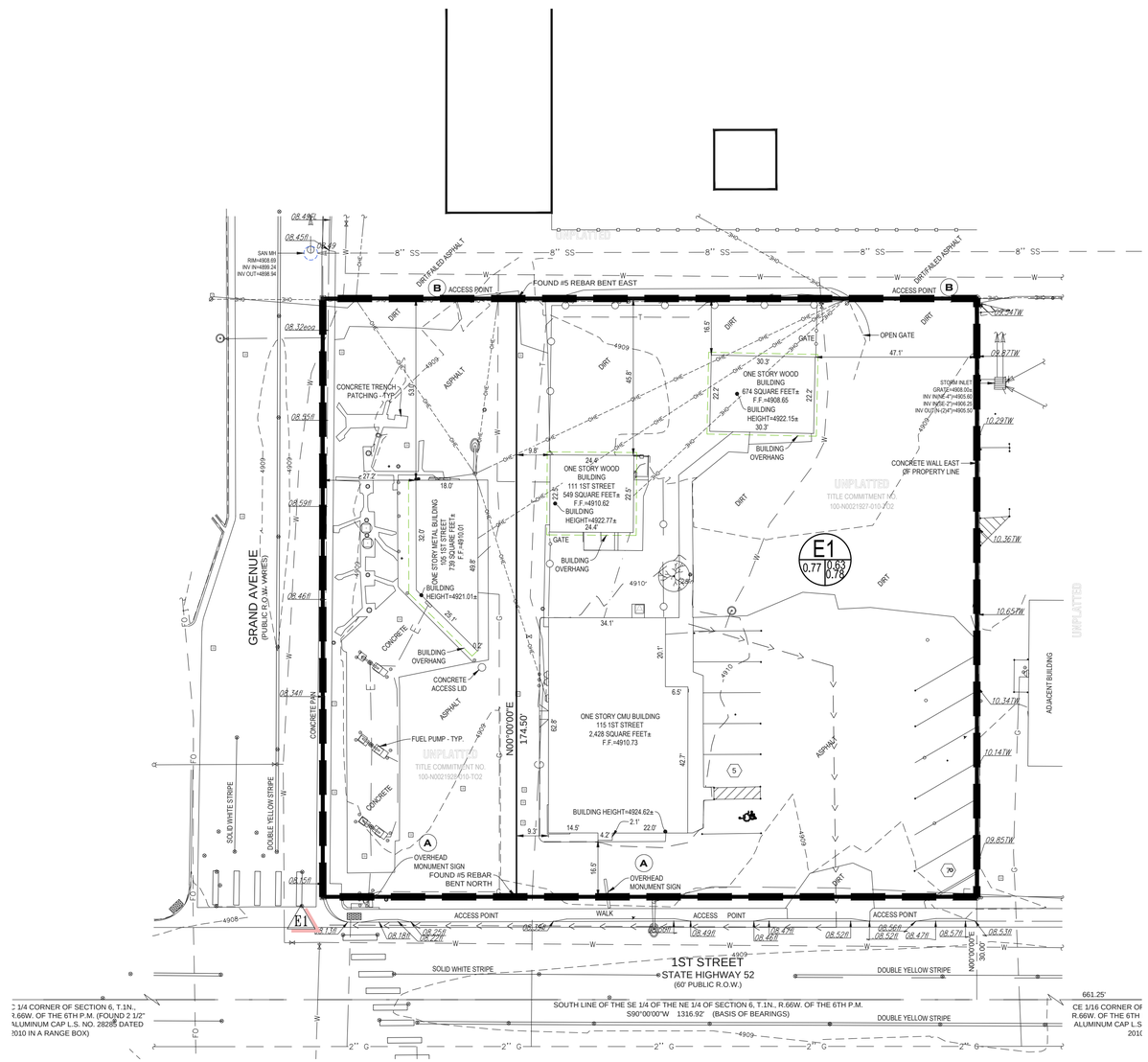
DESIGN POINT

BASIN DESIGNATION

BASIN AREA

10YR COMPOSITE 'C'

100YR COMPOSITE 'C'



20 0 10 20

PLAN SCALE: 1" = 20'

Know what's **below.** **Call** before you dig.

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DATE:	09/11/2020	McD P/CM:	PROPHET
DESIGNED BY:	RJP		
DRAWN BY:	RJP	FILE NAME:	CURRENT.DWG
CHECKED BY:	RJP	SLS JN:	14-001-47

DRAWING TITLE: PROPOSED DRAINAGE PLAN

SHEET NO: DR-1

MCDONALD'S RESTAURANT

105 1st Street
Fort Lupton, CO
STORE ID # 05-0763

STORMWATER MANAGEMENT REPORT (SWMP)

Strategic Land Solutions, Inc. JN: 20-0001-149
Report Date/History: September 11, 2020

Prepared for:
MCDONALD'S USA, LLC
Mr. Trevor Prophet, Area Construction Manager
Rocky Mountain Region
4643 S. Ulster Street, Suite 1300
Denver, CO 80237-2868
Phone (303) 519-4001
Fax (303) 773-6960
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Prepared by:
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Strategic Land Solutions, Inc.
Civil Engineering • Land Planning • Entitlements

ENGINEER'S CERTIFICATION

I hereby certify that this **CONSTRUCTION ACTIVITIES STORMWATER MANAGEMENT PLAN** for **MCDONALD'S RESTAURANT** was prepared (or under my direct supervision) in accordance with the provisions of the Construction Activities Stormwater Discharge Permit for Jefferson County. I understand that the Jefferson County does not and will not assume liability for drainage facilities design.

COLORADO REGISTERED
ROBERT J. PALMER
36320
09/11/2020
PROFESSIONAL ENGINEER

Robert J. Palmer, P.E.
Colorado P.E. 36320

OWNER'S CERTIFICATION

This **CONSTRUCTION ACTIVITIES STORMWATER MANAGEMENT PLAN** has been submitted as part of an application for a Construction Activities Stormwater Discharge Permit filed with the City of Fort Lupton. I understand that additional erosion and sediment control measures may be required of the owner and his or her agents due to unforeseen erosion problems or if the submitted plan does not function as intended. The requirements of this plan shall be the obligation of the land owner and/or his successors or heirs; until such time as the plan is properly completed, modified, or voided.

Signature

Printed Name and Title

Company Name

Strategic Land Solutions, Inc.
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CONSTRUCTION ACTIVITIES STORMWATER MANAGEMENT PLAN

McDonald's Restaurant
105 1st Street
Fort Lupton, CO

SITE DESCRIPTION

This **CONSTRUCTION ACTIVITIES STORM WATER MANAGEMENT PLAN** has been prepared for planned McDonald's Restaurant which will consist of 3,915 S. F. building with associated drives, landscaping, lighting, and utilities located at 105 1st Street, within the Northeast ¼ of Section 6, Township 1 North, Range 66 West of the 6th Principal Meridian, City of Fort Lupton, County of Weld, State of Colorado.

The site is bounded on the west by Grand Avenue, on the south by 1st Street (State Highway 52), on the east by existing retail/commercial, and on the north by an affordable housing project.

Figure 1 - SITE LOCATION MAP

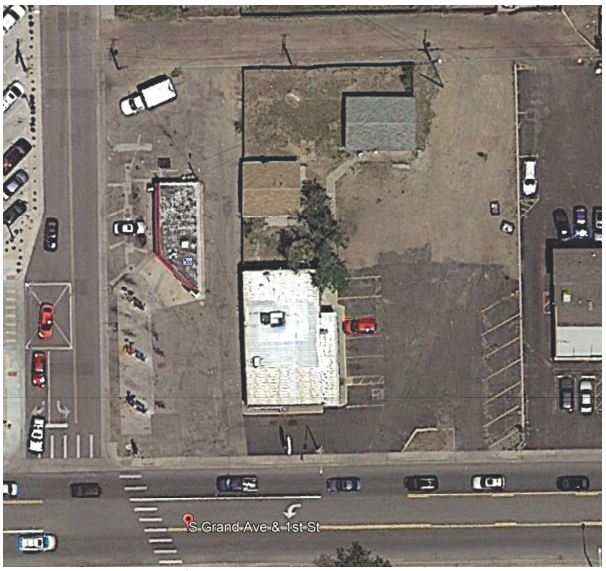

Figure 2 - SITE LOCATION ENLARGEMENT

The site currently encompasses approximately 0.765-acres of developed land. The existing site contains a closed service station with the fuel storage tanks and pumps removed, an operational liquor store, and small single-family home behind the liquor store. The State of Colorado has issued a "No Further Action Required" letter regarding petroleum mitigation. The project consists demolishing the existing buildings, and the construction of a single restaurant building, parking, associated drive lanes, landscaping, LED lighting, and new utility services.

The site lies within the South Plat River basin. Runoff from the site flows south to 1st Street. The site runoff is then conveyed west in a gutter along 1st Street to a catch basin located at highway 85, where it is captured and conveyed underground to the South Plat River.

There are no adjacent major irrigation facilities. However, the South Plat River is located near the site.

<u>The project is located within Flood Zone X</u>, as shown on the National Flood Insurance Program's Flood Insurance Rate Map (FIRM), Weld County Community Panel Number 08123C2104E, Effective Date January 20, 2016.

According the National Resource Council Soil (NRCS) web site, the site soil is Altvan 0 to 1 percent slope (hydrologic soil group B). Hydrologic soil group B was used in the calculations for this report.

As shown in the geotechnical report ground water encountered at 13-16 feet. Therefore no groundwater is expected with this project.

After the proposed project is constructed, runoff will be captured by roof drains and gutters, where it will be conveyed to the existing inlet located at 1st Street and Highway 85, and ultimately to the South Plat River.

The erosion potential for the site in its current condition is high due to lack existing impervious and landscape coverage (asphalt and vegetation). The greatest potential for erosion will occur during construction, due to stormwater runoff and wind. The ground will be exposed for a short time during the demolition phase, but it will be quickly covered by pavement and foundation during construction.

Construction is anticipated to commence in March 2021± with completion in approximately 24 months.

CONSTRUCTION PHASES

The proposed sequence of major construction activity is as follows.....Approximate start date noted

1. Clearing, grubbing, grading, building removal, and pavement removal.....March 2021
   Potential Pollutants
   - ☞ Sediment
   - ☞ Vehicle fuels and lubricants
   - ☞ Asphalt
   - ☞ Concrete
2. Underground utility installation .....March 2021
   Potential Pollutants
   - ☞ Sediment
   - ☞ Vehicle fuels and lubricants
   - ☞ Paints
   - ☞ Solvents
   - ☞ Concrete
   - ☞ Various types of pipe material
   - ☞ South Platte River
3. Building construction..... May 2021
   Potential Pollutants:
   - ☞ Vehicle and equipment fuels
   - ☞ Solvents and paint
   - ☞ Adhesives
   - ☞ Cleaners
   - ☞ Asphalts and tars
   - ☞ Concrete
4. Paving, sidewalk, and curb and gutter installation ..... August 2021
   Potential Pollutants:
   - ☞ Vehicle and equipment fuels
   - ☞ Solvents and Paints
   - ☞ Bituminous products
   - ☞ Concrete
5. Landscaping ..... May 2021
   Potential Pollutants:
   - ☞ Sediment
   - ☞ Fertilizer
   - ☞ Chemicals

There may be overlap between construction sequences two (2), three (3), four (4), and five (5).

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BMP'S FOR STORMWATER POLLUTION PREVENTION

The following controls and measures will be implemented prior to and during the various sequences of construction:

1. **Clearing, grubbing, grading, building removal, and pavement removal** - Install vehicle tracking pad at entrance to site. Define limits of clearing and place silt fence as defined by the approved grading plan (see included drawing). If necessary, designate an area to stockpile topsoil and provide straw bales at toe of slope. Place inlet protection at all inlets and pipe entrances. Follow requirements of approved erosion control plan.

   As grading progresses, provide gravel inlet protection and silt fencing at down-slope side of newly disturbed areas. After drainage low points have been constructed, provide temporary berming to direct as much site storm runoff as possible to these areas. These collection areas will act as temporary sediment basins during construction until permanent land cover features have been placed.

   As construction progresses, designate areas for construction trailer, trash container, vehicle and equipment refueling, vehicle and equipment parking, and material storage. Stored materials shall be free of contact with the soil. Materials in containers shall be stored within a covered area. Fueling and storage areas shall be protected with a minimum 1' high berm, to prevent migration of any spills.

2. **Underground utility installation (sanitary sewer and water)** - Maintain all previous controls and measures from clearing, grubbing, grading, building removal, and pavement removal construction. Trenches shall be backfilled as soon as possible (after inspection).

   Excess material shall be salvaged when possible; waste material shall be disposed of in a proper manner. Empty containers that held hazardous material, such as solvents, lubricants, fuels, etc., shall be disposed of in a proper manner.

   Refueling and vehicle maintenance shall be done at designated areas. Fueling and storage areas shall be protected with a minimum 1' high berm, to prevent migration of any spills

   When trenching for utilities located outside of protected areas, silt fencing and/or straw bales shall be provided at areas down-slope of the disturbance. Upon completion of construction, disturbed areas shall be landscaped. Erosion control measures shall remain in place until stabilization has been achieved.

   The Turbidity curtain Type 3 Sediment control Barrier shall be installed prior to any work within the South Platte River Boundaries

3. **Building construction** - Designate areas for vehicle fueling and maintenance, concrete truck washout, and material storage. Material stored outdoors shall be free of contact with the soil and covered when possible. Materials in containers shall be covered and stored in sheltered areas. All flammable materials shall be stored in proper containers and checked daily for leaks and spills.

4. **Paving, sidewalk, and curb and gutter installation** - Designate areas for vehicle fueling and maintenance, concrete truck washout, and material storage. Material stored outdoors shall be free of contact with the soil. Materials not in containers shall be stored indoors within covered areas.

5. **Landscaping** - Designate areas for vehicle fueling and maintenance, concrete truck washout, and material storage. Material stored outdoors shall be free of contact with the soil and covered when possible. Materials not in containers shall be stored indoors within covered areas. Avoid excess watering and placing of fertilizers and chemicals.

OTHER CONTROLS

1. **Soil Stabilization Practices (During construction)** - Where significant ground cover exists on-site, it will be left in place, if possible, or removed just prior to grading. Any disturbed areas which are left fallow for more than 14 days shall be furrowed parallel to the contours in that area to minimize any

sheet runoff damage. All temporary erosion control measures like silt fencing, straw bales, and inlet and outlet protection shall be monitored on a periodic basis and after any significant storm event. Any damages incurred to erosion control measures shall be repaired immediately, and any accumulated sediment shall be removed and disposed of properly. Follow the Stormwater Quality Control plans included within this report.

2. **Soil Stabilization Practices (Post construction)** - Permanent landscaping shall be installed as soon as possible after grading is completed. The landscaping will be comprised of a mixture of irrigated sodded areas, with a moderate number of landscape trees and shrubs. Follow the Landscape plans included within this report.
3. **Sediment and Erosion Control Practices** - Follow approved Stormwater Quality Control plans included within this report.
4. **Tracking of Sediment onto Roads and Streets** - Streets shall be kept clean and free of mud, soil, and construction waste. Street sweeping or other acceptable methods shall be used to prevent sediment from being washed from the project site. Streets shall not be washed with water if prohibited by local ordinances.
5. **Control Practices for Wind Erosion** - Wind erosion shall be controlled on the site by sprinkling and other appropriate means.
6. **Material Handling and Spill Prevention**

NOTE: IN CASE OF FIRE, EVACUATE ALL PERSONNEL FROM THE IMMEDIATE AREA, RENDER FIRST AID TO ANYONE WHO IS INJURED, AND DIAL 911 IMMEDIATELY. TAKE APPROPRIATE STEPS TO PROTECT HUMAN LIFE AND TO CONTROL FIRES FIRST. SPILL CONTROL IS SECONDARY.

1) Upon detection of any spill, the first action to be taken is to ensure personal safety. All possible ignition sources, including running engines, electrical equipment (including cellular telephones, etc.), or other hazards will be immediately turned off or removed from the area. The extent of the spill and the nature of the spilled material will be evaluated to determine if remedial actions could result in any health hazards, escalation of the spill, or further damage that would intensify the problem. If such conditions exist, a designated employee will oversee the area of the spill and the construction SWMP Administrator will be notified immediately.
2) The source of the spill will be identified and if possible the flow of pollutants stopped if it can be done safely. However, no one should attend to the source or begin cleanup of the spill until ALL emergency priorities (fire, injuries, etc.) have been addressed.
3) <u>Small Spills</u>
   a) Small spills (usually <5 gallons) consist of minor quantities of gasoline, oil, anti - freeze, or other materials that can be cleaned up by a single employee using readily available materials.
   b) The following procedures should be used for clean-up of small spills:
      i) Ensure personal safety, evaluate the spill, and if possible, stop the flow of pollutants.
      ii) Contain the spread of the spill using absorbents, portable berms, sandbags, or other available measures.
      iii) Spread absorbent materials on the area to soak up as much of the liquid as possible and to prevent infiltration into the soil.
      iv) Once the liquids have been absorbed, remove all absorbents from the spill and place the materials in a suitable storage container. On paved areas, wipe any remaining liquids from the surface and place the materials in a storage container. Do not spray or wash down the area using water. For open soil areas, excavate any contaminated soil as soon as possible and place the soil in a suitable storage container. All materials will then be transported off-site for disposal.
      v) If immediate transfer and storage of the contaminated soil is not practical, excavate and place the contaminated soil on a double thickness sheet of 3-mil or higher polyethylene film. In addition, a small berm should be formed around the outer edges of the soil stockpile, underneath the polyethylene film, to ensure that contaminants are not

washed from the site during precipitation events and that materials do not seep through the berm.

vi) Record all significant facts and information about the spill, including the following:
   (1) Type of pollutant
   (2) Location
   (3) Apparent source
   (4) Estimated volume
   (5) Time of discovery
   (6) Actions taken to clean up spill

vii) Notify the SWMP Administrator of the spill and provide the information from Item f. The SWMP Administrator will then contact the Jefferson County Erosion Control Staff.

4) Medium to Large Spills

a) Medium to large spills consist of larger quantities of materials (usually >5 – 25 gallons) that are used on site that cannot be controlled by a single employee. Generally, a number of facility personnel will be needed to control the spill and a response may require the suspension of other facility activities.

b) The following procedure shall be used for the cleanup of medium to large spills:

i) Ensure personal safety, evaluate the spill, and if possible, stop the flow of pollutants.

ii) Immediately dispatch a front-end loader or similar equipment to the spill and construct a berm or berms down gradient of the spill to minimize the spread of potential pollutants. On paved surfaces, portable berms, sandbags, booms, or other measures will be used to control the lateral spread of the pollutants.

iii) When the spread of the spill has been laterally contained, contact the SWMP Administrator or designated facility employee and provide them information on the location, type, and amount of spilled material, and a briefing on the extent of the spread and measures undertaken to contain the contaminants.

iv) Depending on the nature of the spill, mobilize additional resources as needed to contain the contaminants.

v) Cleanup will commence when the lateral spread has been contained and the notification to the SWMP Administrator has been made.

vi) Freestanding liquid will be bailed or pumped into 55-gallon storage drums, steel tanks, or other suitable storage containers. When all the liquid has been removed from the pavement or soil layer, absorbents will be applied to the surface and transferred to the storage containers when they have soaked up as much of the spill as possible.

vii) On paved surfaces, the remaining contaminants will be removed to the extent possible, with rags, sweeping, or similar measures. The area of the spill will not be sprayed or washed down using water. Any contaminant soaked materials will be placed into the storage containers with the other absorbents.

viii) The remaining contaminated soils will be excavated and loaded into a dump truck(s) for disposal off-site at a designated facility. If transport off-site is not immediately available, the remaining soils will be stockpiled on a double thickness sheet of 3-mil or higher polyethylene film. In addition, a small berm will be formed around the outer edges of the soil stockpile, underneath the polyethylene film, to ensure that contaminants are not washed from the site during precipitation and do not seep through the berm.

ix) Record all significant facts and information about the spill, including the following:
   (1) Type of pollutant
   (2) Location
   (3) Apparent source
   (4) Estimated volume
   (5) Time of discovery
   (6) Actions taken to clean up spill

c) Provide the SWMP Administrator (or designated employee) with the information from Item ix. The SWMP Administrator will then contact the Jefferson County.

5) NOTIFICATION
   a) Notification to the Colorado Department of Public Health & Environment (CDPHE) and the Jefferson County is required if there is any release or suspected release of any substance, including oil or other substances that spill into or threaten State waters. Unless otherwise noted, notifications are to be made by the SWMP Administrator and only after emergency responses related to the release have been implemented. This will prevent misinformation and assures that notifications are properly conducted.
   b) The notification requirements are as follows:
      i) Spills into/or Threatens State Waters: Immediate notification is required for releases that occur beneath the surface of the land or impact or threaten waters of the State of threaten the public health and welfare. Notifications that will be made are:
      ii) For any substance, regardless of quantity, contact CDPHE at 1-877-518-5608. State as follows:
         (1) Give your name.
         (2) Give location of spill (name of city).
         (3) Describe the nature of the spill, type of products, and estimate size of spill.
         (4) Describe type of action taken thus far, type of assistance or equipment needed.
      iii) For any quantity of oil or other fluids, call the National Response Center at 1-800-424-8802. State as follows:
         (1) Give your name.
         (2) Give location of spill (name of city and state).
         (3) Describe the nature of the spill, type of product, and estimate size of spill.
         (4) Describe type of action taken thus far, type of assistance or equipment needed.
   c) Reportable Quantity Spill on Land Surface: Immediate notification is required of a release upon the land surface of an oil in quantity that exceeds 25 gallons, or of a hazardous substance that equals or exceeds 10 pounds or its reportable quantity under Section 101(14) of the Comprehensive Environmental Response, Compensation Liability Act (CERCLA) of 1980 as amended (40 CFR Part 302) and Section 329 (3) of the Emergency Planning and Community Right to Know Act of 1986 (40 CFR Part 355) whichever is less. This requirement does apply at a minimum to the substances listed in Table A below.

TABLE A
SUBSTANCES REQUIRING NOTIFICATION

SUBSTANCE	REPORTABLE QUANTITY
Motor Oil	25 Gallons
Hydraulic Oil	25 Gallons
Gasoline/Diesel Fuel	25 Gallons

      i) The notification procedures to be followed are:
         (1) Give your name.
         (2) Give location of spill (name of city and state).
         (3) Describe nature of the spill, type of product, and estimate size of spill.
         (4) Describe type of action taken thus far, type of assistance or equipment needed.
   d) Notification is not required for release of oil upon the land surface of 25 gallons or less that will not constitute a threat to public health and welfare, the environmental or a threat of entering the waters of the State.
   e) Notification, as required in paragraphs 1 and 2 above, will be made to the CDPHE using the 24-hour telephone number to report environmental spills. All information known about the release at the time of discovery is to be included, such as the time of occurrence, quantity and type of material, location and any corrective or clean-up actions presently being taken. Table B lists these phone numbers.

TABLE B

SPILL RESPONSE EMERGENCY NOTIFICATION CONTACTS

Name/Agency	Number
Fort Lupton Fire Department	911
Fort Lupton Police Department	911
Ambulance	911
Hospital	911
National Response Center	1-800-424-8802
CDPHE – Report Environmental Spills (24 hrs/day)	1-877-518-5608
Colorado Emergency Planning Committee	303-273-1622
Also contact SWMP Administrator and Owner	See §3A of this Report

f) It is the responsibility of the SWMP Administrator to contact the Jefferson County, CDPHE, and/or the National Response Center.
g) The National Response Center is to be contacted when a release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under either 40 CFR 110, 4- DFR 117, or 40 CFR 302 occurs during a 24-hour period.
h) Notification to the CDPHE and Jefferson County is required if there is any release or suspected release of any material, including oil or hazardous substances that spill into or threaten state waters.

6) REPORTS
a) The CDPHE and Jefferson County require written notification of a spill or discharge of oil or other substance that may cause pollution of the waters of the State of Colorado. A written report must be submitted to the Water Quality Control District (WQCD) and the Jefferson County Erosion Control Staff within five days after becoming aware of the spill or discharge.

NON-STORMWATER MANAGEMENT

1. Non-storm water discharges will be eliminated or reduced to the extent feasible.
2. No materials shall be discharged in quantities which will have an adverse effect on the receiving waters.
3. The measures listed below will be implemented to achieve these objectives.
   - ☑ Proper and lawful disposal of all waste materials.
   - ☑ Control of any spills and leaks that may occur and clean up (mitigate).
   - ☑ All fueling should take place within the fueling containment berm. Any additional operations that include the transfer of liquids, other than water, should take place within the fuel containment berm. Additionally, a spill prevention team shall be developed by the contractor and put in place prior to the pre-construction team meeting. A list of the team members and their immediate contact information shall be posted in clear site within the construction trailer. In addition to the spill prevention team the contractor shall keep on site adequate physical cleanup materials including brooms, shovels, bulk absorption material. The cleanup team shall be trained in different response techniques to different spills, and spill prevention and cleanup shall be discussed regularly at team meetings. All chemicals and solvents will be kept in a locked area within the construction trailer.
   - ☑ Use of designated areas for equipment repair and cleaning.
   - ☑ Careful application of irrigation water.

FINAL STABILIZATION AND LONG TERM STORMWATER MANAGEMENT

1. Management of stormwater after completion of construction will be accomplished by utilizing the practices listed below.
   - ☑ Upon completion of construction, the site shall be inspected to ensure that all equipment, waste materials, and debris have been removed.
   - ☑ The site will be inspected to make certain that all graded surfaces have been landscaped or

seeded with an appropriate ground cover.

- ☑ All inlet protection, perimeter fencing, and all other control practices and measures that are to remain after completion of construction will be inspected to ensure their proper functioning.

2. The contractor shall be responsible for maintaining the stormwater controls in good working order and shall also be responsible for the costs incurred until such time as they are accepted by the City or no longer required, including removal of measures.

MAINTENANCE AND INSPECTION

The project site and the adjacent streets impacted by construction shall be kept neat, clean, and free of debris. The control measures and facilities shall be maintained in good working order. Any items that are not functioning properly or are inadequate shall be promptly repaired or upgraded. The site shall be inspected by responsible personnel who are familiar with the site. Inspection and monitoring shall follow the procedures outlined below under Monitoring Requirements.

MINIMUM MONITORING (INSPECTION) REQUIREMENTS

Inspections of the construction site shall be conducted by the contractor (or agent) Permittee or contractor shall produce written inspection records every seven (7) days and after significant precipitation events. All necessary maintenance and repair shall be completed immediately. The inspections shall be performed by the qualified site superintendent familiar with this SWMP/BMP.

The purpose of these inspections is to certify compliance with the SWMP/BMP and the permit by:

- ☑ Ensuring that areas contributing significant stormwater discharges related to the construction activities have been identified.
- ☑ Evaluating preventive measures required by the SWMP/BMP to ensure they are adequate and have been properly implemented.
- ☑ Inspecting points of discharge from the site to check for signs of pollutant discharge.
- ☑ Determining if additional control measures need to be implemented.
- ☑ Updating this SWMP if new measures are implemented or existing controls are deleted.

STANDARD NOTES FOR WATER QUALITY/NPDES

STANDARD NOTE # 1

The City of Fort Lupton stormwater inspector must be met on site and provided with a stormwater management plan after installation of temporary best management practices (BMPs), but before construction or grading begins.

STANDARD NOTE # 2

There shall be no earth-disturbing activity outside the limits designated in the accepted plans.

STANDARD NOTE # 3

All required perimeter silt and construction fencing shall be installed prior to any land disturbing activity (stockpiling, stripping, grading, etc). All other required erosion control measures shall be installed at the appropriate time in the construction sequence as indicated in the approved project schedule, construction plans, and stormwater management plan.

STANDARD NOTE # 4

At all times during construction, the Developer shall be responsible for preventing and controlling on-site erosion including keeping the property sufficiently watered so as to minimize windblown sediment. The Developer shall also be responsible for installing and maintaining all erosion control facilities shown herein.

STANDARD NOTE # 5

Pre-disturbance vegetation shall be protected and retained wherever possible. Removal or disturbance of existing vegetation shall be limited to the area(s) required for immediate construction operations, and for the shortest practical period of time.

STANDARD NOTE # 6
All soils exposed during land disturbing activity (stripping, grading, utility installations, stockpiling, filling, etc.) shall be kept in a roughened condition by ripping or disking along land contours until mulch, vegetation, or other permanent erosion control BMPs are installed. No disturbed areas, except those within the project street rights-of-way, shall remain exposed for more than thirty (30) days before temporary or permanent erosion control (e.g. seed/mulch, landscaping, etc.) is installed, unless otherwise approved by the City of Fort Lupton stormwater inspector.

STANDARD NOTE # 7
In order to minimize erosion potential, all temporary (structural) erosion control measures shall:

1. Be inspected at a minimum of once every fourteen (14) days and after each significant storm event and repaired or reconstructed as necessary in order to ensure the continued performance of their intended function.
2. Remain in place until such time as all the surrounding disturbed areas are sufficiently stabilized. The City of Fort Lupton stormwater inspector must be notified prior to removal.
3. Be removed when they are no longer functional or after the site has been sufficiently stabilized as determined by the stormwater inspector. The City of Fort Lupton stormwater inspector must be notified prior to removal.

STANDARD NOTE # 8
When temporary erosion control measures are removed, the Developer shall be responsible for the clean up and removal of all sediment and debris from all drainage infrastructure and other public facilities.

STANDARD NOTE # 9
"The contractor shall immediately clean up any construction materials inadvertently deposited on existing streets, sidewalks, or other public rights of way, and make sure streets and walkways are cleaned at the end of each working day.

STANDARD NOTE # 10
All soil stockpiles shall not be placed within one hundred (100) feet of a drainageway, where possible, and shall be protected from sediment transport by appropriate erosion control methods. Any soil stockpile that will be dormant for over thirty (30) days shall be seeded.

STANDARD NOTE # 11
The stormwater volume capacity of detention ponds will be restored and storm sewer lines will be cleaned upon completion of the project and before turning the maintenance over to the property owner or Homeowners Association (HOA).

STANDARD NOTE # 12
City Ordinance requirements make it unlawful to discharge or allow the discharge of any pollutant or contaminated water from construction sites. Pollutants include, but are not limited to discarded building materials, concrete truck washout, chemicals, oil and gas products, litter, and sanitary waste. The developer shall at all times take whatever measures are necessary to assure the proper containment and disposal of pollutants on the site in accordance with any and all applicable local, state, and federal regulations.

STANDARD NOTE # 13
A designated area shall be provided on site for concrete truck chute washout. The area shall be constructed so as to contain washout material and located at least fifty (50) feet away from any waterway during construction. Upon completion of construction activities the concrete washout material will be removed and properly disposed of prior to the area being restored.

STANDARD NOTE # 14
Masonry activities will be contained with appropriate lot-specific BMPs, such as stockpile perimeter control and bermed washout pits. All waste products from masonry activities will be removed and disposed of properly.

STANDARD NOTE # 15
To ensure that sediment does not move off of individual lots sediment/erosion control BMPs shall be installed and maintained at one or more of the following locations until the lots are landscaped.

1. Below all gutter downspouts.
2. Out to drainage swales.
3. Along lot perimeter.
4. Other locations, if needed.

STANDARD NOTE # 16
A vehicle tracking pad shall be installed wherever it is necessary for construction equipment including but not limited to personal vehicles exiting existing unpaved areas onto roadways. No earthen materials, i.e., stone, dirt, etc., shall be placed in the curb & gutter or roadway as a ramp to access temporary stockpiles, construction materials and/or building sites.

STANDARD NOTE # 14
Conditions in the field may warrant erosion control measures in addition to what is shown on these plans. The Developer shall implement whatever measures are determined necessary, as directed by the City of Fort Lupton.

POTENTIAL POLLUTANT SOURCES

The following are potential pollutant sources, and the BMP for each source.

1. All disturbed soil shall be stored at the designated stockpile site, and erosion control measures shall be included in the stockpile site to contain stockpiled materials.
2. All construction traffic shall utilize the construction entrance, where a vehicle tracking pad has been provided.
3. No contaminated soil is expected. However, if any soil is expected to be contaminated, the contractor shall notify the environmental engineer immediately. The environmental engineer will determine is the soil is contaminated, and will determine the proper means and limits of removal.
4. All loading and unloading operations shall occur within stabilized areas of the site. If unloading must occur in a non-stabilized area, the delivery vehicle shall utilize the vehicle tracking pad.
5. Outdoor storage shall occur in stabilized areas, and may only contain non-hazardous materials. All chemicals, fertilizer, and hazardous materials must be stored in locked interior areas as described in this report.
6. Vehicle and equipment maintenance and fueling shall take place within the vehicle fueling area of the site. Any fluid spills shall be treated and reported per this report.
7. Water spray shall be used to control air born dust and debris during construction activities producing significant amounts of particulate.
8. Routine activities involving fueling, solvents, oils, fertilizer, and pesticides shall be completed in compliance with this report. All material associated with these activities shall be stored in accordance with this report.
9. On-site waste management practices (liquid and solid waster) shall be maintained per the direction in this report. At no time shall trash or other waste products be allowed to spill outside the designated storage devices, or be stored in areas or with methods not discussed in this report.
10. all concrete delivery vehicles and appearances shall be washed within the concrete washout areas shown on the plans located in this report. No exceptions will be allowed.
11. There are no dedicated concrete or asphalt batch plants associated with this project.
12. All non-industrial waste such as worker trash and portable toilets shall utilize the BMP shown in this report. All trash shall be immediately placed in receptacles, and the portable toilets must be securely anchored to the ground, so that they will not blow over in high winds.
13. All expected areas of spills, contamination, and sediment control have been discussed immediately. Any potential contamination encountered in the field not covered by this report shall immediately be brought to the attention of the civil engineer, or the environmental engineer.

REPORTS

- ☑ The inspector will fill out the **INSPECTION LOG** (Exhibit 1) and the **EROSION AND SEDIMENT CONTROL FIELD INSPECTION REPORT** (Exhibit 2) located in the SWMP/BMP log (Appendix A).
- ☑ Control measures and facilities requiring repair will be noted on the **CORRECTIVE ACTION REPORT** (Exhibit 3) and reported to the construction site manager.
- ☑ When the inspection is completed, the inspector shall file the Inspection Log, the Erosion and Sediment Control Field Inspection Report, and/or the Corrective Action Report in the SWMP/BMP log.

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APPENDIX A
SWMP/BMP LOG BOOK

STORMWATER MANAGEMENT PLAN / BEST MANAGEMENT PRACTICE LOG BOOK

for

MCDONALD'S RESTAURANT
105 1st Street
Fort Lupton, Colorado

(Owner)

MCDONALD'S USA, LLC
Mr. Trevor Prophet, Area Construction Manager
Rocky Mountain Region
4643 S. Ulster Street, Suite 1300
Denver, CO 80237-2868
Phone (303) 519-4001
Fax (303) 773-6960
Email Trevor.prophet@us.mcd.com

Strategic Land Solutions, Inc.
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APPENDIX A
SWMP/BMP LOG BOOK

EXHIBIT 1 - INSPECTION LOG

Site: **MCDONALD'S RESTAURANT**
105 1ST STREET – Fort Lupton, CO

DATE	INSPECTOR'S INITIALS	INSPECTION	INSPECTION FORM		CORRECTION REPORT		
			COMPLETED	FILED	N/A	COMPLETED	FILED

EXHIBIT 2 – EROSION AND SEDIMENT CONTROL FIELD INSPECTION REPORT

Erosion and Sediment Control Plan **EROSION AND SEDIMENT CONTROL FIELD INSPECTION REPORT**	Project **MCDONALD'S RESTAURANT** Address: 105 1st Street Fort Lupton, CO

At a minimum, the contractor or his agent shall inspect all BMPs every 7 days and after significant precipitation events. Installations, as required by Denver Wastewater Management Division, will be implemented within 48 hours of notification.

Contractor:	**Contractor's Inspector**:
Date of Inspection:	**Reason for Inspection**:

INSPECTION CHECKLIST

Best Management Practices for Erosion Control	**Practice Used**		**Maintenance and/or Sediment Removal Required**		**Explain Course of Action**
	Yes	*No*	*Yes*	*No*	
Seeding					
Mulching					
Sodding					
Silt Fencing					
Erosion Bales					
Division Swales/Berms					
Surface Roughening					
Check Dams					
Inlet Protection					
Outlet Protection					
Erosion Blankets					
Sediment Trap Basin					
Other:					
Other:					

Contractor's Comments:

Inspector's Comments:

I Certify this Erosion and Sediment Control Field Inspection Report is Complete and Accurate.

Contractor's Inspector ____ Date ____	Reviewed by ____ Date ____

EXHIBIT 3 – CORRECTIVE ACTION REPORT

Erosion and Sediment Control Plan **EROSION AND SEDIMENT CONTROL CORRECTIVE ACTION REPORT**	Project: **MCDONALD'S RESTAURANT** Address: 105 1st Street. Fort Lupton, CO

Date: _____

Control Measure/Facility Requiring Attention:

_____

_____

_____

Recommended Corrective Action:

_____

_____

_____

Scheduled Completion Date: _____ Date Completed: _____

Date: _____

Control Measure/Facility Requiring Attention:

_____

_____

_____

Recommended Corrective Action:

_____

_____

_____

Scheduled Completion Date: _____ Date Completed: _____

Date: _____

Control Measure/Facility Requiring Attention:

_____

_____

_____

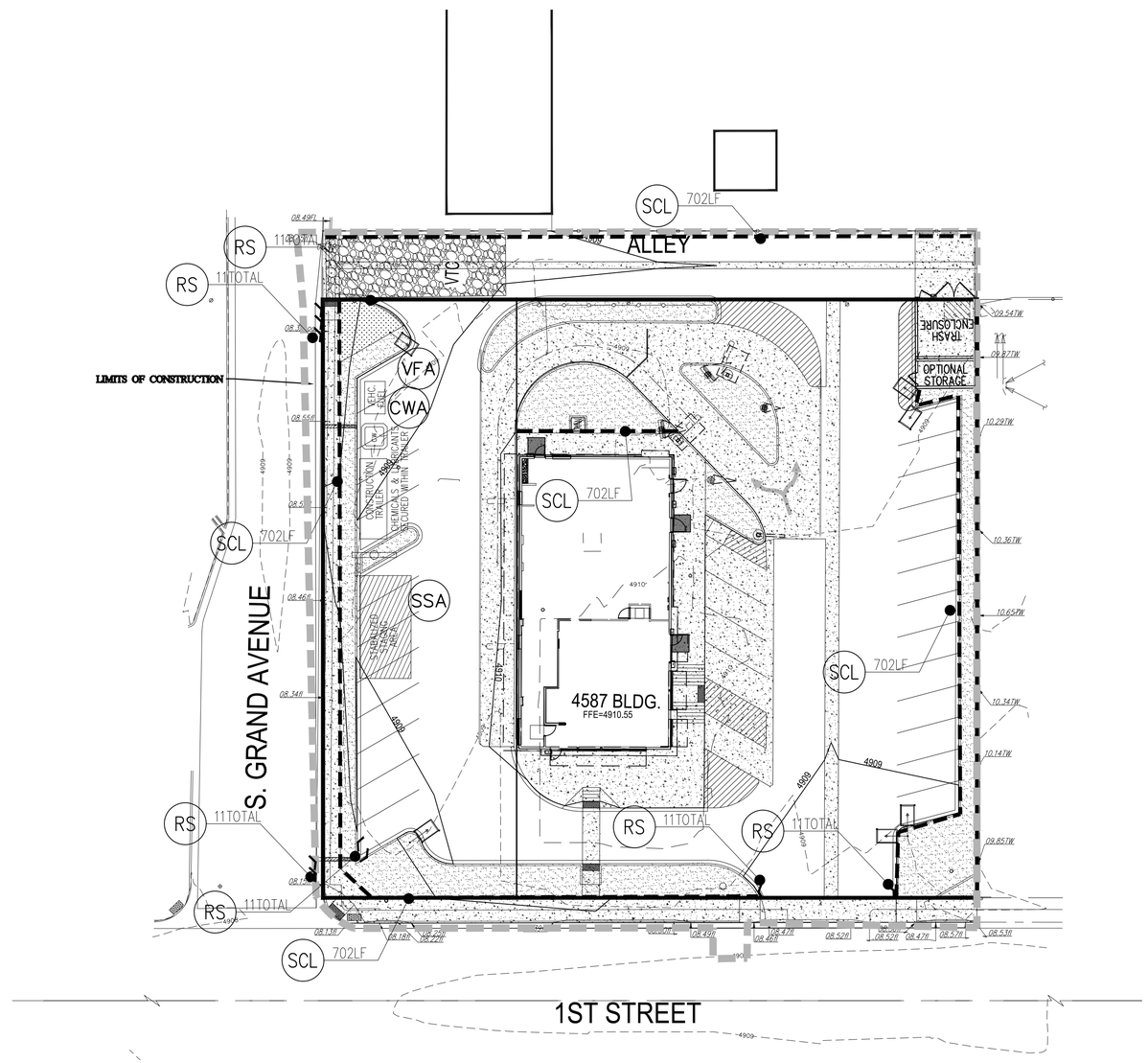
Recommended Corrective Action:

_____

_____

_____

Scheduled Completion Date: _____ Date Completed: _____



STANDARD NOTES FOR WATER QUALITY/NPDES

1. THE OWNER, SITE DEVELOPER, CONTRACTOR AND/OR THEIR AUTHORIZED AGENTS SHALL REMOVE ALL SEDIMENT, MUD, CONSTRUCTION DEBRIS, OR OTHER POTENTIAL POLLUTANTS THAT MAY HAVE BEEN DISCHARGED TO OR, ACCUMULATE IN, THE FLOWLINES AND PUBLIC RIGHTS-OF-WAY AS A RESULT OF CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS SITE DEVELOPMENT OR CONSTRUCTION PROJECT. SAID REMOVAL SHALL BE CONDUCTED IN A TIMELY MANNER.

2. THE CONTRACTOR SHALL PREVENT SEDIMENT, DEBRIS AND ALL OTHER POLLUTANTS FROM ENTERING THE STORM SEWER SYSTEM DURING ALL DEMOLITION, EXCAVATION, TRENCHING, BORING, GRADING OR OTHER CONSTRUCTION OPERATIONS THAT ARE PART OF THIS PROJECT. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR REMEDIATION OF ANY ADVERSE IMPACTS TO ADJACENT WATERWAYS, WETLANDS, ETC., RESULTING FROM WORK DONE AS PART OF THIS PROJECT.

3. A LAYER OF SUITABLE MULCH SHALL BE APPLIED TO ALL DISTURBED PORTIONS OF THE SITE WITHIN 14 DAYS OF THE COMPLETION OF OVERLOT GRADING. SAID MULCH SHALL BE APPLIED AT A RATE OF 2 TONS PER ACRE AND SHALL BE TACKED OR FASTENED BY AN APPROVED METHOD SUITABLE FOR THE TYPE OF MULCH USED. ROUGH-CUT STREETS SHALL BE MULCHED UNLESS A LAYER OF AGGREGATE ROAD BASE OR ASPHALT PAVING IS TO BE APPLIED TO SAID ROUGH-CUT STREETS WITHIN THE 14-DAY PERIOD AFTER COMPLETION OF OVERLOT GRADING.

4. THE CONTRACTOR SHALL LOCATE, INSTALL, AND MAINTAIN ALL EROSION CONTROL AND WATER QUALITY "BEST MANAGEMENT PRACTICES" AS INDICATED IN THE APPROVED CONSTRUCTION ACTIVITIES STORMWATER MANAGEMENT PLAN.

5. THE DEVELOPER, GENERAL CONTRACTOR, GRADING CONTRACTOR AND/OR THEIR AUTHORIZED AGENTS SHALL ENSURE THAT ALL LOADS OF CUT AND FILL MATERIAL IMPORTED TO OR EXPORTED FROM THIS SITE SHALL BE PROPERLY COVERED TO PREVENT LOSS OF THE MATERIAL DURING TRANSPORT ON PUBLIC RIGHTS-OF-WAY.

6. THE USE OF REBAR, STEEL STAKES, OR STEEL FENCE POSTS TO STAKE DOWN STRAW OR HAY BALES; OR TO SUPPORT SILT FENCING USED AS AN EROSION CONTROL MEASURE; IS PROHIBITED. THE USE OF OSHA APPROVED COLORED WARNING CAPS ON REBAR OR FENCE POSTS USED WITH EROSION CONTROL MEASURES IS NOT ACCEPTABLE.

7. SOILS THAT WILL BE STOCKPILED FOR MORE THAN 30 DAYS SHALL BE PROTECTED FROM WIND AND WATER EROSION WITHIN 14 DAYS OF STOCKPILE CONSTRUCTION. STABILIZATION AND PROTECTION OF THE STOCKPILE MAY BE ACCOMPLISHED BY ANY OF THE FOLLOWING: MULCHING, TEMPORARY/PERMANENT REVEGETATION OPERATIONS, CHEMICAL SOIL STABILIZER APPLICATION, OR EROSION CONTROL MATTING/GEOTEXTILES. IF STOCKPILES ARE LOCATED WITHIN 100 FEET OF A DRAINAGEWAY, ADDITIONAL SEDIMENT CONTROLS SUCH AS TEMPORARY DIKES OR SILT FENCE SHALL BE REQUIRED.

8. APPROVED EROSION AND SEDIMENT CONTROL "BEST MANAGEMENT PRACTICES" SHALL BE MAINTAINED AND KEPT IN GOOD REPAIR FOR THE DURATION OF THIS PROJECT. AT A MINIMUM, THE CONTRACTOR OR HIS AGENT SHALL INSPECT ALL BMPS WEEKLY AND AFTER SIGNIFICANT PRECIPITATION EVENTS. ALL NECESSARY MAINTENANCE AND REPAIR SHALL BE COMPLETED IN A TIMELY MANNER. ACCUMULATED SEDIMENT AND DEBRIS SHALL BE REMOVED FROM A BMP WHEN THE SEDIMENT LEVEL REACHES ONE HALF THE HEIGHT OF THE BMP OR, AT ANY TIME THAT SEDIMENT OR DEBRIS ADVERSELY IMPACTS THE FUNCTIONING OF THE BMP.

9. WATER USED IN THE CLEANING OF CEMENT TRUCK DELIVERY CHUTES SHALL BE DISCHARGED INTO A PREDEFINED, BERMED CONTAINMENT AREA ON THE JOB SITE. THE REQUIRED CONTAINMENT AREA IS TO BE BERMED SO THAT WASH WATER IS TOTALLY CONTAINED. WASH WATER DISCHARGED INTO THE CONTAINMENT AREA SHALL BE ALLOWED TO INFILTRATE OR EVAPORATE. DRIED CEMENT WASTE IS TO BE REMOVED FROM THE CONTAINMENT AREA AND PROPERLY DISPOSED OF. SHOULD A PREDEFINED BERMED CONTAINMENT AREA NOT BE ALONGMONTABLE DUE TO THE PROJECT SIZE, OR LACK OF AN AREA WITH A SUITABLE GROUND SURFACE FOR ESTABLISHING A CONTAINMENT AREA, PROPER DISPOSAL OF READY MIX WASHOUT AND RINSE OFF WATER AT THE JOB SITE SHALL CONFORM TO THE APPROVED TECHNIQUES AND PRACTICES. THE DIRECT OR INDIRECT DISCHARGE OF WATER CONTAINING WASTE CEMENT TO THE STORM SEWER SYSTEM IS PROHIBITED.

10. THE CONTRACTOR SHALL PROTECT ALL STORM SEWER FACILITIES ADJACENT TO ANY LOCATION WHERE PAVEMENT CUTTING OPERATIONS INVOLVING WHEEL CUTTING, SAW CUTTING OR ABRASIVE WATER JET CUTTING ARE TO TAKE PLACE. THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL WASTE PRODUCTS GENERATED BY SAID CUTTING OPERATIONS ON A DAILY BASIS. THE DISCHARGE OF ANY WATER CONTAMINATED BY WASTE PRODUCTS FROM CUTTING OPERATIONS TO THE STORM SEWER SYSTEM IS PROHIBITED.

11. PAVED SURFACES WHICH ARE ADJACENT TO CONSTRUCTION SITES SHALL BE SWEPT IN A TIMELY MANNER WHEN SEDIMENT AND OTHER MATERIALS ARE TRACKED OR DISCHARGED ON TO THEM. EITHER SWEEPING BY HAND OR USE OF STREET SWEEPERS IS ACCEPTABLE. STREET SWEEPERS USING WATER WHILE SWEEPING IS PREFERRED IN ORDER TO MINIMIZE DUST. FLUSHING OFF PAVED SURFACES WITH WATER IS PROHIBITED.

SCL	SEDIMENT CONTROL LOG	SF	SILT FENCE
RS	ROCK SOCK	VTC	VEHICLE TRACKING PAD
IP	INLET PROTECTION	CWA	CONCRETE WASHOUT
VFA	VEHICLE FUELING AREA		
SSA	STABALIZED STAGING AREA		

20 0 10 20

PLAN SCALE: 1" = 20'

Know what's **below.**
Call before you dig.

NO.	DATE	REVISION DESCRIPTION

CIVIL ENGINEERING CONSULTANT:

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Robert J. Palmer, PE
President

PREPARED UNDER THE DIRECT SUPERVISION OF:

SEAL: COLORADO REGISTERED ROBERT J. PALMER 36320 PROFESSIONAL ENGINEER

BY Robert J. Palmer, PE
Licensed Professional Engineer (CO PE #36320),
AS PRESIDENT FOR STRATEGIC LAND SOLUTIONS, INC.

McDonald's®

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OFFICE: ROCKY MOUNTAIN REGION
ADDRESS: 4643 S. ULSTER STREET, SUITE 1300, DENVER, COLORADO 80237

STREET ADDRESS: 1ST STREET & GRAND AVENUE
CITY: FORT LUPTON
STATE: COLORADO
COUNTY: WELD
STATE STORE #: TBD
NATIONAL #: XXXXX
REGIONAL DWG. NO: -

SCALE:	AS NOTED	McD RE:	BOWAN
DATE:	09/11/2020	McD P/CM:	PROPHET
DESIGNED BY:	RJP		
DRAWN BY:	RJP	FILE NAME:	CURRENT.DWG
CHECKED BY:	RJP	SLS Jb:	14-001-47

DRAWING TITLE:
EROSION CONTROL PLAN

SHEET NO:
10 OF 10

STANDARD NOTES FOR WATER QUALITY/NPDES

1. THE OWNER, SITE DEVELOPER, CONTRACTOR AND/OR THEIR AUTHORIZED AGENTS SHALL REMOVE ALL SEDIMENT, MUD, CONSTRUCTION DEBRIS, OR OTHER POTENTIAL POLLUTANTS THAT MAY HAVE BEEN DISCHARGED TO OR, ACCUMULATE IN, THE FLOWLINES AND PUBLIC RIGHTS-OF-WAY OF THE CITY OF FORT LUPTON AS A RESULT OF CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS SITE DEVELOPMENT OR CONSTRUCTION PROJECT. SAID REMOVAL SHALL BE CONDUCTED IN A TIMELY MANNER.
2. THIS CONSTRUCTION ACTIVITIES STORMWATER MANAGEMENT PLAN HAS BEEN SUBMITTED AS PART OF AN APPLICATION FOR A CONSTRUCTION ACTIVITIES STORMWATER DISCHARGE PERMIT. IT IS UNDERSTOOD THAT ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES MAY BE REQUIRED OF THE OWNER AND HIS OR HER AGENTS DUE TO UNFORESEEN EROSION PROBLEMS OR IF THE SUBMITTED PLAN DOES NOT FUNCTION AS INTENDED. THE REQUIREMENTS OF THIS PLAN SHALL BE THE OBLIGATION OF THE LAND OWNER AND/OR HIS SUCCESSORS OR HEIRS; UNTIL SUCH TIME AS THE PLAN IS PROPERLY COMPLETED, MODIFIED, OR VOIDED.
3. THE CONTRACTOR SHALL PREVENT SEDIMENT, DEBRIS AND ALL OTHER POLLUTANTS FROM ENTERING THE STORM SEWER SYSTEM DURING ALL DEMOLITION, EXCAVATION, TRENCHING, BORING, GRADING OR OTHER CONSTRUCTION OPERATIONS THAT ARE PART OF THIS PROJECT. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR REMEDIATION OF ANY ADVERSE IMPACTS TO ADJACENT WATERWAYS, WETLANDS, ETC., RESULTING FROM WORK DONE AS PART OF THIS PROJECT.
4. A LAYER OF SUITABLE MULCH SHALL BE APPLIED TO ALL DISTURBED PORTIONS OF THE SITE WITHIN 14 DAYS OF THE COMPLETION OF OVERLOT GRADING. SAID MULCH SHALL BE APPLIED AT A RATE OF 2 TONS PER ACRE AND SHALL BE TACKED OR FASTENED BY AN APPROVED METHOD SUITABLE FOR THE TYPE OF MULCH USED. ROUGH-CUT STREETS SHALL BE MULCHED UNLESS A LAYER OF AGGREGATE ROAD BASE OR ASPHALT PAVING IS TO BE APPLIED TO SAID ROUGH-CUT STREETS WITHIN THE 14-DAY PERIOD AFTER COMPLETION OF OVERLOT GRADING.
5. THE CONTRACTOR SHALL LOCATE, INSTALL, AND MAINTAIN ALL EROSION CONTROL AND WATER QUALITY "BEST MANAGEMENT PRACTICES" AS INDICATED IN THE APPROVED CONSTRUCTION ACTIVITIES STORMWATER MANAGEMENT PLAN.
6. THE DEVELOPER, GENERAL CONTRACTOR, GRADING CONTRACTOR AND/OR THEIR AUTHORIZED AGENTS SHALL ENSURE THAT ALL LOADS OF CUT AND FILL MATERIAL IMPORTED TO OR EXPORTED FROM THIS SITE SHALL BE PROPERLY COVERED TO PREVENT LOSS OF THE MATERIAL DURING TRANSPORT ON PUBLIC RIGHTS-OF-WAY.
7. THE USE OF REBAR, STEEL STAKES, OR STEEL FENCE POSTS TO STAKE DOWN STRAW OR HAY BALES; OR TO SUPPORT SILT FENCING USED AS AN EROSION CONTROL MEASURE; IS PROHIBITED. THE USE OF OSHA APPROVED COLORED WARNING CAPS ON REBAR OR FENCE POSTS USED WITH EROSION CONTROL MEASURES IS NOT ACCEPTABLE.
8. SOILS THAT WILL BE STOCKPILED FOR MORE THAN 30 DAYS SHALL BE PROTECTED FROM WIND AND WATER EROSION WITHIN 14 DAYS OF STOCKPILE CONSTRUCTION. STABILIZATION AND PROTECTION OF THE STOCKPILE MAY BE ACCOMPLISHED BY ANY OF THE FOLLOWING: MULCHING, TEMPORARY/PERMANENT REVEGETATION OPERATIONS, CHEMICAL SOIL STABILIZER APPLICATION (REQUIRES WMD APPROVAL), OR EROSION CONTROL MATTING/GEOTEXTILES. IF STOCKPILES ARE LOCATED WITHIN 100 FEET OF A DRAINAGEWAY, ADDITIONAL SEDIMENT CONTROLS SUCH AS TEMPORARY DIKES OR SILT FENCE SHALL BE REQUIRED.
9. APPROVED EROSION AND SEDIMENT CONTROL "BEST MANAGEMENT PRACTICES" SHALL BE MAINTAINED AND KEPT IN GOOD REPAIR FOR THE DURATION OF THIS PROJECT. AT A MINIMUM, THE CONTRACTOR OR HIS AGENT SHALL INSPECT ALL BMPS WEEKLY AND AFTER SIGNIFICANT PRECIPITATION EVENTS. ALL NECESSARY MAINTENANCE AND REPAIR SHALL BE COMPLETED IN A TIMELY MANNER. ACCUMULATED SEDIMENT AND DEBRIS SHALL BE REMOVED FROM A BMP WHEN THE SEDIMENT LEVEL REACHES ONE HALF THE HEIGHT OF THE BMP OR, AT ANY TIME THAT SEDIMENT OR DEBRIS ADVERSELY IMPACTS THE FUNCTIONING OF THE BMP.
10. MODIFICATION OF AN ACTIVE CONSTRUCTION ACTIVITIES STORMWATER DISCHARGE PERMIT BY THE DEVELOPER, CONTRACTOR OR THEIR AUTHORIZED AGENTS SHALL REQUIRE TIMELY NOTIFICATION OF AND APPROVAL BY THE CITY OF FORT LUPTON PUBLIC WORKS TEAM. TERMINATION OF AN ACTIVE CONSTRUCTION ACTIVITIES STORMWATER DISCHARGE PERMIT UPON COMPLETION OF THE PROJECT REQUIRES NOTIFICATION OF AND APPROVAL BY THE CITY OF FORT LUPTON PUBLIC WORKS TEAM.
11. WATER USED IN THE CLEANING OF CEMENT TRUCK DELIVERY CHUTES SHALL BE DISCHARGED INTO A PREDEFINED, BERMED CONTAINMENT AREA ON THE JOB SITE. THE REQUIRED CONTAINMENT AREA IS TO BE BERMED SO THAT WASH WATER IS TOTALLY CONTAINED. WASH WATER DISCHARGED INTO THE CONTAINMENT AREA SHALL BE ALLOWED TO INFILTRATE OR EVAPORATE. DRIED CEMENT WASTE IS TO BE REMOVED FROM THE CONTAINMENT AREA AND PROPERLY DISPOSED OF. SHOULD A PREDEFINED BERMED CONTAINMENT AREA NOT BE AVAILABLE DUE TO THE PROJECT SIZE, OR LACK OF AN AREA WITH A SUITABLE GROUND SURFACE FOR ESTABLISHING A CONTAINMENT AREA, PROPER DISPOSAL OF READY MIX WASHOUT AND RINSE OFF WATER AT THE JOB SITE SHALL CONFORM TO THE APPROVED TECHNIQUES AND PRACTICES IDENTIFIED IN THE COLORADO DEPARTMENT OF PUBLIC HEALTH & ENVIRONMENT'S TRAINING VIDEO ENTITLED "BUILDING FOR A CLEANER ENVIRONMENT, READY MIX WASHOUT TRAINING", AND ITS ACCOMPANYING MANUAL ENTITLED, "READY MIX WASHOUT GUIDEBOOK, VEHICLE AND EQUIPMENT WASHOUT AT CONSTRUCTION SITES." THE DIRECT OR INDIRECT DISCHARGE OF WATER CONTAINING WASTE CEMENT TO THE STORM SEWER SYSTEM IS PROHIBITED.
12. THE CONTRACTOR SHALL PROTECT ALL STORM SEWER FACILITIES ADJACENT TO ANY LOCATION WHERE PAVEMENT CUTTING OPERATIONS INVOLVING WHEEL CUTTING, SAW CUTTING OR ABRASIVE WATER JET CUTTING ARE TO TAKE PLACE.
13. THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL WASTE PRODUCTS GENERATED BY SAID CUTTING OPERATIONS ON A DAILY BASIS. THE DISCHARGE OF ANY WATER CONTAMINATED BY WASTE PRODUCTS FROM CUTTING OPERATIONS TO THE STORM SEWER SYSTEM IS PROHIBITED.
14. PAVED SURFACES WHICH ARE ADJACENT TO CONSTRUCTION SITES SHALL BE SWEPT IN A TIMELY MANNER WHEN SEDIMENT AND OTHER MATERIALS ARE TRACKED OR DISCHARGED ON TO THEM. EITHER SWEEPING BY HAND OR USE OF STREET SWEEPERS IS ACCEPTABLE. STREET SWEEPERS USING WATER WHILE SWEEPING IS PREFERRED IN ORDER TO MINIMIZE DUST. FLUSHING OFF PAVED SURFACES WITH WATER IS PROHIBITED.

EROSION CONTROL NOTES 1.1

SWMP GENERAL NOTES

1. OWNER/CONTRACTOR IS RESPONSIBLE FOR OBTAINING A STATE OF COLORADO, CDPHE, GENERAL PERMIT APPLICATION - STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY PRIOR TO CONSTRUCTION (NPDES PERMIT). THE OWNER/CONTRACTOR SHALL PROVIDE THE CITY OF FORT LUPTON PUBLIC WORKS TEAM WITH A COPY OF THIS PERMIT APPLICATION TO THE STATE PRIOR TO RECEIVING A GRADING/CONSTRUCTION PERMIT. THE OWNER/CONTRACTOR IS RESPONSIBLE FOR ALL FEES ASSOCIATED WITH THIS STATE PERMIT.
2. OWNER/CONTRACTOR IS RESPONSIBLE FOR FILING A STATE OF COLORADO, CDPHE INACTIVATION NOTICE - CONSTRUCTION STORMWATER DISCHARGE GENERAL PERMIT CERTIFICATION; ONCE THE CONSTRUCTION SITE HAS BEEN FINALLY STABILIZED ACCORDING TO THE APPROVED PERMIT. THE CONTRACTOR SHALL PROVIDE THE CITY OF FORT LUPTON PUBLIC WORKS TEAM WITH A COPY OF THIS NOTICE. THERE IS NO FEE ASSOCIATED WITH THIS NOTICE AND THE THERE WILL BE NO FEE CHARGED TO THE CITY OR IF THE CONTRACTOR NEGLECTS TO FILE THIS NOTICE.
3. THOROUGH INSPECTION OF THE STORMWATER MANAGEMENT PLAN BEST MANAGEMENT PRACTICES (BMPS) SHALL BE PERFORMED EVERY FOURTEEN (14) DAYS AND AFTER ANY PRECIPITATION OR SNOWMELT EVENT. PERIODIC INSPECTIONS SHALL ALSO INCLUDE INSPECTING EQUIPMENT FOR LEAKS AND REVIEWING EQUIPMENT MAINTENANCE PRACTITICE. ALL INSPECTIONS AND MAINTENANCE SHALL BE DOCUMENTED BY THE PROJECT EROSION CONTROL SUPERVISOR AND MADE AVAILABLE TO CITY OF FORT LUPTON PUBLIC WORKS AND THE CDPHE UPON REQUEST. ANY EROSION CONTROL BMPS THAT HAVE BEEN COMPROMISED OR HAVE BEEN DISTURBED SHALL BE REPLACED OR RECONSTRUCTED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE ALL EROSION CONTROL DEVICE(S) IN PLACE AND EFFECTIVE PRIOR TO A STORM EVENT.
4. THE CONCRETE WASHOUT CONTAINMENT STRUCTURE SHALL CONTAIN ALL WASHOUT WATER. STORMWATER SHALL NOT CARRY WASTES FROM WASHOUT LOCATION.
5. THE CONCRETE WASHOUT CONTAINMENT STRUCTURE SHALL BE LOCATED A MINIMUM OF 50-HORIZONTAL-FEET FROM STATE WATERS. THE CONCRETE WASHOUT CONTAINMENT STRUCTURE SHALL BE SIGNED AS "CONCRETE WASHOUT";
6. CHECK ALL CONCRETE WASHOUT AREAS CAPACITY. WASTE MATERIAL FROM CONCRETE WASHOUT OPERATIONS MUST BE REMOVED AND LEGALLY DISPOSED OF WHEN IT HAS ACCUMULATED TWO-THIRDS OF THE WET STORAGE CAPACITY OF THE STRUCTURE;

SWMP BMP MAINTENANCE NOTES

1. THE CONTRACTOR SHALL CONTINUOUSLY MAINTAIN ALL SILT FENCING SO THAT IT FUNCTIONS PROPERLY DURING CONSTRUCTION AND WORK SUSPENSIONS. ALL SILT FENCING SHALL BE REMOVED BY THE CONTRACTOR UPON SUBSTANTIAL PERMANENT STABILIZATION UNLESS OTHERWISE DIRECTED BY AUTHORIZED CITY OF FORT LUPTON PUBLIC WORKS PERSONNEL.
1. ALL INLET/OUTLET PROTECTION WILL BE CHECKED FOR MAINTENANCE AND FAILURE. SEDIMENT SHALL BE REMOVED AND PROPERLY DISPOSED OF ONCE IT HAS ACCUMULATED TO HALF THE DESIGN OF THE TRAP.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE VEHICLE TRACKING CONTROL DURING THE ENTIRE TIME THAT IT IS IN USE IN THE PROJECT. THE VEHICLE TRACKING CONTROL SHALL BE REMOVED AT THE COMPLETION OF THIS PROJECT UNLESS OTHERWISE DIRECTED BY AUTHORIZED CITY OF FORT LUPTON PUBLIC WORKS PERSONNEL.
3. ALL SPILLS SHALL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY, OR CONTAINED UNTIL APPROPRIATE CLEANUP METHODS CAN BE EMPLOYED. MANUFACTURE'S RECOMMENDED METHODS FOR SPILL CLEANUP SHALL BE FOLLOWED, ALONG WITH PROPER DISPOSAL METHODS.
4. EACH CONCRETE TRUCK OPERATOR SHALL BE AWARE OF THE DESIGNATED CONCRETE WASHOUT AREA. WASTE MATERIALS MUST BE REMOVED AND LEGALLY DISPOSED OF WHEN IT HAS ACCUMULATED TO TWO-THIRDS OF THE WET STORAGE CAPACITY OF THE STRUCTURE.
5. ALL CONCRETE WASHOUT AREAS SHALL BE CLEARLY MARKED. THE CONCRETE WASHOUT CONTAINMENT AREA SHALL INCLUDE ORANGE PLASTIC CONSTRUCTION FENCING OR EQUIVALENT AROUND THE WASHOUT STRUCTURE AND A SIGN POSTED LABELED "CONCRETE WASHOUT".
6. THE CONCRETE WASHOUT AREA SHALL BE REPAIRED AND/OR ENLARGED AS NECESSARY TO MAINTAIN CAPACITY FOR WASTED CONCRETE.
7. AT THE END OF CONSTRUCTION, ALL CONCRETE SHALL BE REMOVED FROM THE SITE AND LEGALLY DISPOSED OF AT AN APPROVED WASTE SITE.

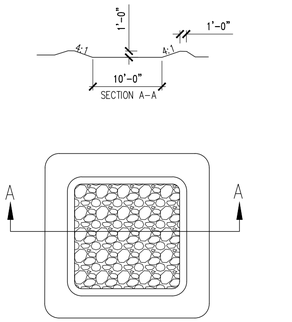
EROSION CONTROL NOTES 1.2

SWMP PERFORMANCE STANDARD NOTES

THE GENERAL REQUIREMENTS FOR EROSION CONTROL WORK SHALL BE AS FOLLOWS:

1. TEMPORARY EROSION CONTROL FACILITIES AND/OR PERMANENT FACILITIES INTENDED TO CONTROL EROSION OF AN EARTH DISTURBANCE OPERATION SHALL BE INSTALLED BEFORE ANY EARTH DISTURBANCE OPERATIONS TAKE PLACE.
2. EARTH DISTURBANCES SHALL BE CONDUCTED IN SUCH A MANNER SO AS TO EFFECTIVELY REDUCE ACCELERATED SOIL EROSION AND RESULTING SEDIMENTATION, AND SHALL NOT EXCEED THE EROSION EXPECTED TO OCCUR FOR THE SITE IN ITS TOTALLY UNDEVELOPED STATE.
3. PERSONS ENGAGED IN EARTH DISTURBANCES SHALL DESIGN, IMPLEMENT, AND MAINTAIN ACCEPTABLE SOIL EROSION AND SEDIMENTATION CONTROL MEASURES, IN CONFORMANCE WITH THE EROSION CONTROL TECHNICAL STANDARDS ADOPTED BY THE CITY OF FORT LUPTON PUBLIC WORKS.
4. EARTH DISTURBANCES SHALL BE DESIGNED, CONSTRUCTED, AND COMPLETED IN SUCH A MANNER SO THAT THE EXPOSED AREA OF ANY DISTURBED LAND SHALL BE LIMITED TO THE SHORTEST POSSIBLE PERIOD OF TIME.
5. SEDIMENT CAUSED BY ACCELERATED SOIL EROSION SHALL BE REMOVED FROM RUNOFF WATER BEFORE IT LEAVES THE SITE OF THE EARTH DISTURBANCE.
6. ANY TEMPORARY OR PERMANENT FACILITY DESIGNED AND CONSTRUCTED FOR THE CONVEYANCE OF WATER AROUND, THROUGH, OR FROM THE EARTH DISTURBANCE AREA SHALL BE DESIGNED TO LIMIT THE WATER FLOW TO A NON-EROSIVE VELOCITY.
7. TEMPORARY SOIL EROSION CONTROL FACILITIES SHALL BE REMOVED AND EARTH DISTURBANCE AREAS GRADED AND STABILIZED WITH PERMANENT SOIL EROSION CONTROL MEASURES PURSUANT TO STANDARDS AND SPECIFICATIONS PRESCRIBED IN ACCORDANCE WITH THE PROVISIONS OF THE "EROSION AND SEDIMENT CONTROL FOR CONSTRUCTION ACTIVITIES" AND IN ACCORDANCE WITH THE PERMANENT EROSION CONTROL FEATURES SHOWN ON THE SOIL STABILIZATION PLAN APPROVED BY THE CITY OF FORT LUPTON PUBLIC WORKS.
8. PERMANENT EROSION CONTROL MEASURES FOR SLOPES, CHANNELS, DITCHES, OR ANY DISTURBED LAND AREA SHALL BE COMPLETED WITHIN 14 CALENDAR DAYS AFTER FINAL GRADING OR THE FINAL EARTH DISTURBANCE HAS BEEN COMPLETED. WHEN IT IS NOT POSSIBLE TO PERMANENTLY STABILIZE A DISTURBED AREA AFTER AN EARTH DISTURBANCE HAS BEEN COMPLETED OR WHERE SIGNIFICANT EARTH DISTURBANCE ACTIVITY CEASES, TEMPORARY SOIL EROSION CONTROL MEASURES SHALL BE IMPLEMENTED WITHIN 14 CALENDAR DAYS. TEMPORARY EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL PERMANENT SOIL EROSION MEASURES ARE IMPLEMENTED.

EROSION CONTROL NOTES 1.3



NOTE:
1. BOTTOM OF CONTAINMENT AREA SHALL BE LINED WITH 1½" GRAVEL SUFFICIENT TO HOLD THE EQUIPMENT LOADS.
2. IN CASE OF A MAJOR SPILL NOTIFY 911.
3. ALL SIDE SLOPES ARE TO BE 4:1 MAX.

FUEL CONTAINMENT 1.4

TITLE	KEY	SYMBOL
CHECK DAM	CD	
CONSTRUCTION ROAD STABILIZATION	CRS	CRS
CURB SOCK INLET PROTECTION	CS	
CONCRETE WASHOUT AREA	CWA	
DIVERSION DITCH AND DIKE, TEMPORARY	DD	DD
DIVERSION CHANNEL, TEMPORARY	DV	DV
DEWATERING	DW	
EROSION CONTROL BLANKET	ECB	
INLET FILTER	IF	
STORM DRAIN INLET PROTECTION	IP	
MULCHING	MU	MU

CITY OF Fort Lupton EST 1836 COME PAINT YOUR FUTURE WITH US

DESIGN STANDARDS	STANDARD DRAWING
MAP SYMBOLS	EC1
	DATE: 8/15/14

LEGEND 1.5

TITLE	KEY	SYMBOL
OUTLET PROTECTION	OP	
PAVED FLUME	PF	PF
PERMANENT SEEDING	PS	PS
REINFORCED CONCRETE DAM	RCD	
ROUGH CUT STREET CONTROL	RCS	
SEDIMENT BASIN	SB	
STRAW BALE BARRIER	SBB	
SILT FENCE	SF	
SURFACE ROUGHENING	SR	SR

CITY OF Fort Lupton EST 1836 COME PAINT YOUR FUTURE WITH US

DESIGN STANDARDS	STANDARD DRAWING
MAP SYMBOLS	EC2
	DATE: 8/15/14

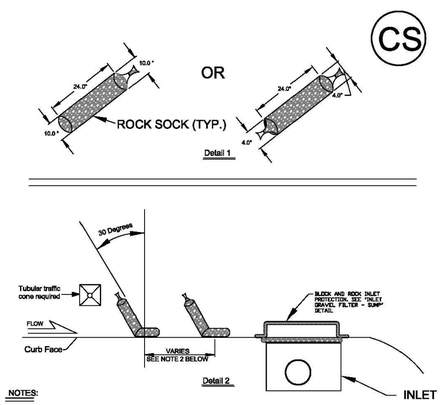
LEGEND 1.6

TITLE	KEY	SYMBOL
STABILIZED STAGING AREA	SSA	
SEDIMENT TRAP	ST	
SEDIMENT LOG	SCL	
TERRACING	TER	
TEMPORARY SEEDING	TS	TS
TEMPORARY STREAM CROSSING CULVERT/BRIDGE TYPE	TSC C	
TEMPORARY STREAM CROSSING FORD TYPE	TSC F	
TEMPORARY SLOPE DRAIN	TSD	TSD
VEHICLE TRACKING CONTROL	VTC	
VEHICLE TRACKING CONTROL WITH WASH RACK	WR	WR

CITY OF Fort Lupton EST 1836 COME PAINT YOUR FUTURE WITH US

DESIGN STANDARDS	STANDARD DRAWING
MAP SYMBOLS	EC3
	DATE: 8/15/14

LEGEND 1.7



NOTES:
1) SOCKS WILL BE USED UPGRADIENT OF THE INLET AND FLUSH WITH THE CURB.
2) NO LESS THAN TWO 10 INCH DIAMETER SOCKS MUST BE USED IN SEQUENCE, SPACED NO MORE THAN FIVE FEET APART. NO LESS THAN SIX SOCKS SHALL BE USED IF THE 4 INCH SOCK IS USED, ALSO SPACED AT NO MORE THAN 5 FEET APART.
3) ALIGN AT 30 DEGREES FROM PERPENDICULAR, OPPOSITE THE DIRECTION OF FLOW (SEE DETAIL 2.
4) EROSION CONTROL MEASURES SHALL BE MAINTAINED AT ALL TIMES AS DIRECTED BY THE CITY.

CITY OF Fort Lupton EST 1836 COME PAINT YOUR FUTURE WITH US

DESIGN STANDARDS	STANDARD DRAWING
ON GRADE INLET PROTECTION	EC 6
	DATE: 8/15/14

INLET PROTECTION 1.8

NO.	DATE	REVISION DESCRIPTION

CIVIL ENGINEERING CONSULTANT:

Strategic Land Solutions, Inc.
Land Engineering • Land Planning • Entitlements
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FRANKTOWN, CO 80116
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President

PREPARED UNDER THE DIRECT SUPERVISION OF:
SEAL: COLORADO REGISTERED ROBERT J. PALMER 36320 PROFESSIONAL ENGINEER
BY Robert J. Palmer, PE
Licensed Professional Engineer (CO PE #36320),
AS PRESIDENT FOR STRATEGIC LAND SOLUTIONS, INC.

McDonald's
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OFFICE: ROCKY MOUNTAIN REGION
ADDRESS: 4643 S. ULSTER STREET, SUITE 1300, DENVER, COLORADO 80237

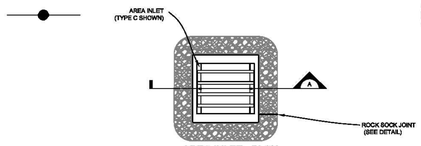
STREET ADDRESS: 1ST STREET & GRAND AVENUE
CITY: FORT LUPTON
STATE: COLORADO
COUNTY: WELD
STATE STORE #: TBD
NATIONAL #: XXXXX
REGIONAL DWG. NO: -

SCALE:	AS NOTED	McD RE:	BOWAN
DATE:	09/11/2020	McD P/CM:	PROPHET
DESIGNED BY:	RJP		
DRAWN BY:	RJP	FILE NAME:	CURRENT.DWG
CHECKED BY:	RJP	SLS JN:	14-001-47

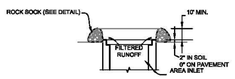
DRAWING TITLE: EROSION CONTROL DETAILS

SHEET NO: CD.1

IP



AREA INLET - PLAN



SECTION A

INLET PROTECTION INSTALLATION NOTES

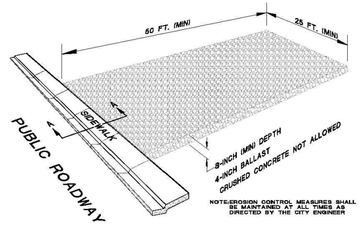
1. INLET PROTECTION AFTER INLET CONSTRUCTION OF AFTER PAVEMENT SHALL BE INSTALLED WITHIN 48 HOUR AFTER INLET CONSTRUCTION OR PAVING IS COMPLETED.
2. STRAW WATTLES/SEDIMENT CONTROL LOGS MAY BE USED IN PLACE OF ROCK SOCKS FOR INLETS IN PERVIOUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.

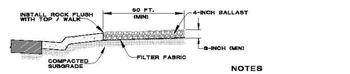
INLET PROTECTION MAINTENANCE NOTES

1. THE SWMP MANAGER SHALL INSPECT INLET PROTECTION WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS OR CLEAN OUT AS NECESSARY. INSPECT MORE FREQUENTLY DURING WINTER CONDITIONS DUE TO FREEZE/THAW PROBLEMS. REPAIRS AS NEEDED.
2. SEDIMENT ACCUMULATED UPSTREAM OF INLET PROTECTION SHALL BE REMOVED WHEN THE SEDIMENT DEPTH UPSTREAM OF ROCK BERM IS WITHIN 2-1/2 INCHES OF THE CREST.
3. INLET PROTECTION IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND IGRASS COVER IS APPROVED, UNLESS THE CITY APPROVES EARLIER REMOVAL OF INLET PROTECTION IN STREETS.
4. WHEN INLET PROTECTION AT AREA INLETS IS REMOVED, THE DISTURBED AREA SHALL BE COVERED WITH TOP SOIL, DRILL SEEDED AND CRIMP MULCHED, OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE CITY .

CITY OF Fort Lupton EST. 1836 — COME PAINT YOUR FUTURE WITH US	DESIGN STANDARDS	STANDARD DRAWING
	AREA INLET PROTECTION USING GRAVEL FILTER	EC 7
		DATE: 8/15/14

INLET PROTECTION 2.1





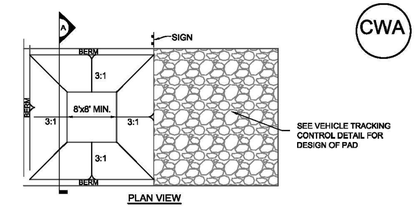
SECTION A–A
-NTS-

NOTES
1. ALL ROCK TO BE REMOVED UPON COMPLETION OF CONSTRUCTION.
2. PUBLIC ROADWAY TO BE KEPT CLEAN AND FREE OF MUD, DIRT AND DEBRIS AT ALL TIMES.

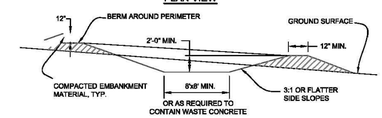
CITY OF Fort Lupton EST. 1836 — COME PAINT YOUR FUTURE WITH US	DESIGN STANDARDS	STANDARD DRAWING
	VEHICLE TRACKING PAD	EC 8
		DATE: 8/15/14

VEHICLE TRACKING PAD 2.2

CWA



PLAN VIEW



SECTION A

CONCRETE WASHOUT AREA INSTALLATION NOTES

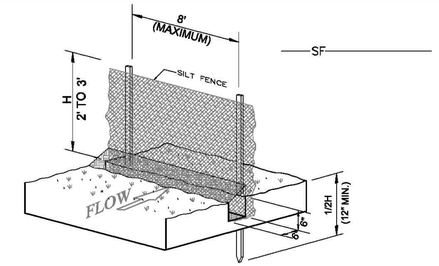
1. SEE PLAN VIEW FOR LOCATIONS OF CONCRETE WASHOUT AREA.
2. THE CONCRETE WASHOUT AREA SHALL BE INSTALLED PRIOR TO ANY CONCRETE PLACEMENT ON SITE.
3. VEHICLE TRACKING CONTROL IS REQUIRED AT THE ACCESS POINT.
4. SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE WASHOUT AREA, AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CONCRETE WASHOUT ARE TO OPERATORS OF CONCRETE TRCUYKS AND PUMP RIGS.

CONCRETE WASHOUT AREA MAINTENANCE NOTES

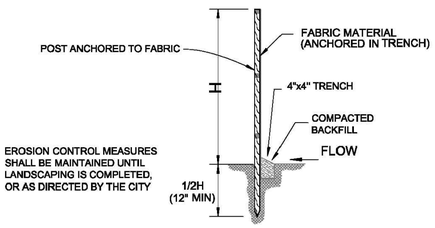
1. THE CONCRETE WASHOUT AREA SHALL BE REPAIRED AND ENLARGED OR CLEANED OUT AS NECESSARY TO MAINTAIN CAPACITY FOR WASTED CONCRETE.
2. AT THE END OF CONSTRUCTION, ALL CONCRETE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF AT AND APPROVED WASTE SITE.
3. WHEN THE CONCRETE WASHOUT AREA IS REMOVED, COVER THE DISTURBED AREA WITH TOP SOIL, DRILL SEED AND CRIMP MULCH, OR OTHERWISE STABILIZE IN A MANNER APPROVED BY THE CITY.
4. INSPECT WEEKLY, DURING AND AFTER ANY STORM EVENT.
5. PORTABLE ROLLOFF TYPE OF CONCRETE WASHOUT FACILITIES WILL ALSO BE ALLOWED.

CITY OF Fort Lupton EST. 1836 — COME PAINT YOUR FUTURE WITH US	DESIGN STANDARDS	STANDARD DRAWING
	CONCRETE WASHOUT AREA	EC 9
		DATE: 8/15/14

CONCRETE WASHOUT 2.3



SILT FENCE INSTALLATION
-NTS-



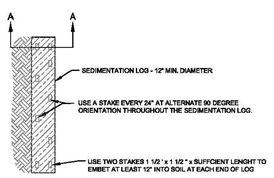
NOTE: EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL LANDSCAPING IS COMPLETED, OR AS DIRECTED BY THE CITY

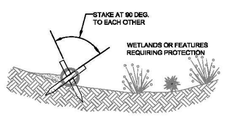
SECTION
-NTS-

CITY OF Fort Lupton EST. 1836 — COME PAINT YOUR FUTURE WITH US	DESIGN STANDARDS	STANDARD DRAWING
	SILT FENCE	EC 15
		DATE: 8/15/14

SILT FENCE 2.4

SCL





SECTION A - A

SEDIMENT CONTROL LOG INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   - LOCATION AND LENGTH OF SEDIMENT CONTROL LOG.
2. SEDIMENT CONTROL LOGS INDICATED ON INITIAL SWMP PLAN SHALL BE INSTALLED PRIOR TO ANY LAND-DISTURBING ACTIVITIES
3. SEDIMENT CONTROL LOGS SHALL CONSIST OF STRAW, COMPOST, EXCELSIOR, OR COCONUT FIBER.
4. NOT FOR USE IN CONCENTRATED FLOW AREAS.
5. THE SEDIMENT CONTROL LOG SHALL BE TRENCHED INTO THE GROUND A MINIMUM OF 2".

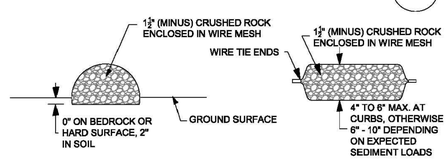
SEDIMENT CONTROL LOG MAINTENANCE NOTES

1. THE SWMP MANAGER SHALL INSPECT SEDIMENT CONTROL LOGS DAILY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS OR CLEAN OUT UPSTREAM SEDIMENT AS NECESSARY.
2. SEDIMENT ACCUMULATED UPSTREAM OF SEDIMENT CONTROL LOGS SHALL BE REMOVED WHEN THE UPSTREAM SEDIMENT DEPTH IS WITHIN ½ THE HEIGHT OF THE CREST OF LOG.
3. SEDIMENT CONTROL LOG SHALL BE REMOVED AT THE END OF CONSTRUCTION. IF ANY DISTURBED AREA EXISTS AFTER REMOVAL, IT SHALL BE COVERED WITH TOP SOIL, DRILL SEEDED AND CRIMP MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE CITY.

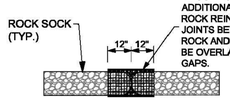
CITY OF Fort Lupton EST. 1836 — COME PAINT YOUR FUTURE WITH US	DESIGN STANDARDS	STANDARD DRAWING
	SEDIMENT CONTROL LOGS	EC 16
		DATE: 8/15/14

SEDIMENT CONTROL LOG 2.5

RS



ROCK SOCK SECTION ROCK SOCK PLAN



ANY GAP AT JOINT SHALL BE FILLED WITH AN ADEQUATE AMOUNT OF 1½" (MINUS) CRUSHED ROCK AND WRAPPED WITH ADDITIONAL WIRE MESH SECURED TO THE ENDS OF THE ROCK REINFORCED SOCK. AS AN ALTERNATIVE TO FILLING JOINTS BETWEEN ADJOINING ROCK SOCKS WITH CRUSHED ROCK AND ADDITIONAL WIRE WRAPPING, ROCK SOCKS CAN BE OVERLAPPED (TYPICALLY 12 - INCH OVERLAP) TO AVOID GAPS.

ROCK SOCK JOINTING

GRADATION TABLE	
SIEVE SIZE	MASS PERCENT PASSING SQUARE MESH SIEVES
	NO. 4
2"	100
11/2"	90 - 100
1"	20 - 55
3/4"	0 - 15
3/8"	0 - 5
MATCHES SPECIFICATIONS FOR NO. 4 COARSE AGGREGATE FOR CONCRETE PER AASHTO M43. ALL ROCK SHALL BE FRACTURED FACE, ALL SIDES.	

ROCK SOCK INSTALLATION NOTES

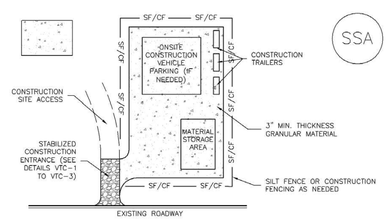
1. SEE PLAN VIEW FORLOCATION OF ROCK SOCKS.
2. CRUSHED ROCK SHALL BE 11/2 " (MINUS) IN SIZE WITH A FRACTURED FACE (ALL SIDES) AND SHALL COMPLY WITH GRADATION SHOWN ON THIS SHEET (11/2" MINUS).
3. WIRE MESH SHALL BE FABRICATED OD 10 GAGE POULTRY MESH OR EQUIVALENT WITH A MAXIMUM OPENING OF 1/2", RECOMMENDED MINIMUM ROLL WIDTH OF 48".
4. WIRE MESH SHALL BE SECURED USING "HOG RINGS" OR WIRE TIES AT 6" CENTERS ALONG ALL JOINTS AND AT 2" CENTERS ON ENDS OF SOCKS.

CITY OF Fort Lupton EST. 1836 — COME PAINT YOUR FUTURE WITH US	DESIGN STANDARDS	STANDARD DRAWING
	ROCK SOCK DETAIL	EC 19
		DATE: 8/15/14

ROCK SOCK 2.6

Stabilized Staging Area (SSA) SM-6

SSA



SSA-1. STABILIZED STAGING AREA

STABILIZED STAGING AREA INSTALLATION NOTES

1. SEE PLAN VIEW FOR
   -LOCATION OF STAGING AREA(S).
   -CONTRACTOR MAY ADJUST LOCATION AND SIZE OF STAGING AREA WITH APPROVAL FROM THE LOCAL JURISDICTION.
2. STABILIZED STAGING AREA SHOULD BE APPROPRIATE FOR THE NEEDS OF THE SITE. OVERSIZING RESULTS IN A LARGER AREA TO STABILIZE FOLLOWING CONSTRUCTION.
3. STAGING AREA SHALL BE STABILIZED PRIOR TO OTHER OPERATIONS ON THE SITE.
4. THE STABILIZED STAGING AREA SHALL CONSIST OF A MINIMUM 3" THICK GRANULAR MATERIAL.
5. UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, AASHTO #3 COARSE AGGREGATE OR 6" (MINUS) ROCK.
6. ADDITIONAL PERIMETER BMPs MAY BE REQUIRED INCLUDING BUT NOT LIMITED TO SILT FENCE AND CONSTRUCTION FENCING.

STABILIZED STAGING AREA MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
4. ROCK SHALL BE REAPPLIED OR REGRADED AS NECESSARY IF RUTTING OCCURS OR UNDERLYING SUBGRADE BECOMES EXPOSED.

STABALIZED STAGING AREA 2.7

SM-6 Stabilized Staging Area (SSA)

STABILIZED STAGING AREA MAINTENANCE NOTES

5. STABILIZED STAGING AREA SHALL BE ENLARGED IF NECESSARY TO CONTAIN PARKING, STORAGE, AND UNLOADING/LOADING OPERATIONS.

6. THE STABILIZED STAGING AREA SHALL BE REMOVED AT THE END OF CONSTRUCTION. THE GRANULAR MATERIAL SHALL BE REMOVED OR, IF APPROVED BY THE LOCAL JURISDICTION, USED ON SITE, AND THE AREA COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY LOCAL JURISDICTION.

NOTE: MANY MUNICIPALITIES PROHIBIT THE USE OF RECYCLED CONCRETE AS GRANULAR MATERIAL FOR STABILIZED STAGING AREAS DUE TO DIFFICULTIES WITH RE-ESTABLISHMENT OF VEGETATION IN AREAS WHERE RECYCLED CONCRETE WAS PLACED.

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

(DETAILS ADAPTED FROM: DOUGLAS COUNTY, COLORADO, NOT AVAILABLE IN AUTOCAD)

STABALIZED STAGING AREA 2.8

NO.	DATE	REVISION DESCRIPTION

CIVIL ENGINEERING CONSULTANT:

Strategic Land Solutions, Inc.
Land Engineering • Land Planning • Entitlements
2595 PONDEROSA ROAD
FRANKTOWN, CO 80116
720.384.7661 Phone
rpalmer@strategicls.net
Robert J. Palmer, PE
President

PREPARED UNDER THE DIRECT SUPERVISION OF:
SEAL: COLORADO REGISTERED ROBERT J. PALMER 36320 PROFESSIONAL ENGINEER
BY Robert J. Palmer, PE
Licensed Professional Engineer (CO PE #36320), AS PRESIDENT FOR STRATEGIC LAND SOLUTIONS, INC.

McDonald's®

THESE PLANS AND SPECIFICATIONS ARE THE PROPERTY OF McDONALD'S CORPORATION AND SHALL NOT BE REPRODUCED WITHOUT THEIR WRITTEN PERMISSION.

OFFICE: ROCKY MOUNTAIN REGION
ADDRESS: 4643 S. ULSTER STREET, SUITE 1300, DENVER, COLORADO 80237

STREET ADDRESS: 1ST STREET & GRAND AVENUE
CITY: FORT LUPTON
STATE: COLORADO
COUNTY: WELD
STATE STORE #: TBD
NATIONAL #: XXXXX
REGIONAL DWG. NO: -

SCALE:	AS NOTED
DATE:	09/11/2020
DESIGNED BY:	RJP
DRAWN BY:	RJP
CHECKED BY:	RJP
McD RE:	BOWAN
McD P/CM:	PROPHET
FILE NAME:	CURRENT.DWG
SLS JN:	14-001-47

DRAWING TITLE: EROSION CONTROL DETAILS

SHEET NO: CD.2

Fort Lupton Fire Protection District
1121 Denver Avenue • Fort Lupton, Colorado 80621
Office: (303)857-4603 • Fax: (303)857-6619 • Website: www.fortluptonfire.org

Date: 11/04/2020
Project name: McDonalds
Project address: 105 1st St., Fort Lupton, Co 80621
FLFPD Project # R2020-050
Plan reviewer: Taw Tamlin, Fire Marshal

The Fire District has reviewed the referral submittal for **McDonalds** located at **105 1st St.**, Fort Lupton, CO 80621. The submittal was reviewed for compliance with *2012 International Fire Code (IFC)* and the current National Fire Protection Association (*NFPA)* standards as adopted by the Fort Lupton Fire Protection District, City Council of Fort Lupton, and Weld County Commissioners. The following specific and general requirements and conditions shall be met.

Specific Requirements:

1. Any property owner or authorized agent who intends to conduct an operation or business, or install or modify systems and equipment which is regulated by this code, or to cause any such work to be done, shall first make application to the fire code official and obtain the required permit. *2012 IFC, 105.1.1*

2. Application for a permit required by this code shall be made to the fire code official in such form and detail as prescribed by the fire code official. Applications for permits shall be accompanied by such plans as prescribed by the fire code official. *2012 IFC, 105.1.3*

3. Construction documents and supporting data shall be submitted *(Electronically)* in two or more sets with each application for a permit and in such form and detail as required by the fire code official. The construction documents shall be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed. *2012 IFC, 105.4.1*

    a. For application and fee schedule go to https://fortluptonfire.org/contractors/

4. New and existing buildings shall have approved address numbers, building numbers or approved building identification placed in a position that is plainly legible and visible from the street or road fronting the property. These numbers shall contrast with their background. Where required by the fire code official, address numbers shall be provided in additional approved locations to facilitate emergency response. Address numbers shall be Arabic numbers or alphabetical letters. Numbers shall be a minimum of 4 inches (101.6 mm) high with a minimum stroke width of 0.5 inch (12.7 mm). Where access is by means of a private road and the building cannot be viewed from the public way, a monument, pole or other sign or means shall be used to identify the structure. Address numbers shall be maintained. *2012 IFC, 505.1.*

5. The minimum turning radius shall be determined by the fire code official.
    a. <u>See attached document showing the minimum turning radius needed</u>

6. An automatic sprinkler system shall be provided for Group A-2 occupancies where one of the following conditions exists:

    1. *The fire area exceeds 5,000 square feet (464 m2).*

    2. *<u>The fire area has an occupant load of 100 or more.</u>*

    3. *The fire area is located on a floor other than a level of exit discharge serving such occupancies.*

7. A Type I hood shall be installed at or above all commercial cooking appliances and domestic cooking appliances used for commercial purposes that produce grease vapors.

Below is a list of fire code reviews, inspections and site visits that will need to be completed at the **McDonalds** Project before the Certificate of Occupancy is issued.

- Plan Review of Architectural drawings, construction drawings, civil drawings.
- Plan Review of Commercial cooking hood system
- Final fire code inspection for Certificate of Occupancy.
- FD tours and site training and fire preplans.

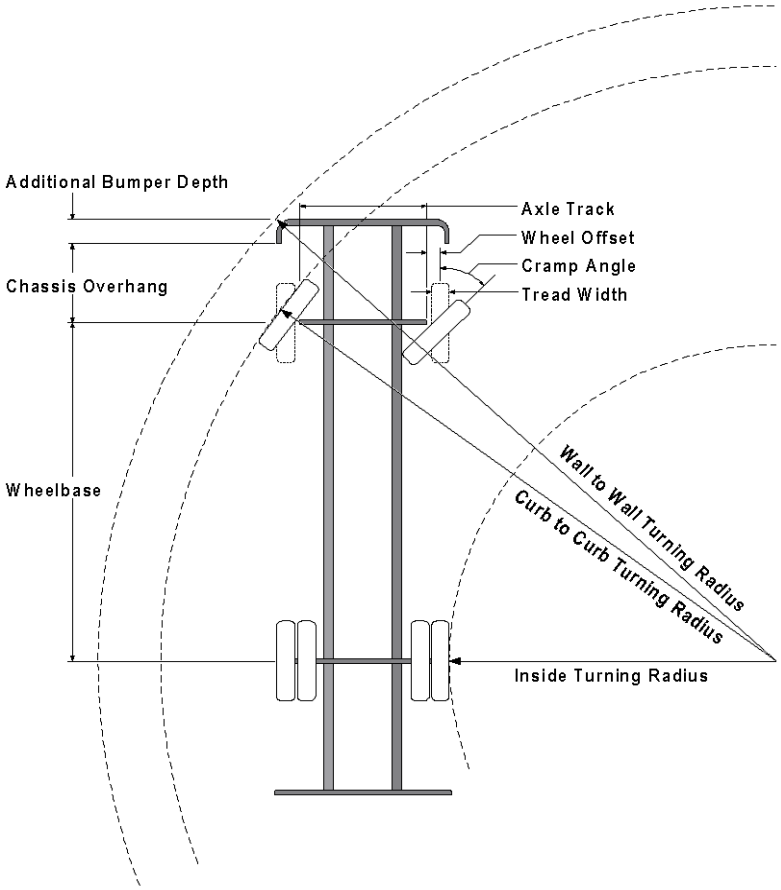
Please contact Fire Marshal, Taw Tamlin at 303-857-4603 one week in advance to schedule the inspections or if you have questions or need further assistance.

Turning Performance Analysis

12/6/2012

Bid Number: 299
Department:

Chassis: Arrow-XT Chassis, PAP/SkyArm/Midmount MUX, 2010
Body: Aerial, Platform 100', Alum Body



Parameters:

Inside Cramp Angle:	45°
Axle Track:	82.92 in.
Wheel Offset:	5.25 in.
Tread Width:	17.4 in.
Chassis Overhang:	68.99 in.
Additional Bumper Depth:	19 in.
Front Overhang:	156.6 in.
Wheelbase:	247 in.

Calculated Turning Radii:

Inside Turn:	19 ft. 5 in.
Curb to curb:	35 ft. 6 in.
Wall to wall:	44 ft. 2 in.

Comments:

CategoryID	Category Description	OptionCode	OptionDescription
6	Axle, Front, Custom	0018453	Axle, Front, Oshkosh TAK-4, Non Drive, 22,800 lb, DLX/Enf/Qtm/AXT
30	Wheels, Front	0001656	Wheels, Front, 22.50" x 12.25", Steel, Hub Pilot
31	Tires, Front	0594821	Tires, Front, Goodyear, G296 MSA, 425/65R22.50, 20 ply
38	Bumpers	0550016	Bumper, 19" Extended, AXT, Dash CF
437	Aerial Devices	0592931	Aerial, 100' Pierce Platform, 50 MPH Wind Rating, 150lb Tip Load Allowance

Notes:

Actual Inside Cramp Angle may be less due to highly specialized options.

Curb to Curb turning radius calculated for a 9.00 inch curb.

Turning Performance Analysis

12/6/2012

Bid Number: 299
Department:

Chassis: Arrow-XT Chassis, PAP/SkyArm/Midmount MUX, 2010
Body: Aerial, Platform 100', Alum Body

Definitions:

Inside Cramp Angle	Maximum turning angle of the front inside tire.
Axle Track	King-pin to King-pin distance of the front axle.
Wheel Offset	Offset from the center-line of the wheel to the king-pin.
Tread Width	Width of the tire tread.
Chassis Overhang	Distance of the center-line of the front axle to the front edge of the cab. This does not include the bumper depth.
Additional Bumper Depth	Depth that the bumper assembly adds to the front overhang.
Wheelbase	Distance between the center lines of the vehicle's front and rear axles.
Inside Turning Radius	Radius of the smallest circle around which the vehicle can turn.
Curb to Curb Turning Radius	Radius of the smallest circle inside of which the vehicle's tires can turn. This measurement assumes a curb height of 9 inches.
Wall to Wall Turning Radius	Radius of the smallest circle inside of which the entire vehicle can turn. This measurement takes into account any front overhang due to chassis,bumper extensions and/or aerial devices.

Maria Lancto

From: John Fryar
Sent: Monday, November 2, 2020 4:56 PM
To: Maria Lancto
Subject: RE: Referral Response Request: McDonald's Site Plan (LUP2020-0032 & SPR2020-0013)

There are no significant LE issues. It will create a very congested intersection at 1st St and Grand Ave.

Committment rather than Compliance
Remember "Find a Way to Help"

John Fryar, Chief of Police
130 S. McKinley Ave
Fort Lupton, CO 80621

Work (303) 857-4011
Cell (303) 210-0100

From: Maria Lancto
Sent: Monday, November 2, 2020 4:46 PM
Cc: Alyssa Knutson <AKnutson@Fortluptonco.gov>; Todd Hodges <thodges@Fortluptonco.gov>
Subject: RE: Referral Response Request: McDonald's Site Plan (LUP2020-0032 & SPR2020-0013)

Hello,

Just a reminder that responses are due soon for the above-mentioned project. If you have already responded, please disregard this email.

Thank you,

Maria Lancto
Planner I
130 S. McKinley Ave.
Fort Lupton, CO 80621
Office: 303.857.6694
Extension: 6107
Cell: 303.718.0172

From: Maria Lancto
Sent: Tuesday, October 20, 2020 6:27 PM
Cc: Alyssa Knutson <AKnutson@Fortluptonco.gov>; Todd Hodges <thodges@Fortluptonco.gov>
Subject: Referral Response Request: McDonald's Site Plan (LUP2020-0032 & SPR2020-0013)

Hello,

The documentation located at the following link is submitted to you for review and recommendation for a site plan being reviewed by the City of Fort Lupton. The application documents can be reviewed at the following link: McDonald's Site Plan.

Any comments you consider relevant to this request would be appreciated. Please reply by **November 10, 2020**, so that we may give full consideration to your recommendation. Any response not received before or on this date may be deemed to be a favorable response to the Planning & Building Department.

The Public Hearings for this matter are scheduled for:

Planning Commission: Thursday, November 12, 2020 at 6:00 PM; and
City Council: Tuesday, December 1, 2020 at 7:00 PM

Your time in this matter is greatly appreciated!

Maria Lancto
Planner I
130 S. McKinley Ave.
Fort Lupton, CO 80621
Office: 303.857.6694
Extension: 6107
Cell: 303.718.0172

COME PAINT YOUR FUTURE WITH US

Form PLAN005

CITY OF Fort Lupton EST 1836

COME PAINT YOUR FUTURE WITH US

FROM: Maria Lancto
DATE: October 20, 2020
PROJECT: McDonalds Site Plan
Project No. LUP2020-0032; Plan No. SPR2020-0013

INTERNAL DISTRIBUTION:

- ☐ Buildings/Grounds Manager
- ☑ City Attorney
- ☑ Police Chief
- ☐ City Administrator
- ☐ City Clerk
- ☑ Public Works Director
- ☑ Building Inspector
- ☐ Recreation Manager
- ☐ Golf Course Manager
- ☑ OMI
- ☑ GIS Specialist
- ☐ Finance Director

OUTSIDE DISTRIBUTION:

- ☑ Fort Lupton Fire Protection District
- ☑ CDOT
- ☐ Colorado DRMS
- ☐ Colorado Parks and Wildlife
- ☐ Division of Water Resources
- ☐ Army Corp of Engineers
- ☑ United Power
- ☑ Comcast
- ☑ CenturyLink
- ☑ Xcel Energy
- ☑ Postmaster
- ☐ Weld County Department of Planning
- ☑ Weld County Dept. of Public Health & Env.
- ☐ Weld County Public Works
- ☐ Weld County School District RE-8
- ☑ NCWCD
- ☐ Fulton Ditch Company
- ☐ Platteville Ditch Company
- ☐ City of Brighton
- ☐ Town of Frederick
- ☐ Town of Platteville
- ☐ City of Dacono
- ☐ Town of Firestone
- ☐ Other:

If you have comments, please respond by: November 10, 2020

Comments may be sent via mail, faxed to 303.857.0351 or emailed to planningdept@fortluptonco.gov. A non-response to this referral may be considered a favorable response.

COMMENTS:

construction drawings shall be submitted to Weld County Department of Health and Environment for plan review in accordance with retail food liscensing.

Right of Way & Permits

1123 West 3rd Avenue
Denver, Colorado 80223
Telephone: **303.571.3306**
Facsimile: 303. 571. 3284
donna.l.george@xcelenergy.com

<<DATE>>

City and County of Denver Development Services
201 West Colfax, Dept. 205
Denver, Colorado 80202

Attn:

Re: McDonald's, Case #s LUP2020-0032 and SPR2020-0013

Public Service Company of Colorado's (PSCo) Right of Way & Permits Referral Desk has reviewed the site plan for **McDonald's**. Please be aware PSCo owns and operates existing natural gas service facilities within the proposed project area. The property owner/ developer/contractor must complete the application process for any new natural gas service, or *modification* to existing facilities via xcelenergy.com/InstallAndConnect. It is then the responsibility of the developer to contact the Designer assigned to the project for approval of design details. Additional easements may need to be acquired by separate document for new facilities.

As a safety precaution, PSCo would like to remind the developer to call the Utility Notification Center by dialing 811 for utility locates prior to construction.

Donna George
Right of Way and Permits
Public Service Company of Colorado dba Xcel Energy
Office: 303-571-3306 – Email: donna.l.george@xcelenergy.com

CITY OF
Fort Lupton
EST 1836

Public Works

130 S. McKinley Avenue
Fort Lupton, CO 80621
Phone: 303.857.6694
Fax: 303.857.0351
www.fortluptonco.gov

MEMO

To: Todd Hodges
Alyssa Knutson
Robert Palmer

From: Roy Vestal

Date: November 6, 2020

Subject: McDonald's Site Plan (LUP2020-0032 & SPR2020-0013)
Public Works Review

Public Works has reviewed the submitted documents for the above referenced development project with the following comments for inclusion with the Final Site Plan submittal. Be advised, review of construction drawings is for general compliance with city standards. There may be additional concerns as this design develops.

1. **Site Plan**
   a. Annotate easement documentation for the northern access drive once recorded.

2. **Drainage**
   a. Final Drainage Study need to be revised.
      i. Paragraph 4.2 states "runoff reduction is being achieved by increasing the pervious areas". The table shows an increase of impervious area. You need to back up the reduced flow to CDOT ROW with existing calculations of % Impervious are, TOC and resultant flows in the existing conditions.
      ii. The existing and proposed drainage plans summary table is the same.
      iii. CDOT has responded to previous site development plans on this site indicating no additional flows will be sent to their storm sewer.
   b. FYI: it is the South Platte River.
   c. The proposed sidewalk chases to S Grand are not a preferred drainage solution. They can be eliminated with revised grading that will help with the CDOT discharge issue will assist in eliminating the chases.

3. **Landscape / Grading** - *Chapter 2 Design Standards*

a. A SWMP and Stormwater Discharge permit must be acquired from CDPH&E. Please submit proof of prior to receiving construction permits. Please provide copy of permit from CDPH&E.
b. Review proposed landscape plans at street locations and evaluate for sight triangle conflicts. The large trees at the SW and SE corners may be problematic.

4. Utilities

a. Water - Chapter 3

i. Water service size is 1- ½". Existing services include 2 ¾" commercial and 1 ¾" residential taps.
   1. CBT water shares required for the new tap is 4.4 shares
   2. Existing tap water shares
      a. 2 ¾" Comm = 2.6 (1.3 share per tap)
      b. 1 ¾" Residential = 1.0 share
      c. Total shares require - 0.8 shares
      d. Current in lieu cost at $60,000/sh = $48,000
ii. Existing water service lines will be required to be abandoned IAW City Standards.
iii. The existing water line in 1st Street should be a 10" line. Material is unknown.
iv. 4" fire line will need to be a wet tap connection.
v. General notes on Sheet 6 - We would prefer you reference City of Fort Lupton and not Longmont.
vi. Backflow prevention assemblies (if required) shall be tested by a Certified Cross-Connection Control Technician upon installation and tested at least annually, thereafter.
vii. Plumbing plans should identify back flow prevention devices and will require inspection by a certified backflow prevention technician and registration on the City's Aqua Flow web site. The backflow device will require annual inspections and entry to the City's Cross Connection Inspection Control system (in accordance with Section 13-85 of the City Municipal Code).

b. Sanitary Sewer - Chapter 4

i. CD's show a 6" sanitary service.
ii. Existing sanitary service lines will be required to be abandoned IAW City Standards.
iii. Sanitary service may not run in the street as designed.

c. Roadway - Chapter 6

i. Do not use R10 and R11 detail. See attached R9 revised pedestrian ramp. It requires revision to accommodate wider sidewalk and larger curb radius.

ii. Do not place crossing ped plate as shown at corner of 1st and Grand. Crossing for Grand should direct west not diagonally out.
iii. Label curb radius.
iv. Hatching along the streets is confusing. I think the landscape is overlapping the concrete hatch.
v. Alley drive will require a ramp up to the existing sidewalk.

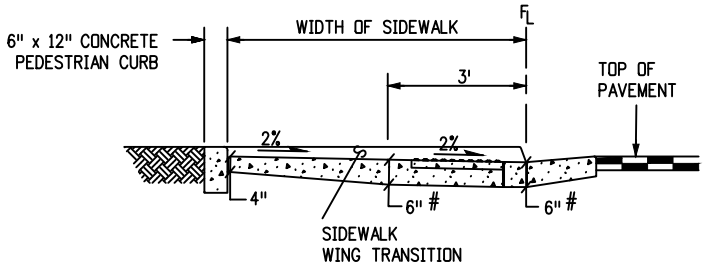
d. Traffic Control - Chapter 8

i. The Traffic Letter as submitted is acceptable.

5. Final Construction Drawings should include City Standard Notes.

a. A Public Works Permit will be required for construction of the street improvements and tapping into existing utility mains.

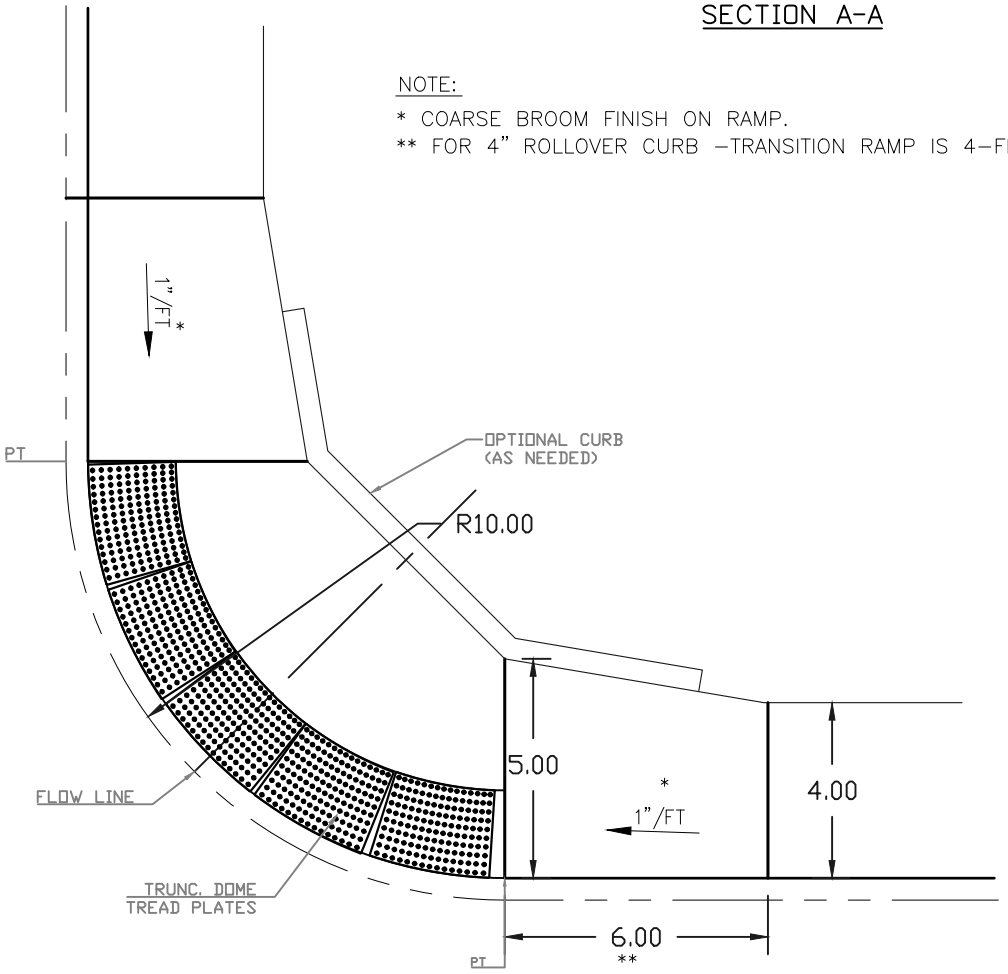
There may be additional concerns as this design develops.



SECTION A-A

NOTE:

* COARSE BROOM FINISH ON RAMP.
** FOR 4" ROLLOVER CURB –TRANSITION RAMP IS 4–FEET.



CURB RAMP DETAIL

SCALE: 1"=4'

CITY OF Fort Lupton EST 1836 COME PAINT YOUR FUTURE WITH US	DESIGN STANDARDS	STANDARD DRAWING
	CURB RAMP	R9
		DATE: 2/28/17

FORT LUPTON STANDARD CONSTRUCTION NOTES

1. CONTRACTOR SHALL CONFORM TO ALL FEDERAL, STATE AND LOCAL HEALTH AND SAFETY RULES AND REGULATIONS.

2. THE CONTRACTOR IS RESPONSIBLE FOR ANY DEBRIS DROPPED INTO PUBLIC MANHOLES AND OTHER PUBLIC STRUCTURES. THE CONTRACTOR SHALL IMMEDIATELY REMOVE ALL DEBRIS IN AFFECTED STRUCTURES. IF IT IS DETERMINED THAT DEBRIS CAUSED A BACKUP, THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR DAMAGES.

3. THE CONTRACTOR SHALL PROVIDE ACCESS TO AND FROM ALL PRIVATE PROPERTY ADJACENT TO THE WORK THROUGHOUT THE PERIOD OF CONSTRUCTION.

4. "AS-BUILT" ELECTRONIC SUBMITTAL OR PRINTS ARE TO BE SUBMITTED TO CITY ENGINEER AT COMPLETION OF THE PROJECT. "AS-BUILT" DRAWINGS ARE TO BE REPRODUCIBLE COPIES (OR ORIGINALS) OF THE APPROVED CONSTRUCTION DRAWINGS. ANY FIELD CHANGES ARE TO BE NOTED. THE DRAWINGS WILL STATE "AS-BUILT" IN LARGE BLOCK LETTERS. THE "AS-BUILT" ELECTRONIC SUBMITTAL OR PRINTS ARE TO BE SIGNED, DATED AND STAMPED BY A COLORADO REGISTERED PROFESSIONAL ENGINEER.

5. NO WATER VALVE OR OTHER CONTROL DEVICE ON THE EXISTING PUBLIC SYSTEM WILL BE OPERATED FOR ANY PURPOSE BY ANYONE OTHER THAN THE CITY WITHOUT PRIOR WRITTEN AUTHORIZATION.

6. TO SCHEDULE AN INSPECTION DURING REGULAR BUSINESS HOURS, CONTACT PUBLIC WORKS DEPARTMENT AT 303-857-6694. FOR AFTER HOURS EMERGENCIES CALL POLICE DISPATCH AT 720-652-4222.

7. THE CONTRACTOR SHALL CONTACT ALL APPROPRIATE UTILITY COMPANIES AND THE CITY OF FORT LUPTON 48 HOURS PRIOR TO THE BEGINNING OF ANY CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ANY EXISTING UTILITY (INCLUDING DEPTHS) WHICH MAY CONFLICT WITH THE PROPOSED CONSTRUCTION. THE CONTRACTOR SHALL PROTECT ALL EXISTING UTILITIES FROM DAMAGE. DAMAGED UTILITIES SHALL BE REPAIRED BY THE CONTRACTOR, AT HIS EXPENSE.

8. PERMITTEE SHALL NOTIFY THE CITY INSPECTOR:

    - TWO WORKING DAYS BEFORE COMMENCING WORK ON R.O.W.;
    - WHEN SUSPENDING OPERATIONS FOR 5 OR MORE WORKING DAYS;
    - TWO WORKING DAYS BEFORE RESUMING SUSPENDED WORK;
    - UPON COMPLETION OF WORK.

9. CONTRACTOR SHALL MAINTAIN AT LEAST ONE COPY OF THE APPROVED PLANS, SPECIFICATIONS AND STANDARDS ON THE JOB SITE AT ALL TIMES.

10. CONTRACTOR IS RESPONSIBLE FOR BEING AWARE OF, NOTIFYING, COORDINATING AND SCHEDULING ALL INSPECTIONS REQUIRED FOR FINAL APPROVALS AND PROJECT ACCEPTANCE.

11. ALL WORK, INCLUDING CORRECTION WORK, IS SUBJECT TO NOTIFICATION AND INSPECTION REQUIREMENTS.

12. CONTRACTOR IS RESPONSIBLE FOR PROVIDING AND MAINTAINING ADEQUATE TRAFFIC CONTROL THROUGHOUT THE PROJECT, INCLUDING PROPER TRAFFIC CONTROL DEVICES AND/OR PERSONNEL AS REQUIRED. A TRAFFIC CONTROL PLAN (TCP) IS SUBJECT TO CITY OF FORT LUPTON AND/OR CDOT APPROVAL PRIOR TO COMMENCING WORK ON ROADWAY ROW. A COPY OF APPROVED TCPS MUST BE AVAILABLE ON SITE DURING WORK. TRAFFIC CONTROL TO BE IN ACCORDANCE WITH M.U.T.C.D., SECTION VI.

13. ALL WORK WILL BE PROPERLY BACKFILLED PRIOR TO THE END OF WORKDAY, NO OPEN HOLES ARE ALLOWED OVERNIGHT. ALL WORK IS TO BE IN ACCORDANCE WITH PERMIT REQUIREMENTS AND APPLICABLE STANDARDS.

14. WHEN AN EXISTING ASPHALT STREET IS CUT, THE STREET MUST BE RESTORED TO A CONDITION EQUAL TO OR BETTER THAN ITS ORIGINAL CONDITION. THE EXISTING STREET CONDITION SHALL BE DOCUMENTED BEFORE ANY CUTS ARE MADE, PATCHING SHALL BE DONE IN CONFORMANCE WITH THE PROJECT STANDARDS. THE FINISHED PATCH SHALL BLEND SMOOTHLY INTO THE EXISTING SURFACE. ALL LARGE PATCHES SHALL BE PAVED WITH AN ASPHALT LAY-DOWN MACHINE.

15. PATCH ASPHALT PAVING AS NECESSARY TO JOIN NEW GUTTERS WITH THE EXISTING PAVEMENT. REMOVAL AND REPLACEMENT OF ASPHALT SHALL BE PER THE LATEST CITY OF FORT LUPTON STANDARDS AND DETAILS.

16. WHERE CONSISTENT WITH SAFETY AND SPACE CONSIDERATIONS, EXCAVATED MATERIAL IS TO BE PLACED ON THE UPHILL SIDE OF TRENCHES.

17. PERMITTEE SHOULD REMOVE MATERIALS AND EQUIPMENT FROM THE ROADWAY R.O.W. AT THE CLOSE OF DAILY OPERATIONS. THE TCP MUST INCLUDE PROTECTIVE MEASURES WHERE MATERIALS AND EQUIPMENT MAY BE STORED ON R.O.W, BUT ENSURE FIVE FEET OF PEDESTRIAN CLEARANCE ON SIDEWALKS.

18. NO WORK SHALL BE PERMITTED AT NIGHT OR ON SATURDAYS, SUNDAYS, AND HOLIDAYS WITHOUT PRIOR AUTHORIZATIONS OR UNLESS OTHERWISE SPECIFIED IN THIS PERMIT. CITY MAY RESTRICT WORK ON R.O.W. DURING ADVERSE WEATHER CONDITIONS OR DURING PERIODS OF HIGH TRAFFIC VOLUME.

19. PRIOR TO FINAL ACCEPTANCE, ALL DISTURBED PORTIONS OF ROADWAY RIGHT OF WAY SHALL BE CLEANED UP AND RESTORED TO THEIR ORIGINAL CONDITION, SUBJECT TO CITY APPROVAL.

20. SEEDING, SODDING, AND PLANTING SHALL BE AS SPECIFIED OR OTHERWISE APPROVED BY CITY. CONSTRUCTION, MAINTENANCE, AND WATERING REQUIREMENTS SHALL CONFORM WITH THE CITY STANDARD SPECIFICATIONS. WHERE LANDSCAPE RESTORATION MUST BE DELAYED DUE TO SEASONAL REQUIREMENTS, SUCH WORK MAY BE AUTHORIZED BY A SEPARATE PERMIT.

GRADING AND EROSION CONTROL NOTES

1. ALL SITE GRADING (EXCAVATION, EMBANKMENT, AND COMPACTION) SHALL CONFORM TO THE RECOMMENDATIONS OF THE LATEST SOILS INVESTIGATION FOR THIS PROPERTY AND SHALL FURTHER BE IN CONFORMANCE WITH THE CITY OF FORT LUPTON'S "SPECIFICATIONS FOR CONSTRUCTION OF PUBLIC IMPROVEMENTS," LATEST EDITION.

2. NATURAL VEGETATION SHALL BE RETAINED AND PROTECTED WHEREVER POSSIBLE. EXPOSURE OF SOIL TO EROSION BY REMOVAL OR DISTURBANCE OF VEGETATION SHALL BE LIMITED TO THE AREA REQUIRED FOR IMMEDIATE CONSTRUCTION

OPERATION AND FOR THE SHORTEST PRACTICAL PERIOD OF TIME.

3. TOPSOIL SHALL BE STOCKPILED TO THE EXTENT PRACTICABLE ON THE SITE FOR USE ON AREAS TO BE REVEGETATED. ANY AND ALL STOCKPILES SHALL BE LOCATED AND PROTECTED FROM EROSIVE ELEMENTS.

4. TEMPORARY VEGETATION SHALL BE INSTALLED ON ALL DISTURBED AREAS WHERE PERMANENT SURFACE IMPROVEMENTS ARE NOT SCHEDULED FOR INSTALLATION WITHIN THREE MONTHS. VEGETATION SHALL BE A VIGOROUS, DROUGHT TOLERANT, NATIVE SPECIES MIX. (REFER TO SECTION 2.26.00 OF CITY CONSTRUCTION SPECIFICATIONS FOR SEEDING MIX.) PROJECT SCHEDULING SHOULD TAKE ADVANTAGE OF SPRING OR FALL PLANTING SEASONS FOR NATURAL GERMINATION, BUT SEEDED AREAS SHALL BE IRRIGATED, IF CONDITIONS SO MERIT.

5. AT ALL TIMES, THE PROPERTY SHALL BE MAINTAINED AND/OR WATERED TO PREVENT WIND CAUSED EROSION. EARTHWORK OPERATIONS SHALL BE DISCONTINUED WHEN FUGITIVE DUST SIGNIFICANTLY IMPACTS ADJACENT PROPERTY. IF EARTHWORK IS COMPLETE OR DISCONTINUED AND DUST FROM THE SITE CONTINUES TO CREATE PROBLEMS, THE OWNER/DEVELOPER SHALL IMMEDIATELY INSTITUTE MITIGATIVE MEASURES AND SHALL CORRECT DAMAGE TO ADJACENT PROPERTY.

6. TEMPORARY CUT/FILL SLOPES SHALL NOT EXCEED A STEEPNESS OF 2:1 (2H:1V). PERMANENT SLOPES SHALL NOT EXCEED 4:1 (4H:1V) IN AREAS TO BE SEEDED OR SODDED.

7. THE OWNER/DEVELOPER SHALL PROVIDE ANY ADDITIONAL DUST ABATEMENT AND EROSION CONTROL MEASURES DEEMED NECESSARY BY THE CITY, SHOULD CONDITIONS MERIT THEM.

8. TEMPORARY FENCES SHALL BE INSTALLED ALONG ALL BOUNDARIES OF THE CONSTRUCTION LIMITS OR PROPERTY LINES AS SHOWN ON THE APPROVED EROSION CONTROL PLAN, TO PREVENT GRADING ON PROPERTY NOT OWNED BY THE DEVELOPER. IN ADDITION, THE CITY MAY REQUIRE ADDITIONAL TEMPORARY FENCES IF FIELD CONDITIONS SO MERIT THEM.

9. IMPERVIOUS SURFACES WHICH ARE ADJACENT TO OR CONTAINED WITHIN CONSTRUCTION SITES WILL BE SWEPT ON A DAILY BASIS OR AS NEEDED DURING THE DAY WHEN SEDIMENT AND OTHER MATERIALS ARE TRACKED OR DISCHARGED ON TO

THEM. EITHER SWEEPING BY HAND OR USE OF STREET SWEEPERS IS ACCEPTABLE. STREET SWEEPERS USING WATER WHILE SWEEPING IS PREFERRED IN ORDER TO MINIMIZE DUST. FLUSHING OFF PAVED SURFACES WITH WATER IS PROHIBITED.

10. THE CONTRACTOR SHALL PROTECT ALL STORM SEWER FACILITIES ADJACENT TO ANY LOCATION WHERE PAVEMENT CUTTING OPERATIONS INVOLVING WHEEL CUTTING, SAW CUTTING, OR ABRASIVE WATER JET CUTTING ARE TO TAKE PLACE. THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL WASTE PRODUCTS GENERATED BY SAID CUTTING OPERATIONS ON A DAILY BASIS OR AS NEEDED THROUGHOUT THE WORK DAY. THE DISCHARGE OF ANY WATER CONTAMINATED BY WASTE PRODUCTS FROM CUTTING OPERATIONS TO THE STORM SEWER SYSTEM IS PROHIBITED.

11. THE DISCHARGE OF WATER CONTAINING WASTE CEMENT TO ADJACENT WATERWAYS, WETLANDS, OTHER PROPERTIES, ETC., IS PROHIBITED. THE CLEANING OF CEMENT TRUCK DELIVERY CHUTES, EXCEPT IN DESIGNATED CONCRETE WASHOUT AREAS, IS PROHIBITED AT THE JOB SITE.

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Maria Lancto

From: Hice-Idler - CDOT, Gloria <gloria.hice-idler@state.co.us>
Sent: Wednesday, November 11, 2020 8:31 AM
To: Maria Lancto; Todd Hodges; Alyssa Knutson
Cc: Timothy Bilobran - CDOT; Allyson Mattson - CDOT
Subject: McDonalds/City of Fort Lupton/SH 52

Follow Up Flag: Follow up
Flag Status: Flagged

The applicant will need to obtain access permit(s) from CDOT for the removal/relocation of the access.

Contact Tim Bilobran at (970) 350-2163 or Ally Mattson at (970) 350-2163.

Gloria Hice-Idler
Rocksol Consulting

(970) 381-8629

10601 W. 10th Street, Greeley, CO 80634
gloria.hice-idler@state.co.us | www.codot.gov | www.cotrip.org

PROOF OF PUBLICATION
FORT LUPTON PRESS
WELD COUNTY
STATE OF COLORADO

I, Steve Smith do solemnly swear that I am the Publisher of the **Fort Lupton Press** the same is a weekly newspaper printed and published in the County of Weld, State of Colorado, and has a general circulation therein; that said newspaper has been published continuously and uninterruptedly in said county of Weld for a period of more than fifty-two consecutive weeks prior to the first publication of the annexed legal notice or advertisement; that said newspaper has been admitted to the United States mails as second-class matter under the provisions of the act of March 3, 1879, or any amendments thereof, and that said newspaper is a weekly newspaper duly qualified for publishing legal notices and advertisements within the meaning of the laws of the State of Colorado. That the annexed legal notice or advertisement was published in the regular and entire issue of every number of said weekly newspaper for the period of **ONE consecutive insertion(s)** and that the first publication of said notice was in the issue of newspaper, dated **28th day of October, 2020** the last on the **28th day of October, 2020.**

Stephen D. Smith

Publisher, Subscribed and sworn before me,
this **28th day of October, 2020**

Bobi Lopez

Notary Public.

Bobi Lopez
Notary Public
State of Colorado
Notary ID 20024002511
My Commission Expires
March 26, 2023

CITY OF FORT LUPTON
NOTICE OF PUBLIC HEARING

Notice is hereby given that the City of Fort Lupton is in receipt of an application for a site plan known as the McDonald's Site Plan located north and adjacent to 1st Street and east and adjacent to Grand Avenue in the 'C-1' General Commercial Zone District within the City of Fort Lupton, pursuant to the City of Fort Lupton Municipal Code Notice Requirements.

The public hearings are to be held before the Planning Commission on November 12, 2020, at 6:00 P.M., and before the City Council on December 1, 2020, at 7:00 P.M. or as soon as possible thereafter.

The public hearings shall be held at the Fort Lupton City Hall, 130 S. McKinley Avenue in Fort Lupton, Colorado. In the event that there are City Hall closures due to COVID-19 at the time of the hearings, the public hearings will be held remotely, accessible to the public by phone and internet. Information on how to attend the hearings will be provided in the agenda as posted on the City's website, www.fortluptonco.gov.
Further information is available through the City Planning and Building Department at (303) 857-6694.

ALL INTERESTED PERSONS MAY ATTEND

LEGAL DESCRIPTION

FOR 105 1ST STREET:
THAT PART OF THE WEST HALF (W ½) OF THE NORTHEAST QUARTER (NE ¼) OF SECTION 6, TOWNSHIP 1 NORTH, RANGE 66 WEST OF THE 6TH P.M., WELD COUNTY, COLORADO, DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT 745.5 FEET WEST FROM THE SOUTHEAST CORNER OF THE W ½ OF THE NE ¼ OF SAID SECTION 6;
THENCE RUNNING NORTH 409 FEET;
THENCE WEST 106.5 FEET;
THENCE SOUTH 409 FEET;
THENCE EAST 106.5 FEET TO THE PLACE OF BEGINNING,

EXCEPT THE EAST 50 FEET AND THE NORTH 204.5 FEET THEREOF, AND EXCEPT ANY PORTION THEREOF LYING WITHIN ANY PUBLIC ROAD,

COUNTY OF WELD,
STATE OF COLORADO.

FOR 111 1ST STREET:
THAT PART OF THE SW1/4 OF THE NE1/4 OF THE SECTION 6, TOWNSHIP 1 NORTH, RANGE 66 WEST OF THE 6TH P.M., COUNTY OF WELD, STATE OF COLORADO, DESCRIBED AS:

BEGINNING AT THE SOUTHEAST CORNER OF SAID SW1/4 OF THE NE 1/4;
THENCE SOUTH 90 DEGREES 00 MINUTES 00 SECONDS WEST ON AN ASSUMED BEARING ALONG THE SOUTH LINE OF SAID SW1/4 OF THE NE1/4, A DISTANCE OF 661.25 FEET TO THE TRUE POINT OF BEGINNING;
THENCE NORTH 00 DEGREES 00 MINUTES 00 SECONDS EAST A DISTANCE OF 204.50 FEET;
THENCE SOUTH 90 DEGREES 00 MINUTES 00 SECONDS WEST A DISTANCE OF 134.25 FEET;
THENCE SOUTH 00 DEGREES 00 MINUTES 00 SECONDS WEST A DISTANCE OF 204.50 FEET TO A POINT ON THE SOUTH LINE OF SAID SW1/4 OF THE NE1/4;
THENCE NORTH 90 DEGREES 00 MINUTES 00 SECONDS EAST ALONG SAID SOUTH LINE A DISTANCE OF 134.25 FEET TO THE TRUE POINT OF BEGINNING,

EXCEPT ANY PORTION THEREOF CONVEYED TO THE STATE HIGHWAY COMMISSION OF COLORADO IN INSTRUMENT RECORDED NOVEMBER 26, 1954 IN BOOK 1405 AT PAGE 338,
AND EXCEPT ANY PORTION THEREOF LYING WITHIN ANY PUBLIC ROAD,

COUNTY OF WELD,
STATE OF COLORADO.

Published in the Fort Lupton Press
October 28, 2020
000ZAI6

CITY OF
Fort Lupton
EST 1836
COME PAINT YOUR FUTURE WITH US

Planning & Building

130 S. McKinley Avenue
Fort Lupton, CO 80621
Phone: 303.857.6694
Fax: 303.857.0351
www.fortluptonco.gov

Sign Posting Affidavit
McDonald's Site Plan & Variance
LUP2020-0032; SPR2020-0013 & VAR2020-0003

1st Street / Highway 52

Grand Avenue

I, _____ hereby acknowledge that the aforementioned property was posted in accordance with City Codes. Said public hearing notice was posted on this ____ day of _____, 2020.

_____
Signature of Owner or Owner's Representative
The foregoing instrument was acknowledged before me by _____, this _____ day of _____, 2020. Witness my hand and seal.

My commission expires _____.

_____
Notary Public

(**SEAL**)

***Signs were posted at least 15 days prior to the Planning Commission Public Hearing. Applicant is working to submit a signed sign posting affidavit.

CITY OF
Fort Lupton
EST 1836
COME PAINT YOUR FUTURE WITH US

CERTIFICATE OF MAILING

I, the undersigned, hereby certify that on the 27st day of October, 2020, a true and correct copy of the foregoing Notice of Public Meeting and Site Plan Map for the McDonald's Site Plan was sent via U.S. Mail, postage pre-paid, to the following addresses:

PEERLESS TYRE CO
5000 KINGSTON ST
DENVER, CO 80239

WEND-ROCKIES INC
15846 DELTA CT
BRIGHTON, CO 80603

COLUMBIA REALTY INC
PO BOX 271054
LITTLETON, CO 80127

HOUSING AUTHORITY OF TOWN OF FT LUPTON
400 2ND ST
FORT LUPTON, CO 80621

LAM FRANION CONG
501 PLUM CREEK PKWY
LEXINGTON, NE 68850

LUKAS FAMILY LMITED PARTNERSHIP
6550 GUNPARK DR
BOULDER, CO 80301

MARTINEZ DAVID A
144 2ND ST
FORT LUPTON, CO 80621

GARCIA SALVADOR
C/O TAQUERIA LOS CAZOS II
123 1ST ST
FORT LUPTON, CO 80621

NORTH RANGE BEHAVIORAL HEALTH
1300 N 17TH AVE
GREELEY, CO 80631

WELLS PROPERTIES LLC
8423 E 161ST AVE
BRIGHTON, CO 80602

Maria Lanata

City Official

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CITY OF FORT LUPTON
NOTICE OF PUBLIC HEARING

Notice is hereby given that the City of Fort Lupton is in receipt of an application for a site plan known as the McDonald's Site Plan located north and adjacent to 1st Street and east and adjacent to Grand Avenue in the 'C-1' General Commercial Zone District within the City of Fort Lupton, pursuant to the City of Fort Lupton Municipal Code Notice Requirements.

The public hearings are to be held before the Planning Commission on November 12, 2020, at 6:00 P.M., and before the City Council on December 1, 2020, at 7:00 P.M. or as soon as possible thereafter.

The public hearings shall be held at the Fort Lupton City Hall, 130 S. McKinley Avenue in Fort Lupton, Colorado. In the event that there are City Hall closures due to COVID-19 at the time of the hearings, the public hearings will be held remotely, accessible to the public by phone and internet. Information on how to attend the hearings will be provided in the agenda as posted on the City's website, www.fortluptonco.gov.

Further information is available through the City Planning and Building Department at (303) 857-6694.

ADDITIONAL INFORMATION AND DOCUMENTS ON THIS APPLICATION CAN BE FOUND AT BIT.LY/FLDEVELOPMENT AND SCROLLING DOWN TO THE ROW TITLED: MCDONALDS SITE PLAN.

ALL INTERESTED PERSONS MAY ATTEND

LEGAL DESCRIPTION

FOR 105 1ST STREET:
THAT PART OF THE WEST HALF (W ½) OF THE NORTHEAST QUARTER (NE ¼) OF SECTION 6, TOWNSHIP 1 NORTH, RANGE 66 WEST OF THE 6TH P.M., WELD COUNTY, COLORADO, DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT 745.5 FEET WEST FROM THE SOUTHEAST CORNER OF THE W ½ OF THE NE ¼ OF SAID SECTION 6;
THENCE RUNNING NORTH 409 FEET;
THENCE WEST 106.5 FEET;
THENCE SOUTH 409 FEET;
THENCE EAST 106.5 FEET TO THE PLACE OF BEGINNING,

EXCEPT THE EAST 50 FEET AND THE NORTH 204.5 FEET THEREOF,
AND EXCEPT ANY PORTION THEREOF LYING WITHIN ANY PUBLIC ROAD,

COUNTY OF WELD,
STATE OF COLORADO.

FOR 111 1ST STREET:
THAT PART OF THE SW1/4 OF THE NE1/4 OF THE SECTION 6, TOWNSHIP 1 NORTH, RANGE 66 WEST OF THE 6TH P.M., COUNTY OF WELD, STATE OF COLORADO, DESCRIBED AS:

BEGINNING AT THE SOUTHEAST CORNER OF SAID SW1/4 OF THE NE 1/4;
THENCE SOUTH 90 DEGREES 00 MINUTES 00 SECONDS WEST ON AN ASSUMED BEARING ALONG THE SOUTH LINE OF SAID SW1/4 OF THE NE1/4, A DISTANCE OF 661.25 FEET TO THE TRUE POINT OF BEGINNING;
THENCE NORTH 00 DEGREES 00 MINUTES 00 SECONDS EAST A DISTANCE OF 204.50 FEET;
THENCE SOUTH 90 DEGREES 00 MINUTES 00 SECONDS WEST A DISTANCE OF 134.25 FEET;
THENCE SOUTH 00 DEGREES 00 MINUTES 00 SECONDS WEST A DISTANCE OF 204.50 FEET TO A POINT ON THE SOUTH LINE OF SAID SW1/4 OF THE NE1/4;
THENCE NORTH 90 DEGREES 00 MINUTES 00 SECONDS EAST ALONG SAID SOUTH LINE A DISTANCE OF 134.25 FEET TO THE TRUE POINT OF BEGINNING,

EXCEPT ANY PORTION THEREOF CONVEYED TO THE STATE HIGHWAY COMMISSION OF COLORADO IN INSTRUMENT RECORDED
NOVEMBER 26, 1954 IN BOOK 1405 AT PAGE 338,
AND EXCEPT ANY PORTION THEREOF LYING WITHIN ANY PUBLIC ROAD,

COUNTY OF WELD,
STATE OF COLORADO.

McDONALD'S RESTAURANT
CONSTRUCTION DRAWINGS

SITUATED IN THE NE ¼ OF SECTION 6, TOWNSHIP 1N, RANGE 66 W, OF THE 6TH PRINCIPAL MERIDIAN
CITY OF FORT LUPTON, COUNTY OF WELD, STATE OF COLORADO
LOCATED AT: 105 State Highway 52 (FIRST STREET)
SITE CONTAINS 0.76 ACRES (33,286S.F.)

LEGAL DESCRIPTION:

105 1ST STREET - TITLE COMMITMENT NO. 100-N0021928-010-TO2

THAT PART OF THE WEST HALF (W ½) OF THE NORTHEAST QUARTER (NE ¼) OF SECTION 6, TOWNSHIP 1 NORTH, RANGE 66 WEST OF THE 6TH P.M., WELD COUNTY, COLORADO, DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT 745.5 FEET WEST FROM THE SOUTHEAST CORNER OF THE W ½ OF THE NE1/4 OF SAID SECTION 6;
THENCE RUNNING NORTH 409 FEET;
THENCE WEST 108.5 FEET;
THENCE SOUTH 409 FEET;
THENCE EAST 108.5 FEET TO THE PLACE OF BEGINNING.

EXCEPT THE EAST 50 FEET AND THE NORTH 204.5 FEET THEREOF,
AND EXCEPT ANY PORTION THEREOF LYING WITHIN ANY PUBLIC ROAD.

COUNTY OF WELD,
STATE OF COLORADO.

111 & 115 1ST STREET - TITLE COMMITMENT NO. 100-N0021928-010-TO2

THAT PART OF THE SW1/4 OF THE NE1/4 OF THE SECTION 6, TOWNSHIP 1 NORTH, RANGE 66 WEST OF THE 6TH P.M., COUNTY OF WELD, STATE OF COLORADO, DESCRIBED AS:

BEGINNING AT THE SOUTHEAST CORNER OF SAID SW1/4 OF THE NE1/4;
THENCE SOUTH 90 DEGREES 00 MINUTES 00 SECONDS WEST ON AN ASSUMED BEARING ALONG THE SOUTH LINE OF SAID SW1/4 OF THE NE1/4, A DISTANCE OF 166.25 FEET TO THE TRUE POINT OF BEGINNING;
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AND EXCEPT ANY PORTION THEREOF LYING WITHIN ANY PUBLIC ROAD.

COUNTY OF WELD,
STATE OF COLORADO.

ZONING INFORMATION:
THIS SITE IS CURRENTLY ZONED: C-1 (GENERAL COMMERCIAL) PER THE CITY OF FORT LUPTON.

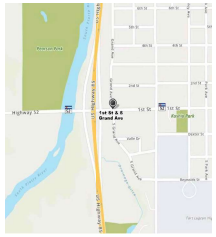
FLOOD PLAIN:
BY GRAPHIC PLOTTING ONLY THE SUBJECT PROPERTY IS SITUATED IN FLOOD ZONE "X" AREA DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN ACCORDING TO FLOOD INSURANCE RATE MAP (FIRM) COMMUNITY PANEL NO. 08123C2116E WITH AN EFFECTIVE DATE OF JANUARY 20, 2016 (PANEL NOT PRINTED.). NO OFFICE CALCULATIONS OR FIELD SURVEYING WAS PERFORMED TO DETERMINE THIS INFORMATION.

BASIS OF BEARINGS:
BEARINGS ARE BASED ON BEARINGS ARE BASED ON THE SOUTH LINE OF THE SW 1/4 OF THE NE 1/4 SECTION 6, TOWNSHIP 1 NORTH RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN BEARING S90°00'00"W BOUNDED BY A 3-1/2" ALUMINUM CAP STAMPED L.S. 28285 DATED 2010 FOUND IN A RANGE BOX AT THE CE 1/16 CORNER OF SAID SECTION 6 AND A 3-1/2" ALUMINUM CAP STAMPED L.S. 28285 DATED 2010 FOUND IN A RANGE BOX AT THE C 1/4 CORNER OF SAID SECTION 6.

BENCHMARK:
BENCHMARK: BENCHMARK: NHS CONTROL STATION "T280"
4.2 MI NORTHERLY ALONG THE UNION PACIFIC RAILROAD FROM ITS JUNCTION WITH INTERSTATE HIGHWAY 76 IN NORTH COMMERCE CITY. CHANGE 84 FEET EAST OF MILEPOST 25 TO 54.1 FT NORTH OF MILEPOST 25
ELEVATION: 4925.96 FEET (NAVD 1988 DATUM).

LIST OF DRAWINGS

1 OF 10	TITLE SHEET
2 OF 10	EXISTING CONDITIONS
3 OF 10	DEMOLITION PLAN
4 OF 10	SITE PLAN
5 OF 10	GRADING PLAN
6 OF 10	UTILITY PLAN
7 OF 10	PHOTOMETRIC PLAN
8 OF 10	LANDSCAPE PLAN
9 OF 10	LANDSCAPE DETAILS
10 OF 10	EROSION CONTROL PLAN
CD1	EROSION CONTROL DETAILS
CD2	EROSION CONTROL DETAILS
CD3	PUBLIC WORKS DETAILS
CD4	PUBLIC WORKS DETAILS
CD5	PUBLIC WORKS DETAILS
CD6	PUBLIC WORKS DETAILS
CD7	CONSTRUCTION DETAILS
CD8	CONSTRUCTION DETAILS
CD9	CONSTRUCTION DETAILS
CD10	CONSTRUCTION DETAILS
CD11	CONSTRUCTION DETAILS
CD12	CONSTRUCTION DETAILS
CD13	CONSTRUCTION DETAILS
CS1	CONSTRUCTION SPECIFICATIONS
CS2	CONSTRUCTION SPECIFICATIONS
CS3	CONSTRUCTION SPECIFICATIONS
CS4	CONSTRUCTION SPECIFICATIONS



VICINITY MAP

AERIAL LOCATION MAP

AERIAL SITE LOCATION MAP

LEGEND

EXISTING

- 5548 — EXISTING INTERIM CONTOUR
- 5550 — EXISTING INDEX CONTOUR
- E — ELECTRICAL LINE
- G — GAS LINE
- SS — SANITARY SEWER LINE
- STS — STORM SEWER LINE
- T — TELEPHONE LINE
- W — WATER LINE
- 00 — CONTOUR LINE
- OHU — OVERHEAD UTILITY LINE
- FENCE LINE
- GUARD RAIL
- 4515.0 — SPOT ELEVATION
- DECIDUOUS TREE / DIAMETER OF TRUNK
- EVERGREEN TREE / DIAMETER OF TRUNK
- SET 5/8"x24" PIN & YELLOW PLASTIC CAP L.S. NO. 38302 UNLESS NOTED OTHERWISE
- ACCESS PLATE
- BOLLARD
- CLEANOUT
- GAS METER
- LIGHT POLE
- MANHOLE
- NUMBER OF PARKING STALLS
- POWER POLE
- SIGN
- CONCRETE
- LANDSCAPING
- (TYP.) TYPICAL
- (XXXX) AS RECORDED
- BK. PG. BOOK PAGE
- REC. NO. RECEPTION NUMBER

PROPOSED

- CIP — CURB INLET PROTECTION
- VTC — VEHICLE TRACKING CONTROL PAD
- SF — SILT FENCE
- TW — TOP OF WALL
- BW — BOTTOM OF WALL
- SITE TRIANGLE
- PARKING LOT LIGHT
- HANDICAP PARKING STALL
- PSG — SPOT GRADE
- SPILL CURB
- CATCH CURB
- WALL
- CLEANOUT
- 5260 — INDEX CONTOUR
- 5261 — INTERIM CONTOUR
- ADA ACCESSABLE ROUTE
- ELEC — ELECTRICAL
- GAS — NATURAL GAS
- SS — SANITARY SEWER
- STORM SEWER
- UgT — UNDERGROUND TELE
- W — WATER LINE

STATISTICAL INFORMATION

ZONING	C1-GENERAL COMMERCIAL
USE	FAST FOOD RESTAURANT WITH DRIVE THRU
SITE AREA	0.766 AC (33,285 S.F.)
BUILDING AREA	3,915 S.F.
BUILDING HEIGHT	TOP OF OF PARAPET: 18'-9½" (ABOVE FINISHED FLOOR) 20'-8" ABOVE LOW POINT, 25' FROM BLDG.
ASPHALT GROUND COVERAGE	21,318 S.F.
CONCRETE SIDEWALK	2,496 S.F.
CONCRETE PAVEMENT GROUND	6,512 S.F.
LANDSCAPING	4,288 SF
PARKING COUNT	REQUIRED: 26 / PROVIDED: 31
HANDICAP PARKING COUNT	2 (8' VAN ACCESSIBLE) SPACE REQUIRED / 2 SPACES PROVIDED
BUILDING SEATS	76-INDOOR SEATS

PROJECT CONTACTS

OWNER/DEVELOPER
MCDONALD'S USA, LLC.
4643 A. ULSTER STREET, SUITE 1300
DENVER, CO. 80237
MR. JOHRI LITMAN
(303) 262-3773

LANDSCAPE ARCHITECT
NATURAL DESIGN SOLUTIONS
CONTACT: JASON OLDHAM
NDSJASONO@GMAIL.COM
1470 MILBROOK COURT
CASTLE ROCK, CO 80109
(970) 420-9555

ARCHITECT
CORE STATES
3401 CENTERLAKE DRIVE, SUITE 430
ONTARIO, CA 91764
ATTN: MR. ROBERT PREECE
(909) 467-8907 | PHONE
(909) 467-8917 | FAX

SITE ENGINEER
STRATEGIC LAND SOLUTIONS, INC.
2595 PONDEROSA ROAD
FRANKTOWN, CO 80116
ROBERT J. PALMER, P.E.
(720) 384-7661

LIGHTING
SECURITY LIGHTING
1085 JOHNSON DRIVE
BUFFALO GROVE, IL 60089

SURVEY
ENGINEERING SERVICE COMPANY
14190 EAST EVANS AVENUE
DENVER, CO 80014
ATTN: MR. CHIP BECKSTROM
(303) 1393 | PHONE

REVIEW AGENCY
CITY OF FORT LUPTON, CO
MR. TODD HODGES
130 S. McKINLEY STREET
FORT LUPTON, CO 80621

NOTES:
1. 31-PARKING SPACES PROVIDED
2. REQUIRED PARKING=8SPACES
3. 100 L.F. CENTERLINE OF PAY WINDOW TO PRIMARY ORDER POINT.

OWNER'S APPROVAL

KNOW ALL MEN BY THESE PRESENTS, THAT_____ BEING THE SOLE OWNER OF THE LAND DESCRIBED HEREIN, AND_____ ALL OF THE MORTGAGEES AND HOLDERS OF LIENS UPON THE PROPERTY, AND EACH AND ALL HEREBY CONSENT TO THIS PLAT AND JOIN THE CONVEYANCE AND DEDICATION OF ALL STREETS, ROADS, ALLEYS, EASEMENTS, PUBLIC WAYS AND PLACES SHOWN HEREON.

IN WITNESS WHEREOF, WE HAVE HEREUNTO SET OUR HANDS AND SEALS THIS_____DAY OF_____2020.

STATE OF)
) SS
COUNTY OF)

THE FOREGOING INSTRUMENT WAS ACKNOWLEDGED BEFORE ME BY_____ON THIS _____DAY OF _____, 2020. WITNESS MY HAND AND SEAL.

MY COMMISSION EXPIRES_____.

NOTARY PUBLIC

CITY ENGINEER'S APPROVAL

APPROVED THIS_____DAY OF_____2020 — CITY ENGINEER

CITY WATER AND SEWER DEPARTMENT APPROVAL

APPROVED THIS_____DAY OF_____2020 — DIRECTOR OF PUBLIC WORKS

CITY ADMINISTRATOR'S APPROVAL

APPROVED THIS_____DAY OF_____2020 — CITY ADMINISTRATOR

PLANNING COMMISSION RECOMMENDATION

RECOMMENDED THIS_____DAY OF_____, 2020, BY RESOLUTION NO._____.

CHAIRPERSON, FORT LUPTON PLANNING COMMISSION

MAYORS CERTIFICATE

THIS IS TO CERTIFY THAT A PLAT OF THE ABOVE-DESCRIBED PROPERTY WAS APPROVED BY NO._____OF THE CITY OF FORT LUPTON PASSED AND ADOPTED ON THE_____DAY OF_____A.D., 2020AND THAT THE MAYOR OF THE CITY OF FORT LUPTON, AS AUTHORIZED BY SAID [ORDINANCE/RESOLUTION] ON BEHALF OF THE CITY OF FORT LUPTON, HEREBY ACKNOWLEDGES AND ADOPTS THE SAID PLAT UPON WHICH THIS CERTIFICATE IS ENDORSED FOR ALL PURPOSES INDICATED THEREON.

MAYOR

ATTEST:

CITY CLERK
(SEAL)

811 Know what's **below.** **Call** before you dig.

NO.	DATE	REVISION DESCRIPTION

CIVIL ENGINEERING CONSULTANT:

Strategic Land Solutions, Inc.
Civil Engineering • Land Planning • Surveying
2595 PONDEROSA ROAD
FRANKTOWN, CO 80116
720.384.7661 Phone
rpalmer@strategicls.net
Robert J. Palmer, PE
President

PREPARED UNDER THE DIRECT SUPERVISION OF:
SEAL: COLORADO REGISTERED ROBERT J. PALMER 36320 PROFESSIONAL ENGINEER
BY Robert J. Palmer, PE
Licensed Professional Engineer (CO PE #36320),
AS PRESIDENT FOR STRATEGIC LAND SOLUTIONS, INC.

THESE PLANS AND SPECIFICATIONS ARE THE PROPERTY OF McDONALD'S CORPORATION AND SHALL NOT BE REPRODUCED WITHOUT THEIR WRITTEN PERMISSION.

OFFICE: ROCKY MOUNTAIN REGION
ADDRESS: 4643 S. ULSTER STREET, SUITE 1300, DENVER, COLORADO 80237

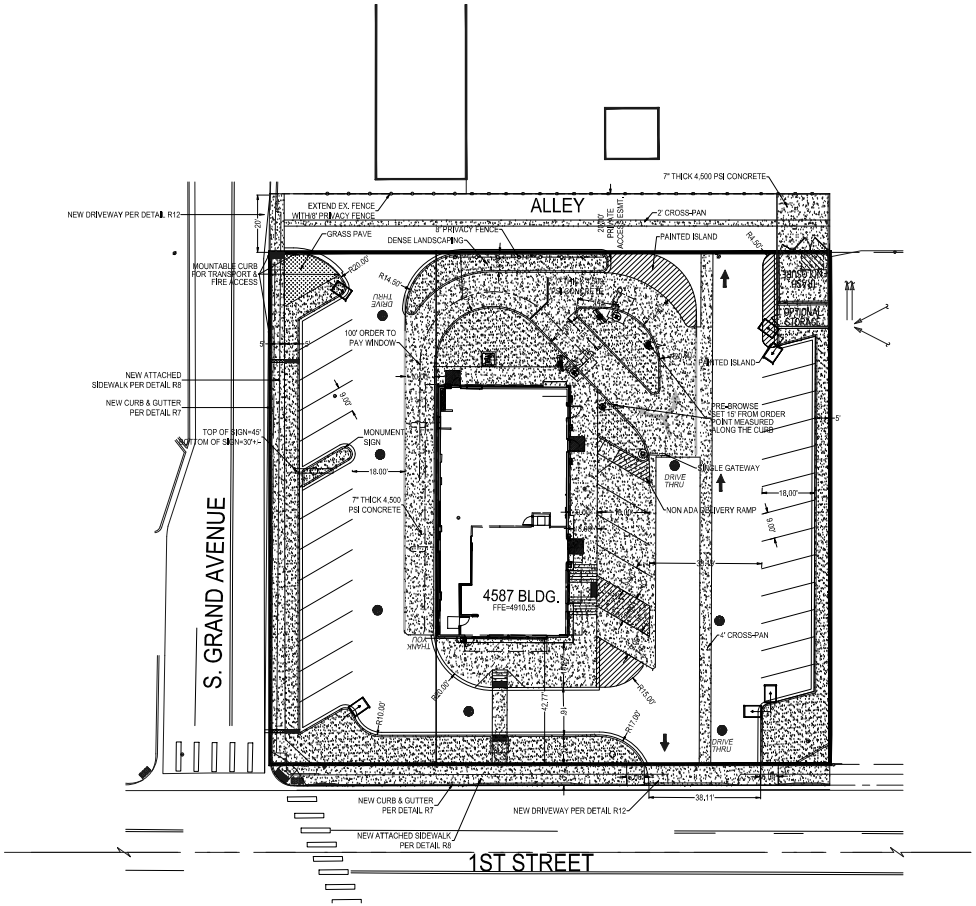
STREET ADDRESS: 1ST STREET & GRAND AVENUE
CITY: FORT LUPTON
STATE: COLORADO
COUNTY: WELD
SITE STORE #: TBD
RESTORE. DWG. NO: -
MAYCOME #: XXXXX

SCALE: AS NOTED	MLO REF: BOWAN
DATE: 09/11/2020	MLO P/CM: PROPHET
DESIGNED BY: RJP	
DRAWN BY: RJP	FILE NAME: CURRENT.DWG
CHECKED BY: RJP	SLS dc 14-001-42

DRAWING TITLE: TITLE SHEET

SHEET NO: 1 OF 10

ADDITIONAL INFORMATION AND DOCUMENTS ON THIS APPLICATION CAN BE FOUND AT BIT.LY/FLDEVELOPMENT AND SCROLLING DOWN TO THE ROW TITLED: MCDONALDS SITE PLAN.



SITE PLAN NOTES

1. ALL DIMENSIONS AND RADII ARE TO THE FACE (FOR 6" REVEAL CURB) OR FLOWLINE (FOR CURB & GUTTER) UNLESS OTHERWISE NOTED.
2. PARKING SPACE STRIPING TO BE WHITE, 4" WIDE, UNLESS OTHERWISE NOTED.
3. LOT LINE AND EXISTING TOPOGRAPHIC INFORMATION TAKEN FROM THE SURVEY PREPARED BY CLC, INC.
4. CONCRETE PAVEMENT, SIDEWALK, CURB & GUTTER TO BE REMOVED (IF APPLICABLE) SHALL BE SAWCUT. CONTRACTOR SHALL REMOVE TO NEXT JOINT IF SAWCUT IS WITHIN 5 FOOT OF A JOINT.
5. THE PARKING AREAS AND ACCESS DRIVES SHALL CONSIST OF A FLEXIBLE COMPOSITE PAVEMENT SECTION OF SIX-INCHES OF ASPHALT OVER FOUR-INCHES OF AGGREGATE BASE COURSE (REFERENCE: SOILS REPORT). AT A MINIMUM, THE PAVEMENT SHALL BE DESIGNED TO SUPPORT THE WEIGHT IMPOSED BY FIRE APPARATUS (40.5 TON, 3 AXLES).
6. THE DRIVE THRU, LOADING AREA, AND TRASH DUMPSTER AREA SHALL CONSIST OF A PORTLAND CEMENT CONCRETE PAVEMENT WITH A MINIMUM THICKNESS OF EIGHT (8) INCHES (UNLESS OTHERWISE NOTED) WITH A 28-DAY COMPRESSIVE STRENGTH OF 4,000 PSI, REINFORCED WITH #3 BARS, 16" O.C.B.W. IN CENTER OF SLAB. USE 3½" CHAIRS AT 48" O.C.B.W.
7. ALL HANDICAP RAMPS TO INCLUDE DETECTABLE WARNING PANELS.
8. ALL-CONSTRUCTION WITHIN PUBLIC-RIGHTS-OF-WAY SHALL BE IN ACCORDANCE WITH THE CURRENT CITY OF LONGMONT STANDARD CONSTRUCTION SPECIFICATIONS.
9. ALL ACCESS AND ACCESSIBLE PARKING IS DESIGNED TO MEET ADA ACCESSIBILITY REQUIREMENTS.

SITE PLAN LEGEND

- SITE PROPERTY LINE (WITH METES & BOUNDS NOTED)
- ADA ACCESSABLE ROUTE
- ADJACENT PARCEL PROPERTY LINE
- EXISTING CURBLINE
- PROPOSED 6" CURBLINE
- PROPOSED 6" CURBLINE W/1' CATCH PAN GUTTER, UNLESS OTHERWISE NOTED
- PROPOSED 6" CURBLINE W/1' SPILL PAN GUTTER, UNLESS OTHERWISE NOTED
- PROPOSED CONCRETE PAVEMENT (WITH THICKNESS NOTED)
- PROPOSED OVERHEAD ROOF/CANOPY LINE
- PROPOSED BUILDING LINE
- CONCRETE RETAINING WALL - GRAY CONCRETE
- CONCRETE - KEYSTONE
- PARKING SPACES

20 0 10 20

PLAN SCALE: 1" = 20'

Know what's **below.** **Call** before you dig.

NO.	DATE	REVISION DESCRIPTION

CIVIL ENGINEERING CONSULTANTS:

Strategic Land Solutions, Inc.
Civil Engineering and Planning Consultants
2595 PIONEER OSA ROAD
FRANKTOWN, CO 80116
720.284.7681 Phone
rpalmer@strategick.net
Robert J. Palmer, PE
President

PREPARED UNDER THE DIRECT SUPERVISION OF:

SEAL: COLORADO REGISTERED ROBERT J. PALMER 36320 PROFESSIONAL ENGINEER

BY Robert J. Palmer, PE
Licensed Professional Engineer (CO PE #36320),
AS PRESIDENT FOR STRATEGIC LAND SOLUTIONS, INC.

McDonald's®

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OFFICE: ROCKY MOUNTAIN REGION
ADDRESS: 4643 S. ULISTER STREET, SUITE 1300, DENVER, COLORADO 80237

STREET ADDRESS: 1ST STREET & GRAND AVENUE
CITY: FORT LUPTON
STATE: COLORADO
COUNTY: WELD
SITE STORE #: TBD
MAPCORE #: XXXXX
REGIONAL DWG. NO: -

SCALE:	AS NOTED	MUD RE:	BOWAN
DATE:	09/11/2020	MUD P/CNE:	PROPHET
DESIGNED BY:	RJP		
DRAWN BY:	RJP	FILE NAME:	CURRENT.DWG
CHECKED BY:	RJP		SLS dc 14-001-42

DRAWING TITLE: SITE PLAN

SHEET NO: 4 OF 10

CITY OF FORT LUPTON
CITY COUNCIL

Zo Stieber, Mayor

Shannon Rhoda, Ward 1
Chris Ceretto, Ward 2
Michael Sanchez, Ward 3

David Crespin, Ward 1
Tommy Holton, Ward 2
Bruce Fitzgerald, Ward 3

AM 2020-202

APPROVE A RESOLUTION ACCEPTING THE WILLOW BEND (F/K/A FULTON RANCH) SUBDIVISION PRELIMINARY PLAT AND PRELIMINARY PUD PLAN

I. Agenda Date: Council Meeting – December 1, 2020

II. Attachments:

a. Proposed Resolution
b. Planning Commission Resolution, Minutes & Staff Report
c. Land Use Application & Project Description
d. Willow Bend Subdivision Preliminary Plat & Preliminary PUD Plan
e. Development Reports & Construction Documents
f. Referral Responses
g. Legal Notifications

III. Summary Statement:

The applicant, Sun Land Development, has applied for approval Preliminary Plat and Preliminary PUD Plan for the City Council's consideration for the Willow Bend Subdivision (f/k/a Fulton Ranch). A public hearing for this application was held before the Planning Commission on November 12, 2020, and Planning Commission recommended approval to City Council of the Preliminary Plat and Preliminary PUD Plan.

.

IV. Submitted by: _____
City Planner

V. Finance Reviewed _____
Finance Director

VI. Approved for Presentation: _____
City Administrator

VII. Attorney Reviewed _____ Approved _____ Pending Approval

VIII. Certification of Council Approval: _____ _____
City Clerk Date

IX. Detail of Issue/Request:

The applicant, Sun Land Development, has applied for approval Preliminary Plat and Preliminary PUD Plan for the City Council's consideration for the Willow Bend Subdivision (f/k/a Fulton Ranch). A public hearing for this application was held before the Planning Commission on November 12, 2020, and Planning Commission recommended approval to City Council of the Preliminary Plat and Preliminary PUD Plan.

The site that is the subject of the Preliminary Plat and PUD Plan is located east and adjacent to County Road 29 (also known as Northrup Avenue), and south and adjacent to 14th Street right of way in Fort Lupton (the "Property"). The Preliminary Plat and PUD Plan is for a residential subdivision that will include one parcel of land with 449 lease spaces for single-family manufactured homes on approximately 127.52 acres, more or less. The proposed development will include an amenity center, pocket parks, and interconnecting trails. The planned density for the subdivision is four dwelling units per acre.

On March 3, 2020, the Fort Lupton City Council approved the Sketch Plat for this project as part of the City's major subdivision process. The Preliminary Plat and Preliminary PUD Plan are the next phase of the subdivision process and zoning process for a planned unit development.

Additional information on this application can be found in the attached Staff Report and other supportive documents. Other submittal documents may not be included with this packet, but can be available for review upon request.

X. Legal/Political Considerations:

The Subdivision Regulations require published notice of the hearings in a timely manner prior to the hearings. The Planning Commission and City Council hearings were published in the Fort Lupton press on October 28, 2020.

Notice of the public hearings were posted on the Property on October 28, 2020, pursuant to the Subdivision Regulations, which require the Applicant post the Property with notice of the hearings at least fifteen (15) days prior to the hearings.

Notice was mailed to neighbor within 500 feet of the Property, and owners and lessees of mineral interests on October 28, 2020.

The subdivision is currently zoned PUD Planned Unit Development. The zoning permits residential uses within the R-1, R-1A, R-2 and R-3 portion of the Municipal Code. The Comprehensive Plan designates this area as Single Family Detached. The proposed use complies with the current zoning and comprehensive plan designation.

XI. Alternatives/Options:

The City Council has the following three options for each request:

a) Approve the proposed resolution.
b) Approve the proposed resolution with conditions.
c) Continue the hearing for additional information or further study.
d) Deny the proposed resolution.

XII. Financial Considerations:

All applicable land use application fees have been paid and a fee deposit has been submitted to cover costs related to the application.

XIII. Staff Recommendation:

Staff recommends conditional approval of the Willow Bend Subdivision Preliminary Plat and Preliminary PUD Plan.

RESOLUTION NO. 2020Rxxx

A RESOLUTION OF THE CITY COUNCIL OF FORT LUPTON APPROVING THE WILLOW BEND (F/K/A FULTON RANCH) SUBDIVISION PRELIMINARY PLAT AND PRELIMINARY PUD PLAN TO CREATE A SINGLE LOT RESIDENTIAL SUBDIVISION LOCATED EAST AND ADJACENT TO COUNTY ROAD 29, AND SOUTH AND ADJACENT TO 14TH STREET IN A PART OF SECTION 33, TOWNSHIP 2 NORTH, RANGE 66 WEST OF THE 6TH P.M., COUNTY OF WELD, STATE OF COLORADO.

WHEREAS, the Planning Commission held a public hearing on November 12, 2020, for the purpose of reviewing the Willow Bend (f/k/a Fulton Ranch) Subdivision Preliminary Plat and Preliminary PUD Plan (Willow Bend Preliminary Plat and PUD Plan) submitted by Sun Land Development; and

WHEREAS, the Willow Bend Preliminary Plat and PUD Plan proposes to develop the property for a single lot residential subdivision with 449 lease spaces, and associated amenities that will include an amenity center, pocket parks and interconnecting trails; and

WHEREAS, after review of the application for the Willow Bend Preliminary Plat and PUD Plan, and consideration of staff comments, applicant's presentation, and any public input, Planning Commission recommended approval of the Willow Bend Preliminary Plat and PUD Plan; and

WHEREAS, all legal requirements for the public hearing have been met, including mailing of public hearing notices to adjacent property owners within 500 feet; and

WHEREAS, the City Council held a public hearing to consider and review the request for the Willow Bend Preliminary Plat and PUD Plan on December 1, 2020; and

NOW THEREFORE BE IT RESOLVED that the Fort Lupton City Council reviewed the plans and supporting documentation, all referral comments and any citizen input in response to this application. Based upon review of the applicable policies and goals in the Fort Lupton Comprehensive Plan, review of the Subdivision and Zoning Regulations, an analysis of referral comments and facts presented on this date, the City Council hereby recommends approval of the Willow Bend Subdivision Preliminary Plat and Preliminary PUD Plan located in a part of Section 33, Township 2 North, Range 66 West of the 6th P.M., County of Weld, State of Colorado with the following conditions:

I. Prior to submittal of a Final Plat and Final PUD Plan:

A. The title of the map shall be updated to include the Project No. LUP2020-0031 & Plan No. PPL2020-0004.

B. Any redline comments provided by City staff shall be made to the preliminary plat and preliminary PUD plan.

C. Referral comments that impact the layout of the preliminary plat shall be incorporated into the preliminary plat, including providing easements as required by utility companies, as well as comments from Public Works that affect layouts shown.

D. Applicant shall submit a pre-application meeting request with City staff to determine requirements of the final plat and final PUD plan submittal.

II. As a part of the Final Plat and Final PUD Plan submittal:

A. Applicant shall provide an update on the status of obtaining access permit(s) from CDOT.

B. Applicant shall adequately address the referral comments from the Fort Lupton Fire Protection District.

C. Applicant shall adequately address the referral comments from the Public Works Director.

D. Applicant shall adequately address the referral comments from the Superintendent of Weld County School District RE-8.

E. Applicant shall adequately address the referral comments from the Colorado Department of Transportation.

F. Applicant shall begin the process of dedicating right of way requested by the Public Works Director.

G. Applicant shall adequately address the referral comments from United Power.

H. Applicant shall work with City staff to finalize proposed street names.

I. Applicant shall work with City staff to incorporate the results of the tree inventory study into the final plat and final PUD plan.

J. Applicant shall provide City staff with any updates on the status of addressing the Colorado Parks and Wildlife comments received during the sketch plat review.

K. Applicant shall adequately address the referral comments from Xcel Energy (Public Service Company).

L. Applicant shall provide updated information concerning any existing surface use agreements and provide details on how the agreements have been addressed on the design of the development, and how any oil and gas easements are being addressed.

M. Applicant shall provide final recommendations on how high ground water on the site will be addressed and how it affects proposed site layout.

VOTE OF THOSE ELECTED TO THE CITY COUNCIL OF THE CITY OF FORT LUPTON, COLORADO THIS 1st DAY OF DECEMBER 2020.

City of Fort Lupton, Colorado

_____
Zo Stieber, Mayor

Attest:

_____
Maricela Peña,
City Clerk

Approved as to form:

_____
Andy Ausmus, City Attorney

Willow Bend

Utility Report

Owner/Developer
Sun Communities ACQ, Inc.
27777 Franklin Road, Suite 200
Southfield, MI 48034

Engineer
Atwell, LLC
143 Union Blvd #700
Lakewood, Colorado 80228
(303) 825-7100

Project Number
19001956

Submittal Date
July 20th, 2020

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APPENDIX A – Water Demand Calculations
APPENDIX B – Water Hydraulic Analysis and Modeling
APPENDIX C – Wastewater Flows
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APPENDIX E – Exhibits and Utility Plans

Certification Statement

This Utility Report for the design of the Willow Bend development was prepared by me or under my direct supervision in accordance with the City of Fort Lupton's Standards and Specifications and acceptable professional practices of the industry. We acknowledge that the City of Fort Lupton's review of this Utility Study is only for general conformance with submittal requirements, current design criteria and standard engineering principles and practices. We are also aware of the provisions of the City Code of the City of Fort Lupton.

07/20/2020

Richard J. Weed, PE — Date

Registered Professional Engineer State of Colorado No. 22076

Project Location and Description

Site Location

The Willow Bend project site is located in Weld County in the City of Fort Lupton. The site is generally bounded by 14th Street to the north, Fulton Ditch to the east, private property to the south, and Northrup Avenue to the west. To the east and south, across the Fulton Ditch, is a planned development named Cottonwood Greens.

Description of Property and Land Use

The proposed development is approximately 127 acres and will contain 449 housing units with on-site open spaces and detention. The site is currently undeveloped land that serves several gas facilities and is zoned PUD. A Geotechnical Site Development Report, completed by A.G. Wassenaar and dated January 15th, 2020, identified the surface soils as loose sand of varying depth. Bedrock consisting of claystone and sandstone were encountered at depths ranging from 1.5-feet to 27.5-feet. Ground water was encountered at depths ranging from 0.5-feet to 24.5-feet.

Calculated Water Demands

The water demands for Willow Bend were based on a conservative estimate for manufactured homes of 160 gpd for the Average Day Demand for each unit without any demand considered for landscaping uses.

Demand per capita (gal/unit/day)	Proposed number of units	Average Day Demand (gpd)
160	449	71,840

The Average Day Demand (ADD) of 71,840 gallons per day is multiplied by the following factors to get Max Day Demand (MDD) and Peak Hour Demand (PHD).

Max Day Demand Factor = 2.5
Peak Hour Demand Factor = 4.0

The required fire flow, per Appendix B of the 2018 International Fire Code, requires one-family dwelling units without automatic sprinkler systems, and having a square footage of less than 3,600 square-feet, be provided with a fire flow of 1,000 gpm for one hour.

A separate, non-potable, water supply is anticipated to provide the irrigation demands and will not be included in the potable water model and results presented in this report.

A detailed report of the water demand calculations can be found in Appendix A.

Existing Water System

Existing Distribution System

Existing water system tie-in points include a 12-inch potable water line in 14th Street and an 8-inch potable water line in Northrup. A 4-inch non-potable water line, built with Cottonwood Greens, will be extended into Willow Bend to provide irrigation.

Existing Storage Facilities

The City of Fort Lupton will be providing the water storage for the development.

Proposed Water System

Potable Water

The proposed potable water system will include extending the existing 12-inch public water main in 14th Street and the 8-inch public water main in Northrup Avenue. The proposed private water mains will tee off of the public mains and will consist of 8-inch, 6-inch, and 4-inch PVC pipes. An 8-inch meter will be

located at the Northrup connection and a 6-inch meter will be located at the 14th Street connection. Each dwelling unit will have a 3/4-inch service tap to the private mains.

Non-Potable Water

The proposed 4-inch (PVC) non-potable water main will connect to the Cottonwood Greens non-potable system.

Proposed Storage Facilities

There is no storage facility proposed with this development.

Hydraulic Modeling

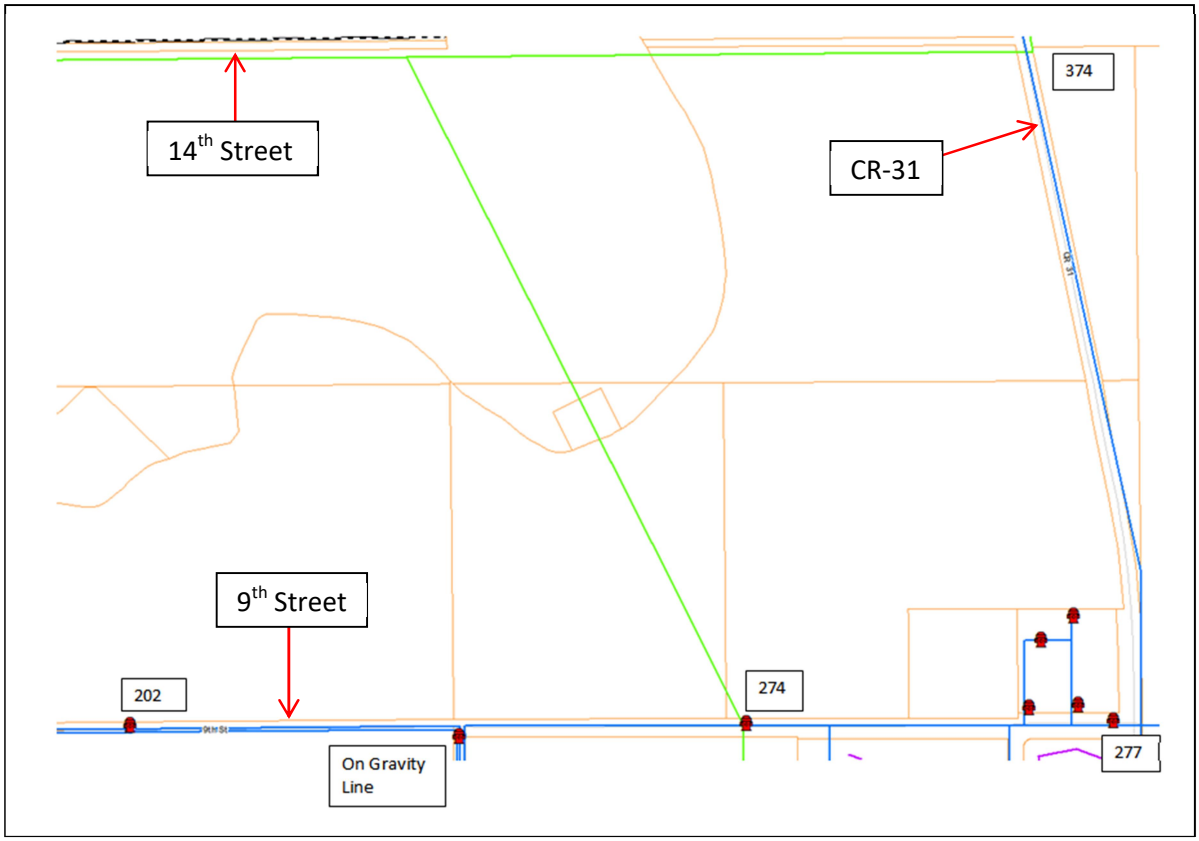
Bentley WaterCAD V8i was used to model the proposed water system. See Appendix B for a system map and tabulated results.

The following scenarios were used for modeling the Willow Bend potable water network. Public and private lines were checked for conformance to Chapter 3 of the City of Fort Lupton *Standards and Specifications for the Design and Construction of Public Improvements.* Since the proposed private system will be new, and will be able to sustain higher velocities, the private system used the criteria from the North Weld County Water District *Potable Water Distribution System Design Criteria and Standards* (NWCWD) for maximum pipe velocity. The criteria are presented in the table below.

	NWCWD	**Fort Lupton**		
Scenario	**Maximum Pipe Velocity (Private lines)** (ft/s)	**Maximum pipe velocity (Public lines)** (ft/s)	**Minimum Pressure** (psi)	**Maximum Pressure** (psi)
Average Day Demand	10	5	-	100
Maximum Day Demand + Fire Flow	10	7	20	-
Peak Hour Demand	10	5	50	-

Hydrant information was provided to us by the City of Fort Lupton and is shown below. Hydrants 374 and 274 were used for modeling.

Fire Department Number	House number	Street Name	PSI	Pitot	Res	GPM	Minutes Flushed	Gallons Flushed	MAKE	MODEL	YEAR	COLOR
274	9th Street	between 31 & College	78	45	70	1130	5	5650	Mueller	5.25	2010	Blue
277	2999	9th NW corner	70	55	62	1250	5	6250	Mueller	5.25	2003	Blue
374	2951	County Road 14.5	74		56	1130	5	5650	Mueller	5.25	2019	Red



Irrigation will be provided by the non-potable water lines and were not modeled as part of the water system.

Results and Conclusions

The proposed public and private potable water system design meets the criteria of the City of Fort Lupton *Standards and Specifications for the Design and Construction of Public Improvements,* with the exception of maximum pressure and velocity as presented below.

The maximum public water line pressure occurs at the lowest elevation of the site, the intersection of Northrup and 14th Street with 103 psi under Average Day Demands. Since we are matching the existing grade at this intersection, the pressure at the intersection cannot be reduced without a PRV on the both the 8" and 12" public water lines. Future, lower elevation, developments may need PRV's in order to meet the City Standards. No PRV is being proposed on the public lines with this development. Under Max Day Demands with Fire Flow, the maximum velocity in the public lines is 3.03 fps. Peak hour demands results show a minimum public system pressure of 75 psi and a velocity of 1.35 fps. The greatest pressure fluctuation between the Average Day Demand and the Peak Hour demand is 1 psi.

For the private system, the maximum pressure under Average Day Demands is 99 psi with the highest pipe velocity being 0.34 fps. Maximum day demands with Fire Flow have a minimum private system pressure of 61 psi with the highest pipe velocity of 9.97 fps. Peak hour demands results show a minimum private system pressure of 83 psi and a maximum velocity of 1.35 fps. The greatest pressure fluctuation between the Average Day Demand and the Peak Hour demand is 1 psi.

Calculated Sanitary Sewer Flows

The Sanitary Sewer flows for Willow Bend were calculated per Chapter 4 of the City of Fort Lupton *Standards and Specifications for the Design and Construction of Public Improvements* and are presented below.

Flow per capita (gpd/capita)	Persons per unit	Flow per dwelling (gpd/dwelling)	Proposed number of units	Average Day Flow (gpd)
70	2.90	203	449	91,147

The Average Day Flow (ADF) of 91,147 gallons per day is multiplied by the peaking factor to get Peak Day Flow (PDF).

Peaking Factor	Peak Flow per dwelling (gpd/dwelling)	Peak Flow per dwelling (gpm/dwelling)	Proposed number of units	Peak Day Flow (gpd)
3.0	609	0.423	449	273,441

The Average Daily Flow per dwelling of 203 gpd is greater than the estimated water demand per dwelling of 160 gpd. For sewer design, we have adhered to the City standards for a more conservative design.

Inflow and infiltration is added to the Peak Day Flows above to get the design flows. Inflow and infiltration is calculated at 100 gpd per acre of tributary area. A detailed report of the Sanitary Sewer flow calculations, including routing and preliminary pipe sizing, can be found in Appendix C.

Existing Sanitary Sewer System

Existing Collection System

An existing 12-inch sanitary sewer main is located on the north edge of the property in 14th Street and another 10-inch main runs southeast to northwest through the site, located in a 20' wide sewer easement. These lines were built as part of the AIMS Community College Outfall Sewer Line. Both of these mains will be used for sanitary sewer connections. See Appendix E for a Utility map.

Proposed Sanitary Sewer System

Proposed Collection System

The proposed private sewer system will consist of 6-inch and 8-inch lines, tied to the existing system with newly constructed manholes. The private sewer mains will be placed at a minimum depth of 8', with minimum slopes per the Fort Lupton Design Standards. A sample of design values are shown below. For a full report, see Appendix D.

Pipe Diameter (in.)	Pipe Slope (%)	Velocity @ 50% full (fps)	Discharge @ 50% full (gpm)	Peak Number of Units Served
6	0.6	2.21	97.5	230
6	0.8	2.56	112.6	266
6	1.0	2.86	125.9	297
6	2.0	4.04	178.1	421
8	0.5	2.45	191.8	453
8	0.6	2.68	210.1	496

Proposed Wastewater Treatment Facilities

The City of Fort Lupton will provide wastewater treatment for the proposed subdivision.

Proposed Sanitary Sewer System Analysis

Bentley Flowmaster software was used for capacity calculations of the proposed Sanitary Sewer system.

Results and Conclusions

The proposed sanitary sewer system for Willow Bend will consist of 6-inch and 8-inch PVC gravity lines. There will be several locations where proposed mains will tie into the existing 10-inch and 12-inch sanitary sewer lines in the vicinity of the site. New discharge points on the 10-inch line running through the site will require new manholes to be constructed on existing lines. The connection to the 12-inch line in 14th Street will be made at an existing manhole. Analysis and design have been completed in accordance with City of Fort Lupton standards.

References

1) *Standards and Specifications for the Design and Construction of Public Improvements;* City of Fort Lupton, 2014 Edition
2) *International Fire Code;* International Code Council, 2018
3) *Geotechnical Site Development Study, Coyote Creek North, Fort Lupton, Colorado;* A.G. Wassenaar, Inc. January 15th, 2020

4) *Potable Water Distribution System Design Criteria and Standards*; North Weld County Water District, April 12, 2018
5) Aim Community College Outfall Sewer Line, Alpha Engineering

APPENDIX A – Water Demands

APPENDIX B – Water Hydraulic Analysis and Modeling

-Water Basin Map
-Color Coded System Schematic
-System Schematic
-Average Day Demand
- Junction Report
- Pipe Report
- Hydrant Report
- Reservoir Report

-Max Day Demand With Fire Flow
- Junction Report
- Pipe Report
- Reservoir Report
- Fire Flow Report

-Peak Hour Demand
- Junction Report
- Pipe Report
- Hydrant Report
- Reservoir Report

APPENDIX C – Sanitary Sewer Flows

APPENDIX D – Sanitary Sewer Hydraulic Analysis and Modeling

-Sewer Basin Map

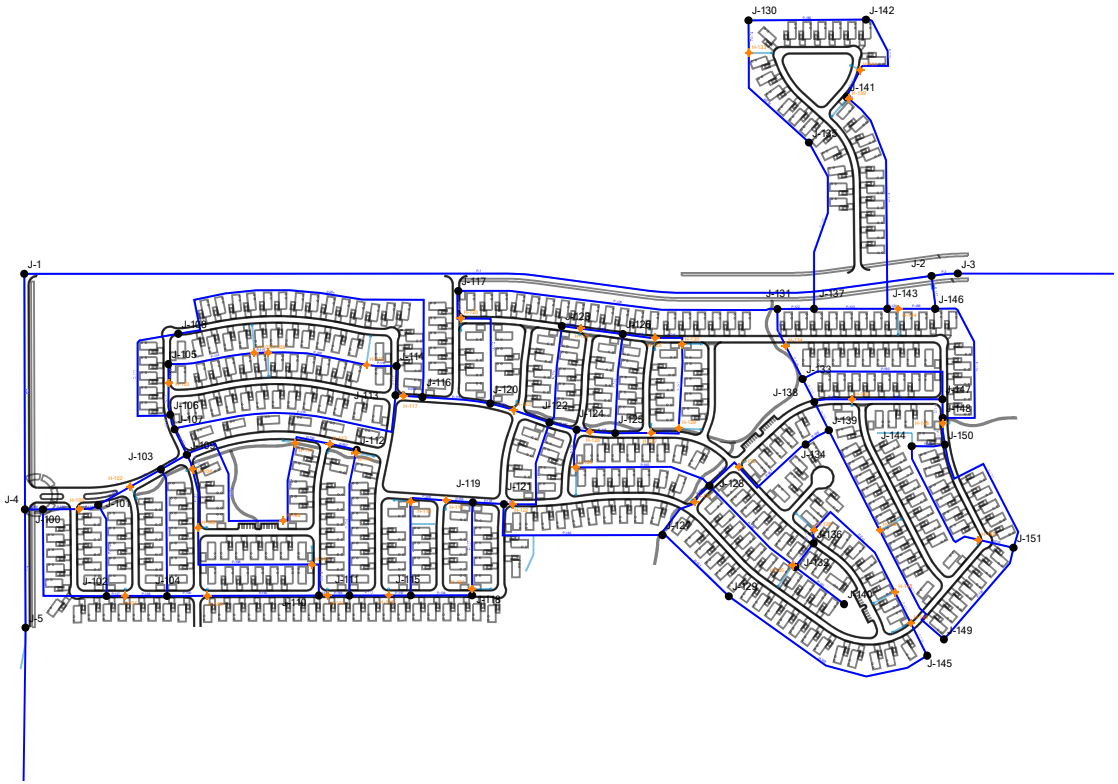
-Pipe Capacity Report

APPENDIX E –Utility Exhibits and Plans

-Preliminary Utility Plan

-Aims Outfall Sewer Plans by Alpha Engineering, selected sheets

System Schematic



Willow Bend

Active Scenario: ADD

FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpd)	Hydraulic Grade (ft)	Pressure (psi)	Demand Shortage (gpd)	Notes
J-1	4,929.35	0	5,166.86	103	0	
J-2	4,974.41	0	5,166.86	83	0	
J-3	4,974.51	0	5,166.86	83	0	
J-4	4,948.88	0	5,166.87	94	0	
J-5	4,960.16	0	5,166.90	89	0	
J-6	4,963.00	0	5,166.99	88	0	
J-100	4,946.03	1,120	5,166.86	96	0	A
J-101	4,942.78	960	5,166.86	97	0	B
J-102	4,959.13	1,120	5,166.86	90	0	C
J-103	4,944.39	1,120	5,166.86	96	0	E
J-104	4,957.23	1,600	5,166.86	91	0	D
J-105	4,939.48	0	5,166.85	98	0	
J-106	4,942.56	4,000	5,166.85	97	0	F
J-107	4,943.68	2,240	5,166.85	97	0	
J-108	4,938.93	0	5,166.85	99	0	
J-109	4,945.46	2,240	5,166.85	96	0	G
J-110	4,961.74	3,520	5,166.85	89	0	J
J-111	4,962.85	1,920	5,166.85	88	0	K
J-112	4,951.79	2,080	5,166.85	93	0	I
J-113	4,949.12	3,360	5,166.85	94	0	H
J-114	4,947.87	0	5,166.85	95	0	
J-115	4,965.12	2,240	5,166.85	87	0	L
J-116	4,950.15	2,880	5,166.85	94	0	M
J-117	4,943.08	2,560	5,166.85	97	0	N
J-118	4,967.41	2,240	5,166.85	86	0	P
J-119	4,959.95	0	5,166.85	90	0	
J-120	4,952.65	1,280	5,166.85	93	0	O
J-121	4,961.44	1,600	5,166.85	89	0	Q
J-122	4,955.12	1,280	5,166.85	92	0	R
J-123	4,947.09	960	5,166.85	95	0	S
J-124	4,956.02	1,280	5,166.85	91	0	V
J-125	4,957.47	1,280	5,166.85	91	0	U
J-126	4,949.35	1,920	5,166.85	94	0	T
J-127	4,968.33	2,080	5,166.85	86	0	JJ
J-128	4,966.43	2,400	5,166.85	87	0	W
J-129	4,973.70	0	5,166.85	84	0	
J-130	4,963.68	1,440	5,166.85	88	0	AN
J-131	4,955.80	0	5,166.85	91	0	
J-132	4,972.06	0	5,166.85	84	0	
J-133	4,957.83	2,720	5,166.85	90	0	Z
J-134	4,964.83	1,440	5,166.85	87	0	X
J-135	4,959.21	800	5,166.85	90	0	DN
J-136	4,966.30	1,760	5,166.85	87	0	GG
J-137	4,957.93	1,280	5,166.85	90	0	AA
J-138	4,960.05	0	5,166.85	89	0	

Willow Bend

Active Scenario: ADD

FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpd)	Hydraulic Grade (ft)	Pressure (psi)	Demand Shortage (gpd)	Notes
J-139	4,962.04	2,080	5,166.85	89	0	Y
J-140	4,972.70	2,080	5,166.85	84	0	HH
J-141	4,962.38	1,600	5,166.85	88	0	CN
J-142	4,963.65	800	5,166.85	88	0	BN
J-143	4,962.62	1,120	5,166.85	88	0	BB
J-144	4,969.62	0	5,166.85	85	0	
J-145	4,970.99	1,760	5,166.85	85	0	II
J-146	4,966.62	0	5,166.85	87	0	
J-147	4,971.73	0	5,166.85	84	0	
J-148	4,972.46	800	5,166.85	84	0	CC
J-149	4,972.00	480	5,166.85	84	0	FF
J-150	4,973.23	2,400	5,166.85	84	0	DD
J-151	4,974.05	0	5,166.85	83	0	

Willow Bend

Active Scenario: ADD

FlexTable: Pipe Table

Label	Start Node	Stop Node	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Flow (Absolute) (gpd)	Velocity (ft/s)	Pressure (Stop) (psi)
P-1	J-2	J-1	3,345	12.0	PVC	130.0	21,522	0.04	103
P-2	J-3	J-2	97	12.0	PVC	130.0	0	0.00	83
P-4	J-4	J-1	866	8.0	PVC	130.0	21,522	0.10	103
P-5	J-5	J-4	435	8.0	PVC	130.0	71,840	0.32	94
P-100	J-4	J-100	66	8.0	PVC	130.0	50,318	0.22	96
P-101	J-100	J-102	550	6.0	PVC	130.0	11,813	0.09	90
P-102	J-100	H-100	134	8.0	PVC	130.0	37,385	0.17	96
P-103	J-101	H-102	135	8.0	PVC	130.0	34,129	0.15	97
P-104	J-101	J-102	342	4.0	PVC	130.0	2,296	0.04	90
P-105	H-102	J-103	130	8.0	PVC	130.0	34,129	0.15	96
P-106	J-103	J-109	110	8.0	PVC	130.0	34,583	0.15	96
P-107	J-109	J-107	104	8.0	PVC	130.0	20,505	0.09	97
P-108	J-109	H-109	607	6.0	PVC	130.0	3,796	0.03	93
P-109	J-107	J-106	56	8.0	PVC	130.0	16,220	0.07	97
P-110	J-107	J-113	947	4.0	PVC	130.0	2,046	0.04	94
P-111	J-106	H-103	118	8.0	PVC	130.0	10,858	0.05	98
P-112	J-106	J-108	544	4.0	PVC	130.0	1,362	0.02	99
P-113	H-103	J-105	69	8.0	PVC	130.0	10,858	0.05	98
P-114	J-105	H-107	319	8.0	PVC	130.0	10,858	0.05	97
P-115	H-107	H-108	51	8.0	PVC	130.0	10,858	0.05	96
P-116	H-115	J-114	110	8.0	PVC	130.0	10,858	0.05	95
P-117	J-114	J-113	107	8.0	PVC	130.0	10,858	0.05	94
P-118	J-113	H-117	29	8.0	PVC	130.0	9,543	0.04	94
P-119	J-116	J-120	251	8.0	PVC	130.0	8,025	0.04	93
P-120	J-120	H-120	422	8.0	PVC	130.0	1,767	0.01	96
P-122	J-131	J-137	134	6.0	PVC	130.0	5,530	0.04	90
P-123	J-137	J-143	270	6.0	PVC	130.0	7,676	0.06	88
P-124	J-143	H-144	41	6.0	PVC	130.0	12,570	0.10	88
P-125	J-143	H-139	817	6.0	PVC	130.0	3,773	0.03	89
P-126	J-117	J-131	1,179	6.0	PVC	130.0	793	0.01	91
P-127	J-102	H-101	69	6.0	PVC	130.0	12,988	0.10	90
P-128	H-101	J-104	153	6.0	PVC	130.0	12,988	0.10	91
P-129	J-104	J-103	470	4.0	PVC	130.0	1,574	0.03	96
P-130	J-104	H-106	149	6.0	PVC	130.0	9,814	0.08	91
P-131	J-110	H-112	32	8.0	PVC	130.0	14,337	0.06	88
P-132	J-110	H-111	138	8.0	PVC	130.0	8,042	0.04	90
P-133	J-111	H-116	144	8.0	PVC	130.0	14,132	0.06	87
P-134	J-115	J-118	226	8.0	PVC	130.0	8,544	0.04	86
P-135	J-115	H-118	345	6.0	PVC	130.0	3,348	0.03	91
P-136	J-118	H-121	24	8.0	PVC	130.0	6,304	0.03	86
P-137	H-121	J-119	317	8.0	PVC	130.0	6,304	0.03	90
P-138	J-119	J-121	114	8.0	PVC	130.0	9,652	0.04	89
P-139	J-121	H-122	32	8.0	PVC	130.0	5,729	0.03	88
P-140	J-121	J-127	702	4.0	PVC	130.0	2,323	0.04	86
P-141	H-122	J-122	395	6.0	PVC	130.0	5,729	0.05	92

Willow Bend

Active Scenario: ADD

FlexTable: Pipe Table

Label	Start Node	Stop Node	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Flow (Absolute) (gpd)	Velocity (ft/s)	Pressure (Stop) (psi)
P-142	J-122	J-124	103	6.0	PVC	130.0	7,854	0.06	91
P-143	J-122	H-123	138	6.0	PVC	130.0	4,978	0.04	92
P-144	J-124	H-126	49	6.0	PVC	130.0	2,587	0.02	91
P-145	H-126	J-125	94	6.0	PVC	130.0	2,587	0.02	91
P-146	J-125	J-126	365	4.0	PVC	130.0	451	0.01	94
P-147	J-125	H-127	133	6.0	PVC	130.0	856	0.01	90
P-148	H-128	J-126	120	6.0	PVC	130.0	856	0.01	94
P-149	J-126	H-125	156	6.0	PVC	130.0	613	0.00	95
P-150	J-123	J-122	362	4.0	PVC	130.0	1,573	0.03	92
P-151	H-105	H-104	217	8.0	PVC	130.0	8,042	0.04	96
P-152	H-109	H-110	303	6.0	PVC	130.0	3,796	0.03	94
P-153	H-110	H-113	148	6.0	PVC	130.0	3,796	0.03	93
P-154	H-114	J-111	527	6.0	PVC	130.0	1,716	0.01	88
P-155	H-119	J-119	98	6.0	PVC	130.0	3,348	0.03	90
P-156	J-127	H-131	178	6.0	PVC	130.0	1,745	0.01	85
P-157	J-127	J-129	334	6.0	PVC	130.0	1,988	0.02	84
P-158	J-145	H-145	134	6.0	PVC	130.0	228	0.00	85
P-159	J-136	J-132	110	6.0	PVC	130.0	1,532	0.01	84
P-160	J-136	H-138	51	6.0	PVC	130.0	228	0.00	87
P-161	J-132	J-140	225	4.0	PVC	130.0	2,080	0.04	84
P-162	J-132	H-135	12	6.0	PVC	130.0	3,612	0.03	82
P-163	H-135	J-128	424	6.0	PVC	130.0	3,612	0.03	87
P-164	J-128	H-132	148	6.0	PVC	130.0	3,769	0.03	89
P-165	J-128	H-124	510	6.0	PVC	130.0	3,987	0.03	87
P-166	H-131	J-128	81	6.0	PVC	130.0	1,745	0.01	87
P-167	H-132	J-134	341	6.0	PVC	130.0	3,769	0.03	87
P-168	J-134	J-139	100	6.0	PVC	130.0	5,209	0.04	89
P-169	J-139	H-142	413	6.0	PVC	130.0	1,616	0.01	88
P-170	J-149	J-151	429	6.0	PVC	130.0	2,096	0.02	83
P-171	J-151	J-150	591	4.0	PVC	130.0	593	0.01	84
P-172	J-150	J-144	122	6.0	PVC	130.0	1,502	0.01	85
P-173	J-150	H-148	79	6.0	PVC	130.0	4,496	0.04	84
P-174	J-148	J-146	613	6.0	PVC	130.0	8,953	0.07	87
P-176	J-148	J-147	69	6.0	PVC	130.0	3,657	0.03	84
P-177	J-133	J-138	95	6.0	PVC	130.0	2,784	0.02	89
P-178	J-133	H-134	137	6.0	PVC	130.0	4,737	0.04	90
P-181	J-144	H-149	483	6.0	PVC	130.0	1,502	0.01	84
P-182	J-141	H-141	111	6.0	PVC	130.0	2,173	0.02	88
P-183	J-142	J-130	432	6.0	PVC	130.0	1,373	0.01	88
P-184	J-130	H-133	119	6.0	PVC	130.0	67	0.00	88
P-185	J-135	J-137	638	6.0	PVC	130.0	867	0.01	90
P-186	H-144	J-146	135	6.0	PVC	130.0	12,570	0.10	87
P-187	J-2	J-146	121	6.0	PVC	130.0	21,522	0.17	87
P-188	J-129	J-145	833	6.0	PVC	130.0	1,988	0.02	85
P-189	J-112	H-114	12	6.0	PVC	130.0	1,716	0.01	93

Willow Bend

Active Scenario: ADD

FlexTable: Pipe Table

Label	Start Node	Stop Node	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Flow (Absolute) (gpd)	Velocity (ft/s)	Pressure (Stop) (psi)
P-190	J-138	J-139	117	6.0	PVC	130.0	5,674	0.04	89
P-191	J-138	H-140	141	6.0	PVC	130.0	2,889	0.02	89
P-192	H-140	J-147	333	6.0	PVC	130.0	2,889	0.02	84
P-193	J-147	J-133	621	4.0	PVC	130.0	768	0.01	90
P-194	H-100	J-101	73	8.0	PVC	130.0	37,385	0.17	97
P-195	H-106	J-110	410	6.0	PVC	130.0	9,814	0.08	89
P-196	H-112	J-111	81	8.0	PVC	130.0	14,337	0.06	88
P-197	H-116	J-115	81	8.0	PVC	130.0	14,132	0.06	87
P-198	H-111	H-105	555	8.0	PVC	130.0	8,042	0.04	93
P-199	H-104	J-109	57	8.0	PVC	130.0	8,042	0.04	96
P-200	H-108	H-115	366	8.0	PVC	130.0	10,858	0.05	95
P-201	J-108	J-116	1,403	4.0	PVC	130.0	1,362	0.02	94
P-202	H-117	J-116	69	8.0	PVC	130.0	9,543	0.04	94
P-203	H-120	J-117	117	6.0	PVC	130.0	1,767	0.01	97
P-204	H-125	J-123	70	6.0	PVC	130.0	613	0.00	95
P-205	H-134	J-131	142	6.0	PVC	130.0	4,737	0.04	91
P-206	H-123	J-120	90	8.0	PVC	130.0	4,978	0.02	93
P-207	H-113	J-112	101	6.0	PVC	130.0	3,796	0.03	93
P-208	H-118	H-119	143	6.0	PVC	130.0	3,348	0.03	90
P-209	H-124	J-124	145	6.0	PVC	130.0	3,987	0.03	91
P-210	H-145	H-143	127	6.0	PVC	130.0	228	0.00	85
P-211	H-143	H-138	473	6.0	PVC	130.0	228	0.00	87
P-212	H-142	J-149	491	6.0	PVC	130.0	1,616	0.01	84
P-213	H-149	J-151	132	6.0	PVC	130.0	1,502	0.01	83
P-214	H-148	J-148	20	6.0	PVC	130.0	4,496	0.04	84
P-215	H-130	H-128	123	6.0	PVC	130.0	856	0.01	93
P-216	H-127	H-129	120	6.0	PVC	130.0	856	0.01	89
P-217	H-129	H-130	309	6.0	PVC	130.0	856	0.01	93
P-218	H-139	J-141	10	6.0	PVC	130.0	3,773	0.03	88
P-219	H-133	J-135	427	6.0	PVC	130.0	67	0.00	90
P-220	H-141	J-142	315	6.0	PVC	130.0	2,173	0.02	88
PE-1	H-374	J-3	1,444	12.0	PVC	130.0	0	0.00	83
PE-2	J-6	J-5	1,308	8.0	PVC	130.0	71,840	0.32	89
PE-4	HE-274	J-6	3,760	16.0	PVC	130.0	71,840	0.08	88
PE-274	R-274	HE-274	1	16.0	PVC	130.0	71,840	0.08	78
PE-374	R-374	H-374	1	12.0	PVC	130.0	0	0.00	76

Willow Bend
Active Scenario: ADD
FlexTable: Hydrant Table

Label	Elevation (ft)	Pressure (psi)
H-100	4,943.93	96
H-101	4,958.77	90
H-102	4,943.15	97
H-103	4,940.26	98
H-104	4,946.00	96
H-105	4,951.47	93
H-106	4,957.65	91
H-107	4,941.95	97
H-108	4,944.71	96
H-109	4,952.50	93
H-110	4,949.46	94
H-111	4,959.34	90
H-112	4,962.71	88
H-113	4,951.30	93
H-114	4,952.91	93
H-115	4,946.59	95
H-116	4,964.90	87
H-117	4,949.20	94
H-118	4,956.97	91
H-119	4,959.64	90
H-120	4,944.93	96
H-121	4,968.29	86
H-122	4,962.75	88
H-123	4,953.29	92
H-124	4,965.17	87
H-125	4,948.19	95
H-126	4,956.99	91
H-127	4,958.75	90
H-128	4,951.98	93
H-129	4,960.25	89
H-130	4,951.57	93
H-131	4,969.38	85
H-132	4,961.77	89
H-133	4,964.41	88
H-134	4,958.46	90
H-135	4,976.36	82
H-138	4,966.08	87
H-139	4,961.42	89
H-140	4,962.17	89
H-141	4,963.45	88
H-142	4,963.85	88
H-143	4,969.85	85
H-144	4,963.39	88
H-145	4,970.62	85
H-148	4,972.93	84
H-149	4,972.78	84
HE-274	4,987.15	78
H-374	4,991.00	76

Willow Bend

Active Scenario: ADD

FlexTable: Reservoir Table

Label	Elevation (ft)	Flow (Out net) (gpd)	Hydraulic Grade (ft)
R-374	5,163.00	0	5,163.00
R-274	5,167.00	71,840	5,167.00

Willow Bend
Active Scenario: MDD + FF
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpd)	Hydraulic Grade (ft)	Pressure (psi)	Demand Shortage (gpd)	Notes
J-1	4,929.35	0	5,166.24	102	0	
J-2	4,974.41	0	5,166.22	83	0	
J-3	4,974.51	0	5,166.22	83	0	
J-4	4,948.88	0	5,166.28	94	0	
J-5	4,960.16	0	5,166.44	89	0	
J-6	4,963.00	0	5,166.95	88	0	
J-100	4,946.03	2,800	5,166.26	95	0	A
J-101	4,942.78	2,400	5,166.24	97	0	B
J-102	4,959.13	2,800	5,166.23	90	0	C
J-103	4,944.39	2,800	5,166.21	96	0	E
J-104	4,957.23	4,000	5,166.22	90	0	D
J-105	4,939.48	0	5,166.19	98	0	
J-106	4,942.56	10,000	5,166.20	97	0	F
J-107	4,943.68	5,600	5,166.20	96	0	
J-108	4,938.93	0	5,166.19	98	0	
J-109	4,945.46	5,600	5,166.20	96	0	G
J-110	4,961.74	8,800	5,166.20	88	0	J
J-111	4,962.85	4,800	5,166.19	88	0	K
J-112	4,951.79	5,200	5,166.19	93	0	I
J-113	4,949.12	8,400	5,166.18	94	0	H
J-114	4,947.87	0	5,166.19	94	0	
J-115	4,965.12	5,600	5,166.19	87	0	L
J-116	4,950.15	7,200	5,166.18	93	0	M
J-117	4,943.08	6,400	5,166.18	97	0	N
J-118	4,967.41	5,600	5,166.19	86	0	P
J-119	4,959.95	0	5,166.19	89	0	
J-120	4,952.65	3,200	5,166.18	92	0	O
J-121	4,961.44	4,000	5,166.19	89	0	Q
J-122	4,955.12	3,200	5,166.18	91	0	R
J-123	4,947.09	2,400	5,166.18	95	0	S
J-124	4,956.02	3,200	5,166.18	91	0	V
J-125	4,957.47	3,200	5,166.18	90	0	U
J-126	4,949.35	4,800	5,166.18	94	0	T
J-127	4,968.33	5,200	5,166.17	86	0	JJ
J-128	4,966.43	6,000	5,166.17	86	0	W
J-129	4,973.70	0	5,166.17	83	0	
J-130	4,963.68	3,600	5,166.18	88	0	AN
J-131	4,955.80	0	5,166.18	91	0	
J-132	4,972.06	0	5,166.17	84	0	
J-133	4,957.83	6,800	5,166.18	90	0	Z
J-134	4,964.83	3,600	5,166.18	87	0	X
J-135	4,959.21	2,000	5,166.18	90	0	DN
J-136	4,966.30	4,400	5,166.17	86	0	GG
J-137	4,957.93	3,200	5,166.18	90	0	AA
J-138	4,960.05	0	5,166.18	89	0	

Willow Bend
Active Scenario: MDD + FF
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpd)	Hydraulic Grade (ft)	Pressure (psi)	Demand Shortage (gpd)	Notes
J-139	4,962.04	5,200	5,166.18	88	0	Y
J-140	4,972.70	5,200	5,166.17	84	0	HH
J-141	4,962.38	4,000	5,166.18	88	0	CN
J-142	4,963.65	2,000	5,166.18	88	0	BN
J-143	4,962.62	2,800	5,166.19	88	0	BB
J-144	4,969.62	0	5,166.18	85	0	
J-145	4,970.99	4,400	5,166.17	84	0	II
J-146	4,966.62	0	5,166.20	86	0	
J-147	4,971.73	0	5,166.18	84	0	
J-148	4,972.46	2,000	5,166.18	84	0	CC
J-149	4,972.00	1,200	5,166.18	84	0	FF
J-150	4,973.23	6,000	5,166.18	83	0	DD
J-151	4,974.05	0	5,166.18	83	0	

Willow Bend

Active Scenario: MDD + FF

FlexTable: Pipe Table

Label	Start Node	Stop Node	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Flow (Absolute) (gpd)	Velocity (ft/s)	Pressure (Stop) (psi)
P-1	J-2	J-1	3,345	12.0	PVC	130.0	53,802	0.11	102
P-2	J-3	J-2	97	12.0	PVC	130.0	6	0.00	83
P-4	J-4	J-1	866	8.0	PVC	130.0	53,802	0.24	102
P-5	J-5	J-4	435	8.0	PVC	130.0	179,595	0.80	94
P-100	J-4	J-100	66	8.0	PVC	130.0	125,793	0.56	95
P-101	J-100	J-102	550	6.0	PVC	130.0	29,532	0.23	90
P-102	J-100	H-100	134	8.0	PVC	130.0	93,461	0.41	96
P-103	J-101	H-102	135	8.0	PVC	130.0	85,322	0.38	97
P-104	J-101	J-102	342	4.0	PVC	130.0	5,739	0.10	90
P-105	H-102	J-103	130	8.0	PVC	130.0	85,322	0.38	96
P-106	J-103	J-109	110	8.0	PVC	130.0	86,457	0.38	96
P-107	J-109	J-107	104	8.0	PVC	130.0	51,262	0.23	96
P-108	J-109	H-109	607	6.0	PVC	130.0	9,490	0.07	92
P-109	J-107	J-106	56	8.0	PVC	130.0	40,549	0.18	97
P-110	J-107	J-113	947	4.0	PVC	130.0	5,114	0.09	94
P-111	J-106	H-103	118	8.0	PVC	130.0	27,144	0.12	98
P-112	J-106	J-108	544	4.0	PVC	130.0	3,405	0.06	98
P-113	H-103	J-105	69	8.0	PVC	130.0	27,144	0.12	98
P-114	J-105	H-107	319	8.0	PVC	130.0	27,144	0.12	97
P-115	H-107	H-108	51	8.0	PVC	130.0	27,144	0.12	96
P-116	H-115	J-114	110	8.0	PVC	130.0	27,144	0.12	94
P-117	J-114	J-113	107	8.0	PVC	130.0	27,144	0.12	94
P-118	J-113	H-117	29	8.0	PVC	130.0	23,857	0.11	94
P-119	J-116	J-120	251	8.0	PVC	130.0	20,062	0.09	92
P-120	J-120	H-120	422	8.0	PVC	130.0	4,413	0.02	96
P-122	J-131	J-137	134	6.0	PVC	130.0	13,826	0.11	90
P-123	J-137	J-143	270	6.0	PVC	130.0	19,192	0.15	88
P-124	J-143	H-144	41	6.0	PVC	130.0	31,426	0.25	88
P-125	J-143	H-139	817	6.0	PVC	130.0	9,434	0.07	89
P-126	J-117	J-131	1,179	6.0	PVC	130.0	1,987	0.02	91
P-127	J-102	H-101	69	6.0	PVC	130.0	32,471	0.26	90
P-128	H-101	J-104	153	6.0	PVC	130.0	32,471	0.26	90
P-129	J-104	J-103	470	4.0	PVC	130.0	3,935	0.07	96
P-130	J-104	H-106	149	6.0	PVC	130.0	24,536	0.19	90
P-131	J-110	H-112	32	8.0	PVC	130.0	35,841	0.16	88
P-132	J-110	H-111	138	8.0	PVC	130.0	20,106	0.09	89
P-133	J-111	H-116	144	8.0	PVC	130.0	35,331	0.16	87
P-134	J-115	J-118	226	8.0	PVC	130.0	21,361	0.09	86
P-135	J-115	H-118	345	6.0	PVC	130.0	8,370	0.07	91
P-136	J-118	H-121	24	8.0	PVC	130.0	15,761	0.07	86
P-137	H-121	J-119	317	8.0	PVC	130.0	15,761	0.07	89
P-138	J-119	J-121	114	8.0	PVC	130.0	24,131	0.11	89
P-139	J-121	H-122	32	8.0	PVC	130.0	14,322	0.06	88
P-140	J-121	J-127	702	4.0	PVC	130.0	5,809	0.10	86
P-141	H-122	J-122	395	6.0	PVC	130.0	14,322	0.11	91

Willow Bend

Active Scenario: MDD + FF

FlexTable: Pipe Table

Label	Start Node	Stop Node	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Flow (Absolute) (gpd)	Velocity (ft/s)	Pressure (Stop) (psi)
P-142	J-122	J-124	103	6.0	PVC	130.0	19,637	0.15	91
P-143	J-122	H-123	138	6.0	PVC	130.0	12,449	0.10	92
P-144	J-124	H-126	49	6.0	PVC	130.0	6,467	0.05	91
P-145	H-126	J-125	94	6.0	PVC	130.0	6,467	0.05	90
P-146	J-125	J-126	365	4.0	PVC	130.0	1,128	0.02	94
P-147	J-125	H-127	133	6.0	PVC	130.0	2,139	0.02	90
P-148	H-128	J-126	120	6.0	PVC	130.0	2,139	0.02	94
P-149	J-126	H-125	156	6.0	PVC	130.0	1,533	0.01	94
P-150	J-123	J-122	362	4.0	PVC	130.0	3,933	0.07	91
P-151	H-105	H-104	217	8.0	PVC	130.0	20,106	0.09	95
P-152	H-109	H-110	303	6.0	PVC	130.0	9,490	0.07	94
P-153	H-110	H-113	148	6.0	PVC	130.0	9,490	0.07	93
P-154	H-114	J-111	527	6.0	PVC	130.0	4,290	0.03	88
P-155	H-119	J-119	98	6.0	PVC	130.0	8,370	0.07	89
P-156	J-127	H-131	178	6.0	PVC	130.0	4,362	0.03	85
P-157	J-127	J-129	334	6.0	PVC	130.0	4,971	0.04	83
P-158	J-145	H-145	134	6.0	PVC	130.0	571	0.00	85
P-159	J-136	J-132	110	6.0	PVC	130.0	3,829	0.03	84
P-160	J-136	H-138	51	6.0	PVC	130.0	571	0.00	87
P-161	J-132	J-140	225	4.0	PVC	130.0	5,200	0.09	84
P-162	J-132	H-135	12	6.0	PVC	130.0	9,029	0.07	82
P-163	H-135	J-128	424	6.0	PVC	130.0	9,029	0.07	86
P-164	J-128	H-132	148	6.0	PVC	130.0	9,420	0.07	88
P-165	J-128	H-124	510	6.0	PVC	130.0	9,970	0.08	87
P-166	H-131	J-128	81	6.0	PVC	130.0	4,362	0.03	86
P-167	H-132	J-134	341	6.0	PVC	130.0	9,420	0.07	87
P-168	J-134	J-139	100	6.0	PVC	130.0	13,020	0.10	88
P-169	J-139	H-142	413	6.0	PVC	130.0	4,033	0.03	88
P-170	J-149	J-151	429	6.0	PVC	130.0	5,233	0.04	83
P-171	J-151	J-150	591	4.0	PVC	130.0	1,465	0.03	83
P-172	J-150	J-144	122	6.0	PVC	130.0	3,769	0.03	85
P-173	J-150	H-148	79	6.0	PVC	130.0	11,233	0.09	84
P-174	J-148	J-146	613	6.0	PVC	130.0	22,381	0.18	86
P-176	J-148	J-147	69	6.0	PVC	130.0	9,148	0.07	84
P-177	J-133	J-138	95	6.0	PVC	130.0	6,960	0.05	89
P-178	J-133	H-134	137	6.0	PVC	130.0	11,839	0.09	90
P-181	J-144	H-149	483	6.0	PVC	130.0	3,769	0.03	84
P-182	J-141	H-141	111	6.0	PVC	130.0	5,434	0.04	88
P-183	J-142	J-130	432	6.0	PVC	130.0	3,434	0.03	88
P-184	J-130	H-133	119	6.0	PVC	130.0	166	0.00	87
P-185	J-135	J-137	638	6.0	PVC	130.0	2,166	0.02	90
P-186	H-144	J-146	135	6.0	PVC	130.0	31,426	0.25	86
P-187	J-2	J-146	121	6.0	PVC	130.0	53,807	0.42	86
P-188	J-129	J-145	833	6.0	PVC	130.0	4,971	0.04	84
P-189	J-112	H-114	12	6.0	PVC	130.0	4,290	0.03	92

Willow Bend

Active Scenario: MDD + FF

FlexTable: Pipe Table

Label	Start Node	Stop Node	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Flow (Absolute) (gpd)	Velocity (ft/s)	Pressure (Stop) (psi)
P-190	J-138	J-139	117	6.0	PVC	130.0	14,187	0.11	88
P-191	J-138	H-140	141	6.0	PVC	130.0	7,227	0.06	88
P-192	H-140	J-147	333	6.0	PVC	130.0	7,227	0.06	84
P-193	J-147	J-133	621	4.0	PVC	130.0	1,921	0.03	90
P-194	H-100	J-101	73	8.0	PVC	130.0	93,461	0.41	97
P-195	H-106	J-110	410	6.0	PVC	130.0	24,536	0.19	88
P-196	H-112	J-111	81	8.0	PVC	130.0	35,841	0.16	88
P-197	H-116	J-115	81	8.0	PVC	130.0	35,331	0.16	87
P-198	H-111	H-105	555	8.0	PVC	130.0	20,106	0.09	93
P-199	H-104	J-109	57	8.0	PVC	130.0	20,106	0.09	96
P-200	H-108	H-115	366	8.0	PVC	130.0	27,144	0.12	95
P-201	J-108	J-116	1,403	4.0	PVC	130.0	3,405	0.06	93
P-202	H-117	J-116	69	8.0	PVC	130.0	23,857	0.11	93
P-203	H-120	J-117	117	6.0	PVC	130.0	4,413	0.03	97
P-204	H-125	J-123	70	6.0	PVC	130.0	1,533	0.01	95
P-205	H-134	J-131	142	6.0	PVC	130.0	11,839	0.09	91
P-206	H-123	J-120	90	8.0	PVC	130.0	12,449	0.06	92
P-207	H-113	J-112	101	6.0	PVC	130.0	9,490	0.07	93
P-208	H-118	H-119	143	6.0	PVC	130.0	8,370	0.07	89
P-209	H-124	J-124	145	6.0	PVC	130.0	9,970	0.08	91
P-210	H-145	H-143	127	6.0	PVC	130.0	571	0.00	85
P-211	H-143	H-138	473	6.0	PVC	130.0	571	0.00	87
P-212	H-142	J-149	491	6.0	PVC	130.0	4,033	0.03	84
P-213	H-149	J-151	132	6.0	PVC	130.0	3,769	0.03	83
P-214	H-148	J-148	20	6.0	PVC	130.0	11,233	0.09	84
P-215	H-130	H-128	123	6.0	PVC	130.0	2,139	0.02	93
P-216	H-127	H-129	120	6.0	PVC	130.0	2,139	0.02	89
P-217	H-129	H-130	309	6.0	PVC	130.0	2,139	0.02	93
P-218	H-139	J-141	10	6.0	PVC	130.0	9,434	0.07	88
P-219	H-133	J-135	427	6.0	PVC	130.0	166	0.00	90
P-220	H-141	J-142	315	6.0	PVC	130.0	5,434	0.04	88
PE-1	H-374	J-3	1,444	12.0	PVC	130.0	6	0.00	83
PE-2	J-6	J-5	1,308	8.0	PVC	130.0	179,595	0.80	89
PE-4	HE-274	J-6	3,760	16.0	PVC	130.0	179,595	0.20	88
PE-274	R-274	HE-274	1	16.0	PVC	130.0	179,595	0.20	78
PE-374	R-374	H-374	1	12.0	PVC	130.0	0	0.00	76

Willow Bend

Active Scenario: MDD

FlexTable: Reservoir Table

Label	Elevation (ft)	Flow (Out net) (gpd)	Hydraulic Grade (ft)
R-374	5,163.00	0	5,163.00
R-274	5,167.00	179,595	5,167.00

Willow Bend

Active Scenario: MDD + FF

Fire Flow Node FlexTable: Fire Flow Report

Label	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Pressure (psi)	Pressure (Calculated Residual) (psi)	Pressure (Residual Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Pressure (Calculated System Lower Limit) (psi)	Pipe w/ Maximum Velocity	Velocity of Maximum Pipe (ft/s)
H-100	True	1,000	1,001	96	92	20	H-374	74	P-100	5.26
H-101	True	1,000	1,001	90	82	20	H-374	74	P-127	6.36
H-102	True	1,000	1,001	97	92	20	H-374	74	P-100	5.07
H-103	True	1,000	1,001	98	91	20	H-374	74	P-100	4.78
H-104	True	1,000	1,001	95	90	20	H-374	74	P-199	5.03
H-105	True	1,000	1,001	93	87	20	H-374	74	P-100	4.85
H-106	True	1,000	1,001	90	82	20	H-374	74	P-130	6.01
H-107	True	1,000	1,001	97	90	20	H-374	74	P-100	4.72
H-108	True	1,000	1,001	96	89	20	H-374	74	P-100	4.71
H-109	True	1,000	1,001	92	80	20	H-374	74	P-108	6.62
H-110	True	1,000	1,001	94	81	20	H-374	74	P-189	5.85
H-111	True	1,000	1,001	89	83	20	H-374	74	P-100	4.82
H-112	True	1,000	1,001	88	82	20	H-374	74	P-100	4.81
H-113	True	1,000	1,001	93	80	20	H-374	74	P-189	6.37
H-114	True	1,000	1,001	92	80	20	H-374	74	P-154	6.78
H-115	True	1,000	1,001	95	88	20	H-374	74	P-100	4.63
H-116	True	1,000	1,001	87	80	20	H-374	74	P-100	4.77
H-117	True	1,000	1,001	94	87	20	H-374	74	P-187	4.65
H-118	True	1,000	1,001	91	81	20	H-374	74	P-208	6.14
H-119	True	1,000	1,001	89	81	20	H-374	74	P-155	7.68
H-120	True	1,000	1,001	96	88	20	H-374	74	P-187	5.12
H-121	True	1,000	1,001	86	78	20	H-374	74	P-100	4.73
H-122	True	1,000	1,001	88	81	20	H-374	74	P-100	4.66
H-123	True	1,000	1,001	92	85	20	H-374	74	P-187	4.85
H-124	True	1,000	1,001	87	78	20	H-374	74	P-209	7.22
H-125	True	1,000	1,001	94	76	20	H-374	74	P-150	8.42
H-126	True	1,000	1,001	91	81	20	H-374	74	P-144	9.93
H-127	True	1,000	1,001	90	76	20	H-374	74	P-145	9.15

Willow Bend

Active Scenario: MDD + FF

Fire Flow Node FlexTable: Fire Flow Report

Label	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Pressure (psi)	Pressure (Calculated Residual) (psi)	Pressure (Residual Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Pressure (Calculated System Lower Limit) (psi)	Pipe w/ Maximum Velocity	Velocity of Maximum Pipe (ft/s)
H-128	True	1,000	1,001	93	76	20	H-374	74	P-145	8.28
H-129	True	1,000	1,001	89	75	20	H-374	74	P-145	8.94
H-130	True	1,000	1,001	93	77	20	H-374	74	P-145	8.46
H-131	True	1,000	1,001	85	74	20	H-135	72	P-166	8.43
H-132	True	1,000	1,001	88	78	20	H-135	73	P-187	5.99
H-133	True	1,000	1,001	87	69	20	J-130	70	P-187	7.82
H-134	True	1,000	1,001	90	82	20	H-374	74	P-187	7.11
H-135	True	1,000	1,001	82	65	20	J-140	66	P-163	8.08
H-138	True	1,000	1,001	87	68	20	H-135	66	P-163	7.53
H-139	True	1,000	1,001	89	71	20	J-141	71	P-187	7.86
H-140	True	1,000	1,001	88	79	20	H-374	74	P-187	7.09
H-141	True	1,000	1,001	88	70	20	J-142	71	P-187	7.86
H-142	True	1,000	1,001	88	74	20	J-149	73	P-169	7.37
H-143	True	1,000	1,001	85	64	20	H-145	64	P-163	6.31
H-144	True	1,000	1,001	88	81	20	H-374	74	P-187	8.12
H-145	True	1,000	1,001	85	63	20	J-145	64	P-163	6.02
H-148	True	1,000	1,001	84	75	20	H-374	74	P-214	9.36
H-149	True	1,000	1,001	84	69	20	J-151	70	P-214	7.37
H-374	True	1,000	1,001	76	74	20	HE-274	78	PE-374	2.39
HE-274	True	1,000	1,001	78	78	20	H-374	76	PE-274	1.80

Willow Bend

Active Scenario: PHD

FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpd)	Hydraulic Grade (ft)	Pressure (psi)	Demand Shortage (gpd)	Notes
J-1	4,929.35	0	5,165.19	102	0	
J-2	4,974.41	0	5,165.14	83	0	
J-3	4,974.51	0	5,165.14	82	0	
J-4	4,948.88	0	5,165.27	94	0	
J-5	4,960.16	0	5,165.67	89	0	
J-6	4,963.00	0	5,166.88	88	0	
J-100	4,946.03	4,480	5,165.24	95	0	A
J-101	4,942.78	3,840	5,165.18	96	0	B
J-102	4,959.13	4,480	5,165.17	89	0	C
J-103	4,944.39	4,480	5,165.12	96	0	E
J-104	4,957.23	6,400	5,165.13	90	0	D
J-105	4,939.48	0	5,165.08	98	0	
J-106	4,942.56	16,000	5,165.08	96	0	F
J-107	4,943.68	8,960	5,165.09	96	0	
J-108	4,938.93	0	5,165.07	98	0	
J-109	4,945.46	8,960	5,165.10	95	0	G
J-110	4,961.74	14,080	5,165.08	88	0	J
J-111	4,962.85	7,680	5,165.08	87	0	K
J-112	4,951.79	8,320	5,165.08	92	0	I
J-113	4,949.12	13,440	5,165.05	93	0	H
J-114	4,947.87	0	5,165.05	94	0	
J-115	4,965.12	8,960	5,165.06	87	0	L
J-116	4,950.15	11,520	5,165.05	93	0	M
J-117	4,943.08	10,240	5,165.04	96	0	N
J-118	4,967.41	8,960	5,165.06	86	0	P
J-119	4,959.95	0	5,165.06	89	0	
J-120	4,952.65	5,120	5,165.04	92	0	O
J-121	4,961.44	6,400	5,165.05	88	0	Q
J-122	4,955.12	5,120	5,165.04	91	0	R
J-123	4,947.09	3,840	5,165.03	94	0	S
J-124	4,956.02	5,120	5,165.03	90	0	V
J-125	4,957.47	5,120	5,165.03	90	0	U
J-126	4,949.35	7,680	5,165.03	93	0	T
J-127	4,968.33	8,320	5,165.02	85	0	JJ
J-128	4,966.43	9,600	5,165.02	86	0	W
J-129	4,973.70	0	5,165.02	83	0	
J-130	4,963.68	5,760	5,165.05	87	0	AN
J-131	4,955.80	0	5,165.04	91	0	
J-132	4,972.06	0	5,165.02	83	0	
J-133	4,957.83	10,880	5,165.04	90	0	Z
J-134	4,964.83	5,760	5,165.03	87	0	X
J-135	4,959.21	3,200	5,165.05	89	0	DN
J-136	4,966.30	7,040	5,165.02	86	0	GG
J-137	4,957.93	5,120	5,165.05	90	0	AA
J-138	4,960.05	0	5,165.04	89	0	

Willow Bend

Active Scenario: PHD

FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpd)	Hydraulic Grade (ft)	Pressure (psi)	Demand Shortage (gpd)	Notes
J-139	4,962.04	8,320	5,165.03	88	0	Y
J-140	4,972.70	8,320	5,165.01	83	0	HH
J-141	4,962.38	6,400	5,165.05	88	0	CN
J-142	4,963.65	3,200	5,165.05	87	0	BN
J-143	4,962.62	4,480	5,165.07	88	0	BB
J-144	4,969.62	0	5,165.04	85	0	
J-145	4,970.99	7,040	5,165.02	84	0	II
J-146	4,966.62	0	5,165.09	86	0	
J-147	4,971.73	0	5,165.04	84	0	
J-148	4,972.46	3,200	5,165.04	83	0	CC
J-149	4,972.00	1,920	5,165.04	84	0	FF
J-150	4,973.23	9,600	5,165.04	83	0	DD
J-151	4,974.05	0	5,165.04	83	0	

Willow Bend

Active Scenario: PHD

FlexTable: Pipe Table

Label	Start Node	Stop Node	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Flow (Absolute) (gpd)	Velocity (ft/s)	Pressure (Stop) (psi)
P-1	J-2	J-1	3,345	12.0	PVC	130.0	86,082	0.17	102
P-2	J-3	J-2	97	12.0	PVC	130.0	6	0.00	83
P-4	J-4	J-1	866	8.0	PVC	130.0	86,082	0.38	102
P-5	J-5	J-4	435	8.0	PVC	130.0	287,350	1.27	94
P-100	J-4	J-100	66	8.0	PVC	130.0	201,268	0.89	95
P-101	J-100	J-102	550	6.0	PVC	130.0	47,250	0.37	89
P-102	J-100	H-100	134	8.0	PVC	130.0	149,538	0.66	96
P-103	J-101	H-102	135	8.0	PVC	130.0	136,515	0.61	96
P-104	J-101	J-102	342	4.0	PVC	130.0	9,183	0.16	89
P-105	H-102	J-103	130	8.0	PVC	130.0	136,515	0.61	96
P-106	J-103	J-109	110	8.0	PVC	130.0	138,331	0.61	95
P-107	J-109	J-107	104	8.0	PVC	130.0	82,019	0.36	96
P-108	J-109	H-109	607	6.0	PVC	130.0	15,183	0.12	92
P-109	J-107	J-106	56	8.0	PVC	130.0	64,877	0.29	96
P-110	J-107	J-113	947	4.0	PVC	130.0	8,182	0.15	93
P-111	J-106	H-103	118	8.0	PVC	130.0	43,429	0.19	97
P-112	J-106	J-108	544	4.0	PVC	130.0	5,448	0.10	98
P-113	H-103	J-105	69	8.0	PVC	130.0	43,429	0.19	98
P-114	J-105	H-107	319	8.0	PVC	130.0	43,429	0.19	97
P-115	H-107	H-108	51	8.0	PVC	130.0	43,429	0.19	95
P-116	H-115	J-114	110	8.0	PVC	130.0	43,429	0.19	94
P-117	J-114	J-113	107	8.0	PVC	130.0	43,429	0.19	93
P-118	J-113	H-117	29	8.0	PVC	130.0	38,171	0.17	93
P-119	J-116	J-120	251	8.0	PVC	130.0	32,099	0.14	92
P-120	J-120	H-120	422	8.0	PVC	130.0	7,059	0.03	95
P-122	J-131	J-137	134	6.0	PVC	130.0	22,122	0.17	90
P-123	J-137	J-143	270	6.0	PVC	130.0	30,707	0.24	88
P-124	J-143	H-144	41	6.0	PVC	130.0	50,282	0.40	87
P-125	J-143	H-139	817	6.0	PVC	130.0	15,095	0.12	88
P-126	J-117	J-131	1,179	6.0	PVC	130.0	3,181	0.03	91
P-127	J-102	H-101	69	6.0	PVC	130.0	51,953	0.41	89
P-128	H-101	J-104	153	6.0	PVC	130.0	51,953	0.41	90
P-129	J-104	J-103	470	4.0	PVC	130.0	6,296	0.11	96
P-130	J-104	H-106	149	6.0	PVC	130.0	39,257	0.31	90
P-131	J-110	H-112	32	8.0	PVC	130.0	57,346	0.25	88
P-132	J-110	H-111	138	8.0	PVC	130.0	32,169	0.14	89
P-133	J-111	H-116	144	8.0	PVC	130.0	56,529	0.25	87
P-134	J-115	J-118	226	8.0	PVC	130.0	34,178	0.15	86
P-135	J-115	H-118	345	6.0	PVC	130.0	13,391	0.11	90
P-136	J-118	H-121	24	8.0	PVC	130.0	25,218	0.11	85
P-137	H-121	J-119	317	8.0	PVC	130.0	25,218	0.11	89
P-138	J-119	J-121	114	8.0	PVC	130.0	38,609	0.17	88
P-139	J-121	H-122	32	8.0	PVC	130.0	22,914	0.10	88
P-140	J-121	J-127	702	4.0	PVC	130.0	9,295	0.16	85
P-141	H-122	J-122	395	6.0	PVC	130.0	22,914	0.18	91

Willow Bend
Active Scenario: PHD
FlexTable: Pipe Table

Label	Start Node	Stop Node	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Flow (Absolute) (gpd)	Velocity (ft/s)	Pressure (Stop) (psi)
P-142	J-122	J-124	103	6.0	PVC	130.0	31,421	0.25	90
P-143	J-122	H-123	138	6.0	PVC	130.0	19,920	0.16	92
P-144	J-124	H-126	49	6.0	PVC	130.0	10,346	0.08	90
P-145	H-126	J-125	94	6.0	PVC	130.0	10,346	0.08	90
P-146	J-125	J-126	365	4.0	PVC	130.0	1,805	0.03	93
P-147	J-125	H-127	133	6.0	PVC	130.0	3,422	0.03	89
P-148	H-128	J-126	120	6.0	PVC	130.0	3,422	0.03	93
P-149	J-126	H-125	156	6.0	PVC	130.0	2,454	0.02	94
P-150	J-123	J-122	362	4.0	PVC	130.0	6,294	0.11	91
P-151	H-105	H-104	217	8.0	PVC	130.0	32,169	0.14	95
P-152	H-109	H-110	303	6.0	PVC	130.0	15,183	0.12	93
P-153	H-110	H-113	148	6.0	PVC	130.0	15,183	0.12	92
P-154	H-114	J-111	527	6.0	PVC	130.0	6,863	0.05	87
P-155	H-119	J-119	98	6.0	PVC	130.0	13,391	0.11	89
P-156	J-127	H-131	178	6.0	PVC	130.0	6,979	0.05	85
P-157	J-127	J-129	334	6.0	PVC	130.0	7,954	0.06	83
P-158	J-145	H-145	134	6.0	PVC	130.0	914	0.01	84
P-159	J-136	J-132	110	6.0	PVC	130.0	6,126	0.05	83
P-160	J-136	H-138	51	6.0	PVC	130.0	914	0.01	86
P-161	J-132	J-140	225	4.0	PVC	130.0	8,320	0.15	83
P-162	J-132	H-135	12	6.0	PVC	130.0	14,446	0.11	82
P-163	H-135	J-128	424	6.0	PVC	130.0	14,446	0.11	86
P-164	J-128	H-132	148	6.0	PVC	130.0	15,070	0.12	88
P-165	J-128	H-124	510	6.0	PVC	130.0	15,955	0.13	86
P-166	H-131	J-128	81	6.0	PVC	130.0	6,979	0.05	86
P-167	H-132	J-134	341	6.0	PVC	130.0	15,070	0.12	87
P-168	J-134	J-139	100	6.0	PVC	130.0	20,830	0.16	88
P-169	J-139	H-142	413	6.0	PVC	130.0	6,454	0.05	87
P-170	J-149	J-151	429	6.0	PVC	130.0	8,374	0.07	83
P-171	J-151	J-150	591	4.0	PVC	130.0	2,349	0.04	83
P-172	J-150	J-144	122	6.0	PVC	130.0	6,025	0.05	85
P-173	J-150	H-148	79	6.0	PVC	130.0	17,974	0.14	83
P-174	J-148	J-146	613	6.0	PVC	130.0	35,810	0.28	86
P-176	J-148	J-147	69	6.0	PVC	130.0	14,636	0.12	84
P-177	J-133	J-138	95	6.0	PVC	130.0	11,134	0.09	89
P-178	J-133	H-134	137	6.0	PVC	130.0	18,940	0.15	89
P-181	J-144	H-149	483	6.0	PVC	130.0	6,025	0.05	83
P-182	J-141	H-141	111	6.0	PVC	130.0	8,695	0.07	87
P-183	J-142	J-130	432	6.0	PVC	130.0	5,495	0.04	87
P-184	J-130	H-133	119	6.0	PVC	130.0	265	0.00	87
P-185	J-135	J-137	638	6.0	PVC	130.0	3,465	0.03	90
P-186	H-144	J-146	135	6.0	PVC	130.0	50,282	0.40	86
P-187	J-2	J-146	121	6.0	PVC	130.0	86,092	0.68	86
P-188	J-129	J-145	833	6.0	PVC	130.0	7,954	0.06	84
P-189	J-112	H-114	12	6.0	PVC	130.0	6,863	0.05	92

Willow Bend

Active Scenario: PHD

FlexTable: Pipe Table

Label	Start Node	Stop Node	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Flow (Absolute) (gpd)	Velocity (ft/s)	Pressure (Stop) (psi)
P-190	J-138	J-139	117	6.0	PVC	130.0	22,696	0.18	88
P-191	J-138	H-140	141	6.0	PVC	130.0	11,562	0.09	88
P-192	H-140	J-147	333	6.0	PVC	130.0	11,562	0.09	84
P-193	J-147	J-133	621	4.0	PVC	130.0	3,073	0.05	90
P-194	H-100	J-101	73	8.0	PVC	130.0	149,538	0.66	96
P-195	H-106	J-110	410	6.0	PVC	130.0	39,257	0.31	88
P-196	H-112	J-111	81	8.0	PVC	130.0	57,346	0.25	87
P-197	H-116	J-115	81	8.0	PVC	130.0	56,529	0.25	87
P-198	H-111	H-105	555	8.0	PVC	130.0	32,169	0.14	92
P-199	H-104	J-109	57	8.0	PVC	130.0	32,169	0.14	95
P-200	H-108	H-115	366	8.0	PVC	130.0	43,429	0.19	95
P-201	J-108	J-116	1,403	4.0	PVC	130.0	5,448	0.10	93
P-202	H-117	J-116	69	8.0	PVC	130.0	38,171	0.17	93
P-203	H-120	J-117	117	6.0	PVC	130.0	7,059	0.06	96
P-204	H-125	J-123	70	6.0	PVC	130.0	2,454	0.02	94
P-205	H-134	J-131	142	6.0	PVC	130.0	18,940	0.15	91
P-206	H-123	J-120	90	8.0	PVC	130.0	19,920	0.09	92
P-207	H-113	J-112	101	6.0	PVC	130.0	15,183	0.12	92
P-208	H-118	H-119	143	6.0	PVC	130.0	13,391	0.11	89
P-209	H-124	J-124	145	6.0	PVC	130.0	15,955	0.13	90
P-210	H-145	H-143	127	6.0	PVC	130.0	914	0.01	84
P-211	H-143	H-138	473	6.0	PVC	130.0	914	0.01	86
P-212	H-142	J-149	491	6.0	PVC	130.0	6,454	0.05	84
P-213	H-149	J-151	132	6.0	PVC	130.0	6,025	0.05	83
P-214	H-148	J-148	20	6.0	PVC	130.0	17,974	0.14	83
P-215	H-130	H-128	123	6.0	PVC	130.0	3,422	0.03	92
P-216	H-127	H-129	120	6.0	PVC	130.0	3,422	0.03	89
P-217	H-129	H-130	309	6.0	PVC	130.0	3,422	0.03	92
P-218	H-139	J-141	10	6.0	PVC	130.0	15,095	0.12	88
P-219	H-133	J-135	427	6.0	PVC	130.0	265	0.00	89
P-220	H-141	J-142	315	6.0	PVC	130.0	8,695	0.07	87
PE-1	H-374	J-3	1,444	12.0	PVC	130.0	0	0.00	82
PE-2	J-6	J-5	1,308	8.0	PVC	130.0	287,350	1.27	89
PE-4	HE-274	J-6	3,760	16.0	PVC	130.0	287,350	0.32	88
PE-274	R-274	HE-274	1	16.0	PVC	130.0	287,350	0.32	78
PE-374	R-374	H-374	1	12.0	PVC	130.0	0	0.00	75

Willow Bend
Active Scenario: PHD
FlexTable: Hydrant Table

Label	Elevation (ft)	Pressure (psi)
H-100	4,943.93	96
H-101	4,958.77	89
H-102	4,943.15	96
H-103	4,940.26	97
H-104	4,946.00	95
H-105	4,951.47	92
H-106	4,957.65	90
H-107	4,941.95	97
H-108	4,944.71	95
H-109	4,952.50	92
H-110	4,949.46	93
H-111	4,959.34	89
H-112	4,962.71	88
H-113	4,951.30	92
H-114	4,952.91	92
H-115	4,946.59	95
H-116	4,964.90	87
H-117	4,949.20	93
H-118	4,956.97	90
H-119	4,959.64	89
H-120	4,944.93	95
H-121	4,968.29	85
H-122	4,962.75	88
H-123	4,953.29	92
H-124	4,965.17	86
H-125	4,948.19	94
H-126	4,956.99	90
H-127	4,958.75	89
H-128	4,951.98	92
H-129	4,960.25	89
H-130	4,951.57	92
H-131	4,969.38	85
H-132	4,961.77	88
H-133	4,964.41	87
H-134	4,958.46	89
H-135	4,976.36	82
H-138	4,966.08	86
H-139	4,961.42	88
H-140	4,962.17	88
H-141	4,963.45	87
H-142	4,963.85	87
H-143	4,969.85	84
H-144	4,963.39	87
H-145	4,970.62	84
H-148	4,972.93	83
H-149	4,972.78	83
HE-274	4,987.15	78
H-374	4,991.00	75

Willow Bend

Active Scenario: PHD

FlexTable: Reservoir Table

Label	Elevation (ft)	Flow (Out net) (gpd)	Hydraulic Grade (ft)
R-374	5,163.00	0	5,163.00
R-274	5,167.00	287,350	5,167.00

APPENDIX C – Sanitary Sewer Flows

Willow Bend ATWELL

Sanitary Sewer Flow Calculations

Date: July 17, 2020 | Prepared For: Sun Communities

DesignValues

Design values are per *City Of Fort Lupton Standards and Specifications for the Design and Construction of Public Improvements* , Chapter 4, Section 4.13.00

Average Daily Flow per capita	70	gpd/capita
Per lot capita	2.9	
Peaking factor	3	
Peak flow per lot	609	gpd
Infiltration and Inflow rate	1000	gpd/acre

Sanitary Sewer Flow and Routing Table

Sewer Basin		A	B	A+B	C	D	C+D	E	Total
Design Point		1	2	3	4	5	6	7	Total
Discharge Manhole		SS-MH_A1	SS-MH_A1	EX SSMH_A	SSMH_C1L.1	SSMH_C1	EX SSMH_C	EX SSMH_B	
Number of lots		128	173	301	45	86	131	17	449
Tributary Area	(acres)	24.8	52.0	76.8	19.3	10.9	10.9	5.6	200.3
Peak Flow Total	(gpd)	77,952	105,357	183,309	27,405	52,374	79,779	10,353	536,529
Infiltration and Inflow Total	(gpd)	24,840	51,978	76,818	19,328	10,871	10,871	5,566	200,271
Sanitary Sewer Design Flow	(gpd)	102,792	157,335	260,127	46,733	63,245	90,650	15,919	736,800
Sanitary Sewer Design Flow	(gpm)	71	109	181	32	44	63	11	511

Minimum Pipe Size	(in)	6	6	8	6	6	6	6	12
Minimum Pipe Slope	(%)	0.60	0.80	0.50	0.60	0.60	0.60	0.60	0.45

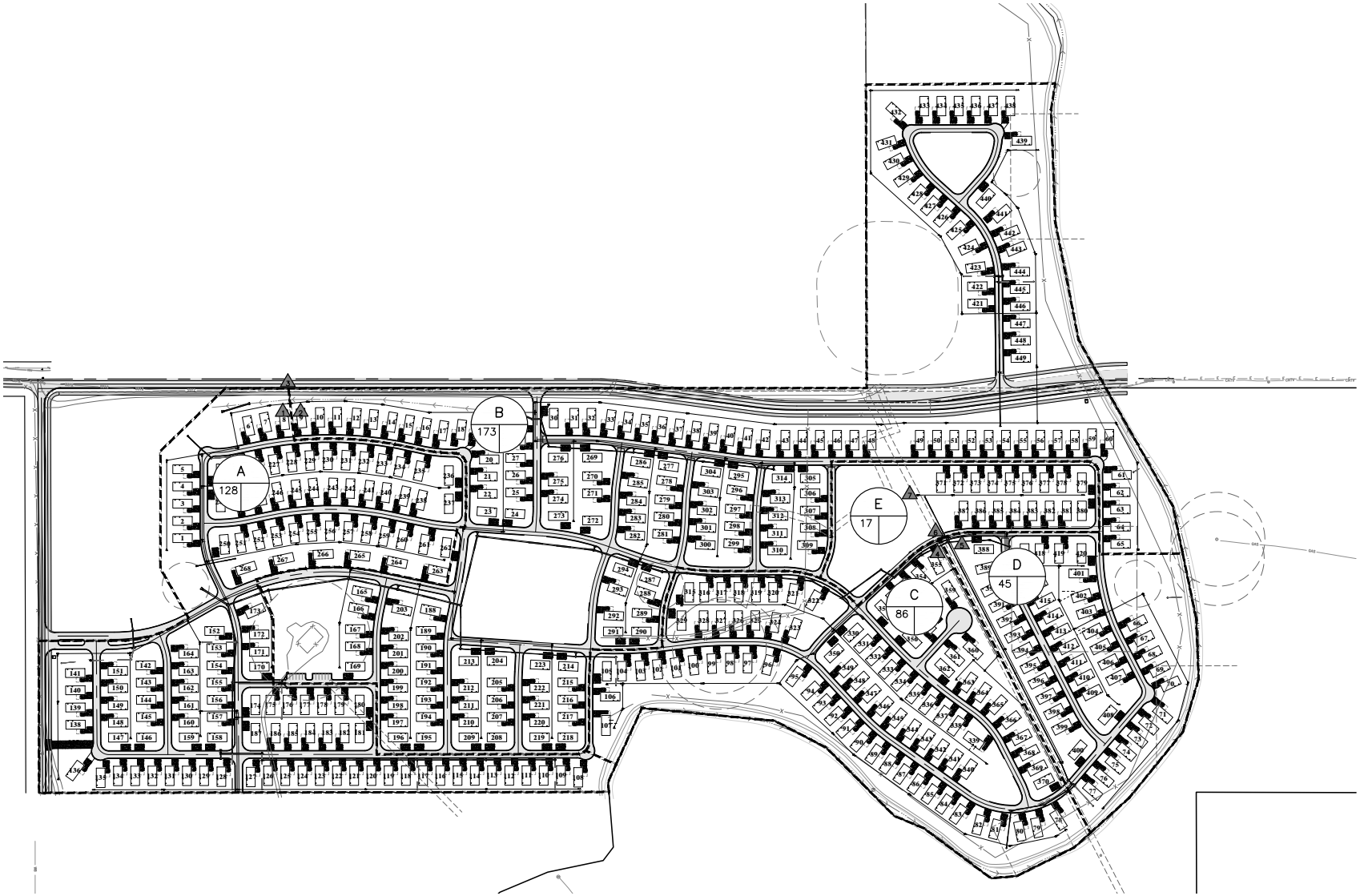
APPENDIX D – Sanitary Sewer Hydraulic Analysis and Modeling

-Sewer Basin Map

-Pipe Capacity Report

WILLOW BEND

WASTEWATER BASIN MAP



(IN FEET)
1 inch = 150 ft.

PROJECT NO.:19001956
DATE: 07/17/2020

ATWELL
143 UNION BOULEVARD, SUITE 700
LAKEWOOD, CO 80228
303.462.1180
INFO@ATWELL-GROUP.COM

CAD FILE: 19001956 - SANITARY SEWER MODELING.DWG

Willow Bend

Sanitary Sewer Pipe Capacity Calculations

Label	Diameter (in)	Solve For	Friction Method	Roughness Coefficient	Channel Slope (ft/ft)	Normal Depth (in)	Discharge (gpm)	Percent Full (%)	Velocity (ft/s)	Froude Number	Maximum Discharge (gpm)
6" San @ 0.6%	6	Discharge	Manning Formula	0.013	0.006	3	97.5	50	2.21	0.88	209.8
6" San @ 0.7%	6	Discharge	Manning Formula	0.013	0.007	3	105.4	50	2.39	0.95	226.7
6" San @ 0.8%	6	Discharge	Manning Formula	0.013	0.008	3	112.6	50	2.56	1.02	242.3
6" San @ 0.9%	6	Discharge	Manning Formula	0.013	0.009	3	119.4	50	2.71	1.08	257
6" San @ 1.0%	6	Discharge	Manning Formula	0.013	0.01	3	125.9	50	2.86	1.14	270.9
6" San @ 2.0%	6	Discharge	Manning Formula	0.013	0.02	3	178.1	50	4.04	1.61	383.1
8" San @ 0.5%	8	Discharge	Manning Formula	0.013	0.005	4	191.8	50	2.45	0.84	412.5
8" San @ 0.6%	8	Discharge	Manning Formula	0.013	0.006	4	210.1	50	2.68	0.92	451.9
8" San @ 1.0%	8	Discharge	Manning Formula	0.013	0.01	4	271.2	50	3.46	1.19	583.4
8" San @ 2.0%	8	Discharge	Manning Formula	0.013	0.02	4	383.5	50	4.9	1.69	825
8" San @ 3.0%	8	Discharge	Manning Formula	0.013	0.03	4	469.7	50	6.00	2.07	1010.5
8" San @ 4.0%	8	Discharge	Manning Formula	0.013	0.04	4	542.3	50	6.92	2.42	1166.8
12" San @ 0.3%	12	Discharge	Manning Formula	0.013	0.03	6	437.9	50	2.48	0.7	942.1
12" San @ 0.4%	12	Discharge	Manning Formula	0.013	0.04	6	505.7	50	2.87	0.81	1087.9
12" San @ 0.5%	12	Discharge	Manning Formula	0.013	0.05	6	565.3	50	3.21	0.90	1216.3
12" San @ 0.6%	12	Discharge	Manning Formula	0.013	0.06	6	619.3	50	3.51	0.99	1332.4

Calculations from Bentley Flowmaster V8i (SELECTseries 1)

APPENDIX E –Utility Exhibits and Plans

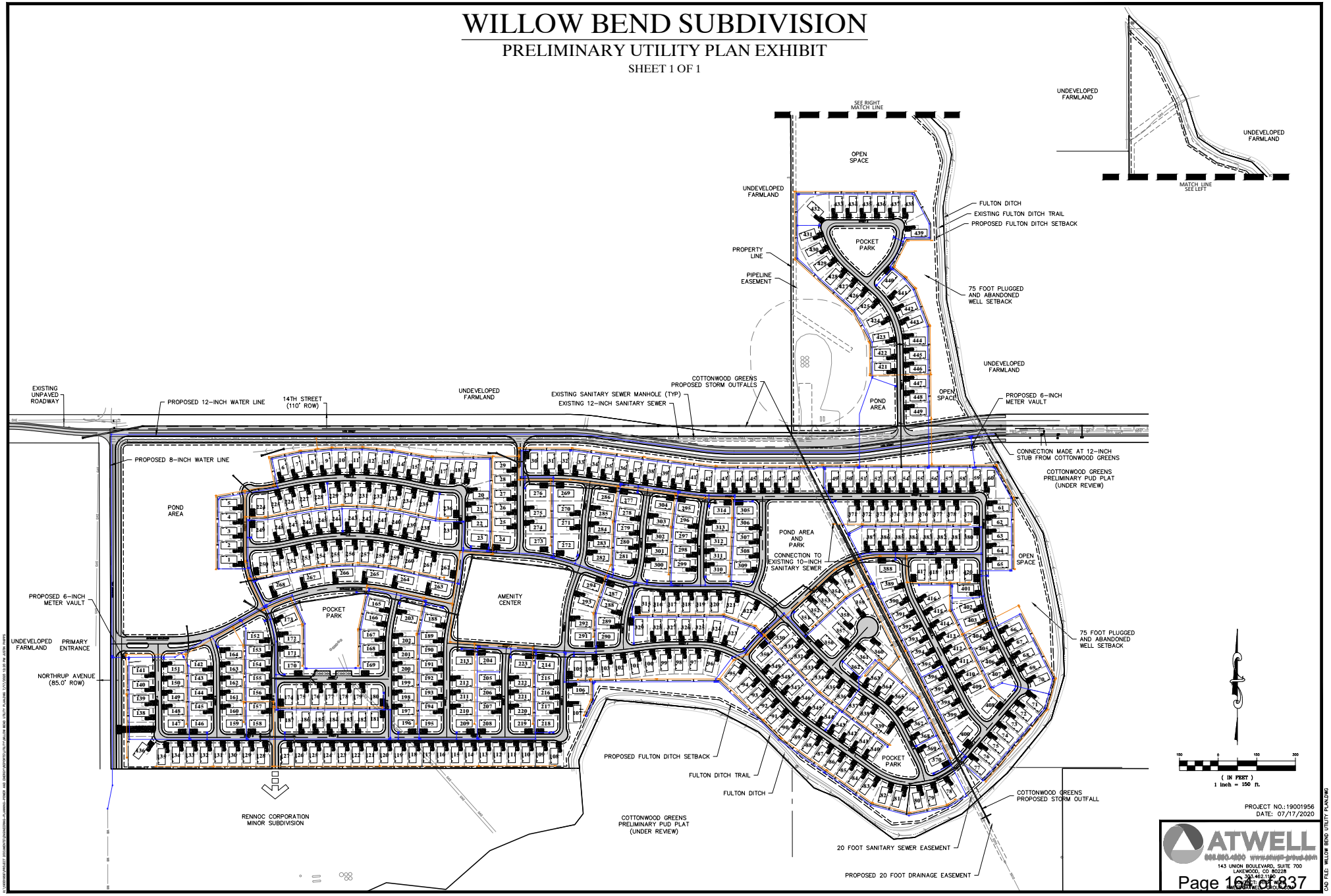
-Preliminary Utility Plan

-Aims Outfall Sewer Plans by Alpha Engineering, selected sheets

WILLOW BEND SUBDIVISION

PRELIMINARY UTILITY PLAN EXHIBIT

SHEET 1 OF 1



PROJECT NO.: 19001956
DATE: 07/17/2020

ATWELL
888.880.4800 www.atwell-group.com
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LAKEWOOD, CO 80228
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CONTACT: TIM WEBER
TWEBER@ATWELL-GROUP.COM

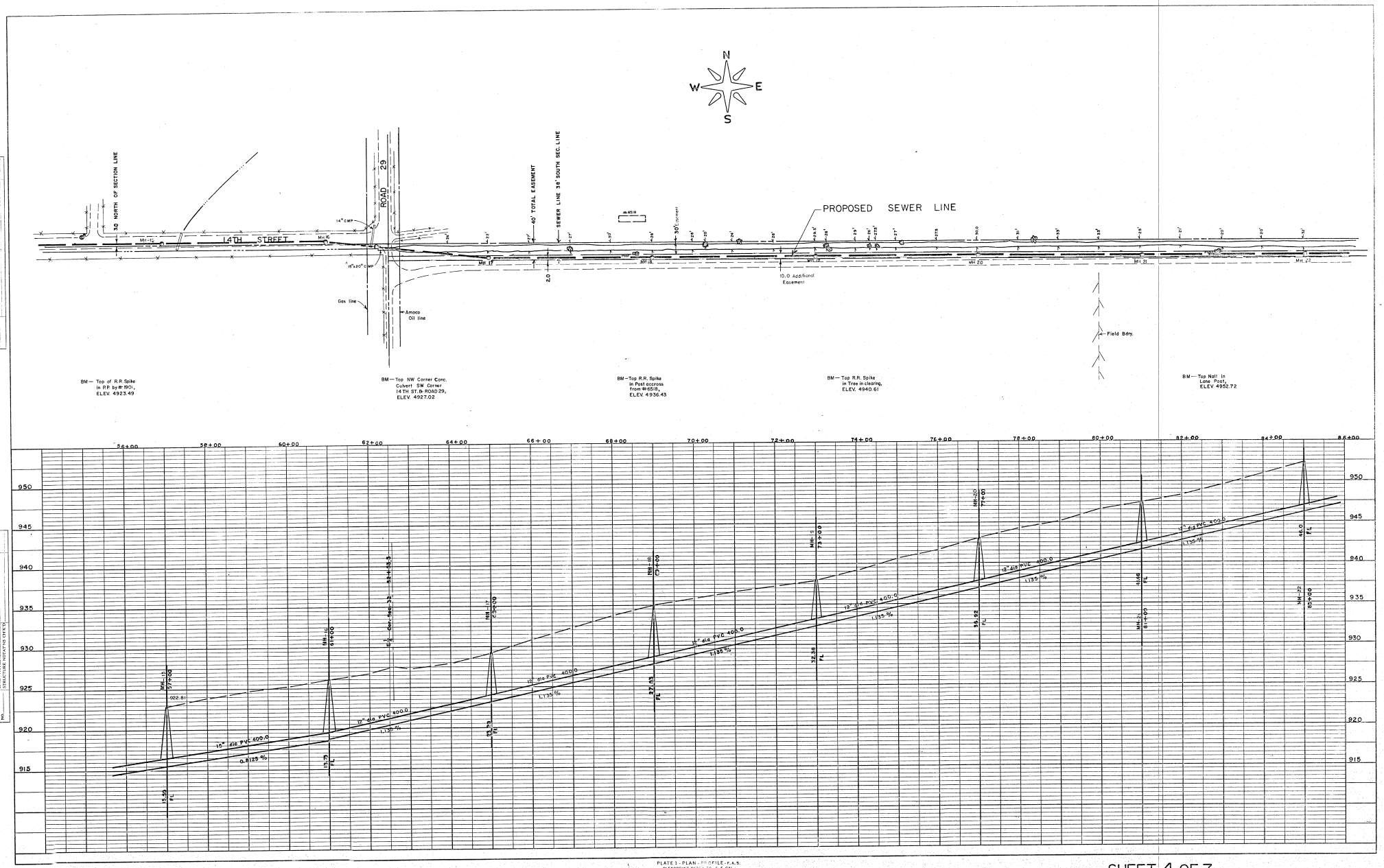


PLATE 1 - PLAN - PROFILE - F.A.S.
CLEARPRINT PAPER CO. S.F. CAL.
NO. 1001-1

SHEET 4 OF 7

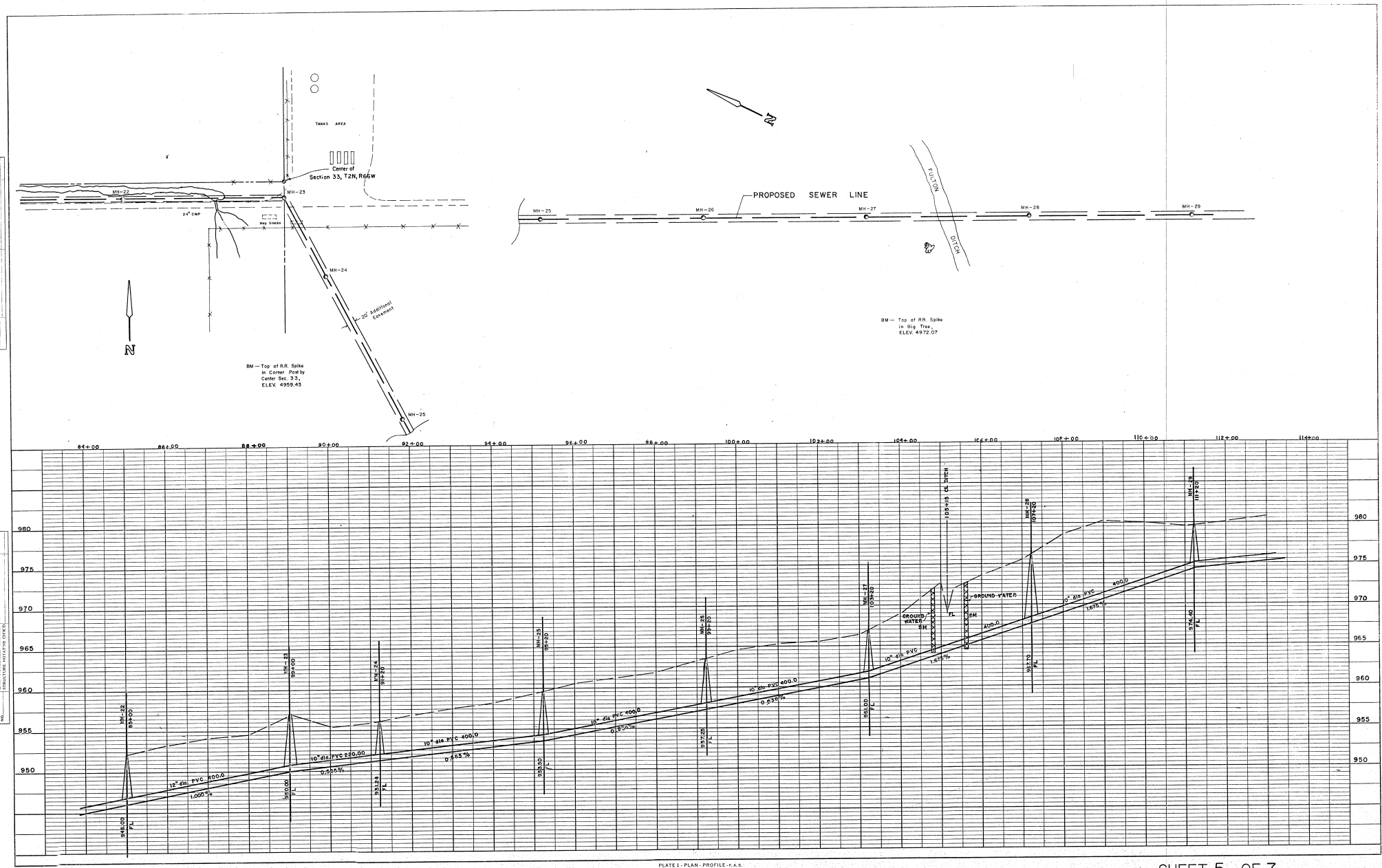


PLATE 1 - PLAN - PROFILE - F.A.S.
CLEARPRINT PAPER CO., S.F. CAL.
NO. 1000H-1

SHEET 5 OF 7

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
DENVER REGULATORY OFFICE, 9307 SOUTH WADSWORTH BOULEVARD
LITTLETON, COLORADO 80128-6901

August 27, 2019

SUBJECT: Approved Jurisdictional Determination, Ft. Lupton Coyote Creek North Site Project, Corps File No. NWO-2019-01310-DEN, Weld County, CO

Ms. Christine Sveum
Atwell, LLC
143 Union Blvd, Suite 700
Lakewood, CO 80228

Dear Ms. Sveum:

Reference is made to the above-mentioned project centered at approximately 40.093380°N, -104.784409°W, in Weld County, Colorado. You have requested an Approved Jurisdictional Determination for all aquatic resources found at the project location.

The project area has been reviewed in accordance with Section 404 of the Clean Water Act under which the U.S. Army Corps of Engineers regulates the discharge of dredged and fill material, and any excavation activity associated with a dredge and fill project in waters of the United States.

The Corps has determined that Fulton Ditch and Wetlands 1, 2, and 3 are excluded waters and are therefore not jurisdictional. In that regard, no permit is required for work at this location.

At your request, an approved jurisdictional determination (JD) has been completed for two aquatic resources in this area. The JD is attached to this letter. If you are not in agreement with the JD decision, you may request an administrative appeal under regulation 33 CFR 331, by using the attached Appeal Form and Administrative Appeal Process form. The request for appeal must be received within 60 days from the date of this letter. If you would like more information on the jurisdictional appeal process, contact this office. It is not necessary to submit a Request for Appeal if you do not object to the JD.

This JD is valid for a period of five years from the date of this letter, unless new information warrants revisions of the JDs before the expiration date, or unless the Corps has identified, after a possible public notice and comment, that specific geographic areas with rapidly changing environmental conditions merit re-verification on a more frequent basis.

If there are any additional questions or concerns, please contact **Mr. Nicholas Franke** of my office at **303-979-4120** or by email at Nicholas.A.Franke@usace.army.mil and reference **Corps File No. NWO-2019-01310-DEN**.

Sincerely,

Matthew Montgomery

for Kiel Downing
Chief, Denver Regulatory Office

Attachments:

Approved Jurisdictional Determination (August 27, 2019)
Approved Jurisdictional Determination Appeal Form
Approved Jurisdictional Determination Appeal Form Instruction Sheet

Regulatory Program

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in the Approved Jurisdictional Determination Form User Manual.

SECTION I: BACKGROUND INFORMATION

A. COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): August 27, 2019

B. ORM NUMBER IN APPROPRIATE FORMAT (e.g., HQ-2015-00001-SMJ): NWO-2019-01310-DEN

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: Colorado County/parish/borough: Weld City: Fort Lupton

Center coordinates of site (lat/long in degree decimal format): Lat. 40.093380°N, Long. -104.784409°W.

Map(s)/diagram(s) of review area (including map identifying single point of entry (SPOE) watershed and/or potential jurisdictional areas where applicable) is/are: ☒attached ☐ in report/map titled .

☐ Other sites (e.g., offsite mitigation sites, disposal sites, etc.) are associated with this action and are recorded on a different JD form. List JD form ID numbers (e.g., HQ-2015-00001-SMJ-1): .

D. REVIEW PERFORMED FOR SITE EVALUATION:

☐ Office (Desk) Determination Only. Date: .

☒ Office (Desk) and Field Determination. Office/Desk Date(s): August 27, 2019. Field Date(s): August 7, 2019.

SECTION II: DATA SOURCES

Check all that were used to aid in the determination and attach data/maps to this JD form and/or references/citations in the administrative record, as appropriate.

☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant. Title/Date: Fig. 1, Vicinity Map; and Fig. 2, Existing Conditions, ERO Resources Corp., July 15, 2019

☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
- ☒ Office concurs with data sheets/delineation report.. Title/Date: ERO Resources Corp., July 1, 2019.
- ☐ Office does not concur with data sheets/delineation report. Summarize rationale and include information on revised data sheets/delineation report that this JD form has relied upon: . Revised Title/Date: .

☐ Data sheets prepared by the Corps. Title/Date: .

☐ Corps navigable waters study. Title/Date: .

☐ CorpsMap ORM map layers. Title/Date: .

☐ USGS Hydrologic Atlas. Title/Date: .

☐ USGS, NHD, or WBD data/maps. Title/Date: .

☒ USGS 8, 10 and/or 12 digit HUC maps. HUC number: HUC8: 10190003; HUC12: 101900030602.

☒ USGS maps. Scale & quad name and date: 1:24,000 – Fort Lupton; 2016.

☐ USDA NRCS Soil Survey. Citation: .

☐ USFWS National Wetlands Inventory maps. Citation: .

☐ State/Local wetland inventory maps. Citation: .

☐ FEMA/FIRM maps. Citation: .

☒ Photographs: ☒ Aerial. Citation: Google Earth, 1993-2018. or ☒ Other. Citation: Site photographs by consultant.

☐ LiDAR data/maps. Citation: .

☐ Previous determinations. File no. and date of jurisdictional determination letter: .

☐ Applicable/supporting case law: .

☐ Applicable/supporting scientific literature: .

☒ Other information (please specify): This AJD prepared in accordance with the 2015 Clean Water Rule.

SECTION III: SUMMARY OF FINDINGS

Complete Spreadsheet Tab "Aquatic Resources" – Required for All AJDs

A. RIVERS AND HARBORS ACT (RHA) SECTION 10 DETERMINATION OF JURISDICTION:

☐ "*navigable waters of the U.S.*" within RHA jurisdiction (as defined by 33 CFR part 329) in the review area.

- **List water(s) and area/length within review area – Required:**

NOTE: If the navigable water is not subject to the ebb and flow of the tide or included on the District's list of Section 10 navigable waters list, DO NOT USE THIS FORM TO MAKE THE DETERMINATION. The District must continue to follow the procedure outlined in 33 CFR part 329.14 to make a Section 10 RHA navigability determination.

B. CLEAN WATER ACT (CWA) SECTION 404 DETERMINATION OF JURISDICTION: "*waters of the U.S.*" within CWA jurisdiction (as defined by 33 CFR part 328.3) in the review area. **Check all that apply.**

☐ (a)(1): All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide. (Traditional Navigable Waters or TNW).

- **Complete Spreadsheet Tab "(a)(1)" - Required**

☐ This JD includes a case-specific (a)(1) TNW (Section 404 navigable-in-fact) determination on a water that has not previously been designated as such. Documentation required for this case-specific (a)(1) TNW determination is attached.

☐ (a)(2): All interstate waters, including interstate wetlands.

- **Complete Spreadsheet Tab "(a)(2)" - Required**

☐ (a)(3): The territorial seas.

- **Complete Spreadsheet Tab "(a)(3)" - Required**

☐ (a)(4): All impoundments of waters otherwise identified as waters of the U.S. under 33 CFR part 328.3.

- **Complete Spreadsheet Tab "(a)(4)" - Required**

☐ (a)(5): All tributaries, as defined in 33 CFR part 328.3, of waters identified in paragraphs (a)(1)-(a)(3) of 33 CFR part 328.3.

- **Complete Spreadsheet Tab "(a)(5)" - Required**

☐ (a)(6): All waters adjacent to a water identified in paragraphs (a)(1)-(a)(5) of 33 CFR part 328.3, including wetlands, ponds, lakes, oxbows, impoundments, and similar waters.

- **Complete Spreadsheet Tab "(a)(6)" - Required**

☐ Bordering/Contiguous.

Neighboring:

☐ (c)(2)(i): All waters located within 100 feet of the ordinary high water mark (OHWM) of a water identified in paragraphs (a)(1)-(a)(5) of 33 CFR part 328.3.

☐ (c)(2)(ii): All waters located within the 100-year floodplain of a water identified in paragraphs (a)(1)-(a)(5) of 33 CFR part 328.3 and not more than 1,500 feet of the OHWM of such water.

☐ (c)(2)(iii): All waters located within 1,500 feet of the high tide line of a water identified in paragraphs (a)(1) or (a)(3) of 33 CFR part 328.3, and all waters within 1,500 feet of the OHWM of the Great Lakes.

☐ (a)(7): All waters identified in 33 CFR 328.3(a)(7)(i)-(v) where they are determined, on a case-specific basis, to have a significant nexus to a water identified in paragraphs (a)(1)-(a)(3) of 33 CFR part 328.3.

- **Complete Spreadsheet Tab "(a)(7)" for the significant nexus determination. Attach a map delineating the SPOE watershed boundary with (a)(7) waters identified in the similarly situated analysis. – Required**

☐ Includes water(s) that are geographically and physically adjacent per (a)(6), but are being used for established, normal farming, silviculture, and ranching activities (33 USC Section 1344(f)(1)) and therefore are not adjacent and require a case-specific significant nexus analysis.

☐ (a)(8): All waters located within the 100-year floodplain of a water identified in paragraphs (a)(1)-(a)(3) of 33 CFR part 328.3 not covered by (c)(2)(ii) above and all waters located within 4,000 feet of the high tide line or OHWM of a water identified in paragraphs (a)(1)-(a)(5) of 33 CFR part 328.3 where they are determined on a case-specific basis to have a significant nexus to a water identified in paragraphs (a)(1)-(a)(3) of 33 CFR part 328.3.

- **Complete Spreadsheet Tab "(a)(8)" for the significant nexus determination. Attach a map delineating the SPOE watershed boundary with (a)(8) waters identified in the similarly situated analysis. – Required**

☐ Includes water(s) that are geographically and physically adjacent per (a)(6), but are being used for established, normal farming, silviculture, and ranching activities (33 USC Section 1344(f)(1)) and therefore are not adjacent and require a case-specific significant nexus analysis.

C. NON-WATERS OF THE U.S. FINDINGS:

Check all that apply.

☐ The review area is comprised entirely of dry land.

☐ Potential-(a)(7) Waters: Waters that DO NOT have a significant nexus to a water identified in paragraphs (a)(1)-(a)(3) of 33 CFR part 328.3.

- **Complete Spreadsheet Tab "NonWaters-No SigNex". Attach a map delineating the SPOE watershed boundary with potential (a)(7) waters identified in the similarly situated analysis. – Required**

☐ Includes water(s) that are geographically and physically adjacent per (a)(6), but are being used for established, normal farming, silviculture, and ranching activities (33 USC Section 1344(f)(1)) and therefore are not adjacent and require a case-specific significant nexus analysis.

☐ Potential-(a)(8) Waters: Waters that DO NOT have a significant nexus to a water identified in paragraphs (a)(1)-(a)(3) of 33 CFR part 328.3.

- **Complete Spreadsheet Tab "NonWaters-No SigNex". Attach a map delineating the SPOE watershed boundary with potential (a)(8) waters identified in the similarly situated analysis. – Required**

☐ Includes water(s) that are geographically and physically adjacent per (a)(6), but are being used for established, normal farming, silviculture, and ranching activities (33 USC Section 1344(f)(1)) and therefore are not adjacent and require a case-specific significant nexus analysis.

☒ Excluded Waters (Non-Waters of U.S.), even where they otherwise meet the terms of paragraphs (a)(4)-(a)(8):

- **Complete Spreadsheet Tab "NonWaters-Excluded" - Required**

☐ (b)(1): Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the CWA.

☐ (b)(2): Prior converted cropland.

☐ (b)(3)(i): Ditches with ephemeral flow that are not a relocated tributary or excavated in a tributary.

☐ (b)(3)(ii): Ditches with intermittent flow that are not a relocated tributary, excavated in a tributary, or drain wetlands.

☒ (b)(3)(iii): Ditches that do not flow, either directly or through another water, into a water identified in paragraphs (a)(1)-(a)(3).

☒ (b)(4)(i): Artificially irrigated areas that would revert to dry land should application of water to that area cease.

☐ (b)(4)(ii): Artificial, constructed lakes and ponds created in dry land such as farm and stock watering ponds, irrigation ponds, settling basins, fields flooded for rice growing, log cleaning ponds, or cooling ponds.

☐ (b)(4)(iii): Artificial reflecting pools or swimming pools created in dry land.[1]

☐ (b)(4)(iv): Small ornamental waters created in dry land.[1]

☐ (b)(4)(v): Water-filled depressions created in dry land incidental to mining or construction activity, including pits excavated for obtaining fill, sand, or gravel that fill with water.

☐ (b)(4)(vi): Erosional features, including gullies, rills, and other ephemeral features that do not meet the definition of tributary, non-wetland swales, and lawfully constructed grassed waterways.[1]

☐ (b)(4)(vii): Puddles.[1]

☐ (b)(5): Groundwater, including groundwater drained through subsurface drainage systems.[1]

☐ (b)(6): Stormwater control features constructed to convey, treat, or store stormwater that are created in dry land.[1]

☐ (b)(7): Wastewater recycling structures created in dry land; detention and retention basins built for wastewater recycling; groundwater recharge basins; percolation ponds built for wastewater recycling; and water distributary structures built for wastewater recycling.

Other non-jurisdictional waters/features within review area that do not meet the definitions in 33 CFR 328.3 of (a)(1)-(a)(8) waters and are not excluded waters identified in (b)(1)-(b)(7).

- **Complete Spreadsheet Tab "NonWaters-Other" - Required**

D. ADDITIONAL COMMENTS TO SUPPORT JD:

[1] In many cases these excluded features will not be specifically identified on the approved JD form, unless specifically requested. Corps Districts may, in case-by-case instances, choose to identify some or all of these features within the review area.

Jurisdictional Waters of the U.S.

Table 1. (a)(1) Traditional Navigable Waters

(a)(1) Waters Name	(a)(1) Criteria	Rationale to Support (a)(1) Designation Include High Tide Line or Ordinary High Water Mark indicators, when applicable.
N/A	Choose an item.	N/A

Table 2. (a)(2) Interstate Waters

(a)(2) Waters Name	Rationale to Support (a)(2) Designation
N/A	N/A

Table 3. (a)(3) Territorial Seas

(a)(3) Waters Name	Rationale to Support (a)(3) Designation
N/A	N/A

Table 4. (a)(4) Impoundments

(a)(4) Waters Name	Rationale to Support (a)(4) Designation
N/A	N/A
N/A	N/A

Table 5. (a)(5)Tributaries

(a)(5) Waters Name	Flow Regime	(a)(1)-(a)(3) Water Name to which this (a)(5) Tributary Flows	Tributary Breaks	Rationale for (a)(5) Designation and Additional Discussion. Identify flowpath to (a)(1)-(a)(3) water or attach map identifying the flowpath; explain any breaks or flow through excluded/non-jurisdictional features, etc.
N/A	Choose an item.	N/A	Choose an item.	N/A
N/A	Choose an item.	N/A	Choose an item.	N/A
N/A	Choose an item.	N/A	Choose an item.	N/A
N/A	Choose an item.	N/A	Choose an item.	N/A

Table 6. (a)(6) Adjacent Waters

(a)(6) Waters Name	(a)(1)-(a)(5) Water Name to which this Water is Adjacent	Rationale for (a)(6) Designation and Additional Discussion. Identify the type of water and how the limits of jurisdiction were established (e.g., wetland, 87 Manual/Regional Supplement); explain how the 100-year floodplain and/or the distance threshold was determined; whether this water extends beyond a threshold; explain if the water is part of a mosaic, etc.
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A

Table 7. (a)(7) Waters

SPOE Name	(a)(7) Waters Name	(a)(1)-(a)(3) Water Name to which this Water has a Significant Nexus	Significant Nexus Determination Identify SPOE watershed; discuss whether any similarly situated waters were present and aggregated for SND; discuss data, provide analysis, and summarize how the waters have more than speculative or insubstantial effect on the physical, chemical, or biological integrity of the (a)(1)-(a)(3) water, etc.
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A

Table 8. (a)(8) Waters

SPOE Name	(a)(8) Waters Name	(a)(1)-(a)(3) Water Name to which this Water has a Significant Nexus	Significant Nexus Determination Identify SPOE watershed; explain how 100-yr floodplain and/or the distance threshold was determined; discuss whether waters were determined to be similarly situated to subject water and aggregated for SND; discuss data, provide analysis, and then summarize how the waters have more than speculative or insubstantial effect the on the physical, chemical, or biological integrity of the (a)(1)-(a)(3) water, etc.
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A

Non-Jurisdictional Waters

Table 9. Non-Waters/No Significant Nexus

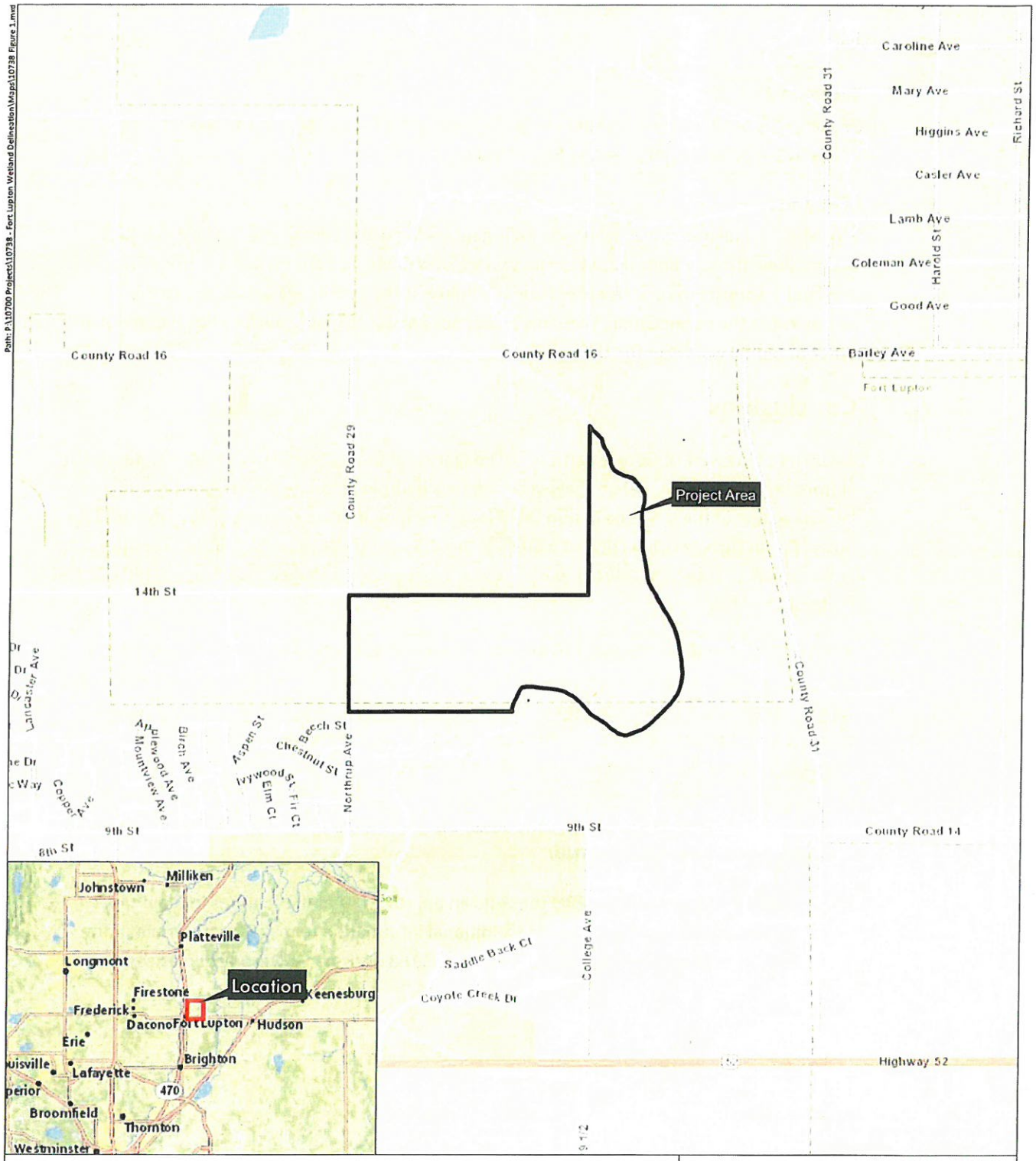
SPOE Name	Non-(a)(7)/(a)(8) Waters Name	(a)(1)-(a)(3) Water Name to which this Water DOES NOT have a Significant Nexus	Basis for Determination that the Functions DO NOT Contribute Significantly to the Chemical, Physical, or Biological Integrity of the (a)(1)-(a)(3) Water. Identify SPOE watershed; explain how 100-yr floodplain and/or the distance threshold was determined; discuss whether waters were determined to be similarly situated to the subject water; discuss data, provide analysis, and summarize how the waters did not have more than a speculative or insubstantial effect on the physical, chemical, or biological integrity of the (a)(1)-(a)(3) water.
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A

Table 10. Non-Waters/Excluded Waters and Features

Paragraph (b) Excluded Feature/Water Name	Rationale for Paragraph (b) Excluded Feature/Water and Additional Discussion.
Fulton Ditch	Fulton Ditch is a non-tidal irrigation ditch excavated in upland. It does not flow, either directly or through another water, into any a(1)-a(3) water. Therefore, Fulton Ditch is excluded under paragraph b(3)(i) and is not jurisdictional.
Wetland 1	Wetland 1 is a wetland adjacent to Fulton Ditch that appears to receive its entire hydrology from ditch leakage. Since Wetland 1 is directly associated with Fulton Ditch, it is excluded under paragraph b(4)(i) and is therefore not jurisdictional.
Wetland 2	Wetland 2 is a wetland abutting Fulton Ditch that appears to receive its entire hydrology from ditch leakage. Since Wetland 2 is directly associated with Fulton Ditch, it is excluded under paragraph b(4)(i) and is therefore not jurisdictional.
Wetland 3	Wetland 3 is a wetland abutting Fulton Ditch that appears to receive its entire hydrology from ditch leakage. Since Wetland 3 is directly associated with Fulton Ditch, it is excluded under paragraph b(4)(i) and is therefore not jurisdictional.

Table 11. Non-Waters/Other

Other Non-Waters of U.S. Feature/Water Name	Rationale for Non-Waters of U.S. Feature/Water and Additional Discussion.
N/A	N/A



Fort Lupton Coyote Creek North

Section 33, T2N, R66W; 6th PM

UTM NAD 83: Zone 13N; 518378mE, 4438144mN

Longitude 104.784409°W, Latitude 40.093380°N

USGS Fort Lupton, CO Quadrangle

Weld County, Colorado

0 750 1,500 Feet

N

Figure 1
Vicinity Map

Prepared for: Sun Communities, Inc.
File: 10738 Figure 1.mxd (GS)
June 28, 2019

ERO Resources Corp.

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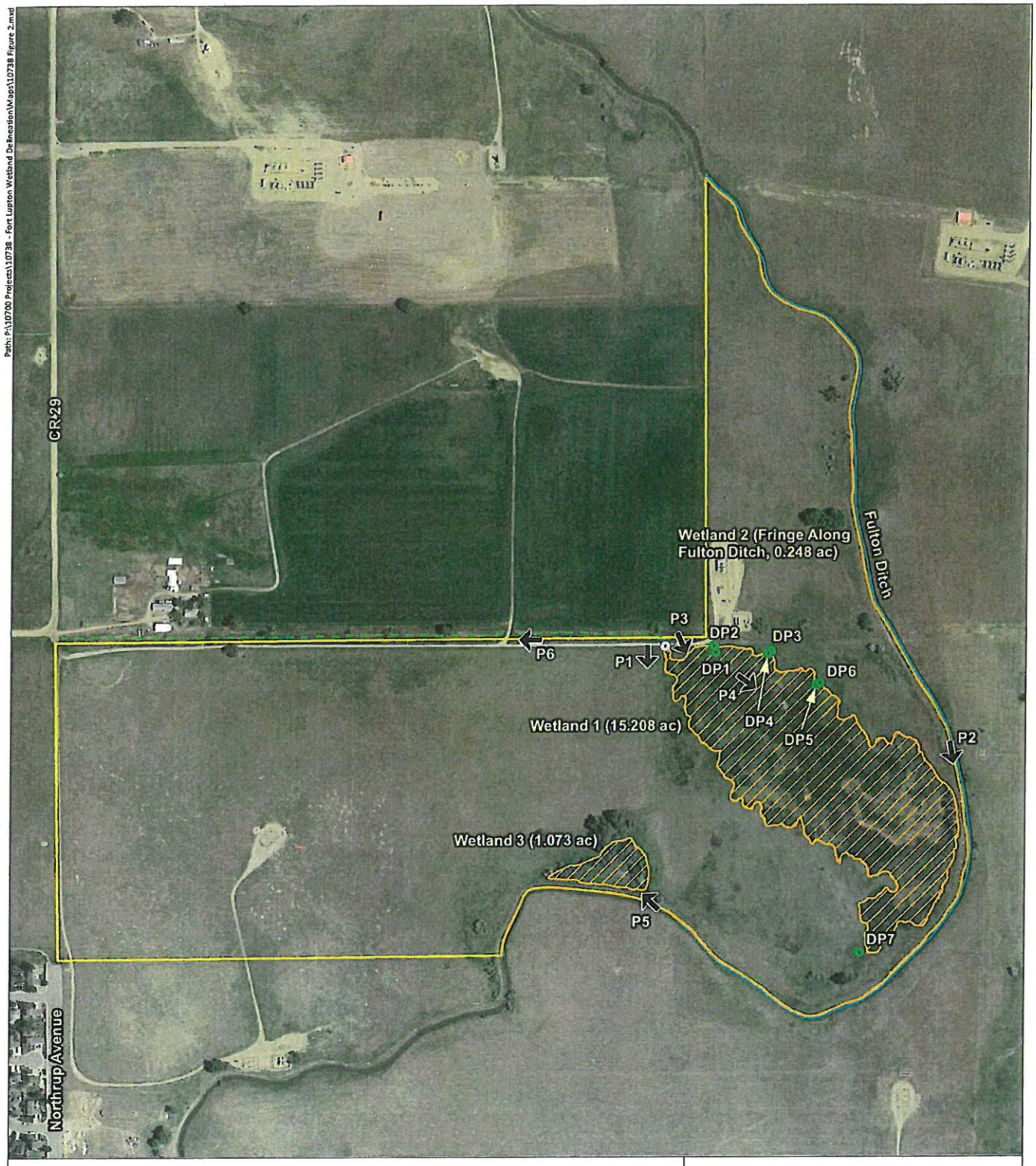


Fort Lupton Coyote Creek North

- Data Point
- Photo Point
- Culvert
- Wetland Ditch
- Ditch (0.886 ac)
- Wetland (16.529 ac)
- Project Area Boundary/Limit of Delineation

0 275 550 Feet

N

Figure 2
Existing Conditions

Image Source: Google Earth©, May 2018

Prepared for: Sun Communities, Inc.
File: 10738 Figure 2.mxd (GS)
July 15, 2019

ERO Resources Corp.

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Christine Sveum, Atwell, LLC.		File Number: NWO-2019-01310-DEN	Date: August 27, 2019
Attached is:			See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)		A
	PROFFERED PERMIT (Standard Permit or Letter of permission)		B
	PERMIT DENIAL		C
X	APPROVED JURISDICTIONAL DETERMINATION		D
	PRELIMINARY JURISDICTIONAL DETERMINATION		E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found in Corps regulations at 33 CFR Part 331, or at http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits/FederalRegulation.aspx

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

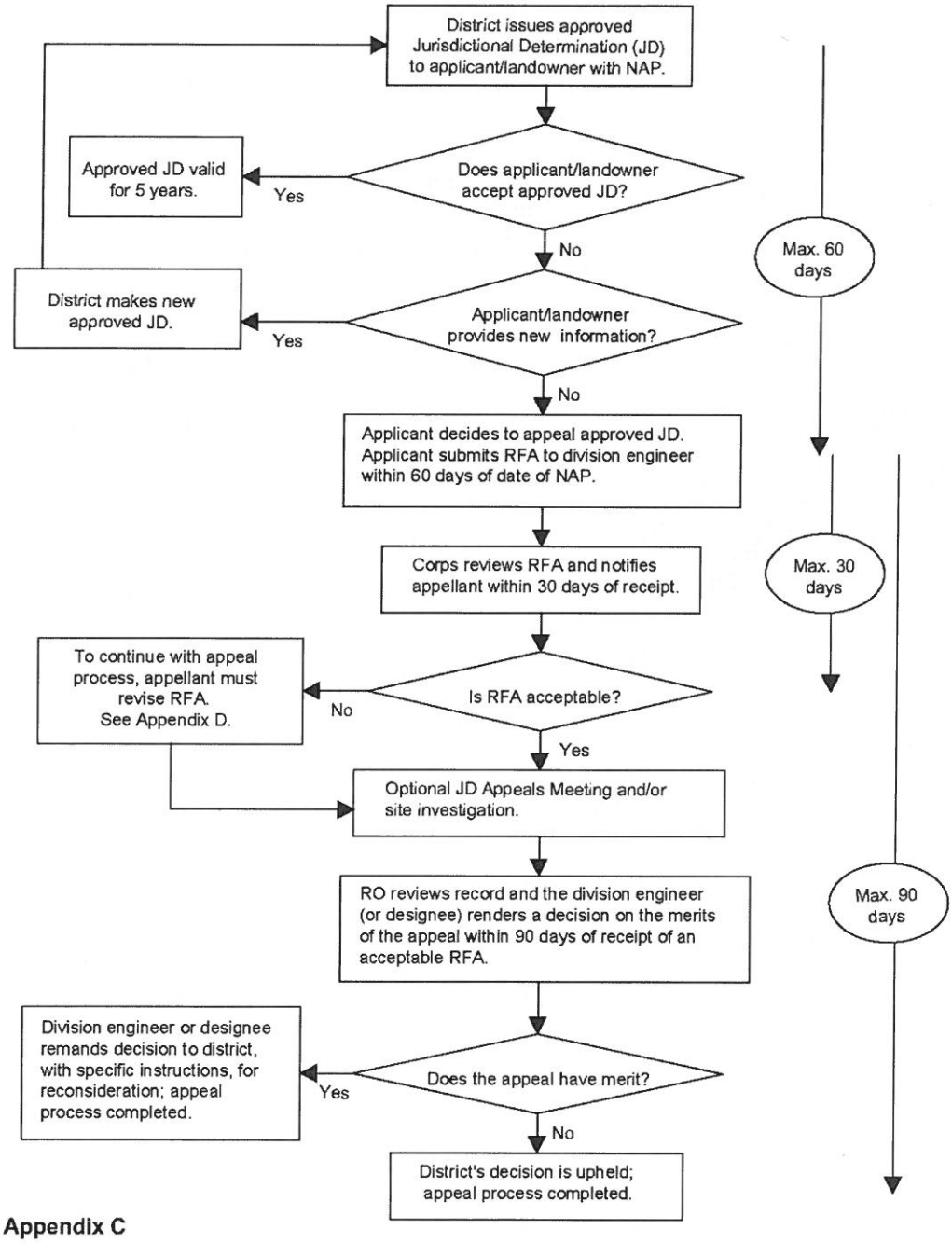
POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact: US Army Corps of Engineers, Denver Regulatory Office Attn: Nicholas Franke, Regulatory Project Manager 9307 S. Wadsworth Blvd Littleton, CO 80128 Telephone (303) 979-4120 Nicholas.A.Franke@usace.army.mil	If you only have questions regarding the appeal process you may also contact: US Army Corps of Engineers, Northwestern Division Attn: Melinda Larsen, Regulatory Appeals Review Officer 1201 NE Lloyd Blvd Ste 400 Portland, OR 97232-1257 Telephone (503) 808-3888 Melinda.M.Larsen@usace.army.mil

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

_____ Signature of appellant or agent.	Date:	Telephone number:

Administrative Appeal Process for Approved Jurisdictional Determinations



Appendix C

July 16, 2020

Rick Weed
Atwell, LLC
143 Union BLVD Suite 700
Lakewood, CO 80228

Dear Mr. Weed:

United Power is the provider of electric service in the area to the proposed Fulton Ranch Project, located at S. E. Corner of 14th St & Northrup Ave in Ft. Lupton, CO. There is electrical distribution in the area that may or may not need to be upgraded, depending on the requirements of the site, in order to provide capacity and safe reliable power to the area.

Service will be provided according to the rules, regulations, and policies in effect by United Power at the time service is requested.

We look forward to this opportunity to provide electric service. If you have any questions, please give me a call at 303-637-1387.

Sincerely,

Marisa Dale

Marisa Dale
Project Coordinator

MDD:ggj

WILL SERVE LETTER

July 16, 2020

Atwell Inc
Attention Rick Weed

Re: 14th and Northrup Ave, Fort Lupton

Dear Sir or Madam,

This letter is to confirm that Xcel Energy is your utility provider for natural gas. In accordance with our tariffs, on file with and approved by the Colorado Public Utilities Commission, gas facilities can be made available to serve the project at 14th and Northrup Ave, Fort Lupton.

Your utility service(s) will be provided after the following steps are completed:

- ***Application submitted to Public Service's "Builders Call Line (BCL)"*** – once your application is accepted you will be assigned a design department representative who will be your primary point of contact
- ***Utility design is completed*** – you must provide your design representative with the site plan, the one line diagrams, and panel schedules for electric and gas loads if applicable
- ***All documents provided by design representative are signed and returned***
- ***Payment is received***
- ***Required easements are granted*** - you must sign and return applicable easement documents to your Right-of-Way agent
- ***Site is ready for utility construction***

A scheduled in-service date will be provided once these requirements have been met.

It is important to keep in mind that the terms and conditions of utility service, per our tariffs, require that you provide adequate space and an easement on your property for all gas and electric facilities required to serve your project, including but not limited to gas and electrical lines and meters, transformers, and pedestals. General guidelines for these requirements can be found at Site Requirements. https://www.xcelenergy.com/staticfiles/xe-responsive/Admin/Managed Documents & PDFs/Xcel-Energy-Standard-For-Electric-Installation-and-Use.pdfEasement requirements can be found at Utility Design and Layout.

Xcel Energy looks forward to working with you on your project and if I can be of further assistance, please contact me at the phone number or email listed below.

Sincerely,

Tyson Barbich
Xcel Energy Technician

Mailing address: Xcel Energy
5460 W 60th Ave
Arvada, CO 80003

Alyssa Knutson

From: Mettenbrink - DNR, Chris <chris.mettenbrink@state.co.us>
Sent: Thursday, October 22, 2020 10:32 AM
To: Alyssa Knutson
Subject: Re: Referral Response Request: Willow Bend (f/k/a Fulton Ranch) PUD/Preliminary Plat; Project No. LUP2020-0031 & PPL2020-0004

Follow Up Flag: Follow up
Flag Status: Completed

Thanks Alyssa. We have no additional comments other than those we submitted to you earlier this year for the Fulton Ranch PUD.

Chris

On Mon, Oct 19, 2020 at 11:59 AM Alyssa Knutson <AKnutson@fortluptonco.gov> wrote:

> Good Afternoon,
>
> The documentation located at the following link is submitted to you for review and recommendation for a preliminary plat and PUD plan being reviewed by the City of Fort Lupton. The application documents can be reviewed at the following link: https://www.fortluptonco.gov/DocumentCenter/Index/525.
>
> Any comments you consider relevant to this request would be appreciated. Please reply by **November 9, 2020**, so that we may give full consideration to your recommendation. Any response not received before or on this date may be deemed to be a favorable response to the Planning & Building Department.
>
> The Public Hearings for this matter are scheduled for:
>
> Planning Commission: Thursday, November 12, 2020 at 6:00 PM; and
>
> City Council: Tuesday, December 1, 2020 at 7:00 PM
>
> Your time in this matter is greatly appreciated!
>
> Alyssa Knutson, AICP

Planner II & FLURA Staff Liaison

130 S. McKinley Ave.

Fort Lupton, CO 80621

Office: 303.857.6694

Direct: 720.466.6128

Mobile: 303.304.4498

This institution is an equal opportunity provider and employer.

The information transmitted is intended only for the person or entity to which it is addressed and may contain CONFIDENTIAL material. If you receive this information in error, please delete or destroy the information.

--

Chris Mettenbrink
District Wildlife Manager- Wildlife Officer
Area 2- Fort Lupton
P 970.472.4405 | C 303.906.1979
4207 W. CR 16E, Loveland, CO 80537
Chris.Mettenbrink@state.co.us | www.cpw.state.co.us

Fort Lupton Fire Protection District
1121 Denver Avenue • Fort Lupton, Colorado 80621
Office: (303)857-4603 • Fax: (303)857-6619 • Website: www.fortluptonfire.org

Date: 11/3/2020
Project name: Willow Bend Sub-Division Site Plan
Project address: 14th St and Northrup Ave. Fort Lupton, Co 80621
FLFPD Project # R2020-049
Plan reviewer: Taw Tamlin, Fire Marshal

The Fire District has reviewed the site plan submittal for **Willow Bend Sub-Division Site Plan** located at **14th St and Northrup Ave.** Fort Lupton, CO 80621. The submittal was reviewed for compliance with *2012 International Fire Code (IFC)* and the current National Fire Protection Association (*NFPA)* standards as adopted by the Fort Lupton Fire Protection District, City Council of Fort Lupton, and Weld County Commissioners. The following specific and general requirements and conditions shall be met at time of construction.

Specific Requirements:

1. Any property owner or authorized agent who intends to conduct an operation or business, or install or modify systems and equipment which is regulated by this code, or to cause any such work to be done, shall first make application to the fire code official and obtain the required permit.

2. Application for a permit required by this code shall be made to the fire code official in such form and detail as prescribed by the fire code official. Applications for permits shall be accompanied by such plans as prescribed by the fire code official. *2012 IFC, 105.1.3*

3. Construction documents and supporting data shall be submitted *(Electronically)* in two or more sets with each application for a permit and in such form and detail as required by the fire code official. The construction documents shall be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed. *2012 IFC, 105.4.1*

    a. For application and fee schedule go to https://fortluptonfire.org/contractors/

4. The minimum fire-flow and flow duration requirements for one- and two-family dwellings having a fire-flow calculation area that does not exceed 3,600 square feet (344.5 m2) shall be 1,000 gallons per minute (3785.4 L/min) for 1 hour. Fire-flow and flow duration for dwellings having a fire-flow calculation area in excess of 3,600 square feet (344.5m2) shall not be less than that specified in Table B105.1. *2012 IFC, B105.1*

   Exception: A reduction in required fire-flow of 50 percent, as approved, is allowed when the building is equipped with an approved automatic sprinkler system.

5. The minimum number of fire hydrants available to a building shall not be less than that listed in Table C105.1. The number of fire hydrants available to a complex or subdivision shall not be less than that determined by spacing requirements listed in Table C105.1 when applied to fire apparatus access roads and perimeter public streets from which fire operations could be conducted. *2012 IFC, C103.1*

TABLE C105.1
NUMBER AND DISTRIBUTION OF FIRE HYDRANTS

FIRE-FLOW REQUIREMENT (gpm)	MINIMUM NUMBER OF HYDRANTS	AVERAGE SPACING BETWEEN HYDRANTS[a, b, c] (feet)	MAXIMUM DISTANCE FROM ANY POINT ON STREET OR ROAD FRONTAGE TO A HYDRANT[d]
1,750 or less	1	500	250
2,000-2,250	2	450	225
2,500	3	450	225
3,000	3	400	225
3,500-4,000	4	350	210
4,500-5,000	5	300	180
5,500	6	300	180
6,000	6	250	150
6,500-7,000	7	250	150
7,500 or more	8 or more[e]	200	120

For SI: 1 foot = 304.8 mm, 1 gallon per minute = 3.785 L/m.

a. Reduce by 100 feet for dead-end streets or roads.
b. Where streets are provided with median dividers which cannot be crossed by fire fighters pulling hose lines, or where arterial streets are provided with four or more traffic lanes and have a traffic count of more than 30,000 vehicles per day, hydrant spacing shall average 500 feet on each side of the street and be arranged on an alternating basis up to a fire-flow requirement of 7,000 gallons per minute and 400 feet for higher fire-flow requirements.
c. Where new water mains are extended along streets where hydrants are not needed for protection of structures or similar fire problems, fire hydrants shall be provided at spacing not to exceed 1,000 feet to provide for transportation hazards.
d. Reduce by 50 feet for dead-end streets or roads.
e. One hydrant for each 1,000 gallons per minute or fraction thereof.

6. Where a fire hydrant is located on a fire apparatus access road, the minimum road width shall be 26 feet (7925 mm), exclusive of shoulders (see Figure D103.1). *2012 IFC, D103.1*

7. The minimum turning radius shall be determined by the fire code official. *2012 IFC, D103.3*
    a. <u>See attached document showing the minimum turning radius needed</u>

8. New and existing buildings shall have approved address numbers, building numbers or approved building identification placed in a position that is plainly legible and visible from the street or road fronting the property. These numbers shall contrast with their background. Where required by the fire code official, address numbers shall be provided in additional approved locations to facilitate emergency response. Address numbers shall be Arabic numbers or alphabetical letters. Numbers shall be a minimum of 4 inches (101.6 mm) high with a minimum stroke width of 0.5 inch (12.7 mm). Where access is by means of a private road and the building cannot be viewed from the public way, a monument, pole or other sign or means shall be used to identify the structure. Address numbers shall be maintained. *2012 IFC, 505.1*

9. When fire apparatus access roads or a water supply for fire protection is required to be installed, such protection shall be installed and made serviceable prior to and during the time of construction except when approved alternative methods of protection are provided. Temporary street signs shall be installed at each street intersection when construction of new roadways allows passage by vehicles in accordance with Section 505.2. *2012 IFC, 501.4*

10. Approved vehicle access for firefighting shall be provided to all construction or demolition sites. Vehicle access shall be provided to within 100 feet (30 480 mm) of temporary or permanent fire department connections. Vehicle access shall be provided by either temporary or permanent roads, capable of supporting vehicle loading under all weather conditions. Vehicle access shall be maintained until permanent fire apparatus access roads are available. *2012 IFC, 3310.1*

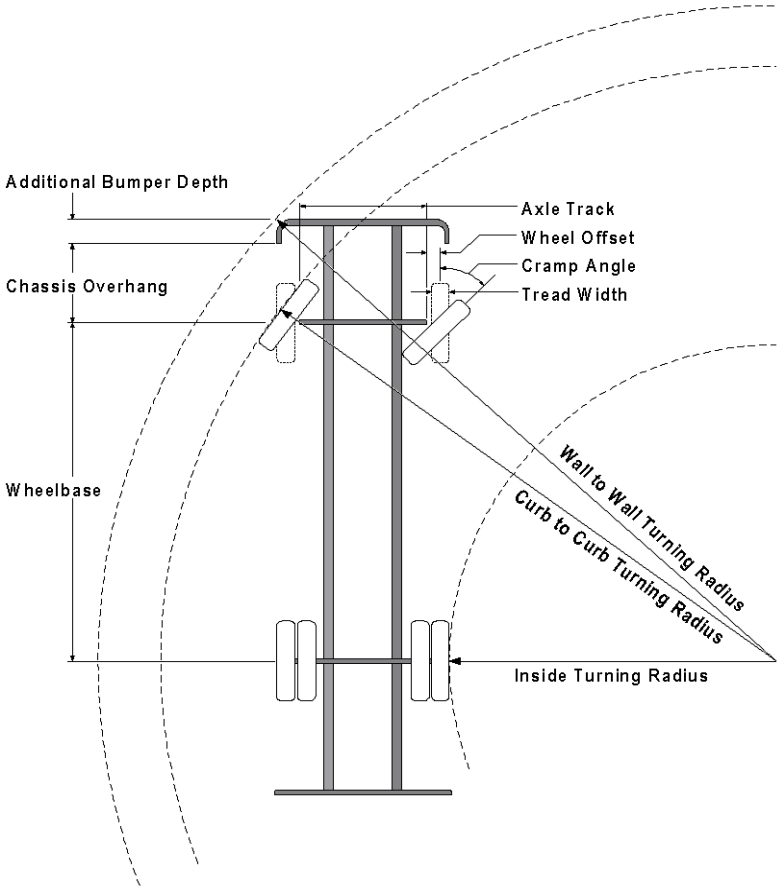
Please contact Fire Marshal, Taw Tamlin at 303-857-4603 if you have questions or need further assistance.

Turning Performance Analysis

12/6/2012

Bid Number: 299
Department:

Chassis: Arrow-XT Chassis, PAP/SkyArm/Midmount MUX, 2010
Body: Aerial, Platform 100', Alum Body



Parameters:

Inside Cramp Angle:	45°
Axle Track:	82.92 in.
Wheel Offset:	5.25 in.
Tread Width:	17.4 in.
Chassis Overhang:	68.99 in.
Additional Bumper Depth:	19 in.
Front Overhang:	156.6 in.
Wheelbase:	247 in.

Calculated Turning Radii:

Inside Turn:	19 ft. 5 in.
Curb to curb:	35 ft. 6 in.
Wall to wall:	44 ft. 2 in.

Comments:

CategoryID	Category Description	OptionCode	OptionDescription
6	Axle, Front, Custom	0018453	Axle, Front, Oshkosh TAK-4, Non Drive, 22,800 lb, DLX/Enf/Qtm/AXT
30	Wheels, Front	0001656	Wheels, Front, 22.50" x 12.25", Steel, Hub Pilot
31	Tires, Front	0594821	Tires, Front, Goodyear, G296 MSA, 425/65R22.50, 20 ply
38	Bumpers	0550016	Bumper, 19" Extended, AXT, Dash CF
437	Aerial Devices	0592931	Aerial, 100' Pierce Platform, 50 MPH Wind Rating, 150lb Tip Load Allowance

Notes:

Actual Inside Cramp Angle may be less due to highly specialized options.

Curb to Curb turning radius calculated for a 9.00 inch curb.

Turning Performance Analysis

12/6/2012

Bid Number: 299
Department:

Chassis: Arrow-XT Chassis, PAP/SkyArm/Midmount MUX, 2010
Body: Aerial, Platform 100', Alum Body

Definitions:

Inside Cramp Angle	Maximum turning angle of the front inside tire.
Axle Track	King-pin to King-pin distance of the front axle.
Wheel Offset	Offset from the center-line of the wheel to the king-pin.
Tread Width	Width of the tire tread.
Chassis Overhang	Distance of the center-line of the front axle to the front edge of the cab. This does not include the bumper depth.
Additional Bumper Depth	Depth that the bumper assembly adds to the front overhang.
Wheelbase	Distance between the center lines of the vehicle's front and rear axles.
Inside Turning Radius	Radius of the smallest circle around which the vehicle can turn.
Curb to Curb Turning Radius	Radius of the smallest circle inside of which the vehicle's tires can turn. This measurement assumes a curb height of 9 inches.
Wall to Wall Turning Radius	Radius of the smallest circle inside of which the entire vehicle can turn. This measurement takes into account any front overhang due to chassis,bumper extensions and/or aerial devices.

Alyssa Knutson

From: Kristen Thompson <kthompson@northernwater.org>
Sent: Tuesday, November 3, 2020 8:05 AM
To: Alyssa Knutson
Cc: Todd Hodges; Maria Lancto
Subject: RE: Referral Response Request: Willow Bend (f/k/a Fulton Ranch) PUD/Preliminary Plat; Project No. LUP2020-0031 & PPL2020-0004

Follow Up Flag: Flag for follow up
Flag Status: Completed

Alyssa,

We have no comment on this Referral.

Have a great week.
Kris

Disclaimer Notice: An allotment of Colorado-Big Thompson water is subject to the Water Conservancy Act, C.R.S 37-45-101 et seq, the authority of the Board of Directors of the Northern Colorado Water Conservancy District, and other relevant laws and regulations. The information provided in this email is not binding on Northern Water because the legal rights to Colorado-Big Thompson Project Allotments are subject to the continuing discretion of the Board of Directors of Northern Water and other legal limitations and requirements. Northern Water staff and counsel cannot provide you with legal advice, and you are advised to seek legal counsel with respect to the subject matter of this

Northern Water

Kristen Thompson | Inclusion Specialist
220 Water Ave | Berthoud, CO 80513
Direct: 970-622-2237
Main: 800-369-RAIN (7246)
www.northernwater.org
Facebook | Twitter | Instagram | LinkedIn

From: Alyssa Knutson <AKnutson@Fortluptonco.gov>
Sent: Monday, November 2, 2020 9:31 AM
Cc: Todd Hodges <thodges@Fortluptonco.gov>; Maria Lancto <MLancto@Fortluptonco.gov>
Subject: RE: Referral Response Request: Willow Bend (f/k/a Fulton Ranch) PUD/Preliminary Plat; Project No. LUP2020-0031 & PPL2020-0004

External Message - Please be cautious when replying or opening links or attachments in this email

Hello- just a reminder that responses are due in one week for the above-mentioned project. If you have already responded, please disregard this email.

Thank you,

Alyssa Knutson, AICP
Planner II & FLURA Staff Liaison
130 S. McKinley Ave.
Fort Lupton, CO 80621
Office: 303.857.6694
Direct: 720.466.6128
Mobile: 303.304.4498

This institution is an equal opportunity provider and employer.

From: Alyssa Knutson
Sent: Monday, October 19, 2020 12:00 PM
Cc: Todd Hodges <thodges@Fortluptonco.gov>; Maria Lancto <MLancto@Fortluptonco.gov>
Subject: Referral Response Request: Willow Bend (f/k/a Fulton Ranch) PUD/Preliminary Plat; Project No. LUP2020-0031 & PPL2020-0004

Good Afternoon,

The documentation located at the following link is submitted to you for review and recommendation for a preliminary plat and PUD plan being reviewed by the City of Fort Lupton. The application documents can be reviewed at the following link: https://www.fortluptonco.gov/DocumentCenter/Index/525.

Any comments you consider relevant to this request would be appreciated. Please reply by **November 9, 2020**, so that we may give full consideration to your recommendation. Any response not received before or on this date may be deemed to be a favorable response to the Planning & Building Department.

The Public Hearings for this matter are scheduled for:

Planning Commission: Thursday, November 12, 2020 at 6:00 PM; and
City Council: Tuesday, December 1, 2020 at 7:00 PM

Your time in this matter is greatly appreciated!

Alyssa Knutson, AICP
Planner II & FLURA Staff Liaison
130 S. McKinley Ave.
Fort Lupton, CO 80621
Office: 303.857.6694
Direct: 720.466.6128
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Alyssa Knutson

From: John Fryar
Sent: Monday, October 19, 2020 1:02 PM
To: Alyssa Knutson
Subject: RE: Referral Response Request: Willow Bend (f/k/a Fulton Ranch) PUD/Preliminary Plat; Project No. LUP2020-0031 & PPL2020-0004

Follow Up Flag: Follow up
Flag Status: Completed

Other than future manpower to service the area, law enforcement does not have concerns.

Committment rather than Compliance
Remember "Find a Way to Help"

John Fryar, Chief of Police
130 S. McKinley Ave
Fort Lupton, CO 80621

Work (303) 857-4011
Cell (303) 210-0100

From: Alyssa Knutson
Sent: Monday, October 19, 2020 12:00 PM
Cc: Todd Hodges <thodges@Fortluptonco.gov>; Maria Lancto <MLancto@Fortluptonco.gov>
Subject: Referral Response Request: Willow Bend (f/k/a Fulton Ranch) PUD/Preliminary Plat; Project No. LUP2020-0031 & PPL2020-0004

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Your time in this matter is greatly appreciated!

Alyssa Knutson, AICP
Planner II & FLURA Staff Liaison
130 S. McKinley Ave.
Fort Lupton, CO 80621
Office: 303.857.6694
Direct: 720.466.6128
Mobile: 303.304.4498

This institution is an equal opportunity provider and employer.

CITY OF
Fort Lupton
EST 1836

Public Works

130 S. McKinley Avenue
Fort Lupton, CO 80621
Phone: 303.857.6694
Fax: 303.857.0351
www.fortluptonco.gov

MEMO

To: Todd Hodges
Alyssa Knutson
CC: Rick Weed (Atwell)

From: Roy Vestal

Date: November 4, 2020

Subject: Willow Bend PUD/Preliminary Plat;
Project No. LUP2020-0031 & PPL2020-0004
Public Works Review

Public Works has reviewed the submitted documents for the above referenced development project with the following comments for inclusion with the Final Plat submittal. Be advised, review of construction drawings is for general compliance with city standards. There may be additional concerns as this design develops.

1. **Preliminary Plat**
    a. Final Plat will need to define emergency access through private streets.
    b. Final Plat will need to define sanitary sewer, storm sewer and water main City access for maintenance.
2. **Utilities**
    a. **Utility Study**
        i. The proposed 4" nonpotable main extension will not be adequate. Also the Cottonwood Greens construction drawings do not have a connection in 14th Street. The main will need to be extended from the east side of CR 31 and needs to be sized along 14th Street to adequately convey the required irrigation load.
        ii. Proposed Water system should consist of 8-inch minimum pipe sizes for mains. (City Standard).
        iii. Model for Phase 1 should be included to determine adequate fire flows prior to looping to the east.

3. **Drainage**
    a. Drainage Study has reference to Teller county for project Basins (page 5). Revise for current drainage planning.
    b. Grading in the vicinity of the Fulton Ditch needs to be evaluated for seepage potential and slope stability (Sheet OG-8, OG-9, OG-11). Coordination with Fulton Ditch company is required.
    c. Include maintenance plan with Final Drainage Study.

4. **Transportation**
    a. Final Plat document to include ROW dedications for 14th Street and Northrup.

5. **Landscape / Grading** - *Chapter 2 Design Standards*
    a. Review proposed landscape plans at street locations and evaluate for sight triangle conflicts.
    b. Grading removal along the ditch is ill advised.

6. **Utilities**
    a. **Utility Memo**
        i. Overall Utility Plan -.
        ii. Utilities running along the ditch appear to be problematic. Not a good idea to dig utility trenches this close to the ditch.
        iii. Offsite drainage easement alongside the existing sanitary sewer easement is required

    b. Water - Chapter 3
        i. Please specify pipe materials on final construction drawings.

    c. Non Potable Irrigation
        i. No existing connection to 14th St. Need to extend connection to east side of CR 31 in 14th Street.
        ii. No linework indicating inclusion of the nonpotable water system. Any water service agreement will have to include a non-potable system for irrigation purposes.
        iii. Designate material as "PURPLE PIPE".

    d. Storm Sewer - Chapter 5
        i. The existing sanitary sewer easement across the site is not adequate to add the storm sewer crossing.
            4.16.00 EASEMENTS *All sanitary sewer mains shall be in an easement which has a width of at least two times the depth to the pipe invert. The minimum easement shall be 20 feet in width for one utility, 30 feet in width for two utilities and 40 feet in width for three utilities. Site specific circumstances may dictate the need for wider easements. The main shall be located a minimum of ten feet from and parallel to the edge of the easement.*
        ii.

    e. Roadway - Chapter 6
        i. The ditch crossing will need to be addressed. Potentially a shared cost with Cottonwood Greens since the property line seems to be the middle of the channel.

7. **Public Improvement Agreement** – The Subdivision Improvements Agreement with revisions has been received and will take more time to review.

There may be additional concerns as this design develops.

Right of Way & Permits

1123 West 3rd Avenue
Denver, Colorado 80223
Telephone: **303.571.3306**
Facsimile: 303. 571.3284
donna.l.george@xcelenergy.com

November 3, 2020

City of Fort Lupton Planning Department
130 South McKinley Avenue
Fort Lupton, CO 80621

Attn: Alyssa Knutson and Todd Hodges

RE: Willow Bend (fka Fulton Ranch), Case #s LUP2020-0031 and PPL2020-0004

Public Service Company of Colorado's (PSCo) Right of Way & Permits Referral Desk has determined **there is a conflict** with the above captioned project in that all "A" utility easements *must* be increased to 10-feet wide, due to the colocation nature of all dry utilities in these areas. This will allow for proper distancing as well as future maintenance and repair.

Please be aware PSCo has an existing high pressure natural gas pipeline and associated land rights in the northerly corner of the subject property. Should there be any activity including grading, proposed landscaping, erosion control or similar activities involving our existing right-of-way, it is the responsibility of the property owner/developer/contractor to contact PSCo's Encroachment Team for development plan review and execution of a License Agreement (upload all files in PDF format) at: https://www.xcelenergy.com/working_with_us/builders/encroachment_requests. An engineer will then be in contact to request specific plan sheets.

The property owner/developer/contractor must complete the application process for any new natural gas service via xcelenergy.com/InstallAndConnect. It is then the responsibility of the developer to contact the Designer assigned to the project for approval of design details. Additional easements may need to be acquired by separate document for new facilities.

Donna George
Right of Way and Permits
Public Service Company of Colorado dba Xcel Energy
Office: 303-571-3306 – Email: donna.l.george@xcelenergy.com

Alyssa Knutson

From: Hice-Idler - CDOT, Gloria <gloria.hice-idler@state.co.us>
Sent: Monday, November 9, 2020 10:45 AM
To: Alyssa Knutson; Todd Hodges; Maria Lancto
Cc: Allyson Mattson - CDOT; Timothy Bilobran - CDOT
Subject: Willow Bend/City of Fort Lupton/US 85 off

Follow Up Flag: Follow up
Flag Status: Completed

CDOT's concern with this proposal would be the intersection of US 85 with 14th Street. The traffic generated by the site will not trigger the need for a new access permit since traffic volumes are not increasing by more than 20%. However, the City is reminded that the intersection is shown as a future interchange location. The City should consider putting in place some kind of participation agreement to start the funding for the interchange.

Gloria Hice-Idler
Rocksol Consulting

(970) 381-8629

10601 W. 10th Street, Greeley, CO 80634
gloria.hice-idler@state.co.us | www.codot.gov | www.cotrip.org

Sent Via U.S. Mail and Email to AKnutson@Fortluptonco.gov

November 9, 2020

Ms. Alyssa Knutson, AICP
Planner II & FLURA Staff Liaison
City of Fort Lupton
130 S. McKinley Avenue
Fort Lupton, Colorado 80621

Re: Willow Bend Preliminary Plat and PUD Plan (the "Application")

Dear Ms. Knutson:

Weld County School District RE-8 (the "School District") is submitting this letter in reference to the above-referenced Application submitted by Sun Communities ("Developer") at your request and pursuant to the requirements of the City of Fort Lupton Planning Department.

It is our understanding that the Application seeks preliminary approval of its planned development, comprised of 449 manufactured homes to be built during the course of four phases, on a 127-acre parcel located at the southeast corner of 14th Street and Northrup Avenue in the City of Fort Lupton, State of Colorado (the "Property").

Recommendation

The Application proposes residential development for property located within the School District's boundaries and, therefore, will have an impact on the School District's responsibility to provide adequate school facilities. The Developer has indicated that there is no land area available within the Property that could be dedicated and conveyed to the School District to address school site requirements created by the student generation expected by the Application. The parties, therefore, are working in good faith to determine the amount of cash in-lieu thereof as well as to resolve other matters arising from the proposed Application. The parties are hopeful that they can reach an agreement on these matters by the end of this calendar year at which time we will be in a much better position to provide a more definitive recommendation.

As the Application is preliminary, the School District respectfully requests the opportunity to amend and supplement this letter, as appropriate, to update the City of Fort Lupton Planning Department as to the School Districts' and the Developer's agreements concerning the cash in-lieu payment as a way to mitigate the impact the development will have on the schools.

Thank you for the opportunity to comment on issues of interest to the City, the School District, and our mutual constituents. Should you have any questions or desire further information, please contact me at your convenience.

Sincerely,

Alan Kaylor
Superintendent
Weld County School District RE-8

4850-0293-6273, v. 2

November 9, 2020

Willow Bend (f/k/a Fulton Ranch) PUD/Preliminary Plat Project No. LUP2020-0031;
Plan No. PPL2020-0004

Dear Mr. Hodges and Ms. Knutson:

On behalf of United Power, Inc., thank you for inviting us to review and comment on the ……. After review of the information, we have the following comments:

- **Front or Rear Lot Distribution** – United Power requires continuous dry utility easements for reliable electric facility installation. This allows us to install electric facilities in a continuous manner for our loop feed which provides reliability. We prefer the separation of gas and electric. Typically, with electric in the rear of the subdivision lots. We will need 8' to 10' wide dry utility easements in the rear of all lots. These utility easements will need to be on sides of lots abutting roads, and across tracts. If gas and electric will be sharing front lot distribution, we will need a 10' to 15' wide dry utility easements in the front of all lots. These utility easements will need to be on sides of lots abutting roads, and across tracts as well.

- **Tracts/Open Space/Parks** – United Power prefers dedicated blanket utility easement use within tracts as this gives us the opportunity to set above ground equipment, coordinated with the developer, and limit the impact to home lots. If Blanket utility easement(s) cannot be given, we will need an 8' to 10' wide dry utility easements along the perimeter of all tracts, along perimeter of tracts abutting roads, and through tracts between lots.

- **Streetlights** – When streetlight locations are identified in a subdivision, we need a 5' wide dry utility easement along one side of the lot closest to the streetlight location. All streetlight locations must be approved and signed off by the city/town, etc. Please note, if we do not get these through the platting process, we will have to get individual ones during the design which will slow United Power's ability to start construction significantly.

Please note, the property owner/developer/contractor must submit an application along with CAD data for new electric service via https://www.unitedpower.com/construction. United Power would like to work with these persons early in the construction process on getting an electric design prepared so that we can request any additional easements needed and hopefully have those easements dedicated on the plat rather than obtaining separate document(s). Obtaining easements via a separate document can be time consuming and could cause delays.

As a Reminder: No permanent structures are acceptable within the dry utility easement(s); such as, window wells, wing walls, retaining walls, basement walls, roof overhang, anything affixed to the house

like decks, etc. United Power considers any structure that impedes the access, maintenance, and safety of our facilities a permanent structure. No exceptions will be allowed, and any encroachments could result in penalties.

Service will be provided according to the rules, regulations, and policies in effect by United Power at the time service is requested. We look forward to safely and efficiently providing reliable electric power and outstanding service.

Thank you,

Amber Mendoza

Amber Mendoza
ROW Agent
303.249.9315

November 10, 2020

VIA E-MAIL

City of Fort Lupton – Planning Commission
Alyssa Knutson – Planner
130 S. McKinley Avenue
Fort Lupton, CO 80621
aknutson@fortluptonco.gov

NOTICE OF RIGHT-OF-WAY GRANT OWNED BY KERR-McGEE GATHERING LLC

Re: Preliminary Plat and PUD Plan – Willow Bend (f/k/a Fulton Ranch)
Sun Communities c/o Cameron Grant/Chris Sveum – Applicant
Township 2 North, Range 66 West, 6th P.M.
Pt. of Section 33
Weld County, Colorado

Ms. Knutson:

This letter is being sent by Kerr-McGee Gathering LLC ("KMGG") to inform you KMGG is the owner of valid easements and pipelines located in Section 33, Township 2 North, Range 66 West and shown on the subsequent page for which the City of Fort Lupton ("City") is reviewing the Preliminary Plat and PUD Plan for the Willow Bend subdivision. KMGG is submitting this comment timely, in accordance with the City's procedural requirements.

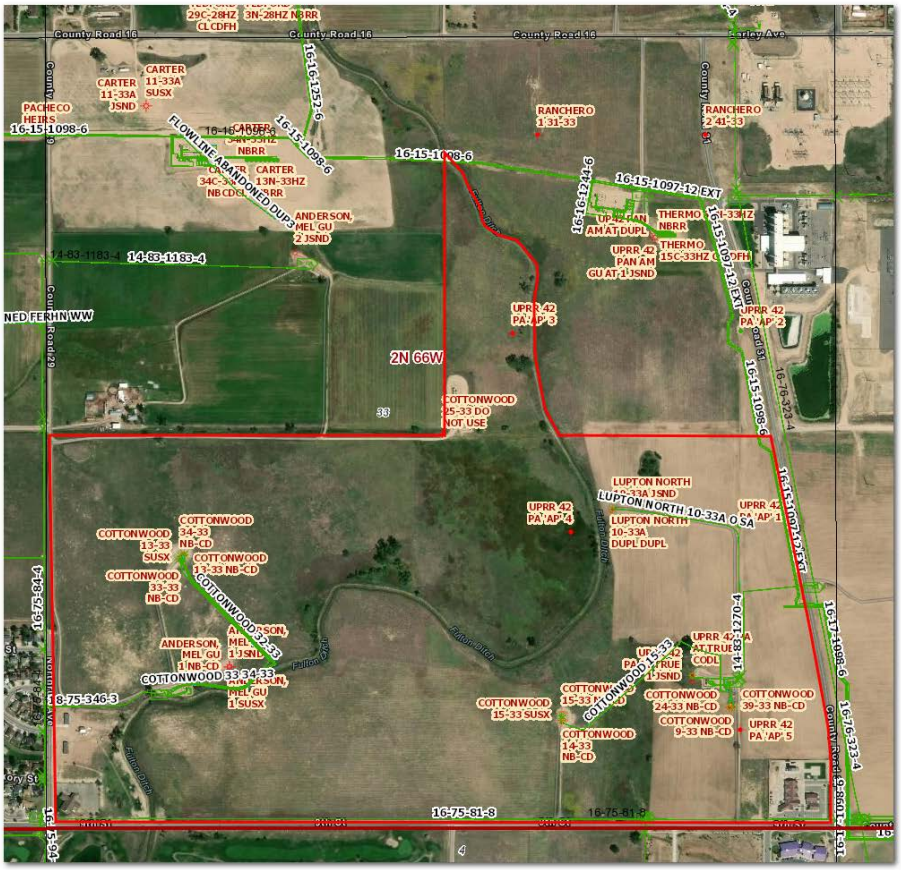
KMGG does not object to the proposed application provided the applicant conforms to the terms of the existing easements and avoids impacting the operational feasibility and integrity of the existing pipelines. Please note that although KMGG does not object to the proposal, we continue to assert the rights granted.

Please contact me at 720-929-3714 if you have any questions or comments about this matter.

Sincerely,
KERR-McGEE GATHERING LLC

Grant Gerrard
Senior Landman

cc: Murph Selby, Senior Counsel
Brett Cavanagh
Jake Billadeau
Heather Bennett
Kelly Reyos


County Road 16
County Road 16
County Road 16
Larley Ave
County Road 29
County Road 29
County Road 31
County Road 31
County Road 9
Fulton Drive
Fulton Drive
Fulton Drive

CITY OF

Fort Lupton

EST 1836

COME PAINT YOUR FUTURE WITH US

CERTIFICATE OF MAILING

I, the undersigned, hereby certify that on the 28th day of ~~November~~ October, 2020 a true and correct copy of the foregoing Notice of Public Hearings and Preliminary Plat/PUD Plan Map for the Willow Bend Subdivision was sent via U.S. Mail, postage pre-paid, to the following addresses:

Justine File
1133 Beech St.
Fort Lupton, CO 80621

William Leigh
Linda Leigh
Eric Leigh
1141 Beech St.
Fort Lupton, CO 80621

William Fehrn, Jr.
Lawrence Fehrn
1861 14th St.
Fort Lupton, CO 80621

Weld County School District RE8
301 Reynolds St.
Fort Lupton, CO 80621

Jeramy Reigenborn
Ray Ann Reigenborn
1117 Beech St.
Fort Lupton, CO 80621

Jason Harris
Brandi Harris
1125 Beech St.
Fort Lupton, CO 80621

The Ranch Estates
c/o John J. Vandemoer
8791 Circle Dr.
Westminister, CO 80031

Coyote Creek North LLC
5300 DTC Pkwy., Ste. 100
Geenwood Village, CO 80031

AIMS I
5305 W. 86th Ave.
Arvada, CO 80003

Thermo Farms
5305 W. 86th Ave.
Arvada, CO 80003

Rennoc Corporation
5303 S. Bellview Rd.
Rogers, AR 72758

Conner Family Trust
2797 Buckner Ln
Thompsons Station, TN 37179

Clifford Carter
Elizabeth Carter
1621 14th St.
Fort Lupton, CO 80621

James A. Dockter Sr. Trust
La Lani F. Dockter Trust
6518 County Road 29
Fort Lupton, CO 80621

Ernest Martinez
Erma Martinez
1114 Cherry Ct.
Fort Lupton, CO 80621

Flora Maltos
1140 Beech St.
Fort Lupton, CO 80621

Sanjuana Hernandez
Kimberly Hernandez
1132 Beech St.
Fort Lupton, CO 80621

Donald Patton
Luann Patton
4502 County Road 31
Fort Lupton, CO 80621

David Schiers
Leslie Schiers
1109 Cherry Ct.
Fort Lupton, CO 80621

Alvaro Sandoval
Guadalupe Salinas
1121 Cherry Ct.
Fort Lupton, CO 80621

Matthew LeBlanc
Mary LeBlanc
2152 S. Denver Ave.
Fort Lupton, CO 80621

David Hamblin
Tonia Hamblin
1173 Beech St.
Fort Lupton, CO 80621

Heriberto Perez
1165 Beech St.
Fort Lupton, CO 80621

Melina Saiti
Stephen Haas
1124 Beech St.
Fort Lupton, CO 80621

Esteban Soriano
1116 Beech St.
Fort Lupton, CO 80621

Douglas Hudson
Kelley Hudson
1115 Cherry Ct.
Fort Lupton, CO 80621

Richard Romero
1129 Cherry Ct.
Fort Lupton, CO 80621

Joshua Hoffman
Sarah Arndt
1148 Beech St.
Fort Lupton, CO 80621

Francisco Rocha
1157 Beech St.
Fort Lupton, CO 80621

William Lesiak
1149 Beech St.
Fort Lupton, CO 80621

City Official

CITY OF

Fort Lupton

EST 1836

COME PAINT YOUR FUTURE WITH US

CITY OF FORT LUPTON
NOTICE OF PUBLIC HEARING

Notice is hereby given that the City of Fort Lupton is in receipt of an application for a preliminary plat and PUD plan for a proposed residential subdivision referred to as the Willow Bend (f/k/a Fulton Ranch) Subdivision, located east and adjacent to County Road 29 (also known as Northrup Avenue), and south and adjacent to 14th Street right of way in Fort Lupton, Colorado, pursuant to the City of Fort Lupton Municipal Code Notice Requirements.

The public hearings are to be held before the Planning Commission on November 12, 2020, at 6:00 P.M., and before the City Council on December 1, 2020, at 7:00 P.M. or as soon as possible thereafter.

The public hearings shall be held at the Fort Lupton City Hall, 130 S. McKinley Avenue in Fort Lupton, Colorado. In the event that there are City Hall closures due to COVID-19 at the time of the hearings, the public hearings will be held remotely, accessible to the public by phone and internet. Information on how to attend the hearings will be provided in the agenda as posted on the City's website, www.fortluptonco.gov.

Further information is available through the City Planning and Building Department at (303) 857-6694.

ALL INTERESTED PERSONS MAY ATTEND.

LEGAL DESCRIPTION

A PARCEL OF LAND LOCATED IN SECTION 33, TOWNSHIP 2 NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN, CITY OF FORT LUPTON, COUNTY OF WELD, STATE OF COLORADO, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BASIS OF BEARINGS: BEARINGS ARE BASED ON THE NORTH LINE OF THE SOUTHWEST QUARTER OF SECTION 33, TOWNSHIP 2 NORTH, RANGE 66 WEST OF THE SIXTH PRINCIPAL MERIDIAN, BEING MONUMENTED AT THE WEST END BY A FOUND 2" ALUMINUM CAP STAMPED "ALPHA ENGNRG 1997 25937" AND AT THE EAST END BY A FOUND 2-1/2" ALUMINUM CAP STAMPED "GREENHORNE & O'MARA INC. 1993 PLS 28656". SAID NORTH LINE BEARS NORTH 89°58'12" EAST, WITH ALL BEARINGS CONTAINED HEREIN RELATIVE THERETO;

COMMENCING AT THE WEST QUARTER CORNER OF SAID SECTION 33;

THENCE ALONG THE WEST LINE OF SAID SOUTHWEST QUARTER SOUTH 00°10'09" EAST 30.00 FEET TO A POINT ON THE SOUTHERLY RIGHT-OF-WAY LINE OF WELD COUNTY ROAD 14-1/2 (14TH/ STREET) AS DESCRIBED IN BOOK 76 AT PAGE 126 WELD COUNTY RECORDS, AND THE **POINT OF BEGINNING**;

THENCE ALONG SAID SOUTHERLY RIGHT-OF-WAY LINE NORTH 89°58'06" EAST 2645.50 FEET TO A POINT ON THE EAST LINE OF SAID SOUTHWEST QUARTER;

THENCE ALONG SAID EAST LINE NORTH 00°08'34" WEST 30.00 FEET TO THE CENTER QUARTER CORNER OF SAID SECTION 33;

THENCE ALONG THE WEST LINE OF THE NORTHEAST QUARTER OF SAID SECTION 33 NORTH 00°08'25" WEST 1842.81 FEET TO THE CENTERLINE OF FULTON DITCH;

THENCE ALONG THE CENTERLINE OF FULTON DITCH THE FOLLOWING TWENTY-SIX (26) COURSES:

1. SOUTH 46°09'18" EAST 161.51 FEET;
2. SOUTH 26°34'39" EAST 237.74 FEET;
3. SOUTH 17°06'19" EAST 155.42 FEET;
4. SOUTH 56°18'27" EAST 109.68 FEET;
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11. SOUTH 29°24'52" EAST 143.19 FEET;
12. SOUTH 29°31'20" EAST 467.66 FEET;
13. SOUTH 11°45'35" EAST 367.88 FEET;
14. SOUTH 02°13'20" EAST 191.53 FEET;
15. SOUTH 16°42'35" WEST 177.01 FEET;
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17. SOUTH 47°56'22" WEST 237.78 FEET;
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23. NORTH 62°30'49" WEST 185.28 FEET;
24. NORTH 84°27'39" WEST 426.41 FEET;
25. SOUTH 24°35'11" WEST 259.79 FEET;
26. SOUTH 04°39'12" EAST 31.82 FEET TO A POINT ON THE SOUTH LINE OF THE NORTH HALF OF SAID SOUTHWEST QUARTER;

THENCE ALONG SAID SOUTH LINE SOUTH 89°54'18" WEST 1818.70 FEET TO A POINT ON THE WEST LINE OF SAID SOUTHWEST QUARTER;

THENCE ALONG SAID WEST LINE NORTH 00°09'06" WEST 1291.08 FEET TO THE **POINT OF BEGINNING**.

SUBJECT TO WELD COUNTY ROAD RIGHT-OF-WAY.

CONTAINING 5,554,830 SQUARE FEET, OR 127.52 ACRES, MORE OR LESS.

ADDITIONAL INFORMATION AND DOCUMENTS ON THIS APPLICATION CAN BE FOUND AT BIT.LY/FLDEVELOPMENT AND SCROLLING DOWN TO THE ROW TITLED: WILLOW BEND (F/K/A FULTON RANCH) PRELIMINARY PLAT/PUD PLAN.

WILLOW BEND SUBDIVISION

PRELIMINARY PLAT/PUD

SITUATED IN SECTION 33, TOWNSHIP 2 NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN,
CITY OF FORT LUPTON, COUNTY OF WELD, STATE OF COLORADO
PROJECT NO. LUP2019-0039 & PLAN NO. SPL2019-0005

LEGEND

- PROPERTY BOUNDARY
- PROPOSED RIGHT-OF-WAY
- EXISTING RIGHT-OF-WAY
- PROPOSED LOT LINE
- EXISTING LOT LINE
- PROPOSED CATCH CURB & GUTTER
- PROPOSED SPILL CURB & GUTTER
- EXISTING CURB & GUTTER
- PROPOSED SIDEWALK
- EXISTING SIDEWALK
- EXISTING SECTION LINE
- PROPOSED EASEMENT
- EXISTING EASEMENT
- PROPOSED CONTOURS
- EXISTING CONTOURS
- PROPOSED SANITARY
- SS — EXISTING SANITARY (# = SIZE)
- S — PROPOSED SANITARY SERVICE
- PROPOSED STORM
- EXISTING STORM
- PROPOSED WATER
- W — EXISTING WATER
- W — PROPOSED WATER SERVICE
- PROPOSED HYDRANT
- EXISTING HYDRANT
- PROPOSED WATER VALVE
- FO — EXISTING FIBER OPTIC
- GAS — EXISTING GAS

BENCHMARK

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B
ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

BASIS OF BEARING

THE EAST LINE OF THE SOUTHEAST QUARTER OF SECTION 33 AS BEARING NORTH 00° 09' 31" WEST.

CONTACT LIST

OWNER:
SUN COMMUNITIES, INC.
27777 FRANKLIN ROAD
SUITE 200
SOUTHFIELD, MI 48114
(248) 208-2556
CONTACT: JOHN B. MCLAREN

PLANNING & LANDSCAPING:
RVI
120 SOUTH ASH AVENUE
SUITE 201
TEMPE, AZ 85281
(480) 994-0994
CONTACT: BRITTANY GEIST

SURVEYOR:
ATWELL, LLC.
143 UNION BLVD.,
SUITE 700
LAKEWOOD, CO 80228
(303) 462-1100
CONTACT: BRIAN RITZ

CIVIL ENGINEER:
ATWELL, LLC.
143 UNION BLVD.,
SUITE 700
LAKEWOOD, CO 80228
(720) 541-6601
CONTACT: RICK WEED

UNITED POWER (ELEC):
P.O. BOX 929
BRIGHTON, CO 80601
(720) 659-0551
CONTACT: HECTOR AVENDANO

CITY OF FORT LUPTON:
130 S. McKINLEY AVE.
FORT LUPTON, CO 80621
(720) 857-6594
CONTACT: ROY VESTAL

XCEL ENERGY(GAS):
5460 W. 60TH AVE.
ARVADA, CO 80003
(720) 895-4999
CONTACT: BONNA SANDERS

LEGAL DESCRIPTION

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3. SOUTH 17°06'19" EAST 155.42 FEET;
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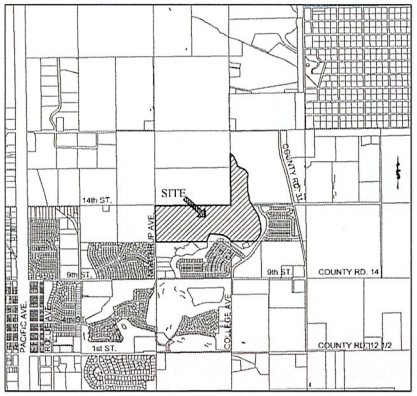
CONTAINING 5,554,830 SQUARE FEET, OR 127.52 ACRES, MORE OR LESS.



VICINITY MAP
SCALE: 1"=2,000'

WILLOW BEND PUD ZONING REQUIREMENTS TABLE

PARCEL	"PROPOSED PUD ZONE"	R-1A ZONE
AREA (AC)	127.5200	
ALLOWABLE LAND USE	SFD	SFD
PERMITTED DENSITY (UNITS/AC)	4	4-6
MAXIMUM UNITS	450	
MINIMUM SITE SIZE (SF)	5500	6500
MINIMUM SITE WIDTH AT STREET (FT) (1)	40 (1)	30
MAXIMUM BUILDING COVERAGE (FOR STRUCTURES ONLY)	45%	
PRINCIPAL BUILDING		
MAXIMUM HEIGHT (FT)	35	35
MINIMUM SETBACK FOR ALL STRUCTURES FROM 14TH STREET (FT)	25	NA
MINIMUM SETBACK FOR ALL STRUCTURES FROM NORTHRUP AVE, (FT)	25	NA
MINIMUM FRONT YARD SETBACK FOR PRINCIPAL BUILDING (FT)	24	25
MINIMUM FRONT YARD SETBACK - GARAGE (GARAGE DOOR SIDE) (FT)	24	25
MINIMUM SIDE YARD SETBACK (FT)	5	5
MINIMUM REAR YARD SETBACK (FT)	10	20
MINIMUM CORNER SIDE YARD SETBACK (FT)	15	20
MINIMUM DWELLING SIZE (SF)	900	900
ACCESSORY USE		
MAXIMUM HEIGHT (FT)	15	NA
MAXIMUM ACCESSORY BUILDING SIZE (SF)	600	
FRONT SETBACK (NOT ALLOWED IN FRONT YARD)		
MINIMUM SIDE SETBACK (FT)	5	5
MINIMUM CORNER SETBACK (FT)	15	20
MINIMUM REAR SETBACK (FT)	8	NA
PARKING REQUIREMENTS		
OFFSTREET SPACES PER UNIT	3	NA

(1) For sites fronting Cul-de-Sacs/Knuckles/Eyebrows the "Minimum Site Width At Street" can be reduced to a minimum of 20 feet.

SHEET INDEX

SHEET NO.	SHEET TITLE
1	COVER SHEET
2	GENERAL NOTES
3	TYPICAL ROAD SECTIONS & DETAILS
4	PHASING PLAN
5	TYPICAL SITE DETAILS
6	EXISTING CONDITIONS MAP
PRELIMINARY PLAT	
7	OVERALL
8	PLAN VIEW 1
9	PLAN VIEW 2
10	PLAN VIEW 3
11	PLAN VIEW 4
12	PLAN VIEW 5
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L0.00	COVER
L1.00	CONCEPTUAL LANDSCAPE PLAN
L2.00	FENCE DETAILS

TRACT SUMMARY TABLE

TRACT	AREA (SF)	AREA (AC)	USE	OWNERSHIP	MAINTENANCE
A	68,498	1.57	PRIVATE ROADWAY/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
B	562,272	12.91	PRIVATE ROADWAY/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
C	368,124	8.45	PUBLIC OPEN SPACE/DRAINAGE/UTILITIES	CITY OF FORT LUPTON	SUN COMMUNITIES, INC
D	34,391	0.79	PRIVATE OPEN SPACE/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
E	385,521	8.85	PRIVATE OPEN SPACE/DRAINAGE/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
F	16,424	0.38	PRIVATE OPEN SPACE/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
G	7,549	0.17	PRIVATE OPEN SPACE/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
H	9,934	0.23	PRIVATE OPEN SPACE/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
I	78,948	1.81	PRIVATE OPEN SPACE/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
J	7,335	0.17	PRIVATE OPEN SPACE/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
K	139,310	3.20	PRIVATE AMENITY CENTER	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
L	6,274	0.14	PRIVATE OPEN SPACE/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
M	8,872	0.20	PRIVATE OPEN SPACE/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
N	6,968	0.16	PRIVATE OPEN SPACE/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
O	10,457	0.24	PRIVATE OPEN SPACE/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
P	114,355	2.63	PRIVATE OPEN SPACE/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
Q	6,166	0.14	PRIVATE OPEN SPACE/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
R	42,746	0.98	PRIVATE OPEN SPACE/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
S	19,160	0.44	PRIVATE OPEN SPACE/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
T	156,854	3.60	PRIVATE OPEN SPACE/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
U	71,974	1.65	PUBLIC OPEN SPACE/UTILITIES/FULTON DITCH	CITY OF FORT LUPTON	SUN COMMUNITIES, INC
V	135,318	3.11	PUBLIC OPEN SPACE/UTILITIES/FULTON DITCH	CITY OF FORT LUPTON	SUN COMMUNITIES, INC
W	31,824	0.73	PRIVATE OPEN SPACE/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
X	46,741	1.07	PRIVATE OPEN SPACE/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
Y	6,662	0.15	PRIVATE OPEN SPACE/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
Z	195,193	4.48	PRIVATE OPEN SPACE/DRAINAGE/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
TOTAL	2,537,870	58.26			

LAND SUMMARY CHART

TYPE	NUMBER	AREA (SF)	AREA (AC)	PERCENT OF TOTAL AREA
MH SITES (LOTS 1-33)	449	2,774,730	63.70	49.95%
TRACTS A-B (PRIVATE ROADS)	2	630,770	14.48	11.36%
TRACTS D-T & W-Z (PRIVATE OPEN SPACE)	21	1,331,684	30.57	23.97%
TRACTS C, U & V (PUBLIC OPEN SPACE)	3	575,416	13.21	10.36%
PUBLIC RIGHT-OF-WAY		242,230	5.56	4.36%
TOTAL		5,554,830	127.52	100.00%

THESE PRELIMINARY DEVELOPMENT PLANS WERE PREPARED BY ME (OR UNDER MY DIRECT SUPERVISION) IN ACCORDANCE WITH THE REQUIREMENTS OF THE CITY OF FORT LUPTON RULES AND REGULATIONS.

RICHARD J. WEED, P.E. DATE
COLORADO NO. 22076
FOR AND ON BEHALF OF ATWELL, LLC.
(720) 541-6601
RWEED@ATWELL-GROUP.COM

ATWELL, INC. ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS (HORIZONTAL AND VERTICAL). THE EXISTING UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS, HOWEVER, THE RESPONSIBILITY OF THE CONTRACTOR TO FILED VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES.

ADDITIONAL INFORMATION AND DOCUMENTS ON THIS APPLICATION CAN BE FOUND AT BIT.LY/FLDEVELOPMENT AND SCROLLING DOWN TO THE ROW TITLED: WILLOW BEND (F/K/A FULTON RANCH) PRELIMINARY PLAT/PUD PLAN

PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

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THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES SHOWN ON THIS DRAWING ARE AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATIONS OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE RESPONSIBLE FOR THE RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

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JOHN B. MCLAREN

CLIENT
SUN COMMUNITIES
WILLOW BEND SUBDIVISION
FORT LUPTON, COLORADO
PRELIMINARY PLAT/PUD
COVER SHEET

SUN

DATE 5/15/2020

REVISIONS

DR. TN | CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. 1

CAD FILE: 19001956-COVER-PUD.DWG

PHASING NOTES

PHASE 1
217 MANUFACTURED HOME SITES
AMENITY CENTER (INCLUDES CLUBHOUSE, POOL, PLAYGROUND, SPORTS COURTS & MAINTENANCE BUILDING)
WESTERN DETENTION POND AREA
NORTHRUP AVENUE PAVING FROM THE WILLOW BEND MAIN ENTRANCE GOING SOUTH
ENTRANCE BOULEVARD WITH ENTRY SIGNAGE
EMERGENCY ACCESS TO NORTHRUP AVENUE
PRIVATE STREETS A – F, H, I, K & L IN THEIR ENTIRETY
PRIVATE STREETS G, J & M TO PHASE LINE
UTILITIES
- SANITARY — AS NEEDED TO SERVE SITES WITHIN PHASE. CONNECT TO EXISTING MANHOLE IN 14TH STREET.
- WATER — 8" PUBLIC WATERMAIN IN NORTHRUP AVENUE FROM CONNECTION POINT AT THE SOUTH PROPERTY LINE TO ENTRANCE BOULEVARD AND ALL INTERIOR PRIVATE WATERLINES AND APPURTENANCES NEEDED TO PROVIDE FIRE PROTECTION AND POTABLE WATER SERVICE TO THE PHASE 1 UNITS AND AMENITY CENTER.
- STORM — AS NEEDED TO SERVE SITES WITHIN PHASE.
- ELECTRIC — AS NEEDED TO SERVE SITES WITHIN PHASE.
- GAS — AS NEEDED TO SERVE SITES WITHIN PHASE.

TRAILWAYS SHOWN AS PART OF PHASE 1
LANDSCAPING WITHIN PHASE 1

PHASE 2
124 MH SITES
COMMUNITY PARK (INCLUDES SHADE STRUCTURE, TOT LOT, OPEN PLAY AREA & DOG PARK)
POCKET PARK ON SE PORTION OF SITE
PRIVATE STREETS N, O, P & T IN THEIR ENTIRETY
PRIVATE STREETS G, J, M & Q TO PHASE LINE(S)
UTILITIES
- SANITARY — AS NEEDED TO SERVE SITES WITHIN PHASE. CONNECTION TO EXISTING SEWER TRAVERSING SITE. OTHER PORTIONS CONNECT TO SEWER WITHIN PHASE 1.
- WATER — 12"PUBLIC WATERMAIN IN 14TH/ STREET FROM CONNECTION POINT AT EAST PROPERTY LINE WITH 12"WATERMAIN CONSTRUCTED BY COTTONWOOD GREENS, TO THE POINT WHERE IT ENTERS THE WILLOW BEND SITE IN THE NORTHEAST CORNER OF THE PROPERTY AND ALL INTERIOR PRIVATE WATERLINES AND APPURTENANCES NEEDED, INCLUDING WATERLINES WITHIN PHASE 3, TO PROVIDE FIRE PROTECTION AND POTABLE WATER SERVICE TO THE PHASE 2 UNITS.
- STORM — AS NEEDED TO SERVE SITES WITHIN PHASE.
- ELECTRIC — AS NEEDED TO SERVE SITES WITHIN PHASE.
- GAS — AS NEEDED TO SERVE SITES WITHIN PHASE.

TRAILWAYS SHOWN AS PART OF PHASE 2 INCLUDING SOUTHERN FULTON DITCH TRAIL CONNECTION
LANDSCAPING WITHIN PHASE 2

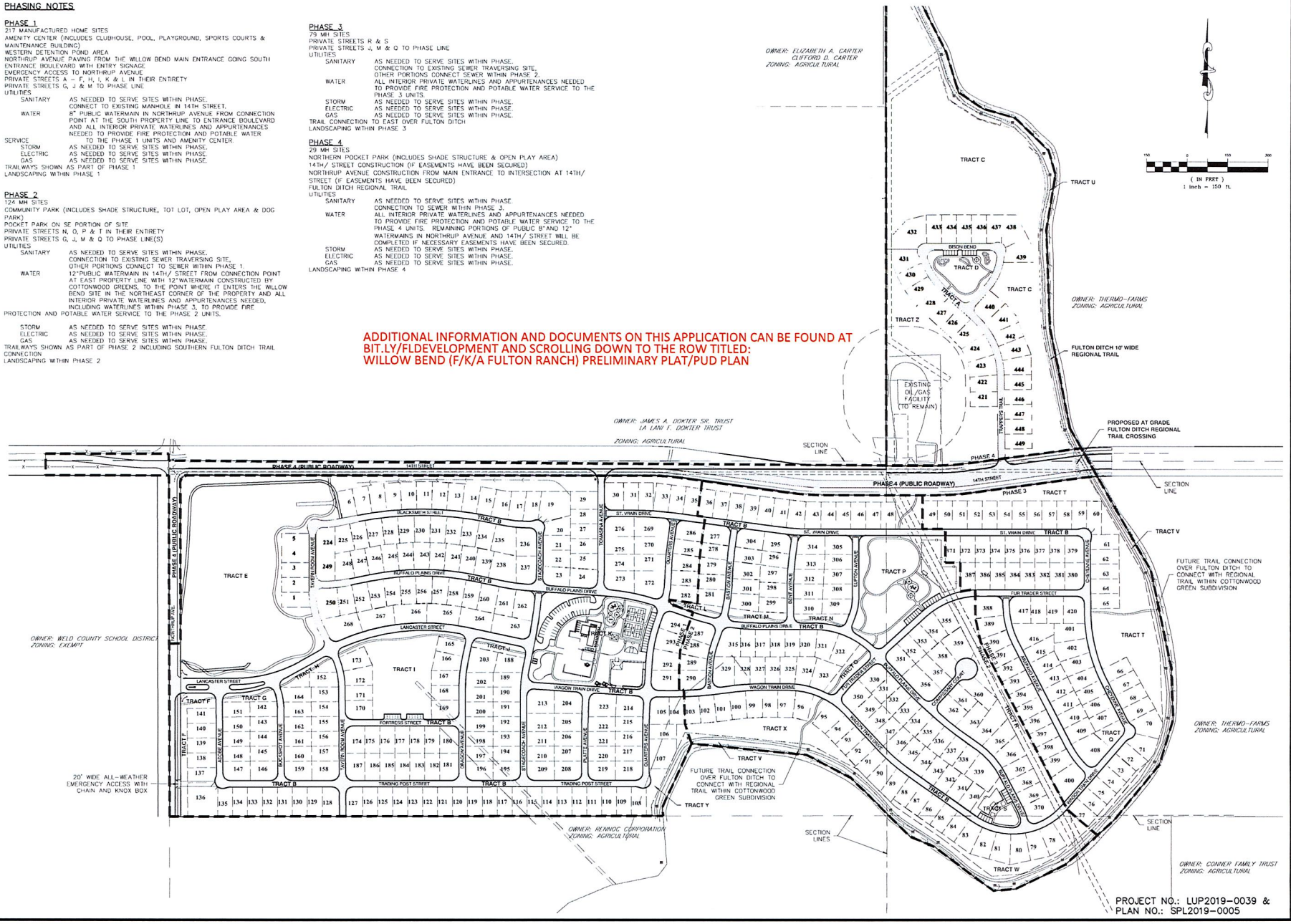
PHASE 3
79 MH SITES
PRIVATE STREETS R & S
PRIVATE STREETS J, M & Q TO PHASE LINE
UTILITIES
- SANITARY — AS NEEDED TO SERVE SITES WITHIN PHASE. CONNECTION TO EXISTING SEWER TRAVERSING SITE, OTHER PORTIONS CONNECT SEWER WITHIN PHASE 2.
- WATER — ALL INTERIOR PRIVATE WATERLINES AND APPURTENANCES NEEDED TO PROVIDE FIRE PROTECTION AND POTABLE WATER SERVICE TO THE PHASE 3 UNITS.
- STORM — AS NEEDED TO SERVE SITES WITHIN PHASE.
- ELECTRIC — AS NEEDED TO SERVE SITES WITHIN PHASE.
- GAS — AS NEEDED TO SERVE SITES WITHIN PHASE.

TRAIL CONNECTION TO EAST OVER FULTON DITCH
LANDSCAPING WITHIN PHASE 3

PHASE 4
29 MH SITES
NORTHERN POCKET PARK (INCLUDES SHADE STRUCTURE & OPEN PLAY AREA)
14TH/ STREET CONSTRUCTION (IF EASEMENTS HAVE BEEN SECURED)
NORTHRUP AVENUE CONSTRUCTION FROM MAIN ENTRANCE TO INTERSECTION AT 14TH/ STREET (IF EASEMENTS HAVE BEEN SECURED)
FULTON DITCH REGIONAL TRAIL
UTILITIES
- SANITARY — AS NEEDED TO SERVE SITES WITHIN PHASE. CONNECTION TO SEWER WITHIN PHASE 3.
- WATER — ALL INTERIOR PRIVATE WATERLINES AND APPURTENANCES NEEDED TO PROVIDE FIRE PROTECTION AND POTABLE WATER SERVICE TO THE PHASE 4 UNITS. REMAINING PORTIONS OF PUBLIC 8" AND 12" WATERMAINS IN NORTHRUP AVENUE AND 14TH/ STREET WILL BE COMPLETED IF NECESSARY EASEMENTS HAVE BEEN SECURED.
- STORM — AS NEEDED TO SERVE SITES WITHIN PHASE.
- ELECTRIC — AS NEEDED TO SERVE SITES WITHIN PHASE.
- GAS — AS NEEDED TO SERVE SITES WITHIN PHASE.

LANDSCAPING WITHIN PHASE 4

ADDITIONAL INFORMATION AND DOCUMENTS ON THIS APPLICATION CAN BE FOUND AT BIT.LY/FLDEVELOPMENT AND SCROLLING DOWN TO THE ROW TITLED: WILLOW BEND (F/K/A FULTON RANCH) PRELIMINARY PLAT/PUD PLAN



PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

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NOTICE:
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JOHN B. MCLAREN

CLIENT
SUN COMMUNITIES
WILLOW BEND SUBDIVISION
FORT LUPTON, COLORADO

PRELIMINARY PLAT/PUD
PHASING PLAN

SUN

DATE 5/15/2020

REVISIONS

DR. TN | CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. 4

CAD FILE: 19001956-PHASING PLAN-PLD.DWG

PROOF OF PUBLICATION
FORT LUPTON PRESS
WELD COUNTY
STATE OF COLORADO

I, Steve Smith do solemnly swear that I am the Publisher of the **Fort Lupton Press** the same is a weekly newspaper printed and published in the County of Weld, State of Colorado, and has a general circulation therein; that said newspaper has been published continuously and uninterruptedly in said county of Weld for a period of more than fifty-two consecutive weeks prior to the first publication of the annexed legal notice or advertisement; that said newspaper has been admitted to the United States mails as second-class matter under the provisions of the act of March 3, 1879, or any amendments thereof, and that said newspaper is a weekly newspaper duly qualified for publishing legal notices and advertisements within the meaning of the laws of the State of Colorado. That the annexed legal notice or advertisement was published in the regular and entire issue of every number of said weekly newspaper for the period of **ONE consecutive insertion(s)** and that the first publication of said notice was in the issue of newspaper, dated **28th day of October, 2020** the last on the **28th day of October, 2020.**

Stephen D. Smith

Publisher, Subscribed and sworn before me,
this **28th day of October, 2020**

Bobi Lopez

Notary Public.

Bobi Lopez
Notary Public
State of Colorado
Notary ID 20024002511
My Commission Expires
March 26, 2023

CITY OF FORT LUPTON
NOTICE OF PUBLIC HEARING

Notice is hereby given that the City of Fort Lupton is in receipt of an application for a preliminary plat and PUD plan for a proposed residential subdivision referred to as the Willow Bend (f/k/a Fulton Ranch) Subdivision, located east and adjacent to County Road 29 (also known as Northrup Avenue), and south and adjacent to 14th Street right of way in Fort Lupton, Colorado, pursuant to the City of Fort Lupton Municipal Code Notice Requirements.

The public hearings are to be held before the Planning Commission on November 12, 2020, at 6:00 P.M., and before the City Council on December 1, 2020, at 7:00 P.M. or as soon as possible thereafter.

The public hearings shall be held at the Fort Lupton City Hall, 130 S. McKinley Avenue in Fort Lupton, Colorado. In the event that there are City Hall closures due to COVID-19 at the time of the hearings, the public hearings will be held remotely, accessible to the public by phone and internet. Information on how to attend the hearings will be provided in the agenda as posted on the City's website, www.fortluptonco.gov.

Further information is available through the City Planning and Building Department at (303) 857-6694.

ALL INTERESTED PERSONS MAY ATTEND.

LEGAL DESCRIPTION

A PARCEL OF LAND LOCATED IN SECTION 33, TOWNSHIP 2 NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN, CITY OF FORT LUPTON, COUNTY OF WELD, STATE OF COLORADO, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BASIS OF BEARINGS: BEARINGS ARE BASED ON THE NORTH LINE OF THE SOUTHWEST QUARTER OF SECTION 33, TOWNSHIP 2 NORTH, RANGE 66 WEST OF THE SIXTH PRINCIPAL MERIDIAN, BEING MONUMENTED AT THE WEST END BY A FOUND 2" ALUMINUM CAP STAMPED "ALPHA ENGNRG 1997 25937" AND AT THE EAST END BY A FOUND 2-1/2" ALUMINUM CAP STAMPED "GREENHORNE & O'MARA INC. 1993 PLS 28656". SAID NORTH LINE BEARS NORTH 89°58'12" EAST, WITH ALL BEARINGS CONTAINED HEREIN RELATIVE THERETO;

COMMENCING AT THE WEST QUARTER CORNER OF SAID SECTION 33;

THENCE ALONG THE WEST LINE OF SAID SOUTHWEST QUARTER SOUTH 00°10'09" EAST 30.00 FEET TO A POINT ON THE SOUTHERLY RIGHT-OF-WAY LINE OF WELD COUNTY ROAD 14-1/2 (14TH/STREET) AS DESCRIBED IN BOOK 76 AT PAGE 126 WELD COUNTY RECORDS, AND THE **POINT OF BEGINNING;**

THENCE ALONG SAID SOUTHERLY RIGHT-OF-WAY LINE NORTH 89°58'06" EAST 2645.50 FEET TO A POINT ON THE EAST LINE OF SAID SOUTHWEST QUARTER;

THENCE ALONG SAID EAST LINE NORTH 00°08'34" WEST 30.00 FEET TO THE CENTER QUARTER CORNER OF SAID SECTION 33;

THENCE ALONG THE WEST LINE OF THE NORTHEAST QUARTER OF SAID SECTION 33 NORTH 00°08'25" WEST 1842.81 FEET TO THE CENTERLINE OF FULTON DITCH;

THENCE ALONG THE CENTERLINE OF FULTON DITCH THE FOLLOWING TWENTY-SIX (26) COURSES:

1. SOUTH 46°09'18" EAST 161.51 FEET;
2. SOUTH 26°34'39" EAST 237.74 FEET;
3. SOUTH 17°06'19" EAST 155.42 FEET;
4. SOUTH 56°18'27" EAST 109.68 FEET;
5. SOUTH 73°59'11" EAST 122.24 FEET;
6. SOUTH 45°26'22" EAST 173.40 FEET;
7. SOUTH 15°54'54" EAST 92.77 FEET;
8. SOUTH 09°11'44" WEST 208.08 FEET;
9. SOUTH 02°10'36" EAST 360.14 FEET;
10. SOUTH 11° 12'41" EAST 382.04 FEET;
11. SOUTH 29°24'52" EAST 143.19 FEET;
12. SOUTH 29°31'20" EAST 467.66 FEET;
13. SOUTH 11°45'35" EAST 367.88 FEET;
14. SOUTH 02°13'20" EAST 191.53 FEET;
15. SOUTH 16°42'35" WEST 177.01 FEET;
16. SOUTH 39°03'23" WEST 269.72 FEET;
17. SOUTH 47°56'22" WEST 237.78 FEET;
18. SOUTH 63°33'42" WEST 205.14 FEET;
19. SOUTH 85°19'19" WEST 82.20 FEET;
20. NORTH 53°17'11" WEST 266.98 FEET;
21. NORTH 67° 19'06" WEST 102.80 FEET;
22. NORTH 44°49'06" WEST 306.80 FEET;
23. NORTH 62°30'49" WEST 185.28 FEET;
24. NORTH 84°27'39" WEST 426.41 FEET;
25. SOUTH 24°35'11" WEST 259.79 FEET;
26. SOUTH 04°39'12" EAST 31.82 FEET TO A POINT ON THE SOUTH LINE OF THE NORTH HALF OF SAID SOUTHWEST QUARTER;

THENCE ALONG SAID SOUTH LINE SOUTH 89°54'18" WEST 1818.70 FEET TO A POINT ON THE WEST LINE OF SAID SOUTHWEST QUARTER;
THENCE ALONG SAID WEST LINE

CITY OF
Fort Lupton
EST 1836
COME PAINT YOUR FUTURE WITH US

Planning & Building

130 S. McKinley Avenue
Fort Lupton, CO 80621
Phone: 303.857.6694
Fax: 303.857.0351
www.fortluptonco.gov

Sign Posting Affidavit

Willow Bend Subdivision Preliminary Plat/PUD Plan
Project No. LUP2020-0031 / Plan No. PPL2020-0004

Northrup Ave. (aka WCR 29)

I, Nicole A. Jeffries hereby acknowledge that the aforementioned property was posted in accordance with City Codes. Said public hearing notice was posted on this 28th day of October 2020.

Signature of Owner or Owner's Representative

The foregoing instrument was acknowledged before me by Nicole A Jeffries, this 2nd day of November, 2020. Witness my hand and seal.

My commission expires 04.16.2021.

Notary Public

JOY LAMPERT
Notary Public, State of Michigan
County of Livingston
My Commission Expires Apr. 16, 2021
Acting in the County of Oakland

(SEAL)

CITY OF
Fort Lupton
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WILLOW BEND (F/K/A FULTON VILLAGE) PRELIMINARY PLAT & PRELIMINARY PUD PLAN
STAFF REPORT
LUP2020-0031 & PPL2020-0004

PROJECT DESCRIPTION

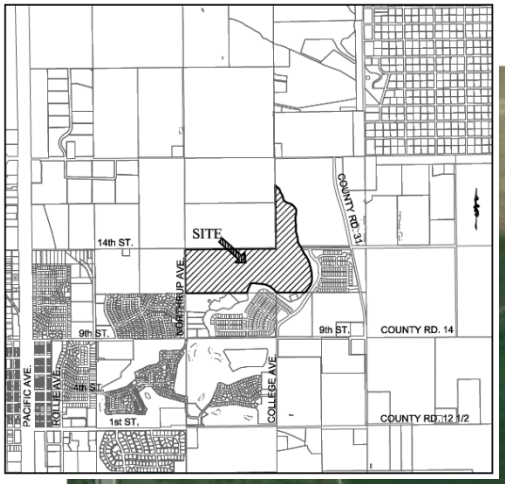
Project Nos.: LUP2020-0031 & PPL2020-0004

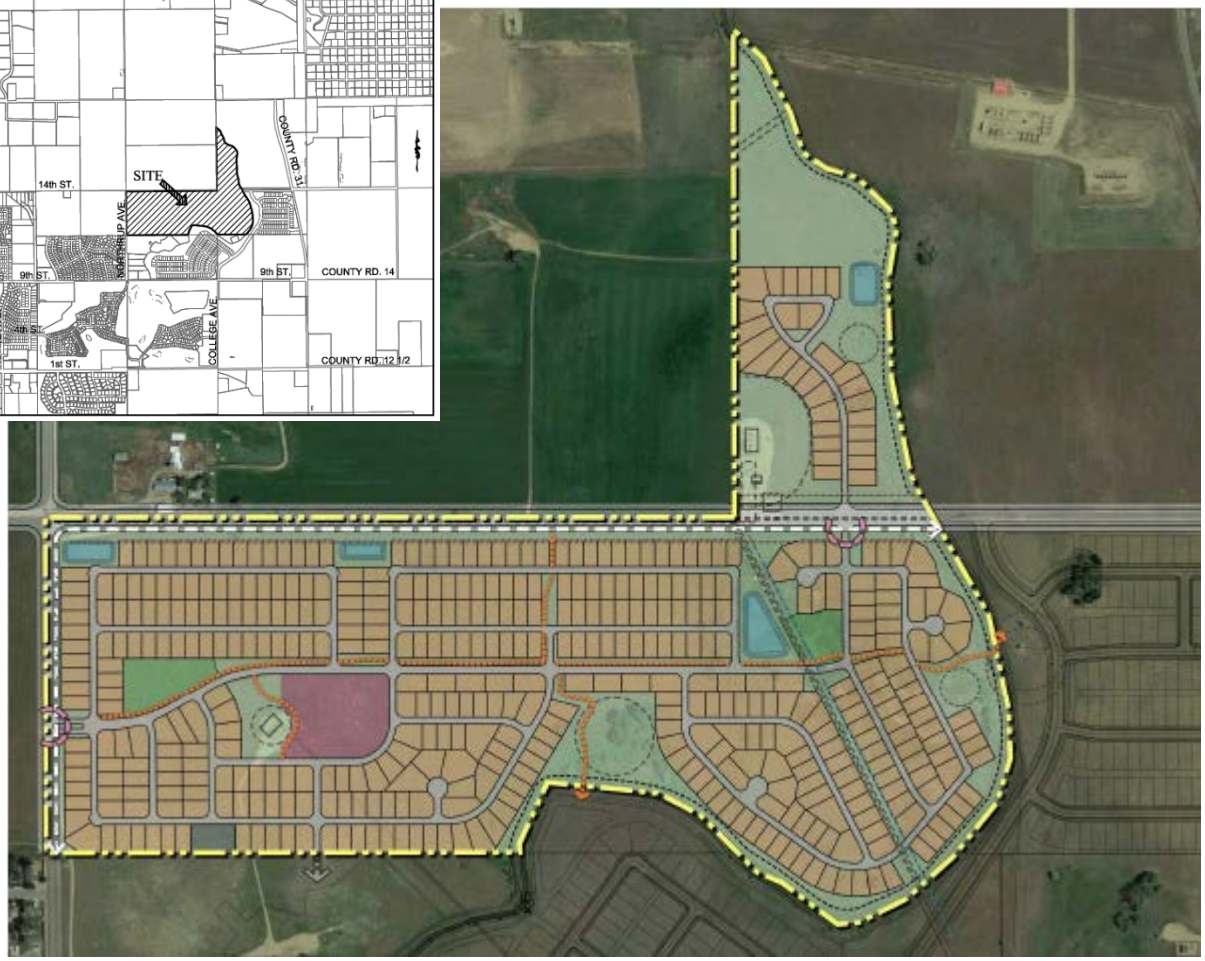
Project Name: Willow Bend (f/k/a Fulton Village) Preliminary Plat & Preliminary PUD Plan

Applicant's Name: Sun Land Development ("Applicant")

Location of Request:

The site consists of a parcel of land located east and adjacent to County Road 29 (also known as Northrup Avenue), and south and adjacent to 14th Street right of way in Fort Lupton (the "Property"). The Property is located in a Part of Section 33, Township 2 North, Range 66 West of the Sixth Principal Meridian, City of Fort Lupton, County of Weld, State of Colorado.





Nature of Request:

The Applicant has submitted a request for a preliminary plat and preliminary PUD plan for a residential subdivision that will include one parcel of land with 449 lease spaces for single-family manufactured homes. Associated amenities will include an amenity center, pocket parks, and interconnecting trails.

Site Size: 127.52 acres, more or less.

Zone District: PUD Planned Unit Development.

Proposed Use: A single parcel residential subdivision that will provide 466 lease spaces for single-family manufactured homes.

Existing Use: Vacant/agricultural.

Hearing Dates: Planning Commission – November 12, 2020 at 6:00 PM; and
City Council – December 1, 2020 at 7:00 PM.

Hearing Location: Fort Lupton City Hall – Council Chambers, 130 S. McKinley Ave., Fort Lupton, Colorado.

Staff Recommendation: Approval with conditions, as shown on the proposed resolution.

SUMMARY OF PREVIOUS APPLICATIONS

On March 3, 2020, the Fort Lupton City Council approved the Sketch Plat for this project as part of the City's major subdivision process. The Preliminary Plat and Preliminary PUD Plan are the next phase of the subdivision process and zoning process for a planned unit development.

APPLICATION PROCESS

The Applicant is requesting approval of a preliminary PUD plan for a residential subdivision that will include one parcel of land with 449 lease spaces for single-family manufactured homes on approximately 127.52 acres. References to the Preliminary PUD Plan establishes the unique regulations and standards for development on the Property. This includes, but is not limited to, any deviations from the City's Zoning Regulations, Residential Design Standards and Specification for Design and Construction of Public Improvements and Zoning Regulations.

The proposed PUD Plan review process is set forth in the Municipal Code. PUD plan applications are to be processed in the same manner as set forth in the Code for major subdivisions. After required public notice of the preliminary PUD plat, the Planning Commission shall consider the application, referral comments and any public testimony at a public hearing and make a recommendation to City Council to approve, approve with conditions or deny the preliminary plat. The Planning Commission's comments shall be based on the evidence presented, conformance with the Comprehensive Plan, and compliance with the City's standards, regulations and policies.

The City Council shall then conduct a public hearing and evaluate the preliminary plat and preliminary PUD plan, referral agency comments, Planning Commission recommendation and any public testimony. City Council shall approve, conditionally approve, continue for additional information or for further

study or deny the application based on the evidence presented and compliance with the City's standards, regulations and policies and other guidelines.

NOTIFICATION REQUIREMENTS

The Subdivision Regulations require published notice of the hearings in a timely manner prior to the hearings. The Planning Commission and City Council hearings were published in the Fort Lupton press on October 28, 2020.

Notice of the public hearings were posted on the Property on October 28, 2020, pursuant to the Subdivision Regulations, which require the Applicant post the Property with notice of the hearings at least fifteen (15) days prior to the hearings.

Notice was mailed to neighbor within 500 feet of the Property, and owners and lessees of mineral interests on October 28, 2020.

CONFORMANCE WITH CITY STANDARDS, REGULATIONS AND POLICIES

The area is zoned PUD Planned Unit Development with R-1, R-1A, R-2, and R-3 uses. The objective of a PUD is to provide for the planning and development of substantial tracts of land, suitable in location and character for the uses proposed, as unified and integrated entities in accordance with detailed development plans.

The Preliminary Plat and Preliminary PUD Plan is for a residential subdivision that will include one parcel of land with 449 lease spaces for single-family manufactured homes on approximately 127.52 acres. The street names and layout have been initially reviewed by the Design Review Team, including representatives from the Fire District, Engineering, Public Works and Planning. Some of the proposed street names will require changes to ensure they are not duplicative of existing streets and staff will work with the Applicant to finalize names prior to submittal of the Final Plat and Final PUD Plan.

The Applicant has submitted the required documents pursuant to the Code. The City Engineer has provided comments related to the construction plans, and the proposed resolution includes conditions of approval to ensure that any concerns are addressed as part of the final plat review process.

Approval of an PUD Plan is being reviewed concurrently with the Preliminary Plat. All development within a PUD zone district must be in accordance with a PUD plan. PUD plans shall contain unique district regulations that apply to the PUD zone district. All provisions of the City's Code and adopted standards and specifications shall apply within PUD zone districts, unless specifically modified in the PUD plan. Deviations from the City's standards are noted on the Preliminary Plat and Preliminary PUD Plan map.

CONFORMANCE WITH THE COMPREHENSIVE PLAN

The Fort Lupton Comprehensive Plan designates this area as the Single Family Detached land use type. This designations allows for neighborhoods of predominately single family detached homes on individual lots. This can consist of a variety of development types, including higher density homes within the City's urban core and planned subdivisions within residential growth areas. In addition to single family units, these neighborhoods may include scattered single family attached and multi-family housing options, as well as public and semi-public uses. Given market demand, single family neighborhoods are

likely to remain the primary residential designation within Fort Lupton and should see considerable growth in the future.

The proposed development provides for small lots, which allows for a higher density of housing. The Comprehensive Plan states that a variety of development types, including higher density homes may be included within certain Single Family Detached areas within the City, specifically within the urban core. Although the Property is currently undeveloped, it is adjacent to current development, including residential to the west, and residential and golf course to the south. An industrial development is located northeast of the Property. Because of its proximity to these developments, staff finds that the proposed development is appropriate at this location as set forth in the Comprehensive Plan. The permitted density of the development will be 4 dwelling units per acre.

The proposal also complies with the Parks and Trails Master Plan, which identifies the Fort Lupton Trail as running along the eastern boundary of the property. The proposal includes plans for development of this trail.

REFERRALS

Referrals were provided to the list below. Any comments received are enclosed with the Planning Commission packet.

Buildings/Grounds Manager	City Attorney	Police Chief
Recreation Manager	Public Works Director	Building Inspector
GIS Specialist	Golf Course Manager	Wastewater Plant Manager
CDOT	Finance Director	Fort Lupton Fire Protection District
Comcast	Army Corp of Engineers	Colorado Parks and Wildlife
Postmaster	CenturyLink	United Power
Fulton Ditch Company	Weld County School District RE-8	Xcel Energy
Weld County Department of Planning	NCWCD	

For more information on this development, please refer to the Planning Commission packet provided. Additional documents are available for review at the Fort Lupton City Hall.

RESOLUTION NO. P2020-024

A RESOLUTION OF THE PLANNING COMMISSION OF FORT LUPTON RECOMMENDING TO CITY COUNCIL APPROVAL OF THE WILLOW BEND (F/K/A FULTON RANCH) SUBDIVISION PRELIMINARY PLAT AND PRELIMINARY PUD PLAN TO CREATE A SINGLE LOT RESIDENTIAL SUBDIVISION LOCATED IN A PART OF SECTION 33, TOWNSHIP 2 NORTH, RANGE 66 WEST OF THE 6TH P.M., COUNTY OF WELD, STATE OF COLORADO.

WHEREAS, the Planning Commission held a public hearing on November 12, 2020, for the purpose of reviewing the Willow Bend (f/k/a Fulton Ranch) Subdivision Preliminary Plat and Preliminary PUD Plan; and

WHEREAS, the Willow Bend Preliminary Plat and Preliminary PUD Plan proposes to develop a property for a single lot residential development with 449 lease spaces, and associated amenities that will include an amenity center, pocket parks and interconnecting trails; and

WHEREAS, after review of the application for the Willow Bend Preliminary Plat and Preliminary PUD Plan, and consideration of staff comments, applicant's presentation, and any public input, the Planning Commission finds the request for the Willow Bend Preliminary Plat and Preliminary PUD Plan conforms with City codes, and requirements and policies therein; and

WHEREAS, all legal requirements for the public hearing have been met, including mailing of public hearing notices to adjacent property owners within 500 feet; and

NOW THEREFORE BE IT RESOLVED, the Planning Commission has considered the application and has taken into consideration all referral comments and any citizen testimony in response to this application. Based upon the facts presented on this date, the Planning Commission hereby recommends approval of the Willow Bend Preliminary Plat and Preliminary PUD Plan located in a part of Section 33, Township 2 North, Range 66 West of the 6th P.M., City of Fort Lupton, County of Weld, State of Colorado with the following conditions:

I. Prior to submittal of a Final Plat and Final PUD Plan:

A. The title of the map shall be updated to include the Project No. LUP2020-0031 & Plan No. PPL2020-0004.

B. Any redline comments provided by City staff shall be made to the preliminary plat and preliminary PUD plan.

C. Referral comments that impact the layout of the preliminary plat shall be incorporated into the preliminary plat, including providing easements as required by utility companies, as well as comments from Public Works that affect layouts shown.

D. Applicant shall submit a pre-application meeting request with City staff to determine requirements of the final plat and final PUD plan submittal.

II. As a part of the Final Plat and Final PUD Plan submittal:

A. Applicant shall provide an update on the status of obtaining access permit(s) from CDOT.

B. Applicant shall adequately address the referral comments from the Fort Lupton Fire Protection District.

C. Applicant shall adequately address the referral comments from the Public Works Director.

D. Applicant shall adequately address the referral comments from the Superintendent of Weld County School District RE-8.

E. Applicant shall adequately address the referral comments from the Colorado Department of Transportation.

F. Applicant shall begin the process of dedicating right of way requested by the Public Works Director.

G. Applicant shall adequately address the referral comments from United Power.

H. Applicant shall work with City staff to finalize proposed street names.

I. Applicant shall work with City staff to incorporate the results of the tree inventory study into the final plat and final PUD plan.

J. Applicant shall provide City staff with any updates on the status of addressing the Colorado Parks and Wildlife comments received during the sketch plat review.

K. Applicant shall adequately address the referral comments from Xcel Energy (Public Service Company).

L. Applicant shall provide updated information concerning any existing surface use agreements and provide details on how the agreements have been addressed on the design of the development, and how any oil and gas easements are being addressed.

M. Applicant shall provide final recommendations on how high ground water on the site will be addressed and how it affects proposed site layout.

DONE THIS 12TH DAY OF NOVEMBER, 2020 BY THE PLANNING COMMISSION FOR THE CITY OF FORT LUPTON, COLORADO.

Vice-Chairman

ATTEST:

Digitally signed by Todd A. Hodges
DN: cn=Todd A. Hodges, o, ou, email=thodges@fortluptonco.gov, c=US
Date: 2020.11.25 09:31:48 -07'00'

Planning Director

RECORD OF PROCEEDINGS
FORT LUPTON PLANNING COMMISSION
November 12, 2020

The Planning Commission of the City of Fort Lupton met in session virtually via GoToMeeting, on Thursday, November 12, 2020.

City Attorney Andy Ausmus gave the following advisement:

> Tonight's meeting shall be held virtually so as to ensure the health and safety of the general public and the City of Fort Lupton City Council, Planning Commission and staff.
>
> The intent and purpose of the virtual appearance options is to allow the City to be innovative in providing the general public the most meaningful access possible in light of the current challenges present as a result of the Covid-19 pandemic. Therefore, subject to social distancing and public health orders, members of the general public will be offered the opportunity to be electronically present for meetings at the City, subject to existing health conditions.
>
> An electronic link has been made available for tonight's meeting on the City's website and social media platforms and as posted at City Hall, so that the general public, Planning Commission and staff may participate electronically via the internet or on the phone.

Vice-Chair Bushrod White called the meeting to order at 6:06 p.m.

ROLL CALL

Roll was taken and those present were Vice-Chair Bushrod White and Commission Members Kathy Kvasnicka, Lynne Derby, Paul Weber, Mark Grajeda, and Thomas Meyers. Also in attendance were Planning Director Todd Hodges, City Planner II Alyssa Knutson and City Planner I Maria Lancto.

APPROVAL OF AGENDA

Vice-Chair White called for a motion to approve the agenda. It was moved by Member Paul Weber and seconded by Member Kathy Kvasnicka.

CONSENT AGENDA

Vice-Chair White called for a motion to approve the consent agenda. It was moved by Member Paul Weber and seconded by Member Kathy Kvasnicka.

PUBLIC COMMENT

Vice-Chair White asked if there was anyone who would like to comment on an item not on the agenda tonight. Seeing none, he closed Public Comment.

ACTION ITEMS

Willow Bend Subdivision Preliminary Plat & Preliminary PUD Plan

City Planner II Alyssa Knutson introduced the project. She stated that the project before Planning Commission is the Willow Bend Subdivision Preliminary Plat & Preliminary PUD Plan. She stated that the proposed subdivision is located east of Northrup Avenue and south of 14st street. She stated that the plat is a single lot subdivision with 449 lease spaces for single family manufactured homes on approximately 127.42 acres. She stated that the plans comply with the Comprehensive Plan. She Stated that zoning is currently PUD and that the proposed use complies with this zoning. She stated that the specific zoning regulations that differ from the City's standard zoning are included in the PUD plan that was provided Planning Commission and posted on the website. She stated that all notification requirements have been met, and the applicant does have a presentation for the Planning Commission tonight.

Nikki Jeffries with Sunrise Land Group introduced the representatives on the line with the project.

City Attorney Andy Ausmus addressed the representative for the applicant, John McLaren, President of Sun Communities. He asked if Mr. McLaren, on behalf of the applicant, understood that Members of the Planning Commission may be appearing tonight via virtual connection and may not be appearing in-person.

Mr. McLaren stated yes.

Mr. Ausmus asked if he consented to the applicable members voting on their submittal, even though said members are not present in person.

Mr. McLaren stated yes.

Mr. Ausmus asked if he understood that they have the right to continue this public hearing to such a date to allow a full in-person public hearing.

Mr. McLaren stated yes.

Mr. Ausmus asked if he has agreed to voluntarily waive that right on behalf of the applicant or themselves by proceeding tonight electronically.

Mr. McLaren stated yes.

Mr. Ausmus asked if he voluntarily signed and submitted the written waiver and consent to proceed electronically tonight.

Mr. McLaren stated yes.

Mr. Ausmus asked if they waived their right to proceed in an in-person public hearing and have consented to proceed forward voluntarily tonight in this virtual planning commission meeting, is that correct.

Mr. McLaren stated yes.

Mr. McLaren stated that he had previously spoken to Planning Commission regarding his company and the project at the Sketch Plat phase of this development at a Public Hearing in February 2020. He stated that the company has grown since that time. He stated that he previously discussed the positive culture of Sun Communities, and wanted to touch on that and what the company has done through the pandemic. He stated Sun Communities provided hardship supports to their residents to the tune of nearly 5 million dollars in way of rent support. He stated that they have also allowed vacant vacation rentals to be used by healthcare workers and first responders to stay close to hospitals free of charge. He stated that they have also provided PPE to hospitals. He stated that they also opened up the River Run vacation rentals in Granby during the East Troublesome Fire. He stated that this has been provided as a free command center for the fire fighters. He stated that he is bringing these up to give the Planning Commission a real example of how the company stands by their policies and culture.

Mr. McLaren indicated to images of four new prototypes of manufactured homes that can be expected in the Willow Bend community. He stated that all these prototypes are also located a few miles from his own house. He indicated to a slide that showed a representation of some possible interiors. He turned over the presentation to Bill Anderson.

Mr. Anderson stated that the property is 127 acres and located at Northrup Avenue and 14th Street. He stated that the Fulton Ditch runs along the eastern boundary. He stated that the Cottonwood Greens development is proposed south of the property. He indicated to a graphic of the current site plan. He stated that there will be 449 home sites with a density of 3.5 units per acre. He stated that the permitted density is about 6.5 units per acre, therefore the proposal is lower in density than maximum permitted. He stated that key features include an amenity center, 5.5 acres of pocket parks, and trail systems. He stated that this plan is about 34% open space.

Mr. Anderson walked through the proposed site plan. He stated that the primary entrance is off Northrup Avenue with a nice boulevard entry. He stated that a detention basin is located north and along Northrup. He stated that as you continue on the main road, you terminate right into the 3-acre amenity center. He stated that north of the amenity center is a secondary entrance drive that will connect into 14th street once 14th street is built. He stated that if you

continue east there is a trail and road network into a significant community park. He stated there are also two pocket parks. He stated that there are two trail connections, one on the east and one on the south to the Fulton Regional Trail. He stated that they are proposing bridge crossings over the Fulton Ditch.

Mr. Anderson indicated to a graphic of two standard home sites, one that is 58' wide and another that is 110' wide. He stated that each home site has 3 parking spaces and concrete walks.

Mr. Anderson stated that changes from the sketch plat include added detention basins, 14th street realignment, an additional emergency access, centralized 14th street access, expanded trail system to the north, bridge connections across Fulton Ditch, and relocation of the maintenance facility. He indicated to a graphic of the proposed amenity center and discussed the fire pits, patios, pools, open play area, play equipment, sports courts, and maintenance facility. He stated that they are very excited about this plan. He stated that they have been working with staff and referral agencies and understand the conditions of approval that are proposed.

Vice-Chair White opened the Public Comment portion of the hearing. Seeing none, public comment was closed.

Ms. Knutson stated that staff received a comment from Kerr-McGee after the Planning Commission Packet was sent out. She stated that they would like their pipeline easements taken into consideration. She stated that they should amend the resolution to include a condition on that.

Mr. Ausmus asked Mr. McLaren if he has had a full and fair opportunity to present all facts, submittals, documents, testimony and presentations in support of the Applicant's application before the City Council and or Planning Commission tonight.

Mr. McLaren stated yes.

Mr. Ausmus asked Mr. McLaren if there has there been anything that he or the Applicant would have liked to have presented in support of Applicant's application that he felt he was prevented from doing so.

Mr. McLaren stated no.

Vice-Chair White asked the Commissioners if they had any questions.

Member Lynne Derby asked if people would be purchasing the land under the modular home as well as the home, or if the land was leased.

Mr. McLaren clarified that the land was leased from Sun Communities.

Member Kathy Kvasnicka asked who was responsible for maintenance.

Mr. McLaren stated that the maintenance of the home and the home site would be the home owner, but all other common areas, roads, etc. would be maintained by Sun Communities.

Member Mark Grajeda asked when construction would begin.

Mr. McLaren stated that typically they start with building a first phase of 200-250 home sites. He stated that they expected to move pretty quickly through the phases, but didn't have an exact time line. He stated that the first phase would also include the amenity core.

Mr. Anderson stated that 219 home sites would be built in the first phase. He stated that detailed engineering and final approvals still need to be completed, but they hoped to begin in the June / July time frame.

Member Paul Weber complimented Sun Communities for addressing drainage, which was an issue discussed at the Sketch Plat hearing.

Vice-Chair White asked the Commissioners if they had any more questions; seeing none, he requested a motion to approve Resolution P2020-024. Mr. Ausmus confirmed that every Commissioner was able to see and hear the entire presentation. Ms. Knutson recommended that Item 2.L. on the resolution be amended to include a statement that oil and gas easements on the site are to be addressed.

It was moved by Member Paul Weber to approve Resolution P2020-024 as amended and Member Lynne Derby seconded.

Motion carried by unanimous roll call vote.

McDonald's Restaurant Site Plan

City Planner I Maria Lancto introduced the project. She stated that the application before Planning Commission is for the McDonald's Site Plan. She stated that the site is located at the northeast corner of Highway 52 and Grand Avenue. She stated that the site is approximately 0.764 acres in size. She stated that the application is requesting approval of a site plan for a fast-food restaurant with a drive-thru. She stated that the site plan includes a 3,915 square foot building with associated parking and landscaping. She stated that current zoning for this property is C-1 General Commercial, and restaurants are a use by right in this zone district. She stated that currently the proposed site plan spans across two parcels and that a condition of approval would be for the applicant to work with staff to complete an amended plat to combine these parcels. She stated that all notification requirements have been met and that staff is recommending conditional approval. She reminded Commissioners and attendees that this is a public hearing for the site plan only and that the applicant has also applied for

a variance that will be heard later in the evening at the Board of Adjustments public hearing. She stated that the representative for the project does have a brief presentation.

City Attorney Andy Ausmus addressed the representative for the applicant, Robert Palmer. He asked if he, on behalf of the applicant, understood that Members of the Planning Commission may be appearing tonight via virtual connection and may not be appearing in-person.

Mr. Palmer stated yes.

Mr. Ausmus asked if he consented to the applicable members voting on their submittal, even though said members are not present in person.

Mr. Palmer stated yes.

Mr. Ausmus asked if he understood that they have the right to continue this public hearing to such a date to allow a full in-person public hearing.

Mr. Palmer stated yes.

Mr. Ausmus asked if he has agreed to voluntarily waive that right on behalf of the applicant or themselves by proceeding tonight electronically.

Mr. Palmer stated yes.

Mr. Ausmus asked if he waived his right to proceed in an in-person public hearing and have consented to proceed forward voluntarily tonight in this virtual planning commission meeting, is that correct.

Mr. Palmer stated yes.

Mr. Palmer stated that they are excited about this project and has appreciated staff input through this process. He indicated to the site plan map and stated that the restaurant is oriented towards 1st street. Mr. Palmer stated that currently there is vacant gas station, liquor store and single family residence at the site. He stated that the site would be scraped and existing utilities removed. He stated that the accesses to the property would also be reconfigured. He stated that they are applying for an access permit from CDOT for the access form Highway 52. He stated that they are working with the Fort Lupton Housing Authority for access on what they are currently labeling as the alley. He stated that that agreement is currently being reviewed by HUD. He stated that the site generally flows counter clock wise. He stated that new utilities are being proposed with this development. He stated that Commissioners are likely familiar with what this site will look like. He discussed the landscaping throughout that will be used to soften the site. He stated that the ADA parking will be located attached the building. He stated that all sidewalks will be ADA.

Vice-Chair Bushrod White opened the Public Comment portion of the hearing.

Rachel Wells, 150 1st Street – Ms. Wells said that she is with Santiago's, the business located across the street from the proposed plan. She stated that she is concerned with the traffic flow. She stated that the road is already very congested and it is already difficult to turn left into her property. She stated that she and her customers are very concerned. She stated that the semi-traffic is an added challenge on Highway 52. She asked what the City and McDonald's have thought about doing to address traffic flow.

Vice-Chair asked if there was anyone else who wished to comment. Hearing no one, Public Comment was closed.

Vice-Chair White asked Mr. Palmer if he would like to respond to the Public Comment.

Mr. Palmer stated that they are also concerned with the traffic impact to surrounding businesses and their own business. He stated this was the driving factor for the alley / easement access located north of the site. He stated that the site would not work without that. He stated that the double drive-thru should also help. He stated that people should access from Grand Avenue rather than 1st street.

Vice-Chair White asked the Commissioners if they had any questions.

Member Mark Grajeda verified that McDonald's is still waiting for responses from CDOT.

Mr. Palmer stated yes and they were going through the normal access permit process. He stated that CDOT usually takes a little longer, and they don't anticipate any issues.

Member Thomas Meyers asked for clarification on if this was a conditional request.

Ms. Knutson stated that staff was recommended conditional approval.

Member Meyers asked if the alley access was guaranteed with the Housing Authority.

Mr. Palmer stated that the Housing Authority is supporting the easement. He stated that HUD has to approve it and the agreement is currently in that process. He stated that this would be a condition of approval that the easement was in place.

Member Meyers stated that he sympathizes with the traffic issues in this area. He asked what would happen if the alley access was not approved.

Mr. Palmer stated that this plan would not work without the alley and they would have to come back with a different site plan.

Planning Director Todd Hodges confirmed that a new site plan would be brought back to Planning Commission for re-review.

Member Paul Weber asked who would be maintaining the alley.

Mr. Palmer confirmed that McDonald's would maintain the alley.

Member Weber stated that he understands the concern with the traffic. He asked Public Works Director Roy Vestal if there were any plans from CDOT on this area.

Roy Vestal stated that CDOT is in the process of conducting the PEL Study which is looking at access control through the corridor. He stated that there are a couple options being looked at included right-in-right-out on both sides of Grand Avenue. He stated that this is a troubling intersection that will only get worse. He stated that reducing the current access is an improvement.

Mr. Ausmus asked Mr. Palmer if he has had a full and fair opportunity to present all facts, submittals, documents, testimony and presentations in support of the Applicant's application before the City Council and or Planning Commission tonight?

Mr. Palmer stated yes.

Mr. Ausmus confirmed that all Commissioners were able to see and hear the entire presentation. This was confirmed through a roll call tally.

Vice-Chair White asked the Commissioners if they had any more questions; seeing none, he requested a motion to approve Resolution P2020-025. It was moved by Thomas Meyer and Member Kathy Kvasnicka seconded.

Motion carried by unanimous roll call vote

DISCUSSION ITEMS

Review of Meeting Discussion
A review of meeting discussions took place.

Development Code Update
A discussion of the Development Code Update took place.

FUTURE BUSINESS

Next Meeting of the Planning Commission

The next meeting of the Planning Commission is scheduled for December 10, 2020 at 6:00 PM.

The Board of Adjustment will be held immediately after this Planning Commission meeting.

ADJOURNMENT

It was moved by Member Kathy Kvasnicka and seconded by Member Lynn Derby to adjourn the November 12, 2020 Planning Commission Meeting.

Motion carried unanimously by voice vote.

_____
Maria Lancto, Planner I

Approved by Planning Commission

_____
Mike Simone, Chair

DRAFT

CITY OF Fort Lupton EST 1836

Planning & Building

130 S. McKinley Avenue
Fort Lupton, CO 80621
Phone: 303.857.6694
Fax: 303.857.0351
www.fortluptonco.gov

Project No. ~~LUP2019-0039~~ LUP2020-0031

Land Use Application Form

A. CONTACT INFORMATION

1) Property Owner Name: Coyote Creek North, LLC

Company: N/A

Phone: 770-339-8841 Email: bleino@fullerre.com

Address: 5300 DTC Parkway, Ste 100, Greenwood Village, CO 80111

Preferred method of contact? Email: Phone: Mail:

2) Representative Name: Nikki Jeffries

Company: Sun Land Development

Phone: 248-892-0889 cell Email: njeffries@sunlanddev.com

Address: c/o Atwell, Two Towne Square, Ste 700, Southfield, MI 48034

Preferred method of contact? Email: X Phone: Mail:

3) Billing Contact *(where invoices should be directed to)*: Nikki Jeffries

Billing Company: Sun Communities, Inc.

Phone: 248-892-0889 Email: njeffries@sunlanddev.com

Address: 27777 Franklin Road, Ste 200, Southfield, MI 48034

B. SITE DESCRIPTION

Site Address: Southeast corner of 14th Street & Northrup Avenue

Parcel Number: 130933000043

Existing Zone Classification: PUD Proposed Zone Classification: PUD

Water Type: Municipal Name: City of Fort Lupton

Sewage Type: Municipal District Name or Location Hauled to: City of Fort Lupton

C. APPLICATION TYPE (CHECK ALL THAT APPLY)

Sketch Plat	Administrative Site Plan	X PUD Plan (Preliminary & Final)
X Preliminary Plat	Special Use Permit	Variance
Final Plat	Oil & Gas Permit	Administrative Variance
Minor Subdivision	Annexation & Initial Zone	Appeal
Amended Plat	Change of Zone	Other: _____
Site Plan	Comp Plan Amendment	

LUP2020-0031

Project No. ~~LUP2019-0039~~

D. PROJECT DESCRIPTION

Project Name: Willow Bend

Please provide a short description of the proposed project in the space provided below:

Willow Bend is a proposed 449 unit manufactured home community in the City of Fort Lupton, Colorado. The community will have a clubhouse, pool, amenity center, and privately maintained parks along with an internal trail system. The project will have private internal roadways and utilities, which will connect to the City's existing public water & sewer systems

E. REQUIRED DOCUMENTS

For an application to be considered complete, and for planning staff to begin review and schedule any applicable public hearings, this Land Use Application Form must be fully completed and all required attachments included. Planning staff will review the application for completeness and will provide notice to the representative and/or owner whether the application has been deemed complete.

F. CERTIFICATIONS

Representative Certification

By signing this application, I attest that I am acting with the knowledge and consent of all owners of the property that is the subject of this application, and that I have been designated to act as the representative for the project described in this land use application. I further certify that all information submitted with this application is true and accurate to the best of my knowledge.

Representative: _____ Date: 7/14/2020

Nicole A. Jeffries

Owner Certification

I hereby certify that I am the legal owner of record of the property that is the subject of this application. I authorize the representative listed on this application, if any, to communicate directly with City officials and to submit documentation and information regarding this application on my behalf.

Owner: _____ Date: 7/14/2020

Robert R. Leino, Managing Member ~ Coyote Creek, LLC

For Office Use Only

Received Date: _____

If the application is not complete, state reasons why it is incomplete:

_____

_____

_____

Deemed Complete Date: _____

Fees Submitted: _____ Escrow Submitted: _____

Instructions for Submitting the Land Use Application Form

DEFINITIONS

Words in the singular include the plural and words in the plural include the singular.

Application refers to the official submittal to the City of Fort Lupton's Planning Department for review of the proposed land use development identified in the land use application form. The application includes the form, all materials submitted for review of the project, including those documents required under the Land Use Regulations of the Municipal Code, and any additional information provided.

Project refers to the land use development identified on the land use application form and application materials.

Property refers to the land that is being proposed for development as described in the land use application form and application materials.

A. CONTACT INFORMATION

1) Provide contact information for all owners of any property that is the subject of the application. If the contact information for all property owners will not fit on the space provided, submit a separate sheet for the additional owners.
2) Provide contact information for all persons, firms or businesses that are authorized by the owners identified in Section A(1) to work on the land use application, including, but not limited to, discussing the project, submitting application materials, and attending meeting and hearings. If the contact information for all representatives will not fit on the space provided, submit a separate sheet for the additional representatives.
3) Provide contact and mailing information for the person that should receive all invoices for the project. If this person changes at any time, contact the Planning Department immediately to update this information.

B. SITE DESCRIPTION

Provide all information requested. Parcel numbers and address information may be found at the Weld County Property Portal at https://www.co.weld.co.us/maps1/propertyportal/. Current zoning can be found at https://www.fortluptonco.gov/405/Zoning.

C. APPLICATION TYPE

Select the land use application that is applicable to the project. If there are multiple land use application types being submitted to run concurrently, select all that apply. The land use application types will be identified during the required pre-application meeting. If you have any questions about this, please contact the Planning Department at 303.857.6694 or planningdept@fortluptonco.gov.

D. PROJECT DESCRIPTION

Please select a project name that will be referenced throughout the project and a description of what the project entails. If you need more space for the project description, please attach a separate sheet.

E. REQUIRED DOCUMENTS

Required documents will be discussed during the pre-application meeting with the Planning Department. If any documents are missing, the acceptance of the application may be delayed until the submittal is complete.

F. CERTIFICATIONS

Representative Certification. Provide the signature of all authorized representatives in this section.
Owner Certification. Provide the signature of all owners of properties included in the application in this section.

For any other questions, please contact the Planning Department at 303.857.6694 or planningdept@fortluptonco.gov.

WILLOW BEND SUBDIVISION

PRELIMINARY PLAT/PUD

SITUATED IN SECTION 33, TOWNSHIP 2 NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN, CITY OF FORT LUPTON, COUNTY OF WELD, STATE OF COLORADO

PROJECT NO. LUP2019-0039 & PLAN NO. SPL2019-0005

LEGEND

- PROPERTY BOUNDARY
- PROPOSED RIGHT-OF-WAY
- EXISTING RIGHT-OF-WAY
- PROPOSED LOT LINE
- EXISTING LOT LINE
- PROPOSED CATCH CURB & GUTTER
- PROPOSED SPILL CURB & GUTTER
- EXISTING CURB & GUTTER
- PROPOSED SIDEWALK
- EXISTING SIDEWALK
- EXISTING SECTION LINE
- PROPOSED EASEMENT
- EXISTING EASEMENT
- PROPOSED CONTOURS
- EXISTING CONTOURS
- PROPOSED SANITARY
- SS — EXISTING SANITARY (# = SIZE)
- S — PROPOSED SANITARY SERVICE
- PROPOSED STORM
- EXISTING STORM
- PROPOSED WATER
- W — EXISTING WATER
- W — PROPOSED WATER SERVICE
- PROPOSED HYDRANT
- EXISTING HYDRANT
- PROPOSED WATER VALVE
- FO — EXISTING FIBER OPTIC
- GAS — EXISTING GAS

BENCHMARK

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B
ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

BASIS OF BEARING

THE EAST LINE OF THE SOUTHEAST QUARTER OF SECTION 33 AS BEARING NORTH 00° 09' 31" WEST.

CONTACT LIST

OWNER:
SUN COMMUNITIES, INC.
27777 FRANKLIN ROAD
SUITE 200
SOUTHFIELD, MI 45114
(248) 208-2556
CONTACT: JOHN B. MCLAREN

PLANNING & LANDSCAPING:
RVI
120 SOUTH ASH AVENUE
SUITE 201
TEMPE, AZ 85281
(480) 994-0994
CONTACT: BRITTANY GEIST

SURVEYOR:
ATWELL, LLC.
143 UNION BLVD.,
SUITE 700
LAKEWOOD, CO 80228
(303) 462-1100
CONTACT: BRIAN RITZ

CIVIL ENGINEER:
ATWELL, LLC.
143 UNION BLVD.,
SUITE 700
LAKEWOOD, CO 80228
(720) 541-6601
CONTACT: RICK WEED

UNITED POWER (ELEC):
P.O. BOX 929
BRIGHTON, CO 80601
(720) 659-0551
CONTACT: HECTOR AVENDANO

CITY OF FORT LUPTON:
130 S. McKINLEY AVE.
FORT LUPTON, CO 80621
(720) 857-6694
CONTACT: ROY VESTAL

XCEL ENERGY(GAS):
5460 W. 60TH AVE.
ARVADA, CO 80003
(720) 895-4999
CONTACT: DONNA SANDERS

LEGAL DESCRIPTION

A PARCEL OF LAND LOCATED IN SECTION 33, TOWNSHIP 2 NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN, CITY OF FORT LUPTON, COUNTY OF WELD, STATE OF COLORADO, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BASIS OF BEARINGS: BEARINGS ARE BASED ON THE NORTH LINE OF THE SOUTHWEST QUARTER OF SECTION 33, TOWNSHIP 2 NORTH, RANGE 66 WEST OF THE SIXTH PRINCIPAL MERIDIAN, BEING MONUMENTED AT THE WEST END BY A FOUND 2" ALUMINUM CAP STAMPED "ALPHA ENGNRG 1997 25937" AND AT THE EAST END BY A FOUND 2-1/2" ALUMINUM CAP STAMPED "GREENHORNE & O'MARA INC. 1993 PLS 28656". SAID NORTH LINE BEARS NORTH 89°58'12" EAST, WITH ALL BEARINGS CONTAINED HEREIN RELATIVE THERETO;

COMMENCING AT THE WEST QUARTER CORNER OF SAID SECTION 33;

THENCE ALONG THE WEST LINE OF SAID SOUTHWEST QUARTER SOUTH 00°10'09" EAST 30.00 FEET TO A POINT ON THE SOUTHERLY RIGHT-OF-WAY LINE OF WELD COUNTY ROAD 14-1/2 (14TH/ STREET) AS DESCRIBED IN BOOK 76 AT PAGE 126 WELD COUNTY RECORDS, AND THE POINT OF BEGINNING;

THENCE ALONG SAID SOUTHERLY RIGHT-OF-WAY LINE NORTH 89°58'06" EAST 2645.50 FEET TO A POINT ON THE EAST LINE OF SAID SOUTHWEST QUARTER;

THENCE ALONG SAID EAST LINE NORTH 00°08'34" WEST 30.00 FEET TO THE CENTER QUARTER CORNER OF SAID SECTION 33;

THENCE ALONG THE WEST LINE OF THE NORTHEAST QUARTER OF SAID SECTION 33 NORTH 00°08'25" WEST 1842.81 FEET TO THE CENTERLINE OF FULTON DITCH;

THENCE ALONG THE CENTERLINE OF FULTON DITCH THE FOLLOWING TWENTY-SIX (26) COURSES:

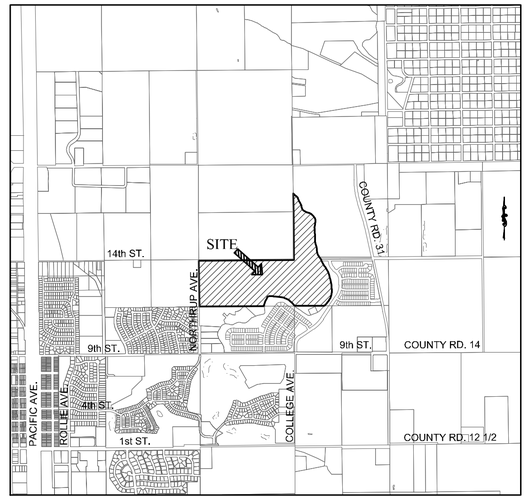
1. SOUTH 46°09'18" EAST 161.51 FEET;
2. SOUTH 26°34'39" EAST 237.74 FEET;
3. SOUTH 17°06'19" EAST 155.42 FEET;
4. SOUTH 56°18'27" EAST 109.68 FEET;
5. SOUTH 73°59'11" EAST 122.24 FEET;
6. SOUTH 45°26'22" EAST 173.40 FEET;
7. SOUTH 15°54'54" EAST 92.77 FEET;
8. SOUTH 09°11'44" WEST 208.08 FEET;
9. SOUTH 02°10'36" EAST 360.14 FEET;
10. SOUTH 11° 12'41" EAST 382.04 FEET;
11. SOUTH 29°24'52" EAST 143.19 FEET;
12. SOUTH 29°31'20" EAST 467.66 FEET;
13. SOUTH 11°45'35" EAST 367.88 FEET;
14. SOUTH 02°13'20" EAST 191.53 FEET;
15. SOUTH 16°42'35" WEST 177.01 FEET;
16. SOUTH 39°03'23" WEST 269.72 FEET;
17. SOUTH 47°56'22" WEST 237.78 FEET;
18. SOUTH 63°33'42" WEST 205.14 FEET;
19. SOUTH 85°19'19" WEST 82.20 FEET;
20. NORTH 53°17'11" WEST 266.98 FEET;
21. NORTH 67° 19'06" WEST 102.80 FEET;
22. NORTH 44°49'06" WEST 306.80 FEET;
23. NORTH 62°30'49" WEST 185.28 FEET;
24. NORTH 84°27'39" WEST 426.41 FEET;
25. SOUTH 24°35'11" WEST 259.79 FEET;
26. SOUTH 04°39'12" EAST 31.82 FEET TO A POINT ON THE SOUTH LINE OF THE NORTH HALF OF SAID SOUTHWEST QUARTER;

THENCE ALONG SAID SOUTH LINE SOUTH 89°54'18" WEST 1818.70 FEET TO A POINT ON THE WEST LINE OF SAID SOUTHWEST QUARTER;

THENCE ALONG SAID WEST LINE NORTH 00°09'06" WEST 1291.08 FEET TO THE POINT OF BEGINNING.

SUBJECT TO WELD COUNTY ROAD RIGHT-OF-WAY.

CONTAINING 5,554,830 SQUARE FEET, OR 127.52 ACRES, MORE OR LESS.



VICINITY MAP
SCALE: 1"=2,000'

WILLOW BEND PUD ZONING REQUIREMENTS TABLE

PARCEL	"PROPOSED PUD ZONE"	R-1A ZONE
AREA (AC)	127.5200	
ALLOWABLE LAND USE	SFD	SFD
PERMITTED DENSITY (UNITS/AC)	4	4-6
MAXIMUM UNITS	450	
MINIMUM SITE SIZE (SF)	5500	6500
MINIMUM SITE WIDTH AT STREET (FT) (1)	40 (1)	30
MAXIMUM BUILDING COVERAGE (FOR STRUCTURES ONLY)	45%	
PRINCIPAL BUILDING		
MAXIMUM HEIGHT (FT)	35	35
MINIMUM SETBACK FOR ALL STRUCTURES FROM 14TH STREET (FT)	25	NA
MINIMUM SETBACK FOR ALL STRUCTURES FROM NORTHRUP AVE. (FT)	25	NA
MINIMUM FRONT YARD SETBACK FOR PRINCIPAL BUILDING (FT)	24	25
MINIMUM FRONT YARD SETBACK - GARAGE (GARAGE DOOR SIDE) (FT)	24	25
MINIMUM SIDE YARD SETBACK (FT)	5	5
MINIMUM REAR YARD SETBACK (FT)	10	20
MINIMUM CORNER SIDE YARD SETBACK (FT)	15	20
MINIMUM DWELLING SIZE (SF)	900	900
ACCESSORY USE		
MAXIMUM HEIGHT (FT)	15	NA
MAXIMUM ACCESSORY BUILDING SIZE (SF)	600	
FRONT SETBACK (NOT ALLOWED IN FRONT YARD)		
MINIMUM SIDE SETBACK (FT)	5	5
MINIMUM CORNER SETBACK (FT)	15	20
MINIMUM REAR SETBACK (FT)	8	NA
PARKING REQUIREMENTS		
OFFSTREET SPACES PER UNIT	3	NA

(1) For sites fronting Cul-de-Sacs/Knuckles/Eyebrows the "Minimum Site Width At Street" can be reduced to a minimum of 20 feet.

SHEET INDEX

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TRACT SUMMARY TABLE

TRACT	AREA (SF)	AREA (AC)	USE	OWNERSHIP	MAINTENANCE
A	68,498	1.57	PRIVATE ROADWAY/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
B	562,272	12.91	PRIVATE ROADWAY/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
C	368,124	8.45	PUBLIC OPEN SPACE/DRAINAGE/UTILITIES	CITY OF FORT LUPTON	SUN COMMUNITIES, INC
D	34,391	0.79	PRIVATE OPEN SPACE/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
E	385,521	8.85	PRIVATE OPEN SPACE/DRAINAGE/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
F	16,424	0.38	PRIVATE OPEN SPACE/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
G	7,549	0.17	PRIVATE OPEN SPACE/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
H	9,934	0.23	PRIVATE OPEN SPACE/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
I	78,948	1.81	PRIVATE OPEN SPACE/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
J	7,335	0.17	PRIVATE OPEN SPACE/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
K	139,310	3.20	PRIVATE AMENITY CENTER	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
L	6,274	0.14	PRIVATE OPEN SPACE/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
M	8,872	0.20	PRIVATE OPEN SPACE/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
N	6,968	0.16	PRIVATE OPEN SPACE/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
O	10,457	0.24	PRIVATE OPEN SPACE/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
P	114,355	2.63	PRIVATE OPEN SPACE/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
Q	6,166	0.14	PRIVATE OPEN SPACE/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
R	42,746	0.98	PRIVATE OPEN SPACE/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
S	19,160	0.44	PRIVATE OPEN SPACE/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
T	156,854	3.60	PRIVATE OPEN SPACE/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
U	71,974	1.65	PUBLIC OPEN SPACE/UTILITIES/FULTON DITCH	CITY OF FORT LUPTON	SUN COMMUNITIES, INC
V	135,318	3.11	PUBLIC OPEN SPACE/UTILITIES/FULTON DITCH	CITY OF FORT LUPTON	SUN COMMUNITIES, INC
W	31,824	0.73	PRIVATE OPEN SPACE/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
X	46,741	1.07	PRIVATE OPEN SPACE/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
Y	6,662	0.15	PRIVATE OPEN SPACE/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
Z	195,193	4.48	PRIVATE OPEN SPACE/DRAINAGE/UTILITIES	SUN COMMUNITIES, INC	SUN COMMUNITIES, INC
TOTAL	**2,537,870**	**58.26**			

LAND SUMMARY CHART

TYPE	NUMBER	AREA (SF)	AREA (AC)	PERCENT OF TOTAL AREA
MH SITES (LOTS 1-33)	449	2,774,730	63.70	49.95%
TRACTS A-B (PRIVATE ROADS)	2	630,770	14.48	11.36%
TRACTS D-T & W-Z (PRIVATE OPEN SPACE)	21	1,331,684	30.57	23.97%
TRACTS C, U & V (PUBLIC OPEN SPACE)	3	575,416	13.21	10.36%
PUBLIC RIGHT-OF-WAY		242,230	5.56	4.36%
TOTAL		**5,554,830**	**127.52**	**100.00%**

THESE PRELIMINARY DEVELOPMENT PLANS WERE PREPARED BY ME (OR UNDER MY DIRECT SUPERVISION) IN ACCORDANCE WITH THE REQUIREMENTS OF THE CITY OF FORT LUPTON RULES AND REGULATIONS.

RICHARD J. WEED, P.E. DATE
COLORADO NO. 22076
FOR AND ON BEHALF OF ATWELL, LLC.
(720) 541-6601
RWEED@ATWELL-GROUP.COM

ATWELL, INC. ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS (HORIZONTAL AND VERTICAL). THE EXISTING UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS, HOWEVER, THE RESPONSIBILITY OF THE CONTRACTOR TO FILED VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES.

PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

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THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

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JOHN B. MCLAREN

CLIENT
SUN COMMUNITIES
WILLOW BEND SUBDIVISION
FORT LUPTON, COLORADO
PRELIMINARY PLAT/PUD
COVER SHEET

SUN COMMUNITIES, INC.

DATE 5/15/2020

REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. 1

CAD FILE: 19001956-COVER-PUD.DWG

VESTING NOTE

APPROVAL OF THIS DOCUMENT ESTABLISHES VESTED PROPERTY RIGHTS PURSUANT TO ARTICLE 68, TITLE 24, COLORADO REVISED STATUTES.

ENGINEERING NOTES

1. LOCATION OF ALL EXISTING UTILITIES (PRIVATE OR PUBUC) SHALL BE IDENTIFIED OR VERIFIED BY CONTRACTOR PRIOR TO MOBILIZATION, CONSTRUCTION OR ORDERING OF MATERIALS. FOR INFORMATION CONTACT DENVER INTER-UTILITY GROUP, 1-800-922-1987 OR LOCAL AGENCY. PRIVATE ENTITY. OR OTHER ASSOCIATED ENTITIES WITHIN THE LIMITS OF CONSTRUCTION. THE CONTRACTOR SHALL BEAR THE FULL COST OF REMOVAL. REPLACEMENT. AND DELAY RELATED TO UNVERIFIED EXISTING CONDITIONS WHERE THE CONTRACTOR FINDS CONFLICTS OR DISCREPANCIES THEY SHALL BE REPORTED IMMEDIATELY TO THE ENGINEER.

2. THE CONTRACTOR SHALL PERFORM ALL WORK NECESSARY TO COMPLETE THE WORK SHOWN ON THE CONSTRUCTION PLANS OR DESCRIBED IN THE SPECIFICATIONS IN A SATISFACTORY MANNER. UNLESS OTHERWISE PROVIDED THE CONTRACTOR SHALL FURNISH ALL MATERIALS, EQUIPMENT, TOOLS, LABOR, AND INCIDENTALS TO COMPLETE THE WORK.

3. SITE "REFERENCE LINES" AS INDICATED ON THE PRELIMINARY PLAT/PUD DRAWING ARE SHOWN FOR PURPOSES OF ESTABLISHING AND MAINTAINING SPECIFIC SITE SETBACK CRITERIA FOR THE UNITS SET ON EACH SITE. THE SITES WILL REMAIN UNDER THE OWNERSHIP OF THE COMMUNITY ESTABLISHED BY THE DEVELOPER OR FUTURE ASSIGNS. INDIVIDUAL FEE SIMPLE LOTS ARE NOT, AND WILL NOT BE CREATED BY THIS PRELIMINARY AND FINAL PLAT.

WILLOW BEND PUD ZONE DISTRICT STANDARDS

1. INTENT. THIS PUD ZONE DISTRICT IS INTENDED TO PROVIDE FOR THE ESTABLISHMENT OF SINGLE-FAMILY USES ON STANDARD SIZE SITES, INCLUDING THE NECESSARY APPURTENANT AND ACCESSORY FACILITIES AND USES ASSOCIATED WITH SUCH LIVING AREAS. THE INDIVIDUAL SITES DEPICTED ON THIS PUD WILL BE OWNED BY THE DEVELOPER OR FUTURE ASSIGNS.

2. DEFINITIONS. REFER TO CHAPTER 16, SECTION 16-6 OF THE FORT LUPTON, COLORADO MUNICIPAL CODE

3. PERMITTED USES.
   a. SINGLE-FAMILY DWELLINGS, INCLUDING HOMES BUILT ON SITE, HUD-APPROVED MODULAR HOMES, AND HUD-APPROVED FACTORY-BUILT HOMES.
   b. HOME OCCUPATIONS.
   c. ACCESSORY BUILDINGS TYPICALLY FOUND WITH THE ABOVE PERMITTED USES.

4. SPECIAL USES. THE FOLLOWING ARE ALLOWED IN THIS PUD ZONE DISTRICT SUBJECT TO THE SPECIAL USE REVIEW AND APPROVAL PROCEDURES FOUND IN CHAPTER 16 OF THE FORT LUPTON, COLORADO MUNICIPAL CODE:
   a. TEMPORARY BUILDINGS FOR COMMERCE OR FOR INDUSTRY WHICH ARE INCIDENTAL TO A RESIDENTIAL DEVELOPMENT. SUCH PERMIT IS TO BE ISSUED FOR NOT MORE THAN A PERIOD OF ONE (1) YEAR.
   b. ACCESSORY DWELLINGS IN CONJUNCTION WITH A PERMITTED SINGLE-FAMILY DWELLING AND SUBJECT TO CRITERIA LISTED IN CHAPTER 16 OF THE FORT LUPTON, COLORADO MUNICIPAL CODE.

5. BUILDING HEIGHT. REFER TO PUD ZONING REQUIREMENTS TABLE ON SHEET 1 OF THIS DOCUMENT.

6. SETBACKS. REFER TO PUD ZONING REQUIREMENTS TABLE ON SHEET 1 OF THIS DOCUMENT.

7. ACCESSORY BUILDING SETBACKS. REFER TO PUD ZONING REQUIREMENTS TABLE ON SHEET 1 OF THIS DOCUMENT.

8. MINIMUM LOT AREA. REFER TO PUD ZONING REQUIREMENTS TABLE ON SHEET 1 OF THIS DOCUMENT.

9. MINIMUM SQUARE FEET OF FLOOR AREA (DWELLING SIZE). REFER TO PUD ZONING REQUIREMENTS TABLE ON SHEET 1 OF THIS DOCUMENT

10. LOT FRONTAGE. REFER TO PUD ZONING REQUIREMENTS TABLE ON SHEET 1 OF THIS DOCUMENT. MINIMUM LOT FRONTAGE IS MEASURED AT FRONT SETBACK.

11. YARDS AND SETBACKS.
   a. EVERY PART OF A REQUIRED YARD OR SETBACK SHALL BE OPEN AND UNOBSTRUCTED, EXCEPT FROM THE ORDINARY PROJECTION OF SILLS, CORNICES, ORNAMENTAL FEATURES AND EAVES; PROVIDED, HOWEVER, THAT NONE OF THE ABOVE PROJECTIONS SHALL PROJECT INTO A SIDE YARD MORE THAN TWENTY-FOUR (24) INCHES.
   b. UNCOVERED PORCHES OR DECKS IN FRONT YARDS LESS THAN THIRTY (30) INCHES ABOVE FINISHED GRADE MAY EXTEND NOT MORE THAN TEN (10) FEET INTO THE REQUIRED FRONT YARD SETBACK.
   c. COVERED PORCHES OR DECKS THAT ARE OPEN ON AT LEAST THREE (3) SIDES WITH NO WALLS OR SCREENS AND LESS THAN (30) INCHES ABOVE FINISHED GRADE MAY EXTEND NOT MORE THAN SIX (6) FEET INTO THE REQUIRED FRONT YARD SETBACKS.

12. ACCESSORY BUILDINGS STANDARDS.
   a. SIZE. ACCESSORY BUILDINGS SHALL BE NO LARGER IN AREA THAN SIX HUNDRED (600) SQUARE FEET.
   b. THE USE OF ACCESSORY BUILDINGS WILL GENERALLY BE LIMITED TO THE PARKING OF MOTOR VEHICLES AND THE STORAGE OF PERSONAL BELONGINGS. HOME OCCUPATIONS MAY BE CONDUCTED IN ACCESSORY BUILDINGS, SUBJECT TO APPLICABLE LAWS.
   c. SETBACKS. SETBACKS FOR ACCESSORY BUILDINGS SHALL BE AS SPECIFIED IN THE PUD ZONING REQUIREMENTS TABLE ON SHEET 1 OF THIS DOCUMENT.
   d. DESIGN. ACCESSORY BUILDINGS SHALL BE DESIGNED AND CONSTRUCTED TO BE COMPATIBLE WITH THE PRINCIPAL BUILDING.

13. HOME OCCUPATIONS.
   a. IT IS THE INTENT OF THE CITY TO PERMIT COMMERCIAL ACTIVITIES TO BE CONDUCTED WITHIN DWELLINGS IN SPECIFIED ZONING DISTRICTS AND ON A LIMITED BASIS WHEN THE NATURE OF THE ACTIVITIES DOES NOT ATTRACT LARGE NUMBERS OF CUSTOMERS OR CLIENTS AND IS NOT EVIDENT OR DETRIMENTAL TO THE PEACE, ENJOYMENT AND QUALITY OF LIFE IN THE SURROUNDING NEIGHBORHOOD.
   b. STANDARDS FOR HOME OCCUPATIONS. HOME OCCUPATIONS MUST MEET THE FOLLOWING STANDARDS:
      (1) OTHER THAN RESIDENTS OF THE DWELLING CONTAINING THE HOME OCCUPATION, THERE SHALL BE NO MORE THAN ONE (1) ADDITIONAL FULL- OR PART-TIME EMPLOYEE WORKING AT THE SITE OF THE HOME OCCUPATION.
      (2) THE EMPLOYEE AND CLIENTS MAY PARK IN OFF-STREET PARKING SPACES ON THE SITE OF THE HOME OCCUPATION OR IN ON-STREET SPACES ADJOINING THE SITE OF THE HOME OCCUPATION.
      (3) SPACE USED BY THE HOME OCCUPATION SHALL NOT EXCEED FIVE HUNDRED (500) SQUARE FEET OR THIRTY PERCENT (30%) OF THE TOTAL FLOOR AREA OF THE DWELLING, WHICHEVER IS LESS. THE HOME OCCUPATION SHALL BE CONDUCTED ENTIRELY WITHIN THE DWELLING OR DESIGNATED ACCESSORY BUILDINGS.
      (4) THE HOME OCCUPATION SHALL BE CLEARLY INCIDENTAL AND SECONDARY TO THE USE OF THE DWELLING FOR DWELLING PURPOSES AND MUST NOT CHANGE THE RESIDENTIAL CHARACTER THEREOF.
      (5) THERE SHALL BE NO CHANGE IN THE OUTSIDE APPEARANCE OF THE DWELLING OR OF THE PREMISES OR OTHER VISIBLE EVIDENCE OF THE CONDUCT OF SUCH HOME OCCUPATION, EXCEPT FOR A LIMITED AMOUNT OF SIGNAGE AS SPECIFIED IN THIS CHAPTER.
      (6) THERE SHALL BE NO EXTERIOR STORAGE ON THE PREMISES OF MATERIAL, MERCHANDISE OR EQUIPMENT USED AS A PART OF THE HOME OCCUPATION.
      (7) NO EQUIPMENT OR PROCESS SHALL BE USED IN SUCH HOME OCCUPATION WHICH CREATES ANY GLARE, FUMES, ODORS, NOISE OR OTHER OBJECTIONABLE CONDITIONS DETECTABLE TO THE NORMAL SENSES AT THE UNIT SITE LINE.
      (8) HOME OCCUPATIONS MAY NOT GENERATE MORE THAN TEN (10) BUSINESS-RELATED VEHICLE TRIPS PER DAY.
      (9) THE FOLLOWING USES SHALL NOT BE PERMITTED AS HOME OCCUPATIONS: MOTOR VEHICLE, BOAT OR TRAILER REPAIR OR SERVICE; MACHINE OR WELDING SHOPS; SEXUALLY ORIENTED BUSINESSES; OR ANY OTHER

ARCHITECTURAL GUIDELINES

1. REFER TO WILLOW BEND PUD ZONING REQUIREMENTS TABLE ON SHEET 1.

RESIDENTIAL DESIGN STANDARDS VARIANCES

SUN IS REQUESTING VARIANCES TO SECTION IV, ITEMS C, E, F & G OF THE RESIDENTIAL DESIGN STANDARDS.

SECTION IV. RESIDENTIAL LOT & BUILDING DESIGN. COMMENTS REGARDING DEVIATIONS ARE NOTED IN BOLD ITALICS.

C. MIX OF RESIDENTIAL LOT DIMENSIONS

NO MORE THAN 40% OF ANY ONE LOT SIZE, UNLESS AGREED TO OTHERWISE BY THE CITY

A TYPICAL PERPENDICULAR MH SITE WILL BE 55' WIDE X 100' DEEP WHILE PARALLEL MH SITES WILL BE 110' WIDE X 70' DEEP. CORNER SITES WILL BE 70' WIDE X 100' DEEP. THE TYPICAL SITE DETAILS ARE SHOWN ON SHEET 5. VARIATIONS IN SITE SIZES AND DIMENSIONS OCCUR THROUGHOUT THE DEVELOPMENT AND CAN BE VIEWED ON SHEETS 7-14. HOWEVER, A SUBSTANTIAL PERCENTAGE OF THE SITES WILL BE 55' WIDE X 100' DEEP PERPENDICULAR SETS.

E. MIX OF DIFFERENT HOUSING MODELS REQUIRED

EACH HOME ELEVATION USED SHALL SUBSTANTIALLY AND DISTINCTLY DIFFER FROM OTHER HOME ELEVATIONS IN AT LEAST 4 OF THE FOLLOWING AREAS:

1. PLACEMENT OF ALL WINDOWS AND DOORS ON THE FRONT FAÇADE (AT LEAST 2' VERTICAL OR HORIZONTAL VARIATION IN SIZE OR LOCATION REQUIRED) - SOME VARIATIONS IN PLACEMENT OF WINDOWS & DOORS ON FRONT FACADES CAN BE ACHIEVED, BUT IT WILL NOT BE ALL DOORS/WINDOWS AND IT MAY BE LESS THAN 2' IN SOME INSTANCES. THE USE OF DIFFERENT MATERIALS ON FRONT FACADE ELEVATION - THIS CAN BE ACCOMPLISHED.

2. SUBSTANTIAL VARIATION IN THE LOCATION AND/OR PROPORTION OF GARAGES AND GARAGE DOORS THERE WILL NOT BE SUBSTANTIAL VARIATION IN THE LOCATION OR PROPORTION OF GARAGE DOORS. HOWEVER, THERE WILL BE VARIATION IN THAT NOT ALL HOMES WILL HAVE A GARAGE.

3. THE WIDTH OF THE FRONT FACADE ELEVATION MUST DIFFER MORE THAN 2' - THIS CANNOT BE ACCOMPLISHED

4. VARIATION IN THE LOCATION AND PROPORTION OF FRONT PORCHES - THIS CAN BE ACCOMPLISHED

5. SUBSTANTIAL VARIATIONS IN ROOFLINES AND/OR IN THE ANGLE OF ROOF RUNS. ROOFS SHALL HAVE A MIN PITCH OF 4:12 - SOME ROOFLINE VARIATIONS CAN BE ACCOMPLISHED, ROOFS SHALL HAVE A MINIMUM PITCH OF 3:12.

6. USE OF ROOF DORMERS - THIS CANNOT BE ACCOMPLISHED.

7. A VARIATION OF BUILDING TYPES: RANCH, TWO-STORY, AND SPLIT-LEVEL - THIS CANNOT BE ACCOMPLISHED.

8. WINDOW SHAPES THAT ARE SUBSTANTIALLY DIFFERENT - SOME DIFFERENT WINDOW SHAPES WILL BE INCORPORATED.

9. OTHER DISTINCT AND SUBSTANTIAL DESIGN VARIATIONS APPROVED BY THE CITY

10. AT LEAST FOUR DIFFERENT HOME ELEVATIONS WILL BE PROVIDED WITH AS MANY OF THE ABOVE VARIATIONS AS POSSIBLE. HOWEVER, MANUFACTURED HOMES WILL NOT MEET SOME OF THE ABOVE REQUIREMENTS. SEE NOTES IN ITALICS ABOVE.

F. MIX OF ROOF COLORS

WHERE ASPHALT SHINGLES ARE USED, EACH SUBDIVISION OF 50 UNITS OR MORE SHALL USE AT LEAST FOUR (4) DISTINCT COLORS OF ROOF MATERIALS DISTRIBUTED IN ROUGHLY EQUAL PROPORTIONS THROUGHOUT.

SUN INTENDS TO USE TWO OR THREE DISTINCT ROOF SHINGLE COLORS RATHER THAN THE REQUIRED FOUR.

G. REAR ELEVATIONS

A HORIZONTAL OR VERTICAL OFFSET, PROJECTION, OR RECESS OF TWELVE (12) INCHES OR GREATER IS REQUIRED ON ALL REAR ELEVATIONS.

NO OFFSETS, PROJECTIONS OR RECESSES WILL BE PROVIDED ON REAR ELEVATIONS.

PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

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NOTICE:
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SUN COMMUNITIES
WILLOW BEND SUBDIVISION
FORT LUPTON, COLORADO
PRELIMINARY PLAT/PUD
GENERAL NOTES

SUN COMMUNITIES, INC.

DATE 5/15/2020

REVISIONS

DR. TN CH. JP/SB
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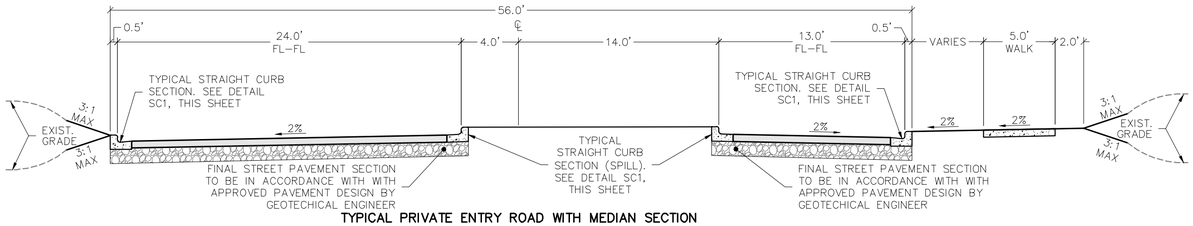
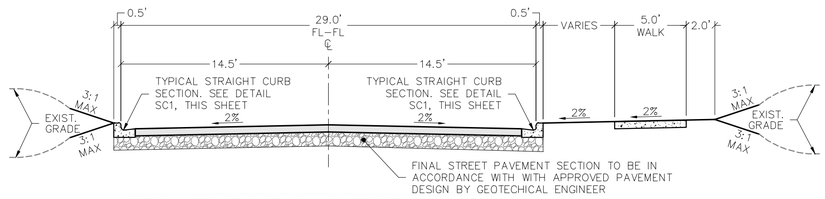
JOB 19001956
SHEET NO. 2

CAD FILE: 19001956-COVER-PUD.DWG



TYPICAL PRIVATE ENTRY ROAD WITH MEDIAN SECTION
1:5 HOR.



TYPICAL PRIVATE ENTRY ROAD WITHOUT MEDIAN SECTION 1
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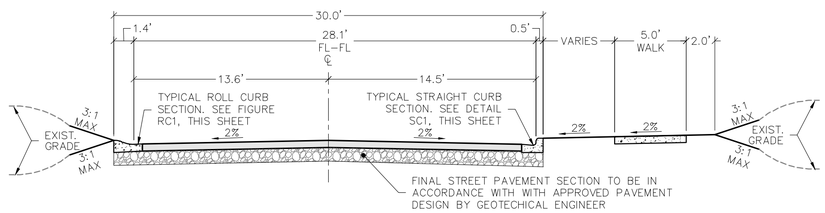

TYPICAL PRIVATE ENTRY ROAD WITHOUT MEDIAN SECTION 2
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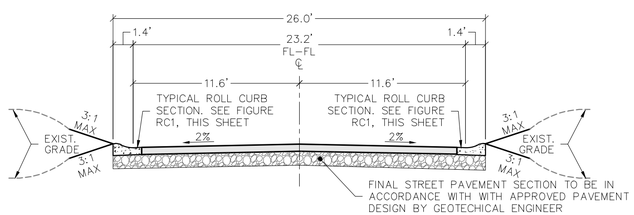
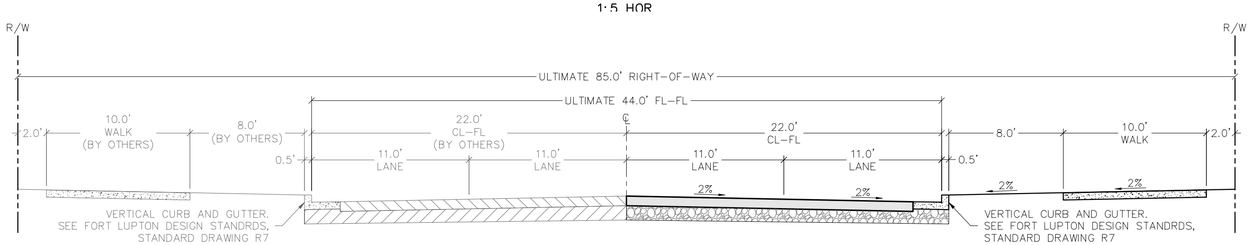
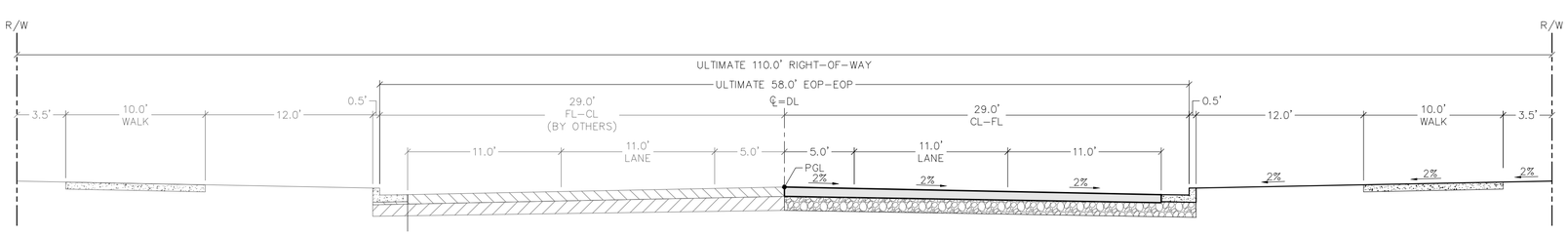


TYPICAL PRIVATE ROAD SECTION
1:5 HOR



PUBLIC ROADWAY SECTION (NORTHRUP AVENUE)
1:5 HOR.



PUBLIC ROADWAY SECTION (14TH STREET/CR 14½)
1:5 HOR.

SUN COMMUNITIES, INC.
MANUFACTURED HOME COMMUNITIES
DEVELOPMENT CRITERIA & DESIGN STANDARDS

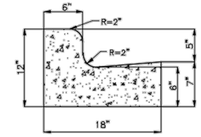


FIGURE SC1
Typical Straight Curb Section

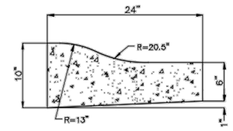


FIGURE RC1
Typical Roll Curb Section

SUN COMMUNITIES, INC.
MANUFACTURED HOME COMMUNITIES
DEVELOPMENT CRITERIA & DESIGN STANDARDS

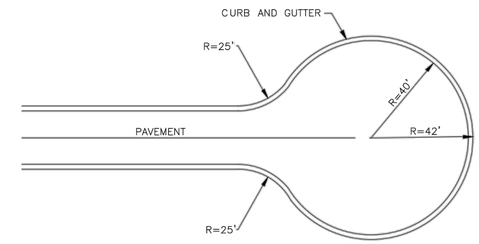
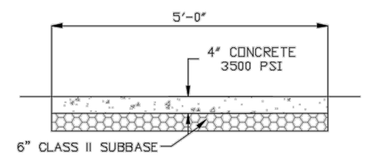


FIGURE CDS
Cul-De-Sac Plan View Standard



NOTES:
1. CONSTRUCTION SHALL BE TO LOCAL SPECIFICATIONS
2. ALL CONCRETE SHALL HAVE A 2% MAXIMUM CROSS SLOPE

FIGURE CW1
Concrete Walk Detail

PROJECT NO.: LUP2019–0039 &
PLAN NO.: SPL2019–0005

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SUN COMMUNITIES
WILLOW BEND SUBDIVISION
FORT LUPTON, COLORADO
PRELIMINARY PLAT/PUD
TYPICAL ROAD SECTIONS & DETAILS

CLIENT
SUN COMMUNITIES, INC.

DATE 5/15/2020

REVISIONS

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CAD FILE: 19001956-DETAILS-PUD.DWG

PHASING NOTES

PHASE 1
217 MANUFACTURED HOME SITES
AMENITY CENTER (INCLUDES CLUBHOUSE, POOL, PLAYGROUND, SPORTS COURTS & MAINTENANCE BUILDING)
WESTERN DETENTION POND AREA
NORTHRUP AVENUE PAVING FROM THE WILLOW BEND MAIN ENTRANCE GOING SOUTH
ENTRANCE BOULEVARD WITH ENTRY SIGNAGE
EMERGENCY ACCESS TO NORTHRUP AVENUE
PRIVATE STREETS A – F, H, I, K & L IN THEIR ENTIRETY
PRIVATE STREETS G, J & M TO PHASE LINE
UTILITIES
- SANITARY — AS NEEDED TO SERVE SITES WITHIN PHASE. CONNECT TO EXISTING MANHOLE IN 14TH STREET.
- WATER — 8" PUBLIC WATERMAIN IN NORTHRUP AVENUE FROM CONNECTION POINT AT THE SOUTH PROPERTY LINE TO ENTRANCE BOULEVARD AND ALL INTERIOR PRIVATE WATERLINES AND APPURTENANCES NEEDED TO PROVIDE FIRE PROTECTION AND POTABLE WATER SERVICE TO THE PHASE 1 UNITS AND AMENITY CENTER.
- STORM — AS NEEDED TO SERVE SITES WITHIN PHASE.
- ELECTRIC — AS NEEDED TO SERVE SITES WITHIN PHASE.
- GAS — AS NEEDED TO SERVE SITES WITHIN PHASE.

TRAILWAYS SHOWN AS PART OF PHASE 1
LANDSCAPING WITHIN PHASE 1

PHASE 2
124 MH SITES
COMMUNITY PARK (INCLUDES SHADE STRUCTURE, TOT LOT, OPEN PLAY AREA & DOG PARK)
POCKET PARK ON SE PORTION OF SITE
PRIVATE STREETS N, O, P & T IN THEIR ENTIRETY
PRIVATE STREETS G, J, M & Q TO PHASE LINE(S)
UTILITIES
- SANITARY — AS NEEDED TO SERVE SITES WITHIN PHASE. CONNECTION TO EXISTING SEWER TRAVERSING SITE, OTHER PORTIONS CONNECT TO SEWER WITHIN PHASE 1.
- WATER — 12"PUBLIC WATERMAIN IN 14TH/ STREET FROM CONNECTION POINT AT EAST PROPERTY LINE WITH 12"WATERMAIN CONSTRUCTED BY COTTONWOOD GREENS, TO THE POINT WHERE IT ENTERS THE WILLOW BEND SITE IN THE NORTHEAST CORNER OF THE PROPERTY AND ALL INTERIOR PRIVATE WATERLINES AND APPURTENANCES NEEDED, INCLUDING WATERLINES WITHIN PHASE 3, TO PROVIDE FIRE PROTECTION AND POTABLE WATER SERVICE TO THE PHASE 2 UNITS.
- STORM — AS NEEDED TO SERVE SITES WITHIN PHASE.
- ELECTRIC — AS NEEDED TO SERVE SITES WITHIN PHASE.
- GAS — AS NEEDED TO SERVE SITES WITHIN PHASE.

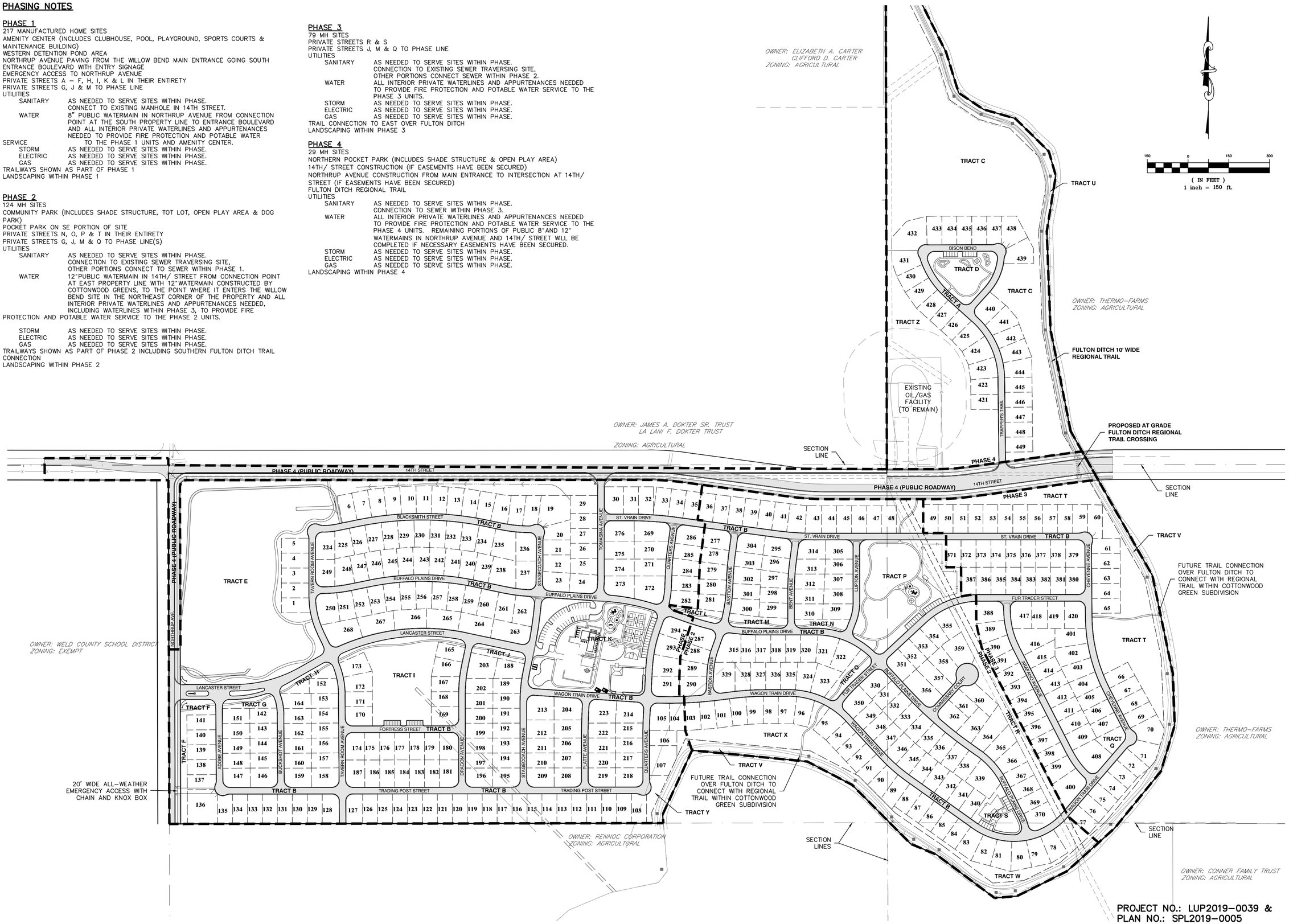
TRAILWAYS SHOWN AS PART OF PHASE 2 INCLUDING SOUTHERN FULTON DITCH TRAIL CONNECTION
LANDSCAPING WITHIN PHASE 2

PHASE 3
79 MH SITES
PRIVATE STREETS R & S
PRIVATE STREETS J, M & Q TO PHASE LINE
UTILITIES
- SANITARY — AS NEEDED TO SERVE SITES WITHIN PHASE. CONNECTION TO EXISTING SEWER TRAVERSING SITE, OTHER PORTIONS CONNECT SEWER WITHIN PHASE 2.
- WATER — ALL INTERIOR PRIVATE WATERLINES AND APPURTENANCES NEEDED TO PROVIDE FIRE PROTECTION AND POTABLE WATER SERVICE TO THE PHASE 3 UNITS.
- STORM — AS NEEDED TO SERVE SITES WITHIN PHASE.
- ELECTRIC — AS NEEDED TO SERVE SITES WITHIN PHASE.
- GAS — AS NEEDED TO SERVE SITES WITHIN PHASE.

TRAIL CONNECTION TO EAST OVER FULTON DITCH
LANDSCAPING WITHIN PHASE 3

PHASE 4
29 MH SITES
NORTHERN POCKET PARK (INCLUDES SHADE STRUCTURE & OPEN PLAY AREA)
14TH/ STREET CONSTRUCTION (IF EASEMENTS HAVE BEEN SECURED)
NORTHRUP AVENUE CONSTRUCTION FROM MAIN ENTRANCE TO INTERSECTION AT 14TH/ STREET (IF EASEMENTS HAVE BEEN SECURED)
FULTON DITCH REGIONAL TRAIL
UTILITIES
- SANITARY — AS NEEDED TO SERVE SITES WITHIN PHASE. CONNECTION TO SEWER WITHIN PHASE 3.
- WATER — ALL INTERIOR PRIVATE WATERLINES AND APPURTENANCES NEEDED TO PROVIDE FIRE PROTECTION AND POTABLE WATER SERVICE TO THE PHASE 4 UNITS. REMAINING PORTIONS OF PUBLIC 8"AND 12" WATERMAINS IN NORTHRUP AVENUE AND 14TH/ STREET WILL BE COMPLETED IF NECESSARY EASEMENTS HAVE BEEN SECURED.
- STORM — AS NEEDED TO SERVE SITES WITHIN PHASE.
- ELECTRIC — AS NEEDED TO SERVE SITES WITHIN PHASE.
- GAS — AS NEEDED TO SERVE SITES WITHIN PHASE.

LANDSCAPING WITHIN PHASE 4



PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

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WILLOW BEND SUBDIVISION
FORT LUPTON, COLORADO
PRELIMINARY PLAT/PUD
PHASING PLAN

CLIENT
SUN COMMUNITIES, INC.

DATE 5/15/2020

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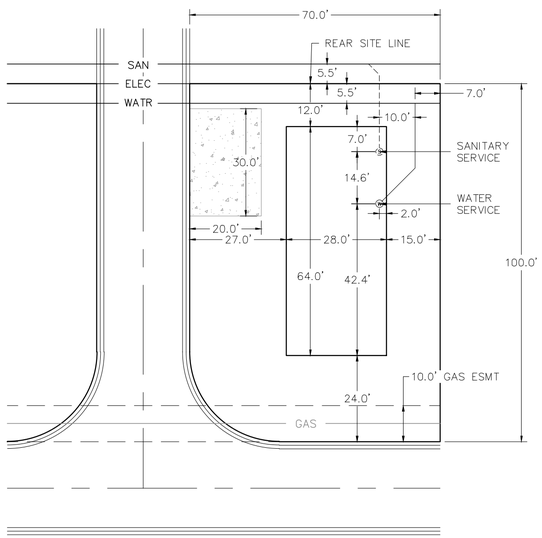

TYPICAL END SITE/PRIVATE ROADWAY
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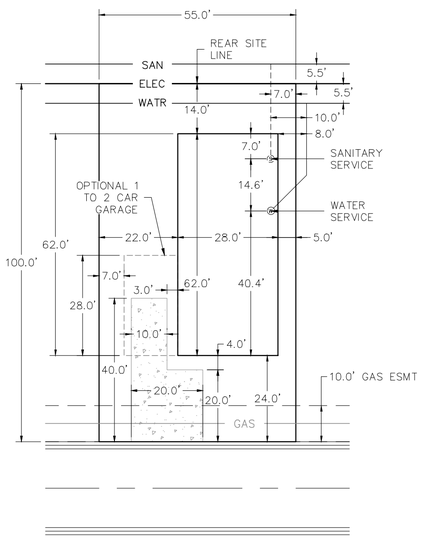
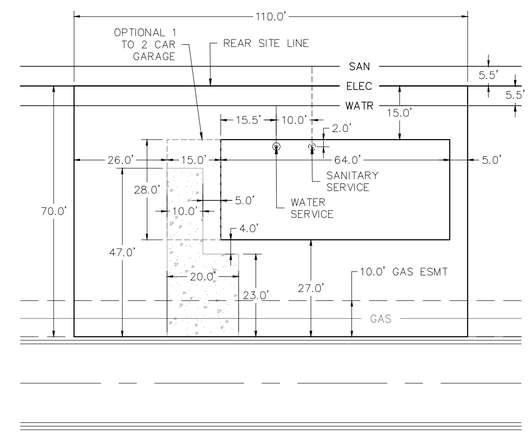


TYPICAL PERPENDICULAR SITE/PRIVATE ROADWAY
1:20 HOR.



TYPICAL PARALLEL SITE/PRIVATE ROADWAY
1:20 HOR.

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PLAN NO.: SPL2019-0005

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SUN COMMUNITIES
WILLOW BEND SUBDIVISION
FORT LUPTON, COLORADO
PRELIMINARY PLAT/PUD
TYPICAL SITE DETAILS

CLIENT
SUN COMMUNITIES, INC.

DATE 5/15/2020

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JOB 19001956
SHEET NO. 5

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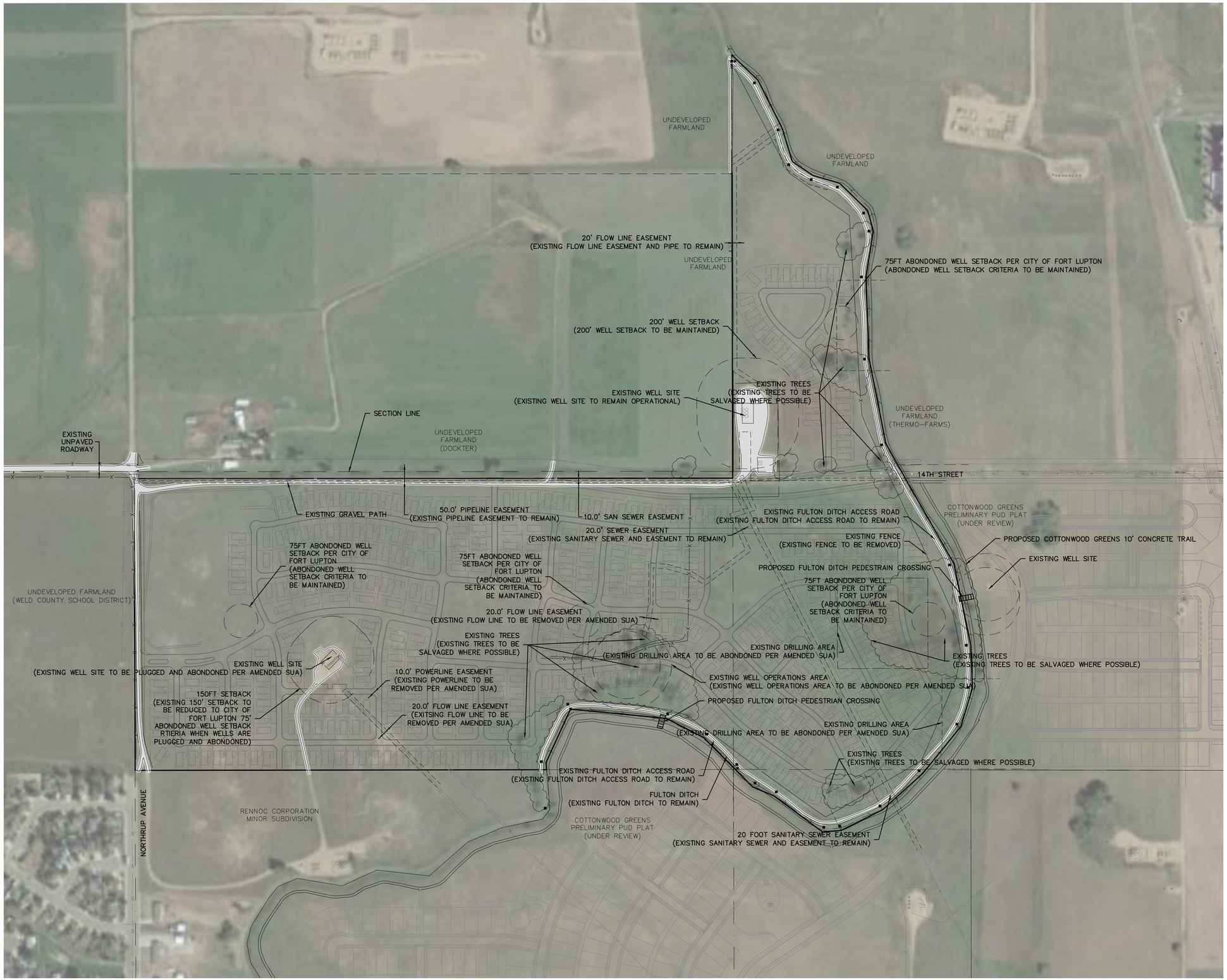

40 0 40 80

(IN FEET)
1 inch = 40 ft.

PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

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FORT LUPTON, COLORADO
PRELIMINARY PLAT/PUD
##########################
EXISTING CONDITIONS MAP

SUN COMMUNITIES, INC.

DATE 5/15/2020

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JOB 19001956
SHEET NO.
ECM -1

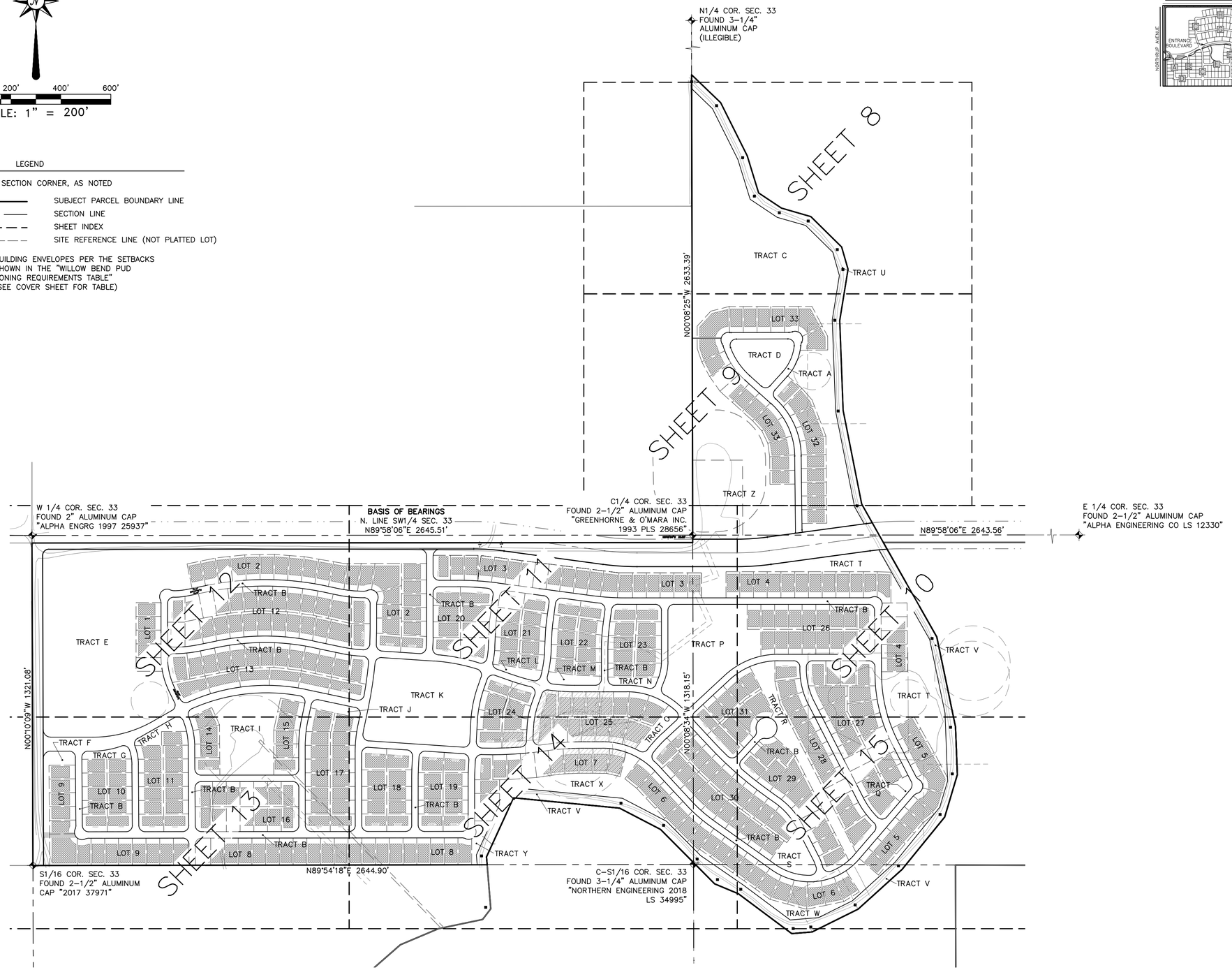
CAD FILE: 19001956-EXISTING CONDITIONS.DWG

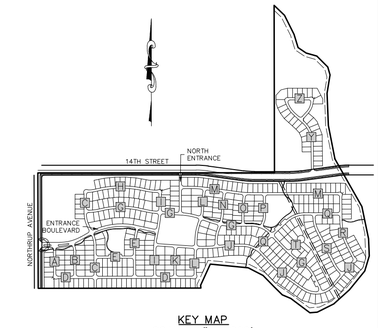
WILLOW BEND SUBDIVISION
PRELIMINARY PLAT/PUD
SITUATED IN SECTION 33, TOWNSHIP 2 NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN, CITY OF FORT LUPTON, COUNTY OF WELD, STATE OF COLORADO

0' 200' 400' 600'
SCALE: 1" = 200'

LEGEND

- SECTION CORNER, AS NOTED
- SUBJECT PARCEL BOUNDARY LINE
- SECTION LINE
- SHEET INDEX
- SITE REFERENCE LINE (NOT PLATTED LOT)
- BUILDING ENVELOPES PER THE SETBACKS SHOWN IN THE "WILLOW BEND PUD ZONING REQUIREMENTS TABLE" (SEE COVER SHEET FOR TABLE)





KEY MAP
SCALE: 1" = 800'

PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

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PRELIMINARY PLAT/PUD
PRELIMINARY PLAT
OVERALL

SUN COMMUNITIES

DATE 5/15/2020

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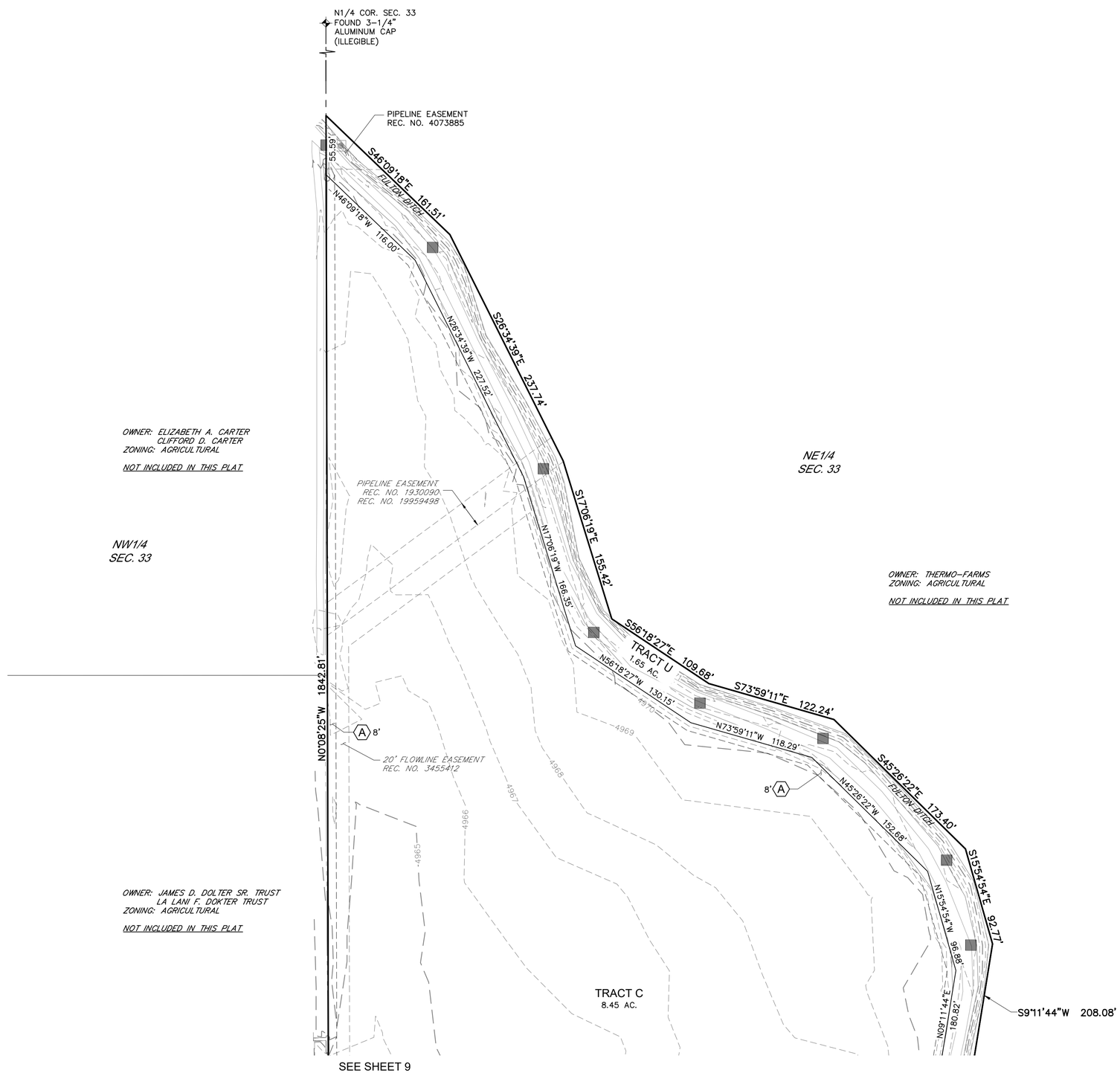
SHEET NO. 7

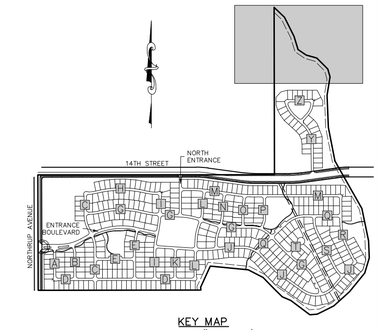
CAD FILE: 19001956-PRELIM PLAT.DWG

k:\19001956\dwg\survey\19001956-prelim plat.dwg Savedate:9/8/2020 3:34 PM Plotdate:9/8/2020 3:41 PM

K:\19001956\DWG\Survey\19001956-PRELIM PLAT.dwg Sht 7, 9/8/2020 3:41:01 PM

WILLOW BEND SUBDIVISION
PRELIMINARY PLAT/PUD
SITUATED IN SECTION 33, TOWNSHIP 2 NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN, CITY OF FORT LUPTON, COUNTY OF WELD, STATE OF COLORADO





KEY MAP
SCALE: 1" = 800'

N

0' 50' 100' 150'
SCALE: 1" = 50'

LEGEND

- SECTION CORNER, AS NOTED
- SUBJECT PARCEL BOUNDARY LINE
- SECTION LINE
- PROPOSED EASEMENT
- EXISTING EASEMENT
- MAJOR CONTOUR
- MINOR CONTOUR
- FOUND 2" ALUMINUM CAP PLS 25378 AS 20' OFFSET REFERENCE MONUMENT
- (A) EASEMENT FOR UTILITY PURPOSES, INCLUDING BUT NOT LIMITED TO GAS, ELECTRIC, TELEPHONE, AND CABLE COMMUNICATIONS SERVICES
- (B) EASEMENT FOR PUBLIC WATER AND SEWER FACILITIES
- (C) EASEMENT FOR PRIVATE ACCESS, PEDESTRIAN ACCESS, AND EMERGENCY SERVICE ACCESS
- (D) EASEMENT FOR ELECTRIC SERVICE FACILITIES

PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

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(248) 208-2556
JOHN B. MCLAREN

CLIENT
SUN COMMUNITIES
WILLOW BEND SUBDIVISION
FORT LUPTON, COLORADO

PRELIMINARY PLAT/PUD
PRELIMINARY PLAT
PLAN VIEW 1

SUN COMMUNITIES, INC.

DATE 5/15/2020

REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. 8

CAD FILE: 19001956-PRELIM PLAT.DWG

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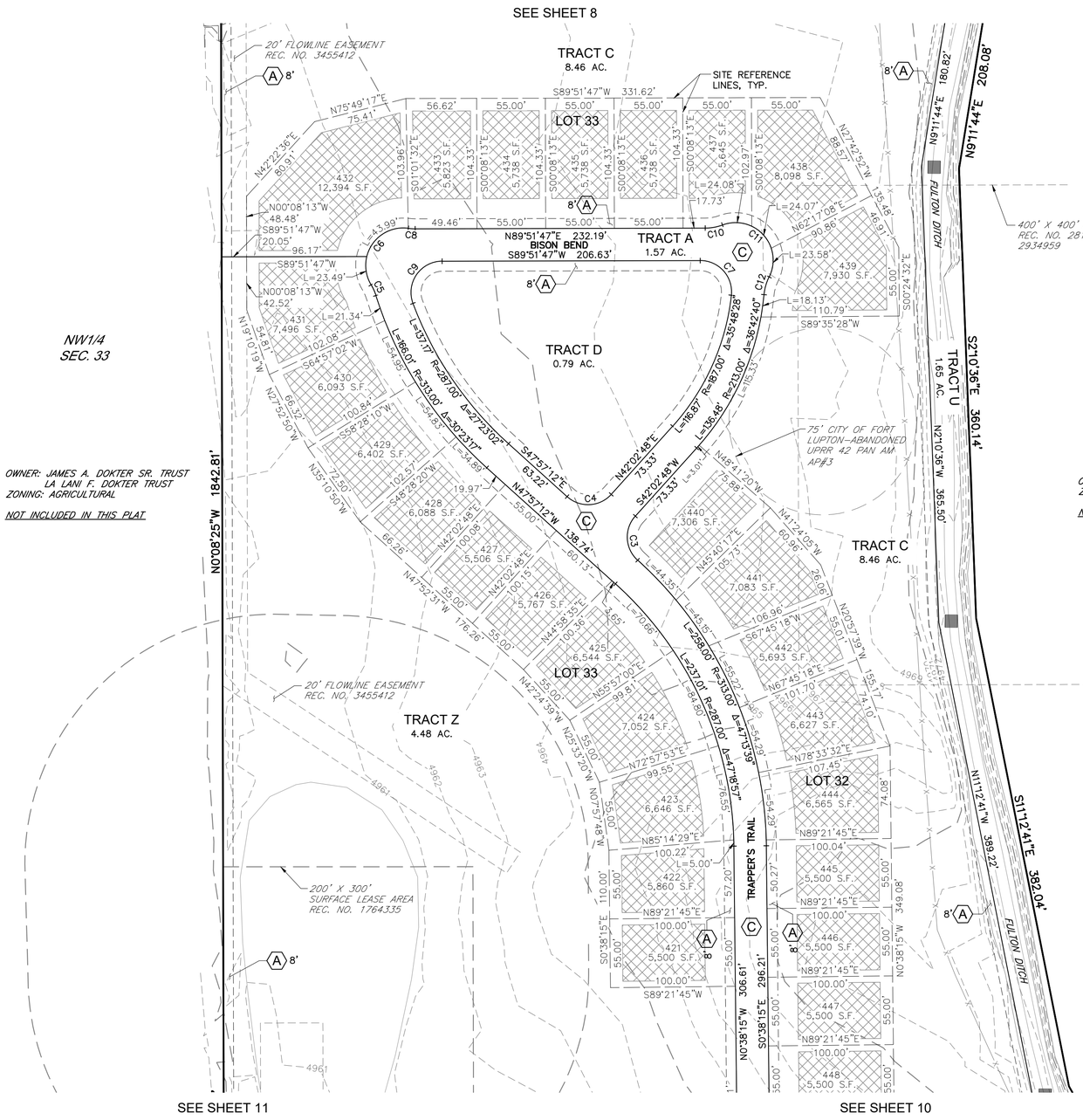
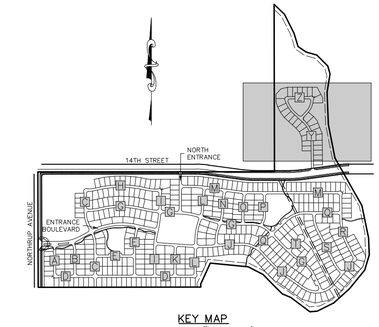
WILLOW BEND SUBDIVISION
PRELIMINARY PLAT/PUD
SITUATED IN SECTION 33, TOWNSHIP 2 NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN, CITY OF FORT LUPTON, COUNTY OF WELD, STATE OF COLORADO





KEY MAP
SCALE: 1" = 800'

0' 50' 100' 150'
SCALE: 1" = 50'

LEGEND

- SECTION CORNER, AS NOTED
- SUBJECT PARCEL BOUNDARY LINE
- SECTION LINE
- PROPOSED EASEMENT
- EXISTING EASEMENT
- MAJOR CONTOUR
- MINOR CONTOUR
- SITE REFERENCE LINE (NOT PLATTED LOT)
- FOUND 2" ALUMINUM CAP PLS 25378 AS 20' OFFSET REFERENCE MONUMENT
- XXX / X,XXX S.F. — REFERENCE SITE NUMBER & AREA
- (A) EASEMENT FOR UTILITY PURPOSES, INCLUDING BUT NOT LIMITED TO GAS, ELECTRIC, TELEPHONE, AND CABLE COMMUNICATIONS SERVICES
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- BUILDING ENVELOPES PER THE SETBACKS SHOWN IN THE "WILLOW BEND PUD ZONING REQUIREMENTS TABLE" (SEE COVER SHEET FOR TABLE)

PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

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WILLOW BEND SUBDIVISION
FORT LUPTON, COLORADO
PRELIMINARY PLAT/PUD
PRELIMINARY PLAT
PLAN VIEW 2

SUN COMMUNITIES, INC.

DATE 5/15/2020

REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. 9

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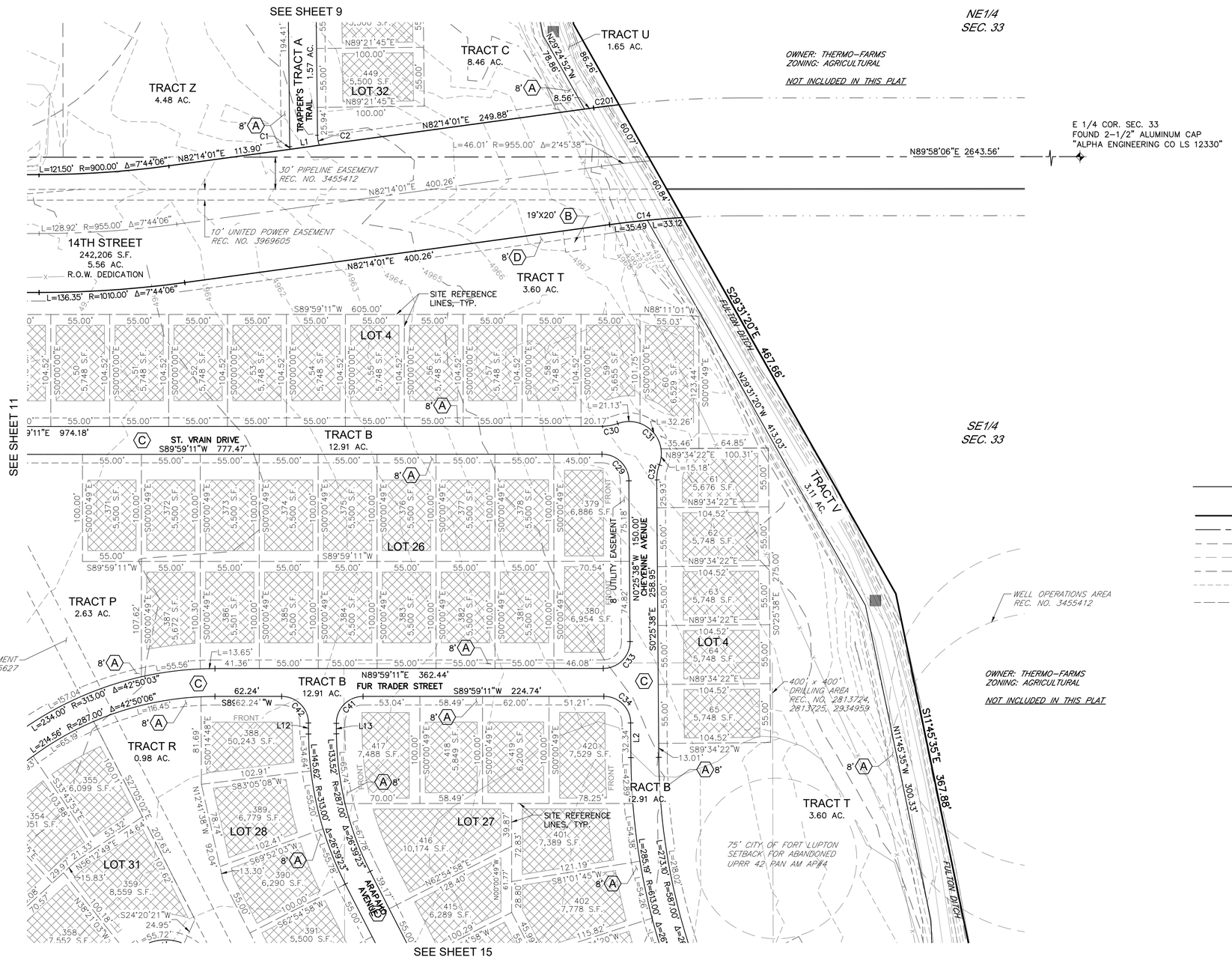
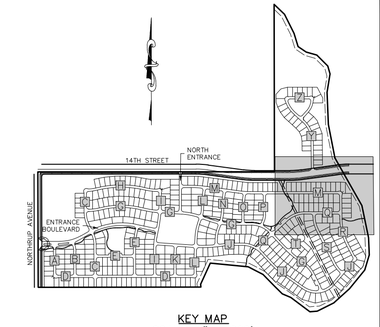
WILLOW BEND SUBDIVISION
PRELIMINARY PLAT/PUD
SITUATED IN SECTION 33, TOWNSHIP 2 NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN, CITY OF FORT LUPTON, COUNTY OF WELD, STATE OF COLORADO





KEY MAP
SCALE: 1" = 800'

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WILLOW BEND SUBDIVISION
FORT LUPTON, COLORADO
PRELIMINARY PLAT/PUD
PRELIMINARY PLAT
PLAN VIEW 3

CLIENT
SUN COMMUNITIES, INC.

DATE 5/15/2020

REVISIONS

DR. TN | CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. 10

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WILLOW BEND SUBDIVISION
PRELIMINARY PLAT/PUD
SITUATED IN SECTION 33, TOWNSHIP 2 NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN, CITY OF FORT LUPTON, COUNTY OF WELD, STATE OF COLORADO

LEGEND

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- SECTION LINE
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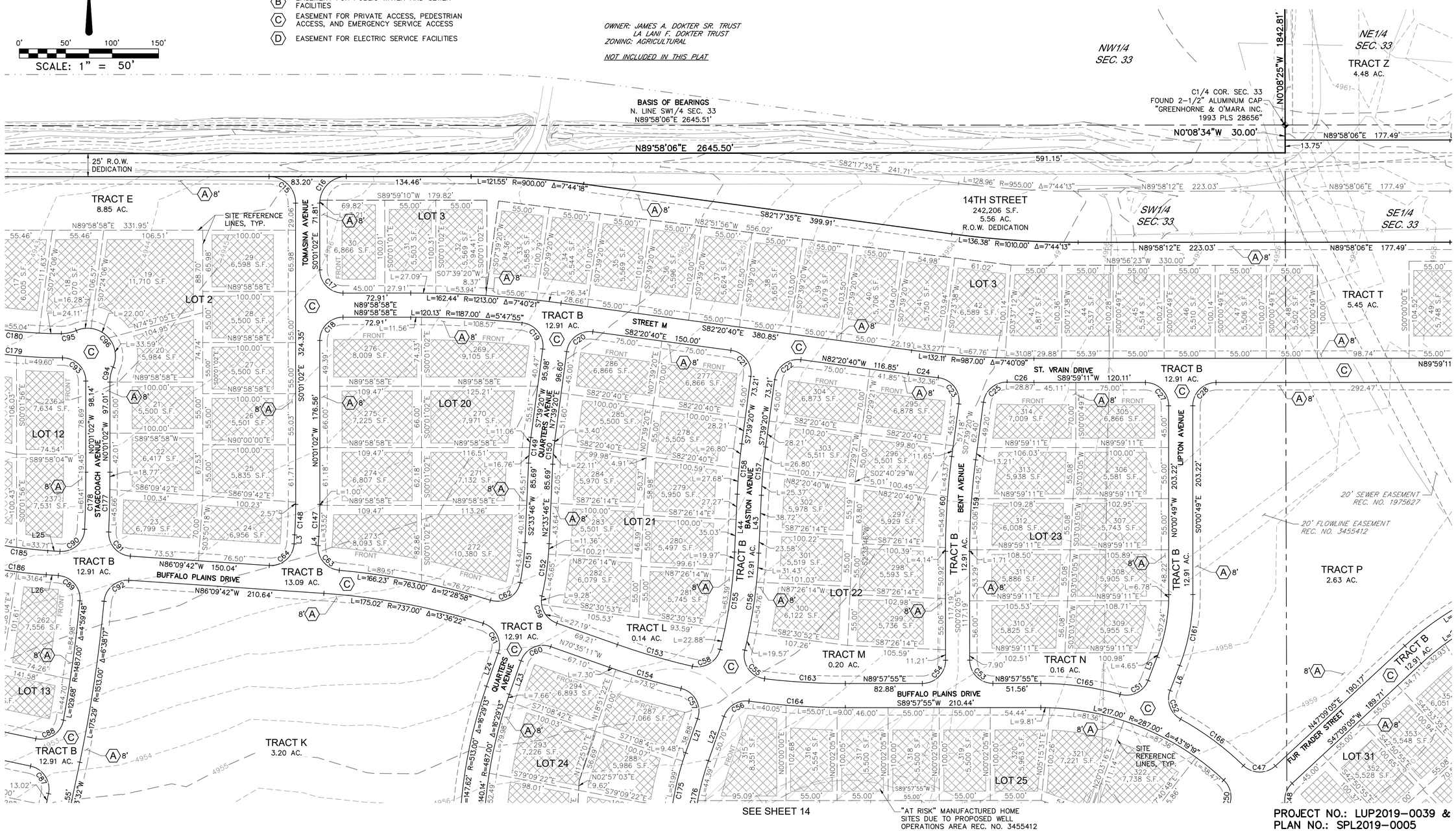
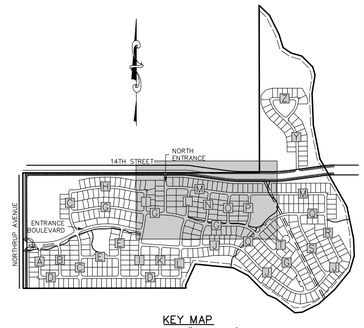
0' 50' 100' 150'
SCALE: 1" = 50'





KEY MAP
SCALE: 1" = 800'

PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

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FORT LUPTON, COLORADO
PRELIMINARY PLAT/PUD
PRELIMINARY PLAT
PLAN VIEW 4

SUN COMMUNITIES, INC.

DATE 5/15/2020

REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. 11

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WILLOW BEND SUBDIVISION
PRELIMINARY PLAT/PUD
SITUATED IN SECTION 33, TOWNSHIP 2 NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN, CITY OF FORT LUPTON, COUNTY OF WELD, STATE OF COLORADO

0' 50' 100' 150'
SCALE: 1" = 50'

LEGEND

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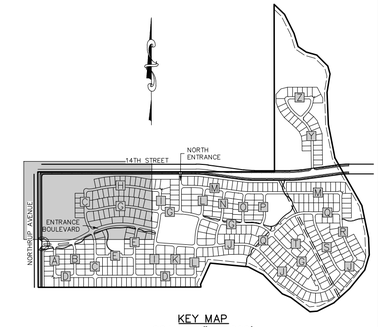
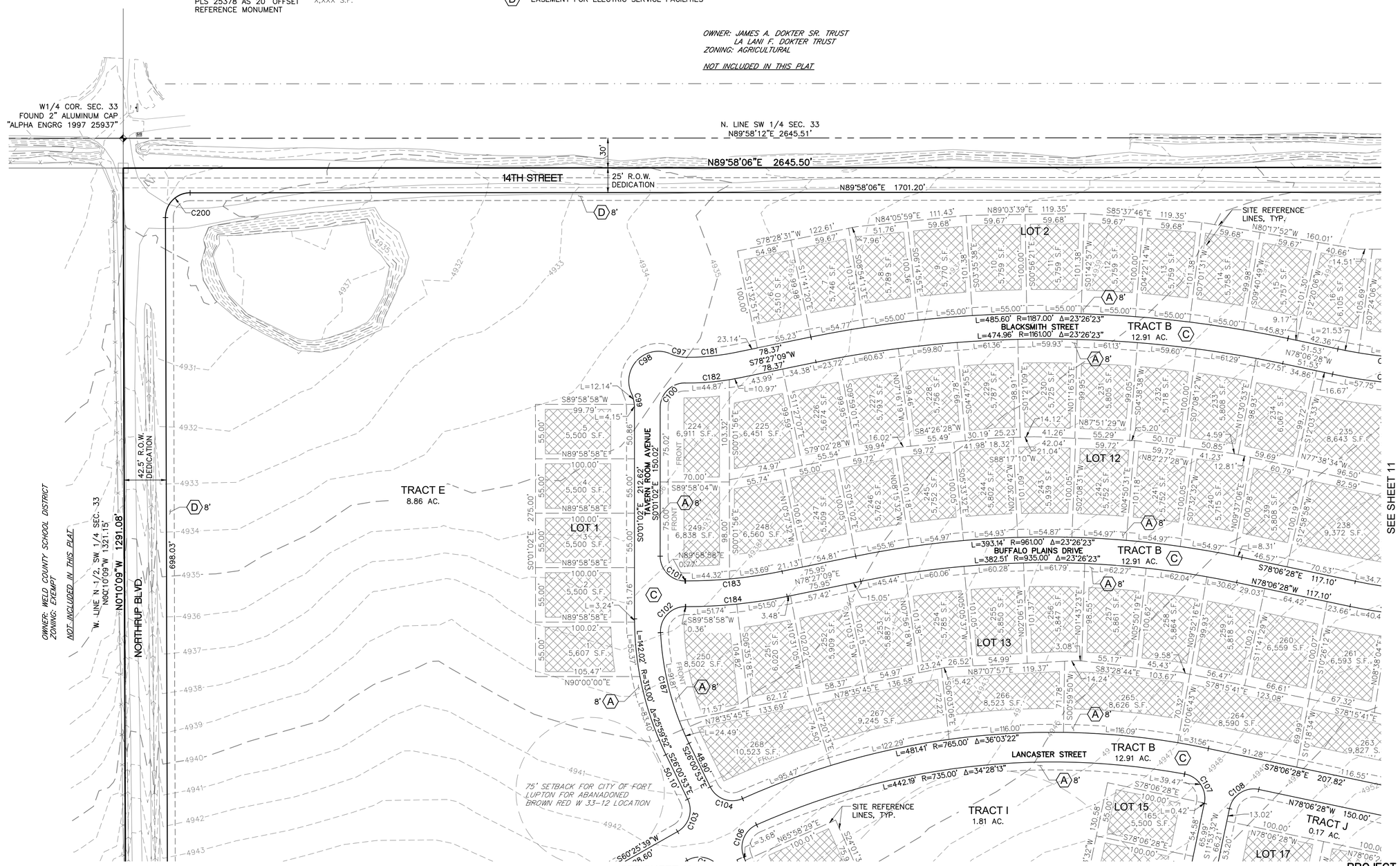


KEY MAP
SCALE: 1" = 800'



PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

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WILLOW BEND SUBDIVISION
FORT LUPTON, COLORADO
PRELIMINARY PLAT/PUD
PRELIMINARY PLAT
PLAN VIEW 5

DATE 5/15/2020

REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. 12

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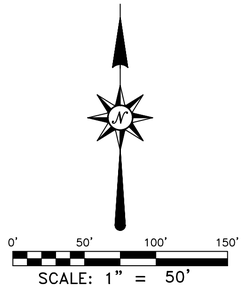
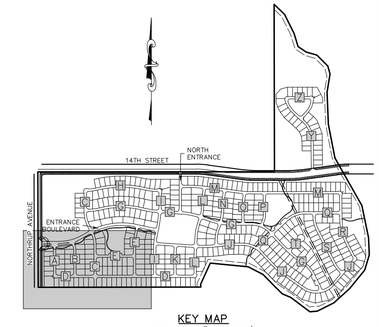
WILLOW BEND SUBDIVISION
PRELIMINARY PLAT/PUD
SITUATED IN SECTION 33, TOWNSHIP 2 NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN, CITY OF FORT LUPTON, COUNTY OF WELD, STATE OF COLORADO





KEY MAP
SCALE: 1" = 800'

SEE SHEET 12

SEE SHEET 14

LEGEND

- SECTION CORNER, AS NOTED
- SUBJECT PARCEL BOUNDARY LINE
- SECTION LINE
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PRELIMINARY PLAT/PUD
PRELIMINARY PLAT
PLAN VIEW 6

SUN COMMUNITIES, INC.

DATE 5/15/2020

REVISIONS

DR. TN | CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. 13

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WILLOW BEND SUBDIVISION
PRELIMINARY PLAT/PUD
SITUATED IN SECTION 33, TOWNSHIP 2 NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN, CITY OF FORT LUPTON, COUNTY OF WELD, STATE OF COLORADO

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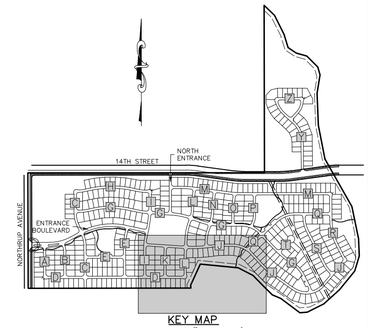

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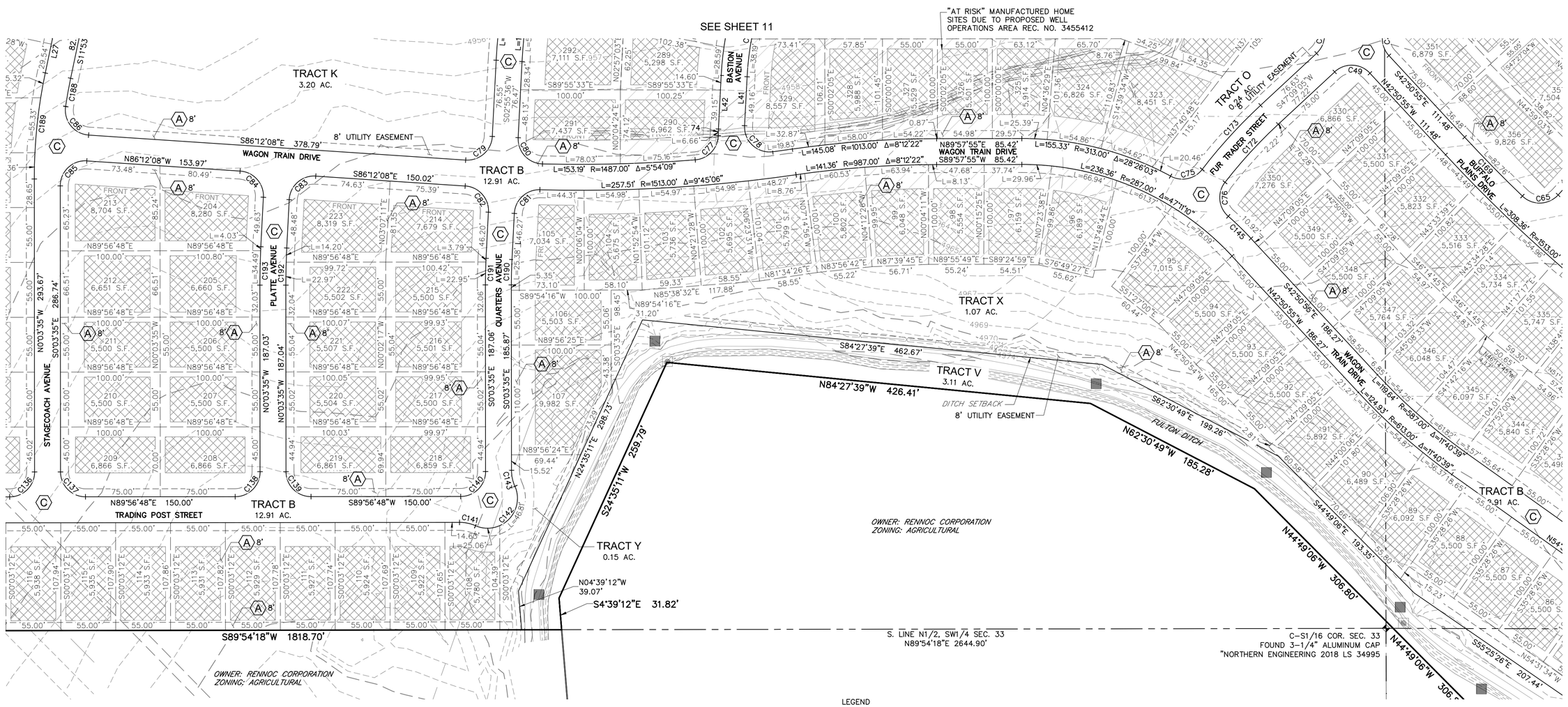

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FORT LUPTON, COLORADO

PRELIMINARY PLAT/PUD
PRELIMINARY PLAT
PLAN VIEW 7

SUN COMMUNITIES, INC.

DATE 5/15/2020

REVISIONS

DR. TN | CH. JP/SB
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JOB 19001956
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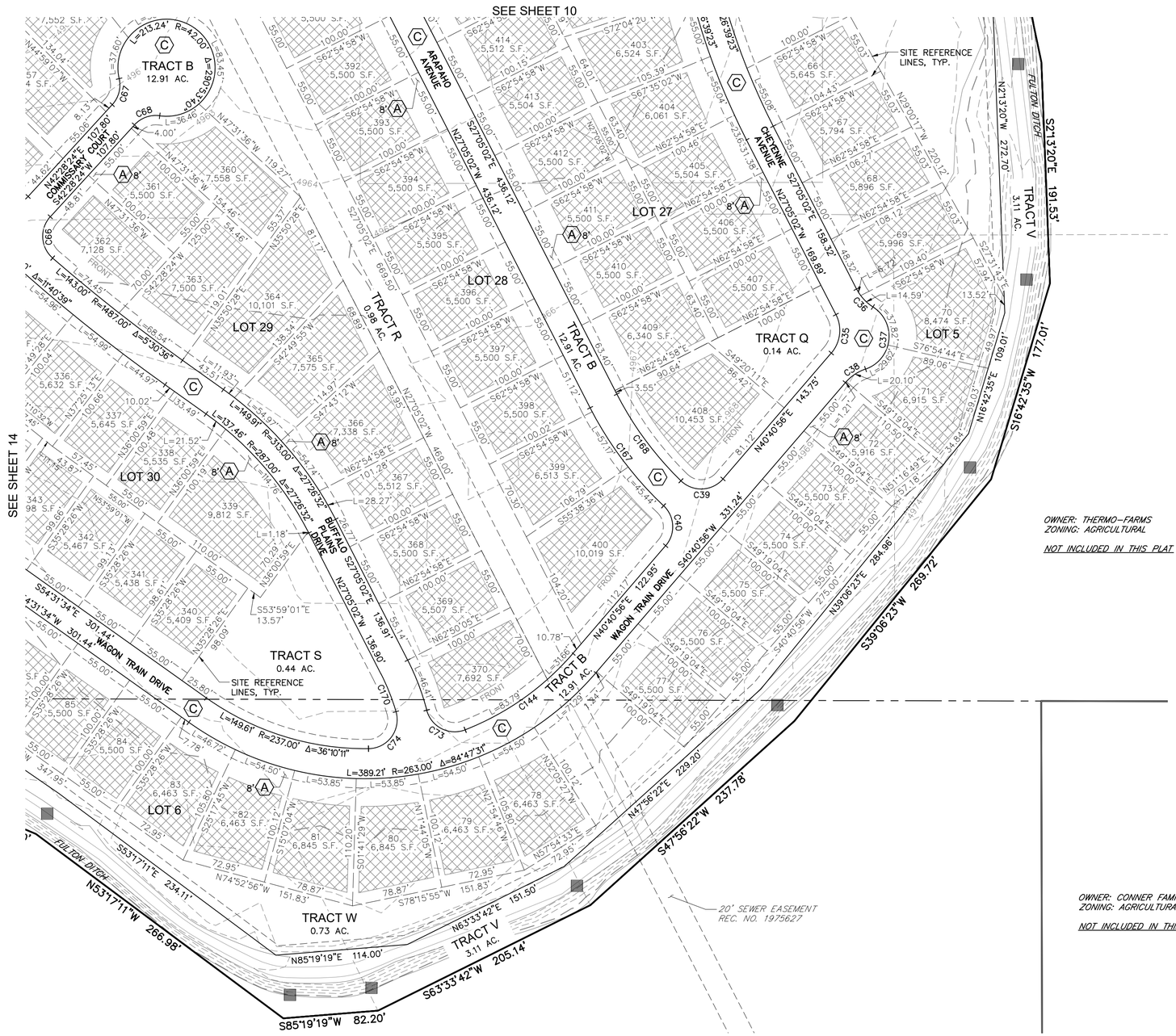
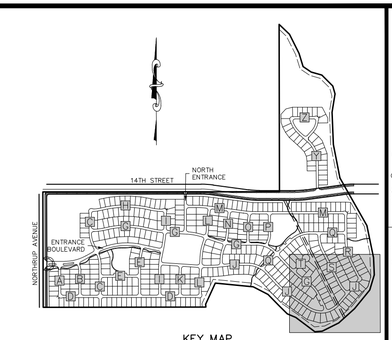
WILLOW BEND SUBDIVISION
PRELIMINARY PLAT/PUD
SITUATED IN SECTION 33, TOWNSHIP 2 NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN, CITY OF FORT LUPTON, COUNTY OF WELD, STATE OF COLORADO





KEY MAP
SCALE: 1" = 800'

0' 50' 100' 150'
SCALE: 1" = 50'

LEGEND

- SECTION CORNER, AS NOTED
- SUBJECT PARCEL BOUNDARY LINE
- SECTION LINE
- PROPOSED EASEMENT
- EXISTING EASEMENT
- MAJOR CONTOUR
- MINOR CONTOUR
- SITE REFERENCE LINE (NOT PLATTED LOT)
- FOUND 2" ALUMINUM CAP PLS 25378 AS 20' OFFSET REFERENCE MONUMENT
- XXX X,XXX S.F. REFERENCE SITE NUMBER & AREA
- (A) EASEMENT FOR UTILITY PURPOSES, INCLUDING BUT NOT LIMITED TO GAS, ELECTRIC, TELEPHONE, AND CABLE COMMUNICATIONS SERVICES
- (B) EASEMENT FOR PUBLIC WATER AND SEWER FACILITIES
- (C) EASEMENT FOR PRIVATE ACCESS, PEDESTRIAN ACCESS, AND EMERGENCY SERVICE ACCESS
- (D) EASEMENT FOR ELECTRIC SERVICE FACILITIES
- BUILDING ENVELOPES PER THE SETBACKS SHOWN IN THE "WILLOW BEND PUD ZONING REQUIREMENTS TABLE" (SEE COVER SHEET FOR TABLE)

PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

811 Know what's below. Call before you dig.

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CLIENT
SUN COMMUNITIES
WILLOW BEND SUBDIVISION
FORT LUPTON, COLORADO
PRELIMINARY PLAT/PUD
PRELIMINARY PLAT
PLAN VIEW 8

SUN COMMUNITIES, INC.

DATE 5/15/2020

REVISIONS

DR. TN | CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. 15

CAD FILE: 19001956-PRELIM PLAT.DWG

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WILLOW BEND SUBDIVISION
PRELIMINARY PLAT/PUD
SITUATED IN SECTION 33, TOWNSHIP 2 NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN, CITY OF FORT LUPTON, COUNTY OF WELD, STATE OF COLORADO

CURVE DATA TABLE

CURVE #	DELTA	RADIUS	LENGTH
C1	4°58'52"	28.60'	2.49'
C2	19°14'20"	28.60'	9.60'
C3	90°00'00"	25.00'	39.27'
C4	90°00'00"	25.00'	39.27'
C5	13°27'53"	40.00'	9.40'
C6	128°52'32"	30.00'	67.48'
C7	96°22'34"	25.00'	42.05'
C8	7°58'57"	40.00'	5.57'
C9	110°25'57"	25.00'	48.19'
C10	20°16'05"	40.00'	14.15'
C11	136°59'09"	30.00'	71.73'
C12	21°14'44"	40.00'	14.83'
C13	1°21'07"	1010.00'	23.83'
C14	4°22'04"	900.00'	68.61'
C15	90°00'52"	28.60'	44.93'
C16	89°59'08"	28.60'	44.92'
C17	90°00'00"	25.00'	39.27'
C18	90°00'00"	25.00'	39.27'
C19	91°52'27"	25.00'	40.09'
C20	90°00'00"	25.00'	39.27'
C21	90°00'00"	25.00'	39.27'
C22	90°00'00"	25.00'	39.27'
C23	91°49'48"	25.00'	40.07'
C24	1°49'48"	1013.00'	32.36'
C25	83°57'50"	25.00'	36.64'

CURVE DATA TABLE

CURVE #	DELTA	RADIUS	LENGTH
C26	1°37'59"	1013.00'	28.87'
C27	90°00'00"	25.00'	39.27'
C28	90°00'00"	25.00'	39.27'
C29	89°35'11"	25.00'	39.09'
C30	20°41'29"	40.00'	14.45'
C31	130°58'08"	30.00'	68.58'
C32	20°41'29"	40.00'	14.45'
C33	90°24'49"	25.00'	39.45'
C34	89°35'11"	25.00'	39.09'
C35	67°45'57"	30.00'	35.48'
C36	30°31'08"	40.00'	21.31'
C37	128°48'13"	30.00'	67.44'
C38	30°31'08"	40.00'	21.31'
C39	93°32'14"	25.00'	40.81'
C40	87°15'32"	25.00'	38.07'
C41	90°24'49"	25.00'	39.45'
C42	89°35'11"	25.00'	39.09'
C47	87°00'20"	25.00'	37.96'
C48	90°00'00"	25.00'	39.27'
C49	90°00'01"	25.00'	39.27'
C50	93°51'51"	25.00'	40.96'
C51	84°46'34"	25.00'	36.99'
C52	82°18'38"	25.00'	35.91'
C53	90°00'00"	25.00'	39.27'
C54	90°00'00"	25.00'	39.27'

CURVE DATA TABLE

CURVE #	DELTA	RADIUS	LENGTH
C55	97°03'54"	25.00'	42.35'
C56	78°21'58"	25.00'	34.19'
C57	96°02'21"	25.00'	41.91'
C58	88°26'50"	25.00'	38.59'
C59	83°35'02"	25.00'	36.47'
C60	90°00'00"	25.00'	39.27'
C61	91°58'09"	25.00'	40.13'
C62	96°12'44"	25.00'	41.98'
C63	88°52'51"	25.00'	38.78'
C64	90°00'00"	25.00'	39.27'
C65	91°29'22"	25.00'	39.92'
C66	91°29'22"	25.00'	39.92'
C67	55°26'50"	25.00'	24.19'
C68	55°26'50"	25.00'	24.19'
C73	96°48'29"	25.00'	42.24'
C74	105°34'14"	25.00'	46.06'
C75	80°57'20"	25.00'	35.32'
C76	86°32'38"	25.00'	37.76'
C77	84°03'32"	25.00'	36.68'
C78	100°24'12"	25.00'	43.81'
C79	90°52'16"	25.00'	39.65'
C80	91°29'22"	25.00'	39.92'
C81	88°35'03"	25.00'	38.65'
C82	89°07'44"	25.00'	38.89'
C83	90°52'16"	25.00'	39.65'

CURVE DATA TABLE

CURVE #	DELTA	RADIUS	LENGTH
C84	89°07'44"	25.00'	38.89'
C85	93°51'28"	25.00'	40.95'
C86	94°43'05"	25.00'	41.33'
C87	90°00'00"	25.00'	39.27'
C88	91°34'04"	25.00'	39.95'
C89	91°29'22"	25.00'	39.92'
C90	91°29'22"	25.00'	39.92'
C91	88°35'03"	25.00'	38.65'
C92	88°35'03"	25.00'	38.65'
C93	90°04'48"	25.00'	39.30'
C94	23°35'35"	40.00'	16.47'
C95	23°44'04"	40.00'	16.57'
C96	137°15'49"	30.00'	71.87'
C97	23°31'26"	40.00'	16.42'
C98	137°16'56"	30.00'	71.88'
C99	23°19'29"	40.00'	16.28'
C100	90°38'07"	25.00'	39.55'
C101	90°00'00"	25.00'	39.27'
C102	93°00'28"	25.00'	40.58'
C103	86°26'32"	25.00'	37.72'
C104	88°08'57"	25.00'	38.46'
C105	98°07'44"	25.00'	42.82'
C106	88°42'25"	25.00'	38.71'
C107	91°25'22"	25.00'	39.89'
C108	90°00'00"	25.00'	39.27'

CURVE DATA TABLE

CURVE #	DELTA	RADIUS	LENGTH
C109	90°00'00"	25.00'	39.27'
C110	90°00'00"	25.00'	39.27'
C115	89°39'38"	25.00'	39.12'
C116	90°20'22"	25.00'	39.42'
C117	2°55'09"	365.00'	18.60'
C118	82°24'37"	25.00'	35.96'
C119	90°28'42"	25.00'	39.48'
C120	90°21'53"	25.00'	39.43'
C121	89°38'07"	25.00'	39.11'
C122	90°08'04"	29.50'	46.41'
C123	89°51'56"	29.50'	46.27'
C124	23°46'00"	40.00'	16.59'
C125	137°14'49"	30.00'	71.86'
C126	23°49'35"	40.00'	16.63'
C127	89°39'14"	25.00'	39.12'
C128	90°20'46"	25.00'	39.42'
C129	89°39'14"	25.00'	39.12'
C130	90°20'46"	25.00'	39.42'
C131	89°39'14"	25.00'	39.12'
C132	89°39'14"	25.00'	39.12'
C133	90°20'46"	25.00'	39.42'
C134	90°00'24"	25.00'	39.27'
C135	89°59'36"	25.00'	39.27'
C136	90°00'24"	25.00'	39.27'
C137	89°59'36"	25.00'	39.27'

LINE DATA TABLE

LINE #	DIRECTION	LENGTH
L1	N82°14'01"E	27.92'
L2	N0°25'38"W	32.34'
L3	S3°50'18"W	9.68'
L4	N3°50'18"E	9.83'
L5	N21°01'41"E	27.10'
L6	S21°01'41"W	28.73'
L12	N0°25'38"W	10.25'
L13	S0°25'38"E	9.71'
L14	S54°31'34"E	43.51'
L15	N54°31'34"W	43.51'
L21	N19°24'49"E	38.88'
L22	S19°24'49"W	50.70'
L23	S19°24'49"W	38.28'
L24	N19°24'49"E	37.86'
L25	S86°09'42"E	13.08'
L26	N86°09'42"W	13.08'
L27	N11°53'32"E	42.55'
L28	S2°55'36"W	46.27'
L29	S2°55'36"W	46.20'
L30	N2°55'36"E	49.63'

LINE DATA TABLE

LINE #	DIRECTION	LENGTH
L31	N2°55'36"E	48.48'
L37	S19°03'49"E	7.47'
L38	S89°57'55"W	13.07'

CURVE DATA TABLE

CURVE #	DELTA	RADIUS	LENGTH
C138	90°00'24"	25.00'	39.27'
C139	89°59'36"	25.00'	39.27'
C140	90°00'24"	25.00'	39.27'
C141	23°37'42"	40.00'	16.50'
C142	137°15'48"	30.00'	71.87'
C143	23°37'42"	40.00'	16.50'
C144	27°54'41"	237.00'	115.45'
C145	5°49'34"	313.00'	31.83'
C146	0°45'51"	1487.00'	19.83'
C147	3°51'20"	513.00'	34.52'
C148	3°51'20"	487.00'	32.77'
C149	5°05'33"	313.00'	27.82'
C150	5°05'33"	287.00'	25.51'
C151	8°39'55"	287.00'	43.40'
C152	10°26'05"	313.00'	57.00'
C153	6°32'14"	737.00'	84.09'
C154	6°02'21"	763.00'	80.42'
C155	11°51'59"	513.00'	106.25'
C156	11°14'33"	539.00'	105.76'
C157	5°05'33"	587.00'	52.17'
C158	5°05'33"	613.00'	54.48'
C159	7°41'24"	737.00'	98.92'
C160	7°41'24"	763.00'	102.41'
C161	21°02'30"	213.00'	78.22'
C162	21°02'30"	187.00'	68.68'

CURVE DATA TABLE

CURVE #	DELTA	RADIUS	LENGTH
C163	6°46'31"	737.00'	87.15'
C164	7°48'52"	763.00'	104.07'
C165	15°50'20"	313.00'	86.53'
C166	15°26'22"	313.00'	84.34'
C167	19°29'34"	313.00'	106.49'
C168	18°41'48"	287.00'	93.65'
C169	3°11'19"	1487.00'	82.76'
C170	10°48'59"	187.00'	35.30'
C171	12°29'07"	213.00'	46.41'
C172	9°16'57"	487.00'	78.90'
C173	9°42'27"	513.00'	86.92'
C174	1°27'03"	263.00'	6.66'
C175	16°29'13"	313.00'	90.07'
C176	16°29'13"	287.00'	82.59'
C177	2°26'23"	1513.00'	64.43'
C178	2°21'58"	1487.00'	61.41'
C179	11°59'22"	513.00'	107.35'
C180	11°50'43"	487.00'	100.68'
C181	11°57'49"	237.00'	49.49'
C182	12°09'56"	263.00'	55.84'
C183	11°31'49"	487.00'	98.00'
C184	11°31'49"	513.00'	103.24'
C185	8°03'14"	487.00'	68.46'
C186	8°03'14"	513.00'	72.11'
C187	23°13'06"	287.00'	116.30'

CURVE DATA TABLE

CURVE #	DELTA	RADIUS	LENGTH
C188	3°22'35"	487.00'	28.70'
C189	11°57'08"	513.00'	107.01'
C190	2°59'11"	487.00'	25.38'
C191	2°59'11"	513.00'	26.74'
C192	2°59'11"	713.00'	37.16'
C193	2°59'11"	739.00'	38.52'
C194	11°57'08"	513.00'	107.01'
C195	11°57'08"	487.00'	101.59'
C196	21°02'39"	287.00'	105.41'
C197	18°23'49"	187.00'	60.04'
C198	18°39'52"	213.00'	69.39'
C199	19°14'24"	365.00'	122.57'
C200	89°58'11"	25.00'	39.26'
C201	1°21'07"	1010.00'	23.83'

PROJECT NO.: LUP2019–0039 &
PLAN NO.: SPL2019–0005

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FORT LUPTON, COLORADO
PRELIMINARY PLAT/PUD
PRELIMINARY PLAT
LINE & CURVE TABLES

SUN COMMUNITIES, INC.

DATE 5/15/2020

REVISIONS

DR. TN CH. JP/SB
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JOB 19001956
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CAD FILE: 19001956–PRELIM PLAT.DWG

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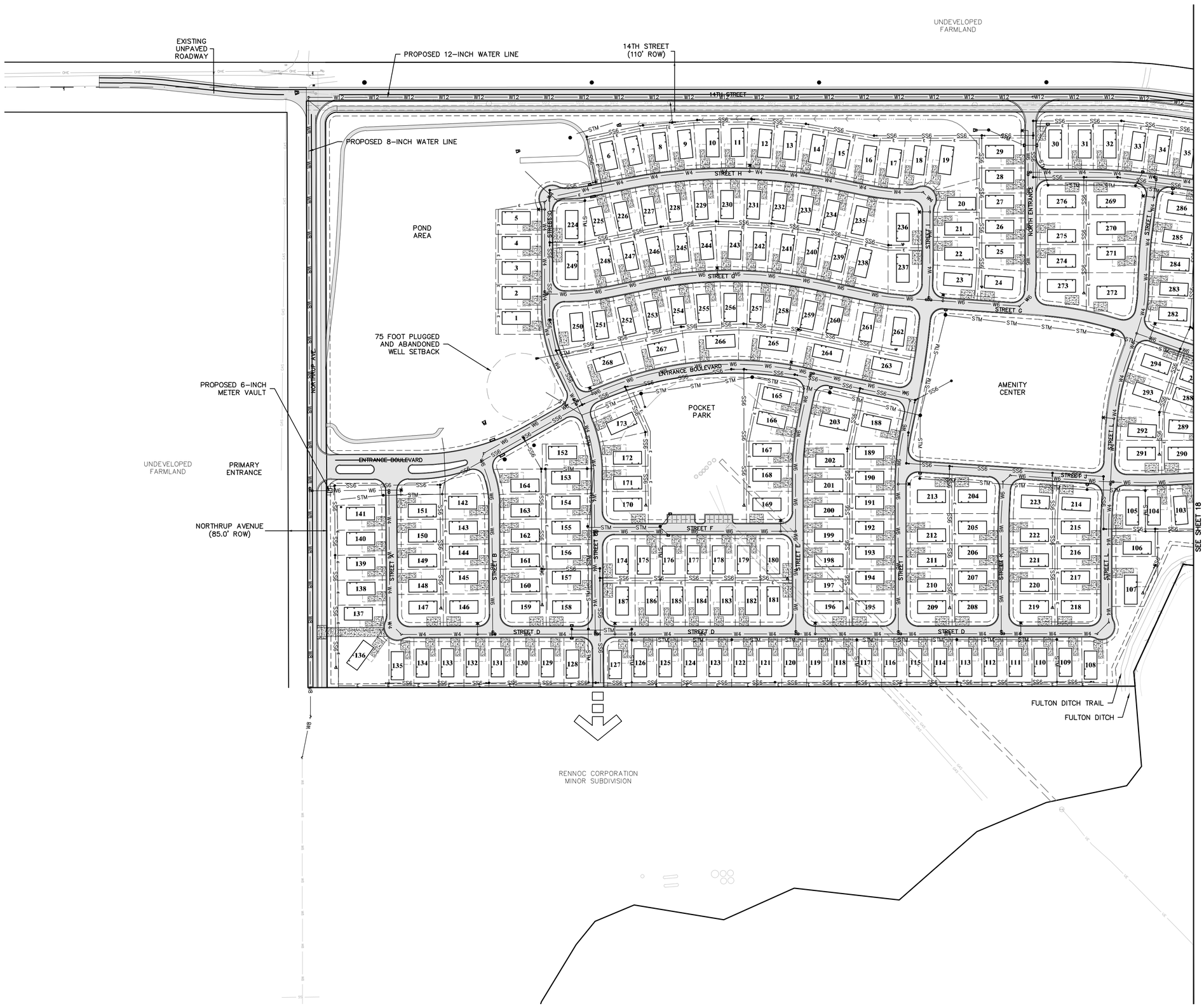

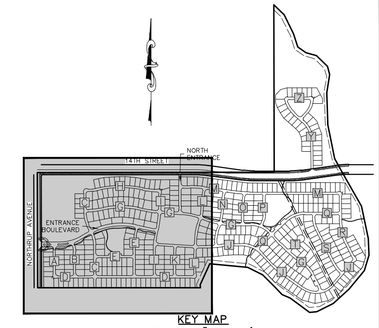

KEY MAP
SCALE: 1" = 800'

LEGEND

	PROPERTY BOUNDARY
	PROPOSED RIGHT-OF-WAY
	EXISTING RIGHT-OF-WAY
	PROPOSED SITE REFERENCE LINE
	EXISTING LOT LINE
	PROPOSED CATCH CURB & GUTTER
	PROPOSED SPILL CURB & GUTTER
	EXISTING CURB & GUTTER
	PROPOSED SIDEWALK
	EXISTING SIDEWALK
	EXISTING SECTION LINE
	PROPOSED EASEMENT
	EXISTING EASEMENT
	PROPOSED CONTOURS
	EXISTING CONTOURS
SS6	PROPOSED 6" SANITARY
SS	EXISTING SANITARY (# = SIZE)
S	PROPOSED SANITARY SERVICE
C.O.	PROPOSED SANITARY CLEANOUT
	PROPOSED STORM
	EXISTING STORM
W4	PROPOSED 4" WATER
W6	PROPOSED 6" WATER
W8	PROPOSED 8" WATER
W12	PROPOSED 12" WATER
W	EXISTING WATER
W	PROPOSED WATER SERVICE
	PROPOSED HYDRANT
	EXISTING HYDRANT
	PROPOSED WATER VALVE
FO	EXISTING FIBER OPTIC
GAS	EXISTING GAS
123	SITE NUMVER

100 0 100 200
(IN FEET)
1 inch = 100 ft.

PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

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SUN COMMUNITIES
WILLOW BEND SUBDIVISION
FORT LUPTON, COLORADO
PRELIMINARY PLAT/PUD
OVREALL UTILITY PLANS
AREA 1

CLIENT
SUN Communities, Inc.

DATE 5/15/2020

REVISIONS

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JOB 19001956
SHEET NO. 17

CAD FILE: 19001956-OVERALL UTILITY PLAN-PUD.DWG

SEE SHEET 19

EXISTING SANITARY SEWER MANHOLE (TYP)

EXISTING 12-INCH SANITARY SEWER

COTTONWOOD GREENS PROPOSED STORM OUTFALLS

POND AREA

OPEN SPACE

PROPOSED 6-INCH METER VAULT

CONNECTION MADE AT 12-INCH STUB FROM COTTONWOOD GREENS

14TH STREET

COTTONWOOD GREENS PRELIMINARY PUD PLAT (UNDER REVIEW)

150' WELL SETBACK

POND AREA AND PARK

CONNECTION TO EXISTING 10-INCH SANITARY SEWER

OPEN SPACE

75 FOOT PLUGGED AND ABANDONED WELL SETBACK

SEE SHEET 17

150 FOOT WELL SETBACK

ADDITIONAL WELL SETBACK

PROPOSED FULTON DITCH SETBACK

FULTON DITCH TRAIL

FULTON DITCH

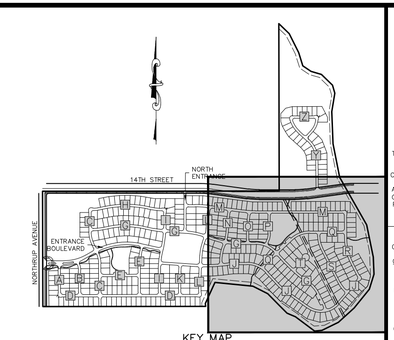
POCKET PARK

COTTONWOOD GREENS PROPOSED STORM OUTFALL

COTTONWOOD GREENS PRELIMINARY PUD PLAT (UNDER REVIEW)

20 FOOT SANITARY SEWER EASEMENT

PROPOSED 20 FOOT DRAINAGE EASEMENT



KEY MAP
SCALE: 1" = 800'

LEGEND

	PROPERTY BOUNDARY
	PROPOSED RIGHT-OF-WAY
	EXISTING RIGHT-OF-WAY
	PROPOSED SITE REFERENCE LINE
	EXISTING LOT LINE
	PROPOSED CATCH CURB & GUTTER
	PROPOSED SPILL CURB & GUTTER
	EXISTING CURB & GUTTER
	PROPOSED SIDEWALK
	EXISTING SIDEWALK
	EXISTING SECTION LINE
	PROPOSED EASEMENT
	EXISTING EASEMENT
	PROPOSED CONTOURS
	EXISTING CONTOURS
SS6	PROPOSED 6" SANITARY
SS	EXISTING SANITARY (# = SIZE)
S	PROPOSED SANITARY SERVICE
C.O.	PROPOSED SANITARY CLEANOUT
	PROPOSED STORM
	EXISTING STORM
W4	PROPOSED 4" WATER
W6	PROPOSED 6" WATER
W8	PROPOSED 8" WATER
W12	PROPOSED 12" WATER
W	EXISTING WATER
W	PROPOSED WATER SERVICE
	PROPOSED HYDRANT
	EXISTING HYDRANT
	PROPOSED WATER VALVE
FO	EXISTING FIBER OPTIC
GAS	EXISTING GAS
123	SITE NUMVER

100 0 100 200

(IN FEET)
1 inch = 100 ft.

PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

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(248) 208-2556
JOHN B. MCLAREN

CLIENT
SUN COMMUNITIES
WILLOW BEND SUBDIVISION
FORT LUPTON, COLORADO
PRELIMINARY PLAT/PUD
OVREALL UTILITY PLANS
AREA 2

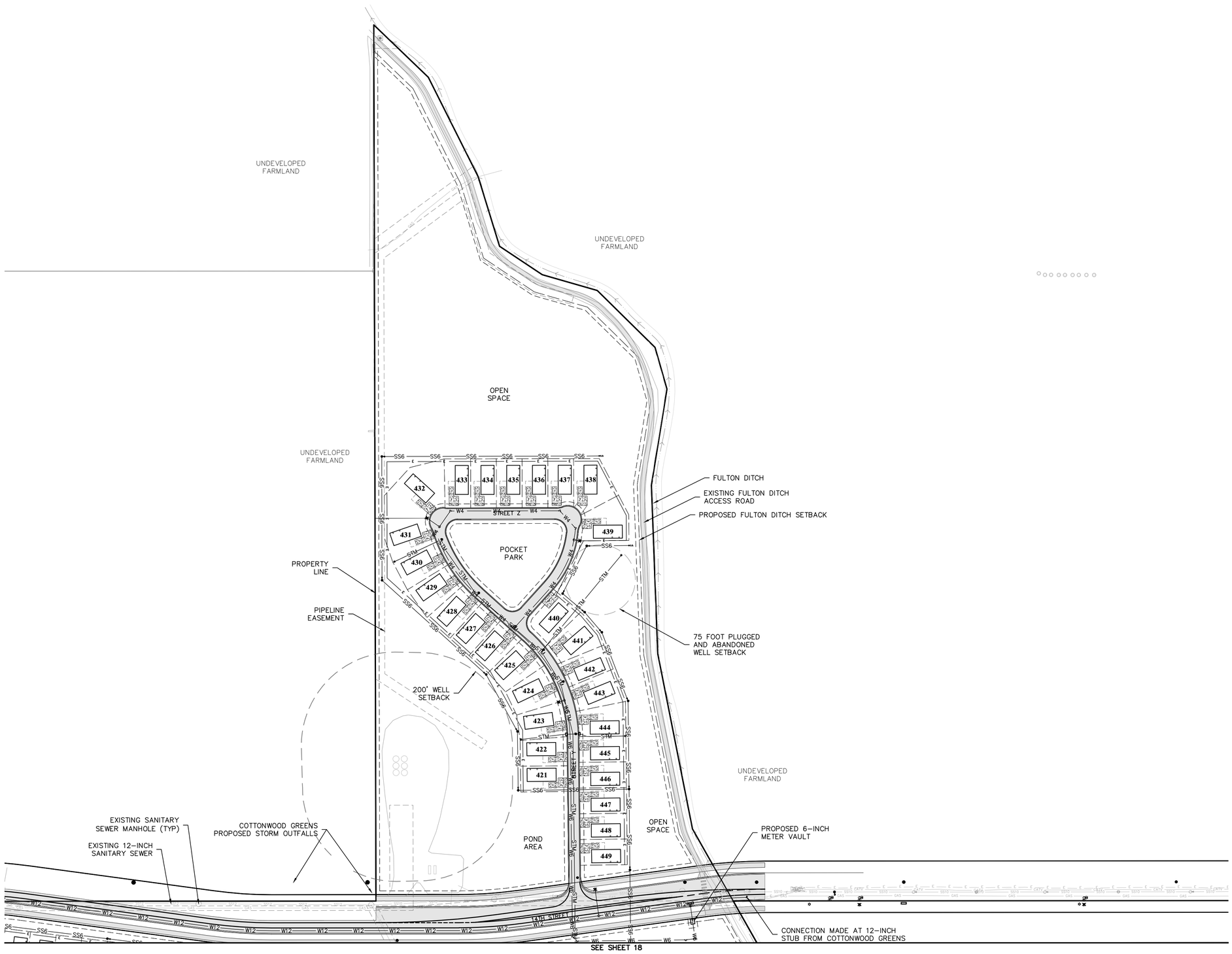
SUN COMMUNITIES, INC.

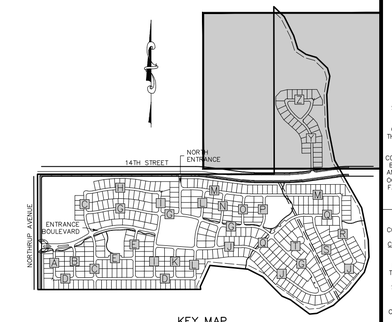
DATE 5/15/2020

REVISIONS

DR. TN | CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. 18

CAD FILE: 19001956-OVERALL UTILITY PLAN-PUD.DWG





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CLIENT

DATE 5/15/2020

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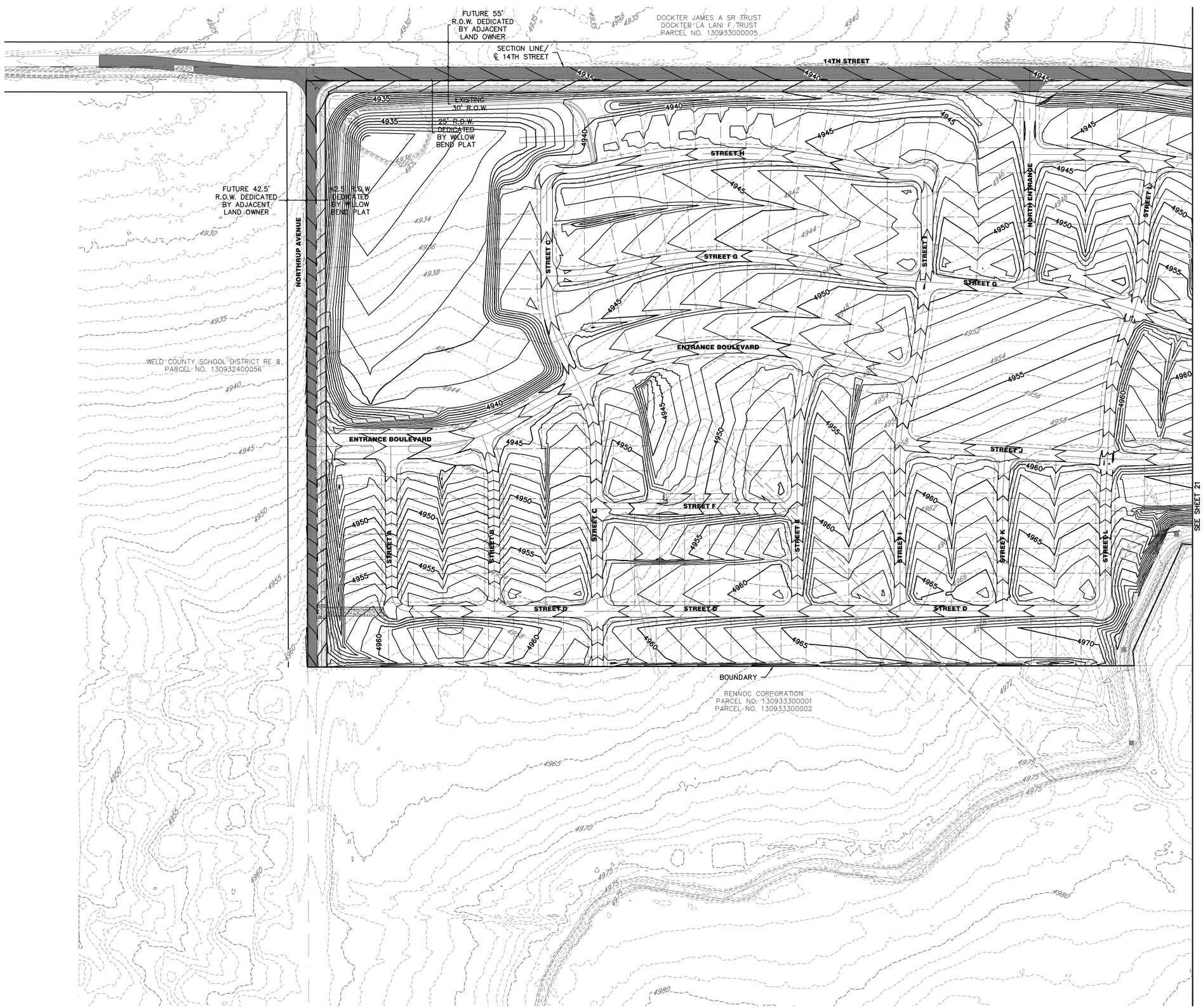

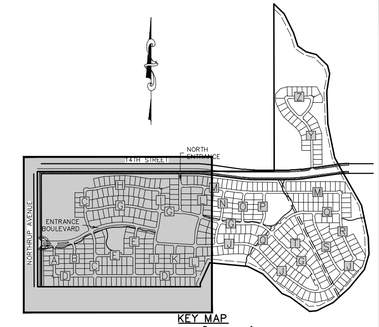

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FORT LUPTON, COLORADO

PRELIMINARY PLAT/PUD OVERALL GRADING PLANS AREA 1

SUN COMMUNITIES, INC.

DATE 5/15/2020

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JOB 19001956
SHEET NO. 20

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SEE SHEET 22

SEE SHEET 20

RIGHT-OF-WAY BOUNDARY

14TH STREET

R.O.W.

FUTURTE 55' R.O.W. DEDICATED BY ADJACENT LAND OWNER

EXISTING 30' R.O.W.

25' R.O.W. DEDICATED BY COTTONWOOD GREEN PLAT

THERMO-FARMS
PARCEL NO. 130933100007

STREET M

STREET N

STREET O

STREET P

STREET Q

STREET R

STREET S

STREET G

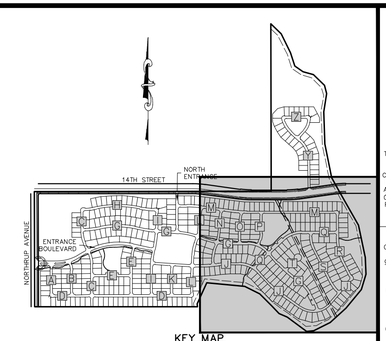
STREET J

BOUNDARY

THE RANCH ESTATES
PARCEL NO. 130933000044

EXISTING SECTION LINE

AIMS 1
PARCEL NO. 130933000053



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SUN Communities, Inc.

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SHEET NO. 21

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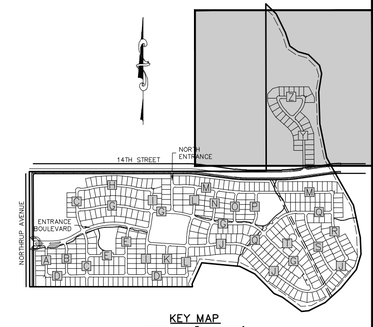

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AREA 3

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DATE 5/15/2020

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LANDSCAPE CONSTRUCTION DOCUMENTS

FOR

WILLOW BEND SUBDIVISION

PRELIMINARY DEVELOPMENT PLANS

FORT LUPTON, COLORADO

SUN COMMUNITIES

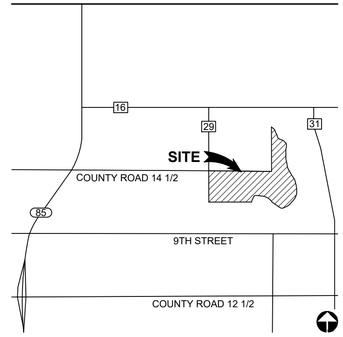
GENERAL CONSTRUCTION NOTES

1. THESE NOTES ARE TO BE USED FOR GENERAL REFERENCE IN CONJUNCTION WITH, AND AS A SUPPLEMENT TO THE WRITTEN SPECIFICATIONS, APPROVED ADDENDA, AND CHANGE ORDERS ASSOCIATED WITH THESE LANDSCAPE IMPROVEMENT DOCUMENTS.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR SECURING ALL NECESSARY PERMITS AND SHALL NOTIFY ALL UTILITY COMPANIES WITH UTILITIES ON SITE PRIOR TO THE CONSTRUCTION OF THE PROJECT. CONTRACTOR SHALL ADHERE TO ALL APPLICABLE LOCAL, STATE AND/OR FEDERAL LAWS OR REGULATIONS PERTAINING TO THE PROJECT.
3. IN ALL CASES WHERE A CONFLICT MAY OCCUR, SUCH AS BETWEEN ITEMS COVERED IN SPECIFICATIONS AND NOTES ON THE DRAWINGS, OR BETWEEN GENERAL NOTES AND SPECIFIC DETAILS, THE LANDSCAPE ARCHITECT SHALL BE NOTIFIED AND HE OR SHE WILL INTERPRET THE INTENT OF THE CONTRACT DOCUMENTS.
4. A QUALIFIED SUPERVISOR SHALL BE PRESENT ON SITE AT ALL TIMES DURING CONSTRUCTION.
5. DETAILS NOTED AS "TYPICAL" SHALL APPLY IN ALL CASES UNLESS SPECIFICALLY SHOWN OR NOTED OTHERWISE.
6. LANDSCAPE CONTRACTOR SHALL INSPECT WITH THE OWNER'S AUTHORIZED REPRESENTATIVE AND/OR OWNER ALL EXISTING CONDITIONS PRIOR TO THE START OF ANY WORK. THE CONTRACTOR SHALL BE RESPONSIBLE UNDER THIS CONTRACT TO REPAIR AND/OR REPLACE, AT THEIR OWN EXPENSE, ANY STRUCTURES, FENCES, WALLS, PLANT MATERIAL, OR OTHER ITEMS DESTROYED DURING CONSTRUCTION. LIKEWISE THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING AND/OR REPLACING ANY AND ALL DAMAGES TO ADJACENT PROPERTIES OR ANY OTHER AREAS OUTSIDE THE CONTRACT LIMITS. THE DAMAGED ITEMS/AREAS WILL BE RESTORED TO THEIR ORIGINAL CONDITION TO THE SATISFACTION OF THE OWNER'S AND/OR OWNER'S AUTHORIZED REPRESENTATIVE.
7. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE ALL PLANT MATERIAL LOCATIONS WITH OTHER TRADES PRIOR TO INSTALLATION. THE CONTRACTOR SHALL FAMILIARIZE THEMSELVES WITH THE LOCATIONS OF EXISTING AND FUTURE UNDERGROUND SERVICES AND IMPROVEMENTS WHICH MAY CONFLICT WITH THE WORK TO BE DONE. PRIOR TO THE START OF WORK, ALL UNDERGROUND UTILITIES ARE TO BE LOCATED AND PROTECTED. CONTRACTOR IS RESPONSIBLE FOR THE INITIAL CALL AND FUTURE UPDATES TO BLUE STAKE AT 602-263-1100. EXISTING UNDERGROUND SERVICES SHALL NOT BE DISTURBED OR REMOVED WITHOUT APPROVAL OF THE OWNER'S AND/OR OWNER'S AUTHORIZED REPRESENTATIVE, UNLESS SPECIFICALLY NOTED OTHERWISE ON DRAWINGS.
8. CONTRACTOR SHALL PROVIDE BARRICADES AND TRAFFIC CONTROL ALONG PUBLIC STREETS IF REQUIRED DURING CONSTRUCTION.
9. PLANTING AND IRRIGATION DESIGN MAY BE MODIFIED TO ADAPT TO WALK CONFIGURATIONS THAT DIFFER FROM THESE PLANS, AND DUE TO GRADE LIMITATIONS ON SITE.
10. REFER TO ENGINEERING PLANS FOR DRAINAGE FLOWS. THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE THAT THESE ARE PROVIDED FOR AND NOT IMPAIRED WITH OBSTRUCTIONS.
11. NO PART OF THE CONTRACT DOCUMENTS ARE INTENDED TO BE IN VIOLATION OF CODES. IF DISCREPANCIES EXIST, NOTIFY LANDSCAPE ARCHITECT AND OWNER IMMEDIATELY.
12. COORDINATE AND COOPERATE WITH ALL CONTRACTORS OF ATTACHED, ADJOINING AND/OR INTERFACING WORK TO INSURE ORDERLY AND EFFICIENT COMPLETION OF ALL WORK.
13. ALL CONSTRUCTION SHALL CONFORM TO ALL APPLICABLE CODES AND ORDINANCES (FEDERAL, STATE, LOCAL, AND HEALTH DEPARTMENTS), EXCEPT WHERE REQUIREMENTS OF CONTRACT DOCUMENTS ARE MOST STRINGENT.
14. ALL EXISTING PLANT MATERIAL SHALL REMAIN UNLESS OTHERWISE NOTED.
15. ANY PLANT MATERIAL THAT MUST BE REMOVED DUE TO CONSTRUCTION MUST BE APPROVED BY OWNER AND/OR OWNER'S AUTHORIZED REPRESENTATIVE. NOTIFY OWNER AND/OR OWNER'S AUTHORIZED REPRESENTATIVE AT LEAST 48 HOURS PRIOR TO REMOVAL AND/OR RELOCATION OF ALL PLANTS.
16. IF ANY EXISTING PLANT MATERIAL THAT IS TO REMAIN IS DAMAGED BY CONTRACTOR, THE CONTRACTOR SHALL REPLACE THE DAMAGED PLANT WITH A NEW ONE OF THE SAME SIZE AND VARIETY AT NO COST TO THE OWNER.
17. DO NOT DISTURB SOIL WITHIN BRANCH SPREAD OF TREES OR SHRUBS TO REMAIN WITHOUT APPROVAL OF THE OWNER AND/OR OWNER'S AUTHORIZED REPRESENTATIVE.
18. ANY DISCREPANCIES BETWEEN THE PLANS AND CONDITIONS ON SITE SHALL BE REPORTED IMMEDIATELY TO THE OWNER AND/OR OWNER'S AUTHORIZED REPRESENTATIVE.
19. CONTRACTOR SHALL PROVIDE OWNER WITH ALL WARRANTY INFORMATION, INSTRUCTION MANUALS AND ANY OTHER PRODUCT INFORMATION FOR ALL NEW EQUIPMENT OR MACHINERY INSTALLED ON THE SITE WITHIN TWO WEEKS AFTER SUBSTANTIAL COMPLETION.
20. NO DESIGN MODIFICATIONS SHALL BE MADE WITHOUT THE OWNER AND/OR OWNER'S AUTHORIZED REPRESENTATIVE APPROVAL.
21. CONTRACTOR SHALL BE RESPONSIBLE FOR HAULING AND LEGALLY DISPOSING OF MATERIALS DESIGNATED TO BE REMOVED. PROVIDE RECEIPTS FOR DUMPING TO OWNER FOR THEIR FILES.
22. ALL BASE INFORMATION IS FROM OTHER PROJECT TEAM MEMBERS AS LISTED IN THE 'PROJECT TEAM' LIST ON THIS SHEET. A THOROUGH ATTEMPT HAS BEEN MADE TO KEEP UP TO DATE WITH THE MOST CURRENT BASE INFORMATION. HOWEVER, DISCREPANCIES MAY EXIST BETWEEN THESE PLANS AND OTHER TEAM MEMBERS PLANS. IN ALL CASES THE ENGINEERS PLANS SHALL HAVE PRECEDENCE OVER THE LANDSCAPE PLANS FOR FINAL PROJECT CONFIGURATION.
23. ALL SIDEWALKS SHOWN ON THESE PLANS ARE FOR REFERENCE ONLY. REFER TO CIVIL ENGINEERING PLANS FOR FINAL LAYOUT, GRADES, FINISHES, DETAILS, AND METHODS OF CONSTRUCTION. RVi UNDER NO CIRCUMSTANCES ASSUMES RESPONSIBILITY FOR UNFORESEEN CONFLICTS, ENGINEERING, STRUCTURAL CALCULATIONS, OR INSTALLATION THAT IS BEYOND OUR CONTROL.
24. SIGHT LINES AND VISIBILITY TRIANGLES ARE SHOWN ON THESE PLANS FOR REFERENCE ONLY. REFER TO ENGINEERING PLANS OR GOVERNING MUNICIPALITY FOR SPECIFIC GUIDELINES. IN CASES WHERE THERE IS MORE THAN ONE GOVERNING BODY, THE MOST RESTRICTIVE GUIDELINE SHALL PREVAIL.
25. ALL WALLS AND VERTICAL SITE FEATURES DESIGNED IN THE INTEREST OF THIS PROJECT ARE SCHEMATIC IN NATURE. POTENTIAL CONSTRUCTION DETAILING AND TECHNIQUES ARE SHOWN FOR DESIGN INTENT CLARIFICATION ONLY. THE CONTRACTOR SHALL HAVE THE ULTIMATE RESPONSIBILITY TO ENSURE THAT ALL CONSTRUCTED ELEMENTS ON THIS PROJECT ARE STRUCTURALLY SOUND AND ARE BUILT WITHIN ALL APPLICABLE CITY, STATE, AND FEDERAL GUIDELINES. RVi UNDER NO CIRCUMSTANCES ASSUMES RESPONSIBILITY FOR UNFORESEEN CONFLICTS, ENGINEERING, STRUCTURAL CALCULATIONS, OR INSTALLATION.
26. SHOP DRAWING REVIEWS WILL BE DONE TO ENSURE THAT PRODUCT DATA, MATERIALS, AND SAMPLES MEET OR EXCEED THE ORIGINAL DESIGN INTENT OF THESE DRAWINGS ONLY. RVi UNDER NO CIRCUMSTANCES ASSUMES RESPONSIBILITY FOR UNFORESEEN CONFLICTS, ENGINEERING, STRUCTURAL CALCULATIONS OR INSTALLATION RESULTING FROM THE PRODUCTION OF ANY SHOP DRAWINGS.

SUBMITTAL HISTORY

DATE	DESCRIPTION / COMMENTS
07/20/20	PRE PLAT 1ST SUBMITTAL
09/08/20	PRE PLAT 2ND SUBMITTAL

VICINITY MAP



PROJECT TEAM

DISCIPLINE	CONTACT INFORMATION
OWNER	SUN COMMUNITIES TOM O'BRANOVIC (tobranovic@suncommunities.com) 27777 FRANKLIN ROAD, SUITE 200 SOUTHFIELD, MICHIGAN 48034 248.208.2610
LANDSCAPE ARCHITECT	RVi PLANNING + LANDSCAPE ARCHITECTURE DOUG CRAIG (dcraig@rviplanning.com) BRITTANY GEIST (bgeist@rviplanning.com) 120 S. ASH AVENUE TEMPE, ARIZONA 85281 480.994.0994
CIVIL ENGINEER	ATWELL, LLC SPENCER CRABB (scrabb@atwell-group.com) TWO TOWNE SQUARE, SUITE 700 SOUTHFIELD, MICHIGAN 48076 248.447.2062 RICK WEED (rweed@atwell-group.com) 143 UNION BOULEVARD, SUITE 700 LAKEWOOD, COLORADO 80228 720.541.6601

SHEET INDEX

NUMBER	DESCRIPTION
L0.00	COVER SHEET
L1.00	CONCEPTUAL LANDSCAPE PLAN
L2.00	FENCE DETAILS

COMMON ABBREVIATIONS

SYMBOL	DEFINITION	SYMBOL	DEFINITION	SYMBOL	DEFINITION
@	AT	EOP	EDGE OF PAVEMENT	OC	ON CENTER
AVG	AVERAGE	EQ	EQUAL	P/L	PROPERTY LINE
BPU	BACKFLOW PREVENTION UNIT	EX	EXISTING	POC	POINT OF CONNECTION
BOC	BACK OF CURB	FF	FINISH FLOOR	PUE	PUBLIC UTILITY EASEMENT
BTH	BROWN TRUNK HEIGHT	FG	FINISH GRADE	PSI	POUNDS PER SQUARE INCH
BW	BOTTOM OF WALL	FL	FLOW LINE	R, RAD	RADIUS
CAL	CALIPER	FOC	FACE OF CURB	R/W	RIGHT OF WAY (R.O.W.)
CB	CATCH BASIN	FT	FEET	SF	SQUARE FEET
CF	CUBIC FEET	GAL	GALLONS	STD	STANDARD
CJ	CONTROL JOINT	GPH	GALLONS PER HOUR	SDL	SIGHT DISTANCE LINE
CL	CENTERLINE	GPM	GALLONS PER MINUTE	SIM	SIMILAR
CLR	CLEAR	HORIZ	HORIZONTAL	SJ	SCORE JOINT
CMU	CONCRETE MASONRY UNIT	HP	HIGH POINT	SVT	SIGHT VISIBILITY TRIANGLE
CONC	CONCRETE	HT	HEIGHT	S/W	S/W
CONT	CONTINUOUS	LF	LINEAR FEET	TBS	TO BE SELECTED
Ø, DIA	DIAMETER	LOC	LIMIT OF CONSTRUCTION	TW	TOP OF WALL
DG	DECOMPOSED GRANITE	L/S	LANDSCAPE	TYP	TYPICAL
EA	EACH	MAX	MAXIMUM	VERT	VERTICAL
EJ	EXPANSION JOINT	MIN	MINIMUM	w/	WITH
ELEV	ELEVATION	NTS	NOT TO SCALE		

GENERAL SCOPE OF WORK

1. THE SCOPE OF WORK FOR THIS PROJECT INCLUDES COMPLETE LANDSCAPING IMPROVEMENTS AS SHOWN ON THE DRAWINGS AND AS SPECIFIED HEREIN VERIFY QUESTIONS ON SCOPE OF WORK PRIOR TO SUBMITTING A BID.
2. CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS INCLUDING WATER, EQUIPMENT AND INCIDENTALS AS SHOWN, SPECIFIED AND REQUIRED TO PERFORM LANDSCAPING WORK. THE EXTENT OF THE LANDSCAPING WORK IS SHOWN ON THE DRAWINGS AND IN THE SCHEDULES. THE TYPES OF LANDSCAPING REQUIRED MAY INCLUDE THE FOLLOWING:
   A. AESTHETIC FINISH GRADING
   B. BOULDER PLACEMENT
   C. INSTALLATION OF TREES, SHRUBS, GROUNDCOVERS, AND ANY OTHER NURSERY STOCK
   D. INSTALLATION OF TURF AREAS
   E. DECOMPOSED GRANITE AND PRE-EMERGENT APPLICATIONS (2)
   F. MULCHES, AND ALL OTHER MATERIAL NECESSARY TO COMPLETE THE PLANTING JOB AS SPECIFIED
   G. MISCELLANEOUS LANDSCAPE MATERIALS AND IMPROVEMENTS
   H. FERTILIZERS AND SOIL AMENDMENTS
   I. MAINTENANCE WORK AS SPECIFIED UNTIL COMPLETION OF THE CONTRACT
   J. GUARANTEES
3. OBTAIN ALL PERMITS AND PAY REQUIRED FEES TO ANY GOVERNMENTAL AGENCY HAVING JURISDICTION OVER THE WORK. ARRANGE INSPECTIONS REQUIRED BY LOCAL AGENCIES AND ORDINANCES DURING THE COURSE OF CONSTRUCTION AS REQUIRED.
4. COORDINATE AND COOPERATE WITH OTHER CONTRACTORS WORKING ON THE SITE FOR SUCCESSFUL COMPLETION OF THE PROJECT.
5. BEFORE COMMENCING WORK ON THE SITE, BECOME THOROUGHLY ACQUAINTED WITH LAYOUT OF ALL UNDERGROUND UTILITIES AND STRUCTURES OVER THE ENTIRE SITE. ALL REQUISITE REPAIRS TO DAMAGE CAUSED BY WORK OF THIS SECTION SHALL BE AT THE CONTRACTOR'S EXPENSE.
6. THE IRRIGATION WORK CONSISTS OF INSTALLING A COMPLETE UNDERGROUND SPRINKLER, EMITTER, AND BUBBLER SYSTEM FOR ALL TURF AND LANDSCAPED AREAS AS SHOWN ON THE DRAWINGS AND AS HEREINAFTER SPECIFIED, INCLUDING THE FURNISHING OF ALL LABOR, EQUIPMENT, APPLIANCES, AND MATERIALS INCLUDING WATER AND IN PERFORMING ALL OPERATION IN CONNECTION WITH THE CONSTRUCTION OF THE IRRIGATION SYSTEM. WORK SHALL INCLUDE FURNISHING AND INSTALLING ALL PLASTIC AND COPPER PIPE AND FITTINGS, AUTOMATIC CONTROL VALVES, VALVE ACCESS BOXES, ELECTRIC COMPUTERIZED CENTRAL CONTROLLERS, ELECTRIC WIRE, TELEPHONE ACCESS LINE (IF REQUIRED), ETC., AS REQUIRED FOR A COMPLETE SYSTEM AS SHOWN ON THE DRAWINGS AND AS CALLED FOR IN THESE SPECIFICATIONS OR AS MAY BE REQUIRED FOR PROPER OPERATION OF THE SYSTEM. THE CONTRACTOR IS RESPONSIBLE FOR ALL COSTS OF WATER USED IN CONNECTION WITH THE INSTALLATION OF THE IRRIGATION SYSTEM.
7. UNLESS OTHERWISE SPECIFIED OR INDICATED ON THE DRAWINGS, THE CONSTRUCTION OF THE IRRIGATION SYSTEM SHALL INCLUDE THE FURNISHING, INSTALLING AND TESTING OF ALL MAINS, LATERALS, RISERS, AND FITTINGS, THE FURNISHING AND INSTALLING OF IRRIGATION HEADS, CONTROL VALVES, CONTROLLERS, LOW AND HIGH VOLTAGE ELECTRIC WIRE, TELEPHONE ACCESS LINE TO CENTRAL CONTROL UNIT (IF REQUIRED), POINT OF CONNECTION, CONTROLS, RESTORATION OF EXISTING IMPROVEMENTS, EXCAVATION AND BACKFILL, AND ALL OTHER WORK IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS AS REQUIRED FOR A COMPLETE SYSTEM.
8. WHENEVER ANY MATERIAL IS SPECIFIED BY NAME AND/OR NUMBER, SUCH SPECIFICATIONS SHALL BE DEEMED TO BE USED FOR THE PURPOSE OF FACILITATING A DESCRIPTION OF THE MATERIALS AND ESTABLISHING QUALITY, AND SHALL BE DEEMED AND CONSTRUED TO BE FOLLOWED BY THE WORDS "OR APPROVED EQUAL." NO SUBSTITUTIONS WILL BE PERMITTED WHICH HAVE NOT BEEN SUBMITTED FOR APPROVAL PRIOR TO BIDDING.
9. LANDSCAPE CONTRACTOR SHALL CALL FOR "BLUE STAKE" AS REQUIRED. EXERCISE EXTREME CAUTION IN ALL PLANTING OPERATIONS, AS THERE MAY BE UNDERGROUND ELECTRIC AND TELEPHONE CABLES, SEWER LINES AND WATER LINES THROUGHOUT THE ENTIRE AREA. CONTRACTOR SHALL STUDY AND BE FAMILIAR WITH THE LOCATION OF THESE OBSTRUCTIONS AND UNDERGROUND UTILITIES. PLACE PLANTINGS WHERE SHOWN ON THE PLANS. IF THERE ARE OBSTRUCTIONS OR UNDERGROUND UTILITIES, RELOCATE PLANTS CLEAR OF ANY INTERFERENCE. LANDSCAPE CONTRACTOR SHALL REPAIR ALL DAMAGES CAUSED BY THEM TO OBSTRUCTIONS AND UNDERGROUND UTILITIES AT NO EXPENSE TO THE OWNER.
10. MAINTAIN UNINTERRUPTED WATER SERVICE TO BUILDING DURING NORMAL WORKING HOURS. ARRANGE FOR TEMPORARY WATER SHUT-OFF WITH ARCHITECT/ENGINEER DURING INSTALLATION OF IRRIGATION SYSTEM, IF NECESSARY.
11. ALL WORK AND MATERIALS TO BE IN FULL ACCORDANCE WITH THE LATEST RULES AND REGULATIONS OF SAFETY ORDERS OF DIVISION OF INDUSTRIAL SAFETY; THE UNIFORM BUILDING CODE, M.A.G. SPECIFICATIONS AND OTHER APPLICABLE LAWS OR REGULATIONS, INCLUDING ALL CITY CODES. NOTHING IN THESE SPECIFICATIONS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES. SHOULD THE CONSTRUCTION DOCUMENTS, OR INSTRUCTION, BE AT VARIANCE WITH THE AFOREMENTIONED RULES AND REGULATIONS, NOTIFY LANDSCAPE ARCHITECT AND GET INSTRUCTIONS BEFORE PROCEEDING WITH THE WORK AFFECTED. IF LANDSCAPE ARCHITECT IS NOT NOTIFIED OF ANY VARIANCE IT SHALL BE UNDERSTOOD THAT THE CONTRACTOR ASSUMES ANY AND ALL RESPONSIBILITY FOR THE WORK DONE.
12. CLEAN UP SHALL BE MADE DAILY AS EACH PORTION OF THE WORK PROGRESSES. REFUSE AND EXCESS DIRT SHALL BE REMOVED FROM THE SITE, AND WALKS AND PAVING SHALL BE SWEPT OR WASHED DOWN DAILY. ANY DAMAGE SHALL BE REPAIRED TO ORIGINAL CONDITIONS AT CONTRACTOR'S EXPENSE. LEAVE WORK IN CLEAN CONDITION.
13. SUBMIT DETAILED OPERATION AND MAINTENANCE DATA FOR ALL EQUIPMENT AND ACCESSORIES PROVIDED UNDER THESE PLANS INCLUDING ASSEMBLY AND PART LISTS FOR EACH TYPE OF VALVE, EMITTER, ETC., FURNISHED TO THE ENGINEER/OWNER'S REPRESENTATIVE.

RVi
120 S. Ash Avenue
Tempe, Arizona 85281
Tel: 480.994.0994
www.rviplanning.com

WILLOW BEND SUBDIVISION
PRELIMINARY DEVELOPMENT PLANS
FORT LUPTON, COLORADO

PROJECT NO :	19001925
DATE :	09/08/2020
DRAWN:	MB/KWN
REVIEWED:	BG

REVISIONS
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COVER

L0.00

2ND SUBMITTAL

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CONCEPT PLANT SCHEDULE

CANOPY TREE - 2.5" Cal. B & B
Acer freemanii `Autumn Blaze` / Autumn Blaze Maple
Aesculus glabra / Ohio Buckeye
Betula nigra `Heritage` / Heritage River Birch
Populus deltoides / Plains Cottonwood

ORNAMENTAL TREE - 2.0" Cal. B & B
Acer ginnala / Amur Maple
Acer tataricum `GarAnn` / Hot Wings Tatarian Maple
Amelanchier alnifolia / Serviceberry
Populus tremuloides / Quaking Aspen

EVERGREEN TREE - 6-8' Height B & B
Picea pungens / Colorado Green Spruce
Picea pungens `Glauca` / Colorado Blue Spruce
Pinus edulis / Pinon Pine
Pinus longaeva / Bristlecone Pine
Pinus nigra / Austrian Black Pine
Pinus ponderosa / Ponderosa Pine

SHRUBS AND GROUND COVERS - 5 Gal. and 1 Gal. Cont.
Agastache cana / Double Bubblemint
Aquilegia x `McKana Hybrids` / McKana Hybrids Columbine
Aronia arbutifolia `Brilliantissima` / Chokeberry
Berberis t. `Atropurpurea` / Purple Leafed Barberry
Bouteloua gracilis / Blue Grama Grass
Calamagrostis x a. `Karl Foerster` / Karl Foerster Feather Reed Grass
Caragana arborescens / Siberian Peashrub
Caryopteris x clandonensis `Dark Knight` / Blue Mist Shrub
Centranthus ruber / Red Valerian
Cercocarpus montanus / Mountain Mohogany
Chrysothamnus nauseosus / Dwarf Rabbitbush
Delphinium x `Summer Skies` / Larkspur
Echinacea purpurea / Purple Coneflower
Euonymus alatus `Compactus` / Dwarf Burning Bush
Festuca glauca `Elijah Blue` / Blue Fescue
Gaillardia x grandiflora / Blanket Flower
Helictotrichon sempervirens / Blue Avena Grass
Heuchera s. `Splendens` / Red Coral Bells
Iberis sempervirens `Snowflake` / Snowflake Evergreen Candytuft
Iris sibirica / Caesar's Brother Siberian Iris
Juniperus horizontalis `Blue Chip` / Blue Chip Juniper
Juniperus horizontalis `Hughes` / Hughes Juniper
Juniperus sabina `Buffalo` / Buffalo Juniper
Leucanthemum x superbum `Alaska` / Alaska Shasta Daisy
Lupinus `Russell Hybrids` / Russell Hybrid Lupine
Mahonia aquifolium `Compacta` / Compact Oregon Grape Holly
Mahonia fremontii / Fremont's Mahonia
Mahonia repens / Creeping Oregon Grape Holly
Penstemon strictus / Rocky Mountain Penstemon
Perovskia atriplicifolia / Russian Sage
Pinus mugo `Mops` / Mops Mugo Pine
Pinus mugo `Slowmound` / Slowmound Mugo Pine
Potentilla f. `McKay's White` / McKay's White Cinquefoil
Potentilla fruticosa / Shrubby Conquefoil
Pulsatilla vulgaris / European Pasque Flower
Quercus gambelii / Gambel Oak
Ratibida columnifera / Prairie Coneflower
Rhus aromatica `Gro-Low` / Gro-Low Fragrant Sumac
Ribes alpinum `Green Mound` / Green Mound Alpine Currant
Rosa foetida bicolor / Austrian Copper Rose
Rudbeckia f. `Goldstrum` / Black Eyed Susan
Salix purpurea `Nana` / Dwarf Blue Arctic Willow
Salvia sylvestris / May Night Salvia
Sedum s. `Autumn Joy` / Autumn Joy Sedum
Spiraea j. `Anthony Waterer` / Anthony Waterer Spirea
Syringa patula `Miss Kim` / Miss Kim Lilac
Viburnum lantana `Mohican` / Mohican Viburnum

NATIVE SEED MIX
TBD

TURF
Festuca x `Bolero Plus` / Bolero Fescue

WALL AND FENCE LEGEND

- 6' HEIGHT SOLID CEDAR PERIMETER FENCE
- 4' HEIGHT 3-RAIL FENCE
- COLUMN

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CONCEPTUAL LANDSCAPE PLAN

L1.00

2ND SUBMITTAL

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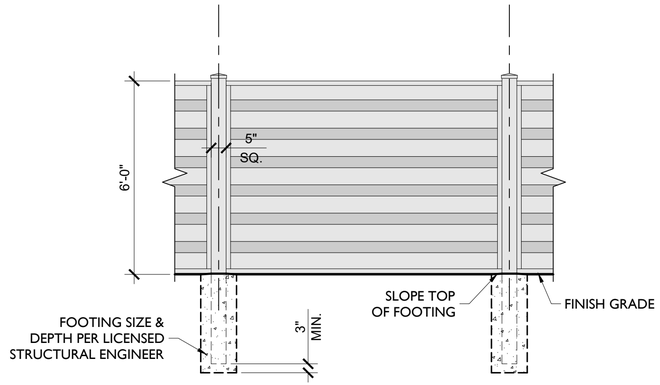
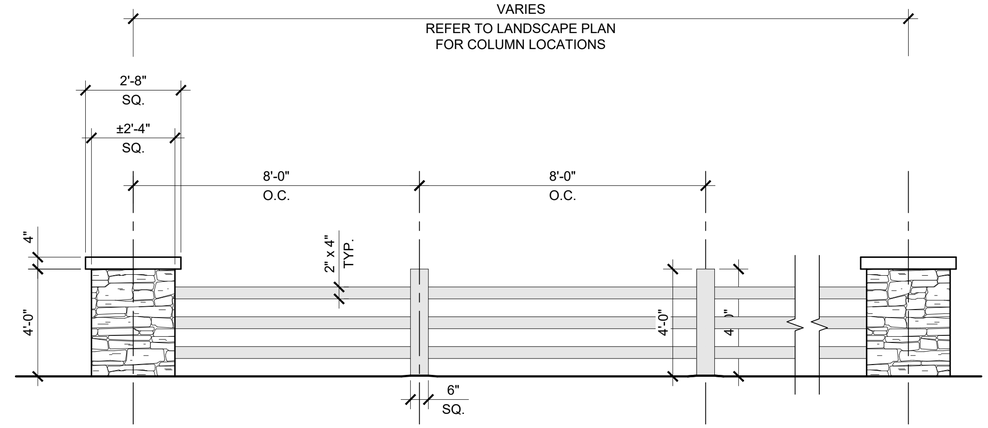
NOTE:
- PICKETS FACING ROAD SIDE ARE VERTICAL
- PICKETS FACING HOME SIDE ARE HORIZONTAL



1 6' HT CEDAR PRIVACY FENCE

SCALE: 1/2" = 1'-0"



2 4' HT SPLIT RAIL FENCE

SCALE: 1/2" = 1'-0"

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FENCE DETAILS

L2.00

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DRAINAGE REPORT

for

WILLOW BEND

Prepared for

SUN COMMUNITIES

TOM O'BRANOVIC

27777 FRANKLIN ROAD, SUITE 200

SOUTHFIELD, MI 48034

248.208.2610

Submitted by: Atwell, LLC

143 UNION BLVD, SUITE 700

LAKEWOOD, CO 80228

303.462.1100

PROJECT NO. 19001956

SUBMITTAL DATE: 07/20/2020

This report and plan for the drainage design of Willow Bend Development was prepared by me (or under my supervision) in accordance with the provisions of City of Fort Lupton Drainage Design and Technical Criteria for the owners thereof. I understand that City of Fort Lupton do not, and will not, assume liability for drainage facilities designed by others.

_____

By: Richard J. Weed, PE
Licensed Professional Engineer for and on behalf of Atwell, LLC
State of Colorado
No. 22076

Sun Communities, Inc hereby certifies that the drainage facilities for the Willow Bend site shall be constructed according to the design presented in this report. I understand that the City of Fort Lupton do not, and will not, assume liability for the drainage facilities designed and/or certified by my engineer and that the City of Larkspur reviews plans pursuant to Colorado Revised Statutes, Title 30, Article 28; but cannot, on behalf of Sun Communities, Inc guarantee that the final drainage review will absolve Sun Communities, LLC and/or their successors and/or assigns of future liability for improper design. I further understand the approval of the final plat does not imply approval of my engineer's drainage design.

_____

Sun Communities, Inc
Authorized Signature

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APPENDICES

A. VICINITY MAP
B. SOILS MAP
C. FEMA FLOODPLAIN MAP
D. NOAA RAINFALL DEPTH
E. URBAN DRAINAGE TABLES 6-3, 6-4, & 6-5
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G. DETENTION POND DESIGN
H. STORM CAD ANALYSIS
I. STREET CAPACITY CALCULATIONS
J. INLET CAPACITY CALCULATIONS
K. STREAM STAT REPORT
L. DRAINAGE PLAN
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PROJECT LOCATION AND DESCRIPTION

The Willow Bend project (site) is a tract of land located in the South Half of Section 33, Township 2 North, Range 66 West of the 6th Principal Meridian, Fort Lupton, County of Weld, State of Colorado. The site is bounded by the Fulton Ditch to the East and South, 14th Street to the North, and the Future Northrup Ave to the West.

To the South, between Fulton Ditch and 9th Street is another portion of the Cottonwood Greens P.U.D., which has a development application in with the City currently. To the North, across 14th Street, is undeveloped land. The Trees Subdivision is located to the Southwest of the property.

The proposed site is approximately 127.5 acres and will consist of 449 manufactured housing units with amenities, open space and water quality treatment ponds. The site is part of the Cottonwood Greens P.U.D., recorded April 13th, 2006, and is currently undeveloped land used for farming, and several gas facilities that are incorporated in the concept plan.

The site's topography generally native grassed and slopes from the southeast to northwest with the slopes ranging between 3 percent and 9 percent. A soil report for the site is included from the Web Soil Survey from the National Resource Conservation Service (NRCS) website. The soil report indicates that site is made up of various sandy loam soils. The majority of the Site consists of Hydrologic Soil Group A, approximately 70.2 percent, while the rest consists of Hydrologic Soil Group B.

The Fulton Ditch, an irrigation ditch adjacent to Fulton Ranch, outlines the southern and eastern boundary of the proposed development location and flows southwest-to-northeast, ending at the nearby South Platte River. Golden's Pond, an existing regional detention pond for the 14th Street Basin, is located 1 mile to the west on the south side of 14th Street.

Historic Drainage Basin

Per the "Storm Drainage Utility Plan" adopted by the City of Fort Lupton in March 2015, the site is part of the 14th Street Basin, bounded by County Road 29 to the West, County Road 31 to the East, County Road 16 to the North, and Colorado highway 52 to the South. Historic flow direction for the 14th Street Basin is West-Northwest, with the South Platte River as the ultimate outfall. Approximately half of the 14th Street Basin is undeveloped but is designated for residential development.

The project area is not within a FEMA regulated floodplain as shown on FEMA Map No. 08123C2110E. As illustrated, the project site designated as Zone X - determined to be outside of the FEMA 100 and 500-year floodplains.

Historic flow paths and patterns will be generally maintained, and no irrigation facilities including the Fulton Ditch, will not be impacted by the development of this site.

For the development area, the existing topography slopes generally southeast to northwest and is bounded by the Fulton Ditch to the South and East, 14th Street to the North, and future Northrup Avenue to the West. Runoff flows along 14th Street is currently collected in a roadside ditch and travels west to Golden's Pond (as described in "Storm Drainage Utility Plan") and then on to the South Platte River.

DRAINAGE BASINS AND SUB-BASINS

MAJOR DRAINAGE BASINS

The Site is located west of East Plum Creek, which is a Zone AE FEMA floodplain. East Plum Creek has a tributary drainage area of 61.6 square miles at a point where it crosses I-25 approximately one mile south of the site. At that point, the 100-year peak discharge is 14,800 cubic feet per second. The drainage area begins in a forested area in Teller County near Saylor Park and the Rampart Range. Carpenter Creek joins in just south of Larkspur. Upstream of the Sky View Lane interchange (Section DR on the Flood Insurance Rate Map), East Plum Creek has a base flood elevation of 6553.5 which rises to about 6569 at the southern limit of the property. The waterway is a major drainageway for the County, flowing through the Town of Castle Rock where it is accompanied by a recreational trail. The proposed development will not encroach on the existing floodplain.

Per conversations with Fort Lupton, it was agreed upon that detention will not be provided on site and that water quality treatment would only be required on the site. Detention would be provided by the downstream Golden's Pond. As such, on-site runoff will be treated for water quality and released at the rate specified by the City of Fort Lupton.

Furthermore, assuming our sub-basin is fully developed for the purposes of drainage calculations ensures that future development will not create drainage problems downstream of the Cottonwood Greens Subdivision development.

The drainage for the Site is divided between three major basins:

- Onsite Developed Drainage - Basin A
- Offsite Drainage –Basin OS

Basin A

Basin A is 110.81 acres and consists of the entire site. It includes the developed residential lots, roads, amenity areas, and the undeveloped off-site area to the south. Runoff generally travels southeast to northwest to the proposed detention pond located in the northwest portion of the site. The detention pond was sized using the FAA method per the City of Fort Lupton "historic" site release rates for Soil Type A. The Basin has an overall imperviousness of 44%. The 5-year historic release rate is 7.76 cfs. The pond size is estimated to be 22.7 ac-ft. Basin A has been subdivided into 56 sub-basins A1.1 through A5.15.

Basin OS

Basin OS is the offsite basin located south of the property boundary. Basin OS is 15.63 acres and runoff from this basin currently sheet flows north on-site. The offsite drainage will continue to flow north in it's historic state and be routed through the site. Basin OS has been subdivided into 5 sub-basin OS-A through OS-E.

STORM MODELING

Rational Method calculations following the Mile High Flood District and City of Fort Lupton Drainage Criteria Standards are presented in Appendices C and D.

The proposed storm sewers will be modeled using StormCAD for both the 5-year and 100-year peak hour events to determine the hydraulic grade lines for the final submittal and will be presented in the Appendix.

DRAINAGE DESIGN CRITERIA

The proposed drainage is governed by the Mile High Flood District's (MHFD) Urban Storm Drainage Criteria Manual, Volumes 1-3 and the City of Fort Lupton Drainage and Technical Criteria Manual (DCSDTCM). The project uses the Intensity-Duration-Frequency (IDF) curves calibrated to the 1-hour point rainfall values for City of Fort Lupton listed in Table 502. Storm sewers are sized for at least the 5-year peak storm event and overland flow routes are sized for the 100-year peak storm. Detention areas are sized using the FAA method for the historic 5-year release rate specified by the UDFCD. Storm sewers, inlet capacity and outlet control design are calculated using UDFCD spreadsheets.

WATER QUALITY ENHANCEMENT BEST MANAGEMENT PRACTICES

Stormwater runoff from the developed site will be treated for water quality via the proposed Water Quality Capture Volume within Pond A. Treatment will occur due to allocated water quality storage volume sized per the MHFD Manual and the City of Fort Lupton Manual. Sediment forebays, trickle channels, micropools and water quality plates will be utilized for water quality enhancement. All structures and features will be designed using the MHFD Manual and the City of Fort Lupton Manual.

FLOODPLAIN MODIFICATIONS

There are no floodplains located on the Site and thus will not require any floodplain modification.

CONCLUSIONS

The proposed Willow Bend Project will be designed to meet the Mile high Flood District Standards and the City of Fort Lupton Drainage Criteria Standards. Facilities will be sized to handle the expected developed condition runoff from both the site and off-site tributary areas. No variances from the drainage criteria are requested.

Drainage is an integral part of the site design. Proposed paved roadways and a storm sewer conveyance system will provide for safe passage of the 100-year runoff and the detention area will provide highly visible green space adjacent. All developed runoff will be treated in the detention ponds prior to release to the Golden's Pond regional detention facility.

REFERENCES

1. "City of Fort Lupton Storm Drainage Design & Technical Criteria Manual", City of Fort Lupton, Colorado.

2. "Urban Storm Drainage Criteria Manuals Volumes 1-3", Urban Drainage and Flood Control District, January 2016.

APPENDIX A – Historic Drainage Maps

Sub-Basin - Design Basin

Project Location

Major Basin - 14th Street Basin

14TH STREET

US HIGHWAY NO. 85

UNION PACIFIC RAILROAD

WELD COUNTY RD 14 1/2

COUNTY RD 31

9TH STREET

COUNTY RD 29 1/2

COLORADO STATE HIGHWAY 52

1ST STREET

SHORTLINE DITCH

CEMETERY ROAD

WELD COUNTY RD 12

MATCHLINE SHEET 2

LEGEND

- STORM SEWER LINE
- STORM MANHOLE
- STORM INLET
- CITY LIMITS
- RAILROAD – UNION PACIFIC
- DRAINAGE BASIN

400 200 0 400 800 1200

SCALE IN FEET

J&T Consulting, Inc.

305 Denver Avenue • Suite D
Fort Lupton, CO 80621
Ph: 970-857-3925 Fax: 970-857-0224
www.J4consulting.com

South Utility Extensions

Storm Sewer System Map

City of Ft. Lupton

REVISIONS				
No.	Date	By	Chk	Description

Job #	10108
Date	6/14/10
Drawn By:	TPY/WSS
Designed By:	TPY
Checked By:	JCY
File:	JT-storm
Scale	1" = 400'
Sheet:	1

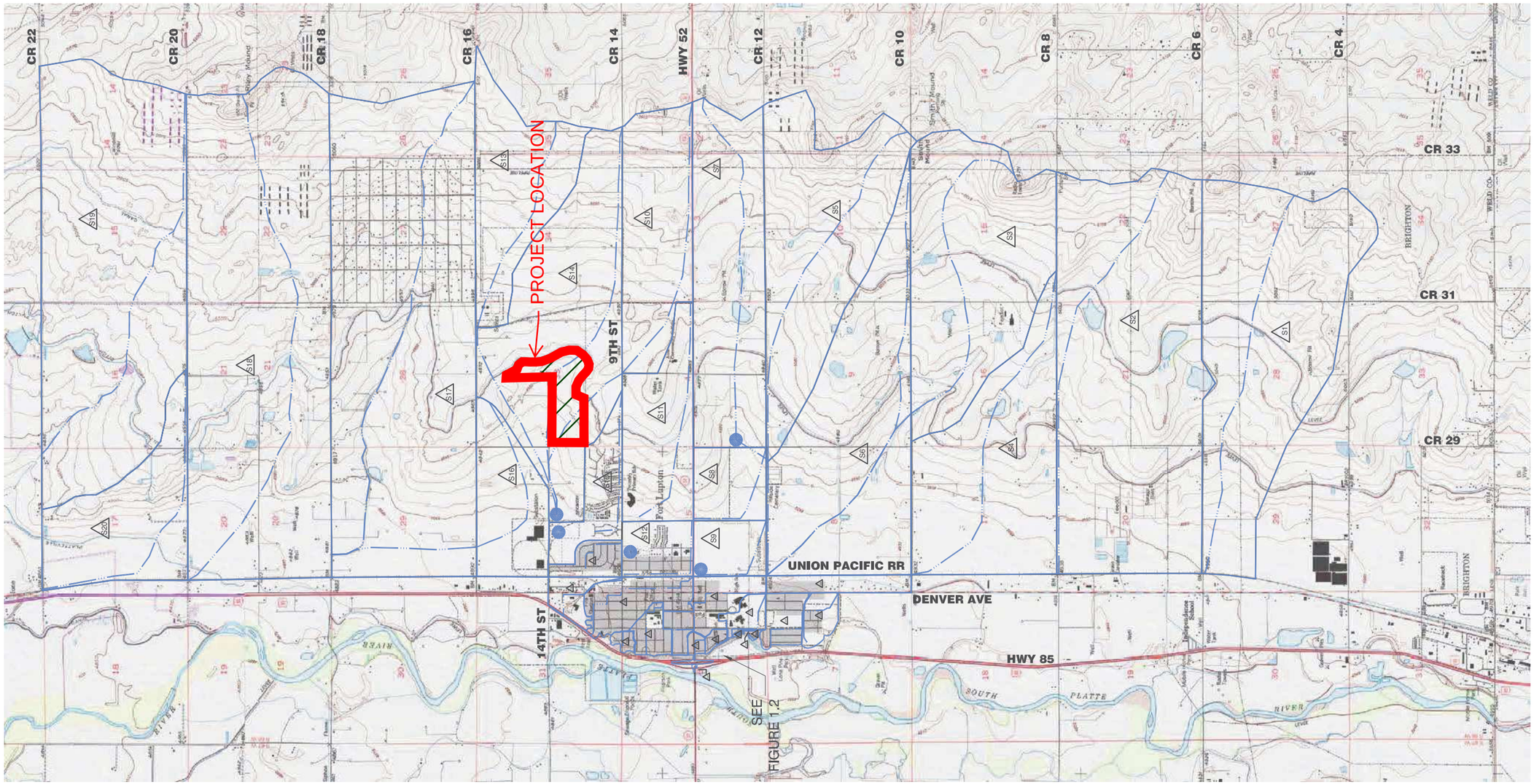
2000 1000 0 2000 4000 6000

SCALE IN FEET

Basin ID	Basin Area (ac)	5 Year Historic Flow	2 Year Developed Flow	5 Year Developed Flow	10 Year Developed Flow	50 Year Developed Flow	100 Year Developed Flow
1	1303.36	547.76	1519.50	1545.54	1556.06	1572.14	1577.02
2	1741.55	734.06	2036.29	2071.20	2085.29	2106.85	2113.38
3	1004.46	595.03	982.81	1012.69	1025.54	1046.01	1052.37
4	858.21	406.14	1642.54	1653.73	1658.20	1665.02	1667.09
5	907.16	380.78	751.49	772.88	781.92	796.15	800.54
6	1081.80	442.02	1526.16	1542.64	1549.26	1559.35	1562.40
7	731.31	352.15	1424.20	1433.90	1437.78	1443.69	1445.48
8	159.81	114.98	318.95	324.41	326.62	330.00	331.02
9	122.28	83.00	411.39	412.39	412.80	413.44	413.63
10	507.49	248.67	925.47	925.47	929.35	939.21	941.77
11	367.74	252.36	416.82	429.49	434.94	443.62	446.32
12	119.33	63.01	237.20	239.15	239.93	241.12	241.48
13	488.97	281.08	1209.67	1216.36	1219.04	1223.14	1224.38
14	1016.07	456.36	1237.39	1237.39	1248.08	1275.52	1282.77
15	170.75	162.12	386.14	395.11	398.80	404.53	406.28
16	307.97	234.82	1163.86	1166.71	1167.87	1169.67	1170.21
17	2103.33	734.09	1748.46	1789.07	1805.79	1831.72	1839.67
18	2137.04	767.96	940.77	962.62	972.29	987.94	992.87
19	1730.16	823.06	1008.26	1031.68	1042.04	1058.82	1064.10
20	503.84	220.00	269.50	275.76	278.53	283.02	284.43

LEGEND:

- DEVELOPED BASIN DELINEATION
- DEVELOPED BASIN TRAVEL PATH
- BASIN DESIGNATION
- EXISTING/PROPOSED DETENTION BASIN



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Fort Lupton, CO 80621
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www.j-tconsulting.com

Storm Drainage Study Area East Basins

Figure 1.1

City of Fort Lupton

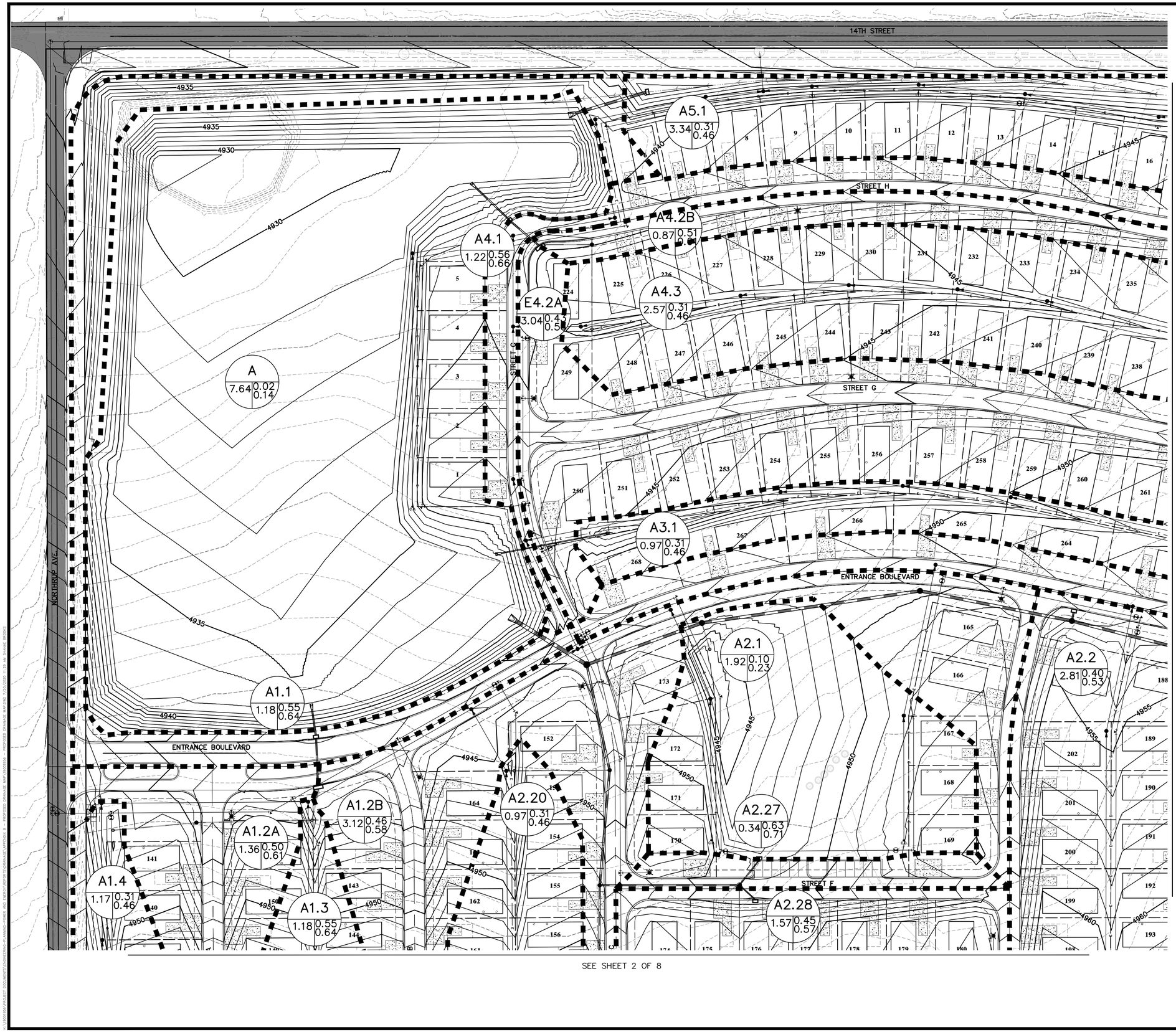
REVISIONS

No	Date	By	Chk	Description

Job #	12106
Date	10/20/14
Drawn By	WSS
Designed By	TPY
Checked By	JCY
File	JT-Fort Lupton drain
Scale	1" = 2000'
Sheet:	1 Of: 1

P:\12106 Fort Lupton Utility Plan Update\Drawings\Plan Sheets\Drainage\JT-Fort Lupton-Drainage-Proposed.dwg, Developed, 10/23/2014 9:44:52 AM

APPENDIX B – Proposed Drainage Map



LEGEND

- PROPERTY BOUNDARY
- PROPOSED CURB & GUTTER
- EXISTING CURB & GUTTER
- PROPOSED EASEMENT
- EXISTING EASEMENT

A = MAJOR BASIN DESIGNATION
B = AREA IN ACRES
C = 5 YR RUNOFF COEFFICIENT
D = 100 YR RUNOFF COEFFICIENT

- DESIGN POINT
- DRAINAGE BASIN BOUNDARY
- MAJOR DRAINAGE BASIN BOUNDARY
- EXISTING STORM SEWER
- PROPOSED STORM SEWER INLET
- PROPOSED STORM SEWER
- PROPOSED UTILITY EASEMENT
- PROPOSED GRADE CONTOUR
- EXISTING CONTOUR
- FLOW DIRECTION
- PROPOSED TRICKLE PAN
- PROPOSED 6' CROSSPAN

(IN FEET)
1 inch = 50 ft.

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PROPOSED DRAINAGE MAP

DATE 11/11/2019

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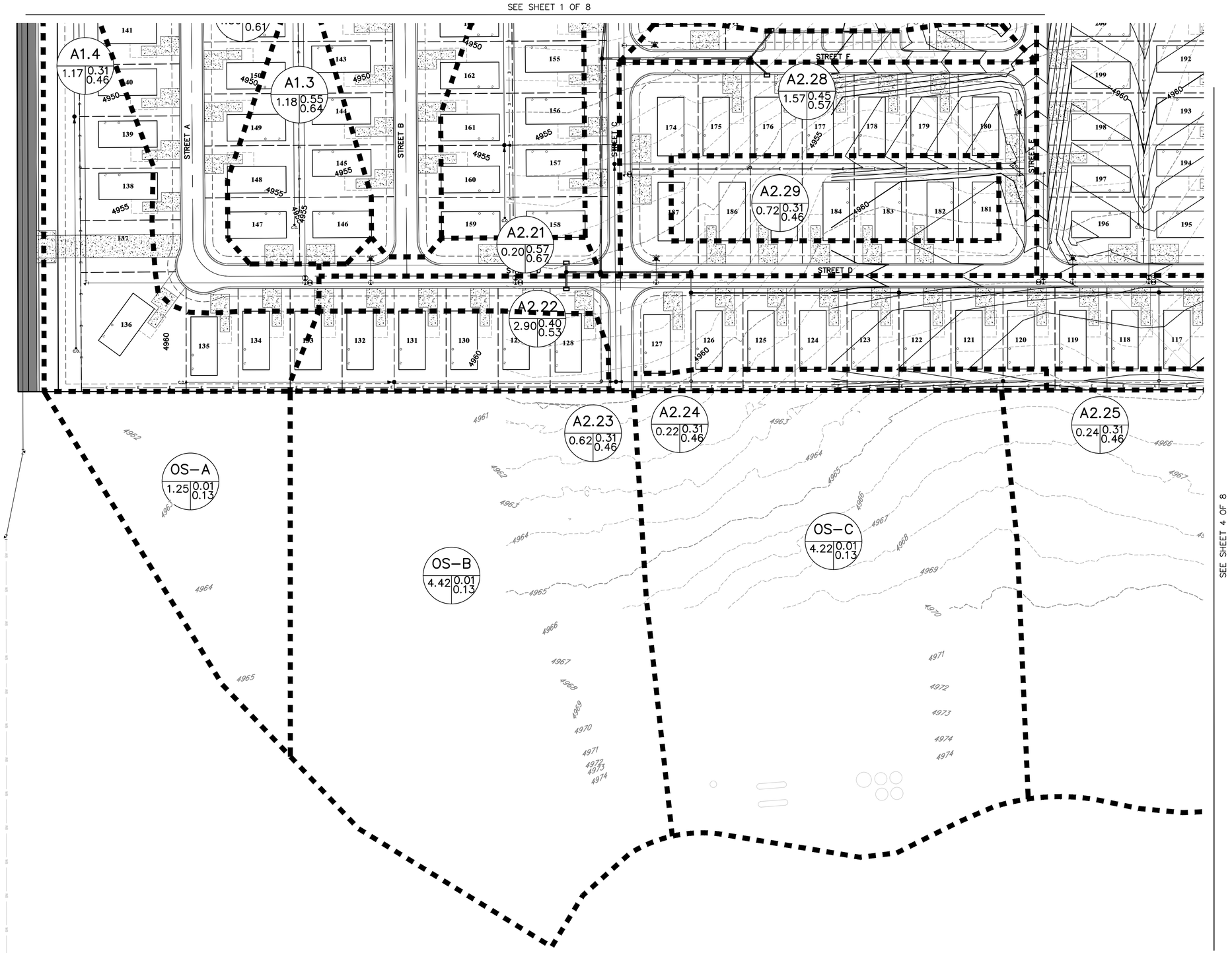
JOB 19001956
SHEET NO. 1 OF 8

CAD FILE: 19001956 – PROPOSED DRAINAGE MAP.DWG



LEGEND

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SHEET NO. 2 OF 8

CAD FILE: 19001956 – PROPOSED DRAINAGE MAP.DWG

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(IN FEET)
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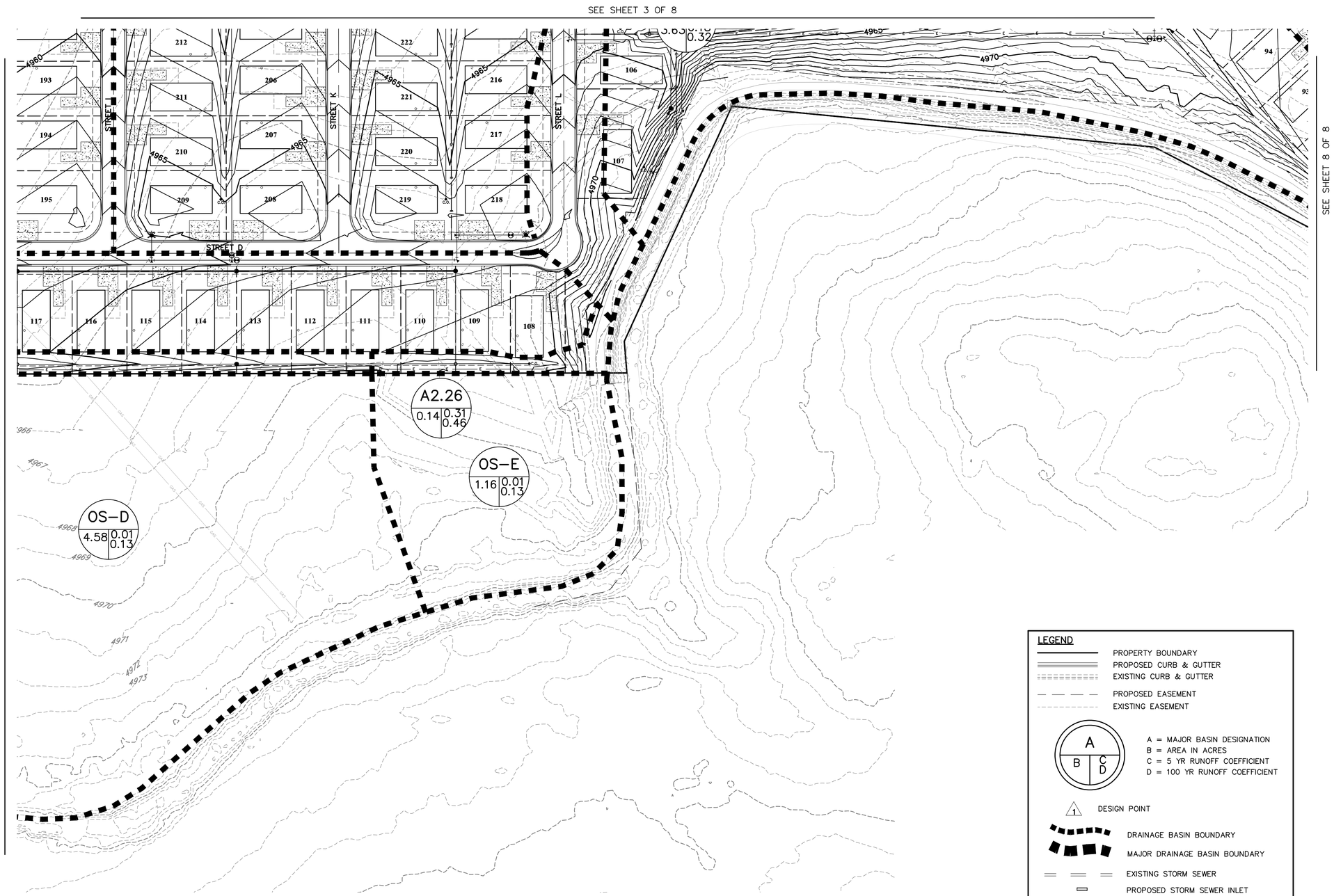
CAD FILE: 19001956 – PROPOSED DRAINAGE MAP.DWG



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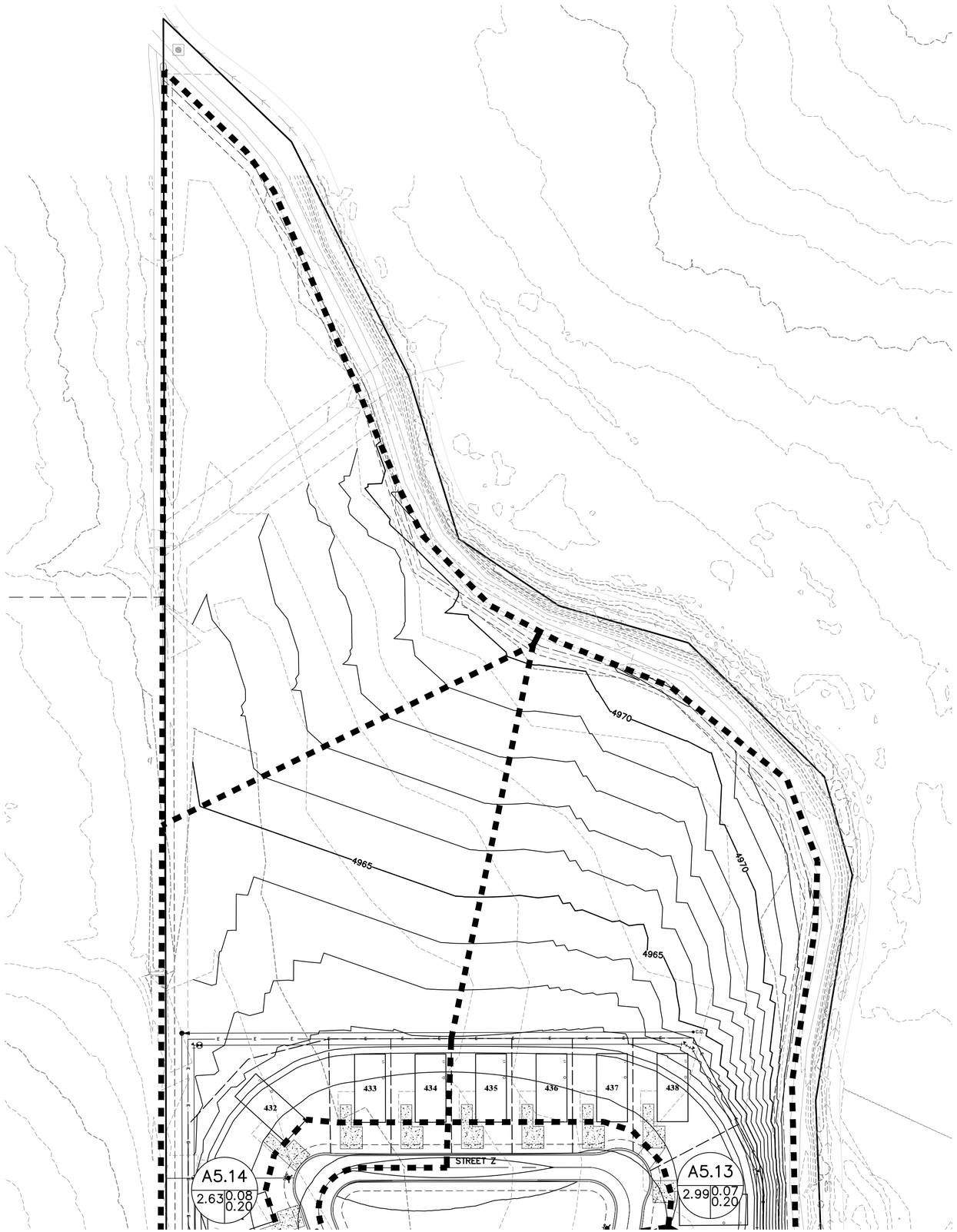

SEE SHEET 6 OF 8

LEGEND

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- PROPOSED CURB & GUTTER
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PROPOSED DRAINAGE MAP

DATE 11/11/2019

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CAD FILE: 19001956 – PROPOSED DRAINAGE MAP.DWG

SEE SHEET 5 OF 8

SEE SHEET 7 OF 8

LEGEND

- PROPERTY BOUNDARY
- PROPOSED CURB & GUTTER
- EXISTING CURB & GUTTER
- PROPOSED EASEMENT
- EXISTING EASEMENT
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PROPOSED DRAINAGE MAP

DATE 11/11/2019

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PLANS UNDER REVIEW NOT FOR CONSTRUCTION

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JOB 19001956
SHEET NO. 6 OF 8

CAD FILE: 19001956 – PROPOSED DRAINAGE MAP.DWG

LEGEND

- PROPERTY BOUNDARY
- PROPOSED CURB & GUTTER
- EXISTING CURB & GUTTER
- PROPOSED EASEMENT
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SHEET NO. 7 OF 8

CAD FILE: 19001956 - PROPOSED DRAINAGE MAP.DWG

SEE SHEET 7 OF 8

SEE SHEET 4 OF 8

LEGEND

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- PROPOSED CURB & GUTTER
- EXISTING CURB & GUTTER
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CAD FILE: 19001956 – PROPOSED DRAINAGE MAP.DWG

APPENDIX C – Hydrologic Computations

COMPOSITE C CALCULATION

PROJECT MANE:
PROJECT NO:
LOCATION:

*Calculations on this sheet come from UDFCD: Urban Storm Drainage Criteria Manual (V.1) (2017)

NRCS Hydrologic Soil Group: A

Historic flow analysis				2% Impervious			
2 yr =	0.01	5 yr =	0.01	10 yr =	0.01	100 yr =	0.13
0.25 acres or less				45% Impervious			
2 yr =	0.30	5 yr =	0.31	10 yr =	0.33	100 yr =	0.46
Paved				100% Impervious			
2 yr =	0.84	5 yr =	0.86	10 yr =	0.87	100 yr =	0.89
Schools				55% Impervious			
2 yr =	0.39	5 yr =	0.40	10 yr =	0.42	100 yr =	0.54
Lawns, sandy soil				2% Impervious			
2 yr =	0.01	5 yr =	0.01	10 yr =	0.01	100 yr =	0.13

EXISTING DRAINAGE AREA

BASIN ID	A_{total} (ft²)	Historic flow analysis (ft²)	0.25 acres or less (ft²)	Paved (ft²)	Schools (ft²)	Lawns, sandy soil (ft²)	A_{total} (Ac)	COMPOSITE C 2 yr	5 yr	10 yr	100 yr	Percent Impervious
OS-A	54286	54286					1.25	0.01	0.01	0.01	0.13	2%
OS-B	192591	192591					4.42	0.01	0.01	0.01	0.13	2%
OS-C	183937	183937					4.22	0.01	0.01	0.01	0.13	2%
OS-D	199603	199603					4.58	0.01	0.01	0.01	0.13	2%
OS-E	50567	50567					1.16	0.01	0.01	0.01	0.13	2%
Subtotals:	680,984	680,984	0	0	0	0						2%
						Drainage Area=	15.63					

COMPOSITE C CALCULATION

PROJECT MANE:
PROJECT NO:
LOCATION:

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NRCS Hydrologic Soil Group: A

Historic flow analysis				2% Impervious			
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2 yr =	0.84	5 yr =	0.86	10 yr =	0.87	100 yr =	0.89
Schools				55% Impervious			
2 yr =	0.39	5 yr =	0.40	10 yr =	0.42	100 yr =	0.54
Lawns, sandy soil				2% Impervious			
2 yr =	0.01	5 yr =	0.01	10 yr =	0.01	100 yr =	0.13

PROPOSED DRAINAGE AREA

BASIN ID	A_{total} (ft²)	Historic flow analysis (ft²)	0.25 acres or less (ft²)	Paved (ft²)	Schools (ft²)	Lawns, sandy soil (ft²)	A_{total} (Ac)	COMPOSITE C 2 yr	5 yr	10 yr	100 yr	Percent Impervious
A	332968		6694			326274	7.64	0.02	0.02	0.02	0.14	3%
A1.1	51307		19826	25493		5988	1.18	0.53	0.55	0.56	0.64	67%
A1.2A	59140		39049	20091			1.36	0.48	0.50	0.51	0.61	64%
A1.2B	135854		98192	37662			3.12	0.45	0.46	0.48	0.58	60%
A1.3	30262		30262				0.69	0.30	0.31	0.33	0.46	45%
A1.4	51115		51115				1.17	0.30	0.31	0.33	0.46	45%
A2.20	42052		42052				0.97	0.30	0.31	0.33	0.46	45%
A2.27	14788		6159	8629			0.34	0.62	0.63	0.65	0.71	77%
A2.28	68480		51280	17200			1.57	0.44	0.45	0.47	0.57	59%
A2.29	31189		31189				0.72	0.30	0.31	0.33	0.46	45%
A2.21	8812		4569	4243			0.20	0.56	0.57	0.59	0.67	71%
A2.22	126428		104667	21761			2.90	0.39	0.40	0.42	0.53	54%
A2.23	26838		26838				0.62	0.30	0.31	0.33	0.46	45%
A2.24	9510		9510				0.22	0.30	0.31	0.33	0.46	45%
A2.25	10481		10481				0.24	0.30	0.31	0.33	0.46	45%
A2.26	5987		5987				0.14	0.30	0.31	0.33	0.46	45%
A2.1	83806		25252			58554	1.92	0.10	0.10	0.11	0.23	15%
A2.2	122615		102384	20231			2.81	0.39	0.40	0.42	0.53	54%
A2.3	149072		124584	24488			3.42	0.39	0.40	0.42	0.53	54%
A2.4	75042		44472	24980		5590	1.72	0.46	0.47	0.49	0.58	60%
A2.5	158082		91301			66781	3.63	0.18	0.18	0.19	0.32	27%
A2.6	154867			15557	139310		3.56	0.44	0.45	0.47	0.58	60%
A2.7	78371		59379	18992			1.80	0.43	0.44	0.46	0.56	58%
A2.8	128951		108549	20402			2.96	0.39	0.40	0.42	0.53	54%
A2.9	170308		142474	27834			3.91	0.39	0.40	0.42	0.53	54%
A2.10	87711		11244	14467		62000	2.01	0.18	0.19	0.19	0.30	24%
A2.11A	135222		112345	22877			3.10	0.39	0.40	0.42	0.53	54%
A2.11B	71617		48015	23602			1.64	0.48	0.49	0.51	0.60	63%
A2.13	50517		50517				1.16	0.30	0.31	0.33	0.46	45%
A2.14	58045		58045				1.33	0.30	0.31	0.33	0.46	45%

COMPOSITE C CALCULATION

PROJECT MANE:
PROJECT NO:
LOCATION:

*Calculations on this sheet come from UDFCD: Urban Storm Drainage Criteria Manual (V.1) (2017)

NRCS Hydrologic Soil Group: A

Historic flow analysis				2% Impervious			
2 yr =	0.01	5 yr =	0.01	10 yr =	0.01	100 yr =	0.13
0.25 acres or less				45% Impervious			
2 yr =	0.30	5 yr =	0.31	10 yr =	0.33	100 yr =	0.46
Paved				100% Impervious			
2 yr =	0.84	5 yr =	0.86	10 yr =	0.87	100 yr =	0.89
Schools				55% Impervious			
2 yr =	0.39	5 yr =	0.40	10 yr =	0.42	100 yr =	0.54
Lawns, sandy soil				2% Impervious			
2 yr =	0.01	5 yr =	0.01	10 yr =	0.01	100 yr =	0.13

PROPOSED DRAINAGE AREA (CONTINUED)

BASIN	A_{total}	Historic flow analysis	0.25 acres or less	Paved	Schools	Lawns, sandy soil	A_{total}	COMPOSITE C				Percent
ID	(ft²)	(ft²)	(ft²)	(ft²)	(ft²)	(ft²)	(Ac)	2 yr	5 yr	10 yr	100 yr	Impervious
A2.15	4628			4628			0.11	0.84	0.86	0.87	0.89	100%
A2.16	50976		34401	16575			1.17	0.48	0.49	0.51	0.60	63%
A2.17	52807		52807				1.21	0.30	0.31	0.33	0.46	45%
A2.18	86121		86121				1.98	0.30	0.31	0.33	0.46	45%
A2.19	138476		123636	14840			3.18	0.36	0.37	0.39	0.51	51%
A2.12	84370		84370				1.94	0.30	0.31	0.33	0.46	45%
A3.1	42377		42377				0.97	0.30	0.31	0.33	0.46	45%
A4.1	53072		28994	24078			1.22	0.54	0.56	0.57	0.66	70%
A4.2A	132544		102673	29871			3.04	0.42	0.43	0.45	0.56	57%
A4.2B	37988		24313	13675			0.87	0.49	0.51	0.52	0.61	65%
A4.3	112062		112062				2.57	0.30	0.31	0.33	0.46	45%
A5.1	145464		145464				3.34	0.30	0.31	0.33	0.46	45%
A5.2	16067		9950	6117			0.37	0.51	0.52	0.54	0.62	66%
A5.3	111691		84355	27336			2.56	0.43	0.44	0.46	0.57	58%
A5.5	79313		51489	27824			1.82	0.49	0.50	0.52	0.61	64%
A5.6	82397		66740	15657			1.89	0.40	0.41	0.43	0.54	55%
A5.7	82376		67628	14748			1.89	0.40	0.41	0.43	0.54	55%
A5.8	131974		104400	27574			3.03	0.41	0.42	0.44	0.55	56%
A5.4	206324		143847			62477	4.74	0.21	0.22	0.23	0.36	32%
A5.11	36079		22234	13845			0.83	0.51	0.52	0.54	0.63	66%
A5.12	59988		46027			13961	1.38	0.23	0.24	0.26	0.38	35%
A5.9	80012		21062	27046		31904	1.84	0.37	0.38	0.38	0.47	46%
A5.10	120350		48560			71790	2.76	0.13	0.13	0.14	0.26	19%
A5.14	114582		25030			89552	2.63	0.07	0.08	0.08	0.20	11%
A5.13	130185		27290			102895	2.99	0.07	0.07	0.08	0.20	11%
A5.15	105205		26296			78909	2.42	0.08	0.08	0.09	0.21	13%
Subtotals:	#######	0	3,098,557	612,323	139,310	976,675						44%

Drainage Area= 110.81

TIME OF CONCENTRATION *(Rational Method)*

PROJECT NAME:
PROJECT NO:
LOCATION:

*Calculations on this sheet come from UDFCD: Urban Storm Drainage Criteria Manual (V.1) (2017)

SUB-BASIN DATA				INITIAL TIME (t_i)			TRAVEL TIME (t_t)				t_c CHECK (URBANIZED BASINS)		FINAL t_c	REMARKS
BASIN ID	DESIGN POINT	C_5	AREA	LENGTH (ft)	SLOPE (ft/ft)	t_i (min)	LENGTH (ft)	SLOPE (ft/ft)	C_v	t_t (min)	TRAVEL LENGTH (ft)	$T_{c\ Reg}$ (min)	(min)	
OS-A	OS-A	0.01	1.25	300	0.010	34.09							34.09	
OS-B	OS-B	0.01	4.42	440	0.030	28.73							28.73	
OS-C	OS-C	0.01	4.22	410	0.030	27.73							27.73	
OS-D	OS-D	0.01	4.58	375	0.025	28.17							28.17	
OS-E	OS-E	0.01	1.16	220	0.050	17.16							17.16	

Designer: JMP Date: 7/20/2020, 12:09 PM

TIME OF CONCENTRATION *(Rational Method)*

PROJECT NAME:
PROJECT NO:
LOCATION:

*Calculations on this sheet come from UDFCD: Urban Storm Drainage Criteria Manual (V.1) (2017)

SUB-BASIN DATA				INITIAL TIME (t_i)			TRAVEL TIME (t_t)				t_c CHECK (URBANIZED BASINS)		FINAL t_c	REMARKS
BASIN ID	DESIGN POINT	C_5	AREA	LENGTH (ft)	SLOPE (ft/ft)	t_i (min)	LENGTH (ft)	SLOPE (ft/ft)	C_v	t_t (min)	TRAVEL LENGTH (ft)	$T_{c\ Reg}$ (min)	(min)	
A	A	0.02	7.64	18	0.250	2.87	675	0.010	20	5.63	675.00	37.48	8.50	
A1.1	A1.1	0.55	1.18	28	0.020	4.19	1025	0.010	20	8.54	1025.00	23.83	12.74	
A1.2A	A1.2A	0.50	1.36	22	0.200	1.90	580	0.010	20	4.83	580.00	20.57	6.73	
A1.2B	A1.2B	0.46	3.12	24	0.020	4.49	1112	0.010	20	9.27	1112.00	26.39	13.75	
A1.3	A1.3	0.31	0.69	161	0.045	11.02	132	0.050	15	0.66	132.00	18.99	11.67	
A1.4	A1.4	0.31	1.17	97	0.040	8.89	528	0.030	15	3.39	528.00	21.67	12.28	
A2.20	A2.20	0.31	0.97	196	0.045	12.16	146	0.045	15	0.76	146.00	19.10	12.92	
A2.27	A2.27	0.63	0.34	31	0.020	3.75	229	0.010	20	1.91	229.00	14.82	5.66	
A2.28	A2.28	0.45	1.57	25	0.020	4.68	702	0.010	20	5.85	702.00	22.79	10.53	
A2.29	A2.29	0.31	0.72	86	0.018	10.90	220	0.020	15	1.73	220.00	20.04	12.62	
A2.21	A2.21	0.57	0.20	20	0.020	3.37	240	0.010	20	2.00	240.00	15.95	5.37	
A2.22	A2.22	0.40	2.90	76	0.020	8.71	1187	0.010	20	9.89	1187.00	28.64	18.60	
A2.23	A2.23	0.31	0.62	68	0.010	11.76	276	0.018	15	2.29	276.00	20.59	14.05	
A2.24	A2.24	0.31	0.22	9	0.055	2.44	408	0.014	15	3.83	408.00	22.11	6.27	
A2.25	A2.25	0.31	0.24	6	0.032	2.38	342	0.016	15	3.00	342.00	21.30	5.38	
A2.26	A2.26	0.31	0.14	80	0.010	12.76							12.76	
A2.1	A2.1	0.10	1.92	305	0.040	19.95	123	0.018	15	1.02	123.00	24.83	20.97	
A2.2	A2.2	0.40	2.81	35	0.020	5.94	616	0.010	20	5.13	616.00	23.00	11.08	
A2.3	A2.3	0.40	3.42	20	0.020	4.49	685	0.015	20	4.66	685.00	22.44	9.16	
A2.4	A2.4	0.47	1.72	28	0.020	4.78	1102	0.013	20	8.05	1102.00	25.03	12.84	
A2.5	A2.5	0.18	3.63	73	0.020	11.25	858	0.015	15	7.78	858.00	30.59	19.03	
A2.6	A2.6	0.45	3.56	350	0.025	16.32	167	0.010	20	1.39	167.00	17.49	17.49	Urbanized Tc
A2.7	A2.7	0.44	1.80	72	0.020	8.00	470	0.020	20	2.77	470.00	19.31	10.77	
A2.8	A2.8	0.40	2.96	38	0.020	6.22	470	0.010	20	3.92	470.00	21.61	10.14	
A2.9	A2.9	0.40	3.91	92	0.020	9.65	700	0.020	15	5.50	700.00	21.80	15.15	
A2.10	A2.10	0.19	2.01	22	0.100	3.61	665	0.010	20	5.54	665.00	30.98	9.15	
A2.11A	A2.11A	0.40	3.10	22	0.020	4.70	915	0.010	20	7.63	915.00	25.95	12.32	
A2.11B	A2.11B	0.49	1.64	23	0.020	4.19	964	0.010	20	8.03	964.00	24.28	12.23	

TIME OF CONCENTRATION *(Rational Method)*

PROJECT NAME:
PROJECT NO:
LOCATION:

*Calculations on this sheet come from UDFCD: Urban Storm Drainage Criteria Manual (V.1) (2017)

SUB-BASIN DATA				INITIAL TIME (t_i)			TRAVEL TIME (t_t)				t_c CHECK (URBANIZED BASINS)		FINAL t_c	REMARKS
BASIN ID	DESIGN POINT	C_5	AREA	LENGTH (ft)	SLOPE (ft/ft)	t_i (min)	LENGTH (ft)	SLOPE (ft/ft)	C_v	t_t (min)	TRAVEL LENGTH (ft)	$T_{c\ Reg}$ (min)	(min)	
A2.13	A2.13	0.31	1.16	152	0.020	13.99	355	0.010	15	3.94	355.00	22.22	17.93	
A2.14	A2.14	0.31	1.33	84	0.020	10.40	345	0.010	15	3.83	345.00	22.11	14.23	
A2.15	A2.15	0.86	0.11				162	0.010	20	1.35	162.00	10.17	5.00	Minimum
A2.16	A2.16	0.49	1.17	28	0.020	4.65	420	0.010	20	3.50	420.00	19.24	8.15	
A2.17	A2.17	0.31	1.21	72	0.020	9.63	343	0.010	15	3.81	343.00	22.09	13.44	
A2.18	A2.18	0.31	1.98	78	0.020	10.02	417	0.010	15	4.63	417.00	22.89	14.65	
A2.19	A2.19	0.37	3.18	21	0.020	4.81	1065	0.010	20	8.88	1065.00	28.36	13.69	
A2.12	A2.12	0.31	1.94	128	0.030	11.23	390	0.020	15	3.06	390.00	21.35	14.29	
A3.1	A3.1	0.31	0.97	42	0.020	7.35	671	0.014	15.00	6.30	671.00	24.53	13.65	
A4.1	A4.1	0.56	1.22	20	0.020	3.47	1266	0.010	20.00	10.55	1266.00	25.34	14.02	
A4.2A	A4.2A	0.43	3.04	83	0.050	6.44	967	0.010	20.00	8.06	967.00	25.70	14.50	
A4.2B	A4.2B	0.51	0.87	30	0.020	4.66	960	0.010	20.00	8.00	960.00	23.84	12.66	
A4.3	A4.3	0.31	2.57	82	0.020	10.28	672	0.010	15.00	7.47	672.00	25.67	17.74	
A5.1	A5.1	0.31	3.34	139	0.020	13.38	1016	0.010	15	11.29	1016.00	29.42	24.67	
A5.2	A5.2	0.52	0.37	25	0.020	4.17	293	0.010	20	2.44	293.00	17.47	6.61	
A5.3	A5.3	0.44	2.56	33	0.020	5.41	520	0.010	20.00	4.33	520.00	21.10	9.74	
A5.5	A5.5	0.50	1.82				2104	0.010	20.00	17.53	2104.00	34.55	17.53	
A5.6	A5.6	0.41	1.89	37	0.020	5.99	545	0.010	20.00	4.54	545.00	21.99	10.53	
A5.7	A5.7	0.41	1.89	30	0.020	5.44	581	0.010	20.00	4.84	581.00	22.48	10.28	
A5.8	A5.8	0.42	3.03	62	0.020	7.64	1124	0.010	20.00	9.37	1124.00	27.48	17.00	
A5.4	A5.4	0.22	4.74	96	0.020	12.40	1767	0.015	15	16.03	1767.00	38.41	28.43	
A5.11	A5.11	0.52	0.83	28	0.020	4.40	701	0.010	20.00	5.84	701.00	21.16	10.24	
A5.12	A5.12	0.24	1.38	68	0.020	10.18	323	0.010	15.00	3.59	323.00	23.92	13.77	
A5.9	A5.9	0.38	1.84	25	0.020	5.20	713	0.010	20.00	5.94	713.00	25.77	11.14	
A5.10	A5.10	0.13	2.76	55	0.030	9.03	632	0.010	15.00	7.02	632.00	31.71	16.05	
A5.14	A5.14	0.08	2.63	379	0.020	28.65	344	0.010	15.00	3.82	344.00	29.47	29.47	Urbanized Tc
A5.13	A5.13	0.07	2.99	341	0.020	27.24	347	0.010	15.00	3.86	347.00	29.61	29.61	Urbanized Tc
A5.15	A5.15	0.08	2.42	117	0.020	15.77	456	0.010	15.00	5.07	456.00	30.88	20.84	

RUNOFF COMPUTATIONS

(RATIONAL METHOD)

PROJECT NAME:
PROJECT NO:
LOCATION:

*Calculations on this sheet come from UDFCD: Urban Storm Drainage Criteria Manual (V.1) (2017)

BASIN ID	DESIGN POINT	AREA Ac	COMPOSITE C				A*C				t_c (min)	INTENSITY (in/hr)				Q (cfs)			
			2 yr	5 yr	10 yr	100 yr	2 yr	5 yr	10 yr	100 yr		2 yr	5 yr	10 yr	100 yr	2 yr	5 yr	10 yr	100 yr
OS-A	OS-A	1.25	0.01	0.01	0.01	0.13	0.01	0.01	0.01	0.16	34.09	1.21	1.58	1.93	3.36	0.02	0.02	0.02	0.54
OS-B	OS-B	4.42	0.01	0.01	0.01	0.13	0.04	0.04	0.04	0.57	28.73	1.34	1.75	2.14	3.72	0.06	0.08	0.09	2.14
OS-C	OS-C	4.22	0.01	0.01	0.01	0.13	0.04	0.04	0.04	0.55	27.73	1.36	1.79	2.18	3.79	0.06	0.08	0.09	2.08
OS-D	OS-D	4.58	0.01	0.01	0.01	0.13	0.05	0.05	0.05	0.60	28.17	1.35	1.77	2.17	3.76	0.06	0.08	0.10	2.24
OS-E	OS-E	1.16	0.01	0.01	0.01	0.13	0.01	0.01	0.01	0.15	17.16	1.77	2.32	2.83	4.91	0.02	0.03	0.03	0.74

RUNOFF COMPUTATIONS

(RATIONAL METHOD)

PROJECT NAME:
PROJECT NO:
LOCATION:

*Calculations on this sheet come from UDFCD: Urban Storm Drainage Criteria Manual (V.1) (2017)

BASIN ID	DESIGN POINT	AREA Ac	COMPOSITE C				A*C				t_c (min)	INTENSITY (in/hr)				Q (cfs)			
			2 yr	5 yr	10 yr	100 yr	2 yr	5 yr	10 yr	100 yr		2 yr	5 yr	10 yr	100 yr	2 yr	5 yr	10 yr	100 yr
A	A	7.64	0.02	0.02	0.02	0.14	0.12	0.12	0.13	1.04	8.50	2.39	3.14	3.83	6.65	0.29	0.38	0.48	6.94
A1.1	A1.1	1.18	0.53	0.55	0.56	0.64	0.63	0.65	0.66	0.75	12.74	2.03	2.67	3.25	5.65	1.28	1.72	2.15	4.23
A1.2A	A1.2A	1.36	0.48	0.50	0.51	0.61	0.66	0.67	0.70	0.82	6.73	2.58	3.39	4.14	7.19	1.70	2.29	2.89	5.92
A1.2B	A1.2B	3.12	0.45	0.46	0.48	0.58	1.40	1.44	1.50	1.81	13.75	1.96	2.58	3.14	5.46	2.75	3.72	4.70	9.86
A1.3	A1.3	0.69	0.30	0.31	0.33	0.46	0.21	0.22	0.23	0.32	11.67	2.11	2.77	3.38	5.87	0.44	0.60	0.77	1.87
A1.4	A1.4	1.17	0.30	0.31	0.33	0.46	0.35	0.36	0.39	0.54	12.28	2.06	2.71	3.31	5.74	0.73	0.99	1.28	3.10
A2.20	A2.20	0.97	0.30	0.31	0.33	0.46	0.29	0.30	0.32	0.44	12.92	2.02	2.65	3.23	5.61	0.58	0.79	1.03	2.49
A2.27	A2.27	0.34	0.62	0.63	0.65	0.71	0.21	0.21	0.22	0.24	5.66	2.72	3.57	4.36	7.57	0.57	0.77	0.96	1.83
A2.28	A2.28	1.57	0.44	0.45	0.47	0.57	0.68	0.70	0.73	0.89	10.53	2.20	2.89	3.52	6.12	1.51	2.04	2.58	5.47
A2.29	A2.29	0.72	0.30	0.31	0.33	0.46	0.21	0.22	0.24	0.33	12.62	2.04	2.68	3.27	5.67	0.44	0.59	0.77	1.87
A2.21	A2.21	0.20	0.56	0.57	0.59	0.67	0.11	0.12	0.12	0.13	5.37	2.76	3.63	4.42	7.69	0.31	0.42	0.53	1.04
A2.22	A2.22	2.90	0.39	0.40	0.42	0.53	1.14	1.17	1.23	1.55	18.60	1.70	2.23	2.72	4.72	1.93	2.61	3.33	7.31
A2.23	A2.23	0.62	0.30	0.31	0.33	0.46	0.18	0.19	0.20	0.28	14.05	1.94	2.55	3.11	5.41	0.36	0.49	0.63	1.53
A2.24	A2.24	0.22	0.30	0.31	0.33	0.46	0.07	0.07	0.07	0.10	6.27	2.64	3.47	4.23	7.35	0.17	0.23	0.30	0.74
A2.25	A2.25	0.24	0.30	0.31	0.33	0.46	0.07	0.07	0.08	0.11	5.38	2.76	3.62	4.42	7.68	0.20	0.27	0.35	0.85
A2.26	A2.26	0.14	0.30	0.31	0.33	0.46	0.04	0.04	0.05	0.06	12.76	2.03	2.66	3.25	5.65	0.08	0.11	0.15	0.36
A2.1	A2.1	1.92	0.10	0.10	0.11	0.23	0.19	0.19	0.20	0.44	20.97	1.59	2.09	2.55	4.43	0.30	0.40	0.52	1.96
A2.2	A2.2	2.81	0.39	0.40	0.42	0.53	1.10	1.13	1.18	1.49	11.08	2.15	2.83	3.45	6.00	2.36	3.19	4.07	8.96
A2.3	A2.3	3.42	0.39	0.40	0.42	0.53	1.33	1.37	1.43	1.82	9.16	2.32	3.05	3.72	6.47	3.09	4.18	5.33	11.74
A2.4	A2.4	1.72	0.46	0.47	0.49	0.58	0.79	0.81	0.84	1.00	12.84	2.02	2.66	3.24	5.63	1.60	2.15	2.71	5.61
A2.5	A2.5	3.63	0.18	0.18	0.19	0.32	0.64	0.67	0.71	1.16	19.03	1.68	2.20	2.68	4.66	1.08	1.46	1.90	5.42
A2.6	A2.6	3.56	0.44	0.45	0.47	0.58	1.55	1.59	1.65	2.04	17.49	1.75	2.30	2.80	4.87	2.71	3.64	4.64	9.95
A2.7	A2.7	1.80	0.43	0.44	0.46	0.56	0.78	0.80	0.83	1.02	10.77	2.18	2.86	3.49	6.07	1.69	2.28	2.90	6.16
A2.8	A2.8	2.96	0.39	0.40	0.42	0.53	1.14	1.18	1.23	1.56	10.14	2.23	2.93	3.58	6.22	2.55	3.45	4.40	9.72
A2.9	A2.9	3.91	0.39	0.40	0.42	0.53	1.52	1.56	1.64	2.07	15.15	1.88	2.46	3.01	5.22	2.85	3.85	4.92	10.82
A2.10	A2.10	2.01	0.18	0.19	0.19	0.30	0.37	0.38	0.39	0.60	9.15	2.32	3.05	3.72	6.47	0.86	1.16	1.45	3.88
A2.11A	A2.11A	3.10	0.39	0.40	0.42	0.53	1.21	1.25	1.31	1.65	12.32	2.06	2.71	3.30	5.73	2.50	3.38	4.32	9.48
A2.11B	A2.11B	1.64	0.48	0.49	0.51	0.60	0.79	0.81	0.84	0.99	12.23	2.07	2.71	3.31	5.75	1.62	2.19	2.77	5.69
A2.13	A2.13	1.16	0.30	0.31	0.33	0.46	0.35	0.36	0.38	0.53	17.93	1.73	2.27	2.77	4.81	0.60	0.82	1.06	2.56
A2.14	A2.14	1.33	0.30	0.31	0.33	0.46	0.40	0.41	0.44	0.61	14.23	1.93	2.54	3.09	5.37	0.77	1.05	1.36	3.29
A2.15	A2.15	0.11	0.84	0.86	0.87	0.89	0.09	0.09	0.09	0.09	5.00	2.82	3.70	4.51	7.84	0.25	0.34	0.42	0.74
A2.16	A2.16	1.17	0.48	0.49	0.51	0.60	0.56	0.57	0.59	0.70	8.15	2.42	3.18	3.88	6.75	1.35	1.82	2.30	4.74
A2.17	A2.17	1.21	0.30	0.31	0.33	0.46	0.36	0.38	0.40	0.56	13.44	1.98	2.60	3.18	5.52	0.72	0.98	1.27	3.08

RUNOFF COMPUTATIONS

(RATIONAL METHOD)

PROJECT NAME:
PROJECT NO:
LOCATION:

*Calculations on this sheet come from UDFCD: Urban Storm Drainage Criteria Manual (V.1) (2017)

BASIN ID	DESIGN POINT	AREA Ac	COMPOSITE C				A*C				t_c (min)	INTENSITY (in/hr)				Q (cfs)			
			2 yr	5 yr	10 yr	100 yr	2 yr	5 yr	10 yr	100 yr		2 yr	5 yr	10 yr	100 yr	2 yr	5 yr	10 yr	100 yr
A2.18	A2.18	1.98	0.30	0.31	0.33	0.46	0.59	0.61	0.65	0.91	14.65	1.90	2.50	3.05	5.30	1.13	1.53	1.99	4.82
A2.19	A2.19	3.18	0.36	0.37	0.39	0.51	1.14	1.17	1.23	1.61	13.69	1.97	2.58	3.15	5.47	2.24	3.03	3.88	8.80
A2.12	A2.12	1.94	0.30	0.31	0.33	0.46	0.58	0.60	0.64	0.89	14.29	1.93	2.53	3.09	5.36	1.12	1.52	1.97	4.78
A3.1	A3.1	0.97	0.30	0.31	0.33	0.46	0.29	0.30	0.32	0.45	13.65	1.97	2.58	3.15	5.48	0.57	0.78	1.01	2.45
A4.1	A4.1	1.22	0.54	0.56	0.57	0.66	0.66	0.68	0.70	0.80	14.02	1.94	2.55	3.12	5.41	1.29	1.74	2.18	4.32
A4.2A	A4.2A	3.04	0.42	0.43	0.45	0.56	1.28	1.32	1.37	1.69	14.50	1.91	2.51	3.07	5.33	2.46	3.32	4.22	9.03
A4.2B	A4.2B	0.87	0.49	0.51	0.52	0.61	0.43	0.44	0.46	0.54	12.66	2.04	2.67	3.26	5.67	0.88	1.18	1.49	3.04
A4.3	A4.3	2.57	0.30	0.31	0.33	0.46	0.77	0.80	0.85	1.18	17.74	1.74	2.28	2.78	4.83	1.34	1.82	2.36	5.72
A5.1	A5.1	3.34	0.30	0.31	0.33	0.46	1.00	1.04	1.10	1.54	24.67	1.46	1.91	2.34	4.06	1.46	1.98	2.57	6.23
A5.2	A5.2	0.37	0.51	0.52	0.54	0.62	0.19	0.19	0.20	0.23	6.61	2.60	3.41	4.16	7.23	0.48	0.65	0.82	1.66
A5.3	A5.3	2.56	0.43	0.44	0.46	0.57	1.11	1.14	1.19	1.45	9.74	2.27	2.98	3.64	6.31	2.51	3.40	4.31	9.15
A5.5	A5.5	1.82	0.49	0.50	0.52	0.61	0.89	0.92	0.95	1.11	17.53	1.75	2.29	2.80	4.86	1.56	2.10	2.65	5.41
A5.6	A5.6	1.89	0.40	0.41	0.43	0.54	0.76	0.78	0.82	1.02	10.53	2.20	2.89	3.52	6.12	1.68	2.27	2.88	6.27
A5.7	A5.7	1.89	0.40	0.41	0.43	0.54	0.75	0.77	0.81	1.02	10.28	2.22	2.92	3.56	6.18	1.67	2.25	2.87	6.28
A5.8	A5.8	3.03	0.41	0.42	0.44	0.55	1.25	1.29	1.34	1.67	17.00	1.77	2.33	2.84	4.94	2.22	3.00	3.81	8.22
A5.4	A5.4	4.74	0.21	0.22	0.23	0.36	1.01	1.04	1.10	1.71	28.43	1.34	1.77	2.15	3.74	1.35	1.83	2.38	6.38
A5.11	A5.11	0.83	0.51	0.52	0.54	0.63	0.42	0.43	0.44	0.52	10.24	2.22	2.92	3.56	6.19	0.93	1.26	1.59	3.20
A5.12	A5.12	1.38	0.23	0.24	0.26	0.38	0.32	0.33	0.35	0.53	13.77	1.96	2.57	3.14	5.46	0.63	0.85	1.11	2.88
A5.9	A5.9	1.84	0.37	0.38	0.38	0.47	0.67	0.69	0.71	0.87	11.14	2.15	2.82	3.44	5.98	1.45	1.95	2.44	5.21
A5.10	A5.10	2.76	0.13	0.13	0.14	0.26	0.35	0.36	0.38	0.73	16.05	1.82	2.40	2.92	5.08	0.64	0.87	1.12	3.69
A5.14	A5.14	2.63	0.07	0.08	0.08	0.20	0.19	0.20	0.21	0.53	29.47	1.32	1.73	2.11	3.66	0.25	0.34	0.44	1.95
A5.13	A5.13	2.99	0.07	0.07	0.08	0.20	0.21	0.22	0.23	0.60	29.61	1.31	1.72	2.10	3.65	0.28	0.38	0.48	2.17
A5.15	A5.15	2.42	0.08	0.08	0.09	0.21	0.20	0.21	0.22	0.51	20.84	1.60	2.10	2.56	4.45	0.32	0.43	0.56	2.28

APPENDIX D – Hydraulic Computations

DETENTION VOLUME BY THE MODIFIED FAA METHOD
(See USDCM Volume 2 Storage Chapter for description of method)

Project: _____

Basin ID: _____

(For catchments less than 160 acres only. For larger catchments, use hydrograph routing method)
(NOTE: for catchments larger than 90 acres, CUHP hydrograph and routing are recommended)

Determination of MINOR Detention Volume Using Modified FAA Method

Design Information (Input):

Catchment Drainage Imperviousness	I_a =	55.00	percent
Catchment Drainage Area	A =	138.600	acres
Predevelopment NRCS Soil Group	Type =	A	A, B, C, or D
Return Period for Detention Control	T =	100	years (2, 5, 10, 25, 50, or 100)
Time of Concentration of Watershed	Tc =	17	minutes
Allowable Unit Release Rate	q =	0.07	cfs/acre
One-hour Precipitation	P_1 =	2.71	inches
Design Rainfall IDF Formula	$i = C_1 * P_1/(C_2+T_c)^{\wedge}C_3$		
Coefficient One	C_1 =	28.50	
Coefficient Two	C_2 =	10	
Coefficient Three	C_3 =	0.789	

Determination of Average Outflow from the Basin (Calculated):

Runoff Coefficient	C =	0.47	
Inflow Peak Runoff	Qp-in =	373.53	cfs
Allowable Peak Outflow Rate	Qp-out =	**9.70**	cfs
Mod. FAA Minor Storage Volume =		990,704	**cubic feet**
Mod. FAA Minor Storage Volume =		**22.743**	**acre-ft**

20 <- Enter Rainfall Duration Incremental Increase Value Here (e.g. 5 for 5-Minutes)

Rainfall Duration minutes (input)	Rainfall Intensity inches / hr (output)	Inflow Volume cubic feet (output)	Adjustment Factor "m" (output)	Average Outflow cfs (output)	Outflow Volume cubic feet (output)	Storage Volume cubic feet (output)
5	9.12	178,181	1.00	9.70	2,911	175,270
25	4.67	456,559	0.84	8.15	12,225	444,334
45	3.27	575,298	0.69	6.68	18,046	557,252
65	2.56	650,604	0.63	6.12	23,867	626,737
85	2.13	706,027	0.60	5.82	29,688	676,339
105	1.83	750,110	0.58	5.64	35,509	714,601
125	1.61	786,870	0.57	5.51	41,331	745,540
145	1.44	818,508	0.56	5.42	47,152	771,356
165	1.31	846,357	0.55	5.35	52,973	793,384
185	1.20	871,286	0.55	5.30	58,794	812,492
205	1.12	893,895	0.54	5.25	64,615	829,279
225	1.04	914,611	0.54	5.22	70,437	844,175
245	0.98	933,754	0.53	5.19	76,258	857,496
265	0.92	951,566	0.53	5.16	82,079	869,487
285	0.87	968,237	0.53	5.14	87,900	880,337
305	0.83	983,919	0.53	5.12	93,721	890,198
325	0.79	998,733	0.53	5.10	99,543	899,191
345	0.75	1,012,781	0.52	5.09	105,364	907,417
365	0.72	1,026,145	0.52	5.08	111,185	914,960
385	0.69	1,038,896	0.52	5.07	117,006	921,890
405	0.66	1,051,094	0.52	5.05	122,827	928,267
425	0.64	1,062,790	0.52	5.05	128,649	934,141
445	0.62	1,074,028	0.52	5.04	134,470	939,558
465	0.60	1,084,846	0.52	5.03	140,291	944,555
485	0.58	1,095,279	0.52	5.02	146,112	949,167
505	0.56	1,105,355	0.52	5.01	151,933	953,422
525	0.54	1,115,102	0.52	5.01	157,755	957,348
545	0.53	1,124,542	0.52	5.00	163,576	960,967
565	0.51	1,133,697	0.52	5.00	169,397	964,300
585	0.50	1,142,585	0.51	4.99	175,218	967,367
605	0.49	1,151,223	0.51	4.99	181,039	970,184
625	0.47	1,159,626	0.51	4.98	186,861	972,766
645	0.46	1,167,809	0.51	4.98	192,682	975,127
665	0.45	1,175,784	0.51	4.98	198,503	977,281
685	0.44	1,183,562	0.51	4.97	204,324	979,238
705	0.43	1,191,155	0.51	4.97	210,145	981,009
725	0.42	1,198,571	0.51	4.96	215,967	982,605
745	0.41	1,205,820	0.51	4.96	221,788	984,033
765	0.41	1,212,911	0.51	4.96	227,609	985,302
785	0.40	1,219,850	0.51	4.96	233,430	986,420
805	0.39	1,226,645	0.51	4.95	239,251	987,394
825	0.38	1,233,303	0.51	4.95	245,073	988,231
845	0.38	1,239,829	0.51	4.95	250,894	988,936
865	0.37	1,246,230	0.51	4.95	256,715	989,515
885	0.36	1,252,511	0.51	4.94	262,536	989,974
905	0.36	1,258,676	0.51	4.94	268,357	990,318
925	0.35	1,264,730	0.51	4.94	274,179	990,552
945	0.34	1,270,678	0.51	4.94	280,000	990,679
965	0.34	1,276,525	0.51	4.94	285,821	990,704
985	0.33	1,282,272	0.51	4.93	291,642	990,630
1005	0.33	1,287,926	0.51	4.93	297,463	990,462
1025	0.32	1,293,488	0.51	4.93	303,285	990,204
1045	0.32	1,298,962	0.51	4.93	309,106	989,857
1065	0.31	1,304,352	0.51	4.93	314,927	989,425
1085	0.31	1,309,660	0.51	4.93	320,748	988,912
1105	0.30	1,314,888	0.51	4.93	326,569	988,319
1125	0.30	1,320,041	0.51	4.92	332,391	987,650
1145	0.30	1,325,119	0.51	4.92	338,212	986,907
1165	0.29	1,330,125	0.51	4.92	344,033	986,092
1185	0.29	1,335,062	0.51	4.92	349,854	985,208
1205	0.28	1,339,932	0.51	4.92	355,675	984,257

Mod. FAA Minor Storage Volume (cubic ft.) = 990,704
Mod. FAA Minor Storage Volume (acre-ft.) = 22.7434

Determination of MAJOR Detention Volume Using Modified FAA Method

Design Information (Input):

Catchment Drainage Imperviousness	I_a =	55.00	percent
Catchment Drainage Area	A =	138.600	acres
Predevelopment NRCS Soil Group	Type =	A	A, B, C, or D
Return Period for Detention Control	T =	100	years (2, 5, 10, 25, 50, or 100)
Time of Concentration of Watershed	Tc =	17	minutes
Allowable Unit Release Rate	q =	0.07	cfs/acre
One-hour Precipitation	P_1 =	2.71	inches
Design Rainfall IDF Formula	$i = C_1 * P_1/(C_2+T_c)^{\wedge}C_3$		
Coefficient One	C_1 =	28.50	
Coefficient Two	C_2 =	10	
Coefficient Three	C_3 =	0.789	

Determination of Average Outflow from the Basin (Calculated):

Runoff Coefficient	C =	0.47	
Inflow Peak Runoff	Qp-in =	373.53	cfs
Allowable Peak Outflow Rate	Qp-out =	**9.70**	cfs
Mod. FAA Major Storage Volume =		990,704	**cubic feet**
Mod. FAA Major Storage Volume =		**22.743**	**acre-ft**

Rainfall Duration minutes (input)	Rainfall Intensity inches / hr (output)	Inflow Volume cubic feet (output)	Adjustment Factor "m" (output)	Average Outflow cfs (output)	Outflow Volume cubic feet (output)	Storage Volume cubic feet (output)
5	9.12	178,181	1.00	9.70	2,911	175,270
25	4.67	456,559	0.84	8.15	12,225	444,334
45	3.27	575,298	0.69	6.68	18,046	557,252
65	2.56	650,604	0.63	6.12	23,867	626,737
85	2.13	706,027	0.60	5.82	29,688	676,339
105	1.83	750,110	0.58	5.64	35,509	714,601
125	1.61	786,870	0.57	5.51	41,331	745,540
145	1.44	818,508	0.56	5.42	47,152	771,356
165	1.31	846,357	0.55	5.35	52,973	793,384
185	1.20	871,286	0.55	5.30	58,794	812,492
205	1.12	893,895	0.54	5.25	64,615	829,279
225	1.04	914,611	0.54	5.22	70,437	844,175
245	0.98	933,754	0.53	5.19	76,258	857,496
265	0.92	951,566	0.53	5.16	82,079	869,487
285	0.87	968,237	0.53	5.14	87,900	880,337
305	0.83	983,919	0.53	5.12	93,721	890,198
325	0.79	998,733	0.53	5.10	99,543	899,191
345	0.75	1,012,781	0.52	5.09	105,364	907,417
365	0.72	1,026,145	0.52	5.08	111,185	914,960
385	0.69	1,038,896	0.52	5.07	117,006	921,890
405	0.66	1,051,094	0.52	5.05	122,827	928,267
425	0.64	1,062,790	0.52	5.05	128,649	934,141
445	0.62	1,074,028	0.52	5.04	134,470	939,558
465	0.60	1,084,846	0.52	5.03	140,291	944,555
485	0.58	1,095,279	0.52	5.02	146,112	949,167
505	0.56	1,105,355	0.52	5.01	151,933	953,422
525	0.54	1,115,102	0.52	5.01	157,755	957,348
545	0.53	1,124,542	0.52	5.00	163,576	960,967
565	0.51	1,133,697	0.52	5.00	169,397	964,300
585	0.50	1,142,585	0.51	4.99	175,218	967,367
605	0.49	1,151,223	0.51	4.99	181,039	970,184
625	0.47	1,159,626	0.51	4.98	186,861	972,766
645	0.46	1,167,809	0.51	4.98	192,682	975,127
665	0.45	1,175,784	0.51	4.98	198,503	977,281
685	0.44	1,183,562	0.51	4.97	204,324	979,238
705	0.43	1,191,155	0.51	4.97	210,145	981,009
725	0.42	1,198,571	0.51	4.96	215,967	982,605
745	0.41	1,205,820	0.51	4.96	221,788	984,033
765	0.41	1,212,911	0.51	4.96	227,609	985,302
785	0.40	1,219,850	0.51	4.96	233,430	986,420
805	0.39	1,226,645	0.51	4.95	239,251	987,394
825	0.38	1,233,303	0.51	4.95	245,073	988,231
845	0.38	1,239,829	0.51	4.95	250,894	988,936
865	0.37	1,246,230	0.51	4.95	256,715	989,515
885	0.36	1,252,511	0.51	4.94	262,536	989,974
905	0.36	1,258,676	0.51	4.94	268,357	990,318
925	0.35	1,264,730	0.51	4.94	274,179	990,552
945	0.34	1,270,678	0.51	4.94	280,000	990,679
965	0.34	1,276,525	0.51	4.94	285,821	990,704
985	0.33	1,282,272	0.51	4.93	291,642	990,630
1005	0.33	1,287,926	0.51	4.93	297,463	990,462
1025	0.32	1,293,488	0.51	4.93	303,285	990,204
1045	0.32	1,298,962	0.51	4.93	309,106	989,857
1065	0.31	1,304,352	0.51	4.93	314,927	989,425
1085	0.31	1,309,660	0.51	4.93	320,748	988,912
1105	0.30	1,314,888	0.51	4.93	326,569	988,319
1125	0.30	1,320,041	0.51	4.92	332,391	987,650
1145	0.30	1,325,119	0.51	4.92	338,212	986,907
1165	0.29	1,330,125	0.51	4.92	344,033	986,092
1185	0.29	1,335,062	0.51	4.92	349,854	985,208
1205	0.28	1,339,932	0.51	4.92	355,675	984,257

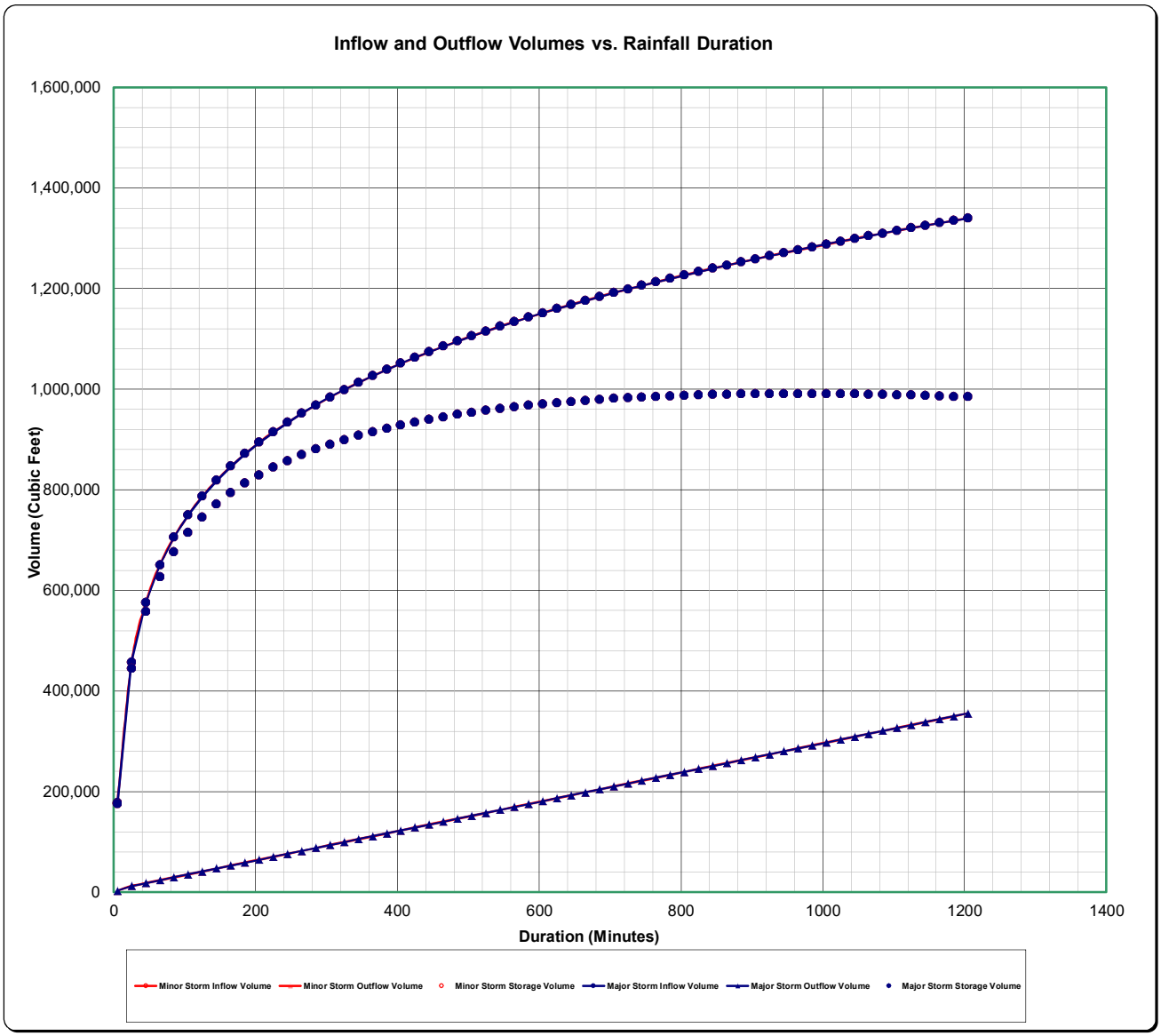
Mod. FAA Major Storage Volume (cubic ft.) = 990,704
Mod. FAA Major Storage Volume (acre-ft.) = 22.7434

UDFCD DETENTION BASIN VOLUME ESTIMATING WORKBOOK Version 2.3, Released March 2012

DETENTION VOLUME BY THE MODIFIED FAA METHOD
(See USDCM Volume 2 Storage Chapter for description of method)

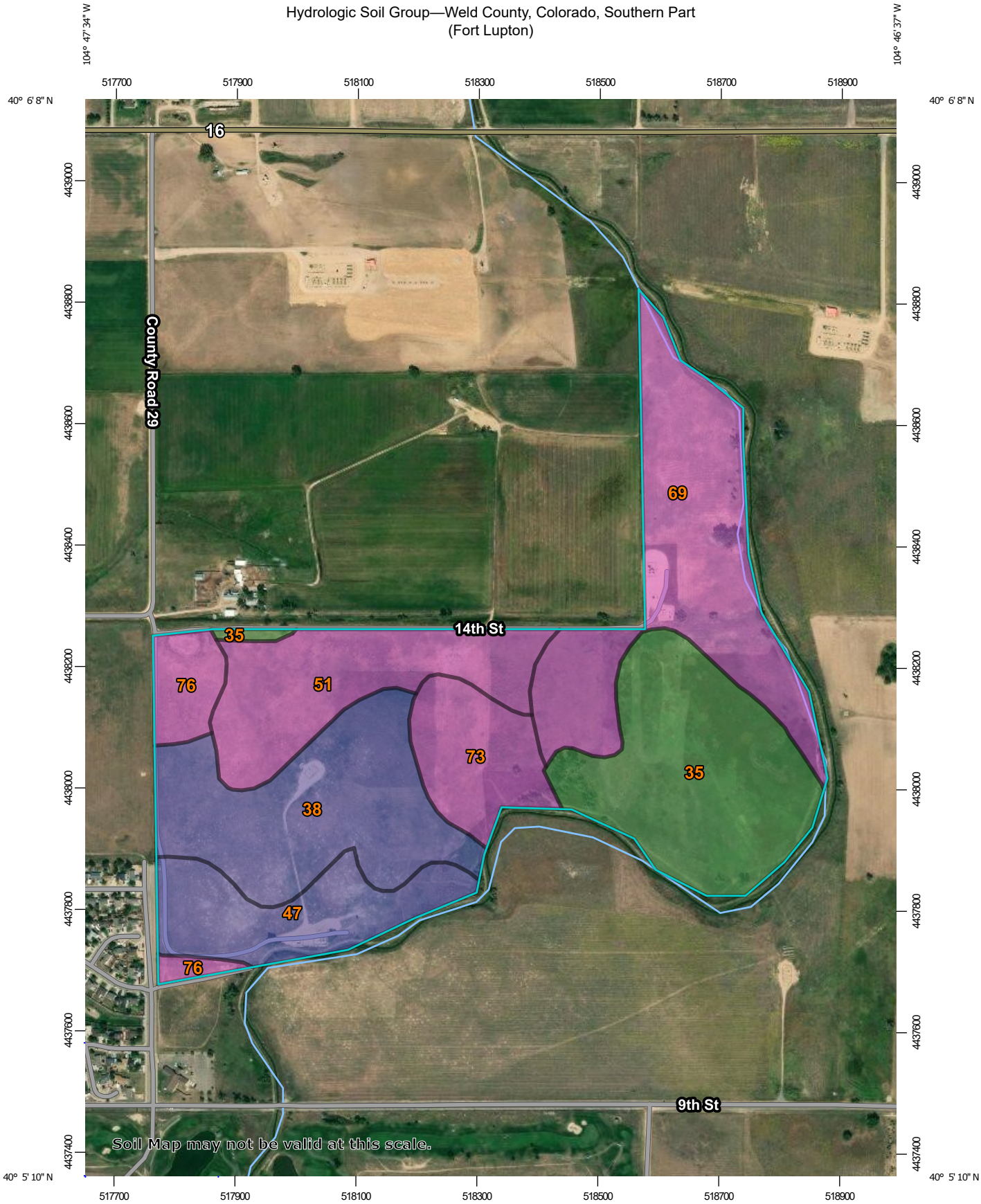
Project: _____

Basin ID: _____



APPENDIX E – Soil Survey

Hydrologic Soil Group—Weld County, Colorado, Southern Part
(Fort Lupton)



Map Scale: 1:8,640 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 400 800 1600 2400

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Weld County, Colorado, Southern Part
Survey Area Data: Version 18, Sep 13, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 20, 2015—Oct 21, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
35	Loup-Boel loamy sands, 0 to 3 percent slopes	A/D	29.4	21.3%
38	Nelson fine sandy loam, 3 to 9 percent slopes	B	26.7	19.3%
47	Olney fine sandy loam, 1 to 3 percent slopes	B	14.4	10.4%
51	Otero sandy loam, 1 to 3 percent slopes	A	19.1	13.8%
69	Valent sand, 0 to 3 percent slopes	A	31.8	23.0%
73	Vona loamy sand, 3 to 5 percent slopes	A	10.8	7.8%
76	Vona sandy loam, 1 to 3 percent slopes	A	5.9	4.3%
Totals for Area of Interest			**138.2**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

National Flood Hazard Layer FIRMette

FEMA

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- B 20.2 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- 8 Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/11/2019 at 1:14:58 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

WILLOW BEND SUBDIVISION

PRELIMINARY CONSTRUCTION PLANS

PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

ENGINEER'S STATEMENT

THE CONSTRUCTION PLANS INCLUDED HEREIN HAVE BEEN PREPARED UNDER MY DIRECT SUPERVISION IN ACCORDANCE WITH THE REQUIREMENTS OF FORT LUPTON ENGINEERING CONSTRUCTION STANDARDS AND SPECIFICATIONS MANUAL.

RICHARD J. WEED, P.E. DATE
COLORADO NO. 22076
FOR AND ON BEHALF OF ATWELL, LLC.

OWNER:
SUN COMMUNITIES
27777 FRANKLIN ROAD
SUITE200
SOUTHFIELD, MI 48034
(248) 208-2610
CONTACT: TOM O'BRANOVIC

PLANNING & LANDSCAPING:
RVI
120 SOUTH ASH AVENUE
SUITE 201
TEMPE, AZ 85281
(480) 994-0994
CONTACT: BRITTANY GEIST

SURVEYOR:
ATWELL, LLC.
143 UNION BLVD.,
SUITE 700
LAKEWOOD, CO 80228
(303) 462-1100
CONTACT: MICHAEL L. POOL

CIVIL ENGINEER:
ATWELL, LLC.
143 UNION BLVD.,
SUITE 700
LAKEWOOD, CO 80228
(720) 541-6601
CONTACT: RICK WEED

CITY OF FORT LUPTON:
130 S. McKINLEY AVE.
FORT LUPTON, CO 80621
(303) 857-6694
CONTACT: ROY VESTAL

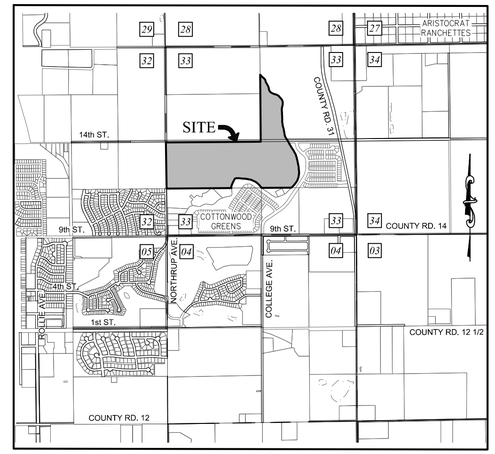
XCEL ENERGY(GAS):
5460 W. 60TH AVE.
ARVADA, CO 80003
(800) 895-4999
CONTACT: DONNA SANDERS

UNITED POWER (ELEC):
P.O. BOX 929
BRIGHTON, CO 80601
(303) 659-0551
CONTACT: HECTOR AVENDANO

CENTURYLINK (FIBER OPTIC):
5324 WADSWORTH BYP.,
SUITE F
ARVADA, CO 80002
(303) 403-9980

SITE SPECIFIC NOTES

1. BASIS OF BEARING IS THE EAST LINE OF THE SOUTHEAST QUARTER OF SECTION 33 AS BEARING NORTH 00°09'31" WEST.
2. PROJECT BENCHMARK: VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.
3. THE CURRENT ZONING IS PLANNED UNIT DEVELOPMENT (PUD).
4. SUBJECT PARCEL CONTAINS 5,554,829 SQUARE FEET OR 127.521 ACRES.
5. SUBJECT PROPERTY IS LOCATED AT THE SOUTHEAST CORNER OF THE INTERSECTION OF 14TH STREET AND COUNTY ROAD 29.



VICINITY MAP
SCALE: 1" = 2000'

SHEET INDEX	
SHEET NO.	SHEET TITLE
CV-1	COVER SHEET
GN-2	GENERAL NOTES
GN-3	LEGENDS & MASTER REVISION TABULATION
Erosion & Sediment Control Plans	
EC-1	EROSION CONTROL – INITIAL AREA 1
EC-2	EROSION CONTROL – INITIAL AREA 2
EC-3	EROSION CONTROL – INITIAL AREA 3
EC-4	EROSION CONTROL – INITIAL AREA 4
EC-5	EROSION CONTROL – INITIAL AREA 5
EC-6	EROSION CONTROL – INITIAL AREA 6
EC-7	EROSION CONTROL – INITIAL AREA 7
EC-8	EROSION CONTROL – INITIAL AREA 8
EC-9	EROSION CONTROL – INITIAL AREA 9
EC-10	EROSION CONTROL – INITIAL AREA 10
EC-11	EROSION CONTROL – INITIAL AREA 11
EC-12	EROSION CONTROL – INITIAL AREA 12
EC-13	EROSION CONTROL – INTERIM AREA 1
EC-14	EROSION CONTROL – INTERIM AREA 2
EC-15	EROSION CONTROL – INTERIM AREA 3
EC-16	EROSION CONTROL – INTERIM AREA 4
EC-17	EROSION CONTROL – INTERIM AREA 5
EC-18	EROSION CONTROL – INTERIM AREA 6
EC-19	EROSION CONTROL – INTERIM AREA 7
EC-20	EROSION CONTROL – INTERIM AREA 8
EC-21	EROSION CONTROL – INTERIM AREA 9
EC-22	EROSION CONTROL – INTERIM AREA 10
EC-23	EROSION CONTROL – INTERIM AREA 11
EC-24	EROSION CONTROL – INTERIM AREA 12
EC-25	EROSION CONTROL – FINAL AREA 1
EC-26	EROSION CONTROL – FINAL AREA 2
EC-27	EROSION CONTROL – FINAL AREA 3
EC-28	EROSION CONTROL – FINAL AREA 4
EC-29	EROSION CONTROL – FINAL AREA 5
EC-30	EROSION CONTROL – FINAL AREA 6
EC-31	EROSION CONTROL – FINAL AREA 7
EC-32	EROSION CONTROL – FINAL AREA 8
EC-33	EROSION CONTROL – FINAL AREA 9
EC-34	EROSION CONTROL – FINAL AREA 10
EC-35	EROSION CONTROL – FINAL AREA 11
EC-36	EROSION CONTROL – FINAL AREA 12
EC-37	EROSION & SEDIMENT CONTROL DETAILS
EC-38	EROSION & SEDIMENT CONTROL DETAILS
EC-39	EROSION & SEDIMENT CONTROL DETAILS

Overlot Grading	
OG-0	OVERALL GRADING INDEX
OG-1	AREA 1
OG-2	AREA 2
OG-3	AREA 3
OG-4	AREA 4
OG-5	AREA 5
OG-6	AREA 6
OG-7	AREA 7
OG-8	AREA 8
OG-9	AREA 9
OG-10	AREA 10
OG-11	AREA 11
Overall Utility Plans	
OU-0	OVERALL UTILITY INDEX
OU-1	AREA 1
OU-2	AREA 2
OU-3	AREA 3
OU-4	AREA 4
OU-5	AREA 5
OU-6	AREA 6
OU-7	AREA 7
OU-8	AREA 8
OU-9	AREA 9
OU-10	AREA 10
OU-11	AREA 11
Sanitary Plan & Profiles	
SS-1	SAN RUNS 1 & 2
SS-2	SAN RUNS 3 & 4
SS-3	SAN RUN 5-1
SS-4	SAN RUN 5-2
SS-5	SAN RUN 6
SS-6	SAN RUNS 7 & 8
SS-7	SAN RUN 9-1
SS-8	SAN RUN 9-2
SS-9	SAN RUN 9-3
SS-10	SAN RUN 9-4
SS-11	SAN RUN 10
SS-12	SAN RUN 11
SS-13	SAN RUNS 12 & 13
SS-14	SAN RUN 14
SS-15	SAN RUN 15
SS-16	SAN RUNS 16 & 17
SS-17	SAN RUN 18
SS-18	SAN RUNS 19 & 20

SS-19	SAN RUN 21
SS-20	SAN RUN 22
SS-21	SAN RUN 23-1
SS-22	SAN RUN 23-2
SS-23	SAN RUN 24-1
SS-24	SAN RUN 24-2
SS-25	SAN RUN 25
SS-26	SAN RUN 26
SS-27	SAN RUN 27-1
SS-28	SAN RUN 27-2
SS-29	SAN RUN 28 & 29
SS-30	SAN RUN 30
SS-31	SAN RUN 31
SS-32	SAN RUN 32
SS-33	SAN RUN 33
SS-34	SAN RUN 34-1 & 34-3
SS-35	SAN RUN 34-2
SS-36	SAN RUN 35
Waterline Plan & Profiles	
	NOT IN SET
Storm Plan & Profiles	
STRM-1	STORM RUN A1
STRM-2	STORM RUN A2-1
STRM-3	STORM RUN A2-2
STRM-4	STORM RUN A2-3
STRM-5	STORM RUN A2-4
STRM-6	STORM RUN A2-5
STRM-7	STORM RUN A2-6
STRM-8	STORM RUN A2-7
STRM-9	STORM RUNS A3 & A4
STRM 10	STORM RUN 5-1
STRM-11	STORM RUN 5-2
STRM 12	STORM RUN 5-3
Pond Plan & Details	
	NOT IN SET
Street Plan & Profiles	
STPP-1	14TH STREET – 1 (PUBLIC)
STPP-2	14TH STREET – 2 (PUBLIC)
STPP-3	14TH STREET – 3 (PUBLIC)
STPP-4	NORTHRUP AVENUE – 1 (PUBLIC)
STPP-5	NORTHRUP AVENUE – 2 (PUBLIC)
STPP-6	ENTRANCE BOULEVARD – 1 (PRIVATE)
STPP-7	ENTRANCE BOULEVARD – 2 (PRIVATE)
STPP-8	STREETS A & D (PRIVATE)

STPP-9	STREETS D & L – 1 (PRIVATE)
STPP-10	STREETS D & L – 2 (PRIVATE)
STPP-11	STREET B (PRIVATE)
STPP-12	STREETS C (PRIVATE)
STPP-13	STREETS H (PRIVATE)
STPP-14	STREETS I (PRIVATE)
STPP-15	STREET E (PRIVATE)
STPP-16	STREET F (PRIVATE)
STPP-17	STREET G – 1 (PRIVATE)
STPP-18	STREET G – 2 (PRIVATE)
STPP-19	STREET G – 3 (PRIVATE)
STPP-20	STREETS J, R & M – 1 (PRIVATE)
STPP-21	STREETS J, R & M – 2 (PRIVATE)
STPP-22	STREETS J, R & M – 3 (PRIVATE)
STPP-23	STREETS J, R & M – 4 (PRIVATE)
STPP-24	STREETS J, R & M – 5 (PRIVATE)
STPP-25	STREET K (PRIVATE)
STPP-26	STREET N (PRIVATE)
STPP-27	STREET O (PRIVATE)
STPP-28	STREET P (PRIVATE)
STPP-29	STREET Q (PRIVATE)
STPP-30	STREET S (PRIVATE)
STPP-31	STREET T (PRIVATE)
STPP-32	STREETS Y & Z
STPP-33	NORTH ENTRANCE
Signage & Striping	
	NOT IN SET
Area Grading	
	NOT IN SET
Construction Details	
D-1	SITE AND UTILITY SERVICE LAYOUT
SSD-1	SANITARY DETAILS
WD-1	WATER DETAILS
WD-2	WATER DETAILS
STMD-1	STORM DETAILS
STMD-2	STORM DETAILS
STD-1	STREET DETAILS
STD-2	STREET DETAILS
GRD	GRADING DETAILS

811 Know what's below. Call before you dig.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

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DEVELOPER
27777 FRANKLIN ROAD
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SOUTHFIELD, MI 48114
(248) 208-2556
JOHN B. MCLAREN

CLIENT
SUN COMMUNITIES
WILLOW BEND SUBDIVISION
FORT LUPTON, COLORADO
PRELIMINARY CONSTRUCTION PLANS
####
COVER SHEET

SUN COMMUNITIES, INC.

DATE DATE

REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO.
CV-1

CAD FILE: 19001956-COVER.DWG

GENERAL NOTES:

1. ALL MATERIALS, WORKMANSHIP, AND CONSTRUCTION OF IMPROVEMENTS SHALL MEET OR EXCEED THE CITY OF FORT LUPTON, STANDARDS AND SPECIFICATIONS MANUAL AND THE STANDARDS AND SPECIFICATIONS SET FORTH IN APPLICABLE STATE AND FEDERAL REGULATIONS. WHERE THERE IS CONFLICT BETWEEN THESE PLANS AND ANY APPLICABLE STANDARDS, THE HIGHER QUALITY STANDARD SHALL APPLY. ALL WORK IS SUBJECT TO INSPECTION BY THE CITY OF FORT LUPTON DESIGNATED PERSONNEL.

2. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON AVAILABLE RECORDS OF THE VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED UPON AS BEING EXACT OR COMPLETE.

3. THE CONTRACTOR MUST CALL THE LOCAL UTILITY LOCATION CENTER AT LEAST 48 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATIONS OF THE UTILITIES. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL VERIFY PERTINENT LOCATIONS AND ELEVATIONS, ESPECIALLY AT CONNECTION POINTS AND AT POTENTIAL UTILITY CONFLICTS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES THAT CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THESE PLANS.

4. THE CONTRACTOR SHALL COORDINATE AND COOPERATE WITH THE OWNER, CITY, AND ALL UTILITY COMPANIES INVOLVED WITH REGARD TO RELOCATIONS OR ADJUSTMENTS OF EXISTING UTILITIES DURING CONSTRUCTION AND TO ASSURE THAT THE WORK IS ACCOMPLISHED IN A TIMELY FASHION AND WITH A MINIMUM DISRUPTION OF SERVICE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING ALL PARTIES AFFECTED BY ANY DISRUPTION OF ANY UTILITY SERVICE.

5. CONTRACTOR SHALL PROVIDE A MINIMUM FORTY EIGHT (48) HOUR NOTICE TO, AND OBTAIN APPROVAL FROM THE CITY OF FORT LUPTON PRIOR TO MAKING ANY CONNECTIONS/TIE-INS TO EXISTING PUBLIC SYSTEMS.

6. THE CONTRACTOR SHALL HAVE ONE (1) SIGNED COPY OF THE APPROVED PLANS, ONE (1) COPY OF THE APPROPRIATE CRITERIA AND SPECIFICATIONS, AND A COPY OF ANY PERMITS AND EXTENSION AGREEMENTS NEEDED FOR THE JOB ONSITE AT ALL TIMES.

7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ASPECTS OF SAFETY INCLUDING, BUT NOT LIMITED TO, EXCAVATION, TRENCHING, SHORING, TRAFFIC CONTROL, AND SECURITY.

8. IF DURING THE CONSTRUCTION PROCESS CONDITIONS ARE ENCOUNTERED WHICH COULD INDICATE A SITUATION THAT IS NOT IDENTIFIED IN THE PLANS OR SPECIFICATIONS, THE CONTRACTOR SHALL CONTACT THE ENGINEER OF RECORD AND THE CITY PUBLIC WORKS INSPECTOR IMMEDIATELY.

9. ALL REFERENCES TO ANY PUBLISHED STANDARDS SHALL REFER TO THE LATEST REVISION OF SAID STANDARD UNLESS SPECIFICALLY STATED OTHERWISE.

10. THE CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN IN ACCORDANCE WITH THE MUTCD TO THE APPROPRIATE RIGHT-OF-WAY AUTHORITY (CITY, COUNTY OR STATE) FOR APPROVAL PRIOR TO ANY CONSTRUCTION ACTIVITIES WITHIN OR AFFECTING THE PUBLIC RIGHT-OF-WAY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ANY AND ALL TRAFFIC CONTROL DEVICES AS MAY BE REQUIRED BY THE CONSTRUCTION ACTIVITIES.

11. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL LABOR AND MATERIALS NECESSARY FOR THE COMPLETION OF THE INTENDED IMPROVEMENTS SHOWN ON THESE DRAWINGS OR AS DESIGNATED TO BE PROVIDED, INSTALLED, OR CONSTRUCTED UNLESS SPECIFICALLY NOTED OTHERWISE.

12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING HIGHWAYS AND ROADS FREE AND CLEAR OF ALL CONSTRUCTION DEBRIS AND DIRT TRACKED FROM THE SITE.

13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RECORDING AS-BUILT INFORMATION ON A SET OF RECORD DRAWINGS KEPT ON THE CONSTRUCTION SITE AND AVAILABLE TO THE OWNER AND CITY INSPECTOR AT ALL TIMES.

14. DIMENSIONS FOR LAYOUT AND CONSTRUCTION ARE NOT TO BE SCALED FROM ANY DRAWING. IF PERTINENT DIMENSIONS ARE NOT SHOWN, CONTACT THE CONSULTANT ENGINEER FOR CLARIFICATION AND ANNOTATE THE DIMENSION ON THE AS-BUILT RECORD DRAWINGS.

15. THE CONTRACTOR SHALL COMPLY WITH ALL TERMS AND CONDITIONS OF THE COLORADO PERMIT FOR STORM WATER DISCHARGE, THE STORM WATER MANAGEMENT PLAN, AND THE GRADING AND EROSION CONTROL PLAN.

16. ALL STRUCTURAL EROSION CONTROL MEASURES SHALL BE INSTALLED AT THE LIMITS OF CONSTRUCTION PRIOR TO ANY OTHER EARTH-DISTURBING ACTIVITY. ALL EROSION CONTROL MEASURES SHALL BE MAINTAINED IN GOOD REPAIR BY THE CONTRACTOR UNTIL SUCH TIME AS THE ENTIRE DISTURBED AREA IS STABILIZED WITH HARD SURFACE OR LANDSCAPING.

17. THE CONTRACTOR SHALL SEQUENCE INSTALLATION OF UTILITIES IN SUCH A MANNER AS TO MINIMIZE POTENTIAL UTILITY CONFLICTS. IN GENERAL, STORM SEWER AND SANITARY SEWER SHOULD BE CONSTRUCTED PRIOR TO INSTALLATION OF THE WATER LINES AND DRY UTILITIES.

18. CONTRACTOR SHALL NOTIFY THE CITY OF FORT LUPTON ONE WEEK PRIOR TO COMMENCING WORK AFTER DRAWING DISTRIBUTION AND PRECONSTRUCTION MEETING HELD WITH THE CITY.

19. CONTRACTOR SHALL POTHOLE ALL EXISTING UTILITIES TO BE CROSSED BY WATER AND/OR SEWER LINES AT LEAST 24 HOURS PRIOR TO CROSSING TO ENSURE 18 INCH MINIMUM CLEARANCE IF OPEN CUT METHODS ARE USED AND 24 INCH MINIMUM CLEARANCE FOR BORED CROSSINGS. IF VERTICAL CLEARANCE CANNOT BE MET AS SHOWN ON THE DRAWINGS, CONTACT THE DESIGN ENGINEER IMMEDIATELY. HORIZONTAL AND VERTICAL LOCATION OF CROSSED EXISTING UTILITIES SHALL BE RECORDED ON THE AS-BUILT RECORD DRAWINGS.

20. THE CONTRACTOR SHALL PROVIDE THE OWNER WITH AS-BUILT RECORD DRAWINGS UPON COMPLETION OF WORK.

21. THE CONTRACTOR IS RESPONSIBLE FOR DUST CONTROL, AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE THE NECESSARY EQUIPMENT AND MATERIALS TO SATISFACTORILY CONTROL DUST AT ALL TIMES, AND AS DIRECTED BY THE CITY. WATER SHALL BE USED AS THE DUST PALLIATIVE WHERE REQUIRED. THE CONTRACTOR WILL FURNISH AND SPREAD WATER AT NO ADDITIONAL COST TO THE PROJECT.

22. ALL DEBRIS, RUBBISH AND OTHER MATERIALS RESULTING FROM DEMOLITION OPERATIONS SHALL BE REMOVED FROM THE SITE AND LEGALLY DISPOSED OF OFF-SITE. LOCATION OF DUMP, LENGTH OF HAUL, AND DISPOSAL EXPENSES SHALL BE CONTRACTOR'S RESPONSIBILITY.

23. THE STREETS ADJACENT TO THE CONSTRUCTION AREA SHALL BE CLEARED OF DEBRIS GENERATED BY THE PROJECT BY THE CONTRACTOR AT THE EARLIEST OPPORTUNITY, BUT IN NO CASE SHALL THE ROADS BE LEFT UNCLEARED AFTER THE COMPLETION OF THE DAY'S WORK. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE THE NECESSARY EQUIPMENT AND MATERIAL TO SATISFACTORILY CLEAN THE ROADWAYS AT NO ADDITIONAL COST TO THE PROJECT.

24. CONTRACTOR SHALL SUBMIT AS-BUILT INFORMATION TO THE PROJECT ENGINEER TO REVIEW AND PREPARE FINAL AS-BUILT RECORD DRAWINGS.

25. ALL WORK WITHIN THE PUBLIC RIGHT-OF-WAY OR EASEMENT SHALL CONFORM TO THE CITY OF FORT LUPTON CONSTRUCTION SPECIFICATIONS AND DESIGN STANDARDS.

26. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS PRIOR TO COMMENCEMENT OF ANY WORK ON THE PROJECT. A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD WITH CITY REPRESENTATIVES BEFORE A PERMIT WILL BE ISSUED.

27. THE CONTRACTOR SHALL NOTIFY CITY OF FORT LUPTON AT LEAST 24-HOURS PRIOR TO THE DESIRED INSPECTION.

28. THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF ALL SURVEY MONUMENTS. ANY MONUMENT THAT MUST BE DESTROYED FOR CONSTRUCTION MUST BE REPLACED. THE CONTRACTOR SHALL ENGAGE THE SERVICES OF A LICENSE SURVEYOR PRIOR TO DISTURBING ANY MONUMENTS.

SIGNING AND STRIPING NOTES:

1. ALL SIGNAGE AND STRIPING IS SUBJECT TO THE GENERAL NOTES ON THIS SHEET AS WELL AS THE SIGNAGE AND STRIPING NOTES LISTED HERE.

2. ALL PAINT SHALL BE 15 MIL THICK UPON INSTALLATION AND 8 MIL THICK WHEN DRY.

3. ALL PERMANENT LONGITUDINAL PAVEMENT STRIPING ON ASPHALT SURFACES (CENTERLINES, LANE LINES, BAY LINES, ETC.) SHALL BE INSTALLED USING AN APPROVED REFLECTIVE TRAFFIC PAINT OR PAVEMENT MARKING TAPE. REFLECTIVE BEADS SHALL BE APPLIED IN ACCORDANCE WITH CDOT'S STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION AND THE MANUFACTURER'S REQUIREMENTS. WHEN TAPE IS USED ON AN ASPHALT STREET, IT SHALL BE "ROLLED" INTO THE FINAL LIFT. ON CONCRETE SURFACES TAPE SHALL BE UTILIZED WITH A CONTRASTING BLACK EDGE AND GROOVED INTO THE PAVEMENT.

4. ALL SURFACES THAT ACCEPT PAINT/THERMO-PLASTIC STRIPING OR PRE-FORMED MARKINGS SHALL BE FIRST SANDBLASTED AND THOROUGHLY CLEANED PRIOR TO INSTALLATION OF STRIPING OR MARKINGS.

5. ALL ARROW MARKINGS SHALL BE PRE-FORMED TAPE, THERMO-PLASTIC OR EPOXY-PAINTED.

6. STOP BARS SHALL BE 90 MIL THERMO-PLASTIC.

7. ALL ROADWAY SIGNAGE SHALL CONFORM TO THE MUTCD AND/OR THE CITY'S CRITERIA.

8. ALL TRAFFIC RELATED SIGNPOSTS SHALL UTILIZE BREAKAWAY ASSEMBLIES AND FASTENERS.

FIRE NOTES:

1. IT IS THE RESPONSIBILITY OF THE PROPERTY OWNER TO MAINTAIN DRIVE LANES FOR EMERGENCY VEHICLE INGRESS AND EGRESS, INCLUDING SNOW REMOVAL.

2. EMERGENCY VEHICLE ACCESS ROADS ARE REQUIRED TO ALLOW ACCESS WITHIN 150' OF THE EXTERIOR OF THE BUILDINGS BY AN APPROVED ROUTE.

3. FIRE APPARATUS ACCESS ROADS SHALL BE DESIGNED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF FIRE APPARATUS AND SHALL BE PROVIDED WITH A SURFACE SO AS TO PROVIDE ALL-WEATHER DRIVING CAPABILITIES. ACCESS ROAD SHALL BE EITHER CONCRETE, ASPHALT, OR OTHER APPROVED ALTERNATIVE MATERIAL ACCOMPANIED WITH AN ENGINEER'S STAMP STATING THE MATERIAL WILL MEET A 75,000 LBS IMPOSED LOAD.

4. FIRE HYDRANT(S) ARE REQUIRED TO BE INSTALLED AND MADE SERVICEABLE PRIOR TO AND DURING THE TIME OF VERTICAL CONSTRUCTION.

5. WHEN FIRE APPARATUS ACCESS ROADS OR A WATER SUPPLY FOR FIRE PROTECTION IS REQUIRED TO BE INSTALLED, SUCH PROTECTION SHALL BE INSTALLED AND MADE SERVICEABLE PRIOR TO BUILDING CONSTRUCTION GOING VERTICAL.

WATERLINE CONSTRUCTION NOTES:

1. THE CONTRACTOR SHALL VERIFY THE HORIZONTAL AND VERTICAL ALIGNMENT OF ALL POINTS OF CONNECTION AND UTILITY CROSSINGS PRIOR TO INSTALLING ANY PIPE. IF A DESIGN MODIFICATION IS REQUIRED IT SHOULD BE BROUGHT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY AND COORDINATED WITH THE ENGINEER.

2. ALL WATER LINE CONSTRUCTION IS SUBJECT TO THE GENERAL NOTES AS WELL AS THE WATER LINE CONSTRUCTION NOTES LISTED HEREIN.

3. THE WATER SYSTEM SHOWN ON THESE PLANS IS TO BE PRIVATELY OWNED, OPERATED AND MAINTAINED BY SUN COMMUNITIES OR THEIR ASSIGNS EXCEPT AS NOTED HEREON, IN PARTICULAR, THE WATER LINES IN NORTHRUP AVENUE AND 14TH STREET ARE PUBLIC LINES TO BE OWNED AND MAINTAINED BY THE CITY OF FORT LUPTON. ALL PUBLIC WATER MAINS TO BE CONSTRUCTED IN ACCORDANCE WITH FORT LUPTON'S STANDARDS AND SPECIFICATIONS.

4. ALL WATER MAINS SHALL BE PVC PIPE, CONFORMING TO AWWA C900 FOR PIPE SIZES 4" TO 12", CL150 (DR18). PIPE MATERIAL FOR WATER SERVICE LEADS SHALL BE 3/4" POLYETHYLENE RATED AT 160 PSI.

5. WATER MAIN FITTINGS (4"-12") SHALL BE DIP CONFORMING TO FORT LUPTON SPECIFICATIONS.

6. ALL DIP AND FITTINGS SHALL BE ENCASED IN POLYETHYLENE TO PREVENT CORROSION. POLYETHYLENE WRAP, TAPE AND INSTALLATION SHALL MEET THE REQUIREMENTS OF AWWA C105.

7. MAIN LINE GATE VALVES SHALL BE DESIGNED AND MANUFACTURED IN ACCORDANCE WITH AWWA C500 AND AWWA C504, IN ACCORDANCE WITH FORT LUPTON SPECIFICATIONS.

8. ALL FIRE HYDRANTS SHALL BE "RED MUELLER 5¼" CENTURION FIRE HYDRANT ASSEMBLY," OPENING TO THE LEFT WITH 5' MINIMUM BURY IN ACCORDANCE WITH FORT LUPTON SPECIFICATIONS.

9. ALL WATER LINES SHALL BE BURIED AN ABSOLUTE MINIMUM OF 6 FEET FROM FINAL GRADE TO THE TOP OF THE WATER MAIN. THE MAXIMUM BURY DEPTH SHALL BE 8 FEET, UNLESS ADDITIONAL DEPTH IS REQUIRED FOR UTILITY CROSSINGS OR OTHER CONFLICTS.

10. ALL WATER LINES SHALL BE BEDDED IN ACCORDANCE WITH DETAILS PROVIDED HEREIN.

11. CONTRACTOR SHALL MAINTAIN A MINIMUM 18-INCH VERTICAL CLEARANCE AND 10-FOOT HORIZONTAL CLEARANCE EDGE-TO-EDGE BETWEEN ALL WATER LINES AND ANY OTHER PIPED UTILITIES.

12. ALL BENDS, TEES, FIRE HYDRANTS AND PLUGS AT DEAD-END MAIN LINES SHALL BE RESTRAINED FROM THRUST BY USING MEGALUG RESTRAINTS IN COMBINATION WITH CONCRETE THRUST BLOCKS PER FORT LUPTON SPECIFICATIONS.

13. CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTING ALL FIRE HYDRANTS AND VALVE BOXES TO FINISH GRADE IN ACCORDANCE WITH FORT LUPTON SPECIFICATIONS.

14. ALL NEW WATERLINES AND/OR SEGMENTS OF WATERLINES SHALL BE DISINFECTED, PRESSURE TESTED, AND BACTERIOLOGICALLY TESTED IN ACCORDANCE WITH FORT LUPTON SPECIFICATIONS. PLEASE NOTE THAT THIS DISINFECTION AND TESTING WILL BE PERFORMED WHILE THE NEW WATERLINES AND/OR SEGMENTS OF WATERLINES ARE NOT PHYSICALLY CONNECTED TO THE EXISTING WATER SYSTEM. CONTRACTOR SHALL PERFORM ALL PROCEDURES FOR TESTING, FLUSHING AND DISINFECTING OF ALL WATER LINES. TESTING SHALL BE DONE IN THE PRESENCE OF THE FORT LUPTON DESIGNATED INSPECTOR. CONTRACTOR SHALL PROVIDE A MINIMUM FORTY EIGHT (48) HOUR NOTICE TO, AND OBTAIN APPROVAL FROM THE FORT LUPTON PUBLIC WORKS INSPECTOR, PRIOR TO DISINFECTION, PRESSURE TESTING, AND BACTERIOLOGICAL TESTING OF ANY NEW WATERLINES AND/OR SEGMENTS OF WATERLINES.

15. DISTANCES SHOWN FOR WATER LINES ARE THE HORIZONTAL DISTANCE FROM THE CENTER OF THE FITTING TO CENTER OF THE FITTING. THEREFORE, DISTANCES SHOWN ON THE PLANS ARE APPROXIMATE AND COULD VARY DUE TO VERTICAL ALIGNMENT AND FITTING DIMENSIONS.

16. WATER LINE TRENCHES SHALL BE SLOPED OR BRACED AND SHEETED AS NECESSARY FOR THE SAFETY OF THE WORKERS AND THE PROTECTION OF OTHER UTILITIES, IN COMPLIANCE WITH ALL APPLICABLE STATE AND FEDERAL REQUIREMENTS. FOR ALL EXCAVATION OPERATIONS, SAFETY IS THE RESPONSIBILITY OF THE CONTRACTOR.

17. TRACER WIRE SHALL BE USED ON ALL DIP AND PVC PIPE AND WARNING TAPE SHALL BE PLACED 1 FOOT ABOVE ALL DIP AND PVC PIPE. TEST STATIONS ARE TO BE MADE OF HIGH IMPACT A.B.S. PLASTIC AND HEAVY DUTY CAST IRON COLLARS AND COVERS ASTM CLASS 25 OR HIGHER. RECOMMENDED MANUFACTURER IS TEST SERVICES - VALVCO, INC.

18. MAXIMUM DEFLECTION FOR WATER MAINS SHALL NOT EXCEED THE MANUFACTURER'S MAXIMUM ALLOWABLE DEFLECTION.

19. THE MAXIMUM DEFLECTION OF WATER SERVICE LINES SHALL NOT EXCEED THE MANUFACTURER'S MAXIMUM ALLOWABLE DEFLECTION.

20. THE MINIMUM HORIZONTAL SEPARATION BETWEEN UTILITY LINES CARRYING THE SAME MATERIAL (E.G., WATER AND WATER) SHALL BE 5 FEET.

21. WHEN INSTALLING CUT IN TEES OR OTHER APPURTENANCES ON/IN AN EXISTING WATER LINE, THE PIPE MATERIAL BETWEEN THE EXISTING WATER LINE AND THE CUT IN TEE OR OTHER APPURTENANCE SHALL REMAIN CONSISTENT.

22. NO POLYVINYL CHLORIDE (PVC) PIPE STORED OUTSIDE AND EXPOSED TO SUNLIGHT SHALL EXCEED THE MANUFACTURER'S RECOMMENDATION EXPOSURE TIME. THIS TIME SHALL BEGIN FROM THE DATE OF MANUFACTURE. IF THE TIME WILL BE GREATER THAN THE MANUFACTURE'S RECOMMENDED TIME, THE PIPE SHALL BE COVERED WITH AN OPAQUE MATERIAL. AIR CIRCULATION SHALL BE PROVIDED UNDER THE COVERING.

23. FOR TAPPING PVC C-900 PIPE, AN APPROVED TAPPING SADDLE SHALL BE USED. THE TAPPING MACHINE USED TO MAKE THE CONNECTION MUST OPERATE WITH A CUTTING/TAPPING TOOL WHICH IS CLASSIFIED AS A CORE CUTTING TOOL (EITHER WITH INTERNAL TEETH OR WITH DOUBLE SLOTS) OF THE SHELL DESIGN WHICH RETAINS THE COUPON WHILE PENETRATING THE WALL OF THE WATER MAIN. THE TAPPING MACHINE SHOULD PROVIDE THE STANDARD RATCHET HANDLE ON THE BORING BAR AND SHOULD BE OF THE DESIGN WHERE CUTTING AND TAPPING IS CONTROLLED AND ACCOMPLISHED WITH A FEED-NUT OR FEED-SCREW AND YOKE.

24. ALL BACKFLOW PROTECTION SHALL BE PROVIDED IN ACCORDANCE WITH THE COLORADO CROSS-CONNECTION CONTROL MANUAL, LATEST EDITION, AND AS REQUIRED NECESSARY BY THE CITY OF FORT LUPTON WATER AND SEWER DEPARTMENT. ALL BACKFLOW ASSEMBLIES MUST BE TESTED UPON INSTALLATION AND JUST PRIOR TO END OF WARRANTY PERIOD. OWNER SHALL BE RESPONSIBLE FOR TESTING EACH YEAR THEREAFTER.

STORM DRAINAGE NOTES:

1. THE CONTRACTOR SHALL VERIFY THE HORIZONTIAL AND VERTICAL ALIGNMENT OF ALL POINTS OF CONNECTION AND UTILITY CROSSINGS PRIOR TO INSTALLING ANY PIPE. IF A DESIGN MODIFICATION IS REQUIRED IT SHOULD BE BROUGHT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY AND COORDINATED WITH THE ENGINEER.

2. ALL STORM DRAINAGE CONSTRUCTION IS SUBJECT TO THE GENERAL NOTES ON THIS SHEET AS WELL AS THE STORM DRAINAGE CONSTRUCTION NOTES LISTED HERE.

3. THE STORM SEWER SYSTEM SHOWN ON THESE PLANS IS TO BE PRIVATELY OWNED, OPERATED AND MAINTAINED BY SUN COMMUNITIES OR THEIR ASSIGNS, EXCEPT AS NOTED HEREIN AS "PUBLIC", WHICH WILL BE OWNED AND MAINTAINED BY THE CITY OF FORT LUPTON.

4. ALL PRIVATE STORM DRAINAGE PIPES SHALL BE HIGH DENSITY POLYETHYLENE PIPE SYSTEM (HDPE) INSTALLED WITH FLEXIBLE PLASTIC (BITUMEN) GASKETS, ACCORDING TO THE MANUFACTURER'S INSTALLATION GUIDELINES PER AASHTO M294 AND ASTM D2321.

5. ALL PUBLIC STORM DRAINAGE PIPES SHALL BE RCP IN ACCORDANCE WITH ASTM C76. JOINTS SHALL INCLUDE RUBBER GASKETS IN ACCORDANCE WITH AASHTO M198. RCP PIPE SHALL BE CL III UNLESS OTHERWISE NOTED ON THE PLANS.

6. ALL STORM DRAINAGE PIPES SHALL HAVE A MINIMUM COVER OF 24" UNLESS LOAD CALCULATIONS ARE PROVIDED. UNDER NO CIRCUMSTANCES WILL ANY PIPE HAVE LESS THAN 18" COVER FROM THE FINISH SURFACE TO THE OUTSIDE WALL OF THE PIPE.

7. ALL STORM DRAINAGE PIPES SHALL BE BEDDED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND/OR FORT LUPTON CRITERIA

8. ALL STORM DRAINAGE TRENCHES SHALL BE SLOPED OR BRACED AND SHEETED AS NECESSARY FOR THE SAFETY OF THE WORKERS AND THE PROTECTION OF OTHER UTILITIES AND IN COMPLIANCE WITH ALL APPLICABLE STATE AND FEDERAL REQUIREMENTS. ALL EXCAVATION OPERATION SAFETY IS THE RESPONSIBILITY OF THE CONTRACTOR.

9. ALL MANHOLE RIM ELEVATIONS GIVEN ON THESE PLANS ARE TO BE CONSIDERED APPROXIMATE. THE CONTRACTOR SHALL SET THE FINAL RIM ELEVATION BASED ON THE COMPLETED FINISH SURFACE.

10. ALL STORM DRAINAGE PIPES SHALL HAVE A MINIMUM HORIZONTAL SEPARATION OF 10' FROM ALL WATER LINES. WHERE LINES CROSS, THERE SHALL BE A MINIMUM OF 18" CLEAR VERTICAL SEPARATION.

10. ALL STORM SEWER IMPROVEMENTS (PUBLIC AND PRIVATE) INCLUDING, BUT NOT LIMITED TO, INLETS, PIPES, CULVERTS, CHANNELS, DITCHES, HYDRAULIC STRUCTURES, RIPRAP, DETENTION BASINS, FOREBAYS, MICROPOOLS, AND WATER QUALITY FACILITIES REQUIRE PERMITTING AND INSPECTIONS. CONTACT THE TOWN OF LARKSPUR FOR PERMITTING REQUIREMENTS.

11. EPOXY COATED REBAR IS REQUIRED ON ALL DRAINAGE STRUCTURES.

12. CLASS D CONCRETE FOR ALL DRAINAGE STRUCTURES.

13. TOE WALLS ARE REQUIRED ON FLARED END SECTIONS AT THE OUTLET END OF CULVERTS AND STORM SEWER OUTFALLS.

14. FILTER FABRIC IS REQUIRED UNDER ALL RIPRAP PADS.

SANITARY SEWER NOTES:

1. ALL STORM SEWER IMPROVEMENTS (PUBLIC AND PRIVATE) INCLUDING, BUT NOT LIMITED TO, INLETS, PIPES, CULVERTS, CHANNELS, DITCHES, HYDRAULIC STRUCTURES, RIPRAP, DETENTION BASINS, FOREBAYS, MICROPOOLS, AND WATER QUALITY FACILITIES REQUIRE PERMITTING AND INSPECTIONS. CONTACT THE FORT LUPTON FOR PERMITTING REQUIREMENTS.

2. ALL SANITARY SEWER CONSTRUCTION IS SUBJECT TO THE GENERAL NOTES ON THIS SHEET AS WELL AS THE SANITARY SEWER CONSTRUCTION NOTES LISTED HEREIN.

3. THE SANITARY SANITARY SEWER SYSTEM SHOWN ON THESE PLANS IS TO BE PRIVATELY OWNED, OPERATED AND MAINTAINED BY SUN COMMUNITIES OR THEIR ASSIGNS. WHERE APPLICABLE, THE CITY OF FORT LUPTON, STANDARDS AND SPECIFICATIONS SHALL BE USED UNLESS SPECIFICALLY NOTED OTHERWISE.

4. ALL SANITARY SEWER PIPELINES SHALL BE PVC, SDR-35, UNLESS OTHERWISE NOTED, IN ACCORDANCE WITH ASTM D-3034, BELL AND SPIGOT WITH ELASTOMERIC SEAL.

5. ALL SANITARY SEWER PIPELINES SHALL HAVE A MINIMUM COVER OF 8' FEET. SANITARY SEWER MAINS WITH GREATER THAN 15 FEET OF COVER SHALL BE SDR-26.

6. ALL SANITARY SEWER PIPELINES SHALL BE BEDDED IN ACCORDANCE WITH DETAILS PROVIDED HEREIN AND/OR FORT LUPTON CRITERIA.

7. ALL MANHOLE RIM ELEVATIONS GIVEN ON THESE PLANS ARE CONSIDERED APPROXIMATE. THE CONTRACTOR SHALL SET THE FINAL RIM ELEVATION BASED ON THE COMPLETE FINISH SURFACE.

8. ALL SEWER LINES SHALL HAVE A MINIMUM HORIZONTAL SEPARATION OF 10 FEET EDGE-TO-EDGE FROM ALL WATER LINES. WHERE LINES CROSS, THERE SHALL BE A MINIMUM OF 18" CLEAR VERTICAL SEPARATION. IF WATER LINE CROSSES UNDER SEWER LINE THEN SEWER LINE SHALL BE ENCASED 9' EITHER SIDE OF WATER LINE PER FORT LUPTON SPECIFICATIONS, OR C900 CL 200 PIPE MAY BE USED.

9. ALL SANITARY SEWER LINES MUST BE TESTED IN ACCORDANCE WITH FORT LUPTON SPECIFICATIONS.

10. ALL SANITARY SEWER LINE TRENCHES SHALL BE SLOPED OR BRACED AND SHEETED AS NECESSARY FOR THE SAFETY OF THE WORKERS AND THE PROTECTION OF OTHER UTILITIES, IN COMPLIANCE WITH ALL APPLICABLE STATE AND FEDERAL REQUIREMENTS. ALL EXCAVATION OPERATION SAFETY IS THE RESPONSIBILITY OF THE CONTRACTOR.

11. MAXIMUM DEFLECTION FOR SANNITARY SEWERS SHALL NOT EXCEED THE MANUFACTURER'S MAXIMUM ALLOWABLE DEFLECTION.

12. SANITARY SEWER SERVICES SHALL BE CONNECTED A MINIMUM OF 5 FEET OUTSIDE OF MANHOLES WITH A WYE CONNECTION WHENEVER POSSIBLE BUT IN NO CASE CLOSER THAN 3'. SERVICES MAY TIE DIRECTLY INTO THE MANHOLE IF THE MANHOLE IS AT THE END OF A RUN..

13. MINIMUM COVER FOR SANITARY SEWER SERVICE LINES SHALL BE 5 FEET AND THE MINIMUM SLOPE SHALL BE 2.0%.

14. ALL SANITARY SEWER SERVICE LINES SHALL BE CONSTRUCTED ALONG THE SHORTEST AND STRAIGHTEST ROUTE POSSIBLE.

15. THE MINIMUM HORIZONTAL SEPARATION BETWEEN UTILITY LINES CARRYING THE SAME MATERIAL (E.G., WASTEWATER AND WASTEWATER) SHALL BE 5 FEET.

16. CLEANOUTS SHALL BE PROVIDED AT THE END OF ALL SERVICE RUNS WITH MORE THAN ONE UNIT.

17. CLEANOUTS SHALL BE INSTALLED IN CONFORMANCE WITH DETAILS SHOWN HEREIN.

18. EPOXY COATED REBAR IS REQUIRED ON ALL DRAINAGE STRUCTURES.

19. CLASS D CONCRETE FOR ALL DRAINAGE STRUCTURES.

20. TOE WALLS ARE REQUIRED ON FLARED END SECTIONS AT THE OUTLET END OF CULVERTS AND STORM SEWER OUTFALLS.

21. FILTER FABRIC IS REQUIRED UNDER ALL RIPRAP PADS.

ROADWAY STANDARD NOTES:

1. THE CONTRACTOR SHALL VERIFY THE HORIZONTIAL AND VERTICAL ALIGNMENT OF ALL POINTS OF CONNECTION AND UTILITY CROSSINGS PRIOR TO INSTALLING ANY PIPE. IF A DESIGN MODIFICATION IS REQUIRED IT SHOULD BE BROUGHT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY AND COORDINATED WITH THE ENGINEER.

2. ALL PRIVATE ROADWAY CONSTRUCTION IS SUBJECT TO THE GENERAL NOTES ON THIS SHEET AS WELL AS THE ROADWAY STANDARD CONSTRUCTION NOTES LISTED HEREIN.

3. THE PRIVATE ROADWAYS SHOWN ON THESE PLANS ARE TO BE PRIVATELY OWNED, OPERATED AND MAINTAINED BY SUN COMMUNITIES OR THEIR ASSIGNS. EXCEPT AS NOTED HEREIN AS "PUBLIC", WHICH WILL BE OWNED AND MAINTAINED BY THE CITY OF FORT LUPTON.

4. ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION BY THE CITY OF FORT LUPTON AS APPLICABLE. THE CITY RESERVES THE RIGHT TO ACCEPT OR REJECT ANY SUCH MATERIALS AND WORKMANSHIP FOR PUBLIC ROADS THAT DOES NOT CONFORM TO THE CITY OF FORT LUPTON, DESIGN STANDARDS AND SPECIFICATIONS.

5. THE CONTRACTOR SHALL NOTIFY THE CITY OF FORT LUPTON INSPECTION DIVISION, A MINIMUM OF 24-HOURS AND A MAXIMUM OF 72-HOURS PRIOR TO STARTING CONSTRUCTION OF THE PUBLIC ROADS.

6. CONSTRUCTION OF PUBLIC ROADS WILL NOT BEGIN UNTIL ALL APPLICABLE PERMITS HAVE BEEN ISSUED.

7. THE LOCATION OF EXISTING UTILITIES SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO ACTUAL CONSTRUCTION. FOR INFORMATION CONTACT: COLORADO 811, AT 1-800-922-1987 (WWW.COLORADO811.ORG).

8. THE CONTRACTOR SHALL HAVE ONE (1) COPY OF THE APPROVED PLANS, ONE (1) COPY OF THE APPLICABLE ROADWAY DESIGN AND CONSTRUCTION STANDARDS AND ALL APPLICABLE PERMITS AT THE JOB SITE AT ALL TIMES.

9. PAVING, INCLUDING CONSTRUCTION OF CURB AND GUTTER SHALL NOT START UNTIL A PAVEMENT DESIGN REPORT AND SUBGRADE COMPACTION TESTS ARE ACCEPTED BY THE OWNER.

10. ALL STATIONING IS BASED ON CENTERLINE OF ROADWAYS UNLESS OTHERWISE NOTED.

11. ANY LAYER OF BITUMINOUS PAVEMENT THAT IS TO HAVE A SUCCEEDING LAYER PLACED THEREON SHALL BE COMPLETED FULL WIDTH BEFORE SUCCEEDING LAYER IS PLACED.

12. TYPE OF COMPACTION FOR THIS PROJECT SHALL BE AASHTO T-99 (ASTM D698) (STANDARD PROCTOR) FOR SUBGRADE SOILS AND AASHTO T-180 (ASTM D1557) (MODIFIED PROCTOR) FOR AGGREGATE BASE COURSE.

13. WHEN EXISTING ASPHALT PAVEMENT IS TO BE REMOVED, IT SHALL BE CUT TO A NEAT WORK LINE WITH A CUTTING WHEEL ATTACHED TO A BLADE, SAW OR OTHER METHODS AS APPROVED BY THE ENGINEER. THIS WORK WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE CONSIDERED AS SUBSIDIARY TO OTHER WORK.

PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

BENCHMARK:

VERTICAL DATUM: NAVD 88 - GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

811 Know what's below. Call before you dig.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. TH

LEGEND

- PROPERTY BOUNDARY
- PROPOSED RIGHT-OF-WAY
- EXISTING RIGHT-OF-WAY
- PROPOSED LOT LINE
- EXISTING LOT LINE
- PROPOSED CATCH CURB & GUTTER
- PROPOSED SPILL CURB & GUTTER
- EXISTING CURB & GUTTER
- PROPOSED SIDEWALK
- EXISTING SIDEWALK
- EXISTING SECTION LINE
- PROPOSED EASEMENT
- EXISTING EASEMENT
- PROPOSED CONTOURS
- EXISTING CONTOURS
- PROPOSED SANITARY
- EXISTING SANITARY
- S — PROPOSED SANITARY SERVICE
- PROPOSED STORM
- EXISTING STORM
- PROPOSED WATER
- EXISTING WATER
- W — PROPOSED WATER SERVICE
- PROPOSED HYDRANT
- EXISTING HYDRANT
- PROPOSED WATER VALVE
- EXISTING WATER VALVE
- EXISTING POWER POLE
- IRR — IRR — EXISTING IRRIGATION LINE
- GAS — EXISTING GAS LINE
- T — T — T — EXISTING TELEPHONE LINE
- OHE — EXISTING OVERHEAD ELECTRICAL
- E — E — E — E — EXISTING ELECTRICAL
- CATV — EXISTING CABLE TV
- FO — FO — FO — EXISTING FIBER OPTIC CABLE
- EXISTING FENCE

ABBREVIATIONS

BM	BENCHMARK	NTS	NOT TO SCALE
BNDY	BOUNDARY	NW	NORTHWEST
CFS	CUBIC FEET PER SECOND	OC	ON CENTER
CIP	CAST IRON PIPE	OHP	OVERHEAD POWER
CL	CENTERLINE	PC	POINT OF CURVATURE
CMP	CORRUGATED METAL PIPE	PCC	POINT OF COMPOUND CURVE
CMU	CONCRETE MASONRY UNIT	PE	POLYETHYLENE
CO	CLEAN OUT	PI	POINT OF INTERSECTION
CONC	CONCRETE	PL	PROPERTY LINE
CY	CUBIC YARDS	POC	POINT OF CONNECTION
DIA	DIAMETER	PP	POWER POLE
DIP	DUCTILE IRON PIPE	PRC	POINT OF REVERSE CURVE
DL	DESIGN LINE	PROP	PROPOSED
E	EAST	PSI	POUNDS PER SQUARE INCH
EG	EXISTING GROUND or GRADE	PT	POINT OF TANGENT
ELEV	ELEVATION	PVC	POLY VINYL CHLORIDE PIPE
ELEC	ELECTRIC	PVI	POINT OF VERTICAL INTERSECTION
EOP	EDGE OF PAVEMENT	Q	RATE OF FLOW
ERCP	ELLIPTICAL REINFORCED CONCRETE PIPE	QTY	QUANTITY
ESMT	EASEMENT	R	RADIUS
ETC	ETCETERA	RCB	REINFORCED CONCRETE BOX
EX	EXISTING	RCP	REINFORCED CONCRETE PIPE
FDC	FIRE DEPARTMENT CONNECTION	RET	RETAINING
FF	FINISH FLOOR	REV	REVISION
FG	FINISH GROUND or GRADE	ROW	RIGHT-OF-WAY
FH	FIRE HYDRANT	R/W	RIGHT-OF-WAY
FL	FLOW LINE	RR	RAILROAD
FT	FEET or FOOT	S	SOUTH
G	GAS	SW	SIDEWALK
GB	GRADE BREAK	SE	SOUTHEAST
GPM	GALLONS PER MINUTE	SF	SQUARE FEET
GV	GATE VALVE	SS	SANITARY SEWER
H	HIGH OR HEIGHT	SSMH	SANITARY SEWER MANHOLE
HDPE	HIGH DENSITY POLYETHYLENE	STA	STATION
HGL	HYDRAULIC GRADE LINE	STD	STANDARD
HOA	HOMEOWNER'S ASSOCIATION	STMH	STORM SEWER MANHOLE
HOR	HORIZONTAL	SW	SOUTHWEST
HP	HIGH POINT	SY	SQUARE YARDS
INV	INVERT	TC	TOP OF CURB
IRR	IRRIGATION	TELE	TELEPHONE
L	LENGTH	TF	TOP OF FOOTING
LBS	POUNDS	TW	TOP OF WALL
LF	LINEAL FEET	TWW	TOP OF WING WALL
LP	LOW POINT	TYP	TYPICAL
LT	LEFT	UG	UNDERGROUND
MAX	MAXIMUM	VC	VERTICAL CURVE
MH	MANHOLE	VERT	VERTICAL
MIN	MINIMUM	W	WEST
ML	MATCHLINE	W/	WITH
N	NORTH	W/O	WITHOUT
NAVD	NORTH AMERICAN VERTICAL DATUM	WL	WATER LINE
NE	NORTHEAST	WM	WATER METER
NG	NATURAL GRADE	WTR	WATER
NO	NUMBER		

PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

MASTER REVISION / TRACKING TABULATION

Number	Date	Description	Sheets Revised
A	DD/MM/YY	SUBMITTALS/PRE-APPROVAL CHANGES DESCRIPTIONS	"LIST OF SHEETS MODIFIED"

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CLIENT
SUN COMMUNITIES
WILLOW BEND SUBDIVISION
FORT LUPTON, COLORADO
PRELIMINARY CONSTRUCTION PLANS
LEGENDS & MASTER REVISION TABULATION

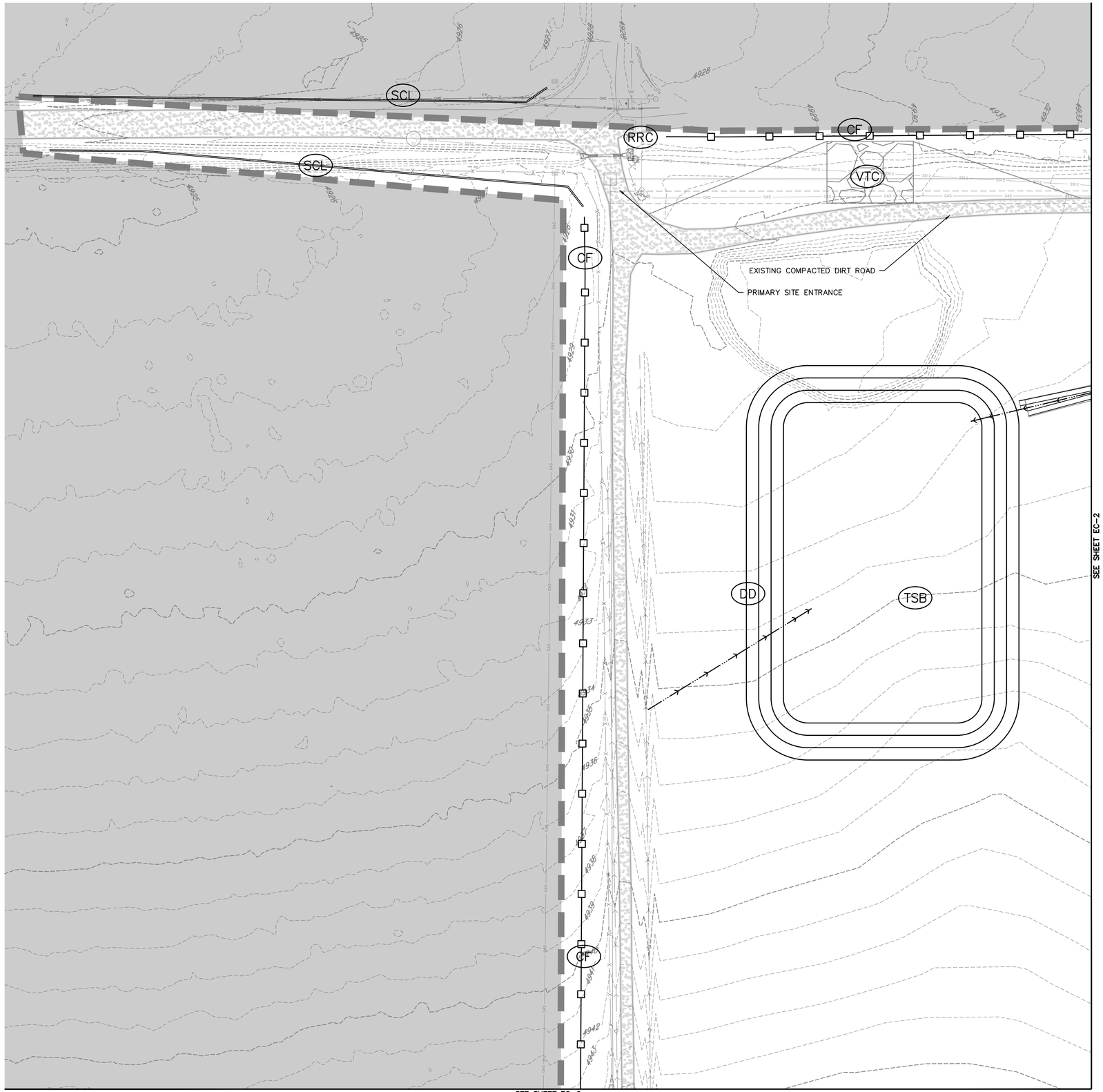
SUN COMMUNITIES, INC.

DATE DATE

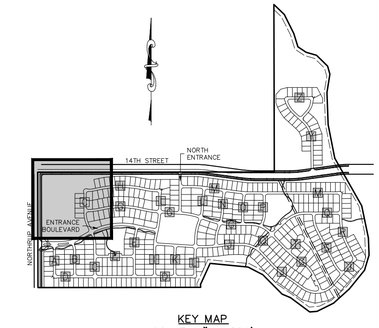
REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. GN-3

CAD FILE: 19001956-COVER.DWG



NOTES:
1. SEE EROSION CONTROL DETAILS ON SHEETS EC-37 – EC-39.



KEY MAP
SCALE: 1" = 800'

BMP LEGEND

CD	CHECK DAM
CB	COMPOST BLANKET
CFB	COMPOST FILTER BERM
CWA	CONCRETE WASHOUT AREA
CF	CONSTRUCTION FENCE
CM	CONSTRUCTION MARKER
DW	DEWATERING
DD	DIVERSION DITCH
ECB	EROSION CONTROL BLANKET
IP	INLET PROTECTION
RCD	REINFORCED CHECK DAM
RRB	REINFORCED ROCK BERM
RRC	RRB FOR CULVERT PROTECTION
SB	SEDIMENT BASIN
SCL	SEDIMENT CONTROL LOG
ST	SEDIMENT TRAP
SM	SEEDING AND MULCHING
SF	SILT FENCE
SSA	STABILIZED STAGING AREA
SR	SURFACE ROUGHENING
TSD	TEMPORARY SLOPE DRAIN
TSC	TEMPORARY STREAM CROSSING
TER	TERRACING
VTC	VEHICLE TRACKING CONTROL
WW	VTC WITH WHEEL WASH
LOC	LIMITS OF CONSTRUCTION

40 0 40 80
(IN FEET)
1 inch = 40 ft.

PROJECT NO.: LUP2019–0039 &
PLAN NO.: SPL2019–0005

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

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FORT LUPTON, COLORADO

PRELIMINARY CONSTRUCTION PLANS
EROSION & SEDIMENT CONTROL PLANS
EROSION CONTROL – INITIAL AREA 1

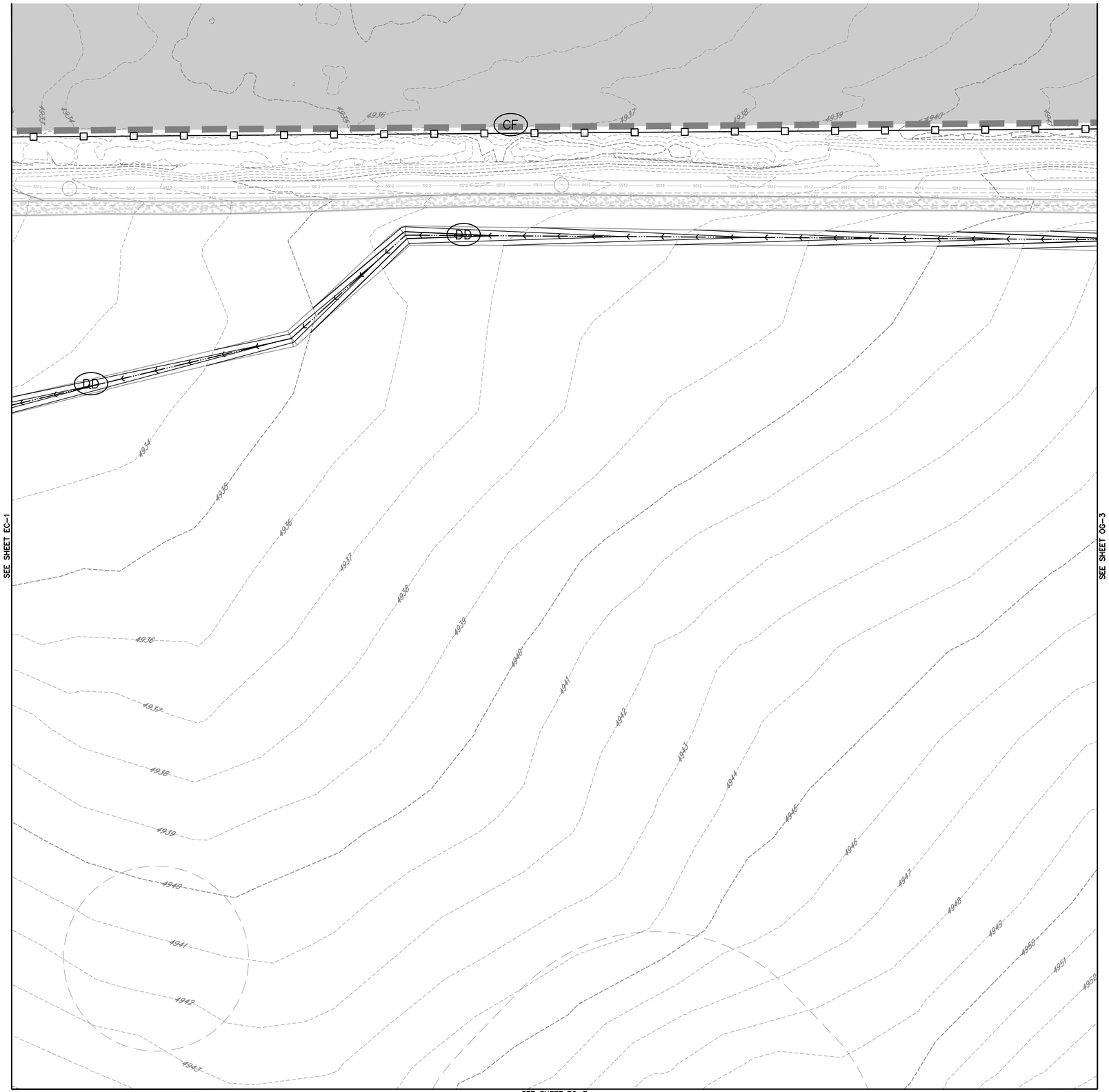
SUN COMMUNITIES, INC.

DATE	DATE

REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. EC-1

CAD FILE: 19001956-GESC-INITIAL.DWG



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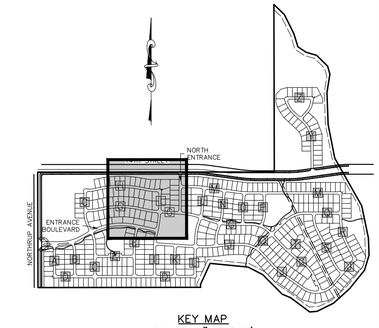

KEY MAP
SCALE: 1" = 800'

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TER	TERRACING
VTC	VEHICLE TRACKING CONTROL
WW	VTC WITH WHEEL WASH
LOC	LIMITS OF CONSTRUCTION

40 0 40 80
(IN FEET)
1 inch = 40 ft.

PROJECT NO.: LUP2019–0039 &
PLAN NO.: SPL2019–0005

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

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FORT LUPTON, COLORADO

PRELIMINARY CONSTRUCTION PLANS
EROSION & SEDIMENT CONTROL PLANS
EROSION CONTROL – INITIAL AREA 2

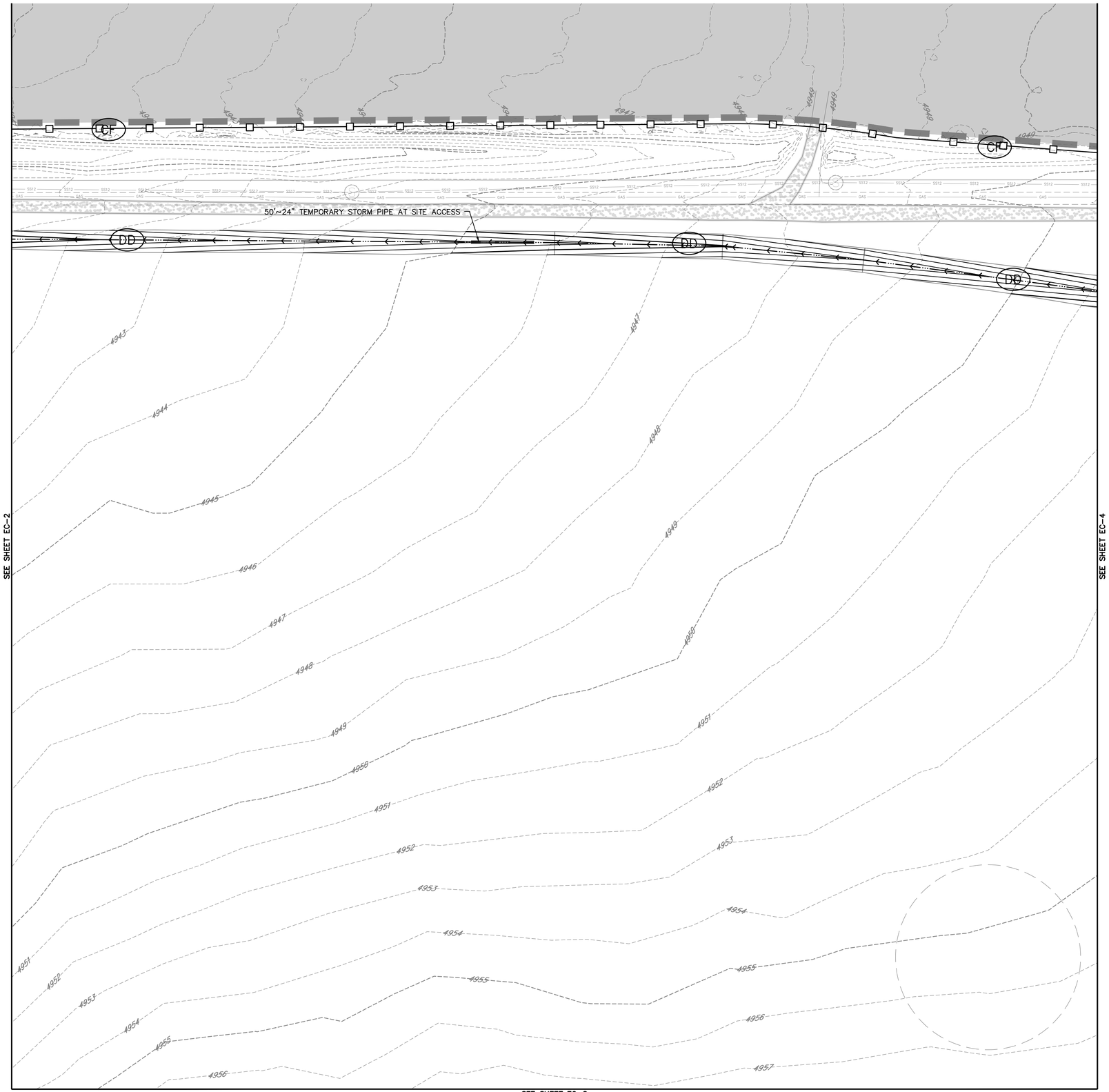
CLIENT
SUN COMMUNITIES, INC.

DATE	DATE

REVISIONS

DR. TN | CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. EC-2

CAD FILE: 19001956-GESC-INITIAL.DWG



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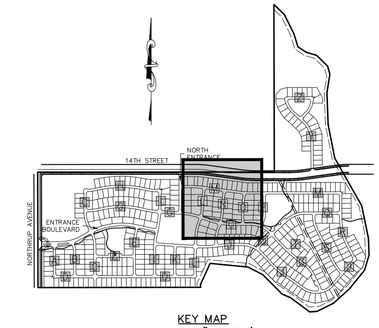

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SCALE: 1" = 800'

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WW	VTC WITH WHEEL WASH
LOC	LIMITS OF CONSTRUCTION

40 0 40 80
(IN FEET)
1 inch = 40 ft.

PROJECT NO.: LUP2019–0039 &
PLAN NO.: SPL2019–0005

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

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FORT LUPTON, COLORADO

PRELIMINARY CONSTRUCTION PLANS
EROSION & SEDIMENT CONTROL PLANS
EROSION CONTROL – INITIAL AREA 3

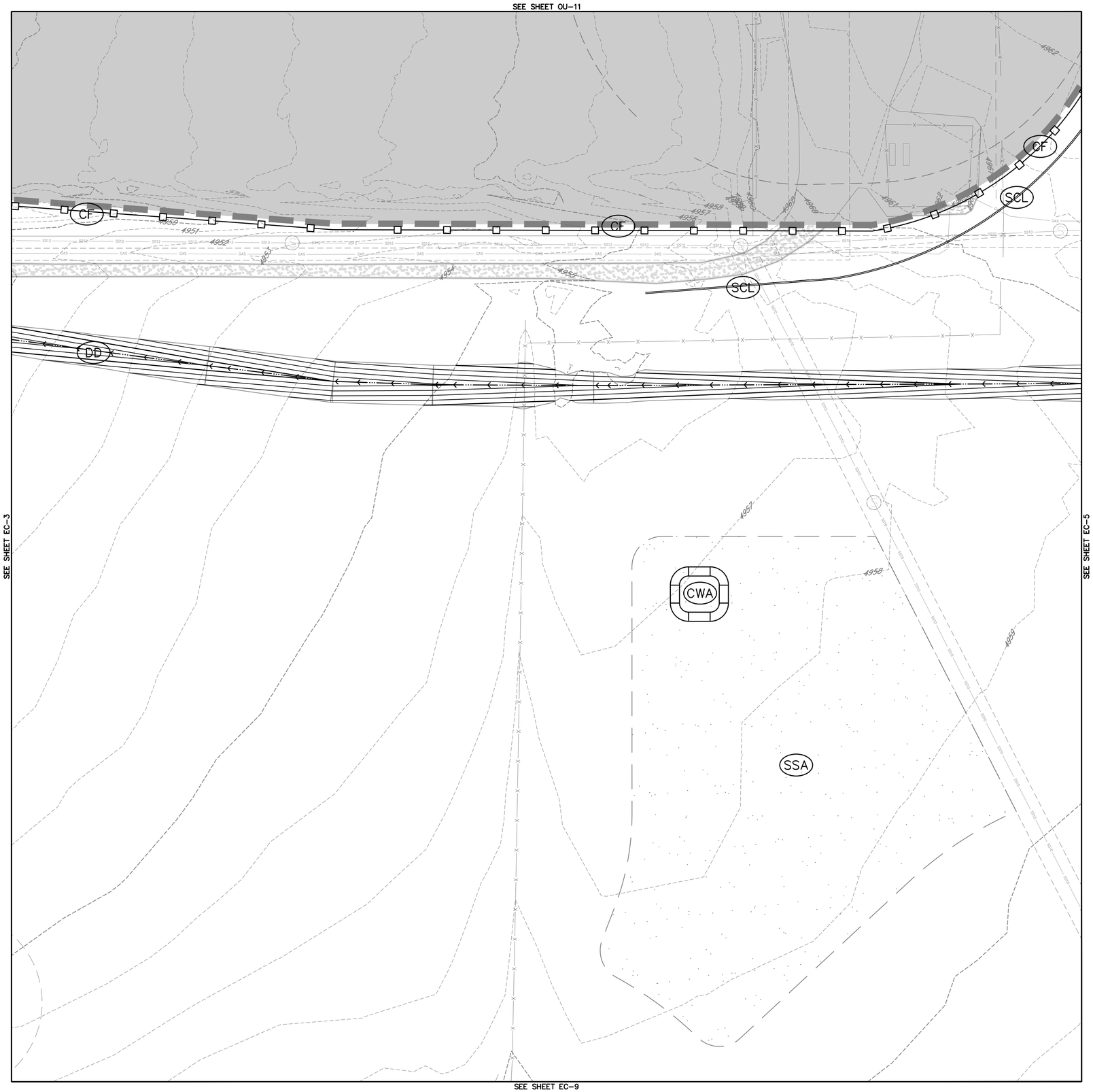
SUN COMMUNITIES, INC.

DATE	DATE

REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. EC-3

CAD FILE: 19001956–EESC–INITIAL.DWG



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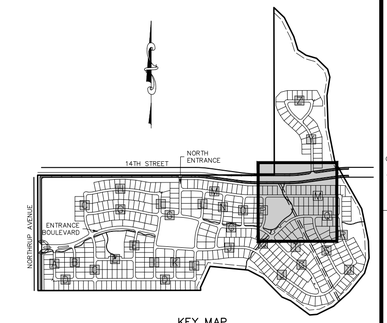

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BMP LEGEND

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WW	VTC WITH WHEEL WASH
LOC	LIMITS OF CONSTRUCTION

40 0 40 80
(IN FEET)
1 inch = 40 ft.

PROJECT NO.: LUP2019–0039 &
PLAN NO.: SPL2019–0005

BENCHMARK:
VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

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PRELIMINARY CONSTRUCTION PLANS
EROSION & SEDIMENT CONTROL PLANS
EROSION CONTROL – INITIAL AREA 4

SUN COMMUNITIES, INC.

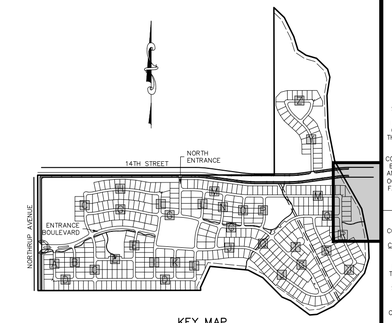
DATE DATE

REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. EC-4

CAD FILE: 19001956-EESC-INITIAL.DWG

NOTES:
1. SEE EROSION CONTROL DETAILS ON SHEETS EC-37 – EC-39.



KEY MAP
SCALE: 1" = 800'

BMP LEGEND

CD	CHECK DAM
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VTC	VEHICLE TRACKING CONTROL
WW	VTC WITH WHEEL WASH
LOC	LIMITS OF CONSTRUCTION

40 0 40 80
(IN FEET)
1 inch = 40 ft.

PROJECT NO.: LUP2019–0039 &
PLAN NO.: SPL2019–0005

BENCHMARK:
VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

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FORT LUPTON, COLORADO

PRELIMINARY CONSTRUCTION PLANS
EROSION & SEDIMENT CONTROL PLANS
EROSION CONTROL – INITIAL AREA 5

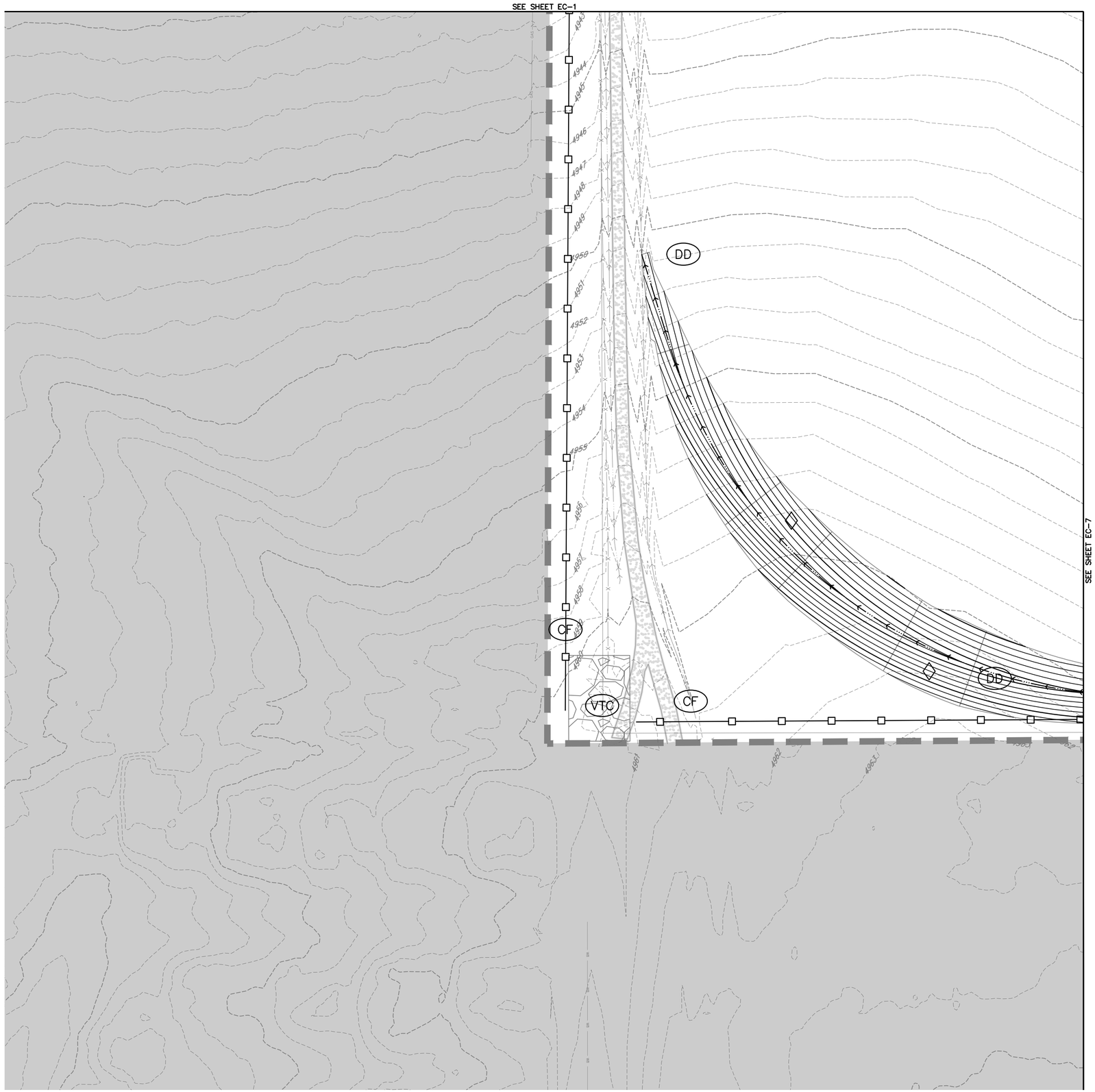
SUN COMMUNITIES, INC.

DATE DATE

REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. EC-5

CAD FILE: 19001956-GESC-INITIAL.DWG



NOTES:
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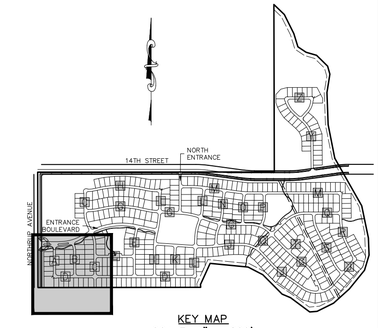

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PROJECT NO.: LUP2019–0039 &
PLAN NO.: SPL2019–0005

BENCHMARK:
VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

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FORT LUPTON, COLORADO

PRELIMINARY CONSTRUCTION PLANS
EROSION & SEDIMENT CONTROL PLANS
EROSION CONTROL – INITIAL AREA 6

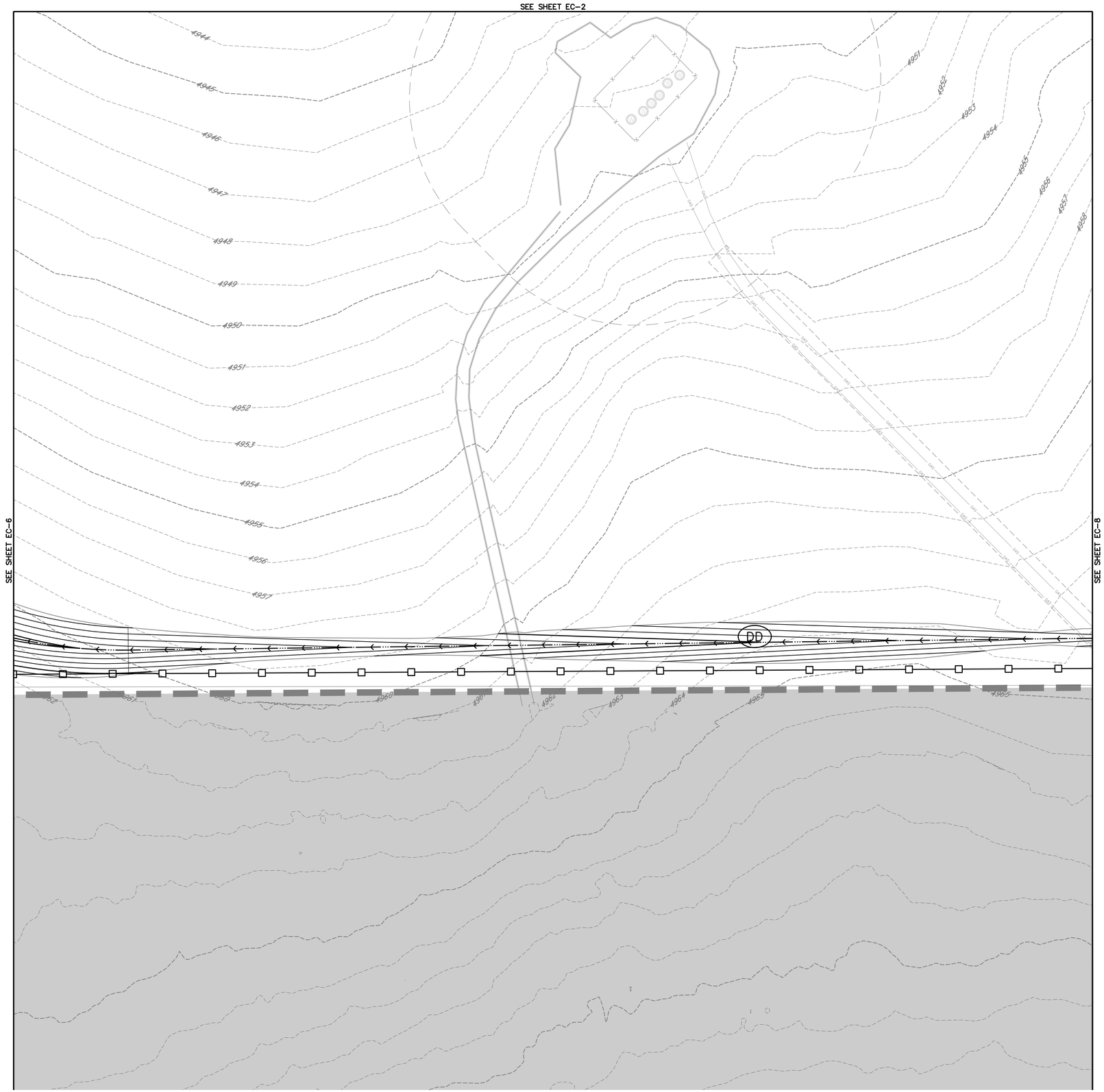
SUN COMMUNITIES, INC.

DATE DATE

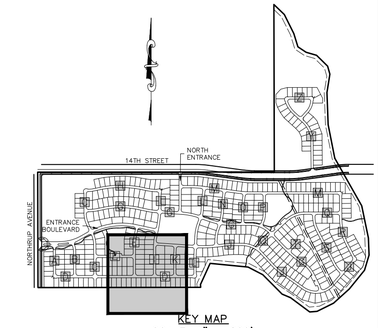
REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. EC-6

CAD FILE: 19001956-EESC-INITIAL.DWG



NOTES:
1. SEE EROSION CONTROL DETAILS ON SHEETS EC-37 – EC-39.



KEY MAP
SCALE: 1" = 800'

BMP LEGEND

CD	CHECK DAM
CB	COMPOST BLANKET
CFB	COMPOST FILTER BERM
CWA	CONCRETE WASHOUT AREA
CF	CONSTRUCTION FENCE
CM	CONSTRUCTION MARKER
DW	DEWATERING
DD	DIVERSION DITCH
ECB	EROSION CONTROL BLANKET
IP	INLET PROTECTION
RCD	REINFORCED CHECK DAM
RRB	REINFORCED ROCK BERM
RRC	RRB FOR CULVERT PROTECTION
SB	SEDIMENT BASIN
SCL	SEDIMENT CONTROL LOG
ST	SEDIMENT TRAP
SM	SEEDING AND MULCHING
SF	SILT FENCE
SSA	STABILIZED STAGING AREA
SR	SURFACE ROUGHENING
TSD	TEMPORARY SLOPE DRAIN
TSC	TEMPORARY STREAM CROSSING
TER	TERRACING
VTC	VEHICLE TRACKING CONTROL
WW	VTC WITH WHEEL WASH
LOC	LIMITS OF CONSTRUCTION

40 0 40 80
(IN FEET)
1 inch = 40 ft.

PROJECT NO.: LUP2019–0039 &
PLAN NO.: SPL2019–0005

BENCHMARK:
VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

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WILLOW BEND SUBDIVISION
FORT LUPTON, COLORADO

PRELIMINARY CONSTRUCTION PLANS
EROSION & SEDIMENT CONTROL PLANS
EROSION CONTROL – INITIAL AREA 7

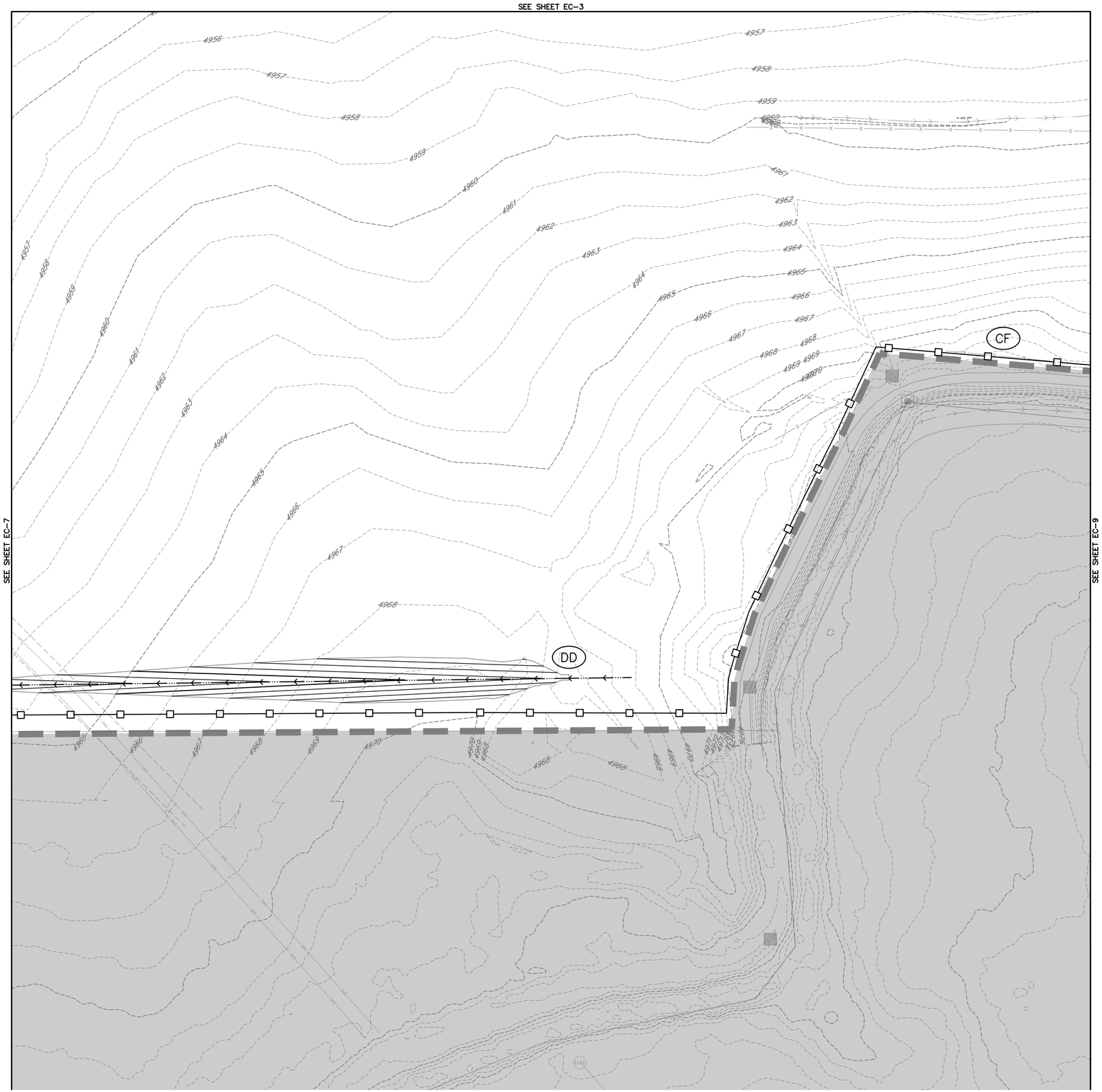
SUN COMMUNITIES, INC.

DATE DATE

REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. EC-7

CAD FILE: 19001956-EESC-INITIAL.DWG



NOTES:
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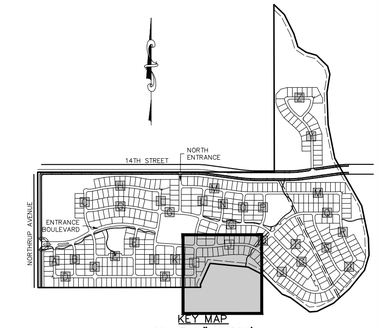

KEY MAP
SCALE: 1" = 800'

BMP LEGEND

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CB	COMPOST BLANKET
CFB	COMPOST FILTER BERM
CWA	CONCRETE WASHOUT AREA
CF	CONSTRUCTION FENCE
CM	CONSTRUCTION MARKER
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TSD	TEMPORARY SLOPE DRAIN
TSC	TEMPORARY STREAM CROSSING
TER	TERRACING
VTC	VEHICLE TRACKING CONTROL
WW	VTC WITH WHEEL WASH
LOC	LIMITS OF CONSTRUCTION

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(IN FEET)
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PROJECT NO.: LUP2019–0039 &
PLAN NO.: SPL2019–0005

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

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FORT LUPTON, COLORADO

PRELIMINARY CONSTRUCTION PLANS
EROSION & SEDIMENT CONTROL PLANS
EROSION CONTROL – INITIAL AREA 8

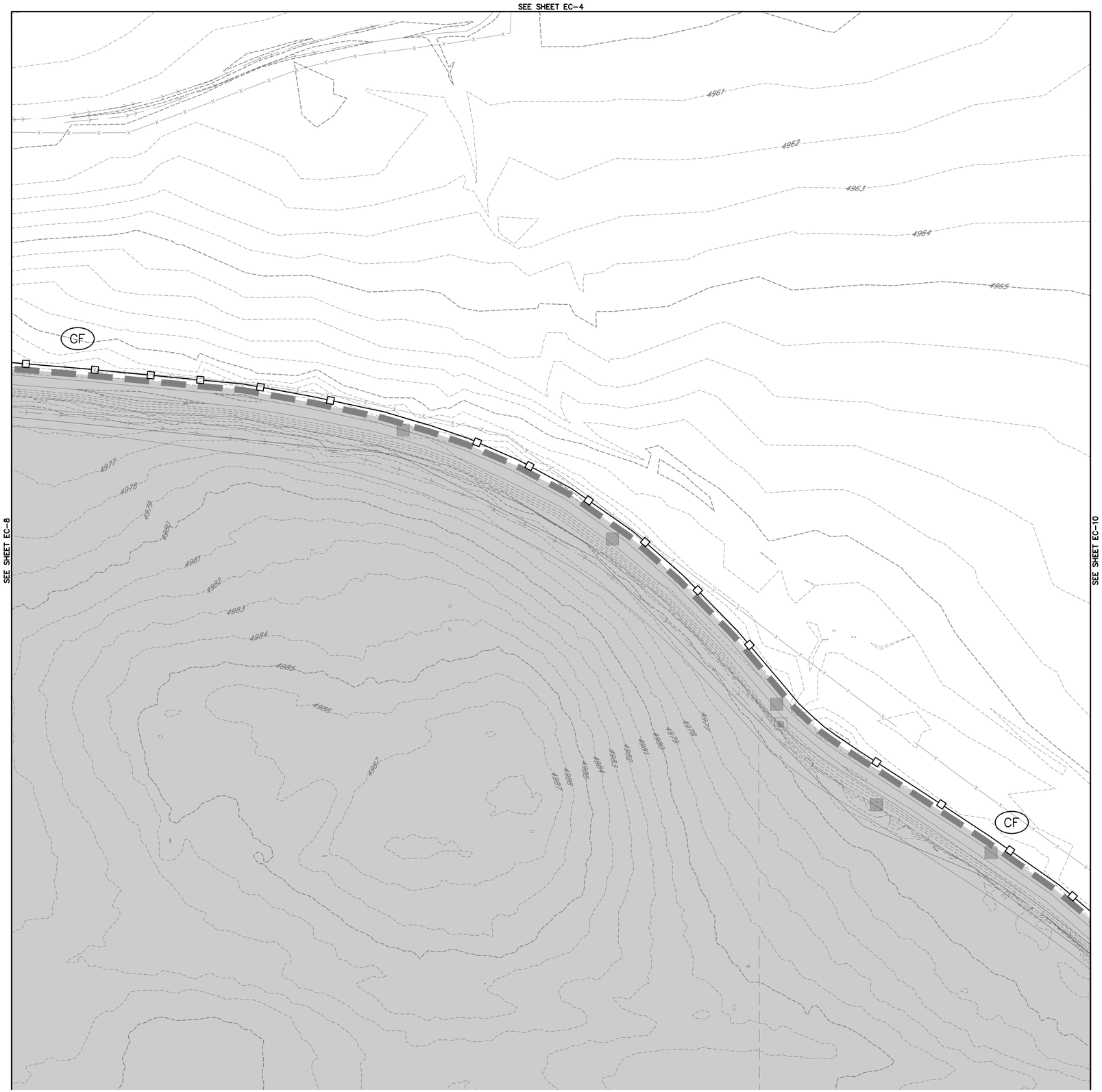
SUN COMMUNITIES, INC.

DATE
DATE

REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO.
EC-8

CAD FILE: 19001956-GESC-INITIAL.DWG



NOTES:
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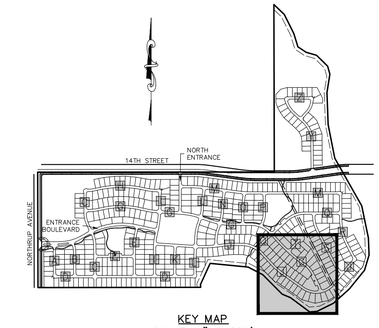

KEY MAP
SCALE: 1" = 800'

BMP LEGEND

CD	CHECK DAM
CB	COMPOST BLANKET
CFB	COMPOST FILTER BERM
CWA	CONCRETE WASHOUT AREA
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WW	VTC WITH WHEEL WASH
LOC	LIMITS OF CONSTRUCTION

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(IN FEET)
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PROJECT NO.: LUP2019–0039 &
PLAN NO.: SPL2019–0005

BENCHMARK:
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PRELIMINARY CONSTRUCTION PLANS
EROSION & SEDIMENT CONTROL PLANS
EROSION CONTROL – INITIAL AREA 9

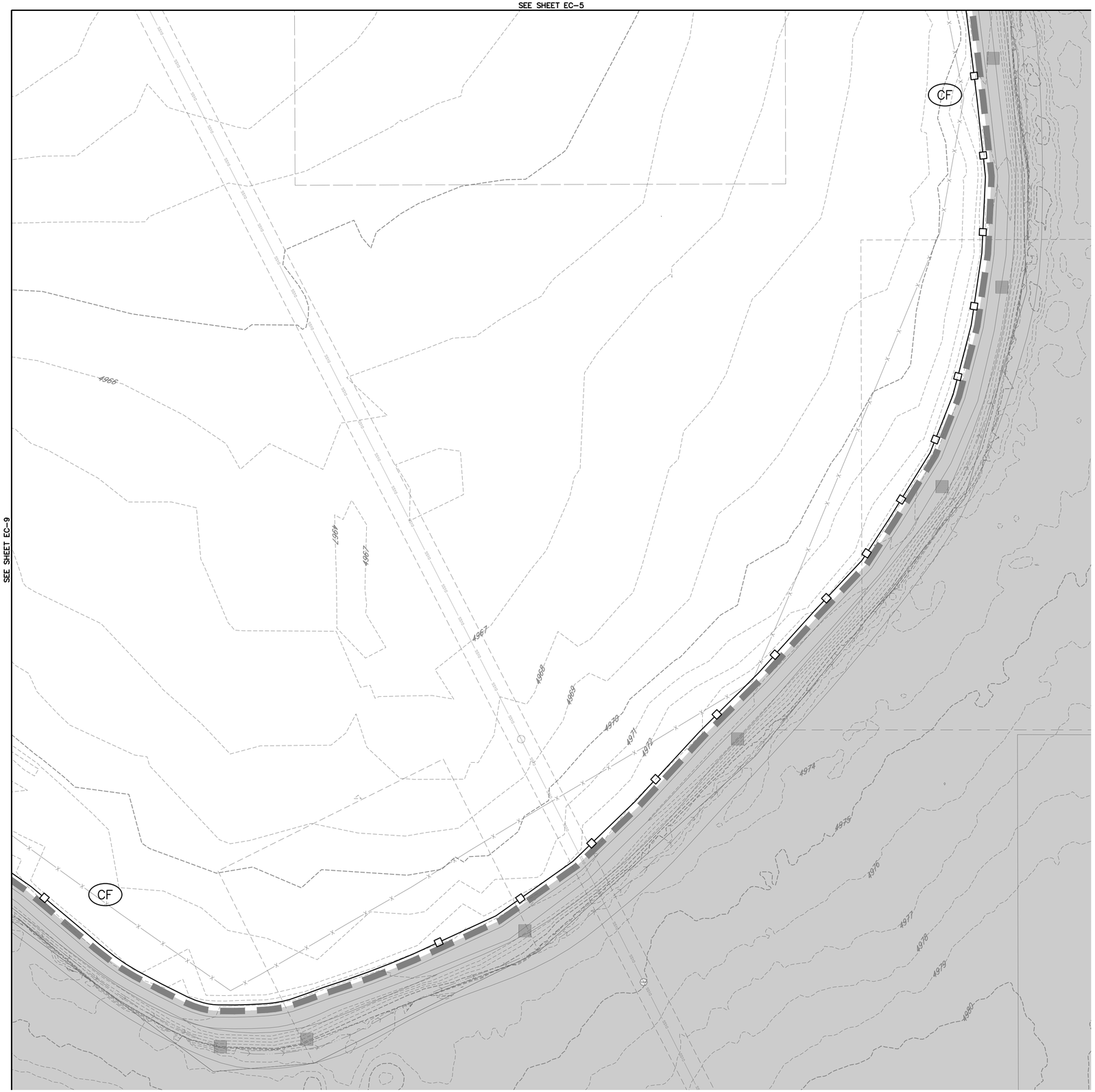
CLIENT
SUN COMMUNITIES, INC.
DATE DATE
REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. EC-9

CAD FILE: 19001956-GESC-INITIAL.DWG

SEE SHEET EC-5

SEE SHEET EC-9



NOTES:
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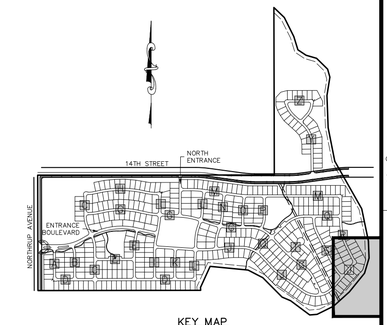

KEY MAP
SCALE: 1" = 800'

BMP LEGEND

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LOC	LIMITS OF CONSTRUCTION

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PROJECT NO.: LUP2019–0039 &
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BENCHMARK:
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PRELIMINARY CONSTRUCTION PLANS
EROSION & SEDIMENT CONTROL PLANS
EROSION CONTROL – INITIAL AREA 10

SUN COMMUNITIES, INC.

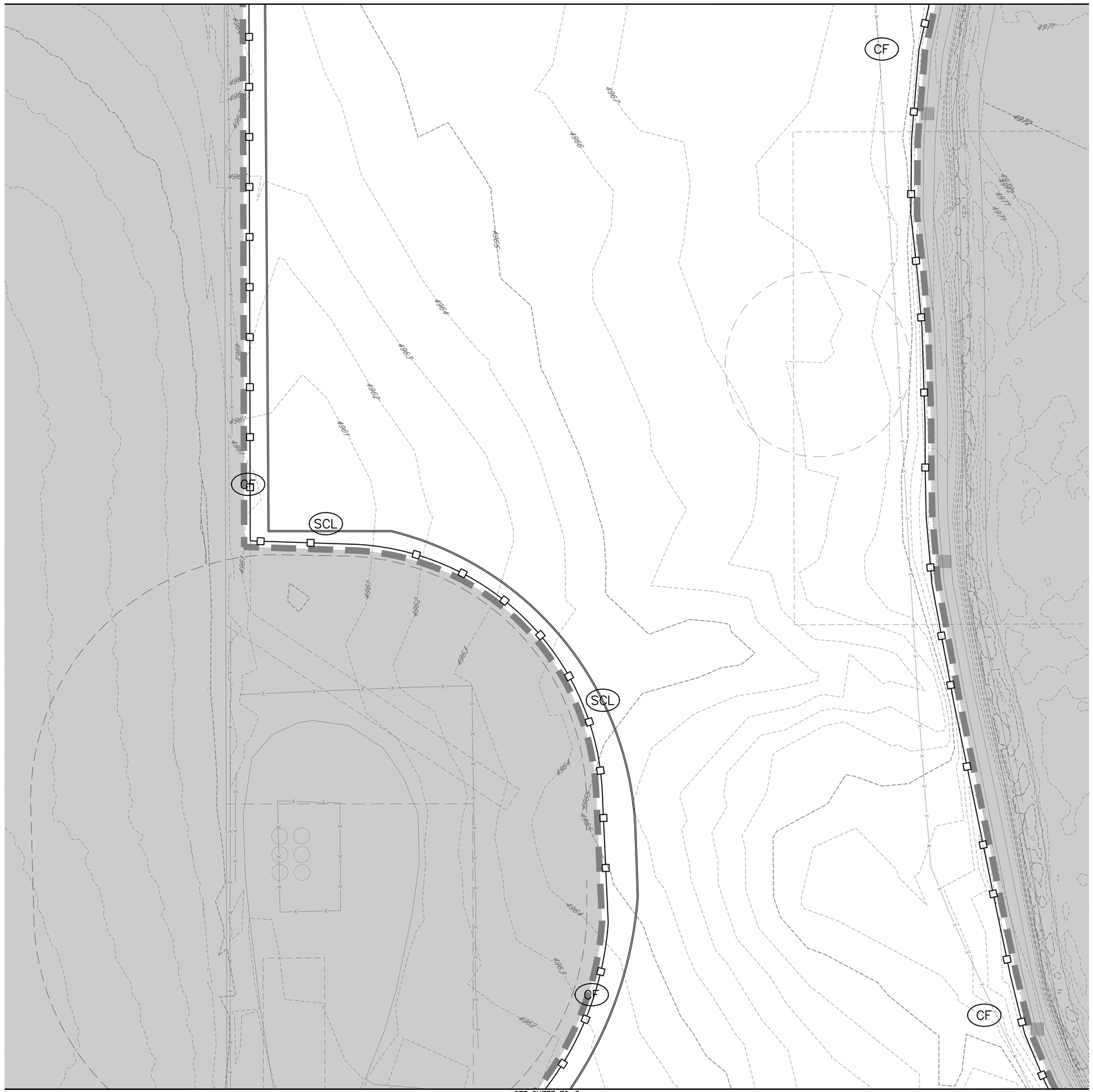
DATE DATE

REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. EC-10

CAD FILE: 19001956-EESC-INITIAL.DWG

SEE SHEET EC-12



SEE SHEET EC-5

NOTES:
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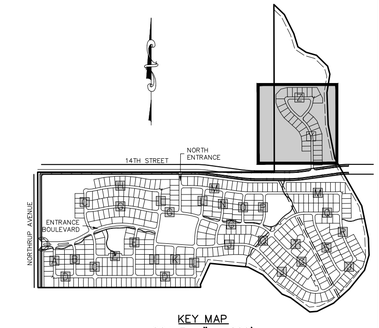

KEY MAP
SCALE: 1" = 800'

BMP LEGEND

CD	CHECK DAM
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WW	VTC WITH WHEEL WASH
LOC	LIMITS OF CONSTRUCTION

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PROJECT NO.: LUP2019–0039 &
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BENCHMARK:

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FORT LUPTON, COLORADO

PRELIMINARY CONSTRUCTION PLANS
EROSION & SEDIMENT CONTROL PLANS
EROSION CONTROL – INITIAL AREA 11

SUN COMMUNITIES, INC.

DATE	DATE

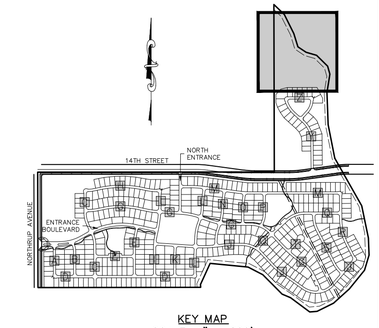
REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. EC-11

CAD FILE: 19001956-GESC-INITIAL.DWG

SEE SHEET EC-11

NOTES:
1. SEE EROSION CONTROL DETAILS ON SHEETS EC-37 – EC-39.



KEY MAP
SCALE: 1" = 800'

BMP LEGEND

CD	CHECK DAM
CB	COMPOST BLANKET
CFB	COMPOST FILTER BERM
CWA	CONCRETE WASHOUT AREA
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VTC	VEHICLE TRACKING CONTROL
WW	VTC WITH WHEEL WASH
LOC	LIMITS OF CONSTRUCTION

40 0 40 80
(IN FEET)
1 inch = 40 ft.

PROJECT NO.: LUP2019–0039 &
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BENCHMARK:

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FORT LUPTON, COLORADO

PRELIMINARY CONSTRUCTION PLANS
EROSION & SEDIMENT CONTROL PLANS
EROSION CONTROL – INITIAL AREA 12

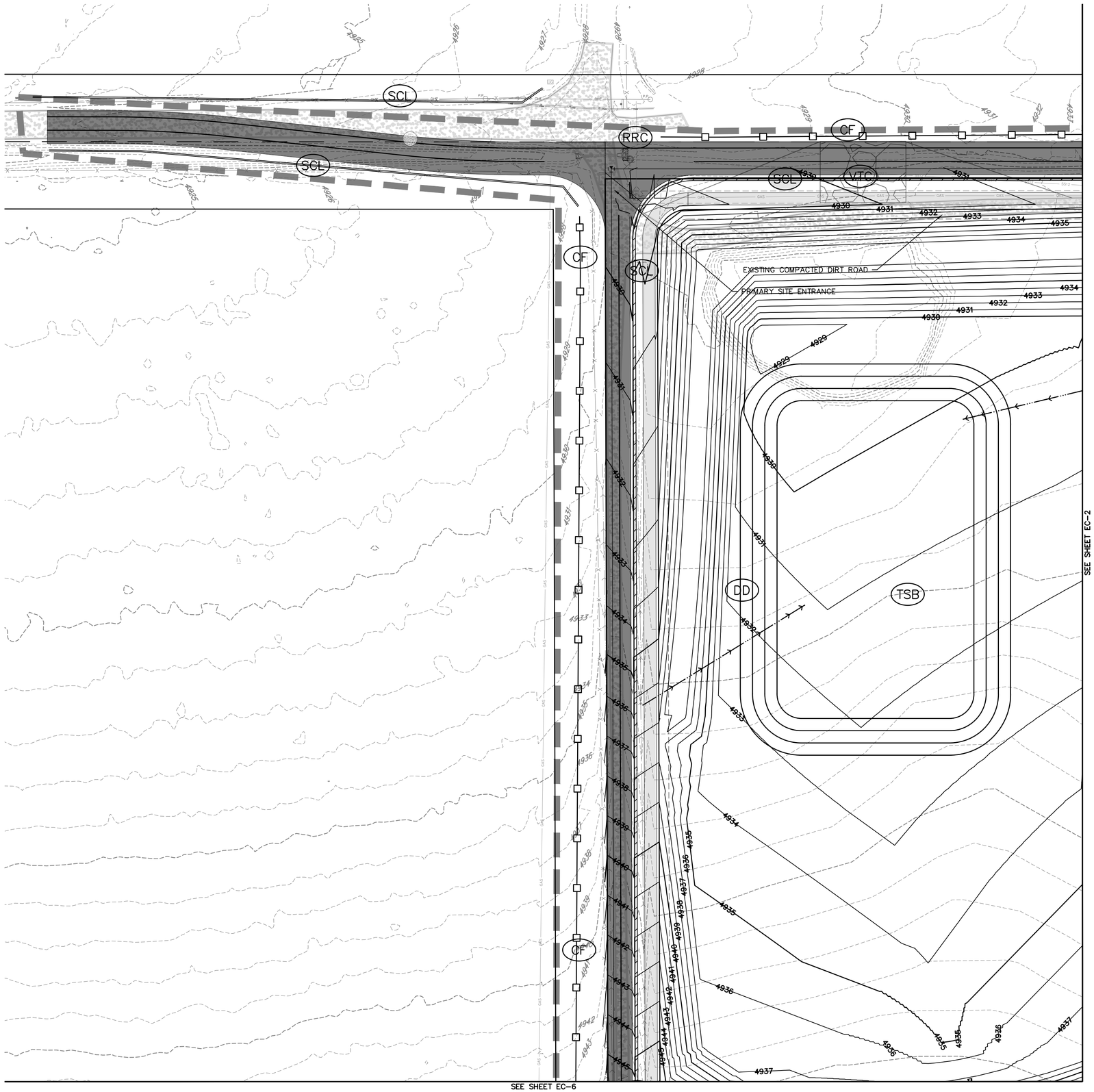
SUN COMMUNITIES, INC.

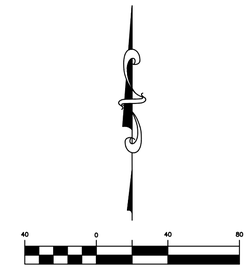
DATE DATE

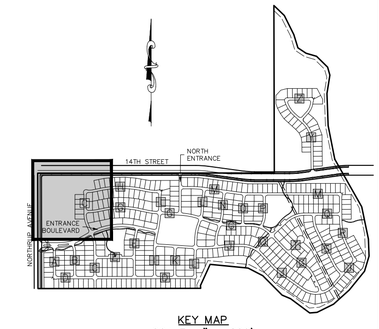
REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. EC-12

CAD FILE: 19001956-CESC-INITIAL.DWG







KEY MAP
SCALE: 1" = 800'

NOTES:
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BMP LEGEND

CD	CHECK DAM
CB	COMPOST BLANKET
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PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

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WILLOW BEND SUBDIVISION
FORT LUPTON, COLORADO

PRELIMINARY CONSTRUCTION PLANS
EROSION & SEDIMENT CONTROL PLANS
EROSION CONTROL – INTERIM AREA 1

CLIENT

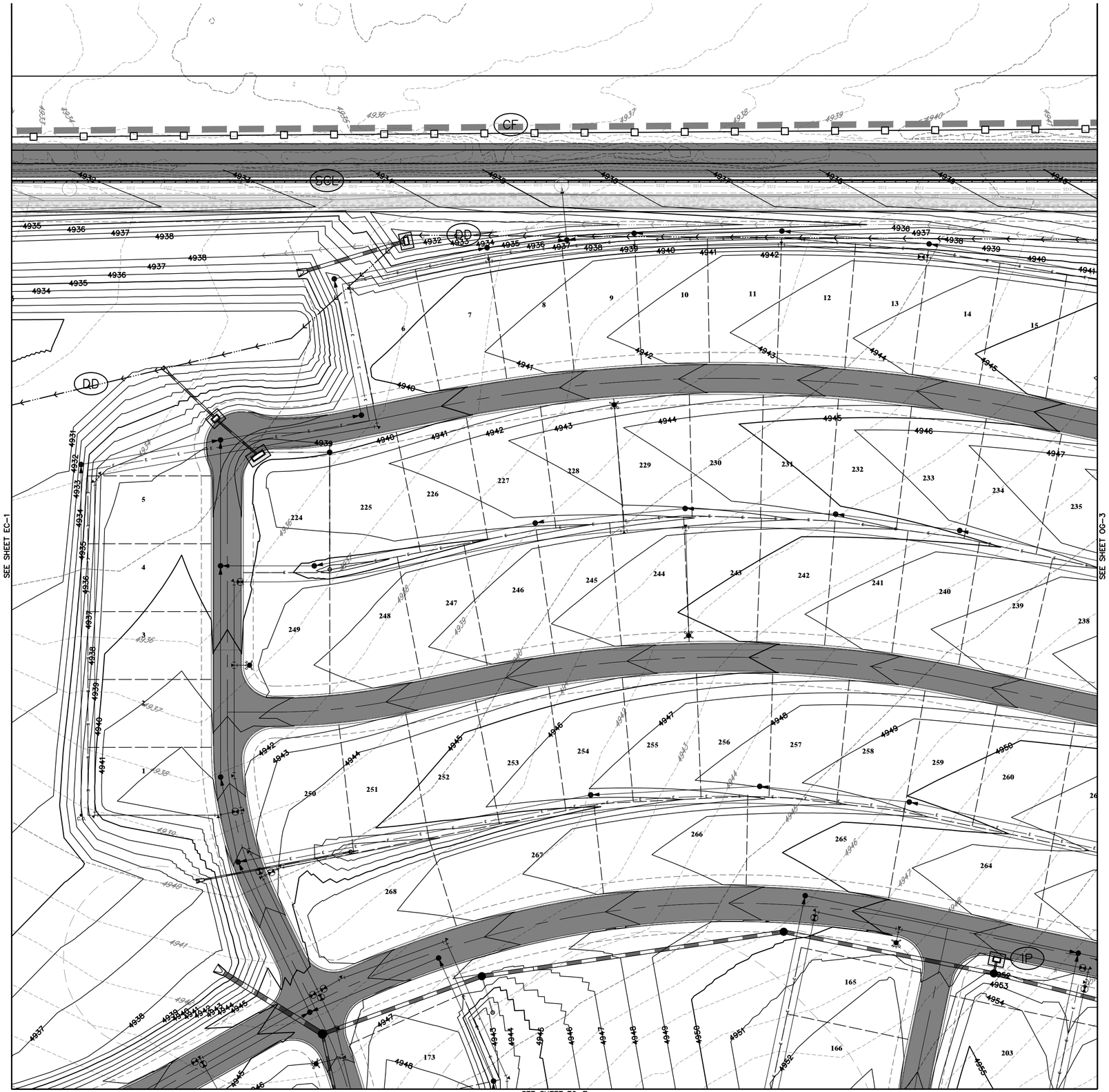
SUN COMMUNITIES, INC.

DATE DATE

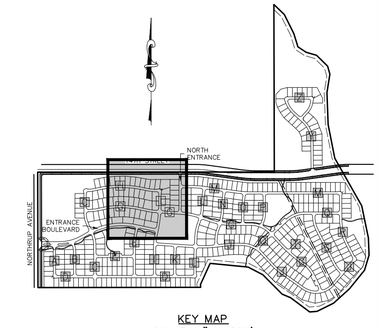
REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO.
EC-13

CAD FILE: 19001956-GESC-INTERIM.DWG



(IN FEET)
1 inch = 40 ft.



KEY MAP
SCALE: 1" = 800'

NOTES:
1. SEE EROSION CONTROL DETAILS ON SHEETS EC-37 – EC-39.

BMP LEGEND

CD	CHECK DAM
CB	COMPOST BLANKET
CFB	COMPOST FILTER BERM
CWA	CONCRETE WASHOUT AREA
CF	CONSTRUCTION FENCE
CM	CONSTRUCTION MARKER
DW	DEWATERING
DD	DIVERSION DITCH
ECB	EROSION CONTROL BLANKET
IP	INLET PROTECTION
RCD	REINFORCED CHECK DAM
RRB	REINFORCED ROCK BERM
RRC	RRB FOR CULVERT PROTECTION
SB	SEDIMENT BASIN
SCL	SEDIMENT CONTROL LOG
ST	SEDIMENT TRAP
SM	SEEDING AND MULCHING
SF	SILT FENCE
SSA	STABILIZED STAGING AREA
SR	SURFACE ROUGHENING
TSD	TEMPORARY SLOPE DRAIN
TSC	TEMPORARY STREAM CROSSING
TER	TERRACING
VTC	VEHICLE TRACKING CONTROL
WW	VTC WITH WHEEL WASH
LOC	LIMITS OF CONSTRUCTION

PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

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PRELIMINARY CONSTRUCTION PLANS
EROSION & SEDIMENT CONTROL PLANS
EROSION CONTROL – INTERIM AREA 2

SUN COMMUNITIES, INC.

DATE	DATE

REVISIONS

DR. TN	CH. JP/SB
P.M. RW	
JOB 19001956	
SHEET NO. EC-14	

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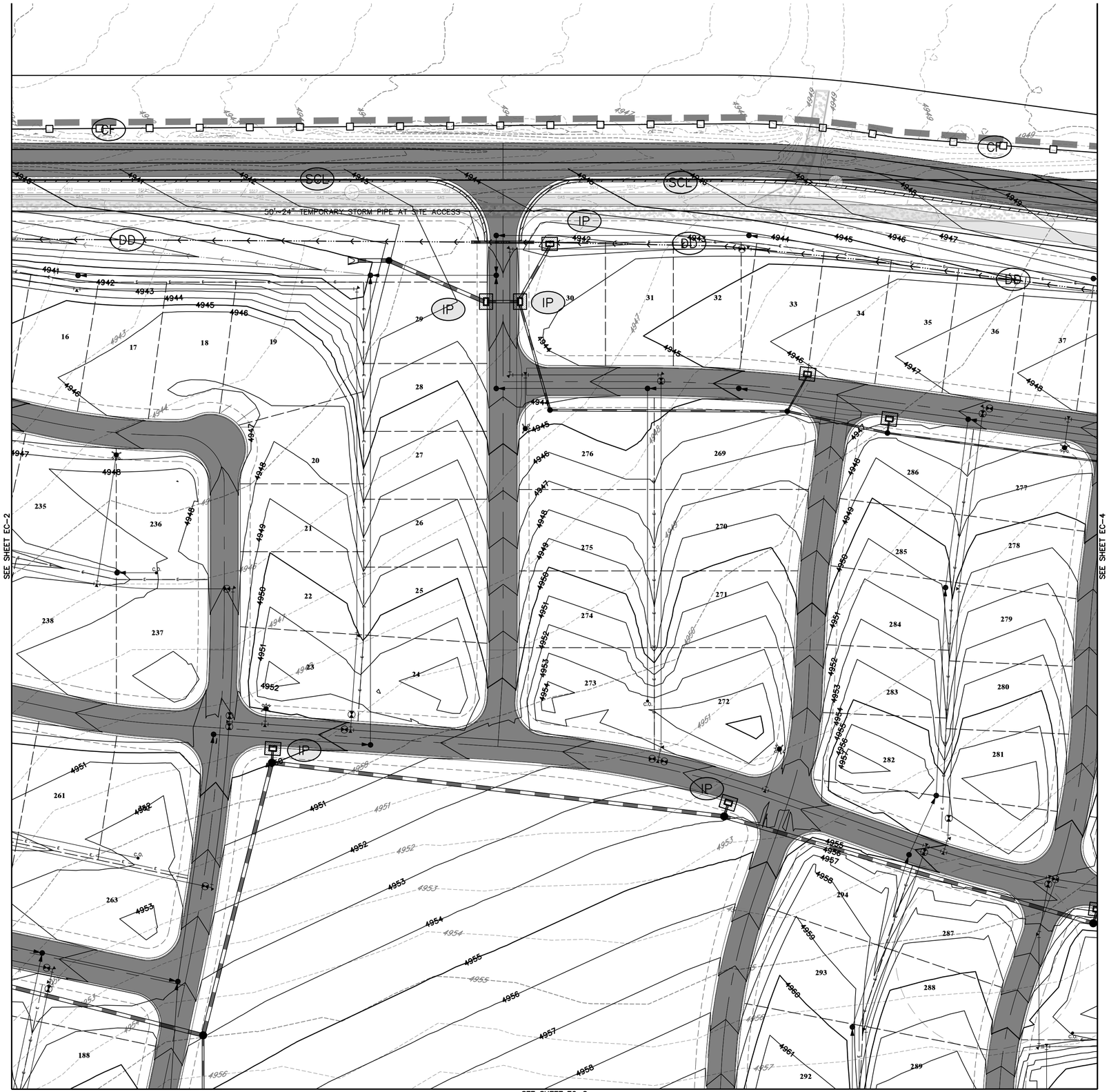
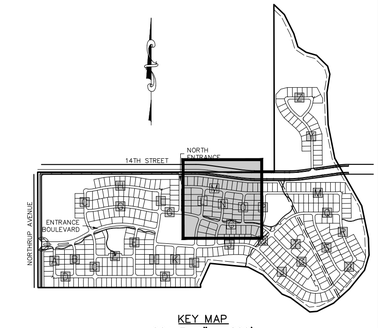


NOTES:
1. SEE EROSION CONTROL DETAILS ON SHEETS EC-37 – EC-39.



KEY MAP
SCALE: 1" = 800'

BMP LEGEND

CD	CHECK DAM
CB	COMPOST BLANKET
CFB	COMPOST FILTER BERM
CWA	CONCRETE WASHOUT AREA
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SM	SEEDING AND MULCHING
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SR	SURFACE ROUGHENING
TSD	TEMPORARY SLOPE DRAIN
TSC	TEMPORARY STREAM CROSSING
TER	TERRACING
VTC	VEHICLE TRACKING CONTROL
WW	VTC WITH WHEEL WASH
LOC	LIMITS OF CONSTRUCTION

40 0 40 80
(IN FEET)
1 inch = 40 ft.

PROJECT NO.: LUP2019–0039 &
PLAN NO.: SPL2019–0005

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

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PRELIMINARY CONSTRUCTION PLANS
EROSION & SEDIMENT CONTROL PLANS
EROSION CONTROL – INTERIM AREA 3

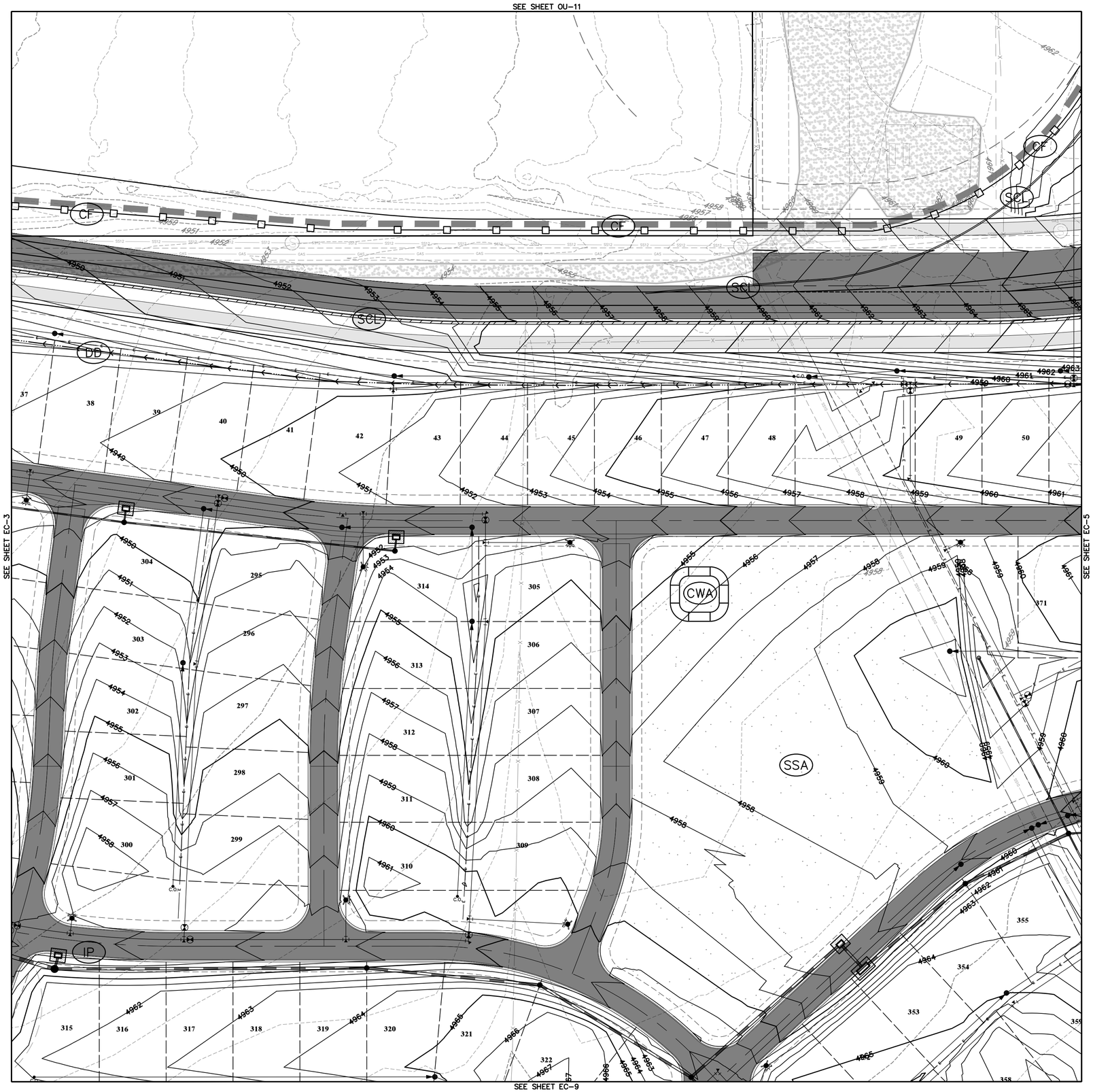
SUN COMMUNITIES, INC.

DATE DATE

REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. EC-15

CAD FILE: 19001956-GESC-INTERIM.DWG



NOTES:
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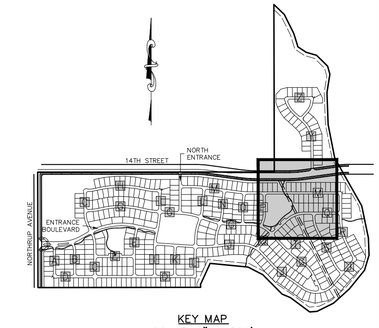

KEY MAP
SCALE: 1" = 800'

BMP LEGEND

CD	CHECK DAM
CB	COMPOST BLANKET
CFB	COMPOST FILTER BERM
CWA	CONCRETE WASHOUT AREA
CF	CONSTRUCTION FENCE
CM	CONSTRUCTION MARKER
DW	DEWATERING
DD	DIVERSION DITCH
ECB	EROSION CONTROL BLANKET
IP	INLET PROTECTION
RCD	REINFORCED CHECK DAM
RRB	REINFORCED ROCK BERM
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SB	SEDIMENT BASIN
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TSC	TEMPORARY STREAM CROSSING
TER	TERRACING
VTC	VEHICLE TRACKING CONTROL
WW	VTC WITH WHEEL WASH
LOC	LIMITS OF CONSTRUCTION

40 0 40 80
(IN FEET)
1 inch = 40 ft.

PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

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PRELIMINARY CONSTRUCTION PLANS
EROSION & SEDIMENT CONTROL PLANS
EROSION CONTROL – INTERIM AREA 4

SUN COMMUNITIES, INC.

DATE	DATE

REVISIONS

DR. TN	CH. JP/SB
P.M. RW	
JOB 19001956	
SHEET NO. EC-16	

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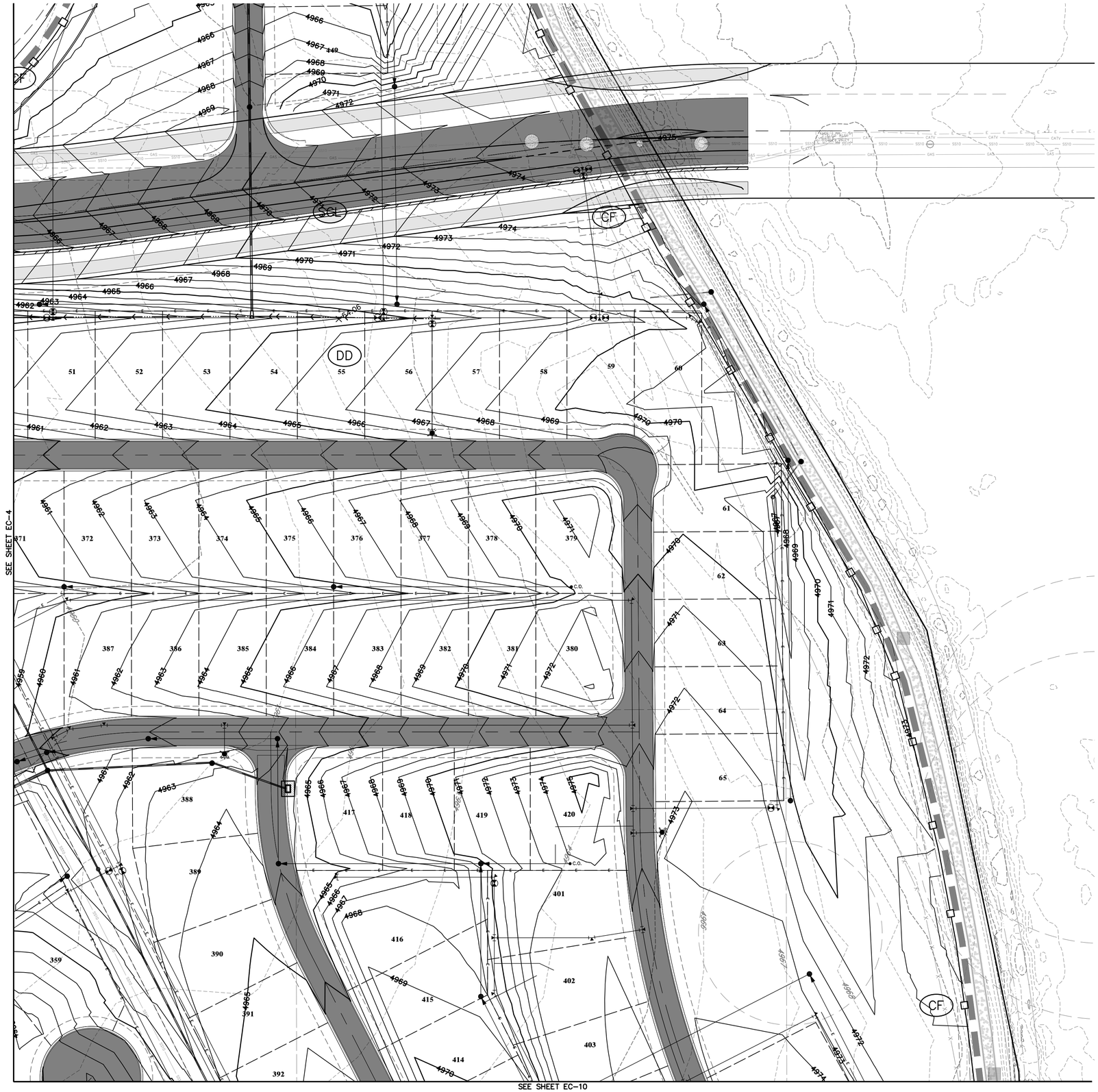

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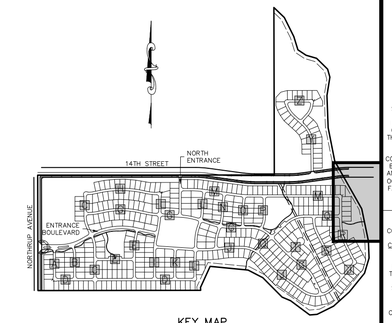

KEY MAP
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BMP LEGEND

CD	CHECK DAM
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VTC	VEHICLE TRACKING CONTROL
WW	VTC WITH WHEEL WASH
LOC	LIMITS OF CONSTRUCTION

40 0 40 80
(IN FEET)
1 inch = 40 ft.

PROJECT NO.: LUP2019–0039 &
PLAN NO.: SPL2019–0005

BENCHMARK:
VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

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FORT LUPTON, COLORADO

PRELIMINARY CONSTRUCTION PLANS
EROSION & SEDIMENT CONTROL PLANS
EROSION CONTROL – INTERIM AREA 5

SUN COMMUNITIES, INC.

DATE DATE

REVISIONS

DR. TN CH. JP/SB
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JOB 19001956
SHEET NO. EC-17

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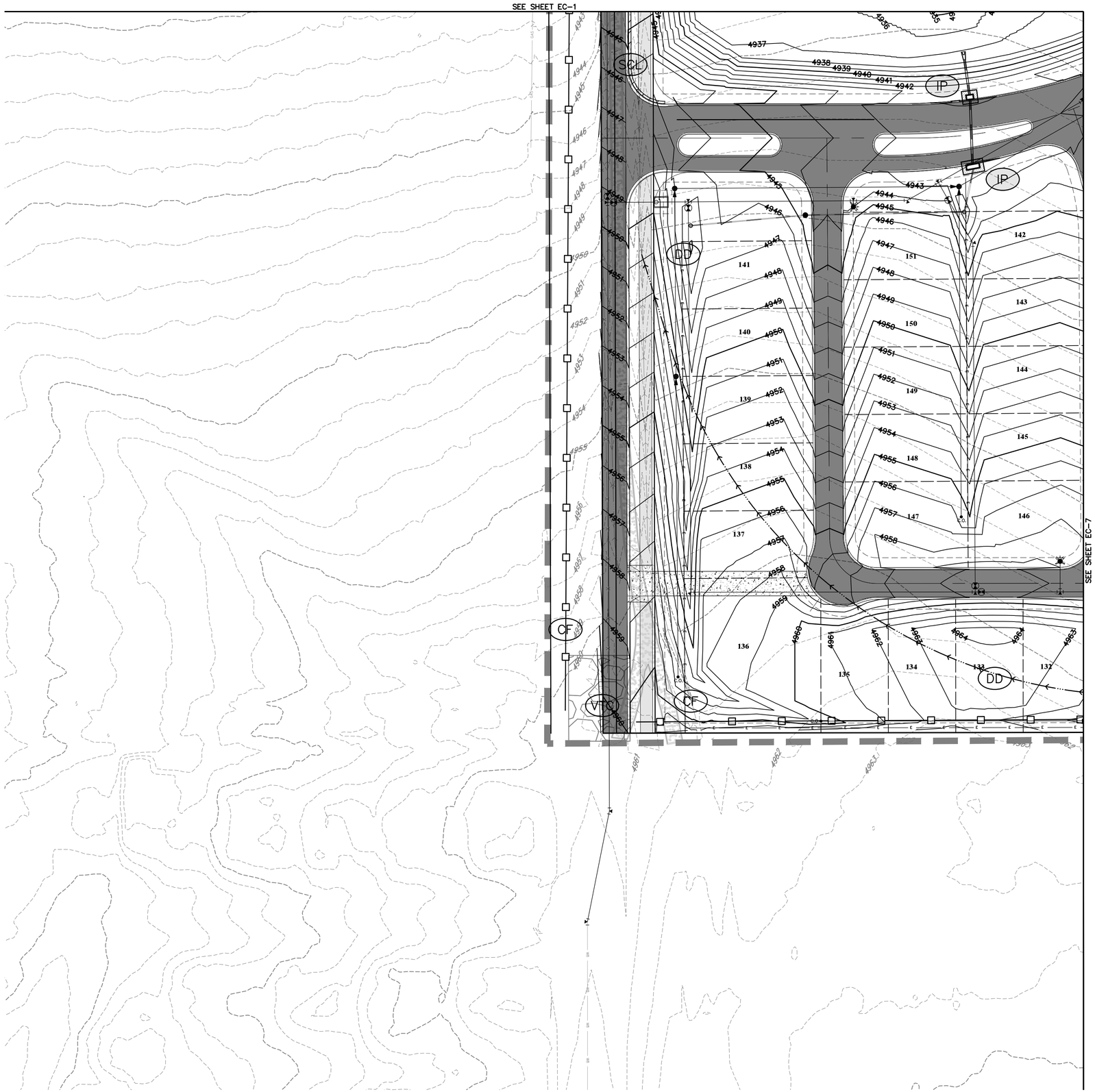

NOTES:
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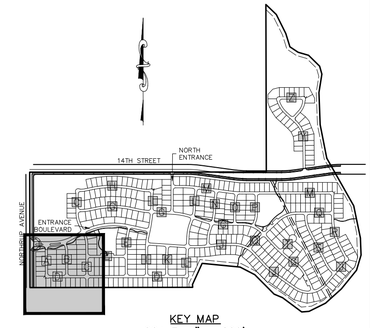

KEY MAP
SCALE: 1" = 800'

BMP LEGEND

CD	CHECK DAM
CB	COMPOST BLANKET
CFB	COMPOST FILTER BERM
CWA	CONCRETE WASHOUT AREA
CF	CONSTRUCTION FENCE
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VTC	VEHICLE TRACKING CONTROL
WW	VTC WITH WHEEL WASH
LOC	LIMITS OF CONSTRUCTION

40 0 40 80
(IN FEET)
1 inch = 40 ft.

PROJECT NO.: LUP2019–0039 &
PLAN NO.: SPL2019–0005

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

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FORT LUPTON, COLORADO

PRELIMINARY CONSTRUCTION PLANS
EROSION & SEDIMENT CONTROL PLANS
EROSION CONTROL – INTERIM AREA 6

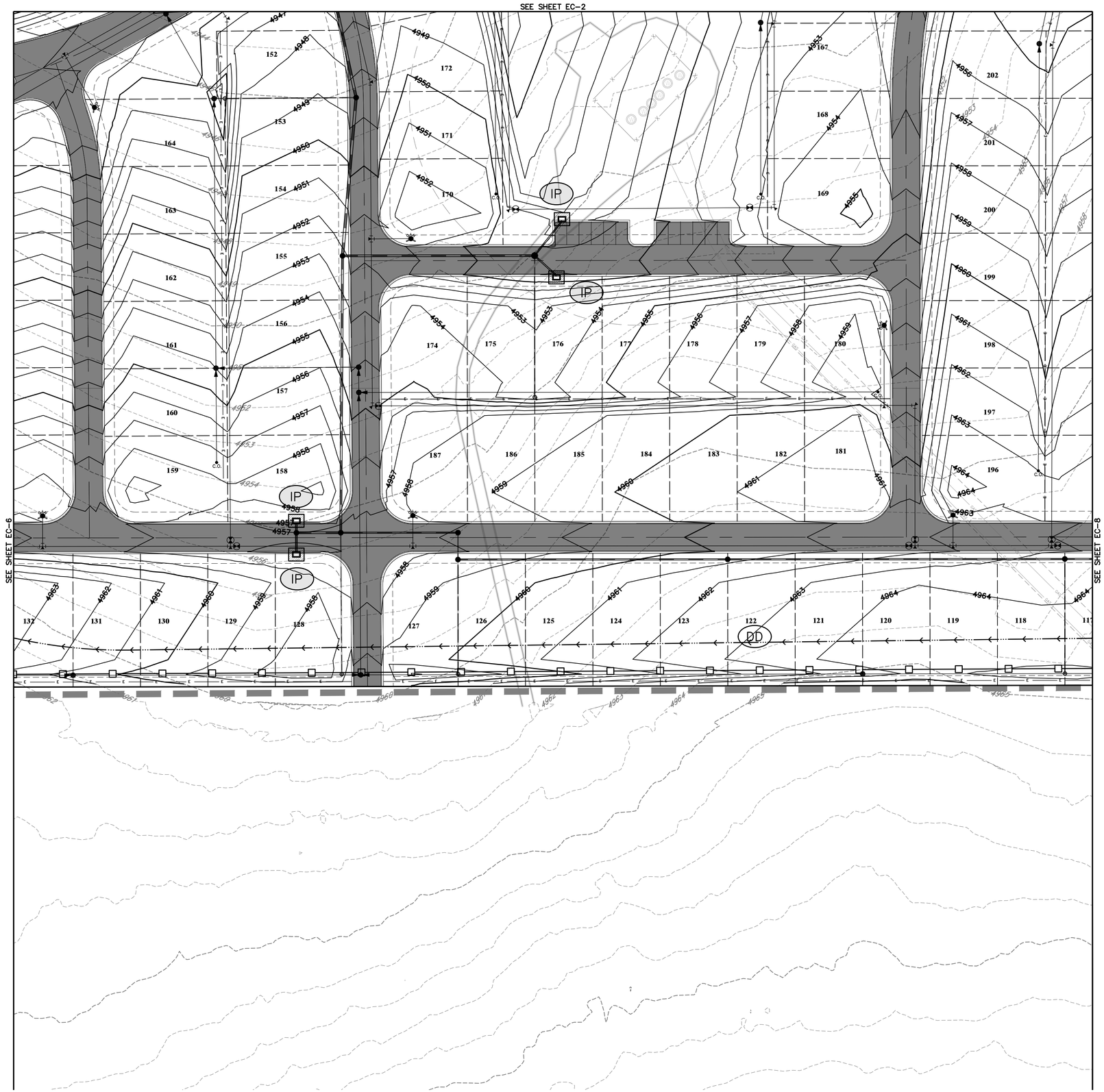
SUN Sun Communities, Inc.

DATE	DATE

REVISIONS

DR. TN | CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. EC-18

CAD FILE: 19001956-GESC-INTERIM.DWG



NOTES:
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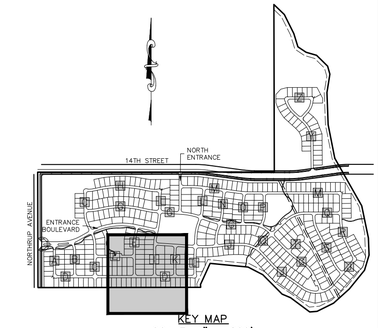

KEY MAP
SCALE: 1" = 800'

BMP LEGEND

CD	CHECK DAM
CB	COMPOST BLANKET
CFB	COMPOST FILTER BERM
CWA	CONCRETE WASHOUT AREA
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TER	TERRACING
VTC	VEHICLE TRACKING CONTROL
WW	VTC WITH WHEEL WASH
LOC	LIMITS OF CONSTRUCTION

40 0 40 80
(IN FEET)
1 inch = 40 ft.

PROJECT NO.: LUP2019–0039 &
PLAN NO.: SPL2019–0005

BENCHMARK:
VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

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PRELIMINARY CONSTRUCTION PLANS
EROSION & SEDIMENT CONTROL PLANS
EROSION CONTROL – INTERIM AREA 7

CLIENT
SUN Communities, Inc.
DATE DATE
REVISIONS

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P.M. RW
JOB 19001956
SHEET NO. EC-19

CAD FILE: 19001956-GESC-INTERIM.DWG

NOTES:
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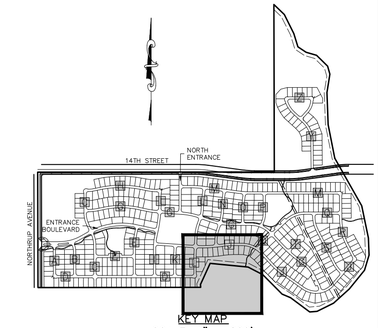

KEY MAP
SCALE: 1" = 800'

BMP LEGEND

CD	CHECK DAM
CB	COMPOST BLANKET
CFB	COMPOST FILTER BERM
CWA	CONCRETE WASHOUT AREA
CF	CONSTRUCTION FENCE
CM	CONSTRUCTION MARKER
DW	DEWATERING
DD	DIVERSION DITCH
ECB	EROSION CONTROL BLANKET
IP	INLET PROTECTION
RCD	REINFORCED CHECK DAM
RRB	REINFORCED ROCK BERM
RRC	RRB FOR CULVERT PROTECTION
SB	SEDIMENT BASIN
SCL	SEDIMENT CONTROL LOG
ST	SEDIMENT TRAP
SM	SEEDING AND MULCHING
SF	SILT FENCE
SSA	STABILIZED STAGING AREA
SR	SURFACE ROUGHENING
TSD	TEMPORARY SLOPE DRAIN
TSC	TEMPORARY STREAM CROSSING
TER	TERRACING
VTC	VEHICLE TRACKING CONTROL
WW	VTC WITH WHEEL WASH
LOC	LIMITS OF CONSTRUCTION

40 0 40 80
(IN FEET)
1 inch = 40 ft.

PROJECT NO.: LUP2019–0039 &
PLAN NO.: SPL2019–0005

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

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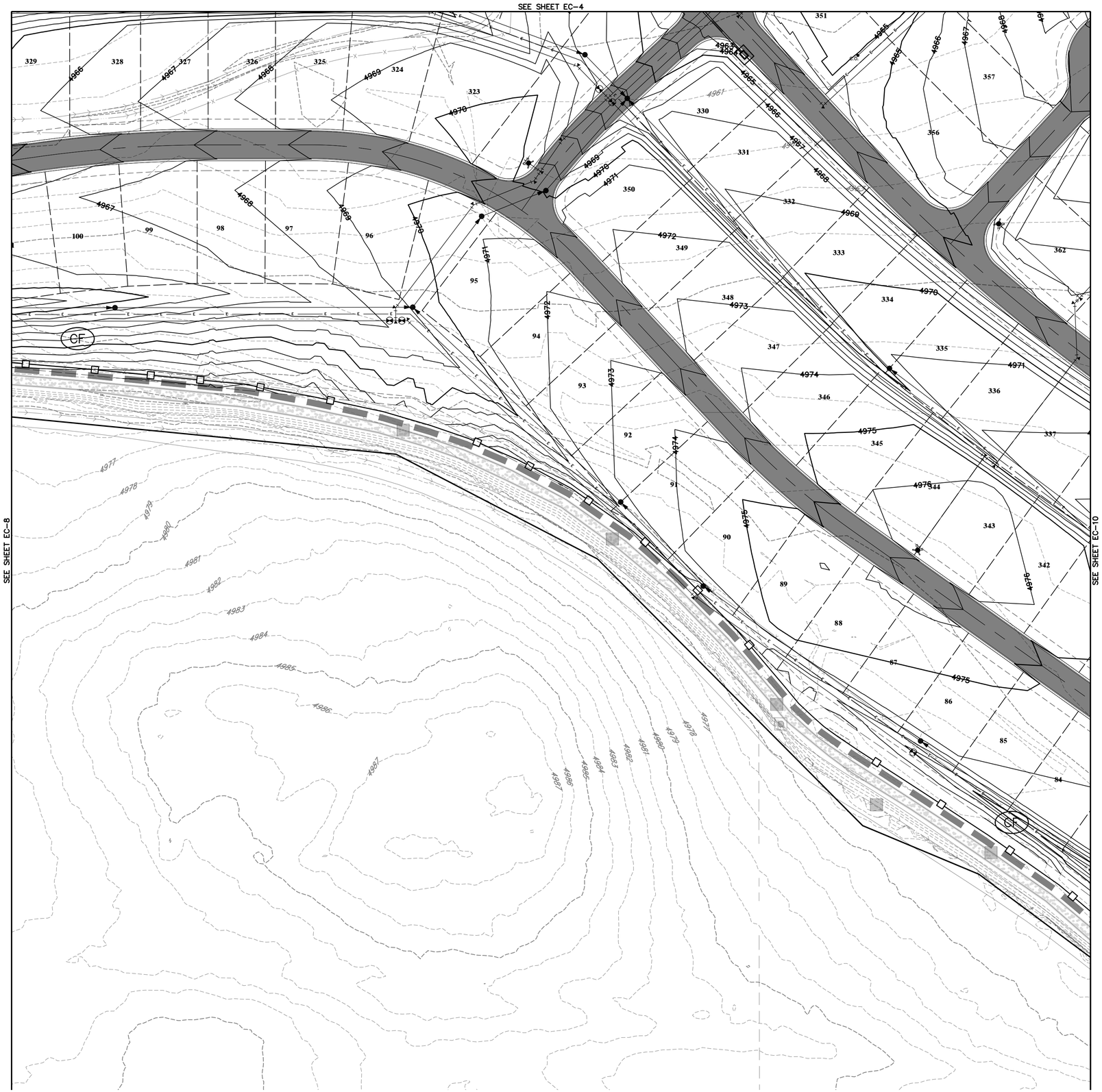
SUN COMMUNITIES
WILLOW BEND SUBDIVISION
FORT LUPTON, COLORADO

PRELIMINARY CONSTRUCTION PLANS
EROSION & SEDIMENT CONTROL PLANS
EROSION CONTROL – INTERIM AREA 8

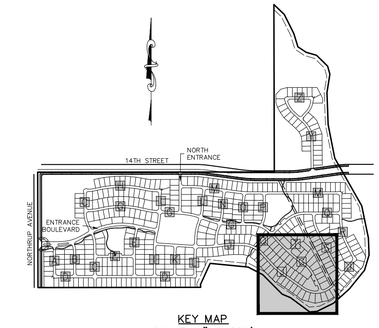
CLIENT
SUN COMMUNITIES, INC.
DATE DATE
REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. EC-20

CAD FILE: 19001956-GESC-INTERIM.DWG



NOTES:
1. SEE EROSION CONTROL DETAILS ON SHEETS EC-37 – EC-39.



KEY MAP
SCALE: 1" = 800'

BMP LEGEND

CD	CHECK DAM
CB	COMPOST BLANKET
CFB	COMPOST FILTER BERM
CWA	CONCRETE WASHOUT AREA
CF	CONSTRUCTION FENCE
CM	CONSTRUCTION MARKER
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TER	TERRACING
VTC	VEHICLE TRACKING CONTROL
WW	VTC WITH WHEEL WASH
LOC	LIMITS OF CONSTRUCTION

40 0 40 80
(IN FEET)
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PROJECT NO.: LUP2019–0039 &
PLAN NO.: SPL2019–0005

BENCHMARK:
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FORT LUPTON, COLORADO

PRELIMINARY CONSTRUCTION PLANS
EROSION & SEDIMENT CONTROL PLANS
EROSION CONTROL – INTERIM AREA 9

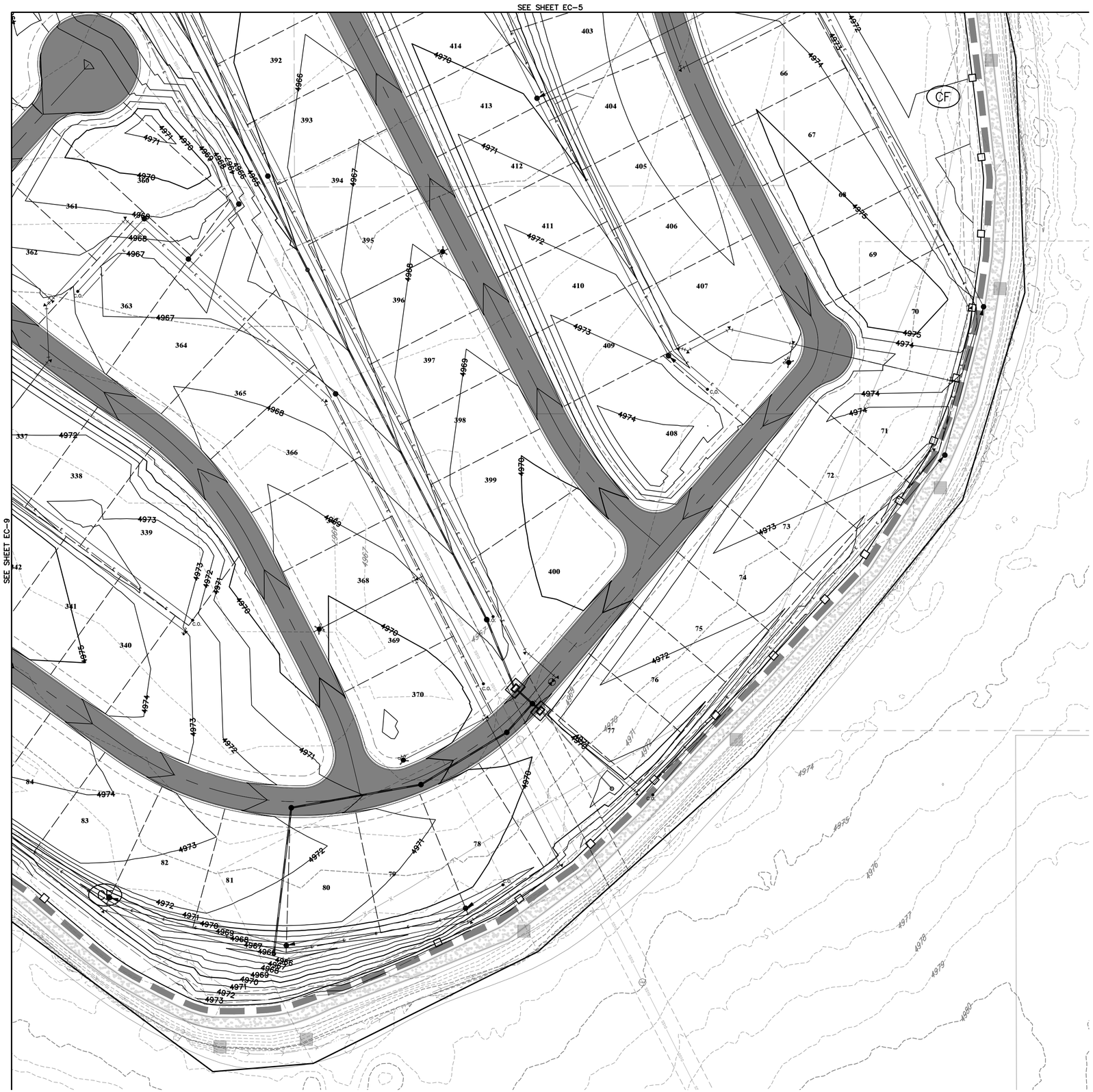
SUN COMMUNITIES, INC.

DATE DATE

REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. EC-21

CAD FILE: 19001956-GESC-INTERIM.DWG



NOTES:
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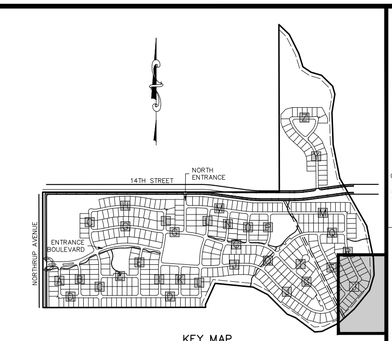

KEY MAP
SCALE: 1" = 800'

BMP LEGEND

CD	CHECK DAM
CB	COMPOST BLANKET
CFB	COMPOST FILTER BERM
CWA	CONCRETE WASHOUT AREA
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VTC	VEHICLE TRACKING CONTROL
WW	VTC WITH WHEEL WASH
LOC	LIMITS OF CONSTRUCTION

40 0 40 80
(IN FEET)
1 inch = 40 ft.

PROJECT NO.: LUP2019–0039 &
PLAN NO.: SPL2019–0005

BENCHMARK:

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FORT LUPTON, COLORADO

PRELIMINARY CONSTRUCTION PLANS
EROSION & SEDIMENT CONTROL PLANS
EROSION CONTROL – INTERIM AREA 10

SUN COMMUNITIES, INC.

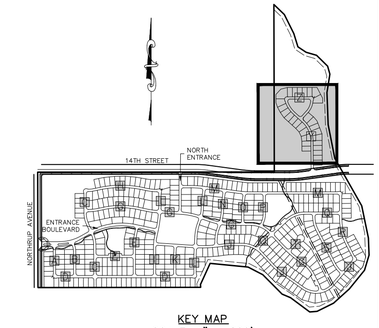
DATE	DATE

REVISIONS

DR. TN	CH. JP/SB
P.M. RW	
JOB 19001956	
SHEET NO. EC-22	

CAD FILE: 19001956-EESC-INTERIM.DWG

NOTES:
1. SEE EROSION CONTROL DETAILS ON SHEETS EC-37 – EC-39.



KEY MAP
SCALE: 1" = 800'

BMP LEGEND

CD	CHECK DAM
CB	COMPOST BLANKET
CFB	COMPOST FILTER BERM
CWA	CONCRETE WASHOUT AREA
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WW	VTC WITH WHEEL WASH
LOC	LIMITS OF CONSTRUCTION

40 0 40 80
(IN FEET)
1 inch = 40 ft.

PROJECT NO.: LUP2019–0039 &
PLAN NO.: SPL2019–0005

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

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FORT LUPTON, COLORADO

PRELIMINARY CONSTRUCTION PLANS
EROSION & SEDIMENT CONTROL PLANS
EROSION CONTROL – INTERIM AREA 11

SUN COMMUNITIES, INC.

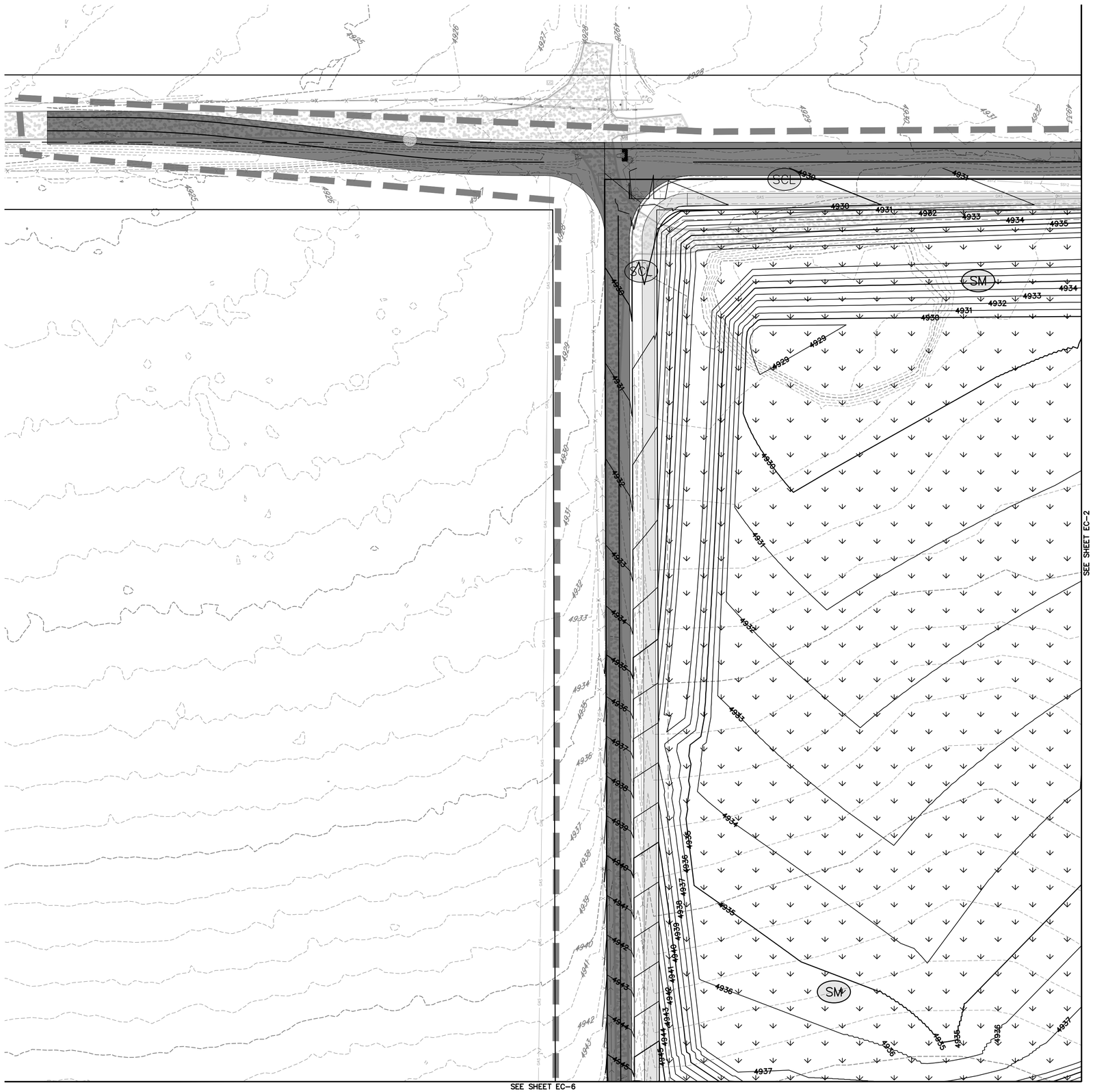
DATE DATE

REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. EC-23

CAD FILE: 19001956–GESC–INTERIM.DWG

NOTES:
1. SEE EROSION CONTROL DETAILS ON SHEETS EC-37 – EC-39.



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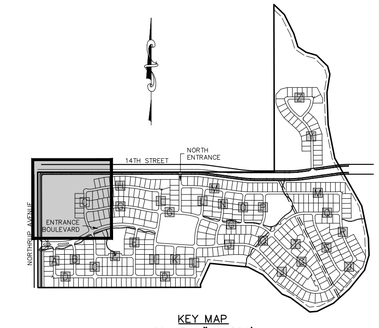

KEY MAP
SCALE: 1" = 800'

BMP LEGEND

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CB	COMPOST BLANKET
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VTC	VEHICLE TRACKING CONTROL
WW	VTC WITH WHEEL WASH
LOC	LIMITS OF CONSTRUCTION

40 0 40 80
(IN FEET)
1 inch = 40 ft.

PROJECT NO.: LUP2019–0039 &
PLAN NO.: SPL2019–0005

BENCHMARK:
VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

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FORT LUPTON, COLORADO

PRELIMINARY CONSTRUCTION PLANS
EROSION & SEDIMENT CONTROL PLANS
EROSION CONTROL – FINAL AREA 1

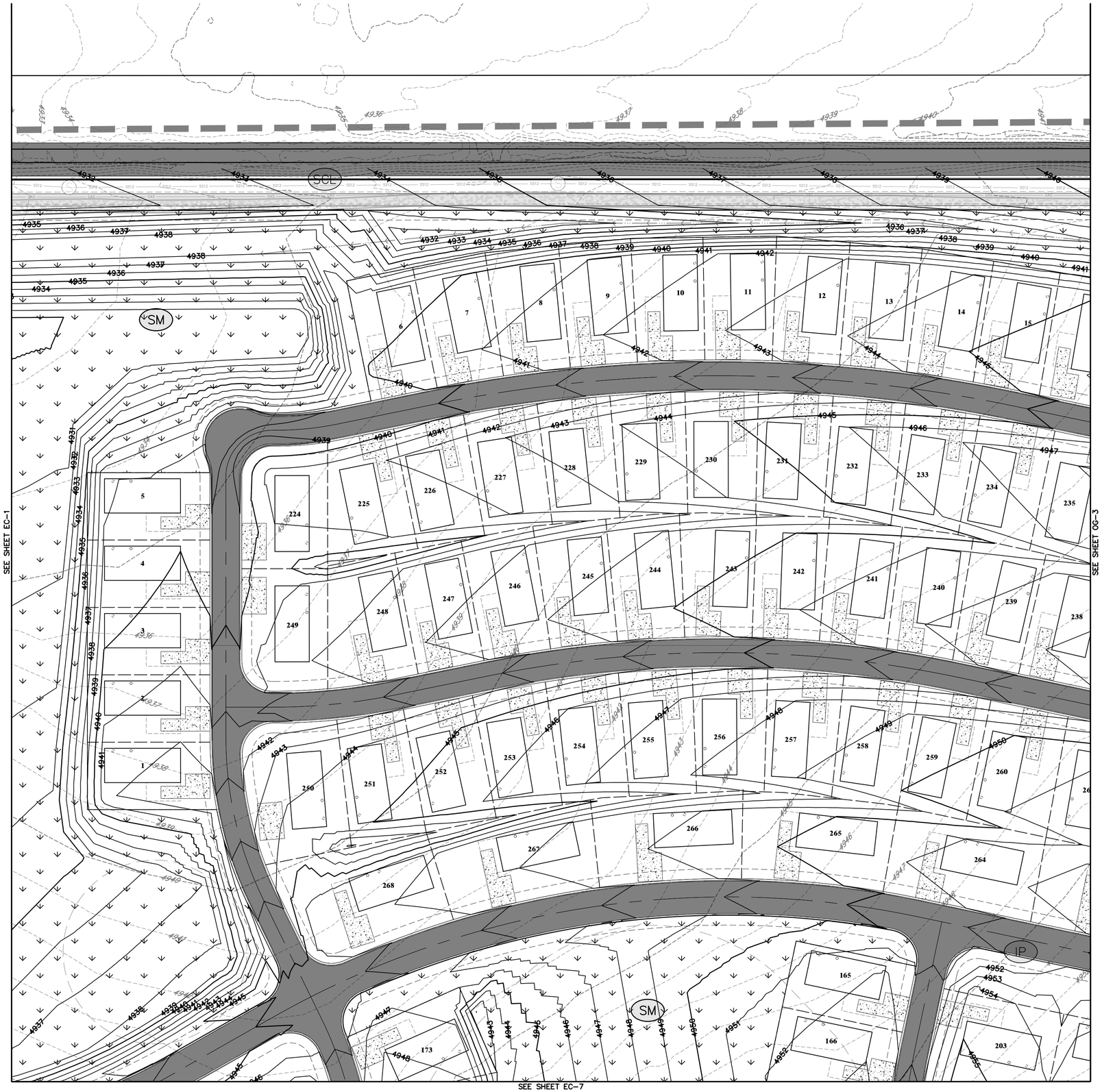
SUN COMMUNITIES, INC.

DATE DATE

REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. EC-25

CAD FILE: 19001956-EESC-FINAL.DWG



NOTES:
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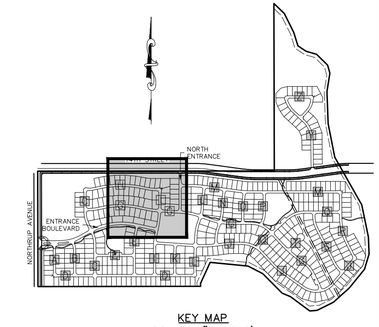

KEY MAP
SCALE: 1" = 800'

BMP LEGEND

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LOC	LIMITS OF CONSTRUCTION

40 0 40 80
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PROJECT NO.: LUP2019-0039 &
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PRELIMINARY CONSTRUCTION PLANS
EROSION & SEDIMENT CONTROL PLANS
EROSION CONTROL – FINAL AREA 2

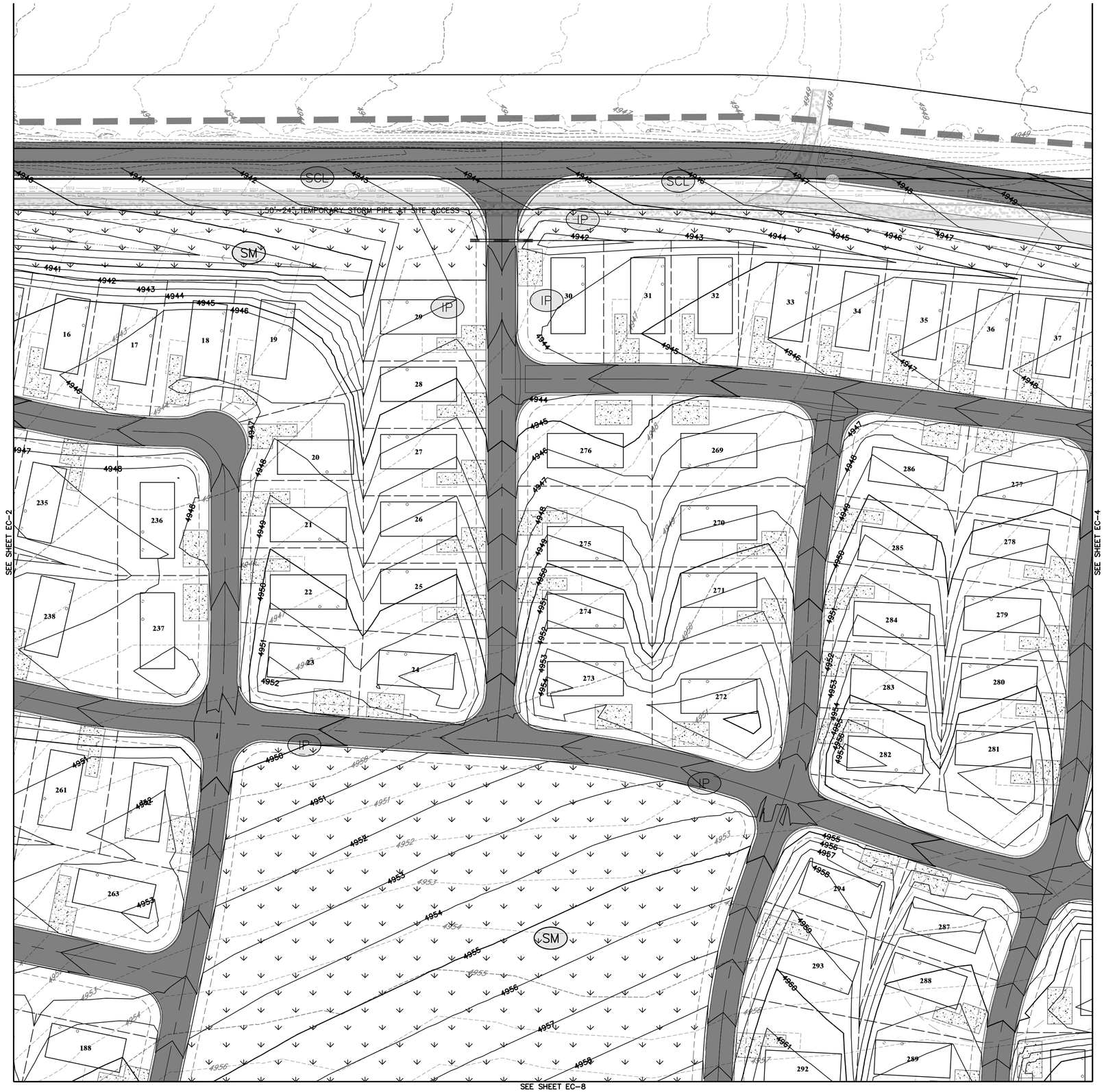
SUN COMMUNITIES, INC.

DATE DATE

REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. EC-26

CAD FILE: 19001956-GESC-FINAL.DWG



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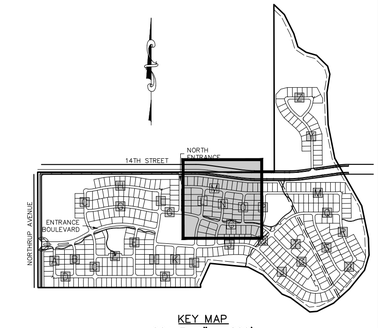

KEY MAP
SCALE: 1" = 800'

BMP LEGEND

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PLAN NO.: SPL2019–0005

BENCHMARK:

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FORT LUPTON, COLORADO

PRELIMINARY CONSTRUCTION PLANS
EROSION & SEDIMENT CONTROL PLANS
EROSION CONTROL – FINAL AREA 3

CLIENT
SUN COMMUNITIES, INC.

DATE DATE

REVISIONS

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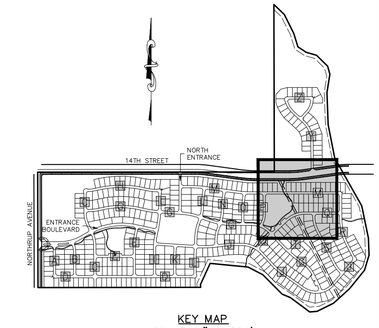
P.M. RW
JOB 19001956
SHEET NO. EC-27

CAD FILE: 19001956-DESC-FINAL.DWG

NOTES:
1. SEE EROSION CONTROL DETAILS ON SHEETS EC-37 – EC-39.



KEY MAP
SCALE: 1" = 800'

BMP LEGEND

CD	CHECK DAM
CB	COMPOST BLANKET
CFB	COMPOST FILTER BERM
CWA	CONCRETE WASHOUT AREA
CF	CONSTRUCTION FENCE
CM	CONSTRUCTION MARKER
DW	DEWATERING
DD	DIVERSION DITCH
ECB	EROSION CONTROL BLANKET
IP	INLET PROTECTION
RCD	REINFORCED CHECK DAM
RRB	REINFORCED ROCK BERM
RRC	RRB FOR CULVERT PROTECTION
SB	SEDIMENT BASIN
SCL	SEDIMENT CONTROL LOG
ST	SEDIMENT TRAP
SM	SEEDING AND MULCHING
SF	SILT FENCE
SSA	STABILIZED STAGING AREA
SR	SURFACE ROUGHENING
TSD	TEMPORARY SLOPE DRAIN
TSC	TEMPORARY STREAM CROSSING
TER	TERRACING
VTC	VEHICLE TRACKING CONTROL
WW	VTC WITH WHEEL WASH
LOC	LIMITS OF CONSTRUCTION

40 0 40 80
(IN FEET)
1 inch = 40 ft.

PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

BENCHMARK:
VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

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WILLOW BEND SUBDIVISION
FORT LUPTON, COLORADO

PRELIMINARY CONSTRUCTION PLANS
EROSION & SEDIMENT CONTROL PLANS
EROSION CONTROL – FINAL AREA 4

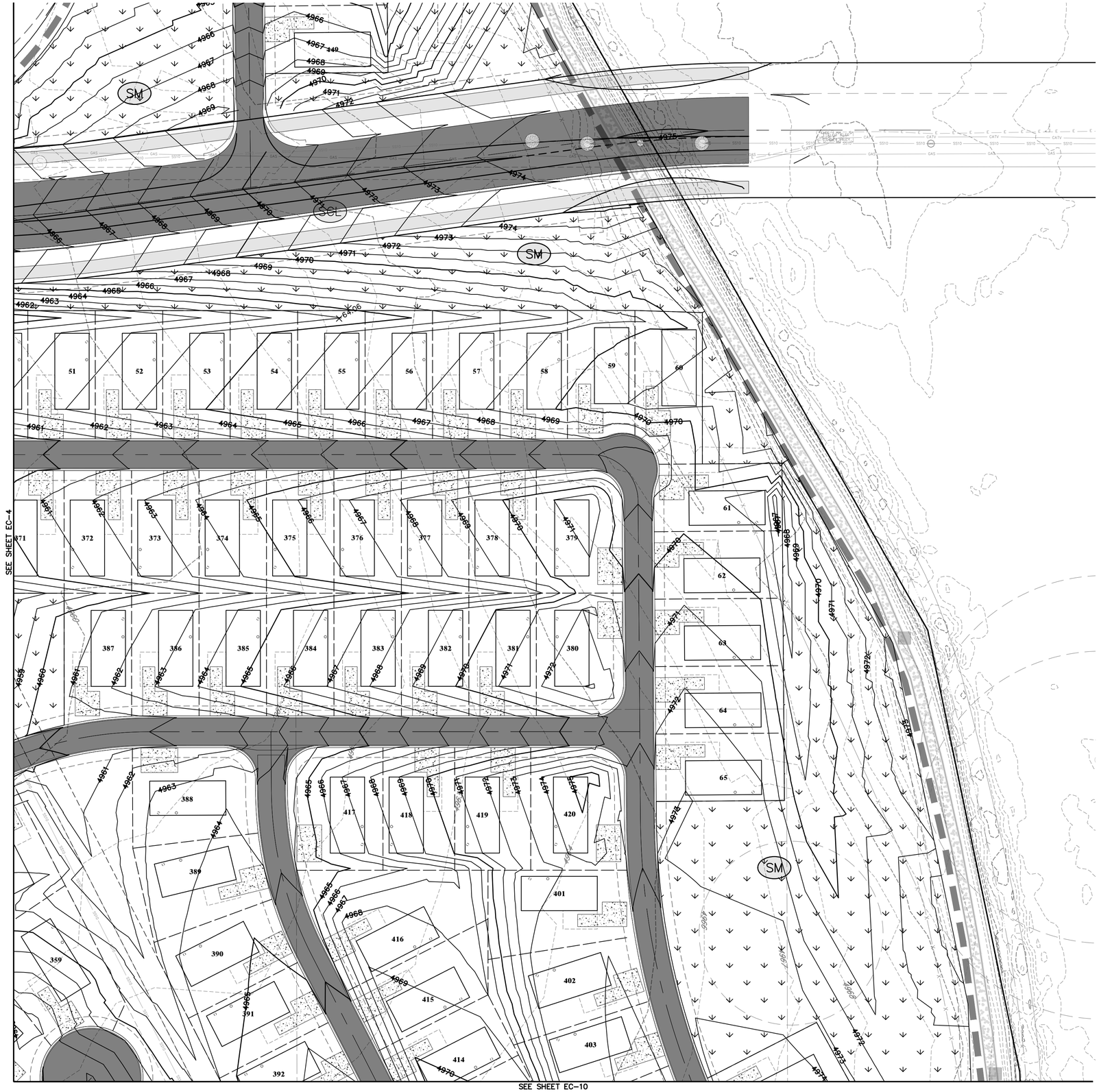
SUN COMMUNITIES, INC.

DATE DATE

REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. EC-28

CAD FILE: 19001956-GESC-FINAL.DWG



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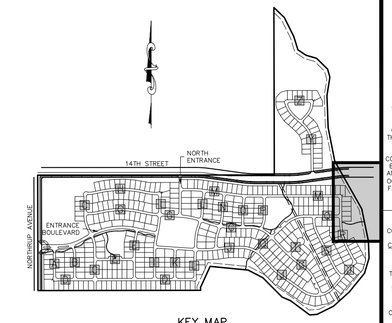

KEY MAP
SCALE: 1" = 800'

BMP LEGEND

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WW	VTC WITH WHEEL WASH
LOC	LIMITS OF CONSTRUCTION

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(IN FEET)
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PROJECT NO.: LUP2019–0039 &
PLAN NO.: SPL2019–0005

BENCHMARK:
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PRELIMINARY CONSTRUCTION PLANS
EROSION & SEDIMENT CONTROL PLANS
EROSION CONTROL – FINAL AREA 5

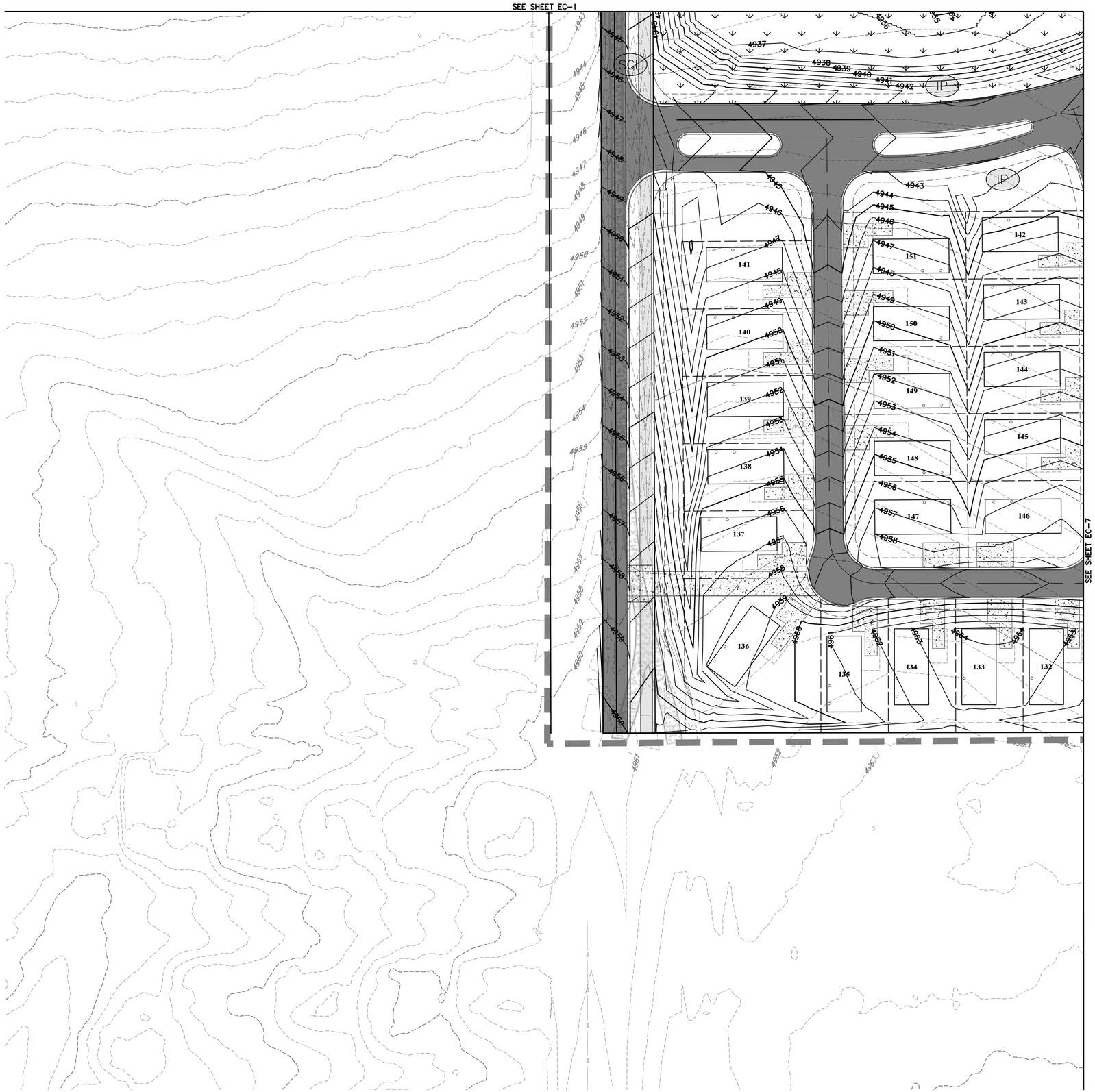
SUN COMMUNITIES, INC.

DATE DATE

REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. EC-29

CAD FILE: 19001956-GESC-FINAL.DWG



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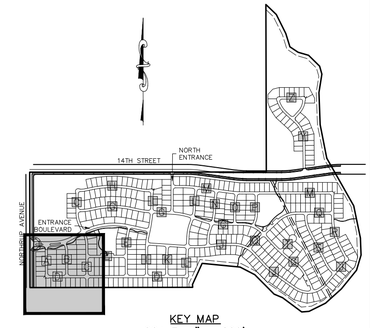

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SCALE: 1" = 800'

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VTC	VEHICLE TRACKING CONTROL
WW	VTC WITH WHEEL WASH
LOC	LIMITS OF CONSTRUCTION

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(IN FEET)
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PROJECT NO.: LUP2019–0039 &
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BENCHMARK:

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PRELIMINARY CONSTRUCTION PLANS
EROSION & SEDIMENT CONTROL PLANS
EROSION CONTROL – FINAL AREA 6

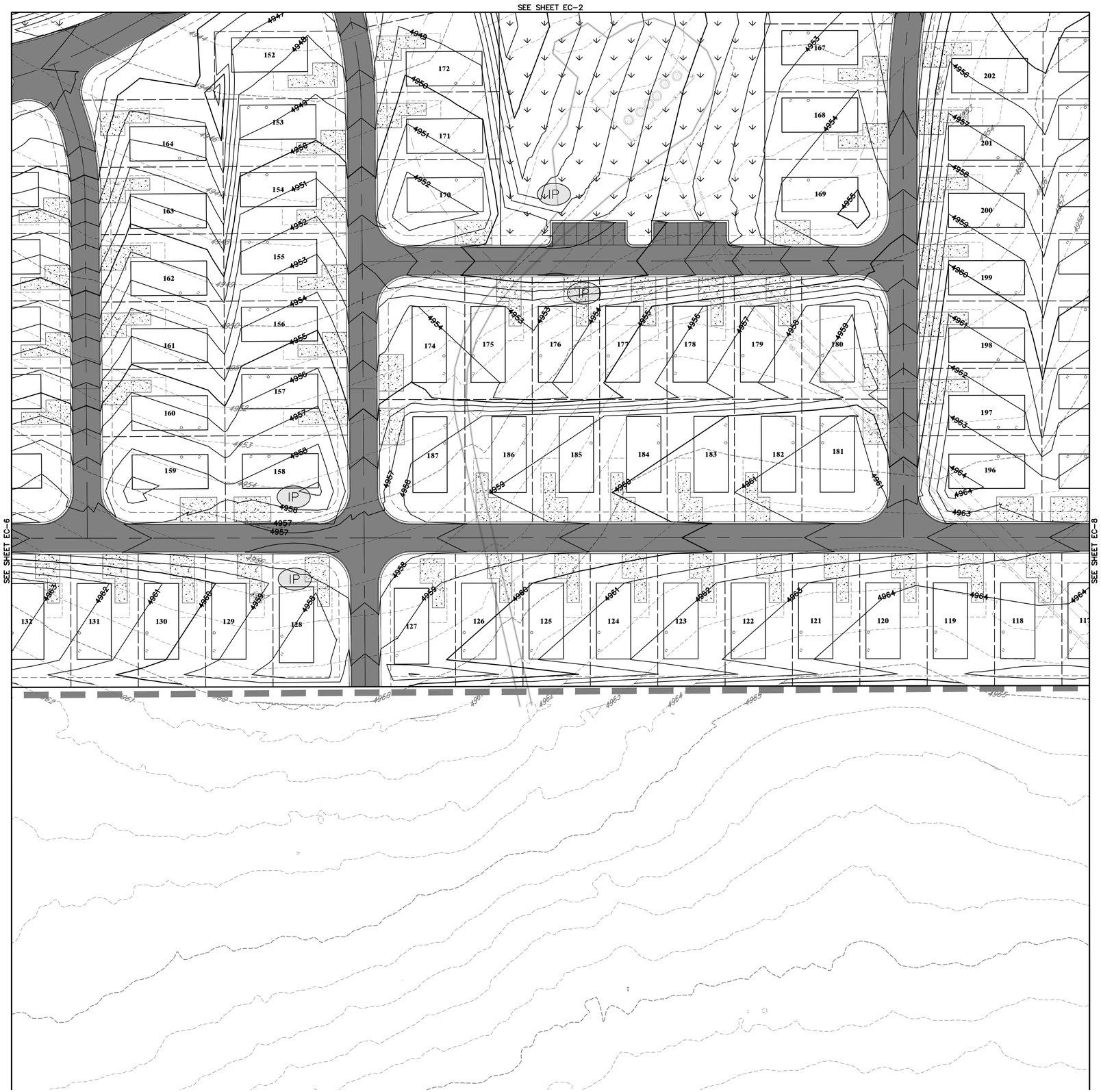
CLIENT
SUN COMMUNITIES, INC.

DATE
DATE

REVISIONS

DR. TN | CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO.
EC–30

CAD FILE: 19001956–GESC–FINAL.DWG



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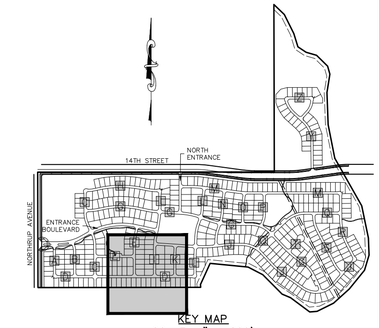

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LOC	LIMITS OF CONSTRUCTION

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(IN FEET)
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PROJECT NO.: LUP2019–0039 &
PLAN NO.: SPL2019–0005

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EROSION & SEDIMENT CONTROL PLANS
EROSION CONTROL – FINAL AREA 7

SUN COMMUNITIES, INC.

DATE DATE

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DR. TN CH. JP/SB
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JOB 19001956
SHEET NO. EC-31

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NOTES:
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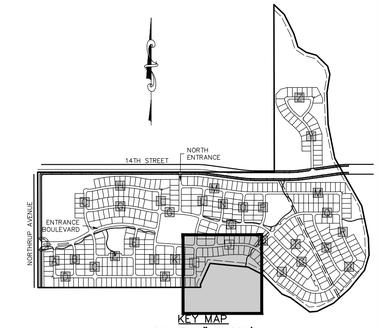

KEY MAP
SCALE: 1" = 800'

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WW	VTC WITH WHEEL WASH
LOC	LIMITS OF CONSTRUCTION

40 0 40 80
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PROJECT NO.: LUP2019–0039 &
PLAN NO.: SPL2019–0005

BENCHMARK:

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FORT LUPTON, COLORADO

PRELIMINARY CONSTRUCTION PLANS
EROSION & SEDIMENT CONTROL PLANS
EROSION CONTROL – FINAL AREA 8

CLIENT
SUN COMMUNITIES, INC.
DATE DATE
REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. EC-32

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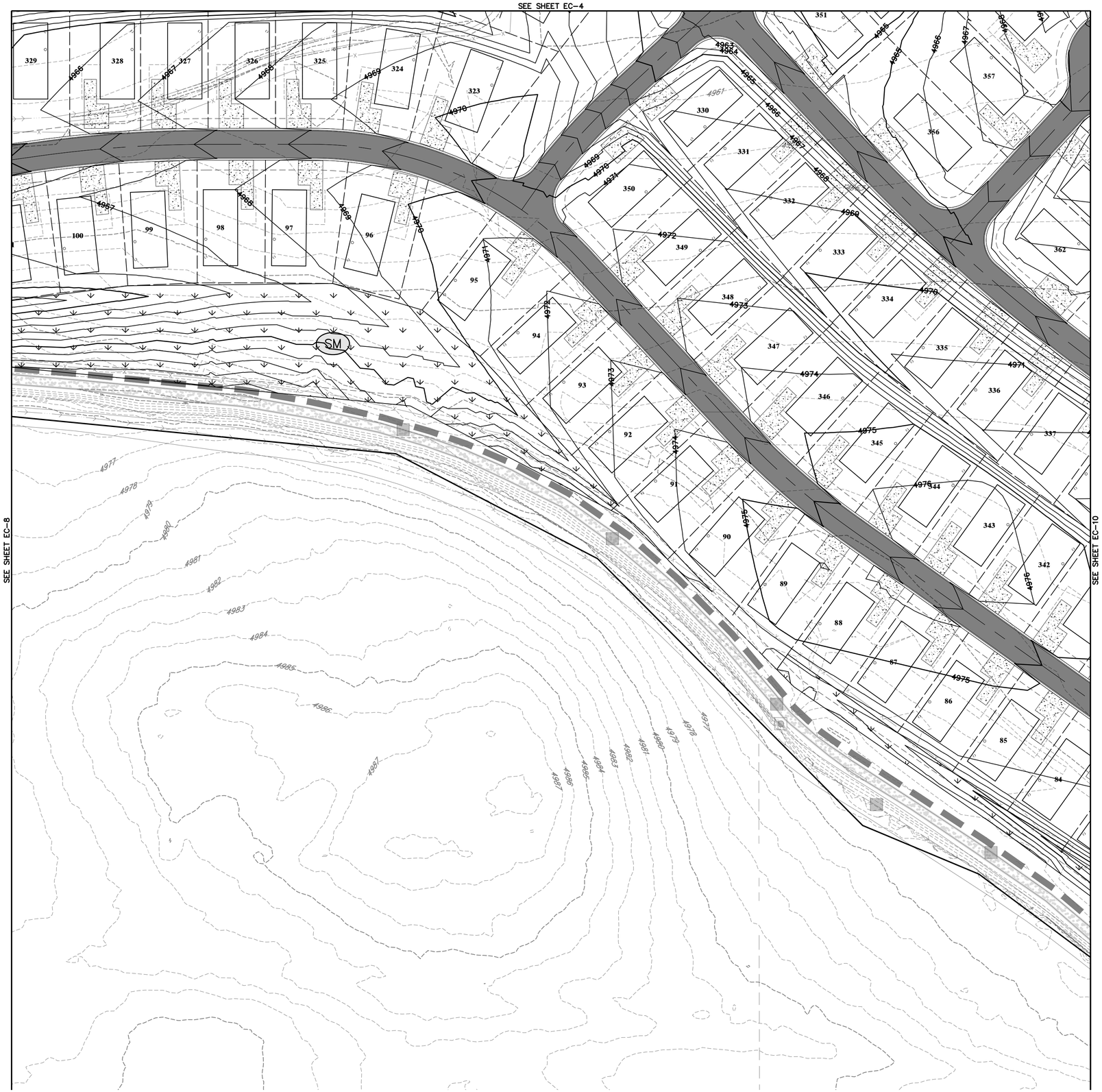

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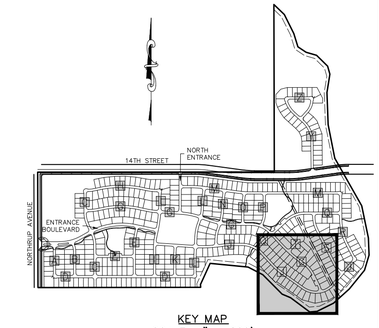

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PROJECT NO.: LUP2019–0039 &
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PRELIMINARY CONSTRUCTION PLANS
EROSION & SEDIMENT CONTROL PLANS
EROSION CONTROL – FINAL AREA 9

DATE DATE
REVISIONS

DR. TN | CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. EC-33

CAD FILE: 19001956-GESC-FINAL.DWG

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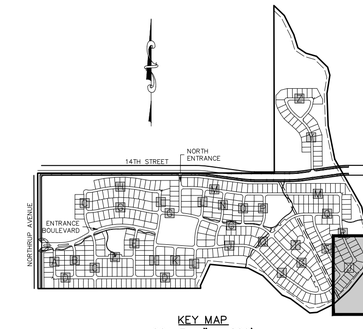

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PRELIMINARY CONSTRUCTION PLANS
EROSION & SEDIMENT CONTROL PLANS
EROSION CONTROL – FINAL AREA 10

SUN COMMUNITIES, INC.

DATE	DATE

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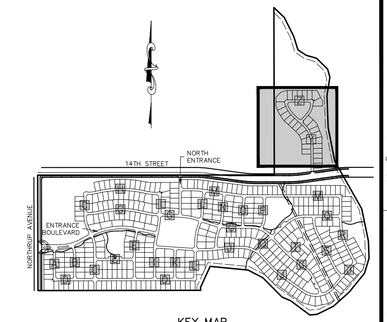
P.M. RW	
JOB 19001956	
SHEET NO. EC-34	

CAD FILE: 19001956-GESC-FINAL.DWG

SEE SHEET EC-12

SEE SHEET EC-5

NOTES:
1. SEE EROSION CONTROL DETAILS ON SHEETS EC-37 – EC-39.



KEY MAP
SCALE: 1" = 800'

BMP LEGEND

CD	CHECK DAM
CB	COMPOST BLANKET
CFB	COMPOST FILTER BERM
CWA	CONCRETE WASHOUT AREA
CF	CONSTRUCTION FENCE
CM	CONSTRUCTION MARKER
DW	DEWATERING
DD	DIVERSION DITCH
ECB	EROSION CONTROL BLANKET
IP	INLET PROTECTION
RCD	REINFORCED CHECK DAM
RRB	REINFORCED ROCK BERM
RRC	RRB FOR CULVERT PROTECTION
SB	SEDIMENT BASIN
SCL	SEDIMENT CONTROL LOG
ST	SEDIMENT TRAP
SM	SEEDING AND MULCHING
SF	SILT FENCE
SSA	STABILIZED STAGING AREA
SR	SURFACE ROUGHENING
TSD	TEMPORARY SLOPE DRAIN
TSC	TEMPORARY STREAM CROSSING
TER	TERRACING
VTC	VEHICLE TRACKING CONTROL
WW	VTC WITH WHEEL WASH
LOC	LIMITS OF CONSTRUCTION

40 0 40 80
(IN FEET)
1 inch = 40 ft.

PROJECT NO.: LUP2019–0039 &
PLAN NO.: SPL2019–0005

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

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FORT LUPTON, COLORADO

PRELIMINARY CONSTRUCTION PLANS
EROSION & SEDIMENT CONTROL PLANS
EROSION CONTROL – FINAL AREA 11

SUN COMMUNITIES, INC.

DATE DATE

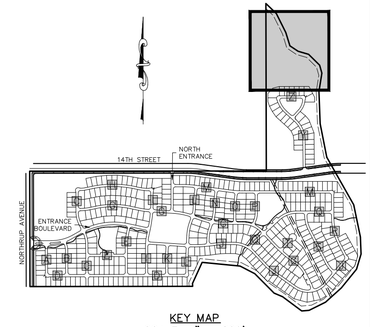
REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. EC-35

CAD FILE: 19001956-GESC-FINAL.DWG

NOTES:
1. SEE EROSION CONTROL DETAILS ON SHEETS EC-37 – EC-39.

SEE SHEET EC-11



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SCALE: 1" = 800'

BMP LEGEND

CD	CHECK DAM
CB	COMPOST BLANKET
CFB	COMPOST FILTER BERM
CWA	CONCRETE WASHOUT AREA
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TSC	TEMPORARY STREAM CROSSING
TER	TERRACING
VTC	VEHICLE TRACKING CONTROL
WW	VTC WITH WHEEL WASH
LOC	LIMITS OF CONSTRUCTION

40 0 40 80
(IN FEET)
1 inch = 40 ft.

PROJECT NO.: LUP2019–0039 &
PLAN NO.: SPL2019–0005

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

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PRELIMINARY CONSTRUCTION PLANS
EROSION & SEDIMENT CONTROL PLANS
EROSION CONTROL – FINAL AREA 12

SUN COMMUNITIES, INC.

DATE	DATE

REVISIONS

DR. TN	CH. JP/SB
P.M. RW	
JOB 19001956	
SHEET NO. EC-36	

CAD FILE: 19001956-GESC-FINAL.DWG

TITLE	KEY	SYMBOL
CHECK DAM	CD	
CONSTRUCTION ROAD STABILIZATION	CRS	CRS
CURB SOCK INLET PROTECTION	CS	
CONCRETE WASHOUT AREA	CWA	
DIVERSION DITCH AND DIKE, TEMPORARY	DD	DD
DIVERSION CHANNEL, TEMPORARY	DV	DV
DEWATERING	DW	
EROSION CONTROL BLANKET	ECB	
INLET FILTER	IF	
STORM DRAIN INLET PROTECTION	IP	
MULCHING	MU	MU

CITY OF Fort Lupton EST. 1836 — COME PAINT YOUR FUTURE WITH US

DESIGN STANDARDS	STANDARD DRAWING
MAP SYMBOLS	EC1
	DATE: 8/15/14

TITLE	KEY	SYMBOL
OUTLET PROTECTION	OP	
PAVED FLUME	PF	PF
PERMANENT SEEDING	PS	PS
REINFORCED CONCRETE DAM	RCD	
ROUGH CUT STREET CONTROL	RCS	
SEDIMENT BASIN	SB	
STRAW BALE BARRIER	SBB	
SILT FENCE	SF	
SURFACE ROUGHENING	SR	SR

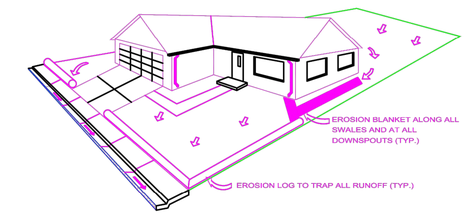
CITY OF Fort Lupton EST. 1836 — COME PAINT YOUR FUTURE WITH US

DESIGN STANDARDS	STANDARD DRAWING
MAP SYMBOLS	EC2
	DATE: 8/15/14

TITLE	KEY	SYMBOL
STABILIZED STAGING AREA	SSA	
SEDIMENT TRAP	ST	
SEDIMENT LOG	SCL	
TERRACING	TER	
TEMPORARY SEEDING	TS	TS
TEMPORARY STREAM CROSSING CULVERT/BRIDGE TYPE	TSC C	
TEMPORARY STREAM CROSSING FORD TYPE	TSC F	
TEMPORARY SLOPE DRAIN	TSD	TSD
VEHICLE TRACKING CONTROL	VTC	
VEHICLE TRACKING CONTROL WITH WASH RACK	WR	WR

CITY OF Fort Lupton EST. 1836 — COME PAINT YOUR FUTURE WITH US

DESIGN STANDARDS	STANDARD DRAWING
MAP SYMBOLS	EC3
	DATE: 8/15/14



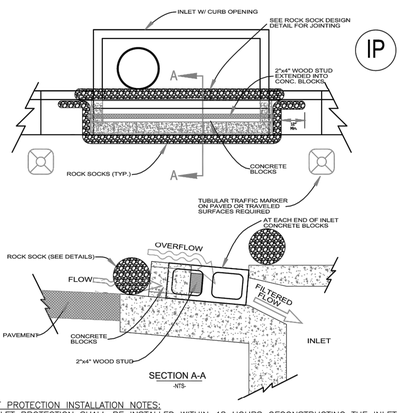
NOTE: EROSION CONTROL MEASURES SHALL BE MAINTAINED AT ALL TIMES AS DIRECTED BY THE CITY

EROSION LOG AND BLANKET BARRIER

RESIDENTIAL INSTALLATION

CITY OF Fort Lupton EST. 1836 — COME PAINT YOUR FUTURE WITH US

DESIGN STANDARDS	STANDARD DRAWING
SINGLE FAMILY EROSION CONTROL PLAN	EC4
	DATE: 8/15/14

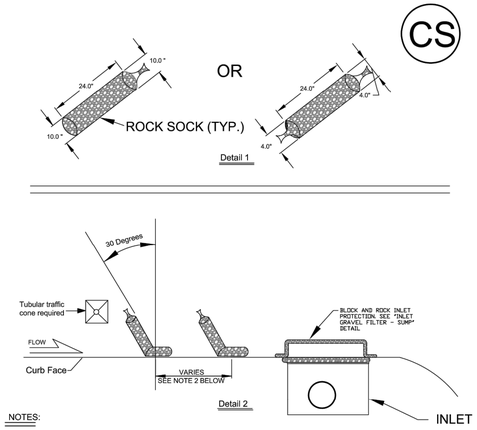


INLET PROTECTION INSTALLATION NOTES:

1. INLET PROTECTION SHALL BE INSTALLED WITHIN 48 HOURS OFCONSTRUCTING THE INLET.
2. SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.
3. CONCRETE "CINDER" BLOCKS SHALL BE LAID ON THEIR SIDES AROUND THE INLET IN A SINGLE ROW ABUTTING ONE ANOTHER WITH THE OPEN END FACING AWAY FROM THE CURB.
4. GRAVEL SOCKS SHALL BE PLACED AROUND THE CONCRETE BLOCKS, CLOSELY ABUTTING ONE ANOTHER AND JOINTED IN ACCORDANCE WITH THE ROCK SOCK DESIGN DETAIL.

CITY OF Fort Lupton EST. 1836 — COME PAINT YOUR FUTURE WITH US

DESIGN STANDARDS	STANDARD DRAWING
INLET GRAVEL FILTER - SUMP	EC5
	DATE: 8/15/14

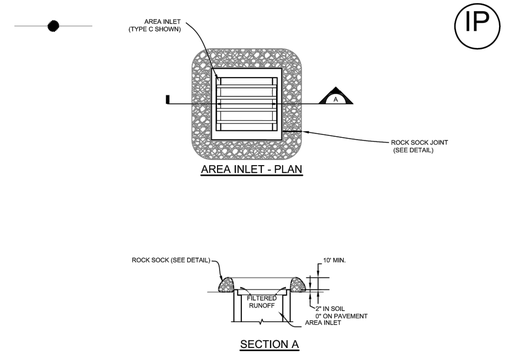


NOTES:

1) SOCKS WILL BE USED UPGRADIENT OF THE INLET AND FLUSH WITH THE CURB.
2) NO LESS THAN TWO 10 INCH DIAMETER SOCKS MUST BE USED IN SEQUENCE, SPACED NO MORE THAN FIVE FEET APART. NO LESS THAN SIX SOCKS SHALL BE USED IF THE 4 INCH SOCK IS USED, ALSO SPACED AT NO MORE THAN 5 FEET APART.
3) ALIGN AT 30 DEGREES FROM PERPENDICULAR, OPPOSITE THE DIRECTION OF FLOW (SEE DETAIL 2.
4) EROSION CONTROL MEASURES SHALL BE MAINTAINED AT ALL TIMES AS DIRECTED BY THE CITY.

CITY OF Fort Lupton EST. 1836 — COME PAINT YOUR FUTURE WITH US

DESIGN STANDARDS	STANDARD DRAWING
ON GRADE INLET PROTECTION	EC 6
	DATE: 8/15/14



INLET PROTECTION INSTALLATION NOTES

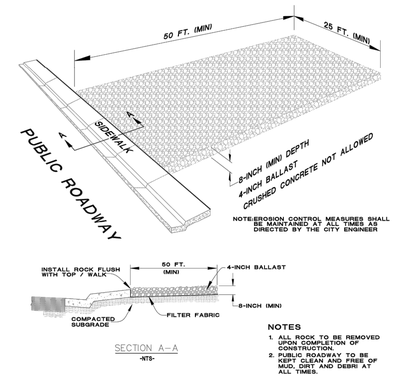
1. INLET PROTECTION AFTER INLET CONSTRUCTION OF AFTER PAVEMENT SHALL BE INSTALLED WITHIN 48 HOUR AFTER INLET CONSTRUCTION OR PAVING IS COMPLETED.
2. STRAW WATTLES/SEDIMENT CONTROL LOGS MAY BE USED IN PLACE OF ROCK SOCKS FOR INLETS IN PERVIOUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.

INLET PROTECTION MAINTENANCE NOTES

1. THE SWMP MANAGER SHALL INSPECT INLET PROTECTION WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS OR CLEAN OUT AS NECESSARY. INSPECT MORE FREQUENTLY DURING WINTER CONDITIONS DUE TO FREEZE/THAW PROBLEMS. REPAIRS AS NEEDED.
2. SEDIMENT ACCUMULATED UPSTREAM OF INLET PROTECTION SHALL BE REMOVED WHEN THE SEDIMENT DEPTH UPSTREAM OF ROCK BERM IS WITHIN 2-1/2 INCHES OF THE CREST.
3. INLET PROTECTION IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND GRASS COVER IS APPROVED, UNLESS THE CITY APPROVES EARLIER REMOVAL OF INLET PROTECTION IN STREETS.
4. WHEN INLET PROTECTION AT AREA INLETS IS REMOVED, THE DISTURBED AREA SHALL BE COVERED WITH TOP SOIL, DRILL SEEDED AND CRIMP MULCHED, OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE CITY .

CITY OF Fort Lupton EST. 1836 — COME PAINT YOUR FUTURE WITH US

DESIGN STANDARDS	STANDARD DRAWING
AREA INLET PROTECTION USING GRAVEL FILTER	EC 7
	DATE: 8/15/14



NOTES

1. ALL ROCK TO BE REMOVED PRIOR TO COMPLETION OF CONSTRUCTION.
2. PUBLIC ROADWAY TO BE KEPT CLEAN AND FREE OF MUD, DIRT AND DEBRI AT ALL TIMES.

CITY OF Fort Lupton EST. 1836 — COME PAINT YOUR FUTURE WITH US

DESIGN STANDARDS	STANDARD DRAWING
VEHICLE TRACKING PAD	EC 8
	DATE: 8/15/14

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PRELIMINARY CONSTRUCTION PLANS
EROSION & SEDIMENT CONTROL PLANS
EROSION & SEDIMENT CONTROL DETAILS

SUN COMMUNITIES, INC.

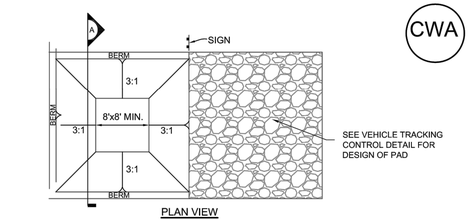
DATE	DATE

REVISIONS

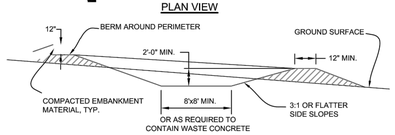
DR. TN | CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. EC-37

CAD FILE: 19001956-GESC-DETAILS.DWG

CWA



PLAN VIEW



SECTION A

CONCRETE WASHOUT AREA INSTALLATION NOTES

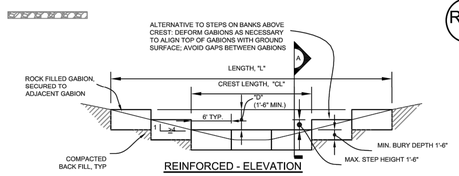
1. SEE PLAN VIEW FOR LOCATIONS OF CONCRETE WASHOUT AREA.
2. THE CONCRETE WASHOUT AREA SHALL BE INSTALLED PRIOR TO ANY CONCRETE PLACEMENT ON SITE.
3. VEHICLE TRACKING CONTROL IS REQUIRED AT THE ACCESS POINT.
4. SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE WASHOUT AREA, AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CONCRETE WASHOUT ARE TO OPERATORS OF CONCRETE TRCUYKS AND PUMP RIGS.

CONCRETE WASHOUT AREA MAINTENANCE NOTES

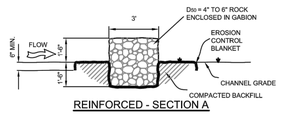
1. THE CONCRETE WASHOUT AREA SHALL BE REPAIRED AND ENLARGED OR CLEANED OUT AS NECESSARY TO MAINTAIN CAPACITY FOR WASTED CONCRETE.
2. AT THE END OF CONSTRUCTION, ALL CONCRETE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF AT AND APPROVED WASTE SITE.
3. WHEN THE CONCRETE WASHOUT AREA IS REMOVED, COVER THE DISTURBED AREA WITH TOP SOIL, DRILL SEED AND CRIMP MULCH, OR OTHERWISE STABILIZE IN A MANNER APPROVED BY THE CITY.
4. INSPECT WEEKLY, DURING AND AFTER ANY STORM EVENT.
5. PORTABLE ROLLOFF TYPE OF CONCRETE WASHOUT FACILITIES WILL ALSO BE ALLOWED.

DESIGN STANDARDS	STANDARD DRAWING
CONCRETE WASHOUT AREA	EC 9
	DATE: 8/15/14

RCD



REINFORCED - ELEVATION



REINFORCED - SECTION A

REINFORCED CHECK DAM INSTALLATION NOTES

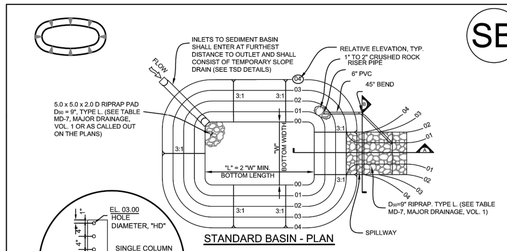
1. SEE PLAN VIEW FOR:
   - LOCATIONS OF CHECK DAMS.
   - CHECK DAM TYPE (CHECK DAM OR REINFORCED CHECK DAM).
   - LENGTH, "L", CREST LENGTH, "CL", AND DEPTH, "D".
2. CHECK DAMS INDICATED ON THE INITIAL SWMP SHALL BE INSTALLED AFTER CONSTRUCTION FENCE, BUT PRIOR TO ANY UPSTREAM LAND-DISTURBING ACTIVITIES.
3. REINFORCED CHECK DAMS, GABIONS SHALL HAVE GALVANIZED TWISTED WIRE NETTING WITH A MAXIMUM OPENING DIMENSION OF 4-1/2 " AND A MINIMUM WIRE THICKNESS OF 0.10". WIRE "HOG RINGS" AT 4" SPACING OR OTHER APPROVED MEANS SHALL BE USED AT ALL GABION SEAMS AND TO SECURE THE GABION TO THE ADJACENT GABION.
4. THE CHECK DAM SHALL BE TRENCHED INTO THE GROUND A MINIMUM OF 1'-6".
5. EROSION BLANKET SHALL BE PLACED IN THE REINFORCED CHECK DAM TRENCH EXTENDING A MINIMUM OF 1'-6" ON BOTH THE UPSTREAM AND DOWNSTREAM SIDES OF THE REINFORCED CHECK DAM.

REINFORCED CHECK DAM MAINTENANCE NOTES

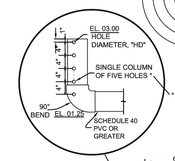
1. THE SWMP MANAGER SHALL INSPECT CHECK DAMS WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS OR CLEAN OUT AS NECESSARY.
2. SEDIMENT ACCUMULATED UPSTREAM OF CHECK DAMS SHALL BE REMOVED WHEN THE SEDIMENT DEPTH UPSTREAM OF CHECK DAM IS WITHIN 1/2 OF THE HEIGHT OF THE CREST.
3. CHECK DAMS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND GRASS COVER IS APPROVED BY THE CITY.
4. WHEN CHECK DAMS ARE REMOVED, EXCAVATIONS SHALL BE FILLED WITH SUITABLE COMPACTED BACKFILL. ANY DISTURBED AREA SHALL BE COVERED WITH TOP SOIL, DRILL SEEDED AND CRIMP MULCHED AND COVERED WITH EROSION CONTROL BLANKET OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE CITY.

DESIGN STANDARDS	STANDARD DRAWING
REINFORCED CHECK DAM	EC 10
	DATE: 8/15/14

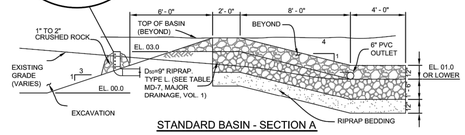
SB



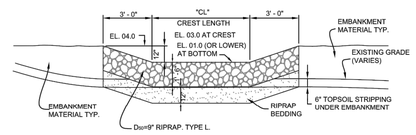
STANDARD BASIN - PLAN



* EXCEPT WHERE THE HOLES EXCEED 1" DIAMETER, THEN UP TO TWO COLUMNS OF SAME SIZED HOLES MAY BE USED (ONE COL. PREFERRED)



STANDARD BASIN - SECTION A



STANDARD BASIN - SECTION B

DESIGN STANDARDS	STANDARD DRAWING
SEDIMENT BASIN DETAILS	EC 11
	DATE: 8/15/14

SB

SIZING INFORMATION FOR STANDARD SEDIMENT BASIN			
Upstream Drainage Area (rounded to nearest acre), (ac)	Basin Bottom Width (W), (ft)	Spillway Crest Length (CL), (ft)	Hole Diameter (HD), (in)
1	12 1/2	2	9/32
2	21	3	13/16
3	28	5	1/2
4	33 1/2	6	9/16
5	38 1/2	8	21/32
6	43	9	21/32
7	47 1/4	11	25/32
8	51	12	27/32
9	55	13	7/8
10	58 1/4	15	15/16
11	61	16	31/32
12	64	18	1
13	67 1/2	19	1 1/16
14	70 1/2	21	1 1/8
15	73 1/4	22	1 3/16

Minimum Bottom Width and diameter of outlet plate holes based on 2,700 cu. ft. / acre of tributary area and 72 hour drain time.

SEDIMENT BASIN INSTALLATION NOTES

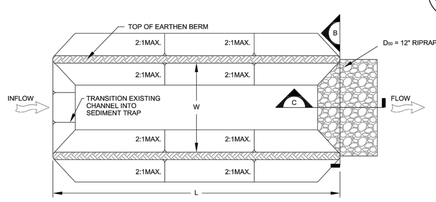
1. SEE PLAN VIEW AND SECTIONS FOR:
   - LOCATION OF SEDIMENT BASIN.
   - TYPE OF BASIN (STANDARD BASIN OR NONSTANDARD BASIN).
   - FOR STANDARD BASIN, BOTTOM WIDTH, "W", CREST LENGTH, "CL", AND HOLE DIAMETER, "HD".
   - FOR NONSTANDARD BASIN, SEE CONSTRUCTION DRAWINGS FOR DESIGN OF BASIN INCLUDING RISER HEIGHT, "H", NUMBER OF COLUMNS, "N", HOLE DIAMETER, "HD", AND PIPE DIAMETER "D".
2. FOR STANDARD BASIN, BOTTOM DIMENSION MAY BE MODIFIED AS LONG AS BOTTOM AREA IS NOT REDUCED.
3. SEDIMENT BASINS INDICATED ON INITIAL SWMP PLAN SHALL BE INSTALLED PRIOR TO ANY OTHER LAND-DISTURBING ACTIVITY.
4. EMBANKMENT MATERIAL SHALL CONSIST OF SOIL FREE OF DEBRIS, ORGANIC MATERIAL, AND ROCKS OR CONCRETE GREATER THAN 3 INCHES AND SHALL HAVE A MINIMUM OF 15 PERCENT BY WEIGHT PASSING THE NO. 200 SIEVE.
5. EMBANKMENT MATERIAL SHALL BE COMPACTED TO AT LEAST 95 PERCENT OF MAXIMUM DENSITY IN ACCORDANCE WITH ASTM D 698.
6. PIPE SCH 40 OR GREATER SHALL BE USED.
7. THE DETAILS SHOWN ON THESE SHEETS PERTAIN TO STANDARD SEDIMENT BASIN(S) IDENTIFIED ON THE SWMP PLAN VIEW DRAWINGS USED FOR DRAINAGE AREAS LESS THAN 15 ACRES. SEE CONSTRUCTION DRAWINGS FOR EMBANKMENT, STORAGE VOLUME, SPILLWAY, OUTLET, AND OUTLET PROTECTION DETAILS FOR ANY SEDIMENT BASIN(S) THAT HAVE BEEN INDIVIDUALLY DESIGNED FOR DRAINAGE AREAS LARGER THAN 15 ACRES.

SEDIMENT BASIN MAINTENANCE NOTES

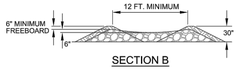
1. THE SWMP MANAGER SHALL INPSECT SEDIMENT BASIN WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS OR CLEAN OUT AS NECESSARY.
2. SEDIMENT ACCUMULATED IN BASIN SHALL BE REMOVED WHEN SEDIMENT DEPTH IS ONE FOOT (I.E., 2-FEET BELOW THE SPILLWAY CREST).
3. SEDIMENT BASINS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND GRASS COVER IS ACCEPTED BY THE CITY.
4. WHEN SEDIMENT BASINS ARE REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY THE CITY.

DESIGN STANDARDS	STANDARD DRAWING
SEDIMENT BASIN SIZING & NOTES	EC 12
	DATE: 8/15/14

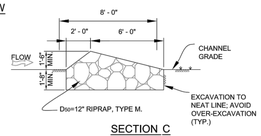
ST



PLAN VIEW



SECTION B



SECTION C

SEDIMENT TRAP INSTALLATION NOTES

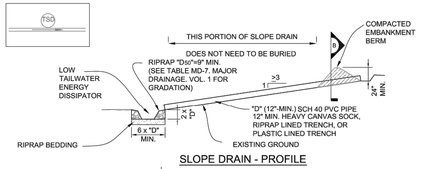
1. SEE PLAN VIEW FOR:
   - LOCATION, LENGTH AND WIDTH OF SEDIMENT TRAP.
2. SEDIMENT TRAPS INDICATED ON INITIAL EROSION CONTROL PLAN SHALL BE INSTALLED PRIOR TO ANY LAND-DISTURBING ACTIVITIES.
3. SEDIMENT TRAP BERM SHALL BE CONSTRUCTED FROM MATERIAL FROM EXCAVATION. THE BERM SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY IN ACCORDANCE WITH ASTM D698.
4. RIPRAP OUTLET SHALL BE CONSTRUCTED WITH D_{50} =12" RIPRAP (TYPE M, SEE TABLE MD-7, MAJOR DRAINAGE, VOL. 1 , URBAN DRAINAGE AND FLOOD CONTROL DISTRICT CRITERIA MANUAL.
5. THE TOP OF THE EARTHEN BERM SHALL BE A MINIMUM OF 6" HIGHER THAN THE TOP OF THE RIPRAP OUTLET STRUCTURE.
6. THE ENDS OF THE RIPRAP OUTLET STRUCTURE SHALL BE MINIMUM OF 6" HIGHER THAN THE CENTER OF THE OUTLET STRUCTURE.

SEDIMENT TRAP MAINTENANCE NOTES

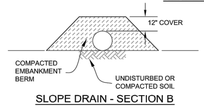
1. THE SWMP MANAGER SHALL INSPECT SEDIMENT TRAPS WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS OR CLEAN OUT UPSTREAM SEDIMENT AS NECESSARY.
2. SEDIMENT ACCUMULATED UPSTREAM OF RIPRAP SHALL BE REMOVED WHEN THE UPSTREAM DEPTH IS WITHIN ½ THE HEIGHT OF THE RIPRAP OUTLET STRUCTURE.
3. SEDIMENT TRAPS SHALL REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND GRASS COVERAGE IS APPROVED BY THE CITY.
4. WHEN SEDIMENT TRAPS ARE REMOVED THE DISTURBED AREA SHALL BE COVERED WITH TOP SOIL, DRILLED SEEDED AND CRIMP MULCHED OR STABILIZED IN A MANNER APPROVED BY THE CITY.

DESIGN STANDARDS	STANDARD DRAWING
SEDIMENT TRAP	EC 13
	DATE: 8/15/14

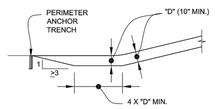
TSD



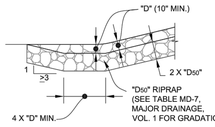
SLOPE DRAIN - PROFILE



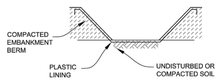
SLOPE DRAIN - SECTION B



TERMINATION OF PLASTIC LINED SLOPE DRAIN - DETAIL



TERMINATION OF RIPRAP LINED SLOPE DRAIN - DETAIL



PLASTIC LINED DRAIN - SECTION

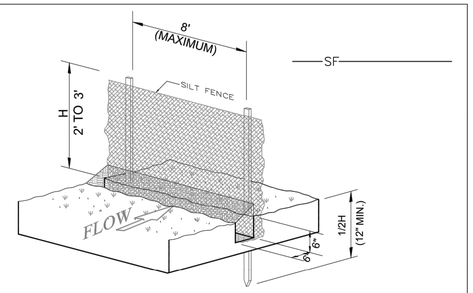
SLOPE DRAIN INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   - LOCATION AND LENGTH OF SLOPE DRAIN.
   - PIPE DIAMETER, "D", AND RIPRAP SIZE, "D50".
2. SLOPE DRAIN DIMENSIONS SHALL BE CONSIDERED MINIMUM DIMENSIONS; CONTRACTOR MAY ELECT TO INSTALL LARGER FACILITIES. ANY DAMAGE TO SLOPE OR SLOPE DRAIN DURING RUNOFF EVENTS SHALL BE THE DEVELOPER'S RESPONSIBILITY.
3. SLOPE DRAINS INDICATED ON INITIAL GESC PLAN SHALL BE INSTALLED PRIOR TO ANY UPSTREAM LAND-DISTURBING ACTIVITIES.
4. FOR TEMPORARY SLOPE DRAINS, PIPE MAY BE INSTALLED ON TOP OF SLOPE; HOWEVER, 12" MIN. COVER AT TOP OF SLOPE SHALL BE PROVIDED. PLASTIC-LINED OR RIPRAP-LINED TRENCHES MAY BE USED INSTEAD OF PIPE.
5. A RIPRAP PAD SHALL BE PLACED AT THE OUTFALL OF THE SLOPE DRAIN.

SLOPE DRAIN MAINTENANCE NOTES

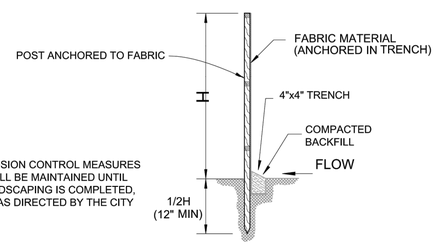
1. THE SWMP MANAGER SHALL INSPECT SLOPE DRAINS WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS AS NECESSARY.
2. TEMPORARY SLOPE DRAINS ARE TO REMAIN IN PLACE UNTIL NO LONGER NEEDED, BUT SHALL BE REMOVED PRIOR TO THE END OF CONSTRUCTION. WHEN SLOPE DRAINS ARE REMOVED, THE DISTURBED AREA SHALL BE COVERED WITH TOP SOIL, DRILL SEEDED AND CRIMP MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE CITY.

DESIGN STANDARDS	STANDARD DRAWING
TEMPORARY SLOPE DRAIN	EC 14
	DATE: 8/15/14



SILT FENCE INSTALLATION

-NTS-



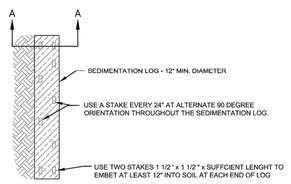
NOTE: EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL LANDSCAPING IS COMPLETED, OR AS DIRECTED BY THE CITY

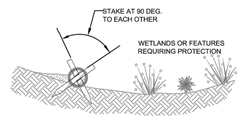
SECTION

-NTS-

DESIGN STANDARDS	STANDARD DRAWING
SILT FENCE	EC 15
	DATE: 8/15/14

SCL





SECTION A - A

SEDIMENT CONTROL LOG INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   - LOCATION AND LENGTH OF SEDIMENT CONTROL LOG.
2. SEDIMENT CONTROL LOGS INDICATED ON INITIAL SWMP PLAN SHALL BE INSTALLED PRIOR TO ANY LAND-DISTURBING ACTIVITIES.
3. SEDIMENT CONTROL LOGS SHALL CONSIST OF STRAW, COMPOST, EXCELSIOR, OR COCONUT FIBER.
4. NOT FOR USE IN CONCENTRATED FLOW AREAS.
5. THE SEDIMENT CONTROL LOG SHALS BE TRENCHED INTO THE GROUND A MINIMUM OF 2".

SEDIMENT CONTROL LOG MAINTENANCE NOTES

1. THE SWMP MANAGER SHALL INSPECT SEDIMENT CONTROL LOGS DAILY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS OR CLEAN OUT UPSTREAM SEDIMENT AS NECESSARY.
2. SEDIMENT ACCUMULATED UPSTREAM OF SEDIMENT CONTROL LOGS SHALL BE REMOVED WHEN THE UPSTREAM SEDIMENT DEPTH IS WITHIN ½ THE HEIGHT OF THE CREST OF LOG.
3. SEDIMENT CONTROL LOG SHALL BE REMOVED AT THE END OF CONSTRUCTION. IF ANY DISTURBED AREA EXISTS AFTER REMOVAL, IT SHALL BE COVERED WITH TOP SOIL, DRILL SEEDED AND CRIMP MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE CITY.

DESIGN STANDARDS	STANDARD DRAWING
SEDIMENT CONTROL LOGS	EC 16
	DATE: 8/15/14

Know what's below. Call before you dig.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

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WILLOW BEND SUBDIVISION
FORT LUPTON, COLORADO

PRELIMINARY CONSTRUCTION PLANS
EROSION & SEDIMENT CONTROL PLANS
EROSION & SEDIMENT CONTROL DETAILS

SUN COMMUNITIES, INC.

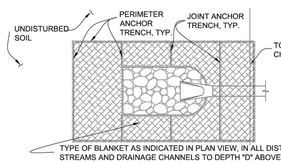
DATE	DATE

REVISIONS

DR. TN | CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. EC-38

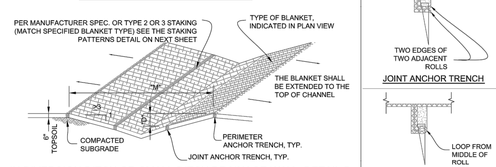
CAD FILE: 19001956-GESC-DETAILS.DWG

ECB

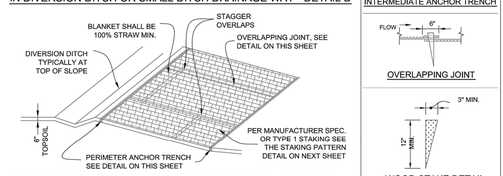


TYPE OF BLANKET AS INDICATED IN PLAN VIEW, IN ALL DISTURBED AREAS OF STREAMS AND DRAINAGE CHANNELS TO DEPTH "D" ABOVE CHANNEL INVERT. BLANKET SHALL GENERALLY BE ORIENTED PARALLEL TO FLOW DIRECTION. STAKING PATTERN SHALL MATCH BLANKET TYPE.

AT PIPE OUTLET AREAS OF STREAMS AND DRAINAGE CHANNELS - DETAIL A

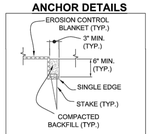


IN DIVERSION DITCH OR SMALL DITCH DRAINAGE WAY - DETAIL B

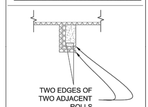


OUTSIDE OF STREAMS AND DRAINAGE CHANNELS - DETAIL C

ANCHOR DETAILS



PERIMETER ANCHOR TRENCH



JOINT ANCHOR TRENCH

INTERMEDIATE ANCHOR TRENCH

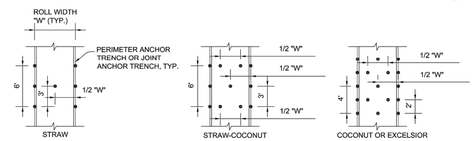
OVERLAPPING JOINT

WOOD STAKE DETAIL

MINIMUM THICKNESS 1"
USE 2x4 MATERIAL FOR STAKES

	DESIGN STANDARDS	STANDARD DRAWING
CITY OF Fort Lupton EST. 1836 COME PAINT YOUR FUTURE WITH US	EROSION BLANKET DETAILS	EC 17
		DATE: 8/15/14

ECB



STAKING PATTERNS

SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATION. IF NO MANUFACTURER'S SPECIFICATION IS AVAILABLE USE THE ACCEPTABLE STAKING PATTERN (AS SHOWN ABOVE)

EROSION CONTROL BLANKET INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   - LOCATION OF PERIMETER OF EROSION CONTROL BLANKET.
   - TYPE OF BLANKET (STRAW, STRAW-COCONUT, COCONUT, OR EXCELSIOR).
   - AREA "A" IN SQUARE YARDS OF EACH TYPE OF BLANKET.

2. ALL EROSION CONTROL BLANKETS AND NETTING SHALL BE MADE OF 100% NATURAL AND BIODEGRADABLE MATERIAL; NO PLASTIC OR OTHER SYNTHETIC MATERIAL, EVEN IF PHOTO DEGRADABLE, SHALL BE ALLOWED.

3. IN AREAS WHERE EROSION CONTROL BLANKET IS SHOWN ON THE PLANS, THE DEVELOPER SHALL PLACE TOPSOIL AND PERFORM FINAL GRADING, SURFACE PREPARATION, AND SEEDING BELOW THE SEEDING AND MULCHING. SUBGRADE SHALL BE SMOOTH AND MOIST PRIOR TO BLANKET INSTALLATION AND THE BLANKET SHALL BE IN FULL CONTACT WITH SUBGRADE. NO GAPS OR VOIDS SHALL EXIST UNDER THE BLANKET.

4. PERIMETER ANCHOR TRENCH SHALL BE USED AT OUTSIDE PERIMETER OF ALL BLANKET AREAS.

5. JOINT ANCHOR TRENCH SHALL BE USED TO JOIN ROLLS OF BLANKETS TOGETHER (LONGITUDINALLY AND TRANSVERSELY) FOR ALL BLANKETS EXCEPT STRAW, WHICH MAY USE AN OVERLAPPING JOINT.

6. INTERMEDIATE ANCHOR TRENCH SHALL BE USED AT SPACING OF ONE-HALF THE ROLL LENGTH FOR COCONUT AND EXCELSIOR BLANKETS.

7. THE OVERLAPPING JOINT DETAIL SHALL BE USED TO JOIN ROLLS OF BLANKETS TOGETHER FOR BLANKETS ON SLOPES.

8. MATERIAL SPECIFICATIONS OF EROSION CONTROL BLANKET SHALL CONFORM TO TABLE 7.1.

9. ANY AREAS OF SEEDING AND MULCHING DISTURBED IN THE PROCESS OF INSTALLING EROSION CONTROL BLANKET SHALL BE RESEEDED AND MULCHED.

10. DETAILS ON DESIGN PLANS FOR MAJOR DRAINAGEWAY STABILIZATION WILL GOVERN IF DIFFERENT FROM ONES SHOWN HERE

TABLE 7.1 - EROSION CONTROL BLANKET TYPE

TYPE	COCONUT CONTENT	STRAW CONTENT	EXCELSIOR CONTENT	NETTING MIN.
STRAW*	-	100%	-	DOUBLE/NATURAL
STRAW-COCONUT	30% MIN.	70% MAX.	-	DOUBLE/NATURAL
COCONUT	100%	-	-	DOUBLE/NATURAL
EXCELSIOR	-	-	100%	DOUBLE/NATURAL

* FOR OUTSIDE OF STREAMS AND DRAINAGE CHANNELS

EROSION CONTROL BLANKET MAINTENANCE NOTES

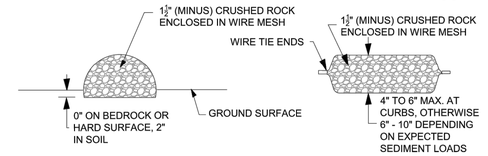
1. THE SWMP MANAGER SHALL INSPECT EROSION CONTROL BLANKETS WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS AS NECESSARY.

2. EROSION CONTROL BLANKET IS TO BE LEFT IN PLACE UNLESS DIRECTED TO BE REMOVED BY THE CITY.

3. ANY EROSION CONTROL BLANKET PULLED OUT, TORN, OR OTHERWISE DAMAGED SHALL BE RE-INSTALLED. ANY SUBGRADE AREAS BELOW THE BLANKET THAT HAVE ERODED TO CREATE A VOID UNDER THE BLANKET, OR THAT REMAIN DEVOID OF GRASS SHALL BE REPAIRED, RESEEDED AND MULCHED AND THE EROSION CONTROL BLANKET REINSTALLED.

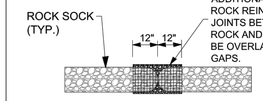
	DESIGN STANDARDS	STANDARD DRAWING
CITY OF Fort Lupton EST. 1836 COME PAINT YOUR FUTURE WITH US	EROSION BLANKET INSTALLATION AND MAINTENANCE NOTES	EC 18
		DATE: 8/15/14

RS



ROCK SOCK SECTION

ROCK SOCK PLAN



ANY GAP AT JOINT SHALL BE FILLED WITH AN ADEQUATE AMOUNT OF 1½" (MINUS) CRUSHED ROCK AND WRAPPED WITH ADDITIONAL WIRE MESH SECURED TO THE ENDS OF THE ROCK REINFORCED SOCK. AS AN ALTERNATIVE TO FILLING JOINTS BETWEEN ADJOINING ROCK SOCKS WITH CRUSHED ROCK AND ADDITIONAL WIRE WRAPPING, ROCK SOCKS CAN BE OVERLAPPED (TYPICALLY 12 - INCH OVERLAP) TO AVOID GAPS.

ROCK SOCK JOINTING

GRADATION TABLE	
SIEVE SIZE	MASS PERCENT PASSING SQUARE MESH SIEVES
	NO. 4
2"	100
11/2"	90 - 100
1"	20 - 55
3/4"	0 - 15
3/8"	0 - 5
MATCHES SPECIFICATIONS FOR NO. 4 COARSE AGGREGATE FOR CONCRETE PER AASHTO M43. ALL ROCK SHALL BE FRACTURED FACE, ALL SIDES.	

ROCK SOCK INSTALLATION NOTES

1. SEE PLAN VIEW FORLOCATION OF ROCK SOCKS.
2. CRUSHED ROCK SHALL BE 11/2 " (MINUS) IN SIZE WITH A FRACTURED FACE (ALL SIDES) AND SHALL COMPLY WITH GRADATION SHOWN ON THIS SHEET (11/2" MINUS).
3. WIRE MESH SHALL BE FABRICATED OD 10 GAGE POULTRY MESH OR EQUIVALENT WITH A MAXIMUM OPENING OF 1/2", RECOMMENDED MINIMUM ROLL WIDTH OF 48".
4. WIRE MESH SHALL BE SECURED USING "HOG RINGS" OR WIRE TIES AT 6" CENTERS ALONG ALL JOINTS AND AT 2" CENTERS ON ENDS OF SOCKS.

	DESIGN STANDARDS	STANDARD DRAWING
CITY OF Fort Lupton EST. 1836 COME PAINT YOUR FUTURE WITH US	ROCK SOCK DETAIL	EC 19
		DATE: 8/15/14

Know what's **below.** **Call** before you dig.

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NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

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FORT LUPTON, COLORADO

PRELIMINARY CONSTRUCTION PLANS
EROSION & SEDIMENT CONTROL PLANS
EROSION & SEDIMENT CONTROL DETAILS

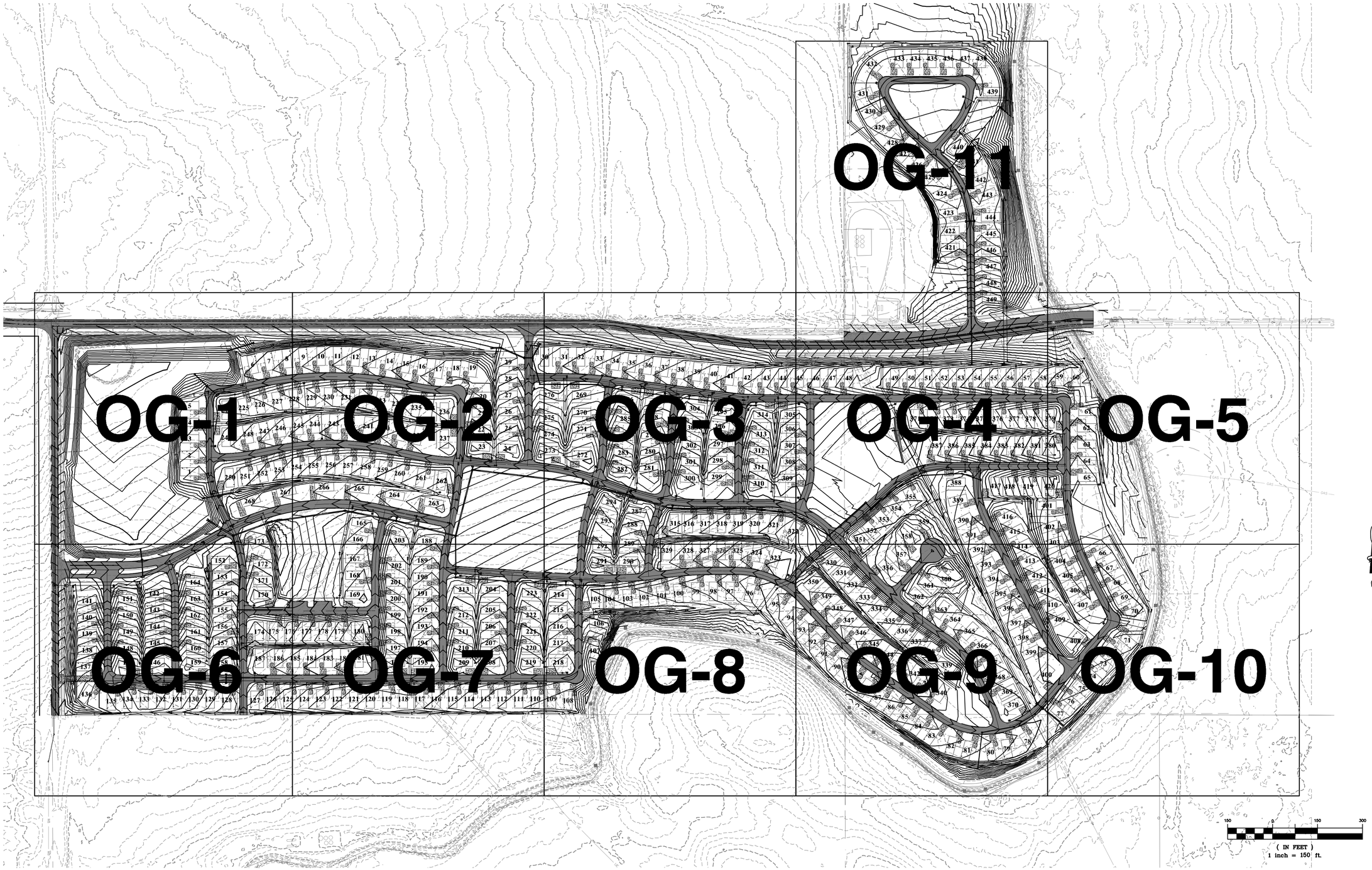
SUN COMMUNITIES, INC.

DATE DATE

REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO.
EC-39

CAD FILE: 19001956-GESC-DETAILS.DWG



PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

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WILLOW BEND SUBDIVISION
FORT LUPTON, COLORADO
PRELIMINARY CONSTRUCTION PLANS
OVERLOT GRADING
OVERALL GRADING INDEX

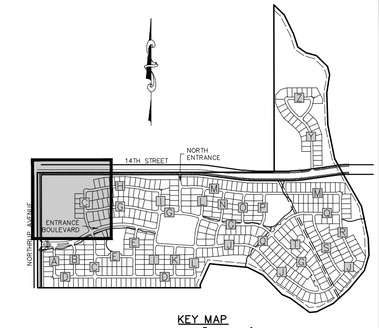
SUN COMMUNITIES, INC.

DATE	DATE

REVISIONS

DR. TN	CH. JP/SB
P.M. RW	
JOB 19001956	
SHEET NO. OG-0	

CAD FILE: 19001956-OVERALL-GRADING INDEX.DWG



KEY MAP
SCALE: 1" = 800'

LEGEND

- PROPERTY BOUNDARY
- PROPOSED RIGHT-OF-WAY
- EXISTING RIGHT-OF-WAY
- PROPOSED LOT LINE
- EXISTING LOT LINE
- PROPOSED CATCH CURB & GUTTER
- PROPOSED SPILL CURB & GUTTER
- EXISTING CURB & GUTTER
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- EXISTING SIDEWALK
- EXISTING SECTION LINE
- PROPOSED EASEMENT
- EXISTING EASEMENT
- PROPOSED CONTOURS
- EXISTING CONTOURS

NOTES:
1. SEE GRADING DETAILS ON SHEET GRD FOR TYPICAL LOT GRADING TEMPLATES.

40 0 40 80
(IN FEET)
1 inch = 40 ft.

PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

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FORT LUPTON, COLORADO
PRELIMINARY CONSTRUCTION PLANS
OVERLOT GRADING
AREA 1

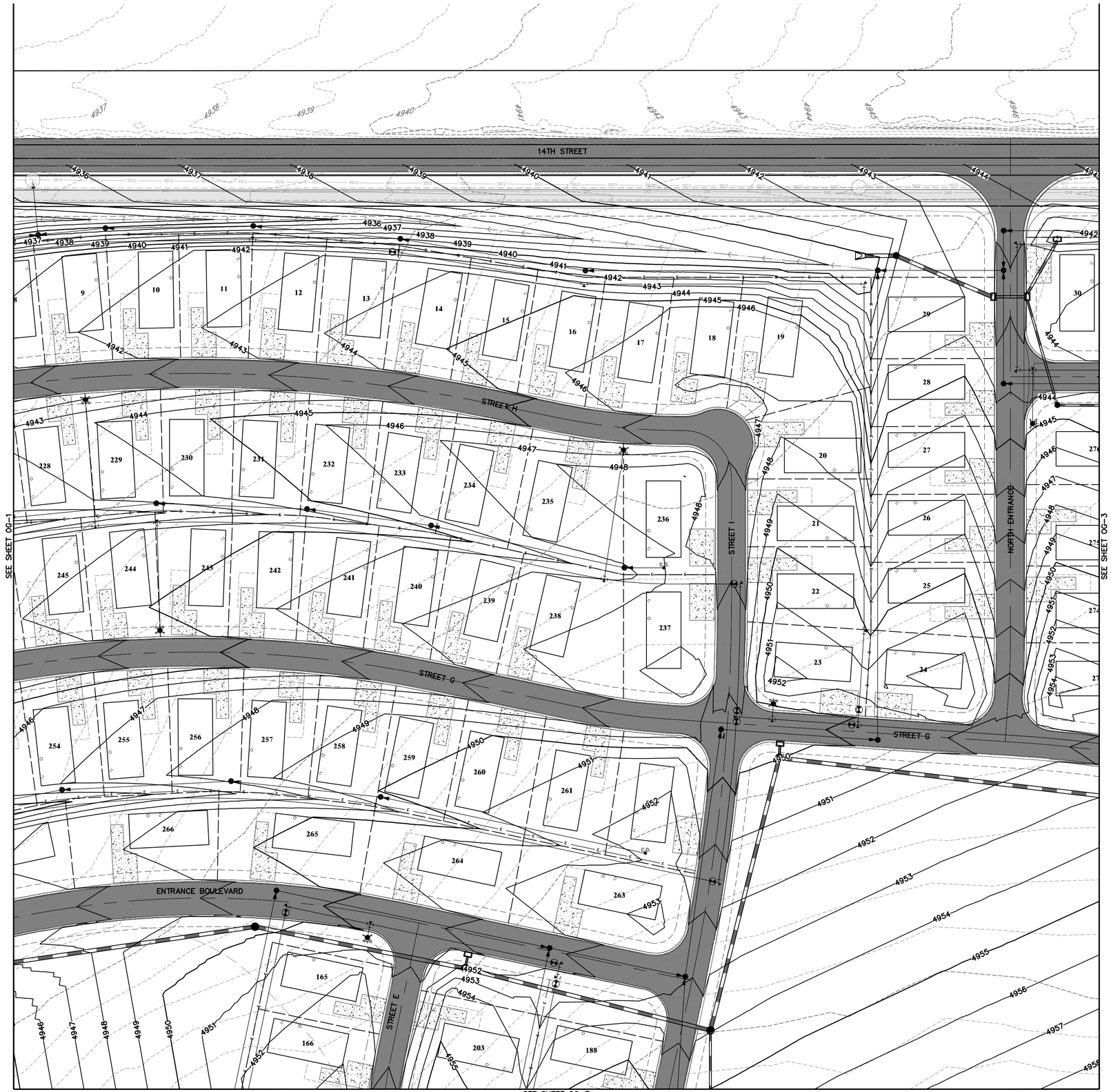
SUN COMMUNITIES, INC.

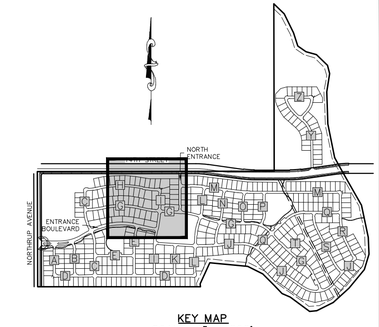
DATE	DATE

REVISIONS

DR. TN	CH. JP/SB
P.M. RW	
JOB 19001956	
SHEET NO. OG-1	

CAD FILE: 19001956-OVERALL-GRADING.DWG





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PLAN NO.: SPL2019-0005

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AREA 2

SUN COMMUNITIES, INC.

DATE DATE

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JOB 19001956	
SHEET NO. OG-2	

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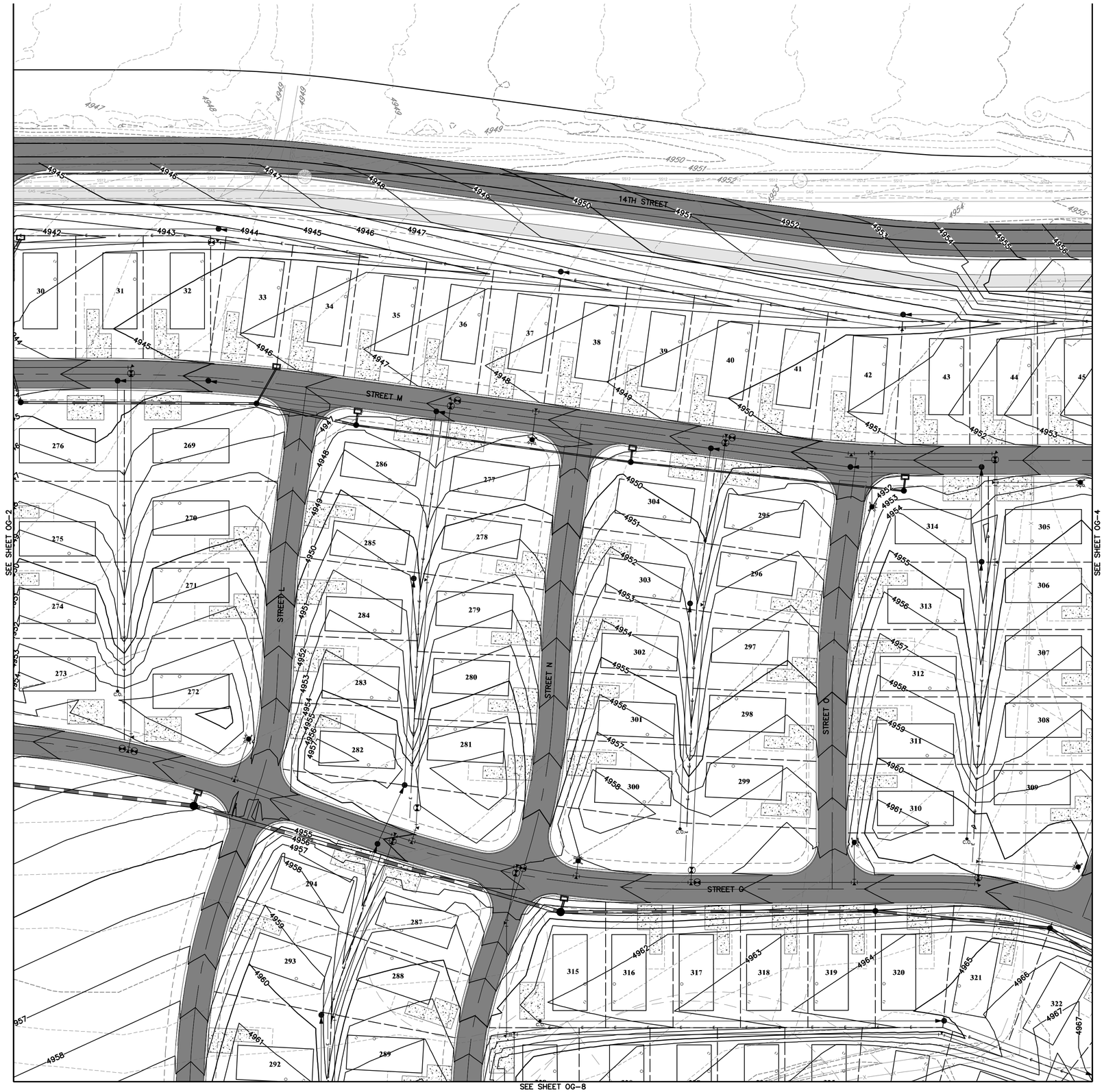

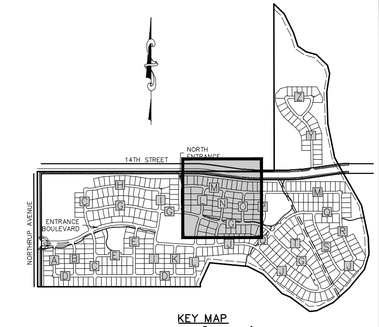

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PROJECT NO.: LUP2019-0039 &
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AREA 3

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DATE	DATE

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JOB 19001956	
SHEET NO. OG-3	

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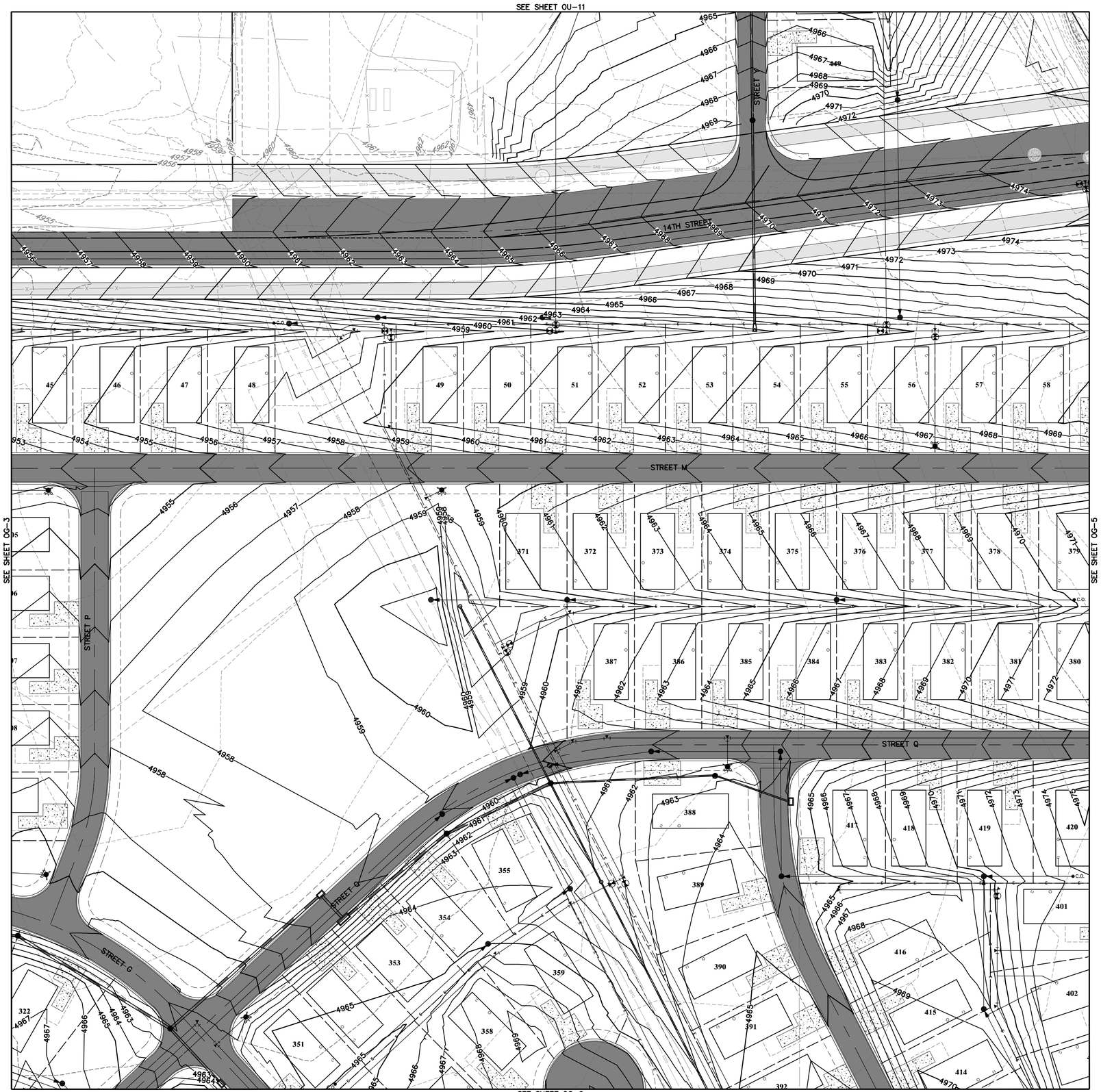

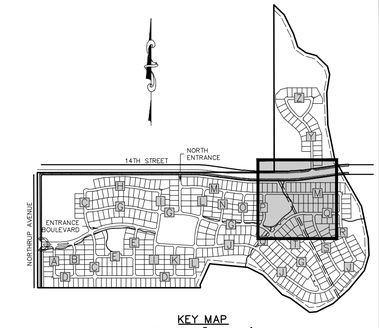

KEY MAP
SCALE: 1" = 800'

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PROJECT NO.: LUP2019-0039 &
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AREA 4

SUN COMMUNITIES, INC.

DATE	DATE

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JOB 19001956	
SHEET NO. OG-4	

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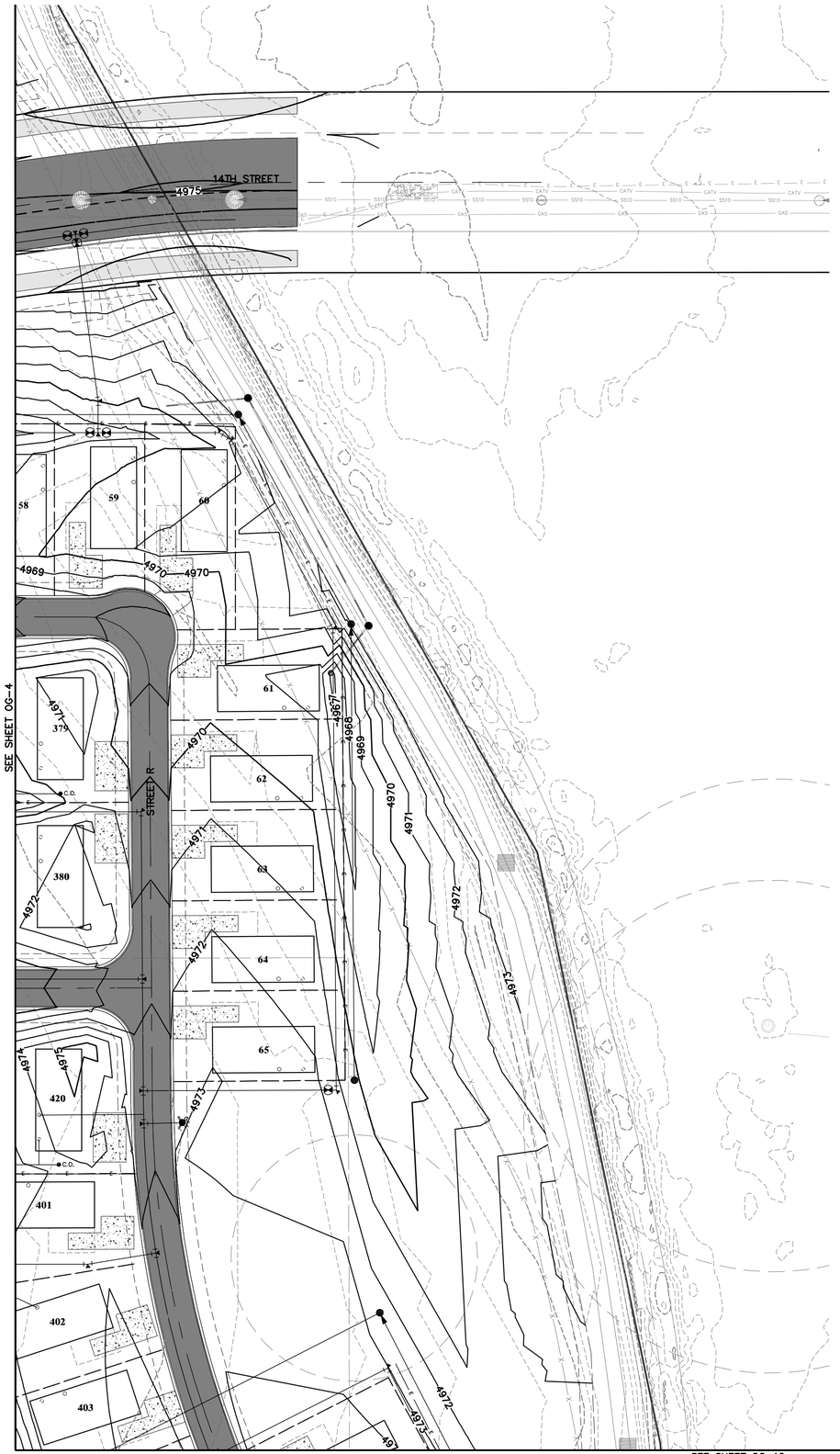

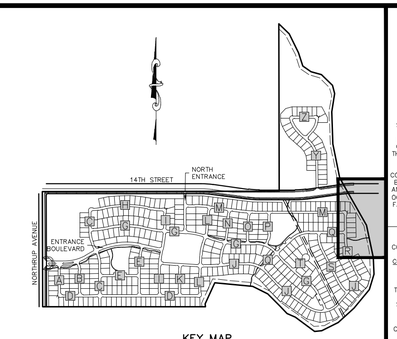

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PROJECT NO.: LUP2019-0039 &
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FORT LUPTON, COLORADO
PRELIMINARY CONSTRUCTION PLANS
OVERLOT GRADING
AREA 5

SUN COMMUNITIES, INC.

DATE	DATE

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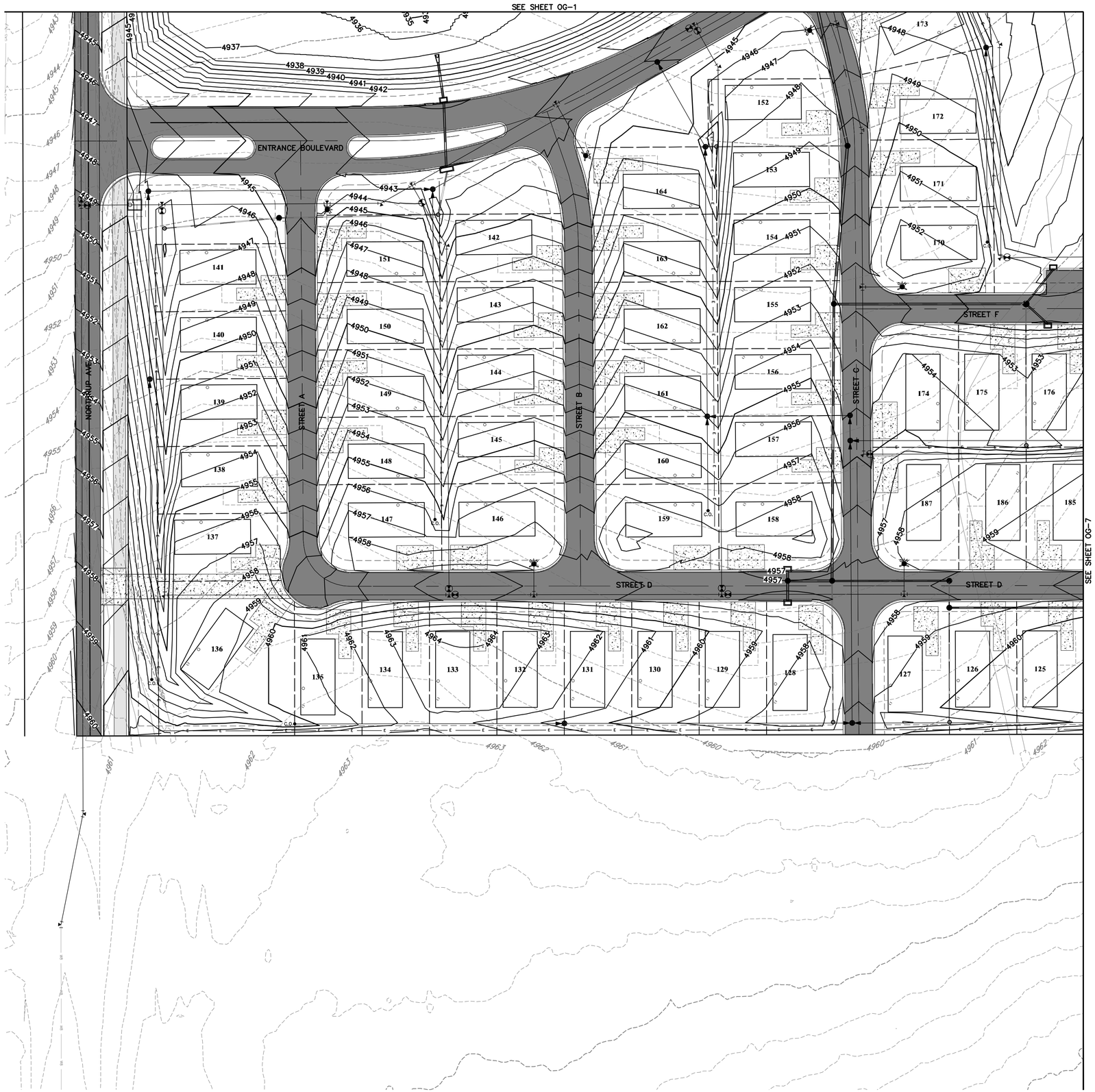
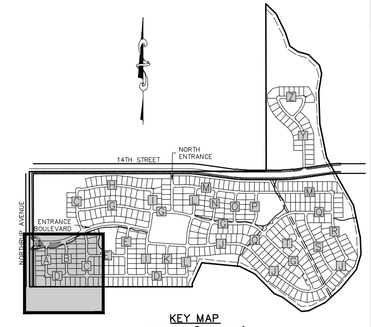
P.M. RW
JOB 19001956
SHEET NO. OG-5

CAD FILE: 19001956-OVERALL-GRADING.DWG





KEY MAP
SCALE: 1" = 800'

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PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

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PRELIMINARY CONSTRUCTION PLANS
OVERLOT GRADING
AREA 6

CLIENT

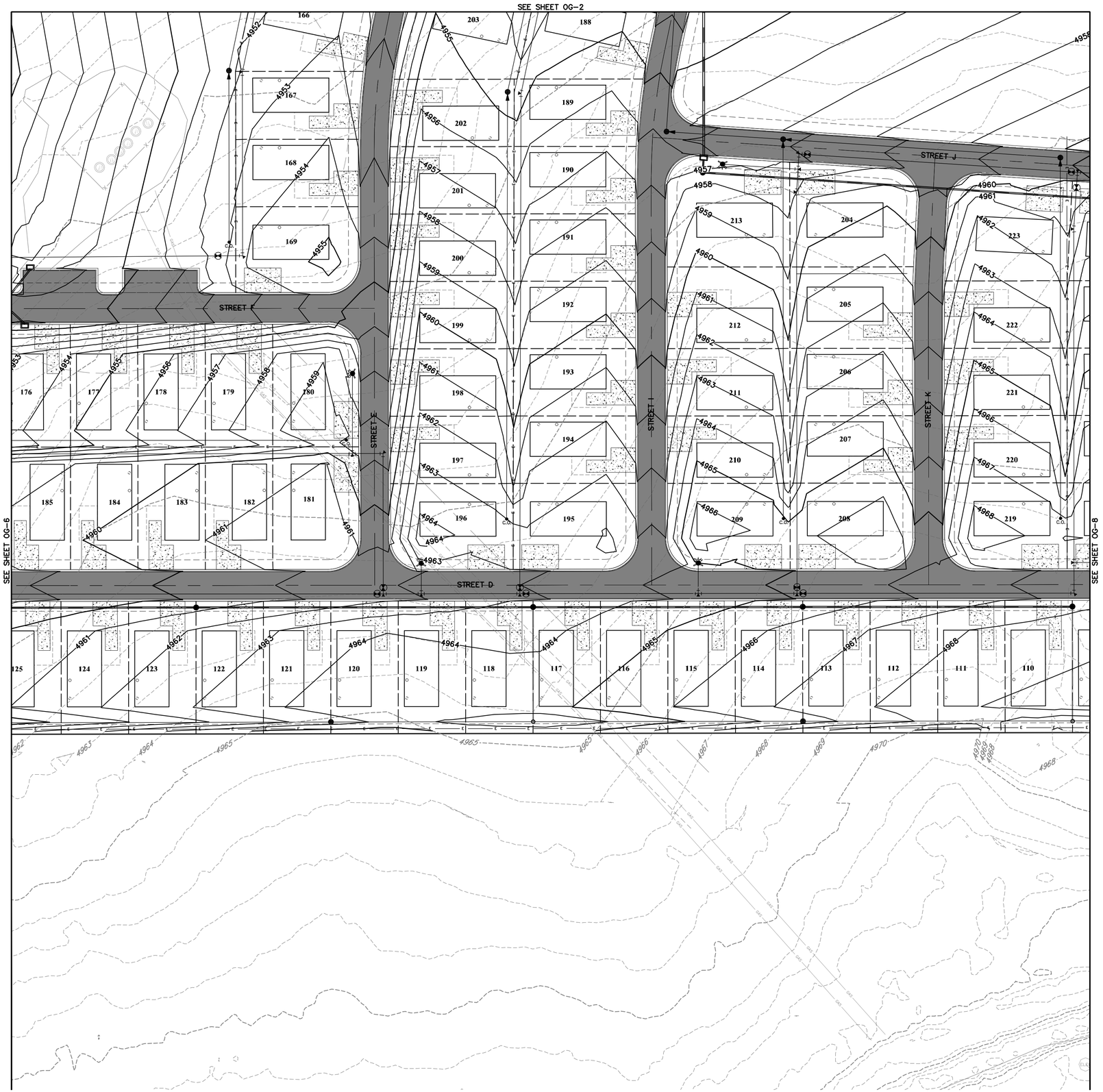
SUN COMMUNITIES, INC.

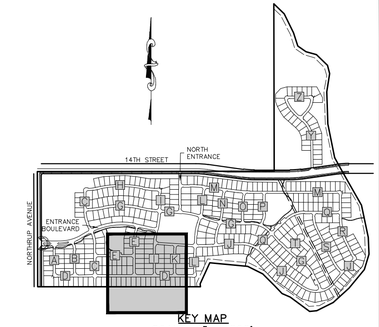
DATE DATE

REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. OG-6

CAD FILE: 19001956-OVERALL-GRADING.DWG





KEY MAP
SCALE: 1" = 800'

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PRELIMINARY CONSTRUCTION PLANS
OVERLOT GRADING
AREA 7

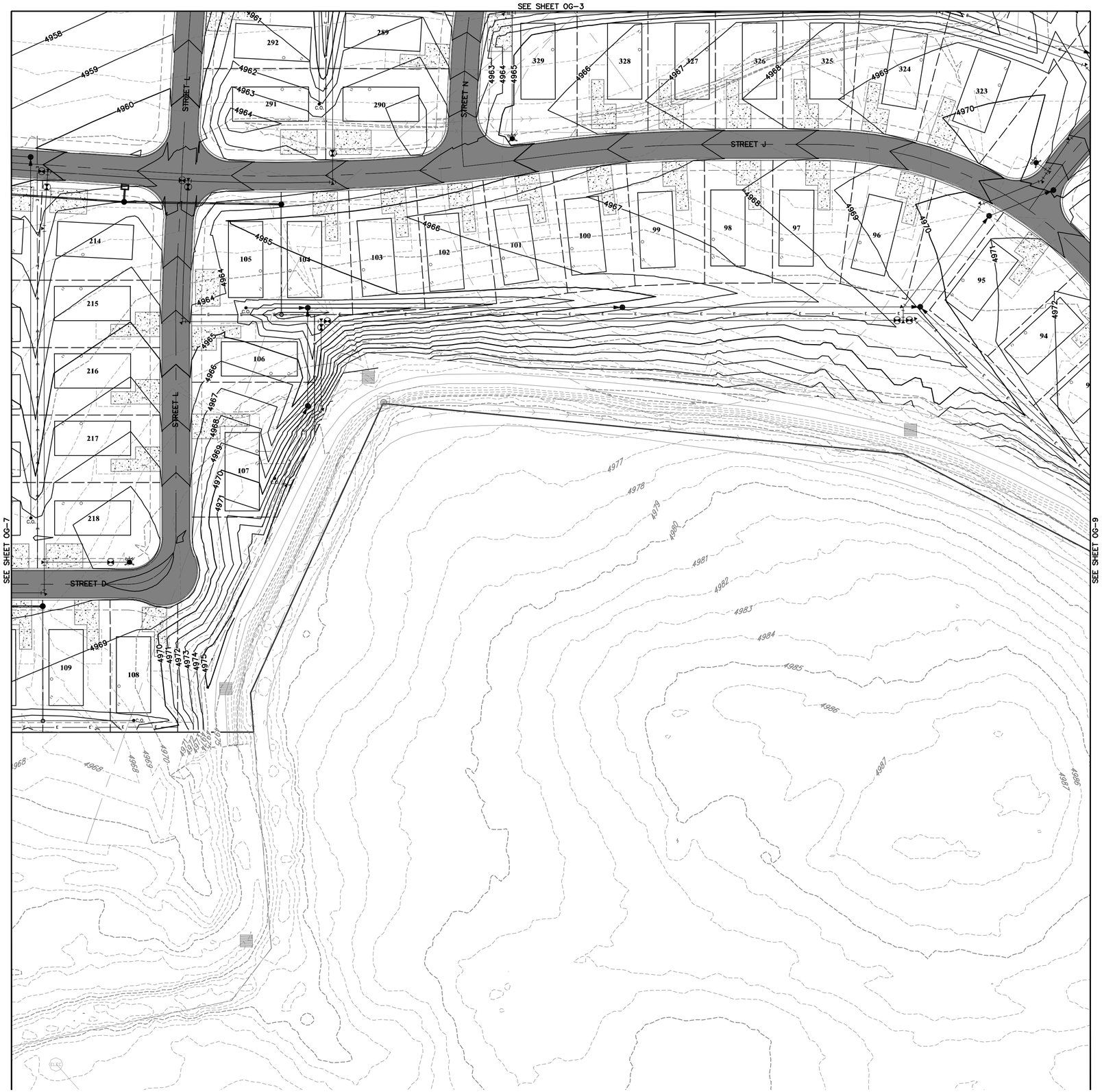
CLIENT
SUN COMMUNITIES, INC.

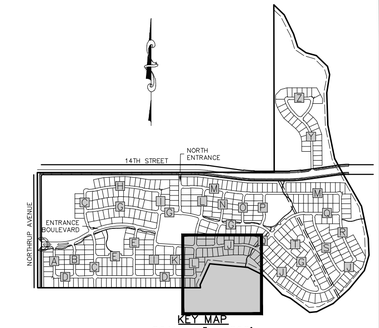
DATE DATE

REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. OG-7

CAD FILE: 19001956-OVERALL-GRADING.DWG





KEY MAP
SCALE: 1" = 800'

LEGEND

- PROPERTY BOUNDARY
- PROPOSED RIGHT-OF-WAY
- EXISTING RIGHT-OF-WAY
- PROPOSED LOT LINE
- EXISTING LOT LINE
- PROPOSED CATCH CURB & GUTTER
- PROPOSED SPILL CURB & GUTTER
- EXISTING CURB & GUTTER
- PROPOSED SIDEWALK
- EXISTING SIDEWALK
- EXISTING SECTION LINE
- PROPOSED EASEMENT
- EXISTING EASEMENT
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- EXISTING CONTOURS

NOTES:
1. SEE GRADING DETAILS ON SHEET GRD FOR TYPICAL LOT GRADING TEMPLATES.

40 0 40 80
(IN FEET)
1 inch = 40 ft.

PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

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WILLOW BEND SUBDIVISION
FORT LUPTON, COLORADO
PRELIMINARY CONSTRUCTION PLANS
OVERLOT GRADING
AREA 8

SUN COMMUNITIES, INC.

DATE	DATE

REVISIONS

DR. TN	CH. JP/SB
P.M. RW	
JOB 19001956	
SHEET NO. OG-8	

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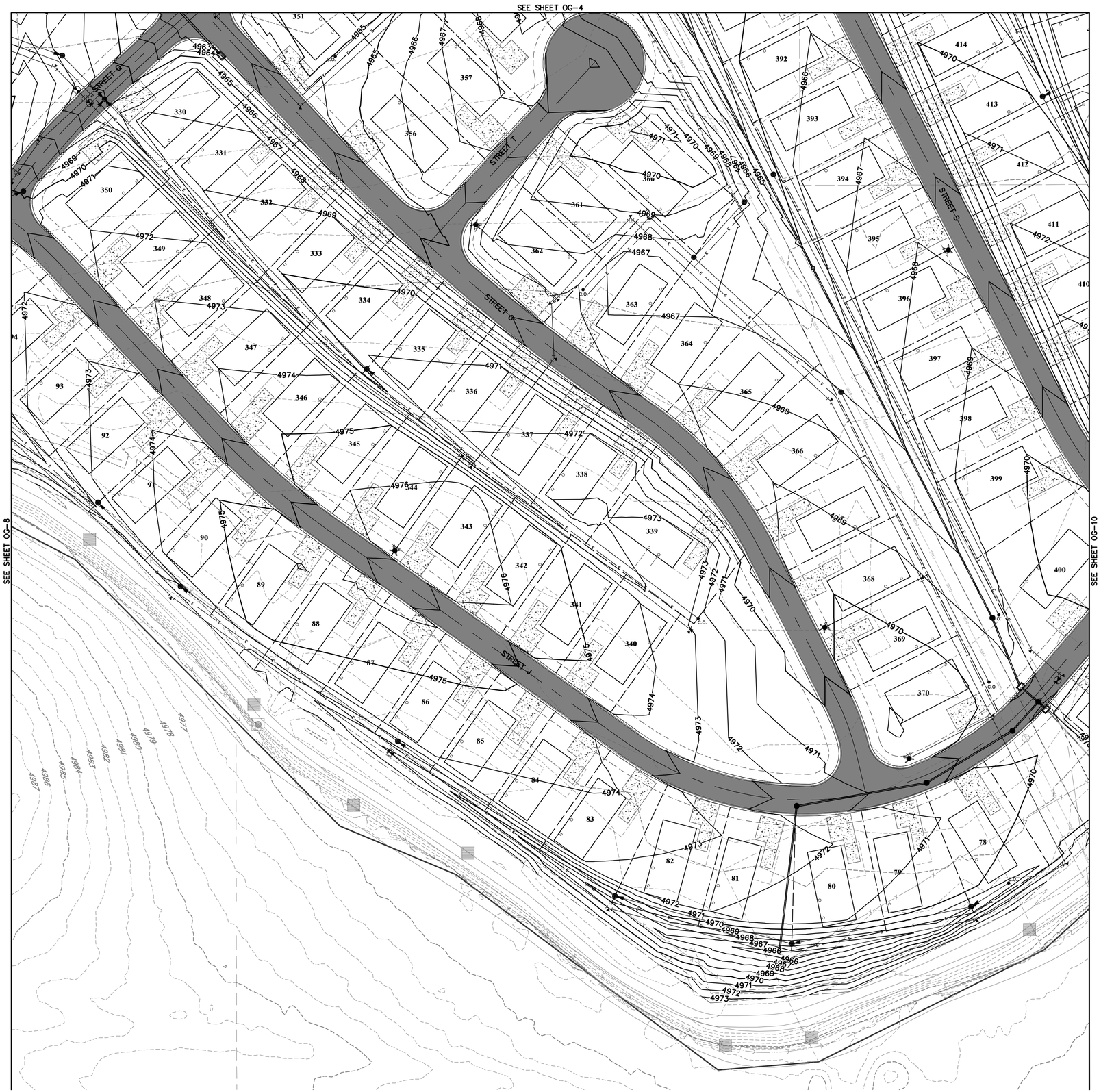

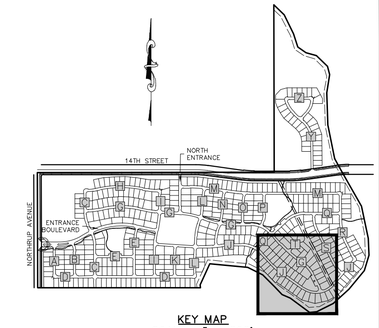

KEY MAP
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PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

BENCHMARK:

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FORT LUPTON, COLORADO
PRELIMINARY CONSTRUCTION PLANS
OVERLOT GRADING
AREA 9

SUN Communities, Inc.

DATE	DATE

REVISIONS

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P.M. RW	
JOB 19001956	
SHEET NO. OG-9	

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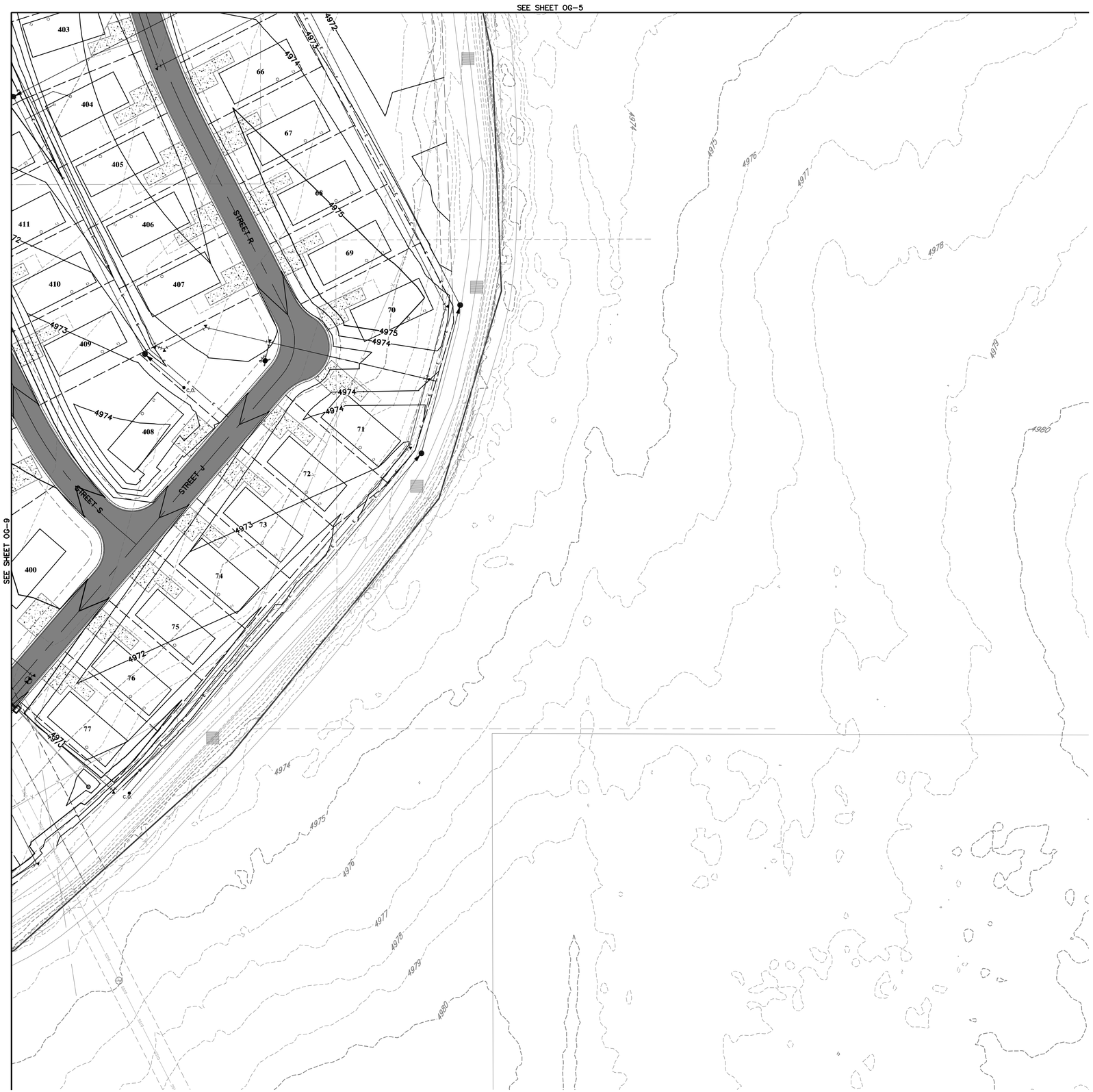

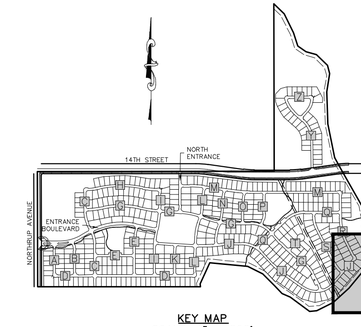

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PROJECT NO.: LUP2019-0039 &
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BENCHMARK:

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WILLOW BEND SUBDIVISION
FORT LUPTON, COLORADO
PRELIMINARY CONSTRUCTION PLANS
OVERLOT GRADING
AREA 10

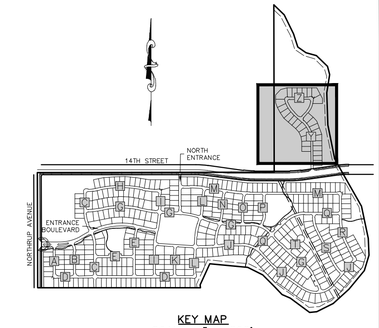
SUN COMMUNITIES, INC.

DATE DATE

REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. OG-10

CAD FILE: 19001956-OVERALL-GRADING.DWG



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SCALE: 1" = 800'

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PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

BENCHMARK:

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WILLOW BEND SUBDIVISION
FORT LUPTON, COLORADO
PRELIMINARY CONSTRUCTION PLANS
OVERLOT GRADING
AREA 11

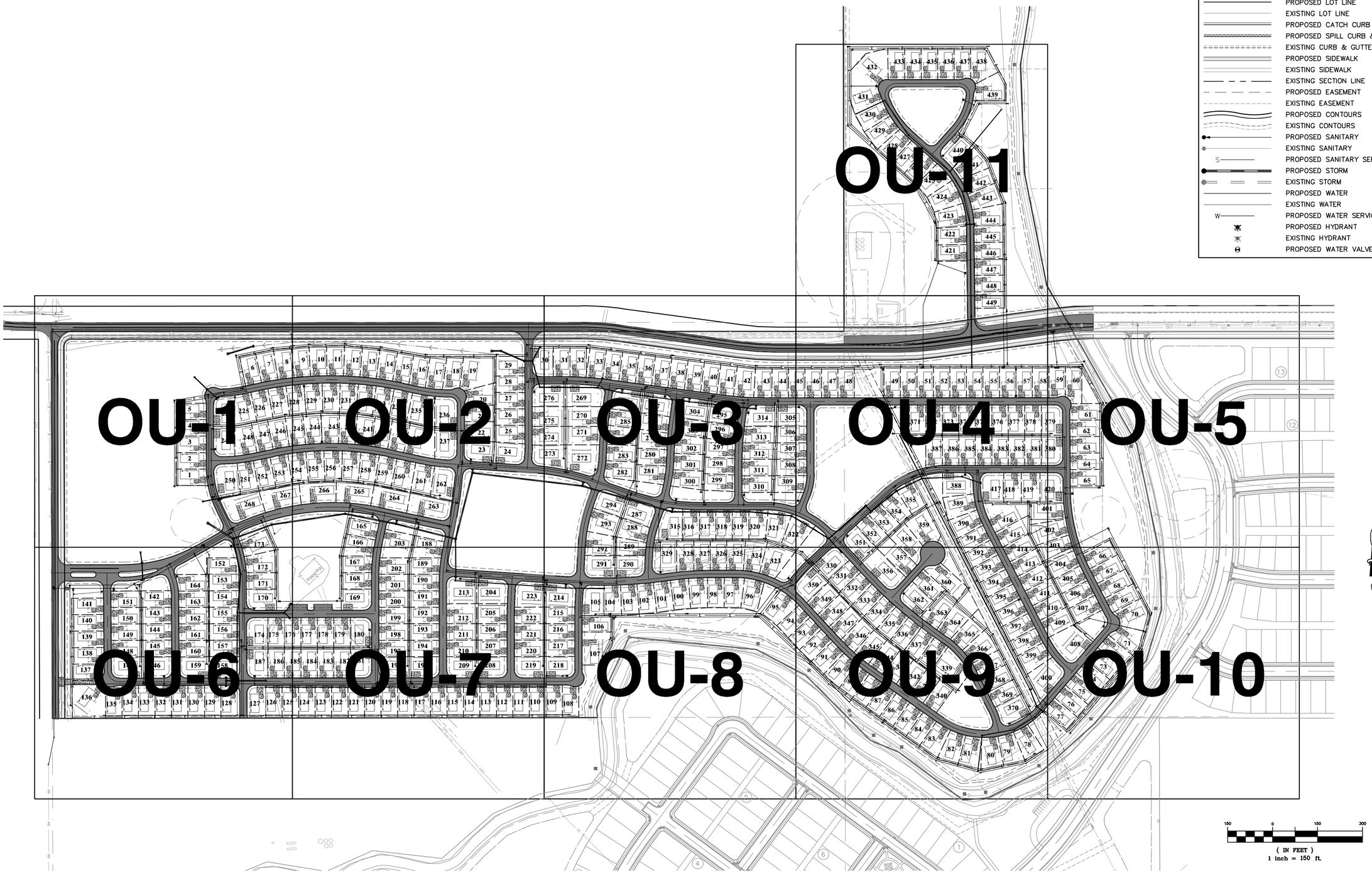
CLIENT
SUN COMMUNITIES, INC.

DATE	DATE

REVISIONS

DR. TN	CH. JP/SB
P.M. RW	
JOB 19001956	
SHEET NO. OG-11	

CAD FILE: 19001956-OVERALL-GRADING.DWG



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- S — PROPOSED SANITARY SERVICE
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- EXISTING STORM
- PROPOSED WATER
- EXISTING WATER
- W — PROPOSED WATER SERVICE
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- PROPOSED WATER VALVE

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WILLOW BEND SUBDIVISION
FORT LUPTON, COLORADO
PRELIMINARY CONSTRUCTION PLANS
OVERALL UTILITY PLANS
OVERALL UTILITY INDEX

CLIENT
SUN COMMUNITIES, INC.

DATE DATE

REVISIONS

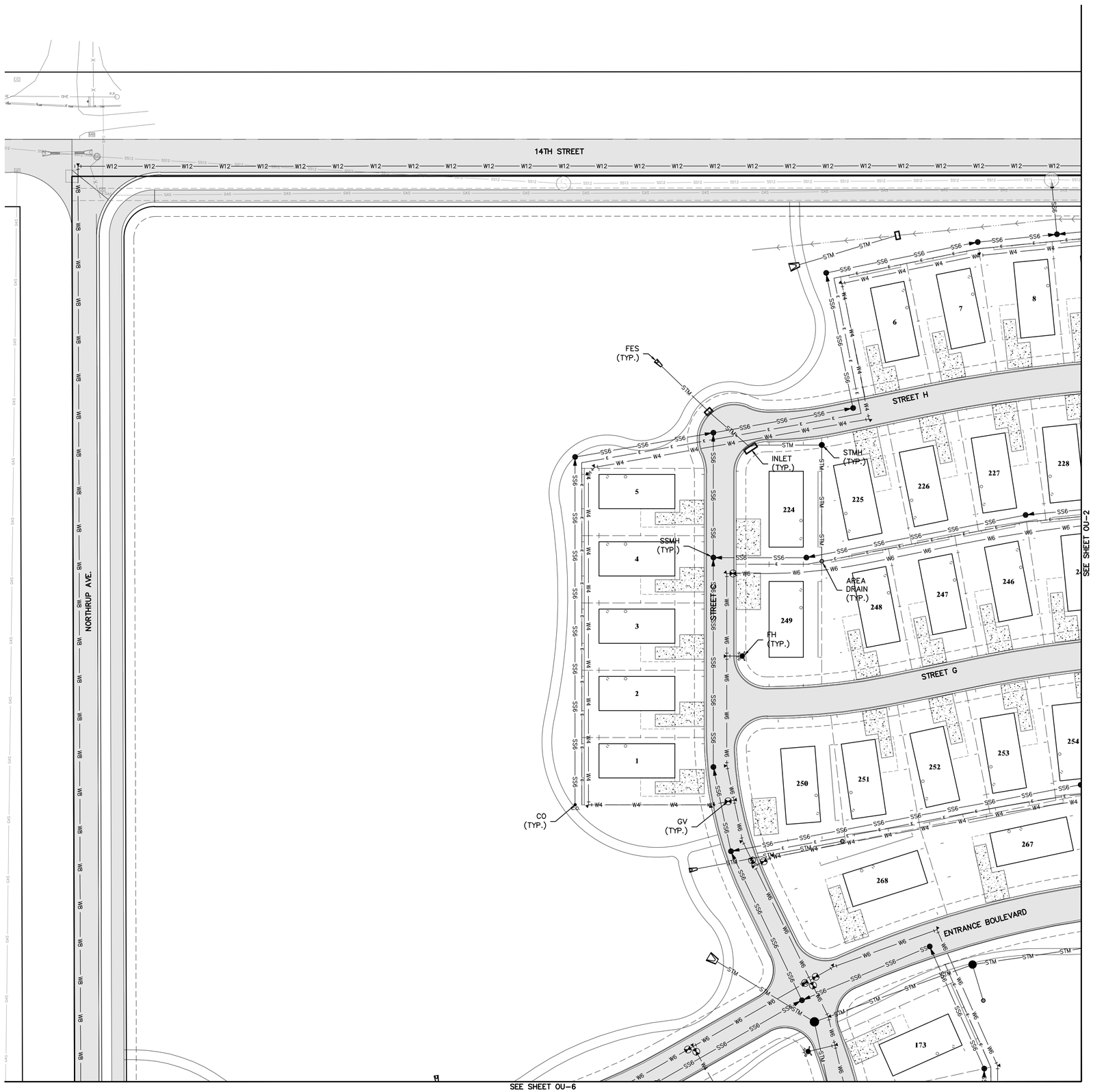
PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

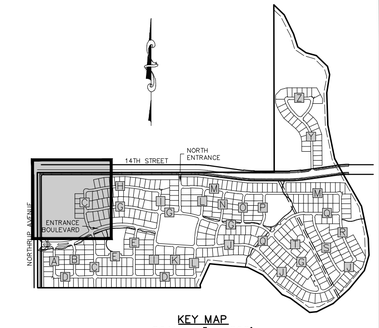
BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. OU-0

CAD FILE: 19001956-OVERALL-UTILITY INDEX.DWG





KEY MAP
SCALE: 1" = 800'

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PROJECT NO.: LUP2019-0039 &
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FORT LUPTON, COLORADO
PRELIMINARY CONSTRUCTION PLANS
OVERALL UTILITY PLANS
AREA 1

CLIENT

DATE DATE

REVISIONS

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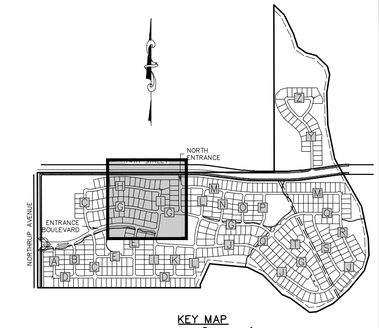
P.M. RW
JOB 19001956
SHEET NO. OU-1

CAD FILE: 19001956-OVERALL-UTILITIES.DWG



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CLIENT
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WILLOW BEND SUBDIVISION
FORT LUPTON, COLORADO
PRELIMINARY CONSTRUCTION PLANS
OVERALL UTILITY PLANS
AREA 2

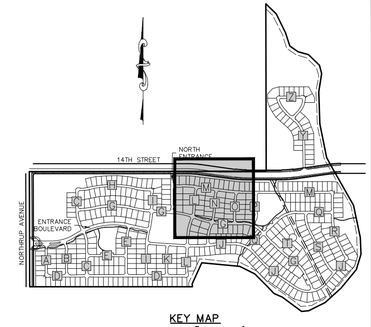
SUN COMMUNITIES, INC.

DATE	DATE

REVISIONS

DR. TN	CH. JP/SB
P.M. RW	
JOB 19001956	
SHEET NO. OU-2	

CAD FILE: 19001956-OVERALL-UTILITIES.DWG



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- FO — EXISTING FIBER OPTIC CABLE
- EXISTING FENCE

40 0 40 80
(IN FEET)
1 inch = 40 ft.

PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

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CLIENT
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WILLOW BEND SUBDIVISION
FORT LUPTON, COLORADO
PRELIMINARY CONSTRUCTION PLANS
OVERALL UTILITY PLANS
AREA 3

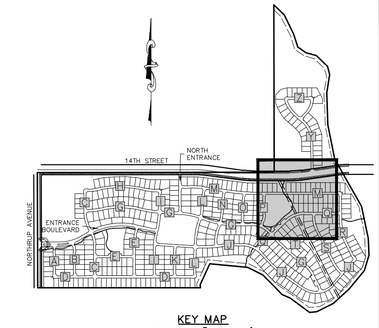
SUN COMMUNITIES, INC.

DATE	DATE

REVISIONS

DR. TN	CH. JP/SB
P.M. RW	
JOB 19001956	
SHEET NO. OU-3	

CAD FILE: 19001956-OVERALL-UTILITIES.DWG



KEY MAP
SCALE: 1" = 800'

LEGEND

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- PROPOSED RIGHT-OF-WAY
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AREA 4

SUN COMMUNITIES, INC.

DATE DATE

REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO.
OU-4

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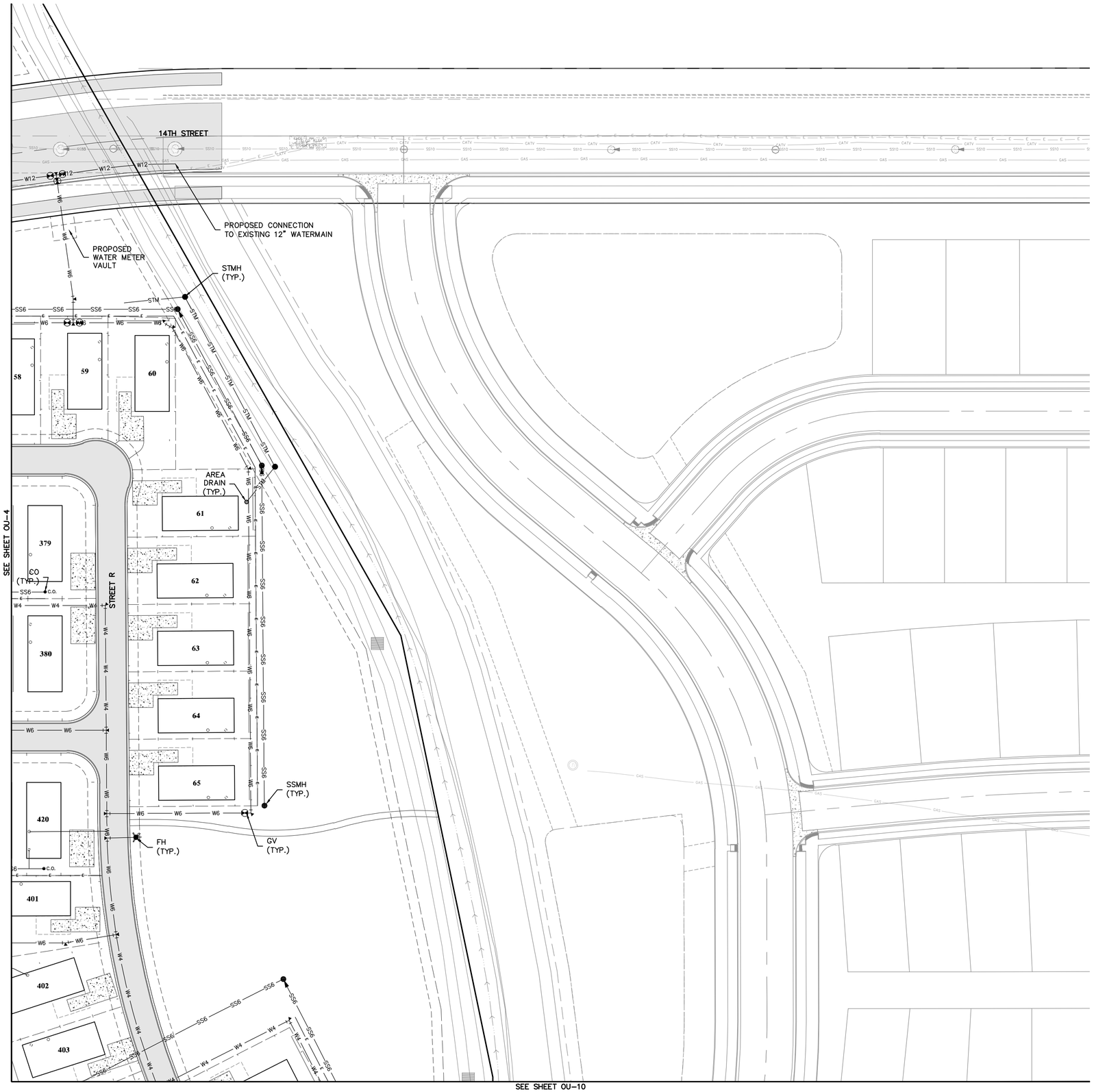

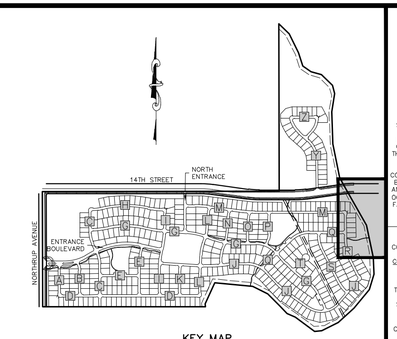

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AREA 5

SUN COMMUNITIES, INC.

DATE DATE

REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. OU-5

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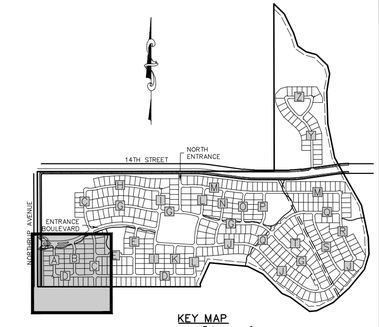

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OVERALL UTILITY PLANS
AREA 6

CLIENT

DATE DATE

REVISIONS

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P.M. RW
JOB 19001956
SHEET NO. OU-6

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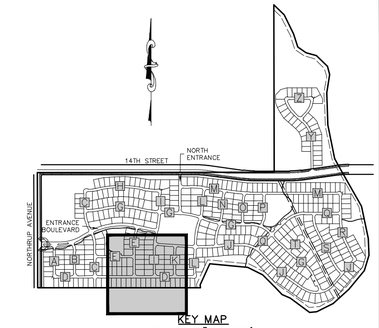

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OVERALL UTILITY PLANS
AREA 7

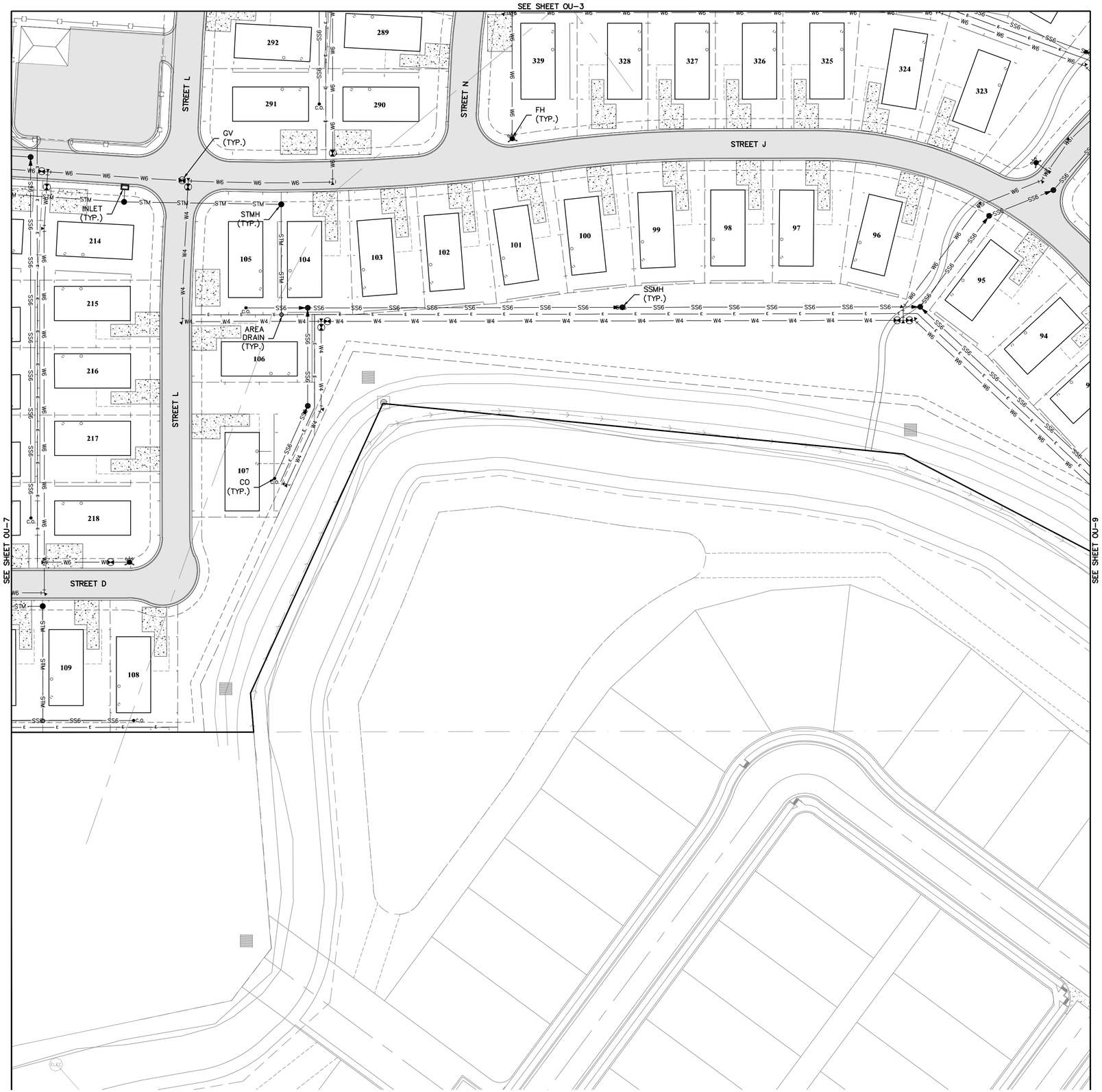
SUN COMMUNITIES, INC.

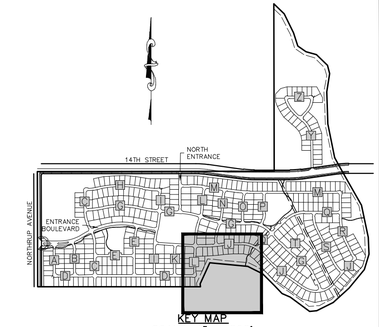
DATE DATE

REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. OU-7

CAD FILE: 19001956-OVERALL-UTILITIES.DWG





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AREA 8

CLIENT

DATE
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REVISIONS

DR. TN | CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO.
OU-8

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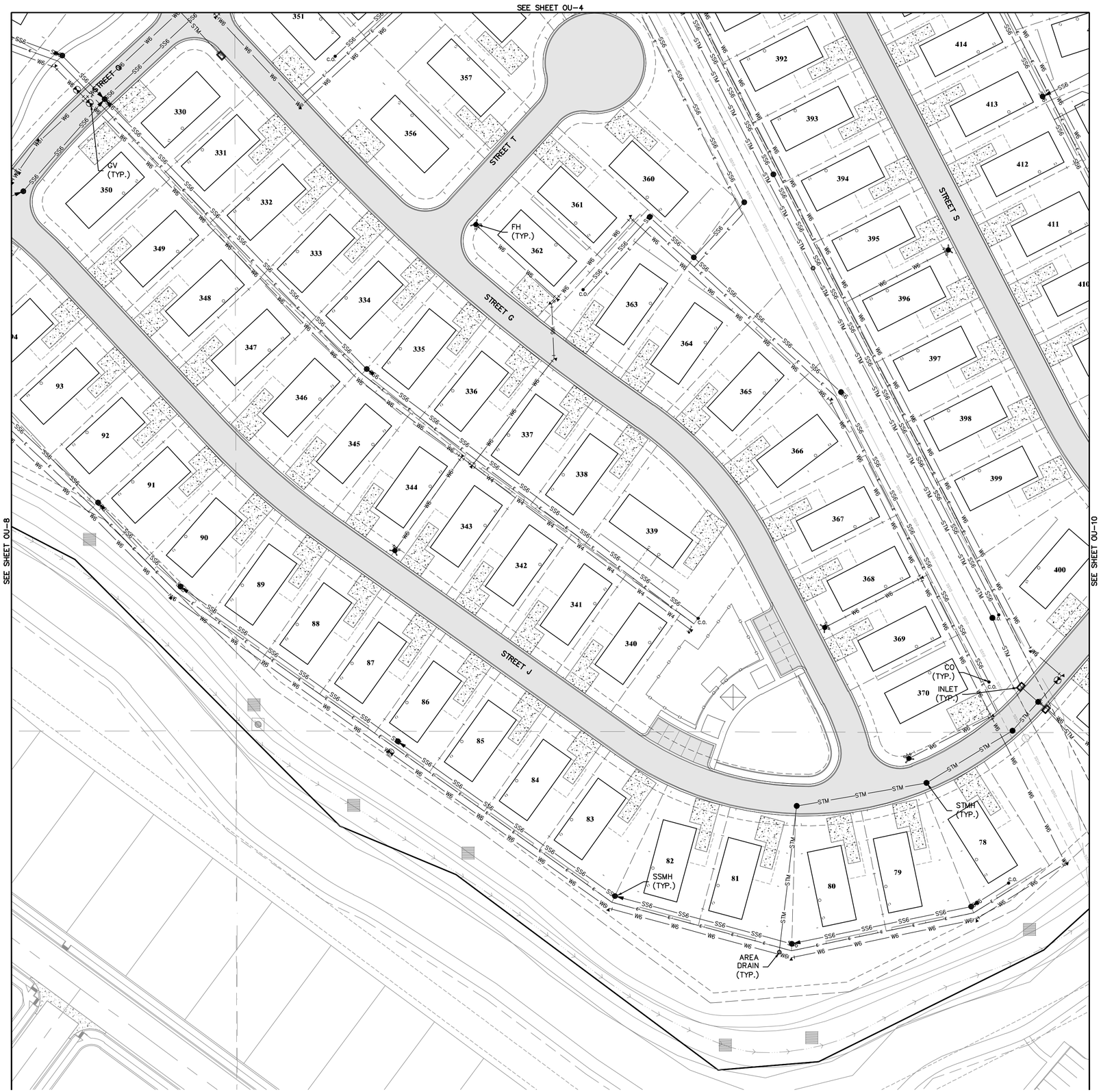

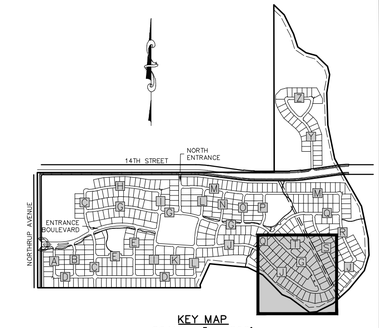

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AREA 9

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SUN COMMUNITIES, INC.

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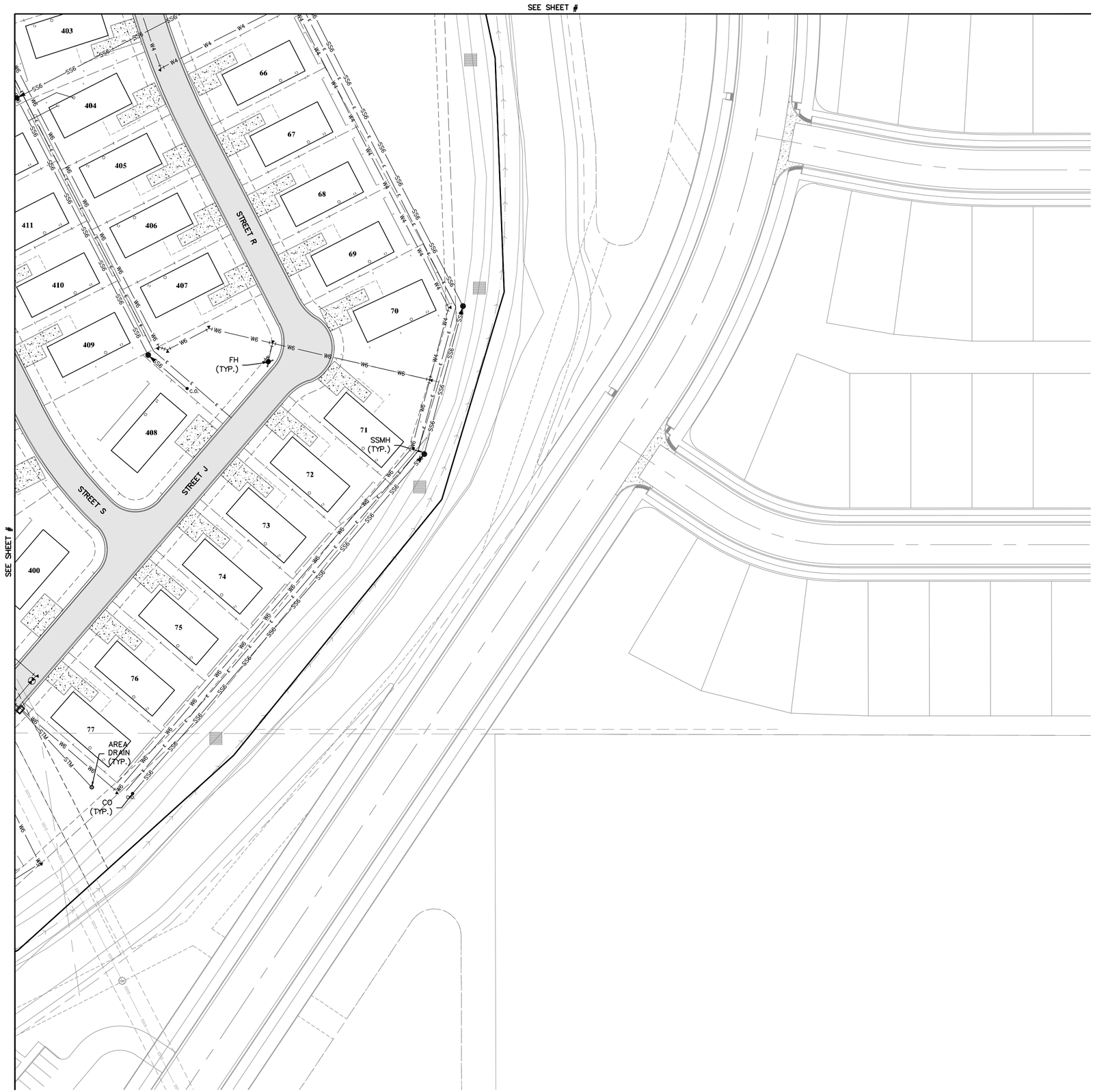

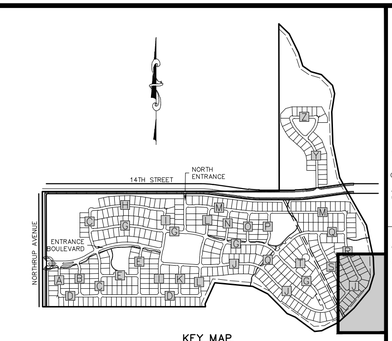

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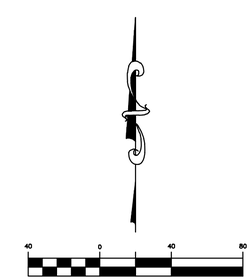
- PROPOSED RIGHT-OF-WAY
- EXISTING RIGHT-OF-WAY
- PROPOSED LOT LINE
- EXISTING LOT LINE
- PROPOSED CATCH CURB & GUTTER
- PROPOSED SPILL CURB & GUTTER
- EXISTING CURB & GUTTER
- PROPOSED SIDEWALK
- EXISTING SIDEWALK
- EXISTING SECTION LINE
- PROPOSED EASEMENT
- EXISTING EASEMENT
- PROPOSED CONTOURS
- EXISTING CONTOURS
- PROPOSED SANITARY
- EXISTING SANITARY
- S — PROPOSED SANITARY SERVICE
- PROPOSED STORM
- EXISTING STORM
- PROPOSED WATER
- EXISTING WATER
- W — PROPOSED WATER SERVICE
- PROPOSED HYDRANT
- EXISTING HYDRANT
- PROPOSED WATER VALVE
- EXISTING WATER VALVE
- EXISTING POWER POLE
- IRR — EXISTING IRRIGATION LINE
- GAS — EXISTING GAS LINE
- T — EXISTING TELEPHONE LINE
- OHE — EXISTING OVERHEAD ELECTRICAL
- E — EXISTING ELECTRICAL
- CATV — EXISTING CABLE TV
- FO — EXISTING FIBER OPTIC CABLE
- EXISTING FENCE



PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

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WILLOW BEND SUBDIVISION
FORT LUPTON, COLORADO
PRELIMINARY CONSTRUCTION PLANS
OVERALL UTILITY PLANS
AREA 10

CLIENT

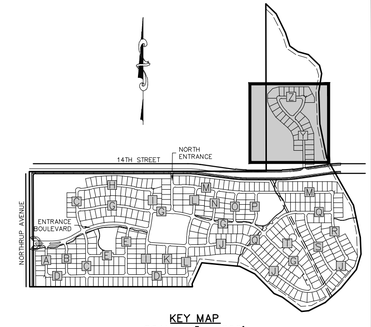
SUN COMMUNITIES, INC.

DATE	DATE

REVISIONS

DR. TN	CH. JP/SB
P.M. RW	
JOB 19001956	
SHEET NO. OU-10	

CAD FILE: 19001956-OVERALL-UTILITIES.DWG



KEY MAP
SCALE: 1" = 800'

LEGEND

- PROPERTY BOUNDARY
- PROPOSED RIGHT-OF-WAY
- EXISTING RIGHT-OF-WAY
- PROPOSED LOT LINE
- EXISTING LOT LINE
- PROPOSED CATCH CURB & GUTTER
- PROPOSED SPILL CURB & GUTTER
- EXISTING CURB & GUTTER
- PROPOSED SIDEWALK
- EXISTING SIDEWALK
- EXISTING SECTION LINE
- PROPOSED EASEMENT
- EXISTING EASEMENT
- PROPOSED CONTOURS
- EXISTING CONTOURS
- PROPOSED SANITARY
- EXISTING SANITARY
- PROPOSED SANITARY SERVICE
- PROPOSED STORM
- EXISTING STORM
- PROPOSED WATER
- EXISTING WATER
- PROPOSED WATER SERVICE
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- EXISTING HYDRANT
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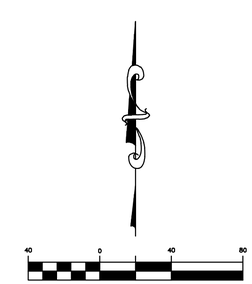
- EXISTING GAS LINE
- EXISTING TELEPHONE LINE
- EXISTING OVERHEAD ELECTRICAL
- EXISTING ELECTRICAL
- EXISTING CABLE TV
- EXISTING FIBER OPTIC CABLE
- EXISTING FENCE



(IN FEET)
1 inch = 40 ft.

PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

BENCHMARK:

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FORT LUPTON, COLORADO
PRELIMINARY CONSTRUCTION PLANS
OVERALL UTILITY PLANS
AREA 11

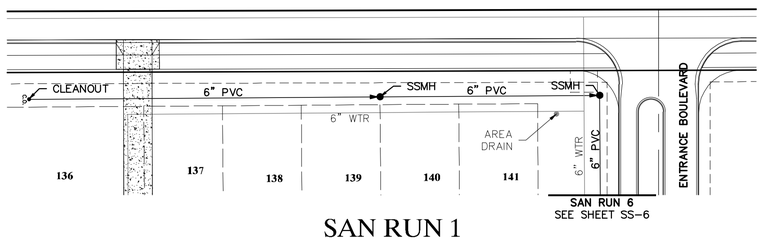
SUN COMMUNITIES, INC.

DATE	DATE

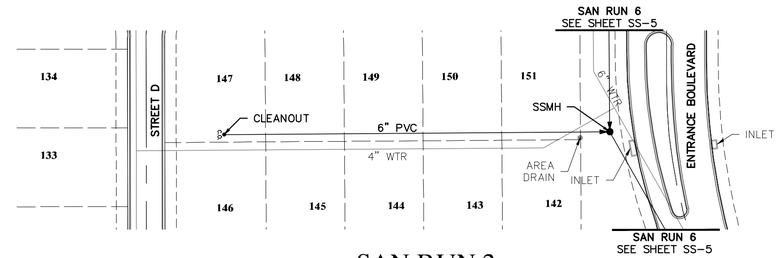
REVISIONS

DR. TN	CH. JP/SB
P.M. RW	
JOB 19001956	
SHEET NO. OU-11	

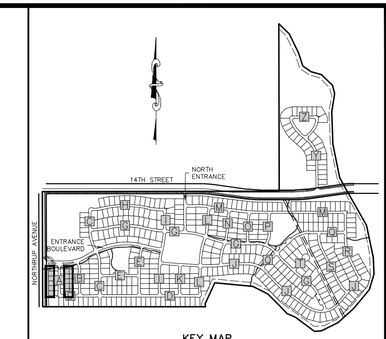
CAD FILE: 19001956-OVERALL-UTILITIES.DWG



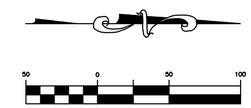
SAN RUN 1



SAN RUN 2



KEY MAP
SCALE: 1" = 800'



(IN FEET)
1 inch = 50 ft. (Horz)
1 inch = 5 ft. (Vert)

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

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PROFILE TO BE PROVIDED WITH FINAL PLANS

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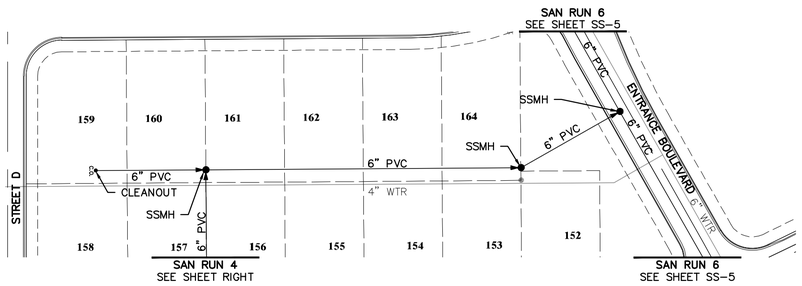
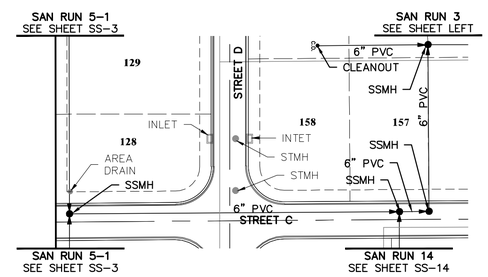
P.M. RW
JOB 19001956
SHEET NO.
SS-1

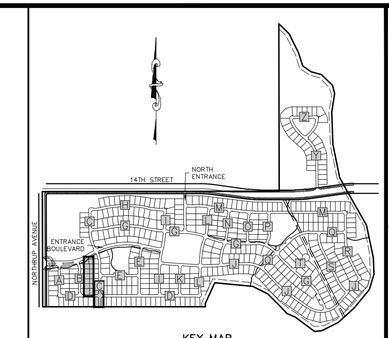
CAD FILE: 19001956-SAN P&P-RUNS 1-5.DWG



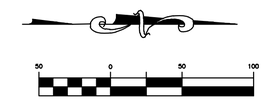
SAN RUN 3



SAN RUN 4



KEY MAP
SCALE: 1" = 800'



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BENCHMARK:

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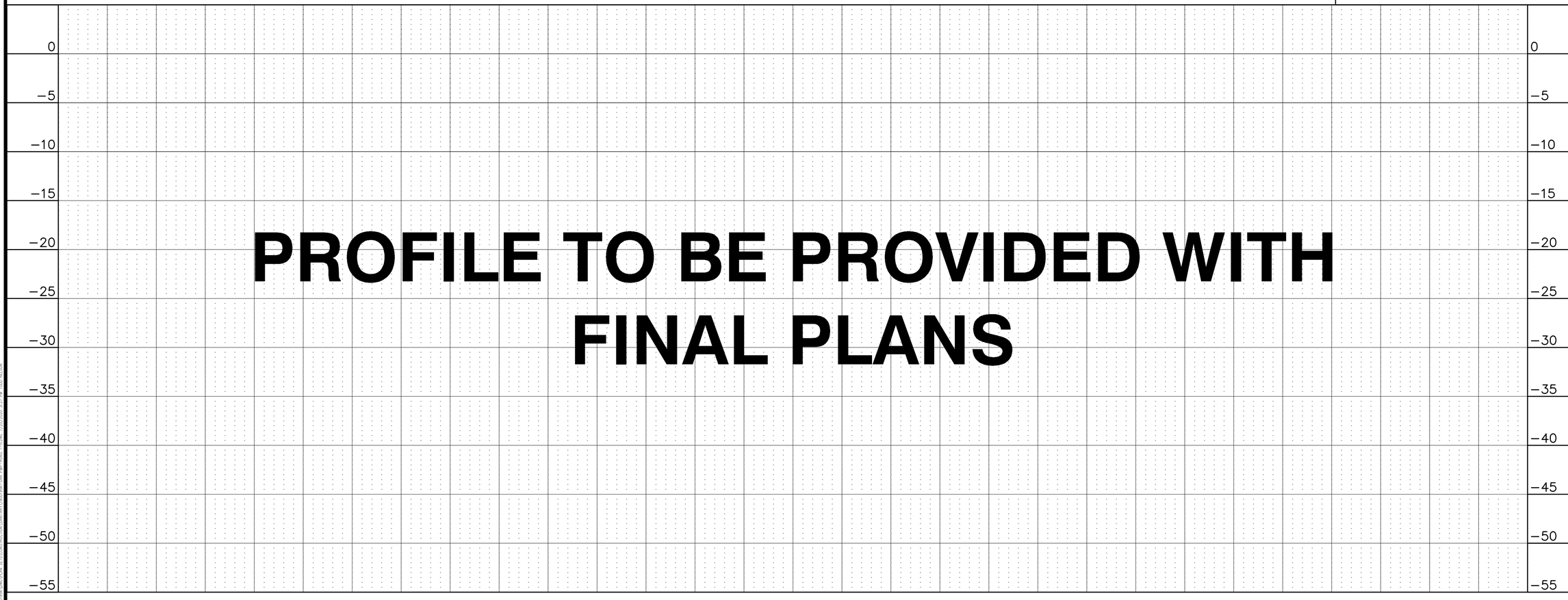

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SANITARY PLAN & PROFILES
SAN RUNS 3 & 4

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SUN COMMUNITIES, INC.

DATE DATE
REVISIONS

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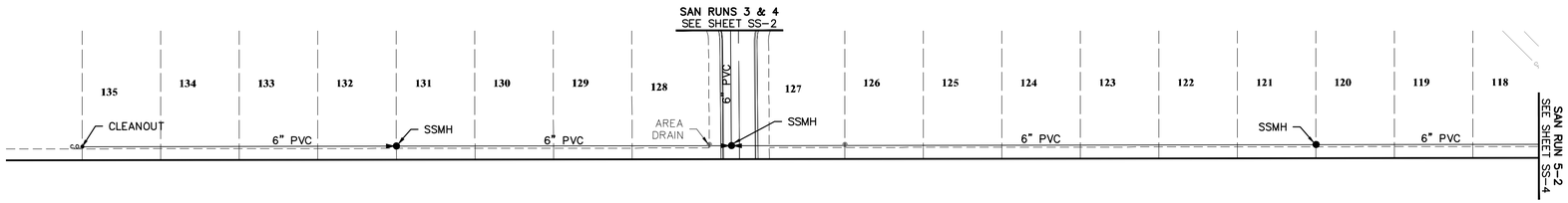
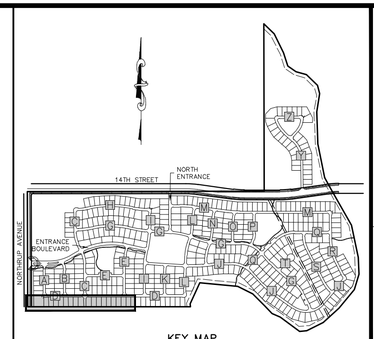
P.M. RW
JOB 19001956
SHEET NO.
SS-2

CAD FILE: 19001956-SAN P&P-RUNS 1-5.DWG



SAN RUN 5-1



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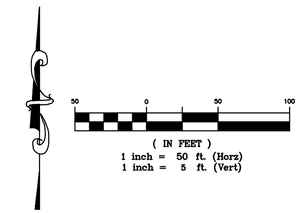

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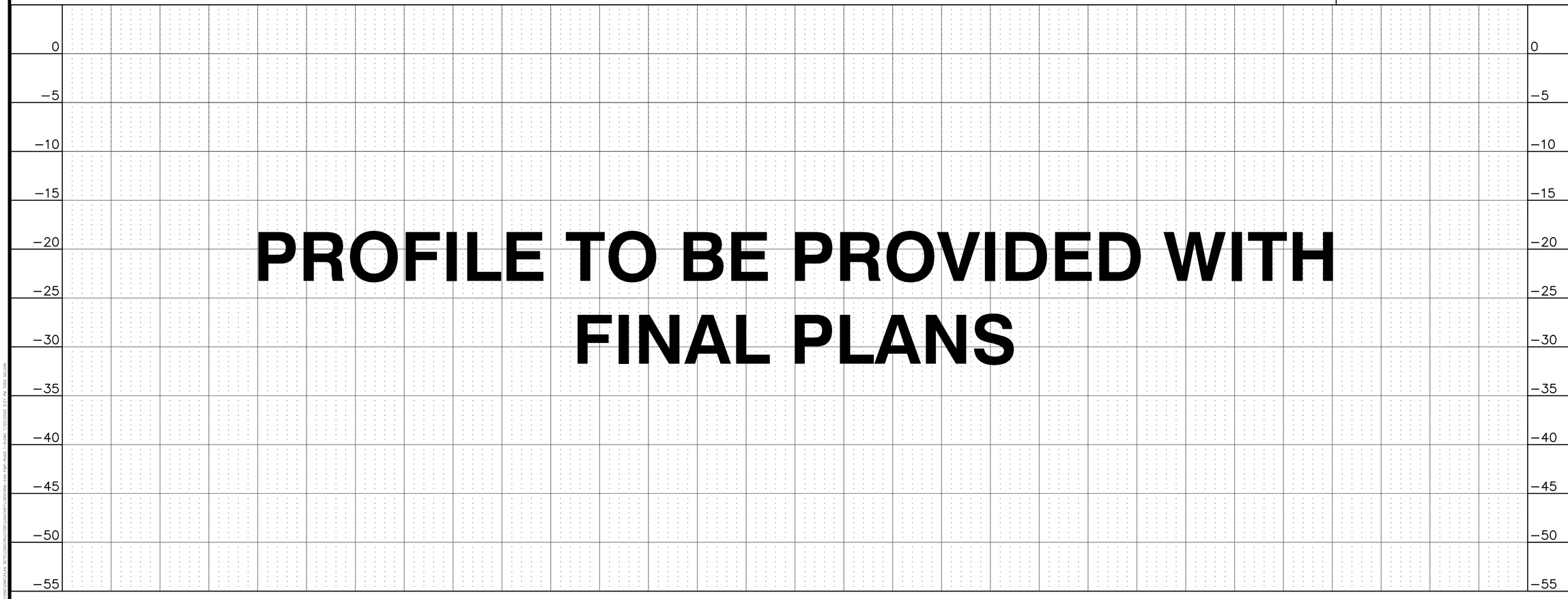

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SAN RUN 5-1

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SUN COMMUNITIES, INC.

DATE DATE

REVISIONS

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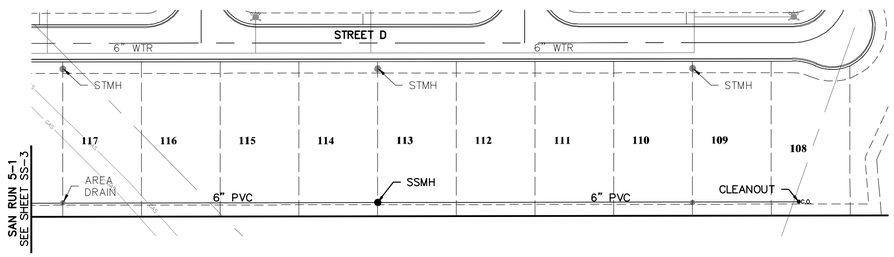
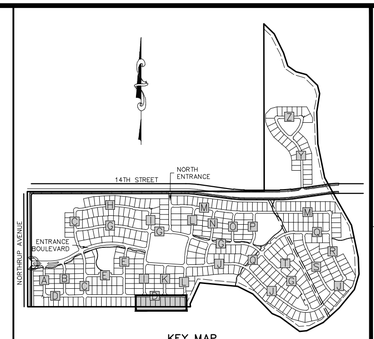
P.M. RW
JOB 19001956
SHEET NO. SS-3

CAD FILE: 19001956-SAN P&P-RUNS 1-5.DWG



SAN RUN 5-2



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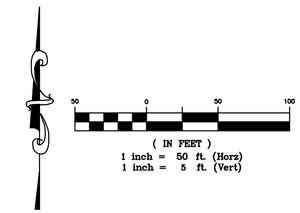

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SAN RUN 5-2

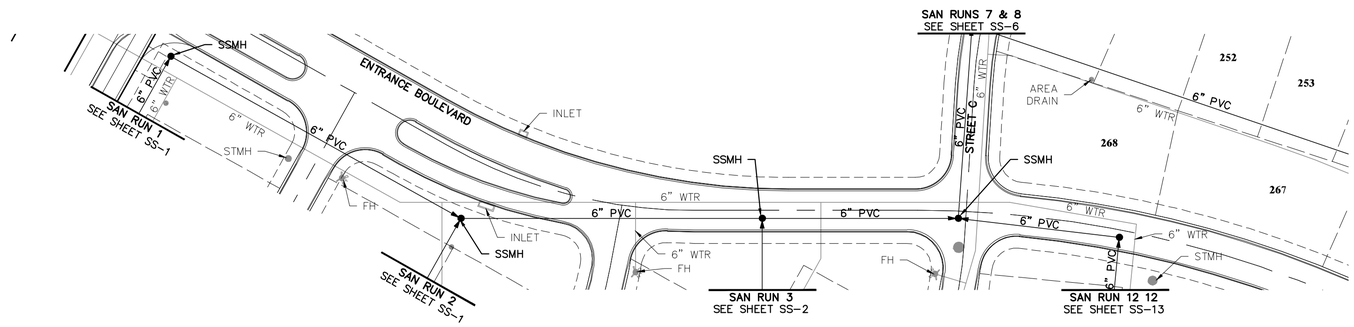
CLIENT
SUN COMMUNITIES, INC.

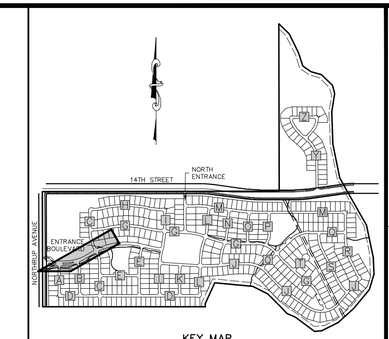
DATE DATE

REVISIONS

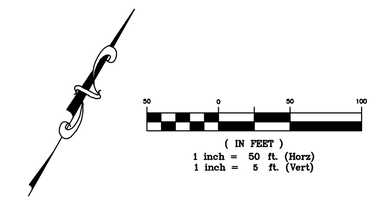
DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO.
SS-4

CAD FILE: 19001956-SAN P&P-RUN5 1-5.DWG





KEY MAP
SCALE: 1" = 800'



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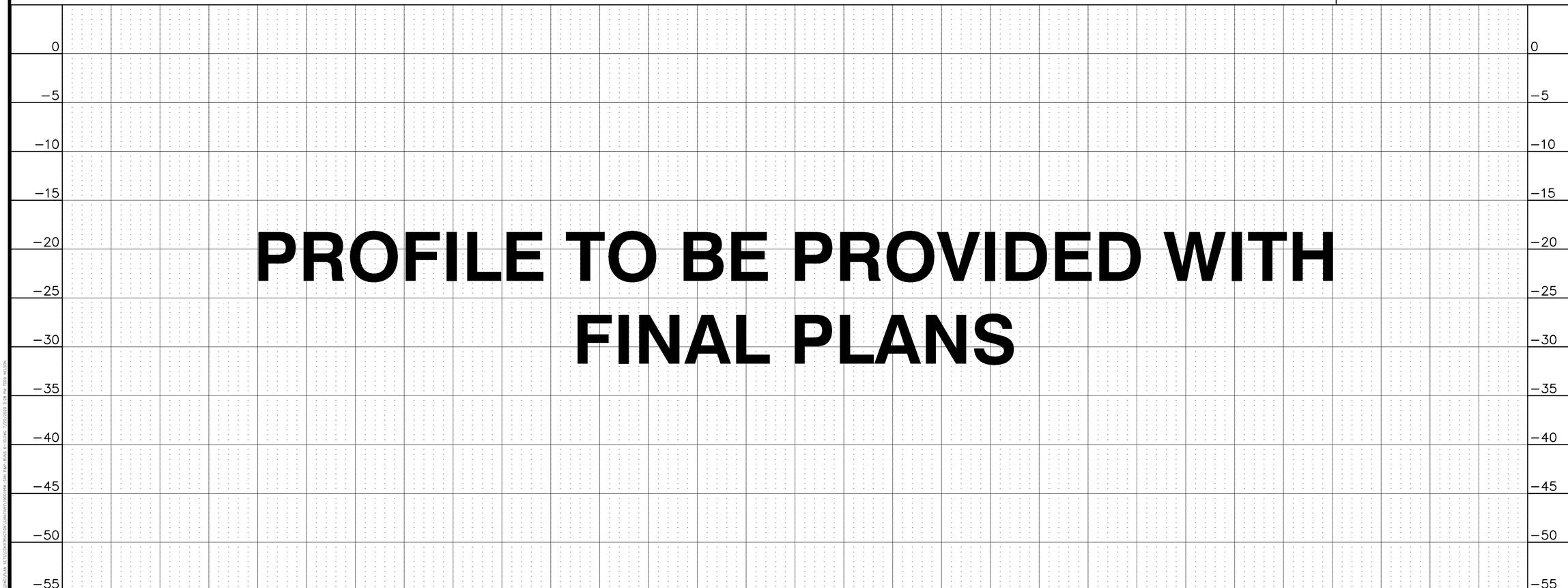
SAN RUN 6



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SANITARY PLAN & PROFILES
SAN RUN 6

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SUN COMMUNITIES, INC.

DATE DATE

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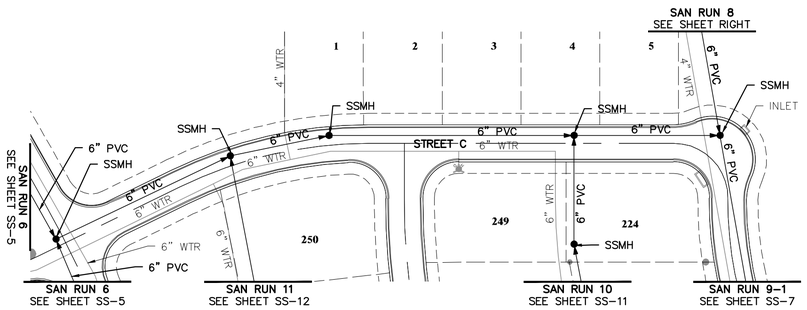
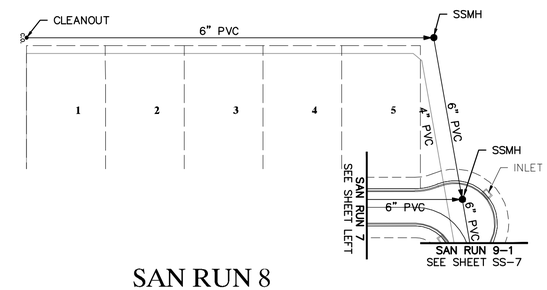
JOB 19001956
SHEET NO. SS-5

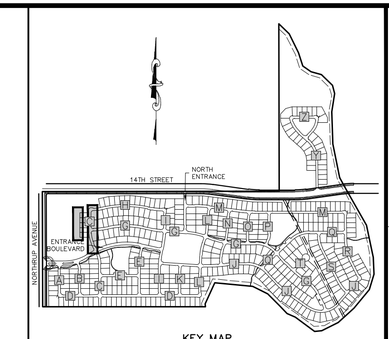
CAD FILE: 19001956-SAN P&P-RUNS 6-10.DWG



SAN RUN 7



SAN RUN 8



KEY MAP
SCALE: 1" = 800'

50 0 50 100

(IN FEET)
1 inch = 50 ft. (Horz)
1 inch = 5 ft. (Vert)

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

0
–5
–10
–15
–20
–25
–30
–35
–40
–45
–50
–55

PROFILE TO BE PROVIDED WITH FINAL PLANS

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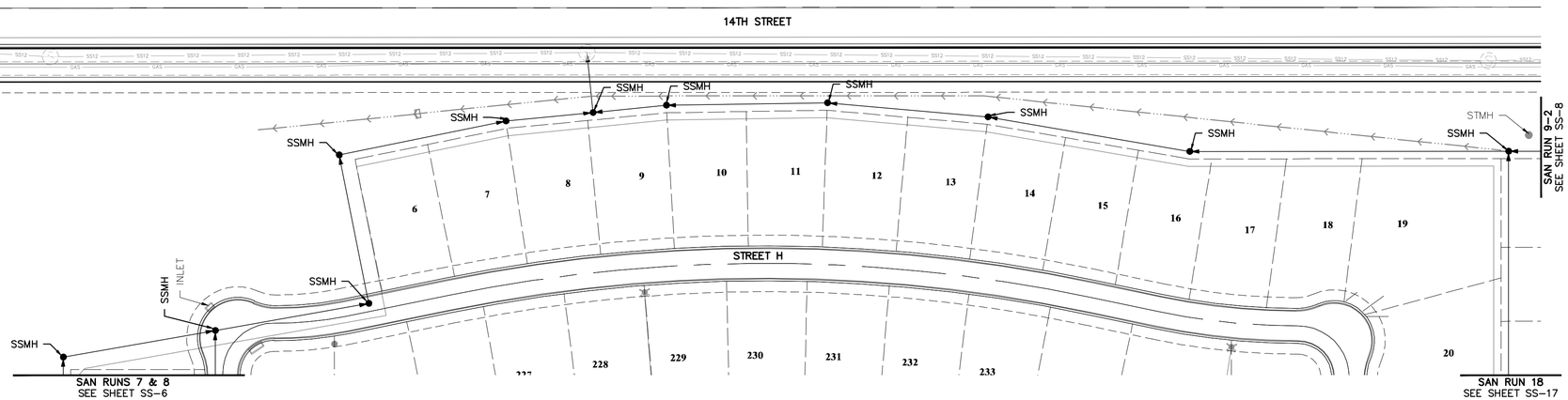
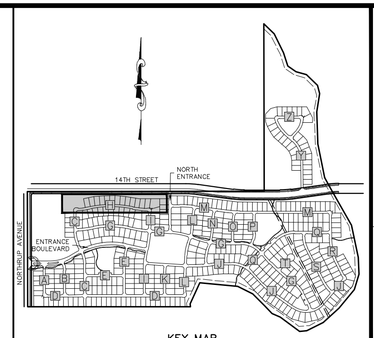
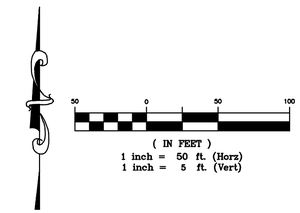
JOB 19001956
SHEET NO.
SS-6

CAD FILE: 19001956-SAN P&P-RUNS 6-10.DWG





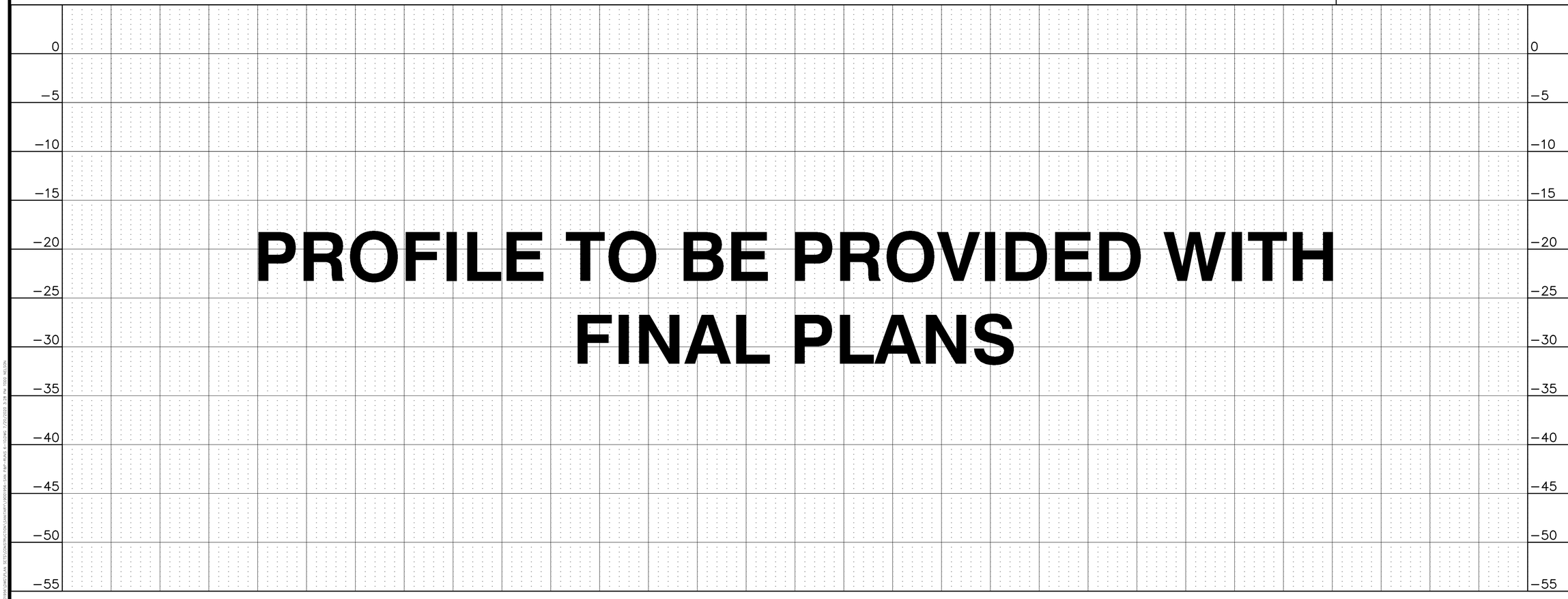
KEY MAP
SCALE: 1" = 800'



BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

SAN RUN 9-1



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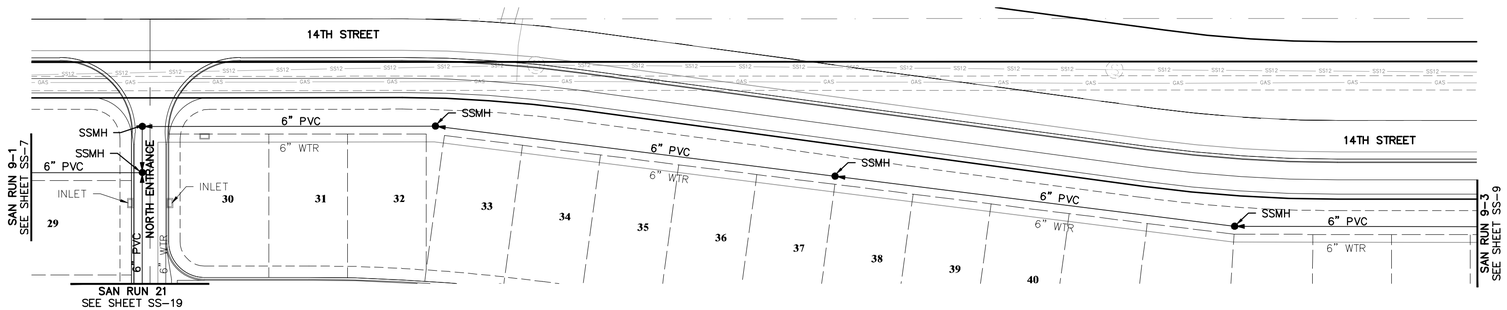
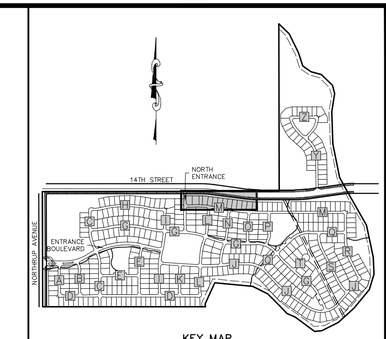
CAD FILE: 19001956-SAN P&P-RUNS 6-10.DWG



SAN RUN 9-2



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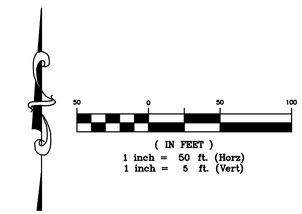

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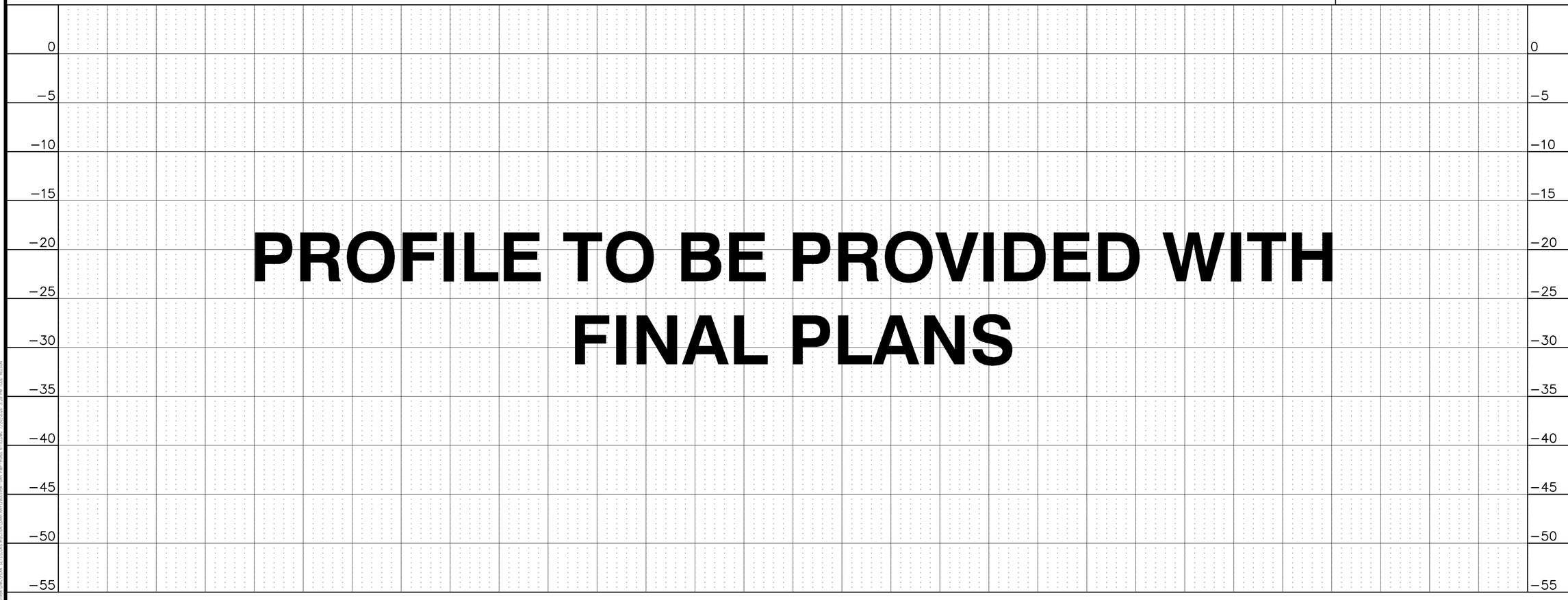

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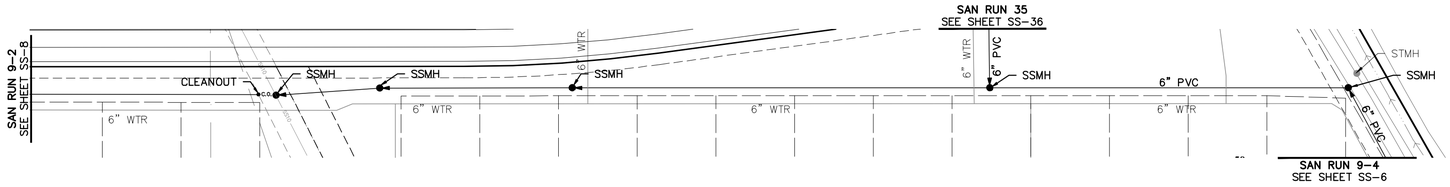
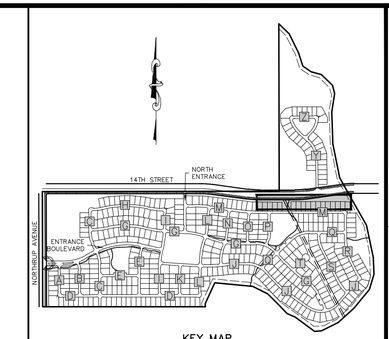
CAD FILE: 19001956-SAN P&P-RUNS 6-10.DWG





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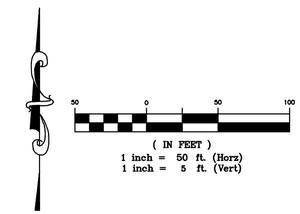

(IN FEET)
1 inch = 50 ft. (Horz)
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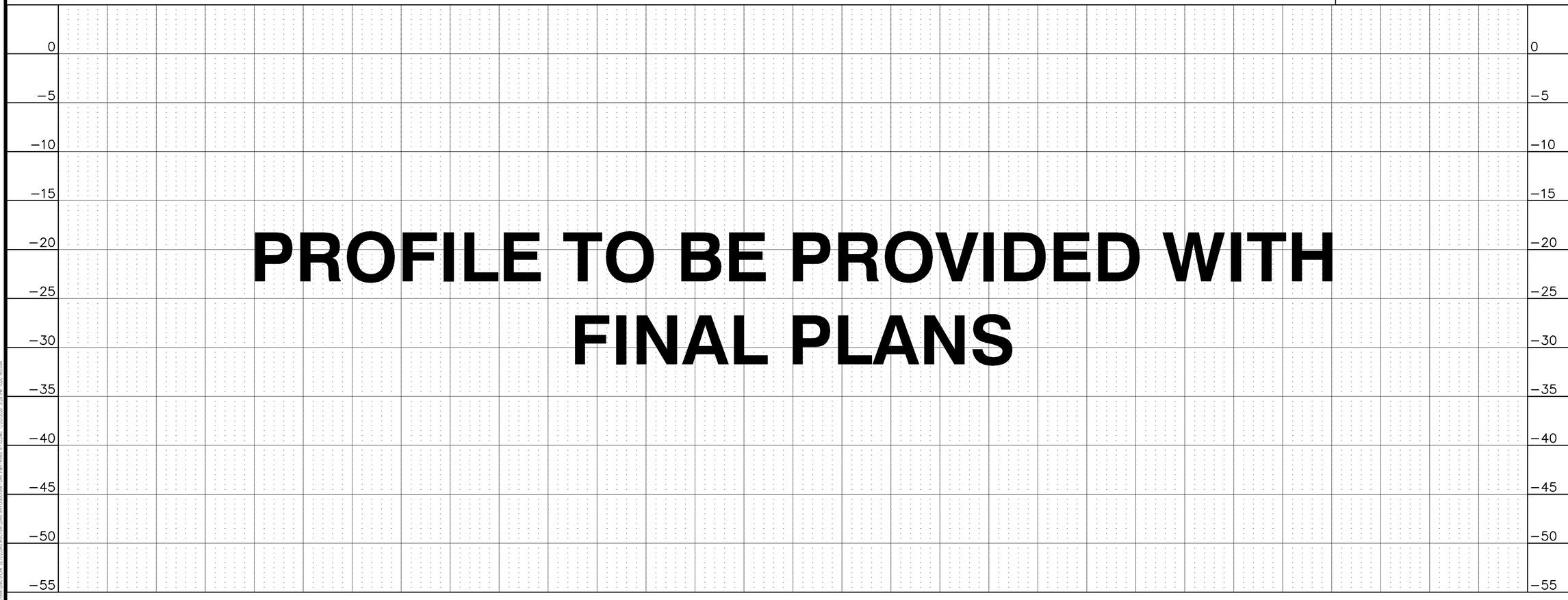
BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

SAN RUN 9-3



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DATE DATE

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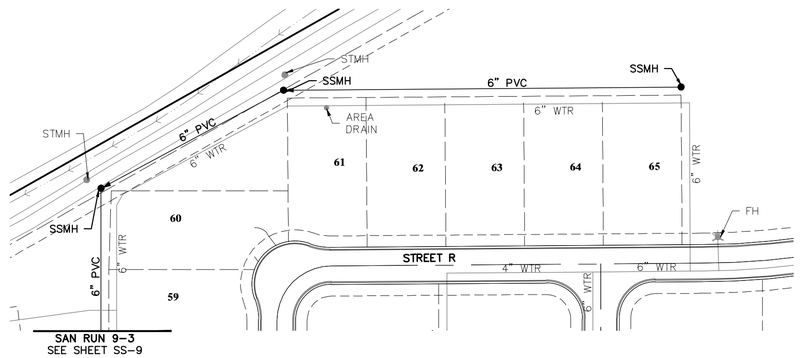
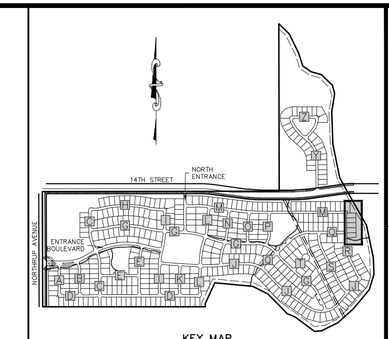
CAD FILE: 19001956-SAN P&P-RUNS 6-10.DWG





KEY MAP
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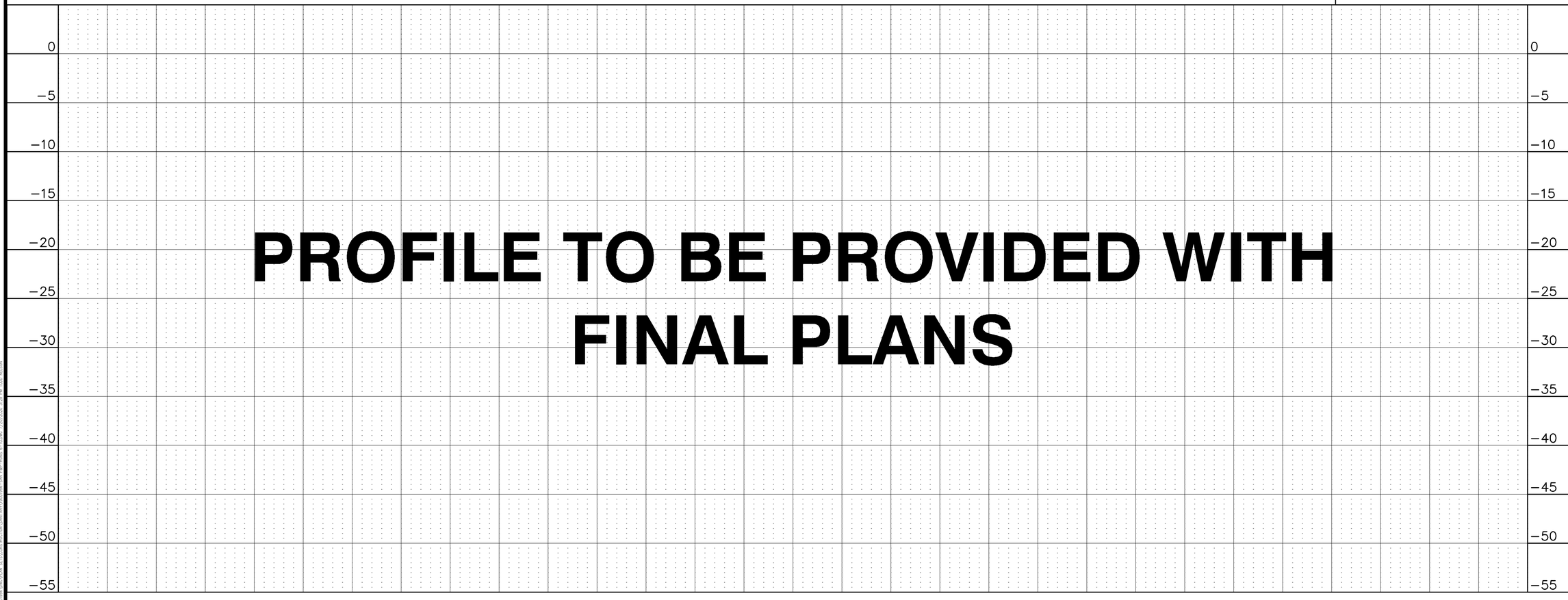
SAN RUN 9-4

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.



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CLIENT
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DATE DATE
REVISIONS

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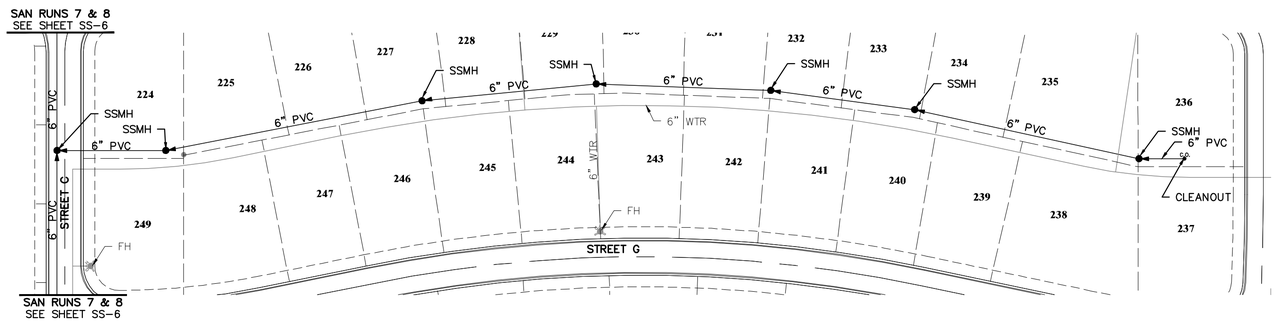
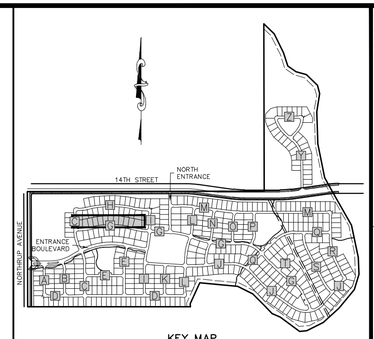
P.M. RW
JOB 19001956
SHEET NO.
SS-10

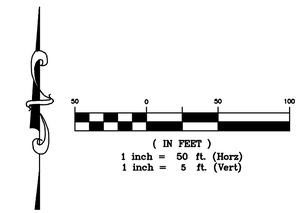
CAD FILE: 19001956-SAN P&P-RUNS 6-10.DWG



SAN RUN 10



KEY MAP
SCALE: 1" = 800'



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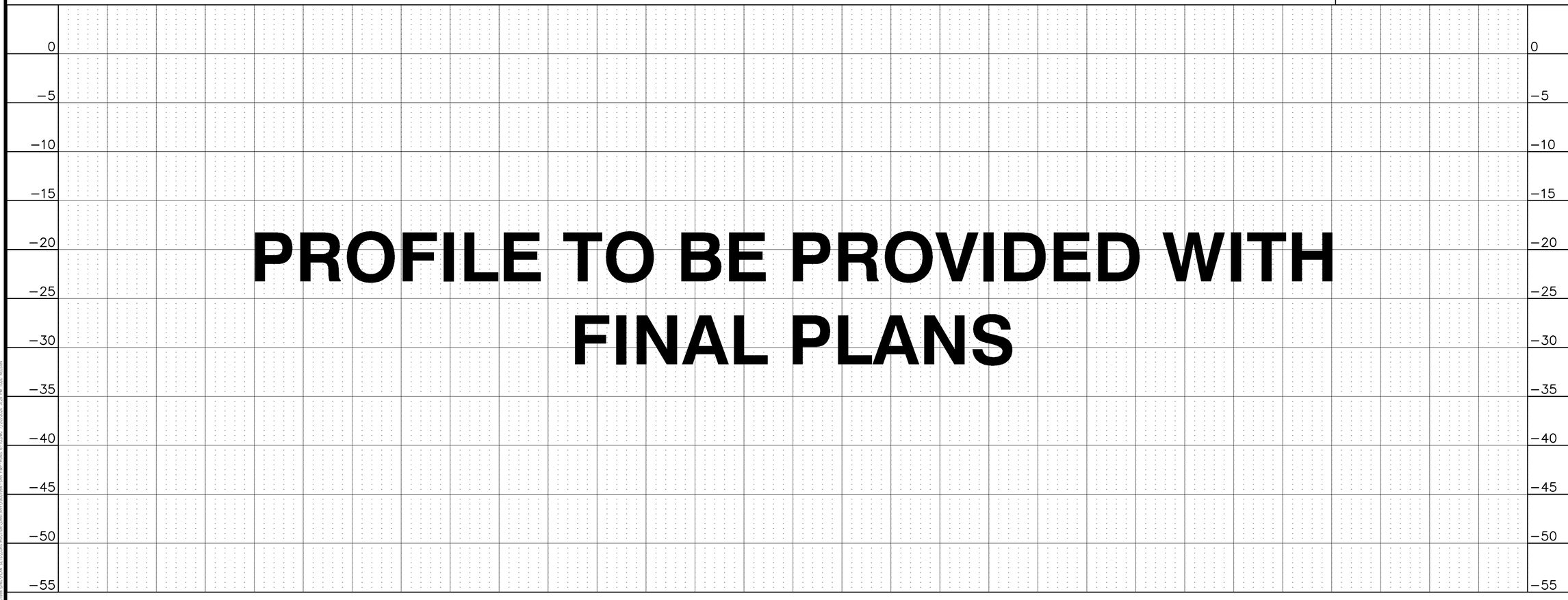

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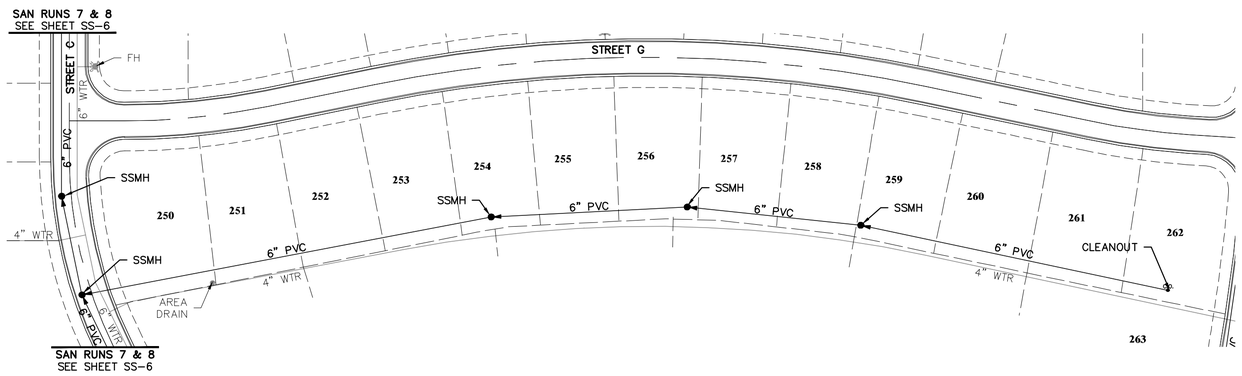
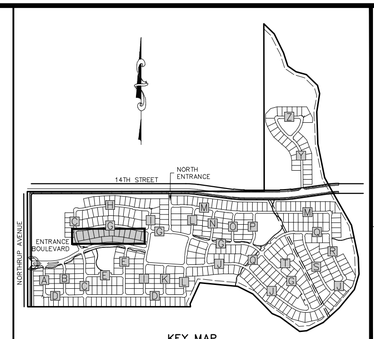


SAN RUN 11



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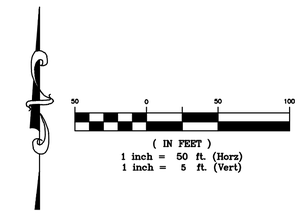

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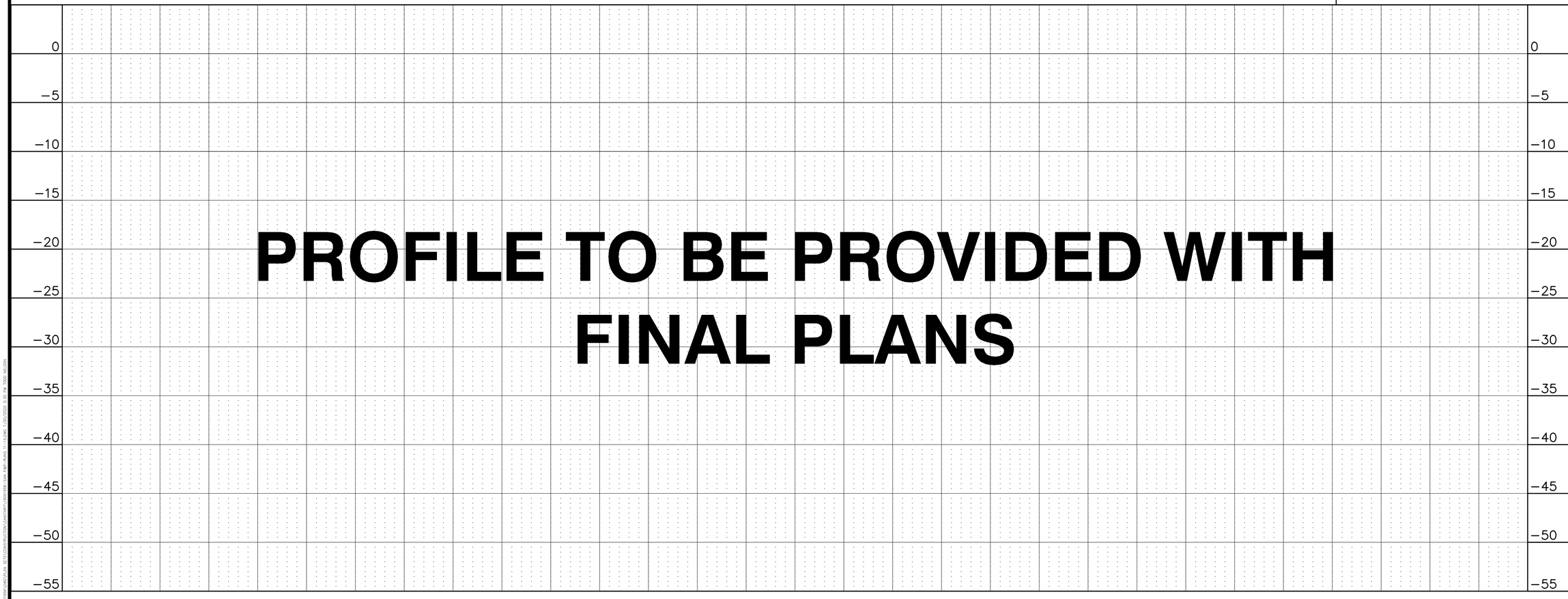

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SAN RUN 11

CLIENT

SUN COMMUNITIES, INC.

DATE DATE

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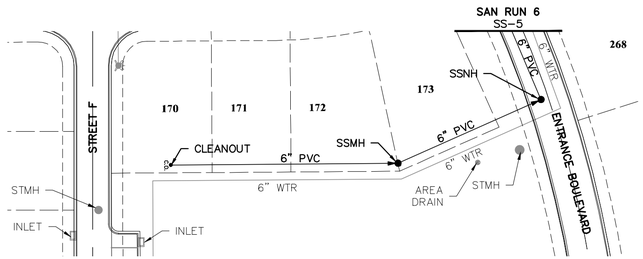
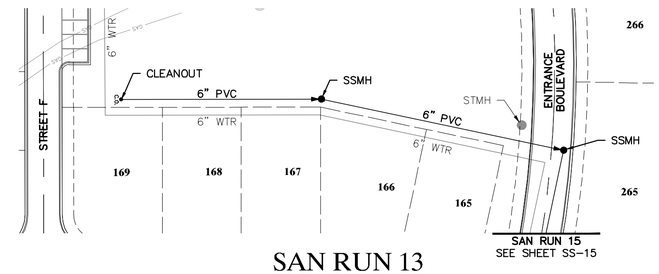
P.M. RW
JOB 19001956
SHEET NO.
SS-12

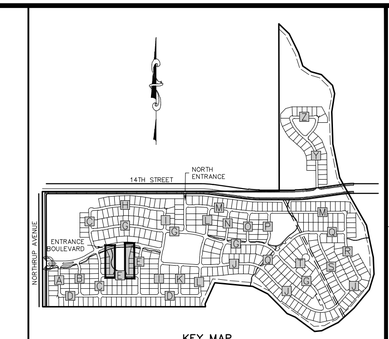
CAD FILE: 19001956-SAN P&P-RUNS 11-15.DWG



SAN RUN 12



SAN RUN 13



KEY MAP
SCALE: 1" = 800'

50 0 50 100

(IN FEET)
1 inch = 50 ft. (Horz)
1 inch = 5 ft. (Vert)

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

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PROFILE TO BE PROVIDED WITH FINAL PLANS

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WILLOW BEND SUBDIVISION
FORT LUPTON, COLORADO
PRELIMINARY CONSTRUCTION PLANS
SANITARY PLAN & PROFILES
SAN RUNS 12 & 13

CLIENT
SUN COMMUNITIES, INC.

DATE DATE

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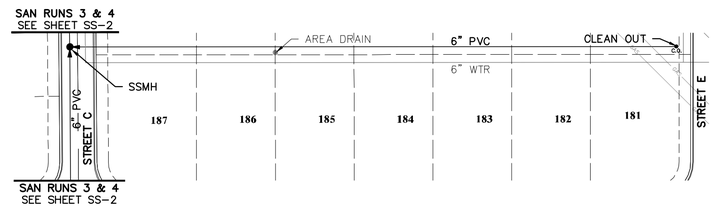
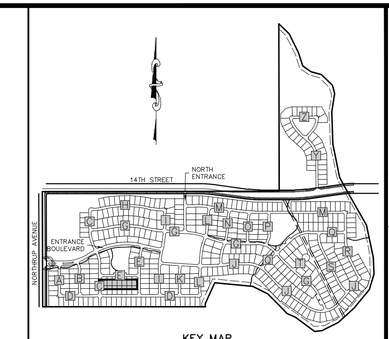
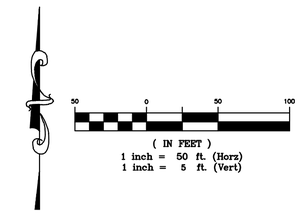
DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. SS-13

CAD FILE: 19001956-SAN P&P-RUNS 11-15.DWG





KEY MAP
SCALE: 1" = 800'



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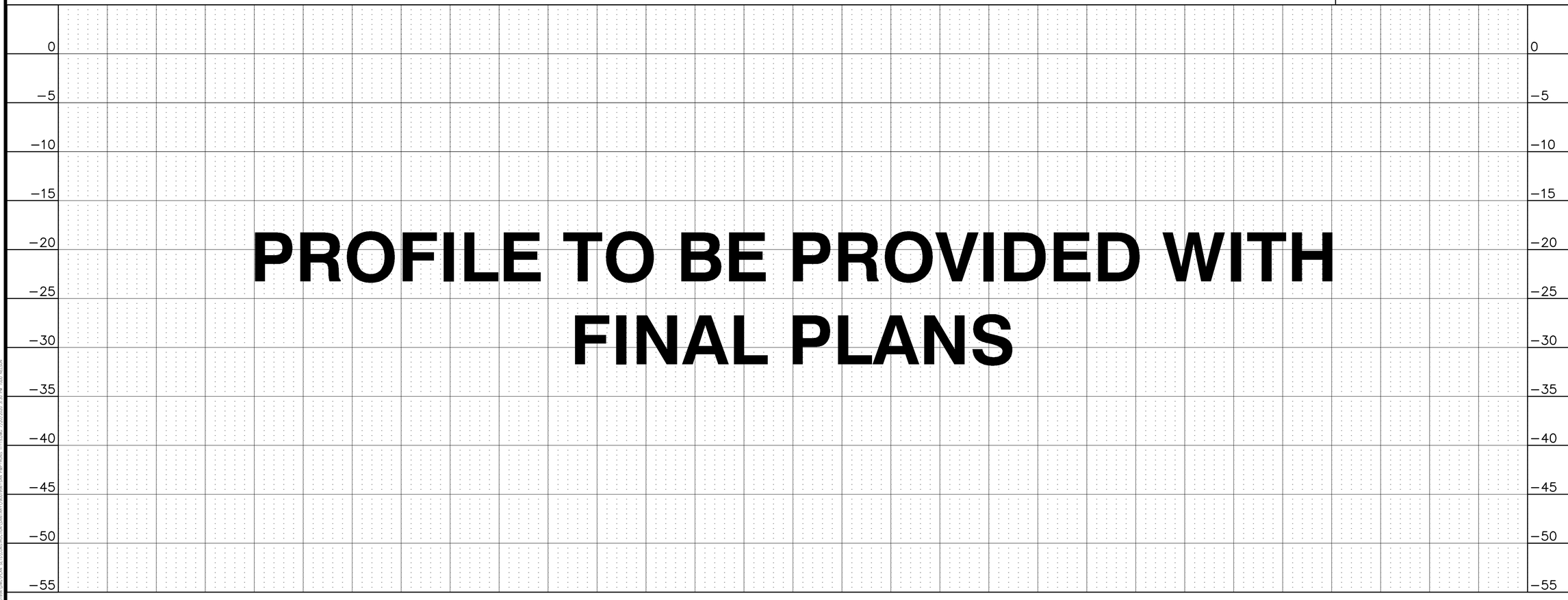
BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

SAN RUN 14



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SANITARY PLAN & PROFILES
SAN RUN 14

CLIENT

SUN COMMUNITIES, INC.

DATE DATE

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SS-14

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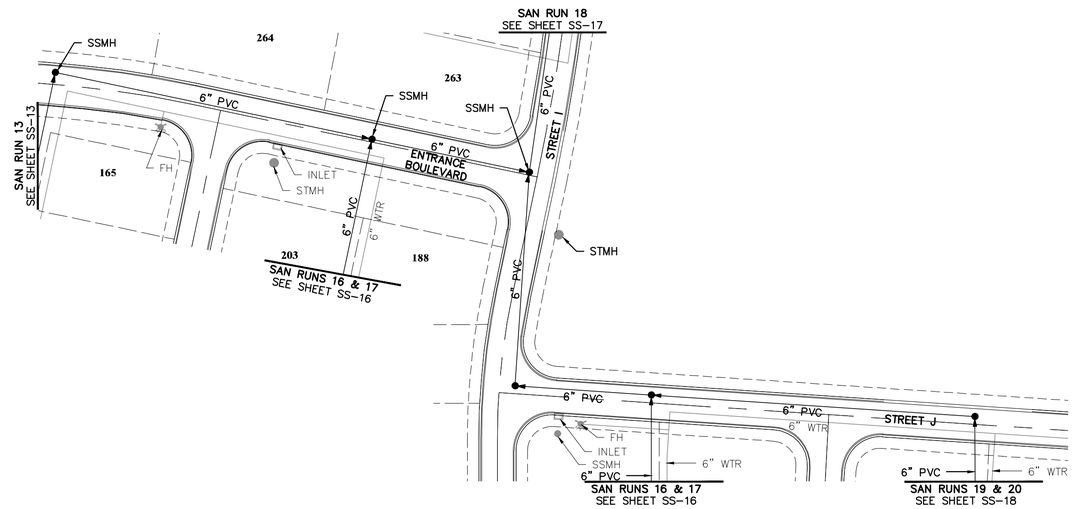
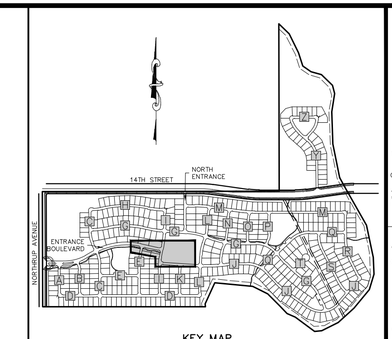


SAN RUN 15



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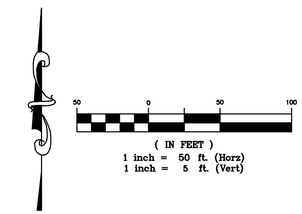

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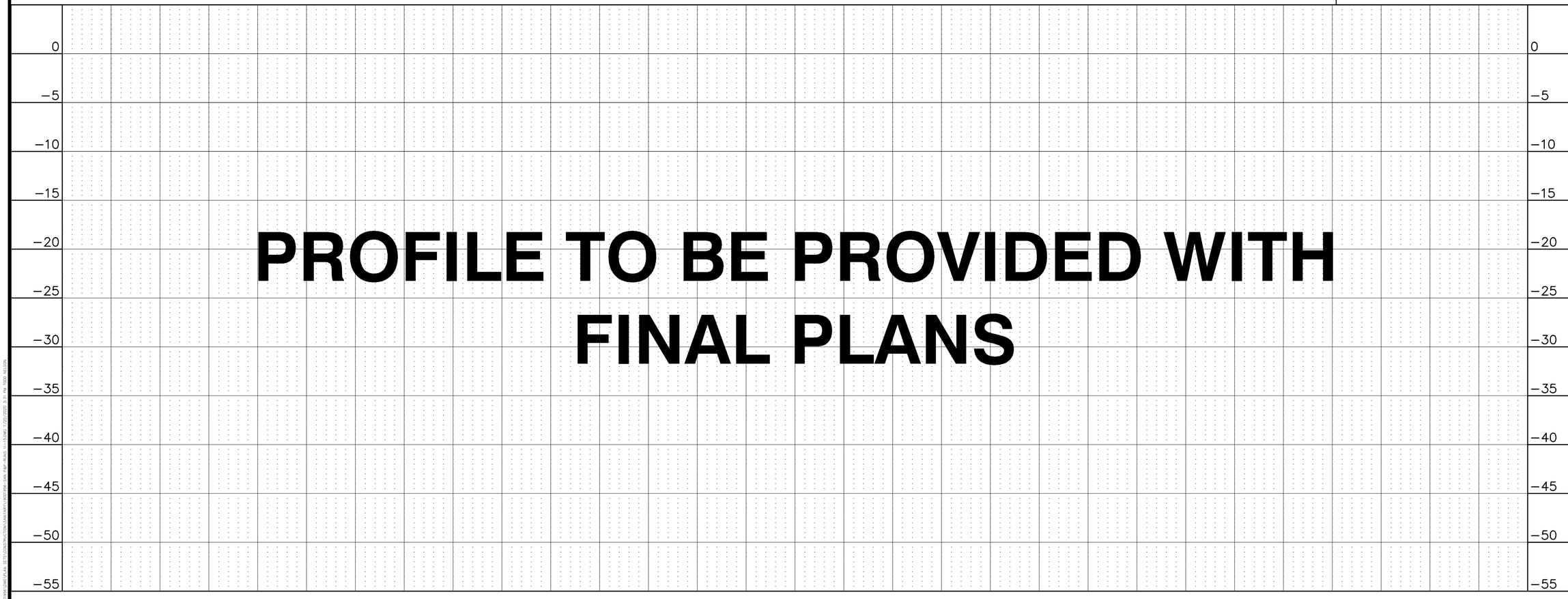

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SANITARY PLAN & PROFILES
SAN RUN 15

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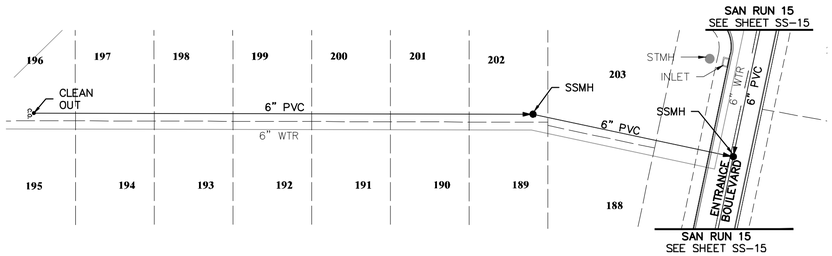
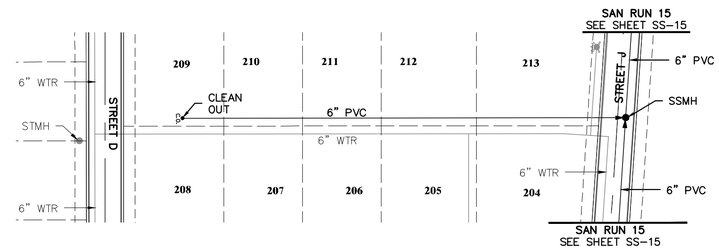
SHEET NO.
SS-15

CAD FILE: 19001956-SAN P&P-RUNS 11-15.DWG



SAN RUN 16



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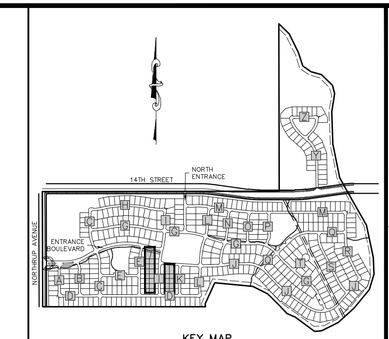

KEY MAP
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50 0 50 100
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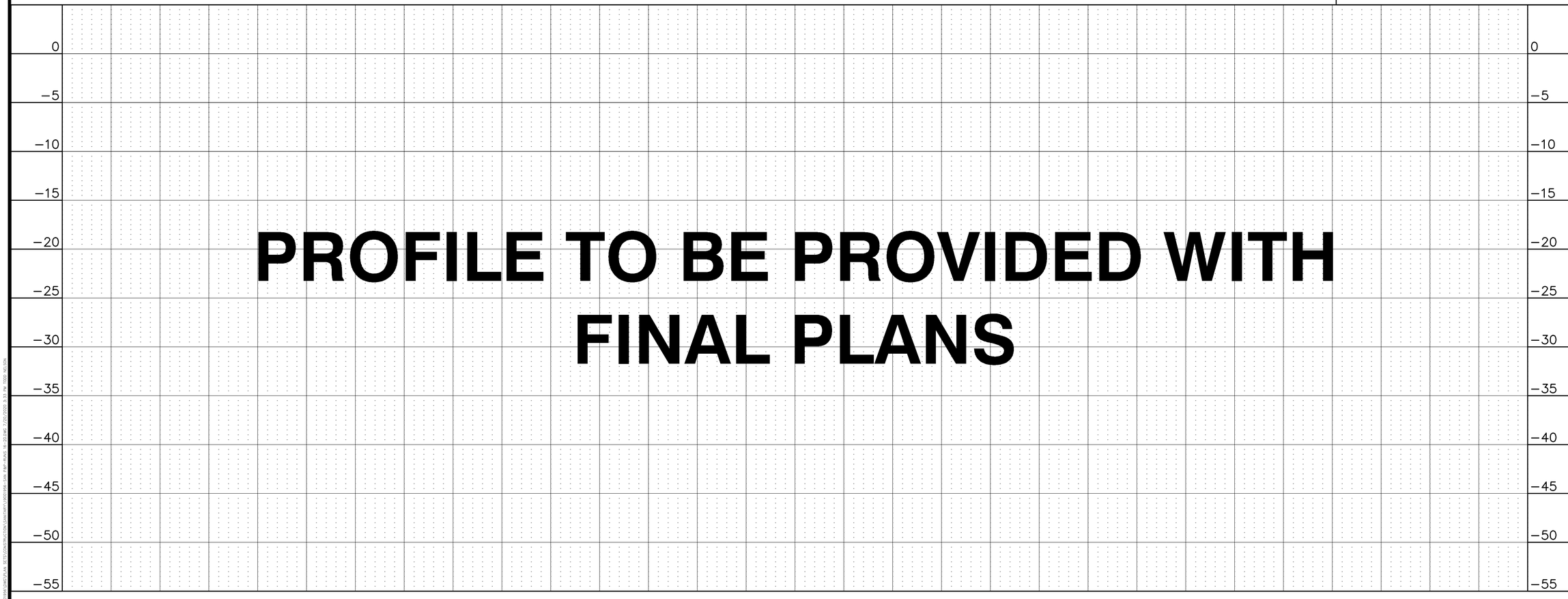

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SANITARY PLAN & PROFILES
SAN RUNS 16 & 17

CLIENT

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DATE DATE

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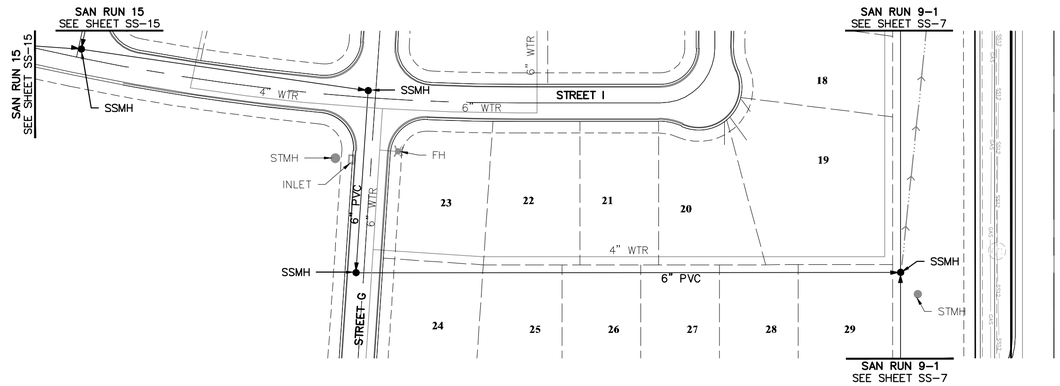
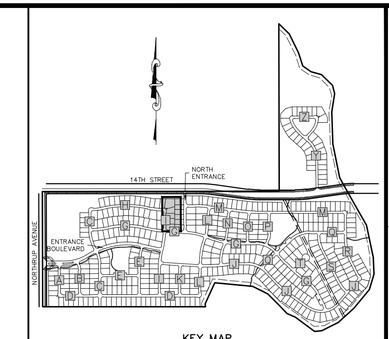
SHEET NO.
SS-16

CAD FILE: 19001956-SAN P&P-RUNS 16-20.DWG





KEY MAP
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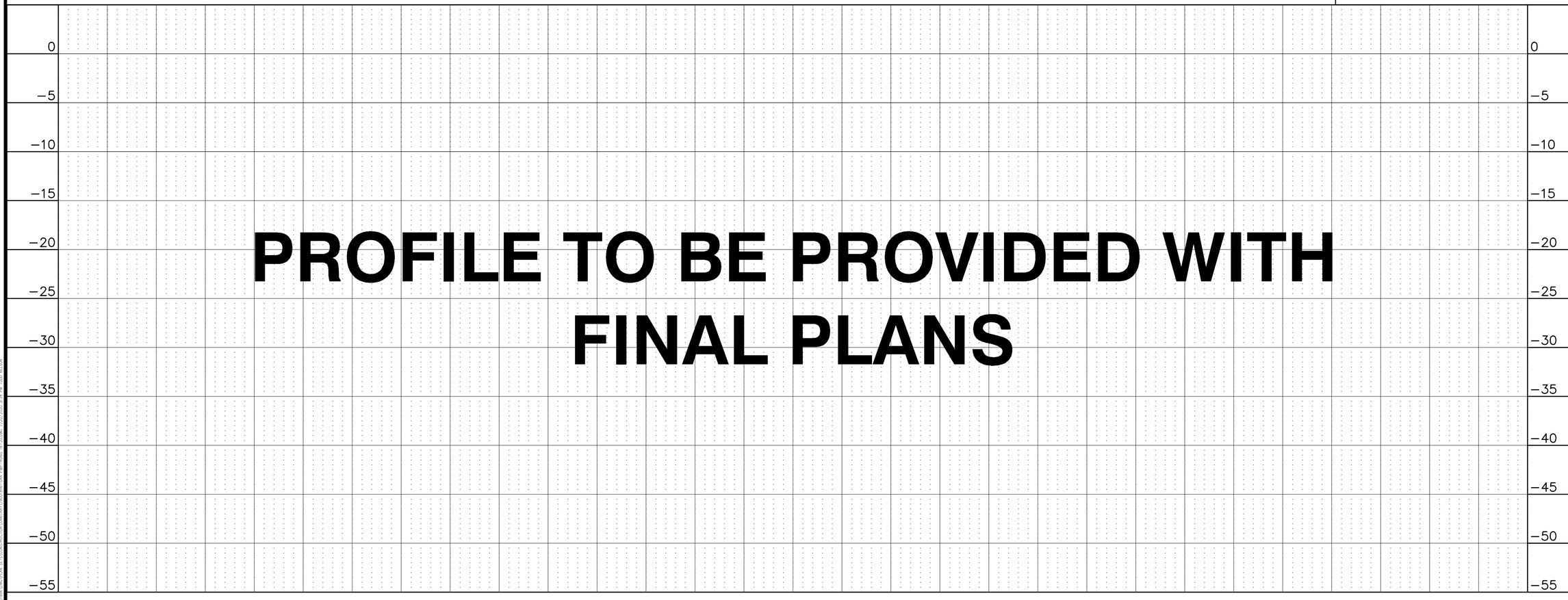
BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

SAN RUN 18



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PRELIMINARY CONSTRUCTION PLANS
SANITARY PLAN & PROFILES
SAN RUN 18

CLIENT
SUN COMMUNITIES, INC.

DATE DATE

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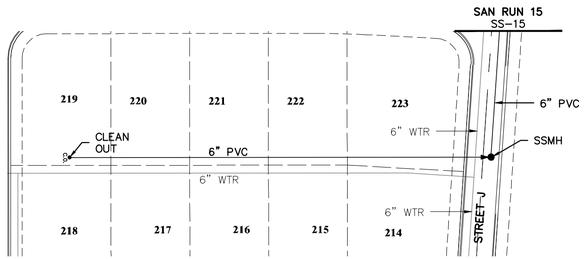
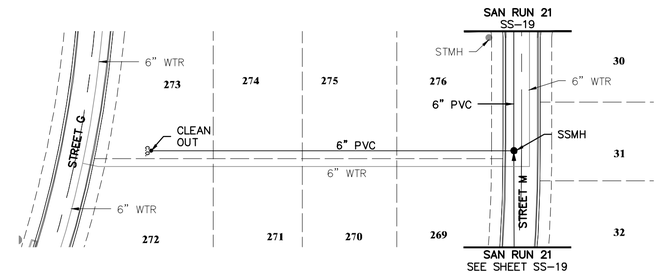
DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO.
SS-17

CAD FILE: 19001956-SAN P&P-RUNS 16-20.DWG



SAN RUN 19



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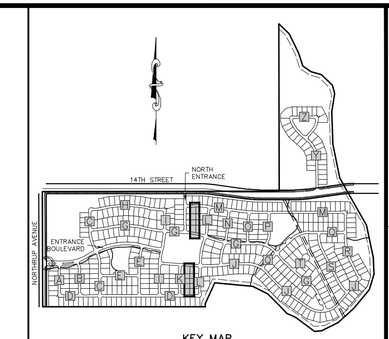

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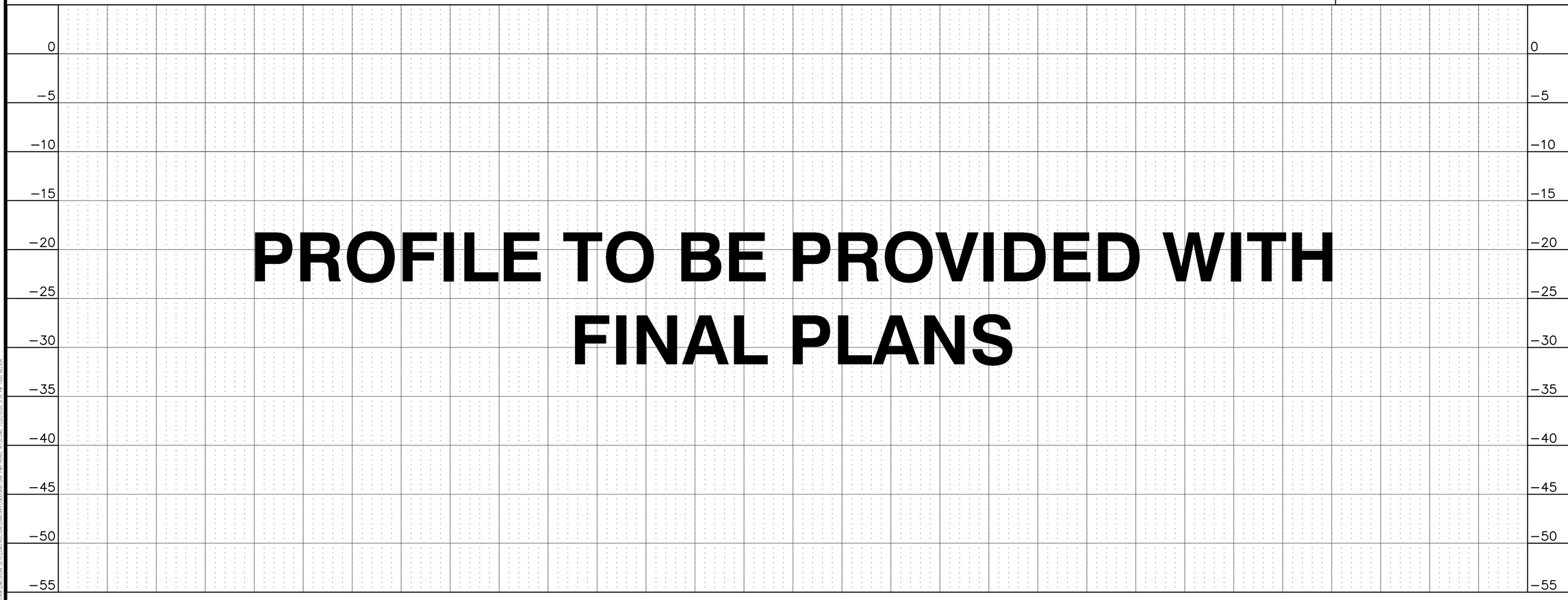

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SAN RUNS 19 & 20

CLIENT
SUN COMMUNITIES, INC.

DATE DATE

REVISIONS

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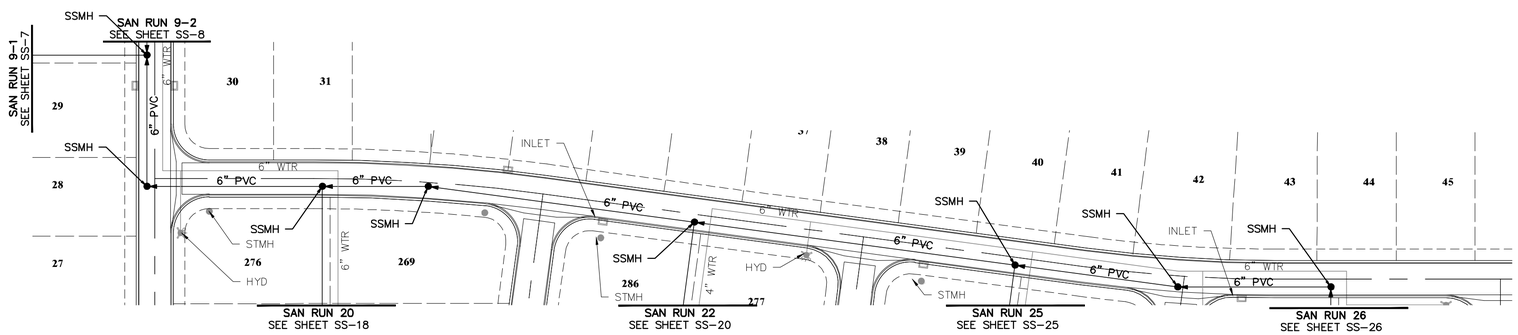
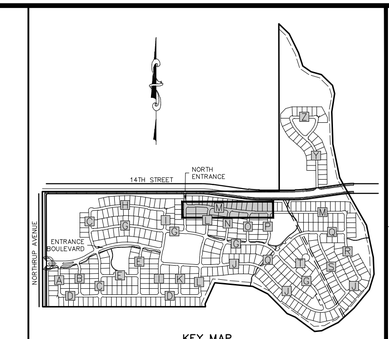
SHEET NO.
SS-18

CAD FILE: 19001956-SAN P&P-RUNS 16-20.DWG



SAN RUN 21



KEY MAP
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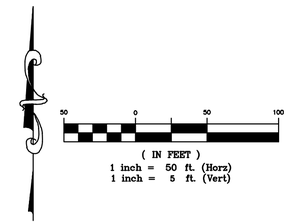

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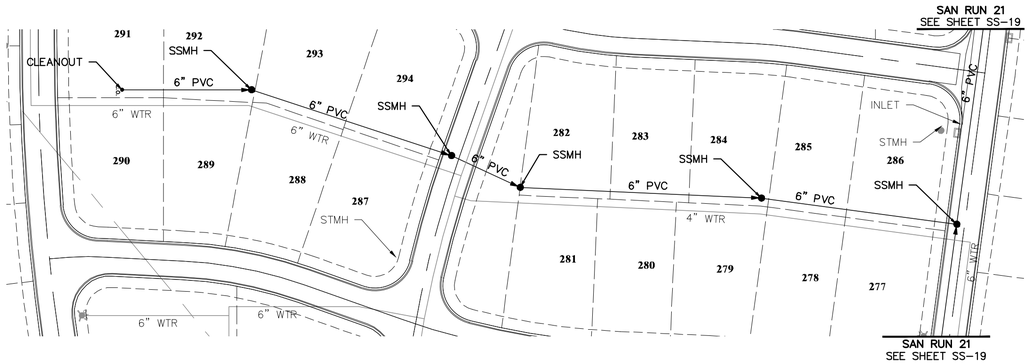
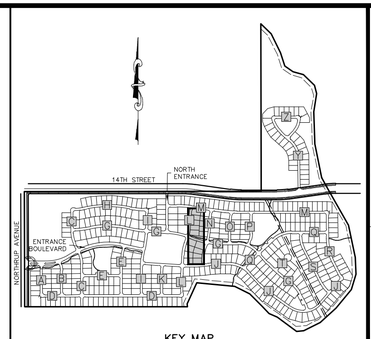
SS-19

CAD FILE: 19001956-SAN P&P-RUNS 21-25.DWG





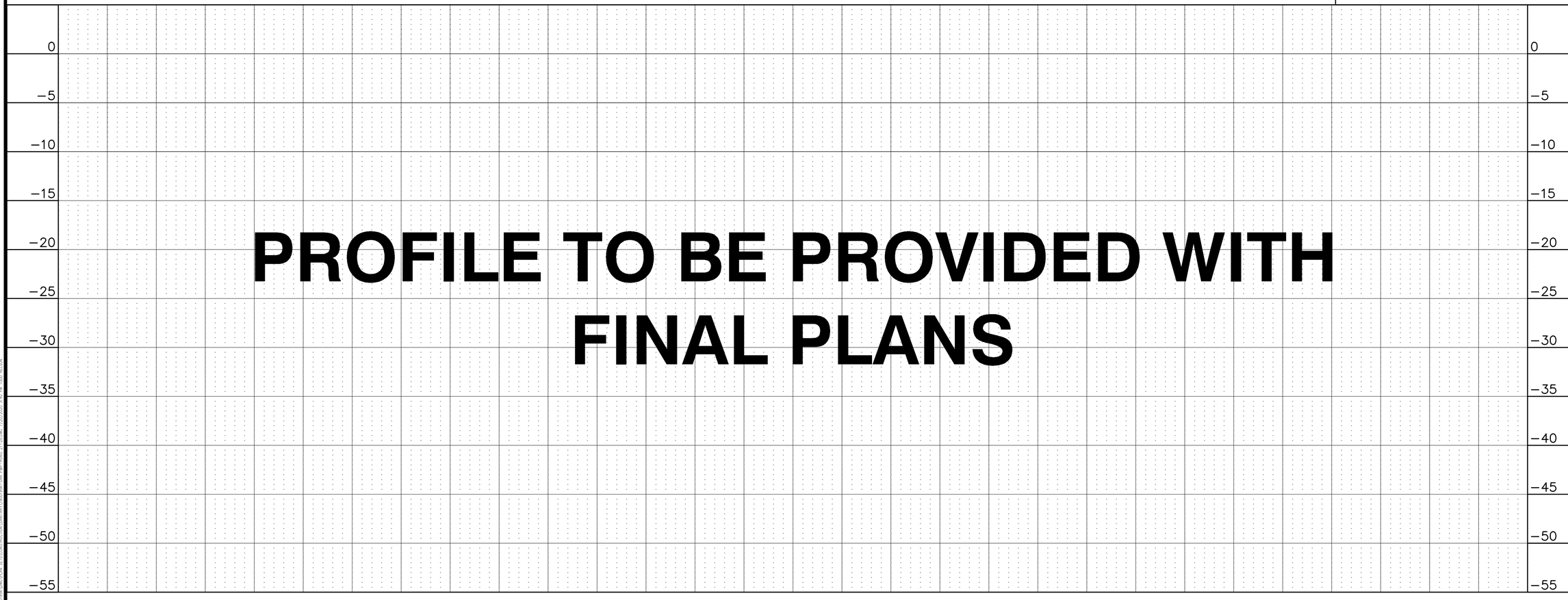
KEY MAP
SCALE: 1" = 800'

(IN FEET)
1 inch = 50 ft. (Horz)
1 inch = 5 ft. (Vert)

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

SAN RUN 22



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SANITARY PLAN & PROFILES
SAN RUN 22

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DATE DATE

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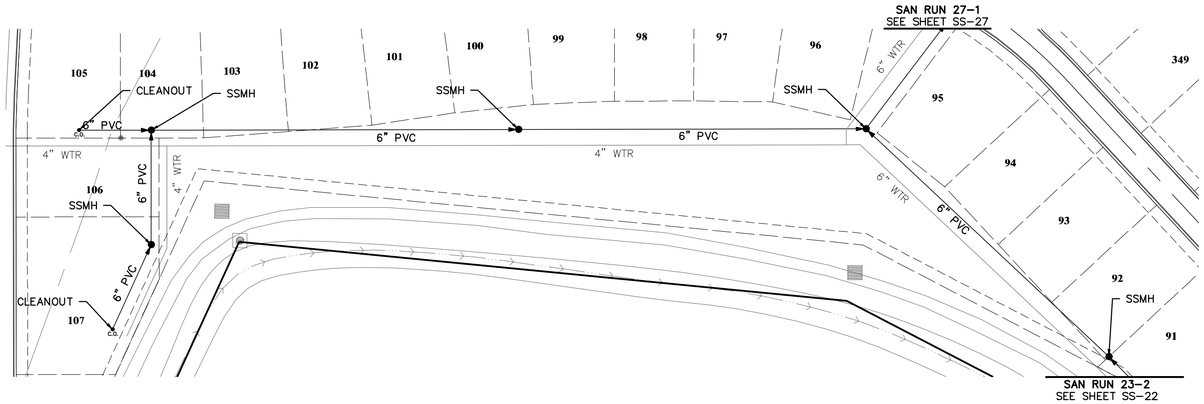
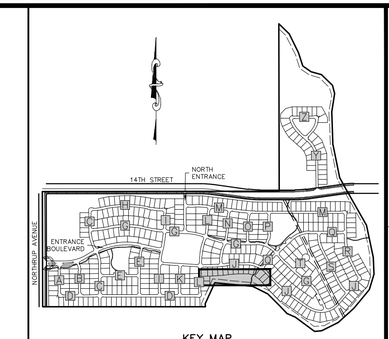
SHEET NO.
SS-20

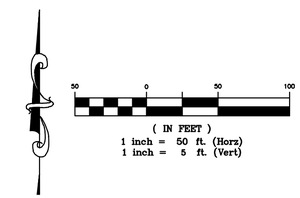
CAD FILE: 19001956-SAN P&P-RUNS 21-25.DWG



SAN RUN 23-1

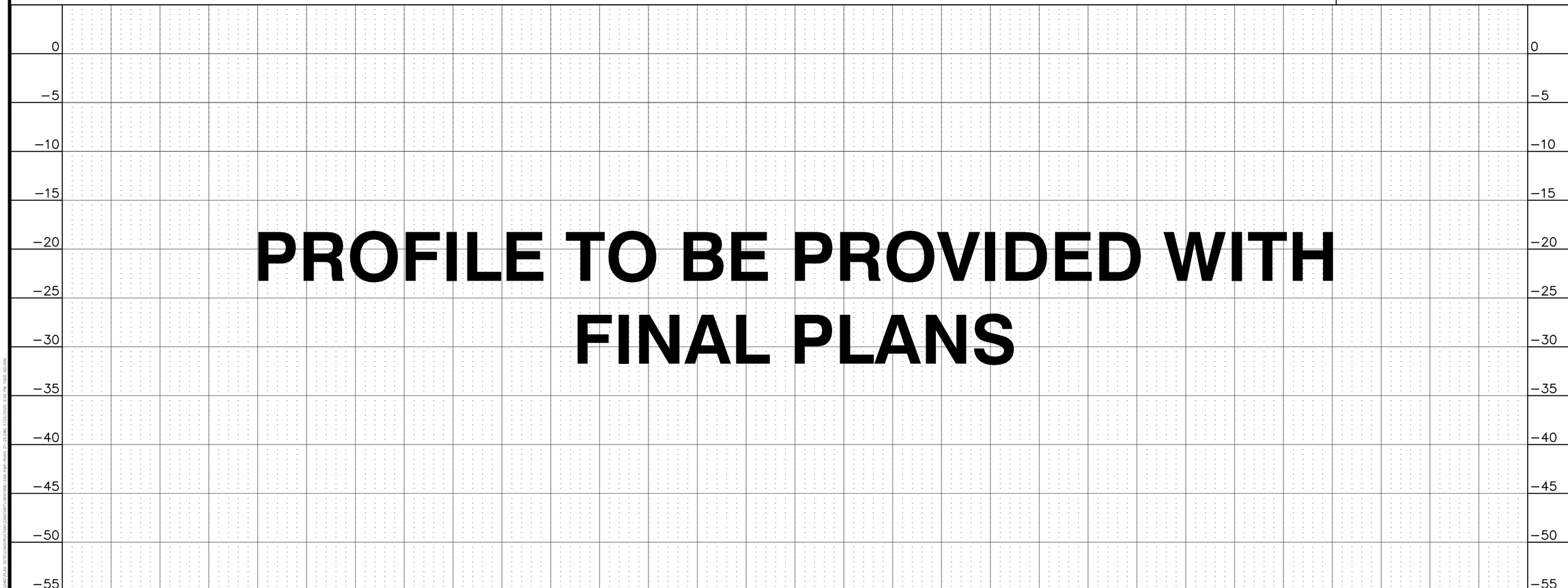


KEY MAP
SCALE: 1" = 800'



BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.



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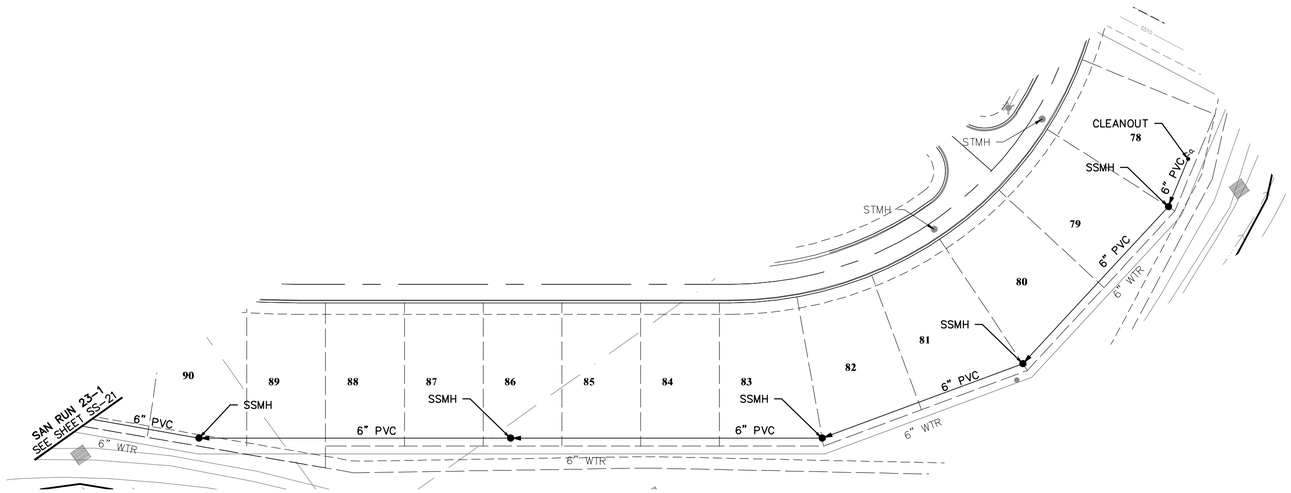
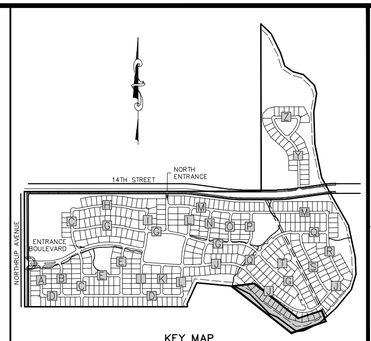
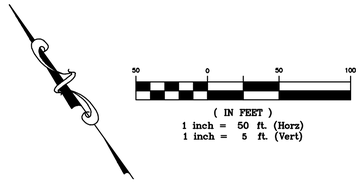
CAD FILE: 19001956-SAN P&P-RUNS 21-25.DWG



SAN RUN 23-2



KEY MAP
SCALE: 1" = 800'



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DATE DATE

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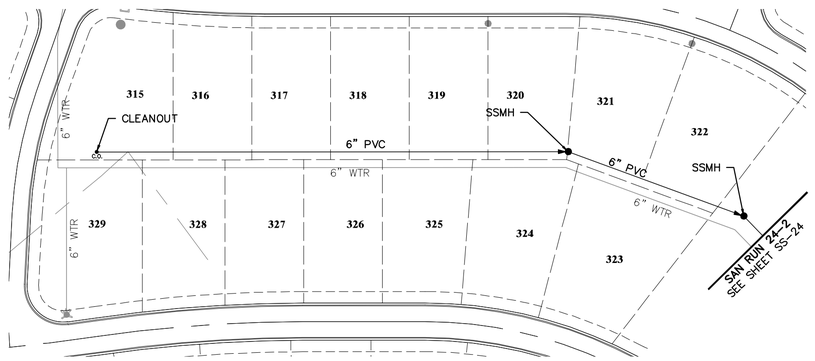
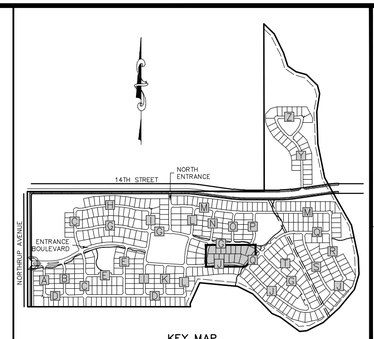
JOB 19001956
SHEET NO. SS-22

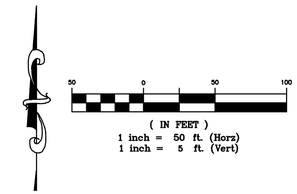
CAD FILE: 19001956-SAN P&P-RUNS 21-25.DWG



SAN RUN 24-1



KEY MAP
SCALE: 1" = 800'



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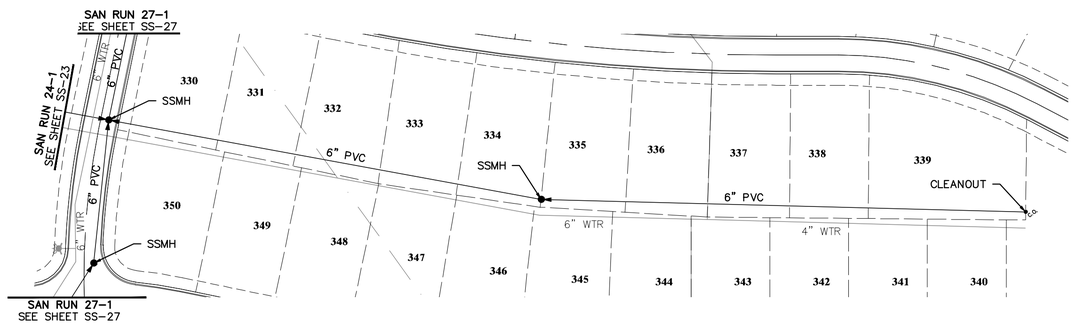
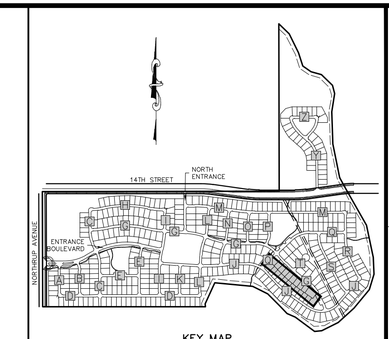
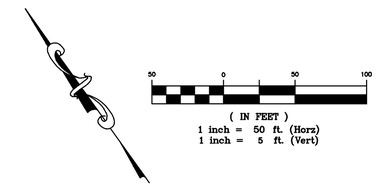


SAN RUN 24-2



KEY MAP
SCALE: 1" = 800'



BENCHMARK:

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PROFILE TO BE PROVIDED WITH FINAL PLANS

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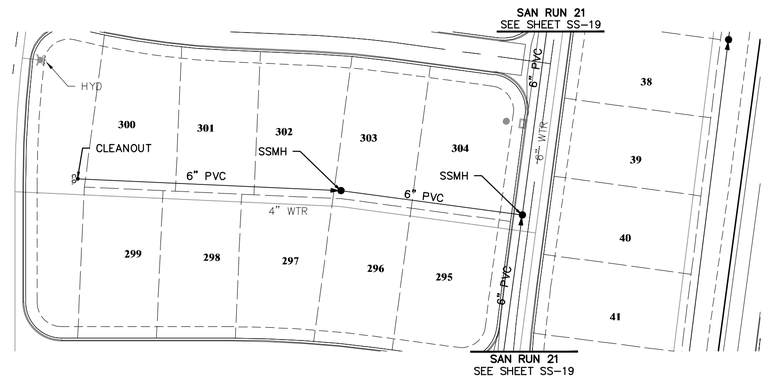
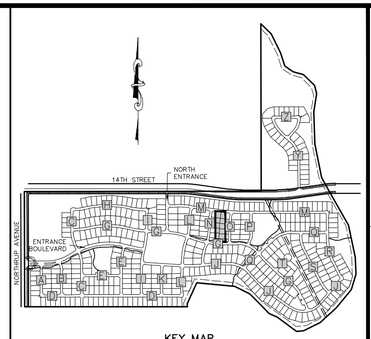
SHEET NO. SS-24

CAD FILE: 19001956-SAN P&P-RUNS 21-25.DWG



SAN RUN 25



KEY MAP
SCALE: 1" = 800'

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(IN FEET)
1 inch = 50 ft. (Horz)
1 inch = 5 ft. (Vert)

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

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JOB 19001956
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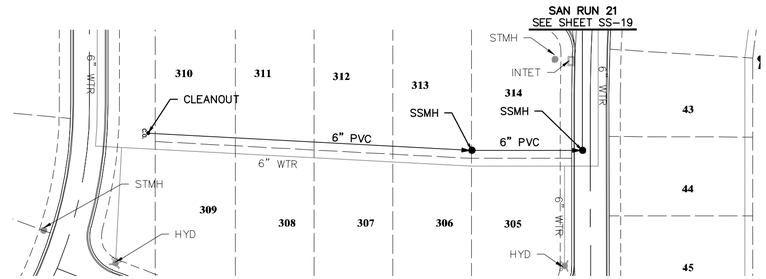
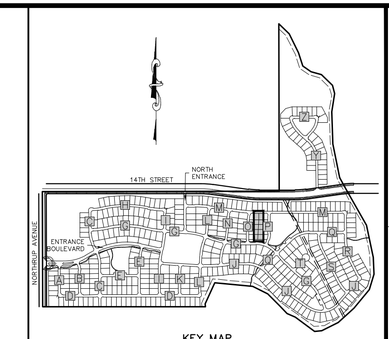
CAD FILE: 19001956-SAN P&P-RUNS 21-25.DWG



SAN RUN 26



KEY MAP
SCALE: 1" = 800'

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(IN FEET)
1 inch = 50 ft. (Horz)
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SHEET NO.
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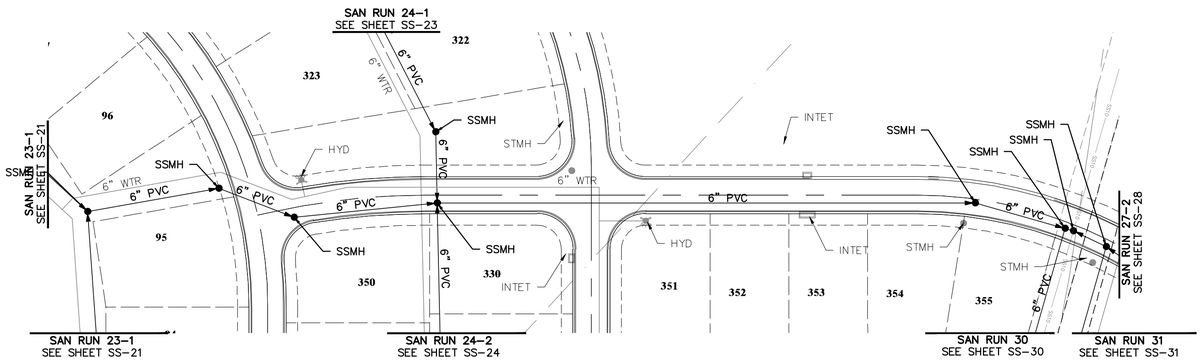
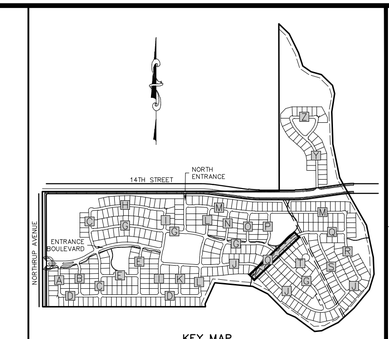
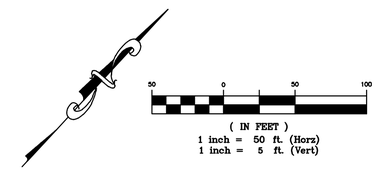
CAD FILE: 19001956-SAN P&P-RUNS 26-30.DWG



SAN RUN 27-1



KEY MAP
SCALE: 1" = 800'



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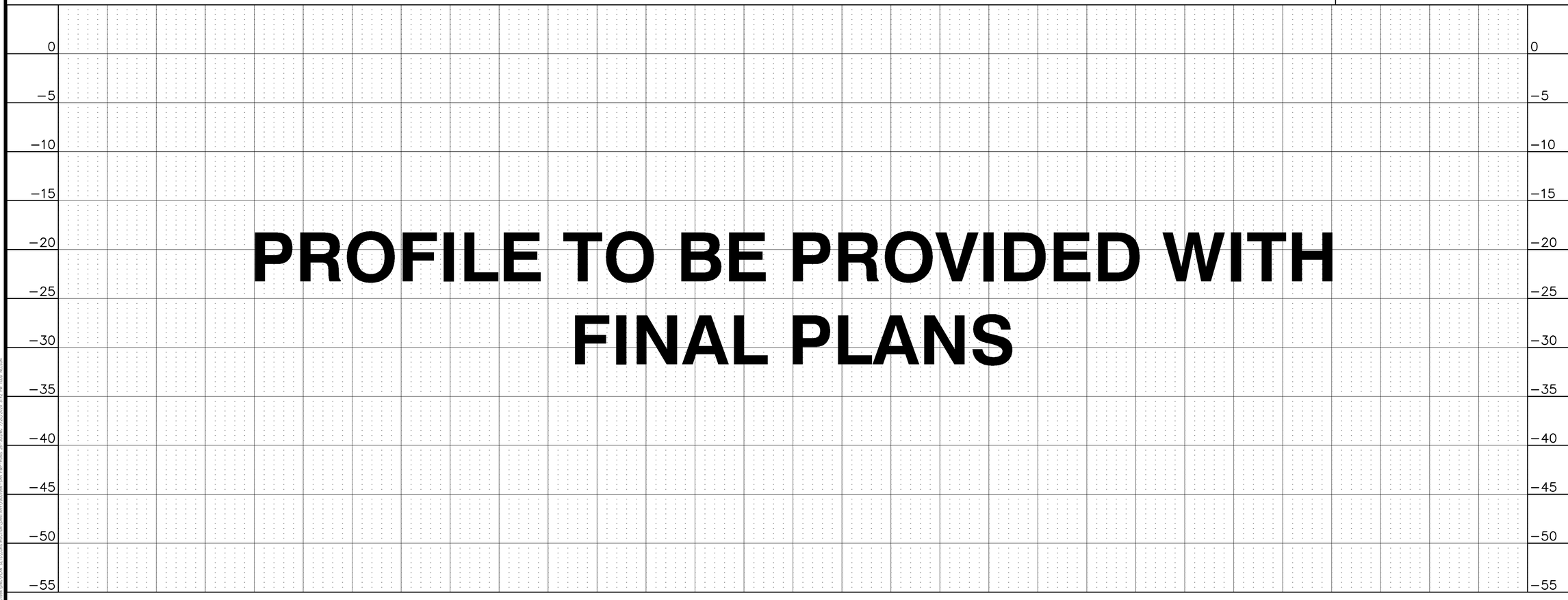

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SANITARY PLAN & PROFILES
SAN RUN 27-1

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SUN COMMUNITIES, INC.

DATE DATE

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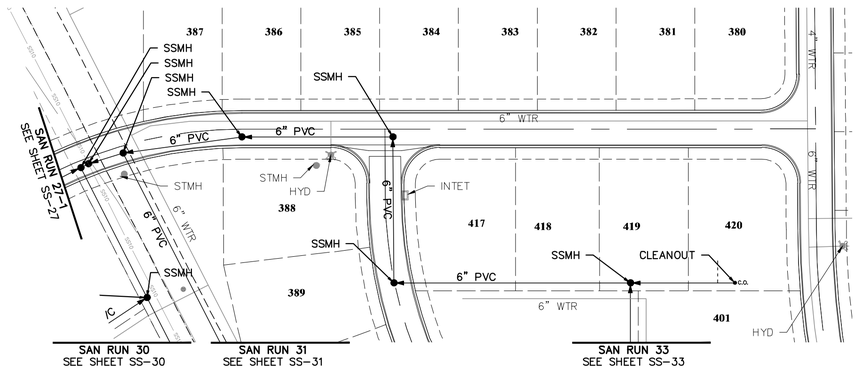
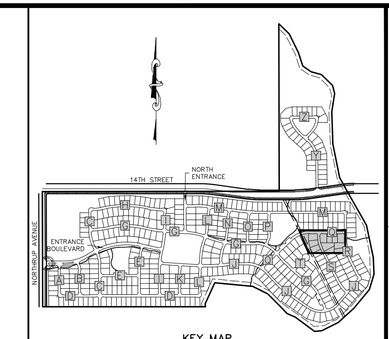
P.M. RW
JOB 19001956
SHEET NO. SS-27

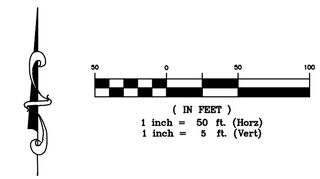
CAD FILE: 19001956-SAN P&P-RUNS 26-30.DWG



SAN RUN 27-2

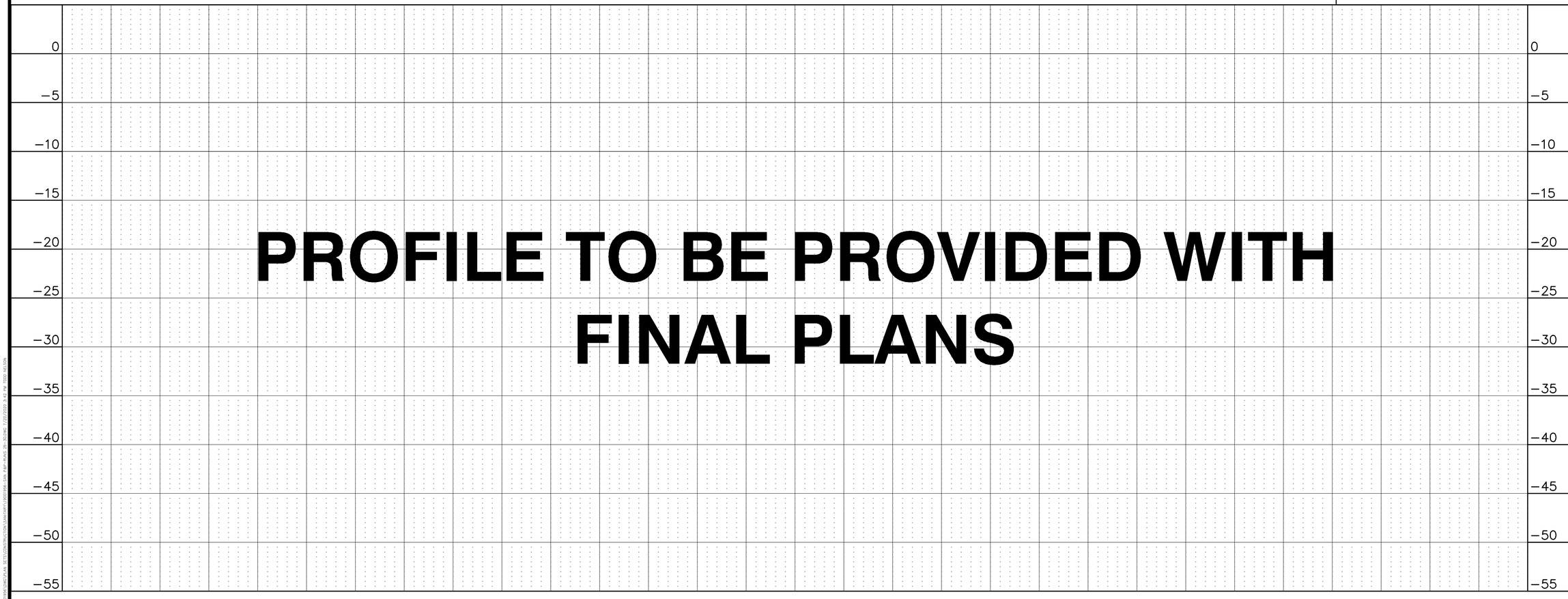


KEY MAP
SCALE: 1" = 800'



BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.



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SAN RUN 27-2

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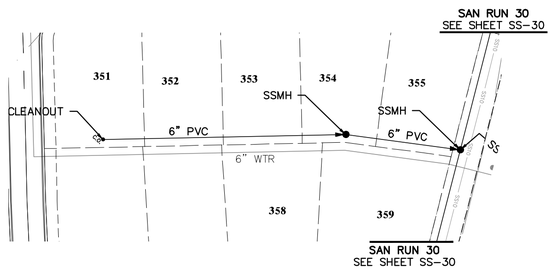
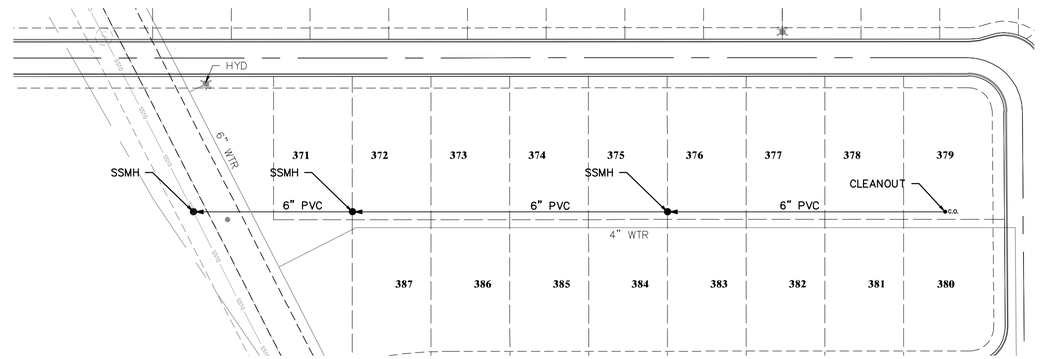


SAN RUN 28



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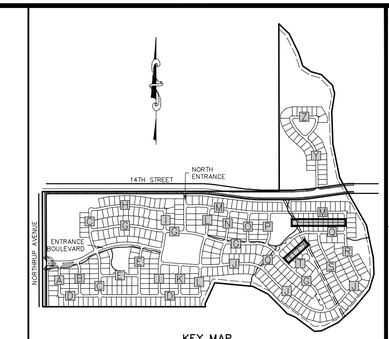

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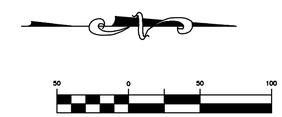
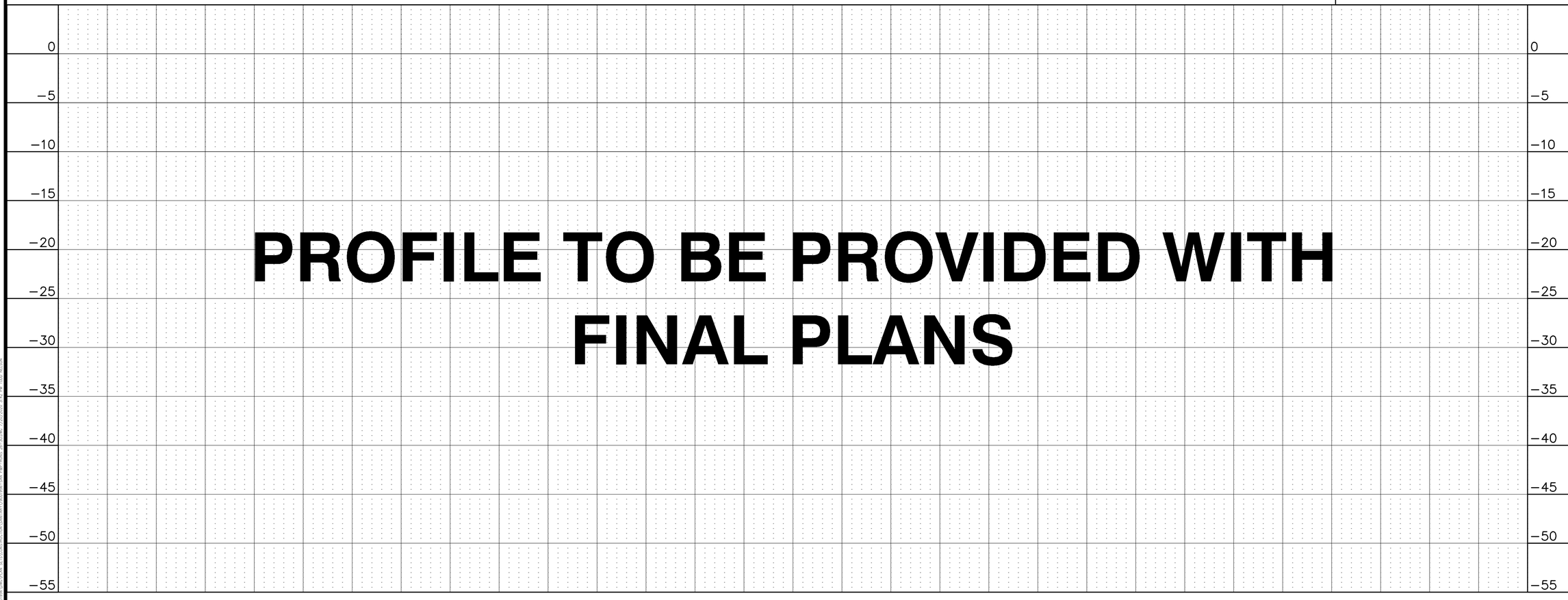


(IN FEET)
1 inch = 50 ft. (Horz)
1 inch = 5 ft. (Vert)

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.



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SAN RUN 28 & 29

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SUN COMMUNITIES, INC.

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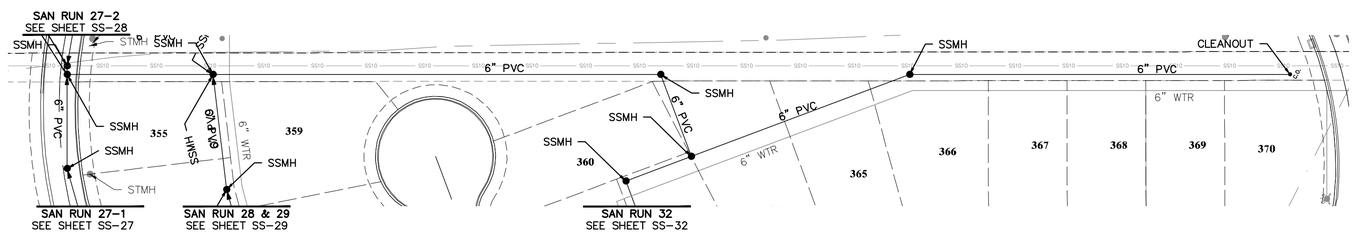
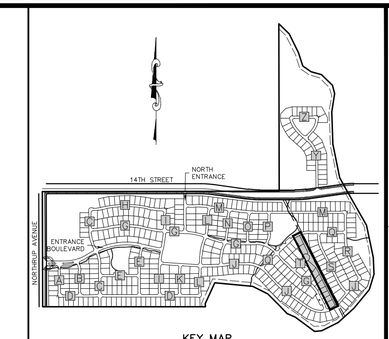
P.M. RW
JOB 19001956
SHEET NO.
SS-29

CAD FILE: 19001956-SAN P&P-RUNS 28-30.DWG



SAN RUN 30



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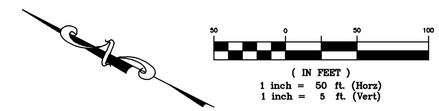

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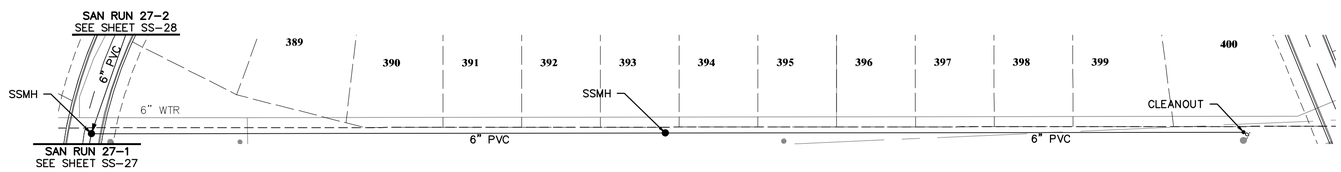
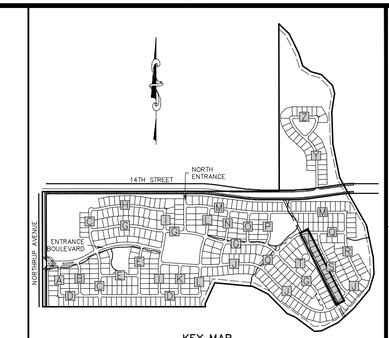
JOB 19001956
SHEET NO. SS-30

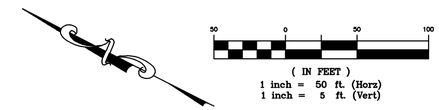
CAD FILE: 19001956-SAN P&P-RUNS 26-30.DWG



SAN RUN 31



KEY MAP
SCALE: 1" = 800'

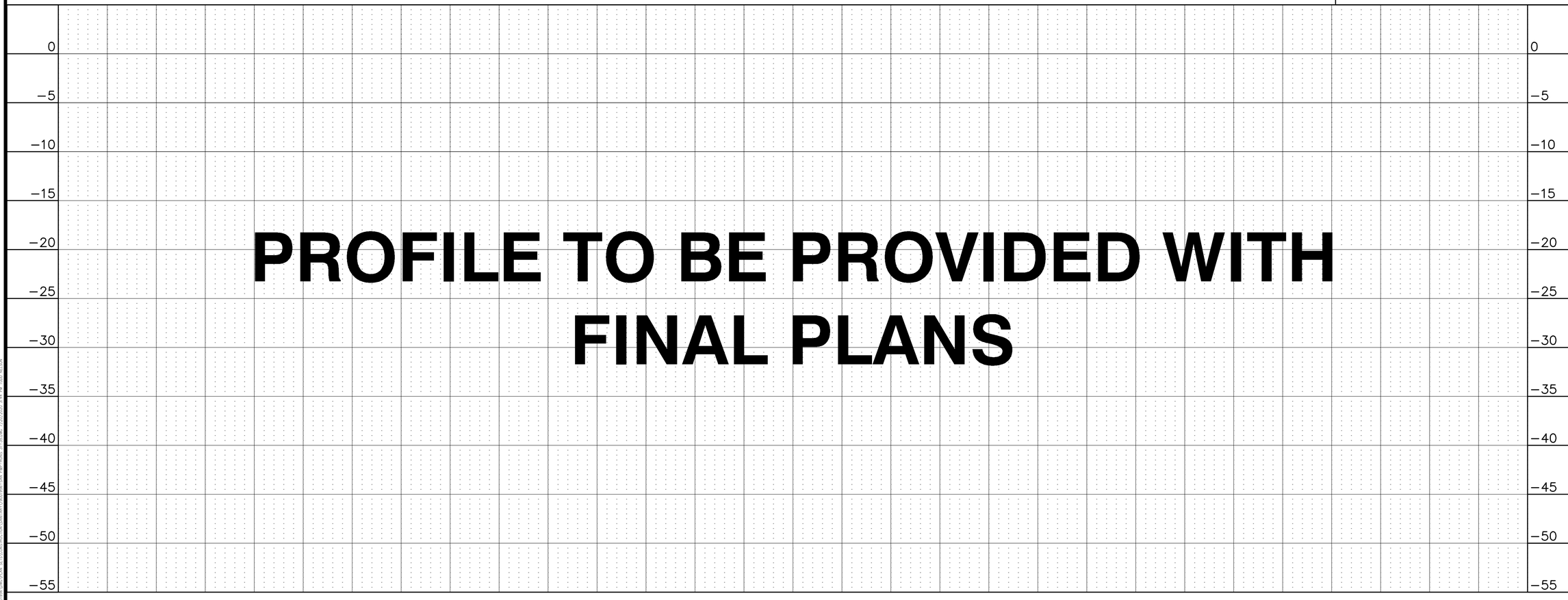


NOTE
ALL ELEVATIONS ARE FL (CURB FLOWLINE) UNLESS OTHERWISE NOTED.

PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.



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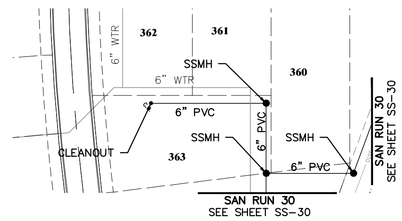
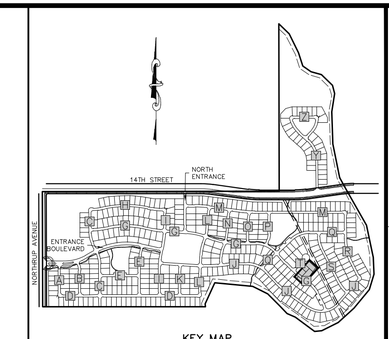
SS-31

CAD FILE: 19001956-SAN P&P-RUNS 31-35.DWG



SAN RUN 32



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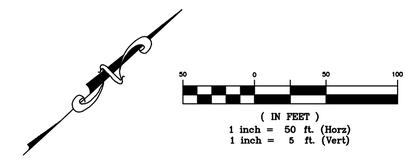

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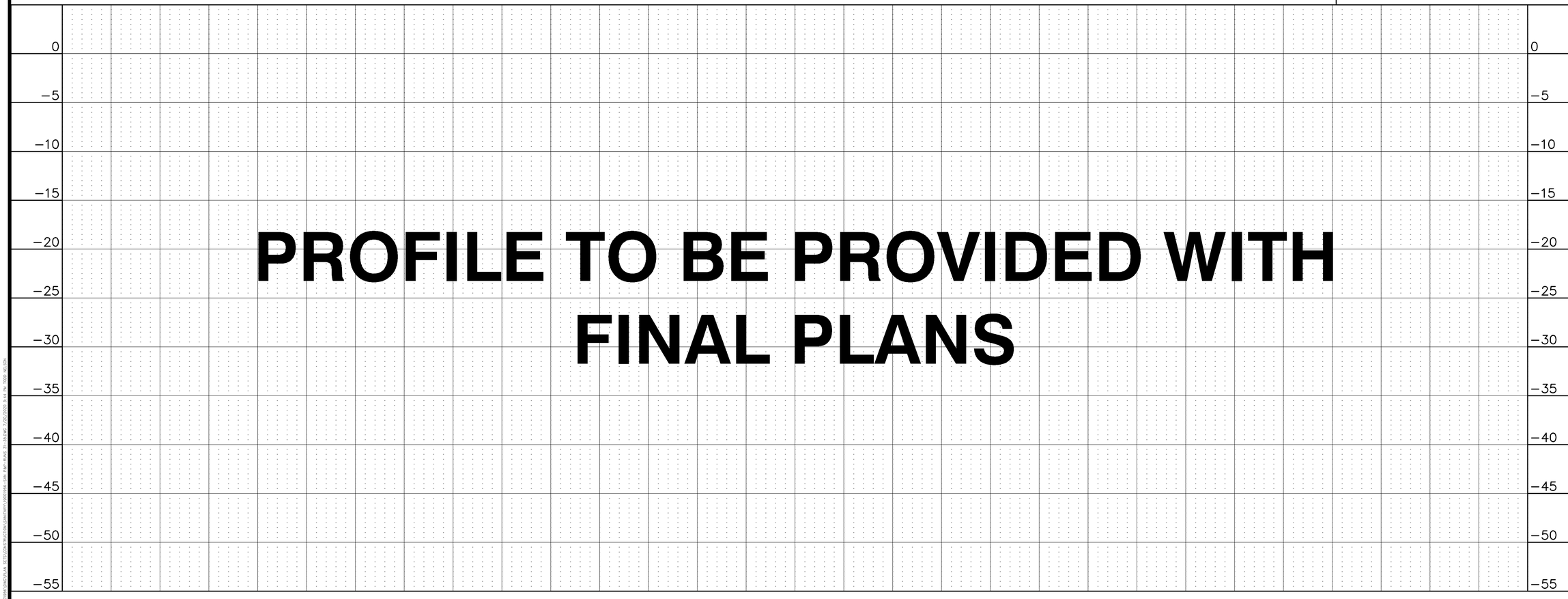

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SAN RUN 32

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SUN COMMUNITIES, INC.
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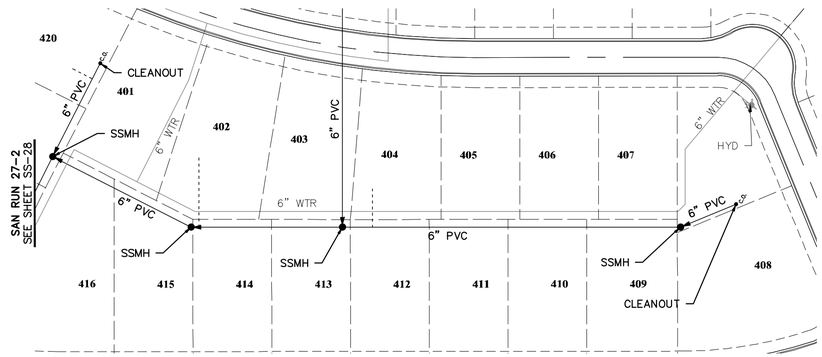
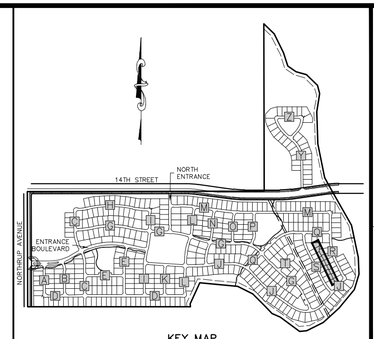
P.M. RW
JOB 19001956
SHEET NO.
SS-32

CAD FILE: 19001956-SAN P&P-RUNS 31-35.DWG



SAN RUN 33



KEY MAP
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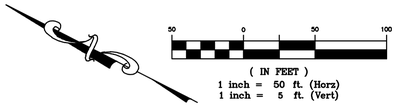

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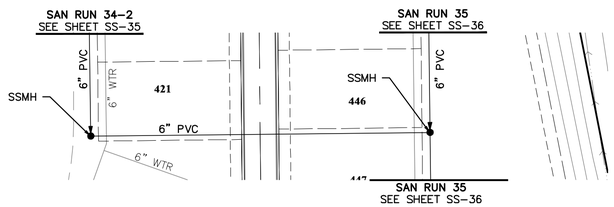
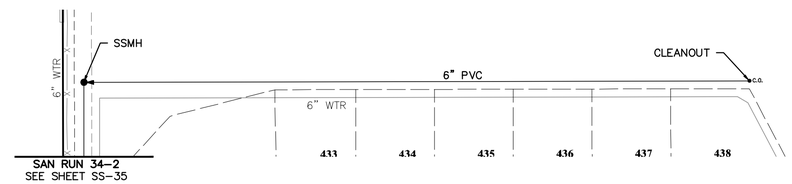
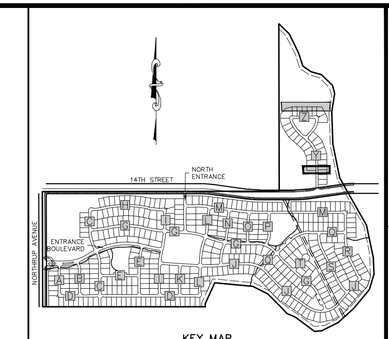


SAN RUN 34-1



SAN RUN 34-3



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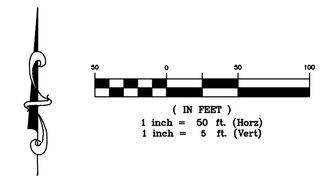
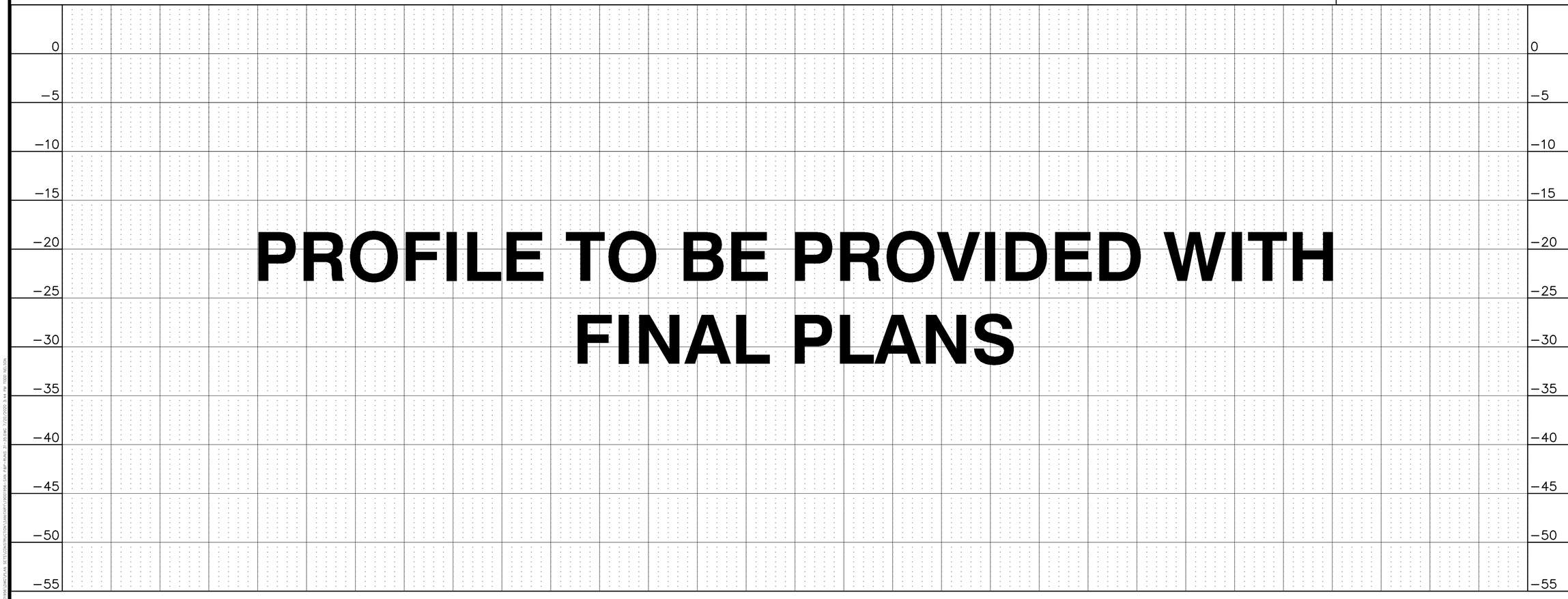


BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.



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SAN RUN 34-1 & 34-3

CLIENT
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DATE DATE

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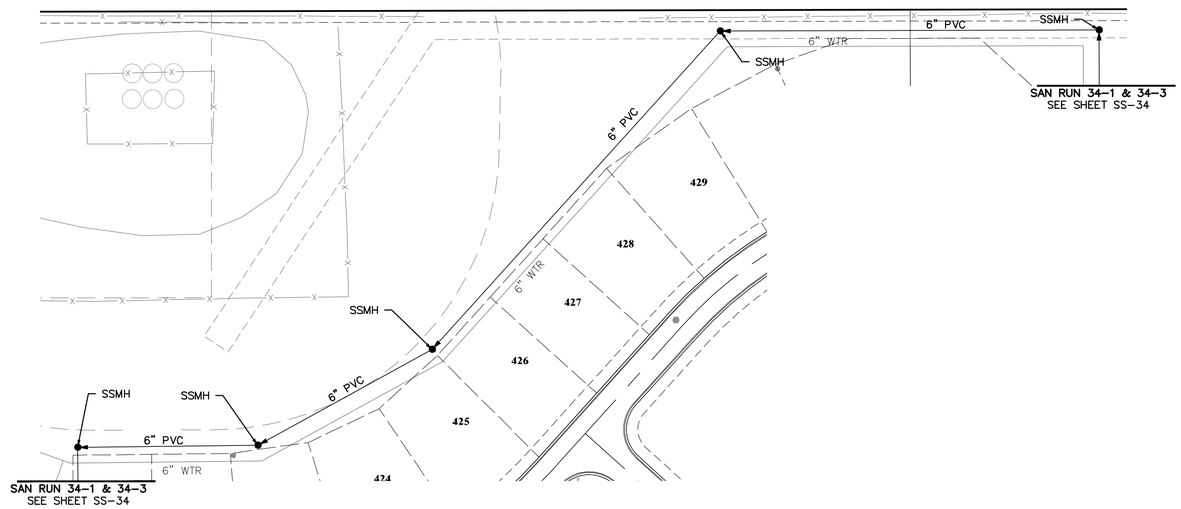
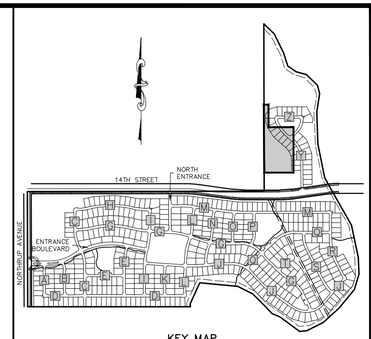
SHEET NO.
SS-34

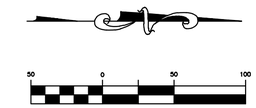
CAD FILE: 19001956-SAN P&P-RUNS 31-35.DWG



SAN RUN 34-2



KEY MAP
SCALE: 1" = 800'



(IN FEET)
1 inch = 50 ft. (Horz)
1 inch = 5 ft. (Vert)

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

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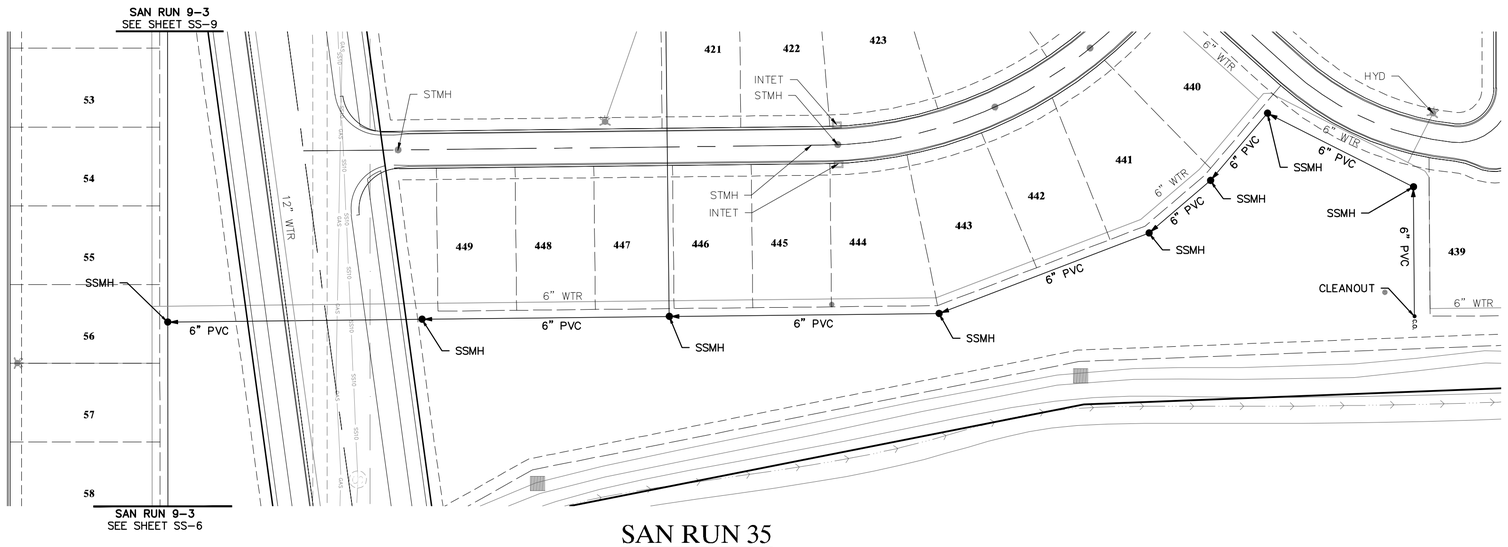
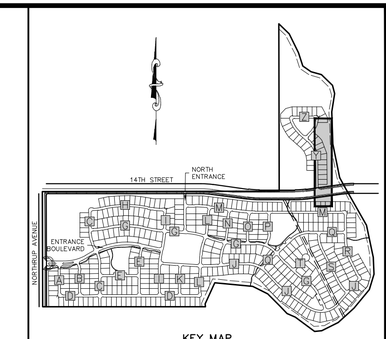
SHEET NO. SS-35

CAD FILE: 19001956-SAN P&P-RUNS 31-35.DWG



SAN RUN 35



KEY MAP
SCALE: 1" = 800'

50 0 50 100

(IN FEET)
1 inch = 50 ft. (Horz)
1 inch = 5 ft. (Vert)

BENCHMARK:

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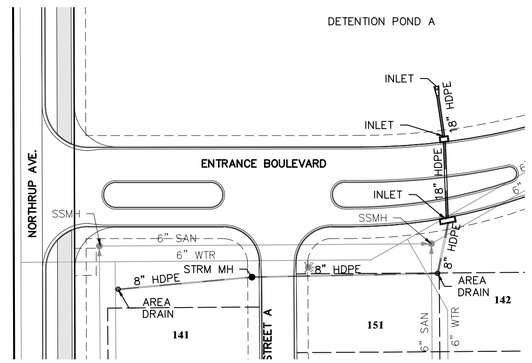
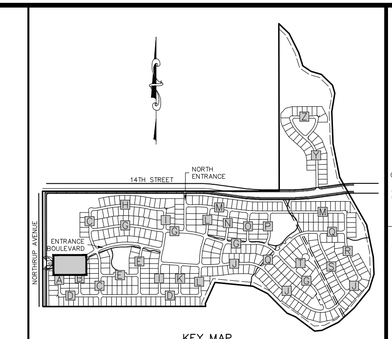
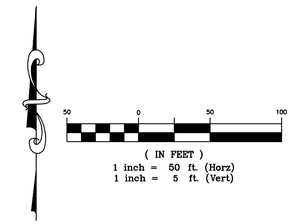




KEY MAP
SCALE: 1" = 800'



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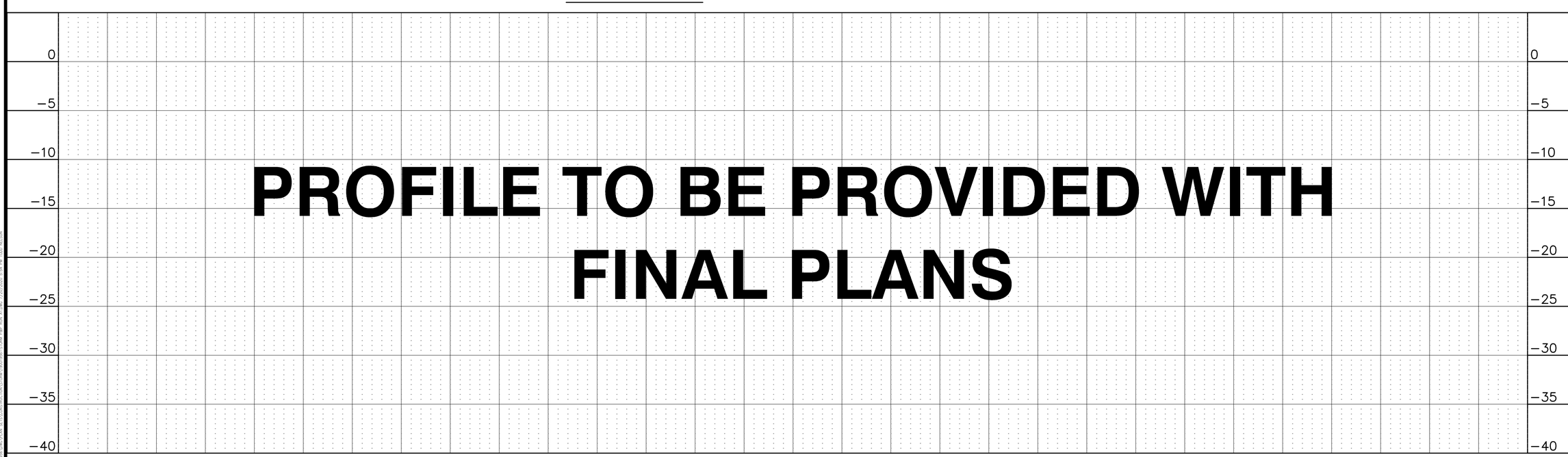

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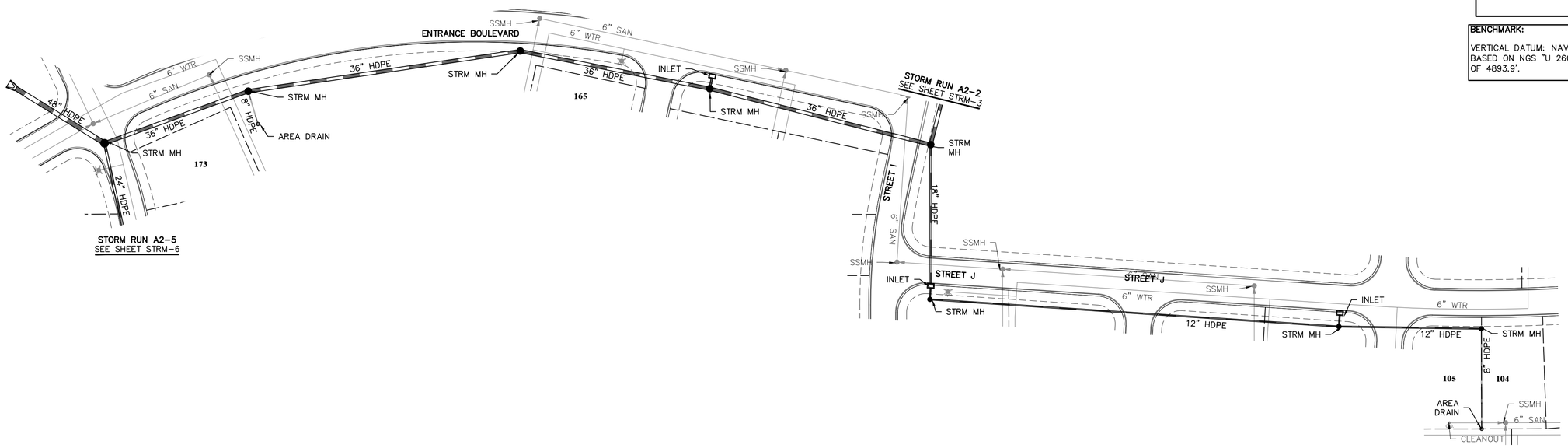
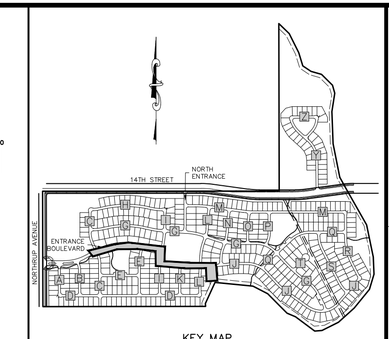
CAD FILE: 19001956-STORM P&P RUN A1.DWG



STORM RUN A2-1



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SCALE: 1" = 800'

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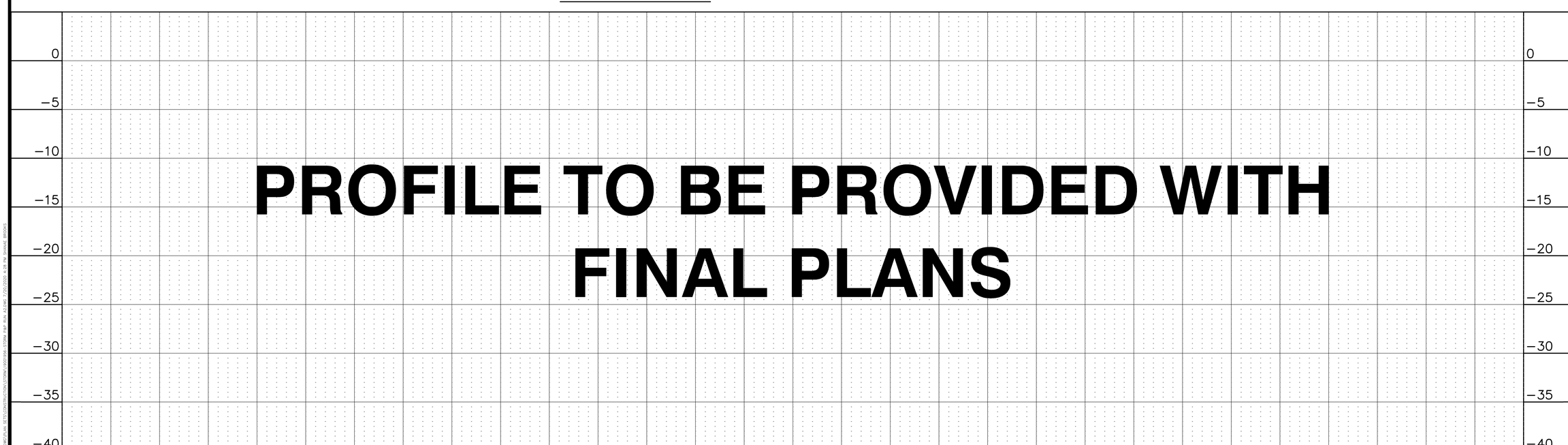

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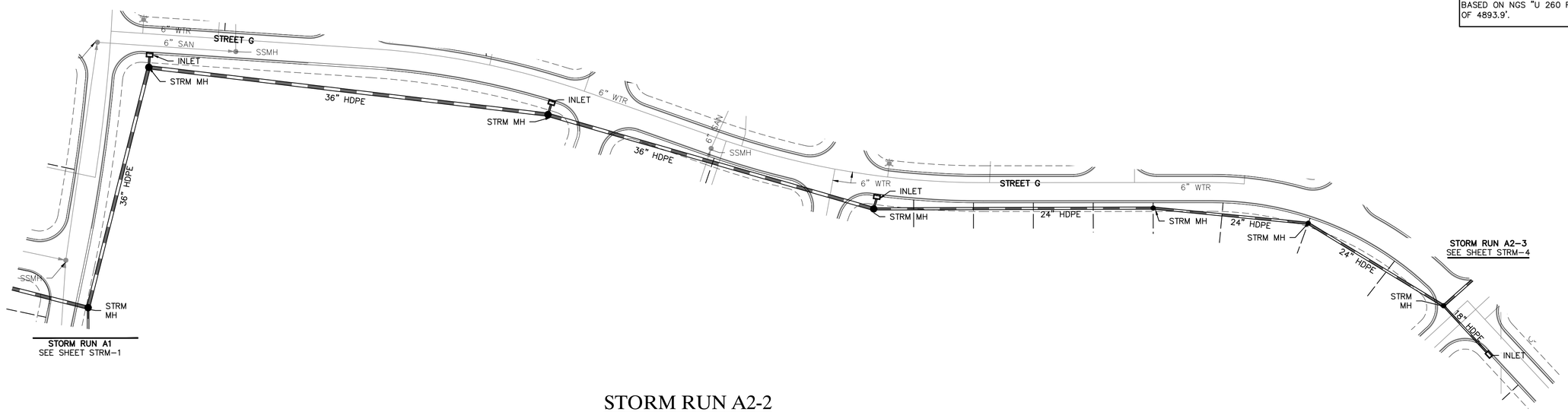
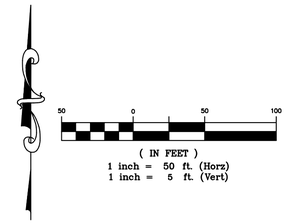
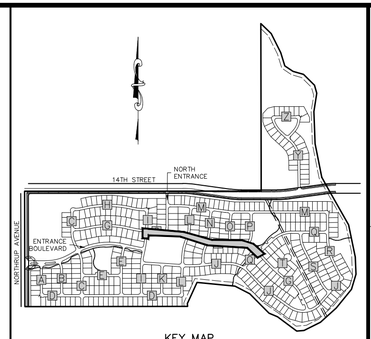


STORM RUN A2-2





KEY MAP
SCALE: 1" = 800'

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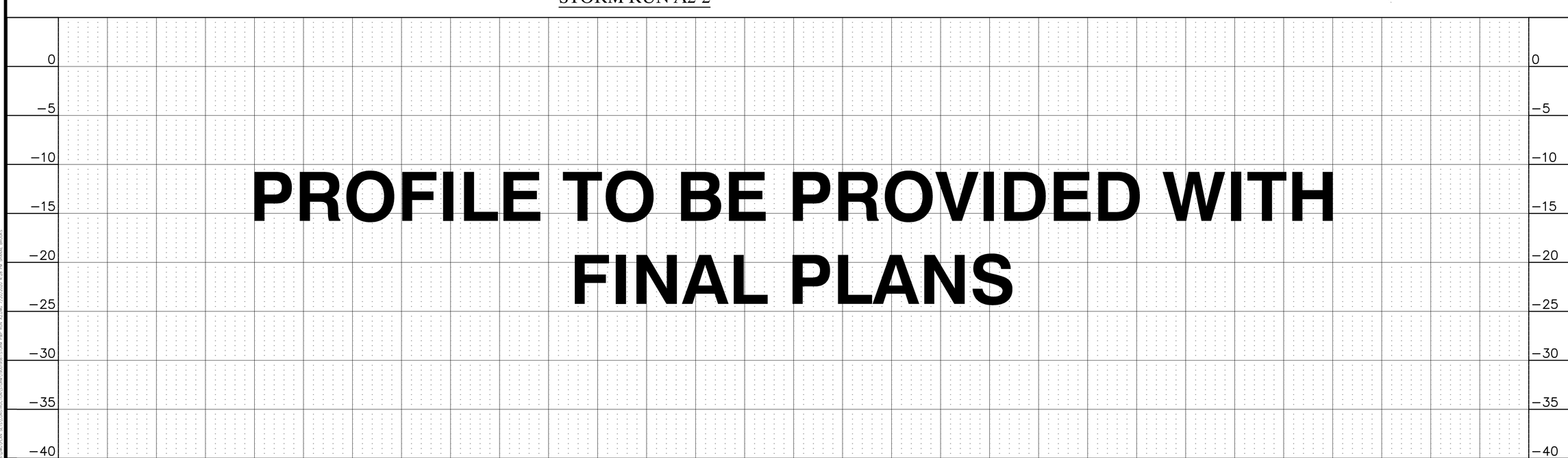

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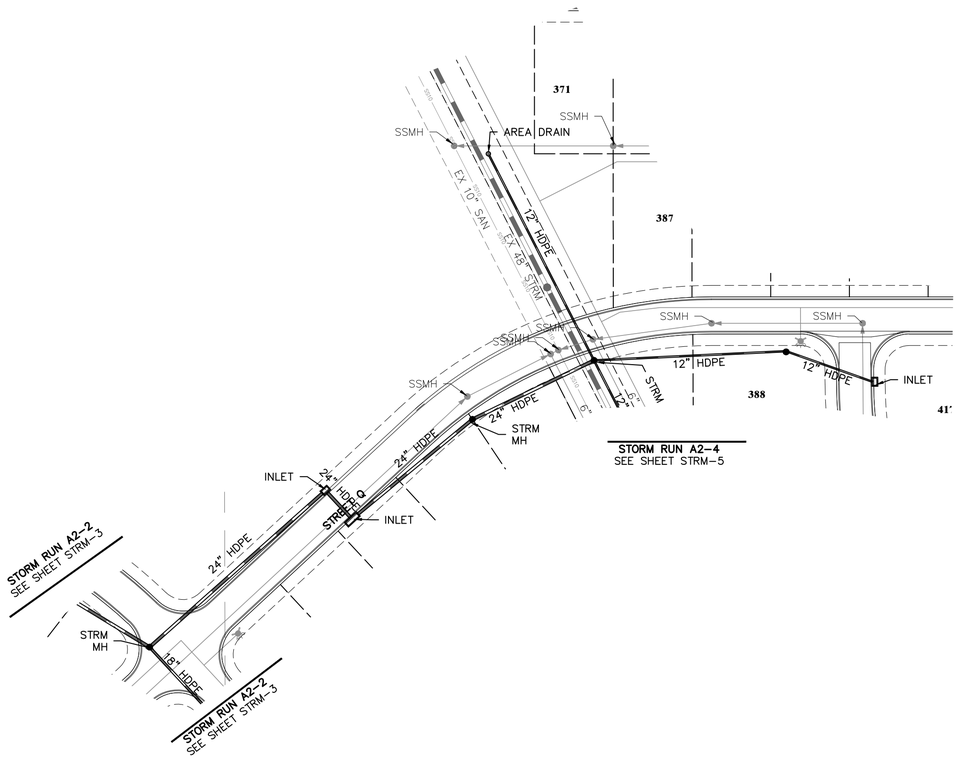
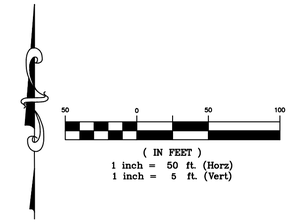
SHEET NO.
STRM-3

CAD FILE: 19001956-STORM P&P RUN A2.DWG



STORM RUN A2-3



(IN FEET)
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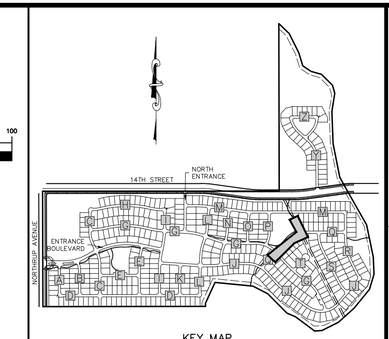

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SHEET NO.
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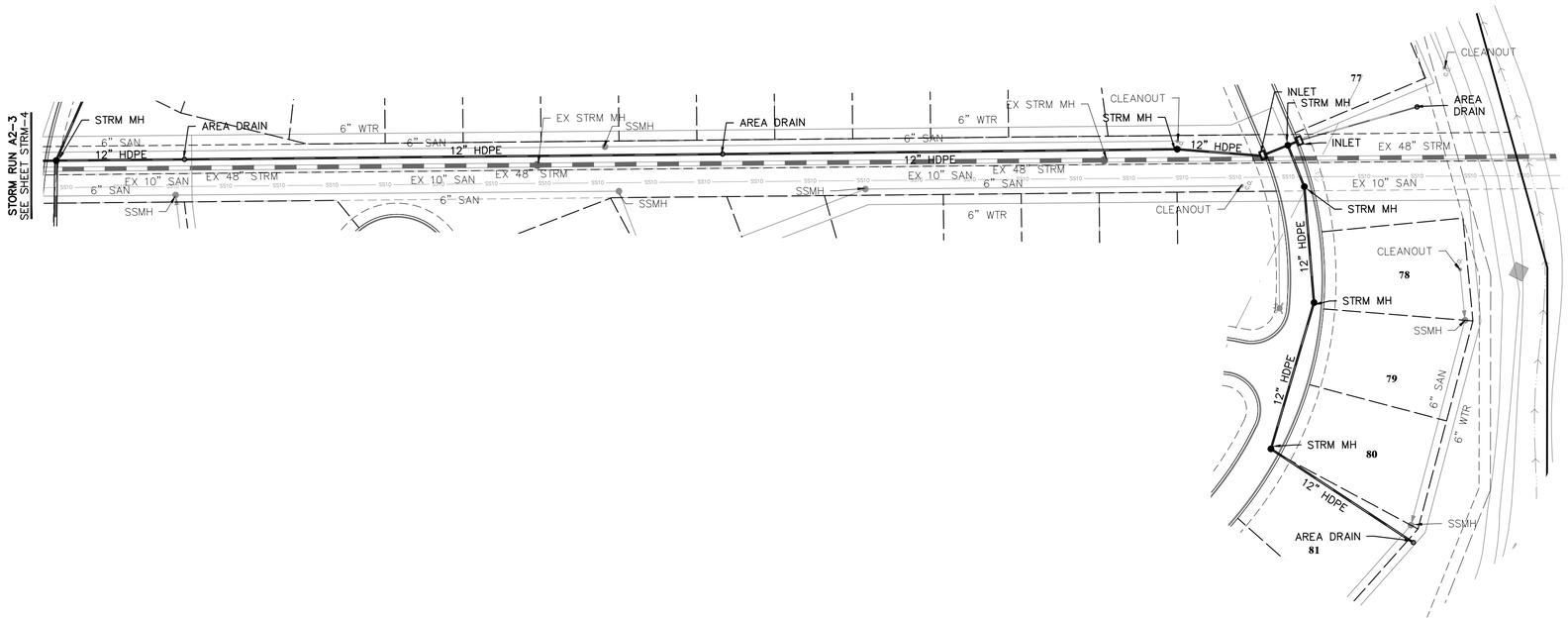
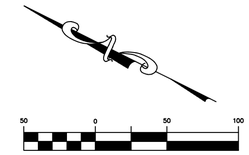
CAD FILE: 19001956-STORM P&P RUN A2.DWG





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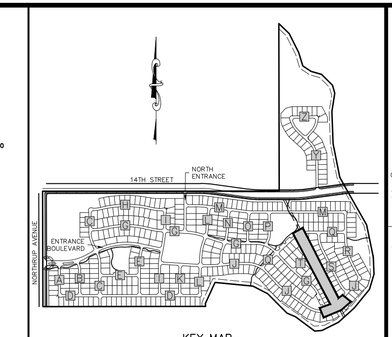

KEY MAP
SCALE: 1" = 800'

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

STORM RUN A2-4

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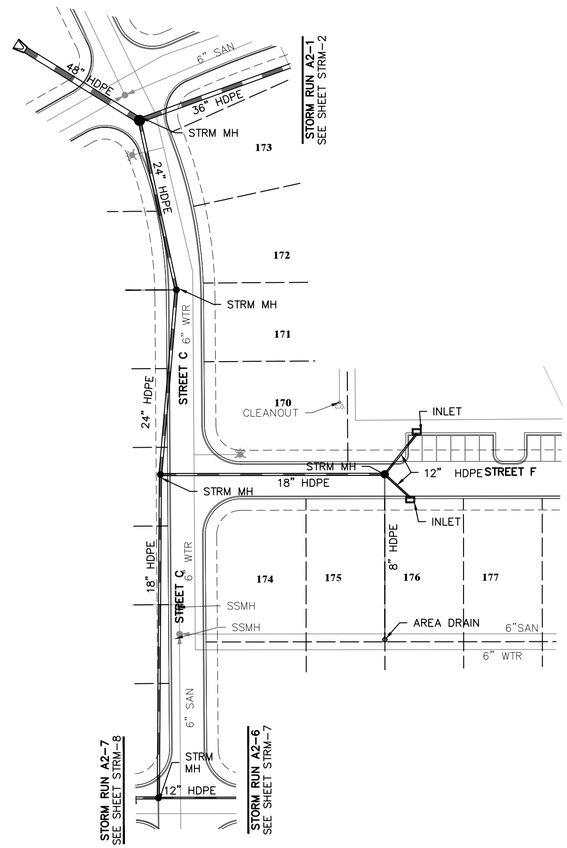
STORM PLAN & PROFILES
STORM RUN A2-4

CLIENT
SUN
DATE DATE

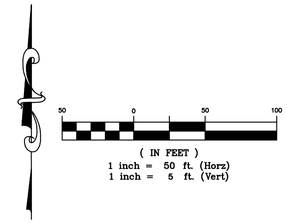
REVISIONS

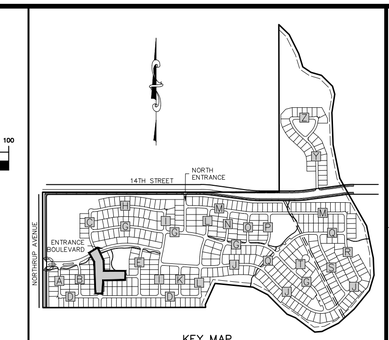
DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO.
STRM-5

CAD FILE: 19001956-STORM P&P RUN A2.DWG



STORM RUN A2-5





KEY MAP
SCALE: 1" = 800'

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

PROFILE TO BE PROVIDED WITH FINAL PLANS

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SUN COMMUNITIES, INC.

DATE DATE

REVISIONS

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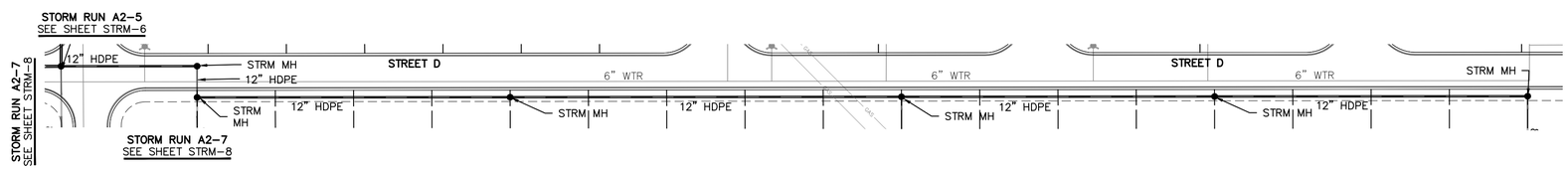
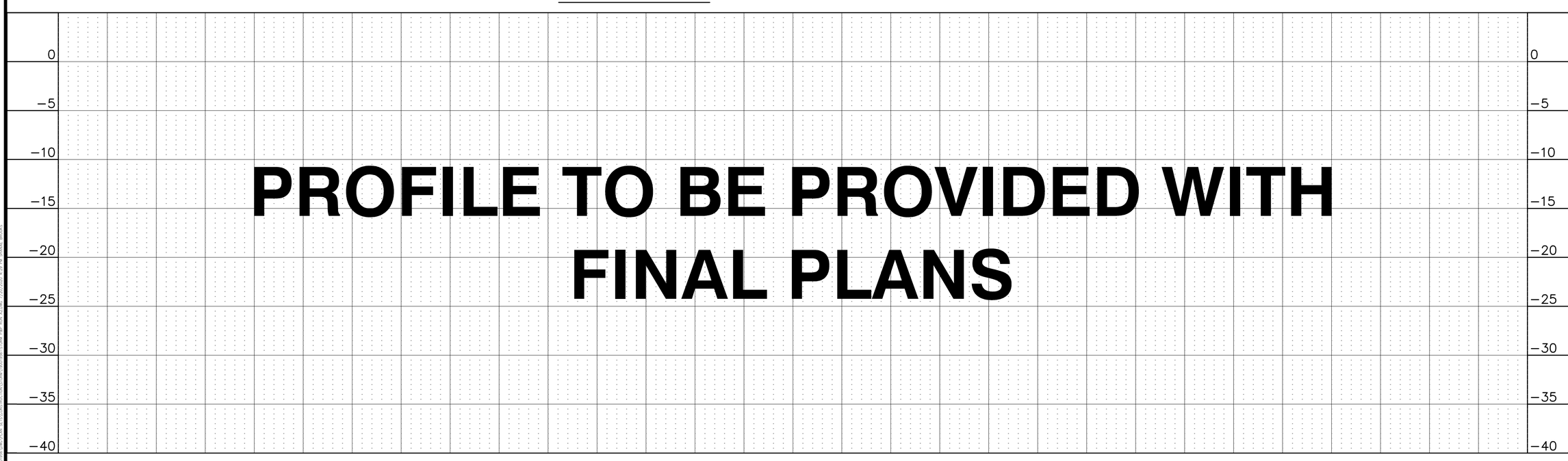
P.M. RW
JOB 19001956
SHEET NO.
STRM-6

CAD FILE: 19001956-STORM P&P RUN A2.DWG



STORM RUN A2-6



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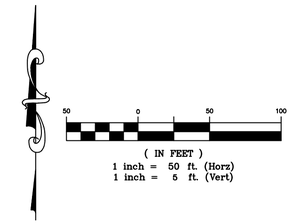

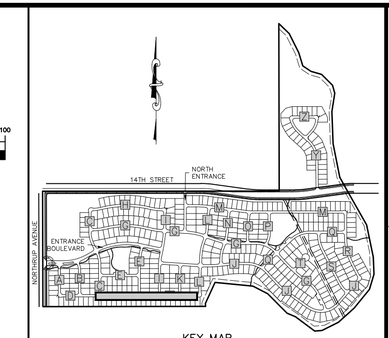

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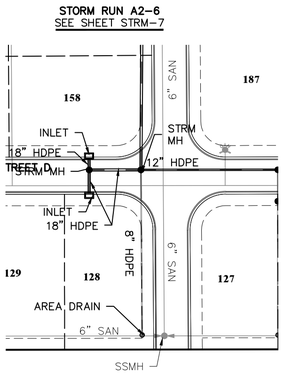
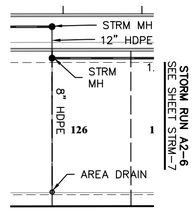
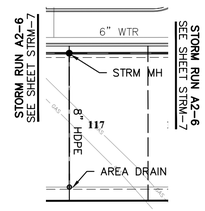
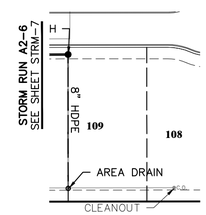
SHEET NO.
STRM-7

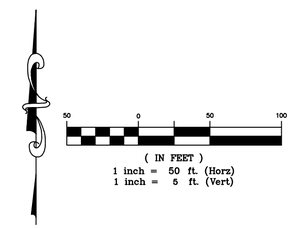
CAD FILE: 19001956-STORM P&P RUN A2.DWG



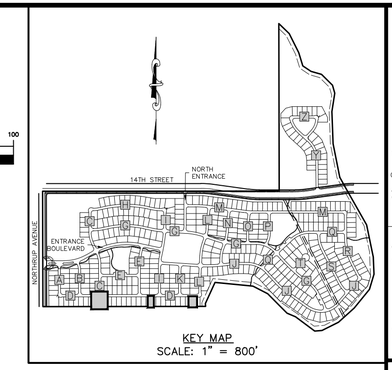








(IN FEET)
1 inch = 50 ft. (Horz)
1 inch = 5 ft. (Vert)

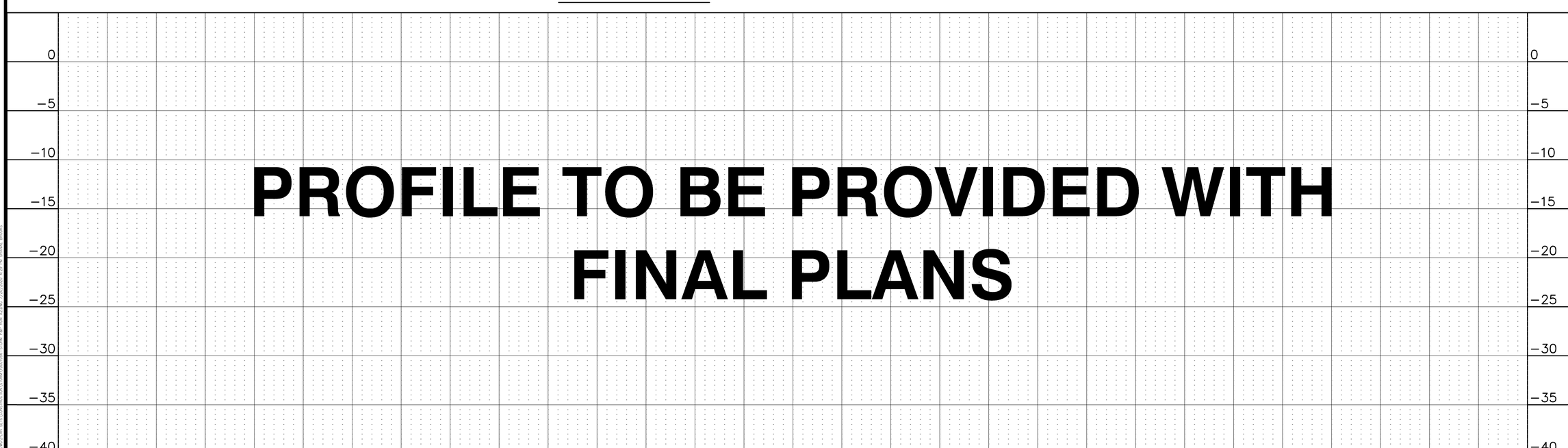


KEY MAP
SCALE: 1" = 800'

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

STORM RUN A2-7



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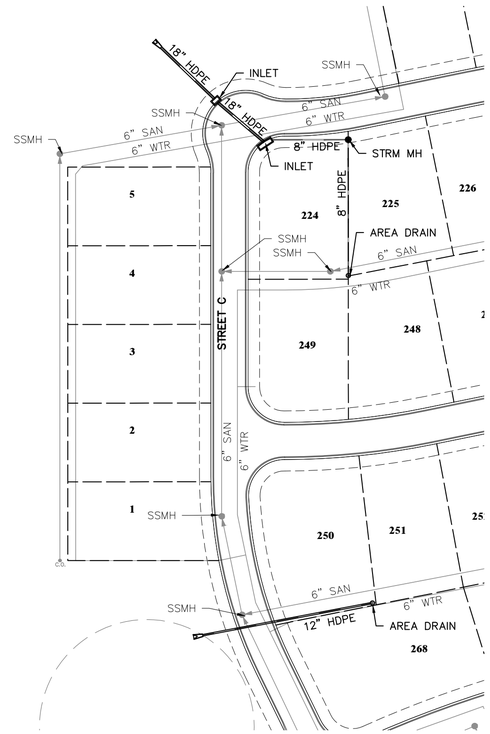
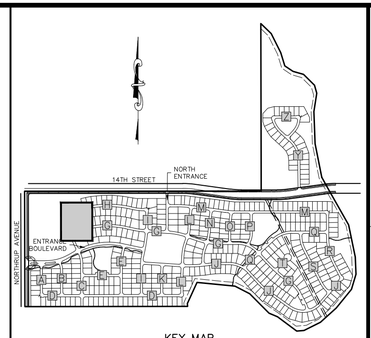
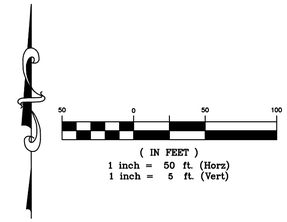
CAD FILE: 19001956-STORM P&P RUN A2.DWG



STORM RUNS A3 & A4



KEY MAP
SCALE: 1" = 800'



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STORM RUNS A3 & A4

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STRM-9

CAD FILE: 19001956-STORM P&P RUNS 3-4.DWG

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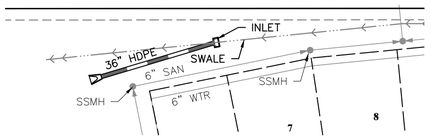

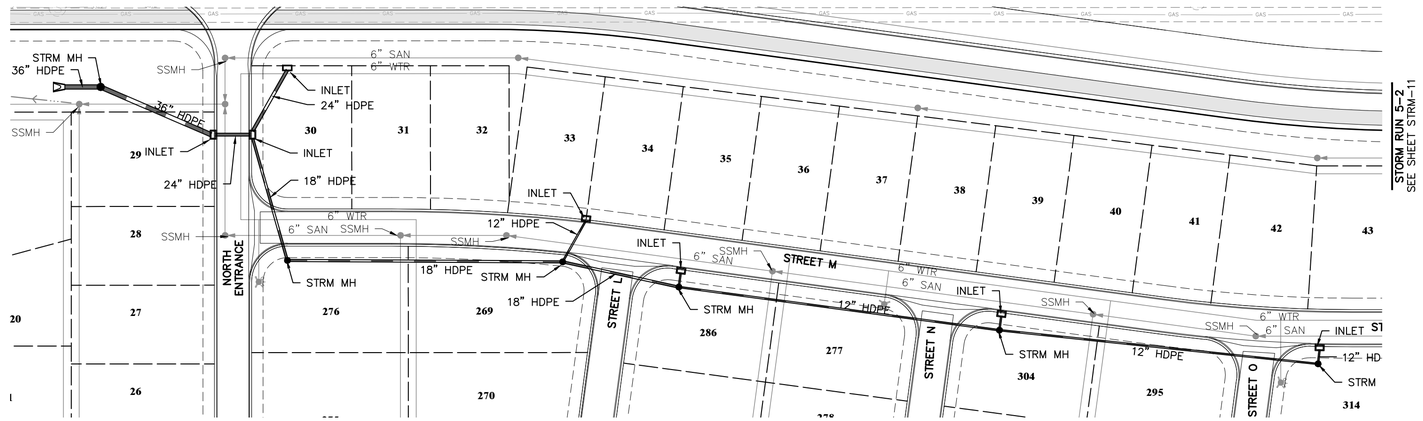

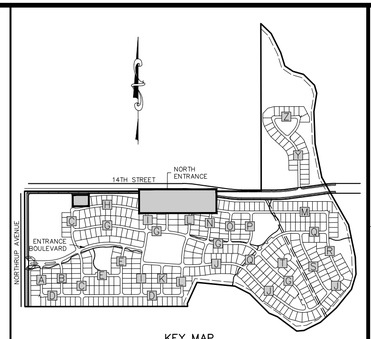

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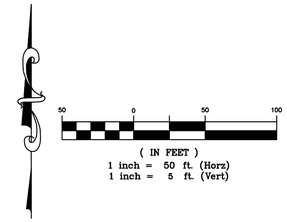

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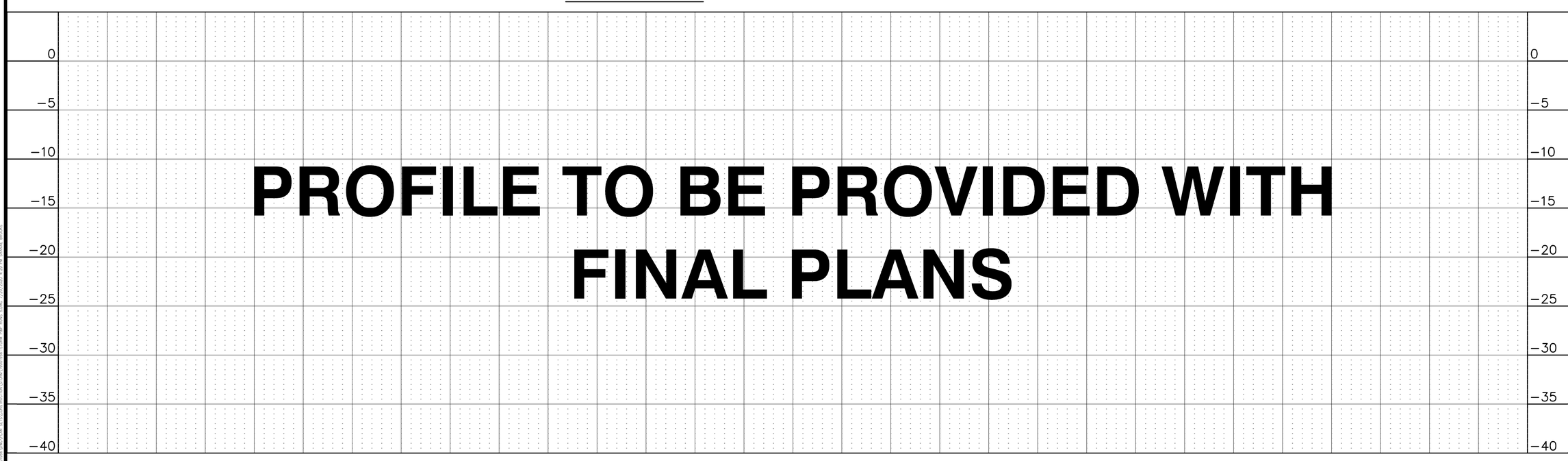
VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

STORM RUN 5-1



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STORM RUN 5-1

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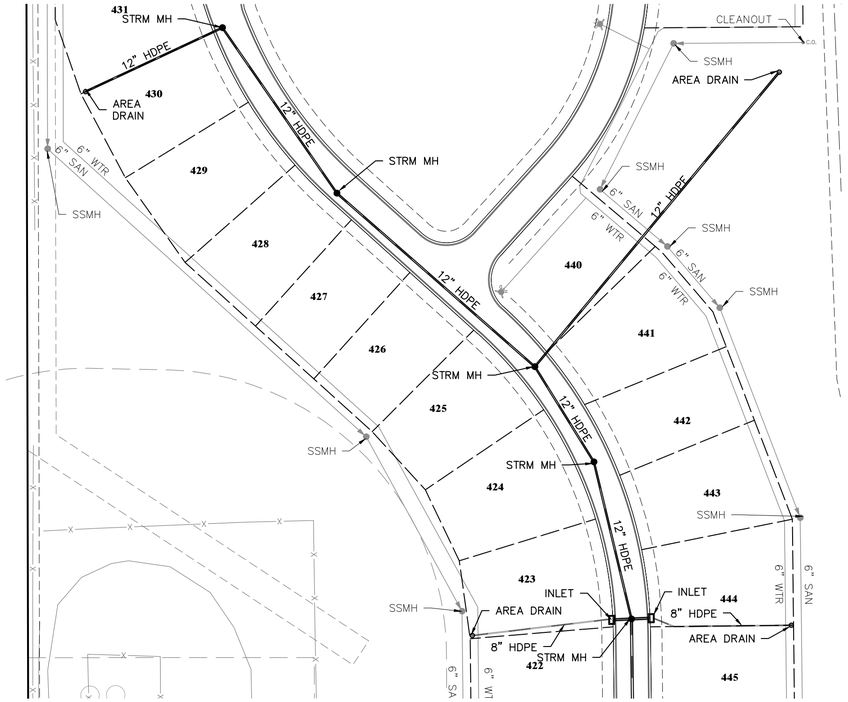
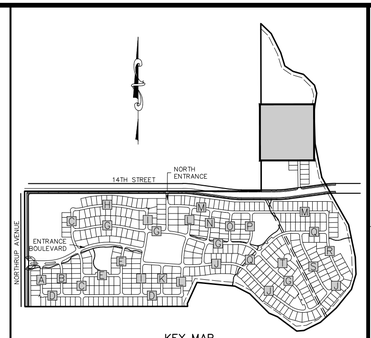
JOB 19001956
SHEET NO. STRM 10

CAD FILE: 19001956-STORM P&P RUNS 5.DWG



STORM RUN 5-3
SEE SHEET STRM 12



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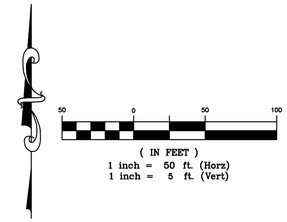

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STORM RUN 5-2

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JOB 19001956
SHEET NO.
STRM-11

CAD FILE: 19001956-STORM P&P RUNS 5.DWG

STORM RUN 5-2

0
−5
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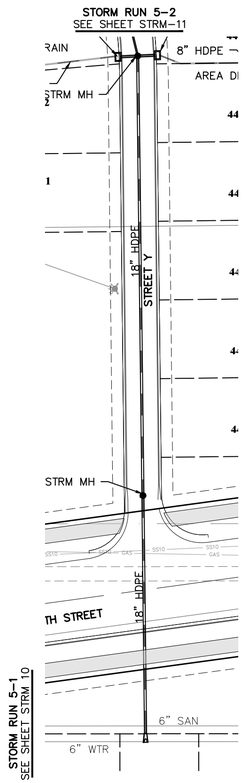
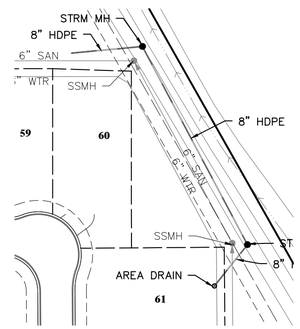
−20
−25
−30
−35
−40

PROFILE TO BE PROVIDED WITH FINAL PLANS





STORM RUN 5-3

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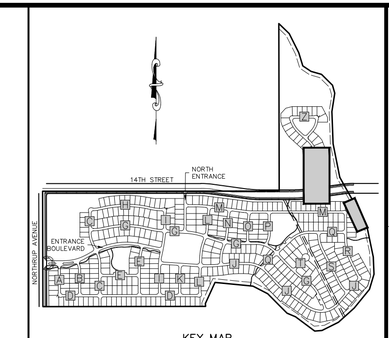

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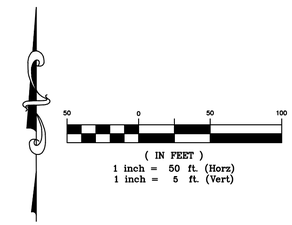

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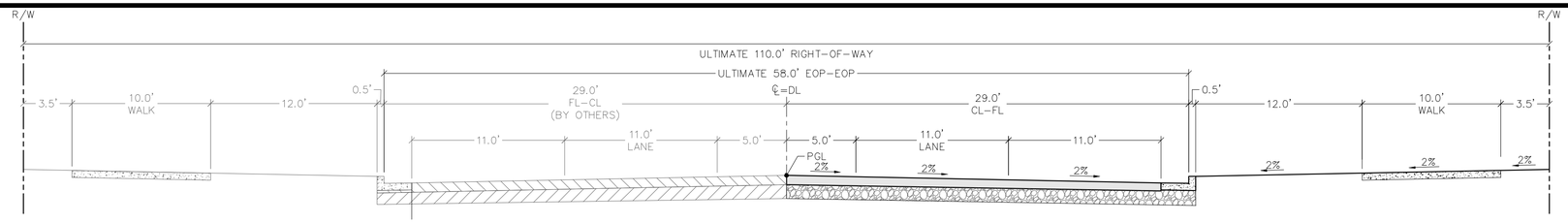
WILLOW BEND SUBDIVISION
FORT LUPTON, COLORADO
PRELIMINARY CONSTRUCTION PLANS
STORM PLAN & PROFILES
STORM RUN 5-3

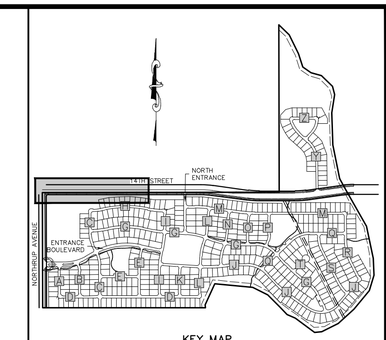
CLIENT
SUN COMMUNITIES
DATE DATE
REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. STRM 12

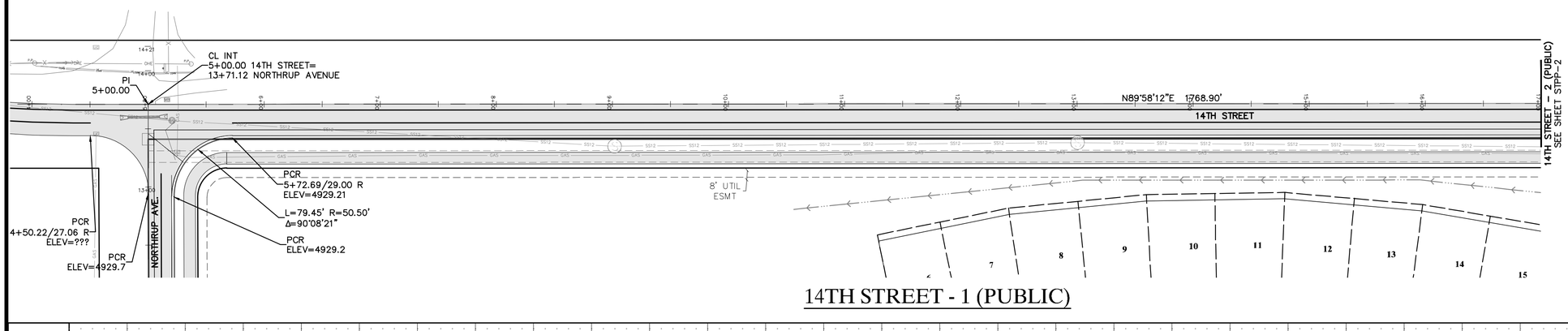
CAD FILE: 19001956-STORM P&P RUNS 5.DWG



PUBLIC ROADWAY SECTION (14TH STREET/CR 14½)
1:5 HOR.



KEY MAP
SCALE: 1" = 800'



14TH STREET - 1 (PUBLIC)

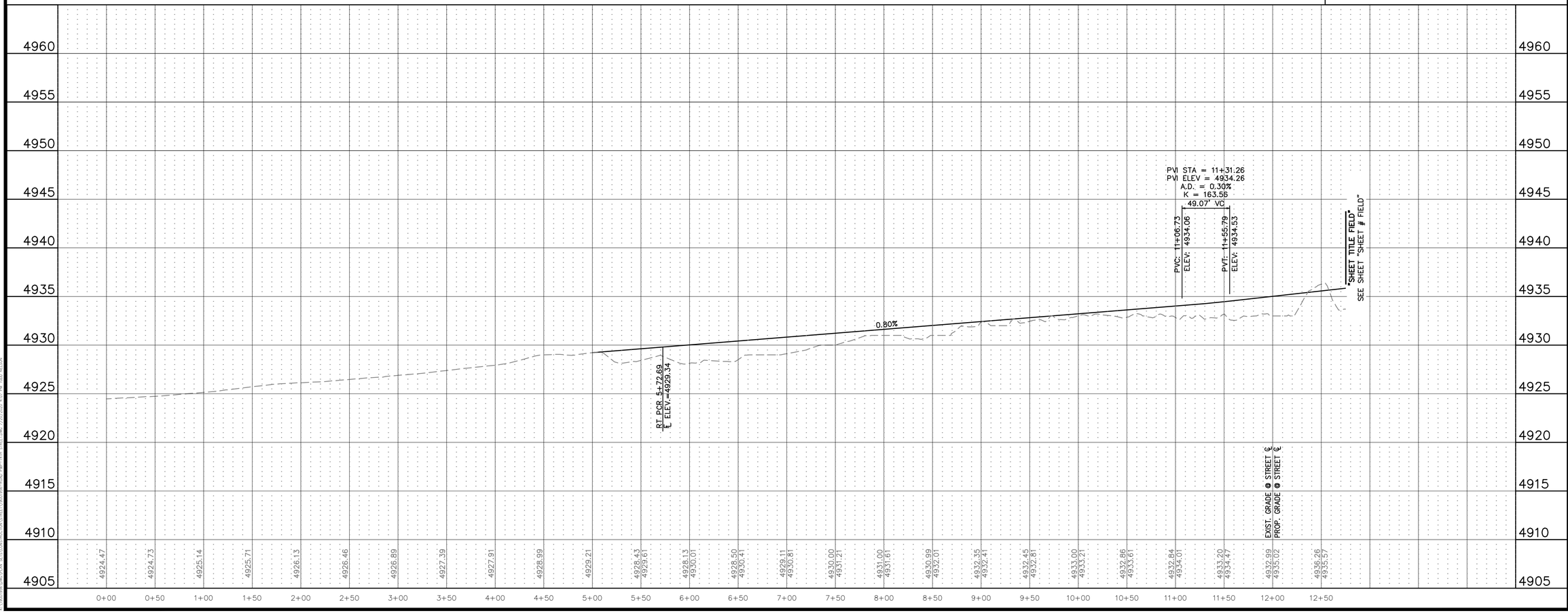
(IN FEET)
1 inch = 50 ft. (Horz)
1 inch = 5 ft. (Vert)

NOTE
ALL ELEVATIONS ARE FL (CURB FLOWLINE) UNLESS OTHERWISE NOTED.

PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.



811
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FORT LUPTON, COLORADO

PRELIMINARY CONSTRUCTION PLANS
STREET PLAN & PROFILES
14TH STREET – 1 (PUBLIC)

CLIENT

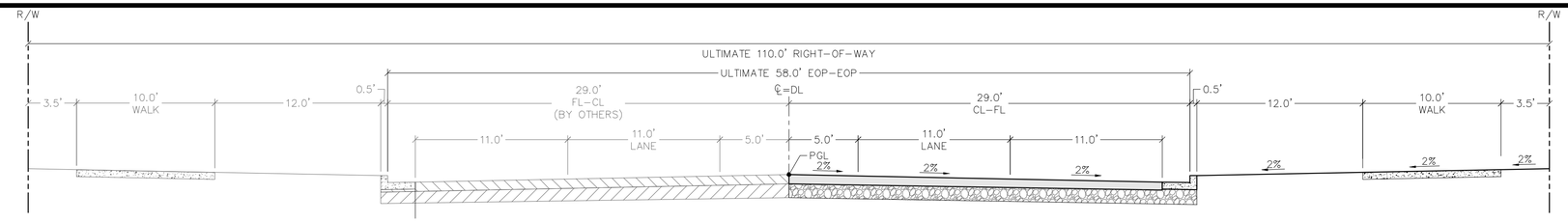
SUN COMMUNITIES, INC.

DATE DATE

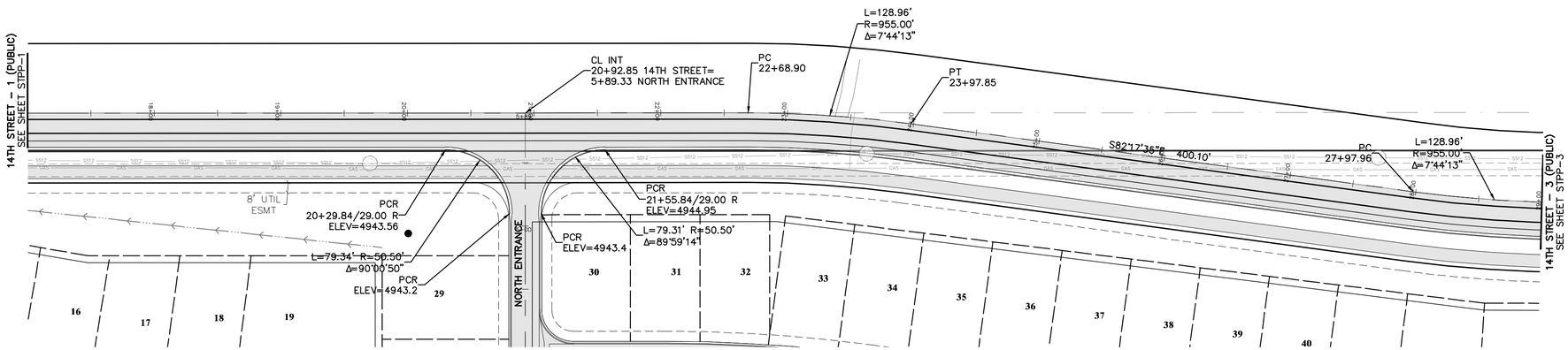
REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO.
STPP-1

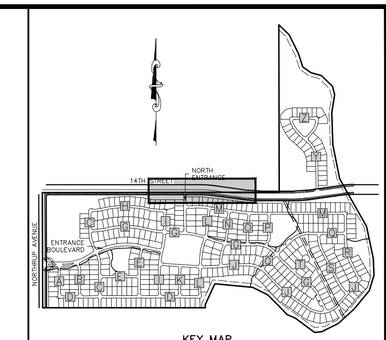
CAD FILE: 19001956-ROAD P&P-14th STREET.DWG



PUBLIC ROADWAY SECTION (14TH STREET/CR 14½)
1:5 HOR.



14TH STREET - 2 (PUBLIC)



KEY MAP
SCALE: 1" = 800'

(IN FEET)
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PROJECT NO.: LUP2019–0039 &
PLAN NO.: SPL2019–0005

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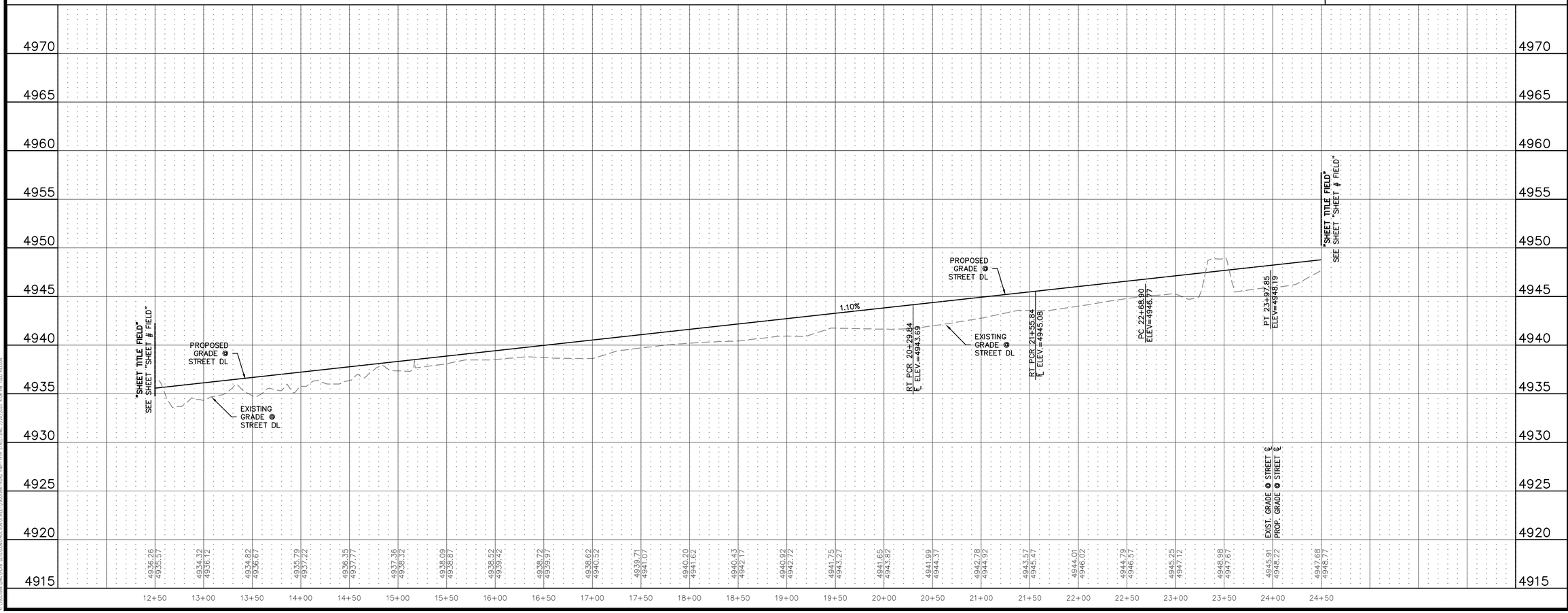

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PRELIMINARY CONSTRUCTION PLANS
STREET PLAN & PROFILES
14TH STREET – 2 (PUBLIC)

CLIENT

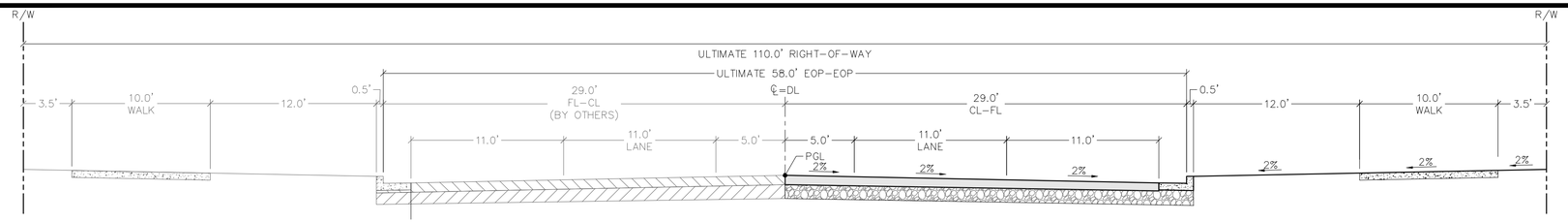
SUN COMMUNITIES, INC.

DATE DATE

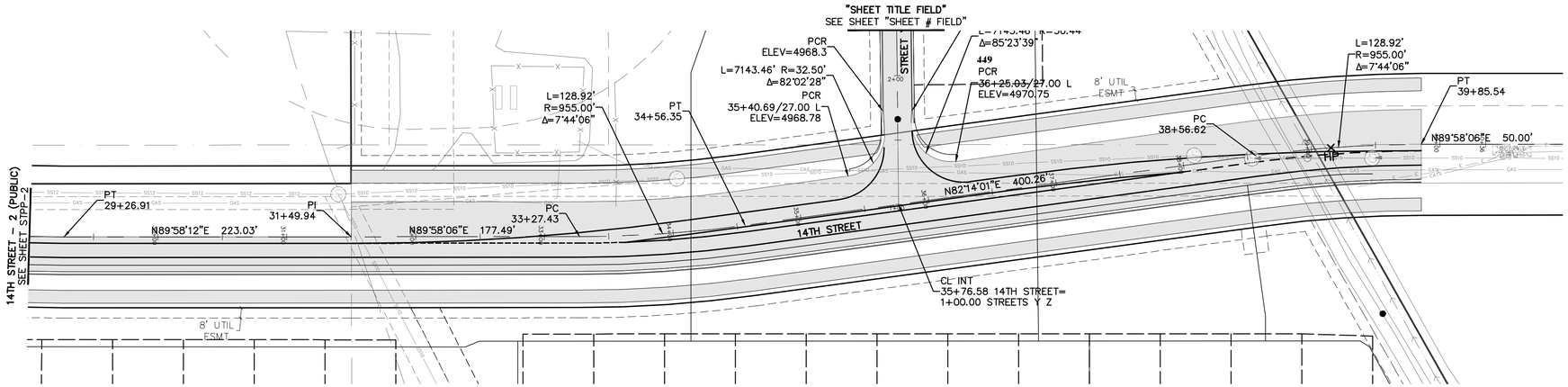
REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. STPP–2

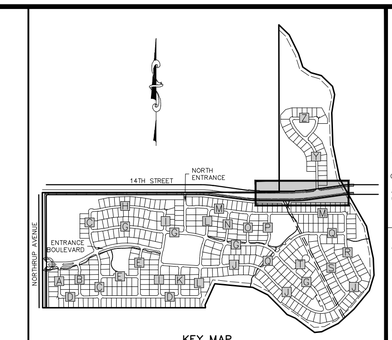
CAD FILE: 19001956–ROAD P&P–14th STREET.DWG



PUBLIC ROADWAY SECTION (14TH STREET/CR 14½)
1:5 HOR.



14TH STREET - 3 (PUBLIC)



KEY MAP
SCALE: 1" = 800'

50 0 50 100
(IN FEET)
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PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

BENCHMARK:

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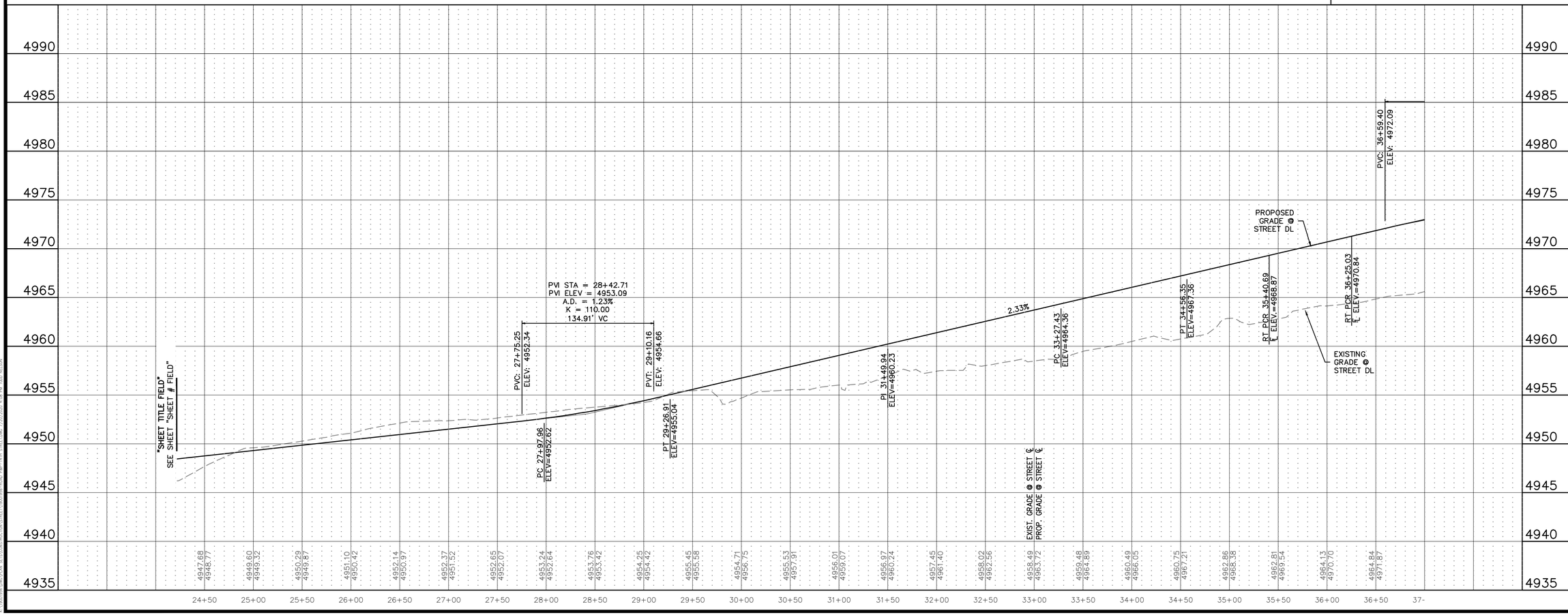

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PRELIMINARY CONSTRUCTION PLANS
STREET PLAN & PROFILES
14TH STREET – 3 (PUBLIC)

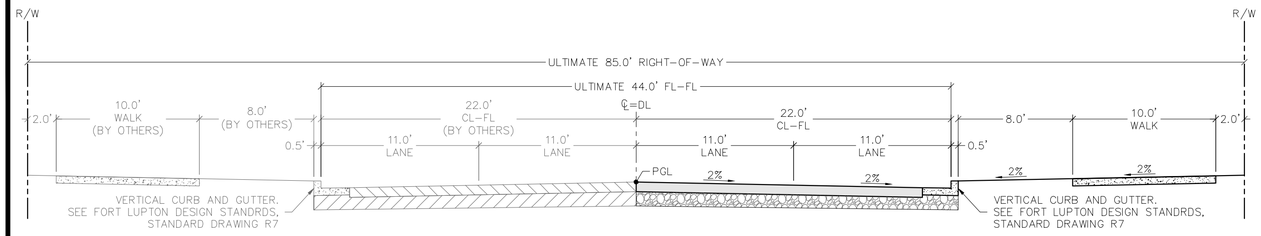
SUN COMMUNITIES, INC.

DATE DATE

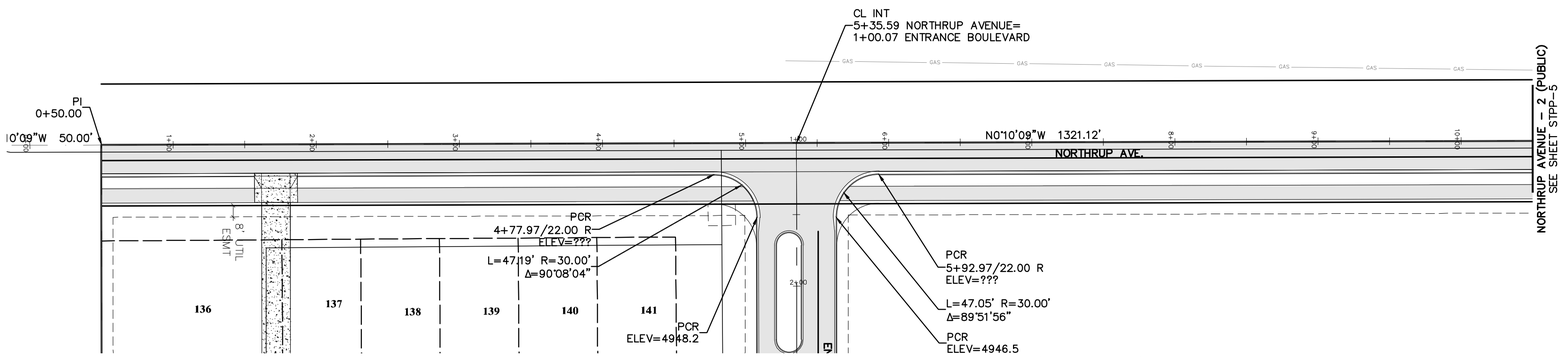
REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. STPP-3

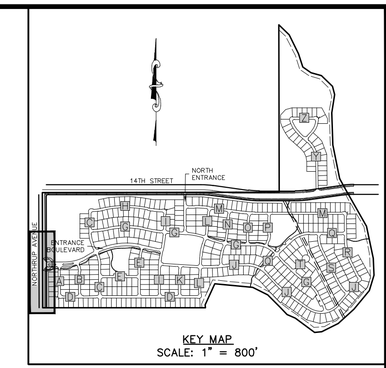
CAD FILE: 19001956-ROAD P&P-14th STREET.DWG



PUBLIC ROADWAY SECTION (NORTHRUP AVENUE)
1:5 HOR.



NORTHRUP AVENUE - 1 (PUBLIC)



KEY MAP
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PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

BENCHMARK:

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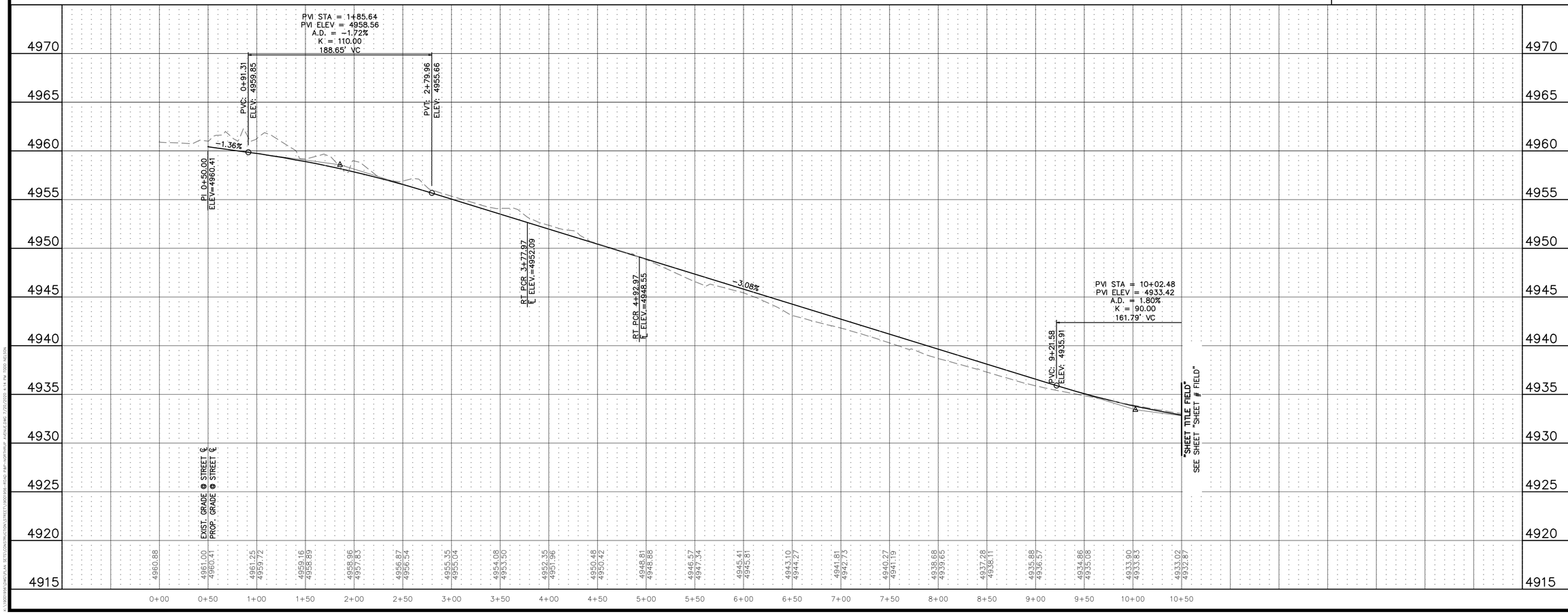

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PRELIMINARY CONSTRUCTION PLANS
STREET PLAN & PROFILES
NORTHRUP AVENUE – 1 (PUBLIC)

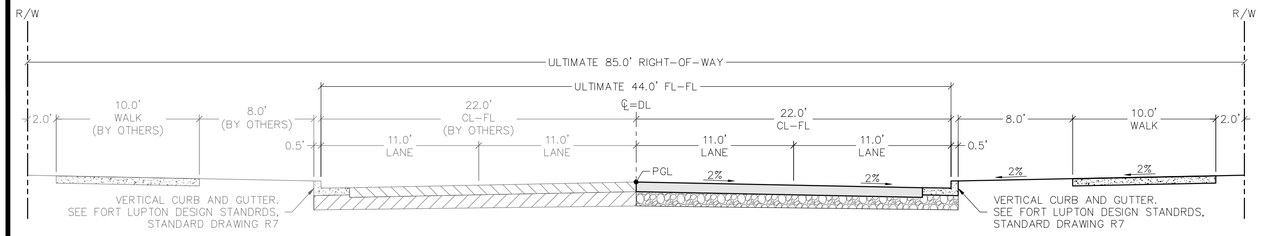
SUN COMMUNITIES, INC.

DATE DATE

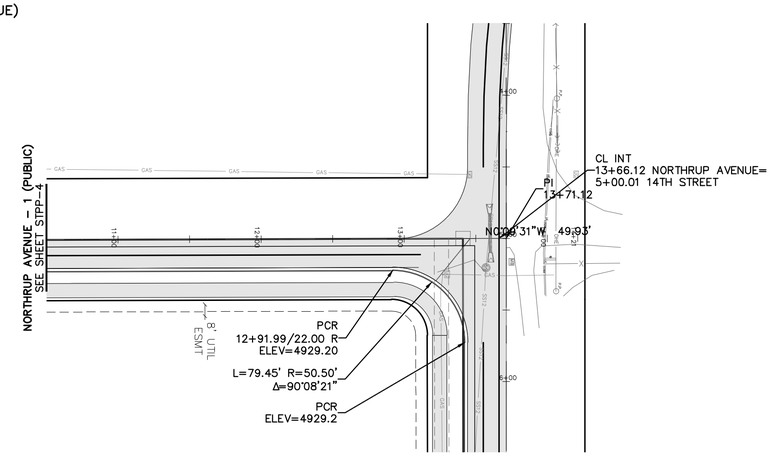
REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO.
STPP-4

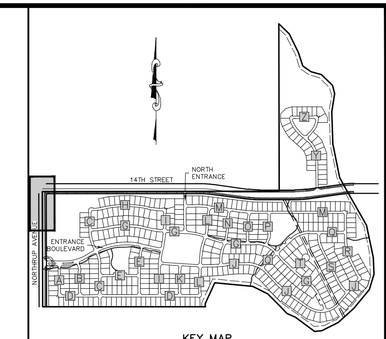
CAD FILE: 19001956-ROAD P&P-NORTHRUP AVENUE.DWG



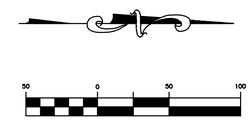
PUBLIC ROADWAY SECTION (NORTHRUP AVENUE)
1:5 HOR.



NORTHRUP AVENUE - 2 (PUBLIC)



KEY MAP
SCALE: 1" = 800'



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PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

BENCHMARK:

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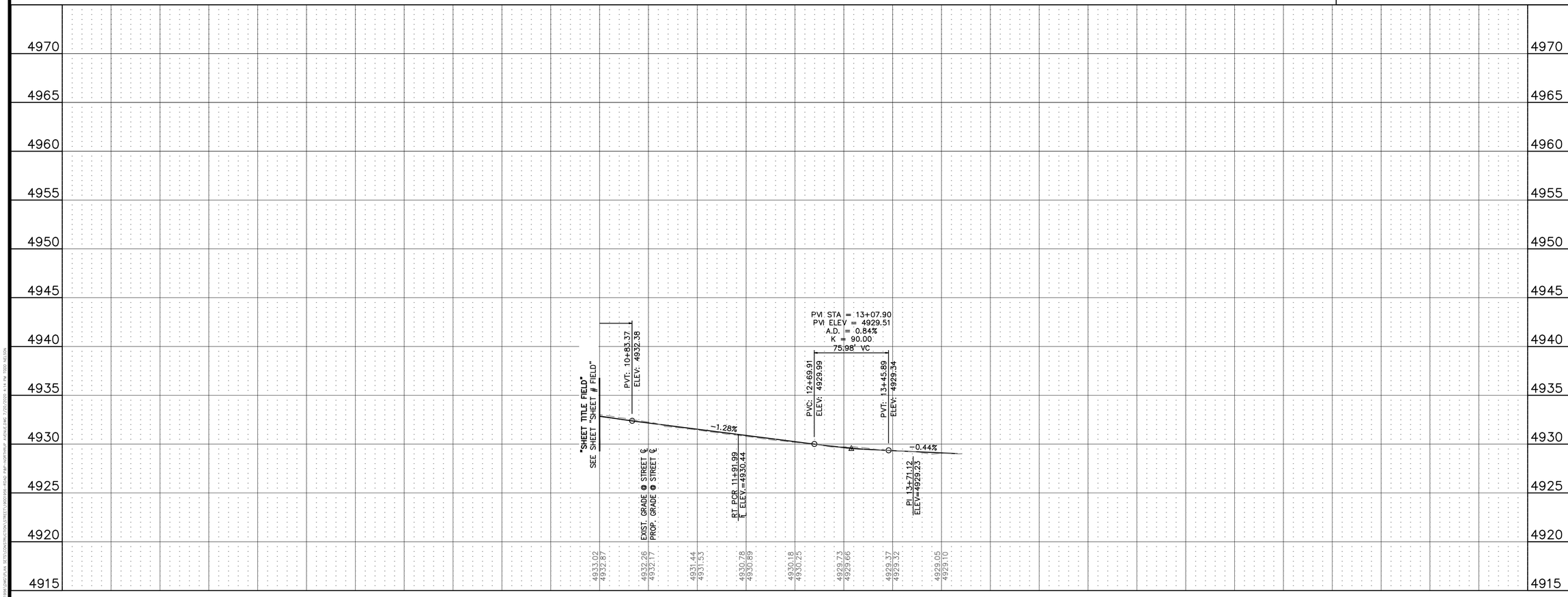

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PRELIMINARY CONSTRUCTION PLANS
STREET PLAN & PROFILES
NORTHRUP AVENUE – 2 (PUBLIC)

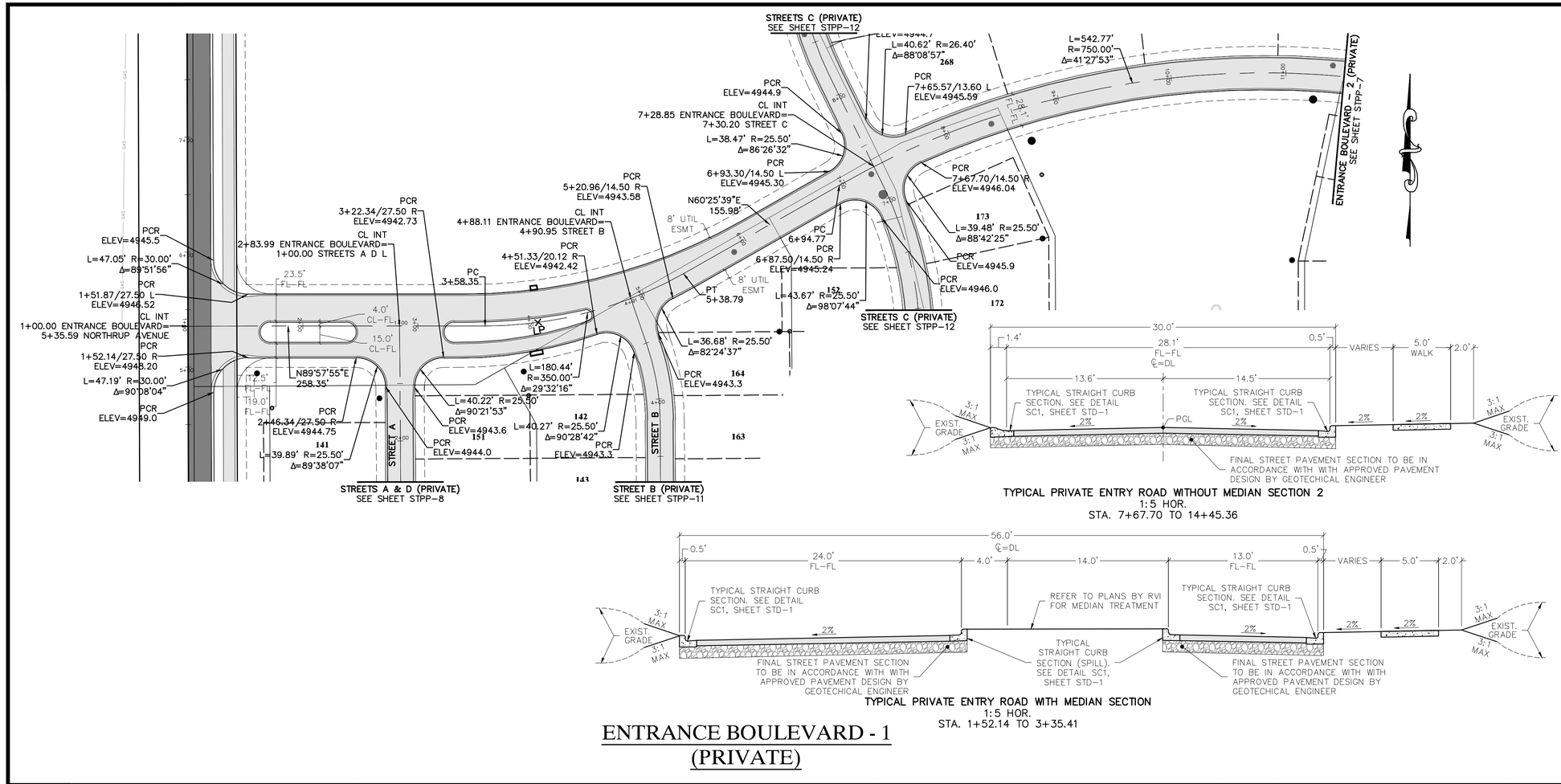
CLIENT
SUN COMMUNITIES, INC.

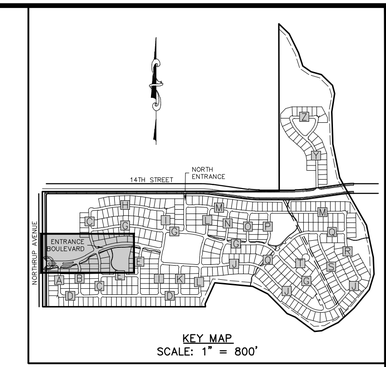
DATE DATE

REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO.
STPP-5

CAD FILE: 19001956-ROAD P&P-NORTHRUP AVENUE.DWG





KEY MAP
SCALE: 1" = 800'

TYPICAL PRIVATE ENTRY ROAD WITHOUT MEDIAN SECTION 2
1:5 HOR.
STA. 7+67.70 TO 14+45.36

TYPICAL PRIVATE ENTRY ROAD WITH MEDIAN SECTION
1:5 HOR.
STA. 1+52.14 TO 3+35.41

(IN FEET)
1 inch = 50 ft. (Horz)
1 inch = 5 ft. (Vert)

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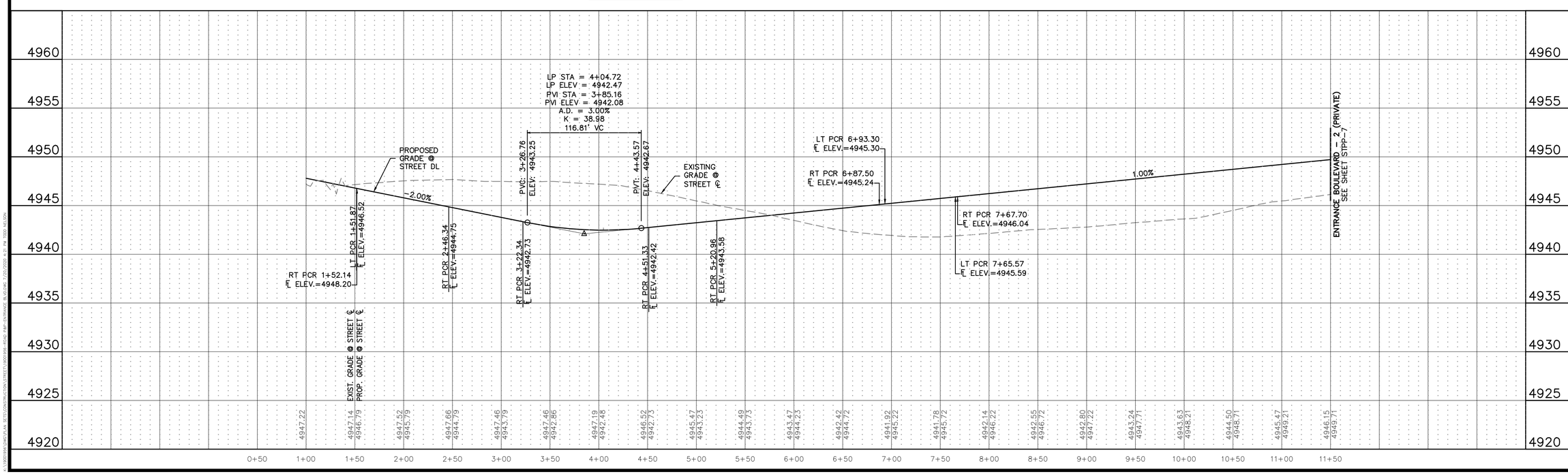
PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

BENCHMARK:
VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

ENTRANCE BOULEVARD - 1 (PRIVATE)



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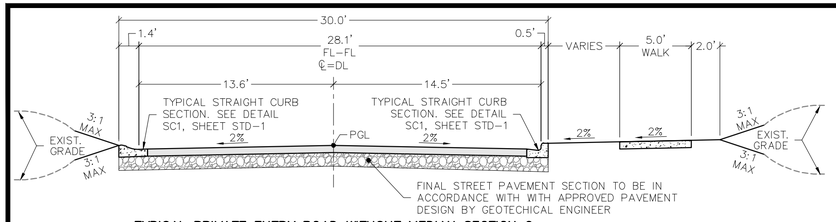
PRELIMINARY CONSTRUCTION PLANS
STREET PLAN & PROFILES
ENTRANCE BOULEVARD – 1 (PRIVATE)

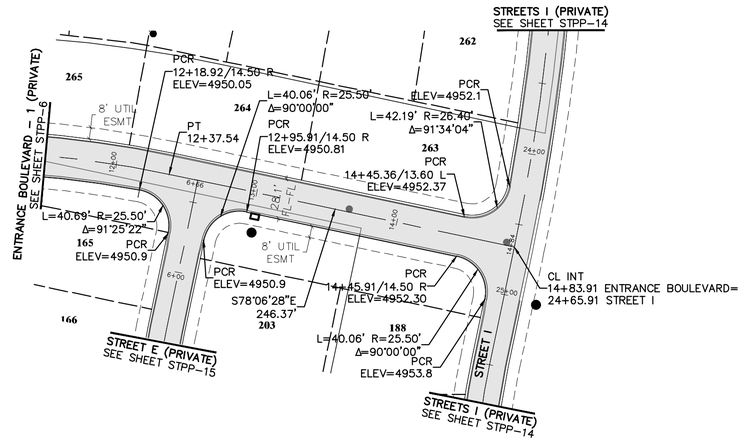
CLIENT
SUN COMMUNITIES, INC.
DATE
DATE
REVISIONS

DR. TN | CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO.
STPP-6

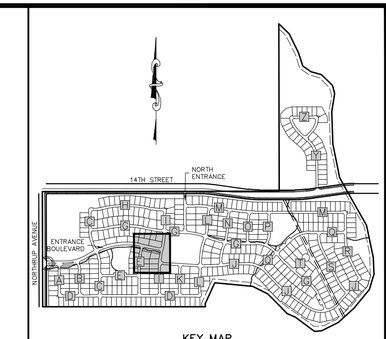
CAD FILE: 19001956-ROAD P&P-ENTRANCE BLVD.DWG



TYPICAL PRIVATE ENTRY ROAD WITHOUT MEDIAN SECTION 2
1:5 HOR.
STA. 7+67.70 TO 14+45.36



ENTRANCE BOULEVARD - 2 (PRIVATE)



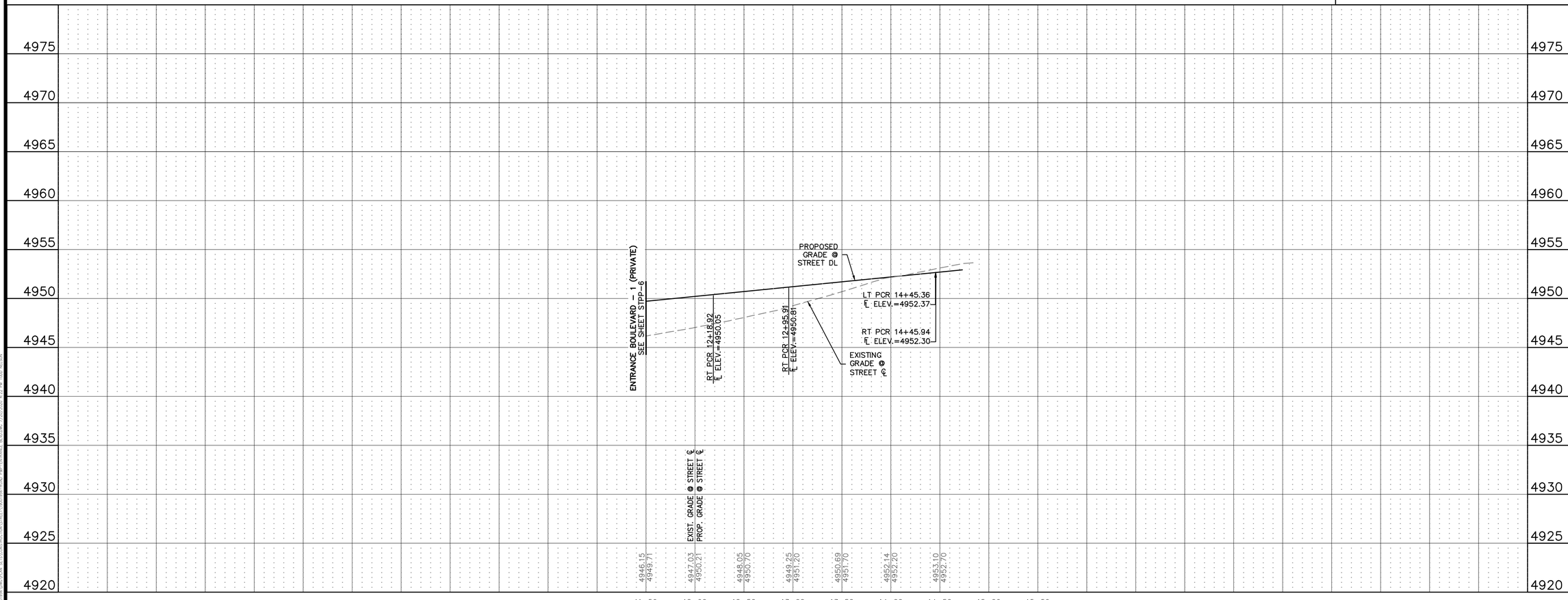
KEY MAP
SCALE: 1" = 800'

50 0 50 100
(IN FEET)
1 inch = 50 ft. (Horz)
1 inch = 5 ft. (Vert)

NOTE
ALL ELEVATIONS ARE FL (CURB FLOWLINE) UNLESS OTHERWISE NOTED.

PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

BENCHMARK:
VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.



811 Know what's below. Call before you dig.

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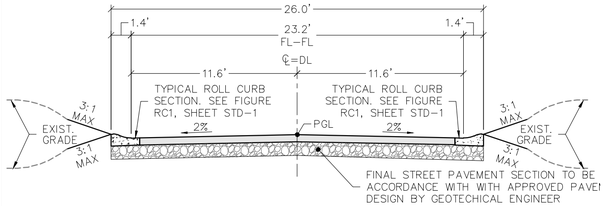
JOHN B. MCLAREN

SUN COMMUNITIES
WILLOW BEND SUBDIVISION
FORT LUPTON, COLORADO
PRELIMINARY CONSTRUCTION PLANS
STREET PLAN & PROFILES
ENTRANCE BOULEVARD – 2 (PRIVATE)

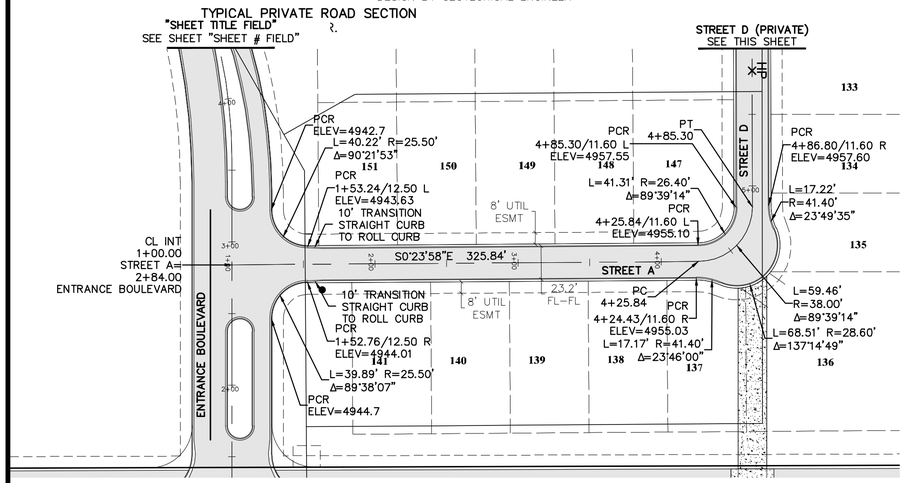
CLIENT
SUN COMMUNITIES, INC.
DATE DATE
REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. STPP-7

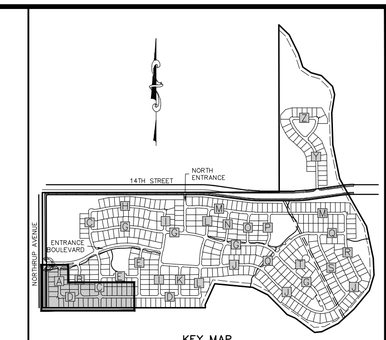
CAD FILE: 19001956-ROAD P&P-ENTRANCE BLVD.DWG



TYPICAL PRIVATE ROAD SECTION
"SHEET TITLE FIELD"
SEE SHEET "SHEET # FIELD"



STREETS A & D (PRIVATE)



KEY MAP
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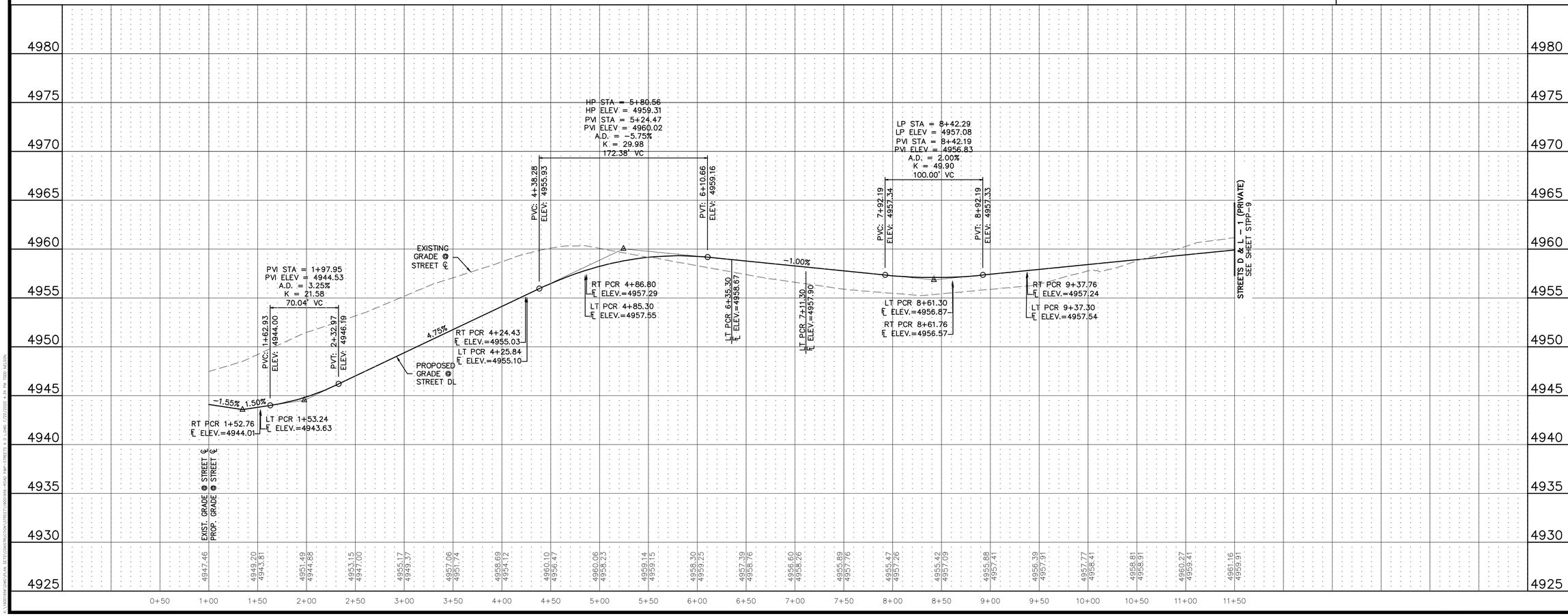
PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

BENCHMARK:
VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.



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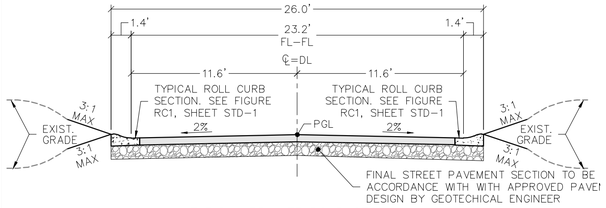
WILLOW BEND SUBDIVISION
FORT LUPTON, COLORADO
PRELIMINARY CONSTRUCTION PLANS
STREET PLAN & PROFILES
STREETS A & D (PRIVATE)

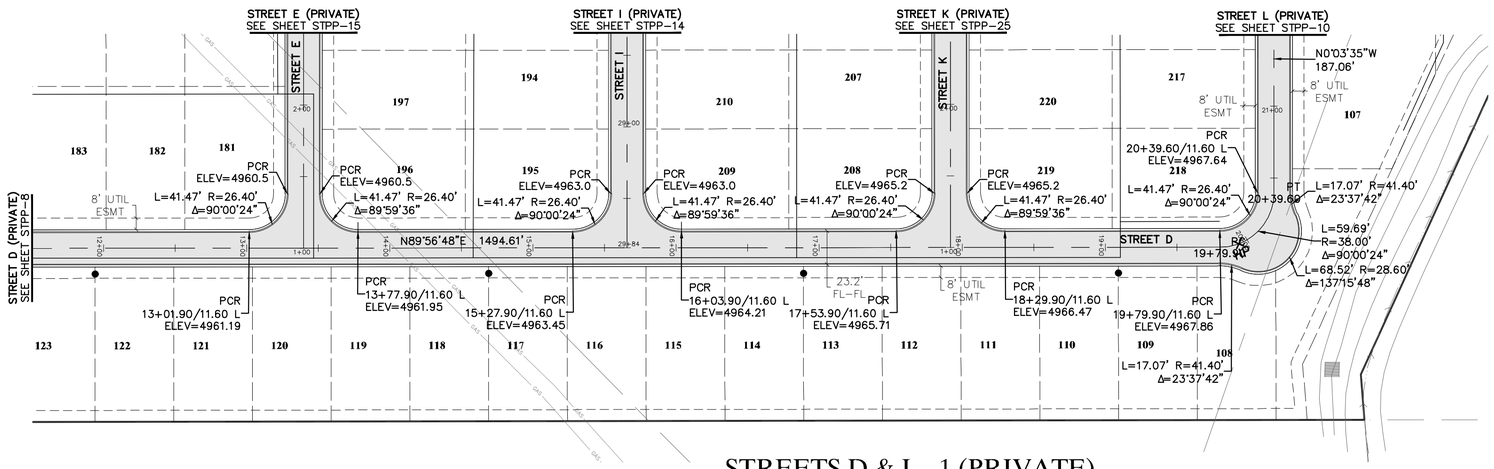
CLIENT
SUN COMMUNITIES, INC.
DATE
DATE
REVISIONS

DR. TN | CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO.
STPP-8

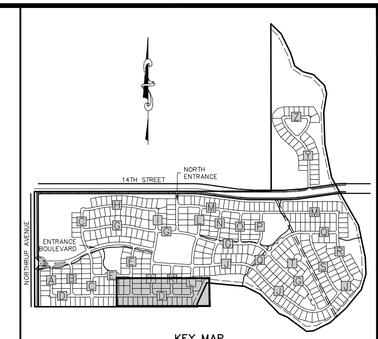
CAD FILE: 19001956-ROAD P&P-STREETS A D.DWG



TYPICAL PRIVATE ROAD SECTION
1:5 HOR.



STREETS D & L - 1 (PRIVATE)



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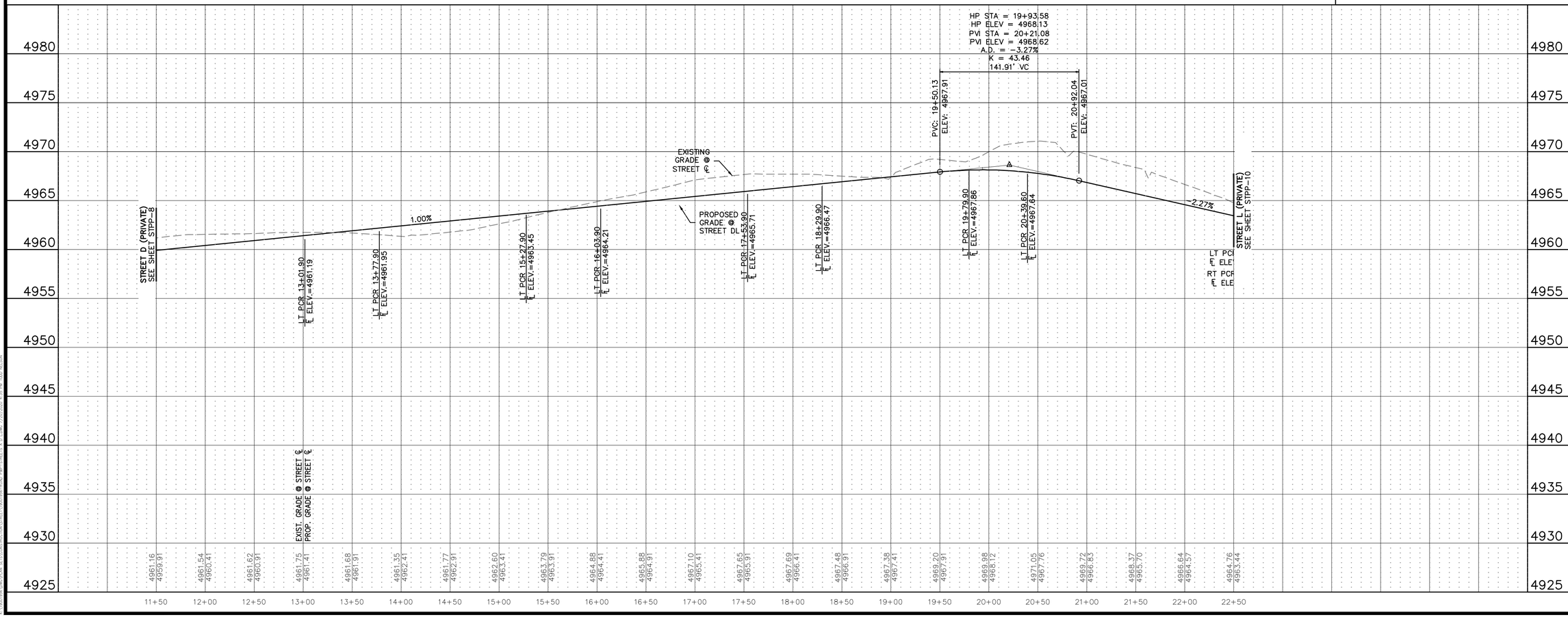
PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.



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WILLOW BEND SUBDIVISION
FORT LUPTON, COLORADO

PRELIMINARY CONSTRUCTION PLANS
STREET PLAN & PROFILES
STREETS D & L – 1 (PRIVATE)

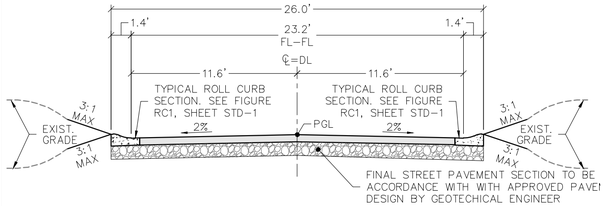
CLIENT
SUN COMMUNITIES, INC.

DATE DATE

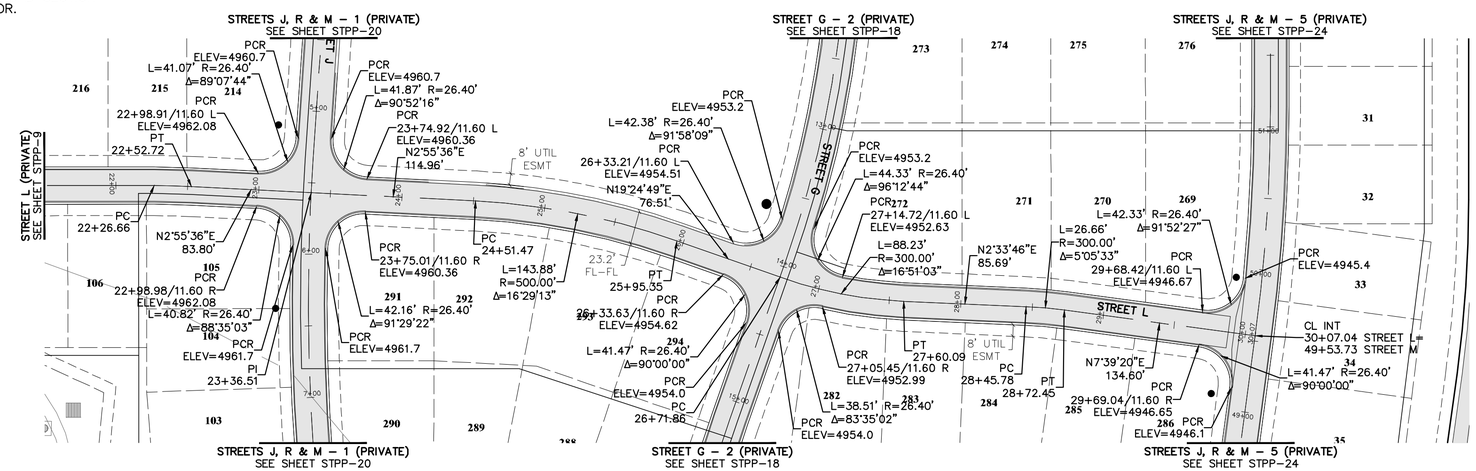
REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. STPP-9

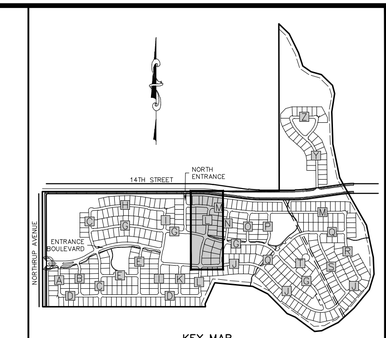
CAD FILE: 19001956-ROAD P&P-STREETS A D L.DWG



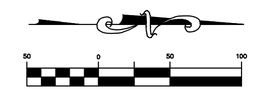
TYPICAL PRIVATE ROAD SECTION
1:5 HOR.



STREETS D & L - 2 (PRIVATE)



KEY MAP
SCALE: 1" = 800'



NOTE
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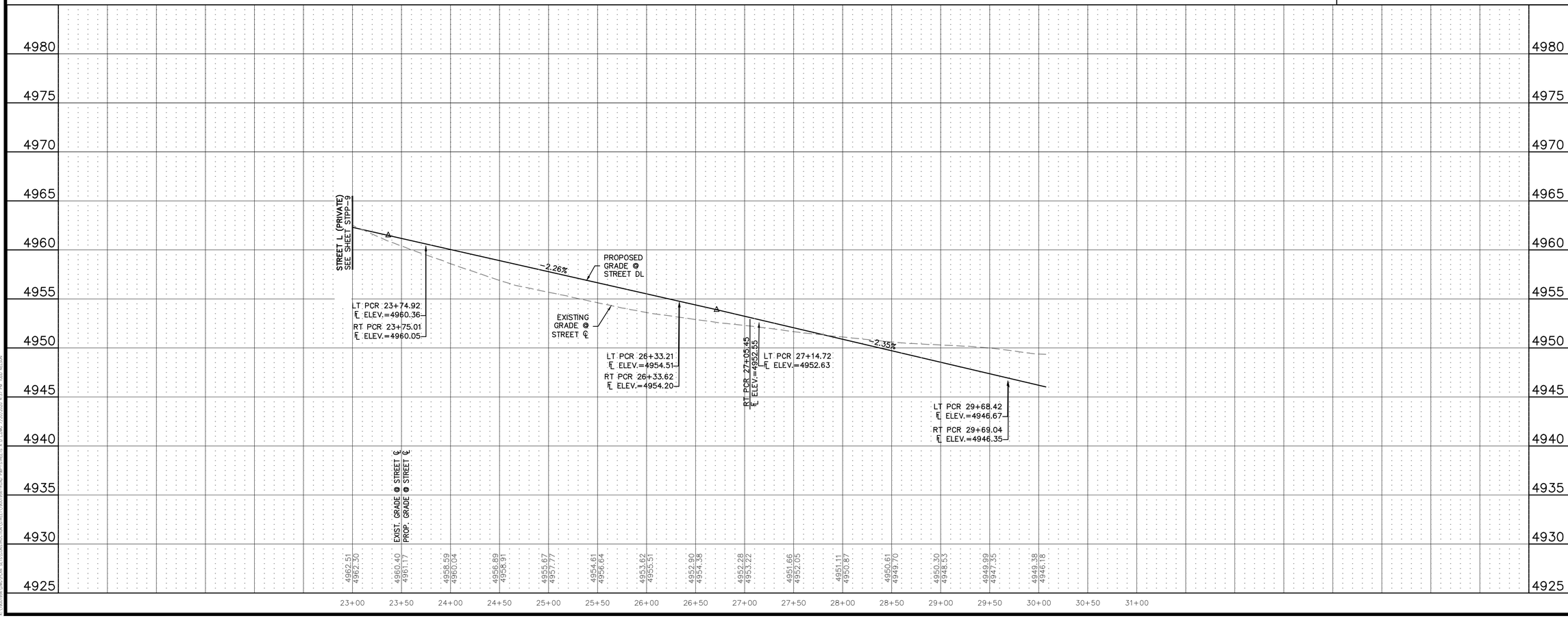
PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.



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SUN COMMUNITIES

WILLOW BEND SUBDIVISION
FORT LUPTON, COLORADO

PRELIMINARY CONSTRUCTION PLANS
STREET PLAN & PROFILES
STREETS D & L – 2 (PRIVATE)

CLIENT

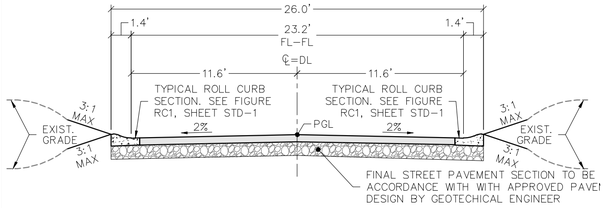
SUN COMMUNITIES, INC.

DATE DATE

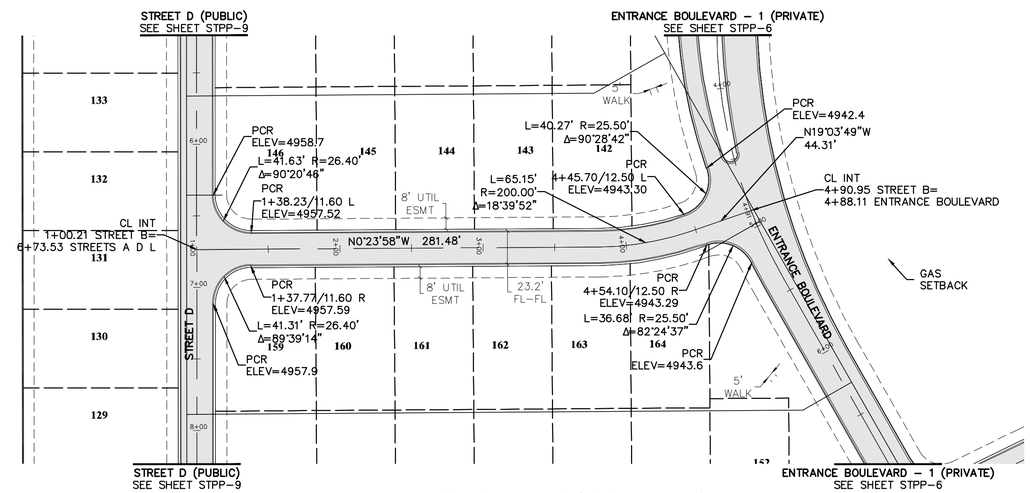
REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. STPP-10

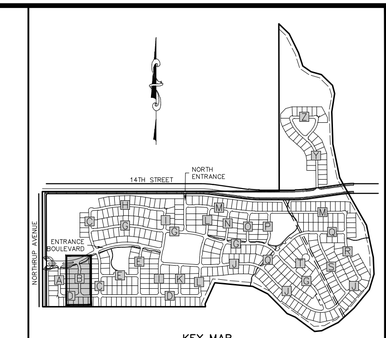
CAD FILE: 19001956-ROAD P&P-STREETS A D L.DWG



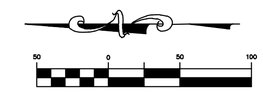
TYPICAL PRIVATE ROAD SECTION
1:5 HOR.



STREET B (PRIVATE)



KEY MAP
SCALE: 1" = 800'



(IN FEET)
1 inch = 50 ft. (Horz)
1 inch = 5 ft. (Vert)

NOTE
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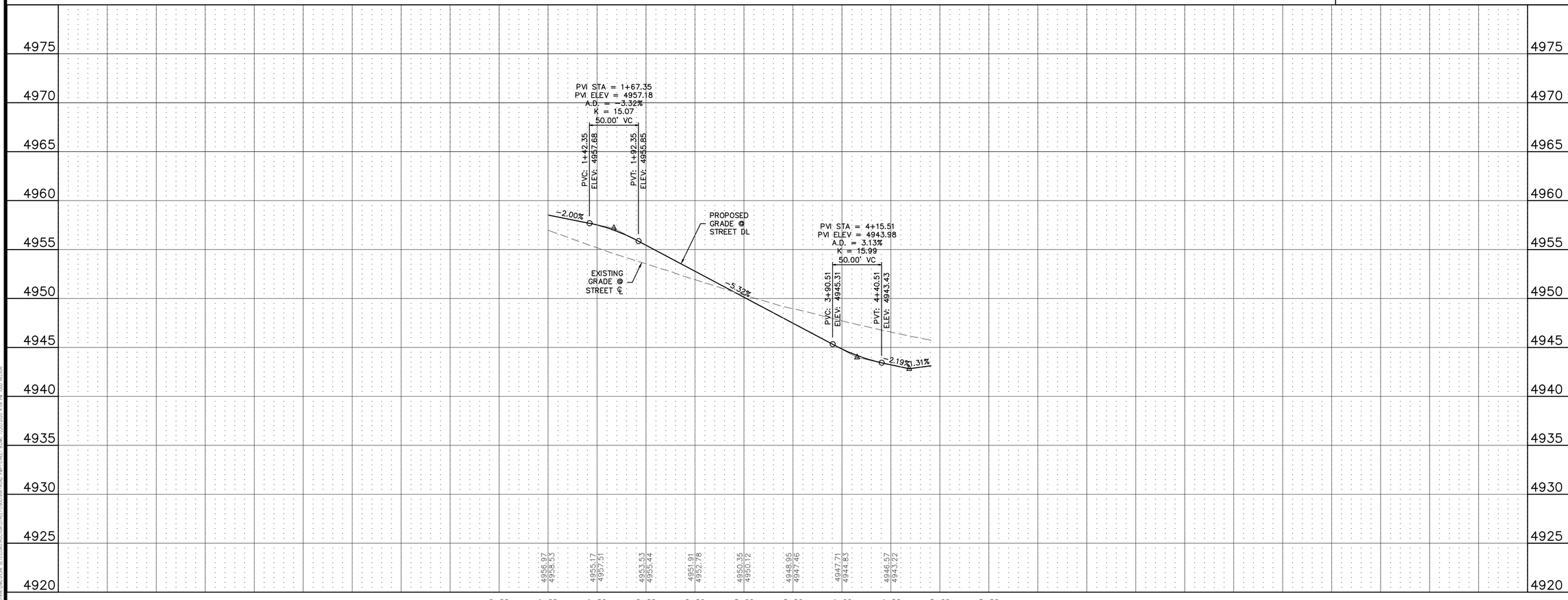
PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.



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SUN COMMUNITIES

CLIENT

WILLOW BEND SUBDIVISION
FORT LUPTON, COLORADO

PRELIMINARY CONSTRUCTION PLANS
STREET PLAN & PROFILES
STREET B (PRIVATE)

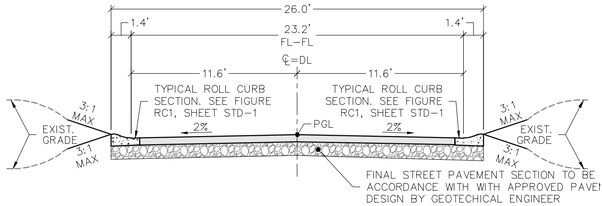
SUN COMMUNITIES, INC.

DATE DATE

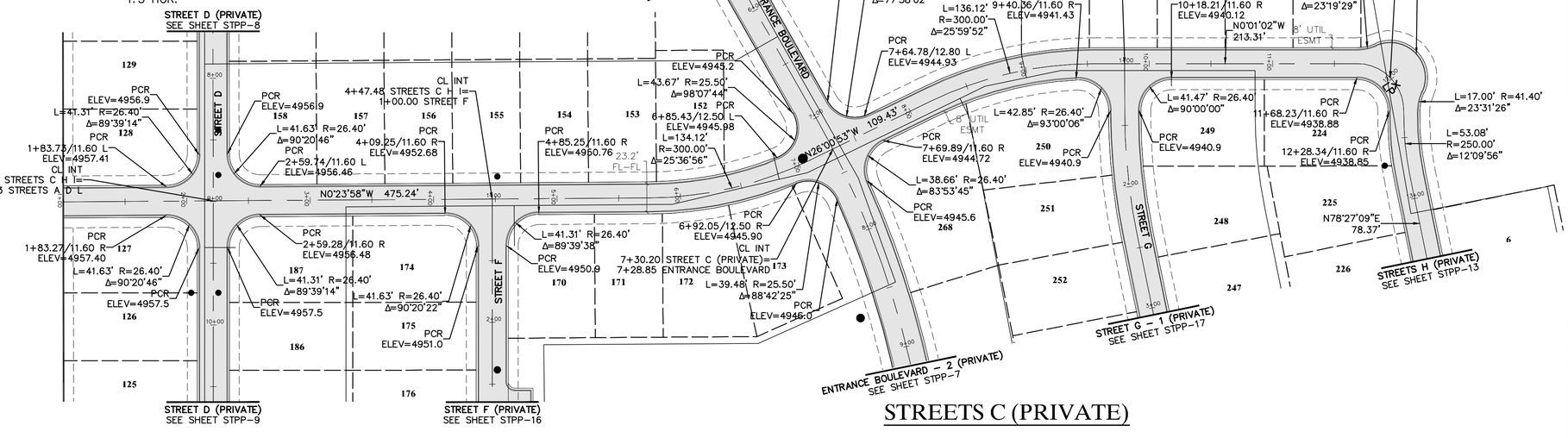
REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO.
STPP-11

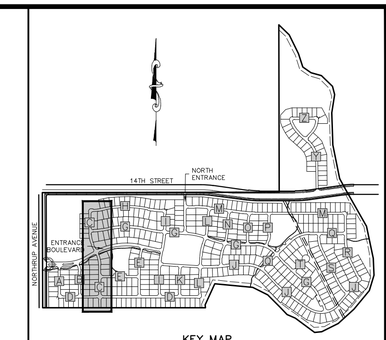
CAD FILE: 19001956-ROAD P&P-STREET B.DWG



TYPICAL PRIVATE ROAD SECTION
1:5 HOR.



STREETS C (PRIVATE)



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PLAN NO.: SPL2019-0005

BENCHMARK:

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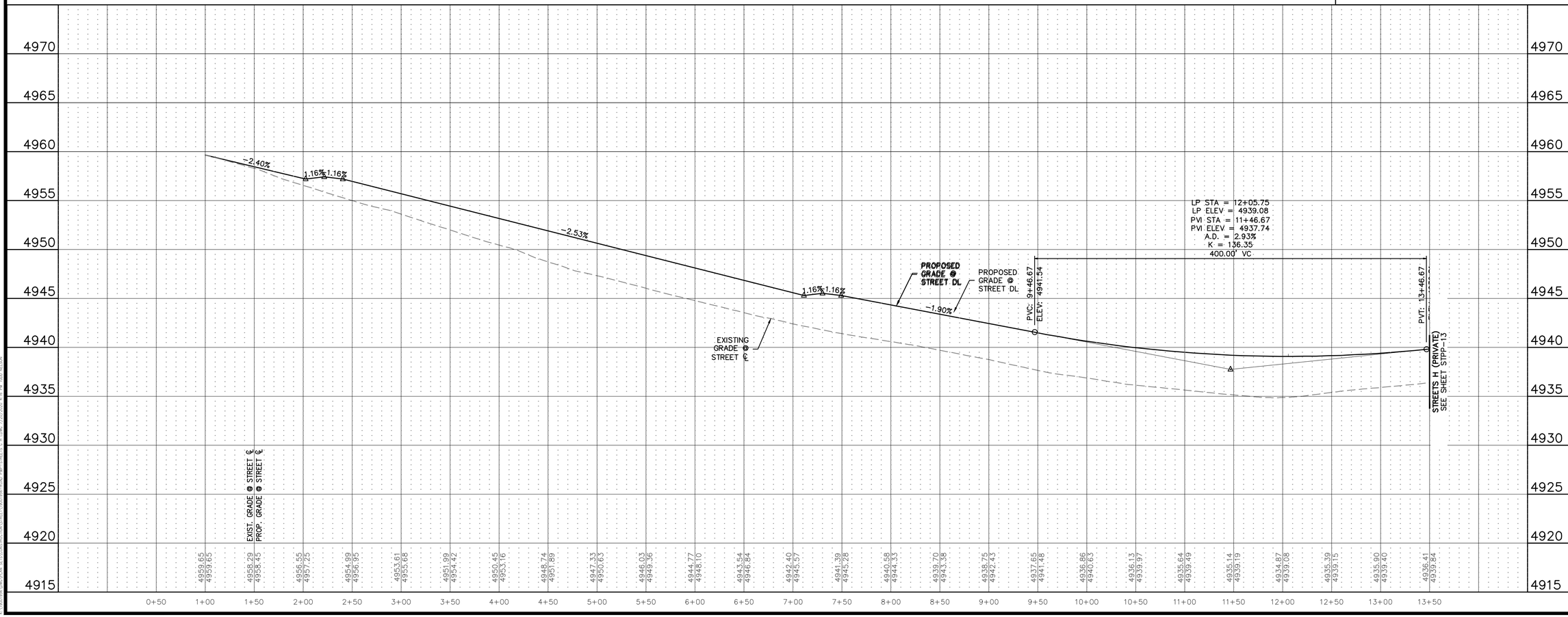

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PRELIMINARY CONSTRUCTION PLANS
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STREETS C (PRIVATE)

CLIENT
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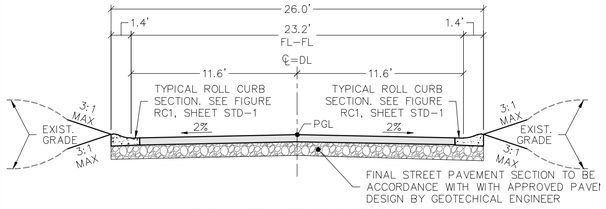
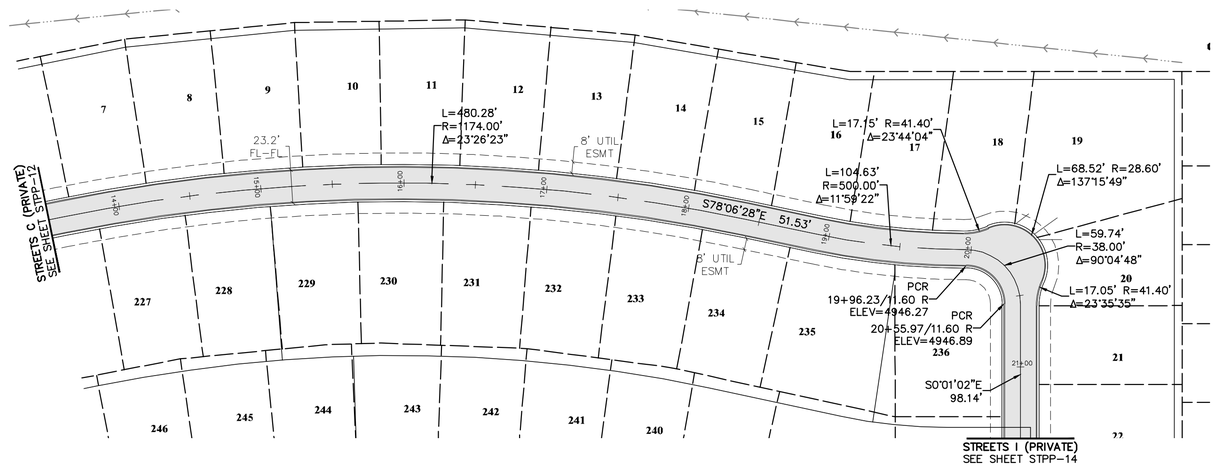
DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO.
STPP-12

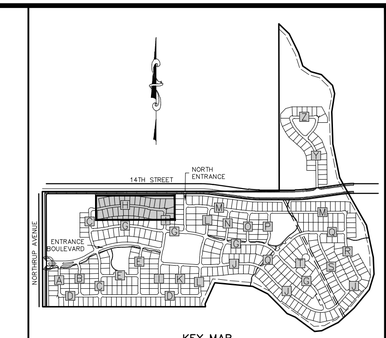
CAD FILE: 19001956-ROAD P&P-STREETS C H I.DWG



TYPICAL PRIVATE ROAD SECTION
1:5 HOR.



STREETS H (PRIVATE)



KEY MAP
SCALE: 1" = 800'

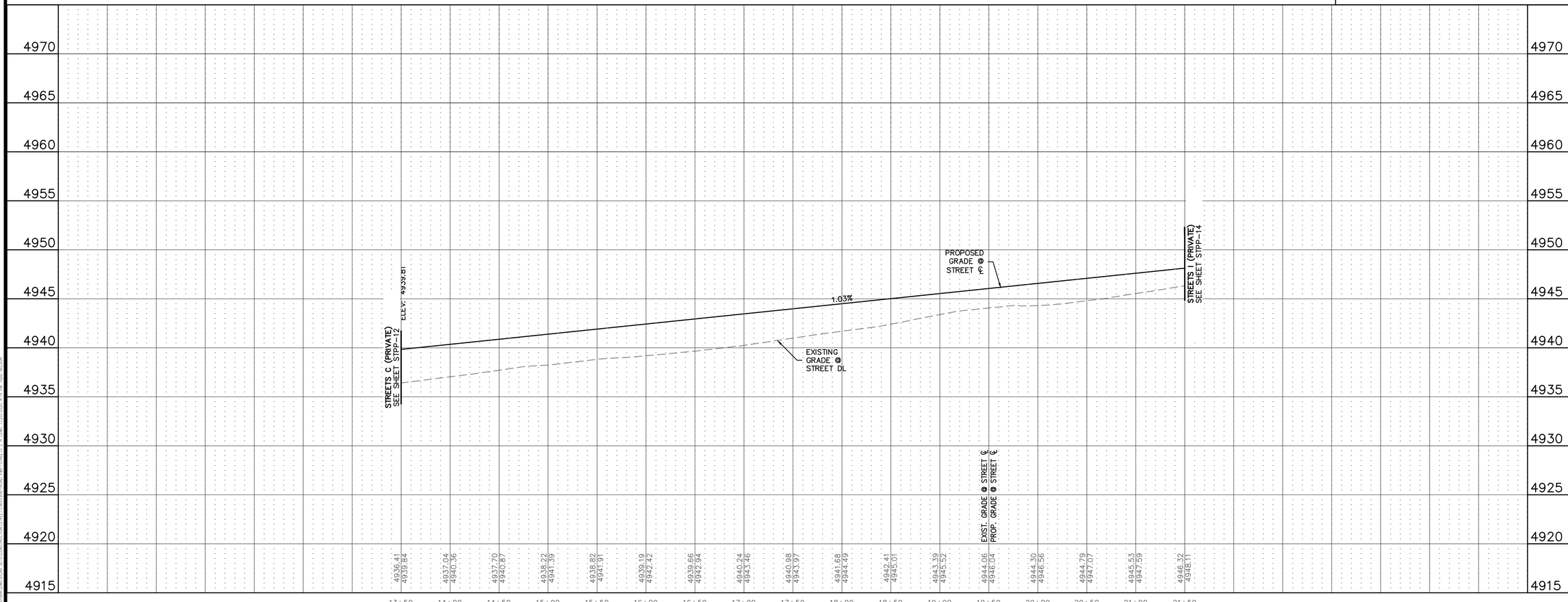
(IN FEET)
1 inch = 50 ft. (Horz)
1 inch = 5 ft. (Vert)

NOTE
ALL ELEVATIONS ARE FL (CURB FLOWLINE) UNLESS OTHERWISE NOTED.

PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.



811
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FORT LUPTON, COLORADO

PRELIMINARY CONSTRUCTION PLANS
STREET PLAN & PROFILES
STREETS H (PRIVATE)

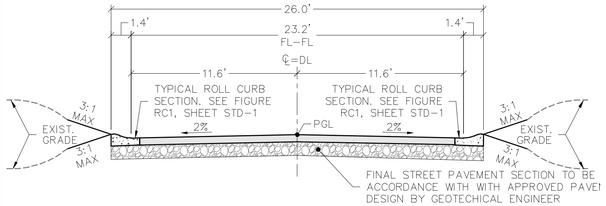
SUN COMMUNITIES, INC.

DATE DATE

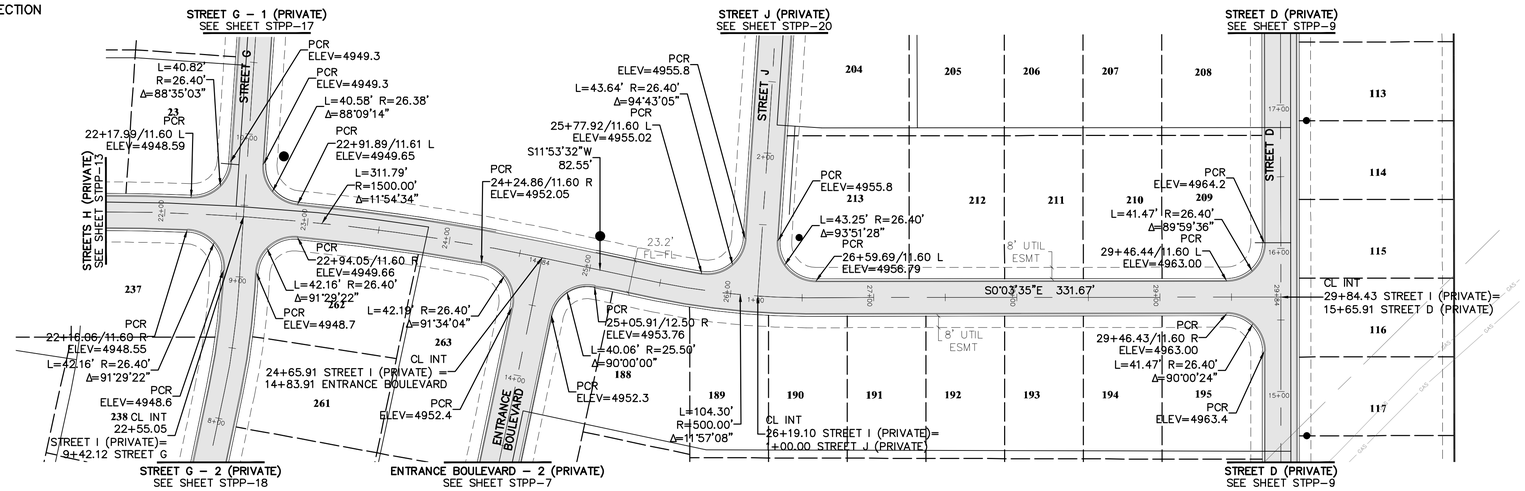
REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO.
STPP-13

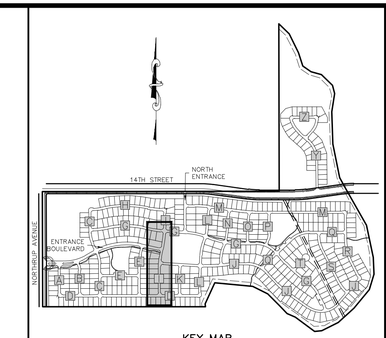
CAD FILE: 19001956-ROAD P&P-STREETS C-H.DWG



TYPICAL PRIVATE ROAD SECTION
1:5 HOR.



STREETS I (PRIVATE)



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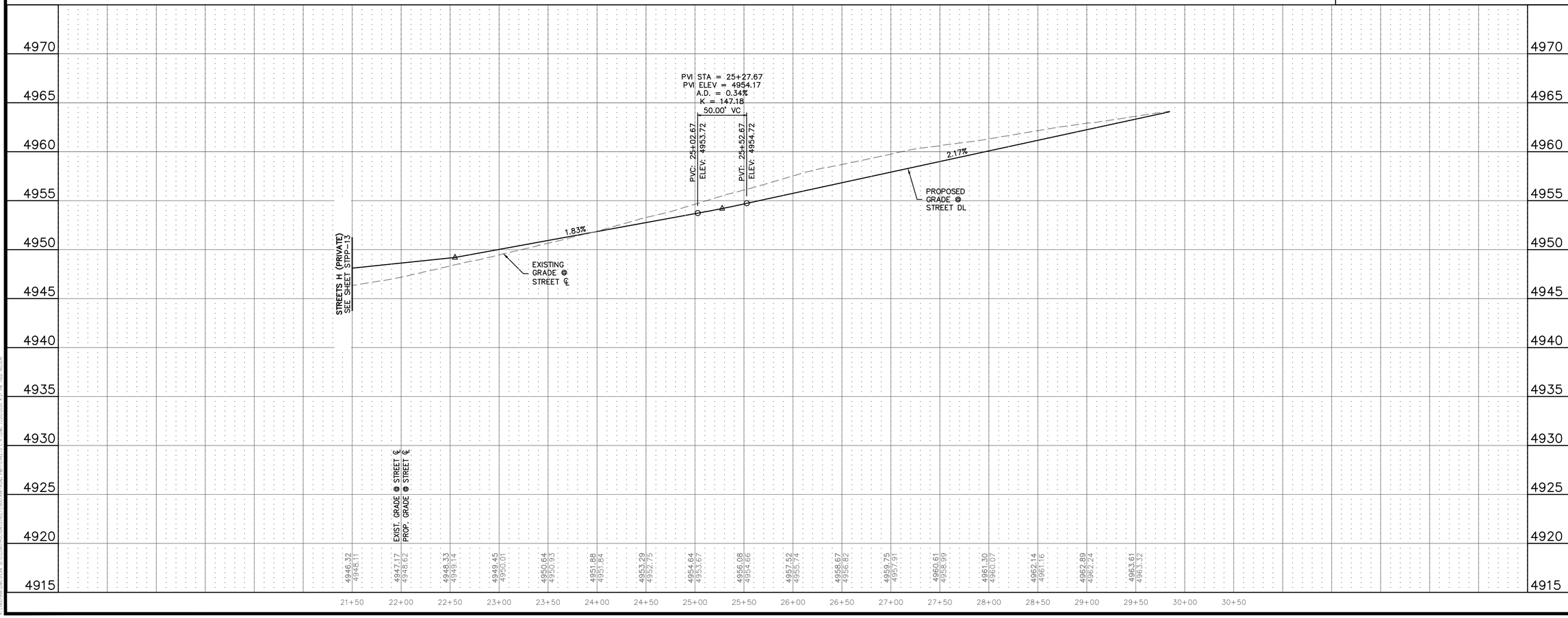
PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

BENCHMARK:
VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.



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STREET PLAN & PROFILES
STREETS I (PRIVATE)

CLIENT
SUN COMMUNITIES, INC.

DATE DATE

REVISIONS

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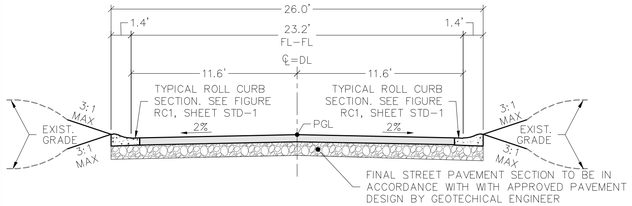
JOB 19001956
SHEET NO.
STPP-14

CAD FILE: 19001956-ROAD P&P-STREETS G-H I.DWG



TYPICAL PRIVATE ROAD SECTION
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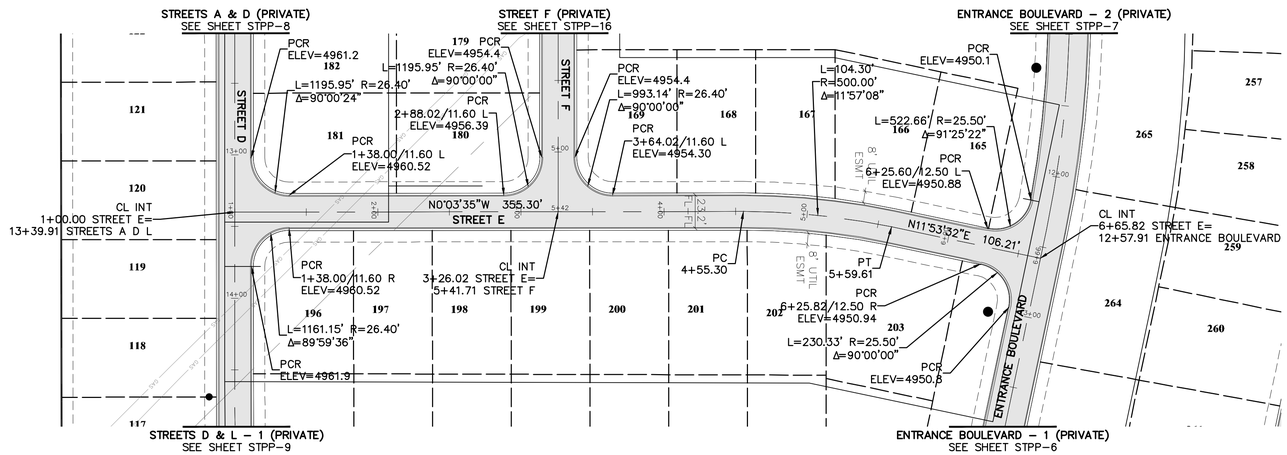
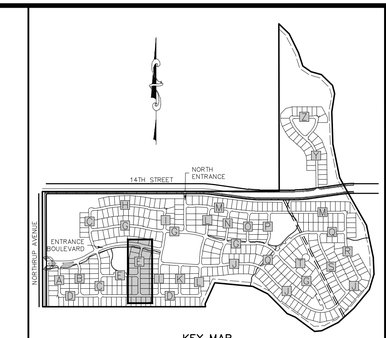


STREET E (PRIVATE)



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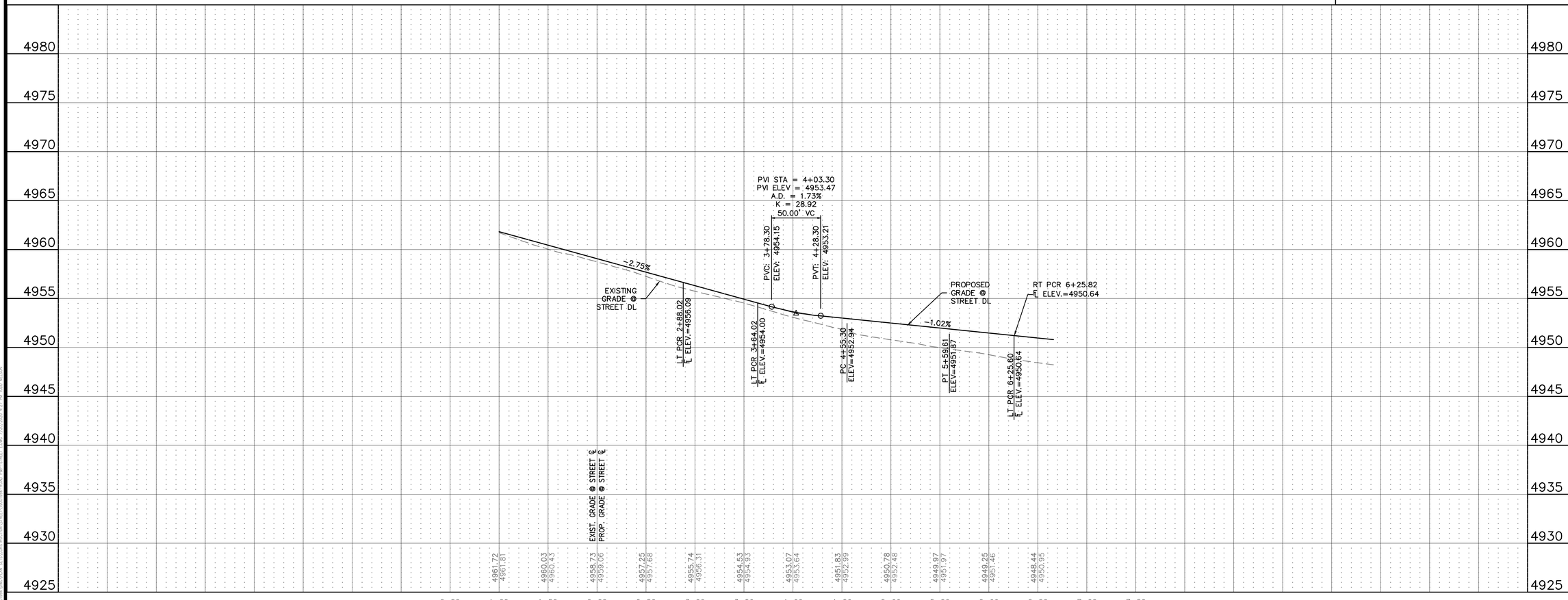
PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

BENCHMARK:

VERTICAL DATUM: NAVD 88 - GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.



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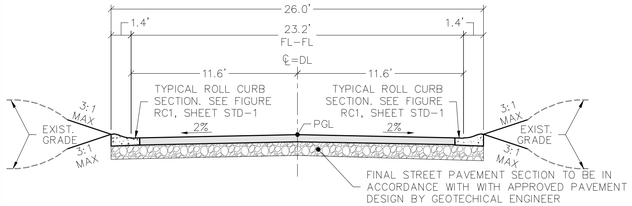
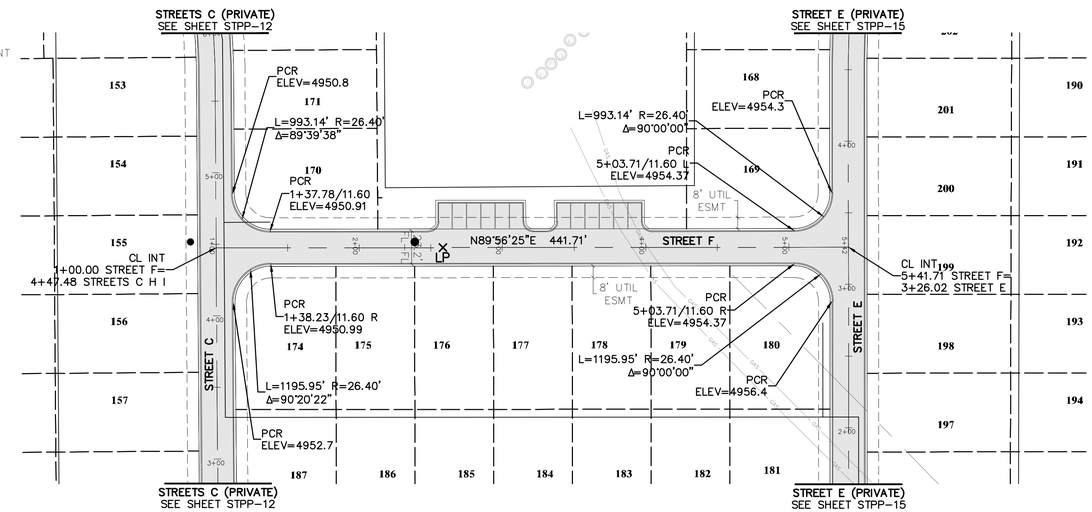
P.M. RW
JOB 19001956
SHEET NO. STPP-15

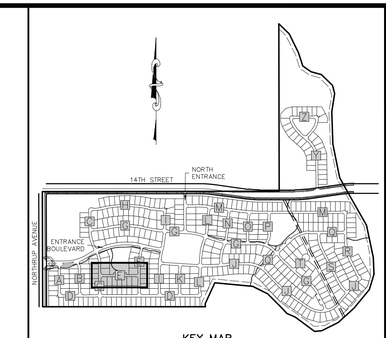
CAD FILE: 19001956-ROAD P&P-STREET E.DWG



TYPICAL PRIVATE ROAD SECTION
1:5 HOR.



STREET F (PRIVATE)



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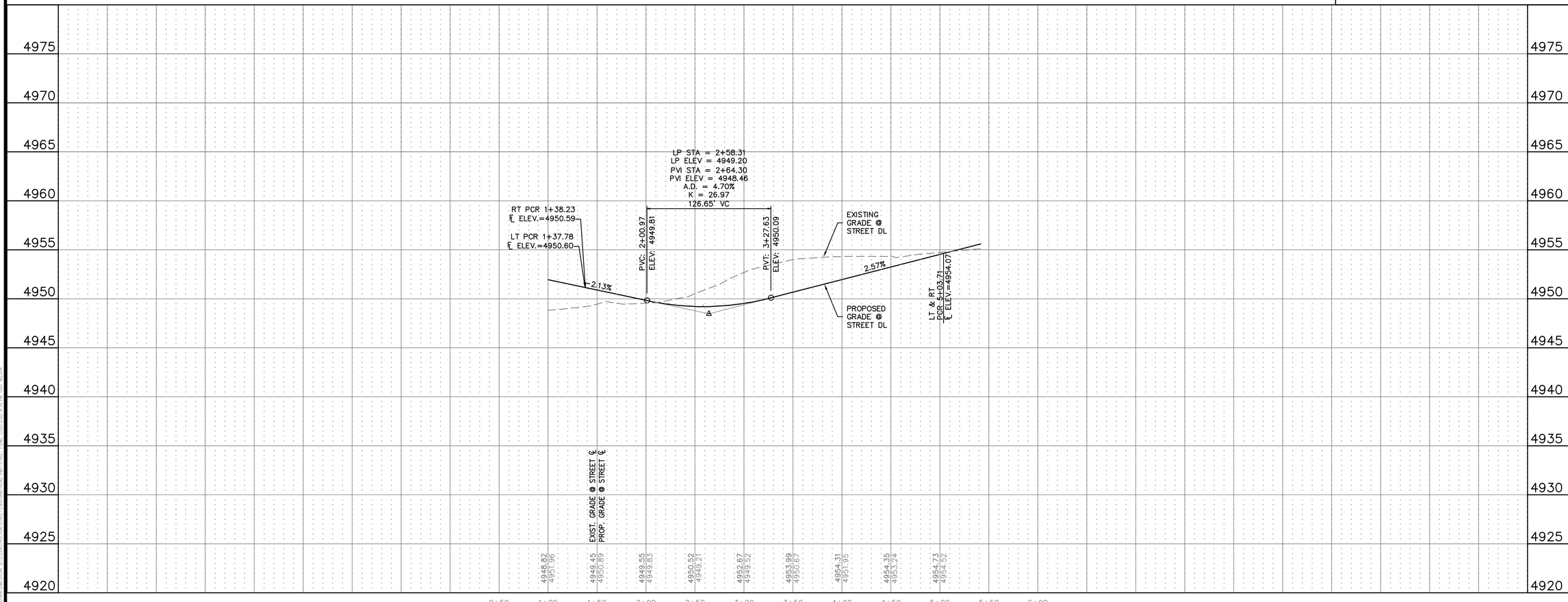
PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.



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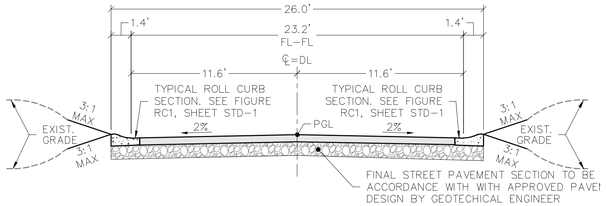
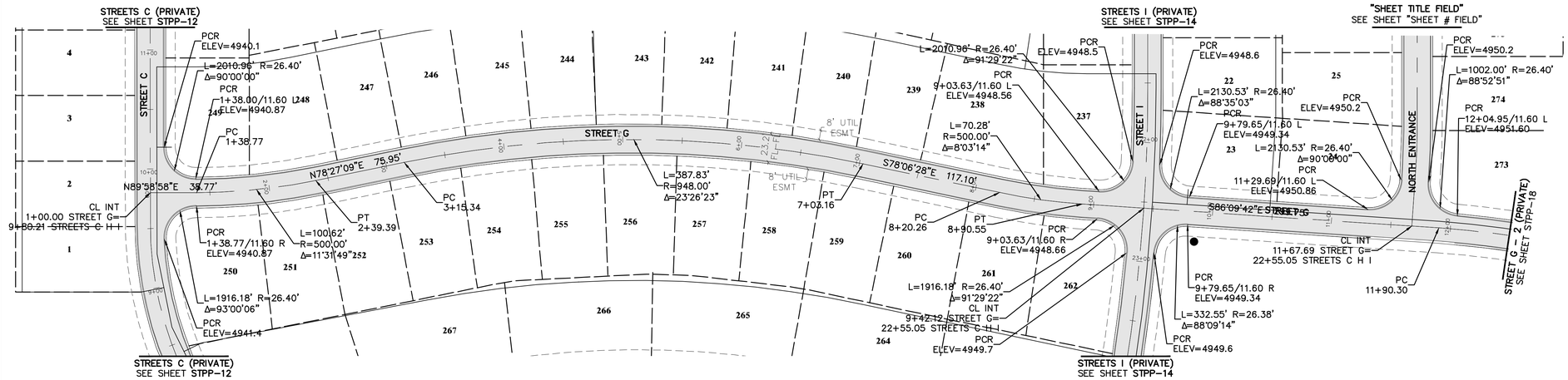
SHEET NO.
STPP-16

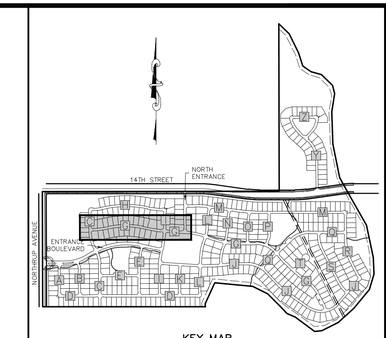
CAD FILE: 19001956-ROAD P&P-STREET F.DWG



TYPICAL PRIVATE ROAD SECTION
1:5 HOR.



STREET G - 1 (PRIVATE)



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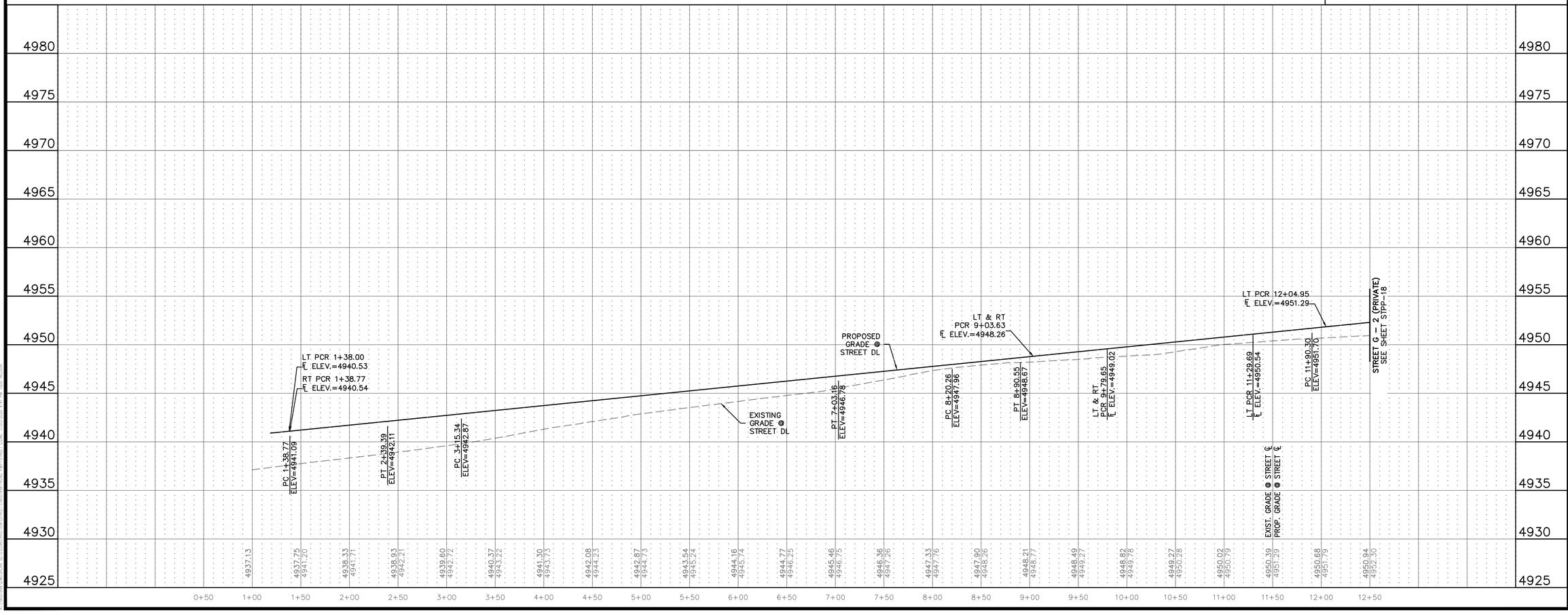
PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

BENCHMARK:
VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.



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PRELIMINARY CONSTRUCTION PLANS
STREET PLAN & PROFILES
STREET G – 1 (PRIVATE)

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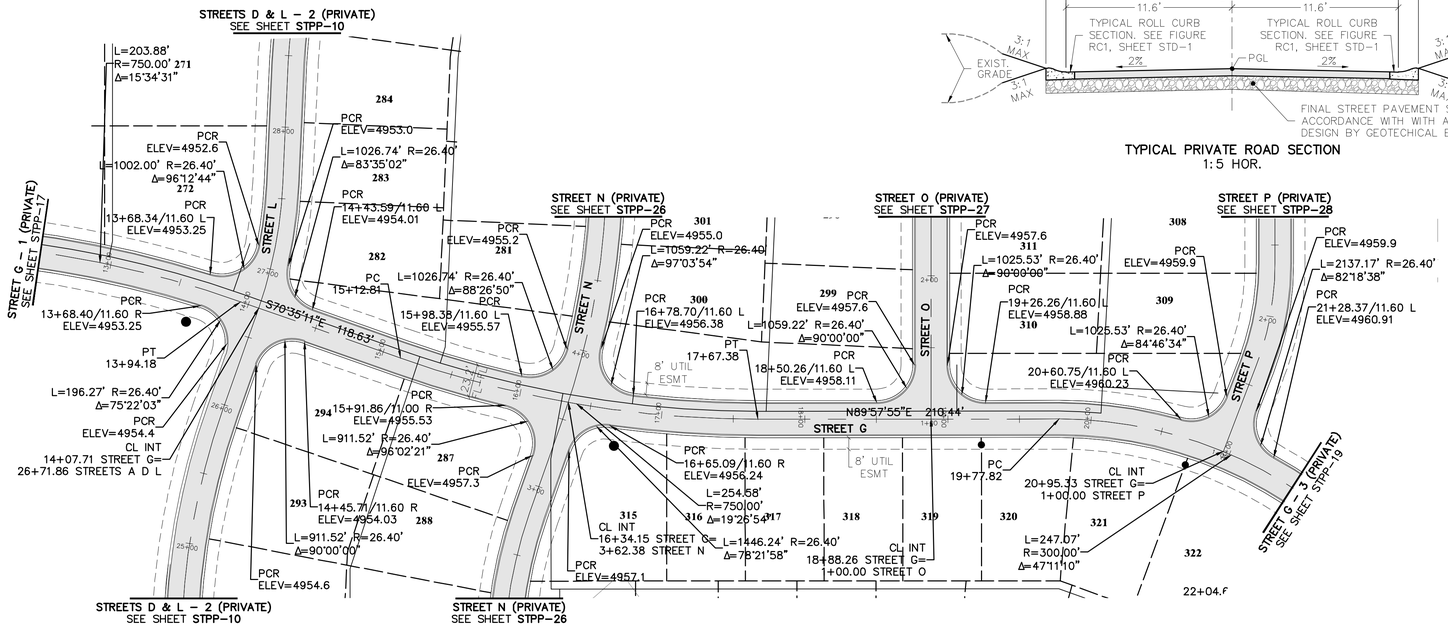
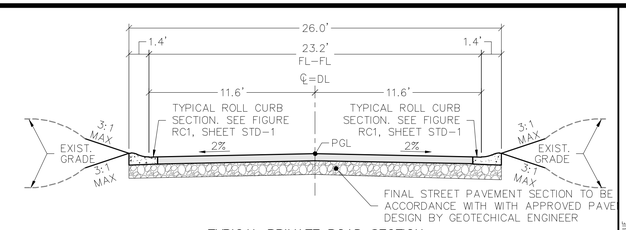
P.M. RW
JOB 19001956
SHEET NO. STPP-17

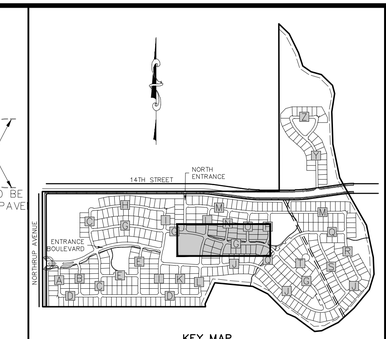
CAD FILE: 19001956-ROAD P&P-STREET G.DWG



STREET G - 2 (PRIVATE)



TYPICAL PRIVATE ROAD SECTION
1:5 HOR.



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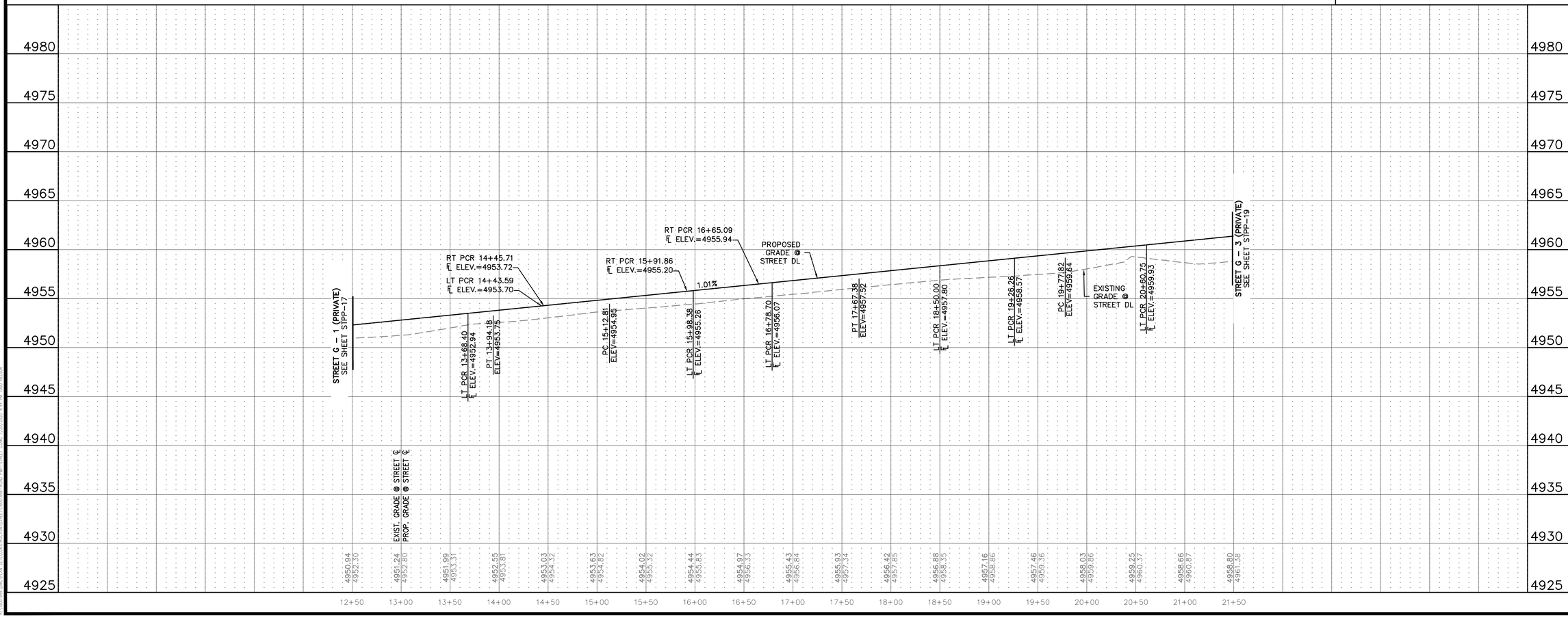
PROJECT NO.: LUP2019–0039 &
PLAN NO.: SPL2019–0005

BENCHMARK:
VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.



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STREET PLAN & PROFILES
STREET G – 2 (PRIVATE)

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SUN COMMUNITIES, INC.
DATE DATE
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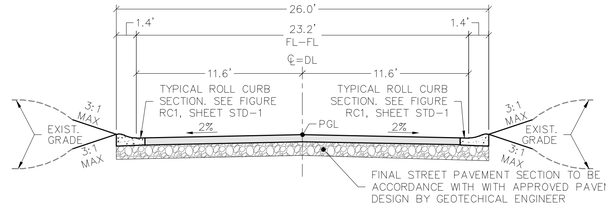
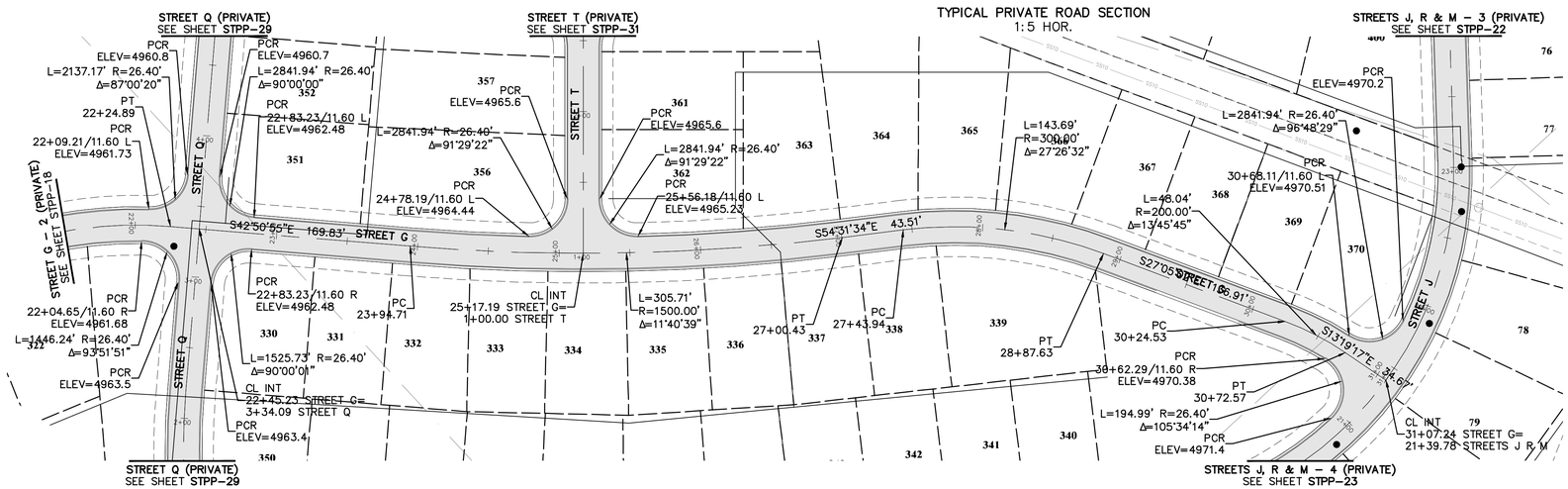
P.M. RW
JOB 19001956
SHEET NO. STPP–18

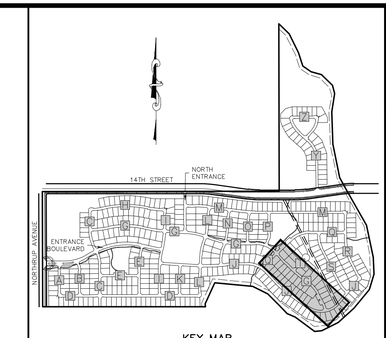
CAD FILE: 19001956–ROAD P&P–STREET G.DWG



TYPICAL PRIVATE ROAD SECTION
1:5 HOR.



STREET G - 3 (PRIVATE)



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PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

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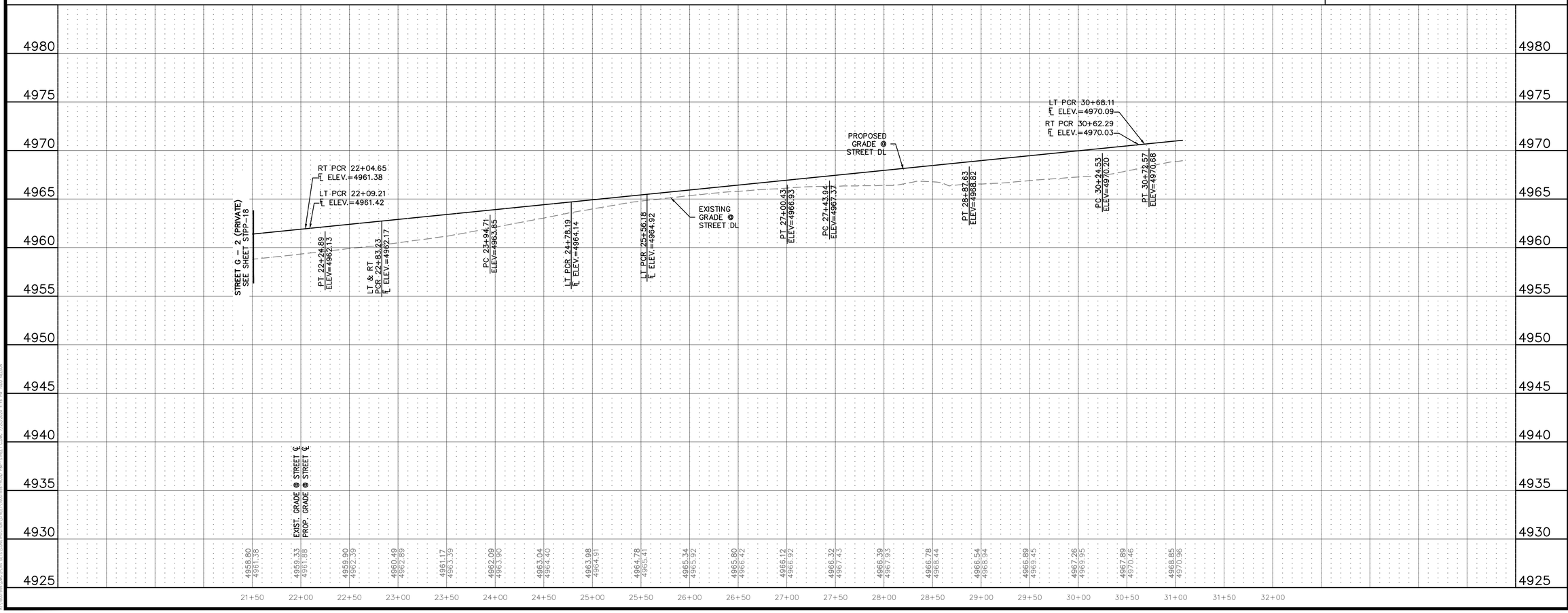

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PRELIMINARY CONSTRUCTION PLANS
STREET PLAN & PROFILES
STREET G – 3 (PRIVATE)

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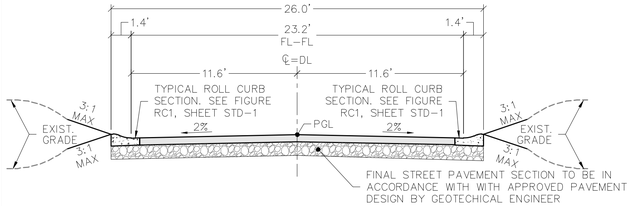
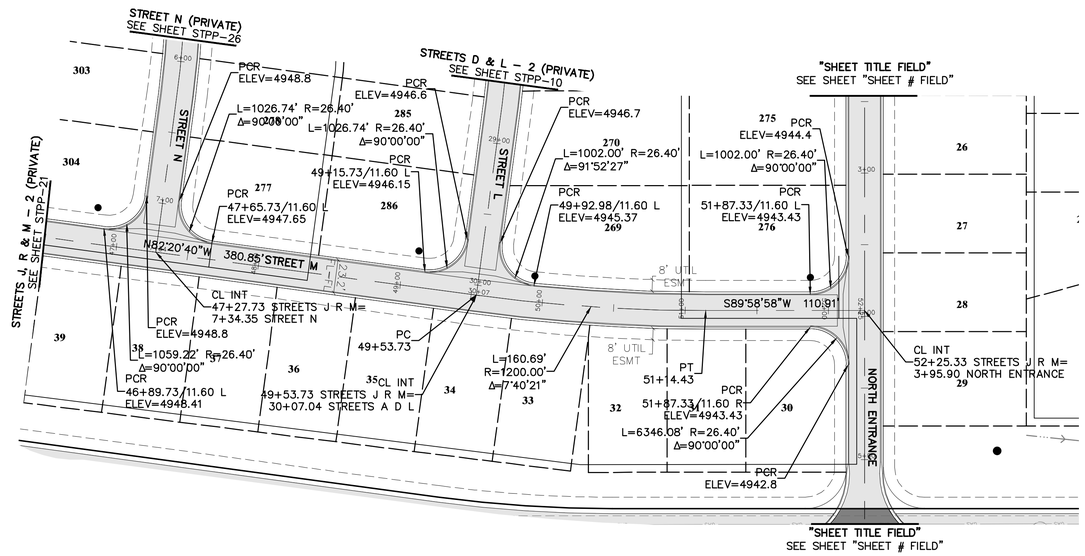
SHEET NO.
STPP-19

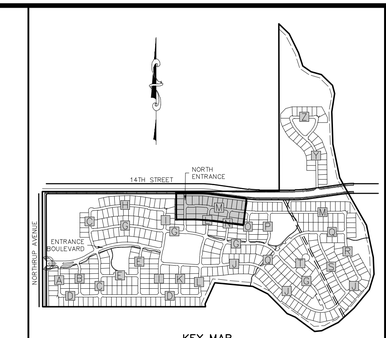
CAD FILE: 19001956-ROAD P&P-STREET G.DWG



TYPICAL PRIVATE ROAD SECTION
1:5 HOR.



STREETS J, R & M - 1 (PRIVATE)



KEY MAP
SCALE: 1" = 800'

(IN FEET)
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1 inch = 5 ft. (Vert)

NOTE
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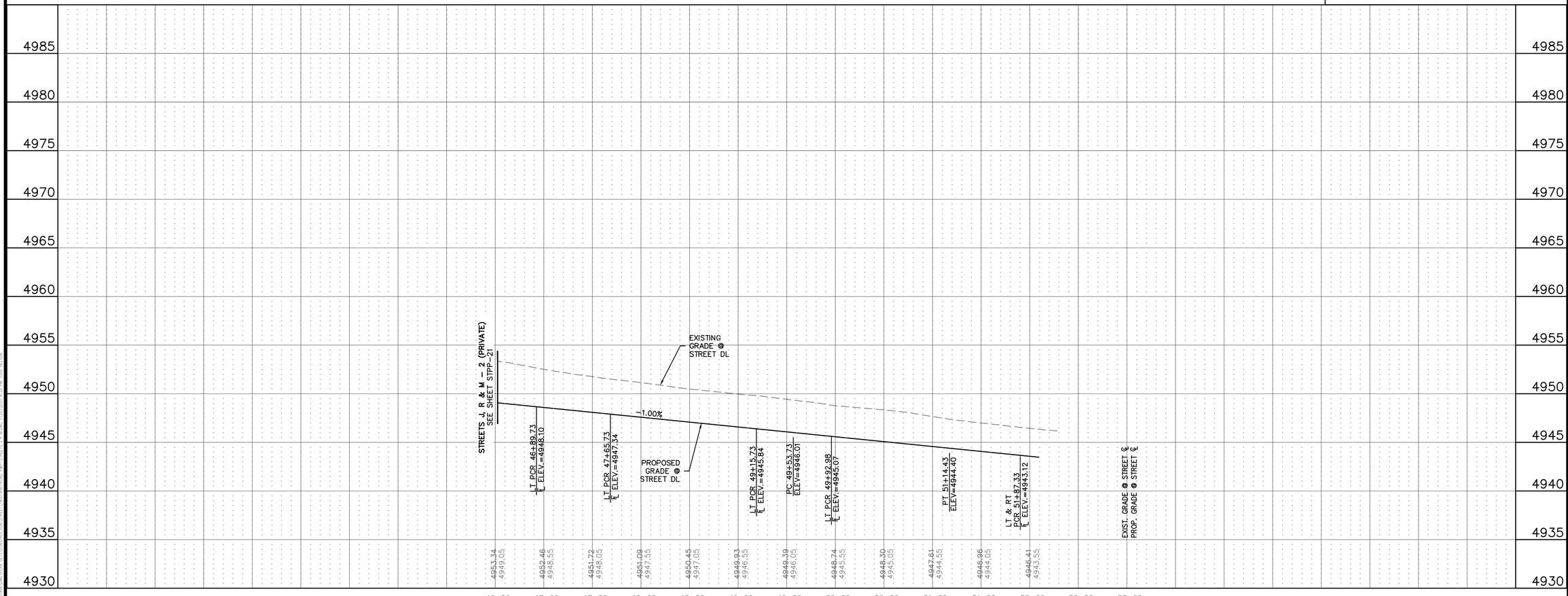
PROJECT NO.: LUP2019–0039 &
PLAN NO.: SPL2019–0005

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.



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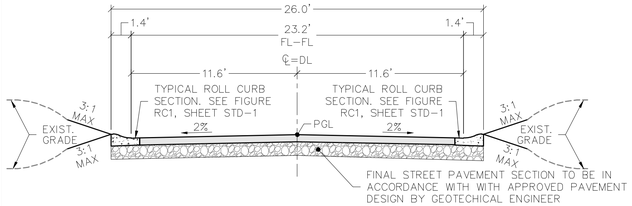
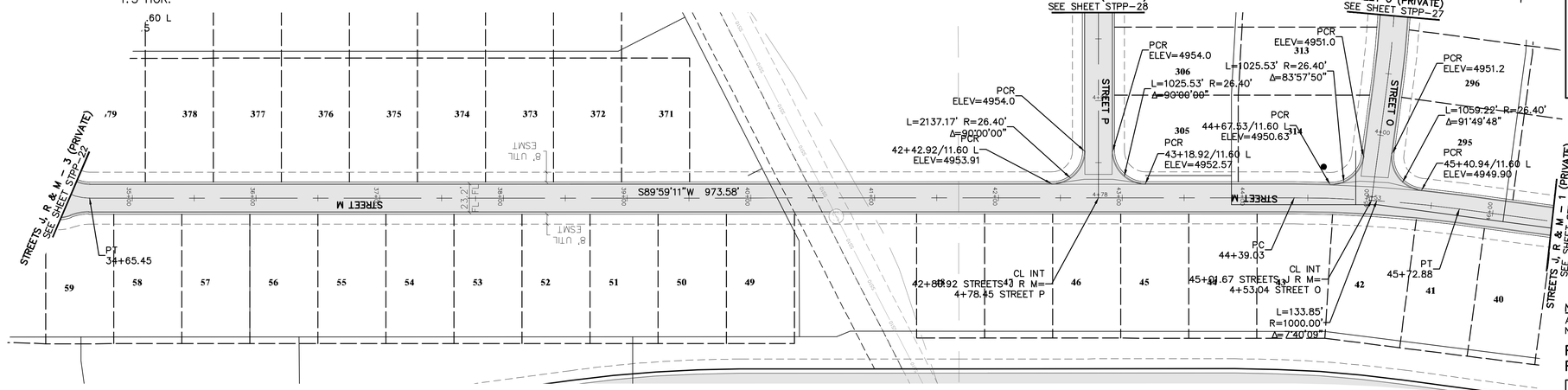
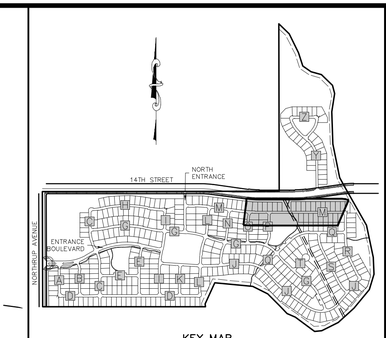
CAD FILE: 19001956-ROAD P&P-STREETS J R M.DWG



TYPICAL PRIVATE ROAD SECTION
1:5 HOR.



STREETS J, R & M - 2 (PRIVATE)



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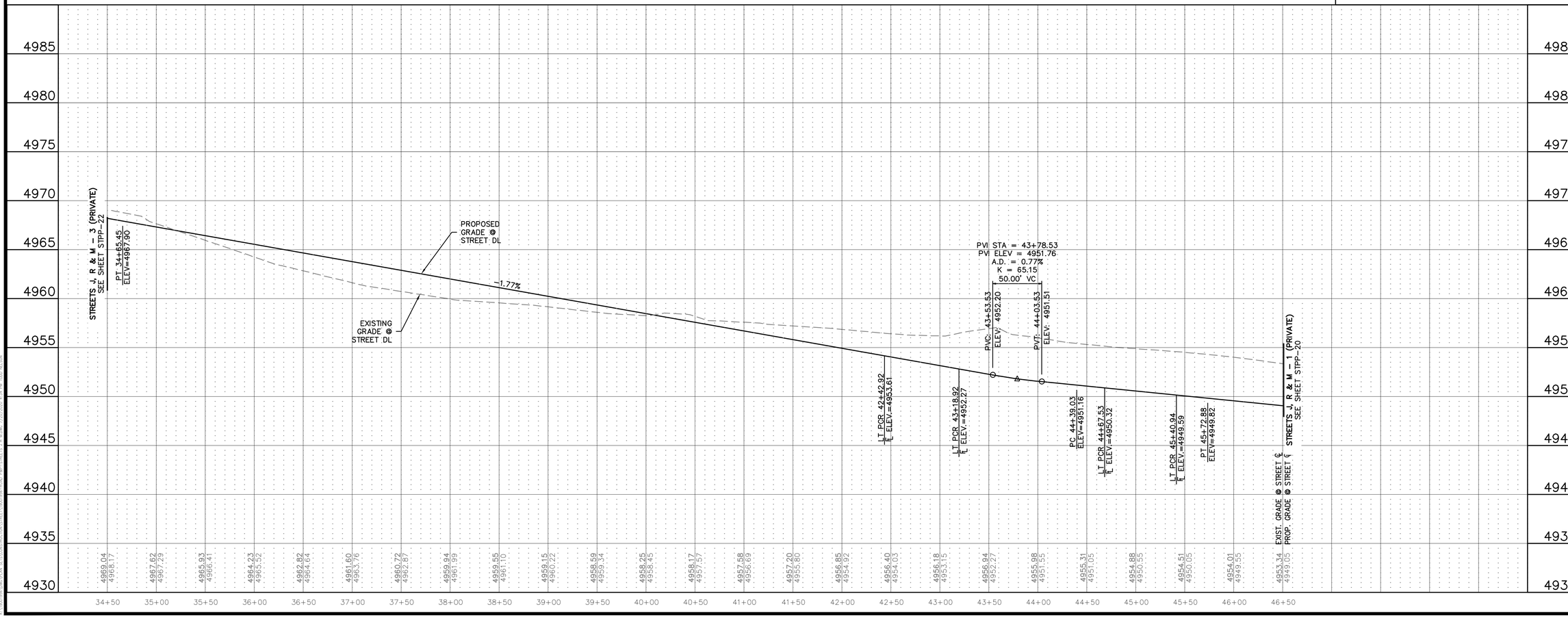
PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

BENCHMARK:
VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.



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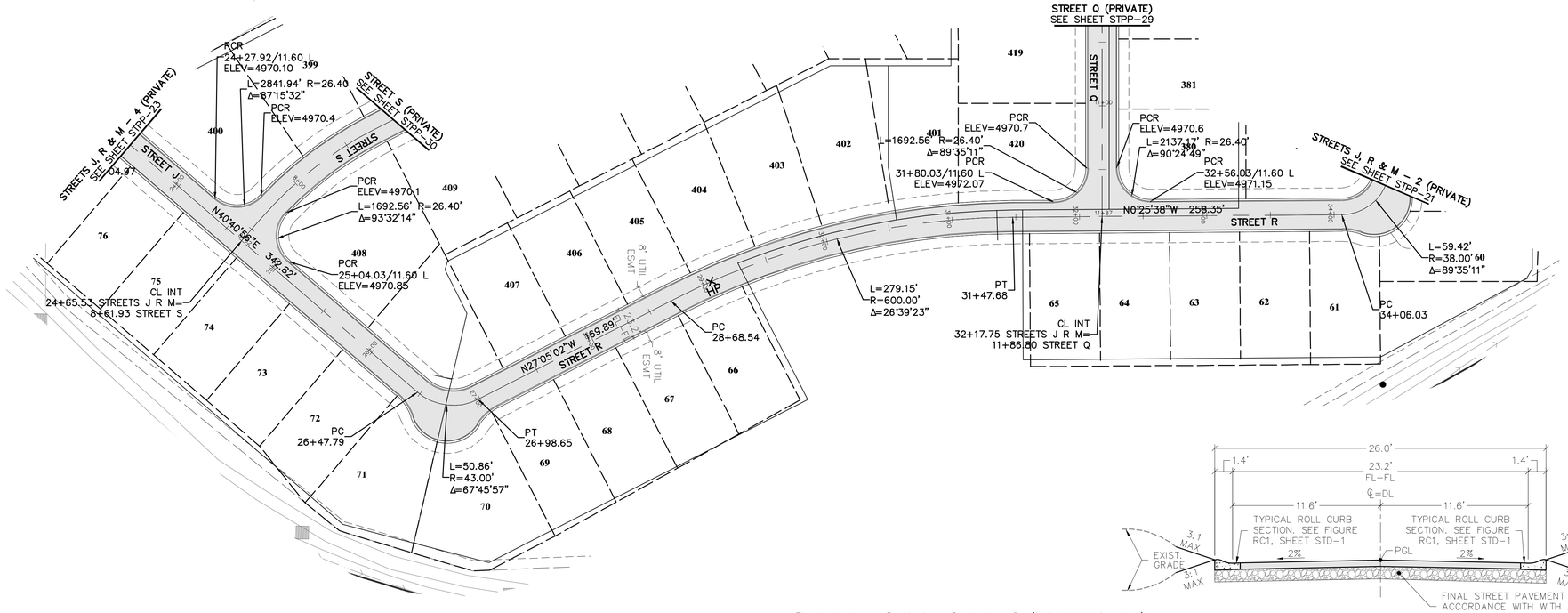

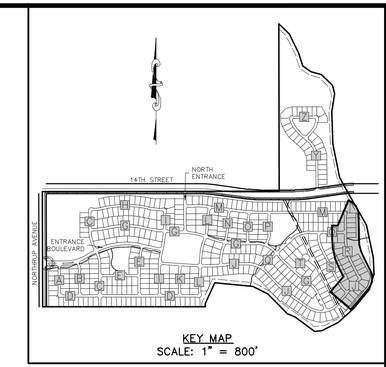

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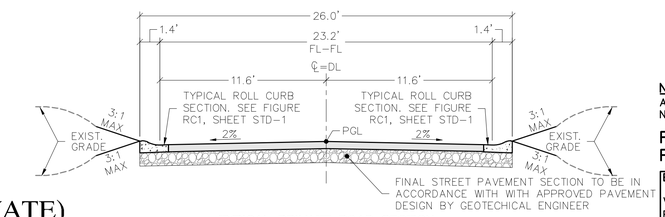

TYPICAL PRIVATE ROAD SECTION
1:5 HOR.

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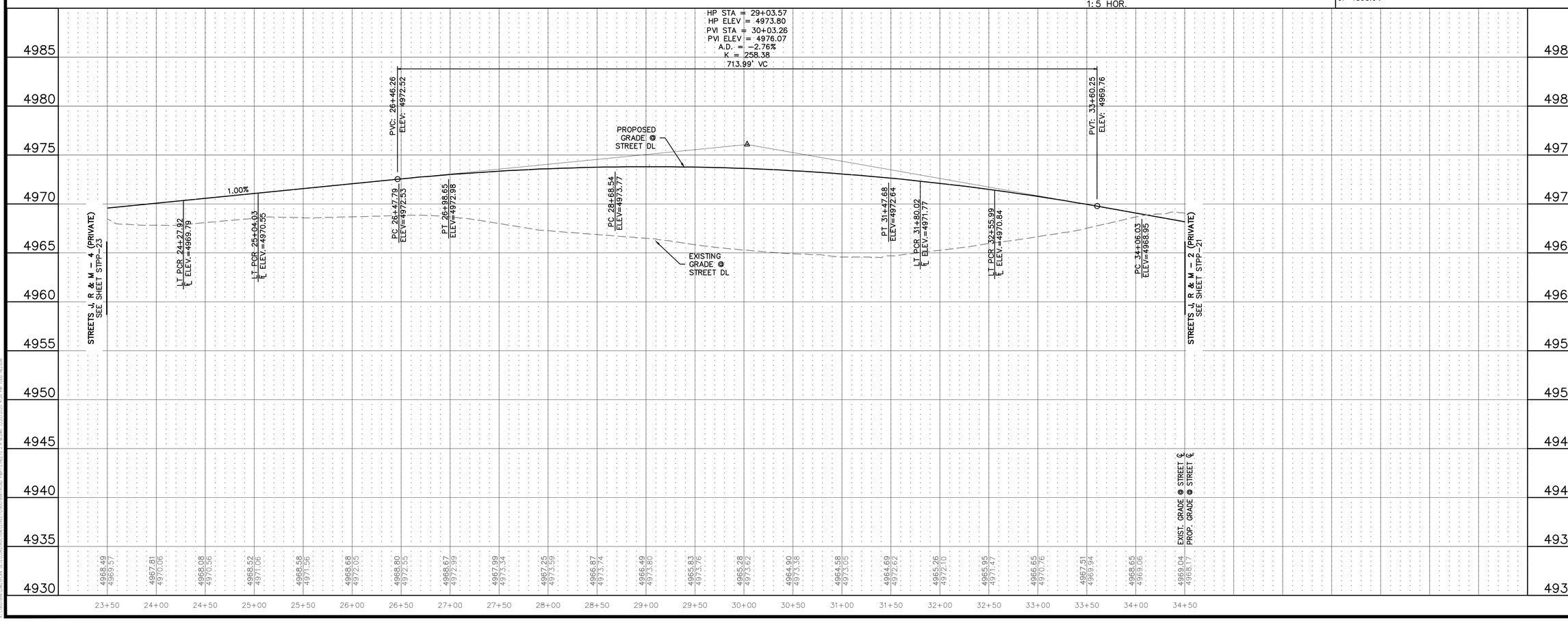
PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

BENCHMARK:
VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.

STREETS J, R & M - 3 (PRIVATE)



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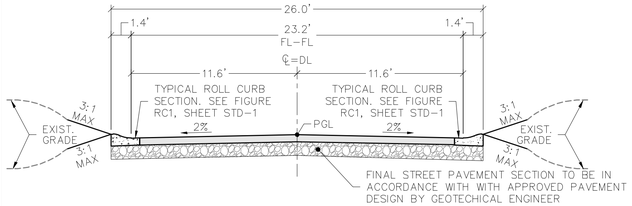
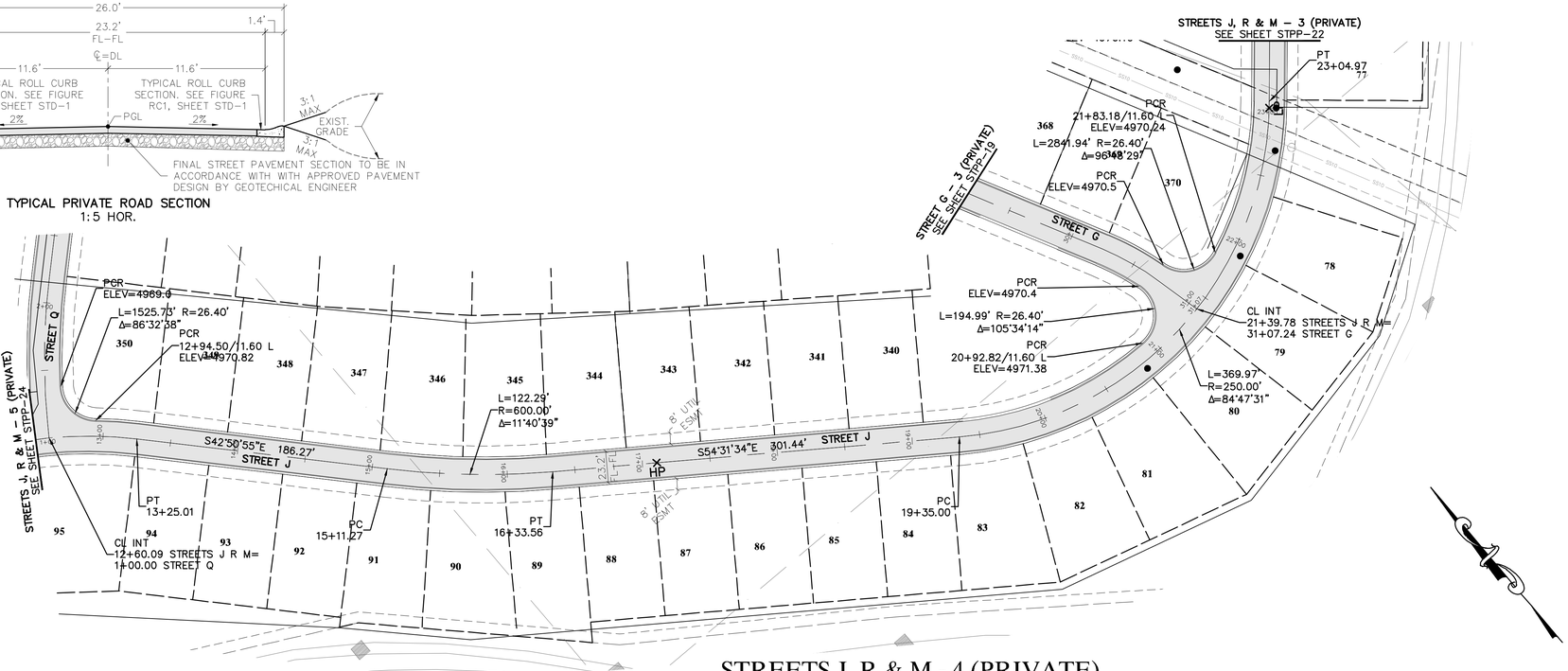
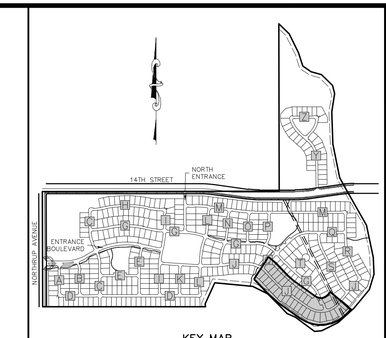


TYPICAL PRIVATE ROAD SECTION
1:5 HOR.



STREETS J, R & M - 4 (PRIVATE)



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PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

BENCHMARK:

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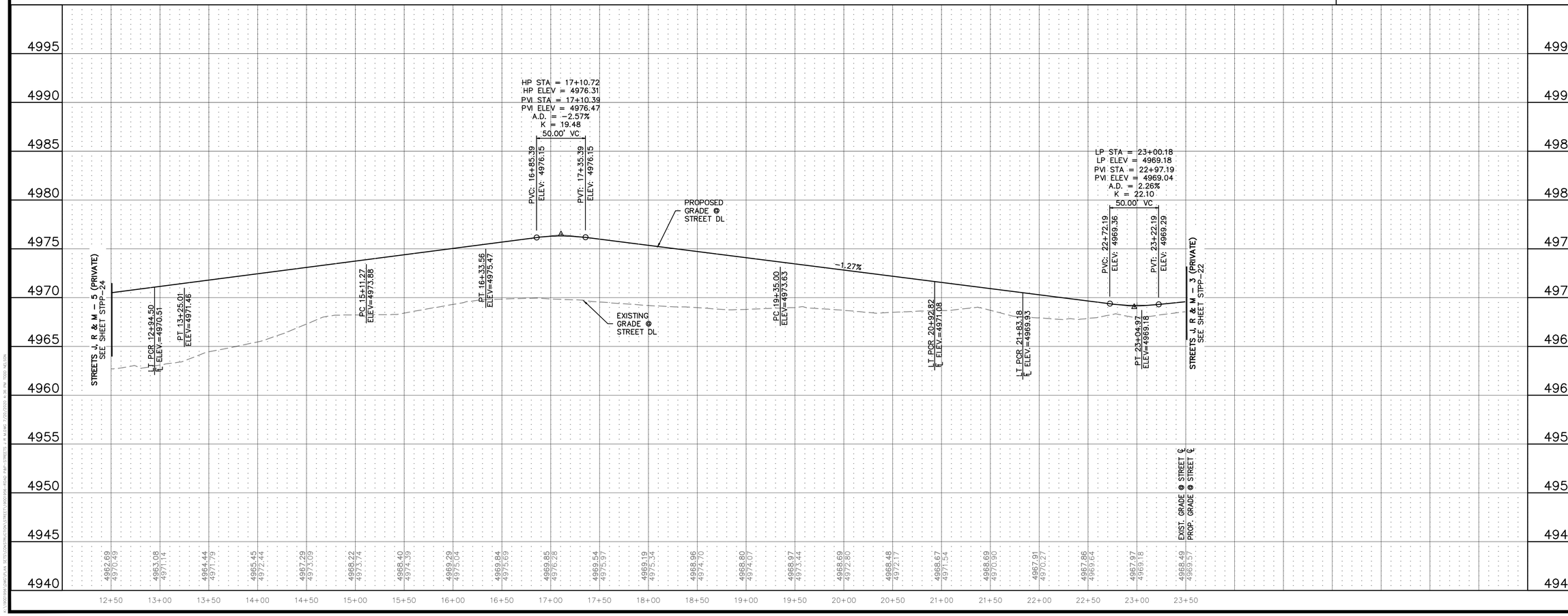

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STREETS J, R & M – 4 (PRIVATE)

SUN COMMUNITIES, INC.

DATE DATE

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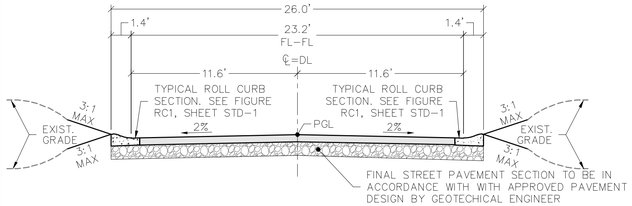
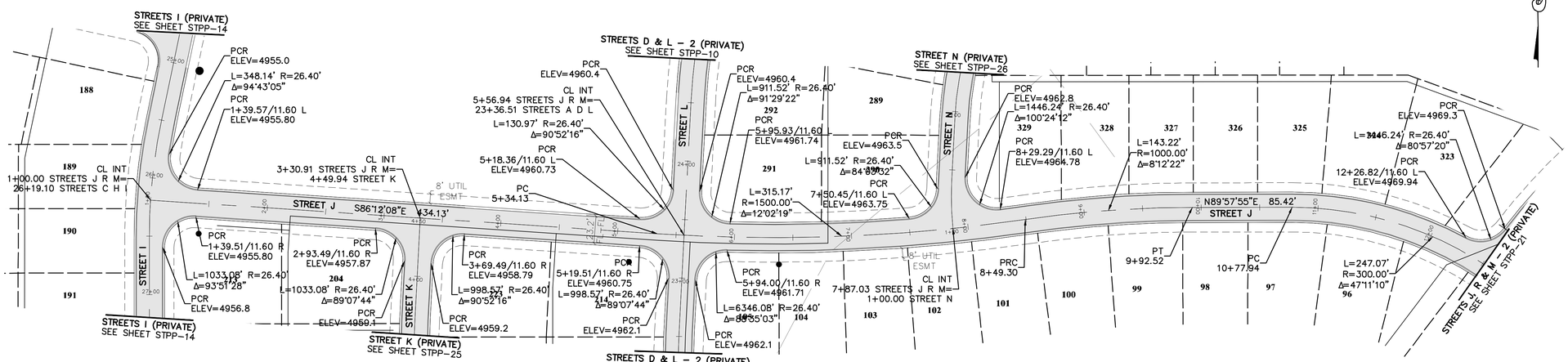
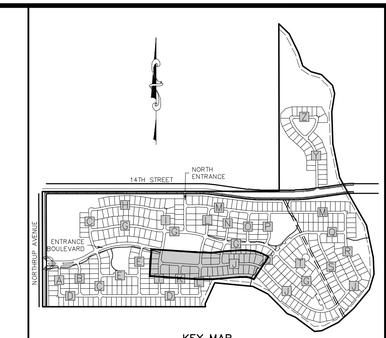
CAD FILE: 19001956-ROAD P&P-STREETS J R M.DWG



TYPICAL PRIVATE ROAD SECTION
1: 5 HOR.



STREETS J, R & M - 5 (PRIVATE)



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PLAN NO.: SPL2019-0005

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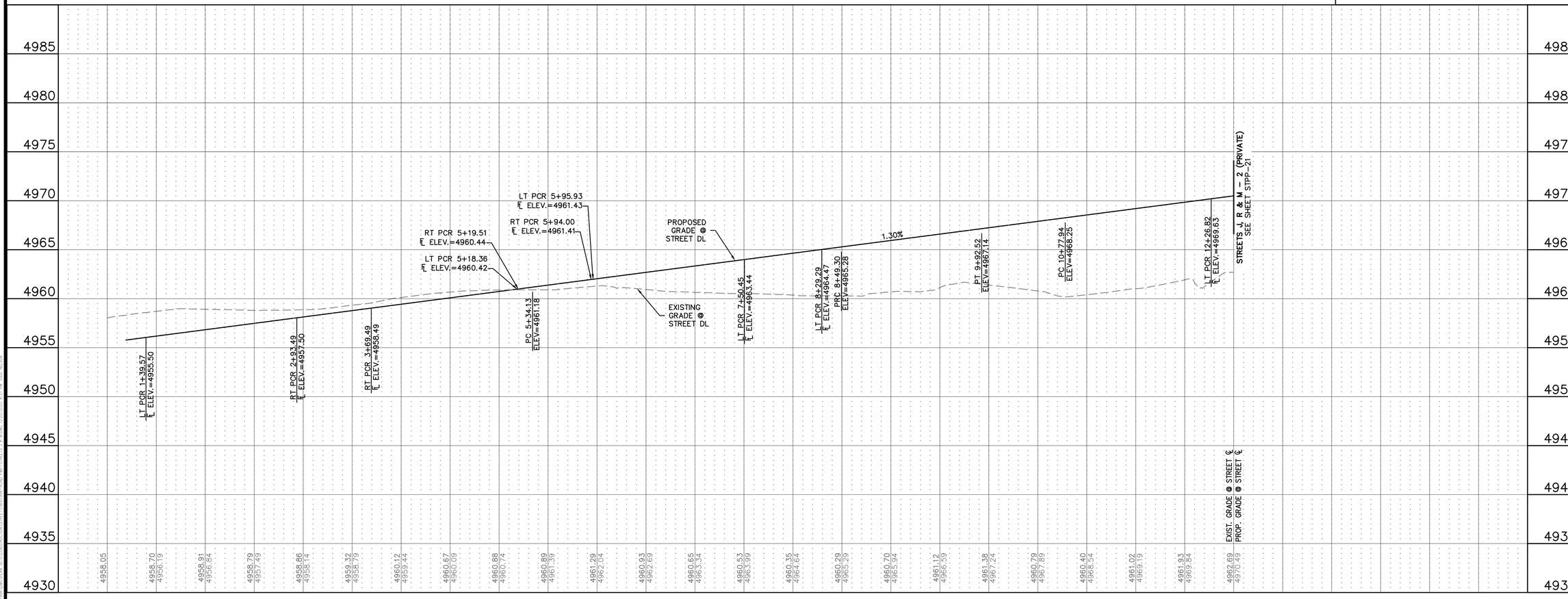

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STREETS J, R & M – 5 (PRIVATE)

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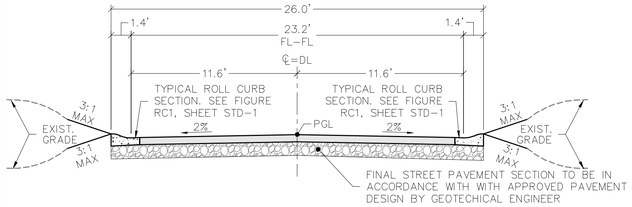
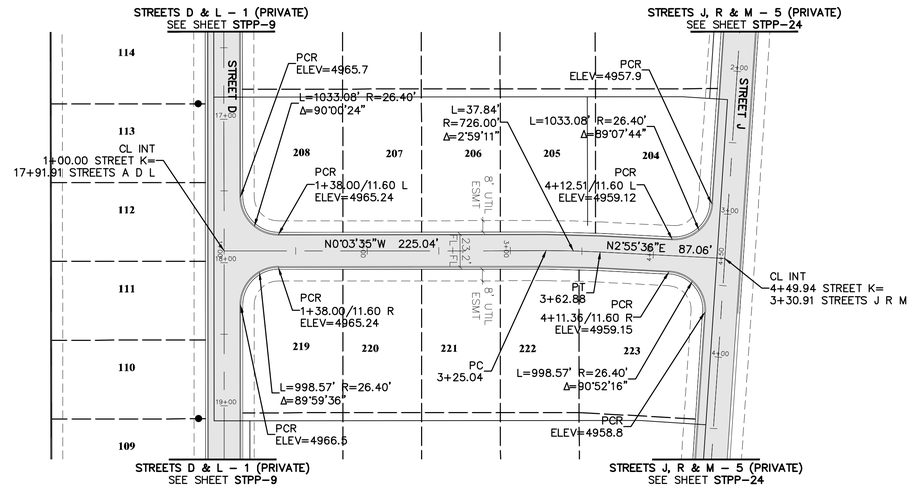
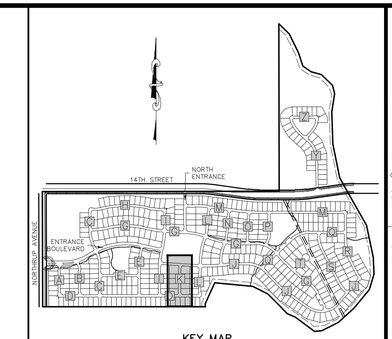
CAD FILE: 19001956-ROAD P&P-STREETS J R M.DWG



TYPICAL PRIVATE ROAD SECTION
1:5 HOR.



STREET K (PRIVATE)



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PROJECT NO.: LUP2019–0039 &
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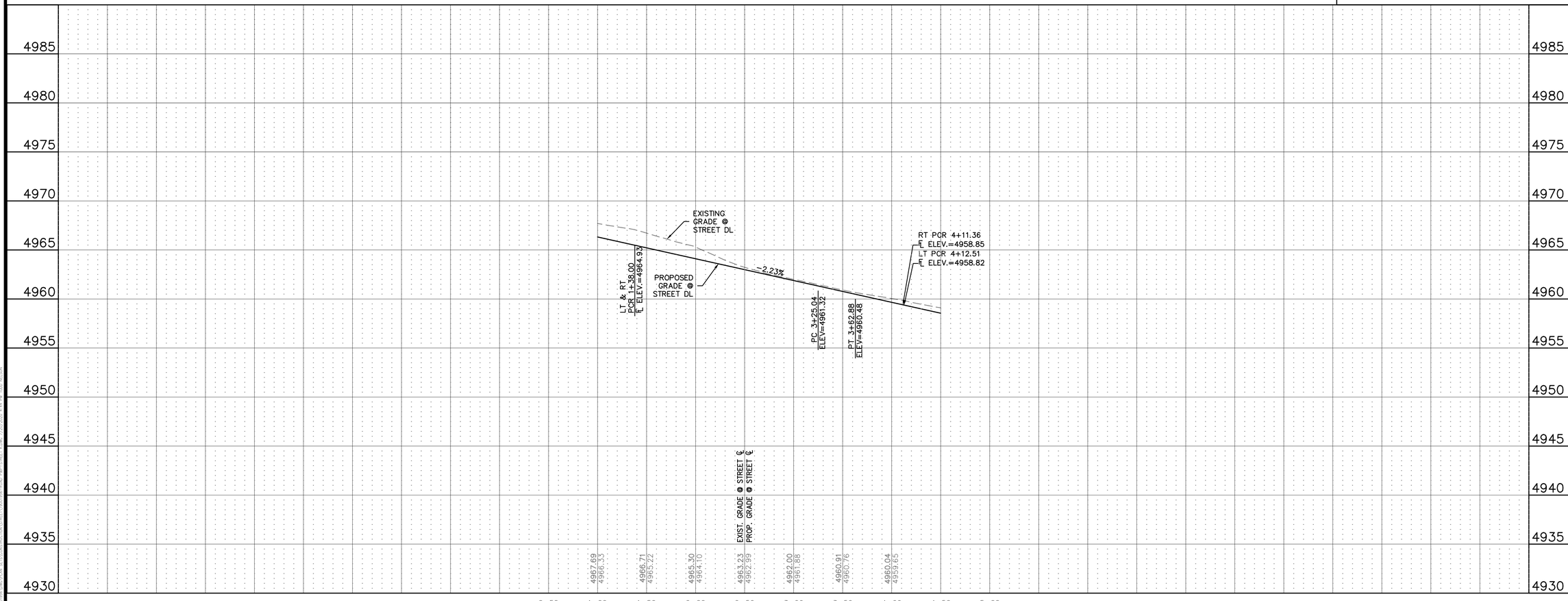

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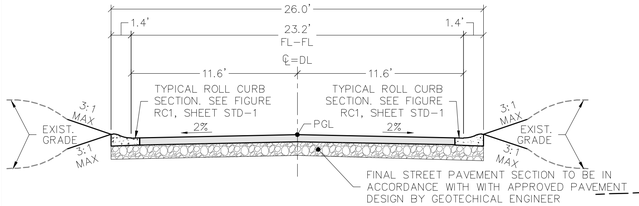
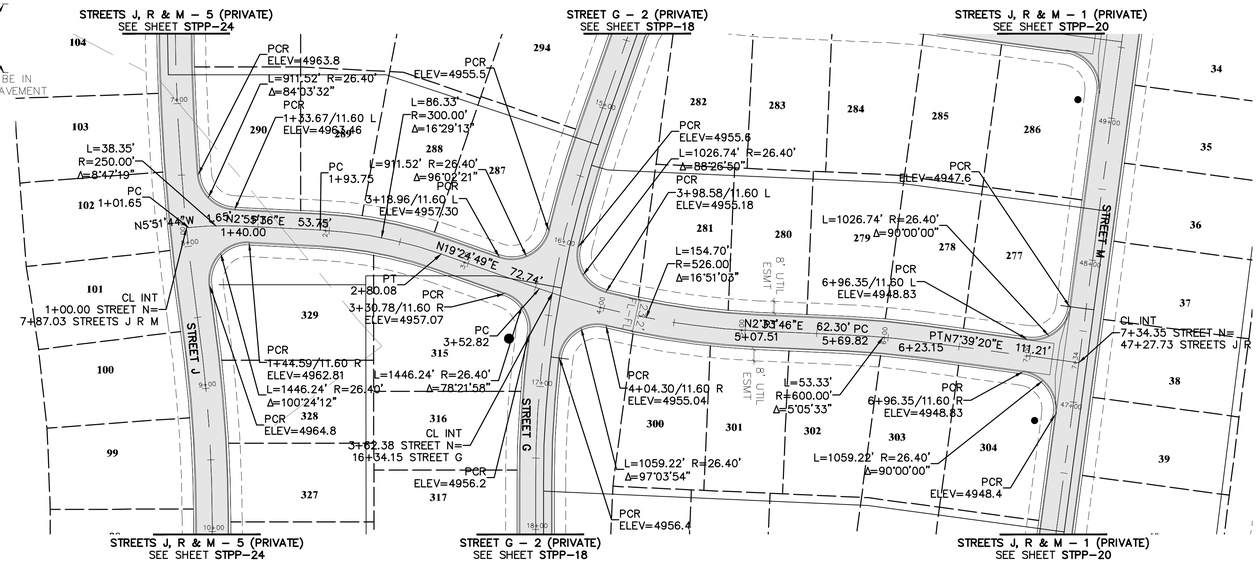
STPP–25

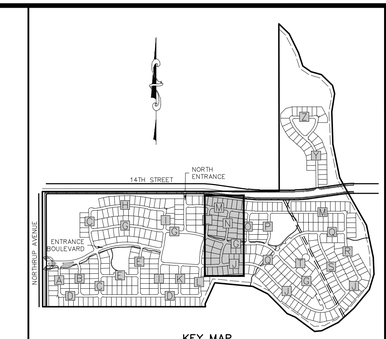
CAD FILE: 19001956-ROAD P&P-STREET K.DWG



TYPICAL PRIVATE ROAD SECTION
1:5 HOR.



STREET N (PRIVATE)



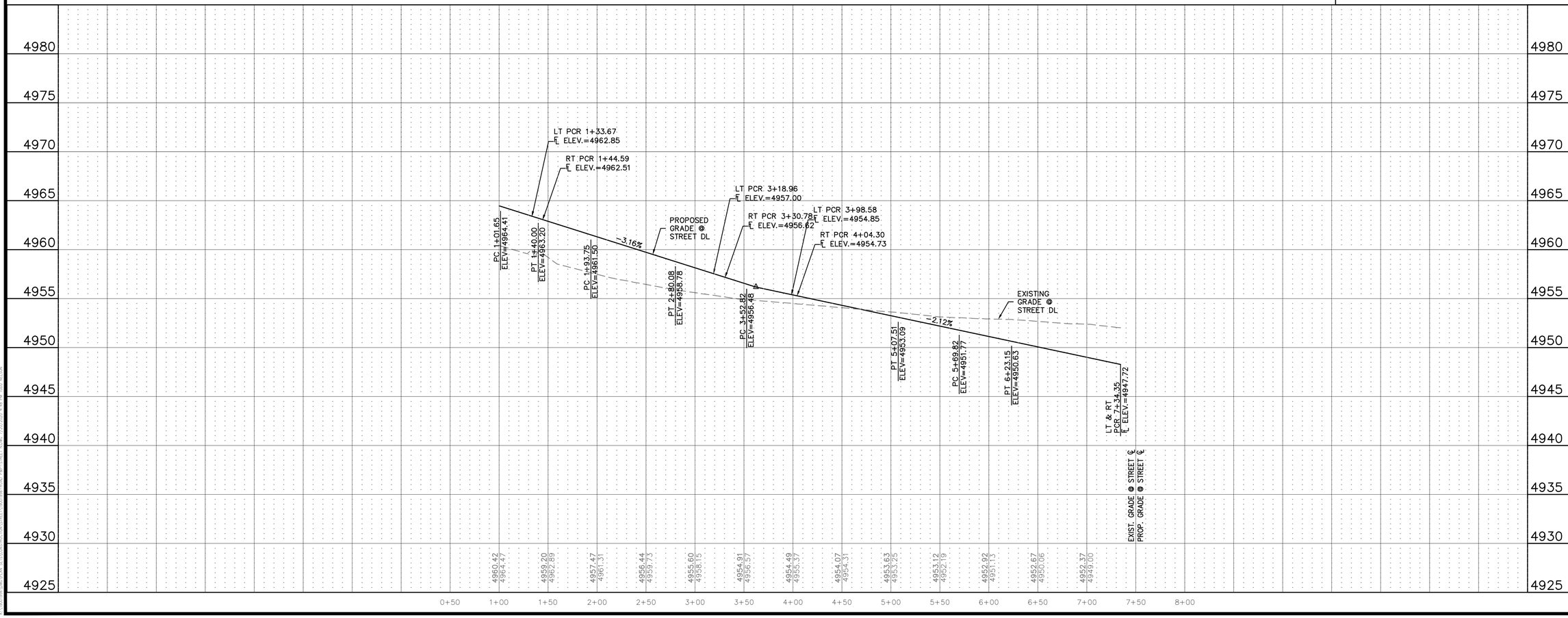
KEY MAP
SCALE: 1" = 800'

(IN FEET)
1 inch = 50 ft. (Horz)
1 inch = 5 ft. (Vert)

NOTE
ALL ELEVATIONS ARE FL (CURB FLOWLINE) UNLESS OTHERWISE NOTED.

PROJECT NO.: LUP2019–0039 &
PLAN NO.: SPL2019–0005

BENCHMARK:
VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.



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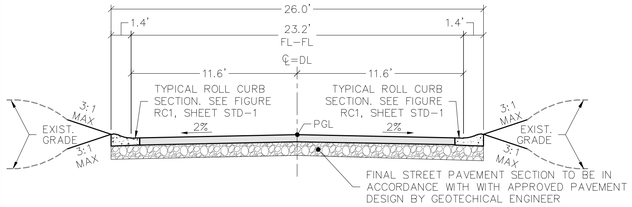
PRELIMINARY CONSTRUCTION PLANS
STREET PLAN & PROFILES
STREET N (PRIVATE)

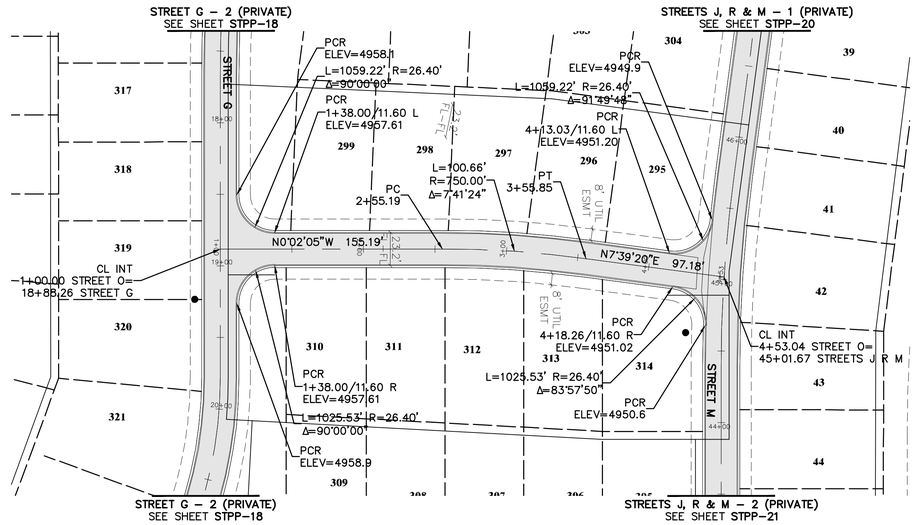
CLIENT
SUN COMMUNITIES, INC.
DATE DATE
REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO.
STPP-26

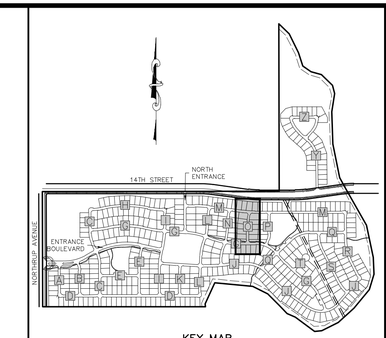
CAD FILE: 19001956-ROAD P&P-STREET N.DWG



TYPICAL PRIVATE ROAD SECTION
1:5 HOR.



STREET O (PRIVATE)



KEY MAP
SCALE: 1" = 800'

(IN FEET)
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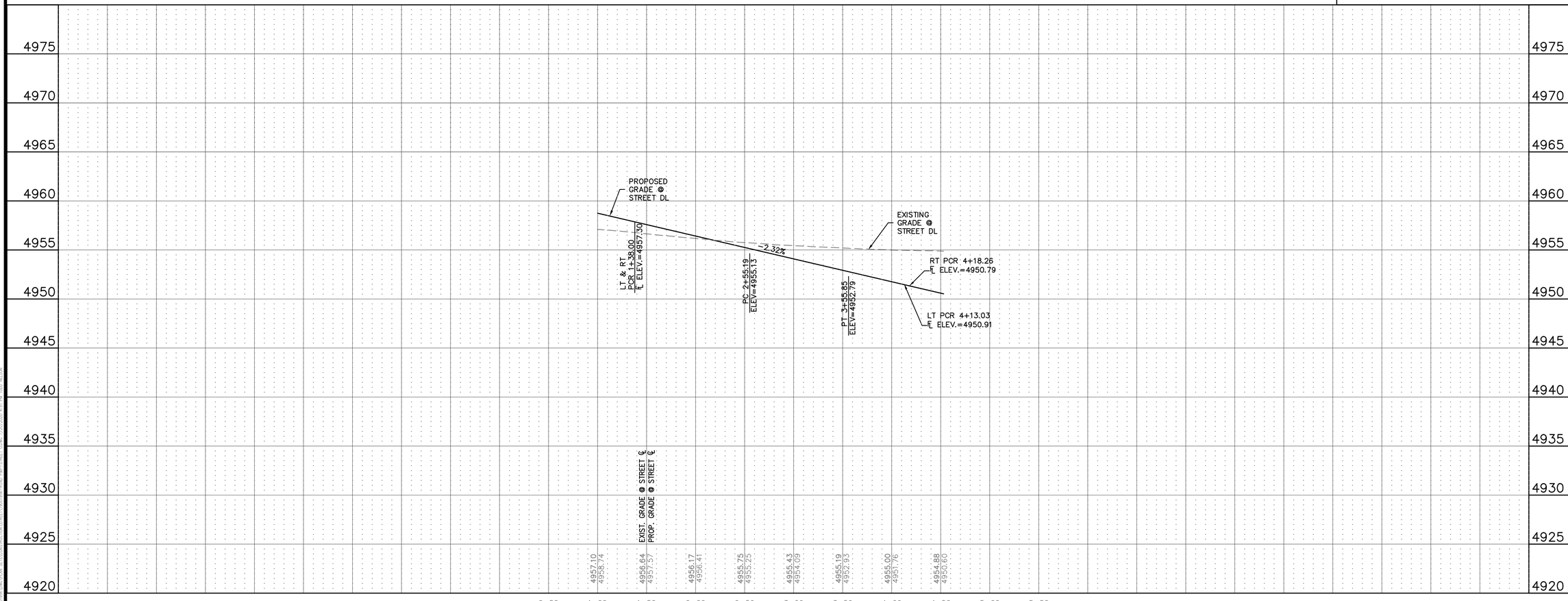
1 inch = 5 ft. (Vert)

NOTE
ALL ELEVATIONS ARE FL (CURB FLOWLINE) UNLESS OTHERWISE NOTED.

PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.



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STREET PLAN & PROFILES
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CLIENT
SUN COMMUNITIES, INC.

DATE
DATE

REVISIONS

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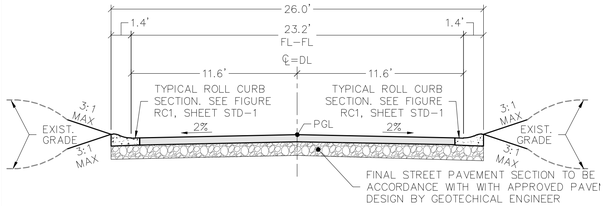
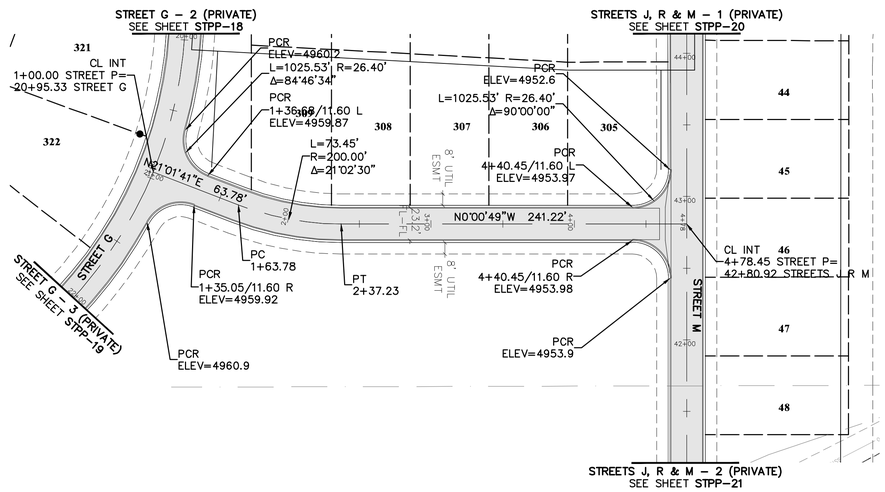
P.M. RW
JOB 19001956
SHEET NO.
STPP-27

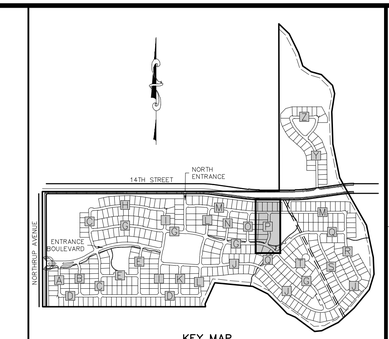
CAD FILE: 19001956-ROAD P&P-STREET O.DWG



TYPICAL PRIVATE ROAD SECTION
1:5 HOR.



STREET P (PRIVATE)



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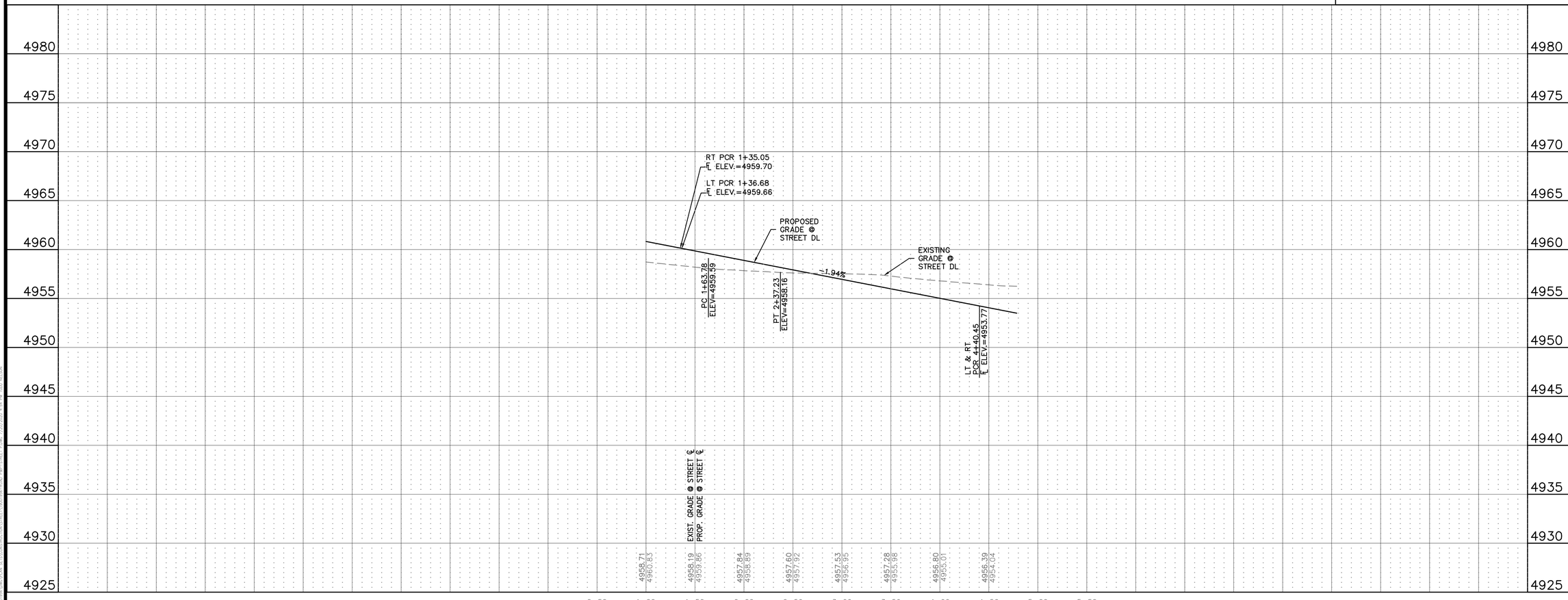
PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.



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SUN COMMUNITIES, INC.

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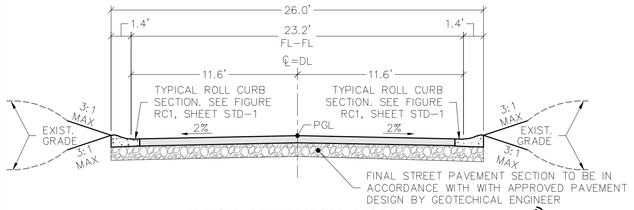
JOB 19001956
SHEET NO.
STPP-28

CAD FILE: 19001956-ROAD P&P-STREET P.DWG



TYPICAL PRIVATE ROAD SECTION
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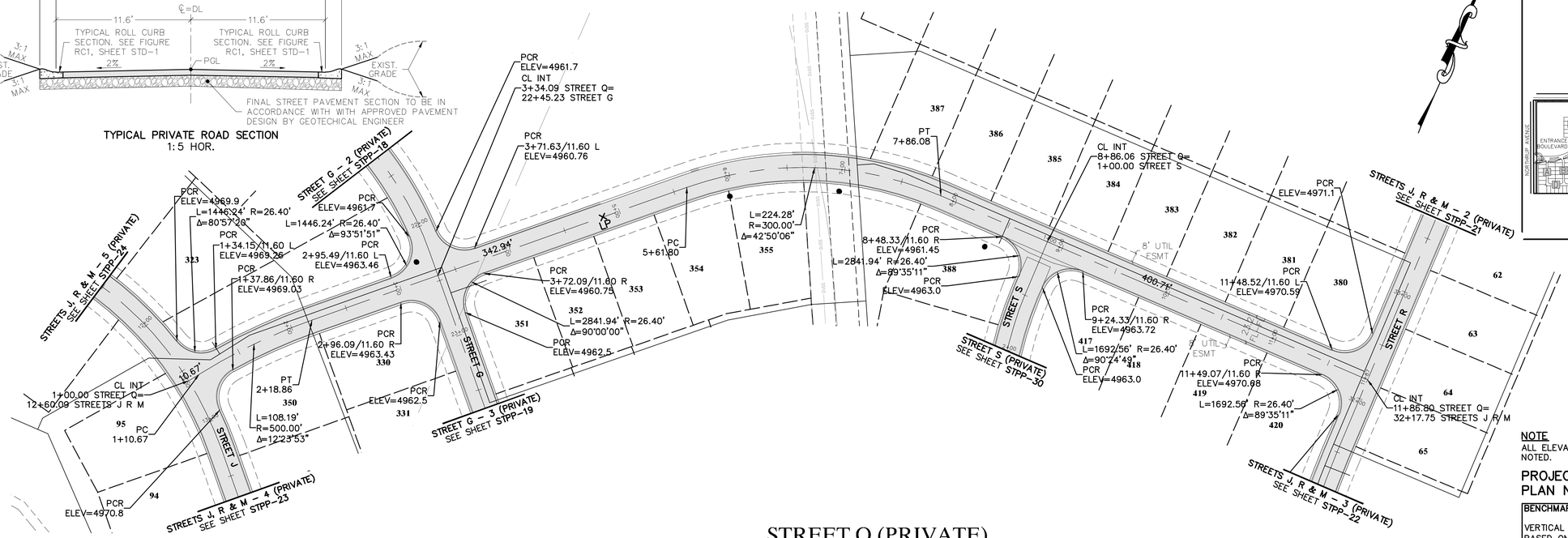
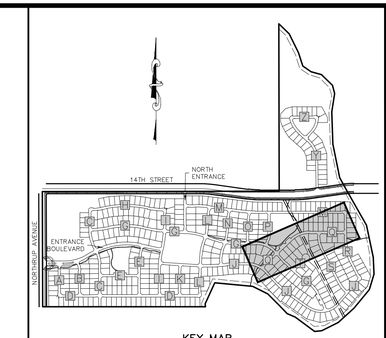


STREET Q (PRIVATE)



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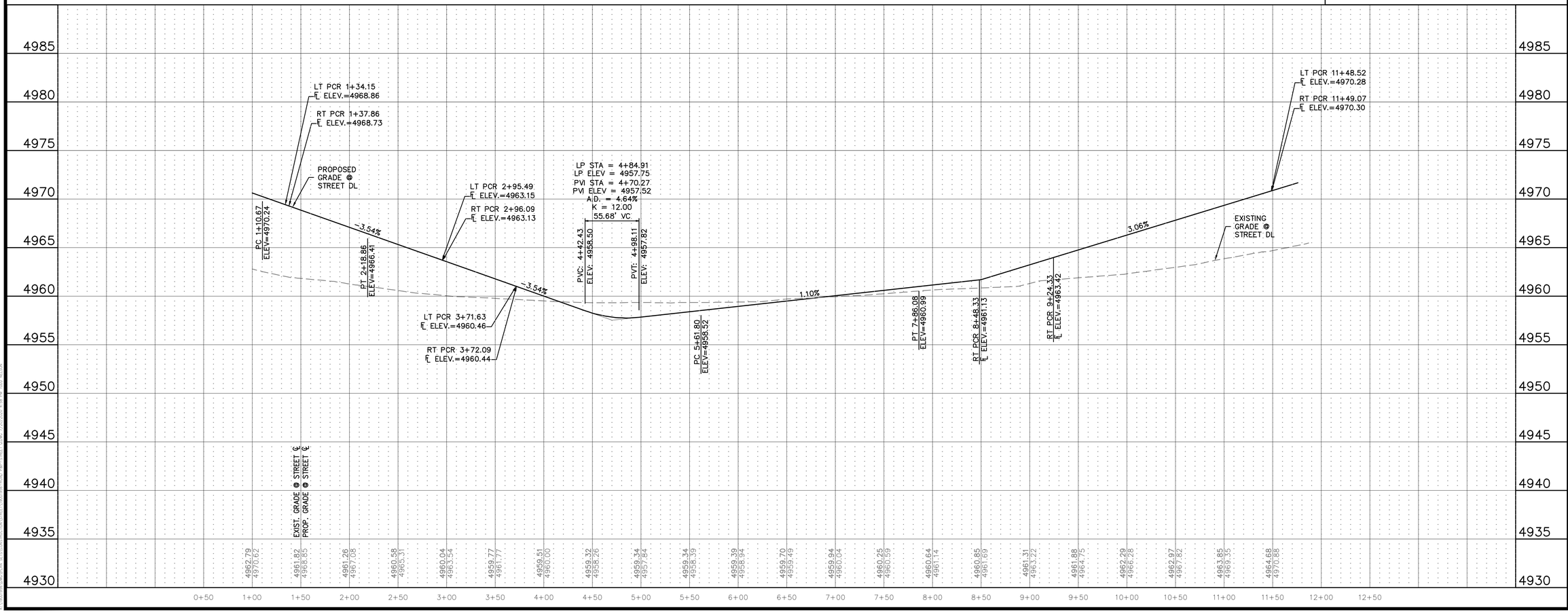
PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

BENCHMARK:
VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.



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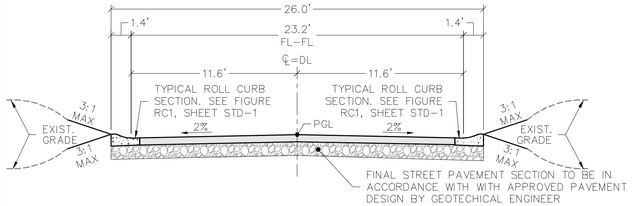
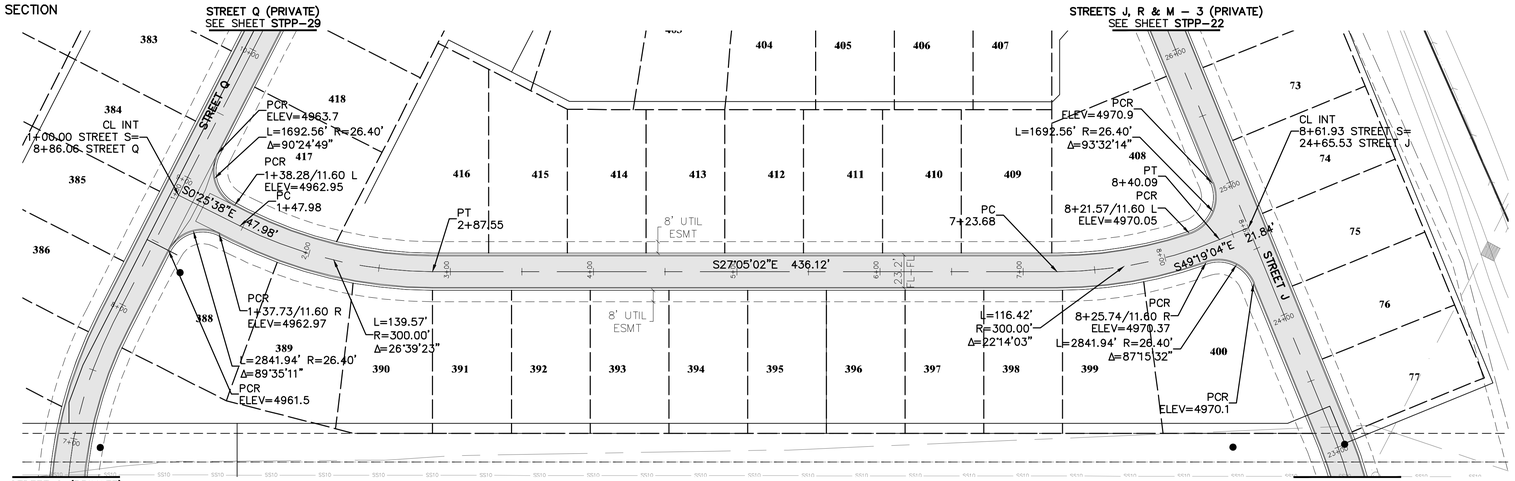
JOB 19001956
SHEET NO. STPP-29

CAD FILE: 19001956-ROAD P&P-STREET Q.DWG



TYPICAL PRIVATE ROAD SECTION
1:5 HOR.



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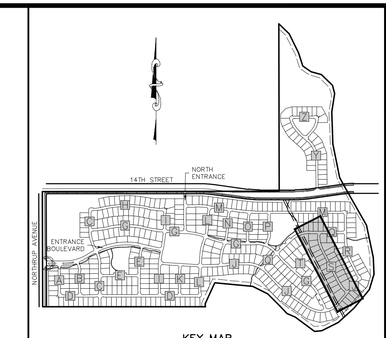

KEY MAP
SCALE: 1" = 800'

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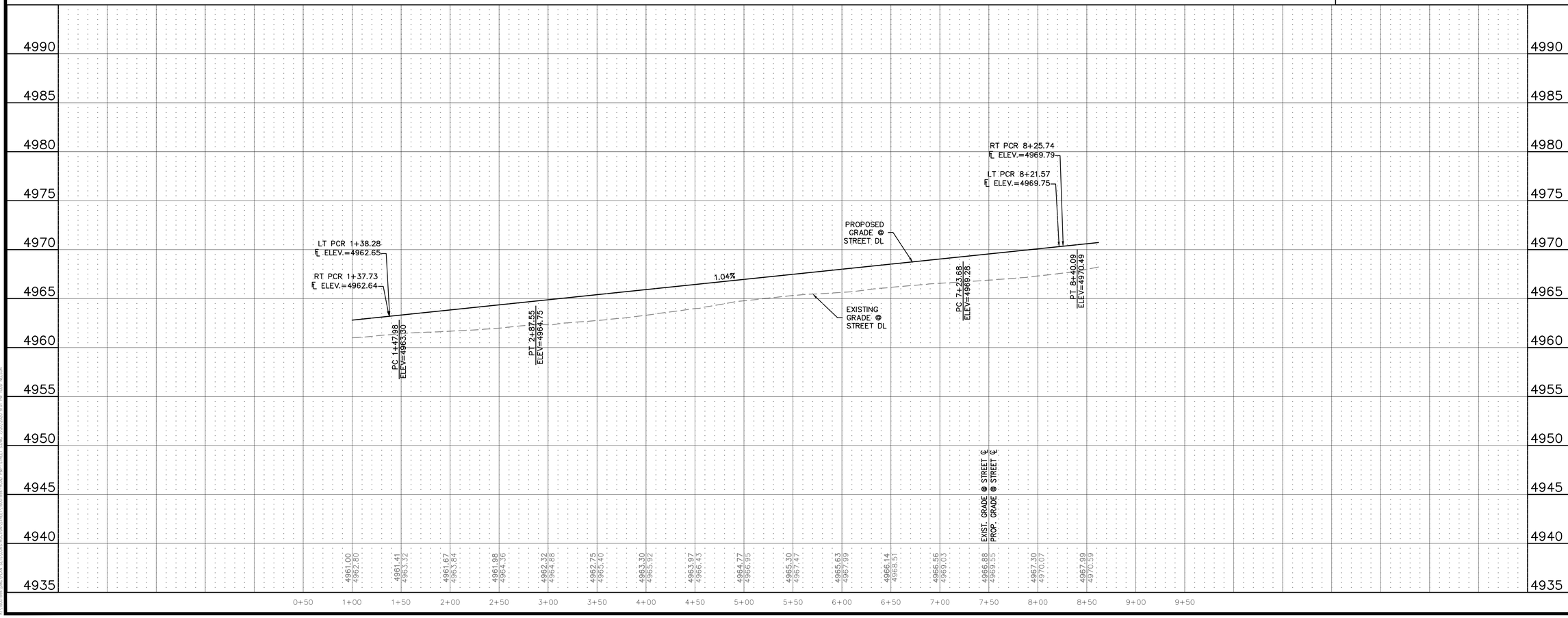
PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.



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SUN COMMUNITIES, INC.

DATE DATE

REVISIONS

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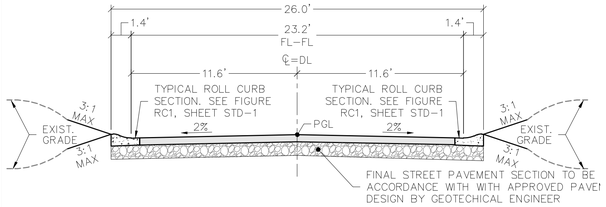
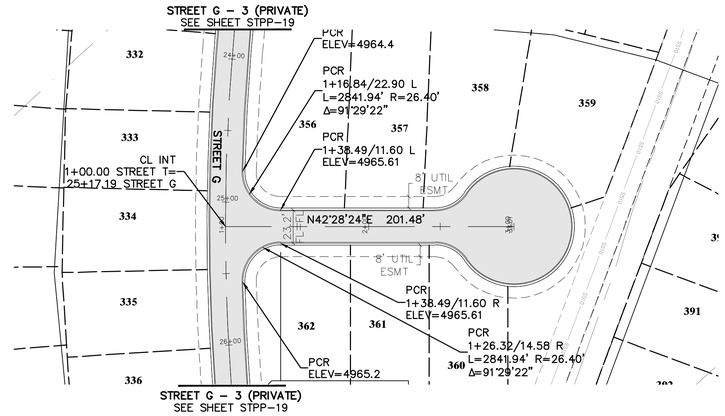
P.M. RW
JOB 19001956
SHEET NO.
STPP-30

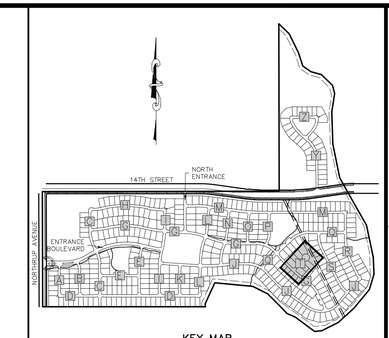
CAD FILE: 19001956-ROAD P&P-STREET S.DWG



TYPICAL PRIVATE ROAD SECTION
1:5 HOR.



STREET T (PRIVATE)



KEY MAP
SCALE: 1" = 800'

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NOTE
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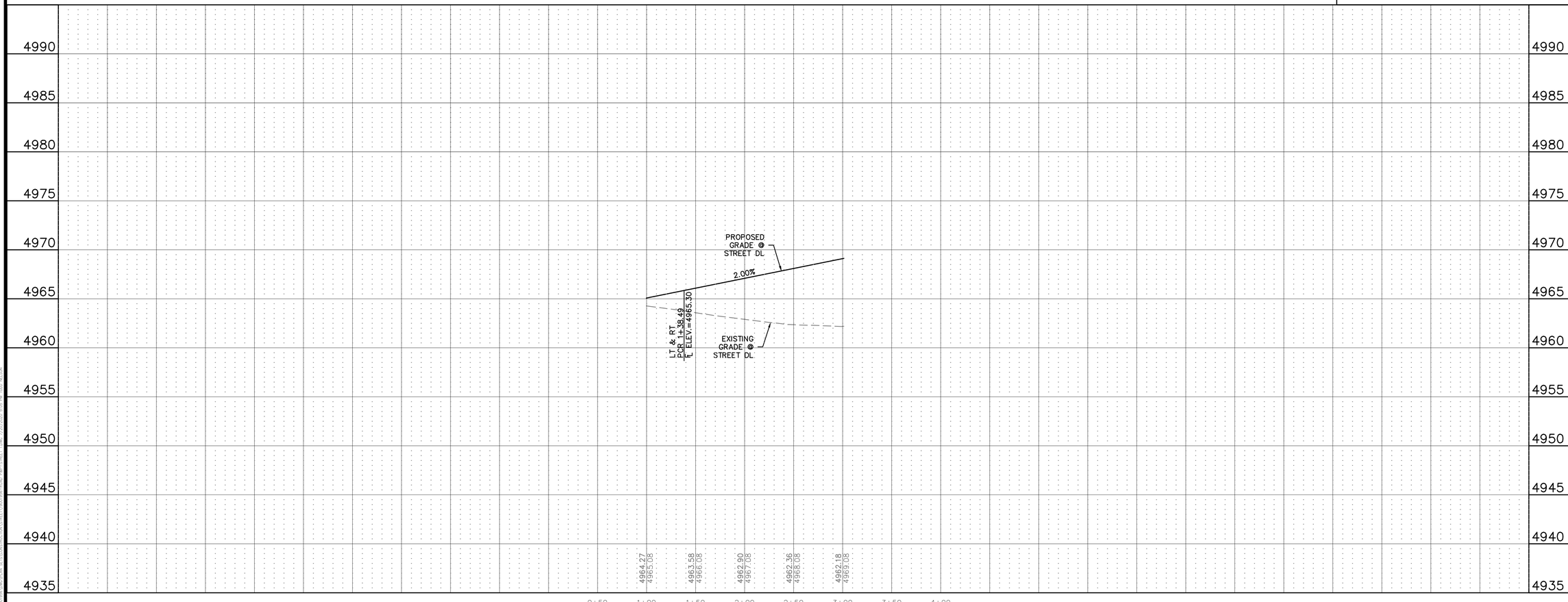
PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.



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SUN COMMUNITIES, INC.

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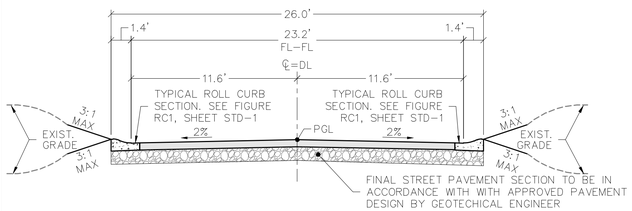
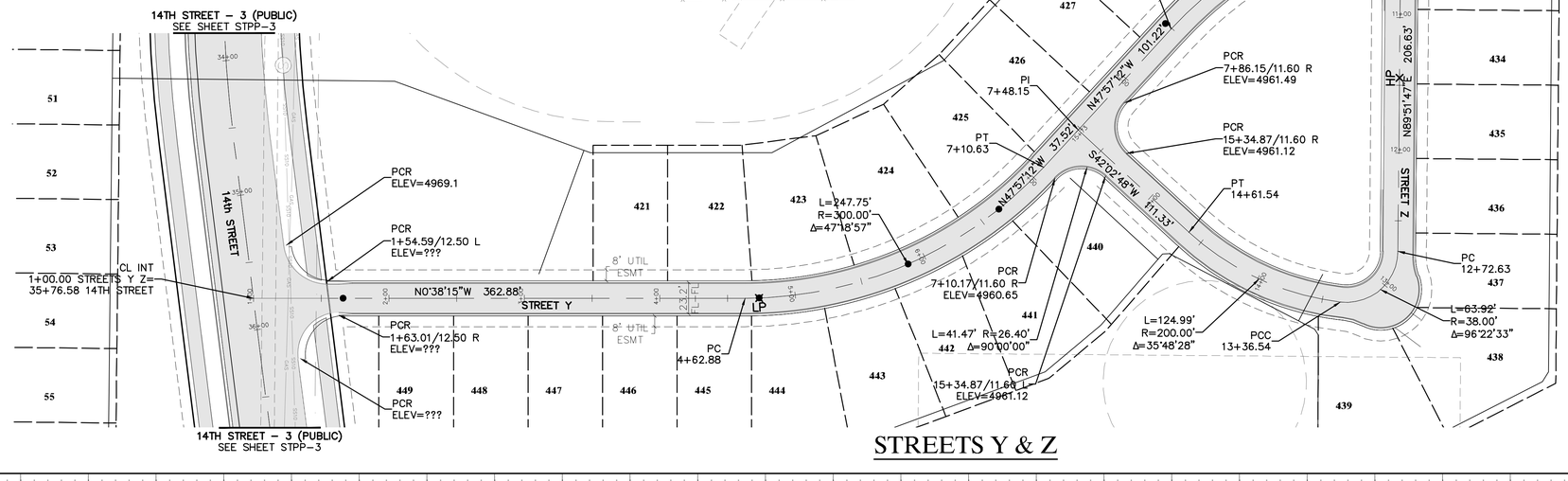
JOB 19001956
SHEET NO.
STPP-31

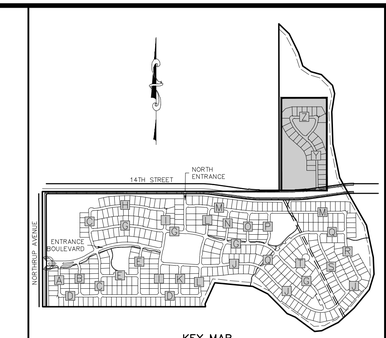
CAD FILE: 19001956-ROAD P&P-STREET T.DWG



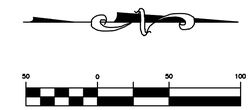
TYPICAL PRIVATE ROAD SECTION
1:5 HOR.



STREETS Y & Z



KEY MAP
SCALE: 1" = 800'



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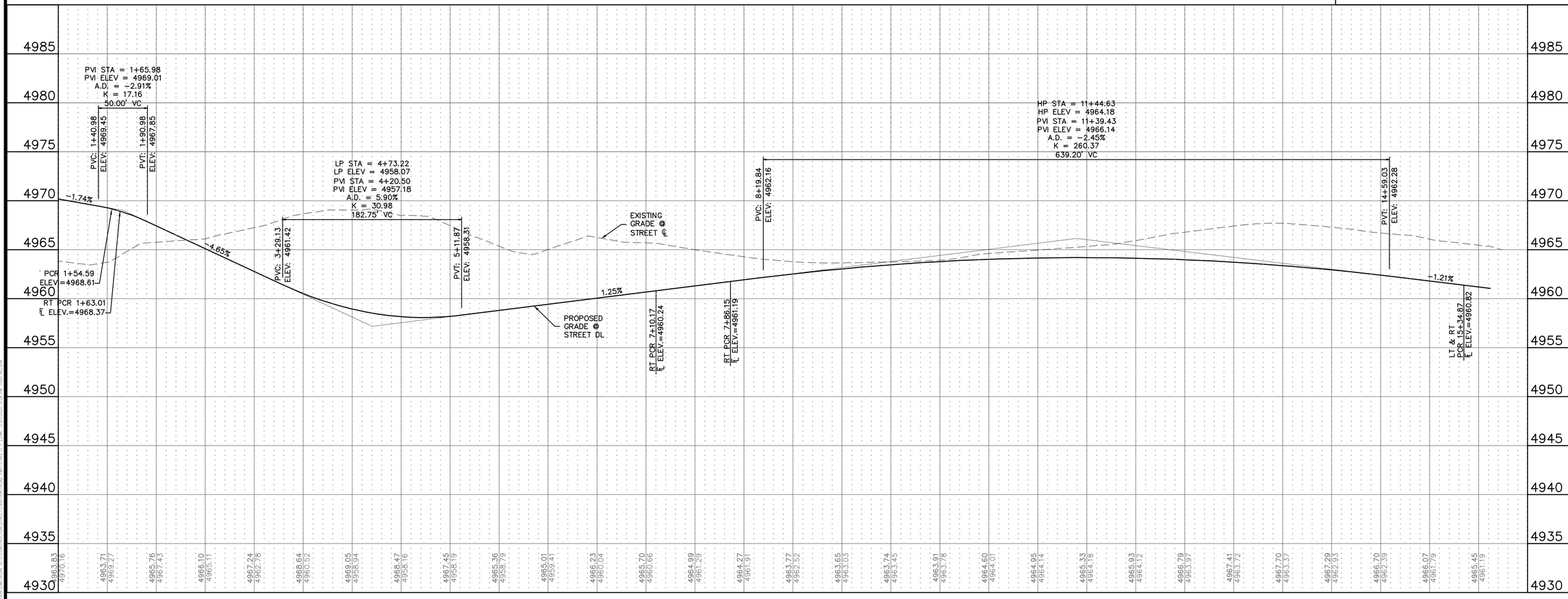
PROJECT NO.: LUP2019-0039 &
PLAN NO.: SPL2019-0005

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.



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SUN COMMUNITIES
WILLOW BEND SUBDIVISION
FORT LUPTON, COLORADO
PRELIMINARY CONSTRUCTION PLANS
STREET PLAN & PROFILES
STREETS Y & Z

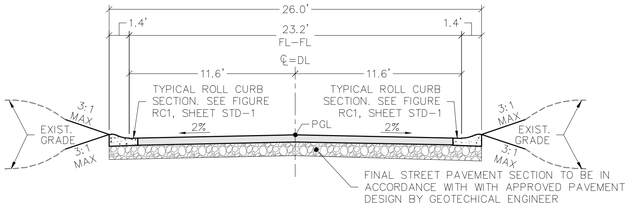
CLIENT
SUN COMMUNITIES, INC.

DATE DATE

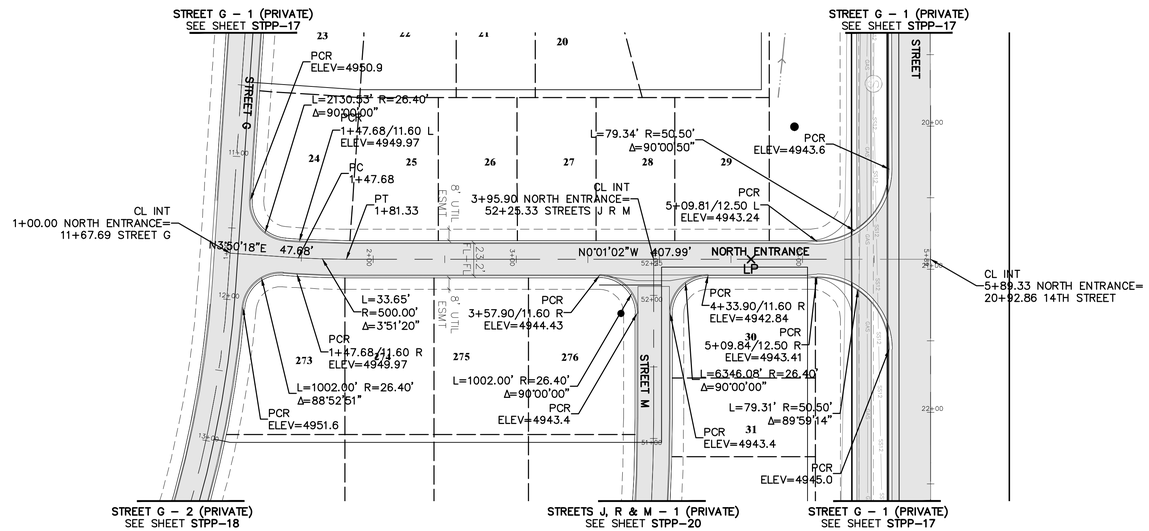
REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. STPP-32

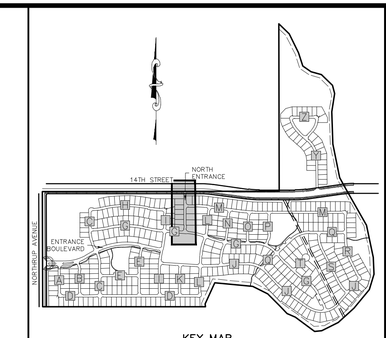
CAD FILE: 19001956-ROAD P&P-STREETS Y-Z.DWG



TYPICAL PRIVATE ROAD SECTION
1:5 HOR.



NORTH ENTRANCE



KEY MAP
SCALE: 1" = 800'

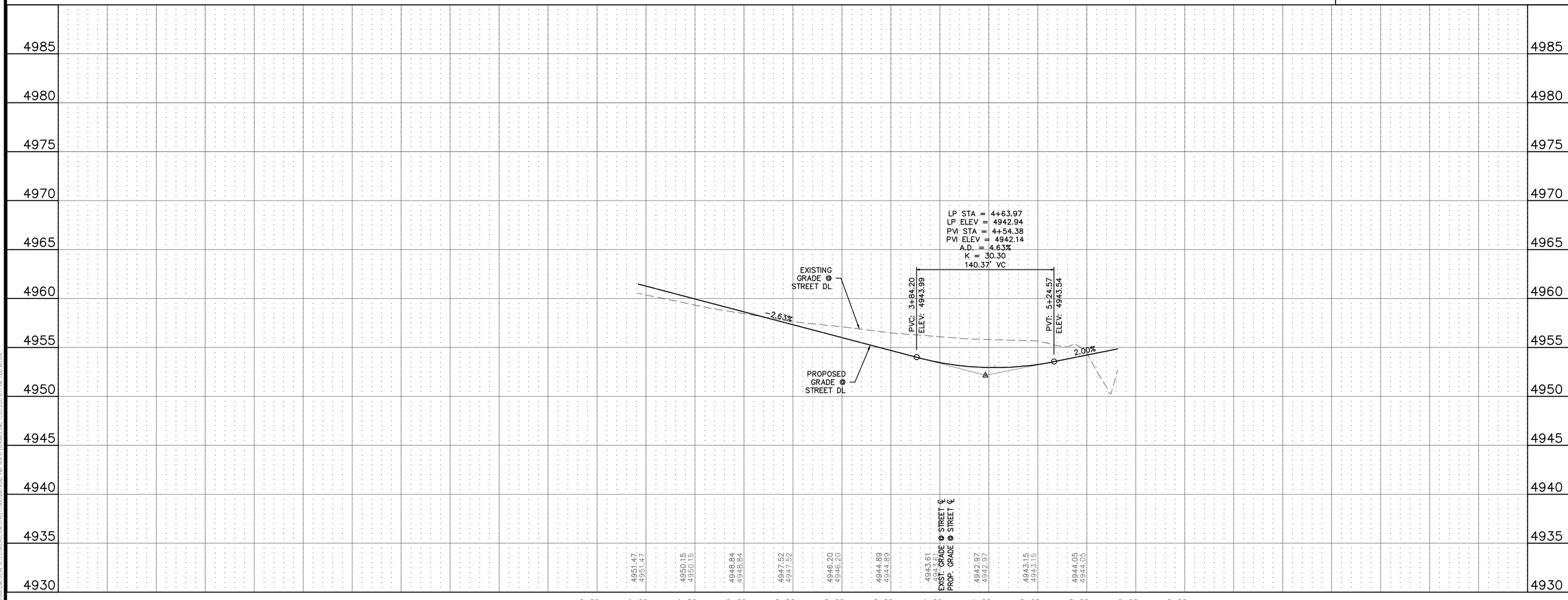
(IN FEET)
1 inch = 50 ft. (Horz)
1 inch = 5 ft. (Vert)

NOTE
ALL ELEVATIONS ARE FL (CURB FLOWLINE) UNLESS OTHERWISE NOTED.

PROJECT NO.: LUP2019–0039 &
PLAN NO.: SPL2019–0005

BENCHMARK:

VERTICAL DATUM: NAVD 88 – GEOID MODEL 12B ELEVATIONS BASED ON NGS "U 260 RESET" WITH PUBLISHED ELEVATION OF 4893.9'.



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NORTH ENTRANCE

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SHEET NO.
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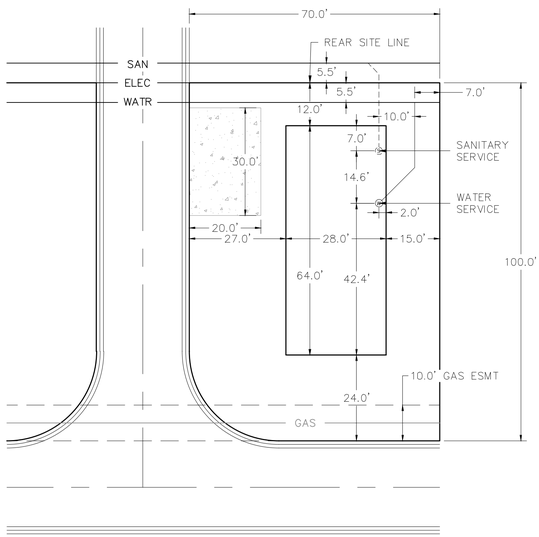
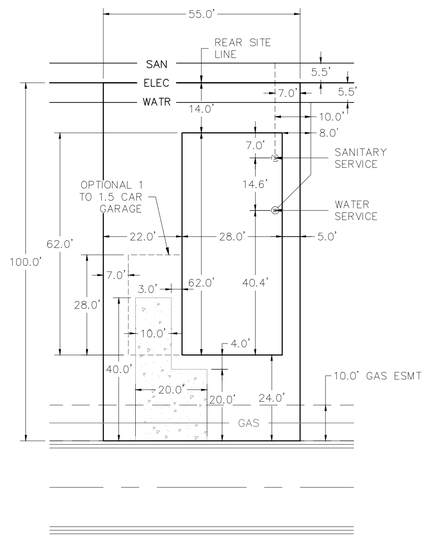
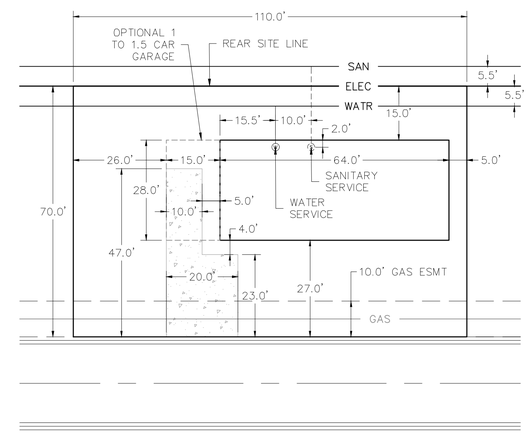
CAD FILE: 19001956-ROAD P&P NORTH ENTRANCE.DWG



TYPICAL END SITE/PRIVATE ROADWAY
1:20 HOR.



TYPICAL PERPENDICULAR SITE/PRIVATE ROADWAY
1:20 HOR.



TYPICAL PARALLEL SITE/PRIVATE ROADWAY
1:20 HOR.

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PRELIMINARY CONSTRUCTION PLANS
CONSTRUCTION DETAILS
SITE AND UTILITY SERVICE LAYOUT

CLIENT

SUN COMMUNITIES, INC.

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P.M. RW
JOB 19001956
SHEET NO.
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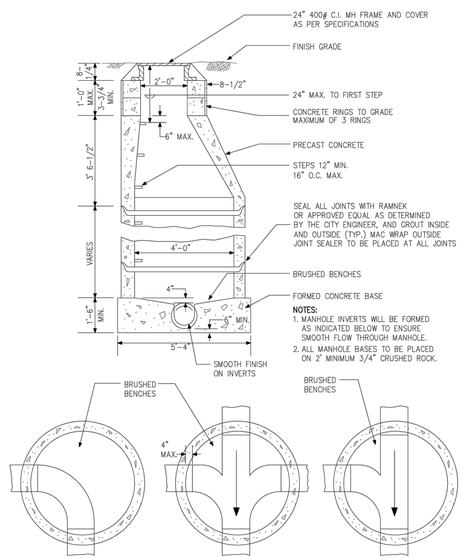
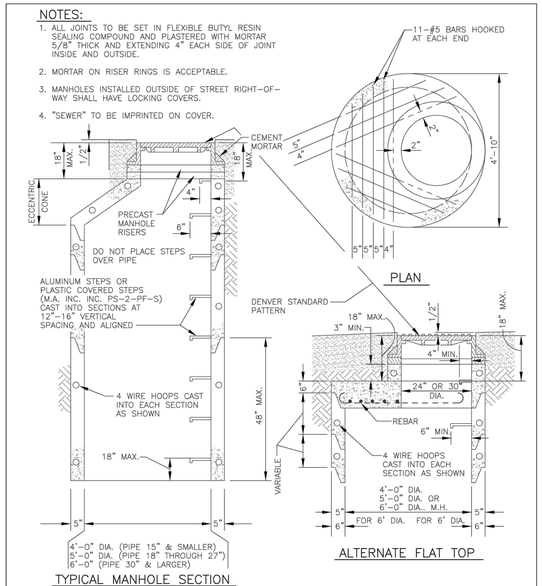


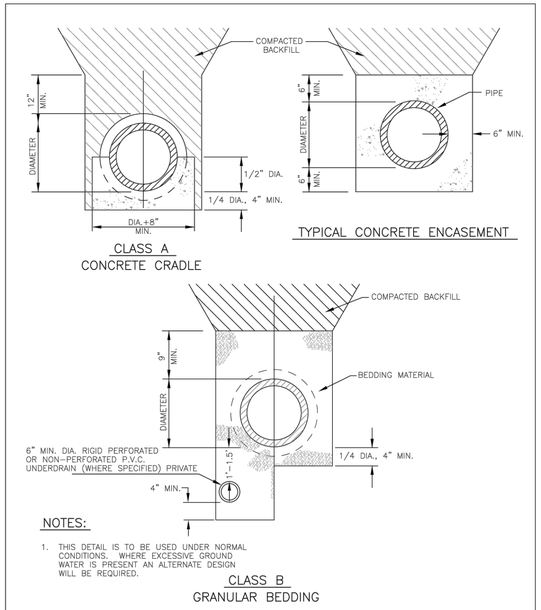
NOTES:
1. MANHOLE INVERTS WILL BE FORMED AS INDICATED BELOW TO ENSURE SMOOTH FLOW THROUGH MANHOLE.
2. ALL MANHOLE BASES TO BE PLACED ON 2' MINIMUM 3/4" CRUSHED ROCK.

DESIGN STANDARDS	STANDARD DRAWING
SANITARY SEWER STANDARD MANHOLE	SS1
	DATE: 8/15/14

NOTES:
1. ALL JOINTS TO BE SET IN FLEXIBLE BUTYL RESIN SEALING COMPOUND AND PLASTERED WITH MORTAR 5/8" THICK AND EXTENDING 4" EACH SIDE OF JOINT INSIDE AND OUTSIDE.
2. MORTAR ON RISER RINGS IS ACCEPTABLE.
3. MANHOLES INSTALLED OUTSIDE OF STREET RIGHT-OF-WAY SHALL HAVE LOCKING COVERS.
4. "SEWER" TO BE IMPRINTED ON COVER.



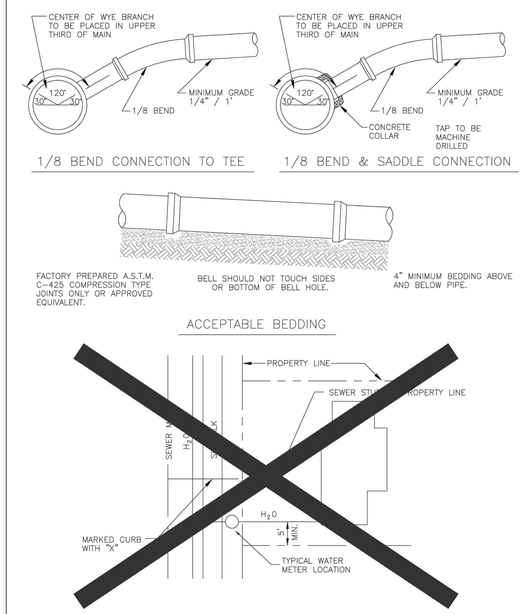
DESIGN STANDARDS	STANDARD DRAWING
MANHOLE BARRELS AND ALTERNATE TOPS	SS2
	DATE: 8/15/14



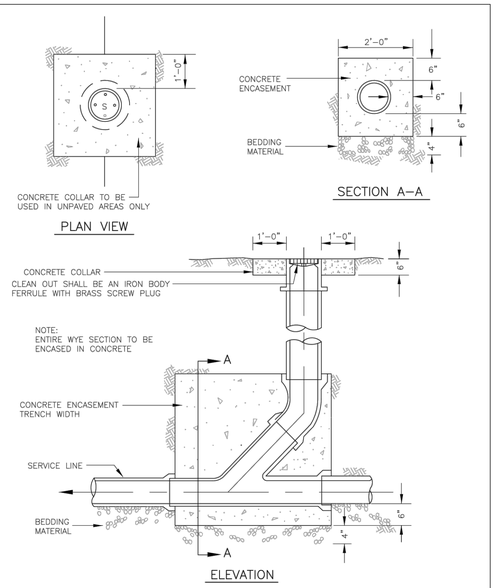
NOTES:
1. THIS DETAIL IS TO BE USED UNDER NORMAL CONDITIONS. WHERE EXCESSIVE GROUND WATER IS PRESENT AN ALTERNATE DESIGN WILL BE REQUIRED.

CLASS B
GRANULAR BEDDING

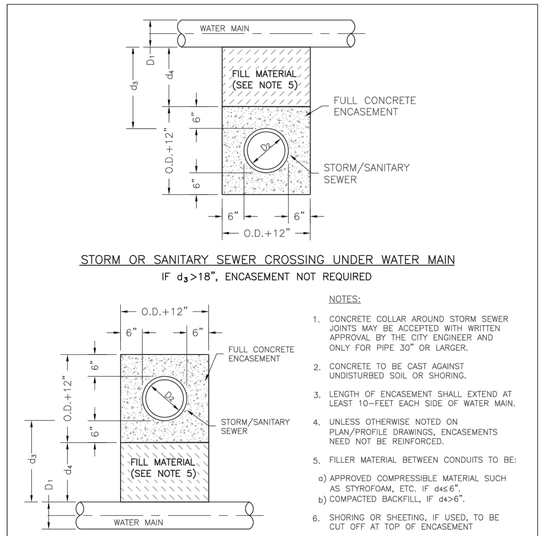
DESIGN STANDARDS	STANDARD DRAWING
TYPICAL PIPE BEDDING	SS6
	DATE: 8/15/14



DESIGN STANDARDS	STANDARD DRAWING
TYPICAL HOUSE SERVICE LOCATION	SS7
	DATE: 8/15/14



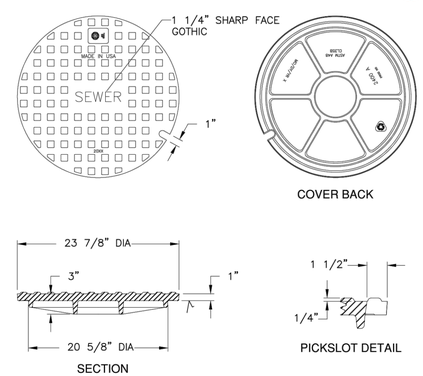
DESIGN STANDARDS	STANDARD DRAWING
STANDARD CLEAN-OUT DETAIL	SS8
	DATE: 8/15/14



NOTES:
1. CONCRETE COLLAR AROUND STORM SEWER JOINTS MAY BE ACCEPTED WITH WRITTEN APPROVAL BY THE CITY ENGINEER AND ONLY FOR PIPE 30" OR LARGER.
2. CONCRETE TO BE CAST AGAINST UNDISTURBED SOIL OR SHORING.
3. LENGTH OF ENCASEMENT SHALL EXTEND AT LEAST 10-FEET EACH SIDE OF WATER MAIN.
4. UNLESS OTHERWISE NOTED ON PLAN/PROFILE DRAWINGS, ENCASEMENTS NEED NOT BE REINFORCED.
5. FILLER MATERIAL BETWEEN CONDUITS TO BE:
   a) APPROVED COMPRESSIBLE MATERIAL SUCH AS STYROFOAM, ETC. IF $d_4 \leq 6"$.
   b) COMPACTED BACKFILL, IF $d_4 > 6"$.
6. SHORING OR SHEETING, IF USED, TO BE CUT OFF AT TOP OF ENCASEMENT

DESIGN STANDARDS	STANDARD DRAWING
ENCASEMENT FOR CONDUIT CROSSING	SS11
	DATE: 8/15/14

2400A Cover



Product Number
00240023
Design Features
-Materials
- Gray Iron (CL35B)
-Design Load
- Heavy Duty
-Coating
- Undipped
-, - Designates Machined Surface

Certification
- ASTM A48
-Country of Origin:USA

DESIGN STANDARDS	STANDARD DRAWING
SANITARY SEWER MANHOLE LID	SS12
	DATE: 5/04/2017

SUN COMMUNITIES, INC.
MANUFACTURED HOME COMMUNITIES
DEVELOPMENT CRITERIA & DESIGN STANDARDS

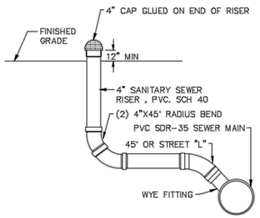


FIGURE SSR
Typical Sanitary Sewer Riser Detail

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P.M. RW
JOB 19001956
SHEET NO. SSD-1

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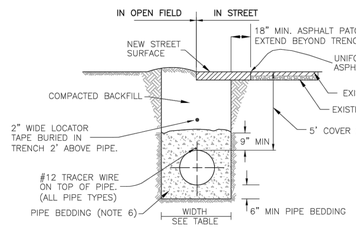


TYPICAL TRENCH SECTION

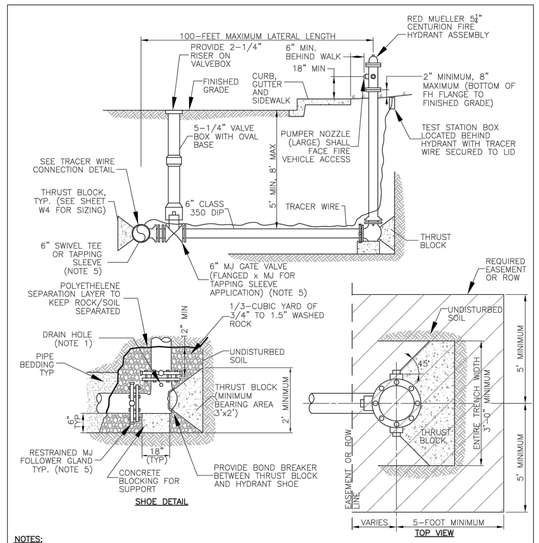
TRENCH WIDTH

PIPE DIAMETER	MINIMUM WIDTH	MAXIMUM WIDTH
4"	1'-4"	2'-4"
6"	1'-6"	2'-6"
8"	1'-8"	2'-8"
12"	2'-0"	3'-0"
16"	2'-4"	3'-4"
20"	2'-8"	3'-8"
24"	4'-0"	5'-0"

NOTES:

1. TRENCHES 5 FT DEEP OR GREATER REQUIRE A "PROTECTIVE SYSTEM" AS DEFINED BY OSHA. TRENCHES 20 FT DEEP OR GREATER REQUIRE THAT THE PROTECTIVE SYSTEM BE DESIGN BY A REGISTERED PROFESSIONAL ENGINEER.
2. OSHA'S STANDARDS REQUIRE THAT TRENCHES BE INSPECTED DAILY AND AS CONDITIONS CHANGE BY A "COMPETENT PERSON" (AS DEFINED BY OSHA) PRIOR TO WORKER ENTRY TO ENSURE ELIMINATION OF EXCAVATION HAZARDS. FOR ADDITIONAL INFORMATION REGARDING OSHA REQUIREMENTS CALL 1-800-321-OSHA.
3. MINIMUM COVER OVER PIPE TO BE BELOW OFFICIAL STREET GRADE.
4. FOR PIPE BEDDING REQUIREMENTS REFER TO CHAPTER 9 OF THE STANDARDS AND SPECIFICATIONS.
5. PIPE BEDDING SHALL BE PLACED AGAINST UNDISTURBED SOIL IN THE TRENCH BOTTOM, HOWEVER, WHERE ADVERSE SOIL IS ENCOUNTERED IN THE TRENCH BOTTOM, SOIL SHALL BE REMOVED AND TRENCH STABILIZATION MATERIAL SHALL BE PLACED IN ACCORDANCE WITH THE RECOMMENDATIONS OF A GEOTECHNICAL ENGINEER.

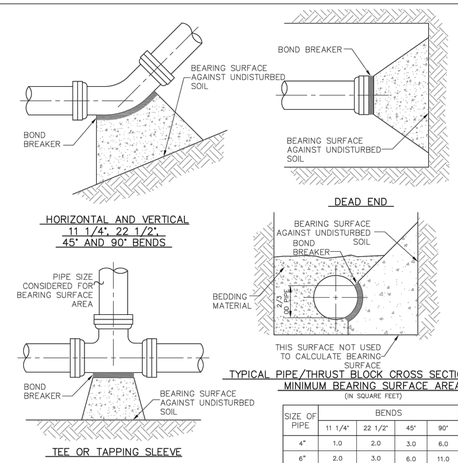
DESIGN STANDARDS	STANDARD DRAWING
TYPICAL TRENCH SECTION PIPE PROTECTION	W1
	DATE: 8/15/14



NOTES:

1. ALL FITTINGS, DI PIPE, AND HYDRANT BARREL SHALL BE POLYETHYLENE WRAPPED PER AWWA C-105. PROVIDE PERFORATION AT HYDRANT DRAIN HOLES.
2. PRIOR TO PUTTING INTO SERVICE THE FOLLOWING SHALL BE PERFORMED: NOZZLE THREADS SHALL BE GREASED, OIL RESERVOIR SHALL BE FILLED, AND HYDRANTS SHALL BE BRUSH PAINTED FIRE ENGINE RED (#7407).
3. THE ENTIRE PIPING ASSEMBLY (HYDRANT SHOE TO CONNECTION AT MAIN) SHALL BE FULLY RESTRAINED.

DESIGN STANDARDS	STANDARD DRAWING
FIRE HYDRANT INSTALLATION DETAIL	W2
	DATE: 8/15/14



MINIMUM BEARING SURFACE AREA
(IN SQUARE FEET)

SIZE OF PIPE	BENDS				TEE OR DEAD END
	11 1/4°	22 1/2°	45°	90°	
4"	1.0	2.0	3.0	6.0	4.0
6"	2.0	3.0	6.0	11.0	8.0
8"	3.0	6.0	11.0	19.0	14.0
12"	6.0	12.0	22.0	40.0	29.0
16"	10.0	20.0	38.0	70.0	50.0
20"	15.0	30.0	59.0	108.0	46.0
24"	22.0	43.0	84.0	154.0	110.0

NOTES:

1. BEARING SURFACES SHOWN IN CHART ARE MINIMUM.
2. BEARING SURFACES ARE BASED ON 150 PSI INTERNAL PIPE \ PRESS PLUS WATER HAMMER
   4", 6", 8" AND 12" WATER HAMMER = 110 PSI
   16", 20" AND 24" WATER HAMMER = 70 PSI
3. BEARING SURFACE CALCULATIONS ARE BASED ON 900 PSF SOIL BEARING CAPACITY.
4. ALL DUCTILE IRON AND CAST IRON PIPE AND FITTINGS SHALL BE WRAPPED IN POLYETHYLENE AND SECURELY TAPED PRIOR TO PLACING TRUST BLOCKS.
5. NO COMPACTION SHALL BE ALLOWED ABOVE THRUST BLOCKS FOR A MINIMUM OF 24 HOURS AFTER PLACEMENT. CONCRETE MUST CURE A MIN. OF 48 HOURS PRIOR TO FILLING LINES.

DESIGN STANDARDS	STANDARD DRAWING
CONCRETE THRUST BLOCKS - BEARING SURFACES AND INSTALLATION	W3
	DATE: 8/15/14

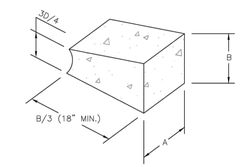
MINIMUM DIMENSIONS FOR THRUST BLOCKS

FITTING SIZE	TEES & PLUGS		90° BEND		45° BENDS & WYES	
	A	B	A	B	A	B
4"	1'-7"	1'-2"	1'-9"	1'-6"	1'-8"	0'-10"
6"	2'-0"	1'-11"	2'-5"	2'-2"	1'-10"	1'-7"
8"	2'-8"	2'-6"	3'-2"	3'-0"	2'-5"	2'-1"
10"	3'-4"	3'-3"	4'-0"	3'-10"	3'-0"	2'-9"
12"	4'-0"	3'-10"	4'-8"	4'-8"	3'-8"	3'-3"
14"	5'-5"	3'-10"	6'-6"	4'-11"	4'-9"	3'-5"
20"	5'-0"	5'-0"	6'-0"	6'-0"	5'-0"	4'-0"
24"	6'-0"	6'-0"	7'-0"	7'-0"	5'-0"	5'-0"
30"	7'-6"	7'-6"	8'-0"	8'-0"	6'-3"	6'-3"

FITTING SIZE	REDUCERS & 22 1/2° BENDS		11 1/4° BENDS	
	A	B	A	B
4"	1'-7"	0'-6"	0'-6"	0'-6"
6"	1'-9"	0'-10"	1'-0"	0'-6"
8"	1'-9"	1'-6"	1'-0"	1'-0"
10"	2'-2"	1'-11"	1'-6"	1'-0"
12"	2'-7"	2'-3"	2'-0"	1'-0"
14"	3'-5"	2'-5"	2'-0"	1'-6"
20"	3'-6"	3'-0"	3'-0"	2'-0"
24"	4'-6"	3'-0"	3'-0"	3'-0"
30"	4'-9"	4'-6"	3'-3"	3'-3"

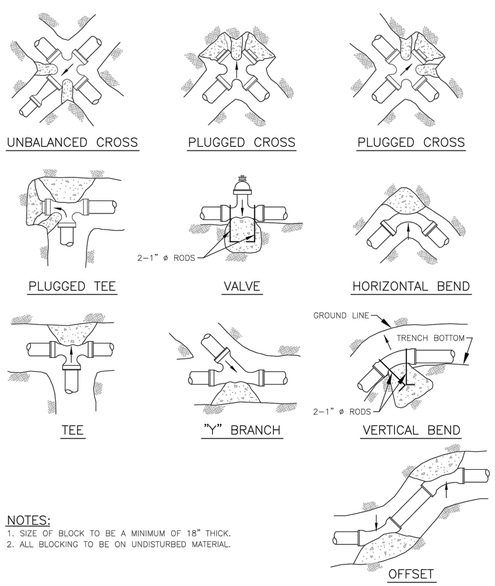
GENERAL NOTES:

1. BEARING SURFACE AREAS SHOWN IN CHART ARE MINIMUM.
2. BASED ON 150 P.S.I. INTERNAL PIPE PRESSURE.
3. SOIL BEARING CAPACITY = 2000 LB./SQ. FT.
4. ALL FITTINGS TO BE WRAPPED WITH POLYETHYLENE (MINIMUM 8 MIL.).



NOT TO SCALE

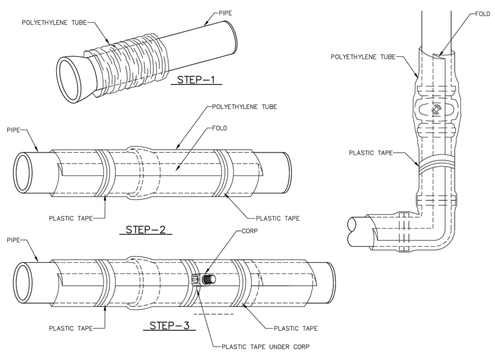
DESIGN STANDARDS	STANDARD DRAWING
TYPICAL TRENCH BLOCK DIMENSIONS	W4
	DATE: 8/15/14



NOTES:

1. SIZE OF BLOCK TO BE A MINIMUM OF 18" THICK.
2. ALL BLOCKING TO BE ON UNDISTURBED MATERIAL.

DESIGN STANDARDS	STANDARD DRAWING
CONCRETE THRUST BLOCK FOR UNBALANCED SURFACES	W5
	DATE: 8/15/14



FIELD INSTALLATION-POLYETHYLENE WRAP

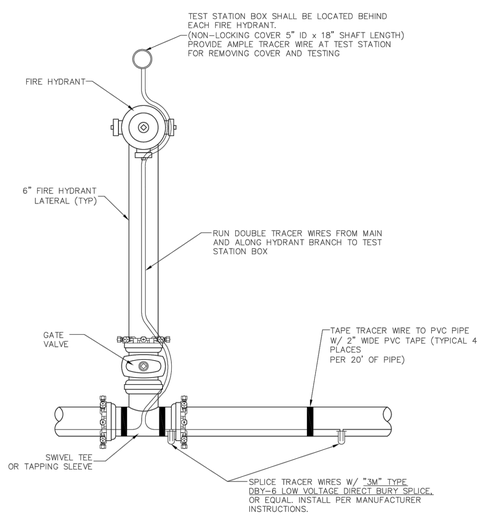
STEP-1 PLACE TUBE OF POLYETHYLENE MATERIAL AROUND PIPE PRIOR TO LOWERING PIPE INTO TRENCH.

STEP-2 PULL THE TUBE OVER THE LENGTH OF THE PIPE. TAPE TUBE TO PIPE AT JOINT. FOLD MATERIAL AROUND THE ADJACENT SPIGOT END AND WRAP WITH TAPE TO HOLD THE PLASTIC TUBE IN PLACE.

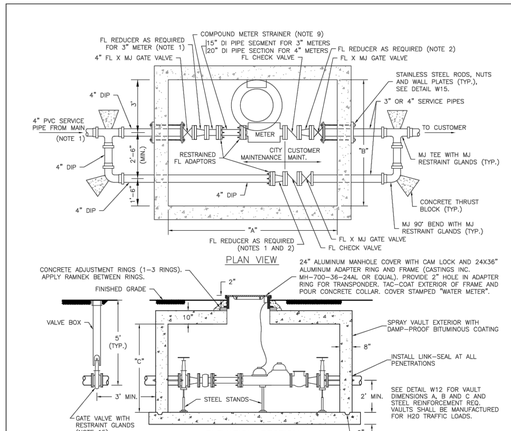
STEP-3 OVERLAP FIRST TUBE WITH ADJACENT TUBE AND SECURE WITH PLASTIC ADHESIVE TAPE. THE POLYETHYLENE TUBE MATERIAL COVERING THE PIPE SHALL BE LOOSE. EXCESS MATERIAL SHALL BE NEATLY DRAWN UP AROUND THE PIPE BARREL, FOLDED ON TOP OF THE PIPE AND TAPED IN PLACE.

NOTE: POLYETHYLENE SHALL BE MINIMUM 8-MIL THICKNESS

DESIGN STANDARDS	STANDARD DRAWING
POLYETHYLENE WRAP	W6
	DATE: 8/15/14



DESIGN STANDARDS	STANDARD DRAWING
TRACER WIRE	W7
	DATE: 8/15/14



NOTES:

1. FOR ALL 3" AND 4" METER SETTINGS, 4" PVC SERVICE PIPE SHALL BE REQUIRED FROM THE MAIN TO THE VAULT AS SHOWN ON THIS DETAIL. FOR 3" METER SETTINGS, A REDUCER SHALL BE REQUIRED BEFORE THE METER AND ALSO ON THE BYPASS AS SHOWN (SEE NOTE 2 FOR EXCEPTION).
2. UPSIZING OF THE SERVICE PIPE AFTER THE METER REQUIRES THE APPROVAL OF THE BUILDING DEPT. FOR A SERVICE PIPE UPSIZED FROM 3" TO 4", A REDUCER SHALL BE INSTALLED AFTER THE METER AS SHOWN (REDUCER IS NOT REQUIRED ON BYPASS IN THIS CASE).
3. IN GENERAL, PVC PIPE SHALL BE USED ON THE SERVICE LINE OUTSIDE THE VAULT, EXCEPT WHERE THE DI PIPE STUBS THROUGH THE VAULT WALLS, AND DI PIPE SHALL BE USED INSIDE THE VAULT. FITTINGS INSIDE THE VAULT SHALL BE FLANGED, UNLESS OTHERWISE NOTED. FITTINGS OUTSIDE THE VAULT SHALL BE MECHANICAL JOINT.
4. FOR APPROVED MANUFACTURERS AND MODEL NUMBERS OF FITTINGS, REFER TO CHAPTER 3 OF THESE STANDARDS AND SPECIFICATIONS.
5. METER VAULT SHALL BE SURVEYED SO THAT THE COVER CAN BE PROPERLY LOCATED 2" ABOVE FINISHED GRADE PRIOR TO BACKFILLING.
6. A BYPASS IS REQUIRED TO BE INSTALLED ON ALL POTABLE WATER SETTINGS.
7. MANHOLE STEPS SHALL BE PLACED 12" ON CENTER AND 18" MAX. FROM FINISHED GRADE TO THE FIRST STEP.
8. SERVICE PIPES LARGER THAN 4" WILL REQUIRE SHOP DRAWING SUBMITTAL AND APPROVAL BY UTILITY OPERATIONS.
9. COMPOUND METERS SHALL HAVE STRAINERS UPSTREAM OF THE 15" PIPE SEGMENT. TURBO METERS SHALL HAVE INTERGRAL STRAINERS.
10. STEEL PIPE STANDS SHALL BE REQUIRED: 3 FOR MAIN LINE AND 2 FOR BYPASS LINE (MINIMUM).
11. METER VAULT AND CURB STOP SHALL BE LOCATED IN A SOD OR MULCH AREA WITH A 10' MIN. WIDTH UTILITY EASEMENT. NO TREES, SHRUBS OR STRUCTURES SHALL BE LOCATED IN THE EASEMENT.
12. THIS VAULT IS NOT INTENDED FOR INSTALLATION IN STREETS, DRIVEWAYS OR CONCRETE AREAS.
13. SERVICE LINES SHALL BE INSTALLED PERPENDICULAR TO THE WATER MAIN.
14. NOTE: VAULT RODDING, NUTS AND WALL PLATES MUST BE STAINLESS STEEL.
15. ALL SERVICE PIPE AND FITTINGS OUTSIDE OF THE VAULT SHALL BE RESTRAINED FOR A MIN. DISTANCE OF 20' UPSTREAM AND DOWNSTREAM OF THE BYPASS TEES.

DESIGN STANDARDS	STANDARD DRAWING
3" AND 4" DOMESTIC METER SETS	W11
	DATE: 8/15/14

Know what's below. Call before you dig.

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NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

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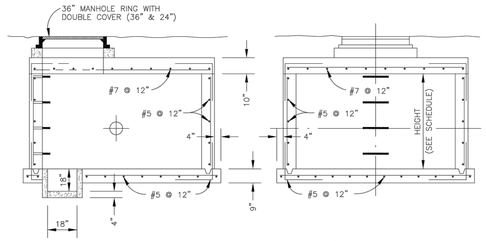
WILLOW BEND SUBDIVISION
FORT LUPTON, COLORADO
PRELIMINARY CONSTRUCTION PLANS
CONSTRUCTION DETAILS
WATER DETAILS

DATE DATE

REVISIONS

DR. TN CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. WD-1

CAD FILE: 19001956-DETAILS.DWG



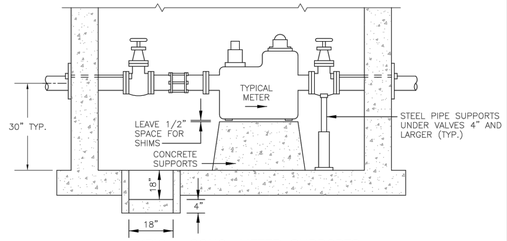
SECTION A–A

SECTION B–B

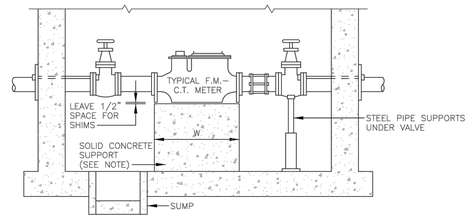
METER VAULT–INSIDE DIMENSION SCHEDULE

METER SIZE	LENGTH	WIDTH	HEIGHT	WALL THICKNESS
3"	8'–0"	7'–0"	7'–0"	8"
4"	10'–0"	7–0"	7'–0"	8"
6"	12'–0"	9'–0"	7'–0"	8"
8"	12'–0"	9'–0"	7'–0"	8"
12"	12'–0"	10'–0"	8'–0"	8"

DESIGN STANDARDS	STANDARD DRAWING
TYPICAL METER VAULT	W12
	DATE: 8/15/14



TYPICAL CONC. METER SUPPORTS FOR 3", 4", 6", 8", & 10" METERS

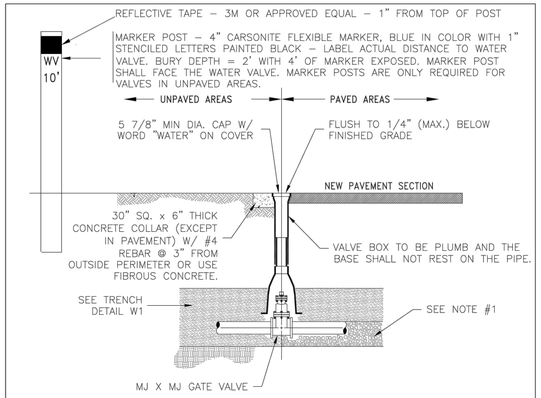


NOTES:
1. SOLID CONCRETE BASE EXTENDS UNDER THE F.M.–C.T. METER BYPASS FOR 6", 8" & 10".
2. SOLID CONCRETE BASE MAY BE PRECAST.

SIZE OF CONCRETE SUPPORT
6" F.M.–C.T. W=3'–9" L=3'–0"
8" F.M.–C.T. W=4'–5" L=3'–8"
10" F.M.–C.T. W=5'–8" L=4'–8"

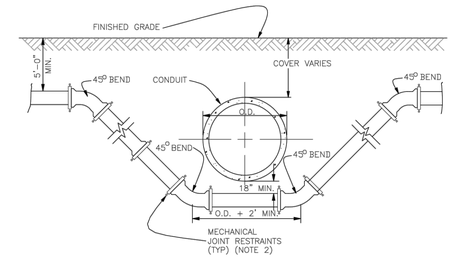
TYPICAL CONC. METER SUPPORT FOR F.M.–M.C.T. OR TURBINE

DESIGN STANDARDS	STANDARD DRAWING
STANDARD CONCRETE METER SUPPORTS	W13
	DATE: 8/15/14

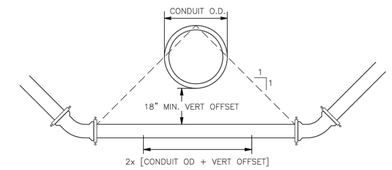


NOTES:
1. CARE SHALL BE TAKEN WHEN INSTALLING VALVES TO ASSURE PROPER SUPPORT OF THE VALVE. THE CITY ENGINEER MAY REQUIRE 3/4" CRUSHED ROCK TO BE INSTALLED UNDER THE VALVE TO PROVIDE PROPER SUPPORT.
2. VALVES SHALL NOT BE PLACED IN CONCRETE SIDEWALKS, CROSS PANS, GUTTERS, OR OTHER DRAINAGE WAYS.
3. OPERATING NUTS OR EXTENSIONS SHALL NOT BE SET CLOSER THAN TWO (2) FEET FROM FINAL GRADE. IF THE OPERATING NUT IS DEEPER THAN FIVE (5) FEET FROM FINAL GRADE, PROVIDE A 1 1/4" EXTENSION SHAFT W/ CENTERING RING. OPERATOR EXTENSIONS SHALL BE CONNECTED TO THE VALVE OPERATOR NUT USING A PIN. THE EXTENSION SHAFT SHALL INCLUDE A 1/4" THICK TRASH RING LOCATED 6" BELOW THE NON–RISING PORTION OF THE VALVE BOX. THE DIAMETER OF THE TRASH RING SHALL BE 1/8" LESS THAN THE INSIDE DIAMETER OF THE VALVE BOX.
4. GATE VALVE SHALL BE POLYETHYLENE WRAPPED (8 MIL).
5. CONCRETE COLLARS & MARKER POSTS ARE REQUIRED WHEN VALVE IS LOCATED IN AN UNPAVED AREA.
6. VALVE BOXES ARE TO BE BROUGHT UP TO GRADE AT THE TIME OF PAVEMENT PLACEMENT OR OVERLAY. VALVE BOX ADJUSTING RINGS ARE NOT ALLOWED.

DESIGN STANDARDS	STANDARD DRAWING
VALVE BOX	W14
	DATE: 8/15/14



NOTES:
1. SEWER LINES CROSSING ABOVE WATER MAINS SHALL BE PVC C900 PRESSURE PIPE AND EXTEND 9' EACH SIDE OF CROSSING (MIN.).
2. MECHANICAL JOINT RESTRAINTS SHALL BE PROVIDED AT ALL JOINTS IN THE LOWERING AND FOR THE SPECIFIED DISTANCE BACK FROM THE LOWERING AS DESIGNED BY THE ENGINEER OF RECORD.
3. WATER MAINS CROSSING CULVERTS THAT ARE EXPOSED TO THE ELEMENTS SHOULD BE EVALUATED FOR FREEZE POTENTIAL.
4. A BORED CROSSING MAY BE REQUIRED FOR THE WATERMAIN.
5. CATHODIC PROTECTION MAY BE REQUIRED FOR THE DUCTILE IRON WATER MAINS AS SPECIFIED BY THE ENGINEER.



DESIGN STANDARDS	STANDARD DRAWING
CONDUIT CROSSING	W18
	DATE: 8/15/14

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MANUFACTURED HOME COMMUNITIES
DEVELOPMENT CRITERIA & DESIGN STANDARDS

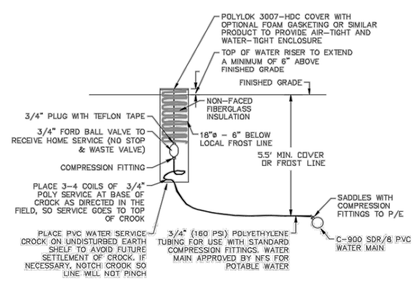
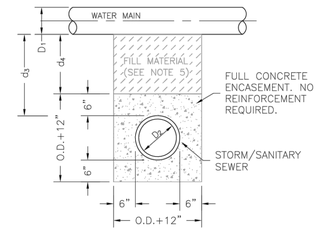
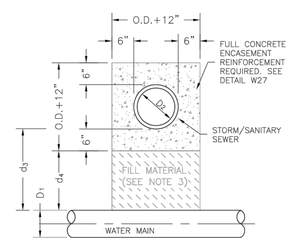


FIGURE WSC
Water Service Connection



STORM OR SANITARY SEWER CROSSING UNDER WATER MAIN
IF d_3 >18" AN ENCASEMENT IS NOT REQUIRED



NOTES:
1. CONCRETE TO BE CAST AGAINST UNDISTURBED SOIL OR SHORING.
2. LENGTH OF ENCASEMENT SHALL EXTEND AT LEAST 9–FEET EACH SIDE OF WATER MAIN.
3. FILLER MATERIAL BETWEEN CONDUITS TO BE APPROVED COMPRESSIBLE MATERIAL SUCH AS STYROFOAM, ETC. IF d4≤6", COMPACTED BACKFILL, IF d4>6".
4. SHORING OR SHEETING, IF USED, TO BE CUT OFF AT TOP OF ENCASEMENT
5. A REINFORCED ENCASEMENT IS REQUIRED FOR ALL CONDUITS CROSSING OVER WATERMAINS BUT ENCASEMENTS ARE NOT REQUIRED TO BE REINFORCED IF CROSSING UNDER WATERMAINS.

STORM OR SANITARY SEWER CROSSING OVER TOP OF WATER MAIN
REINFORCED ENCASEMENT REQUIRED REGARDLESS OF DIMENSION d_3

DESIGN STANDARDS	STANDARD DRAWING
ENCASEMENT FOR CONDUIT CROSSING	W26
	DATE: 8/15/14

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REVISIONS

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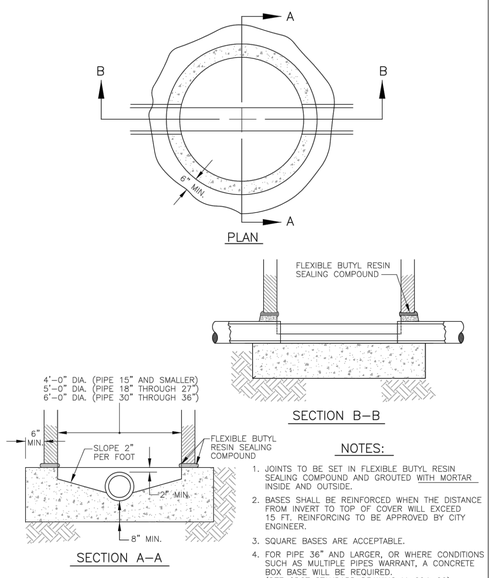
P.M. RW
JOB 19001956
SHEET NO.
WD-2

CAD FILE: 19001956–DETAILS.DWG



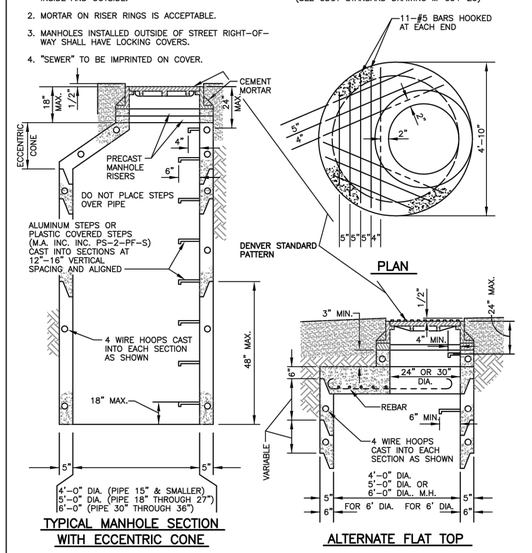
NOTES:

1. JOINTS TO BE SET IN FLEXIBLE BUTYL RESIN SEALING COMPOUND AND GROUTED WITH MORTAR INSIDE AND OUTSIDE.
2. BASES SHALL BE REINFORCED WHEN THE DISTANCE FROM INVERT TO TOP OF COVER WILL EXCEED 15 FT. REINFORCING TO BE APPROVED BY CITY ENGINEER.
3. SQUARE BASES ARE ACCEPTABLE.
4. FOR PIPE 36" AND LARGER, OR WHERE CONDITIONS SUCH AS MULTIPLE PIPES WARRANT, A CONCRETE BOX BASE WILL BE REQUIRED. (SEE CDOT STANDARD DRAWING M-604-20)

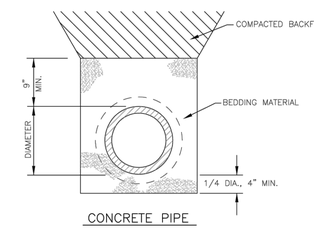
	DESIGN STANDARDS	STANDARD DRAWING
CITY OF Fort Lupton EST. 1836 — COME PAINT YOUR FUTURE WITH US	STANDARD MANHOLE BASE	ST1
		DATE: 8/15/14

NOTES:

1. ALL JOINTS TO BE SET IN FLEXIBLE BUTYL RESIN SEALING COMPOUND AND PLASTERED WITH MORTAR 5/8" THICK AND EXTENDING 4" EACH SIDE OF JOINT INSIDE AND OUTSIDE.
2. MORTAR ON RISER RINGS IS ACCEPTABLE.
3. MANHOLES INSTALLED OUTSIDE OF STREET RIGHT-OF-WAY SHALL HAVE LOCKING COVERS.
4. "SEWER" TO BE IMPRINTED ON COVER.
5. FOR PIPE 36" AND LARGER, OR WHERE CONDITIONS SUCH AS MULTIPLE PIPES WARRANT, A CONCRETE BOX BASE WILL BE REQUIRED. (SEE CDOT STANDARD DRAWING M-604-20)



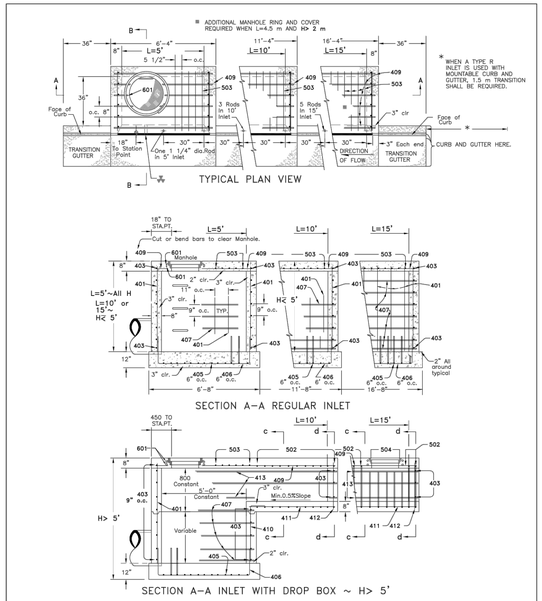
	DESIGN STANDARDS	STANDARD DRAWING
CITY OF Fort Lupton EST. 1836 — COME PAINT YOUR FUTURE WITH US	MANHOLE BARRELS AND ALTERNATE TOPS	ST2
		DATE: 8/15/14



NOTES:

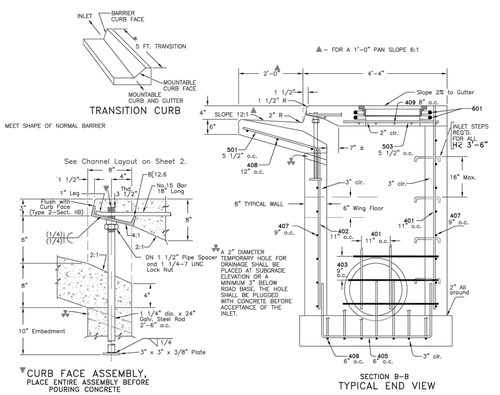
1. THIS DETAIL IS TO BE USED UNDER NORMAL CONDITIONS. WHERE EXCESSIVE GROUND WATER IS PRESENT AN ALTERNATE DESIGN WILL BE REQUIRED.
2. BEDDING FOR HDPE PIPE SHALL BE PER MANUFACTURERS RECOMMENDATIONS.

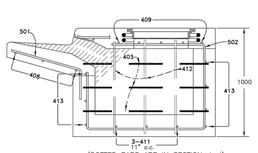
	DESIGN STANDARDS	STANDARD DRAWING
CITY OF Fort Lupton EST. 1836 — COME PAINT YOUR FUTURE WITH US	TYPICAL PIPE BEDDING	ST4
		DATE: 8/15/14



(1 OF 4)

	DESIGN STANDARDS	STANDARD DRAWING
CITY OF Fort Lupton EST. 1836 — COME PAINT YOUR FUTURE WITH US	CURB INLET TYPE R	ST5
		DATE: 8/15/14





(2 OF 4)

	DESIGN STANDARDS	STANDARD DRAWING
CITY OF Fort Lupton EST. 1836 — COME PAINT YOUR FUTURE WITH US	CURB INLET TYPE R	ST6
		DATE: 8/15/14

TABLE ONE ~ BAR LIST FOR CURB INLETS, TYPE "R"

MARK	DIA (in)	O.C. SPACING (in)	TYPE	ALL INLETS Ln = 5' NO. REQ'D.	LENGTH (ft–in)	INLETS, H ≤ 5' 10' NO. REQ'D.	LENGTH (ft–in)	15' NO. REQ'D.	LENGTH (ft–in)	INLETS, H > 5' 10' NO. REQ'D.	LENGTH (ft–in)	15' NO. REQ'D.	LENGTH (ft–in)
401		11"	II	15	*	21	*	28	*	11	*	11	*
402		11"	II	7	*	13	*	18	*	7	*	7	*
403		9"	II	*	4'–0"	*	4'–0"	*	4'–0"	*	4'–0"	*	4'–0"
405		6"	XII	11	6'–10"	21	6'–10"	31	6'–10"	11	6'–10"	11	6'–10"
406		6"	XIII	7	8'–10"	7	13'–10"	7	18'–10"	7	8'–10"	7	8'–10"
407	1/2"	9"	II	*	5'–10"	*	10'–10"	*	15'–10"	*	5'–10"	*	8'–10"
408		12"	II	3	6'–0"	3	11'–0"	3	16'–0"	3	11'–0"	3	16'–0"
409		8"	II	6	5'–10"	6	10'–10"	6	15'–10"	6	10'–10"	6	15'–10"
410		11"	XII							3		3	
411		11"	II							3	5'–2"	3	10'–2"
412		11"	II							3	2'–9"	3	2'–9"
413		9"	II							7	10'–10"	7	15'–10"
501		5 1/2"	IX	11	3'–4"	22	3'–4"	33	3'–4"	22	3'–4"	33	3'–4"
502	5/8"	5 1/2"	III							11	11'–6"	17	11'–5"
503		5 1/2"	II	5	3'–6"	16	3'–6"	27	3'–6"	6	3'–6"	6	3'–6"
504		5 1/2"	II									5	8'–4"
601	3/4"	2 1/2"	X	2	8'–10"	2	8'–10"	2	8'–10"	2	8'–10"	4	8'–10"
∅R(8.5				1	5'–10"	1	10'–10"	1	15'–10"	1	10'–10"	1	15'–10"
▼				2 BARS, 3 RODS	—	4 BARS, 3 RODS	—	8 BARS, 5 RODS	—	4 BARS, 3 RODS	—	8 BARS, 5 RODS	—
						REGULAR INLETS				DROP BOX INLETS			

* VARIABLE, REFER TO TABLE TWO.
∅ INCLUDE 18" NO. 4 BARS (SEE CHANNEL LAYOUT DETAILS).
▼ SEE CURB FACE ASSEMBLY ON SHEET 3 AND AND CHANNEL LAYOUT DETAILS ON SHEET 4.

TABLE TWO ~ BARS AND QUANTITIES VARIABLE WITH "H"

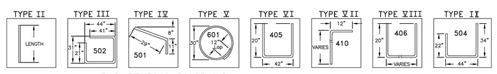
"H" (ft–in)	LENGTH (ft–in) 401	402	410	NO. REQ'D. REGULAR 403	407	DROP BOX 403	407	Ln 5' CONC. CU.YD.	STEEL LBS.	Ln 10' CONC. CU.YD.	STEEL LBS.	Ln 15' CONC. CU.YD.	STEEL LBS.
3'–0"	2'–8"	1'–8"		10	7			3.2	285	5.3	497	7.4	708
3'–6"	3'–2"	2'–2"		10	7			3.4	305	5.7	528	7.9	747
4'–0"	3'–8"	2'–8"		12	9			3.7	326	6.0	559	8.4	786
4'–6"	4'–2"	3'–2"		12	9			3.9	334	6.4	571	8.8	803
5'–0"	4'–8"	3'–8"		14	11			4.1	354	6.7	602	9.3	844
5'–6"	5'–2"	4'–2"	3'–5"	16	13	15	6	4.4	375	6.0	607	7.4	850
6'–0"	5'–8"	4'–8"	3'–11"	16	13	16	6	4.6	382	6.2	616	7.6	860
6'–6"	6'–2"	5'–2"	4'–5"	18	15	18	8	4.8	402	6.4	637	7.8	880
7'–0"	6'–8"	5'–8"	4'–11"	20	17	19	10	5.0	423	6.6	654	8.0	897
7'–6"	7'–2"	6'–2"	5'–5"	20	17	20	10	5.3	430	6.9	664	8.3	907
8'–0"	7'–8"	6'–8"	5'–11"	22	19	22	12	5.5	451	7.1	684	8.5	927
8'–6"	8'–2"	7'–2"	6'–5"	24	21	23	14	5.7	471	7.3	702	8.7	944
9'–0"	8'–8"	7'–8"	6'–11"	24	21	24	14	6.0	479	7.6	711	9.0	954
9'–6"	9'–2"	8'–2"	7'–5"	26	23	26	16	6.2	499	7.8	732	9.2	974
10'–0"	9'–8"	8'–8"	7'–11"	28	25	27	18	6.4	520	8.0	749	9.4	992
10'–6"	10'–2"	9'–2"	8'–5"	28	25	28	18	6.7	527	8.3	759	9.7	1001
11'–0"	10'–8"	9'–8"	8'–11"	30	27	30	20	6.9	547	8.5	779	9.9	1022

NOTE: FOR Ln 5', Ln 10' AND Ln 15'

REGULAR INLETS: TOTAL QUANTITES NEEDED ARE OUTSIDE OF THE HEAVY BLACK LINE.

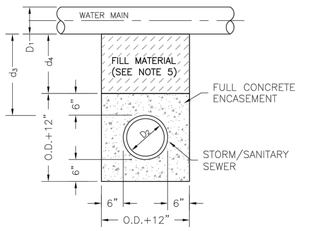
DROP BOX INLETS: TOTAL QUANTITES NEEDED ARE INSIDE OF THE HEAVY BLACK LINE.

STEEL WEIGHTS DO NOT INCLUDE STRUCTURAL STEEL.



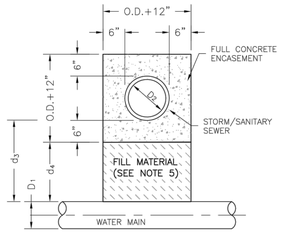
(3 OF 4)

	DESIGN STANDARDS	STANDARD DRAWING
CITY OF Fort Lupton EST. 1836 — COME PAINT YOUR FUTURE WITH US	CURB INLET TYPE R	ST7
		DATE: 8/15/14



NOTES:

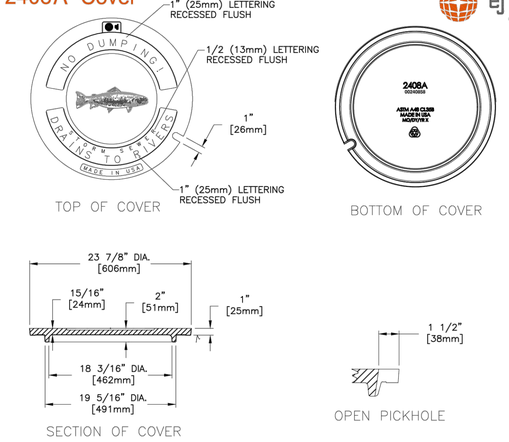
1. CONCRETE COLLAR AROUND STORM SEWER JOINTS MAY BE ACCEPTED WITH WRITTEN APPROVAL BY THE CITY ENGINEER AND ONLY FOR PIPE 30" OR LARGER.
2. CONCRETE TO BE CAST AGAINST UNDISTURBED SOIL OR SHORING.
3. LENGTH OF ENCASEMENT SHALL EXTEND AT LEAST 10-FEET EACH SIDE OF WATER MAIN.
4. UNLESS OTHERWISE NOTED ON PLAN/PROFILE DRAWINGS, ENCASEMENTS NEED NOT BE REINFORCED.
5. FILLER MATERIAL BETWEEN CONDUITS TO BE:
   a) APPROVED COMPRESSIBLE MATERIAL SUCH AS STYROFOAM, ETC. IF d≤6".
   b) COMPACTED BACKFILL, IF d>6".
6. SHORING OR SHEETING, IF USED, TO BE CUT OFF AT TOP OF ENCASEMENT



ENCASEMENT REQUIRED REGARDLESS OF DIMENSION d_3
(SEE NOTE 1 FOR SPECIAL CASES)

	DESIGN STANDARDS	STANDARD DRAWING
CITY OF Fort Lupton EST. 1836 — COME PAINT YOUR FUTURE WITH US	ENCASEMENT FOR CONDUIT CROSSING	ST9
		DATE: 8/15/14

2408A Cover



Product Number
00240858

Design Features
-Materials
Gray Iron (CL35B)
-Design Load
Heavy Duty
-Coating
Undipped
- ✓ Designates Machined Surface

Certification
- ASTM A48
-Country of Origin:USA

(4 OF 4)

	DESIGN STANDARDS	STANDARD DRAWING
CITY OF Fort Lupton EST. 1836 — COME PAINT YOUR FUTURE WITH US	CURB INLET TYPE R	ST8
		DATE: 5/04/2017

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FORT LUPTON, COLORADO

PRELIMINARY CONSTRUCTION PLANS
CONSTRUCTION DETAILS
STORM DETAILS

CLIENT
SUN COMMUNITIES, INC.

DATE	DATE

REVISIONS

DR. TN | CH. JP/SB
P.M. RW
JOB 19001956
SHEET NO. STMD-1

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SUN COMMUNITIES, INC.

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SHEET NO.
STMD-2

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SUN COMMUNITIES, INC.
MANUFACTURED HOME COMMUNITIES
DEVELOPMENT CRITERIA & DESIGN STANDARDS

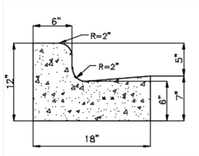

FIGURE SC1
Typical Straight Curb Section

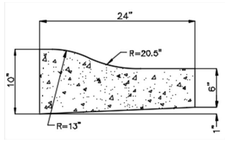

FIGURE RC1
Typical Roll Curb Section

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MANUFACTURED HOME COMMUNITIES
DEVELOPMENT CRITERIA & DESIGN STANDARDS

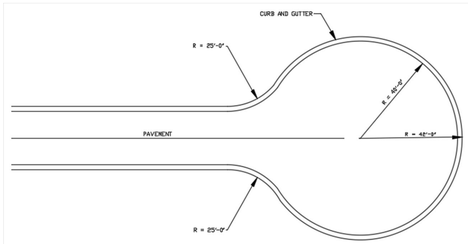
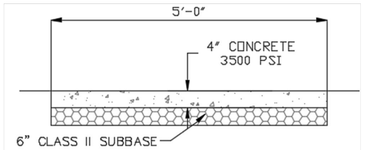
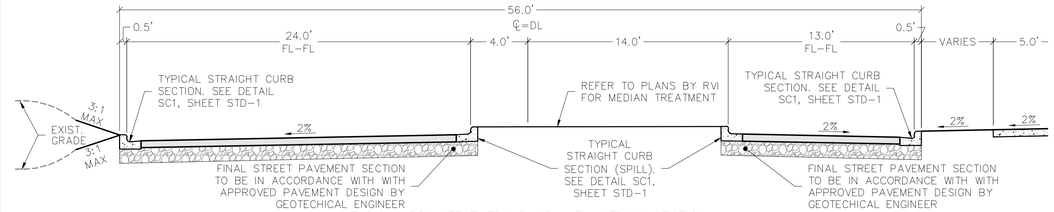


FIGURE CDS
Cul-De-Sac Plan View Standard

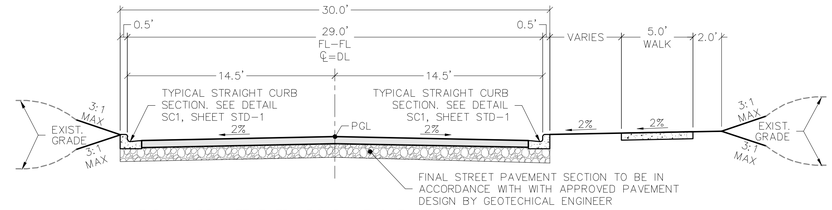


NOTES:
1. CONSTRUCTION SHALL BE TO TWP ORDINANCE SPECIFICATIONS.
2. ALL CONCRETE SHALL HAVE A 2% MAXIMUM CROSS SLOPE.

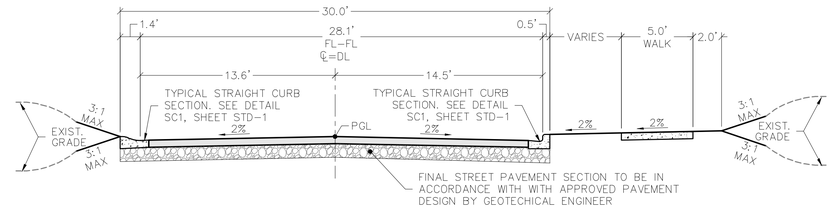
FIGURE CW1
Concrete Walk Detail



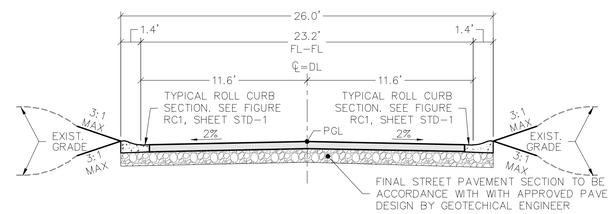
TYPICAL PRIVATE ENTRY ROAD WITH MEDIAN SECTION
1:5 HOR.



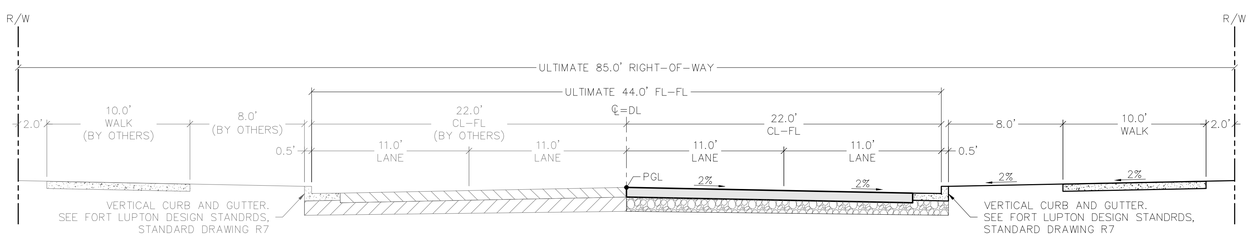
TYPICAL PRIVATE ENTRY ROAD WITHOUT MEDIAN SECTION 1
1:5 HOR.



TYPICAL PRIVATE ENTRY ROAD WITHOUT MEDIAN SECTION 2
1:5 HOR.



TYPICAL PRIVATE ROAD SECTION
1:5 HOR.



PUBLIC ROADWAY SECTION (NORTHRUP AVENUE)
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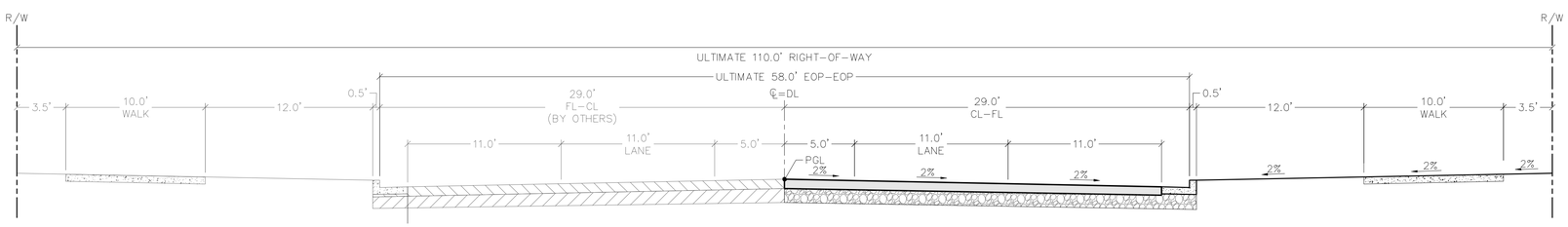

PUBLIC ROADWAY SECTION (14TH STREET/CR 14½)
1:5 HOR.

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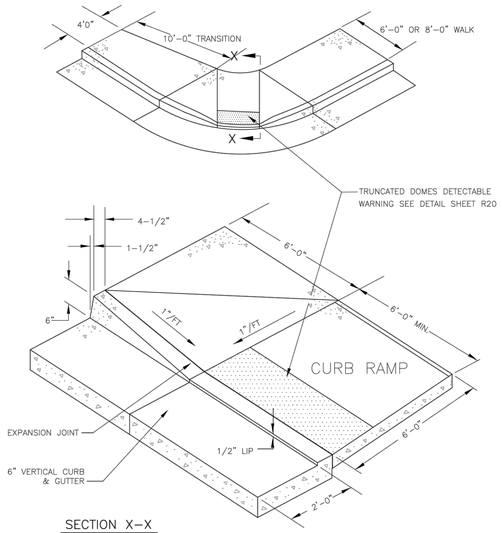
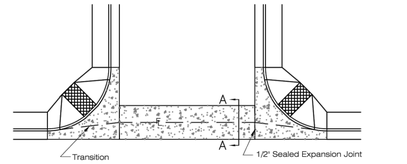
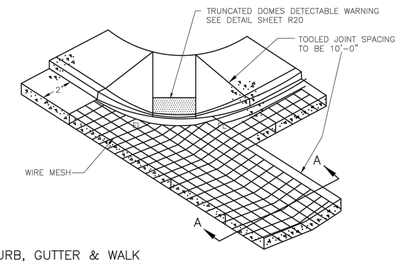


SECTION X–X

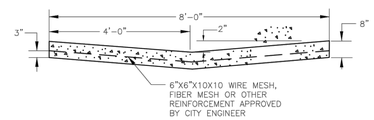
NOTE:
MIDBLOCK RAMP IS SAME AS ABOVE WITH 10 FOOT TRANSITIONS TO SIDEWALKS OF A DIFFERING DIMENSION OR A DETACHED WALK.

DESIGN STANDARDS	STANDARD DRAWING
CURB RAMP BARRIER CURB AND WALK	R10
	DATE: 8/15/14



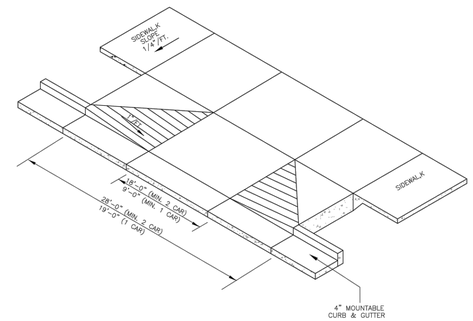


CURB, GUTTER & WALK

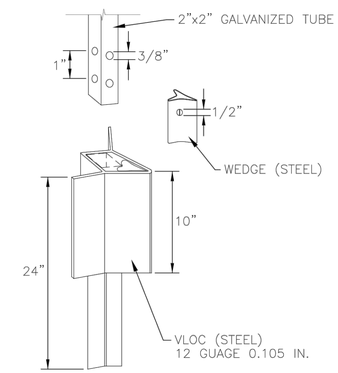


SECTION A–A

DESIGN STANDARDS	STANDARD DRAWING
SIDEWALK RAMP WITH CROSS PAN	R11
	DATE: 3/15/17



DESIGN STANDARDS	STANDARD DRAWING
RAMP DRIVE FOR VERTICAL CURB / DETACHED WALK	R13
	DATE: 8/15/14



DESIGN STANDARDS	STANDARD DRAWING
TYPICAL SIGN POST ANCHOR DETAIL	T2
	DATE: 8/15/14

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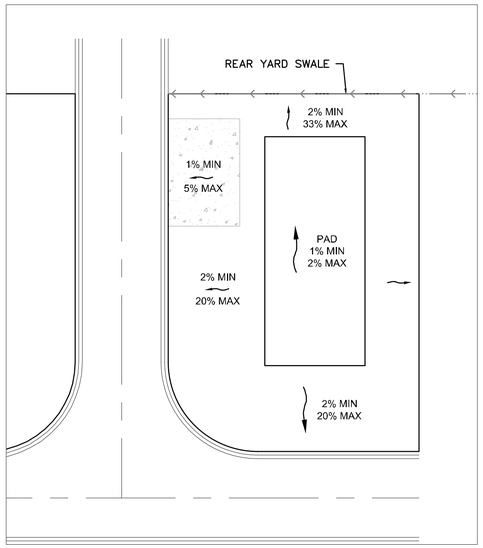
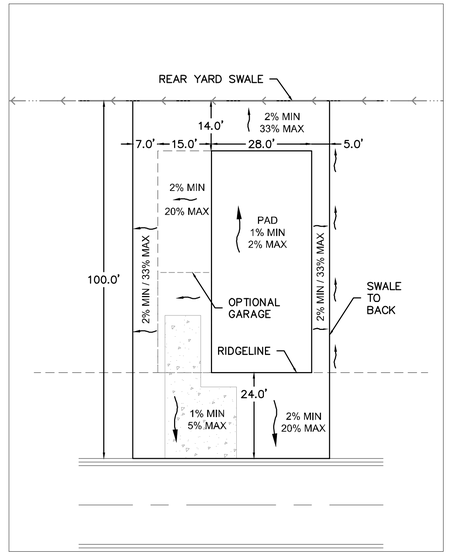
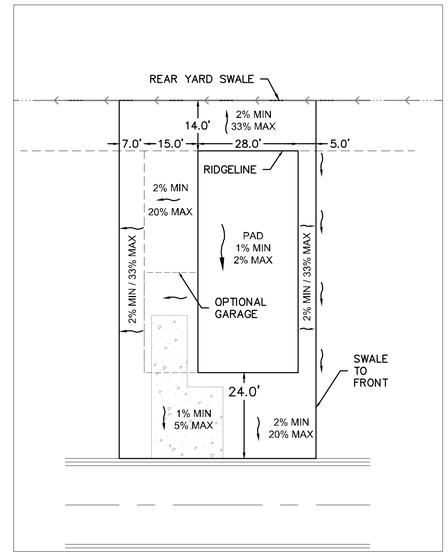


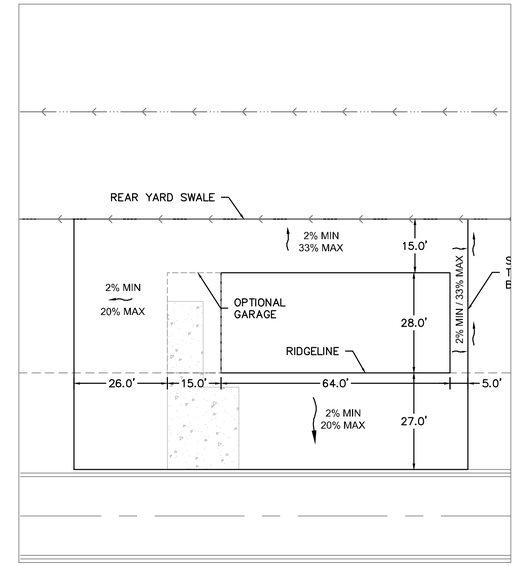
GRADING DETAIL
CORNER UNIT
NTS



GRADING DETAIL
"A" UNIT
NTS



GRADING DETAIL
"B" UNIT
NTS



GRADING DETAIL
PARALLEL SET UNIT
NTS

811
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Geotechnical Site Development Study
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1.0 EXECUTIVE SUMMARY

A. G. Wassenaar, Inc. (AGW) completed the geotechnical site development study for the proposed residential development at the subject site. The data collected during our field exploration and laboratory work and our analysis, opinions, and conclusions are presented. The purpose of our study is to provide design recommendations for planning and site development and preliminary design concepts for foundation systems, interior floor support, and streets.

The subsurface materials encountered in our test borings consist of topsoil, sand, and clay overlying sedimentary bedrock. Claystone or sandstone bedrock was encountered at depths ranging from 4 to 7 feet below the ground surface. Ground water was measured at depths ranging from 1 to 16 feet during this study.

Site development considerations should include provisions for the presence of shallow ground water and the associated loose soils and shallow claystone bedrock. A barrier system and/or other dewatering techniques will be necessary to control ground water on the site. Raising the elevation of the site may also be considered. Difficulty developing the site must be anticipated due to the depth of ground water.

Based upon the results of this preliminary study, we anticipate 55% to 65% of the structures will be founded on straight shaft piers drilled into competent bedrock. Casing of the drilled piers will be necessary. Alternatively, soil modification may be considered. This will be difficult due to the shallow ground water. Where sufficient sand is found (35% to 45% of the site), post-tensioned slabs, rafts, or spread or pad-type footings may be possible. Stabilization of the loose soils will likely be necessary. These recommendations must be reviewed once grading plans have been completed and the depth of foundations have been decided. Preliminary foundation design concepts are presented in the report.

Floors and flatwork being considered for construction on-grade will require a specific risk analysis by the Client because of the potential for movement of the soils and bedrock encountered. Where the structures are founded upon straight shaft piers, engineered structural floors or modification of the floor supporting soils or bedrock can be anticipated. Where footings are constructed, slabs-on-grade may be possible depending on the expansion potential of the supporting materials and the Client's analysis of risk. Slabs supported by soil will be subject to movement. Options for floor support are discussed.

Foundation subsurface drainage systems will be necessary for all below grade areas. Extensive drain systems will be required when foundations are within 4 feet of ground water. Water soluble sulfate test results indicate that site and foundation concrete should be designed for severe sulfate exposure. Preliminary pavement and other geotechnical-related recommendations are presented in the following report. We encourage the Client to read this report in its entirety and not to solely rely on the cursory information contained in this summary.

2.0 PURPOSE

This report presents the results of a geotechnical site development study for the proposed residential development to be located southeast of Weld County Road 14½ (14th Street) and Weld County Road 29 (Northrup Avenue), in Fort Lupton, Colorado. The study was conducted by AGW to assist in determining geotechnical design criteria for planning, site evaluation, and development considerations. Preliminary geotechnical design concepts are also presented for foundations, interior floor support, foundation drainage, and street construction. Factual data gathered during the field and laboratory work are summarized on Figures 1 through 5 and in Appendix A. Our opinions and recommendations presented in this report are based on the data generated during our field exploration, laboratory testing, our understanding of the proposed project, and our experience with similar projects and geotechnical conditions. The field and laboratory data contained in the "Geotechnical Site Development Study, Proposed Residential Development, Coyote Creek North, Southeast of Weld County Road 14½ and Weld County Road 29, Fort Lupton, Colorado" by AGW, Project Number 174095, dated January 22, 2018, was considered during the preparation of this report. The data contained in the referenced report is presented in Appendix B.

This study was performed in general conformance with our Proposal Number 195960, dated November 8, 2019. This report is not intended to provide design criteria for individual foundations or street construction. Additional geotechnical studies will be required to provide final design criteria and construction recommendations.

3.0 PROPOSED CONSTRUCTION

We understand the proposed development will include 498 lots for modular single family residences with the associated utility and roadway infrastructure. Preliminary overlot grading plans were not available at the time of this study. The contents of this report must be reviewed by AGW once the grading plans are available.

4.0 SITE CONDITIONS

The parcel is bounded by undeveloped agricultural land to the north and northeast, Fulton Ditch to the east and south, and County Road 29 to the west. Vegetation consists of natural grasses, weeds, cattails (in the southeast portion) and mature trees along the ditch. Water was observed in Fulton Ditch at the time of our field work. Two existing oil and gas wells are located in the center of the western half and in the northeast portion of the site. An additional three oil and gas wells are located adjacent to the site to the south, southeast, and east. The site slopes gently to the north and west. No bedrock outcrops were observed.

5.0 FIELD EXPLORATION

Subsurface conditions were explored by drilling 13 test borings at the approximate locations indicated on Figure 1. Test Borings 31 through 36 were drilled for ground water measurements only. The test borings drilled for the referenced study are also shown on Figure 1. The test borings were advanced using a 4-inch diameter, continuous flight auger powered by a truck-mounted drill rig. At frequent intervals, samples of the subsurface materials were obtained using a Modified California sampler

which was driven into the soil by dropping a 140-pound hammer through a free fall of 30 inches. The Modified California sampler is a 2.5-inch outside diameter by 2-inch inside diameter device. The number of blows required for the sampler to penetrate 12 inches and/or the number of inches that the sampler is driven by 50 blows gives an indication of the consistency or relative density of the soils and bedrock materials encountered. Results of the penetration tests and locations of sampling are presented on the "Test Boring Logs", Figures 2 through 5. Slotted PVC pipe was installed in all of the test borings to prevent caving prior to ground water measurements. The PVC pipe was removed after the subsequent ground water measurements were obtained. Ground water measurements were made at the time of drilling and subsequent to drilling. The field data for the test borings drilled from the referenced study are included in Appendix B.

6.0 LABORATORY TESTING

The samples obtained during drilling were returned to the laboratory where they were visually classified by a geotechnical engineer. Laboratory testing was then assigned to specific samples to evaluate their engineering properties. The laboratory tests included swell-consolidation tests to evaluate the effect of wetting and loading on the selected samples. Gradation analysis and Atterberg limits tests were conducted to evaluate grain size distribution and plasticity. Standard Proctor and remolded swell-consolidation tests were performed on blended bulk samples of the soils anticipated to be used as fill. In addition, representative samples were tested for water soluble sulfates, pH, resistivity, and chlorides. The test results are summarized on Figures 2 through 5 and presented in Appendix A. The laboratory results from the referenced study are included in Appendix B.

7.0 SUBSURFACE CONDITIONS

The subsurface materials encountered in our test borings consist of topsoil, sand, and clay, overlying sedimentary bedrock. Claystone or sandstone bedrock was encountered at depths ranging from 4 to 16 feet. Ground water was measured at depths ranging from 1 to 7 feet in during this study. A more complete description of the subsurface conditions is shown on Figures 2 through 5.

7.1 Natural Soil

Topsoil was encountered in all the test borings. The topsoil consisted of sandy clay and was up to 1½ feet thick. It was organic, moist, and dark brown.

Sand was encountered in all the test borings. The sand was loose to dense, slightly silty to very silty, clean to very clayey, with clay lenses, moist to wet, and brown to light brown. The sand is considered to possess low expansion potential and low to moderate settlement potential.

Clay was encountered in one of the 13 test borings. The clay was stiff, silty, sandy, with sand lenses, moist to wet, and brown. This clay is considered to possess low expansion and compression potential.

7.2 Bedrock

Claystone bedrock was encountered in 12 of the 13 test borings at depths ranging from 4 to 16 feet. The claystone was weathered to very hard, silty, trace sand to very sandy, with sandstone lenses, iron stained, slightly moist to moist, and brown to olive to rust to gray. A 2½-foot zone of ironstone

was encountered in Test Boring 29 within the claystone. The claystone is assessed to possess high to very high expansion potential.

Sandstone was encountered in one of the 13 test borings at a depth of 17 feet. The sandstone encountered was hard, poorly cemented, silty, clean to very clayey, with claystone lenses, moist, and brown to light brown to light gray to olive to rust. The sandstone is assessed to possess low expansion potential. Plans showing estimated depth and elevation of bedrock are presented on Figures 6 and 7.

7.3 Ground Water

Ground water was measured at depths ranging from 2 to 10 feet in seven of the 13 test borings at the time of drilling. Ground water was measured at depths ranging from 1 to 13 feet in 10 of the 13 test borings when checked 3 to 6 days after drilling. In the previous report, ground water was measured at depths of ranging from ½ to 32 feet in 18 of the 23 test borings at the time of drilling. When we returned 19 to 43 days after drilling, ground water was measured at depths ranging from ½ to 24½ feet in 21 of the 23 test borings for the previous study. Test Boring 14 was caved at a depth of 1 foot when checked 20 days after drilling. Estimated depth and elevation of the ground water are shown on Figures 6 and 7.

8.0 GEOTECHNICAL CONCERNS

8.1 Shallow Ground Water and Associated Loose Soils

Ground water was encountered at depths ranging from ½ to 24½ feet in 25 of the 36 test borings 3 to 43 days after drilling (see Figures 8 and 9). The shallowest ground water was encountered in the eastern two-thirds and along the northern boundary of the site. The ground water was found at depths that will influence construction across the majority of the site. This water appears to be influenced by the irrigation ditch located along the south, southeast, and east perimeter of the site. Ground water less than 15 feet below the site grading elevation will likely affect utility construction and some site grading operations. Ground water less than 10 feet below the site grading elevation will likely affect foundation excavations. In addition, ground water less than 5 feet below the existing or final ground surface will pose stabilization problems during site grading, foundation construction, and may cause problems during pavement construction. We recommend that foundations be constructed at least 4 feet or more above ground water level. Site development should be planned to avoid (e. g., raise the site grade, only at-grade construction) or remove the ground water. These issues are discussed more fully in the following sections. A geohydrologist specializing in ground water issues should be consulted regarding dewatering the site.

Loose sand was encountered across the site. The loose sand will present soil stability concerns for site grading, foundation excavations, and during pavement construction. As stated previously, the sand exhibited low to moderate settlement potential. It is likely that large, rubber tired equipment will cause severe rutting and may not be able to traverse the loose areas. It will likely be necessary to stabilize the loose, wet areas prior to fill placement. It may also be necessary to stabilize the soils prior to foundation construction. These issues are discussed more fully in the following sections.

8.2 Expansive Bedrock

Weathered to very hard claystone bedrock with high to very high expansion potential was encountered across the site. Therefore, we believe that completing development of the site using traditional overlot grading techniques will result in a portion of the residences within the subdivision being supported upon straight shaft piers bottomed in bedrock. Using current risk analysis techniques, all of the interior floors for these structures will be supported structurally. An alternative to drilled piers and structural floors is ground modification with an overexcavation and replacement process to reduce swell potential to possibly allow for shallow foundations and slab-on-grade construction. This will be difficult due to the ground water encountered across the site.

9.0 SITE DEVELOPMENT

9.1 Traditional Overlot Grading

We understand the fill materials to be used at the site will be from on-site cut areas. In general, suitable inorganic on-site or off-site soils may be used for structural fill. Topsoil, soil containing significant vegetation, organic debris or other deleterious material should be excavated and removed from the structural areas. Off-site material considered for new fill should be evaluated by AGW prior to importing to the site.

Construction of the fill embankments throughout the site should consist of proper foundation preparation, constructing embankment benching where necessary, disposition of strippings, proper fill placement and compaction, and designing slopes in accordance with the recommendations provided in this report and the applicable governing regulations. The following are general site grading recommendations:

1. The final site grading or overexcavation plans should be provided to AGW prior to commencement of work at the site in order to evaluate which areas and to what depth overexcavation should be performed.
2. It is recommended that we be retained on an essentially full-time basis to observe and test the fill placement. We should also be retained to provide observations and/or testing of the other items discussed below. The purpose of this observation and testing is to provide the Client with a greater degree of confidence that the work is being performed within the recommendations of this geotechnical study and the project specifications.
3. All topsoil and vegetation should be stripped and removed prior to fill placement. The vegetation, organic soils, or topsoil should be wasted from the site, placed in non-structural areas (e.g., parks, landscaping, tracts, etc.) and/or stockpiled for future use in revegetating the surface of exposed slopes. In no case should these materials be used in the structural areas or where the stability of slopes will be affected. If placed in lots, topsoil must be placed outside of the structure setbacks and should not be placed where the fill depths exceed 5 feet. If placed in depth across the back of lots, movements of fences and dry utilities should be expected.
4. Where soft, rutting soils are found beneath planned fill areas, removal, in-place drying, or stabilization may be necessary. Stabilization prior to fill placement may be accomplished by placing crushed rock or equivalent material, which should be

evaluated by AGW prior to use. The material should be spread across the area and worked into the underlying soft or loose soils with fully-loaded rubber-tired equipment. This procedure should continue until scraper-type equipment can be supported on the rock fill with no significant deflection or rutting. In some instances, a geogrid or geotextile stabilization fabric may be economical for use in conjunction with rock stabilization.

5. Due to the presence of loose sands, it may be necessary to pre-load the site with fill or to delay structure construction. Additional studies will be necessary to determine the amount of preloading and/or anticipated delay.
6. Where the existing slopes are steeper than a 5:1 (horizontal:vertical), benching will be required for structural integrity of any fills (see Figure 10).
7. The stripped foundation areas should be observed by AGW prior to fill placement. Any soft soils found in these areas must be removed or stabilized as necessary prior to fill placement.
8. After the fill areas have been cleared, the exposed soils should be scarified to a minimum depth of 6 inches, brought to the proper moisture content, and then compacted according to Appendix C.
9. The compaction and moisture content of the soils will be dependent upon material types and the depth and location of placement. The specifications outlined in Appendix C are based upon providing a fill with sufficient shear strength to support structures and sufficient moisture to reduce the potential of swell of the expansive soil used in the fill.
10. The results of Standard Proctor tests performed on a bulk sample of the upper level soils likely to be used for fill are shown on Figures A-9 and A-10 in Appendix A. These results can be used as guideline for contractors to estimate how much additional moisture may be required to bring the on-site soils to the required moisture content.
11. Particular attention should be paid to compaction of the exterior faces of slopes.
12. Placement and compaction of fill should continue to final overlot grade. We recommend that the lots not be left low or "dished-out" and that placement of fill not stop at foundation elevation.
13. Other specifications outlined in Appendix C should be followed.

9.2 Overexcavation and Placement of Moisture Treated Fill

Based on the expansion potential of the claystone, we recommend that a portion of the site be overexcavated if the use of shallow foundations is desired. Our experience indicates that overexcavation and placement of a moisture treated fill would be most effectively performed using mass grading techniques. The ideal time to do this would be during site development operations. As some overexcavation beneath the roadways will likely be required, it would be advantageous to perform this overexcavation during site grading. The following recommendations should be followed in order to enable the placement of a moisture treated fill that could be used for slab and foundation support. These recommendations may be modified during construction if soil conditions differing from those anticipated are encountered.

1. The final site grading or overexcavation plans should be provided to AGW prior to commencement of work at the site in order to evaluate which areas and to what depth overexcavation should be performed.
2. The expansive claystone should be excavated to a depth of at least 10 feet below the lowest foundation elevation for basement foundations, 12 feet below foundation elevation for at-grade crawl space foundations, or 10 feet below foundation elevation for post-tensioned foundations. The base of the excavation should extend, at a minimum, to a width of at least 5 feet beyond the foundation footprint (including any counterforts, covered porches, patios, decks, etc.). Excavations that do not extend to these minimums risk future foundation performance issues. It may be prudent to extend the base of the excavation to 5 feet outside of the front and rear setbacks in order to accommodate potential changes in structure dimension. Placement of moisture treated fill beneath the pavement areas is discussed under "Preliminary Street Pavement Design". The excavation should be sloped following current OSHA regulations. We will not be responsible for testing near excavations that do not meet OSHA regulations. A licensed surveyor must verify the extents of the excavation prior to any fill placement.
3. Water flow into the overexcavation may occur in areas of shallow ground water. We believe that the water can be handled during construction by channeling the water in the excavation(s) and pumping from sumps. It may be prudent to provide permanent drains at the base of the overexcavation in these areas. However, if an outfall for the drains cannot be found, they should not be constructed. The drain(s) should be sloped to a positive gravity outfall. Depending on the location of the inflow, chimney drains may be necessary to convey water from sidewall seepage areas to the drain. The configuration of these drains should be determined at the time of construction.
4. Where soft, rutting soils are found beneath planned fill areas, removal, in-place drying, or stabilization may be necessary. Stabilization prior to fill placement may be accomplished by placing crushed rock or equivalent material, which should be evaluated by AGW prior to use. The material should be spread across the area and worked into the underlying soft or loose soils with fully-loaded rubber-tired equipment. This procedure should continue until scraper-type equipment can be supported on the rock fill with no significant deflection or rutting. In some instances, a geogrid or geotextile stabilization fabric may be economical for use in conjunction with rock stabilization.
5. Once the excavation depth and width have been verified, fill placement may begin. The bottom of the excavation should be scarified and moistened prior to fill placement. The fill, consisting of the excavated materials, should be placed in maximum 8-inch loose lifts. Moisture should be added and the lift processed. The use of a construction disc to mix and process each lift is suggested. Mixing should be performed until the moisture content is relatively uniform throughout the lift and the majority of the particles are less than 3 inches in dimension. Additional processing of the excavated claystone bedrock may be required due to the hardness of the material and low moisture content. The earthwork contractor should be made aware of the

extra processing required. The fill should then be compacted as described in Appendix C.

6. The results of Standard Proctor tests performed on bulk samples of the upper level soils likely to be used for fill are shown on Figures A-9 and A-10 in Appendix A. These results can be used as guideline for contractors to estimate how much additional moisture may be required to bring the on-site soils to the required moisture content.
7. Essentially full-time observation and testing of fill placement must be performed by AGW. Testing should include in-place moisture content and dry density. Swell-consolidation or other testing may also be performed at the discretion of AGW.
8. Placement and compaction of fill should continue to final overlot grade. We recommend that the lots not be left low or "dished-out" and that placement of fill not stop at foundation elevation. If the residences will not be constructed within two years of completion of the fill, additional effort may be necessary to help maintain the moisture within the fill. This may include the addition of more soil to blanket the compacted fill, the placement of mechanical or chemical barriers, or applying water periodically to the fill surface. We are available to discuss this with you.

It must be understood that while this method is used to reduce the likelihood of future heave, it is not free of risk of foundation movement. While future heave is less likely, the possibility of settlement induced by excess moisture is increased. Therefore, the control and removal of surface water at the site will continue to be very important.

Our experience indicates that clay materials of the type encountered at this site will likely exhibit an average swell of less than 2% under a surcharge load of 1,000 pounds per square foot (psf) when thoroughly mixed with water and processed with typical earthmoving equipment. It is anticipated that if this level of swell reduction is achieved, the foundations may be constructed by placing footings upon the fill. This level of swell should also provide for a low to moderate risk of basement slab movement. However, it must be understood that even with the procedures outlined above, there is a possibility that moderate to high measured swells may be found in the fill. This may require rework of portions of the fill or the use of pier foundations and structural support of interior floors. Additional drilling after the soil modification has been completed will be required to provide final foundation recommendations and basement slab risk assessments for each residence.

9.3 Slopes and Retaining Walls

Slope stability and retaining wall analyses were not conducted as part of this study. In areas where existing slopes exceed 5:1 (horizontal:vertical), benching prior to fill placement will be required (see Figure 10). Construction of conventional fill slopes should be limited to 3 to 1 or flatter. Cut slopes steeper than 2 to 1 should be evaluated for stability. Specific analysis will also be necessary if retaining walls are to be constructed.

9.4 Construction Excavation

In our opinion, the majority of the site grading, utility, and foundation excavations may be constructed using conventional earth-moving equipment for the Front Range area. In some areas, unstable soils beneath earth-moving equipment may be encountered. Care should be taken so that the foundation soils are not disturbed or are properly stabilized.

Excavations deeper than 3 feet should be properly sloped or braced to prevent collapse of potentially caving soils. For planning purposes, the sands and any soil influenced by ground water can be considered as a "Type C", the clay can be considered as "Type B", and the underlying bedrock can be considered as a "Type A" according to OSHA regulations. A final determination of the soil type must be made by the Contractor's "Competent Person" (as defined by OSHA Regulation). Local, city, county, state, and federal (OSHA) regulations should be followed.

The presence of ground water will be a significant constraint on construction excavation. It will be necessary to dewater all excavations constructed below the ground water level. Dewatering may include pumping from the work area or construction of well points. The excavation and utility contractor(s) must be made aware of the ground water conditions so that contract bidding will include the appropriate provisions.

9.5 Utility Construction

In our experience, utility excavations may be constructed using conventional earth-moving equipment for the Front Range area. All excavations should be sloped or shored in the interest of safety, following local and federal (OSHA) regulations. For planning purposes, OSHA soil type designations are discussed under "Construction Excavations". Final determination of the soil types must be made by the contractor's "Competent Person" (as defined by OSHA) at the time of construction.

The presence of ground water will be a constraint upon utility construction. It will be necessary to dewater all trenches constructed below the ground water level. A possible method for dewatering would be to begin construction of the deeper (sewer) utilities at their outfall and to work upstream. Other methods include pumping from the trench in the work area or construction of well points along the trenches. The utility contractor must be made aware of the ground water conditions.

Trench backfill within all structural areas should, as a minimum, be compacted using the same methods and to the same specifications as required for overlot grading. This is especially important where utility lines and laterals are constructed beneath foundation, alley, and driveway areas. Trenches in streets should be compacted to the City of Fort Lupton specifications. Observation and testing of fill placement must be performed during trench backfilling.

The choice of compaction equipment can have a significant effect on the performance of trench fills. It is our experience that utility trench backfills compacted with a compaction wheel attached to an excavator experience more settlement (both in area and magnitude) than those compacted with self-propelled equipment. While the contractor has control of the means and methods of construction, the Client should be aware of this issue.

9.6 Subsurface Drainage

The ground water encountered is anticipated to cause significant problems across the site during development, especially if the overexcavation option is selected. As discussed under "Geotechnical Concerns", ground water should be avoided wherever possible.

Additionally, clay soils and bedrock were encountered in the test borings drilled for this and the previous studies. These types of material have a relatively low permeability and can develop a perched water condition. Perched water conditions generally occur after development and construction have taken place, when landscape irrigation and surface drainage conditions are changed.

For these reasons, an overall area drain (underdrain) should be considered for the site. In addition, the overall area drain could also provide for a discharge and collection point for individual foundation drains. If an area drain discharge is not available, the individual foundation drains will discharge collected water to the ground surface near each residence. Surface discharge can result in water recycling to the foundation drain and ponding of water where surface grading is not sufficient for water flow. Foundation drain discharge can also result in algae growth where water continually crosses sidewalks which become ice hazards on walkways and gutters in the winter months.

Typically, overall area drains can be designed and constructed with installation of the sanitary sewer system. However, the City of Fort Lupton should be consulted to determine where an overall system is allowed. The civil engineering company contracted to design the infrastructure should be able to provide this design. If the area drain is to be used as part of a site-wide dewatering system, it should be designed by a Geohydrologist familiar with residential subdivisions. For the system to work, the area drain must be graded to a positive discharge point. **If a permanent outfall for an area drain cannot be determined, the area drain should not be constructed.**

If it is decided not to install an overall area drain, an alternative would be to establish points of positive gravity discharge for the gravel bedding beneath the sewer. We also recommend any basement or below grade area be provided with a perimeter subsurface drainage system sloped to drain to a positive gravity discharge such as a sump or connected directly to the overall area drain system.

9.7 Surface Drainage

We recommend that provisions be made to divert surface runoff away from development areas. This may reduce potential problems associated with excess water in structure bearing soils. The site should be designed such that a 10% slope can be established near the structures after foundation construction. Slopes of at least 2% should be planned in landscaped areas once the water is away from the foundations.

10.0 SITE CONCRETE AND CORROSIVITY

Laboratory tests conducted on selected soil samples yielded water soluble sulfates ranging from less than 100 parts per million (ppm) to 2,920 ppm. Based upon these results and our experience in the area, the site soils and bedrock are assigned to possess severe (S2 or RS2) sulfate exposure per ACI 318 or ACI 332. We recommend the "ACI Manual of Concrete Practice", of the most recent edition be used for proper concrete mix design properties as they relate to these conditions.

The pH test results were 7.9. Resistivity test results at in-situ moisture were 317 and 4,049 ohm•cm. Chloride test results were 0.0023% and 0.0368%. These results are summarized on Figures 2 through 5 and in Appendix A. The results from the previous report are included in Appendix B. The results of this testing should be used as an aid in choosing the construction materials in contact with these soils which will be resistant to the various corrosive forces. Manufacturer's representatives should be contacted regarding the specific corrosivity resistance for their particular product. In addition, local specifications should be consulted when selecting pipe materials.

11.0 PRELIMINARY FOUNDATION DESIGN CONCEPTS

The foundation recommendations for each structure are dependent upon the subsurface profile and engineering properties of the materials encountered at and near the depth of the proposed foundation. These are dependent upon the final configuration of and construction methods used during overlot grading at the site. The information in the following sections presents preliminary foundation concepts which must be finalized for each building site upon completion of the overlot grading operations. AGW should be retained to perform design level soil and foundation studies after completion of site grading.

11.1 Straight Shaft Piers

A possible foundation system for structures founded where claystone is at or near the bottom of the foundation excavations would be straight shaft piers drilled into bedrock. If soil modification is not employed, we believe that 55 to 65% of the structures will require a pier foundation system. The piers will likely be designed for an end bearing pressure in the range of 15,000 to 30,000 pounds per square foot (psf), a minimum dead load pressure in the range of 10,000 to 25,000 psf, and a side shear in the range of 1,500 to 2,000 psf. Pier lengths on the order of 25 to 35 feet with bedrock penetration from 16 to 22 feet can be anticipated. Casing of the piers should be anticipated. As an alternative to piers, helical piles drilled into bedrock could be constructed to support these foundations.

11.2 Spread or Pad-Type Footings

Foundations supported by spread footings or footing pads may be possible for structures where sufficient non- to low expansive clays, sands, or properly placed and compacted fills are encountered beneath the foundation elevation. The footings must be founded below frost depth. The footings will likely be designed for maximum soil bearing pressures ranging from 1,000 to 3,000 psf. Minimum dead load pressure on the order of 700 to 1,000 psf may be required for footings supported on native clayey soils or clay fills.

We anticipate 35 to 45% of the site will be able to utilize this foundation type if traditional grading techniques are used. Should the expansive claystone be overexcavated and the excavated materials are placed as moisture treated fill, it is likely most if not all of the structures could be founded on spread or pad-type footings bearing on the moisture treated fill.

11.3 Post-Tensioned Slab Foundation

A post-tensioned slab foundation system could be constructed to support the structures. The foundation should be supported by the native clayey soils or properly placed and compacted clayey fill. The expansive claystone should be excavated to a depth of 10 feet beneath the lowest foundation element. The excavated material may then be placed in the excavation as moisture treated fill as described in Appendix C. This type of construction should provide a foundation and floor system which moves together as one unit. The foundations will likely be designed for a soil bearing pressure ranging from 1,500 to 3,000 psf.

The range of parameters provided below will likely be used for design of the foundation system. These parameters were developed using practices established by AGW, as well as our evaluation of published information and experience in working with these types of foundations.

Center Lift		
Edge Moisture Variation Distance (e_m)	=	7 to 9 feet
Differential Movement (y_m)	=	0.5 to 1.5 inches
Edge Lift		
Edge Moisture Variation Distance (e_m)	=	4 to 6 feet
Differential Movement (y_m)	=	0.5 to 1.0 inches

We suggest that the structural engineer consider the information contained in "Design and Construction of Post-Tensioned Slabs-on-Grade" by the Post-Tensioning Institute (Third Edition) for design of the slab.

11.4 Raft Foundations

In areas where silty sands are encountered to a depth of 10 feet or greater below the foundation, reinforced concrete slab-on-grade raft foundations bearing on natural sands or properly placed and compacted sand fill may be acceptable. The turn down edges must be below frost depth or frost protected as provided by ASCE or NAHB. The raft foundations will likely be designed for an allowable bearing pressure of 800 to 1,500 psf. A modulus of subgrade reaction (k_s) of 75 to 150 kcf will likely be acceptable. If soft soils or excessive rutting occurs during excavation for foundations, stabilization of the foundation subgrade may be required prior to placing foundation forms.

11.5 Lateral Earth Pressures

Foundation walls with fill on only one side will need to be designed for lateral earth pressures. For this site, lateral earth pressures calculated based upon equivalent fluid densities on the order of 50 to 80 pcf should be anticipated. The preliminary estimates are for properly placed and compacted fill at foundation walls. They should not be used for site retaining walls.

11.6 Interior Floors

If the site is developed using traditional overlot grading techniques, it is likely that the sites where piers are required for foundation support will be assessed with moderate to high to very high slab risk performance. Where footing type foundations are constructed, it is likely that the sites will be assessed with a low to moderate slab risk performance. If the site is developed using traditional

overlot grading techniques, it is likely that approximately 55 to 65% of the sites will be assessed with a high to very high slab risk performance evaluation. If the site can be developed using overexcavation and placement of moisture treated fill, it is likely that most of the sites will be assessed with low to moderate slab risk performance evaluation. Slab-on-grade construction may be appropriate for full, unfinished basement construction on sites with low or moderate evaluations. Structural floors are generally recommended on sites with higher evaluations and for finished basements or any site where floor movement or cracking cannot be tolerated. If slab movement cannot be tolerated, structural floors should be constructed. For post-tensioned or raft type foundations, the interior slab will be part of the foundation system, and therefore are considered structural.

11.7 First Floor Construction (Crawl Space Products)

Some of the structures may be constructed over crawl spaces. Structural floors will be constructed in the living areas of the residences. For the garage areas, it is likely that there will be a low to moderate risk of garage slab movement on the natural soils after the expansive claystone is overexcavated and placed as a moisture treated fill.

11.8 Drain Systems

Drain systems will be required around the lowest excavation level of below grade spaces for each structure. Either interior or exterior drains may be used for a portion of the sites. Where ground water is within 4 feet of the foundation, a more extensive drain system will be required. This may include gravel across the entire foundation, drain laterals, or combination interior and exterior drains. The drains must be led to a positive gravity outfall or sump. If an overall subdivision area drain is constructed, individual drains should be connected into this system if allowed by the jurisdiction.

11.9 Backfill and Surface Drainage

Foundation backfill should be moistened and compacted to reduce future settlement. The site grading should consider a slope of 10% away from the foundation at the completion of construction. All other drainage swales in landscaped areas should slope at a minimum of 2%.

12.0 PRELIMINARY STREET PAVEMENT DESIGN

Pavement design is based on the engineering properties of the subgrade and pavement materials, the assumed design traffic conditions, and the Town of Fort Lupton pavement regulations. Effective pavement structures are composed of various pavement materials bearing upon properly prepared subgrade soils. The following preliminary pavement recommendations are based upon the subsurface conditions encountered and our experience in the area.

It appears the proposed subgrade materials will likely be sands, clays, claystone, or fill constructed from these materials with AASHTO Soil Classifications of A-1-b, A-2-4, A-3, A-4, A-6, and A-7-6.

Based upon our laboratory testing and our experience in the area, it is anticipated that the claystone subgrade materials encountered on this site can be expected to exhibit enough swell to negatively impact the performance of the pavement and will likely be in excess of those allowed by City of Fort

Lupton regulation. Therefore, we recommend that the expansive subgrade materials be modified during site grading operations to reduce the potential future heave of the pavement. The expansive claystone should be overexcavated to a depth of at least 5 feet below the subgrade elevation. The overexcavation should be performed during site grading prior to construction of utilities within the right-of-way. Overexcavation should cover the area from 1 foot beyond back of sidewalk (for attached sidewalk areas) or back of curb (for detached sidewalks). The excavated material may be placed as moisture treated fill (see Appendix C) within the right-of-way. All fill placed within 5 feet of the subgrade elevation should be placed as moisture treated fill. Lime, other chemical treatment, or other methods of subgrade preparation may also be required dependent upon the results of the final pavement design report.

The shallow ground water encountered on the site may cause stabilization issues for pavement construction. This may require chemical or mechanical stabilization based upon the unstable encountered on this site. Chemical stabilization includes the use of lime, fly ash, cement, or other chemical additives to the soil. Mechanical stabilization includes the use of rock fill with or without a geogrid beneath the base course. Where soft yielding pavement subgrade is found, stabilization using rock or chemicals (fly ash or cement) may be necessary. The use of pavement drains will be necessary when ground water is within 3 feet of the subgrade to prevent frost heave (see Figure 11).

Based upon the subgrade soil classifications, we have estimated the relative strengths of the subgrade soils presented above in order to determine the preliminary pavement thicknesses. Based upon the nature of the development, we believe the roadways will be classified as local streets (ESAL = 36,000), or as residential collector (ESAL = 219,000). Based on this information and utilizing the design methodology determined from the pavement design regulations for the City of Fort Lupton the alternatives presented below were determined.

Pavement Thickness Alternatives for Interior Streets

Traffic Category	HBP (in.)	HBP / ABC (in.)
Local Streets	6.5 to 7.0	5.0 to 6.0 / 8.0 to 12.0
Residential Collector	8.0 to 10.0	5.0 to 6.0 / 10.0 to 14.0

HBP = Hot Bituminous Pavement ABC = Aggregate Base Course

The above preliminary thickness recommendations are based on a design life of 20 years. It should be emphasized that the design alternatives provided above are preliminary for the materials anticipated. The final design thicknesses could be more or less than indicated depending upon the materials sampled during the final pavement design.

Proper surface and subsurface drainage is essential for adequate performance of pavements. It has been our experience that water from landscaped areas can infiltrate pavement subgrade soils and result in softening of the subgrade followed by pavement damage. Therefore, provisions should be made to maintain adequate drainage and/or contain runoff from such areas. In addition, water and irrigation lines should be thoroughly pressure tested for leaks prior to placement of pavement materials.

It must be reiterated that the information contained in this section is preliminary in nature. More detailed information will be required by the City of Fort Lupton prior to issuance of a paving permit. Therefore, when overlot grading is complete at the site, a final pavement evaluation must be performed.

13.0 FINAL DESIGN CONSULTATION AND CONSTRUCTION OBSERVATION

This report has been prepared for the exclusive use of Sun ACQ, LLC for the purpose of providing geotechnical criteria for the proposed project. The data gathered and the conclusions and recommendations presented herein are based upon the consideration of many factors including, but not limited to, the type of structures proposed, the configuration of the structures, the proposed usage of the site, the configuration of surrounding structures, the geologic setting, the materials encountered, and our understanding of the level of risk acceptable to the Client. Therefore, the conclusions and recommendations contained in this report should not be considered valid for use by others unless accompanied by written authorization from AGW.

AGW should be contacted if the Client desires an explanation of the contents of this report. AGW should be retained to provide future geotechnical services for the site including, but not limited to, design level geotechnical studies, consultation during design, observation and testing during construction, and other geotechnically related services. Failure to contract with AGW for these services or selection of a firm other than AGW to provide these services will eliminate liability for AGW. We are available to discuss this with you.

14.0 GEOTECHNICAL RISK

The concept of risk is an important aspect of any geotechnical evaluation. The primary reason for this is that the analytical methods used to develop geotechnical recommendations do not comprise an exact science. The analytical tools which geotechnical engineers use are generally empirical and must be tempered by engineering judgment and experience. Therefore, the solutions or recommendations presented in any geotechnical evaluation should not be considered risk-free and, more importantly, are not a guarantee that the interaction between the soils and the proposed structures will perform as desired or intended. What the engineering recommendations presented in the preceding sections do constitute is our judgement of those measures that increase the chances for the structures and improvements performing satisfactorily. The Developer, Builder, and Owner must understand this concept of risk, as it is they who must ultimately decide what is an acceptable level of risk for the proposed development of the site.

15.0 LIMITATIONS

We believe the professional judgments expressed in this report are consistent with that degree of skill and care ordinarily exercised by practicing design professionals performing similar design services in the same locality, at the same time, at the same site and under the same or similar circumstances and conditions. No other warranty, express or implied, is made. In the event that any changes in the nature, design or location of the facility are made, the conclusions and recommendations contained in this report should not be considered valid unless the changes are reviewed and the conclusions of

this report are modified or verified in writing. Because of the constantly changing state of the practice in geotechnical engineering, and the potential for site changes after our field exploration, this report must not be relied upon after a period of three years without AGW being given the opportunity to review and, if necessary, revise our findings.

The test borings drilled for this study were spaced to obtain an understanding of subsurface conditions for design purposes. Variations frequently occur from these conditions which are not indicated by the test borings. These variations are sometimes sufficient to necessitate modifications in the designs. If unexpected subsurface conditions are observed by any party during site development, we must be notified to review our recommendations.

Our scope of services for this project did not include, either specifically or by implication, any research, identification, testing, or assessment relative to past or present contamination of the site by any source, including biological (i.e., mold, fungi, bacteria, etc.). If such contamination were present, it is likely that the exploration and testing conducted for this report would not reveal its existence. If the Client is concerned about the potential for such contamination or pollution, additional studies should be undertaken. We are available to discuss the scope of such studies with you.

Our scope of services for this project did not include a local or global geological risk assessment. Therefore, issues such as mine subsidence, slope stability, faults, etc. were not researched or addressed as part of this study. If the Client is concerned about these issues, we are available to discuss the scope of such studies upon your request.

Sincerely,

A. G. Wassenaar, Inc.

Keith D. Seaton, P. E.
Senior Engineer

Reviewed by:

Ashley A. McDaniels, P. E.
Project Engineer
Digitally signed by: Ashley A. McDaniels, PE
Date: 2020.01.24 16:10:26 -07'00'

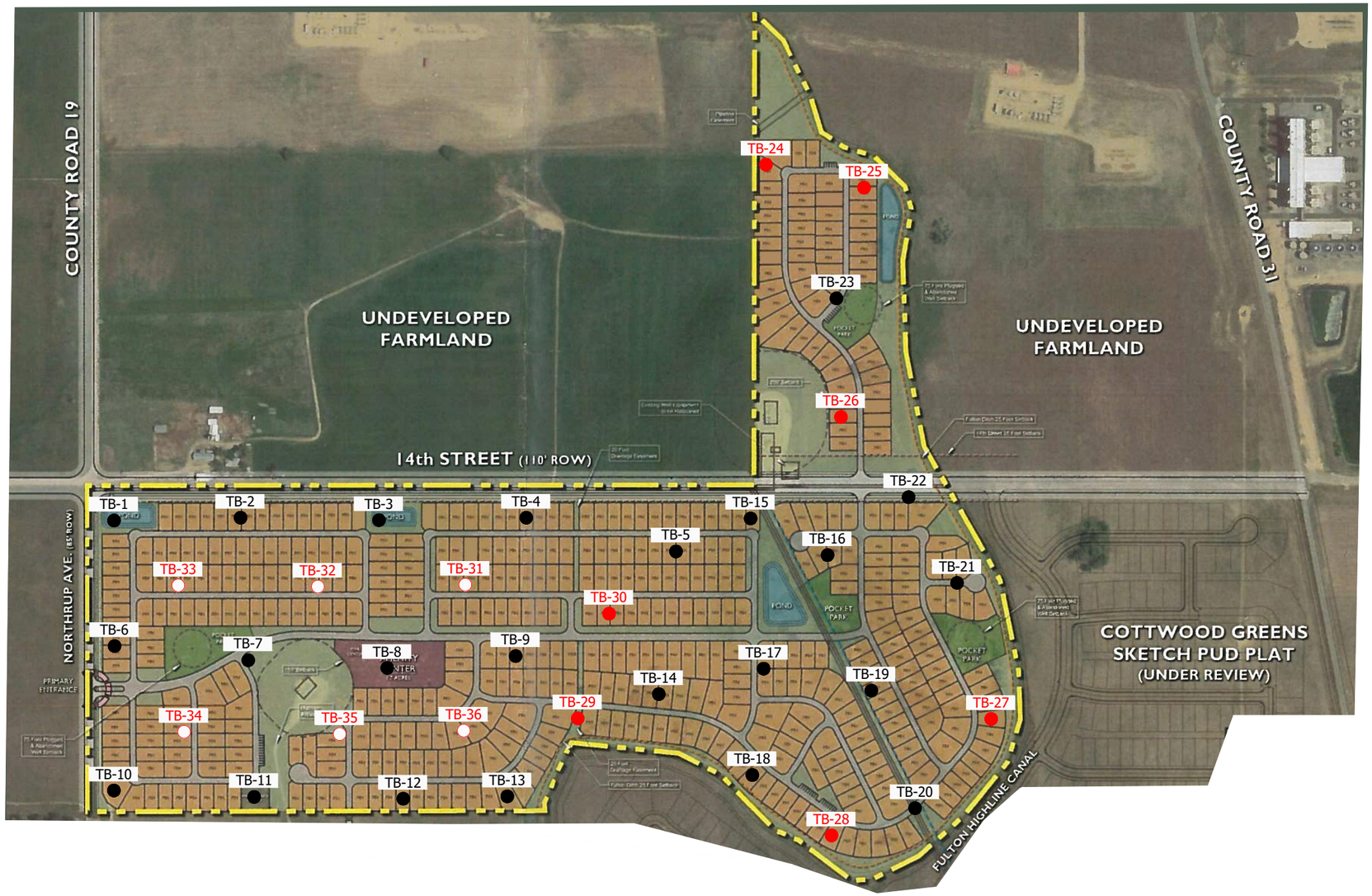
COLORADO LICENSED
ASHLEY ANN MCDANIELS
51150
PROFESSIONAL ENGINEER

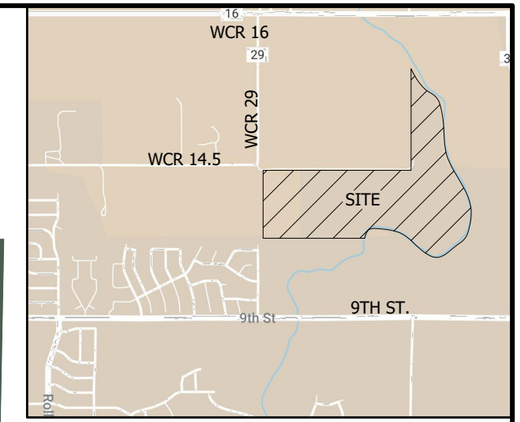
KDS/AAM/bab

COYOTE CREEK NORTH
FORT LUPTON, COLORADO

N

0 500 1000
Scale in Feet





VICINITY MAP
NOT TO SCALE

- TEST BORING DRILLED FOR THIS REPORT
- GROUND WATER BORING DRILLED FOR THIS REPORT
- TEST BORING FROM AGW PROJECT NUMBER 174095

NOTES:

1. TEST BORINGS ARE OVERLAID ON THE "FORT LUPTON - CONCEPTUAL LAYOUT -(G)- 498 UNITS" PLAN, PREPARED BY RVI PLANNING, DATED SEPTEMBER 25, 2019.
2. ALL LOCATIONS ARE APPROXIMATE.

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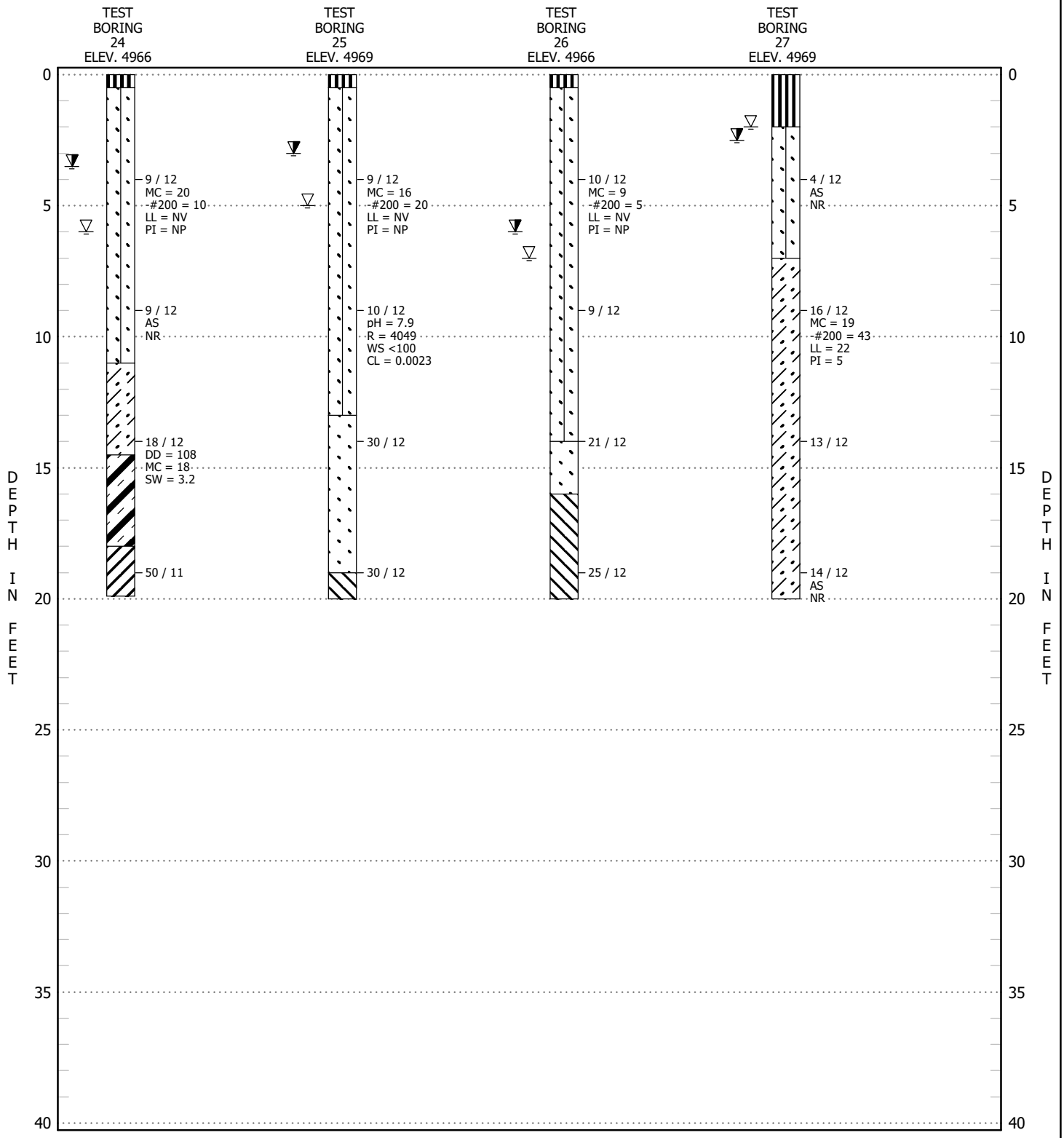
SITE PLAN AND VICINITY MAP	PROJECT NO. 195960 FIGURE 1

AGW
A.G. WASSENAAR, INC.

CLIENT Sun ACQ, LLC **PROJECT NAME** Coyote Creek North

PROJECT NUMBER 195960 **PROJECT LOCATION** Fort Lupton, Colorado



SEE FIGURE 5 FOR LEGEND AND NOTES TO TEST BORINGS

TEST BORING LOGS

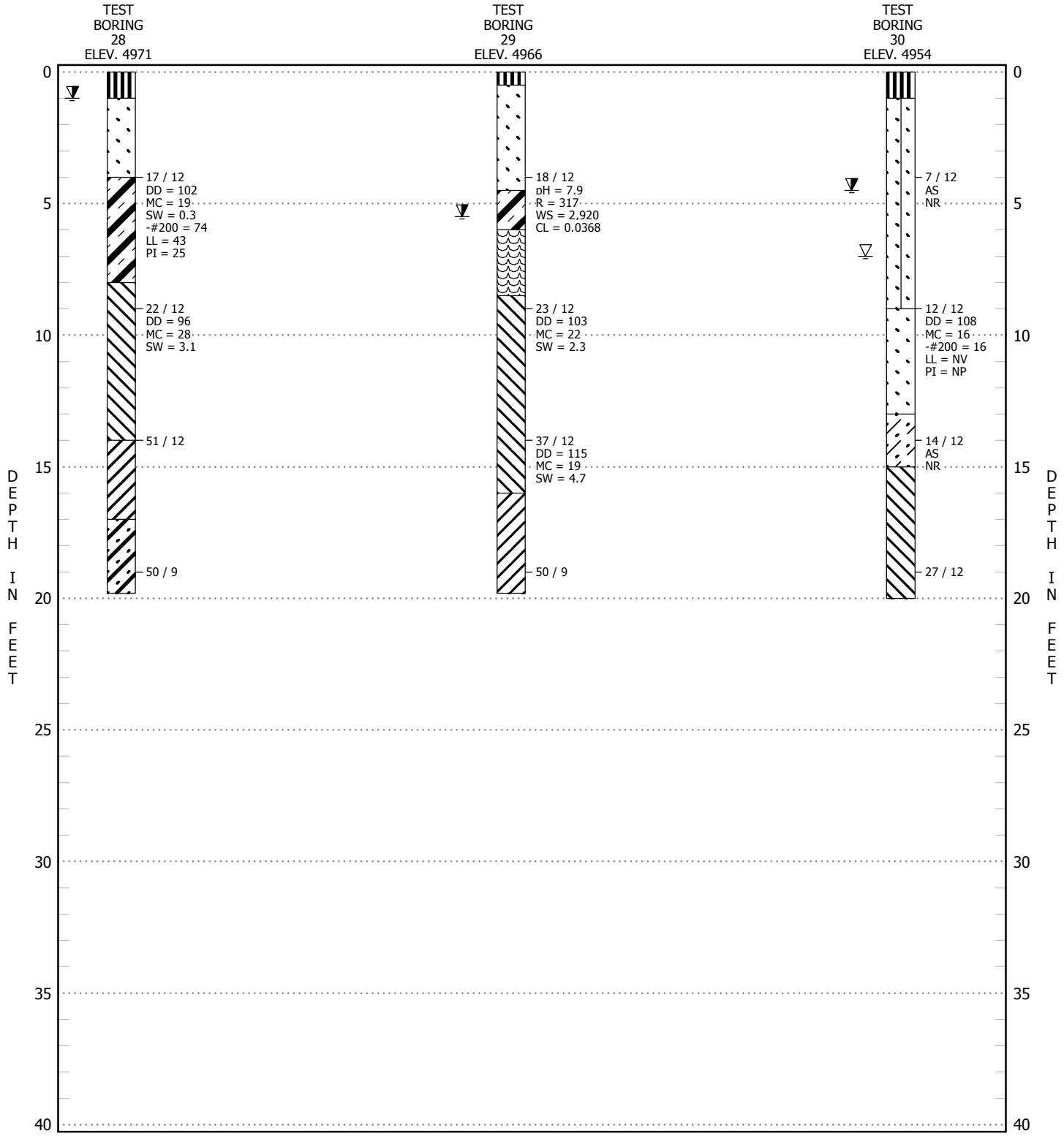
FIGURE 2

U:\PROJECT FILES\2 - GEOTECHNICAL\195960 COYOTE CREEK NORTH SUN ACQ SD AAM\TO BE SAVED\GINT\195960S_GT2019-12-27 COYOTE CREEK NORTH.GPJ

A.G. WASSENAAR, INC.

CLIENT Sun ACQ, LLC **PROJECT NAME** Coyote Creek North

PROJECT NUMBER 195960 **PROJECT LOCATION** Fort Lupton, Colorado



SEE FIGURE 5 FOR LEGEND AND NOTES TO TEST BORINGS

TEST BORING LOGS

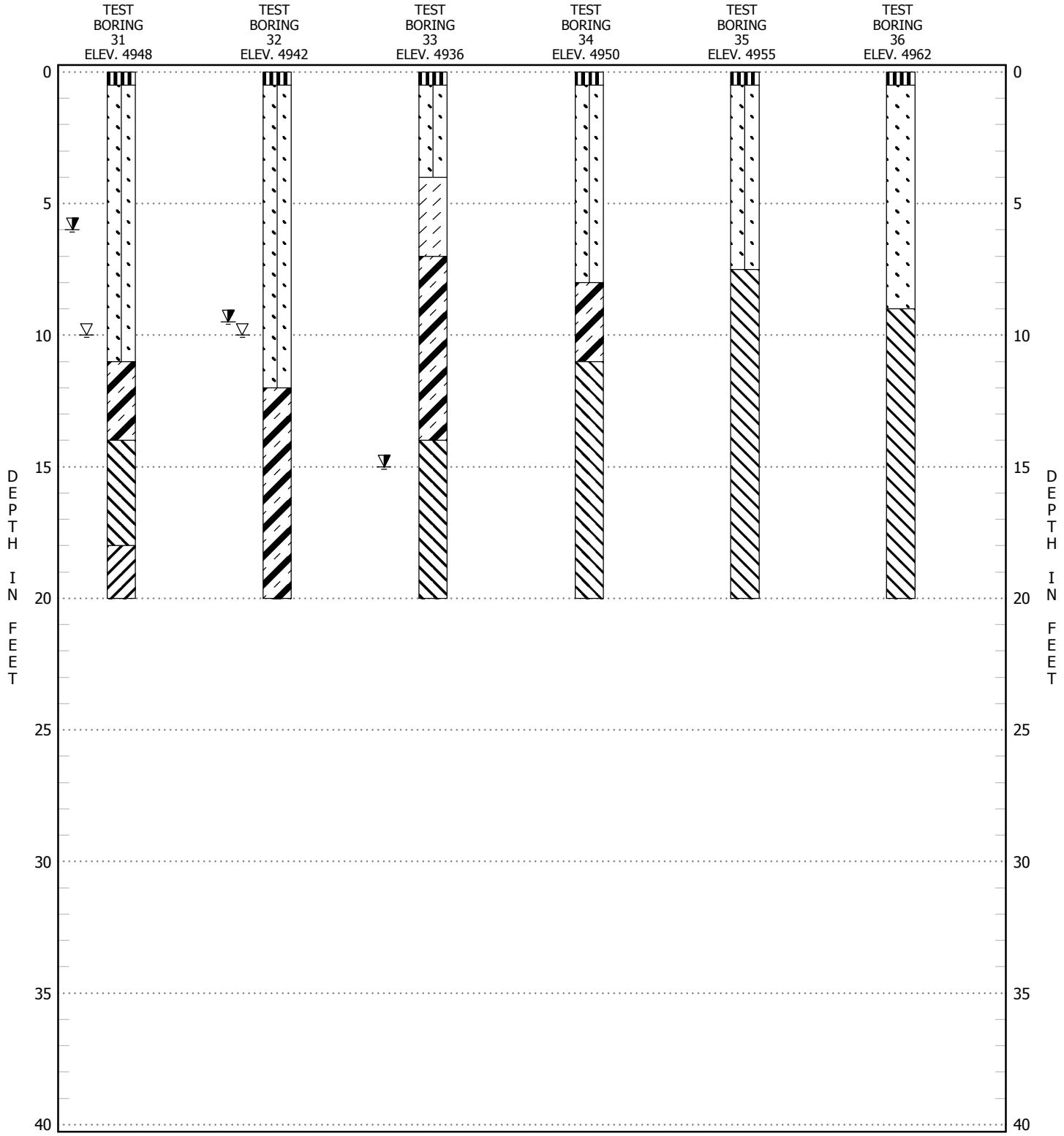
FIGURE 3

U:\PROJECT FILES\2 - GEOTECHNICAL\195960 COYOTE CREEK NORTH SUN ACQ SD AAM\TO BE SAVED\GINT\195960S_GT2019-12-27 COYOTE CREEK NORTH.GPJ

A.G. WASSENAAR, INC.

CLIENT Sun ACQ, LLC **PROJECT NAME** Coyote Creek North

PROJECT NUMBER 195960 **PROJECT LOCATION** Fort Lupton, Colorado



SEE FIGURE 5 FOR LEGEND AND NOTES TO TEST BORINGS

TEST BORING LOGS

FIGURE 4

U:\PROJECT FILES\2 - GEOTECHNICAL\195960 COYOTE CREEK NORTH SUN ACQ SD AAM\TO BE SAVED\GINT\195960S_GT2019-12-27 COYOTE CREEK NORTH.GPJ

A.G. WASSENAAR, INC.

CLIENT Sun ACQ, LLC **PROJECT NAME** Coyote Creek North

PROJECT NUMBER 195960 **PROJECT LOCATION** Fort Lupton, Colorado

SOIL DESCRIPTIONS

- Topsoil, clay, sandy, organic
- Clay, stiff to very stiff
- Sand, loose
- Sand, medium dense, silty
- Sand, medium dense, silty, clayey
- Clay (weathered claystone), medium stiff to stiff
- Claystone (Bedrock), firm to medium hard
- Claystone (Bedrock), hard to very hard
- Sandstone (Bedrock), hard to very hard
- Ironstone, hard

ABBREVIATIONS

DD	Dry density of sample in pounds per cubic foot (pcf)
MC	Moisture content as a percentage of dry weight of soil (%)
SW	Percent swell under a surcharge of 1000 pounds per square foot (psf) upon wetting (%)
COM	Percent compression under a surcharge of 1000 pounds per square foot (psf) upon wetting (%)
UC	Unconfined compressive strength in pounds per square foot (psf)
-#200	Percent passing the Number 200 sieve (%)
LL	Liquid Limit
PI	Plasticity Index
NP	Non-Plastic
NV	No Value
pH	Acidity or alkalinity of sample in pH units
R	Resistivity in ohms.cm
WS	Water soluble sufates in parts per million (ppm)
CL	Chlorides in percent (%)
x/y	X blows of a 140-pound hammer falling 30 inches were required to drive a 2.5-inch outside diameter sampler Y inches
x/y SS	X blows of a 140-pound hammer falling 30 inches were required to drive a 2.0-inch outside diameter sampler Y inches
C-x	Depth of cut to grade (rounded to the nearest foot)
F-x	Depth of fill to grade (rounded to the nearest foot)
FG	Finished grade (rounded to the nearest foot)
NR	No sample recovered
Bounce	Sampler bounced during driving
B	Bulk sample
AS	Auger sample
	Moderately to well cemented layer
—	Approximate depth of cut
	Depth at which practical drilling refusal was encountered
	Water level at time of drilling
	Caved depth at time of drilling
	Water level 3 to 16 day(s) after drilling
	Caved depth 3 to 16 day(s) after drilling

Notes:

1. Test borings were drilled December 4, 2019 and December 20, 2019.
2. Location of the test borings were staked by others at locations chosen by this firm.
3. The horizontal lines shown on the logs are to differentiate materials and represent the approximate boundaries between materials. The transitions between materials may be gradual.
4. Elevations were obtained from staking provided by others and have been rounded to the nearest foot.
5. Boring logs shown in this report are subject to the limitations, explanations, and conclusions of this report.

LEGEND AND NOTES

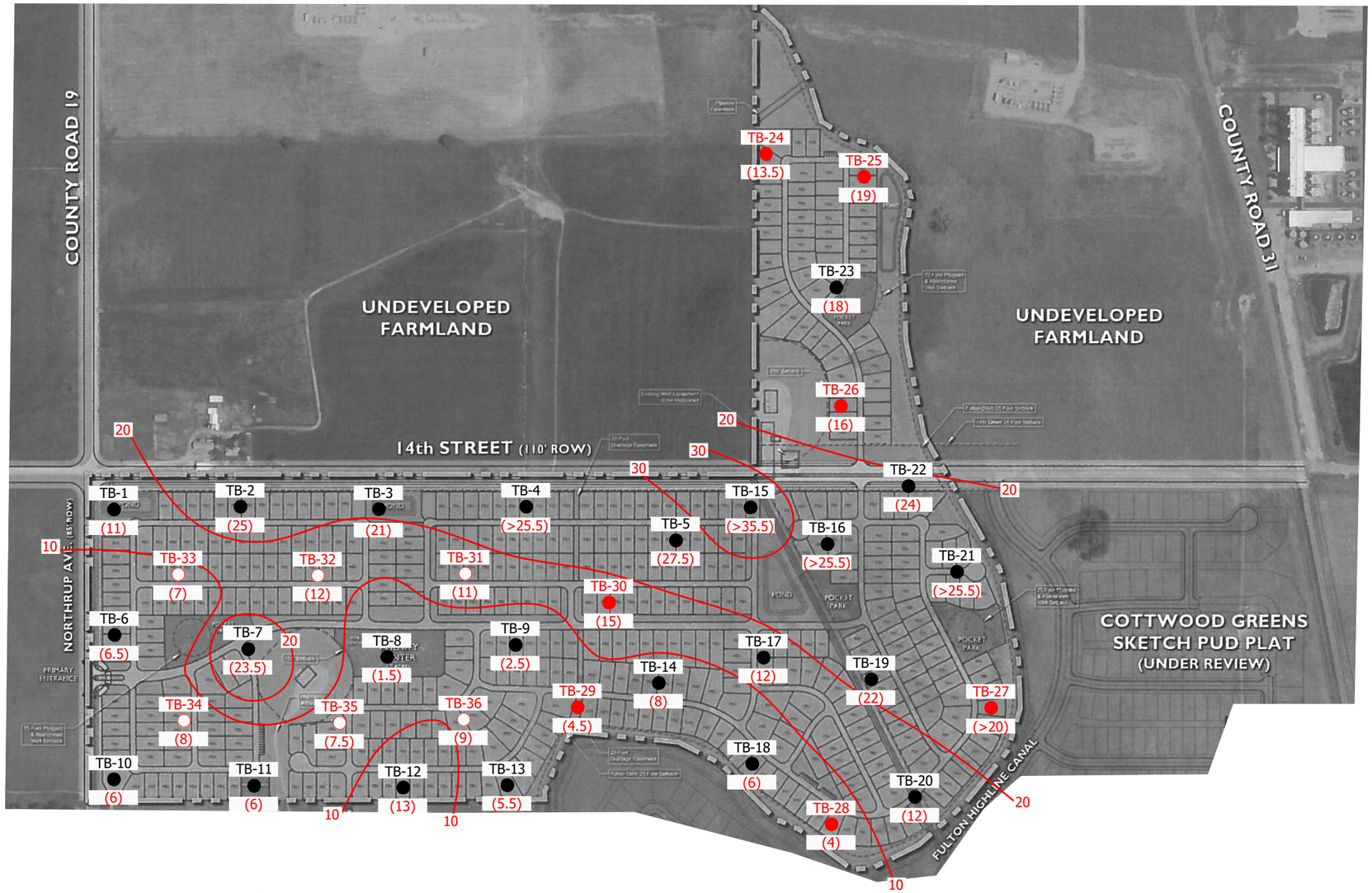
FIGURE 5

U:\PROJECT FILES\2 - GEOTECHNICAL\195960 COYOTE CREEK NORTH SUN ACQ SD AAM\TO BE SAVED\GINT\195960S_GT2019-12-27 COYOTE CREEK NORTH.GPJ

COYOTE CREEK NORTH
FORT LUPTON, COLORADO

N

0 500 1000
Scale in Feet



(XX) BEDROCK WAS ENCOUNTERED AT A DEPTH OF XX FEET

NOTES:

1. TEST BORINGS ARE OVERLAID ON THE "FORT LUPTON - CONCEPTUAL LAYOUT -(G)- 498 UNITS" PLAN, PREPARED BY RVI PLANNING, DATED SEPTEMBER 25, 2019.
2. BEDROCK DEPTH CONTOURS ARE BASED UPON THE EXTRAPOLATION OF DATA FROM WIDELY SPACED TEST BORINGS. LOCAL AND SIGNIFICANT VARIATIONS MAY OCCUR BETWEEN THE BORINGS. THIS MAP REPRESENTS AN OPINION WHICH IS ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHODS USED.
3. ALL LOCATIONS ARE APPROXIMATE.

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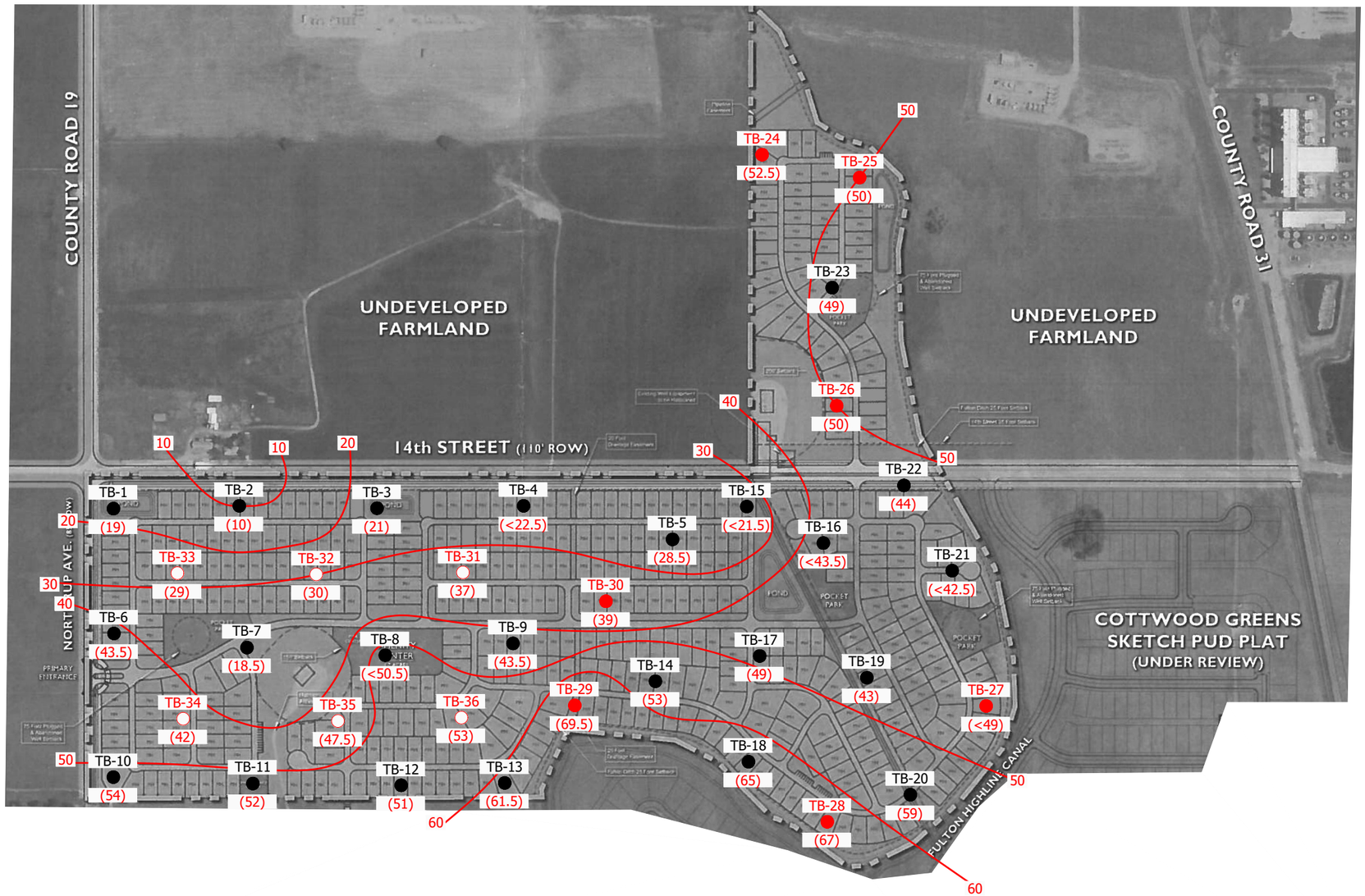
ESTIMATED DEPTH TO BEDROCK	PROJECT NO. 195960 FIGURE 6

COYOTE CREEK NORTH
FORT LUPTON, COLORADO

N

0 500 1000
Scale in Feet



(XX) BEDROCK WAS ENCOUNTERED AT AN ELEVATION OF 4,9XX FEET

NOTES:

1. TEST BORINGS ARE OVERLAID ON THE "FORT LUPTON - CONCEPTUAL LAYOUT -(G)- 498 UNITS", PREPARED BY RVI PLANNING, DATED SEPTEMBER 25, 2019.
2. ELEVATION CONTOURS ARE BASED UPON THE EXTRAPOLATION OF DATA FROM WIDELY SPACED TEST BORINGS. LOCAL AND SIGNIFICANT VARIATIONS MAY OCCUR BETWEEN THE BORINGS. THIS MAP REPRESENTS AN OPINION WHICH IS ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHODS USED.
3. ELEVATIONS ARE BASED UPON THE TEST BORING ELEVATIONS PROVIDED ON THE TEST BORING STAKES AND THE RECORDED DEPTHS TO BEDROCK.
4. ALL LOCATIONS ARE APPROXIMATE.

AGW
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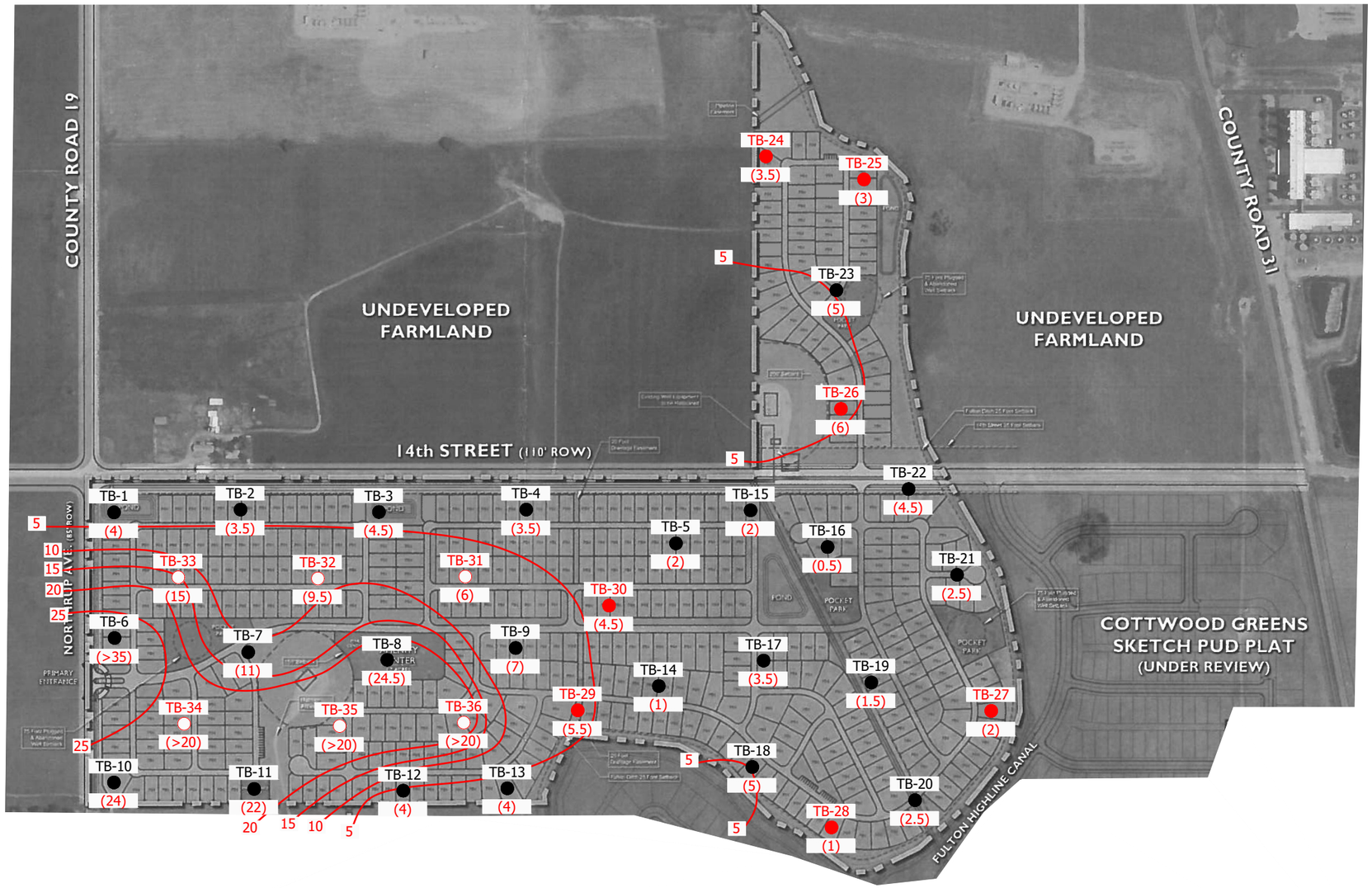
ESTIMATED ELEVATION OF BEDROCK	PROJECT NO. 195960 FIGURE 7

COYOTE CREEK NORTH
FORT LUPTON, COLORADO

N

0 500 1000
Scale in Feet



(XX) GROUND WATER OR WET CAVE IN WAS ENCOUNTERED AT A DEPTH OF XX FEET

NOTES:

1. TEST BORINGS ARE OVERLAID ON THE "FORT LUPTON - CONCEPTUAL LAYOUT -(G)- 498 UNITS" PLAN, PREPARED BY RVI PLANNING, DATED SEPTEMBER 25, 2019.
2. GROUND WATER DEPTH CONTOURS ARE BASED UPON THE EXTRAPOLATION OF DATA FROM WIDELY SPACED TEST BORINGS. LOCAL AND SIGNIFICANT VARIATIONS MAY OCCUR BETWEEN THE BORINGS. THIS MAP REPRESENTS AN OPINION WHICH IS ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHODS USED.
3. ALL LOCATIONS ARE APPROXIMATE.

AGW
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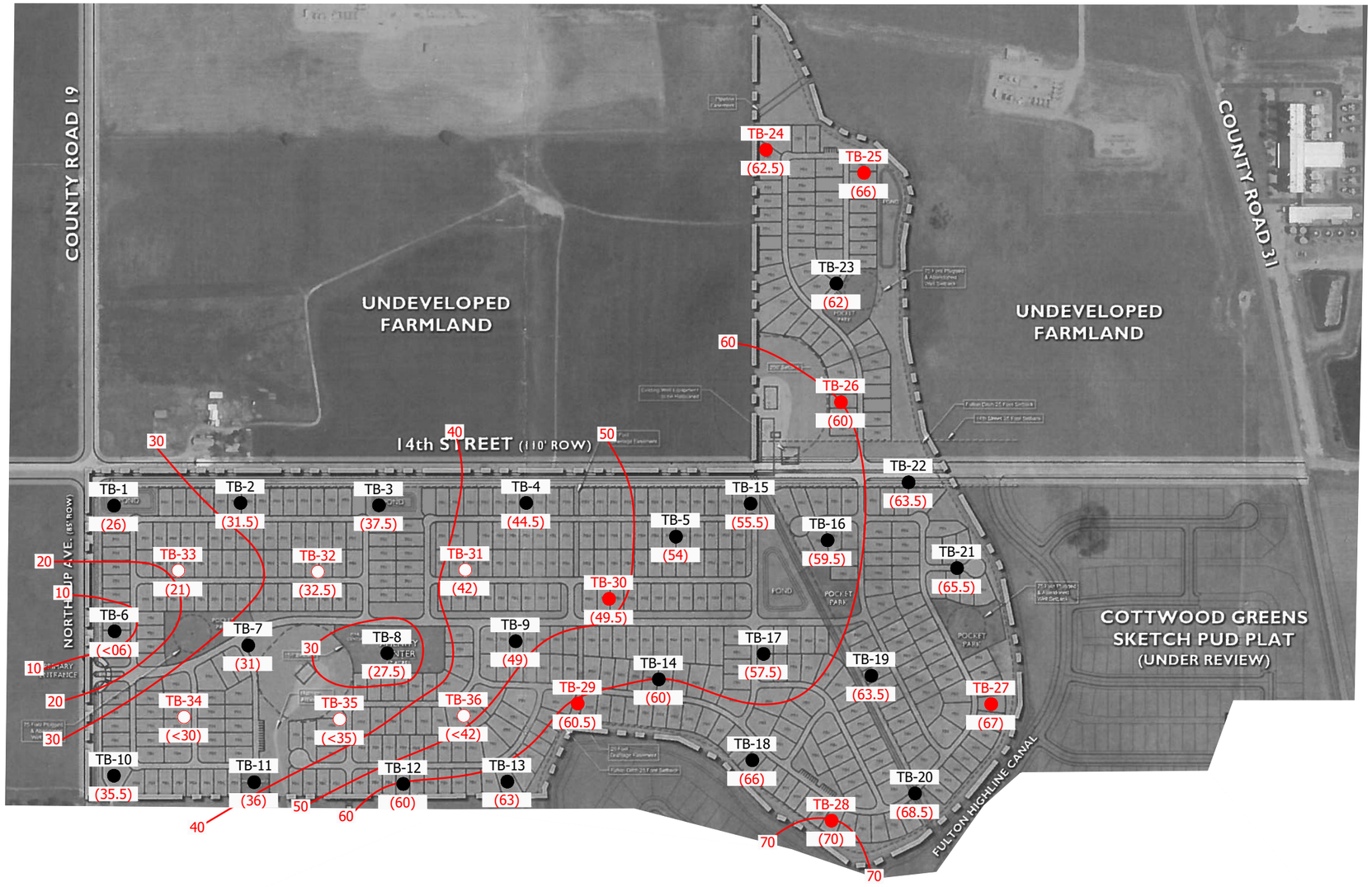
ESTIMATED DEPTH TO GROUND WATER	PROJECT NO. 195960 FIGURE 8

COYOTE CREEK NORTH
FORT LUPTON, COLORADO

N

0 500 1000
Scale in Feet



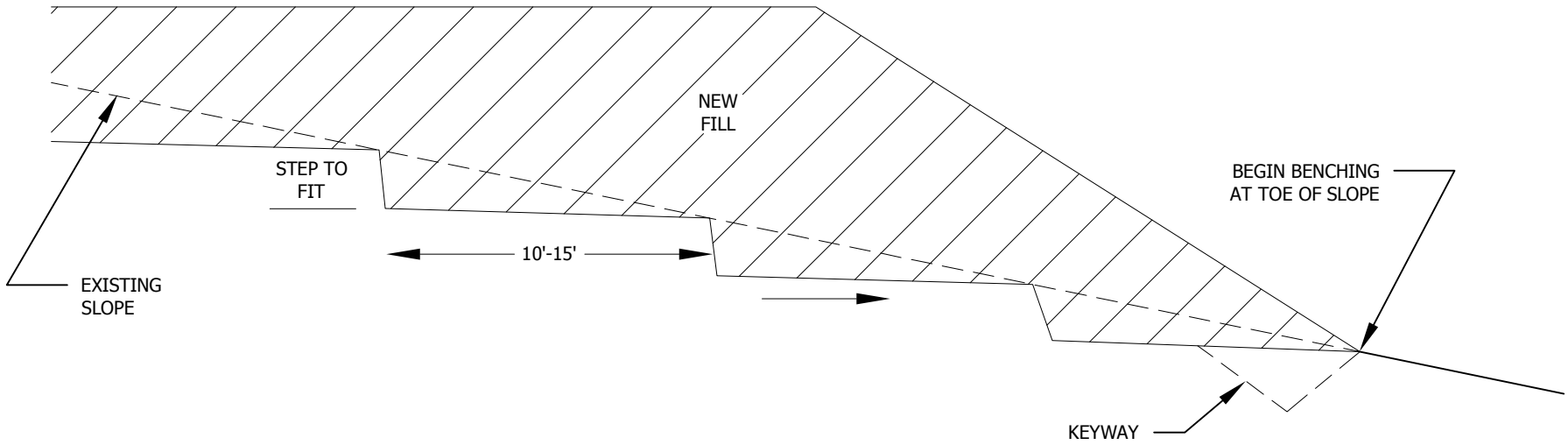
(XX) GROUND WATER OR WET CAVE WAS ENCOUNTERED AT AN ELEVATION OF 4,9XX FEET.

NOTES:

1. TEST BORINGS ARE OVERLAID ON THE "FORT LUPTON - CONCEPTUAL LAYOUT -(G)- 498 UNITS" PLAN, PREPARED BY RVI PLANNING, DATED SEPTEMBER 25, 2019.
2. ELEVATION CONTOURS ARE BASED UPON THE EXTRAPOLATION OF DATA FROM WIDELY SPACED TEST BORINGS. LOCAL AND SIGNIFICANT VARIATIONS MAY OCCUR BETWEEN THE BORINGS. THIS MAP REPRESENTS AN OPINION WHICH IS ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHODS USED.
3. ELEVATIONS ARE BASED UPON THE TEST BORING ELEVATIONS PROVIDED ON THE TEST BORING STAKES AND THE RECORDED DEPTHS TO BEDROCK.
4. ALL LOCATIONS ARE APPROXIMATE.

AGW
A.G. WASSENAAR, INC.

ESTIMATED ELEVATION OF GROUND WATER	PROJECT NO. 195960 FIGURE 9



NOTES:

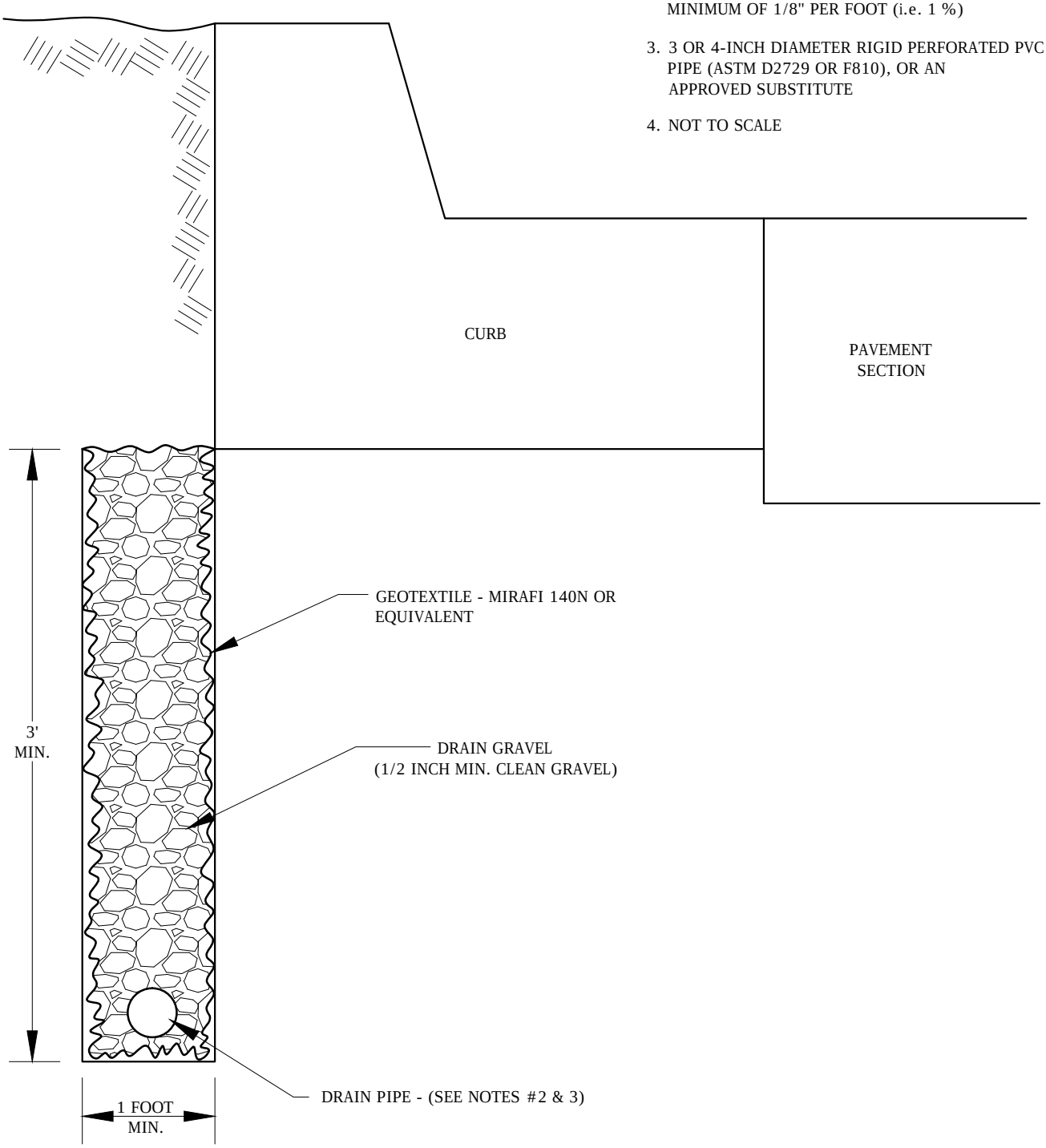
1. BENCHING REQUIRED WHEN EXISTING SLOPE IS 5 : 1 (HORIZONTAL : VERTICAL) OR STEEPER
2. CONTINUE BENCHING UNTIL NATURAL SLOPE FLATTENS OR DAYLIGHTS
3. DRAINS MAY BE REQUIRED IF GROUND WATER IS ENCOUNTERED
4. ADDITIONAL EXCAVATION MAY BE REQUIRED BY AGW IF SLOPE INSTABILITY IS NOTED
5. A KEYWAY MAY BE REQUIRED BY AGW DEPENDING UPON SLOPE CONFIGURATION
6. NOT TO SCALE

AGW
A.G. WASSENAAR, INC.

GENERALIZED BENCHING DETAIL	PROJECT NO. 195960 FIGURE 10

NOTES:

1. DRAIN MUST SLOPE TO A POSITIVE GRAVITY OUTLET
2. SLOPE BOTTOM OF TRENCH AND PIPE AT A MINIMUM OF 1/8" PER FOOT (i.e. 1 %)
3. 3 OR 4-INCH DIAMETER RIGID PERFORATED PVC PIPE (ASTM D2729 OR F810), OR AN APPROVED SUBSTITUTE
4. NOT TO SCALE



AGW
A.G. WASSENAAR, INC.

PAVEMENT DRAIN DETAIL	PROJECT NO. 195960 FIGURE 11

APPENDIX A
LABORATORY TEST RESULTS

SUMMARY OF LABORATORY TEST RESULTS.....TABLE A-1

SWELL-CONSOLIDATION TEST RESULTS .....FIGURES A-1 THROUGH A-4

GRADATION/ATTERBERG TEST RESULTS.....FIGURES A-5 THROUGH A-8

STANDARD PROCTOR TEST RESULTS ..... FIGURES A-9 AND A-10

AGW
A.G. WASSENAAR, INC.

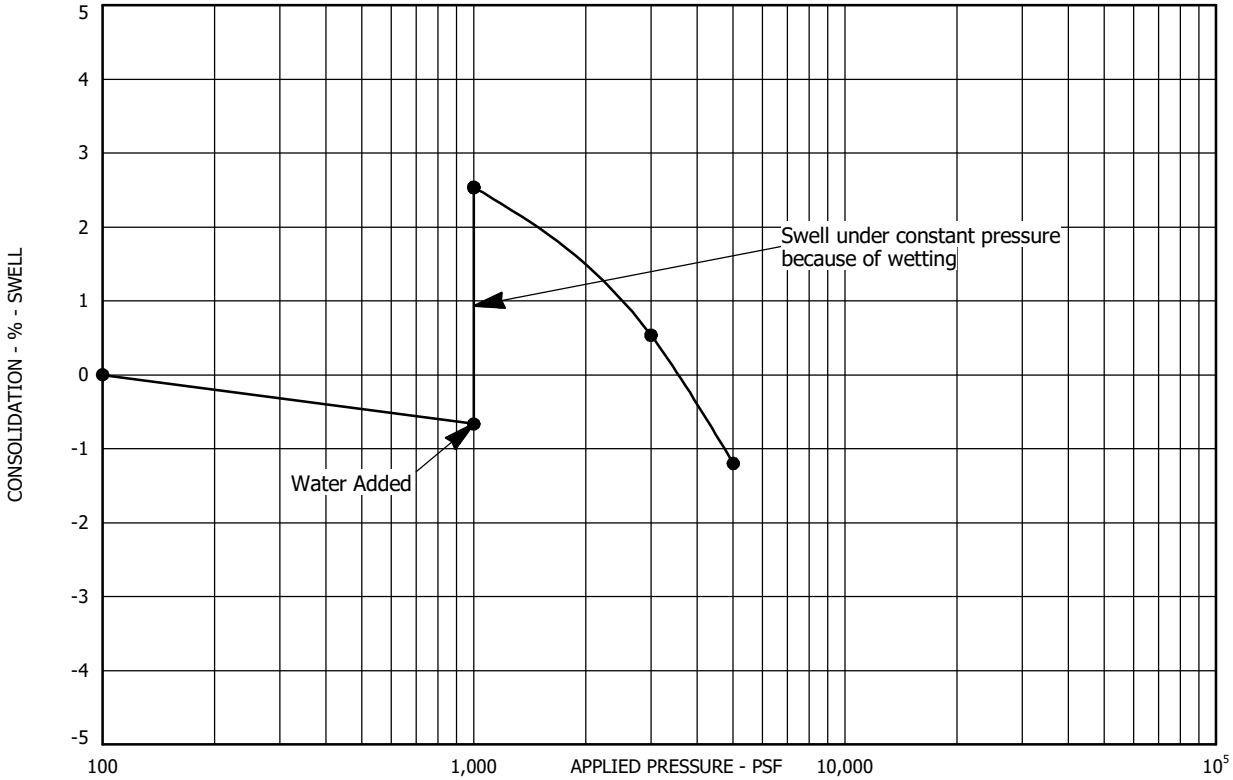
TABLE A-1
SUMMARY OF LABORATORY TEST RESULTS
January 15, 2020

Test Boring Number	Depth (feet)	Soil Type	Natural Dry Density (pcf)	Natural Moisture (%)	Swell / Consolidation (-) (%) [1]	Swell Pressure (psf)	% Passing #200 Sieve	Atterberg Liquid Limit LL	Atterberg Plasticity Index PI	pH	Resistivity (ohm•cm)	Water Soluble Sulfates (ppm)	Chlorides (%)
24	4	Sand, slightly silty		20			10	NV	NP				
24	14	Clay (weathered claystone), sandy	108	18	3.2	4,300							
25	4	Sand, silty		16			20	NV	NP				
25	9	Sand, silty								7.9	4,049	<100	0.0023
26	4	Sand, slightly silty		9			5	NV	NP				
27	9	Sand, very silty to very clayey		19			43	22	5				
28	4	Clay (weathered claystone), sandy, trace gravel	102	19	0.3	1,800	74	43	25				
28	9	Claystone, sandy	96	28	3.1	5,300							
29	4	Clay (weathered claystone), sandy								7.9	317	2,920	0.0368
29	9	Claystone, sandy	103	22	2.3	4,700							
29	14	Claystone, sandy	115	19	4.7	11,000							
30	9	Sand, silty	108	16			16	NV	NP				
Bulk 1[2]	NA	Blended Bulk Sample (Sand, very silty)	128.2 [4]	10.1 [4]			37	20	3				
Bulk 1[2]	NA	Blended Bulk Sample (Sand, very silty)	122	11	0.1 [5]	—							
Bulk 2[3]	NA	Blended Bulk Sample (Clay, very sandy)	125.7 [4]	9.9 [4]			55	26	8				
Bulk 2[3]	NA	Blended Bulk Sample (Clay, very sandy)	120	9	0.4 [5]	—							

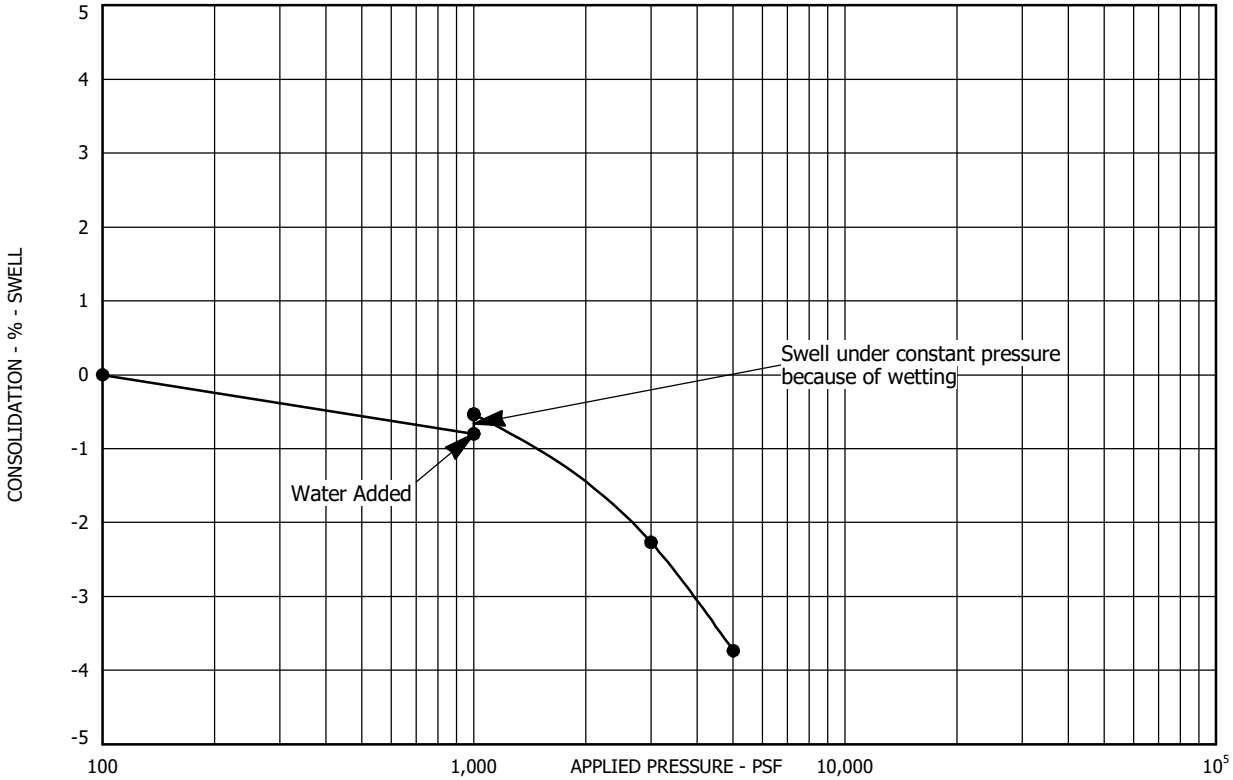
Notes:
[1] Indicates percent swell or consolidation when wetted under a 1,000 psf load
[2] Bulk 1 is a blended bulk sample obtained from the auger cuttings of Test Borings 24 through 28
[3] Bulk 2 is a blended bulk sample obtained from the auger cuttings of Test Borings 29 through 36
[4] Maximum dry density (MDD) and optimum moisture content (OMC)
[5] Sample was remolded to approximately 95% MDD

NA - Not Applicable, NV - No Value, NP - Nonplastic

AGW
A.G. WASSENAAR, INC.



Sample Location: Test Boring No. 24 at a depth of 14 feet
Sample Description: Clay (Weathered claystone), sandy
Dry Unit Weight (pcf): 108
Moisture Content (%): 18



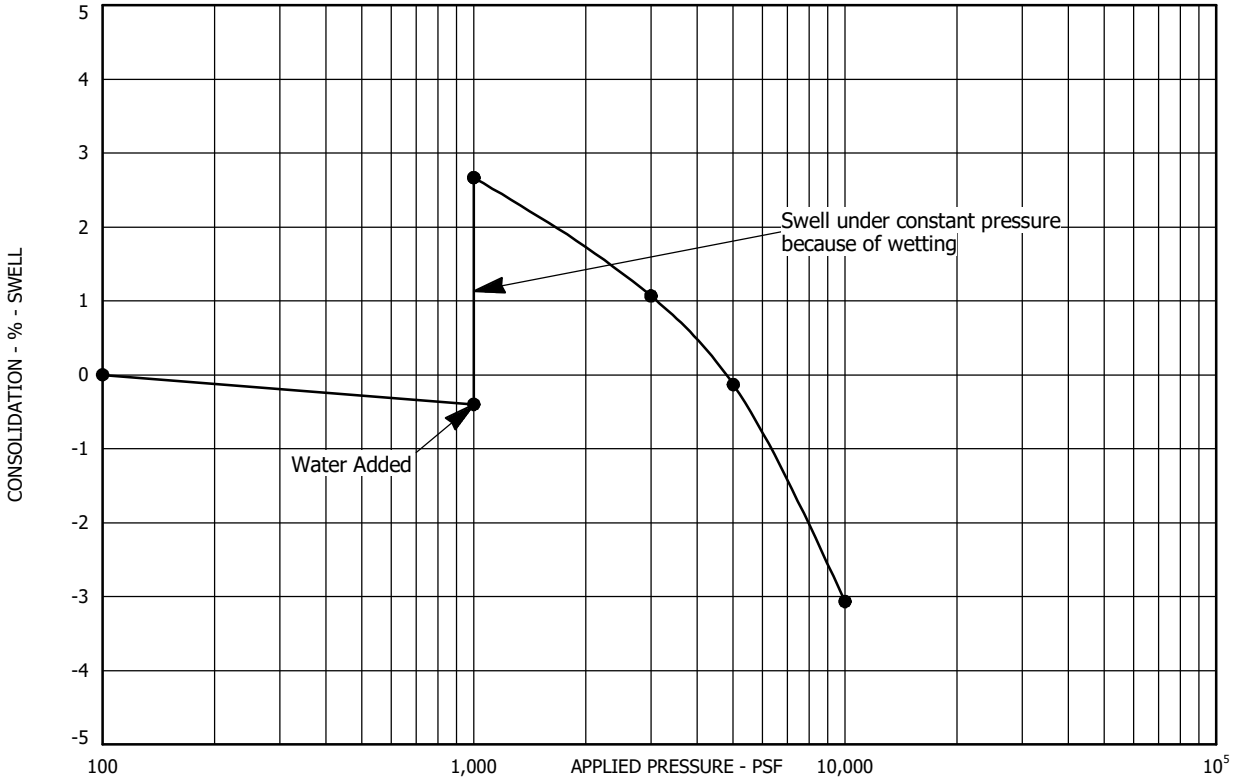
Sample Location: Test Boring No. 28 at a depth of 4 feet
Sample Description: Clay (Weathered claystone), sandy, trace gravel
Dry Unit Weight (pcf): 102
Moisture Content (%): 19

SWELL - CONSOLIDATION TEST RESULTS

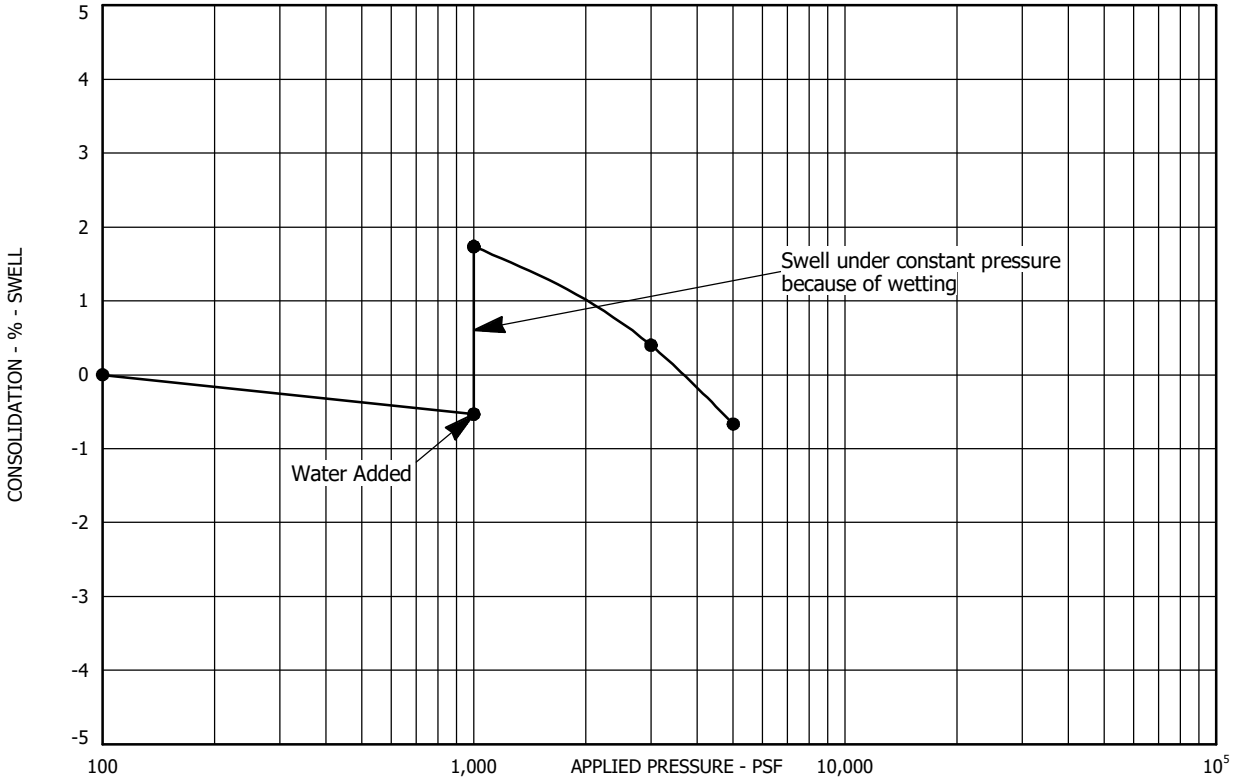
FIGURE A-1

PROJECT NO. 195960

AGW
A.G. WASSENAAR, INC.



Sample Location: Test Boring No. 28 at a depth of 9 feet
Sample Description: Claystone, sandy
Dry Unit Weight (pcf): 96
Moisture Content (%): 28

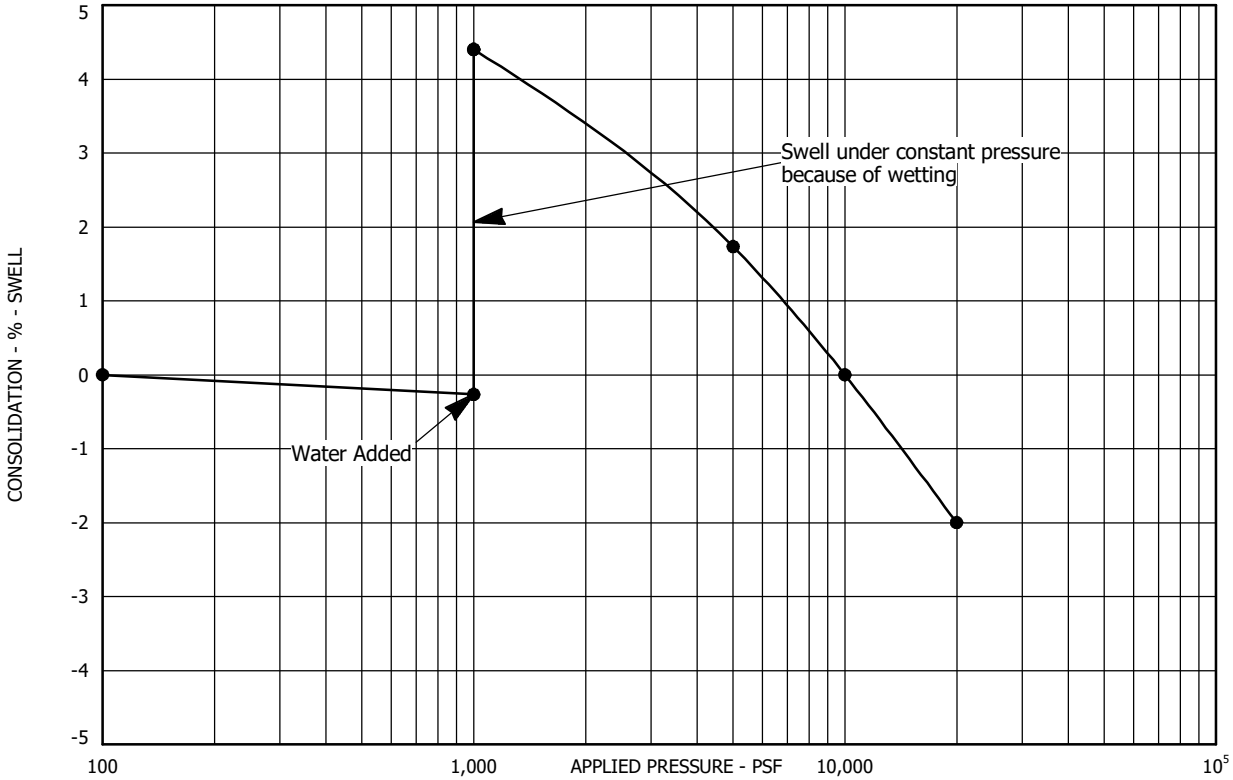


Sample Location: Test Boring No. 29 at a depth of 9 feet
Sample Description: Claystone, sandy
Dry Unit Weight (pcf): 103
Moisture Content (%): 22

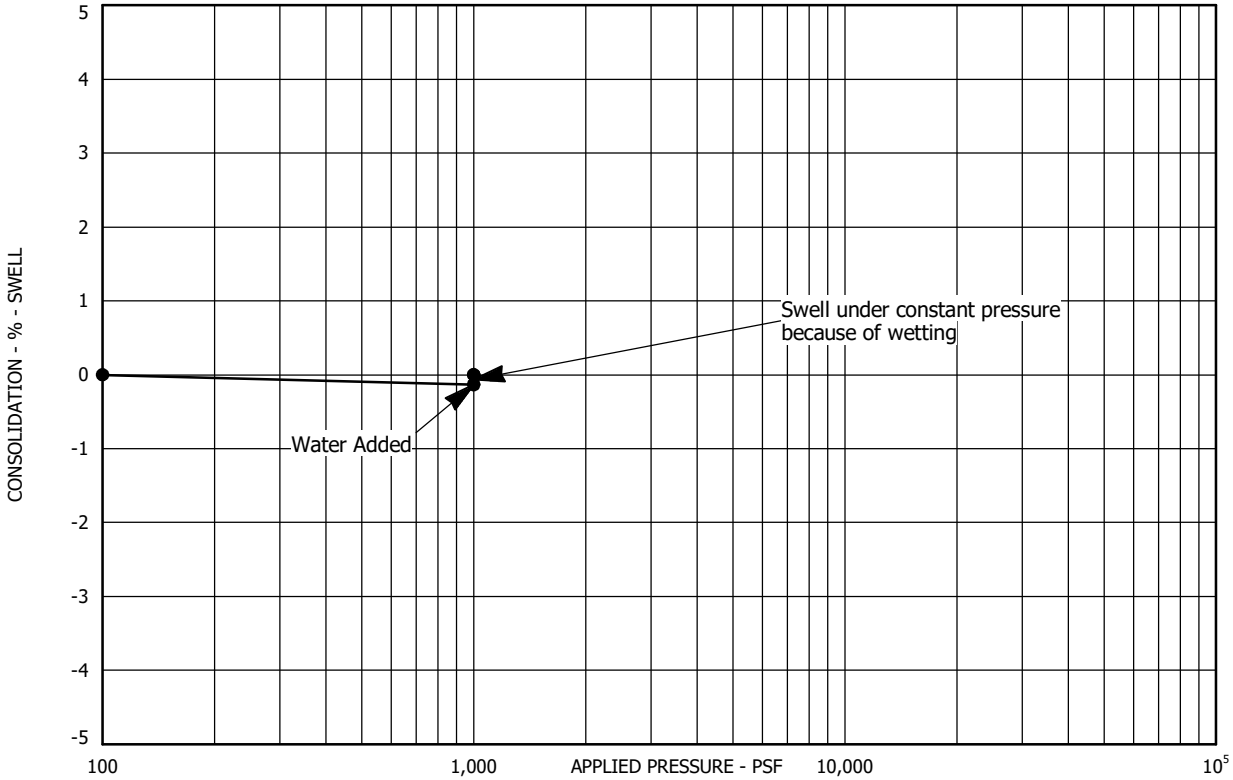
SWELL - CONSOLIDATION TEST RESULTS

FIGURE A-2

PROJECT NO. 195960



Sample Location: Test Boring No. 29 at a depth of 14 feet
Dry Unit Weight (pcf): 115
Sample Description: Claystone, sandy
Moisture Content (%): 19

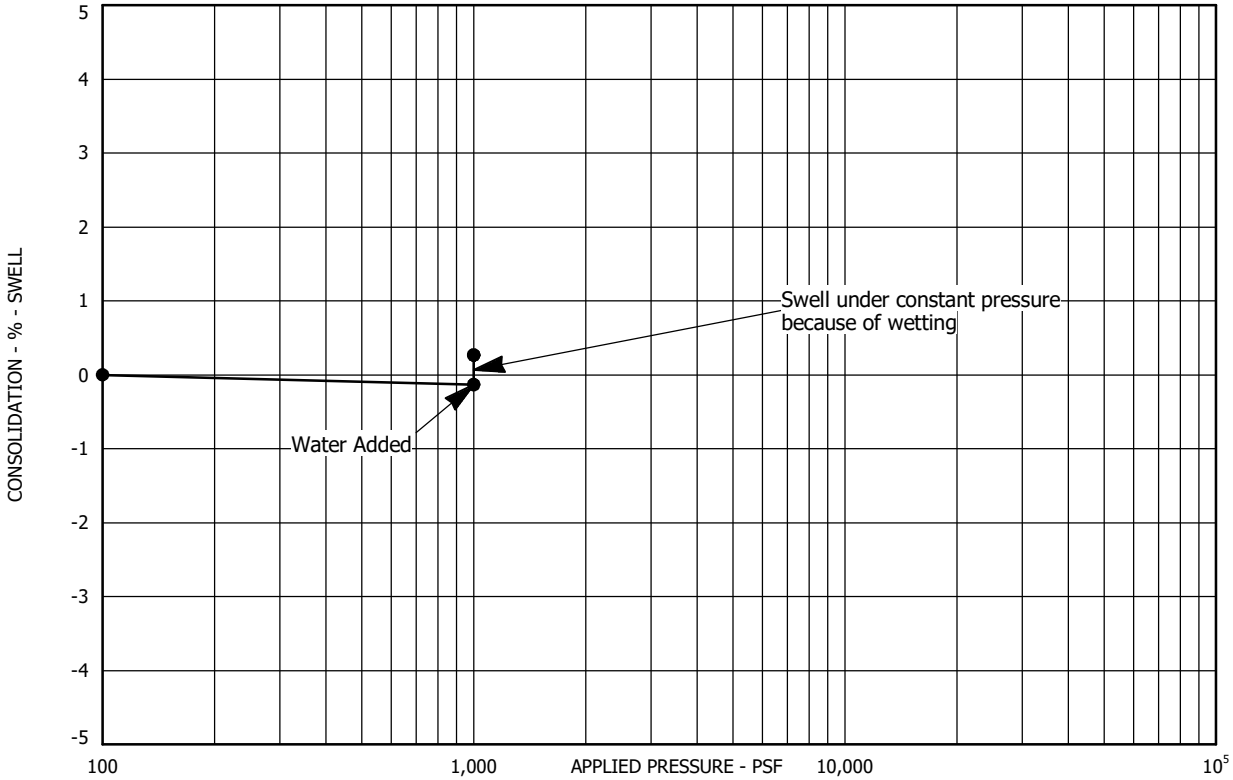


Sample Location: Blended Bulk Sample 1 (Test Borings 24-28)
Dry Unit Weight (pcf): 122
Sample Description: Sand, very silty
Moisture Content (%): 11

SWELL - CONSOLIDATION TEST RESULTS

FIGURE A-3

PROJECT NO. 195960



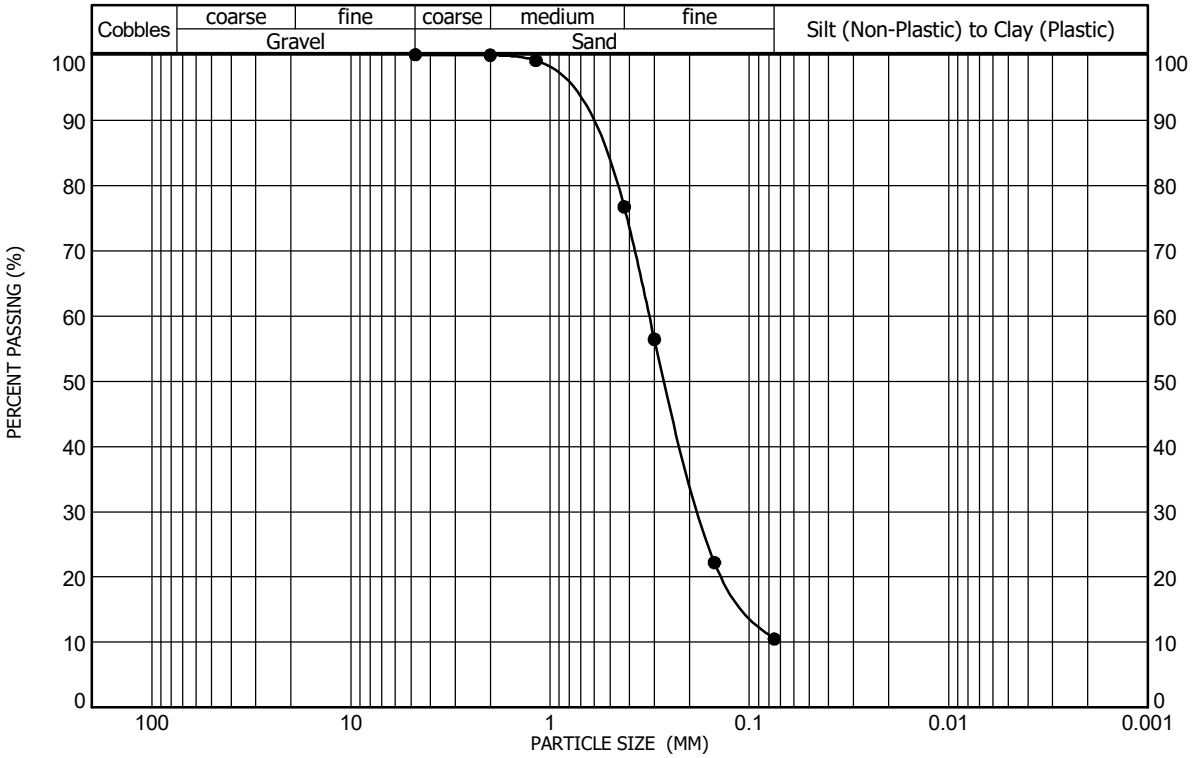
Sample Location	Blended Bulk Sample 2 (Test Borings 29-36)	Dry Unit Weight (pcf)	120
Sample Description	Clay, very sandy	Moisture Content (%)	9

SWELL - CONSOLIDATION TEST RESULTS

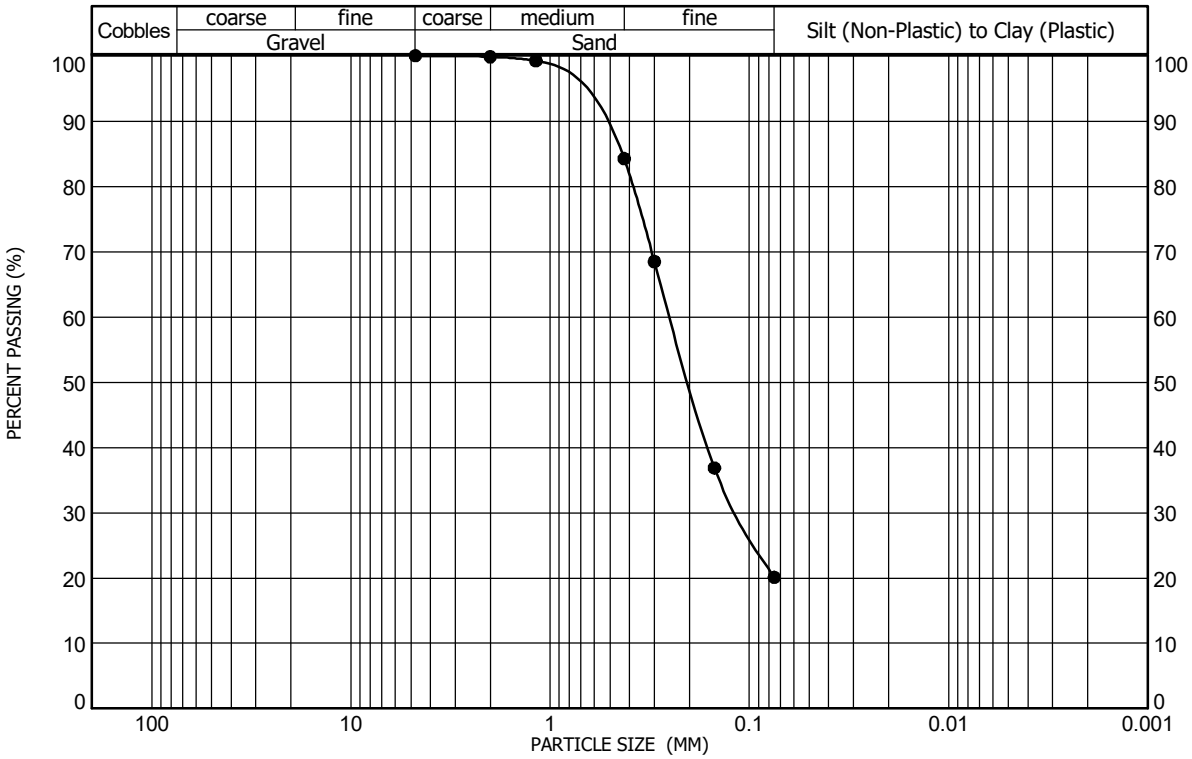
FIGURE A-4

PROJECT NO. 195960

AGW
A.G. WASSENAAR, INC.



Sample Location: Test Boring No. 24 at a depth of 4 feet — Gravel (%): 0 — Liquid Limit: NV
Sample Description: Sand, slightly silty — Sand (%): 90 — Plasticity Index: NP
Classification: A-3(0), POORLY GRADED SAND with SILT(SP-SM) — Clay/Silt (%): 10

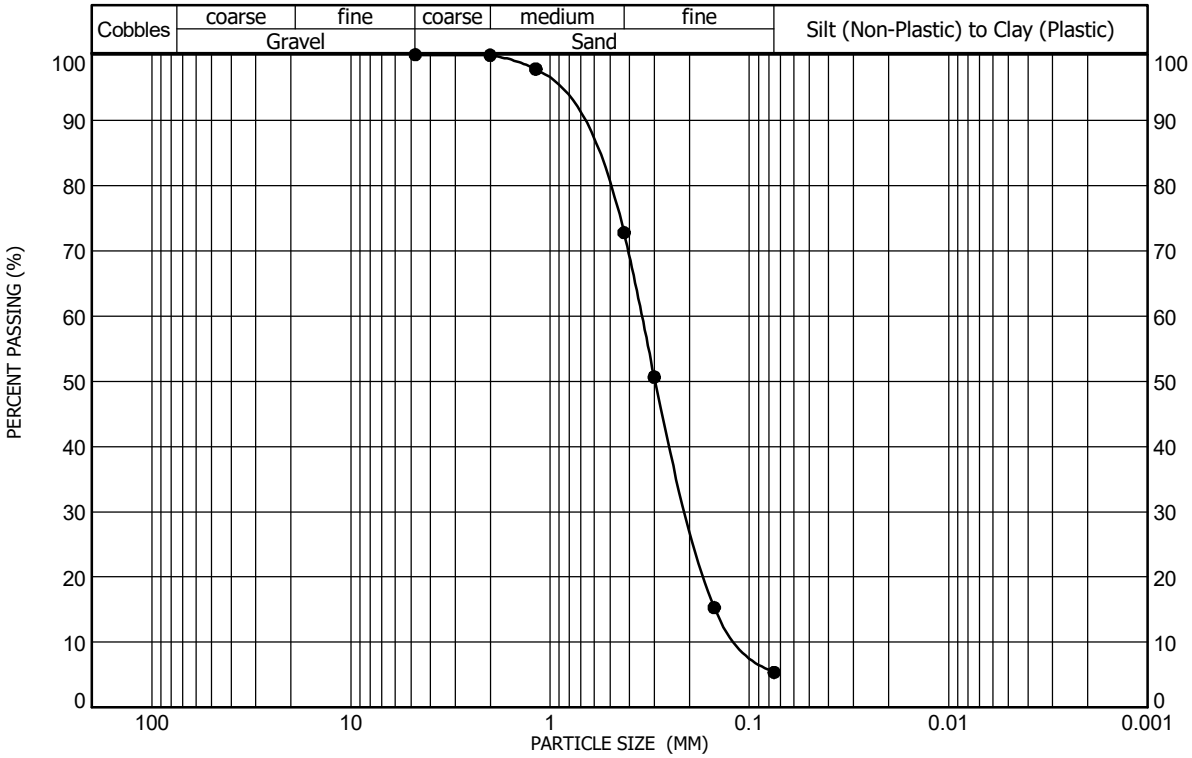


Sample Location: Test Boring No. 25 at a depth of 4 feet — Gravel (%): 0 — Liquid Limit: NV
Sample Description: Sand, silty — Sand (%): 80 — Plasticity Index: NP
Classification: A-2-4(0), SILTY SAND(SM) — Clay/Silt (%): 20

GRADATION AND ATTERBERG TEST RESULTS
FIGURE A-5

PROJECT NO. 195960

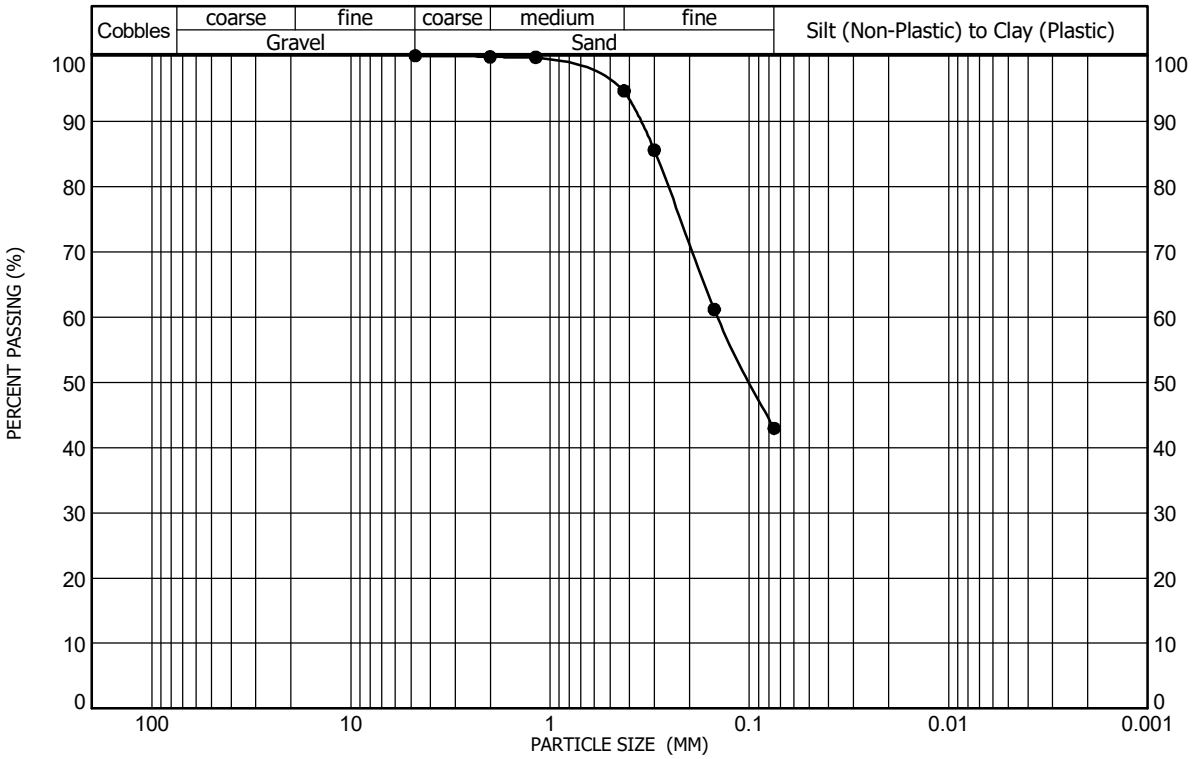
AGW
A.G. WASSENAAR, INC.



Sample Location: Test Boring No. 26 at a depth of 4 feet
Sample Description: Sand, slightly silty
Classification: A-3(0), POORLY GRADED SAND with SILT(SP-SM)

Gravel (%): 0
Sand (%): 95
Clay/Silt (%): 5

Liquid Limit: NV
Plasticity Index: NP



Sample Location: Test Boring No. 27 at a depth of 9 feet
Sample Description: Sand, very silty to very clayey
Classification: A-4(0), SILTY, CLAYEY SAND(SC-SM)

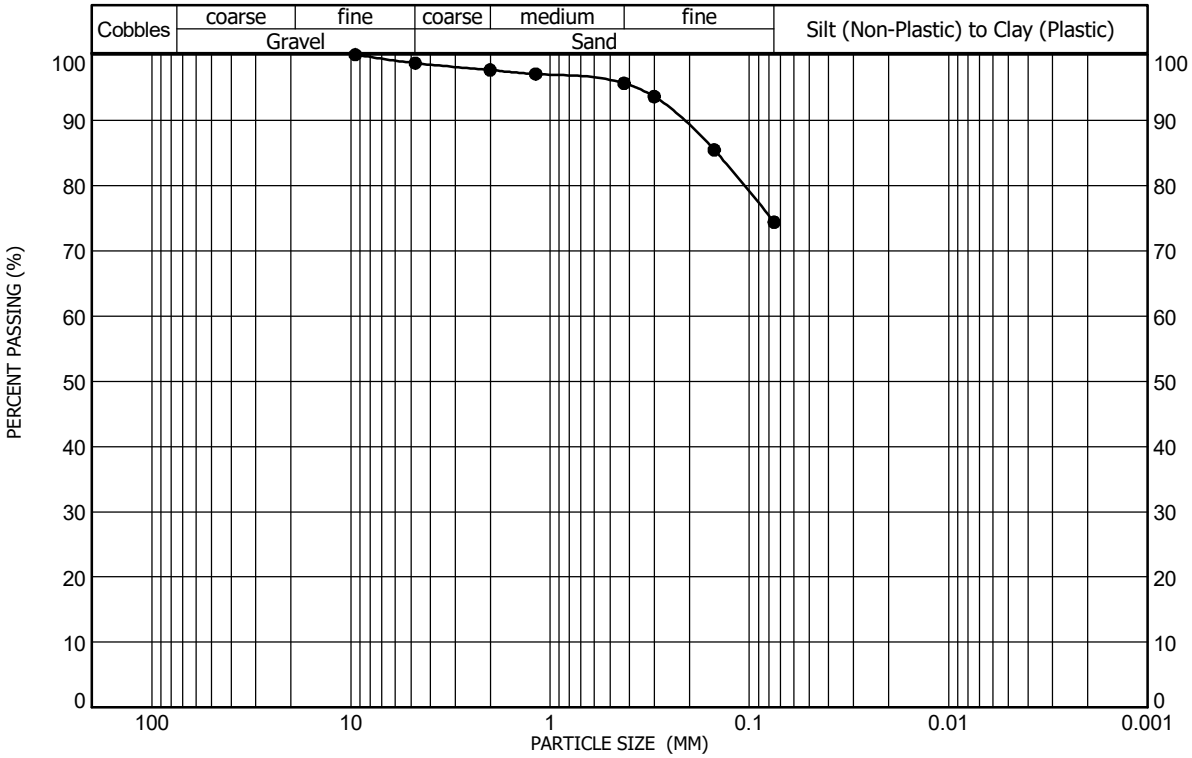
Gravel (%): 0
Sand (%): 57
Clay/Silt (%): 43

Liquid Limit: 22
Plasticity Index: 5

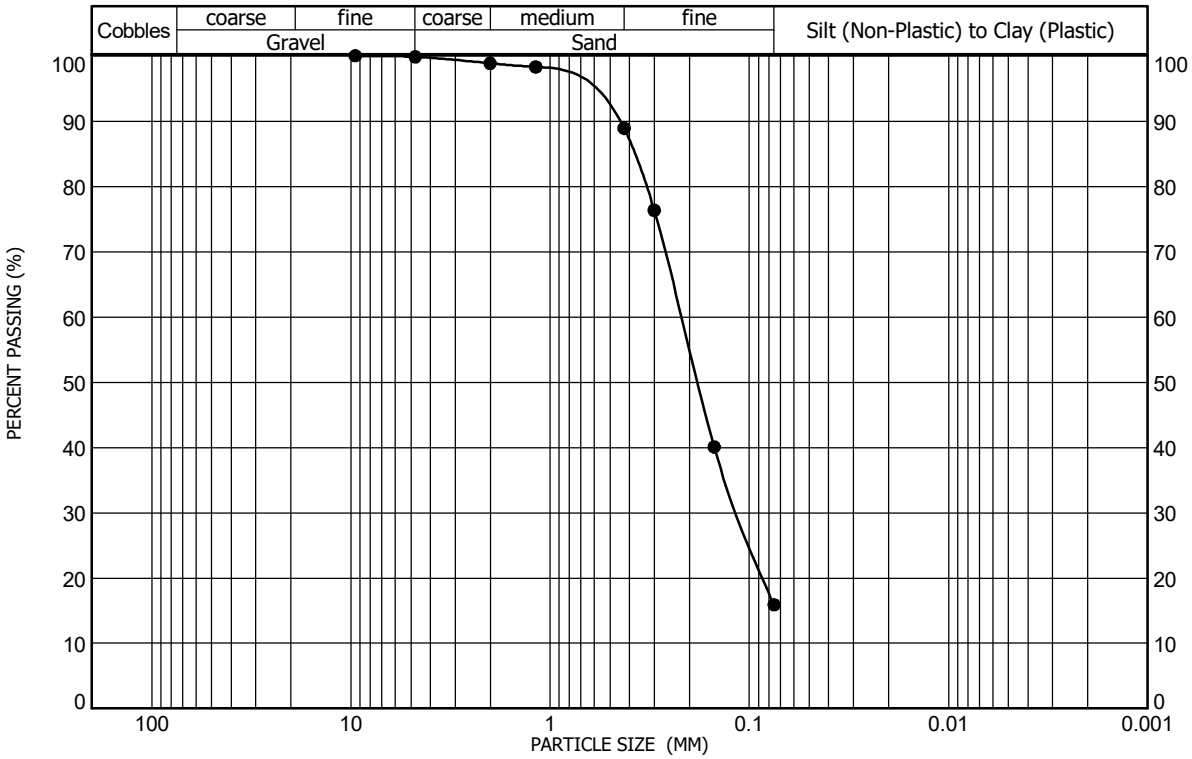
GRADATION AND ATTERBERG TEST RESULTS
FIGURE A-6

PROJECT NO. 195960

AGW
A.G. WASSENAAR, INC.



Sample Location: Test Boring No. 28 at a depth of 4 feet — Gravel (%): 1 — Liquid Limit: 43
Sample Description: Clay (Weathered claystone), sandy, trace gravel — Sand (%): 24 — Plasticity Index: 25
Classification: A-7-6(17), LEAN CLAY with SAND(CL) — Clay/Silt (%): 74

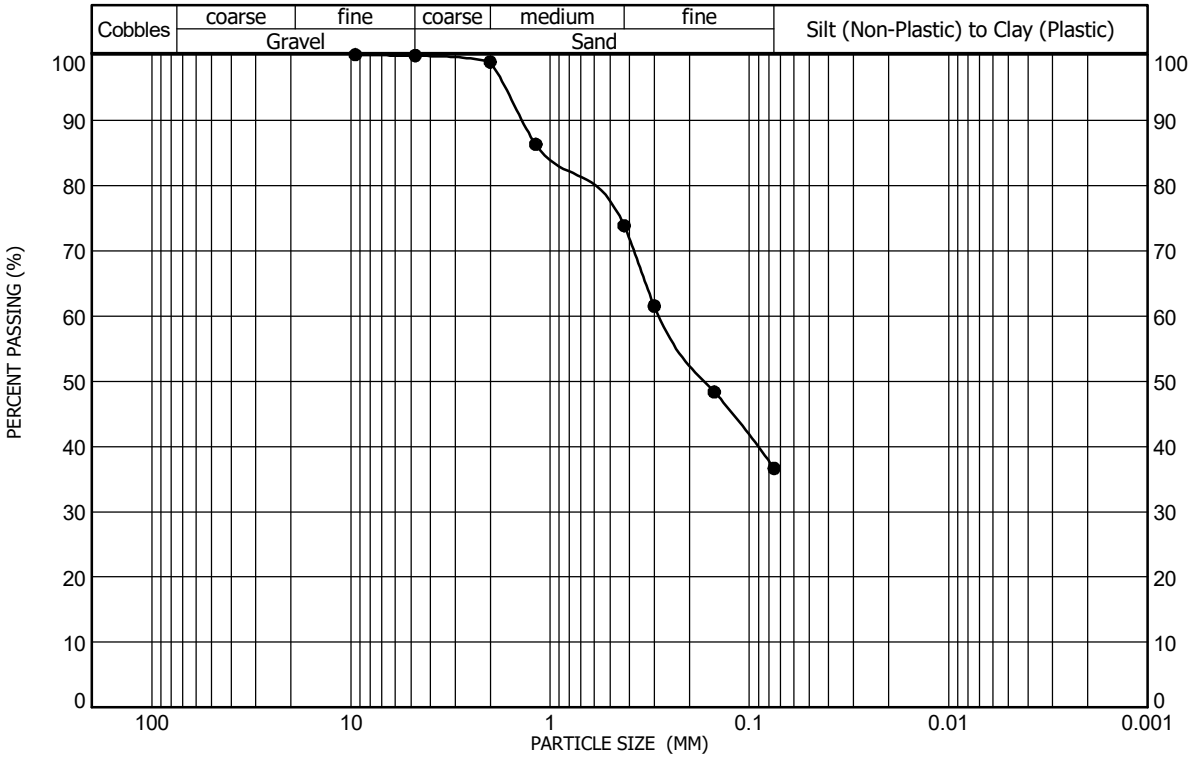


Sample Location: Test Boring No. 30 at a depth of 9 feet — Gravel (%): 0 — Liquid Limit: NV
Sample Description: Sand, silty — Sand (%): 84 — Plasticity Index: NP
Classification: A-2-4(0), SILTY SAND(SM) — Clay/Silt (%): 16

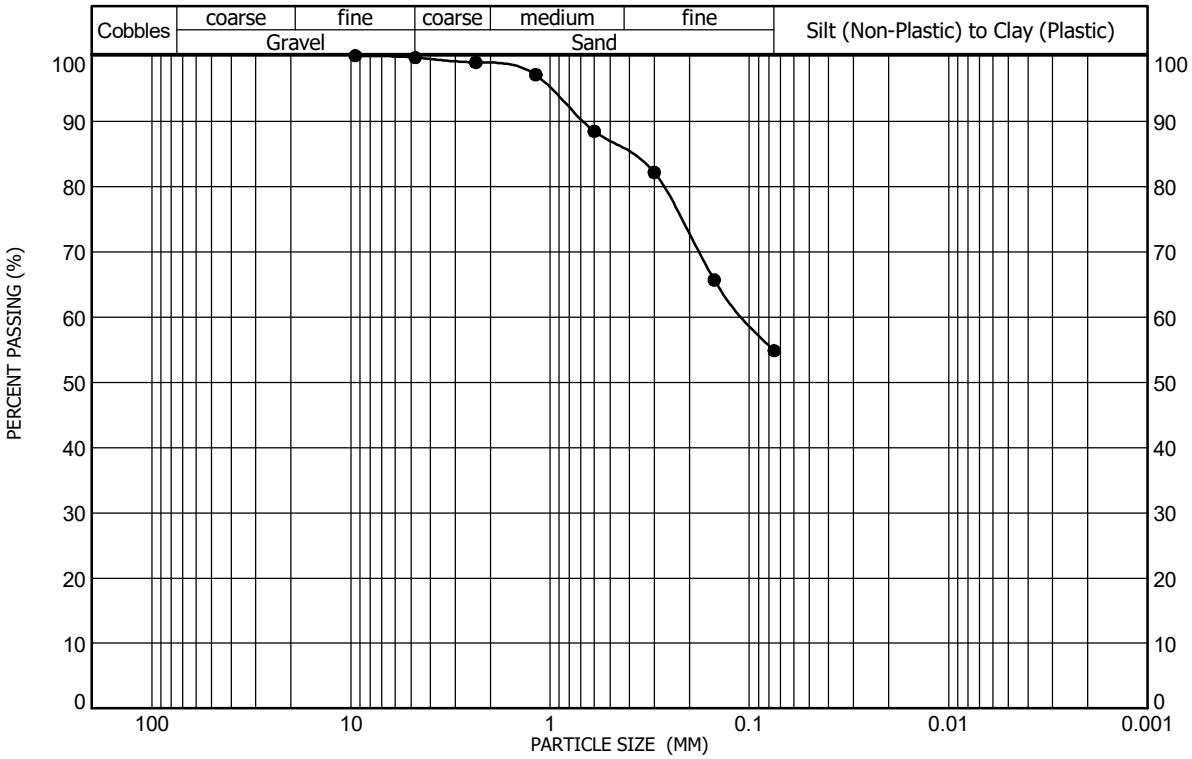
GRADATION AND ATTERBERG TEST RESULTS
FIGURE A-7

PROJECT NO. 195960

AGW
A.G. WASSENAAR, INC.



Sample Location Blended Bulk Sample 1 (Test Borings 24-28) Gravel (%) 0 Liquid Limit 20
Sample Description Sand, very silty Sand (%) 63 Plasticity Index 3
Classification A-4(0), SILTY SAND(SM) Clay/Silt (%) 37



Sample Location Blended Bulk Sample 2 (Test Borings 29-36) Gravel (%) 0 Liquid Limit 26
ample Description Clay, very sandy Sand (%) 45 Plasticity Index 8
Classification A-4(2), SANDY LEAN CLAY(CL) Clay/Silt (%) 55

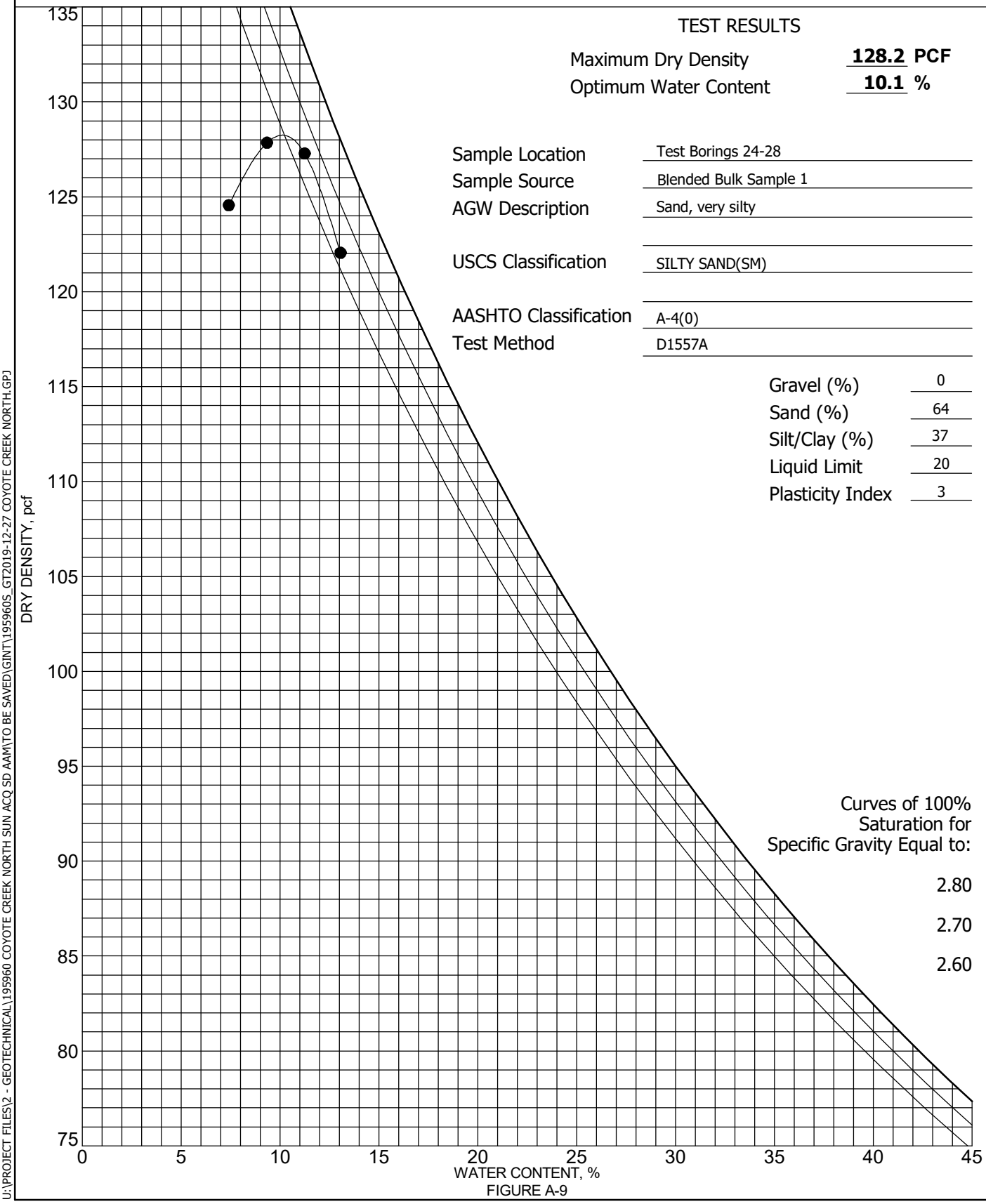
GRADATION AND ATTERBERG TEST RESULTS
FIGURE A-8

PROJECT NO. 195960

MOISTURE-DENSITY RELATIONSHIP

AGW
A.G. WASSENAAR, INC.

CLIENT Sun ACQ, LLC
PROJECT NAME Coyote Creek North
PROJECT NUMBER 195960
PROJECT LOCATION Fort Lupton, Colorado



TEST RESULTS

Maximum Dry Density	**128.2**	**PCF**
Optimum Water Content	**10.1**	**%**

Sample Location	Test Borings 24-28
Sample Source	Blended Bulk Sample 1
AGW Description	Sand, very silty
USCS Classification	SILTY SAND(SM)
AASHTO Classification	A-4(0)
Test Method	D1557A

Gravel (%)	0
Sand (%)	64
Silt/Clay (%)	37
Liquid Limit	20
Plasticity Index	3

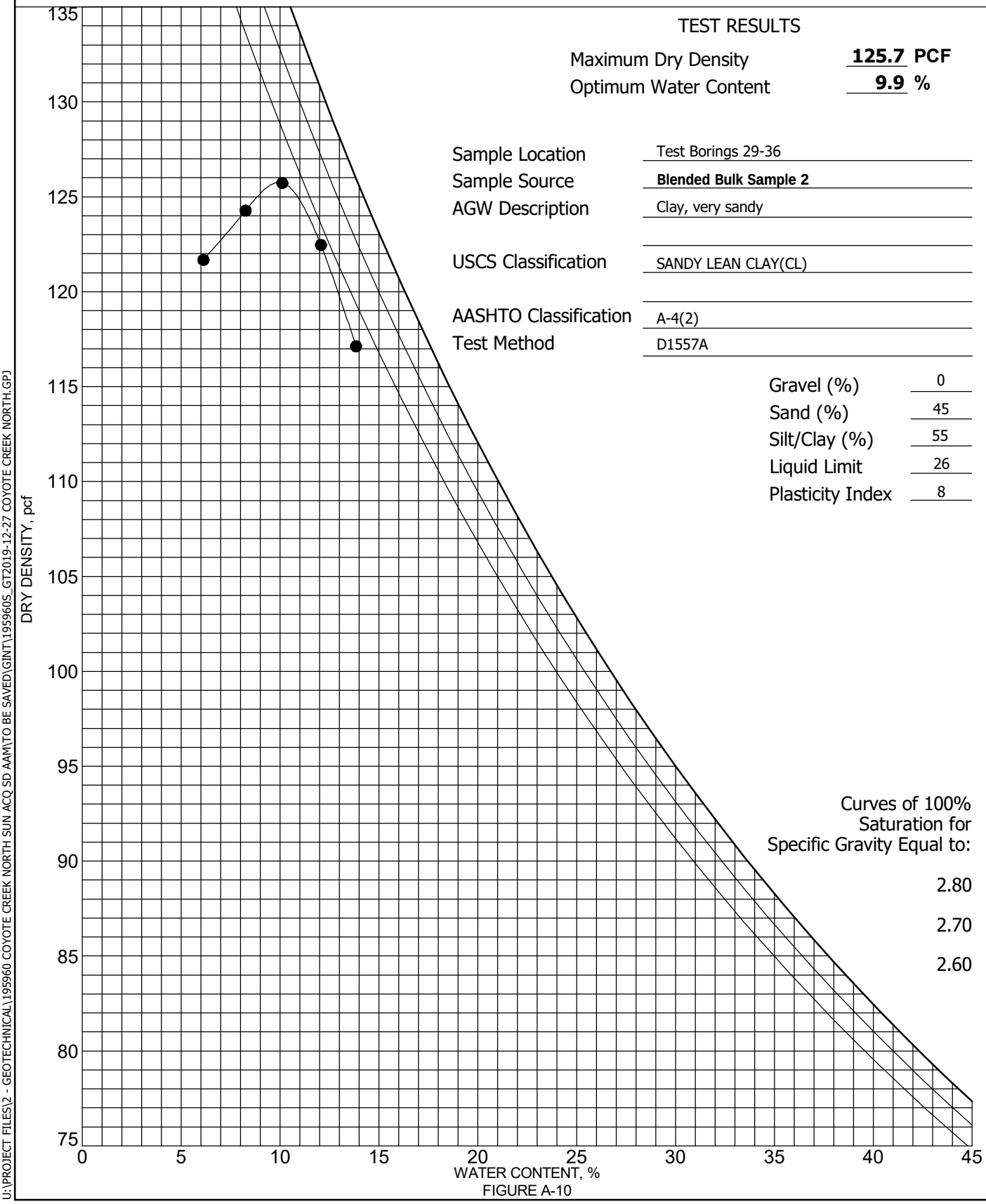
FIGURE A-9

U:\PROJECT FILES\2 - GEOTECHNICAL\195960 COYOTE CREEK NORTH SUN ACQ SD AAM\TO BE SAVED\GINT\195960S_GT2019-12-27 COYOTE CREEK NORTH.GPJ

MOISTURE-DENSITY RELATIONSHIP

AGW
A.G. WASSENAAR, INC.

CLIENT Sun ACQ, LLC
PROJECT NAME Coyote Creek North
PROJECT NUMBER 195960
PROJECT LOCATION Fort Lupton, Colorado



TEST RESULTS

Maximum Dry Density	**125.7**	**PCF**
Optimum Water Content	**9.9**	**%**

Sample Location	Test Borings 29-36
Sample Source	**Blended Bulk Sample 2**
AGW Description	Clay, very sandy
USCS Classification	SANDY LEAN CLAY(CL)
AASHTO Classification	A-4(2)
Test Method	D1557A

Gravel (%)	0
Sand (%)	45
Silt/Clay (%)	55
Liquid Limit	26
Plasticity Index	8

FIGURE A-10

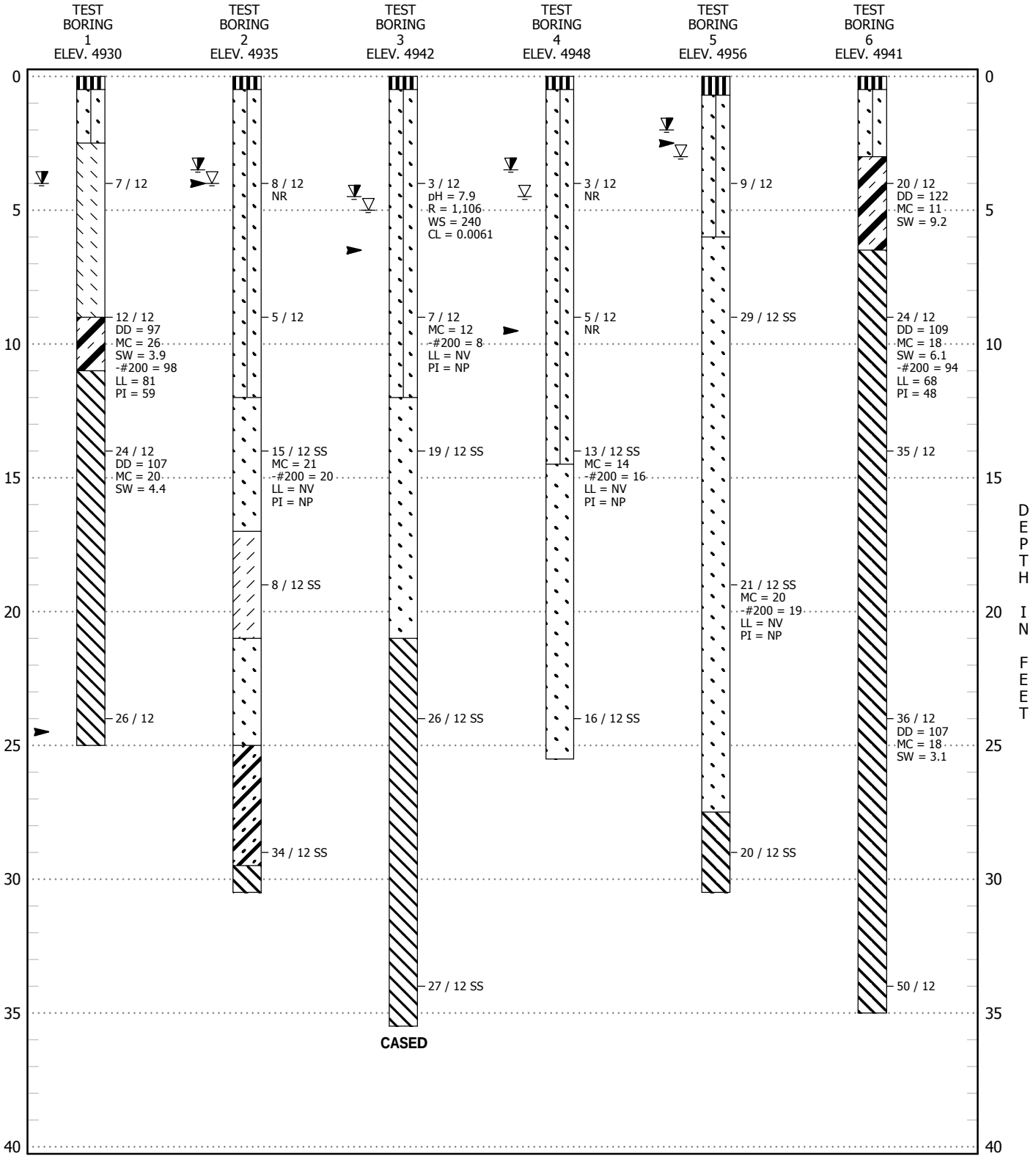
U:\PROJECT FILES\2 - GEOTECHNICAL\195960 COYOTE CREEK NORTH SUN ACQ SD AAM\TO BE SAVED\GINT\195960S_GT2019-12-27 COYOTE CREEK NORTH.GPJ

APPENDIX B
FIELD AND LABORATORY DATA FROM PREVIOUS REPORT

A.G. Wassenaar Inc.
Geotechnical and Environmental Consultants

CLIENT Coyote Creek North, LLC **PROJECT NAME** Coyote Creek North

PROJECT NUMBER 174095 **PROJECT LOCATION** Fort Lupton, Colorado



SEE FIGURE 6 FOR LEGEND AND NOTES TO TEST BORINGS

TEST BORING LOGS

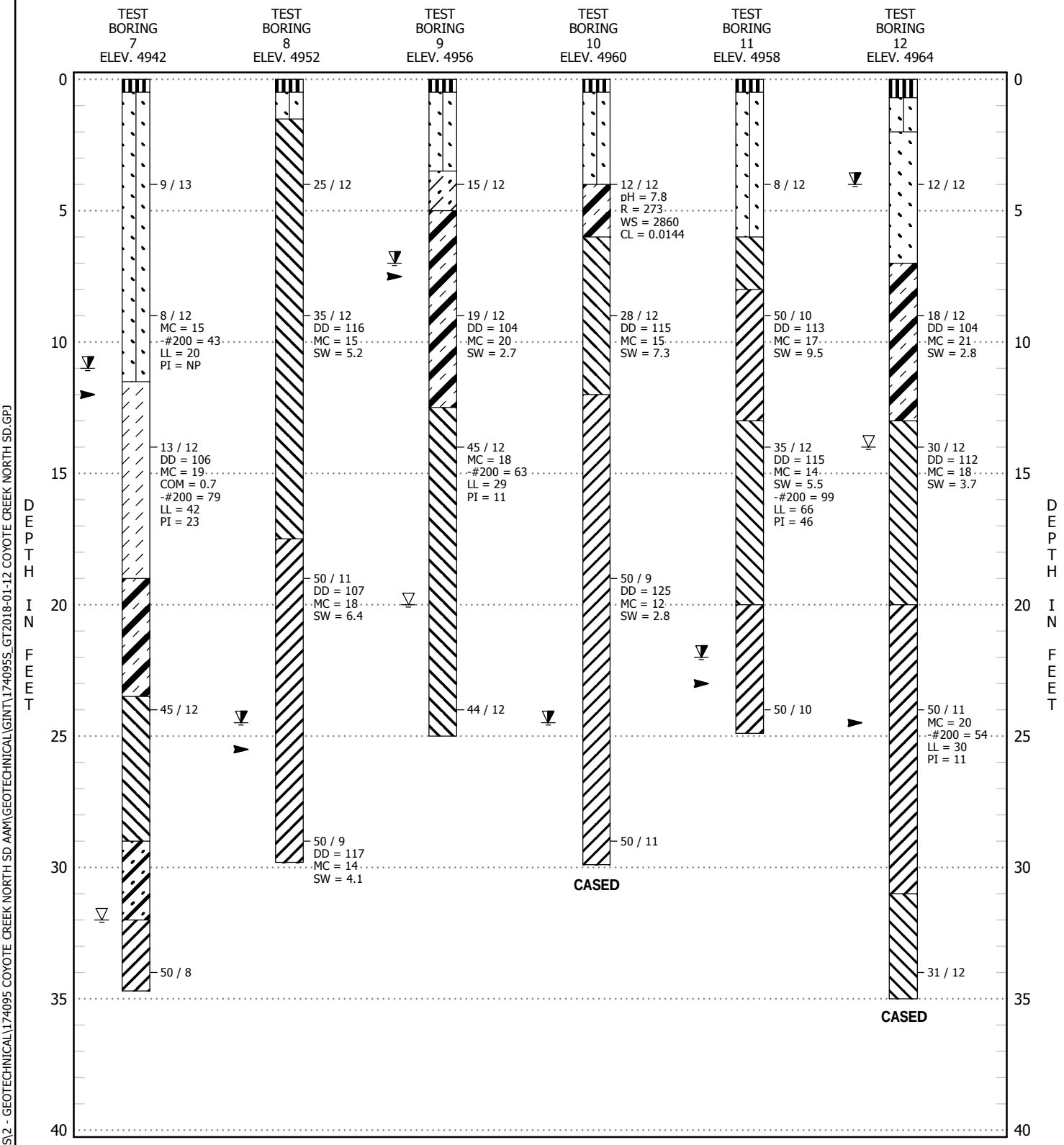
FIGURE 2

U:\PROJECT FILES\2 - GEOTECHNICAL\174095 COYOTE CREEK NORTH SD AAM\GEOTECHNICAL\GINT\174095S_GT2018-01-12 COYOTE CREEK NORTH SD.GPJ

A.G. Wassenaar Inc.
Geotechnical and Environmental Consultants

CLIENT Coyote Creek North, LLC **PROJECT NAME** Coyote Creek North

PROJECT NUMBER 174095 **PROJECT LOCATION** Fort Lupton, Colorado



SEE FIGURE 6 FOR LEGEND AND NOTES TO TEST BORINGS

TEST BORING LOGS

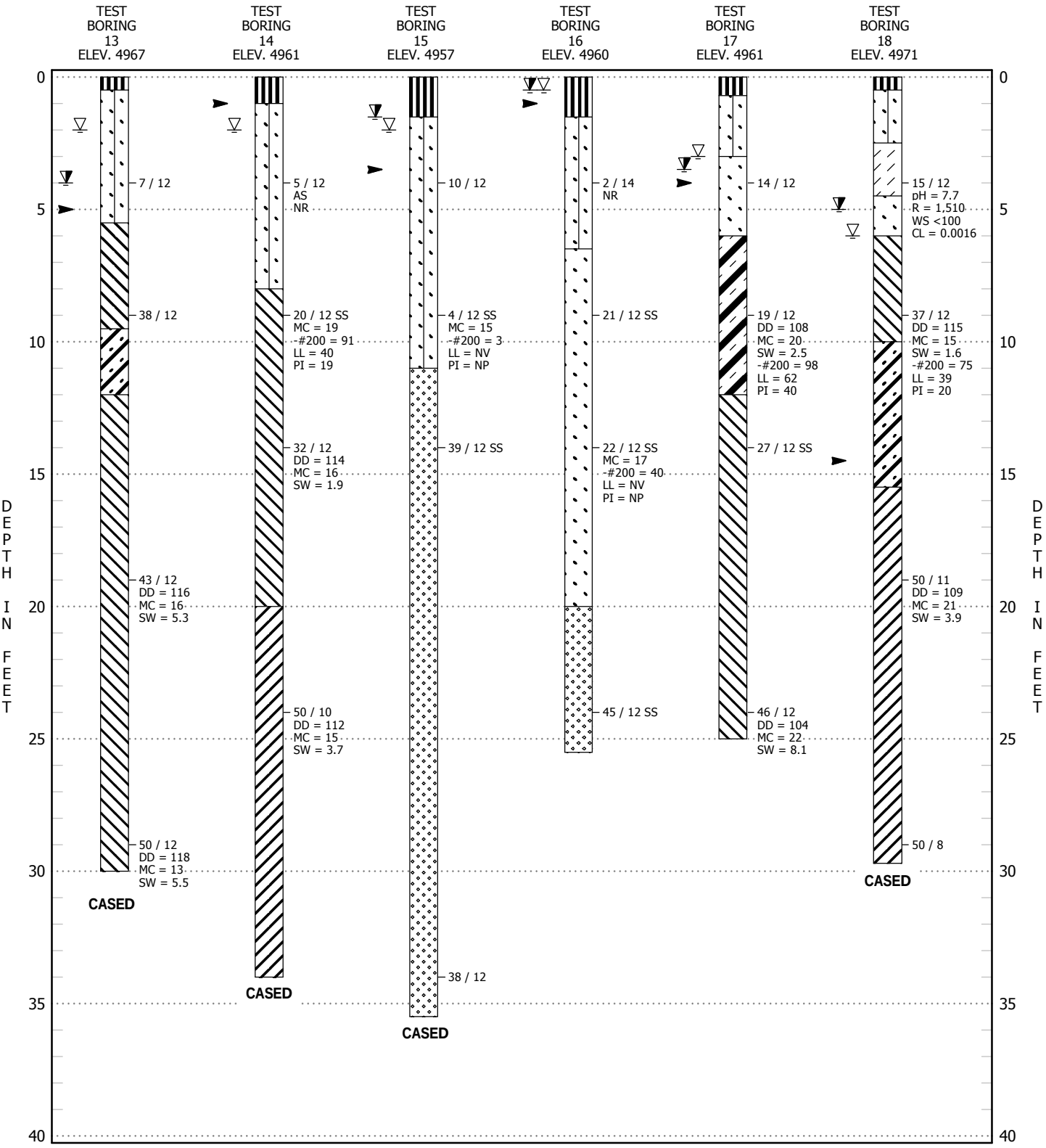
FIGURE 3

U:\PROJECT FILES\2 - GEOTECHNICAL\174095 COYOTE CREEK NORTH SD AAM\GEOTECHNICAL\GINT\174095S_GT2018-01-12 COYOTE CREEK NORTH SD.GPJ

A.G. Wassenaar Inc.
Geotechnical and Environmental Consultants

CLIENT Coyote Creek North, LLC **PROJECT NAME** Coyote Creek North

PROJECT NUMBER 174095 **PROJECT LOCATION** Fort Lupton, Colorado



SEE FIGURE 6 FOR LEGEND AND NOTES TO TEST BORINGS

TEST BORING LOGS

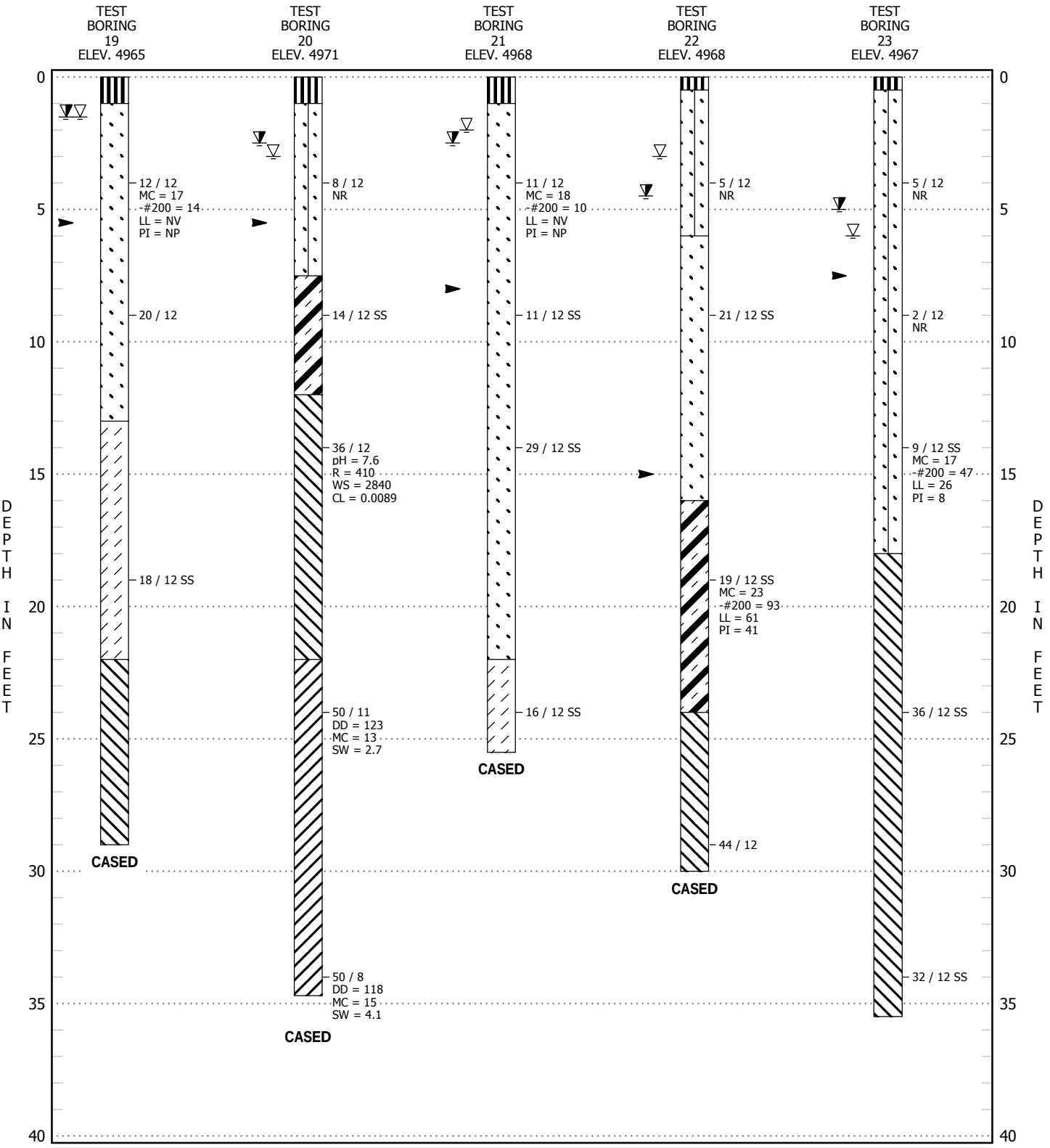
FIGURE 4

U:\PROJECT FILES\2 - GEOTECHNICAL\174095 COYOTE CREEK NORTH SD AAM\GEOTECHNICAL\GINT\174095S_GT2018-01-12 COYOTE CREEK NORTH SD.GPJ

A.G. Wassenaar Inc.
Geotechnical and Environmental Consultants

CLIENT Coyote Creek North, LLC **PROJECT NAME** Coyote Creek North

PROJECT NUMBER 174095 **PROJECT LOCATION** Fort Lupton, Colorado



SEE FIGURE 6 FOR LEGEND AND NOTES TO TEST BORINGS

TEST BORING LOGS

FIGURE 5

U:\PROJECT FILES\2 - GEOTECHNICAL\174095 COYOTE CREEK NORTH SD AAM\GEOTECHNICAL\GINT\174095S_GT2018-01-12 COYOTE CREEK NORTH SD.GPJ

A.G. Wassenaar Inc.
Geotechnical and Environmental Consultants

CLIENT Coyote Creek North, LLC **PROJECT NAME** Coyote Creek North

PROJECT NUMBER 174095 **PROJECT LOCATION** Fort Lupton, Colorado

SOIL DESCRIPTIONS

- Topsoil, clay, sandy, organic
- Clay, medium stiff
- Clay, stiff to very stiff
- Sand, loose
- Sand, medium dense, silty
- Sand, medium dense, silty, clayey
- Sand, dense to very dense, silty
- Clay (weathered claystone), medium stiff to stiff
- Claystone (Bedrock), firm to medium hard
- Claystone (Bedrock), hard to very hard
- Sandstone (Bedrock), hard to very hard

ABBREVIATIONS

DD	Dry density of sample in pounds per cubic foot (pcf)
MC	Moisture content as a percentage of dry weight of soil (%)
SW	Percent swell under a surcharge of 1000 pounds per square foot (psf) upon wetting (%)
COM	Percent compression under a surcharge of 1000 pounds per square foot (psf) upon wetting (%)
UC	Unconfined compressive strength in pounds per square foot (psf)
-#200	Percent passing the Number 200 sieve (%)
LL	Liquid Limit
PI	Plasticity Index
NP	Non-Plastic
NV	No Value
pH	Acidity or alkalinity of sample in pH units
R	Resistivity in ohms.cm
WS	Water soluble sufates in parts per million (ppm)
CL	Chlorides in percent (%)
x/y	X blows of a 140-pound hammer falling 30 inches were required to drive a 2.5-inch outside diameter sampler Y inches
x/y SS	X blows of a 140-pound hammer falling 30 inches were required to drive a 2.0-inch outside diameter sampler Y inches
C-x	Depth of cut to grade (rounded to the nearest foot)
F-x	Depth of fill to grade (rounded to the nearest foot)
FG	Finished grade (rounded to the nearest foot)
NR	No sample recovered
Bounce	Sampler bounced during driving
B	Bulk sample
AS	Auger sample
	Moderately to well cemented layer
	Approximate depth of cut
	Depth at which practical drilling refusal was encountered
	Water level at time of drilling
	Caved depth at time of drilling
	Water level 19 to 43 days after drilling
	Caved depth 19 to 43 days after drilling

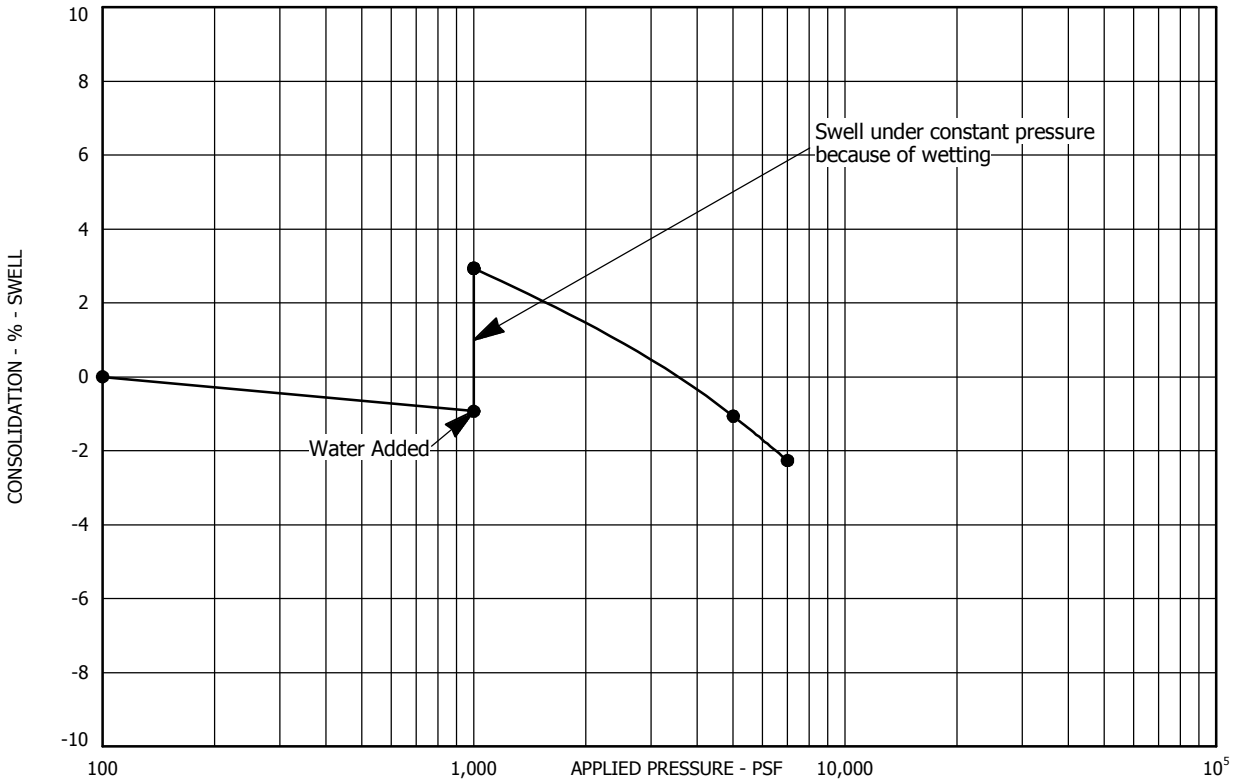
Notes:

1. Test borings were drilled November 21, 2017 to December 15, 2017.
2. Location of the test borings were staked by others at locations chosen by this firm.
3. The horizontal lines shown on the logs are to differentiate materials and represent the approximate boundaries between materials. The transitions between materials may be gradual.
4. Elevations were obtained from staking provided by others and have been rounded to the nearest foot.
5. Boring logs shown in this report are subject to the limitations, explanations, and conclusions of this report.

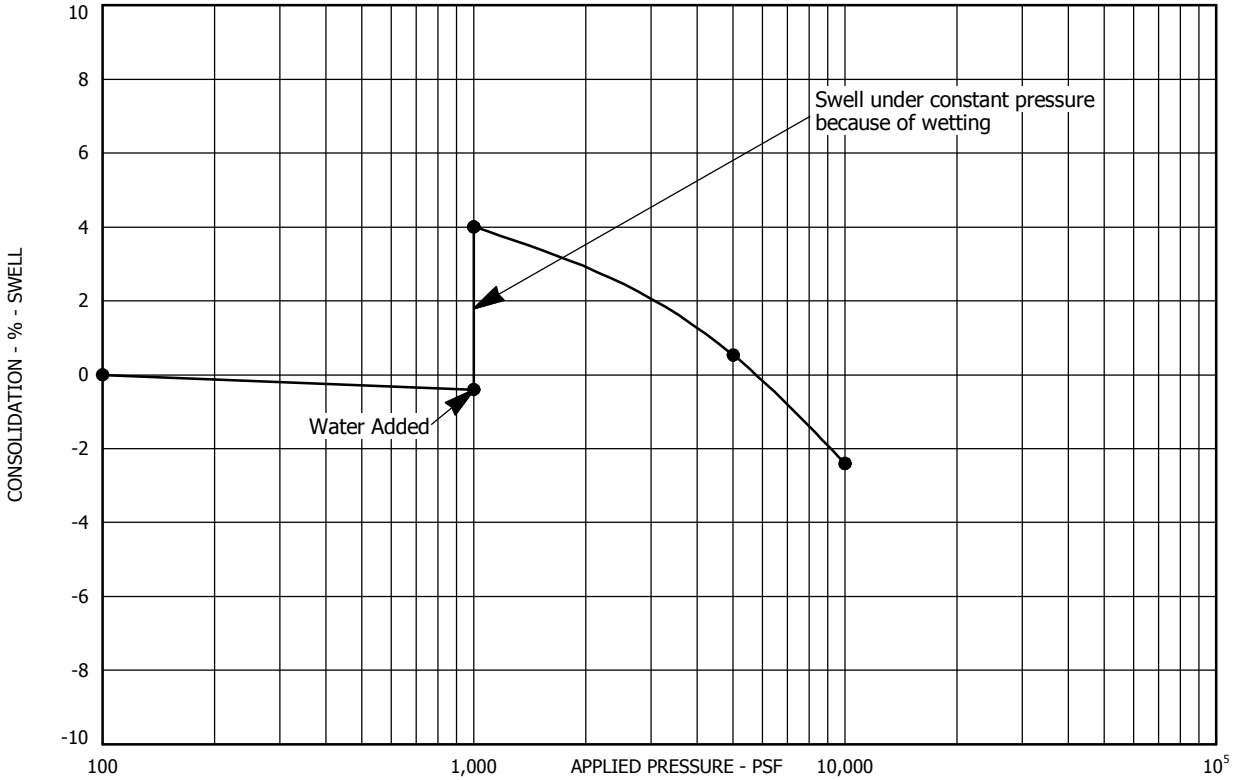
LEGEND AND NOTES
FIGURE 6

U:\PROJECT FILES\2 - GEOTECHNICAL\174095 COYOTE CREEK NORTH SD AAM\GEOTECHNICAL\GINT\174095S_GT2018-01-12 COYOTE CREEK NORTH SD.GPJ

A.G. Wassenaar Inc.
Geotechnical and Environmental Consultants



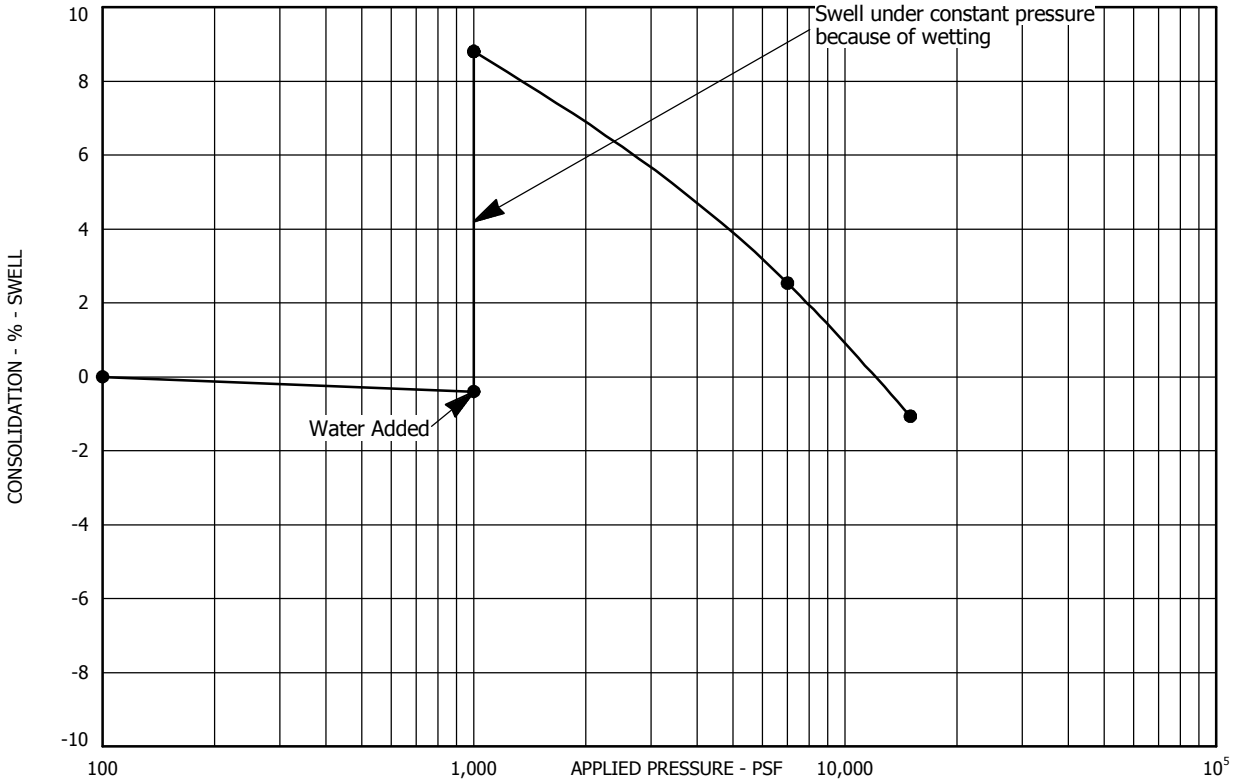
Sample Location: Test Boring No. 1 at a depth of 9 feet
Sample Description: Clay (weathered claystone), trace sand
Dry Unit Weight (pcf): 97
Moisture Content (%): 26



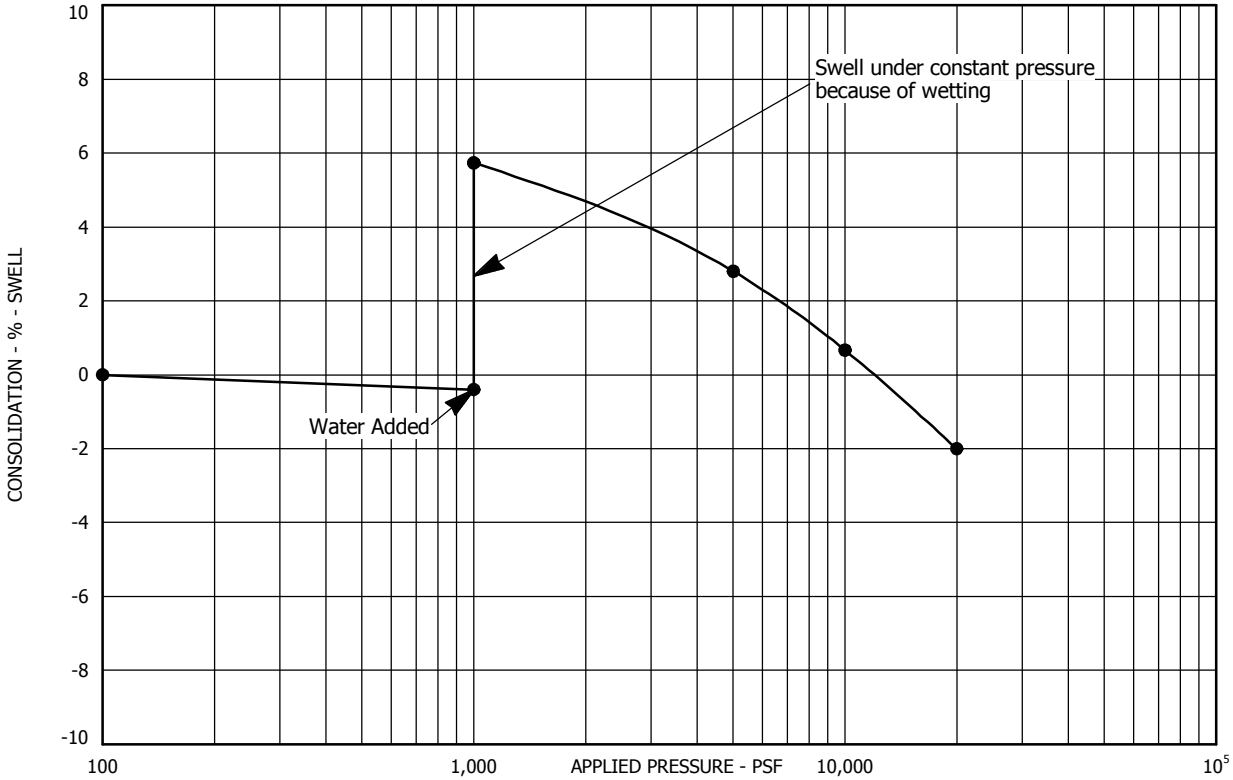
Sample Location: Test Boring No. 1 at a depth of 14 feet
Sample Description: Claystone, slightly sandy
Dry Unit Weight (pcf): 107
Moisture Content (%): 20

SWELL - CONSOLIDATION TEST RESULTS
FIGURE 7
PROJECT NO. 174095

A.G. Wassenaar Inc.
Geotechnical and Environmental Consultants



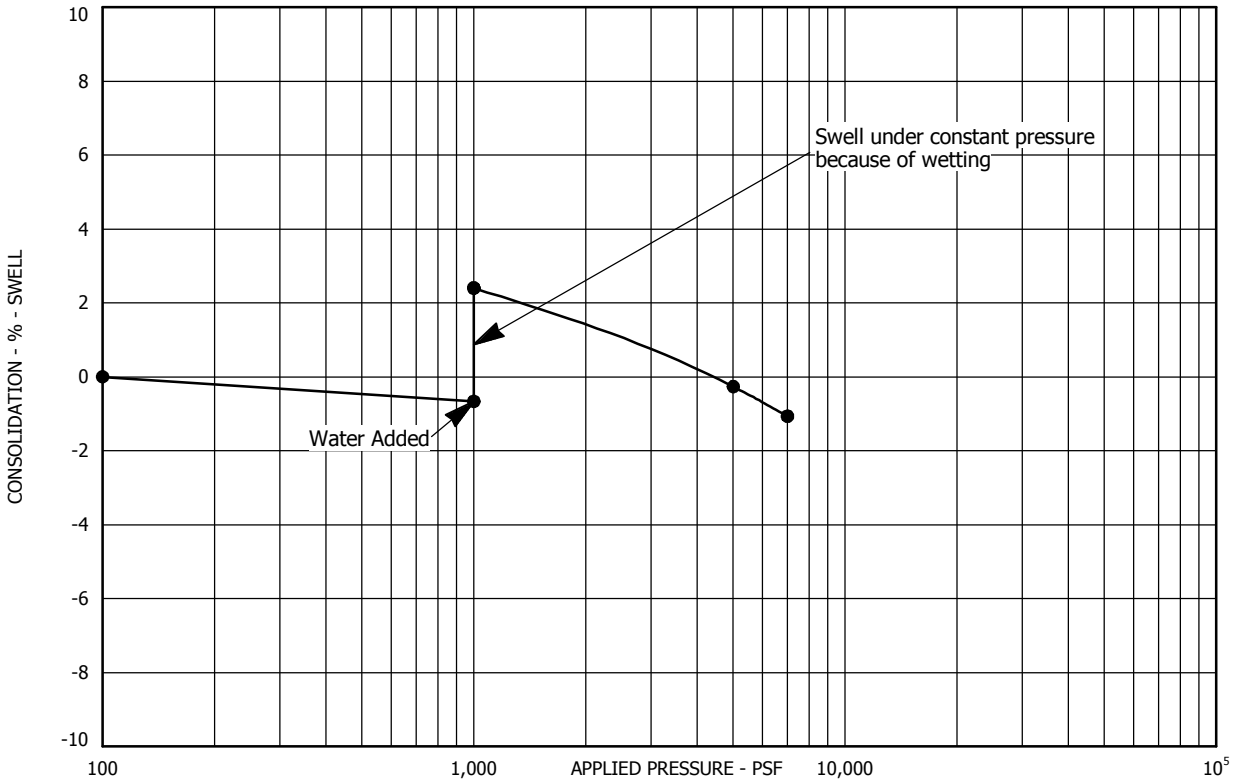
Sample Location: Test Boring No. 6 at a depth of 4 feet
Sample Description: Clay (weathered claystone), sandy
Dry Unit Weight (pcf): 122
Moisture Content (%): 11



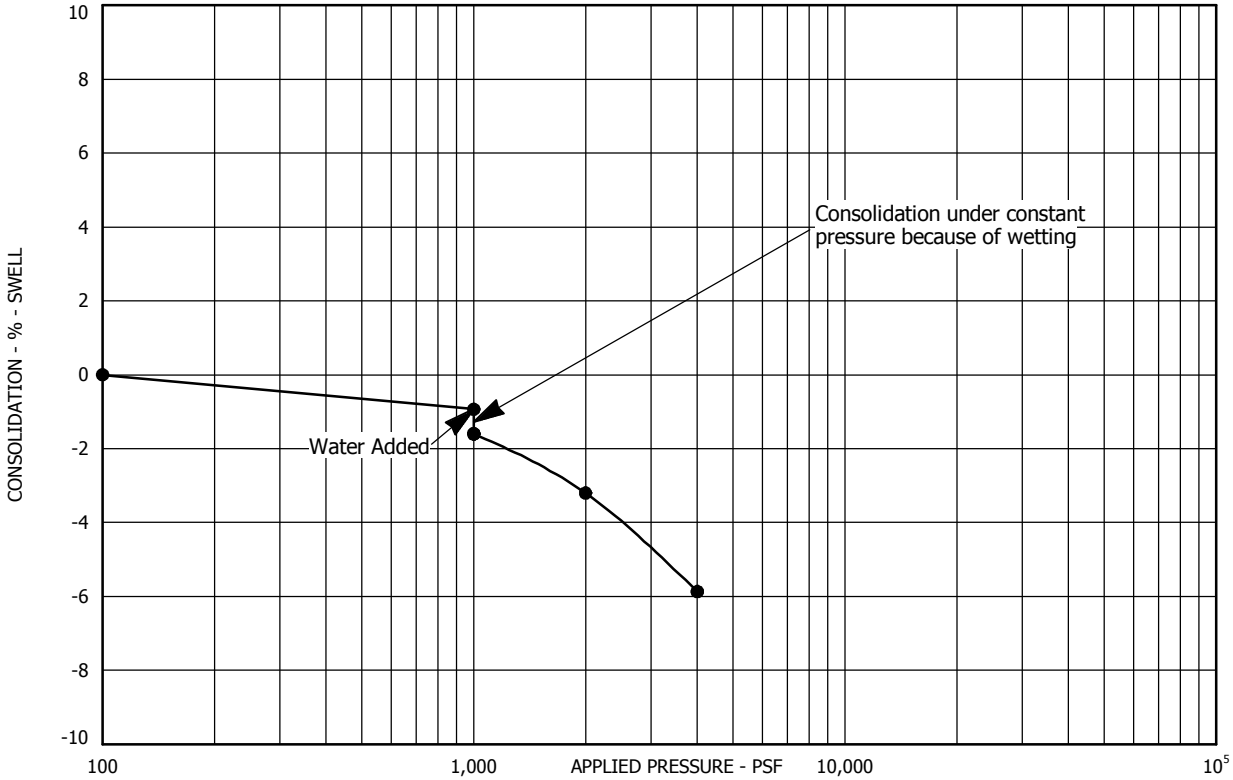
Sample Location: Test Boring No. 6 at a depth of 9 feet
Sample Description: Claystone, slightly sandy
Dry Unit Weight (pcf): 109
Moisture Content (%): 18

SWELL - CONSOLIDATION TEST RESULTS
FIGURE 8
PROJECT NO. 174095

A.G. Wassenaar Inc.
Geotechnical and Environmental Consultants



Sample Location: Test Boring No. 6 at a depth of 24 feet
Sample Description: Claystone, slightly sandy
Dry Unit Weight (pcf): 107
Moisture Content (%): 18



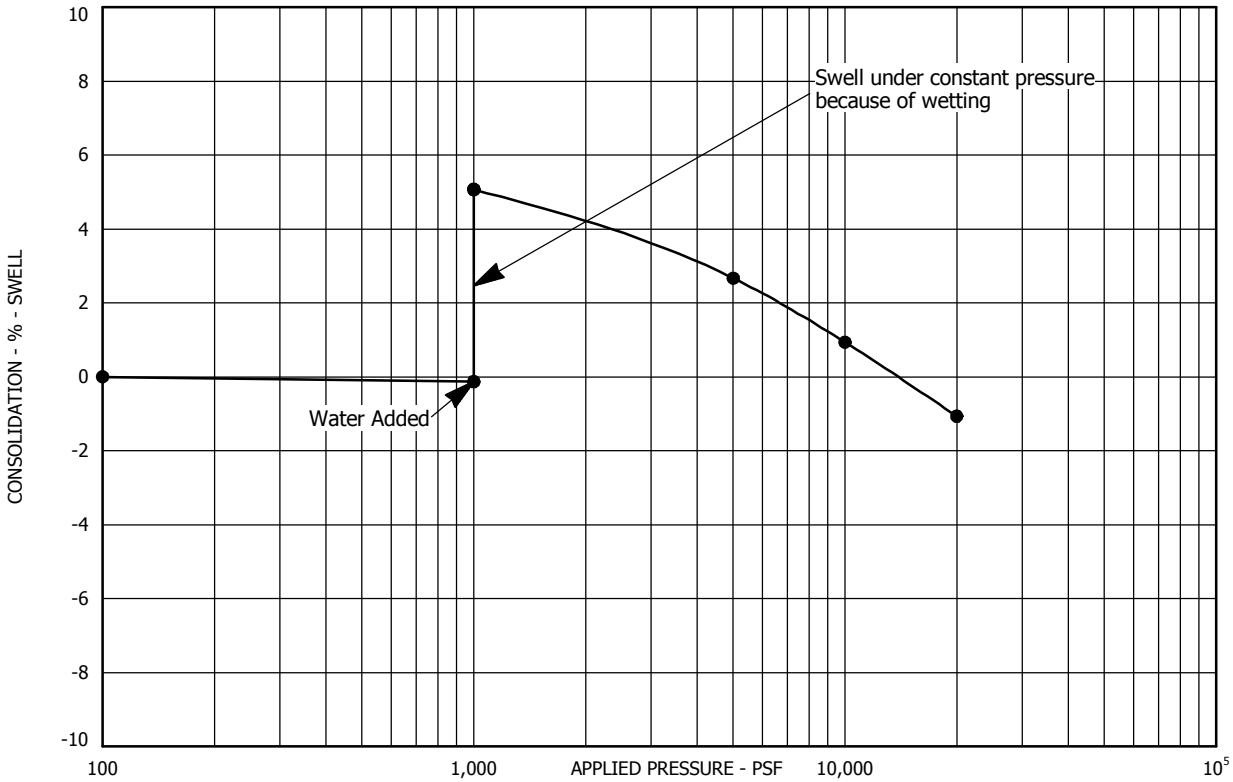
Sample Location: Test Boring No. 7 at a depth of 14 feet
Sample Description: Clay, sandy
Dry Unit Weight (pcf): 106
Moisture Content (%): 19

SWELL - CONSOLIDATION TEST RESULTS

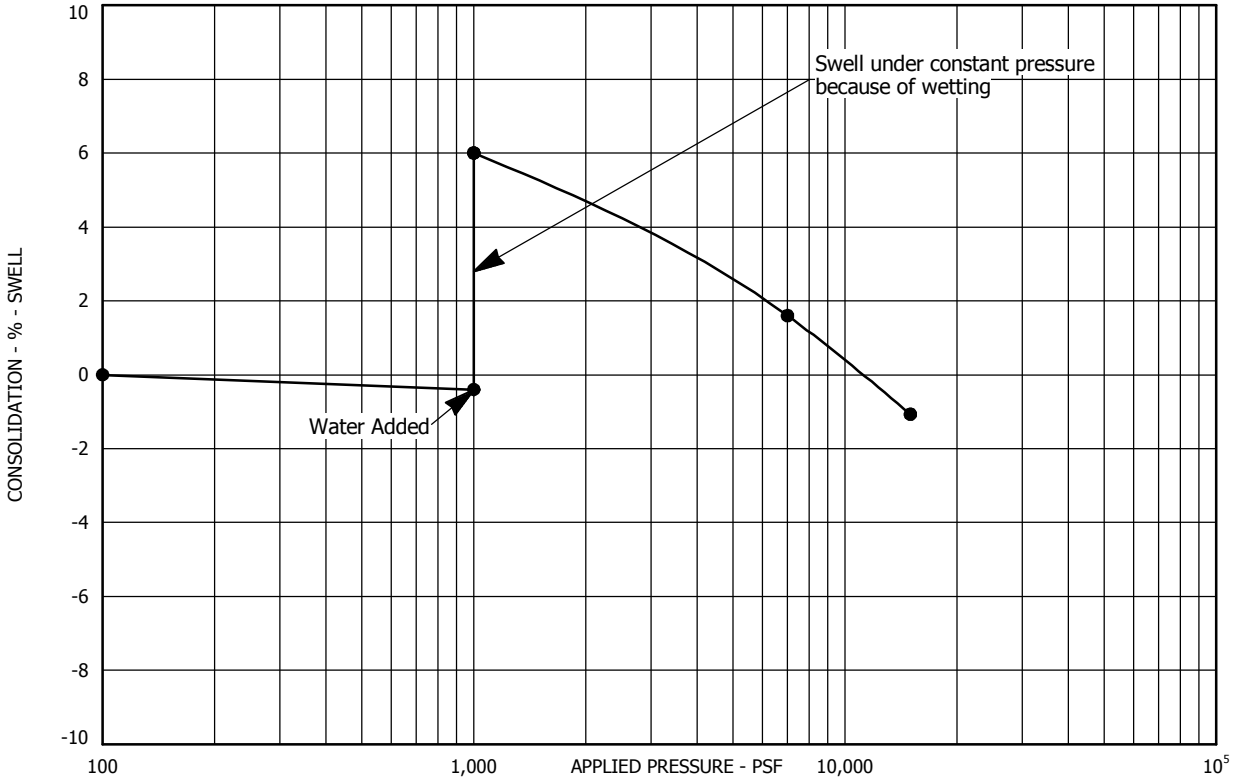
FIGURE 9

PROJECT NO. 174095

A.G. Wassenaar Inc.
Geotechnical and Environmental Consultants



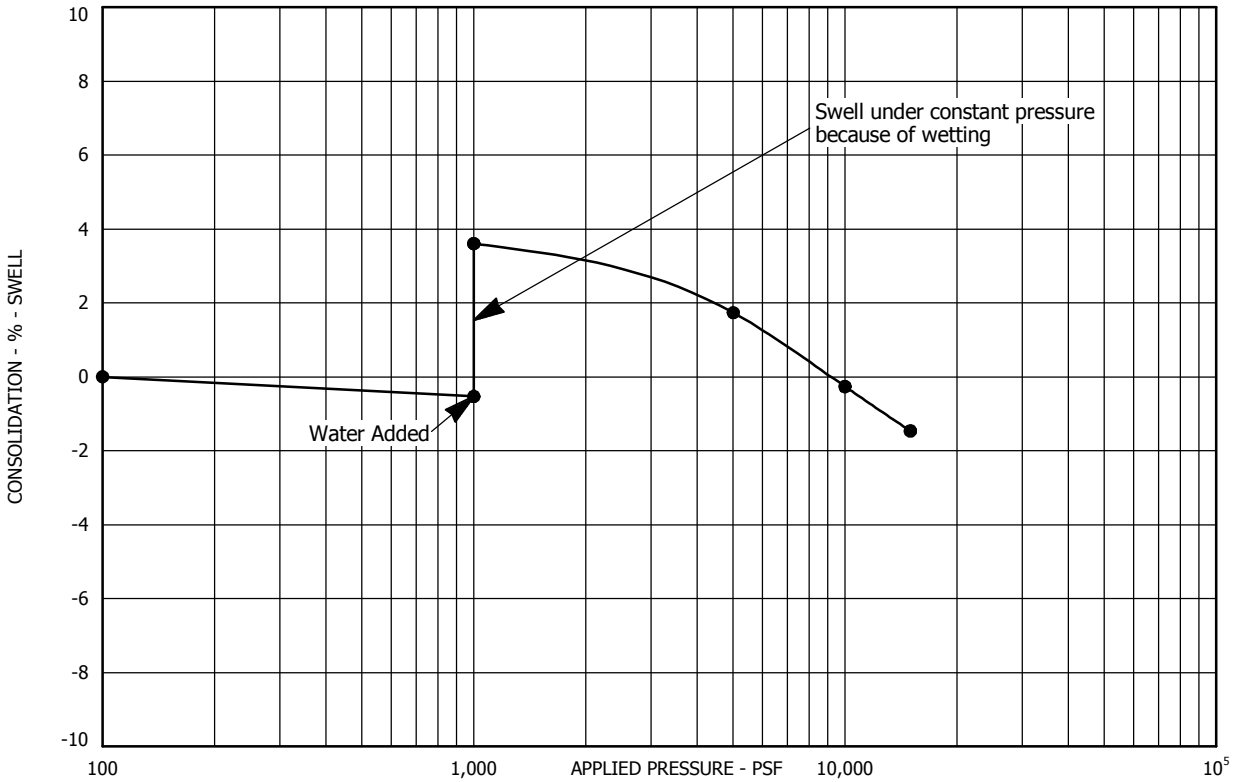
Sample Location: Test Boring No. 8 at a depth of 9 feet — Dry Unit Weight (pcf): 116
Sample Description: Claystone, slightly sandy — Moisture Content (%): 15



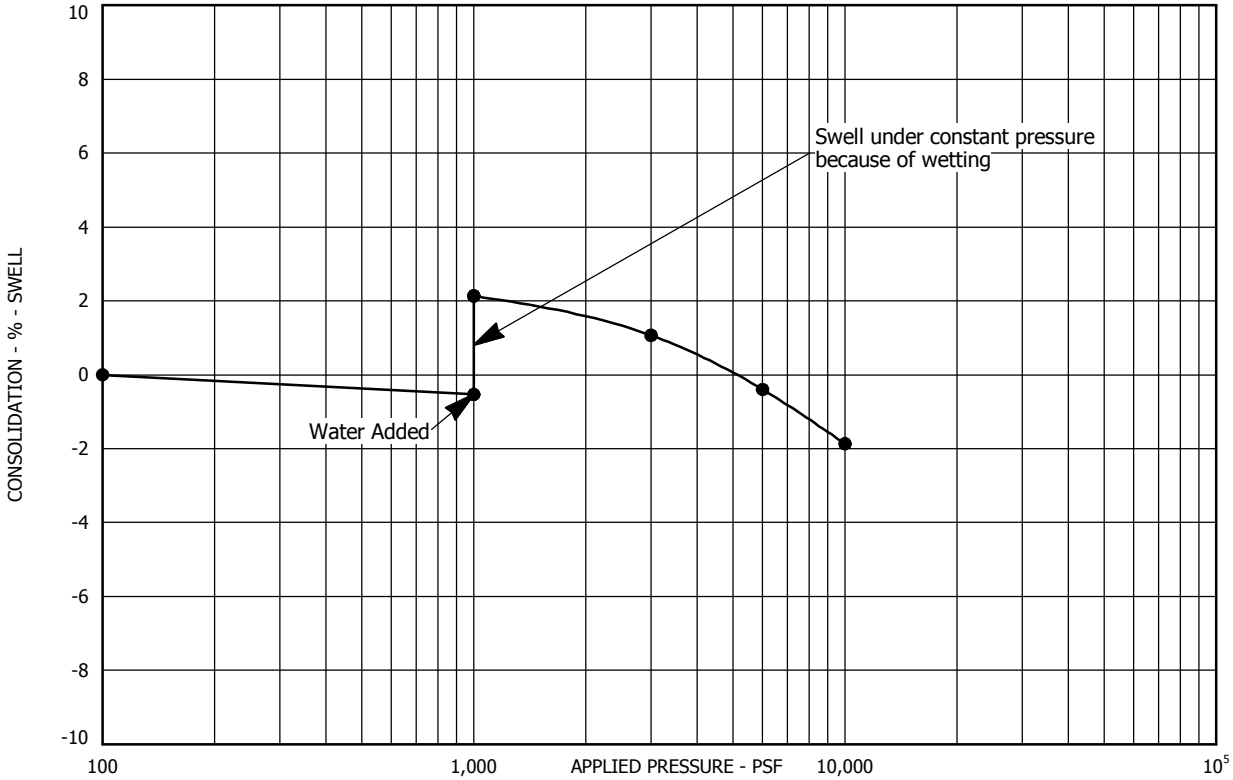
Sample Location: Test Boring No. 8 at a depth of 19 feet — Dry Unit Weight (pcf): 107
Sample Description: Claystone, slightly sandy — Moisture Content (%): 18

SWELL - CONSOLIDATION TEST RESULTS
FIGURE 10
PROJECT NO. 174095

A.G. Wassenaar Inc.
Geotechnical and Environmental Consultants



Sample Location: Test Boring No. 8 at a depth of 29 feet
Dry Unit Weight (pcf): 117
Sample Description: Claystone, slightly sandy
Moisture Content (%): 14



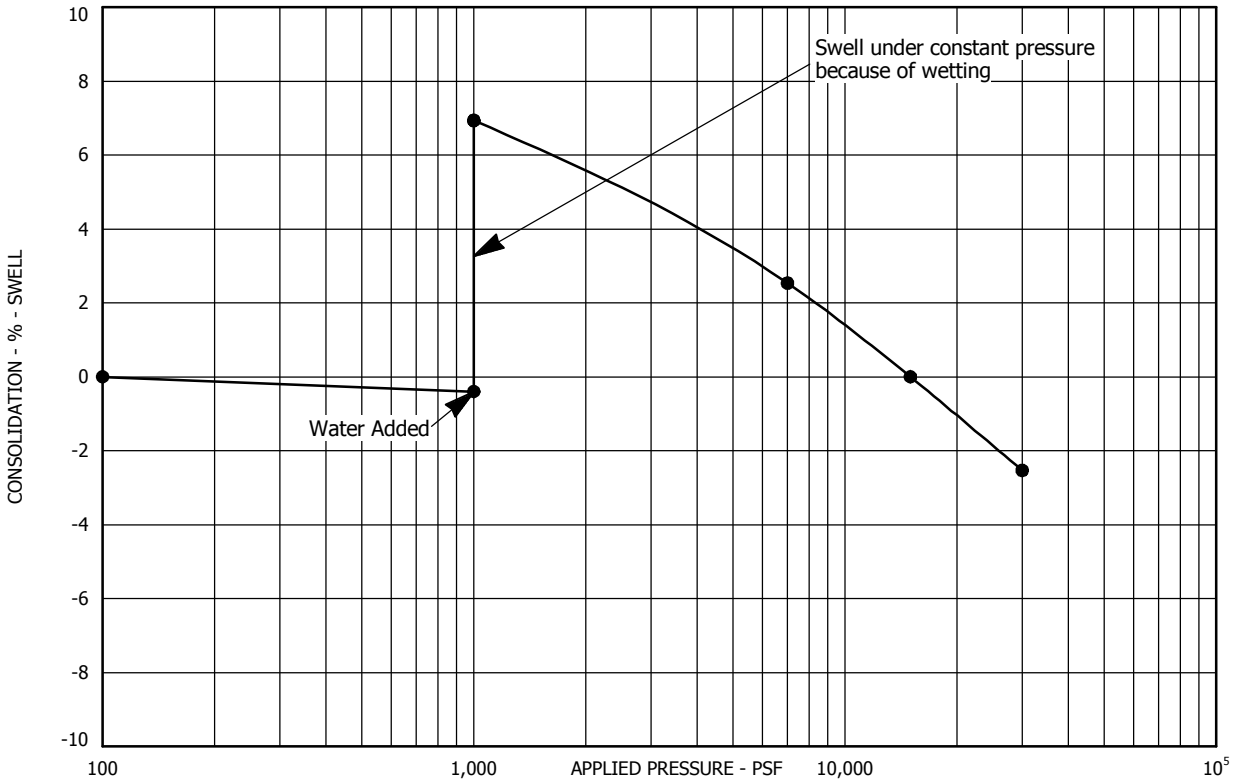
Sample Location: Test Boring No. 9 at a depth of 9 feet
Dry Unit Weight (pcf): 104
Sample Description: Clay (weathered claystone), slightly sandy
Moisture Content (%): 20

SWELL - CONSOLIDATION TEST RESULTS

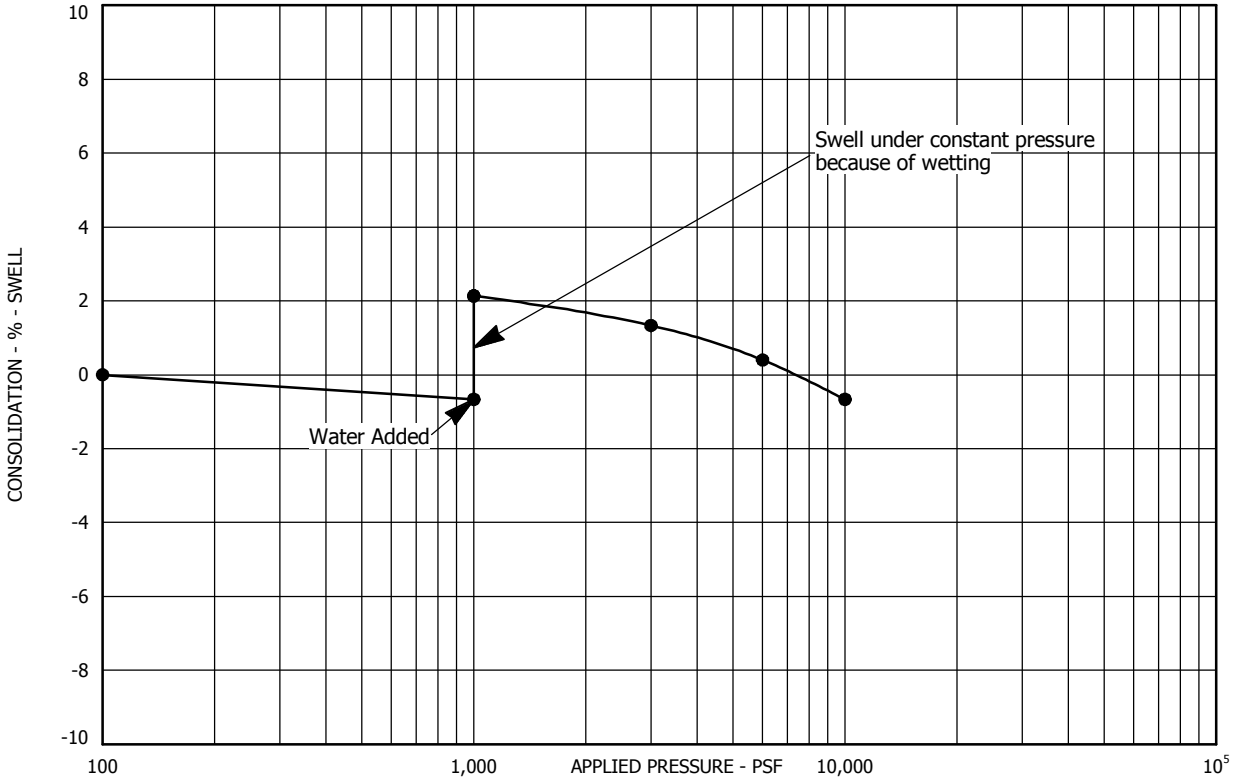
FIGURE 11

PROJECT NO. 174095

A.G. Wassenaar Inc.
Geotechnical and Environmental Consultants



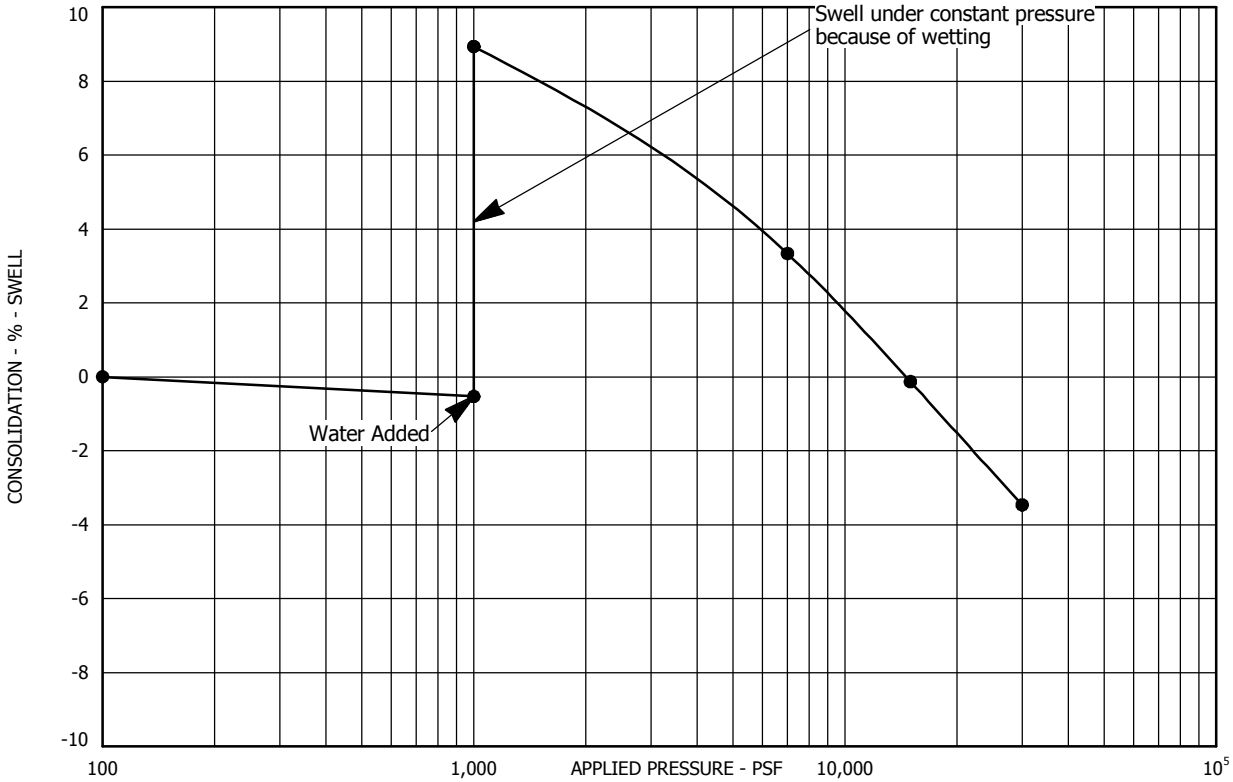
Sample Location: Test Boring No. 10 at a depth of 9 feet
Dry Unit Weight (pcf): 115
Sample Description: Claystone, slightly sandy
Moisture Content (%): 15



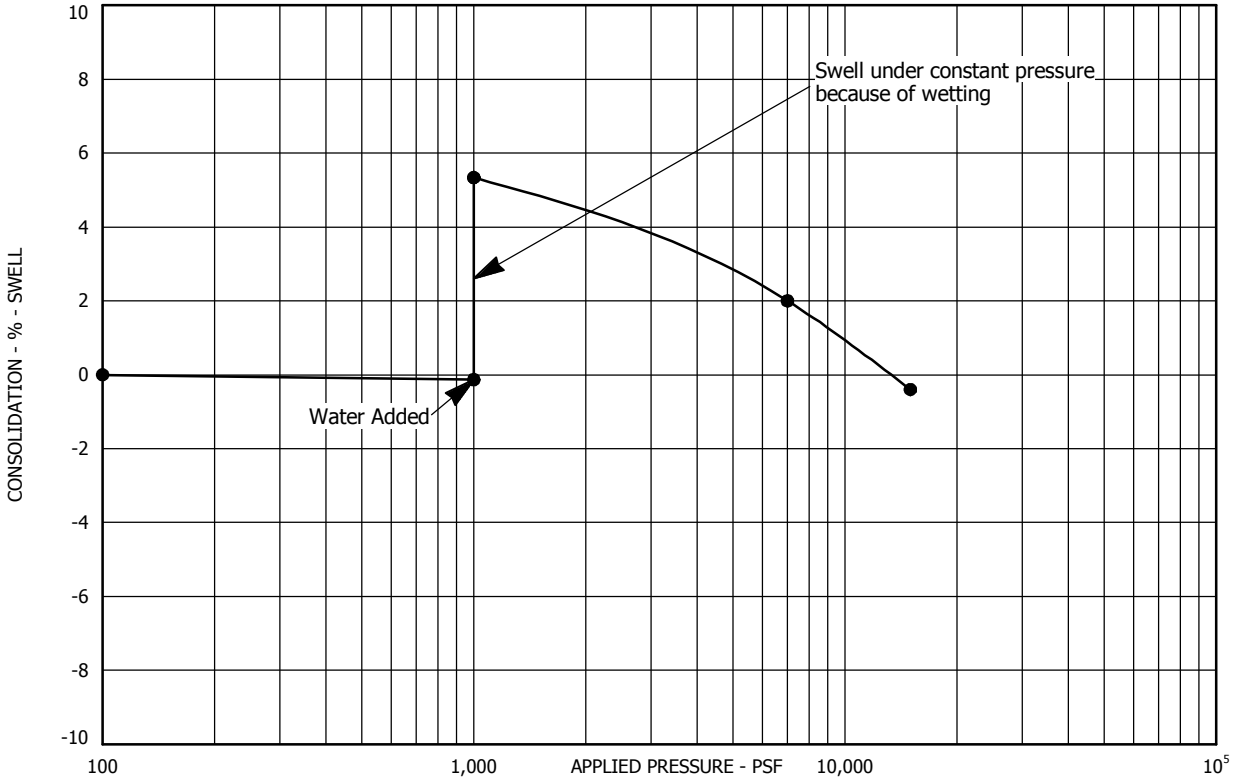
Sample Location: Test Boring No. 10 at a depth of 19 feet
Dry Unit Weight (pcf): 125
Sample Description: Claystone, slightly sandy
Moisture Content (%): 12

SWELL - CONSOLIDATION TEST RESULTS
FIGURE 12
PROJECT NO. 174095

A.G. Wassenaar Inc.
Geotechnical and Environmental Consultants



Sample Location: Test Boring No. 11 at a depth of 9 feet
Dry Unit Weight (pcf): 113
Sample Description: Claystone, slightly sandy
Moisture Content (%): 17



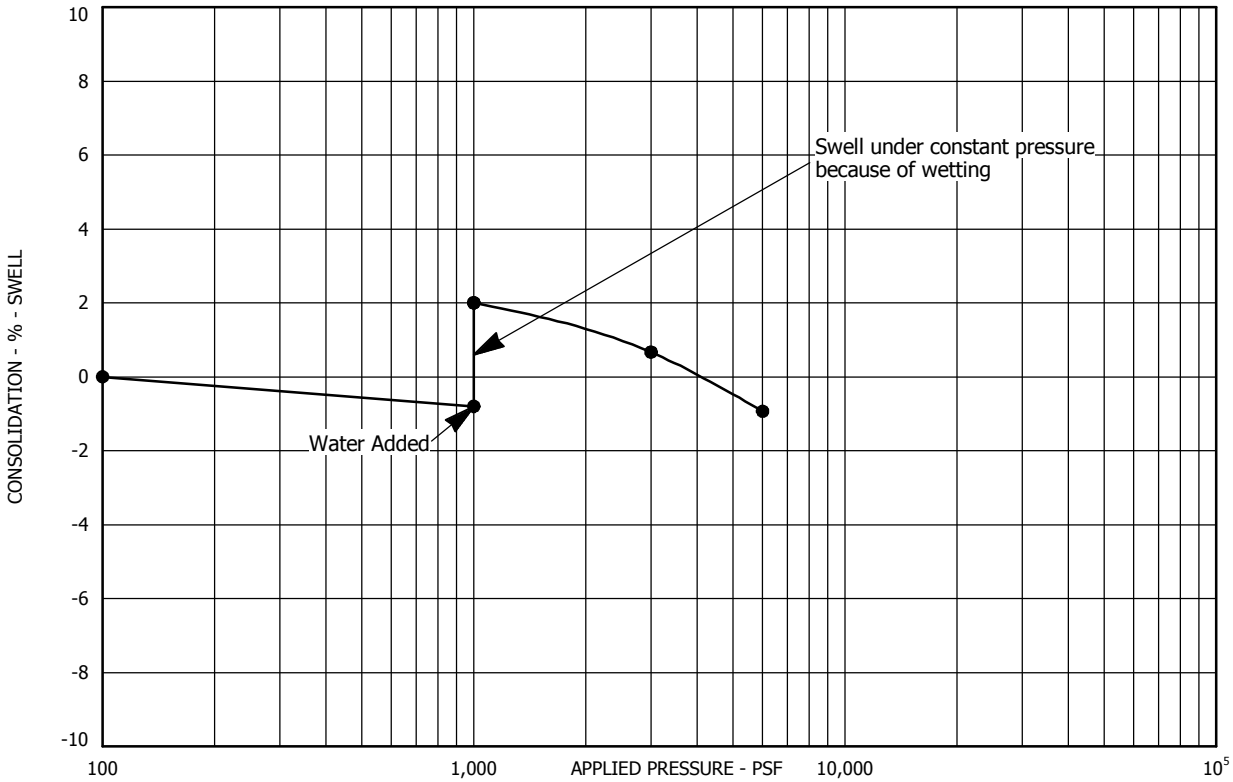
Sample Location: Test Boring No. 11 at a depth of 14 feet
Dry Unit Weight (pcf): 115
Sample Description: Claystone, trace sand
Moisture Content (%): 14

SWELL - CONSOLIDATION TEST RESULTS

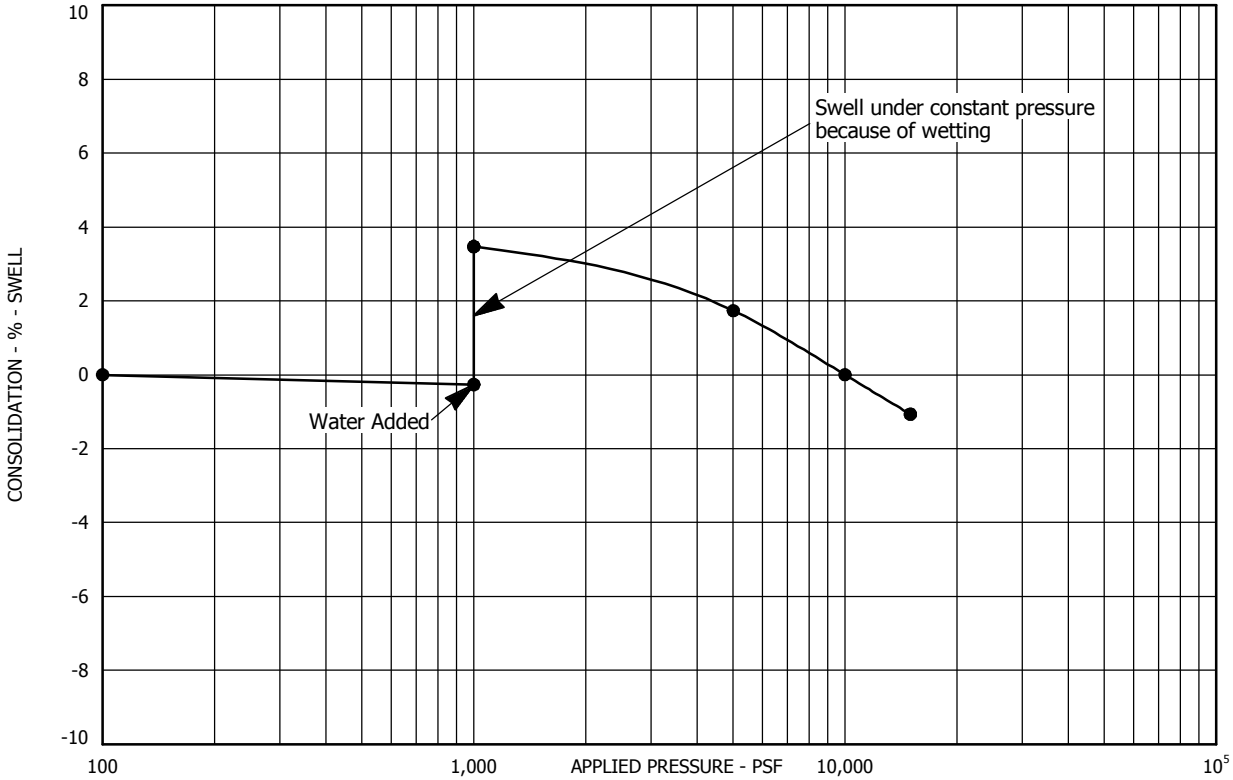
FIGURE 13

PROJECT NO. 174095

A.G. Wassenaar Inc.
Geotechnical and Environmental Consultants



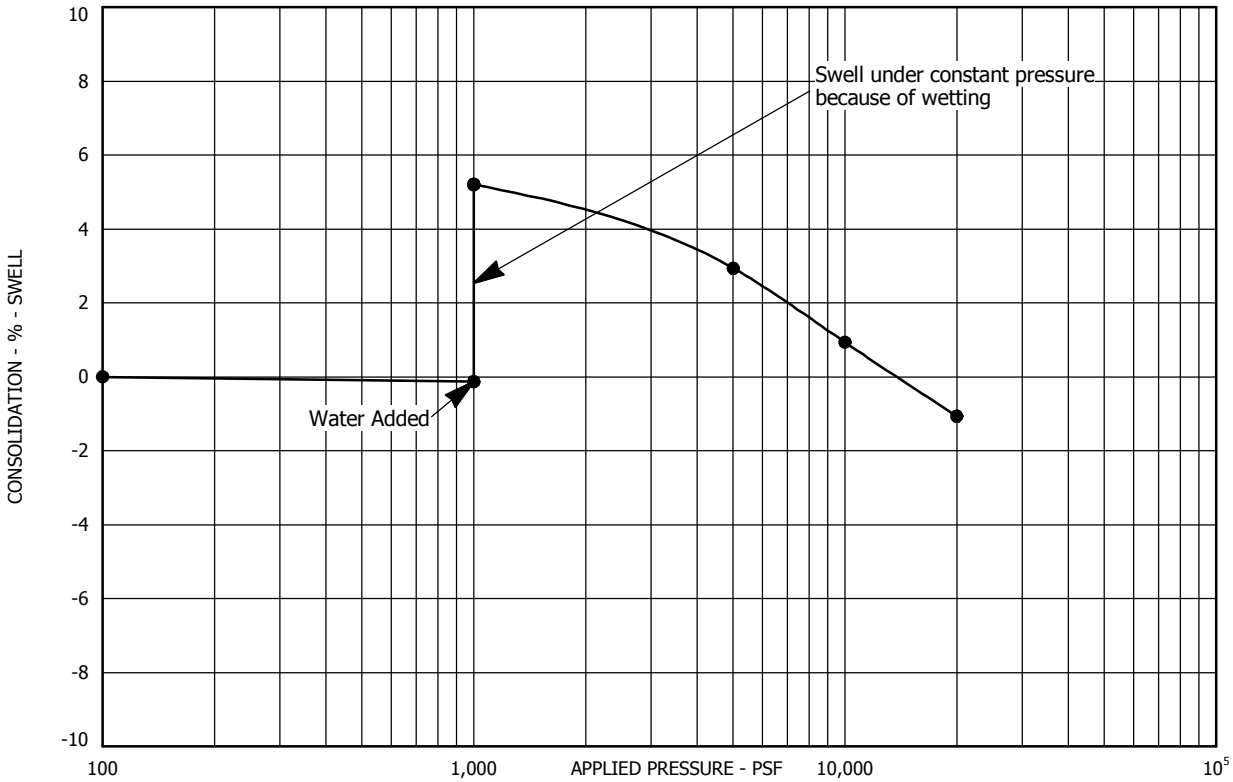
Sample Location: Test Boring No. 12 at a depth of 9 feet
Dry Unit Weight (pcf): 104
Sample Description: Claystone, slightly sandy
Moisture Content (%): 21



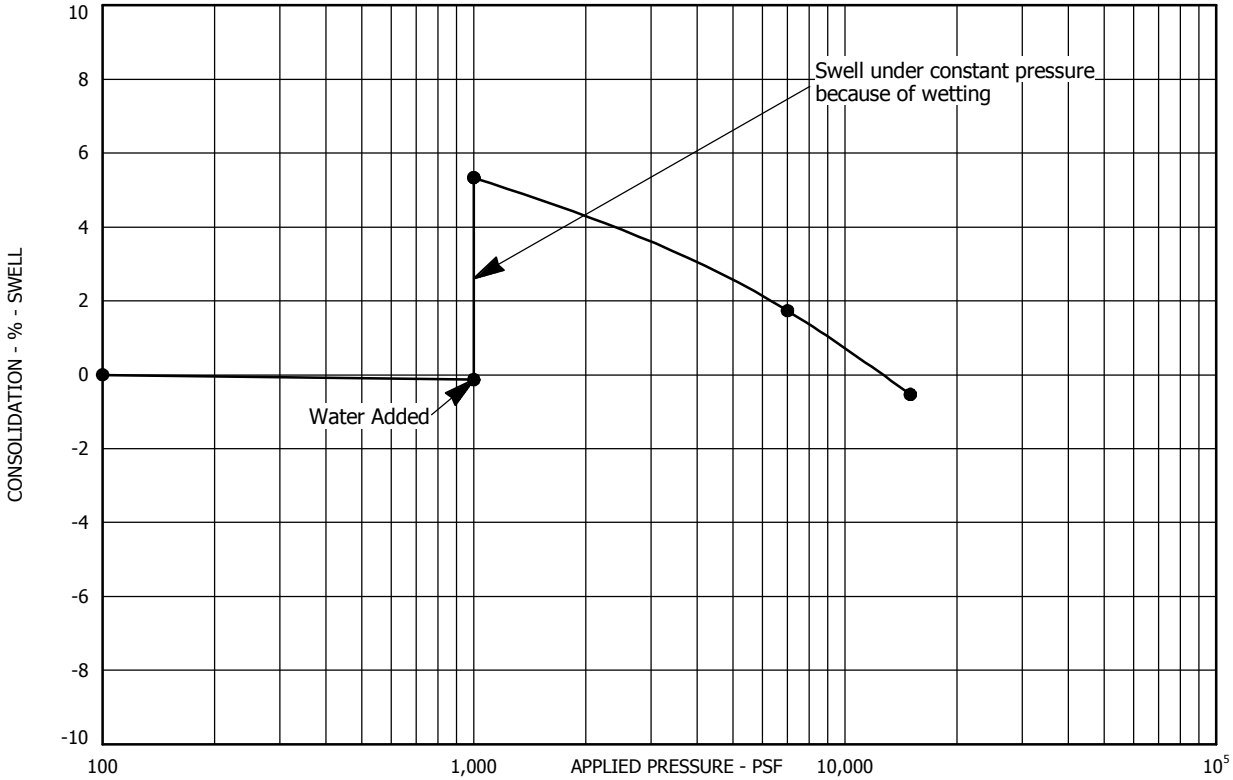
Sample Location: Test Boring No. 12 at a depth of 14 feet
Dry Unit Weight (pcf): 112
Sample Description: Claystone, slightly sandy
Moisture Content (%): 18

SWELL - CONSOLIDATION TEST RESULTS
FIGURE 14
PROJECT NO. 174095

A.G. Wassenaar Inc.
Geotechnical and Environmental Consultants



Sample Location: Test Boring No. 13 at a depth of 19 feet
Dry Unit Weight (pcf): 116
Sample Description: Claystone, slightly sandy
Moisture Content (%): 16



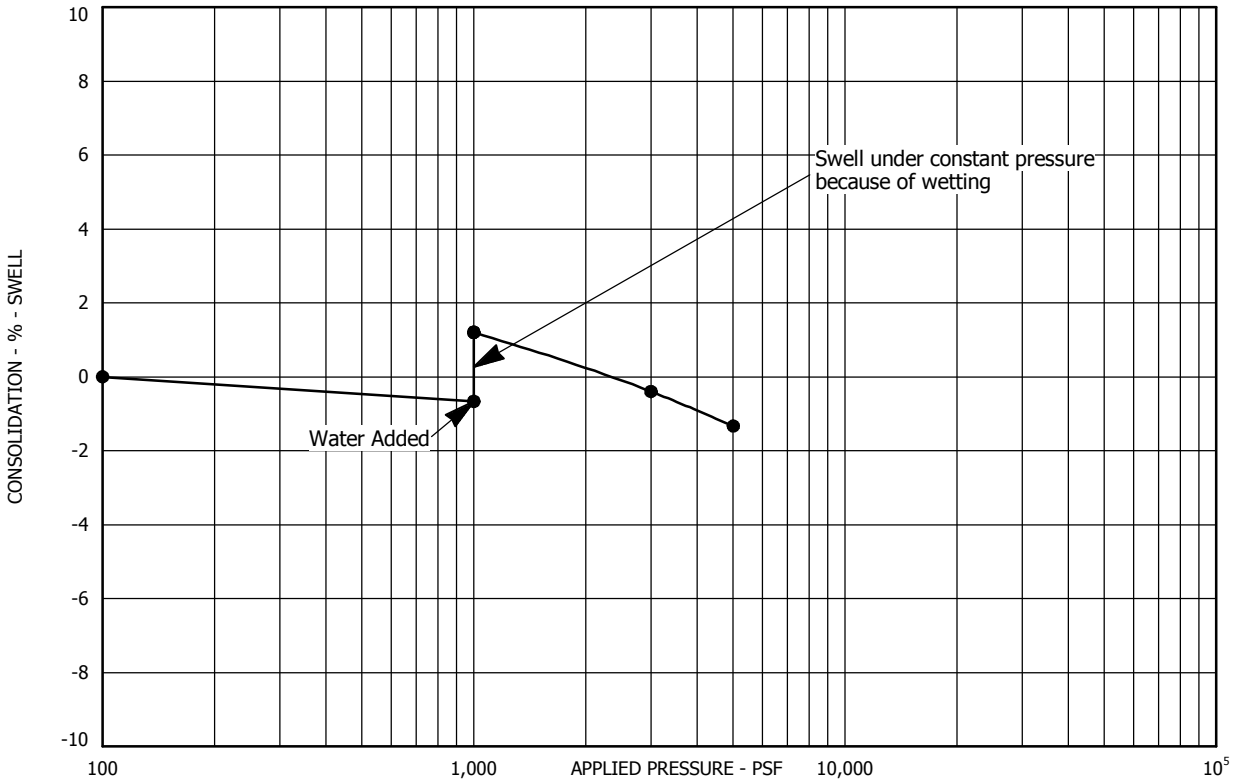
Sample Location: Test Boring No. 13 at a depth of 29 feet
Dry Unit Weight (pcf): 118
Sample Description: Claystone, slightly sandy
Moisture Content (%): 13

SWELL - CONSOLIDATION TEST RESULTS

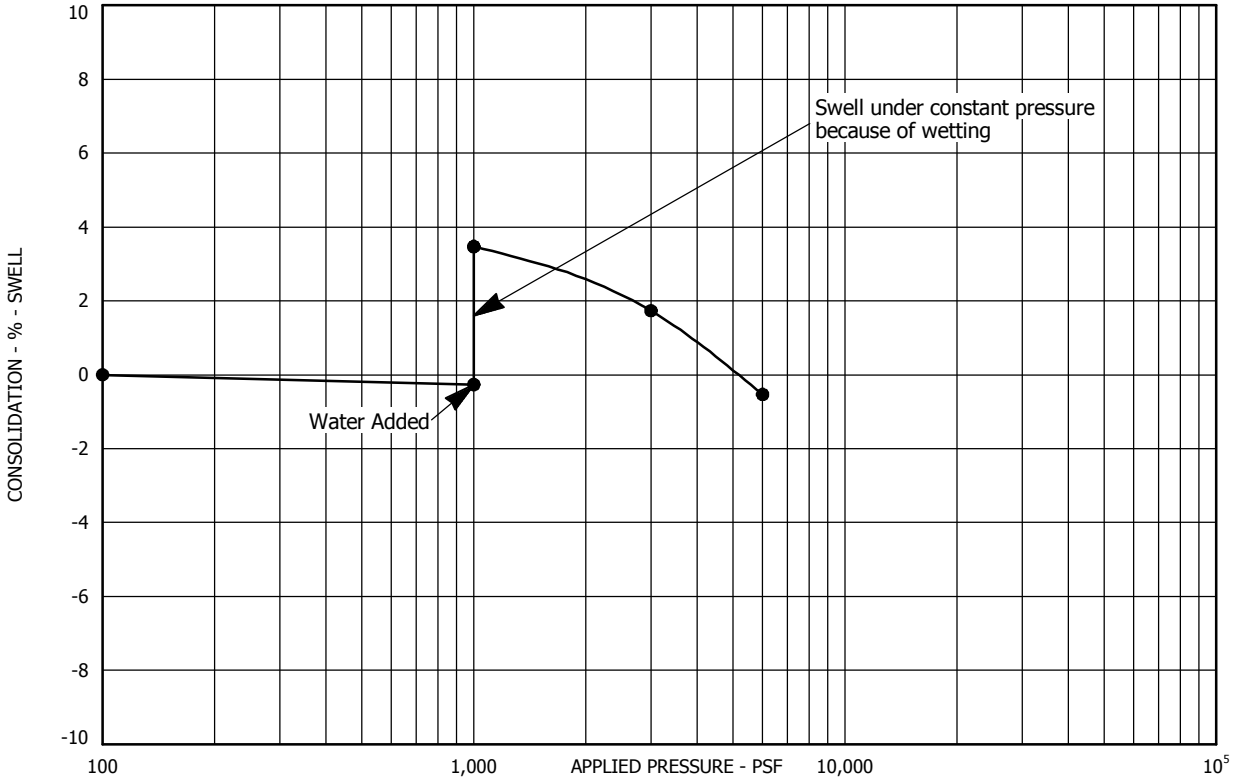
FIGURE 15

PROJECT NO. 174095

A.G. Wassenaar Inc.
Geotechnical and Environmental Consultants



Sample Location: Test Boring No. 14 at a depth of 14 feet
Dry Unit Weight (pcf): 114
Sample Description: Claystone, slightly sandy
Moisture Content (%): 16



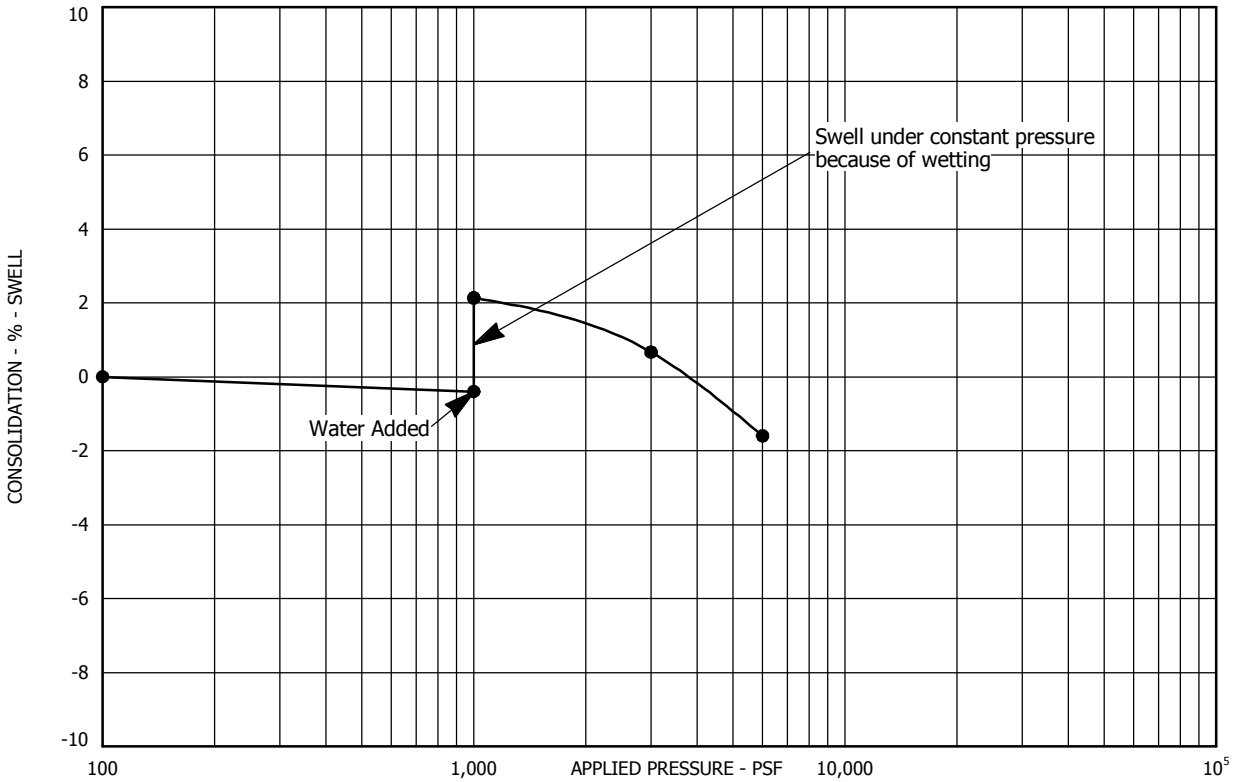
Sample Location: Test Boring No. 14 at a depth of 24 feet
Dry Unit Weight (pcf): 112
Sample Description: Claystone, slightly sandy
Moisture Content (%): 15

SWELL - CONSOLIDATION TEST RESULTS

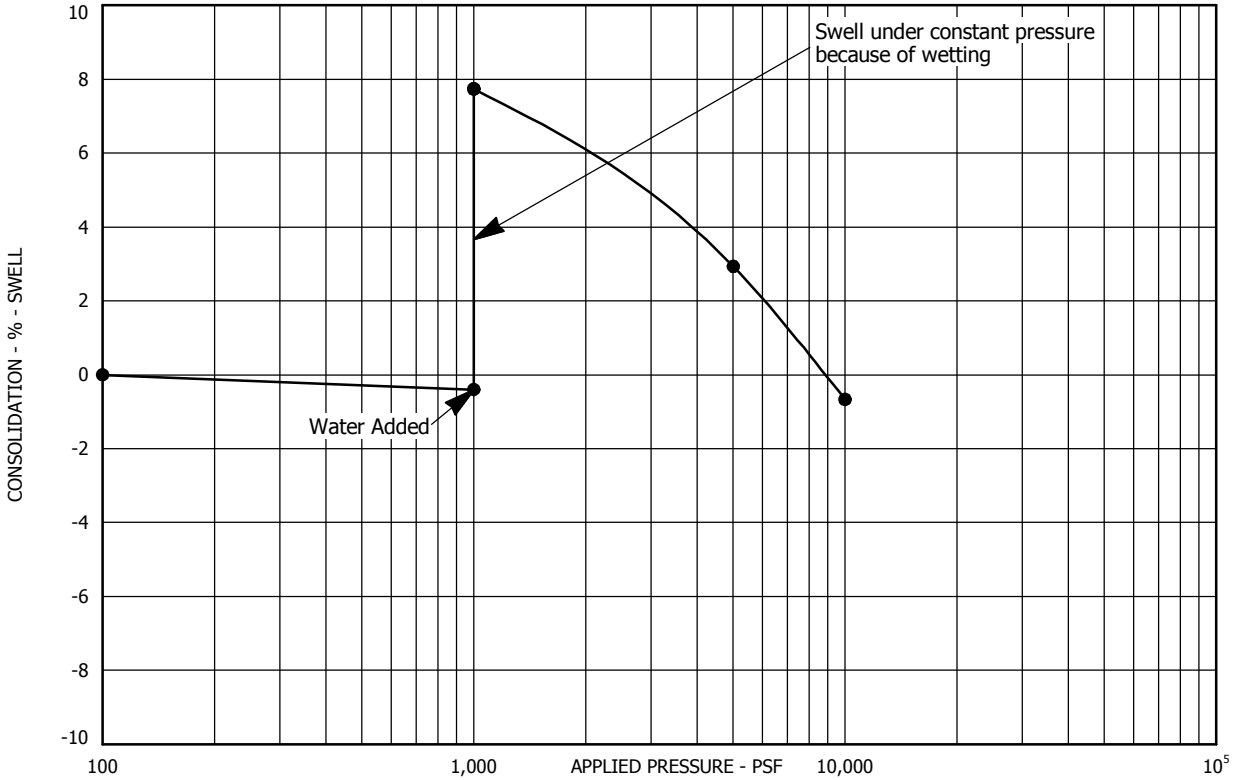
FIGURE 16

PROJECT NO. 174095

A.G. Wassenaar Inc.
Geotechnical and Environmental Consultants



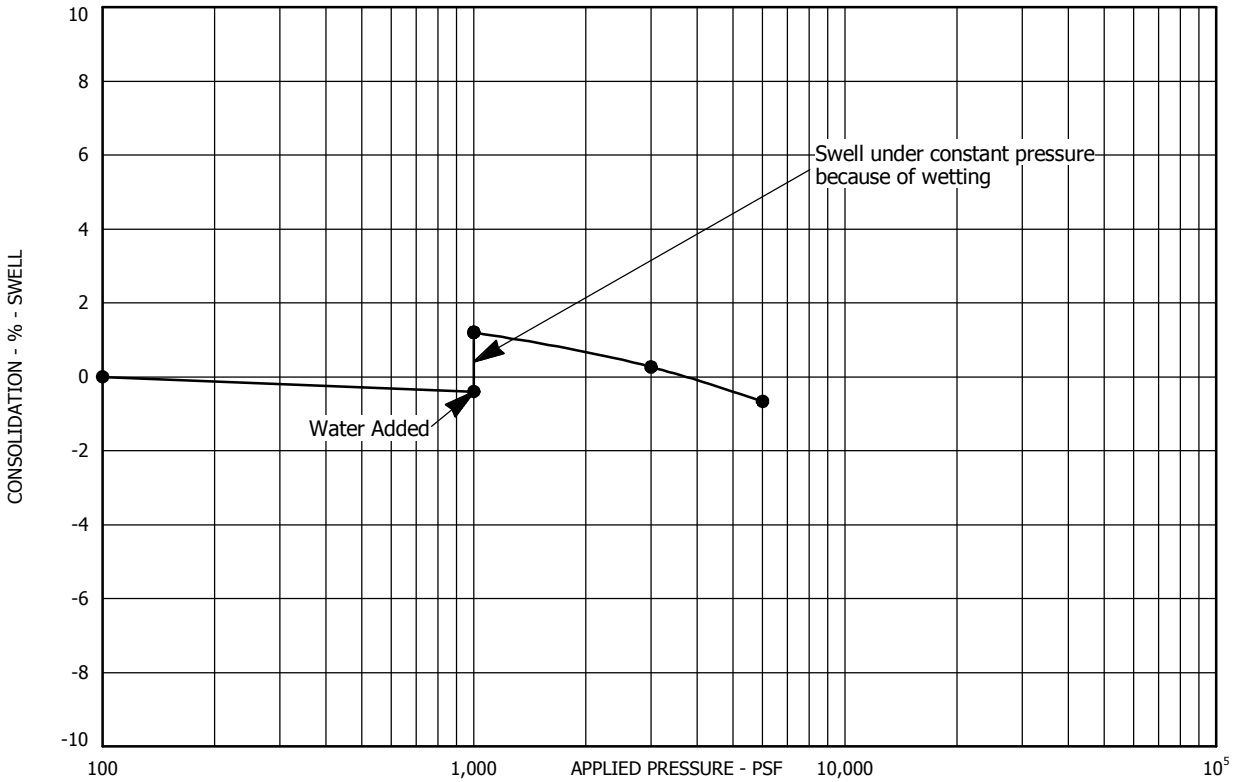
Sample Location: Test Boring No. 17 at a depth of 9 feet
Sample Description: Clay (weathered claystone), trace sand
Dry Unit Weight (pcf): 108
Moisture Content (%): 20



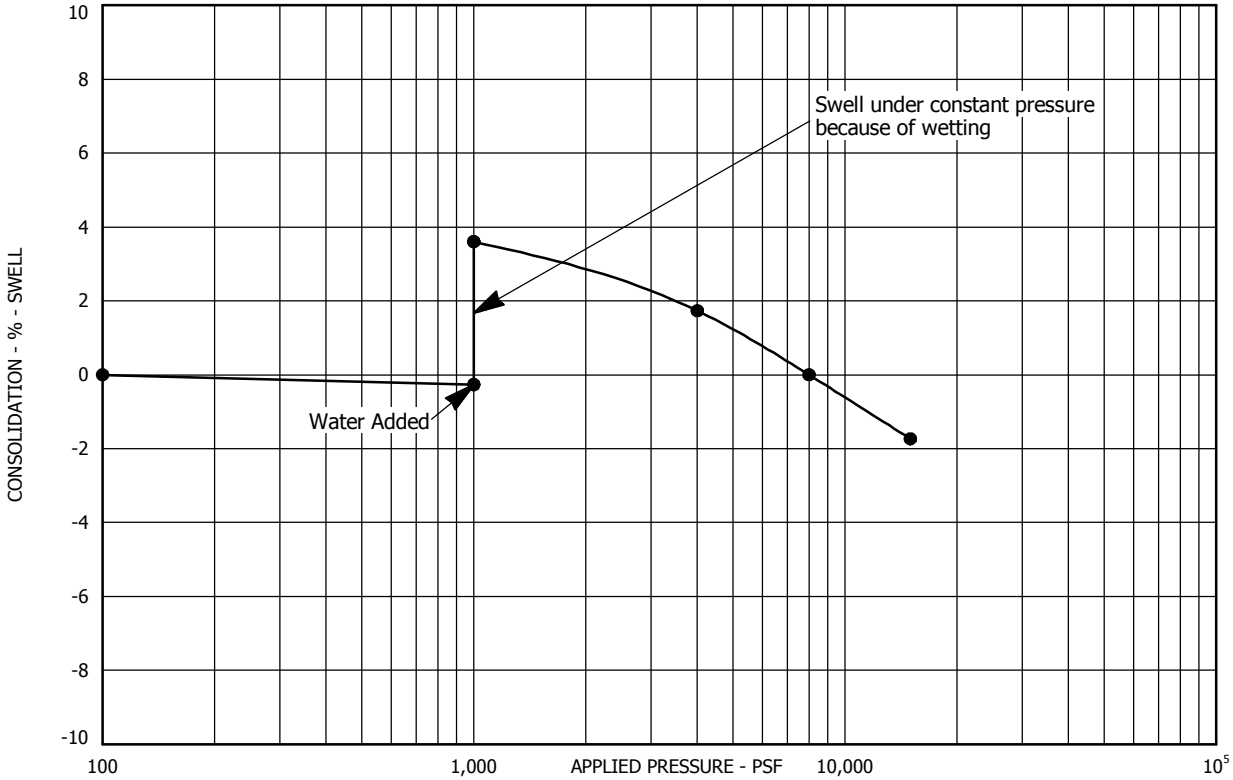
Sample Location: Test Boring No. 17 at a depth of 24 feet
Sample Description: Claystone, slightly sandy
Dry Unit Weight (pcf): 104
Moisture Content (%): 22

SWELL - CONSOLIDATION TEST RESULTS
FIGURE 17
PROJECT NO. 174095

A.G. Wassenaar Inc.
Geotechnical and Environmental Consultants



Sample Location: Test Boring No. 18 at a depth of 9 feet
Dry Unit Weight (pcf): 115
Sample Description: Claystone, sandy
Moisture Content (%): 15



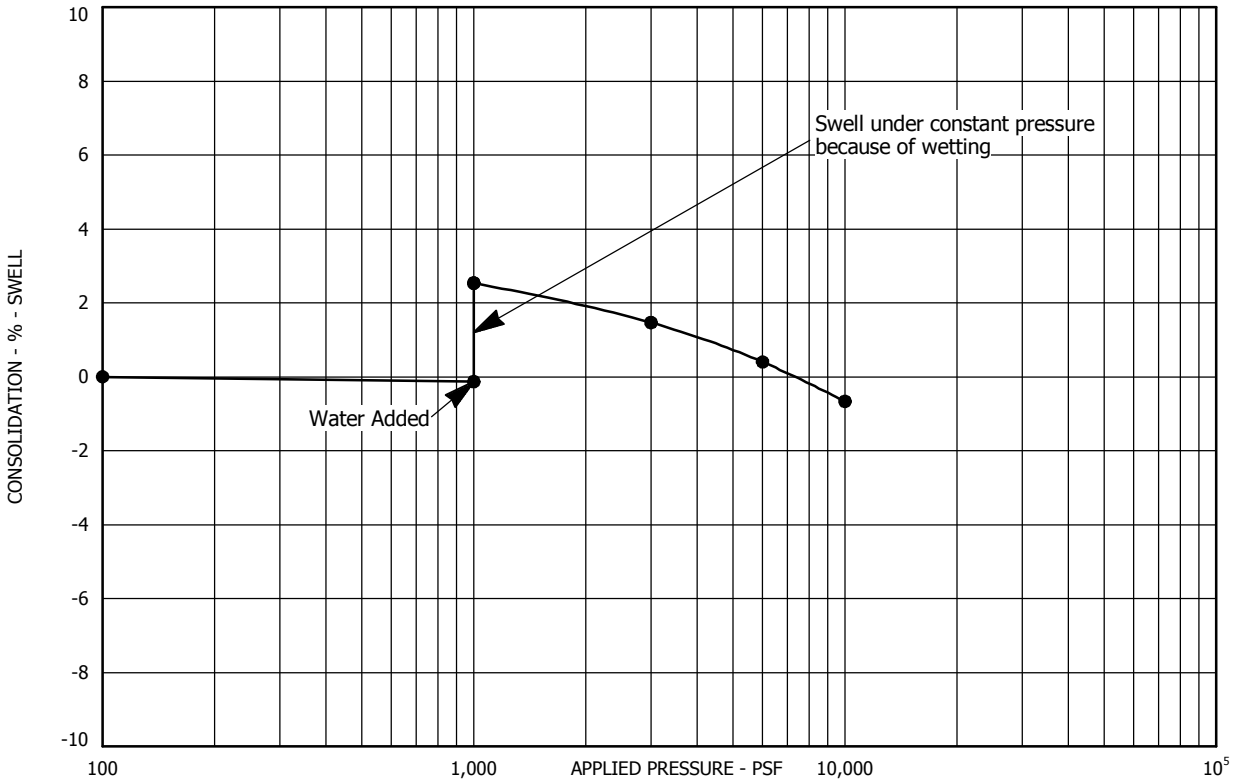
Sample Location: Test Boring No. 18 at a depth of 19 feet
Dry Unit Weight (pcf): 109
Sample Description: Claystone, slightly sandy
Moisture Content (%): 21

SWELL - CONSOLIDATION TEST RESULTS

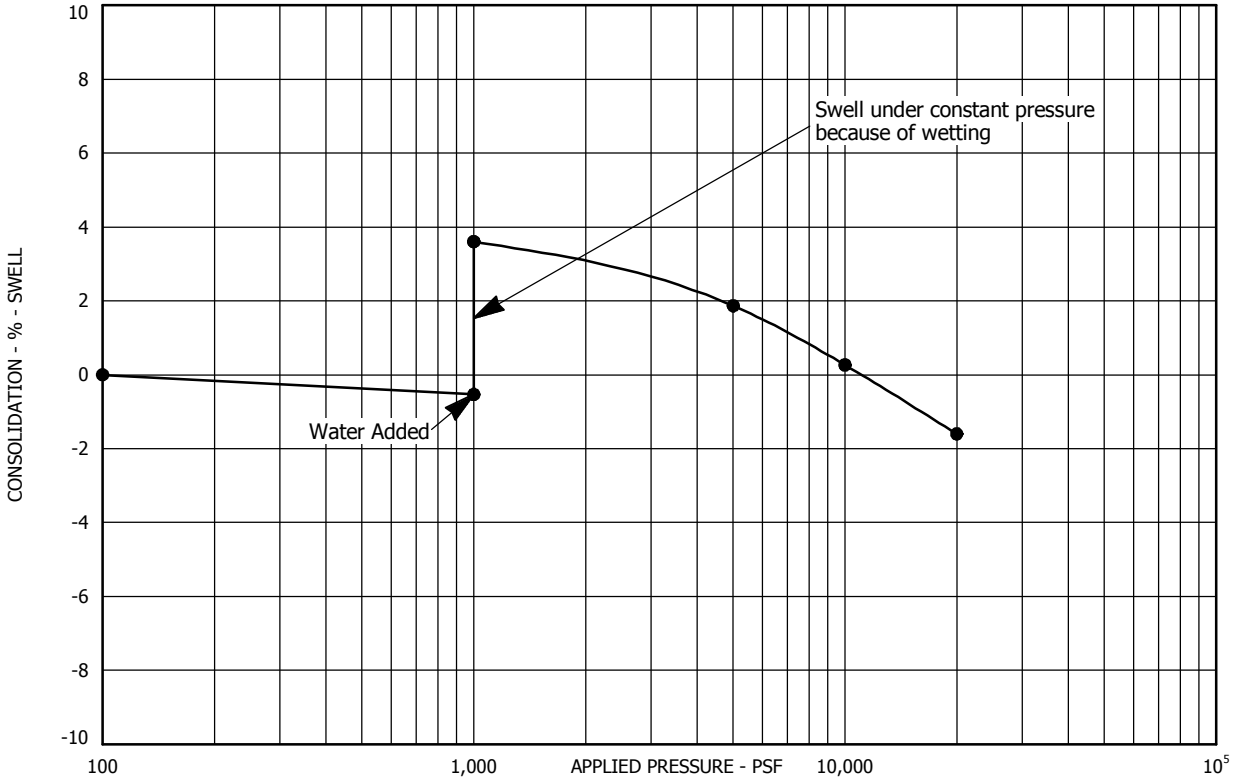
FIGURE 18

PROJECT NO. 174095

A.G. Wassenaar Inc.
Geotechnical and Environmental Consultants



Sample Location: Test Boring No. 20 at a depth of 24 feet
Dry Unit Weight (pcf): 123
Sample Description: Claystone, slightly sandy
Moisture Content (%): 13



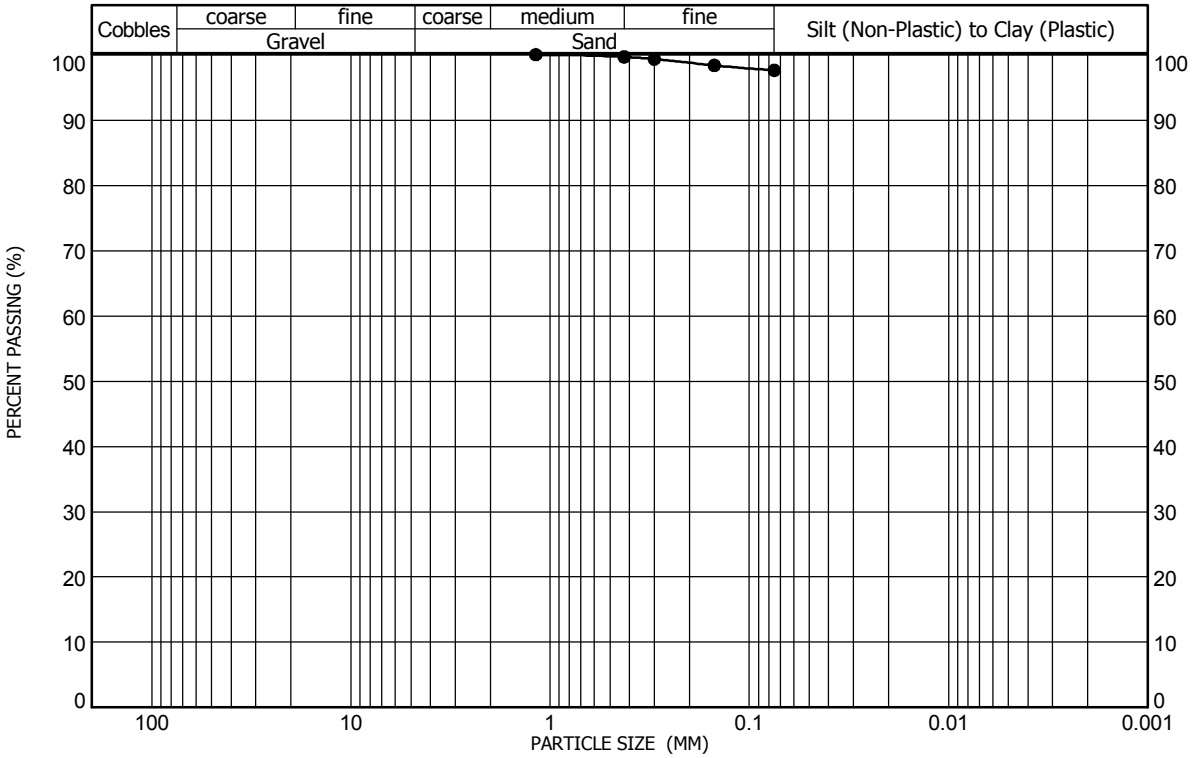
Sample Location: Test Boring No. 20 at a depth of 34 feet
Dry Unit Weight (pcf): 118
Sample Description: Claystone, slightly sandy
Moisture Content (%): 15

SWELL - CONSOLIDATION TEST RESULTS

FIGURE 19

PROJECT NO. 174095

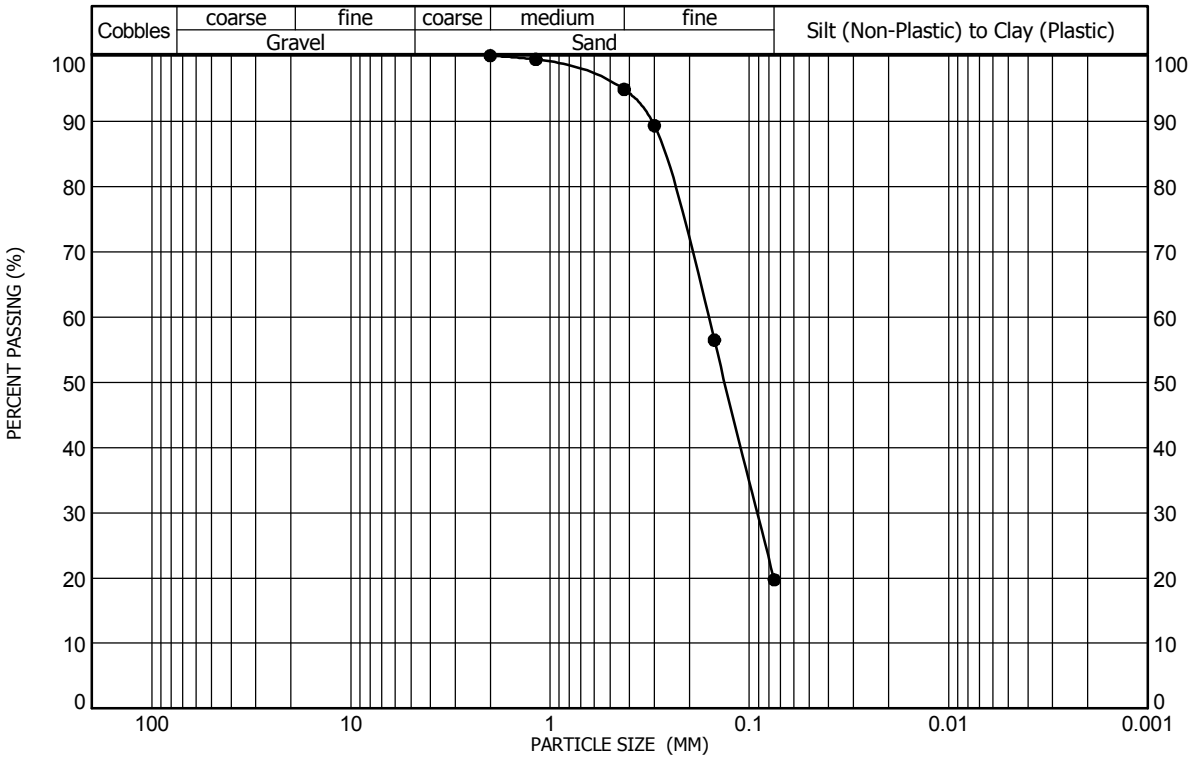
A.G. Wassenaar Inc.
Geotechnical and Environmental Consultants



Sample Location: Test Boring No. 1 at a depth of 9 feet
Sample Description: Clay (weathered claystone), trace sand
Classification: A-7-6(66), FAT CLAY(CH)

Gravel (%): 0
Sand (%): 2
Clay/Silt (%): 98

Liquid Limit: 81
Plasticity Index: 59



Sample Location: Test Boring No. 2 at a depth of 14 feet
Sample Description: Sand, silty
Classification: A-2-4(0), SILTY SAND(SM)

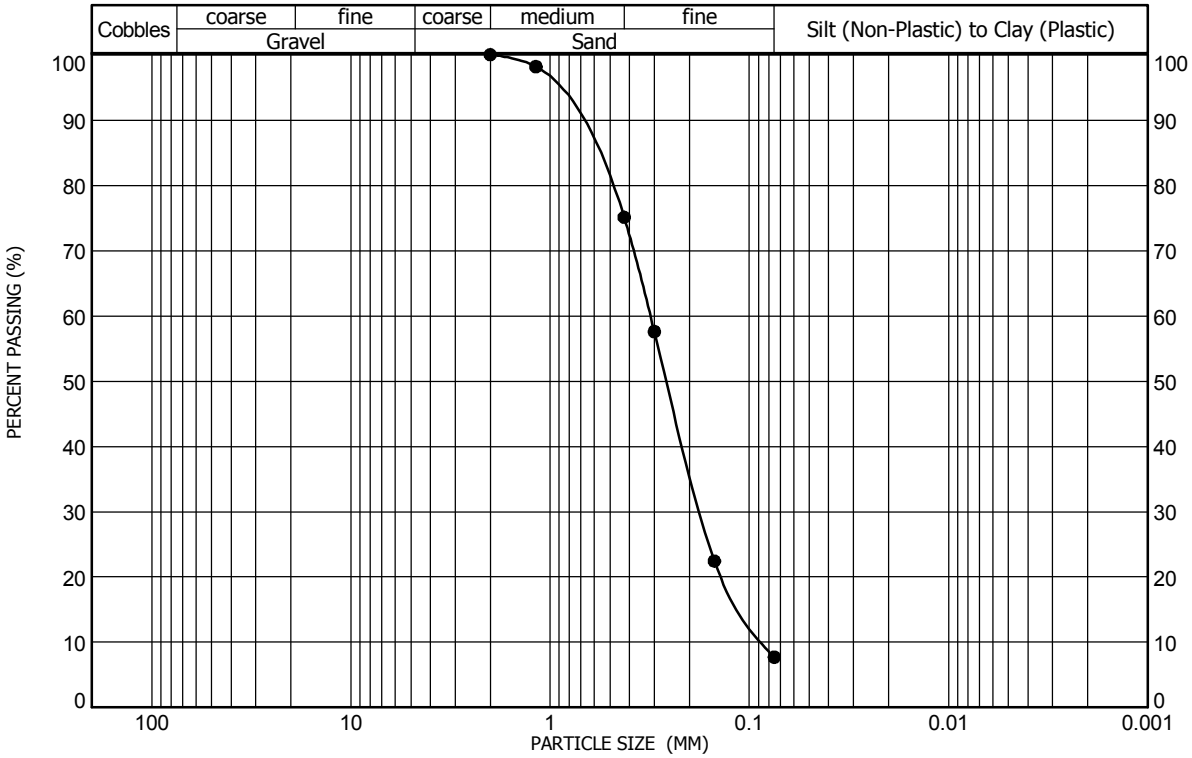
Gravel (%): 0
Sand (%): 80
Clay/Silt (%): 20

Liquid Limit: NV
Plasticity Index: NP

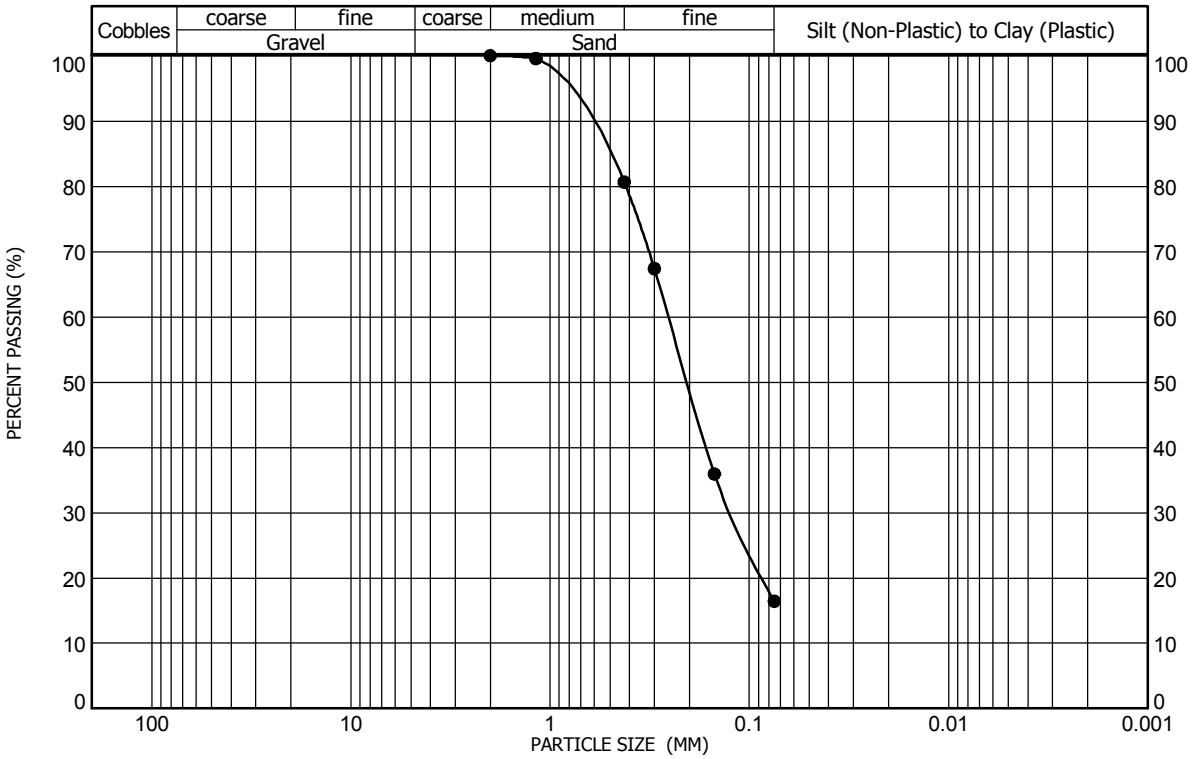
GRADATION AND ATTERBERG TEST RESULTS
FIGURE 20

PROJECT NO. 174095

A.G. Wassenaar Inc.
Geotechnical and Environmental Consultants



Sample Location: Test Boring No. 3 at a depth of 9 feet — Gravel (%): 0 — Liquid Limit: NV
Sample Description: Sand, slightly silty — Sand (%): 92 — Plasticity Index: NP
Classification: A-3(0), POORLY GRADED SAND with SILT(SP-SM) — Clay/Silt (%): 8

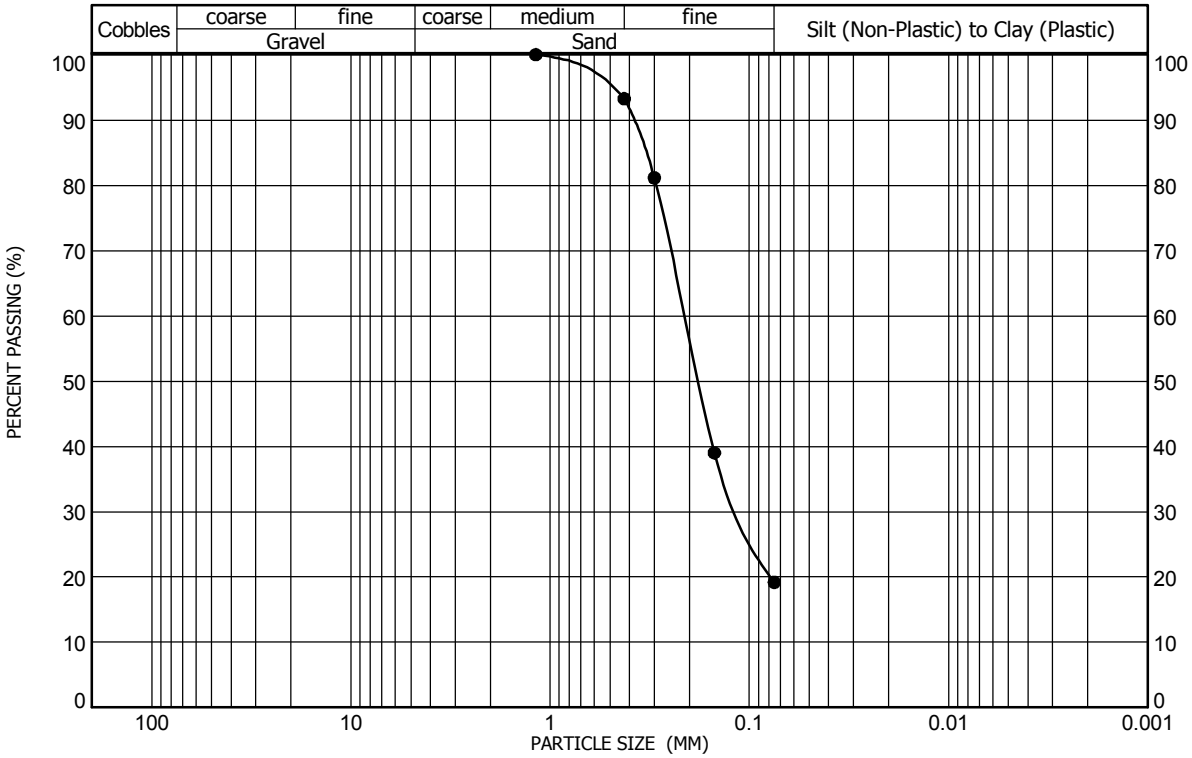


Sample Location: Test Boring No. 4 at a depth of 14 feet — Gravel (%): 0 — Liquid Limit: NV
Sample Description: Sand, silty — Sand (%): 84 — Plasticity Index: NP
Classification: A-2-4(0), SILTY SAND(SM) — Clay/Silt (%): 16

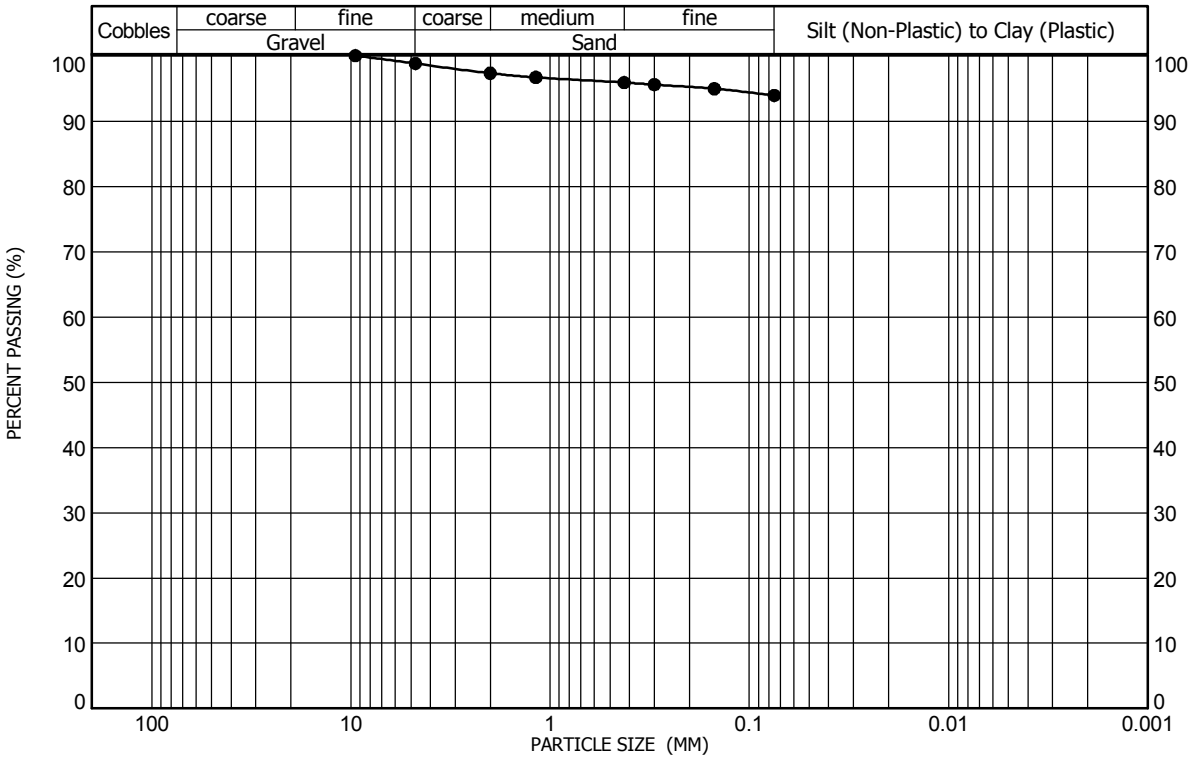
GRADATION AND ATTERBERG TEST RESULTS
FIGURE 21

PROJECT NO. 174095

A.G. Wassenaar Inc.
Geotechnical and Environmental Consultants



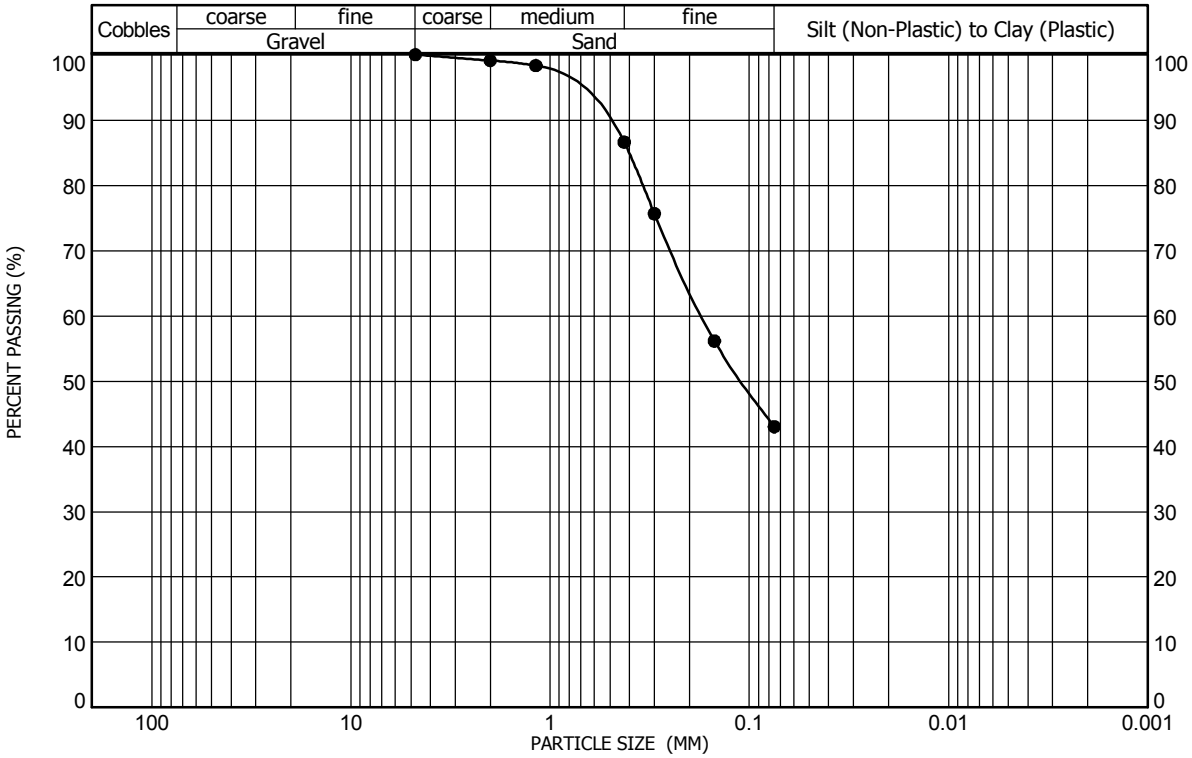
Sample Location: Test Boring No. 5 at a depth of 19 feet
Sample Description: Sand, silty
Classification: A-2-4(0), SILTY SAND(SM)
Gravel (%): 0
Sand (%): 81
Clay/Silt (%): 19
Liquid Limit: NV
Plasticity Index: NP



Sample Location: Test Boring No. 6 at a depth of 9 feet
Sample Description: Claystone, slightly sandy
Classification: A-7-6(50), FAT CLAY(CH)
Gravel (%): 1
Sand (%): 5
Clay/Silt (%): 94
Liquid Limit: 68
Plasticity Index: 48

GRADATION AND ATTERBERG TEST RESULTS
FIGURE 22
PROJECT NO. 174095

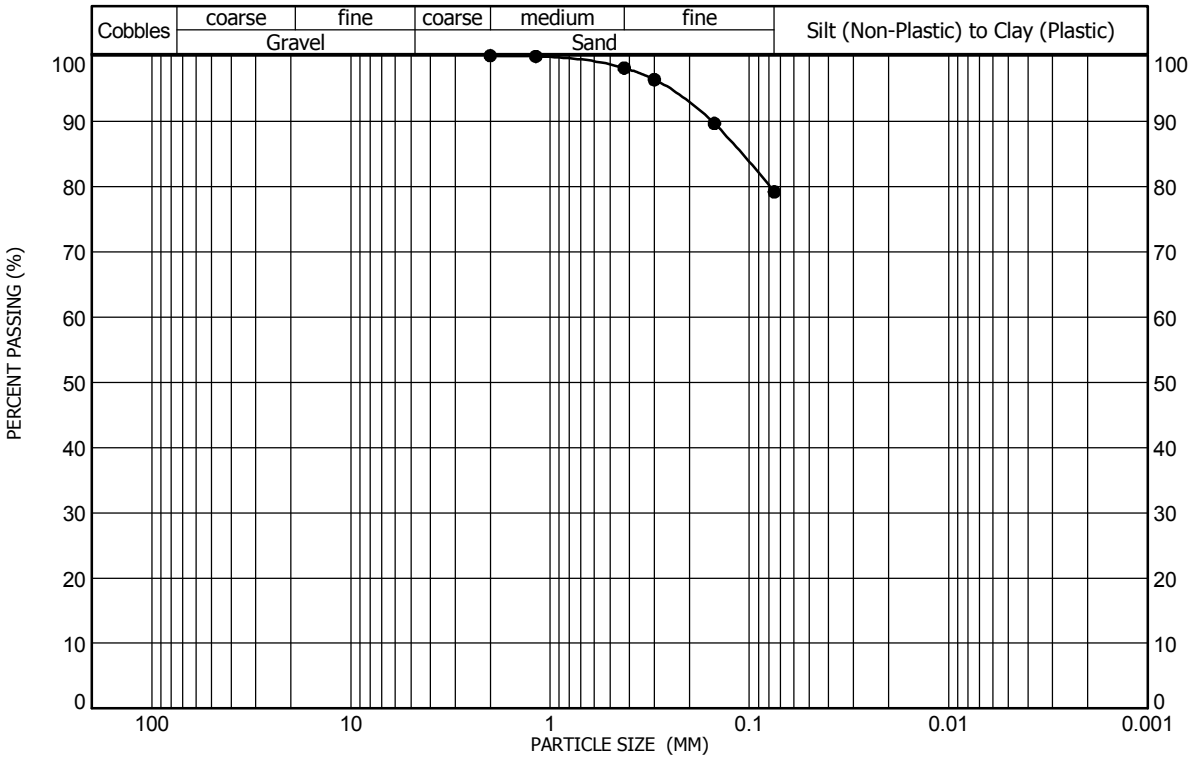
A.G. Wassenaar Inc.
Geotechnical and Environmental Consultants



Sample Location: Test Boring No. 7 at a depth of 9 feet
Sample Description: Sand, very silty
Classification: A-4(0), SILTY SAND(SM)

Gravel (%): 0
Sand (%): 57
Clay/Silt (%): 43

Liquid Limit: 20
Plasticity Index: NP



Sample Location: Test Boring No. 7 at a depth of 14 feet
Sample Description: Clay, sandy
Classification: A-7-6(18), LEAN CLAY with SAND(CL)

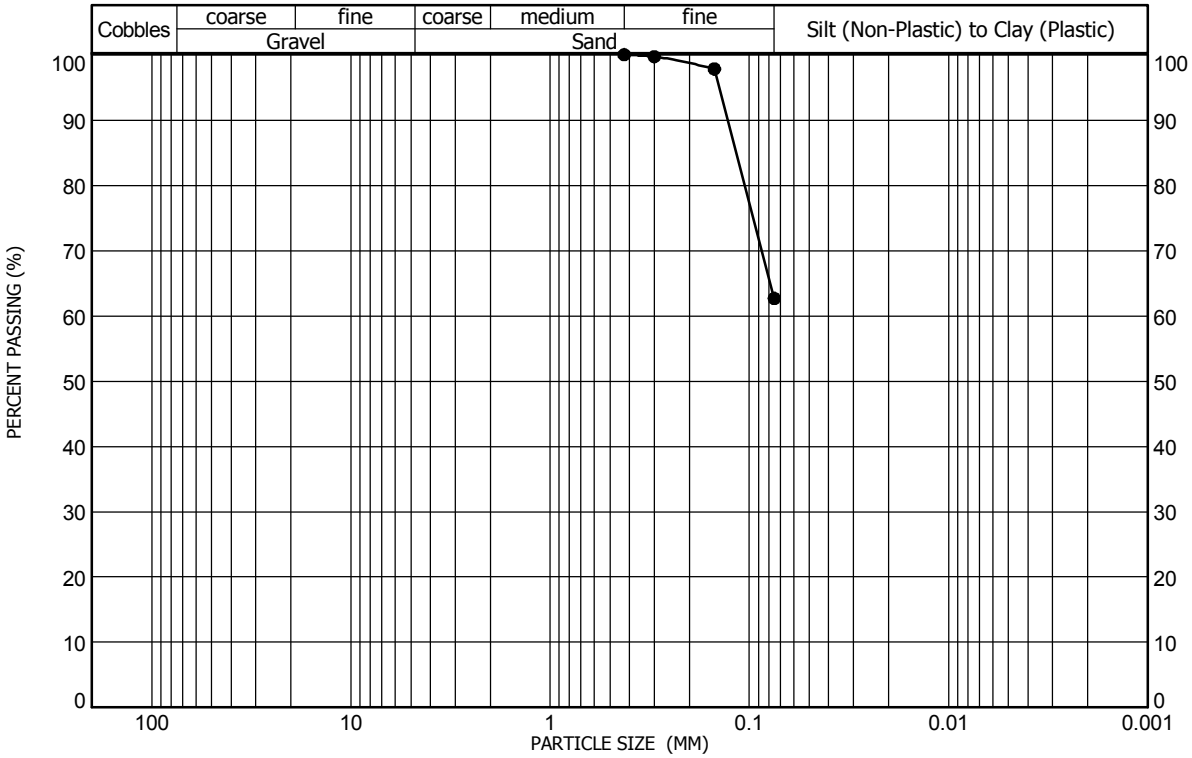
Gravel (%): 0
Sand (%): 21
Clay/Silt (%): 79

Liquid Limit: 42
Plasticity Index: 23

GRADATION AND ATTERBERG TEST RESULTS
FIGURE 23

PROJECT NO. 174095

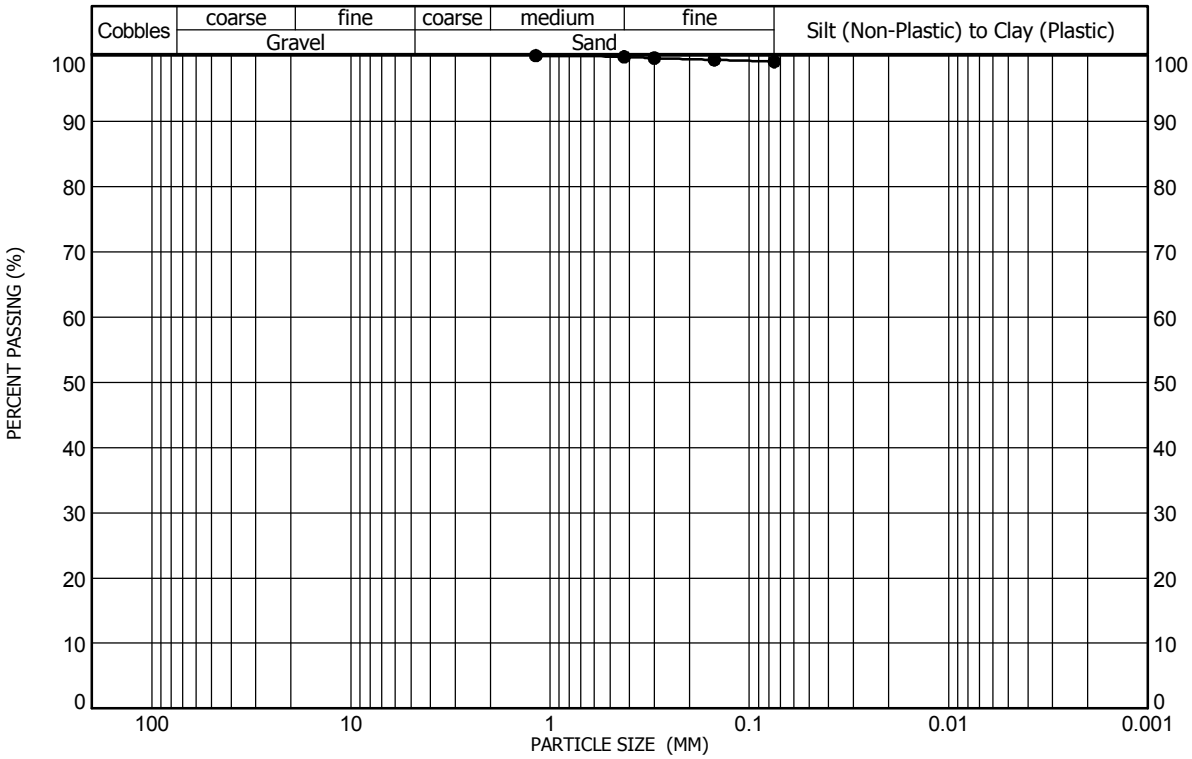
A.G. Wassenaar Inc.
Geotechnical and Environmental Consultants



Sample Location: Test Boring No. 9 at a depth of 14 feet
Sample Description: Claystone, very sandy
Classification: A-6(5), SANDY LEAN CLAY(CL)

Gravel (%): 0
Sand (%): 37
Clay/Silt (%): 63

Liquid Limit: 29
Plasticity Index: 11



Sample Location: Test Boring No. 11 at a depth of 14 feet
Sample Description: Claystone, trace sand
Classification: A-7-6(51), FAT CLAY(CH)

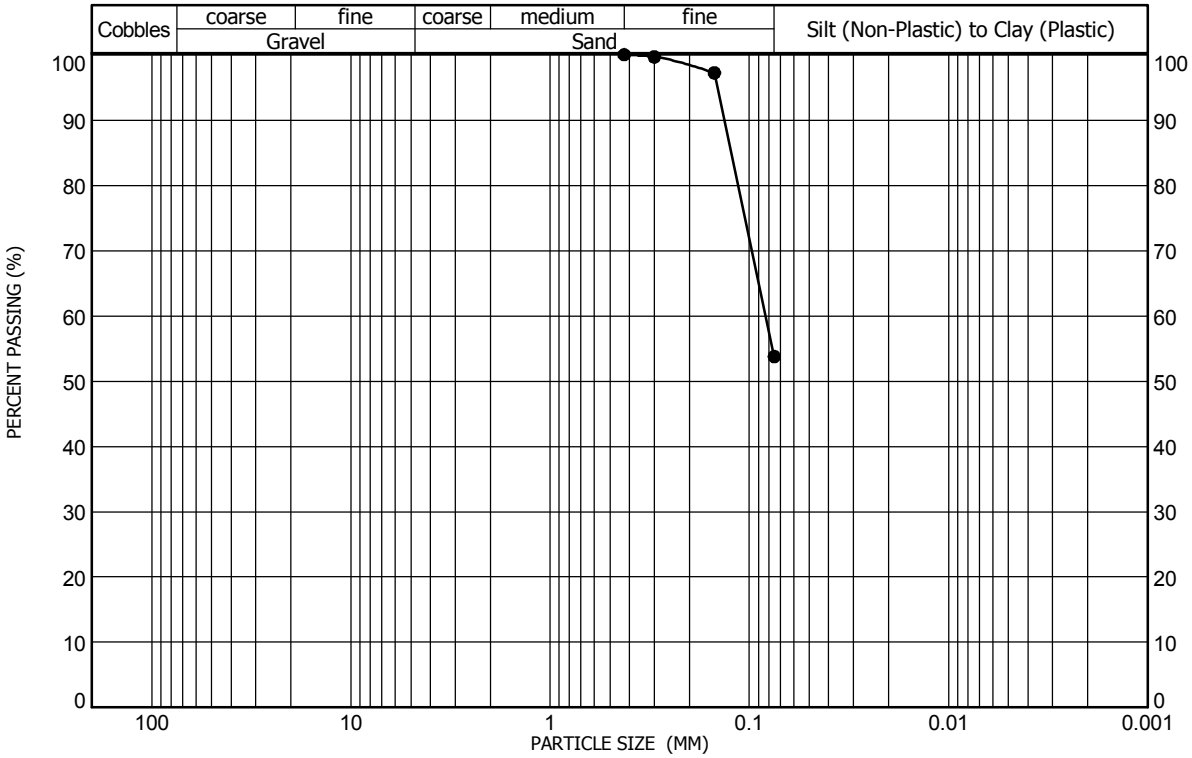
Gravel (%): 0
Sand (%): 1
Clay/Silt (%): 99

Liquid Limit: 66
Plasticity Index: 46

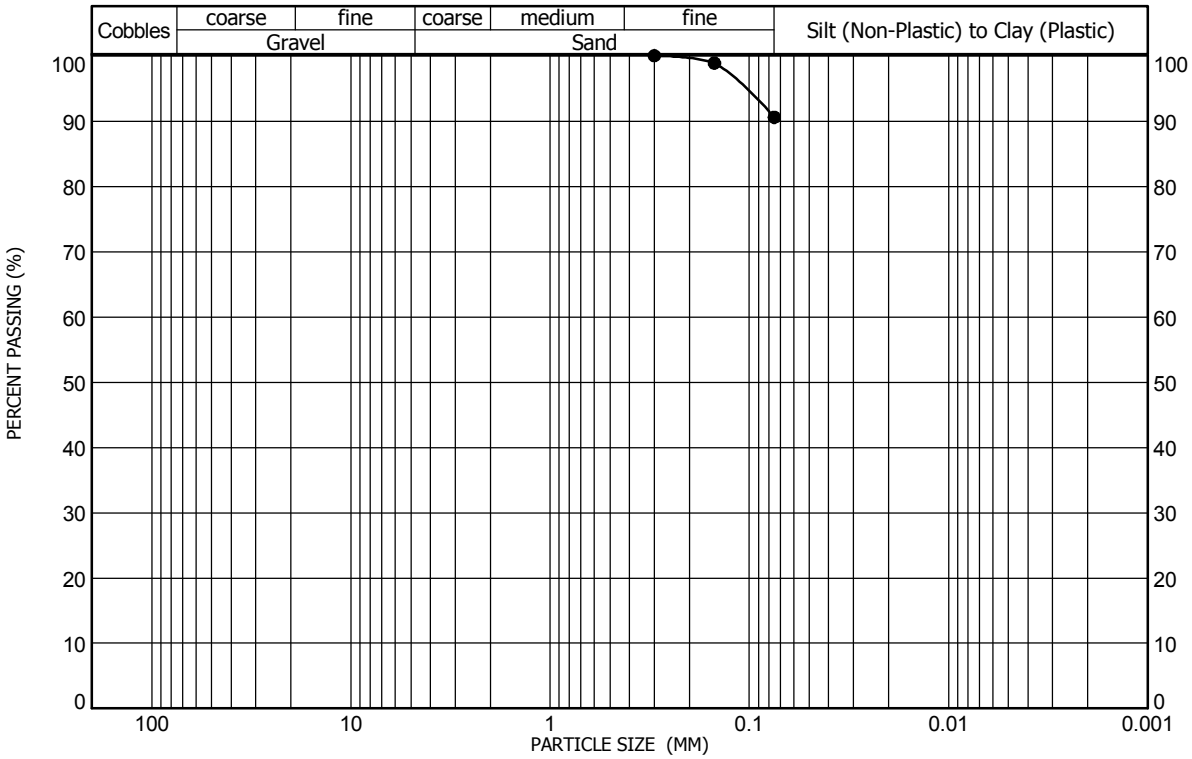
GRADATION AND ATTERBERG TEST RESULTS
FIGURE 24

PROJECT NO. 174095

A.G. Wassenaar Inc.
Geotechnical and Environmental Consultants



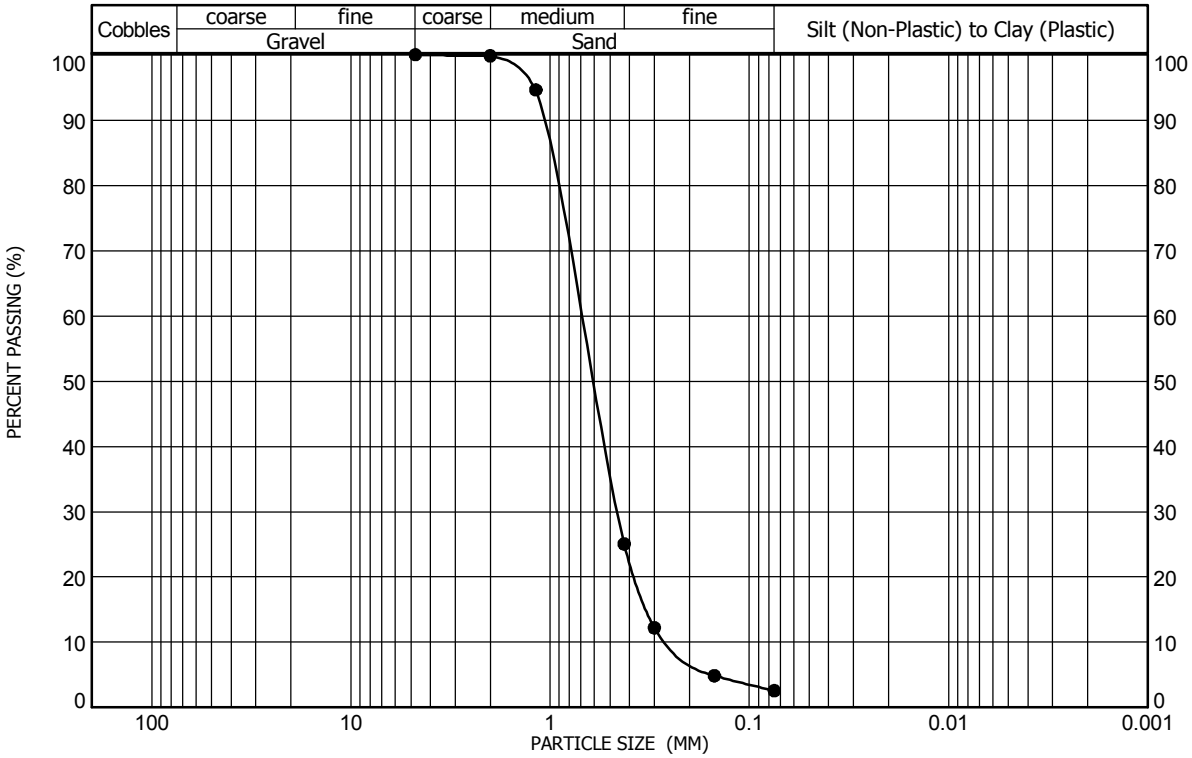
Sample Location: Test Boring No. 12 at a depth of 24 feet
Sample Description: Claystone, very sandy
Classification: A-6(3), SANDY LEAN CLAY(CL)
Gravel (%): 0
Sand (%): 46
Clay/Silt (%): 54
Liquid Limit: 30
Plasticity Index: 11



Sample Location: Test Boring No. 14 at a depth of 9 feet
Sample Description: Claystone, slightly sandy
Classification: A-6(18), LEAN CLAY(CL)
Gravel (%): 0
Sand (%): 9
Clay/Silt (%): 91
Liquid Limit: 40
Plasticity Index: 19

GRADATION AND ATTERBERG TEST RESULTS
FIGURE 25
PROJECT NO. 174095

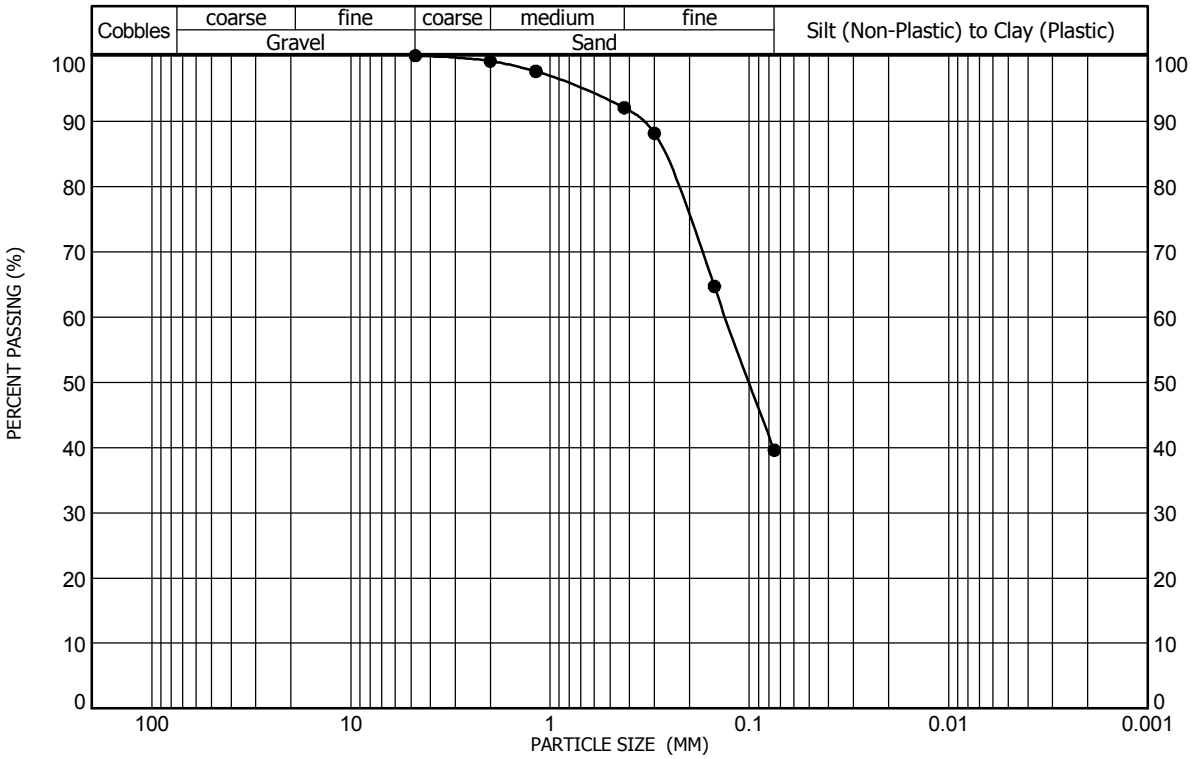
A.G. Wassenaar Inc.
Geotechnical and Environmental Consultants



Sample Location: Test Boring No. 15 at a depth of 9 feet
Sample Description: Sand, trace silty
Classification: A-1-b(0), POORLY GRADED SAND(SP)

Gravel (%): 0
Sand (%): 97
Clay/Silt (%): 3

Liquid Limit: NV
Plasticity Index: NP



Sample Location: Test Boring No. 16 at a depth of 14 feet
Sample Description: Sand, very silty
Classification: A-4(0), SILTY SAND(SM)

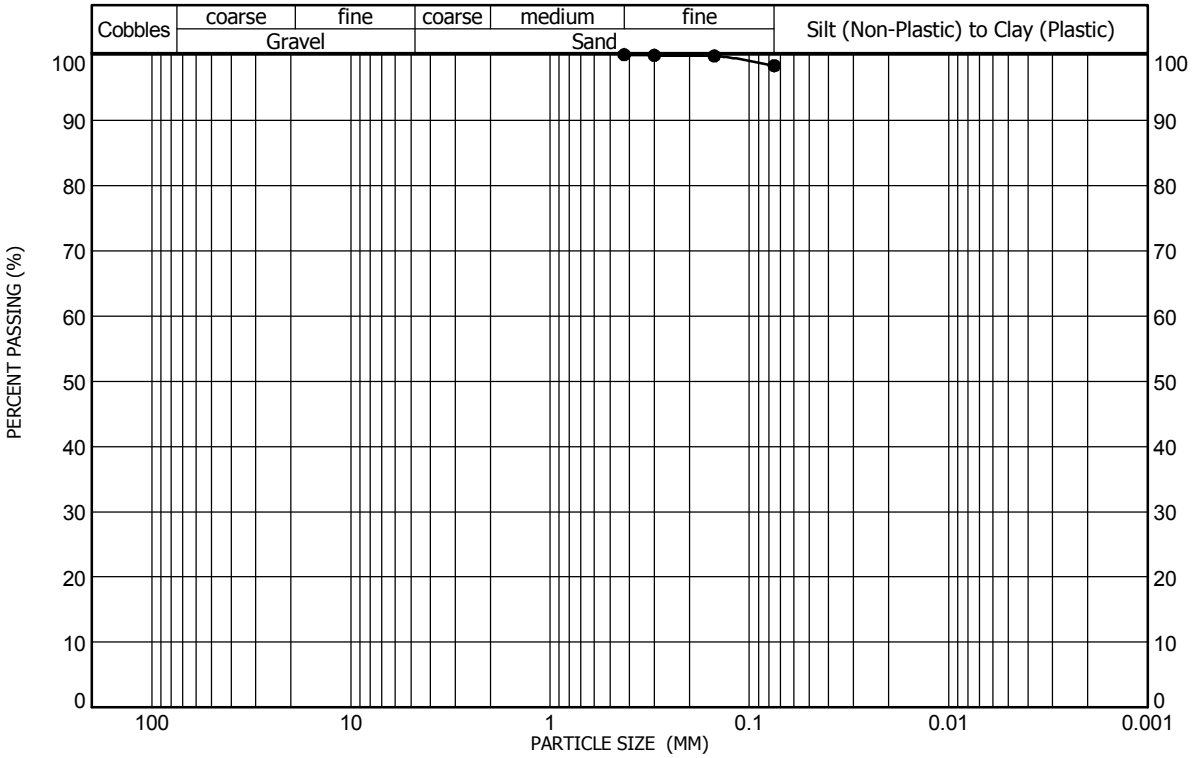
Gravel (%): 0
Sand (%): 60
Clay/Silt (%): 40

Liquid Limit: NV
Plasticity Index: NP

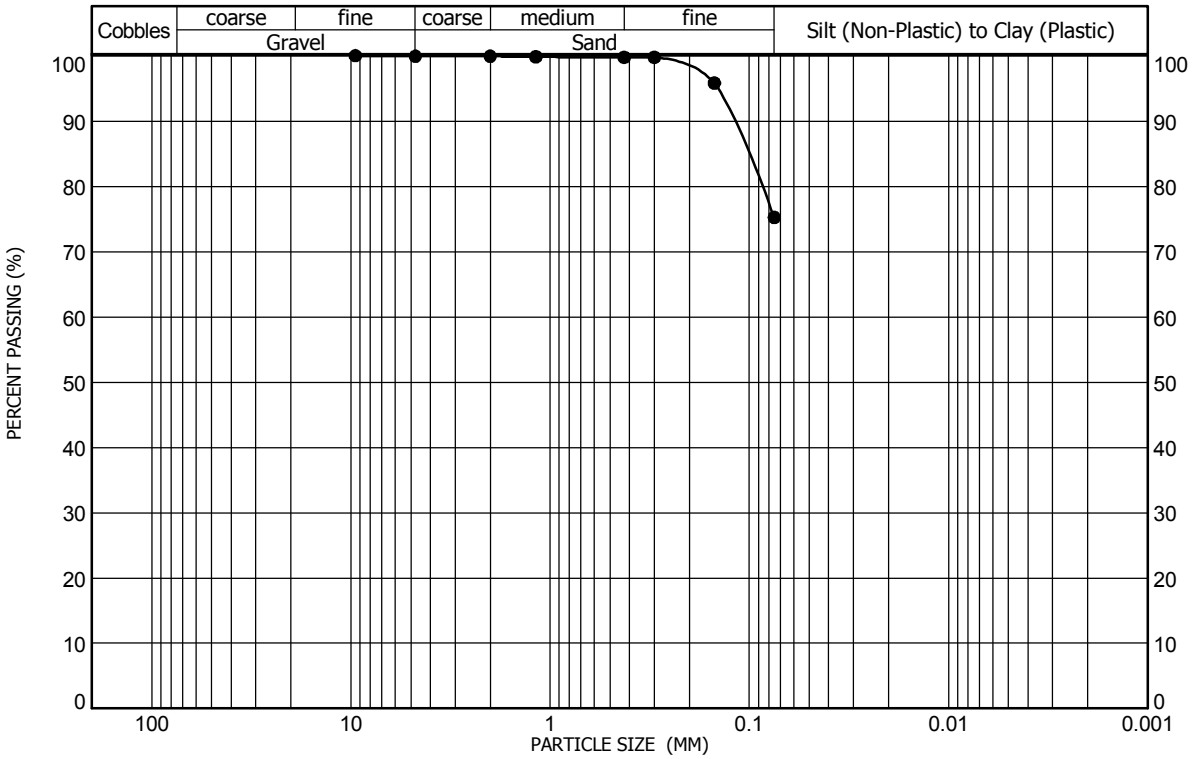
GRADATION AND ATTERBERG TEST RESULTS
FIGURE 26

PROJECT NO. 174095

A.G. Wassenaar Inc.
Geotechnical and Environmental Consultants



Sample Location: Test Boring No. 17 at a depth of 9 feet — Gravel (%): 0 — Liquid Limit: 62
Sample Description: Clay (weathered claystone), trace sand — Sand (%): 2 — Plasticity Index: 40
Classification: A-7-6(44), FAT CLAY(CH) — Clay/Silt (%): 98



Sample Location: Test Boring No. 18 at a depth of 9 feet — Gravel (%): 0 — Liquid Limit: 39
Sample Description: Claystone, sandy — Sand (%): 25 — Plasticity Index: 20
Classification: A-6(14), LEAN CLAY with SAND(CL) — Clay/Silt (%): 75

GRADATION AND ATTERBERG TEST RESULTS
FIGURE 27
PROJECT NO. 174095

A.G. Wassenaar Inc.
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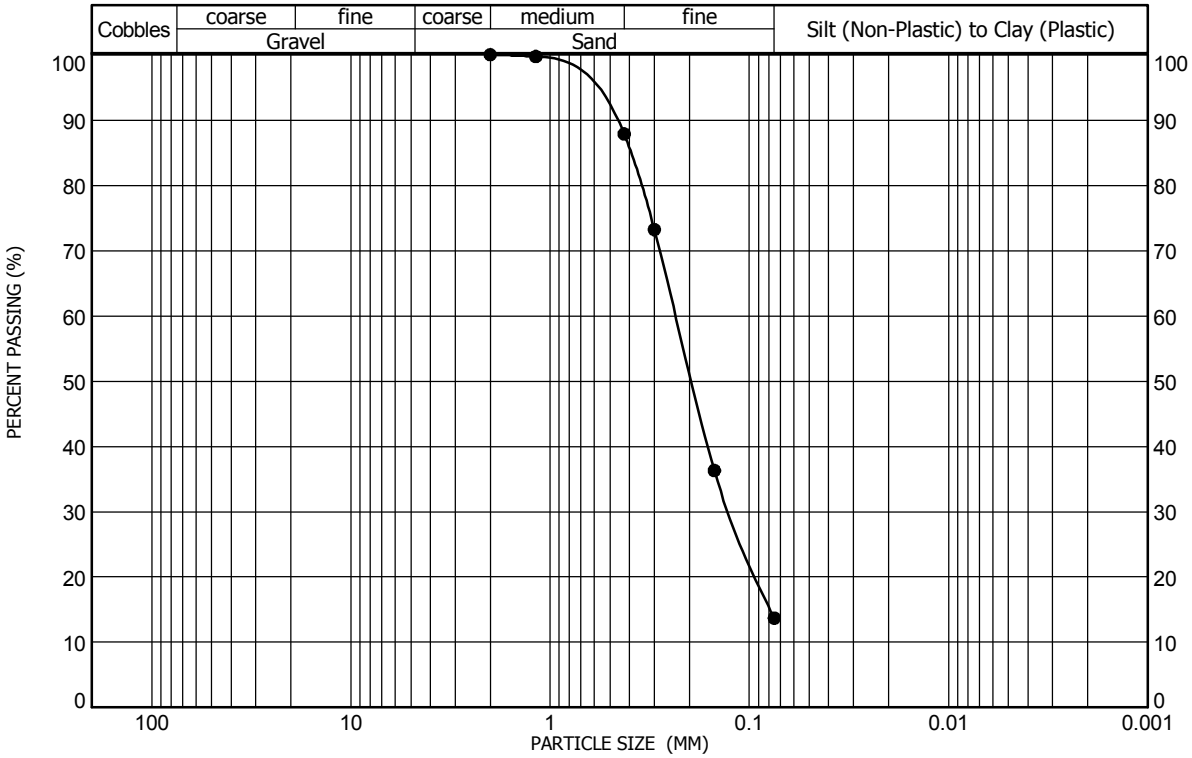
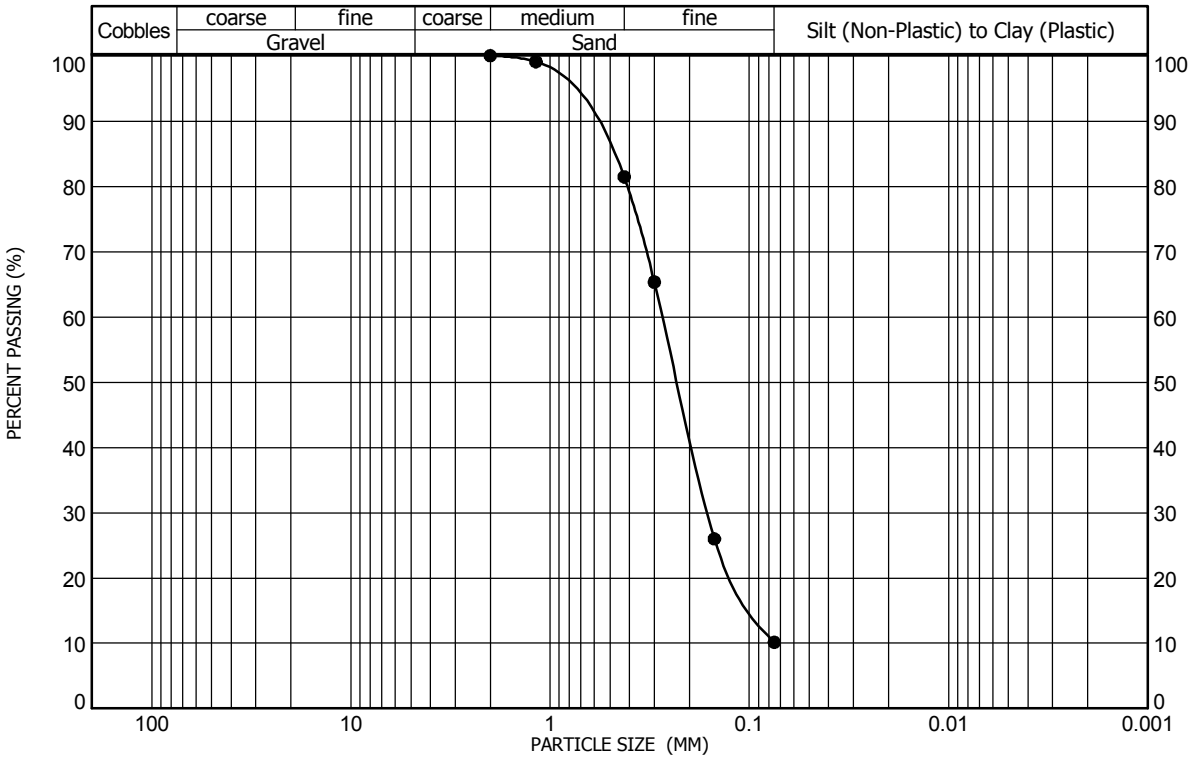


Sample Location: Test Boring No. 19 at a depth of 4 feet — Gravel (%): 0 — Liquid Limit: NV
Sample Description: Sand, slightly silty — Sand (%): 86 — Plasticity Index: NP
Classification: A-2-4(0), SILTY SAND(SM) — Clay/Silt (%): 14



Sample Location: Test Boring No. 21 at a depth of 4 feet — Gravel (%): 0 — Liquid Limit: NV
Sample Description: Sand, slightly silty — Sand (%): 90 — Plasticity Index: NP
Classification: A-3(0), POORLY GRADED SAND with SILT(SP-SM) — Clay/Silt (%): 10

GRADATION AND ATTERBERG TEST RESULTS
FIGURE 28

PROJECT NO. 174095

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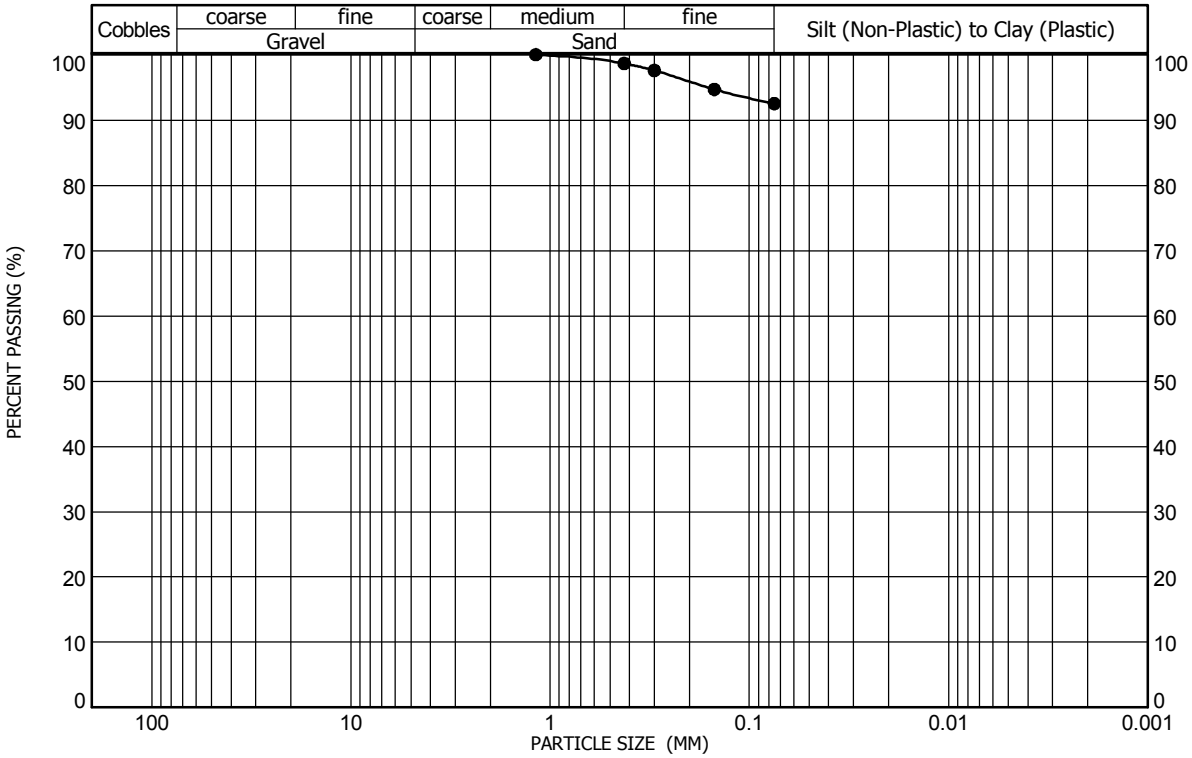
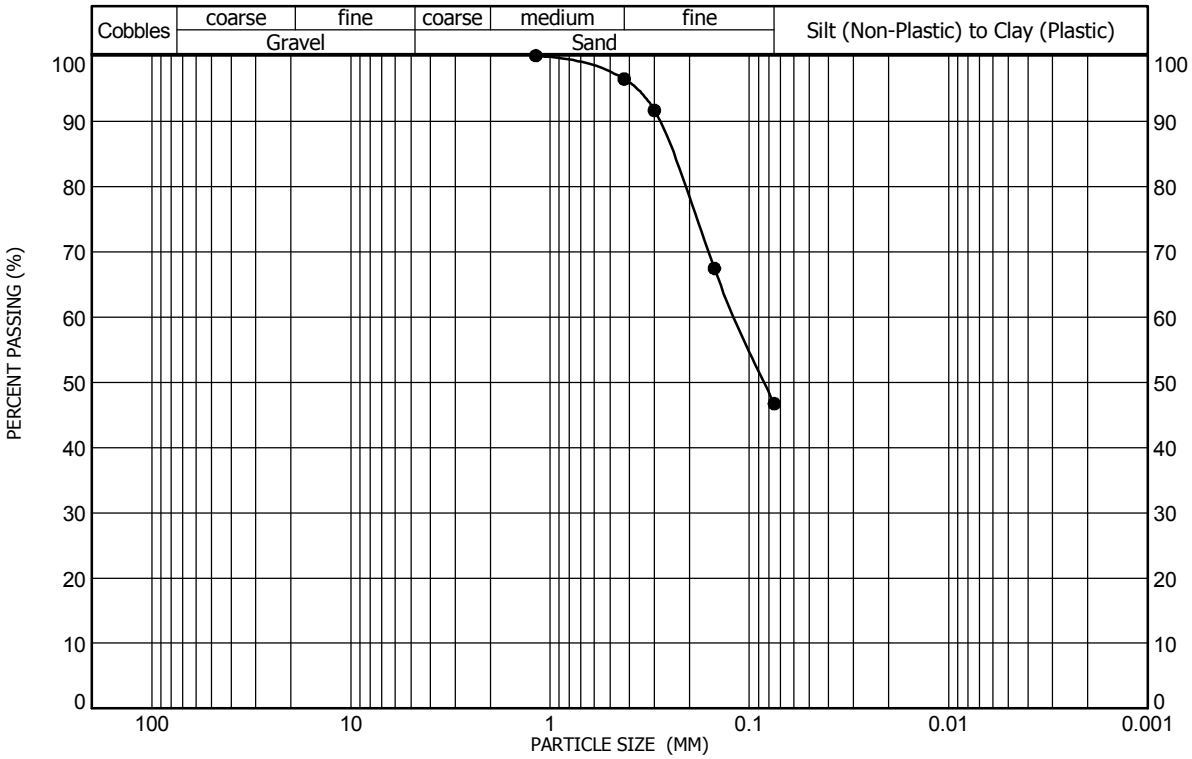


Sample Location: Test Boring No. 22 at a depth of 19 feet — Gravel (%): 0 — Liquid Limit: 61
Sample Description: Clay (weathered claystone), slightly sandy — Sand (%): 7 — Plasticity Index: 41
Classification: A-7-6(42), FAT CLAY(CH) — Clay/Silt (%): 93



Sample Location: Test Boring No. 23 at a depth of 14 feet — Gravel (%): 0 — Liquid Limit: 26
Sample Description: Sand, very clayey — Sand (%): 53 — Plasticity Index: 8
Classification: A-4(1), CLAYEY SAND(SC) — Clay/Silt (%): 47

GRADATION AND ATTERBERG TEST RESULTS
FIGURE 29
PROJECT NO. 174095

A.G. Wassenaar Inc.
Geotechnical and Environmental Consultants

TABLE I
SUMMARY OF LABORATORY TEST RESULTS
January 22, 2018

Test Boring Number	Depth (feet)	Soil Type	Natural Dry Density (pcf)	Natural Moisture (%)	Swell / Consolidation (-) (%) [1]	Swell Pressure (psf)	% Passing #200 Sieve	Atterberg Liquid Limit LL	Atterberg Plasticity Index PI	pH	Resistivity (ohm●cm)	Water Soluble Sulfates (ppm)	Chlorides (%)
1	9	Clay (weathered claystone), trace sand	97	26	3.9	4,800	98	81	59				
1	14	Claystone, slightly sandy	107	20	4.4	6,200							
2	14	Sand, silty		21			20	NV	NP				
3	4	Sand, silty								7.9	1,106	240	0.0061
3	9	Sand, slightly silty		12			8	NV	NP				
4	14	Sand, silty		14			16	NV	NP				
5	19	Sand, silty		20			19	NV	NP				
6	4	Clay (weathered claystone), sandy	122	11	9.2	16,800							
6	9	Claystone, slightly sandy	109	18	6.1	13,200	94	68	48				
6	24	Claystone, slightly sandy	107	18	3.1	5,900							
7	9	Sand, very silty		15			43	20	NP				
7	14	Clay, sandy	106	19	-0.7		79	42	23				
8	9	Claystone, slightly sandy	116	15	5.2	14,500							
8	19	Claystone, slightly sandy	107	18	6.4	12,400							
8	29	Claystone, slightly sandy	117	14	4.1	10,900							
9	9	Clay (weathered claystone), slightly sandy	104	20	2.7	6,300							
9	14	Claystone, very sandy		18			63	29	11				
10	4	Clay (weathered claystone), slightly sandy								7.8	273	2,860	0.0144
10	9	Claystone, slightly sandy	115	15	7.3	16,700							
10	19	Claystone, slightly sandy	125	12	2.8	10,000							
11	9	Claystone, slightly sandy	113	17	9.5	16,300							
11	14	Claystone, trace sand	115	14	5.5	13,800	99	66	46				

Notes:
[1] Indicates Percent Swell or Consolidation (−) when wetted under a 1,000 psf load, unless otherwise noted.

NV - indicates No Value
NP - indicates Non-Plastic

TABLE I
SUMMARY OF LABORATORY TEST RESULTS
January 22, 2018

Test Boring Number	Depth (feet)	Soil Type	Natural Dry Density (pcf)	Natural Moisture (%)	Swell / Consolidation (-) (%) [1]	Swell Pressure (psf)	% Passing #200 Sieve	Atterberg Liquid Limit LL	Atterberg Plasticity Index PI	pH	Resistivity (ohm●cm)	Water Soluble Sulfates (ppm)	Chlorides (%)
12	9	Claystone, slightly sandy	104	21	2.8	5,700							
12	14	Claystone, slightly sandy	112	18	3.7	11,100							
12	24	Claystone, very sandy		20			54	30	11				
13	19	Claystone, slightly sandy	116	16	5.3	14,500							
13	29	Claystone, slightly sandy	118	13	5.5	13,100							
14	9	Claystone, slightly sandy		19			91	40	19				
14	14	Claystone, slightly sandy	114	16	1.9	3,500							
14	24	Claystone, slightly sandy	112	15	3.7	5,500							
15	9	Sand, trace silty		15			3	NV	NP				
16	14	Sand, very silty		17			40	NV	NP				
17	9	Clay (weathered claystone), trace sand	108	20	2.5	4,200	98	62	40				
17	24	Claystone, slightly sandy	104	22	8.1	9,500							
18	4	Sand, silty								7.7	1,510	<100	0.0016
18	9	Claystone, sandy	115	15	1.6	4,900	75	39	20				
18	19	Claystone, slightly sandy	109	21	3.9	8,800							
19	4	Sand, slightly silty		17			14	NV	NP				
20	14	Claystone, slightly sandy								7.6	410	2,840	0.0089
20	24	Claystone, slightly sandy	123	13	2.7	7,700							
20	34	Claystone, slightly sandy	118	15	4.1	13,500							
21	4	Sand, slightly silty		18			10	NV	NP				
22	19	Clay (weathered claystone), slightly sandy		23			93	61	41				
23	14	Sand, very clayey		17			47	26	8				

Notes:
[1] Indicates Percent Swell or Consolidation (−) when wetted under a 1,000 psf load, unless otherwise noted.

NV - indicates No Value
NP - indicates Non-Plastic

APPENDIX C
SPECIFICATIONS FOR PLACEMENT OF FILL

APPENDIX C
SPECIFICATIONS FOR PLACEMENT OF FILL

General

AGW, as the Client's representative, should observe fill placement and conduct tests to determine if the materials placed, methods of placement, and compaction are in reasonable conformance with these specifications. Specifications presented in this Appendix are general in nature. They should be used for construction except where specifically superseded by those presented in the attendant geotechnical study.

For the purpose of this specification, structural areas include those areas that will support constructed appurtenances (e.g., foundations, slabs, flatwork, pavements, etc.) and fill embankments or slopes that support significant fills or constructed appurtenances. Structural areas will be as defined by AGW.

Fill Material

Fill material should consist of on or off-site soils which are relatively free of vegetable matter and rubble. Off-site materials should be evaluated by AGW prior to importation. No organic, frozen, perishable, rock greater than 6 inches, or other unsuitable material should be placed in the fill. For the purpose of this specification, cohesive soil is defined as a mixture of clay, sand, and silt with more than 35% passing a U. S. Standard #200 sieve and a Plasticity Index of at least 11. These materials will classify as an A-6 or A-7 by the AASHTO Classification system. Granular soils are all materials which do not classify as cohesive.

Preparation of Fill Subgrade

Vegetation, organic topsoil, and any other deleterious materials should be removed from the fill area. The area to be filled should then be scarified, moistened or dried as necessary, and compacted to the moisture content and compaction level specified below prior to placement of subsequent layers of fill.

Placement of Fill Material

The materials should be delivered to the fill in a manner which will permit a well and uniformly compacted fill. Before compacting, the fill material should be properly broken down, mixed, and spread in approximately horizontal layers not greater than 8 inches in loose thickness.

Moisture Control

The material must contain uniformly distributed moisture for proper compaction. The Contractor will be required to add moisture to the materials if, in the opinion of AGW, sufficient and uniform moisture is not present in the fill. If the fill materials are too wet for proper compaction, aerating and/or mixing with drier materials will be required.

Moisture content should be controlled as a percentage deviation from optimum. Optimum moisture content is defined as the moisture content corresponding to the maximum density of a laboratory

compacted sample performed according to ASTM D698 for cohesive soils or ASTM D1557 for granular soils. The moisture content specifications for the various areas are as follows:

		Cohesive Soils	Granular Soils
1.	Beneath Structural Areas:	0 to +4%	−2 to +2%
2.	Beneath Non-Structural Areas:	−3 to +3%	−3 to +3%
3.	Moisture Treated Fill:	0 to +4%	−2 to +2%

Compaction

When the moisture content and conditions of each layer spread are satisfactory, the fill should be compacted. Laboratory moisture-density tests should be performed on typical fill materials to determine the maximum density. Field density tests must then be made to determine fill compaction. The compaction standard to be utilized in determining the maximum density is ASTM D698 for cohesive soils or ASTM D1557 for granular soils. The following compaction specifications should be followed for each area:

1.	Beneath Structural Areas:	95% of Maximum Dry Density
2.	Beneath Non-Structural Areas:	90% of Maximum Dry Density
3.	Moisture Treated Fill:	95% of Maximum Dry Density

If the fill contains less than 10% passing the No. 200 sieve, it may be necessary to control compaction based on relative density (ASTM D2049). If this is the case, then compaction around the structures and beneath walkway or other slabs should be to at least 70% relative density, and compaction beneath foundations and vehicle supporting should be to at least 80% relative density.

Deep Fills

In areas where fill depths exceed 20 feet beneath structural areas, additional compaction considerations will be required to reduce fill settlement. Fill placed within 20 feet of final overlot grade should be compacted as required above. Deeper fills should be compacted to 100% of maximum dry density at a moisture content of ±2% of optimum moisture content. Relative density of at least 85% will be required when necessary.

Responsibility

Any mention of essentially full-time testing and observation does not mean AGW will accept responsibility for future fill performance. AGW shall not be responsible for constant or exhaustive inspection of the work, the means and methods of construction or the safety procedures employed by Client's contractor. Performance of construction observation services does not constitute a warranty or guarantee of any type, since even with diligent observation, some construction defects, deficiencies or omissions in the Contractor's work may occur undetected. Client shall hold its contractor solely responsible for the quality and completion of the project, including construction in accordance with the construction documents. Any duty hereunder is for the sole benefit of the Client and not for any third party, including the contractor or any subcontractor.

Traffic Impact Study
Fulton Ranch

December 2, 2019

Prepared for:

Sun ACQ LLC

Rollins Consult LLC

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1 INTRODUCTION

This report documents the results of a study to evaluate the potential traffic impacts of the proposed Fulton Ranch project in the City of Fort Lupton, Colorado. Rollins Consult LLC conducted the study in support of the development application for the proposed project.

PROJECT DESCRIPTION

The Fulton Ranch project is located in the City of Fort Lupton, west of Weld County Road (CR) 31 roughly between 14th Street and the Fulton Highline Canal. The project site is comprised of approximately 127 acres. The site is surrounded by primarily undeveloped land to the north, east and west. South of the site is undeveloped land that is proposed as the Cottonwood Greens residential project. Figure 1 illustrates the project location and study area.

The project site is depicted on Figure 2. The site was designed with numerous roadways which allow for distribution of pedestrians, bicycles and vehicles. The internal roadways were designed as a basic and curvilinear grid. There are two pedestrian and bicycle trail connections proposed to the future Main Fulton Ditch Trail that follows the alignment of the Fulton Highline Canal. One exclusive pedestrian/bicycle connection is proposed to 14th Street.

The project proposes the following land uses and transportation elements:

- There are 466 manufactured homes proposed.
- 30 homes would be located north of 14th Street.
- Access to public roadways would be provided at two connections. One access location is proposed from Northrup Avenue and one from 14th Street.
- The internal roadway system has been designed to accommodate the project traffic.
- There are two connections from the project to the future Main Fulton Ditch Trail.
- One central open space/trail connection is provided in the center of the project. This provides a connection from 14th Street to the Main Fulton Ditch Trail.

Figure 1 – Project Location

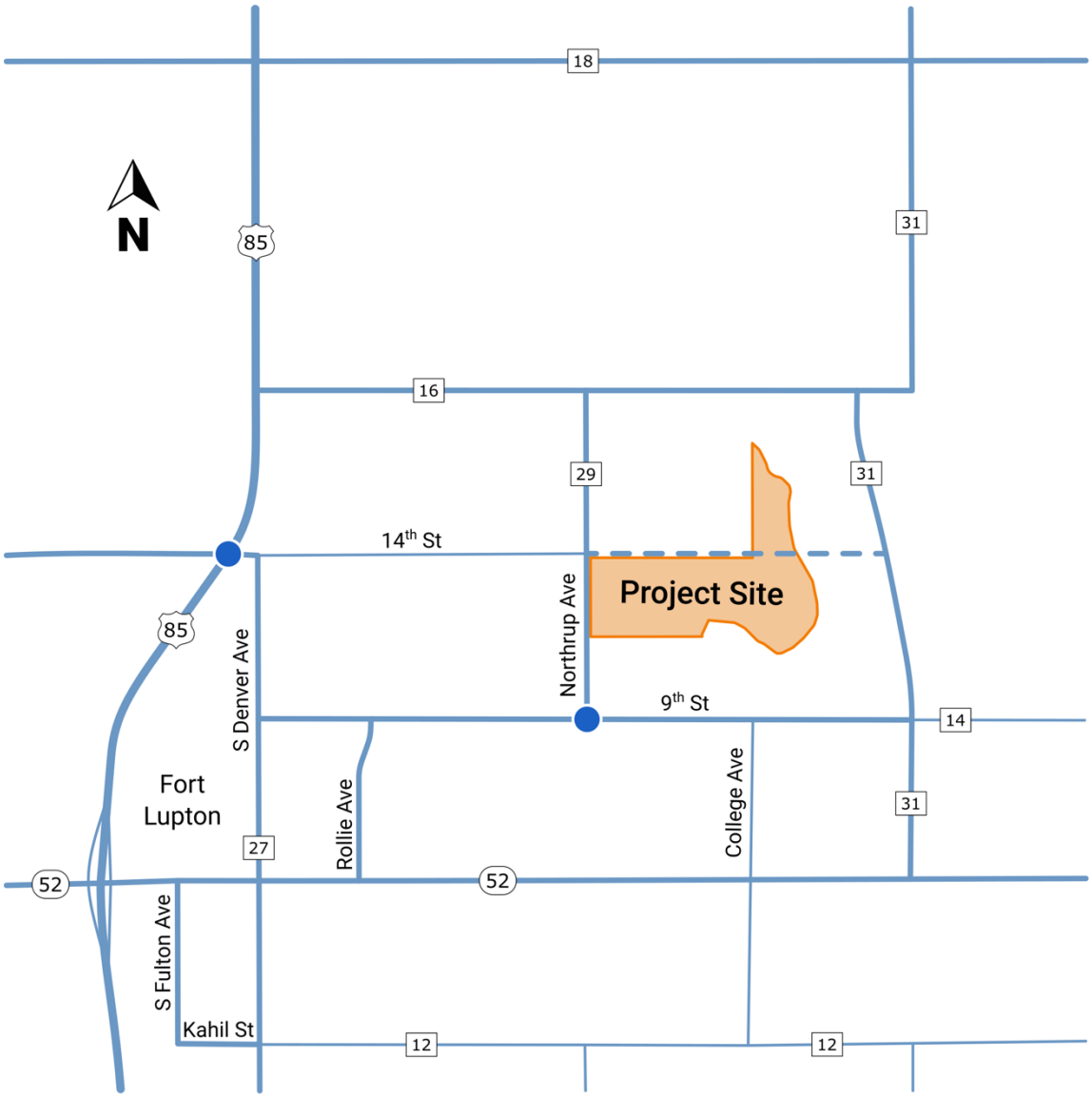
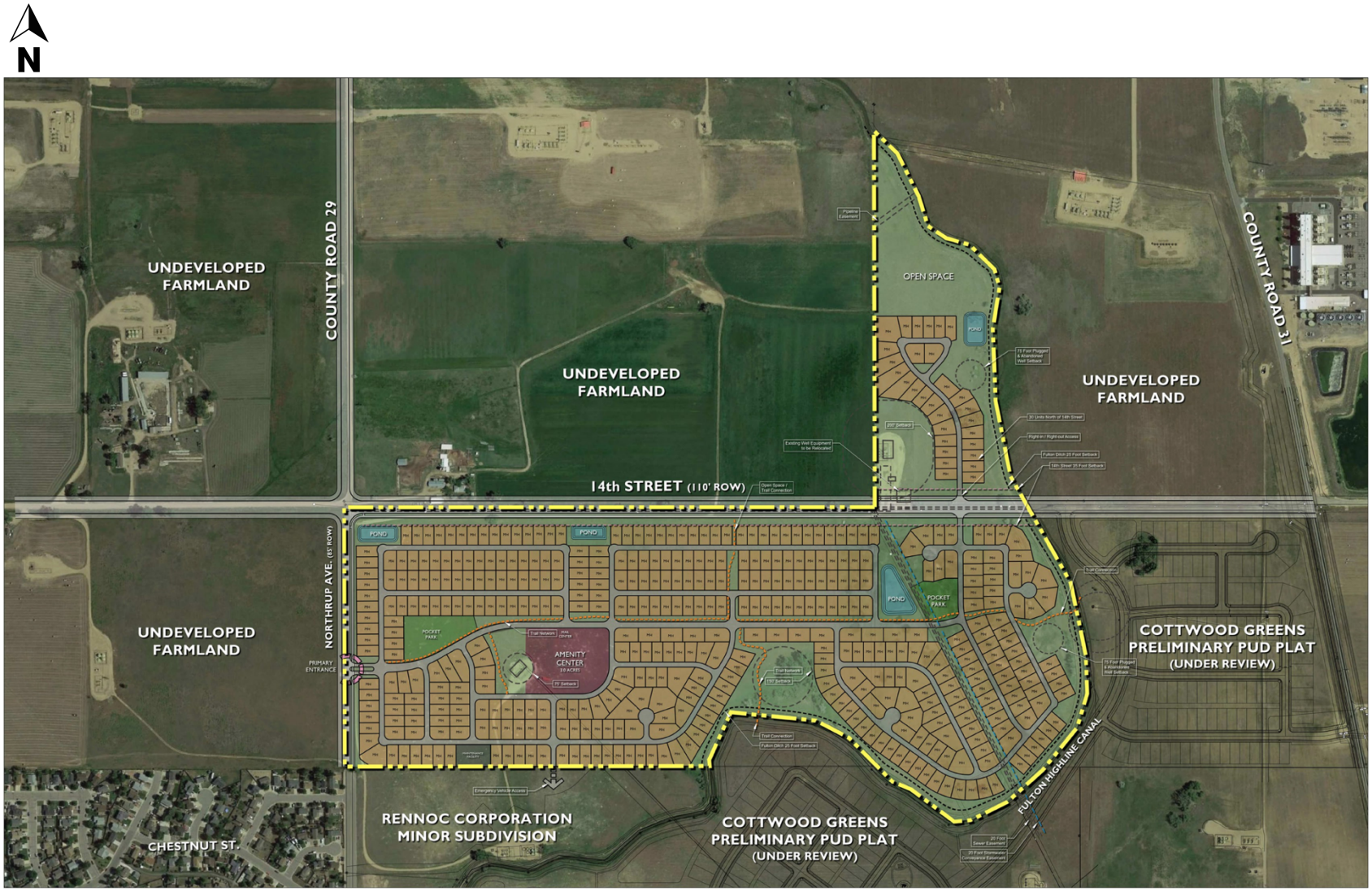


Figure 2 - Project Site Plan



STUDY SCOPE

The scope of work for this study was developed in conjunction with the City of Fort Lupton's Public Works department. The base assumptions, technical methodologies, and geographic coverage of the study were all identified as part of the study approach. The study analyzes the potential project-generated traffic impacts on the adjacent street system.

The study evaluates the potential changes to the transportation system after completion of the proposed Fulton Ranch residential project for two future horizon years. The analysis of future year traffic forecasts is based on projected conditions in year 2024 (short range conditions) and 2040 (long range future conditions) both with and without the addition of the project traffic. The following transportation scenarios were analyzed for the AM and PM peak hours:

- **Existing Conditions** – The analysis of existing traffic conditions provides a basis for the remainder of the study. The existing transportation system is described. Peak hour intersection operations are evaluated.
- **Project Travel Demand** – The traffic generated by the Project will be estimated, distributed, and assigned to the transportation network.
- **2024 and 2040 Background Conditions** – Future traffic conditions are projected without the proposed Project for the project buildout year 2024 and the long range future year 2040. The traffic volumes on the roadway system will be factored and analyzed to reflect conditions for 2024 and 2040. This analysis will include the addition of traffic from other potential projects.
- **Total Future Conditions** – The traffic associated with the project will be projected and added to the Background traffic. The intersection operations will be determined.

The study examined two existing and three future intersections within the study area. These were identified by the City of Fort Lupton for inclusion in the study. The study intersections are:

1. US 85 & 14th Street/CR 14 ½
2. Northrup Avenue & 9th Street
3. Future Northrup Avenue & 14th Street
4. Future Northrup Avenue & proposed Access Street A
5. Future Access Street B & 14th Street

2 EXISTING CONDITIONS

The transportation system has numerous elements that are described in this chapter. The roadway network identified for this study is described and traffic volume information presented for the study intersections.

ADJACENT LANDUSE

The Project site is located west of CR 31 and north of the Fulton Highline Canal. The site is currently undeveloped land and is located to the east of downtown Fort Lupton. It is surrounded by undeveloped land, rural residential and industrial to the north and east. South of the site is the proposed Cottonwood Greens residential development. West of the project site is undeveloped land.

TRANSPORTATION NETWORK

The primary roadways that serve the Project site are described below. Roadway designations were provided in the *Fort Lupton Transportation Plan,* June 2018.

Roadway Network

US Highway 85 – This is a four-lane state highway that provides regional connections from Denver north to the Wyoming boarder. In the study area, US 85 is a four-lane north-south roadway with paved shoulders. The speed limit is posted at 55 mph. At the signalized intersection with 14th street there are turn/auxiliary lanes provided. The Colorado Department of Transportation (CDOT) completed, the *US 85 Planning and Environmental linkages (PEL) Study,* in April 2017. This study was performed to look at the overall operations and vision of US 85 between Interstate 76 and Weld County Road 100. The preferred recommendation for this intersection was to be a junior interchange to be relocated to the west.

14th Street is a east-west two-lane roadway. The posted speed varies between 25 and 30 mph. 14th is paved between US 85 and the eastern most aluminum business (approximately 6/10 of a mile east of US 85). East of that, it becomes a gravel road.

9th Street is an east-west two-lane roadway. Portions of 9th have been improved to include sidewalks. There are narrow shoulders. Near Northrup Avenue there is no posted speed limit. West of Northrup the speed is 20 mph near the Twonbly Elementary School.

Northrup Avenue is currently a two-lane north-south roadway. It exists north and south of 9th Street. To the south of 9th Street, Northrup has been constructed to provide access to future residential however, it currently does not connect to any existing residential areas south of 9th. North of 9th it provides access to existing residential and a church. It terminates approximately 1,300 feet north of 9th.

EXISTING TRAFFIC CONDITIONS

Existing intersection operations were evaluated for both the morning and evening peak hours. Intersection count data and daily counts were collected on Tuesday, November 12, 2019. **Appendix A** includes the intersection turning movement count data. The resulting peak hour turning movements are provided on Figure 3. The current lane configurations of the study intersections are shown on Figure 4.

Intersection Level of Service Analysis Methodologies

Transportation professionals evaluate intersections to determine how they are currently operating and will operate in the future. The methods employed can be found in the Transportation Research Board's, 6th Edition, 2016 *Highway Capacity Manual* (HCM). Level of service (LOS) is based on a "graded" system from LOS A, very little to no delays, to LOS F which represents excessive delays and congestion.

The City of Fort Lupton has established a Level of Service criteria within their *Standards and Specifications for the Design and Construction of Public Improvements,* 2015. Chapter 8 – Traffic Control states: "Level of Service "C" shall be the design objective for all movements, and under no circumstances will less than level of Service "D" be accepted for site and non-site traffic, including existing traffic at Build-out of the study area." Definitions for level of service are provided for both unsignalized (existing operations) and signalized conditions.

Unsignalized Intersection

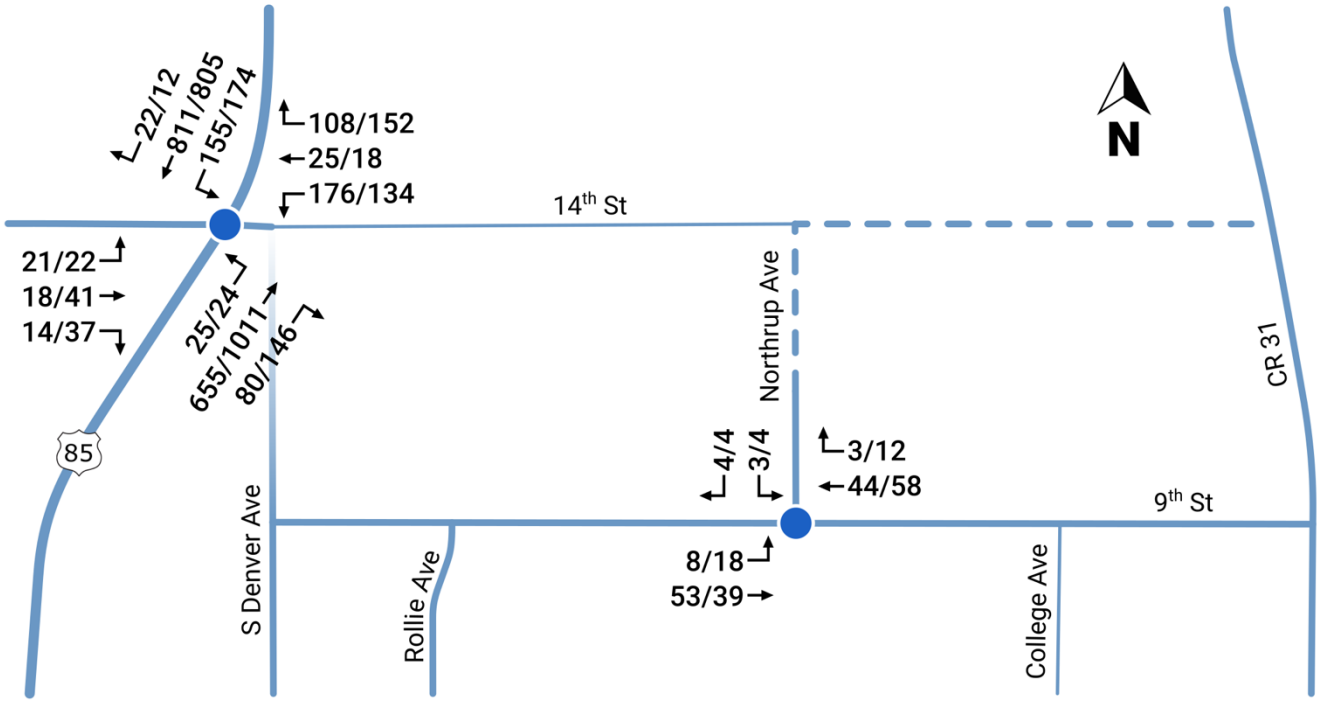
Peak hour levels of motor vehicle delay at unsignalized intersections were estimated using the method from Chapter 17 of the 2016 *Highway Capacity Manual*. The delays for the entire intersection and for each of the constrained movements are reported. Table 1 summarizes the relationship between average control delay per vehicle and LOS for unsignalized intersections.

Table 1 Unsignalized Intersection Level of Service Definitions

Level of Service	Average Control Delay Per Vehicle (Seconds)	Description
A	≤10.0	No delay for stop-controlled approaches.
B	10.0 and ≤15.0	Operations with minor delay.
C	>15.0 and ≤25.0	Operations with moderate delays.
D	>25.0 and ≤35.0	Operations with increasingly unacceptable delays.
E	>35.0 and ≤50.0	Operations with high delays, and long queues.
F	>50.0	Operations with extreme congestion, and with very high delays and long queues unacceptable to most drivers.

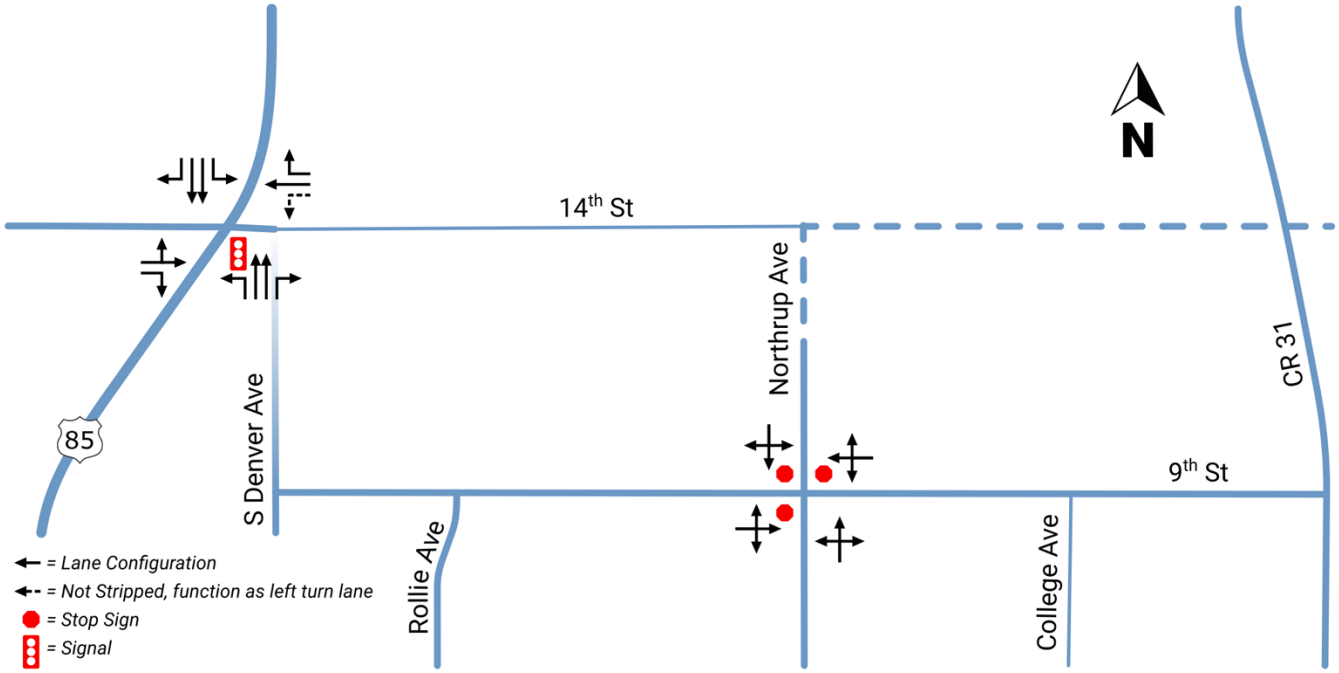
Source: Transportation Research Board, Highway Capacity Manual, 2016.

Figure 3 – Existing Peak Hour Volumes



AM/PM Peak Hour Turning Movements

Figure 4 – Existing Lane Configurations



Signalized Intersections

Peak hour levels of motor vehicle delay at signalized intersections were estimated using methods provided in Transportation Research Board's 2010 Highway Capacity Manual. This operations analysis method uses various intersection characteristics (such as traffic volumes, lane geometry, and signal phasing) to estimate the average control delay experienced by motorists traveling through an intersection. Control delay incorporates delay associated with deceleration, acceleration, stopping, and moving up in the queue Table 2 summarizes the relationship between average control delay per vehicle and LOS for signalized intersections.

Table 2 Signalized Intersection Level of Service Definitions

Level of Service	Average Control Delay Per Vehicle (Seconds)	Description
A	≤10.0	Free Flow or Insignificant Delays: Operations with very low delay, when signal progression is extremely favorable and most vehicles arrive during the green light phase. Most vehicles do not stop at all.
B	>10.0 and ≤20.0	Stable Operation or Minimal Delays: Generally, occurs with good signal progression and/or short cycle lengths. More vehicles stop than with LOS A, causing higher levels of average delay. An occasional approach phase is fully utilized.
C	>20.0 and ≤35.0	Stable Operation or Acceptable Delays: Higher delays resulting from fair signal progression and/or longer cycle lengths. Drivers begin having to wait through more than one red light. Most drivers feel somewhat restricted.
D	>35.0 and ≤55.0	Approaching Unstable or Tolerable Delays: Influence of congestion becomes more noticeable. Longer delays result from unfavorable signal progression, long cycle lengths, or high volume to capacity ratios. Many vehicles stop. Drivers may have to wait through more than one red light. Queues may develop, but dissipate rapidly, without excessive delays.
E	>55.0 and ≤80.0	Unstable Operation or Significant Delays: Considered to be the limit of acceptable delay. High delays indicate poor signal progression, long cycle lengths and high volume to capacity ratios. Individual cycle failures are frequent occurrences. Vehicles may wait through several signal cycles. Long queues form upstream from intersection.
F	>80.0	Forced Flow or Excessive Delays: Occurs with oversaturation when flows exceed the intersection capacity. Represents jammed conditions. Many cycle failures. Queues may block upstream intersections.

Source: Transportation Research Board, Highway Capacity Manual, 2016.

Existing Intersection Conditions

Using the HCM methodology, the weekday AM and PM peak hour intersection operations were determined. The results are provided in Table 3. As indicated in the table, both of the study intersections are currently operating at acceptable levels of service. The detailed analysis worksheets are provided in Appendix B.

Table 3 Existing Weekday Peak-Hour Intersection Level of Service

#	Intersection	Overall Movement	AM Peak		PM Peak	
			Delay	LOS	Delay	LOS
1	US 85 & 14th Street Signal	Overall	20.4	C	25.5	C
		EB	15.2	B	15.6	B
		WB	18.6	B	18.7	B
		NB	20.9	C	30.5	C
		SB	20.8	C	22.5	C
2	Northrup Ave & 9th St All-Way Stop Control	Overall	7.2	A	7.3	A
		EB	7.3	A	7.4	A
		WB	7.2	A	7.3	A
		NB	0	A	0	A
		SB	7	A	7.1	A

Notes:
1. LOS calculations performed using Synchro which is based on the Transportation Research Board HCM 2016.
2. Average vehicle delay (in seconds per vehicle) is reported for both overall intersection and each constrained /STOP-controlled movement or approach. Movements with LOS greater than or equal to E are also provided.

3 PROJECT TRAVEL DEMAND

This chapter provides an overview of the project and a description of the travel demand methodology to estimate vehicle trip generation, distribution, and assignment of project-generated traffic along area roadways and intersections.

PROJECT CHARACTERISTICS

The proposed Fulton Ranch project is a residential project located west of CR 31 and north of the Fulton Highline Canal. The project site plan was depicted on Figure 2. The project is planned on approximately 127 acres. Vehicular access to the project will be from: Northrup Avenue (one location), 14th Street (one location). The project will be developed with 466 manufactured homes. The transportation characteristics of the site includes a classic and curvilinear grid roadway layout, a pedestrian/bicycle trail that allows for future connections to the Main Fulton Ditch Trail and 14th Street.

PROJECT TRIP GENERATION

The trip generation characteristics of the project were estimated using data from the Institute of Transportation Engineers (ITE) *Trip Generation Manual,* 10th Edition. Table 4 provides the trip generation estimated for the project. As indicated in the table, the full buildout of the project is estimated to generate approximately 2,330 daily trips, 120 morning and 215 evening peak hour trips.

PROJECT TRIP DISTRIBUTION | ASSIGNMENT

The distribution of the project traffic onto the roadway system was based on: the existing peak hour traffic counts, the roadway network, the adjacent land use, the location of the project within the region and the City of Fort Lupton, traffic forecasts from the *Transportation Plan,* and input from the City engineer. The project trip distribution is depicted on Figure 5.

The project assigned peak hour traffic volumes for are shown on Figure 6. The City of Fort Lupton, City Engineer has expressed concerns with the proposed Access B onto 14th Street and has advised that this location may become a right-in/right-out when 14th Street becomes four lanes. This study was done with a full access onto 14th Street. The impacts of this will be discussed in the conclusions.

Table 4 – Estimated Trip Generation

ITE Land Use Code & Rates		Project	Project Trip Generation						
Land Use	Land Use Code	Dwelling Units	Daily	AM			PM		
				IN	Out	Total	IN	Out	Total
Manufactured Housing	240	466	2,330	38	84	121	133	81	214
Based on ITE Trip Generation 10th Edition									

Figure 5 – Trip Distribution

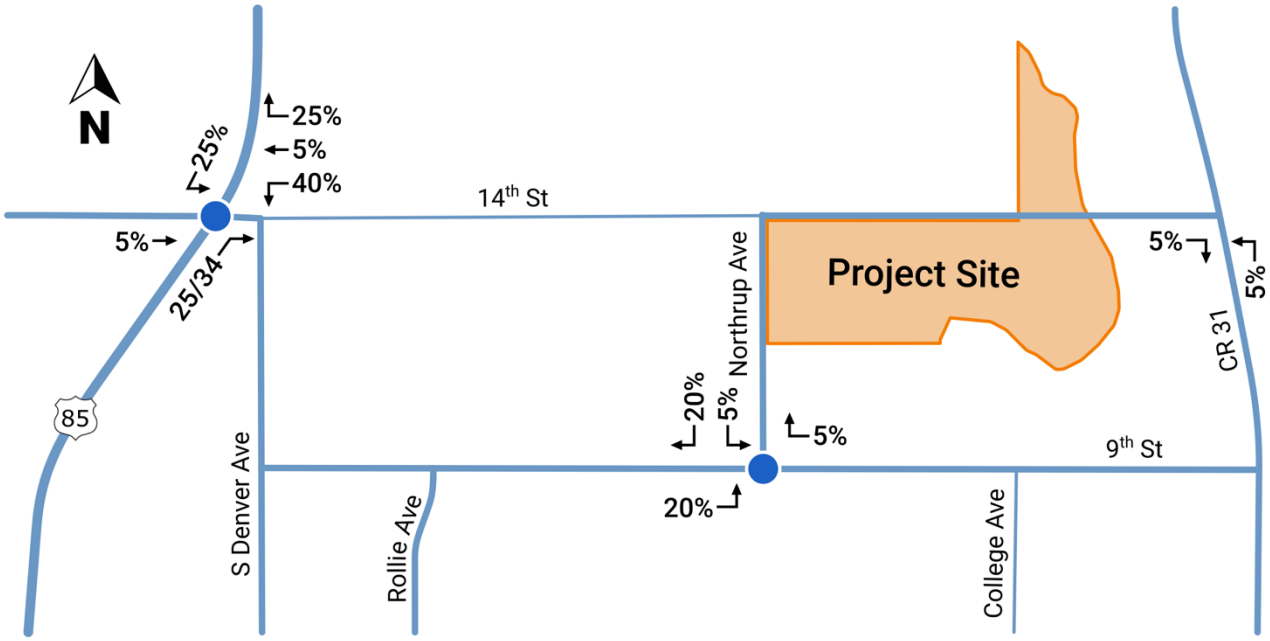
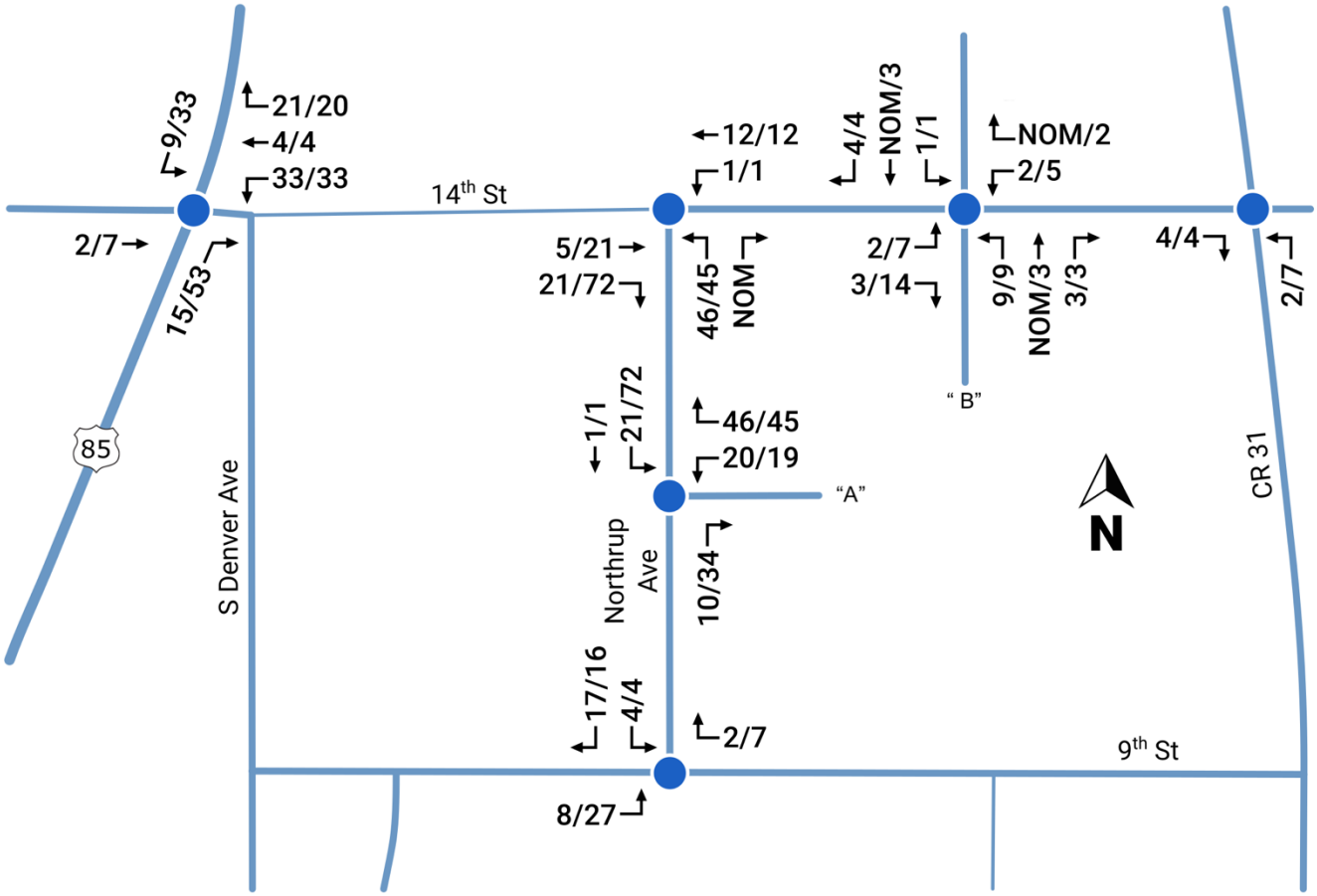


Figure 6 – Project Traffic



AM/PM Peak Hour Turning Movements

4 FUTURE TRAFFIC PROJECTIONS

Estimates of future traffic conditions both with and without the proposed Project were necessary to evaluate the potential impact of the Project on the local street system. The background base traffic scenario represents future traffic conditions without the addition of the Project, while the total scenario represents future traffic conditions with completion of the proposed Project. Two future years were analyzed, Year 2024 and Year 2040. The development of these future traffic scenarios is described in this chapter.

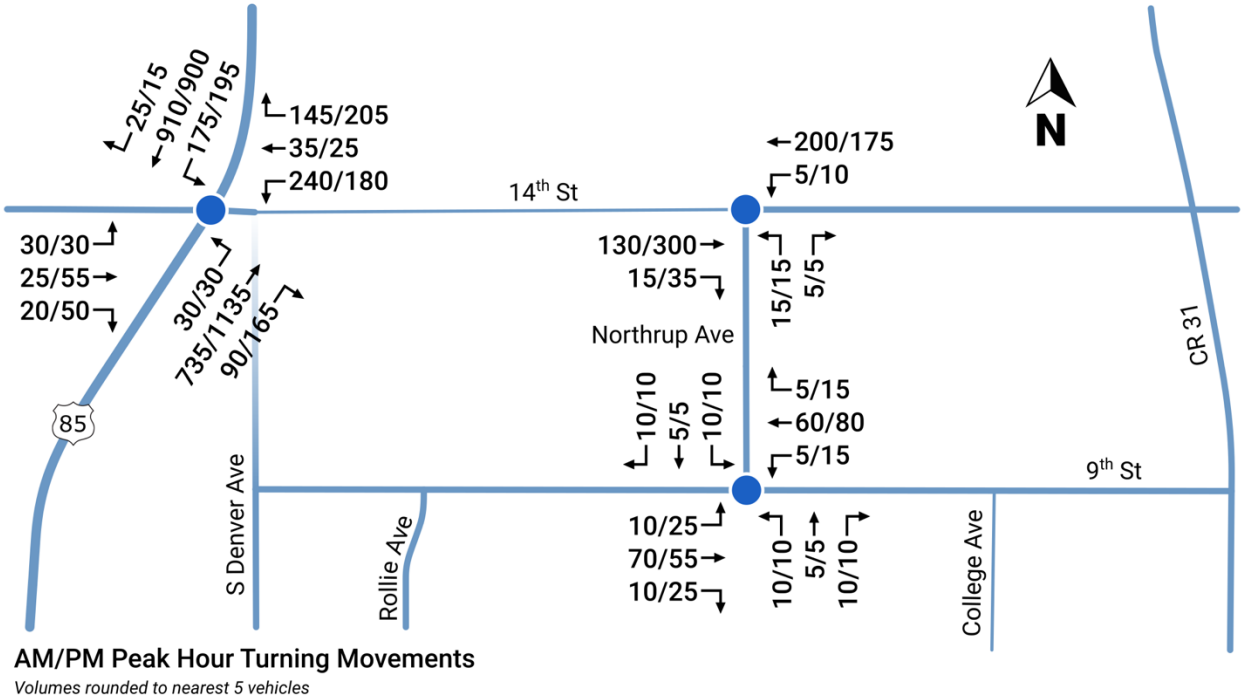
BACKGROUND 2024 TRAFFIC PROJECTIONS

The background traffic projections reflect growth in traffic from two primary sources: ambient growth in the existing traffic volumes due to regional growth both in and outside of the study area, and traffic generated by potential projects. Additionally, 14th Street will be constructed to CR 31 by 2024. Each of these elements are described below.

- The **ambient growth** in traffic was determined with information from the *Fort Lupton Transportation Plan,* June 2018. Based on these projections an annual compounded growth rate of 6.3% per year was established for the short range for each roadway except US 85. It should be noted that the future projections were adjusted to account for traffic from the proposed project. This eliminates double counting the Project traffic which is already included in the future projections in the *Transportation Plan*. The growth rate for US 85 was 2.3% per year. This value will be applied to the existing counts to determine the Year 2024 volumes due to regional growth.
- Traffic associated with the proposed Cottonwood Greens project was included in the background traffic. The *Cottonwood Greens, Traffic Impact Study,* October 7, 2019 was used in this effort.
- Traffic on Northrup Avenue, south of 9th Street was assumed to be similar to the existing traffic north of 9th.
- 14th Street is expected to be built as a 2-lane roadway to CR 31. Northrup Avenue will be completed north to 14th Street.

The resulting Background 2024 traffic projections for the study intersections is provided on Figure 7.

Figure 7 – Background Traffic 2024



BACKGROUND 2040 TRAFFIC PROJECTIONS

The traffic projections for 2040 was estimated using a similar methodology as for 2024. The City of Fort Lupton has plans for roadway improvements by Year 2040. Each of these components to the 2040 projections are discussed below.

- The **ambient growth** in traffic was based on the values developed for 2024. An annual compounded growth of 6.3 % per year will be used for each roadway except for US 85 which was 2.3% per year.
- Similar to 2024, Cottonwood Greens was assumed to be completed.
- 14th Street was assumed to be built to CR 31 to a 4-lane arterial street.
- Northrup Avenue was assumed to extend north of 14th Street. This would be a 2-lane collector road.

The assumed intersection configurations for 2040 are illustrated on Figure 8. The resulting Background 2040 traffic projections for each of the study intersections are provided on Figure 9.

TOTAL TRAFFIC PROJECTIONS

The total traffic projections include both the background plus project traffic. Total traffic projections were developed for Year 2024 and 2040. The project-generated traffic volumes from Figure 6 were added to the Year 2024 background traffic volumes illustrated on Figure 8 to develop background plus project peak hour traffic volumes. The resulting Year 2024 total traffic is depicted on Figure 10.

The Year 2040 Total traffic projections were developed by adding the Project traffic from Figure 6, to the Year 2040 Background traffic from Figure 9. The resulting Year 2040 total traffic is illustrated on Figure 11.

INTERNAL SITE TRAFFIC

The Project site was designed to accommodate the traffic generated by the project. The City of Fort Lupton, within Chapter 6 of the *Standards and Specifications for the Design and Construction of Public Improvements,* has established that Local streets can accommodate up to 2,500 daily vehicular trips. It was estimated that the streets within Fulton Ranch will accommodate between 400 and 1,900 daily trips at locations near their intersections with public roadways. The design of the internal streets as local streets is therefore appropriate.

Figure 8 – Lane Configurations 2040

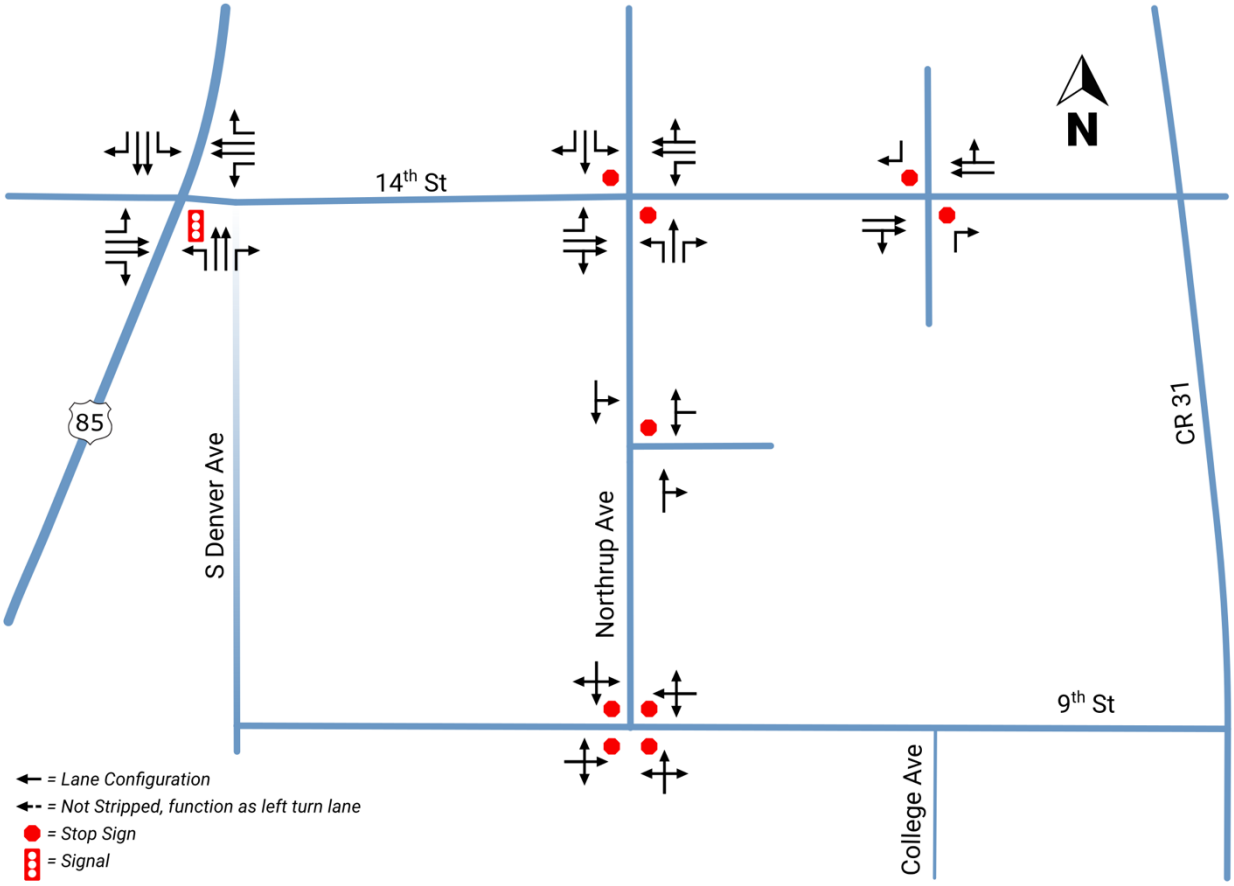


Figure 9 – Background Traffic 2040

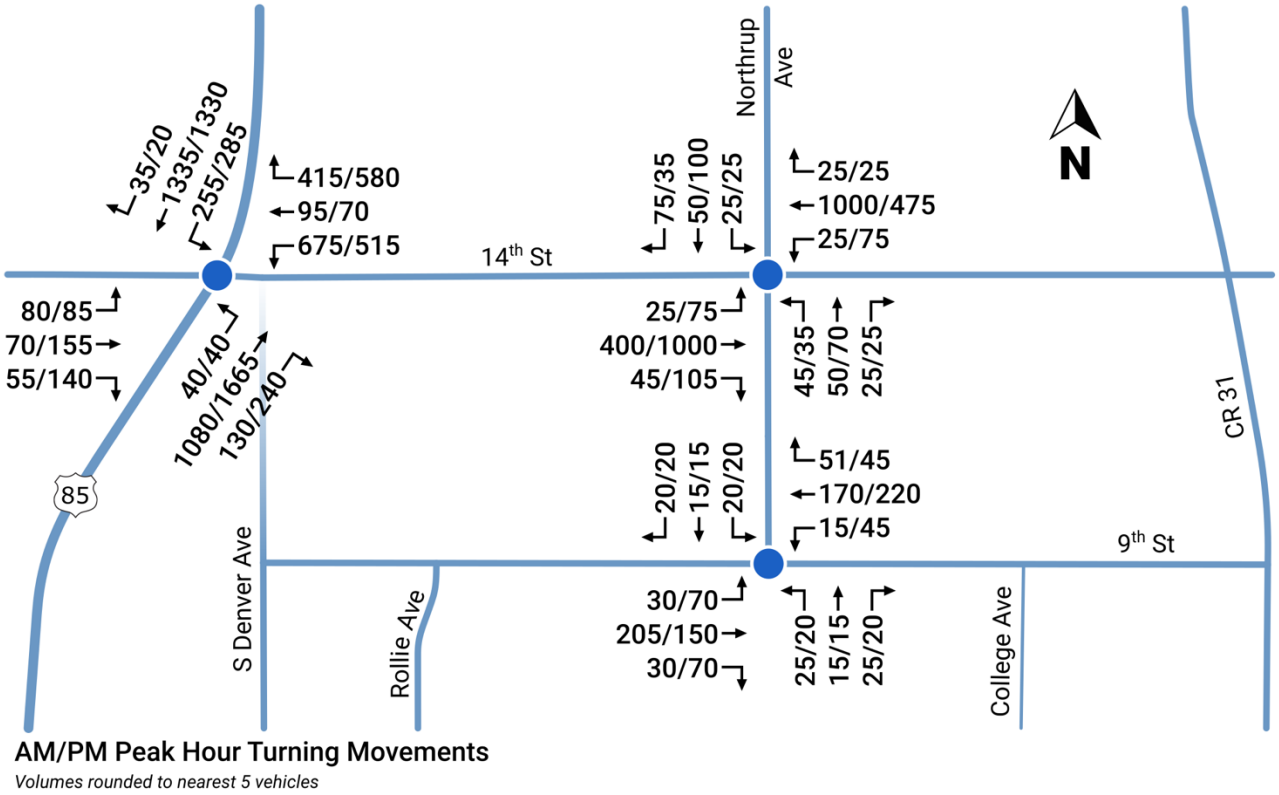


Figure 10 – Total Traffic 2024

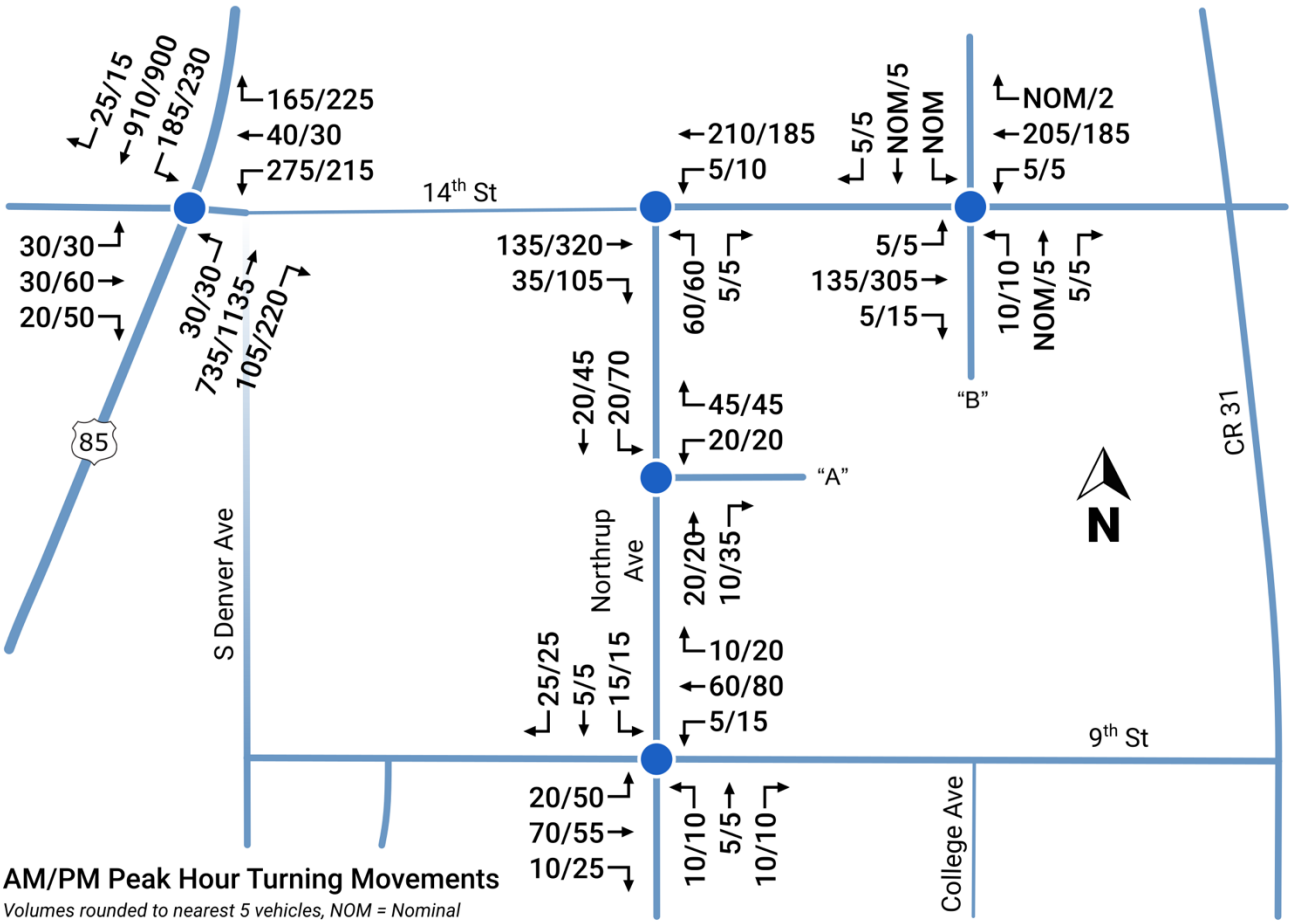
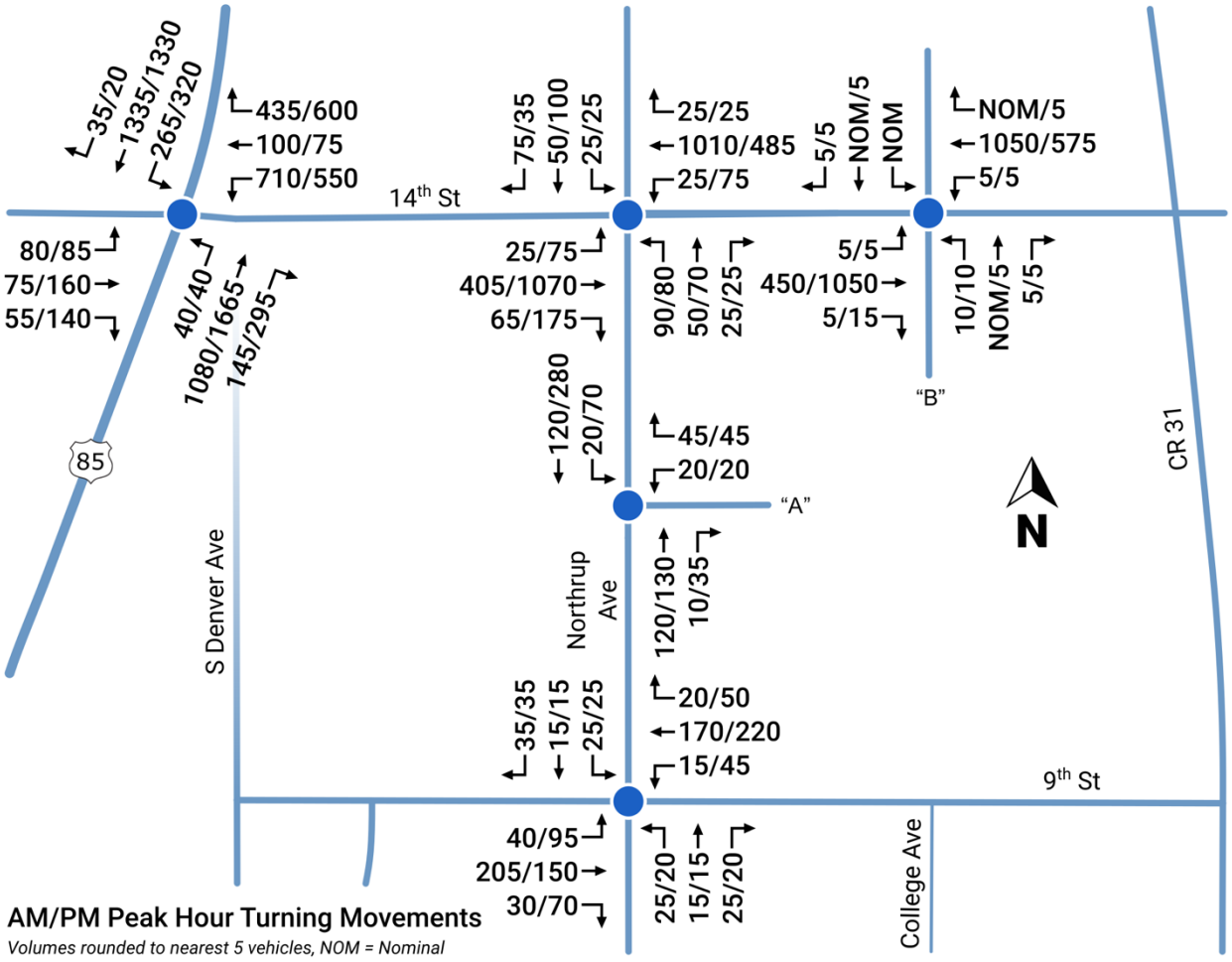


Figure 11 – Total Traffic 2040



5 TRAFFIC IMPACT ANALYSIS

This chapter presents an analysis of the potential impacts of the traffic generated by the proposed Fulton Ranch project on the local street system. The analysis compares the projected levels of service at each study intersection under future background and total conditions to estimate the incremental increase in the delay caused by the proposed project. This provides the information needed to assess the potential impact of the project using the significance criteria.

SIGNIFICANT TRAFFIC IMPACT CRITERIA

Threshold criteria were applied to determine if the growth in traffic due to regional growth/other projects and/or the proposed Project has a significant traffic impact at an intersection. If the future traffic projections for either Background (without Project) or Total (with Project) resulted in any portion of an intersection to exceed the LOS standards, this would be considered an impact.

As presented earlier, based on the City of Fort Lupton standards, LOS C is the design objective for all movements at an intersection. Level of service less than D is unacceptable.

FUTURE TRAFFIC CONDITIONS

The future traffic projections at the three study intersections were analyzed to determine their future operating conditions. The results for Year 2024 are provided in Table 5 for both the background and total traffic scenarios. The future operating conditions for Year 2040 are provided in Table 6.

It should be noted that under 2040 conditions, the intersection of CR 31 and SH 52 was projected to have peak hour volumes that would warrant signalization. The operational analysis for this location was performed assuming it was signalized. The need for a traffic signal is documented in the Federal Highways Administration, *Manual On Uniform Traffic Control Devices* (MUTCD), 2009. The Peak Hour - Warrant 3 is provided in Appendix C.

Note that the results provided in Tables 5 and 6 indicate both the overall delay/LOS for the intersection and the delay/LOS for each approach. An individual movement is also shown if it is projected to operate at LOS E or F. If an intersection, a movement, or leg is projected to operate at unacceptable levels it is highlighted in grey.

Table 5 Future 2024 Intersection Level of Service

			AM Peak Hr				PM Peak Hr			
			Background		Total		Background		Total	
#	Intersection	Movement	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	CR 31 & SH 52 Signalized	Overall	21.7	C	22.0	C	23.4	C	27.5	C
		EB	15.5	B	15.6	B	18.4	B	17.7	B
		WB	20.9	C	22.6	C	25.4	C	25.6	C
		NB	19.5	B	19.5	B	25.6	C	30.3	D
		SB	24.2	C	24.3	C	20.7	C	26.0	C
2	Northrup Ave & 9th St All-Way Stop Control	Overall	7.5	A	7.6	A	7.7	A	7.9	A
		EB	7.6	A	7.8	A	7.7	A	8	A
		WB	7.5	A	7.6	A	7.8	A	7.9	A
		NB	7.3	A	7.4	A	7.5	A	7.6	A
		SB	7.3	A	7.4	A	7.5	A	7.5	A
3	Northrup Ave & 14th Street (to be built) T-Stop Control	Overall	0.7	A	1.8	A	0.6	A	1.5	A
		EB	0	A	0	A	0	A	0	A
		WB	0.2	A	0.2	A	0.4	A	0.4	A
		NB	10.5	B	11.6	B	12.1	B	14.4	B
4	Northrup Ave & Access A T-Stop Control	Overall			5.4	A			4.8	A
		WB			8.9	A			9.3	A
		NB			0	A			0	A
		SB			3.7	A			4.5	A
5	Access B & 14th Street Two-Way Stop Control	Overall			0.9	A			0.8	A
		EB			0.3	A			0.1	A
		WB			0.2	A			0.2	A
		NB			10.9	B			13	B
		SB			10.1	B			11.7	B

Notes:

1. LOS calculations performed using Synchro which is based on the Transportation Research Board HCM 2016.
2. Average vehicle delay (in seconds per vehicle) is reported for both overall intersection and each constrained STOP-controlled movement, lane group (signalized) or approach. Movements with LOS greater than or equal to E are also provided.
3. Delays greater than 50 seconds are rounded to nearest second.

Table 6 Future 2040 Intersection Level of Service

			AM Peak Hr				PM Peak Hr			
			Background		Total		Background		Total	
#	Intersection	Movement	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	CR 31 & SH 52 Signalized	Overall	143	F	157	F	198	F	212	F
		EB	18.2	B	18.4	B	20.4	C	20.6	C
		WB	306	F	345	F	311	F	362	F
		WB LT	503	F	567	F	498	F	586	F
		WB RT	51	D	61	E	181	F	201	F
		NB	40.2	D	40.2	D	227	F	227	F
		NB LT	-	-	-	-	57.7	F	57.7	F
		NB Thru	-	-	-	-	262	F	262	F
		SB	119	F	120	F	125	F	135	F
		SB LT	79	F	91	F	121	F	176	F
		SB Thru	129	F	129	F	127	F	127	F
2	Northrup Ave & 9th St All-Way Stop Control	Overall	9.5	A	9.7	A	10.4	B	10.5	A
		EB	10	A	10.3	B	10.5	B	11.1	B
		WB	9.3	A	9.5	A	10.9	B	10.9	B
		NB	8.6	A	8.7	A	8.9	A	9	A
		SB	8.5	A	8.7	A	8.9	A	9.1	A
3	Northrup Ave & 14th Street (to be built) Two-Way Stop Control	Overall	13.5	B	35.4	D	0.8	A	0.8	A
		EB	0.6	A	0.6	A	0.6	A	0.6	A
		WB	0.2	A	0.2	A	1.6	A	1.7	A
		NB	107	F	325	F	513	F	722	F
		SB	72	F	80	F	895	F	1285	F
4	Northrup Ave & Access A T-Stop Control	Overall			2.4	A			2.1	A
		WB			9.8	A			11.1	B
		NB			0	A			0	A
		SB			7.5	A			7.7	A
5	Access B & 14th Street Two-Way Stop Control	Overall			0.5	A			1	A
		EB			0.2	A			0.1	A
		WB			0.1	A			0.2	A
		NB			34.1	C			51	F
		SB			21.9	C			34.2	D

Notes:

1. LOS calculations performed using Synchro which is based on the Transportation Research Board HCM 2016.
2. Average vehicle delay (in seconds per vehicle) is reported for both overall intersection and each constrained STOP-controlled movement, lane group (signalized) or approach. Movements with LOS greater than or equal to E are also provided.
3. Delays greater than 50 seconds are rounded to nearest second.
4. Grey highlighted indicates intersection operating at unacceptable LOS conditions.

The study results for 2024 indicate the following:

- Each of the five study intersections are projected to operate at acceptable levels of service.

The study results for 2040 indicate the following:

- At US 85 and 14th Street the overall intersection and numerous movements are projected at LOS F under both Background and Total conditions.
- The Background and Total traffic projections for the intersection of Northrup Avenue and 14th Street indicate high delays in the northbound and southbound directions.
- At the proposed Access Street B and 14th Street the northbound direction is projected to experience LOS F during the evening peak hour.

FUTURE YEAR 2040 IMPROVEMENT MEASURES

US 85 at 14th Street

The future 2040 traffic volume projections and operations were evaluated at US 85 and 14th Street to determine effective improvements. With the high traffic projections for the intersection, significant improvements would be necessary to bring operations to a LOS D. Widening of US 85 to a six lane facility would be necessary and is impractical. The earlier referenced CDOT *US 85 Planning and Environmental linkages (PEL) Study,* suggested that the intersection of US 85 at 14th Street be reconfigured to a junior interchange. This high level improvement will be required for desirable operations at this location in the long range future.

Northrup Avenue at 14th Street

The intersection of Northrup Avenue and 14th Street is projected to experience long delays for the stop-controlled movements in the north and southbound directions. A review of the projected volumes indicates that during the peak hours signalization may be warranted. The need for a traffic signal is documented in the Federal Highways Administration, *Manual On Uniform Traffic Control Devices* (MUTCD), 2009. The Peak Hour - Warrant 3 is provided in Appendix C. It should be noted that satisfaction of one warrant in and of itself does not justify signalization. The City will be monitoring this location as these roadways are built and traffic volumes increase. At the time higher volumes are achieved, an engineering study should be conducted to ensure that installing a signal will improve overall operations and safety of this intersection.

Northrup Avenue at 14th Street was analyzed with a signal. The results are provided in Table 7. Under signalization the intersection is projected to operate acceptably under both Background and Total traffic conditions.

Table 7 - 2040 Northrup/14th With Signalization

			AM Peak Hr				PM Peak Hr			
			Background		Total		Background		Total	
#	Intersection	Movement	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
3	Northrup Ave & 14th Street **Signalized**	Overall	13.3	B	14.5	B	6.2	A	7.0	A
		EB	10.1	B	11.1	B	2.8	A	4.1	A
		WB	15.4	B	17.3	B	8.2	A	8.4	A
		NB	10.7	B	10.6	B	15.8	B	16.7	B
		SB	10.8	B	10.1	B	15.8	B	15.8	B

Access Street B at 14th Street

The northbound movement at Access Street B is projected to experience long delays under 2040 future conditions. The projected volumes are very low. When vehicles from a local street enter a higher volume roadway it is typical for them to experience long delays. The residents on the south side of 14th Street will have the option of utilizing Northrup Avenue as an alternative. Additionally, if the intersection of Northrup Avenue at 14th is signalized, this will create gaps in the flows along 14th and may reduce the delays experienced in the northbound direction.

The City Engineer for Fort Lupton expressed concerns with Access Street B's location on 14th Street in addition to the ability of the 30 homes north of 14th to access the community facilities on the south side of 14th Street. The future signalization of Northrup Avenue at 14th Street could create gaps to enable the ease of these movements. However, from an overall transportation system design perspective the proposed location of Access Street B would be better if it were located midway between Northrup Avenue and the proposed Cottonwood Greens access. This would allow for a future access to the property on the north side of 14th Street to utilize this same location. The access to the 30 homes could remain at its' current location however it would most likely become restricted to right-in/right-out only, when 14th Street becomes a 4-lane facility. If the applicant desires for these homes to have a full access from14th Street, a future connection to the west (connecting to a future development) should be provided. If the applicant finds that a right-turn restricted access is acceptable at Access Street B (for both the northbound and southbound directions), the roadway system does not need to be changed.

6 AUXILIARY LANE ANALYSIS

An analysis was conducted to determine the need for auxiliary right-turn and left-turn lanes at the Project access locations. This analysis was performed for both 2024 and 2040. The projected peak hour traffic volumes at these locations were provided earlier on Figure 6. The turning volumes were analyzed based on the guidelines set forth in the Transportation Research Board's *NCHRP Report 279*, 1985 provided in Appendix D.

It was assumed that 14th Street would have a posted speed limit of 40 to 45 mph and Northrup Avenue at 35 mph.

Using the criteria provided in the Report 279, it was determined that no auxiliary lanes are required for 2024.

For 2040 it was determined that a southbound left-turn lane from Northrup Avenue into Access Street A would most likely be warranted.

No right-turn lanes were determined to be required.

7 CONCLUSIONS

This study was undertaken to analyze the potential traffic impacts of the proposed Fulton Ranch project in the City of Fort Lupton. The following summarizes the results of this analysis:

- The full buildout proposed Project consists of 466 manufactured homes.
- The Project site is located north of the Fulton Highline Canal and west of CR 31 on land that is undeveloped.
- The Project is expected to generate approximately 2,330 daily trips, 120 trips during the AM peak hour and 215 trips during the PM peak hour.
- Currently the two study intersections of US 85 at 14th Street and Northrup Avenue at 9th Street are operating at acceptable levels.
- For 2024 is was assumed that 14th Street would connect from its' current terminus, east to CR 31 and Northrup Avenue would be paved from its' current terminus, north to 14th Street.
- Under the future 2024 conditions, the intersections are projected to operate at acceptable levels.
- Under the future 2040 conditions it was assumed that Northrup Avenue would be extended north of 14th Street as a two-lane collector. 14th Street would be improved to a 4-lane arterial street.
- Under 2040 projected conditions, the traffic at US 85 and 14th Street will experience long delays. A future junior interchange was suggested for this location in the CDOT *US 85 Planning and Environmental linkages (PEL) Study.* The findings of this study support that recommendation.
- Under 2040 projected conditions, the north and southbound traffic at Northrup Avenue and 14th Street will experience long delays. The future traffic volumes at this location suggest that signalization may be appropriate. With a signal, this intersection would operate acceptably in 2040.
- The northbound direction of traffic at the proposed Access Street B at 14th Street will experience long delays during the PM peak hour. These volumes are very low and this is typical for intersections of local streets with 4-lane

arterials. The City Engineer has indicated that this location may need to be restricted to right-in/right-out only for both the north and southbound directions. If the applicant desires full movement for the northbound direction, it is suggested that this intersection be moved to the west. This location should be approximately midway between Northrup Avenue and the proposed Cottonwood Greens street to the east.

- Under 2040 conditions a southbound left-turn lane would be needed on Northrup Avenue at the proposed Access Street A.

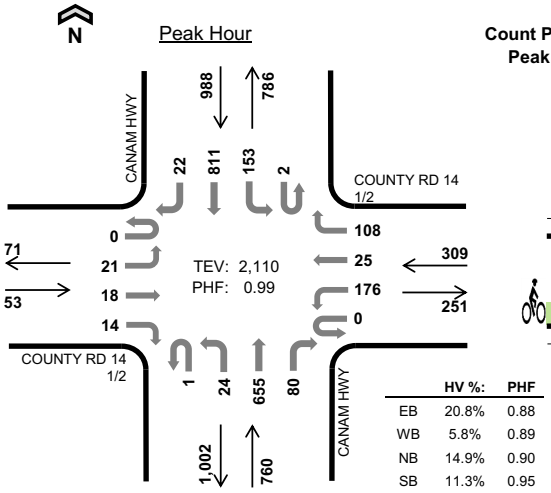
APPENDICIES

- Appendix A: Traffic Counts
- Appendix B: HCM LOS Calculation Outputs
- Appendix C: Figure and Table 4C-3 Manual on Uniform Traffic Control Devices
- Appendix D: NCHRP Report 279

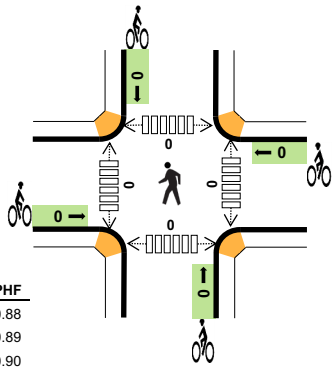
Appendix A
Traffic Counts

CANAM HWY
COUNTY RD 14 1/2

Date: Tue, Nov 12, 2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:00 AM to 8:00 AM



	HV %:	PHF
EB	20.8%	0.88
WB	5.8%	0.89
NB	14.9%	0.90
SB	11.3%	0.95
TOTAL	12.0%	0.99



Two-Hour Count Summaries

Interval Start	COUNTY RD 14 1/2 Eastbound				COUNTY RD 14 1/2 Westbound				CANAM HWY Northbound				CANAM HWY Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	**0**	**7**	**5**	**3**	**0**	**47**	**5**	**32**	**0**	**6**	**165**	**23**	**1**	**29**	**202**	**1**	**526**	0
7:15 AM	**0**	**6**	**2**	**4**	**0**	**41**	**10**	**36**	**0**	**5**	**153**	**17**	**0**	**32**	**221**	**6**	**533**	0
7:30 AM	**0**	**4**	**5**	**3**	**0**	**48**	**5**	**20**	**0**	**8**	**177**	**25**	**1**	**44**	**190**	**3**	**533**	0
7:45 AM	**0**	**4**	**6**	**4**	**0**	**40**	**5**	**20**	**1**	**5**	**160**	**15**	**0**	**48**	**198**	**12**	**518**	**2,110**
8:00 AM	0	2	7	9	0	34	3	16	0	6	137	14	0	36	183	0	447	2,031
8:15 AM	0	5	3	8	0	32	4	23	0	7	119	20	0	38	178	3	440	1,938
8:30 AM	0	5	4	3	0	27	9	26	0	3	119	19	0	26	130	5	376	1,781
8:45 AM	0	4	4	4	0	27	7	21	0	2	140	15	0	31	166	1	422	1,685
Count Total	0	37	36	38	0	296	48	194	1	42	1,170	148	2	284	1,468	31	3,795	0
Peak Hour	**0**	**21**	**18**	**14**	**0**	**176**	**25**	**108**	**1**	**24**	**655**	**80**	**2**	**153**	**811**	**22**	**2,110**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	**2**	**7**	**30**	**23**	***62***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
7:15 AM	**2**	**2**	**23**	**29**	***56***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
7:30 AM	**3**	**6**	**32**	**17**	***58***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
7:45 AM	**4**	**3**	**28**	**43**	***78***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:00 AM	4	2	24	30	*60*	0	0	0	0	*0*	0	0	0	0	*0*
8:15 AM	6	3	36	34	*79*	0	0	0	0	*0*	0	0	0	0	*0*
8:30 AM	5	8	24	23	*60*	0	0	0	0	*0*	0	0	0	0	*0*
8:45 AM	4	5	28	28	*65*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	30	36	225	227	*518*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**11**	**18**	**113**	**112**	***254***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

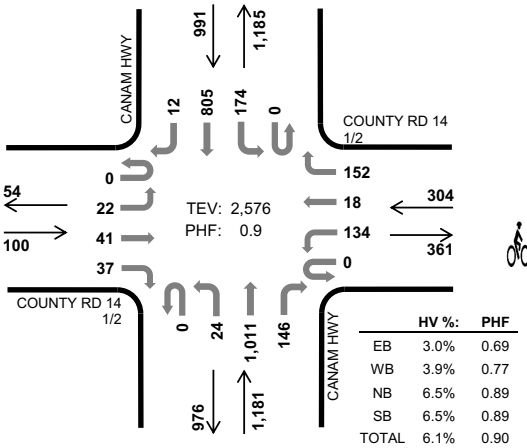
Mark Skaggs: (425) 250-0777 mark.skaggs@idaxdata.com

CANAM HWY
COUNTY RD 14 1/2

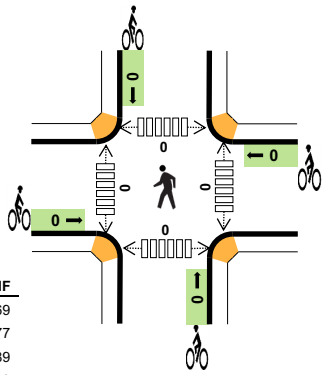
Date: Tue, Nov 12, 2019
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:15 PM to 5:15 PM

N

Peak Hour



	HV %:	PHF
EB	3.0%	0.69
WB	3.9%	0.77
NB	6.5%	0.89
SB	6.5%	0.89
TOTAL	6.1%	0.90



Two-Hour Count Summaries

Interval Start	COUNTY RD 14 1/2 Eastbound				COUNTY RD 14 1/2 Westbound				CANAM HWY Northbound				CANAM HWY Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	2	6	6	0	38	4	38	0	7	231	31	0	29	189	2	583	0
4:15 PM	**0**	**3**	**12**	**8**	**0**	**24**	**1**	**33**	**0**	**4**	**217**	**39**	**0**	**39**	**189**	**5**	**574**	0
4:30 PM	**0**	**7**	**6**	**4**	**0**	**35**	**6**	**32**	**0**	**3**	**253**	**31**	**0**	**40**	**184**	**2**	**603**	0
4:45 PM	**0**	**6**	**7**	**11**	**0**	**37**	**7**	**30**	**0**	**12**	**283**	**36**	**0**	**49**	**203**	**2**	**683**	2,443
5:00 PM	**0**	**6**	**16**	**14**	**0**	**38**	**4**	**57**	**0**	**5**	**258**	**40**	**0**	**46**	**229**	**3**	**716**	**2,576**
5:15 PM	0	3	7	5	0	35	3	33	0	3	197	32	0	49	196	3	566	2,568
5:30 PM	0	0	3	2	0	27	2	27	0	0	188	34	0	61	187	1	532	2,497
5:45 PM	0	3	17	2	0	28	7	30	1	2	232	39	1	59	226	4	651	2,465
Count Total	0	30	74	52	0	262	34	280	1	36	1,859	282	1	372	1,603	22	4,908	0
Peak Hour	**0**	**22**	**41**	**37**	**0**	**134**	**18**	**152**	**0**	**24**	**1,011**	**146**	**0**	**174**	**805**	**12**	**2,576**	**0**

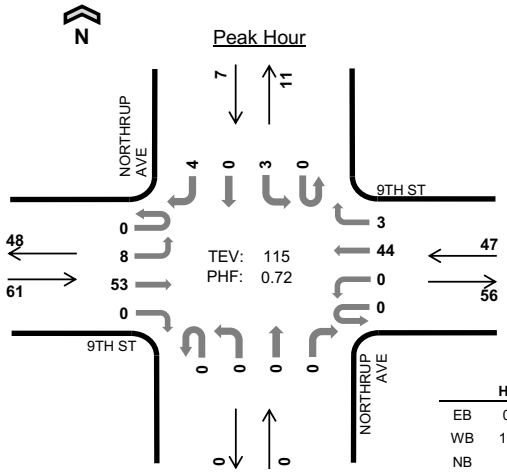
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

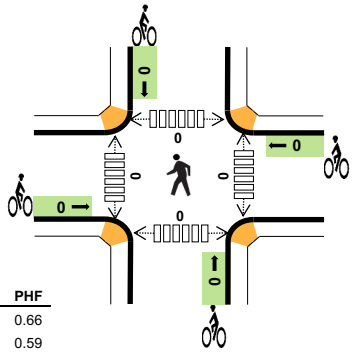
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	0	23	24	*47*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	**0**	**9**	**22**	**18**	***49***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:30 PM	**1**	**1**	**18**	**17**	***37***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:45 PM	**1**	**1**	**20**	**14**	***36***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:00 PM	**1**	**1**	**17**	**15**	***34***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:15 PM	1	3	10	8	*22*	0	0	0	0	*0*	0	2	0	0	*2*
5:30 PM	0	3	17	14	*34*	0	0	0	0	*0*	0	3	0	0	*3*
5:45 PM	1	2	16	18	*37*	0	0	0	0	*0*	0	1	0	0	*1*
Count Total	5	20	143	128	*296*	0	0	0	0	*0*	0	6	0	0	*6*
Peak Hour	**3**	**12**	**77**	**64**	***156***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

Mark Skaggs: (425) 250-0777 mark.skaggs@idaxdata.com

NORTHRUP AVE
9TH ST

Date: Tue, Nov 12, 2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM





	HV %:	PHF
EB	0.0%	0.66
WB	10.6%	0.59
NB	-	-
SB	14.3%	0.58
TOTAL	5.2%	0.72

Two-Hour Count Summaries

Interval Start	9TH ST Eastbound				9TH ST Westbound				NORTHRUP AVE Northbound				NORTHRUP AVE Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	4	0	0	0	4	0	0	0	0	0	0	3	0	3	14	0
7:15 AM	0	0	3	0	0	0	4	2	0	0	0	0	0	4	0	1	14	0
7:30 AM	0	3	9	0	0	0	7	1	0	0	0	0	0	0	0	0	20	0
7:45 AM	**0**	**1**	**8**	**0**	**0**	**0**	**5**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**17**	65
8:00 AM	**0**	**2**	**12**	**0**	**0**	**0**	**19**	**1**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**1**	**37**	88
8:15 AM	**0**	**2**	**21**	**0**	**0**	**0**	**15**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**40**	114
8:30 AM	**0**	**3**	**12**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**21**	**115**
8:45 AM	0	0	5	0	0	0	2	1	0	0	0	0	0	0	0	1	9	107
Count Total	0	11	74	0	0	0	61	7	0	0	0	0	0	10	0	9	172	0
Peak Hour	**0**	**8**	**53**	**0**	**0**	**0**	**44**	**3**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**4**	**115**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	1	0	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
7:45 AM	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**0**	**3**	**0**	**1**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:15 AM	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:30 AM	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:45 AM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	1	5	0	1	*7*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**0**	**5**	**0**	**1**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

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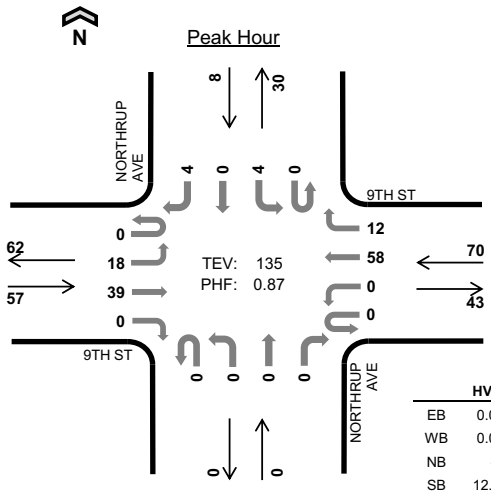
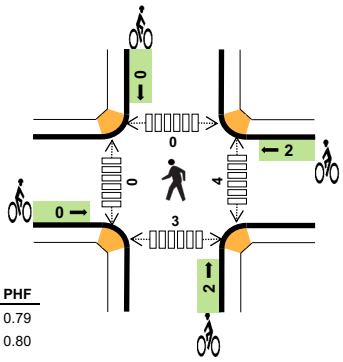
NORTHRUP AVE
9TH ST

Date: Tue, Nov 12, 2019
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM





	HV %:	PHF
EB	0.0%	0.79
WB	0.0%	0.80
NB	-	-
SB	12.5%	0.67
TOTAL	0.7%	0.87

Two-Hour Count Summaries

Interval Start	9TH ST Eastbound				9TH ST Westbound				NORTHRUP AVE Northbound				NORTHRUP AVE Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**1**	**7**	**0**	**0**	**0**	**12**	**7**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**1**	**30**	0
4:15 PM	**0**	**9**	**7**	**0**	**0**	**0**	**17**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**38**	0
4:30 PM	**0**	**4**	**14**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**28**	0
4:45 PM	**0**	**4**	**11**	**0**	**0**	**0**	**20**	**2**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**39**	**135**
5:00 PM	0	4	4	0	0	0	9	2	0	0	0	0	0	1	0	2	22	127
5:15 PM	0	3	1	0	0	0	9	2	0	0	0	0	0	0	0	1	16	105
5:30 PM	0	4	8	0	0	0	3	1	0	0	0	0	0	1	0	2	19	96
5:45 PM	0	4	3	0	0	0	8	5	0	0	0	0	0	2	0	1	23	80
Count Total	0	33	55	0	0	0	87	22	0	0	0	0	0	8	0	10	215	0
Peak Hour	**0**	**18**	**39**	**0**	**0**	**0**	**58**	**12**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**4**	**135**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**1**	*2*
4:15 PM	**0**	**0**	**0**	**1**	***1***	**0**	**0**	**0**	**0**	***0***	**3**	**0**	**0**	**2**	*5*
4:30 PM	**0**	**0**	**0**	**0**	***0***	**0**	**2**	**2**	**0**	***4***	**0**	**0**	**0**	**0**	*0*
4:45 PM	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:00 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	1	1	*2*
5:15 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
5:30 PM	1	0	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	1	0	0	1	*2*	0	2	2	0	*4*	4	0	1	4	*9*
Peak Hour	**0**	**0**	**0**	**1**	***1***	**0**	**2**	**2**	**0**	***4***	**4**	**0**	**0**	**3**	***7***

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Appendix B
Level of Service Worksheets

EXISTING

HCM 6th Signalized Intersection Summary
1: US 85 & CR 14 1/2/14th Street

11/25/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	18	14	176	25	108	25	655	80	155	811	22
Future Volume (veh/h)	21	18	14	176	25	108	25	655	80	155	811	22
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	23	20	15	191	27	117	27	712	87	168	882	24
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	306	240	476	509	561	476	338	1066	476	413	1185	528
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.08	0.30	0.30	0.12	0.33	0.33
Sat Flow, veh/h	712	800	1585	1373	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	43	0	15	191	27	117	27	712	87	168	882	24
Grp Sat Flow(s),veh/h/ln	1512	0	1585	1373	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	0.0	0.0	0.4	6.9	0.6	3.3	0.6	10.5	2.4	3.6	13.2	0.6
Cycle Q Clear(g_c), s	1.0	0.0	0.4	7.9	0.6	3.3	0.6	10.5	2.4	3.6	13.2	0.6
Prop In Lane	0.53		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	546	0	476	509	561	476	338	1066	476	413	1185	528
V/C Ratio(X)	0.08	0.00	0.03	0.37	0.05	0.25	0.08	0.67	0.18	0.41	0.74	0.05
Avail Cap(c_a), veh/h	546	0	476	509	561	476	338	1066	476	413	1185	528
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.0	0.0	14.8	17.9	14.9	15.9	12.7	18.4	15.6	12.5	17.7	13.5
Incr Delay (d2), s/veh	0.3	0.0	0.1	2.1	0.2	1.2	0.5	3.3	0.8	3.0	4.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.1	2.3	0.3	1.3	0.2	4.4	0.9	1.6	5.5	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.3	0.0	15.0	20.0	15.1	17.1	13.1	21.7	16.4	15.5	22.0	13.7
LnGrp LOS	B	A	B	B	B	B	B	C	B	B	C	B
Approach Vol, veh/h		58			335			826			1074	
Approach Delay, s/veh		15.2			18.6			20.9			20.8	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.0	25.0		23.0	10.0	27.0		23.0
Change Period (Y+Rc), s	5.0	7.0		5.0	5.0	7.0		5.0
Max Green Setting (Gmax), s	7.0	18.0		18.0	5.0	20.0		18.0
Max Q Clear Time (g_c+I1), s	5.6	12.5		3.0	2.6	15.2		9.9
Green Ext Time (p_c), s	0.1	2.4		0.2	0.0	2.5		0.7

Intersection Summary		
HCM 6th Ctrl Delay		20.4
HCM 6th LOS		C

HCM 6th Signalized Intersection Summary
1: US 85 & CR 14 1/2/14th Street

11/25/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	41	37	134	18	152	24	1011	146	174	805	12
Future Volume (veh/h)	22	41	37	134	18	152	24	1011	146	174	805	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	24	45	40	146	20	165	26	1099	159	189	875	13
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	211	358	476	479	561	476	341	1185	528	284	1185	528
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.08	0.33	0.33	0.08	0.33	0.33
Sat Flow, veh/h	433	1194	1585	1313	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	69	0	40	146	20	165	26	1099	159	189	875	13
Grp Sat Flow(s),veh/h/ln	1627	0	1585	1313	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	0.0	0.0	1.1	5.5	0.5	4.9	0.5	17.9	4.5	4.2	13.1	0.3
Cycle Q Clear(g_c), s	1.6	0.0	1.1	7.1	0.5	4.9	0.5	17.9	4.5	4.2	13.1	0.3
Prop In Lane	0.35		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	569	0	476	479	561	476	341	1185	528	284	1185	528
V/C Ratio(X)	0.12	0.00	0.08	0.31	0.04	0.35	0.08	0.93	0.30	0.67	0.74	0.02
Avail Cap(c_a), veh/h	569	0	476	479	561	476	341	1185	528	284	1185	528
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.3	0.0	15.1	17.8	14.9	16.4	11.8	19.3	14.8	14.7	17.7	13.4
Incr Delay (d2), s/veh	0.4	0.0	0.3	1.6	0.1	2.0	0.4	13.7	1.5	11.7	4.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.4	1.7	0.2	1.9	0.2	8.8	1.7	2.4	5.4	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.7	0.0	15.4	19.5	15.0	18.4	12.3	33.0	16.3	26.4	21.8	13.5
LnGrp LOS	B	A	B	B	B	B	B	C	B	C	C	B
Approach Vol, veh/h		109			331			1284			1077	
Approach Delay, s/veh		15.6			18.7			30.5			22.5	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.0	27.0		23.0	10.0	27.0		23.0
Change Period (Y+Rc), s	5.0	7.0		5.0	5.0	7.0		5.0
Max Green Setting (Gmax), s	5.0	20.0		18.0	5.0	20.0		18.0
Max Q Clear Time (g_c+I1), s	6.2	19.9		3.6	2.5	15.1		9.1
Green Ext Time (p_c), s	0.0	0.1		0.3	0.0	2.5		0.8

Intersection Summary	
HCM 6th Ctrl Delay	25.5
HCM 6th LOS	C

Intersection	
Intersection Delay, s/veh	7.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	53	0	0	44	3	0	0	0	3	0	4
Future Vol, veh/h	8	53	0	0	44	3	0	0	0	3	0	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	58	0	0	48	3	0	0	0	3	0	4
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.3	7.2	0	7
HCM LOS	A	A	-	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	13%	0%	43%
Vol Thru, %	100%	87%	94%	0%
Vol Right, %	0%	0%	6%	57%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	61	47	7
LT Vol	0	8	0	3
Through Vol	0	53	44	0
RT Vol	0	0	3	4
Lane Flow Rate	0	66	51	8
Geometry Grp	1	1	1	1
Degree of Util (X)	0	0.074	0.056	0.008
Departure Headway (Hd)	4.142	4.012	3.959	3.878
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	0	896	907	917
Service Time	2.193	2.023	1.973	1.927
HCM Lane V/C Ratio	0	0.074	0.056	0.009
HCM Control Delay	7.2	7.3	7.2	7
HCM Lane LOS	N	A	A	A
HCM 95th-tile Q	0	0.2	0.2	0

Intersection	
Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	18	39	0	0	58	12	0	0	0	4	0	4
Future Vol, veh/h	18	39	0	0	58	12	0	0	0	4	0	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	42	0	0	63	13	0	0	0	4	0	4
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.4	7.3	0	7.1
HCM LOS	A	A	-	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	32%	0%	50%
Vol Thru, %	100%	68%	83%	0%
Vol Right, %	0%	0%	17%	50%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	57	70	8
LT Vol	0	18	0	4
Through Vol	0	39	58	0
RT Vol	0	0	12	4
Lane Flow Rate	0	62	76	9
Geometry Grp	1	1	1	1
Degree of Util (X)	0	0.07	0.082	0.01
Departure Headway (Hd)	4.18	4.07	3.893	3.971
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	0	882	922	894
Service Time	2.237	2.086	1.909	2.027
HCM Lane V/C Ratio	0	0.07	0.082	0.01
HCM Control Delay	7.2	7.4	7.3	7.1
HCM Lane LOS	N	A	A	A
HCM 95th-tile Q	0	0.2	0.3	0

BACKGROUND 2024

HCM 6th Signalized Intersection Summary
1: US 85 & CR 14 1/2/14th Street

11/25/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	25	20	240	35	145	30	735	90	175	910	25
Future Volume (veh/h)	30	25	20	240	35	145	30	735	90	175	910	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	33	27	22	261	38	158	33	799	98	190	989	27
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	306	225	476	495	561	476	311	1185	528	355	1185	528
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.08	0.33	0.33	0.08	0.33	0.33
Sat Flow, veh/h	710	751	1585	1356	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	60	0	22	261	38	158	33	799	98	190	989	27
Grp Sat Flow(s),veh/h/ln	1461	0	1585	1356	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	0.0	0.0	0.6	10.3	0.9	4.7	0.7	11.6	2.6	4.2	15.4	0.7
Cycle Q Clear(g_c), s	1.4	0.0	0.6	11.7	0.9	4.7	0.7	11.6	2.6	4.2	15.4	0.7
Prop In Lane	0.55		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	531	0	476	495	561	476	311	1185	528	355	1185	528
V/C Ratio(X)	0.11	0.00	0.05	0.53	0.07	0.33	0.11	0.67	0.19	0.53	0.83	0.05
Avail Cap(c_a), veh/h	531	0	476	495	561	476	311	1185	528	355	1185	528
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.2	0.0	14.9	19.4	15.0	16.3	12.5	17.2	14.2	13.0	18.5	13.6
Incr Delay (d2), s/veh	0.4	0.0	0.2	4.0	0.2	1.9	0.7	3.1	0.8	5.7	7.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.2	3.5	0.4	1.8	0.3	4.7	1.0	2.0	6.8	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.6	0.0	15.1	23.4	15.2	18.2	13.2	20.3	15.0	18.7	25.5	13.7
LnGrp LOS	B	A	B	C	B	B	B	C	B	B	C	B
Approach Vol, veh/h		82			457			930			1206	
Approach Delay, s/veh		15.5			20.9			19.5			24.2	
Approach LOS		B			C			B			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.0	27.0		23.0	10.0	27.0		23.0
Change Period (Y+Rc), s	5.0	7.0		5.0	5.0	7.0		5.0
Max Green Setting (Gmax), s	5.0	20.0		18.0	5.0	20.0		18.0
Max Q Clear Time (g_c+I1), s	6.2	13.6		3.4	2.7	17.4		13.7
Green Ext Time (p_c), s	0.0	3.0		0.3	0.0	1.6		0.7

Intersection Summary			
HCM 6th Ctrl Delay			21.7
HCM 6th LOS			C

HCM 6th Signalized Intersection Summary
1: US 85 & CR 14 1/2/14th Street

11/27/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	55	50	180	25	205	30	1135	165	195	900	15
Future Volume (veh/h)	30	55	50	180	25	205	30	1135	165	195	900	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	33	60	54	196	27	223	33	1234	179	212	978	16
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	184	297	396	389	468	396	353	1362	608	289	1362	608
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.08	0.38	0.38	0.08	0.38	0.38
Sat Flow, veh/h	413	1187	1585	1279	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	93	0	54	196	27	223	33	1234	179	212	978	16
Grp Sat Flow(s),veh/h/ln	1600	0	1585	1279	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	0.0	0.0	1.6	8.6	0.7	7.4	0.6	19.7	4.7	4.3	14.0	0.4
Cycle Q Clear(g_c), s	2.4	0.0	1.6	10.9	0.7	7.4	0.6	19.7	4.7	4.3	14.0	0.4
Prop In Lane	0.35		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	481	0	396	389	468	396	353	1362	608	289	1362	608
V/C Ratio(X)	0.19	0.00	0.14	0.50	0.06	0.56	0.09	0.91	0.29	0.73	0.72	0.03
Avail Cap(c_a), veh/h	481	0	396	389	468	396	353	1362	608	289	1362	608
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.8	0.0	17.5	22.1	17.1	19.6	10.4	17.5	12.9	13.9	15.7	11.5
Incr Delay (d2), s/veh	0.9	0.0	0.7	4.6	0.2	5.7	0.5	10.2	1.2	15.1	3.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.6	2.9	0.3	3.1	0.3	8.9	1.7	2.7	5.6	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.7	0.0	18.2	26.7	17.4	25.3	11.0	27.7	14.1	29.0	19.0	11.6
LnGrp LOS	B	A	B	C	B	C	B	C	B	C	B	B
Approach Vol, veh/h		147			446			1446			1206	
Approach Delay, s/veh		18.5			25.4			25.6			20.7	
Approach LOS		B			C			C			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.0	30.0		20.0	10.0	30.0		20.0
Change Period (Y+Rc), s	5.0	7.0		5.0	5.0	7.0		5.0
Max Green Setting (Gmax), s	5.0	23.0		15.0	5.0	23.0		15.0
Max Q Clear Time (g_c+I1), s	6.3	21.7		4.4	2.6	16.0		12.9
Green Ext Time (p_c), s	0.0	1.0		0.4	0.0	3.7		0.4

Intersection Summary		
HCM 6th Ctrl Delay		23.4
HCM 6th LOS		C

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	70	10	5	60	5	10	5	10	10	5	10
Future Vol, veh/h	10	70	10	5	60	5	10	5	10	10	5	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	76	11	5	65	5	11	5	11	11	5	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.6	7.5	7.3	7.3
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	40%	11%	7%	40%
Vol Thru, %	20%	78%	86%	20%
Vol Right, %	40%	11%	7%	40%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	25	90	70	25
LT Vol	10	10	5	10
Through Vol	5	70	60	5
RT Vol	10	10	5	10
Lane Flow Rate	27	98	76	27
Geometry Grp	1	1	1	1
Degree of Util (X)	0.031	0.11	0.086	0.031
Departure Headway (Hd)	4.095	4.041	4.073	4.095
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	862	883	875	862
Service Time	2.18	2.084	2.121	2.18
HCM Lane V/C Ratio	0.031	0.111	0.087	0.031
HCM Control Delay	7.3	7.6	7.5	7.3
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.4	0.3	0.1

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	55	25	15	80	15	10	5	10	10	5	10
Future Vol, veh/h	25	55	25	15	80	15	10	5	10	10	5	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	60	27	16	87	16	11	5	11	11	5	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.7	7.8	7.5	7.5
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	40%	24%	14%	40%
Vol Thru, %	20%	52%	73%	20%
Vol Right, %	40%	24%	14%	40%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	25	105	110	25
LT Vol	10	25	15	10
Through Vol	5	55	80	5
RT Vol	10	25	15	10
Lane Flow Rate	27	114	120	27
Geometry Grp	1	1	1	1
Degree of Util (X)	0.033	0.128	0.135	0.033
Departure Headway (Hd)	4.308	4.023	4.059	4.308
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	836	883	876	836
Service Time	2.309	2.084	2.118	2.309
HCM Lane V/C Ratio	0.032	0.129	0.137	0.032
HCM Control Delay	7.5	7.7	7.8	7.5
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.4	0.5	0.1

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	130	15	5	200	15	5
Future Vol, veh/h	130	15	5	200	15	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	141	16	5	217	16	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	157	0	376	149
Stage 1	-	-	-	-	149	-
Stage 2	-	-	-	-	227	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1423	-	625	898
Stage 1	-	-	-	-	879	-
Stage 2	-	-	-	-	811	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1423	-	623	898
Mov Cap-2 Maneuver	-	-	-	-	623	-
Stage 1	-	-	-	-	879	-
Stage 2	-	-	-	-	808	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	10.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	675	-	-	1423	-
HCM Lane V/C Ratio	0.032	-	-	0.004	-
HCM Control Delay (s)	10.5	-	-	7.5	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	300	35	10	175	15	5
Future Vol, veh/h	300	35	10	175	15	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	326	38	11	190	16	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	364	0	557	345
Stage 1	-	-	-	-	345	-
Stage 2	-	-	-	-	212	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1195	-	491	698
Stage 1	-	-	-	-	717	-
Stage 2	-	-	-	-	823	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1195	-	486	698
Mov Cap-2 Maneuver	-	-	-	-	486	-
Stage 1	-	-	-	-	717	-
Stage 2	-	-	-	-	815	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	12.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	526	-	-	1195	-
HCM Lane V/C Ratio	0.041	-	-	0.009	-
HCM Control Delay (s)	12.1	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

TOTAL 2024

HCM 6th Signalized Intersection Summary
1: US 85 & CR 14 1/2/14th Street

11/25/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	30	20	275	40	165	30	735	105	185	910	25
Future Volume (veh/h)	30	30	20	275	40	165	30	735	105	185	910	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	33	33	22	299	43	179	33	799	114	201	989	27
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	281	253	476	490	561	476	311	1185	528	354	1185	528
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.08	0.33	0.33	0.08	0.33	0.33
Sat Flow, veh/h	636	844	1585	1349	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	66	0	22	299	43	179	33	799	114	201	989	27
Grp Sat Flow(s),veh/h/ln	1480	0	1585	1349	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	0.0	0.0	0.6	12.4	1.0	5.3	0.7	11.6	3.1	4.5	15.4	0.7
Cycle Q Clear(g_c), s	1.5	0.0	0.6	13.9	1.0	5.3	0.7	11.6	3.1	4.5	15.4	0.7
Prop In Lane	0.50		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	534	0	476	490	561	476	311	1185	528	354	1185	528
V/C Ratio(X)	0.12	0.00	0.05	0.61	0.08	0.38	0.11	0.67	0.22	0.57	0.83	0.05
Avail Cap(c_a), veh/h	534	0	476	490	561	476	311	1185	528	354	1185	528
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.2	0.0	14.9	20.3	15.0	16.6	12.5	17.2	14.4	13.2	18.5	13.6
Incr Delay (d2), s/veh	0.5	0.0	0.2	5.6	0.3	2.3	0.7	3.1	0.9	6.5	7.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.2	4.3	0.4	2.1	0.3	4.7	1.1	2.2	6.8	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.7	0.0	15.1	25.9	15.3	18.8	13.2	20.3	15.3	19.6	25.5	13.7
LnGrp LOS	B	A	B	C	B	B	B	C	B	B	C	B
Approach Vol, veh/h		88			521			946			1217	
Approach Delay, s/veh		15.6			22.6			19.4			24.3	
Approach LOS		B			C			B			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.0	27.0		23.0	10.0	27.0		23.0
Change Period (Y+Rc), s	5.0	7.0		5.0	5.0	7.0		5.0
Max Green Setting (Gmax), s	5.0	20.0		18.0	5.0	20.0		18.0
Max Q Clear Time (g_c+I1), s	6.5	13.6		3.5	2.7	17.4		15.9
Green Ext Time (p_c), s	0.0	3.1		0.3	0.0	1.6		0.4

Intersection Summary	
HCM 6th Ctrl Delay	22.0
HCM 6th LOS	C

HCM 6th Signalized Intersection Summary
1: US 85 & CR 14 1/2/14th Street

11/27/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	60	50	215	30	225	30	1135	220	230	900	15
Future Volume (veh/h)	30	60	50	215	30	225	30	1135	220	230	900	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	33	65	54	234	33	245	33	1234	239	250	978	16
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	184	323	423	408	499	423	340	1303	581	279	1303	581
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.08	0.37	0.37	0.08	0.37	0.37
Sat Flow, veh/h	389	1210	1585	1273	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	98	0	54	234	33	245	33	1234	239	250	978	16
Grp Sat Flow(s),veh/h/ln	1599	0	1585	1273	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	0.0	0.0	1.6	10.5	0.8	8.0	0.6	20.2	6.7	5.0	14.4	0.4
Cycle Q Clear(g_c), s	2.4	0.0	1.6	12.9	0.8	8.0	0.6	20.2	6.7	5.0	14.4	0.4
Prop In Lane	0.34		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	507	0	423	408	499	423	340	1303	581	279	1303	581
V/C Ratio(X)	0.19	0.00	0.13	0.57	0.07	0.58	0.10	0.95	0.41	0.90	0.75	0.03
Avail Cap(c_a), veh/h	507	0	423	408	499	423	340	1303	581	279	1303	581
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.0	0.0	16.7	22.0	16.4	19.1	11.1	18.4	14.2	15.4	16.6	12.2
Incr Delay (d2), s/veh	0.9	0.0	0.6	5.8	0.3	5.7	0.6	15.1	2.1	32.6	4.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.6	3.5	0.3	3.4	0.3	10.0	2.5	4.3	5.9	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.9	0.0	17.3	27.8	16.7	24.8	11.7	33.5	16.3	48.1	20.6	12.2
LnGrp LOS	B	A	B	C	B	C	B	C	B	D	C	B
Approach Vol, veh/h		152			512			1506			1244	
Approach Delay, s/veh		17.7			25.6			30.3			26.0	
Approach LOS		B			C			C			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.0	29.0		21.0	10.0	29.0		21.0
Change Period (Y+Rc), s	5.0	7.0		5.0	5.0	7.0		5.0
Max Green Setting (Gmax), s	5.0	22.0		16.0	5.0	22.0		16.0
Max Q Clear Time (g_c+I1), s	7.0	22.2		4.4	2.6	16.4		14.9
Green Ext Time (p_c), s	0.0	0.0		0.5	0.0	3.1		0.3

Intersection Summary	
HCM 6th Ctrl Delay	27.5
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	70	10	5	60	10	10	5	10	15	5	25
Future Vol, veh/h	20	70	10	5	60	10	10	5	10	15	5	25
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	76	11	5	65	11	11	5	11	16	5	27
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.8	7.6	7.4	7.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	40%	20%	7%	33%
Vol Thru, %	20%	70%	80%	11%
Vol Right, %	40%	10%	13%	56%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	25	100	75	45
LT Vol	10	20	5	15
Through Vol	5	70	60	5
RT Vol	10	10	10	25
Lane Flow Rate	27	109	82	49
Geometry Grp	1	1	1	1
Degree of Util (X)	0.032	0.124	0.092	0.055
Departure Headway (Hd)	4.241	4.107	4.082	4.015
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	849	866	870	876
Service Time	2.241	2.164	2.145	2.112
HCM Lane V/C Ratio	0.032	0.126	0.094	0.056
HCM Control Delay	7.4	7.8	7.6	7.4
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.4	0.3	0.2

Intersection	
Intersection Delay, s/veh	7.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	55	25	15	80	20	10	5	10	15	5	25
Future Vol, veh/h	50	55	25	15	80	20	10	5	10	15	5	25
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	54	60	27	16	87	22	11	5	11	16	5	27
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8	7.9	7.6	7.5
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	40%	38%	13%	33%
Vol Thru, %	20%	42%	70%	11%
Vol Right, %	40%	19%	17%	56%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	25	130	115	45
LT Vol	10	50	15	15
Through Vol	5	55	80	5
RT Vol	10	25	20	25
Lane Flow Rate	27	141	125	49
Geometry Grp	1	1	1	1
Degree of Util (X)	0.033	0.162	0.142	0.058
Departure Headway (Hd)	4.408	4.122	4.095	4.278
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	817	861	864	842
Service Time	2.41	2.197	2.174	2.279
HCM Lane V/C Ratio	0.033	0.164	0.145	0.058
HCM Control Delay	7.6	8	7.9	7.5
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.6	0.5	0.2

Intersection	
Int Delay, s/veh	1.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	135	35	5	210	60	5
Future Vol, veh/h	135	35	5	210	60	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	147	38	5	228	65	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	185	0	404	166
Stage 1	-	-	-	-	166	-
Stage 2	-	-	-	-	238	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1390	-	603	878
Stage 1	-	-	-	-	863	-
Stage 2	-	-	-	-	802	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1390	-	601	878
Mov Cap-2 Maneuver	-	-	-	-	601	-
Stage 1	-	-	-	-	863	-
Stage 2	-	-	-	-	799	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	11.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	616	-	-	1390	-
HCM Lane V/C Ratio	0.115	-	-	0.004	-
HCM Control Delay (s)	11.6	-	-	7.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	320	105	10	185	60	5
Future Vol, veh/h	320	105	10	185	60	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	348	114	11	201	65	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	462	0	628	405
Stage 1	-	-	-	-	405	-
Stage 2	-	-	-	-	223	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1099	-	447	646
Stage 1	-	-	-	-	673	-
Stage 2	-	-	-	-	814	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1099	-	442	646
Mov Cap-2 Maneuver	-	-	-	-	442	-
Stage 1	-	-	-	-	673	-
Stage 2	-	-	-	-	805	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	14.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	453	-	-	1099	-
HCM Lane V/C Ratio	0.156	-	-	0.01	-
HCM Control Delay (s)	14.4	-	-	8.3	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0	-

Intersection	
Int Delay, s/veh	5.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	45	20	10	20	20
Future Vol, veh/h	20	45	20	10	20	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	49	22	11	22	22

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	94	28	0	0	33	0
Stage 1	28	-	-	-	-	-
Stage 2	66	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	906	1047	-	-	1579	-
Stage 1	995	-	-	-	-	-
Stage 2	957	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	893	1047	-	-	1579	-
Mov Cap-2 Maneuver	893	-	-	-	-	-
Stage 1	995	-	-	-	-	-
Stage 2	944	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	3.7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	994	1579	-
HCM Lane V/C Ratio	-	-	0.071	0.014	-
HCM Control Delay (s)	-	-	8.9	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection	
Int Delay, s/veh	4.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	45	20	35	70	45
Future Vol, veh/h	20	45	20	35	70	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	49	22	38	76	49

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	242	41	0	0	60	0
Stage 1	41	-	-	-	-	-
Stage 2	201	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	746	1030	-	-	1544	-
Stage 1	981	-	-	-	-	-
Stage 2	833	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	708	1030	-	-	1544	-
Mov Cap-2 Maneuver	708	-	-	-	-	-
Stage 1	981	-	-	-	-	-
Stage 2	791	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.3	0	4.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	904	1544	-
HCM Lane V/C Ratio	-	-	0.078	0.049	-
HCM Control Delay (s)	-	-	9.3	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.2	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	135	5	5	205	1	10	1	5	1	1	5
Future Vol, veh/h	5	135	5	5	205	1	10	1	5	1	1	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	147	5	5	223	1	11	1	5	1	1	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	224	0	0	152	0	0	397	394	150	397	396	224
Stage 1	-	-	-	-	-	-	160	160	-	234	234	-
Stage 2	-	-	-	-	-	-	237	234	-	163	162	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1345	-	-	1429	-	-	563	542	896	563	541	815
Stage 1	-	-	-	-	-	-	842	766	-	769	711	-
Stage 2	-	-	-	-	-	-	766	711	-	839	764	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1345	-	-	1429	-	-	555	538	896	555	537	815
Mov Cap-2 Maneuver	-	-	-	-	-	-	555	538	-	555	537	-
Stage 1	-	-	-	-	-	-	839	763	-	766	708	-
Stage 2	-	-	-	-	-	-	757	708	-	829	761	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.2	10.9	10.1
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	629	1345	-	-	1429	-	-	714
HCM Lane V/C Ratio	0.028	0.004	-	-	0.004	-	-	0.011
HCM Control Delay (s)	10.9	7.7	0	-	7.5	0	-	10.1
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	305	15	5	185	2	10	5	5	1	5	5
Future Vol, veh/h	5	305	15	5	185	2	10	5	5	1	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	332	16	5	201	2	11	5	5	1	5	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	203	0	0	348	0	0	567	563	340	567	570	202
Stage 1	-	-	-	-	-	-	350	350	-	212	212	-
Stage 2	-	-	-	-	-	-	217	213	-	355	358	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1369	-	-	1211	-	-	434	435	702	434	431	839
Stage 1	-	-	-	-	-	-	666	633	-	790	727	-
Stage 2	-	-	-	-	-	-	785	726	-	662	628	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1369	-	-	1211	-	-	424	431	702	423	427	839
Mov Cap-2 Maneuver	-	-	-	-	-	-	424	431	-	423	427	-
Stage 1	-	-	-	-	-	-	663	630	-	786	723	-
Stage 2	-	-	-	-	-	-	770	722	-	648	625	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.2	13	11.7
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	473	1369	-	-	1211	-	-	549
HCM Lane V/C Ratio	0.046	0.004	-	-	0.004	-	-	0.022
HCM Control Delay (s)	13	7.6	0	-	8	0	-	11.7
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

BACKGROUND 2040

HCM 6th Signalized Intersection Summary
1: US 85 & CR 14 1/2/14th Street

11/25/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	70	55	675	95	415	40	1080	130	255	1335	35
Future Volume (veh/h)	80	70	55	675	95	415	40	1080	130	255	1335	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	87	76	60	734	103	451	43	1174	141	277	1451	38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	250	193	476	360	561	476	268	1185	528	270	1185	528
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.08	0.33	0.33	0.08	0.33	0.33
Sat Flow, veh/h	528	642	1585	1253	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	163	0	60	734	103	451	43	1174	141	277	1451	38
Grp Sat Flow(s),veh/h/ln	1170	0	1585	1253	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	4.1	0.0	1.7	11.5	2.4	16.7	0.9	19.7	3.9	5.0	20.0	1.0
Cycle Q Clear(g_c), s	6.5	0.0	1.7	18.0	2.4	16.7	0.9	19.7	3.9	5.0	20.0	1.0
Prop In Lane	0.53		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	443	0	476	360	561	476	268	1185	528	270	1185	528
V/C Ratio(X)	0.37	0.00	0.13	2.04	0.18	0.95	0.16	0.99	0.27	1.02	1.22	0.07
Avail Cap(c_a), veh/h	443	0	476	360	561	476	268	1185	528	270	1185	528
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.8	0.0	15.3	26.2	15.6	20.5	13.8	19.9	14.6	17.6	20.0	13.7
Incr Delay (d2), s/veh	2.3	0.0	0.5	476.8	0.7	30.2	1.3	24.1	1.2	61.3	108.9	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	0.6	52.6	1.1	9.5	0.4	11.2	1.5	6.8	25.2	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.1	0.0	15.8	503.0	16.3	50.8	15.1	44.0	15.9	78.9	128.9	13.9
LnGrp LOS	B	A	B	F	B	D	B	D	B	F	F	B
Approach Vol, veh/h		223			1288			1358			1766	
Approach Delay, s/veh		18.2			305.7			40.2			118.6	
Approach LOS		B			F			D			F	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.0	27.0		23.0	10.0	27.0		23.0
Change Period (Y+Rc), s	5.0	7.0		5.0	5.0	7.0		5.0
Max Green Setting (Gmax), s	5.0	20.0		18.0	5.0	20.0		18.0
Max Q Clear Time (g_c+I1), s	7.0	21.7		8.5	2.9	22.0		20.0
Green Ext Time (p_c), s	0.0	0.0		0.9	0.0	0.0		0.0

Intersection Summary		
HCM 6th Ctrl Delay		142.8
HCM 6th LOS		F

HCM 6th Signalized Intersection Summary
1: US 85 & CR 14 1/2/14th Street

11/25/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	155	140	515	70	580	40	1665	240	285	1330	20
Future Volume (veh/h)	85	155	140	515	70	580	40	1665	240	285	1330	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	92	168	152	560	76	630	43	1810	261	310	1446	22
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	186	298	476	278	561	476	268	1185	528	268	1185	528
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.08	0.33	0.33	0.08	0.33	0.33
Sat Flow, veh/h	348	992	1585	1060	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	260	0	152	560	76	630	43	1810	261	310	1446	22
Grp Sat Flow(s),veh/h/ln	1341	0	1585	1060	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	5.6	0.0	4.5	8.9	1.8	18.0	0.9	20.0	7.9	5.0	20.0	0.6
Cycle Q Clear(g_c), s	9.1	0.0	4.5	18.0	1.8	18.0	0.9	20.0	7.9	5.0	20.0	0.6
Prop In Lane	0.35		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	483	0	476	278	561	476	268	1185	528	268	1185	528
V/C Ratio(X)	0.54	0.00	0.32	2.02	0.14	1.32	0.16	1.53	0.49	1.15	1.22	0.04
Avail Cap(c_a), veh/h	483	0	476	278	561	476	268	1185	528	268	1185	528
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.5	0.0	16.3	27.5	15.3	21.0	13.8	20.0	16.0	17.6	20.0	13.5
Incr Delay (d2), s/veh	4.2	0.0	1.8	470.2	0.5	160.3	1.3	241.9	3.3	103.4	107.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	0.0	1.7	40.1	0.8	27.1	0.4	47.1	3.0	9.9	24.9	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.7	0.0	18.0	497.6	15.8	181.3	15.1	261.9	19.2	120.9	127.1	13.7
LnGrp LOS	C	A	B	F	B	F	B	F	B	F	F	B
Approach Vol, veh/h		412			1266			2114			1778	
Approach Delay, s/veh		20.4			311.3			226.9			124.6	
Approach LOS		C			F			F			F	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.0	27.0		23.0	10.0	27.0		23.0
Change Period (Y+Rc), s	5.0	7.0		5.0	5.0	7.0		5.0
Max Green Setting (Gmax), s	5.0	20.0		18.0	5.0	20.0		18.0
Max Q Clear Time (g_c+I1), s	7.0	22.0		11.1	2.9	22.0		20.0
Green Ext Time (p_c), s	0.0	0.0		1.4	0.0	0.0		0.0

Intersection Summary		
HCM 6th Ctrl Delay		198.2
HCM 6th LOS		F

Intersection	
Intersection Delay, s/veh	9.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	205	30	15	170	15	25	15	25	20	15	20
Future Vol, veh/h	30	205	30	15	170	15	25	15	25	20	15	20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	33	223	33	16	185	16	27	16	27	22	16	22
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	10	9.3	8.6	8.5
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	38%	11%	7%	36%
Vol Thru, %	23%	77%	85%	27%
Vol Right, %	38%	11%	7%	36%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	65	265	200	55
LT Vol	25	30	15	20
Through Vol	15	205	170	15
RT Vol	25	30	15	20
Lane Flow Rate	71	288	217	60
Geometry Grp	1	1	1	1
Degree of Util (X)	0.098	0.357	0.275	0.083
Departure Headway (Hd)	4.997	4.457	4.546	5.022
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	714	807	789	710
Service Time	3.049	2.491	2.581	3.076
HCM Lane V/C Ratio	0.099	0.357	0.275	0.085
HCM Control Delay	8.6	10	9.3	8.5
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	1.6	1.1	0.3

Intersection	
Intersection Delay, s/veh	10.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	70	150	70	45	220	45	20	15	20	20	15	20
Future Vol, veh/h	70	150	70	45	220	45	20	15	20	20	15	20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	76	163	76	49	239	49	22	16	22	22	16	22
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	10.5	10.9	8.9	8.9
HCM LOS	B	B	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	36%	24%	15%	36%
Vol Thru, %	27%	52%	71%	27%
Vol Right, %	36%	24%	15%	36%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	55	290	310	55
LT Vol	20	70	45	20
Through Vol	15	150	220	15
RT Vol	20	70	45	20
Lane Flow Rate	60	315	337	60
Geometry Grp	1	1	1	1
Degree of Util (X)	0.088	0.396	0.425	0.088
Departure Headway (Hd)	5.323	4.523	4.536	5.323
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	668	794	792	668
Service Time	3.399	2.566	2.578	3.399
HCM Lane V/C Ratio	0.09	0.397	0.426	0.09
HCM Control Delay	8.9	10.5	10.9	8.9
HCM Lane LOS	A	B	B	A
HCM 95th-tile Q	0.3	1.9	2.1	0.3

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	130	15	5	200	15	5
Future Vol, veh/h	130	15	5	200	15	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	141	16	5	217	16	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	157	0	376	149
Stage 1	-	-	-	-	149	-
Stage 2	-	-	-	-	227	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1423	-	625	898
Stage 1	-	-	-	-	879	-
Stage 2	-	-	-	-	811	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1423	-	623	898
Mov Cap-2 Maneuver	-	-	-	-	623	-
Stage 1	-	-	-	-	879	-
Stage 2	-	-	-	-	808	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	10.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	675	-	-	1423	-
HCM Lane V/C Ratio	0.032	-	-	0.004	-
HCM Control Delay (s)	10.5	-	-	7.5	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	75	1000	105	75	475	25	35	70	25	25	100	35
Future Vol, veh/h	75	1000	105	75	475	25	35	70	25	25	100	35
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	0	-	0	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	82	1087	114	82	516	27	38	76	27	27	109	38

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	543	0	0	1201	0	0	1785	2015	601	1440	2059	272
Stage 1	-	-	-	-	-	-	1308	1308	-	694	694	-
Stage 2	-	-	-	-	-	-	477	707	-	746	1365	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1022	-	-	577	-	-	51	~ 58	443	93	~ 54	726
Stage 1	-	-	-	-	-	-	168	228	-	399	442	-
Stage 2	-	-	-	-	-	-	538	436	-	372	214	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1022	-	-	577	-	-	-	~ 46	443	-	~ 43	726
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	~ 46	-	-	~ 43	-
Stage 1	-	-	-	-	-	-	155	210	-	367	379	-
Stage 2	-	-	-	-	-	-	312	374	-	205	197	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	1.6		
HCM LOS			-	-

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	-	46	443	1022	-	-	577	-	-	-	43	726
HCM Lane V/C Ratio	-	1.654	0.061	0.08	-	-	0.141	-	-	-	2.528	0.052
HCM Control Delay (s)	-$	513.1	13.7	8.8	-	-	12.3	-	-	-$	894.4	10.2
HCM Lane LOS	-	F	B	A	-	-	B	-	-	-	F	B
HCM 95th %tile Q(veh)	-	7.5	0.2	0.3	-	-	0.5	-	-	-	11.7	0.2

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

TOTAL 2040

HCM 6th Signalized Intersection Summary
1: US 85 & CR 14 1/2/14th Street

11/25/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	75	55	710	100	435	40	1080	145	265	1335	35
Future Volume (veh/h)	80	75	55	710	100	435	40	1080	145	265	1335	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	87	82	60	772	109	473	43	1174	158	288	1451	38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	241	201	476	354	561	476	268	1185	528	270	1185	528
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.08	0.33	0.33	0.08	0.33	0.33
Sat Flow, veh/h	502	669	1585	1246	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	169	0	60	772	109	473	43	1174	158	288	1451	38
Grp Sat Flow(s),veh/h/ln	1170	0	1585	1246	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	4.1	0.0	1.7	11.3	2.6	17.9	0.9	19.7	4.4	5.0	20.0	1.0
Cycle Q Clear(g_c), s	6.7	0.0	1.7	18.0	2.6	17.9	0.9	19.7	4.4	5.0	20.0	1.0
Prop In Lane	0.51		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	442	0	476	354	561	476	268	1185	528	270	1185	528
V/C Ratio(X)	0.38	0.00	0.13	2.18	0.19	0.99	0.16	0.99	0.30	1.07	1.22	0.07
Avail Cap(c_a), veh/h	442	0	476	354	561	476	268	1185	528	270	1185	528
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.8	0.0	15.3	26.3	15.6	21.0	13.8	19.9	14.8	17.6	20.0	13.7
Incr Delay (d2), s/veh	2.5	0.0	0.5	540.7	0.8	40.0	1.3	24.1	1.4	73.2	108.9	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	0.6	58.0	1.1	11.2	0.4	11.2	1.7	7.7	25.2	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.3	0.0	15.8	567.0	16.4	60.9	15.1	44.0	16.3	90.8	128.9	13.9
LnGrp LOS	B	A	B	F	B	E	B	D	B	F	F	B
Approach Vol, veh/h		229			1354			1375			1777	
Approach Delay, s/veh		18.4			345.9			39.9			120.3	
Approach LOS		B			F			D			F	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.0	27.0		23.0	10.0	27.0		23.0
Change Period (Y+Rc), s	5.0	7.0		5.0	5.0	7.0		5.0
Max Green Setting (Gmax), s	5.0	20.0		18.0	5.0	20.0		18.0
Max Q Clear Time (g_c+I1), s	7.0	21.7		8.7	2.9	22.0		20.0
Green Ext Time (p_c), s	0.0	0.0		0.9	0.0	0.0		0.0

Intersection Summary		
HCM 6th Ctrl Delay		156.5
HCM 6th LOS		F

HCM 6th Signalized Intersection Summary
1: US 85 & CR 14 1/2/14th Street

11/25/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	160	140	550	75	600	40	1665	295	320	1330	20
Future Volume (veh/h)	85	160	140	550	75	600	40	1665	295	320	1330	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	92	174	152	598	82	652	43	1810	321	348	1446	22
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	182	299	476	270	561	476	268	1185	528	268	1185	528
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.08	0.33	0.33	0.08	0.33	0.33
Sat Flow, veh/h	338	996	1585	1054	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	266	0	152	598	82	652	43	1810	321	348	1446	22
Grp Sat Flow(s),veh/h/ln	1334	0	1585	1054	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	6.0	0.0	4.5	8.5	1.9	18.0	0.9	20.0	10.2	5.0	20.0	0.6
Cycle Q Clear(g_c), s	9.5	0.0	4.5	18.0	1.9	18.0	0.9	20.0	10.2	5.0	20.0	0.6
Prop In Lane	0.35		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	481	0	476	270	561	476	268	1185	528	268	1185	528
V/C Ratio(X)	0.55	0.00	0.32	2.21	0.15	1.37	0.16	1.53	0.61	1.30	1.22	0.04
Avail Cap(c_a), veh/h	481	0	476	270	561	476	268	1185	528	268	1185	528
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.6	0.0	16.3	27.6	15.4	21.0	13.8	20.0	16.7	17.6	20.0	13.5
Incr Delay (d2), s/veh	4.5	0.0	1.8	558.0	0.5	180.0	1.3	241.9	5.1	158.1	107.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	0.0	1.7	45.6	0.8	29.7	0.4	47.1	4.1	13.9	24.9	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.1	0.0	18.0	585.6	15.9	201.0	15.1	261.9	21.8	175.7	127.1	13.7
LnGrp LOS	C	A	B	F	B	F	B	F	C	F	F	B
Approach Vol, veh/h		418			1332			2174			1816	
Approach Delay, s/veh		20.6			362.3			221.6			135.0	
Approach LOS		C			F			F			F	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.0	27.0		23.0	10.0	27.0		23.0
Change Period (Y+Rc), s	5.0	7.0		5.0	5.0	7.0		5.0
Max Green Setting (Gmax), s	5.0	20.0		18.0	5.0	20.0		18.0
Max Q Clear Time (g_c+I1), s	7.0	22.0		11.5	2.9	22.0		20.0
Green Ext Time (p_c), s	0.0	0.0		1.4	0.0	0.0		0.0

Intersection Summary		
HCM 6th Ctrl Delay		212.2
HCM 6th LOS		F

Intersection	
Intersection Delay, s/veh	9.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	205	30	15	170	20	25	15	25	25	15	35
Future Vol, veh/h	40	205	30	15	170	20	25	15	25	25	15	35
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	43	223	33	16	185	22	27	16	27	27	16	38
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	10.3	9.5	8.7	8.7
HCM LOS	B	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	38%	15%	7%	33%
Vol Thru, %	23%	75%	83%	20%
Vol Right, %	38%	11%	10%	47%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	65	275	205	75
LT Vol	25	40	15	25
Through Vol	15	205	170	15
RT Vol	25	30	20	35
Lane Flow Rate	71	299	223	82
Geometry Grp	1	1	1	1
Degree of Util (X)	0.1	0.376	0.285	0.113
Departure Headway (Hd)	5.077	4.533	4.608	5.001
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	702	792	778	713
Service Time	3.139	2.574	2.652	3.062
HCM Lane V/C Ratio	0.101	0.378	0.287	0.115
HCM Control Delay	8.7	10.3	9.5	8.7
HCM Lane LOS	A	B	A	A
HCM 95th-tile Q	0.3	1.8	1.2	0.4

Intersection	
Intersection Delay, s/veh	10.5
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	95	150	70	15	220	50	20	15	20	25	15	35
Future Vol, veh/h	95	150	70	15	220	50	20	15	20	25	15	35
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	103	163	76	16	239	54	22	16	22	27	16	38
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	11.1	10.6	9	9.1
HCM LOS	B	B	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	36%	30%	5%	33%
Vol Thru, %	27%	48%	77%	20%
Vol Right, %	36%	22%	18%	47%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	55	315	285	75
LT Vol	20	95	15	25
Through Vol	15	150	220	15
RT Vol	20	70	50	35
Lane Flow Rate	60	342	310	82
Geometry Grp	1	1	1	1
Degree of Util (X)	0.089	0.435	0.395	0.119
Departure Headway (Hd)	5.37	4.577	4.592	5.264
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	661	784	781	674
Service Time	3.457	2.63	2.645	3.347
HCM Lane V/C Ratio	0.091	0.436	0.397	0.122
HCM Control Delay	9	11.1	10.6	9.1
HCM Lane LOS	A	B	B	A
HCM 95th-tile Q	0.3	2.2	1.9	0.4

Intersection	
Int Delay, s/veh	35.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	405	65	25	1010	25	90	50	25	25	50	75
Future Vol, veh/h	25	405	65	25	1010	25	90	50	25	25	50	75
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	0	-	0	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	440	71	27	1098	27	98	54	27	27	54	82

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1125	0	0	511	0	0	1160	1709	256	1467	1731	563
Stage 1	-	-	-	-	-	-	530	530	-	1166	1166	-
Stage 2	-	-	-	-	-	-	630	1179	-	301	565	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	617	-	-	1050	-	-	151	90	743	89	87	470
Stage 1	-	-	-	-	-	-	500	525	-	206	266	-
Stage 2	-	-	-	-	-	-	436	262	-	683	506	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	617	-	-	1050	-	-	~ 55	84	743	39	81	470
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 55	84	-	39	81	-
Stage 1	-	-	-	-	-	-	478	502	-	197	259	-
Stage 2	-	-	-	-	-	-	277	255	-	561	484	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0.2	$ 324.7	80.2
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	55	84	743	617	-	-	1050	-	-	39	81	470
HCM Lane V/C Ratio	1.779	0.647	0.037	0.044	-	-	0.026	-	-	0.697	0.671	0.173
HCM Control Delay (s)	$ 533.9	105.5	10	11.1	-	-	8.5	-	-	212.4	112.9	14.3
HCM Lane LOS	F	F	B	B	-	-	A	-	-	F	F	B
HCM 95th %tile Q(veh)	9.3	3	0.1	0.1	-	-	0.1	-	-	2.5	3.1	0.6

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	75	1070	175	75	485	25	80	70	25	25	100	35
Future Vol, veh/h	75	1070	175	75	485	25	80	70	25	25	100	35
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	0	-	0	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	82	1163	190	82	527	27	87	76	27	27	109	38

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	554	0	0	1353	0	0	1904	2140	677	1489	2222	277
Stage 1	-	-	-	-	-	-	1422	1422	-	705	705	-
Stage 2	-	-	-	-	-	-	482	718	-	784	1517	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1012	-	-	504	-	-	~ 42	~ 48	395	86	~ 43	720
Stage 1	-	-	-	-	-	-	143	200	-	393	437	-
Stage 2	-	-	-	-	-	-	534	431	-	352	180	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1012	-	-	504	-	-	-	~ 37	395	-	~ 33	720
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	~ 37	-	-	~ 33	-
Stage 1	-	-	-	-	-	-	131	184	-	361	366	-
Stage 2	-	-	-	-	-	-	298	361	-	177	165	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	1.7		
HCM LOS			-	-

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	-	37	395	1012	-	-	504	-	-	-	33	720
HCM Lane V/C Ratio	-	2.056	0.069	0.081	-	-	0.162	-	-	-	3.294	0.053
HCM Control Delay (s)	-	$ 722.8	14.8	8.9	-	-	13.5	-	-	$	1284.5	10.3
HCM Lane LOS	-	F	B	A	-	-	B	-	-	-	F	B
HCM 95th %tile Q(veh)	-	8.3	0.2	0.3	-	-	0.6	-	-	-	12.7	0.2

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	2.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	45	120	10	20	120
Future Vol, veh/h	20	45	120	10	20	120
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	49	130	11	22	130

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	310	136	0	0	141	0
Stage 1	136	-	-	-	-	-
Stage 2	174	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	682	913	-	-	1442	-
Stage 1	890	-	-	-	-	-
Stage 2	856	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	671	913	-	-	1442	-
Mov Cap-2 Maneuver	671	-	-	-	-	-
Stage 1	890	-	-	-	-	-
Stage 2	842	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.8	0	1.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	822	1442	-
HCM Lane V/C Ratio	-	-	0.086	0.015	-
HCM Control Delay (s)	-	-	9.8	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0	-

Intersection	
Int Delay, s/veh	2.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	45	130	35	70	280
Future Vol, veh/h	20	45	130	35	70	280
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	49	141	38	76	304

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	616	160	0	0	179	0
Stage 1	160	-	-	-	-	-
Stage 2	456	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	454	885	-	-	1397	-
Stage 1	869	-	-	-	-	-
Stage 2	638	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	424	885	-	-	1397	-
Mov Cap-2 Maneuver	424	-	-	-	-	-
Stage 1	869	-	-	-	-	-
Stage 2	597	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.1	0	1.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	663	1397	-
HCM Lane V/C Ratio	-	-	0.107	0.054	-
HCM Control Delay (s)	-	-	11.1	7.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0.2	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	450	5	5	1050	1	10	1	5	1	1	5
Future Vol, veh/h	5	450	5	5	1050	1	10	1	5	1	1	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	489	5	5	1141	1	11	1	5	1	1	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1142	0	0	494	0	0	1083	1654	247	1407	1656	571
Stage 1	-	-	-	-	-	-	502	502	-	1152	1152	-
Stage 2	-	-	-	-	-	-	581	1152	-	255	504	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	608	-	-	1066	-	-	172	97	753	99	97	464
Stage 1	-	-	-	-	-	-	520	540	-	210	270	-
Stage 2	-	-	-	-	-	-	467	270	-	727	539	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	608	-	-	1066	-	-	165	95	753	96	95	464
Mov Cap-2 Maneuver	-	-	-	-	-	-	165	95	-	96	95	-
Stage 1	-	-	-	-	-	-	514	534	-	208	266	-
Stage 2	-	-	-	-	-	-	454	266	-	712	533	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.1	24.1	21.9
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	206	608	-	-	1066	-	-	221
HCM Lane V/C Ratio	0.084	0.009	-	-	0.005	-	-	0.034
HCM Control Delay (s)	24.1	11	0.1	-	8.4	0.1	-	21.9
HCM Lane LOS	C	B	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	1050	15	5	575	5	10	5	5	1	5	5
Future Vol, veh/h	5	1050	15	5	575	5	10	5	5	1	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	1141	16	5	625	5	11	5	5	1	5	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	630	0	0	1157	0	0	1484	1799	579	1221	1805	315
Stage 1	-	-	-	-	-	-	1159	1159	-	638	638	-
Stage 2	-	-	-	-	-	-	325	640	-	583	1167	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	948	-	-	600	-	-	87	79	458	136	78	681
Stage 1	-	-	-	-	-	-	208	268	-	431	469	-
Stage 2	-	-	-	-	-	-	661	468	-	465	266	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	948	-	-	600	-	-	80	77	458	124	76	681
Mov Cap-2 Maneuver	-	-	-	-	-	-	80	77	-	124	76	-
Stage 1	-	-	-	-	-	-	205	264	-	425	463	-
Stage 2	-	-	-	-	-	-	640	462	-	443	262	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.2	50.7	34.2
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	100	948	-	-	600	-	-	135
HCM Lane V/C Ratio	0.217	0.006	-	-	0.009	-	-	0.089
HCM Control Delay (s)	50.7	8.8	0.1	-	11.1	0.1	-	34.2
HCM Lane LOS	F	A	A	-	B	A	-	D
HCM 95th %tile Q(veh)	0.8	0	-	-	0	-	-	0.3

Northrup & 14th With Improvements
Appendix C

HCM 6th Signalized Intersection Summary
3: Northrup Ave & 14th Street

11/27/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	400	45	25	1000	25	45	50	25	25	50	75
Future Volume (veh/h)	25	400	45	25	1000	25	45	50	25	25	50	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	27	435	49	27	1087	27	49	54	27	27	54	82
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	248	1450	162	475	1595	40	584	692	586	607	692	586
Arrive On Green	0.45	0.45	0.45	0.45	0.45	0.45	0.37	0.37	0.37	0.37	0.37	0.37
Sat Flow, veh/h	506	3221	361	911	3543	88	1253	1870	1585	1317	1870	1585
Grp Volume(v), veh/h	27	239	245	27	545	569	49	54	27	27	54	82
Grp Sat Flow(s),veh/h/ln	506	1777	1805	911	1777	1855	1253	1870	1585	1317	1870	1585
Q Serve(g_s), s	2.2	4.3	4.3	1.0	12.2	12.2	1.3	0.9	0.5	0.7	0.9	1.7
Cycle Q Clear(g_c), s	14.4	4.3	4.3	5.3	12.2	12.2	2.3	0.9	0.5	1.6	0.9	1.7
Prop In Lane	1.00		0.20	1.00		0.05	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	248	800	812	475	800	835	584	692	586	607	692	586
V/C Ratio(X)	0.11	0.30	0.30	0.06	0.68	0.68	0.08	0.08	0.05	0.04	0.08	0.14
Avail Cap(c_a), veh/h	248	800	812	475	800	835	584	692	586	607	692	586
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.6	8.7	8.7	10.4	10.9	10.9	10.9	10.2	10.1	10.7	10.2	10.5
Incr Delay (d2), s/veh	0.9	1.0	1.0	0.2	4.7	4.5	0.3	0.2	0.1	0.1	0.2	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	1.5	1.6	0.2	4.8	4.9	0.4	0.4	0.2	0.2	0.4	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.5	9.7	9.7	10.7	15.6	15.4	11.2	10.4	10.2	10.9	10.4	11.0
LnGrp LOS	B	A	A	B	B	B	B	B	B	B	B	B
Approach Vol, veh/h		511			1141			130			163	
Approach Delay, s/veh		10.1			15.4			10.7			10.8	
Approach LOS		B			B			B			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		23.0		27.0		23.0		27.0				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.5		22.5		18.5		22.5				
Max Q Clear Time (g_c+I1), s		4.3		16.4		3.7		14.2				
Green Ext Time (p_c), s		0.4		1.6		0.5		4.5				

Intersection Summary												
HCM 6th Ctrl Delay			13.3									
HCM 6th LOS			B									

HCM 6th Signalized Intersection Summary
3: Northrup Ave & 14th Street

11/27/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	1000	105	75	475	25	35	70	25	25	100	35
Future Volume (veh/h)	75	1000	105	75	475	25	35	70	25	25	100	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	82	1087	114	82	516	27	38	76	27	27	109	38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	517	1758	184	372	1861	97	449	577	489	480	577	489
Arrive On Green	1.00	1.00	1.00	0.54	0.54	0.54	0.31	0.31	0.31	0.31	0.31	0.31
Sat Flow, veh/h	863	3246	340	466	3435	179	1241	1870	1585	1291	1870	1585
Grp Volume(v), veh/h	82	595	606	82	266	277	38	76	27	27	109	38
Grp Sat Flow(s),veh/h/ln	863	1777	1809	466	1777	1838	1241	1870	1585	1291	1870	1585
Q Serve(g_s), s	1.0	0.0	0.0	5.9	4.9	4.9	1.4	1.8	0.7	0.9	2.6	1.0
Cycle Q Clear(g_c), s	5.9	0.0	0.0	5.9	4.9	4.9	4.0	1.8	0.7	2.7	2.6	1.0
Prop In Lane	1.00		0.19	1.00		0.10	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	517	962	980	372	962	996	449	577	489	480	577	489
V/C Ratio(X)	0.16	0.62	0.62	0.22	0.28	0.28	0.08	0.13	0.06	0.06	0.19	0.08
Avail Cap(c_a), veh/h	517	962	980	372	962	996	449	577	489	480	577	489
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.4	0.0	0.0	7.6	7.4	7.4	16.7	15.0	14.6	15.9	15.2	14.7
Incr Delay (d2), s/veh	0.7	3.0	2.9	1.4	0.7	0.7	0.4	0.5	0.2	0.2	0.7	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.8	0.8	0.6	1.7	1.7	0.4	0.8	0.3	0.3	1.1	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	1.1	3.0	2.9	9.0	8.1	8.1	17.1	15.4	14.8	16.1	16.0	15.0
LnGrp LOS	A	A	A	A	A	A	B	B	B	B	B	B
Approach Vol, veh/h		1283			625			141			174	
Approach Delay, s/veh		2.8			8.2			15.8			15.8	
Approach LOS		A			A			B			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		23.0		37.0		23.0		37.0				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.5		32.5		18.5		32.5				
Max Q Clear Time (g_c+I1), s		6.0		7.9		4.7		7.9				
Green Ext Time (p_c), s		0.4		9.9		0.6		4.7				

Intersection Summary		
HCM 6th Ctrl Delay		6.2
HCM 6th LOS		A

HCM 6th Signalized Intersection Summary
3: Northrup Ave & 14th Street

11/27/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	405	65	25	1010	25	90	50	25	25	50	75
Future Volume (veh/h)	25	405	65	25	1010	25	90	50	25	25	50	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	27	440	71	27	1098	27	98	54	27	27	54	82
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	231	1319	211	441	1524	37	610	729	618	634	729	618
Arrive On Green	0.43	0.43	0.43	0.43	0.43	0.43	0.39	0.39	0.39	0.39	0.39	0.39
Sat Flow, veh/h	501	3067	492	889	3544	87	1253	1870	1585	1317	1870	1585
Grp Volume(v), veh/h	27	254	257	27	550	575	98	54	27	27	54	82
Grp Sat Flow(s),veh/h/ln	501	1777	1782	889	1777	1855	1253	1870	1585	1317	1870	1585
Q Serve(g_s), s	2.4	4.7	4.8	1.0	12.8	12.8	2.7	0.9	0.5	0.7	0.9	1.7
Cycle Q Clear(g_c), s	15.1	4.7	4.8	5.9	12.8	12.8	3.6	0.9	0.5	1.6	0.9	1.7
Prop In Lane	1.00		0.28	1.00		0.05	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	231	764	766	441	764	798	610	729	618	634	729	618
V/C Ratio(X)	0.12	0.33	0.34	0.06	0.72	0.72	0.16	0.07	0.04	0.04	0.07	0.13
Avail Cap(c_a), veh/h	231	764	766	441	764	798	610	729	618	634	729	618
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.0	9.5	9.5	11.4	11.8	11.8	10.7	9.6	9.5	10.1	9.6	9.8
Incr Delay (d2), s/veh	1.0	1.2	1.2	0.3	5.8	5.6	0.6	0.2	0.1	0.1	0.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	1.7	1.8	0.2	5.2	5.4	0.7	0.3	0.2	0.2	0.3	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.1	10.6	10.7	11.7	17.6	17.3	11.3	9.8	9.6	10.2	9.8	10.3
LnGrp LOS	B	B	B	B	B	B	B	A	A	B	A	B
Approach Vol, veh/h		538			1152			179			163	
Approach Delay, s/veh		11.1			17.3			10.6			10.1	
Approach LOS		B			B			B			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		24.0		26.0		24.0		26.0				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		19.5		21.5		19.5		21.5				
Max Q Clear Time (g_c+I1), s		5.6		17.1		3.7		14.8				
Green Ext Time (p_c), s		0.5		1.3		0.5		3.9				

Intersection Summary			
HCM 6th Ctrl Delay		14.5	
HCM 6th LOS		B	

HCM 6th Signalized Intersection Summary
3: Northrup Ave & 14th Street

11/27/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	1070	175	75	485	25	80	70	25	25	100	35
Future Volume (veh/h)	75	1070	175	75	485	25	80	70	25	25	100	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	82	1163	190	82	527	27	87	76	27	27	109	38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	512	1657	270	338	1863	95	449	577	489	480	577	489
Arrive On Green	1.00	1.00	1.00	0.54	0.54	0.54	0.31	0.31	0.31	0.31	0.31	0.31
Sat Flow, veh/h	854	3060	498	403	3440	176	1241	1870	1585	1291	1870	1585
Grp Volume(v), veh/h	82	673	680	82	272	282	87	76	27	27	109	38
Grp Sat Flow(s),veh/h/ln	854	1777	1781	403	1777	1839	1241	1870	1585	1291	1870	1585
Q Serve(g_s), s	1.1	0.0	0.0	7.0	5.0	5.0	3.3	1.8	0.7	0.9	2.6	1.0
Cycle Q Clear(g_c), s	6.1	0.0	0.0	7.0	5.0	5.0	5.9	1.8	0.7	2.7	2.6	1.0
Prop In Lane	1.00		0.28	1.00		0.10	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	512	962	965	338	962	996	449	577	489	480	577	489
V/C Ratio(X)	0.16	0.70	0.70	0.24	0.28	0.28	0.19	0.13	0.06	0.06	0.19	0.08
Avail Cap(c_a), veh/h	512	962	965	338	962	996	449	577	489	480	577	489
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.5	0.0	0.0	7.9	7.4	7.4	17.4	15.0	14.6	15.9	15.2	14.7
Incr Delay (d2), s/veh	0.7	4.2	4.3	1.7	0.7	0.7	1.0	0.5	0.2	0.2	0.7	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	1.1	1.2	0.6	1.7	1.8	1.0	0.8	0.3	0.3	1.1	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	1.1	4.2	4.3	9.6	8.2	8.2	18.4	15.4	14.8	16.1	16.0	15.0
LnGrp LOS	A	A	A	A	A	A	B	B	B	B	B	B
Approach Vol, veh/h		1435			636			190			174	
Approach Delay, s/veh		4.1			8.4			16.7			15.8	
Approach LOS		A			A			B			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		23.0		37.0		23.0		37.0				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.5		32.5		18.5		32.5				
Max Q Clear Time (g_c+I1), s		7.9		8.1		4.7		9.0				
Green Ext Time (p_c), s		0.5		11.6		0.6		4.9				

Intersection Summary			
HCM 6th Ctrl Delay			7.0
HCM 6th LOS			A

Figure and Table 4C-3 Manual on Uniform Traffic Control Devices

Excerpt from the Federal Highway Administration's, "Manual on Uniform Traffic Control Devices" (MUTCD), 2009

2009 EDITION PART 4 FIGURE 4C-3. WARRANT 3, PEAK HOUR

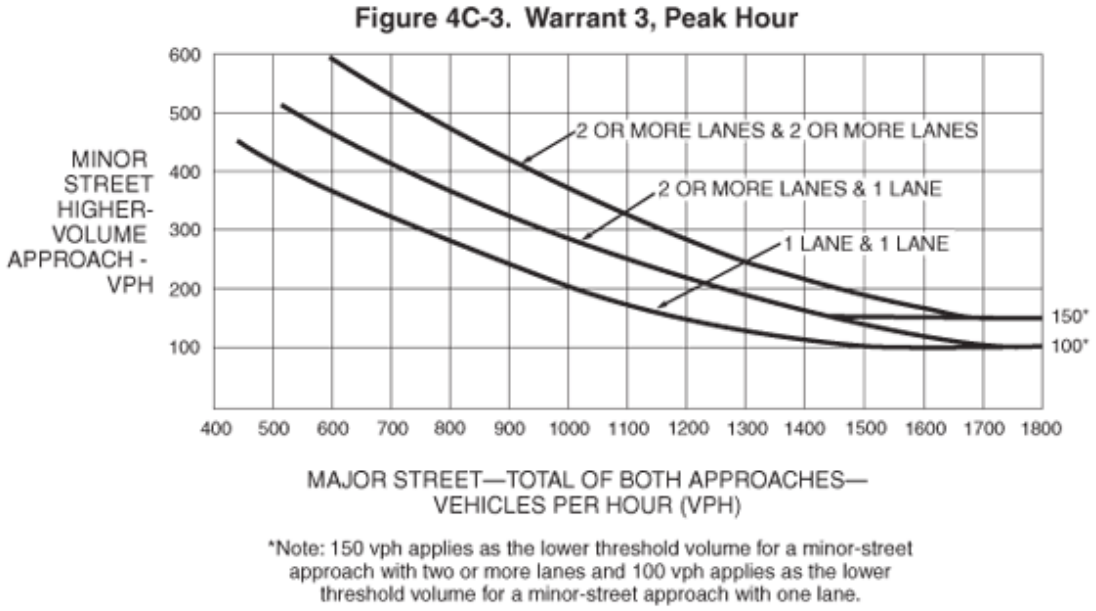


Figure 4C-3. Warrant 3, Peak Hour

This figure shows a graph depicting numerical values for Warrant 3, Peak Hour (see Section 4C.04 for further details). The figure displays three curves—one for each existing combination of approach lanes: one lane and one lane, two or more lanes and one lane, and two or more lanes and two or more lanes.

The table below shows the approximate VPH on the major street and corresponding VPH on the minor street for each combination of approach lanes.

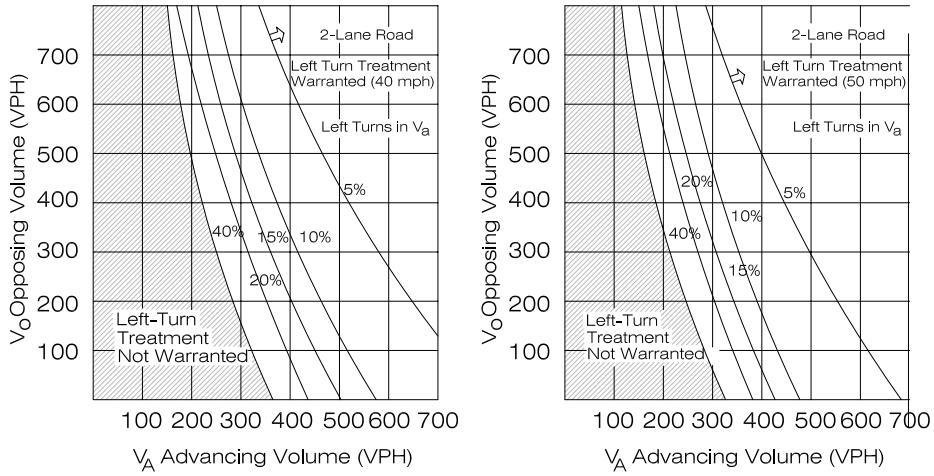
Table for Figure 4C-3					
One lane and one lane		Two or more lanes and one lane		Two or more lanes and two or more lanes	
VPH on the major street (Total of both approaches)	VPH on the minor street (Higher volume approach)	VPH on the major street (Total of both approaches)	VPH on the minor street (Higher volume approach)	VPH on the major street (Total of both approaches)	VPH on the minor street (Higher volume approach)
1800	100	1800	100 or 150*	1800	150
1700	100	1700	100 or 150*	1700	150
1600	100	1600	120 or 150*	1600	170
1500	100	1500	145 or 150*	1500	180
1400	120	1400	155	1400	220
1300	130	1300	190	1300	250
1200	150	1200	220	1200	285
1100	175	1100	250	1100	340
1000	200	1000	285	1000	370
900	245	900	325	900	425
800	285	800	360	800	475
700	325	700	420	700	540
600	360	600	460	600	590
500	420	500	Not available	500	Not available

* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

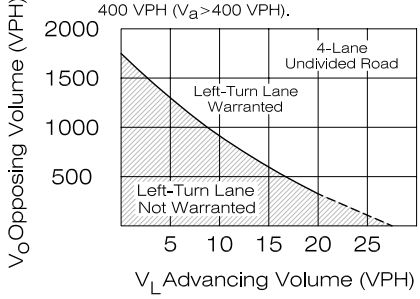
Source: Federal Highway Administration's on-line "Manual on Uniform Traffic Control Devices" (MUTCD) 2009

Appendix D
NCHRP REPORT 279

Based on Transportation Research Board's, *NCHRP – Report 279*, 1985

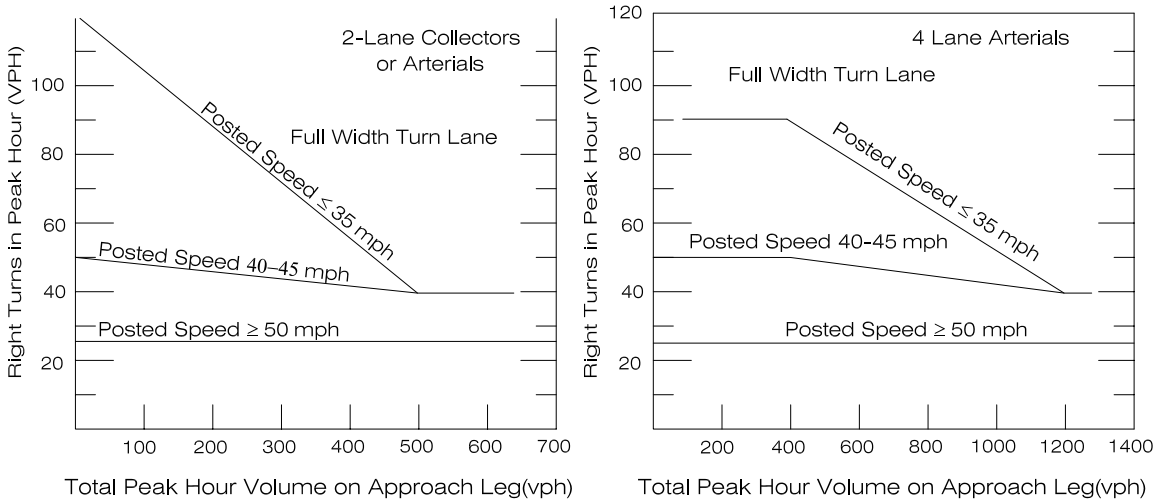


NOTE: When V_O < 400 VPH (dashed line). A Left-Turn Lane is not normally warranted unless the advancing volume (V_a) in the same direction as the Left-Turning traffic exceeds 400 VPH (V_a>400 VPH).



Notes: 1. Left turn lanes are required at all intersections and all-movement accesses on arterial roadways except where roundabouts are provided.

Based on Transportation Research Board's, *NCHRP – Report 279*, 1985



NOTE:
1. Right turn lanes are required on 6-lane arterial when the right turn volume exceeds 200 vph.

Rollins Consult LLC

MEMORANDUM

To: Roy Vestal, Public Works Director, City of Fort Lupton

From: Ruth Rollins, Principal, Rollins Consult LLC

Date: August 26, 2020

Subject: Supplemental Analysis of Willow Bend with Northrup Access Only

The following memorandum is a supplemental analysis of the proposed Willow Bend residential project in Fort Lupton. The original study *Traffic Impact Study, Fulton Ranch*, December 2, 2019, is used as a reference for this supplemental analysis. The project location is depicted on Figure 1. The project name has changed from Fulton Ranch to Willow Bend. The revised site plan allows for a total of 449 homes (the previous study included 466 homes) and is shown on Figure 2.

This study was required by the City to address the proposed project and it's short term use of Northrup Avenue exclusively. Northrup would be constructed to the south connecting to the existing road. Northrup would not connect to the north. The long term build out of the area would include two access points onto 14th Street and the completion of Northrup Avenue, north to 14th Street.

This memo includes:

- A description of the existing transportation network.
- Updated project trip generation estimates at Northrup Avenue and 9th Street.
- Analysis of the intersection of Northrup Avenue at 9th Street for the Year 2024. This includes a background scenario that accounts for other projects in the area/general growth and a total scenario with buildout of the project.
- Determination if any improvements are needed near the existing Twombly Elementary School.
- Discussion of project traffic that may travel south of 9th Street on Northrup Avenue and impacts to the neighborhood.
- Recommended improvements.

Figure 1 – Study Area

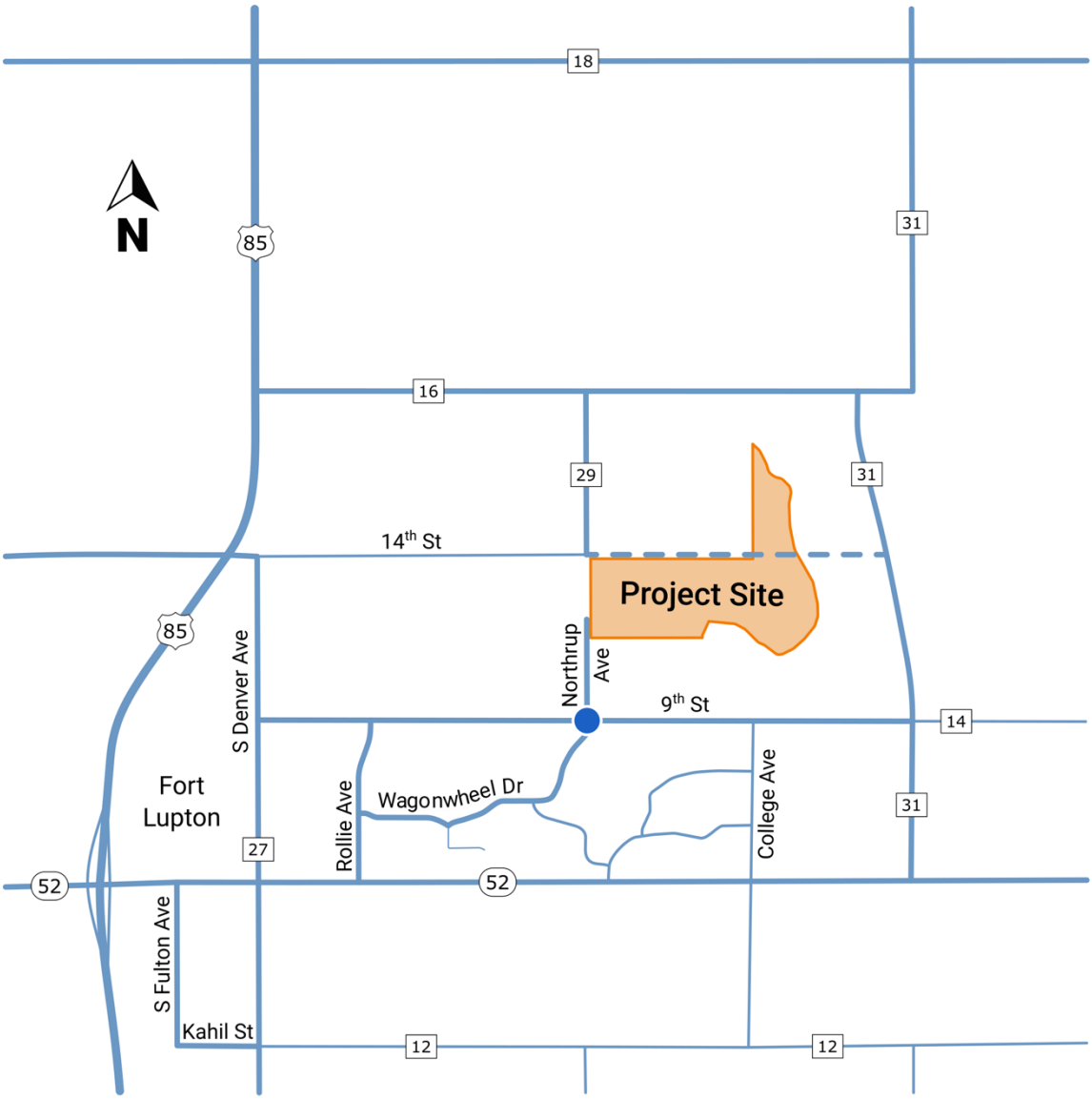
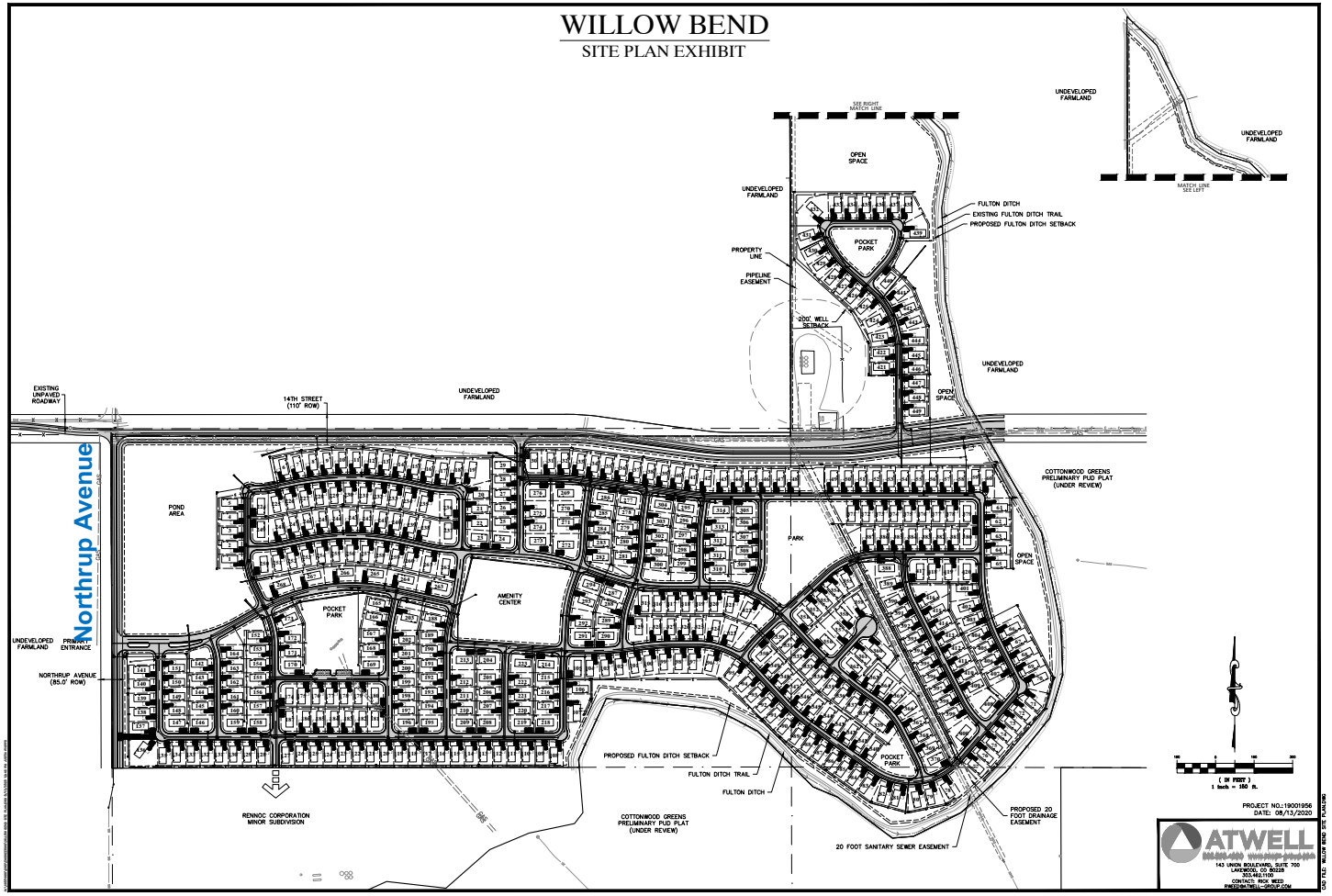


Figure 2 – Site Plan



EXISTING TRANSPORTATION NETWORK

The current transportation network is briefly described below.

9th Street is an east-west two-lane roadway. Portions of 9th Street have been improved to include sidewalks. There are narrow shoulders on 9th Street east of Northrup. Near Northrup Avenue there is no posted speed limit however, the City has a 25 mph speed limit unless posted otherwise. West of Northrup Avenue the speed is 20 mph near the Twombly Elementary School when the school flashers are active. There are sidewalks on both sides of 9th Street west of Northrup Avenue with the exception of a gap on the south side just east of Twombly School. This section will be completed in the near future. To the east of Northrup Avenue there are no sidewalks.

Northrup Avenue is currently a two-lane north-south roadway. It exists north and south of 9th Street. To the south of 9th Street, Northrup Avenue is posted at 25 mph and provides access to the residential area and the Coyote Creek Golf Course. There is parking allowed on both sides of the street. South of 9th the road is 30 feet wide which allows for access and is narrow enough to slightly calm traffic with the presence of on-street parking.

North of 9th Street, Northrup is between 51 and 55 feet wide (based on Google Earth Pro) and allows for parking on both sides of the street. There are sidewalks on both sides (with one exception) ranging from 3.5 to 5 feet in width. On the east side of Northrup the sidewalk ends on the northern boundary of the existing residential development.

Two conditions that should be noted:

- the lack of sidewalk on the east side of Northrup Avenue south of the proposed Willow Bend project
- The southbound approach of Northrup Avenue at 9th Street is offset due to the difference in roadway widths.

UPDATED PROJECT TRAFFIC

The estimated project traffic projections at the study intersection were updated to account for a decrease in dwellings from 466 to 449 and an assignment to Northrup Avenue only.

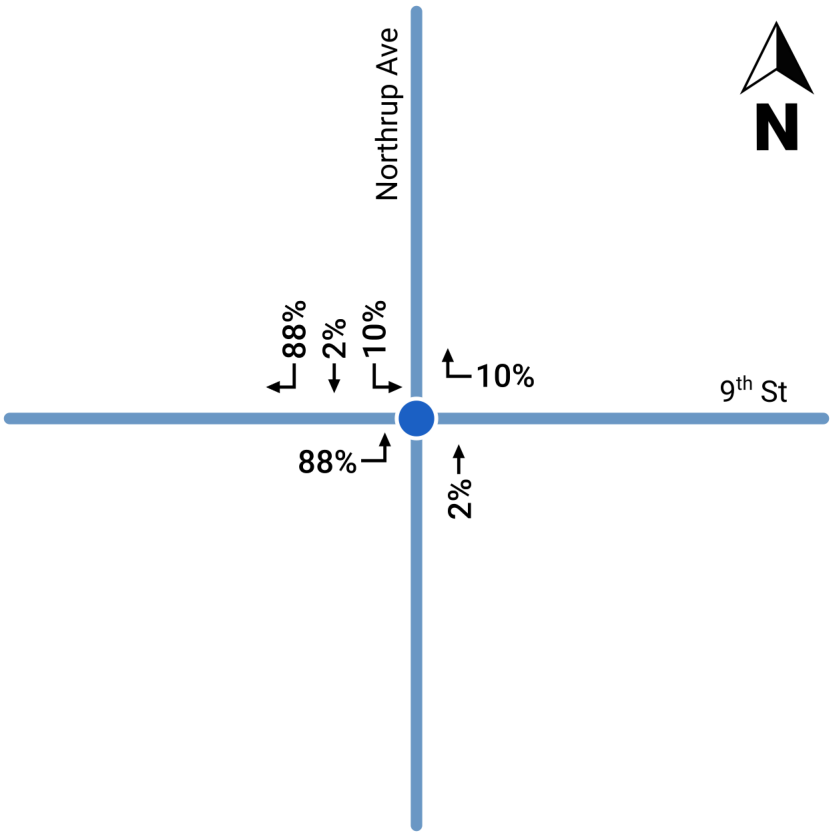
The revised trip generation of the project is shown in Table 1.

Table 1 – Estimated Trip Generation

ITE Land Use Code & Rates		Project	Project Trip Generation						
Land Use	Land Use Code	Dwelling Units	Daily	AM			PM		
				IN	Out	Total	IN	Out	Total
Manufactured Housing	240	449	2,245	36	81	117	128	78	207
Based on ITE Trip Generation 10th Edition									

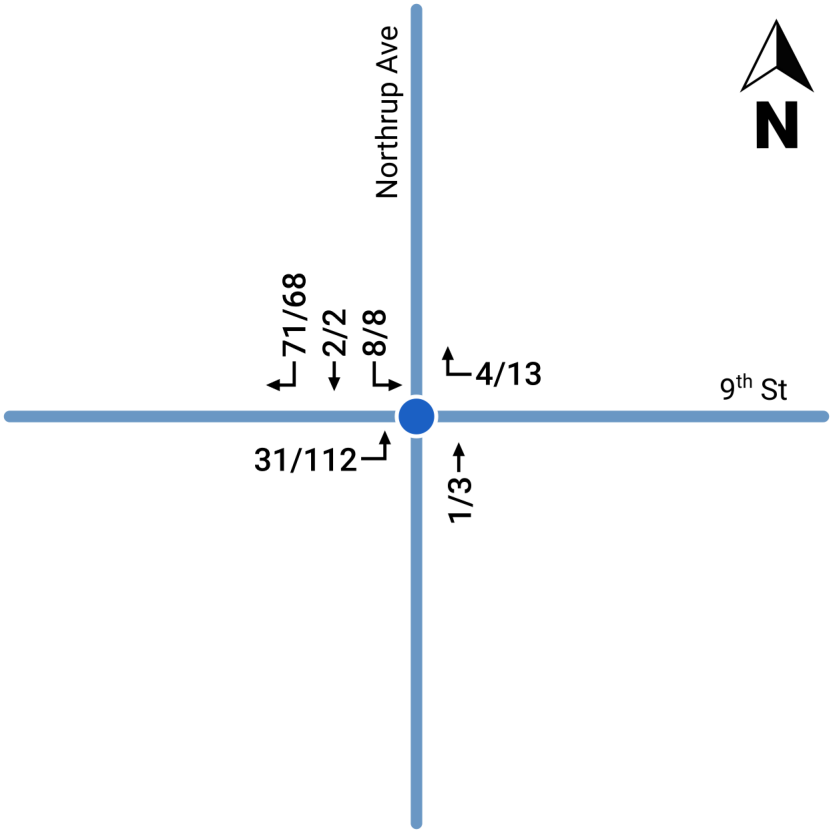
The distribution of the project was updated to reflect the Northrup Avenue only access point. The distribution is shown on Figure 3.

Figure 3 – Trip Distribution



The assignment of the project traffic to the study intersection is depicted on Figure 4. This includes the full buildout of the Willow Bend project.

Figure 4 – Project Traffic



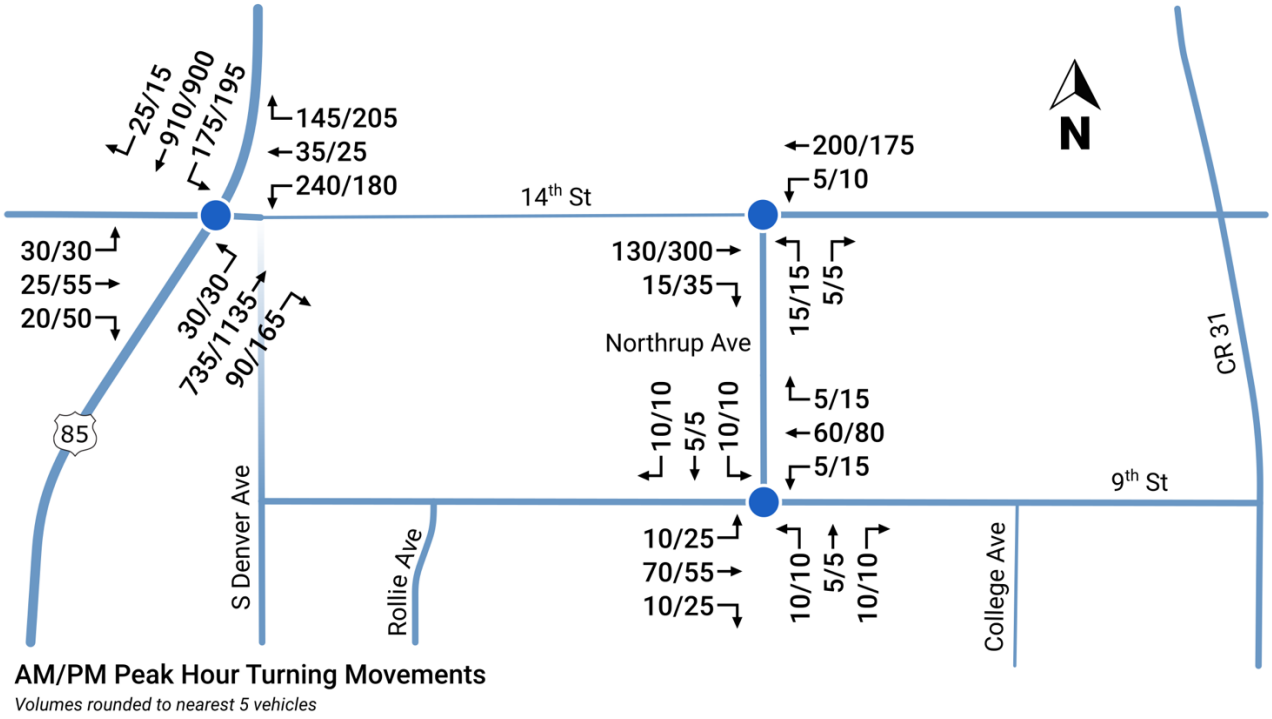
AM/PM Peak Hour Turning Movements

2024 TRAFFIC PROJECTIONS

The background traffic conditions for 2024 were developed in the original traffic study. These projections are shown on Figure 5. The volumes projected for 14th Street were relocated to 9th Street. The 2024 background projections include:

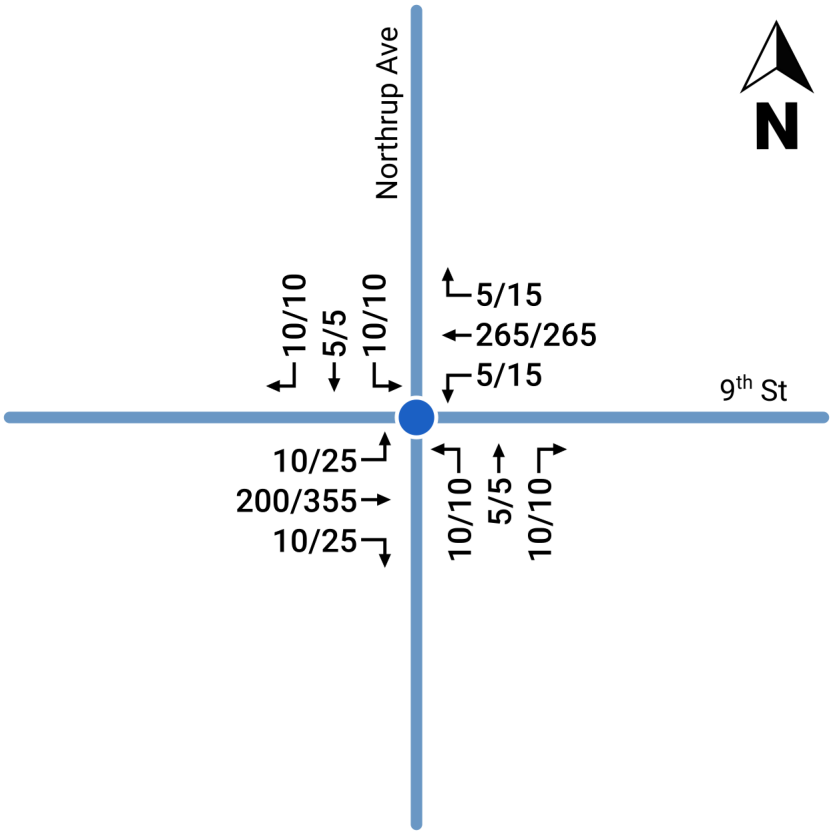
- An annual growth rate in existing traffic of just over 6% per year.
- Traffic associated with the proposed Cottonwood Greens project (located between 9th and the future 14th Streets and east/south of Willow Bend).

Figure 5 – 2024 Original Background Traffic



The resulting revised projections for the intersection of Northrup Avenue at 9th Street are illustrated on Figure 6.

Figure 6 – 2024 Revised Background Traffic

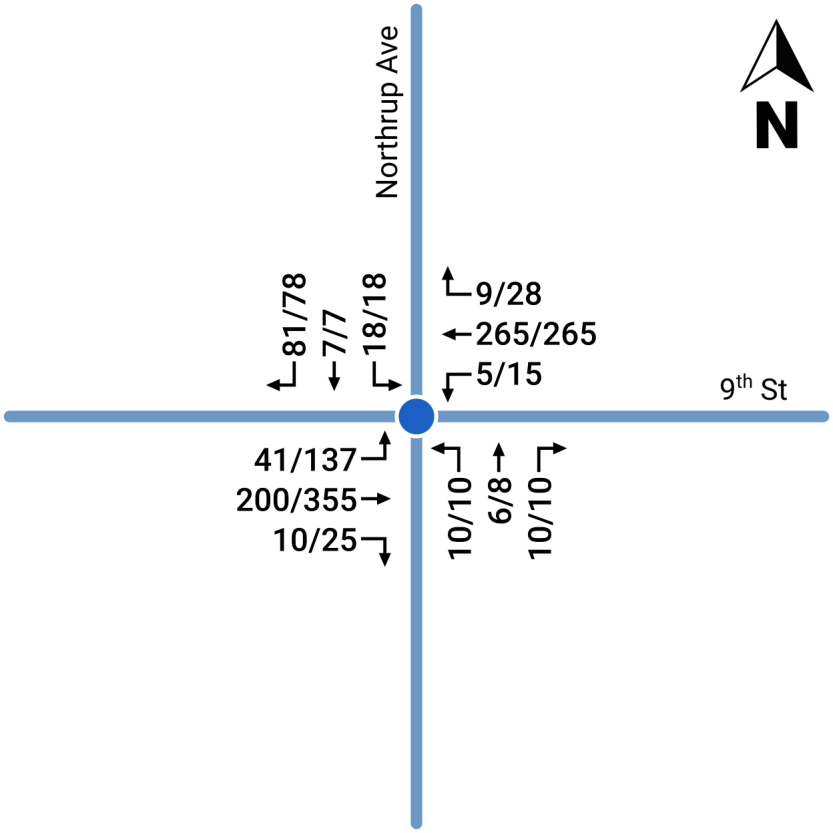


AM/PM Peak Hour Turning Movements

Volumes rounded to nearest 5 vehicles

The total traffic projections for 2024 were developed by adding the project traffic at full build-out, depicted on Figure 4 to the background 2024 traffic shown on Figure 6. The resulting total traffic for 2024 is shown on Figure 7.

Figure 7 – 2024 Total Traffic



AM/PM Peak Hour Turning Movements

TRAFFIC OPERATIONS NORTHRUP/9TH

The future traffic projections at Northrup Avenue and 9th Street were analyzed to determine the anticipated traffic operations. This analysis was done using the same methodology as in the original TIS. The methods employed are based on the Transportation Research Board's, 6th Edition, 2016 *Highway Capacity Manual* (HCM). Level of service (LOS) is based on a "graded" system from LOS A, very little to no delays, to LOS F which represents excessive delays and congestion. The City of Fort Lupton has established a LOS C as the design objective and LOS D as the threshold.

The future background and total 2024 traffic operations are provided on Table 2.

Table 2 - Future 2024 Intersection Level of Service

		AM Peak Hr				PM Peak Hr			
		Background		Total		Background		Total	
Intersection	Movement	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Northrup Ave & 9th St All-Way Stop Control	Overall	9.3	A	10	A	11.5	B	16.4	C
	EB	9.1	A	10.2	B	12.4	B	20.4	C
	WB	9.7	A	10.5	B	10.6	B	12.4	B
	NB	8.2	A	8.6	A	8.8	A	9.6	A
	SB	8.2	A	8.8	A	8.8	A	10	A

Notes:

1. LOS calculations performed using Synchro which is based on the Transportation Research Board HCM 2016.
2. Average vehicle delay (in seconds per vehicle) is reported for both overall intersection and each constrained STOP-controlled movement or approach.

As indicated in the table, the intersection is projected to operate at acceptable levels of service.

9TH STREET NEAR TWOMBLY SCHOOL

The need for additional school area crossing treatments was evaluated with the addition of future traffic along 9th Street. Currently there are numerous marked crossings on 9th Street with S1-1 “School Crossing” signs and striped crosswalks. School flashers are located on both approaches to the school with an advisory speed of 20 mph during flashing operations.

Sidewalks exist on both sides of 9th Street west of 9th Street with the exception of one segment. The missing sidewalk is located on the south side of 9th Street directly east of the school. This section is planned to be constructed in the near future.

It is recommended that crosswalks be installed at the intersection of 9th Street and Northrup Avenue.

TRAVEL ON NORTHRUP SOUTH OF 9TH STREET

The potential for traffic to travel on the public streets such as Northrup Avenue south of 9th Street was considered. This roadway network was driven on August 19, 2020. The roadway system was designed with the intent of minimizing cut-through traffic while providing mobility for the residents, visitors and deliveries. The roadways allow parking on both sides of the street with a narrower cross section of 30 feet from curb face to curb face. The roadway layout is meandering

with stop control at many intersections. It is not anticipated that a significant amount of traffic will utilize this area as a means of accessing destinations outside of the neighborhood.

RECOMMENDED IMPROVEMENTS

The following improvements are recommended to enhance mobility in the area:

- Install crosswalks on all approaches at the intersection of Northrup Avenue and 9th Street.
- Install a crosswalk on Northrup Avenue on the south side of the Willow Bend entrance and on the project driveway. This should include a W11-2 (Pedestrian Crossing) and a R1-5 or R1-5b (Yield Here to Pedestrian) signs. Installation of a sidewalk on the west side of Northrup Avenue, on property not owned by the applicant, will be necessary to provide a continuous sidewalk for pedestrians. The City/Applicant will need to work with the property owner to determine if this is feasible.
- Stripe the southbound direction of Northrup Avenue at 9th Street as an exclusive right-turn lane and a shared through/left-turn lane. This will require the shifting of the shared through/left-turn lane to the east to align with Northrup Avenue on the south side of 9th Street.

APPENDIX A – LEVEL OF SERVICE WORKSHEETS

HCM 6th AWSC
2: Northrup Ave & 9th St 08/18/2020

Intersection	
Intersection Delay, s/veh	9.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	200	10	5	265	5	10	5	10	10	5	10
Future Vol, veh/h	10	200	10	5	265	5	10	5	10	10	5	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	217	11	5	288	5	11	5	11	11	5	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.1	9.7	8.2	8.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	40%	5%	2%	40%
Vol Thru, %	20%	91%	96%	20%
Vol Right, %	40%	5%	2%	40%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	25	220	275	25
LT Vol	10	10	5	10
Through Vol	5	200	265	5
RT Vol	10	10	5	10
Lane Flow Rate	27	239	299	27
Geometry Grp	1	1	1	1
Degree of Util (X)	0.038	0.289	0.358	0.038
Departure Headway (Hd)	4.982	4.354	4.306	4.982
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	718	827	837	718
Service Time	3.015	2.374	2.325	3.015
HCM Lane V/C Ratio	0.038	0.289	0.357	0.038
HCM Control Delay	8.2	9.1	9.7	8.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	1.2	1.6	0.1

Willow Bend Manufactured Northrup Access Only 11/12/2019 Background 2024 AM With Northrup Access Only Synchro 10 Light Report
RR Page 1

HCM 6th AWSC
2: Northrup Ave & 9th St 08/18/2020

Intersection	
Intersection Delay, s/veh	11.5
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	355	25	15	265	15	10	5	10	10	5	10
Future Vol, veh/h	25	355	25	15	265	15	10	5	10	10	5	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	386	27	16	288	16	11	5	11	11	5	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	12.4	10.6	8.8	8.8
HCM LOS	B	B	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	40%	6%	5%	40%
Vol Thru, %	20%	88%	90%	20%
Vol Right, %	40%	6%	5%	40%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	25	405	295	25
LT Vol	10	25	15	10
Through Vol	5	355	265	5
RT Vol	10	25	15	10
Lane Flow Rate	27	440	321	27
Geometry Grp	1	1	1	1
Degree of Util (X)	0.041	0.537	0.402	0.041
Departure Headway (Hd)	5.463	4.393	4.512	5.463
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	652	823	798	652
Service Time	3.523	2.419	2.54	3.523
HCM Lane V/C Ratio	0.041	0.535	0.402	0.041
HCM Control Delay	8.8	12.4	10.6	8.8
HCM Lane LOS	A	B	B	A
HCM 95th-tile Q	0.1	3.3	2	0.1

Willow Bend Manufactured Housing with Northrup only 11/12/2019 Background 2024 PM Northrup Only Synchro 10 Light Report
RR Page 1

HCM 6th AWSC
2: Northrup Ave & 9th St 08/18/2020

Intersection	
Intersection Delay, s/veh	10
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	41	200	10	5	265	9	10	6	10	18	7	81
Future Vol, veh/h	41	200	10	5	265	9	10	6	10	18	7	81
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	45	217	11	5	288	10	11	7	11	20	8	88
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	10.2	10.5	8.6	8.8
HCM LOS	B	B	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	38%	16%	2%	17%
Vol Thru, %	23%	80%	95%	7%
Vol Right, %	38%	4%	3%	76%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	26	251	279	106
LT Vol	10	41	5	18
Through Vol	6	200	265	7
RT Vol	10	10	9	81
Lane Flow Rate	28	273	303	115
Geometry Grp	1	1	1	1
Degree of Util (X)	0.041	0.351	0.386	0.155
Departure Headway (Hd)	5.256	4.634	4.579	4.849
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	676	772	782	735
Service Time	3.328	2.68	2.622	2.908
HCM Lane V/C Ratio	0.041	0.354	0.387	0.156
HCM Control Delay	8.6	10.2	10.5	8.8
HCM Lane LOS	A	B	B	A
HCM 95th-tile Q	0.1	1.6	1.8	0.5

Willow Bend Manufactured Northrup Access Only 11/12/2019 Total 2024 AM With Northrup Access Only Synchro 10 Light Report
RR Page 1

HCM 6th AWSC
2: Northrup Ave & 9th St 08/18/2020

Intersection	
Intersection Delay, s/veh	16.4
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	137	355	25	15	265	28	10	8	10	18	7	78
Future Vol, veh/h	137	355	25	15	265	28	10	8	10	18	7	78
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	149	386	27	16	288	30	11	9	11	20	8	85
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	20.4	12.4	9.6	10
HCM LOS	C	B	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	36%	26%	5%	17%
Vol Thru, %	29%	69%	86%	7%
Vol Right, %	36%	5%	9%	76%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	28	517	308	103
LT Vol	10	137	15	18
Through Vol	8	355	265	7
RT Vol	10	25	28	78
Lane Flow Rate	30	562	335	112
Geometry Grp	1	1	1	1
Degree of Util (X)	0.052	0.741	0.468	0.178
Departure Headway (Hd)	6.197	4.745	5.031	5.708
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	579	753	720	630
Service Time	4.22	2.844	3.031	3.725
HCM Lane V/C Ratio	0.052	0.746	0.465	0.178
HCM Control Delay	9.6	20.4	12.4	10
HCM Lane LOS	A	C	B	A
HCM 95th-tile Q	0.2	6.7	2.5	0.6

Willow Bend Manufactured Housing with Northrup only 11/12/2019 Total 2024 PM Northrup Only
RR
Synchro 10 Light Report
Page 1

ERO

Consultants in Natural Resources and the Environment

Tree Inventory Report
Fort Lupton Coyote Creek North
Weld County, Colorado

Prepared for—

Sun Communities, Inc.
27777 Franklin Road, Suite 200
Southfield, Michigan 48034

Prepared by—

ERO Resources Corporation
1842 Clarkson Street
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(303) 830-1188
ERO Project #10738

September 17, 2020

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Appendices

Appendix A Photo Log

Wetland Delineation Report
Fort Lupton Coyote Creek North
Weld County, Colorado

September 17, 2020

Introduction

Sun Communities, Inc. (Sun Communities) retained ERO Resources Corporation (ERO) to provide a tree inventory for a parcel of land generally north of the Fulton Ditch in Fort Lupton, Weld County, Colorado (project area; Figure 1). ERO assessed the project area for trees and identified trees by species, diameter at breast height (DBH), growth form, age class, and habitat and aesthetic values. On September 8, 2020, Hidde Snieder with ERO visited the project area (2020 site visit).

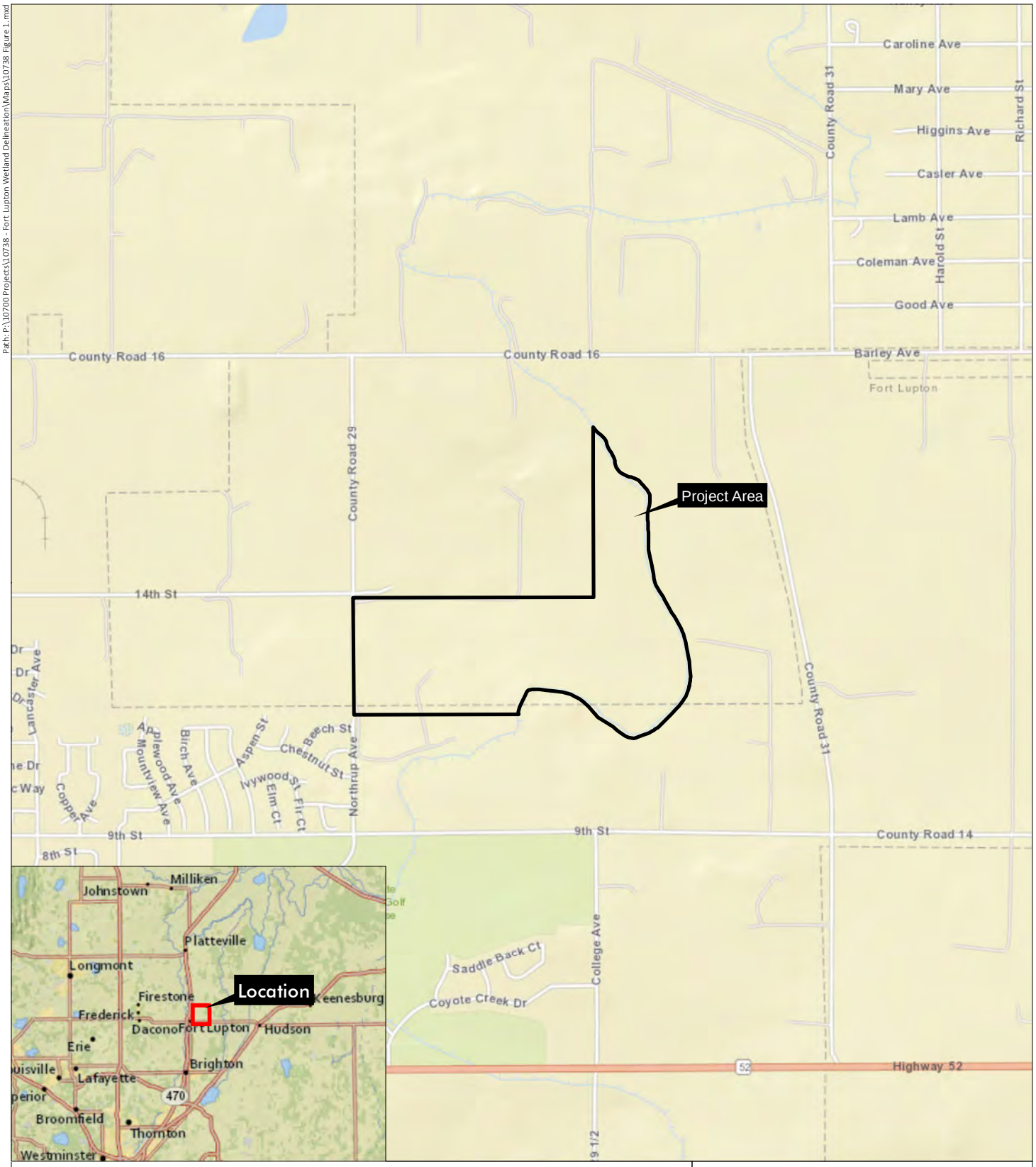
Location

The project area is in Section 33, Township 2 North, Range 66 West of the 6th Principal Meridian in Fort Lupton, Weld County, Colorado (Figure 1). The UTM coordinates of the approximate center of the project area are 518378mE, 4438144mN of NAD 83 Zone 13N. The longitude/latitude of the project area is 104.784409°W/40.093380°N. The elevation of the project area is approximately 4,970 feet above sea level.

Summary of Ecological Setting

The U.S. Department of Agriculture (USDA) maps the project area within the southern part of the Central High Plains Major Land Resource Area (MLRA), which is characterized by a flat to gently rolling landscape formed by glacial drift material and sediment deposition from the Rocky Mountains (USDA, Natural Resources Conservation Service (NRCS) 2006). This MLRA is part of the Colorado Piedmont section of the Great Plains physiographic province and ranges in elevation from 3,000 to 7,800 feet. The climate of the area is typical of mid-continental semiarid temperate zones, but the strong rain shadow effect of the Southern Rocky Mountains makes the area somewhat drier. The average annual precipitation is 12 to 18 inches, most of which occurs from April to September. The mean annual temperature is 45°F to 55°F with the number of frost-free days ranging from 135 to 190.

Path: P:\10700 Projects\10738 - Fort Lupton Wetland Delineation\Maps\10738 Figure 1.mxd



Fort Lupton Coyote Creek North

Section 33, T2N, R66W; 6th PM

UTM NAD 83: Zone 13N; 518378mE, 4438144mN

Longitude 104.784409°W, Latitude 40.093380°N

USGS Fort Lupton, CO Quadrangle

Weld County, Colorado

0 750 1,500 Feet

N

Figure 1
Vicinity Map

Prepared for: Sun Communities, Inc.
File: 10738 Figure 1.mxd (GS)
June 28, 2019

ERO Resources Corp.

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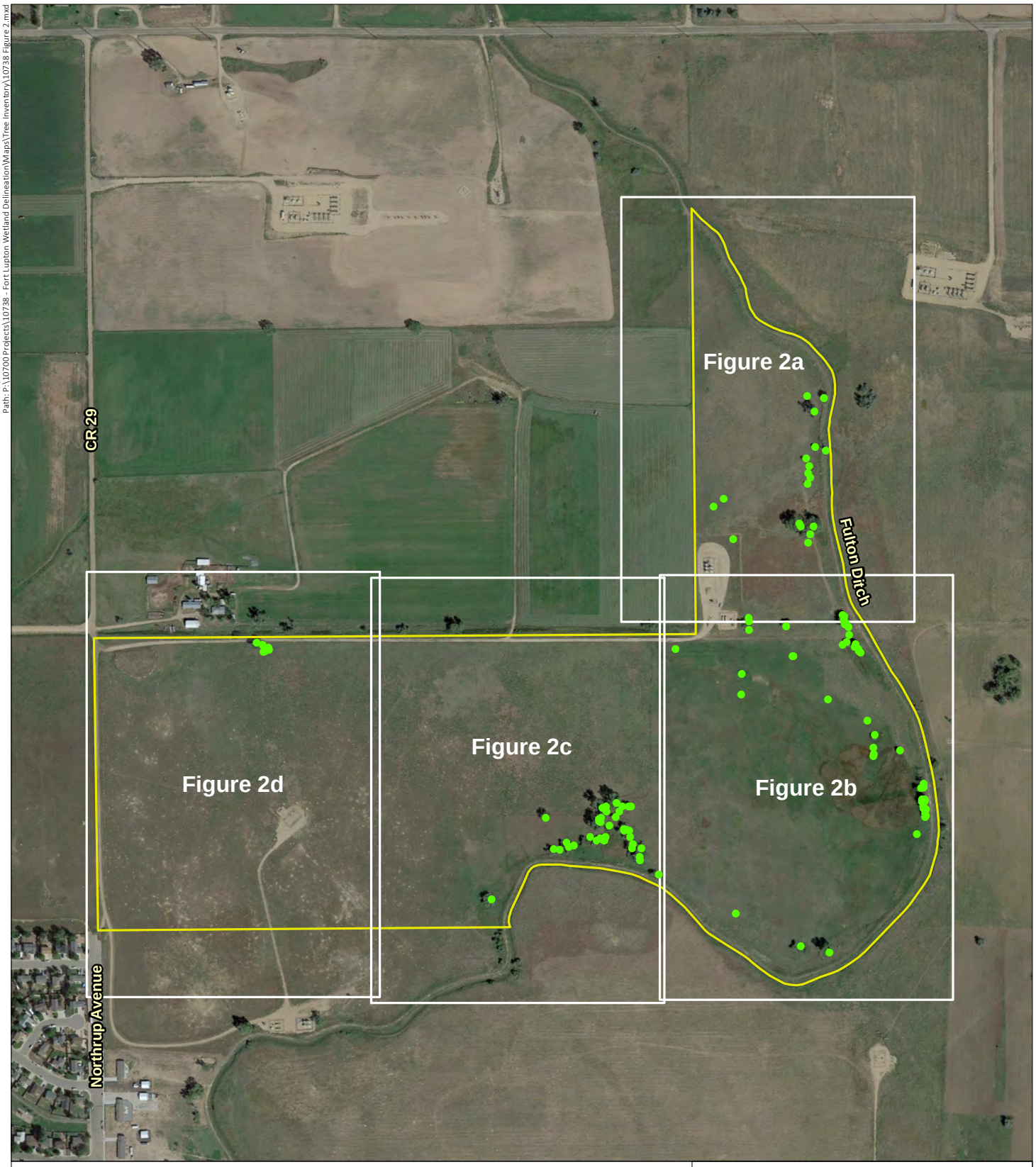
The project area is further divided into the Flat to Rolling Plains ecoregion of Colorado within the High Plains region of the United States (Chapman et al. 2006). This ecoregion is more level and less dissected than the adjacent Moderate Relief Plains. The geology of the Flat to Rolling Plains is generally silty with a veneer of loess. Most of the ecoregion historically consisted of shortgrass and midgrass prairie intermixed with riparian and wetland areas along stream corridors. Most of the Flat to Rolling Plains land use has undergone, or is currently undergoing, a shift from cropland and rangeland to urban development. The development has resulted in a shift from native habitat to urban areas that contain a high number of manmade lakes and gravel pits, public infrastructure, buildings, and narrower riparian corridors along streams and rivers in the region. Located within the South Platte River watershed of central Colorado, streams flow from west to east, out of the Front Range mountains and foothills or from southeast to northwest off the Palmer Divide, and into the South Platte River. The South Platte River converges with the North Platte River just west of Ogallala, Nebraska to form the Platte River. The Platte River is tributary to the Missouri River, which eventually flows into the Mississippi River. Most of the tributaries that flow into the South Platte River watershed contain riparian corridors dominated by deciduous woodlands and transitional shrubs and grasslands.

Project Area Description

The project area is north of the Fulton Ditch in Fort Lupton, Colorado (Figure 1). The project area is generally bounded to the north by County Road 14½ and agricultural land, the Fulton Ditch to the east and south, and County Road 29 and undeveloped land to the west. Photo points of the project area are shown on Figure 2 and Figure 2a through Figure 2d, and the photo log is in Appendix A.

The majority of the project area consists of undeveloped agricultural land dominated by a mixture of native and nonnative upland species including smooth brome (*Bromus inermis*), cheatgrass (*Bromus tectorum*), western wheatgrass (*Pascopyrum smithii*), white top (*Lepidium draba*), Canada thistle (*Cirsium arvense*), musk thistle (*Carduus nutams*), and Scotch thistle (*Onopordum acanthium*). The Fulton Ditch occurs along the southern and eastern borders of the project area and contains a narrow wetland fringe along the entire ditch. A large wetland complex occurs in the eastern half of the project area. A second wetland occurs north of the Fulton Ditch near the center of the project area. Trees occur near the Fulton Ditch sporadically throughout the project area and observed species include plains cottonwood (*Populus deltoides*), Russian olive (*Elaeagnus angustifolia*), Siberian elm (*Ulmus pumila*), and crack willow (*Salix fragilis*).

Path: P:\10700 Projects\10738 - Fort Lupton Wetland Delineation\Maps\Tree Inventory\10738 Figure 2.mxd



Fort Lupton Coyote Creek North

Tree

Project Area Boundary/Limit of Delineation

Image Source: Google Earth©, September 2019

0 275 550 Feet

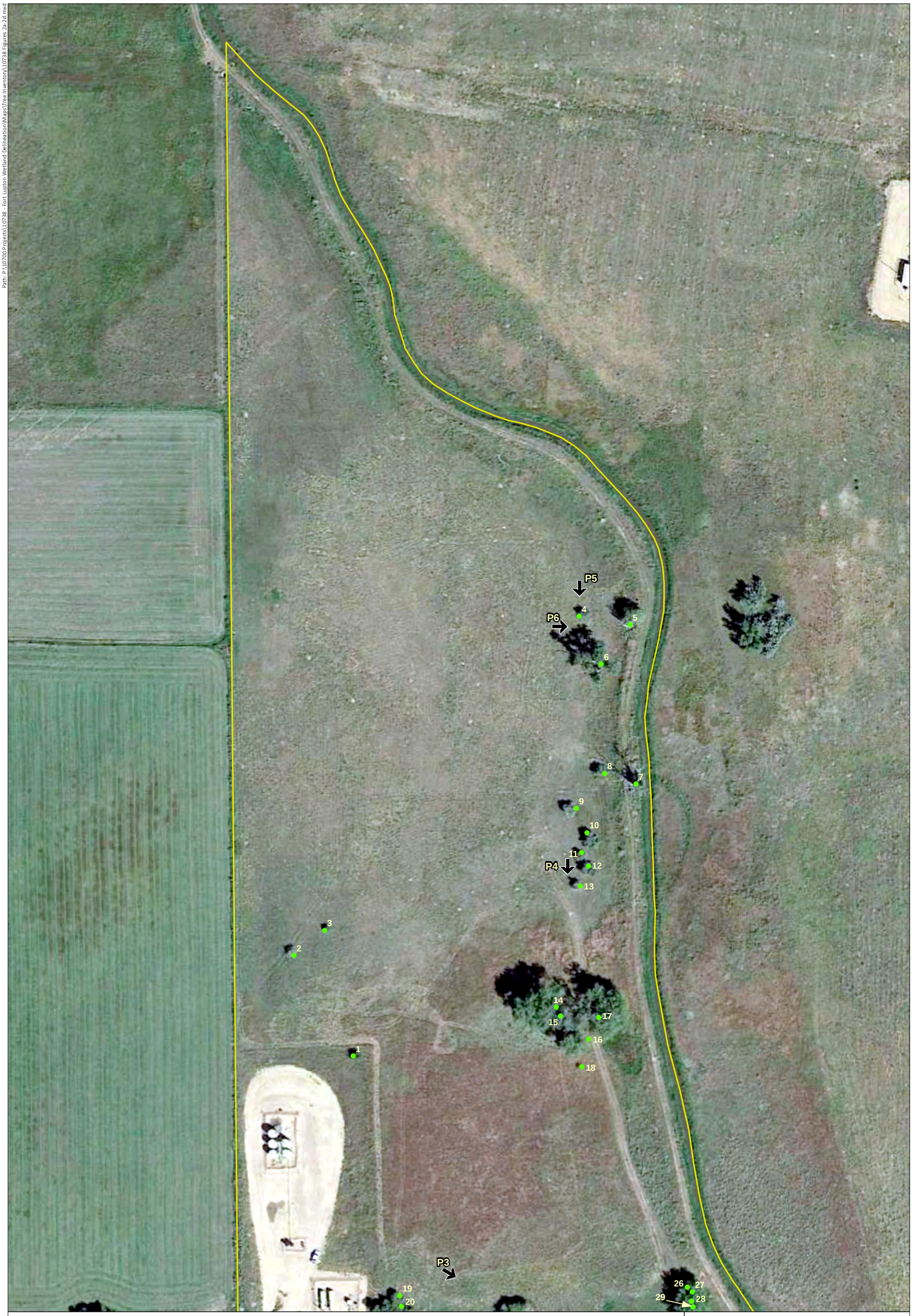
N

Figure 2
Tree Inventory
Index

Prepared for: Sun Communities, Inc.
File: 10738 Figure 2.mxd (GS)
September 14, 2020

ERO Resources Corp.

Path: P:\10700 Projects\10738 - Fort Lupton Wetland Delineation\Maps\Tree Inventory\10738 Figures 2a-2d.mxd



Fort Lupton Coyote Creek North

Photo Point

Tree

Project Area Boundary/Limit of Delineation

Image Source: Google Earth©, September 2019

0 65 130 Feet

N

Figure 2a
Tree Inventory

Prepared for: Sun Communities, Inc.
File: 10738 Figures 2a-2d.mxd (GS)
September 16, 2020

ERO Resources Corp.

Fort Lupton Coyote Creek North

Photo Point

Tree

Project Area Boundary/Limit of Delineation

Image Source: Google Earth©, September 2019

0 65 130 Feet

N

Figure 2b
Tree Inventory

Prepared for: Sun Communities, Inc.
File: 10738 Figures 2a-2d.mxd (GS)
September 16, 2020

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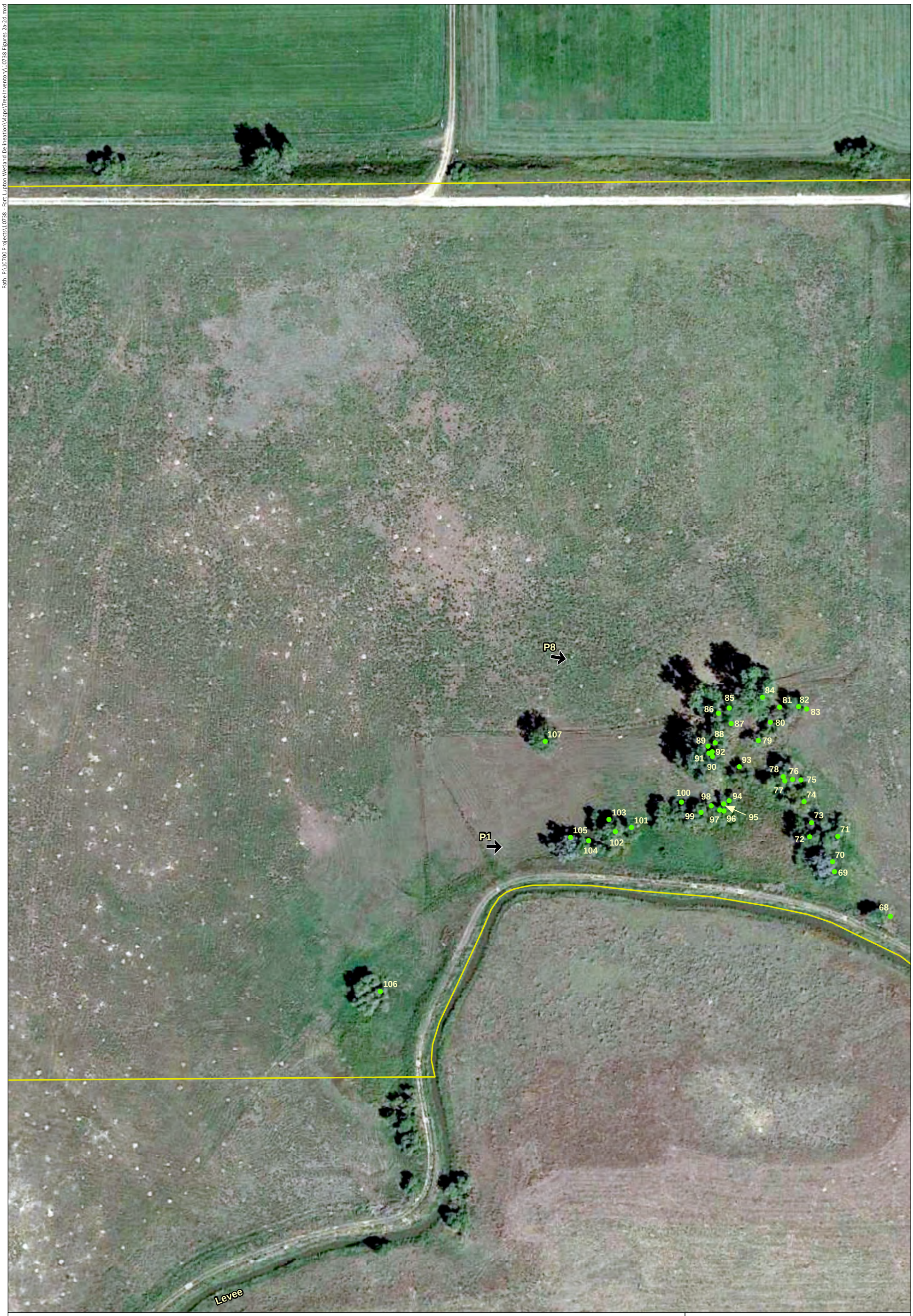

Fort Lupton Coyote Creek North

Photo Point

Tree

Project Area Boundary/Limit of Delineation

Image Source: Google Earth©, September 2019

0 65 130 Feet

N

Figure 2c
Tree Inventory

Prepared for: Sun Communities, Inc.
File: 10738 Figures 2a-2d.mxd (GS)
September 16, 2020

ERO Resources Corp.

Path: P:\10700 Projects\10738 - Fort Lupton Wetland Delineation\Maps\Tree Inventory\10738 Figures 2a-2d.mxd

Fort Lupton Coyote Creek North

Photo Point

Tree

Project Area Boundary/Limit of Delineation

Image Source: Google Earth©, September 2019

0 65 130 Feet

N

Figure 2d
Tree Inventory

Prepared for: Sun Communities, Inc.
File: 10738 Figures 2a-2d.mxd (GS)
September 16, 2020

ERO Resources Corp.

Methods

During the 2020 site visit, ERO surveyed the project area for trees and noted the species, DBH, growth form, age class, and habitat and aesthetic values. Taxonomy was determined using *Flora of Colorado* (Ackerfield 2015) and *Colorado Flora: Eastern Slope* (Weber and Wittmann 2012), and nomenclature was determined using *The PLANTS Database* (USDA, NRCS 2020).

The trees were mapped using a Trimble Global Positioning System (GPS) unit. Data were differentially corrected using the CompassCom base station. All differential correction was completed using Trimble Pathfinder Office 5.9 software. GPS data were incorporated using ESRI® ArcGIS Desktop software. Additionally, where appropriate, wetlands were drawn on georectified aerials and then digitized.

Results

During the 2020 site visit, ERO identified 116 trees within the project area (Table 1). The observed tree species include plains cottonwood (native), Russian olive (introduced – List B Colorado noxious weed), Siberian elm (introduced), and crack willow (introduced). Of the 116 trees observed, 35 trees were native plains cottonwood trees while the remaining 81 trees were identified as introduced species. The DBH of the trees ranged from 2 inches for young species up to 74 inches for mature plains cottonwood trees. The introduced trees in the project area included a mixture of mature and young Russian olive, Siberian elm, and crack willow trees (Photos 1, 2, and 3). Mature plains cottonwood trees occur as individuals or as clusters near the Fulton Ditch along the project area boundaries (Photos 4, 5, 6, 7, and 8). The majority of the mature plains cottonwood trees appeared healthy; however, one individual tree (Tree 5) was mostly senescent and had lost the majority of its branches and upper trunk structure (Photo 6). The invasive tree species do not provide significant habitat and aesthetic values due to their short growth form and their status as invasive species. The young plains cottonwood trees in the project area consisted of single stem trees that are relatively short and do not provide much visual relief from the surrounding area. However, the healthy mature plains cottonwood trees, including numbers 6, 7, 14, 15, 16, 17, 65, 84, 86, 87, 88, 89, 90, 91, 92, and 114, provide habitat and aesthetic values. Trees 6, 7, 14, 15, 16, 17, 65, 84, 86, 87, 88, 89, 90, 91, 92, and 114 serve as a visual buffer for the project area by breaking up the viewshed of the surrounding area, serve as wildlife habitat for a variety of migratory bird species including raptors, and provide shelter for small to large mammals that frequent the project area.

Table 1. Tree Inventory

Label	Latitude	Longitude	Species	Status	DBH (inches)	Growth Form	Age Class	Aesthetic and Habitat Values
1	40.095661	104.781555	Plains Cottonwood	Native	4	Multi Stem	Young	No
2	40.096062	104.781856	Russian Olive	Introduced	3	Single Stem	Young	No
3	40.096159	104.781698	Russian Olive	Introduced	3	Single Stem	Young	No
4	40.097393	104.780372	Russian Olive	Introduced	4	Single Stem	Young	No
5	40.097359	104.780110	Plains Cottonwood	Native	55	Single Stem	Mature	No
6	40.097203	104.780260	Plains Cottonwood	Native	74	Multi Stem	Mature	**Yes**
7	40.096728	104.780086	Plains Cottonwood	Native	70	Multi Stem	Mature	**Yes**
8	40.096771	104.780246	Russian Olive	Introduced	5	Single Stem	Young	No
9	40.096634	104.780394	Russian Olive	Introduced	6	Single Stem	Young	No
10	40.096538	104.780341	Russian Olive	Introduced	6	Multi Stem	Young	No
11	40.096457	104.780369	Russian Olive	Introduced	5	Multi Stem	Young	No
12	40.096405	104.780334	Russian Olive	Introduced	3	Multi Stem	Young	No
13	40.096327	104.780378	Russian Olive	Introduced	3	Single Stem	Young	No
14	40.095847	104.780506	Plains Cottonwood	Native	68	Multi Stem	Mature	**Yes**
15	40.095812	104.780484	Plains Cottonwood	Native	38	Single Stem	Mature	**Yes**
16	40.095720	104.780341	Plains Cottonwood	Native	41	Single Stem	Mature	**Yes**
17	40.095806	104.780289	Plains Cottonwood	Native	72	Multi Stem	Mature	**Yes**
18	40.095611	104.780377	Plains Cottonwood	Native	3	Single Stem	Young	No
19	40.094712	104.781324	Crack Willow	Introduced	12	Single Stem	Young	No
20	40.094668	104.781317	Crack Willow	Introduced	36	Multi Stem	Mature	No
21	40.094563	104.781319	Crack Willow	Introduced	24	Multi Stem	Mature	No
22	40.094601	104.780730	Crack Willow	Introduced	36	Multi Stem	Mature	No
23	40.094245	104.780633	Russian Olive	Introduced	3	Single Stem	Young	No
24	40.094245	104.780615	Russian Olive	Introduced	3	Single Stem	Young	No
25	40.093713	104.780078	Siberian Elm	Introduced	4	Single Stem	Young	No
26	40.094737	104.779842	Russian Olive	Introduced	4	Single Stem	Young	No
27	40.094717	104.779816	Russian Olive	Introduced	2	Single Stem	Young	No
28	40.094681	104.779822	Plains Cottonwood	Native	46	Single Stem	Mature	No
29	40.094658	104.779814	Plains Cottonwood	Native	36	Multi Stem	Young	No
30	40.094631	104.779785	Plains Cottonwood	Native	16	Multi Stem	Young	No
31	40.094625	104.779807	Plains Cottonwood	Native	10	Single Stem	Young	No
32	40.094590	104.779750	Plains Cottonwood	Native	12	Single Stem	Young	No
33	40.094498	104.779738	Russian Olive	Introduced	4	Single Stem	Young	No
34	40.094380	104.779847	Russian Olive	Introduced	5	Single Stem	Young	No
35	40.094410	104.779782	Russian Olive	Introduced	18	Multi Stem	Mature	No
36	40.094383	104.779640	Russian Olive	Introduced	19	Multi Stem	Mature	No
37	40.094350	104.779653	Plains Cottonwood	Native	14	Multi Stem	Young	No
38	40.094321	104.779597	Russian Olive	Introduced	3	Multi Stem	Young	No
39	40.094295	104.779589	Russian Olive	Introduced	2	Multi Stem	Young	No
40	40.094279	104.779559	Russian Olive	Introduced	2	Multi Stem	Young	No
41	40.093456	104.779464	Siberian Elm	Introduced	2	Single Stem	Young	No
42	40.093282	104.779348	Russian Olive	Introduced	12	Single Stem	Mature	No
43	40.093129	104.779371	Russian Olive	Introduced	6	Multi Stem	Young	No
44	40.093053	104.779368	Russian Olive	Introduced	5	Multi Stem	Young	No
45	40.093028	104.779375	Siberian Elm	Introduced	6	Single Stem	Young	No
46	40.093094	104.778950	Siberian Elm	Introduced	18	Single Stem	Mature	No
47	40.092687	104.778584	Siberian Elm	Introduced	12	Single Stem	Mature	No
48	40.092648	104.778581	Siberian Elm	Introduced	17	Single Stem	Mature	No
49	40.092638	104.778626	Siberian Elm	Introduced	16	Single Stem	Mature	No

Label	Latitude	Longitude	Species	Status	DBH (inches)	Growth Form	Age Class	Aesthetic and Habitat Values
50	40.092499	104.778568	Siberian Elm	Introduced	14	Single Stem	Mature	No
51	40.092484	104.778567	Siberian Elm	Introduced	20	Single Stem	Mature	No
52	40.092482	104.778583	Siberian Elm	Introduced	10	Single Stem	Young	No
53	40.092496	104.778616	Siberian Elm	Introduced	4	Single Stem	Young	No
54	40.092471	104.778615	Siberian Elm	Introduced	8	Single Stem	Mature	No
55	40.092465	104.778601	Siberian Elm	Introduced	3	Single Stem	Young	No
56	40.092452	104.778590	Siberian Elm	Introduced	14	Single Stem	Mature	No
57	40.092414	104.778590	Siberian Elm	Introduced	8	Single Stem	Mature	No
58	40.092400	104.778589	Siberian Elm	Introduced	3	Single Stem	Young	No
59	40.092386	104.778583	Siberian Elm	Introduced	12	Single Stem	Mature	No
60	40.092375	104.778549	Siberian Elm	Introduced	6	Single Stem	Young	No
61	40.092330	104.778566	Siberian Elm	Introduced	18	Single Stem	Mature	No
62	40.092302	104.778550	Siberian Elm	Introduced	4	Single Stem	Young	No
63	40.092286	104.778566	Siberian Elm	Introduced	5	Single Stem	Mature	No
64	40.092081	104.778700	Russian Olive	Introduced	4	Multi Stem	Young	No
65	40.090650	104.780092	Plains Cottonwood	Native	54	Single Stem	Mature	**Yes**
66	40.090735	104.780544	Crack Willow	Introduced	12	Multi Stem	Mature	No
67	40.091136	104.781558	Crack Willow	Introduced	36	Multi Stem	Mature	No
68	40.091615	104.782771	Crack Willow	Introduced	34	Single Stem	Mature	No
69	40.091792	104.783058	Russian Olive	Introduced	8	Single Stem	Young	No
70	40.091831	104.783068	Russian Olive	Introduced	24	Multi Stem	Mature	No
71	40.091932	104.783040	Crack Willow	Introduced	24	Multi Stem	Mature	No
72	40.091933	104.783184	Plains Cottonwood	Native	36	Multi Stem	Mature	No
73	40.091987	104.783174	Crack Willow	Introduced	18	Multi Stem	Mature	No
74	40.092071	104.783212	Crack Willow	Introduced	38	Multi Stem	Mature	No
75	40.092156	104.783227	Crack Willow	Introduced	6	Multi Stem	Young	No
76	40.092159	104.783269	Crack Willow	Introduced	8	Single Stem	Young	No
77	40.092153	104.783309	Crack Willow	Introduced	24	Multi Stem	Mature	No
78	40.092171	104.783317	Crack Willow	Introduced	28	Multi Stem	Mature	No
79	40.092315	104.783445	Crack Willow	Introduced	24	Single Stem	Mature	No
80	40.092386	104.783381	Crack Willow	Introduced	36	Multi Stem	Mature	No
81	40.092446	104.783333	Plains Cottonwood	Native	10	Single Stem	Young	No
82	40.092447	104.783236	Plains Cottonwood	Native	6	Multi Stem	Young	No
83	40.092437	104.783194	Plains Cottonwood	Native	7	Single Stem	Young	No
84	40.092485	104.783422	Plains Cottonwood	Native	70	Single Stem	Mature	**Yes**
85	40.092444	104.783591	Plains Cottonwood	Native	12	Multi Stem	Young	No
86	40.092423	104.783647	Plains Cottonwood	Native	72	Multi Stem	Mature	**Yes**
87	40.092382	104.783584	Plains Cottonwood	Native	50	Single Stem	Mature	**Yes**
88	40.092306	104.783667	Plains Cottonwood	Native	30	Single Stem	Mature	**Yes**
89	40.092293	104.783703	Plains Cottonwood	Native	41	Single Stem	Mature	**Yes**
90	40.092266	104.783699	Plains Cottonwood	Native	48	Single Stem	Mature	**Yes**
91	40.092270	104.783681	Plains Cottonwood	Native	30	Single Stem	Mature	**Yes**
92	40.092253	104.783681	Plains Cottonwood	Native	70	Multi Stem	Mature	**Yes**
92	40.092253	104.783681	Crack Willow	Introduced	36	Multi Stem	Mature	No
93	40.092210	104.783544	Crack Willow	Introduced	12	Single Stem	Mature	No
94	40.092078	104.783598	Crack Willow	Introduced	18	Multi Stem	Mature	No
95	40.092063	104.783625	Crack Willow	Introduced	24	Multi Stem	Mature	No
96	40.092036	104.783624	Crack Willow	Introduced	20	Multi Stem	Mature	No
97	40.092041	104.783646	Crack Willow	Introduced	24	Multi Stem	Mature	No
98	40.092056	104.783689	Crack Willow	Introduced	30	Multi Stem	Mature	No
99	40.092030	104.783742	Crack Willow	Introduced	30	Single Stem	Mature	No

Label	Latitude	Longitude	Species	Status	DBH (inches)	Growth Form	Age Class	Aesthetic and Habitat Values
100	40.092073	104.783843	Crack Willow	Introduced	36	Multi Stem	Mature	No
101	40.091974	104.784101	Crack Willow	Introduced	6	Multi Stem	Young	No
102	40.091959	104.784185	Crack Willow	Introduced	24	Multi Stem	Mature	No
103	40.092006	104.784216	Crack Willow	Introduced	36	Multi Stem	Mature	No
104	40.091924	104.784323	Crack Willow	Introduced	36	Multi Stem	Mature	No
105	40.091937	104.784415	Russian Olive	Introduced	24	Single Stem	Mature	No
106	40.091335	104.785400	Crack Willow	Introduced	38	Multi Stem	Mature	No
107	40.092318	104.784541	Siberian Elm	Introduced	28	Single Stem	Mature	No
108	40.094342	104.782477	Russian Olive	Introduced	6	Single Stem	Young	No
109	40.094031	104.781434	Russian Olive	Introduced	8	Single Stem	Young	No
110	40.093792	104.781443	Russian Olive	Introduced	6	Single Stem	Young	No
111	40.094398	104.788887	Plains Cottonwood	Native	2	Single Stem	Young	No
112	40.094373	104.788884	Plains Cottonwood	Native	4	Multi Stem	Young	No
113	40.094359	104.788937	Plains Cottonwood	Native	4	Multi Stem	Young	No
114	40.094349	104.788969	Plains Cottonwood	Native	3	Single Stem	Young	**Yes**
115	40.094433	104.788983	Plains Cottonwood	Native	24	Multi Stem	Mature	No
116	40.094457	104.789075	Plains Cottonwood	Native	18	Multi Stem	Young	No

Recommendation

If possible ERO recommends preserving the mature cottonwood trees that provide aesthetic value and wildlife habitat including trees 6, 7, 14, 15, 16, 17, 65, 84, 86, 87, 88, 89, 90, 91, 92, and 114. Additionally, invasive and noxious tree species including Russian olive, Siberian elm, and crack willow should be removed and, if possible, replaced with native tree species.

References

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Appendix A Photo Log

Photo 1 - Overview of Russian olive trees along the Fulton Ditch (101 to 105). View is to the east.

Photo 2 - Overview of Siberian elm trees along the Fulton Ditch (47 to 63). View is to the north.

Photo 3 - Overview of crack willow trees in the project area (22). View is to the southeast.

Photo 4 - Overview of mature plains cottonwood trees (14 to 17). View is to the south.

Photo 5 - Overview of a mature plains cottonwood tree in the project area (6). View is to the south.

Photo 6 - Overview of a senescent plains cottonwood tree in the project area (5). View is to the east.

Photo 7 - Overview of a mature plains cottonwood tree in the project area (65). View is to the south.

Photo 8 - Overview of mature plains cottonwood trees in the project area (84 to 92). View is to the east.

CITY OF FORT LUPTON
CITY COUNCIL

Zo Stieber, Mayor

Shannon Rhoda, Ward 1
Chris Ceretto, Ward 2
Michael Sanchez, Ward 3

David Crespin, Ward 1
Tommy Holton, Ward 2
Bruce Fitzgerald, Ward 3

AM 2020-194

AMEND THE AGREEMENT WITH TYLER TECHNOLOGIES MAKING THE CITY OF FORT LUPTON RESPONSIBLE FOR ONLINE PAYMENT FEES

I. Agenda Date: Council Meeting – Date, 2020

II. Attachments:
a. Amendment – Municipal Court online fee
b. Amendment – Utility Billing online fee

III. Summary Statement:

Amend the Agreement with Tyler Technologies making the City of Fort Lupton responsible for online fees for Municipal Court and Utility Billing payments.

IV. Submitted by: _____
Court Administrator

V. Finance Reviewed _____
Finance Director

VI. Approved for Presentation: _____
City Administrator

VII. Attorney Reviewed _____ Approved _____ Pending Approval

VIII. Certification of Council Approval: _____ _____
City Clerk Date

IX. Detail of Issue/Request:

The year 2020 has been continuously changing due to Covid-19. On various occasions, City Hall has closed to the general public. In turn affecting some of the payment options available to customers.

Credit card customers are charged a 3.21% processing fees, instead of the City. Online customers are charges an additional fee of $2.50 Court / $1.50 Utility Billing per transaction. Over-the-phone and in-person payments require staff to be in the facility.

Current Covid levels are requiring staff to transition to remote. By amending the Agreement, staff could efficiently process payments without an extra cost to citizens. Customers would still pay the credit card processing fee of 3.21%. Tyler Technologies would bill the City quarterly.

X. Legal/Political Considerations:

XI. Alternatives/Options:

1) Approve to amend the City of Fort Lupton's Agreement with Tyler Technologies and pay the online fees.
2) Reject to amend the City of Fort Lupton's Agreement with Tyler Technologies and continue to have customers pay the online fees.

XII. Financial Considerations:

The Court implemented online payments in March of 2020. In 7 months (March through September), 474 credit card payments were processed. Of these payments, 34% were online, 42% in-person and 24% over-the-phone. The cost to the City during this period is estimated at $685.

In from January – October 2020 the number of credit card payments for utility billing totaled 11,359. Of those payment 8,891 were made online through PSN. We currently pay portal fees of $1 for online checks and $3.50 for credit card on PSN. The cost of both payment types will be $1.50 on the Tyler Tech payment solution.

XIII. Staff Recommendation:

Staff recommend amending the Agreement with Tyler Technologies.

Amendment

This amendment ("Amendment") is effective as of the date of signature of the last party to sign as indicated below ("Effective Date"), by and between Tyler Technologies, Inc., a Delaware corporation with offices at One Tyler Drive, Yarmouth, Maine 04096 ("Tyler"), and the City of Fort Lupton, with offices at 130 South McKinley, Fort Lupton, Colorado 80621 ("Client").

WHEREAS, Tyler and Client are parties to an agreement effective May 3, 2016 ("Agreement"); and

WHEREAS, Tyler and Client desire to amend the terms of the Agreement as provided herein.

NOW THEREFORE, in consideration of the mutual promises hereinafter contained, Tyler and the Client agree as follows:

1. The City of Fort Lupton is responsible for paying the $2.50 fee per transaction for municipal court payments on-line.

2. No monies already paid for the items listed above will be refunded. All terms and conditions of the Agreement not herein amended remain in full force and effect.

IN WITNESS WHEREOF, persons having been duly authorized and empowered to enter into this amendment hereunto executed this Amendment effective as of the date last set forth below.

Tyler Technologies, Inc. Local Government Division	City of Fort Lupton
By: _____	By: _____
Name: _____	Name: _____
Title: _____	Title: _____
Date: _____	Date: _____

Amendment

This amendment ("Amendment") is effective as of the date of signature of the last party to sign as indicated below ("Effective Date"), by and between Tyler Technologies, Inc., a Delaware corporation with offices at One Tyler Drive, Yarmouth, Maine 04096 ("Tyler"), and the City of Fort Lupton, with offices at 130 South McKinley, Fort Lupton, Colorado 80621 ("Client").

WHEREAS, Tyler and Client are parties to an agreement effective May 3, 2016 ("Agreement"); and

WHEREAS, Tyler and Client desire to amend the terms of the Agreement as provided herein.

NOW THEREFORE, in consideration of the mutual promises hereinafter contained, Tyler and the Client agree as follows:

1. The City of Fort Lupton is responsible for paying the $1.25 fee per transaction for utility billing payments on-line.

2. No monies already paid for the items listed above will be refunded. All terms and conditions of the Agreement not herein amended remain in full force and effect.

IN WITNESS WHEREOF, persons having been duly authorized and empowered to enter into this amendment hereunto executed this Amendment effective as of the date last set forth below.

Tyler Technologies, Inc. Local Government Division	City of Fort Lupton
By: _____	By: _____
Name: _____	Name: _____
Title: _____	Title: _____
Date: _____	Date: _____

CITY OF FORT LUPTON
CITY COUNCIL

Zo Stieber, Mayor

Shannon Rhoda, Ward 1
Chris Ceretto, Ward 2
Michael Sanchez, Ward 3

David Crespin, Ward 1
Tommy Holton, Ward 2
Bruce Fitzgerald, Ward 3

AM 2020-195

APPROVE PURCHASE OF 140M3 MOTOR GRADER FOR PUBLIC WORKS STREETS FROM WAGNER EQUIPMENT CO. FOR NOT TO EXCEED $198,900.00 FROM THE GENERAL FUND PUBLIC WORKS STREETS BUDGET

I. Agenda Date: Council Meeting – December 1, 2020

II. Attachments: a. Wagner Equipment Quote

III. Summary Statement:

Accept motor grader quote from Wagner Equipment Co. for $198,900.00 from the General Fund Public Works Streets Budget.

IV. Submitted by: _____
Public Works Director

V. Finance Reviewed _____
Finance Director

VI. Approved for Presentation: _____
City Administrator

VII. Attorney Reviewed _____ Approved _____ Pending Approval

VIII. Certification of Council Approval: _____ _____
City Clerk Date

IX. Detail of Issue/Request:

The new road grader is needed by Public Works for maintaining the City's dirt roads and alleys. The current grader is a 2001 CAT 140 with over 16,280 operating hours. The machine has been having maintenance issues for the last year and is becoming difficult to keep operational. In 2020 we lost approximately 2 weeks of time waiting for repairs.

Used graders have been a challenge to find. Wagner had a 2014 on their lot available for $186,931.00, with 5600 hours. Out City mechanic went to look at it and determined it was pretty beat up. While they were there, the salesman found one that had just come on the lot and was in the shop (2014 with 4,662 hours). They were going to list it for $214,000.00. Anthony evaluated it and determined it need new tires. He negotiated for a price of $198,900 that included new tires ($6,000) and a 2-year warranty. We currently have it on hold.

New CAT 140 Motor Grader would cost $415,000

All three quotes are comparably sized machines. The selected 2014 CAT 140M3 has been determined to be an excellent value compared to other available machines.

X. Legal/Political Considerations:

Not Applicable.

XI. Alternatives/Options:

- *Accept quote*
- *Reject quotes*
- *Delay system purchase to a later date*

XII. Financial Considerations:

2020 Budget includes $220,000.00 in the General Fund Public Works Street budget for Road Grader.

XIII. Staff Recommendation:

Staff recommends approving purchase of the used 2014 CAT 140M3 Motor Grader from Wagner Equipment for $198,900.00.

Quote 221571-01

November 18, 2020

CITY OF FT LUPTON
130 S MCKINLEY AVE
FORT LUPTON, Colorado 80621

Attention: ANTHONY GOMEZ

Dear Sir,

We would like to thank you for your interest in our company and our products, and are pleased to quote the following for your consideration.

Caterpillar Model: 140M3 Motor Grader

STOCK NUMBER: 431930 **SERIAL NUMBER:** 0N9D00116 **YEAR:** 2014 **HOURS:** 4,662

We appreciate the opportunity to extend this quote. This quote is subject to availability and is valid for 30 days, after which time we reserve the right to re-quote. If there are any questions, please do not hesitate to contact me.

Regards,

Larry Vigil
Sales Representative
Wagner Equipment Co.

Caterpillar Model: 140M3 Motor Grader

STANDARD EQUIPMENT

POWERTRAIN -Air cleaner, dual stage dry type radial -seal with service indicator and -automatic dust ejector -Air-to-air after cooler (ATAAC) -Belt, serpentine, automatic tensioner -Brakes, oil disc, four-wheel, hydraulic -Demand fan, hydraulic -Differential, lock/unlock, Automatic -Drain, engine oil, ecology -Electronic over-speed protection -Engine: --C9 with ACERT technology, diesel -with automatic engine derate and idle -control. EPA/ARB Tier 4 Final & EU -stage --IV certified Engine & Aftertreatment -Parking brake, multi-disc, sealed and -oil cooled. -Sediment drain, fuel tank. -Tandem drive -Transmission, 8 speed forward and -6 speed reverse, power shift, direct -drive -VHP Plus (Variable Horse Power Plus)

ELECTRICAL -Alarm, back-up -Alternator, 150 ampere, sealed -Batteries, maintenance free, heavy -duty, 1125 CCA -Breaker panel, ground accessible -Electrical hydraulic valves -Electrical system, 24V -Grade control ready (Cab harness, -software, electrical hydraulic valves, -bosses and brackets) -Lights, reversing -Lights, roading, roof-mounted, -stop and tail, LED -Starter, electric

OPERATOR ENVIRONMENT -Air Conditioning with heater -Articulation, automatic return to center -Centershift pin indicator -Display, digital speed and gear -Doors, left and right side with wiper -Gauge, machine level -Gauges (analog) inside the cab -(includes fuel, articulation, engine -coolant temp, engine RPM, -and hydraulic oil temp, DEF/AdBlue) -Joystick, adjustable armrests -Joystick gear selection, hydraulic -power steering hydraulic controls -(right/left, blade lift w/ float -position, blade sideshift and tip, -circle drive, centershift, front wheel -lean and articulation and steering) -Lights, night time cab -Messenger operator information system -Meter, hour, digital -Mirror, inside rearview, wide angle -Power Port, 12V -Radio Ready, Entertainment -ROPS cab, sound suppressed -69dB(A) - ISO 6394 -Seat,cloth-covered, comfort suspension -Storage area for cooler/lunchbox -Throttle control, electronic -Windows laminated glass: --Fixed front with intermittent wiper --Door with intermittent wipers (3) -Windows tempered: --Left and right side wipers --Rear with intermittent wiper -Cab storage -

SAFETY AND SECURITY -Clutch, circle drive slip -Doors, 2 engine compartment, (two left -hand, two right hand) locking -Doors, 2 service, left and right locking -Ground level engine shutdown -Hammer (emergency exit) -Horn, electric -Lockout, hydraulic implement (for -roading and servicing) -Seat belt, retractable 76.2 (3") -Secondary steering -Tandem walkway/guards

TIRES, RIMS, AND WHEELS -A partial allowance for tires on -254mm x 609.6mm (10" x 24") multi-piece -rims is included in the base machine -price and weight.

FLUIDS -Antifreeze -Extended life coolant -35C/-30F

OTHER STANDARD EQUIPMENT -Accumulators -brake -dual certified -Drawbar,6 shoe w/replaceable wear strips -Fluid check, ground level -Fuel tank, 398 liters (105 gallon) -Ground level fueling -DEF/AdBlue Tank, 21 liters (5.5 gallon) -Hydraulic lines for base functions -Pump, hydrailic, high capacity -(98cc / 15 cu in) -Radiator, cleanout access -(both sides with swing doors) -SOS ports -engine -hydraulic --transmission -coolant -fuel -Tandem walkway/guards -Tool box -Debris guard

CONSIST NOTE -STANDARD EQUIPMENT: -The standard equipment list includes key -components necessary for an operable -machine.

MACHINE SPECIFICATIONS

140M3 MOTOR GRADER
C9 ENGINE
PRODUCT LINK, SATELLITE PL321
GLOBAL ARRANGEMENT,LOW AMBIENT
MOLDBOARD, 14' BASIC
MOLDBOARD 14' X 24" X 7/8"
CURVED CUTTING EDGE, 8"X3/4"
END BITS, WITHOUT OVERLAY
RIPPER/SCARIFIER
COLD WEATHER PLUS PACKAGE
STARTING AID, ETHER
COLD START; TRANS OIL & BRKE
BATTERIES, EXTREME DUTY 1400
OIL, HYDRAULIC, COLD, 0W
ACCUMULATORS, BLADE LIFT
PRECLEANER, SY-KLONE
BASE + 3 (FL,DA1,RIP)
STARTER, ELEC, EXTREME DUTY
LIGHTS, FRONT HEADLIGHTS, LOW
CAB, PLUS (STANDARD GLASS)
150 AMP ALTERNATOR
WIPER/WASHER, REAR
STANDARD GLASS
CAB, PLUS (INTERIOR)
SEAT, AIR SUSPENSION, CLOTH
RADIO,12V,AM/FM,WTHRBAND,BLUETTH
FAN, DEFROSTER, REAR WINDOW
CONVERTER, COMMUNICATION
SHADE, SUN
SEAT BELT
NO ACCUGRADE
TIRES, WILL NEED TO GET NEW
ARTICULATION GUARD
LIGHTS, WORKING, PLUS, HALOGEN
LIGHTS, RIPPER 3X3
LIGHTS, WORK, HEEL 3X3
LIGHTS, WORK, MIDFRAME TOE
SWITCH, WORK LIGHTING
LIGHT, LED WARNING STROBE
MOUNTING, WARNING LIGHT
TRANSMISSION, AUTOSHIFT
MIRRORS, OUTSIDE HEATED 24V
GUARD, TRANSMISSION
HEATER, ENGINE COOLANT, 120V
PUSH PLATE, COUNTERWEIGHT
SHANKS/TEETH, RIPPER/SCARIFIER
QUICK-EVAC SYSTEM
CAT CERTIFIED USED

SELL PRICE	$198,900.00
SUBTOTAL	**$198,900.00**
TOTAL	**$198,900.00**

WARRANTY & COVERAGE

Standard Warranty:

Extended Coverage: **2 Year / 2000 Hour Powertrain and Hydraulic Extended Warranty**

SERVICES AND UPDATES WILL BE PERFORMED

PAYMENT TERMS

Cash Invoice Terms

CASH WITH ORDER
$0.00

CITY OF FORT LUPTON
CITY COUNCIL

Zo Stieber, Mayor

Shannon Rhoda, Ward 1
Chris Ceretto, Ward 2
Michael Sanchez, Ward 3

David Crespin, Ward 1
Tommy Holton, Ward 2
Bruce Fitzgerald, Ward 3

AM 2020-196

APPROVE CHANGE ORDER NUMBER 2 TO JBS PIPELINE CONTRACTORS CONTRACT FOR THE KAHIL STREET PROJECT, FOR NOT TO EXCEED $223,844.75 FROM UTILITY FUND - WATER LINES

I. Agenda Date: Council Meeting – December 1, 2020

II. Attachments: a. Change Order #2 - JBS Pipeline Contractors.

III. Summary Statement:

Approve Change Order No. 2 to Agreement with JBS Pipeline Contractors for not to exceed $223,844.75 for the Kahil Street Project from Utility Fund - Water Lines.

IV. Submitted by: _____
Public Works Director

V. Finance Reviewed _____
Finance Director

VI. Approved for Presentation: _____
City Administrator

VII. Attorney Reviewed _____ Approved _____ Pending Approval

VIII. Certification of Council Approval: _____ _____
City Clerk Date

IX. Detail of Issue/Request:

JBS Pipeline Contractors was awarded the Kahil Storm Drainage Project on August 19, 2020 for $826,327.70. This project is preceding the repaving of Kahil Street next spring.)

Change Order #1 was issued September 16, 2020 that provided a modified construction schedule to accommodate JBS's projects schedule and allow for material orders and delivery. CO #1 did not change cost of project agreement.

During utility work for the Fulton Village subdivision, it was discovered that the existing potable water main in Kahil is not in very good condition. In preparation for the paving project it is determined that the water main should be replaced.

CO #2 is to add replacement of the 8-inch water main in Kahil Street. Total cost is $223,844.75 *with a 1-month extension for project time. Total project cost is $1,050,172.45*

Project is currently under construction. Anticipating completion in time for paving project to start in early spring.

X. Legal/Political Considerations:

Not Applicable

XI. Alternatives/Options:

- *Approve Change Order #2 with JBS Pipeline Contractors*
- *Do not approve the Change Order*
- *Bid out as separate project*

XII. Financial Considerations:

The Water Sales Tax Fund has $250,000 budgeted for Well 26 that can be reallocated to the non-potable water installation on Mustang Ave.

XIII. Staff Recommendation:

Staff recommends approving Change Order No. 2 with JBS Pipeline Contractors for not to exceed $223,844.75 for the installation of new water main in Kahil Street under the Kahil Street Project.

City of Fort Lupton, Colorado
Public Works Department

Change Order

No. 2

Date of Issuance: **December 1, 2020** Effective Date: **December 1, 2020**

Project: **Kahil Storm Drainage Project**	Owner: **City of Fort Lupton**	Owner's Contract No.: **FTL202005**
Contractor: **JBS Pipeline Contractors**		Date of Contract: **August 18, 2020**

The Contract Documents are modified as follows upon execution of this Change Order:

Add water main replacement in Kahil Street.

Attachments (list documents supporting change): CD sheets 24 - 31

CHANGE IN CONTRACT PRICE:	CHANGE IN CONTRACT TIME:
Original Contract Price: $ **826,327.70**	Original Contract ☐ Working ☒ Calendar Substantial completion (days or date): **12/18/2020** Ready for final payment (days or date): **01/04/2021**
Increase from previously approved Change Orders No. _____ to No. _____: $ **0**	Increase from previously approved Change Orders No. **1** to No. _____: Substantial completion (days): **02/19/2021** Ready for final payment (days): **03/05/2021**
Contract Price prior to this Change Order: $ **826,327.70**	Contract Times prior to this Change Order: Substantial completion or date: **02/19/2021** Ready for final payment or date: **03/05/2021**
Increase of this Change Order: $ **223,844.75**	Increase of this Change Order: Substantial completion days: **30** Ready for final payment date:_____
Contract Price incorporating this Change $ **1,050,172.45**	Contract Times with all approved Change Orders: Substantial completion (days or date): **03/19/2021** Ready for final payment (days or date):**04/05/2021**

RECOMMENDED:	AUTHORIZED:	ACCEPTED:
By: _____	By: _____	By: _____
Engineer (Authorized)	Owner (Authorized)	Contractor (Authorized)
Date: **11/23/2020**	Date: 12/02/2020	Date: _____

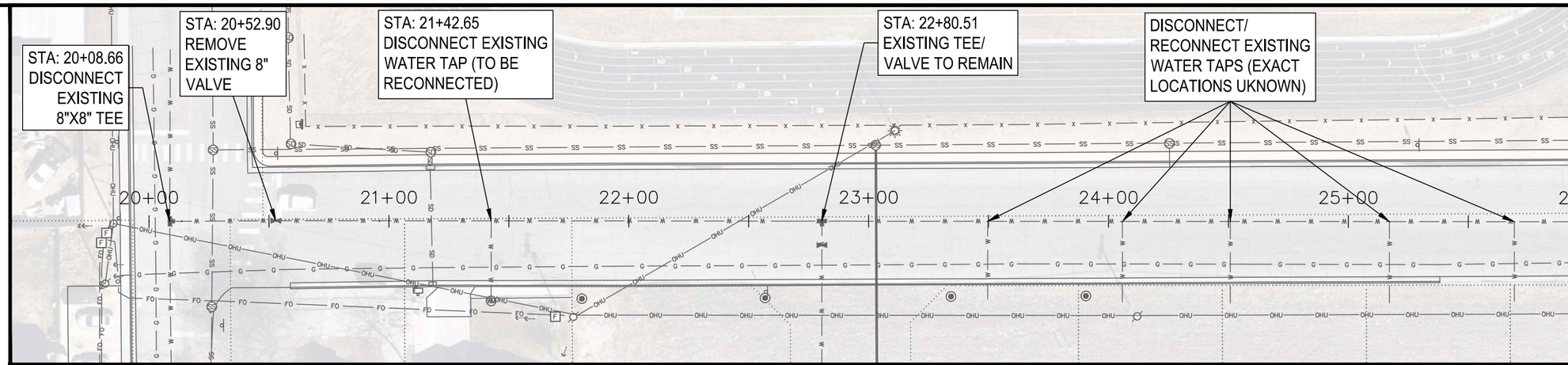
City of Fort Lupton, Colorado
Public Works Department
Kahil Storm West Extension
CHANGE ORDER -2 (WATER PIPE ADDITION)
REVISED 11-18-2020

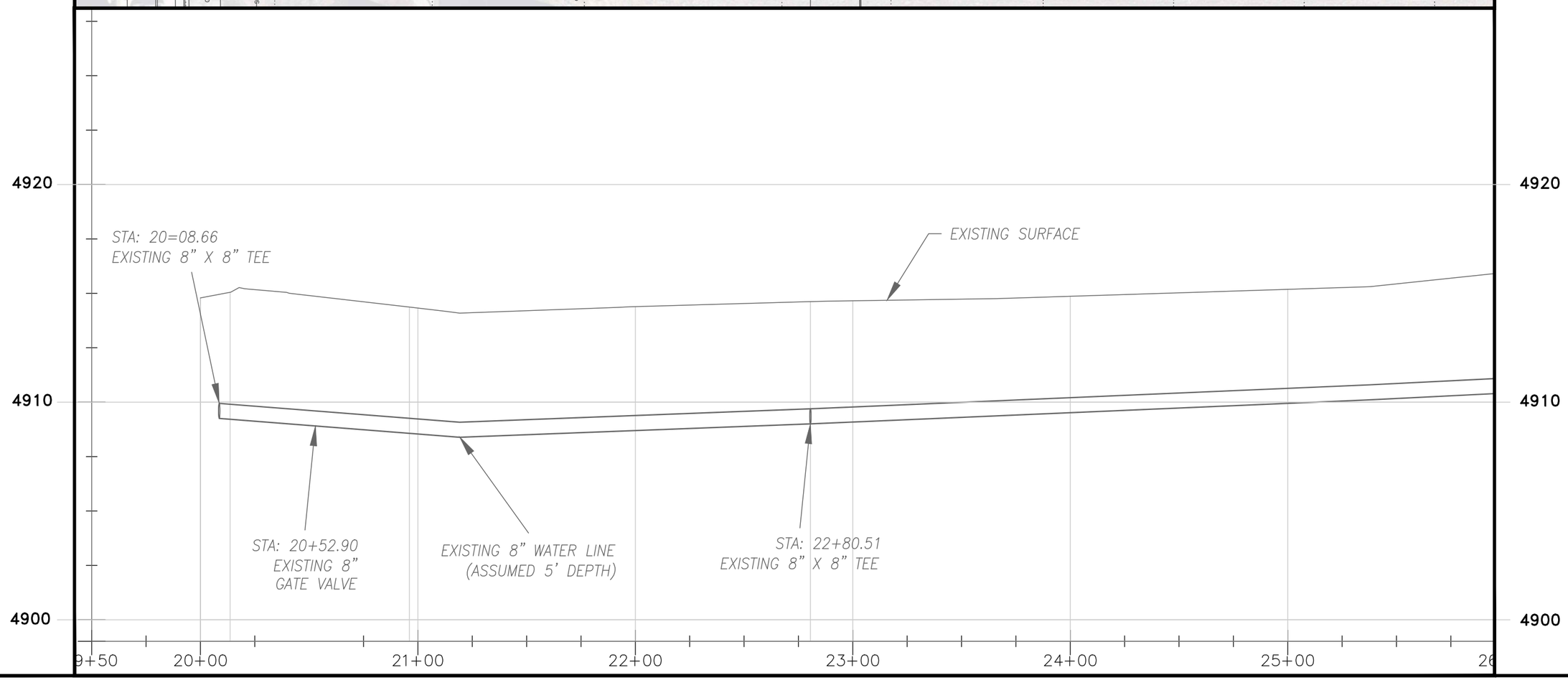
Contractor: **JBS Pipeline Contractors**

Payment Item No.	Specification Reference	Description	Unit	Qty	Rate	Amount
Project Total						**$ 223,844.75**
Division 100 - General Provisions						
1	TS 16-101	Mobilizaton & Project Setup	LS	1	$ 6,800.00	$ 6,800.00
2	TS 16-102	Traffic Control	LS	1	$ 8,400.00	$ 8,400.00
3	TS 16-103	Construction Surveying	LS	1	$ 3,500.00	$ 3,500.00
4	TS 16-104	Material Testing / QC	LS	1	$ 9,600.00	$ 9,600.00
Subtotal, Division 100						$ 28,300.00

Water Line Addition

Payment Item No.	Specification Reference	Description	Unit	Qty	Rate	Amount
Water Line Total						**$ 195,544.75**
Division 200 - Earthwork, Erosion Control, And Seeding						
5c	TS 16-201	Remove Existing Asphalt - Full Depth	SY	76	$ 3.00	$ 228.00
6c	TS 16-201	Remove Existing Concrete Road (With Chip Seal Top) - Full Depth	SY	2,005	$ 10.35	$ 20,751.75
44	TS 16-201	Remove Existing 8" Water Line	LF	1,435	$ 24.00	$ 34,440.00
45	TS 16-201	Remove Existing 8" x 8" Tee	EA	2	$ 195.00	$ 390.00
46	TS 16-201	Remove Existing 8" x 8" Cross	EA	1	$ 195.00	$ 195.00
47	TS 16-201	Remove Existing 8" Gate Valve	EA	5	$ 195.00	$ 975.00
Subtotal, Division 200						$ 56,979.75
Division 300 - Aggregate Base Courses						
20c	TS 16-301	Furnish and Place Aggregate Base Course, (4" Depth) Class 6, Recycled Asphalt or Recycled Concrete in Alignment of Pipework Area	SY	2,005	$ 9.00	$ 18,045.00
Subtotal, Division 300						$ 18,045.00
Division 500 - Piping						
48	TS 16-503	Furnish and Install 8 inch PVC AWWA C900 Water Line	LF	1,400	$ 52.00	$ 72,800.00
49	TS 16-503	Furnish and Install 8" x 8" Tee w/ Thrust Block (Cut-In Tees)	EA	2	$ 7,700.00	$ 15,400.00
50	TS 16-503	Furnish and Install 8" Gate Valve w/ Valve Box	EA	7	$ 1,850.00	$ 12,950.00
51	TS 16-503	Furnish and Install 8" Sleeve w/ Mechanical Joints	EA	8	$ 475.00	$ 3,800.00
52	TS 16-503	Furnish and Install 8" x 8" Cross w/ Thrust Block	EA	1	$ 1,825.00	$ 1,825.00
53	TS 16-503	Re-Install 3/4" Water Tap	EA	7	$ 740.00	$ 5,180.00
54	TS 16-503	Furnish and Install new Fire Hydrant Assembly; New 8" x 6" Tee with 20.22 LF of 6" D.I.P. and 6" Gate Valve	EA	1	$ 8,565.00	$ 8,565.00
Subtotal, Division 500						$ 120,520.00





PLAN VIEW
SCALE: 1" = 50'

THIS LINE SHOULD BE 1" WIDE

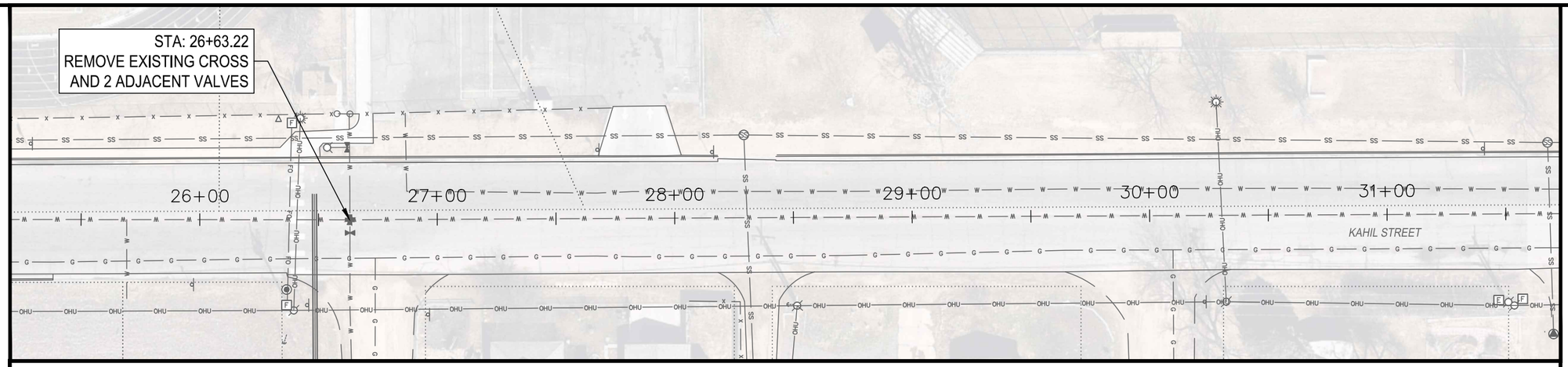
KAHIL ST STORM EXTENSION PROJECT

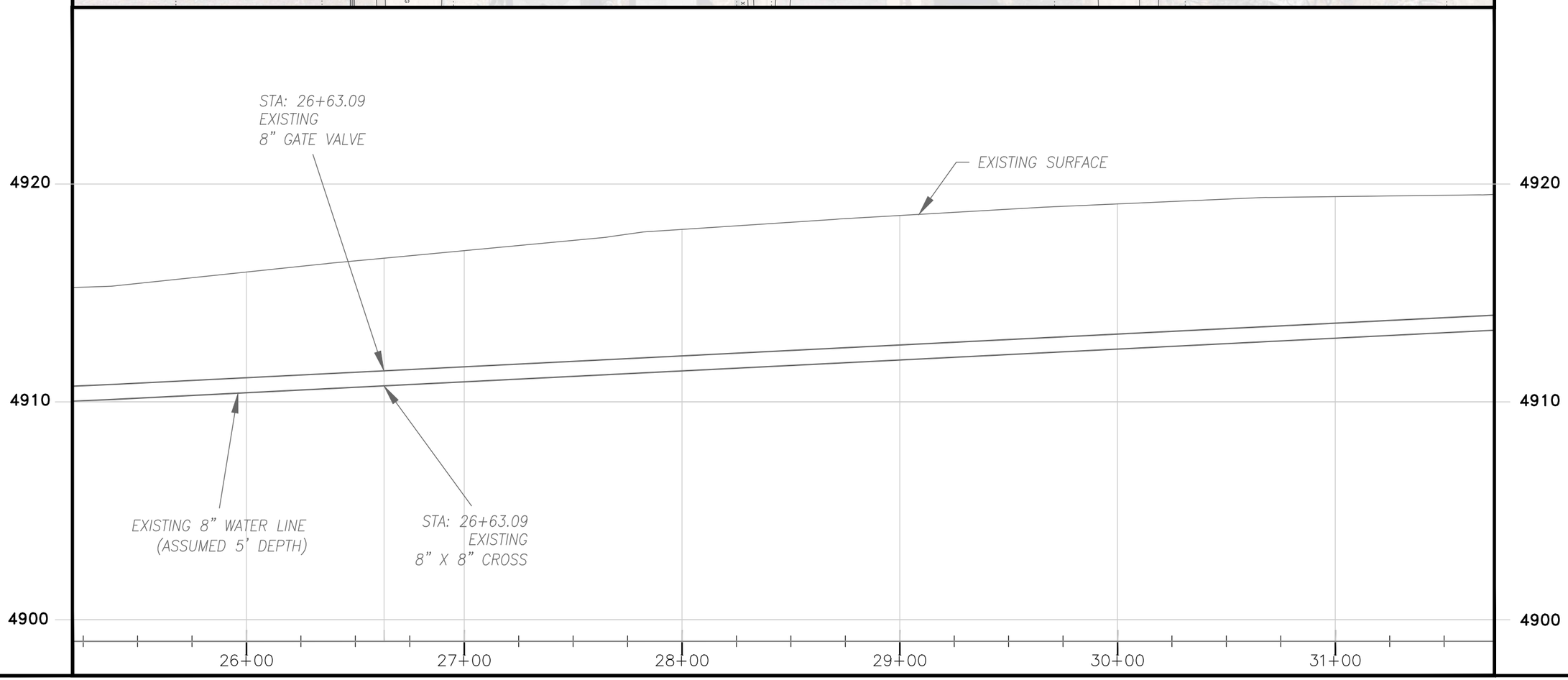
EXISTING WATER LINE PLAN & PROFILE - 1

CITY OF FORT LUPTON
130 S. McKINLEY AVE
FORT LUPTON, COLORADO - 80621

SHEET 24 OF 23

10/21/2020





PLAN VIEW
SCALE: 1" = 50'

THIS LINE SHOULD BE 1" WIDE

KAHIL ST STORM EXTENSION PROJECT

EXISTING WATER LINE PLAN & PROFILE - 2

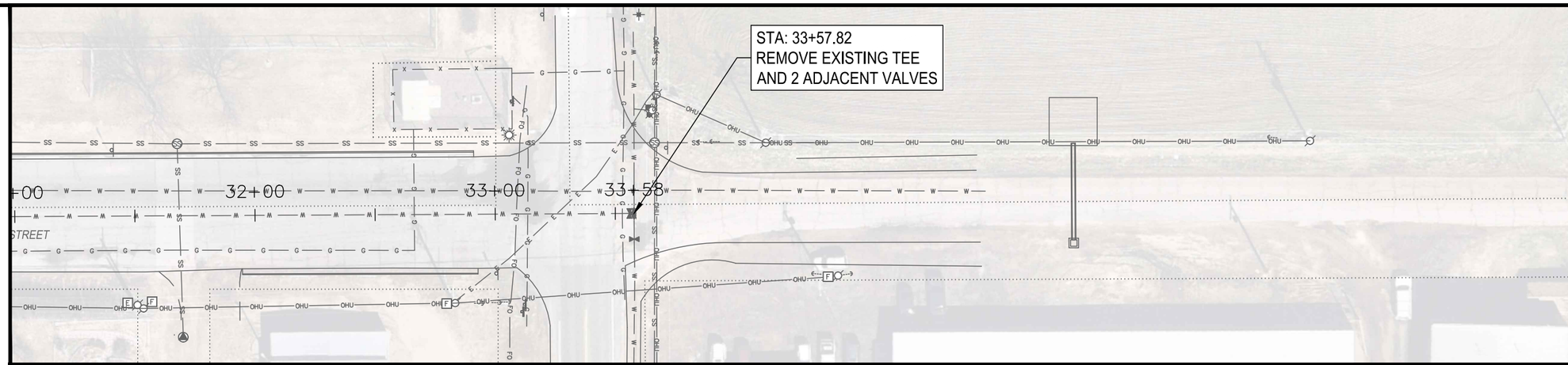
N

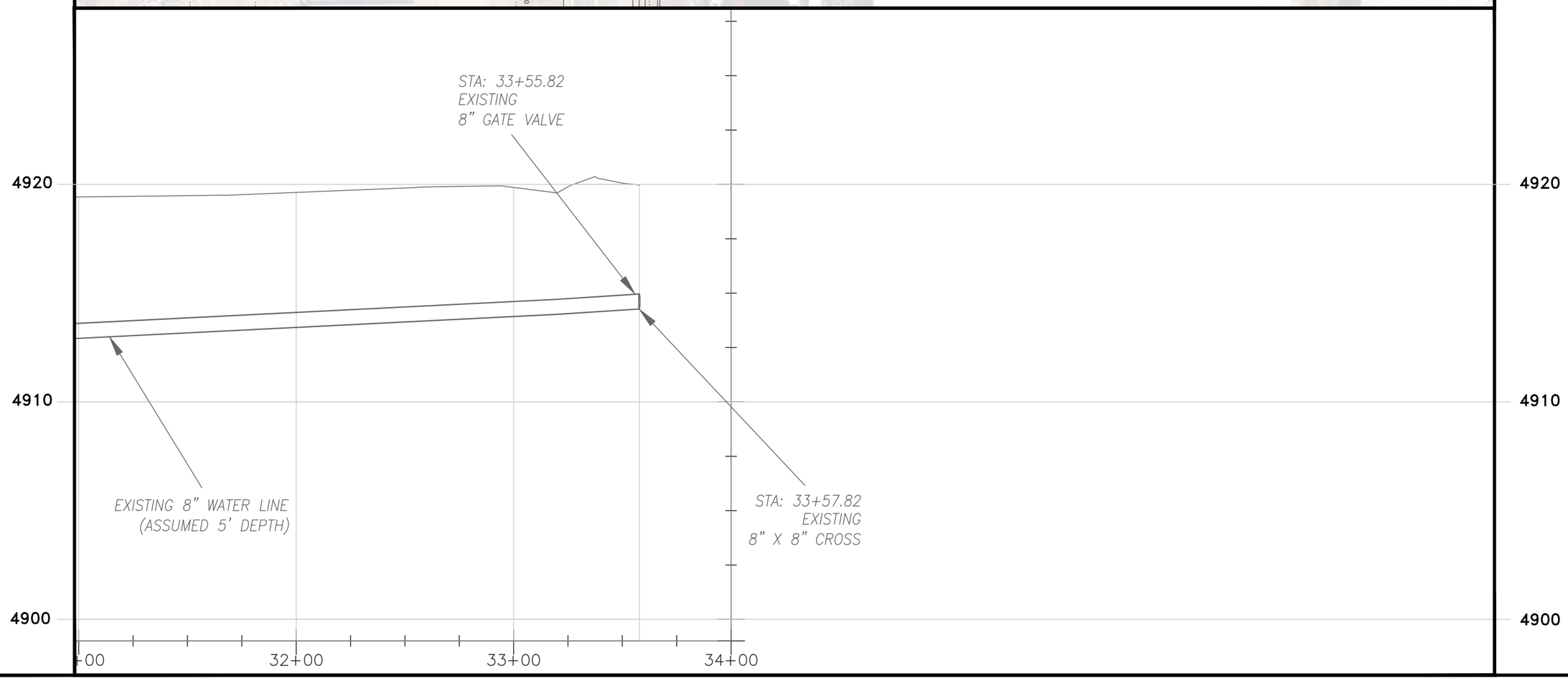
CITY OF FORT LUPTON
130 S. McKINLEY AVE
FORT LUPTON, COLORADO - 80621

CITY OF Fort Lupton EST 1836
COME PAINT YOUR FUTURE WITH US

SHEET 25 OF 23

10/21/2020





PLAN VIEW
SCALE: 1" = 50'

THIS LINE SHOULD BE 1" WIDE

KAHIL ST STORM EXTENSION PROJECT

EXISTING WATER LINE PLAN & PROFILE - 3

CITY OF FORT LUPTON
130 S. McKINLEY AVE
FORT LUPTON, COLORADO - 80621

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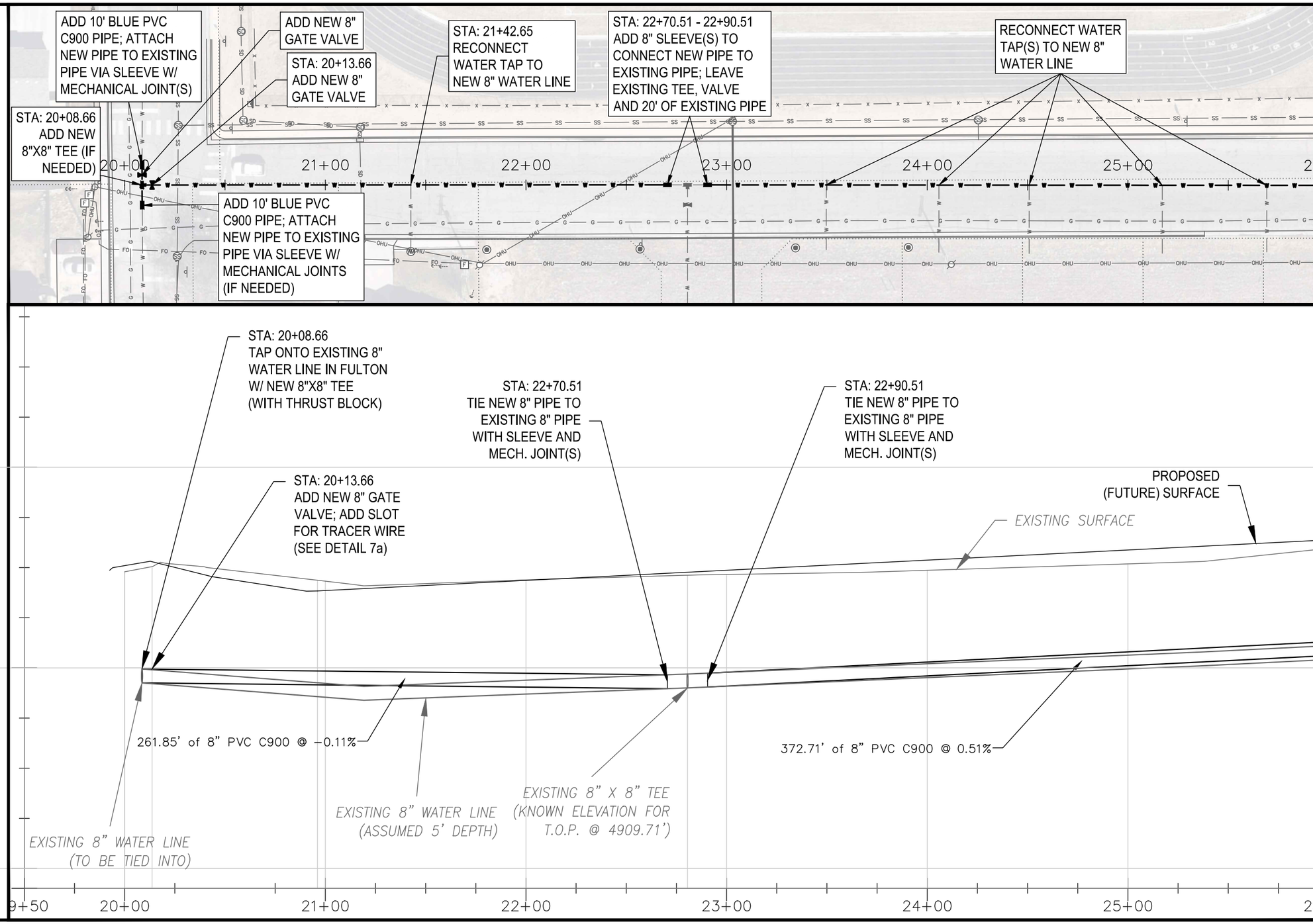
CITY OF Fort Lupton EST 1836 COME PAINT YOUR FUTURE WITH US

SHEET 26 OF 23

10/21/2020



PLAN VIEW
SCALE: 1" = 50'

THIS LINE SHOULD BE 1" WIDE

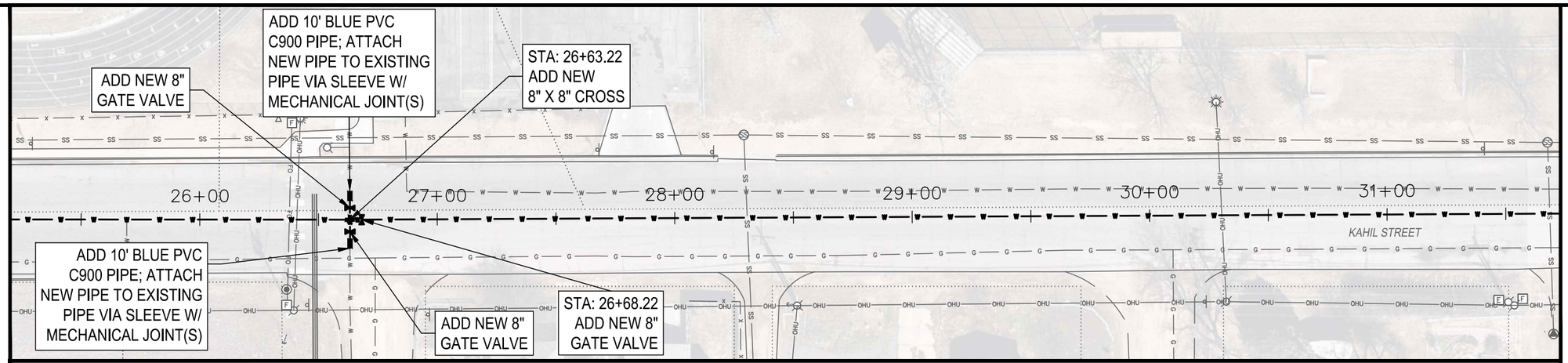
KAHIL ST STORM EXTENSION PROJECT

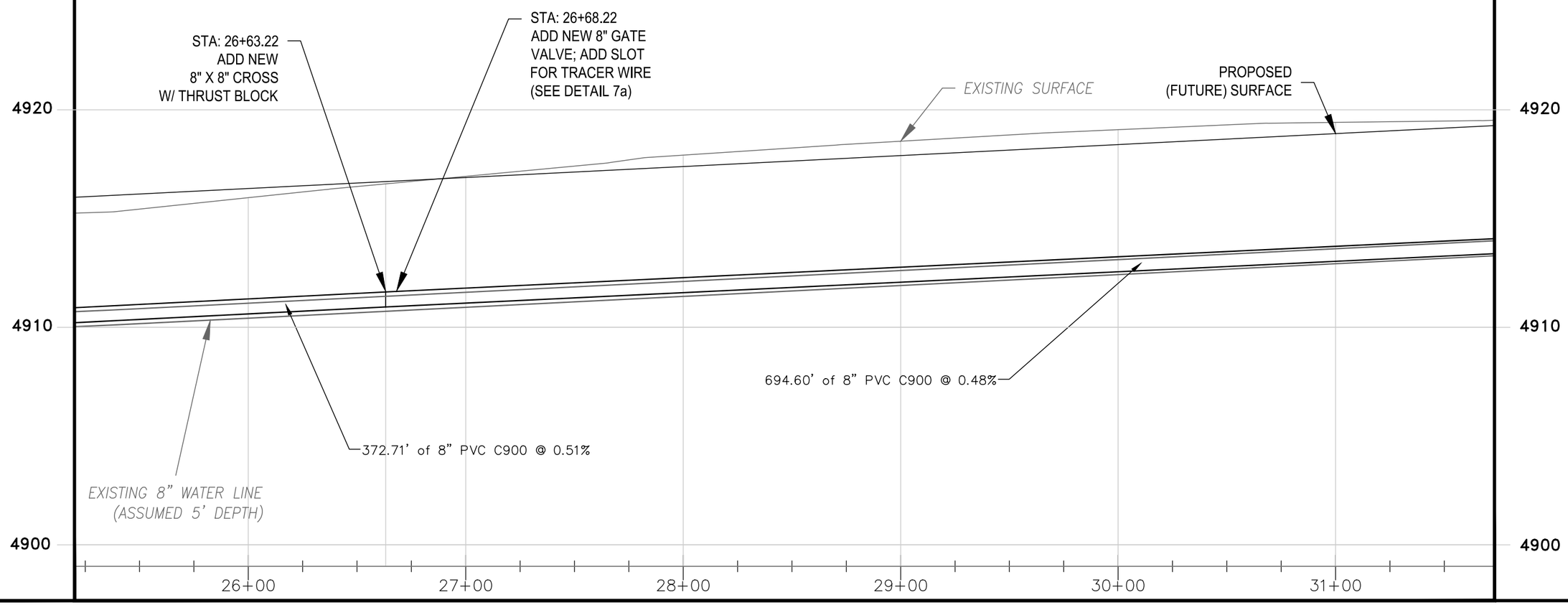
WATER LINE PLAN & PROFILE - 1

CITY OF FORT LUPTON
130 S. McKINLEY AVE
FORT LUPTON, COLORADO - 80621

SHEET 27 OF 23

10/21/2020





PLAN VIEW
SCALE: 1" = 50'

THIS LINE SHOULD BE 1" WIDE

KAHIL ST STORM EXTENSION PROJECT

WATER LINE PLAN & PROFILE - 2

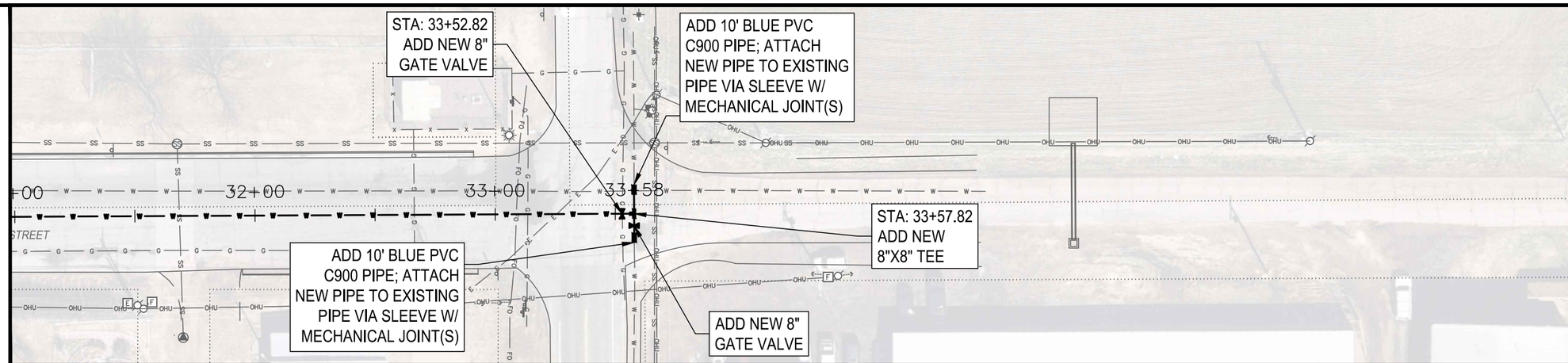
N

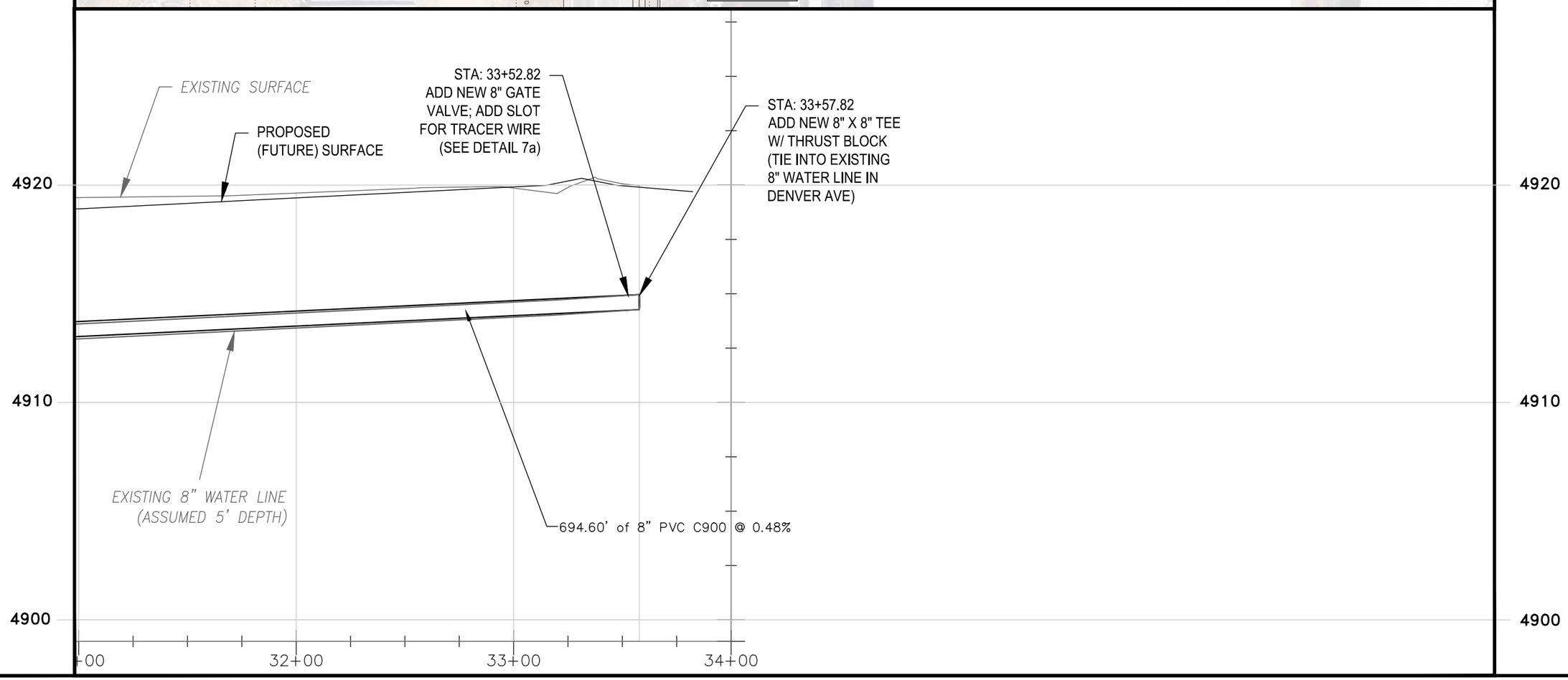
CITY OF FORT LUPTON
130 S. McKINLEY AVE
FORT LUPTON, COLORADO - 80621

CITY OF Fort Lupton EST 1836 COME PAINT YOUR FUTURE WITH US

SHEET 28 OF 23

10/21/2020





PLAN VIEW
SCALE: 1" = 50'

THIS LINE SHOULD BE 1" WIDE

KAHIL ST STORM EXTENSION PROJECT

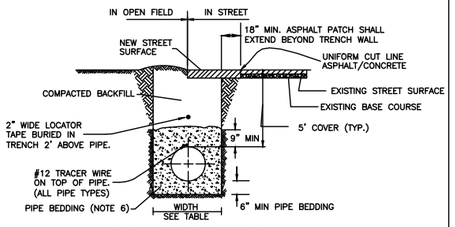
WATER LINE PLAN & PROFILE - 3

CITY OF FORT LUPTON
130 S. McKINLEY AVE
FORT LUPTON, COLORADO - 80621

CITY OF Fort Lupton EST 1836 COME PAINT YOUR FUTURE WITH US

SHEET 29 OF 23

10/21/2020



TYPICAL TRENCH SECTION

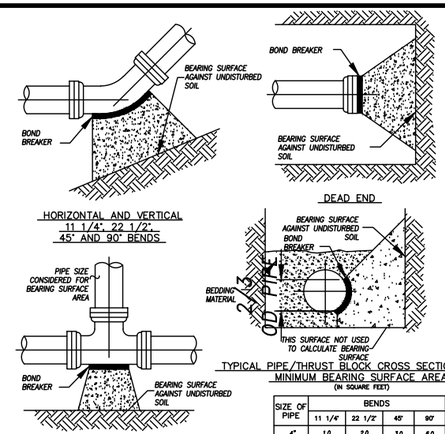
TRENCH WIDTH

PIPE DIAMETER	MINIMUM WIDTH	MAXIMUM WIDTH
4"	1'-4"	2'-4"
6"	1'-6"	2'-6"
8"	1'-8"	2'-8"
12"	2'-0"	3'-0"
16"	2'-4"	3'-4"
20"	2'-8"	3'-8"
24"	4'-0"	5'-0"

NOTES:

1. TRENCHES 5 FT DEEP OR GREATER REQUIRE A "PROTECTIVE SYSTEM" AS DEFINED BY OSHA. TRENCHES 20 FT DEEP OR GREATER REQUIRE THAT THE PROTECTIVE SYSTEM BE DESIGN BY A REGISTERED PROFESSIONAL ENGINEER.
2. OSHA'S STANDARDS REQUIRE THAT TRENCHES BE INSPECTED DAILY AND AS CONDITIONS CHANGE BY A "COMPETENT PERSON" (AS DEFINED BY OSHA) PRIOR TO WORKER ENTRY TO ENSURE ELIMINATION OF EXCAVATION HAZARDS. FOR ADDITIONAL INFORMATION REGARDING OSHA REQUIREMENTS CALL 1-800-321-OSHA.
3. MINIMUM COVER OVER PIPE TO BE BELOW OFFICIAL STREET GRADE.
4. FOR PIPE BEDDING REQUIREMENTS REFER TO CHAPTER 9 OF THE STANDARDS AND SPECIFICATIONS.
5. PIPE BEDDING SHALL BE PLACED AGAINST UNDISTURBED SOIL IN THE TRENCH BOTTOM, HOWEVER, WHERE ADVERSE SOIL IS ENCOUNTERED IN THE TRENCH BOTTOM, SOIL SHALL BE REMOVED AND TRENCH STABILIZATION MATERIAL SHALL BE PLACED IN ACCORDANCE WITH THE RECOMMENDATIONS OF A GEOTECHNICAL ENGINEER.

DESIGN STANDARDS	STANDARD DRAWING
TYPICAL TRENCH SECTION PIPE PROTECTION	W1
	DATE: 8/15/14



TYPICAL PIPE/THRUST BLOCK CROSS SECTION

MINIMUM BEARING SURFACE AREA
(IN SQUARE FEET)

SIZE OF PIPE	BENDS				TEE OR DEAD END
	11 1/4°	22 1/2°	45°	90°	
4"	1.0	2.0	3.0	6.0	4.0
6"	2.0	3.0	6.0	11.0	8.0
8"	3.0	6.0	11.0	19.0	14.0
12"	6.0	12.0	22.0	40.0	29.0
16"	10.0	20.0	38.0	70.0	50.0
20"	15.0	30.0	59.0	108.0	46.0
24"	22.0	43.0	84.0	154.0	110.0

NOTES:

1. BEARING SURFACES SHOWN IN CHART ARE MINIMUM.
2. BEARING SURFACES ARE BASED ON 150 PSI INTERNAL PIPE \ PRESS PLUS WATER HAMMER.
   4", 6", 8" AND 12" WATER HAMMER = 110 PSI
   16", 20" AND 24" WATER HAMMER = 70 PSI
3. BEARING SURFACE CALCULATIONS ARE BASED ON 900 PSF SOIL BEARING CAPACITY.
4. ALL DUCTILE IRON AND CAST IRON PIPE AND FITTINGS SHALL BE WRAPPED IN POLYETHYLENE AND SECURELY TAPED PRIOR TO PLACING TRUST BLOCKS.
5. NO COMPACTION SHALL BE ALLOWED ABOVE THRUST BLOCKS FOR A MINIMUM OF 24 HOURS AFTER PLACEMENT. CONCRETE MUST CURE A MIN. OF 48 HOURS PRIOR TO FILLING LINES.

DESIGN STANDARDS	STANDARD DRAWING
CONCRETE THRUST BLOCKS - BEARING SURFACES AND INSTALLATION	W3
	DATE: 8/15/14

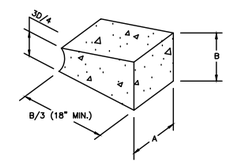
MINIMUM DIMENSIONS FOR THRUST BLOCKS

FITTING SIZE	TEES & PLUGS		90° BEND		45° BENDS & WYES	
	A	B	A	B	A	B
4"	1'-7"	1'-2"	1'-9"	1'-6"	1'-8"	0'-10"
6"	2'-0"	1'-11"	2'-5"	2'-2"	1'-10"	1'-7"
8"	2'-8"	2'-6"	3'-2"	3'-0"	2'-5"	2'-1"
10"	3'-4"	3'-3"	4'-0"	3'-10"	3'-0"	2'-9"
12"	4'-0"	3'-10"	4'-8"	4'-8"	3'-8"	3'-3"
14"	5'-0"	3'-10"	6'-6"	4'-11"	4'-9"	3'-5"
20"	5'-0"	5'-0"	6'-0"	6'-0"	5'-0"	4'-0"
24"	6'-0"	6'-0"	7'-0"	7'-0"	5'-0"	5'-0"
30"	7'-6"	7'-6"	8'-0"	8'-0"	6'-3"	6'-3"

FITTING SIZE	REDUCERS & 22 1/2° BENDS		11 1/4° BENDS	
	A	B	A	B
4"	1'-7"	0'-6"	0'-6"	0'-6"
6"	1'-9"	0'-10"	1'-0"	0'-6"
8"	1'-9"	1'-6"	1'-0"	1'-0"
10"	2'-2"	1'-11"	1'-6"	1'-0"
12"	2'-2"	2'-3"	2'-0"	1'-0"
14"	3'-9"	2'-5"	2'-0"	1'-6"
20"	3'-8"	3'-0"	3'-0"	2'-0"
24"	4'-6"	3'-0"	3'-0"	3'-0"
30"	4'-9"	4'-6"	3'-3"	3'-3"

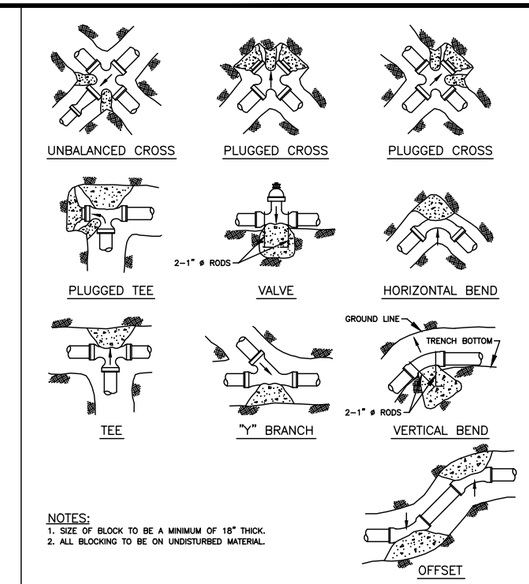
GENERAL NOTES:

1. BEARING SURFACE AREAS SHOWN IN CHART ARE MINIMUM.
2. BASED ON 150 P.S.I. INTERNAL PIPE PRESSURE.
3. SOIL BEARING CAPACITY = 2000 LB./SQ. FT.
4. ALL FITTINGS TO BE WRAPPED WITH POLYETHYLENE (MINIMUM 8 MIL.).



NOT TO SCALE

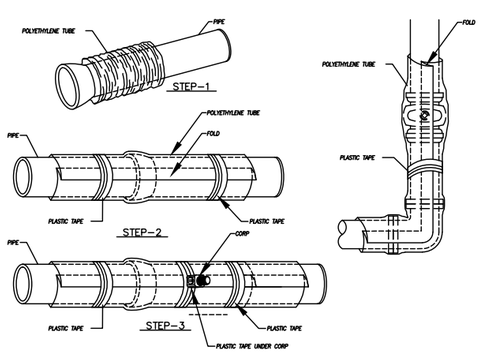
DESIGN STANDARDS	STANDARD DRAWING
TYPICAL TRENCH BLOCK DIMENSIONS	W4
	DATE: 8/15/14



NOTES:

1. SIZE OF BLOCK TO BE A MINIMUM OF 18" THICK.
2. ALL BLOCKING TO BE ON UNDISTURBED MATERIAL.

DESIGN STANDARDS	STANDARD DRAWING
CONCRETE THRUST BLOCK FOR UNBALANCED SURFACES	W5
	DATE: 8/15/14



FIELD INSTALLATION-POLYETHYLENE WRAP

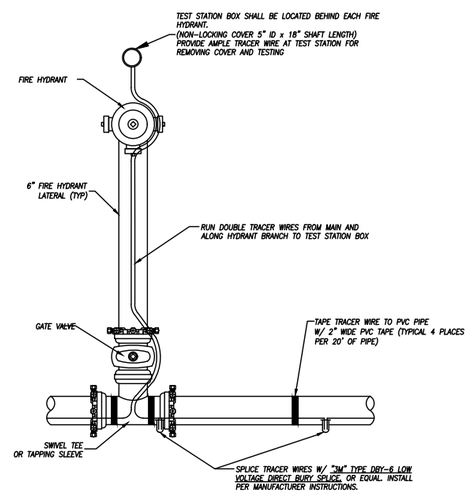
STEP-1 PLACE TUBE OF POLYETHYLENE MATERIAL AROUND PIPE PRIOR TO LOWERING PIPE INTO TRENCH.

STEP-2 PULL THE TUBE OVER THE LENGTH OF THE PIPE. TAPE TUBE TO PIPE AT JOINT. FOLD MATERIAL AROUND THE ADJACENT SPIGOT END AND WRAP WITH TAPE TO HOLD THE PLASTIC TUBE IN PLACE.

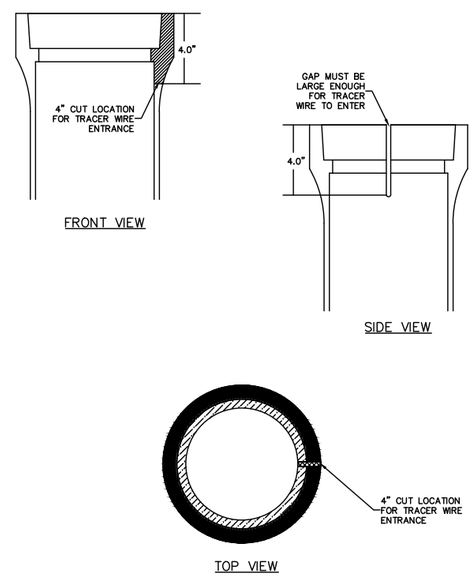
STEP-3 OVERLAP FIRST TUBE WITH ADJACENT TUBE AND SECURE WITH PLASTIC ADHESIVE TAPE. THE POLYETHYLENE TUBE MATERIAL COVERING THE PIPE SHALL BE LOOSE. EXCESS MATERIAL SHALL BE NEATLY DRAWN UP AROUND THE PIPE BARREL, FOLDED ON TOP OF THE PIPE AND TAPED IN PLACE.

NOTE: POLYETHYLENE SHALL BE MINIMUM 8-MIL THICKNESS

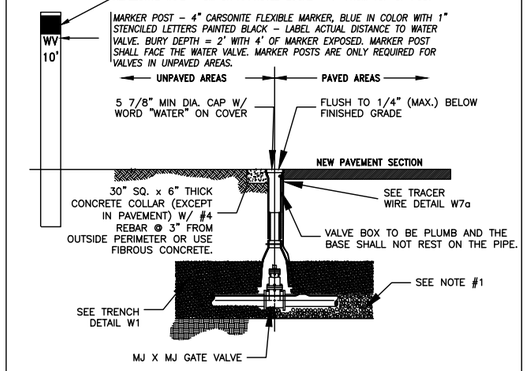
DESIGN STANDARDS	STANDARD DRAWING
POLYETHYLENE WRAP	W6
	DATE: 8/15/14



DESIGN STANDARDS	STANDARD DRAWING
TRACER WIRE	W7
	DATE: 8/15/14



DESIGN STANDARDS	STANDARD DRAWING
TRACER WIRE FOR VALVES	W7a
	DATE: 11/26/14



NOTES:

1. CARE SHALL BE TAKEN WHEN INSTALLING VALVES TO ASSURE PROPER SUPPORT OF THE VALVE. THE CITY ENGINEER MAY REQUIRE 3/4" CRUSHED ROCK TO BE INSTALLED UNDER THE VALVE TO PROVIDE PROPER SUPPORT.
2. VALVES SHALL NOT BE PLACED IN CONCRETE SIDEWALKS, CROSS PANS, GUTTERS, OR OTHER DRAINAGE WAYS.
3. OPERATING NUTS OR EXTENSIONS SHALL NOT BE SET CLOSER THAN TWO (2) FEET FROM FINAL GRADE. IF THE OPERATING NUT IS DEEPER THAN FIVE (5) FEET FROM FINAL GRADE, PROVIDE A 1 1/4" EXTENSION SHAFT W/ CENTERING RING. OPERATOR EXTENSIONS SHALL BE CONNECTED TO THE VALVE OPERATOR NUT USING A PIN. THE EXTENSION SHAFT SHALL INCLUDE A 1/4" THICK TRASH RING LOCATED 6" BELOW THE NON-RISING PORTION OF THE VALVE BOX. THE DIAMETER OF THE TRASH RING SHALL BE 1/8" LESS THAN THE INSIDE DIAMETER OF THE VALVE BOX.
4. GATE VALVE SHALL BE POLYETHYLENE WRAPPED (8 MIL).
5. CONCRETE COLLARS & MARKER POSTS ARE REQUIRED WHEN VALVE IS LOCATED IN AN UNPAVED AREA.
6. VALVE BOXES ARE TO BE BROUGHT UP TO GRADE AT THE TIME OF PAVEMENT PLACEMENT OR OVERLAY. VALVE BOX ADJUSTING RINGS ARE NOT ALLOWED.

DESIGN STANDARDS	STANDARD DRAWING
VALVE BOX	W14
	DATE: 8/15/14

KAHIL ST STORM EXTENSION PROJECT

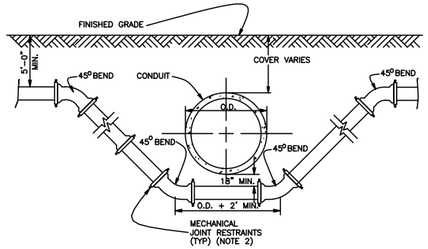
DETAIL SHEET - 4

CITY OF FORT LUPTON
130 S. McKINLEY AVE
FORT LUPTON, COLORADO - 80621

CITY OF Fort Lupton EST 1836 COME PAINT YOUR FUTURE WITH US

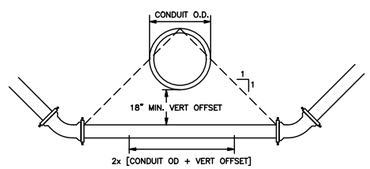
SHEET 30 OF 23

10/21/2020

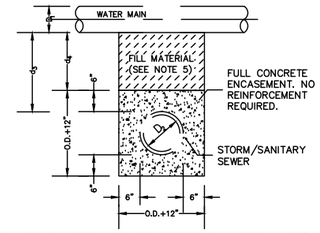


NOTES:

1. SEWER LINES CROSSING ABOVE WATER MAINS SHALL BE PVC C900 PRESSURE PIPE AND EXTEND 9' EACH SIDE OF CROSSING (MIN.).
2. MECHANICAL JOINT RESTRAINTS SHALL BE PROVIDED AT ALL JOINTS IN THE LOWERING AND FOR THE SPECIFIED DISTANCE BACK FROM THE LOWERING AS DESIGNED BY THE ENGINEER OF RECORD.
3. WATER MAINS CROSSING CULVERTS THAT ARE EXPOSED TO THE ELEMENTS SHOULD BE EVALUATED FOR FREEZE POTENTIAL.
4. A BORED CROSSING MAY BE REQUIRED FOR THE WATERMAIN.
5. CATHODIC PROTECTION MAY BE REQUIRED FOR THE DUCTILE IRON WATER MAINS AS SPECIFIED BY THE ENGINEER.

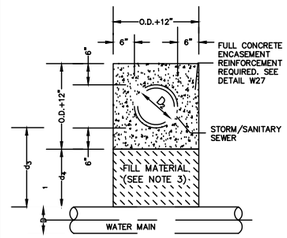


DESIGN STANDARDS	STANDARD DRAWING
CONDUIT CROSSING	W18
	DATE: 8/15/14



STORM OR SANITARY SEWER CROSSING UNDER WATER MAIN

IF d_1 >18" AN ENCASEMENT IS NOT REQUIRED



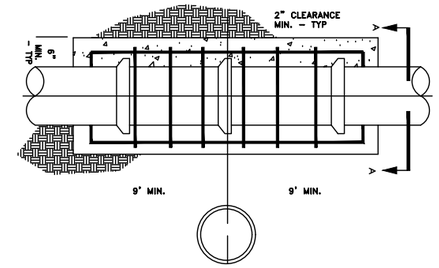
NOTES:

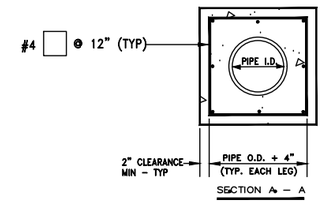
1. CONCRETE TO BE CAST AGAINST UNDISTURBED SOIL OR SHORING.
2. LENGTH OF ENCASEMENT SHALL EXTEND AT LEAST 9-FEET EACH SIDE OF WATER MAIN.
3. FILLER MATERIAL BETWEEN CONDUITS TO BE APPROVED COMPRESSIBLE MATERIAL SUCH AS STYROFOAM, ETC. IF $d_4 \leq 6"$. COMPACTED BACKFILL, IF $d_4 > 6"$.
4. SHORING OR SHEETING, IF USED, TO BE CUT OFF AT TOP OF ENCASEMENT
5. A REINFORCED ENCASEMENT IS REQUIRED FOR ALL CONDUITS CROSSING OVER WATERMAINS BUT ENCASEMENTS ARE NOT REQUIRED TO BE REINFORCED IF CROSSING UNDER WATERMAINS.

STORM OR SANITARY SEWER CROSSING OVER TOP OF WATER MAIN

REINFORCED ENCASEMENT REQUIRED REGARDLESS OF DIMENSION d_3

DESIGN STANDARDS	STANDARD DRAWING
ENCASEMENT FOR CONDUIT CROSSING	W26
	DATE: 8/15/14





SECTION A – A

PIPE I.D.	NO. OF LONGITUDINAL BARS & LOCATION	
6" TO 8"	4 – #4 BARS	1 EACH CORNER
10" TO 18"	8 – #4 BARS	3 EACH SIDE
21" TO 33"	12 – #4 BARS	4 EACH SIDE
36"	16 – #4 BARS	5 EACH SIDE

DESIGN STANDARDS	STANDARD DRAWING
CONCRETE ENCASEMENT REINFORCEMENT DETAIL	W27
	DATE: 8/15/14

KAHIL ST STORM EXTENSION PROJECT

DETAIL SHEET - 5

CITY OF FORT LUPTON
130 S. McKINLEY AVE
FORT LUPTON, COLORADO - 80621

CITY OF Fort Lupton EST 1836 COME PAINT YOUR FUTURE WITH US

SHEET 31 OF 23 **10/21/2020**

CITY OF FORT LUPTON
CITY COUNCIL

Zo Stieber, Mayor

Shannon Rhoda, Ward 1
Chris Ceretto, Ward 2
Michael Sanchez, Ward 3

David Crespin, Ward 1
Tommy Holton, Ward 2
Bruce Fitzgerald, Ward 3

AM 2020-197

PURCHASE OF A TOW BEHIND AERATOR AT COYOTE CREEK GOLF COURSE

I. Agenda Date: Council Meeting – December 1, 2020

II. Attachments:
a. Bid from LL Johnson
b. Bid from Potestio Brothers

III. Summary Statement:

Coyote Creek Golf Course is looking to purchase a Tow Behind Aerator to assist with aeration rough at the golf course and parks.

IV. Submitted by: _____
Tyler Tarpley

V. Finance Reviewed _____
Finance Director

VI. Approved for Presentation: _____
City Administrator

VII. Attorney Reviewed _____ Approved _____ Pending Approval

VIII. Certification of Council Approval: _____ _____
City Clerk Date

IX. Detail of Issue/Request:

The Ryan Renovaire tow-behind aerator will be a new piece of equipment for Coyote Creek Golf Course. This aerator will be used to aerate the 42 acres of rough at the golf course. In the past we have borrowed the parks department aerator that is four feet wide. The new aerator is six feet wide and will allow staff to complete the process in less time. The aerator will work with the tractor that the parks department has and they will be able to use it to aerate all the parks and the ball fields. The aerator has trays that can hold up to 150 pounds allowing the tines to go deeper into the ground in compacted areas.

An RFP was issued for this purchase, LL Johnson and Potestio Brothers were the only two companies to complete and submit bids. Potestio Brothers was the low bid at $8,125.

X. Legal/Political Considerations:

N/A

XI. Alternatives/Options:

Do not approve the purchase of the Tow Behind Aerator

XII. Financial Considerations:

The bid from Potestio Brothers is for $8,125 and will require a supplemental budget resolution.

XIII. Staff Recommendation:

Staff recommends the purchase of tow behind aerator for $8,125.

****
REQUEST NO.
FTL2016XX
****

CITY OF
Fort Lupton
EST 1836
COME PAINT YOUR FUTURE WITH US

Ms. Leann Perino
Finance Director
130 South McKinley Avenue
Fort Lupton, Colorado 80621

Dear Ms. Perino:

The undersigned having become familiar with the specifications for ***Golf Course Maintenance Equipment*** and deliver to the City of Fort Lupton as set forth in the following schedule:

Item	**Equipment**	**Attachments**	**Price**
Item #1	Compact Utility Loader		$25,522.00
		Standard Bucket	$599.00
		Trencher	$5261.00
		Soil Cultivator	$6,337.00
		Blade	$1,950.00
	Total For Compact Utility Loader with attachments		
Item #2	Broadcast Topdresser		$14,787.06
Item #3	Deep Tine Aerator		$19,601.85
Item #4	Tow-Behind Aerator		$8,468.88

The City would like all pieces of equipment to be invoiced and delivered by December 31, 2020.

LL JOHNSON
4700 HOLLY ST
DENVER, CO 80216

11/17/2020

CITY OF FORT LUPTON
FOR:COYOTE CREEK GOLF COURSE
ATTN: MIKE MCNAY

PH:303-350-5252
FAX:
E-MAIL:mmcnay@fortluptonco.gov

DINGO SYSTEM QUOTE

		LIST PRICE	YOUR PRICE
22324	DINGO 525TX DIESEL WIDE TRACK DRIVE	$ 30,750.00	$ 25,522.00
	SER#		
22409	STANDARD BUCKET 42"	$ 725.00	$ 599.00
	SER#		
22473	HIGH TORQUE TRENCHER HEAD	$ 4,395.00	$ 3,647.00
	SER#		
22976	3 FT BOOM	$ 800.00	$ 664.00
	SER#		
22487	3'X 4" COMBO TRENCHER CHAIN	$ 1,145	$ 950.00
	SER#		
23102	SOIL CULTIVATOR	$ 7,635.00	$ 6,337.00
	SER#		
35-27700	KWIK WAY BACKFILL BLADE AND SNOW	$ 2,385.00	$ 1,950.00
	SER# THIS IS A BETTER BLADE THAN THE		
	TORO BLADE AND LESS MONEY	SUB TOTAL	$ 39,669.00
	NO	TAX	
		TOTAL	
	PRICES SUBJECT TO CHANGE WITHOUT NOTICE		

LL JOHNSON EST. 1976 DISTRIBUTING COMPANY

4700 Holly Street
Denver, CO 80216
Mobile: 720-641-3864
Office: 303-394-6673

TORO. Count on it.

City of Fort Lupton

Attn: Mike Mcnay

11/17/2020

Qty	Model Number	Description	MSRP	2021 MAPO
1	**44751**	**ProPass 200 Wireless**	**$ 14,416.00**	**$ 11,273.31**
1	44724	Propass Tow Chassis And Fender Kit	$ 3,423.00	$ 2,676.79
1	44706	Tow Chasis Hose Assembly	$ 343.00	$ 268.23
		MAPO Service Fee	$ 727.28	$ 568.73
		SUB TOTAL	**$ 18,909.28**	**$ 14,787.06**

Qty	Model Number	Description	MSRP	2021 MAPO
1	**44856**	**Turf Aerator 686**	**$ 9,891.00**	**$ 7,734.76**
96	108-9299	3/4 Inch Spoon Tine Closed	$ 522.24	$ 408.39
		MAPO Service Fee	$ 416.53	$ 325.73
		SUB TOTAL	**$ 10,829.77**	**$ 8,468.88**

Qty	Model Number	Description	MSRP	2021 MAPO
1	**09931**	**ProCore SR54**	**$ 23,053.00**	**$ 18,027.45**
1	09952	Rear Roller SR54	$ 954.00	$ 746.03
18	SGS08500	Solid Tine, 12mm x 8.00 Inch [12mm MNT]	$ 95.22	$ 74.46
		MAPO Service Fee	$ 964.09	$ 753.92
		SUB TOTAL	**$ 25,066.31**	**$ 19,601.85**

GRAND TOTAL	**$ 54,805.36**	**$ 42,857.79**

I am sending our current pricing information on the Toro Commercial Turf products that you are interested in. These prices are from our current MAPO contract #2017025 available to all of our tax supported accounts. The Service Fee listed above covers freight, set-up and delivery charges.

* All Toro equipment comes with a two year or 1,500 hour warranty

Thank you for the opportunity to quote you on the equipment listed above. The prices are guaranteed through May 20th 2021. The equipment pricing includes all set up and delivery.

Please feel free to call me with any questions.

Sincerely,

Brandon Bollerud
Northern Territory Manager

Turf Aerator 686/687

TOW-BEHIND LARGE AREA AERATORS

FEATURES

- *Productive 78" (198 cm) aeration swath*
- *Aerate up to 10 mph (16.1 km/h)*
- *Slicing and core aerating tines available*
- *3-point (687) or tow type (686)*

Productive Aeration. Simple Design.

The 686 and 687 Turf Aerators are an efficient and effective way to aerate large turf areas. Designed with 70 pound (31.75 kg) cast wheels and a unique floating head design, these aerators give excellent depth and ground following capabilities. For highly compacted or unusually uneven grounds, optional rear weights are available.

Toro Turf Aerator 686

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Call your Toro distributor at 800-803-8676

Turf Aerators 686 & 687

The 686 and 687 Turf Aerators give excellent depth performance and follow ground contours, vertically and horizontally, like no other aerator available.

(Turf Aerator 686 shown)

	TURF AERATOR 686, MODEL 44856	TURF AERATOR 687, MODEL 44867
CAST WHEELS	3 sets of 4, each set moves independently. 70 lbs. (32 kg), 13" (33 cm) diameter.	
AERATING SWATH	78" (198 cm)	78" (198 cm)
TINES	Choice of 1/2" (12.7 mm) or 3/4" (19 mm) open or closed tines. 4" (10 cm) and 6" (15 cm) slicing blades.	
PATTERN	6" (15 cm) forward. 3" (8 cm) lateral	
HITCH	Drop pin, tow type with hydraulic cylinder for lift, hand pump standard.	3 pt., Category 1.
OPERATING SPEED	1-10 mph (1.6-16.1 km/h)	1-10 mph (1.6-16.1 km/h)
LENGTH	78" (198 cm)	48" (122 cm)
WIDTH	90" (229 cm)	82" (208 cm)
HEIGHT	Approx. 40" (102 cm)	Approx. 40" (102 cm)
OPTIONS	Weights: 35 lbs. (16 kg) each, 2 maximum per coring head. Tractor Remote Kit, Model 68-608-3521. **Note:** Includes weights, but additional weights can be added.	Weights: 35 lbs. (16 kg) each, 2 maximum per coring head; set of 3. **Note:** Includes weights, but additional weights can be added.
SHIPPING WEIGHT	1,420 lbs. (644 kg)	1,300 lbs. (590 kg)
WARRANTY	Two-year limited warranty; Refer to the Operator's Manual for further details.	

*Specifications and design subject to change without notice. Products depicted in this literature are for demonstration purposes only. Actual products offered for sale may vary in design, required attachments and safety features. Consult your local Toro Distributor.

ProPass™ 200

BROADCAST TOPDRESSER

FEATURES

Accurate – *Color-coded operating system delivers a perfect spread every time. Repeatable settings for consistent operation and defined edges.*

Wireless Remote Operation – *Available wireless controller allows real-time adjustments. Make quick setting changes and store settings for future use. Base model features a wired controller.*

Spread Consistency: *Ultra-light to ultra-heavy. Evenly apply materials from 9' (2.74 m) narrow to 30' (9.1 m) wide with the use of our unique "drop zone" patented sliding adjustment.*

Dependable – *Low maintenance and easy cleaning procedures provide long life and solid performance.*

Versatile – *The twin spinner accessory can be swapped out with a 270 degree swivel cross-conveyor quickly and easily without tools.*

Choice of Configurations – *Available as a bed mounted version, a trailer version with either engine or vehicle hydraulic power, or as a fifth wheel trailer version.*

Why Settle? Leave the guesswork to the other guys.

The ProPass 200 series broadcast-style topdressers provide the ultimate in application versatility and precision. Intuitive color-coded adjustment settings deliver extremely accurate spread patterns from ultra-light dustings to ultra-heavy aeration hole filling applications from the first pass, without the guesswork. The unique four-wheel, walking-beam suspension means a light footprint that is easy on the most sensitive turf. Select from a range of configurations and controls to match your needs, tow vehicle and budget. If you are looking for one topdresser to do it all - the ProPass 200 is the only one.

Trailer Version

- *Chassis with 4-wheel walking beam suspension*
- *11 hp (8.2 kW) engine-powered hydraulics or vehicle-powered hydraulics*

Utility Vehicle Mounted Version

- *Vehicle-powered hydraulics*
- *Storage stands for removal and storage*

Call your Toro distributor at 800-803-8676

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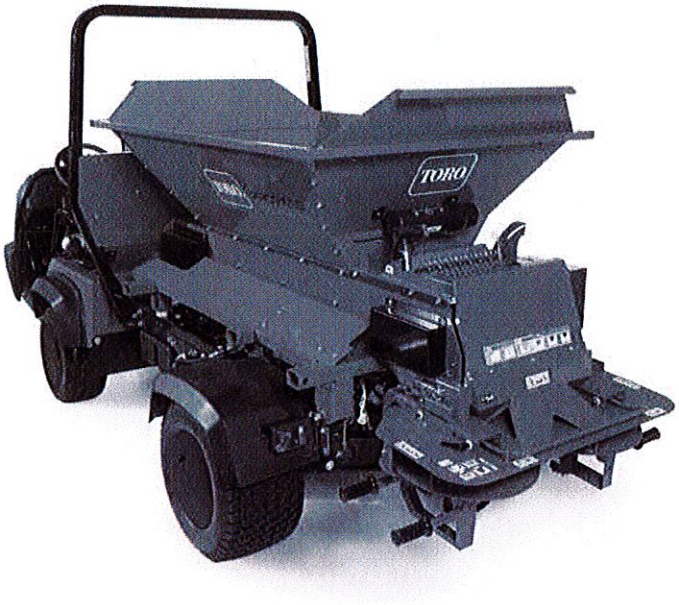
ProPass™ 200

The ProPass 200 Series broadcast-style topdressers provide the ultimate in application versatility. Intuitive color-coded adjustment settings deliver extremely accurate spread patterns from ultra-light dustings to ultra-heavy aeration filling applications. The four-wheel, walking-beam suspension means a light footprint that is easy on the most sensitive turf. If you are looking for one topdresser to do it all – the ProPass 200 is the only one. Choice of bed-mounted or trailer configurations and manual or wireless controls.



	PROPASS 200, MODEL 44701 / PROPASS 200 WIRELESS, MODEL 44751*		
GENERAL	Hopper Capacity: 21 ft³ / 0.54 m³ struck (25 ft³ / 0.71 m³ heaped) Controls: standard or electronic wireless Belt: One-piece vulcanized, self-tracking (no seams or staples) Hydraulic Power Pack (optional): 11 hp (8.2 Kw) engine Cross conveyor / swivel kit assembly (option): cross conveyor rotates 270 degrees		
SPREAD WIDTH	30' (9.1 meters)		
WEIGHT	Base model: 546 lbs (248 kg) Tow behind chassis: 480 lbs (218 kg) Truck mount kit: 90 lbs (41 kg) Twin spinner: 140 lbs (66 kg) Truck mount storage stand: 65 lbs (30 kg) Hydraulic power pack engine: (dry) 220 lbs (100 kg) Cross conveyor / swivel kit assembly: 140 lbs (63.5 kg)		
DIMENSIONS	**Tow-Behind Configuration** Length 134 in (3.4 m) Height 56 in (1.4 m) Width 65 in (1.7 m) Total unit weight: 1166 lbs (531 kg) Payload 2,000 lbs (905 kg)	**Truck Mount Configuration** Length 78 in (1.98 m) Height 56 in (1.4 m) Width 65 in (1.7 m) Total unit weight: 776 lbs (355 kg) Payload: 2,000 lbs (905 kg)	**Cross Conveyor Configuration** Length 65 in (1.7 m) Belt width: 8 in (20.3 cm) seamless
TIRES ON CHASSIS	24 x 13 x 12 in (60 x 32.5 x 30 cm) , 4 ply Suspension: 4-wheel walking beam		
TOW VEHICLE REQUIREMENTS	Towing capacity: 3,400 lbs (1550 kg) Tongue weight: 300 lbs (136 kg)		
HYDRAULICS	Minimum 6 US gal/m @ 2,000 psi (23 L/m @ 138 bar) Maximum 10 US gal/m @ 2,800 psi (38 L/m @ 190 bar)		
WARRANTY	Two-year limited warranty. Refer to operator's manual for further details.		
CE REQUIREMENTS	Meets the CE requirements for the EU		

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ProCore® SR Series

DEEP-TINE AERATORS

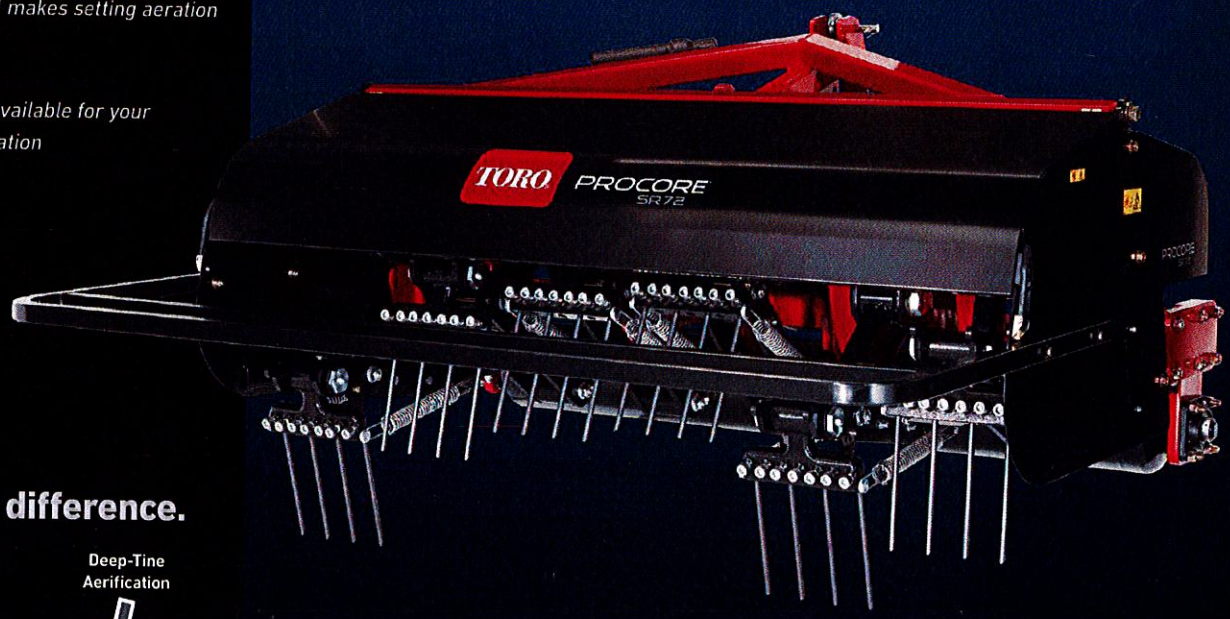
FEATURES

Deep-tine aerfication relieves soil compaction at lower soil levels than typical aerification. The tines fracture the soil creating channels through the root zone allowing oxygen, water and critical nutrients to penetrate deep into the soil profile.

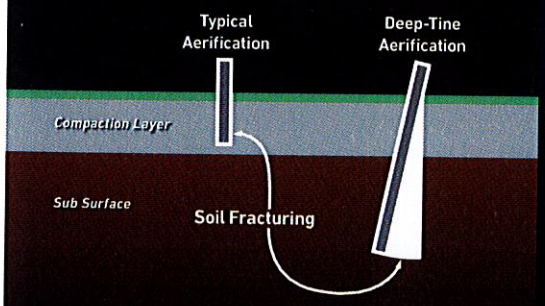
- *Multiple high-performance units for a wide variety of aeration applications*
- *Aeration widths of 54"-73" (1.37 m - 1.85 m)*
- *Aeration depths to 16" (40.6 cm)*
- *Hydraulic depth control makes setting aeration depth easy*
- *Solid and coring tines available for your specific aeration application*

Reduce soil compaction for healthier turf.

ProCore SR Series deep-tine aerators alleviate subsurface soil compaction, helping to create an environment for turf to thrive. These durable and time-tested products are capable of withstanding the most extreme aeration conditions. From lightweight, precision machines to robust, heavy-duty machines to break up soil on even the most compact surfaces, the ProCore SR Series deep-tine aerators are the ultimate choice for performance and quality.



The deep-tine difference.



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ProCore® SR Series Specifications*

	PROCORE SR54 MODEL 09931	PROCORE SR54-S MODEL 09932	PROCORE SR70 MODEL 09933	PROCORE SR70-S MODEL 09934	PROCORE SR72 MODEL 09935
WEIGHT WITH PTO & TOP LINK	1,165 lbs. (528 kg)	1,250 lbs. (567 kg)	1,500 lbs. (681 kg)	1,655 lbs. (750 kg)	2,091 lbs. (945 kg)
WORKING WIDTH	54" (1.37 m)	54" (1.37 m)	73" (1.85 m)	73" (1.85 m)	72" (1.83 m)
WORKING DEPTH (ADJUSTABLE)	1" - 10" (25-250 mm)	1" - 10" (25-250 mm)	1" - 10" (25-250 mm)	1" - 10" (25-250 mm)	1" - 16" (25-406 mm)
HOLE SPACING	2.5" - 4" (64-102 mm)	2.5" - 4" (64-102 mm)	2.5" - 4" (64-102 mm)	2.5" - 4" (64-102 mm)	3" - 6" (75-150 mm)
PRODUCTIVITY	36,000 sq.ft./hr. (3,345 sq. m/hr.)	36,000 sq.ft./hr. (3,345 sq. m/hr.)	48,000 sq.ft./hr. (4,460 sq. m/hr.)	48,000 sq.ft./hr. (4,460 sq. m/hr.)	38,000 sq.ft./hr. (3,530 sq. m/hr.)
RECOMMENDED TRACTOR SIZE	16-18 HP	18 HP	25-35 HP	25-35 HP	45 HP
RECOMMENDED LIFT CAPACITY	1,200 lbs. (682 kg)	1,500 lbs. (682 kg)	1,700 lbs. (773 kg)	1,800 lbs. (817 kg)	2,800 lbs. (1,270 kg)
RECOMMENDED COUNTER WEIGHT	150 lbs. (70 kg)	150 lbs. (70 kg)	250 lbs. (115 kg)	250 lbs. (115 kg)	300-500 lbs. (135-225 kg)
RECOMMENDED PTO SPEED	400-500 rpm	400-500 rpm	400-500 rpm	400-500 rpm	400-500 rpm
ACTUAL WORKING SPEED @ 400 PTO RPM (VARIES WITH HOLE SPACING)	1.5 -2.5 mph (2.41 - 4.02 kph)	1.5 -2.5 mph (2.41 - 4.02 kph)	1.5 -2.5 mph (2.41 - 4.02 kph)	1.5 -2.5 mph (2.41 - 4.02 kph)	0.8 -1.5 mph (1.29 - 2.41 kph)
LIFT SYSTEM	Std. 3-point	Std. 3-point	Std. 3-point	Std. 3-point	Std. 3-point
CERTIFICATION	ISO 4254-5:2008. CE and EU machinery directives				
WARRANTY	Two-year or 500-hour limited warranty. Refer to Operator's Manual for further details				

	PROCORE SR SERIES ACCESSORIES
	REAR ROLLER OPTIONS
09952	Rear Roller Kit for ProCore SR54 / SR54S
09953	Rear Roller Kit for ProCore SR70 / SR70S
09954	Rear Roller Kit for ProCore SR72

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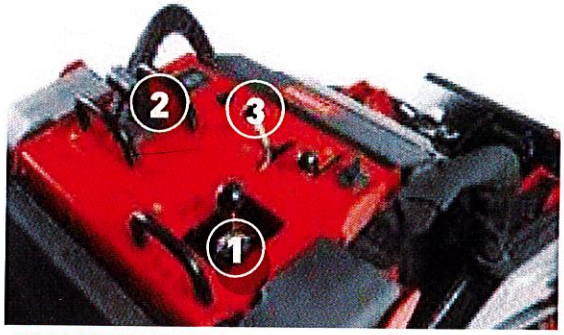
DINGO® COMPACT UTILITY LOADERS

WHEELED / TRACKED / VERTICAL LIFT / RADIAL LIFT

THE COMPACT UTILITY LOADER, REDEFINED.

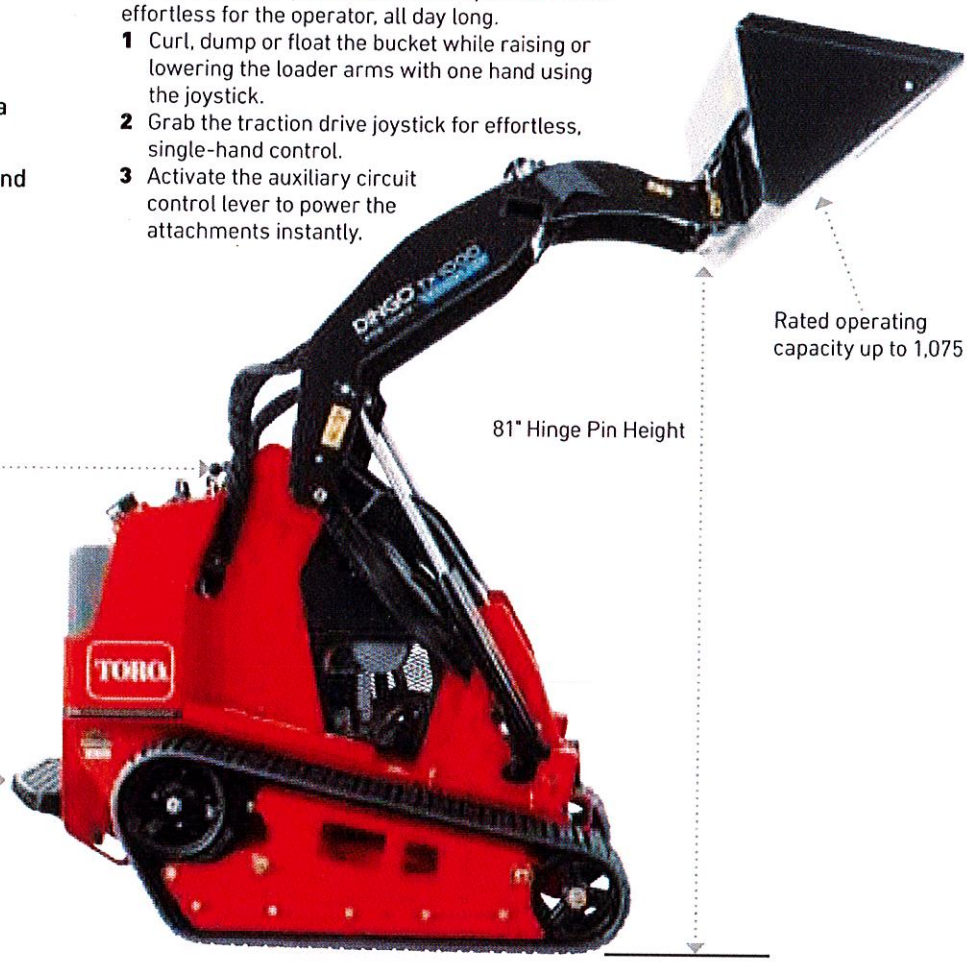
The all-new TX 1000 - a giant step forward in performance and versatility. This lightweight maneuverable machine packs unmatched strength and reach in a compact package for the ultimate working advantage. The 1,000 pound rated operating capacity makes the TX 1000 a powerful, compact alternative to larger skid steer loaders and other machines.



TX 1000 CONTROLS

New patent-pending control system exclusive to the Toro TX 1000 provides intuitive operation that's effortless for the operator, all day long.

1. Curl, dump or float the bucket while raising or lowering the loader arms with one hand using the joystick.
2. Grab the traction drive joystick for effortless, single-hand control.
3. Activate the auxiliary circuit control lever to power the attachments instantly.



TX 1000 FEATURES

UNMATCHED STRENGTH

Vertical lift loader arms allow the TX 1000 to lift and transport heavy loads with a category-leading rated operating capacity of 1,000 lbs.

MAXIMUM HEIGHT AND REACH

The 81" (206 cm) hinge pin height allows attachments to easily clear the side of 30-yard dumpsters or one-ton trucks.

HIGH DRIVE TRACK SYSTEM

Ideal for the demands of any jobsite to outperform on any surface, even sand or loose gravel.

COMPACT FOOTPRINT

The narrow model is just 33.7" (86 cm) wide and fits through standard 36" gates. At just 41" (104 cm) wide, the wide-track model is also easy to maneuver.

TX 427 & TX 525
TRACKED DINGO
MORE WORK IN
LESS TIME

RUGGED AND DEPENDABLE.

The original tracked compact utility loaders, Toro Dingo TX 427 & 525 models deliver durability and reliability pros and Do-It-Yourselvers trust, combined with powerful performance and incredible versatility. For operators who are frequently switching tasks or moving things out of the way, these walk-behind models provide greater productivity due to the ability to walk up to the machine and go. In addition, with walk-behind Dingos, operators don't feel the bumps when going over rough terrain.

EXCLUSIVE TX CONTROLS

Three simple controls let operators get to work fast:

1. Curl, dump or float the bucket while raising or lowering the loader arms with one hand using the joystick.
2. Grab the one-handed traction drive from any angle for effortless control.
3. Activate the auxiliary circuit control lever to power the attachments instantly.

TX 427 & TX 525 FEATURES

LOW-IMPACT FOOTPRINT

Long-lasting, Kevlar® reinforced tracks disperse weight evenly for a light footprint on turf, while delivering better traction in sandy or wet ground conditions.

EASY-TO-USE PLATFORM

Quickly and easily bolted on to Toro Dingo TX 427 & 525 models, this ride-on platform helps minimize operator fatigue when the job requires a lot of hauling or covers substantial distances. The platform can be flipped up – out of the way – any time the operator wishes.

HIGH-PERFORMANCE HYDRAULICS

The 4-pump hydraulic system directs power right where you need it. Operate the loader, bucket, traction and auxiliary drives at the same time for increased operator efficiency.

DIESEL AND GAS ENGINES

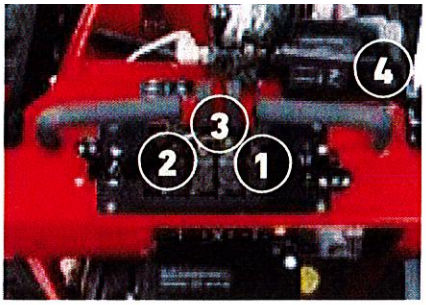
Choose a gas model for easy maintenance and cold-weather starting. Or choose diesel for better performance in high altitudes and warmer climates, along with more horsepower for attachments.

220, 323 & 320D WHEELED DINGOS

BIG BENEFITS IN SMALL SPACES

GO WHERE YOU NEED TO WORK.

Access confined spaces you never thought possible with a wheeled Dingo® compact utility loader. These models offer zero-turn capability, along with a shorter length that's easy to load on a trailer. You also get reliable hydraulic power to use a wide range of attachments. If you do a lot of tasks in tight spaces or on hard surfaces, these are the models for you.



DINGO CONTROLS
Responsive controls make the wheeled Dingo highly maneuverable:

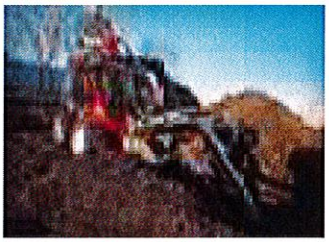
1. Curl or dump the attachment while raising or lowering the loader arms.
2. Raise and lower loader arms.
3. Traction drive control.
4. Activate the auxiliary circuit control lever to power the attachments instantly.

220, 323 & 320D FEATURES

HIGHLY MANEUVERABLE
Short wheelbase design offers excellent maneuverability. Get into tight spaces where only hand labor could go before.

TWO TRANSPORT SPEEDS
Low speed sends more hydraulic power to the attachment and high speed sends more power to the wheels. The low speed option also helps new operators shorten their learning curve.

IMPROVED VISIBILITY
The integrated ride-on operator platform allows improved visibility of the working area and attachments.



4-PAW™ INDEPENDENT FOUR-WHEEL DRIVE
Four independent wheel motors deliver hydraulic flow and pressure to all four wheels for improved traction and mobility. Fewer moving parts also mean less maintenance.
Available on 323 and 320D only.

GET THE JOB DONE

TORO QUICK ATTACH SYSTEM
CHANGE ATTACHMENTS IN SECONDS

1 Mount to the attachment plate on the unit.

2 Twist the pins to locked position.

3 For powered attachment, connect hydraulic lines to dripless flush-face quick couplers on loader arms.

TRENCHING, PLOWING, AND BORING EQUIPMENT

BORE DRIVE HEAD AND ROD & REAMER KIT *(sold separately)*
Easily bore under driveways and sidewalks to simplify irrigation and cable installations.

VIBRATORY PLOW
Reduce time spent on irrigation or cable installations. The vibratory plow optimizes pipe-pulling performance while minimizing turf damage. Extremely tight turning radius allows for tight maneuvering in confined spaces.

TRENCH FILLER
Two sets of opposing augers direct spoils into the hole. Standard float mechanism allows for up to 5" of ground following floatation. Skids evenly disperses weight and slide easily over turf, minimizing damage.

TORO® DINGO® COMPACT UTILITY LOADER ACCESSORIES

SUPERIOR DESIGN FOR LONG-LASTING, DEPENDABLE PERFORMANCE AND THE PERFECT FIT.

Genuine Toro Dingo attachments are your best assurance for attaining a long life and peak performance from your CUL. Designed specifically for the Dingo, the attachments are easy to operate and deliver clear sight lines.

TRENCHING, PLOWING AND BORING SPECIFICATIONS

Model #	Attachment Description	Dimensions (W* x L x H)	Weight (Lbs)
22420	Bore Drive Head Attachment (Bore diameter 1.25"-3.5")	24" x 22" x 25"	120
22421	Rod and Reamer (Bore diameter 1.25"-4.5")	-	58
22472	Trench Filler	48" x 31" x 22"	410

*Working Width

Model #	Attachment Description	Dimensions (W x L x H)	Weight (Lbs)
22473	High-Torque Trencher Head	35" x 65" x 24"	390
22474	High-Speed Trencher Head	35" x 65" x 24"	390
22911	Vibratory Plow	29" x 35" x 24"	400

HIGH-SPEED TRENCHER

Ideal for fast, efficient trenching in most soil conditions. 24", 36" and 48"* booms available. Chain speed: 187 rpm at 11 gpm. Torque: 442 ft/lbs at 3000 psi
*Longer, optional spoils auger recommended for 4' boom

HIGH-TORQUE TRENCHER HEAD

Guarantees performance in difficult soil conditions. 24", 36" and 48"* booms available. Chain speed: 120 rpm at 11 gpm. Torque: 675 ft/lbs at 3000 psi
*Optional spoils auger recommended for 4' boom

AUGERS AND TREE CARE EQUIPMENT

STUMP GRINDER
Rugged design and incredible hydraulic power, the Toro stump grinder will make powder of the toughest stumps. Grinds down as far as 16.5" below grade. Grinds up to 36" above grade. 17" wheel diameter.

HIGH-TORQUE AUGER POWER HEAD
Designed specifically to power up to 30" diameter augers in the toughest soil conditions. Auger bits from 6" to 30".

UNIVERSAL SWIVEL AUGER POWER HEAD
Ensures "plumb" holes on uneven terrain up to 18". Perfect for installing fences.

TORO® DINGO® COMPACT UTILITY LOADER ACCESSORIES

AUGERING, EARTH MOVING, TILLING AND TRENCHING TO LEVELING, LIFTING, HAULING AND DEMOLISHING...THE OPTIONS ARE ENDLESS

With the wide array of attachments available — more than 35 — the Dingo compact utility loader can perform big-machine applications like grading soil or carrying large amounts of material.

AUGERS AND TREE CARE SPECIFICATIONS

Model #	Attachment Description	Dimensions (W x L x H)	Weight (Lbs)
22429	Stump Grinder (w/chip guard)	44" x 20" x 31"	265
22438	Tree Fork (max load 220 lbs)	24.5" x 45" x 12.5"	169
22341	Adjustable Fork	31" x 45" x 27"	162
22521	Grapple Rake	35.5" x 18" x 30"	265
22805	High-Torque Auger Power Head	24" x 16" x 23"	182
22806	Universal Swivel Auger Power Head	24" x 17" x 23"	196

AUGER BITS AND EXTENSIONS

Model #	Attachment Description
22814	18" Auger Bit
22815	24" Auger Bit
22816	30" Auger Bit
22818	12" Auger Bit Extension
22819	24" Auger Bit Extension
22820	6" Full Flight Auger Bit
22821	9" Full Flight Auger Bit
22822	12" Full Flight Auger Bit
22823	15" Full Flight Auger Bit

GRAPPLE RAKE

Grab, drag, lift and place brush and debris easily with up to 3,000 lbs (1,361 kg) of clamping force at the tine tips.

TREE FORK

Hydraulic fork arm opens to handle large trees and shrubs. Angle design allows for gentle handling.

ADJUSTABLE FORKS

Easily adjust forks to desired width. Carry fence posts, rocks, pallets, plants, fertilizer, irrigation supplies and more. Forks constructed of high-strength steel. Lift capacity up to 600* lbs.; Maximum lift height: 61".

**Dependent upon Dingo model used.*

MAKES MOVING MATERIALS EASY

EARTH MOVING AND DIGGING EQUIPMENT

LEVELER
Grade, finish, and spread topsoil and other landscape materials. Back fill trenches. Carry job site materials such as plants, fertilizer, irrigation supplies, and more.

SOIL CULTIVATOR
Bury stones, soil clods, debris and grass. Prepares seed bed in one pass, tilling soil up to 5.5" deep. Adjustable grading bar and comb teeth leave perfect germination environment.

TILLER
Hardened steel tines for any soil condition, including clay or hardpan. Till more than six inches deep and 40" wide on one pass. Reversible tine direction frees jams quickly.

TORO® DINGO® COMPACT UTILITY LOADER ACCESSORIES

MANY ATTACHMENTS WITH ONE GOAL: PRODUCTIVITY

A wide variety of attachments, including buckets, augers, trenchers and forks, make the Dingo a more cost effective choice than a dedicated piece of equipment. In short, get more work done in less time.

BUCKET SPECIFICATIONS

Model #	Attachment Description	Dimensions (W x L x H)	Weight (Lbs)	Capacity (cu. ft.)
22409	4 cu.ft.n Standard Bucket	42" x 50" x 42.3"	115	4
22410	Loose Materials Bucket	48" x 26" x 18"	175	6.4
22520	Narrow Bucket	34.5" x 26.7" x 25.1"	153	3.5
22340	TX 1000 Standard Bucket	41" x 23" x 15"	172	4.3
22342	TX 1000 High Volume Bucket	53.25" x 29" x 17"	253	9.0

EARTH MOVING EQUIPMENT SPECIFICATIONS

Model #	Attachment Description	Dimensions (W x L x H)	Weight (Lbs)
22426	Direct Drive Power Box Rake	48" x - x 20.9"	365
22445	40" Tiller	44/40" Tilling Width x 20" x 26"	363
23102	Soil Cultivator	51" x 51" x 21"	363

Model #	Attachment Description	Dimensions (W x L x H)	Weight (Lbs)
23163	Backhoe	34.5" x 41" x 71"	762
23161	Wheeled Backhoe Fit-up Kit*	-	21
23162	TX Backhoe Fit-up Kit**	-	81
23165	Leveler	31.3" x 41.2" x 27"	162

*Backhoe fit-up kit for models 22317 & 22318
*Backhoe fit-up kit for models 22321, 22322, 22323 & 22324

POWER BOX RAKE

Perfect tool for seed or sod bed preparation. Carbide-teeth rotary drum pulverizes rough soil, cuts high spots and fills low spots in one pass. Manually adjustable yoke allows 20° offset. Overall width: 67"; Working width: 48".

BUCKETS

Perfect for light-duty grading, leveling, and material handling. Buckets vary in capacity from 4.3 cu. ft. to 9 cu. ft. for lighter materials.

BACKHOE

Versatile — dig foundations, plant trees, trench and much more. Folds to 34.5" wide for access to tight spaces and ease of transport. 180° bucket and swing arm rotation, 82"digging depth, and standard 13" bucket.

YOU CAN HANDLE IT

MATERIAL HANDLING EQUIPMENT

CEMENT BOWL
Flighting mixes and holds cement in bowl. Mix, haul, and pour up to 200 lbs. Auger power head required (sold separately).

MANUAL OR HYDRAULIC FORKS
Transport and position trees and large shrubs exactly where you want them with exceptional maneuverability.

HYDRAULIC CONCRETE BREAKER
The hydraulic breaker is the perfect tool for precision demolition. Combined with the compact size and ease of use of the Dingo, the breaker simplifies the difficult job of breaking concrete, asphalt, rock or brick during renovation jobs.

TORO® DINGO® COMPACT UTILITY LOADER ACCESSORIES

TACKLE A LOT MORE WORK IN LESS TIME.

Uses for the Toro Dingo and its various attachments are limited only by your imagination.

MATERIAL HANDLING SPECIFICATIONS

Model #	Attachment Description	Dimensions (W x L x H)	Weight (Lbs)
22423	Multi-Purpose Tool	24" x 4" x10"	40
-	Boom Jib	0.63" x 32.4 x 9.4"	23.2
-	Scarifier Teeth	2" x 13" x 11.7"	9
22442	Cement Bowl		75
22456	Snowthrower	48" x 43.3" x 50.4"	335
23135	Concrete Breaker	25" x 50" x 13" 17" length x 2" diameter	262
22414	Utility Blade	48" x 25" x 21"	212

MISCELLANEOUS SPECIFICATIONS

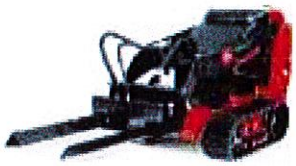
Model #	Attachment Description	Weight (Lbs)
22475	TX Platform (Gas)	95
22476	TX Platform (Diesel)	95
22464	Trencher Crumber Kit	52
22417	Counter Weight	183

SNOWTHROWER
Two-stage design with the power to handle the toughest snow conditions. Replaceable scraper. Adjustable skids. Overall Width: 48"
Clearing width 44".

MULTI-PURPOSE TOOL
Plant and haul trees or dig and breakup soil with the 3-in-1 ripper, towbar and boom.

UTILITY BLADE
Backfill trenches, move or smooth dirt or even use to clear snow.

MEET THE FAMILY



DINGO TX 1000 SPECIFICATIONS

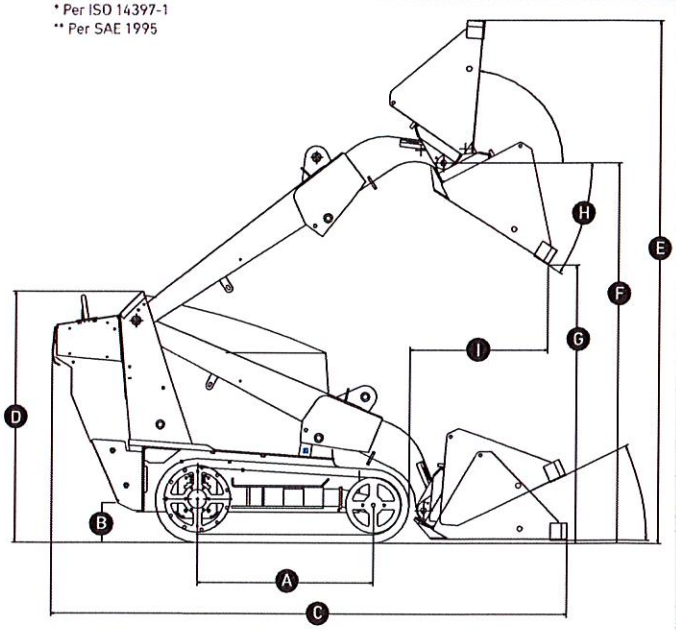
		DINGO TX 1000 NARROW TRACK 22327	DINGO TX 1000 WIDE TRACK 22328
DIMENSIONS	A Wheelbase	41" (10 cm)	
	B Ground Clearance	6.0" (15 cm)	
	Overall Width	33.7" (86 cm	41" (104 cm)
	C Overall Length	100.7" (256 cm) w/bucket; 81.7" (208 cm) w/o bucket	
	D Overall Height	53.2" (135 cm)	
	E Max Operating Height	105" (267 cm)	
	F Hinge Pin Height	81" (206 cm	
	G Dump Height	61" (155 cm)	
	H Dump Angle	40-degrees	
	I Reach - Fully Raised	24.5" (62 cm)	
	Ground Speed (F/R)	4.7 mph (7.6 km/h)/ /4.7 mph (7.6 km/h)	
	Weight	2,610 lbs (1184 kg)	2,790 lbs (1266 kg)
	Tip Capacity	2,857 lbs (1,296 kg)	3,071 lbs (1,393 kg)
	Rated Operating Capacity (35% of Tip Capacity)*	1,000 lbs (454 kg)	1,075 lbs (488 kg)
ENGINE	Engine	Kubota* D1305	
	Manufacturer's Gross HP Rating at RPM**	24.9 HP (18.6 kW) @ 2600 rpm	
	Displacement	77 cu. in. (1262cc)	
	Fuel Type	Diesel	
	Air Filter	Two-stage, heavy-duty, remote	
	Cooling System	Liquid Cooled	
	Fuel Tank	11.5 gallons (44 liters)	
	Oil Capacity	6.0 quarts (5.7 liters)	
	Loader Arms	Vertical	
OPERATION	Hydraulic Pressure	3,000 PSI	
	Hydraulic Flow	Traction: 13.3 gpm (each pump); Auxiliary: 15.2 gpm	
	Reservoir Capacity	10 gallons (57.5 liters)	
TRACKS	Tracks	Sprocket-drive, 6 road wheels per side	
	Traction	Dual hydrostatic pump	
	Track Length x Width	127.6" x 5.9" (324 cm x 15 cm)	127.6" x 9.5" (324 cm x 24 cm)
	Ground Pressure	5.4 PSI	3.6 PSI

* Per ISO 14397-1
** Per SAE 1995

DINGO TX 427 & TX 525 SPECIFICATIONS

	TX 525 22323	TX 525 WIDE 22324
A Wheelbase	31.2" (79 cm)	
B Ground Clearance	4.6" (11.7 cm)	
Overall Width	33.7" (85.6 cm)	41" (104 cm)
C Overall Length	92" (233.7 cm) w/bucket; 70.7" (180 cm) w/o bucket	
D Overall Height	46.1" (117.1 cm)	
E Max Operating Height	90.1" (229 cm)	
F Hinge Pin Height	65.8" (167.1 cm)	
G Dump Height	46.1" (117.1 cm)	
H Dump Angle	38-degrees	
I Reach - Fully Raised	21.8" (55.4 cm)	
Ground Speed (F/R)	0-4.5 mph (0-7.2 km/h) / 0-2.0 mph (0-3.2 km/h)	
Weight	1,904 lbs (864 kg)	2,013 lbs (907 kg)
Tip Capacity	1,580 lbs. (717 kg)	
Rated Operating Capacity (35% of Tip Capacity)*	553 lbs. (251 kg)	
Engine	Kubota D902	
Manufacturer's Gross HP Rating at RPM**	23.3 HP (17.3 kW) @ 3400 rpm	
Displacement	55 cu. in. (901cc)	
Fuel Type	Diesel	
Air Filter	Two-stage, heavy-duty, remote	
Cooling System	Liquid Cooled	
Fuel Tank	6.0 gallons (23 liters)	
Oil Capacity	3.84 quarts (3.63 liters) 2.0 quarts (2.95 liters)	
Loader Arms	Radial	
Hydraulic Pressure	3,000 PSI	
Hydraulic Flow	Traction: 16.9 gpm (each pump); Auxiliary: 13.8 gpm	
Reservoir Capacity	10.5 gallons (40 liters)	
Tracks	Sprocket-drive, 10 road wheels per side	
Traction	Dual hydrostatic pump	
Track Length	96.6" x 5.9" (245 cm x 15 cm)	96.6" x 9.5" (245 cm x 24 cm
Ground Pressure	5.0 PSI	3.5 PSI

* Per ISO 14397-1
** Per SAE 1995

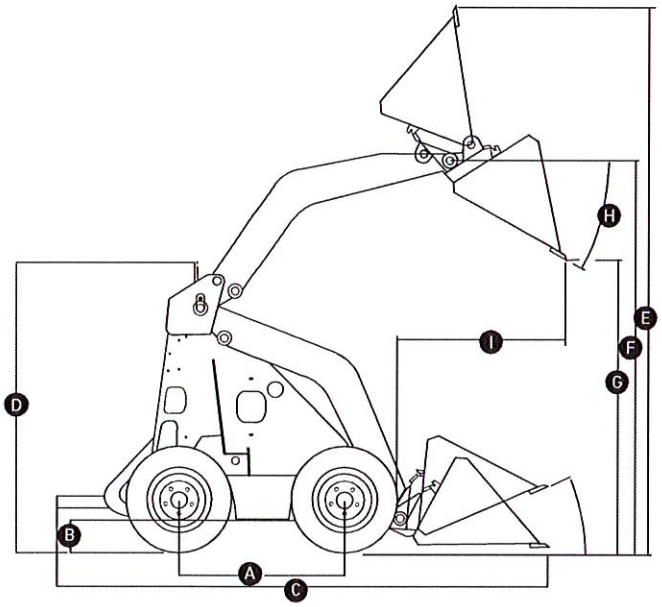


DINGO 220, 323 & 320-D SPECIFICATIONS

	TX 427 22321	TX 427 WIDE 22322
	31.2" (79 cm)	
	4.6" (11.7 cm)	
	33.7" (85.6 cm)	41" (104 cm)
	92" (233.7 cm) w/bucket; 70.7" (180 cm) w/o bucket	
	46.1" (117.1 cm)	
	90.1" (229 cm)	
	65.8" (167.1 cm)	
	46.1" (117.1 cm)	
	38-degrees	
	21.8" (55.4 cm)	
	0-4.5 mph (0-7.2 km/h) / 0-2.0 mph (0-3.2 km/h)	
	1,882 lbs (854 kg)	1,990 lbs (902 kg)
	1,530 lbs. (694 kg)	
	535 lbs. (243 kg)	
	Kohler Command Pro Series CH 740	
	25 HP (20.1 kW) @ 3600 rpm	
	44 cu. in. (725cc)	
	Gas	
	Two-stage, heavy-duty, remote	
	Air Cooled	
	6.0 gallons (23 liters)	
	2.0 quarts (2.95 liters)	
	Radial	
	3,000 PSI	
	Traction: 16.9 gpm (each pump); Auxiliary: 11.4 gpm	
	10.5 gallons (40 liters)	
	Sprocket-drive, 10 road wheels per side	
	Dual hydrostatic pump	
	96.6" x 5.9" (245 cm x 15 cm)	96.6" x 9.5" (245 cm x 24 cm)
	5.0 PSI	3.5 PSI

	DINGO 220 22317	DINGO 323 22318	DINGO 320-D 22337CP
A Wheelbase	28" (71 cm)		
B Ground Clearance	5.8" (15 cm) front & rear		
Overall Width	40.5" (103 cm) standard tires; 35" (90 cm) narrow tires		
C Overall Length	82.2" (208.8 cm) w/bucket; 62" (157.5 cm) w/o bucket		
D Overall Height	48.7" (123.7 cm)		
E Max Operating Height	91.2" (231.6 cm)		
F Hinge Pin Height	66" (167.6 cm)		
G Dump Height	47" (119 cm)		
H Dump Angle	34-degrees		
I Reach – Fully Raised	28" (71.1 cm)		
Ground Speed (F/R)	0-3.7 mph (0-6 km/h) / 0-3.7 mph (0-6 km/h)		0-3.0 mph (0-4.8 km/h) / 0-3.0 mph (0-4.8 km/h)
Weight	1,430 lbs (649 kg)	1,567 lbs (711 kg)	1,722 lbs (781 kg)
Tip Capacity	1,030 lbs (467 kg)		1,048 lbs (146 kg)
Rated Operating Capacity (50% of Tip Capacity)*	515 lbs. (234 kg)		524 lbs. (238 kg)
Engine	Kohler* Command Series CH20	Kohler* Command Series CH23	Kubota D722
Manufacturer's Gross HP Rating at RPM*	20 HP (14.9 kW) @ 3600 rpm	23 HP (17.2 kW) @ 3600 rpm	20 HP (14.9 kW) @ 3600 rpm
Displacement	38.1 cu. in. (624 cc)	41 cu. in. (674cc)	43.88 cu. in. (719 cc)
Fuel Type	Gas		Diesel
Air Filter	High-capacity, paper type w/pre-cleaner	Two-stage, heavy-duty, remote	
Cooling System	Air Cooled		Liquid Cooled
Fuel Tank	5.6 gallon (21 liter)	11.2 gallon (42.4 liter)	4 gallon (15 liter)
Oil Capacity	2 quarts (1.9 liter)		3.4 quarts (3.2 liter)
Loader Arms	Radial		
Hydraulic Pressure	3,250 PSI		
Hydraulic Flow	10.8 gpm high-flow hydraulic circuit, 4 gpm low-flow hydraulic circuit		
Reservoir Capacity	14.8 gallons (56 liter)	17 gallons (64 liter)	14.8 gallons (56 liter)

* Per ISO 14397-1
** Per SAE 1995



DIMENSIONS

- A Wheelbase
- B Ground Clearance
- C Overall Length
- D Overall Height
- E Maximum Operating Height
- F Hinge Pin Height
- G Dump Height
- H Dump Angle
- I Reach

toro.com / toro.ca

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Products depicted in this literature are for demonstration purposes only. Actual products offered for sale may vary in use, design, required attachments and safety features. We reserve the right to improve our products and make changes in specifications, design an d standard equipment without notice and without incurring obligation. See your dealer for details on all our warranties.

WHEN WE SAY **COUNT ON IT**, WE MEAN IT

Every product that carries the Toro brand is backed by over 100 years of history, innovation and timeless dependability. We never stop investing in research and development to give our customers the latest features. That's why Toro is one of the best-known, most trusted brands in the business. We also stand behind our products with a nationwide network of knowledgeable dealers for parts and service support. **Real People. Real Support.**

THERE IS NO SUBSTITUTE FOR TORO GENUINE PARTS

With Toro, quality and service don't end when you take delivery of your equipment. Genuine Toro parts are designed specifically for your machine to ensure it performs as intended. For peace of mind, insist on Toro genuine parts.

TORO. **Count on it.**

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twitter.com/TheToroCompany

POTESTIO BROTHERS
EQUIPMENT, INC.

7380 space Village Ave.
Colorado Springs, CO 80929
joec@pbequip.com
800-497-8770
719-550-0680
Fax 550-0773
Cell 510-5390

Fax

To:	CITY OF FORT LUPTON	**From:**	Joe Conner
Fax:	303-857-6090	**Pages:**	13
Phone:		**Date:**	11/18/2020
Re:	FTL2016XX Due 8/12/2019 10:00 am MT	**CC:**	

☐ **Urgent** X **For Review** ☐ **Please Comment** ☐ **Please Reply** ☐ **Please Recycle**

I hereby waive my right to a sealed bid,

Thank you,

Joe Conner

JOHN DEERE

****
REQUEST NO.
FTL2016XX
****

CITY OF
Fort Lupton
EST 1836
COME PAINT YOUR FUTURE WITH US

Ms. Leann Perino
Finance Director
130 South McKinley Avenue
Fort Lupton, Colorado 80621

Dear Ms. Perino:

The undersigned having become familiar with the specifications for ***Golf Course Maintenance Equipment*** and deliver to the City of Fort Lupton as set forth in the following schedule:

Item	**Equipment**	**Attachments**	**Price**
Item #1	Compact Utility Loader		No Bid
		Standard Bucket	
		Trencher	
		Soil Cultivator	
		Blade	
	Total For Compact Utility Loader with attachments		
Item #2	Broadcast Topdresser		$14,650.00
Item #3	Deep Tine Aerator		$24,525.00
Item #4	Tow-Behind Aerator	Manual Hyd. Lift	$8,125.00

The City would like all pieces of equipment to be invoiced and delivered by December 31, 2020.

****
REQUEST NO.
FTL2016XX
****

CITY OF
Fort Lupton
EST 1836
COME PAINT YOUR FUTURE WITH US

I certify that the above quotation is exclusive of any federal excise taxes and all other state and local taxes, and includes any applicable permits and fees for installation. I further certify that the items offered for intended use by the City of Fort Lupton will meet all specifications is has so indicated in this bid form. The Council of the City of Fort Lupton reserves the right to reject any or all bids, to waive any informality in bids, and to accept the bid that, in the opinion of the Council, is to the best interests of the Council and of the City of Fort Lupton. The Council of the City of Fort Lupton shall give preference to residents of Fort Lupton bidders in all cases where the bids are competitive in price and quality.

FIRM POTESTIO BROTHERS EQUIPMENT INC BY JOE CONNER joec@pbequip.com

BUSINESS ADDRESS 19020 LONGS WAY TITLE SALES

CITY, STATE, ZIP CODE PARKER, CO 80134 DATE 11/19/2020

TELEPHONE NO. 303-841-2299 FAX NO. 303-841-7039 TAXPAYER I.D.# 84-1193905

DOES YOUR BID MEET OUR SPECIFICATIONS? YES X NO____

CITY OF FORT LUPTON IS EXEMPT FROM COLORADO SALES TAXES. CERTIFICATE OF EXEMPTION NO.98-02812-0000. CITY OF FORT LUPTON FAX NUMBER IS #303-857-6090

****
REQUEST NO.
FTL2016XX
****

CITY OF
Fort Lupton
EST 1836
COME PAINT YOUR FUTURE WITH US

CITY OF FORT LUPTON

CERTIFICATION STATEMENT REGARDING ILLEGAL ALIENS

The Vendor, whose name and signature appear below, certifies and agrees as follows:

1. The Vendor shall comply with provisions of CRS 8-17.5-101 et seq.

2. The Vendor shall not knowingly employ or contract with an illegal alien to perform work under this purchase order or enter into a contact with a subcontractor that knowingly employs or contracts with an illegal alien.

3. The Vendor represents, warrants, and agrees that it (i) has verified that it does not employ any illegal aliens, through participation in the Basic Pilot Employment Verification Program administered by the Social Security Administration and Department of Homeland Security, or (ii) otherwise shall comply with the requirements of CRS 8-(2)(b)(I).

4. The Vendor shall comply with all reasonable requests made in the course of an investigation by the Colorado Department of Labor and Employment. If the Vendor fails to comply with any requirement of this provision or CRS 8-17.5-101 et seq., the City may terminate the above referenced purchase order for breach and the Vendor shall be liable for actual and consequential damages to the City.

CERTIFIED and AGREED to this 18 day of NOVEMBER, 2020.

VENDOR:

Joseph A Conner Jr
(Full Legal Name)

BY: _____
Signature of Authorized Representative(s)

VENDOR(S) CANNOT BEGIN WORK UNTIL THIS COMPLETED FORM IS RETURNED TO THE CITY OF FORT LUPTON.

EQUIPMENT WARRANTY INFORMATION

DAKOTA Peat & Equipment is hereinafter called DAKOTA

(A) WARRANTY

a. DAKOTA warrants all products manufactured by it to be free from defects in material and manufactured at the time of shipment and for twelve (12) months from date of delivery to customer. DAKOTA will furnish to the dealer, without charge, f.o.b. East Grand Forks, Minnesota, replacements for such parts as DAKOTA finds to have been defective at the time of shipment; or at DAKOTA's option, will make or authorize repairs to such parts, provided that, upon request, such parts are returned, transportation prepaid, to the factory at East Grand Forks, Minnesota.

b. This warranty shall not apply to any product that has been subjected to misuse, misapplication, neglect (including but not limited to improper maintenance), accident, improper installation, modification (including but not limited to use of unauthorized parts or attachments), adjustment, or repair. Engines, motors, and any accessories furnished with DAKOTA's products, but which are not manufactured by DAKOTA, are not warranted by DAKOTA but are sold only with the express warranty, if any, of the manufacturers thereof. THE FOREGOING IS IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED (INCLUDING THOSE OF MERCHANTABILITY AND FITNESS OF ANY PRODUCT FOR A PARTICULAR PURPOSE), AND OF ANY OTHER OBLIGATION OF LIABILITY ON THE PART OF DAKOTA.

(B) LIMITATION OF LIABILITY

a. It is expressly understood that DAKOTA's liability for its products, whether due to breach of warranty, negligence, strict liability, or otherwise, is limited to the furnishing of such replacement parts, and DAKOTA will not be liable for any other injury, loss, damage, or expense, whether direct or consequential, including but not limited to loss of use, income, profit, or production, or increased cost of operation, or spoilage of or damage to material, arising in connection with the sale, installation, use, or inability to use, or the repair or replacement of, DAKOTA's products.

b. Any operation expressly prohibited in the operating instructions or manuals furnished with the machine, or any adjustment or assembly procedure not recommended or authorized in the operating or service instructions, shall void such warranty.

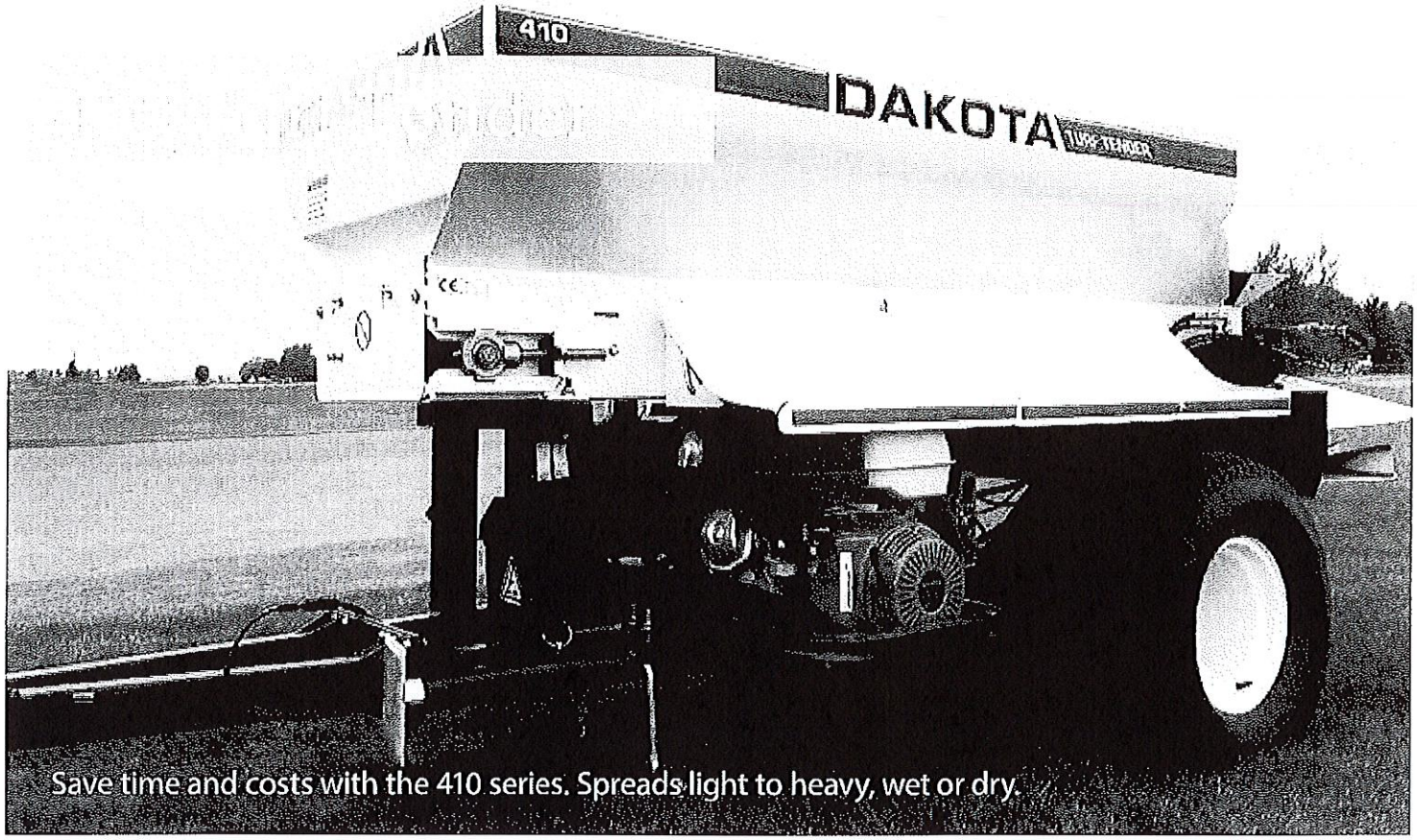
(C) REGISTRATION

a. THIS WARRANTY IS VOID UNLESS "DEALER'S SALE REPORT TO THE FACTORY" CARD IS COMPLETED AND RETURNED TO THE FACTORY AT EAST GRAND FORKS, MINNESOTA, WITHIN 30 DAYS AFTER DELIVERY OF UNIT TO CUSTOMER.

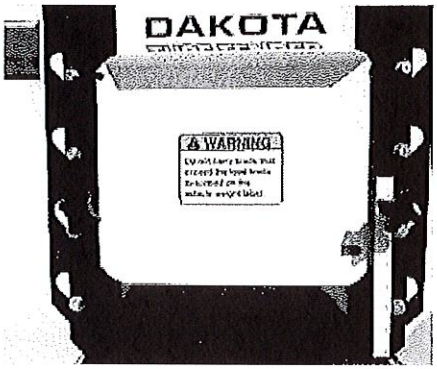
b. No Parts shall be returned under warranty unless a Return Goods Authorization (RGA) is obtained from DAKOTA.

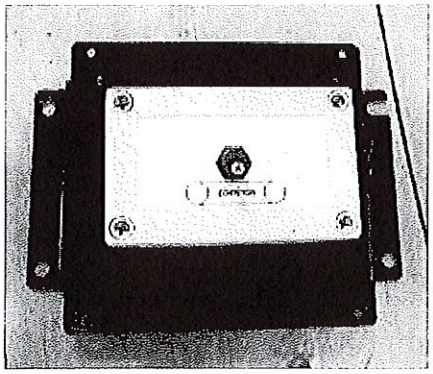
c. ALWAYS GIVE PART NAME, NUMBER AND MACHINE SERIAL NUMBER WHEN ORDERING PARTS.

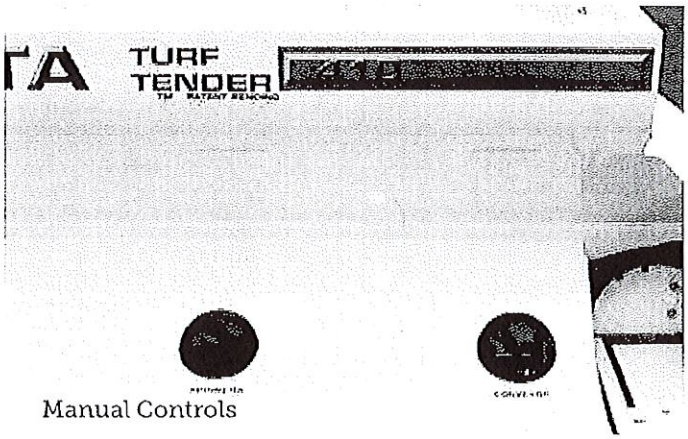
NOTICE: DAKOTA reserves the right to make changes to design or construction without obligation to incorporate such changes in equipment previously sold.



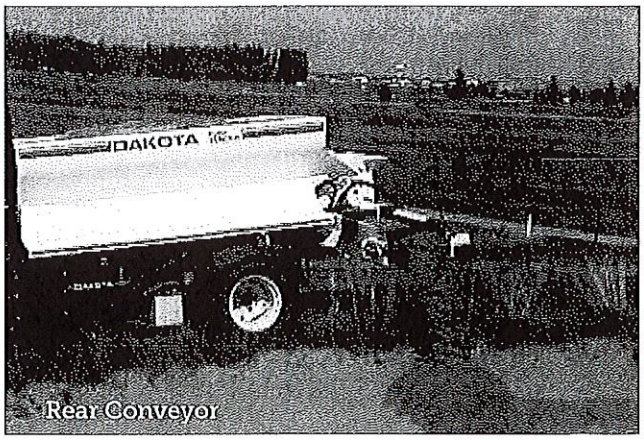
Save time and costs with the 410 series. Spreads light to heavy, wet or dry.







Manual Controls



Rear Conveyor

Features

410 Turf Tender Pull Type

Pull Unit Requirements:
› Requires 3-7 GPM. Oil flow without optional power unit
Overall Dimensions:
› Overall length = 144 in
› Overall width = 60 in
› Height = 50 in
› Weight = 920 lbs.
› Weight = 1240 lbs. (with optional power unit)
Hopper:
› Capacity = 23 cu ft. (.65m³) level, 27 cu ft. (.76m³) heaped
› Trackless 18 in PVC belt (crescent-style)
› Rear door adjusted from 0" to 7"
› Powder coat paint
› Hopper length = 76 in
Frame:
› Welded heavy-duty A-frame construction
› Jack stand
Tires:
› 2 Ultra Trac Turf Tires 26.5x14x12
Dual Spinner System:
› 2 Throw discs (24 in diameter, 6 adjustable paddles per disc)
› Quick change
› 2 hydraulic motors, 1 per spinner-disc
› Spreading width 12' to 49' variable
› Spreading application (extremely fine to very heavy)
› Capable of spreading a large variety of materials

Options

Controls:
› Electric over hydraulic machine (controls belt and spinner speed from the vehicle mounted control panel with speed gauges)
› Manual hydraulic machine (valves on the side of the machine to control the belt and spinner speed) with vehicle mounted on/off switches
Optional Spinners:
› Black spinners (fertilizer)
› Green spinners (grass seed)
Optional Power Unit:
› Honda 11 hp engine
› Electric start
› 1.72 US Gal. fuel tank
› Max. Pressure = 2500 psi
› Max. Flow = 7.26 GPM
› Reservoir size = 11.5 gal.
Optional Rear Conveyor
Optional Auto Rear Door
Optional Roll Tarp

410 Turf Tender Mounted

Models: Mounted
› Mounts on John Deer Pro Gator™, Toro Workman™, or Jacobsen Truckster™ XD
Requirements:
› John Deere™ PTO Hydraulic kit required on John Deere ProGator™
› DAKOTA Auxiliary hydraulic kit required on Toro Workman™ on models older than 2001, 2002 and newer requires Toro High Flow hydraulics
Overall Dimensions:
› Overall length = 103 in
› Overall width = 60 in
› Height = 54 in
› Weight = 780 lbs. with sub-frame
Hopper:
› Capacity = 23 cu ft. (.65m³) level, 27 cu ft. (.76m³) heaped (Note: Do not exceed recommended vehicle load rating for John Deer Pro Gator™, Toro Workman™, or Jacobsen Truckster™ XD)
› Trackless 18 in PVC belt (crescent-style)
› Rear door adjusted from 0" to 7"
› Powder coat paint
› Hopper length = 76 in
Frame:
› Welded heavy-duty sub-frame
› Mounts using existing cylinder and box mount
Dual Spinner System:
› 2 Throw discs (24 in diameter, 6 adjustable paddles per disc)
› Quick change
› 2 hydraulic motors, 1 per spinner-disc
› Spreading width = 12' to 40' variable
› Spreading application is adjustable (extremely fine to very heavy)
› Capable of spreading a large variety of materials

Options

Controls:
› Electric over hydraulic machine (controls belt and spinner speed from the vehicle mounted control panel with speed gauges)
› Manual hydraulic machine (valves on the side of the machine to control the belt and spinner speed) with vehicle mounted on/off switches
Optional Spinners:
› Black spinners (fertilizer)
› Green spinners (grass seed)
Optional Parking Stand:
› Easy on/off using 4 legs
› Rear legs are jack stands
Optional Rear Conveyor
Optional Auto Rear Door

See an important update for how we're operating during COVID-19

denmann
erica, LLC
ed to Turf.

Terms and Conditions of Sale

Shipment. (a) Goods will be shipped by Wiedenmann North America, LLC ("WNA") FOB the WNA warehouse, Savannah, Georgia (Incoterms 2000). (b) Delivery by WNA shall be made within a reasonable period of time based upon availability. WNA assumes no responsibility for delays prior to or during shipment due to causes beyond its control. (c) Goods shall be packaged by WNA as required to assure common carrier acceptance. (d) A packing slip and bill of lading will be supplied with each shipment referenced by the buyer's purchase order number and WNA's part number(s). (e) All claims by buyer for shortage or damage in transit are to be made promptly to the shipper with a copy to WNA.

Additional Charges. WNA may assess reasonable additional charges to the buyer for any changes in the order including, but not limited to, charges occasioned by changes in specifications, quantities, delivery, schedule or cancellation.

Restocking Charges. WNA may assess a 30% restocking fee on any goods returned to WNA.

Specification Changes. WNA reserves the right to manufacture to later and more current engineering specifications including the latest ordinance engineering changes where applicable if such current specifications do not affect interchangeability or manufacturing costs to either WNA or Buyer.

Sales. All sales are deemed made in the State of Georgia. The parties consent to exclusive jurisdiction and venue in the federal and state courts of Chatham County, Georgia for any dispute regarding the goods sold subject to these Terms.

Warranties. WNA warranties all goods sold, when properly installed, to be free from defects in material and workmanship under normal use and service for a period of one (1) year. The warranty period starts when the good is put into service or 24 months after the shipping date from WNA – whatever comes first. WNA will honor warranty only if the warranty card is returned. This warranty is void with respect to any product which has been altered in any way from its manufactured condition such as intentional modification, accident, corrosion, misuse, failure to provide necessary and reasonable maintenance and its exclusive of normal wear. Written authorization from WNA must be obtained prior to returning any part or parts. No charges for transportation or for labor performed on WNA products by unauthorized persons will be allowed under this warranty.

Disclaimers. THERE ARE NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING THE WARRANTY OF MERCHANTABILITY OR A WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE EXTENDING BEYOND THAT SET FORTH IN THE PARAGRAPH ABOVE.

General Limitation of Liability. WNA's liability under this agreement and in particular, WNA's liability for breach of Warranty shall be limited to repair or replacement of any defective or nonconforming equipment or, in the event the material cannot be repaired or replaced, refund of the purchase price. Goods for which a refund is due must be returned to WNA with transportation charges prepaid. WNA and Buyer agree that this shall be the buyers sole and exclusive remedy and WNA shall not be liable in any event for proximate, incidental, consequential or other damages, including but not limited to damages for loss of production, lost profits or injury to persons or property.

Indemnity – General. WNA will not indemnify or hold harmless any party or parties from or against any claim, suit, demand or cost arising out of the use, manufacture, or operation of material supplied herein.

Indemnity – Patent. WNA warrants that it will indemnify Buyer for an award of damages against Buyer by a court of competent jurisdiction for infringement of a valid U.S. or Canadian patent when material is used in accordance with WNA's designs and specifications. Buyer shall indemnify WNA against all liability, loss, cost, or expense from the infringement or alleged infringement of any patent or patents arising from the manufacture, use or sale of any material delivered to Buyer where the material is developed for the Buyer in accordance with Buyer's designs, specifications or recommendations.

Trademarks. The Buyer may not remove or deface any trademarks, tradenames, servicemarks or logos attached to or made a part of the goods sold subject to these Terms.

Assignment. WNA reserves the right to assign any portion of this contract provided however, such assignment shall not relieve WNA's obligation of performance. This contract shall not be assignable by Buyer without WNA's consent.

Payment and Collection. Payment for all goods shipped shall be made in accordance with the terms set forth in the invoice. Late payments shall accrue an immediate late charge of 5% of the balance and thereafter shall accrue interest at the rate of .0005 of the daily balance per day until paid.

Waiver. The failure of either party to the performance of any term of this contract or the waiver by either party of any breach under the contract shall not prevent a subsequent enforcement of the term or be deemed a waiver of any subsequent breach.

Construction – Governing Law. These terms shall be construed in accordance with the laws of the state of Georgia and in particular the Georgia Uniform Commercial Code.

Purchase Price. The purchase price will be that on the current price list published by WNA, which is incorporated herein by reference unless covered by a specific valid quotation to Buyer. All prices include applicable federal excise tax unless otherwise noted.

Amendment. These Terms are not altered by oral statements or by contrary terms in Buyer documents (such as purchase orders) and may only be altered by a written instrument signed by an officer of WNA.

Security Interest. To secure the performance and payment of all obligations of Buyer to WNA,
whether now existing or hereinafter incurred and of every kind and character, Buyer grants to WNA a Security Interest in all goods of every type and description purchased from or financed by Company and in proceeds there from. The collateral includes all of the foregoing described items now in the possession of or hereafter acquired by Buyer and all replacement, substitutions and additions thereto. Buyer hereby consents to WNA filing a financing statement to perfect this lien.

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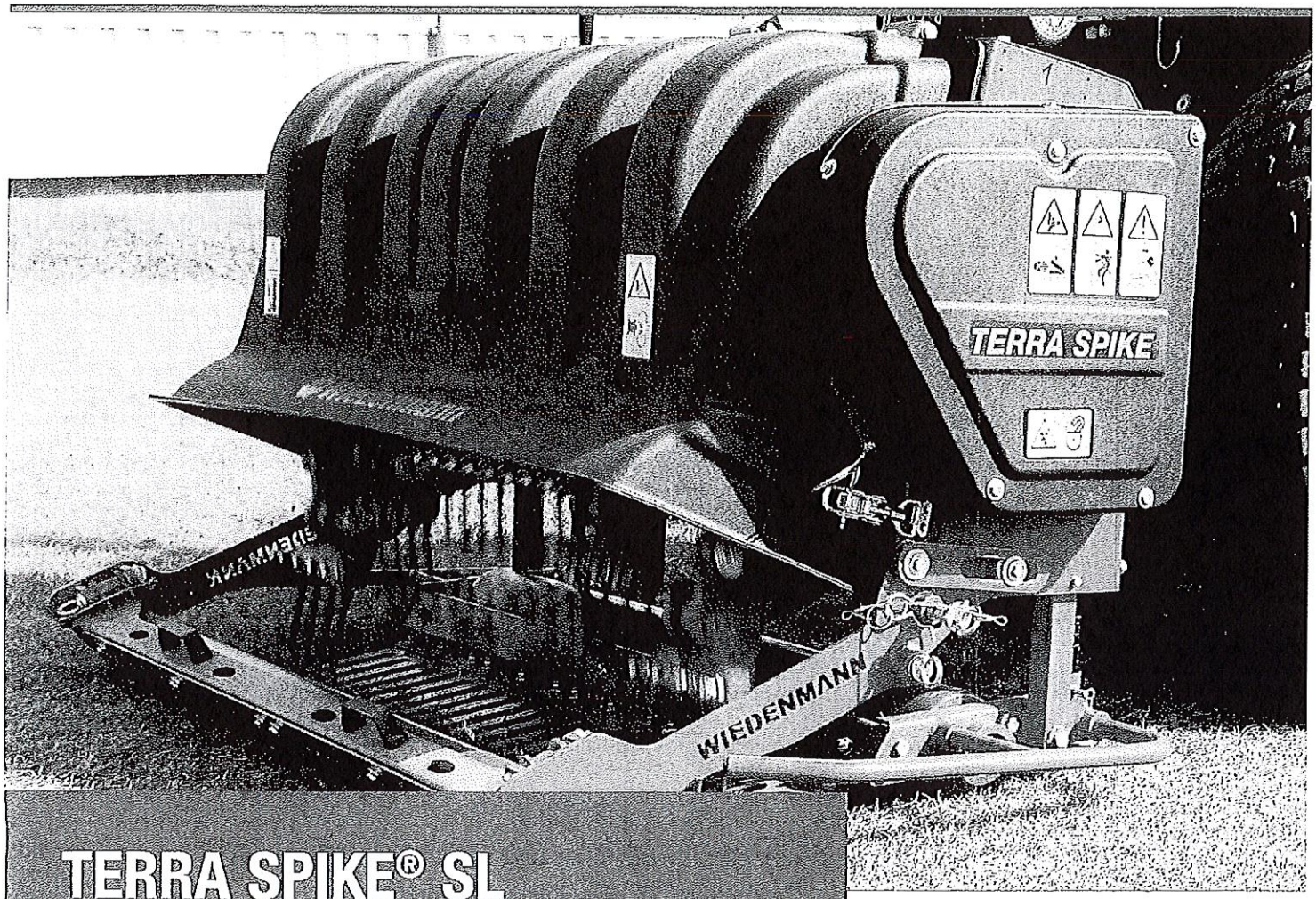
Wiedenmann®



TERRA SPIKE® SL

Deep Tine Aerator
To remove compaction on sand-based golf greens, tees, and athletic fields

Devoted to Turf. www.wiedenmannusa.com

TERRA SPIKE® SL

The lightest of the Terra Spikes

With the TERRA SPIKE® SL, Wiedenmann has developed a machine that fulfills customer demands for a machine that is lightweight with deep working depth while maintaining high productivity. Due to its weight of less than 1050 pounds, operating with tractors in the 25HP class is possible.

Time is money – this guiding principle applies today more than ever in professional turf maintenance. Whether you maintain athletic fields or golf courses, the time available for maintenance is continually decreasing while players' expectations are increasing. Regular deep tine aerifying is one of the most important ways to maintain healthy root growth.

When compaction is broken, roots can penetrate deeper into the ground and make better use of water and nutrients. Water flow and air balance are improved, thatch is removed, and the shear strength of the root zone increases. Wiedenmann has revolutionized turf maintenance and set new standards with respect to speed, productivity, and labor quality. In addition, the TERRA SPIKE® SL utilizes VibraStop, which reduces stress on your tractor and your body.

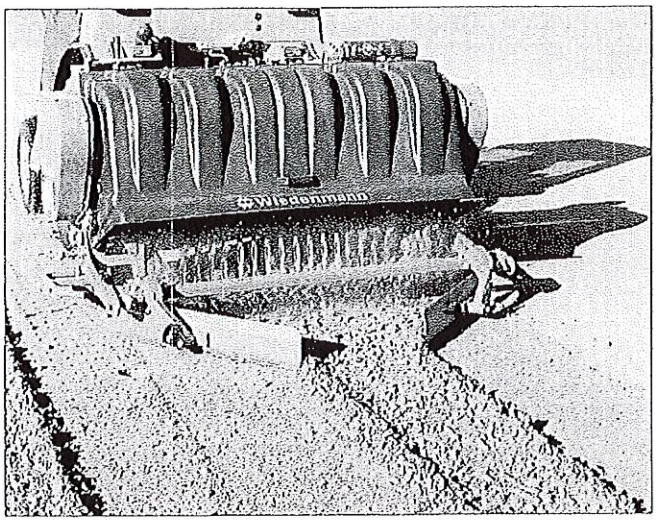
The TwinDrive drive concept can be equipped with various transmission ratios so that the crankshaft speed can be optimally adapted to the performance of the available tractor.

With the exclusive QuickSet system, you can easily change the settings of the working depth or the heave angle with just a few manual operations.

The central adjustment of the heave angle allows you to set the optimal adaptation of the loosening intensity to the respective ground conditions and degree of compaction. With the exclusive QuickChange system, arduous and time consuming tine replacements are a chore of the past.

The TERRA SPIKE® SL is extremely service friendly. The machine has no metallic return springs and the number of lubricating points has been reduced to a minimum.

The high productivity of the TERRA SPIKE® SL and hole quality perfection will convince you that this is the ideal machine for aerating your greens, tees, and finer surfaces.

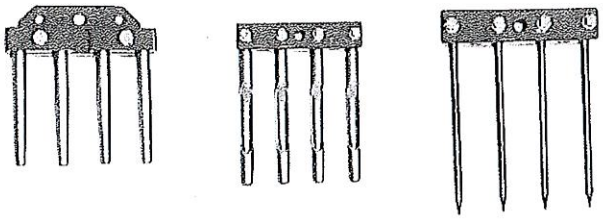


Windrow

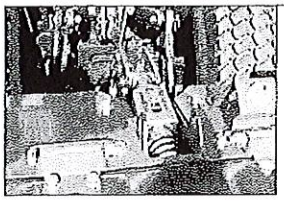
When using coring tines on the TERRA SPIKE® SL, the cores can automatically be aligned by using the optional windrow. This helps facililates the subsequent removal of the cores.

Tine Program

The TERRA SPIKE® SL can be equipped with solid tines from 7/16" to 5/8" in diameter, as well as with coring tines from 1/4" – 3/4" in diameter. These tines fit into the standard tine heads with 1/2" (12 mm) shanks. Wiedenmann also offers tine heads for top-ejecting coring tines with 1/2" and 5/8" diameter.

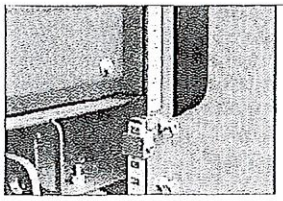


The advantages



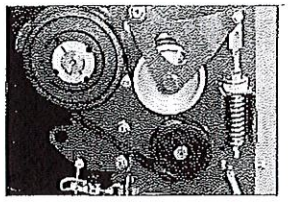
VibraStop

The exclusive VibraStop system protects the driver and the tractor from vibrations and helps protect the linkage when hitting an object, such as a rock. VibraStop meets all requirements of the EU Directive 78/764/EEC with respect to whole body vibrations. Vibrations that affect the operator are significantly reduced by the VibraStop system.



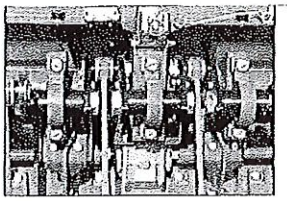
QuickChange

The TERRA SPIKE® SL is equipped with exchangeable tine holders. The tine heads can be rapidly exchanged with only one screw. Standard equipment for the machine includes tine heads for tines with ½" (12 mm) shanks. Tine heads for top-ejecting coring tines are available as an option.



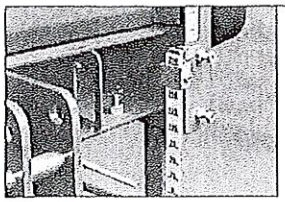
TwinDrive

The exclusive TwinDrive symmetrically drives the power from both sides of the continuous crankshaft, thus eliminating any timing issues. If harmful load peaks occur while working, such as when a tine strikes a stone, the special v-ribbed belt on either side absorbs the impact. The encapsulated drive is securely protected from dust and dirt.



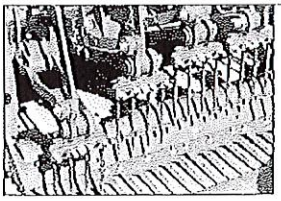
Crankshaft

The stable, computer optimized crankshaft is supported by large maintenance free sealed bearings. The gearbox has been moved forward in order to optimize the position of the center of gravity.



QuickSet

The working depth is rapidly and correctly adjusted with a crank, without other tools. The heave angle is centrally adjustable with the supplied tool. The working depth and the heave angle are easily readable on a large scale.



Turf retainer

The optional turf retainer prevents damage to turf with poor roots. The turf retainer has been designed to match tine spacing.

TECHNICAL DATA		TECHNICAL DATA	
Working width in inches:	55"	Weight with rear roller in approximate pounds:	1,050 lbs.
Maximum working depth in inches:	8"	Dimensions L/W/H in approximate inches:	39"/ 70"/ 45"
QuickSet/QuickChange/VibraStop/Twin Drive	Series	Solid tine diameters in inches:	3/16", ¼", 5/16", ½", 5/8"
Minimum lifting capacity of tractor in pounds:	1,375 lbs.		
Coring tine diameters in inches:	¼", 5/16", ½", ¾"	Rear roller:	Series
Windrow:	Optional	Turf retainer:	Optional
Exchangeable tine heads for upwards ejecting coring tines:			Optional
Area coverage in continuous operation in square feet per hour at a crankshaft speed:		360 rpm – at 0.8 mph square hole spacing 2"	approx. 17,868 sq.ft./hr.
Area coverage in continuous operation in square feet per hour at a crankshaft speed:		485 rpm - at 1.0 mph square hole spacing 2"	approx. 23,680 sq.ft./hr.

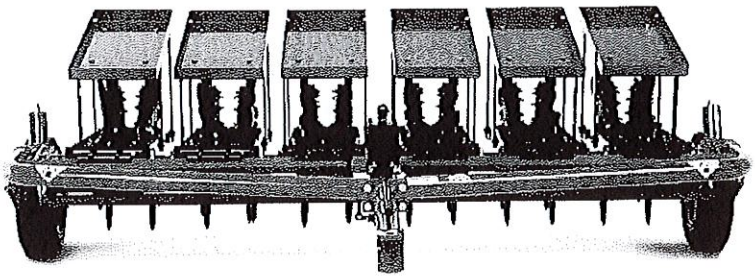
Descriptions and illustrations are not binding. Changes in design and execution reserved.

The First Name in Turf Renovation™

RENOVAIRE®

When the terrain gets tough, the Renovaire® aerator gets going. This hard-working piece of equipment is at its best on large, undulating turf areas such as golf course fairways and roughs.

With each pair of tine wheels mounted independently from the others, aeration follows the contour of the landscape, providing unmatched coring precision on undulating surfaces. With six feet of aerating width and an operating speed of four mph, the Renovaire® is capable of completing three acres in a single hour. Your choice of coring, spoon or slicing tines penetrate to a depth of four inches. Each weight tray is capable of holding up to 150 pounds, allowing pristine aeration even in the most heavily compacted soil. Just attach it to any tractor capable of towing 1,600 pounds and get ready to conquer the ups and downs of the most challenging surfaces.



SPECIFICATIONS

UNIT

Power	Tractor mounted
Lubrication	Pressure grease fittings at pivot points and tine wheels
Aerating Wheel Axle	1.25 in. (32 mm) diameter
Aerating Wheels	12, cast iron with sintered bushings; pressure lubrication fitting; grooved for mounting aerating tines on both sides; each wheel weighs 75 lb (34 kg)
Tines	8 per wheel (96 total); standard one set 0.75 in. (19 mm) coring; wheels can be mounted with double set of tines, 16 per wheel (192 total)
Coring Depth	Up to 4 in. (102 mm)
Aerating Width	72 in. (1,829 mm)
Aeration Pattern	6 in. x 6 in. (152 mm x 152 mm) with single tines; 3 in. x 3 in. (76 mm x 76 mm) with double tines
Holes per SqFt	Up to 9 (.84 m²) with single tines; up to 18 (1.7 m²) with double tines
Productivity	3 acres/hr (1.2 ha/hr) at 4 mph (6 km/hr)
Towing Speed	Up to 10 mph (16 km/hr)
Transport Tires	16 x 4.80-8, 6-ply
Transport Lift	Hydraulic cylinder
Weight Tray	Set of 6 included

OPTIONAL EQIUPMENT

Manual hydraulic pump

DIMENSIONS

Weight	1,518 lb (689 kg)
Width	96 in. (2,438 mm)
Length	60 in. (1,524 mm)
Height	36 in. (914 mm)

Specifications subject to change without notice.

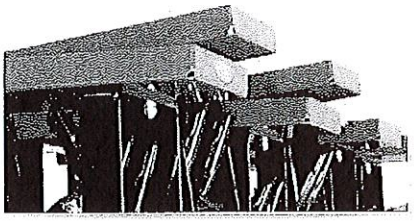
TINES

515197*	Tine, Coring 3/4" (19mm), Back Discharge, Thick Wall
515196	Tine, Coring 1/2" (13mm), Back Discharge, Thick Wall
520404	Tine, Spoon

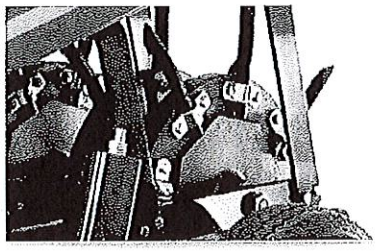
KNIVES

521155	Deep Slicing Knife
515193	Shallow Slicing Knife

*Standard configuration



Each weight tray is capable of holding up to 150 pounds for better penetration in heavily compacted soil.



Independently mounted tine wheels follow terrain contours closely for clean, precise aeration of undulated surfaces.

WWW.RYANTURF.COM

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WARRANTY

RYAN® TWO (2) YEAR LIMITED WARRANTY

2-Year Limited Warranty

Ryan® provides a two (2) year limited warranty to the original purchaser of any new RYAN® Turf Renovation Product, Attachment or Accessory from any authorized RYAN dealer.

Your **local RYAN® dealer (/ryan-dealer-locator/)** will repair or replace, at its option, any covered part found to be defective in material or workmanship during the warranty term specified herein. Warranty service must be performed by an authorized RYAN® dealer. Warranty service will be performed without charge to the purchaser for parts and labor.

Service Parts are warranted for a period of 180 DAYS from the date of purchase. RYAN® makes no warranty with respect to engines, tires, batteries, belts, regulators, starter-generators or other parts not of its manufacture. The engine warranty is covered by the engine manufacturer, and these other parts may be covered by the warranties of their respective manufacturers. Consult the Operator's Manual of the engine provided with your product or ask an authorized dealer for the terms and conditions of these warranties.

For additional information or technical support please **contact us (/contact-ryan/)**. Warranty terms and conditions are available at your **local dealer (/ryan-dealer-locator/)**.

Download Ryan® Warranty Statement (PDF) **(https://www.ryanturf.com/coming-soon/)**

ENGINE MANUFACTURERS

Briggs & Stratton®
www.briggsandstratton.com (http://www.briggsandstratton.com/)

Honda®
www.hondaengines.com (http://www.hondaengines.com/)

RYAN TURF

Dealer & Distributor Login (https://www.schillergcpro.com/)
Financing (/ryan-financing/)
Catalog (/free-ryan-catalog/)

Privacy Policy (/ryan-privacy-policy/)
Terms of Use (/ryan-terms-of-use/)

CITY OF FORT LUPTON
CITY COUNCIL

Zo Stieber, Mayor

Shannon Rhoda, Ward 1
Chris Ceretto, Ward 2
Michael Sanchez, Ward 3

David Crespin, Ward 1
Tommy Holton, Ward 2
Bruce Fitzgerald, Ward 3

AM 2020-198

PURCHASE OF A BROADCAST TOPDRESSER AT COYOTE CREEK GOLF COURSE

I. Agenda Date: Council Meeting – December 1, 2020

II. Attachments:
a. Bid from LL Johnson
b. Bid from Potestio Brothers

III. Summary Statement:

Coyote Creek Golf Course is looking to purchase a Broadcast Topdresser to assist with top dressing greens and tees.

IV. Submitted by: _____
Tyler Tarpley

V. Finance Reviewed _____
Finance Director

VI. Approved for Presentation: _____
City Administrator

VII. Attorney Reviewed _____ Approved _____ Pending Approval

VIII. Certification of Council Approval: _____ _____
City Clerk Date

IX. Detail of Issue/Request:

The Dakota Topdresser will replace our current ProPass Topdresser. Every other week we use the topdresser to spread a light layer of sand on the greens. When the greens are aerated twice a year we use it to spread a heavy layer of sand down to fill all the holes on the greens. The current topdresser is a 2006 model making it 14 years old. In 2014 when we were using it to spread sand after aerifying and the engine on the topdresser caught on fire. We were able to repair it, but it just hasn't operated the same since the fire. Every year we have had to spend money on it to try to get it running better. This year we have had to put $4,000 into the machine and it was not operational for a month and a half.

An RFP was issued for this purchase, LL Johnson and Potestio Brothers were the only two companies to complete and submit bids. Potestio Brothers was the low bid at $14,650.

X. Legal/Political Considerations:

N/A

XI. Alternatives/Options:

Do not approve the purchase of the Broadcast Topdresser

XII. Financial Considerations:

The bid from Potestio Brothers for the Broadcast Topdresser is for $14,650 and will require a supplemental budget resolution.

XIII. Staff Recommendation:

Staff recommends the purchase of the Broadcast Topdresser from Potestio Brothers for $14,650.

****
REQUEST NO.
FTL2016XX
****

CITY OF
Fort Lupton
EST 1836
COME PAINT YOUR FUTURE WITH US

Ms. Leann Perino
Finance Director
130 South McKinley Avenue
Fort Lupton, Colorado 80621

Dear Ms. Perino:

The undersigned having become familiar with the specifications for ***Golf Course Maintenance Equipment*** and deliver to the City of Fort Lupton as set forth in the following schedule:

Item	**Equipment**	**Attachments**	**Price**
Item #1	Compact Utility Loader		$25,522.00
		Standard Bucket	$599.00
		Trencher	$5261.00
		Soil Cultivator	$6,337.00
		Blade	$1,950.00
	Total For Compact Utility Loader with attachments		
Item #2	Broadcast Topdresser		$14,787.06
Item #3	Deep Tine Aerator		$19,601.85
Item #4	Tow-Behind Aerator		$8,468.88

The City would like all pieces of equipment to be invoiced and delivered by December 31, 2020.

LL JOHNSON
4700 HOLLY ST
DENVER, CO 80216

11/17/2020

CITY OF FORT LUPTON
FOR:COYOTE CREEK GOLF COURSE
ATTN: MIKE MCNAY

PH:303-350-5252
FAX:
E-MAIL:mmcnay@fortluptonco.gov

DINGO SYSTEM QUOTE

		LIST PRICE	YOUR PRICE
22324	DINGO 525TX DIESEL WIDE TRACK DRIVE	$ 30,750.00	$ 25,522.00
	SER#		
22409	STANDARD BUCKET 42"	$ 725.00	$ 599.00
	SER#		
22473	HIGH TORQUE TRENCHER HEAD	$ 4,395.00	$ 3,647.00
	SER#		
22976	3 FT BOOM	$ 800.00	$ 664.00
	SER#		
22487	3'X 4" COMBO TRENCHER CHAIN	$ 1,145	$ 950.00
	SER#		
23102	SOIL CULTIVATOR	$ 7,635.00	$ 6,337.00
	SER#		
35-27700	KWIK WAY BACKFILL BLADE AND SNOW	$ 2,385.00	$ 1,950.00
	SER# THIS IS A BETTER BLADE THAN THE		
	TORO BLADE AND LESS MONEY	SUB TOTAL	$ 39,669.00
	NO	TAX	
		TOTAL	
	PRICES SUBJECT TO CHANGE WITHOUT NOTICE		

LL JOHNSON EST. 1976 DISTRIBUTING COMPANY

4700 Holly Street
Denver, CO 80216
Mobile: 720-641-3864
Office: 303-394-6673

TORO. Count on it.

City of Fort Lupton

Attn: Mike Mcnay

11/17/2020

Qty	Model Number	Description	MSRP	2021 MAPO
1	**44751**	**ProPass 200 Wireless**	**$ 14,416.00**	**$ 11,273.31**
1	44724	Propass Tow Chassis And Fender Kit	$ 3,423.00	$ 2,676.79
1	44706	Tow Chasis Hose Assembly	$ 343.00	$ 268.23
		MAPO Service Fee	$ 727.28	$ 568.73
		SUB TOTAL	**$ 18,909.28**	**$ 14,787.06**

Qty	Model Number	Description	MSRP	2021 MAPO
1	**44856**	**Turf Aerator 686**	**$ 9,891.00**	**$ 7,734.76**
96	108-9299	3/4 Inch Spoon Tine Closed	$ 522.24	$ 408.39
		MAPO Service Fee	$ 416.53	$ 325.73
		SUB TOTAL	**$ 10,829.77**	**$ 8,468.88**

Qty	Model Number	Description	MSRP	2021 MAPO
1	**09931**	**ProCore SR54**	**$ 23,053.00**	**$ 18,027.45**
1	09952	Rear Roller SR54	$ 954.00	$ 746.03
18	SGS08500	Solid Tine, 12mm x 8.00 Inch [12mm MNT]	$ 95.22	$ 74.46
		MAPO Service Fee	$ 964.09	$ 753.92
		SUB TOTAL	**$ 25,066.31**	**$ 19,601.85**

GRAND TOTAL	**$ 54,805.36**	**$ 42,857.79**

I am sending our current pricing information on the Toro Commercial Turf products that you are interested in. These prices are from our current MAPO contract #2017025 available to all of our tax supported accounts. The Service Fee listed above covers freight, set-up and delivery charges.

* All Toro equipment comes with a two year or 1,500 hour warranty

Thank you for the opportunity to quote you on the equipment listed above. The prices are guaranteed through May 20th 2021. The equipment pricing includes all set up and delivery.

Please feel free to call me with any questions.

Sincerely,

Brandon Bollerud
Northern Territory Manager

Turf Aerator 686/687

TOW-BEHIND LARGE AREA AERATORS

FEATURES

- *Productive 78" (198 cm) aeration swath*
- *Aerate up to 10 mph (16.1 km/h)*
- *Slicing and core aerating tines available*
- *3-point (687) or tow type (686)*

Productive Aeration. Simple Design.

The 686 and 687 Turf Aerators are an efficient and effective way to aerate large turf areas. Designed with 70 pound (31.75 kg) cast wheels and a unique floating head design, these aerators give excellent depth and ground following capabilities. For highly compacted or unusually uneven grounds, optional rear weights are available.

Toro Turf Aerator 686

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Call your Toro distributor at 800-803-8676

Turf Aerators 686 & 687

The 686 and 687 Turf Aerators give excellent depth performance and follow ground contours, vertically and horizontally, like no other aerator available.

(Turf Aerator 686 shown)

	TURF AERATOR 686, MODEL 44856	TURF AERATOR 687, MODEL 44867
CAST WHEELS	3 sets of 4, each set moves independently. 70 lbs. (32 kg), 13" (33 cm) diameter.	
AERATING SWATH	78" (198 cm)	78" (198 cm)
TINES	Choice of 1/2" (12.7 mm) or 3/4" (19 mm) open or closed tines. 4" (10 cm) and 6" (15 cm) slicing blades.	
PATTERN	6" (15 cm) forward. 3" (8 cm) lateral	
HITCH	Drop pin, tow type with hydraulic cylinder for lift, hand pump standard.	3 pt., Category 1.
OPERATING SPEED	1-10 mph (1.6-16.1 km/h)	1-10 mph (1.6-16.1 km/h)
LENGTH	78" (198 cm)	48" (122 cm)
WIDTH	90" (229 cm)	82" (208 cm)
HEIGHT	Approx. 40" (102 cm)	Approx. 40" (102 cm)
OPTIONS	Weights: 35 lbs. (16 kg) each, 2 maximum per coring head. Tractor Remote Kit, Model 68-608-3521. **Note:** Includes weights, but additional weights can be added.	Weights: 35 lbs. (16 kg) each, 2 maximum per coring head; set of 3. **Note:** Includes weights, but additional weights can be added.
SHIPPING WEIGHT	1,420 lbs. (644 kg)	1,300 lbs. (590 kg)
WARRANTY	Two-year limited warranty; Refer to the Operator's Manual for further details.	

*Specifications and design subject to change without notice. Products depicted in this literature are for demonstration purposes only. Actual products offered for sale may vary in design, required attachments and safety features. Consult your local Toro Distributor.

ProPass™ 200

BROADCAST TOPDRESSER

FEATURES

Accurate – *Color-coded operating system delivers a perfect spread every time. Repeatable settings for consistent operation and defined edges.*

Wireless Remote Operation – *Available wireless controller allows real-time adjustments. Make quick setting changes and store settings for future use. Base model features a wired controller.*

Spread Consistency: *Ultra-light to ultra-heavy. Evenly apply materials from 9' (2.74 m) narrow to 30' (9.1 m) wide with the use of our unique "drop zone" patented sliding adjustment.*

Dependable – *Low maintenance and easy cleaning procedures provide long life and solid performance.*

Versatile – *The twin spinner accessory can be swapped out with a 270 degree swivel cross-conveyor quickly and easily without tools.*

Choice of Configurations – *Available as a bed mounted version, a trailer version with either engine or vehicle hydraulic power, or as a fifth wheel trailer version.*

Why Settle? Leave the guesswork to the other guys.

The ProPass 200 series broadcast-style topdressers provide the ultimate in application versatility and precision. Intuitive color-coded adjustment settings deliver extremely accurate spread patterns from ultra-light dustings to ultra-heavy aeration hole filling applications from the first pass, without the guesswork. The unique four-wheel, walking-beam suspension means a light footprint that is easy on the most sensitive turf. Select from a range of configurations and controls to match your needs, tow vehicle and budget. If you are looking for one topdresser to do it all - the ProPass 200 is the only one.

Trailer Version

- *Chassis with 4-wheel walking beam suspension*
- *11 hp (8.2 kW) engine-powered hydraulics or vehicle-powered hydraulics*

Utility Vehicle Mounted Version

- *Vehicle-powered hydraulics*
- *Storage stands for removal and storage*

Call your Toro distributor at 800-803-8676

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ProPass™ 200

The ProPass 200 Series broadcast-style topdressers provide the ultimate in application versatility. Intuitive color-coded adjustment settings deliver extremely accurate spread patterns from ultra-light dustings to ultra-heavy aeration filling applications. The four-wheel, walking-beam suspension means a light footprint that is easy on the most sensitive turf. If you are looking for one topdresser to do it all – the ProPass 200 is the only one. Choice of bed-mounted or trailer configurations and manual or wireless controls.

	PROPASS 200, MODEL 44701 / PROPASS 200 WIRELESS, MODEL 44751*		
GENERAL	Hopper Capacity: 21 ft³ / 0.54 m³ struck (25 ft³ / 0.71 m³ heaped) Controls: standard or electronic wireless Belt: One-piece vulcanized, self-tracking (no seams or staples) Hydraulic Power Pack (optional): 11 hp (8.2 Kw) engine Cross conveyor / swivel kit assembly (option): cross conveyor rotates 270 degrees		
SPREAD WIDTH	30' (9.1 meters)		
WEIGHT	Base model: 546 lbs (248 kg) Tow behind chassis: 480 lbs (218 kg) Truck mount kit: 90 lbs (41 kg) Twin spinner: 140 lbs (66 kg) Truck mount storage stand: 65 lbs (30 kg) Hydraulic power pack engine: (dry) 220 lbs (100 kg) Cross conveyor / swivel kit assembly: 140 lbs (63.5 kg)		
DIMENSIONS	**Tow-Behind Configuration** Length 134 in (3.4 m) Height 56 in (1.4 m) Width 65 in (1.7 m) Total unit weight: 1166 lbs (531 kg) Payload 2,000 lbs (905 kg)	**Truck Mount Configuration** Length 78 in (1.98 m) Height 56 in (1.4 m) Width 65 in (1.7 m) Total unit weight: 776 lbs (355 kg) Payload: 2,000 lbs (905 kg)	**Cross Conveyor Configuration** Length 65 in (1.7 m) Belt width: 8 in (20.3 cm) seamless
TIRES ON CHASSIS	24 x 13 x 12 in (60 x 32.5 x 30 cm) , 4 ply Suspension: 4-wheel walking beam		
TOW VEHICLE REQUIREMENTS	Towing capacity: 3,400 lbs (1550 kg) Tongue weight: 300 lbs (136 kg)		
HYDRAULICS	Minimum 6 US gal/m @ 2,000 psi (23 L/m @ 138 bar) Maximum 10 US gal/m @ 2,800 psi (38 L/m @ 190 bar)		
WARRANTY	Two-year limited warranty. Refer to operator's manual for further details.		
CE REQUIREMENTS	Meets the CE requirements for the EU		

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ProCore® SR Series

DEEP-TINE AERATORS

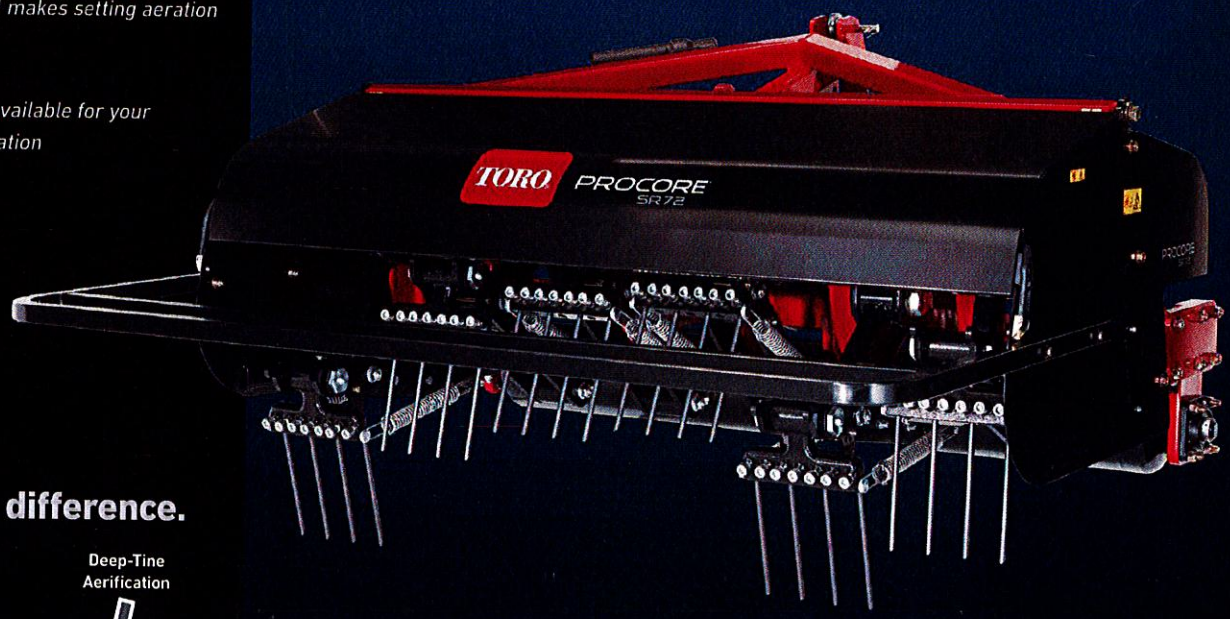
FEATURES

Deep-tine aerfication relieves soil compaction at lower soil levels than typical aerification. The tines fracture the soil creating channels through the root zone allowing oxygen, water and critical nutrients to penetrate deep into the soil profile.

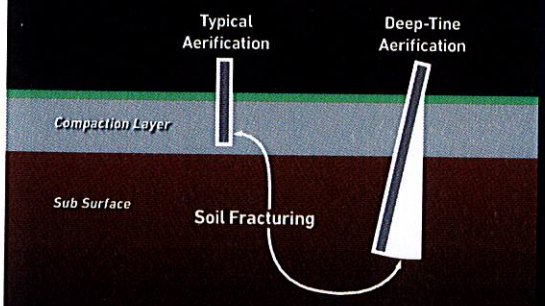
- *Multiple high-performance units for a wide variety of aeration applications*
- *Aeration widths of 54"-73" (1.37 m - 1.85 m)*
- *Aeration depths to 16" (40.6 cm)*
- *Hydraulic depth control makes setting aeration depth easy*
- *Solid and coring tines available for your specific aeration application*

Reduce soil compaction for healthier turf.

ProCore SR Series deep-tine aerators alleviate subsurface soil compaction, helping to create an environment for turf to thrive. These durable and time-tested products are capable of withstanding the most extreme aeration conditions. From lightweight, precision machines to robust, heavy-duty machines to break up soil on even the most compact surfaces, the ProCore SR Series deep-tine aerators are the ultimate choice for performance and quality.



The deep-tine difference.



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Call your Toro distributor at 800-803-8676

ProCore® SR Series Specifications*

	PROCORE SR54 MODEL 09931	PROCORE SR54-S MODEL 09932	PROCORE SR70 MODEL 09933	PROCORE SR70-S MODEL 09934	PROCORE SR72 MODEL 09935
WEIGHT WITH PTO & TOP LINK	1,165 lbs. (528 kg)	1,250 lbs. (567 kg)	1,500 lbs. (681 kg)	1,655 lbs. (750 kg)	2,091 lbs. (945 kg)
WORKING WIDTH	54" (1.37 m)	54" (1.37 m)	73" (1.85 m)	73" (1.85 m)	72" (1.83 m)
WORKING DEPTH (ADJUSTABLE)	1" - 10" (25-250 mm)	1" - 10" (25-250 mm)	1" - 10" (25-250 mm)	1" - 10" (25-250 mm)	1" - 16" (25-406 mm)
HOLE SPACING	2.5" - 4" (64-102 mm)	2.5" - 4" (64-102 mm)	2.5" - 4" (64-102 mm)	2.5" - 4" (64-102 mm)	3" - 6" (75-150 mm)
PRODUCTIVITY	36,000 sq.ft./hr. (3,345 sq. m/hr.)	36,000 sq.ft./hr. (3,345 sq. m/hr.)	48,000 sq.ft./hr. (4,460 sq. m/hr.)	48,000 sq.ft./hr. (4,460 sq. m/hr.)	38,000 sq.ft./hr. (3,530 sq. m/hr.)
RECOMMENDED TRACTOR SIZE	16-18 HP	18 HP	25-35 HP	25-35 HP	45 HP
RECOMMENDED LIFT CAPACITY	1,200 lbs. (682 kg)	1,500 lbs. (682 kg)	1,700 lbs. (773 kg)	1,800 lbs. (817 kg)	2,800 lbs. (1,270 kg)
RECOMMENDED COUNTER WEIGHT	150 lbs. (70 kg)	150 lbs. (70 kg)	250 lbs. (115 kg)	250 lbs. (115 kg)	300-500 lbs. (135-225 kg)
RECOMMENDED PTO SPEED	400-500 rpm	400-500 rpm	400-500 rpm	400-500 rpm	400-500 rpm
ACTUAL WORKING SPEED @ 400 PTO RPM (VARIES WITH HOLE SPACING)	1.5 -2.5 mph (2.41 - 4.02 kph)	1.5 -2.5 mph (2.41 - 4.02 kph)	1.5 -2.5 mph (2.41 - 4.02 kph)	1.5 -2.5 mph (2.41 - 4.02 kph)	0.8 -1.5 mph (1.29 - 2.41 kph)
LIFT SYSTEM	Std. 3-point	Std. 3-point	Std. 3-point	Std. 3-point	Std. 3-point
CERTIFICATION	ISO 4254-5:2008. CE and EU machinery directives				
WARRANTY	Two-year or 500-hour limited warranty. Refer to Operator's Manual for further details				

	PROCORE SR SERIES ACCESSORIES
	REAR ROLLER OPTIONS
09952	Rear Roller Kit for ProCore SR54 / SR54S
09953	Rear Roller Kit for ProCore SR70 / SR70S
09954	Rear Roller Kit for ProCore SR72

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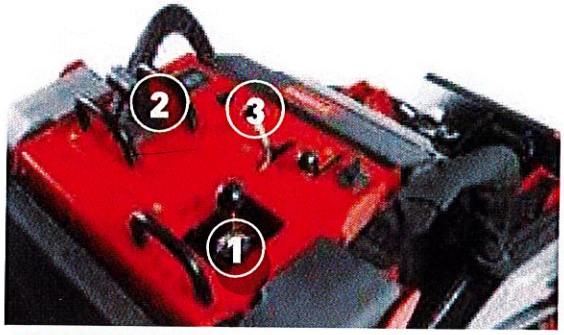
DINGO® COMPACT UTILITY LOADERS

WHEELED / TRACKED / VERTICAL LIFT / RADIAL LIFT

THE COMPACT UTILITY LOADER, REDEFINED.

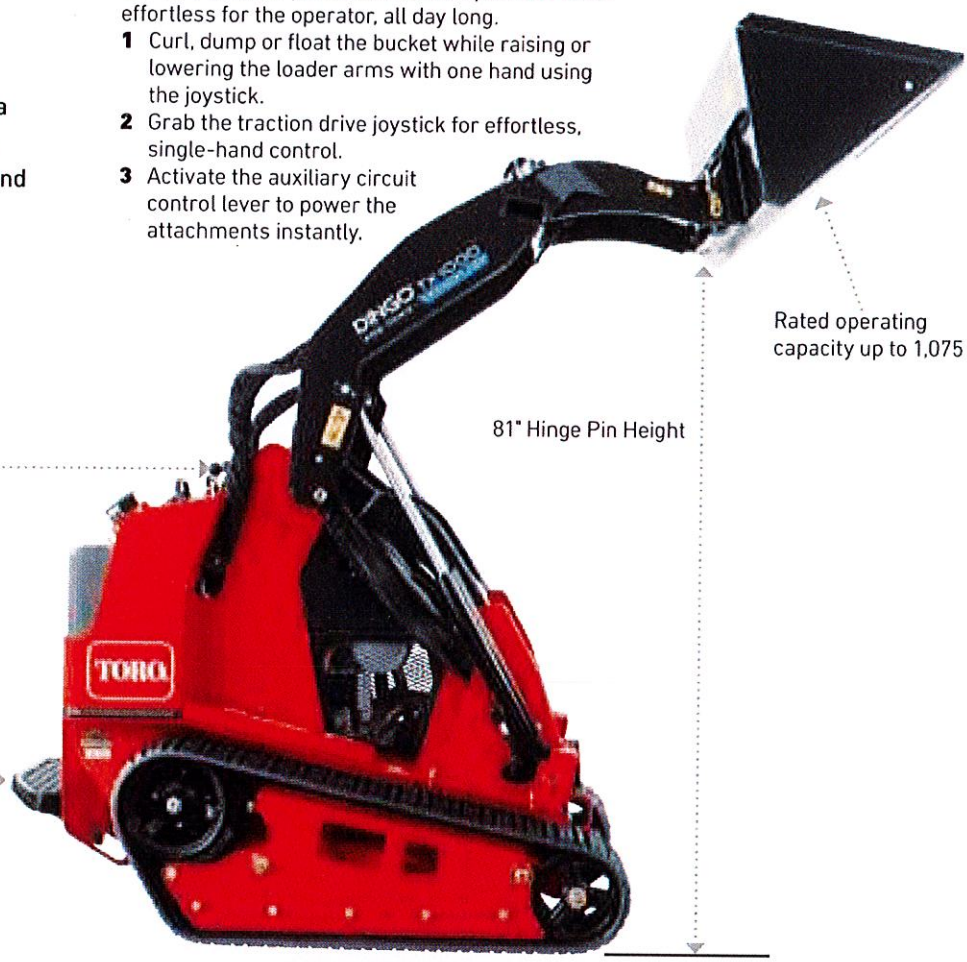
The all-new TX 1000 - a giant step forward in performance and versatility. This lightweight maneuverable machine packs unmatched strength and reach in a compact package for the ultimate working advantage. The 1,000 pound rated operating capacity makes the TX 1000 a powerful, compact alternative to larger skid steer loaders and other machines.



TX 1000 CONTROLS

New patent-pending control system exclusive to the Toro TX 1000 provides intuitive operation that's effortless for the operator, all day long.

1. Curl, dump or float the bucket while raising or lowering the loader arms with one hand using the joystick.
2. Grab the traction drive joystick for effortless, single-hand control.
3. Activate the auxiliary circuit control lever to power the attachments instantly.



TX 1000 FEATURES

UNMATCHED STRENGTH

Vertical lift loader arms allow the TX 1000 to lift and transport heavy loads with a category-leading rated operating capacity of 1,000 lbs.

MAXIMUM HEIGHT AND REACH

The 81" (206 cm) hinge pin height allows attachments to easily clear the side of 30-yard dumpsters or one-ton trucks.

HIGH DRIVE TRACK SYSTEM

Ideal for the demands of any jobsite to outperform on any surface, even sand or loose gravel.

COMPACT FOOTPRINT

The narrow model is just 33.7" (86 cm) wide and fits through standard 36" gates. At just 41" (104 cm) wide, the wide-track model is also easy to maneuver.

TX 427 & TX 525
TRACKED DINGO
MORE WORK IN
LESS TIME

RUGGED AND DEPENDABLE.

The original tracked compact utility loaders, Toro Dingo TX 427 & 525 models deliver durability and reliability pros and Do-It-Yourselvers trust, combined with powerful performance and incredible versatility. For operators who are frequently switching tasks or moving things out of the way, these walk-behind models provide greater productivity due to the ability to walk up to the machine and go. In addition, with walk-behind Dingos, operators don't feel the bumps when going over rough terrain.

EXCLUSIVE TX CONTROLS

Three simple controls let operators get to work fast:

1. Curl, dump or float the bucket while raising or lowering the loader arms with one hand using the joystick.
2. Grab the one-handed traction drive from any angle for effortless control.
3. Activate the auxiliary circuit control lever to power the attachments instantly.

TX 427 & TX 525 FEATURES

LOW-IMPACT FOOTPRINT

Long-lasting, Kevlar® reinforced tracks disperse weight evenly for a light footprint on turf, while delivering better traction in sandy or wet ground conditions.

EASY-TO-USE PLATFORM

Quickly and easily bolted on to Toro Dingo TX 427 & 525 models, this ride-on platform helps minimize operator fatigue when the job requires a lot of hauling or covers substantial distances. The platform can be flipped up – out of the way – any time the operator wishes.

HIGH-PERFORMANCE HYDRAULICS

The 4-pump hydraulic system directs power right where you need it. Operate the loader, bucket, traction and auxiliary drives at the same time for increased operator efficiency.

DIESEL AND GAS ENGINES

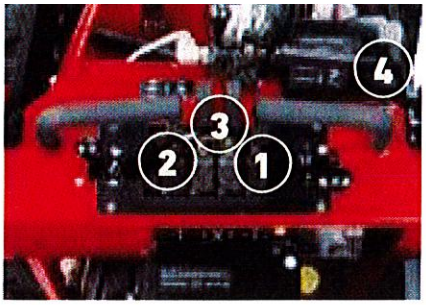
Choose a gas model for easy maintenance and cold-weather starting. Or choose diesel for better performance in high altitudes and warmer climates, along with more horsepower for attachments.

220, 323 & 320D WHEELED DINGOS

BIG BENEFITS IN SMALL SPACES

GO WHERE YOU NEED TO WORK.

Access confined spaces you never thought possible with a wheeled Dingo® compact utility loader. These models offer zero-turn capability, along with a shorter length that's easy to load on a trailer. You also get reliable hydraulic power to use a wide range of attachments. If you do a lot of tasks in tight spaces or on hard surfaces, these are the models for you.



DINGO CONTROLS
Responsive controls make the wheeled Dingo highly maneuverable:

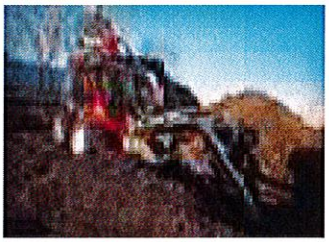
1. Curl or dump the attachment while raising or lowering the loader arms.
2. Raise and lower loader arms.
3. Traction drive control.
4. Activate the auxiliary circuit control lever to power the attachments instantly.

220, 323 & 320D FEATURES

HIGHLY MANEUVERABLE
Short wheelbase design offers excellent maneuverability. Get into tight spaces where only hand labor could go before.

TWO TRANSPORT SPEEDS
Low speed sends more hydraulic power to the attachment and high speed sends more power to the wheels. The low speed option also helps new operators shorten their learning curve.

IMPROVED VISIBILITY
The integrated ride-on operator platform allows improved visibility of the working area and attachments.



4-PAW™ INDEPENDENT FOUR-WHEEL DRIVE
Four independent wheel motors deliver hydraulic flow and pressure to all four wheels for improved traction and mobility. Fewer moving parts also mean less maintenance.
Available on 323 and 320D only.

GET THE JOB DONE

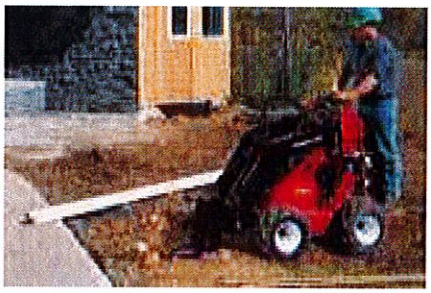
TORO QUICK ATTACH SYSTEM
CHANGE ATTACHMENTS IN SECONDS

1 Mount to the attachment plate on the unit.

2 Twist the pins to locked position.

3 For powered attachment, connect hydraulic lines to dripless flush-face quick couplers on loader arms.

TRENCHING, PLOWING, AND BORING EQUIPMENT



BORE DRIVE HEAD AND ROD & REAMER KIT *(sold separately)*
Easily bore under driveways and sidewalks to simplify irrigation and cable installations.

VIBRATORY PLOW
Reduce time spent on irrigation or cable installations. The vibratory plow optimizes pipe-pulling performance while minimizing turf damage. Extremely tight turning radius allows for tight maneuvering in confined spaces.

TRENCH FILLER
Two sets of opposing augers direct spoils into the hole. Standard float mechanism allows for up to 5" of ground following floatation. Skids evenly disperses weight and slide easily over turf, minimizing damage.

TORO® DINGO® COMPACT UTILITY LOADER ACCESSORIES

SUPERIOR DESIGN FOR LONG-LASTING, DEPENDABLE PERFORMANCE AND THE PERFECT FIT.

Genuine Toro Dingo attachments are your best assurance for attaining a long life and peak performance from your CUL. Designed specifically for the Dingo, the attachments are easy to operate and deliver clear sight lines.

TRENCHING, PLOWING AND BORING SPECIFICATIONS

Model #	Attachment Description	Dimensions (W* x L x H)	Weight (Lbs)
22420	Bore Drive Head Attachment (Bore diameter 1.25"-3.5")	24" x 22" x 25"	120
22421	Rod and Reamer (Bore diameter 1.25"-4.5")	-	58
22472	Trench Filler	48" x 31" x 22"	410

*Working Width

Model #	Attachment Description	Dimensions (W x L x H)	Weight (Lbs)
22473	High-Torque Trencher Head	35" x 65" x 24"	390
22474	High-Speed Trencher Head	35" x 65" x 24"	390
22911	Vibratory Plow	29" x 35" x 24"	400

HIGH-SPEED TRENCHER

Ideal for fast, efficient trenching in most soil conditions. 24", 36" and 48"* booms available. Chain speed: 187 rpm at 11 gpm. Torque: 442 ft/lbs at 3000 psi
*Longer, optional spoils auger recommended for 4' boom

HIGH-TORQUE TRENCHER HEAD

Guarantees performance in difficult soil conditions. 24", 36" and 48"* booms available. Chain speed: 120 rpm at 11 gpm. Torque: 675 ft/lbs at 3000 psi
*Optional spoils auger recommended for 4' boom

AUGERS AND TREE CARE EQUIPMENT

STUMP GRINDER
Rugged design and incredible hydraulic power, the Toro stump grinder will make powder of the toughest stumps. Grinds down as far as 16.5" below grade. Grinds up to 36" above grade. 17" wheel diameter.

HIGH-TORQUE AUGER POWER HEAD
Designed specifically to power up to 30" diameter augers in the toughest soil conditions. Auger bits from 6" to 30".

UNIVERSAL SWIVEL AUGER POWER HEAD
Ensures "plumb" holes on uneven terrain up to 18". Perfect for installing fences.

TORO® DINGO® COMPACT UTILITY LOADER ACCESSORIES

AUGERING, EARTH MOVING, TILLING AND TRENCHING TO LEVELING, LIFTING, HAULING AND DEMOLISHING...THE OPTIONS ARE ENDLESS

With the wide array of attachments available — more than 35 — the Dingo compact utility loader can perform big-machine applications like grading soil or carrying large amounts of material.

AUGERS AND TREE CARE SPECIFICATIONS

Model #	Attachment Description	Dimensions (W x L x H)	Weight (Lbs)
22429	Stump Grinder (w/chip guard)	44" x 20" x 31"	265
22438	Tree Fork (max load 220 lbs)	24.5" x 45" x 12.5"	169
22341	Adjustable Fork	31" x 45" x 27"	162
22521	Grapple Rake	35.5" x 18" x 30"	265
22805	High-Torque Auger Power Head	24" x 16" x 23"	182
22806	Universal Swivel Auger Power Head	24" x 17" x 23"	196

AUGER BITS AND EXTENSIONS

Model #	Attachment Description
22814	18" Auger Bit
22815	24" Auger Bit
22816	30" Auger Bit
22818	12" Auger Bit Extension
22819	24" Auger Bit Extension
22820	6" Full Flight Auger Bit
22821	9" Full Flight Auger Bit
22822	12" Full Flight Auger Bit
22823	15" Full Flight Auger Bit

GRAPPLE RAKE

Grab, drag, lift and place brush and debris easily with up to 3,000 lbs (1,361 kg) of clamping force at the tine tips.

TREE FORK

Hydraulic fork arm opens to handle large trees and shrubs. Angle design allows for gentle handling.

ADJUSTABLE FORKS

Easily adjust forks to desired width. Carry fence posts, rocks, pallets, plants, fertilizer, irrigation supplies and more. Forks constructed of high-strength steel. Lift capacity up to 600* lbs.; Maximum lift height: 61".

**Dependent upon Dingo model used.*

MAKES MOVING MATERIALS EASY

EARTH MOVING AND DIGGING EQUIPMENT

LEVELER
Grade, finish, and spread topsoil and other landscape materials. Back fill trenches. Carry job site materials such as plants, fertilizer, irrigation supplies, and more.

SOIL CULTIVATOR
Bury stones, soil clods, debris and grass. Prepares seed bed in one pass, tilling soil up to 5.5" deep. Adjustable grading bar and comb teeth leave perfect germination environment.

TILLER
Hardened steel tines for any soil condition, including clay or hardpan. Till more than six inches deep and 40" wide on one pass. Reversible tine direction frees jams quickly.

TORO® DINGO® COMPACT UTILITY LOADER ACCESSORIES

MANY ATTACHMENTS WITH ONE GOAL: PRODUCTIVITY

A wide variety of attachments, including buckets, augers, trenchers and forks, make the Dingo a more cost effective choice than a dedicated piece of equipment. In short, get more work done in less time.

BUCKET SPECIFICATIONS

Model #	Attachment Description	Dimensions (W x L x H)	Weight (Lbs)	Capacity (cu. ft.)
22409	4 cu.ft.n Standard Bucket	42" x 50" x 42.3"	115	4
22410	Loose Materials Bucket	48" x 26" x 18"	175	6.4
22520	Narrow Bucket	34.5" x 26.7" x 25.1"	153	3.5
22340	TX 1000 Standard Bucket	41" x 23" x 15"	172	4.3
22342	TX 1000 High Volume Bucket	53.25" x 29" x 17"	253	9.0

EARTH MOVING EQUIPMENT SPECIFICATIONS

Model #	Attachment Description	Dimensions (W x L x H)	Weight (Lbs)
22426	Direct Drive Power Box Rake	48" x - x 20.9"	365
22445	40" Tiller	44/40" Tilling Width x 20" x 26"	363
23102	Soil Cultivator	51" x 51" x 21"	363

Model #	Attachment Description	Dimensions (W x L x H)	Weight (Lbs)
23163	Backhoe	34.5" x 41" x 71"	762
23161	Wheeled Backhoe Fit-up Kit*	-	21
23162	TX Backhoe Fit-up Kit**	-	81
23165	Leveler	31.3" x 41.2" x 27"	162

*Backhoe fit-up kit for models 22317 & 22318
*Backhoe fit-up kit for models 22321, 22322, 22323 & 22324

POWER BOX RAKE

Perfect tool for seed or sod bed preparation. Carbide-teeth rotary drum pulverizes rough soil, cuts high spots and fills low spots in one pass. Manually adjustable yoke allows 20° offset. Overall width: 67"; Working width: 48".

BUCKETS

Perfect for light-duty grading, leveling, and material handling. Buckets vary in capacity from 4.3 cu. ft. to 9 cu. ft. for lighter materials.

BACKHOE

Versatile — dig foundations, plant trees, trench and much more. Folds to 34.5" wide for access to tight spaces and ease of transport. 180° bucket and swing arm rotation, 82"digging depth, and standard 13" bucket.

YOU CAN HANDLE IT

MATERIAL HANDLING EQUIPMENT

CEMENT BOWL
Flighting mixes and holds cement in bowl. Mix, haul, and pour up to 200 lbs. Auger power head required (sold separately).

MANUAL OR HYDRAULIC FORKS
Transport and position trees and large shrubs exactly where you want them with exceptional maneuverability.

HYDRAULIC CONCRETE BREAKER
The hydraulic breaker is the perfect tool for precision demolition. Combined with the compact size and ease of use of the Dingo, the breaker simplifies the difficult job of breaking concrete, asphalt, rock or brick during renovation jobs.

TORO® DINGO® COMPACT UTILITY LOADER ACCESSORIES

TACKLE A LOT MORE WORK IN LESS TIME.

Uses for the Toro Dingo and its various attachments are limited only by your imagination.

MATERIAL HANDLING SPECIFICATIONS

Model #	Attachment Description	Dimensions (W x L x H)	Weight (Lbs)
22423	Multi-Purpose Tool	24" x 4" x10"	40
-	Boom Jib	0.63" x 32.4 x 9.4"	23.2
-	Scarifier Teeth	2" x 13" x 11.7"	9
22442	Cement Bowl		75
22456	Snowthrower	48" x 43.3" x 50.4"	335
23135	Concrete Breaker	25" x 50" x 13" 17" length x 2" diameter	262
22414	Utility Blade	48" x 25" x 21"	212

MISCELLANEOUS SPECIFICATIONS

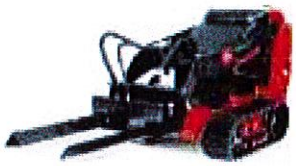
Model #	Attachment Description	Weight (Lbs)
22475	TX Platform (Gas)	95
22476	TX Platform (Diesel)	95
22464	Trencher Crumber Kit	52
22417	Counter Weight	183

SNOWTHROWER
Two-stage design with the power to handle the toughest snow conditions. Replaceable scraper. Adjustable skids. Overall Width: 48"
Clearing width 44".

MULTI-PURPOSE TOOL
Plant and haul trees or dig and breakup soil with the 3-in-1 ripper, towbar and boom.

UTILITY BLADE
Backfill trenches, move or smooth dirt or even use to clear snow.

MEET THE FAMILY



DINGO TX 1000 SPECIFICATIONS

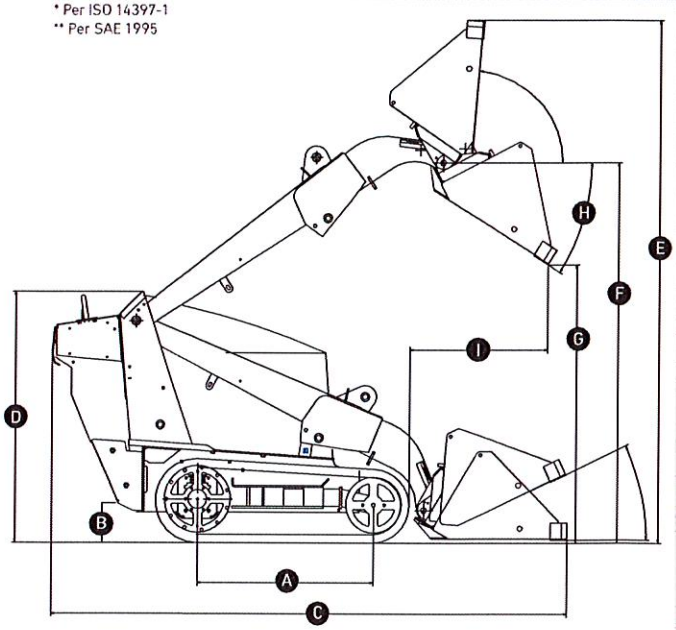
		DINGO TX 1000 NARROW TRACK 22327	DINGO TX 1000 WIDE TRACK 22328
DIMENSIONS	A Wheelbase	41" (10 cm)	
	B Ground Clearance	6.0" (15 cm)	
	Overall Width	33.7" (86 cm	41" (104 cm)
	C Overall Length	100.7" (256 cm) w/bucket; 81.7" (208 cm) w/o bucket	
	D Overall Height	53.2" (135 cm)	
	E Max Operating Height	105" (267 cm)	
	F Hinge Pin Height	81" (206 cm	
	G Dump Height	61" (155 cm)	
	H Dump Angle	40-degrees	
	I Reach - Fully Raised	24.5" (62 cm)	
	Ground Speed (F/R)	4.7 mph (7.6 km/h)/ /4.7 mph (7.6 km/h)	
	Weight	2,610 lbs (1184 kg)	2,790 lbs (1266 kg)
	Tip Capacity	2,857 lbs (1,296 kg)	3,071 lbs (1,393 kg)
	Rated Operating Capacity (35% of Tip Capacity)*	1,000 lbs (454 kg)	1,075 lbs (488 kg)
ENGINE	Engine	Kubota* D1305	
	Manufacturer's Gross HP Rating at RPM**	24.9 HP (18.6 kW) @ 2600 rpm	
	Displacement	77 cu. in. (1262cc)	
	Fuel Type	Diesel	
	Air Filter	Two-stage, heavy-duty, remote	
	Cooling System	Liquid Cooled	
	Fuel Tank	11.5 gallons (44 liters)	
	Oil Capacity	6.0 quarts (5.7 liters)	
	Loader Arms	Vertical	
OPERATION	Hydraulic Pressure	3,000 PSI	
	Hydraulic Flow	Traction: 13.3 gpm (each pump); Auxiliary: 15.2 gpm	
	Reservoir Capacity	10 gallons (57.5 liters)	
TRACKS	Tracks	Sprocket-drive, 6 road wheels per side	
	Traction	Dual hydrostatic pump	
	Track Length x Width	127.6" x 5.9" (324 cm x 15 cm)	127.6" x 9.5" (324 cm x 24 cm)
	Ground Pressure	5.4 PSI	3.6 PSI

* Per ISO 14397-1
** Per SAE 1995

DINGO TX 427 & TX 525 SPECIFICATIONS

	TX 525 22323	TX 525 WIDE 22324
A Wheelbase	31.2" (79 cm)	
B Ground Clearance	4.6" (11.7 cm)	
Overall Width	33.7" (85.6 cm)	41" (104 cm)
C Overall Length	92" (233.7 cm) w/bucket; 70.7" (180 cm) w/o bucket	
D Overall Height	46.1" (117.1 cm)	
E Max Operating Height	90.1" (229 cm)	
F Hinge Pin Height	65.8" (167.1 cm)	
G Dump Height	46.1" (117.1 cm)	
H Dump Angle	38-degrees	
I Reach - Fully Raised	21.8" (55.4 cm)	
Ground Speed (F/R)	0-4.5 mph (0-7.2 km/h) / 0-2.0 mph (0-3.2 km/h)	
Weight	1,904 lbs (864 kg)	2,013 lbs (907 kg)
Tip Capacity	1,580 lbs. (717 kg)	
Rated Operating Capacity (35% of Tip Capacity)*	553 lbs. (251 kg)	
Engine	Kubota D902	
Manufacturer's Gross HP Rating at RPM**	23.3 HP (17.3 kW) @ 3400 rpm	
Displacement	55 cu. in. (901cc)	
Fuel Type	Diesel	
Air Filter	Two-stage, heavy-duty, remote	
Cooling System	Liquid Cooled	
Fuel Tank	6.0 gallons (23 liters)	
Oil Capacity	3.84 quarts (3.63 liters) 2.0 quarts (2.95 liters)	
Loader Arms	Radial	
Hydraulic Pressure	3,000 PSI	
Hydraulic Flow	Traction: 16.9 gpm (each pump); Auxiliary: 13.8 gpm	
Reservoir Capacity	10.5 gallons (40 liters)	
Tracks	Sprocket-drive, 10 road wheels per side	
Traction	Dual hydrostatic pump	
Track Length	96.6" x 5.9" (245 cm x 15 cm)	96.6" x 9.5" (245 cm x 24 cm
Ground Pressure	5.0 PSI	3.5 PSI

* Per ISO 14397-1
** Per SAE 1995

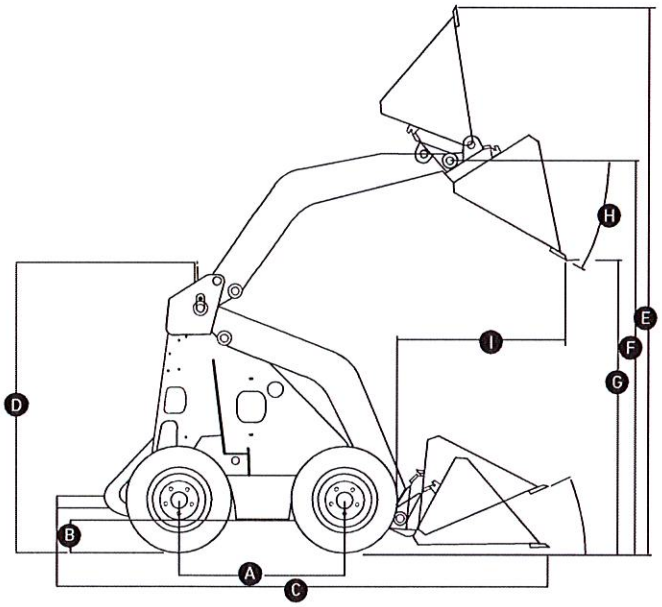


DINGO 220, 323 & 320-D SPECIFICATIONS

	TX 427 22321	TX 427 WIDE 22322
	31.2" (79 cm)	
	4.6" (11.7 cm)	
	33.7" (85.6 cm)	41" (104 cm)
	92" (233.7 cm) w/bucket; 70.7" (180 cm) w/o bucket	
	46.1" (117.1 cm)	
	90.1" (229 cm)	
	65.8" (167.1 cm)	
	46.1" (117.1 cm)	
	38-degrees	
	21.8" (55.4 cm)	
	0-4.5 mph (0-7.2 km/h) / 0-2.0 mph (0-3.2 km/h)	
	1,882 lbs (854 kg)	1,990 lbs (902 kg)
	1,530 lbs. (694 kg)	
	535 lbs. (243 kg)	
	Kohler Command Pro Series CH 740	
	25 HP (20.1 kW) @ 3600 rpm	
	44 cu. in. (725cc)	
	Gas	
	Two-stage, heavy-duty, remote	
	Air Cooled	
	6.0 gallons (23 liters)	
	2.0 quarts (2.95 liters)	
	Radial	
	3,000 PSI	
	Traction: 16.9 gpm (each pump); Auxiliary: 11.4 gpm	
	10.5 gallons (40 liters)	
	Sprocket-drive, 10 road wheels per side	
	Dual hydrostatic pump	
	96.6" x 5.9" (245 cm x 15 cm)	96.6" x 9.5" (245 cm x 24 cm)
	5.0 PSI	3.5 PSI

	DINGO 220 22317	DINGO 323 22318	DINGO 320-D 22337CP
A Wheelbase	28" (71 cm)		
B Ground Clearance	5.8" (15 cm) front & rear		
Overall Width	40.5" (103 cm) standard tires; 35" (90 cm) narrow tires		
C Overall Length	82.2" (208.8 cm) w/bucket; 62" (157.5 cm) w/o bucket		
D Overall Height	48.7" (123.7 cm)		
E Max Operating Height	91.2" (231.6 cm)		
F Hinge Pin Height	66" (167.6 cm)		
G Dump Height	47" (119 cm)		
H Dump Angle	34-degrees		
I Reach – Fully Raised	28" (71.1 cm)		
Ground Speed (F/R)	0-3.7 mph (0-6 km/h) / 0-3.7 mph (0-6 km/h)		0-3.0 mph (0-4.8 km/h) / 0-3.0 mph (0-4.8 km/h)
Weight	1,430 lbs (649 kg)	1,567 lbs (711 kg)	1,722 lbs (781 kg)
Tip Capacity	1,030 lbs (467 kg)		1,048 lbs (146 kg)
Rated Operating Capacity (50% of Tip Capacity)*	515 lbs. (234 kg)		524 lbs. (238 kg)
Engine	Kohler* Command Series CH20	Kohler* Command Series CH23	Kubota D722
Manufacturer's Gross HP Rating at RPM*	20 HP (14.9 kW) @ 3600 rpm	23 HP (17.2 kW) @ 3600 rpm	20 HP (14.9 kW) @ 3600 rpm
Displacement	38.1 cu. in. (624 cc)	41 cu. in. (674cc)	43.88 cu. in. (719 cc)
Fuel Type	Gas		Diesel
Air Filter	High-capacity, paper type w/pre-cleaner	Two-stage, heavy-duty, remote	
Cooling System	Air Cooled		Liquid Cooled
Fuel Tank	5.6 gallon (21 liter)	11.2 gallon (42.4 liter)	4 gallon (15 liter)
Oil Capacity	2 quarts (1.9 liter)		3.4 quarts (3.2 liter)
Loader Arms	Radial		
Hydraulic Pressure	3,250 PSI		
Hydraulic Flow	10.8 gpm high-flow hydraulic circuit, 4 gpm low-flow hydraulic circuit		
Reservoir Capacity	14.8 gallons (56 liter)	17 gallons (64 liter)	14.8 gallons (56 liter)

* Per ISO 14397-1
** Per SAE 1995



DIMENSIONS

- A Wheelbase
- B Ground Clearance
- C Overall Length
- D Overall Height
- E Maximum Operating Height
- F Hinge Pin Height
- G Dump Height
- H Dump Angle
- I Reach

toro.com / toro.ca

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Products depicted in this literature are for demonstration purposes only. Actual products offered for sale may vary in use, design, required attachments and safety features. We reserve the right to improve our products and make changes in specifications, design an d standard equipment without notice and without incurring obligation. See your dealer for details on all our warranties.

WHEN WE SAY **COUNT ON IT**, WE MEAN IT

Every product that carries the Toro brand is backed by over 100 years of history, innovation and timeless dependability. We never stop investing in research and development to give our customers the latest features. That's why Toro is one of the best-known, most trusted brands in the business. We also stand behind our products with a nationwide network of knowledgeable dealers for parts and service support. **Real People. Real Support.**

THERE IS NO SUBSTITUTE FOR TORO GENUINE PARTS

With Toro, quality and service don't end when you take delivery of your equipment. Genuine Toro parts are designed specifically for your machine to ensure it performs as intended. For peace of mind, insist on Toro genuine parts.

TORO. **Count on it.**

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POTESTIO BROTHERS
EQUIPMENT, INC.

7380 space Village Ave.
Colorado Springs, CO 80929
joec@pbequip.com
800-497-8770
719-550-0680
Fax 550-0773
Cell 510-5390

Fax

To:	CITY OF FORT LUPTON	**From:**	Joe Conner
Fax:	303-857-6090	**Pages:**	13
Phone:		**Date:**	11/18/2020
Re:	FTL2016XX Due 8/12/2019 10:00 am MT	**CC:**	

☐ **Urgent** X **For Review** ☐ **Please Comment** ☐ **Please Reply** ☐ **Please Recycle**

I hereby waive my right to a sealed bid,

Thank you,

Joe Conner

JOHN DEERE

****
REQUEST NO.
FTL2016XX
****

CITY OF
Fort Lupton
EST 1836
COME PAINT YOUR FUTURE WITH US

Ms. Leann Perino
Finance Director
130 South McKinley Avenue
Fort Lupton, Colorado 80621

Dear Ms. Perino:

The undersigned having become familiar with the specifications for ***Golf Course Maintenance Equipment*** and deliver to the City of Fort Lupton as set forth in the following schedule:

Item	**Equipment**	**Attachments**	**Price**
Item #1	Compact Utility Loader		No Bid
		Standard Bucket	
		Trencher	
		Soil Cultivator	
		Blade	
	Total For Compact Utility Loader with attachments		
Item #2	Broadcast Topdresser		$14,650.00
Item #3	Deep Tine Aerator		$24,525.00
Item #4	Tow-Behind Aerator	Manual Hyd. Lift	$8,125.00

The City would like all pieces of equipment to be invoiced and delivered by December 31, 2020.

****
REQUEST NO.
FTL2016XX
****

CITY OF
Fort Lupton
EST 1836
COME PAINT YOUR FUTURE WITH US

I certify that the above quotation is exclusive of any federal excise taxes and all other state and local taxes, and includes any applicable permits and fees for installation. I further certify that the items offered for intended use by the City of Fort Lupton will meet all specifications is has so indicated in this bid form. The Council of the City of Fort Lupton reserves the right to reject any or all bids, to waive any informality in bids, and to accept the bid that, in the opinion of the Council, is to the best interests of the Council and of the City of Fort Lupton. The Council of the City of Fort Lupton shall give preference to residents of Fort Lupton bidders in all cases where the bids are competitive in price and quality.

FIRM POTESTIO BROTHERS EQUIPMENT INC BY JOE CONNER joec@pbequip.com

BUSINESS ADDRESS 19020 LONGS WAY TITLE SALES

CITY, STATE, ZIP CODE PARKER, CO 80134 DATE 11/19/2020

TELEPHONE NO. 303-841-2299 FAX NO. 303-841-7039 TAXPAYER I.D.# 84-1193905

DOES YOUR BID MEET OUR SPECIFICATIONS? YES X NO____

CITY OF FORT LUPTON IS EXEMPT FROM COLORADO SALES TAXES. CERTIFICATE OF EXEMPTION NO.98-02812-0000. CITY OF FORT LUPTON FAX NUMBER IS #303-857-6090

****
REQUEST NO.
FTL2016XX
****

CITY OF
Fort Lupton
EST 1836
COME PAINT YOUR FUTURE WITH US

CITY OF FORT LUPTON

CERTIFICATION STATEMENT REGARDING ILLEGAL ALIENS

The Vendor, whose name and signature appear below, certifies and agrees as follows:

1. The Vendor shall comply with provisions of CRS 8-17.5-101 et seq.

2. The Vendor shall not knowingly employ or contract with an illegal alien to perform work under this purchase order or enter into a contact with a subcontractor that knowingly employs or contracts with an illegal alien.

3. The Vendor represents, warrants, and agrees that it (i) has verified that it does not employ any illegal aliens, through participation in the Basic Pilot Employment Verification Program administered by the Social Security Administration and Department of Homeland Security, or (ii) otherwise shall comply with the requirements of CRS 8-(2)(b)(I).

4. The Vendor shall comply with all reasonable requests made in the course of an investigation by the Colorado Department of Labor and Employment. If the Vendor fails to comply with any requirement of this provision or CRS 8-17.5-101 et seq., the City may terminate the above referenced purchase order for breach and the Vendor shall be liable for actual and consequential damages to the City.

CERTIFIED and AGREED to this 18 day of NOVEMBER, 2020.

VENDOR:

Joseph A Conner Jr
(Full Legal Name)

BY: _____
Signature of Authorized Representative(s)

VENDOR(S) CANNOT BEGIN WORK UNTIL THIS COMPLETED FORM IS RETURNED TO THE CITY OF FORT LUPTON.

EQUIPMENT WARRANTY INFORMATION

DAKOTA Peat & Equipment is hereinafter called DAKOTA

(A) WARRANTY

a. DAKOTA warrants all products manufactured by it to be free from defects in material and manufactured at the time of shipment and for twelve (12) months from date of delivery to customer. DAKOTA will furnish to the dealer, without charge, f.o.b. East Grand Forks, Minnesota, replacements for such parts as DAKOTA finds to have been defective at the time of shipment; or at DAKOTA's option, will make or authorize repairs to such parts, provided that, upon request, such parts are returned, transportation prepaid, to the factory at East Grand Forks, Minnesota.

b. This warranty shall not apply to any product that has been subjected to misuse, misapplication, neglect (including but not limited to improper maintenance), accident, improper installation, modification (including but not limited to use of unauthorized parts or attachments), adjustment, or repair. Engines, motors, and any accessories furnished with DAKOTA's products, but which are not manufactured by DAKOTA, are not warranted by DAKOTA but are sold only with the express warranty, if any, of the manufacturers thereof. THE FOREGOING IS IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED (INCLUDING THOSE OF MERCHANTABILITY AND FITNESS OF ANY PRODUCT FOR A PARTICULAR PURPOSE), AND OF ANY OTHER OBLIGATION OF LIABILITY ON THE PART OF DAKOTA.

(B) LIMITATION OF LIABILITY

a. It is expressly understood that DAKOTA's liability for its products, whether due to breach of warranty, negligence, strict liability, or otherwise, is limited to the furnishing of such replacement parts, and DAKOTA will not be liable for any other injury, loss, damage, or expense, whether direct or consequential, including but not limited to loss of use, income, profit, or production, or increased cost of operation, or spoilage of or damage to material, arising in connection with the sale, installation, use, or inability to use, or the repair or replacement of, DAKOTA's products.

b. Any operation expressly prohibited in the operating instructions or manuals furnished with the machine, or any adjustment or assembly procedure not recommended or authorized in the operating or service instructions, shall void such warranty.

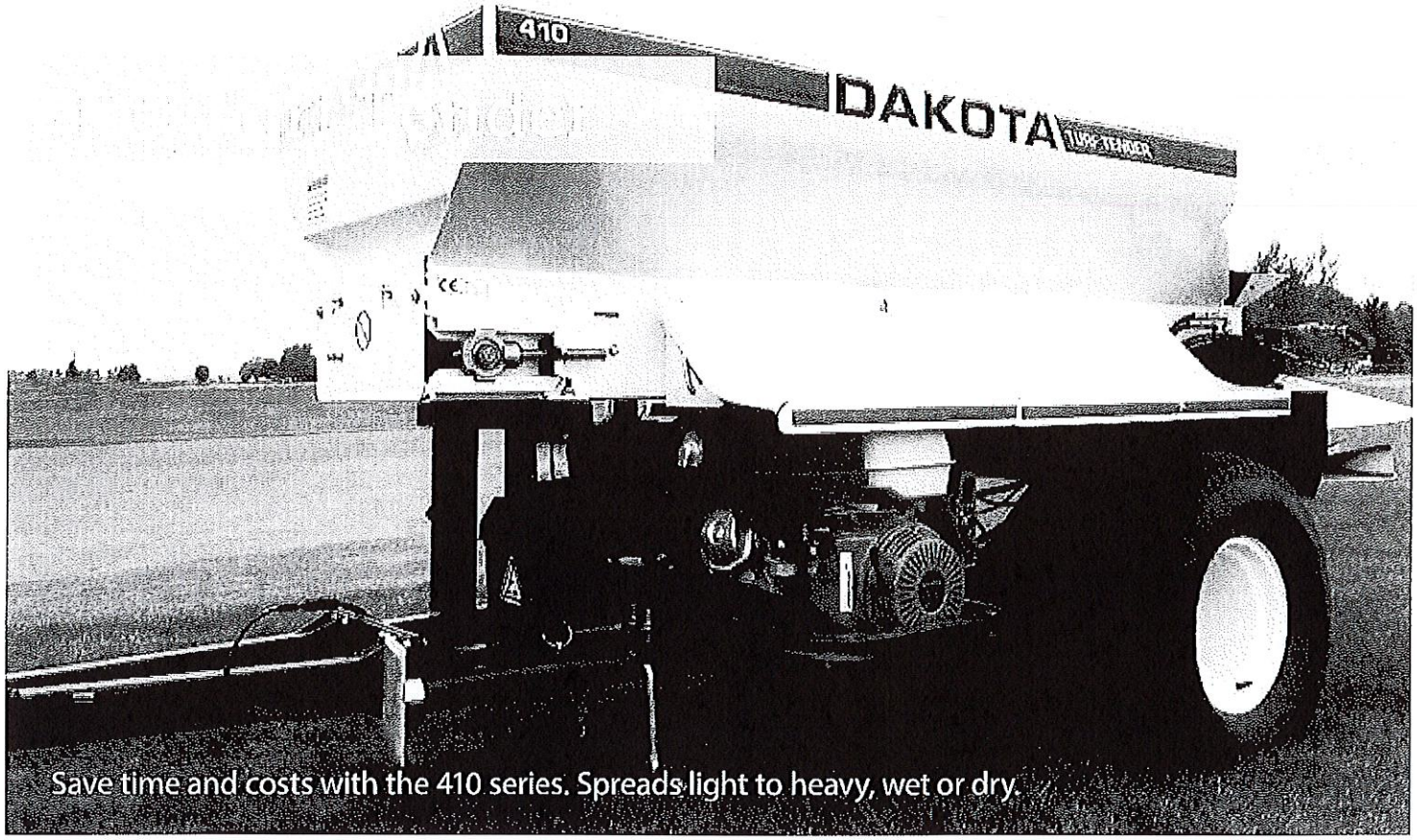
(C) REGISTRATION

a. THIS WARRANTY IS VOID UNLESS "DEALER'S SALE REPORT TO THE FACTORY" CARD IS COMPLETED AND RETURNED TO THE FACTORY AT EAST GRAND FORKS, MINNESOTA, WITHIN 30 DAYS AFTER DELIVERY OF UNIT TO CUSTOMER.

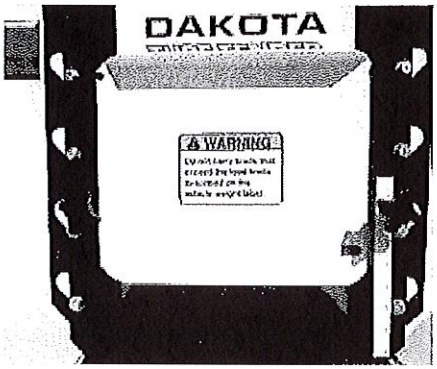
b. No Parts shall be returned under warranty unless a Return Goods Authorization (RGA) is obtained from DAKOTA.

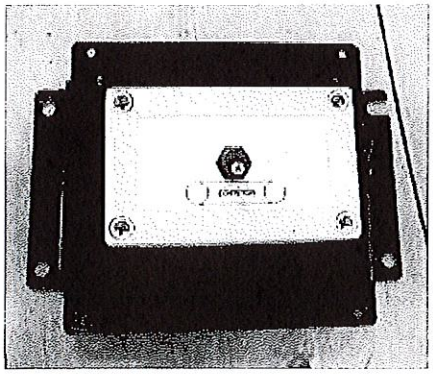
c. ALWAYS GIVE PART NAME, NUMBER AND MACHINE SERIAL NUMBER WHEN ORDERING PARTS.

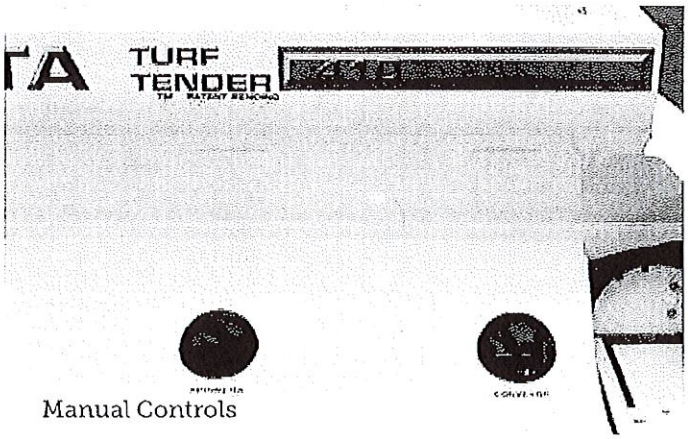
NOTICE: DAKOTA reserves the right to make changes to design or construction without obligation to incorporate such changes in equipment previously sold.



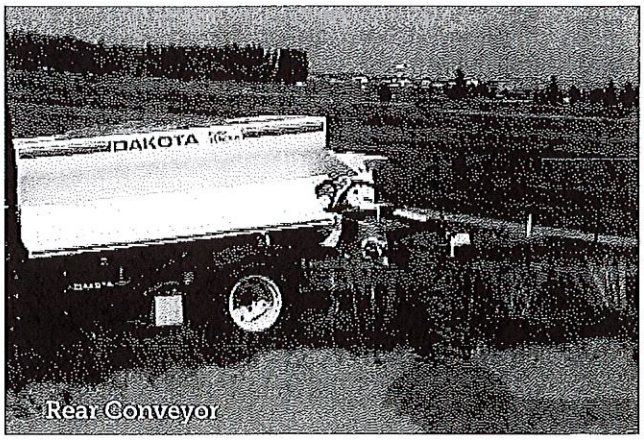
Save time and costs with the 410 series. Spreads light to heavy, wet or dry.







Manual Controls



Rear Conveyor

Features

410 Turf Tender Pull Type

Pull Unit Requirements:
› Requires 3-7 GPM. Oil flow without optional power unit
Overall Dimensions:
› Overall length = 144 in
› Overall width = 60 in
› Height = 50 in
› Weight = 920 lbs.
› Weight = 1240 lbs. (with optional power unit)
Hopper:
› Capacity = 23 cu ft. (.65m³) level, 27 cu ft. (.76m³) heaped
› Trackless 18 in PVC belt (crescent-style)
› Rear door adjusted from 0" to 7"
› Powder coat paint
› Hopper length = 76 in
Frame:
› Welded heavy-duty A-frame construction
› Jack stand
Tires:
› 2 Ultra Trac Turf Tires 26.5x14x12
Dual Spinner System:
› 2 Throw discs (24 in diameter, 6 adjustable paddles per disc)
› Quick change
› 2 hydraulic motors, 1 per spinner-disc
› Spreading width 12' to 49' variable
› Spreading application (extremely fine to very heavy)
› Capable of spreading a large variety of materials

Options

Controls:
› Electric over hydraulic machine (controls belt and spinner speed from the vehicle mounted control panel with speed gauges)
› Manual hydraulic machine (valves on the side of the machine to control the belt and spinner speed) with vehicle mounted on/off switches
Optional Spinners:
› Black spinners (fertilizer)
› Green spinners (grass seed)
Optional Power Unit:
› Honda 11 hp engine
› Electric start
› 1.72 US Gal. fuel tank
› Max. Pressure = 2500 psi
› Max. Flow = 7.26 GPM
› Reservoir size = 11.5 gal.
Optional Rear Conveyor
Optional Auto Rear Door
Optional Roll Tarp

410 Turf Tender Mounted

Models: Mounted
› Mounts on John Deer Pro Gator™, Toro Workman™, or Jacobsen Truckster™ XD
Requirements:
› John Deere™ PTO Hydraulic kit required on John Deere ProGator™
› DAKOTA Auxiliary hydraulic kit required on Toro Workman™ on models older than 2001, 2002 and newer requires Toro High Flow hydraulics
Overall Dimensions:
› Overall length = 103 in
› Overall width = 60 in
› Height = 54 in
› Weight = 780 lbs. with sub-frame
Hopper:
› Capacity = 23 cu ft. (.65m³) level, 27 cu ft. (.76m³) heaped (Note: Do not exceed recommended vehicle load rating for John Deer Pro Gator™, Toro Workman™, or Jacobsen Truckster™ XD)
› Trackless 18 in PVC belt (crescent-style)
› Rear door adjusted from 0" to 7"
› Powder coat paint
› Hopper length = 76 in
Frame:
› Welded heavy-duty sub-frame
› Mounts using existing cylinder and box mount
Dual Spinner System:
› 2 Throw discs (24 in diameter, 6 adjustable paddles per disc)
› Quick change
› 2 hydraulic motors, 1 per spinner-disc
› Spreading width = 12' to 40' variable
› Spreading application is adjustable (extremely fine to very heavy)
› Capable of spreading a large variety of materials

Options

Controls:
› Electric over hydraulic machine (controls belt and spinner speed from the vehicle mounted control panel with speed gauges)
› Manual hydraulic machine (valves on the side of the machine to control the belt and spinner speed) with vehicle mounted on/off switches
Optional Spinners:
› Black spinners (fertilizer)
› Green spinners (grass seed)
Optional Parking Stand:
› Easy on/off using 4 legs
› Rear legs are jack stands
Optional Rear Conveyor
Optional Auto Rear Door

See an important update for how we're operating during COVID-19

denmann
erica, LLC
ed to Turf.

Terms and Conditions of Sale

Shipment. (a) Goods will be shipped by Wiedenmann North America, LLC ("WNA") FOB the WNA warehouse, Savannah, Georgia (Incoterms 2000). (b) Delivery by WNA shall be made within a reasonable period of time based upon availability. WNA assumes no responsibility for delays prior to or during shipment due to causes beyond its control. (c) Goods shall be packaged by WNA as required to assure common carrier acceptance. (d) A packing slip and bill of lading will be supplied with each shipment referenced by the buyer's purchase order number and WNA's part number(s). (e) All claims by buyer for shortage or damage in transit are to be made promptly to the shipper with a copy to WNA.

Additional Charges. WNA may assess reasonable additional charges to the buyer for any changes in the order including, but not limited to, charges occasioned by changes in specifications, quantities, delivery, schedule or cancellation.

Restocking Charges. WNA may assess a 30% restocking fee on any goods returned to WNA.

Specification Changes. WNA reserves the right to manufacture to later and more current engineering specifications including the latest ordinance engineering changes where applicable if such current specifications do not affect interchangeability or manufacturing costs to either WNA or Buyer.

Sales. All sales are deemed made in the State of Georgia. The parties consent to exclusive jurisdiction and venue in the federal and state courts of Chatham County, Georgia for any dispute regarding the goods sold subject to these Terms.

Warranties. WNA warranties all goods sold, when properly installed, to be free from defects in material and workmanship under normal use and service for a period of one (1) year. The warranty period starts when the good is put into service or 24 months after the shipping date from WNA – whatever comes first. WNA will honor warranty only if the warranty card is returned. This warranty is void with respect to any product which has been altered in any way from its manufactured condition such as intentional modification, accident, corrosion, misuse, failure to provide necessary and reasonable maintenance and its exclusive of normal wear. Written authorization from WNA must be obtained prior to returning any part or parts. No charges for transportation or for labor performed on WNA products by unauthorized persons will be allowed under this warranty.

Disclaimers. THERE ARE NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING THE WARRANTY OF MERCHANTABILITY OR A WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE EXTENDING BEYOND THAT SET FORTH IN THE PARAGRAPH ABOVE.

General Limitation of Liability. WNA's liability under this agreement and in particular, WNA's liability for breach of Warranty shall be limited to repair or replacement of any defective or nonconforming equipment or, in the event the material cannot be repaired or replaced, refund of the purchase price. Goods for which a refund is due must be returned to WNA with transportation charges prepaid. WNA and Buyer agree that this shall be the buyers sole and exclusive remedy and WNA shall not be liable in any event for proximate, incidental, consequential or other damages, including but not limited to damages for loss of production, lost profits or injury to persons or property.

Indemnity – General. WNA will not indemnify or hold harmless any party or parties from or against any claim, suit, demand or cost arising out of the use, manufacture, or operation of material supplied herein.

Indemnity – Patent. WNA warrants that it will indemnify Buyer for an award of damages against Buyer by a court of competent jurisdiction for infringement of a valid U.S. or Canadian patent when material is used in accordance with WNA's designs and specifications. Buyer shall indemnify WNA against all liability, loss, cost, or expense from the infringement or alleged infringement of any patent or patents arising from the manufacture, use or sale of any material delivered to Buyer where the material is developed for the Buyer in accordance with Buyer's designs, specifications or recommendations.

Trademarks. The Buyer may not remove or deface any trademarks, tradenames, servicemarks or logos attached to or made a part of the goods sold subject to these Terms.

Assignment. WNA reserves the right to assign any portion of this contract provided however, such assignment shall not relieve WNA's obligation of performance. This contract shall not be assignable by Buyer without WNA's consent.

Payment and Collection. Payment for all goods shipped shall be made in accordance with the terms set forth in the invoice. Late payments shall accrue an immediate late charge of 5% of the balance and thereafter shall accrue interest at the rate of .0005 of the daily balance per day until paid.

Waiver. The failure of either party to the performance of any term of this contract or the waiver by either party of any breach under the contract shall not prevent a subsequent enforcement of the term or be deemed a waiver of any subsequent breach.

Construction – Governing Law. These terms shall be construed in accordance with the laws of the state of Georgia and in particular the Georgia Uniform Commercial Code.

Purchase Price. The purchase price will be that on the current price list published by WNA, which is incorporated herein by reference unless covered by a specific valid quotation to Buyer. All prices include applicable federal excise tax unless otherwise noted.

Amendment. These Terms are not altered by oral statements or by contrary terms in Buyer documents (such as purchase orders) and may only be altered by a written instrument signed by an officer of WNA.

Security Interest. To secure the performance and payment of all obligations of Buyer to WNA,
whether now existing or hereinafter incurred and of every kind and character, Buyer grants to WNA a Security Interest in all goods of every type and description purchased from or financed by Company and in proceeds there from. The collateral includes all of the foregoing described items now in the possession of or hereafter acquired by Buyer and all replacement, substitutions and additions thereto. Buyer hereby consents to WNA filing a financing statement to perfect this lien.

initial

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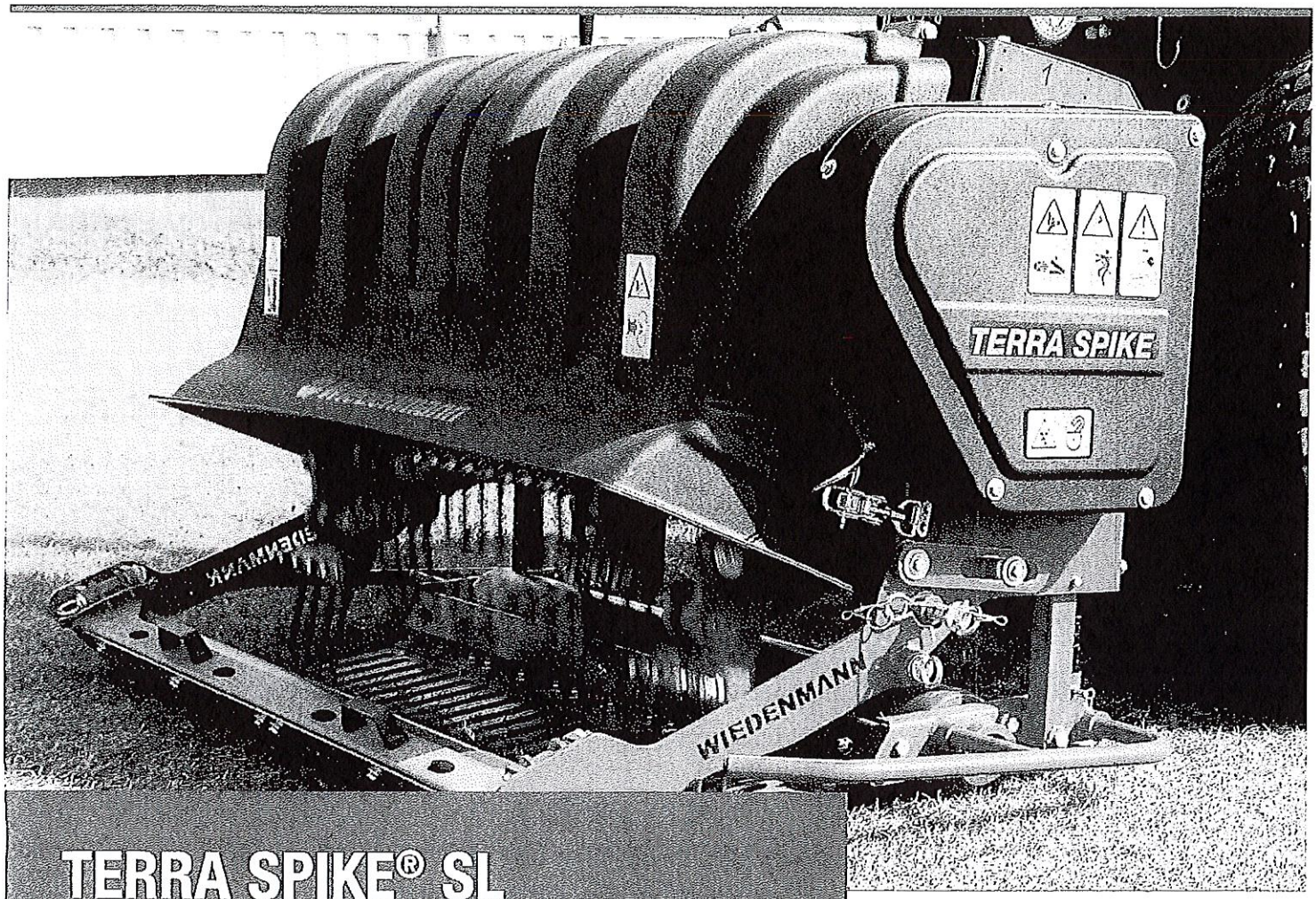
Wiedenmann®



TERRA SPIKE® SL

Deep Tine Aerator
To remove compaction on sand-based golf greens, tees, and athletic fields

Devoted to Turf. www.wiedenmannusa.com

TERRA SPIKE® SL

The lightest of the Terra Spikes

With the TERRA SPIKE® SL, Wiedenmann has developed a machine that fulfills customer demands for a machine that is lightweight with deep working depth while maintaining high productivity. Due to its weight of less than 1050 pounds, operating with tractors in the 25HP class is possible.

Time is money – this guiding principle applies today more than ever in professional turf maintenance. Whether you maintain athletic fields or golf courses, the time available for maintenance is continually decreasing while players' expectations are increasing. Regular deep tine aerifying is one of the most important ways to maintain healthy root growth.

When compaction is broken, roots can penetrate deeper into the ground and make better use of water and nutrients. Water flow and air balance are improved, thatch is removed, and the shear strength of the root zone increases. Wiedenmann has revolutionized turf maintenance and set new standards with respect to speed, productivity, and labor quality. In addition, the TERRA SPIKE® SL utilizes VibraStop, which reduces stress on your tractor and your body.

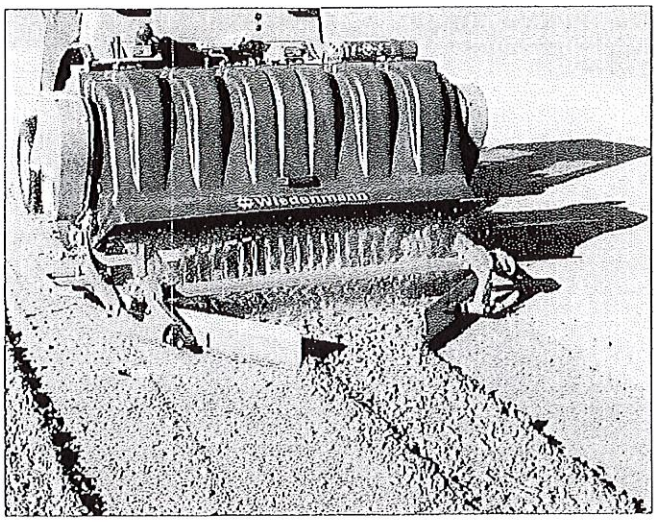
The TwinDrive drive concept can be equipped with various transmission ratios so that the crankshaft speed can be optimally adapted to the performance of the available tractor.

With the exclusive QuickSet system, you can easily change the settings of the working depth or the heave angle with just a few manual operations.

The central adjustment of the heave angle allows you to set the optimal adaptation of the loosening intensity to the respective ground conditions and degree of compaction. With the exclusive QuickChange system, arduous and time consuming tine replacements are a chore of the past.

The TERRA SPIKE® SL is extremely service friendly. The machine has no metallic return springs and the number of lubricating points has been reduced to a minimum.

The high productivity of the TERRA SPIKE® SL and hole quality perfection will convince you that this is the ideal machine for aerating your greens, tees, and finer surfaces.

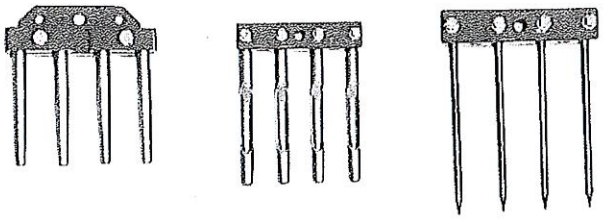


Windrow

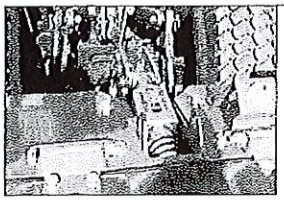
When using coring tines on the TERRA SPIKE® SL, the cores can automatically be aligned by using the optional windrow. This helps facililates the subsequent removal of the cores.

Tine Program

The TERRA SPIKE® SL can be equipped with solid tines from 7/16" to 5/8" in diameter, as well as with coring tines from 1/4" – 3/4" in diameter. These tines fit into the standard tine heads with 1/2" (12 mm) shanks. Wiedenmann also offers tine heads for top-ejecting coring tines with 1/2" and 5/8" diameter.

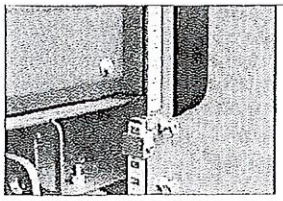


The advantages



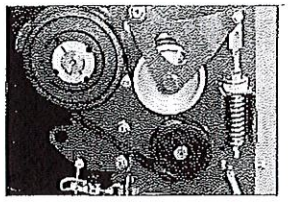
VibraStop

The exclusive VibraStop system protects the driver and the tractor from vibrations and helps protect the linkage when hitting an object, such as a rock. VibraStop meets all requirements of the EU Directive 78/764/EEC with respect to whole body vibrations. Vibrations that affect the operator are significantly reduced by the VibraStop system.



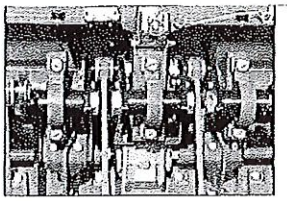
QuickChange

The TERRA SPIKE® SL is equipped with exchangeable tine holders. The tine heads can be rapidly exchanged with only one screw. Standard equipment for the machine includes tine heads for tines with ½" (12 mm) shanks. Tine heads for top-ejecting coring tines are available as an option.



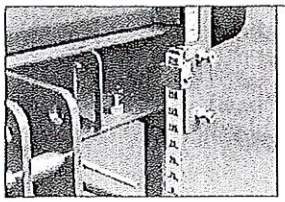
TwinDrive

The exclusive TwinDrive symmetrically drives the power from both sides of the continuous crankshaft, thus eliminating any timing issues. If harmful load peaks occur while working, such as when a tine strikes a stone, the special v-ribbed belt on either side absorbs the impact. The encapsulated drive is securely protected from dust and dirt.



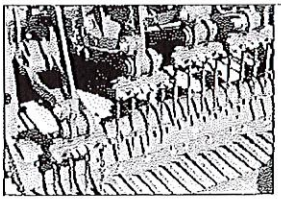
Crankshaft

The stable, computer optimized crankshaft is supported by large maintenance free sealed bearings. The gearbox has been moved forward in order to optimize the position of the center of gravity.



QuickSet

The working depth is rapidly and correctly adjusted with a crank, without other tools. The heave angle is centrally adjustable with the supplied tool. The working depth and the heave angle are easily readable on a large scale.



Turf retainer

The optional turf retainer prevents damage to turf with poor roots. The turf retainer has been designed to match tine spacing.

TECHNICAL DATA		TECHNICAL DATA	
Working width in inches:	55"	Weight with rear roller in approximate pounds:	1,050 lbs.
Maximum working depth in inches:	8"	Dimensions L/W/H in approximate inches:	39"/ 70"/ 45"
QuickSet/QuickChange/VibraStop/Twin Drive	Series	Solid tine diameters in inches:	3/16", ¼", 5/16", ½", 5/8"
Minimum lifting capacity of tractor in pounds:	1,375 lbs.		
Coring tine diameters in inches:	¼", 5/16", ½", ¾"	Rear roller:	Series
Windrow:	Optional	Turf retainer:	Optional
Exchangeable tine heads for upwards ejecting coring tines:			Optional
Area coverage in continuous operation in square feet per hour at a crankshaft speed:		360 rpm – at 0.8 mph square hole spacing 2"	approx. 17,868 sq.ft./hr.
Area coverage in continuous operation in square feet per hour at a crankshaft speed:		485 rpm - at 1.0 mph square hole spacing 2"	approx. 23,680 sq.ft./hr.

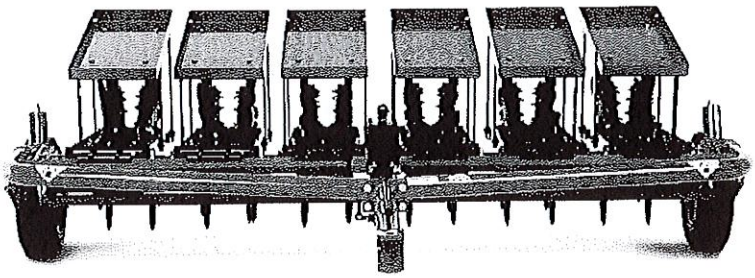
Descriptions and illustrations are not binding. Changes in design and execution reserved.

The First Name in Turf Renovation™

RENOVAIRE®

When the terrain gets tough, the Renovaire® aerator gets going. This hard-working piece of equipment is at its best on large, undulating turf areas such as golf course fairways and roughs.

With each pair of tine wheels mounted independently from the others, aeration follows the contour of the landscape, providing unmatched coring precision on undulating surfaces. With six feet of aerating width and an operating speed of four mph, the Renovaire® is capable of completing three acres in a single hour. Your choice of coring, spoon or slicing tines penetrate to a depth of four inches. Each weight tray is capable of holding up to 150 pounds, allowing pristine aeration even in the most heavily compacted soil. Just attach it to any tractor capable of towing 1,600 pounds and get ready to conquer the ups and downs of the most challenging surfaces.



SPECIFICATIONS

UNIT

Power	Tractor mounted
Lubrication	Pressure grease fittings at pivot points and tine wheels
Aerating Wheel Axle	1.25 in. (32 mm) diameter
Aerating Wheels	12, cast iron with sintered bushings; pressure lubrication fitting; grooved for mounting aerating tines on both sides; each wheel weighs 75 lb (34 kg)
Tines	8 per wheel (96 total); standard one set 0.75 in. (19 mm) coring; wheels can be mounted with double set of tines, 16 per wheel (192 total)
Coring Depth	Up to 4 in. (102 mm)
Aerating Width	72 in. (1,829 mm)
Aeration Pattern	6 in. x 6 in. (152 mm x 152 mm) with single tines; 3 in. x 3 in. (76 mm x 76 mm) with double tines
Holes per SqFt	Up to 9 (.84 m²) with single tines; up to 18 (1.7 m²) with double tines
Productivity	3 acres/hr (1.2 ha/hr) at 4 mph (6 km/hr)
Towing Speed	Up to 10 mph (16 km/hr)
Transport Tires	16 x 4.80-8, 6-ply
Transport Lift	Hydraulic cylinder
Weight Tray	Set of 6 included

OPTIONAL EQIUPMENT

Manual hydraulic pump

DIMENSIONS

Weight	1,518 lb (689 kg)
Width	96 in. (2,438 mm)
Length	60 in. (1,524 mm)
Height	36 in. (914 mm)

Specifications subject to change without notice.

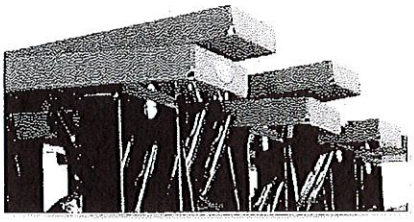
TINES

515197*	Tine, Coring 3/4" (19mm), Back Discharge, Thick Wall
515196	Tine, Coring 1/2" (13mm), Back Discharge, Thick Wall
520404	Tine, Spoon

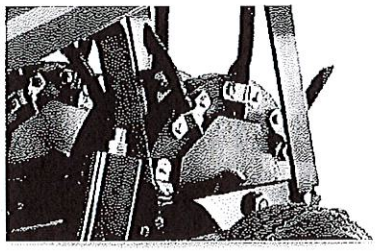
KNIVES

521155	Deep Slicing Knife
515193	Shallow Slicing Knife

*Standard configuration



Each weight tray is capable of holding up to 150 pounds for better penetration in heavily compacted soil.



Independently mounted tine wheels follow terrain contours closely for clean, precise aeration of undulated surfaces.

WWW.RYANTURF.COM

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WARRANTY

RYAN® TWO (2) YEAR LIMITED WARRANTY

2-Year Limited Warranty

Ryan® provides a two (2) year limited warranty to the original purchaser of any new RYAN® Turf Renovation Product, Attachment or Accessory from any authorized RYAN dealer.

Your **local RYAN® dealer (/ryan-dealer-locator/)** will repair or replace, at its option, any covered part found to be defective in material or workmanship during the warranty term specified herein. Warranty service must be performed by an authorized RYAN® dealer. Warranty service will be performed without charge to the purchaser for parts and labor.

Service Parts are warranted for a period of 180 DAYS from the date of purchase. RYAN® makes no warranty with respect to engines, tires, batteries, belts, regulators, starter-generators or other parts not of its manufacture. The engine warranty is covered by the engine manufacturer, and these other parts may be covered by the warranties of their respective manufacturers. Consult the Operator's Manual of the engine provided with your product or ask an authorized dealer for the terms and conditions of these warranties.

For additional information or technical support please **contact us (/contact-ryan/)**. Warranty terms and conditions are available at your **local dealer (/ryan-dealer-locator/)**.

Download Ryan® Warranty Statement (PDF) **(https://www.ryanturf.com/coming-soon/)**

ENGINE MANUFACTURERS

Briggs & Stratton®
www.briggsandstratton.com (http://www.briggsandstratton.com/)

Honda®
www.hondaengines.com (http://www.hondaengines.com/)

RYAN TURF

Dealer & Distributor Login (https://www.schillergcpro.com/)
Financing (/ryan-financing/)
Catalog (/free-ryan-catalog/)

Privacy Policy (/ryan-privacy-policy/)
Terms of Use (/ryan-terms-of-use/)

CITY OF FORT LUPTON
CITY COUNCIL

Zo Stieber, Mayor

Shannon Rhoda, Ward 1
Chris Ceretto, Ward 2
Michael Sanchez, Ward 3

David Crespin, Ward 1
Tommy Holton, Ward 2
Bruce Fitzgerald, Ward 3

AM 2020-199

PURCHASE OF A DEEPTINE AERATOR AT COYOTE CREEK GOLF COURSE

I. Agenda Date: Council Meeting – December 1, 2020

II. Attachments:
a. Bid from LL Johnson
b. Bid from Potestio Brothers

III. Summary Statement:

Coyote Creek Golf Course is looking to purchase a Deep Tine Aerator to assist with aeration of greens, tees and fairways.

IV. Submitted by: _____
Tyler Tarpley

V. Finance Reviewed _____
Finance Director

VI. Approved for Presentation: _____
City Administrator

VII. Attorney Reviewed _____ Approved _____ Pending Approval

VIII. Certification of Council Approval: _____ _____
City Clerk Date

IX. Detail of Issue/Request:

The ProCore SR54 deep-tine aerator will be a new piece of equipment for Coyote Creek Golf Course. The current aerator used to aerify fairways has the ability to make holes at a depth of four inches. The new deep-tine aerator will be able to create hole at a depth of up to ten inches. This will allow roots and water to grow deeper into the ground. It also has the ability to fracture the soil at ten inches creating a bigger cavity at the bottom of the hole. Using this type of aerator will help penetrate the compaction layer typically found within the four inches. In 2015 we contracted a company to deep tine three acres of greens at a cost of $5,000. Staff would be able to do all the greens and also all 27 acres of fairways in house.

An RFP was issued for this purchase, LL Johnson and Potestio Brothers were the only two companies to complete and submit bids. LL Johnson was the low bid at $19,601.85.

X. Legal/Political Considerations:

N/A

XI. Alternatives/Options:

Do not approve the purchase of the Deep Tine Aerator

XII. Financial Considerations:

The bid from LL Johnson for the Deep Tine Aerator is for $19,601.85 and will require a supplemental budget resolution.

XIII. Staff Recommendation:

Staff recommends the purchase of the Deep Tine Aerator from LL Johnson for $19,601.85.

****
REQUEST NO.
FTL2016XX
****

CITY OF
Fort Lupton
EST 1836
COME PAINT YOUR FUTURE WITH US

Ms. Leann Perino
Finance Director
130 South McKinley Avenue
Fort Lupton, Colorado 80621

Dear Ms. Perino:

The undersigned having become familiar with the specifications for ***Golf Course Maintenance Equipment*** and deliver to the City of Fort Lupton as set forth in the following schedule:

Item	**Equipment**	**Attachments**	**Price**
Item #1	Compact Utility Loader		$25,522.00
		Standard Bucket	$599.00
		Trencher	$5261.00
		Soil Cultivator	$6,337.00
		Blade	$1,950.00
	Total For Compact Utility Loader with attachments		
Item #2	Broadcast Topdresser		$14,787.06
Item #3	Deep Tine Aerator		$19,601.85
Item #4	Tow-Behind Aerator		$8,468.88

The City would like all pieces of equipment to be invoiced and delivered by December 31, 2020.

LL JOHNSON
4700 HOLLY ST
DENVER, CO 80216

11/17/2020

CITY OF FORT LUPTON
FOR:COYOTE CREEK GOLF COURSE
ATTN: MIKE MCNAY

PH:303-350-5252
FAX:
E-MAIL:mmcnay@fortluptonco.gov

DINGO SYSTEM QUOTE

		LIST PRICE	YOUR PRICE
22324	DINGO 525TX DIESEL WIDE TRACK DRIVE	$ 30,750.00	$ 25,522.00
	SER#		
22409	STANDARD BUCKET 42"	$ 725.00	$ 599.00
	SER#		
22473	HIGH TORQUE TRENCHER HEAD	$ 4,395.00	$ 3,647.00
	SER#		
22976	3 FT BOOM	$ 800.00	$ 664.00
	SER#		
22487	3'X 4" COMBO TRENCHER CHAIN	$ 1,145	$ 950.00
	SER#		
23102	SOIL CULTIVATOR	$ 7,635.00	$ 6,337.00
	SER#		
35-27700	KWIK WAY BACKFILL BLADE AND SNOW	$ 2,385.00	$ 1,950.00
	SER# THIS IS A BETTER BLADE THAN THE		
	TORO BLADE AND LESS MONEY	SUB TOTAL	$ 39,669.00
	NO	TAX	
		TOTAL	
	PRICES SUBJECT TO CHANGE WITHOUT NOTICE		

LL JOHNSON EST. 1976 DISTRIBUTING COMPANY

4700 Holly Street
Denver, CO 80216
Mobile: 720-641-3864
Office: 303-394-6673

TORO. Count on it.

City of Fort Lupton

Attn: Mike Mcnay

11/17/2020

Qty	Model Number	Description	MSRP	2021 MAPO
1	**44751**	**ProPass 200 Wireless**	**$ 14,416.00**	**$ 11,273.31**
1	44724	Propass Tow Chassis And Fender Kit	$ 3,423.00	$ 2,676.79
1	44706	Tow Chasis Hose Assembly	$ 343.00	$ 268.23
		MAPO Service Fee	$ 727.28	$ 568.73
		SUB TOTAL	**$ 18,909.28**	**$ 14,787.06**

Qty	Model Number	Description	MSRP	2021 MAPO
1	**44856**	**Turf Aerator 686**	**$ 9,891.00**	**$ 7,734.76**
96	108-9299	3/4 Inch Spoon Tine Closed	$ 522.24	$ 408.39
		MAPO Service Fee	$ 416.53	$ 325.73
		SUB TOTAL	**$ 10,829.77**	**$ 8,468.88**

Qty	Model Number	Description	MSRP	2021 MAPO
1	**09931**	**ProCore SR54**	**$ 23,053.00**	**$ 18,027.45**
1	09952	Rear Roller SR54	$ 954.00	$ 746.03
18	SGS08500	Solid Tine, 12mm x 8.00 Inch [12mm MNT]	$ 95.22	$ 74.46
		MAPO Service Fee	$ 964.09	$ 753.92
		SUB TOTAL	**$ 25,066.31**	**$ 19,601.85**

GRAND TOTAL	**$ 54,805.36**	**$ 42,857.79**

I am sending our current pricing information on the Toro Commercial Turf products that you are interested in. These prices are from our current MAPO contract #2017025 available to all of our tax supported accounts. The Service Fee listed above covers freight, set-up and delivery charges.

* All Toro equipment comes with a two year or 1,500 hour warranty

Thank you for the opportunity to quote you on the equipment listed above. The prices are guaranteed through May 20th 2021. The equipment pricing includes all set up and delivery.

Please feel free to call me with any questions.

Sincerely,

Brandon Bollerud
Northern Territory Manager

Turf Aerator 686/687

TOW-BEHIND LARGE AREA AERATORS

FEATURES

- *Productive 78" (198 cm) aeration swath*
- *Aerate up to 10 mph (16.1 km/h)*
- *Slicing and core aerating tines available*
- *3-point (687) or tow type (686)*

Productive Aeration. Simple Design.

The 686 and 687 Turf Aerators are an efficient and effective way to aerate large turf areas. Designed with 70 pound (31.75 kg) cast wheels and a unique floating head design, these aerators give excellent depth and ground following capabilities. For highly compacted or unusually uneven grounds, optional rear weights are available.

Toro Turf Aerator 686

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Call your Toro distributor at 800-803-8676

Turf Aerators 686 & 687

The 686 and 687 Turf Aerators give excellent depth performance and follow ground contours, vertically and horizontally, like no other aerator available.

(Turf Aerator 686 shown)

	TURF AERATOR 686, MODEL 44856	TURF AERATOR 687, MODEL 44867
CAST WHEELS	3 sets of 4, each set moves independently. 70 lbs. (32 kg), 13" (33 cm) diameter.	
AERATING SWATH	78" (198 cm)	78" (198 cm)
TINES	Choice of 1/2" (12.7 mm) or 3/4" (19 mm) open or closed tines. 4" (10 cm) and 6" (15 cm) slicing blades.	
PATTERN	6" (15 cm) forward. 3" (8 cm) lateral	
HITCH	Drop pin, tow type with hydraulic cylinder for lift, hand pump standard.	3 pt., Category 1.
OPERATING SPEED	1-10 mph (1.6-16.1 km/h)	1-10 mph (1.6-16.1 km/h)
LENGTH	78" (198 cm)	48" (122 cm)
WIDTH	90" (229 cm)	82" (208 cm)
HEIGHT	Approx. 40" (102 cm)	Approx. 40" (102 cm)
OPTIONS	Weights: 35 lbs. (16 kg) each, 2 maximum per coring head. Tractor Remote Kit, Model 68-608-3521. **Note:** Includes weights, but additional weights can be added.	Weights: 35 lbs. (16 kg) each, 2 maximum per coring head; set of 3. **Note:** Includes weights, but additional weights can be added.
SHIPPING WEIGHT	1,420 lbs. (644 kg)	1,300 lbs. (590 kg)
WARRANTY	Two-year limited warranty; Refer to the Operator's Manual for further details.	

*Specifications and design subject to change without notice. Products depicted in this literature are for demonstration purposes only. Actual products offered for sale may vary in design, required attachments and safety features. Consult your local Toro Distributor.

ProPass™ 200

BROADCAST TOPDRESSER

FEATURES

Accurate – *Color-coded operating system delivers a perfect spread every time. Repeatable settings for consistent operation and defined edges.*

Wireless Remote Operation – *Available wireless controller allows real-time adjustments. Make quick setting changes and store settings for future use. Base model features a wired controller.*

Spread Consistency: *Ultra-light to ultra-heavy. Evenly apply materials from 9' (2.74 m) narrow to 30' (9.1 m) wide with the use of our unique "drop zone" patented sliding adjustment.*

Dependable – *Low maintenance and easy cleaning procedures provide long life and solid performance.*

Versatile – *The twin spinner accessory can be swapped out with a 270 degree swivel cross-conveyor quickly and easily without tools.*

Choice of Configurations – *Available as a bed mounted version, a trailer version with either engine or vehicle hydraulic power, or as a fifth wheel trailer version.*

Why Settle? Leave the guesswork to the other guys.

The ProPass 200 series broadcast-style topdressers provide the ultimate in application versatility and precision. Intuitive color-coded adjustment settings deliver extremely accurate spread patterns from ultra-light dustings to ultra-heavy aeration hole filling applications from the first pass, without the guesswork. The unique four-wheel, walking-beam suspension means a light footprint that is easy on the most sensitive turf. Select from a range of configurations and controls to match your needs, tow vehicle and budget. If you are looking for one topdresser to do it all - the ProPass 200 is the only one.

Trailer Version

- *Chassis with 4-wheel walking beam suspension*
- *11 hp (8.2 kW) engine-powered hydraulics or vehicle-powered hydraulics*

Utility Vehicle Mounted Version

- *Vehicle-powered hydraulics*
- *Storage stands for removal and storage*

Call your Toro distributor at 800-803-8676

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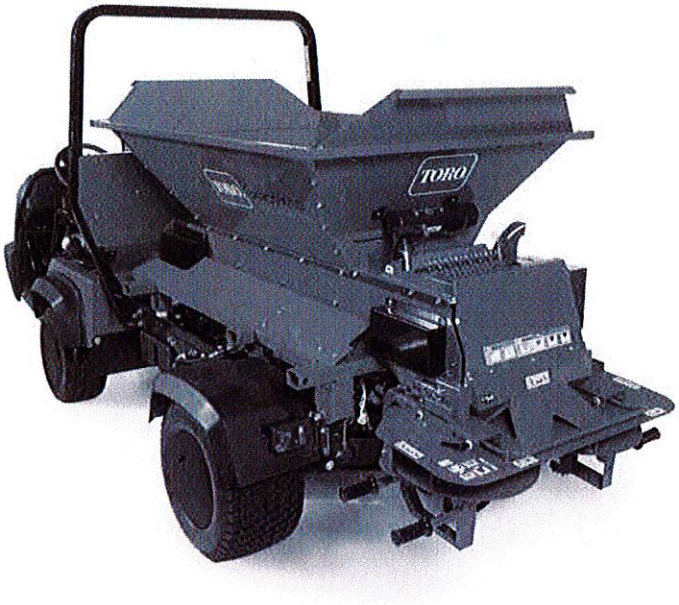
ProPass™ 200

The ProPass 200 Series broadcast-style topdressers provide the ultimate in application versatility. Intuitive color-coded adjustment settings deliver extremely accurate spread patterns from ultra-light dustings to ultra-heavy aeration filling applications. The four-wheel, walking-beam suspension means a light footprint that is easy on the most sensitive turf. If you are looking for one topdresser to do it all – the ProPass 200 is the only one. Choice of bed-mounted or trailer configurations and manual or wireless controls.



	PROPASS 200, MODEL 44701 / PROPASS 200 WIRELESS, MODEL 44751*		
GENERAL	Hopper Capacity: 21 ft³ / 0.54 m³ struck (25 ft³ / 0.71 m³ heaped) Controls: standard or electronic wireless Belt: One-piece vulcanized, self-tracking (no seams or staples) Hydraulic Power Pack (optional): 11 hp (8.2 Kw) engine Cross conveyor / swivel kit assembly (option): cross conveyor rotates 270 degrees		
SPREAD WIDTH	30' (9.1 meters)		
WEIGHT	Base model: 546 lbs (248 kg) Tow behind chassis: 480 lbs (218 kg) Truck mount kit: 90 lbs (41 kg) Twin spinner: 140 lbs (66 kg) Truck mount storage stand: 65 lbs (30 kg) Hydraulic power pack engine: (dry) 220 lbs (100 kg) Cross conveyor / swivel kit assembly: 140 lbs (63.5 kg)		
DIMENSIONS	**Tow-Behind Configuration** Length 134 in (3.4 m) Height 56 in (1.4 m) Width 65 in (1.7 m) Total unit weight: 1166 lbs (531 kg) Payload 2,000 lbs (905 kg)	**Truck Mount Configuration** Length 78 in (1.98 m) Height 56 in (1.4 m) Width 65 in (1.7 m) Total unit weight: 776 lbs (355 kg) Payload: 2,000 lbs (905 kg)	**Cross Conveyor Configuration** Length 65 in (1.7 m) Belt width: 8 in (20.3 cm) seamless
TIRES ON CHASSIS	24 x 13 x 12 in (60 x 32.5 x 30 cm) , 4 ply Suspension: 4-wheel walking beam		
TOW VEHICLE REQUIREMENTS	Towing capacity: 3,400 lbs (1550 kg) Tongue weight: 300 lbs (136 kg)		
HYDRAULICS	Minimum 6 US gal/m @ 2,000 psi (23 L/m @ 138 bar) Maximum 10 US gal/m @ 2,800 psi (38 L/m @ 190 bar)		
WARRANTY	Two-year limited warranty. Refer to operator's manual for further details.		
CE REQUIREMENTS	Meets the CE requirements for the EU		

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ProCore® SR Series

DEEP-TINE AERATORS

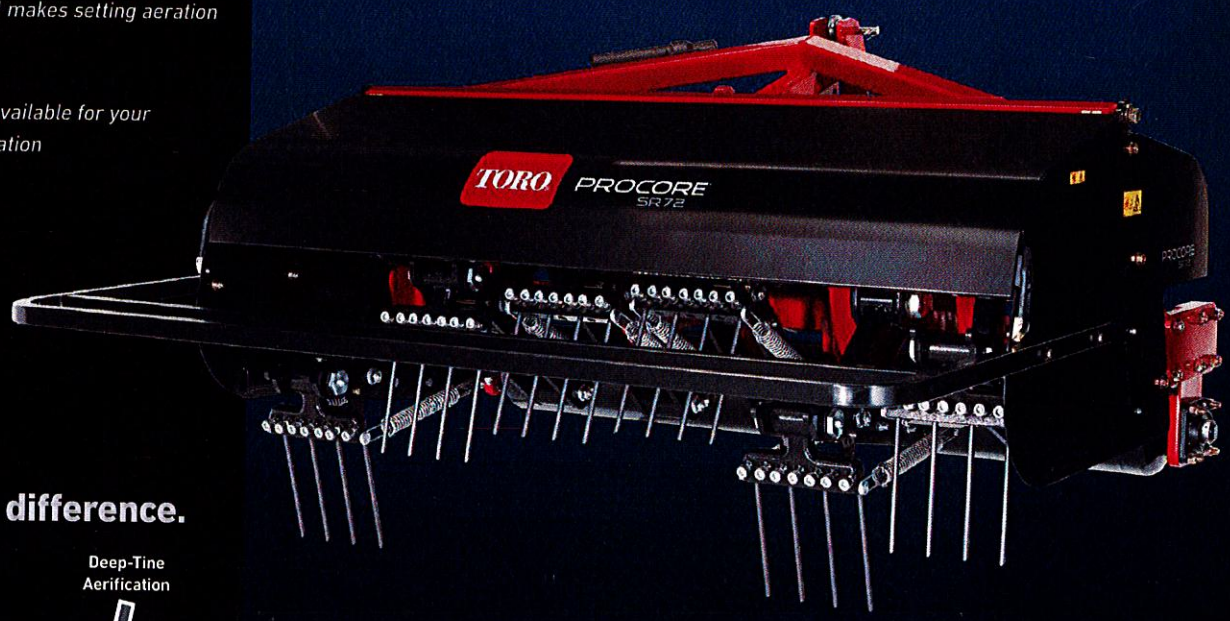
FEATURES

Deep-tine aerfication relieves soil compaction at lower soil levels than typical aerification. The tines fracture the soil creating channels through the root zone allowing oxygen, water and critical nutrients to penetrate deep into the soil profile.

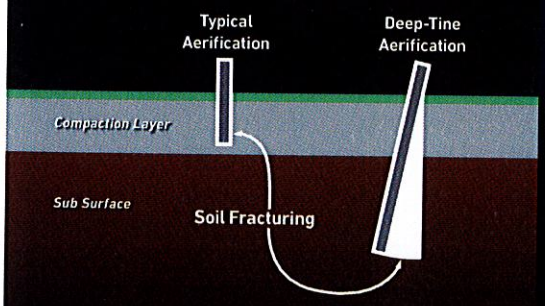
- *Multiple high-performance units for a wide variety of aeration applications*
- *Aeration widths of 54"-73" (1.37 m - 1.85 m)*
- *Aeration depths to 16" (40.6 cm)*
- *Hydraulic depth control makes setting aeration depth easy*
- *Solid and coring tines available for your specific aeration application*

Reduce soil compaction for healthier turf.

ProCore SR Series deep-tine aerators alleviate subsurface soil compaction, helping to create an environment for turf to thrive. These durable and time-tested products are capable of withstanding the most extreme aeration conditions. From lightweight, precision machines to robust, heavy-duty machines to break up soil on even the most compact surfaces, the ProCore SR Series deep-tine aerators are the ultimate choice for performance and quality.



The deep-tine difference.



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ProCore® SR Series Specifications*

	PROCORE SR54 MODEL 09931	PROCORE SR54-S MODEL 09932	PROCORE SR70 MODEL 09933	PROCORE SR70-S MODEL 09934	PROCORE SR72 MODEL 09935
WEIGHT WITH PTO & TOP LINK	1,165 lbs. (528 kg)	1,250 lbs. (567 kg)	1,500 lbs. (681 kg)	1,655 lbs. (750 kg)	2,091 lbs. (945 kg)
WORKING WIDTH	54" (1.37 m)	54" (1.37 m)	73" (1.85 m)	73" (1.85 m)	72" (1.83 m)
WORKING DEPTH (ADJUSTABLE)	1" - 10" (25-250 mm)	1" - 10" (25-250 mm)	1" - 10" (25-250 mm)	1" - 10" (25-250 mm)	1" - 16" (25-406 mm)
HOLE SPACING	2.5" - 4" (64-102 mm)	2.5" - 4" (64-102 mm)	2.5" - 4" (64-102 mm)	2.5" - 4" (64-102 mm)	3" - 6" (75-150 mm)
PRODUCTIVITY	36,000 sq.ft./hr. (3,345 sq. m/hr.)	36,000 sq.ft./hr. (3,345 sq. m/hr.)	48,000 sq.ft./hr. (4,460 sq. m/hr.)	48,000 sq.ft./hr. (4,460 sq. m/hr.)	38,000 sq.ft./hr. (3,530 sq. m/hr.)
RECOMMENDED TRACTOR SIZE	16-18 HP	18 HP	25-35 HP	25-35 HP	45 HP
RECOMMENDED LIFT CAPACITY	1,200 lbs. (682 kg)	1,500 lbs. (682 kg)	1,700 lbs. (773 kg)	1,800 lbs. (817 kg)	2,800 lbs. (1,270 kg)
RECOMMENDED COUNTER WEIGHT	150 lbs. (70 kg)	150 lbs. (70 kg)	250 lbs. (115 kg)	250 lbs. (115 kg)	300-500 lbs. (135-225 kg)
RECOMMENDED PTO SPEED	400-500 rpm	400-500 rpm	400-500 rpm	400-500 rpm	400-500 rpm
ACTUAL WORKING SPEED @ 400 PTO RPM (VARIES WITH HOLE SPACING)	1.5 -2.5 mph (2.41 - 4.02 kph)	1.5 -2.5 mph (2.41 - 4.02 kph)	1.5 -2.5 mph (2.41 - 4.02 kph)	1.5 -2.5 mph (2.41 - 4.02 kph)	0.8 -1.5 mph (1.29 - 2.41 kph)
LIFT SYSTEM	Std. 3-point	Std. 3-point	Std. 3-point	Std. 3-point	Std. 3-point
CERTIFICATION	ISO 4254-5:2008. CE and EU machinery directives				
WARRANTY	Two-year or 500-hour limited warranty. Refer to Operator's Manual for further details				

	PROCORE SR SERIES ACCESSORIES
	REAR ROLLER OPTIONS
09952	Rear Roller Kit for ProCore SR54 / SR54S
09953	Rear Roller Kit for ProCore SR70 / SR70S
09954	Rear Roller Kit for ProCore SR72

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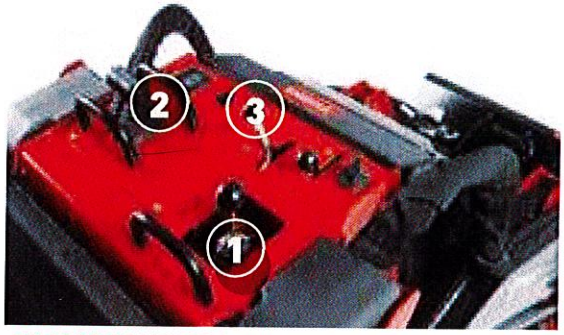
DINGO® COMPACT UTILITY LOADERS

WHEELED / TRACKED / VERTICAL LIFT / RADIAL LIFT

THE COMPACT UTILITY LOADER, REDEFINED.

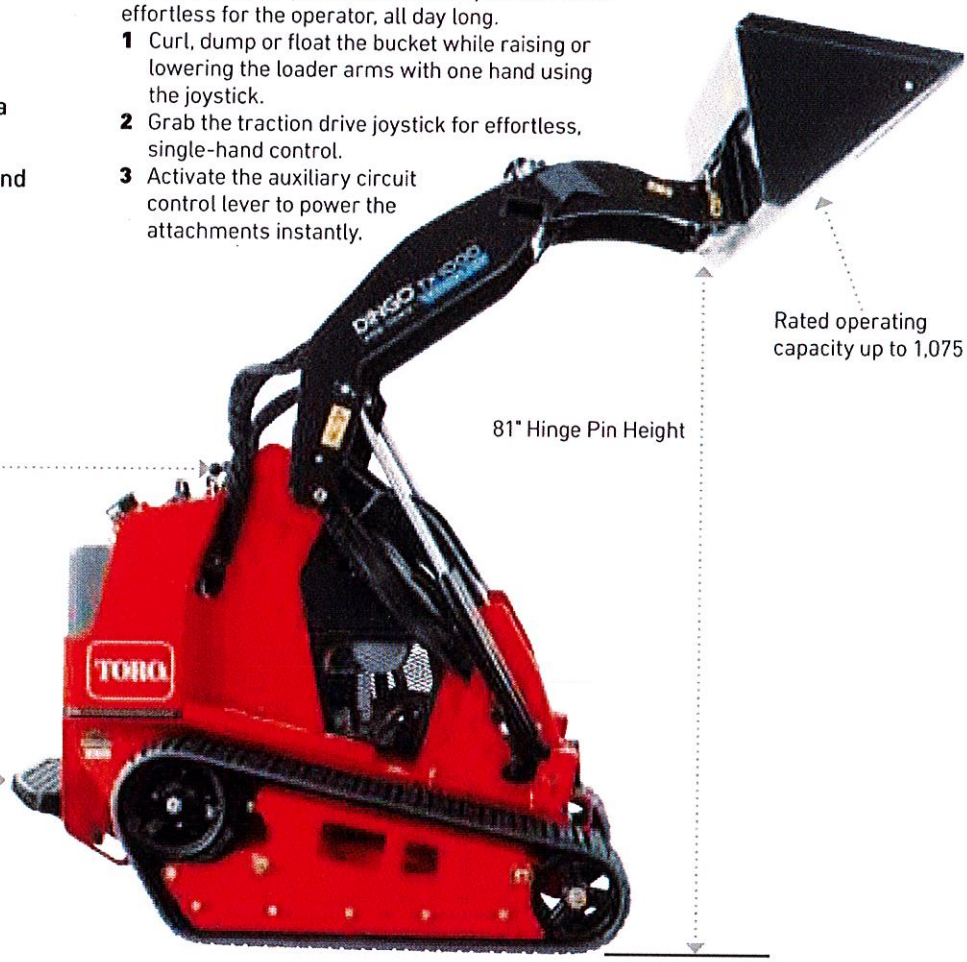
The all-new TX 1000 - a giant step forward in performance and versatility. This lightweight maneuverable machine packs unmatched strength and reach in a compact package for the ultimate working advantage. The 1,000 pound rated operating capacity makes the TX 1000 a powerful, compact alternative to larger skid steer loaders and other machines.



TX 1000 CONTROLS

New patent-pending control system exclusive to the Toro TX 1000 provides intuitive operation that's effortless for the operator, all day long.

1. Curl, dump or float the bucket while raising or lowering the loader arms with one hand using the joystick.
2. Grab the traction drive joystick for effortless, single-hand control.
3. Activate the auxiliary circuit control lever to power the attachments instantly.



TX 1000 FEATURES

UNMATCHED STRENGTH

Vertical lift loader arms allow the TX 1000 to lift and transport heavy loads with a category-leading rated operating capacity of 1,000 lbs.

MAXIMUM HEIGHT AND REACH

The 81" (206 cm) hinge pin height allows attachments to easily clear the side of 30-yard dumpsters or one-ton trucks.

HIGH DRIVE TRACK SYSTEM

Ideal for the demands of any jobsite to outperform on any surface, even sand or loose gravel.

COMPACT FOOTPRINT

The narrow model is just 33.7" (86 cm) wide and fits through standard 36" gates. At just 41" (104 cm) wide, the wide-track model is also easy to maneuver.

TX 427 & TX 525
TRACKED DINGO
MORE WORK IN
LESS TIME

RUGGED AND DEPENDABLE.

The original tracked compact utility loaders, Toro Dingo TX 427 & 525 models deliver durability and reliability pros and Do-It-Yourselvers trust, combined with powerful performance and incredible versatility. For operators who are frequently switching tasks or moving things out of the way, these walk-behind models provide greater productivity due to the ability to walk up to the machine and go. In addition, with walk-behind Dingos, operators don't feel the bumps when going over rough terrain.

EXCLUSIVE TX CONTROLS

Three simple controls let operators get to work fast:

1. Curl, dump or float the bucket while raising or lowering the loader arms with one hand using the joystick.
2. Grab the one-handed traction drive from any angle for effortless control.
3. Activate the auxiliary circuit control lever to power the attachments instantly.

TX 427 & TX 525 FEATURES

LOW-IMPACT FOOTPRINT

Long-lasting, Kevlar® reinforced tracks disperse weight evenly for a light footprint on turf, while delivering better traction in sandy or wet ground conditions.

EASY-TO-USE PLATFORM

Quickly and easily bolted on to Toro Dingo TX 427 & 525 models, this ride-on platform helps minimize operator fatigue when the job requires a lot of hauling or covers substantial distances. The platform can be flipped up – out of the way – any time the operator wishes.

HIGH-PERFORMANCE HYDRAULICS

The 4-pump hydraulic system directs power right where you need it. Operate the loader, bucket, traction and auxiliary drives at the same time for increased operator efficiency.

DIESEL AND GAS ENGINES

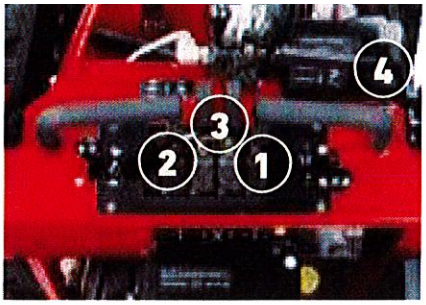
Choose a gas model for easy maintenance and cold-weather starting. Or choose diesel for better performance in high altitudes and warmer climates, along with more horsepower for attachments.

220, 323 & 320D WHEELED DINGOS

BIG BENEFITS IN SMALL SPACES

GO WHERE YOU NEED TO WORK.

Access confined spaces you never thought possible with a wheeled Dingo® compact utility loader. These models offer zero-turn capability, along with a shorter length that's easy to load on a trailer. You also get reliable hydraulic power to use a wide range of attachments. If you do a lot of tasks in tight spaces or on hard surfaces, these are the models for you.



DINGO CONTROLS
Responsive controls make the wheeled Dingo highly maneuverable:

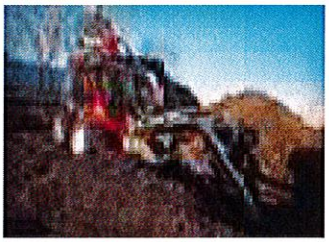
1. Curl or dump the attachment while raising or lowering the loader arms.
2. Raise and lower loader arms.
3. Traction drive control.
4. Activate the auxiliary circuit control lever to power the attachments instantly.

220, 323 & 320D FEATURES

HIGHLY MANEUVERABLE
Short wheelbase design offers excellent maneuverability. Get into tight spaces where only hand labor could go before.

TWO TRANSPORT SPEEDS
Low speed sends more hydraulic power to the attachment and high speed sends more power to the wheels. The low speed option also helps new operators shorten their learning curve.

IMPROVED VISIBILITY
The integrated ride-on operator platform allows improved visibility of the working area and attachments.



4-PAW™ INDEPENDENT FOUR-WHEEL DRIVE
Four independent wheel motors deliver hydraulic flow and pressure to all four wheels for improved traction and mobility. Fewer moving parts also mean less maintenance.
Available on 323 and 320D only.

GET THE JOB DONE

TORO QUICK ATTACH SYSTEM
CHANGE ATTACHMENTS IN SECONDS

1 Mount to the attachment plate on the unit.

2 Twist the pins to locked position.

3 For powered attachment, connect hydraulic lines to dripless flush-face quick couplers on loader arms.

TRENCHING, PLOWING, AND BORING EQUIPMENT

BORE DRIVE HEAD AND ROD & REAMER KIT *(sold separately)*
Easily bore under driveways and sidewalks to simplify irrigation and cable installations.

VIBRATORY PLOW
Reduce time spent on irrigation or cable installations. The vibratory plow optimizes pipe-pulling performance while minimizing turf damage. Extremely tight turning radius allows for tight maneuvering in confined spaces.

TRENCH FILLER
Two sets of opposing augers direct spoils into the hole. Standard float mechanism allows for up to 5" of ground following floatation. Skids evenly disperses weight and slide easily over turf, minimizing damage.

TORO® DINGO® COMPACT UTILITY LOADER ACCESSORIES

SUPERIOR DESIGN FOR LONG-LASTING, DEPENDABLE PERFORMANCE AND THE PERFECT FIT.

Genuine Toro Dingo attachments are your best assurance for attaining a long life and peak performance from your CUL. Designed specifically for the Dingo, the attachments are easy to operate and deliver clear sight lines.

TRENCHING, PLOWING AND BORING SPECIFICATIONS

Model #	Attachment Description	Dimensions (W* x L x H)	Weight (Lbs)
22420	Bore Drive Head Attachment (Bore diameter 1.25"-3.5")	24" x 22" x 25"	120
22421	Rod and Reamer (Bore diameter 1.25"-4.5")	-	58
22472	Trench Filler	48" x 31" x 22"	410

*Working Width

Model #	Attachment Description	Dimensions (W x L x H)	Weight (Lbs)
22473	High-Torque Trencher Head	35" x 65" x 24"	390
22474	High-Speed Trencher Head	35" x 65" x 24"	390
22911	Vibratory Plow	29" x 35" x 24"	400

HIGH-SPEED TRENCHER

Ideal for fast, efficient trenching in most soil conditions. 24", 36" and 48"* booms available. Chain speed: 187 rpm at 11 gpm. Torque: 442 ft/lbs at 3000 psi
*Longer, optional spoils auger recommended for 4' boom

HIGH-TORQUE TRENCHER HEAD

Guarantees performance in difficult soil conditions. 24", 36" and 48"* booms available. Chain speed: 120 rpm at 11 gpm. Torque: 675 ft/lbs at 3000 psi
*Optional spoils auger recommended for 4' boom

AUGERS AND TREE CARE EQUIPMENT

STUMP GRINDER
Rugged design and incredible hydraulic power, the Toro stump grinder will make powder of the toughest stumps. Grinds down as far as 16.5" below grade. Grinds up to 36" above grade. 17" wheel diameter.

HIGH-TORQUE AUGER POWER HEAD
Designed specifically to power up to 30" diameter augers in the toughest soil conditions. Auger bits from 6" to 30".

UNIVERSAL SWIVEL AUGER POWER HEAD
Ensures "plumb" holes on uneven terrain up to 18". Perfect for installing fences.

TORO® DINGO® COMPACT UTILITY LOADER ACCESSORIES

AUGERING, EARTH MOVING, TILLING AND TRENCHING TO LEVELING, LIFTING, HAULING AND DEMOLISHING...THE OPTIONS ARE ENDLESS

With the wide array of attachments available — more than 35 — the Dingo compact utility loader can perform big-machine applications like grading soil or carrying large amounts of material.

AUGERS AND TREE CARE SPECIFICATIONS

Model #	Attachment Description	Dimensions (W x L x H)	Weight (Lbs)
22429	Stump Grinder (w/chip guard)	44" x 20" x 31"	265
22438	Tree Fork (max load 220 lbs)	24.5" x 45" x 12.5"	169
22341	Adjustable Fork	31" x 45" x 27"	162
22521	Grapple Rake	35.5" x 18" x 30"	265
22805	High-Torque Auger Power Head	24" x 16" x 23"	182
22806	Universal Swivel Auger Power Head	24" x 17" x 23"	196

AUGER BITS AND EXTENSIONS

Model #	Attachment Description
22814	18" Auger Bit
22815	24" Auger Bit
22816	30" Auger Bit
22818	12" Auger Bit Extension
22819	24" Auger Bit Extension
22820	6" Full Flight Auger Bit
22821	9" Full Flight Auger Bit
22822	12" Full Flight Auger Bit
22823	15" Full Flight Auger Bit

GRAPPLE RAKE

Grab, drag, lift and place brush and debris easily with up to 3,000 lbs (1,361 kg) of clamping force at the tine tips.

TREE FORK

Hydraulic fork arm opens to handle large trees and shrubs. Angle design allows for gentle handling.

ADJUSTABLE FORKS

Easily adjust forks to desired width. Carry fence posts, rocks, pallets, plants, fertilizer, irrigation supplies and more. Forks constructed of high-strength steel. Lift capacity up to 600* lbs.; Maximum lift height: 61".

**Dependent upon Dingo model used.*

MAKES MOVING MATERIALS EASY

EARTH MOVING AND DIGGING EQUIPMENT

LEVELER
Grade, finish, and spread topsoil and other landscape materials. Back fill trenches. Carry job site materials such as plants, fertilizer, irrigation supplies, and more.

SOIL CULTIVATOR
Bury stones, soil clods, debris and grass. Prepares seed bed in one pass, tilling soil up to 5.5" deep. Adjustable grading bar and comb teeth leave perfect germination environment.

TILLER
Hardened steel tines for any soil condition, including clay or hardpan. Till more than six inches deep and 40" wide on one pass. Reversible tine direction frees jams quickly.

TORO® DINGO® COMPACT UTILITY LOADER ACCESSORIES

MANY ATTACHMENTS WITH ONE GOAL: PRODUCTIVITY

A wide variety of attachments, including buckets, augers, trenchers and forks, make the Dingo a more cost effective choice than a dedicated piece of equipment. In short, get more work done in less time.

BUCKET SPECIFICATIONS

Model #	Attachment Description	Dimensions (W x L x H)	Weight (Lbs)	Capacity (cu. ft.)
22409	4 cu.ft.n Standard Bucket	42" x 50" x 42.3"	115	4
22410	Loose Materials Bucket	48" x 26" x 18"	175	6.4
22520	Narrow Bucket	34.5" x 26.7" x 25.1"	153	3.5
22340	TX 1000 Standard Bucket	41" x 23" x 15"	172	4.3
22342	TX 1000 High Volume Bucket	53.25" x 29" x 17"	253	9.0

EARTH MOVING EQUIPMENT SPECIFICATIONS

Model #	Attachment Description	Dimensions (W x L x H)	Weight (Lbs)
22426	Direct Drive Power Box Rake	48" x - x 20.9"	365
22445	40" Tiller	44/40" Tilling Width x 20" x 26"	363
23102	Soil Cultivator	51" x 51" x 21"	363

Model #	Attachment Description	Dimensions (W x L x H)	Weight (Lbs)
23163	Backhoe	34.5" x 41" x 71"	762
23161	Wheeled Backhoe Fit-up Kit*	-	21
23162	TX Backhoe Fit-up Kit**	-	81
23165	Leveler	31.3" x 41.2" x 27"	162

*Backhoe fit-up kit for models 22317 & 22318
*Backhoe fit-up kit for models 22321, 22322, 22323 & 22324

POWER BOX RAKE

Perfect tool for seed or sod bed preparation. Carbide-teeth rotary drum pulverizes rough soil, cuts high spots and fills low spots in one pass. Manually adjustable yoke allows 20° offset. Overall width: 67"; Working width: 48".

BUCKETS

Perfect for light-duty grading, leveling, and material handling. Buckets vary in capacity from 4.3 cu. ft. to 9 cu. ft. for lighter materials.

BACKHOE

Versatile — dig foundations, plant trees, trench and much more. Folds to 34.5" wide for access to tight spaces and ease of transport. 180° bucket and swing arm rotation, 82"digging depth, and standard 13" bucket.

YOU CAN HANDLE IT

MATERIAL HANDLING EQUIPMENT

CEMENT BOWL
Flighting mixes and holds cement in bowl. Mix, haul, and pour up to 200 lbs. Auger power head required (sold separately).

MANUAL OR HYDRAULIC FORKS
Transport and position trees and large shrubs exactly where you want them with exceptional maneuverability.

HYDRAULIC CONCRETE BREAKER
The hydraulic breaker is the perfect tool for precision demolition. Combined with the compact size and ease of use of the Dingo, the breaker simplifies the difficult job of breaking concrete, asphalt, rock or brick during renovation jobs.

TORO® DINGO® COMPACT UTILITY LOADER ACCESSORIES

TACKLE A LOT MORE WORK IN LESS TIME.

Uses for the Toro Dingo and its various attachments are limited only by your imagination.

MATERIAL HANDLING SPECIFICATIONS

Model #	Attachment Description	Dimensions (W x L x H)	Weight (Lbs)
22423	Multi-Purpose Tool	24" x 4" x10"	40
-	Boom Jib	0.63" x 32.4 x 9.4"	23.2
-	Scarifier Teeth	2" x 13" x 11.7"	9
22442	Cement Bowl		75
22456	Snowthrower	48" x 43.3" x 50.4"	335
23135	Concrete Breaker	25" x 50" x 13" 17" length x 2" diameter	262
22414	Utility Blade	48" x 25" x 21"	212

MISCELLANEOUS SPECIFICATIONS

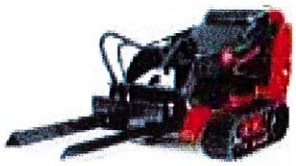
Model #	Attachment Description	Weight (Lbs)
22475	TX Platform (Gas)	95
22476	TX Platform (Diesel)	95
22464	Trencher Crumber Kit	52
22417	Counter Weight	183

SNOWTHROWER
Two-stage design with the power to handle the toughest snow conditions. Replaceable scraper. Adjustable skids. Overall Width: 48"
Clearing width 44".

MULTI-PURPOSE TOOL
Plant and haul trees or dig and breakup soil with the 3-in-1 ripper, towbar and boom.

UTILITY BLADE
Backfill trenches, move or smooth dirt or even use to clear snow.

MEET THE FAMILY



DINGO TX 1000 SPECIFICATIONS

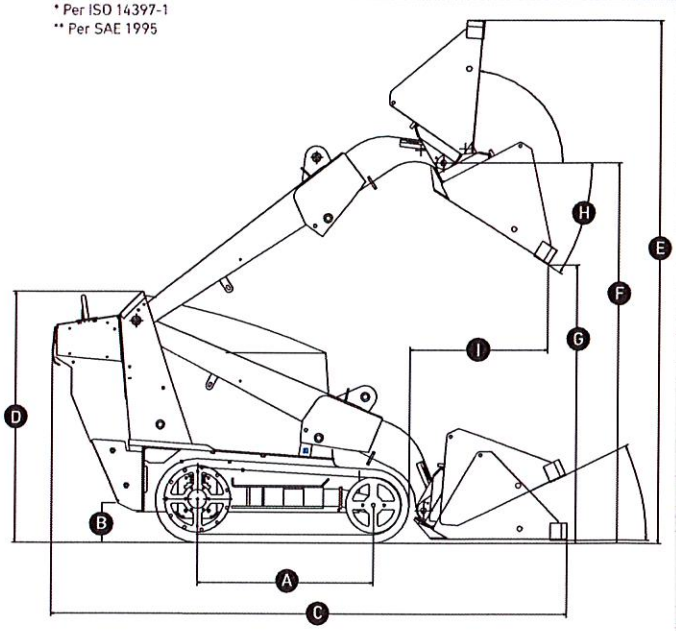
		DINGO TX 1000 NARROW TRACK 22327	DINGO TX 1000 WIDE TRACK 22328
DIMENSIONS	A Wheelbase	41" (10 cm)	
	B Ground Clearance	6.0" (15 cm)	
	Overall Width	33.7" (86 cm	41" (104 cm)
	C Overall Length	100.7" (256 cm) w/bucket; 81.7" (208 cm) w/o bucket	
	D Overall Height	53.2" (135 cm)	
	E Max Operating Height	105" (267 cm)	
	F Hinge Pin Height	81" (206 cm	
	G Dump Height	61" (155 cm)	
	H Dump Angle	40-degrees	
	I Reach - Fully Raised	24.5" (62 cm)	
	Ground Speed (F/R)	4.7 mph (7.6 km/h)/ /4.7 mph (7.6 km/h)	
	Weight	2,610 lbs (1184 kg)	2,790 lbs (1266 kg)
	Tip Capacity	2,857 lbs (1,296 kg)	3,071 lbs (1,393 kg)
	Rated Operating Capacity (35% of Tip Capacity)*	1,000 lbs (454 kg)	1,075 lbs (488 kg)
ENGINE	Engine	Kubota* D1305	
	Manufacturer's Gross HP Rating at RPM**	24.9 HP (18.6 kW) @ 2600 rpm	
	Displacement	77 cu. in. (1262cc)	
	Fuel Type	Diesel	
	Air Filter	Two-stage, heavy-duty, remote	
	Cooling System	Liquid Cooled	
	Fuel Tank	11.5 gallons (44 liters)	
	Oil Capacity	6.0 quarts (5.7 liters)	
	Loader Arms	Vertical	
OPERATION	Hydraulic Pressure	3,000 PSI	
	Hydraulic Flow	Traction: 13.3 gpm (each pump); Auxiliary: 15.2 gpm	
	Reservoir Capacity	10 gallons (57.5 liters)	
TRACKS	Tracks	Sprocket-drive, 6 road wheels per side	
	Traction	Dual hydrostatic pump	
	Track Length x Width	127.6" x 5.9" (324 cm x 15 cm)	127.6" x 9.5" (324 cm x 24 cm)
	Ground Pressure	5.4 PSI	3.6 PSI

* Per ISO 14397-1
** Per SAE 1995

DINGO TX 427 & TX 525 SPECIFICATIONS

	TX 525 22323	TX 525 WIDE 22324
A Wheelbase	31.2" (79 cm)	
B Ground Clearance	4.6" (11.7 cm)	
Overall Width	33.7" (85.6 cm)	41" (104 cm)
C Overall Length	92" (233.7 cm) w/bucket; 70.7" (180 cm) w/o bucket	
D Overall Height	46.1" (117.1 cm)	
E Max Operating Height	90.1" (229 cm)	
F Hinge Pin Height	65.8" (167.1 cm)	
G Dump Height	46.1" (117.1 cm)	
H Dump Angle	38-degrees	
I Reach - Fully Raised	21.8" (55.4 cm)	
Ground Speed (F/R)	0-4.5 mph (0-7.2 km/h) / 0-2.0 mph (0-3.2 km/h)	
Weight	1,904 lbs (864 kg)	2,013 lbs (907 kg)
Tip Capacity	1,580 lbs. (717 kg)	
Rated Operating Capacity (35% of Tip Capacity)*	553 lbs. (251 kg)	
Engine	Kubota D902	
Manufacturer's Gross HP Rating at RPM**	23.3 HP (17.3 kW) @ 3400 rpm	
Displacement	55 cu. in. (901cc)	
Fuel Type	Diesel	
Air Filter	Two-stage, heavy-duty, remote	
Cooling System	Liquid Cooled	
Fuel Tank	6.0 gallons (23 liters)	
Oil Capacity	3.84 quarts (3.63 liters) 2.0 quarts (2.95 liters)	
Loader Arms	Radial	
Hydraulic Pressure	3,000 PSI	
Hydraulic Flow	Traction: 16.9 gpm (each pump); Auxiliary: 13.8 gpm	
Reservoir Capacity	10.5 gallons (40 liters)	
Tracks	Sprocket-drive, 10 road wheels per side	
Traction	Dual hydrostatic pump	
Track Length	96.6" x 5.9" (245 cm x 15 cm)	96.6" x 9.5" (245 cm x 24 cm
Ground Pressure	5.0 PSI	3.5 PSI

* Per ISO 14397-1
** Per SAE 1995

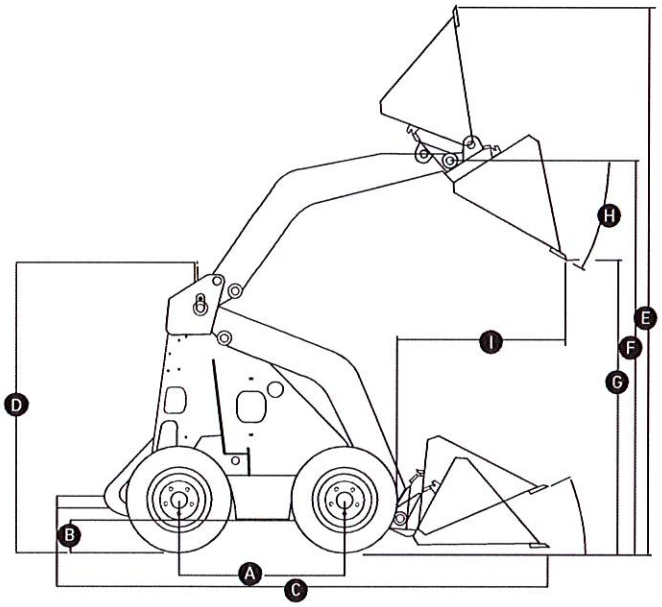


DINGO 220, 323 & 320-D SPECIFICATIONS

	TX 427 22321	TX 427 WIDE 22322
	31.2" (79 cm)	
	4.6" (11.7 cm)	
	33.7" (85.6 cm)	41" (104 cm)
	92" (233.7 cm) w/bucket; 70.7" (180 cm) w/o bucket	
	46.1" (117.1 cm)	
	90.1" (229 cm)	
	65.8" (167.1 cm)	
	46.1" (117.1 cm)	
	38-degrees	
	21.8" (55.4 cm)	
	0-4.5 mph (0-7.2 km/h) / 0-2.0 mph (0-3.2 km/h)	
	1,882 lbs (854 kg)	1,990 lbs (902 kg)
	1,530 lbs. (694 kg)	
	535 lbs. (243 kg)	
	Kohler Command Pro Series CH 740	
	25 HP (20.1 kW) @ 3600 rpm	
	44 cu. in. (725cc)	
	Gas	
	Two-stage, heavy-duty, remote	
	Air Cooled	
	6.0 gallons (23 liters)	
	2.0 quarts (2.95 liters)	
	Radial	
	3,000 PSI	
	Traction: 16.9 gpm (each pump); Auxiliary: 11.4 gpm	
	10.5 gallons (40 liters)	
	Sprocket-drive, 10 road wheels per side	
	Dual hydrostatic pump	
	96.6" x 5.9" (245 cm x 15 cm)	96.6" x 9.5" (245 cm x 24 cm)
	5.0 PSI	3.5 PSI

	DINGO 220 22317	DINGO 323 22318	DINGO 320-D 22337CP
A Wheelbase	28" (71 cm)		
B Ground Clearance	5.8" (15 cm) front & rear		
Overall Width	40.5" (103 cm) standard tires; 35" (90 cm) narrow tires		
C Overall Length	82.2" (208.8 cm) w/bucket; 62" (157.5 cm) w/o bucket		
D Overall Height	48.7" (123.7 cm)		
E Max Operating Height	91.2" (231.6 cm)		
F Hinge Pin Height	66" (167.6 cm)		
G Dump Height	47" (119 cm)		
H Dump Angle	34-degrees		
I Reach – Fully Raised	28" (71.1 cm)		
Ground Speed (F/R)	0-3.7 mph (0-6 km/h) / 0-3.7 mph (0-6 km/h)		0-3.0 mph (0-4.8 km/h) / 0-3.0 mph (0-4.8 km/h)
Weight	1,430 lbs (649 kg)	1,567 lbs (711 kg)	1,722 lbs (781 kg)
Tip Capacity	1,030 lbs (467 kg)		1,048 lbs (146 kg)
Rated Operating Capacity (50% of Tip Capacity)*	515 lbs. (234 kg)		524 lbs. (238 kg)
Engine	Kohler* Command Series CH20	Kohler* Command Series CH23	Kubota D722
Manufacturer's Gross HP Rating at RPM*	20 HP (14.9 kW) @ 3600 rpm	23 HP (17.2 kW) @ 3600 rpm	20 HP (14.9 kW) @ 3600 rpm
Displacement	38.1 cu. in. (624 cc)	41 cu. in. (674cc)	43.88 cu. in. (719 cc)
Fuel Type	Gas		Diesel
Air Filter	High-capacity, paper type w/pre-cleaner	Two-stage, heavy-duty, remote	
Cooling System	Air Cooled		Liquid Cooled
Fuel Tank	5.6 gallon (21 liter)	11.2 gallon (42.4 liter)	4 gallon (15 liter)
Oil Capacity	2 quarts (1.9 liter)		3.4 quarts (3.2 liter)
Loader Arms	Radial		
Hydraulic Pressure	3,250 PSI		
Hydraulic Flow	10.8 gpm high-flow hydraulic circuit, 4 gpm low-flow hydraulic circuit		
Reservoir Capacity	14.8 gallons (56 liter)	17 gallons (64 liter)	14.8 gallons (56 liter)

* Per ISO 14397-1
** Per SAE 1995



DIMENSIONS

- A Wheelbase
- B Ground Clearance
- C Overall Length
- D Overall Height
- E Maximum Operating Height
- F Hinge Pin Height
- G Dump Height
- H Dump Angle
- I Reach

toro.com / toro.ca

490-9226
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Products depicted in this literature are for demonstration purposes only. Actual products offered for sale may vary in use, design, required attachments and safety features. We reserve the right to improve our products and make changes in specifications, design an d standard equipment without notice and without incurring obligation. See your dealer for details on all our warranties.

WHEN WE SAY **COUNT ON IT**, WE MEAN IT

Every product that carries the Toro brand is backed by over 100 years of history, innovation and timeless dependability. We never stop investing in research and development to give our customers the latest features. That's why Toro is one of the best-known, most trusted brands in the business. We also stand behind our products with a nationwide network of knowledgeable dealers for parts and service support. **Real People. Real Support.**

THERE IS NO SUBSTITUTE FOR TORO GENUINE PARTS

With Toro, quality and service don't end when you take delivery of your equipment. Genuine Toro parts are designed specifically for your machine to ensure it performs as intended. For peace of mind, insist on Toro genuine parts.

TORO. **Count on it.**

youtube.com/toro

facebook.com/toro.company

twitter.com/TheToroCompany

POTESTIO BROTHERS
EQUIPMENT, INC.

7380 space Village Ave.
Colorado Springs, CO 80929
joec@pbequip.com
800-497-8770
719-550-0680
Fax 550-0773
Cell 510-5390

Fax

To:	CITY OF FORT LUPTON	**From:**	Joe Conner
Fax:	303-857-6090	**Pages:**	13
Phone:		**Date:**	11/18/2020
Re:	FTL2016XX Due 8/12/2019 10:00 am MT	**CC:**	

☐ **Urgent** X **For Review** ☐ **Please Comment** ☐ **Please Reply** ☐ **Please Recycle**

I hereby waive my right to a sealed bid,

Thank you,

Joe Conner

JOHN DEERE

****
REQUEST NO.
FTL2016XX
****

CITY OF
Fort Lupton
EST 1836
COME PAINT YOUR FUTURE WITH US

Ms. Leann Perino
Finance Director
130 South McKinley Avenue
Fort Lupton, Colorado 80621

Dear Ms. Perino:

The undersigned having become familiar with the specifications for ***Golf Course Maintenance Equipment*** and deliver to the City of Fort Lupton as set forth in the following schedule:

Item	**Equipment**	**Attachments**	**Price**
Item #1	Compact Utility Loader		No Bid
		Standard Bucket	
		Trencher	
		Soil Cultivator	
		Blade	
	Total For Compact Utility Loader with attachments		
Item #2	Broadcast Topdresser		$14,650.00
Item #3	Deep Tine Aerator		$24,525.00
Item #4	Tow-Behind Aerator	Manual Hyd. Lift	$8,125.00

The City would like all pieces of equipment to be invoiced and delivered by December 31, 2020.

****
REQUEST NO.
FTL2016XX
****

CITY OF
Fort Lupton
EST 1836
COME PAINT YOUR FUTURE WITH US

I certify that the above quotation is exclusive of any federal excise taxes and all other state and local taxes, and includes any applicable permits and fees for installation. I further certify that the items offered for intended use by the City of Fort Lupton will meet all specifications is has so indicated in this bid form. The Council of the City of Fort Lupton reserves the right to reject any or all bids, to waive any informality in bids, and to accept the bid that, in the opinion of the Council, is to the best interests of the Council and of the City of Fort Lupton. The Council of the City of Fort Lupton shall give preference to residents of Fort Lupton bidders in all cases where the bids are competitive in price and quality.

FIRM POTESTIO BROTHERS EQUIPMENT INC BY JOE CONNER joec@pbequip.com

BUSINESS ADDRESS 19020 LONGS WAY TITLE SALES

CITY, STATE, ZIP CODE PARKER, CO 80134 DATE 11/19/2020

TELEPHONE NO. 303-841-2299 FAX NO. 303-841-7039 TAXPAYER I.D.# 84-1193905

DOES YOUR BID MEET OUR SPECIFICATIONS? YES X NO____

CITY OF FORT LUPTON IS EXEMPT FROM COLORADO SALES TAXES. CERTIFICATE OF EXEMPTION NO.98-02812-0000. CITY OF FORT LUPTON FAX NUMBER IS #303-857-6090

****
REQUEST NO.
FTL2016XX
****

CITY OF
Fort Lupton
EST 1836
COME PAINT YOUR FUTURE WITH US

CITY OF FORT LUPTON

CERTIFICATION STATEMENT REGARDING ILLEGAL ALIENS

The Vendor, whose name and signature appear below, certifies and agrees as follows:

1. The Vendor shall comply with provisions of CRS 8-17.5-101 et seq.

2. The Vendor shall not knowingly employ or contract with an illegal alien to perform work under this purchase order or enter into a contact with a subcontractor that knowingly employs or contracts with an illegal alien.

3. The Vendor represents, warrants, and agrees that it (i) has verified that it does not employ any illegal aliens, through participation in the Basic Pilot Employment Verification Program administered by the Social Security Administration and Department of Homeland Security, or (ii) otherwise shall comply with the requirements of CRS 8-(2)(b)(I).

4. The Vendor shall comply with all reasonable requests made in the course of an investigation by the Colorado Department of Labor and Employment. If the Vendor fails to comply with any requirement of this provision or CRS 8-17.5-101 et seq., the City may terminate the above referenced purchase order for breach and the Vendor shall be liable for actual and consequential damages to the City.

CERTIFIED and AGREED to this 18 day of NOVEMBER, 2020.

VENDOR:

Joseph A Conner Jr
(Full Legal Name)

BY: _____
Signature of Authorized Representative(s)

VENDOR(S) CANNOT BEGIN WORK UNTIL THIS COMPLETED FORM IS RETURNED TO THE CITY OF FORT LUPTON.

EQUIPMENT WARRANTY INFORMATION

DAKOTA Peat & Equipment is hereinafter called DAKOTA

(A) WARRANTY

a. DAKOTA warrants all products manufactured by it to be free from defects in material and manufactured at the time of shipment and for twelve (12) months from date of delivery to customer. DAKOTA will furnish to the dealer, without charge, f.o.b. East Grand Forks, Minnesota, replacements for such parts as DAKOTA finds to have been defective at the time of shipment; or at DAKOTA's option, will make or authorize repairs to such parts, provided that, upon request, such parts are returned, transportation prepaid, to the factory at East Grand Forks, Minnesota.

b. This warranty shall not apply to any product that has been subjected to misuse, misapplication, neglect (including but not limited to improper maintenance), accident, improper installation, modification (including but not limited to use of unauthorized parts or attachments), adjustment, or repair. Engines, motors, and any accessories furnished with DAKOTA's products, but which are not manufactured by DAKOTA, are not warranted by DAKOTA but are sold only with the express warranty, if any, of the manufacturers thereof. THE FOREGOING IS IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED (INCLUDING THOSE OF MERCHANTABILITY AND FITNESS OF ANY PRODUCT FOR A PARTICULAR PURPOSE), AND OF ANY OTHER OBLIGATION OF LIABILITY ON THE PART OF DAKOTA.

(B) LIMITATION OF LIABILITY

a. It is expressly understood that DAKOTA's liability for its products, whether due to breach of warranty, negligence, strict liability, or otherwise, is limited to the furnishing of such replacement parts, and DAKOTA will not be liable for any other injury, loss, damage, or expense, whether direct or consequential, including but not limited to loss of use, income, profit, or production, or increased cost of operation, or spoilage of or damage to material, arising in connection with the sale, installation, use, or inability to use, or the repair or replacement of, DAKOTA's products.

b. Any operation expressly prohibited in the operating instructions or manuals furnished with the machine, or any adjustment or assembly procedure not recommended or authorized in the operating or service instructions, shall void such warranty.

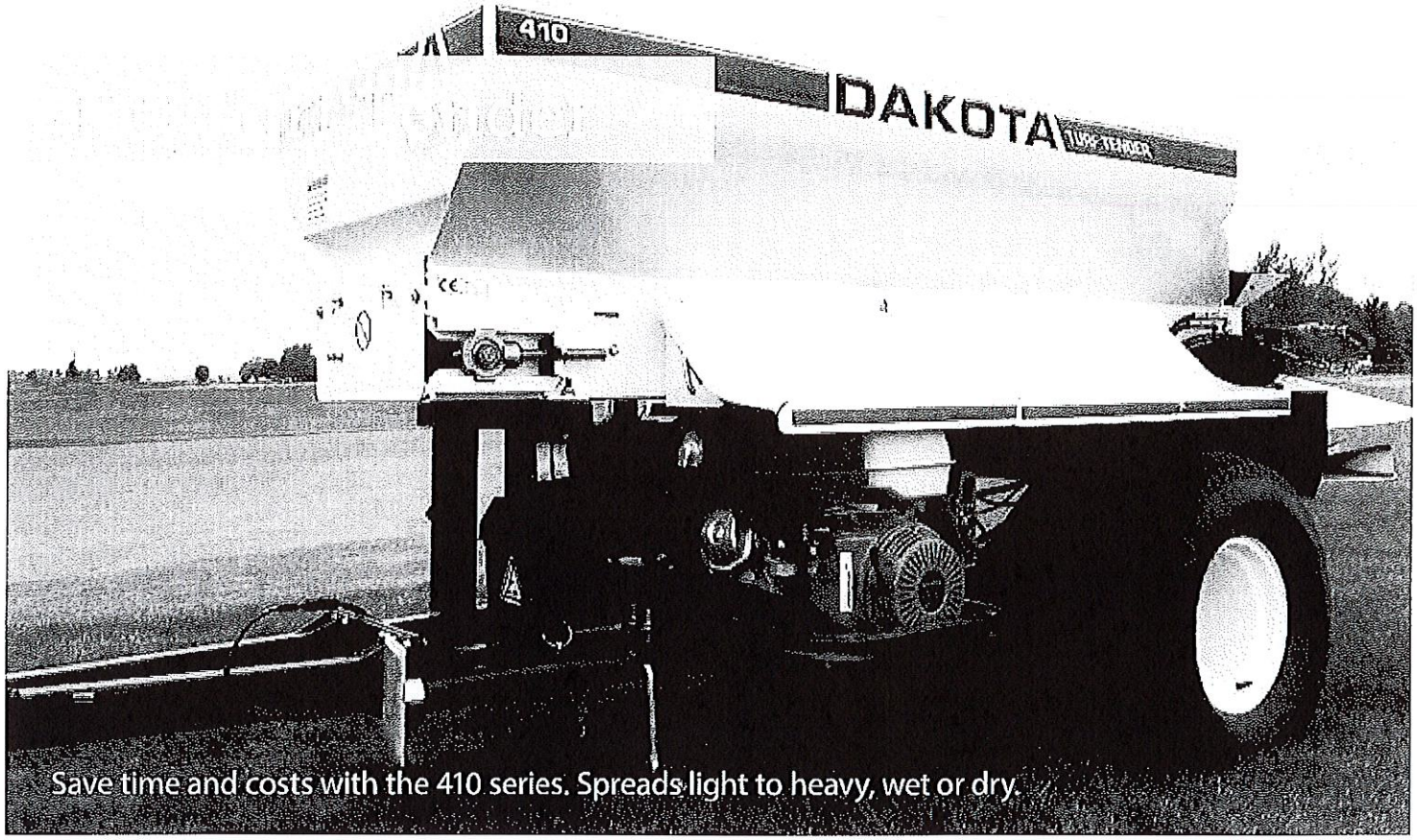
(C) REGISTRATION

a. THIS WARRANTY IS VOID UNLESS "DEALER'S SALE REPORT TO THE FACTORY" CARD IS COMPLETED AND RETURNED TO THE FACTORY AT EAST GRAND FORKS, MINNESOTA, WITHIN 30 DAYS AFTER DELIVERY OF UNIT TO CUSTOMER.

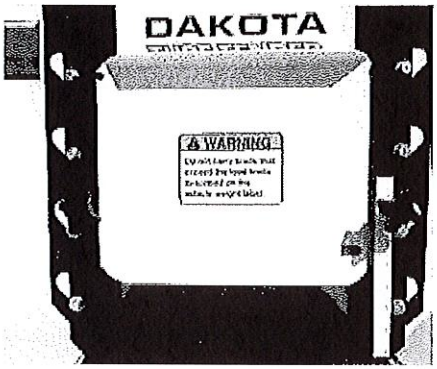
b. No Parts shall be returned under warranty unless a Return Goods Authorization (RGA) is obtained from DAKOTA.

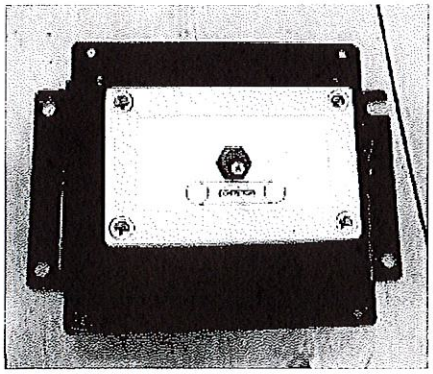
c. ALWAYS GIVE PART NAME, NUMBER AND MACHINE SERIAL NUMBER WHEN ORDERING PARTS.

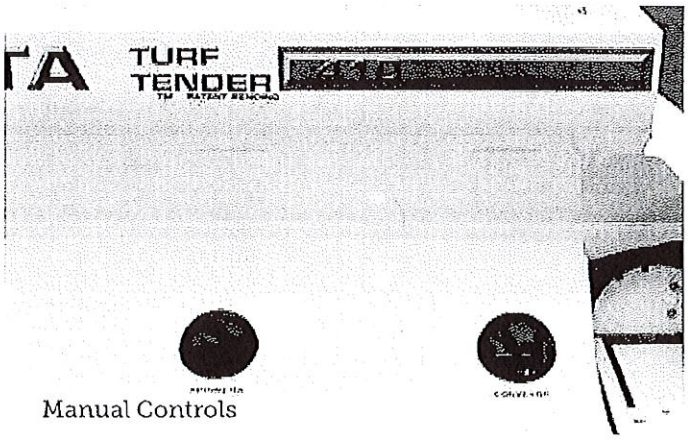
NOTICE: DAKOTA reserves the right to make changes to design or construction without obligation to incorporate such changes in equipment previously sold.



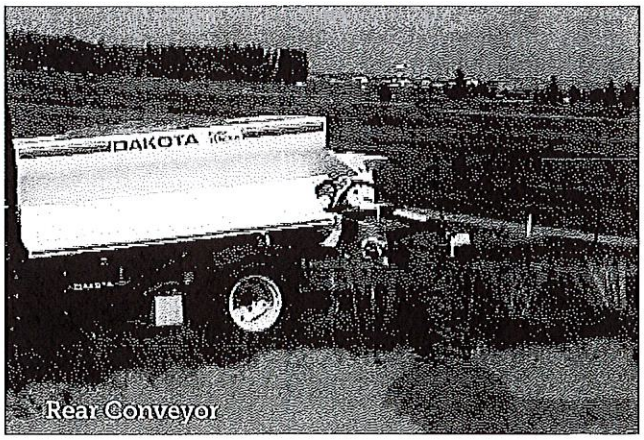
Save time and costs with the 410 series. Spreads light to heavy, wet or dry.







Manual Controls



Rear Conveyor

Features

410 Turf Tender Pull Type

Pull Unit Requirements:
› Requires 3-7 GPM. Oil flow without optional power unit
Overall Dimensions:
› Overall length = 144 in
› Overall width = 60 in
› Height = 50 in
› Weight = 920 lbs.
› Weight = 1240 lbs. (with optional power unit)
Hopper:
› Capacity = 23 cu ft. (.65m³) level, 27 cu ft. (.76m³) heaped
› Trackless 18 in PVC belt (crescent-style)
› Rear door adjusted from 0" to 7"
› Powder coat paint
› Hopper length = 76 in
Frame:
› Welded heavy-duty A-frame construction
› Jack stand
Tires:
› 2 Ultra Trac Turf Tires 26.5x14x12
Dual Spinner System:
› 2 Throw discs (24 in diameter, 6 adjustable paddles per disc)
› Quick change
› 2 hydraulic motors, 1 per spinner-disc
› Spreading width 12' to 49' variable
› Spreading application (extremely fine to very heavy)
› Capable of spreading a large variety of materials

Options

Controls:
› Electric over hydraulic machine (controls belt and spinner speed from the vehicle mounted control panel with speed gauges)
› Manual hydraulic machine (valves on the side of the machine to control the belt and spinner speed) with vehicle mounted on/off switches
Optional Spinners:
› Black spinners (fertilizer)
› Green spinners (grass seed)
Optional Power Unit:
› Honda 11 hp engine
› Electric start
› 1.72 US Gal. fuel tank
› Max. Pressure = 2500 psi
› Max. Flow = 7.26 GPM
› Reservoir size = 11.5 gal.
Optional Rear Conveyor
Optional Auto Rear Door
Optional Roll Tarp

410 Turf Tender Mounted

Models: Mounted
› Mounts on John Deer Pro Gator™, Toro Workman™, or Jacobsen Truckster™ XD
Requirements:
› John Deere™ PTO Hydraulic kit required on John Deere ProGator™
› DAKOTA Auxiliary hydraulic kit required on Toro Workman™ on models older than 2001, 2002 and newer requires Toro High Flow hydraulics
Overall Dimensions:
› Overall length = 103 in
› Overall width = 60 in
› Height = 54 in
› Weight = 780 lbs. with sub-frame
Hopper:
› Capacity = 23 cu ft. (.65m³) level, 27 cu ft. (.76m³) heaped (Note: Do not exceed recommended vehicle load rating for John Deer Pro Gator™, Toro Workman™, or Jacobsen Truckster™ XD)
› Trackless 18 in PVC belt (crescent-style)
› Rear door adjusted from 0" to 7"
› Powder coat paint
› Hopper length = 76 in
Frame:
› Welded heavy-duty sub-frame
› Mounts using existing cylinder and box mount
Dual Spinner System:
› 2 Throw discs (24 in diameter, 6 adjustable paddles per disc)
› Quick change
› 2 hydraulic motors, 1 per spinner-disc
› Spreading width = 12' to 40' variable
› Spreading application is adjustable (extremely fine to very heavy)
› Capable of spreading a large variety of materials

Options

Controls:
› Electric over hydraulic machine (controls belt and spinner speed from the vehicle mounted control panel with speed gauges)
› Manual hydraulic machine (valves on the side of the machine to control the belt and spinner speed) with vehicle mounted on/off switches
Optional Spinners:
› Black spinners (fertilizer)
› Green spinners (grass seed)
Optional Parking Stand:
› Easy on/off using 4 legs
› Rear legs are jack stands
Optional Rear Conveyor
Optional Auto Rear Door

See an important update for how we're operating during COVID-19

denmann
erica, LLC
ed to Turf.

Terms and Conditions of Sale

Shipment. (a) Goods will be shipped by Wiedenmann North America, LLC ("WNA") FOB the WNA warehouse, Savannah, Georgia (Incoterms 2000). (b) Delivery by WNA shall be made within a reasonable period of time based upon availability. WNA assumes no responsibility for delays prior to or during shipment due to causes beyond its control. (c) Goods shall be packaged by WNA as required to assure common carrier acceptance. (d) A packing slip and bill of lading will be supplied with each shipment referenced by the buyer's purchase order number and WNA's part number(s). (e) All claims by buyer for shortage or damage in transit are to be made promptly to the shipper with a copy to WNA.

Additional Charges. WNA may assess reasonable additional charges to the buyer for any changes in the order including, but not limited to, charges occasioned by changes in specifications, quantities, delivery, schedule or cancellation.

Restocking Charges. WNA may assess a 30% restocking fee on any goods returned to WNA.

Specification Changes. WNA reserves the right to manufacture to later and more current engineering specifications including the latest ordinance engineering changes where applicable if such current specifications do not affect interchangeability or manufacturing costs to either WNA or Buyer.

Sales. All sales are deemed made in the State of Georgia. The parties consent to exclusive jurisdiction and venue in the federal and state courts of Chatham County, Georgia for any dispute regarding the goods sold subject to these Terms.

Warranties. WNA warranties all goods sold, when properly installed, to be free from defects in material and workmanship under normal use and service for a period of one (1) year. The warranty period starts when the good is put into service or 24 months after the shipping date from WNA – whatever comes first. WNA will honor warranty only if the warranty card is returned. This warranty is void with respect to any product which has been altered in any way from its manufactured condition such as intentional modification, accident, corrosion, misuse, failure to provide necessary and reasonable maintenance and its exclusive of normal wear. Written authorization from WNA must be obtained prior to returning any part or parts. No charges for transportation or for labor performed on WNA products by unauthorized persons will be allowed under this warranty.

Disclaimers. THERE ARE NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING THE WARRANTY OF MERCHANTABILITY OR A WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE EXTENDING BEYOND THAT SET FORTH IN THE PARAGRAPH ABOVE.

General Limitation of Liability. WNA's liability under this agreement and in particular, WNA's liability for breach of Warranty shall be limited to repair or replacement of any defective or nonconforming equipment or, in the event the material cannot be repaired or replaced, refund of the purchase price. Goods for which a refund is due must be returned to WNA with transportation charges prepaid. WNA and Buyer agree that this shall be the buyers sole and exclusive remedy and WNA shall not be liable in any event for proximate, incidental, consequential or other damages, including but not limited to damages for loss of production, lost profits or injury to persons or property.

Indemnity – General. WNA will not indemnify or hold harmless any party or parties from or against any claim, suit, demand or cost arising out of the use, manufacture, or operation of material supplied herein.

Indemnity – Patent. WNA warrants that it will indemnify Buyer for an award of damages against Buyer by a court of competent jurisdiction for infringement of a valid U.S. or Canadian patent when material is used in accordance with WNA's designs and specifications. Buyer shall indemnify WNA against all liability, loss, cost, or expense from the infringement or alleged infringement of any patent or patents arising from the manufacture, use or sale of any material delivered to Buyer where the material is developed for the Buyer in accordance with Buyer's designs, specifications or recommendations.

Trademarks. The Buyer may not remove or deface any trademarks, tradenames, servicemarks or logos attached to or made a part of the goods sold subject to these Terms.

Assignment. WNA reserves the right to assign any portion of this contract provided however, such assignment shall not relieve WNA's obligation of performance. This contract shall not be assignable by Buyer without WNA's consent.

Payment and Collection. Payment for all goods shipped shall be made in accordance with the terms set forth in the invoice. Late payments shall accrue an immediate late charge of 5% of the balance and thereafter shall accrue interest at the rate of .0005 of the daily balance per day until paid.

Waiver. The failure of either party to the performance of any term of this contract or the waiver by either party of any breach under the contract shall not prevent a subsequent enforcement of the term or be deemed a waiver of any subsequent breach.

Construction – Governing Law. These terms shall be construed in accordance with the laws of the state of Georgia and in particular the Georgia Uniform Commercial Code.

Purchase Price. The purchase price will be that on the current price list published by WNA, which is incorporated herein by reference unless covered by a specific valid quotation to Buyer. All prices include applicable federal excise tax unless otherwise noted.

Amendment. These Terms are not altered by oral statements or by contrary terms in Buyer documents (such as purchase orders) and may only be altered by a written instrument signed by an officer of WNA.

Security Interest. To secure the performance and payment of all obligations of Buyer to WNA,
whether now existing or hereinafter incurred and of every kind and character, Buyer grants to WNA a Security Interest in all goods of every type and description purchased from or financed by Company and in proceeds there from. The collateral includes all of the foregoing described items now in the possession of or hereafter acquired by Buyer and all replacement, substitutions and additions thereto. Buyer hereby consents to WNA filing a financing statement to perfect this lien.

initial

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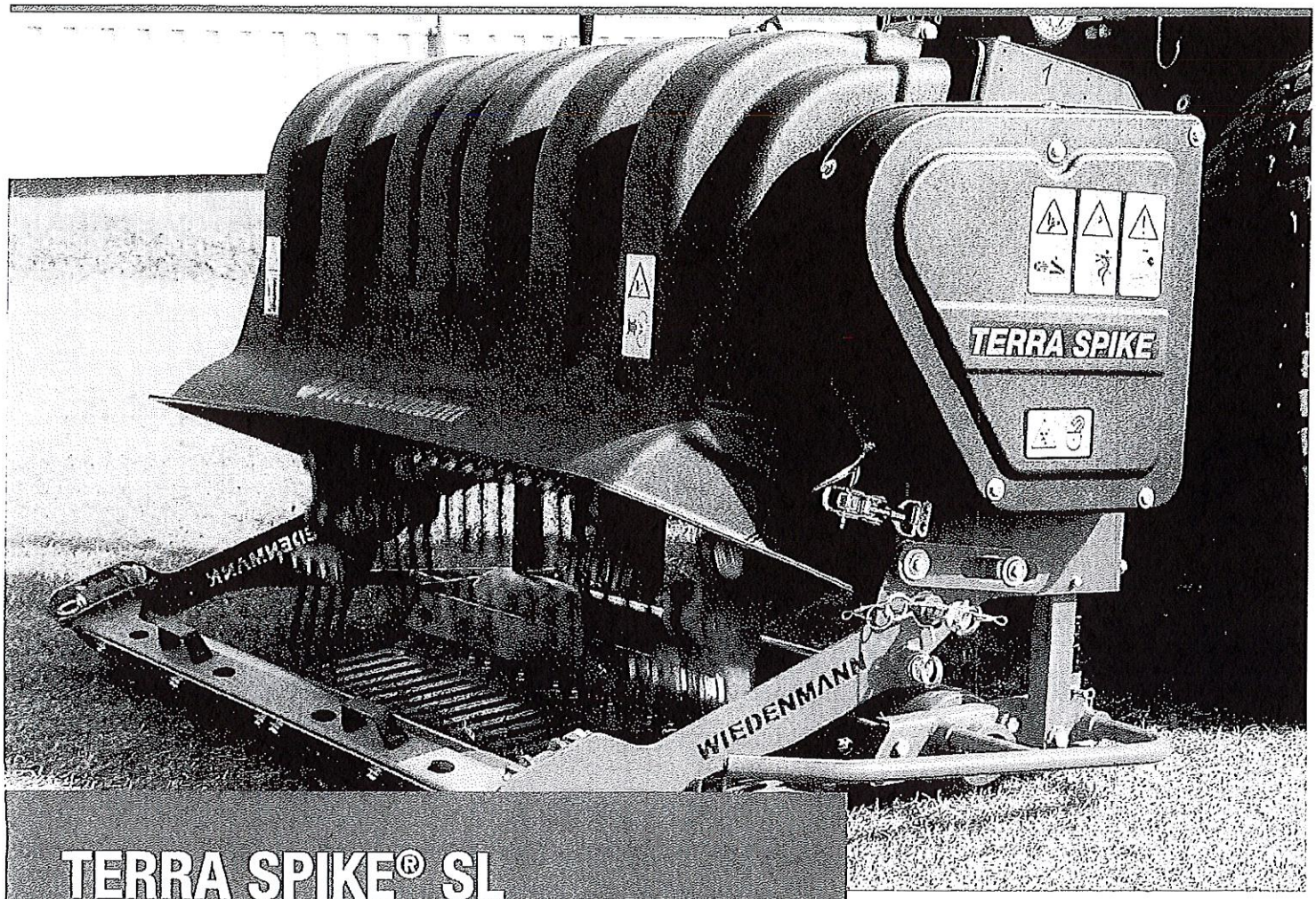
Wiedenmann®



TERRA SPIKE® SL

Deep Tine Aerator
To remove compaction on sand-based golf greens, tees, and athletic fields

Devoted to Turf. www.wiedenmannusa.com

TERRA SPIKE® SL

The lightest of the Terra Spikes

With the TERRA SPIKE® SL, Wiedenmann has developed a machine that fulfills customer demands for a machine that is lightweight with deep working depth while maintaining high productivity. Due to its weight of less than 1050 pounds, operating with tractors in the 25HP class is possible.

Time is money – this guiding principle applies today more than ever in professional turf maintenance. Whether you maintain athletic fields or golf courses, the time available for maintenance is continually decreasing while players' expectations are increasing. Regular deep tine aerifying is one of the most important ways to maintain healthy root growth.

When compaction is broken, roots can penetrate deeper into the ground and make better use of water and nutrients. Water flow and air balance are improved, thatch is removed, and the shear strength of the root zone increases. Wiedenmann has revolutionized turf maintenance and set new standards with respect to speed, productivity, and labor quality. In addition, the TERRA SPIKE® SL utilizes VibraStop, which reduces stress on your tractor and your body.

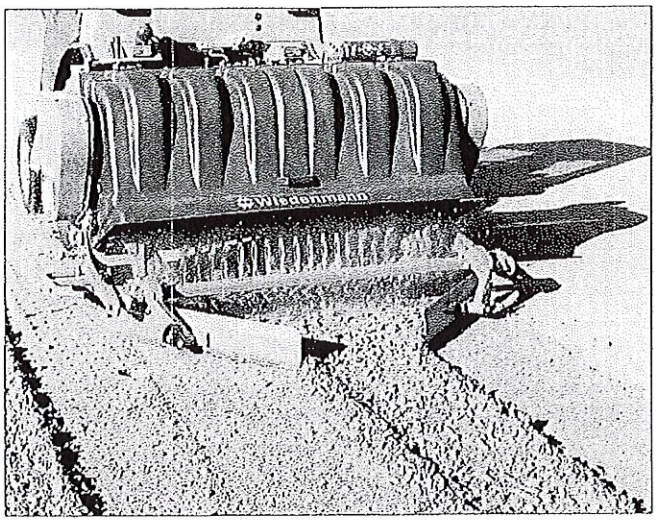
The TwinDrive drive concept can be equipped with various transmission ratios so that the crankshaft speed can be optimally adapted to the performance of the available tractor.

With the exclusive QuickSet system, you can easily change the settings of the working depth or the heave angle with just a few manual operations.

The central adjustment of the heave angle allows you to set the optimal adaptation of the loosening intensity to the respective ground conditions and degree of compaction. With the exclusive QuickChange system, arduous and time consuming tine replacements are a chore of the past.

The TERRA SPIKE® SL is extremely service friendly. The machine has no metallic return springs and the number of lubricating points has been reduced to a minimum.

The high productivity of the TERRA SPIKE® SL and hole quality perfection will convince you that this is the ideal machine for aerating your greens, tees, and finer surfaces.

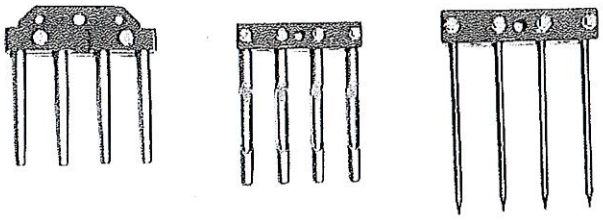


Windrow

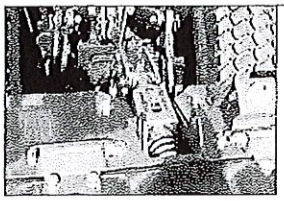
When using coring tines on the TERRA SPIKE® SL, the cores can automatically be aligned by using the optional windrow. This helps facilitates the subsequent removal of the cores.

Tine Program

The TERRA SPIKE® SL can be equipped with solid tines from 7/16" to 5/8" in diameter, as well as with coring tines from 1/4" – 3/4" in diameter. These tines fit into the standard tine heads with 1/2" (12 mm) shanks. Wiedenmann also offers tine heads for top-ejecting coring tines with 1/2" and 5/8" diameter.

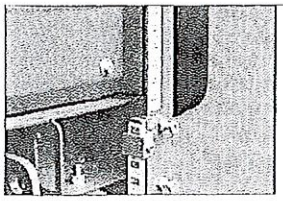


The advantages



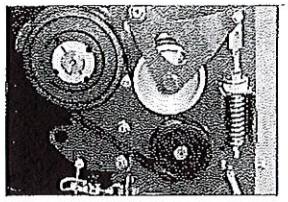
VibraStop

The exclusive VibraStop system protects the driver and the tractor from vibrations and helps protect the linkage when hitting an object, such as a rock. VibraStop meets all requirements of the EU Directive 78/764/EEC with respect to whole body vibrations. Vibrations that affect the operator are significantly reduced by the VibraStop system.



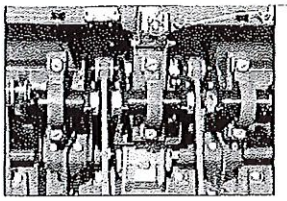
QuickChange

The TERRA SPIKE® SL is equipped with exchangeable tine holders. The tine heads can be rapidly exchanged with only one screw. Standard equipment for the machine includes tine heads for tines with ½" (12 mm) shanks. Tine heads for top-ejecting coring tines are available as an option.



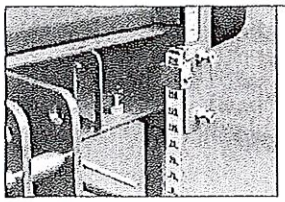
TwinDrive

The exclusive TwinDrive symmetrically drives the power from both sides of the continuous crankshaft, thus eliminating any timing issues. If harmful load peaks occur while working, such as when a tine strikes a stone, the special v-ribbed belt on either side absorbs the impact. The encapsulated drive is securely protected from dust and dirt.



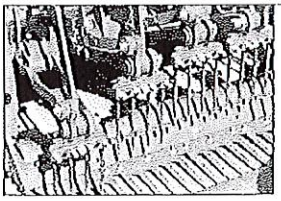
Crankshaft

The stable, computer optimized crankshaft is supported by large maintenance free sealed bearings. The gearbox has been moved forward in order to optimize the position of the center of gravity.



QuickSet

The working depth is rapidly and correctly adjusted with a crank, without other tools. The heave angle is centrally adjustable with the supplied tool. The working depth and the heave angle are easily readable on a large scale.



Turf retainer

The optional turf retainer prevents damage to turf with poor roots. The turf retainer has been designed to match tine spacing.

TECHNICAL DATA		TECHNICAL DATA	
Working width in inches:	55"	Weight with rear roller in approximate pounds:	1,050 lbs.
Maximum working depth in inches:	8"	Dimensions L/W/H in approximate inches:	39"/ 70"/ 45"
QuickSet/QuickChange/VibraStop/Twin Drive	Series	Solid tine diameters in inches:	3/16", ¼", 5/16", ½", 5/8"
Minimum lifting capacity of tractor in pounds:	1,375 lbs.		
Coring tine diameters in inches:	¼", 5/16", ½", ¾"	Rear roller:	Series
Windrow:	Optional	Turf retainer:	Optional
Exchangeable tine heads for upwards ejecting coring tines:			Optional
Area coverage in continuous operation in square feet per hour at a crankshaft speed:		360 rpm – at 0.8 mph square hole spacing 2"	approx. 17,868 sq.ft./hr.
Area coverage in continuous operation in square feet per hour at a crankshaft speed:		485 rpm - at 1.0 mph square hole spacing 2"	approx. 23,680 sq.ft./hr.

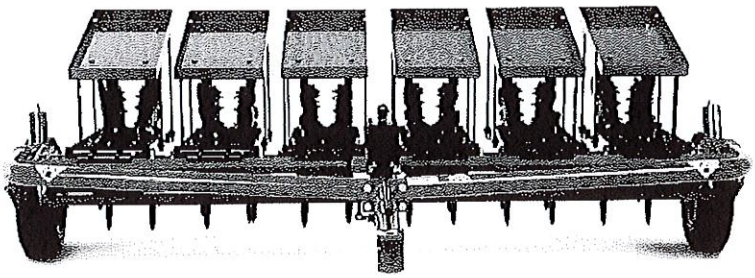
Descriptions and illustrations are not binding. Changes in design and execution reserved.

The First Name in Turf Renovation™

RENOVAIRE®

When the terrain gets tough, the Renovaire® aerator gets going. This hard-working piece of equipment is at its best on large, undulating turf areas such as golf course fairways and roughs.

With each pair of tine wheels mounted independently from the others, aeration follows the contour of the landscape, providing unmatched coring precision on undulating surfaces. With six feet of aerating width and an operating speed of four mph, the Renovaire® is capable of completing three acres in a single hour. Your choice of coring, spoon or slicing tines penetrate to a depth of four inches. Each weight tray is capable of holding up to 150 pounds, allowing pristine aeration even in the most heavily compacted soil. Just attach it to any tractor capable of towing 1,600 pounds and get ready to conquer the ups and downs of the most challenging surfaces.



SPECIFICATIONS

UNIT

Power	Tractor mounted
Lubrication	Pressure grease fittings at pivot points and tine wheels
Aerating Wheel Axle	1.25 in. (32 mm) diameter
Aerating Wheels	12, cast iron with sintered bushings; pressure lubrication fitting; grooved for mounting aerating tines on both sides; each wheel weighs 75 lb (34 kg)
Tines	8 per wheel (96 total); standard one set 0.75 in. (19 mm) coring; wheels can be mounted with double set of tines, 16 per wheel (192 total)
Coring Depth	Up to 4 in. (102 mm)
Aerating Width	72 in. (1,829 mm)
Aeration Pattern	6 in. x 6 in. (152 mm x 152 mm) with single tines; 3 in. x 3 in. (76 mm x 76 mm) with double tines
Holes per SqFt	Up to 9 (.84 m²) with single tines; up to 18 (1.7 m²) with double tines
Productivity	3 acres/hr (1.2 ha/hr) at 4 mph (6 km/hr)
Towing Speed	Up to 10 mph (16 km/hr)
Transport Tires	16 x 4.80-8, 6-ply
Transport Lift	Hydraulic cylinder
Weight Tray	Set of 6 included

OPTIONAL EQIUPMENT

Manual hydraulic pump

DIMENSIONS

Weight	1,518 lb (689 kg)
Width	96 in. (2,438 mm)
Length	60 in. (1,524 mm)
Height	36 in. (914 mm)

Specifications subject to change without notice.

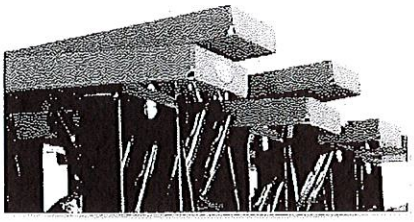
TINES

515197*	Tine, Coring 3/4" (19mm), Back Discharge, Thick Wall
515196	Tine, Coring 1/2" (13mm), Back Discharge, Thick Wall
520404	Tine, Spoon

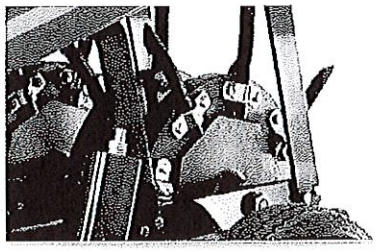
KNIVES

521155	Deep Slicing Knife
515193	Shallow Slicing Knife

*Standard configuration



Each weight tray is capable of holding up to 150 pounds for better penetration in heavily compacted soil.



Independently mounted tine wheels follow terrain contours closely for clean, precise aeration of undulated surfaces.

WWW.RYANTURF.COM

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WARRANTY

RYAN® TWO (2) YEAR LIMITED WARRANTY

2-Year Limited Warranty

Ryan® provides a two (2) year limited warranty to the original purchaser of any new RYAN® Turf Renovation Product, Attachment or Accessory from any authorized RYAN dealer.

Your **local RYAN® dealer (/ryan-dealer-locator/)** will repair or replace, at its option, any covered part found to be defective in material or workmanship during the warranty term specified herein. Warranty service must be performed by an authorized RYAN® dealer. Warranty service will be performed without charge to the purchaser for parts and labor.

Service Parts are warranted for a period of 180 DAYS from the date of purchase. RYAN® makes no warranty with respect to engines, tires, batteries, belts, regulators, starter-generators or other parts not of its manufacture. The engine warranty is covered by the engine manufacturer, and these other parts may be covered by the warranties of their respective manufacturers. Consult the Operator's Manual of the engine provided with your product or ask an authorized dealer for the terms and conditions of these warranties.

For additional information or technical support please **contact us (/contact-ryan/)**. Warranty terms and conditions are available at your **local dealer (/ryan-dealer-locator/)**.

Download Ryan® Warranty Statement (PDF) **(https://www.ryanturf.com/coming-soon/)**

ENGINE MANUFACTURERS

Briggs & Stratton®
www.briggsandstratton.com (http://www.briggsandstratton.com/)

Honda®
www.hondaengines.com (http://www.hondaengines.com/)

RYAN TURF

Dealer & Distributor Login (https://www.schillergcpro.com/)
Financing (/ryan-financing/)
Catalog (/free-ryan-catalog/)

Privacy Policy (/ryan-privacy-policy/)
Terms of Use (/ryan-terms-of-use/)

CITY OF FORT LUPTON
CITY COUNCIL

Zo Stieber, Mayor

Shannon Rhoda, Ward 1
Chris Ceretto, Ward 2
Michael Sanchez, Ward 3

David Crespin, Ward 1
Tommy Holton, Ward 2
Bruce Fitzgerald, Ward 3

AM 2020-200

PURCHASE OF A COMPACT UTILITY LOADER AT COYOTE CREEK GOLF COURSE

I. Agenda Date: Council Meeting – December 1, 2020

II. Attachments: a. Bid from LL Johnson

III. Summary Statement:

Coyote Creek Golf Course is looking to purchase a Compact Utility Loader to assist with completing in-house projects around the golf course.

IV. Submitted by: _____
Tyler Tarpley

V. Finance Reviewed _____
Finance Director

VI. Approved for Presentation: _____
City Administrator

VII. Attorney Reviewed _____ Approved _____ Pending Approval

VIII. Certification of Council Approval: _____ _____
City Clerk Date

IX. Detail of Issue/Request:

The Toro Dingo compact utility loader will be a new piece of equipment for Coyote Creek Golf Course. It will be purchased with a bucket, a trencher, a soil cultivator, and a plow. Any time we need to add sprinkler heads we have to dig trenches by hand. Some trenches have been up to 75 feet long and it sometimes takes two people two days to complete digging the trench. If we were to get the trencher, a trench can be dug in less than 30 minutes with one person operating it. There are a lot of areas on the Golf Course that need additional sprinkler heads but have not been installed due to not having the right equipment to get the job done. The Golf Course has a lot of areas with poor drainage. In order to improve drainage and eliminate wet spots on the golf course new drain lines need to be installed. The trencher will let us be more efficient and be able to complete projects faster. Over the years a lot of pot holes have been created in the turf around cart paths. The pot holes fill up with water and we are not able to mow around them. We have to send the crew out to trim the grass down by hand. We will use the soil cultivator to till up those areas, re-grade the areas so water will not be standing on the cart paths, and then re-sod the turf areas. In 2016/2017 we had a company complete a bunker renovation on all the green-side bunkers at a cost of $120,000. The fairway bunkers did not have anything done to them and are in need of renovations. With this piece of equipment, staff will be able to start renovating all the remaining bunkers. The Toro Dingo will allow staff to do more golf course improvement projects in house saving money in the long run by not having to have some things contracted out.

An RFP was issued for this purchase, only one bidder (LL Johnson) completed and submitted the necessary materials.

X. Legal/Political Considerations:

N/A

XI. Alternatives/Options:

Do not approve the purchase of the Compact Utility Loader

XII. Financial Considerations:

The bid from LL Johnson for the Compact Utility Loader is for $39,669 and will require a supplemental budget resolution.

XIII. Staff Recommendation:

Staff recommends the purchase of the Compact Utility Loader from LL Johnson for $39,669.

****
REQUEST NO.
FTL2016XX
****

CITY OF
Fort Lupton
EST 1836
COME PAINT YOUR FUTURE WITH US

Ms. Leann Perino
Finance Director
130 South McKinley Avenue
Fort Lupton, Colorado 80621

Dear Ms. Perino:

The undersigned having become familiar with the specifications for ***Golf Course Maintenance Equipment*** and deliver to the City of Fort Lupton as set forth in the following schedule:

Item	**Equipment**	**Attachments**	**Price**
Item #1	Compact Utility Loader		$25,522.00
		Standard Bucket	$599.00
		Trencher	$5261.00
		Soil Cultivator	$6,337.00
		Blade	$1,950.00
	Total For Compact Utility Loader with attachments		
Item #2	Broadcast Topdresser		$14,787.06
Item #3	Deep Tine Aerator		$19,601.85
Item #4	Tow-Behind Aerator		$8,468.88

The City would like all pieces of equipment to be invoiced and delivered by December 31, 2020.

LL JOHNSON
4700 HOLLY ST
DENVER, CO 80216

11/17/2020

CITY OF FORT LUPTON
FOR:COYOTE CREEK GOLF COURSE
ATTN: MIKE MCNAY

PH:303-350-5252
FAX:
E-MAIL:mmcnay@fortluptonco.gov

DINGO SYSTEM QUOTE

		LIST PRICE	YOUR PRICE
22324	DINGO 525TX DIESEL WIDE TRACK DRIVE	$ 30,750.00	$ 25,522.00
	SER#		
22409	STANDARD BUCKET 42"	$ 725.00	$ 599.00
	SER#		
22473	HIGH TORQUE TRENCHER HEAD	$ 4,395.00	$ 3,647.00
	SER#		
22976	3 FT BOOM	$ 800.00	$ 664.00
	SER#		
22487	3'X 4" COMBO TRENCHER CHAIN	$ 1,145	$ 950.00
	SER#		
23102	SOIL CULTIVATOR	$ 7,635.00	$ 6,337.00
	SER#		
35-27700	KWIK WAY BACKFILL BLADE AND SNOW	$ 2,385.00	$ 1,950.00
	SER# THIS IS A BETTER BLADE THAN THE		
	TORO BLADE AND LESS MONEY	SUB TOTAL	$ 39,669.00
	NO	TAX	
		TOTAL	
	PRICES SUBJECT TO CHANGE WITHOUT NOTICE		

LL JOHNSON EST. 1976 DISTRIBUTING COMPANY

4700 Holly Street
Denver, CO 80216
Mobile: 720-641-3864
Office: 303-394-6673

TORO. Count on it.

City of Fort Lupton

Attn: Mike Mcnay

11/17/2020

Qty	Model Number	Description	MSRP	2021 MAPO
1	**44751**	**ProPass 200 Wireless**	**$ 14,416.00**	**$ 11,273.31**
1	44724	Propass Tow Chassis And Fender Kit	$ 3,423.00	$ 2,676.79
1	44706	Tow Chasis Hose Assembly	$ 343.00	$ 268.23
		MAPO Service Fee	$ 727.28	$ 568.73
		SUB TOTAL	**$ 18,909.28**	**$ 14,787.06**

Qty	Model Number	Description	MSRP	2021 MAPO
1	**44856**	**Turf Aerator 686**	**$ 9,891.00**	**$ 7,734.76**
96	108-9299	3/4 Inch Spoon Tine Closed	$ 522.24	$ 408.39
		MAPO Service Fee	$ 416.53	$ 325.73
		SUB TOTAL	**$ 10,829.77**	**$ 8,468.88**

Qty	Model Number	Description	MSRP	2021 MAPO
1	**09931**	**ProCore SR54**	**$ 23,053.00**	**$ 18,027.45**
1	09952	Rear Roller SR54	$ 954.00	$ 746.03
18	SGS08500	Solid Tine, 12mm x 8.00 Inch [12mm MNT]	$ 95.22	$ 74.46
		MAPO Service Fee	$ 964.09	$ 753.92
		SUB TOTAL	**$ 25,066.31**	**$ 19,601.85**

GRAND TOTAL	**$ 54,805.36**	**$ 42,857.79**

I am sending our current pricing information on the Toro Commercial Turf products that you are interested in. These prices are from our current MAPO contract #2017025 available to all of our tax supported accounts. The Service Fee listed above covers freight, set-up and delivery charges.

* All Toro equipment comes with a two year or 1,500 hour warranty

Thank you for the opportunity to quote you on the equipment listed above. The prices are guaranteed through May 20th 2021. The equipment pricing includes all set up and delivery.

Please feel free to call me with any questions.

Sincerely,

Brandon Bollerud
Northern Territory Manager

Turf Aerator 686/687

TOW-BEHIND LARGE AREA AERATORS

FEATURES

- *Productive 78" (198 cm) aeration swath*
- *Aerate up to 10 mph (16.1 km/h)*
- *Slicing and core aerating tines available*
- *3-point (687) or tow type (686)*

Productive Aeration. Simple Design.

The 686 and 687 Turf Aerators are an efficient and effective way to aerate large turf areas. Designed with 70 pound (31.75 kg) cast wheels and a unique floating head design, these aerators give excellent depth and ground following capabilities. For highly compacted or unusually uneven grounds, optional rear weights are available.

Toro Turf Aerator 686

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Call your Toro distributor at 800-803-8676

Turf Aerators 686 & 687

The 686 and 687 Turf Aerators give excellent depth performance and follow ground contours, vertically and horizontally, like no other aerator available.

(Turf Aerator 686 shown)

	TURF AERATOR 686, MODEL 44856	TURF AERATOR 687, MODEL 44867
CAST WHEELS	3 sets of 4, each set moves independently. 70 lbs. (32 kg), 13" (33 cm) diameter.	
AERATING SWATH	78" (198 cm)	78" (198 cm)
TINES	Choice of 1/2" (12.7 mm) or 3/4" (19 mm) open or closed tines. 4" (10 cm) and 6" (15 cm) slicing blades.	
PATTERN	6" (15 cm) forward. 3" (8 cm) lateral	
HITCH	Drop pin, tow type with hydraulic cylinder for lift, hand pump standard.	3 pt., Category 1.
OPERATING SPEED	1-10 mph (1.6-16.1 km/h)	1-10 mph (1.6-16.1 km/h)
LENGTH	78" (198 cm)	48" (122 cm)
WIDTH	90" (229 cm)	82" (208 cm)
HEIGHT	Approx. 40" (102 cm)	Approx. 40" (102 cm)
OPTIONS	Weights: 35 lbs. (16 kg) each, 2 maximum per coring head. Tractor Remote Kit, Model 68-608-3521. **Note:** Includes weights, but additional weights can be added.	Weights: 35 lbs. (16 kg) each, 2 maximum per coring head; set of 3. **Note:** Includes weights, but additional weights can be added.
SHIPPING WEIGHT	1,420 lbs. (644 kg)	1,300 lbs. (590 kg)
WARRANTY	Two-year limited warranty; Refer to the Operator's Manual for further details.	

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ProPass™ 200

BROADCAST TOPDRESSER

FEATURES

Accurate – *Color-coded operating system delivers a perfect spread every time. Repeatable settings for consistent operation and defined edges.*

Wireless Remote Operation – *Available wireless controller allows real-time adjustments. Make quick setting changes and store settings for future use. Base model features a wired controller.*

Spread Consistency: *Ultra-light to ultra-heavy. Evenly apply materials from 9' (2.74 m) narrow to 30' (9.1 m) wide with the use of our unique "drop zone" patented sliding adjustment.*

Dependable – *Low maintenance and easy cleaning procedures provide long life and solid performance.*

Versatile – *The twin spinner accessory can be swapped out with a 270 degree swivel cross-conveyor quickly and easily without tools.*

Choice of Configurations – *Available as a bed mounted version, a trailer version with either engine or vehicle hydraulic power, or as a fifth wheel trailer version.*

Why Settle? Leave the guesswork to the other guys.

The ProPass 200 series broadcast-style topdressers provide the ultimate in application versatility and precision. Intuitive color-coded adjustment settings deliver extremely accurate spread patterns from ultra-light dustings to ultra-heavy aeration hole filling applications from the first pass, without the guesswork. The unique four-wheel, walking-beam suspension means a light footprint that is easy on the most sensitive turf. Select from a range of configurations and controls to match your needs, tow vehicle and budget. If you are looking for one topdresser to do it all - the ProPass 200 is the only one.

Trailer Version

- *Chassis with 4-wheel walking beam suspension*
- *11 hp (8.2 kW) engine-powered hydraulics or vehicle-powered hydraulics*

Utility Vehicle Mounted Version

- *Vehicle-powered hydraulics*
- *Storage stands for removal and storage*

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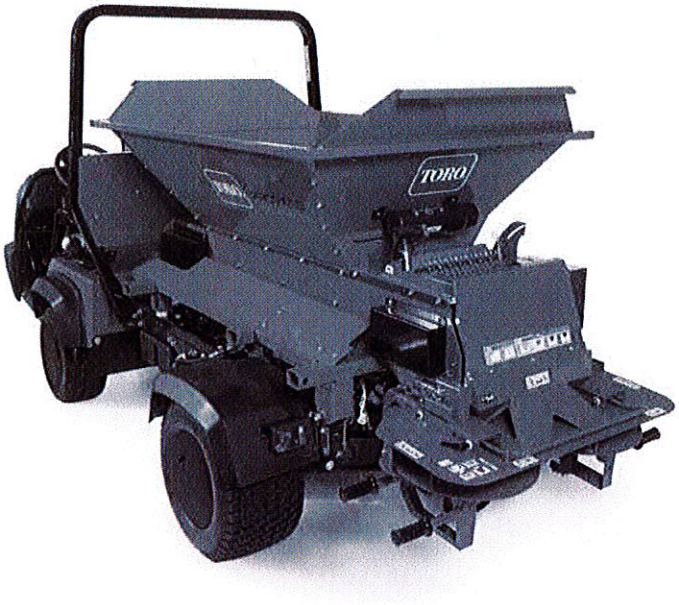
ProPass™ 200

The ProPass 200 Series broadcast-style topdressers provide the ultimate in application versatility. Intuitive color-coded adjustment settings deliver extremely accurate spread patterns from ultra-light dustings to ultra-heavy aeration filling applications. The four-wheel, walking-beam suspension means a light footprint that is easy on the most sensitive turf. If you are looking for one topdresser to do it all – the ProPass 200 is the only one. Choice of bed-mounted or trailer configurations and manual or wireless controls.



	PROPASS 200, MODEL 44701 / PROPASS 200 WIRELESS, MODEL 44751*		
GENERAL	Hopper Capacity: 21 ft³ / 0.54 m³ struck (25 ft³ / 0.71 m³ heaped) Controls: standard or electronic wireless Belt: One-piece vulcanized, self-tracking (no seams or staples) Hydraulic Power Pack (optional): 11 hp (8.2 Kw) engine Cross conveyor / swivel kit assembly (option): cross conveyor rotates 270 degrees		
SPREAD WIDTH	30' (9.1 meters)		
WEIGHT	Base model: 546 lbs (248 kg) Tow behind chassis: 480 lbs (218 kg) Truck mount kit: 90 lbs (41 kg) Twin spinner: 140 lbs (66 kg) Truck mount storage stand: 65 lbs (30 kg) Hydraulic power pack engine: (dry) 220 lbs (100 kg) Cross conveyor / swivel kit assembly: 140 lbs (63.5 kg)		
DIMENSIONS	**Tow-Behind Configuration** Length 134 in (3.4 m) Height 56 in (1.4 m) Width 65 in (1.7 m) Total unit weight: 1166 lbs (531 kg) Payload 2,000 lbs (905 kg)	**Truck Mount Configuration** Length 78 in (1.98 m) Height 56 in (1.4 m) Width 65 in (1.7 m) Total unit weight: 776 lbs (355 kg) Payload: 2,000 lbs (905 kg)	**Cross Conveyor Configuration** Length 65 in (1.7 m) Belt width: 8 in (20.3 cm) seamless
TIRES ON CHASSIS	24 x 13 x 12 in (60 x 32.5 x 30 cm) , 4 ply Suspension: 4-wheel walking beam		
TOW VEHICLE REQUIREMENTS	Towing capacity: 3,400 lbs (1550 kg) Tongue weight: 300 lbs (136 kg)		
HYDRAULICS	Minimum 6 US gal/m @ 2,000 psi (23 L/m @ 138 bar) Maximum 10 US gal/m @ 2,800 psi (38 L/m @ 190 bar)		
WARRANTY	Two-year limited warranty. Refer to operator's manual for further details.		
CE REQUIREMENTS	Meets the CE requirements for the EU		

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ProCore® SR Series

DEEP-TINE AERATORS

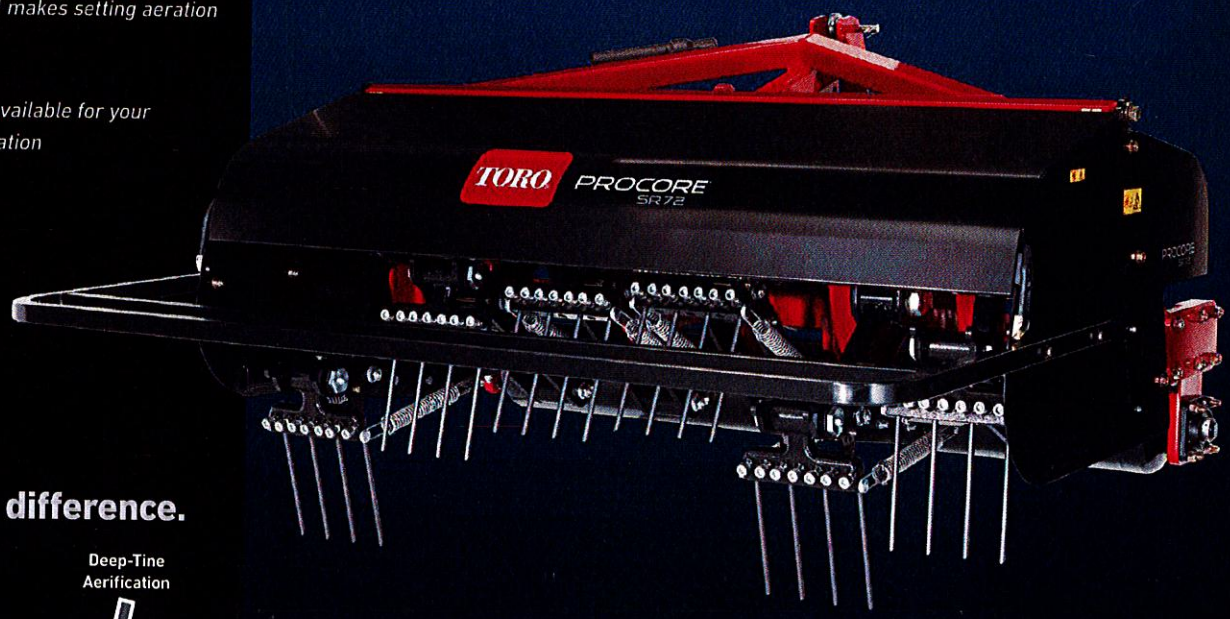
FEATURES

Deep-tine aerfication relieves soil compaction at lower soil levels than typical aerification. The tines fracture the soil creating channels through the root zone allowing oxygen, water and critical nutrients to penetrate deep into the soil profile.

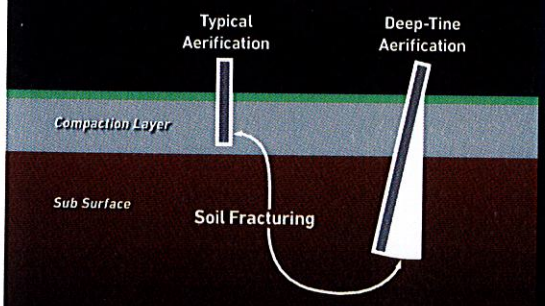
- *Multiple high-performance units for a wide variety of aeration applications*
- *Aeration widths of 54"-73" (1.37 m - 1.85 m)*
- *Aeration depths to 16" (40.6 cm)*
- *Hydraulic depth control makes setting aeration depth easy*
- *Solid and coring tines available for your specific aeration application*

Reduce soil compaction for healthier turf.

ProCore SR Series deep-tine aerators alleviate subsurface soil compaction, helping to create an environment for turf to thrive. These durable and time-tested products are capable of withstanding the most extreme aeration conditions. From lightweight, precision machines to robust, heavy-duty machines to break up soil on even the most compact surfaces, the ProCore SR Series deep-tine aerators are the ultimate choice for performance and quality.



The deep-tine difference.



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ProCore® SR Series Specifications*

	PROCORE SR54 MODEL 09931	PROCORE SR54-S MODEL 09932	PROCORE SR70 MODEL 09933	PROCORE SR70-S MODEL 09934	PROCORE SR72 MODEL 09935
WEIGHT WITH PTO & TOP LINK	1,165 lbs. (528 kg)	1,250 lbs. (567 kg)	1,500 lbs. (681 kg)	1,655 lbs. (750 kg)	2,091 lbs. (945 kg)
WORKING WIDTH	54" (1.37 m)	54" (1.37 m)	73" (1.85 m)	73" (1.85 m)	72" (1.83 m)
WORKING DEPTH (ADJUSTABLE)	1" - 10" (25-250 mm)	1" - 10" (25-250 mm)	1" - 10" (25-250 mm)	1" - 10" (25-250 mm)	1" - 16" (25-406 mm)
HOLE SPACING	2.5" - 4" (64-102 mm)	2.5" - 4" (64-102 mm)	2.5" - 4" (64-102 mm)	2.5" - 4" (64-102 mm)	3" - 6" (75-150 mm)
PRODUCTIVITY	36,000 sq.ft./hr. (3,345 sq. m/hr.)	36,000 sq.ft./hr. (3,345 sq. m/hr.)	48,000 sq.ft./hr. (4,460 sq. m/hr.)	48,000 sq.ft./hr. (4,460 sq. m/hr.)	38,000 sq.ft./hr. (3,530 sq. m/hr.)
RECOMMENDED TRACTOR SIZE	16-18 HP	18 HP	25-35 HP	25-35 HP	45 HP
RECOMMENDED LIFT CAPACITY	1,200 lbs. (682 kg)	1,500 lbs. (682 kg)	1,700 lbs. (773 kg)	1,800 lbs. (817 kg)	2,800 lbs. (1,270 kg)
RECOMMENDED COUNTER WEIGHT	150 lbs. (70 kg)	150 lbs. (70 kg)	250 lbs. (115 kg)	250 lbs. (115 kg)	300-500 lbs. (135-225 kg)
RECOMMENDED PTO SPEED	400-500 rpm	400-500 rpm	400-500 rpm	400-500 rpm	400-500 rpm
ACTUAL WORKING SPEED @ 400 PTO RPM (VARIES WITH HOLE SPACING)	1.5 -2.5 mph (2.41 - 4.02 kph)	1.5 -2.5 mph (2.41 - 4.02 kph)	1.5 -2.5 mph (2.41 - 4.02 kph)	1.5 -2.5 mph (2.41 - 4.02 kph)	0.8 -1.5 mph (1.29 - 2.41 kph)
LIFT SYSTEM	Std. 3-point	Std. 3-point	Std. 3-point	Std. 3-point	Std. 3-point
CERTIFICATION	ISO 4254-5:2008. CE and EU machinery directives				
WARRANTY	Two-year or 500-hour limited warranty. Refer to Operator's Manual for further details				

	PROCORE SR SERIES ACCESSORIES
	REAR ROLLER OPTIONS
09952	Rear Roller Kit for ProCore SR54 / SR54S
09953	Rear Roller Kit for ProCore SR70 / SR70S
09954	Rear Roller Kit for ProCore SR72

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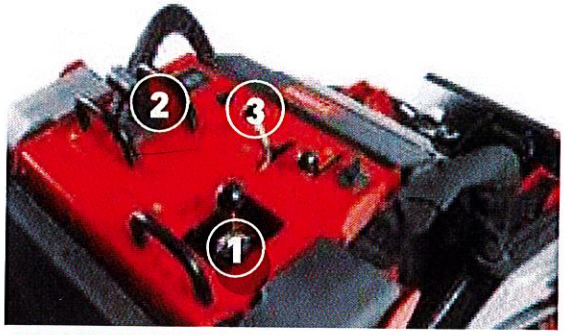
DINGO® COMPACT UTILITY LOADERS

WHEELED / TRACKED / VERTICAL LIFT / RADIAL LIFT

THE COMPACT UTILITY LOADER, REDEFINED.

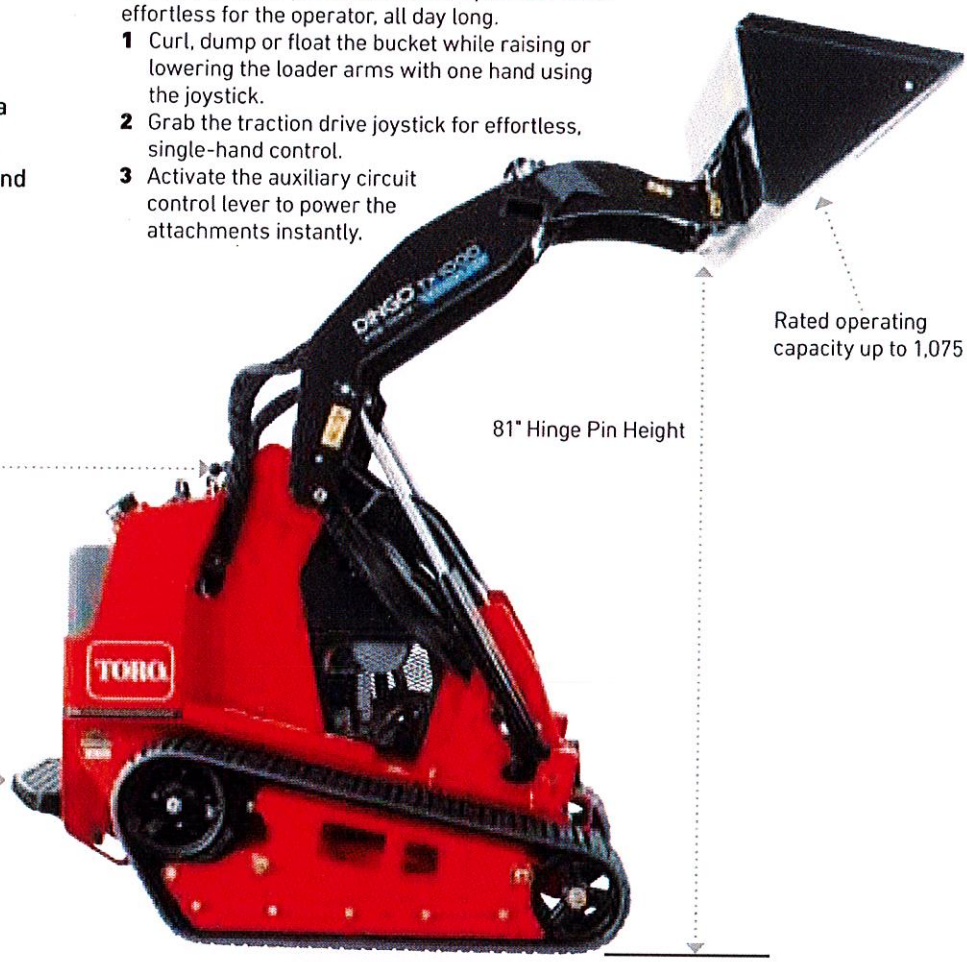
The all-new TX 1000 - a giant step forward in performance and versatility. This lightweight maneuverable machine packs unmatched strength and reach in a compact package for the ultimate working advantage. The 1,000 pound rated operating capacity makes the TX 1000 a powerful, compact alternative to larger skid steer loaders and other machines.



TX 1000 CONTROLS

New patent-pending control system exclusive to the Toro TX 1000 provides intuitive operation that's effortless for the operator, all day long.

1. Curl, dump or float the bucket while raising or lowering the loader arms with one hand using the joystick.
2. Grab the traction drive joystick for effortless, single-hand control.
3. Activate the auxiliary circuit control lever to power the attachments instantly.



TX 1000 FEATURES

UNMATCHED STRENGTH

Vertical lift loader arms allow the TX 1000 to lift and transport heavy loads with a category-leading rated operating capacity of 1,000 lbs.

MAXIMUM HEIGHT AND REACH

The 81" (206 cm) hinge pin height allows attachments to easily clear the side of 30-yard dumpsters or one-ton trucks.

HIGH DRIVE TRACK SYSTEM

Ideal for the demands of any jobsite to outperform on any surface, even sand or loose gravel.

COMPACT FOOTPRINT

The narrow model is just 33.7" (86 cm) wide and fits through standard 36" gates. At just 41" (104 cm) wide, the wide-track model is also easy to maneuver.

TX 427 & TX 525
TRACKED DINGO
MORE WORK IN
LESS TIME

RUGGED AND DEPENDABLE.

The original tracked compact utility loaders, Toro Dingo TX 427 & 525 models deliver durability and reliability pros and Do-It-Yourselvers trust, combined with powerful performance and incredible versatility. For operators who are frequently switching tasks or moving things out of the way, these walk-behind models provide greater productivity due to the ability to walk up to the machine and go. In addition, with walk-behind Dingos, operators don't feel the bumps when going over rough terrain.

EXCLUSIVE TX CONTROLS

Three simple controls let operators get to work fast:

1. Curl, dump or float the bucket while raising or lowering the loader arms with one hand using the joystick.
2. Grab the one-handed traction drive from any angle for effortless control.
3. Activate the auxiliary circuit control lever to power the attachments instantly.

TX 427 & TX 525 FEATURES

LOW-IMPACT FOOTPRINT

Long-lasting, Kevlar® reinforced tracks disperse weight evenly for a light footprint on turf, while delivering better traction in sandy or wet ground conditions.

EASY-TO-USE PLATFORM

Quickly and easily bolted on to Toro Dingo TX 427 & 525 models, this ride-on platform helps minimize operator fatigue when the job requires a lot of hauling or covers substantial distances. The platform can be flipped up – out of the way – any time the operator wishes.

HIGH-PERFORMANCE HYDRAULICS

The 4-pump hydraulic system directs power right where you need it. Operate the loader, bucket, traction and auxiliary drives at the same time for increased operator efficiency.

DIESEL AND GAS ENGINES

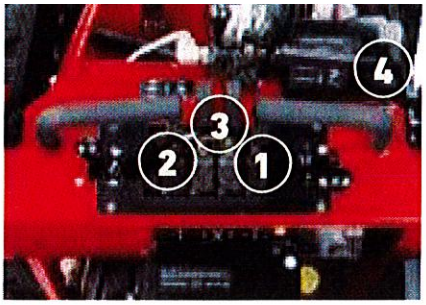
Choose a gas model for easy maintenance and cold-weather starting. Or choose diesel for better performance in high altitudes and warmer climates, along with more horsepower for attachments.

220, 323 & 320D WHEELED DINGOS

BIG BENEFITS IN SMALL SPACES

GO WHERE YOU NEED TO WORK.

Access confined spaces you never thought possible with a wheeled Dingo® compact utility loader. These models offer zero-turn capability, along with a shorter length that's easy to load on a trailer. You also get reliable hydraulic power to use a wide range of attachments. If you do a lot of tasks in tight spaces or on hard surfaces, these are the models for you.



DINGO CONTROLS
Responsive controls make the wheeled Dingo highly maneuverable:

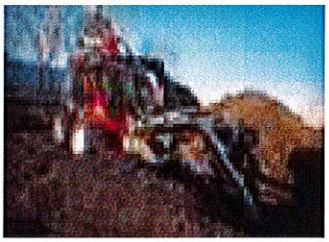
1. Curl or dump the attachment while raising or lowering the loader arms.
2. Raise and lower loader arms.
3. Traction drive control.
4. Activate the auxiliary circuit control lever to power the attachments instantly.

220, 323 & 320D FEATURES

HIGHLY MANEUVERABLE
Short wheelbase design offers excellent maneuverability. Get into tight spaces where only hand labor could go before.

TWO TRANSPORT SPEEDS
Low speed sends more hydraulic power to the attachment and high speed sends more power to the wheels. The low speed option also helps new operators shorten their learning curve.

IMPROVED VISIBILITY
The integrated ride-on operator platform allows improved visibility of the working area and attachments.



4-PAW™ INDEPENDENT FOUR-WHEEL DRIVE
Four independent wheel motors deliver hydraulic flow and pressure to all four wheels for improved traction and mobility. Fewer moving parts also mean less maintenance.
Available on 323 and 320D only.

GET THE JOB DONE

TORO QUICK ATTACH SYSTEM
CHANGE ATTACHMENTS IN SECONDS

1 Mount to the attachment plate on the unit.

2 Twist the pins to locked position.

3 For powered attachment, connect hydraulic lines to dripless flush-face quick couplers on loader arms.

TRENCHING, PLOWING, AND BORING EQUIPMENT

BORE DRIVE HEAD AND ROD & REAMER KIT *(sold separately)*
Easily bore under driveways and sidewalks to simplify irrigation and cable installations.

VIBRATORY PLOW
Reduce time spent on irrigation or cable installations. The vibratory plow optimizes pipe-pulling performance while minimizing turf damage. Extremely tight turning radius allows for tight maneuvering in confined spaces.

TRENCH FILLER
Two sets of opposing augers direct spoils into the hole. Standard float mechanism allows for up to 5" of ground following floatation. Skids evenly disperses weight and slide easily over turf, minimizing damage.

TORO® DINGO® COMPACT UTILITY LOADER ACCESSORIES

SUPERIOR DESIGN FOR LONG-LASTING, DEPENDABLE PERFORMANCE AND THE PERFECT FIT.

Genuine Toro Dingo attachments are your best assurance for attaining a long life and peak performance from your CUL. Designed specifically for the Dingo, the attachments are easy to operate and deliver clear sight lines.

TRENCHING, PLOWING AND BORING SPECIFICATIONS

Model #	Attachment Description	Dimensions (W* x L x H)	Weight (Lbs)
22420	Bore Drive Head Attachment (Bore diameter 1.25"-3.5")	24" x 22" x 25"	120
22421	Rod and Reamer (Bore diameter 1.25"-4.5")	-	58
22472	Trench Filler	48" x 31" x 22"	410

*Working Width

Model #	Attachment Description	Dimensions (W x L x H)	Weight (Lbs)
22473	High-Torque Trencher Head	35" x 65" x 24"	390
22474	High-Speed Trencher Head	35" x 65" x 24"	390
22911	Vibratory Plow	29" x 35" x 24"	400

HIGH-SPEED TRENCHER

Ideal for fast, efficient trenching in most soil conditions. 24", 36" and 48"* booms available. Chain speed: 187 rpm at 11 gpm. Torque: 442 ft/lbs at 3000 psi
*Longer, optional spoils auger recommended for 4' boom

HIGH-TORQUE TRENCHER HEAD

Guarantees performance in difficult soil conditions. 24", 36" and 48"* booms available. Chain speed: 120 rpm at 11 gpm. Torque: 675 ft/lbs at 3000 psi
*Optional spoils auger recommended for 4' boom

AUGERS AND TREE CARE EQUIPMENT

STUMP GRINDER
Rugged design and incredible hydraulic power, the Toro stump grinder will make powder of the toughest stumps. Grinds down as far as 16.5" below grade. Grinds up to 36" above grade. 17" wheel diameter.

HIGH-TORQUE AUGER POWER HEAD
Designed specifically to power up to 30" diameter augers in the toughest soil conditions. Auger bits from 6" to 30".

UNIVERSAL SWIVEL AUGER POWER HEAD
Ensures "plumb" holes on uneven terrain up to 18". Perfect for installing fences.

TORO® DINGO® COMPACT UTILITY LOADER ACCESSORIES

AUGERING, EARTH MOVING, TILLING AND TRENCHING TO LEVELING, LIFTING, HAULING AND DEMOLISHING...THE OPTIONS ARE ENDLESS

With the wide array of attachments available — more than 35 — the Dingo compact utility loader can perform big-machine applications like grading soil or carrying large amounts of material.

AUGERS AND TREE CARE SPECIFICATIONS

Model #	Attachment Description	Dimensions (W x L x H)	Weight (Lbs)
22429	Stump Grinder (w/chip guard)	44" x 20" x 31"	265
22438	Tree Fork (max load 220 lbs)	24.5" x 45" x 12.5"	169
22341	Adjustable Fork	31" x 45" x 27"	162
22521	Grapple Rake	35.5" x 18" x 30"	265
22805	High-Torque Auger Power Head	24" x 16" x 23"	182
22806	Universal Swivel Auger Power Head	24" x 17" x 23"	196

AUGER BITS AND EXTENSIONS

Model #	Attachment Description
22814	18" Auger Bit
22815	24" Auger Bit
22816	30" Auger Bit
22818	12" Auger Bit Extension
22819	24" Auger Bit Extension
22820	6" Full Flight Auger Bit
22821	9" Full Flight Auger Bit
22822	12" Full Flight Auger Bit
22823	15" Full Flight Auger Bit

GRAPPLE RAKE

Grab, drag, lift and place brush and debris easily with up to 3,000 lbs (1,361 kg) of clamping force at the tine tips.

TREE FORK

Hydraulic fork arm opens to handle large trees and shrubs. Angle design allows for gentle handling.

ADJUSTABLE FORKS

Easily adjust forks to desired width. Carry fence posts, rocks, pallets, plants, fertilizer, irrigation supplies and more. Forks constructed of high-strength steel. Lift capacity up to 600* lbs.; Maximum lift height: 61".

**Dependent upon Dingo model used.*

MAKES MOVING MATERIALS EASY

EARTH MOVING AND DIGGING EQUIPMENT

LEVELER
Grade, finish, and spread topsoil and other landscape materials. Back fill trenches. Carry job site materials such as plants, fertilizer, irrigation supplies, and more.

SOIL CULTIVATOR
Bury stones, soil clods, debris and grass. Prepares seed bed in one pass, tilling soil up to 5.5" deep. Adjustable grading bar and comb teeth leave perfect germination environment.

TILLER
Hardened steel tines for any soil condition, including clay or hardpan. Till more than six inches deep and 40" wide on one pass. Reversible tine direction frees jams quickly.

TORO® DINGO® COMPACT UTILITY LOADER ACCESSORIES

MANY ATTACHMENTS WITH ONE GOAL: PRODUCTIVITY

A wide variety of attachments, including buckets, augers, trenchers and forks, make the Dingo a more cost effective choice than a dedicated piece of equipment. In short, get more work done in less time.

BUCKET SPECIFICATIONS

Model #	Attachment Description	Dimensions (W x L x H)	Weight (Lbs)	Capacity (cu. ft.)
22409	4 cu.ft.n Standard Bucket	42" x 50" x 42.3"	115	4
22410	Loose Materials Bucket	48" x 26" x 18"	175	6.4
22520	Narrow Bucket	34.5" x 26.7" x 25.1"	153	3.5
22340	TX 1000 Standard Bucket	41" x 23" x 15"	172	4.3
22342	TX 1000 High Volume Bucket	53.25" x 29" x 17"	253	9.0

EARTH MOVING EQUIPMENT SPECIFICATIONS

Model #	Attachment Description	Dimensions (W x L x H)	Weight (Lbs)
22426	Direct Drive Power Box Rake	48" x - x 20.9"	365
22445	40" Tiller	44/40" Tilling Width x 20" x 26"	363
23102	Soil Cultivator	51" x 51" x 21"	363

Model #	Attachment Description	Dimensions (W x L x H)	Weight (Lbs)
23163	Backhoe	34.5" x 41" x 71"	762
23161	Wheeled Backhoe Fit-up Kit*	-	21
23162	TX Backhoe Fit-up Kit**	-	81
23165	Leveler	31.3" x 41.2" x 27"	162

*Backhoe fit-up kit for models 22317 & 22318
*Backhoe fit-up kit for models 22321, 22322, 22323 & 22324

POWER BOX RAKE

Perfect tool for seed or sod bed preparation. Carbide-teeth rotary drum pulverizes rough soil, cuts high spots and fills low spots in one pass. Manually adjustable yoke allows 20° offset. Overall width: 67"; Working width: 48".

BUCKETS

Perfect for light-duty grading, leveling, and material handling. Buckets vary in capacity from 4.3 cu. ft. to 9 cu. ft. for lighter materials.

BACKHOE

Versatile — dig foundations, plant trees, trench and much more. Folds to 34.5" wide for access to tight spaces and ease of transport. 180° bucket and swing arm rotation, 82"digging depth, and standard 13" bucket.

YOU CAN HANDLE IT

MATERIAL HANDLING EQUIPMENT

CEMENT BOWL
Flighting mixes and holds cement in bowl. Mix, haul, and pour up to 200 lbs. Auger power head required (sold separately).

MANUAL OR HYDRAULIC FORKS
Transport and position trees and large shrubs exactly where you want them with exceptional maneuverability.

HYDRAULIC CONCRETE BREAKER
The hydraulic breaker is the perfect tool for precision demolition. Combined with the compact size and ease of use of the Dingo, the breaker simplifies the difficult job of breaking concrete, asphalt, rock or brick during renovation jobs.

TORO® DINGO® COMPACT UTILITY LOADER ACCESSORIES

TACKLE A LOT MORE WORK IN LESS TIME.

Uses for the Toro Dingo and its various attachments are limited only by your imagination.

MATERIAL HANDLING SPECIFICATIONS

Model #	Attachment Description	Dimensions (W x L x H)	Weight (Lbs)
22423	Multi-Purpose Tool	24" x 4" x10"	40
-	Boom Jib	0.63" x 32.4 x 9.4"	23.2
-	Scarifier Teeth	2" x 13" x 11.7"	9
22442	Cement Bowl		75
22456	Snowthrower	48" x 43.3" x 50.4"	335
23135	Concrete Breaker	25" x 50" x 13" 17" length x 2" diameter	262
22414	Utility Blade	48" x 25" x 21"	212

MISCELLANEOUS SPECIFICATIONS

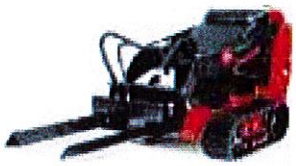
Model #	Attachment Description	Weight (Lbs)
22475	TX Platform (Gas)	95
22476	TX Platform (Diesel)	95
22464	Trencher Crumber Kit	52
22417	Counter Weight	183

SNOWTHROWER
Two-stage design with the power to handle the toughest snow conditions. Replaceable scraper. Adjustable skids. Overall Width: 48"
Clearing width 44".

MULTI-PURPOSE TOOL
Plant and haul trees or dig and breakup soil with the 3-in-1 ripper, towbar and boom.

UTILITY BLADE
Backfill trenches, move or smooth dirt or even use to clear snow.

MEET THE FAMILY



DINGO TX 1000 SPECIFICATIONS

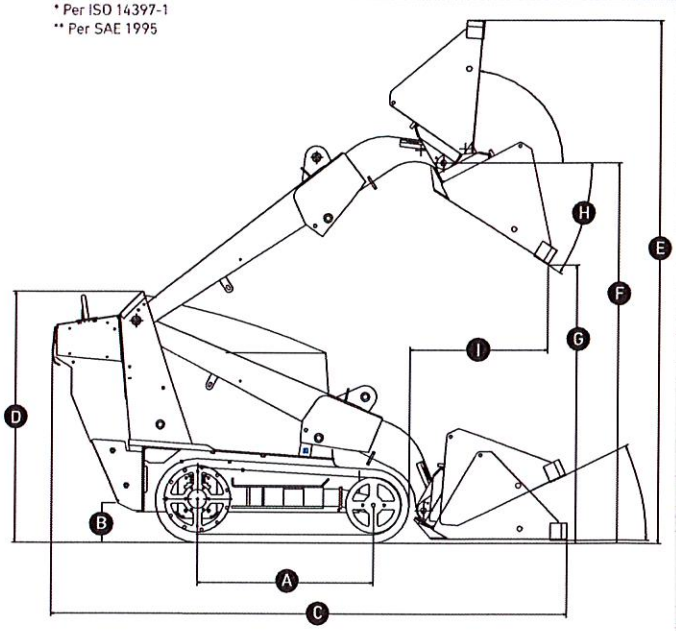
		DINGO TX 1000 NARROW TRACK 22327	DINGO TX 1000 WIDE TRACK 22328
DIMENSIONS	A Wheelbase	41" (10 cm)	
	B Ground Clearance	6.0" (15 cm)	
	Overall Width	33.7" (86 cm	41" (104 cm)
	C Overall Length	100.7" (256 cm) w/bucket; 81.7" (208 cm) w/o bucket	
	D Overall Height	53.2" (135 cm)	
	E Max Operating Height	105" (267 cm)	
	F Hinge Pin Height	81" (206 cm	
	G Dump Height	61" (155 cm)	
	H Dump Angle	40-degrees	
	I Reach - Fully Raised	24.5" (62 cm)	
	Ground Speed (F/R)	4.7 mph (7.6 km/h)/ /4.7 mph (7.6 km/h)	
	Weight	2,610 lbs (1184 kg)	2,790 lbs (1266 kg)
	Tip Capacity	2,857 lbs (1,296 kg)	3,071 lbs (1,393 kg)
	Rated Operating Capacity (35% of Tip Capacity)*	1,000 lbs (454 kg)	1,075 lbs (488 kg)
ENGINE	Engine	Kubota* D1305	
	Manufacturer's Gross HP Rating at RPM**	24.9 HP (18.6 kW) @ 2600 rpm	
	Displacement	77 cu. in. (1262cc)	
	Fuel Type	Diesel	
	Air Filter	Two-stage, heavy-duty, remote	
	Cooling System	Liquid Cooled	
	Fuel Tank	11.5 gallons (44 liters)	
	Oil Capacity	6.0 quarts (5.7 liters)	
	Loader Arms	Vertical	
OPERATION	Hydraulic Pressure	3,000 PSI	
	Hydraulic Flow	Traction: 13.3 gpm (each pump); Auxiliary: 15.2 gpm	
	Reservoir Capacity	10 gallons (57.5 liters)	
TRACKS	Tracks	Sprocket-drive, 6 road wheels per side	
	Traction	Dual hydrostatic pump	
	Track Length x Width	127.6" x 5.9" (324 cm x 15 cm)	127.6" x 9.5" (324 cm x 24 cm)
	Ground Pressure	5.4 PSI	3.6 PSI

* Per ISO 14397-1
** Per SAE 1995

DINGO TX 427 & TX 525 SPECIFICATIONS

	TX 525 22323	TX 525 WIDE 22324
A Wheelbase	31.2" (79 cm)	
B Ground Clearance	4.6" (11.7 cm)	
Overall Width	33.7" (85.6 cm)	41" (104 cm)
C Overall Length	92" (233.7 cm) w/bucket; 70.7" (180 cm) w/o bucket	
D Overall Height	46.1" (117.1 cm)	
E Max Operating Height	90.1" (229 cm)	
F Hinge Pin Height	65.8" (167.1 cm)	
G Dump Height	46.1" (117.1 cm)	
H Dump Angle	38-degrees	
I Reach - Fully Raised	21.8" (55.4 cm)	
Ground Speed (F/R)	0-4.5 mph (0-7.2 km/h) / 0-2.0 mph (0-3.2 km/h)	
Weight	1,904 lbs (864 kg)	2,013 lbs (907 kg)
Tip Capacity	1,580 lbs. (717 kg)	
Rated Operating Capacity (35% of Tip Capacity)*	553 lbs. (251 kg)	
Engine	Kubota D902	
Manufacturer's Gross HP Rating at RPM**	23.3 HP (17.3 kW) @ 3400 rpm	
Displacement	55 cu. in. (901cc)	
Fuel Type	Diesel	
Air Filter	Two-stage, heavy-duty, remote	
Cooling System	Liquid Cooled	
Fuel Tank	6.0 gallons (23 liters)	
Oil Capacity	3.84 quarts (3.63 liters) 2.0 quarts (2.95 liters)	
Loader Arms	Radial	
Hydraulic Pressure	3,000 PSI	
Hydraulic Flow	Traction: 16.9 gpm (each pump); Auxiliary: 13.8 gpm	
Reservoir Capacity	10.5 gallons (40 liters)	
Tracks	Sprocket-drive, 10 road wheels per side	
Traction	Dual hydrostatic pump	
Track Length	96.6" x 5.9" (245 cm x 15 cm)	96.6" x 9.5" (245 cm x 24 cm
Ground Pressure	5.0 PSI	3.5 PSI

* Per ISO 14397-1
** Per SAE 1995

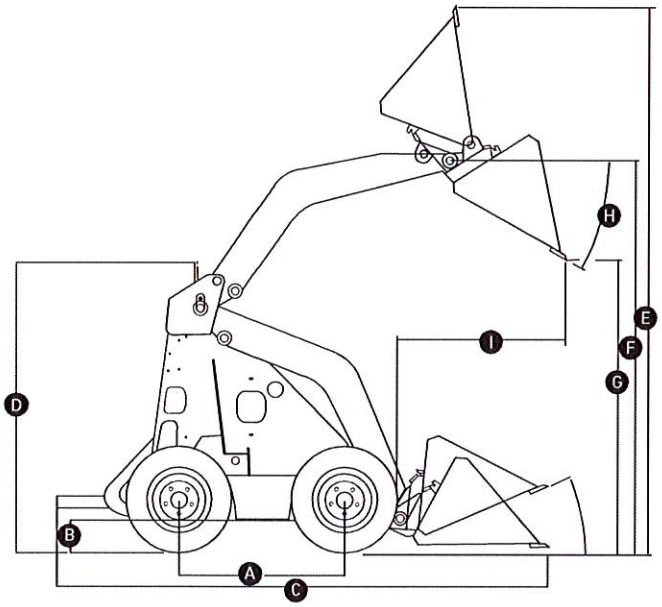


DINGO 220, 323 & 320-D SPECIFICATIONS

	TX 427 22321	TX 427 WIDE 22322
	31.2" (79 cm)	
	4.6" (11.7 cm)	
	33.7" (85.6 cm)	41" (104 cm)
	92" (233.7 cm) w/bucket; 70.7" (180 cm) w/o bucket	
	46.1" (117.1 cm)	
	90.1" (229 cm)	
	65.8" (167.1 cm)	
	46.1" (117.1 cm)	
	38-degrees	
	21.8" (55.4 cm)	
	0-4.5 mph (0-7.2 km/h) / 0-2.0 mph (0-3.2 km/h)	
	1,882 lbs (854 kg)	1,990 lbs (902 kg)
	1,530 lbs. (694 kg)	
	535 lbs. (243 kg)	
	Kohler Command Pro Series CH 740	
	25 HP (20.1 kW) @ 3600 rpm	
	44 cu. in. (725cc)	
	Gas	
	Two-stage, heavy-duty, remote	
	Air Cooled	
	6.0 gallons (23 liters)	
	2.0 quarts (2.95 liters)	
	Radial	
	3,000 PSI	
	Traction: 16.9 gpm (each pump); Auxiliary: 11.4 gpm	
	10.5 gallons (40 liters)	
	Sprocket-drive, 10 road wheels per side	
	Dual hydrostatic pump	
	96.6" x 5.9" (245 cm x 15 cm)	96.6" x 9.5" (245 cm x 24 cm)
	5.0 PSI	3.5 PSI

	DINGO 220 22317	DINGO 323 22318	DINGO 320-D 22337CP
A Wheelbase	28" (71 cm)		
B Ground Clearance	5.8" (15 cm) front & rear		
Overall Width	40.5" (103 cm) standard tires; 35" (90 cm) narrow tires		
C Overall Length	82.2" (208.8 cm) w/bucket; 62" (157.5 cm) w/o bucket		
D Overall Height	48.7" (123.7 cm)		
E Max Operating Height	91.2" (231.6 cm)		
F Hinge Pin Height	66" (167.6 cm)		
G Dump Height	47" (119 cm)		
H Dump Angle	34-degrees		
I Reach – Fully Raised	28" (71.1 cm)		
Ground Speed (F/R)	0-3.7 mph (0-6 km/h) / 0-3.7 mph (0-6 km/h)		0-3.0 mph (0-4.8 km/h) / 0-3.0 mph (0-4.8 km/h)
Weight	1,430 lbs (649 kg)	1,567 lbs (711 kg)	1,722 lbs (781 kg)
Tip Capacity	1,030 lbs (467 kg)		1,048 lbs (146 kg)
Rated Operating Capacity (50% of Tip Capacity)*	515 lbs. (234 kg)		524 lbs. (238 kg)
Engine	Kohler* Command Series CH20	Kohler* Command Series CH23	Kubota D722
Manufacturer's Gross HP Rating at RPM*	20 HP (14.9 kW) @ 3600 rpm	23 HP (17.2 kW) @ 3600 rpm	20 HP (14.9 kW) @ 3600 rpm
Displacement	38.1 cu. in. (624 cc)	41 cu. in. (674cc)	43.88 cu. in. (719 cc)
Fuel Type	Gas		Diesel
Air Filter	High-capacity, paper type w/pre-cleaner	Two-stage, heavy-duty, remote	
Cooling System	Air Cooled		Liquid Cooled
Fuel Tank	5.6 gallon (21 liter)	11.2 gallon (42.4 liter)	4 gallon (15 liter)
Oil Capacity	2 quarts (1.9 liter)		3.4 quarts (3.2 liter)
Loader Arms	Radial		
Hydraulic Pressure	3,250 PSI		
Hydraulic Flow	10.8 gpm high-flow hydraulic circuit, 4 gpm low-flow hydraulic circuit		
Reservoir Capacity	14.8 gallons (56 liter)	17 gallons (64 liter)	14.8 gallons (56 liter)

* Per ISO 14397-1
** Per SAE 1995



DIMENSIONS

- A Wheelbase
- B Ground Clearance
- C Overall Length
- D Overall Height
- E Maximum Operating Height
- F Hinge Pin Height
- G Dump Height
- H Dump Angle
- I Reach

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Upcoming Events

November 28-December 5th	Small Business Week of Deals
December 5th	Winterfest at Fort Lupton Recreation Center by Appointment
December 8th	Town Hall Meeting, 130 S. McKinley Ave. 6:30 p.m.
December 15th	City Council Meeting, 130 S. McKinley Ave. 7:00 p.m.
December 25th	City Offices and Fort Lupton Recreation Center Closed in Observance of the Christmas Holiday
December 26-27th	Recreation Center will be closed.