OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
13.97 ACRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016



8 CARRIAGE FRONT ELEVATION - COLOR
1/8" = 1'-0"



7 CARRIAGE RIGHT ELEVATION - COLOR
1/8" = 1'-0"



6 CARRIAGE REAR ELEVATION - COLOR
1/8" = 1'-0"



5 CARRIAGE LEFT ELEVATION - COLOR
1/8" = 1'-0"

EXTERIOR COLOR SCHEME 3	
• BOARD AND BATTEN SIDING	SW 7674 PEPEPRCORN
• 6" CEMENTITIOUS LAP SIDING	SW 7649 SILVERPLATE
• ACCENT TRIM	SW 7069 IRON ORE
• DOORS	TYPICAL: SW 6991 BLACK MAGIC UTILITY DOORS: MATCH FIELD
• GRARAGE DOORS	SW 7069 IRON ORE
• ASPHALT ROOF	TAMKO "RUSTIC BLACK"
• MASONRY	SUNSET STONE LIMESTONE "WINTERSKY"
• METAL RAILINGS	PWDR. COAT BLACK FLAT BK247

NOTES:
ALL PAINT COLORS BY SHERWIN WILLILAMS UNLESS OTHERWISE NOTED
RETURN WALLS TO MATCH EXTERIOR WALLS

ROOF
TAMKO: RUSTIC BLACK

METAL ROOF
BERRIDGE: CHARCOAL GREY

BODY 1
SHERWIN WILLIAMS: 7674 PEPPERCORN

TRIM
SHERWIN WILLIAMS: 7069 IRON ORE

BODY 2
SHERWIN WILLIAMS: 7649 SILVERPLATE

ENTRY
SHERWIN WILLIAMS: 6991 BLACK MAGIC

GARAGE
SHERWIN WILLIAMS: 7069 IRON ORE

RAILINGS
CARDINAL: POWDER COATING BLACK FLAT BK247

MASONRY
SUNSET STONE: LIMESTONE WINTERSKY

WINDOWS
WHITE



4 CARRIAGE - REAR-RIGHT CORNER



3 CARRIAGE - REAR-LEFT CORNER



2 CARRIAGE - FRONT-RIGHT CORNER



1 CARRIAGE - FRONT-LEFT CORNER

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REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

BLDG. TYPE D - ELEVATIONS
SHEET 44 OF 51

KA PROJECT #215093

OUTLOOK NINE MILE

OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
13.97 ACRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016

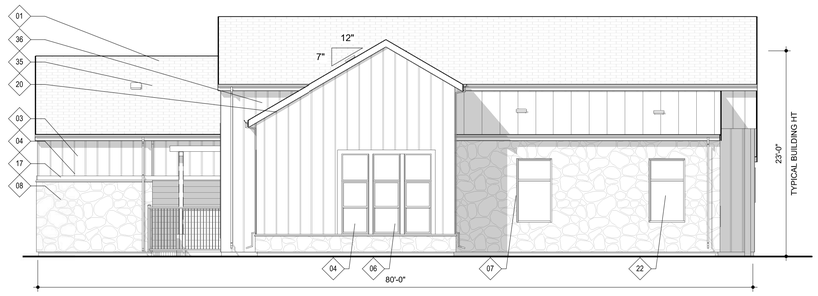
KEYNOTES	
01	ARCHITECTURAL COMPOSITE SHINGLE ROOF
02	5/4" X 8" PAINTED FASCIA
03	6" CEMENTITIOUS LAP SIDING
04	5/4" X 6" PAINTED CEMENTITIOUS ACCENT TRIM
06	VINYL SINGLE-HUNG WINDOW
07	VINYL FIXED WINDOW
08	STONE VENEER
09	OVERHEAD GARAGE DOOR; STEEL
12	BUILDING ENTRY DOOR, MAINTAIN ACCESSIBLE ROUTE TO THIS LOCATION
13	STANDING SEAM METAL ROOF
17	STONE SILL/CAP
20	5/4" X 10" PAINTED CEMENTITIOUS ACCENT TRIM
22	STOREFRONT
28	ELECTRIC METER
29	GAS METER
35	ROOF VENT; MATCH ROOF COLOR
36	CEMENTITIOUS BOARD AND BATTEN

EXTERIOR COLOR SCHEME - CLUBHOUSE		
•	BOARD AND BATTEN SIDING	SW 7662 7674 PEPPERCORN
•	6" CEMENTITIOUS LAP SIDING	SW 6012 BROWSE BROWN
•	ACCENT TRIM	SW 7069 IRON ORE
•	DOORS	TYPICAL: SW 6991 BLACK MAGIC UTILITY DOORS: MATCH FIELD
•	STOREFRONT	BLACK
•	GARAGE DOORS	7069 IRON ORE
•	ASPHALT ROOF	TAMKO "RUSTIC BLACK"
•	STANDING SEAM METAL ROOF	BERRIDGE METALS "CHARCOAL GRAY"
•	MASONRY	SUNSET STONE LIMESTONE "WINTERSKY"
•	METAL RAILINGS	POWDER COAT FLAT BLACK BK247

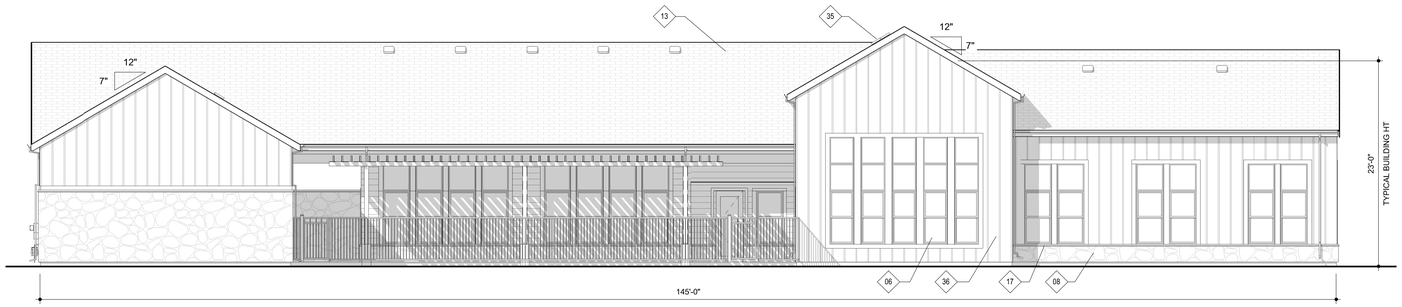
NOTES:

ALL PAINT COLORS BY SHERWIN WILLILAMS UNLESS OTHERWISE NOTED

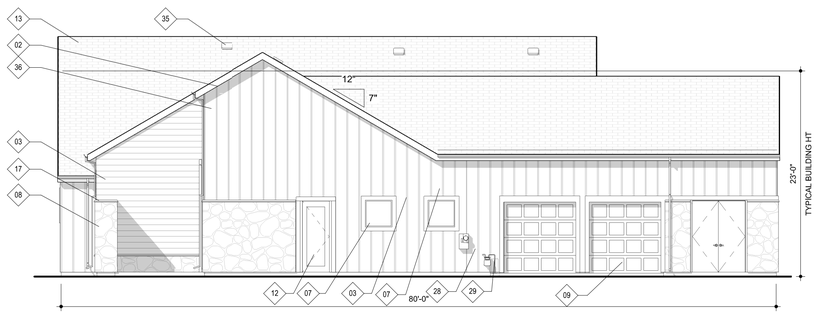
RETURN WALLS TO MATCH EXTERIOR WALLS



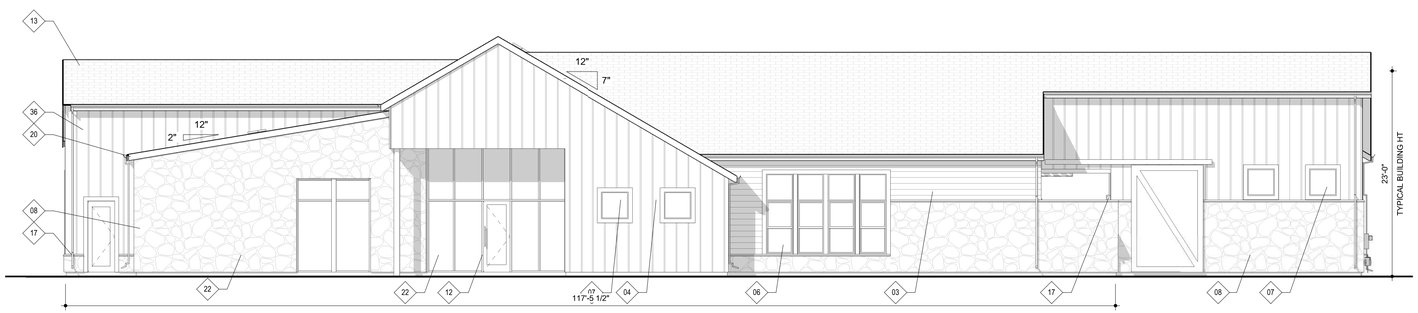
4 CLUBHOUSE - LEFT ELEVATION
1/8" = 1'-0"



3 CLUBHOUSE - REAR ELEVATION
1/8" = 1'-0"



2 CLUBHOUSE - RIGHT ELEVATION
1/8" = 1'-0"



1 CLUBHOUSE - FRONT ELEVATION
1/8" = 1'-0"

KA PROJECT #215093

01-30-2020
11-08-2019
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CLUBHOUSE ELEVATIONS
SHEET 45 OF 51

OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
13.97 ACRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016



8 CLUBHOUSE - FRONT ELEVATION
1/8" = 1'-0"



7 CLUBHOUSE - RIGHT ELEVATION
1/8" = 1'-0"



6 CLUBHOUSE - REAR ELEVATION
1/8" = 1'-0"



5 CLUBHOUSE - LEFT ELEVATION
1/8" = 1'-0"

ROOF
TAMKO: RUSTIC BLACK

METAL ROOF
BERRIDGE: CHARCOAL GREY

BODY 1
SHERWIN WILLIAMS: 7674 PEPPERCORN

TRIM
SHERWIN WILLIAMS: 7069 IRON ORE

BODY 2
SHERWIN WILLIAMS: 6012 BROWSE BROWN

ENTRY
SHERWIN WILLIAMS: 6991 BLACK MAGIC

GARAGE
SHERWIN WILLIAMS: 7069 IRON ORE

RAILINGS
CARDINAL: POWDER COATING BLACK FLAT BK247

MASONRY
SUNSET STONE: LIMESTONE WINTERSKY

WINDOWS
WHITE



4 CLUBHOUSE - FRONT LEFT CORNER



3 CLUBHOUSE - REAR LEFT CORNER



2 CLUBHOUSE - FRONT RIGHT CORNER



1 CLUBHOUSE - REAR RIGHT CORNER

EXTERIOR COLOR SCHEME - CLUBHOUSE	
• BOARD AND BATTEN SIDING	SW 7662 7674 PEPPERCORN
• 6" CEMENTITIOUS LAP SIDING	SW 6012 BROWSE BROWN
• ACCENT TRIM	SW 7069 IRON ORE
• DOORS	TYPICAL: SW 6991 BLACK MAGIC UTILITY DOORS: MATCH FIELD
• STOREFRONT	BLACK
• GARAGE DOORS	7069 IRON ORE
• ASPHALT ROOF	TAMKO "RUSTIC BLACK"
• STANDING SEAM METAL ROOF	BERRIDGE METALS "CHARCOAL GRAY"
• MASONRY	SUNSET STONE LIMESTONE "WINTERSKY"
• METAL RAILINGS	POWDER COAT FLAT BLACK BK247

NOTES:
ALL PAINT COLORS BY SHERWIN WILLILAMS UNLESS OTHERWISE NOTED
RETURN WALLS TO MATCH EXTERIOR WALLS

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CLUBHOUSE ELEVATIONS

OUTLOOK NINE MILE

OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
13.97 ACRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016

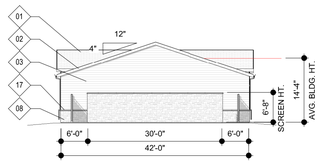
KEYNOTES	
#	DESCRIPTION
01	ARCHITECTURAL COMPOSITE SHINGLE ROOF
02	5/4" X 8" PAINTED FASCIA
03	6" CEMENTITIOUS LAP SIDING
04	5/4" X 6" PAINTED CEMENTITIOUS ACCENT TRIM
05	CEMENTITIOUS PANEL SIDING
08	STONE VENEER
09	OVERHEAD GARAGE DOOR; STEEL
17	STONE SILL/CAP
23	SECURITY GATE
26	METAL TRASH ENCLOSURE GATE
36	CEMENTITIOUS BOARD AND BATTEN

EXTERIOR COLOR SCHEME - GARAGES	
• BOARD AND BATTEN SIDING	SW 7649 SILVERPLATE
• 6" CEMENTITIOUS LAP SIDING	SW 7649 SILVERPLATE
• ACCENT TRIM	SW 7069 IRON ORE
• DOORS	SW 7069 IRON ORE
• GARAGE DOORS	SW 7069 IRON ORE
• ASPHALT ROOF	TAMKO "RUSTIC BLACK"
• MASONRY	SUNSET STONE LIMESTONE "WINTERSKY"

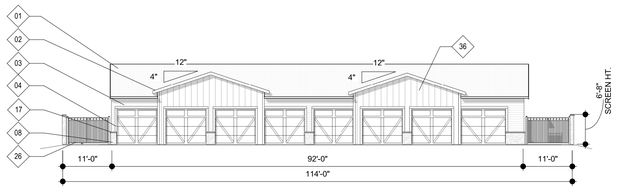
NOTES:

ALL PAINT COLORS BY SHERWIN WILLILAMS UNLESS OTHERWISE NOTED

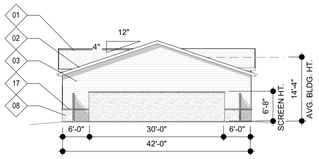
RETURN WALLS TO MATCH EXTERIOR WALLS



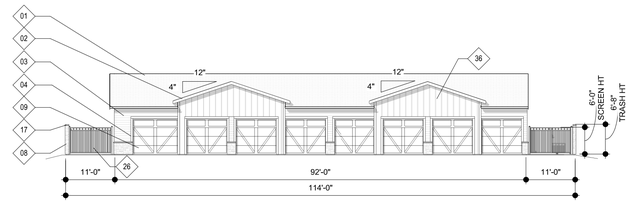
8 GARAGE TYPE B - RIGHT ELEVATION
1/16" = 1'-0"



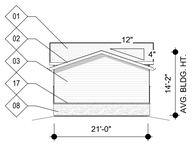
7 GARAGE TYPE B - REAR ELEVATION
1/16" = 1'-0"



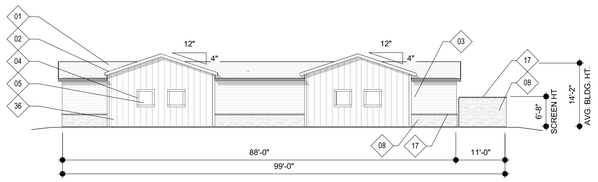
6 GARAGE TYPE B - LEFT ELEVATION
1/16" = 1'-0"



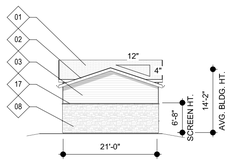
5 GARAGE TYPE B - FRONT ELEVATION
1/16" = 1'-0"



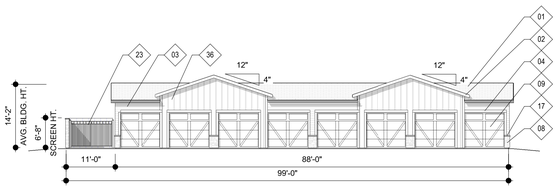
4 GARAGE TYPE A - RIGHT ELEVATION
1/16" = 1'-0"



3 GARAGE TYPE A - REAR ELEVATION
1/16" = 1'-0"



2 GARAGE TYPE A - LEFT ELEVATION
1/16" = 1'-0"



1 GARAGE TYPE A - FRONT ELEVATION
1/16" = 1'-0"

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ACCESSORY ELEVATIONS
SHEET 47 OF 51

OUTLOOK NINE MILE

OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
13.97 ACRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016



16 GARAGE TYPE A - FRONT ELEVATION
1/16" = 1'-0"



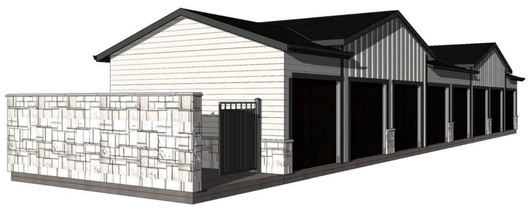
15 GARAGE TYPE A - LEFT ELEVATION
1/16" = 1'-0"



14 GARAGE TYPE A - REAR ELEVATION
1/16" = 1'-0"



13 GARAGE TYPE A - RIGHT ELEVATION
1/16" = 1'-0"



12 GARAGE TYPE A - FRONT-LEFT CORNER



11 GARAGE TYPE A - FRONT-RIGHT CORNER



10 GARAGE TYPE A - REAR-LEFT CORNER



9 GARAGE TYPE A - REAR-RIGHT CORNER



8 GARAGE TYPE B - FRONT ELEVATION
1/16" = 1'-0"



7 GARAGE TYPE B - LEFT ELEVATION
1/16" = 1'-0"



6 GARAGE TYPE B - REAR ELEVATION
1/16" = 1'-0"



5 GARAGE TYPE B - RIGHT ELEVATION
1/16" = 1'-0"



4 GARAGE TYPE B - FRONT-LEFT CORNER



3 GARAGE TYPE B - REAR-LEFT CORNER



2 GARAGE TYPE B - REAR-RIGHT CORNER



1 GARAGE TYPE B -FRONT-RIGHT CORNER

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ACCESSORY ELEVATIONS

OUTLOOK NINE MILE

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OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
13.97 ARCRES (LOT 11, TRACTS F, G & H)

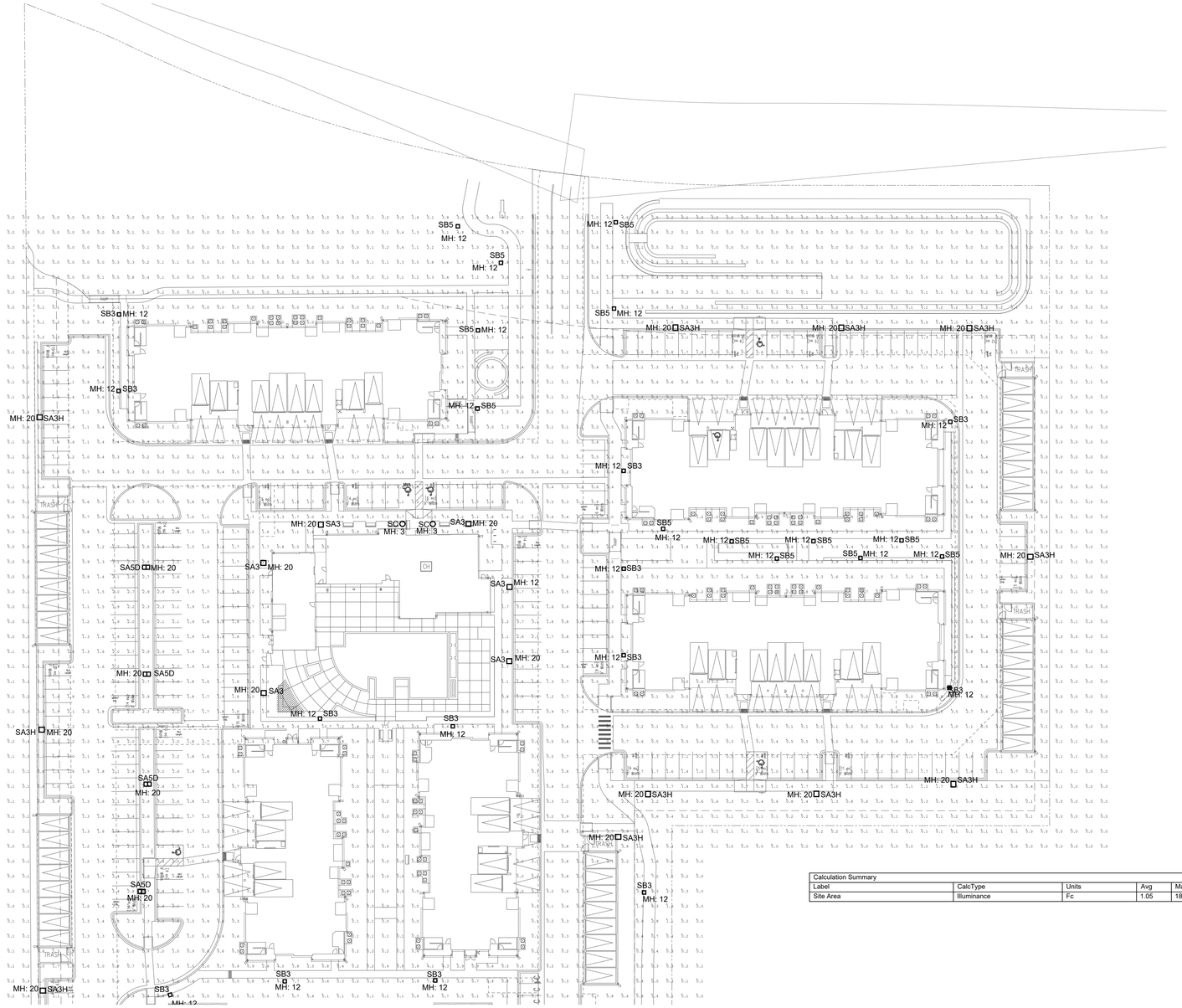
SITE PLAN - SP-000832-2016

GENERAL NOTES:

1. ANY PROPOSED LIGHT FIXTURES INSTALLED ON PRIVATE PROPERTY ADJACENT TO PUBLIC ROW, SHALL BE ORIENTED IN A MANNER OR LIMITED IN LUMEN OUTPUT TO PREVENT GLARE PROBLEMS AND SHALL NOT EXCEED NATIONAL IES LIGHTING STANDARDS FOR DISABILITY GLARE.

2. ALL VALUES ARE IN UNITS OF FOOTCANDLES. ILLUMINATION VALUES AT PROPERTY LINE COMPLY WITH THE RULES AND REGULATIONS FOR THE LANDSCAPING OF PARKING AREAS SECTION I, (3), WHERE THE REQUIREMENT OF 0.1 FOOTCANDLE DOES NOT APPLY TO PUBLIC RIGHT OF WAYS.

3. ALL FIXTURES TO BE FULL CUTOFF. REFER TO SPEC SHEETS FOR MORE INFORMATION.



SITE PHOTOMETRIC PLAN

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Site Area	Illuminance	Fc	1.05	18.2	0.0	N.A.	N.A.

40 0 40 80
SCALE: 1" = 40'

N

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11-08-2019
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ISSUE DATE: 04-27-2017

SITE PHOTOMETRIC PLAN 1
SHEET 49 OF 51

PROJECT NUMBER: 160602

OUTLOOK NINE MILE

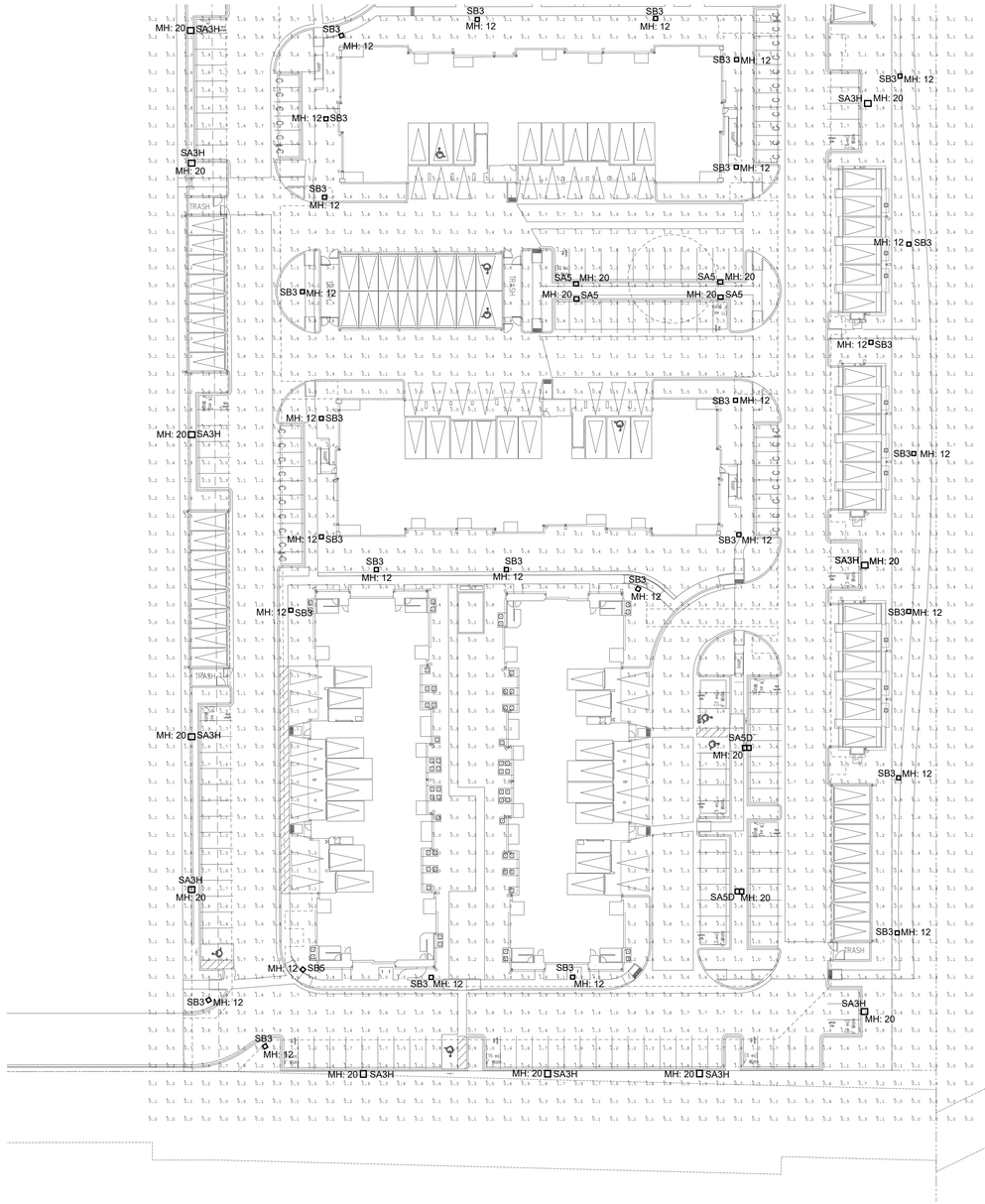
NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH

OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

13.97 ARCRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016



GENERAL NOTES:

1. ANY PROPOSED LIGHT FIXTURES INSTALLED ON PRIVATE PROPERTY ADJACENT TO PUBLIC ROW, SHALL BE ORIENTED IN A MANNER OR LIMITED IN LUMEN OUTPUT TO PREVENT GLARE PROBLEMS AND SHALL NOT EXCEED NATIONAL IES LIGHTING STANDARDS FOR DISABILITY GLARE.

2. ALL VALUES ARE IN UNITS OF FOOTCANDLES. ILLUMINATION VALUES AT PROPERTY LINE COMPLY WITH THE RULES AND REGULATIONS FOR THE LANDSCAPING OF PARKING AREAS SECTION i, (3), WHERE THE REQUIREMENT OF 0.1 FOOTCANDLE DOES NOT APPLY TO PUBLIC RIGHT OF WAYS.

3. ALL FIXTURES TO BE FULL CUTOFF. REFER TO SPEC SHEETS FOR MORE INFORMATION.

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Site Area	Illuminance	Fc	1.05	18.2	0.0	N.A.	N.A.

SITE PHOTOMETRIC PLAN

40 0 40 80

SCALE: 1" = 40'

01.30.2020
11-08-2019
REVISION DATE: 09-27-2019

ISSUE DATE: 04-27-2017

SITE PHOTOMETRIC PLAN

SHEET 50 OF 51

PROJECT NUMBER: 160602

OUTLOOK NINE MILE

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OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

13.97 ARCRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016



D-Series Size 1

LED Area Luminaire

Catalog Number

Notes

Type

Hit the Tab key or mouse over the page to see all interactive elements.

Specifications

EPA: 1.01 ft² (0.09 m²)

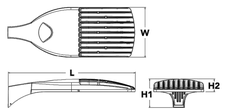
Length: 33" (83.8 cm)

Width: 13" (33.0 cm)

Height H1: 7-1/2" (19.0 cm)

Height H2: 3-1/2"

Weight (max): 27 lbs (12.2 kg)



Introduction

The modern styling of the D-Series is striking yet unobtrusive - making a bold, progressive statement even as it blends seamlessly with its environment. The D-Series distills the benefits of the latest in LED technology into a high performance, high efficacy, long-life luminaire.

The outstanding photometric performance results in sites with excellent uniformity, greater pole spacing and lower power density. It is ideal for replacing up to 750W metal halide in pedestrian and area lighting applications with typical energy savings of 65% and expected service life of over 100,000 hours.

A+ Capable options indicated by this color background.

Ordering Information

EXAMPLE: DSX1 LED P7 40K T3M MVOLT SPA NLTAIR2 PIRHN DDBXD

DSX1 LED

Series	LEDs	Color temperature	Distribution	Voltage	Mounting
DSX1 LED	**Forward optics** P1 P4 P7 P2 P5 P8 P3 P6 P9 **Rotated optics** P10[1] P12[1] P11[1] P13[1]	30K 3000 K 40K 4000 K 50K 5000 K	T1S Type I short T2S Type II short T2M Type II medium T3S Type III short T3M Type III medium T4M Type IV medium TFTM Forward throw medium T5VS Type V very short T5S Type V short T5M Type V medium T5W Type V wide BLC Backlight control[2] LCCO Left corner cutoff[2] RCCO Right corner cutoff[2]	MVOLT[3] 120[4] 208[4] 240[4] 277[4] 347[4] 480[4]	**Shipped included** SPA Square pole mounting RPA Round pole mounting WBA Wall bracket SPUMBA Square pole universal mounting adaptor[5] RPUMBA Round pole universal mounting adaptor[5] **Shipped separately** KMA8 DDBXD U Mast arm mounting bracket adaptor (specify finish)[6]

Control options		Other options	Finish (required)
Shipped installed		**Shipped installed**	DDBXD Dark bronze
NLTAIR2 nLight AIR generation 2 enabled[7]	PIR High/low, motion/ambient sensor, 8-15' mounting height, ambient sensor enabled at 5fc[13,16]	HS House-side shield[17]	DBLXD Black
PIRHN Network, high/low motion/ambient sensor[8]	PIRH High/low, motion/ambient sensor, 15-30' mounting height, ambient sensor enabled at 5fc[13,16]	SF Single fuse (120, 277, 347V)[9]	DNAXD Natural aluminum
PER NEMA twist-lock receptacle only (controls ordered separately)[9]	PIR1FC3V High/low, motion/ambient sensor, 8-15' mounting height, ambient sensor enabled at 1fc[13,16]	DF Double fuse (208, 240, 480V)[9]	DWHXD White
PER5 Five-pin receptacle only (controls ordered separately)[9,10]	PIRH1FC3V Bi-level, motion/ambient sensor, 15-30' mounting height, ambient sensor enabled at 1fc[13,16]	L90 Left rotated optics[11]	DDBTXD Textured dark bronze
PER7 Seven-pin receptacle only (controls ordered separately)[9,10]	FAO Field adjustable output[14]	R90 Right rotated optics[11]	DBLBXD Textured black
DMG 0-10v dimming wires pulled outside fixture (for use with an external control, ordered separately)[12]		**Shipped separately**	DNATXD Textured natural aluminum
DS Dual switching[12,15,16]		BS Bird spikes[18]	DWHGXD Textured white
		EGS External glare shield[18]	

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TYPE SA3,SA3H, SA5 AND SA5D

LED LIFESTYLE SMALL DECORATIVE AREA LIGHTS (XDLS)



US patent 7,828,456 8,002,428, 8,177,386 8,434,893 8,567,983 and US & int'l. patents pending

SMARTTEC™ - LSI drivers feature integral sensor which reduces drive current when ambient temperatures exceed rated temperature

ENERGY SAVING CONTROL OPTION - DIM - 0-10 volt dimming enabled with controls by others. BLS - Bi-level switching responds to external line voltage signal from separate 120-277V controller or sensor (by others), with low light level decreased to 30% maximum drive current.

LEDS - Select high-brightness LEDs in Cool White (5000K), Neutral White (4000K) or Warm White (3500K) color temperature. 70 CRI CW. 80 CRI NW and WW.

DISTRIBUTION PATTERN - Types 3, FT and 5. Exceptional uniformity creates bright environment at lower light levels. Improved backlight cutoff minimizes light trespass.

CROWN - Cast aluminum. Wiring emerges from crown through compression seal fitting to prevent water entry. One-piece silicone gasket seals crown to shade for water- and dust-tight construction.

SHADES - Spun aluminum. Two shade styles available - A - Angle and B - Bell.

OPTICAL UNIT - Optical unit and aluminum door frame recessed into shade and sealed with one-piece silicone gasket. Clear tempered flat glass lens sealed with silicone gasket to door frame (includes pressure-stabilizing breather). Optical unit is tethered and provides access to driver. Door frame retaining fasteners are captive.

BRACKETS - Brackets are extruded and cast aluminum assemblies or fabrications. All decorative elements are die cast or extruded aluminum.

MOUNTING - Classic Hook (CH) and Side Arm (SA - 4" O.D. minimum pole top required) available. See Steel Round Pole and Aluminum Round Pole data sheets for pole selection information. Side Arm pole mount requires 3" reduced drilling pattern. Classic hook mount requires a 4" O.D. pole or tenon.

ELECTRICAL - Two-stage surge protection (including separate surge protection built into electronic driver) meets IEEE C62.41.2-2002, Location Category C. Available with universal voltage power supply 120-277VAC (UE - 50/60Hz input), and 347-480 VAC. Optional button-type photocells (PCI) are available in 120, 208, 240, 277 or 347 volt (supply voltage must be specified).

DRIVERS - Available in SS (Super Saver) and HO (High Output) drive currents (Drive currents are factory programmed.). Components are fully encased in potting material for moisture resistance. Driver complies with FCC standards. Driver and key electronic components can easily be accessed.

OPERATING TEMPERATURE - -40°C to +50°C (-40°F to +122°F).

FINISH - Each fixture is finished with LSI's DuraGrip polyester powder coat process. The DuraGrip finish withstands extreme weather changes without cracking or peeling.

WARRANTY - LSI LED fixtures carry a limited 5-year warranty.

PHOTOMETRICS - Please visit our web site at **www.lsi-industries.com** for detailed photometric data.

SHIPPING WEIGHT (IN CARTON) - 24 lbs. (10.8 kg)

LISTINGS - UL listed to U.S. and Canadian safety standards. Suitable for wet locations

LIGHT OUTPUT - XDLS

		Lumens (Nominal) Type 3	Type FT	Type 5	Watts (Nominal)
Cool White	SS	7100	6540	6220	71
	HO	9600	8890	8500	106
Neutral White	SS	6510	5840	5680	71
	HO	8810	7890	7780	106
Warm White	SS	4790	5170	5010	71
	HO	6460	6880	6740	106

LED Chips are frequently updated therefore values may increase.

This product, or selected versions of this product, meet the standards listed below. Please consult factory for your specific requirements.

ARRA Funding Compliant · UL Wet Location · RoHS COMPLIANT · FC

Project Name _____ Fixture Type _____

Catalog # _____

9/09/19

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TYPE SB



D-Series

LED Bollard

Catalog Number

Notes

Type

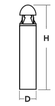
Hit the Tab key or mouse over the page to see all interactive elements.

Specifications

Diameter: 8" Round (20.3 cm)

Height: 42" (106.7 cm)

Weight (max): 27 lbs (12.25 kg)



Introduction

The D-Series LED Bollard is a stylish, energy-saving, long-life solution designed to perform the way a bollard should—with zero uplight. An optical leap forward, this full cut-off luminaire will meet the most stringent of lighting codes. The D-Series LED Bollard's rugged construction, durable finish and long-lasting LEDs will provide years of maintenance-free service.

Ordering Information

EXAMPLE: DSXB LED 16C 700 40K SYM MVOLT DDBXD

DSXB LED

Series	LEDs	Drive current	Color temperature	Distribution	Voltage	Control options	Other options	Finish (required)
DSXB LED	**Asymmetric** 12C 12 LEDs[1] **Symmetric** 16C 16 LEDs[2]	350 350 mA 450 450 mA[3,4] 530 530 mA 700 700 mA	30K 3000 K 40K 4000 K 50K 5000 K AMBPC Amber phosphor converted AMBLW Amber limited wavelength[3,4]	ASY Asymmetric[1] SYM Symmetric[2]	MVOLT[5] 120[5] 208[5] 240[5] 277[5] 347[6]	**Shipped installed** PE Photoelectric cell, button type DMG 0-10v dimming wires pulled outside fixture (for use with an external control, ordered separately) ELCW Emergency battery backup[7]	**Shipped installed** SF Single fuse (120, 277, 347V)[6,7] DF Double fuse (208, 240V)[6,7] H24 24" overall height H30 30" overall height H36 36" overall height FG Ground-fault festoon outlet L/AB Without anchor bolts L/AB4 4-bolt retrofit base without anchor bolts[8]	DWHXD White DNAXD Natural aluminum DDBXD Dark bronze DBLXD Black DDBTXD Textured dark bronze DBLBXD Textured black DNATXD Textured natural aluminum DWHGXD Textured white

Accessories

Ordered and shipped separately.

MRAB U Anchor bolts for DSXB[8]

NOTES

1. Only available in the 12C, ASY version.
2. Only available in the 16C, SYM version.
3. Only available with 450 AMBLW version.
4. Not available with ELCW.
5. MVOLT driver operates on any line voltage from 120-277V (50/60 Hz). Specify 120, 208, 240 or 277 options only when ordering with fusing (SF, DF options), or photocontrol (PE option).
6. Not available with 347V. Not available with fusing. Not available with 450 AMBLW.
7. Single fuse (SF) requires 120, 277, or 347 voltage option. Double fuse (DF) requires 208 or 240 voltage option.
8. MRAB U not available with L/AB4 option.

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TYPE SC

LUMINAIRE SCHEDULE

TYPE	LAMPS/KELVIN	DESCRIPTION	MOUNTING HEIGHT	LUMENS	LOAD, VA	VOLTS	MANUFACTURER/CAT. NO.	NOTES
SA3	4000K LED	SINGLE HEAD LED AREA LIGHT. TYPE 3 DISRIBUTION	20' ABOVE GRADE	6468	54W	MVOLT	LITHONIA - DSX1 LED-P1-340K-T3M-MVOLT-SPA-DMG-DDBXD, SQUARE STEEL POLE	FULL CUT OFF, FIXTURES TO BE CONTROLLED BY TIMECLOCK AND EXTERNAL PHOTOCELL
SA3H	4000K LED	SINGLE HEAD LED AREA LIGHT. TYPE 3 DISRIBUTION, INTEGRAL HOUSE SIDED SHEILD	20' ABOVE GRADE	6468	54W	MVOLT	LITHONIA - DSX1 LED-P1-340K-T3M-MVOLT-SPA-DMG-HS-DDBXD, SQUARE STEEL POLE	FULL CUT OFF, FIXTURES TO BE CONTROLLED BY TIMECLOCK AND EXTERNAL PHOTOCELL
SA5	4000K LED	SINGLE HEAD LED AREA LIGHT. TYPE 5 DISRIBUTION	20' ABOVE GRADE	6711	54W	MVOLT	LITHONIA - DSX1 LED-P1-340K-T5M-MVOLT-SPA-DMG-DDBXD, SQUARE STEEL POLE	FULL CUT OFF, FIXTURES TO BE CONTROLLED BY TIMECLOCK AND EXTERNAL PHOTOCELL
SA5D	4000K LED	DOUBLE HEAD (180 DEGREES APART) LED AREA LIGHT. TYPE 5 DISRIBUTION	20' ABOVE GRADE	(2) 6711	(2) 54W	MVOLT	LITHONIA - DSX1 LED-P1-340K-T5M-MVOLT-SPA-DMG-DDBXD, SQUARE STEEL POLE	FULL CUT OFF, FIXTURES TO BE CONTROLLED BY TIMECLOCK AND EXTERNAL PHOTOCELL
SB3	4000k LED	SINGLE HEAD PEDESTRIAN AREA LIGHT, TYPE 3 DISTRIBUTION	12' ABOVE GRADE	5685	71	MVOLT	LSI INDUSTRIES - XDLSB-3-SS-NW-UE-BRZ-MOUNTING-S-DIM, ROUND STEEL POLE	FULL CUT OFF, FIXTURES TO BE CONTROLLED BY TIMECLOCK AND EXTERNAL PHOTOCELL
SB5	4000k LED	SINGLE HEAD PEDESTRIAN AREA LIGHT, TYPE 5 DISTRIBUTION	12' ABOVE GRADE	5685	71	MVOLT	LSI INDUSTRIES - XDLSB-5- SS-NW-UE-BRZ-MOUNTING-S-DIM, ROUND STEEL POLE	FULL CUT OFF, FIXTURES TO BE CONTROLLED BY TIMECLOCK AND EXTERNAL PHOTOCELL
SC	4000k LED	LED BOLLARD	40" ABOVE GRADE	1847	22	MVOLT	LITHONIA- DSXB-12C-530-40K-=SYM-MVOLT-DMG-H36-DDBXD	FULL CUT OFF, FIXTURES TO BE CONTROLLED BY TIMECLOCK AND EXTERNAL PHOTOCELL

1. VERIFY EXACT FIXTURE'S CATALOG NUMBER, FINISH, LAMP(S), LENGTHS AND OPTIONS WITH TENANT/ARCHITECT PRIOR TO ORDERING.
2. CONTRACTOR TO VERIFY COMPATIBLE DIMMER TYPE AND MANUFACTURER FROM LUMINAIRE CUT SHEET
3. CONTRACTOR TO PROVIDE ALL PARTS AND ACESSORIES FOR A COMPLETE, AND FUNCTIONING SYSTEM.

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH

OUTLOOK AT NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

CIVIL CONSTRUCTION PLANS

LEGAL DESCRIPTION:

LOT 11, TRACTS H AND G
NINE MILE CORNER FILING NO. 1
TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

BASIS OF BEARINGS:

BEARINGS ARE BASED ON THE NORTH LINE OF THE NORTHEAST QUARTER OF SECTION 34 AND MONUMENTED ON THE WEST BY A 2.5" ALUMINUM CAP STAMPED "PLS29752" IN A RANGE BOX FOR THE N ¼ CORNER AND MONUMENTED ON THE EAST BY A 2.5" ALUMINUM CAP STAMPED "PLS12405" FOR THE NE CORNER AND IS ASSUMED TO BEAR S 89°58'01"E.

BENCHMARK:

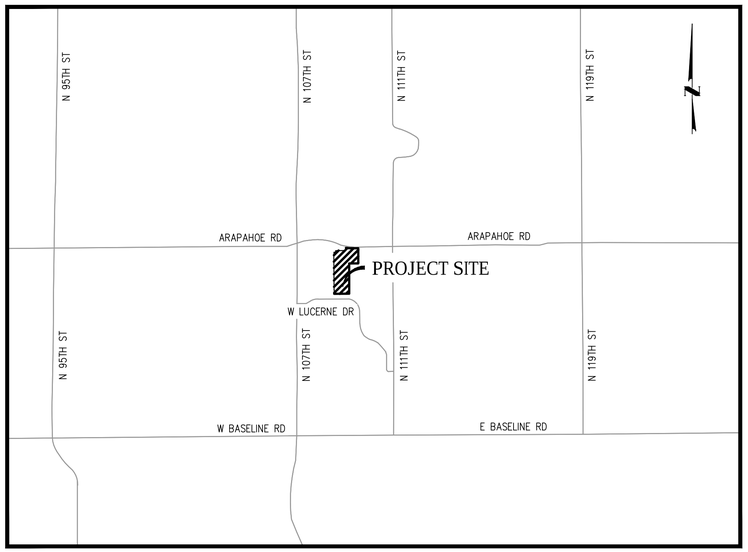
ELEVATIONS SHOWN ARE NAVD88 AND ARE DERIVED VIA GPS OBSERVATIONS FROM THE LIECA SMARTNET RTK GPS NETWORK AND GEOID 12B.

LEGEND

	EXISTING	PROPOSED
PROPERTY LINE		
RIGHT-OF-WAY		
CONTOURS	5280	5280
SANITARY SEWER PIPE	SS	SS
WATER PIPE	W	8W
STORM SEWER PIPE	ST	
GAS	G	G
UNDERGROUND TELEPHONE	UT	UT
UNDERGROUND ELECTRIC	UE	UE
OVERHEAD ELECTRIC	OE	OE
JOINT TRENCH		JT
TO BE ABANDONED OR REMOVED		
MANHOLE	ST	
GATE VALVE		
HYDRANT		
TEE & FITTINGS		
WATER METER W/ CURB STOP		
WATER DOMESTIC SERVICE		
WATER FIRE SERVICE		
SANITARY SERVICE W/ CLEANOUT		
INLET		
LANDSCAPE DRAIN		
LIGHT		
TELEPHONE VAULT		
TELEPHONE JUNCTION BOX		
FIBER OPTIC PEDESTAL	FO	
FENCE POST/BOLLARD		
TRANSFORMER		

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VICINITY MAP
SCALE: 1" = 2000'

ABBREVIATIONS

BOP	BOTTOM OF PIPE
BS	BOTTOM OF STEP
BW	BOTTOM OF WALL (FG)
BYOT	BY OTHERS
CONC	CONCRETE
DIA	DIAMETER
DOM	DOMESTIC
DR	DOOR
DS	DOWNSPOUT
E	EAST, EASTING
EL	ELEVATION
ESMT	EASEMENT
EX	EXISTING
FES	FLARED END SECTION
FF	FINISHED FLOOR
FG	FINISHED GRADE
FH	FIRE HYDRANT
℄	FLOW LINE
GV	GATE VALVE
HC	HANDICAP
HGL	HYDRAULIC GRADE LINE
HP	HIGH POINT
INV	INVERT
JT	JOINT TRENCH
LP	LOW POINT
LSD	LANDSCAPE DRAIN
MAX	MAXIMUM
MH	MANHOLE
MIN	MINIMUM
N	NORTH, NORTHING
PR	PROPOSED
PVC	POLYVINYL CHLORIDE
RCP	REINFORCED CONCRETE PIPE
ROW	RIGHT OF WAY
SS	SANITARY SEWER
STA	STATION
STM	STORM
TB	THRUST BLOCK
TBC	TOP/BACK OF CURB
TOP	TOP OF PIPE
TS	TOP OF STEP
TW	TOP OF WALL (FG)
TYP	TYPICAL
UGE	UNDERGROUND ELECTRIC
WAT	WATER

SITE INFO TABLE

DESCRIPTION	VALUE
BUILDING FOOTPRINTS AREA	136,009 SQ FT
IRRIGATED XERIC AREA	61,798 SQ FT
IRRIGATED TURF LANDSCAPE AREA	10,291 SQ FT
NUMBER OF TREES IN NATIVE GRASS AREAS	49 TREES (35,967 SQ FT NATIVE GRASS AREA)

ALL WORK SHALL BE CONSTRUCTED TO TOWN OF ERIE STANDARDS AND SPECIFICATIONS. THIS DRAWING HAS BEEN REVIEWED AND FOUND TO BE IN GENERAL COMPLIANCE WITH THESE STANDARDS AND SPECIFICATIONS AND OTHER TOWN REQUIREMENTS. THE ENGINEERING DESIGN AND CONCEPT REMAINS THE RESPONSIBILITY OF THE PROFESSIONAL ENGINEER WHOSE STAMP AND SIGNATURE APPEAR HEREON.

ACCEPTED BY: _____ _____
TOWN ENGINEER DATE

I HEREBY AFFIRM THAT THESE FINAL CONSTRUCTION PLANS WERE PREPARED UNDER MY DIRECT SUPERVISION, IN ACCORDANCE WITH ALL APPLICABLE TOWN OF ERIE AND STATE OF COLORADO STANDARDS AND STATUTES, RESPECTIVELY; AND THAT I AM FULLY RESPONSIBLE FOR ALL DESIGN AND REVISIONS RELATIVE TO SAID PLANS.

811 Know what's below. Call before you dig.
CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

DEVELOPER:
Evergreen
Development | Services | Investments

ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

CIVIL ENGINEER:
HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

RACHEL PATTON, P.E. 54450
ON THE BEHALF OF HARRIS KOCHER SMITH

PRELIMINARY NOT FOR CONSTRUCTION

Filepath: P:\160602\ENGINEERING\CD\CD - COVER SHEET.DWG Layout: COVER SHEET
Plotted: WED 01/29/20 5:37:19P By: Rachel Patton

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH

GENERAL NOTES – CONSTRUCTION

1. ALL CONSTRUCTION SHALL CONFORM TO THE LATEST "STANDARDS AND SPECIFICATIONS FOR DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS" BY THE TOWN OF ERIE. COPIES OF THE TOWN OF ERIE STANDARDS AND SPECIFICATIONS MAY BE OBTAINED FROM THE TOWN OF ERIE WEB SITE. CONTRACTOR SHALL HAVE A SET ON SITE AT ALL TIMES.

2. THE OWNER SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE TOWN OF ERIE ENGINEERING STAFF PRIOR TO THE START OF CONSTRUCTION. THOSE IN ATTENDANCE SHALL INCLUDE THE OWNER, HIS ENGINEER, THE TOWN OF ERIE ENGINEERING STAFF, REPRESENTATIVES OF THE CONTRACTORS AND OTHER AFFECTED AGENCIES. PLANS SIGNED AND ACCEPTED BY THE TOWN OF ERIE WILL BE DISTRIBUTED AT THE PRECONSTRUCTION MEETING. CONTRACTOR SHALL HAVE (1) COPY OF THE SIGNED PLANS ON SITE AT ALL TIMES.

3. THE TOWN OF ERIE, THROUGH ACCEPTANCE OF THIS DOCUMENT, ASSUMES NO RESPONSIBILITY FOR THE COMPLETENESS AND/OR ACCURACY OF THIS DOCUMENT. THE OWNER AND DESIGN ENGINEER UNDERSTAND THAT THE RESPONSIBILITY FOR THE ENGINEERING ADEQUACY OF THE FACILITIES DEPICTED IN THIS DOCUMENT LIES SOLELY WITH THE REGISTERED PROFESSIONAL ENGINEER WHOSE STAMP AND SIGNATURE ARE AFFIXED TO THIS DOCUMENT. REPORT ALL DISCREPANCIES TO THE DESIGN ENGINEER IMMEDIATELY.

4. PRIOR TO BEGINNING THE WORK, THE CONTRACTOR SHALL OBTAIN ANY/ALL WRITTEN AGREEMENTS FOR INGRESS AND EGRESS TO THE WORK SITE FROM ADJACENT PRIVATE PROPERTY OWNERS. A COPY OF ALL AGREEMENTS SHALL BE PROVIDED TO THE TOWN. ACCESS TO ANY ADJACENT PRIVATE PROPERTY SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD.

5. ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION BY THE TOWN OF ERIE ENGINEERING STAFF. THE TOWN RESERVES THE RIGHT TO ACCEPT OR REJECT ANY SUCH MATERIALS AND WORKMANSHIP THAT DOES NOT CONFORM TO TOWN STANDARDS AND SPECIFICATIONS. INSPECTIONS AND ONSITE VISITS ARE NOT TO BE CONSTRUED AS A GUARANTEE BY THE TOWN ENGINEERING STAFF OF THE CONTRACTORS' CONTRACTUAL COMMITMENT. REQUESTS FOR INSPECTION BY THE TOWN OF ERIE SHALL BE MADE BY THE CONTRACTOR A MINIMUM OF TWENTY- FOUR (24) HOURS IN ADVANCE.

6. CONSTRUCTION WATER IS AVAILABLE TO THE CONTRACTOR AS ESTABLISHED IN THE TOWN OF ERIE STANDARDS AND SPECIFICATIONS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT THE TOWN OF ERIE REGARDING CURRENT REGULATIONS, FEES AND REQUIRED AGREEMENTS RELATED TO THE PROVISION OF CONSTRUCTION WATER.

7. THE CONTRACTOR SHALL COORDINATE HIS ACTIVITIES WITH THE AFFECTED UTILITY COMPANIES AND SHALL NOTIFY THE UTILITY NOTIFICATION CENTER, PHONE NUMBER 811, THREE (3) BUSINESS DAYS PRIOR TO THE START OF CONSTRUCTION.

8. UTILITIES IN THE AREA OF CONSTRUCTION ARE APPROXIMATE ONLY. THEY HAVE BEEN LOCATED FROM FIELD INVESTIGATION AND THE BEST AVAILABLE UTILITY RECORDS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION, PROTECTION AND REPAIR OF ALL UTILITIES ENCOUNTERED DURING CONSTRUCTION WHETHER SHOWN ON THESE PLANS OR NOT. THE CONTRACTOR SHALL CONTACT ALL RESPECTIVE UTILITIES AND HAVE ALL UTILITIES FIELD-LOCATED PRIOR TO CONSTRUCTION. IF ANY UNKNOWN SUBSURFACE STRUCTURES ARE ENCOUNTERED DURING CONSTRUCTION, IT SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE TOWN OF ERIE ENGINEERING STAFF AND DESIGN ENGINEER PRIOR TO PROCEEDING.

9. THE CONTRACTOR SHALL NOTIFY TOWN OF ERIE ENGINEERING STAFF OF ANY PROBLEM IMPACTING WATER AND WASTE WATER FACILITIES THAT WOULD POTENTIALLY REQUIRE A VARIANCE FROM THE APPROVED PLANS AND SPECIFICATIONS. ANY VARIANCE FROM THE APPROVED DOCUMENTS SHALL BE AT THE SOLE DISCRETION OF THE TOWN OF ERIE ENGINEERING STAFF.

10. CONTRACTOR SHALL OBTAIN, AT HIS OWN EXPENSE, ALL APPLICABLE SPECIFICATIONS AND PERMITS NECESSARY TO PERFORM THE PROPOSED WORK.

11. AS-BUILT DRAWINGS AS REQUIRED IN THE SPECIFICATIONS, ARE TO BE SUBMITTED BY THE OWNER/DEVELOPER PRIOR TO INITIAL ACCEPTANCE OF THE CONSTRUCTION.

12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING AND REPLACING ANY EXISTING SIGNS, STRUCTURES, FENCES, ETC., ENCOUNTERED ON THE JOB AND RESTORING THEM TO THEIR ORIGINAL CONDITION.

13. THE CONTRACTOR IS RESPONSIBLE FOR:

    A. NOTIFYING THE TOWN OF ERIE UTILITY CUSTOMERS OF POTENTIAL SERVICE OUTAGES, AND COORDINATE WITH THE TOWN OF ERIE FOR DETERMINATION OF MINIMUM TIME REQUIREMENT.

    B. NOTIFYING THE TOWN OF ERIE ENGINEERING STAFF IF WORK IS SUSPENDED FOR ANY PERIOD OF TIME AFTER INITIAL START-UP. THE CONTRACTOR SHALL NOTIFY THE TOWN OF ERIE FORTY-EIGHT (48) HOURS PRIOR TO RESTART.

    C. IN THE EVENT OF AN AFTER HOURS EMERGENCY, CALL 303-441-4444.

    D. NOTIFYING THE MOUNTAIN VIEW FIRE PROTECTION DISTRICT OF ALL STREET CLOSURES AND EXISTING FIRE HYDRANTS TAKEN OUT OF SERVICE A MINIMUM OF FORTY-EIGHT (48) HOURS PRIOR TO THE START OF CONSTRUCTION.

14. PRIOR TO INSTALLATION OF UTILITY MAINS, ROAD CONSTRUCTION MUST HAVE COMPLETED THE OVER LOT GRADING STAGE.

15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ANY GROUNDWATER ENCOUNTERED DURING THE CONSTRUCTION OF ANY PORTION OF THIS PROJECT. A CONSTRUCTION DEWATERING PERMIT MUST BE OBTAINED FROM THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT (CDPHE). GROUNDWATER SHALL BE PUMPED, PIPED, REMOVED AND DISPOSED OF IN A MANNER WHICH DOES NOT CAUSE FLOODING OF EXISTING STREETS OR EROSION OF ABUTTING PROPERTIES IN ORDER TO CONSTRUCT THE IMPROVEMENTS SHOWN ON THESE PLANS. THE USE OF ANY SANITARY SEWER TO DISPOSE OF TRENCH WATER WILL NOT BE PERMITTED. NO CONCRETE SHALL BE PLACED WHERE GROUNDWATER IS VISIBLE OR UNTIL THE GROUNDWATER TABLE HAS BEEN LOWERED BELOW THE PROPOSED IMPROVEMENTS. ANY UNSTABLE AREAS, AS A RESULT OF GROUNDWATER, ENCOUNTERED DURING THE CONSTRUCTION OF THE PROPOSED IMPROVEMENTS SHALL BE STABILIZED AS AGREED UPON BY THE CONTRACTOR, THE TOWN OF ERIE, AND THE DESIGN ENGINEER AT THE TIME OF THE OCCURRENCE.

16. IT SHALL BE THE RESPONSIBILITY OF THE DESIGN ENGINEER TO RESOLVE CONSTRUCTION PROBLEMS WITH THE TOWN OF ERIE DUE TO CHANGED CONDITIONS ENCOUNTERED BY THE CONTRACTOR DURING THE PROGRESS OF ANY PORTION OF THE PROPOSED WORK. IF, IN THE OPINION OF THE TOWN OF ERIE, PROPOSED ALTERATIONS TO THE SIGNED CONSTRUCTION PLANS INVOLVES SIGNIFICANT CHANGES TO THE CHARACTER OF THE WORK, OR TO THE FUTURE CONTIGUOUS PUBLIC OR PRIVATE IMPROVEMENTS, THE DESIGN ENGINEER SHALL BE RESPONSIBLE FOR SUBMITTING REVISED PLANS TO THE TOWN OF ERIE FOR REVIEW, PRIOR TO ANY FURTHER CONSTRUCTION RELATED TO THAT PORTION OF THE WORK.

17. DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS AT AND ADJACENT TO THE JOB INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THE CONTRACTOR SHALL PROVIDE ALL LIGHTS, SIGNS, BARRICADES, FLAGMEN, OR OTHER DEVICES NECESSARY TO PROVIDE FOR PUBLIC SAFETY. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND IS NOT LIMITED TO NORMAL WORKING HOURS. THE TOWN OF ERIE OR THE DESIGN ENGINEER EXERCISE NO CONTROLS OVER THE SAFETY OR ADEQUACY OF ANY EQUIPMENT, BUILDING COMPONENTS, SCAFFOLDING, FORMS OR OTHER WORK AIDS USED IN OR ABOUT THE PROJECT, OR IN THE SUPERINTENDING OF THE SAME. THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD HARMLESS FROM ANY AND ALL LIABILITY, REAL AND ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER, THE DESIGN ENGINEER OR THE TOWN. THE TOWN OF ERIE ENGINEERING STAFF, OR ANY CONTRACTED ENGINEER, ARE NOT RESPONSIBLE FOR SAFETY IN, ON OR ABOUT THE PROJECT SITE, NOR FOR COMPLIANCE BY THE APPROPRIATE PARTY OF ANY REGULATIONS RELATING THERETO.

18. WORK IN PUBLIC STREETS, ONCE BEGUN, SHALL BE PROSECUTED TO COMPLETION WITHOUT DELAY SO AS TO PROVIDE MINIMUM INCONVENIENCE TO ADJACENT PROPERTY OWNERS AND TO THE TRAVELING PUBLIC.

19. REGULAR WORK HOURS ARE SEVEN (7) A.M. UNTIL SEVEN (7) P.M. OR DUSK (WHICHEVER OCCURS FIRST) OF THE SAME DAY, MONDAY THROUGH FRIDAY. THE CONTRACTOR WILL NOT PERMIT OVERTIME WORK OUTSIDE OF REGULAR WORKING HOURS OR THE PERFORMANCE OF WORK ON SATURDAY, SUNDAY OR ANY LEGAL HOLIDAY WITHOUT RECEIVING WRITTEN CONSENT FROM THE PUBLIC WORKS DIRECTOR. REQUESTS FOR WEEKEND WORK APPROVAL MUST BE SUBMITTED, IN WRITING TO THE TOWN OF ERIE NO LATER THAN WEDNESDAYS AT 3:30PM FOR SUBSEQUENT WEEKEND AND REQUESTS FOR HOLIDAY WORK APPROVAL MUST BE SUBMITTED, IN WRITING TO THE TOWN OF ERIE NO LATER THAN 7:00AM-2 BUSINESS DAYS PRIOR TO THE HOLIDAY. ALL EXPENSES INCURRED BY THE TOWN SHALL BE REIMBURSED AT A RATE TO BE DETERMINED BY DIRECTOR OF FINANCE.

20. THE CONTRACTOR SHALL TAKE ALL NECESSARY AND PROPER PRECAUTIONS TO PROTECT ADJACENT PROPERTIES FROM ANY AND ALL DAMAGE THAT MAY OCCUR FROM STORM WATER RUNOFF AND/OR DEPOSITION OF DEBRIS RESULTING FROM ANY AND ALL WORK. THE OWNER/CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL APPROPRIATE PERMITS FROM BOTH THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT AND THE TOWN OF ERIE FOR ANY PROJECT DISTURBING ONE ACRE OR MORE OR ANY PROJECT LESS THAN ONE ACRE THAT IS PART OF A LARGER COMMON PLAN OF DEVELOPMENT.

21. EACH TYPE OF CONSTRUCTION SHALL BE COMPLETED BY A CONTRACTOR THAT HAS DEMONSTRATED ACCEPTABLE QUALIFICATIONS TO THE TOWN AND IS A LICENSED CONTRACTOR IN THE TOWN OF ERIE.

22. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRAFFIC CONTROL DURING CONSTRUCTION. ALL TRAFFIC CONTROLS SHALL CONFORM TO THE TOWN OF ERIE STANDARDS AND SPECIFICATIONS AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, (MUTCD) LATEST EDITIONS. A PLAN SHALL BE SUBMITTED TO THE TOWN FOR REVIEW AND ACCEPTANCE PRIOR TO CONSTRUCTION.

23. ALL BACKFILL SHALL CONFORM TO THE TRENCH DETAIL LOCATED IN THE TOWN OF ERIE STANDARDS & SPECIFICATIONS.

24. THE OWNER/OPERATOR IS RESPONSIBLE FOR ENSURING THE IMMEDIATE REMOVAL OF ANY CONSTRUCTION DEBRIS OR MUD TRACKED ONTO EXISTING ROADWAYS.

25. THE CONTRACTOR SHALL REPAIR ANY EXCAVATION OR PAVEMENT FAILURES CAUSED BY HIS CONSTRUCTION.

26. THE CONTRACTOR SHALL RENEW OR REPLACE ANY EXISTING TRAFFIC STRIPING AND/OR PAVEMENT MARKINGS, WHICH HAVE BEEN EITHER REMOVED OR THE EFFECTIVENESS OF WHICH HAS BEEN REDUCED DURING HIS OPERATION. RENEWAL OF PAVEMENT STRIPING AND MARKING SHALL BE DONE IN CONFORMANCE WITH THE TOWN OF ERIE STANDARD SPECIFICATIONS.

27. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO TAKE EVERY MEASURE NECESSARY TO COMPLY WITH ANY STATE, COUNTY OR TOWN DUST CONTROL ORDINANCE.

28. CONSTRUCTION VEHICLES SHALL USE TRUCK ROUTES DESIGNATED BY THE TOWN.

29. THE OWNER/DEVELOPER WILL BE HELD RESPONSIBLE FOR THE PROPER FUNCTIONING OF THE IMPROVEMENTS FOR A MINIMUM OF TWO (2) YEARS FROM THE DATE OF INITIAL ACCEPTANCE OF THE IMPROVEMENTS BY THE TOWN OF ERIE. ANY FAILURE DURING THIS PERIOD OF GUARANTEE SHALL BE REMEDIED BY THE OWNER/CONTRACTOR TO THE SATISFACTION OF THE TOWN OF ERIE AT NO EXPENSE TO THE TOWN.

30. THE SOILS ENGINEER SHALL PERFORM SUFFICIENT INSPECTIONS DURING GRADING AND CONSTRUCTION SO THAT AN OPINION CAN BE RENDERED AND VERIFIED IN WRITING AS TO COMPLIANCE WITH THE PLANS AND CODES WITHIN THE SOILS ENGINEER'S PURVIEW.

GENERAL NOTES – GRADING

1. ALL CONSTRUCTION ACTIVITIES THAT DISTURBS ONE OR MORE ACRES OF LAND, AS WELL AS ACTIVITIES THAT DISTURB LESS THAN ONE ACRE OF LAND, BUT IS PART OF A LARGER COMMON PLAN OF DEVELOPMENT, MUST COMPLY WITH BOTH LOCAL AND STATE REGULATIONS REGARDING STORMWATER DRAINAGE ON CONSTRUCTION SITES. OWNERS OR CONTRACTORS MUST OBTAIN A COLORADO STORMWATER DISCHARGE PERMIT FOR CONSTRUCTION ACTIVITIES FROM THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT (CDPHE) AND A GRADING AND STORMWATER QUALITY PERMIT FROM THE TOWN OF ERIE.
   CONTRACTOR SHALL:

   A. MAINTAIN A COPY OF THE STORM WATER MANAGEMENT PLAN (SWMP) ONSITE AT ALL TIMES OR PROVIDE AN UPDATED DIGITAL COPY WITHIN TWO BUSINESS DAYS UPON REQUEST. THE SWMP MUST BE MAINTAINED AND MADE AVAILABLE TO TOWN OF ERIE INSPECTORS UPON REQUEST.

   B. INSTALL AND MAINTAIN EROSION, SEDIMENT, AND MATERIALS MANAGEMENT CONTROL MEASURE AS SPECIFIED IN THE SWMP.

   C. INSPECT ALL CONTROL MEASURES AT LEAST EVERY SEVEN (7) DAYS OR EVERY FOURTEEN (14) DAYS AND WITHIN TWENTY FOUR (24) HOURS AFTER ANY PRECIPITATION OR SNOWMELT EVENT THAT CAUSES SURFACE RUNOFF.

   D. MAINTAIN INSPECTION AND MAINTENANCE RECORDS OF CONTROL MEASURES WITH THE SWMP. COPIES OF THESE REPORTS SHALL BE PROVIDED TO THE TOWN OF ERIE ENGINEERING STAFF.

   E. BASED ON INSPECTIONS PERFORMED BY THE PERMIT HOLDER OR BY TOWN PERSONNEL, MODIFICATIONS TO THE SWMP WILL BE NECESSARY IF AT ANY TIME THE SPECIFIED CONTROL MEASURES DO NOT MEET THE OBJECTIVES OF THE PERMIT. ALL MODIFICATIONS SHALL BE COMPLETED AS SOON AS PRACTICABLE AFTER THE REFERENCED INSPECTION, AND SHALL BE RECORDED ON THE OWNER'S COPY OF THE SWMP.

   F. THE OPERATOR SHALL AMEND THE SWMP WHENEVER THERE IS A SIGNIFICANT CHANGE IN DESIGN, CONSTRUCTION, OPERATION, OR MAINTENANCE, WHICH HAS A SIGNIFICANT EFFECT ON THE POTENTIAL FOR DISCHARGE OF POLLUTANTS TO THE RECEIVING WATERS, OR IF THE SWMP PROVES TO BE INEFFECTIVE IN ACHIEVING THE GENERAL OBJECTIVES OF CONTROLLING POLLUTANTS IN STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES.

   G. INSTALLATION AND MAINTENANCE OF CONTROL MEASURES SHALL BE SUPERVISED BY PERSONNEL CERTIFIED IN EROSION AND SEDIMENT CONTROL.

   H. ALL APPROPRIATE CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE START OF EACH CONSTRUCTION PHASE.

   I. APPROPRIATE STABILIZED CONSTRUCTION ENTRANCES WITH VEHICLE TRACKING CONTROLS INSTALLED SHALL BE UTILIZED AT ALL TIMES TO REDUCE THE TRACKOUT OF SEDIMENT. IF NONSTRUCTURAL VEHICLE TRACKING CONTROLS ARE UTILIZED, CLEANUP OF TRACKOUT MUST OCCUR AT THE END OF EVERY BUSINESS DAY WITH CONSTRUCTION ACTIVITY OCCURRING.

2. 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 TOWN OF ERIE "STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS", LATEST EDITION.

3. ALL GRADING AND FILLING OPERATIONS SHALL BE OBSERVED, INSPECTED AND TESTED BY A LICENSED SOILS ENGINEER. ALL TEST RESULTS SHALL BE SUBMITTED TO THE TOWN OF ERIE ENGINEERING STAFF.

4. 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. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO AVOID ANY DAMAGE TO EXISTING FOLIAGE THAT LIES IN THE PROJECT AREA UNLESS DESIGNATED FOR REMOVAL AND SHALL BE LIABLE FOR SUCH DAMAGE AT HIS/HER EXPENSE.

5. TOPSOIL SHALL BE STOCKPILED TO THE EXTENT PRACTICABLE ON THE SITE FOR USE ON AREAS TO BE RE-VEGETATED. ANY AND ALL STOCKPILES SHALL BE LOCATED AND PROTECTED FROM EROSIVE ELEMENTS. IF MATERIALS ARE STORED OFFSITE, A WRITTEN USE AGREEMENT BETWEEN THE PERMITTEE AND THE OWNER/OPERATOR OF ANY CONTROL MEASURES BEING UTILIZED OUTSIDE OF THE PERMITTED AREA MUST BE MADE AVAILABLE TO TOWN PERSONNEL UPON REQUEST.

6. TEMPORARY VEGETATION/STABILIZATION SHALL BE INSTALLED ON ALL DISTURBED AREAS WHERE PERMANENT SURFACE IMPROVEMENTS ARE NOT SCHEDULED FOR IMMEDIATE INSTALLATION BUT NO LATER THAN FOURTEEN (14) DAYS. SEEDING WILL BE DONE ACROSS THE SLOPE FOLLOWING THE CONTOURS. VEGETATION SHALL CONFORM TO THE TOWN OF ERIE STANDARDS AND SPECIFICATIONS. PROJECT SCHEDULING SHOULD TAKE ADVANTAGE OF SPRING OR FALL PLANTING SEASONS FOR NATURAL GERMINATION. SEEDED AREAS SHALL BE IRRIGATED IN ACCORDANCE WITH THE TOWN OF ERIE'S STANDARDS AND SPECIFICATIONS.

7. AT ALL TIMES, A WATER TRUCK SHALL BE ON-SITE AND 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.

8. FILL SLOPES SHALL BE COMPACTED BY MEANS OF SHEEPSFOOT COMPACTOR OR OTHER SUITABLE EQUIPMENT. COMPACTING SHALL CONTINUE UNTIL SLOPES ARE STABLE AND THERE IS NOT AN APPRECIABLE AMOUNT OF LOOSE SOIL ON THE SLOPES.

9. TEMPORARY CUT/FILL SLOPES SHALL ABIDE BY THE SOILS REPORT. PERMANENT SLOPES SHALL BE AS SHOWN ON PLANS.

10. DEPTH OF MOISTURE-DENSITY CONTROL SHALL BE FULL DEPTH ON ALL EMBANKMENT AND SIX (6) INCHES ON THE BASE OF CUTS AND FILLS.

11. OUTLET SIDES OF ALL STORM PIPES SHALL BE GRADED TO DRAIN AND SHALL HAVE SUFFICIENT EROSION PROTECTION.

12. THE PERMITTEE OR HIS AGENT SHALL NOTIFY THE SITE GEOTECHNICAL ENGINEER WHEN THE GRADING OPERATION IS READY FOR EACH OF THE FOLLOWING INSPECTIONS:

    A. INITIAL INSPECTION WHEN THE PERMITTEE IS READY TO BEGIN WORK, BUT NOT LESS THAN TWO (2) DAYS BEFORE ANY GRADING OR GRUBBING IS STARTED.

    B. AFTER THE NATURAL GROUND OR BEDROCK IS EXPOSED AND PREPARED TO RECEIVE FILL, BUT BEFORE FILL IS PLACED.

    C. EXCAVATION INSPECTION AFTER THE EXCAVATION IS STARTED BUT BEFORE THE VERTICAL DEPTH OF THE EXCAVATION EXCEEDS TEN (10) FEET.

    D. FILL INSPECTION AFTER THE FILL PLACEMENT IS STARTED, BUT BEFORE THE FILL EXCEEDS TEN (10) FEET.

GENERAL NOTES – ROADWAY

1. ALL STATIONING IS BASED ON CENTERLINE OF ROADWAYS UNLESS OTHERWISE NOTED.

2. THE CONTRACTOR SHALL PREPARE THE SUBGRADE BY SCARIFYING THE UPPER ONE (1) FOOT OF THE SUBGRADE IN CUT AREAS OR AREAS WITH LITTLE OR NO FILL, UNLESS SPECIFIED IN THE SOILS REPORT. THE WORK SHALL CONFORM TO THE COLORADO DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS.

3. PAVEMENT SHALL NOT BE CONSTRUCTED UNTIL ALL UNDERGROUND UTILITIES HAVE BEEN INSTALLED, TESTED AND ACCEPTED BY THE TOWN OF ERIE ENGINEERING STAFF.

4. IT SHALL BE THE RESPONSIBILITY OF THE OWNER/CONTRACTOR TO SUPERVISE AND CERTIFY THAT PROPER COMPACTION HAS BEEN OBTAINED BY SUBCONTRACTORS AND AGENCIES CONCERNING UTILITY LINE BACKFILL INCLUDING, BUT NOT LIMITED TO, SEWER, WATER, ELECTRICAL, GAS AND LANDSCAPE IRRIGATION LINES AND ACCEPTED BY THE TOWN OF ERIE ENGINEERING STAFF AND THE SOILS ENGINEER.

5. STREET PAVING SHALL NOT START UNTIL:

    A. A SOILS REPORT AND PAVEMENT DESIGN IS ACCEPTED BY THE TOWN OF ERIE ENGINEERING STAFF.

    B. ALL STREETS ARE COMPACTED IN ACCORDANCE WITH THE SOILS REPORT AND THE TOWN OF ERIE SPECIFICATIONS.

    C. ALL COMPACTION TEST REPORTS HAVE BEEN SUBMITTED TO THE TOWN ENGINEERING STAFF PRIOR TO PROOF ROLLS.

    D. PROOF ROLLS ARE PERFORMED USING A LOADED SINGLE AXLE 2000 GALLON WATER TRUCK AND MONITORED BY THE TOWN OF ERIE ENGINEERING STAFF.

6. THE OWNER/CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTING ALL UTILITY MANHOLE COVERS AND ACCESS LIDS TO GRADE.

7. ALL CONCRETE SHALL BE A MINIMUM OF CLASS B, IN CONFORMANCE WITH CDOT STANDARDS.

8. ALL CONCRETE EDGES MUST BE ROUNDED TO A FOURTH (1/4) INCH RADIUS, EXCEPT WHERE SHOWN OTHERWISE ON DRAWINGS.

9. ONE HALF (1/2) INCH EXPANSION JOINTS SHALL BE INSTALLED AT ALL CURB RETURNS, CURB CUTS AND EXISTING STRUCTURES. CONTROL JOINTS SHALL BE INSTALLED PER THE TOWNS STANDARDS AND SPECIFICATIONS.

10. BEFORE PLACING OF ASPHALT THE SUBGRADE SHALL RECEIVE A GROUND STERILANT APPLIED AT A RATE IN ACCORDANCE TO MANUFACTURERS RECOMMENDATIONS.

11. THE GRADATION OF THE MINERAL AGGREGATE WILL BE GRADING SX (½" NOMINAL) FOR ALL TOP LIFTS AND OVERLAYS.

12. TACK COAT SHALL BE USED PRIOR TO OVERLAY, (CSS-1H), 50:50 DILUTION, 0.10 GAL/SY. ALL EDGES ABUTTING NEW PAVEMENT SHALL BE TACKED.

13. WHEN IT IS REQUIRED TO MATCH EXISTING PAVEMENT, EXISTING PAVEMENT SHALL BE SAW CUT IN A MANNER TO AFFECT A SMOOTH, VERTICAL STRAIGHT CUT EDGE. T PATCH MILLING MUST BE DONE PER STANDARD DETAILS.

14. ALL SAWCUT EDGES OF EXISTING PAVEMENT SHALL BE CLEAN AND COATED WITH TACK COAT PRIOR TO PLACING NEW PAVEMENT ADJACENT TO THE EXISTING PAVEMENT.

15. ALL ASPHALT SHALL BE ONE FOURTH (1/4) INCH ABOVE CONCRETE EDGES, MANHOLE COVERS AND ACCESS LIDS.

16. SIGNAGE AND STRIPING SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE COLORADO DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, THE COLORADO DEPARTMENT OF TRANSPORTATION M&S STANDARDS, AND THE TOWN OF ERIE STANDARD DESIGN CRITERIA AND STANDARD CONSTRUCTION REQUIREMENTS.

17. THE PURCHASE AND INSTALLATION OF STREET NAME SIGNS SHALL BE THE RESPONSIBILITY OF THE OWNER/CONTRACTOR. THE OWNER/CONTRACTOR SHALL SECURE THE APPROVAL OF THE TOWN OF ERIE ENGINEERING STAFF FOR TYPE AND LOCATION OF THE STREET NAME SIGNS PRIOR TO INSTALLATION.

18. ALL NEW ROADWAY SECTIONS SHALL HAVE SUBGRADE PREPARATION AND INITIAL ASPHALT PAVEMENT PLACED WITH A 1% CROWN. FINAL OVERLAY IS TO BE PLACED WITH A 2% CROWN. SEE DETAIL ST7 IN THE 'STANDARD DETAILS-STREET' FOR MORE INFORMATION.

19. DETERMINATION OF CROWN FOR CUL DE SAC PAVING SHALL BE EVALUATED ON A CASE BY CASE BASIS.

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

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

DESIGNED BY: AEM
CHECKED BY: MSM
DRAWN BY: AEM

HKS HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
GENERAL NOTES

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

SHEET NO.
2
2 OF 69

FILEPATH: P:\160602\ENGINEERING\CD\CD - GENERAL NOTES.DWG LAYOUT: GENERAL NOTES 1
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PLOTTED: WED 01/29/20 5:37:25P BY: RACHEL PATTON

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH

GENERAL NOTES – SEWER

1. THE CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL LOCATIONS OF ALL EXISTING SEWERS TO BE CONNECTED TO PRIOR TO CONSTRUCTION STAKING.
2. CONNECTION TO EXISTING TOWN OF ERIE LINES WILL BE PERMITTED UPON INITIAL ACCEPTANCE OF THE NEW SANITARY SEWER SYSTEM. EXISTING PIPE AT THE POINT OF CONNECTION SHALL NOT BE "BROKEN OUT" UNTIL THE NEW SYSTEM IS ACCEPTED. IF CONNECTING TO AN EXISTING MANHOLE, THE NEW LINE SHALL BE PLUGGED UNTIL THE NEW SYSTEM IS ACCEPTED.
3. MINIMUM VERTICAL SEPARATIONS BETWEEN ALL UTILITY PIPES SHALL BE EIGHTEEN (18) INCHES. IF VERTICAL SEPARATIONS ARE LESS THAN EIGHTEEN (18) INCHES, THE UTILITY PIPES SHALL BE REINFORCED AND PROTECTED AS REQUIRED BY CURRENT TOWN STANDARD SPECIFICATIONS.
4. WATER AND SANITARY SEWER LINES SHALL HAVE A MINIMUM HORIZONTAL SEPARATION OF TEN (10) FEET. WHEN A TEN (10) FOOT SEPARATION IS NOT PROVIDED OR WHEN SEWER LINES CROSS WATER LINES WITH LESS THAN ONE AND ONE–HALF (1½) FEET OF VERTICAL SEPARATION, SEWER LINE JOINTS SHALL BE CONCRETE ENCASED. FOR PERPENDICULAR CROSSINGS, ENCASED JOINTS SHALL EXTEND TEN (10) FEET, PERPENDICULAR TO THE WATER LINE IN BOTH DIRECTIONS.
5. ALL SANITARY SEWER SERVICES AND WATER SERVICES ARE TO BE TEN (10) FEET APART.
6. SERVICE LATERALS SHALL EXTEND FIVE (5) FEET BEYOND RIGHTS OF WAY OR UTILITY EASEMENTS, WHICHEVER IS GREATER. THE ENDS SHALL BE MARKED BY A GREEN PAINTED WOOD POST UNTIL CURB AND GUTTER IS IN PLACE. WHEN CURB AND GUTTER IS IN PLACE THE LATERALS SHALL BE MARKED ON THE CONCRETE CURB FACE WITH AN "S" OR "X".
7. THE LENGTH OF SANITARY SEWER LINE IS THE HORIZONTAL DISTANCE BETWEEN CENTER OF MANHOLE TO CENTER OF MANHOLE. THEREFORE, THE DISTANCES INDICATED ON THE PLANS ARE APPROXIMATE AND COULD VARY DUE TO VERTICAL ALIGNMENT AND MANHOLE DIMENSIONS.
8. SERVICE LINE CONNECTIONS TO DEAD END MANHOLES THAT HAVE NO FURTHER POSSIBILITY OF EXTENSION SHALL BE ALLOWED AND SHALL HAVE A MINIMUM DROP OF 0.75 X MAIN DIAMETER. SERVICE LINE CONNECTIONS TO IN–LINE MANHOLES ARE NOT PERMITTED. MINIMUM SERVICE LINE SLOPE; 4 INCHES=2%; 6 INCHES= 1%; 8 INCHES=0.4%
9. ALL FOUR (4) THROUGH FIFTEEN (15) INCH SANITARY SEWER PIPE SHALL BE POLYVINYL CHLORIDE (PVC) AND SHALL BE IN ACCORDANCE WITH ASTM D–3034–SDR35, "STANDARD SPECIFICATION FOR PVC SEWER PIPE AND FITTINGS". ANY SANITARY SEWER HAVING A DEPTH IN EXCESS OF FIFTEEN (15) FEET SHALL BE COORDINATED WITH THE PUBLIC WORKS DEPARTMENT.
10. BEDDING MATERIAL SHALL CONFORM TO TOWN OF ERIE STANDARDS AND SPECIFICATIONS.
11. WARNING TAPE SHALL BE INSTALLED 12" MINIMUM AND 18" MAXIMUM ABOVE SEWER PIPE.
12. PRECAST CONCRETE MANHOLE SECTIONS SHALL BE IN ACCORDANCE WITH ASTM C–478. MANHOLE STEPS SHALL BE POLYPROPYLENE COVERED STEEL CONFORMING TO ASTM. D–4101 AND ASTMA–615. CAST IRON RING AND COVER SHALL CONFORM TO ASTM A–48.
13. MANHOLES SHALL BE A MINIMUM FOUR (4) FOOT DIAMETER AND CONSTRUCTED PER THE STANDARDS AND SPECIFICATIONS.
14. THE CONTRACTOR SHALL TAKE CARE TO PROPERLY SHAPE ALL MANHOLE INVERTS AND BENCHES IN ACCORDANCE WITH THE TOWN OF ERIE STANDARDS AND SPECIFICATIONS, TO PROMOTE SMOOTH FLOW THROUGH THE MANHOLE. INVERTS OF LINES INTERSECTING AT 90 DEGREES AND AT HIGHLY DIVERGENT OR FLAT SLOPES ARE ESPECIALLY CRITICAL. MANHOLE INVERTS SHALL BE CONSTRUCTED WITH A SMOOTH TROWEL FINISH, AND BENCH FINISHED WITH A LIGHT BROOMED, NON–SKID, FINISH.
15. SEWER TEES AND/OR WYES SHALL BE STAKED BY A SURVEY CREW. THE CONTRACTOR SHALL FURNISH TO THE ENGINEER "AS–CONSTRUCTED" LOCATION OF TEES AND WYES. ALL SERVICE LINES ARE FOUR (4) INCH UNLESS OTHERWISE NOTED.
16. THE CONTRACTOR, AT THE OWNER'S EXPENSE, WILL MAKE ALL SEWER SERVICE TAPS.
17. PRIOR TO BACKFILL THE TOWN OF ERIE ENGINEERING STAFF SHALL INSPECT ALL SANITARY SEWER MAINS AND SERVICE EXTENSIONS.
18. MANHOLE RIMS SHALL BE SET AT AN ELEVATION RELATIVE TO THE PAVEMENT, IN ACCORDANCE WITH THE TOWN OF ERIE STANDARDS. WHETHER THE MANHOLE IS AT PAVED OR UNPAVED GRADE, A MINIMUM OF ONE (1) AND A MAXIMUM OF FOUR (4) CONCRETE RINGS SHALL BE USED TO ADJUST THE RIM ELEVATION TO FINAL GRADE. THE MAXIMUM ACCEPTABLE VERTICAL ADJUSTMENT UTILIZING CONCRETE RINGS IS EIGHTEEN (18) INCHES.
19. INITIAL ACCEPTANCE OF THE NEW SANITARY SEWER MAINS IS CONTINGENT UPON COMPLETION OF ITEMS LISTED IN THE TOWNS STANDARDS AND SPECIFICATIONS.

GENERAL NOTES – STORM DRAIN

1. EXCEPT WHERE NOTED, ALL STORM SEWER PIPE SHALL BE REINFORCED CONCRETE, CLASS III AND SHALL CONFORM TO REQUIREMENTS OF ASTM C76. ALL RCP SHALL HAVE RUBBER GASKETED JOINTS AND SHALL CONFORM TO REQUIREMENTS OF ASTM C443, AND SHALL PROVIDE WATERTIGHT PERFORMANCE CHARACTERISTICS.
2. TONGUE AND GROOVE JOINTS SHALL NOT BE ALLOWED.
3. THE MINIMUM COVERAGE FOR ALL STORM DRAINAGE PIPES SHALL BE 1.5 FEET FOR CLASS III PIPE AND 1 FOOT FOR CLASS IV PIPE.
4. BEDDING MATERIAL SHALL CONFORM TO TOWN OF ERIE STANDARDS AND SPECIFICATIONS.
5. ALL MANHOLES SHALL BE CONCRETE AND CONFORM TO CDOT STANDARD M–604–20.
6. THE MINIMUM MANHOLE DIAMETER SHALL BE AS SPECIFIED BELOW:

PIPE DIAMETER	MANHOLE SIZE
15" TO 18"	4' DIAMETER
21" TO 42"	5' DIAMETER
48" TO 54"	6' DIAMETER
60" AND LARGER	BOX BASE MANHOLE

7. ALL STREET INLETS SHALL BE CURB OPENING TYPE R CONFORMING TO CDOT STANDARD M–604–12, EXCEPT WHERE OTHERWISE NOTED.
8. ALL INLET ACCESS COVERS SHALL HAVE THE WORDS 'NO DUMPING–DRAINS TO RIVERS' AND 'STORM SEWER' CAST INTO THE COVER PER TOWN OF ERIE STANDARD DETAIL.
9. ALL END SECTIONS SHALL CONFORM TO CDOT STANDARD M–603–10.
10. WHERE RIPRAP OR GROUTED BOULDERS ARE CALLED FOR ON THE PLANS FOR EROSION CONTROL, IT SHALL CONFORM TO THE URBAN STORM DRAINAGE CRITERIA MANUAL SPECIFICATIONS (LATEST REVISION).
11. ALL STORM SEWER SHALL BE PRIVATE UNLESS OTHERWISE NOTED.

GENERAL NOTES – WATER

1. AT ALL POINTS OF CONNECTION OF NEW WATER MAINS TO EXISTING MAINS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR EXCAVATING AND VERIFYING LOCATION OF THE EXISTING LINES PRIOR TO ANY CONSTRUCTION.
2. EXCEPT IN CASE OF AN EMERGENCY, VALVES ON THE TOWN OF ERIE WATER SYSTEM SHALL BE OPERATED BY OR UNDER THE DIRECTION OF THE APPROPRIATE TOWN OF ERIE PERSONNEL. THE CONTRACTOR SHALL GIVE THE TOWN OF ERIE ENGINEERING STAFF 48 HOURS NOTICE TO ARRANGE FOR OPERATING VALVES. BOTH THE CONTRACTOR AND THE APPROPRIATE TOWN OF ERIE PERSONNEL SHALL BE PRESENT WHEN THE VALVES ARE OPERATED.
3. WATER AND SANITARY SEWER LINES SHALL HAVE A MINIMUM HORIZONTAL SEPARATION OF TEN (10) FEET. WHEN A TEN (10) FOOT SEPARATION IS NOT PROVIDED OR WHEN SEWER LINES CROSS WATER LINES WITH LESS THAN ONE AND ONE–HALF (1½) FEET OF VERTICAL SEPARATION, SEWER LINE JOINTS SHALL BE CONCRETE ENCASED. FOR PERPENDICULAR CROSSINGS, ENCASED JOINTS SHALL EXTEND TEN (10) FEET, PERPENDICULAR TO THE WATER LINE IN BOTH DIRECTIONS.
4. ALL WATER LINES SHALL HAVE A MINIMUM OF FOUR AND ONE–HALF (4½) FEET OF COVER AND BE LOCATED A MINIMUM OF TEN (10) FEET FROM THE SANITARY SEWER AND THREE (3) FEET FROM THE EDGE OF CONCRETE CURB AND GUTTER PAN.
5. CHANGES IN DIRECTION OF WATERLINE PIPE GREATER THAN ONE DEGREE SHALL REQUIRE FITTINGS IN ALL INSTANCES. AXIAL DEFLECTION AT THE JOINTS SHALL NOT BE IN EXCESS OF MANUFACTURER'S RECOMMENDATION OR IN NO CASE MORE THAN ONE DEGREE.
6. WHEN IT IS NECESSARY TO DEPRESS WATER LINES AT UTILITY CROSSINGS, A MINIMUM CLEARANCE OF ONE AND ONE–HALF (1–1/2) FEET SHALL BE MAINTAINED BETWEEN OUTSIDES OF PIPE.
7. DISTANCES FOR WATER LINES ARE THE HORIZONTAL DISTANCE BETWEEN THE CENTERS OF THE FITTINGS. THEREFORE, DISTANCES SHOWN ON THE PLANS ARE APPROXIMATE AND COULD VARY DUE TO VERTICAL ALIGNMENT AND FITTING DIMENSIONS.
8. ALL WATER LINE VALVES SHALL BE SET ADJACENT TO THE TEE, EXCEPT FOR POINTS THAT FALL IN THE FLOW LINE OF A CONCRETE CROSS PAN. IN WHICH CASE, THE VALVE SHALL BE LOCATED SO THAT SURFACE DRAINAGE DOES NOT INFILTRATE THE VALVE BOX. VALVE BOXES SHALL BE SET AT AN ELEVATION IN ACCORDANCE WITH TOWN PAVING REQUIREMENTS.
9. ALL WATER MAINS SHALL BE POLYVINYL CHLORIDE (PVC) PRESSURE PIPE UNLESS SPECIFIED OTHERWISE. NOMINAL PVC PIPE SIZES 6–INCH THROUGH 12–INCH SHALL CONFORM TO ALL REQUIREMENTS OF AWWA STANDARD C–900, PRESSURE CLASS 150 (DR18). NOMINAL PVC PIPE SIZES 16–INCH THROUGH 24–INCH SHALL CONFORM TO ALL REQUIREMENTS OF AWWA STANDARD C–905, PRESSURE CLASS 165 (DR25). ALL PVC PIPES SHALL HAVE OUTSIDE DIAMETERS EQUIVALENT TO CAST IRON PIPE.
10. FIRE HYDRANT ASSEMBLY INCLUDES THE FIRE HYDRANT, SIX (6) INCH VALVE, AND SIX (6) INCH PIPE. INSTALLATION SHALL BE IN ACCORDANCE WITH THE TOWN OF ERIE STANDARDS AND SPECIFICATIONS.
11. ALL FITTINGS SHALL BE MADE FROM DUCTILE IRON, FURNISHED WITH MECHANICAL JOINT ENDS OR INTEGRAL RESTRAINED JOINTS, AND SHALL HAVE A PRESSURE RATING OF 350 PSI.
12. POLYETHYLENE WRAPPING SHALL BE INSTALLED AROUND ALL DUCTILE IRON PIPES, FITTINGS, VALVES, FIRE HYDRANT BARRELS AND ROD AND CLAMPS. THE POLYETHYLENE SHALL HAVE A MINIMUM THICKNESS OF EIGHT (8) MILS, IN ACCORDANCE WITH AWWA STANDARD C–105.
13. ALL WATER LINE PIPE SHALL BE PROVIDED WITH A MINIMUM GAGE SIZE OF 12 SINGLE STRAND INSULATED COPPER WIRE. SPLICES IN TRACER WIRE SHALL BE CAPPED IN WATER PROOF GEL CAP TYPE CONNECTORS SUITED FOR DIRECT BURY APPLICATION (3M TYPE DBY–6 LOW VOLTAGE OR EQUAL). WIRE SHALL BE ATTACHED TO TOP OF WATER LINE WITH 2–INCH WIDE PVC TAPE @ 5–FT INTERVALS ALONG PIPE TRACER WIRE SHALL EXTEND TO THE SURFACE AND BE COILED IN A LOCATE BOX AT THE BACKSIDE OF EITHER EACH FIRE HYDRANT OR VALVE. UNDER THE SUPERVISION OF TOWN OF ERIE ENGINEERING STAFF, TEST SHALL BE MADE BY THE CONTRACTOR @ THE COMPLETION OF CONSTRUCTION TO INSURE THAT THE TRACER WIRES CARRY A CONTINUOUS CURRENT BETWEEN ALL ACCESS POINTS.
14. WARNING TAPE SHALL BE INSTALLED 12" MINIMUM AND 18" MAXIMUM ABOVE WATER PIPE.
15. BEDDING MATERIAL SHALL CONFORM TO TOWN OF ERIE STANDARDS AND SPECIFICATIONS.
16. VALVES SHALL OPEN COUNTER CLOCKWISE. VALVES 12–INCH AND SMALLER SHALL BE RESILIENT SEAT GATE VALVES. LARGER VALVES SHALL BE BUTTERFLY VALVES.
17. VALVE BOXES SHALL BE RAISED TO ONE–FOURTH (1/4) INCH BELOW GRADE AFTER COMPLETION OF SURFACE PAVING OR FINAL GRADING. VALVE BOXES IN NON–PAVED AREAS SHALL HAVE A CONCRETE COLLAR AROUND THE VALVE LID IN ACCORDANCE WITH THE DETAIL.
18. ALL SERVICE LINE TAPS SHALL HAVE DOUBLE STRAP BRASS TAPPING SADDLES. (ROMAC 202B OR APPROVED EQUAL).
19. ALL RESIDENTIAL WATER TAPS SHALL BE THREE–QUARTER (3/4) INCH OR AS REQUIRED BY THE CURRENT BUILDING CODE.
20. ALL WATER SERVICE LATERALS SHALL EXTEND FIVE (5) FEET BEYOND RIGHT OF WAY OR UTILITY EASEMENTS, WHICHEVER IS GREATER. THE ENDS SHALL BE MARKED BY A BLUE PAINTED WOOD POST UNTIL CURB AND GUTTER IS IN PLACE. WHEN CURB AND GUTTER IS IN PLACE THE LATERALS SHALL BE MARKED ON THE CONCRETE CURB FACE WITH A "V" OR "W".
21. CONCRETE THRUST BLOCKS AND/OR "MEGA–LUG" MECHANICAL RESTRAINTS ARE REQUIRED AT ALL MECHANICAL FITTINGS. THRUST BLOCKS MAY NOT BE REQUIRED IF PIPE RESTRAINT IS PROVIDED IN ACCORDANCE WITH RESTRAINED PIPE DETAIL.
22. NO WORK SHALL BE BACKFILLED (INCLUDING BEDDING MATERIAL ABOVE THE SPRING LINE OF THE PIPE) UNTIL THE CONSTRUCTION HAS BEEN INSPECTED AND APPROVED FOR BACKFILLING BY THE TOWN OF ERIE ENGINEERING STAFF.
23. ONLY ONE CONNECTION TO THE EXISTING WATER DISTRIBUTION SYSTEM SHALL BE MADE UNTIL ALL HYDROSTATIC TESTING, CHLORINATION AND FLUSHING HAS BEEN COMPLETED.
24. DISINFECTION AND HYDROSTATIC TESTING SHALL BE DONE IN THE PRESENCE OF A TOWN OF ERIE ENGINEERING STAFF. CONTACT THE TOWN OF ERIE DEPARTMENT OF PUBLIC WORKS, FORTY–EIGHT (48) HOURS PRIOR TO DISINFECTING AND/OR TESTING.
25. DISINFECTION AND FLUSHING SHALL BE DONE IN ACCORDANCE WITH THE REQUIREMENTS OF THE COLORADO DEPARTMENT OF HEALTH AND THE PROCEDURE SET FORTH IN AWWA C651, "STANDARD FOR DISINFECTING WATER MAINS". THE CHLORINATION OF THE WATER LINE SHALL BE PERFORMED PRIOR TO THE HYDROSTATIC TESTING. ALL VALVES, FIRE HYDRANTS AND OTHER APPURTANCES SHALL BE OPERATED WHILE PIPELINE IS FILLED WITH THE CHLORINATING AGENT TO INSURE THAT HIGH CHLORINE CONTACT IS MADE WITH ALL INTERNAL SURFACES.
26. ALL WATER LINES SHALL BE HYDROSTATIC TESTED. PRESSURE AN LEAKAGE TESTS SHALL BE CONDUCTED ACCORDING TO THE APPLICABLE SECTIONS OF AWWA C600/605 TO A MINIMUM PRESSURE OF ONE HUNDRED AND FIFTY (150) POUNDS PER SQUARE (PSI) INCH AT THE LOW POINT OF THE SECTION BEING TESTED FOR THE DURATION OF TWO (2) HOURS. THE MAXIMUM LENGTH OF LINE TO BE TESTED SHALL BE ONE THOUSAND (1,000) FEET. ALL JOINTS IN CONNECTIONS ARE TO BE WATERTIGHT WITHIN TOLERANCES ALLOWED BY THE SPECIFICATIONS IN AWWA C600/605. ANY LEAKAGE THAT IS DISCOVERED BY OBSERVATION OR TESTS SHALL BE LOCATED AND MADE WATERTIGHT BY THE CONTRACTOR. PRESSURE AND LEAKAGE TESTS SHALL NOT BE CONDUCTED UNTIL THE LINE HAS PASSED ALL REQUIRED DISINFECTION TESTS.
27. INITIAL ACCEPTANCE OF THE NEW WATER LINES ARE CONTINGENT UPON RECEIVING COPIES OF:
    A. WATER TRENCH COMPACTION TEST RESULTS
    B. HYDRO STATIC TESTING OF 100% OF THE SYSTEM
    C. HEALTH DEPARTMENT TESTS. (CHLORINE AND/OR CLEAR WATER AS REQUIRED)
28. ALL METER PITS AND CURB STOPS SHALL BE PROTECTED AT THE TIME OF INSTALLATION WITH A MINIMUM OF THREE (3) T–POSTS AND ORANGE SAFETY FENCE. THE T–POST AND SAFETY FENCE SHALL REMAIN IN PLACE AND IN GOOD CONDITION UNTIL THE LANDSCAPING IS INSTALLED.
29. ALL WATER VAULTS SHALL BE WATER TIGHT. CONTRACTOR SHALL SEAL VAULTS TO ENSURE SURFACE WATER DOES NOT INFILTRATE INTO THE VAULTS. VAULT LIDS SHALL BE PLACED TO ENSURE THAT SURFACE WATER DOES NOT FLOW INTO THE VAULTS.

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

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

DESIGNED BY: AEM
CHECKED BY: MSM
DRAWN BY: AEM

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
GENERAL NOTES

ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

SHEET NO.
3
3 OF 69

FILEPATH: P:\160602\ENGINEERING\CD\CD - GENERAL NOTES.DWG LAYOUT: GENERAL NOTES 2
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PLOTTED: WED 01/29/20 5:37:27P BY: RACHEL PATTON

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.

OWNER: PATRICK & DEBRA GONZALES
LEGAL: 10 AC TR 4114 34-1N-69 PER DEED 1434442
RECEPTION NO. 1434442

OWNER: TOWN OF ERIE
LEGAL: OUTLOT C ARAPAHOE RIDGE FLG 2 AMENDMENT 1

TRACT G
0.70 ACRES

OWNER: PATRICK & DEBRA GONZALES
LEGAL: 10 AC TR 4114 34-1N-69
PER DEED 1434442
RECEPTION NO. 1434442

OWNER: MATTHEW & KRISTEN STARR
LEGAL: TR 4869 LESS 4869A 7.10 AC 34-1N-69
RECEPTION NO. 03191798

OWNER: CITY OF LAYAYETTE
LEGAL: TRACTS C & D & E BEACON HILL REPLAT TRACT D

ARAPAHOE ROAD
ROW VARIES

TRACT H
0.59 ACRES

LOT 11
11.67 ACRES

OWNER: TOWN OF ERIE
LEGAL: TRACT C ARAPAHOE RIDGE FLG 4 AMENDED

SEE SHEET 5 FOR DETAILED SITE PLAN

SEE SHEET 6 FOR DETAILED SITE PLAN

SEE SHEET 7 FOR DETAILED SITE PLAN

TRACT F
1.02 ACRES

CH

TRASH

TRACT A
4.29 ACRES

REPLAT OF BEACON HILL SUBDIVISION
BLOCK 2, LOTS 1 TO 5
RECEPTION NO. 487195

REPLAT OF BEACON HILL SUBDIVISION
BLOCK 1, LOTS 1 TO 14
RECEPTION NO. 487195

NINE MILE CORNER
COMMERCIAL PROPERTY

SECONDARY ACCESS ROAD

Know what's below. Call before you dig.
CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

50 0 50 100
SCALE: 1" = 50'

DESIGNED BY: TJS
CHECKED BY: MSM
DRAWN BY: TJS

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
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OUTLOOK AT NINE MILE
OVERALL SITE PLAN

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

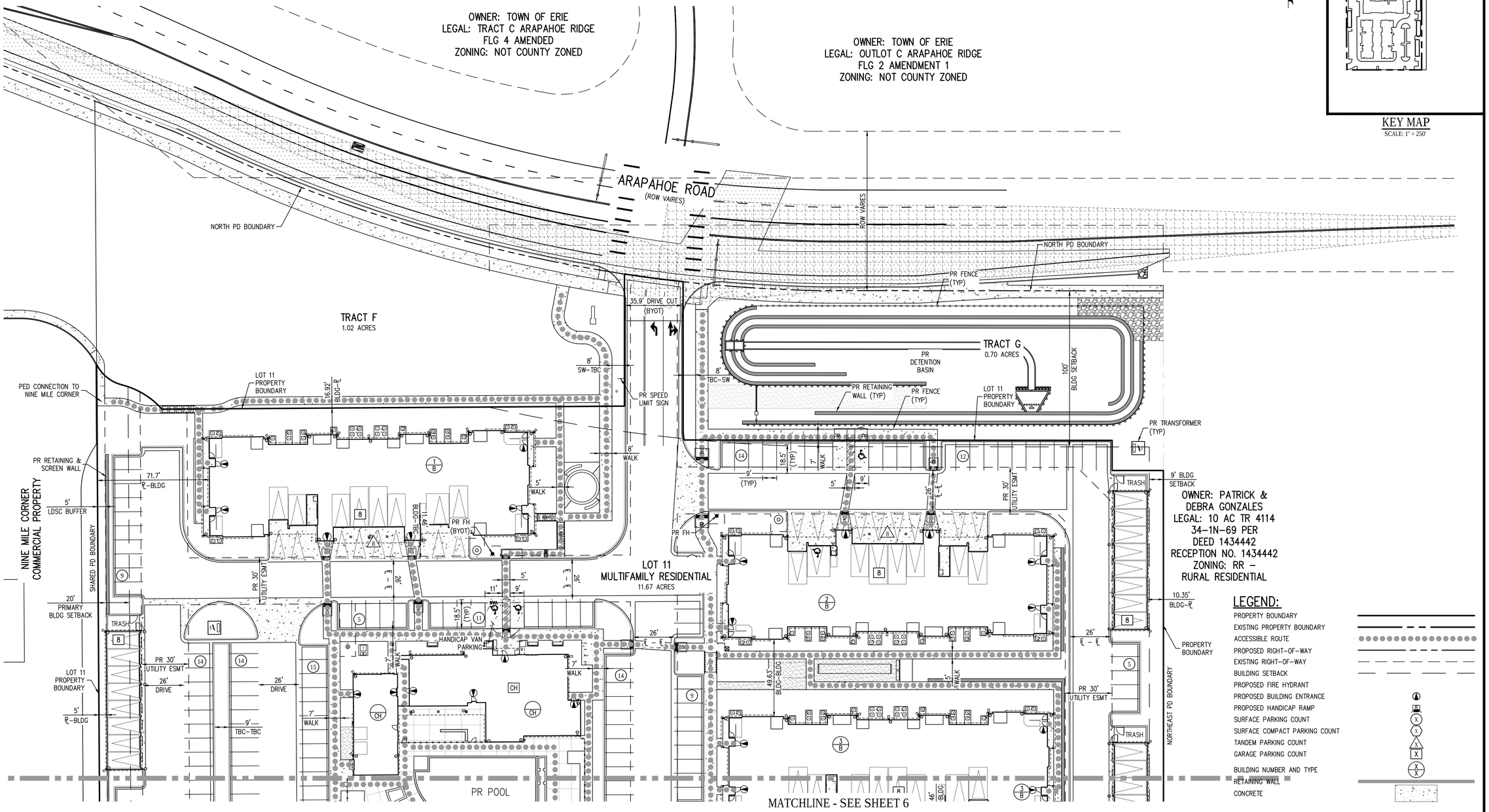
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
4
4 OF 69

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PLOTTED: WED 07/29/20 5:25:49P BY: RACHEL PATTON

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Know what's below. Call before you dig.

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

30 0 30 60
SCALE: 1" = 30'

DESIGNED BY: TJS
CHECKED BY: MSM
DRAWN BY: TJS

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
DETAILED SITE PLAN

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

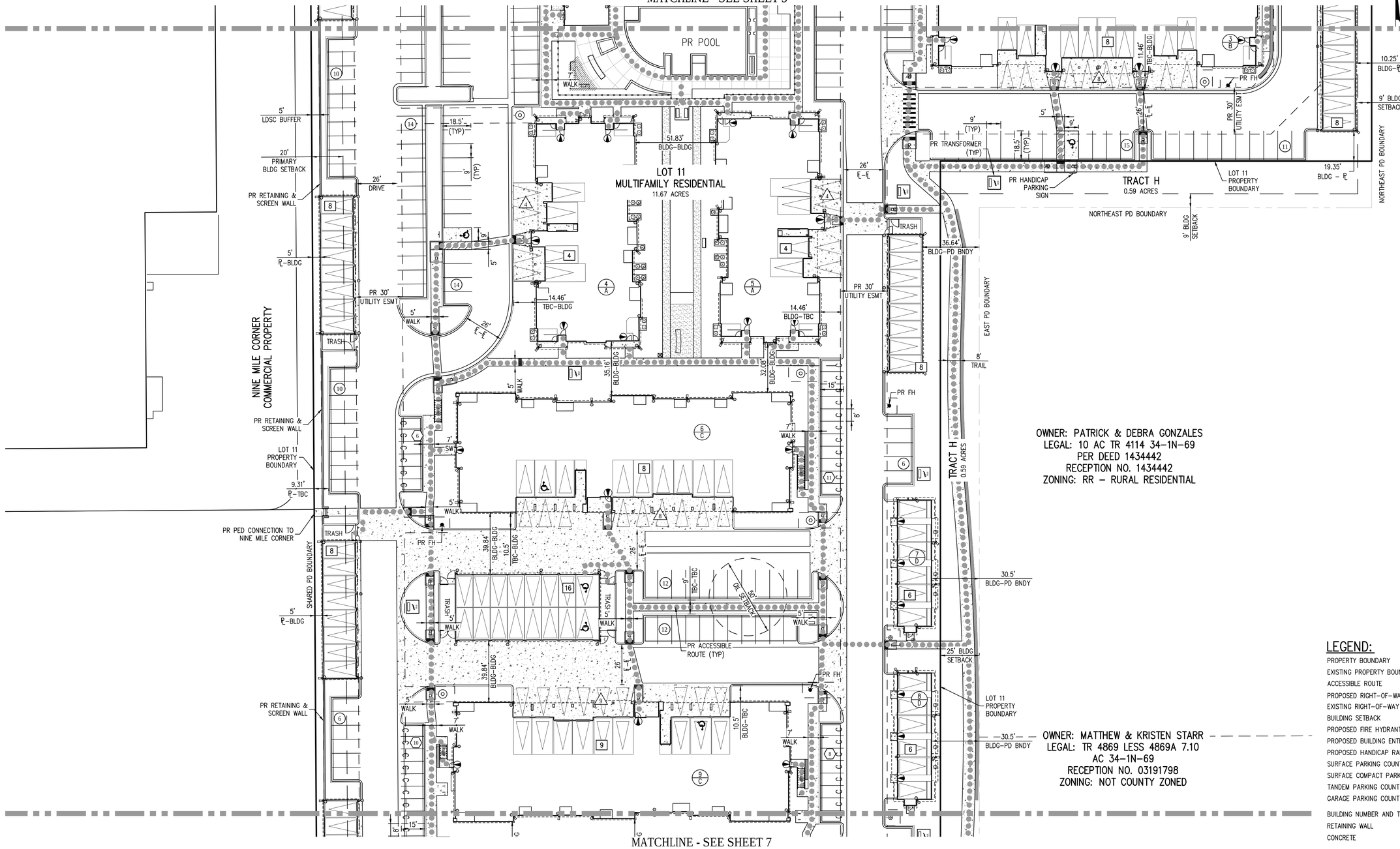
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NOT FOR
CONSTRUCTION

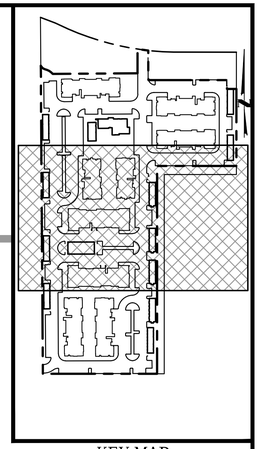
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MATCHLINE - SEE SHEET 5





OWNER: PATRICK & DEBRA GONZALES
LEGAL: 10 AC TR 4114 34–1N–69
PER DEED 1434442
RECEPTION NO. 1434442
ZONING: RR – RURAL RESIDENTIAL

OWNER: MATTHEW & KRISTEN STARR
LEGAL: TR 4869 LESS 4869A 7.10
AC 34–1N–69
RECEPTION NO. 03191798
ZONING: NOT COUNTY ZONED

LEGEND:

- PROPERTY BOUNDARY
- EXISTING PROPERTY BOUNDARY
- ACCESSIBLE ROUTE
- PROPOSED RIGHT–OF–WAY
- EXISTING RIGHT–OF–WAY
- BUILDING SETBACK
- PROPOSED FIRE HYDRANT
- PROPOSED BUILDING ENTRANCE
- PROPOSED HANDICAP RAMP
- SURFACE PARKING COUNT
- SURFACE COMPACT PARKING COUNT
- TANDEM PARKING COUNT
- GARAGE PARKING COUNT
- BUILDING NUMBER AND TYPE
- RETAINING WALL
- CONCRETE

MATCHLINE - SEE SHEET 7

811 Know what's below. Call before you dig.
CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

30 0 30 60
SCALE: 1" = 30'

DESIGNED BY: TJS
CHECKED BY: MSM
DRAWN BY: TJS

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
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OUTLOOK AT NINE MILE
DETAILED SITE PLAN

ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

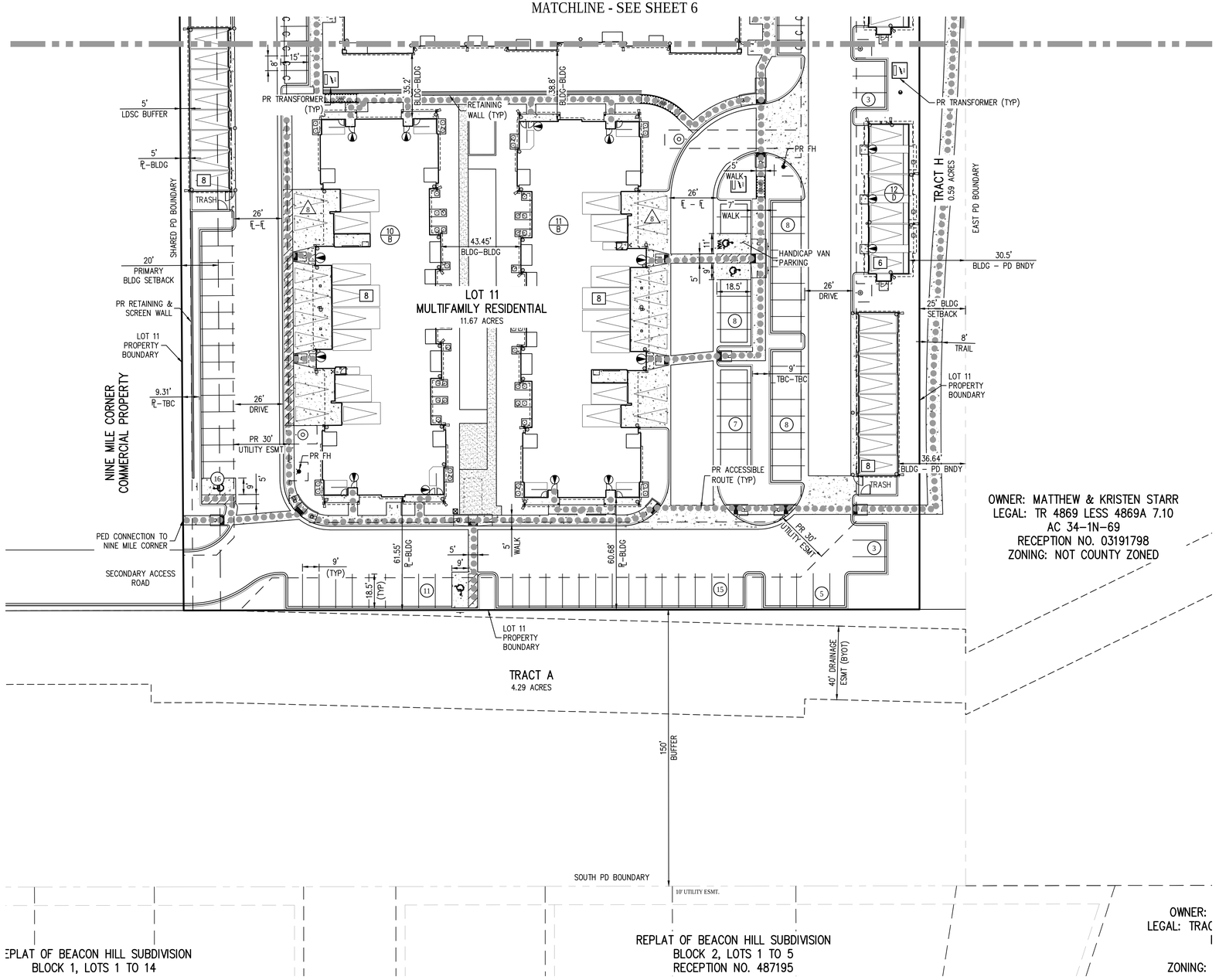
PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
6
6 OF 69

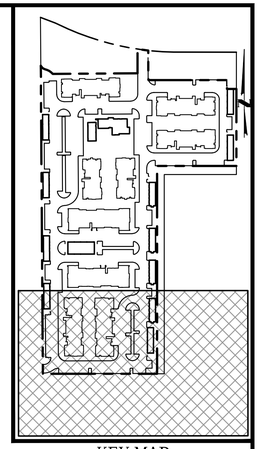
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MATCHLINE - SEE SHEET 6



OWNER: MATTHEW & KRISTEN STARR
LEGAL: TR 4869 LESS 4869A 7.10
AC 34-1N-69
RECEPTION NO. 03191798
ZONING: NOT COUNTY ZONED



KEY MAP
SCALE: 1" = 250'

LEGEND:

- PROPERTY BOUNDARY
- EXISTING PROPERTY BOUNDARY
- ACCESSIBLE ROUTE
- PROPOSED RIGHT-OF-WAY
- EXISTING RIGHT-OF-WAY
- BUILDING SETBACK
- PROPOSED FIRE HYDRANT
- PROPOSED BUILDING ENTRANCE
- PROPOSED HANDICAP RAMP
- SURFACE PARKING COUNT
- SURFACE COMPACT PARKING COUNT
- TANDEM PARKING COUNT
- GARAGE PARKING COUNT
- BUILDING NUMBER AND TYPE
- RETAINING WALL
- CONCRETE

Know what's below. Call before you dig.
CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

30 0 30 60
SCALE: 1" = 30'

DESIGNED BY: TJS
CHECKED BY: MSM
DRAWN BY: TJS

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
DETAILED SITE PLAN

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

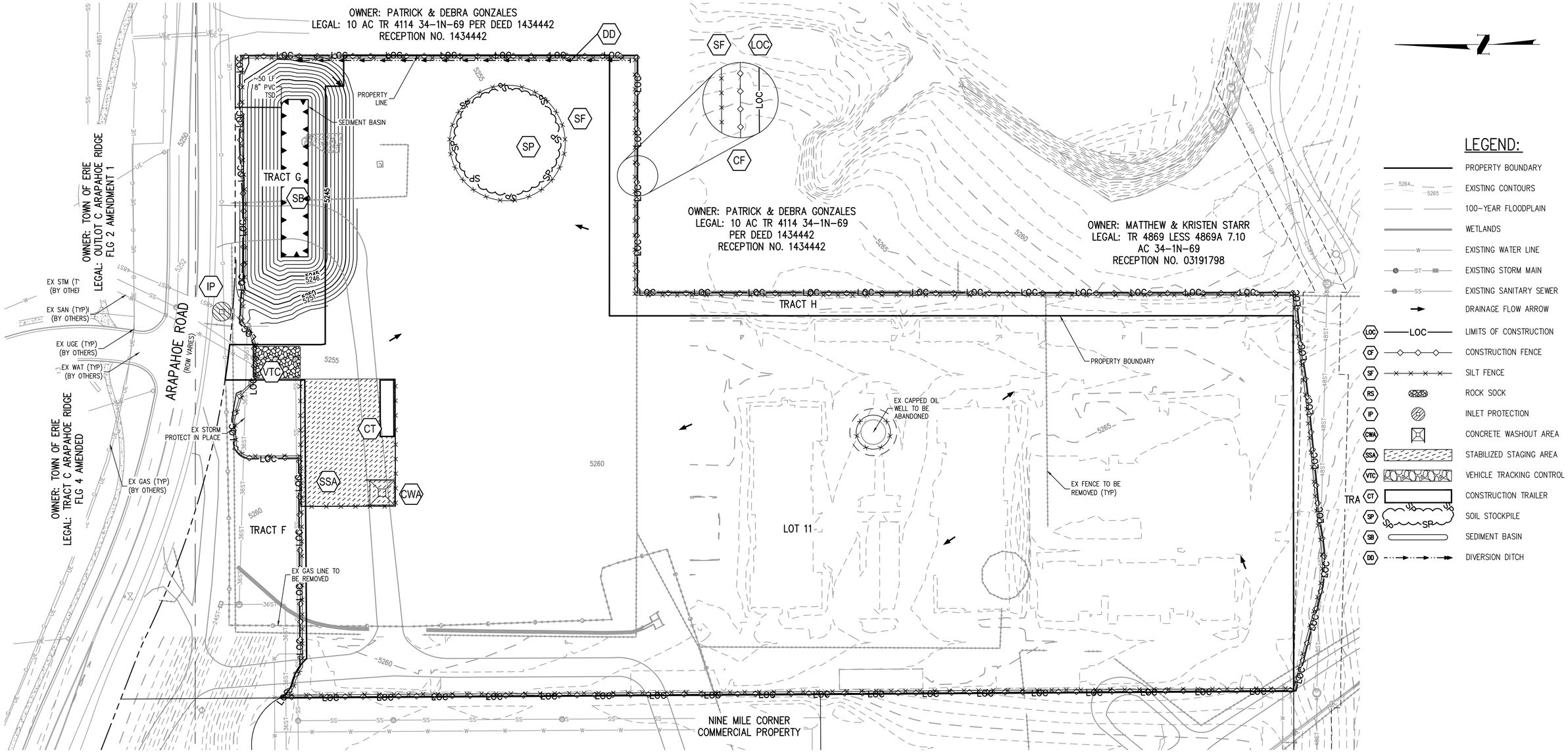
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO. 7

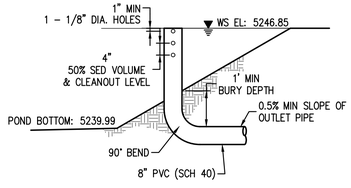
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PLOTTED: WED 01/29/20 5:38:01 P BY: RACHEL PATTON

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SEDIMENT BASIN INFORMATION:

TRIBUTARY AREA:	~ 13.25 AC
REQUIRED VOLUME:	47,700 CF
PROVIDED VOLUME:	81,791 CF
BERM ELEVATION:	5250
POND BOTTOM ELEVATION:	5239.99
WATER SURFACE ELEVATION (AT REQUIRED VOLUME):	5246.85
MAXIMUM BERM SLOPE:	4:1



SEDIMENT BASIN OUTLET

NOTES:

1. SEE SHEET 2 FOR TOWN OF ERIE GENERAL NOTES.
2. CONTRACTOR SHALL SEED AND MULCH ANY AREAS WHICH ARE TO REMAIN UNDISTURBED FOR MORE THAN FOURTEEN (14) DAYS.
3. FINAL STABILIZATION SHALL BE IN ACCORDANCE WITH FORMAL LANDSCAPING SHOWN ON THE APPROVED LANDSCAPE PLANS.
4. THE SEDIMENT BASIN IS ALSO BEING USED AS THE EXTENDED DETENTION BASIN. FULL STABILIZATION SHALL BE ACHIEVED WITHIN THE PERMANENT SEDIMENT CONTROL FACILITY BEFORE THE TERMINATION OF THE STORMWATER CONSTRUCTION ACTIVITY PERMIT.
5. ALL SILT FENCE SHALL BE INSTALLED ALONG CONTOURS. AT THE END OF A RUN OF SILT FENCE ALONG A CONTOUR, THE SILT FENCE SHOULD BE TURNED PERPENDICULAR TO THE CONTOUR TO CREATE A "J-HOOK." THE "J-HOOK" EXTENDING PERPENDICULAR TO THE CONTOUR SHOULD BE OF SUFFICIENT LENGTH TO KEEP RUNOFF FROM FLOWING AROUND THE END OF THE SILT FENCE (TYPICALLY 10'-20').

811 Know what's below. Call before you dig.
CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

50 0 50 100
SCALE: 1" = 50'

DESIGNED BY: RJH
CHECKED BY: MSM
DRAWN BY: RJH

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
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OUTLOOK AT NINE MILE
EROSION CONTROL PLAN INITIAL

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO. 8

FILEPATH: P:\160602\ENGINEERING\EROSION\CD_EROSION CONTROL PLAN INITIAL.DWG LAYOUT: EROSION CONTROL PLAN INITIAL
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PLOTTED: WED 01/29/20 5:38:04P BY: RACHEL PATTON

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.

OWNER: PATRICK & DEBRA GONZALES
LEGAL: 10 AC TR 4114 34-1N-69 PER DEED 1434442
RECEPTION NO. 1434442

OWNER: TOWN OF ERIE
LEGAL: OUTLOT C ARAPAHOE RIDGE FLG 2 AMENDMENT 1

TRACT G

ARAPAHOE ROAD
ROW VARIES

OWNER: TOWN OF ERIE
LEGAL: TRACT C ARAPAHOE RIDGE FLG 4 AMENDED

TRACT F

OWNER: PATRICK & DEBRA GONZALES
LEGAL: 10 AC TR 4114 34-1N-69
PER DEED 1434442
RECEPTION NO. 1434442

TRACT H

TRACT A

SURFACE ROUGHENING, SEEDING & MULCHING AS NEEDED. SEE NOTE #1

PROPERTY LINE

NINE MILE CORNER COMMERCIAL PROPERTY

LEGEND:

- PROPERTY BOUNDARY
- EXISTING CONTOURS
- 100-YEAR FLOODPLAIN
- WETLANDS
- EXISTING WATER LINE
- EXISTING STORM MAIN
- EXISTING SANITARY SEWER
- DRAINAGE FLOW ARROW
- LOC — LIMITS OF CONSTRUCTION
- CF — CONSTRUCTION FENCE
- SF — SILT FENCE
- RS — ROCK SOCK
- IP — INLET PROTECTION
- CWA — CONCRETE WASHOUT AREA
- SSA — STABILIZED STAGING AREA
- VTC — VEHICLE TRACKING CONTROL
- CT — CONSTRUCTION TRAILER
- SP — SOIL STOCKPILE
- SB — SEDIMENT BASIN
- TEMPORARY SEEDING & MULCHING

NOTES:

1. SEE SHEET 2 FOR TOWN OF ERIE GENERAL NOTES.
2. CONTRACTOR SHALL SEED AND MULCH ANY AREAS WHICH ARE TO REMAIN UNDISTURBED FOR MORE THAN FOURTEEN (14) DAYS.
3. FINAL STABILIZATION SHALL BE IN ACCORDANCE WITH FORMAL LANDSCAPING SHOWN ON THE APPROVED LANDSCAPE PLANS.
4. THE SEDIMENT BASIN IS ALSO BEING USED AS THE EXTENDED DETENTION BASIN. FULL STABILIZATION SHALL BE ACHIEVED WITHIN THE PERMANENT SEDIMENT CONTROL FACILITY BEFORE THE TERMINATION OF THE STORMWATER CONSTRUCTION ACTIVITY PERMIT.

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CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

50 0 50 100
SCALE: 1" = 50'

DESIGNED BY: DAM
CHECKED BY: MSM
DRAWN BY: DAM

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
EROSION CONTROL PLAN INTERIM

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

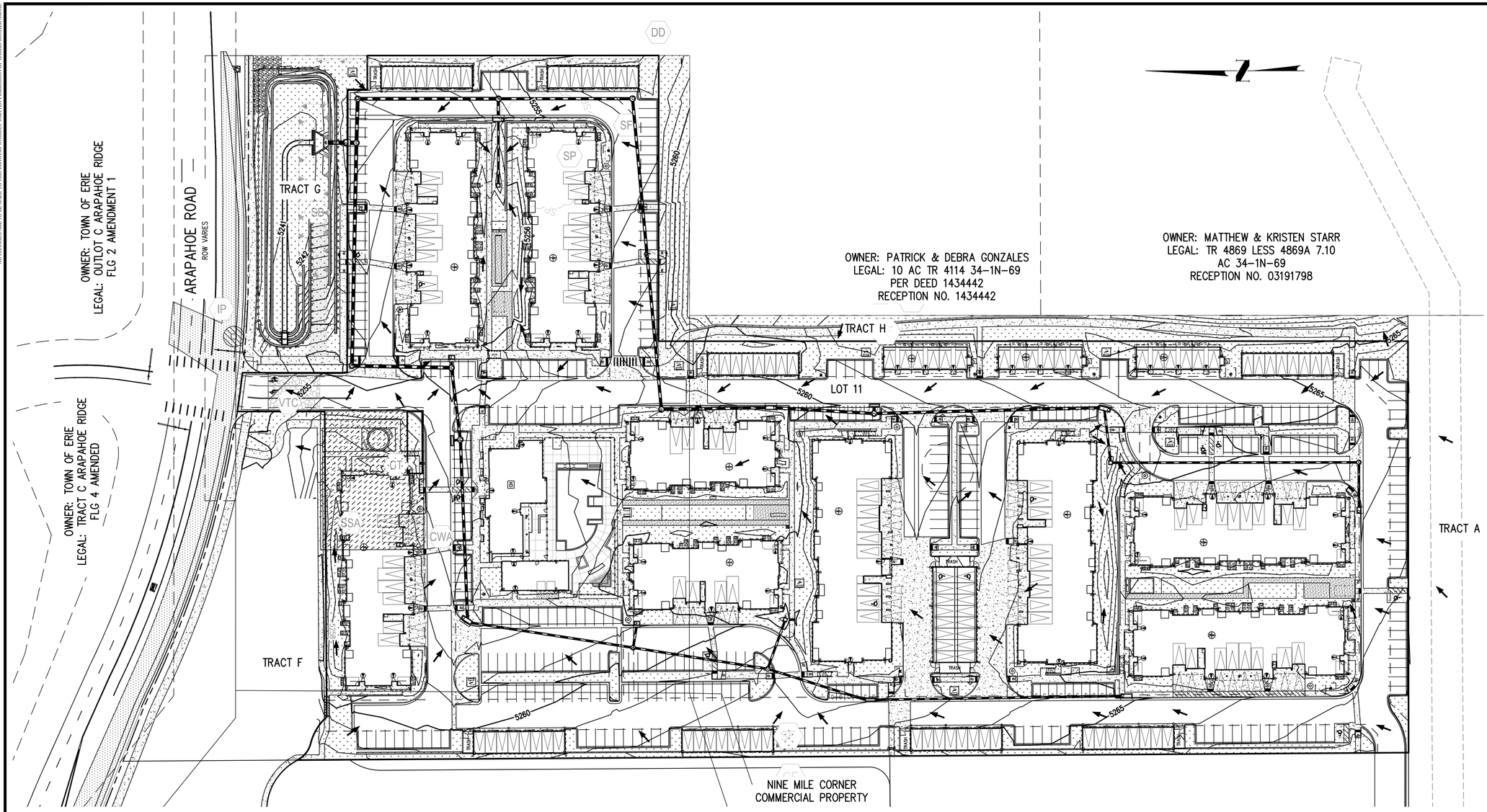
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO. 9
9 OF 69

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PLOTTED: WED 01/29/20 5:38:31 P BY: RACHEL PATTON

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LEGEND:

- SEEDING AND MULCHING
- 5173 / 5170 — EXISTING CONTOURS
- 5173 / 5170 — PROPOSED CONTOURS
- DRAINAGE FLOW ARROW

NOTES:

1. SEE SHEET 2 FOR TOWN OF ERIE GENERAL NOTES.
2. CONTRACTOR SHALL SEED AND MULCH ANY AREAS WHICH ARE TO REMAIN UNDISTURBED FOR MORE THAN FOURTEEN (14) DAYS.
3. FINAL STABILIZATION SHALL BE IN ACCORDANCE WITH FORMAL LANDSCAPING SHOWN ON THE APPROVED LANDSCAPE PLANS.
4. THE SEDIMENT BASIN IS ALSO BEING USED AS THE EXTENDED DETENTION BASIN. FULL STABILIZATION SHALL BE ACHIEVED WITHIN THE PERMANENT SEDIMENT CONTROL FACILITY BEFORE THE TERMINATION OF THE STORMWATER CONSTRUCTION ACTIVITY PERMIT.

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

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

50 0 50 100
SCALE: 1" = 50'

DESIGNED BY: RJH
CHECKED BY: MSM
DRAWN BY: RJH

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1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
EROSION CONTROL PLAN FINAL

ISSUE DATE: 11-08-2019	PROJECT #: 160602
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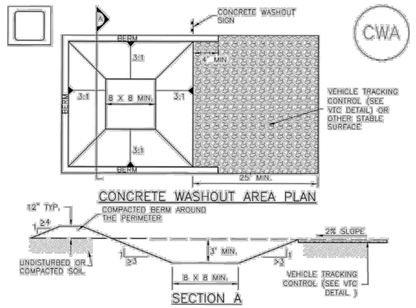
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SHEET NO. 10

10 OF 69

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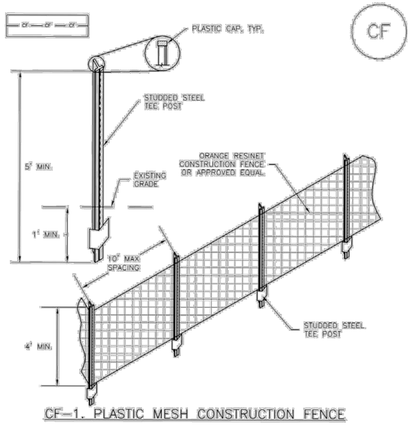
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CWA–1. CONCRETE WASHOUT AREA

CWA INSTALLATION NOTES

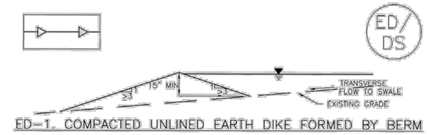
1. SEE PLAN VIEW FOR:
   –CWA INSTALLATION LOCATION.
2. DO NOT LOCATE AN UNLINED CWA WITHIN 400' OF ANY NATURAL DRAINAGE PATHWAY OR WATERBODY. DO NOT LOCATE WITHIN 1,000' OF ANY WELLS OR DRINKING WATER SOURCES. IF SITE CONSTRAINTS MAKE THIS INFEASIBLE, OR IF HIGHLY PERMEABLE SOILS EXIST ON SITE, THE CWA MUST BE INSTALLED WITH AN IMPERMEABLE LINER (16 MIL MIN. THICKNESS) OR SURFACE STORAGE ALTERNATIVES USING PREFABRICATED CONCRETE WASHOUT DEVICES OR A LINED ABOVE GROUND STORAGE ARE SHOULD BE USED.
3. THE CWA SHALL BE INSTALLED PRIOR TO CONCRETE PLACEMENT ON SITE.
4. CWA SHALL INCLUDE A FLAT SUBSURFACE PIT THAT IS AT LEAST 8' BY 8' SLOPES LEADING OUT OF THE SUBSURFACE PIT SHALL BE 3:1 OR FLATTER. THE PIT SHALL BE AT LEAST 3' DEEP.
5. BERM SURROUNDING SIDES AND BACK OF THE CWA SHALL HAVE MINIMUM HEIGHT OF 1'.
6. VEHICLE TRACKING PAD SHALL BE SLOPED 2% TOWARDS THE CWA.
7. SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE CWA, AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CWA TO OPERATORS OF CONCRETE TRUCKS AND PUMP RIGS.
8. USE EXCAVATED MATERIAL FOR PERIMETER BERM CONSTRUCTION.



CF–1. PLASTIC MESH CONSTRUCTION FENCE

CONSTRUCTION FENCE INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –LOCATION OF CONSTRUCTION FENCE.
2. CONSTRUCTION FENCE SHOWN SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.
3. CONSTRUCTION FENCE SHALL BE COMPOSED OF ORANGE, CONTRACTOR-GRADE MATERIAL THAT IS AT LEAST 4' HIGH. METAL POSTS SHOULD HAVE A PLASTIC CAP FOR SAFETY.
4. STUDDED STEEL TEE POSTS SHALL BE UTILIZED TO SUPPORT THE CONSTRUCTION FENCE. MAXIMUM SPACING FOR STEEL TEE POSTS SHALL BE 10'.
5. CONSTRUCTION FENCE SHALL BE SECURELY FASTENED TO THE TOP, MIDDLE, AND BOTTOM OF EACH POST.



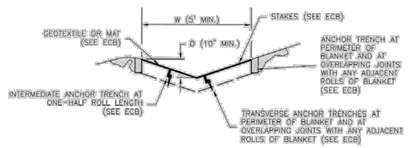
ED–1. COMPACTED UNLINED EARTH DIKE FORMED BY BERM



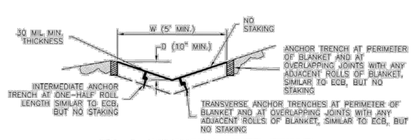
DS–1. COMPACTED UNLINED EXCAVATED SWALE



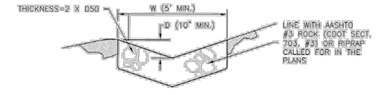
DS–2. COMPACTED UNLINED SWALE FORMED BY CUT AND FILL



DS–3. ECB LINED SWALE (CUT AND FILL OR BERM)



DS–4. SYNTHETIC LINED SWALE



DS–5. RIPRAP LINED SWALE

EARTH DIKE AND DRAINAGE SWALE INSTALLATION NOTES

1. SEE SITE PLAN FOR:
   – LOCATION OF DIVERSION SWALE
   – TYPE OF SWALE (UNLINED, COMPACTED AND/OR LINED).
   – LENGTH OF EACH SWALE.
   – DEPTH, D, AND WIDTH, W DIMENSIONS.
   – FOR ECB/TRM LINED DITCH, SEE ECB DETAIL.
   – FOR RIPRAP LINED DITCH, SIZE OF RIPRAP, D50.
2. SEE DRAINAGE PLANS FOR DETAILS OF PERMANENT CONVEYANCE FACILITIES AND/OR DIVERSION SWALES EXCEEDING 2-YEAR FLOW RATE OF 10 CFS.
3. EARTH DIKES AND SWALES INDICATED ON SWMP PLAN SHALL BE INSTALLED PRIOR TO LAND-DISTURBING ACTIVITIES IN PROXIMITY.
4. EMBANKMENT IS TO BE COMPACTED TO 90% OF MAXIMUM DENSITY AND WITHIN 2% OF OPTIMUM MOISTURE CONTENT ACCORDING TO ASTM D698.
5. SWALES ARE TO DRAIN TO A SEDIMENT CONTROL BMP.
6. FOR LINED DITCHES, INSTALLATION OF ECB/TRM SHALL CONFORM TO THE REQUIREMENTS OF THE ECB DETAIL.
7. WHEN CONSTRUCTION TRAFFIC MUST CROSS A DIVERSION SWALE, INSTALL A TEMPORARY CULVERT WITH A MINIMUM DIAMETER OF 12 INCHES.

CWA 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. THE CWA SHALL BE REPAIRED, CLEANED, OR ENLARGED AS NECESSARY TO MAINTAIN CAPACITY FOR CONCRETE WASTE. CONCRETE MATERIALS, ACCUMULATED IN PIT, SHALL BE REMOVED ONCE THE MATERIALS HAVE REACHED A DEPTH OF 2'.
5. CONCRETE WASHOUT WATER, WASTED PIECES OF CONCRETE AND ALL OTHER DEBRIS IN THE SUBSURFACE PIT SHALL BE TRANSPORTED FROM THE JOB SITE IN A WATER-TIGHT CONTAINER AND DISPOSED OF PROPERLY.
6. THE CWA SHALL REMAIN IN PLACE UNTIL ALL CONCRETE FOR THE PROJECT IS PLACED.
7. WHEN THE CWA IS REMOVED, COVER THE DISTURBED AREA WITH TOP SOIL, SEED AND MULCH OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

(DETAIL ADAPTED FROM DOUGLAS COUNTY, COLORADO AND THE CITY OF PARKER, COLORADO, NOT AVAILABLE IN AUTOCAD).

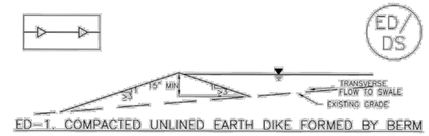
NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

CONSTRUCTION FENCE 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. CONSTRUCTION FENCE SHALL BE REPAIRED OR REPLACED WHEN THERE ARE SIGNS OF DAMAGE SUCH AS RIPS OR SAGS. CONSTRUCTION FENCE IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.
5. WHEN CONSTRUCTION FENCES ARE REMOVED, ALL DISTURBED AREAS ASSOCIATED WITH THE INSTALLATION, MAINTENANCE, AND/OR REMOVAL OF THE FENCE SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED, OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

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.

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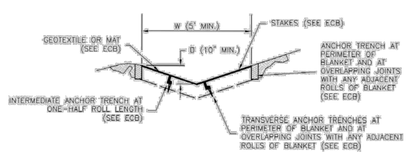
ED–1. COMPACTED UNLINED EARTH DIKE FORMED BY BERM



DS–1. COMPACTED UNLINED EXCAVATED SWALE



DS–2. COMPACTED UNLINED SWALE FORMED BY CUT AND FILL



DS–3. ECB LINED SWALE (CUT AND FILL OR BERM)

EARTH DIKE AND DRAINAGE SWALE 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. SWALES SHALL REMAIN IN PLACE UNTIL THE END OF CONSTRUCTION; IF APPROVED BY LOCAL JURISDICTION, SWALES MAY BE LEFT IN PLACE.
5. WHEN A SWALE IS REMOVED, THE DISTURBED AREA SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY LOCAL JURISDICTION.

(DETAIL ADAPTED FROM DOUGLAS COUNTY, COLORADO AND THE CITY OF COLORADO SPRINGS, COLORADO, NOT AVAILABLE IN AUTOCAD)

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.

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OUTLOOK AT NINE MILE
EROSION CONTROL PLAN DETAIL 1

ISSUE DATE: 11-08-2019	PROJECT #: 160602
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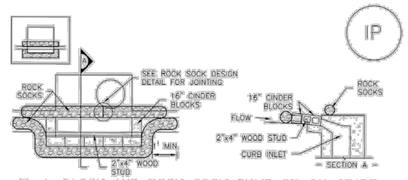
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SHEET NO. 11

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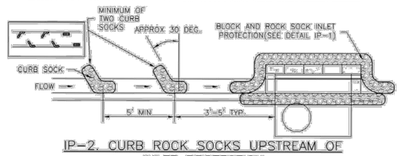
IP–1. BLOCK AND ROCK SOCK SUMP OR ON GRADE INLET PROTECTION

BLOCK AND CURB SOCK INLET PROTECTION INSTALLATION NOTES

1. SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. 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.

3. GRAVEL BAGS SHALL BE PLACED AROUND CONCRETE BLOCKS, CLOSELY ABUTTING ONE ANOTHER AND JOINTED TOGETHER IN ACCORDANCE WITH ROCK SOCK DESIGN DETAIL.



IP–2. CURB ROCK SOCKS UPSTREAM OF INLET PROTECTION

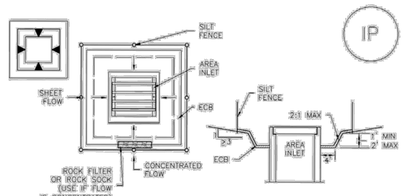
CURB ROCK SOCK INLET PROTECTION INSTALLATION NOTES

1. SEE ROCK SOCK DESIGN DETAIL INSTALLATION REQUIREMENTS.

2. PLACEMENT OF THE SOCK SHALL BE APPROXIMATELY 30 DEGREES FROM PERPENDICULAR IN THE OPPOSITE DIRECTION OF FLOW.

3. SOCKS ARE TO BE FLUSH WITH THE CURB AND SPACED A MINIMUM OF 5 FEET APART.

4. AT LEAST TWO CURB SOCKS IN SERIES ARE REQUIRED UPSTREAM OF ON-GRADE INLETS.



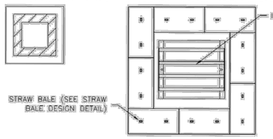
IP–5. OVEREXCAVATION INLET PROTECTION

OVEREXCAVATION INLET PROTECTION INSTALLATION NOTES

1. THIS FORM OF INLET PROTECTION IS PRIMARILY APPLICABLE FOR SITES THAT HAVE NOT YET REACHED FINAL GRADE AND SHOULD BE USED ONLY FOR INLETS WITH A RELATIVELY SMALL CONTRIBUTING DRAINAGE AREA.

2. WHEN USING FOR CONCENTRATED FLOWS, SHAPE BASIN IN 2:1 RATIO WITH LENGTH ORIENTED TOWARDS DIRECTION OF FLOW.

3. SEDIMENT MUST BE PERIODICALLY REMOVED FROM THE OVEREXCAVATED AREA.



IP–6. STRAW BALE FOR SUMP INLET PROTECTION

STRAW BALE BARRIER INLET PROTECTION INSTALLATION NOTES

1. SEE STRAW BALE DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. BALES SHALL BE PLACED IN A SINGLE ROW AROUND THE INLET WITH ENDS OF BALES TIGHTLY ABUTTING ONE ANOTHER.

GENERAL INLET PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –LOCATION OF INLET PROTECTION.
   –TYPE OF INLET PROTECTION ((IP.1, IP.2, IP.3, IP.4, IP.5, IP.6)

2. INLET PROTECTION SHALL BE INSTALLED PROMPTLY AFTER INLET CONSTRUCTION OR PAVING IS COMPLETE (TYPICALLY WITHIN 48 HOURS). IF A RAINFALL/RUNOFF EVENT IS FORECAST, INSTALL INLET PROTECTION PRIOR TO ONSET OF EVENT.

3. 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.

INLET PROTECTION 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. SEDIMENT ACCUMULATED UPSTREAM OF INLET PROTECTION SHALL BE REMOVED AS NECESSARY TO MAINTAIN BMP EFFECTIVENESS, TYPICALLY WHEN STORAGE VOLUME REACHES 50% OF CAPACITY, A DEPTH OF 6" WHEN SILT FENCE IS USED, OR ¼ OF THE HEIGHT FOR STRAW BALES.

5. INLET PROTECTION IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS PERMANENTLY STABILIZED, UNLESS THE LOCAL JURISDICTION APPROVES EARLIER REMOVAL OF INLET PROTECTION IN STREETS.

6. WHEN INLET PROTECTION AT AREA INLETS IS REMOVED, THE DISTURBED AREA SHALL BE COVERED WITH TOP SOIL, SEEDED AND MULCHED, OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

(DETAIL ADAPTED FROM TOWN OF PARKER, COLORADO AND CITY OF AURORA, COLORADO, NOT AVAILABLE IN AUTOCAD)

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.

NOTE: THE DETAILS INCLUDED WITH THIS FACT SHEET SHOW COMMONLY USED, CONVENTIONAL METHODS OF INLET PROTECTION IN THE DENVER METROPOLITAN AREA. THERE ARE MANY PROPRIETARY INLET PROTECTION METHODS ON THE MARKET. UDFCD NEITHER ENDORSES NOR DISCOURAGES USE OF PROPRIETARY INLET PROTECTION; HOWEVER, IN THE EVENT PROPRIETARY METHODS ARE USED, THE APPROPRIATE DETAIL FROM THE MANUFACTURER MUST BE INCLUDED IN THE SWMP AND THE BMP MUST BE INSTALLED AND MAINTAINED AS SHOWN IN THE MANUFACTURER'S DETAILS.

NOTE: SOME MUNICIPALITIES DISCOURAGE OR PROHIBIT THE USE OF STRAW BALES FOR INLET PROTECTION. CHECK WITH LOCAL JURISDICTION TO DETERMINE IF STRAW BALE INLET PROTECTION IS ACCEPTABLE.

TABLE SB–1. 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	2	5/32
2	21	3	7/16
3	28	5	1/2
4	33	6	9/16
5	38	8	7/32
6	43	9	23/32
7	47	11	25/32
8	51	12	27/32
9	55	13	1
10	58	15	1 9/64
11	61	16	1 5/32
12	64	18	1 7/32
13	67	19	1 11/64
14	70	21	1 1/4
15	73	22	1 19/64

SEDIMENT BASIN INSTALLATION NOTES

1. SEE PLAN VIEW 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.

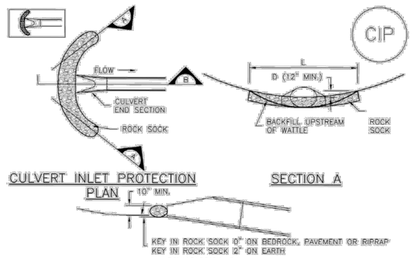
3. SEDIMENT BASINS SHALL BE INSTALLED PRIOR TO ANY OTHER LAND-DISTURBING ACTIVITY THAT RELIES ON ON BASINS AS AS A STORMWATER CONTROL.

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 D698.

6. PIPE SCH 40 OR GREATER SHALL BE USED.

7. THE DETAILS SHOWN ON THESE SHEETS PERTAIN TO STANDARD SEDIMENT BASIN(S) 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.



CIP–1. CULVERT INLET PROTECTION

CULVERT INLET PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –LOCATION OF CULVERT INLET PROTECTION.

2. SEE ROCK SOCK DESIGN DETAIL FOR ROCK GRADATION REQUIREMENTS AND JOINTING DETAIL.

CULVERT INLET PROTECTION 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.

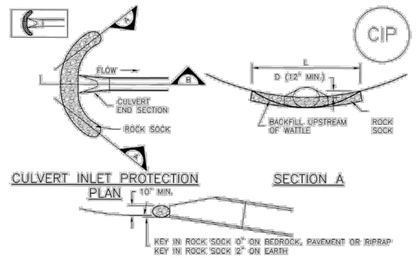
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. SEDIMENT ACCUMULATED UPSTREAM OF THE CULVERT SHALL BE REMOVED WHEN THE SEDIMENT DEPTH IS ½ THE HEIGHT OF THE ROCK SOCK.

5. CULVERT INLET PROTECTION SHALL REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS PERMANENTLY STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.

(DETAILS ADAPTED FROM AURORA, COLORADO, NOT AVAILABLE IN AUTOCAD)

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.



CIP–1. CULVERT INLET PROTECTION

CULVERT INLET PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –LOCATION OF CULVERT INLET PROTECTION.

2. SEE ROCK SOCK DESIGN DETAIL FOR ROCK GRADATION REQUIREMENTS AND JOINTING DETAIL.

CULVERT INLET PROTECTION 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.

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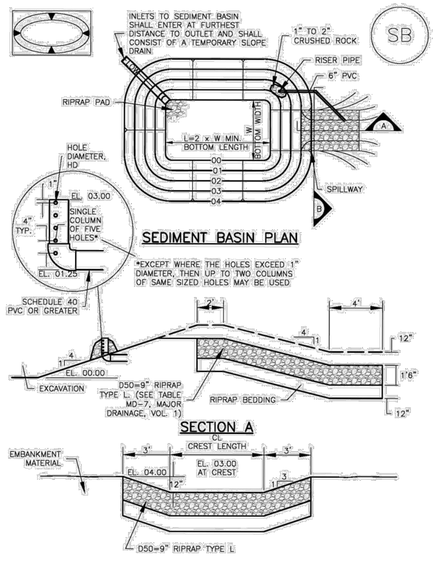
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4. SEDIMENT ACCUMULATED UPSTREAM OF THE CULVERT SHALL BE REMOVED WHEN THE SEDIMENT DEPTH IS ½ THE HEIGHT OF THE ROCK SOCK.

5. CULVERT INLET PROTECTION SHALL REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS PERMANENTLY STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.

(DETAILS ADAPTED FROM AURORA, COLORADO, NOT AVAILABLE IN AUTOCAD)

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.



SEDIMENT BASIN 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. SEDIMENT ACCUMULATED IN BASIN SHALL BE REMOVED AS NEEDED TO MAINTAIN BMP EFFECTIVENESS, TYPICALLY WHEN SEDIMENT DEPTH REACHES ONE FOOT (I.E., TWO FEET BELOW THE SPILLWAY CREST).

5. SEDIMENT BASINS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND GRASS COVER IS ACCEPTED BY THE LOCAL JURISDICTION.

6. WHEN SEDIMENT BASINS ARE REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

(DETAILS ADAPTED FROM DOUGLAS COUNTY, COLORADO)

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.

Know what's below. Call before you dig.
CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

DESIGNED BY: DAM
CHECKED BY: MSM
DRAWN BY: DAM

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

Evergreen
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OUTLOOK AT NINE MILE
EROSION CONTROL PLAN DETAIL 2

ISSUE DATE: 11-08-2019 PROJECT #: 160602

DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

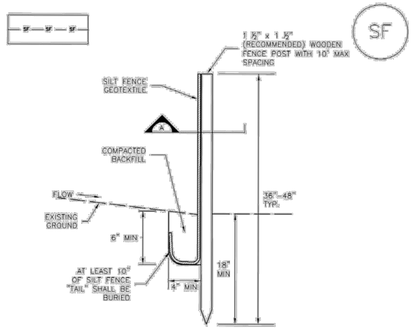
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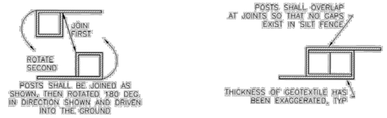
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NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH

Silt Fence (SF) SC-1



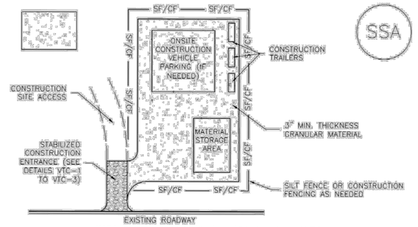
SILT FENCE



SECTION A

SF-1. SILT FENCE

Stabilized Staging Area (SSA) SM-6



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

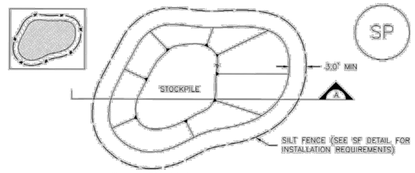
1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

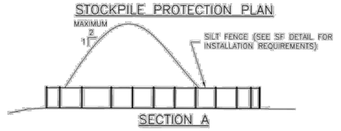
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. ROCK SHALL BE REAPPLIED OR REGRADED AS NECESSARY IF RUTTING OCCURS OR UNDERLYING SUBGRADE BECOMES EXPOSED.

Stockpile Management (SP) MM-2



STOCKPILE PROTECTION PLAN



SECTION A

SP-1. STOCKPILE PROTECTION

STOCKPILE PROTECTION INSTALLATION NOTES

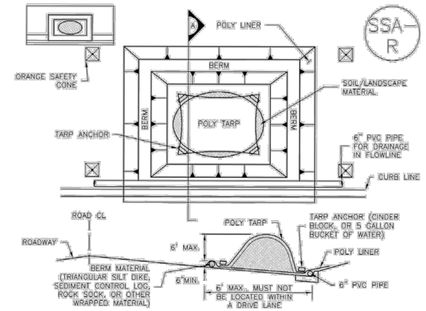
1. SEE PLAN VIEW FOR:
   -LOCATION OF STOCKPILES.
   -TYPE OF STOCKPILE PROTECTION.

2. INSTALL PERIMETER CONTROLS IN ACCORDANCE WITH THEIR RESPECTIVE DESIGN DETAILS. SILT FENCE IS SHOWN IN THE STOCKPILE PROTECTION DETAILS; HOWEVER, OTHER TYPES OF PERIMETER CONTROLS INCLUDING SEDIMENT CONTROL LOGS OR ROCK SOCKS MAY BE SUITABLE IN SOME CIRCUMSTANCES. CONSIDERATIONS FOR DETERMINING THE APPROPRIATE TYPE OF PERIMETER CONTROL FOR A STOCKPILE INCLUDE WHETHER THE STOCKPILE IS LOCATED ON A PERVIOUS OR IMPERVIOUS SURFACE, THE RELATIVE HEIGHTS OF THE PERIMETER CONTROL AND STOCKPILE, THE ABILITY OF THE PERIMETER CONTROL TO CONTAIN THE STOCKPILE WITHOUT FAILING IN THE EVENT THAT MATERIAL FROM THE STOCKPILE SHIFTS OR SLUMPS AGAINST THE PERIMETER, AND OTHER FACTORS.

3. STABILIZE THE STOCKPILE SURFACE WITH SURFACE ROUGHENING, TEMPORARY SEEDING AND MULCHING, EROSION CONTROL BLANKETS, OR SOIL BINDERS; SOILS STOCKPILED FOR AN EXTENDED PERIOD (TYPICALLY FOR MORE THAN 60 DAYS) SHOULD BE SEEDED AND MULCHED WITH A TEMPORARY GRASS COVER ONCE THE STOCKPILE IS PLACED (TYPICALLY WITHIN 14 DAYS). USE OF MULCH ONLY OR A SOIL BINDER IS ACCEPTABLE IF THE STOCKPILE WILL BE IN PLACE FOR A MORE LIMITED TIME PERIOD (TYPICALLY 30-60 DAYS).

4. FOR TEMPORARY STOCKPILES ON THE INTERIOR PORTION OF A CONSTRUCTION SITE, WHERE OTHER DOWNGRADIENT CONTROLS, INCLUDING PERIMETER CONTROL, ARE IN PLACE, STOCKPILE PERIMETER CONTROLS MAY NOT BE REQUIRED.

Stockpile Management (SP) MM-2



SP-2. MATERIALS STAGING IN ROADWAY

MATERIALS STAGING IN ROADWAYS INSTALLATION NOTES

1. SEE PLAN VIEW FOR
   -LOCATION OF MATERIAL STAGING AREA(S).
   -CONTRACTOR MAY ADJUST LOCATION AND SIZE OF STAGING AREA WITH APPROVAL FROM THE LOCAL JURISDICTION.

2. FEATURE MUST BE INSTALLED PRIOR TO EXCAVATION, EARTHWORK OR DELIVERY OF MATERIALS.

3. MATERIALS MUST BE STATIONED ON THE POLY LINER. ANY INCIDENTAL MATERIALS DEPOSITED ON PAVED SECTION OR ALONG CURB LINE MUST BE CLEANED UP PROMPTLY.

4. POLY LINER AND TARP COVER SHOULD BE OF SIGNIFICANT THICKNESS TO PREVENT DAMAGE OR LOSS OF INTEGRITY.

5. SAND BAGS MAY BE SUBSTITUTED TO ANCHOR THE COVER TARP OR PROVIDE BERMING UNDER THE BASE LINER.

6. FEATURE IS NOT INTENDED FOR USE WITH WET MATERIAL THAT WILL BE DRAINING AND/OR SPREADING OUT ON THE POLY LINER OR FOR DEMOLITION MATERIALS.

7. THIS FEATURE CAN BE USED FOR:
   -UTILITY REPAIRS.
   -WHEN OTHER STAGING LOCATIONS AND OPTIONS ARE LIMITED.
   -OTHER LIMITED APPLICATION AND SHORT DURATION STAGING.

SC-1 Silt Fence (SF)

SILT FENCE INSTALLATION NOTES

1. SILT FENCE MUST BE PLACED AWAY FROM THE TOE OF THE SLOPE TO ALLOW FOR WATER PONDING. SILT FENCE AT THE TOE OF A SLOPE SHOULD BE INSTALLED IN A FLAT LOCATION AT LEAST SEVERAL FEET (2-5 FT) FROM THE TOE OF THE SLOPE TO ALLOW ROOM FOR PONDING AND DEPOSITION.

2. A UNIFORM 8" X 4" ANCHOR TRENCH SHALL BE EXCAVATED USING TRENCHER OR SILT FENCE INSTALLATION DEVICE. NO ROAD GRADERS, BACKHOES, OR SIMILAR EQUIPMENT SHALL BE USED.

3. COMPACT ANCHOR TRENCH BY HAND WITH A "JUMPING JACK" OR BY WHEEL ROLLING. COMPACTION SHALL BE SUCH THAT SILT FENCE RESISTS BEING PULLED OUT OF ANCHOR TRENCH BY HAND.

4. SILT FENCE SHALL BE PULLED TIGHT AS IT IS ANCHORED TO THE STAKES. THERE SHOULD BE NO NOTICEABLE SAG BETWEEN STAKES AFTER IT HAS BEEN ANCHORED TO THE STAKES.

5. SILT FENCE FABRIC SHALL BE ANCHORED TO THE STAKES USING 1" HEAVY DUTY STAPLES OR NAILS WITH 1" HEADS. STAPLES AND NAILS SHOULD BE PLACED 3" ALONG THE FABRIC DOWN THE STAKE.

6. AT THE END OF A RUN OF SILT FENCE ALONG A CONTOUR, THE SILT FENCE SHOULD BE TURNED PERPENDICULAR TO THE CONTOUR TO CREATE A "J-HOOK." THE "J-HOOK" EXTENDING PERPENDICULAR TO THE CONTOUR SHOULD BE OF SUFFICIENT LENGTH TO KEEP RUNOFF FROM FLOWING AROUND THE END OF THE SILT FENCE (TYPICALLY 10' = 20').

7. SILT FENCE SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

SILT FENCE 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. SEDIMENT ACCUMULATED UPSTREAM OF THE SILT FENCE SHALL BE REMOVED AS NEEDED TO MAINTAIN THE FUNCTIONALITY OF THE BMP, TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY 6".

5. REPAIR OR REPLACE SILT FENCE WHEN THERE ARE SIGNS OF WEAR, SUCH AS SAGGING, TEARING, OR COLLAPSE.

6. SILT FENCE IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION, OR IS REPLACED BY AN EQUIVALENT PERIMETER SEDIMENT CONTROL BMP.

7. WHEN SILT FENCE IS REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

(DETAIL ADAPTED FROM TOWN OF PARKER, COLORADO AND CITY OF AURORA, NOT AVAILABLE IN AUTOCAD)

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.

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)

MM-2 Stockpile Management (SM)

STOCKPILE PROTECTION 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.

STOCKPILE PROTECTION MAINTENANCE NOTES

4. IF PERIMETER PROTECTION MUST BE MOVED TO ACCESS SOIL STOCKPILE, REPLACE PERIMETER CONTROLS BY THE END OF THE WORKDAY.

5. STOCKPILE PERIMETER CONTROLS CAN BE REMOVED ONCE ALL THE MATERIAL FROM THE STOCKPILE HAS BEEN USED.

(DETAILS ADAPTED FROM PARKER, COLORADO, NOT AVAILABLE IN AUTOCAD)

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.

MM-2 Stockpile Management (SM)

MATERIALS STAGING IN ROADWAY 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. INSPECT PVC PIPE ALONG CURB LINE FOR CLOGGING AND DEBRIS. REMOVE OBSTRUCTIONS PROMPTLY.

5. CLEAN MATERIAL FROM PAVED SURFACES BY SWEEPING OR VACUUMING.

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 AURORA, COLORADO)

Know what's below. Call before you dig.

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

DESIGNED BY: DAM
CHECKED BY: MSM
DRAWN BY: DAM

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
EROSION CONTROL PLAN DETAIL 3

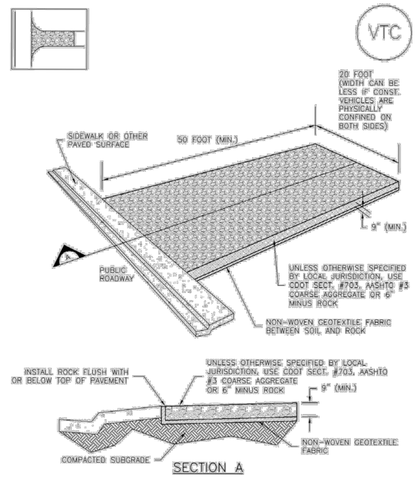
ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

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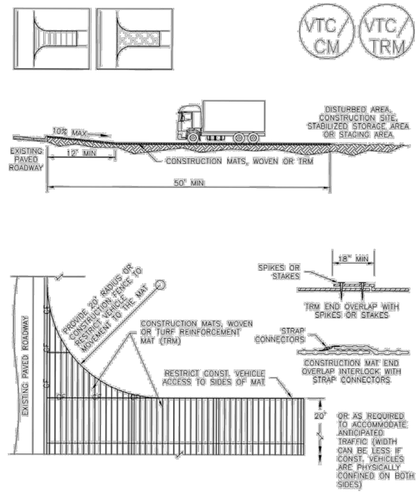
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VTC–1. AGGREGATE VEHICLE TRACKING CONTROL



VTC–3. VEHICLE TRACKING CONTROL W/ CONSTRUCTION MAT OR TURF REINFORCEMENT MAT (TRM)

Description

Temporary seeding can be used to stabilize disturbed areas that will be inactive for an extended period. Permanent seeding should be used to stabilize areas at final grade that will not be otherwise stabilized. Effective seeding includes preparation of a seedbed, selection of an appropriate seed mixture, proper planting techniques, and protection of the seeded area with mulch, geotextiles, or other appropriate measures.



Photograph TS/PS -1. Equipment used to drill seed. Photo courtesy of Douglas County.

Appropriate Uses

When the soil surface is disturbed and will remain inactive for an extended period (typically 30 days or longer), proactive stabilization measures should be implemented. If the inactive period is short-lived (on the order of two weeks), techniques such as surface roughening may be appropriate. For longer periods of inactivity, temporary seeding and mulching can provide effective erosion control. Permanent seeding should be used on finished areas that have not been otherwise stabilized.

Typically, local governments have their own seed mixes and timelines for seeding. Check jurisdictional requirements for seeding and temporary stabilization.

Design and Installation

Effective seeding requires proper seedbed preparation, selection of an appropriate seed mixture, use of appropriate seeding equipment to ensure proper coverage and density, and protection with mulch or fabric until plants are established.

The USDCM Volume 2 *Revegetation* Chapter contains detailed seed mix, soil preparations, and seeding and mulching recommendations that may be referenced to supplement this Fact Sheet.

Drill seeding is the preferred seeding method. Hydroseeding is not recommended except in areas where steep slopes prevent use of drill seeding equipment, and even in these instances it is preferable to hand seed and mulch. Some jurisdictions do not allow hydroseeding or hydromulching.

Seedbed Preparation

Prior to seeding, ensure that areas to be revegetated have soil conditions capable of supporting vegetation. Overlot grading can result in loss of topsoil, resulting in poor quality subsoils at the ground surface that have low nutrient value, little organic matter content, few soil microorganisms, rooting restrictions, and conditions less conducive to infiltration of precipitation. As a result, it is typically necessary to provide stockpiled topsoil, compost, or other

Temporary and Permanent Seeding	
Functions	
Erosion Control	Yes
Sediment Control	No
Site/Material Management	No

Seeding dates for the highest success probability of perennial species along the Front Range are generally in the spring from April through early May and in the fall after the first of September until the ground freezes. If the area is irrigated, seeding may occur in summer months, as well. See Table TS/PS-3 for appropriate seeding dates.

Table TS/PS-1. Minimum Drill Seeding Rates for Various Temporary Annual Grasses

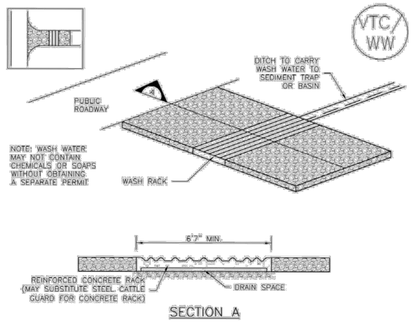
Species[a] (Common name)	Growth Season[b]	Pounds of Pure Live Seed (PLS)/acre[c]	Planting Depth (inches)
1. Oats	Cool	35 - 50	1 - 2
2. Spring wheat	Cool	25 - 35	1 - 2
3. Spring barley	Cool	25 - 35	1 - 2
4. Annual ryegrass	Cool	10 - 15	½
5. Millet	Warm	3 - 15	½ - ¾
6. Sudangrass	Warm	5–10	½ - ¾
7. Sorghum	Warm	5–10	½ - ¾
8. Winter wheat	Cool	20–35	1 - 2
9. Winter barley	Cool	20–35	1 - 2
10. Winter rye	Cool	20–35	1 - 2
11. Triticale	Cool	25–40	1 - 2

[a] Successful seeding of annual grass resulting in adequate plant growth will usually produce enough dead-plant residue to provide protection from wind and water erosion for an additional year. This assumes that the cover is not disturbed or mowed closer than 8 inches.

Hydraulic seeding may be substituted for drilling only where slopes are steeper than 3:1 or where access limitations exist. When hydraulic seeding is used, hydraulic mulching should be applied as a separate operation, when practical, to prevent the seeds from being encapsulated in the mulch.

[b] See Table TS/PS-3 for seeding dates. Irrigation, if consistently applied, may extend the use of cool season species during the summer months.

[c] Seeding rates should be doubled if seed is broadcast, or increased by 50 percent if done using a Brillion Drill or by hydraulic seeding.



VTC–2. AGGREGATE VEHICLE TRACKING CONTROL WITH WASH RACK

STABILIZED CONSTRUCTION ENTRANCE/EXIT INSTALLATION NOTES

1. SEE PLAN VIEW FOR
   -LOCATION OF CONSTRUCTION ENTRANCE(S)/EXIT(S).
   -TYPE OF CONSTRUCTION ENTRANCE(S)/EXITS(S) (WITH/WITHOUT WHEEL WASH, CONSTRUCTION MAT OR TRM).

2. CONSTRUCTION MAT OR TRM STABILIZED CONSTRUCTION ENTRANCES ARE ONLY TO BE USED ON SHORT DURATION PROJECTS (TYPICALLY RANGING FROM A WEEK TO A MONTH) WHERE THERE WILL BE LIMITED VEHICULAR ACCESS.

3. A STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE LOCATED AT ALL ACCESS POINTS WHERE VEHICLES ACCESS THE CONSTRUCTION SITE FROM PAVED RIGHT-OF-WAYS.

4. STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

5. A NON-WOVEN GEOTEXTILE FABRIC SHALL BE PLACED UNDER THE STABILIZED CONSTRUCTION ENTRANCE/EXIT PRIOR TO THE PLACEMENT OF ROCK.

6. UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, AASHTO #3 COARSE AGGREGATE OR 6" (MINUS) ROCK.

STABILIZED CONSTRUCTION ENTRANCE/EXIT 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 TO THE STABILIZED ENTRANCE/EXIT TO MAINTAIN A CONSISTENT DEPTH.

5. SEDIMENT TRACKED ONTO PAVED ROADS IS TO BE REMOVED THROUGHOUT THE DAY AND AT THE END OF THE DAY BY SHOVELING OR SWEEPING. SEDIMENT MAY NOT BE WASHED DOWN STORM SEWER DRAINS.

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 CITY OF BROOMFIELD, COLORADO, NOT AVAILABLE IN AUTOCAD)

soil amendments and rototill them into the soil to a depth of 6 inches or more.

Topsoil should be salvaged during grading operations for use and spread on areas to be revegetated later. Topsoil should be viewed as an important resource to be utilized for vegetation establishment, due to its water-holding capacity, structure, texture, organic matter content, biological activity, and nutrient content. The rooting depth of most native grasses in the semi-arid Denver metropolitan area is 6 to 18 inches. At a minimum, the upper 6 inches of topsoil should be stripped, stockpiled, and ultimately respread across areas that will be revegetated.

Where topsoil is not available, subsoils should be amended to provide an appropriate plant-growth medium. Organic matter, such as well digested compost, can be added to improve soil characteristics conducive to plant growth. Other treatments can be used to adjust soil pH conditions when needed. Soil testing, which is typically inexpensive, should be completed to determine and optimize the types and amounts of amendments that are required.

If the disturbed ground surface is compacted, rip or rototill the surface prior to placing topsoil. If adding compost to the existing soil surface, rototilling is necessary. Surface roughening will assist in placement of a stable topsoil layer on steeper slopes, and allow infiltration and root penetration to greater depth.

Prior to seeding, the soil surface should be rough and the seedbed should be firm, but neither too loose nor compacted. The upper layer of soil should be in a condition suitable for seeding at the proper depth and conducive to plant growth. Seed-to-soil contact is the key to good germination.

Seed Mix for Temporary Vegetation

To provide temporary vegetative cover on disturbed areas which will not be paved, built upon, or fully landscaped or worked for an extended period (typically 30 days or more), plant an annual grass appropriate for the time of planting and mulch the planted areas. Annual grasses suitable for the Denver metropolitan area are listed in Table TS/PS-1. These are to be considered only as general recommendations when specific design guidance for a particular site is not available. Local governments typically specify seed mixes appropriate for their jurisdiction.

Seed Mix for Permanent Revegetation

To provide vegetative cover on disturbed areas that have reached final grade, a perennial grass mix should be established. Permanent seeding should be performed promptly (typically within 14 days) after reaching final grade. Each site will have different characteristics and a landscape professional or the local jurisdiction should be contacted to determine the most suitable seed mix for a specific site. In lieu of a specific recommendation, one of the perennial grass mixes appropriate for site conditions and growth season listed in Table TS/PS-2 can be used. The pure live seed (PLS) rates of application recommended in these tables are considered to be absolute minimum rates for seed applied using proper drill-seeding equipment.

If desired for wildlife habitat or landscape diversity, shrubs such as rubber rabbitbrush (*Chrysothamnus nauseosus*), fourwing saltbush (*Atriplex canescens*) and skunkbrush sumac (*Rhus trilobata*) could be added to the upland seedmixes at 0.25, 0.5 and 1 pound PLS/acre, respectively. In riparian zones, planting root stock of such species as American plum (*Prunus americana*), woods rose (*Rosa woodsii*), plains cottonwood (*Populus sargentii*), and willow (*Populus spp.*) may be considered. On non-topsoiled upland sites, a legume such as Ladak alfalfa at 1 pound PLS/acre can be included as a source of nitrogen for perennial grasses.

Table TS/PS-2. Minimum Drill Seeding Rates for Perennial Grasses

Common[a] Name	Botanical Name	Growth Season[b]	Growth Form	Seeds/ Pound	Pounds of PLS/acre
Alakali Soil Seed Mix					
Alkali sacaton	*Sporobolus airoides*	Cool	Bunch	1,750,000	0.25
Basin wildrye	*Elymus cinereus*	Cool	Bunch	165,000	2.5
Sodar streambank wheatgrass	*Agropyron riparium 'Sodar'*	Cool	Sod	170,000	2.5
Jose tall wheatgrass	*Agropyron elongatum 'Jose'*	Cool	Bunch	79,000	7.0
Arriba western wheatgrass	*Agropyron smithii 'Arriba'*	Cool	Sod	110,000	5.5
Total					**17.75**
Fertile Loamy Soil Seed Mix					
Ephriam crested wheatgrass	*Agropyron cristatum 'Ephriam'*	Cool	Sod	175,000	2.0
Dural hard fescue	*Festuca ovina 'duriuscula'*	Cool	Bunch	565,000	1.0
Lincoln smooth brome	*Bromus inermis leyss 'Lincoln'*	Cool	Sod	130,000	3.0
Sodar streambank wheatgrass	*Agropyron riparium 'Sodar'*	Cool	Sod	170,000	2.5
Arriba western wheatgrass	*Agropyron smithii 'Arriba'*	Cool	Sod	110,000	7.0
Total					**15.5**
High Water Table Soil Seed Mix					
Meadow foxtail	*Alopecurus pratensis*	Cool	Sod	900,000	0.5
Redtop	*Agrostis alba*	Warm	Open sod	5,000,000	0.25
Reed canarygrass	*Phalaris arundinacea*	Cool	Sod	68,000	0.5
Lincoln smooth brome	*Bromus inermis leyss 'Lincoln'*	Cool	Sod	130,000	3.0
Pathfinder switchgrass	*Panicum virgatum 'Pathfinder'*	Warm	Sod	389,000	1.0
Alkar tall wheatgrass	*Agropyron elongatum 'Alkar'*	Cool	Bunch	79,000	5.5
Total					**10.75**
Transition Turf Seed Mix[c]					
Ruebens Canadian bluegrass	*Poa compressa 'Ruebens'*	Cool	Sod	2,500,000	0.5
Dural hard fescue	*Festuca ovina 'duriuscula'*	Cool	Bunch	565,000	1.0
Citation perennial ryegrass	*Lolium perenne 'Citation'*	Cool	Sod	247,000	3.0
Lincoln smooth brome	*Bromus inermis leyss 'Lincoln'*	Cool	Sod	130,000	3.0
Total					**7.5**

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CHECKED BY: MSM
DRAWN BY: DAM

HKS HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
EROSION CONTROL PLAN DETAIL 4

ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO. 14
14 OF 69

FILEPATH: P:\160602\ENGINEERING\EROSION\CD - EROSION CONTROL PLAN DETAIL.DWG LAYOUT: EROSION CONTROL PLAN DETAIL 4
3 XREFs: p-base, p-legal, p-util[U]
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NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.

Table TS/PS-2. Minimum Drill Seeding Rates for Perennial Grasses (cont.)

Common Name	Botanical Name	Growth Season[b]	Growth Form	Seeds/ Pound	Pounds of PLS/acre
Sandy Soil Seed Mix					
Blue grama	*Bouteloua gracilis*	Warm	Sod-forming bunchgrass	825,000	0.5
Camper little bluestem	*Schizachyrium scoparium 'Camper'*	Warm	Bunch	240,000	1.0
Prairie sandreed	*Calamovilfa longifolia*	Warm	Open sod	274,000	1.0
Sand dropseed	*Sporobolus cryptandrus*	Cool	Bunch	5,298,000	0.25
Vaughn sideoats grama	*Bouteloua curtipendula 'Vaughn'*	Warm	Sod	191,000	2.0
Arriba western wheatgrass	*Agropyron smithii 'Arriba'*	Cool	Sod	110,000	5.5
Total					**10.25**
Heavy Clay, Rocky Foothill Seed Mix					
Ephriam crested wheatgrass[d]	*Agropyron cristatum 'Ephriam'*	Cool	Sod	175,000	1.5
Oahe Intermediate wheatgrass	*Agropyron intermedium 'Oahe'*	Cool	Sod	115,000	5.5
Vaughn sideoats grama[e]	*Bouteloua curtipendula 'Vaughn'*	Warm	Sod	191,000	2.0
Lincoln smooth brome	*Bromus inermis leyss 'Lincoln'*	Cool	Sod	130,000	3.0
Arriba western wheatgrass	*Agropyron smithii 'Arriba'*	Cool	Sod	110,000	5.5
Total					**17.5**

[a] All of the above seeding mixes and rates are based on drill seeding followed by crimped straw mulch. These rates should be doubled if seed is broadcast and should be increased by 50 percent if the seeding is done using a Brillion Drill or is applied through hydraulic seeding. Hydraulic seeding may be substituted for drilling only where slopes are steeper than 3:1. If hydraulic seeding is used, hydraulic mulching should be done as a separate operation.

[b] See Table TS/PS-3 for seeding dates.

[c] If site is to be irrigated, the transition turf seed rates should be doubled.

[d] Crested wheatgrass should not be used on slopes steeper than 6H to 1V.

[e] Can substitute 0.5 lbs PLS of blue grama for the 2.0 lbs PLS of Vaughn sideoats grama.

Description

Mulching consists of evenly applying straw, hay, shredded wood mulch, rock, bark or compost to disturbed soils and securing the mulch by crimping, tackifiers, netting or other measures. Mulching helps reduce erosion by protecting bare soil from rainfall impact, increasing infiltration, and reducing runoff. Although often applied in conjunction with temporary or permanent seeding, it can also be used for temporary stabilization of areas that cannot be reseeded due to seasonal constraints.



Photograph MU-1. An area that was recently seeded, mulched, and crimped.

Mulch can be applied either using standard mechanical dry application methods or using hydromulching equipment that hydraulically applies a slurry of water, wood fiber mulch, and often a tackifier.

Appropriate Uses

Use mulch in conjunction with seeding to help protect the seedbed and stabilize the soil. Mulch can also be used as a temporary cover on low to mild slopes to help temporarily stabilize disturbed areas where growing season constraints prevent effective reseeding. Disturbed areas should be properly mulched and tacked, or seeded, mulched and tacked promptly after final grade is reached (typically within no longer than 14 days) on portions of the site not otherwise permanently stabilized.

Standard dry mulching is encouraged in most jurisdictions; however, hydromulching may not be allowed in certain jurisdictions or may not be allowed near waterways.

Do not apply mulch during windy conditions.

Design and Installation

Prior to mulching, surface-roughen areas by rolling with a crimping or punching type roller or by track walking. Track walking should only be used where other methods are impractical because track walking with heavy equipment typically compacts the soil.

A variety of mulches can be used effectively at construction sites. Consider the following:

Mulch	
Functions	
Erosion Control	Yes
Sediment Control	Moderate
Site/Material Management	No

Table TS/PS-3. Seeding Dates for Annual and Perennial Grasses

	Annual Grasses (Numbers in table reference species in Table TS/PS-1)		Perennial Grasses	
Seeding Dates	**Warm**	**Cool**	**Warm**	**Cool**
January 1–March 15			✓	✓
March 16–April 30	4	1,2,3	✓	✓
May 1–May 15	4		✓	
May 16–June 30	4,5,6,7			
July 1–July 15	5,6,7			
July 16–August 31				
September 1–September 30		8,9,10,11		
October 1–December 31			✓	✓

Mulch

Cover seeded areas with mulch or an appropriate rolled erosion control product to promote establishment of vegetation. Anchor mulch by crimping, netting or use of a non-toxic tackifier. See the Mulching BMP Fact Sheet for additional guidance.

Maintenance and Removal

Monitor and observe seeded areas to identify areas of poor growth or areas that fail to germinate. Reseed and mulch these areas, as needed.

An area that has been permanently seeded should have a good stand of vegetation within one growing season if irrigated and within three growing seasons without irrigation in Colorado. Reseed portions of the site that fail to germinate or remain bare after the first growing season.

Seeded areas may require irrigation, particularly during extended dry periods. Targeted weed control may also be necessary.

Protect seeded areas from construction equipment and vehicle access.

- Clean, weed-free and seed-free cereal grain straw should be applied evenly at a rate of 2 tons per acre and must be tacked or fastened by a method suitable for the condition of the site. Straw mulch must be anchored (and not merely placed) on the surface. This can be accomplished mechanically by crimping or with the aid of tackifiers or nets. Anchoring with a crimping implement is preferred, and is the recommended method for areas flatter than 3:1. Mechanical crimpers must be capable of tucking the long mulch fibers into the soil to a depth of 3 inches without cutting them. An agricultural disk, while not an ideal substitute, may work if the disk blades are dull or blunted and set vertically; however, the frame may have to be weighted to afford proper soil penetration.

- Grass hay may be used in place of straw; however, because hay is comprised of the entire plant including seed, mulching with hay may seed the site with non-native grass species which might in turn out-compete the native seed. Alternatively, native species of grass hay may be purchased, but can be difficult to find and are more expensive than straw. Purchasing and utilizing a certified weed-free straw is an easier and less costly mulching method. When using grass hay, follow the same guidelines as for straw (provided above).

- On small areas sheltered from the wind and heavy runoff, spraying a tackifier on the mulch is satisfactory for holding it in place. For steep slopes and special situations where greater control is needed, erosion control blankets anchored with stakes should be used instead of mulch.

- Hydraulic mulching consists of wood cellulose fibers mixed with water and a tackifying agent and should be applied at a rate of no less than 1,500 pounds per acre (1,425 lbs of fibers mixed with at least 75 lbs of tackifier) with a hydraulic mulcher. For steeper slopes, up to 2000 pounds per acre may be required for effective hydroseeding. Hydromulch typically requires up to 24 hours to dry; therefore, it should not be applied immediately prior to inclement weather. Application to roads, waterways and existing vegetation should be avoided.

- Erosion control mats, blankets, or nets are recommended to help stabilize steep slopes (generally 3:1 and steeper) and waterways. Depending on the product, these may be used alone or in conjunction with grass or straw mulch. Normally, use of these products will be restricted to relatively small areas. Biodegradable mats made of straw and jute, straw-coconut, coconut fiber, or excelsior can be used instead of mulch. (See the ECM/TRM BMP for more information.)

- Some tackifiers or binders may be used to anchor mulch. Check with the local jurisdiction for allowed tackifiers. Manufacturer's recommendations should be followed at all times. (See the Soil Binder BMP for more information on general types of tackifiers.)

- Rock can also be used as mulch. It provides protection of exposed soils to wind and water erosion and allows infiltration of precipitation. An aggregate base course can be spread on disturbed areas for temporary or permanent stabilization. The rock mulch layer should be thick enough to provide full coverage of exposed soil on the area it is applied.

Maintenance and Removal

After mulching, the bare ground surface should not be more than 10 percent exposed. Reapply mulch, as needed, to cover bare areas.

811 Know what's below. Call before you dig.
CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

DESIGNED BY: DAM
CHECKED BY: MSM
DRAWN BY: DAM

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
EROSION CONTROL PLAN DETAIL 5

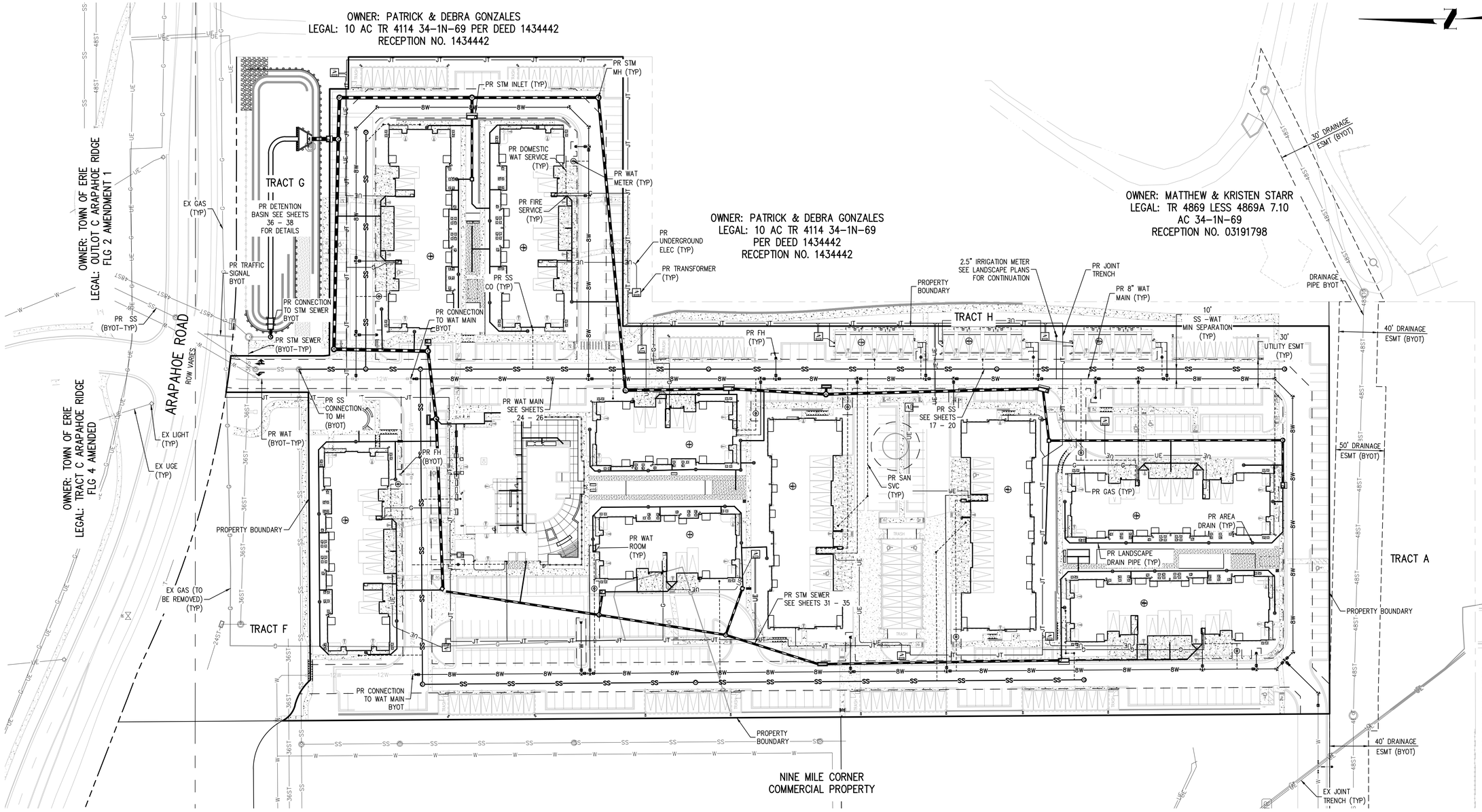
ISSUE DATE: 11-08-2019	PROJECT #: 160602
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SHEET NO. 15
15 OF 69

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NOTES:

1. OVERALL PLAN DEPICTED IS INTENDED FOR GENERAL REFERENCE OF PROJECT DEVELOPMENT.
2. SEE SANITARY PLAN SHEETS FOR DETAILS REGARDING SANITARY IMPROVEMENTS.
3. SEE WATER PLAN SHEETS FOR DETAILS REGARDING WATER IMPROVEMENTS.
4. SEE STORM SEWER PLAN SHEETS FOR DETAILS REGARDING STORM IMPROVEMENTS.
5. THE LOCATION 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 CONTRACTORS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES IN THE VERTICAL/HORIZONTAL LOCATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR THE FOLLOWING NOTIFICATION:
   a. UTILITY NOTIFICATION CENTER OF COLORADO, 811. CALL THREE (3) BUSINESS DAYS PRIOR TO DIGGING, GRADING OR EXCAVATING FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.
      - LOCATION OF EXISTING UTILITIES SHALL BE VERIFIED BY CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATION, SUPPORT, PROTECTION AND RESTORATION OF ALL EXISTING UTILITIES AND APPURTENANCES, WHETHER SHOWN OR NOT SHOWN ON THE APPROVED CONSTRUCTION DOCUMENTS.
      - PROVIDING NOTIFICATION AND RECEIVING MARKING OF UNDERGROUND MEMBER UTILITIES IN NO WAY CONSTITUTES PERMISSION TO PERFORM CONSTRUCTION.

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

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

50 0 50 100
SCALE: 1" = 50'

DESIGNED BY: TJS
CHECKED BY: MSM
DRAWN BY: TJS

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
OVERALL UTILITY PLAN

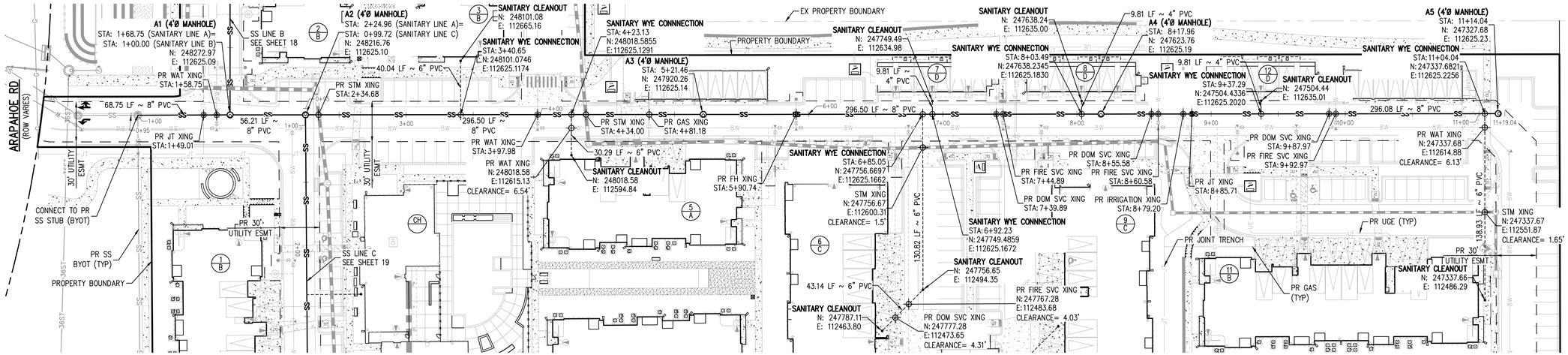
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SHEET NO.
16
16 OF 69

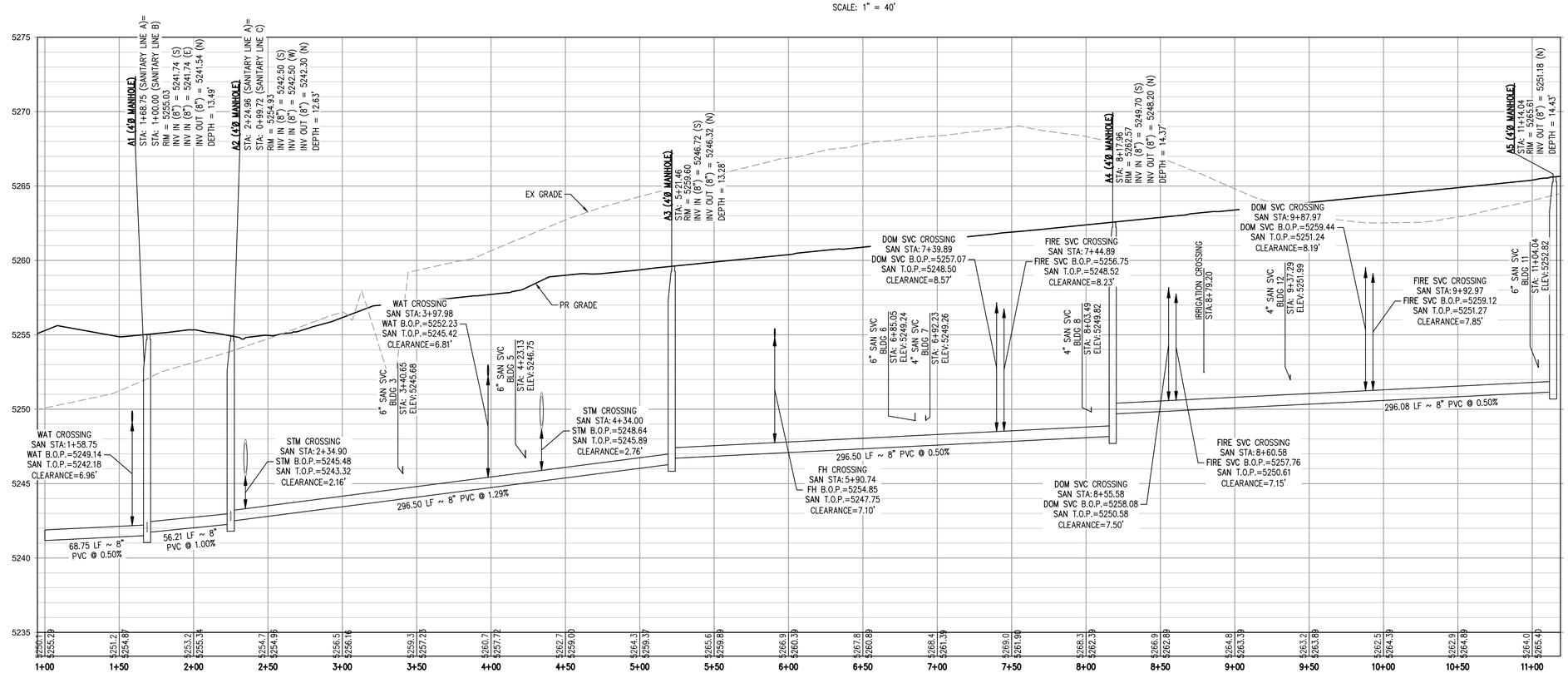
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PLOTTED: WED 01/29/20 5:40:53P BY: RACHEL PATTON

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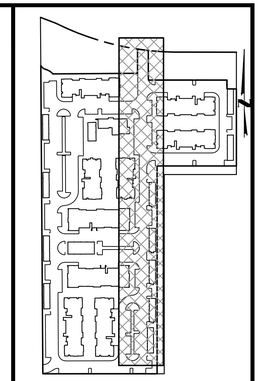
SANITARY LINE A PLAN

SCALE: 1" = 40'



SANITARY LINE A PROFILE

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



KEY MAP
SCALE: 1" = 250'

SANITARY SERVICE TABLE

BLDG SERVICE	SAN STA @ MAIN	SERVICE INV @ MAIN	INV @ BLDG CLEANOUT	FFE	LENGTH (FT)	SLOPE (%)	SIZE (DIA. IN.)
3	3+40.65	5245.68	5248.88	5258.10	40.04	8.00	6"
5	4+23.13	5246.75	5249.17	5259.77	30.29	8.00	6"
6	6+85.05	5249.24	5252.72	5263.12	173.96	2.00	6"
7	6+92.23	5249.26	5250.05	5262.21	9.81	8.00	4"
8	8+03.49	5249.82	5250.60	5263.32	9.81	8.00	4"
12	9+37.29	5251.99	5252.77	5264.66	9.81	8.00	4"
11	11+04.04	5252.82	5255.95	5266.86	138.93	2.25	6"

NOTES:

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3. STATIONING IS ALONG CENTER LINE OF PIPE UNLESS OTHERWISE NOTED.
4. NORTHINGS/EASTINGS SHOWN FOR MANHOLE PLACEMENT REFERS TO CENTER OF BARREL.
5. PIPE LENGTH IS FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE.
6. MANHOLE LIDS TO BE ROTATED AS SHOWN ON PLAN.
7. ALL MANHOLES ARE ECCENTRIC UNLESS OTHERWISE NOTED.
8. ALL PROPOSED MANHOLES, SANITARY MAINS, AND SERVICES SHALL BE IN ACCORDANCE WITH CITY OF ERIE STANDARD DETAILS.

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CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

40 0 40 80
SCALE: 1" = 40'

DESIGNED BY: AEM
CHECKED BY: MSM
DRAWN BY: AEM

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
SANITARY SEWER P&P LINE A

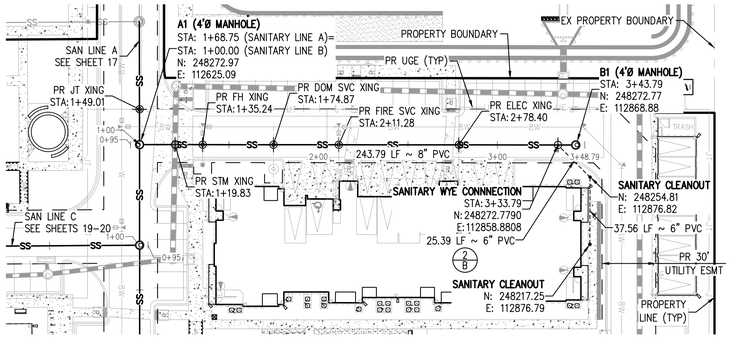
ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
17
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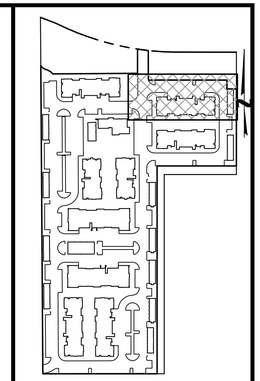
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6 XREFs: cd - stamp, cd_evergreen logo, keymap, keymap_phase, p-sign, p-rail
PLOTTED: WED 01/29/20 5:41:18P BY: RACHEL PATTON

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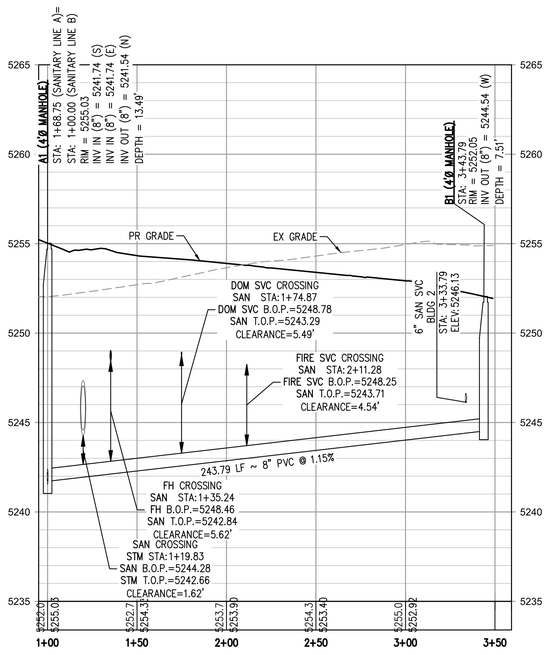
SANITARY LINE B PLAN

SCALE: 1" = 40'



KEY MAP

SCALE: 1" = 250'



SANITARY LINE B PROFILE

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

SANITARY SERVICE TABLE

BLDG SERVICE	SAN STA @ MAIN	SERVICE INV @ MAIN	INV @ BLDG CLEANOUT	FFE	LENGTH (FT)	SLOPE (%)	SIZE (DIA. IN.)
2	3+33.79	5246.13	5250.54	5254.44	62.95	7.00	6"

NOTES:

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40 0 40 80
SCALE: 1" = 40'

DESIGNED BY: AEM
CHECKED BY: MSM
DRAWN BY: AEM

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
SANITARY SEWER P&P LINE B

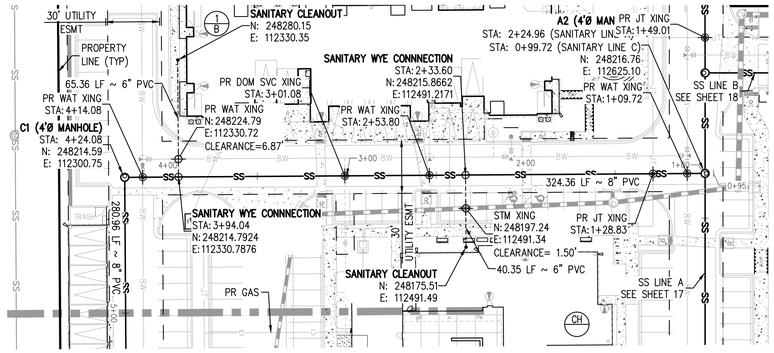
ISSUE DATE: 11-08-2019	PROJECT #: 160602
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01-27-2020	PER TOWN OF ERIE COMMENTS

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SHEET NO.
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FILEPATH: P:\160602\ENGINEERING\UTILITIES\SANITARY\CD - SANITARY SEWER PLAN & PROFILE.DWG LAYOUT: SANITARY SEWER PLAN & PROFILE LINE B
6 XREFs: cd - sump, cd_evergreen logo, layout, p base, p sign, p soil
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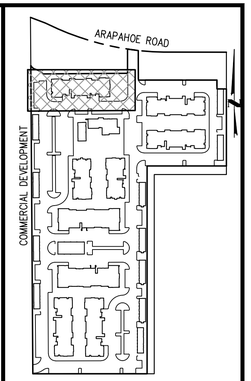
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MATCHLINE STA: 5+00 - SEE SHEET 20

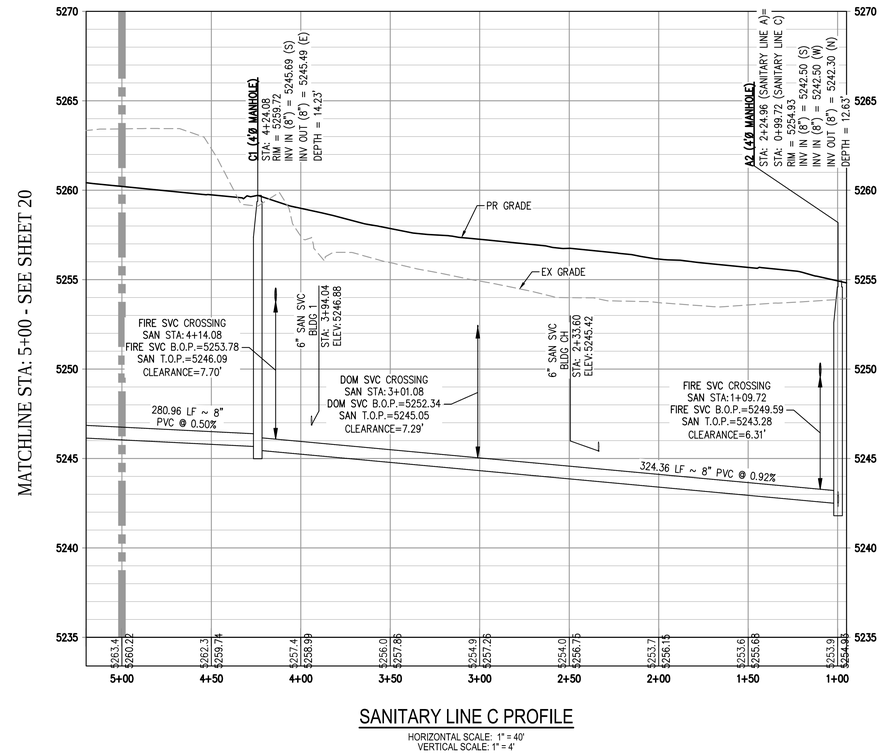
SANITARY LINE C

SCALE: 1" = 40'



KEY MAP

SCALE: 1" = 250'



SANITARY LINE C PROFILE

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

SANITARY SERVICE TABLE							
BLDG SERVICE	SAN STA @ MAIN	SERVICE INV @ MAIN	INV @ BLDG CLEANOUT	FFE	LENGTH (FT)	SLOPE (%)	SIZE (DIA. IN.)
CH	2+33.60	5245.42	5252.11	5257.92	40.35	1.56	6"
1	3+94.04	5246.88	5252.11	5258.77	65.36	8.00	6"

NOTES:

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40 0 40 80
SCALE: 1" = 40'

DESIGNED BY: AEM
CHECKED BY: MSM
DRAWN BY: AEM

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HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
SANITARY SEWER P&P LINE C
(STA: 0+95 TO STA: 5+00)

ISSUE DATE: 11-08-2019 PROJECT #: 160602

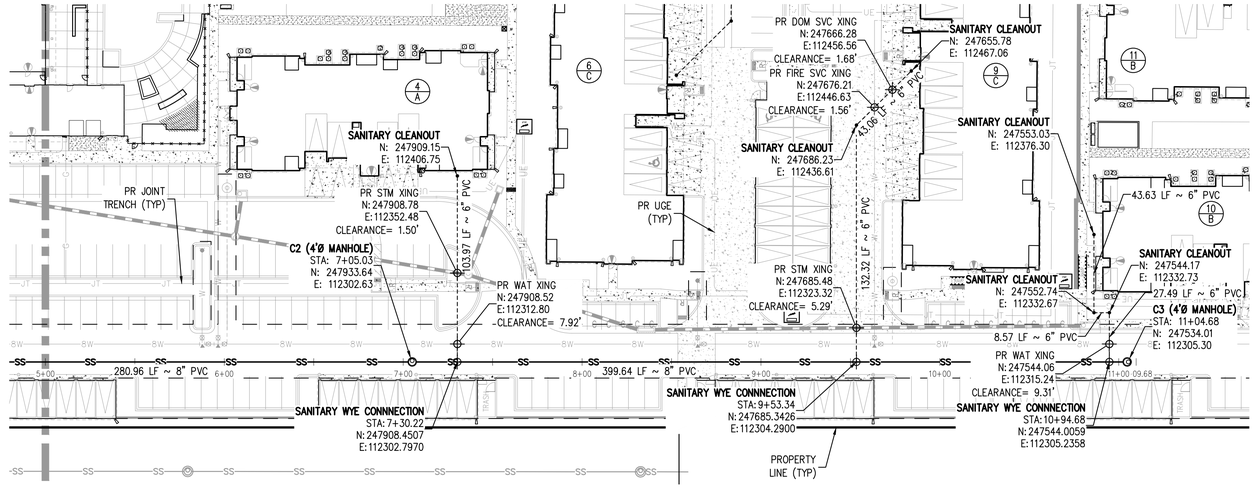
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
19
19 OF 69

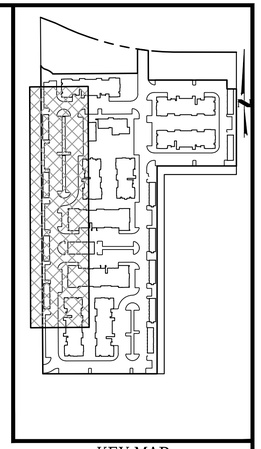
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PLOTTED: WED 01/29/20 5:41:24P BY: RACHEL PATTON

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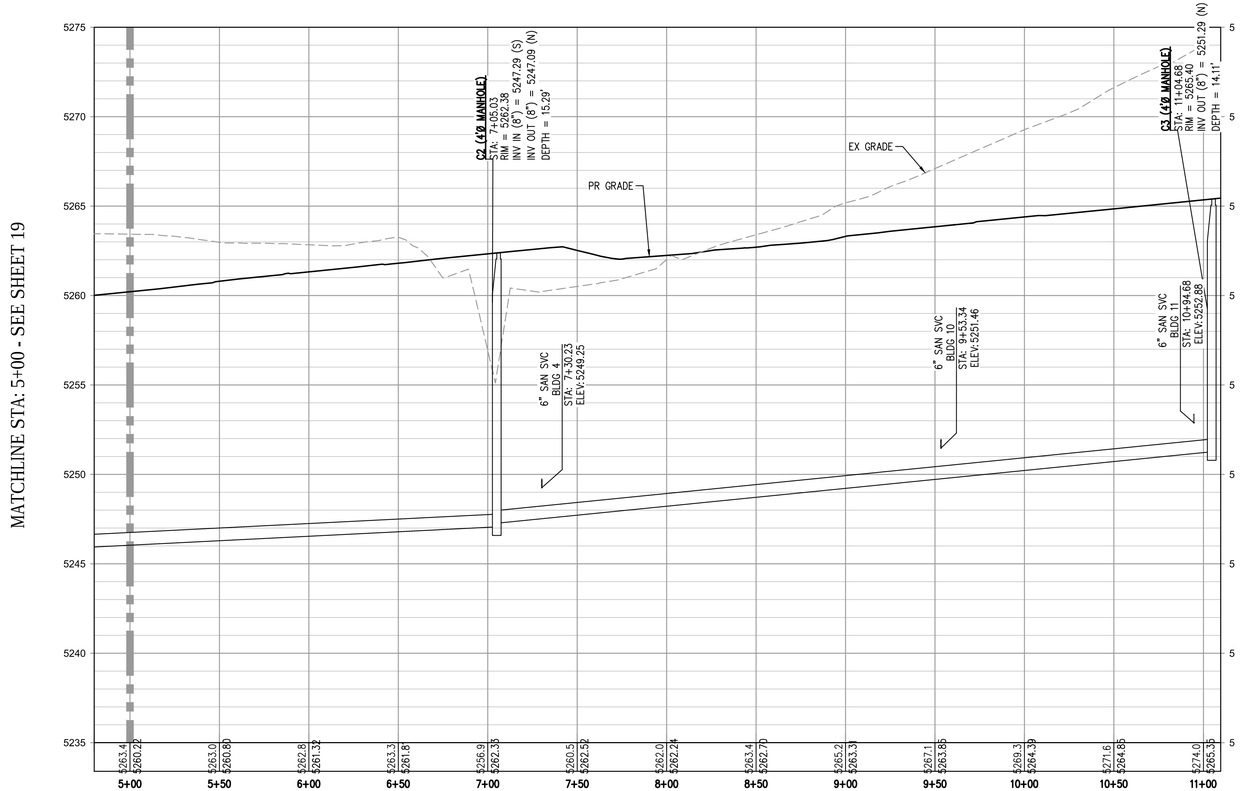
SANITARY LINE C

SCALE: 1" = 40'



KEY MAP

SCALE: 1" = 250'



SANITARY LINE C PROFILE

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

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4	7+30.22	5249.25	5251.33	5260.66	103.97	2.00	6"
9	9+53.54	5251.46	5256.73	5264.43	132.32	3.00	6"
10	10+94.68	5252.88	5259.25	5267.33	79.69	8.00	6"

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40 0 40 80
SCALE: 1" = 40'

DESIGNED BY: AEM
CHECKED BY: MSM
DRAWN BY: AEM

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OUTLOOK AT NINE MILE
SANITARY SEWER P&P LINE C
(STA: 5+00 TO STA: 10+98)

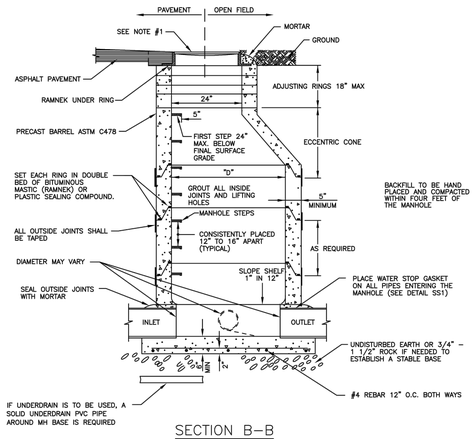
ISSUE DATE: 11-08-2019	PROJECT #: 160602
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PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
20
20 OF 69

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6 XREFs: cd - sanup, cd_evergreen logo, keymap, p-base, p-topo, p-util
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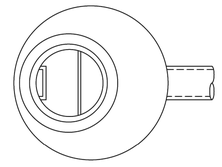
SECTION B–B

NOTES:

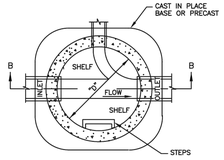
1. FINAL GRADE OF MANHOLE COVERS SHALL BE 1/4" LOWER THAN FINAL STREET.
2. ALL CHANNELS FLOWING INTO THE MAIN STREAM OF THE SEWER SHALL BE HAND FORMED INTO THE FLOW.
3. STEPS SHOULD BE PLACED OVER THE SHELF, NOT OVER THE FLOW. NO STEPS ALLOWED IN THE ADJUSTING RING AREA.
4. PRECAST CONCRETE SECTIONS SHALL CONFORM TO ASTM C–478.
5. BLOCK–OUTS, WHEN APPROVED, SHALL EXTEND A MAX. OF 6" PAST MANHOLE O.D. AND BE SATISFACTORILY PLUGGED AND SEALED.
6. BENCH MUST HAVE A BRUSHED, NON–SKID SURFACE.
7. BENCH IS TO BE EVEN WITH TOP OF PIPES
8. A MINIMUM OF 0.2' AND MAXIMUM OF 2' FALL REQUIRED FROM INLET TO OUTLET
9. MANHOLES NOT IN ASPHALT OR CONCRETE SHALL BE RAISED 6" ABOVE FINAL GRADE AND A CONCRETE COLLAR INSTALLED WITH A GREEN CARSONITE POST

The Town of ERIE COLORADO

DRAWING TITLE: STANDARD MANHOLE
DRAWING NUMBER: SS3A (1 OF 2)
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2010



ECCENTRIC CONE PLAN VIEW



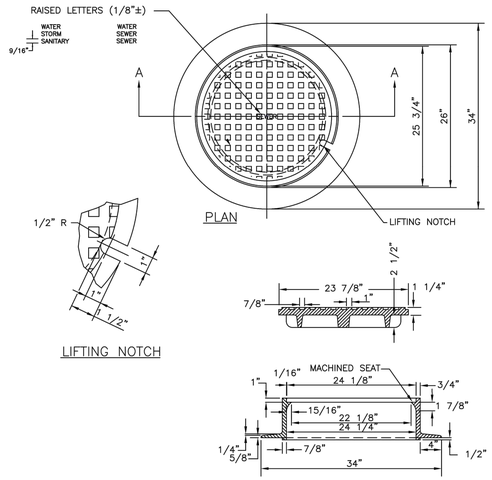
BASE PLAN VIEW

PIPE I.D.	MANHOLE I.D.	RING & COVER
18" & SMALLER	4'–0"▲	24"
21" TO 48"	5'–0"	30"
54"	6'–0"	30", 36" W/ 24"
60" & LARGER	SPECIAL DESIGN	INNER COVER

▲ WHENEVER MORE THAN A TWO WAY MANHOLE OF MAX. PIPE I.D. IS REQUIRED, THE MANHOLE SHOULD BE INCREASED TO LARGER DIA., EG. 18"x18"x18", REQUIRES 5'–0" I.D.

The Town of ERIE COLORADO

DRAWING TITLE: STANDARD MANHOLE
DRAWING NUMBER: SS3B (2 OF 2)
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN DATE: 06/2004



SECTION A–A

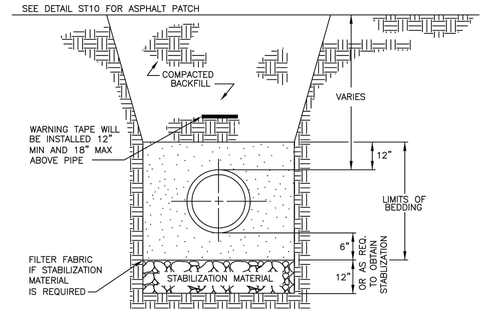
1. CASTING SPECIFICATIONS: ASTM A–48 WITH A MINIMUM TENSILE STRENGTH OF 25 KSI (CLASS 25)
2. ALL CASTINGS TO BE DIPPED IN ASPHALT BASE PAINT (OR APPROVED EQUAL)
3. CASTINGS SHALL BE AS SPECIFIED BELOW OR APPROVED EQUAL:

MANUFACTURERS	CAT. #
NEENAH	R–1706
CASTINGS, INC.	MH–400–24 C.I.
HUTCHINSON FDRY. & STL. INC.	MH–400

4. ALL NEW MANHOLES MUST INCLUDE A PLASTIC OR VINYL TAG ATTACHED TO THE TOP STEP STATING THE FOLLOWING "CAUTION CONFINED SPACE; ENTRY PERMIT REQUIRED.

The Town of ERIE COLORADO

DRAWING TITLE: 24" MANHOLE RING AND COVER
DRAWING NUMBER: SS6
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN DATE: 1/2015



NOTES:

1. COMPACTION SHALL BE AS FOLLOWS: PIPE ZONE BEDDING 6" UNDER AND 12" OVER PIPE WILL REQUIRE 90% S.P.D. TRENCH ZONE ABOVE BEDDING MATERIALS, FULL TRENCH SECTION IN ROADWAY OR STREET R.O.W. LIMITS WILL REQUIRE 95% S.P.D. TRENCH ZONE ABOVE BEDDING MATERIALS, OUTSIDE OF STREET R.O.W. WILL REQUIRE 90% S.P.D.
2. FILTER FABRIC IS REQUIRED IF STABILIZATION MATERIAL IS USED. THE FABRIC SHALL BE INSTALLED AS SHOWN IN THE DETAIL.
3. TRENCH TO BE BRACED OR SHEETED AS NECESSARY FOR THE SAFETY OF THE WORKMEN AND PROTECTION OF OTHER UTILITIES IN ACCORDANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL SAFETY REGULATIONS.
4. PIPE SHALL BE BEDDED FROM 6" BELOW THE BOTTOM OF THE PIPE TO 12" ABOVE THE TOP OF THE PIPE.
5. TRENCH WIDTH SHALL NOT BE MORE THAN 24" NOR LESS THAN 12" WIDER THAN THE LARGEST OUTSIDE DIAMETER OF THE PIPE.
6. SHOULD THE TRENCH BE EXCAVATED WIDER THAN ALLOWED, A CONCRETE CRADLE SHALL BE PLACED WITH 2500 P.S.I. CONCRETE FROM TRENCH BOTTOM TO PIPE SPRINGLINE.

The Town of ERIE COLORADO

DRAWING TITLE: SANITARY SEWER TRENCH DETAIL
DRAWING NUMBER: SS8
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN DATE: 01/2012

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

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DESIGNED BY: BMW
CHECKED BY: MSM
DRAWN BY: BMW

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1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
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OUTLOOK AT NINE MILE
SANITARY SEWER DETAILS

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

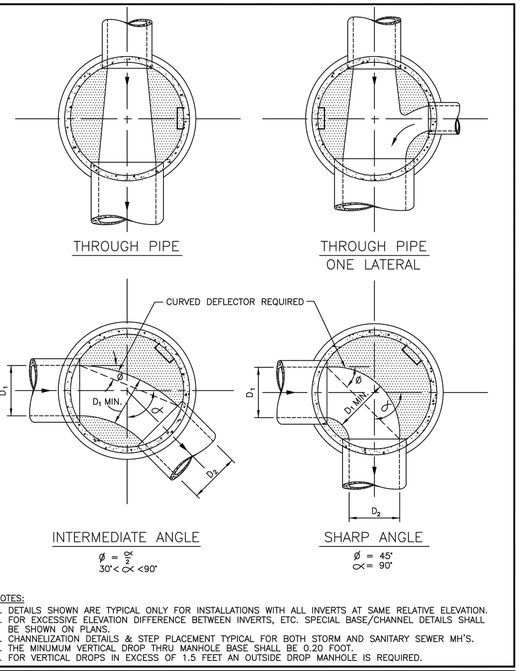
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
21
21 OF 69

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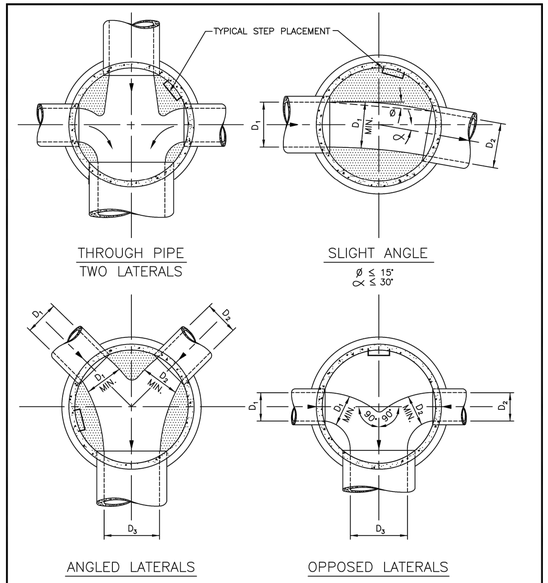
NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.



NOTES:
1. DETAILS SHOWN ARE TYPICAL ONLY FOR INSTALLATIONS WITH ALL INVERTS AT SAME RELATIVE ELEVATION.
2. FOR EXCESSIVE ELEVATION DIFFERENCE BETWEEN INVERTS, ETC. SPECIAL BASE/CHANNEL DETAILS SHALL BE SHOWN ON PLANS.
3. CHANNELIZATION DETAILS & STEP PLACEMENT TYPICAL FOR BOTH STORM AND SANITARY SEWER MH'S.
4. THE MINUMUM VERTICAL DROP THRU MANHOLE BASE SHALL BE 0.20 FOOT.
5. FOR VERTICAL DROPS IN EXCESS OF 1.5 FEET AN OUTSIDE DROP MANHOLE IS REQUIRED.

The Town of ERIE COLORADO

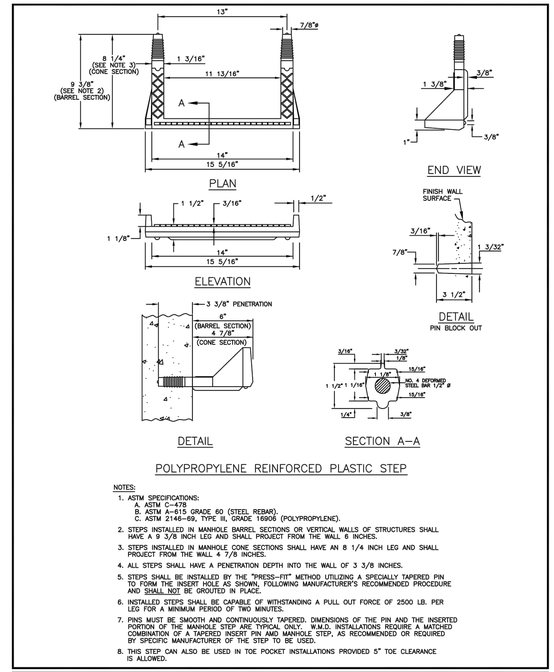
DRAWING TITLE: TYPICAL MH BASE CHANNELIZATION (1 OF 2)
DRAWING NUMBER: SS11A
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN DATE: 06/2004



NOTES:
1. DETAILS SHOWN ARE TYPICAL ONLY FOR INSTALLATIONS WITH ALL INVERTS AT SAME RELATIVE ELEVATION.
2. FOR EXCESSIVE ELEVATION DIFFERENCE BETWEEN INVERTS, ETC. SPECIAL BASE/CHANNEL DETAILS SHALL BE SHOWN ON PLANS.
3. CHANNELIZATION DETAILS & STEP PLACEMENT TYPICAL FOR BOTH STORM AND SANITARY SEWER MH'S.
4. THE MINUMUM VERTICAL DROP THRU MANHOLE BASE SHALL BE 0.20 FOOT.
5. FOR VERTICAL DROPS IN EXCESS OF 1.5 FEET AN OUTSIDE DROP MANHOLE IS REQUIRED.

The Town of ERIE COLORADO

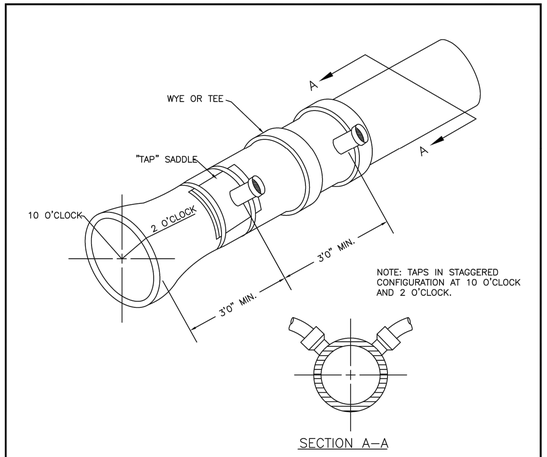
DRAWING TITLE: TYPICAL MH BASE CHANNELIZATION (2 OF 2)
DRAWING NUMBER: SS11B
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN DATE: 06/2004



NOTES:
1. ASTM SPECIFICATIONS:
   A. ASTM C-478
   B. ASTM A-615 GRADE 60 (STEEL REBAR).
   C. ASTM 2146-69, TYPE III, GRADE 16906 (POLYPROPYLENE).
2. STEPS INSTALLED IN MANHOLE BARREL SECTIONS OR VERTICAL WALLS OF STRUCTURES SHALL HAVE A 9 3/8 INCH LEG AND SHALL PROJECT FROM THE WALL 6 INCHES.
3. STEPS INSTALLED IN MANHOLE CONE SECTIONS SHALL HAVE AN 8 1/4 INCH LEG AND SHALL PROJECT FROM THE WALL 4 7/8 INCHES.
4. ALL STEPS SHALL HAVE A PENETRATION DEPTH INTO THE WALL OF 3 3/8 INCHES.
5. STEPS SHALL BE INSTALLED BY THE "PRESS-FIT" METHOD UTILIZING A SPECIALLY TAPERED PIN TO FORM THE INSERT HOLE AS SHOWN, FOLLOWING MANUFACTURER'S RECOMMENDED PROCEDURE AND SHALL NOT BE GROUTED IN PLACE.
6. INSTALLED STEPS SHALL BE CAPABLE OF WITHSTANDING A PULL OUT FORCE OF 2500 LB. PER LEG FOR A MINIMUM PERIOD OF TWO MINUTES.
7. PINS MUST BE SMOOTH AND CONTINUOUSLY TAPERED. DIMENSIONS OF THE PIN AND THE INSERTED PORTION OF THE MANHOLE STEP ARE TYPICAL ONLY. W.M.D. INSTALLATIONS REQUIRE A MATCHED COMBINATION OF A TAPERED INSERT PIN AMD MANHOLE STEP, AS RECOMMENDED OR REQUIRED BY SPECIFIC MANUFACTURER OF THE STEP TO BE USED.
8. THIS STEP CAN ALSO BE USED IN TOE POCKET INSTALLATIONS PROVIDED 5" TOE CLEARANCE IS ALLOWED.

The Town of ERIE COLORADO

DRAWING TITLE: MANHOLE STEPS
DRAWING NUMBER: SS12
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN DATE: 06/2004



NOTES:
1. SEWER SERVICE CONNECTIONS SHALL BE POSITIONED AT EITHER THE 2 O'CLOCK OR THE 10 O'CLOCK POSITION ON THE CIRCUMFERENCE OF THE SEWER MAIN.
2. ON NEW INSTALLATIONS, EITHER WYE OR TEE FITTINGS SHALL BE USED. WHEN TAPPING INTO AN EXISTING SEWER MAIN, A SADDLE CONNECTION AND APPROVED CORING METHOD SHALL BE USED.
3. THE MINIMUM DISTANCE BETWEEN SERVICE CONNECTIONS MADE ALONG THE PIPE SHALL BE 3–FEET. THE MINIMUM DISTANCE FROM EITHER THE BELL OR SPIGOT END OF A PIPE SHALL BE 3–FEET. THE MINIMUM DISTANCE FROM THE CENTER OF A MANHOLE TO A SERVICE CONNECTION SHALL BE EITHER 5–FEET OR THE TRANSITION POINT FROM THE MANHOLE TRENCH, WHICHEVER IS GREATER.
4. A MAXIMUM OF 4 SEWER SERVICE CONNECTIONS SHALL BE ALLOWED PER 20–FEET LENGTH OF PIPE. A SPECIFIC SOILS INVESTIGATIONS SHOULD BE CONDUCTED TO ASSURE THAT THE EXTERNAL LOADING WILL BE WITHIN ALLOWABLE LIMITS REGARDLESS OF THE NUMBER OF TAPS INVOLVED.

The Town of ERIE COLORADO

DRAWING TITLE: DOMESTIC SEWER TAPPING
DRAWING NUMBER: SS15
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN DATE: 06/2004

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

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

DESIGNED BY: BMW
CHECKED BY: MSM
DRAWN BY: BMW

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
SANITARY SEWER DETAILS

ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

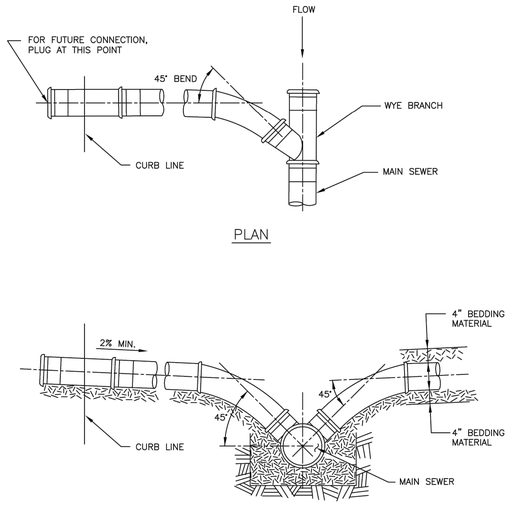
PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO. 22

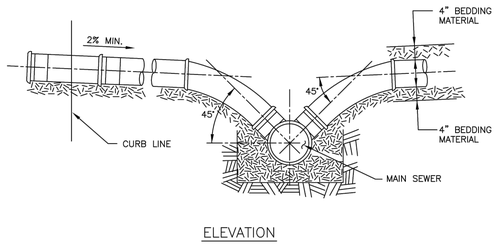
22 OF 69

FILEPATH: P:\160602\ENGINEERING\UTILITIES\SANITARY\CD - SANITARY DETAILS.DWG LAYOUT: LAYOUT2
NO XREFS
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NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH



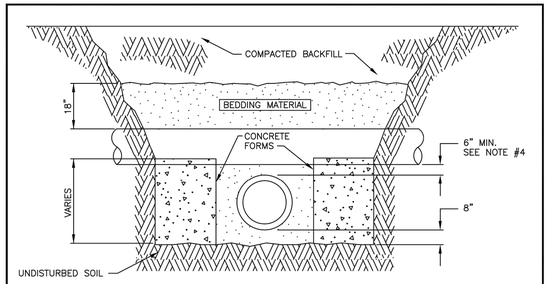
PLAN



ELEVATION

The Town of ERIE COLORADO

DRAWING TITLE: SEWER SERVICE CONNECTION
DRAWING NUMBER: SS18
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN DATE: 06/2004



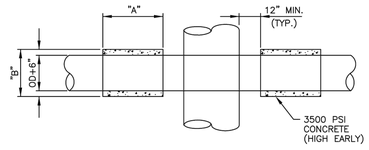


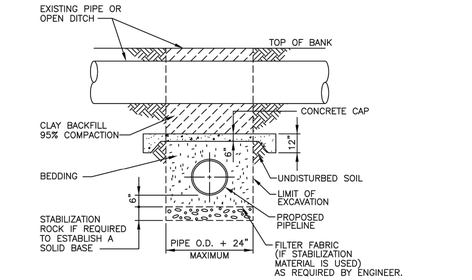
TABLE	
"A"	"B"
PIPES ≤ 12" =12" PIPES > 12" =18"	PIPE O.D. + 6" ON BOTH SIDES.

NOTES:

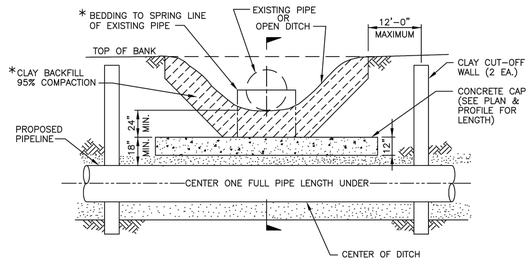
1. PIPE SECTIONS SHALL BE CENTERED OVER THE PIPE BEING CROSSED.
2. SIZES ABOVE 24" WILL BE DETERMINED BY THE ENGINEER.
3. A BOND BREAKER SHOULD BE PLACED BETWEEN THE CONCRETE AND THE PIPE BEING SUPPORTED.
4. IF THE CROSSING INVOLVES A WATER LINE AND THERE IS 6" OF CLEARANCE, OR THERE IS LESS THAN 4' OF COVER OVER THE UPPER PIPE, A FIBER BOARD INSULATION (DOW 2" EXTRUDED POLYSTYRENE IN ACCORDANCE WITH ASTM-C578 OR APPROVED EQUAL) MUST BE INSTALLED BETWEEN THE PIPES. THE BOARD SHOULD EXTEND 2' BEYOND THE OUTSIDE EDGES OF BOTH PIPES.

The Town of ERIE COLORADO

DRAWING TITLE: PIPE CROSSING SUPPORT PAD
DRAWING NUMBER: SS19
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN DATE: 06/2004



SECTION



PROFILE

* USE CLAY BACKFILL ONLY WHEN CROSSING OPEN DITCH. USE BEDDING MATERIAL TO SPRING LINE OF EXISTING PIPE WHEN CROSSING PIPE.

The Town of ERIE COLORADO

DRAWING TITLE: DITCH OR PIPE CROSSING
DRAWING NUMBER: SS21
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN DATE: 06/2004

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

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

DESIGNED BY: BMW
CHECKED BY: MSM
DRAWN BY: BMW

HKS HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
SANITARY SEWER DETAILS

ISSUE DATE: 11-08-2019 PROJECT #: 160602

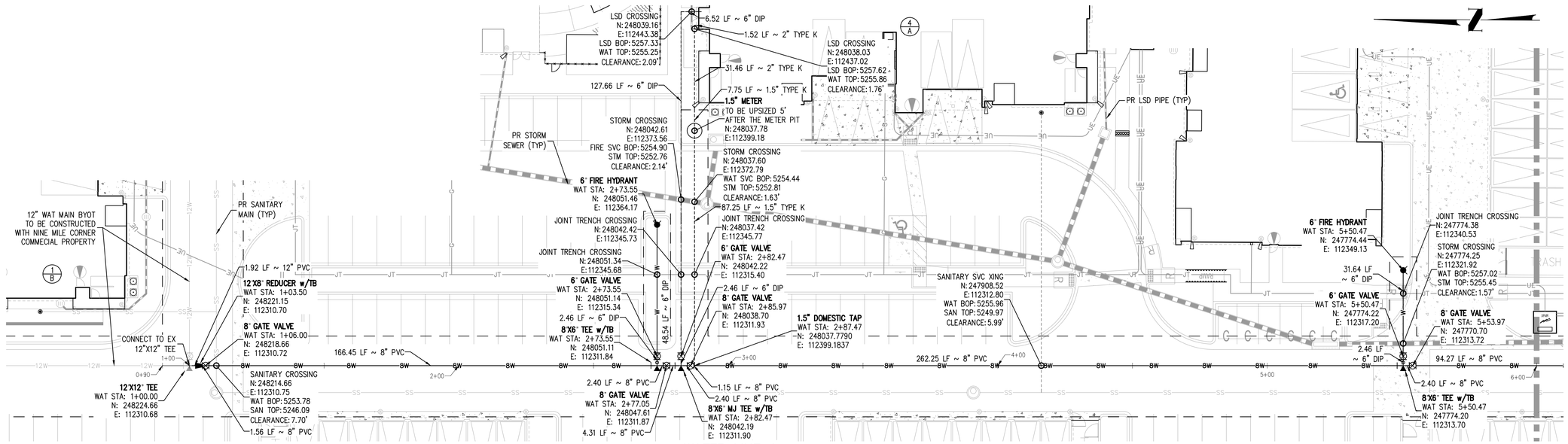
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
23
23 OF 69

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NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH



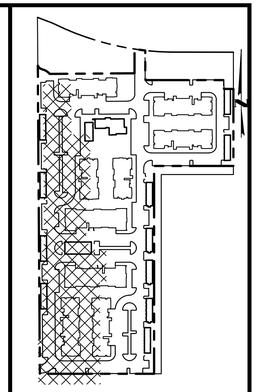
WATER LINE A

STA: 1+00 TO 6+00

SCALE: 1" = 20'

MATCHLINE STA: 6+00 - SEE THIS SHEET

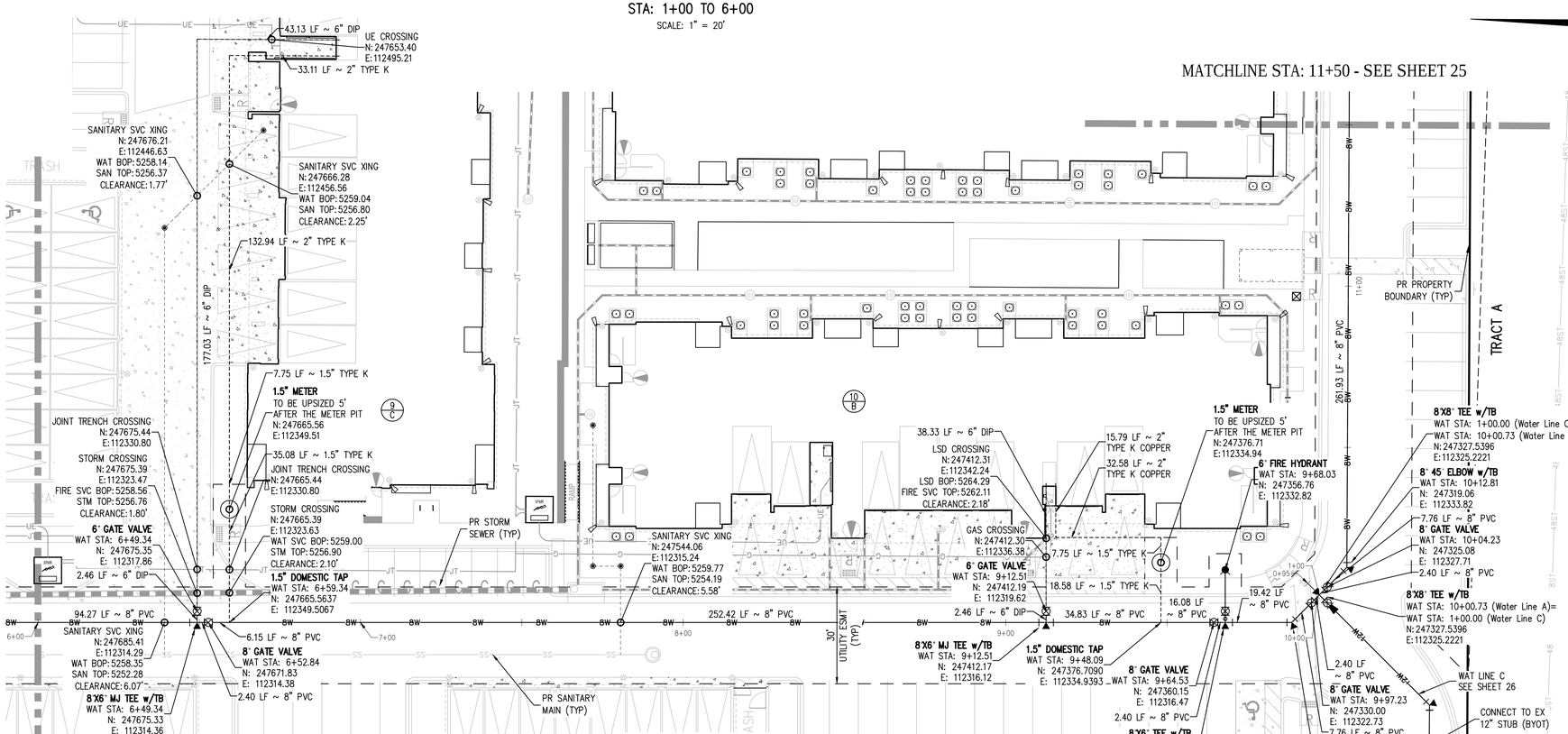
MATCHLINE STA: 6+00 - SEE THIS SHEET



KEY MAP

SCALE: 1" = 250'

MATCHLINE STA: 11+50 - SEE SHEET 25



WATER LINE A

STA: 6+00 TO 11+50

SCALE: 1" = 20'

MATCHLINE STA: 6+00 - SEE THIS SHEET

NOTES:

1. ALL WATER AND FIRE SERVICES SHALL BE INSTALLED A MINIMUM OF 4.5 FEET OF COVER FROM FINISHED GRADE.
2. STATIONING IS BASED ALONG WATER CENTER LINE.
3. PIPE LENGTH GIVEN FOR DOMESTIC WATER AND FIRE SERVICES ARE FROM MAIN TO BUILDING.
4. ALL HYDRANT ASSEMBLIES, VALVES, BENDS AND FITTINGS ARE TO BE FULLY RESTRAINED.
5. ALL VALVES, BENDS, TEES AND CROSSES SHALL HAVE THRUST BLOCKS.
6. ALL WORK SHALL BE IN ACCORDANCE WITH THE TOWN OF ERIE'S 2017 STANDARDS AND SPECIFICATIONS.
7. ALL WATER WILL BE PUBLIC UNLESS OTHERWISE NOTED.
8. CURB STOPS SHALL BE ONE FOOT FROM THE METER PIT.
9. THE LOCATION 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 MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES IN THE VERTICAL/HORIZONTAL LOCATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION.
10. FOR TOWN OF ERIE NOTES – SEE SHEETS 2 & 3

Know what's below. Call before you dig.

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

20 0 20 40

SCALE: 1" = 20'

DESIGNED BY: BMW
CHECKED BY: MSM
DRAWN BY: BMW

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
WATER PLAN LINE A
STA: 1+00 TO 12+50

ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

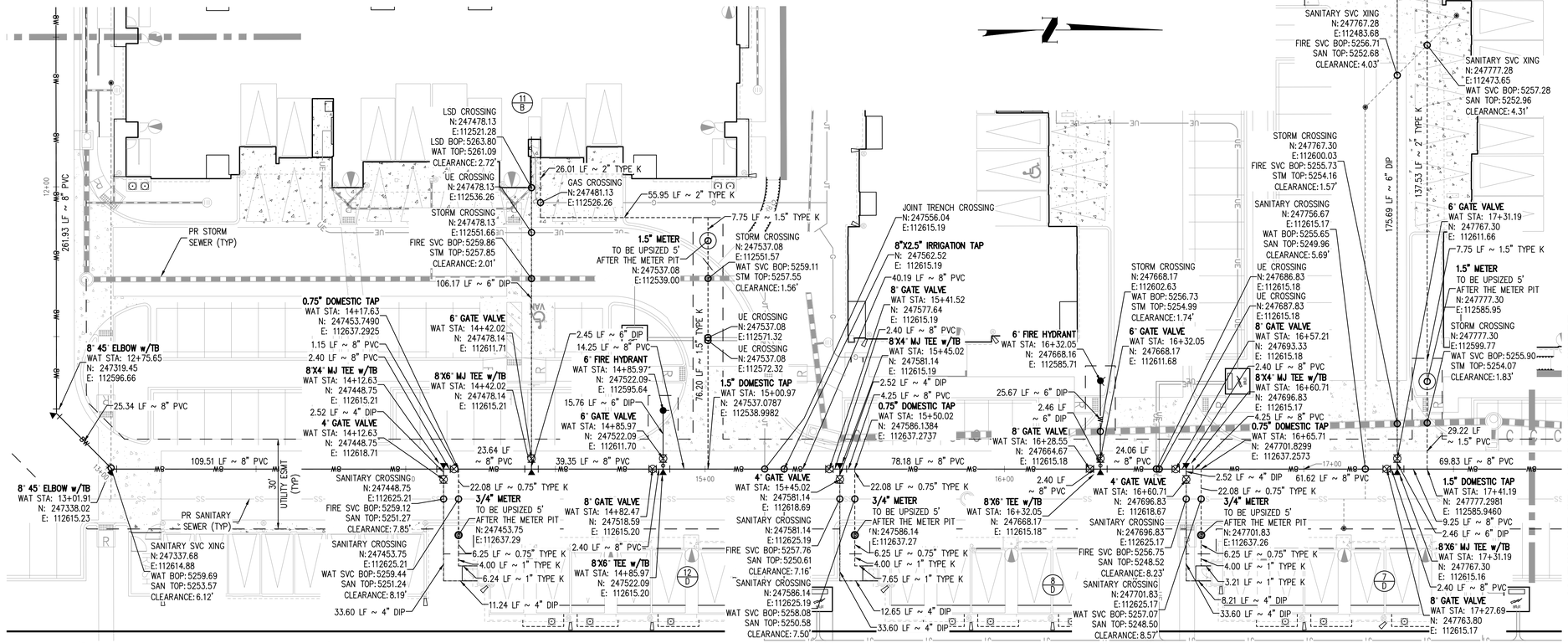
SHEET NO. 24

24 OF 69

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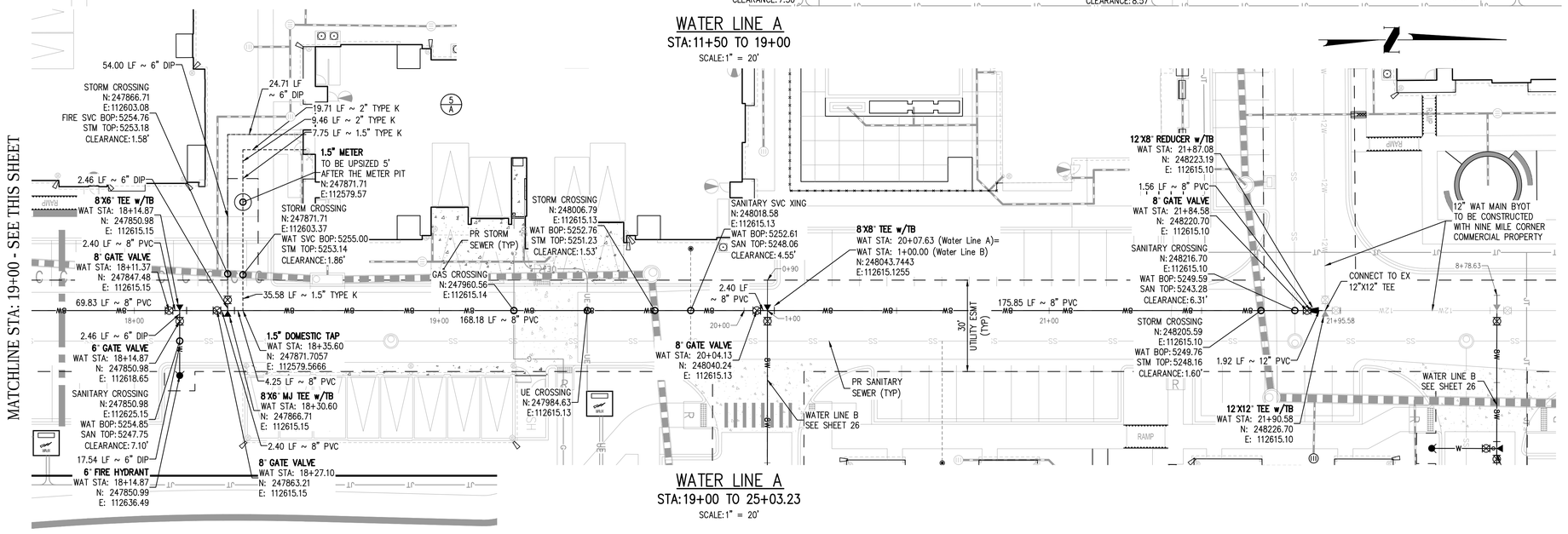
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MATCHLINE STA: 11+50 - SEE SHEET 24



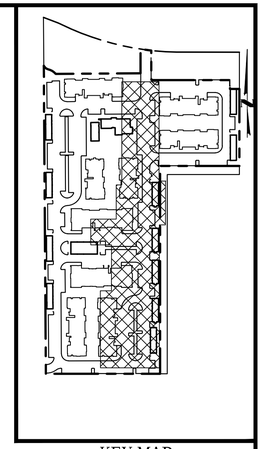
MATCHLINE STA: 19+00 - SEE THIS SHEET

WATER LINE A
STA: 11+50 TO 19+00
SCALE: 1" = 20'



MATCHLINE STA: 19+00 - SEE THIS SHEET

WATER LINE A
STA: 19+00 TO 25+03.23
SCALE: 1" = 20'



KEY MAP
SCALE: 1" = 250'

NOTES:

1. ALL WATER AND FIRE SERVICES SHALL BE INSTALLED A MINIMUM OF 4.5 FEET OF COVER FROM FINISHED GRADE.
2. STATIONING IS BASED ALONG WATER CENTER LINE.
3. PIPE LENGTH GIVEN FOR DOMESTIC WATER AND FIRE SERVICES ARE FROM MAIN TO BUILDING.
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20 0 20 40
SCALE: 1" = 20'

DESIGNED BY: RJH
CHECKED BY: MSM
DRAWN BY: RJH

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
WATER PLAN LINE A
STA: 12+00 TO 25+03.23

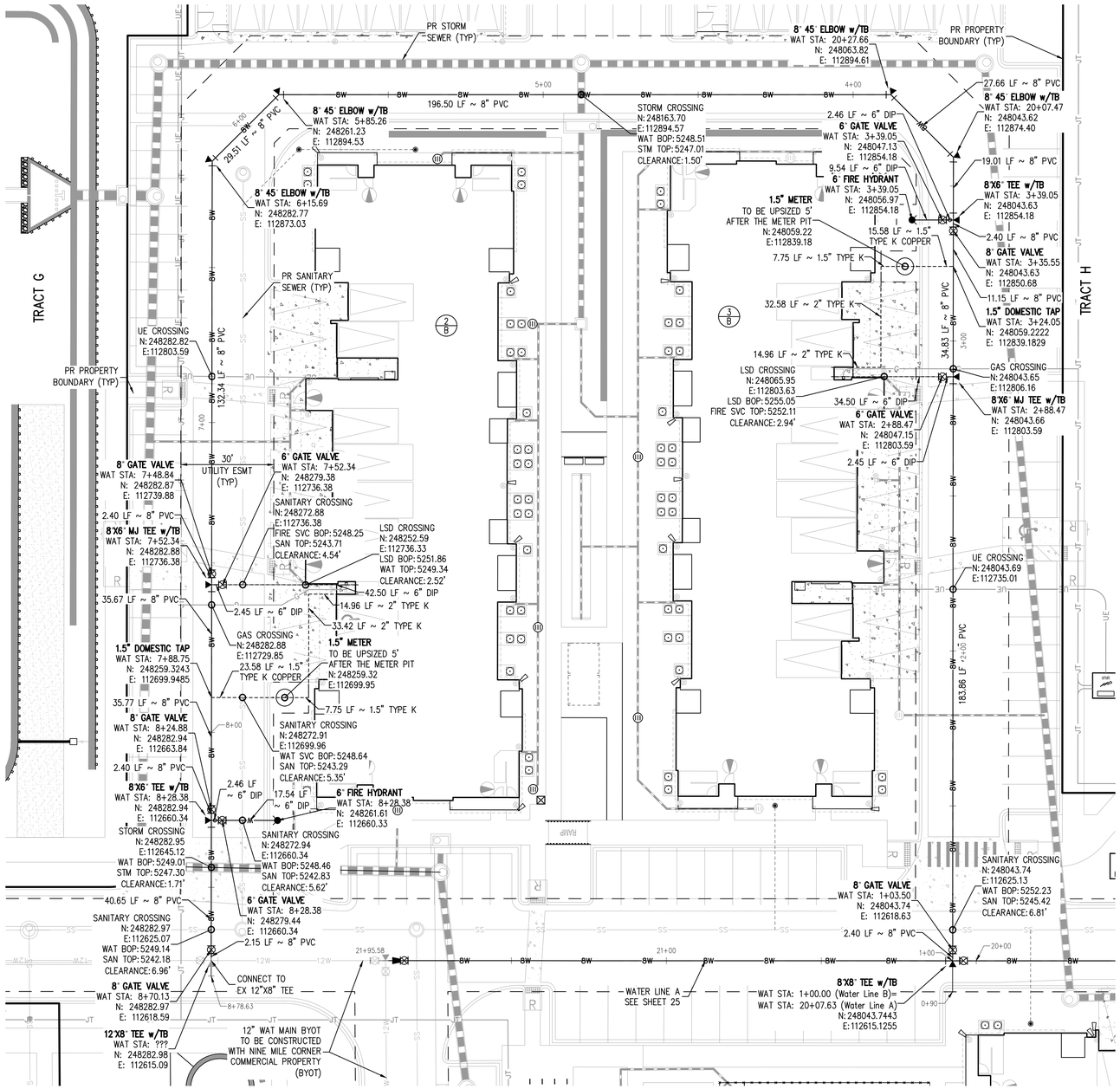
ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

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SHEET NO.
25
25 OF 69

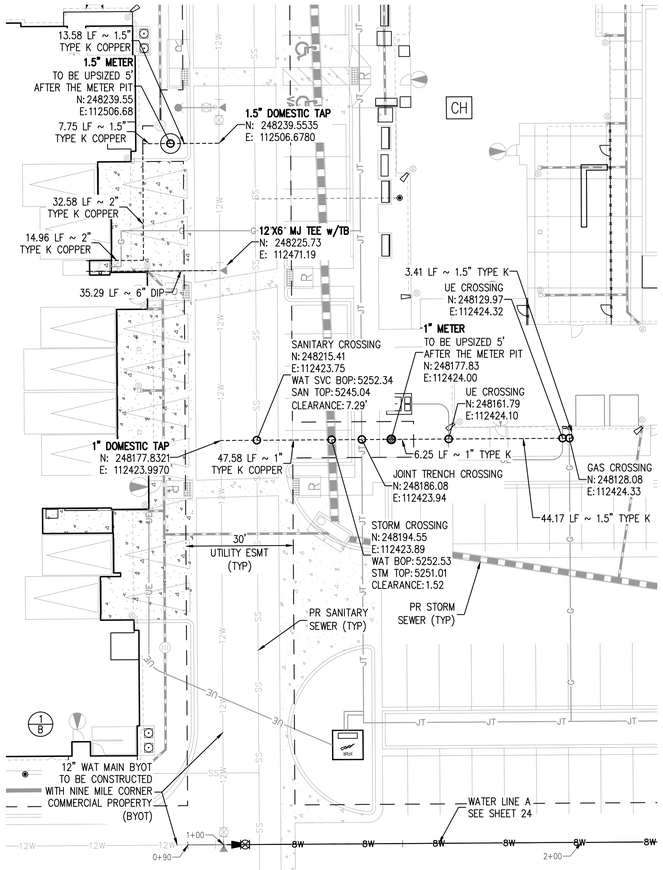
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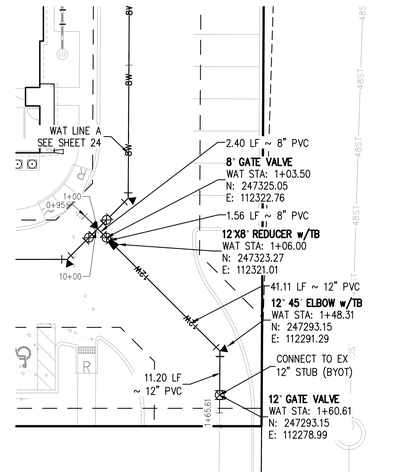
WATER LINE B

SCALE: 1" = 20'



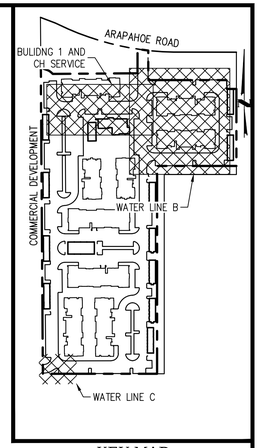
BULIDING 1 AND CLUBHOUSE SERVICE

SCALE: 1" = 20'



WATER LINE C

SCALE: 1" = 20'



KEY MAP

SCALE: 1" = 250'

NOTES:

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20 0 20 40
SCALE: 1" = 20'

DESIGNED BY: RJH
CHECKED BY: MSM
DRAWN BY: RJH

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
WATER PLAN LINE B & C
STA: 13+50 TO 22+00

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

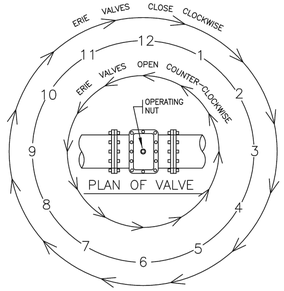
PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO. 26

26 OF 69

FILEPATH: P:\160602\ENGINEERING\UTILITIES\WATER\CD - WATER PLAN.DWG LAYOUT: WATER PLAN 3
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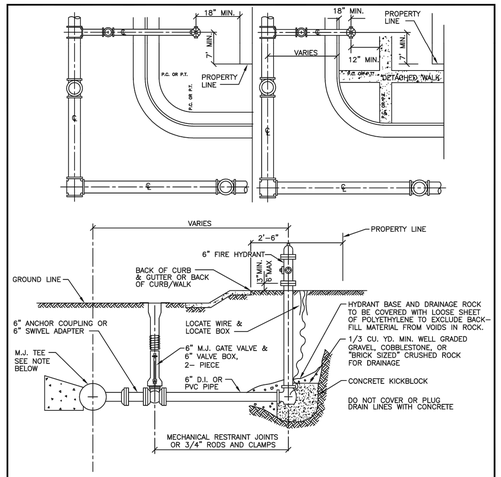


NOTE:
NORMALLY VALVES WITH A BLACK OPERATING NUT INDICATE A STANDARD ERIE VALVE. (OPEN LEFT)

VALVE OPENING & CLOSING PROCEDURE

The Town of ERIE COLORADO

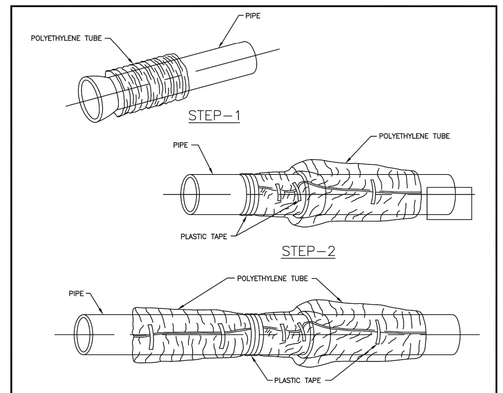
DRAWING TITLE: VALVE OPERATION
DRAWING NUMBER: W1
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2009



NOTES:
1. ALTERNATE TO THE ABOVE: FASTEN M.J. VALVE DIRECTLY TO A M.J. ANCHOR TEE (ALSO CALLED SWIVEL TEE)
2. NO HORIZONTAL OR VERTICAL BENDS ARE ALLOWED IN FIRE HYDRANT BRANCH OR SPRINKLER LINES
3. MAXIMUM OF ONE FIRE HYDRANT EXTENSION
4. CONTRACTOR TO TAKE CARE NOT TO BLOCK WEEP HOLES
5. ALL DUCTILE IRON PIPE TO BE POLYETHYLENE WRAPPED

The Town of ERIE COLORADO

DRAWING TITLE: FIRE HYDRANTS, MAINS & VALVES
DRAWING NUMBER: W7
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN DATE: 06/2010



FIELD INSTALLATION-POLYETHYLENE WRAP

STEP-1 PLACE TUBE OF POLYETHYLENE MATERIAL AROUND PIPE PRIOR TO LOWERING PIPE INTO TRENCH.

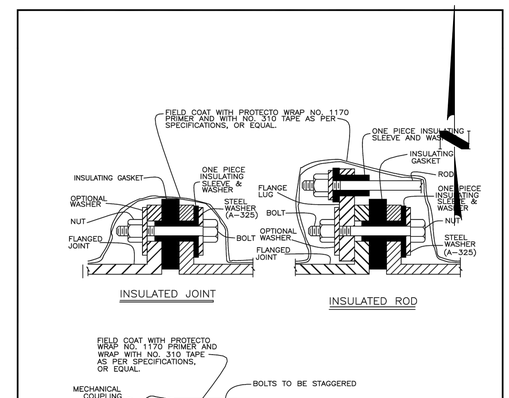
STEP-2 PULL THE TUBE OVER THE LENGTH OF THE PIPE. TAPE TUBE TO PIPE AT JOINT. FOLD MATERIAL AROUND THE ADJACENT SPIGOT END AND WRAP WITH THREE CIRCUMFERENTIAL TURNS OF TWO-INCH WIDE PLASTIC TAPE TO HOLD PLASTIC TUBE AROUND SPIGOT END.

STEP-3 ADJACENT TUBE OVERLAPS FIRST TUBE AND IS SECURED WITH PLASTIC ADHESIVE TAPE. THE POLYETHYLENE TUBE MATERIAL COVERING THE PIPE WILL BE LOOSE. EXCESS MATERIAL AND SHOULD BE NEATLY DRAWN UP AROUND THE PIPE BARREL, FOLDED INTO AN OVERLAP ON TOP OF THE PIPE AND HELD IN PLACE BY MEANS OF PIECES OF THE PLASTIC TAPE AT APPROXIMATELY THREE TO FIVE FOOT INTERVALS.

NOTE: ALL RODDING TO BE ENCASED IN POLYETHYLENE SEPARATED FROM THE PIPE

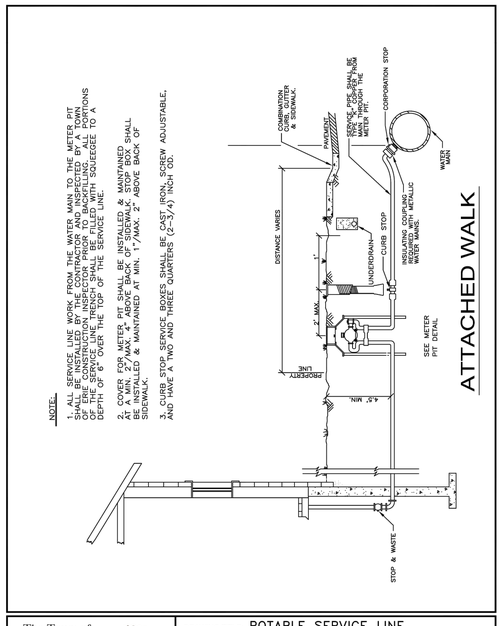
The Town of ERIE COLORADO

DRAWING TITLE: POLYETHYLENE WRAP
DRAWING NUMBER: W9
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN DATE: 06/2004



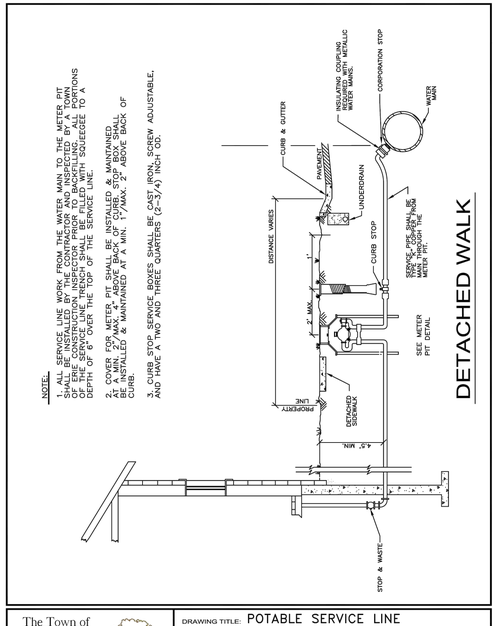
The Town of ERIE COLORADO

DRAWING TITLE: INSULATORS
DRAWING NUMBER: W10
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN DATE: 06/2004



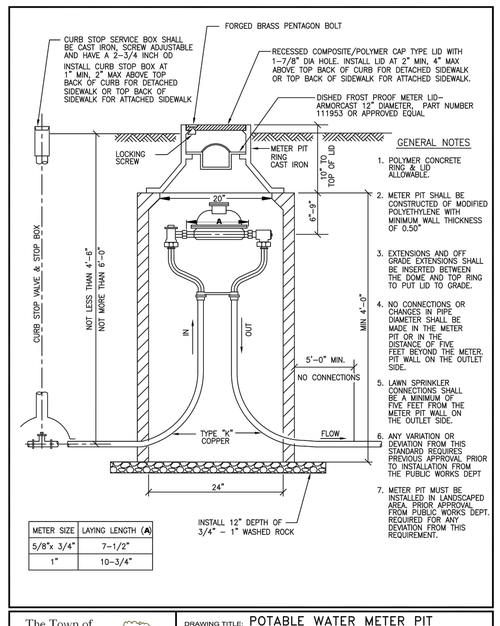
The Town of ERIE COLORADO

DRAWING TITLE: POTABLE SERVICE LINE ATTACHED WALK
DRAWING NUMBER: W11A (1 OF 2)
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2015



The Town of ERIE COLORADO

DRAWING TITLE: POTABLE SERVICE LINE DETACHED WALK
DRAWING NUMBER: W11B (2 OF 2)
DRAWN BY: J. ASCUNCE APPROVED BY: R. PENNINGTON REV. DATE: 10/2018



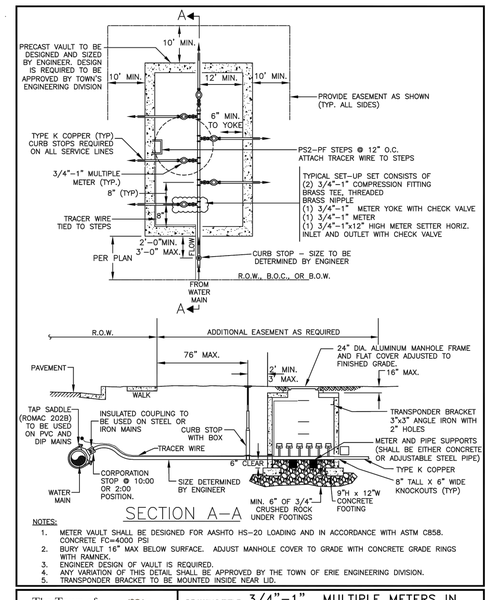
METER SIZE	LAYING LENGTH (A)
5/8"x 3/4"	7-1/2"
1"	10-3/4"

GENERAL NOTES

1. POLYMER CONCRETE RING & LID ALLOWABLE.
2. METER PIT SHALL BE CONSTRUCTED OF MODIFIED POLYETHYLENE WITH MINIMUM WALL THICKNESS OF 0.50"
3. EXTENSIONS AND OFF GRADE EXTENSIONS SHALL BE INSERTED BETWEEN THE DOME AND TOP RING TO PUT LID TO GRADE.
4. NO CONNECTIONS OR CHANGES IN PIPE DIAMETER SHALL BE MADE IN THE METER PIT OR IN THE DISTANCE OF FIVE FEET BEYOND THE METER. PIT WALL ON THE OUTLET SIDE.
5. LAWN SPRINKLER CONNECTIONS SHALL BE A MINIMUM OF FIVE FEET FROM THE METER PIT WALL ON THE OUTLET SIDE.
6. ANY VARIATION OR DEVIATION FROM THIS STANDARD REQUIRES PREVIOUS APPROVAL PRIOR TO INSTALLATION FROM THE PUBLIC WORKS DEPT
7. METER PIT MUST BE INSTALLED IN LANDSCAPED AREA PRIOR APPROVAL FROM PUBLIC WORKS DEPT. REQUIRED FOR ANY DEVIATION FROM THIS REQUIREMENT.

The Town of ERIE COLORADO

DRAWING TITLE: POTABLE WATER METER PIT 3/4" & 1" METER
DRAWING NUMBER: W12A
DRAWN BY: J. ASCUNCE APPROVED BY: J. SMITH REV. DATE: 05/2019



NOTES:
1. METER VAULT SHALL BE DESIGNED FOR AASHTO HS-20 LOADING AND IN ACCORDANCE WITH ASTM C858. CONCRETE FC=4000 PSI
2. BURY VAULT 16" MAX BELOW SURFACE. ADJUST MANHOLE COVER TO GRADE WITH CONCRETE GRADE RINGS WITH RAMNEK.
3. ENGINEER DESIGN OF VAULT IS REQUIRED.
4. ANY VARIATION OF THIS DETAIL SHALL BE APPROVED BY THE TOWN OF ERIE ENGINEERING DIVISION.
5. TRANSPONDER BRACKET TO BE MOUNTED INSIDE NEAR LID.

The Town of ERIE COLORADO

DRAWING TITLE: 3/4"-1" MULTIPLE METERS IN PRE CAST VAULT (TYP)
DRAWING NUMBER: W12B
DRAWN BY: S. ELKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2017

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

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

DESIGNED BY: BMW
CHECKED BY: MSM
DRAWN BY: BMW

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

Evergreen
Development | Services | Investments

OUTLOOK AT NINE MILE
WATER DETAILS

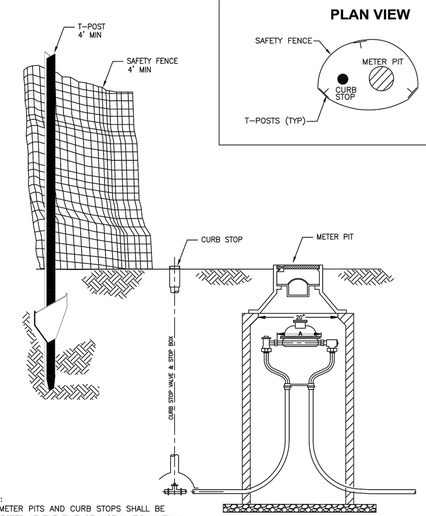
ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
27
27 OF 69

FILEPATH: P:\160602\ENGINEERING\UTILITIES\WATER\CD - WATER DETAILS.DWG LAYOUT: LAYOUT1
NO XREFS
PLOTTED: WED 01/29/20 5:42:36P BY: RACHEL PATTON

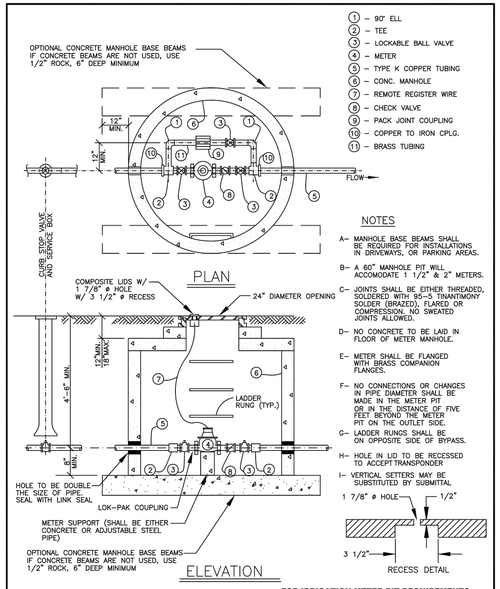
NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH



NOTE:
ALL METER PITS AND CURB STOPS SHALL BE PROTECTED AT THE TIME OF INSTALLATION WITH A MINIMUM OF 3 T-POSTS AND ORANGE SAFETY FENCE. THE T-POSTS AND SAFETY FENCE SHALL REMAIN IN PLACE AND IN GOOD CONDITION UNTIL THE LANDSCAPING IS INSTALLED.

The Town of ERIE COLORADO

DRAWING TITLE: METER PIT & CURB STOP PROTECTION
DRAWING NUMBER: W12C
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2012



① – 90° ELL
② – TEE
③ – LOCKABLE BALL VALVE
④ – METER
⑤ – TYPE K COPPER TUBING
⑥ – CONC. MANHOLE
⑦ – REMOTE REGISTER WIRE
⑧ – CHECK VALVE
⑨ – PACK JOINT COUPLING
⑩ – COPPER TO IRON CPLG.
⑪ – BRASS TUBING

NOTES

A– MANHOLE BASE BEAMS SHALL BE REQUIRED FOR INSTALLATIONS IN DRIVEWAYS, OR PARKING AREAS.

B– A 60" MANHOLE PIT WILL ACCOMODATE 1 1/2" & 2" METERS.

C– JOINTS SHALL BE EITHER THREADED, SOLDERED WITH 95–5 TINANTIMONY SOLDER (BRAZED), FLARED OR COMPRESSION. NO SWEATED JOINTS ALLOWED.

D– NO CONCRETE TO BE LAID IN FLOOR OF METER MANHOLE.

E– METER SHALL BE FLANGED WITH BRASS COMPANION FLANGES.

F– NO CONNECTIONS OR CHANGES IN PIPE DIAMETER SHALL BE MADE IN THE METER PIT OR IN THE DISTANCE OF FIVE FEET BEYOND THE METER PIT ON THE OUTLET SIDE.

G– LADDER RUNGS SHALL BE ON OPPOSITE SIDE OF PYPASS.

H– HOLE IN LID TO BE RECESSED TO ACCEPT TRANSPONDER

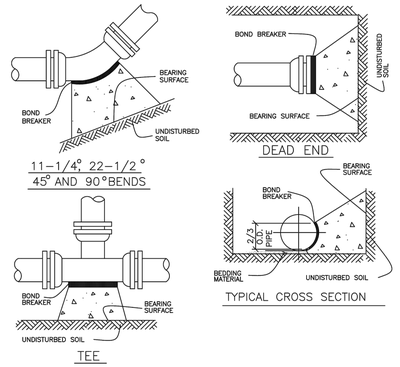
I– VERTICAL SETTERS MAY BE SUBSTITUTED BY SUBMITTAL

FOR SIZE OF METER PIT FOR LARGER THAN 2" METER, CONTACT TOWN OF ERIE ENGINEERING STAFF

FOR IRRIGATION METER PIT REQUIREMENTS SEE PARKS STANDARD DETAILS

The Town of ERIE COLORADO

DRAWING TITLE: 1–1/2" & 2" METER MANHOLE METER PIT
DRAWING NUMBER: W13
DRAWN BY: J. ASCUNCE APPROVED BY: R. PENNINGTON REV. DATE: 08/2018



NOTES:

1. SEE THRUST BLOCKING CHART FOR MINIMUM BEARING SURFACE AREAS
2. BASED ON 150 PSI INTERNAL PIPE PRESSURE PLUS WATER HAMMER
   4",6",8" AND 12" WATER HAMMER=110 P.S.I.
   16",20" AND 24" WATER HAMMER =70 P.S.I.
3. BASED ON 3,000 pfs SOIL BEARING CAPACITY
4. THRUST BLOCKING SHALL BE CAST AGAINST UNDISTURBED EARTH. FORMS SHALL BE USED AS REQUIRED TO OBTAIN ADEQUATE BEARING AND TO CONFINE THE CONCRETE. THRUST BLOCKING SHALL BEAR ON THE FITTING OR END CAP ONLY AND SHOULD NOT BE ALLOWED TO SPILL OVER THE JOINT OR AGAINST THE PIPE

The Town of ERIE COLORADO

DRAWING TITLE: THRUST BLOCK
DRAWING NUMBER: W14A
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2015

TABLE OF BEARING AREAS IN SQ. FT. FOR CONCRETE THRUST BLOCKING

FOR 100 P.S.I. INTERNAL STATIC PRESSURE AND 1,000 LBS. PER SQUARE FOOT SOIL BEARING CAPACITY.

SIZE	BENDS				TEES *	GATE VALVES	DEAD ENDS	CROSS W/ 1 BRANCH PLUGGED	CROSS W/ 2 BRANCHES PLUGGED
	90°	45°	22–1/2°	11–1/4°					
3	1.0	0.6	0.3	1.0	0.7	0.5	0.7	0.7	0.7
4	1.8	1.0	0.5	1.0	1.3	0.5	1.3	1.3	1.3
6	4.0	2.2	1.1	1.0	2.8	0.7	2.8	2.8	2.8
8	7.1	3.8	2.0	1.0	5.0	2.4	5.0	5.0	5.0
10	11.1	6.0	3.0	1.5	7.8	4.5	7.8	7.8	7.8
12	16.0	8.6	4.4	2.2	11.3	7.3	11.3	11.3	11.3
14	21.7	11.8	6.0	3.0	15.4	11.0	15.4	15.4	15.4
15	25.0	13.5	7.0	3.5	17.6	SPECIAL DESIGN	17.6	17.6	17.6
16	28.4	15.3	8.0	4.0	20.0		20.0	20.0	20.0
18	36.0	19.4	10.0	5.0	25.4		25.4	25.4	25.4
20	44.2	24.0	12.2	6.1	31.4		31.4	31.4	31.4
21	49.0	26.5	13.5	6.8	34.6		34.6	34.6	34.6
22	54.0	29.0	14.8	7.4	38.0		38.0	38.0	38.0
24	64.0	34.5	17.7	8.8	45.0		45.0	45.0	45.0
30	100.0	54.0	27.6	13.8	71.0		71.0	71.0	71.0
36	144.0	78.0	40.0	20.0	102.0		102.0	102.0	102.0

* SIZE IS BRANCH SIZE

AREAS GIVEN IN TABLE ARE BASED UPON AN INTERNAL STATIC PRESSURE OF 100 P.S.I. AND A SOIL BEARING CAPACITY OF 1,000 LBS. PER SQUARE FOOT. BEARING AREAS FOR ANY PRESSURE AND SOIL BEARING CAPACITY MAY BE OBTAINED BY MULTIPLYING THE TABULATED VALUES BY A CORRECTION FACTOR "F".

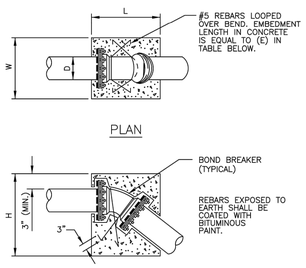
$$F = \frac{\text{ACTUAL SPECIFIED TEST PRESSURE IN HUNDRED OF LBS.}}{\text{ACTUAL SOIL BEARING CAPACITY IN THOUSANDS OF LBS.}}$$

EXAMPLE: TO FIND BEARING AREA FOR 8" – 90° BEND WITH A STATIC INTERNAL PRESSURE OF 150 P.S.I. AND WITH A SOIL BEARING CAPACITY OF 3,000 LBS. PER SQUARE FOOT.

F = 1.5 ÷ 3 = 0.5 TABULATED VALUE = 7.1 SQUARE FOOT.
0.5 x 7.1 = 3.56 SAY 4 SQUARE FEET OF 2 FOOT LONG BY 2 FOOT HIGH.

The Town of ERIE COLORADO

DRAWING TITLE: THRUST BLOCKING CHART
DRAWING NUMBER: W14B
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2015



SIZE OF PIPE (D)	11 1/4 DEG.					22 1/2 DEG.					45 DEG.				
	L"	W"	H"	E"	VOL	L"	W"	H"	E"	VOL	L"	W"	H"	E"	VOL
4"	12	24	24	12	4	12	34	34	12	8	22	37	32	22	15
6"	18	32	27	18	9	15	52	40	15	18	28	64	32	28	33
8"	21	40	33	21	16	22	61	40	22	31	35	64	45	35	58
10"	24	50	36	24	25	30	59	48	30	49	42	72	52	42	90
12"	31	56	36	31	36	36	70	48	36	70	45	80	62	45	129

NOTES:

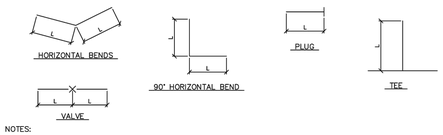
1. THRUST BLOCKING SHALL BE CAST AGAINST UNDISTURBED EARTH. FORMS SHALL BE USED AS REQUIRED TO OBTAIN ADEQUATE BEARING AND TO CONFINE THE CONCRETE. THRUST BLOCKING SHALL BEAR ON THE FITTING OR END CAP ONLY AND SHOULD NOT BE ALLOWED TO SPILL OVER THE JOINT OR AGAINST THE PIPE.
2. VOLUME IS IN CUBIC FEET.
3. ALL CONCRETE TO BE 4000 P.S.I. MIN.
4. BLOCKS TO BE CENTERED HORIZONTALLY ON THE BEND.
5. DESIGN BASED ON A TEST PRESSURE OF 150 P.S.I. AND SAFETY FACTOR (S_f) OF 1.5
6. $V_g = \frac{S_f \text{ PA SIN } \Theta}{W_m}$
7. W_m= 140 # / FT^3
8. THE DESIGN ENGINEER IS RESPONSIBLE FOR VERIFYING THE ACTUAL SITE CONDITIONS WITH RESPECT TO THE ASSUMPTIONS LISTED ABOVE.

The Town of ERIE COLORADO

DRAWING TITLE: UPPER VERTICAL THRUST BLOCK
DRAWING NUMBER: W15
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2015

ROD DIAMETER, GRADE & LENGTH OF RESTRAINED PIPE

PIPE SIZE	4"			6"			8"			12"			16"			20"			24"		
FITTING	D	L	G	D	L	G	D	L	G	D	L	G	D	L	G	D	L	G	D	L	G
90° BEND, TEE, PLUG	3/4"	30'	MS	3/4"	45'	MS	3/4"	60'	MS	3/4"	86'	MS	1"	108'	HS	1 1/4"	132'	HS	–	155'	–
VALVE	–	–	–	–	–	–	–	–	–	–	–	–	1"	108'	HS	1 1/4"	132'	HS	–	155'	–
45° BEND	3/4"	9'	MS	3/4"	13'	MS	3/4"	18'	MS	3/4"	25'	MS	1"	32'	MS	3/4"	39'	HS	–	45'	–
22 1/2° BEND	3/4"	1'	MS	3/4"	4'	MS	3/4"	5'	MS	3/4"	7'	MS	3/4"	8'	MS	3/4"	10'	MS	–	12'	–
11 1/4° BEND	–	–	–	–	–	–	3/4"	1'	MS	3/4"	2'	MS	3/4"	2'	MS	3/4"	3'	MS	–	3'	–

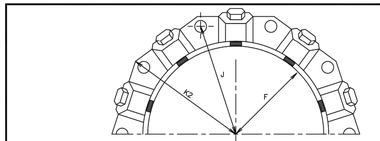


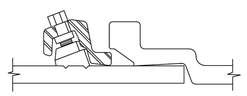
NOTES:

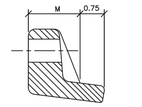
1. LENGTH OF RESTRAINED PIPE MEASURED EACH WAY FROM VALVES AND BENDS.
2. CLAMPS AND RODS NOT ALLOWED FOR 24" & LARGER PIPES.
3. D=DIAMETER, L=LENGTH, G=GRADE, MS=MILD STEEL, HS=HIGH STRENGTH.
4. MIN 4.5' GROUND COVER REQD.
5. BASED ON 150 PSI INTERNAL PRESSURE.
6. MS = MILD STEEL ROD ASTM A 36.
7. HS = HIGH STRENGTH ROD ASTM A 193 GRADE B7.
8. NUTS SHALL BE ASTM A 307 GRADE A OR B HEXAGON HEAVY SERIES. HS NUTS SHALL CONFORM TO MS–22.
9. LENGTH REFERS TO THE AMOUNT OF PIPE WHICH MUST BE RESTRAINED TOGETHER.
10. LENGTH OF RESTRAINED PIPE CHART IS ALSO FOR THE LENGTH OF JOINT RESTRAINT FOR MEGALUGS.
11. TEES & CROSSES MUST BE RESTRAINED IN ALL APPLICABLE DIRECTIONS.
12. 12" AND SMALLER IN LINE VALVES AND TEES SHALL HAVE A MECHANICAL JOINT RESTRAINT DEVICE ON EACH SIDE OF THE FITTING OR VALVE.
13. A SECOND VALVE WILL BE REQD TO BE CLOSED WHEN EXCAVATING NEXT TO A EXIST VALVE.
14. WHEN REDUCERS ARE USED ON VALVE INSTALLATIONS THE LENGTH OF RESTRAINT SHALL BE BASED ON THE SIZE OF THE PIPE NOT THE SIZE OF THE VALVE.
15. ALL REDUCERS/INCREASERS SHALL HAVE MECHANICAL RESTRAINT DEVICES ON EACH SIDE OF FITTING.
16. PIPE JOINT RESTRAINT MAY BE ACCOMPLISHED USING HARNESS RODS, MECHANICAL JOINT RESTRAINT OR RESTRAINED JOINT PIPE AND FITTINGS.
17. AN ANALYSIS OF THE NECESSARY RESTRAINT LENGTH FOR PIPE LARGER THAN 24" SHALL BE SUBMITTED TO THE PUBLIC WORKS DEPT FOR REVIEW AND APPROVAL ON A CASE BY CASE BASIS.

The Town of ERIE COLORADO

DRAWING TITLE: RESTRAINED PIPE LENGTHS
DRAWING NUMBER: W16
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2015







DIMENSIONS

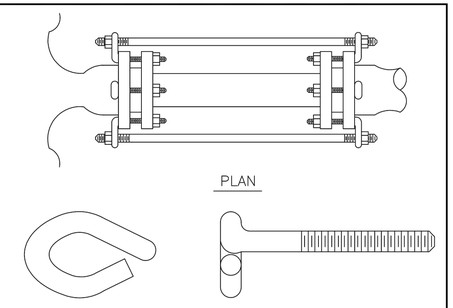
	NOMINAL PIPE SIZE	NO. OF BOLTS	NO. OF WEDGES	K2 INCHES	J INCHES	F INCHES	M INCHES	
PVC	4"	2	2					PVC
	6"	6	3	11.12	9.50	7.00	0.88	
	8"	6	4	13.37	11.75	9.15	1.00	
	10"	8	6	15.62	14.00	11.20	1.00	
	12"	8	8	17.88	16.25	13.30	1.25	
DI	4"	4	2					DI
	6"	6	3	11.12	9.50	7.00	0.88	
	8"	6	4	13.37	11.75	9.15	1.00	
	10"	8	6	15.62	14.00	11.20	1.00	
	12"	8	8	17.88	16.25	13.30	1.25	

NOTES:

1. DIMENSIONS FOR 16" AND 20" D.I. PIPE NOT SHOWN.
2. OTHER MECHANICAL JOINT RESTRAINT DEVICES MUST BE APPROVED BEFORE INSTALLATION.

The Town of ERIE COLORADO

DRAWING TITLE: MECHANICAL JOINT RESTRAINT DETAIL
DRAWING NUMBER: W17
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2009



DIMENSIONS

ALLOWABLE PIPE DIAMETER INCHES	BOLT SIZE	NO . OF BOLTS REQUIRED
4	3/4"	2
6	3/4"	2
8	3/4"	2
10	3/4"	4
12	3/4"	6

NOTES:

1. THE BOLT SHALL BE MANUFACTURED OF "COR–TEN" OR APPROVED EQUAL.
2. THE BOLT MAY BE HEAT TREATED.

The Town of ERIE COLORADO

DRAWING TITLE: JOINT RESTRAINT DETAIL
DRAWING NUMBER: W19
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2009

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DESIGNED BY: BMW
CHECKED BY: MSM
DRAWN BY: BMW

HKS HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
WATER DETAILS

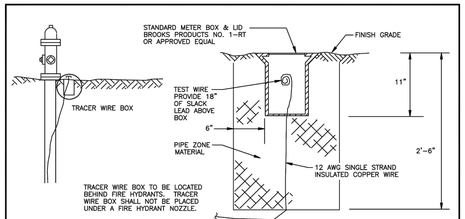
ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

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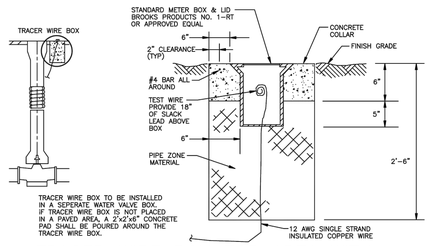
SHEET NO.
28
28 OF 69

FILEPATH: P:\160602\ENGINEERING\UTILITIES\WATER\CD - WATER DETAILS.DWG LAYOUT: LAYOUT2
NO XREFs
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NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH

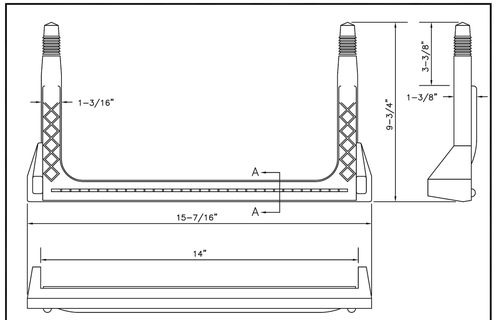


TRACER WIRE BOX AT FIRE HYDRANT



TRACER WIRE BOX FOR AREA WITH NO FIRE HYDRANT

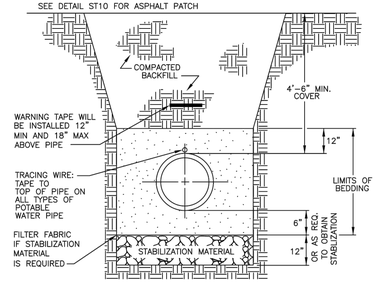
The Town of ERIE COLORADO	DRAWING TITLE: TRACER WIRE DRAWING NUMBER: W32B (2 OF 2) DRAWN BY: C. GERATY APPROVED BY: G. BEHLEN REV. DATE: 01/2016



COPOLYMER POLYPROPYLENE PLASTIC

SECTION A-A

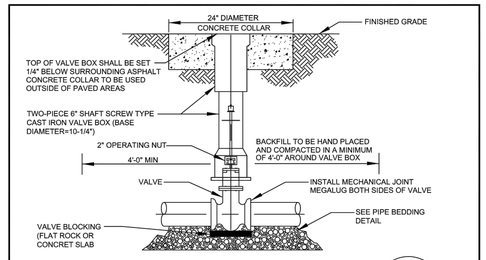
The Town of ERIE COLORADO	DRAWING TITLE: PLASTIC STEP DRAWING NUMBER: W34 DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2015



NOTES:

1. COMPACTION SHALL BE AS FOLLOWS: PIPE ZONE BEDDING 6" UNDER AND 12" OVER PIPE WILL REQUIRE 90% S.P.D. TRENCH ZONE ABOVE BEDDING MATERIALS, FULL TRENCH SECTION IN ROADWAY OR STREET R.O.W. LIMITS WILL REQUIRE 95% S.P.D. TRENCH ZONE ABOVE BEDDING MATERIALS, OUTSIDE OF STREET R.O.W. WILL REQUIRE 90% S.P.D.
2. 12 AWG. SINGLE STRAND INSULATED COPPER WIRE SHALL BE INSTALLED AS TRACING WIRE ABOVE ALL POTABLE WATER PIPES. THE WIRE SHALL BE CONNECTED AND COME TO THE SURFACE BEHIND THE FIRE HYDRANTS IN A TESTBOX.
3. FILTER FABRIC IS REQUIRED IF STABILIZATION MATERIAL IS USED. THE FABRIC SHALL BE INSTALLED AS SHOWN IN THE DETAIL.
4. TRENCH TO BE BRACED OR SHEETED AS NECESSARY FOR THE SAFETY OF THE WORKMEN AND PROTECTION OF OTHER UTILITIES IN ACCORDANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL SAFETY REGULATIONS.
5. PIPE SHALL BE BEDDED FROM 6" BELOW THE BOTTOM OF THE PIPE TO 12" ABOVE THE TOP OF THE PIPE.
6. TRENCH WIDTH SHALL NOT BE MORE THAN 24" NOR LESS THAN 12" WIDER THAN THE LARGEST OUTSIDE DIAMETER OF THE PIPE.

The Town of ERIE COLORADO	DRAWING TITLE: WATER TRENCH DETAIL DRAWING NUMBER: W35 DRAWN BY: J. ASCUNCE APPROVED BY: R. PENNINGTON REV. DATE: 09/2017



NOTES:
1. POTABLE & FIRE VALVE BOX LID RESTS INSIDE THE UPPER VALVE BOX SECTION.
2. NON-POTABLE VALVE BOX LID SLIDES OVER THE TOP OF THE UPPER VALVE BOX SECTION.
3. NON-POTABLE, WATER OR FIRE CAST IN TOP OF APPROPRIATE VALVE BOX COVER.
4. VALVE BOX SHALL NOT BE SUPPORTED BY WATER LINE.
5. VALVE BOX TO BE PLUMB AND CENTERED OVER NUT.
6. UTILIZING A VALVE BOX ALIGNMENT DEVICE IS OPTIONAL.
7. IF 2" OPERATING NUT IS MORE THAN 6' BELOW FINISHED GRADE, A VAULT NUT EXTENDER SHALL BE INSTALLED TO PUT THE VALVE NUT AT AN ELEVATION OF 4' BELOW FINISHED GRADE.

The Town of ERIE COLORADO	DRAWING TITLE: STANDARD VALVE AND BOX DRAWING NUMBER: W38 DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 1/2015

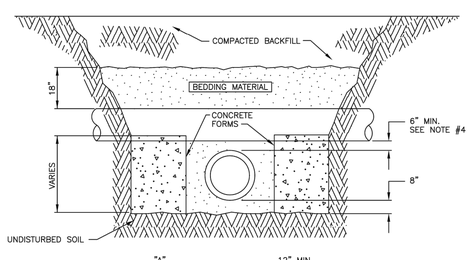


TABLE	
"A"	"B"
PIPES ≤ 12" =12" PIPES > 12" =18"	PIPE O.D. + 6" ON BOTH SIDES.

NOTES:

1. PIPE SECTIONS SHALL BE CENTERED OVER THE PIPE BEING CROSSED.
2. SIZES ABOVE 24" WILL BE DETERMINED BY THE ENGINEER.
3. A BOND BREAKER SHOULD BE PLACED BETWEEN THE CONCRETE AND THE PIPE BEING SUPPORTED.
4. IF THE CROSSING INVOLVES A WATER LINE AND THERE IS 6" OF CLEARANCE, OR THERE IS LESS THAN 4' OF COVER OVER THE UPPER PIPE, A FIBER BOARD INSULATION (DOW 2" EXTRUDED POLYSTYRENE IN ACCORDANCE WITH ASTM-C578 OR APPROVED EQUAL) MUST BE INSTALLED BETWEEN THE PIPES. THE BOARD SHOULD EXTEND 2' BEYOND THE OUTSIDE EDGES OF BOTH PIPES.

The Town of ERIE COLORADO	DRAWING TITLE: PIPE CROSSING SUPPORT PAD DRAWING NUMBER: W36 DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2015

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CHECKED BY: MSM
DRAWN BY: BMW

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
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OUTLOOK AT NINE MILE
WATER DETAILS

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

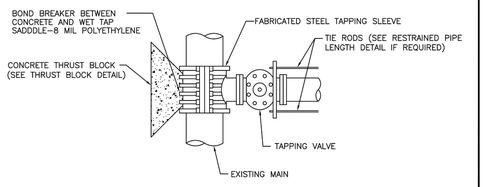
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

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29
29 OF 69

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NOTES:

1. FABRICATED STEEL TAPPING SLEEVE SHALL BE:

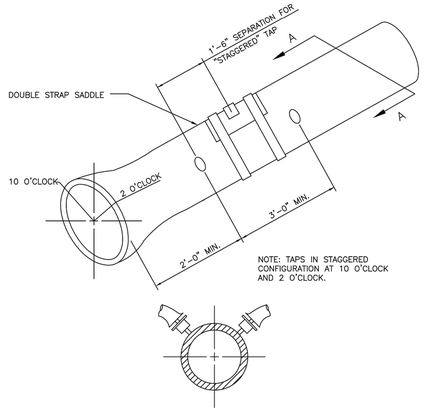
   ROMAC FTS419 OR APPROVED EQUAL TO BE USED FOR PVC UP TO 75% OF EXISTING MAIN

   ROMAC FTS420 OR APPROVED EQUAL TO BE USED FOR DIP UP TO 75% OF EXISTING MAIN

   ROMAC FTS425 OR APPROVED EQUAL TO BE USED ON ALL AC PIPE AND ANYTIME BRANCH LINE IS GREATER THAN 75% OF EXISTING MAIN

The Town of ERIE COLORADO

DRAWING TITLE: TAPPING TEE AND VALVE
DRAWING NUMBER: W21
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2015



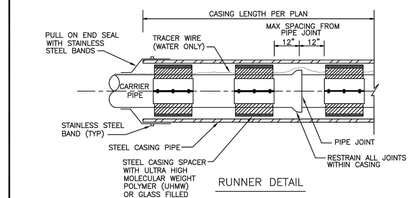
NOTE: TAPS IN STAGGERED CONFIGURATION AT 10 O'CLOCK AND 2 O'CLOCK.

SECTION A–A

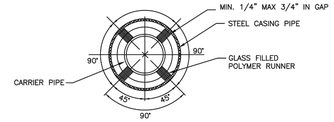
NOTE:
SERVICE TAPS – WATER SERVICE TAPS SHALL BE MADE AT EITHER THE 2 O'CLOCK OR THE 10 O'CLOCK POSITION ON THE CIRCUMFERENCE OF A WATER MAIN. THE MINIMUM DISTANCE BETWEEN A TAP MADE AT THE 2 O'CLOCK POSITION AND THE ONE MADE AT THE 10 O'CLOCK POSITION SHALL BE 18–INCHES MEASURED ALONG THE PIPE. THE MINIMUM DISTANCE BETWEEN SUCCESSIVE TAPS MADE EITHER AT THE 2 O'CLOCK OR THE 10 O'CLOCK POSITION SHALL BE 3–FEET. THE MINIMUM DISTANCE FROM EITHER THE BELL OR THE SPIGOT END OF A PIPE TO A TAP SHALL BE 2–FEET. A MAXIMUM OF 4 WATER SERVICE TAPS SHALL BE ALLOWED PER LENGTH OF PIPE. DOUBLE STRAP SADDLE (ROMAC 202B OR APPROVED EQUAL) SHALL BE USED FOR ALL SERVICE TAPS.

The Town of ERIE COLORADO

DRAWING TITLE: DOMESTIC WATER TAPPING DETAIL
DRAWING NUMBER: W22
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2010



RUNNER DETAIL



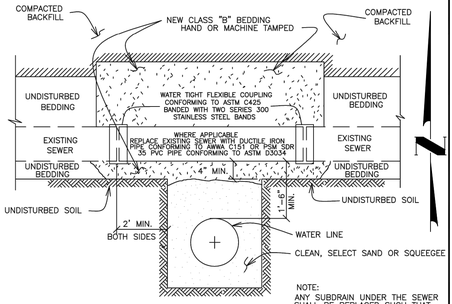
PIPE CASING DETAIL

1. EACH SECTION OF PIPE WITHIN CASING SHALL HAVE A MINIMUM OF (3) CASING SPACERS/SKIDS. THE MIDDLE SPACER/SKID SHALL BE CENTERED BETWEEN PIPE JOINTS
2. WATER & SANITARY SEWER PIPE JOINTS SHALL BE RESTRAINED
3. EXTEND TRACING WIRE THROUGH CASING (WATER APPLICATIONS ONLY)
4. MINIMUM RUNNER SIZE & DISTANCE BETWEEN SPACERS SHALL BE IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS

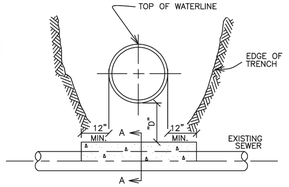
CARRIER PIPE NOMINAL DIA.	CASING PIPE MIN. WALL THICK
4"	0.25"
6"	0.3125"
8"	0.3125"
12"	0.375"
16"	0.500"
20"	0.500"

The Town of ERIE COLORADO

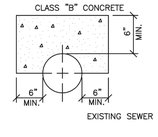
DRAWING TITLE: CASING PIPE DETAIL
DRAWING NUMBER: W24
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2016



NOTE:
ANY SUBDRAIN UNDER THE SEWER SHALL BE REPLACED SUCH THAT NO FLOW SHALL ENTER THE WATER LINE TRENCH.



SEWER CROSSING UNDER WITH "D" LESS THAN 2'

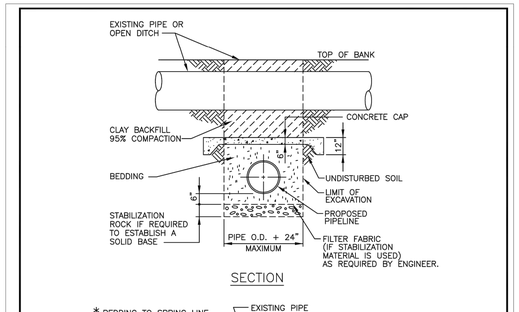


SECTION A–A

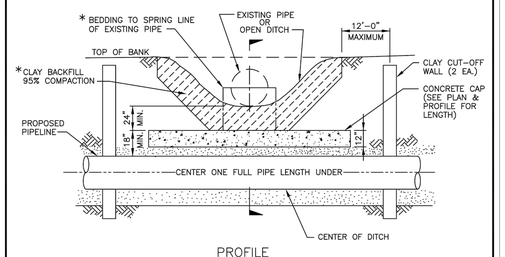
NOTE:
ALL EXISTING SEWER DAMAGED DURING INSTALLATION MUST BE REPLACED WITH PVC PIPE.

The Town of ERIE COLORADO

DRAWING TITLE: CROSSING STORM AND SANITARY SEWERS
DRAWING NUMBER: W25
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2009



SECTION

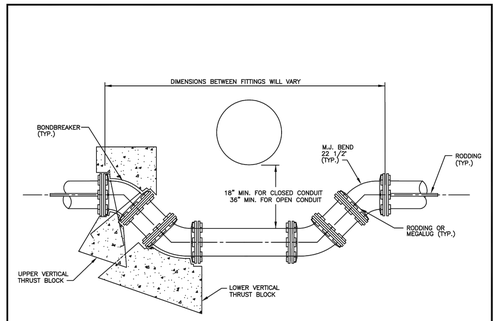


PROFILE

* USE CLAY BACKFILL ONLY WHEN CROSSING OPEN DITCH. USE BEDDING MATERIAL TO SPRING LINE OF EXISTING PIPE WHEN CROSSING PIPE.

The Town of ERIE COLORADO

DRAWING TITLE: DITCH OR PIPE CROSSING
DRAWING NUMBER: W26
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2009



NOTES:

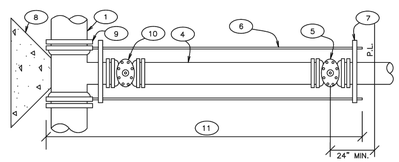
1. LOWERING OF THIS TYPE WILL BE RESTRAINED BY MEANS OF THRUST BLOCKING AND MEGALUGS OR RODDING.
2. FOR SIZING INFORMATION OF THRUST BLOCKS REFER TO THRUST BLOCK DETAILS.
3. WHEN RESTRAINING PIPE BY MEANS OF RODDING JOINTS, 3/4 " TIE RODS, NUTS, AND WASHERS WILL BE USED AND ARE TO BE MADE OF "COR-TEN" STEEL AS PER A.S.T.M. A242.
4. FOR FURTHER INFORMATION ON RODDING OF JOINTS REFER TO TABLE 1.
5. ALL METALLIC PIPE, FITTINGS, AND APPURTENANCES WILL BE WRAPPED IN POLYETHYLENE.
6. REQUIREMENTS FOR LARGER THAN 12" DIAMETER PIPE WILL BE DETERMINED ON A CASE BY CASE BASIS.
7. LENGTH OF EXTENSION OF PIPE AND RESTRAINED JOINTS SHALL BE IN ACCORDANCE WITH THE ENGINEERING STANDARDS.
8. CATHODIC PROTECTION SHALL BE AS REQUIRED IN ACCORDANCE WITH THE ENGINEERING STANDARDS.
9. A BORED CROSSING MAY BE REQUIRED BY THE ENGINEER.

TABLE 1

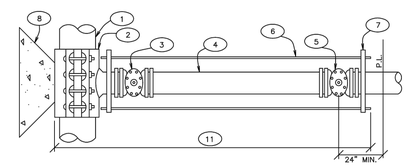
Pipe Size	Test Pressure	Minimum number of Tie Rods
10" and less	150	2
	200	2
12"	150	2
	200	4

The Town of ERIE COLORADO

DRAWING TITLE: 12" OR SMALLER WATERLINE, LOWERING DTL. FOR UTILITY CROSSINGS
DRAWING NUMBER: W27
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2011



FIRELINE OR DOMESTIC CONNECTION WITH MAIN EXTENSION

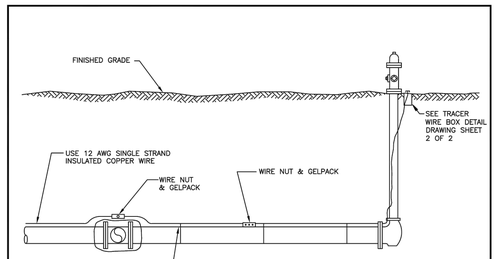


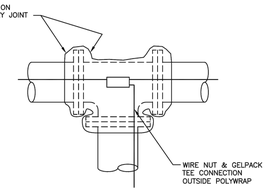
FIRELINE OR DOMESTIC CONNECTION

1. EXISTING MAIN
2. TAPPING SLEEVE
3. TAPPING VALVE
4. DOUBLE SPIGOT PIPE
5. PROPERTY LINE VALVE
6. TIE RODS (MEGALUGS MAY BE USED IN PLACE OF RODDING.)
7. PIPE CLAMP
8. CONCRETE KICKBLOCK
9. M.J. ANCHORING TEE (SWIVEL TEE WHERE APPLICABLE)
10. M.J. VALVE
11. POLYETHYLENE WRAPPED

The Town of ERIE COLORADO

DRAWING TITLE: 2" AND LARGER DOMESTIC AND FIRELINE CONNECTIONS
DRAWING NUMBER: W31
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2009





The Town of ERIE COLORADO

DRAWING TITLE: TRACER WIRE
DRAWING NUMBER: W32A (1 OF 2)
DRAWN BY: J. ASCUNCE APPROVED BY: R. PENNINGTON REV. DATE: 09/2017

811 Know what's below. Call before you dig.
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DESIGNED BY: BMW
CHECKED BY: MSM
DRAWN BY: BMW

HKS HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
WATER DETAILS

ISSUE DATE: 11-08-2019 PROJECT #: 160602

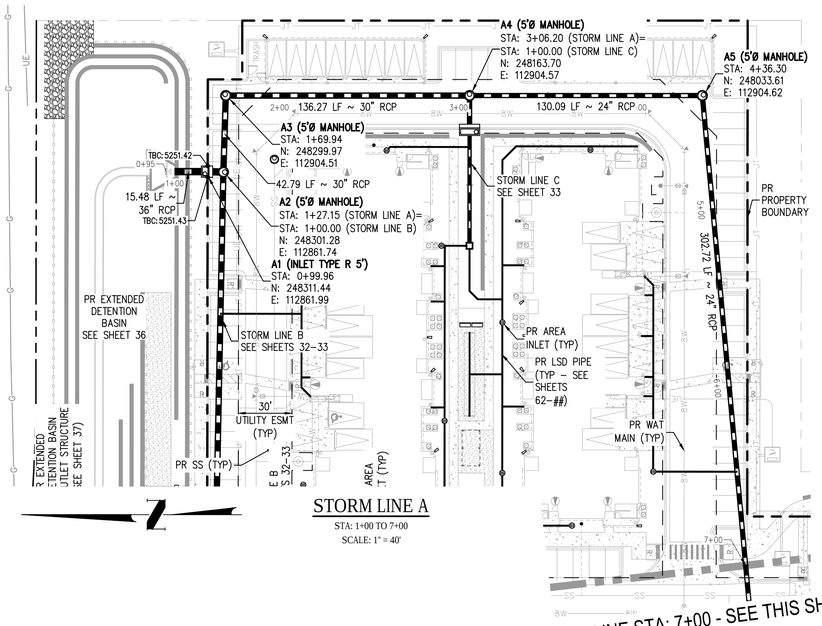
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

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30
30 OF 69

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NO XREFS
PLOTTED: WED 01/29/20 5:42:46P BY: RACHEL PATTON

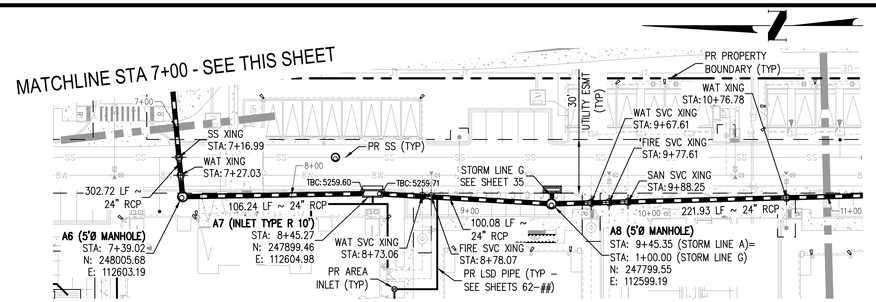
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STORM LINE A

STA: 1+00 TO 7+00

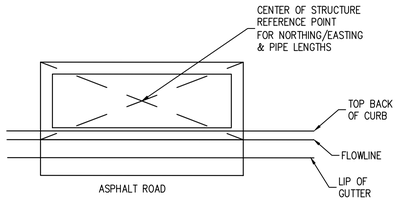
SCALE: 1" = 40'



STORM LINE A,

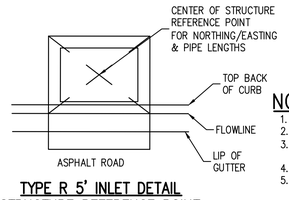
STA: 7+00 TO 11+00

SCALE: 1" = 40'



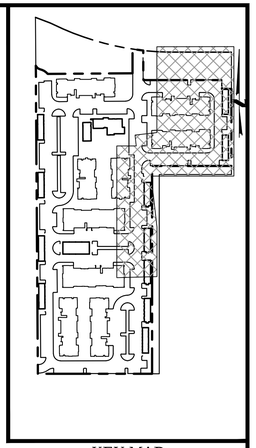
TYPE R 10' INLET DETAIL
STRUCTURE REFERENCE POINT

SCALE: NTS



TYPE R 5' INLET DETAIL
STRUCTURE REFERENCE POINT

SCALE: NTS

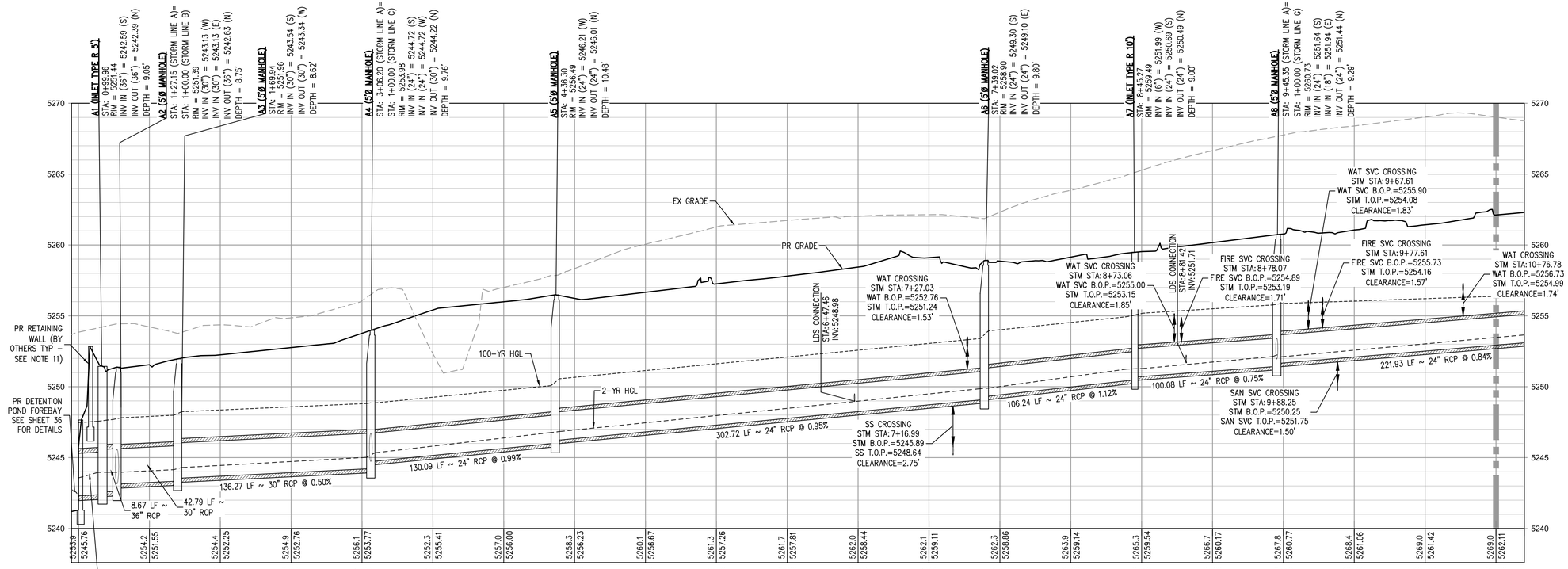


KEY MAP

SCALE: 1" = 250'

NOTES:

1. PIPE LENGTHS ARE GIVEN FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE.
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4. STORM SEWER PIPE SHALL BE IN ACCORDANCE WITH TOWN OF ERIE STANDARDS AND SPECIFICATIONS.
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8. STORM SEWER MANHOLE RIMS SHALL BE ROTATED AS SHOWN ON PLAN.
9. INLETS WITHIN SIDEWALKS HAVE BEEN MARKED MODIFIED AND SHALL HAVE THE TOP OF THEIR BOX MODIFIED TO MATCH THE SIDEWALK GRADES NOTED ON THE GRADING PLAN.
10. ALL STORM SEWER SHALL BE PRIVATE UNLESS OTHERWISE NOTED.
11. RETAINING WALLS (BY OTHERS) ARE SHOWN IN AN APPROXIMATE WAY ONLY.



STORM LINE A PROFILE

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

MATCHLINE STA 11+00 - SEE SHEET 32

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

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

40 0 40 80

SCALE: 1" = 40'

DESIGNED BY: JWM
CHECKED BY: MSM
DRAWN BY: JWM

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
STORM SEWER PLAN & PROFILE LINE A

ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.

31

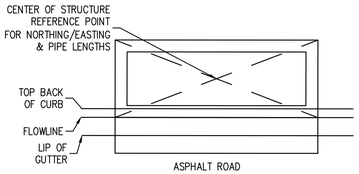
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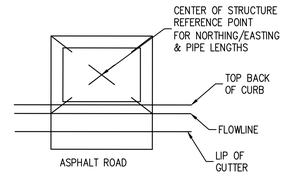
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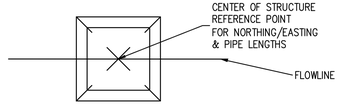
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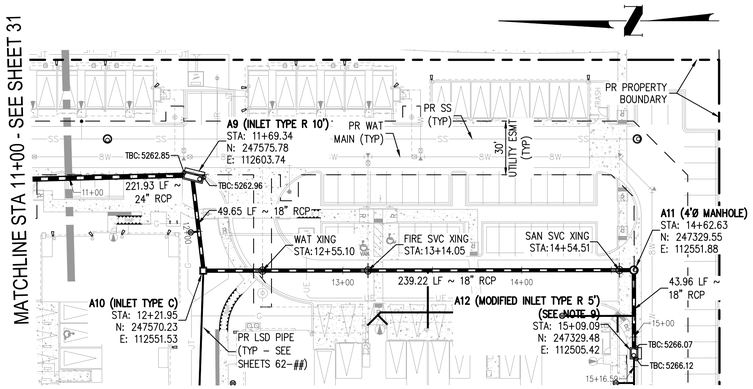
TYPE R 10' INLET DETAIL
STRUCTURE REFERENCE POINT
SCALE: NTS



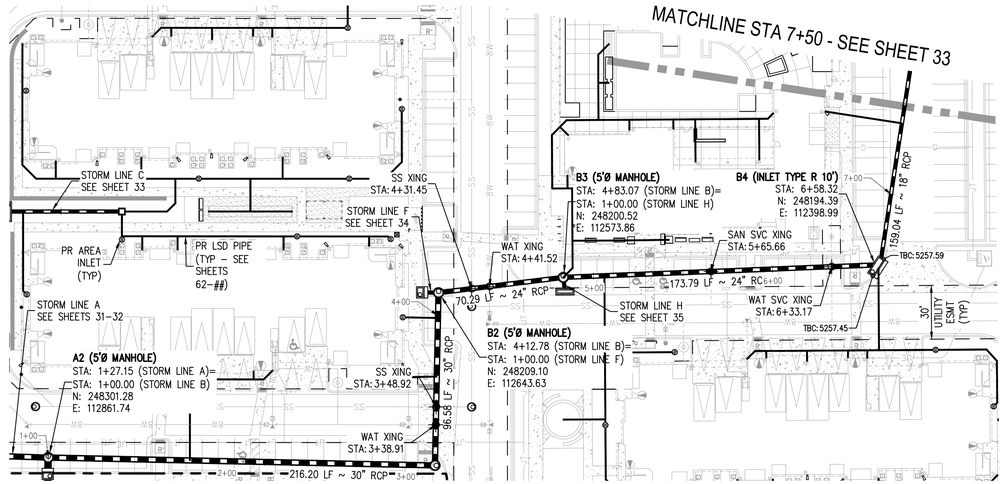
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STRUCTURE REFERENCE POINT
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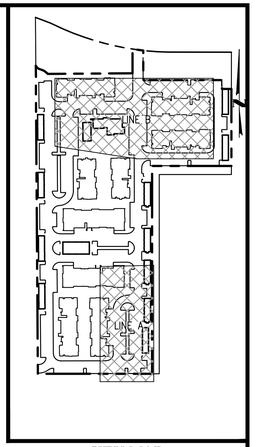
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STRUCTURE REFERENCE POINT
SCALE: NTS



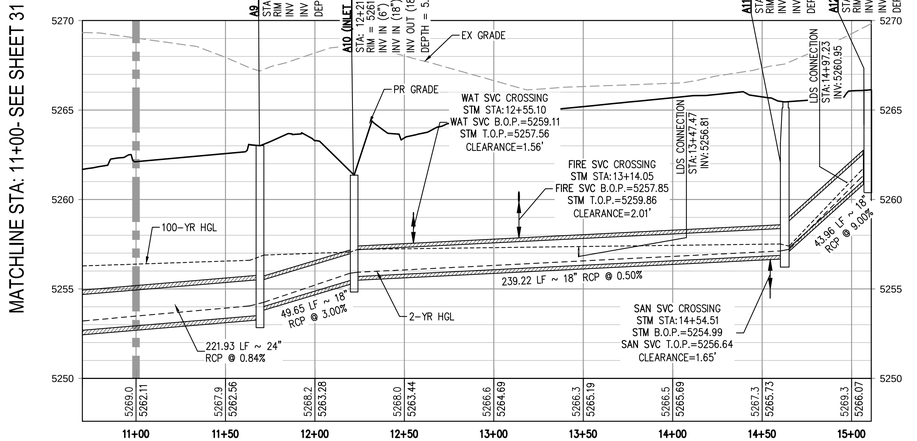
STORM LINE A PLAN
STA: 11+00 TO END
SCALE: 1" = 40'



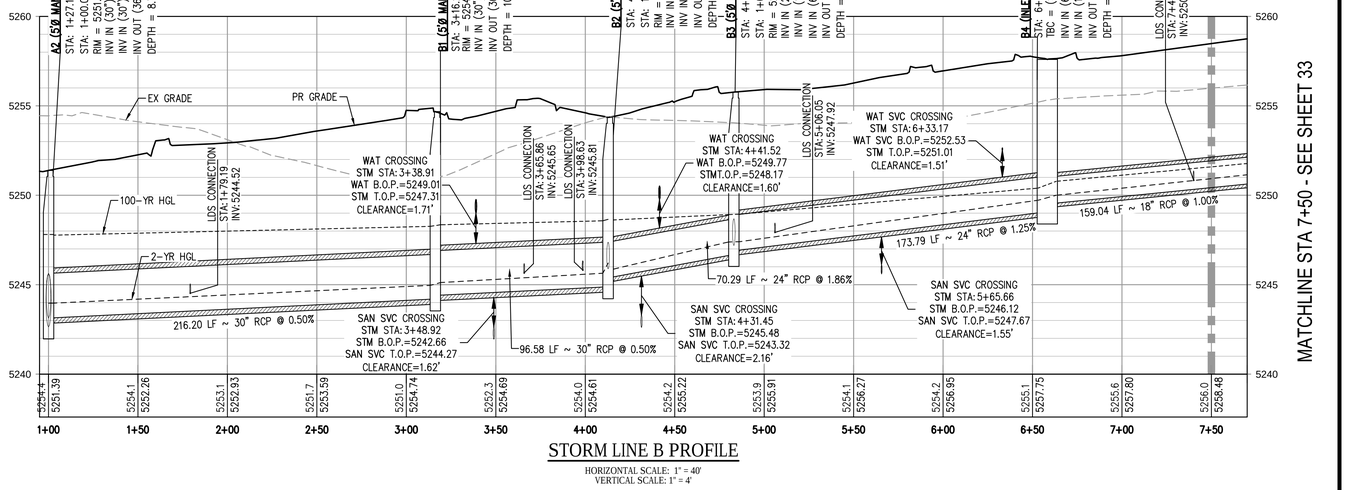
STORM LINE B PLAN
STA: 1+00 TO 7+50
SCALE: 1" = 40'



KEY MAP
SCALE: 1" = 250'



STORM LINE A PROFILE
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



STORM LINE B PROFILE
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

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40 0 40 80
SCALE: 1" = 40'

DESIGNED BY: RJH
CHECKED BY: MSM
DRAWN BY: RJH

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OUTLOOK AT NINE MILE
STORM SEWER PLAN & PROFILE LINES A & B

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

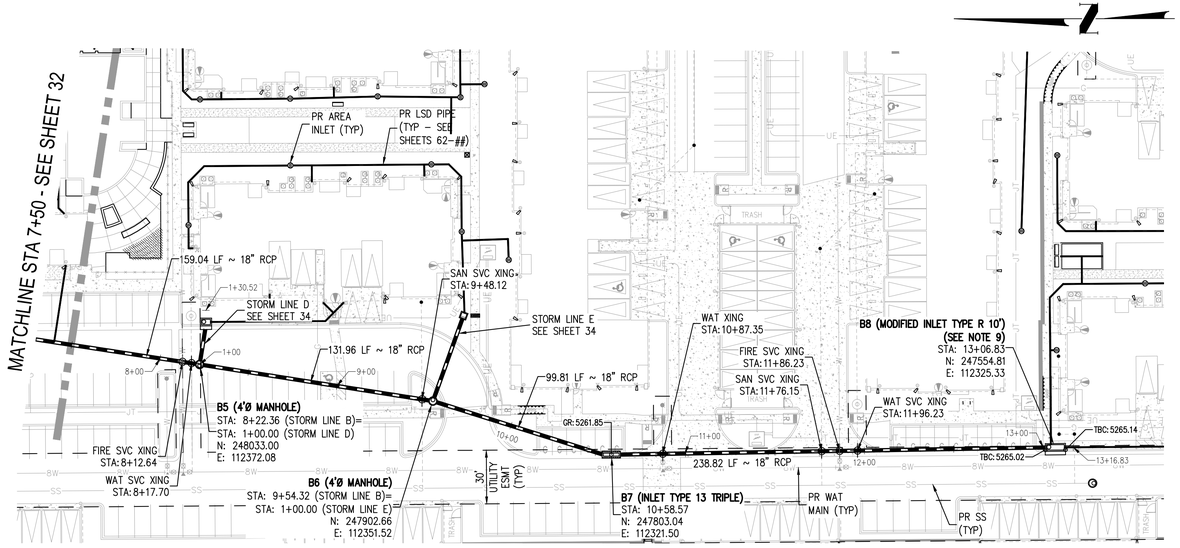
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
32

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PLOTTED: WED 01/29/20 5:43:27P BY: RACHEL PATTON

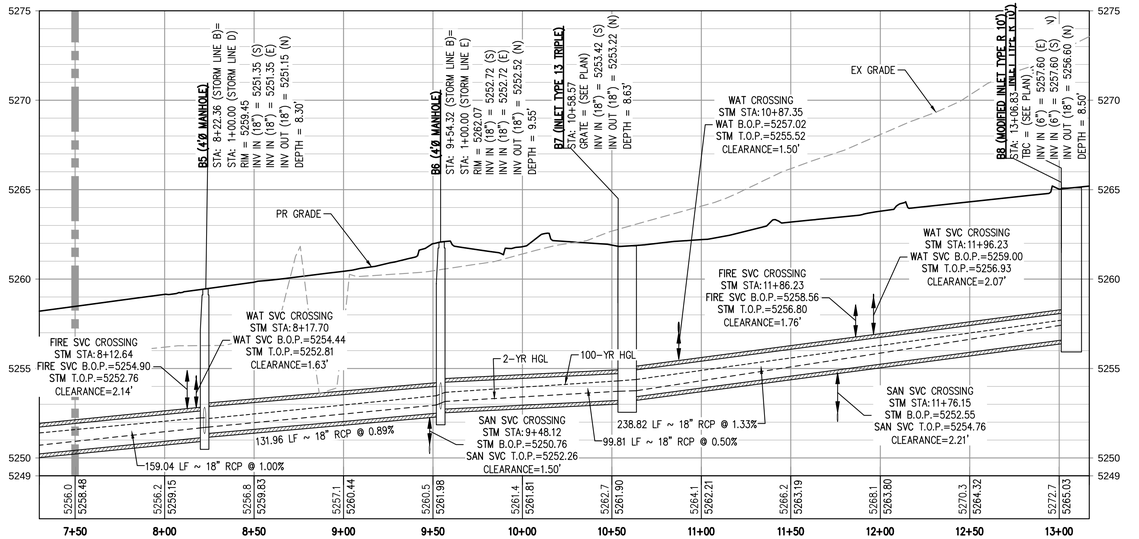
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STORM LINE B PLAN

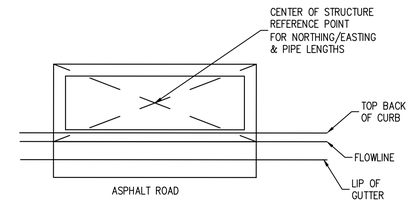
STA:7+50 TO END

SCALE: 1" = 40'



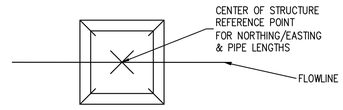
STORM LINE B PROFILE

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



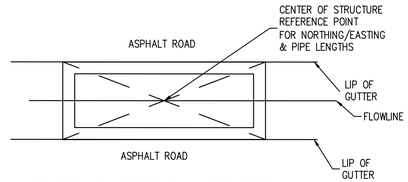
TYPE R 10' INLET DETAIL STRUCTURE REFERENCE POINT

SCALE: NTS



TYPE C INLET DETAIL STRUCTURE REFERENCE POINT

SCALE: NTS

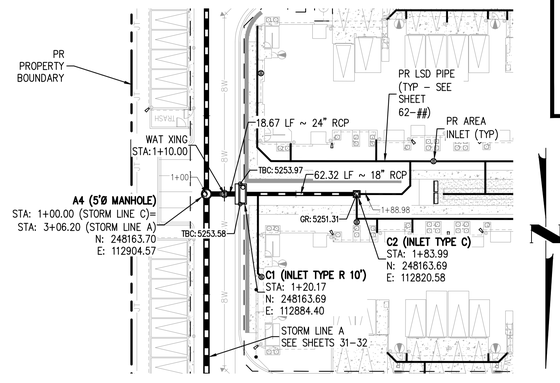


TYPE 13 TRIPLE INLET DETAIL STRUCTURE REFERENCE POINT

SCALE: NTS

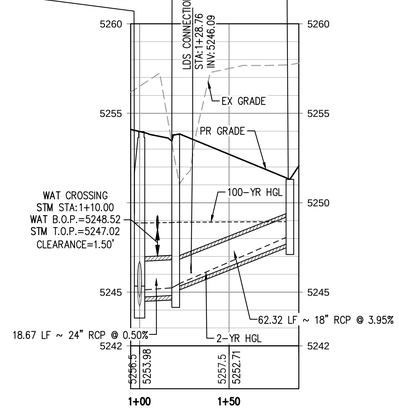
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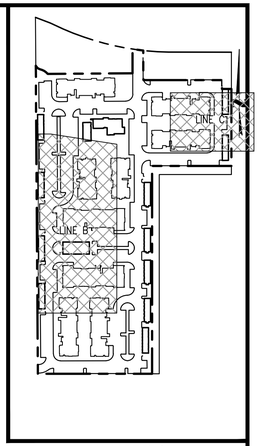
STORM LINE C PLAN

SCALE: 1" = 40'



STORM LINE C PROFILE

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



KEY MAP

SCALE: 1" = 250'

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40 0 40 80
SCALE: 1" = 40'

DESIGNED BY: RJH
CHECKED BY: MSM
DRAWN BY: RJH

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OUTLOOK AT NINE MILE
STORM SEWER PLAN & PROFILE LINES B & C

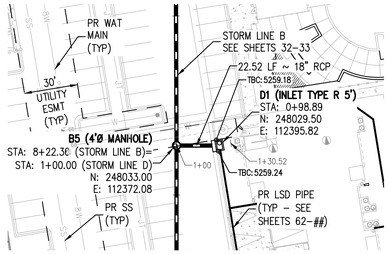
ISSUE DATE: 11-08-2019	PROJECT #: 160602
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01-27-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

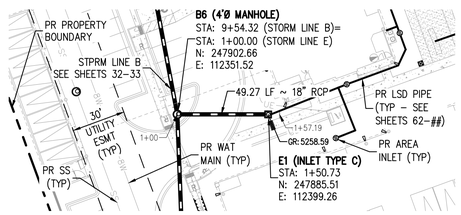
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33
33 OF 69

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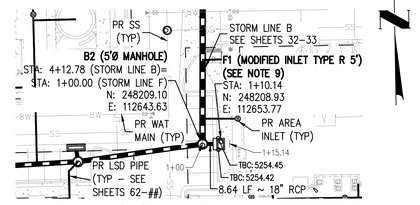
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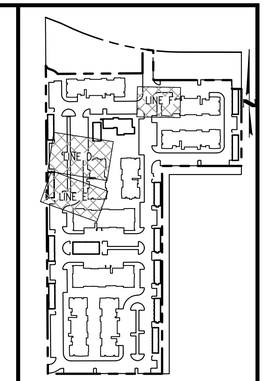
STORM LINE D PLAN
SCALE: 1" = 40'



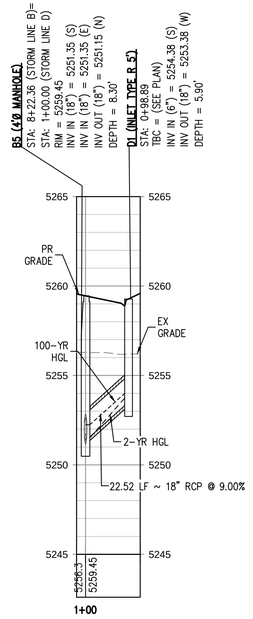
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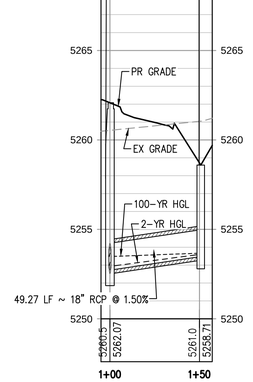
STORM LINE F PLAN
SCALE: 1" = 40'



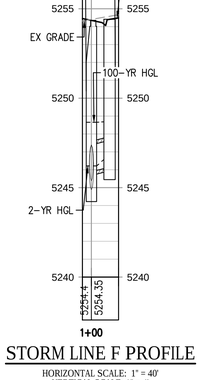
KEY MAP
SCALE: 1" = 250'



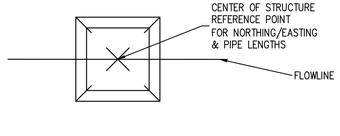
STORM LINE D PROFILE
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



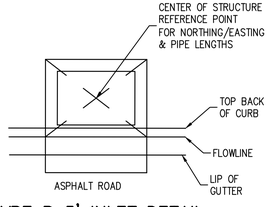
STORM LINE E PROFILE
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



STORM LINE F PROFILE
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



TYPE C INLET DETAIL
STRUCTURE REFERENCE POINT
SCALE: NTS



TYPE R 5' INLET DETAIL
STRUCTURE REFERENCE POINT
SCALE: NTS

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SCALE: 1" = 40'

DESIGNED BY: RJH
CHECKED BY: MSM
DRAWN BY: RJH

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Denver, Colorado 80203
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OUTLOOK AT NINE MILE
STORM SEWER PLAN & PROFILE LINES D, E & F

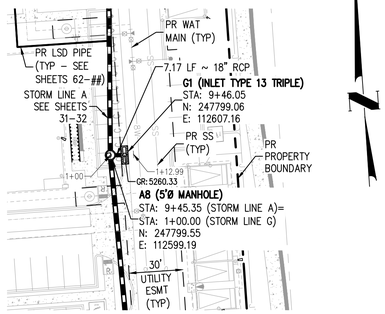
ISSUE DATE: 11-08-2019	PROJECT #: 160602
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01-27-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
34
34 OF 69

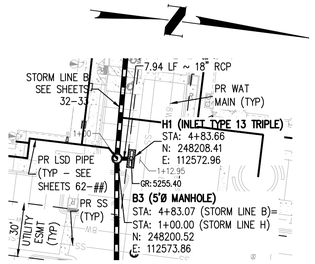
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PLOTTED: WED 01/29/20 5:43:57P BY: RACHEL PATTON

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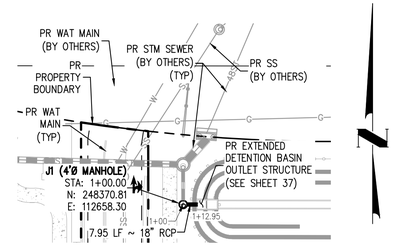
STORM LINE G PLAN

SCALE: 1" = 40'



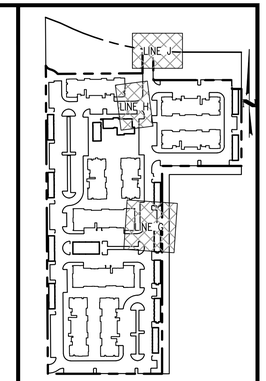
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SCALE: 1" = 40'



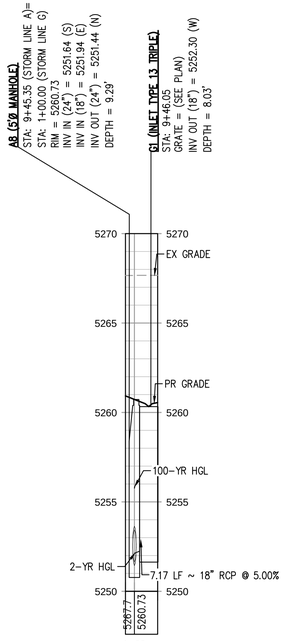
STORM LINE J PLAN

SCALE: 1" = 40'



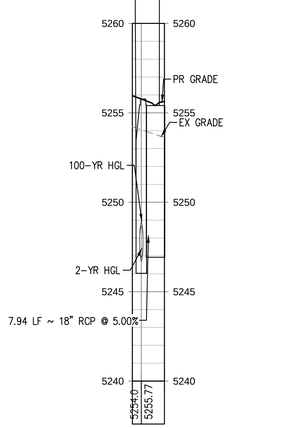
KEY MAP

SCALE: 1" = 250'



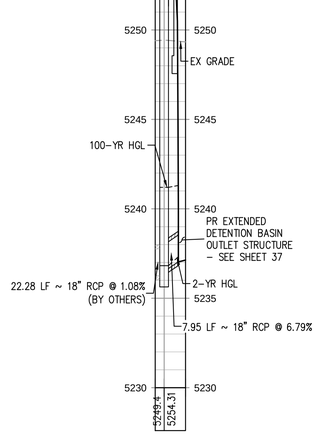
STORM LINE G PROFILE

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



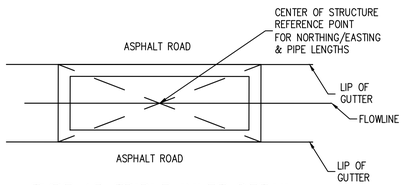
STORM LINE H PROFILE

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



STORM LINE J PROFILE

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



TYPE 13 TRIPLE INLET DETAIL STRUCTURE REFERENCE POINT

SCALE: NTS

NOTES:

1. PIPE LENGTHS ARE GIVEN FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE.
2. ALL COORDINATES ARE AT THE CENTER OF THE STRUCTURE UNLESS OTHERWISE INDICATED.
3. ALL WORK SHALL BE IN ACCORDANCE WITH TOWN OF ERIE STANDARDS AND SPECIFICATIONS. STANDARDS ARE AVAILABLE AT THE TOWN'S WEBSITE. THE CONTRACTOR MUST HAVE A COPY ON SITE.
4. STORM SEWER PIPE SHALL BE IN ACCORDANCE WITH TOWN OF ERIE STANDARDS AND SPECIFICATIONS.
5. CONTRACTOR SHALL MODIFY ALL INLETS AS NEEDED IN ORDER TO ENSURE ALL STORM PIPES CONNECT PROPERLY TO THE INLET. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS (MODIFIED INLETS AND OUTLET STRUCTURE) FOR APPROVAL BY OWNER, ENGINEER, AND TOWN OF ERIE PRIOR TO INSTALLATION.
6. THE LOCATION 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.
7. ALL STORM SEWER INLETS SHALL BE CONSTRUCTED IN ACCORDANCE WITH TOWN OF ERIE STANDARDS AND SPECIFICATIONS.
8. STORM SEWER MANHOLE RIMS SHALL BE ROTATED AS SHOWN ON PLAN.
9. INLETS WITHIN SIDEWALKS HAVE BEEN MARKED MODIFIED AND SHALL HAVE THE TOP OF THEIR BOX MODIFIED TO MATCH THE SIDEWALK GRADES NOTED ON THE GRADING PLAN.
10. ALL STORM SEWER SHALL BE PRIVATE UNLESS OTHERWISE NOTED.
11. RETAINING WALLS (BY OTHERS) ARE SHOWN IN AN APPROXIMATE WAY ONLY.

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

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

40 0 40 80
SCALE: 1" = 40'

DESIGNED BY: RJH
CHECKED BY: MSM
DRAWN BY: RJH

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
STORM SEWER PLAN & PROFILE LINES G, H & J

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

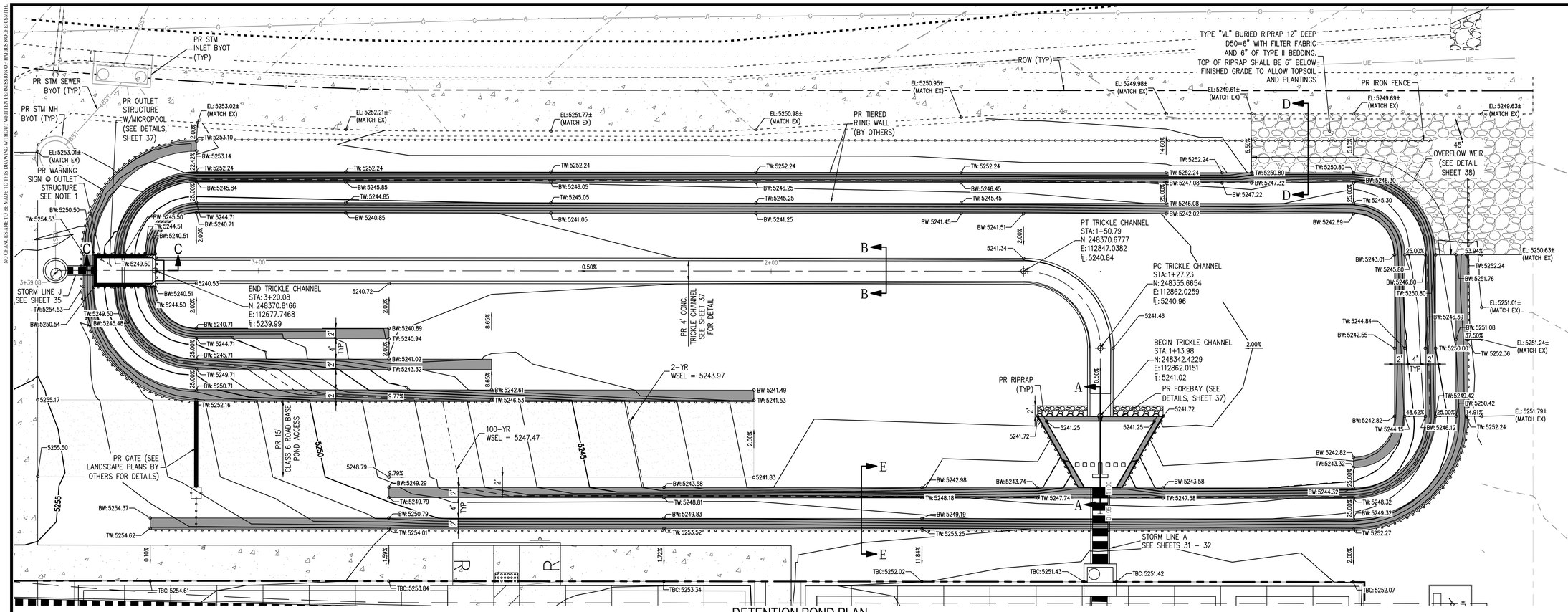
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SHEET NO. 35

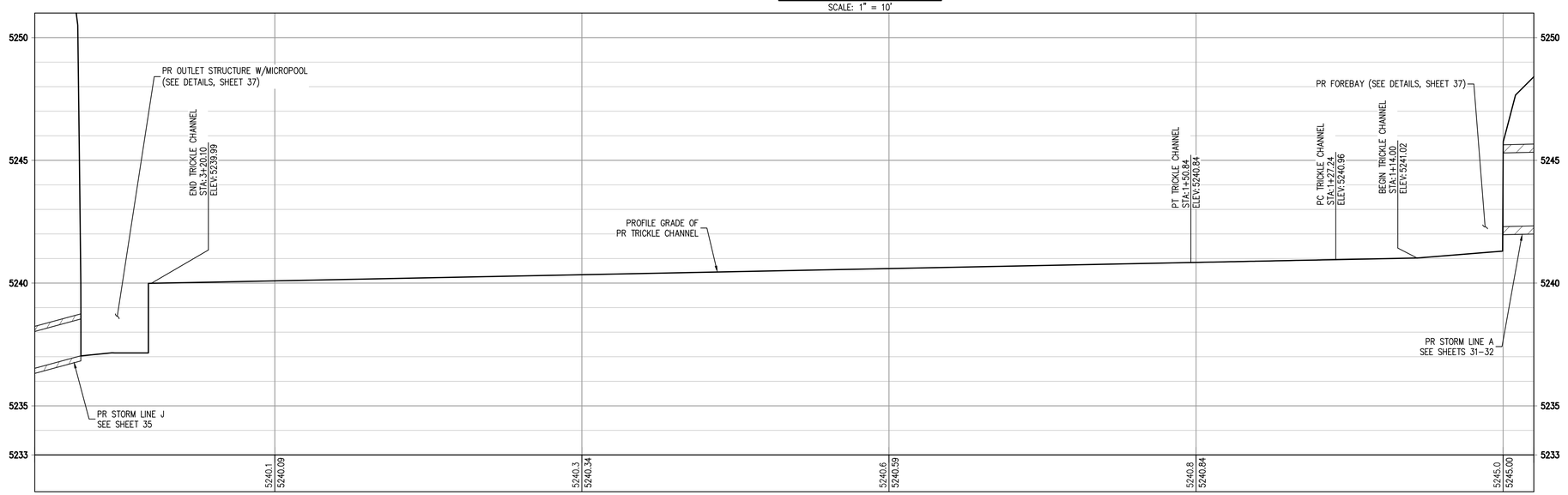
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PLOTTED: WED 01/29/20 5:44:05P BY: RACHEL PATTON

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DETENTION POND PLAN
SCALE: 1" = 10'



TRICKLE CHANNEL PROFILE
HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1" = 2'

OUTLET STRUCTURE NOTES:

1. SIGN SHALL STATE " WARNING UNAUTHORIZED MODIFICATION OF THIS OUTLET IS A CODE VIOLATION AND SUBJECT TO THE PENALTIES AS PROVIDED BY LAW". REFER TO CITY AND STATE REGULATION REGARDING SPECIFICS OF THIS SIGN.
2. SEE SHEETS 37 FOR SECTIONS A-A, B-B, C-C, AND FOR ALL SPECIFIC DETAILS FOR THIS DETENTION POND.

811 Know what's below. Call before you dig.
CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

10 0 10 20
SCALE: 1" = 10'

DESIGNED BY: KDB
CHECKED BY: MSM
DRAWN BY: KDB

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
DETENTION POND PLAN

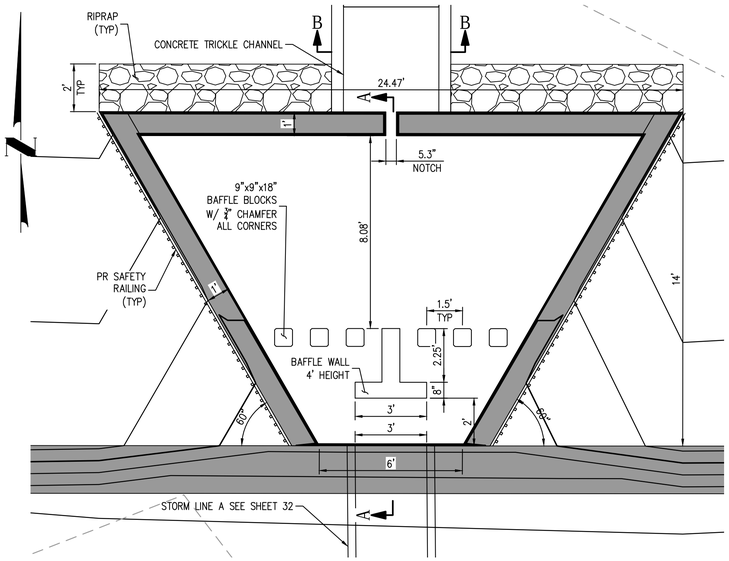
ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

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SHEET NO.
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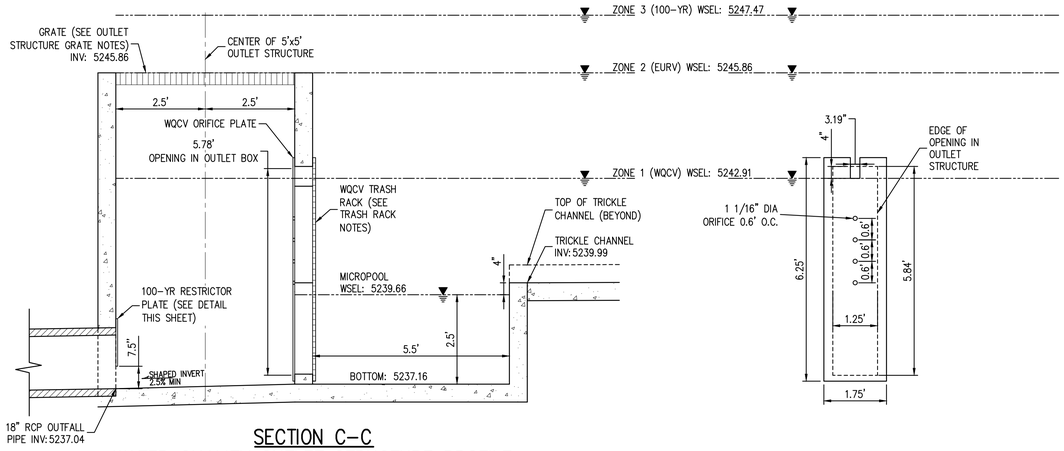
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MODIFIED IMPACT STILLING BASIN PLAN

SEE NOTE #7 THIS SHEET
SCALE: 1" = 3'

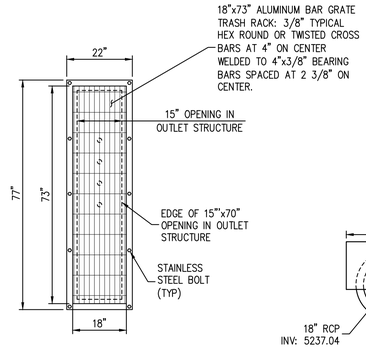


SECTION C-C
WATER QUALITY OUTLET STRUCTURE PROFILE

SCALE: N.T.S.

WQCV ORIFICE PLATE DETAIL

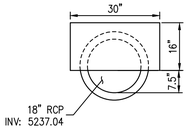
N.T.S.



WQCV TRASH RACK DETAIL

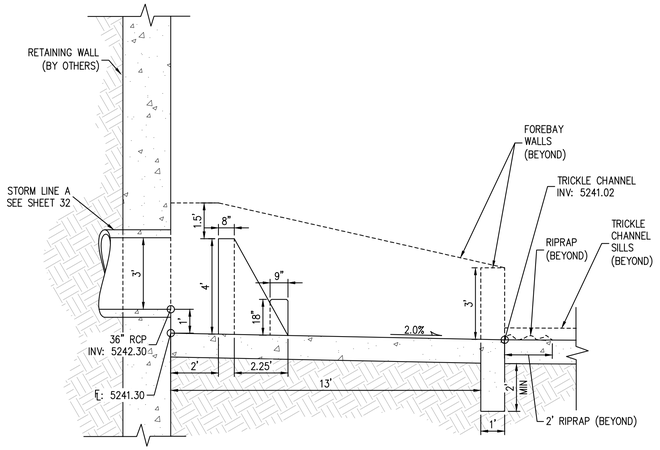
N.T.S.

REFER TO UDFCD ORIFICE PLATE AND TRASH RACK NOTES (VOL 3, FIG OS-4) FOR ADDITIONAL INFORMATION



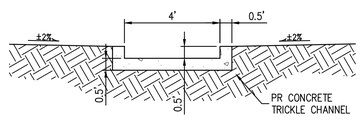
100-YR RESTRICTOR PLATE DETAIL

N.T.S.



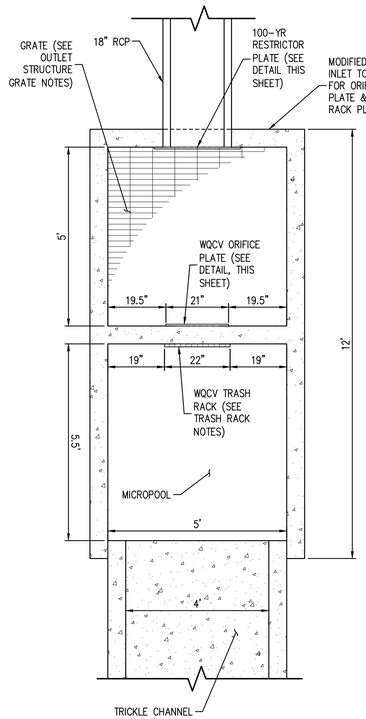
SECTION A-A
MODIFIED IMPACT STILLING BASIN PROFILE DETAIL

SEE NOTE #7 THIS SHEET
SCALE: 1" = 3'



SECTION B-B
TRICKLE CHANNEL DETAIL

SCALE: 1" = 3'



WATER QUALITY OUTLET STRUCTURE PLAN

SCALE: N.T.S.

GENERAL NOTES:

1. ALL PENETRATIONS AND JOINTING SHALL BE WATER-TIGHT, WITH LINK-SEAL OR APPPROVED EQUIVALENT.
2. THE EXTENDED DETENTION BASIN FOREBAY SHALL BE BUILT IN ACCORDANCE WITH CURRENT UDFCD CRITERIA AND DETAILS.
3. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS FOR ALL TRASH RACKS AND ORIFICE PLATES PRIOR TO CONSTRUCTION.
4. STRUCTURAL DESIGN OF ALL TRASH RACKS SHALL BE BASED ON FULL HYDROSTATIC HEAD WITH ZERO HEAD DOWNSTREAM OF THE RACK.
5. CONTRACTOR SHALL PROVIDE STRUCTURAL DESIGN/SHOP DRAWINGS FOR THE POND WALLS, ENERGY DISSIPATION BAFFLE WALLS, FOREBAY SLAB, FOREBAY WALLS, TRICKLE CHANNEL, MICROPOOL, WINGWALLS, AND OUTLET STRUCTURE.
6. ALL DESIGN ELEMENTS INCLUDING CONCRETE, THICKNESS, AND REINFORCEMENT FOR POND WALL ENERGY DISSIPATION BAFFLE WALL, FOREBAY SLAB, FOREBAY WALL, TRICKLE CHANNEL, MICROPOOL, WINGWALLS AND OUTLET STRUCTURE WILL BE ACCORDING TO UDFCD CRITERIA AND DETAILS.
7. MODIFIED IMPACT STILLING BASIN FIGURE 9-43 PER URBAN STORM DRAINAGE CRITERIA MANUAL, UPDATED SEPTEMBER 2017.

TRASH RACK NOTES:

1. TRASH RACK SHALL BE IN ACCORDANCE WITH UDFCD TYPICAL BAR GRATE TRASH RACK
   - 1.1. 3/8" TYPICAL HEX ROUND OR TWISTED CROSS BARS MOUNTED AT 4" O.C.
   - 1.2. STAINLESS STEEL SUPPORT BARS SHALL BE 4" X 3/8", 2 3/8" O.C.
   - 1.3. C8X18.75 AMERICAN STANDARD STRUCTURAL STEEL CHANNEL FORMED INTO CONCRETE BOTTOM AND SIDE OF TRASH RACK SHALL BE ATTACHED BY STAINLESS STEEL BOLTING HARDWARE, 12" MAX O.C. ALONG THE EDGE OF THE MOUNTING FRAME.

OUTLET STRUCTURE GRATE NOTES:

1. GRATE SHALL BE CLOSED MESH GRATE PER CDOT TYPE C INLET M-604-10
2. GRATE SHALL BE MOUNTED USING STAINLESS STEEL HARDWARE AND PROVIDED WITH HINGED AND LOCKABLE OR BOLTABLE ACCESS PANELS.
3. GRATE SHALL BE STAINLESS ALUMINUM OR STEEL, SHALL BE HOT DIP GALVANIZED AND MAY BE HOT POWDER COATED AFTER GALVANIZING.

ORIFICE/RESTRICTOR PLATE NOTES:

1. PROVIDE GASKET MATERIAL BETWEEN ORIFICE PLATE AND CONCRETE.
2. BOLT PLATE TO CONCRETE 12" MAX O.C.

811 Know what's below. Call before you dig.
CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

DESIGNED BY: JWM
CHECKED BY: MSM
DRAWN BY: JWM

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
POND PLAN DETAILS

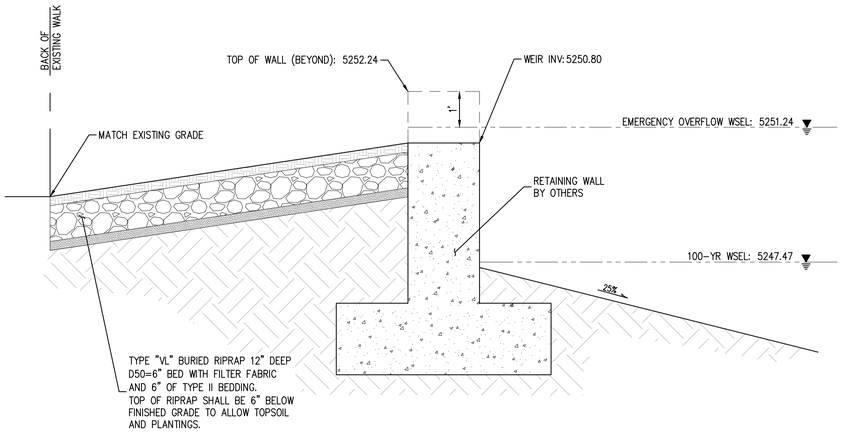
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DATE	REVISION COMMENTS
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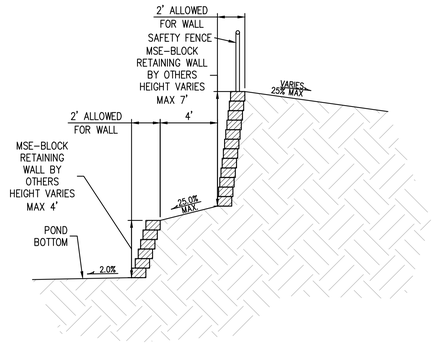
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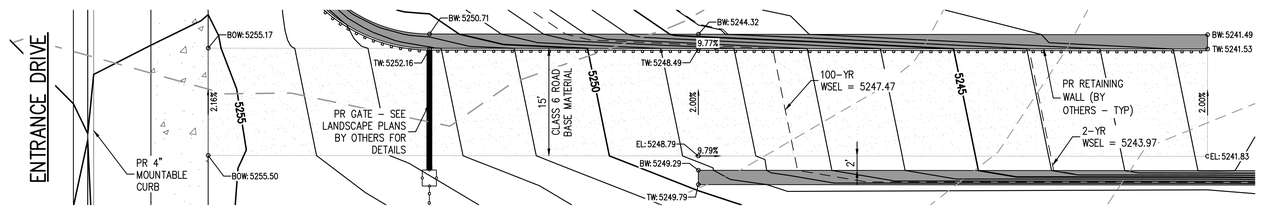
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SECTION D–D
OVERFLOW SPILLWAY DETAIL
N.T.S.



SECTION E–E
RETAINING WALL DETAIL
N.T.S.



MAINTENANCE ACCESS DETAIL
SCALE: 1" = 10'

GENERAL NOTES:

1. CONTRACTOR SHALL PROVIDE STRUCTURAL DESIGN/SHOP DRAWINGS FOR THE POND WALLS, ENERGY DISSIPATION BAFFLE WALLS, FOREBAY SLAB, FOREBAY WALLS, TRICKLE CHANNEL, MICROPOOL, WINGWALLS, AND OUTLET STRUCTURE.
2. ALL DESIGN ELEMENTS INCLUDING CONCRETE, THICKNESS, AND REINFORCEMENT FOR POND WALL ENERGY DISSIPATION BAFFLE WALL, FOREBAY SLAB, FOREBAY WALL, TRICKLE CHANNEL, MICROPOOL, WINGWALLS AND OUTLET STRUCTURE WILL BE ACCORDING TO UDFCD CRITERIA AND DETAILS.

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

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

DESIGNED BY: JWM
CHECKED BY: MSM
DRAWN BY: JWM

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
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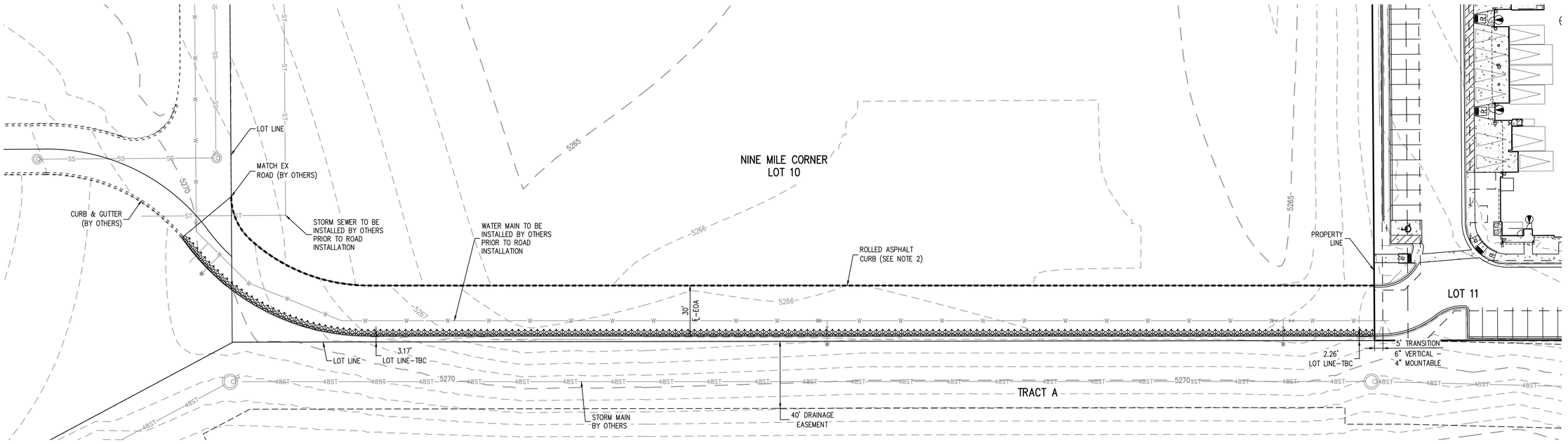
OUTLOOK AT NINE MILE
POND PLAN DETAILS

ISSUE DATE: 11-08-2019	PROJECT #: 160602
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SHEET NO.
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LEGEND:

PROPOSED 6" VERTICAL CURB & GUTTER (1' SPILL)

NOTES:

1. ALL WATER AND STORM IMPROVEMENTS SHOWN WAS PROVIDED BY GALLOWAY, AND IS SHOWN FOR REFERENCE ONLY. REFER TO NINE MILE CORNER COMMERCIAL CIVIL PLANS FOR DESIGN INFORMATION.
2. ROLLED ASPHALT CURB SHALL REMAIN IN PLACE UNTIL THE DEVELOPMENT OF LOT 10.
3. OVERLOT GRADING OF ROAD AND LOT 10 SHALL BE COMPLETED WITH METRO-DISTRICT WORK (BY OTHERS). GRADING INFORMATION SHOWN WAS PROVIDED BY GALLOWAY, AND IS SHOWN FOR REFERENCE ONLY. CONTRACTOR TO NOTIFY ENGINEER OF ANY DISCREPANCIES BETWEEN COMPLETED OVERLOT GRADING AND GRADING INFORMATION SHOWN ON THE PLAN.

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

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

30 0 30 60
SCALE: 1" = 30'

DESIGNED BY: RCP
CHECKED BY: RCP
DRAWN BY: RCP

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
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OUTLOOK AT NINE MILE
SECONDARY ACCESS ROAD PLAN

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

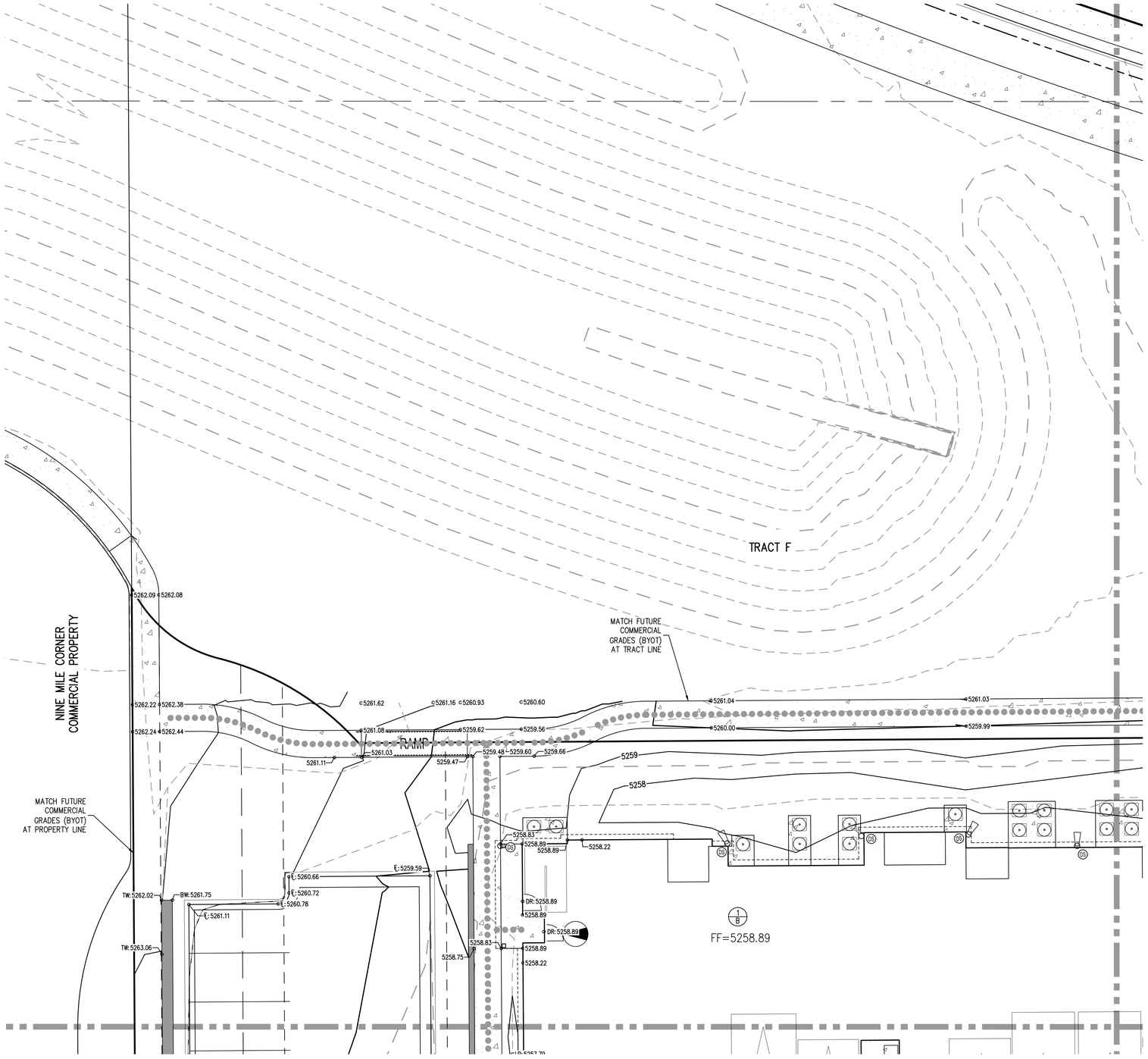
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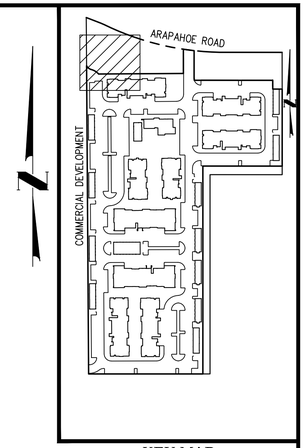
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KEY MAP
SCALE: 1" = 250'

GENERAL GRADING NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT HANDRAILS, STAIRS, CURB RAMPS, AND RAMPS ARE INSTALLED IN CONFORMANCE WITH ALL APPLICABLE LOCAL STATE AND/OR FEDERAL REGULATIONS AND STANDARDS, INCLUDING BUT NOT LIMITED TO, THE AMERICANS WITH DISABILITIES ACT (ADA), THE FAIR HOUSING ACT (FHA) AND THE AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI).
2. CROSS SLOPES ALONG THE ACCESSIBLE ROUTE OR AT LANDINGS SHALL NOT EXCEED 2% IN ANY DIRECTION.
3. LONGITUDINAL SLOPES ALONG THE ACCESSIBLE ROUTE SHALL NOT EXCEED 5% LONGITUDINAL SLOPES ON RAMPS SHALL NOT EXCEED 8.33% RAMPS, EXCEPT CURB RAMPS, SHALL HAVE HANDRAILS ON BOTH SIDES.
4. GUTTER SLOPES AT THE CURB RAMPS SHALL NOT EXCEED 5%.
5. GUTTER PANS SURROUNDING HANDICAP SPACES SHALL MATCH THE SLOPE OF THE ADJACENT PAVEMENT WITH A MAXIMUM 2% SLOPE IN ALL DIRECTIONS.
6. ALL GRADES ARE FINISHED GRADE, UNLESS OTHERWISE NOTED.
7. ROCK MULCH, IF PLACED UPSTREAM OF CONCRETE FLATWORK OR GRASSED AREA, SHALL BE PLACED ON TOP OF FINISHED GRADE SHOWN ON THESE PLANS. ROCK MULCH AREAS SHALL BE DESIGNED AND CONSTRUCTED TO ADEQUATELY DRAIN AND NOT RETAIN WATER. ALL LANDSCAPE EDGE MATERIALS SHALL NOT PREVENT DRAINAGE TO PASS THROUGH.
8. ALL GRADES ADJACENT TO THE BUILDINGS SHALL BE AT MINIMUM 8-INCHES BELOW FINISHED FLOOR ELEVATION, UNLESS OTHERWISE NOTED.
9. NON-PAVED GRADES ADJACENT TO BUILDINGS SHALL SLOPE AWAY FROM ALL BUILDINGS AT A MINIMUM OF 5% FOR 10-FT. ALL PAVED GRADES ATTACHED TO BUILDINGS SHALL SLOPE AWAY FROM ALL BUILDINGS AT A MINIMUM OF 1%, UNLESS OTHERWISE NOTED.
10. ALL GRADES FOR WALLS ARE FINISHED GRADE ELEVATIONS AT BOTTOM OF FRONT FACE (BW) AND TOP-BACK OF WALL (TW). THE WALL ELEVATIONS DO NOT INDICATE FOUNDATION DEPTHS OR ELEVATIONS. RETAINING WALL DETAILS SHALL BE PROVIDED BY OTHERS.
11. REFER TO STRUCTURAL PLANS FOR BUILDING FOUNDATION STEP LOCATIONS WHEN APPLICABLE.
12. PORTIONS OF STAIRS THAT DO NOT MEET THE MINIMUM 4-INCH RISER HEIGHT (DUE TO AN ADJACENT SLOPING PUBLIC WAY) SHALL HAVE A DISTINCTIVE MARKING STRIPE, 1-INCH TO 2-INCHES IN WIDTH, WITH A SLIP-RESISTANT SURFACE, IN ACCORDANCE WITH CURRENT INTERNATIONAL BUILDING CODE REGULATIONS.
13. SEE LANDSCAPE ARCHITECT PLANS FOR HEIGHT AND TOP OF COURTYARD AMENITIES (PLANTER CURBS, SEAT WALLS, BENCHES, FIRE WALL, MEDIA WALL, BARS, AND GRILLS).
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10 0 10 20
SCALE: 1" = 10'

DESIGNED BY: RJH
CHECKED BY: RCP
DRAWN BY: RJH

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
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OUTLOOK AT NINE MILE
DETAILED GRADING PLAN

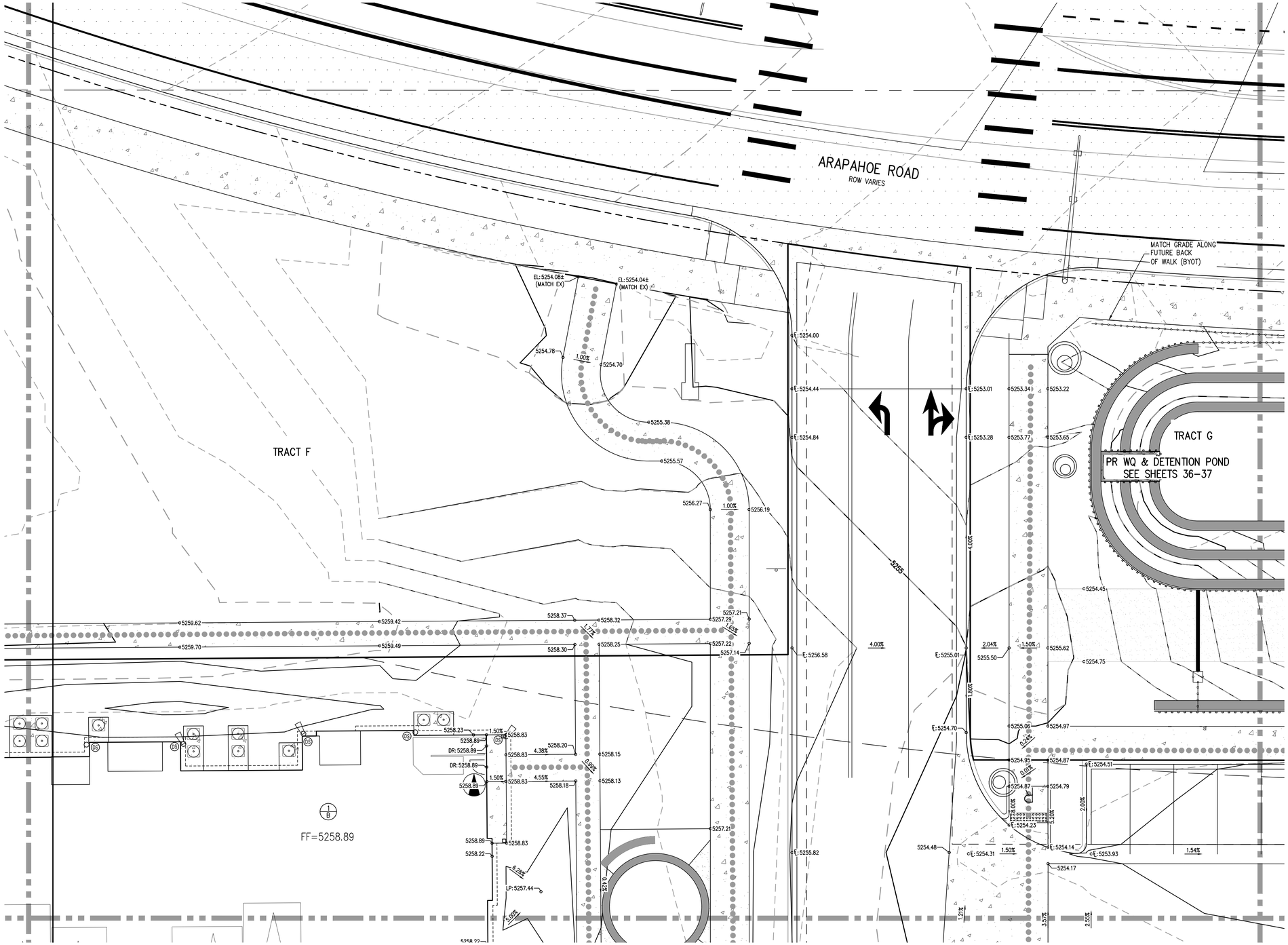
ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

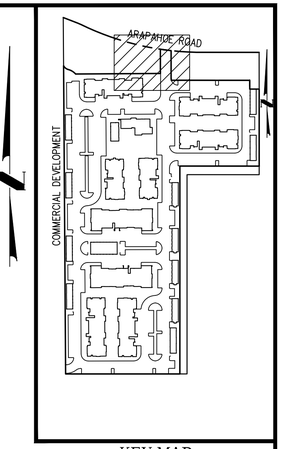
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SHEET NO.
40
40 OF 69

FILEPATH: P:\160602\ENGINEERING\GRADING\CD - DETAILED GRADING PLAN 1.DWG LAYOUT: LAYOUT1
NO XREFs
PLOTTED: WED 01/29/20 6:07:36P BY: RACHEL PATTON

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT THE WRITTEN PERMISSION OF HARRIS KOCHER SMITH





KEY MAP
SCALE: 1" = 250'

GENERAL GRADING NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT HANDRAILS, STAIRS, CURB RAMPS, AND RAMPS ARE INSTALLED IN CONFORMANCE WITH ALL APPLICABLE LOCAL STATE AND/OR FEDERAL REGULATIONS AND STANDARDS, INCLUDING BUT NOT LIMITED TO, THE AMERICANS WITH DISABILITIES ACT (ADA), THE FAIR HOUSING ACT (FHA) AND THE AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI).
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7. ROCK MULCH, IF PLACED UPSTREAM OF CONCRETE FLATWORK OR GRASSED AREA, SHALL BE PLACED ON TOP OF FINISHED GRADE SHOWN ON THESE PLANS. ROCK MULCH AREAS SHALL BE DESIGNED AND CONSTRUCTED TO ADEQUATELY DRAIN AND NOT RETAIN WATER. ALL LANDSCAPE EDGE MATERIALS SHALL NOT PREVENT DRAINAGE TO PASS THROUGH.
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OUTLOOK AT NINE MILE
DETAILED GRADING PLAN

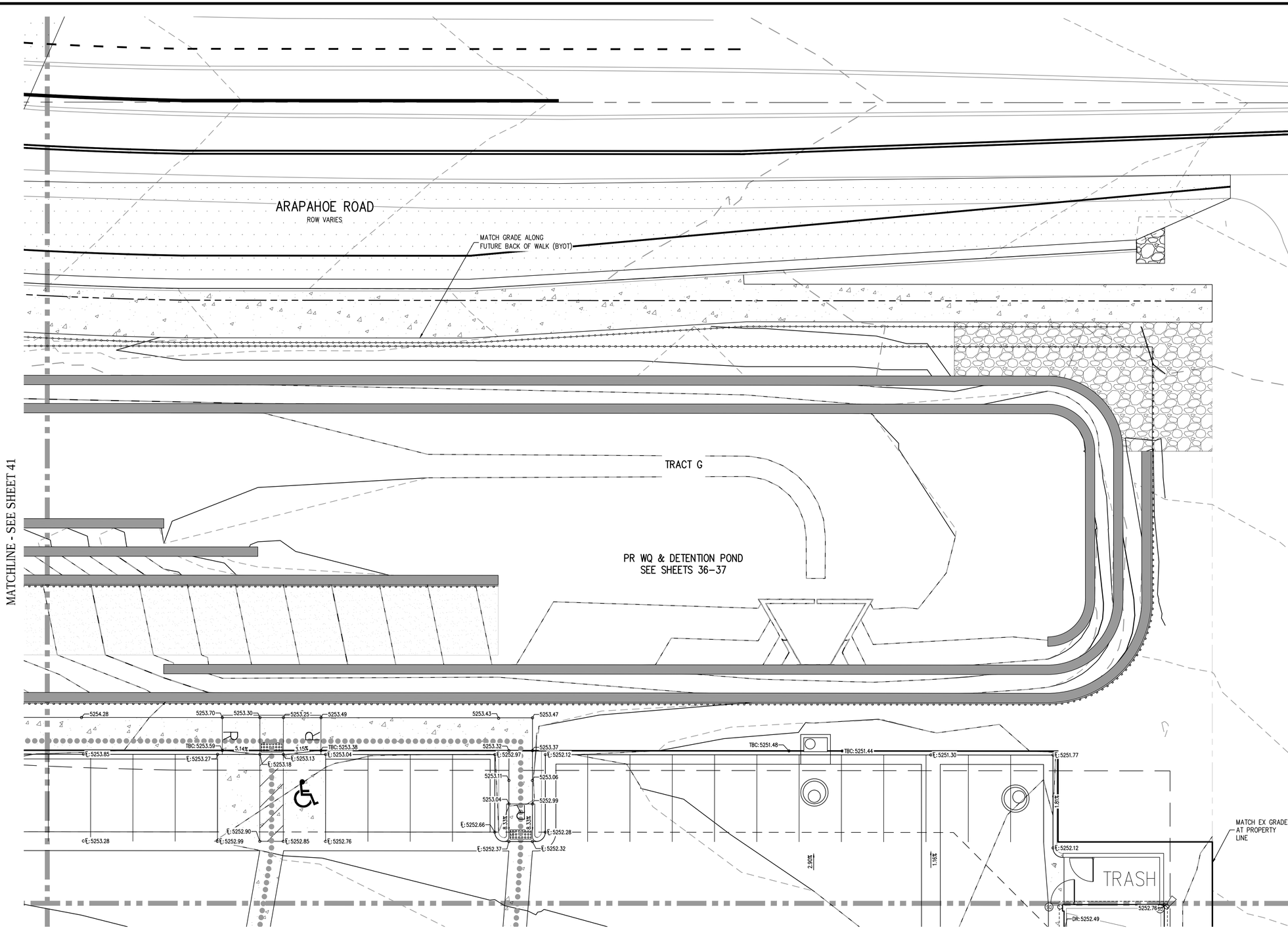
ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

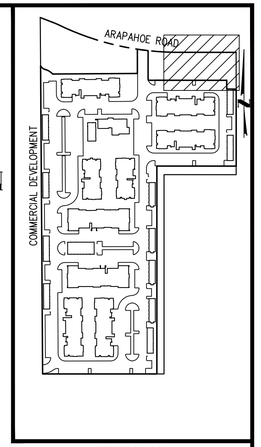
PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
41
41 OF 69

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NO XREFS
PLOTTED: WED 01/29/20 6:07:41P BY: RACHEL PATTON

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT THE WRITTEN PERMISSION OF HARRIS KOCHER SMITH





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MATCHLINE - SEE SHEET 43

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10 0 10 20
SCALE: 1" = 10'

DESIGNED BY: RJH
CHECKED BY: RCP
DRAWN BY: RJH

HARRIS KOCHER SMITH
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OUTLOOK AT NINE MILE
DETAILED GRADING PLAN

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

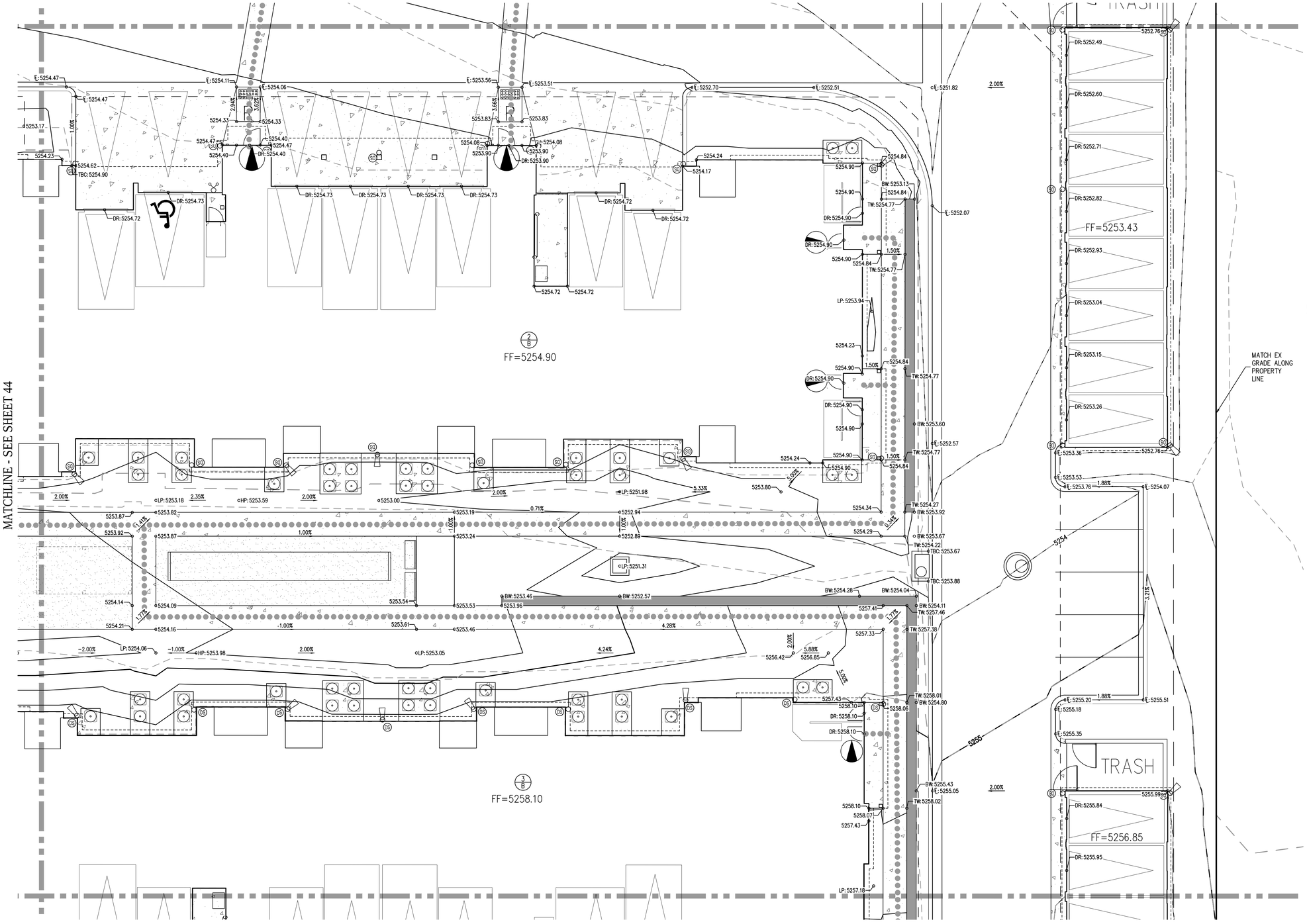
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42
42 OF 69

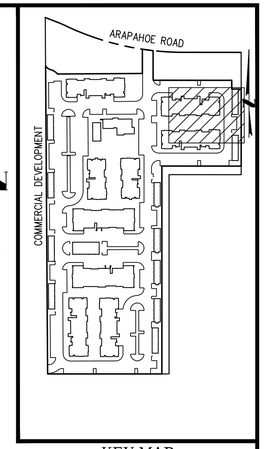
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NO XREFs
PLOTTED: WED 01/29/20 6:07:46P BY: RACHEL PATTON

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MATCHLINE - SEE SHEET 42

MATCHLINE - SEE SHEET 44





KEY MAP
SCALE: 1" = 250'

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MATCHLINE - SEE SHEET 48

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OUTLOOK AT NINE MILE
DETAILED GRADING PLAN

ISSUE DATE: 11-08-2019	PROJECT #: 160602
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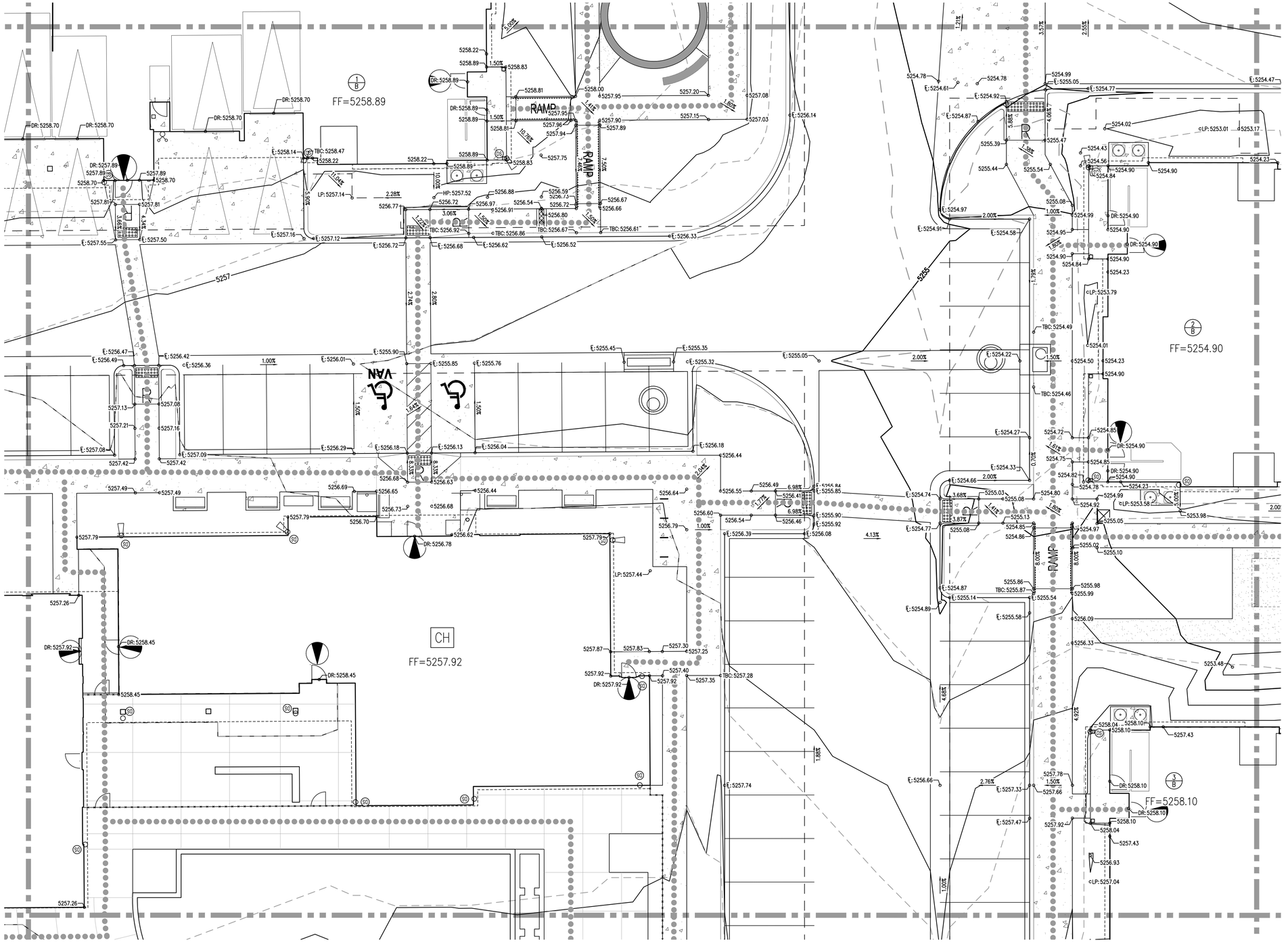
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SHEET NO.
43
43 OF 69

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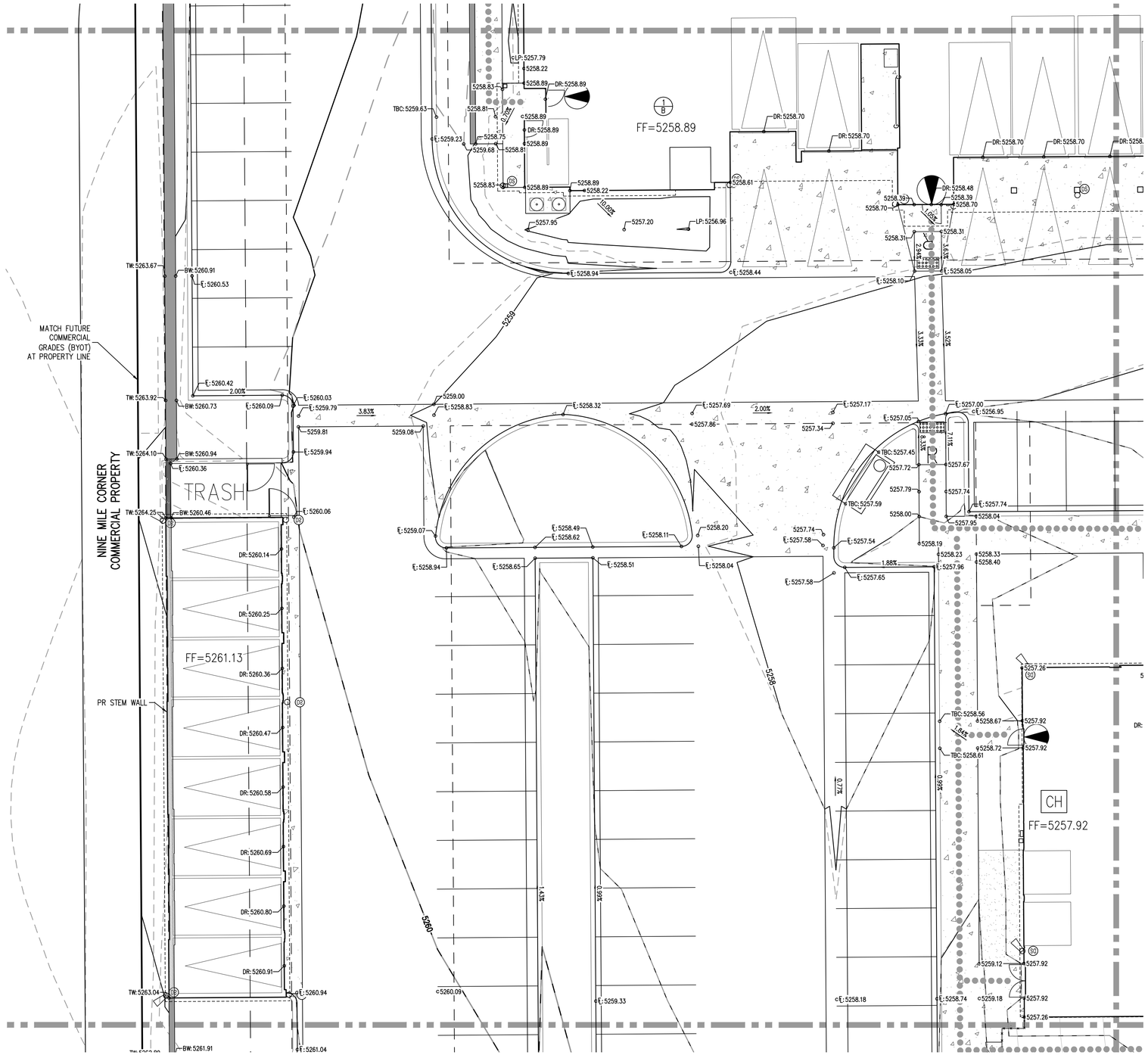
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MATCHLINE - SEE SHEET 41


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VAN
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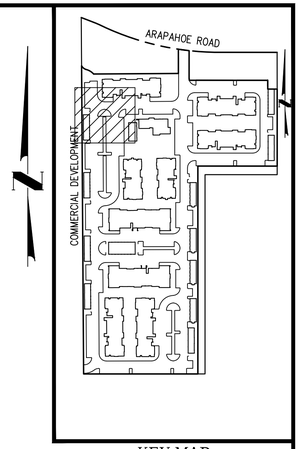
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MATCHLINE - SEE SHEET 40



MATCHLINE - SEE SHEET 44

MATCHLINE - SEE SHEET 46



KEY MAP
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10 0 10 20
SCALE: 1" = 10'

DESIGNED BY: RJH
CHECKED BY: RCP
DRAWN BY: RJH

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
DETAILED GRADING PLAN

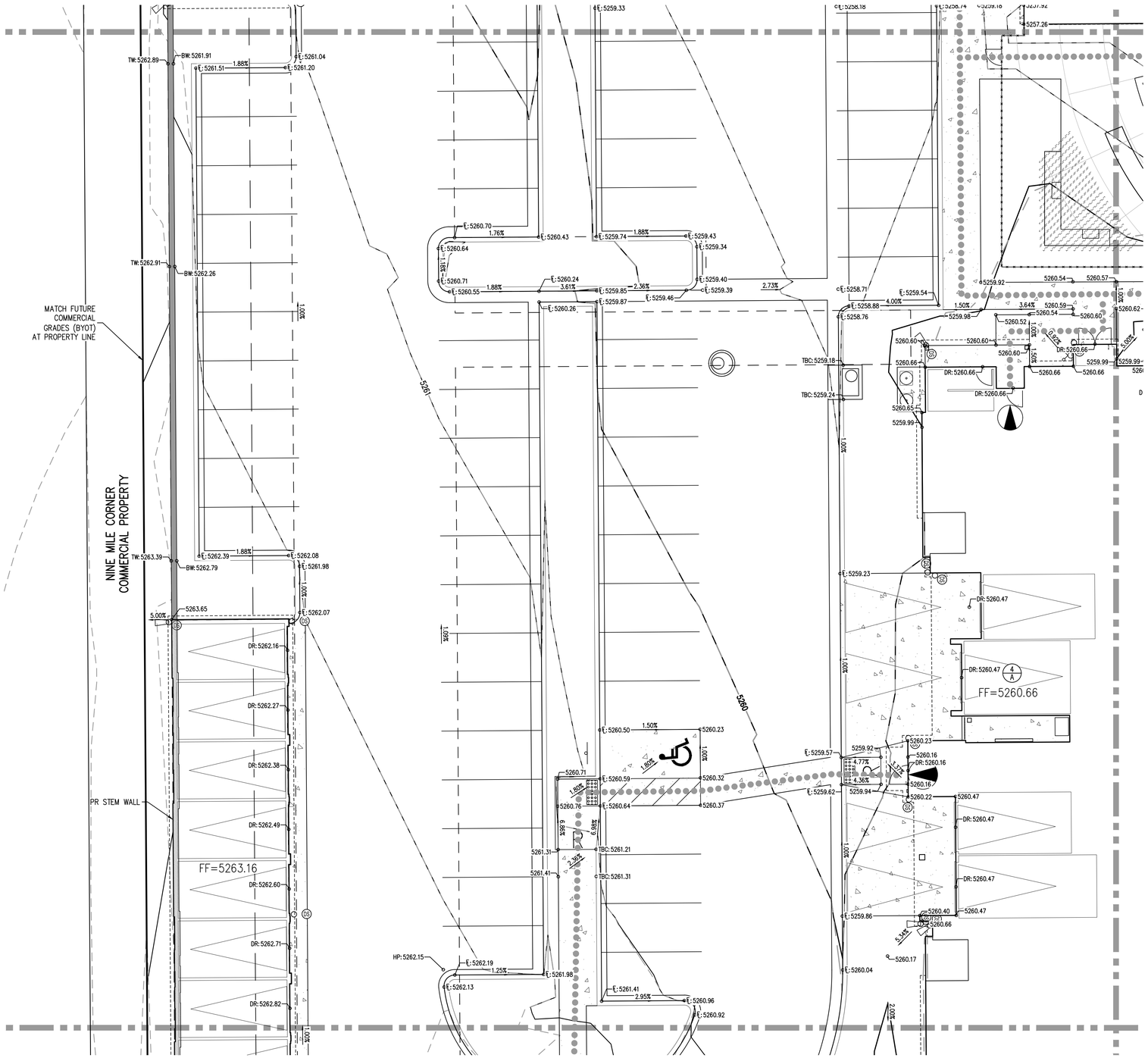
ISSUE DATE: 11-08-2019	PROJECT #: 160602
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01-27-2020	PER TOWN OF ERIE COMMENTS

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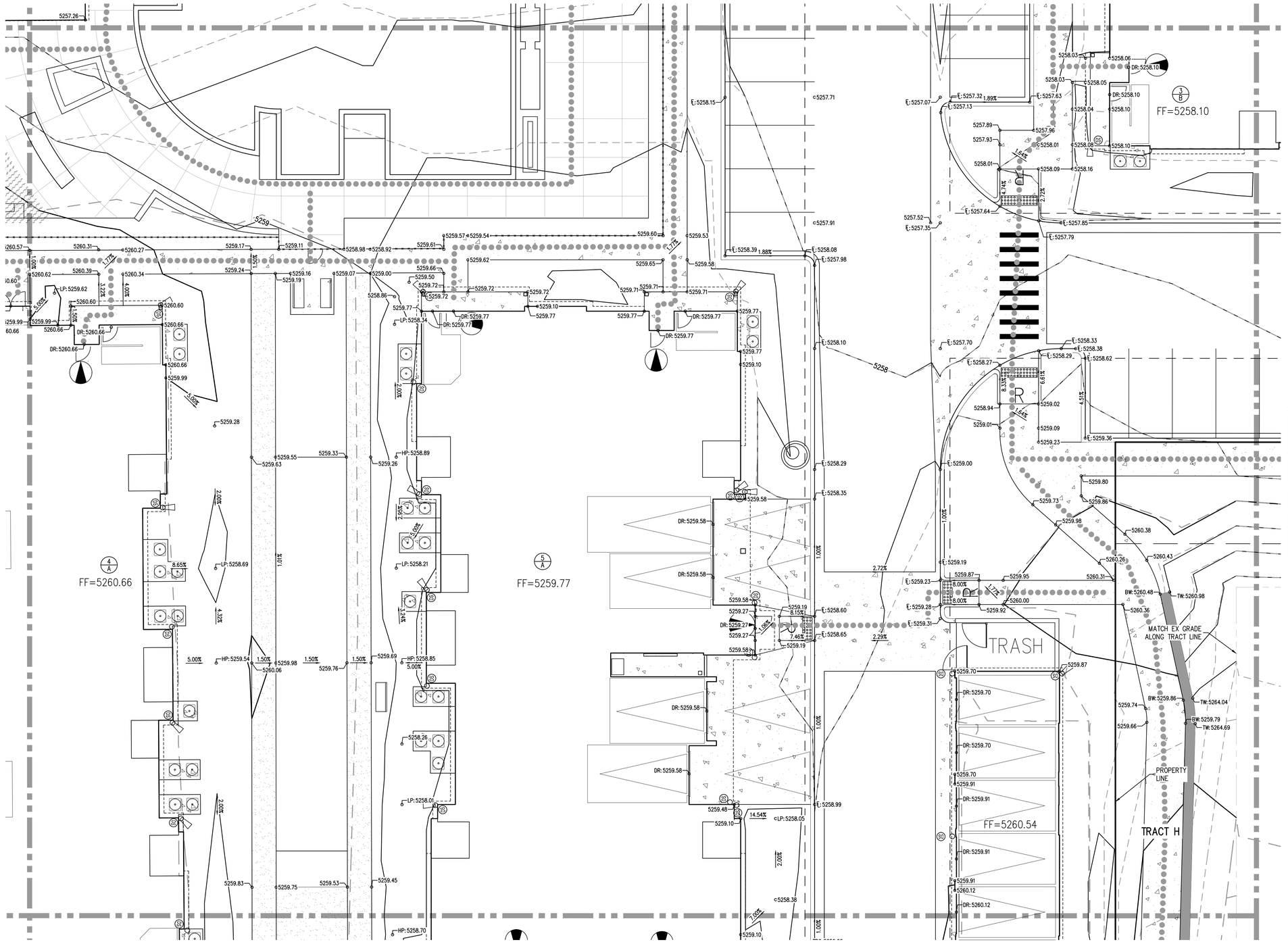
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45
45 OF 69

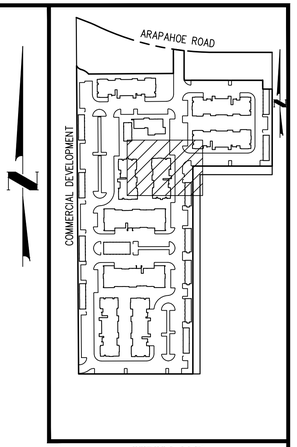
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NO XREFS
PLOTTED: WED 01/29/20 6:07:58P BY: RACHEL PATTON

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MATCHLINE - SEE SHEET 45
MATCHLINE - SEE SHEET 47
MATCHLINE - SEE SHEET 50
NINE MILE CORNER
COMMERCIAL PROPERTY
MATCH FUTURE COMMERCIAL GRADES (BYOT) AT PROPERTY LINE
PR STEM WALL
FF=5263.16
FF=5260.66
TW:5262.89
BW:5261.91
E:5261.04
E:5261.51
1.88%
E:5261.20
TW:5262.91
BW:5262.26
TW:5263.39
BW:5262.79
E:5262.39
1.88%
E:5262.08
E:5261.98
5.00%
5263.65
E:5262.07
DR:5262.16
DR:5262.27
DR:5262.38
DR:5262.49
DR:5262.60
DR:5262.71
DR:5262.82
E:5259.33
E:5260.70
1.76%
E:5260.43
E:5259.74
1.88%
E:5259.43
E:5259.34
E:5260.64
E:5260.71
1.88%
E:5260.55
E:5260.24
3.61%
E:5259.85
2.36%
E:5259.40
E:5259.39
E:5260.26
E:5259.87
E:5259.46
2.73%
5261
5260
TBC:5259.18
TBC:5259.24
E:5258.18
E:5258.14
E:5259.16
E:5257.92
5257.26
E:5258.71
E:5259.54
E:5258.88
4.00%
E:5258.76
5259.92
5260.54
5260.57
1.50%
5259.98
3.64%
5260.59
5260.54
5260.60
5260.52
5260.62
5260.60
5260.60
5260.60
DR:5260.66
5260.66
DR:5260.66
5259.99
5260.66
DR:5260.66
5260.65
5259.99
E:5259.23
DR:5260.47
DR:5260.47
4
A
5260.50
1.50%
5260.23
1.80%
5260.71
E:5260.59
5260.32
1.80%
5260.76
E:5260.64
5260.37
6.89%
6.89%
5261.31
2.95%
TBC:5261.21
5261.41
TBC:5261.31
HP:5262.15
E:5262.19
1.25%
E:5261.98
E:5262.13
E:5261.41
2.95%
E:5260.96
E:5260.92
E:5259.57
4.77%
4.36%
5259.92
5260.23
5260.16
DR:5260.16
5260.16
5259.94
E:5259.62
5260.22
5260.47
DR:5260.47
DR:5260.47
5260.47
E:5259.86
5260.40
5260.66
5.34%
5260.17
E:5260.04
5260
5260
5260

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KEY MAP
SCALE: 1" = 250'

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OUTLOOK AT NINE MILE
DETAILED GRADING PLAN

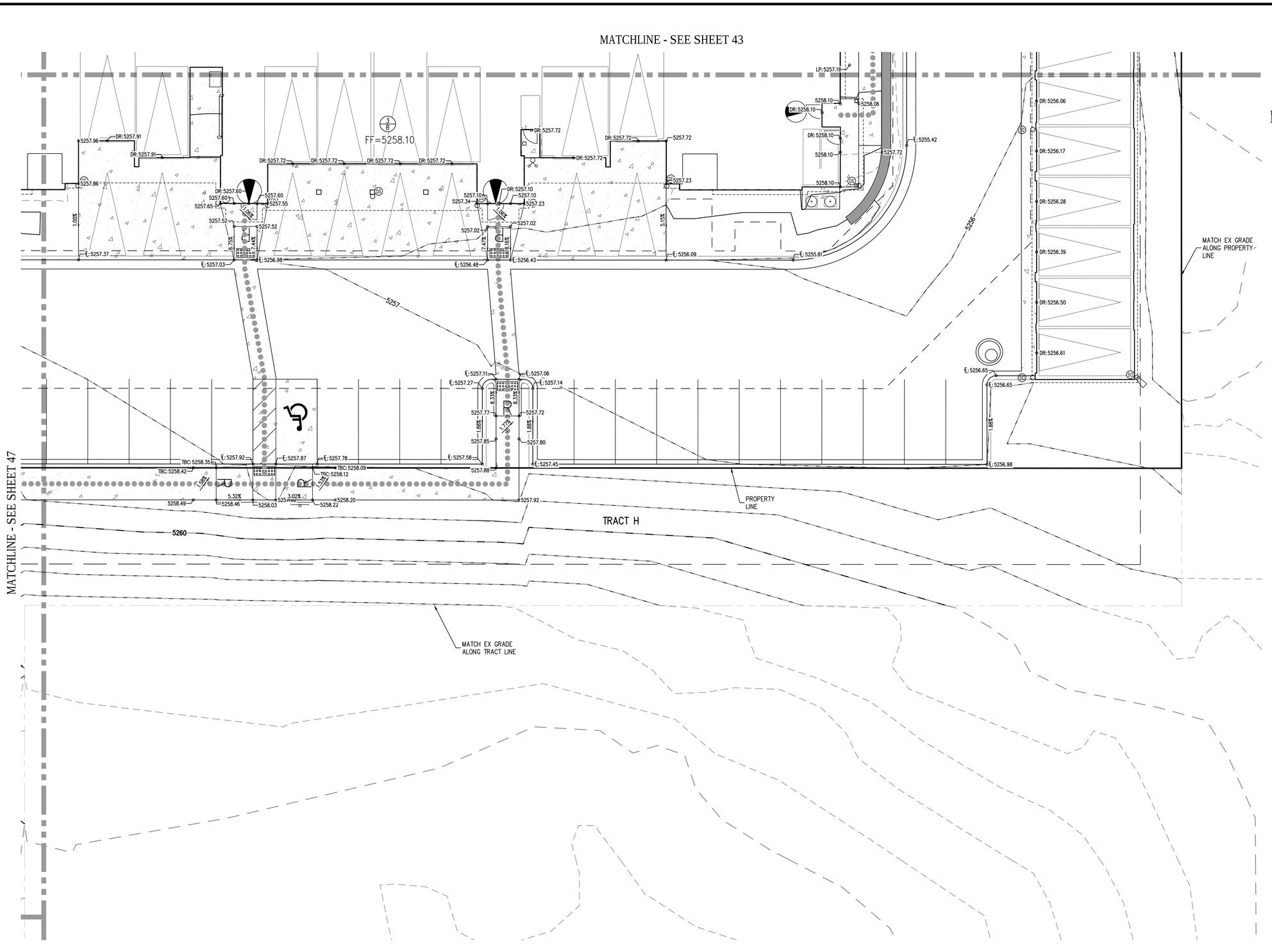
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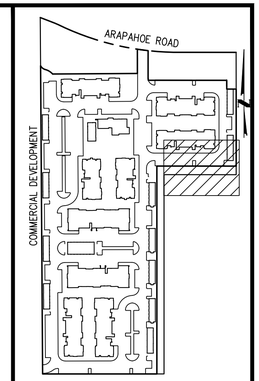
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SHEET NO.
47
47 OF 69

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PLOTTED: WED 01/29/20 6:08:10P BY: RACHEL PAYTON

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT THE WRITTEN PERMISSION OF HARRIS KOCHER SMITH





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SCALE: 1" = 250'

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SCALE: 1" = 10'

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OUTLOOK AT NINE MILE
DETAILED GRADING PLAN

ISSUE DATE: 11-08-2019	PROJECT #: 160602
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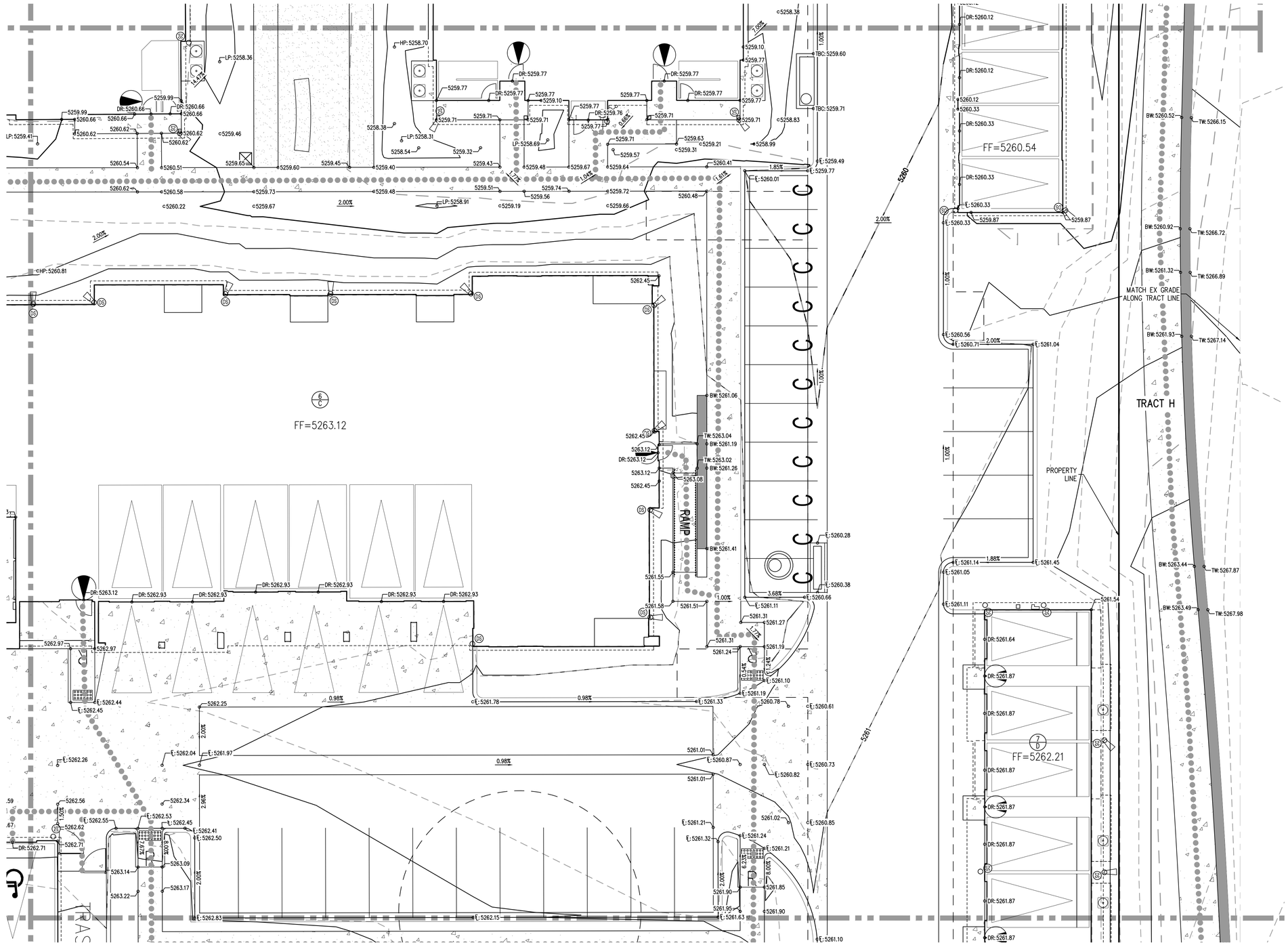
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SHEET NO.
48
48 OF 69

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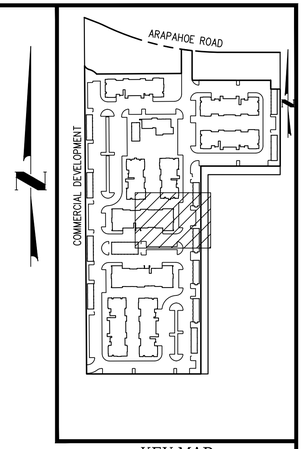
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MATCHLINE - SEE SHEET 47



MATCHLINE - SEE SHEET 50

MATCHLINE - SEE SHEET 52



KEY MAP
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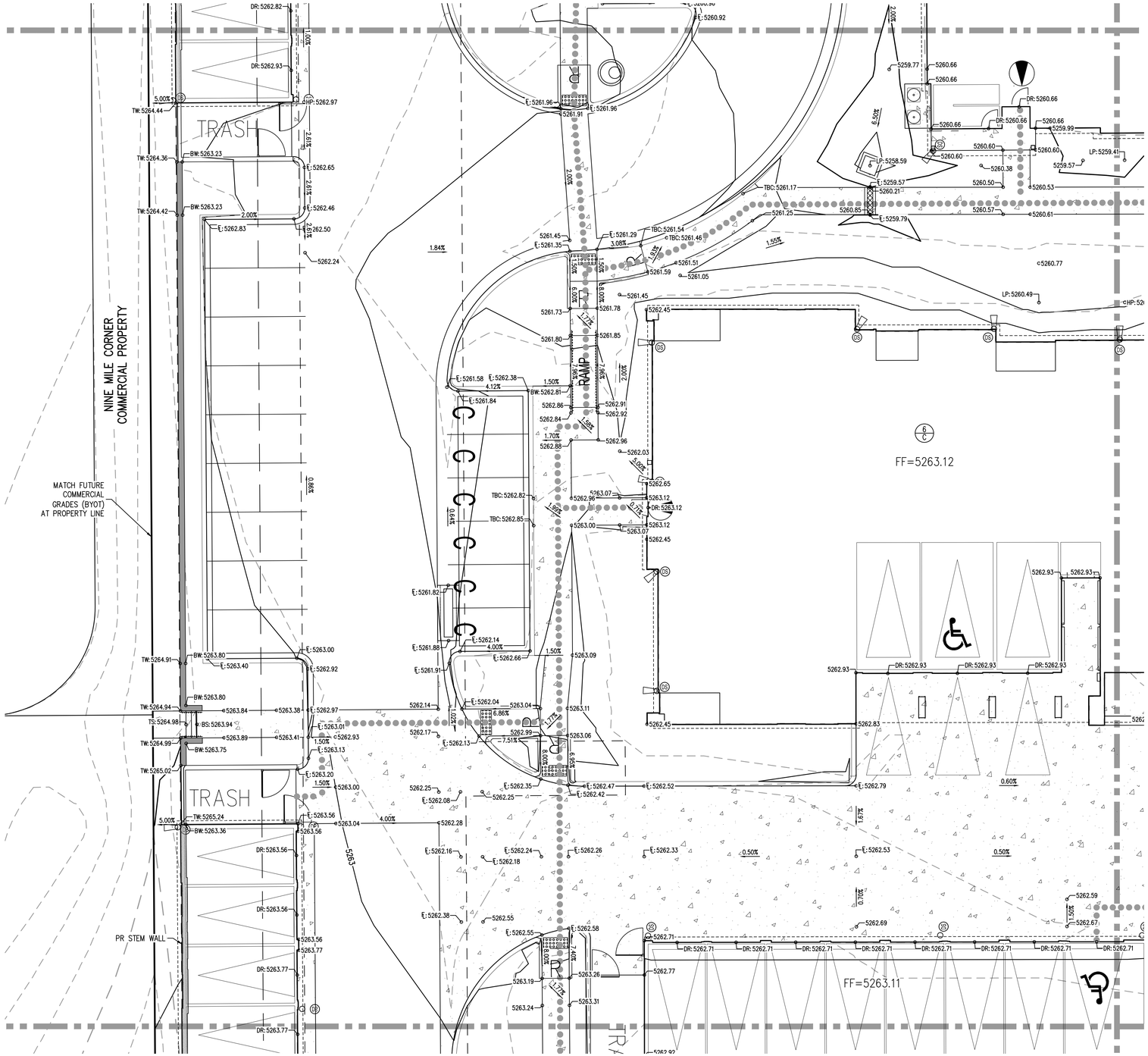
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49 OF 69

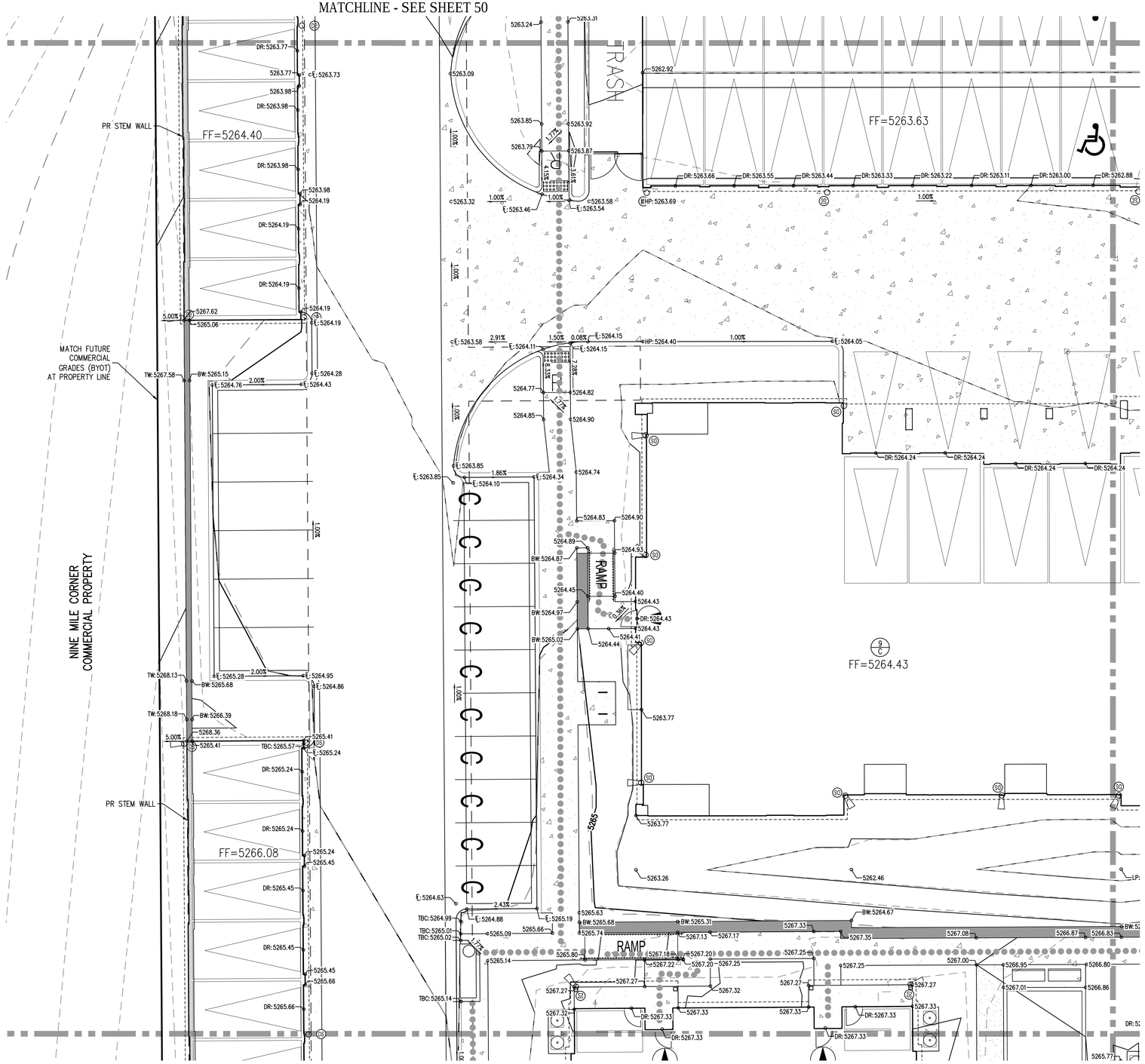
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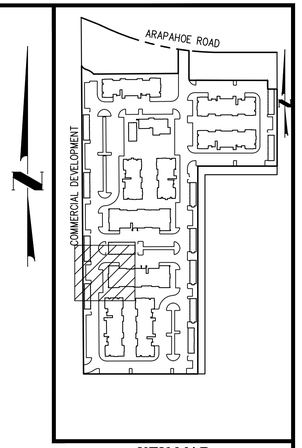
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MATCHLINE - SEE SHEET 46


NINE MILE CORNER
COMMERCIAL PROPERTY
MATCH FUTURE COMMERCIAL GRADES (BYOT) AT PROPERTY LINE
PR STEM WALL
TRASH
TRASH
RAMP
FF=5263.12
FF=5263.11
DR: 5262.82
DR: 5262.93
DR: 5262.97
TW: 5264.44
BW: 5263.23
TW: 5264.36
TW: 5264.42
BW: 5263.23
E: 5262.65
E: 5262.46
E: 5262.83
E: 5262.50
5262.24
E: 5261.96
E: 5260.92
5261.91
TBC: 5261.17
5261.25
5260.85
E: 5259.79
5260.57
5260.61
5261.45
E: 5261.35
E: 5261.29
TBC: 5261.54
TBC: 5261.46
5261.51
5261.59
5261.05
5260.77
LP: 5260.49
5261.73
5261.78
5261.80
5261.85
5262.45
E: 5261.58
E: 5262.38
BW: 5262.81
E: 5261.84
5262.86
5262.84
5262.88
5262.91
5262.92
5262.96
5262.03
5262.65
TBC: 5262.82
TBC: 5262.85
5263.07
5263.12
DR: 5263.12
5263.00
5263.07
5262.45
E: 5261.82
E: 5261.88
E: 5261.91
E: 5262.14
E: 5262.66
5263.09
5262.14
5262.17
E: 5262.04
5263.04
E: 5262.13
5262.99
5263.11
5263.06
TW: 5264.91
BW: 5263.80
E: 5263.40
E: 5263.00
E: 5262.92
TW: 5264.94
BW: 5263.80
5263.84
5263.38
E: 5262.97
TS: 5264.98
BS: 5263.94
5263.01
5262.93
TW: 5264.99
BW: 5263.75
5263.89
5263.41
5263.13
TW: 5265.02
5263.20
5263.00
TW: 5265.24
BW: 5263.36
5263.56
5263.04
5262.28
DR: 5263.56
DR: 5263.56
DR: 5263.77
DR: 5263.77
5263.56
5263.77
5262.25
5262.08
E: 5262.35
E: 5262.47
E: 5262.42
E: 5262.52
E: 5262.79
E: 5262.16
E: 5262.24
5262.18
E: 5262.26
E: 5262.33
E: 5262.53
E: 5262.38
5262.55
E: 5262.55
E: 5262.58
5263.26
5263.31
5263.19
5263.24
5262.77
5262.69
5262.71
5262.67
5262.59
DR: 5262.71
5262.93
DR: 5262.93
5262.83
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5260.66
DR: 5260.66
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LP: 5259.41
LP: 5258.59
5259.57
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NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT THE WRITTEN PERMISSION OF HARRIS KOCHER SMITH





KEY MAP
SCALE: 1" = 250'

GENERAL GRADING NOTES:

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2. CROSS SLOPES ALONG THE ACCESSIBLE ROUTE OR AT LANDINGS SHALL NOT EXCEED 2% IN ANY DIRECTION.
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6. ALL GRADES ARE FINISHED GRADE, UNLESS OTHERWISE NOTED.
7. ROCK MULCH, IF PLACED UPSTREAM OF CONCRETE FLATWORK OR GRASSED AREA, SHALL BE PLACED ON TOP OF FINISHED GRADE SHOWN ON THESE PLANS. ROCK MULCH AREAS SHALL BE DESIGNED AND CONSTRUCTED TO ADEQUATELY DRAIN AND NOT RETAIN WATER. ALL LANDSCAPE EDGE MATERIALS SHALL NOT PREVENT DRAINAGE TO PASS THROUGH.
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12. PORTIONS OF STAIRS THAT DO NOT MEET THE MINIMUM 4-INCH RISER HEIGHT (DUE TO AN ADJACENT SLOPING PUBLIC WAY) SHALL HAVE A DISTINCTIVE MARKING STRIPE, 1-INCH TO 2-INCHES IN WIDTH, WITH A SLIP-RESISTANT SURFACE, IN ACCORDANCE WITH CURRENT INTERNATIONAL BUILDING CODE REGULATIONS.
13. SEE LANDSCAPE ARCHITECT PLANS FOR HEIGHT AND TOP OF COURTYARD AMENITIES (PLANTER CURBS, SEAT WALLS, BENCHES, FIRE WALL, MEDIA WALL, BARS, AND GRILLS).
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SCALE: 1" = 10'

DESIGNED BY: RJH
CHECKED BY: RCP
DRAWN BY: RJH

HKS HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
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OUTLOOK AT NINE MILE
DETAILED GRADING PLAN

ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

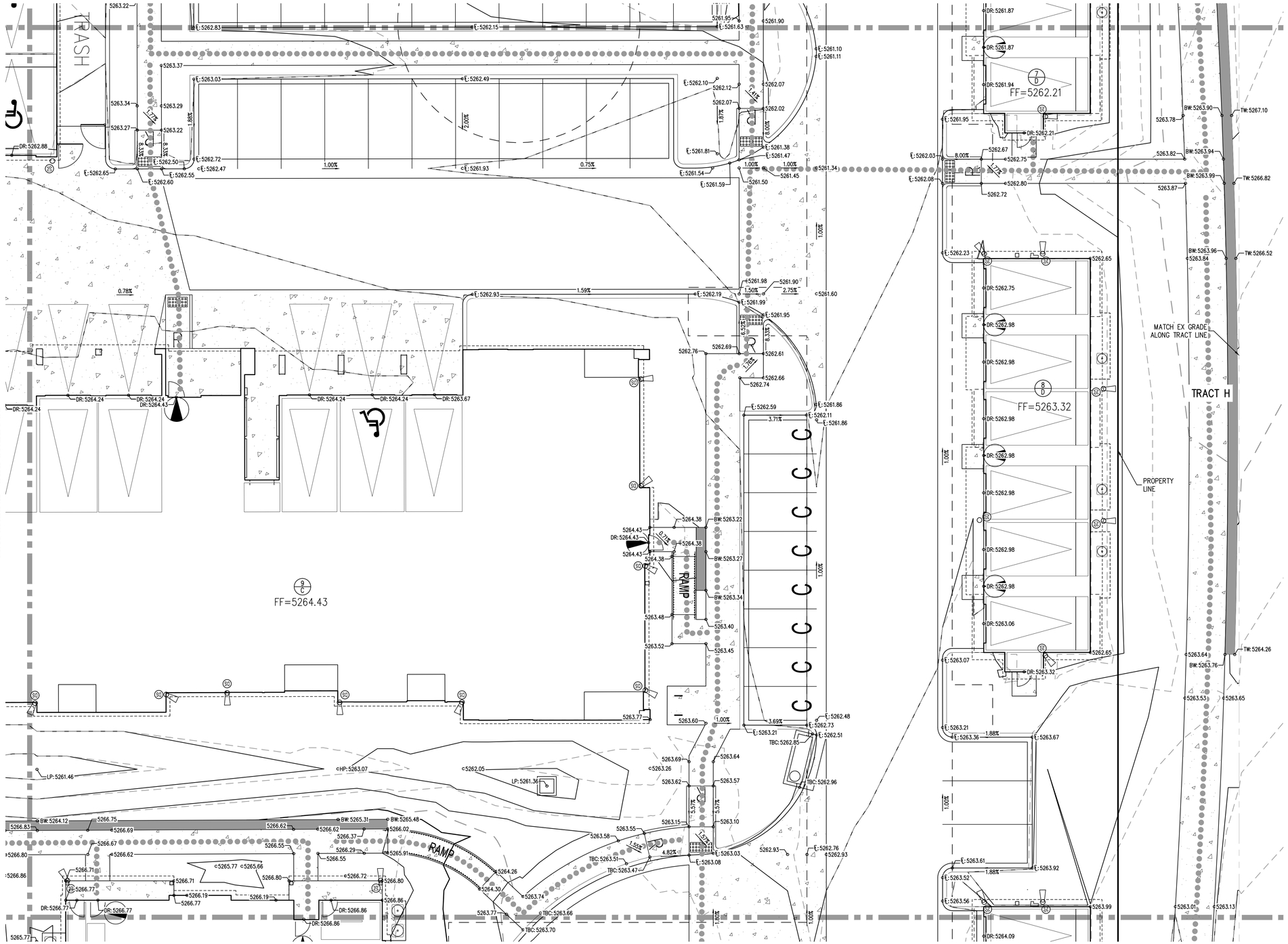
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SHEET NO.
51
51 OF 69

FILEPATH: P:\160602\ENGINEERING\GRADING\CD - DETAILED GRADING PLAN 3.DWG LAYOUT: LAYOUT1
NO XREFs
PLOTTED: WED 01/29/20 5:52:01 P BY: RACHEL PATTON

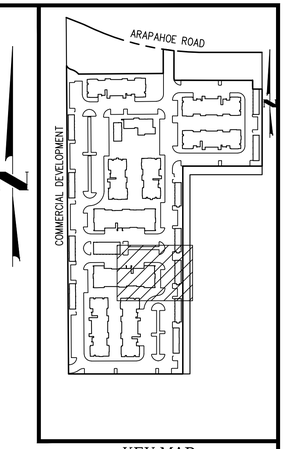
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MATCHLINE - SEE SHEET 49



MATCHLINE - SEE SHEET 51

MATCHLINE - SEE SHEET 53



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DRAWN BY: RJH

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OUTLOOK AT NINE MILE
DETAILED GRADING PLAN

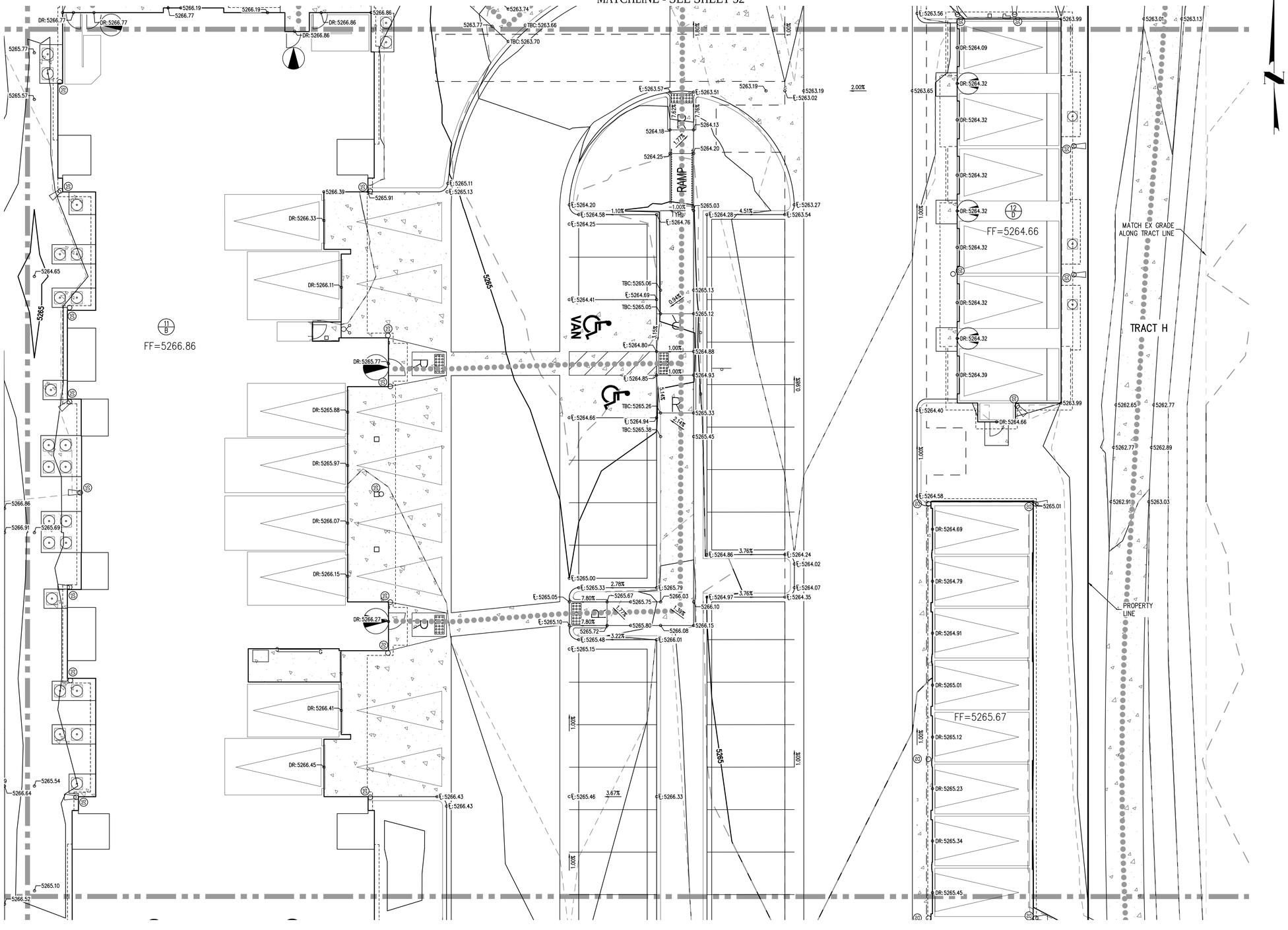
ISSUE DATE: 11-08-2019	PROJECT #: 160602
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01-27-2020	PER TOWN OF ERIE COMMENTS

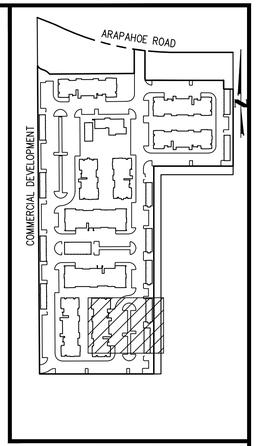
PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
52
52 OF 69

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NO XREFS
PLOTTED: WED 01/29/20 5:52:06P BY: RACHEL PATTON

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KEY MAP
SCALE: 1" = 250'

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10 0 10 20
SCALE: 1" = 10'

DESIGNED BY: RJH
CHECKED BY: RCP
DRAWN BY: RJH

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
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OUTLOOK AT NINE MILE
DETAILED GRADING PLAN

ISSUE DATE: 11-08-2019	PROJECT #: 160602
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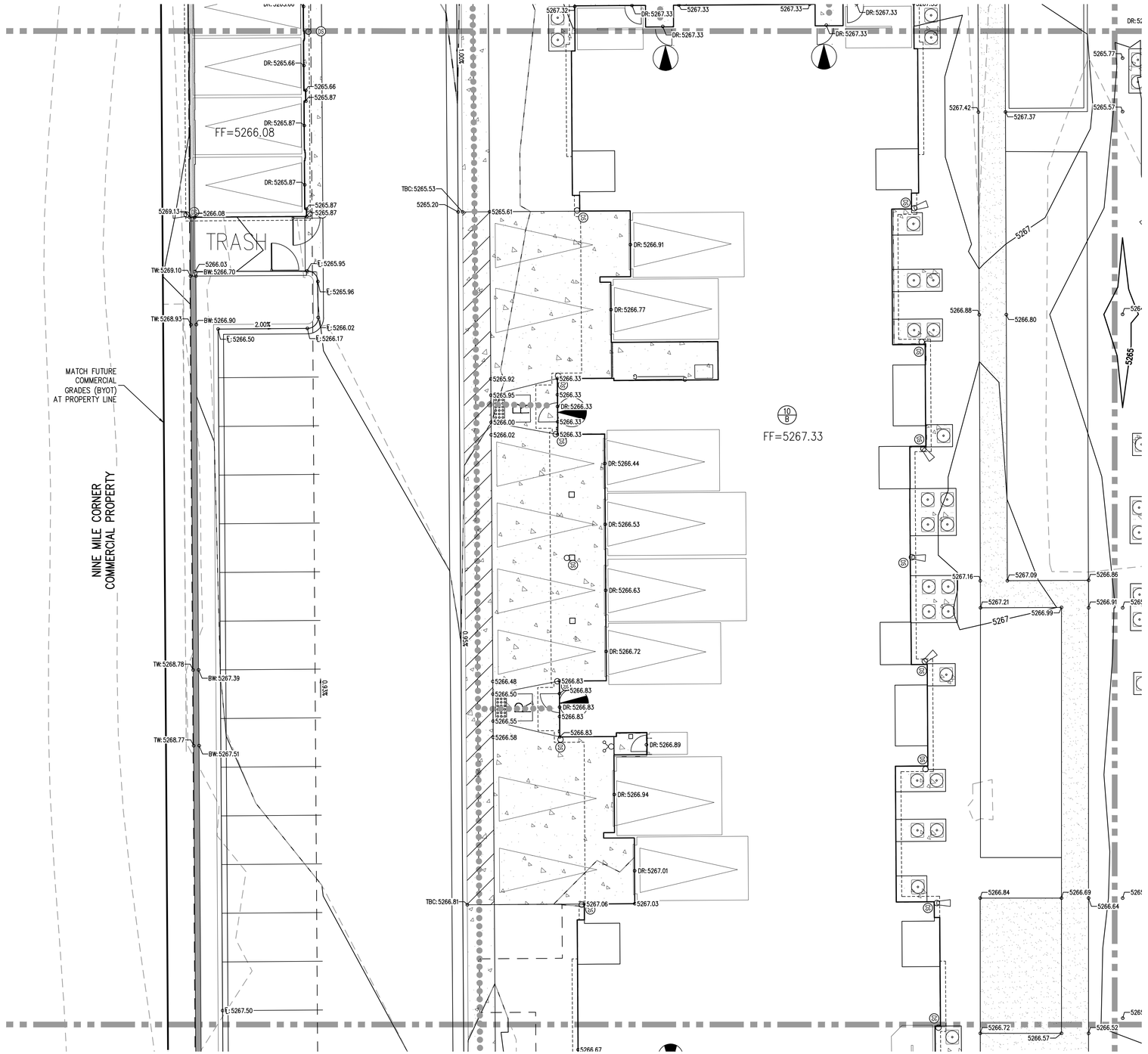
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SHEET NO.
53
53 OF 69

FILEPATH: P:\160602\ENGINEERING\GRADING\CD - DETAILED GRADING PLAN 3.DWG LAYOUT: LAYOUT3
NO XREFs
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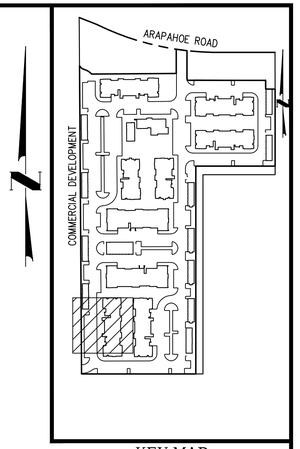
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MATCHLINE - SEE SHEET 51



MATCHLINE - SEE SHEET 53

MATCHLINE - SEE SHEET 55



KEY MAP
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DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

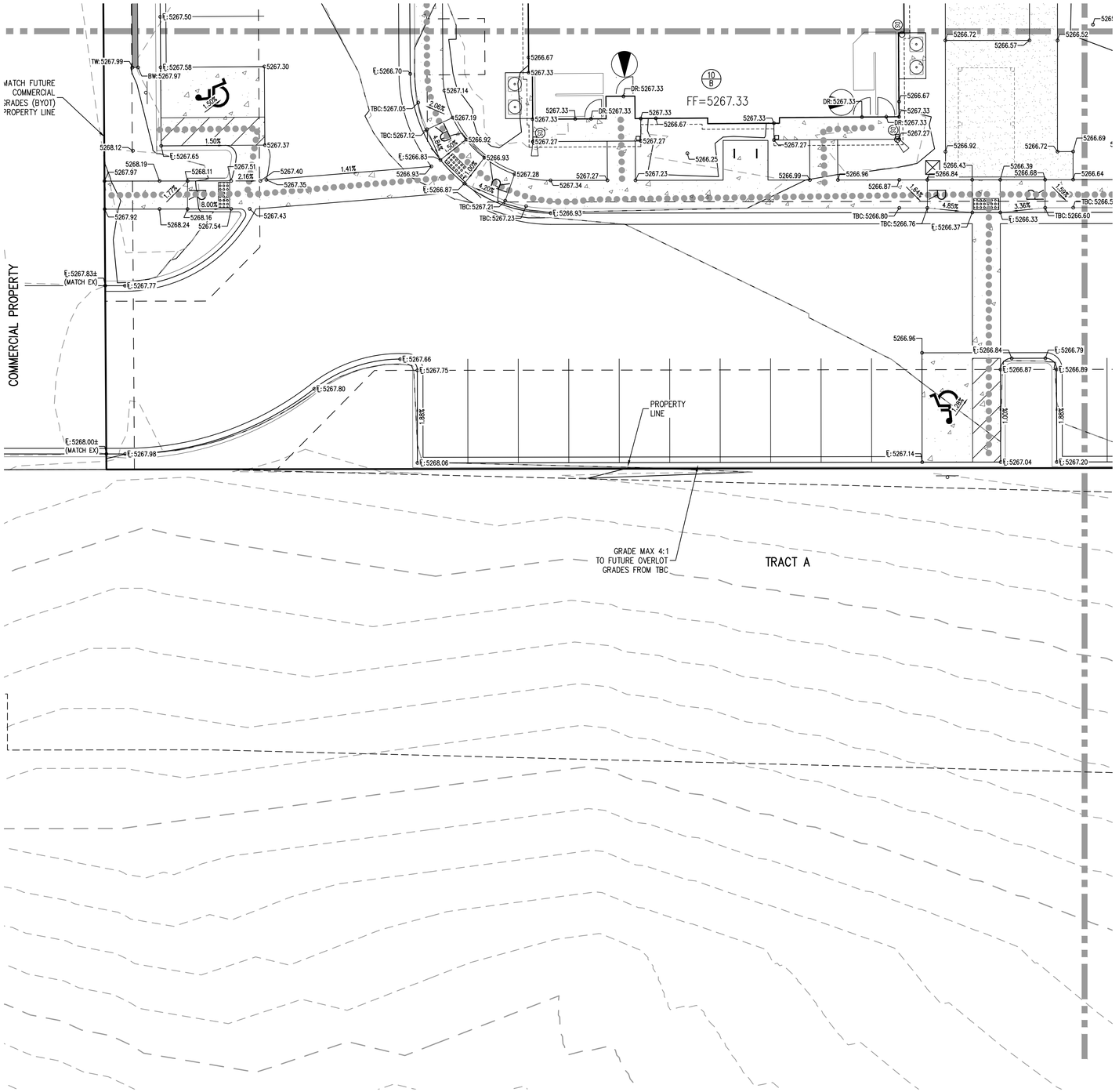
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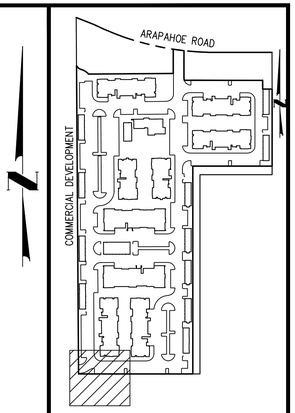
SHEET NO.
54
54 OF 69

FILEPATH: P:\160602\ENGINEERING\GRADING\GD - DETAILED GRADING PLAN 3.DWG LAYOUT: LAYOUT4
NO XREFs
PLOTTED: WED 01/29/20 5:52:15P BY: RACHEL PATTON

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT THE WRITTEN PERMISSION OF HARRIS KOCHER SMITH

MATCHLINE - SEE SHEET 54





KEY MAP
SCALE: 1" = 250'

GENERAL GRADING NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT HANDRAILS, STAIRS, CURB RAMPS, AND RAMPS ARE INSTALLED IN CONFORMANCE WITH ALL APPLICABLE LOCAL STATE AND/OR FEDERAL REGULATIONS AND STANDARDS, INCLUDING BUT NOT LIMITED TO, THE AMERICANS WITH DISABILITIES ACT (ADA), THE FAIR HOUSING ACT (FHA) AND THE AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI).
2. CROSS SLOPES ALONG THE ACCESSIBLE ROUTE OR AT LANDINGS SHALL NOT EXCEED 2% IN ANY DIRECTION.
3. LONGITUDINAL SLOPES ALONG THE ACCESSIBLE ROUTE SHALL NOT EXCEED 5% LONGITUDINAL SLOPES ON RAMPS SHALL NOT EXCEED 8.33% RAMPS, EXCEPT CURB RAMPS, SHALL HAVE HANDRAILS ON BOTH SIDES.
4. GUTTER SLOPES AT THE CURB RAMPS SHALL NOT EXCEED 5%
5. GUTTER PANS SURROUNDING HANDICAP SPACES SHALL MATCH THE SLOPE OF THE ADJACENT PAVEMENT WITH A MAXIMUM 2% SLOPE IN ALL DIRECTIONS.
6. ALL GRADES ARE FINISHED GRADE, UNLESS OTHERWISE NOTED.
7. ROCK MULCH, IF PLACED UPSTREAM OF CONCRETE FLATWORK OR GRASSED AREA, SHALL BE PLACED ON TOP OF FINISHED GRADE SHOWN ON THESE PLANS. ROCK MULCH AREAS SHALL BE DESIGNED AND CONSTRUCTED TO ADEQUATELY DRAIN AND NOT RETAIN WATER. ALL LANDSCAPE EDGE MATERIALS SHALL NOT PREVENT DRAINAGE TO PASS THROUGH.
8. ALL GRADES ADJACENT TO THE BUILDINGS SHALL BE AT MINIMUM 8-INCHES BELOW FINISHED FLOOR ELEVATION, UNLESS OTHERWISE NOTED.
9. NON-PAVED GRADES ADJACENT TO BUILDINGS SHALL SLOPE AWAY FROM ALL BUILDINGS AT A MINIMUM OF 5% FOR 10-FT. ALL PAVED GRADES ATTACHED TO BUILDINGS SHALL SLOPE AWAY FROM ALL BUILDINGS AT A MINIMUM OF 1%, UNLESS OTHERWISE NOTED.
10. ALL GRADES FOR WALLS ARE FINISHED GRADE ELEVATIONS AT BOTTOM OF FRONT FACE (BW) AND TOP-BACK OF WALL (TW). THE WALL ELEVATIONS DO NOT INDICATE FOUNDATION DEPTHS OR ELEVATIONS. RETAINING WALL DETAILS SHALL BE PROVIDED BY OTHERS.
11. REFER TO STRUCTURAL PLANS FOR BUILDING FOUNDATION STEP LOCATIONS WHEN APPLICABLE.
12. PORTIONS OF STAIRS THAT DO NOT MEET THE MINIMUM 4-INCH RISER HEIGHT (DUE TO AN ADJACENT SLOPING PUBLIC WAY) SHALL HAVE A DISTINCTIVE MARKING STRIPE, 1-INCH TO 2-INCHES IN WIDTH, WITH A SLIP-RESISTANT SURFACE, IN ACCORDANCE WITH CURRENT INTERNATIONAL BUILDING CODE REGULATIONS.
13. SEE LANDSCAPE ARCHITECT PLANS FOR HEIGHT AND TOP OF COURTYARD AMENITIES (PLANTER CURBS, SEAT WALLS, BENCHES, FIRE WALL, MEDIA WALL, BARS, AND GRILLS).
14. TOP STEP ELEVATIONS FOR STOOPS AND PATIOS ARE SHOWN FOR REFERENCE ONLY. TOP OF STEPS AND PATIO ELEVATIONS SHALL BE COORDINATED WITH ARCHITECTURAL PLANS/DETAILS AND AS-BUILT STOOP/PATIO ELEVATIONS.
15. ELECTRICAL TRANSFORMER PADS AND AC-UNIT PADS ARE TO BE SET A MINIMUM OF 2-INCHES ABOVE THE ADJACENT FINISHED GRADE AROUND THE PERIMETER OF THE PAD. CONTRACTOR SHALL PROVIDE A CONCRETE TURNDOWN AS NECESSARY. CONTRACTOR IS TO VERIFY POSITIVE DRAINAGE AWAY FROM, AND AROUND, ALL ELECTRICAL PADS AND AC-UNIT PADS.
16. SITE GRADING SHALL BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS, AND THE RECOMMENDATIONS SET FORTH IN THE GEOTECHNICAL ENGINEERING REPORT.
17. CONTRACTOR SHALL ENSURE ACCESSIBLE EXTERIOR DOORS AND GATES ARE CONSTRUCTED WITH ADEQUATE LANDING WIDTH AND DEPTH TO COMPLY WITH APPLICABLE AMERICANS WITH DISABILITIES ACT (ADA) AND AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) MANEUVERING CLEARANCES AT DOOR REQUIREMENTS (BASED ON THE DIRECTION OF APPROACH OF THE SIDEWALK).

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

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

10 0 10 20
SCALE: 1" = 10'

DESIGNED BY: RJH
CHECKED BY: RCP
DRAWN BY: RJH

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
DETAILED GRADING PLAN

ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

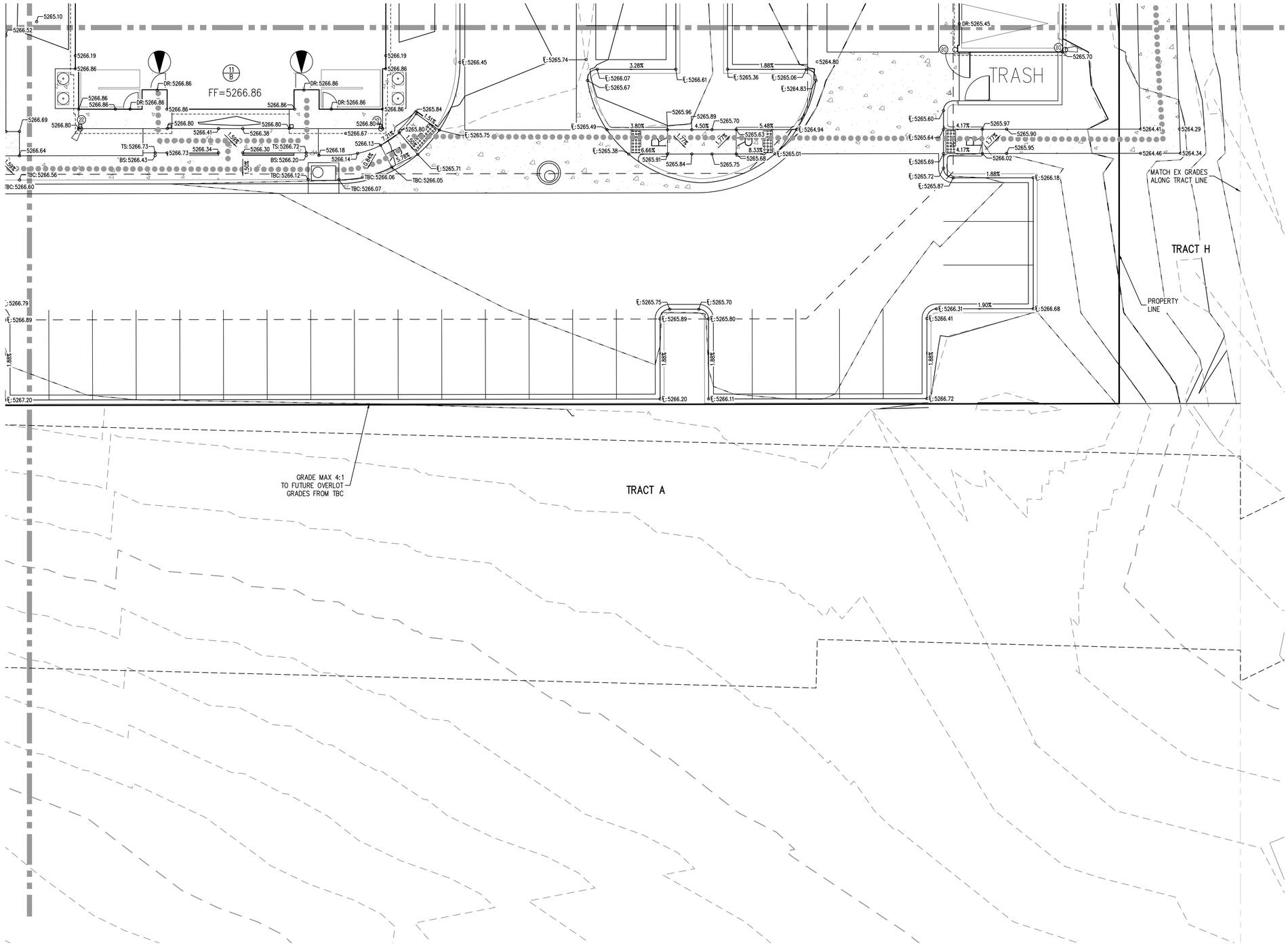
PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
55
55 OF 69

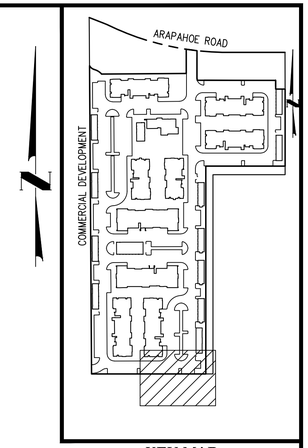
FILEPATH: P:\160602\ENGINEERING\GRADING\GD - DETAILED GRADING PLAN 3.DWG LAYOUT: LAYOUT5
NO XREFS
PLOTTED: WED 01/29/20 5:52:18P BY: RACHEL PATTON

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT THE WRITTEN PERMISSION OF HARRIS KOCHER SMITH

MATCHLINE - SEE SHEET 53



MATCHLINE - SEE SHEET 55



KEY MAP
SCALE: 1" = 250'

GENERAL GRADING NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT HANDRAILS, STAIRS, CURB RAMPS, AND RAMPS ARE INSTALLED IN CONFORMANCE WITH ALL APPLICABLE LOCAL STATE AND/OR FEDERAL REGULATIONS AND STANDARDS, INCLUDING BUT NOT LIMITED TO, THE AMERICANS WITH DISABILITIES ACT (ADA), THE FAIR HOUSING ACT (FHA) AND THE AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI).
2. CROSS SLOPES ALONG THE ACCESSIBLE ROUTE OR AT LANDINGS SHALL NOT EXCEED 2% IN ANY DIRECTION.
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6. ALL GRADES ARE FINISHED GRADE, UNLESS OTHERWISE NOTED.
7. ROCK MULCH, IF PLACED UPSTREAM OF CONCRETE FLATWORK OR GRASSED AREA, SHALL BE PLACED ON TOP OF FINISHED GRADE SHOWN ON THESE PLANS. ROCK MULCH AREAS SHALL BE DESIGNED AND CONSTRUCTED TO ADEQUATELY DRAIN AND NOT RETAIN WATER. ALL LANDSCAPE EDGE MATERIALS SHALL NOT PREVENT DRAINAGE TO PASS THROUGH.
8. ALL GRADES ADJACENT TO THE BUILDINGS SHALL BE AT MINIMUM 8-INCHES BELOW FINISHED FLOOR ELEVATION, UNLESS OTHERWISE NOTED.
9. NON-PAVED GRADES ADJACENT TO BUILDINGS SHALL SLOPE AWAY FROM ALL BUILDINGS AT A MINIMUM OF 5% FOR 10-FT. ALL PAVED GRADES ATTACHED TO BUILDINGS SHALL SLOPE AWAY FROM ALL BUILDINGS AT A MINIMUM OF 1%, UNLESS OTHERWISE NOTED.
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811 Know what's below. Call before you dig.

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

10 0 10 20
SCALE: 1" = 10'

DESIGNED BY: RJH
CHECKED BY: RCP
DRAWN BY: RJH

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
DETAILED GRADING PLAN

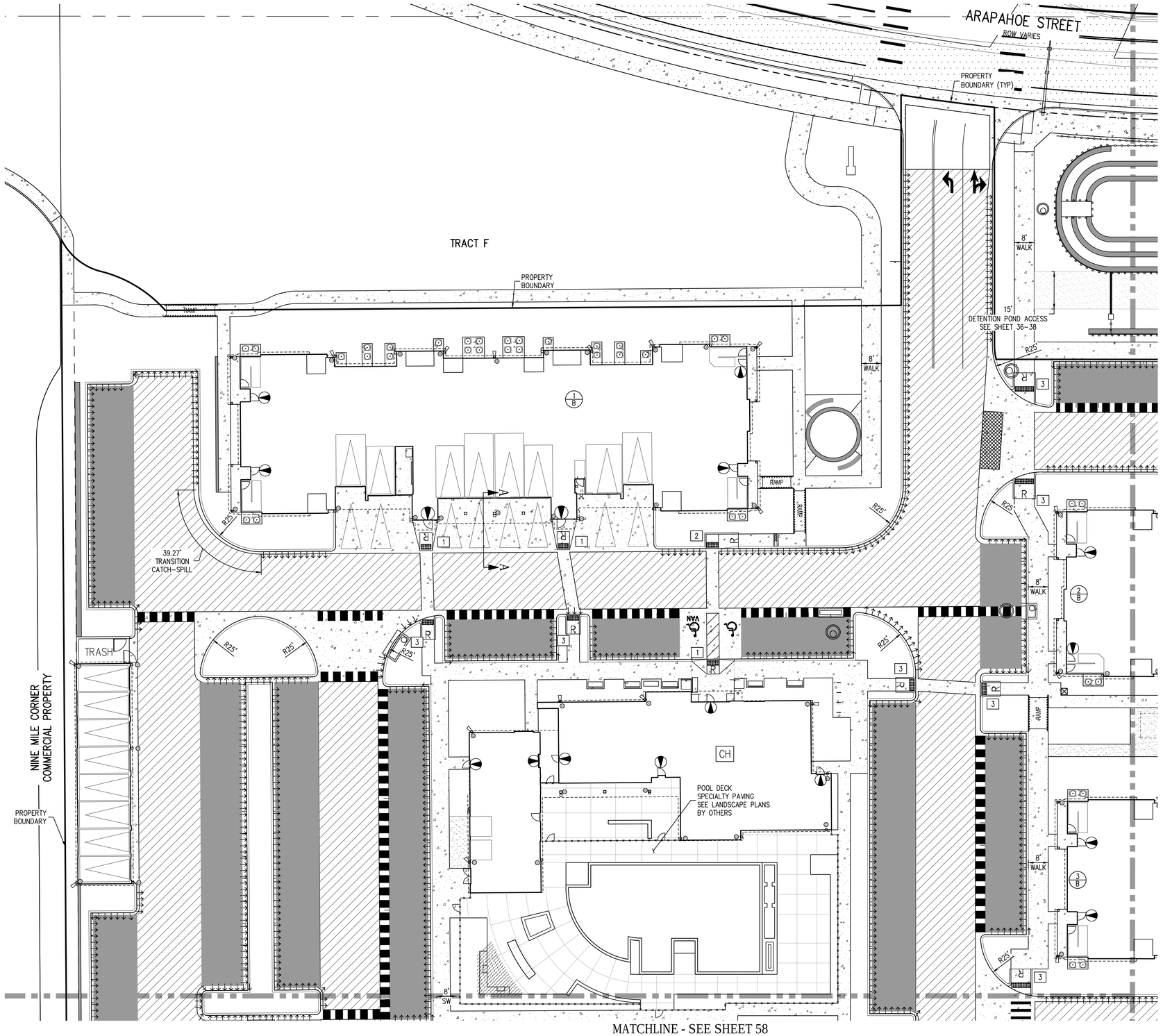
ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
56
56 OF 69

FILEPATH: P:\160602\ENGINEERING\GRADING\GD - DETAILED GRADING PLAN 3.DWG LAYOUT: LAYOUT6
NO XREFS
PLOTTED: WED 01/29/20 5:52:23P BY: RACHEL PATTON

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH

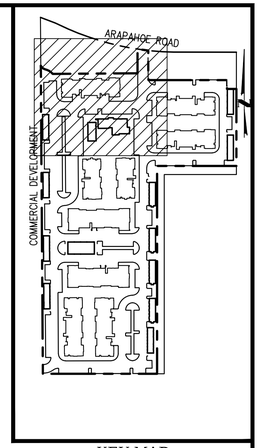


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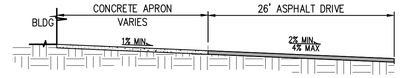
- 6" PORTLAND CEMENT CONCRETE PAVEMENT
- 7" HOT MIX ASPHALT FOR ACCESS DRIVES/FIRE LANES
- 6" HOT MIX ASPHALT FOR PARKING AREAS ONLY
- PROPOSED 4" MOUNTABLE CURB & GUTTER (2' CATCH)
- PROPOSED 4" MOUNTABLE CURB & GUTTER (1' SPILL)
- PROPOSED 8' CROSS PAN
- PROPOSED 4' VALLEY PAN
- 1 TYPE 1 HANDICAP RAMP
- 2 TYPE 2 HANDICAP RAMP
- 3 TYPE 3 HANDICAP RAMP

NOTES:

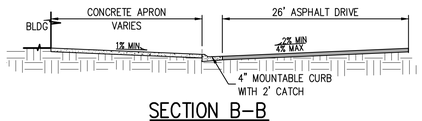
1. ALL DETACHED SIDEWALKS ARE 5' UNLESS OTHERWISE DIMENSIONED
2. ALL ATTACHED (TO HEAD-IN PARKING STALLS) ARE 7' UNLESS OTHERWISE DIMENSIONED.
3. ALL DRIVE AISLES ARE 26' FLOWLINE TO FLOWLINE UNLESS OTHERWISE DIMENSIONED.
4. NO GUTTER PAN ACROSS HANDICAP PARKING.
5. PARKING CURB RADIUS IS 2' UNLESS OTHERWISE NOTED.
6. ALL STREET SECTIONS ARE PRELIMINARY. FINAL PAVEMENT DESIGN TO BE UPDATED AFTER UTILITIES ARE IN AND PRIOR TO CURB AND GUTTER.
7. REFER TO GEOTECH REPORT FOR PAVEMENT AND ASPHALT SECTION RECOMMENDATIONS.
8. FOR TOWN OF ERIE STANDARD NOTES – SEE SHEET 2



KEY MAP
SCALE: 1" = 250'



SECTION A-A
NTS



SECTION B-B
NTS

Know what's below. Call before you dig.

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

20 0 20 40
SCALE: 1" = 20'

DESIGNED BY: DAM
CHECKED BY: MSM
DRAWN BY: DAM

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
PAVING PLAN

ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

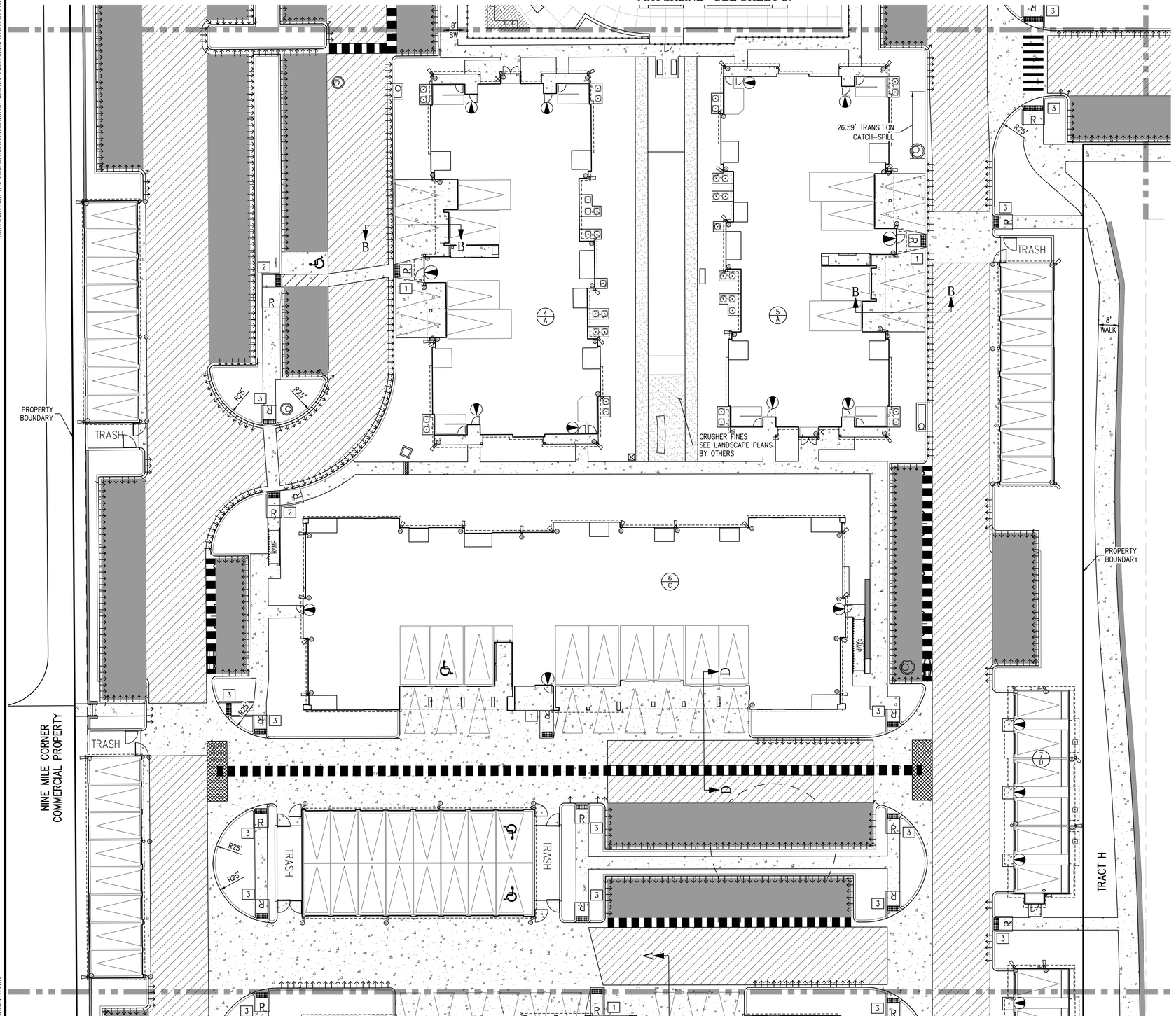
PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
57
57 OF 69

FILEPATH: P:\160602\ENGINEERING\BROADWAY\CD_PAVING PLAN.DWG, LAYOUT: LAYOUT1
6 XREFs: cd - sump, c-base_hyot, levmap, p-base, p-base_offsite_hyot, p-legal
PLOTTED: WED 01/29/20 5:52:35P BY: RACHEL PATTON

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH

MATCHLINE - SEE SHEET 57



MATCHLINE - SEE SHEET 60

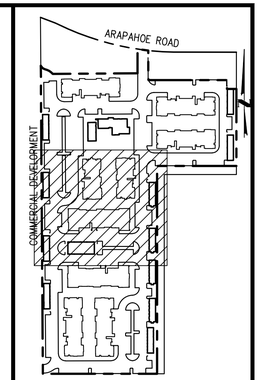
MATCHLINE - SEE SHEET 59

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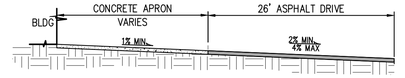
- 6" PORTLAND CEMENT CONCRETE PAVEMENT
- 7" HOT MIX ASPHALT FOR ACCESS DRIVES/FIRE LANES
- 6" HOT MIX ASPHALT FOR PARKING AREAS ONLY
- PROPOSED 4" MOUNTABLE CURB & GUTTER (2' CATCH)
- PROPOSED 4" MOUNTABLE CURB & GUTTER (1' SPILL)
- PROPOSED 8' CROSS PAN
- PROPOSED 4' VALLEY PAN
- 1 TYPE 1 HANDICAP RAMP
- 2 TYPE 2 HANDICAP RAMP
- 3 TYPE 3 HANDICAP RAMP

NOTES:

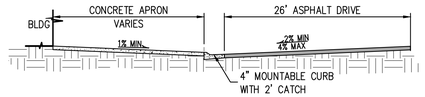
1. ALL DETACHED SIDEWALKS ARE 5' UNLESS OTHERWISE DIMENSIONED
2. ALL ATTACHED (TO HEAD-IN PARKING STALLS) ARE 7' UNLESS OTHERWISE DIMENSIONED.
3. ALL DRIVE AISLES ARE 26' FLOWLINE TO FLOWLINE UNLESS OTHERWISE DIMENSIONED.
4. NO GUTTER PAN ACROSS HANDICAP PARKING.
5. PARKING CURB RADIUS IS 2' UNLESS OTHERWISE NOTED.
6. ALL STREET SECTIONS ARE PRELIMINARY. FINAL PAVEMENT DESIGN TO BE UPDATED AFTER UTILITIES ARE IN AND PRIOR TO CURB AND GUTTER.
7. REFER TO GEOTECH REPORT FOR PAVEMENT AND ASPHALT SECTION RECOMMENDATIONS.
8. FOR TOWN OF ERIE STANDARD NOTES – SEE SHEET 2



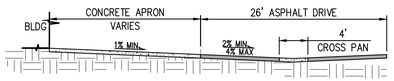
KEY MAP
SCALE: 1" = 250'



SECTION A–A
NTS



SECTION B–B
NTS



SECTION D–D
NTS

811 Know what's below. Call before you dig.
CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

20 0 20 40
SCALE: 1" = 20'

DESIGNED BY: DAM
CHECKED BY: MSM
DRAWN BY: DAM

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
PAVING PLAN

ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

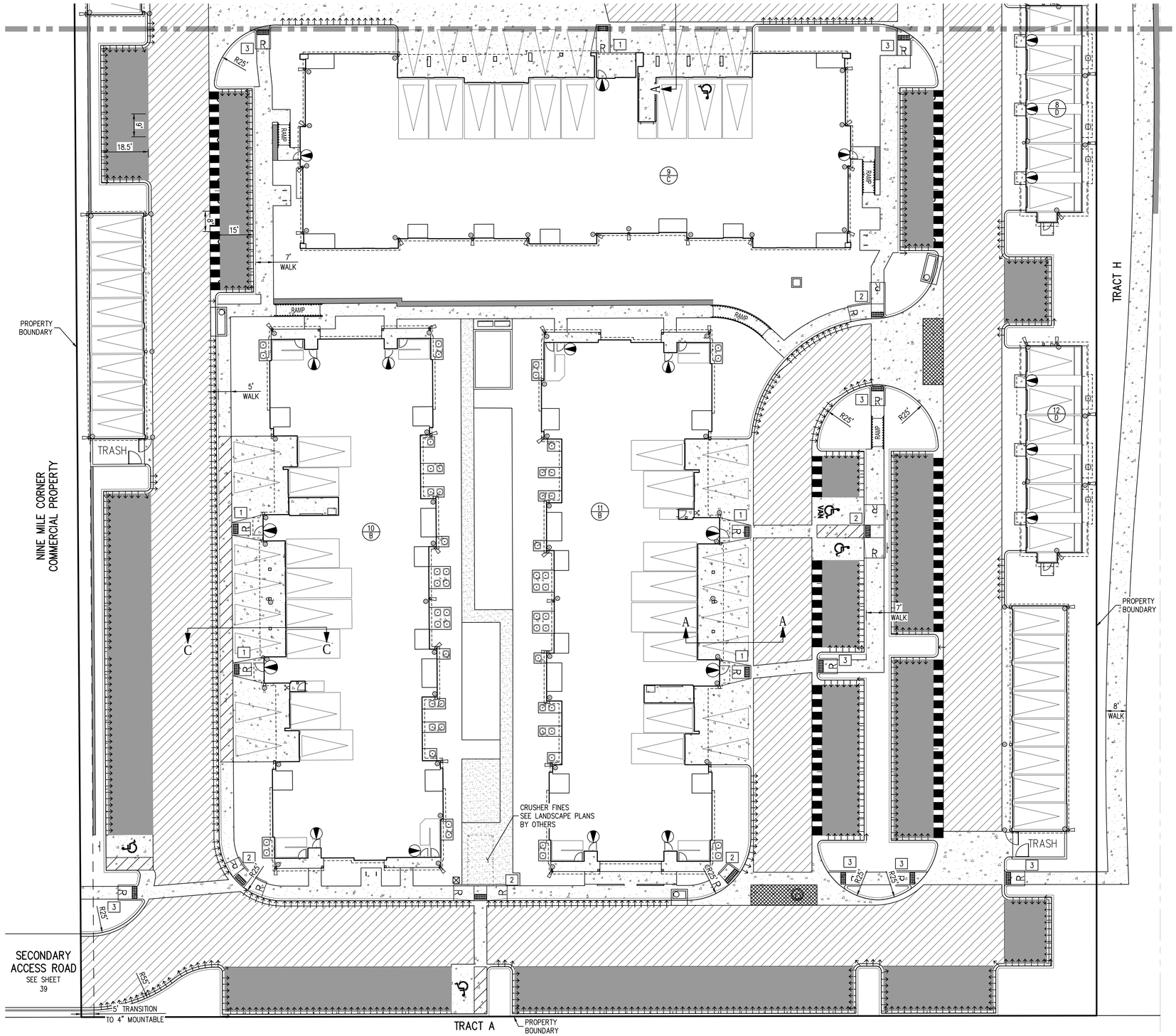
PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
58
58 OF 69

FILEPATH: P:\160602\ENGINEERING\BROADWAY\CD_PAVING PLAN.DWG LAYOUT: LAYOUT2
6 XREFs: cd_ stamp, e-base_bwd, keymap, p-base, p-base_offsite_bwd, P-legal
PLOTTED: WED 01/29/20 5:52:38P BY: RACHEL PATTON

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH

MATCHLINE - SEE SHEET 58

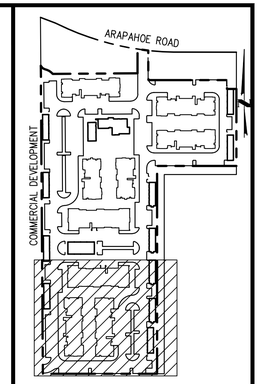


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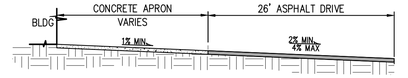
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- 2 TYPE 2 HANDICAP RAMP
- 3 TYPE 3 HANDICAP RAMP

NOTES:

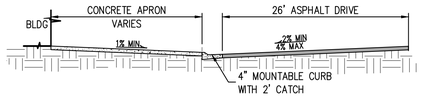
1. ALL DETACHED SIDEWALKS ARE 5' UNLESS OTHERWISE DIMENSIONED
2. ALL ATTACHED (TO HEAD-IN PARKING STALLS) ARE 7' UNLESS OTHERWISE DIMENSIONED.
3. ALL DRIVE AISLES ARE 26' FLOWLINE TO FLOWLINE UNLESS OTHERWISE DIMENSIONED.
4. NO GUTTER PAN ACROSS HANDICAP PARKING.
5. PARKING CURB RADIUS IS 2' UNLESS OTHERWISE NOTED.
6. ALL STREET SECTIONS ARE PRELIMINARY. FINAL PAVEMENT DESIGN TO BE UPDATED AFTER UTILITIES ARE IN AND PRIOR TO CURB AND GUTTER.
7. REFER TO GEOTECH REPORT FOR PAVEMENT AND ASPHALT SECTION RECOMMENDATIONS.
8. FOR TOWN OF ERIE STANDARD NOTES – SEE SHEET 2



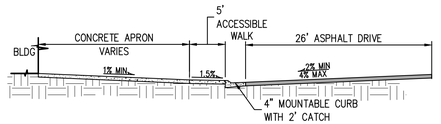
KEY MAP
SCALE: 1" = 250'



SECTION A-A
NTS



SECTION B-B
NTS



SECTION C-C
NTS

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

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

20 0 20 40
SCALE: 1" = 20'

DESIGNED BY: DAM
CHECKED BY: MSM
DRAWN BY: DAM

HKS HARRIS KOCHER SMITH
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Denver, Colorado 80203
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OUTLOOK AT NINE MILE
PAVING PLAN

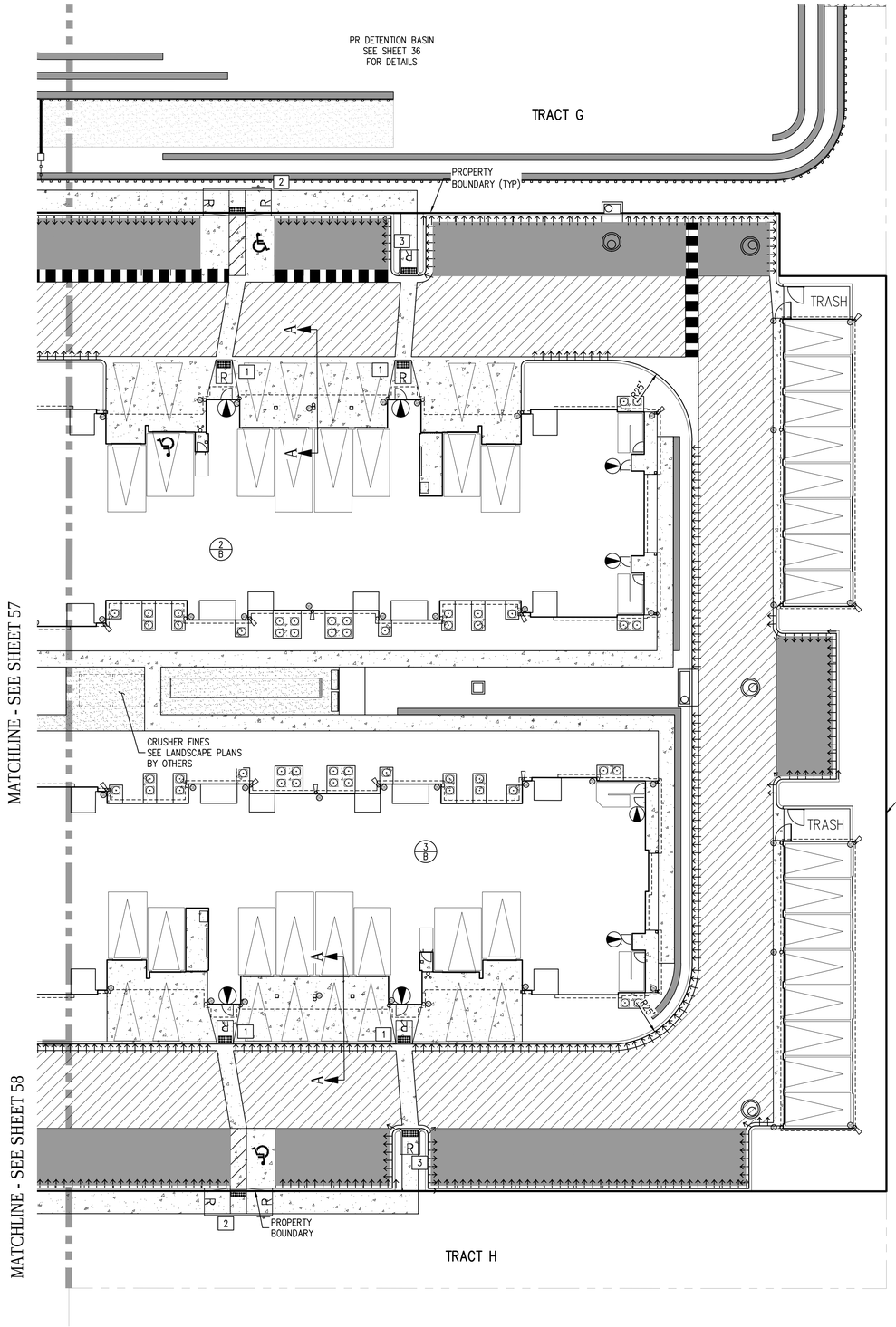
ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
59
59 OF 69

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NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.



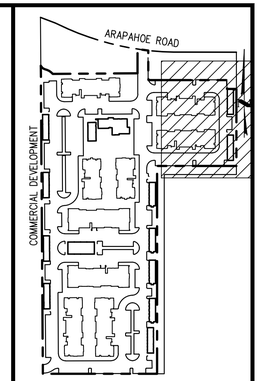
10 AC TR 4114 34-1N-69 PER DEED 1434442
RECEPTION NO. 1434442

LEGEND:

- 6" PORTLAND CEMENT CONCRETE PAVEMENT
- 7" HOT MIX ASPHALT FOR ACCESS DRIVES/FIRE LANES
- 6" HOT MIX ASPHALT FOR PARKING AREAS ONLY
- PROPOSED 4" MOUNTABLE CURB & GUTTER (2' CATCH)
- PROPOSED 4" MOUNTABLE CURB & GUTTER (1' SPILL)
- PROPOSED 8' CROSS PAN
- PROPOSED 4' VALLEY PAN
- 1 TYPE 1 HANDICAP RAMP
- 2 TYPE 2 HANDICAP RAMP
- 3 TYPE 3 HANDICAP RAMP

NOTES:

1. ALL DETACHED SIDEWALKS ARE 5' UNLESS OTHERWISE DIMENSIONED
2. ALL ATTACHED (TO HEAD-IN PARKING STALLS) ARE 7' UNLESS OTHERWISE DIMENSIONED.
3. ALL DRIVE AISLES ARE 26' FLOWLINE TO FLOWLINE UNLESS OTHERWISE DIMENSIONED.
4. NO GUTTER PAN ACROSS HANDICAP PARKING.
5. PARKING CURB RADIUS IS 2' UNLESS OTHERWISE NOTED.
6. ALL STREET SECTIONS ARE PRELIMINARY. FINAL PAVEMENT DESIGN TO BE UPDATED AFTER UTILITIES ARE IN AND PRIOR TO CURB AND GUTTER.
7. REFER TO GEOTECH REPORT FOR PAVEMENT AND ASPHALT SECTION RECOMMENDATIONS.
8. FOR TOWN OF ERIE STANDARD NOTES – SEE SHEET 2



KEY MAP
SCALE: 1" = 250'

811 Know what's below. Call before you dig.
CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

20 0 20 40
SCALE: 1" = 20'

DESIGNED BY: DAM
CHECKED BY: MSM
DRAWN BY: DAM

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

Evergreen Development | Services | Investments

OUTLOOK AT NINE MILE
PAVING PLAN

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

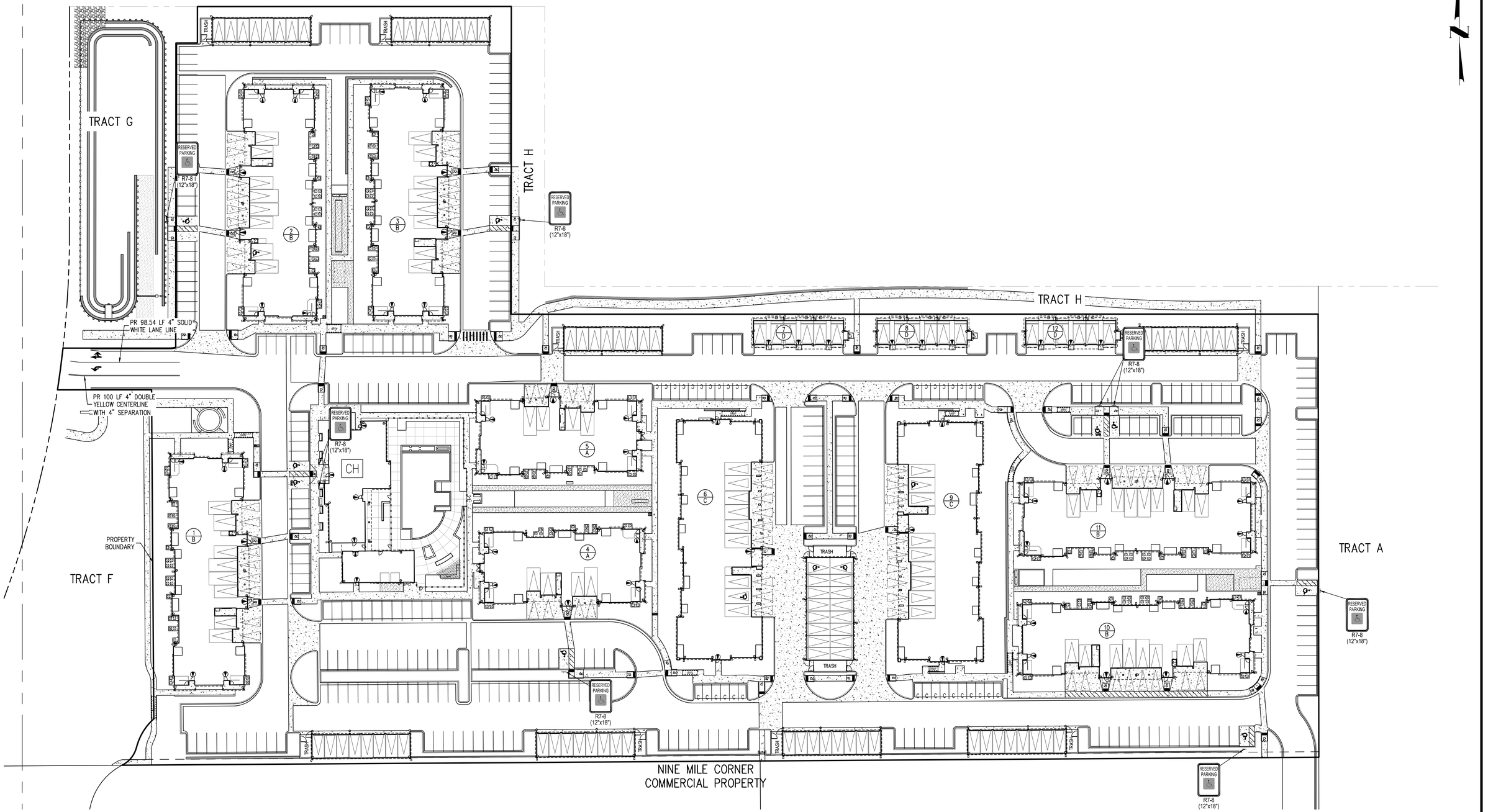
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
60
60 OF 69

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NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.



NOTES:

1. STRIPING AND SIGNAGE SHALL BE INSTALLED IN ACCORDANCE WITH TOWN OF ERIE STANDARD DETAILS AND SPECIFICATIONS.

253 LF 4" DOUBLE YELLOW CENTERLINE WITH 4" SEPARATION

Know what's below. Call before you dig.

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

40 0 40 80
SCALE: 1" = 40'

DESIGNED BY: RCP
CHECKED BY: RCP
DRAWN BY: RCP

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

Evergreen
Development | Services | Investments

OUTLOOK AT NINE MILE
SIGNING & STRIPING PLAN

ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
61
61 OF 69

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PHASE III DRAINAGE REPORT

FOR

OUTLOOK NINE MILE
ERIE, COLORADO

Prepared: November 8, 2019
Revised: January 27, 2020

Prepared for:

Evergreen
Development | Services | Investments

1873 S. Bellaire Street, Suite 1200
Denver, Colorado 80222
Phone: 303-757-0401

Prepared by:

HKS HARRIS KOCHER SMITH

Michael Moore, P.E.
1120 Lincoln Street, Suite 1000
Denver, CO 80203
Ph.: 303-623-6300, Fax: 303-623-6311

Harris Kocher Smith Project No.: 160602

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Appendix G: Operations & Maintenance Plan, Design Standards Form

ENGINEER'S CERTIFICATION

I hereby certify that this Phase III Drainage Report for Outlook at Nine Mile was prepared by me, or under my direct supervision, in accordance with the provisions of the *Town of Erie Standards and Specifications for Design and Construction* for the owners thereof. I understand that the Town of Erie (Town) does not and will not assume liability for drainage facilities designed by others, including the designs presented in this report.

Michael Moore, P.E.
Registered Professional Engineer
State of Colorado License No. 47854
On Behalf of Harris Kocher Smith

TOWN ACCEPTANCE

This report has been reviewed and found to be in general compliance with the *Town of Erie Standards and Specifications for Design and Construction* and other Town requirements. **THE ACCURACY AND VALIDITY OF THE ENGINEERING DESIGN, DETAILS, DIMENSIONS, QUANTITIES, AND CONCEPTS IN THIS REPORT REMAINS THE SOLE RESPONSIBILITY OF THE PROFESSIONAL ENGINEER WHOSE STAMP AND SIGNATURE APPEAR HEREON**.

Accepted by: _____ _____

Deputy Public Works Director Date

If during the construction process or at any time within one year following the acceptance by the Town of the completed improvements, any deficiencies or errors are discovered in the construction plans, specifications, drainage reports, or the actual constructed improvements, the Town shall have the right to require the developer to make any and all corrections which may be deemed necessary by the Town. The costs associated with any such corrections shall be the sole responsibility of the developer.

CONTACT INFORMATION

Applicant:	Jeff Wikstrom
Company Name:	Evergreen
Email:	JWikstrom@evgre.com
Mailing Address:	1873 S. Bellaire St., Ste 1106
	Denver, CO 80222
Telephone #:	(602) 808-8600

Plan Preparation Consultant:

Company Name:	Harris Kocher Smith
Professional Engineer:	Michael Moore, P.E.
Email:	mmoore@hkseng.com
Mailing Address:	1120 Lincoln Street, Suite 1000
	Denver, CO 80203
Telephone #	(303) 623-6300
Fax #	(303) 623-6311

General Location & Description

A. Location

The Outlook at Nine Mile development project is within a greater PD-Development that is within a portion of the northeast quarter of Section 34, Township 1 North, Range 69 West and the southeast quarter of Section 27, Township 1 North, Range 69 West of the Sixth Principal Meridian, in the Town of Erie, County of Boulder, State of Colorado. The PD-Development is located at the southeast corner of Arapahoe Road (variable width R.O.W.), and North 107th Street, aka State Highway 287 (variable width R.O.W.).

The PD-Development is bounded by Arapahoe Road to the north, rural residential developments to the south and east, and N 107th Street to the west. The South Boulder Canyon Ditch (Ditch) meanders east to west through the northern portion of the Site. In the recent past, there was an existing pond, Prince Lake Number 1, on the west side of the PD-Development that has been removed as part of the Site's greater development, Nine Mile Corner Planned Development (PD).

The area studied for the multifamily development (Site) includes lot 11, block 2, tract G and tract H, and the eastern portion of tract A of the PD-development. The Site will be developed as multi-family residential housing with 287 units. The proposed development will also include attached and detached garages, surface parking, a clubhouse with pool, maintenance facilities, trash enclosures, and on-site stormwater conveyance and detention facilities with water quality treatment.

A Vicinity Map is located in Appendix A of this report.

B. Description of Property

The Site is comprised of Lot 11, Tract G, and Tract H of Nine Mile Corner Filing Number 1, totaling approximately 12.96 acres of primarily undeveloped land, with a few permanent and temporary structures. For the proposed development, lot 11 will consist of the multifamily buildings and will be owned and maintained by the multifamily property owner. Tract G will consist of the proposed Extended Detention Basin and Tract H will consist of a proposed pedestrian trail. Tracts G and H will be owned and maintained by the Metro District. Residential and other. Primary existing ground cover appears to be native grasses and weeds, some dirt drives, and dense vegetation along the Ditch including trees and shrubs. Small tracts of farmland are also present.

According to the Natural Resources Conservation Service (NRCS) Web Soil Survey, the underlying surface soils are Ascalon sandy loam, which is classified as Hydrologic Group B (see Appendix B).

The north portion of the Site drains north with 3% to 6% slopes, to Arapahoe Road. The middle portion of the Site drains north-northeast with 3% to 6% slopes, to South Boulder Canyon Ditch, which flows generally east through the north portion of the Site. The south portion of the Site drains generally to the east with 5% to 9% slopes.

A small portion, along the west edge of the north portion of the Site, drains to the west, toward (former) Prince Lake Number 1.

Irrigation facilities exist on and adjacent to the property; plans to re-route an existing on-site irrigation ditch are currently in place.

No major drainageways exist within or adjacent to the Site. The Site is not within the bounds of any existing FHAD according to Urban Drainage & Flood Control District.

There are no known designated wetland areas within the Site or affected by the development.

Drainage Basins

C. Major Basin Description

The Site is a part of the Erie Outfall Systems Planning Preliminary Design, issued in May 2001. The study shows the Site to be tributary to Bullhead Gulch, with all runoff originating on the Site flowing to Bullhead Gulch in both the historic and developed conditions. This report was updated in 2007 but did not study the Prince/Bullhead Gulch tributary.

RESPEC Consulting & Services also prepared a report entitled *Town of Erie Outfall Systems Plan (West of Coal Creek)* in January 2014. This report identified existing drainage problems in the existing watershed and provided different alternatives for future improvements to help control outflow to the effected tributaries.

Much of the major basin remains undeveloped, relatively pervious land. The intent of the study was to update the hydrology for the watershed and ensure proper measures are taken as the watershed develops to prevent flooding and to treat stormwater. For private site development, the recommendations include runoff volume control practices including minimizing directly connected impervious areas, employing infiltrating BMPs, and utilizing stormwater detention.

The Site is shown to be in a Zone X (unshaded) Flood Area according to FIRM Map 08013C0438J effective December 18, 2012. Zone X (unshaded) is described by FEMA as areas determined to be outside the 500-year flood plain. A copy of the FEMA Firmette is included in Appendix A, for reference.

As mentioned above, South Boulder Canyon Ditch meanders through the Site. In order to develop the Site, the ditch will need to be re-routed to the South. A plan is in place and running concurrently with the development of the Site as part of the PD in order to shift the alignment of the Ditch to the south and alter the flow regime from open ditch to closed conduit for the section directly adjacent to the Site.

A previously existing pond, Prince Lake Number 1, to the west of the Site has been removed as part of the PD and will no longer be influenced by this Site.

D. Sub-basin Description

The Site is mostly undeveloped, pervious area with Type B soils and likely does not constitute a large portion of the runoff in the greater area. Runoff originating in the southern portion of the Site nearly entirely drains toward the Ditch, leaving the Site at different locations but eventually making its way to the Ditch. The northern portion of the Site drains toward Arapahoe Road right of way. As mentioned above, Prince Lake Number 1 and South Boulder Canyon Ditch (wetlands) will no longer be influenced by the site under post-development conditions. Refer to the master drainage study for the PD provided by Galloway for additional details.

Drainage Design Criteria

E. Development Criteria Reference and Constraints

The principal design criteria used for this Phase III Drainage Report was the Town of Erie Standards and Specifications for Design and Construction of Public Improvements (Erie Standards), 2019 Edition.

In addition, the Urban Storm Drainage Criteria Manual (USDCM), Volumes 1-3 for Urban Drainage and Flood Control District (UDFCD) was also consulted.

F. Hydrological Criteria

The design storms analyzed for this Site are the 2-year and 100-year for the initial and major storm, respectively.

Rainfall intensities were taken from the following USDCM equation:

$$I = \frac{28.5P_1}{(10 + T_C)^{0.786}}$$

One hour rainfall P_1 values were taken from Table 800-2 in the Erie Standards. For the Site, the 2-year storm P_1=0.81 inches and for the 100-year storm, P_1=2.68 inches.

The Rational Method was used to analyze the initial and major storm for the design of storm sewer and inlets.

The empirical equations provided in Section 814.09 of the Erie Standards were used to compute the necessary 100-year detention volume for the extended detention basin (EDB). The release rates were computed using Table 800-4 of the Erie Standards. The Site is comprised of Hydrologic Type B soil and will use a unit release rate of 0.85 cfs per acre, subtracting any flow leaving the Site undetained. Table 800-4 and Section 814.09 of the Erie standards are included in Appendix F for reference.

The following equation was used for the 100-year detention volume:

$V_{100}=K_{100}*A$ where:
$K_{100} = (1.78*I – 0.002*I^2-3.56)/1000$
I = Developed basin imperviousness (%)
A = Tributary area

The EDB will use Full-Spectrum Detention. The USDCM was consulted in order to compute this volume and release rate. EDB volumes are tabulated in Section “I” of this report and calculations are provided in the appendices, for reference.

G. Hydraulic Criteria

Inlet capacity is based on fully developed conditions and designed utilizing the UDFCD spreadsheet “UD Inlet v4.05.xls”, released March 2017. Some on-grade inlets will bypass a portion of the major storm events. Roadway capacity will be adequate to convey all runoff during the major storm event minus discharge captured by roadway inlets. Cross-section capacity analysis has been provided in Appendix D.

All proposed storm sewer pipes will be sized to convey the major storm event. The existing ultimate receiving storm sewer system is being designed by others as part of the PD and will be adequate to receive the Site’s detained stormwater runoff.

Erie Standards were followed without variation or deviation, except where specifically noted.

Drainage Facility Design

H. General Concept

An area totaling approximately 14.5 acres was analyzed as tributary to the proposed EDB under post-development conditions. All impervious area developed within the Outlook at Nine Mile project, as well as potential runoff from off-site, will be routed to the proposed EDB in Tract G along the north property boundary of the Site, with the exception of a small portion of the private drive. The EDB will be designed for Full-Spectrum Detention and will outfall to a proposed storm sewer outfall designed by others as part of the PD. The EDB will be owned and maintained by the Metro District.

The general concept of the drainage design is to route runoff into the major storm sewer inlets through grass swales, landscape & roof drains, and private drive curb & gutter. Inlets within the private drive are designed to be spaced at intervals that ensure the private drive is still passable to emergency vehicles during the major storm event.

The major storm sewer is routed through the Site generally from south to north toward the proposed EDB at the north end of the Site. Runoff will be conveyed to the

EDB, detained and treated, and then be conveyed to the proposed storm sewer outfall (by others).

Inspection and maintenance of all private storm sewer facilities will be the responsibility of the property owner and shall be done in accordance with Town of Erie standards.

The EDB will exist in a tract of land that is to be owned and maintained by the Metro District. Access for maintenance to the EDP is provided off the main drive at the entrance to the Site.

I. Specific Details

Runoff from nearly all Site sub-basins is captured via proposed storm sewer and routed to the proposed EDB at the north end of the Site. One small sub-basin will flow off the Site un-detained. Peak discharge to the EDB in the fully developed condition will be approximately 12 cfs during the initial storm event and approximately 47 cfs during the major storm event.

The following is a summary of each on-site drainage sub-basin:

Basin A1 (0.71 acres) consists of landscaping only. The peak runoff rate from basin A1 is calculated to be 0.01 cfs during the initial storm event and 2.2 cfs during the major storm event. Peak runoff from basin A1 sheet flows to the north and joins runoff in basin A as described below.

Basin A (0.31 acres) consists of buildings, drives, sidewalks, and landscaping. Runoff originating within this basin will either surface-drain through curb & gutter or be captured and conveyed by roof & landscape drains to a proposed 5' Type R on-grade curb inlet (inlet A12) within the private drive (design point 1a). The peak runoff rate from basin A combined with runoff from basin A1 is calculated to be 0.4 cfs during the initial storm event and 3.8 cfs during the major storm event. During the initial storm event it is expected that the landscape drains will capture and convey all landscaping runoff. During the major storm event, some runoff may overtop the landscaped areas into the roadway and be conveyed by curb & gutter to the on-grade inlet. The inlet captures all runoff during the initial storm event and bypasses 1.1 cfs during the major storm event which will flow through curb & gutter to the inlet in downstream basin B (Design Point 2). In the event of a storm sewer clog, runoff will be conveyed through the private drive to the next inlet, or ultimately to the detention basin.

Basin C (0.49 acres) consists of buildings, sidewalks, and landscaping. Runoff originating within this basin will either surface-drain through grass swales or be captured and conveyed by roof & landscape drains to Design Point 1 in basin F, described below. The peak runoff rate from basin C is calculated to be 0.4 cfs during the initial storm event and 2.4 cfs during the major storm event. During the initial and major storm events, all runoff should ultimately be collected and conveyed to Design

Point 1 in basin F. If the landscape drains clog, runoff will overtop the sump area and flow to Design Point 1.

Basin F (0.33 acres) consists of buildings and landscaping. Runoff originating within this basin will either surface-drain through grass swales or be captured and conveyed by roof & landscape drains to a proposed sump-condition Type C inlet (inlet A10) and then conveyed by closed conduit at Design Point 1. During the initial storm event it is expected that the landscape drains will capture and convey all landscaping runoff. During the initial storm event, the peak runoff rate from basin F, 0.3 cfs, will combine with carryover flow from upstream basin C to total 0.7 cfs, all of which will be captured by the inlet and conveyed via closed conduit to Design Point 2. During the major storm event, the peak runoff originating in Basin F, 1.7 cfs, will combine with carryover flow from upstream basin C to total 3.6 cfs of surface flow routed to the inlet. The inlet will capture and convey 3.6 cfs from surface runoff and convey it to Design Point 2, along with 2.7 cfs conveyed via closed conduit from upstream basin A (a total of 6.2 cfs). If the inlet clogs, runoff will be conveyed through the private drive to the next inlet, or ultimately to the detention basin.

Basin B1 (0.47 acres) consists of landscaping only. The peak runoff rate from basin B1 is calculated to be 0.01 cfs during the initial storm event and 1.4 cfs during the major storm event. Peak runoff from basin B1 sheet flows to the north and joins runoff in basin B as described below.

Basin B (1.18 acres) consists of buildings, drives, sidewalks, and landscaping. Runoff originating within this basin will either surface-drain through curb & gutter or be captured and conveyed by roof & landscape drains to a proposed on-grade 10’ Type R curb inlet (inlet A9) within the private drive (Design Point 2). During the initial storm event it is expected that the landscape drains will capture and convey all landscaping runoff. The peak runoff rate from basin B combined with runoff from basin B1 is calculated to be 1.4 cfs during the initial storm event, all of which will be captured by the inlet and conveyed via closed conduit to Design Point 3. During the major storm event, some runoff may overtop the landscaped areas into the roadway and be conveyed by curb & gutter to the on-grade inlet. During the major storm event, the peak runoff originating in basin B will combine with runoff from basin B1 and bypass flow from upstream basin A for a total of 8.1 cfs to be routed to inlet A9. The inlet will capture 7.0 cfs from surface runoff and convey it to Design Point 3, along with 6.2 cfs conveyed via closed conduit from upstream basins (a total of 13.0 cfs). The inlet will bypass 1.1 cfs to Design Point 3. If the inlet clogs, runoff will be conveyed through the private drive to the next inlet, or ultimately to the detention basin.

Basin G (1.60 acres) consists of buildings, drives, sidewalks, and landscaping. Runoff originating within this basin will either surface-drain through curb & gutter or be captured and conveyed by roof & landscape drains to a proposed on-grade Triple Type 13 valley inlet (inlet G1) within the private drive (Design Point 3). During the initial storm event it is expected that the landscape drains will capture and convey all landscaping runoff. The peak runoff rate from basin G is calculated to be 1.9 cfs

during the initial storm event. The inlet will capture 1.6 cfs from the initial storm surface runoff to be conveyed via closed conduit to Design Point 3a. The inlet will bypass 0.3 cfs to Design Point 4 during the initial storm. During the major storm event, some runoff may overtop the landscaped areas into the roadway and be conveyed by curb & gutter to the on-grade inlet at Design Point 3. During the major storm event the peak runoff originating in basin G, 8.5 cfs, will combine with bypassed flow from upstream basin B to total 8.1 cfs of surface flow routed to the inlet. The inlet will capture 5.3 cfs from surface runoff and convey it to Design Point 4, along with 13.0 cfs conveyed via closed conduit from upstream basins (a total of 17.2 cfs). The inlet will bypass 2.8 cfs to Design Point 4. If the inlet clogs, runoff will be conveyed through the private drive to the next inlet, or ultimately to the detention basin.

Basin I (0.29 acres) consists of buildings and landscaping. Runoff originating within this basin will either surface-drain through grass swales or be captured and conveyed by roof & landscape drains to the on-grade inlet in downstream basin J (Design Point 4). The peak runoff rate from basin I is calculated to be 0.3 cfs during the initial storm event and 1.4 cfs during the major storm event. During the initial and major storm events, all runoff should ultimately be collected and conveyed to Design Point 4.

Basin J (0.32 acres) consists of buildings, sidewalks, drives, and landscaping. Runoff originating within this basin will either surface-drain through curb & gutter or be captured and conveyed by roof & landscape drains to a proposed on-grade 10’ type-R inlet (inlet A7) within the private drive (Design Point 4). During the initial storm event it is expected that the landscape drains will capture and convey all landscaping runoff. The peak runoff rate from basin J combined with runoff from basin I and bypass flow from basin G is calculated to be 0.9 cfs for the initial storm event. During the initial storm event, all runoff should ultimately be collected and conveyed to Design Point 6. During the major storm event the peak runoff originating in basin J, 2.0 cfs, will combine with runoff from basin I and bypass flow from upstream basin G to total 5.2 cfs of surface flow routed to the inlet. The inlet will capture 5.1 cfs from surface runoff and convey it to Design Point 4, along with 17.2 cfs conveyed via closed conduit from upstream basins (a total of 21.9 cfs). If the landscape drains clog, runoff will overtop the sump area and flow to the private drive and eventually to Design Point 4, or ultimately to the detention basin. If the inlet clogs, runoff will be conveyed through the private drive to the next inlet, or ultimately to the detention basin.

Basin N (0.55 acres) consists of buildings, sidewalks, and landscaping. Runoff originating within this basin will either surface-drain through grass swales or be captured and conveyed by roof & landscape drains to a sump condition Type C inlet (inlet C2) at design point 5a and then conveyed by closed conduit to Design Point 5. The peak runoff rate from basin N is calculated to be 0.6 cfs during the initial storm event and 2.9 cfs during the major storm event. During the initial and major storm events, all runoff should ultimately be collected and conveyed to Design Point 5. If the

inlet clogs, runoff will overtop the sump area and flow into the private drive and eventually to Design Point 5, or ultimately to the detention basin.

Basin L1 (0.55 acres) consists of buildings, drives, and landscaping. The peak runoff rate from basin L1 is calculated to be 0.2 cfs during the initial storm event and 2.0 cfs during the major storm event. Peak runoff from basin L1 sheet flows to the north and joins runoff in basin L as described below.

Basin L (0.87 acres) consists of buildings, drives, sidewalks, and landscaping. Runoff originating within this basin will either surface-drain through curb & gutter or be captured and conveyed by roof & landscape drains to a proposed on-grade 10' Type R curb inlet (inlet C1) within the private drive (Design Point 5). During the initial storm event it is expected that the landscape drains will capture and convey all landscaping runoff. The peak runoff rate from basin L combined with runoff from basin L1 is calculated to be 1.1 cfs during the initial storm event, all of which will be captured by the inlet and conveyed via closed conduit to Design Point 6. During the major storm event, the peak runoff originating in basin L will combine with runoff from basin L1 for a total of 6.2 cfs to be routed to inlet C1. The inlet will capture 5.9 cfs from surface runoff and convey it to Design Point 6, along with 2.9 cfs conveyed via closed conduit from upstream basin N (a total of 7.7 cfs). The inlet will bypass 0.3 cfs to Design Point 7a. During the major storm event, some runoff may overtop the landscaped areas into the roadway and be conveyed by curb & gutter to inlet C1. If the inlet clogs, runoff will be conveyed through the private drive to the next inlet, or ultimately to the detention basin.

Basin D (0.61 acres) consists of buildings, drives, sidewalks, and landscaping. Runoff originating within this basin will either surface-drain through curb & gutter or be captured and conveyed by roof & landscape drains to a proposed on-grade 10' Type R curb inlet (inlet B8) within the private drive (Design Point 8c). The peak runoff rate from basin D is calculated to be 0.9 cfs during the initial storm event and 3.7 cfs during the major storm event. During the initial storm event it is expected that the landscape drains will capture and convey all landscaping runoff. During the major storm event, some runoff may overtop the landscaped areas into the roadway and be conveyed by curb & gutter to the on-grade inlet. The inlet captures all runoff during the initial and major storm events. In the event of a storm sewer clog, runoff will be conveyed through the private drive to the next inlet, or ultimately to the detention basin.

Basin E (0.46 acres) consists of buildings, drives, sidewalks, and landscaping. Runoff originating within this basin will either surface-drain through curb & gutter or be captured and conveyed by roof & landscape drains to a proposed on-grade Triple Type 13 valley inlet (inlet B7) within the private drive (Design Point 8). The peak runoff rate from basin E is calculated to be 0.7 cfs during the initial storm event, all of which will be captured by inlet B7 and conveyed via closed conduit to Design Point 8a. During the initial storm event it is expected that the landscape drains will capture

and convey all landscaping runoff. During the major storm event, some runoff may overtop the landscaped areas into the roadway and be conveyed by curb & gutter to the on-grade inlet. The peak runoff rate from basin E is calculated to be 3.0 cfs during the major storm event to be routed to inlet B7. The inlet will capture 2.3 cfs from surface runoff and convey it to Design Point 8a, along with 3.7 cfs conveyed via closed conduit from upstream basin D (a total of 6.2 cfs). The inlet will bypass 0.7 cfs to Design Point 9. If the inlet clogs, runoff will be conveyed through the private drive to the next inlet, or ultimately to the detention basin.

Basin H1 (0.06 acres) Consists of buildings, sidewalks, and landscaping. Runoff originating within this basin will either surface-drain through grass swales or be captured and conveyed by roof & landscape drains to a sump condition Type C inlet (inlet E1) at design point 8b and then conveyed by closed conduit to Design Point 8a. The peak runoff rate from basin H1 is calculated to be 0.1 cfs during the initial storm event and 0.3 cfs during the major storm event. During the initial and major storm events, all runoff should ultimately be collected and conveyed to Design Point 8a. For the major storm event, the 0.3 cfs captured by inlet E1 will combine with 6.2 cfs conveyed via closed conduit from Design Point 8 for a total of 6.5 cfs to be conveyed via closed conduit to Design Point 10. If the inlet clogs, runoff will overtop the sump area and flow into the private drive and eventually to Design Point 9, or ultimately to the detention basin.

Basin H (0.53 acres) consists of consists of buildings, drives, sidewalks, and landscaping. Runoff originating within this basin will either surface-drain through curb & gutter or be captured and conveyed by roof & landscape drains to a proposed on-grade 5’ Type R curb inlet (inlet D1) within the private drive (Design Point 9). The peak runoff rate from basin H is calculated to be 0.9 cfs during the initial storm event, all of which will be captured by inlet D1 and conveyed via closed conduit to Design Point 10. During the initial storm event it is expected that the landscape drains will capture and convey all landscaping runoff. During the major storm event, some runoff may overtop the landscaped areas into the roadway and be conveyed by curb & gutter to the on-grade inlet. During the major storm event the peak runoff originating in basin H will combine with bypass flow from upstream basin E for a total of 3.7 cfs to be routed to inlet D1. The inlet will capture 2.7 cfs from surface runoff and convey it to Design Point 10, where it will combine with 6.5 cfs conveyed via closed conduit from Design Point 8a for a total of 8.8 cfs to be conveyed via closed conduit to Design Point 11. The inlet will bypass 1.0 cfs to Design Point 11. If the inlet clogs, runoff will be conveyed through the private drive to the next inlet, or ultimately to the detention basin.

Basin P (1.20 acres) consists of consists of buildings, drives, sidewalks, and landscaping. Runoff originating within this basin will either surface-drain through curb & gutter or be captured and conveyed by roof & landscape drains to a proposed on-grade 10’ Type R curb inlet (inlet B4) within the private drive (Design Point 11). The peak runoff rate from basin P is calculated to be 2.0 cfs during the initial storm event, all of which will be captured by inlet B4 and conveyed via closed conduit to Design

Point 12a. During the initial storm event it is expected that the landscape drains will capture and convey all landscaping runoff. During the major storm event, some runoff may overtop the landscaped areas into the roadway and be conveyed by curb & gutter to the on-grade inlet. During the major storm event the peak runoff originating in basin P will combine with bypass flow from upstream basin H for a total of 7.7 cfs to be routed to inlet B4. The inlet will capture 6.9 cfs from surface runoff and convey it to Design Point 12a, along with 8.8 cfs conveyed via closed conduit from upstream Design Point 10 (a total of 15.4 cfs). The inlet will bypass 0.8 cfs to Design Point 12. If the inlet clogs, runoff will be conveyed through the private drive to the next inlet, or ultimately to the detention basin.

Basin Q (0.44 acres) consists of consists of buildings, drives, sidewalks, and landscaping. Runoff originating within this basin will either surface-drain through curb & gutter or be captured and conveyed by roof & landscape drains to a proposed on-grade Type 13 Triple Valley inlet (inlet H1) within the private drive (Design Point 12). During the initial storm event it is expected that the landscape drains will capture and convey all landscaping runoff. The peak runoff rate from basin Q is calculated to be 0.7 cfs during the initial storm event. The inlet will capture 0.6 cfs from the initial storm surface runoff to be conveyed via closed conduit to Design Point 12a. The inlet will bypass 0.1 cfs to Design Point 13 during the initial storm. During the major storm event, some runoff may overtop the landscaped areas into the roadway and be conveyed by curb & gutter to the on-grade inlet. During the major storm event the peak runoff originating in basin Q will combine with bypass flow from upstream basin P for a total of 3.2 cfs to be routed to inlet H1. The inlet will capture 2.5 cfs from surface runoff and convey it to Design Point 12a, where it will combine with 15.4 cfs conveyed via closed conduit from Design Point 11 for a total of 17.0 cfs to be conveyed via closed conduit to Design Point 14. The inlet will bypass 0.7 cfs to Design Point 13. If the inlet clogs, runoff will be conveyed through the private drive to the next inlet, or ultimately to the detention basin.

Basin O (0.75 acres) consists of buildings, sidewalks, and landscaping. Runoff originating within this basin will either surface-drain through grass swales or be captured and conveyed by roof & landscape drains to the sump-condition 5’ Type R curb inlet in downstream basin K (Design Point 13). The peak runoff rate from basin O is calculated to be 0.5 cfs during the initial storm event and 3.5 cfs during the major storm event. During the initial and major storm events, all runoff should ultimately be collected and conveyed to Design Point 13.

Basin K (0.86 acres) consists of buildings, sidewalks, drives, and landscaping. Runoff originating within this basin will either surface-drain through curb & gutter or be captured and conveyed by roof & landscape drains to a proposed sump-condition 5’ Type R curb inlet (inlet F1) within the private drive (Design Point 13). During the initial storm event it is expected that the landscape drains will capture and convey all landscaping runoff. The peak runoff rate from basin K combined with runoff from basin O and bypass flow from basin Q is calculated to be 1.5 cfs for the initial storm event. During the initial storm event, all runoff should ultimately be collected and

conveyed to Design Point 14. During the major storm event the peak runoff originating in basin K, 5.2 cfs, will combine with runoff from basin O and bypass flow from upstream basin Q to total 6.2 cfs of surface flow routed to the inlet. The inlet will capture all surface runoff and convey it to Design Point 14, where it will combine with 17.0 cfs conveyed via closed conduit from Design Point 11 for a total of 19.4 cfs to be conveyed via closed conduit to Design Point 7. If the inlet clogs, runoff will be conveyed through the private drive to the next inlet, or ultimately to the detention basin.

Basin R (0.32 acres) consists of buildings, sidewalks, and landscaping. Runoff originating within this basin will either surface-drain through grass swales or be captured and conveyed by roof & landscape drains to the on-grade 5' Type R curb inlet in downstream basin M (Design Point 7a). The peak runoff rate from basin O is calculated to be 0.3 cfs during the initial storm event and 1.6 cfs during the major storm event. During the initial and major storm events, all runoff should ultimately be collected and conveyed to Design Point 7a.

Basin M (0.99 acres) consists of buildings, sidewalks, drives, and landscaping. Runoff originating within this basin will either surface-drain through curb & gutter or be captured and conveyed by roof & landscape drains to a proposed sump-condition 5' type-R inlet (inlet A1) within the private drive (Design Point 7a). During the initial storm event it is expected that the landscape drains will capture and convey all landscaping runoff. The peak runoff rate from basin M combined with runoff from basin R and bypass flow from basin L is calculated to be 1.5 cfs for the initial storm event. During the initial storm event, all runoff should ultimately be collected and conveyed to Design Point 7a where it will combined with 10.5 cfs conveyed via closed conduit from Design Point 7 for a total of 11.7 cfs to outfall into the detention basin. During the major storm event the peak runoff originating in basin M, 6.0 cfs, will combine with runoff from basin R and bypass flow from upstream basin L to total 6.4 cfs of surface flow routed to inlet A1. This surface flow will combine with 44.2 cfs conveyed via closed conduit from Design Point 7 to total 49.4 cfs to outfall into the detention basin during the major storm event.

Basin OS-3 (0.61 acres) consists of sidewalks, landscaping, and EDB. All runoff originating in basin OS-3 will surface drain to the EDB where it will combine with all upstream runoff from the Site. Peak runoff during the initial and major storm events are 0.15 cfs and 2.2 cfs, respectively.

Basin OS-2 (0.07 acres) consists of the small portion of private drive between the most downstream inlet in the private storm sewer system and the northern property boundary. Runoff originating in this basin totals 0.2 cfs and 0.6 cfs in the initial and major storm events, respectively. The major and minor storm event runoff escaping the Site undetained into Arapahoe Road right of way is subtracted from the total allowable detention pond release. These flows ultimately collect at a downstream inlet to the east of the private drive entrance in Arapahoe Road.

Basin OS-4 (0.22 acres) consists of sidewalks and landscaping within Tract F. Runoff originating in this basin totals 0.07 cfs and 0.9 cfs in the initial and major storm events, respectively. These flows ultimately collect at a downstream inlet to the east of the private drive entrance in Arapahoe Road.

Basin OS-1 (0.11 acres) consists of landscaping only. Runoff originating in this basin totals negligible and 0.4 cfs in the initial and major storm events, respectively. The major and minor storm event runoff escaping the Site undetained to the east is subtracted from the total allowable detention pond release.

The proposed EDB will outfall into a proposed storm sewer outfall location being designed by others as part of the PD. Controlled, detained runoff release will be conveyed from the outlet structure of the EDB to an outfall manhole along the northern property boundary of the Site. An overflow weir along the northeastern edge of the EDB will safely convey flows during outlet clogging or storms in excess of the 100-year event to Arapahoe Road right of way.

Due to the available footprint for the EDB, retaining walls were used to achieve adequate detention volume.

Design Storm Event	WSEL (feet)	Volume Provided CF	Volume Provided Acre-Feet	Release Rate (CFS)
WQCV	5242.91	14,546	0.334	40-Hour drain time
EURV	5245.86	48,594	1.116	12-32-Hour drain time*
100-Year	5247.47	70,373	1.616	11.1

*Independent of the WQCV

The EDB provides a micropool within the outlet box to and provides an adequate surcharge depth separate from the WQCV and EURV volumes. The EURV will be discharged through an orifice plate on the outlet box in standard conformance with the USDCM. Above the EURV water surface elevation, the outlet box will allow stormwater to flow into the outlet structure and discharge directly to the outlet pipe. The release will be controlled to the maximum allowable 11.3 cfs (14.50 acres * 0.85 cfs/acre – 1.0 cfs undetained release) via restrictor plate bolted over the outlet pipe designed to release 11.1 cfs with an accumulated head corresponding to the 100-year water surface elevation shown above.

Per Erie Standards, there is one foot of provided freeboard between the 100-year water surface elevation and the top of the berm. The weir has been designed to discharge the peak runoff rate during the major storm event at a flow depth of approximately 5 inches. The discharge will flow over the weir crest and down the reinforced pond berm to the outfall location in Arapahoe Road right of way. EDB Pond details can be found in Appendix E.

Calculations for the pond hydraulic designs are included in Appendix D. Storm sewer profiles can be found in Appendix E.

Construction will be phased in a way that will utilize the existing low point where the EDB is proposed as a temporary sediment basin to receive discharge that may be conveying sediment during construction. As storm sewer and roadway infrastructure is built (from downstream to the southern corner of the Site), proper temporary BMPs will be put in place in order to limit the amount of sediment leaving the Site.

Summary & Conclusion

All proposed on-site drainage infrastructure shown on the Final Drainage Plan (Appendix E) will be designed to convey the major-storm event and all sumps will be designed to have points of overland relief in order to prevent property damage in the event of clogging.

Stormwater quality will be provided within the proposed EDB and where feasible, directly connected impervious areas will be avoided.

The proposed project will not adversely affect drainage patterns on the Site or negatively affect adjacent, upstream, or downstream property. The project was designed in accordance with the Town of Erie storm drainage criteria.

References

1. Town of Erie Standards and Specifications for Design and Construction of Public Improvements, Town of Erie, Colorado, 2019.

2. Town of Erie Outfall Systems Planning Preliminary Design, Town of Erie, Colorado, May 2001

3. Urban Storm Drainage Criteria Manual, Vol. 1, Urban Drainage and Flood Control District, Revised August 2018.

4. Urban Storm Drainage Criteria Manual, Vol. 2, Urban Drainage and Flood Control District, Revised September 2017.

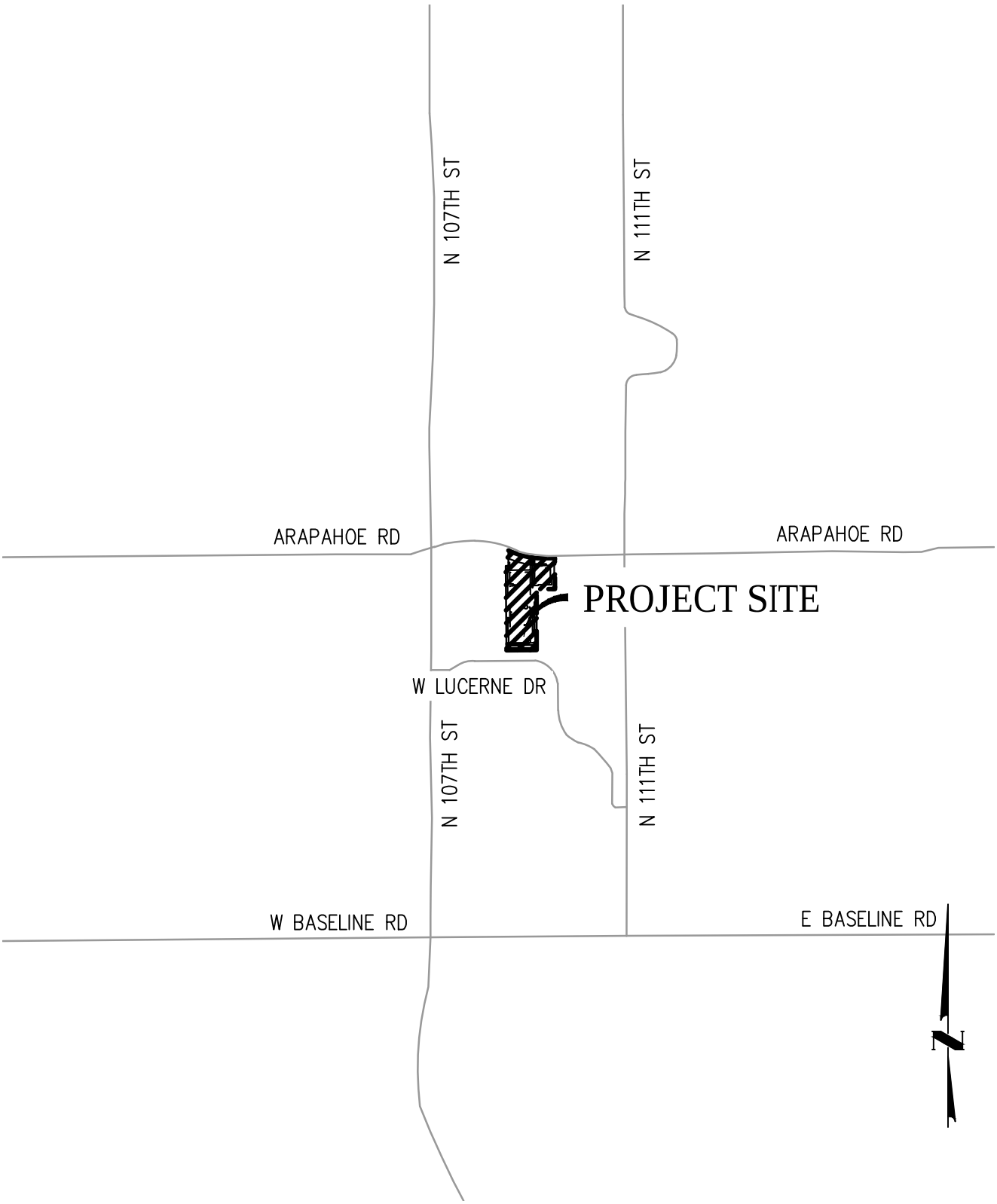
5. Urban Storm Drainage Criteria Manual, Vol. 3, Urban Drainage and Flood Control District, Revised April 2018.

6. United States Department of Agriculture, Natural Resources Conservation Service. Custom Soil Resource Report.

7. United States Department of Homeland Security, Federal Emergency Management Agency. Flood Insurance Rate Map. Map Number 08005C0194K, December 17, 2010

APPENDIX A

Vicinity Map
FEMA Firmette



Plotted: WED 04/26/17 4:37:12P By: Reggie Smith Filepath: p:\160602\engineering\xref\vicmap.dwg Layout: layout1

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.

ISSUE DATE: 09/19/2016	PROJECT #: 160602
DATE	REVISION COMMENTS

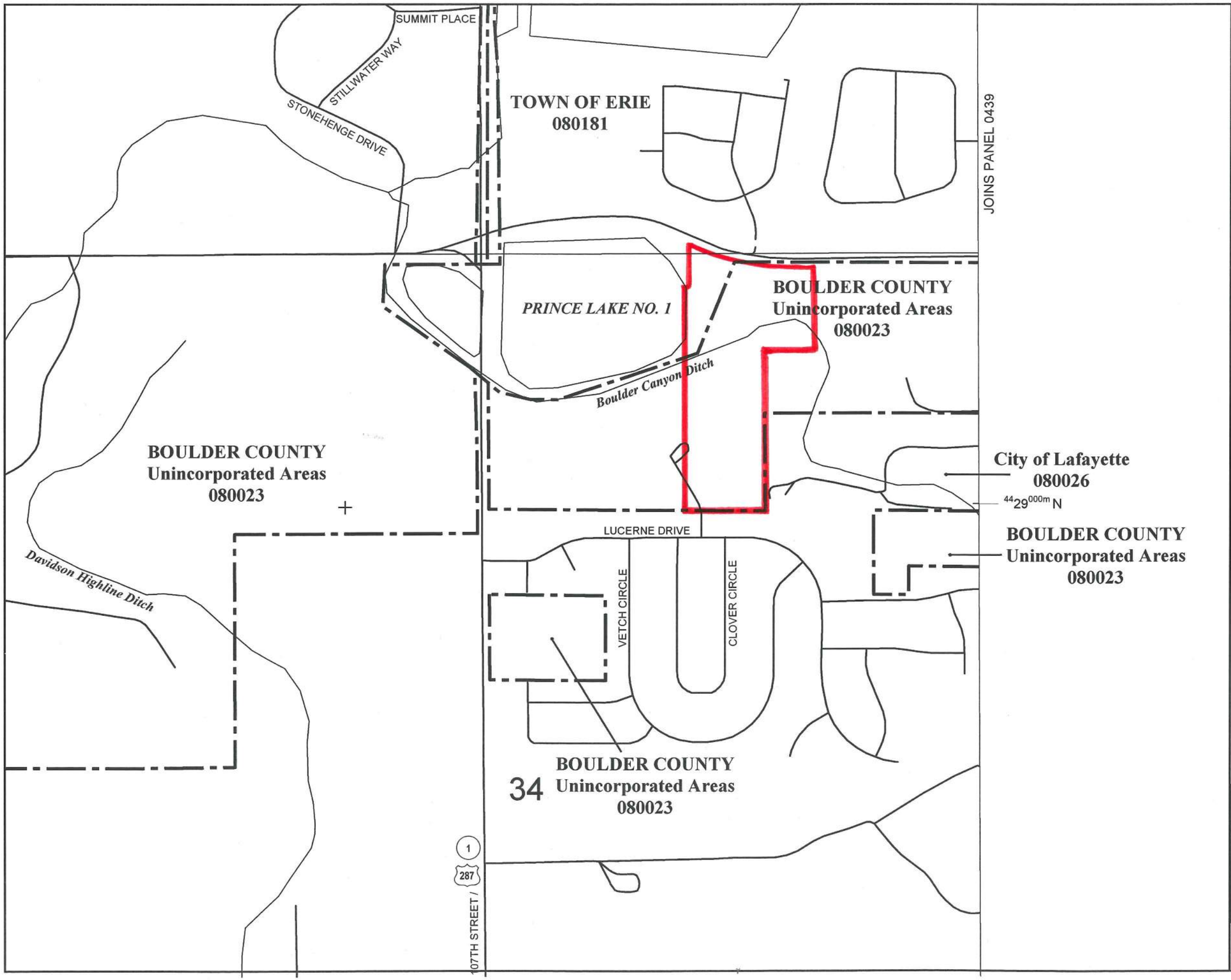
EVERGREEN

OUTLOOK AT NINE MILE
VICINITY MAP

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

DSN'D BY: MEG
CHK'D BY: TEG
DRAWN BY: MEG

SHEET NO.
1
1 OF 1



urance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

MET

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0438J

FIRM

FLOOD INSURANCE RATE MAP

BOULDER COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 438 OF 615

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BOULDER COUNTY	080023	0438	J
ERIE, TOWN OF	080181	0438	J
LAFAYETTE, CITY OF	080026	0438	J

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
08013C0438J

MAP REVISED
DECEMBER 18, 2012

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

APPENDIX B

Soils Information

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Boulder County Area, Colorado



July 18, 2016

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means

for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

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W—Water.....15
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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

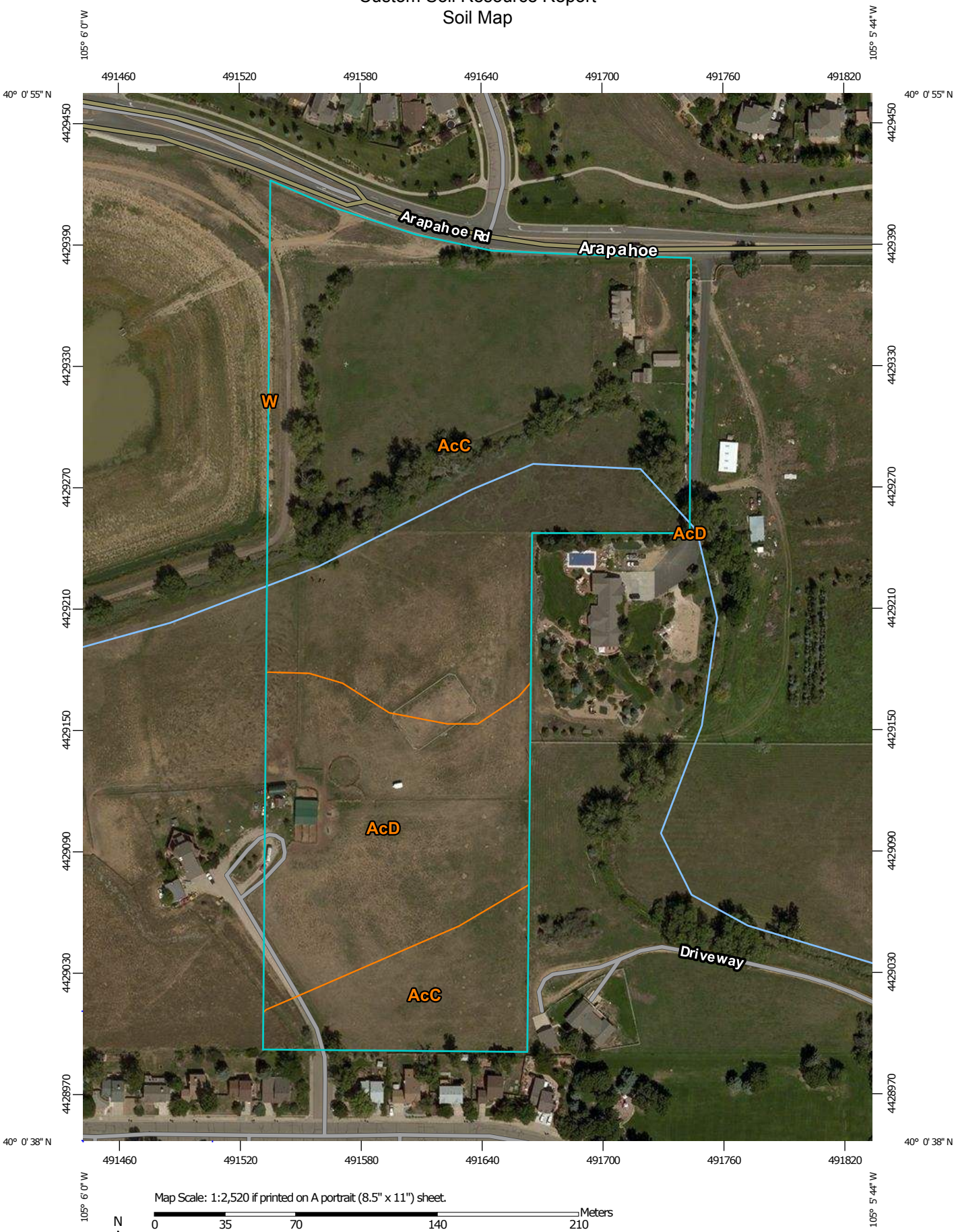
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:2,520 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 35 70 140 210

Feet: 0 100 200 400 600

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 Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

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 1:20,000.

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: http://websoilsurvey.nrcs.usda.gov
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: Boulder County Area, Colorado
Survey Area Data: Version 12, Sep 22, 2015

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

Date(s) aerial images were photographed: Aug 30, 2014—Sep 18, 2014

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.

Map Unit Legend

Boulder County Area, Colorado (CO643)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
AcC	Ascalon sandy loam, 3 to 5 percent slopes	11.9	74.6%
AcD	Ascalon sandy loam, 5 to 9 percent slopes	4.1	25.4%
W	Water	0.0	0.0%
Totals for Area of Interest		**15.9**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If

intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Boulder County Area, Colorado

AcC—Ascalon sandy loam, 3 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2tlnt
Elevation: 3,550 to 5,970 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 46 to 57 degrees F
Frost-free period: 135 to 160 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Ascalon and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ascalon

Setting

Landform: Interfluves
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Wind-reworked alluvium and/or calcareous sandy eolian deposits

Typical profile

Ap - 0 to 6 inches: sandy loam
Bt1 - 6 to 12 inches: sandy clay loam
Bt2 - 12 to 19 inches: sandy clay loam
Bk - 19 to 35 inches: sandy clay loam
C - 35 to 80 inches: sandy loam

Properties and qualities

Slope: 3 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline (0.1 to 1.9 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 1.0
Available water storage in profile: Moderate (about 6.9 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4c
Hydrologic Soil Group: B
Ecological site: Sandy Plains (R067BY024CO), Sandy (North) Draft (April 2010) (PE 16-20) (R072XA022KS)

Minor Components

Stoneham

Percent of map unit: 10 percent
Landform: Interfluves
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Loamy Plains (R067BY002CO), Loamy Upland (North) (PE 16-20) (R072XA015KS)

Vona

Percent of map unit: 8 percent
Landform: Interfluves
Landform position (two-dimensional): Backslope, footslope, shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Sandy Plains (R067BY024CO), Sandy (North) Draft (April 2010) (PE 16-20) (R072XA022KS)

Platner

Percent of map unit: 2 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Loamy Plains (R067BY002CO), Loamy Upland (North) (PE 16-20) (R072XA015KS)

AcD—Ascalon sandy loam, 5 to 9 percent slopes

Map Unit Setting

National map unit symbol: jpr4
Elevation: 4,900 to 5,500 feet
Mean annual precipitation: 12 to 18 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 140 to 155 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Ascalon and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ascalon

Setting

Landform: Terraces
Landform position (three-dimensional): Side slope, tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed loamy alluvium and/or eolian deposits

Typical profile

H1 - 0 to 5 inches: sandy loam
H2 - 5 to 16 inches: sandy clay loam, sandy loam
H2 - 5 to 16 inches: fine sandy loam, loamy fine sand, sandy loam
H3 - 16 to 60 inches:
H3 - 16 to 60 inches:
H3 - 16 to 60 inches:

Properties and qualities

Slope: 5 to 9 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Very high (about 16.9 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: Sandy (R067XB026CO)

Minor Components

Olney

Percent of map unit: 10 percent

Otero

Percent of map unit: 5 percent

Terry

Percent of map unit: 5 percent

W—Water

Map Unit Composition

Water: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Minor Components

Aquolls

Percent of map unit: 5 percent
Landform: Marshes

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APPENDIX C

Hydrologic Computations

Project Name: Outlook Nine Mile

Composite C-Value Computations

Post-Development

Project No: 160602

Date: 11/04/19

Revised: 01/27/20

Design by: JWM

Checked by: MSM

NRCS Soil Group B

BASIN	TOTAL AREA (ACRES)	ROOFS (90%)	CONCRETE DRIVES & WALKS (90%)	STREETS (100%)	LANDSCAPE AREA (2%)	PERCENT IMPERVIOUS	C_2=	C_5=	C_{100}=
A	0.31	0.07	0.03	0.16	0.05	81%	0.66	0.69	0.81
B	1.18	0.20	0.22	0.50	0.25	75%	0.60	0.63	0.78
C	0.49	0.27	0.03	0.00	0.19	56%	0.42	0.45	0.69
D	0.61	0.18	0.09	0.24	0.10	79%	0.64	0.67	0.80
E	0.46	0.07	0.11	0.18	0.10	74%	0.59	0.62	0.77
F	0.33	0.19	0.00	0.00	0.14	53%	0.40	0.43	0.67
G	1.60	0.48	0.29	0.47	0.36	73%	0.58	0.61	0.77
H	0.53	0.08	0.06	0.27	0.12	76%	0.61	0.64	0.78
H1	0.06	0.03	0.01	0.00	0.03	53%	0.40	0.43	0.68
I	0.29	0.19	0.00	0.00	0.10	60%	0.46	0.49	0.71
J	0.32	0.04	0.06	0.11	0.11	63%	0.49	0.52	0.72
K	0.86	0.16	0.21	0.32	0.17	76%	0.61	0.64	0.78
L	0.87	0.21	0.09	0.30	0.27	66%	0.52	0.55	0.74
M	0.99	0.24	0.15	0.38	0.23	74%	0.59	0.62	0.77
N	0.55	0.28	0.06	0.00	0.20	58%	0.44	0.47	0.70
O	0.75	0.22	0.15	0.00	0.38	45%	0.33	0.36	0.64
P	1.20	0.16	0.09	0.69	0.26	77%	0.62	0.65	0.79
Q	0.44	0.15	0.10	0.13	0.06	82%	0.66	0.69	0.81
R	0.32	0.16	0.03	0.00	0.13	53%	0.40	0.44	0.68
On-Site Total	**12.16**	**3.38**	**1.78**	**3.75**	**3.24**	**70%**	**0.55**	**0.58**	**0.75**
A1	0.71	0.00	0.00	0.00	0.71	2%	0.01	0.01	0.44
B1	0.47	0.00	0.00	0.00	0.47	2%	0.01	0.01	0.44
OS-1	0.11	0.00	0.00	0.00	0.11	2%	0.01	0.01	0.44
OS-2	0.07	0.00	0.00	0.07	0.00	100%	0.84	0.86	0.90
OS-3	0.61	0.00	0.12	0.00	0.49	19%	0.12	0.14	0.51
OS-4	0.22	0.00	0.05	0.00	0.17	22%	0.14	0.17	0.53
L1	0.55	0.03	0.12	0.00	0.41	25%	0.16	0.19	0.54
OS (off-site) Total	**2.74**	**0.03**	**0.28**	**0.07**	**1.79**	**14%**	**0.08**	**0.10**	**0.49**

Project Name: Outlook Nine Mile
Project No: 160602
Date: 11/04/19
Revised: 01/27/20

STANDARD FORM SF-2
TIME OF CONCENTRATION

Designed By: JWM
Checked By: MSM

SUB-BASIN DATA			INITIAL/OVERLAND TIME (Ti)			TRAVEL TIME (Tt)					Tc CHECK (URBANIZED BASINS)			FINAL	REMARKS
BASIN	AREA (AC)	C_5	LENGTH (FT)	SLOPE %	Ti (MIN)	LENGTH (FT)	SLOPE %	C_v	VELOCITY (FPS)	Tt (MIN)	COMPOS. Tc (MIN)	TOTAL LENGTH	Tc = (L/180) + 10 (MIN)	Tc (MIN)	
A	0.31	0.69	69	2.00	5.01	104	1.50	20	2.45	0.71	5.72	173	10.96	5.72	
B	1.18	0.63	69	2.00	5.64	202	1.75	20	2.65	1.27	6.92	271	11.51	6.92	
C	0.49	0.45	114	2.00	10.05	47	5.53	15	3.53	0.22	10.27	161	10.89	10.27	
D	0.61	0.67	190	2.00	8.68	35	5.54	20	4.71	0.12	8.80	225	11.25	8.80	
E	0.46	0.62	50	2.00	4.93	220	1.10	20	2.10	1.75	6.68	270	11.50	6.68	
F	0.33	0.43	77	2.00	8.57	20	4.45	15	3.16	0.11	8.68	97	10.54	8.68	
G	1.60	0.61	220	2.00	10.49	154	1.97	20	2.81	0.91	11.41	374	12.08	11.41	
H	0.53	0.64	46	2.00	4.56	73	1.81	20	2.69	0.45	5.01	119	10.66	5.01	
H1	0.06	0.43	51	2.00	6.92	14	1.50	7	0.86	0.27	7.19	65	10.36	7.19	
I	0.29	0.49	182	2.00	11.96	25	5.60	15	3.55	0.12	12.08	207	11.15	11.15	
J	0.32	0.52	50	2.00	5.96	58	2.38	20	3.09	0.31	6.27	108	10.60	6.27	
K	0.86	0.64	113	2.00	7.09	242	1.76	20	2.65	1.52	8.61	355	11.97	8.61	
L	0.87	0.55	110	2.00	8.40	110	3.02	20	3.48	0.53	8.92	220	11.22	8.92	
M	0.99	0.62	116	2.00	7.60	96	1.94	20	2.79	0.57	8.17	212	11.18	8.17	
N	0.55	0.47	90	2.00	8.64	50	5.40	15	3.49	0.24	8.88	140	10.78	8.88	
O	0.75	0.36	85	2.00	9.90	29	6.90	15	3.94	0.12	10.02	114	10.63	10.02	
P	1.20	0.65	42	2.00	4.29	137	2.34	20	3.06	0.75	5.04	179	10.99	5.04	
Q	0.44	0.69	150	2.00	7.32	62	4.32	20	4.16	0.25	7.57	212	11.18	7.57	
R	0.32	0.44	100	2.00	9.68	38	3.18	15	2.67	0.24	9.91	138	10.77	9.91	
Off-Site															
A1	0.71	0.01	191	4.35	16.89	0	0.00	7	0.00	0.00	16.89	191	11.06	11.06	
B1	0.47	0.01	201	2.83	19.99	0	0.00	7	0.00	0.00	19.99	201	11.12	11.12	
OS-1	0.11	0.01	43	11.50	5.79	0	0.00	7	0.00	0.00	5.79	43	10.24	5.79	
OS-2	0.07	0.86	53	5.67	1.80	41	1.00	20	2.00	0.34	5.00	94	10.52	5.00	
OS-3	0.61	0.14	58	2.00	10.66	193	0.50	20	1.41	2.27	12.94	251	11.39	11.39	
OS-4	0.22	0.17	101	5.47	9.77	0	0.00	7	0.00	0.00	9.77	101	10.56	9.77	
L1	0.55	0.19	279	3.80	17.88	154	2.10	20	2.90	0.89	18.76	433	12.41	12.41	

Project Name: Outlook Nine Mile

Project No: 160602

Date: 11/04/19

Revised: 01/27/20

STANDARD FORM SF-2

Post-Development
Rational Method Procedure

Designed By: JWM

Checked By: MSM

Design Storm: 2 YR

		DIRECT RUNOFF						TOTAL RUNOFF				STREET/INLET					STORM SEWER PIPE				TRAVEL TIME			CARRYOVER FLOWS					
BASIN (s)	DESIGN POINT	AREA (AC)	RUNOFF COEFF	Tc (min)	C x A (AC)	I (IN/HR)	DIRECT RUNOFF, Q (CFS)	Tc (min)	Σ(C x A) (AC)	I (IN/HR)	TOTAL RUNOFF, Q (CFS)	SLOPE (%)	STREET FLOW (CFS)	INLET DESIGN FLOW (CFS)	STREET OR INLET INTERCEPTION (CFS)	CARRYOVER (CFS)	DESIGN FLOW (CFS)	PIPE SLOPE (%)	PIPE SIZE (IN)	Q_{FULL} (CFS)	LENGTH (FT)	VELOCITY (FPS)	Tt (min)	Σ(C x A) BYPASS (AC)	LENGTH (FT)	SLOPE (%)	VELOCITY (FPS)	Tt (min)	REMARKS
A1		0.71	0.01	11.06	0.01	2.10	0.01	11.06	0.01	2.10	0.01													0.01	61.83	1.81	2.7	0.38	Basin A1 Direct Runoff
A		0.31	0.66	5.72	0.20	2.65	0.5	5.72	0.20	2.65	0.5																		Basin A Direct runoff
Basin A + Basin A1	1a							**11.44**	**0.21**	**2.07**	**0.4**						**0.4**	**3.84**	**18**	**20.6**	**283.0**	**4.3**	**1.09**						**Basin A + Basin A1 surface flow captured by Pr Inlet (Combined flow from DP 1a to DP 1)**
C		0.49	0.42	10.27	0.21	2.17	0.4																	0.21	202	0.40	1.3	2.66	Basin C Direct Runoff
F		0.33	0.40	8.68	0.13	2.31	0.3																						Basin F Direct Runoff
Basin C + Basin F	1							12.93	0.34	1.97	0.7																		Total Flow captured by Type C Inlet at DP 1
								12.93	**0.55**	**1.97**	**1.1**						**1.1**	**3.0**	**18**	**18.2**	**50.2**	**5.6**	**0.15**						**Combined flow in Pipe at from DP 1 to DP 2**
B1		0.47	0.01	11.12	0.004	2.10	0.01	11.12	0.004	2.10	0.01													0.004	294.9	1.12	2.1	2.32	Basin B1 Direct Runoff
B		1.18	0.60	6.92	0.71	2.50	1.8																						Basin B Direct Runoff
Basin B + Basin B1								13.44	0.72	1.93	1.4																		Captured by PR Inlet at DP 2
Basin B + Basin B1 + DP 1	2							**13.08**	**1.26**	**1.96**	**2.5**						**2.5**	**0.84**	**24**	**20.7**	**219.0**	**4.4**	**0.83**						**Combined flow in pipe from DP 2 to DP3a**
G	3	1.60	0.58	11.41	0.94	2.08	1.9						1.9	1.6	1.6	0.3													Basin G Direct runoff
								11.41	0.77	2.08	1.6						1.6	5.0	18	23.5	7.2	7.3	0.02						Captured by PR Inlet at DP 3
DP 2 + DP 3	3a							**13.91**	**2.03**	**1.90**	**3.9**						**3.9**	**0.75**	**24**	**19.6**	**100.8**	**4.8**	**0.35**						**Combined flow in pipe from DP 3a to DP 4**
								11.41	0.17	2.08	0.3													0.17	101.4	1.00	2.0	0.85	Bypass Flows to DP 4
J		0.32	0.49	6.27	0.16	2.58	0.4																						Basin J Direct Runoff
I		0.29	0.46	11.15	0.13	2.10	0.3																	0.13	130	2.88	3.4	0.64	Basin I direct Runoff
Basin I + Basin J + Bypass								12.25	0.46	2.01	0.9																		Basin J Direct Runoff + Basin I Carryover + Bypass form Basin G (Captured by PR Inlet)
Basin J +Basin I + Bypass + DP 3a	4							**14.26**	**2.49**	**1.88**	**4.7**						**4.7**	**1.00**	**24**	**22.6**	**539.1**	**5.6**	**1.60**						**Combined flow in pipe from DP 4 to DP 6**
N	5a	**0.55**	**0.44**	**8.88**	**0.24**	**2.29**	**0.6**										**0.6**	**4.00**	**18**	**21.0**	**56.7**	**5.0**	**0.19**						**Basin N Direct Runoff Captured by PR Inlet (combined flow from DP 5a to DP 5)**
L1		0.55	0.16	12.41	0.09	2.00	0.2	12.41	0.09	2.00	0.2													0.09	198.3	4.01	4.0	0.83	Basin L1 Direct Runoff
L		0.87	0.52	8.92	0.45	2.29	1.0																						Basin L Direct Runoff
Basin L + Basin L1								13.23	0.54	1.95	1.1																		Captured by PR Inlet at DP 5
Basin L + Basin L1 + Basin N	5							**13.23**	**0.79**	**1.95**	**1.5**						**1.5**	**0.50**	**24**	**16.0**	**18.7**	**3.1**	**0.10**						**Combined flow in pipe from DP 5 to DP 6**
DP 4 + DP 5	6							**15.86**	**3.27**	**1.79**	**5.9**						**5.9**	**0.50**	**30**	**29.0**	**179.1**	**3.0**	**1.01**						**Combined flow in pipe from DP 6 to DP 7**
D	8c	**0.61**	**0.64**	**8.80**	**0.39**	**2.30**	**0.9**										**0.9**	**1.6**	**18**	**13.2**	**227.7**	**4.1**	**0.92**						**Basin D Direct Runoff captured by PR inlet (combined flow from DP 8c to DP 8)**
E		0.46	0.59	6.68	0.27	2.53	0.7																						Basin E Direct Runoff captured by PR inlet
Basin D + Basin E	8							**9.73**	**0.66**	**2.22**	**1.5**						**1.5**	**0.5**	**18**	**7.4**	**113.7**	**3.1**	**0.60**						**Combined flow in pipe from DP 8 to DP 8a**
H1	8b	**0.06**	**0.40**	**7.19**	**0.02**	**2.47**	**0.1**										**0.1**	**0.50**	**18**	**7.4**	**49.3**	**1.3**	**0.62**						**Basin H1 Direct Runoff Captured by PR Inlet (flow from DP 8b to DP 8a)**
DP 8b + DP9	8a							**10.33**	**0.69**	**2.16**	**1.5**						**1.5**	**0.89**	**18**	**9.9**	**132.0**	**3.8**	**0.58**						**Combined flow in pipe from DP 8a to DP 10**
H	9	**0.53**	**0.61**	**5.01**	**0.32**	**2.75**	**0.9**										**0.9**	**9.0**	**18**	**31.5**	**22.5**	**7.4**	**0.05**						**Basin H Direct Runoff captured by PR inlet (Flow in Pipe from DP 9 to DP 10)**
DP 8a + DP 9	10							**10.33**	**0.99**	**2.16**	**2.1**						**2.1**	**1.0**	**18**	**10.5**	**159.0**	**4.5**	**0.59**						**Combined flow in Pipe from DP 10 to DP 11**
P		1.20	0.62	5.04	0.74	2.74	2.0																						Basin P Direct Runoff captured by PR inlet
Basin P + DP 10	11							**10.92**	**1.73**	**2.12**	**3.6**						**3.6**	**1.3**	**24**	**25.3**	**173.8**	**5.7**	**0.51**						**Combined flow in pipe from DP 11 to DP 12a**
Q	12	0.44	0.66	7.57	0.29	2.43	0.7						0.7	0.6	0.6	0.1													Basin Q Direct Runoff
								7.57	**0.25**	**2.43**	**0.6**						**0.6**	**6.3**	**18**	**26.3**	**7.9**	**5.9**	**0.02**						**Captured by Pr Inlet (combined flow from DP 12 ro DP 12a)**
DP 11 + DP 12	12a							**11.43**	**1.97**	**2.08**	**4.1**						**4.1**	**1.0**	**24**	**22.0**	**70.3**	**5.3**	**0.22**						**Combined Flow in Pipe from DP 12a to DP 14**
								7.57	0.04	2.43	0.1													0.04	95.12	1.00	2.0	0.79	Bypass Flow to DP 13
O		0.75	0.33	10.02	0.25	2.19	0.5																	0.25	354.1	1.00	2.0	2.95	Basin O Direct Runoff
K		0.86	0.61	8.61	0.53	2.32	1.2																						Basin K Direct Runoff
Basin O + Basin K + Bypass	13							**12.97**	**0.78**	**1.97**	**1.5**						**1.5**	**2.7**	**18**	**17.2**	**8.6**	**5.9**	**0.02**						**(Captured by PR inlet) Combined Flow in Pipe from DP 13 to DP 14**
DP 12a + DP 13	14							**13.00**	**2.75**	**1.96**	**5.4**						**5.4**	**0.5**	**30**	**29.0**	**312.8**	**4.4**	**1.18**						**Combined Flow in Pipe from DP 14 to DP 7**
DP 14 + DP 6	7							**16.87**	**6.02**	**1.74**	**10.5**						**10.5**	**0.5**	**36**	**47.2**	**8.7**	**5.3**	**0.03**						**Combined Flow in Pipe from DP 7 to DP 7a**
M		0.99	0.59	8.17	0.58	2.36	1.4																						Basin M direct Runoff
R		0.32	0.40	9.91	0.13	2.20	0.3																	0.13	402.6	1.49	2.4	2.75	Basin R Direct Runoff
Basin M + Basin R + Bypass								12.66	0.75	1.99	1.5																		Total Runoff to PR Inlet at DP 7a
Basin M + Basin R + Bypass + DP 7	7a							**16.90**	**6.78**	**1.74**	**11.8**						**11.8**	**0.6**	**36**	**51.7**	**15.5**	**5.8**	**0.04**						**Combined Flow in Pipe From DP 7a to DP 15**
TOTAL OUTFALL TO EDB	15							**16.94**	**6.78**	**1.73**	**11.7**																		**Total Flow at Outfall to EDB**
Off-Site																													
OS-1		0.11	0.01	5.79	0.001	2.64	0.003																						Basin OS-1 Flow Off Site
OS-2		0.07	0.84	5.00	0.06	2.75	0.2																						Basin OS-2 Flow Off Site to Arapahoe Rd
OS-3		0.61	0.12	11.39	0.07	2.08	0.15																						Basin OS 3 Direct Runoff
OS-4		0.22	0.14	9.77	0.031	2.21	0.07																						Basin OS-4 Floww Off Site to Arapahoe Rd

Project Name: Outlook Nine Mile

Project No: 160602

Date: 11/04/19

Revised: 01/23/20

STANDARD FORM SF-2

Post-Development
Rational Method Procedure

Designed By: JWM

Checked By: MSM

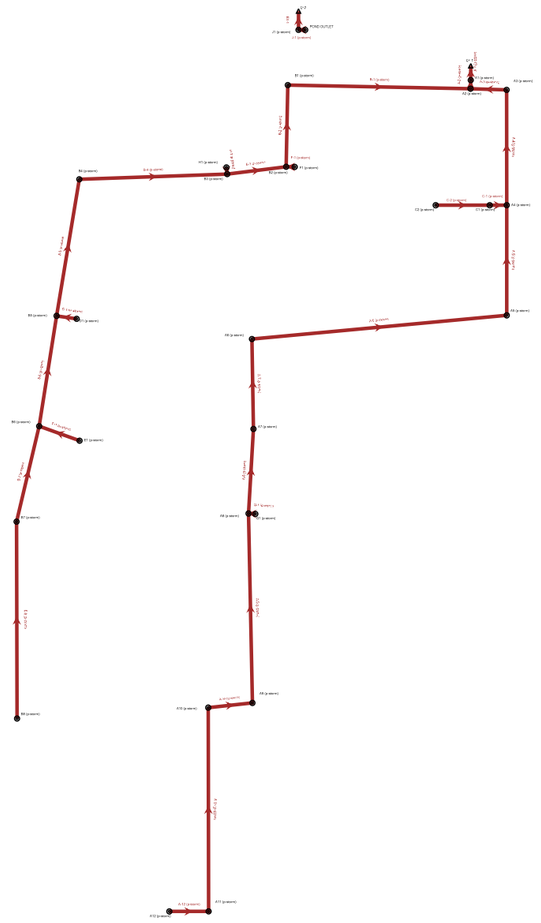
Design Storm: 100 YR

		DIRECT RUNOFF						TOTAL RUNOFF				STREET/INLET					STORM SEWER PIPE				TRAVEL TIME			CARRYOVER FLOWS					
BASIN (s)	DESIGN POINT	AREA (AC)	RUNOFF COEFF	Tc (min)	C x A (AC)	I (IN/HR)	DIRECT RUNOFF, Q (CFS)	Tc (min)	Σ(C x A) (AC)	I (IN/HR)	TOTAL RUNOFF, Q (CFS)	SLOPE (%)	STREET FLOW (CFS)	INLET DESIGN FLOW (CFS)	STREET OR INLET INTERCEPTION (CFS)	CARRYOVER (CFS)	DESIGN FLOW (CFS)	PIPE SLOPE (%)	PIPE SIZE (IN)	Q_{FULL} (CFS)	LENGTH (FT)	VELOCITY (FPS)	Tt (min)	Σ(C x A) BYPASS (AC)	LENGTH (FT)	SLOPE (%)	VELOCITY (FPS)	Tt (min)	REMARKS
A1		0.71	0.44	11.06	0.31	6.96	2.2	11.06	0.31	6.96	2.2													0.31	61.83	1.81	2.7	0.38	Basin A1 Direct Runoff
A		0.31	0.81	5.72	0.25	8.76	2.2																					Basin A Direct runoff
Basin A + Basin A1	1a							11.44	0.56	6.86	3.8		3.8	2.7	2.7	1.1												Basin A + Basin A1 Direct Runoff
								11.44	**0.39**	**6.86**	2.7						**2.7**	**3.84**	**18**	**20.6**	**283.2**	**8.0**	**0.59**					**Runoff From Basin A + A1 captured by PR Inlet (combined flow from DP 1a to DP 1)**
								11.44	0.17	6.86	1.1													0.17	306.5	1.00	2.0	2.55	Bypass to DP 2
C		0.49	0.69	10.27	0.34	7.17	2.4																	0.34	202	0.40	1.3	2.66	Basin C Direct Runoff
F		0.33	0.67	8.68	0.22	7.65	1.7																					Basin F Direct Runoff
Basin C + Basin F	1							12.93	0.56	6.51	3.6																	Total Flow captured at Type C Inlet at DP 1
								12.93	**0.95**	**6.51**	**6.2**						**6.2**	**3.0**	**18**	**18.2**	**50.2**	**9.2**	**0.09**					**Combined flow in Pipe from DP 1 to DP 2**
B1		0.47	0.44	11.12	0.20	6.95	1.4	11.12	0.20	6.95	1.4													0.205	294.9	1.12	2.1	2.32	Basin B1 Direct Runoff
B		1.18	0.78	6.92	0.92	8.27	7.6																					Basin B Direct Runoff
Basin B + Bypass + Basin B1								14.00	1.29	6.28	8.1		8.1	7.0	7.0	1.1												Basin B Runoff + Basin A Bypass
								14.00	1.11	6.28	7.0																	Captured by PR Inlet
	2							**14.00**	**2.07**	**6.28**	**13.0**						**13.0**	**0.84**	**24**	**20.7**	**219.0**	**6.9**	**0.53**					**Combined flow in pipe from DP 2 to DP3a**
								14.00	0.18	6.28	1.1													0.18	335.2	1.00	2.0	2.79	Bypass Flow to DP 3
G		1.60	0.77	11.41	1.23	6.87	8.5																					Basin G Direct runoff
Basin G + Bypass	3							16.79	1.41	5.76	8.1		8.1	5.3	5.3	2.8												Basin G Runoff + Basin B Bypass
								16.79	0.92	5.76	5.3						5.3	5.0	18	23.5	7.2	10.5	0.01					Captured by PR Inlet
DP 2 +DP 3	**3a**							**16.80**	**2.99**	**5.76**	**17.2**						**17.2**	**0.75**	**24**	**19.6**	**100.8**	**7.0**	**0.24**					**Combined flow in pipe at DP from DP 3a to DP 4**
								16.79	0.49	5.76	2.8													0.49	101.4	1.00	2.0	0.85	Bypass Flow to DP 4
I		0.29	0.71	11.15	0.20	6.94	1.4																	0.20	130	2.88	3.4	0.64	Basin I direct Runoff
J		0.32	0.72	6.27	0.23	8.53	2.0																					Basin J Direct Runoff
Basin J + Basin I + Bypass								17.64	0.93	5.62	5.2		5.2	5.1	5.1	0.1												Basin J Runoff + Basin G Bypass + Basin I Carryover
								17.64	0.91	5.62	5.1																	Captured by PR Inlet
Basin J + Basin I + Bypass + DP 3	4							**17.64**	**3.89**	**5.62**	**21.9**						**21.9**	**1.00**	**24**	**22.6**	**539.1**	**8.2**	**1.10**					**Combined flow in pipe from DP 4 to DP 6**
								17.64	0.02	5.62	0.1													0.02	354.5	1.37	2.3	2.52	Bypass flow to DP 13
N	**5a**	**0.55**	**0.70**	**8.88**	**0.38**	**7.59**	**2.9**										**2.9**	**4.00**	**18**	**21.0**	**56.7**	**8.2**	**0.11**					**Basin N Direct Runoff Captured by PR Inlet (combined flow from DP 5a to DP 5)**
L1		0.55	0.54	12.41	0.30	6.63	2.0	12.41	0.30	6.63	2.0													0.30	61.83	1.81	2.7	0.38	Basin L1 Direct Runoff
L		0.87	0.74	8.92	0.64	7.57	4.9																					Basin L Direct Runoff
Basin L + Basin L1								12.79	0.94	6.54	6.2		6.2	5.9	5.9	0.3												Basin L + Basin L1 Direct Runoff
								12.79	0.90	6.54	5.9						5.9	0.50	24	16.0	18.7	4.7	0.07					Captured by PR Inlet at DP 5
								12.79	0.04	6.54	0.3													0.04	170.1	1.41	2.4	1.19	Bypass to DP 7a
Basin L + Basin L1 + Basin N	**5**							**9.00**	**1.03**	**7.55**	**7.7**						**7.7**	**0.50**	**24**	**16.0**	**18.7**	**5.0**	**0.06**					**Combined flow in pipe at from DP 5 to DP 6**
DP 4 + DP 5	**6**							**18.74**	**4.92**	**5.45**	**26.8**						**26.8**	**0.50**	**30**	**29.0**	**179.1**	**6.7**	**0.45**					**Combined flow in pipe from DP 6 to DP 7**
D	**8c**	**0.61**	**0.80**	**8.80**	**0.49**	**7.61**	**3.7**										**3.7**	**1.3**	**18**	**12.0**	**238.8**	**6.0**	**0.66**					**Basin D Direct Runoff Captured by PR Inlet (combined flow from DP 8c to DP 8)**
E		0.46	0.77	6.68	0.36	8.36	3.0						3.0	2.3	2.3	0.7												Basin E Direct Runoff
								6.68	0.28	8.36	2.3																	Captured by PR Inlet
DP 8c + Basin E	**8**							**9.47**	**0.84**	**7.41**	**6.2**						**6.2**	**0.5**	**18**	**7.4**	**99.8**	**4.7**	**0.36**					**Combined flow in pipe from DP 8 to DP 8a**
								6.68	0.08	8.36	0.7													0.08	276.3	1.00	2.0	2.30	Bypass flow to DP 9
H1	**8b**	**0.06**	**0.68**	**7.19**	**0.04**	**8.17**	**0.3**										**0.3**	**0.50**	**18**	**7.4**	**49.3**	**2.0**	**0.42**					**Basin H1 Direct Runoff Captured by PR Inlet (flow from DP 8b to DP 8a)**
DP 8b + DP 8	**8a**							**9.82**	**0.88**	**7.30**	**6.5**						**6.5**	**0.89**	**18**	**9.9**	**132.0**	**5.9**	**0.37**					**Combined flow in pipe from DP 8a to DP 10**
H		0.53	0.78	5.01	0.42	9.08	3.8																					Basin H Direct Runoff
Basin H + Bypass								8.98	0.50	7.55	3.7		3.7	2.7	2.7	1.0												Basin H Runoff + Bypass from Basin E
	9							**8.98**	**0.36**	**7.55**	2.7						**2.7**	**9.0**	**18**	**31.5**	**22.5**	**10.7**	**0.04**					**Captured by PR Inlet (Flow from DP 9 to DP 10)**
								8.98	0.14	7.55	1.0													0.14	167.1	1.00	2.0	1.39	Bypass flow to DP 11
DP 8 + DP 9	**10**							**9.82**	**1.20**	**7.30**	**8.8**						**8.8**	**1.0**	**18**	**10.5**	**159.0**	**6.7**	**0.40**					**Combined flow in Pipe from DP 10 to DP 11**
P		1.20	0.79	5.04	0.94	9.07	8.6																					Basin P Direct Runoff
Basin P + Bypass								10.38	1.08	7.14	7.7		7.7	6.9	6.9	0.8												Basin P Runoff + Bypass from Basin H
								10.38	0.97	7.14	6.9																	Captured by PR Inlet
Basin P + DP 10	**11**							**10.22**	**2.14**	**7.19**	**15.4**						**15.4**	**1.3**	**24**	**25.3**	**173.8**	**8.6**	**0.34**					**Combined flow in pipe from DP 11 to DP 12a**
								10.38	0.12	7.14	0.8													0.12	180.4	1.00	2.0	1.50	Bypass Flows to DP 12
Q		0.44	0.81	7.57	0.36	8.03	2.9																					Basin Q Direct Runoff
Basin Q + Bypass	12							11.88	0.47	6.76	3.2		3.2	2.5	2.5	0.7												Basin Q Runoff + bypass from Basin P
								11.88	**0.37**	**6.76**	2.5						**2.5**	**5.0**	**18**	**23.5**	**7.9**	**8.6**	**0.02**					**Captured by PR Inlet (combined flow from DP 12 to DP 12a)**
DP 11+ DP 12	**12a**							**11.90**	**2.51**	**6.75**	**17.0**						**17.0**	**1.9**	**24**	**30.9**	**70.3**	**10.0**	**0.12**					**Combined Flow in Pipe from DP 12a to DP 14**
								11.88	0.10	6.76	0.7													0.10	95.12	1.00	2.0	0.79	Bypass Flow to DP 13
O		0.75	0.64	10.02	0.48	7.24	3.5																	0.48	354.1	1.00	2.0	2.95	Basin O Direct Runoff
K		0.86	0.78	8.61	0.68	7.67	5.2																					Basin K Direct Runoff
Basin K + Basin O + Bypass	13							**20.16**	**1.17**	**5.25**	**6.2**						**6.2**	**2.7**	**18**	**17.2**	**8.6**	**8.9**	**0.02**					**Captured by PR Inlet (Combined flow from DP 13 to DP 14)**
DP 12a + DP 13	**14**							**20.18**	**3.69**	**5.25**	**19.4**						**19.4**	**0.5**	**30**	**29.0**	**312.8**	**6.3**	**0.83**					**Combined flow in pipe from DP 14 to DP 7**
DP 6 + DP 14	**7**							**21.01**	**8.61**	**5.14**	**44.2**						**44.2**	**0.5**	**36**	**47.2**	**8.7**	**7.6**	**0.02**					**Combined Flow in Pipe from DP 7 to DP 7a**
R		0.32	0.68	9.91	0.22	7.28	1.6																	0.22	402.6	1.49	2.4	2.75	Basin R Direct Runoff
M		0.99	0.77	8.17	0.76	7.82	6.0																					Basin M Direct Runoff
Basin M + Basin R + Bypass								13.98	1.02	6.29	6.4																	Total Runoff to PR Inlet at DP 7
Basin M + Basin R + Bypass + DP 7	**7a**							**21.02**	**9.63**	**5.13**	**49.4**						**49.4**	**0.6**	**36**	**51.7**	**15.5**	**8.3**	**0.03**					**Combined Flow in Pipe from DP 7a to DP 15**
Total Outfall to EDB	**15**							**21.06**	**9.63**	**5.13**	**49.4**																	**Total Flow at Outfall to EDB**
Off-Site																												
OS-1		0.11	0.44	5.79	0.05	8.73	0.4																					Basin OS-1 Flow Off Site
OS-2		0.07	0.90	5.00	0.06	9.09	0.6																					Basin OS-2 Flow Off Site to Arapahoe Rd
OS-3		0.61	0.51	11.39	0.31	6.88	2.2																					Basin OS 3 Direct Runoff
OS-4		0.22	0.53	9.77	0.12	7.32	0.9																					Basin OS-4 Flow Off Site to Arapahoe Rd

APPENDIX D

Hydraulic Computations

Scenario: 100-YR
Active Scenario: 100-YR



FlexTable: Conduit Table

Active Scenario: 2-YR

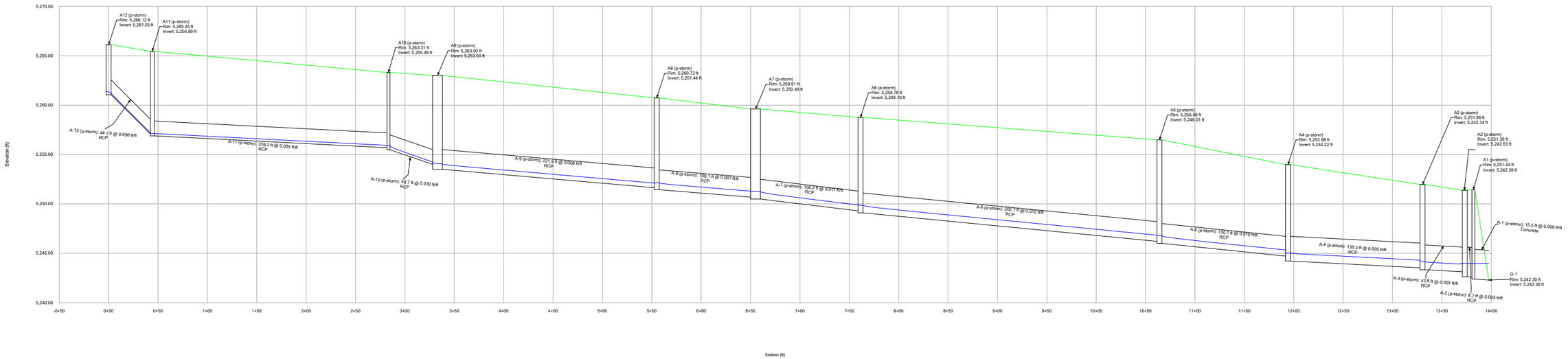
Label	Notes	Diameter (in)	Manning's n	Start Node	Stop Node	Length (Unified) (ft)	Invert (Start) (ft)	Invert (Stop) (ft)	Slope (Calculated) (ft/ft)	Flow (cfs)	Capacity (Full Flow) (cfs)	Velocity (ft/s)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)
A-1 (p-storm)	36" RCP	36.0	0.013	A1 (p-storm)	O-1	15.5	5,242.39	5,242.30	0.006	11.70	51.66	5.91	5,243.96	5,243.97	5,244.11	5,244.10
A-2 (p-storm)	36" RCP	36.0	0.013	A2 (p-storm)	A1 (p-storm)	8.7	5,242.63	5,242.59	0.005	10.40	47.16	5.35	5,243.97	5,243.97	5,244.15	5,244.14
A-3 (p-storm)	30" RCP	30.0	0.013	A3 (p-storm)	A2 (p-storm)	42.8	5,243.34	5,243.13	0.005	5.90	29.00	4.64	5,244.15	5,243.97	5,244.44	5,244.23
A-4 (p-storm)	30" RCP	30.0	0.013	A4 (p-storm)	A3 (p-storm)	136.3	5,244.22	5,243.54	0.005	5.90	29.00	4.64	5,245.02	5,244.30	5,245.32	5,244.64
A-5 (p-storm)	24" RCP	24.0	0.013	A5 (p-storm)	A4 (p-storm)	130.1	5,246.01	5,244.72	0.010	4.70	22.53	5.67	5,246.77	5,245.34	5,247.06	5,245.84
A-6 (p-storm)	24" RCP	24.0	0.013	A6 (p-storm)	A5 (p-storm)	302.7	5,249.10	5,246.21	0.010	4.70	22.10	5.59	5,249.86	5,246.84	5,250.15	5,247.32
A-7 (p-storm)	24" RCP	24.0	0.013	A7 (p-storm)	A6 (p-storm)	106.2	5,250.49	5,249.30	0.011	4.70	23.94	5.92	5,251.25	5,249.90	5,251.54	5,250.45
A-8 (p-storm)	24" RCP	24.0	0.013	A8 (p-storm)	A7 (p-storm)	100.1	5,251.44	5,250.69	0.007	3.90	19.59	4.86	5,252.13	5,251.29	5,252.39	5,251.66
A-9 (p-storm)	24" RCP	24.0	0.013	A9 (p-storm)	A8 (p-storm)	221.9	5,253.50	5,251.64	0.008	2.50	20.71	4.46	5,254.05	5,252.11	5,254.25	5,252.42
A-10 (p-storm)	18" RCP	18.0	0.013	A10 (p-storm)	A9 (p-storm)	49.7	5,255.49	5,254.00	0.030	1.10	18.19	5.68	5,255.88	5,254.25	5,256.02	5,254.75
A-11 (p-storm)	18" RCP	18.0	0.013	A11 (p-storm)	A10 (p-storm)	239.2	5,256.89	5,255.69	0.005	0.40	7.43	2.24	5,257.12	5,255.93	5,257.20	5,256.00
A-12 (p-storm)	18" RCP	18.0	0.013	A12 (p-storm)	A11 (p-storm)	44.1	5,261.05	5,257.09	0.090	0.40	31.45	6.15	5,261.28	5,257.21	5,261.36	5,257.80
B-1 (p-storm)	30" RCP	30.0	0.013	B1 (p-storm)	A2 (p-storm)	216.2	5,244.20	5,243.13	0.005	5.30	28.87	4.48	5,244.96	5,243.97	5,245.24	5,244.18
B-2 (p-storm)	30" RCP	30.0	0.013	B2 (p-storm)	B1 (p-storm)	96.6	5,244.88	5,244.40	0.005	5.30	29.00	4.50	5,245.64	5,245.12	5,245.92	5,245.44
B-3 (p-storm)	24" RCP	24.0	0.013	B3 (p-storm)	B2 (p-storm)	70.3	5,246.69	5,245.38	0.019	4.00	30.88	6.78	5,247.39	5,245.87	5,247.65	5,246.58
B-4 (p-storm)	24" RCP	24.0	0.013	B4 (p-storm)	B3 (p-storm)	173.8	5,249.06	5,246.89	0.012	3.60	25.29	5.70	5,249.72	5,247.40	5,249.97	5,247.90
B-5 (p-storm)	18" RCP	18.0	0.013	B5 (p-storm)	B4 (p-storm)	159.0	5,251.15	5,249.56	0.010	2.00	10.50	4.58	5,251.68	5,250.00	5,251.88	5,250.33
B-6 (p-storm)	18" RCP	18.0	0.013	B6 (p-storm)	B5 (p-storm)	132.0	5,252.52	5,251.35	0.009	1.40	9.89	3.96	5,252.96	5,251.73	5,253.12	5,251.97
B-7 (p-storm)	18" RCP	18.0	0.013	B7 (p-storm)	B6 (p-storm)	113.7	5,253.29	5,252.72	0.005	1.40	7.43	3.23	5,253.73	5,253.16	5,253.89	5,253.32
B-8 (p-storm)	18" RCP	18.0	0.013	B8 (p-storm)	B7 (p-storm)	227.7	5,257.08	5,253.49	0.016	0.90	13.18	4.26	5,257.43	5,253.76	5,257.56	5,254.04
C-1 (p-storm)	24" RCP	24.0	0.013	C1 (p-storm)	A4 (p-storm)	18.7	5,244.81	5,244.72	0.005	1.50	16.00	3.19	5,245.24	5,245.13	5,245.39	5,245.29
C-2 (p-storm)	18" RCP	18.0	0.013	C2 (p-storm)	C1 (p-storm)	62.4	5,247.77	5,245.31	0.039	0.60	20.86	5.21	5,248.06	5,245.48	5,248.16	5,245.91
D-1 (p-storm)	18" RCP	18.0	0.013	D1 (p-storm)	B5 (p-storm)	22.6	5,253.38	5,251.35	0.090	0.90	31.45	7.84	5,253.73	5,251.52	5,253.85	5,252.48
E-1 (p-storm)	18" RCP	18.0	0.013	E1 (p-storm)	B6 (p-storm)	49.3	5,253.46	5,252.72	0.015	0.10	12.87	2.17	5,253.58	5,252.96	5,253.62	5,252.97
EX-1	18" RCP	18.0	0.013	J1 (p-storm)	O-2	22.3	5,236.30	5,236.06	0.011	0.60	10.91	3.31	5,236.59	5,236.30	5,236.69	5,236.47
F-1 (p-storm)	18" RCP	18.0	0.013	F1 (p-storm)	B2 (p-storm)	8.6	5,246.11	5,245.88	0.027	1.50	17.21	5.98	5,246.57	5,246.21	5,246.74	5,246.63
G-1 (p-storm)	18" RCP	18.0	0.013	G1 (p-storm)	A8 (p-storm)	7.2	5,252.30	5,251.94	0.050	1.60	23.47	7.59	5,252.77	5,252.25	5,252.95	5,252.82
H-1 (p-storm)	18" RCP	18.0	0.013	H1 (p-storm)	B3 (p-storm)	7.9	5,247.59	5,247.19	0.050	0.60	23.57	5.68	5,247.88	5,247.37	5,247.98	5,247.78
J-1 (p-storm)	18" RCP	18.0	0.013	POND OUTLET	J1 (p-storm)	8.0	5,237.04	5,236.50	0.068	0.60	27.35	6.30	5,237.33	5,236.82	5,237.43	5,236.90

FlexTable: Manhole Table

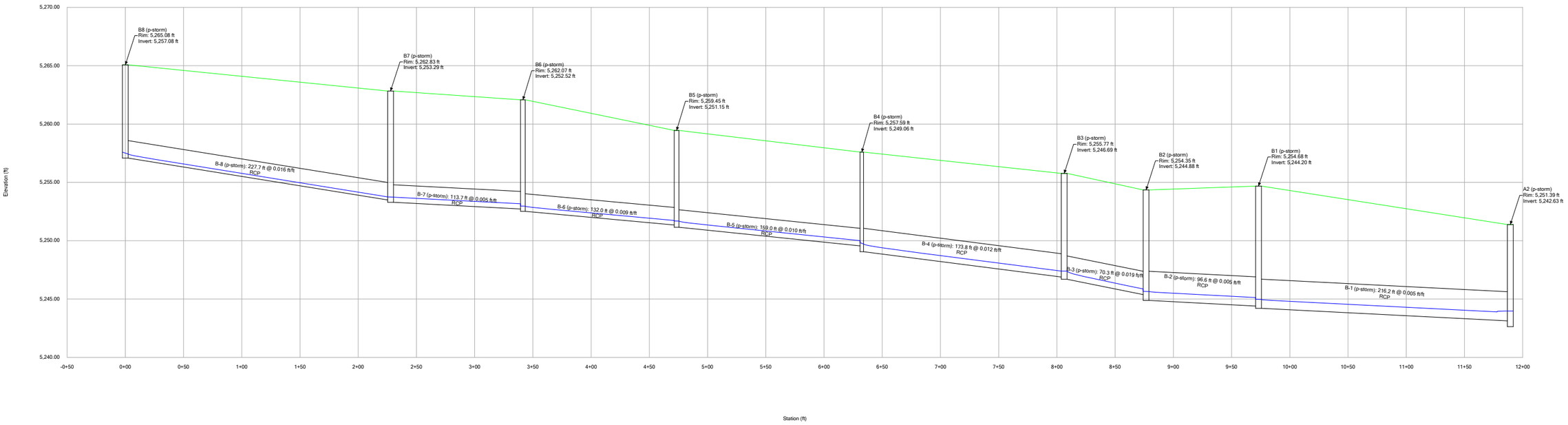
Active Scenario: 2-YR

Label	Elevation (Ground) (ft)	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Depth (Out) (ft)	Flow (Total Out) (cfs)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)	Notes	Headloss Method	Headloss Coefficient (Standard)	Headloss (ft)	HEC-22 Benching Method	Flow (Known) (cfs)
A1 (p-storm)	5,251.44	5,251.44	5,242.39	1.57	11.70	5,243.97	5,243.96	5,244.14	5,244.12	Inlet Type R 5'	HEC-22 Energy (Second Edition)		0.01	Flat	11.70
A2 (p-storm)	5,251.39	5,251.39	5,242.63	1.34	10.40	5,243.97	5,243.97	5,244.18	5,244.15	5'Ø Manhole	HEC-22 Energy (Second Edition)		0.01	Half	10.40
A3 (p-storm)	5,251.96	5,251.96	5,243.34	0.80	5.90	5,244.16	5,244.15	5,244.50	5,244.44	5'Ø Manhole	HEC-22 Energy (Second Edition)		0.02	Half	5.90
A4 (p-storm)	5,253.98	5,253.98	5,244.22	0.80	5.90	5,245.03	5,245.02	5,245.19	5,245.32	5'Ø DROP MANHOLE	HEC-22 Energy (Second Edition)		0.00	Half	5.90
A5 (p-storm)	5,256.49	5,256.49	5,246.01	0.76	4.70	5,246.79	5,246.77	5,247.28	5,247.06	5'Ø Manhole	HEC-22 Energy (Second Edition)		0.02	Half	4.70
A6 (p-storm)	5,258.76	5,258.76	5,249.10	0.76	4.70	5,249.88	5,249.86	5,250.43	5,250.15	5'Ø Manhole	HEC-22 Energy (Second Edition)		0.02	Half	4.70
A7 (p-storm)	5,259.61	5,259.61	5,250.49	0.76	4.70	5,251.29	5,251.25	5,251.65	5,251.54	Inlet Type R 10'	HEC-22 Energy (Second Edition)		0.03	Flat	4.70
A8 (p-storm)	5,260.73	5,260.73	5,251.44	0.69	3.90	5,252.14	5,252.13	5,252.45	5,252.39	5'Ø Manhole	HEC-22 Energy (Second Edition)		0.00	Half	3.90
A9 (p-storm)	5,263.00	5,263.00	5,253.50	0.55	2.50	5,254.13	5,254.05	5,254.63	5,254.25	Inlet Type R 10'	HEC-22 Energy (Second Edition)		0.07	Flat	2.50
A10 (p-storm)	5,263.31	5,263.31	5,255.49	0.39	1.10	5,255.93	5,255.88	5,256.00	5,256.02	Inlet Type C	HEC-22 Energy (Second Edition)		0.05	Flat	1.10
A11 (p-storm)	5,265.45	5,265.45	5,256.89	0.24	0.40	5,257.13	5,257.12	5,257.71	5,257.20	4'Ø Manhole	HEC-22 Energy (Second Edition)		0.00	Half	0.40
A12 (p-storm)	5,266.12	5,266.12	5,261.05	0.23	0.40	5,261.38	5,261.28	5,261.46	5,261.36	Modified Inlet Type R 5'	Standard	1.250	0.10	<None>	0.40
B1 (p-storm)	5,254.68	5,254.68	5,244.20	0.76	5.30	5,244.98	5,244.96	5,245.29	5,245.24	5'Ø Manhole	HEC-22 Energy (Second Edition)		0.02	Half	5.30
B2 (p-storm)	5,254.35	5,254.35	5,244.88	0.76	5.30	5,245.65	5,245.64	5,246.37	5,245.92	5'Ø Manhole	HEC-22 Energy (Second Edition)		0.01	Half	5.30
B3 (p-storm)	5,255.77	5,255.77	5,246.69	0.70	4.00	5,247.39	5,247.39	5,247.80	5,247.65	5'Ø Manhole	HEC-22 Energy (Second Edition)		0.00	Half	4.00
B4 (p-storm)	5,257.59	5,257.59	5,249.06	0.66	3.60	5,249.83	5,249.72	5,250.15	5,249.97	Inlet Type R 10'	HEC-22 Energy (Second Edition)		0.10	Flat	3.60
B5 (p-storm)	5,259.45	5,259.45	5,251.15	0.53	2.00	5,251.69	5,251.68	5,252.64	5,251.88	4'Ø Manhole	HEC-22 Energy (Second Edition)		0.00	Half	2.00
B6 (p-storm)	5,262.07	5,262.07	5,252.52	0.44	1.40	5,252.96	5,252.96	5,252.97	5,253.12	4'Ø Manhole	HEC-22 Energy (Second Edition)		0.00	Half	1.40
B7 (p-storm)	5,262.83	5,262.83	5,253.29	0.44	1.40	5,253.76	5,253.73	5,254.04	5,253.89	Inlet Type R 5'	HEC-22 Energy (Second Edition)		0.02	Flat	1.40
B8 (p-storm)	5,265.08	5,265.08	5,257.08	0.35	0.90	5,257.59	5,257.43	5,257.71	5,257.56	MODIFIED INLET TYPE R 5'	Standard	1.250	0.16	<None>	0.90
C1 (p-storm)	5,253.80	5,253.80	5,244.81	0.42	1.50	5,245.25	5,245.24	5,245.67	5,245.39	Inlet Type R 10'	HEC-22 Energy (Second Edition)		0.01	Flat	1.50
C2 (p-storm)	5,251.31	5,251.31	5,247.77	0.29	0.60	5,248.18	5,248.06	5,248.28	5,248.16	Inlet Type C	Standard	1.250	0.13	<None>	0.60
D1 (p-storm)	5,259.28	5,259.28	5,253.38	0.35	0.90	5,253.89	5,253.73	5,254.01	5,253.85	Inlet Type R 5'	Standard	1.250	0.16	<None>	0.90
E1 (p-storm)	5,260.71	5,260.71	5,252.97	0.61	0.10	5,253.63	5,253.58	5,253.66	5,253.61	Inlet Type C	Standard	1.250	0.05	<None>	0.10
F1 (p-storm)	5,254.41	5,254.41	5,246.11	0.46	1.50	5,246.78	5,246.57	5,246.95	5,246.74	MODIFIED INLET TYPE R 5'	Standard	1.250	0.21	<None>	1.50
G1 (p-storm)	5,260.33	5,260.33	5,252.30	0.48	1.60	5,252.99	5,252.77	5,253.16	5,252.95	Inlet Type 13 Triple	Standard	1.250	0.22	<None>	1.60
H1 (p-storm)	5,255.40	5,255.40	5,247.05	0.83	0.60	5,248.00	5,247.88	5,248.10	5,247.98	Inlet Type 13 Triple	Standard	1.250	0.13	<None>	0.60
J1 (p-storm)	5,254.31	5,254.31	5,236.30	0.29	0.60	5,236.69	5,236.59	5,236.76	5,236.69	4'Ø Manhole	HEC-22 Energy (Third Edition)		0.10	Half	0.60
POND OUTLET	5,237.04	5,237.04	5,237.04	0.00	0.60	5,237.17	5,237.04	5,237.27	5,237.14	Dummy Null Structure for LandXML purposes	Standard	1.250	0.13	<None>	0.60

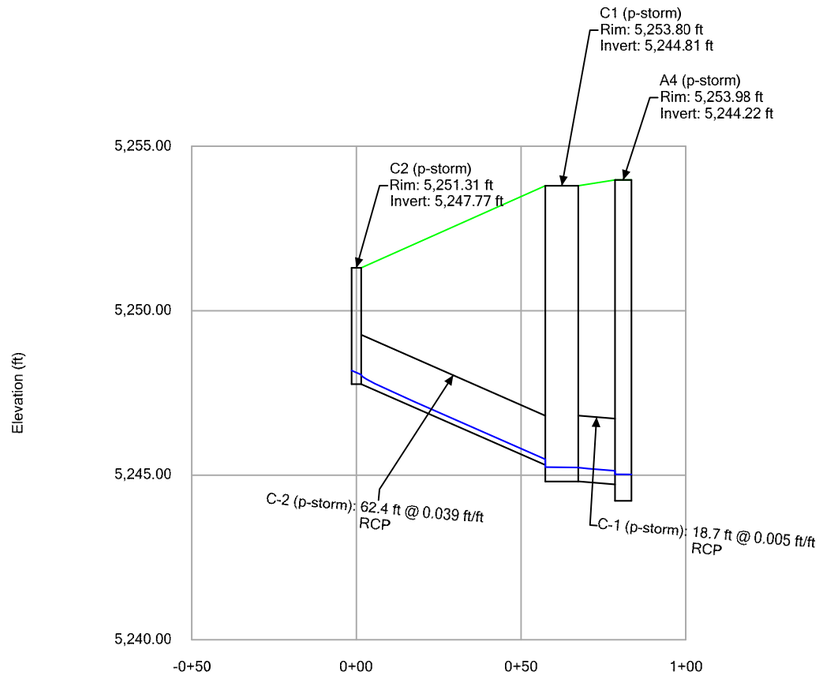
Profile Report
Engineering Profile - STORM LINE A (2020-01-17 StormCAD Base.stsw)
Active Scenario: 2-YR



Profile Report
Engineering Profile - STORM LINE B (2020-01-17 StormCAD Base.stsw)
Active Scenario: 2-YR



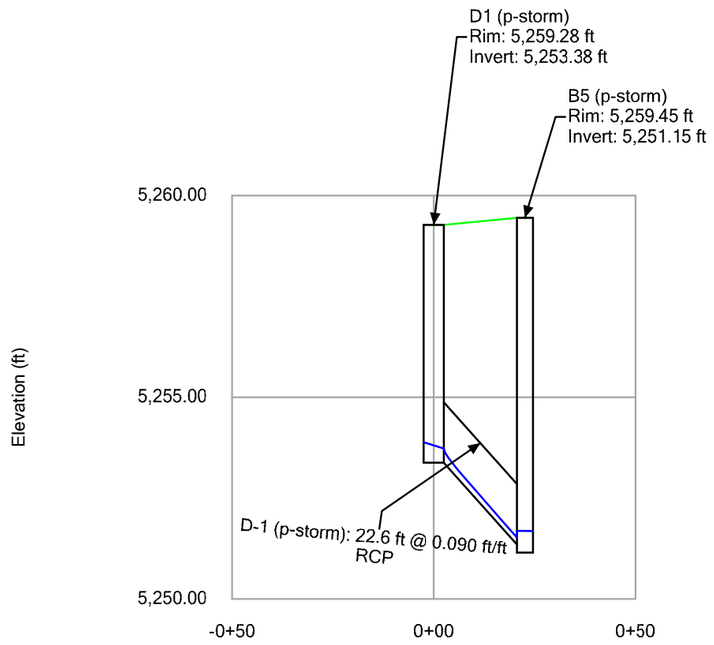
Profile Report
Engineering Profile - STORM LINE C (2020-01-17 StormCAD Base.stsw)
Active Scenario: 2-YR



Profile Report

Engineering Profile - STORM LINE D (2020-01-17 StormCAD Base.stsw)

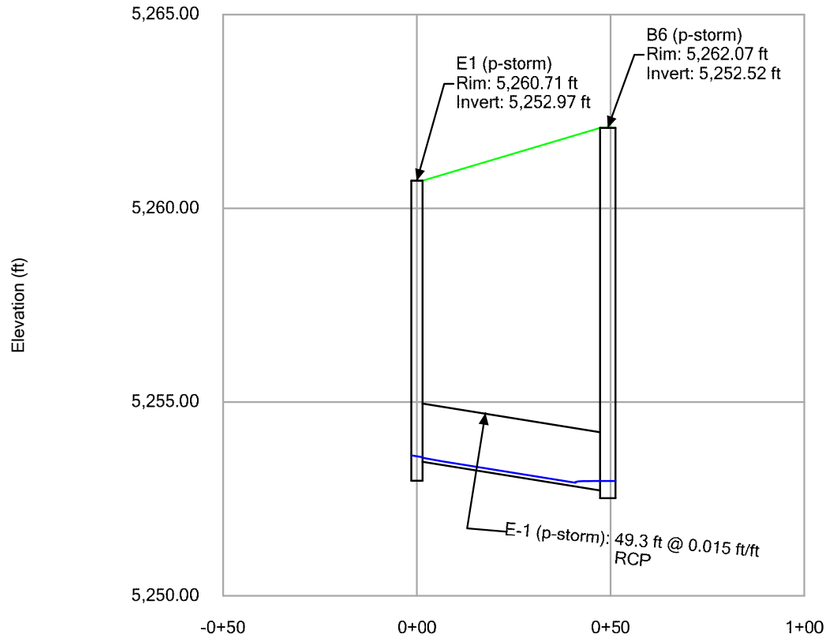
Active Scenario: 2-YR



Profile Report

Engineering Profile - STORM LINE E (2020-01-17 StormCAD Base.stsw)

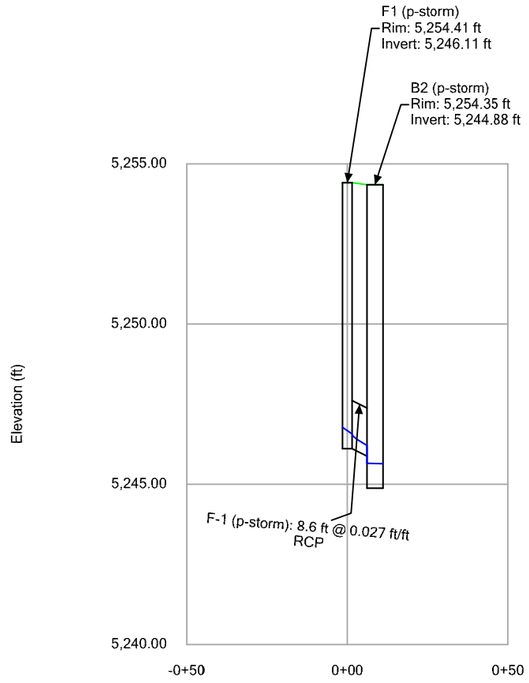
Active Scenario: 2-YR



Profile Report

Engineering Profile - STORM LINE F (2020-01-17 StormCAD Base.stsw)

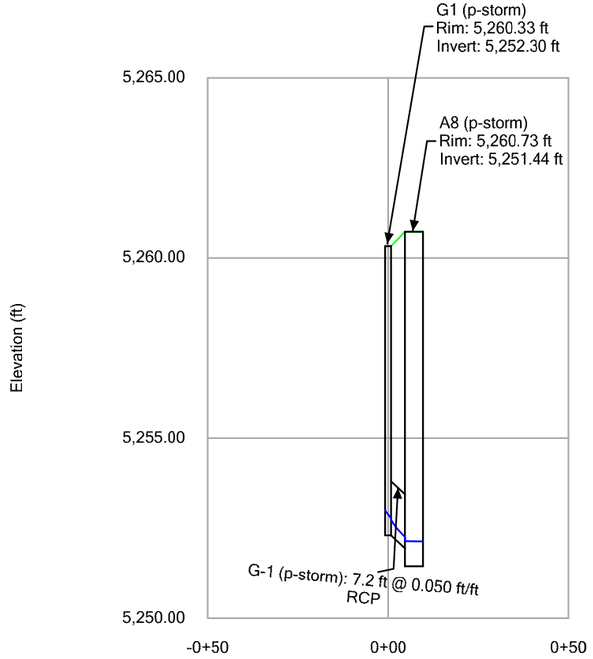
Active Scenario: 2-YR



Profile Report

Engineering Profile - STORM LINE G (2020-01-17 StormCAD Base.stsw)

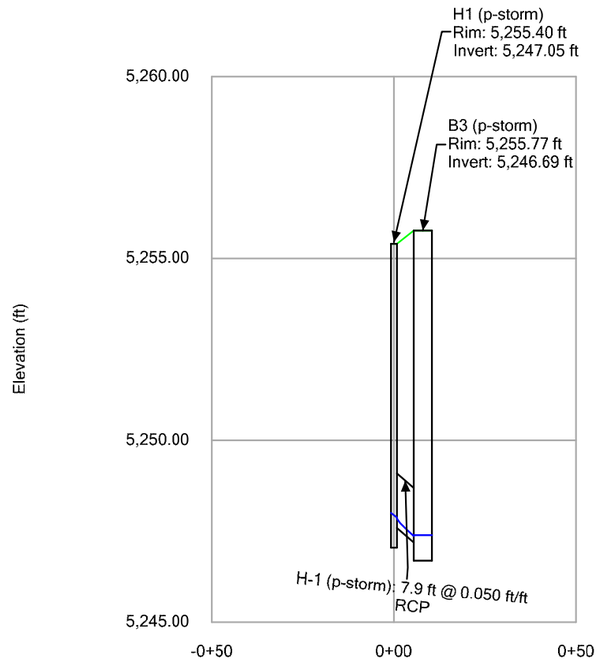
Active Scenario: 2-YR



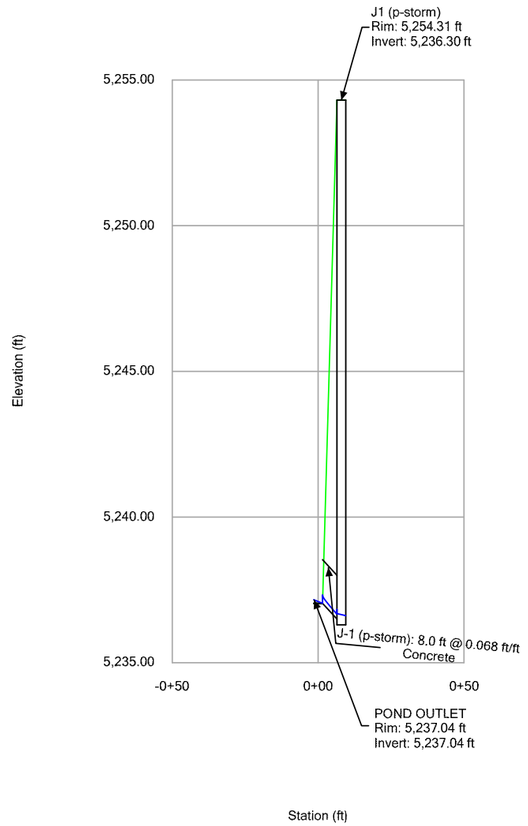
Profile Report

Engineering Profile - STORM LINE H (2020-01-17 StormCAD Base.stsw)

Active Scenario: 2-YR



Profile Report
Engineering Profile - STORM LINE J (2020-01-17 StormCAD Base.stsw)
Active Scenario: 2-YR



FlexTable: Conduit Table

Active Scenario: 100-YR

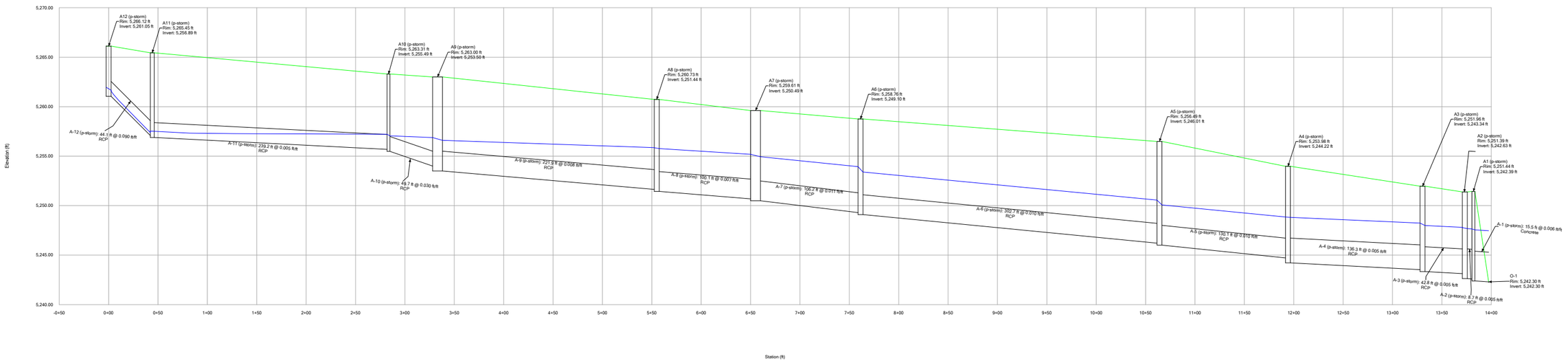
Label	Notes	Diameter (in)	Manning's n	Start Node	Stop Node	Length (Unified) (ft)	Invert (Start) (ft)	Invert (Stop) (ft)	Slope (Calculated) (ft/ft)	Flow (cfs)	Capacity (Full Flow) (cfs)	Velocity (ft/s)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)
A-1 (p-storm)	36" RCP	36.0	0.013	A1 (p-storm)	O-1	15.5	5,242.39	5,242.30	0.006	49.40	51.66	6.99	5,247.56	5,247.47	5,248.31	5,248.23
A-2 (p-storm)	36" RCP	36.0	0.013	A2 (p-storm)	A1 (p-storm)	8.7	5,242.63	5,242.59	0.005	44.20	47.16	6.25	5,247.69	5,247.65	5,248.29	5,248.26
A-3 (p-storm)	30" RCP	30.0	0.013	A3 (p-storm)	A2 (p-storm)	42.8	5,243.34	5,243.13	0.005	26.80	29.00	5.46	5,247.99	5,247.81	5,248.46	5,248.28
A-4 (p-storm)	30" RCP	30.0	0.013	A4 (p-storm)	A3 (p-storm)	136.3	5,244.22	5,243.54	0.005	26.80	29.00	5.46	5,248.82	5,248.24	5,249.28	5,248.70
A-5 (p-storm)	24" RCP	24.0	0.013	A5 (p-storm)	A4 (p-storm)	130.1	5,246.01	5,244.72	0.010	21.90	22.53	6.97	5,250.08	5,248.86	5,250.83	5,249.61
A-6 (p-storm)	24" RCP	24.0	0.013	A6 (p-storm)	A5 (p-storm)	302.7	5,249.10	5,246.21	0.010	21.90	22.10	6.97	5,253.40	5,250.56	5,254.16	5,251.32
A-7 (p-storm)	24" RCP	24.0	0.013	A7 (p-storm)	A6 (p-storm)	106.2	5,250.49	5,249.30	0.011	21.90	23.94	6.97	5,254.94	5,253.94	5,255.69	5,254.70
A-8 (p-storm)	24" RCP	24.0	0.013	A8 (p-storm)	A7 (p-storm)	100.1	5,251.44	5,250.69	0.007	17.20	19.59	5.47	5,255.77	5,255.19	5,256.23	5,255.66
A-9 (p-storm)	24" RCP	24.0	0.013	A9 (p-storm)	A8 (p-storm)	221.9	5,253.50	5,251.64	0.008	13.00	20.71	4.14	5,256.60	5,255.87	5,256.87	5,256.13
A-10 (p-storm)	18" RCP	18.0	0.013	A10 (p-storm)	A9 (p-storm)	49.7	5,255.49	5,254.00	0.030	6.20	18.19	3.51	5,257.06	5,256.89	5,257.25	5,257.08
A-11 (p-storm)	18" RCP	18.0	0.013	A11 (p-storm)	A10 (p-storm)	239.2	5,256.89	5,255.69	0.005	2.70	7.43	3.87	5,257.51	5,257.21	5,257.74	5,257.25
A-12 (p-storm)	18" RCP	18.0	0.013	A12 (p-storm)	A11 (p-storm)	44.1	5,261.05	5,257.09	0.090	2.70	31.45	10.88	5,261.67	5,257.39	5,261.90	5,259.23
B-1 (p-storm)	30" RCP	30.0	0.013	B1 (p-storm)	A2 (p-storm)	216.2	5,244.20	5,243.13	0.005	19.40	28.87	3.95	5,248.26	5,247.77	5,248.50	5,248.02
B-2 (p-storm)	30" RCP	30.0	0.013	B2 (p-storm)	B1 (p-storm)	96.6	5,244.88	5,244.40	0.005	19.40	29.00	3.95	5,248.57	5,248.35	5,248.81	5,248.60
B-3 (p-storm)	24" RCP	24.0	0.013	B3 (p-storm)	B2 (p-storm)	70.3	5,246.69	5,245.38	0.019	14.90	30.88	4.74	5,248.92	5,248.62	5,249.27	5,248.97
B-4 (p-storm)	24" RCP	24.0	0.013	B4 (p-storm)	B3 (p-storm)	173.8	5,249.06	5,246.89	0.012	13.80	25.29	8.23	5,250.40	5,248.94	5,250.99	5,249.24
B-5 (p-storm)	18" RCP	18.0	0.013	B5 (p-storm)	B4 (p-storm)	159.0	5,251.15	5,249.56	0.010	7.90	10.50	6.53	5,252.24	5,250.78	5,252.75	5,251.19
B-6 (p-storm)	18" RCP	18.0	0.013	B6 (p-storm)	B5 (p-storm)	132.0	5,252.52	5,251.35	0.009	6.20	9.89	5.91	5,253.48	5,252.21	5,253.90	5,252.75
B-7 (p-storm)	18" RCP	18.0	0.013	B7 (p-storm)	B6 (p-storm)	113.7	5,253.29	5,252.72	0.005	6.00	7.43	4.68	5,254.31	5,253.67	5,254.65	5,254.07
B-8 (p-storm)	18" RCP	18.0	0.013	B8 (p-storm)	B7 (p-storm)	227.7	5,257.08	5,253.49	0.016	2.80	13.18	5.92	5,257.71	5,254.39	5,257.96	5,254.49
C-1 (p-storm)	24" RCP	24.0	0.013	C1 (p-storm)	A4 (p-storm)	18.7	5,244.81	5,244.72	0.005	7.70	16.00	2.45	5,248.89	5,248.87	5,248.99	5,248.96
C-2 (p-storm)	18" RCP	18.0	0.013	C2 (p-storm)	C1 (p-storm)	62.4	5,247.77	5,245.31	0.039	2.90	20.86	8.31	5,248.94	5,248.91	5,249.00	5,248.96
D-1 (p-storm)	18" RCP	18.0	0.013	D1 (p-storm)	B5 (p-storm)	22.6	5,253.38	5,251.35	0.090	2.60	31.45	10.76	5,253.99	5,252.25	5,254.22	5,252.34
E-1 (p-storm)	18" RCP	18.0	0.013	E1 (p-storm)	B6 (p-storm)	49.3	5,253.46	5,252.72	0.015	0.30	12.87	3.02	5,253.66	5,253.49	5,253.73	5,253.49
EX-1	18" RCP	18.0	0.013	J1 (p-storm)	O-2	22.3	5,236.30	5,236.06	0.011	12.00	10.91	6.79	5,237.70	5,237.37	5,238.46	5,238.21
F-1 (p-storm)	18" RCP	18.0	0.013	F1 (p-storm)	B2 (p-storm)	8.6	5,246.11	5,245.88	0.027	6.20	17.21	3.51	5,248.68	5,248.65	5,248.87	5,248.84
G-1 (p-storm)	18" RCP	18.0	0.013	G1 (p-storm)	A8 (p-storm)	7.2	5,252.30	5,251.94	0.050	5.30	23.47	3.00	5,255.87	5,255.85	5,256.01	5,255.99
H-1 (p-storm)	18" RCP	18.0	0.013	H1 (p-storm)	B3 (p-storm)	7.9	5,247.59	5,247.19	0.050	2.10	23.57	8.25	5,248.93	5,248.93	5,248.96	5,248.95
J-1 (p-storm)	18" RCP	18.0	0.013	POND OUTLET	J1 (p-storm)	8.0	5,237.04	5,236.50	0.068	12.00	27.35	6.79	5,241.31	5,241.20	5,242.02	5,241.92

FlexTable: Manhole Table

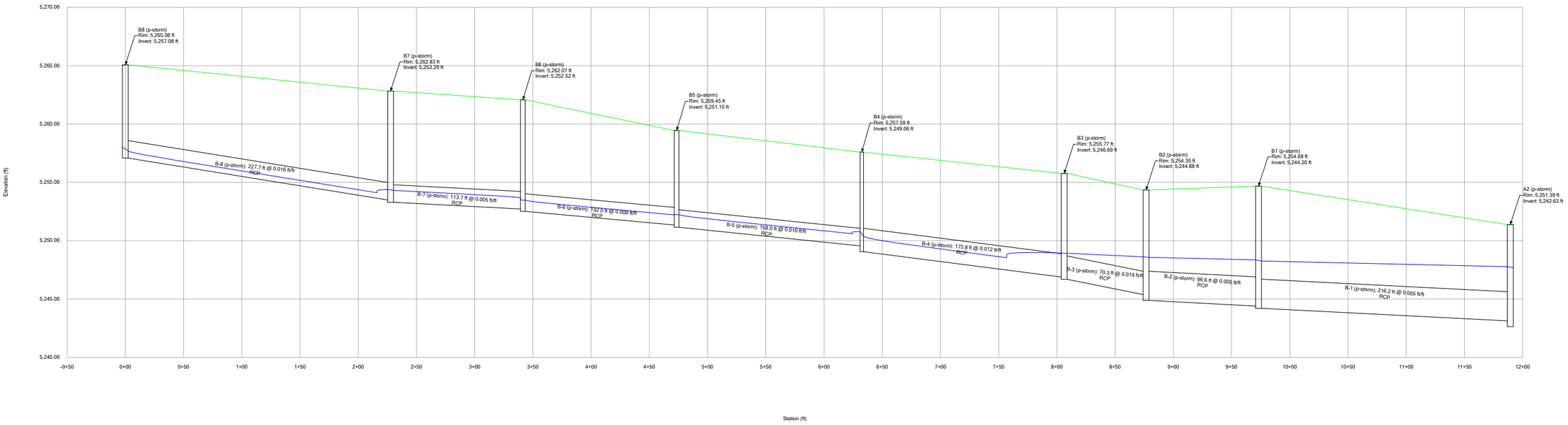
Active Scenario: 100-YR

Label	Elevation (Ground) (ft)	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Depth (Out) (ft)	Flow (Total Out) (cfs)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)	Notes	Headloss Method	Headloss Coefficient (Standard)	Headloss (ft)	HEC-22 Benching Method	Flow (Known) (cfs)
A1 (p-storm)	5,251.44	5,251.44	5,242.39	5.16	49.40	5,247.65	5,247.56	5,248.26	5,248.31	Inlet Type R 5'	HEC-22 Energy (Second Edition)		0.09	Flat	49.40
A2 (p-storm)	5,251.39	5,251.39	5,242.63	5.05	44.20	5,247.77	5,247.69	5,248.02	5,248.29	5'Ø Manhole	HEC-22 Energy (Second Edition)		0.09	Half	44.20
A3 (p-storm)	5,251.96	5,251.96	5,243.34	4.65	26.80	5,248.24	5,247.99	5,248.70	5,248.46	5'Ø Manhole	HEC-22 Energy (Second Edition)		0.24	Half	26.80
A4 (p-storm)	5,253.98	5,253.98	5,244.22	4.60	26.80	5,248.86	5,248.82	5,249.61	5,249.28	5'Ø DROP MANHOLE	HEC-22 Energy (Second Edition)		0.04	Half	26.80
A5 (p-storm)	5,256.49	5,256.49	5,246.01	4.07	21.90	5,250.56	5,250.08	5,251.32	5,250.83	5'Ø Manhole	HEC-22 Energy (Second Edition)		0.49	Half	21.90
A6 (p-storm)	5,258.76	5,258.76	5,249.10	4.30	21.90	5,253.94	5,253.40	5,254.70	5,254.16	5'Ø Manhole	HEC-22 Energy (Second Edition)		0.54	Half	21.90
A7 (p-storm)	5,259.61	5,259.61	5,250.49	4.45	21.90	5,255.19	5,254.94	5,255.66	5,255.70	Inlet Type R 10'	HEC-22 Energy (Second Edition)		0.25	Flat	21.90
A8 (p-storm)	5,260.73	5,260.73	5,251.44	4.33	17.20	5,255.85	5,255.77	5,255.99	5,256.23	5'Ø Manhole	HEC-22 Energy (Second Edition)		0.08	Half	17.20
A9 (p-storm)	5,263.00	5,263.00	5,253.50	3.10	13.00	5,256.89	5,256.60	5,257.08	5,256.87	Inlet Type R 10'	HEC-22 Energy (Second Edition)		0.29	Flat	13.00
A10 (p-storm)	5,263.31	5,263.31	5,255.49	1.57	6.20	5,257.21	5,257.06	5,257.25	5,257.25	Inlet Type C	HEC-22 Energy (Second Edition)		0.15	Flat	6.20
A11 (p-storm)	5,265.45	5,265.45	5,256.89	0.63	2.70	5,257.53	5,257.51	5,259.37	5,257.74	4'Ø Manhole	HEC-22 Energy (Second Edition)		0.02	Half	2.70
A12 (p-storm)	5,266.12	5,266.12	5,261.05	0.62	2.70	5,261.96	5,261.67	5,262.20	5,261.90	Modified Inlet Type R 5'	Standard	1.250	0.29	<None>	2.70
B1 (p-storm)	5,254.68	5,254.68	5,244.20	4.06	19.40	5,248.35	5,248.26	5,248.60	5,248.50	5'Ø Manhole	HEC-22 Energy (Second Edition)		0.09	Half	19.40
B2 (p-storm)	5,254.35	5,254.35	5,244.88	3.69	19.40	5,248.62	5,248.57	5,248.97	5,248.81	5'Ø Manhole	HEC-22 Energy (Second Edition)		0.05	Half	19.40
B3 (p-storm)	5,255.77	5,255.77	5,246.69	2.23	14.90	5,248.93	5,248.92	5,248.95	5,249.27	5'Ø Manhole	HEC-22 Energy (Second Edition)		0.01	Half	14.90
B4 (p-storm)	5,257.59	5,257.59	5,249.06	1.34	13.80	5,250.78	5,250.40	5,251.19	5,250.99	Inlet Type R 10'	HEC-22 Energy (Second Edition)		0.38	Flat	13.80
B5 (p-storm)	5,259.45	5,259.45	5,251.15	1.09	7.90	5,252.25	5,252.24	5,252.79	5,252.75	4'Ø Manhole	HEC-22 Energy (Second Edition)		0.01	Half	7.90
B6 (p-storm)	5,262.07	5,262.07	5,252.52	0.96	6.20	5,253.49	5,253.48	5,253.49	5,253.90	4'Ø Manhole	HEC-22 Energy (Second Edition)		0.00	Half	6.20
B7 (p-storm)	5,262.83	5,262.83	5,253.29	1.02	6.00	5,254.39	5,254.31	5,254.49	5,254.65	Inlet Type R 5'	HEC-22 Energy (Second Edition)		0.08	Flat	6.00
B8 (p-storm)	5,265.08	5,265.08	5,257.08	0.64	2.80	5,258.02	5,257.71	5,258.26	5,257.96	MODIFIED INLET TYPE R 5'	Standard	1.250	0.30	<None>	2.80
C1 (p-storm)	5,253.80	5,253.80	5,244.81	4.08	7.70	5,248.91	5,248.89	5,248.96	5,248.99	Inlet Type R 10'	HEC-22 Energy (Second Edition)		0.02	Flat	7.70
C2 (p-storm)	5,251.31	5,251.31	5,247.77	1.17	2.90	5,249.02	5,248.94	5,249.08	5,249.00	Inlet Type C	Standard	1.250	0.07	<None>	2.90
D1 (p-storm)	5,259.28	5,259.28	5,253.38	0.61	2.60	5,254.27	5,253.99	5,254.50	5,254.22	Inlet Type R 5'	Standard	1.250	0.29	<None>	2.60
E1 (p-storm)	5,260.71	5,260.71	5,252.97	0.70	0.30	5,253.75	5,253.66	5,253.82	5,253.73	Inlet Type C	Standard	1.250	0.09	<None>	0.30
F1 (p-storm)	5,254.41	5,254.41	5,246.11	2.56	6.20	5,248.91	5,248.68	5,249.11	5,248.87	MODIFIED INLET TYPE R 5'	Standard	1.250	0.24	<None>	6.20
G1 (p-storm)	5,260.33	5,260.33	5,252.30	3.57	5.30	5,256.04	5,255.87	5,256.18	5,256.01	Inlet Type 13 Triple	Standard	1.250	0.17	<None>	5.30
H1 (p-storm)	5,255.40	5,255.40	5,247.05	1.88	2.10	5,248.96	5,248.93	5,248.99	5,248.96	Inlet Type 13 Triple	Standard	1.250	0.03	<None>	2.10
J1 (p-storm)	5,254.31	5,254.31	5,236.30	1.40	12.00	5,240.92	5,237.70	5,241.63	5,238.46	4'Ø Manhole	HEC-22 Energy (Third Edition)		3.22	Half	12.00
POND OUTLET	5,237.04	5,237.04	5,237.04	0.00	12.00	5,237.94	5,237.04	5,238.65	5,237.76	Dummy Null Structure for LandXML purposes	Standard	1.250	0.90	<None>	12.00

Profile Report
Engineering Profile - STORM LINE A (2020-01-17 StormCAD Base.stsw)
Active Scenario: 100-YR



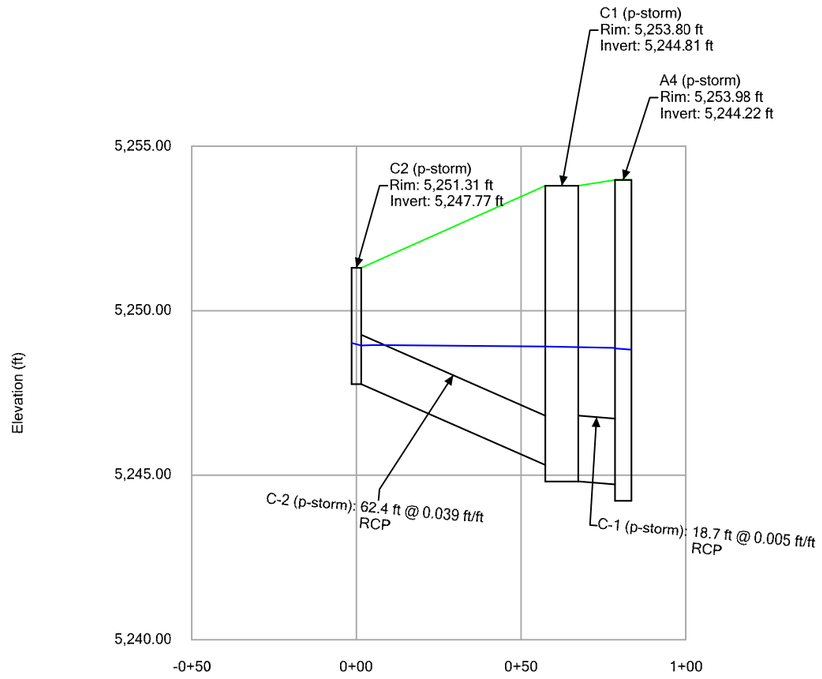
Profile Report
Engineering Profile - STORM LINE B (2020-01-17 StormCAD Base.stsw)
Active Scenario: 100-YR



Profile Report

Engineering Profile - STORM LINE C (2020-01-17 StormCAD Base.stsw)

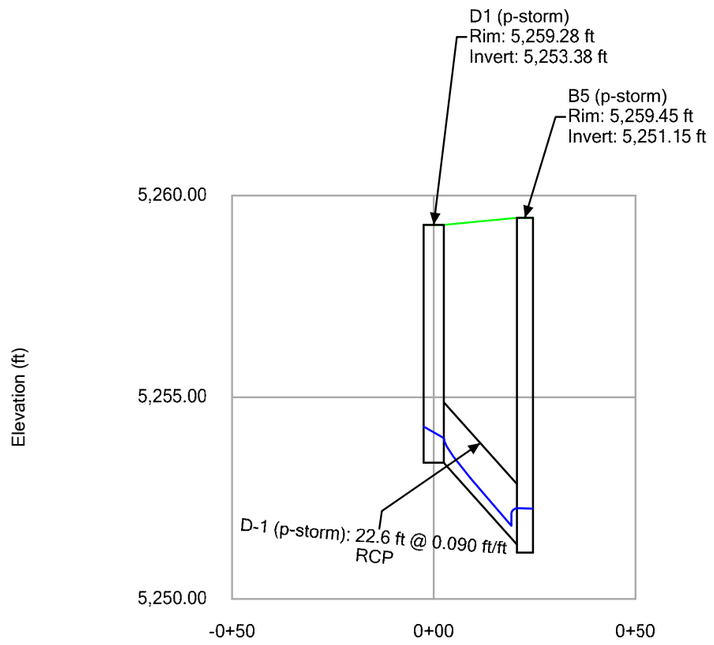
Active Scenario: 100-YR



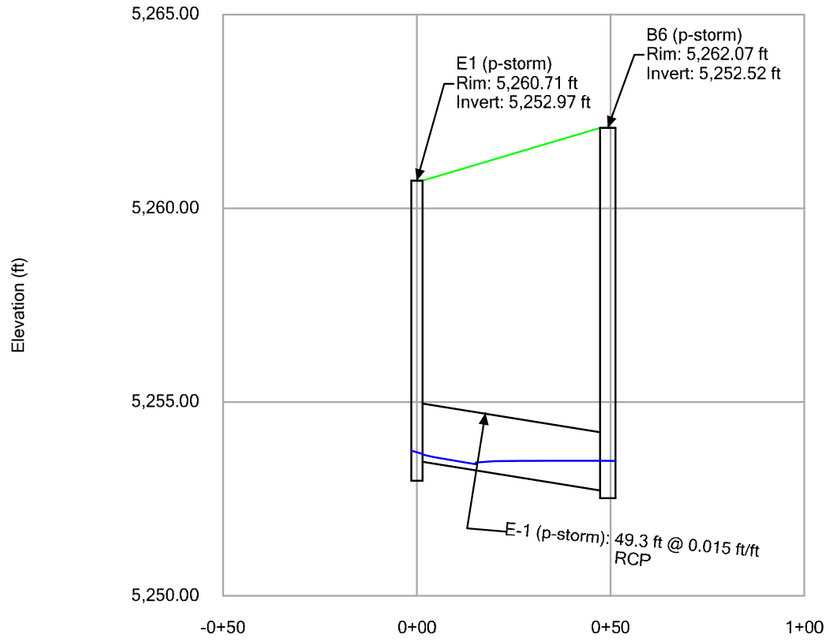
Profile Report

Engineering Profile - STORM LINE D (2020-01-17 StormCAD Base.stsw)

Active Scenario: 100-YR



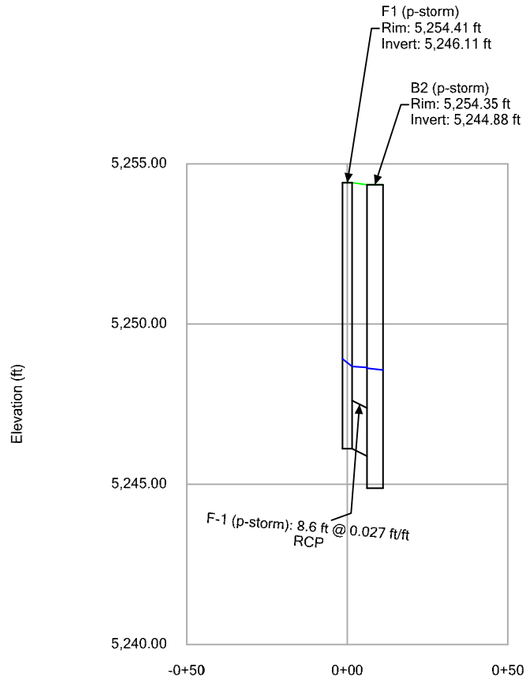
Profile Report
Engineering Profile - STORM LINE E (2020-01-17 StormCAD Base.stsw)
Active Scenario: 100-YR



Profile Report

Engineering Profile - STORM LINE F (2020-01-17 StormCAD Base.stsw)

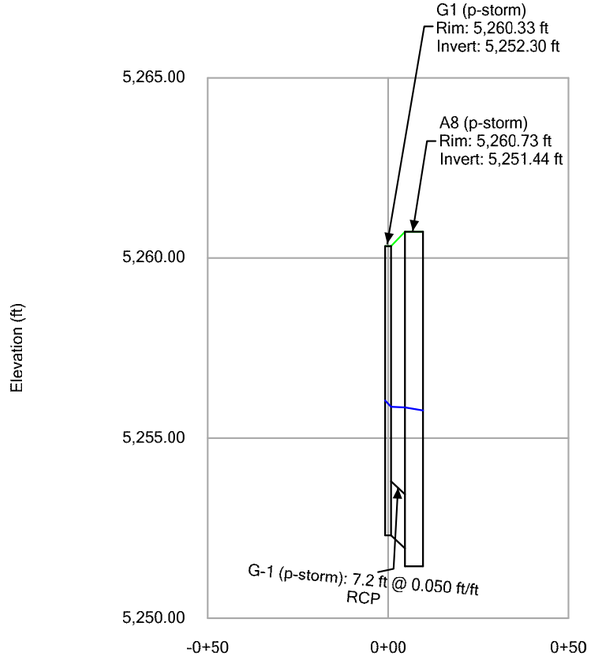
Active Scenario: 100-YR



Profile Report

Engineering Profile - STORM LINE G (2020-01-17 StormCAD Base.stsw)

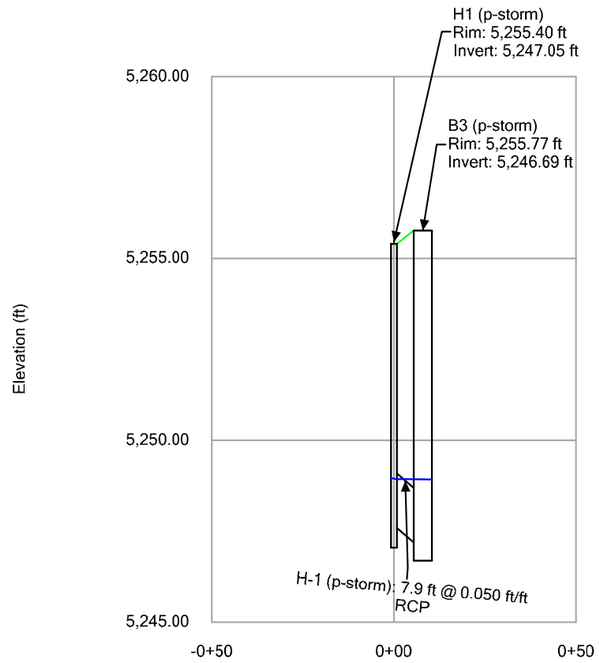
Active Scenario: 100-YR



Profile Report

Engineering Profile - STORM LINE H (2020-01-17 StormCAD Base.stsw)

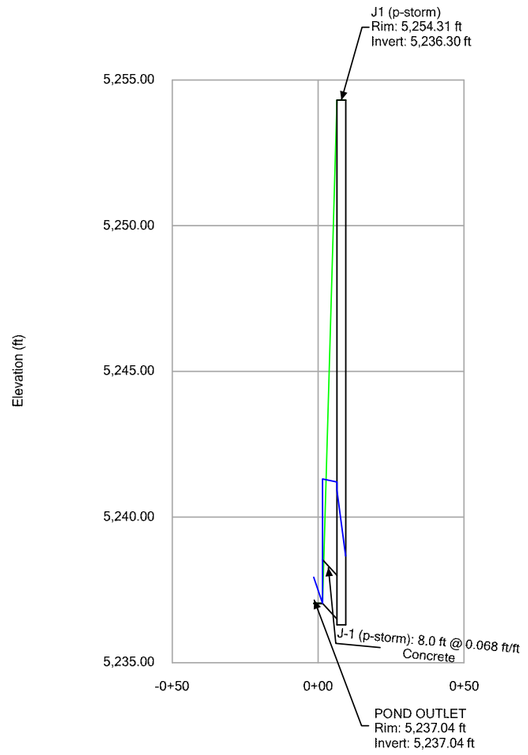
Active Scenario: 100-YR



Profile Report

Engineering Profile - STORM LINE J (2020-01-17 StormCAD Base.stsw)

Active Scenario: 100-YR



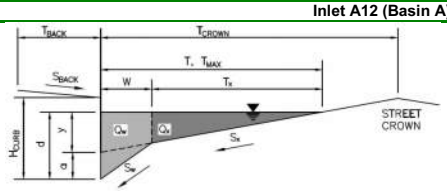
Version 4.05 Released March 2017

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: OUTLOOK AT NINE MILE

Inlet ID: Inlet A12 (Basin A)



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	0.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.013	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	44.5	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.008	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	13.0	13.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	12.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

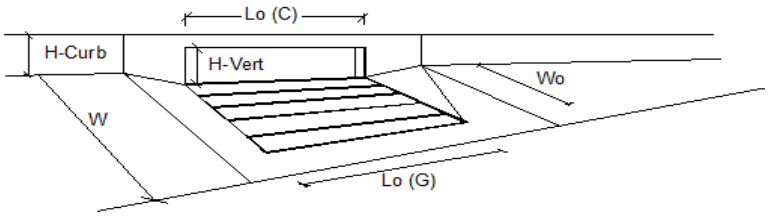
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**2.9**	**4.9**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

Version 4.05 Released March 2017



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	5.0	5.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f-G =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f-C =	0.10	0.10	

Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**0.4**	**2.7**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**1.1**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**100**	**72**	**%**

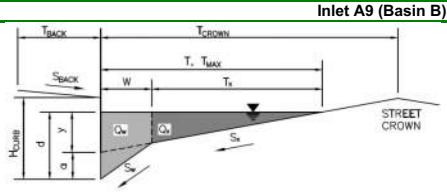
Version 4.05 Released March 2017

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: OUTLOOK AT NINE MILE

Inlet ID: Inlet A9 (Basin B)



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	0.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	26.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.023	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.010	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	13.0	13.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	12.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

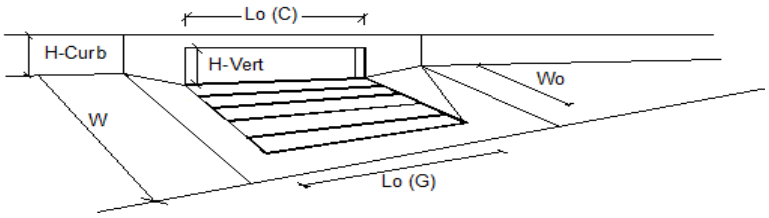
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**3.2**	**6.8**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

WARNING: MAJOR STORM max. allowable capacity is less than the design flow given on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

Version 4.05 Released March 2017



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	5.0	5.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	10.00	10.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f-G =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f-C =	0.10	0.10	

Street Hydraulics: WARNING: Q > ALLOWABLE Q FOR MAJOR STORM		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**1.4**	**7.0**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**1.1**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**100**	**86**	**%**

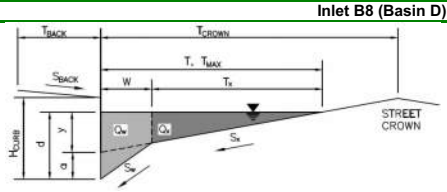
Version 4.05 Released March 2017

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: OUTLOOK AT NINE MILE

Inlet ID: Inlet B8 (Basin D)



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	0.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	26.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.025	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.010	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	13.0	13.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	12.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

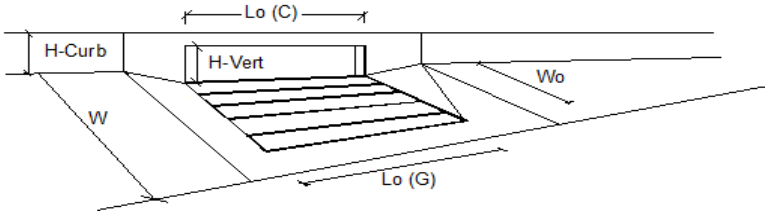
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**3.1**	**7.7**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

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Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	5.0	5.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	10.00	10.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f-G =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f-C =	0.10	0.10	

Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**0.9**	**3.7**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.0**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**100**	**100**	**%**

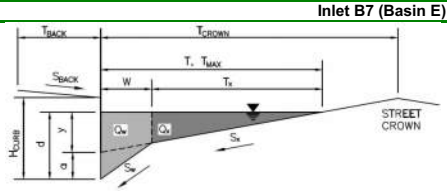
Version 4.05 Released March 2017

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: OUTLOOK AT NINE MILE

Inlet ID: Inlet B7 (Basin E)



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	18.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	45.5	ft
Gutter Width	W =	4.00	ft
Street Transverse Slope	S_X =	0.022	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.010	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	13.0	13.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	12.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

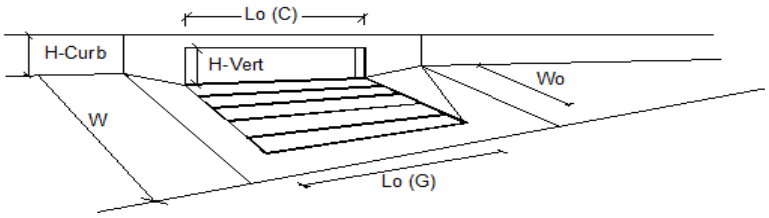
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**2.3**	**11.2**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

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Design Information (Input)		MINOR	MAJOR	
Type of Inlet	CDOT/Denver 13 Valley Grate	Type =	CDOT/Denver 13 Valley Grate	
Local Depression (additional to continuous gutter depression 'a')		a_{LOCAL} =	2.0	2.0 inches
Total Number of Units in the Inlet (Grate or Curb Opening)		No =	3	3
Length of a Single Unit Inlet (Grate or Curb Opening)		L_o =	3.00	3.00 ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)		W_o =	1.73	1.73 ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)		C_f-G =	0.50	0.50
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)		C_f-C =	N/A	N/A

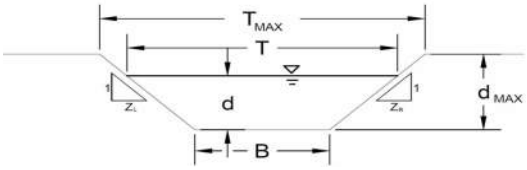
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**0.7**	**2.3**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.7**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**97**	**76**	**%**

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AREA INLET IN A SWALE

OUTLOOK AT NINE MILE

Inlet A10 (Basin F)



This worksheet uses the NRCS vegetal retardance method to determine Manning's n.

For more information see Section 7.2.3 of the USDCM.

Analysis of Trapezoidal Grass-Lined Channel Using SCS Method

NRCS Vegetal Retardance (A, B, C, D, or E)	A, B, C, D or E		
Manning's n (Leave cell D16 blank to manually enter an n value)	n =	0.040	
Channel Invert Slope	S_O =	0.0200	ft/ft
Bottom Width	B =	0.00	ft
Left Side Slope	Z1 =	4.00	ft/ft
Right Side Slope	Z2 =	4.00	ft/ft

Check one of the following soil types:

Soil Type:	Max. Velocity (V_{MAX})	Max Froude No. (F_{MAX})
Non-Cohesive	5.0 fps	0.60
Cohesive	7.0 fps	0.80
Paved	N/A	N/A

Choose One:
- Non-Cohesive
- Cohesive
- Paved

		Minor Storm	Major Storm	
Max. Allowable Top Width of Channel for Minor & Major Storm	T_{MAX} =	6.00	9.00	feet
Max. Allowable Water Depth in Channel for Minor & Major Storm	d_{MAX} =	1.00	2.00	feet

Allowable Channel Capacity Based On Channel Geometry

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Top Width Criterion	Q_{allow} =	6.0	17.8	cfs
MAJOR STORM Allowable Capacity is based on Top Width Criterion	d_{allow} =	0.75	1.13	ft

Water Depth in Channel Based On Design Peak Flow

Design Peak Flow	Q_o =	0.7	3.6	cfs
Water Depth	d =	0.33	0.62	feet

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

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AREA INLET IN A SWALE

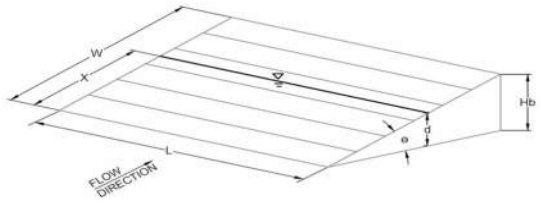
OUTLOOK AT NINE MILE

Inlet A10 (Basin F)

Inlet Design Information (Input)

Type of Inlet: CDOT Type C

Inlet Type = CDOT Type C



Angle of Inclined Grate (must be <= 30 degrees)	θ =	0.00	degrees
Width of Grate	W =	3.00	feet
Length of Grate	L =	3.00	feet
Open Area Ratio	A_{RATIO} =	0.70	
Height of Inclined Grate	H_B =	0.00	feet
Clogging Factor	C_f =	0.50	
Grate Discharge Coefficient	C_d =	0.96	
Orifice Coefficient	C_o =	0.64	
Weir Coefficient	C_w =	2.05	

		MINOR	MAJOR	
Water Depth at Inlet (for depressed inlets, 1 foot is added for depression)	d =	0.33	0.62	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**3.6**	**9.0**	**cfs**
	Bypassed Flow, Q_b =	**0.0**	**0.0**	**cfs**
	Capture Percentage = Q_a/Q_o = C%	**100**	**100**	**%**

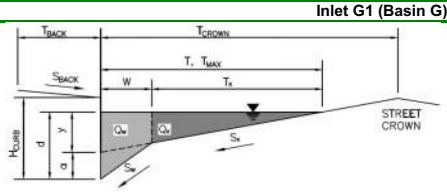
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ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: OUTLOOK AT NINE MILE

Inlet ID: Inlet G1 (Basin G)



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	15.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	28.0	ft
Gutter Width	W =	4.00	ft
Street Transverse Slope	S_X =	0.023	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.042	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.010	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	13.0	13.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	12.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

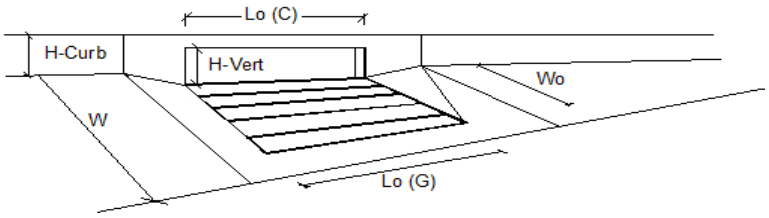
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**5.1**	**7.0**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

WARNING: MAJOR STORM max. allowable capacity is less than the design flow given on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

Version 4.05 Released March 2017



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	CDOT/Denver 13 Valley Grate	Type =	CDOT/Denver 13 Valley Grate	
Local Depression (additional to continuous gutter depression 'a')		a_{LOCAL} =	2.0	2.0 inches
Total Number of Units in the Inlet (Grate or Curb Opening)		No =	3	3
Length of a Single Unit Inlet (Grate or Curb Opening)		L_o =	3.00	3.00 ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)		W_o =	1.73	1.73 ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)		C_f-G =	0.50	0.50
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)		C_f-C =	N/A	N/A

Street Hydraulics: WARNING: Q > ALLOWABLE Q FOR MAJOR STORM		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**1.6**	**5.3**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.3**	**2.8**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**85**	**66**	**%**

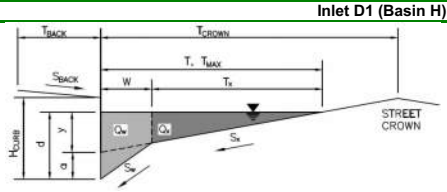
Version 4.05 Released March 2017

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: OUTLOOK AT NINE MILE

Inlet ID: Inlet D1 (Basin H)



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	0.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	44.5	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.023	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.010	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	13.0	13.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	12.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

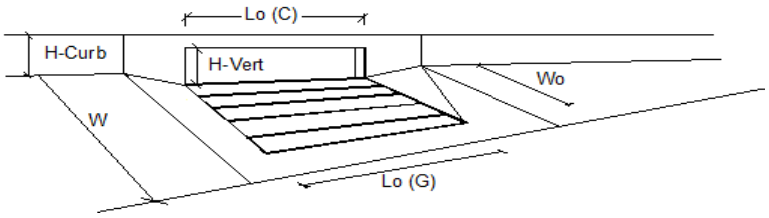
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**3.2**	**7.0**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

Version 4.05 Released March 2017



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	5.0	5.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f-G =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f-C =	0.10	0.10	

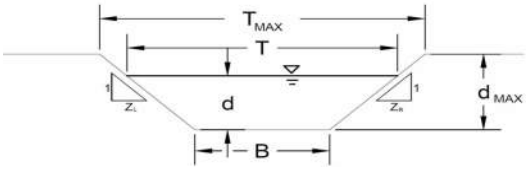
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**0.9**	**2.7**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**1.0**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**100**	**74**	**%**

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AREA INLET IN A SWALE

OUTLOOK AT NINE MILE

Inlet E1 (Basin H1)



This worksheet uses the NRCS vegetal retardance method to determine Manning's n.

For more information see Section 7.2.3 of the USDCM.

Analysis of Trapezoidal Grass-Lined Channel Using SCS Method

NRCS Vegetal Retardance (A, B, C, D, or E)	A, B, C, D or E		
Manning's n (Leave cell D16 blank to manually enter an n value)	n =	0.040	
Channel Invert Slope	S_O =	0.0200	ft/ft
Bottom Width	B =	0.00	ft
Left Side Slope	Z1 =	4.00	ft/ft
Right Side Slope	Z2 =	4.00	ft/ft

Check one of the following soil types:

Soil Type:	Max. Velocity (V_{MAX})	Max Froude No. (F_{MAX})
Non-Cohesive	5.0 fps	0.60
Cohesive	7.0 fps	0.80
Paved	N/A	N/A

Choose One:
- ○ Non-Cohesive
- ◉ Cohesive
- ○ Paved

		Minor Storm	Major Storm	
Max. Allowable Top Width of Channel for Minor & Major Storm	T_{MAX} =	6.00	9.00	feet
Max. Allowable Water Depth in Channel for Minor & Major Storm	d_{MAX} =	1.00	2.00	feet

Allowable Channel Capacity Based On Channel Geometry

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Top Width Criterion	Q_{allow} =	6.0	17.8	cfs
MAJOR STORM Allowable Capacity is based on Top Width Criterion	d_{allow} =	0.75	1.13	ft

Water Depth in Channel Based On Design Peak Flow

Design Peak Flow	Q_o =	0.1	0.3	cfs
Water Depth	d =	0.16	0.24	feet

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

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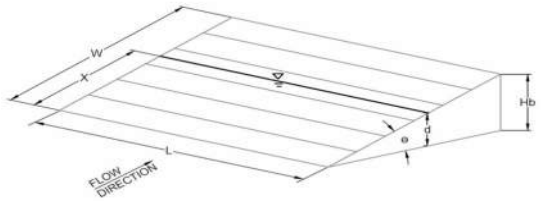
AREA INLET IN A SWALE

OUTLOOK AT NINE MILE

Inlet E1 (Basin H1)

Inlet Design Information (Input)

Type of Inlet: CDOT Type C — Inlet Type = CDOT Type C



Angle of Inclined Grate (must be <= 30 degrees)	θ =	0.00	degrees
Width of Grate	W =	3.00	feet
Length of Grate	L =	3.00	feet
Open Area Ratio	A_{RATIO} =	0.70	
Height of Inclined Grate	H_B =	0.00	feet
Clogging Factor	C_f =	0.50	
Grate Discharge Coefficient	C_d =	0.96	
Orifice Coefficient	C_o =	0.64	
Weir Coefficient	C_w =	2.05	

		MINOR	MAJOR	
Water Depth at Inlet (for depressed inlets, 1 foot is added for depression)	d =	0.16	0.24	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**1.2**	**2.2**	**cfs**
	Bypassed Flow, Q_b =	**0.0**	**0.0**	**cfs**
	Capture Percentage = Q_a/Q_o = C%	**100**	**100**	**%**

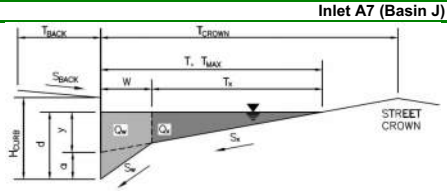
Version 4.05 Released March 2017

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: OUTLOOK AT NINE MILE

Inlet ID: Inlet A7 (Basin J)



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	0.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	34.5	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.010	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	13.0	13.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	12.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

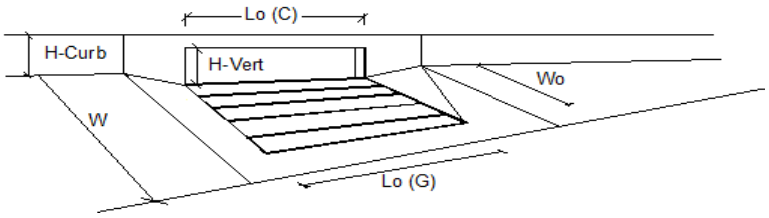
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**3.4**	**5.7**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

Version 4.05 Released March 2017



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	5.0	5.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	10.00	10.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f-G =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f-C =	0.10	0.10	

Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**0.9**	**5.1**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.1**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**100**	**98**	**%**

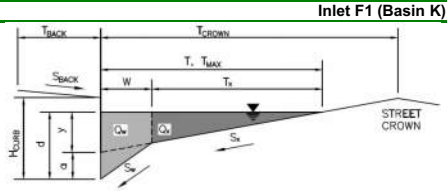
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ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: OUTLOOK AT NINE MILE

Inlet ID: Inlet F1 (Basin K)



Gutter Geometry (Enter data in the blue cells)

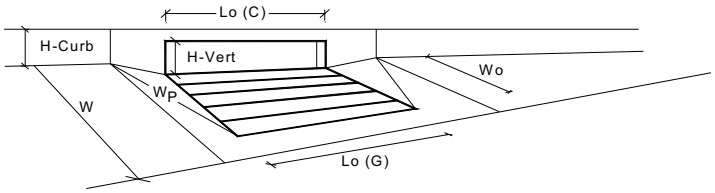
Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	0.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	44.5	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.015	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.000	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	31.5	31.5	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	12.0	inches
Check boxes are not applicable in SUMP conditions		☐	☐	

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**SUMP**	**SUMP**	**cfs**

INLET IN A SUMP OR SAG LOCATION

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Design Information (Input)	CDOT Type R Curb Opening		MINOR	MAJOR	
Type of Inlet		Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from above)		a_{local} =	5.00	5.00	inches
Number of Unit Inlets (Grate or Curb Opening)		No =	1	1	
Water Depth at Flowline (outside of local depression)		Ponding Depth =	4.0	7.3	inches
Grate Information			MINOR	MAJOR	Override Depths
Length of a Unit Grate		L_o (G) =	N/A	N/A	feet
Width of a Unit Grate		W_o =	N/A	N/A	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)		A_{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)		C_f (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)		C_w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)		C_o (G) =	N/A	N/A	
Curb Opening Information			MINOR	MAJOR	
Length of a Unit Curb Opening		L_o (C) =	5.00	5.00	feet
Height of Vertical Curb Opening in Inches		H_{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches		H_{throat} =	6.00	6.00	inches
Angle of Throat (see USDCM Figure ST-5)		Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)		W_p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)		C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)		C_w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)		C_o (C) =	0.67	0.67	
Low Head Performance Reduction (Calculated)			MINOR	MAJOR	
Depth for Grate Midwidth		d_{Grate} =	N/A	N/A	ft
Depth for Curb Opening Weir Equation		d_{Curb} =	0.17	0.44	ft
Combination Inlet Performance Reduction Factor for Long Inlets		$RF_{Combination}$ =	0.51	0.94	
Curb Opening Performance Reduction Factor for Long Inlets		RF_{Curb} =	1.00	1.00	
Grated Inlet Performance Reduction Factor for Long Inlets		RF_{Grate} =	N/A	N/A	
			MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)		**Q_a =**	**1.9**	**8.2**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms(>Q PEAK)		$Q_{PEAK\ REQUIRED}$ =	1.5	6.2	cfs

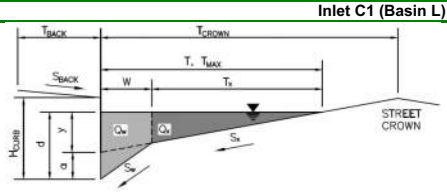
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ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: OUTLOOK AT NINE MILE

Inlet ID: Inlet C1 (Basin L)



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	0.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	44.5	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.023	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.021	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	13.0	13.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	12.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

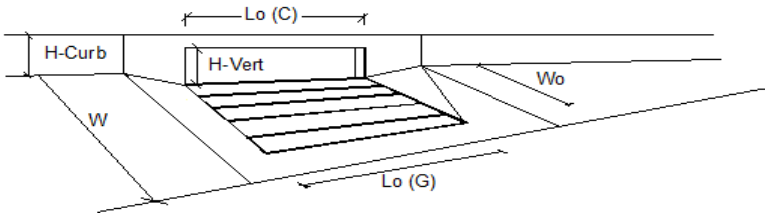
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**4.6**	**10.4**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

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Design Information (Input)		MINOR	MAJOR	
Type of Inlet	CDOT Type R Curb Opening	Type =	CDOT Type R Curb Opening	
Local Depression (additional to continuous gutter depression 'a')		a_{LOCAL} =	5.0	5.0 inches
Total Number of Units in the Inlet (Grate or Curb Opening)		No =	1	1
Length of a Single Unit Inlet (Grate or Curb Opening)		L_o =	10.00	10.00 ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)		W_o =	N/A	N/A ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)		C_f-G =	N/A	N/A
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)		C_f-C =	0.10	0.10

Street Hydraulics: OK - Q < Allowable Street Capacity'	MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**1.1**	**5.9** **cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.3** **cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**100**	**95** **%**

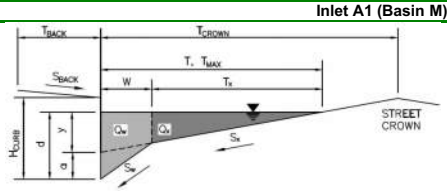
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ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: OUTLOOK AT NINE MILE

Inlet ID: Inlet A1 (Basin M)



Gutter Geometry (Enter data in the blue cells)

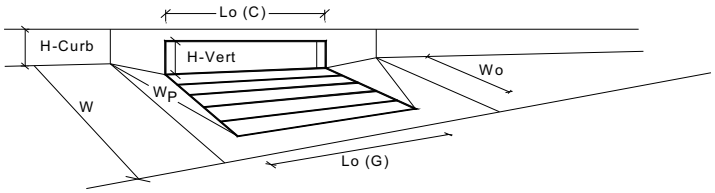
Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	0.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	44.5	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.015	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.000	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	31.5	31.5	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	12.0	inches
Check boxes are not applicable in SUMP conditions		☐	☐	

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**SUMP**	**SUMP**	**cfs**

INLET IN A SUMP OR SAG LOCATION

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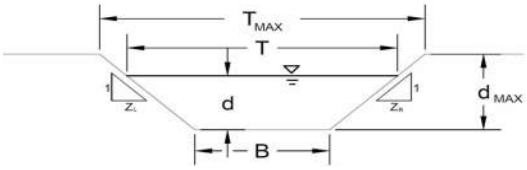
Design Information (Input)	CDOT Type R Curb Opening			
Type of Inlet	Type =	MINOR: CDOT Type R Curb Opening	MAJOR: CDOT Type R Curb Opening	
Local Depression (additional to continuous gutter depression 'a' from above)	a_{local} =	5.00	5.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	1	1	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	4.0	7.4	inches
Grate Information		MINOR	MAJOR	☐ Override Depths
Length of a Unit Grate	L_o (G) =	N/A	N/A	feet
Width of a Unit Grate	W_o =	N/A	N/A	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	N/A	N/A	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	5.00	5.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	6.00	6.00	inches
Angle of Throat (see USDCM Figure ST-5)	Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	C_w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.67	0.67	
Low Head Performance Reduction (Calculated)		MINOR	MAJOR	
Depth for Grate Midwidth	d_{Grate} =	N/A	N/A	ft
Depth for Curb Opening Weir Equation	d_{Curb} =	0.17	0.45	ft
Combination Inlet Performance Reduction Factor for Long Inlets	$RF_{Combination}$ =	0.51	0.95	
Curb Opening Performance Reduction Factor for Long Inlets	RF_{Curb} =	1.00	1.00	
Grated Inlet Performance Reduction Factor for Long Inlets	RF_{Grate} =	N/A	N/A	
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**1.9**	**8.5**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms(>Q PEAK)	$Q_{PEAK\ REQUIRED}$ =	1.5	6.4	cfs

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AREA INLET IN A SWALE

OUTLOOK AT NINE MILE

Inlet C2 (Basin N)



This worksheet uses the NRCS vegetal retardance method to determine Manning's n.

For more information see Section 7.2.3 of the USDCM.

Analysis of Trapezoidal Grass-Lined Channel Using SCS Method

NRCS Vegetal Retardance (A, B, C, D, or E)	A, B, C, D or E		
Manning's n (Leave cell D16 blank to manually enter an n value)	n =	0.040	
Channel Invert Slope	S_O =	0.0200	ft/ft
Bottom Width	B =	0.00	ft
Left Side Slope	Z1 =	4.00	ft/ft
Right Side Slope	Z2 =	4.00	ft/ft

Check one of the following soil types:

Soil Type:	Max. Velocity (V_{MAX})	Max Froude No. (F_{MAX})
Non-Cohesive	5.0 fps	0.60
Cohesive	7.0 fps	0.80
Paved	N/A	N/A

Choose One:
- Non-Cohesive
- Cohesive
- Paved

		Minor Storm	Major Storm	
Max. Allowable Top Width of Channel for Minor & Major Storm	T_{MAX} =	6.00	9.00	feet
Max. Allowable Water Depth in Channel for Minor & Major Storm	d_{MAX} =	1.00	2.00	feet

Allowable Channel Capacity Based On Channel Geometry

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Top Width Criterion	Q_{allow} =	6.0	17.8	cfs
MAJOR STORM Allowable Capacity is based on Top Width Criterion	d_{allow} =	0.75	1.13	ft

Water Depth in Channel Based On Design Peak Flow

Design Peak Flow	Q_o =	0.6	2.9	cfs
Water Depth	d =	0.32	0.57	feet

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

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AREA INLET IN A SWALE

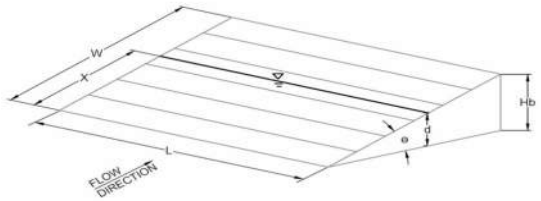
OUTLOOK AT NINE MILE

Inlet C2 (Basin N)

Inlet Design Information (Input)

Type of Inlet: CDOT Type C

Inlet Type = CDOT Type C



Angle of Inclined Grate (must be <= 30 degrees)	θ =	0.00	degrees
Width of Grate	W =	3.00	feet
Length of Grate	L =	3.00	feet
Open Area Ratio	A_{RATIO} =	0.70	
Height of Inclined Grate	H_B =	0.00	feet
Clogging Factor	C_f =	0.50	
Grate Discharge Coefficient	C_d =	0.96	
Orifice Coefficient	C_o =	0.64	
Weir Coefficient	C_w =	2.05	

		MINOR	MAJOR	
Water Depth at Inlet (for depressed inlets, 1 foot is added for depression)	d =	0.32	0.57	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**3.3**	**7.9**	**cfs**
	Bypassed Flow, Q_b =	**0.0**	**0.0**	**cfs**
	Capture Percentage = Q_a/Q_o = C%	**100**	**100**	**%**

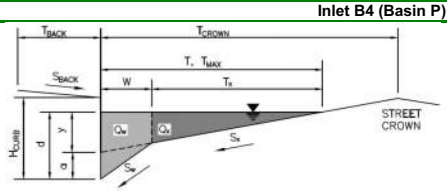
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ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: OUTLOOK AT NINE MILE

Inlet ID: Inlet B4 (Basin P)



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	0.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	34.4	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.028	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.010	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	17.2	17.2	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	12.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

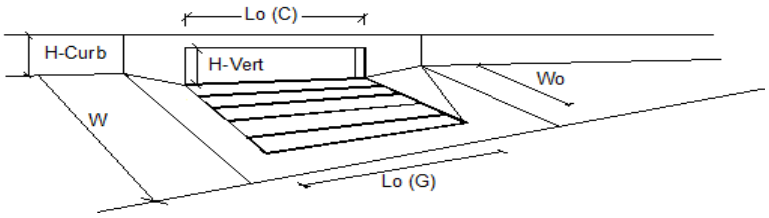
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**3.0**	**18.9**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

Version 4.05 Released March 2017



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	5.0	5.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	10.00	10.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f-G =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f-C =	0.10	0.10	

Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**2.0**	**6.9**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.8**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**100**	**89**	**%**

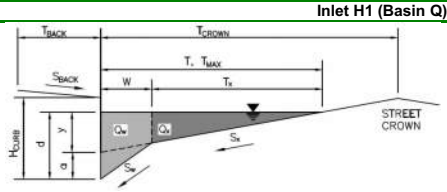
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ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: OUTLOOK AT NINE MILE

Inlet ID: Inlet H1 (Basin Q)



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	18.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	26.0	ft
Gutter Width	W =	4.00	ft
Street Transverse Slope	S_X =	0.025	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.042	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.010	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	13.0	13.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	12.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

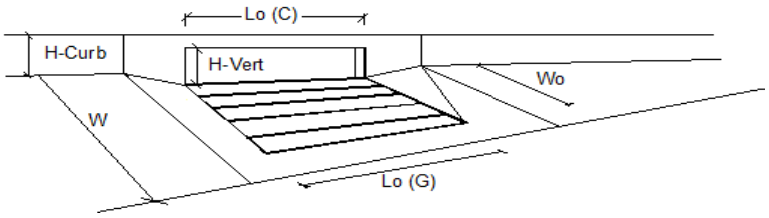
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**4.9**	**8.1**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

Version 4.05 Released March 2017



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	CDOT/Denver 13 Valley Grate	Type =	CDOT/Denver 13 Valley Grate	
Local Depression (additional to continuous gutter depression 'a')		a_{LOCAL} =	2.0	2.0 inches
Total Number of Units in the Inlet (Grate or Curb Opening)		No =	3	3
Length of a Single Unit Inlet (Grate or Curb Opening)		L_o =	3.00	3.00 ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)		W_o =	1.73	1.73 ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)		C_f-G =	0.50	0.50
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)		C_f-C =	N/A	N/A

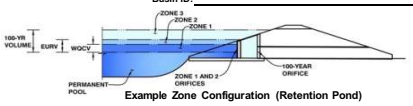
Street Hydraulics: OK - Q < Allowable Street Capacity'	MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**0.6**	**2.5** **cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.1**	**0.7** **cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**92**	**80** **%**

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)

Project: _____

Basin ID: _____



Example Zone Configuration (Retention Pond)

Required Volume Calculation

Selected BMP Type =	EDB	
Watershed Area =	14.50	acres
Watershed Length =	1,150	ft
Watershed Slope =	0.014	ft/ft
Watershed Imperviousness =	70.00%	percent
Percentage Hydrologic Soil Group A =	0.0%	percent
Percentage Hydrologic Soil Group B =	100.0%	percent
Percentage Hydrologic Soil Groups C/D =	0.0%	percent
Desired WQCV Drain Time =	40.0	hours
Location for 1-hr Rainfall Depths =	Erie	
Water Quality Capture Volume (WQCV) =	0.332	acre-feet
Excess Urban Runoff Volume (EURV) =	1.115	acre-feet
2-yr Runoff Volume (P1 = 0.81 in.) =	0.634	acre-feet
5-yr Runoff Volume (P1 = 1.11 in.) =	0.914	acre-feet
10-yr Runoff Volume (P1 = 1.39 in.) =	1.244	acre-feet
25-yr Runoff Volume (P1 = 1.84 in.) =	1.817	acre-feet
50-yr Runoff Volume (P1 = 2.24 in.) =	2.267	acre-feet
100-yr Runoff Volume (P1 = 2.68 in.) =	2.845	acre-feet
500-yr Runoff Volume (P1 = 3.89 in.) =	4.354	acre-feet
Approximate 2-yr Detention Volume =	0.594	acre-feet
Approximate 5-yr Detention Volume =	0.859	acre-feet
Approximate 10-yr Detention Volume =	1.164	acre-feet
Approximate 25-yr Detention Volume =	1.448	acre-feet
Approximate 50-yr Detention Volume =	1.630	acre-feet
Approximate 100-yr Detention Volume =	1.866	acre-feet

Optional User Override 1-hr Precipitation

	inches
	inches
	inches
	inches
	inches
	inches

Stage-Storage Calculation

Zone 1 Volume (WQCV) =	0.332	acre-feet
Zone 2 Volume (EURV - Zone 1) =	0.782	acre-feet
Zone 3 Volume (User Defined - Zones 1 & 2) =	0.498	acre-feet
Total Detention Basin Volume =	1.613	acre-feet
Initial Surcharge Volume (ISV) =	user	ft^3
Initial Surcharge Depth (ISD) =	user	ft
Total Available Detention Depth (H_{total}) =	user	ft
Depth of Trickle Channel (H_{TC}) =	user	ft
Slope of Trickle Channel (S_{TC}) =	user	ft/ft
Slopes of Main Basin Sides (S_{main}) =	user	H:V
Basin Length-to-Width Ratio ($R_{L/W}$) =	user	
Initial Surcharge Area (A_{ISV}) =	user	ft^2
Surcharge Volume Length (L_{ISV}) =	user	ft
Surcharge Volume Width (W_{ISV}) =	user	ft
Depth of Basin Floor (H_{FLOOR}) =	user	ft
Length of Basin Floor (L_{FLOOR}) =	user	ft
Width of Basin Floor (W_{FLOOR}) =	user	ft
Area of Basin Floor (A_{FLOOR}) =	user	ft^2
Volume of Basin Floor (V_{FLOOR}) =	user	ft^3
Depth of Main Basin (H_{MAIN}) =	user	ft
Length of Main Basin (L_{MAIN}) =	user	ft
Width of Main Basin (W_{MAIN}) =	user	ft
Area of Main Basin (A_{MAIN}) =	user	ft^2
Volume of Main Basin (V_{MAIN}) =	user	ft^3
Calculated Total Basin Volume (V_{total}) =	user	acre-feet

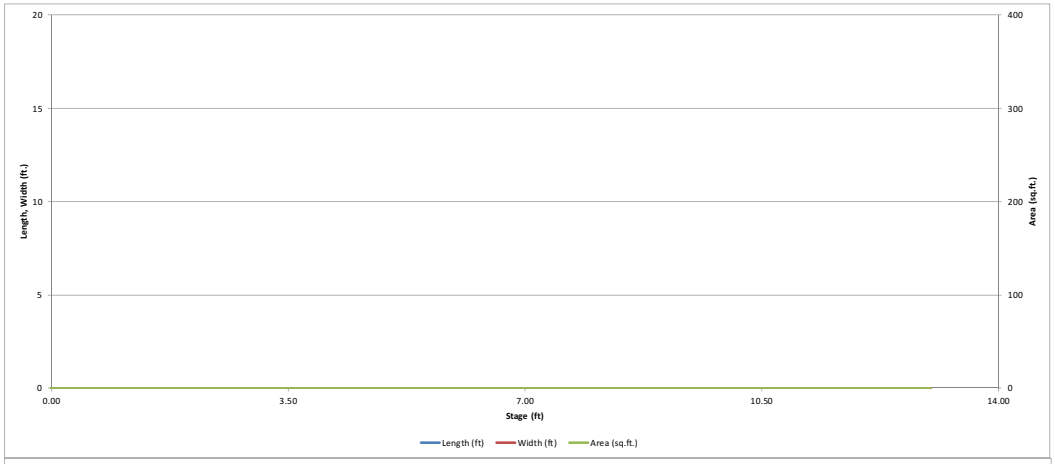
Total detention volume is less than 100-year volume.

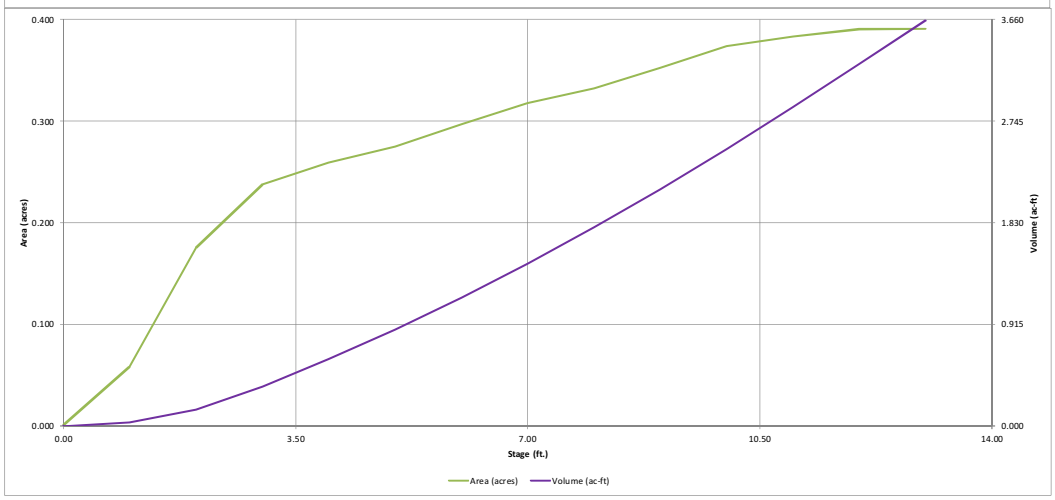
Depth Increment = ft

Stage - Storage Description	Stage (ft)	Optional Override Stage (ft)	Length (ft)	Width (ft)	Area (ft^2)	Optional Override Area (ft^2)	Area (acre)	Volume (ft^3)	Volume (ac-ft)
Top of Micropool	--	0.00	--	--	--	55	0.001		
	--	0.01	--	--	--	64	0.001	1	0.000
	--	1.00	--	--	--	2,539	0.058	1,264	0.029
	--	2.00	--	--	--	7,628	0.175	6,296	0.145
	--	3.00	--	--	--	10,359	0.238	15,365	0.353
	--	4.00	--	--	--	11,284	0.259	26,187	0.601
	--	5.00	--	--	--	11,970	0.275	37,813	0.868
	--	6.00	--	--	--	12,938	0.297	50,267	1.154
	--	7.00	--	--	--	13,841	0.318	63,657	1.461
	--	8.00	--	--	--	14,472	0.332	77,813	1.786
	--	9.00	--	--	--	15,335	0.352	92,717	2.128
	--	10.00	--	--	--	16,285	0.374	108,527	2.491
	--	11.00	--	--	--	16,696	0.383	125,018	2.870
	--	12.00	--	--	--	17,002	0.390	141,867	3.257
	--	13.00	--	--	--	17,002	0.390	158,869	3.647

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)



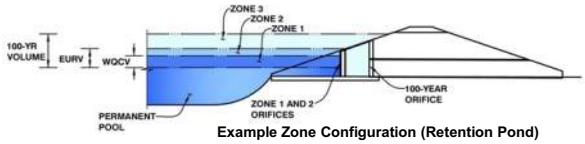


Detention Basin Outlet Structure Design

UD-Detention, Version 3.07 (February 2017)

Project:

Basin ID:



Example Zone Configuration (Retention Pond)

	Stage (ft)	Zone Volume (ac-ft)	Outlet Type
Zone 1 (WQCV)	2.92	0.332	Orifice Plate
Zone 2 (EURV)	5.87	0.782	Rectangular Orifice
Zone 3 (User)	7.48	0.498	Weir&Pipe (Restrict)
		1.613	Total

User Input: Orifice at Underdrain Outlet (typically used to drain WQCV in a Filtration BMP)

Underdrain Orifice Invert Depth =	N/A	ft (distance below the filtration media surface)
Underdrain Orifice Diameter =	N/A	inches

Calculated Parameters for Underdrain

Underdrain Orifice Area =	N/A	ft^2
Underdrain Orifice Centroid =	N/A	feet

User Input: Orifice Plate with one or more orifices or Elliptical Slot Weir (typically used to drain WQCV and/or EURV in a sedimentation BMP)

Invert of Lowest Orifice =	0.00	ft (relative to basin bottom at Stage = 0 ft)
Depth at top of Zone using Orifice Plate =	2.86	ft (relative to basin bottom at Stage = 0 ft)
Orifice Plate: Orifice Vertical Spacing =	7.60	inches
Orifice Plate: Orifice Area per Row =	0.96	sq. inches (diameter = 1-1/16 inches)

Calculated Parameters for Plate

WQ Orifice Area per Row =	6.667E-03	ft^2
Elliptical Half-Width =	N/A	feet
Elliptical Slot Centroid =	N/A	feet
Elliptical Slot Area =	N/A	ft^2

User Input: Stage and Total Area of Each Orifice Row (numbered from lowest to highest)

	Row 1 (required)	Row 2 (optional)	Row 3 (optional)	Row 4 (optional)	Row 5 (optional)	Row 6 (optional)	Row 7 (optional)	Row 8 (optional)
Stage of Orifice Centroid (ft)	0.00	0.60	1.20	1.80				
Orifice Area (sq. inches)	0.96	0.96	0.96	0.96				

	Row 9 (optional)	Row 10 (optional)	Row 11 (optional)	Row 12 (optional)	Row 13 (optional)	Row 14 (optional)	Row 15 (optional)	Row 16 (optional)
Stage of Orifice Centroid (ft)								
Orifice Area (sq. inches)								

User Input: Vertical Orifice (Circular or Rectangular)

	Zone 2 Rectangular	Not Selected	
Invert of Vertical Orifice =	2.92	N/A	ft (relative to basin bottom at Stage = 0 ft)
Depth at top of Zone using Vertical Orifice =	5.87	N/A	ft (relative to basin bottom at Stage = 0 ft)
Vertical Orifice Height =	4.00	N/A	inches
Vertical Orifice Width =	3.19		inches

Calculated Parameters for Vertical Orifice

	Zone 2 Rectangular	Not Selected	
Vertical Orifice Area =	0.09	N/A	ft^2
Vertical Orifice Centroid =	0.17	N/A	feet

User Input: Overflow Weir (Dropbox) and Grate (Flat or Sloped)

	Zone 3 Weir	Not Selected	
Overflow Weir Front Edge Height, Ho =	5.87	N/A	ft (relative to basin bottom at Stage = 0 ft)
Overflow Weir Front Edge Length =	6.67	N/A	feet
Overflow Weir Slope =	0.00	N/A	H:V (enter zero for flat grate)
Horiz. Length of Weir Sides =	0.00	N/A	feet
Overflow Grate Open Area % =	70%	N/A	%, grate open area/total area
Debris Clogging % =	50%	N/A	%

Calculated Parameters for Overflow Weir

	Zone 3 Weir	Not Selected	
Height of Grate Upper Edge, H_t =	5.87	N/A	feet
Over Flow Weir Slope Length =	0.00	N/A	feet
Grate Open Area / 100-yr Orifice Area =	0.00	N/A	should be ≥ 4
Overflow Grate Open Area w/o Debris =	0.00	N/A	ft^2
Overflow Grate Open Area w/ Debris =	0.00	N/A	ft^2

User Input: Outlet Pipe w/ Flow Restriction Plate (Circular Orifice, Restrictor Plate, or Rectangular Orifice)

	Zone 3 Restrictor	Not Selected	
Depth to Invert of Outlet Pipe =	2.95	N/A	ft (distance below basin bottom at Stage = 0 ft)
Outlet Pipe Diameter =	18.00	N/A	inches
Restrictor Plate Height Above Pipe Invert =	7.50		inches

Calculated Parameters for Outlet Pipe w/ Flow Restriction Plate

	Zone 3 Restrictor	Not Selected	
Outlet Orifice Area =	0.70	N/A	ft^2
Outlet Orifice Centroid =	0.36	N/A	feet
Half-Central Angle of Restrictor Plate on Pipe =	1.40	N/A	radians

User Input: Emergency Spillway (Rectangular or Trapezoidal)

Spillway Invert Stage=	10.81	ft (relative to basin bottom at Stage = 0 ft)
Spillway Crest Length =	45.00	feet
Spillway End Slopes =	4.00	H:V
Freeboard above Max Water Surface =	1.00	feet

Calculated Parameters for Spillway

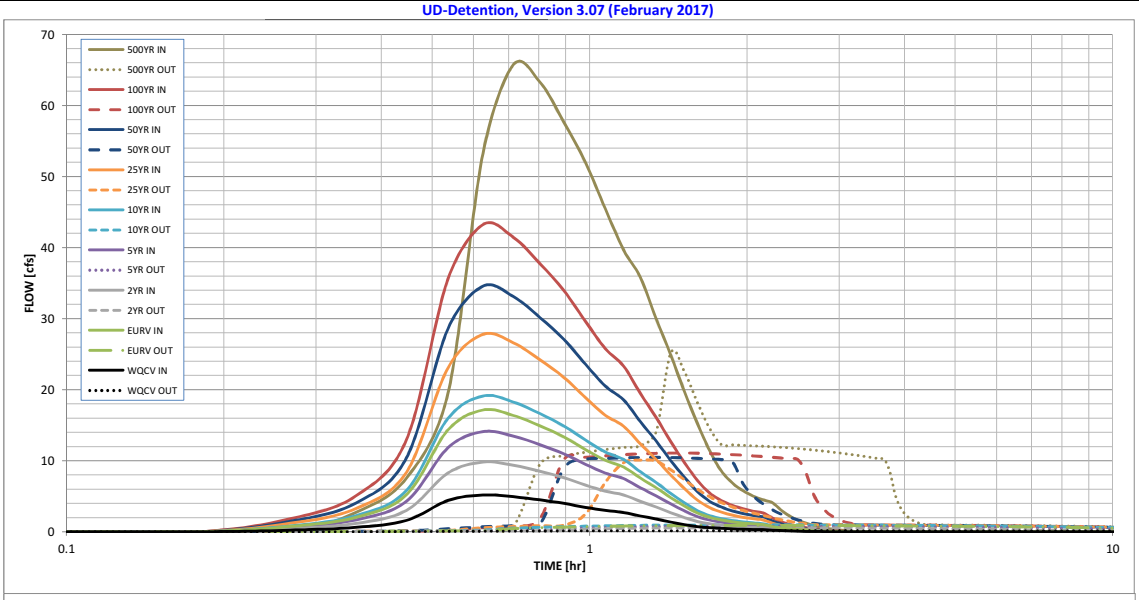
Spillway Design Flow Depth=	0.44	feet
Stage at Top of Freeboard =	12.25	feet
Basin Area at Top of Freeboard =	0.39	acres

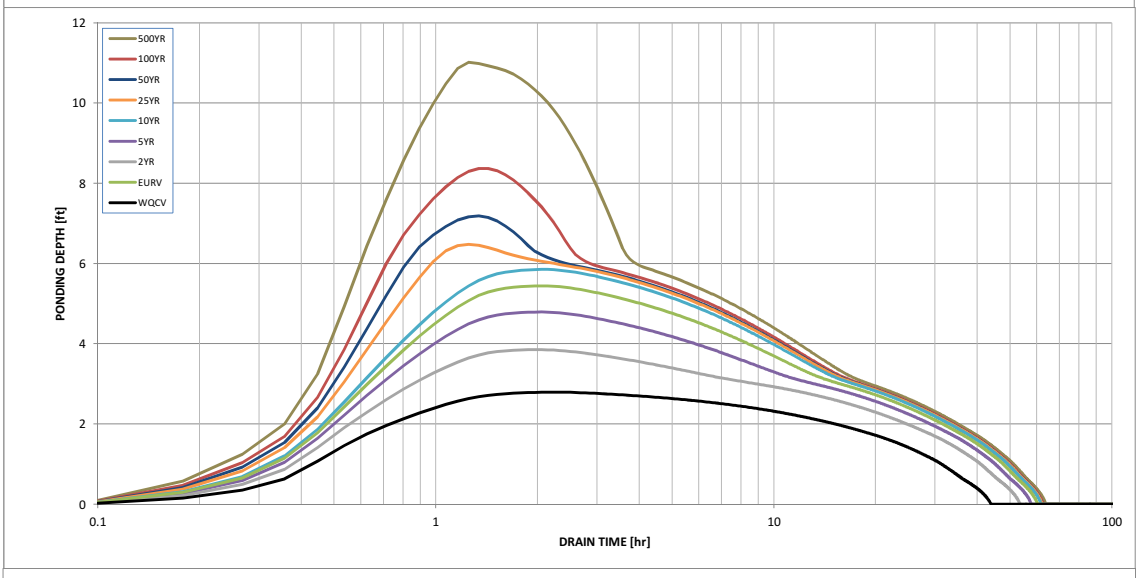
Routed Hydrograph Results

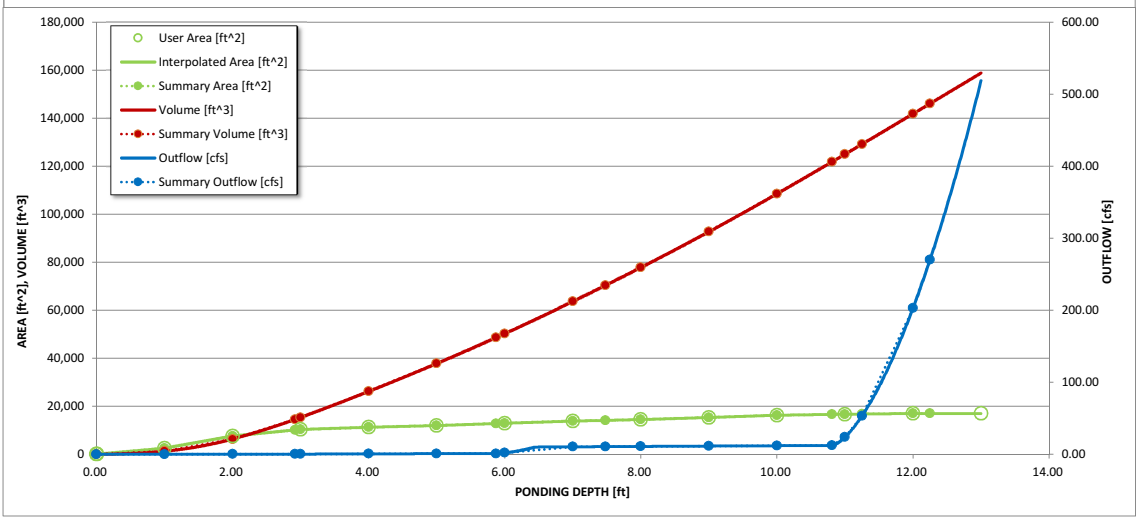
Design Storm Return Period =	WQCV	EURV	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year	500 Year
One-Hour Rainfall Depth (in) =	0.53	1.07	0.81	1.11	1.39	1.84	2.24	2.68	3.89
Calculated Runoff Volume (acre-ft) =	0.332	1.115	0.634	0.914	1.244	1.817	2.267	2.845	4.354
OPTIONAL Override Runoff Volume (acre-ft) =									
Inflow Hydrograph Volume (acre-ft) =	0.332	1.113	0.633	0.913	1.243	1.815	2.266	2.843	4.351
Predevelopment Unit Peak Flow, q (cfs/acre) =	0.00	0.00	0.01	0.01	0.15	0.56	0.85	1.22	2.10
Predevelopment Peak Q (cfs) =	0.0	0.0	0.1	0.2	2.1	8.2	12.3	17.7	30.5
Peak Inflow Q (cfs) =	5.2	17.1	9.8	14.1	19.1	27.8	34.6	43.2	65.7
Peak Outflow Q (cfs) =	0.2	0.9	0.6	0.8	1.0	10.1	10.5	11.1	25.2
Ratio Peak Outflow to Predevelopment Q =	N/A	N/A	N/A	3.9	0.5	1.2	0.9	0.6	0.8
Structure Controlling Flow =	Plate	Vertical Orifice 1	Vertical Orifice 1	Vertical Orifice 1	Vertical Orifice 1	Outlet Plate 1	Outlet Plate 1	Outlet Plate 1	Spillway
Max Velocity through Grate 1 (fps) =	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Max Velocity through Grate 2 (fps) =	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Time to Drain 97% of Inflow Volume (hours) =	37	47	44	46	48	45	43	41	37
Time to Drain 99% of Inflow Volume (hours) =	**41**	53	49	52	54	53	52	51	48
Maximum Ponding Depth (ft) =	2.79	5.44	3.85	4.79	5.85	6.48	7.19	8.37	11.02
Area at Maximum Ponding Depth (acres) =	0.22	0.28	0.26	0.27	0.29	0.31	0.32	0.34	0.38
Maximum Volume Stored (acre-ft) =	0.304	0.991	0.563	0.811	1.110	1.296	1.519	1.911	2.874

Detention Basin Outlet Structure Design

UD-Detention, Version 3.07 (February 2017)







S-A-V-D Chart Axis Override	X-axis	Left Y-Axis	Right Y-Axis
minimum bound			
maximum bound			

Detention Basin Outlet Structure Design

Outflow Hydrograph Workbook Filename:

Storm Inflow Hydrographs **UD-Detention, Version 3.07 (February 2017)**

The user can override the calculated inflow hydrographs from this workbook with inflow hydrographs developed in a separate program.

Time Interval	SOURCE	WORKBOOK	WORKBOOK	WORKBOOK	WORKBOOK	WORKBOOK	WORKBOOK	WORKBOOK	WORKBOOK	WORKBOOK
	TIME	WQCV [cfs]	EURV [cfs]	2 Year [cfs]	5 Year [cfs]	10 Year [cfs]	25 Year [cfs]	50 Year [cfs]	100 Year [cfs]	500 Year [cfs]
5.36 min	0:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0:05:22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hydrograph	0:10:43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	0:16:05	0.23	0.75	0.43	0.62	0.83	1.20	1.48	1.84	2.72
0.932	0:21:26	0.62	2.03	1.17	1.67	2.26	3.27	4.05	5.04	7.56
	0:26:48	1.60	5.21	3.01	4.30	5.80	8.39	10.40	12.95	19.41
	0:32:10	4.40	14.32	8.27	11.82	15.94	23.04	28.54	35.54	53.22
	0:37:31	5.18	17.13	9.81	14.09	19.10	27.78	34.56	43.23	65.71
	0:42:53	4.93	16.38	9.36	13.46	18.27	26.59	33.11	41.46	63.27
	0:48:14	4.49	14.91	8.52	12.26	16.63	24.21	30.14	37.73	57.64
	0:53:36	4.00	13.35	7.61	10.97	14.90	21.72	27.08	33.93	51.93
	0:58:58	3.43	11.57	6.57	9.49	12.91	18.87	23.57	29.59	45.44
	1:04:19	3.00	10.06	5.72	8.26	11.23	16.39	20.50	25.78	39.68
	1:09:41	2.71	9.12	5.19	7.49	10.18	14.87	18.57	23.32	35.81
	1:15:02	2.22	7.57	4.28	6.20	8.46	12.39	15.50	19.49	30.03
	1:20:24	1.81	6.21	3.49	5.08	6.95	10.21	12.79	16.11	24.89
	1:25:46	1.38	4.82	2.69	3.93	5.41	7.99	10.05	12.70	19.73
	1:31:07	1.01	3.63	2.00	2.94	4.08	6.08	7.68	9.74	15.25
	1:36:29	0.74	2.63	1.45	2.13	2.97	4.46	5.66	7.22	11.40
	1:41:50	0.58	2.02	1.12	1.64	2.27	3.39	4.29	5.45	8.54
	1:47:12	0.47	1.66	0.92	1.35	1.86	2.76	3.48	4.41	6.87
	1:52:34	0.40	1.41	0.79	1.14	1.58	2.33	2.94	3.72	5.78
	1:57:55	0.36	1.23	0.69	1.00	1.38	2.04	2.57	3.24	5.02
	2:03:17	0.32	1.11	0.62	0.90	1.24	1.83	2.30	2.90	4.49
	2:08:38	0.30	1.02	0.57	0.83	1.14	1.68	2.11	2.66	4.11
	2:14:00	0.22	0.75	0.42	0.61	0.84	1.24	1.56	1.97	3.07
	2:19:22	0.16	0.55	0.31	0.45	0.61	0.90	1.13	1.43	2.22
	2:24:43	0.12	0.40	0.23	0.33	0.45	0.67	0.84	1.06	1.64
	2:30:05	0.09	0.30	0.17	0.24	0.33	0.49	0.62	0.78	1.22
	2:35:26	0.06	0.21	0.12	0.17	0.24	0.36	0.45	0.57	0.90
	2:40:48	0.04	0.15	0.08	0.12	0.17	0.25	0.32	0.41	0.64
	2:46:10	0.03	0.11	0.06	0.09	0.12	0.18	0.23	0.30	0.47
	2:51:31	0.02	0.07	0.04	0.06	0.08	0.13	0.16	0.21	0.33
	2:56:53	0.01	0.04	0.02	0.04	0.05	0.08	0.10	0.13	0.21
	3:02:14	0.01	0.02	0.01	0.02	0.03	0.04	0.06	0.07	0.12
	3:07:36	0.00	0.01	0.00	0.01	0.01	0.02	0.02	0.03	0.06
	3:12:58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
	3:18:19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:23:41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:29:02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:34:24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:39:46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:45:07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:50:29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:55:50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:01:12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:06:34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:11:55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:17:17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:22:38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:28:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:33:22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:38:43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:44:05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:49:26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:54:48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:00:10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:05:31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:10:53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:16:14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:21:36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:26:58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:32:19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:37:41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:43:02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:48:24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:53:46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:59:07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	6:04:29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	6:09:50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	6:15:12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	6:20:34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	6:25:55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Detention Basin Outlet Structure Design

UD-Detention, Version 3.07 (February 2017)

Summary Stage-Area-Volume-Discharge Relationships

The user can create a summary S-A-V-D by entering the desired stage increments and the remainder of the table will populate automatically.

The user should graphically compare the summary S-A-V-D table to the full S-A-V-D table in the chart to confirm it captures all key transition points.

Stage - Storage Description	Stage [ft]	Area [ft^2]	Area [acres]	Volume [ft^3]	Volume [ac-ft]	Total Outflow [cfs]
Top of Micropool	0.00	55	0.001	0	0.000	0.00
	1.00	2,514	0.058	1,264	0.029	0.05
	2.00	7,577	0.174	6,296	0.145	0.13
WQCV	2.92	10,140	0.233	14,546	0.334	0.18
	3.00	10,359	0.238	15,365	0.353	0.20
	4.00	11,284	0.259	26,187	0.601	0.63
	5.00	11,970	0.275	37,813	0.868	0.85
EURV	5.87	12,812	0.294	48,594	1.116	1.00
	6.00	12,938	0.297	50,267	1.154	1.96
	7.00	13,841	0.318	63,657	1.461	10.39
100-yr Water Surface	7.48	14,144	0.325	70,373	1.616	10.65
	8.00	14,472	0.332	77,813	1.786	10.92
	9.00	15,335	0.352	92,717	2.128	11.42
	10.00	16,285	0.374	108,527	2.491	11.91
Spillway Invert	10.81	16,618	0.381	121,853	2.797	12.28
	11.00	16,696	0.383	125,018	2.870	23.70
Overflow Water Surface	11.25	16,773	0.385	129,201	2.966	53.12
	12.00	17,002	0.390	141,867	3.257	202.89
Freeboard Elevation	12.25	17,002	0.390	146,117	3.354	270.09

For best results, include the stages of all grade slope changes (e.g. ISV and Floor) from the S-A-V table on Sheet 'Basin'.

Also include the inverts of all outlets (e.g. vertical orifice, overflow grate, and spillway, where applicable).

Design Procedure Form: Extended Detention Basin (EDB)

UD-BMP (Version 3.07, March 2018)

Designer: JWM
Company: HKS
Date: January 23, 2020
Project: 160602 - Outlook at Nine Mile
Location: Erie, CO

---

1. Basin Storage Volume

A) Effective Imperviousness of Tributary Area, I_a — I_a = 70.0 %

B) Tributary Area's Imperviousness Ratio ($i = I_a / 100$) — i = 0.700

C) Contributing Watershed Area — Area = 14.500 ac

D) For Watersheds Outside of the Denver Region, Depth of Average Runoff Producing Storm — d_6 = 1.11 in

E) Design Concept (Select EURV when also designing for flood control)

Choose One
- ○ Water Quality Capture Volume (WQCV)
- ◉ Excess Urban Runoff Volume (EURV)

F) Design Volume (WQCV) Based on 40-hour Drain Time
($V_{DESIGN} = (1.0 * (0.91 * i^3 - 1.19 * i^2 + 0.78 * i) / 12 * Area$)
V_{DESIGN} = ac-ft

G) For Watersheds Outside of the Denver Region, Water Quality Capture Volume (WQCV) Design Volume
($V_{WQCV\ OTHER} = (d_6 * (V_{DESIGN}/0.43))$)
$V_{DESIGN\ OTHER}$ = ac-ft

H) User Input of Water Quality Capture Volume (WQCV) Design Volume (Only if a different WQCV Design Volume is desired)
$V_{DESIGN\ USER}$ = 0.393 ac-ft

I) NRCS Hydrologic Soil Groups of Tributary Watershed
- i) Percentage of Watershed consisting of Type A Soils — HSG_A = 0 %
- ii) Percentage of Watershed consisting of Type B Soils — HSG_B = 100 %
- iii) Percentage of Watershed consisting of Type C/D Soils — $HSG_{C/D}$ = 0 %

J) Excess Urban Runoff Volume (EURV) Design Volume
For HSG A: $EURV_A = 1.68 * i^{1.28}$
For HSG B: $EURV_B = 1.36 * i^{1.08}$
For HSG C/D: $EURV_{C/D} = 1.20 * i^{1.08}$
$EURV_{DESIGN}$ = ac-f t

K) User Input of Excess Urban Runoff Volume (EURV) Design Volume (Only if a different EURV Design Volume is desired)
$EURV_{DESIGN\ USER}$ = 1.277 ac-f t

---

2. Basin Shape: Length to Width Ratio (A basin length to width ratio of at least 2:1 will improve TSS reduction.)
L : W = 4.0 : 1

---

3. Basin Side Slopes

A) Basin Maximum Side Slopes (Horizontal distance per unit vertical, 4:1 or flatter preferred)
Z = 4.00 ft / ft

---

4. Inlet

A) Describe means of providing energy dissipation at concentrated inflow locations:

---

5. Forebay

A) Minimum Forebay Volume (V_{FMIN} = 3% of the WQCV)
V_{FMIN} = 0.012 ac-ft

B) Actual Forebay Volume
V_F = 0.012 ac-ft

C) Forebay Depth (D_F = 18 inch maximum)
D_F = 18.0 in

D) Forebay Discharge

i) Undetained 100-year Peak Discharge
Q_{100} = 43.10 cfs

ii) Forebay Discharge Design Flow ($Q_F = 0.02 * Q_{100}$)
Q_F = 0.86 cfs

E) Forebay Discharge Design

Choose One
- ○ Berm With Pipe
- ◉ Wall with Rect. Notch
- ○ Wall with V-Notch Weir

Flow too small for berm w/ pipe

F) Discharge Pipe Size (minimum 8-inches)
Calculated D_P = in

G) Rectangular Notch Width
Calculated W_N = 5.3 in

Design Procedure Form: Extended Detention Basin (EDB)

Designer:	**JWM**
Company:	**HKS**
Date:	**January 23, 2020**
Project:	**160602 - Outlook at Nine Mile**
Location:	**Erie, CO**

6. Trickle Channel

A) Type of Trickle Channel — Choose One: (●) Concrete ( ) Soft Bottom

F) Slope of Trickle Channel — S = 0.0050 ft / ft

7. Micropool and Outlet Structure

A) Depth of Micropool (2.5-feet minimum) — D_M = 2.8 ft

B) Surface Area of Micropool (10 ft^2 minimum) — A_M = 25 sq ft

C) Outlet Type — Choose One: (●) Orifice Plate ( ) Other (Describe):

D) Smallest Dimension of Orifice Opening Based on Hydrograph Routing (Use UD-Detention) — $D_{orifice}$ = 0.96 inches

E) Total Outlet Area — A_{ot} = 3.84 square inches

8. Initial Surcharge Volume

A) Depth of Initial Surcharge Volume (Minimum recommended depth is 4 inches) — D_{IS} = 4 in

B) Minimum Initial Surcharge Volume (Minimum volume of 0.3% of the WQCV) — V_{IS} = 51 cu ft

C) Initial Surcharge Provided Above Micropool — V_s = 8.3 cu ft

9. Trash Rack

A) Water Quality Screen Open Area: $A_t = A_{ot} * 38.5*(e^{-0.095D})$ — A_t = 135 square inches

B) Type of Screen (If specifying an alternative to the materials recommended in the USDCM, indicate "other" and enter the ratio of the total open are to the total screen are for the material specified.) — Other (Y/N): y

Other (Please describe below)

Aluminum Bar Grate trash rack per town of Erie comments. See detention pond details for additional information.

C) Ratio of Total Open Area to Total Area (only for type 'Other') — User Ratio =

D) Total Water Quality Screen Area (based on screen type) — A_{total} = sq. in.

E) Depth of Design Volume (EURV or WQCV) (Based on design concept chosen under 1E) — H= 5.87 feet

F) Height of Water Quality Screen (H_{TR}) — H_{TR}= 102.4 inches

G) Width of Water Quality Screen Opening ($W_{opening}$) (Minimum of 12 inches is recommended) — $W_{opening}$ = inches

Design Procedure Form: Extended Detention Basin (EDB)

Designer: JWM
Company: HKS
Date: January 23, 2020
Project: 160602 - Outlook at Nine Mile
Location: Erie, CO

10. Overflow Embankment

A) Describe embankment protection for 100-year and greater overtopping:

B) Slope of Overflow Embankment
(Horizontal distance per unit vertical, 4:1 or flatter preferred)

Ze = 4.00 ft / ft

11. Vegetation

Choose One
- ○ Irrigated
- ○ Not Irrigated

12. Access

A) Describe Sediment Removal Procedures

Notes:

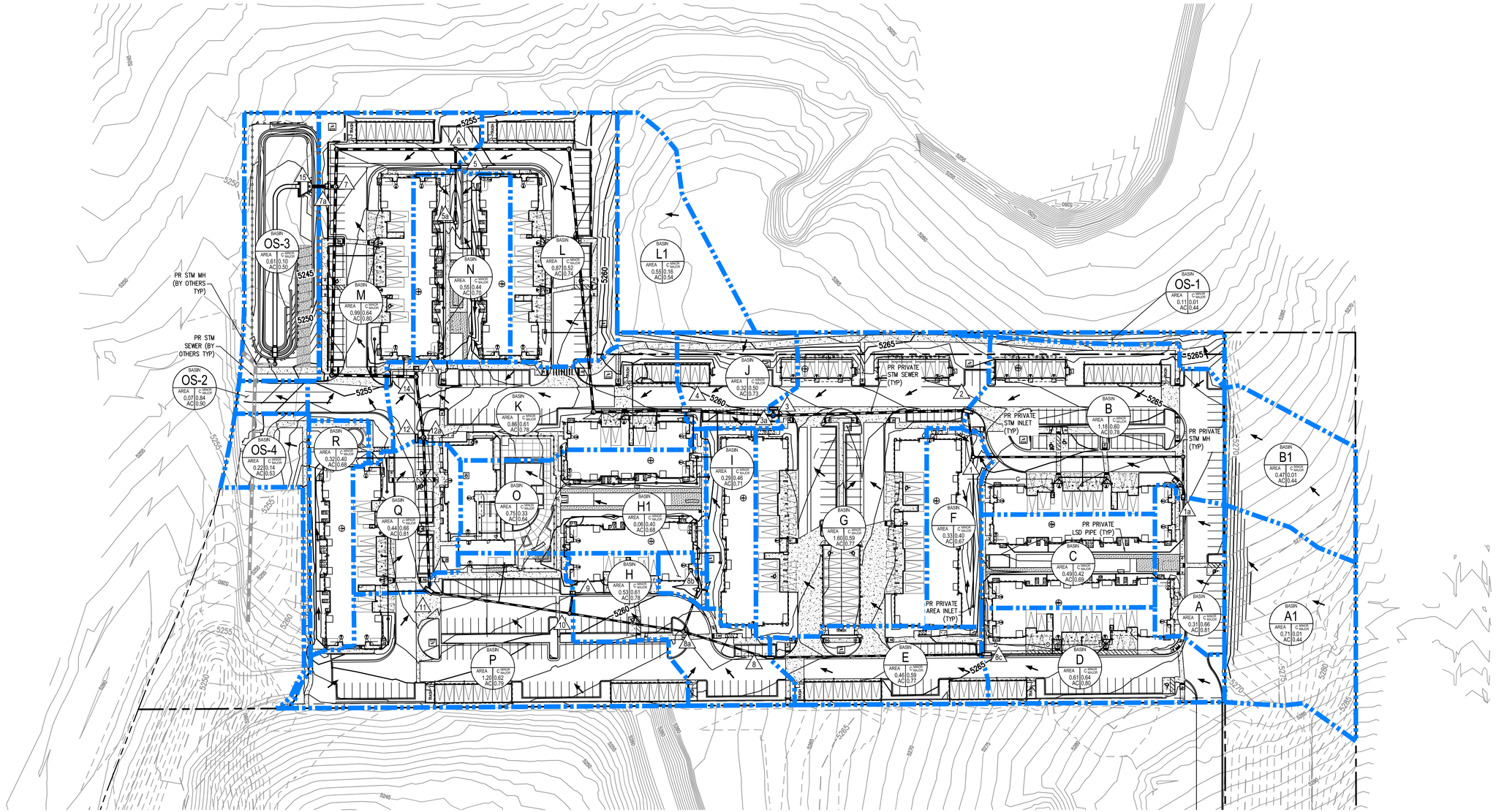
APPENDIX E

Final Drainage Plan

Detention Pond Details

Storm Sewer Profiles

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LENGEND:

BASIN BOUNDARY

DRAINAGE FLOW

PROPOSED STORM SEWER

PROPOSED CONTOURS

PROPOSED OVERLOT GRADING CONTOURS BY OTHERS

EXISTING GIS CONTOURS BY OTHERS

BASIN DESIGNATION — OS 1 — 2-YR RATIONAL C COEFFICIENT

BASIN SIZE IN ACRES — AREA 1.23 — C MINOR 0.45 C MAJOR AC 0.67 — 100-YR RATIONAL C COEFFICIENT

1 BASIN DESIGN POINT

NOTES:

1. THE OVERLOT GRADING SHOWN EXTERIOR TO THE SITE WAS PROVIDED BY GALLOWAY AND IS SHOWN FOR REFERENCE ONLY.
2. EXISTING CONTOURS EXTERIOR TO THE SITE ARE BASED ON GIS DATA PROVIDED BY GALLOWAY AND ARE SHOWN FOR REFERENCE ONLY.

RUNOFF SUMMARY TABLE

DESIGN POINT	CONTRIBUTING AREA (ACRES)	RUNOFF PEAK 2-YEAR EVENT (CFS)	RUNOFF PEAK 100-YEAR EVENT (CFS)
1a	1.02	0.40	3.80
1	0.82	0.70	3.60
2	1.65	1.39	8.12
3	1.60	1.94	8.47
4	0.61	0.92	5.21
5	1.42	1.06	6.15
5a	0.55	0.56	2.91
7a	1.31	1.50	6.41
8	0.46	0.69	2.98
8b	0.06	0.06	0.33
8c	0.61	0.90	3.71
9	0.53	0.89	3.77
11	1.20	2.03	8.57
12	0.44	0.71	2.86
13	1.61	1.52	6.16

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

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

60 0 60 120

SCALE: 1" = 60'

DESIGNED BY: JWM
CHECKED BY: MSM
DRAWN BY: JWM

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

Evergreen Development | Services | Investments

OUTLOOK AT NINE MILE
DRAINAGE PLAN

ISSUE DATE: 11-01-2019 | PROJECT #: 160602

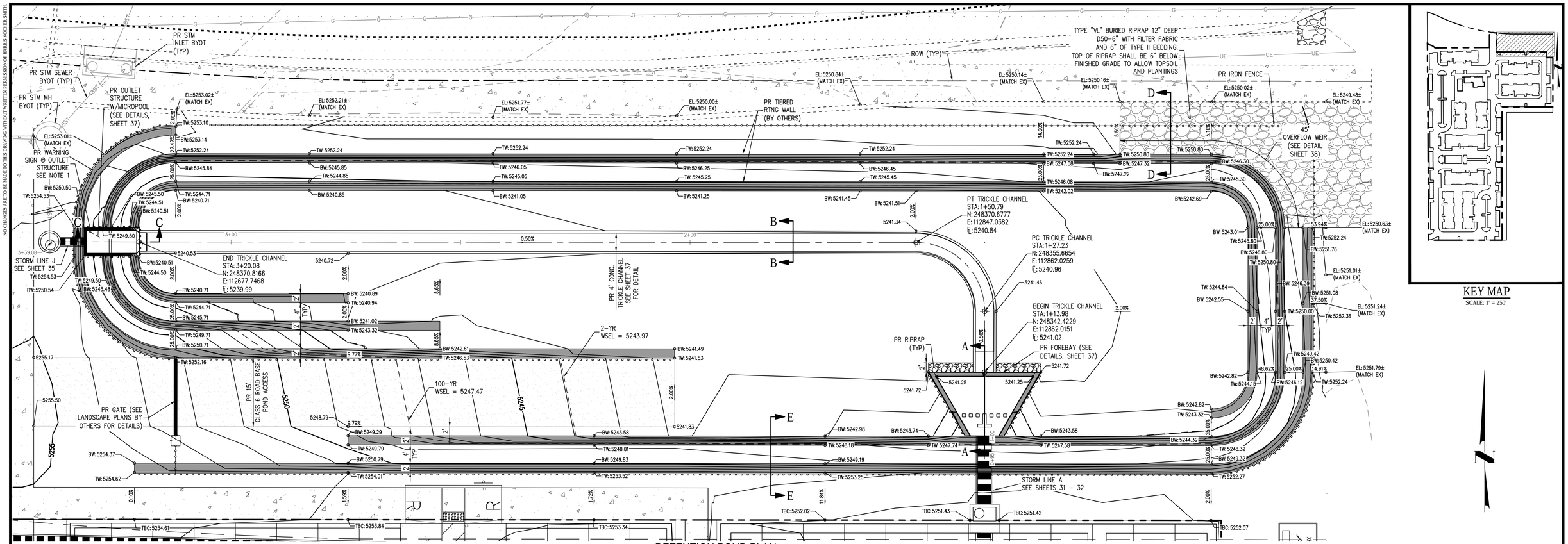
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO. 1 OF 1

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NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH

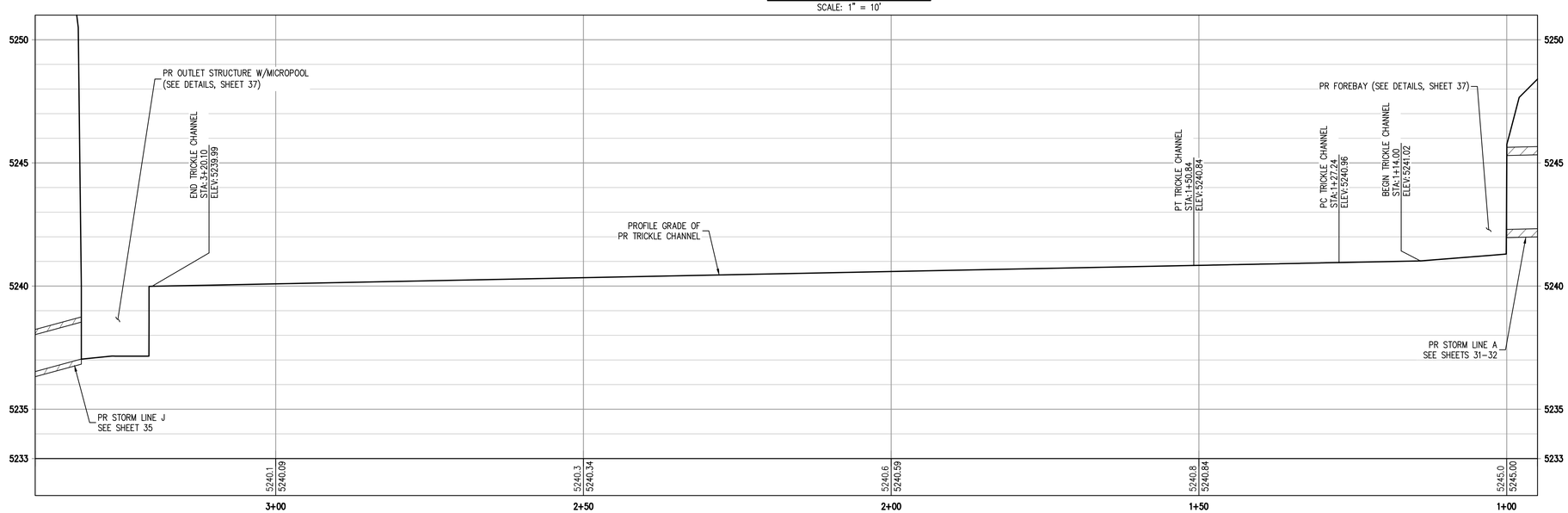


DETENTION POND PLAN

SCALE: 1" = 10'

KEY MAP

SCALE: 1" = 250'



TRICKLE CHANNEL PROFILE

HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1" = 2'

OUTLET STRUCTURE NOTES:

1. SIGN SHALL STATE " WARNING UNAUTHORIZED MODIFICATION OF THIS OUTLET IS A CODE VIOLATION AND SUBJECT TO THE PENALTIES AS PROVIDED BY LAW". REFER TO CITY AND STATE REGULATION REGARDING SPECIFICS OF THIS SIGN.
2. SEE SHEETS 37 FOR SECTIONS A-A, B-B, C-C, AND FOR ALL SPECIFIC DETAILS FOR THIS DETENTION POND.

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

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

10 0 10 20
SCALE: 1" = 10'

DESIGNED BY: KDB
CHECKED BY: MSM
DRAWN BY: KDB

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
DETENTION POND PLAN

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

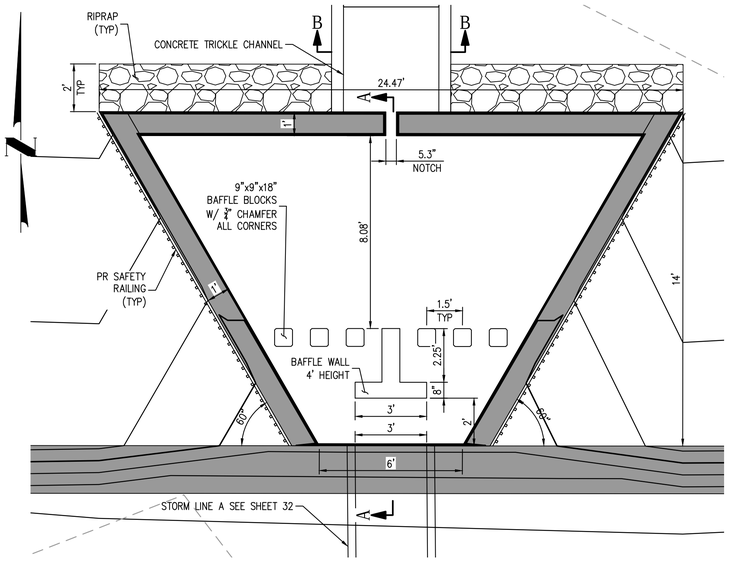
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01-27-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

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36 OF 69

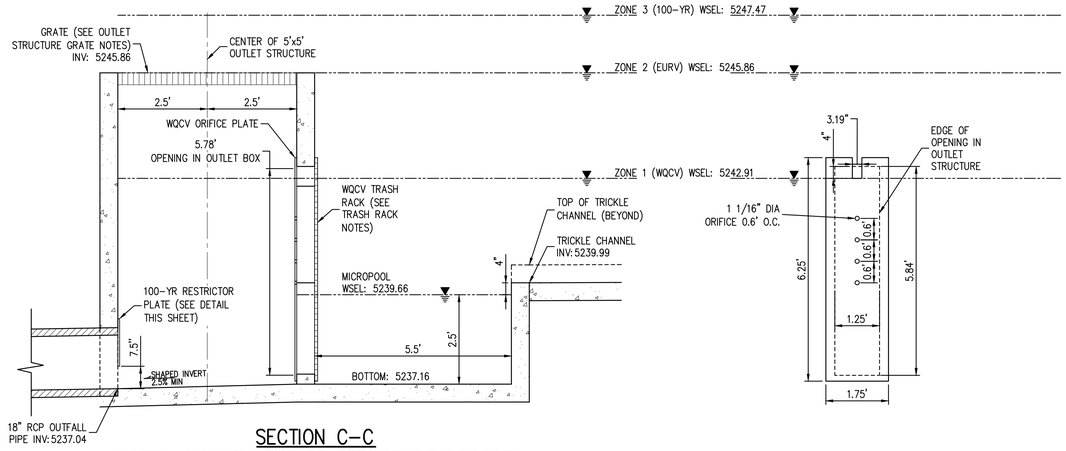
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MODIFIED IMPACT STILLING BASIN PLAN

SEE NOTE #7 THIS SHEET
SCALE: 1" = 3'

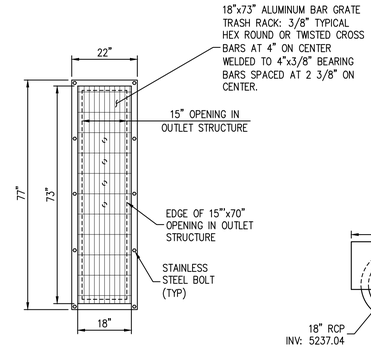


SECTION C-C
WATER QUALITY OUTLET STRUCTURE PROFILE

SCALE: N.T.S.

WQCV ORIFICE PLATE DETAIL

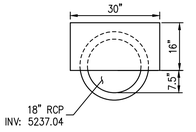
N.T.S.



WQCV TRASH RACK DETAIL

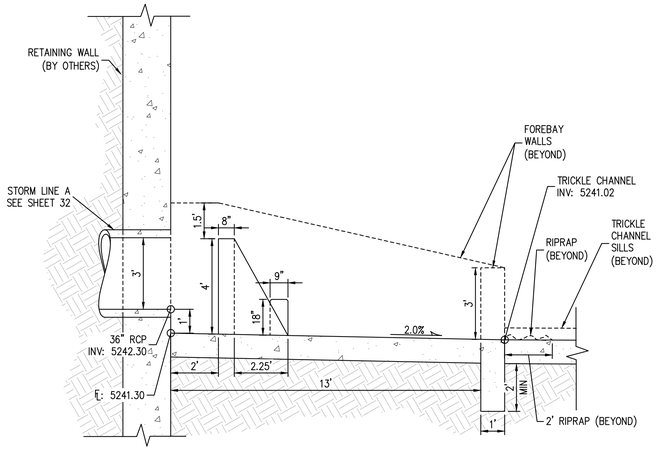
N.T.S.

REFER TO UDFCD ORIFICE PLATE AND TRASH RACK NOTES (VOL 3, FIG OS-4) FOR ADDITIONAL INFORMATION



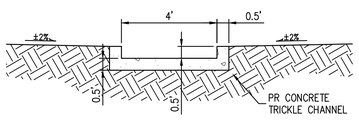
100-YR RESTRICTOR PLATE DETAIL

N.T.S.



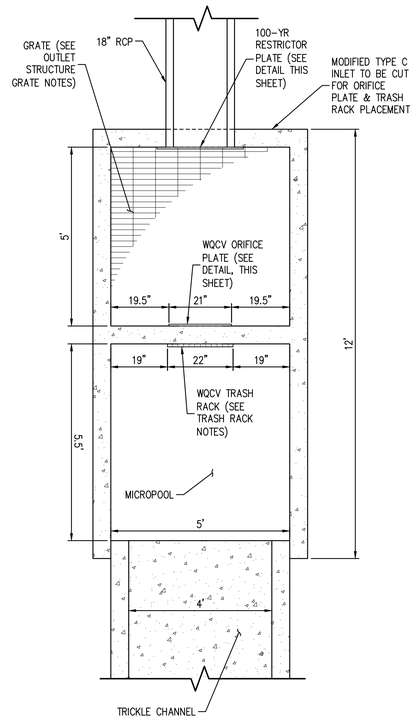
SECTION A-A
MODIFIED IMPACT STILLING BASIN PROFILE DETAIL

SEE NOTE #7 THIS SHEET
SCALE: 1" = 3'



SECTION B-B
TRICKLE CHANNEL DETAIL

SCALE: 1" = 3'



WATER QUALITY OUTLET STRUCTURE PLAN

SCALE: N.T.S.

GENERAL NOTES:

1. ALL PENETRATIONS AND JOINTING SHALL BE WATER-TIGHT, WITH LINK-SEAL OR APPPROVED EQUIVALENT.
2. THE EXTENDED DETENTION BASIN FOREBAY SHALL BE BUILT IN ACCORDANCE WITH CURRENT UDFCD CRITERIA AND DETAILS.
3. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS FOR ALL TRASH RACKS AND ORIFICE PLATES PRIOR TO CONSTRUCTION.
4. STRUCTURAL DESIGN OF ALL TRASH RACKS SHALL BE BASED ON FULL HYDROSTATIC HEAD WITH ZERO HEAD DOWNSTREAM OF THE RACK.
5. CONTRACTOR SHALL PROVIDE STRUCTURAL DESIGN/SHOP DRAWINGS FOR THE POND WALLS, ENERGY DISSIPATION BAFFLE WALLS, FOREBAY SLAB, FOREBAY WALLS, TRICKLE CHANNEL, MICROPOOL, WINGWALLS, AND OUTLET STRUCTURE.
6. ALL DESIGN ELEMENTS INCLUDING CONCRETE, THICKNESS, AND REINFORCEMENT FOR POND WALL ENERGY DISSIPATION BAFFLE WALL, FOREBAY SLAB, FOREBAY WALL, TRICKLE CHANNEL, MICROPOOL, WINGWALLS AND OUTLET STRUCTURE WILL BE ACCORDING TO UDFCD CRITERIA AND DETAILS.
7. MODIFIED IMPACT STILLING BASIN FIGURE 9-43 PER URBAN STORM DRAINAGE CRITERIA MANUAL, UPDATED SEPTEMBER 2017.

TRASH RACK NOTES:

1. TRASH RACK SHALL BE IN ACCORDANCE WITH UDFCD TYPICAL BAR GRATE TRASH RACK
   - 1.1. 3/8" TYPICAL HEX ROUND OR TWISTED CROSS BARS MOUNTED AT 4" O.C.
   - 1.2. STAINLESS STEEL SUPPORT BARS SHALL BE 4" X 3/8", 2 3/8" O.C.
   - 1.3. C8X18.75 AMERICAN STANDARD STRUCTURAL STEEL CHANNEL FORMED INTO CONCRETE BOTTOM AND SIDE OF TRASH RACK SHALL BE ATTACHED BY STAINLESS STEEL BOLTING HARDWARE, 12" MAX O.C. ALONG THE EDGE OF THE MOUNTING FRAME.

OUTLET STRUCTURE GRATE NOTES:

1. GRATE SHALL BE CLOSED MESH GRATE PER CDOT TYPE C INLET M-604-10
2. GRATE SHALL BE MOUNTED USING STAINLESS STEEL HARDWARE AND PROVIDED WITH HINGED AND LOCKABLE OR BOLTABLE ACCESS PANELS.
3. GRATE SHALL BE STAINLESS ALUMINUM OR STEEL, SHALL BE HOT DIP GALVANIZED AND MAY BE HOT POWDER COATED AFTER GALVANIZING.

ORIFICE/RESTRICTOR PLATE NOTES:

1. PROVIDE GASKET MATERIAL BETWEEN ORIFICE PLATE AND CONCRETE.
2. BOLT PLATE TO CONCRETE 12" MAX O.C.

811 Know what's below. Call before you dig.
CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

DESIGNED BY: JWM
CHECKED BY: MSM
DRAWN BY: JWM

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
POND PLAN DETAILS

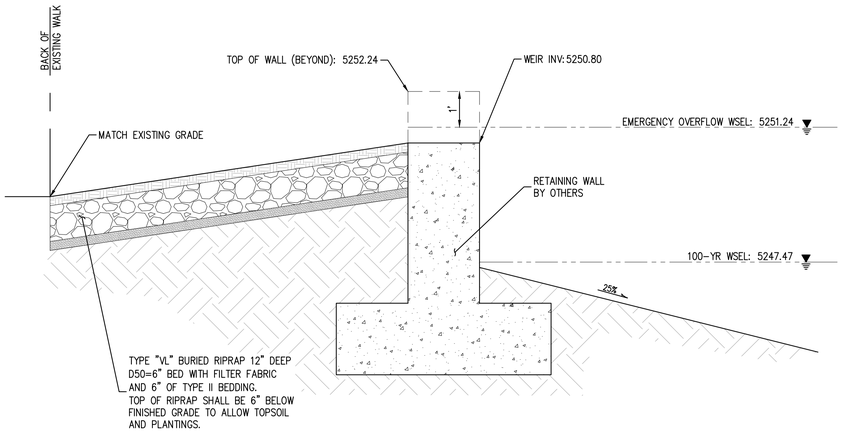
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01-27-2020	PER TOWN OF ERIE COMMENTS

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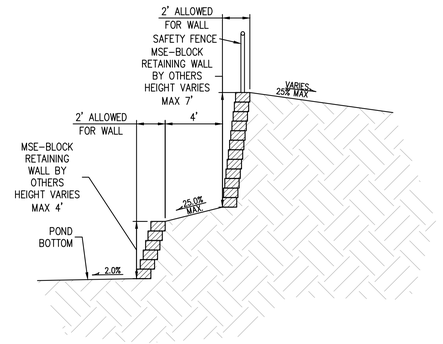
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37
37 OF 69

FILEPATH: P:\160602\ENGINEERING\DRAINAGE\CD - DETENTION POND DETAILS.DWG LAYOUT: LAYOUT1
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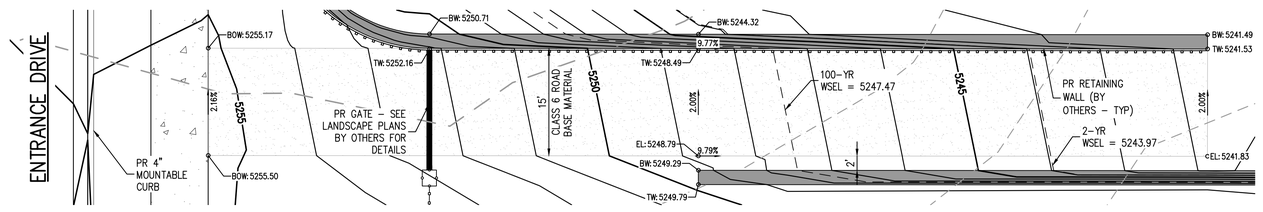
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SECTION D–D
OVERFLOW SPILLWAY DETAIL
N.T.S.



SECTION E–E
RETAINING WALL DETAIL
N.T.S.



MAINTENANCE ACCESS DETAIL
SCALE: 1" = 10'

GENERAL NOTES:

1. CONTRACTOR SHALL PROVIDE STRUCTURAL DESIGN/SHOP DRAWINGS FOR THE POND WALLS, ENERGY DISSIPATION BAFFLE WALLS, FOREBAY SLAB, FOREBAY WALLS, TRICKLE CHANNEL, MICROPOOL, WINGWALLS, AND OUTLET STRUCTURE.
2. ALL DESIGN ELEMENTS INCLUDING CONCRETE, THICKNESS, AND REINFORCEMENT FOR POND WALL ENERGY DISSIPATION BAFFLE WALL, FOREBAY SLAB, FOREBAY WALL, TRICKLE CHANNEL, MICROPOOL, WINGWALLS AND OUTLET STRUCTURE WILL BE ACCORDING TO UDFCD CRITERIA AND DETAILS.

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

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

DESIGNED BY: JWM
CHECKED BY: MSM
DRAWN BY: JWM

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
POND PLAN DETAILS

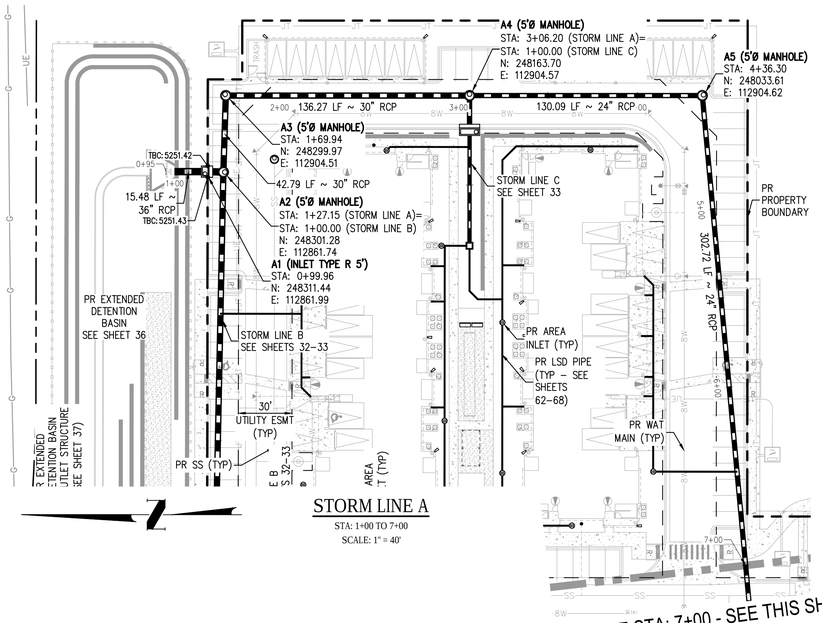
ISSUE DATE: 11-08-2019 | PROJECT #: 160602

DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

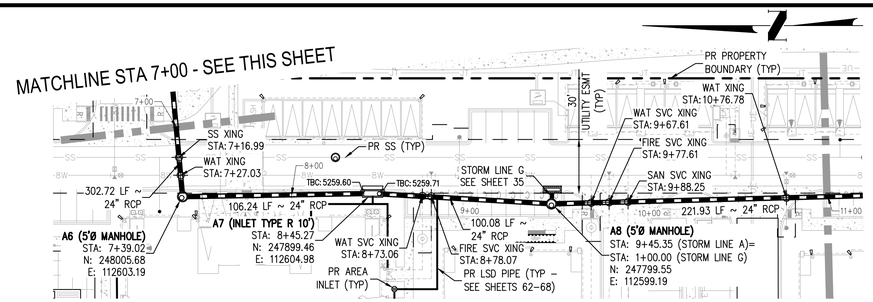
SHEET NO.
38
38 OF 69

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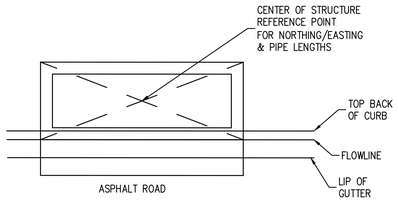
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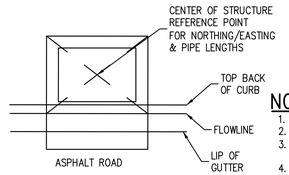
STORM LINE A
STA: 1+00 TO 7+00
SCALE: 1" = 40'



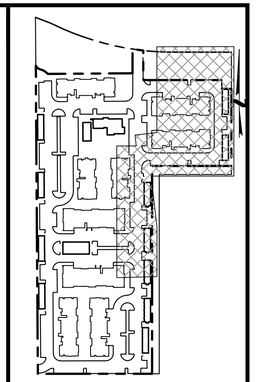
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STA: 7+00 TO 11+00
SCALE: 1" = 40'



TYPE R 10' INLET DETAIL
STRUCTURE REFERENCE POINT
SCALE: NTS

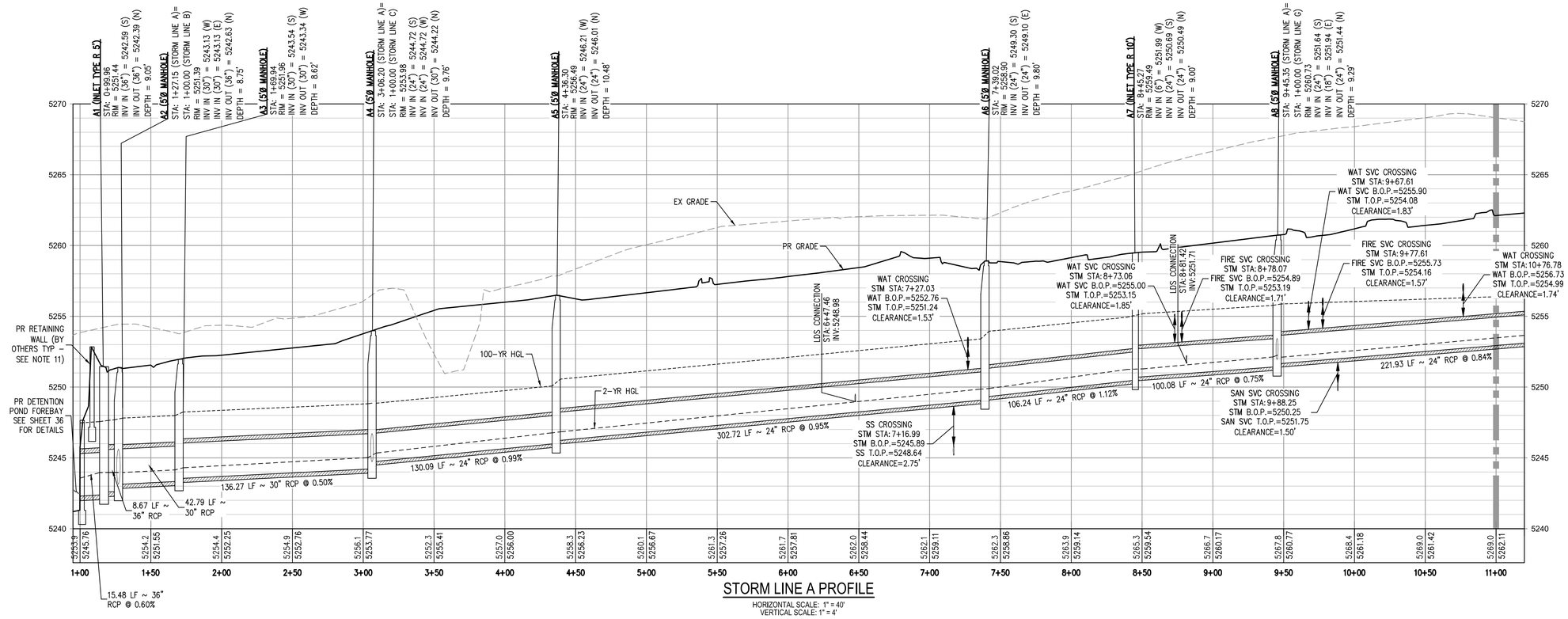


TYPE R 5' INLET DETAIL
STRUCTURE REFERENCE POINT
SCALE: NTS



KEY MAP
SCALE: 1" = 250'

NOTES:
1. PIPE LENGTHS ARE GIVEN FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE.
2. ALL COORDINATES ARE AT THE CENTER OF THE STRUCTURE UNLESS OTHERWISE INDICATED.
3. ALL WORK SHALL BE IN ACCORDANCE WITH TOWN OF ERIE STANDARDS AND SPECIFICATIONS. STANDARDS ARE AVAILABLE AT THE TOWN'S WEBSITE. THE CONTRACTOR MUST HAVE A COPY ON SITE.
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8. STORM SEWER MANHOLE RIMS SHALL BE ROTATED AS SHOWN ON PLAN.
9. INLETS WITHIN SIDEWALKS HAVE BEEN MARKED MODIFIED AND SHALL HAVE THE TOP OF THEIR BOX MODIFIED TO MATCH THE SIDEWALK GRADES NOTED ON THE GRADING PLAN.
10. ALL STORM SEWER SHALL BE PRIVATE UNLESS OTHERWISE NOTED.
11. RETAINING WALLS (BY OTHERS) ARE SHOWN IN AN APPROXIMATE WAY ONLY.



MATCHLINE STA 11+00 - SEE SHEET 32

STORM LINE A PROFILE
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

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40 0 40 80
SCALE: 1" = 40'

DESIGNED BY: JWM
CHECKED BY: MSM
DRAWN BY: JWM

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Denver, Colorado 80203
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OUTLOOK AT NINE MILE
STORM SEWER PLAN & PROFILE LINE A

ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

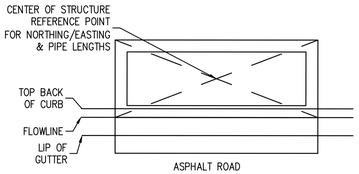
SHEET NO.
31
31 OF 69

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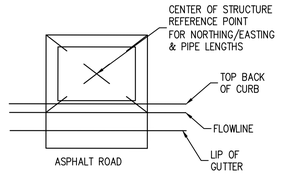
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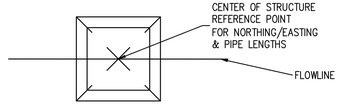
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10. ALL STORM SEWER SHALL BE PRIVATE UNLESS OTHERWISE NOTED.



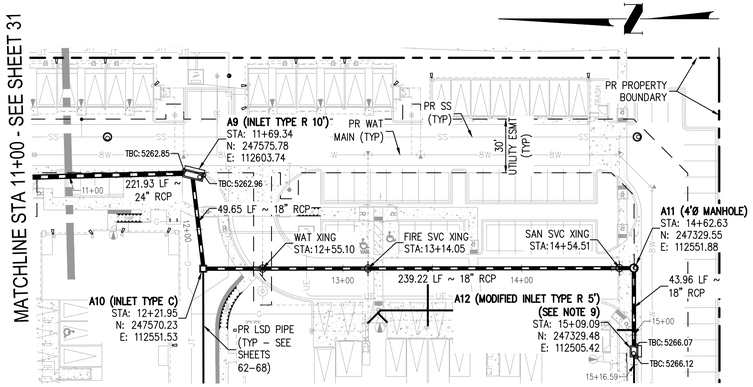
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STRUCTURE REFERENCE POINT
SCALE: NTS



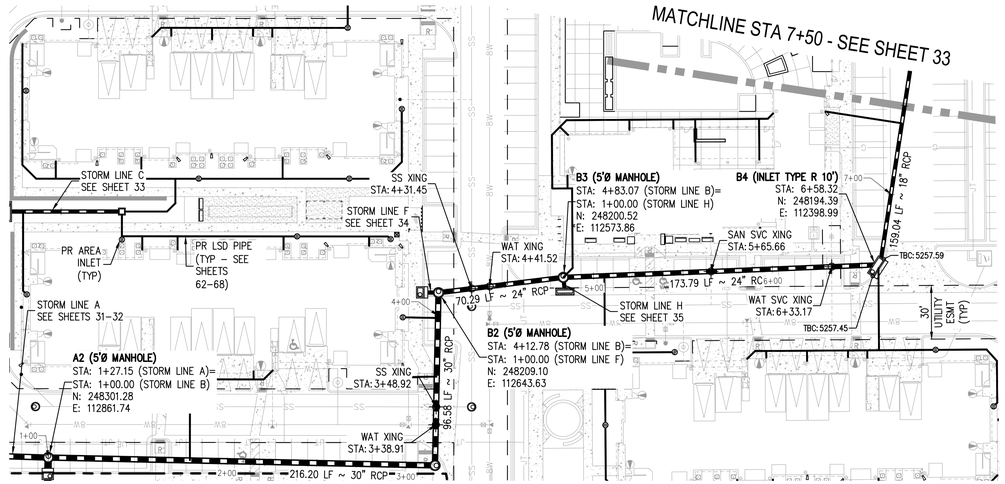
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STRUCTURE REFERENCE POINT
SCALE: NTS



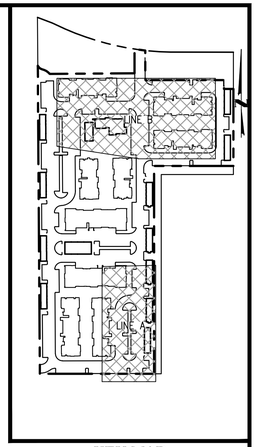
TYPE C INLET DETAIL
STRUCTURE REFERENCE POINT
SCALE: NTS



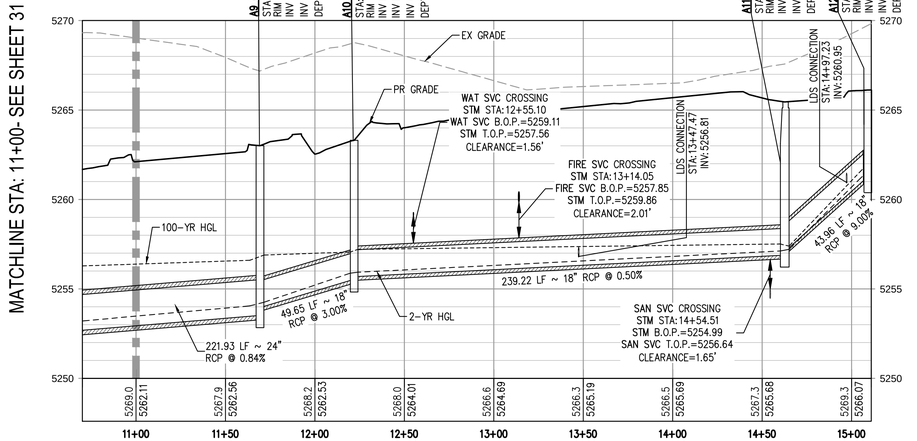
STORM LINE A PLAN
STA: 11+00 TO END
SCALE: 1" = 40'



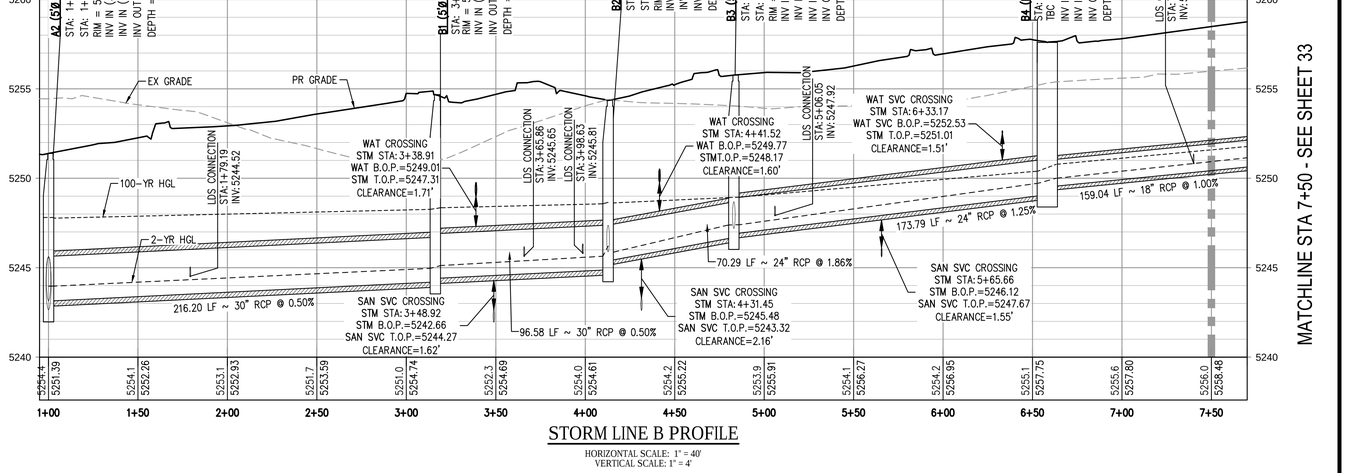
STORM LINE B PLAN
STA: 1+00 TO 7+50
SCALE: 1" = 40'



KEY MAP
SCALE: 1" = 250'



STORM LINE A PROFILE
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



STORM LINE B PROFILE
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

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40 0 40 80
SCALE: 1" = 40'

DESIGNED BY: RJH
CHECKED BY: MSM
DRAWN BY: RJH

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1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
STORM SEWER PLAN & PROFILE LINES A & B

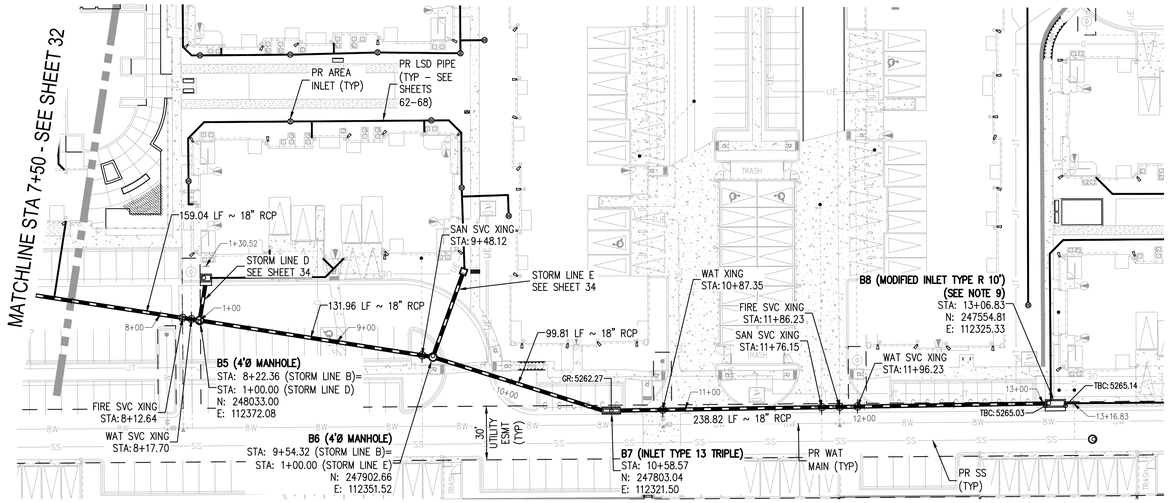
ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
32
32 OF 69

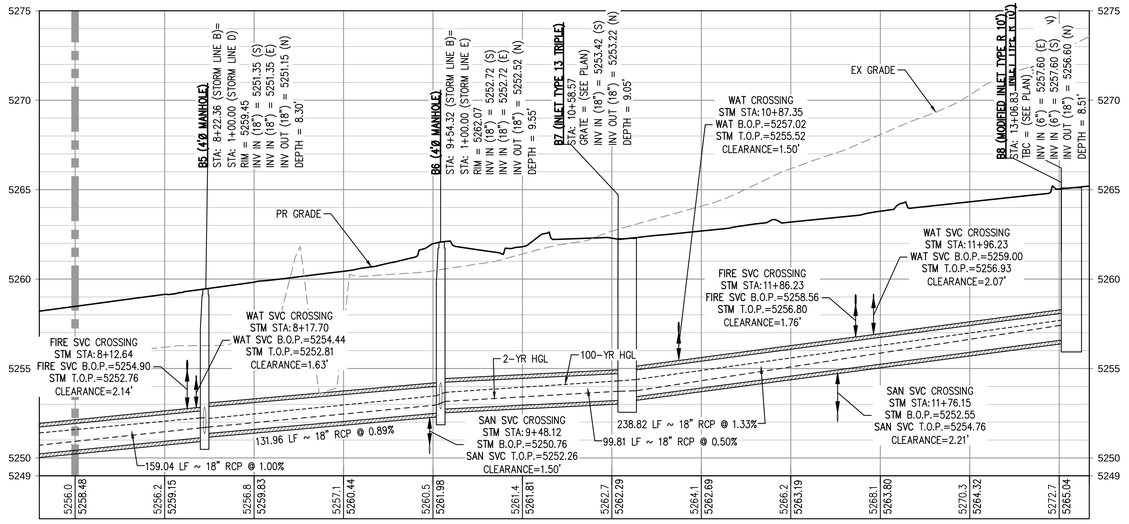
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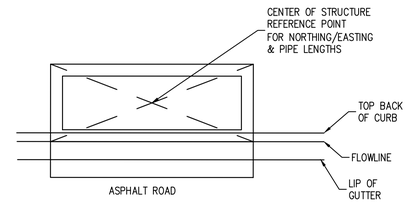
STORM LINE B PLAN

STA:7+50 TO END
SCALE: 1" = 40'



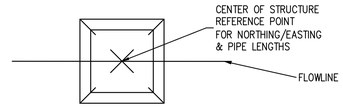
STORM LINE B PROFILE

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



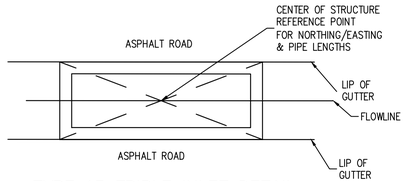
TYPE R 10' INLET DETAIL STRUCTURE REFERENCE POINT

SCALE: NTS



TYPE C INLET DETAIL STRUCTURE REFERENCE POINT

SCALE: NTS

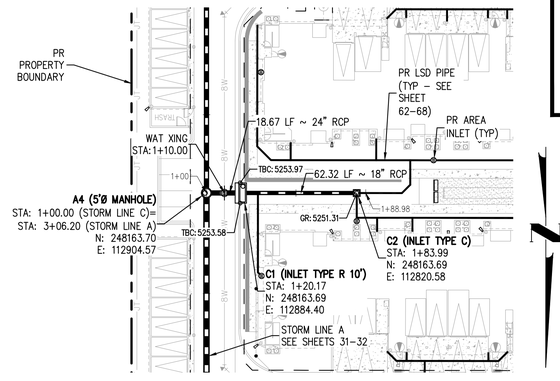


TYPE 13 TRIPLE INLET DETAIL STRUCTURE REFERENCE POINT

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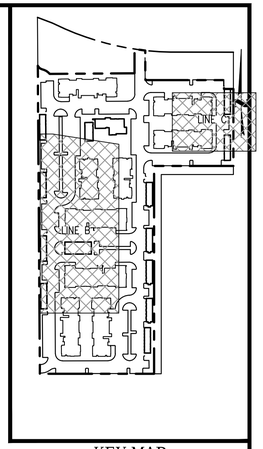
NOTES:

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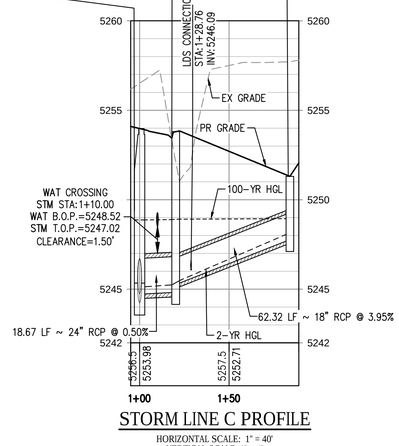
STORM LINE C PLAN

SCALE: 1" = 40'



KEY MAP

SCALE: 1" = 250'



STORM LINE C PROFILE

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

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CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

40 0 40 80
SCALE: 1" = 40'

DESIGNED BY: RJH
CHECKED BY: MSM
DRAWN BY: RJH

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Denver, Colorado 80203
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HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
STORM SEWER PLAN & PROFILE LINES B & C

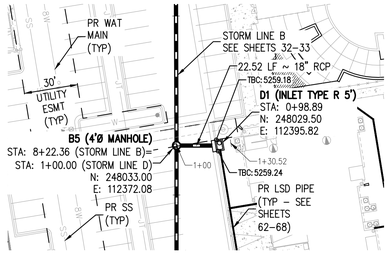
ISSUE DATE: 11-08-2019	PROJECT #: 160602
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01-27-2020	PER TOWN OF ERIE COMMENTS

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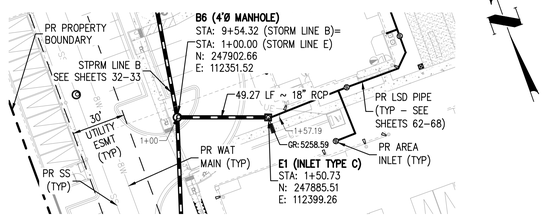
SHEET NO.
33
33 OF 69

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PLOTTED: FRI 01/24/20 12:13:09P BY: JEFF MINNICH

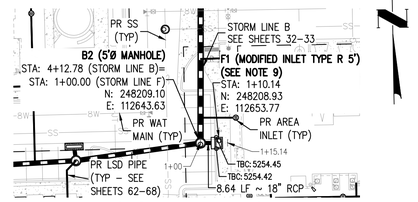
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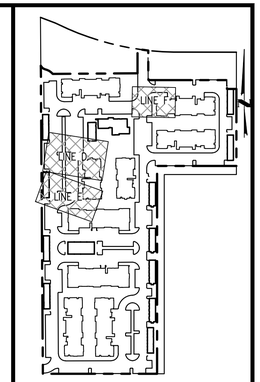
STORM LINE D PLAN
SCALE: 1" = 40'



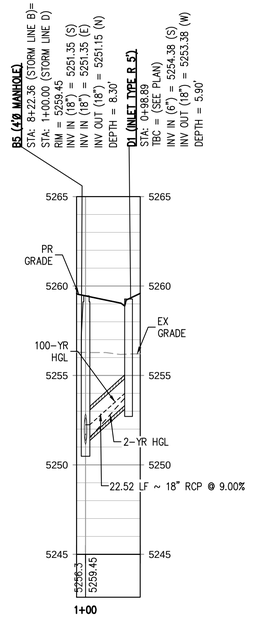
STORM LINE E PLAN
SCALE: 1" = 40'



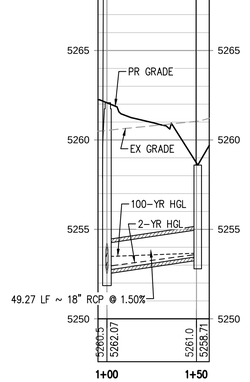
STORM LINE F PLAN
SCALE: 1" = 40'



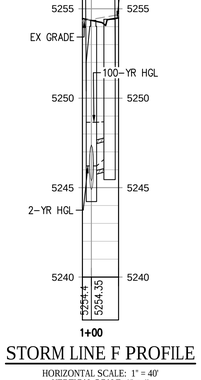
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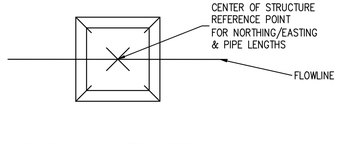
STORM LINE D PROFILE
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



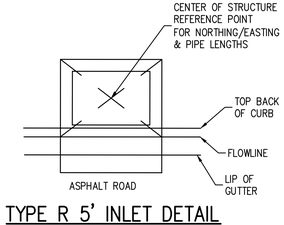
STORM LINE E PROFILE
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



STORM LINE F PROFILE
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



TYPE C INLET DETAIL
STRUCTURE REFERENCE POINT
SCALE: NTS



TYPE R 5' INLET DETAIL
STRUCTURE REFERENCE POINT
SCALE: NTS

NOTES:

1. PIPE LENGTHS ARE GIVEN FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE.
2. ALL COORDINATES ARE AT THE CENTER OF THE STRUCTURE UNLESS OTHERWISE INDICATED.
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6. THE LOCATION 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.
7. ALL STORM SEWER INLETS SHALL BE CONSTRUCTED IN ACCORDANCE WITH TOWN OF ERIE STANDARDS AND SPECIFICATIONS.
8. STORM SEWER MANHOLE RIMS SHALL BE ROTATED AS SHOWN ON PLAN.
9. INLETS WITHIN SIDEWALKS HAVE BEEN MARKED MODIFIED AND SHALL HAVE THE TOP OF THEIR BOX MODIFIED TO MATCH THE SIDEWALK GRADES NOTED ON THE GRADING PLAN.
10. ALL STORM SEWER SHALL BE PRIVATE UNLESS OTHERWISE NOTED.

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

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

40 0 40 80
SCALE: 1" = 40'

DESIGNED BY: RJH
CHECKED BY: MSM
DRAWN BY: RJH

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
STORM SEWER PLAN & PROFILE LINES D, E & F

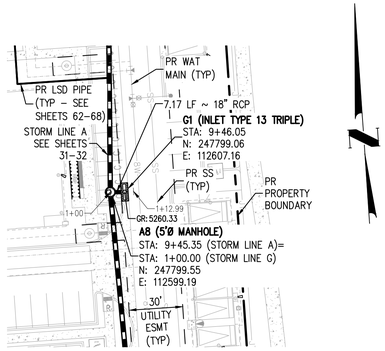
ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

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34
34 OF 69

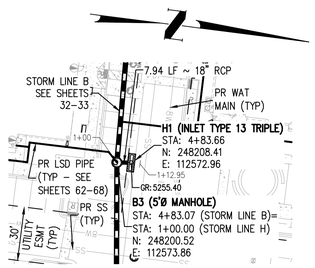
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NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH



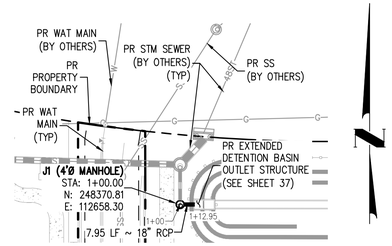
STORM LINE G PLAN

SCALE: 1" = 40'



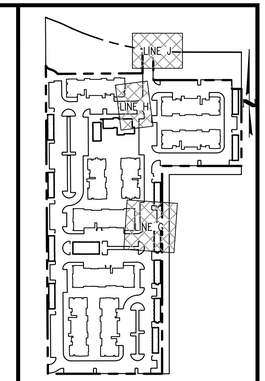
STORM LINE H PLAN

SCALE: 1" = 40'



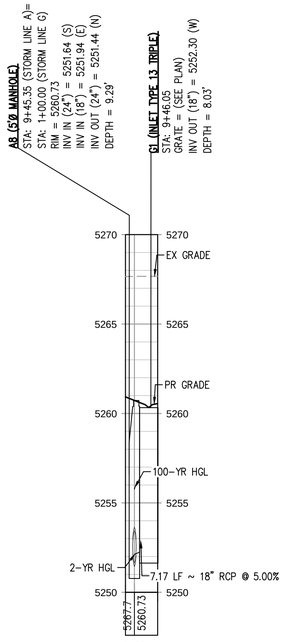
STORM LINE J PLAN

SCALE: 1" = 40'



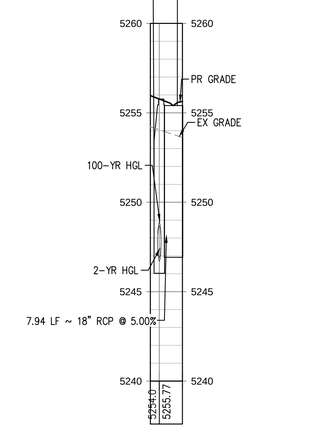
KEY MAP

SCALE: 1" = 250'



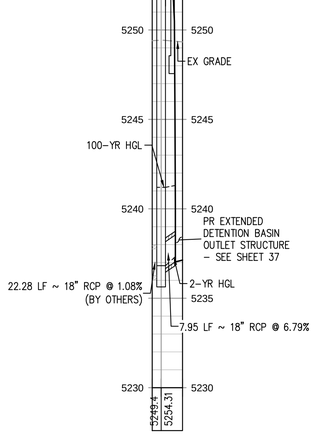
STORM LINE G PROFILE

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



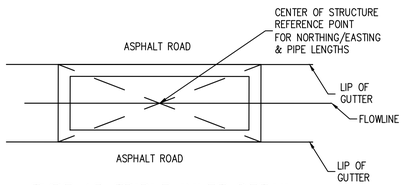
STORM LINE H PROFILE

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



STORM LINE J PROFILE

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



TYPE 13 TRIPLE INLET DETAIL STRUCTURE REFERENCE POINT

SCALE: NTS

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10. ALL STORM SEWER SHALL BE PRIVATE UNLESS OTHERWISE NOTED.
11. RETAINING WALLS (BY OTHERS) ARE SHOWN IN AN APPROXIMATE WAY ONLY.

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40 0 40 80
SCALE: 1" = 40'

DESIGNED BY: RJH
CHECKED BY: MSM
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Evergreen
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OUTLOOK AT NINE MILE
STORM SEWER PLAN & PROFILE LINES G, H & J

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

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SHEET NO. 35

35 OF 69

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APPENDIX F

Excerpt from Town of Erie Engineering Standards & Specifications

TABLE 800-4
ALLOWABLE RELEASE RATES FOR DETENTION PONDS - CFS/ACRE

	SCS SOIL GROUP*		
CONTROL FREQUENCY	A	B	C & D
2-year	0.02	0.03	0.04
5-year	0.07	0.13	0.17
10-year	0.13	0.23	0.30
25-year	0.24	0.41	0.52
100-year	0.5	0.85	1.00

*SCS soil groups are classified according to their infiltration and transmission rates. The hydrologic soil groups are:

A. - Soils having high infiltration rates even when thoroughly wetted. These consist chiefly of deep, well to excessively drained sands or gravel. These soils have a high rate of water transmission.

B. - Soils having moderate infiltration rates when thoroughly wetted. These consist chiefly of moderately fine to moderately coarse textures. These soils have a moderate rate of water transmission.

C & D. - Soils having slow infiltration rates when thoroughly wetted. These consist chiefly of soils with a layer that impede downward movement of water or soils with moderately fine to fine texture. These soils have a slow rate of water transmission.

814.09 Minimum Detention Volume

The minimum required detention volumes should be determined using the following equations (Refer to Urban Storm Drainage Criteria Manual Volume 3 for water quality release rates):

$V = KA$, (Equation 801)

For the 100-year storm event,
$K_{100} = (1.78I-0.002I^2- 3.56)/1000$ (Equation 802)

For the 10-year, storm event,

$K_{10} = (0.95I – 1.90)/1000$ (Equation 803)

Where V = required volume for the 100 or 10-year storm event (acre-feet),
I = Developed basin imperviousness (%)
A = Tributary area (Acres)

814.10 Compensating Detention Procedure

Detention facilities are to be designed using the compensating detention procedure if any runoff is to flow undetained from the subject property. There may be more than one local detention facility onsite. The compensating detention procedure requires that the total release rates from the detained and undetained areas be equal to the allowable release rates from the site. Therefore, the more undetained runoff, the less the allowable detention facility release rates. The maximum limit on the undetained area is 5% or 5 acres, whichever is less.

APPENDIX G

Operations & Maintenance Plan

Design Standards Form



ADAPTED FOR THE TOWN OF ERIE, COLORADO

PERMANENT STORMWATER CONTROL FACILITIES

OPERATION AND MAINTENANCE (O&M) PLAN

for:

Outlook at Nine Mile

Located at:

Nine Mile Corner Planned Development

Prepared for:

Metro District

Prepared by:

HKS Engineering 1120 Lincoln Street, Suite 1000, (303) 623-6300

REFERENCES:

This manual is adapted from both:

TOWN OF PARKER, COLORADO, STORMWATER PERMANENT BEST MANAGEMENT PRACTICES (PBMP) LONG-TERM OPERATION AND MAINTENANCE MANUAL, OCTOBER 2004

SOUTHEAST METRO STORMWATER AUTHORITY, STORMWATER MANAGEMENT FACILITY OPERATION AND MAIN OPERATION AND MAINTENANCE MANUAL

TABLE OF CONTENTS

I. COMPLIANCE WITH STORMWATER CONTROL FACILITIES MAINTENANCE REQUIREMENTS

II. INSPECTION & MAINTENANCE: ANNUAL REPORTING

III. PREVENTATIVE MEASURES TO REDUCE MAINTENANCE COSTS

IV. ACCESS

V. SAFETY

VI. FIELD INSPECTION EQUIPMENT

VII. INSPECTING AND MAINTAINING STORMWATER CONTROL FACILITIES

A. INSPECTION PROCEDURES AND REPORTING

B. MAINTENANCE CATEGORIES AND MAINTENANCE SCHEDULE

ATTACHMENTS

ATTACHMENT 1 – PERMANENT STORMWATER CONTROL FACILITIES DRAWINGS

ATTACHMENT 2 – INSPECTION CHECKLIST(S) (TEMPLATE)

ATTACHMENT 3 – ANNUAL INSPECTION AND MAINTENANCE REPORTING FORM (TEMPLATE)

PERMANENT STORMWATER CONTROL FACILITIES
OPERATION AND MAINTENANCE (O&M) PLAN

I. COMPLIANCE WITH PERMANENT STORMWATER CONTROL FACILITIES MAINTENANCE REQUIREMENTS

All property owners are responsible for ensuring that stormwater control facilities installed on their property are properly maintained and that they function as designed. In some cases, this maintenance responsibility may be assigned to others through special agreements. Property owners should be aware of their responsibilities regarding stormwater control facilities maintenance.

II. INSPECTION & MAINTENANCE: ANNUAL REPORTING

Requirements for the inspection and maintenance of stormwater control facilities, as well as reporting requirements are included in this Permanent Stormwater Control Facilities O&M Plan.

Verification that the stormwater control facilities have been properly inspected and maintained is established through the submittal of the required Inspection Forms to the Town of Erie on an annual basis. The annual reporting forms shall be provided to the Town of Erie for the previous year by January 31.

Copies of the Inspection Checklist(s) for each of the stormwater control facilities are provided as Attachment 2. A standard annual reporting form is provided as Attachment 3. Each form shall be reviewed and submitted by the permit holder to the Town of Erie.

III. PREVENTATIVE MEASURES TO REDUCE MAINTENANCE COSTS

The most effective way to maintain stormwater control facilities is to prevent the pollutants from entering the facilities in the first place. Common pollutants include sediment, trash & debris, chemicals, dog wastes, runoff from stored materials, illicit discharges into the storm drainage system, and many others. A thoughtful maintenance program will include measures to address these potential contaminants, and will save money and time in the long run. Key points to consider in your maintenance program include:

- Educate property owners/residents to be aware of how their actions affect water quality, and how they can help reduce maintenance costs.
- Keep properties, streets and gutters, and parking lots free of trash, debris, and lawn clippings.
- Ensure the proper disposal of hazardous wastes and chemicals.
- Plan lawn care to minimize the use of chemicals and pesticides.
- Sweep paved surfaces and put the sweepings back on the lawn.
- Be aware of automobiles leaking fluids. Use absorbents such as cat litter to soak up drippings – dispose of properly.
- Re-vegetate disturbed and bare areas to maintain vegetative stabilization.

- Clean out the upstream components of the storm drainage system, including inlets, storm sewers and outfalls.
- Do not store materials outdoors (including landscaping materials) unless properly protected from runoff.

IV. ACCESS

All stormwater control facilities located on the site have a designated access location for maintenance. Refer to the Permanent Stormwater Control Facilities Drawings provided as Attachment 1 for access locations.

V. SAFETY

Keep safety considerations at the forefront of inspection procedures at all times. Likely hazards should be anticipated and avoided. Never enter a confined space (outlet structure, manhole, etc) without proper training or equipment. A confined space should never be entered without at least one additional person present.

If a toxic or flammable substance is discovered, leave the immediate area and contact the local Sheriff at 911.

Potentially dangerous (e.g., fuel, chemicals, hazardous materials) substances found in the areas must be referred to the local Sheriff's Office immediately for response by the Hazardous Materials Unit. The emergency contact number is 911.

Vertical drops may be encountered in areas located within and around the facility. Avoid walking on top of retaining walls or other structures that have a significant vertical drop. If a vertical drop is identified within the pond that is greater than 48" in height, make the appropriate note/comment on the inspection form.

If any hazard is found within the facility area that poses an immediate threat to public safety, contact the local Sheriff's Office immediately.

VI. FIELD INSPECTION EQUIPMENT

It is imperative that the appropriate equipment is taken to the field with the inspector(s). This is to ensure the safety of the inspector and allow the inspections to be performed as efficiently as possible. Below is a list of the equipment that may be necessary to perform the inspections of all stormwater control facilities:

- Protective clothing and boots
- Safety equipment (vest, hard hat, confined space entry equipment)
- Communication equipment
- O&M Plan for the site including stormwater control facilities drawings
- Clipboard
- Inspection and Maintenance Forms (See Attachment 2)

- Manhole lid remover
- Shovel

Some of the items identified above need not be carried by the inspector (manhole lid remover, shovel, and confined space entry equipment). However, this equipment should be available in the vehicle driven to the site.

VII. Inspection and Maintenance of Stormwater Control Facilities

The quality of stormwater entering the waters of the state relies heavily on the proper operation and maintenance of stormwater control facilities. These facilities must be inspected to ensure that they function as designed. The inspection will determine the appropriate maintenance that is required.

A. Inspection Procedures and Reporting

All stormwater control facilities are required to be inspected by a qualified individual at a minimum of once per year. Inspection and maintenance personnel must be qualified to properly maintain stormwater control facilities. Inadequately trained personnel can cause additional problems resulting in additional maintenance costs. The person conducting the inspection should follow the inspection checklist provided as Attachment 2 for the specific type of facility.

Completed inspection checklists must be signed by the inspector and the permit holder prior to being submitted to the City. Reference Section II for submittal procedures.

For each inspection item, the inspector is required to circle “Yes”, “No”, or “N/A”. For items that are not relevant for the specific facility, the “N/A” selection should be circled. Not all facilities have all of the features identified on the form (forebay, micro-pool, etc.).

B. Maintenance Categories and Schedule

Routine maintenance performed on a scheduled basis, can help avoid more costly rehabilitative maintenance that results when facilities are not adequately maintained. The recommended inspection and maintenance schedule for the stormwater control facility is provided in the Table(s) below.

Stormwater control facility maintenance programs are separated into three broad categories of work. The categories are separated based upon the magnitude and type of maintenance activities performed. A description of each category follows:

- Routine Work

  The majority of this work consists of scheduled mowings and trash/debris pickups for stormwater control facilities during the growing season. This includes items such as the removal of debris/material that may be clogging the inlet, outlet structure, well screens, and trash racks. It also includes activities such as weed control, mosquito treatment, and algae treatment. These activities normally will be performed multiple times during the year.

- Periodic Work

  This work consists of a variety of isolated or small-scale maintenance and the work needed to address operational problems. Most of this work can be completed by a small crew, with minor tools, and small equipment.

- Rehabilitation Work

  This work consists of large-scale maintenance and major improvements needed to address failures within stormwater control facilities. This work may also require more specialized maintenance equipment, surveying, construction permits or assistance through private contractors and consultants. This work requires consultation with the Town of Erie as the work may modify the design of the stormwater control facility and a revised permit may be required.

The Table below provides recommended maintenance schedules for the stormwater control facilities.

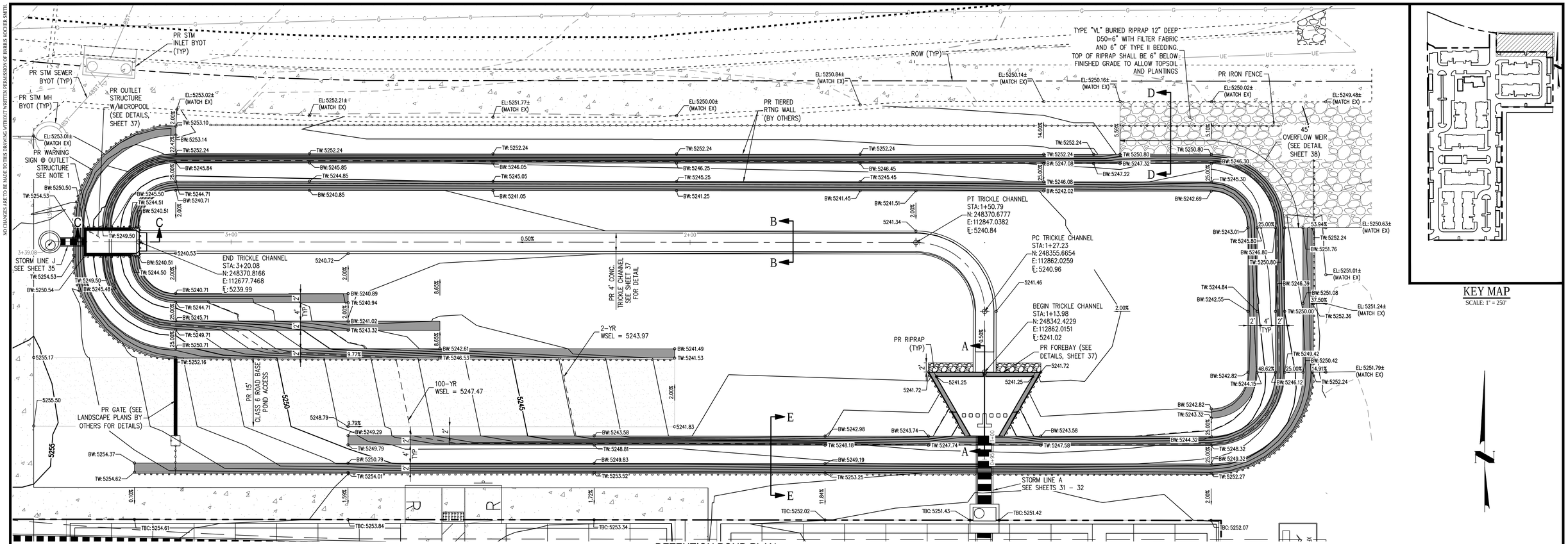
TABLE 1: MAINTENANCE SCHEDULE

WATER QUALITY EXTENDED DETENTION BASIN		
CATEGORY	**MAINTENANCE**	**ESTIMATED FREQUENCY**
Routine	Mowing irrigated vegetation to 3-4 inches tall	2 weeks
Routine	Mowing non-irrigated vegetation to 4-6 inches tall	2 weeks
Routine	Micropool-Sediment Removal	As needed
Routine	Micropool periodic draining	2 times per year
Routine	Clean orifices, remove trash and sediments from grates and trickle channel	As needed -Visually checked at least monthly
Routine	Fertilize (Use minimum amount)	2 times per year
Periodic	Repair and re-vegetate eroded areas	1-3 years
Periodic	Sediment removal	15-25 years
Routine	Nuisance control (odor, insects, etc)	As needed
Periodic	Aquatic plant harvesting	5-15 years
Routine	Visually inspect after storm event of 0.75 inches or more to check facility function and/or alert to maintenance needs	At least once per year
Periodic	Replacement of Facility	30 years

ATTACHMENT 1

PERMANENT STORMWATER CONTROL FACILITY DRAWINGS

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH

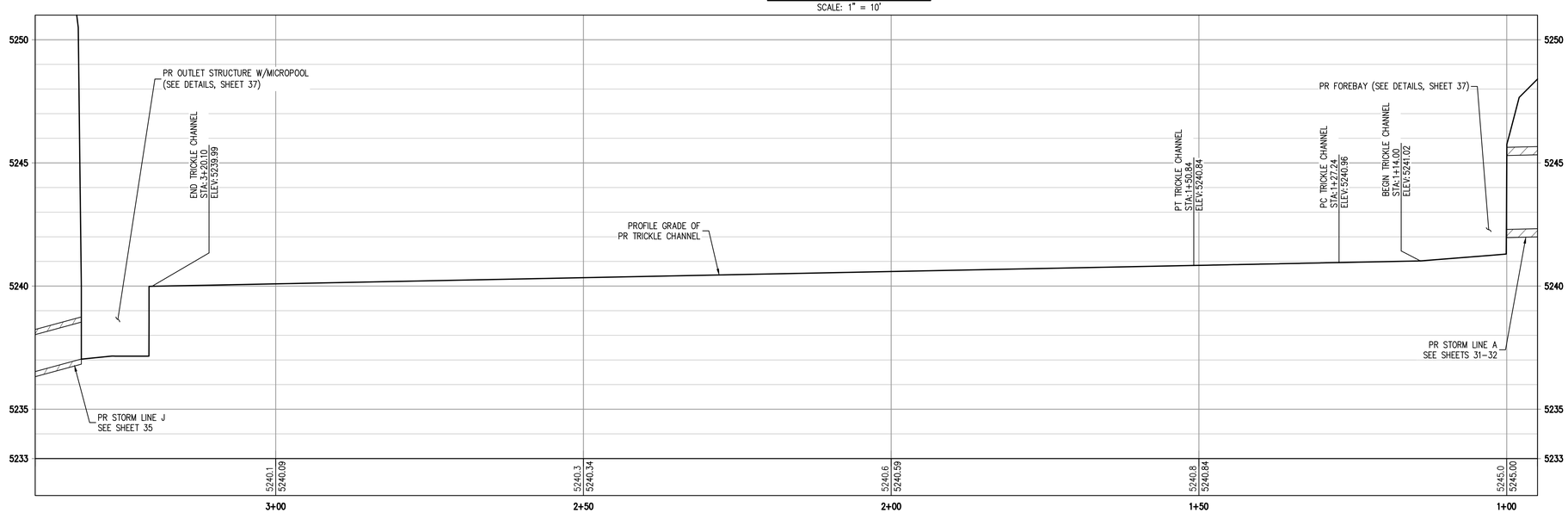


DETENTION POND PLAN

SCALE: 1" = 10'

KEY MAP

SCALE: 1" = 250'



TRICKLE CHANNEL PROFILE

HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1" = 2'

OUTLET STRUCTURE NOTES:

1. SIGN SHALL STATE " WARNING UNAUTHORIZED MODIFICATION OF THIS OUTLET IS A CODE VIOLATION AND SUBJECT TO THE PENALTIES AS PROVIDED BY LAW". REFER TO CITY AND STATE REGULATION REGARDING SPECIFICS OF THIS SIGN.
2. SEE SHEETS 37 FOR SECTIONS A-A, B-B, C-C, AND FOR ALL SPECIFIC DETAILS FOR THIS DETENTION POND.

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10 0 10 20
SCALE: 1" = 10'

DESIGNED BY: KDB
CHECKED BY: MSM
DRAWN BY: KDB

HARRIS KOCHER SMITH
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OUTLOOK AT NINE MILE
DETENTION POND PLAN

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

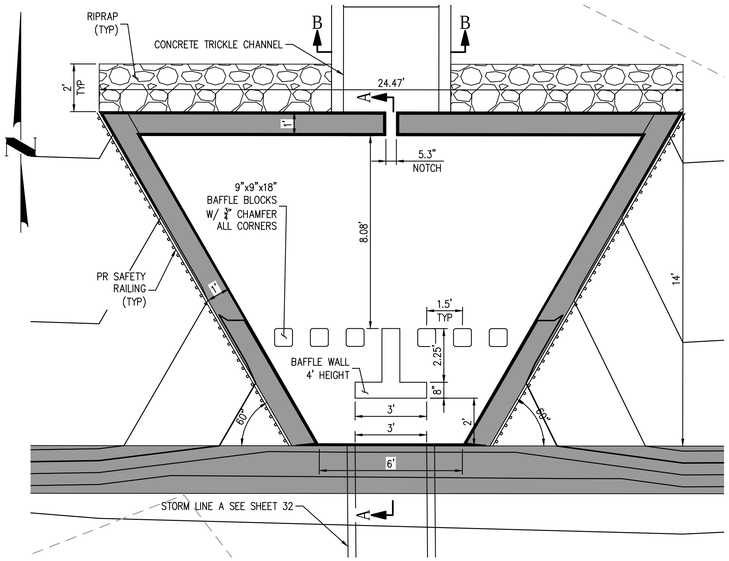
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36 OF 69

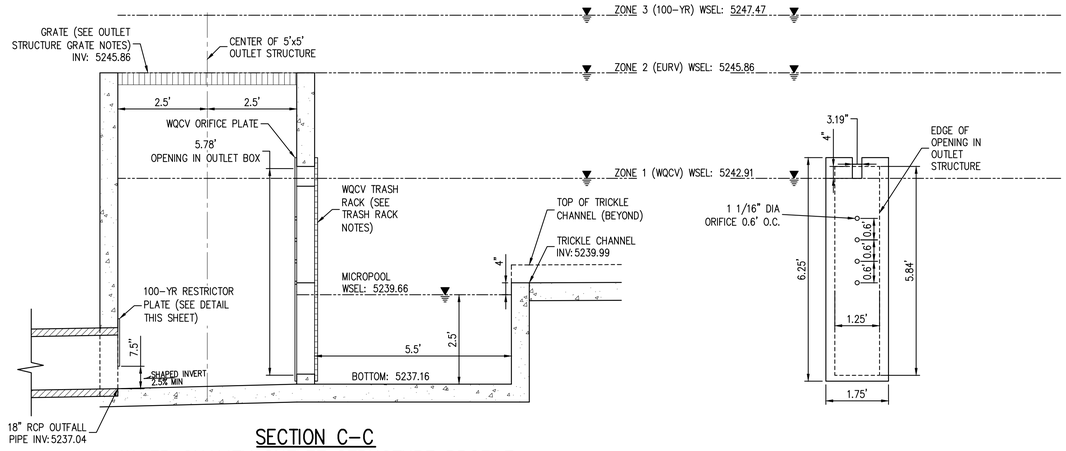
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MODIFIED IMPACT STILLING BASIN PLAN

SEE NOTE #7 THIS SHEET
SCALE: 1" = 3'

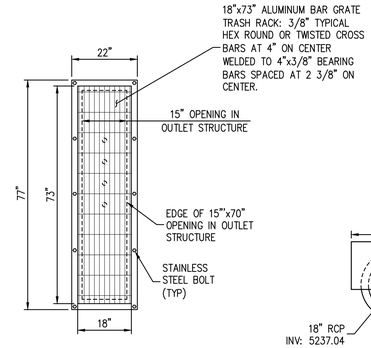


SECTION C-C
WATER QUALITY OUTLET STRUCTURE PROFILE

SCALE: N.T.S.

WQCV ORIFICE PLATE DETAIL

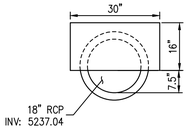
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WQCV TRASH RACK DETAIL

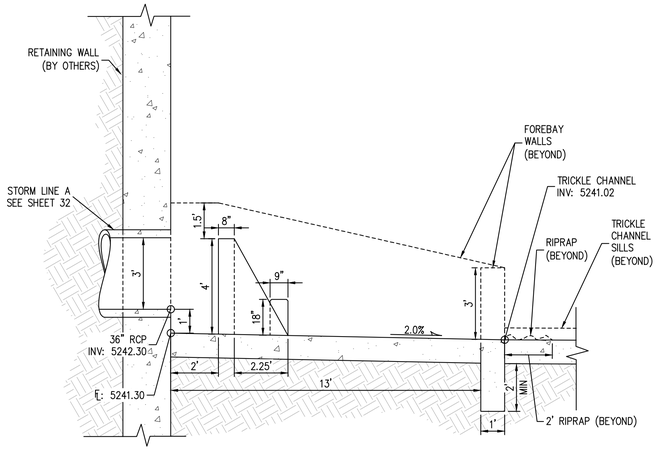
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REFER TO UDFCD ORIFICE PLATE AND TRASH RACK NOTES (VOL 3, FIG OS-4) FOR ADDITIONAL INFORMATION



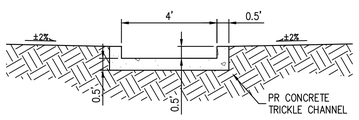
100-YR RESTRICTOR PLATE DETAIL

N.T.S.



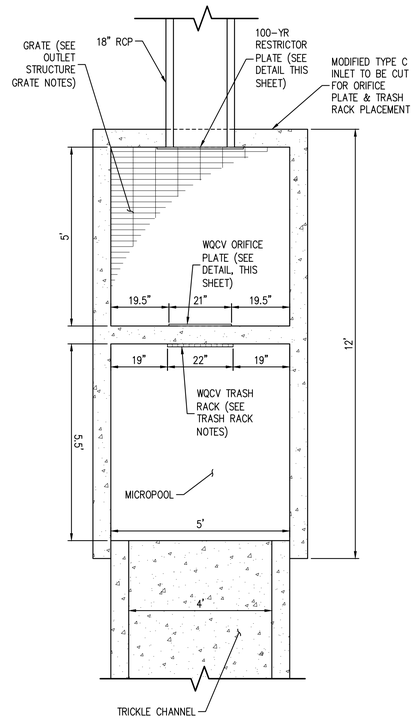
SECTION A-A
MODIFIED IMPACT STILLING BASIN PROFILE DETAIL

SEE NOTE #7 THIS SHEET
SCALE: 1" = 3'



SECTION B-B
TRICKLE CHANNEL DETAIL

SCALE: 1" = 3'



WATER QUALITY OUTLET STRUCTURE PLAN

SCALE: N.T.S.

GENERAL NOTES:

1. ALL PENETRATIONS AND JOINTING SHALL BE WATER-TIGHT, WITH LINK-SEAL OR APPPROVED EQUIVALENT.
2. THE EXTENDED DETENTION BASIN FOREBAY SHALL BE BUILT IN ACCORDANCE WITH CURRENT UDFCD CRITERIA AND DETAILS.
3. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS FOR ALL TRASH RACKS AND ORIFICE PLATES PRIOR TO CONSTRUCTION.
4. STRUCTURAL DESIGN OF ALL TRASH RACKS SHALL BE BASED ON FULL HYDROSTATIC HEAD WITH ZERO HEAD DOWNSTREAM OF THE RACK.
5. CONTRACTOR SHALL PROVIDE STRUCTURAL DESIGN/SHOP DRAWINGS FOR THE POND WALLS, ENERGY DISSIPATION BAFFLE WALLS, FOREBAY SLAB, FOREBAY WALLS, TRICKLE CHANNEL, MICROPOOL, WINGWALLS, AND OUTLET STRUCTURE.
6. ALL DESIGN ELEMENTS INCLUDING CONCRETE, THICKNESS, AND REINFORCEMENT FOR POND WALL ENERGY DISSIPATION BAFFLE WALL, FOREBAY SLAB, FOREBAY WALL, TRICKLE CHANNEL, MICROPOOL, WINGWALLS AND OUTLET STRUCTURE WILL BE ACCORDING TO UDFCD CRITERIA AND DETAILS.
7. MODIFIED IMPACT STILLING BASIN FIGURE 9-43 PER URBAN STORM DRAINAGE CRITERIA MANUAL, UPDATED SEPTEMBER 2017.

TRASH RACK NOTES:

1. TRASH RACK SHALL BE IN ACCORDANCE WITH UDFCD TYPICAL BAR GRATE TRASH RACK
   - 1.1. 3/8" TYPICAL HEX ROUND OR TWISTED CROSS BARS MOUNTED AT 4" O.C.
   - 1.2. STAINLESS STEEL SUPPORT BARS SHALL BE 4" X 3/8", 2 3/8" O.C.
   - 1.3. C8X18.75 AMERICAN STANDARD STRUCTURAL STEEL CHANNEL FORMED INTO CONCRETE BOTTOM AND SIDE OF TRASH RACK SHALL BE ATTACHED BY STAINLESS STEEL BOLTING HARDWARE, 12" MAX O.C. ALONG THE EDGE OF THE MOUNTING FRAME.

OUTLET STRUCTURE GRATE NOTES:

1. GRATE SHALL BE CLOSED MESH GRATE PER CDOT TYPE C INLET M-604-10
2. GRATE SHALL BE MOUNTED USING STAINLESS STEEL HARDWARE AND PROVIDED WITH HINGED AND LOCKABLE OR BOLTABLE ACCESS PANELS.
3. GRATE SHALL BE STAINLESS ALUMINUM OR STEEL, SHALL BE HOT DIP GALVANIZED AND MAY BE HOT POWDER COATED AFTER GALVANIZING.

ORIFICE/RESTRICTOR PLATE NOTES:

1. PROVIDE GASKET MATERIAL BETWEEN ORIFICE PLATE AND CONCRETE.
2. BOLT PLATE TO CONCRETE 12" MAX O.C.

811 Know what's below. Call before you dig.
CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

DESIGNED BY: JWM
CHECKED BY: MSM
DRAWN BY: JWM

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
POND PLAN DETAILS

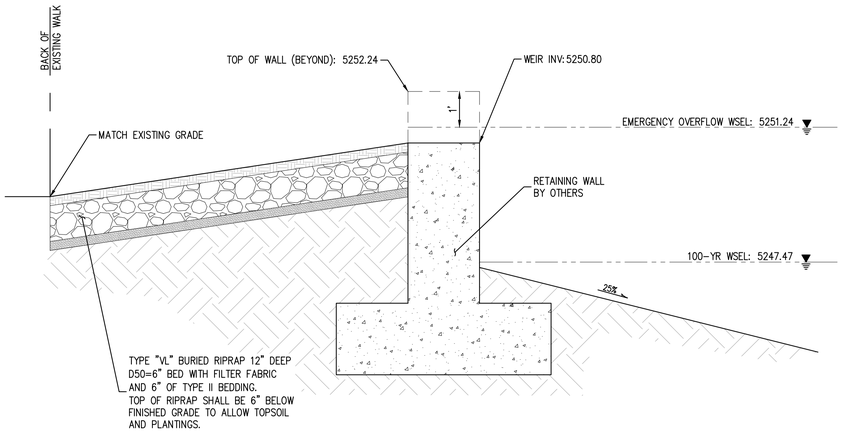
ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

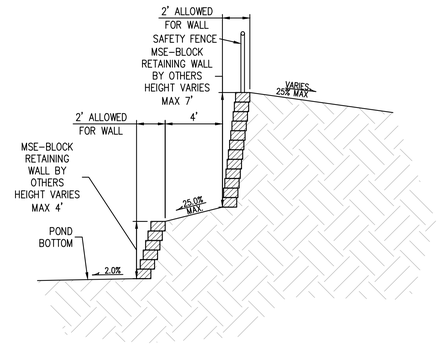
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37
37 OF 69

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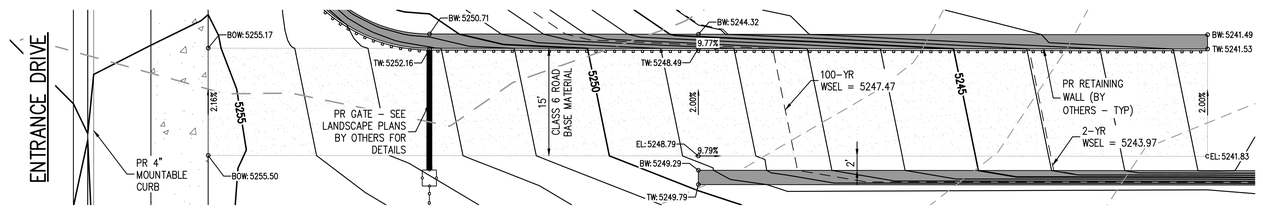
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SECTION D–D
OVERFLOW SPILLWAY DETAIL
N.T.S.



SECTION E–E
RETAINING WALL DETAIL
N.T.S.



MAINTENANCE ACCESS DETAIL
SCALE: 1" = 10'

GENERAL NOTES:

1. CONTRACTOR SHALL PROVIDE STRUCTURAL DESIGN/SHOP DRAWINGS FOR THE POND WALLS, ENERGY DISSIPATION BAFFLE WALLS, FOREBAY SLAB, FOREBAY WALLS, TRICKLE CHANNEL, MICROPOOL, WINGWALLS, AND OUTLET STRUCTURE.
2. ALL DESIGN ELEMENTS INCLUDING CONCRETE, THICKNESS, AND REINFORCEMENT FOR POND WALL ENERGY DISSIPATION BAFFLE WALL, FOREBAY SLAB, FOREBAY WALL, TRICKLE CHANNEL, MICROPOOL, WINGWALLS AND OUTLET STRUCTURE WILL BE ACCORDING TO UDFCD CRITERIA AND DETAILS.

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

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

DESIGNED BY: JWM
CHECKED BY: MSM
DRAWN BY: JWM

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
POND PLAN DETAILS

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

SHEET NO.
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38 OF 69

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ATTACHMENT 2

INSPECTION CHECKLIST(S)

PERMANENT STORMWATER CONTROL FACILITY
INSPECTION CHECKLIST
ADAPTED FOR THE TOWN OF ERIE.

EXTENDED DETENTION BASIN/WATER QUALITY POND

PSC Permit Number:	
Property Name:	
Contact Name (Permit):	Contact Phone:
Inspector Name & Company:	Inspector Phone:

Inspection Items	Inspected?	Maintenance Needed	Comments/Description
Vegetation healthy and desirable?	Yes No N/A	Yes No N/A	
Vegetation interfering with flow or volume?	Yes No N/A	Yes No N/A	
Erosion present?	Yes No N/A	Yes No N/A	
Sediment accumulation in forebay or bottom of pond?	Yes No N/A	Yes No N/A	
Drains blocked or not functioning?	Yes No N/A	Yes No N/A	
Underdrain system clogged?	Yes No N/A	Yes No N/A	
Standing water or boggy areas?	Yes No N/A	Yes No N/A	
Leaks or seeps on embankment?	Yes No N/A	Yes No N/A	
Forebay in good condition and functional?	Yes No N/A	Yes No N/A	
Orifices in good condition and functional?	Yes No N/A	Yes No N/A	
Trash rack free of debris and corrosion?	Yes No N/A	Yes No N/A	
Concrete/masonry in good condition?	Yes No N/A	Yes No N/A	
Metal in good condition?	Yes No N/A	Yes No N/A	
Valves operational?	Yes No N/A	Yes No N/A	
Outfall channels in good condition?	Yes No N/A	Yes No N/A	
Overflow in good condition?	Yes No N/A	Yes No N/A	
Visual pollution?	Yes No N/A	Yes No N/A	
Nuisance noticed (odor, insects, etc.)?	Yes No N/A	Yes No N/A	
Encroachment into pond or easement area by other activities?	Yes No N/A	Yes No N/A	
Burrowing animals/pests?	Yes No N/A	Yes No N/A	
Any evidence that water is not draining properly?	Yes No N/A	Yes No N/A	
Access for maintenance in good condition?	Yes No N/A	Yes No N/A	
Have there been complaints?	Yes No N/A	Yes No N/A	
Public hazards noted?	Yes No N/A	Yes No N/A	

Inspector Comments: _____

If any of the above Inspection Items are marked ***Yes*** for *Maintenance Needed* , list the maintenance actions and their completion or scheduled maintenance dates below:

Maintenance Action Needed	Date

Inspector Signature:_____ Date:_____

Permit Contact Signature:_____ Date:_____

ATTACHMENT 3

ANNUAL INSPECTION AND MAINTENANCE REPORTING FORM

ENVIRONMENTAL SERVICES
(303) 651-8416 | LONGMONTCOLORADO.GOV

ADAPTED FOR THE TOWN OF ERIE.

PSC ANNUAL REPORTING FORM

*This form must be completed and the certification signed by the Owner, its administrator, executor, successor, heir or assign. One copy of the completed Annual Report, including the inspection log, and any other applicable attachments, shall be submitted by **January 31st** for the year prior.*

NAME OF DEVELOPMENT _____

1. GENERAL INFORMATION

Name of Ownership Company / Organization _____

O&M Contact Name _____ Contact Phone _____

Company Name _____ Company Phone _____

Email Address _____

Billing Address _____

City _____ State _____ Zip Code _____

2. INSPECTION DETAILS

Reporting Period: January 1 to December 31, _____ (enter year)

PSC Permit Number PSC _____ (enter number)

Have there been any major changes to, or maintenance upon, the BMP? ☐ Yes ☐ No

Does the BMP have any major deficiencies that need to be addressed? ☐ Yes ☐ No

Do you have any requests for updates to the O&M Manual? ☐ Yes ☐ No

3. MAINTENANCE SUMMARY

_____

_____

_____

_____

4. MAINTENANCE CERTIFICATION

"I certify that to the best of my knowledge and belief the maintenance and inspection of the permanent BMP is being implemented in accordance to the Permanent Stormwater Control Operation and Maintenance Plan for this property or that a notice of any deficiencies has been provided."

Signature _____ Date _____

Printed Name _____ Title _____

Attachments: Inspection Log

[Attach additional information as needed. Remedial actions taken, how they were completed, and who performed them. Deficiencies to the BMPs, or problems encountered.]

Please submit this form to:

City of Longmont
Water Resources and Environmental Services
RE: Permanent Stormwater Control Permit – Annual Reporting
1100 S. Sherman St. Longmont CO 80501

Digital submittals are accepted. Submit signed PDF to:

SWQProgram@LongmontColorado.gov

PROJECT SHEET *BASE DESIGN STANDARDS*

Complete one Project Sheet for each project that includes Stormwater Quality Control Measures.

SITE INFORMATION

Project Name: OUTLOOK AT NINE				
Project Location: NINE MILE CORNER PLANNED DEVELOPMENT - ERIE, CO				
Submitted Date: 01/27/2020			Submitted By:	
Acreage Disturbed: 12.96				
Existing Impervious: NEGLIGIBLE			New Net Impervious: 70%	
Review Date:			Reviewed By:	
✓ Preparer	✓ TOE	Requirements		
✓		Design Details are included for all Control Measures (CM)		
✓ FULL SPECTRUM EDB		List or include a description of any Source CMs (i.e. preventing pollutants from contacting stormwater) or other non-structural CMs:		
		Does project overlap multiple MS4 Jurisdictions?	Yes	No
N/A		If project overlaps jurisdictions, provide written agreement designating responsibility for CM requirements, review, inspections		

DESIGN STANDARDS

Design Standards may be used in combination, as necessary, to meet the requirements. Additional design methods may be considered if they comply with the MS4 Permit. Evaluation of suitability of Stormwater Quality Control Measures (CMs) is based on pollutant removal, flood attenuation and long-term maintenance. CMs must be designed in accordance with the most current version of USDCM vol. 3, Chapter 4 "Treatment BMPs" and the Town of Erie's Standards and Specifications. CMs must also meet the specific requirements for each Design Standard used.

1. Indicate below, which Design Standards will be used for the project, and
2. Complete a separate, corresponding Design Standards checklist for each CM (e.g., WQCV, etc.)

Design Standard	*# CMs*	*Location/Identifying information*
WQCV	1	TRACT G - EDB
Pollutant Removal	1	TRACT G - EDB
Runoff Reduction	1	TRACT G - EDB
Regional WQCV Control Measure	0	
Regional WQCV Facility	0	

CHECKLIST WQCV Standard

WQCV STANDARD Criteria

Control measure(s) must be designed to provide treatment and/or infiltration of the Water Quality Capture Volume (WQCV) for 100% of the site.

Complete checklist if using the WQCV Standard to meet Design Standard requirements.

Project Name:			
Preparer	TOE	Requirements	
N/A		Control measure(s) provide treatment and/or infiltration of the WQCV for 100% of the site	
		% of site treated:	
		CM type:	CM ID/location:
		See Drainage Report section:	

If less than 100% of the site is treated, complete the following:

Preparer	TOE	Requirements	
✓		% of site not treated by control measures (not to exceed 20% or 1 acre):	
		2.5 %	0.33 size (acres)
✓		Provide explanation that the excluded area is impractical to treat: GRADING RESTRAINTS CAUSE A SMALL PORTION OF RUNOFF TO FLOW OFFSITE UNTREATED.	
✓		Provide explanation that another CM is not practicable for the untreated area: UNTREATED AREAS CREATE A MINIMAL AMOUNT OF RUNOFF AND WILL EVENTUALLY BE COLLOECTED AND TREATED BY THE OVERALL STORM SEWER SYSTEM FOR THE PLANNED NINE MILE CORNER DEVELOPMENT.	

FINAL UTILITY REPORT

FOR

OUTLOOK NINE MILE

Prepared: November 5, 2019

Revised: January 27, 2020

Prepared for:



1873 S. Bellaire Street, Suite 1200

Denver, Colorado 80222

Phone: 303-757-0401

Prepared by:



Michael Moore, P.E.

1120 Lincoln Street, Suite 1000

Denver, CO 80203

Ph.: 303-623-6300, Fax: 303-623-6311

Harris Kocher Smith Project No.: 160602

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Appendix A: Vicinity Map

Appendix B: Water Demands

Appendix C: Water Hydraulic Analysis & Modeling & Fire Hydrant Test Results

Appendix D: Wastewater Flow Calculations

Appendix E: Proposed Overall Utility Plan

ENGINEER'S STATEMENT

The enclosed utility report, and exhibits, were prepared by me or under my direct supervision and is correct to the best of my knowledge and belief. Said utility report has been prepared in accordance with applicable Town of Erie criteria and is in conformance with the master utility plans for the affected area. I accept responsibility for any liability caused by negligent acts, errors or omissions on my part in preparing this report.

_____ _____

Michael S. Moore, PE 47854 Date

For and on behalf of Harris Kocher Smith

OWNER/DEVELOPER STATEMENT:

As Owner/Developer of land identified within this report; I agree to proceed, implement and comply with all recommendations and requirements outlined herein.

_____

Name of Developer

_____

Authorized Signature

I. PROJECT LOCATION AND DESCRIPTION

A. Site Location

The proposed Outlook Nine Mile project ("Site") is located within the Town of Erie, County of Boulder, Colorado at the southeast corner of Arapahoe Road and N. 107th Street. More specifically, it is situated within the Northeast ¼ of Section 34, and the Southeast ¼ of Section 27, Township 1 North, Range 69 West of the 6th Principal Meridian.

The Site is bordered by Arapahoe Road to the north, private land to the east, a single-family residential development to the south and the future Nine Mile Commercial project ("Commercial") to the west.

The Site is a part of a master development, Nine Mile Corner, under Nine Mile Corner PD – Development Plan ("PD")

B. Description of Property

The Site consists of Lot 11, Tract H, and Tract G of Nine Mile Corner Filing Number 1, for a total of 12.96 acres. It is currently vacant land which will be used for a multi-family development. For the proposed development, lot 11 will consist of the multi-family buildings and will be owned and maintained by the multi-family property owner. Tract G will consist of the proposed Extended Detention Basin serving the multi-family development. Tract H will consist of a proposed pedestrian trail. Tracts G and H will be owned and maintained by the Metro District. Vegetation cover is comprised of native grasses and bare ground with approximately 100% coverage.

The existing ground generally slopes from south to north, with slopes ranging from 0.5% to 25%. Construction will include overlot grading, installation of internal roadway and utility infrastructure, and construction of multi-family buildings, including a clubhouse and associated amenities.

The Site will be developed as twelve multi-family residential buildings, a clubhouse/leasing office, a swimming pool and various site amenities, such as landscaping, and associated infrastructure improvements, including construction of private drives and utility installation.

One detention and water quality pond is proposed to accommodate runoff from the development.

Easements will be provided around water mains, fire hydrants, water meters, and sanitary sewer mains outside of the public rights-of-way, in accordance with Town of Erie (Town) standards regarding location and size. The proposed easements are to be dedicated by plat, Nine Mile Corner Filing Number 1

There is an existing irrigation ditch located on-Site. As a part of the master development, the ditch will be filled in, and flows will be conveyed via storm pipe along the southern portion of the Site. At the time of the start of the Site development, the ditch will no longer be located on site.

As previously mentioned, the Site is a part of a master development, and the water and sanitary sewer infrastructure was analyzed in the "Final Utility Report at Nine Mile Corner at Nine Mile Subdivision Filing No. 1" prepared by Galloway & Company, Inc. on August 16, 2019.

II. CALCULATED WATER DEMANDS

The design of the water distribution system was based on the information provided in The Erie Planning & Development Standards and Specifications Section 600 – Water Facilities (Water Manual). Demands were computed for the full build out of the Project. Water demand calculations by building can be found in Appendix A.

A. AVERAGE DAY DEMANDS (ADD)

The Average Daily Demand rate is 140 GPCD (Gallons Per Capita/Day) for Multi-Family Residential per the Water Manual. Per the PD, a value of 2.79 persons/dwelling unit was used.

Land Use	Dwelling Units	ADD (GPD)	ADD (GPM)
Multi-Family Residential	287	112,102	78

B. MAX DAY DEMANDS (MDD)

The Maximum Day Demand rate is 2.6 MDD/ADD per the Water Manual.

Land Use	Dwelling Units	ADD (GPD)	MDD (GPD)	MDD (GPM)
Multi-Family Residential	287	112,102	291466	202

C. MAX HOUR DEMANDS (MH)

The Max Hour Demand Rate is 3.9 (MH/ADD) per the Water Manual.

Land Use	Dwelling Units	ADD (GPD)	MH (GPD)	PHD (GPM)
Multi-Family Residential	287	112,102	437,199	304

D. FIRE FLOW DEMANDS

Fire flow was calculated based on 2018 International Fire Code flow rates. All buildings were assumed to be construction Type V-A or V-B. It was also assumed that only one fire would be fought at a time. Based on Table B 105.1, a minimum fire flow demand of 4,250 GPM was derived. An automatic sprinkler system is to be installed within the multi-family apartment buildings allowing a 50% reduction in flow, resulting in a fire flow of 2,125 GPM which is then rounded to the nearest 500 GPM. Thus the final required fire flow is 2500 GPM. An excerpt of IFC Table B 105.1 is on the following page for reference.

TABLE B105.1(2)
REFERENCE TABLE FOR TABLES B105.1(1) AND B105.2

FIRE-FLOW CALCULATION AREA (square feet)					FIRE-FLOW (gallons per minute)[b]	FLOW DURATION (hours)
Type IA and IB[a]	Type IIA and IIIA[a]	Type IV and V-A[a]	Type IIB and IIIB[a]	Type V-B[a]		
0-22,700	0-12,700	0-8,200	0-5,900	0-3,600	1,500	2
22,701-30,200	12,701-17,000	8,201-10,900	5,901-7,900	3,601-4,800	1,750	
30,201-38,700	17,001-21,800	10,901-12,900	7,901-9,800	4,801-6,200	2,000	
38,701-48,300	21,801-24,200	12,901-17,400	9,801-12,600	6,201-7,700	2,250	
48,301-59,000	24,201-33,200	17,401-21,300	12,601-15,400	7,701-9,400	2,500	
59,001-70,900	33,201-39,700	21,301-25,500	15,401-18,400	9,401-11,300	2,750	
70,901-83,700	39,701-47,100	25,501-30,100	18,401-21,800	11,301-13,400	3,000	3
83,701-97,700	47,101-54,900	30,101-35,200	21,801-25,900	13,401-15,600	3,250	
97,701-112,700	54,901-63,400	35,201-40,600	25,901-29,300	15,601-18,000	3,500	
112,701-128,700	63,401-72,400	40,601-46,400	29,301-33,500	18,001-20,600	3,750	
128,701-145,900	72,401-82,100	46,401-52,500	33,501-37,900	20,601-23,300	4,000	4
145,901-164,200	82,101-92,400	52,501-59,100	37,901-42,700	23,301-26,300	4,250	
164,201-183,400	92,401-103,100	59,101-66,000	42,701-47,700	26,301-29,300	4,500	
183,401-203,700	103,101-114,600	66,001-73,300	47,701-53,000	29,301-32,600	4,750	
203,701-225,200	114,601-126,700	73,301-81,100	53,001-58,600	32,601-36,000	5,000	
225,201-247,700	126,701-139,400	81,101-89,200	58,601-65,400	36,001-39,600	5,250	
247,701-271,200	139,401-152,600	89,201-97,700	65,401-70,600	39,601-43,400	5,500	
271,201-295,900	152,601-166,500	97,701-106,500	70,601-77,000	43,401-47,400	5,750	
295,901-Greater	166,501-Greater	106,501-115,800	77,001-83,700	47,401-51,500	6,000	
—	—	115,801-125,500	83,701-90,600	51,501-55,700	6,250	
—	—	125,501-135,500	90,601-97,900	55,701-60,200	6,500	
—	—	135,501-145,800	97,901-106,800	60,201-64,800	6,750	
—	—	145,801-156,700	106,801-113,200	64,801-69,600	7,000	
—	—	156,701-167,900	113,201-121,300	69,601-74,600	7,250	
—	—	167,901-179,400	121,301-129,600	74,601-79,800	7,500	
—	—	179,401-191,400	129,601-138,300	79,801-85,100	7,750	
—	—	191,401-Greater	138,301-Greater	85,101-Greater	8,000	

For SI: 1 square foot = 0.0929 m^2, 1 gallon per minute = 3.785 L/m, 1 pound per square inch = 6.895 kPa.

a.Types of construction are based on the *International Building Code*.
b.Measured at 20 psi residual pressure.

III. EXISTING WATER SYSTEM

A. Existing Distribution System

An existing 12” water main is located along the north side of Arapahoe Road. This is the only existing water distribution system near the Site.

IV. PROPOSED WATER SYSTEM

A. Proposed Distribution System

The proposed on-site water infrastructure will be designed to accommodate the entire development. Water meter sizes are summarized in the Table 1 below. The water services are proposed to be upsized 5’ past the meter.

Water Meter Sizes	
Building Type	**Meter Size (in)**
Type A	1.5”
Type B	1.5”
Type C	1.5”
Type D	0.75”
Clubhouse	1”

Table 1: Water Meter sizes on Site

A portion of the water system on Site will be 12” water main. This 12” water main and one hydrant will be constructed by Galloway with the Nine Mile Corner commercial property. This 12” water loop is shown as existing on the multi-family plans. The proposed water system, consisting of 8” water main, will be looped through the Site and connect to the 12” water main constructed by Galloway. The proposed water main will be connected to water main constructed by Galloway at three locations: southwest of Building 1, east of Building 2, and southwest of building 10. As part of the master development, Galloway will be placing new water main along Arapahoe Street, as well as in their

commercial development previously discussed. See Appendix E for existing and proposed water infrastructure.

V. PROPOSED WATER SYSTEM ANALYSIS AND MODELING

A. Hydraulic Models and Pressure Constraints

The proposed water system was modeled using Bentley WaterCAD V8i software. Per the Water Manual, water distribution pipes must have a maximum velocity of 10 feet per second, which applies to all scenarios. A Hazen Williams "C" factor of 100 was used. Maximum allowable head loss is 2 feet per 1000 feet, which applies to the maximum daily demand scenario. Operating pressure requirements from the water manual are:

- Maximum static pressure of 125 psi
- Minimum static pressure of 43 psi
- Maintaining 20 psi residual pressure during required fire flow and 40 psi residential residual pressure during peak residential flow
- Maximum pressure drop from static head to either fire flow or peak residential shall not exceed 30 psi.

B. Hydraulic Modeling Scenarios

The Following scenarios were modeled and results can be found in Appendix C:

- Average Daily Demand
- Maximum Daily Demand plus Fire Flow for the full build-out of the development
- Maximum Hour Demand for the full build-out of the development

C. Hydraulic Modeling Output

The total demand supplied by the model for each scenario can be found in Table 2 on the following page. The Maximum Daily Demand + Fire Scenarios were calculated by adding the Fire Flow GPM to the Maximum Daily Demand scenario. Per the Water Manual, the complete fire flow demand is applied at a single hydrant location, where the pressure is lowest within the proposed water system. The complete modeling output can be found in Appendix C.

Scenario	Demand (GPM)
Average Daily Demand	81
Max Hour Demand	305
Max Daily Demand [MDD]	204
MDD + Fire Building CH	2,704
MDD + Fire Building 1	1,904
MDD + Fire Building 2	1,904
MDD + Fire Building 3	1,904
MDD + Fire Building 4	1,904
MDD + Fire Building 5	1,904
MDD + Fire Building 6	3,004
MDD + Fire Building 7	1,904
MDD + Fire Building 8	1,904
MDD + Fire Building 9	3,004
MDD + Fire Building 10	1,904
MDD + Fire Building 11	1,904
MDD + Fire Building 12	1,904

Table 2: Water Demand For Each Scenario

D. FIRE HYDRANT TEST RESULTS

A fire hydrant test was conducted around Highway 287 and Arapahoe Road. A copy of the results can be found in Appendix B. Hydraulic grades, provided by the Town of Erie, were used in our water model and can be seen in the table below.

Connection Point	Maximum Day HGL	Peak Hour HGL
Beasley Drive & Arapahoe Road	5418.1 feet MSL	5406.1 feet MSL
Safeway Shopping Plaza & Arapahoe Road	5417.8 feet MSL	5405.8 feet MSL

VI. CALCULATED WASTEWATER FLOWS

A. Average Daily Flows

Average Daily Flows (ADF) for wastewater was calculated per the Town of Erie Public Works Standards and Specifications Section 700 – Sanitary Sewer Facilities ("Sanitary Manual"). A flow of 90 gallons/day/capita with 2.79 persons/dwelling unit was utilized for the multi-family units.

Peak Daily Flows were determined by multiplying the Average Daily Flow by the Peaking Factor (PF). The Peaking Factor is calculated using the following equation:

$$PF = 3.8/(ADF)^{0.17}$$

The Peaking Factor shall not be less than 2.5 or greater than 5 per the Sanitary Manual.

The Peak Flow rate is calculated by multiplying the Average Design Flows with the Peaking Factor. The sanitary sewers must convey the Peak Flow Rate at a maximum flow depth of 80% of the pipe diameter.

The Peak Design Flow rate has been calculated to be 360,329 gpd or 0.56 cfs.

Average Daily Flows and Peak Flow Rate for the development are as follows:

Multi-Family Site		
	287	Units
	2.79	Capita/Unit
	90	Gal/Day/Capita
Average Daily Flow	72,066	Gal/Day
	0.11	cfs
	5.94	Calculated Peaking Factor
	5	Used Peaking Factor
Peak Flow Rate	360,329	Gal/Day
	0.56	cfs

Table 3: Sanitary Flow Calculations

VII. EXISTING WASTEWATER SYSTEM

A. Existing Collection System

An existing 8" sanitary main is located on the north side of the site in the Arapahoe Road right-of-way. This line is currently operating at or above capacity. As a part of the commercial and master development, a bypass line is extending from the Nine Mile Corner development to an interceptor line that runs north from Arapahoe ridge subdivision within N. 111th Street to prevent overload of existing sanitary system. This bypass line includes a stub into Lot 11 for the Site connection.

VIII. PROPOSED WASTEWATER SYSTEM

A. Proposed Collection System

The proposed on-site sanitary infrastructure will be designed to accommodate the entire development. Service sizes for the building types A, B, C can be found in Table 4 below.

Sanitary Service Sizes	
Building Type	**Service Size (in)**
Type A	6"
Type B	6"
Type C	6"
Type D	4"
Clubhouse	6"

Table 4: Sanitary Service Sizes on Site

The sanitary infrastructure generally flows northeast within the development to the provided stub near Arapahoe Road. See Appendix E for the existing and proposed sanitary system.

B. Proposed Wastewater Facilities

No new wastewater facilities will be constructed as part of this development.

IX. PROPOSED WASTEWATER SYSTEM ANALYSIS AND MODELING

A. Hydraulic Constraints

Per the Sanitary Manual:

- Sanitary Mains 10" and smaller shall carry a maximum design flow at a maximum flow depth of 80%
- Sanitary Mains 12" and larger may be designed to flow full at the peak design flow rate.
- Minimum Velocity at the peak design flow rate shall be two feet per second.
- Maximum Velocity shall not exceed 10 feet per second at 80% flow depth.

B. Modeling Output

Using Hydraflow Express, three wastewater system models were created: one model showing the system as maximum capacity, one model showing the system at its minimum velocity, and one showing the system at its maximum velocity. The results can be found in Table 5 below. For the Hydraflow Express modeling output see Appendix D.

Model Scenario	Input	Flow Result (cfs)	Velocity Result (ft/s)
Maximum Capacity	80% depth, 0.5% Pipe Slope	0.923	3.03
Minimum Velocity	0.56 cfs, 0.5% Pipe Slope	N/A	2.70
Maximum Velocity	0.56 cfs, 1.0% Pipe Slope	N/A	3.49

Table 5: Wastewater Modeling Output

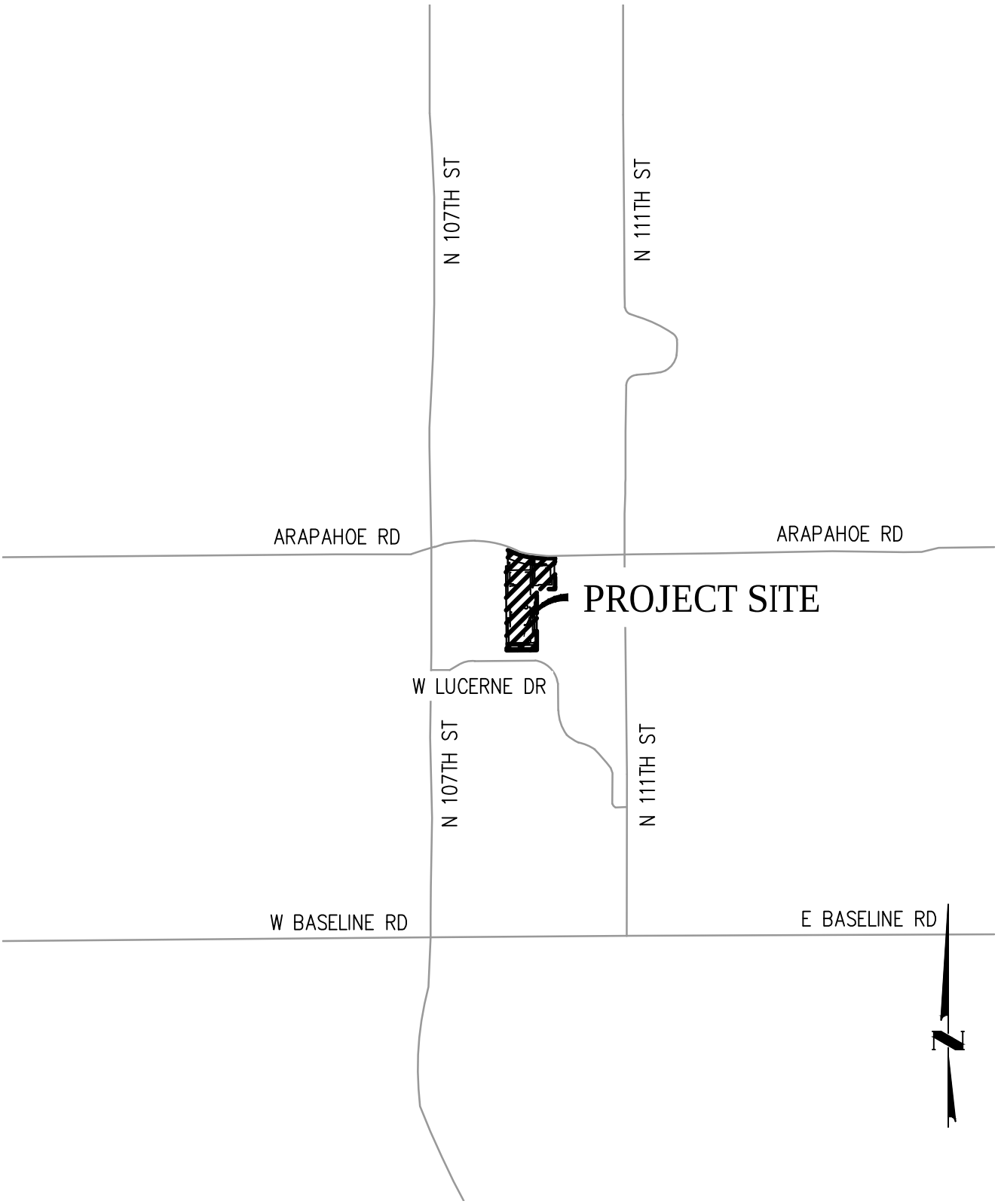
X. FUTURE DEVELOPMENT REQUIREMENTS

No future development of water and/or sanitary infrastructure and service stubs are expected or incorporated into the design.

XI. REFERENCES

- Town of Erie Public Works Standards and Specifications Section 600 – Water Facilities
- Town of Erie Public Works Standards and Specifications Section 700 – Sanitary Sewer Facilities
- Galloway Final Utility Report for Nine Mile Corner At Nine Mile Subdivision Filing No. 1

Appendix A – Vicinity Map



Plotted: THU 04/27/17 3:47:19P By: Derrik Mills Filepath: p:\160602\engineering\xref\vicmap.dwg Layout: layout1

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.

ISSUE DATE: 09/19/2016	PROJECT #: 160602
DATE	REVISION COMMENTS

EVERGREEN

OUTLOOK AT NINE MILE
VICINITY MAP

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

DSN'D BY: MEG
CHK'D BY: TEG
DRAWN BY: MEG

SHEET NO.
1
1 OF 1

Appendix B – Water Demands

BLDG	Total Sq Ft	Count	Construction Type	Stories	Calculated Fire Flow (Table B105.1) (GPM)	W/50% Reduction (Min 1,500)	Min Hydrants	Average Spacing	Max Spacing	Hose Pull	Number of Hydrants Used	Fire Flow to Each Hydrant (GPM)
Clubhouse	6,350	1	V-B	1	2,500	No Reduction	2	500	300	250	2	1,250
Carriage	3,753	3	V-B	2	1,750	1,500	1	500	300	250	1	1,500
18-Plex	18,388	2	V-A	3	2,500	1,500	1	500	300	250	1	1,500
28-Plex	27,751	5	V-A	2	3,000	1,500	1	500	300	250	1	1,500
51-Plex	57,383	2	V-A	4	4,250	2,500	2	450	300	225	2	1,250

BUILDING	Type	TOTAL BUILDING SQUARE FOOTAGE	CONSTRUCTION TYPE	NUMBER OF STORIES	SPRINKLED	CALCULATED FIRE FLOW (IFC TABLE B105.1) (GPM)	CALCULATED FIRE FLOW W/ 50% REDUCTION (IFC SECTION B105) (GPM)	MINIMUM NUMBER OF HYDRANTS (IFC TABLE C105.1)	NUMBER OF HYDRANTS USED	FIRE FLOW TO EACH HYDRANT (GPM)
Building 1	28-Plex	27,751	V-A	2	Yes	3,000	1,500	1	1	1500
Building 2	28-Plex	27,751	V-A	2	Yes	3,000	1,500	1	1	1500
Building 3	28-Plex	27,751	V-A	2	Yes	3,000	1,500	1	1	1500
Building 4	18-Plex	18,388	V-A	3	Yes	2,500	1,500	1	1	1500
Building 5	18-Plex	18,388	V-A	3	Yes	2,500	1,500	1	1	1500
Building 6	51-Plex	57,383	V-A	4	Yes	4,250	2,500	2	2	1250
Building 7	Carriage	3,753	V-B	2	Yes	1,750	1,500	1	1	1500
Building 8	Carriage	3,753	V-B	2	Yes	1,750	1,500	1	1	1500
Building 9	51-Plex	57,383	V-A	4	Yes	4,250	2,500	2	2	1250
Building 10	28-Plex	27,751	V-A	2	Yes	3,000	1,500	1	1	1500
Building 11	28-Plex	27,751	V-A	2	Yes	3,000	1,500	1	1	1500
Building 12	Carriage	3,753	V-B	2	Yes	1,750	1,500	1	1	1500
Clubhouse	Clubhouse	6,350	V-B	1	No	2,500	N/A	2	2	1250

- unknown quantities (from previous iteration of calcs in 2017)

Lot/Parcel	3	Area (acre)	Units	Persons/Unit	ADF/Unit* Gal/Unit/Day	ADF (gpd)	Max Hour Factor** (MHD)	MHD (gpm)	Max Daily Factor*** (MDD)	MDD (gpm)
Block 2	Multi-Family	12.96	287	2.79	140	112102.2	3.9	304	2.6	202

BUILDING TYPE	# OF UNITS	SPRINKLER FIRE FLOWS (GPM)	AVG DAILY DEMAND (GPD)	AVG DAILY DEMAND (GPM)	MAX DAILY DEMAND (GPM)	MAX HOUR DEMAND (GPM)
51-PLEX	51	300	19920.6	13.83	35.97	53.95
28-PLEX	28	200	10936.8	7.60	19.75	29.62
18-PLEX	18	200	7030.8	4.88	12.69	19.04
CARRIAGE	3	200	1171.8	0.81	2.12	3.17

** MAX DAY/AVG DAY 2.6
*** MAX HR./FLOW RATIO 3.9

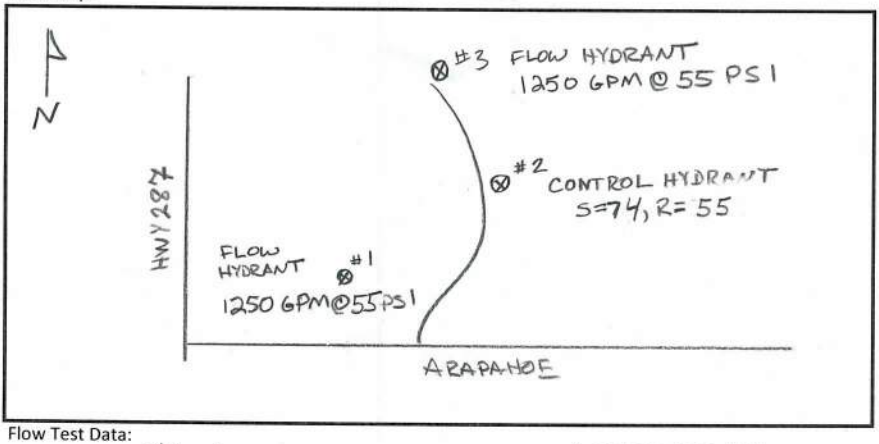
Appendix C – Water Hydraulic Analysis & Modeling & Fire Hydrant Test Results

Flow Test Information Report

Date: 8/7/19 Time: 10:30AM

Project Name: ERIE

Address: HWY 287 and ARAPAHOE, ERIE, CO
Test conducted by: Jim Maxwell FireTest Company (3) 697-7377
Test witnessed by: Scott Brown, Town of Erie + DEREKLIS, EVERGREEN
Source of water supply: Town of Erie, Pumps
Name of Water District: " " "
Area Map:



Flow Test Data:
Hose size: 4 inch / 2.5 inch Number of Hoses: 1 @ 1250 GPM / 2 @ 11 PSI

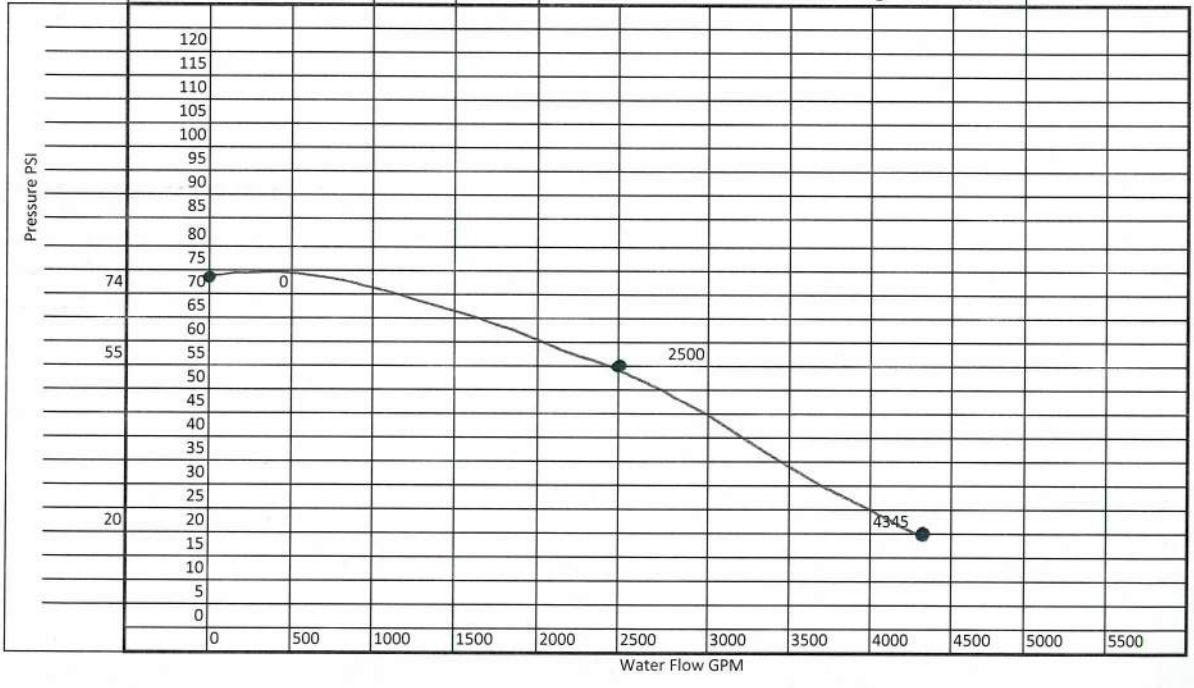
Flow at Hydrant No.	Static at Hydrant No.	Static PSIG	Residual PSIG	Flow GPM
1	2	74	55	1250
3	2	74	55	1250
TOTAL		74	55	2500

See second page for graph

Signed [signature] 08/07/2019

Water Flow Test Summary & Graph

Hydrant No.	Outlet I.D> Inches	Pitot or Gauge Pressure	Flow GPM	Residual PSI	**FireTest** Company 13724 W. Auburn Ave. Lakewood, CO 80228 (303) 697-7377
1	4		1250	55	Date: 8/7/2019 Time: 10:30 AM
3	2.5	11	625	55	Name: Erie, Safeway Hwy 287 and Arapahoe
3	2.5	11	625	55	Address: 3331 Arapahoe, Erie, CO
Total Flow			2500		Static Presure PSI: 74 Flow GPM @ 20 PSI 4395



Scenario: Avg Day
Current Time Step: 0.000Hr
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
1Dom	5,251.50	8	72
1Fire	5,251.80	0	72
2Dom	5,248.40	8	73
2Fire	5,248.00	0	74
3Dom	5,251.10	8	72
3Fire	5,251.50	0	72
4Dom	5,255.80	5	70
4Fire	5,255.80	0	70
5Dom	5,254.60	5	71
5Fire	5,254.70	0	71
6Dom	5,255.60	14	70
6Fire	5,255.70	0	70
7Dom	5,256.40	1	70
7Fire	5,256.40	0	70
8Dom	5,257.50	1	69
8Fire	5,257.60	0	69
9Dom	5,258.70	14	69
9Fire	5,258.60	0	69
10Dom	5,261.40	8	68
10Fire	5,261.10	0	68
11Dom	5,258.00	8	69
11Fire	5,258.60	0	69
12Dom	5,258.80	1	69
12Fire	5,258.90	0	69
CHDOM	5,252.30	0	72
H1	5,248.80	0	73
H2	5,251.00	0	72
H3	5,254.90	0	71
H4	5,256.70	0	70
H5	5,258.10	0	69
H6	5,261.60	0	68
H7	5,257.60	0	69
H8	5,255.70	0	70
H9	5,251.30	0	72
Tee1	5,250.10	0	73
Tee2	5,250.20	0	73
Tee3	5,252.60	0	72
Tee4	5,261.40	0	68
Tee5	5,254.30	0	71
		TOTAL: 81	

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Scenario: Avg Day
Current Time Step: 0.000Hr
FlexTable: Pipe Table

Label	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)
P-1	133	12.0	100.0	345	0.98	0.700
P-2	56	12.0	100.0	300	0.85	0.659
P-3	183	8.0	100.0	43	0.28	0.096
P-4	45	8.0	100.0	44	0.28	0.151
P-5	40	8.0	100.0	44	0.28	0.111
P-6	36	8.0	100.0	37	0.23	0.080
P-7	413	8.0	100.0	37	0.23	0.069
P-8	15	8.0	100.0	37	0.23	0.098
P-9	36	8.0	100.0	29	0.19	0.055
P-10	188	8.0	100.0	29	0.19	0.047
P-11	172	8.0	100.0	72	0.46	0.244
P-12	5	8.0	100.0	67	0.43	0.391
P-13	16	8.0	130.0	67	0.43	0.248
P-14	74	8.0	100.0	67	0.43	0.232
P-15	10	8.0	100.0	54	0.34	0.195
P-16	65	8.0	100.0	54	0.34	0.142
P-17	5	8.0	100.0	53	0.34	0.195
P-18	29	8.0	100.0	53	0.34	0.170
P-19	82	8.0	100.0	53	0.34	0.143
P-20	5	8.0	100.0	52	0.33	0.293
P-21	44	8.0	100.0	52	0.33	0.134
P-22	15	8.0	100.0	44	0.28	0.127
P-23	44	8.0	100.0	44	0.28	0.122
P-24	24	8.0	100.0	44	0.28	0.120
P-25	5	8.0	100.0	44	0.28	0.098
P-26	414	8.0	100.0	44	0.28	0.095
P-27	61	12.0	100.0	-49	0.14	0.024
P-28	33	8.0	100.0	-6	0.04	0.015
P-29	20	8.0	100.0	-6	0.04	0.000
P-30	36	8.0	100.0	-13	0.09	0.014
P-31	253	8.0	100.0	-13	0.09	0.010
P-32	10	8.0	100.0	-27	0.17	0.049
P-33	99	8.0	100.0	-27	0.17	0.044
P-34	263	8.0	100.0	-27	0.17	0.037
P-35	5	8.0	100.0	-32	0.21	0.098
P-36	9	8.0	100.0	-32	0.21	0.164
P-37	174	8.0	100.0	-32	0.21	0.053
P-38	108	12.0	100.0	218	0.62	0.284
P-39	113	12.0	100.0	-250	0.71	0.432
P-40	48	12.0	100.0	-250	0.71	0.370
P-41	36	12.0	100.0	-250	0.71	0.398
P-42	10	12.0	100.0	-257	0.73	0.928
P-43	98	12.0	100.0	-257	0.73	0.506

Scenario: Max Day
Current Time Step: 0.000Hr
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
1Dom	5,251.50	20	72
1Fire	5,251.80	0	72
2Dom	5,248.40	20	73
2Fire	5,248.00	0	74
3Dom	5,251.10	20	72
3Fire	5,251.50	0	72
4Dom	5,255.80	13	70
4Fire	5,255.80	0	70
5Dom	5,254.60	13	71
5Fire	5,254.70	0	71
6Dom	5,255.60	36	70
6Fire	5,255.70	0	70
7Dom	5,256.40	2	70
7Fire	5,256.40	0	70
8Dom	5,257.50	2	69
8Fire	5,257.60	0	69
9Dom	5,258.70	36	69
9Fire	5,258.60	0	69
10Dom	5,261.40	20	68
10Fire	5,261.10	0	68
11Dom	5,258.00	20	69
11Fire	5,258.60	0	69
12Dom	5,258.80	2	69
12Fire	5,258.90	0	69
CHDOM	5,252.30	0	72
H1	5,248.80	0	73
H2	5,251.00	0	72
H3	5,254.90	0	70
H4	5,256.70	0	70
H5	5,258.10	0	69
H6	5,261.60	0	68
H7	5,257.60	0	69
H8	5,255.70	0	70
H9	5,251.30	0	72
Tee1	5,250.10	0	73
Tee2	5,250.20	0	73
Tee3	5,252.60	0	72
Tee4	5,261.40	0	68
Tee5	5,254.30	0	71
		TOTAL: 204	

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Scenario: Max Day
Current Time Step: 0.000Hr
FlexTable: Pipe Table

Label	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)
P-1	133	12.0	100.0	378	1.07	0.832
P-2	56	12.0	100.0	314	0.89	0.720
P-3	183	8.0	100.0	64	0.41	0.197
P-4	45	8.0	100.0	64	0.41	0.291
P-5	40	8.0	100.0	64	0.41	0.234
P-6	36	8.0	100.0	44	0.28	0.107
P-7	413	8.0	100.0	44	0.28	0.097
P-8	15	8.0	100.0	44	0.28	0.163
P-9	36	8.0	100.0	25	0.16	0.027
P-10	188	8.0	100.0	25	0.16	0.036
P-11	172	8.0	100.0	88	0.56	0.349
P-12	5	8.0	100.0	75	0.48	0.488
P-13	16	8.0	130.0	75	0.48	0.341
P-14	74	8.0	100.0	75	0.48	0.278
P-15	10	8.0	100.0	39	0.25	0.146
P-16	65	8.0	100.0	39	0.25	0.075
P-17	5	8.0	100.0	37	0.24	0.195
P-18	29	8.0	100.0	37	0.24	0.085
P-19	82	8.0	100.0	37	0.24	0.071
P-20	5	8.0	100.0	35	0.22	0.195
P-21	44	8.0	100.0	35	0.22	0.067
P-22	15	8.0	100.0	15	0.10	0.000
P-23	44	8.0	100.0	15	0.10	0.022
P-24	24	8.0	100.0	15	0.10	0.000
P-25	5	8.0	100.0	13	0.09	0.098
P-26	414	8.0	100.0	13	0.09	0.009
P-27	61	12.0	100.0	16	0.05	0.000
P-28	33	8.0	100.0	30	0.19	0.075
P-29	20	8.0	100.0	30	0.19	0.049
P-30	36	8.0	100.0	10	0.06	0.014
P-31	253	8.0	100.0	10	0.06	0.006
P-32	10	8.0	100.0	-26	0.17	0.049
P-33	99	8.0	100.0	-26	0.17	0.040
P-34	263	8.0	100.0	-26	0.17	0.035
P-35	5	8.0	100.0	-39	0.25	0.195
P-36	9	8.0	100.0	-39	0.25	0.164
P-37	174	8.0	100.0	-39	0.25	0.079
P-38	108	12.0	100.0	192	0.54	0.225
P-39	113	12.0	100.0	-231	0.65	0.372
P-40	48	12.0	100.0	-231	0.65	0.319
P-41	36	12.0	100.0	-231	0.65	0.343
P-42	10	12.0	100.0	-250	0.71	0.879
P-43	98	12.0	100.0	-250	0.71	0.477

Scenario: Max Hour
Current Time Step: 0.000Hr
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
1Dom	5,251.50	30	67
1Fire	5,251.80	0	67
2Dom	5,248.40	30	68
2Fire	5,248.00	0	68
3Dom	5,251.10	30	67
3Fire	5,251.50	0	67
4Dom	5,255.80	19	65
4Fire	5,255.80	0	65
5Dom	5,254.60	19	65
5Fire	5,254.70	0	65
6Dom	5,255.60	54	65
6Fire	5,255.70	0	65
7Dom	5,256.40	3	65
7Fire	5,256.40	0	65
8Dom	5,257.50	3	64
8Fire	5,257.60	0	64
9Dom	5,258.70	54	64
9Fire	5,258.60	0	64
10Dom	5,261.40	30	62
10Fire	5,261.10	0	63
11Dom	5,258.00	30	64
11Fire	5,258.60	0	64
12Dom	5,258.80	3	64
12Fire	5,258.90	0	64
CHDOM	5,252.30	0	66
H1	5,248.80	0	68
H2	5,251.00	0	67
H3	5,254.90	0	65
H4	5,256.70	0	65
H5	5,258.10	0	64
H6	5,261.60	0	62
H7	5,257.60	0	64
H8	5,255.70	0	65
H9	5,251.30	0	67
Tee1	5,250.10	0	67
Tee2	5,250.20	0	67
Tee3	5,252.60	0	66
Tee4	5,261.40	0	62
Tee5	5,254.30	0	66
		TOTAL: 305	

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Scenario: Max Hour
Current Time Step: 0.000Hr
FlexTable: Pipe Table

Label	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)
P-1	133	12.0	100.0	400	1.13	0.924
P-2	56	12.0	100.0	322	0.91	0.755
P-3	183	8.0	100.0	75	0.48	0.267
P-4	45	8.0	100.0	78	0.50	0.432
P-5	40	8.0	100.0	78	0.50	0.333
P-6	36	8.0	100.0	48	0.31	0.121
P-7	413	8.0	100.0	48	0.31	0.113
P-8	15	8.0	100.0	48	0.31	0.163
P-9	36	8.0	100.0	19	0.12	0.027
P-10	188	8.0	100.0	19	0.12	0.021
P-11	172	8.0	100.0	93	0.60	0.392
P-12	5	8.0	100.0	74	0.47	0.488
P-13	16	8.0	130.0	74	0.47	0.310
P-14	74	8.0	100.0	74	0.47	0.272
P-15	10	8.0	100.0	20	0.13	0.049
P-16	65	8.0	100.0	20	0.13	0.022
P-17	5	8.0	100.0	17	0.11	0.000
P-18	29	8.0	100.0	17	0.11	0.034
P-19	82	8.0	100.0	17	0.11	0.018
P-20	5	8.0	100.0	14	0.09	0.000
P-21	44	8.0	100.0	14	0.09	0.011
P-22	15	8.0	100.0	-16	0.10	0.032
P-23	44	8.0	100.0	-16	0.10	0.011
P-24	24	8.0	100.0	-16	0.10	0.020
P-25	5	8.0	100.0	-19	0.12	0.000
P-26	414	8.0	100.0	-19	0.12	0.020
P-27	61	12.0	100.0	72	0.21	0.056
P-28	33	8.0	100.0	54	0.34	0.209
P-29	20	8.0	100.0	54	0.34	0.196
P-30	36	8.0	100.0	24	0.15	0.027
P-31	253	8.0	100.0	24	0.15	0.031
P-32	10	8.0	100.0	-30	0.19	0.049
P-33	99	8.0	100.0	-30	0.19	0.049
P-34	263	8.0	100.0	-30	0.19	0.046
P-35	5	8.0	100.0	-49	0.31	0.195
P-36	9	8.0	100.0	-49	0.31	0.274
P-37	174	8.0	100.0	-49	0.31	0.121
P-38	108	12.0	100.0	168	0.48	0.176
P-39	113	12.0	100.0	-217	0.62	0.333
P-40	48	12.0	100.0	-217	0.62	0.288
P-41	36	12.0	100.0	-217	0.62	0.302
P-42	10	12.0	100.0	-247	0.70	0.879
P-43	98	12.0	100.0	-247	0.70	0.462

Scenario: 1Fire H9
Current Time Step: 0.000Hr
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
1Dom	5,251.50	20	72
1Fire	5,251.80	200	71
2Dom	5,248.40	20	73
2Fire	5,248.00	0	73
3Dom	5,251.10	20	72
3Fire	5,251.50	0	72
4Dom	5,255.80	13	70
4Fire	5,255.80	0	70
5Dom	5,254.60	13	70
5Fire	5,254.70	0	70
6Dom	5,255.60	36	70
6Fire	5,255.70	0	70
7Dom	5,256.40	2	70
7Fire	5,256.40	0	70
8Dom	5,257.50	2	69
8Fire	5,257.60	0	69
9Dom	5,258.70	36	69
9Fire	5,258.60	0	69
10Dom	5,261.40	20	68
10Fire	5,261.10	0	68
11Dom	5,258.00	20	69
11Fire	5,258.60	0	69
12Dom	5,258.80	2	69
12Fire	5,258.90	0	69
CHDOM	5,252.30	0	71
H1	5,248.80	0	73
H2	5,251.00	0	72
H3	5,254.90	0	70
H4	5,256.70	0	70
H5	5,258.10	0	69
H6	5,261.60	0	68
H7	5,257.60	0	69
H8	5,255.70	0	70
H9	5,251.30	1,500	72
Tee1	5,250.10	0	72
Tee2	5,250.20	0	72
Tee3	5,252.60	0	71
Tee4	5,261.40	0	68
Tee5	5,254.30	0	71
		TOTAL: 1904	

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Scenario: 1Fire H9
Current Time Step: 0.000Hr
FlexTable: Pipe Table

Label	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)
P-1	133	12.0	100.0	906	2.57	4.309
P-2	56	12.0	100.0	816	2.32	4.442
P-3	183	8.0	100.0	-89	0.57	0.368
P-4	45	8.0	100.0	90	0.57	0.572
P-5	40	8.0	100.0	90	0.57	0.444
P-6	36	8.0	100.0	70	0.45	0.241
P-7	413	8.0	100.0	70	0.45	0.228
P-8	15	8.0	100.0	70	0.45	0.391
P-9	36	8.0	100.0	50	0.32	0.123
P-10	188	8.0	100.0	50	0.32	0.137
P-11	172	8.0	100.0	-39	0.25	0.077
P-12	5	8.0	100.0	-52	0.33	0.293
P-13	16	8.0	130.0	-52	0.33	0.155
P-14	74	8.0	100.0	-52	0.33	0.139
P-15	10	8.0	100.0	-88	0.56	0.488
P-16	65	8.0	100.0	-88	0.56	0.351
P-17	5	8.0	100.0	-90	0.57	0.684
P-18	29	8.0	100.0	-90	0.57	0.477
P-19	82	8.0	100.0	-90	0.57	0.387
P-20	5	8.0	100.0	-92	0.59	0.684
P-21	44	8.0	100.0	-92	0.59	0.403
P-22	15	8.0	100.0	-112	0.71	0.667
P-23	44	8.0	100.0	-112	0.71	0.711
P-24	24	8.0	100.0	-112	0.71	0.621
P-25	5	8.0	100.0	-114	0.73	1.074
P-26	414	8.0	100.0	-114	0.73	0.563
P-27	61	12.0	100.0	236	0.67	0.548
P-28	33	8.0	100.0	122	0.78	0.986
P-29	20	8.0	100.0	122	0.78	0.955
P-30	36	8.0	100.0	102	0.65	0.494
P-31	253	8.0	100.0	102	0.65	0.446
P-32	10	8.0	100.0	66	0.42	0.293
P-33	99	8.0	100.0	66	0.42	0.227
P-34	263	8.0	100.0	66	0.42	0.201
P-35	5	8.0	100.0	54	0.34	0.293
P-36	9	8.0	100.0	54	0.34	0.329
P-37	174	8.0	100.0	54	0.34	0.143
P-38	108	12.0	100.0	-760	2.16	2.970
P-39	113	12.0	100.0	814	2.31	4.040
P-40	48	12.0	100.0	814	2.31	3.422
P-41	36	12.0	100.0	614	1.74	2.127
P-42	10	12.0	100.0	594	1.69	4.834
P-43	98	12.0	100.0	-906	2.57	5.537

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Scenario: 2Fire H1
Current Time Step: 0.000Hr
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
1Dom	5,251.50	20	72
1Fire	5,251.80	0	72
2Dom	5,248.40	20	71
2Fire	5,248.00	200	71
3Dom	5,251.10	20	71
3Fire	5,251.50	0	71
4Dom	5,255.80	13	70
4Fire	5,255.80	0	70
5Dom	5,254.60	13	70
5Fire	5,254.70	0	70
6Dom	5,255.60	36	70
6Fire	5,255.70	0	70
7Dom	5,256.40	2	69
7Fire	5,256.40	0	69
8Dom	5,257.50	2	69
8Fire	5,257.60	0	69
9Dom	5,258.70	36	69
9Fire	5,258.60	0	69
10Dom	5,261.40	20	68
10Fire	5,261.10	0	68
11Dom	5,258.00	20	69
11Fire	5,258.60	0	69
12Dom	5,258.80	2	69
12Fire	5,258.90	0	68
CHDOM	5,252.30	0	71
H1	5,248.80	1,500	71
H2	5,251.00	0	71
H3	5,254.90	0	70
H4	5,256.70	0	69
H5	5,258.10	0	69
H6	5,261.60	0	68
H7	5,257.60	0	69
H8	5,255.70	0	70
H9	5,251.30	0	72
Tee1	5,250.10	0	72
Tee2	5,250.20	0	72
Tee3	5,252.60	0	71
Tee4	5,261.40	0	68
Tee5	5,254.30	0	71
		TOTAL: 1904	

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Scenario: 2Fire H1
Current Time Step: 0.000Hr
FlexTable: Pipe Table

Label	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)
P-1	133	12.0	100.0	1,163	3.30	6.887
P-2	56	12.0	100.0	-173	0.49	0.226
P-3	183	8.0	100.0	294	1.88	3.424
P-4	45	8.0	100.0	1,336	8.53	101.145
P-5	40	8.0	100.0	-164	1.05	1.368
P-6	36	8.0	100.0	-184	1.17	1.502
P-7	413	8.0	100.0	-384	2.45	5.384
P-8	15	8.0	100.0	-384	2.45	9.635
P-9	36	8.0	100.0	-404	2.58	6.545
P-10	188	8.0	100.0	-404	2.58	6.643
P-11	172	8.0	100.0	-110	0.70	0.528
P-12	5	8.0	100.0	-122	0.78	1.270
P-13	16	8.0	130.0	-122	0.78	0.776
P-14	74	8.0	100.0	-122	0.78	0.702
P-15	10	8.0	100.0	-158	1.01	1.563
P-16	65	8.0	100.0	-158	1.01	1.059
P-17	5	8.0	100.0	-160	1.02	2.148
P-18	29	8.0	100.0	-160	1.02	1.397
P-19	82	8.0	100.0	-160	1.02	1.149
P-20	5	8.0	100.0	-163	1.04	2.246
P-21	44	8.0	100.0	-163	1.04	1.152
P-22	15	8.0	100.0	-182	1.16	1.747
P-23	44	8.0	100.0	-182	1.16	1.800
P-24	24	8.0	100.0	-182	1.16	1.561
P-25	5	8.0	100.0	-184	1.18	2.832
P-26	414	8.0	100.0	-184	1.18	1.385
P-27	61	12.0	100.0	266	0.75	0.693
P-28	33	8.0	100.0	82	0.52	0.463
P-29	20	8.0	100.0	82	0.52	0.441
P-30	36	8.0	100.0	62	0.40	0.192
P-31	253	8.0	100.0	62	0.40	0.176
P-32	10	8.0	100.0	26	0.17	0.049
P-33	99	8.0	100.0	26	0.17	0.040
P-34	263	8.0	100.0	26	0.17	0.033
P-35	5	8.0	100.0	13	0.08	0.098
P-36	9	8.0	100.0	13	0.08	0.000
P-37	174	8.0	100.0	13	0.08	0.011
P-38	108	12.0	100.0	-474	1.34	1.224
P-39	113	12.0	100.0	487	1.38	1.521
P-40	48	12.0	100.0	487	1.38	1.305
P-41	36	12.0	100.0	487	1.38	1.386
P-42	10	12.0	100.0	467	1.32	2.979
P-43	98	12.0	100.0	467	1.32	1.569

Scenario: 3Fire H2
Current Time Step: 0.000Hr
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
1Dom	5,251.50	20	72
1Fire	5,251.80	0	72
2Dom	5,248.40	20	72
2Fire	5,248.00	0	72
3Dom	5,251.10	20	67
3Fire	5,251.50	200	67
4Dom	5,255.80	13	70
4Fire	5,255.80	0	70
5Dom	5,254.60	13	69
5Fire	5,254.70	0	69
6Dom	5,255.60	36	69
6Fire	5,255.70	0	69
7Dom	5,256.40	2	69
7Fire	5,256.40	0	69
8Dom	5,257.50	2	68
8Fire	5,257.60	0	68
9Dom	5,258.70	36	69
9Fire	5,258.60	0	69
10Dom	5,261.40	20	68
10Fire	5,261.10	0	68
11Dom	5,258.00	20	68
11Fire	5,258.60	0	68
12Dom	5,258.80	2	68
12Fire	5,258.90	0	68
CHDOM	5,252.30	0	71
H1	5,248.80	0	72
H2	5,251.00	1,500	67
H3	5,254.90	0	69
H4	5,256.70	0	69
H5	5,258.10	0	68
H6	5,261.60	0	68
H7	5,257.60	0	69
H8	5,255.70	0	70
H9	5,251.30	0	72
Tee1	5,250.10	0	72
Tee2	5,250.20	0	72
Tee3	5,252.60	0	70
Tee4	5,261.40	0	68
Tee5	5,254.30	0	71
		TOTAL: 1904	

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Scenario: 3Fire H2
Current Time Step: 0.000Hr
FlexTable: Pipe Table

Label	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)
P-1	133	12.0	100.0	1,067	3.03	5.856
P-2	56	12.0	100.0	295	0.84	0.642
P-3	183	8.0	100.0	719	4.59	18.197
P-4	45	8.0	100.0	772	4.92	35.175
P-5	40	8.0	100.0	772	4.92	25.398
P-6	36	8.0	100.0	752	4.80	20.944
P-7	413	8.0	100.0	752	4.80	18.804
P-8	15	8.0	100.0	-748	4.78	34.831
P-9	36	8.0	100.0	-768	4.90	21.887
P-10	188	8.0	100.0	-968	6.18	34.307
P-11	172	8.0	100.0	-249	1.59	2.430
P-12	5	8.0	100.0	-262	1.67	5.469
P-13	16	8.0	130.0	-262	1.67	3.446
P-14	74	8.0	100.0	-262	1.67	2.916
P-15	10	8.0	100.0	-298	1.90	5.078
P-16	65	8.0	100.0	-298	1.90	3.445
P-17	5	8.0	100.0	-300	1.91	7.227
P-18	29	8.0	100.0	-300	1.91	4.566
P-19	82	8.0	100.0	-300	1.91	3.702
P-20	5	8.0	100.0	-302	1.93	7.227
P-21	44	8.0	100.0	-302	1.93	3.690
P-22	15	8.0	100.0	-322	2.05	5.113
P-23	44	8.0	100.0	-322	2.05	5.255
P-24	24	8.0	100.0	-322	2.05	4.564
P-25	5	8.0	100.0	-324	2.07	8.301
P-26	414	8.0	100.0	-324	2.07	3.946
P-27	61	12.0	100.0	384	1.09	1.410
P-28	33	8.0	100.0	60	0.38	0.254
P-29	20	8.0	100.0	60	0.38	0.245
P-30	36	8.0	100.0	40	0.26	0.082
P-31	253	8.0	100.0	40	0.26	0.081
P-32	10	8.0	100.0	5	0.03	0.000
P-33	99	8.0	100.0	5	0.03	0.000
P-34	263	8.0	100.0	5	0.03	0.002
P-35	5	8.0	100.0	-8	0.05	0.000
P-36	9	8.0	100.0	-8	0.05	0.055
P-37	174	8.0	100.0	-8	0.05	0.003
P-38	108	12.0	100.0	-452	1.28	1.121
P-39	113	12.0	100.0	444	1.26	1.279
P-40	48	12.0	100.0	444	1.26	1.089
P-41	36	12.0	100.0	444	1.26	1.166
P-42	10	12.0	100.0	424	1.20	2.490
P-43	98	12.0	100.0	424	1.20	1.301

Scenario: 4Fire H8
Current Time Step: 0.000Hr
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
1Dom	5,251.50	20	72
1Fire	5,251.80	0	72
2Dom	5,248.40	20	73
2Fire	5,248.00	0	73
3Dom	5,251.10	20	72
3Fire	5,251.50	0	72
4Dom	5,255.80	13	67
4Fire	5,255.80	200	67
5Dom	5,254.60	13	71
5Fire	5,254.70	0	71
6Dom	5,255.60	36	70
6Fire	5,255.70	0	70
7Dom	5,256.40	2	70
7Fire	5,256.40	0	70
8Dom	5,257.50	2	69
8Fire	5,257.60	0	69
9Dom	5,258.70	36	67
9Fire	5,258.60	0	67
10Dom	5,261.40	20	67
10Fire	5,261.10	0	67
11Dom	5,258.00	20	69
11Fire	5,258.60	0	69
12Dom	5,258.80	2	69
12Fire	5,258.90	0	69
CHDOM	5,252.30	0	72
H1	5,248.80	0	73
H2	5,251.00	0	72
H3	5,254.90	0	70
H4	5,256.70	0	70
H5	5,258.10	0	69
H6	5,261.60	0	67
H7	5,257.60	0	67
H8	5,255.70	1,500	67
H9	5,251.30	0	72
Tee1	5,250.10	0	73
Tee2	5,250.20	0	73
Tee3	5,252.60	0	71
Tee4	5,261.40	0	68
Tee5	5,254.30	0	71
		TOTAL: 1904	

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Scenario: 4Fire H8
Current Time Step: 0.000Hr
FlexTable: Pipe Table

Label	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)
P-1	133	12.0	100.0	547	1.55	1.668
P-2	56	12.0	100.0	472	1.34	1.562
P-3	183	8.0	100.0	59	0.38	0.171
P-4	45	8.0	100.0	76	0.48	0.410
P-5	40	8.0	100.0	76	0.48	0.320
P-6	36	8.0	100.0	56	0.36	0.161
P-7	413	8.0	100.0	56	0.36	0.150
P-8	15	8.0	100.0	56	0.36	0.260
P-9	36	8.0	100.0	36	0.23	0.069
P-10	188	8.0	100.0	36	0.23	0.073
P-11	172	8.0	100.0	95	0.61	0.406
P-12	5	8.0	100.0	82	0.53	0.586
P-13	16	8.0	130.0	82	0.53	0.373
P-14	74	8.0	100.0	82	0.53	0.331
P-15	10	8.0	100.0	46	0.30	0.146
P-16	65	8.0	100.0	46	0.30	0.112
P-17	5	8.0	100.0	44	0.28	0.195
P-18	29	8.0	100.0	44	0.28	0.119
P-19	82	8.0	100.0	44	0.28	0.101
P-20	5	8.0	100.0	42	0.27	0.195
P-21	44	8.0	100.0	42	0.27	0.089
P-22	15	8.0	100.0	22	0.14	0.032
P-23	44	8.0	100.0	22	0.14	0.033
P-24	24	8.0	100.0	22	0.14	0.040
P-25	5	8.0	100.0	20	0.13	0.000
P-26	414	8.0	100.0	20	0.13	0.024
P-27	61	12.0	100.0	569	1.61	3.005
P-28	33	8.0	100.0	589	3.76	19.800
P-29	20	8.0	100.0	589	3.76	19.301
P-30	36	8.0	100.0	569	3.63	12.487
P-31	253	8.0	100.0	569	3.63	10.747
P-32	10	8.0	100.0	533	3.40	15.576
P-33	99	8.0	100.0	533	3.40	11.260
P-34	263	8.0	100.0	533	3.40	9.511
P-35	5	8.0	100.0	521	3.32	20.898
P-36	9	8.0	100.0	321	2.05	11.553
P-37	174	8.0	100.0	-1,179	7.53	46.178
P-38	108	12.0	100.0	-786	2.23	3.164
P-39	113	12.0	100.0	-393	1.12	1.015
P-40	48	12.0	100.0	-393	1.12	0.874
P-41	36	12.0	100.0	-393	1.12	0.919
P-42	10	12.0	100.0	-413	1.17	2.344
P-43	98	12.0	100.0	-413	1.17	1.241

Scenario: 5Fire H3
Current Time Step: 0.000Hr
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
1Dom	5,251.50	20	72
1Fire	5,251.80	0	72
2Dom	5,248.40	20	73
2Fire	5,248.00	0	73
3Dom	5,251.10	20	71
3Fire	5,251.50	0	70
4Dom	5,255.80	13	70
4Fire	5,255.80	0	70
5Dom	5,254.60	13	66
5Fire	5,254.70	200	65
6Dom	5,255.60	36	65
6Fire	5,255.70	0	65
7Dom	5,256.40	2	65
7Fire	5,256.40	0	65
8Dom	5,257.50	2	66
8Fire	5,257.60	0	66
9Dom	5,258.70	36	69
9Fire	5,258.60	0	69
10Dom	5,261.40	20	68
10Fire	5,261.10	0	68
11Dom	5,258.00	20	66
11Fire	5,258.60	0	66
12Dom	5,258.80	2	66
12Fire	5,258.90	0	66
CHDOM	5,252.30	0	72
H1	5,248.80	0	73
H2	5,251.00	0	71
H3	5,254.90	1,500	65
H4	5,256.70	0	65
H5	5,258.10	0	66
H6	5,261.60	0	67
H7	5,257.60	0	69
H8	5,255.70	0	70
H9	5,251.30	0	72
Tee1	5,250.10	0	72
Tee2	5,250.20	0	72
Tee3	5,252.60	0	70
Tee4	5,261.40	0	68
Tee5	5,254.30	0	71
		TOTAL: 1904	

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Scenario: 5Fire H3
Current Time Step: 0.000Hr
FlexTable: Pipe Table

Label	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)
P-1	133	12.0	100.0	865	2.45	3.944
P-2	56	12.0	100.0	483	1.37	1.631
P-3	183	8.0	100.0	791	5.05	21.762
P-4	45	8.0	100.0	381	2.43	9.085
P-5	40	8.0	100.0	381	2.43	6.691
P-6	36	8.0	100.0	362	2.31	5.310
P-7	413	8.0	100.0	362	2.31	4.812
P-8	15	8.0	100.0	362	2.31	8.594
P-9	36	8.0	100.0	342	2.18	4.789
P-10	188	8.0	100.0	342	2.18	4.858
P-11	172	8.0	100.0	1,133	7.23	40.925
P-12	5	8.0	100.0	1,120	7.15	92.188
P-13	16	8.0	130.0	920	5.88	39.521
P-14	74	8.0	100.0	-580	3.70	12.943
P-15	10	8.0	100.0	-616	3.93	20.508
P-16	65	8.0	100.0	-616	3.93	13.364
P-17	5	8.0	100.0	-618	3.94	29.102
P-18	29	8.0	100.0	-618	3.94	18.060
P-19	82	8.0	100.0	-618	3.94	14.339
P-20	5	8.0	100.0	-620	3.96	29.297
P-21	44	8.0	100.0	-620	3.96	14.189
P-22	15	8.0	100.0	-639	4.08	18.862
P-23	44	8.0	100.0	-639	4.08	19.387
P-24	24	8.0	100.0	-639	4.08	16.674
P-25	5	8.0	100.0	-642	4.10	31.348
P-26	414	8.0	100.0	-642	4.10	14.116
P-27	61	12.0	100.0	636	1.81	3.730
P-28	33	8.0	100.0	-5	0.03	0.000
P-29	20	8.0	100.0	-5	0.03	0.000
P-30	36	8.0	100.0	-25	0.16	0.041
P-31	253	8.0	100.0	-25	0.16	0.033
P-32	10	8.0	100.0	-61	0.39	0.244
P-33	99	8.0	100.0	-61	0.39	0.193
P-34	263	8.0	100.0	-61	0.39	0.169
P-35	5	8.0	100.0	-74	0.47	0.488
P-36	9	8.0	100.0	-74	0.47	0.657
P-37	174	8.0	100.0	-74	0.47	0.259
P-38	108	12.0	100.0	-401	1.14	0.896
P-39	113	12.0	100.0	328	0.93	0.722
P-40	48	12.0	100.0	328	0.93	0.617
P-41	36	12.0	100.0	328	0.93	0.659
P-42	10	12.0	100.0	308	0.87	1.367
P-43	98	12.0	100.0	308	0.87	0.705

Scenario: 6Fire H4 & H7
Current Time Step: 0.000Hr
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
1Dom	5,251.50	20	72
1Fire	5,251.80	0	72
2Dom	5,248.40	20	73
2Fire	5,248.00	0	73
3Dom	5,251.10	20	71
3Fire	5,251.50	0	71
4Dom	5,255.80	13	68
4Fire	5,255.80	0	69
5Dom	5,254.60	13	67
5Fire	5,254.70	0	67
6Dom	5,255.60	36	65
6Fire	5,255.70	300	65
7Dom	5,256.40	2	65
7Fire	5,256.40	0	65
8Dom	5,257.50	2	65
8Fire	5,257.60	0	65
9Dom	5,258.70	36	66
9Fire	5,258.60	0	66
10Dom	5,261.40	20	67
10Fire	5,261.10	0	67
11Dom	5,258.00	20	65
11Fire	5,258.60	0	65
12Dom	5,258.80	2	65
12Fire	5,258.90	0	65
CHDOM	5,252.30	0	71
H1	5,248.80	0	73
H2	5,251.00	0	71
H3	5,254.90	0	67
H4	5,256.70	1,250	64
H5	5,258.10	0	65
H6	5,261.60	0	67
H7	5,257.60	1,250	66
H8	5,255.70	0	69
H9	5,251.30	0	72
Tee1	5,250.10	0	72
Tee2	5,250.20	0	72
Tee3	5,252.60	0	70
Tee4	5,261.40	0	67
Tee5	5,254.30	0	71
		TOTAL: 3004	

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Scenario: 6Fire H4 & H7
Current Time Step: 0.000Hr
FlexTable: Pipe Table

Label	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)
P-1	133	12.0	100.0	873	2.48	4.018
P-2	56	12.0	100.0	558	1.58	2.152
P-3	183	8.0	100.0	638	4.07	14.548
P-4	45	8.0	100.0	315	2.01	6.312
P-5	40	8.0	100.0	315	2.01	4.670
P-6	36	8.0	100.0	295	1.89	3.634
P-7	413	8.0	100.0	295	1.89	3.306
P-8	15	8.0	100.0	295	1.89	5.827
P-9	36	8.0	100.0	276	1.76	3.211
P-10	188	8.0	100.0	276	1.76	3.246
P-11	172	8.0	100.0	914	5.83	27.395
P-12	5	8.0	100.0	901	5.75	60.352
P-13	16	8.0	130.0	901	5.75	37.937
P-14	74	8.0	100.0	901	5.75	29.636
P-15	10	8.0	100.0	865	5.52	39.258
P-16	65	8.0	100.0	565	3.61	11.395
P-17	5	8.0	100.0	563	3.59	24.219
P-18	29	8.0	100.0	563	3.59	15.146
P-19	82	8.0	100.0	-687	4.39	17.512
P-20	5	8.0	100.0	-689	4.40	35.938
P-21	44	8.0	100.0	-689	4.40	17.320
P-22	15	8.0	100.0	-709	4.53	22.927
P-23	44	8.0	100.0	-709	4.53	23.597
P-24	24	8.0	100.0	-709	4.53	20.257
P-25	5	8.0	100.0	-711	4.54	38.184
P-26	414	8.0	100.0	-711	4.54	17.097
P-27	61	12.0	100.0	1,356	3.85	16.064
P-28	33	8.0	100.0	644	4.11	23.518
P-29	20	8.0	100.0	644	4.11	22.925
P-30	36	8.0	100.0	625	3.99	14.847
P-31	253	8.0	100.0	625	3.99	12.766
P-32	10	8.0	100.0	589	3.76	18.799
P-33	99	8.0	100.0	589	3.76	13.551
P-34	263	8.0	100.0	-661	4.22	14.171
P-35	5	8.0	100.0	-674	4.30	34.473
P-36	9	8.0	100.0	-674	4.30	49.388
P-37	174	8.0	100.0	-674	4.30	16.220
P-38	108	12.0	100.0	-774	2.19	3.069
P-39	113	12.0	100.0	100	0.28	0.078
P-40	48	12.0	100.0	100	0.28	0.062
P-41	36	12.0	100.0	100	0.28	0.069
P-42	10	12.0	100.0	80	0.23	0.098
P-43	98	12.0	100.0	80	0.23	0.055

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Scenario: 7Fire H3
Current Time Step: 0.000Hr
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
1Dom	5,251.50	20	72
1Fire	5,251.80	0	72
2Dom	5,248.40	20	73
2Fire	5,248.00	0	73
3Dom	5,251.10	20	71
3Fire	5,251.50	0	71
4Dom	5,255.80	13	70
4Fire	5,255.80	0	70
5Dom	5,254.60	13	66
5Fire	5,254.70	0	66
6Dom	5,255.60	36	65
6Fire	5,255.70	0	65
7Dom	5,256.40	2	65
7Fire	5,256.40	200	65
8Dom	5,257.50	2	65
8Fire	5,257.60	0	65
9Dom	5,258.70	36	69
9Fire	5,258.60	0	69
10Dom	5,261.40	20	68
10Fire	5,261.10	0	68
11Dom	5,258.00	20	66
11Fire	5,258.60	0	66
12Dom	5,258.80	2	66
12Fire	5,258.90	0	66
CHDOM	5,252.30	0	72
H1	5,248.80	0	73
H2	5,251.00	0	71
H3	5,254.90	1,500	65
H4	5,256.70	0	65
H5	5,258.10	0	66
H6	5,261.60	0	67
H7	5,257.60	0	69
H8	5,255.70	0	70
H9	5,251.30	0	72
Tee1	5,250.10	0	72
Tee2	5,250.20	0	72
Tee3	5,252.60	0	70
Tee4	5,261.40	0	68
Tee5	5,254.30	0	71
		TOTAL: 1904	

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Scenario: 7Fire H3
Current Time Step: 0.000Hr
FlexTable: Pipe Table

Label	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)
P-1	133	12.0	100.0	851	2.41	3.823
P-2	56	12.0	100.0	477	1.35	1.596
P-3	183	8.0	100.0	774	4.94	20.860
P-4	45	8.0	100.0	373	2.38	8.729
P-5	40	8.0	100.0	373	2.38	6.433
P-6	36	8.0	100.0	354	2.26	5.095
P-7	413	8.0	100.0	354	2.26	4.617
P-8	15	8.0	100.0	354	2.26	8.236
P-9	36	8.0	100.0	334	2.13	4.583
P-10	188	8.0	100.0	334	2.13	4.648
P-11	172	8.0	100.0	1,107	7.07	39.211
P-12	5	8.0	100.0	1,095	6.99	88.184
P-13	16	8.0	130.0	1,095	6.99	55.323
P-14	74	8.0	100.0	-405	2.59	6.614
P-15	10	8.0	100.0	-441	2.82	10.840
P-16	65	8.0	100.0	-441	2.82	7.182
P-17	5	8.0	100.0	-443	2.83	15.332
P-18	29	8.0	100.0	-643	4.11	19.508
P-19	82	8.0	100.0	-643	4.11	15.476
P-20	5	8.0	100.0	-645	4.12	31.641
P-21	44	8.0	100.0	-645	4.12	15.318
P-22	15	8.0	100.0	-665	4.25	20.323
P-23	44	8.0	100.0	-665	4.25	20.898
P-24	24	8.0	100.0	-665	4.25	17.975
P-25	5	8.0	100.0	-667	4.26	33.691
P-26	414	8.0	100.0	-667	4.26	15.187
P-27	61	12.0	100.0	658	1.87	3.980
P-28	33	8.0	100.0	-9	0.06	0.015
P-29	20	8.0	100.0	-9	0.06	0.000
P-30	36	8.0	100.0	-29	0.19	0.055
P-31	253	8.0	100.0	-29	0.19	0.042
P-32	10	8.0	100.0	-65	0.42	0.293
P-33	99	8.0	100.0	-65	0.42	0.217
P-34	263	8.0	100.0	-65	0.42	0.191
P-35	5	8.0	100.0	-78	0.50	0.586
P-36	9	8.0	100.0	-78	0.50	0.712
P-37	174	8.0	100.0	-78	0.50	0.290
P-38	108	12.0	100.0	-394	1.12	0.864
P-39	113	12.0	100.0	316	0.90	0.674
P-40	48	12.0	100.0	316	0.90	0.586
P-41	36	12.0	100.0	316	0.90	0.604
P-42	10	12.0	100.0	296	0.84	1.270
P-43	98	12.0	100.0	296	0.84	0.655

Scenario: 7Fire H4
Current Time Step: 0.000Hr
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
1Dom	5,251.50	20	72
1Fire	5,251.80	0	72
2Dom	5,248.40	20	73
2Fire	5,248.00	0	73
3Dom	5,251.10	20	71
3Fire	5,251.50	0	71
4Dom	5,255.80	13	70
4Fire	5,255.80	0	70
5Dom	5,254.60	13	67
5Fire	5,254.70	0	67
6Dom	5,255.60	36	65
6Fire	5,255.70	0	65
7Dom	5,256.40	2	64
7Fire	5,256.40	200	64
8Dom	5,257.50	2	64
8Fire	5,257.60	0	64
9Dom	5,258.70	36	69
9Fire	5,258.60	0	69
10Dom	5,261.40	20	68
10Fire	5,261.10	0	68
11Dom	5,258.00	20	64
11Fire	5,258.60	0	64
12Dom	5,258.80	2	65
12Fire	5,258.90	0	65
CHDOM	5,252.30	0	72
H1	5,248.80	0	73
H2	5,251.00	0	71
H3	5,254.90	0	66
H4	5,256.70	1,500	63
H5	5,258.10	0	64
H6	5,261.60	0	67
H7	5,257.60	0	69
H8	5,255.70	0	70
H9	5,251.30	0	72
Tee1	5,250.10	0	73
Tee2	5,250.20	0	72
Tee3	5,252.60	0	70
Tee4	5,261.40	0	68
Tee5	5,254.30	0	71

TOTAL: 1904

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Scenario: 7Fire H4
Current Time Step: 0.000Hr
FlexTable: Pipe Table

Label	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)
P-1	133	12.0	100.0	774	2.20	3.204
P-2	56	12.0	100.0	445	1.26	1.397
P-3	183	8.0	100.0	675	4.31	16.171
P-4	45	8.0	100.0	329	2.10	6.852
P-5	40	8.0	100.0	329	2.10	5.077
P-6	36	8.0	100.0	310	1.98	3.969
P-7	413	8.0	100.0	310	1.98	3.603
P-8	15	8.0	100.0	310	1.98	6.380
P-9	36	8.0	100.0	290	1.85	3.513
P-10	188	8.0	100.0	290	1.85	3.562
P-11	172	8.0	100.0	965	6.16	30.327
P-12	5	8.0	100.0	952	6.08	67.188
P-13	16	8.0	130.0	952	6.08	42.222
P-14	74	8.0	100.0	952	6.08	32.877
P-15	10	8.0	100.0	916	5.85	43.848
P-16	65	8.0	100.0	916	5.85	28.092
P-17	5	8.0	100.0	914	5.83	62.109
P-18	29	8.0	100.0	714	4.56	23.784
P-19	82	8.0	100.0	-786	5.02	22.530
P-20	5	8.0	100.0	-788	5.03	46.582
P-21	44	8.0	100.0	-788	5.03	22.251
P-22	15	8.0	100.0	-808	5.16	29.373
P-23	44	8.0	100.0	-808	5.16	30.230
P-24	24	8.0	100.0	-808	5.16	25.922
P-25	5	8.0	100.0	-810	5.17	49.121
P-26	414	8.0	100.0	-810	5.17	21.787
P-27	61	12.0	100.0	779	2.21	5.510
P-28	33	8.0	100.0	-31	0.20	0.075
P-29	20	8.0	100.0	-31	0.20	0.049
P-30	36	8.0	100.0	-50	0.32	0.137
P-31	253	8.0	100.0	-50	0.32	0.120
P-32	10	8.0	100.0	-86	0.55	0.488
P-33	99	8.0	100.0	-86	0.55	0.370
P-34	263	8.0	100.0	-86	0.55	0.327
P-35	5	8.0	100.0	-99	0.63	0.781
P-36	9	8.0	100.0	-99	0.63	1.205
P-37	174	8.0	100.0	-99	0.63	0.453
P-38	108	12.0	100.0	-349	0.99	0.689
P-39	113	12.0	100.0	250	0.71	0.432
P-40	48	12.0	100.0	250	0.71	0.380
P-41	36	12.0	100.0	250	0.71	0.384
P-42	10	12.0	100.0	230	0.65	0.781
P-43	98	12.0	100.0	230	0.65	0.407

Scenario: 8Fire H4
Current Time Step: 0.000Hr
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
1Dom	5,251.50	20	72
1Fire	5,251.80	0	72
2Dom	5,248.40	20	73
2Fire	5,248.00	0	73
3Dom	5,251.10	20	71
3Fire	5,251.50	0	71
4Dom	5,255.80	13	70
4Fire	5,255.80	0	70
5Dom	5,254.60	13	67
5Fire	5,254.70	0	67
6Dom	5,255.60	36	65
6Fire	5,255.70	0	65
7Dom	5,256.40	2	64
7Fire	5,256.40	0	64
8Dom	5,257.50	2	63
8Fire	5,257.60	200	63
9Dom	5,258.70	36	69
9Fire	5,258.60	0	69
10Dom	5,261.40	20	68
10Fire	5,261.10	0	68
11Dom	5,258.00	20	64
11Fire	5,258.60	0	64
12Dom	5,258.80	2	64
12Fire	5,258.90	0	65
CHDOM	5,252.30	0	72
H1	5,248.80	0	73
H2	5,251.00	0	71
H3	5,254.90	0	67
H4	5,256.70	1,500	63
H5	5,258.10	0	64
H6	5,261.60	0	67
H7	5,257.60	0	69
H8	5,255.70	0	70
H9	5,251.30	0	72
Tee1	5,250.10	0	73
Tee2	5,250.20	0	72
Tee3	5,252.60	0	70
Tee4	5,261.40	0	68
Tee5	5,254.30	0	71
		TOTAL: 1904	

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Scenario: 8Fire H4
Current Time Step: 0.000Hr
FlexTable: Pipe Table

Label	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)
P-1	133	12.0	100.0	764	2.17	3.123
P-2	56	12.0	100.0	441	1.25	1.371
P-3	183	8.0	100.0	661	4.22	15.562
P-4	45	8.0	100.0	323	2.06	6.614
P-5	40	8.0	100.0	323	2.06	4.892
P-6	36	8.0	100.0	303	1.94	3.821
P-7	413	8.0	100.0	303	1.94	3.471
P-8	15	8.0	100.0	303	1.94	6.120
P-9	36	8.0	100.0	284	1.81	3.376
P-10	188	8.0	100.0	284	1.81	3.425
P-11	172	8.0	100.0	945	6.03	29.163
P-12	5	8.0	100.0	932	5.95	64.551
P-13	16	8.0	130.0	932	5.95	40.514
P-14	74	8.0	100.0	932	5.95	31.598
P-15	10	8.0	100.0	896	5.72	42.041
P-16	65	8.0	100.0	896	5.72	26.959
P-17	5	8.0	100.0	894	5.71	59.473
P-18	29	8.0	100.0	894	5.71	36.494
P-19	82	8.0	100.0	-606	3.87	13.833
P-20	5	8.0	100.0	-608	3.88	28.223
P-21	44	8.0	100.0	-808	5.16	23.313
P-22	15	8.0	100.0	-828	5.28	30.771
P-23	44	8.0	100.0	-828	5.28	31.674
P-24	24	8.0	100.0	-828	5.28	27.143
P-25	5	8.0	100.0	-830	5.30	51.465
P-26	414	8.0	100.0	-830	5.30	22.798
P-27	61	12.0	100.0	796	2.26	5.752
P-28	33	8.0	100.0	-34	0.21	0.090
P-29	20	8.0	100.0	-34	0.21	0.073
P-30	36	8.0	100.0	-53	0.34	0.151
P-31	253	8.0	100.0	-53	0.34	0.133
P-32	10	8.0	100.0	-89	0.57	0.488
P-33	99	8.0	100.0	-89	0.57	0.395
P-34	263	8.0	100.0	-89	0.57	0.345
P-35	5	8.0	100.0	-102	0.65	0.879
P-36	9	8.0	100.0	-102	0.65	1.259
P-37	174	8.0	100.0	-102	0.65	0.475
P-38	108	12.0	100.0	-342	0.97	0.666
P-39	113	12.0	100.0	240	0.68	0.402
P-40	48	12.0	100.0	240	0.68	0.339
P-41	36	12.0	100.0	240	0.68	0.370
P-42	10	12.0	100.0	221	0.63	0.684
P-43	98	12.0	100.0	221	0.63	0.377

Scenario: 9Fire H4 & H7
Current Time Step: 0.000Hr
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
1Dom	5,251.50	20	72
1Fire	5,251.80	0	72
2Dom	5,248.40	20	73
2Fire	5,248.00	0	73
3Dom	5,251.10	20	71
3Fire	5,251.50	0	71
4Dom	5,255.80	13	68
4Fire	5,255.80	0	68
5Dom	5,254.60	13	68
5Fire	5,254.70	0	68
6Dom	5,255.60	36	67
6Fire	5,255.70	0	67
7Dom	5,256.40	2	66
7Fire	5,256.40	0	66
8Dom	5,257.50	2	66
8Fire	5,257.60	0	66
9Dom	5,258.70	36	65
9Fire	5,258.60	300	65
10Dom	5,261.40	20	66
10Fire	5,261.10	0	66
11Dom	5,258.00	20	66
11Fire	5,258.60	0	66
12Dom	5,258.80	2	66
12Fire	5,258.90	0	66
CHDOM	5,252.30	0	71
H1	5,248.80	0	73
H2	5,251.00	0	72
H3	5,254.90	0	68
H4	5,256.70	1,250	66
H5	5,258.10	0	66
H6	5,261.60	0	67
H7	5,257.60	1,250	65
H8	5,255.70	0	68
H9	5,251.30	0	72
Tee1	5,250.10	0	72
Tee2	5,250.20	0	72
Tee3	5,252.60	0	71
Tee4	5,261.40	0	67
Tee5	5,254.30	0	71
		TOTAL: 3004	

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Scenario: 9Fire H4 & H7
Current Time Step: 0.000Hr
FlexTable: Pipe Table

Label	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)
P-1	133	12.0	100.0	831	2.36	3.664
P-2	56	12.0	100.0	572	1.62	2.256
P-3	183	8.0	100.0	510	3.26	9.579
P-4	45	8.0	100.0	260	1.66	4.348
P-5	40	8.0	100.0	260	1.66	3.253
P-6	36	8.0	100.0	240	1.53	2.454
P-7	413	8.0	100.0	240	1.53	2.247
P-8	15	8.0	100.0	240	1.53	3.906
P-9	36	8.0	100.0	220	1.41	2.099
P-10	188	8.0	100.0	220	1.41	2.135
P-11	172	8.0	100.0	730	4.66	18.046
P-12	5	8.0	100.0	718	4.58	38.867
P-13	16	8.0	130.0	718	4.58	24.402
P-14	74	8.0	100.0	718	4.58	19.338
P-15	10	8.0	100.0	682	4.35	24.902
P-16	65	8.0	100.0	682	4.35	16.175
P-17	5	8.0	100.0	680	4.34	34.961
P-18	29	8.0	100.0	680	4.34	21.671
P-19	82	8.0	100.0	-570	3.64	12.357
P-20	5	8.0	100.0	-572	3.65	25.000
P-21	44	8.0	100.0	-572	3.65	12.232
P-22	15	8.0	100.0	-592	3.78	16.322
P-23	44	8.0	100.0	-592	3.78	16.754
P-24	24	8.0	100.0	-592	3.78	14.432
P-25	5	8.0	100.0	-594	3.79	26.953
P-26	414	8.0	100.0	-594	3.79	12.241
P-27	61	12.0	100.0	1,415	4.01	17.458
P-28	33	8.0	100.0	821	5.24	37.420
P-29	20	8.0	100.0	821	5.24	36.421
P-30	36	8.0	100.0	801	5.11	23.684
P-31	253	8.0	100.0	801	5.11	20.253
P-32	10	8.0	100.0	765	4.88	31.055
P-33	99	8.0	100.0	465	2.97	8.707
P-34	263	8.0	100.0	-785	5.01	19.479
P-35	5	8.0	100.0	-798	5.09	47.656
P-36	9	8.0	100.0	-798	5.09	68.716
P-37	174	8.0	100.0	-798	5.09	22.221
P-38	108	12.0	100.0	-756	2.14	2.939
P-39	113	12.0	100.0	-42	0.12	0.013
P-40	48	12.0	100.0	-42	0.12	0.021
P-41	36	12.0	100.0	-42	0.12	0.014
P-42	10	12.0	100.0	-62	0.17	0.049
P-43	98	12.0	100.0	-62	0.17	0.030

Scenario: 10Fire H6
Current Time Step: 0.000Hr
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
1Dom	5,251.50	20	72
1Fire	5,251.80	0	72
2Dom	5,248.40	20	73
2Fire	5,248.00	0	74
3Dom	5,251.10	20	72
3Fire	5,251.50	0	72
4Dom	5,255.80	13	70
4Fire	5,255.80	0	70
5Dom	5,254.60	13	70
5Fire	5,254.70	0	70
6Dom	5,255.60	36	70
6Fire	5,255.70	0	70
7Dom	5,256.40	2	70
7Fire	5,256.40	0	70
8Dom	5,257.50	2	69
8Fire	5,257.60	0	69
9Dom	5,258.70	36	67
9Fire	5,258.60	0	68
10Dom	5,261.40	20	66
10Fire	5,261.10	200	66
11Dom	5,258.00	20	69
11Fire	5,258.60	0	69
12Dom	5,258.80	2	69
12Fire	5,258.90	0	68
CHDOM	5,252.30	0	72
H1	5,248.80	0	73
H2	5,251.00	0	72
H3	5,254.90	0	70
H4	5,256.70	0	69
H5	5,258.10	0	69
H6	5,261.60	1,500	66
H7	5,257.60	0	68
H8	5,255.70	0	70
H9	5,251.30	0	72
Tee1	5,250.10	0	73
Tee2	5,250.20	0	73
Tee3	5,252.60	0	71
Tee4	5,261.40	0	67
Tee5	5,254.30	0	71
		TOTAL: 1904	

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Scenario: 10Fire H6
Current Time Step: 0.000Hr
FlexTable: Pipe Table

Label	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)
P-1	133	12.0	100.0	455	1.29	1.178
P-2	56	12.0	100.0	364	1.03	0.954
P-3	183	8.0	100.0	129	0.83	0.739
P-4	45	8.0	100.0	91	0.58	0.593
P-5	40	8.0	100.0	91	0.58	0.444
P-6	36	8.0	100.0	72	0.46	0.255
P-7	413	8.0	100.0	72	0.46	0.236
P-8	15	8.0	100.0	72	0.46	0.391
P-9	36	8.0	100.0	52	0.33	0.137
P-10	188	8.0	100.0	52	0.33	0.142
P-11	172	8.0	100.0	181	1.16	1.343
P-12	5	8.0	100.0	168	1.08	2.441
P-13	16	8.0	130.0	168	1.08	1.459
P-14	74	8.0	100.0	168	1.08	1.279
P-15	10	8.0	100.0	132	0.85	1.074
P-16	65	8.0	100.0	132	0.85	0.761
P-17	5	8.0	100.0	130	0.83	1.465
P-18	29	8.0	100.0	130	0.83	0.937
P-19	82	8.0	100.0	130	0.83	0.780
P-20	5	8.0	100.0	128	0.82	1.367
P-21	44	8.0	100.0	128	0.82	0.749
P-22	15	8.0	100.0	108	0.69	0.667
P-23	44	8.0	100.0	108	0.69	0.667
P-24	24	8.0	100.0	108	0.69	0.580
P-25	5	8.0	100.0	106	0.68	0.977
P-26	414	8.0	100.0	106	0.68	0.497
P-27	61	12.0	100.0	1,278	3.62	14.324
P-28	33	8.0	100.0	1,384	8.83	101.987
P-29	20	8.0	100.0	-116	0.74	0.857
P-30	36	8.0	100.0	-136	0.87	0.851
P-31	253	8.0	100.0	-336	2.14	4.035
P-32	10	8.0	100.0	-372	2.37	7.813
P-33	99	8.0	100.0	-372	2.37	5.714
P-34	263	8.0	100.0	-372	2.37	4.870
P-35	5	8.0	100.0	-384	2.45	11.621
P-36	9	8.0	100.0	-384	2.45	16.481
P-37	174	8.0	100.0	-384	2.45	5.680
P-38	108	12.0	100.0	-170	0.48	0.180
P-39	113	12.0	100.0	-215	0.61	0.324
P-40	48	12.0	100.0	-215	0.61	0.277
P-41	36	12.0	100.0	-215	0.61	0.302
P-42	10	12.0	100.0	-234	0.66	0.781
P-43	98	12.0	100.0	-234	0.66	0.422

Scenario: 11Fire H5
Current Time Step: 0.000Hr
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
1Dom	5,251.50	20	72
1Fire	5,251.80	0	72
2Dom	5,248.40	20	73
2Fire	5,248.00	0	73
3Dom	5,251.10	20	71
3Fire	5,251.50	0	71
4Dom	5,255.80	13	70
4Fire	5,255.80	0	70
5Dom	5,254.60	13	68
5Fire	5,254.70	0	68
6Dom	5,255.60	36	66
6Fire	5,255.70	0	66
7Dom	5,256.40	2	65
7Fire	5,256.40	0	65
8Dom	5,257.50	2	64
8Fire	5,257.60	0	63
9Dom	5,258.70	36	69
9Fire	5,258.60	0	69
10Dom	5,261.40	20	67
10Fire	5,261.10	0	68
11Dom	5,258.00	20	63
11Fire	5,258.60	200	63
12Dom	5,258.80	2	63
12Fire	5,258.90	0	63
CHDOM	5,252.30	0	72
H1	5,248.80	0	73
H2	5,251.00	0	71
H3	5,254.90	0	67
H4	5,256.70	0	65
H5	5,258.10	1,500	63
H6	5,261.60	0	67
H7	5,257.60	0	69
H8	5,255.70	0	70
H9	5,251.30	0	72
Tee1	5,250.10	0	73
Tee2	5,250.20	0	72
Tee3	5,252.60	0	70
Tee4	5,261.40	0	67
Tee5	5,254.30	0	71
		TOTAL: 1904	

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Scenario: 11Fire H5
Current Time Step: 0.000Hr
FlexTable: Pipe Table

Label	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)
P-1	133	12.0	100.0	704	2.00	2.681
P-2	56	12.0	100.0	418	1.18	1.241
P-3	183	8.0	100.0	580	3.70	12.162
P-4	45	8.0	100.0	287	1.83	5.255
P-5	40	8.0	100.0	287	1.83	3.906
P-6	36	8.0	100.0	267	1.70	3.003
P-7	413	8.0	100.0	267	1.70	2.734
P-8	15	8.0	100.0	267	1.70	4.818
P-9	36	8.0	100.0	247	1.58	2.607
P-10	188	8.0	100.0	247	1.58	2.643
P-11	172	8.0	100.0	827	5.28	22.738
P-12	5	8.0	100.0	814	5.20	49.609
P-13	16	8.0	130.0	814	5.20	31.138
P-14	74	8.0	100.0	814	5.20	24.500
P-15	10	8.0	100.0	778	4.97	32.031
P-16	65	8.0	100.0	778	4.97	20.709
P-17	5	8.0	100.0	776	4.95	45.215
P-18	29	8.0	100.0	776	4.95	27.856
P-19	82	8.0	100.0	776	4.95	22.000
P-20	5	8.0	100.0	774	4.94	45.020
P-21	44	8.0	100.0	774	4.94	21.513
P-22	15	8.0	100.0	754	4.81	25.785
P-23	44	8.0	100.0	-746	4.76	25.986
P-24	24	8.0	100.0	-946	6.04	34.890
P-25	5	8.0	100.0	-948	6.05	66.699
P-26	414	8.0	100.0	-948	6.05	29.217
P-27	61	12.0	100.0	899	2.55	7.259
P-28	33	8.0	100.0	-49	0.32	0.179
P-29	20	8.0	100.0	-49	0.32	0.171
P-30	36	8.0	100.0	-69	0.44	0.233
P-31	253	8.0	100.0	-69	0.44	0.216
P-32	10	8.0	100.0	-105	0.67	0.684
P-33	99	8.0	100.0	-105	0.67	0.533
P-34	263	8.0	100.0	-105	0.67	0.468
P-35	5	8.0	100.0	-118	0.75	1.172
P-36	9	8.0	100.0	-118	0.75	1.643
P-37	174	8.0	100.0	-118	0.75	0.625
P-38	108	12.0	100.0	-300	0.85	0.518
P-39	113	12.0	100.0	182	0.52	0.238
P-40	48	12.0	100.0	182	0.52	0.206
P-41	36	12.0	100.0	182	0.52	0.220
P-42	10	12.0	100.0	162	0.46	0.391
P-43	98	12.0	100.0	162	0.46	0.209

Scenario: 12Fire H5
Current Time Step: 0.000Hr
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
1Dom	5,251.50	20	72
1Fire	5,251.80	0	72
2Dom	5,248.40	20	73
2Fire	5,248.00	0	73
3Dom	5,251.10	20	71
3Fire	5,251.50	0	71
4Dom	5,255.80	13	70
4Fire	5,255.80	0	70
5Dom	5,254.60	13	68
5Fire	5,254.70	0	68
6Dom	5,255.60	36	66
6Fire	5,255.70	0	66
7Dom	5,256.40	2	65
7Fire	5,256.40	0	65
8Dom	5,257.50	2	64
8Fire	5,257.60	0	64
9Dom	5,258.70	36	69
9Fire	5,258.60	0	69
10Dom	5,261.40	20	67
10Fire	5,261.10	0	68
11Dom	5,258.00	20	63
11Fire	5,258.60	0	63
12Dom	5,258.80	2	63
12Fire	5,258.90	200	63
CHDOM	5,252.30	0	72
H1	5,248.80	0	73
H2	5,251.00	0	71
H3	5,254.90	0	67
H4	5,256.70	0	65
H5	5,258.10	1,500	63
H6	5,261.60	0	67
H7	5,257.60	0	69
H8	5,255.70	0	70
H9	5,251.30	0	72
Tee1	5,250.10	0	73
Tee2	5,250.20	0	72
Tee3	5,252.60	0	70
Tee4	5,261.40	0	67
Tee5	5,254.30	0	71
		TOTAL: 1904	

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Scenario: 12Fire H5
Current Time Step: 0.000Hr
FlexTable: Pipe Table

Label	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)
P-1	133	12.0	100.0	701	1.99	2.655
P-2	56	12.0	100.0	416	1.18	1.241
P-3	183	8.0	100.0	575	3.67	11.981
P-4	45	8.0	100.0	285	1.82	5.190
P-5	40	8.0	100.0	285	1.82	3.845
P-6	36	8.0	100.0	265	1.69	2.963
P-7	413	8.0	100.0	265	1.69	2.696
P-8	15	8.0	100.0	265	1.69	4.720
P-9	36	8.0	100.0	245	1.56	2.566
P-10	188	8.0	100.0	245	1.56	2.601
P-11	172	8.0	100.0	820	5.23	22.397
P-12	5	8.0	100.0	807	5.15	48.828
P-13	16	8.0	130.0	807	5.15	30.642
P-14	74	8.0	100.0	807	5.15	24.122
P-15	10	8.0	100.0	771	4.92	31.543
P-16	65	8.0	100.0	771	4.92	20.374
P-17	5	8.0	100.0	769	4.91	44.434
P-18	29	8.0	100.0	769	4.91	27.413
P-19	82	8.0	100.0	769	4.91	21.649
P-20	5	8.0	100.0	767	4.90	44.238
P-21	44	8.0	100.0	767	4.90	21.155
P-22	15	8.0	100.0	747	4.77	25.372
P-23	44	8.0	100.0	-753	4.80	26.430
P-24	24	8.0	100.0	-753	4.80	22.679
P-25	5	8.0	100.0	-755	4.82	42.773
P-26	414	8.0	100.0	-955	6.09	29.603
P-27	61	12.0	100.0	904	2.57	7.347
P-28	33	8.0	100.0	-50	0.32	0.179
P-29	20	8.0	100.0	-50	0.32	0.171
P-30	36	8.0	100.0	-70	0.45	0.247
P-31	253	8.0	100.0	-70	0.45	0.220
P-32	10	8.0	100.0	-106	0.68	0.732
P-33	99	8.0	100.0	-106	0.68	0.543
P-34	263	8.0	100.0	-106	0.68	0.473
P-35	5	8.0	100.0	-119	0.76	1.172
P-36	9	8.0	100.0	-119	0.76	1.697
P-37	174	8.0	100.0	-119	0.76	0.633
P-38	108	12.0	100.0	-297	0.84	0.509
P-39	113	12.0	100.0	178	0.51	0.229
P-40	48	12.0	100.0	178	0.51	0.195
P-41	36	12.0	100.0	178	0.51	0.220
P-42	10	12.0	100.0	159	0.45	0.342
P-43	98	12.0	100.0	159	0.45	0.204

Scenario: CH H8 & H9
Current Time Step: 0.000Hr
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
1Dom	5,251.50	20	72
1Fire	5,251.80	0	71
2Dom	5,248.40	20	73
2Fire	5,248.00	0	73
3Dom	5,251.10	20	72
3Fire	5,251.50	0	72
4Dom	5,255.80	13	68
4Fire	5,255.80	0	68
5Dom	5,254.60	13	70
5Fire	5,254.70	0	70
6Dom	5,255.60	36	70
6Fire	5,255.70	0	70
7Dom	5,256.40	2	70
7Fire	5,256.40	0	70
8Dom	5,257.50	2	69
8Fire	5,257.60	0	69
9Dom	5,258.70	36	68
9Fire	5,258.60	0	68
10Dom	5,261.40	20	67
10Fire	5,261.10	0	67
11Dom	5,258.00	20	69
11Fire	5,258.60	0	69
12Dom	5,258.80	2	69
12Fire	5,258.90	0	69
CHDOM	5,252.30	0	71
H1	5,248.80	0	73
H2	5,251.00	0	72
H3	5,254.90	0	70
H4	5,256.70	0	70
H5	5,258.10	0	69
H6	5,261.60	0	67
H7	5,257.60	0	68
H8	5,255.70	1,250	68
H9	5,251.30	1,250	72
Tee1	5,250.10	0	72
Tee2	5,250.20	0	72
Tee3	5,252.60	0	71
Tee4	5,261.40	0	68
Tee5	5,254.30	0	70
		TOTAL: 2704	

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Scenario: CH H8 & H9
Current Time Step: 0.000Hr
FlexTable: Pipe Table

Label	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)
P-1	133	12.0	100.0	899	2.55	4.246
P-2	56	12.0	100.0	806	2.29	4.338
P-3	183	8.0	100.0	-74	0.47	0.259
P-4	45	8.0	100.0	93	0.59	0.604
P-5	40	8.0	100.0	93	0.59	0.468
P-6	36	8.0	100.0	73	0.47	0.268
P-7	413	8.0	100.0	73	0.47	0.246
P-8	15	8.0	100.0	73	0.47	0.391
P-9	36	8.0	100.0	53	0.34	0.151
P-10	188	8.0	100.0	53	0.34	0.150
P-11	172	8.0	100.0	-20	0.13	0.023
P-12	5	8.0	100.0	-33	0.21	0.098
P-13	16	8.0	130.0	-33	0.21	0.062
P-14	74	8.0	100.0	-33	0.21	0.066
P-15	10	8.0	100.0	-69	0.44	0.293
P-16	65	8.0	100.0	-69	0.44	0.231
P-17	5	8.0	100.0	-71	0.45	0.391
P-18	29	8.0	100.0	-71	0.45	0.307
P-19	82	8.0	100.0	-71	0.45	0.250
P-20	5	8.0	100.0	-73	0.47	0.488
P-21	44	8.0	100.0	-73	0.47	0.268
P-22	15	8.0	100.0	-93	0.59	0.476
P-23	44	8.0	100.0	-93	0.59	0.500
P-24	24	8.0	100.0	-93	0.59	0.440
P-25	5	8.0	100.0	-95	0.61	0.781
P-26	414	8.0	100.0	-95	0.61	0.405
P-27	61	12.0	100.0	555	1.58	2.868
P-28	33	8.0	100.0	460	2.94	12.334
P-29	20	8.0	100.0	460	2.94	12.026
P-30	36	8.0	100.0	440	2.81	7.698
P-31	253	8.0	100.0	440	2.81	6.669
P-32	10	8.0	100.0	404	2.58	9.180
P-33	99	8.0	100.0	404	2.58	6.692
P-34	263	8.0	100.0	404	2.58	5.689
P-35	5	8.0	100.0	392	2.50	12.109
P-36	9	8.0	100.0	392	2.50	17.083
P-37	174	8.0	100.0	-858	5.48	25.493
P-38	108	12.0	100.0	-1,248	3.54	7.534
P-39	113	12.0	100.0	389	1.10	0.998
P-40	48	12.0	100.0	389	1.10	0.863
P-41	36	12.0	100.0	389	1.10	0.906
P-42	10	12.0	100.0	370	1.05	1.904
P-43	98	12.0	100.0	-880	2.50	5.244

Appendix D – Wastewater Flow Calculations and Modeling

HARRIS KOCHER SMITH
DENVER • DALLAS/FORT WORTH

Outlook Nine Mile
Jan. 27, 2020

Sanitary Sewer Peak Flow									
	Units	Capita/Unit	Gal/Capita/Day	Gal/Unit/Day	Average Day (Gal/Day)	Average Day (cfs)	Peaking Factor	Max Flow Rate (Gal/Day)	Max Flow Rate (cfs)
Multi-Family Area	287	2.79	90	251.1	72,066	0.11	5	360,329	0.56

Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Wednesday, Jan 15 2020

Maximum Sanitary Sewer Pipe Capacity

Circular

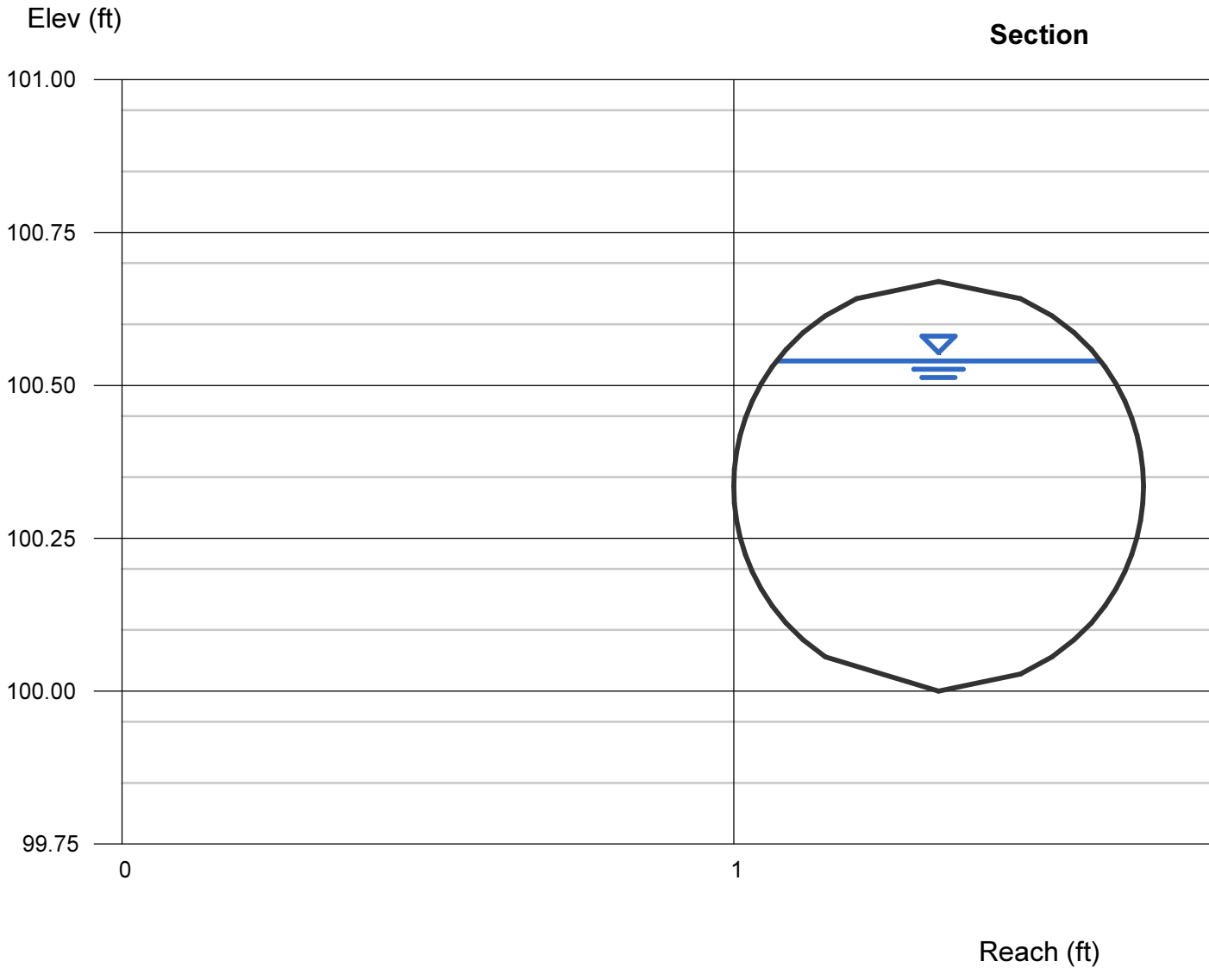
Diameter (ft)	= 0.67
Invert Elev (ft)	= 100.00
Slope (%)	= 0.50
N-Value	= 0.012

Calculations

Compute by:	Known Depth
Known Depth (ft)	= 0.54

Highlighted

Depth (ft)	= 0.54
Q (cfs)	= 0.923
Area (sqft)	= 0.30
Velocity (ft/s)	= 3.03
Wetted Perim (ft)	= 1.49
Crit Depth, Yc (ft)	= 0.46
Top Width (ft)	= 0.53
EGL (ft)	= 0.68



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Wednesday, Jan 15 2020

Minimum Sanitary Sewer Pipe Velocity

Circular

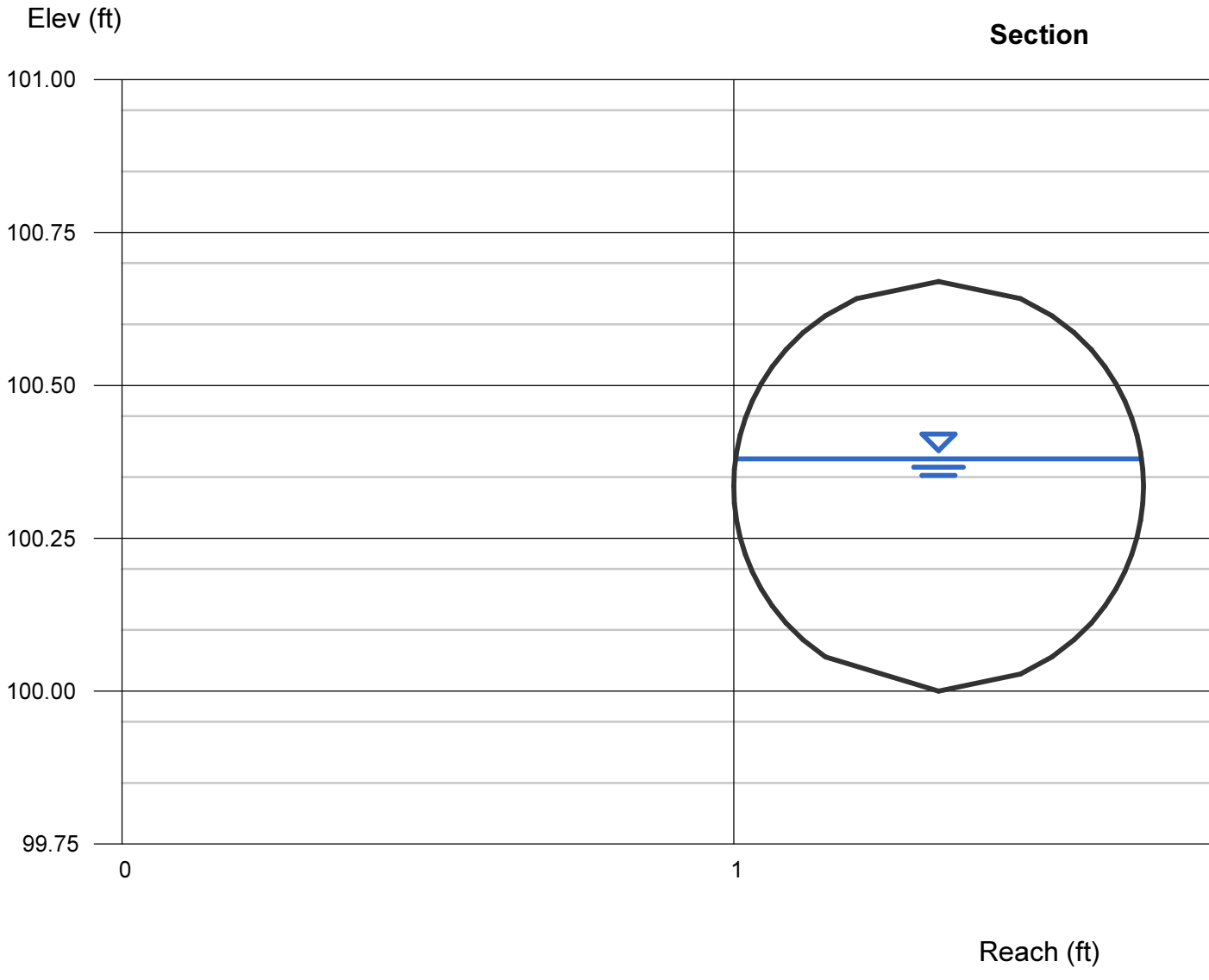
Diameter (ft)	= 0.67
Invert Elev (ft)	= 100.00
Slope (%)	= 0.50
N-Value	= 0.012

Calculations

Compute by:	Known Q
Known Q (cfs)	= 0.56

Highlighted

Depth (ft)	= 0.38
Q (cfs)	= 0.560
Area (sqft)	= 0.21
Velocity (ft/s)	= 2.70
Wetted Perim (ft)	= 1.15
Crit Depth, Yc (ft)	= 0.35
Top Width (ft)	= 0.66
EGL (ft)	= 0.49



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Wednesday, Jan 15 2020

Maximum Sanitary Sewer Pipe Velocity

Circular

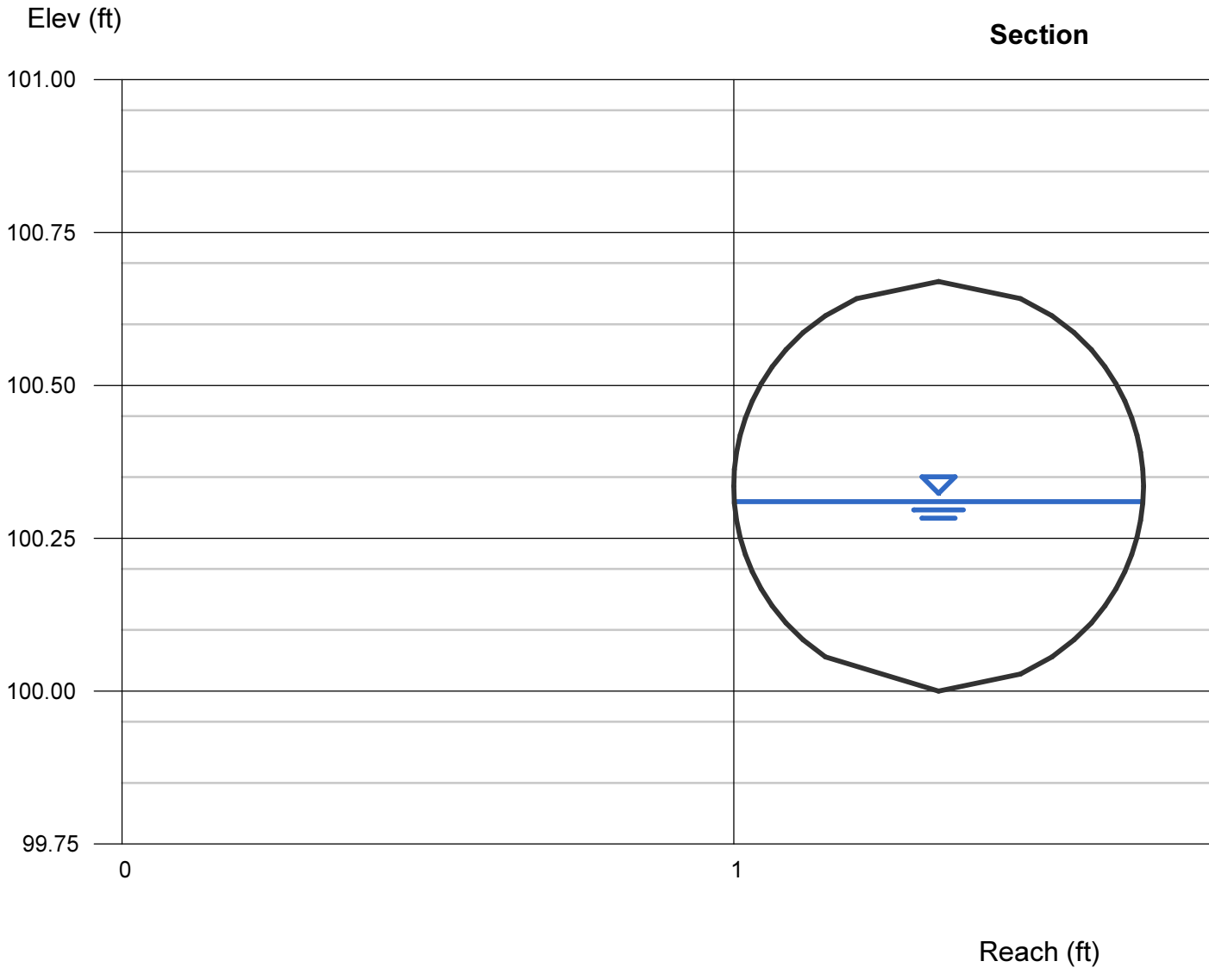
Diameter (ft)	= 0.67
Invert Elev (ft)	= 100.00
Slope (%)	= 1.00
N-Value	= 0.012

Calculations

Compute by:	Known Q
Known Q (cfs)	= 0.56

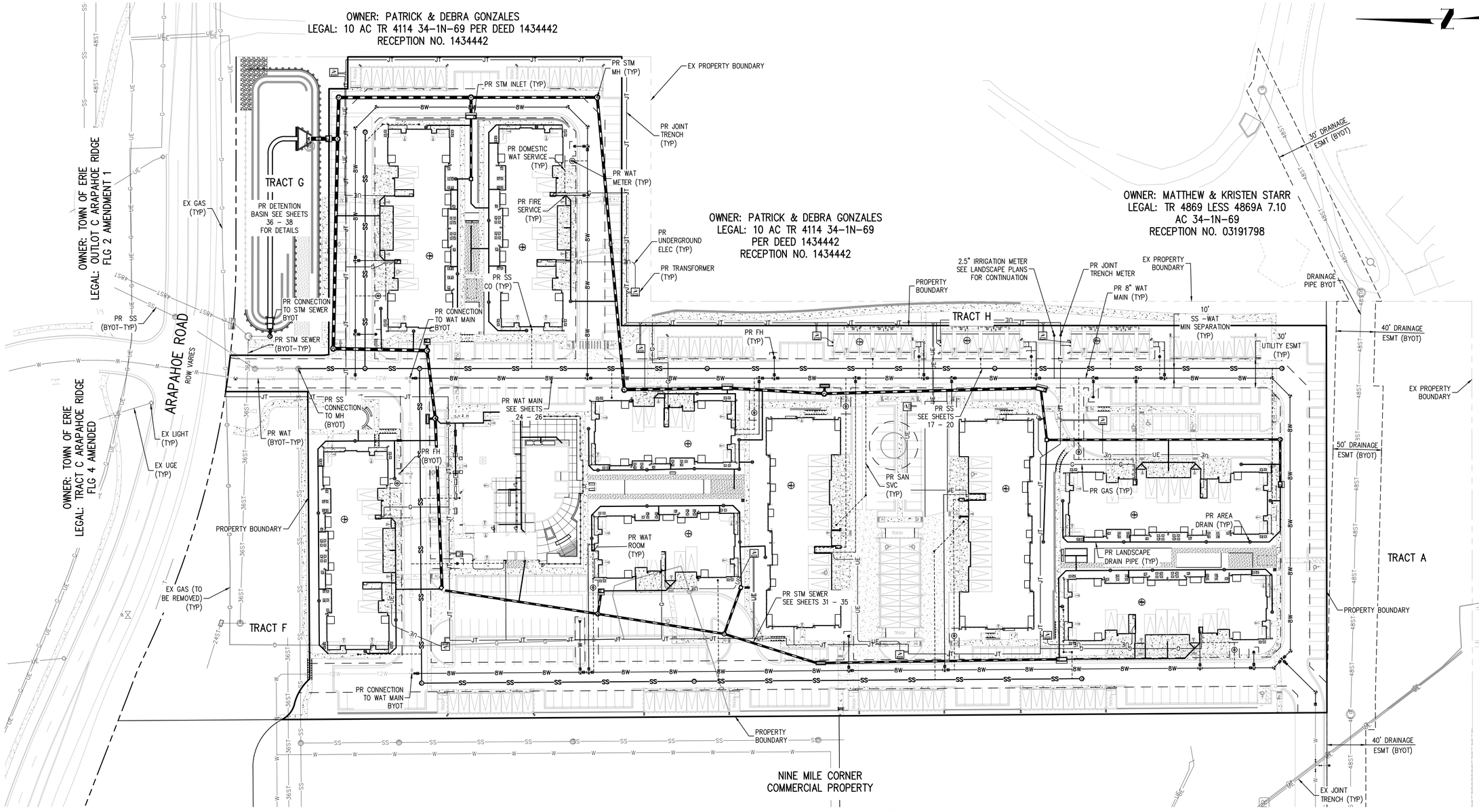
Highlighted

Depth (ft)	= 0.31
Q (cfs)	= 0.560
Area (sqft)	= 0.16
Velocity (ft/s)	= 3.49
Wetted Perim (ft)	= 1.00
Crit Depth, Yc (ft)	= 0.35
Top Width (ft)	= 0.67
EGL (ft)	= 0.50



Appendix E - Proposed Overall Utility Plan

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH



NOTES:

1. OVERALL PLAN DEPICTED IS INTENDED FOR GENERAL REFERENCE OF PROJECT DEVELOPMENT.
2. SEE SANITARY PLAN SHEETS FOR DETAILS REGARDING SANITARY IMPROVEMENTS.
3. SEE WATER PLAN SHEETS FOR DETAILS REGARDING WATER IMPROVEMENTS.
4. SEE STORM SEWER PLAN SHEETS FOR DETAILS REGARDING STORM IMPROVEMENTS.
5. THE LOCATION 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 CONTRACTORS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES IN THE VERTICAL/HORIZONTAL LOCATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR THE FOLLOWING NOTIFICATION:
   a. UTILITY NOTIFICATION CENTER OF COLORADO, 811. CALL THREE (3) BUSINESS DAYS PRIOR TO DIGGING, GRADING OR EXCAVATING FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.
      - LOCATION OF EXISTING UTILITIES SHALL BE VERIFIED BY CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATION, SUPPORT, PROTECTION AND RESTORATION OF ALL EXISTING UTILITIES AND APPURTENANCES, WHETHER SHOWN OR NOT SHOWN ON THE APPROVED CONSTRUCTION DOCUMENTS.
      - PROVIDING NOTIFICATION AND RECEIVING MARKING OF UNDERGROUND MEMBER UTILITIES IN NO WAY CONSTITUTES PERMISSION TO PERFORM CONSTRUCTION.

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

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

50 0 50 100
SCALE: 1" = 50'

DESIGNED BY: TJS
CHECKED BY: MSM
DRAWN BY: TJS

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

Evergreen
Development | Services | Investments

OUTLOOK AT NINE MILE
OVERALL UTILITY PLAN

ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
16
16 OF 69

FILEPATH: P:\160602\ENGINEERING\UTILITIES\CD\ OVERALL UTILITY PLAN.DWG LAYOUT: OVERALL UTILITY PLAN
8 XREFs: xd - stamp, xd_evergreen logo, e-base_byor, e-sign_byor[1], e-util, p-base, p-sign, p-util
PLOTTED: MON 01/27/20 6:56:54P BY: BRAD WEAVERLING

STORMWATER MANAGEMENT PLAN

FOR

OUTLOOK NINE MILE

January 27, 2020

Prepared for:

Evergreen
Development | Services | Investments

Prepared by:

HKS HARRIS KOCHER SMITH

Rachel Patton, P.E.
1120 Lincoln Street, Suite 1000
Denver, CO 80203
Ph: 303-623-6300, Fax: 303-623-6311

Harris Kocher Smith Project No.: 160602

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CONTACT INFORMATION

Applicant:	Ron Wolford
Company Name:	Evergreen Devco Inc.
Email:	rwolford@evgre.com
Mailing Address:	1873 South Bellaire St. Suite 1106 Denver, CO 80222
Telephone #:	303-757-0469

Local Contact/Project Manager:

Name:
Email:
Mailing Address:

Telephone #

Plan Preparation Consultant:

Company Name:	Harris Kocher Smith
Professional Engineer:	Rachel Patton, PE
Email:	rpatton@hkseng.com
Mailing Address:	1120 Lincoln Street, Suite 1000 Denver, CO 80203
Telephone #	(303) 623-6300
Fax #	(303) 623-6311

I. Project Location

The proposed Outlook Nine Mile project ("Site") is located within the Town of Erie, County of Boulder, Colorado at the southeast corner of Arapahoe Road and Highway 287. More specifically, it is situated within the Quarter of Section 34, Township 1 North, Range 69 West and the Southeast Quarter of Section 27, Township 1 North, Range 69 West of the 6th Principal Meridian.

The Site is bordered by Arapahoe Road to the north, private land to the east, a single-family residential development to the south and the future Nine Mile Commercial project ("Commercial") to the west.

A Vicinity Map is attached in Appendix A.

II. Project Description

The Site is planned to be developed as a multifamily housing with 287 units, located in 11 residential buildings. Amenities such as a clubhouse and pool will be provided. Site improvements include curb and gutter, surface parking, detached garages, paved roads, hardscaping and landscaping. A permanent extended detention basin will also be constructed.

The total Site area is 12.96 acres, comprised of Lot 11, Tracts G and H of Nine Mile Corner Filing No. 1. Approximately 13.25 acres will be disturbed by construction activities. The preconstruction runoff coefficient is approximately 0.38 acres, with about 5% of the existing land being impervious.

III. Existing Site Conditions

The existing site is primarily undeveloped with the majority of the property being native grasses and shrubs. There is a gravel road that runs through the northern portion of the site that provides access from Arapahoe Road to Prince Lake Number 1 located to the west of the project. There is also an old asphalt drive located on the south side of the site that will be removed as a part of the project. The very northern portion of the site drains to a ditch that runs parallel to Arapahoe Road with the middle majority of the site draining to a small channel that flows west to east through the site. The most southern portion of the site

drains to the southeast and eventually offsite. Overlot grading to re-route the existing irrigation ditch, and fill in Prince Lake Number 1 is currently under construction. At the time the multi-family development starts construction, the Site will be pad-graded.

The site is within the Zone X (unshaded) flood area according to FEMA FIRM Map number 08013C0438J effective December 18, 2012. Zone X is described by FEMA as "areas determined to be outside the 0.2% annual chance floodplain" and this map can be seen in Appendix A.

IV. Receiving Waters

Historically, the majority of the existing site drains to the South Boulder Canyon Ditch that runs through the middle of the site. The South Boulder Canyon Ditch flows to the east where it discharges to Thomas Reservoir and then eventually to Coal Creek. Coal Creek ultimately discharges to Boulder Creek. The northern portion of the site flows to a ditch that parallels Arapahoe Road and flows to the city's storm sewer system.
The proposed project includes a storm sewer system that will collect the majority of the runoff from the site and route it to an extended detention basin located near the northeast corner of the site. The pond will discharge the collected storm water to the city's storm sewer system at a rate at or below the historic amount.

V. Description of Potential Pollutants

The construction activities associated with this project will have some potential to pollute the storm water being discharged from the Site. Below are the pollutants with a short description of each.

- Disturbed and stored soils: Activities associated with grading and material stockpiling.
- Vehicle tracking of sediments: Caused by vehicle traffic during construction.
- Loading and unloading operations: Construction materials being brought to the site and materials being removed from the site.
- Outdoor storage activities: Building material storage, stored fertilizers for soil stabilization, and stored chemicals for construction activities.
- Vehicle and equipment maintenance and fueling: Maintaining vehicles and equipment throughout the construction of the project.

- Significant dust and particulate generating processes: Dust created by soil disturbing activities and saw cutting concrete.
- Routine maintenance activities: Permanent and temporary soil stabilization after and during construction.
- Concrete truck/equipment washing: Area for concrete trucks and equipment to be cleaned after use. This is due to the installation of sidewalk, curb and gutter, pavement etc.
- Non-Industrial waste sources: Workers trash and portable toilets.
- Waste from geotechnical testing: Potholing and borings for utility locates.
- Demolition of pavement: Asphalt roadway to be removed.
- Construction dewatering: Removing groundwater and storm water from the site.

VI. Soils and Groundwater

According to the NRCS web soil survey the existing soils on site are sandy loams with 3 to 9 percent slopes. The soils report can be seen in Appendix B.

A geotechnical investigation was conducted by CTL Thompson Inc. and a report was prepared on May 25, 2017. The report indicates that groundwater was encountered at a depth of 15.5 feet to 34 feet and that groundwater is not expected to influence the planned construction. A map prepared by CTL Thompson Inc. showing the estimated groundwater surface elevations can be seen in Appendix B.

VII. Areas and Volumes

The Site is approximately 12.96 acres and the proposed project site set to disturb 13.25 acres of the site. As stated previously the preconstruction runoff coefficient is about 0.38 and the post-construction runoff coefficient is approximately 0.72.
The majority of the Site is in cut. After coordination with the Commercial project to the west as a part of the master development, the two Sites (Commercial and Multi-Family) are balanced. During the on-going overlot grading, the contractor will cut dirt from the multi-family site to be used as fill on the commercial.

VIII. Erosion and Sediment Control Measures (BMP's)

The following Best Management Practices (BMPs) shall be implemented as indicated, prior to and during construction activities on the site. The information shown below describes the BMP, when it is estimated to be installed, and the maintenance requirements of the BMP. The Site Map shown in Appendix C displays the locations of the BMPs. The associated Urban Drainage Flood Control District (UDFCD) details can be seen in Appendix D for BMP installation and maintenance.

1. Silt Fence (SF)
    a. A woven geotextile fabric attached to wooden posts and trenched into the ground. It is used to intercept sheet flow runoff from disturbed areas. The silt fence shall be installed prior to all land disturbing activities. The contractor shall inspect and maintain all silt fence throughout construction. Any section of silt fence that has a tear, hole, slumping, undercutting or has been bypassed should be replaced with a new section. Accumulated sediment should be removed before it reached a depth of 50% the height of the silt fence.
2. Vehicle Control Tracking (VTC)
    a. A stabilized construction site access where vehicles exit the site onto paved public roads. It helps removed sediment from vehicles, reducing tacking onto the paved surface. The vehicle control tracking shall be installed prior to any land disturbing activities. Vehicle tracking control shall be inspected and maintained throughout construction. Replace aggregate or material used for stabilization at entrance/exit as needed. Ensure drainage ways are not blocked by vehicle tracking control.
3. Concrete Washout Area (CWA)
    a. An area created using one of several approaches designed to receive wash water from washing of tools and concrete mixer chutes, liquid concrete waste from dump trucks, mobile batch mixers, or pump trucks. Three approaches are allowable: excavation of a pit in the ground, use of an above ground storage area, or use of prefabricated haul-away concrete washout containers. The concrete washout area shall be installed prior to any concrete pours. Concrete washout areas shall be inspected and maintained

throughout construction activities. Provide adequate signage throughout the site to ensure that concrete washout areas can be identified.

4. Stockpile Management (SP)
    a. Area on site where soils and other erodible materials are stored. Includes measures to minimize erosion and sediment transport from soil stockpiles. The stockpile management area shall be installed prior to any land disturbing activities. Stockpiles shall be inspected and maintained throughout construction activities.
5. Stabilized Staging Area (SSA)
    a. Clearly designated area where construction equipment and vehicles, stockpiles, waste bins, and other construction-related materials are stored. Stabilized staging areas shall be installed prior to any construction activities. Staging areas shall be inspected and maintained through construction activities. A stable surface cover of gravel and perimeter controls shall be maintained as a part of the staging area.
6. Sediment Control Log (SCL)
    a. A linear roll made of natural materials such as straw, coconut fibers, or compost. They are used as a sediment barrier to intercept sheet flow runoff from disturbed areas. Sediment control logs shall be installed prior to any land disturbing activities. Control logs shall be inspected and maintained through construction activities. Accumulated sediment should be removed before it reaches a depth of 50% the height of the sediment control log.
7. Inlet Protection (IP)
    a. Permeable barriers installed around an inlet to filter runoff and remove sediment prior to entering a storm drain inlet. These can be constructed from rock socks, sediment control logs, silt fence, block and rock socks, or other materials approved by the City of Louisville. Area inlets can also be protected by over-excavating around the inlet to form a sediment trap. Inlet protection shall be installed prior to any land disturbing activities. Inlet protection shall be inspected and maintained throughout construction activities. Ensure that flows do not bypass the inlet protection when flowing to the storm drainage system. Accumulated sediment should be removed before it reaches a depth of 50% the height of the inlet protection.

8. Rock Sock (RS)
    a. Gravel that has been wrapped by wire mesh or a geotextile to form an elongated cylindrical filter. Used either as a perimeter control or as part of inlet protection. These are intended to trap sediment from storm water runoff that flows onto roadways as a result of construction activities. Rock socks shall be installed prior to any land disturbing activities. Rock socks shall be inspected and maintained throughout construction activities. Accumulated sediment should be removed before it reaches a depth of 50% the height of the rock sock.
9. Temporary Outlet Protection (TOP)
    a. Typically consists of riprap or rock aprons at the conveyance outlet. These help to reduce erosion immediately downstream or a pipe, culvert, slope drain, rundown or other conveyance with concentrated, high-velocity flows. Temporary outlet protection shall be installed prior to any land disturbing activities for existing outlets and installed after installation of proposed outlets. Temporary outlet protections shall be inspected and maintained throughout construction activities. Remove sediment accumulated at the outlet before the outlet protection becomes buried and ineffective.
10. Sediment Basin (SB)
    a. A temporary pond built to capture eroded or disturbed soil transported in storm runoff prior to discharge from the site. These are designed to capture site runoff and slowly release it to allow time for settling of sediment prior to discharge. Sediment basins shall be installed prior to any land disturbing activities. Sediment basins shall be inspected and maintained through construction activities. Basins will need to be dredged typically when the design storage volume is no more than 33% filled with sediment. Embankments will need to be stabilized and may need to be re-stabilized during construction.
11. Construction Fence (CF)
    a. Fence that restricts site access to designated entrances and exits, delineates construction site boundaries and keeps construction out of sensitive areas such as natural areas to be preserved as open space, wetlands and riparian areas. These may be chain link or plastic mesh. Construction fence shall be installed prior to any construction activities.

Construction fencing shall be inspected and maintained through construction activities.

12. Surface Roughening (SR)
    a. An erosion control practice that involves tracking, scarifying, imprinting, or tilling a disturbed area to provide temporary stabilization of disturbed areas. This creates variations in the soil surface that help to minimize wind and water erosion. Surface roughening shall be conducted where necessary to ensure soil stabilization.

IX. Construction Schedule

Construction activities are estimated to commence in the spring of 2020 with an anticipated substantial completion date in the fall of 2024. A more refined construction schedule will be provided closer to construction commencement date.

X. SWMP Administrator

The Stormwater Management Plan (SWMP) administrator shall be the construction site superintendent.

- The SWMP administrator is responsible for implementing and maintaining the Stormwater Management Plan.
- The SWMP administrator shall contact the Engineer of Record (EOR) for any and all revisions to the SWMP.
- The SWMP administrator shall be responsible for reporting spills.
- The SWMP administrator shall conduct site inspections of the BMPS and shall verify that repairs have been completed and correctly certified.
- The SWMP administrator shall conduct BMP training.

XI. Spill Prevention and Response Plan

The SWMP administrator and contractor shall prepare a spill prevention and response plan prior to any construction activities. The standard operating procedures for material spill containment and clean-up are provided in Appendix E. In general, spill prevention and response procedures shall include the following:

- Notification procedures to be used in the event of an accident. At the very least, the Qualified Stormwater Manage should be notified. Depending on the nature of the

spill and the material involved, the Colorado Department of Public Health and Environment (24-hour spill reporting line 877-518-5608), downstream water users, or other agencies may also need to be notified.

- Instructions for clean-up procedures and identification of spill kit location(s).
- Provisions for absorbents to be made available for use in fuel areas, and for containers to be available for used absorbents.
- Procedures for properly washing out concrete truck chutes and other equipment in a manner and location so that the materials and wash water cannot discharge from the site and never into a storm drain system or stream.
- A release of any chemical, oil, petroleum product, sewage, etc., which may enter waters of the State of Colorado (which include surface water, groundwater and dry gullies or storm sewers leading to surface water) must be reported.

XII. Final Stabilization and Long-Term Stormwater Management

Upon completion of construction, open space areas of the development will have permanent vegetation installed in conformance with the landscape plans and City of Erie standards. Final stabilization is reached when all soil-disturbing activities at the site have been completed, and uniform vegetative cover has been established with a density of at least 70% of the preconstruction levels or equivalent permanent, physical erosion reduction methods have been employed. The final design will also include a water quality/detention pond.

XIII. Inspection and Maintenance

Shown below are the Inspection and maintenance requirements.

1. Person responsible for conducting inspections
    a. The inspector must be a qualified stormwater manager.
2. Inspection frequency
    a. The first site inspection must be conducted within seven calendar days of the commencement of construction activities on site. Site inspections must be conducted in accordance with one of the following minimum frequencies:
        i. At least one inspection every 7 calendar days.

ii. At least one inspection every 14 calendar days, plus post-storm event inspections conducted within 24 hours after the end of any precipitation or snowmelt event that causes surface erosion.
    1. Post-storm inspections may be used to fulfill the 14-day routine inspection requirements.

b. Inspections may be conducted on either the 7 day or 14 day schedule, and may switch between these schedules as appropriate for the site. The inspection schedule must be noted on the inspection reports, as noted below.

c. When site conditions make the required schedule impractical, a petition to grant an alternate inspection schedule may be submitted to the division. The alternative inspection schedule may not be implemented prior to written approval by the division and incorporation into the plan.

d. Site inspections must be conducted at least once every seven calendar days for sites that discharge to a water body designated as an Outstanding Water by the Water Quality Control Commission.

3. Reduced Inspection Frequency

a. Post-Storm inspections at Temporarily Idle Sites

i. If the contractor chooses to combine 14-day inspections and post-storm-event inspections, if no construction activities will occur following the storm event, post-storm event inspections must be conducted prior to re-commencing construction activities, but no later than 72 hours following the storm event. The delay of any post-storm event inspection must be documented in the inspection record. Routine inspections must still be conducted at least every 14 calendar days.

b. Inspections at completed sites/areas

i. When the site or portions of a site are awaiting establishment of a vegetative ground cover and final stabilization, a site inspection must be conducted every 30 calendar days.

ii. Post-storm event inspections are not required.

iii. This reduced inspection schedule is allowed if all of the following criteria are met:

1. All construction activities resulting in ground disturbance are complete.
2. All activities required for final stabilization, in accordance with the plan, have been completed, with the exception of the application of seed that has not occurred due to seasonal conditions or the necessity for additional seed application to augment previous efforts.
3. The plan has been amended to locate those areas to be inspected on a reduced schedule.

c. Winter conditions inspections exclusion
    i. Inspections are not required for sites that meet all of the following conditions:
        1. Construction activities are temporarily halted.
        2. Snow cover exists over the entire site for an extended period.
        3. Melting conditions posing a risk of surface erosion do not exist.
    ii. When this inspection exclusion is implemented, the following information must be documented in the inspection reports:
        1. Dates when snow over existed.
        2. Date when construction activities ceased.
        3. Date melting conditions began.

4. Inspection scope
    a. Inspect the following areas for evidence of, or the potential for, pollutants leaving the construction site boundaries, entering the stormwater drainage system, or discharging to state waters.
        i. Construction site perimeter.
        ii. All disturbed areas.
        iii. Designated haul routes.
        iv. Material and waste storage areas exposed to precipitation.
        v. Locations where stormwater has the potential to discharge offsite.
        vi. Locations where vehicles exit the site.
    b. Inspections must include the following requirements:

i. Visually verify whether all implemented control measures are in effective operational condition and are working as designed in their specifications to minimize pollutant discharges.
ii. Determine if there are new potential sources of pollutants.
iii. Assess the adequacy of control measures at the site to identify areas requiring new or modified control measures to minimize pollutant discharges.
iv. Identify all areas of non-compliance with the Construction Stormwater Permit requirements, and, if necessary, implement corrective action.

XIV. Conclusion

This Stormwater Management Plan is in conformance with the State of Colorado Stormwater Management Plan Preparation Guidance. Additional grading, erosion and sediment control measures may be required of the owner or his/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.

XV. References

1. Urban Drainage and Flood Control District (UDFCD). Nov 2010. Urban Storm Drainage Criteria Manual Volume 3. Updated and maintained by UDFCD. Denver, CO.

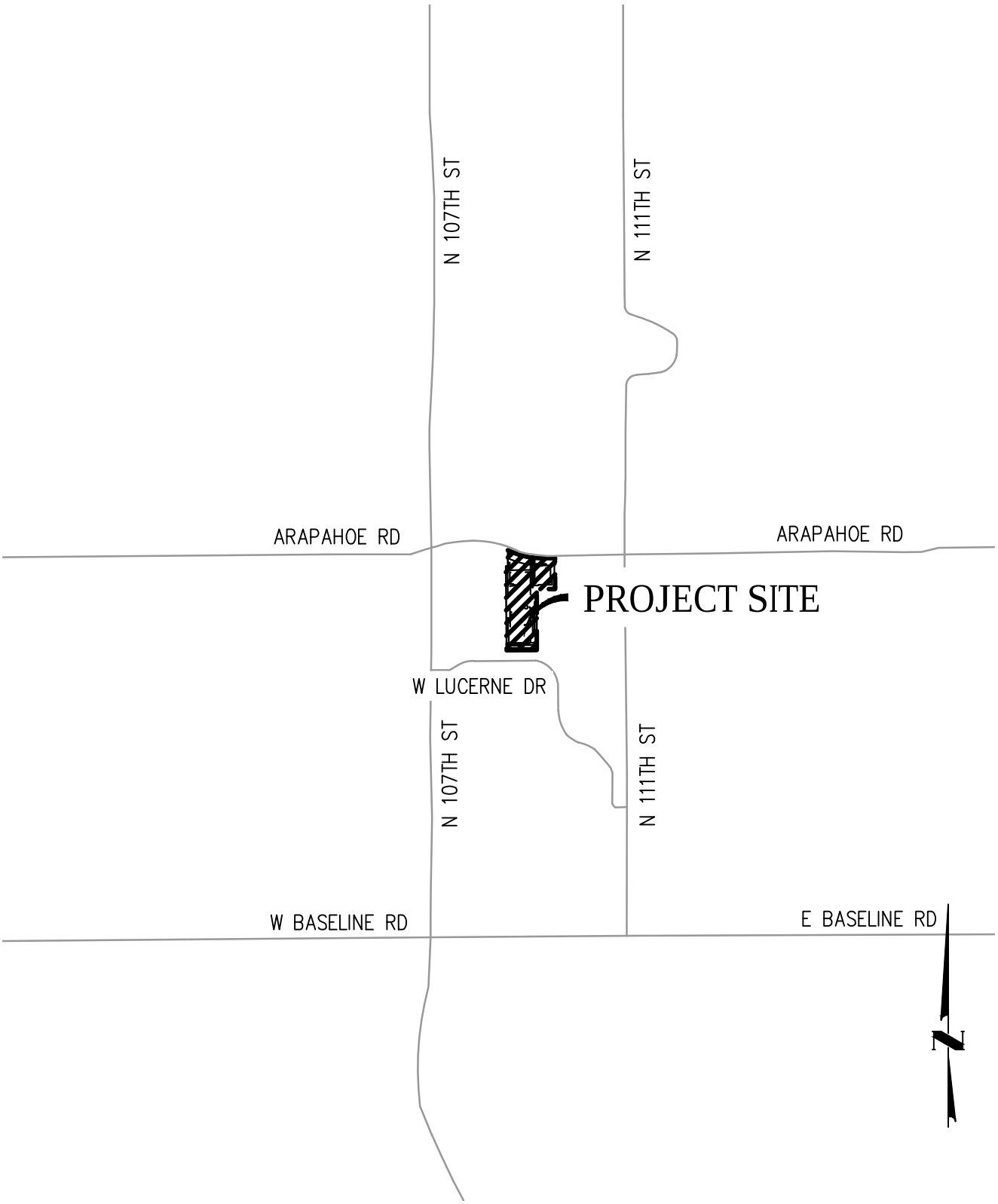
2. Preliminary Geotechnical Investigation - Nine Mile Corner. CTL Thompson, Inc. February, 2017.

3. Custom Soil Resource Report for Boulder County Area, Colorado. July 16, 2016. United States Department of Agriculture Natural Resources Conservation Service (NRCS).

4. Outlook Nine Mile Drainage Report. Harris Kocher Smith; April, 2017.

5. Stormwater Management Plan Preparation Guidance; Colorado Department of Public Health and Environment; Revised April, 2011.

APPENDIX A – Vicinity Map and FIRM Map



Plotted: THU 04/27/17 3:47:19P By: Derrik Mills Filepath: p:\160602\engineering\xref\vicmap.dwg Layout: layout1

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.

ISSUE DATE: 09/19/2016	PROJECT #: 160602
DATE	REVISION COMMENTS

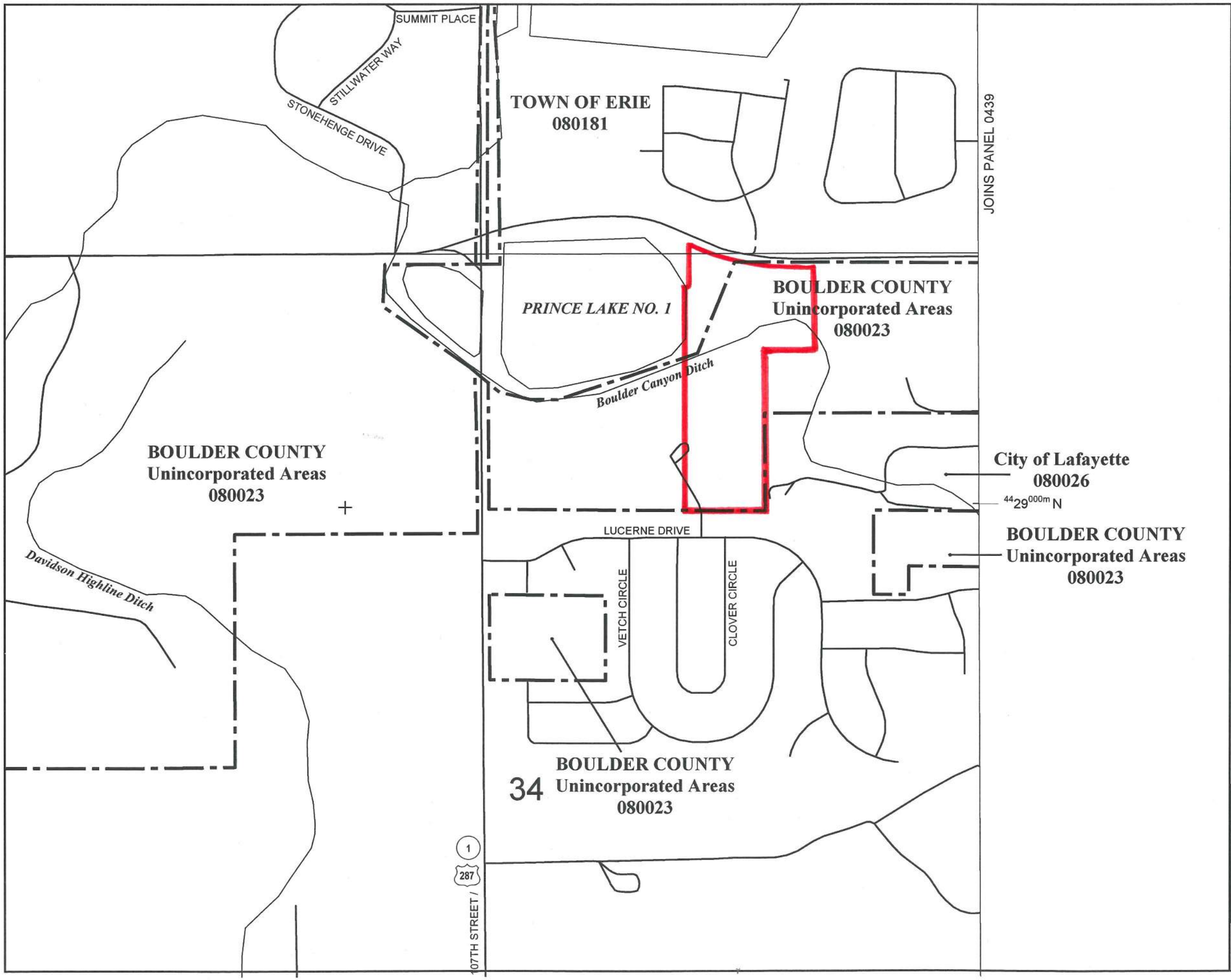
EVERGREEN

OUTLOOK AT NINE MILE
VICINITY MAP

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

DSN'D BY: MEG
CHK'D BY: TEG
DRAWN BY: MEG

SHEET NO.
1
1 OF 1



urance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

MET

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0438J

FIRM

FLOOD INSURANCE RATE MAP

BOULDER COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 438 OF 615

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BOULDER COUNTY	080023	0438	J
ERIE, TOWN OF	080181	0438	J
LAFAYETTE, CITY OF	080026	0438	J

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

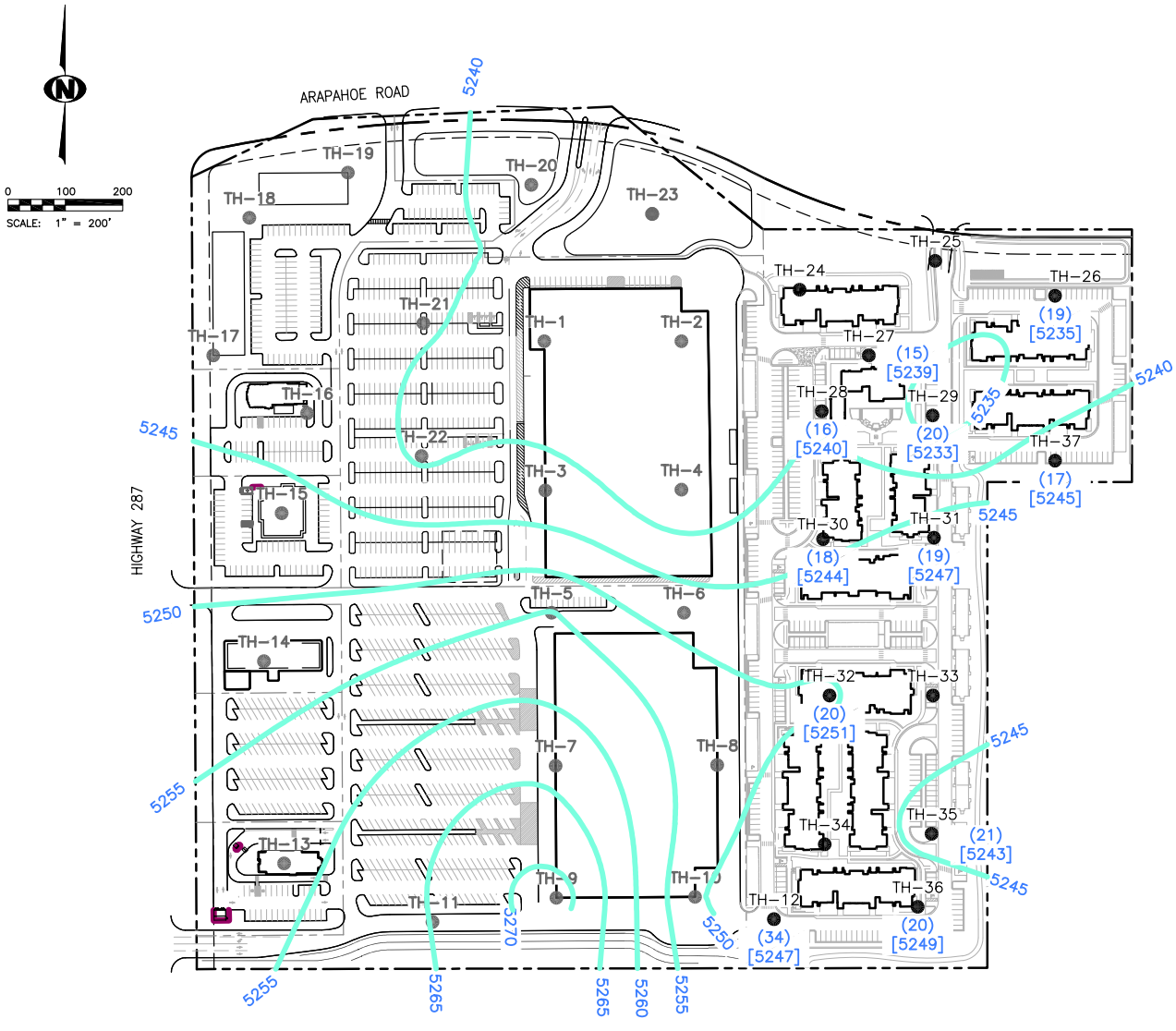
MAP NUMBER
08013C0438J

MAP REVISED
DECEMBER 18, 2012

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

APPENDIX B – NCRS Soils Report and Groundwater Map



LEGEND:

TH-12 ●	APPROXIMATE LOCATION OF EXPLORATORY BORING
TH-1 ●	APPROXIMATE LOCATION OF EXPLORATORY BORING INCLUDED IN SEPARATE INVESTIGATION
(19)	INDICATES MEASURED DEPTH TO GROUNDWATER AT BORING LOCATION (FEET)
[5235]	INDICATES GROUNDWATER ELEVATION AT BORING LOCATION (FEET)
5240	INDICATES ESTIMATED GROUNDWATER SURFACE ELEVATION (FEET)

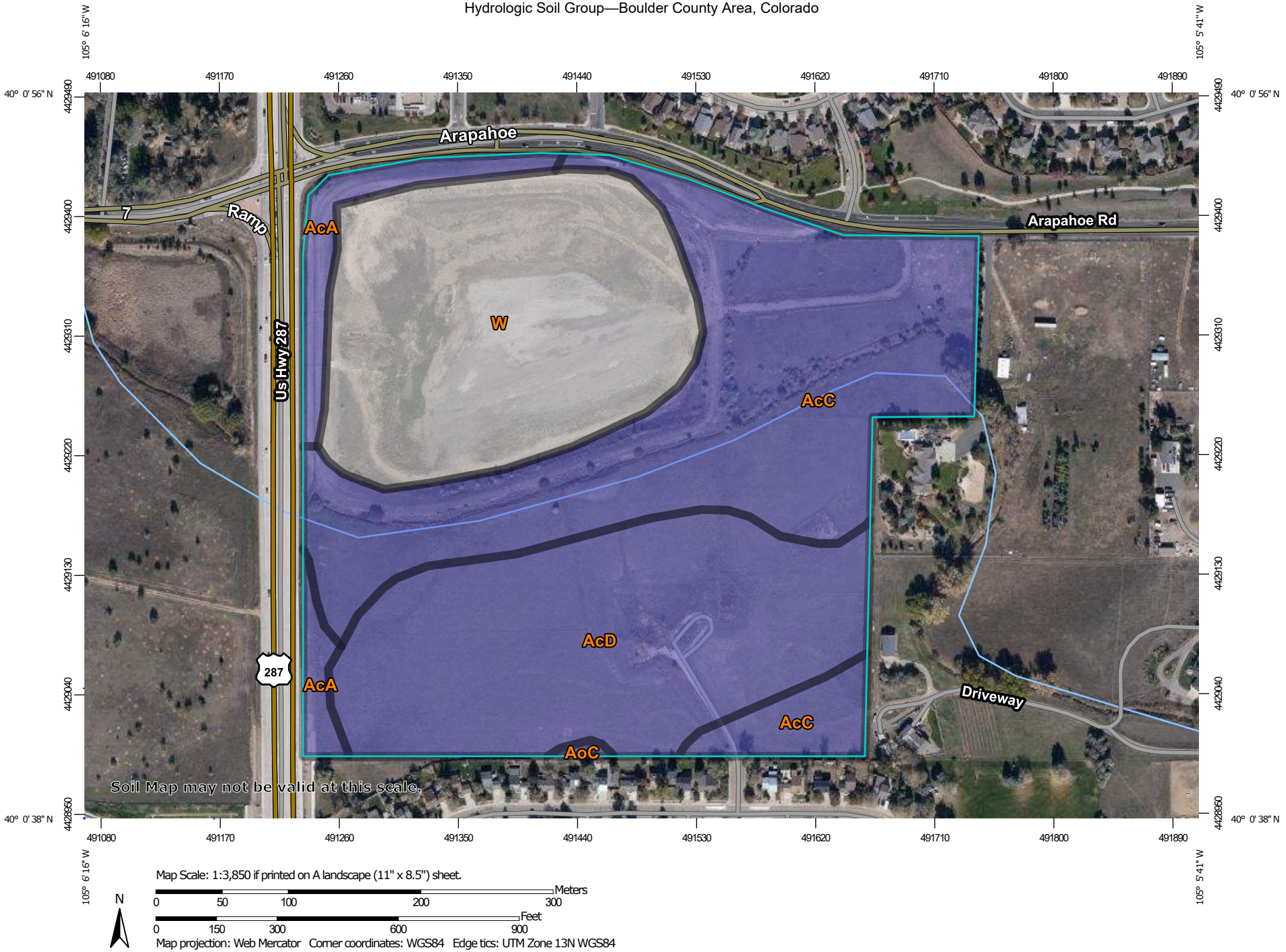
NOTE: THIS ESTIMATE WAS BASED UPON A SUBJECTIVE ANALYSIS OF DRILL HOLE DATA AND MAY NOT REFLECT LOCAL VARIATIONS AND SEASONAL FLUCTUATIONS.

EVERGREEN DEVELOPMENT
NINE MILE CORNER APARTMENTS
CTL\T Project No. DN48,647-125-R2

Estimated Groundwater Surface Elevations

Fig. 3

C:\Users\rstanisic\AppData\Local\Box\Box Edit\Documents\8boo0MHm2oEqOqtzVqee3RQ==\DN48647-125-R2-D1.dwg, 5/25/2017 9:47:54 AM, rstanisic



Map Scale: 1:3,850 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 50 100 200 300

Feet
0 150 300 600 900

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 1:20,000.

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: Boulder County Area, Colorado
Survey Area Data: Version 16, 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: Oct 1, 2018—Oct 31, 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
AcA	Ascalon sandy loam, 0 to 3 percent slopes	B	2.4	5.0%
AcC	Ascalon sandy loam, 3 to 5 percent slopes	B	18.4	37.6%
AcD	Ascalon sandy loam, 5 to 9 percent slopes	B	14.2	29.0%
AoC	Ascalon-Otero complex, 3 to 5 percent slopes	B	0.1	0.2%
W	Water		13.8	28.1%
Totals for Area of Interest			**48.9**	**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

APPENDIX C – Standard Operating Procedures

Standard Operating Procedure (SOP)

Minor Spill of Material (Paint, Stain, Solvent, Glue) (Less than Reportable Quantity)

A. Purpose

The purpose of this Standard Operating Procedure is to establish uniform procedures for cleanup and disposal of material from a minor accidental spill of paint, stain solvent or glue. The procedures outlined in this SOP are applicable to all personnel working on the Outlook Nine Mile construction site. Cleanup and proper disposal of spilled material into the soil or onto the ground surface is required to ensure the material or contaminated soil does not enter or impact the waters of the State or the sanitary sewer system.

B. Summary of the Method

This procedure outlines the steps to be taken to prevent spilled material from impacting waters of the State and disposal of the resulting contaminated cleanup material.

C. Definitions

1. Material Safety Data Sheet (MSDS). The standard industry list for a product detailing the chemical makeup, safety hazards, first aid, firefighting and spill cleanup measures, handling, storage, and disposal methods.

D. Health and Safety Warnings

Many construction materials mat be flammable, cause skin and eye irritation, and may be harmful or fatal if swallowed. Caution should be used during cleanup operations. The MSDS for the spilled material should be consulted to ensure personnel safety during cleanup operations.

E. Equipment and Supplies

1. Absorbent pads and booms
2. Hand equipment (shovels, brooms)
3. Waste containers (5 gallon buckets, drums)
4. Personal Protective Equipment

F. Procedural Steps

1. Shut down all equipment operating in the area to prevent ignition of the spill.
2. Quickly control the spill by stopping or securing the spill source. This could be as simple as up-righting a tipped container or shutting down a piece of equipment producing the spill.
3. Contact the Responsible Person on site to enact the emergency response contact procedure.

a. Responsible Person shall consult the MSDS for proper spill procedures and determination of Reportable Quantity for a spill. In the event the spilled quantity exceeds the reportable quantity the Responsible Person shall contact:
    i. Call 911 for fire control if necessary.
    ii. Town of Erie: 303-926-2870

4. Prevent migration of the spill by using an absorbent. This could include absorbent pads or booms, floor dry, cat litter or dirt. The absorbent should be spread across the spill and along the downhill side to stop flow.
5. If necessary to prevent the material from entering a storm inlet or manhole a dam of absorbent material should be placed in the gutter upstream form the inlet.
6. Begin cleanup of the spilled material and absorbents by placing the materials in 5 gallon, plastic buckets with lids or into a provided drum.
7. Continue cleanup until all spilled material and contaminated absorbents are removed. On a hard surface this should include sweeping the area. Material spilled on the dirt should be removed down to a level where discoloration of the soil has been removed. Water shall never be used to flush a material off a surface.
8. All material shall be properly stored in a location designated by the Responsible Person on site.
9. The Responsible Person shall contact the Site Contracted Emergency Response and Disposal Co. to collect and properly dispose of the material.
10. Location of the spill will be documented on the Stormwater Maintenance Plan (SWMP) in the construction trailer.
11. Inspection of materials and equipment shall occur daily.

G. Record Management

All documentation from the incident, including incident report and incident disposal manifests, shall be maintained at 1873 South Bellaire St, Suite 1106, Denver, CO 80222 (Ph: 303-757-0469), for a period of 3 years from the date of the spill.

H. After Incident Briefing

All personnel involved in the incident shall attend a debriefing to determine the cause of the spill, procedures followed, and corrective actions to prevent future spills. All pertinent data shall be documented. All findings from the debriefing should be discussed at the next Safety Meeting. Town of Erie shall be notified.

Standard Operating Procedure (SOP)

Minor Fuel or Oil Spill (Less than 5 Gallons)

A. Purpose

The purpose of this Standard Operating Procedure is to establish a uniform procedure for cleanup and disposal of material from a minor accidental spill of fuel (gasoline or diesel) or oil (hydraulic or motor). The procedures outlined in this SOP are applicable to all personnel working on the Outlook Nine Mile construction site. Cleanup and proper disposal of spilled fuel or oil into the soil or onto the ground surface is required to ensure the material or contaminated soil does not enter or impact the water the State or the sanitary sewer system.

B. Summary of the Method

This procedure outlines the steps to be taken to prevent spilled fuel or oil from impacting waters of the State and disposal of the resulting contaminated cleanup material.

C. Definitions

1. Material Safety Data Sheet (MSDS). The standard industry list for a product detailing the chemical makeup, safety hazards, first aid, firefighting and spill cleanup measures, handling, storage, and disposal methods.

D. Health and Safety Warnings

Fuels and fuel oils may be extremely flammable, cause skin and eye irritation, and may be harmful or fatal if swallowed. Caution should be used during cleanup operations. The MSDS for the spilled material should be consulted to ensure personnel safety during cleanup operations.

E. Equipment and Supplies

1. Absorbent pads and booms
2. Hand equipment (shovels, brooms)
3. Waste containers (5 gallon buckets, drums)
4. Personal Protective Equipment

F. Procedural Steps

1. Shut down all equipment operating in the area to prevent ignition of the spill.
2. Quickly control the spill by stopping or securing the spill source. This could be as simple as up-righting a tipped container or shutting down a piece of equipment producing the spill.
3. Contact the Responsible Person on site to enact the emergency response contact procedure.

a. Responsible Person shall consult the MSDS for proper spill procedures and determination of Reportable Quantity for a spill. In the event the spilled quantity exceeds the reportable quantity the Responsible Person shall contact:
   i. Call 911 for fire control if necessary.
   ii. Town of Erie: 303-926-2870
4. Prevent migration of the spill by using an absorbent. This could include absorbent pads or booms, floor dry, cat litter, or dirt. The absorbent should be spread across the spill and long the downhill side to stop any flow.
5. If necessary to prevent the material from entering a storm inlet or manhole a dam of absorbent material should be placed in the gutter upstream from the inlet.
6. Begin cleanup of the spilled material and absorbents by placing the materials in 5 gallon, plastic buckets with lids or into a provided drum.
7. Continue cleanup until all spilled material and contaminated absorbents are removed. On a hard surface this should include sweeping the area. Material spilled on dirt should be removed down to a level where discoloration of the soil has been removed. Water shall never be used to flush material off a surface.
8. All material shall be properly stored in a location designated by the Responsible Person on site.
9. The Responsible Person shall contact the Site Contracted Emergency Response and Disposal Co to collect and properly dispose of the material.
10. Location of the spill will be documented on the Stormwater Maintenance Plan (SWMP) in the construction trailer.
11. Inspection of materials and equipment shall occur daily.

G. Record Management

All documentation from the incident including incident report and incident disposal manifests, shall be maintained at 1873 South Bellaire St, Suite 1106, Denver, CO 80222 (Ph: 303-757-0469), for a period of 3 years from the date of the spill.

H. After Incident Briefing

All personnel involved in the incident shall attend a debriefing to determine the cause of the spill, procedures followed, and corrective actions to prevent future spills. All pertinent data will be recorded. All findings from the debriefing should be discussed at the next Safety Meeting. Town of Erie shall be notified.

Standard Operating Procedure (SOP)

Small Fuel or Oil Spill (5 Gallons to Less than 25 Gallons)

A. Purpose

The purpose of this Standard Operating Procedure is to establish a uniform procedure for cleanup and disposal of material from a small accidental spill of fuel (gasoline or diesel) or oil (hydraulic or motor). The procedures outlined in this SOP are applicable to all personnel working on the Outlook Nine Mile construction site. Cleanup and proper disposal of spilled fuel or oil into the soil or onto the ground surface is required to ensure the material or contaminated soil do not enter or impact the waters of the State of the sanitary sewer system.

B. Summary of the Method

This procedure outlines the steps to be taken to prevent spilled fuel or oil from impacting waters of the State and disposal of the resulting contaminated cleanup material.

C. Definitions

1. Material Safety Data Sheet (MSDS). The standard industry list for a product detailing the chemical make-up, safety hazards, first aid, firefighting, and spill cleanup measures, handling, storage, and disposal methods.

D. Health and Safety Warnings

Fuels and fuel oils may be extremely flammable, cause skin irritation, and may be harmful or fatal if swallowed. Caution should be used during cleanup operations. The MSDS for the spilled material should be consulted to ensure personnel safety during cleanup operations.

E. Equipment and Supplies

1. Absorbent pads and booms
2. Hand equipment (shovel, brooms)
3. Waste containers (5 gallons buckets, drums)
4. Personal Protective Equipment

F. Procedural Steps

1. Shut down all equipment operating in the area to prevent ignition of the spill.
2. Contact the Responsible Person on site to enact the emergency response contact procedure.
    a. The Responsible Person begins contacting Emergency Response Agencies.
        i. For gasoline or diesel spill call 911 for fire control.

b. Responsible Person shall consult the MSDS for proper spill procedures and determination of Reportable Quantity for a spill. In the event the spilled quantity exceeds the reportable quantity the Responsible Person shall contact:
    i. Call 911 for fire control if necessary.
    ii. Colorado Environmental Release and Incident Reporting Hotline: (1-877) 518-5608.
    iii. Town of Erie: 303-926-2870

3. Attempt to control the spill by stopping or securing the spill source. This could be as simple as up-righting a tipped container or shutting down a piece of equipment producing the spill.
4. Prevent migration of the spill by using an absorbent. This could include absorbent pads or booms, floor dry, cat litter, or dirt. The absorbent should be spread across the spill and along the downhill side to stop any flow.
5. If necessary to prevent the material from entering a storm inlet or manhole a dam of absorbent material should be placed in the gutter upstream form the inlet.
6. Begin cleanup of the spilled material and absorbents by placing the materials in 5 gallon, plastic buckets with lids or into a provided drum.
7. Continue cleanup until all spilled material and contaminated absorbents are removed. On a hard surface, this should include sweeping of the area. Material spilled on dirt should be removed down to a level where discoloration of the soul has been removed. Water shall never be used to flush material off a surface.
8. All material shall be properly stored in a location designated by the Responsible Person on site.
9. The Responsible Person shall contact the Site Contracted Emergency Response and Disposal Co. to collect and properly dispose of the material.
10. Location of the spill will be documented on the Stormwater Maintenance Plan (SWMP) in the construction trailer.
11. Inspection of materials and equipment shall occur daily.

G. Record Management

All documentation from the incident, including incident report and incident disposal manifest, shall be maintained at 1873 South Bellaire St, Suite 1106, Denver, CO 80222 (Ph: 303-757-0469), for a period of 3 years from the date of the spill.

H. After Incident Briefing

All personnel involved in the incident shall attend a debriefing to determine the cause of the spill, procedures followed, and corrective actions to prevent future spills. All pertinent data will be recorded. The CDPHE shall be notified of a major

spill by a written follow up within five days of the incident. All finding form the debriefing should be discussed at the next Safety Meeting. Town of Erie shall be notified. Town of Erie will require on copy of any documents that are sent to the State.

Standard Operating Procedure (SOP)

Small Fuel or Oil Spill (5 Gallons to Less than 25 Gallons)

A. Purpose

The purpose of this Standard Operating Procedure is to establish a uniform procedure for cleanup and disposal of material from a small accidental spill of fuel (gasoline or diesel) or oil (hydraulic or motor). The procedures outlined in this SOP are applicable to all personnel working on the Outlook Nine Mile construction site. Cleanup and proper disposal of spilled fuel or oil into the soil or onto the ground surface is required to ensure the material or contaminated soil do not enter or impact the waters of the State of the sanitary sewer system.

B. Summary of the Method

This procedure outlines the steps to be taken to prevent spilled fuel or oil from impacting waters of the State and disposal of the resulting contaminated cleanup material.

C. Definitions

1. Material Safety Data Sheet (MSDS). The standard industry list for a product detailing the chemical make-up, safety hazards, first aid, firefighting, and spill cleanup measures, handling, storage, and disposal methods.

D. Health and Safety Warnings

Fuels and fuel oils may be extremely flammable, cause skin irritation, and may be harmful or fatal if swallowed. Caution should be used during cleanup operations. The MSDS for the spilled material should be consulted to ensure personnel safety during cleanup operations.

E. Equipment and Supplies

1. Absorbent pads and booms
2. Hand equipment (shovel, brooms)
3. Waste containers (5 gallons buckets, drums)
4. Personal Protective Equipment

F. Procedural Steps

1. Shut down all equipment operating in the area to prevent ignition of the spill.
2. Ensure the safety of personnel in the area. If necessary, evacuate the area and wait for Emergency Response Personnel.
3. Contact the Chain of Command on site to enact the emergency response contact procedure.
    a. The Responsible Person begins contacting Emergency Response Agencies.

i. Call 911 for fire control.
ii. Colorado Environmental Release and Incident Reporting Hotline: (1-877) 518-5608
iii. Town of Erie: 303-926-2870

b. Responsible Person shall consult the MSDS for spill procedure.

4. If it can be safely accomplished, attempt to prevent migration of the spill by using an absorbent. This could include absorbent pads or booms, floor dry, cat litter, or dirt. The absorbent should be spread along the downhill side to stop any flow.
5. If it can be safely accomplished, attempt to prevent the material from entering a storm inlet or manhole by constructing a damn of absorbent material in the gutter upstream from the inlet.
6. Emergency Response Personnel should handle stabilization of the spill and initial cleanup.
7. Final cleanup and disposal of contaminated material should be handled by the Site Contracted Emergency Response and Disposal Co.
8. Location of the spill will be documented on the Stormwater Maintenance Plan (SMWP0 in the construction trailer.
9. Inspection of materials and equipment shall occur daily.

G. Record Management

All documentation from the incident, including incident report and incident disposal manifests, shall be maintained at 1873 South Bellaire St, Suite 1106, Denver, CO 80222 (Ph: 303-757-0469), for a period of 3 years from the date of the spill.

H. After Incident Briefing

All personnel involved in the incident shall attend a debriefing to determine the cause of the spill, procedures followed, and corrective actions to prevent future spills. All pertinent data will be recorded. The CDPHE shall be notified of a major spill by a written follow up within five days of the incident. All findings from the debriefing should be discussed at the next Safety Meeting. Town of Erie shall be notified. Town of Erie will require one copy of any documents that are sent to the State.

BOULDER COUNTY TREASURER

Certificate of Taxes Due

Account Number R0084551
Parcel 146534100005
Assessed To

TOWN OF ERIE
PO BOX 98
ERIE, CO 80516-0098

Certificate Number 2015-14174
Order Number 70471321A
Vendor ID 10

LAND TITLE GUARANTEE COMPANY
5975 GREENWOOD PLAZA BLVD
STE 200
GREENWOOD VILLAGE, CO 80111

Legal Description

PRINCE RESERVOIR #2 & TR 4101 LESS TO HWY PER DEEDS 532304 & 536539 & 1759789 BCR 34-1N-69
TOTAL 17.13 ACS M/L

Situs Address

0 HWY 287 ERIE 80026 ERIE

Year	Tax	Interest	Fees	Payments	Balance
Grand Total Due as of 10/19/2015					**$0.00**

Tax Billed at 2014 Rates for Tax Area 001398 - 102.678000

Authority	Mill Levy	Amount
COUNTY	24.7940000	$0.00
BOULDER VALLEY RE2	47.5690000	$0.00
CITY OF ERIE	17.3640000	$0.00
URBAN DRAIN & FLOOD CTRL GE	0.6320000*	$0.00
MOUNTAIN VIEW FIRE DIST	11.7470000	$0.00
HIGH PLAINS LIBRARY DISTRIC	3.2670000	$0.00
Taxes Billed 2014	105.3730000	$0.00

* Credit Levy

Values	Actual	Assessed
9149 - political subd-exempt	$90,800	$26,332
Total	$90,800	$26,332

FEE FOR THIS CERTIFICATE: $10.00

This certificate does not include land or improvements assessed under a separate account number, personal property taxes, transfer tax or misc. tax collected on behalf of other entities, special or local improvement district assessments or mobile homes, unless specifically mentioned.

All Tax Lien Sale amounts are subject to change due to endorsement of current taxes by the lienholder or to advertising and distraint warrant fees. Changes may occur and the Treasurer's Office will need to be contacted prior to remittance. **TAX LIEN SALE REDEMPTION AMOUNTS MUST BE PAID BY CASH OR CASHIERS CHECK.**

Special taxing districts and the boundaries of such districts may be on file with the Board of County Commissioners, the County Clerk, or the County Assessor.

I, the undersigned, do hereby certify that the entire amount of taxes due upon the above described parcels of real property and all outstanding sales for unpaid taxes as shown by the records in my office from which the same may still be redeemed with the amount required for redemption are as noted herein. In witness whereof, I have hereunto set my hand and seal.

PAUL WEISSMANN
BOULDER COUNTY TREASURER
PO BOX 471
BOULDER, CO 80306-0471
(303) 441-3520

BOULDER COUNTY TREASURER ★ SEAL ★ STATE OF COLORADO

BOULDER COUNTY TREASURER

Certificate of Taxes Due

Account Number R0084551	Certificate Number 2019-13551
Parcel 146534100005	Order Number 70471321
Assessed To	Vendor ID 10
TOWN OF ERIE PO BOX 98 ERIE, CO 80516-0098	LAND TITLE GUARANTEE COMPANY 5975 GREENWOOD PLAZA BLVD STE 200 GREENWOOD VILLAGE, CO 80111

Legal Description

PRINCE RESERVOIR #2 & TR 4101 LESS TO HWY PER DEEDS 532304 & 536539 & 1759789 BCR 34-1N-69 TOTAL 17.13 ACS M/L

Situs Address

0 HWY 287 ERIE 80026

Year	Tax	Interest	Fees	Payments	Balance
Grand Total Due as of 11/08/2019					**$0.00**

Tax Billed at 2018 Rates for Tax Area 004195 - 004195

Authority	Mill Levy	Amount
COUNTY	24.0260000*	$0.00
BOULDER VALLEY RE2	48.9670000	$0.00
CITY OF ERIE	15.0900000	$0.00
URBAN DRAIN & FLOOD CTRL GE	0.7260000*	$0.00
MOUNTAIN VIEW FIRE DIST	16.2470000	$0.00
HIGH PLAINS LIBRARY DISTRIC	3.2520000	$0.00
Taxes Billed 2018	108.3080000	$0.00

* Credit Levy

Values	Actual	Assessed
9149 - political subd-exempt	$90,800	$26,332
Total	$90,800	$26,332

FEE FOR THIS CERTIFICATE: $10.00

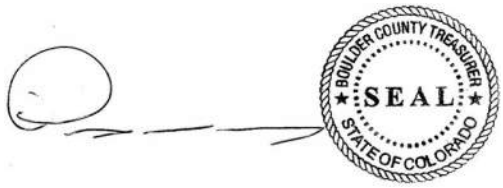
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BOULDER COUNTY TREASURER
PO BOX 471
BOULDER, CO 80306-0471
(303) 441-3520



BOULDER COUNTY TREASURER

Certificate of Taxes Due

Account Number R0606745	Certificate Number 2019-13549
Parcel 146534100015	Order Number 70471321
Assessed To	Vendor ID 10
TOWN OF ERIE URBAN RENEWAL AUTHORITY PO BOX 750 ERIE, CO 80516	LAND TITLE GUARANTEE COMPANY 5975 GREENWOOD PLAZA BLVD STE 200 GREENWOOD VILLAGE, CO 80111

Legal Description

TR 4109 5.01 AC M/L 34-1N-69

Situs Address

10960 ARAPAHOE RD ERIE 80026

Year	Tax	Interest	Fees	Payments	Balance
Grand Total Due as of 11/08/2019					**$0.00**

Tax Billed at 2018 Rates for Tax Area 001410 - 001410

Authority	Mill Levy	Amount
COUNTY	24.0260000*	$0.00
BOULDER VALLEY RE2	48.9670000	$0.00
CITY OF ERIE	15.0900000	$0.00
URBAN DRAIN & FLOOD CTRL GE	0.7260000*	$0.00
MOUNTAIN VIEW FIRE DIST	16.2470000	$0.00
Taxes Billed 2018	105.0560000	$0.00

* Credit Levy

Values	Actual	Assessed
9141 - towns	$283,000	$82,070
9241 - towns	$0	$0
Total	$283,000	$82,070

FEE FOR THIS CERTIFICATE: $10.00

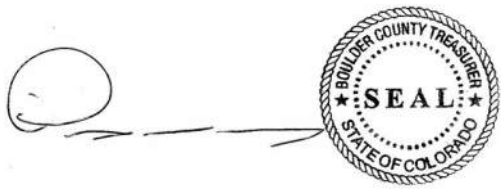
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BOULDER COUNTY TREASURER
PO BOX 471
BOULDER, CO 80306-0471
(303) 441-3520



BOULDER COUNTY TREASURER

Certificate of Taxes Due

Account Number R0606746	Certificate Number 2019-13550
Parcel 146534100016	Order Number 70471321
Assessed To	Vendor ID 10
TOWN OF ERIE URBAN RENEWAL AUTHORITY PO BOX 750 ERIE, CO 80516	LAND TITLE GUARANTEE COMPANY 5975 GREENWOOD PLAZA BLVD STE 200 GREENWOOD VILLAGE, CO 80111

Legal Description

TR 4100 1.05 AC M/L 34-1N-69

Situs Address

10960 ARAPAHOE RD ERIE 80026

Year	Tax	Interest	Fees	Payments	Balance
Grand Total Due as of 11/08/2019					**$0.00**

Tax Billed at 2018 Rates for Tax Area 001410 - 001410

Authority	Mill Levy	Amount
COUNTY	24.0260000*	$0.00
BOULDER VALLEY RE2	48.9670000	$0.00
CITY OF ERIE	15.0900000	$0.00
URBAN DRAIN & FLOOD CTRL GE	0.7260000*	$0.00
MOUNTAIN VIEW FIRE DIST	16.2470000	$0.00
Taxes Billed 2018	105.0560000	$0.00

* Credit Levy

Values	Actual	Assessed
9141 - towns	$56,800	$16,472
Total	$56,800	$16,472

FEE FOR THIS CERTIFICATE: $10.00

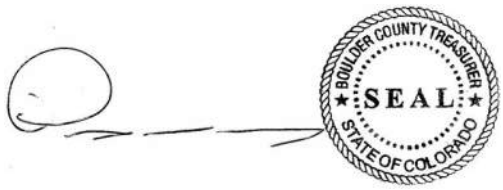
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PO BOX 471
BOULDER, CO 80306-0471
(303) 441-3520



BOULDER COUNTY TREASURER

Certificate of Taxes Due

Account Number R0021598	Certificate Number 2019-13554
Parcel 146534100006	Order Number
Assessed To	Vendor ID 10
TOWN OF ERIE URBAN RENEWAL AUTHORITY 645 HOLBROOK ST ERIE, CO 80516	LAND TITLE GUARANTEE COMPANY 5975 GREENWOOD PLAZA BLVD STE 200 GREENWOOD VILLAGE, CO 80111

Legal Description

PARCEL OF LAND IN NW1/4 NE1/4 34-1N-69 LESS 0.083 ACS M/L IN NWLY CORNER TO STATE DEPT OF HWYS /REC# 543786 & LESS WLY PT TO HWY /REC# 1678309 3/97

Situs Address

504 W LUCERNE DR ERIE 80026

Year	Tax	Interest	Fees	Payments	Balance
Grand Total Due as of 11/08/2019					**$0.00**

Tax Billed at 2018 Rates for Tax Area 001410 - 001410

Authority	Mill Levy	Amount
COUNTY	24.0260000*	$0.00
BOULDER VALLEY RE2	48.9670000	$0.00
CITY OF ERIE	15.0900000	$0.00
URBAN DRAIN & FLOOD CTRL GE	0.7260000*	$0.00
MOUNTAIN VIEW FIRE DIST	16.2470000	$0.00
Taxes Billed 2018	105.0560000	$0.00

* Credit Levy

Values	Actual	Assessed
9140 - exempt political sub res land	$528,100	$38,023
9240 - exempt political sub res improvements	$242,298	$17,445
Total	$770,398	$55,468

FEE FOR THIS CERTIFICATE: $10.00

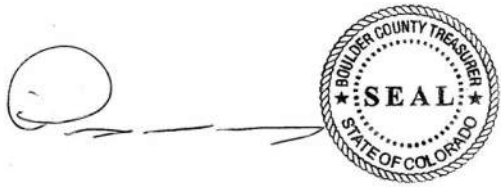
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PAUL WEISSMANN
BOULDER COUNTY TREASURER
PO BOX 471
BOULDER, CO 80306-0471
(303) 441-3520



Land Title Guarantee Company
Customer Distribution

PREVENT FRAUD - Please remember to call a member of our closing team when initiating a wire transfer or providing wiring instructions.

Order Number: **ABZ70471321-15** Date: **11/08/2019**

Property Address: **VACANT LAND AT HWY 287 AND ARAPAHOE, ERIE, CO 80516**

PLEASE CONTACT YOUR CLOSER OR CLOSER'S ASSISTANT FOR WIRE TRANSFER INSTRUCTIONS

For Closing Assistance
Colin Snody
3033 EAST FIRST AVENUE, SUITE 600
DENVER, CO 80206
(303) 331-6234 (Work)
(303) 393-3806 (Work Fax)
csnody@ltgc.com
Contact License: CO271428
Company License: CO44565

Closer's Assistant
Nathaniel Bukowski
3033 EAST FIRST AVENUE, SUITE 600
DENVER, CO 80206
(303) 331-6221 (Work)
(303) 393-3886 (Work Fax)
nbukowski@ltgc.com
Company License: CO44565

For Title Assistance
KIM ZIMMERMAN
5975 GREENWOOD PLAZA BLVD
GREENWOOD VILLAGE, CO 80111
(720) 406-2083 (Work)
(303) 393-4919 (Work Fax)
kzimmerman@ltgc.com

EVERGREEN DEVCO
Attention: TYLER CARLSON
1873 S BELLAIRE ST. #1106
DENVER, CO 80222
(303) 757-0462 (Work)
tcarlson@evgre.com
Delivered via: Electronic Mail

BROWNSTEIN HYATT FARBER & SCHRECK PC
Attention: JUDITH CLOUTIER
410 17TH ST 22ND FL
DENVER, CO 80202
(970) 221-6275 (Cell)
(303) 223-1100 (Work)
(303) 223-1111 (Work Fax)
jcloutier@bhfs.com
Delivered via: Electronic Mail

EVERGREEN DEVELOPMENT
Attention: DEREK LIS
1873 S. BELLAIRE ST., SUITE 1200
Denver, CO 80222
(602) 808-8600 (Work)
dlis@evgre.com
Delivered via: Electronic Mail

BROWNSTEIN HYATT FARBER & SCHRECK PC
Attention: CATHERINE A HILDRETH
410 17TH ST 22ND FL
DENVER, CO 80202
(303) 253-4044 (Cell)
(303) 223-1263 (Work)
(303) 223-1111 (Work Fax)
childreth@bhfs.com
Delivered via: Electronic Mail

EVERGREEN DEVELOPMENT
Attention: LAURA ORTIZ
1873 S. BELLAIRE ST., #1106
Denver, CO 80222
lortiz@evgre.com
Delivered via: Electronic Mail

BROWNSTEIN HYATT FARBER & SCHRECK PC
Attention: JEAN HARRISON
410 17TH ST 22ND FL
DENVER, CO 80202
(303) 223-1100 (Work)
jharrison@bhfs.com
Delivered via: Electronic Mail

TOWN OF ERIE
Attention: MALCOLM FLEMING
mfleming@erieco.gov
Delivered via: Electronic Mail

LAND TITLE GUARANTEE COMPANY
Attention: MINDY HUMPHREY
3033 EAST FIRST AVENUE SUITE 600
DENVER, CO 80206
(303) 618-6569 (Cell)
(303) 331-6274 (Work)
(303) 393-4912 (Work Fax)
mhumphrey@ltgc.com
Delivered via: Electronic Mail

DAVIS GRAHAM & STUBBS
Attention: J CHRISTOPHER KINSMAN
1550 17TH ST #500
DENVER, CO 80202
(720) 299-6585 (Cell)
(303) 892-7311 (Work)
(303) 893-1379 (Work Fax)
chris.kinsman@dgslaw.com

JUMPS LAW LLC
Attention: STEPHANIE M REED
2579 W MAIN ST #201
LITTLETON, CO 80120
(303) 586-4219 (Work)
(720) 643-2997 (Work Fax)
sreed@jumpslaw.com
Delivered via: Electronic Mail

DAVIS GRAHAM & STUBBS
Attention: TIM CANNON
1550 17TH ST #500
Denver, CO 80202
(303) 892-7428 (Work)
tim.canon@dgslaw.com
Delivered via: Electronic Mail

JUMPS LAW LLC
Attention: BRIAN JUMPS
2579 W MAIN ST #201
LITTLETON, CO 80120
(303) 586-1855 (Work)
(720) 643-2997 (Work Fax)
bjumps@jumpslaw.com
Delivered via: Electronic Mail

Land Title Guarantee Company
Estimate of Title Fees

Order Number: **ABZ70471321-15** Date: **11/08/2019**

Property Address: **VACANT LAND AT HWY 287 AND ARAPAHOE, ERIE, CO 80516**

Parties: **EVERGREEN DEVCO, INC., A CALIFORNIA CORPORATION**

TOWN OF ERIE URBAN RENEWAL AUTHORITY, AS TO PARCELS A AND B
THE TOWN OF ERIE, WELD COUNTY, STATE OF COLORADO, A MUNICIPAL CORPORATION, AS TO PARCEL C

Visit Land Title's Website at **www.ltgc.com** for directions to any of our offices.

Estimate of Title insurance Fees	
"ALTA" Owner's Policy 06-17-06	$8,152.00
Endorsement ALTA 35.3-06	$1,000.00
Deletion of Standard Exception(s)	$100.00
Tax Certificate 4 tax accounts for 2018	$104.00
	Total $9,356.00
If Land Title Guarantee Company will be closing this transaction, the fees listed above will be collected at closing.	
Thank you for your order!	

Chain of Title Documents:

Boulder county recorded 11/02/1956 at book 1028 page 471

Boulder county recorded 04/29/1968 under reception no. 877395

Boulder county recorded 01/17/2012 under reception no. 3196450

Boulder county recorded 03/01/2012 under reception no. 3206319

Boulder county recorded 01/16/2013 under reception no. 3282584

ALTA COMMITMENT

Old Republic National Title Insurance Company

Schedule A

Order Number: ABZ70471321-15

Property Address:

VACANT LAND AT HWY 287 AND ARAPAHOE, ERIE, CO 80516

1. **Effective Date:**

   11/04/2019 at 5:00 P.M.

2. **Policy to be Issued and Proposed Insured:**

   "ALTA" Owner's Policy 06-17-06 $10,000,000.00
   Proposed Insured:
   EVERGREEN DEVCO, INC., A CALIFORNIA CORPORATION

3. **The estate or interest in the land described or referred to in this Commitment and covered herein is:**

   A FEE SIMPLE

4. **Title to the estate or interest covered herein is at the effective date hereof vested in:**

   TOWN OF ERIE URBAN RENEWAL AUTHORITY, AS TO PARCELS A AND B
   THE TOWN OF ERIE, WELD COUNTY, STATE OF COLORADO, A MUNICIPAL CORPORATION, AS TO PARCEL C

5. **The Land referred to in this Commitment is described as follows:**

   PARCEL A:

   PART OF THE NORTH HALF NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, DESCRIBED AS FOLLOWS:

   BEGINNING AT THE SOUTHWEST CORNER OF THE NORTH HALF NORTHEAST QUARTER FROM WHENCE THE NORTHWEST CORNER OF SAID NORTH HALF NORTHEAST QUARTER BEARS NORTH 00°04'00" EAST; THENCE SOUTH 89°48'30" EAST ALONG THE SOUTH LINE OF SAID NORTH HALF NORTHEAST QUARTER, A DISTANCE OF 1434.83 FEET; THENCE NORTH 00°14'20" EAST, 845.98 FEET TO THE SOUTH LINE OF THAT PROPERTY CONVEYED BY FLOYD E. HARRIS AND NEVADIA HARRIS TO LEONARD L. LANHAM AND NINA E. LANHAM, RECORDED MAY 15, 1968 ON FILM 635 AT RECEPTION NO. **879012**; THENCE NORTH 89°41'50" WEST ALONG SAID SOUTH LINE, A DISTANCE OF 366.57 FEET TO A POINT ON THE EAST LINE OF THAT PROPERTY CONVEYED BY DEED FROM FLOYD EUGENE HARRIS AND NEVADIA HARRIS TO THE TOWN OF ERIE, A MUNICIPAL CORPORATION, RECORDED APRIL 29, 1968 IN FILM 633 AT RECEPTION NO. **877395**; THENCE SOUTH 00°58'00" WEST ALONG SAID EAST LINE, 31.12 FEET TO THE CENTERLINE OF THE SOUTH BOULDER CANYON IRRIGATION DITCH; THENCE TRAVERSING ALONG THE CENTERLINE OF SAID DITCH AND THE SOUTH LINE OF PROPERTY DESCRIBED ON FILM 633 AT RECEPTION NO. **877395**, THE FOLLOWING COURSES AND DISTANCES:
   SOUTH 71°36'00" WEST, 508.65 FEET;
   THENCE SOUTH 73°48'00" WEST, 241.52 FEET;
   THENCE NORTH 89°40'00" WEST, 140.82 FEET;
   THENCE NORTH 77°42'00" WEST, 114.23 FEET;
   THENCE NORTH 62°24'00" WEST, 118.52 FEET TO A POINT ON THE WEST LINE OF THE NORTH HALF NORTHEAST QUARTER OF SAID SECTION 34;
   SAID POINT BEING ALSO THE SOUTHWEST CORNER OF THAT PROPERTY DESCRIBED ON FILM 633 AT RECEPTION NO. **877395**; THENCE SOUTH 00°04'00" WEST ALONG SAID WEST LINE OF THE NORTH HALF NORTHEAST QUARTER, A DISTANCE OF 675.12 FEET TO THE TRUE POINT OF BEGINNING,

EXCEPTING THEREFROM THAT PORTION DESCRIBED IN DEED RECORDED APRIL 15, 1983 AT RECEPTION NO. 543786, AND IN DEED RECORDED FEBRUARY 20, 1997 ON FILM NO. 2187 AT RECEPTION NO. 1678309,
COUNTY OF BOULDER, STATE OF COLORADO.

PARCEL B:

A PORTION OF THE NORTH 1/2 OF THE NORTHEAST 1/4 OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE NORTH LINE OF SAID NORTHEAST 1/4, 20 FEET WEST OF THE NORTHEAST CORNER OF THE NORTHWEST 1/4 OF THE NORTHEAST 1/4; THENCE NORTH 89°41'50" WEST ALONG SAID NORTH LINE, 230.64 FEET; THENCE SOUTH 00°58' WEST, 469.96 FEET; THENCE SOUTH 89°41'50" EAST, 618.52; THENCE NORTH 00°14'20" EAST, 469.93 FEET TO THE NORTH LINE OF SAID NORTHEAST 1/4; THENCE NORTH 89°41'50" WEST, ALONG SAID NORTH LINE TO THE TRUE POINT OF BEGINNING;
EXCEPTING THEREFROM THAT PORTION CONVEYED TO THE COUNTY OF BOULDER BY THE DEED RECORDED NOVEMBER 29, 1913 IN BOOK 381 AT PAGE 127,

COUNTY OF BOULDER, STATE OF COLORADO.

PARCEL C:

PARCEL I:

A PART OF THE NORTHWEST 1/4 OF THE NORTHEAST 1/4 OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF BOULDER, STATE OF COLORADO, MORE PARTICULARLY DESCRIBED AS FOLLOWS:
BEGINNING AT THE NORTH 1/4 CORNER OF SAID SECTION; THENCE SOUTH 0°09' WEST 642.7 FEET; THENCE SOUTH 69°45' EAST 211.4 FEET; THENCE NORTH 85° EAST 195 FEET; THENCE NORTH 71°53' EAST 718 FEET; THENCE NORTH 24°20' EAST 539 FEET TO A POINT ON THE NORTH LINE OF SAID SECTION, 20 FEET WEST OF THE NORTHEAST CORNER OF SAID NORTHWEST 1/4 OF THE NORTHEAST 1/4; THENCE WEST ALONG SAID NORTH LINE OF SAID SECTION TO THE PLACE OF BEGINNING;

EXCEPTING THEREFROM THAT PORTION CONVEYED TO THE COUNTY OF BOULDER BY THE DEED RECORDED NOVEMBER 29, 1913 IN BOOK 381 AT PAGE 127;
AND EXCEPT THAT PORTION DESCRIBED IN DEED RECORDED APRIL 29, 1968 UNDER RECEPTION NO. 877396;
AND EXCEPT THAT PORTION CONVEYED TO THE STATE DEPARTMENT OF HIGHWAYS, DIVISION OF HIGHWAYS, STATE OF COLORADO, BY THE DEED RECORDED FEBRUARY 8, 1983 UNDER RECEPTION NO. 532304;
AND EXCEPT THAT PORTION CONVEYED TO THE DEPARTMENT OF TRANSPORTATION, STATE OF COLORADO BY THE DEED RECORDED JANUARY 2, 1998 UNDER RECEPTION NO. 1759789.

ALTA COMMITMENT

Old Republic National Title Insurance Company

Schedule A

Order Number: ABZ70471321-15

PARCEL II:

A PORTION OF THE NORTHWEST 1/4 OF THE NORTHEAST 1/4 OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF BOULDER, STATE OF COLORADO, DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTH QUARTER CORNER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, THENCE SOUTH 0°09' WEST, 642.7 FEET; THENCE SOUTH 69°45' EAST, 2.59 FEET TO A POINT ON THE WEST LINE OF THE NORTHEAST QUARTER OF SAID SECTION 34, THE TRUE POINT OF BEGINNING; THENCE SOUTH 69°45' EAST, 208.81 FEET; THENCE NORTH 85°0' EAST, 195.00 FEET; THENCE NORTH 71°53' EAST, 718.00 FEET; THENCE SOUTH 0°58' WEST, 31.12 FEET TO A POINT ON THE CENTERLINE OF THE SOUTH BOULDER CANYON DITCH; THENCE WESTERLY, ALONG THE SAID DITCH CENTERLINE AS FOLLOWS: SOUTH 71°36' WEST, 508.65 FEET; SOUTH 73°48' WEST, 241.52 FEET; NORTH 89°40' WEST, 140.82 FEET; NORTH 77°42' WEST, 114.23 FEET; NORTH 62°24' WEST, 118.52 FEET TO A POINT ON THE WEST LINE OF THE NORTHEAST QUARTER OF SAID SECTION 34; THENCE NORTH 0°04' WEST, ALONG THE SAID WEST LINE OF THE NORTHEAST QUARTER, 11.00 FEET TO THE TRUE POINT OF BEGINNING;

EXCEPTING THEREFROM THAT PORTION CONVEYED TO THE STATE DEPARTMENT OF HIGHWAYS DIVISION OF HIGHWAYS, STATE OF COLORADO BY DEED RECORDED FEBRUARY 8, 1983 UNDER RECEPTION NO. **532304**.

PARCEL III:

THAT PORTION OF THE SOUTHWEST 1/4 OF THE SOUTHEAST 1/4 OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF BOULDER, STATE OF COLORADO, LYING SOUTH OF THE COUNTY ROAD AS DESCRIBED IN DEED RECORDED NOVEMBER 29, 1913 IN BOOK 381 AT PAGE **127**;

EXCEPTING THEREFROM THAT PORTION CONVEYED TO THE STATE DEPARTMENT OF HIGHWAYS, DIVISION OF HIGHWAYS, STATE OF COLORADO, BY THE DEED RECORDED FEBRUARY 8, 1983 UNDER RECEPTION NO. **532304**.

NOTE: THE FINAL POLICY DOES NOT IN ANY WAY GUARANTEE OR INSURE THE DIMENSIONS OF THE ABOVE DESCRIBED LAND, THE LEGAL DESCRIPTION IS DERIVED FROM THE CHAIN OF TITLE AND ONLY AN ACCURATE SURVEY CAN DETERMINE THE DIMENSIONS.

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ALTA COMMITMENT

Old Republic National Title Insurance Company

Schedule B-1

(Requirements)

Order Number: ABZ70471321-15

The following are the requirements to be complied with:

PAYMENT TO OR FOR THE ACCOUNT OF THE GRANTORS OR MORTGAGORS OF THE FULL CONSIDERATION FOR THE ESTATE OR INTEREST TO BE INSURED.

PROPER INSTRUMENT(S) CREATING THE ESTATE OR INTEREST TO BE INSURED MUST BE EXECUTED AND DULY FILED FOR RECORD, TO-WIT:

1. ORDINANCE AUTHORIZING THE SALE OF SUBJECT PROPERTY AND THE EXECUTION OF NECESSARY DOCUMENTS BY THE TOWN OF ERIE AND TOWN OF ERIE URBAN RENEWAL AUTHORITY.
2. WARRANTY DEED FROM TOWN OF ERIE URBAN RENEWAL AUTHORITY AND THE TOWN OF ERIE TO EVERGREEN DEVCO, INC., A CALIFORNIA CORPORATION CONVEYING SUBJECT PROPERTY.
3. ORDER OF DISMISSAL ISSUED BY THE CLERK OF THE DISTRICT COURT IN AND FOR THE COUNTY OF BOULDER OF CIVIL ACTION NO. 2016CV30791 ENTITLED THE CITY OF LAFAYETTE, PLAINTIFF (S), VS. TOWN OF ERIE URBAN RENEWAL AUTHORITY ET AL., DEFENDANT (S). NOTICE OF LIS PENDENS RECORDED JULY 19, 2016, UNDER RECEPTION NO. **03531289**.
4. PROVIDE THIS COMPANY WITH A FINAL COPY OF THE NINE MILE CORNER SITE PLAN APPROVED BY THE TOWN OF ERIE.

   2 PAGES OF A DRAFT COPY OF SAID SITE PLAN DATED MARCH 3, 2017 HAS BEEN RECEIVED.

   NOTE: REQUIREMENT IS NECESSARY TO ISSUE THE ALTA 35.3 ENDORSEMENT AS TO EXCEPTIONS 8,10,11,12 AND 13. ADDITIONAL REQUIREMENTS AND/OR EXCEPTIONS MAY BE MADE AFTER THE REVIEW OF SAID PLAN.
5. FOR CONSIDERATION OF ANY ENDORSEMENT COVERING ANY OIL AND GAS MINERAL RESERVATIONS OR OIL AND GAS LEASES, THE COMPANY AND ITS UNDERWRITER REQUIRES (1) DULY EXECUTED AND ACKNOWLEDGED RELINQUISHMENTS, TERMINATIONS, AND/OR SURFACE USE WAIVER AGREEMENTS, SPECIFIC TO THE SUBJECT PROPERTY, BY ALL CURRENT OWNERS OF SAID MINERAL INTERESTS OR LEASE INTERESTS.

   NOTE: SATISFACTORY MINERAL INTEREST REPORT BY J.L. OBOURN, JR & CO. DATED DECEMBER 1, 2107 HAS BEEN RECEIVED BY THE COMPANY.

   NOTE: THE COMPANY AND ITS UNDERWRITER RESERVE THE RIGHT TO ADD ADDITIONAL REQUIREMENTS OR EXCEPTIONS UPON REVIEW OF SAID DOCUMENTATION.

   NOTE: THE ABOVE REQUIREMENT IS NECESSARY TO CONSIDER COVERAGE FOR ANY OF THE FOLLOWING EXCEPTIONS: 14, 26, 27, 28, 30, 31, 32, 33, 34, 35, 36, 37 AND 44. NOTICE REQUIREMENTS IN EXCEPTIONS 40, 41 AND 42 ARE NOT MINERAL INTERESTS AND WILL REMAIN ON TITLE.
6. RECORD TERMINATION OF DEED RESERVATION, BY THE TOWN OF ERIE, FOR THAT EASEMENT RESERVED IN DEED RECORDED APRIL 29, 1968 UNDER RECEPTION NO. **877396**.

   NOTE: SAID REQUIREMENT IS NECESSARY FOR DELETION OF EXCEPTION #18. AN ACCEPTABLE DRAFT COPY HAS BEEN PROVIDED TO THE COMPANY.
7. (THIS ITEM WAS INTENTIONALLY DELETED)

ALTA COMMITMENT

Old Republic National Title Insurance Company

Schedule B-1

(Requirements)

Order Number: ABZ70471321-15

The following are the requirements to be complied with:

8. PROVIDE A CERTIFIED RENT ROLL FOR SUBJECT PROPERTY, OR, IN THE ALTERNATIVE, PROVIDE CONFIRMATION ON SELLER'S FINAL AFFIDAVIT THAT THERE ARE NO EXISTING UNRECORDED LEASES OR TENANCIES ON SUBJECT PROPERTY. SAID REQUIREMENT IS NECESSARY TO EITHER MODIFY OR DELETE EXCEPTION NO. 47.
9. PROVIDE LAND TITLE GUARANTEE COMPANY WITH A FINAL SIGNED/STAMPED ALTA/NSPS LAND TITLE SURVEY OF SUBJECT PROPERTY. UPON REVIEW, ADDITIONAL REQUIREMENTS AND/OR EXCEPTIONS MAY BE NECESSARY.

   SAID SURVEY MUST BE CERTIFIED TO LAND TITLE GUARANTEE COMPANY AND OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY.

   NOTE: SURVEY BY GALLOWAY DATED DECEMBER 9, 2016, PROJECT NO. ED1000018 IS INCOMPLETE AS TO THE LEGAL DESCRIPTIONS AND AS TO MEASUREMENTS BETWEEN THE PARCELS HEREIN. IN ADDITION THE COMPANY HAS BEEN PROVIDED WITH 2 DIFFERENT VERSIONS OF "SHEET 2 OF 2".

   NOTE: ITEMS 1-3 OF THE STANDARD EXCEPTIONS WILL BE DELETED UPON RECEIPT OF AN APPROVED SURVEY. MATTERS DISCLOSED BY SAID SURVEY MAY BE ADDED TO SCHEDULE B-2 HEREOF.

   NOTE: UPON THE APPROVAL OF THE COMPANY AND THE RECEIPT OF A NOTARIZED FINAL LIEN AFFIDAVIT, ITEM NO. 4 OF THE STANDARD EXCEPTIONS ON THE OWNER'S POLICY, WILL BE AMENDED AS FOLLOWS:

   ITEM NO. 4 OF THE STANDARD EXCEPTIONS IS DELETED AS TO ANY LIENS OR FUTURE LIENS RESULTING FROM WORK OR MATERIAL FURNISHED AT THE SPECIFIC, DIRECT REQUEST, AND WITH THE ACTUAL KNOWLEDGE OF TOWN OF ERIE URBAN RENEWAL AUTHORITY, AS TO PARCELS A AND B THE TOWN OF ERIE, WELD COUNTY, STATE OF COLORADO, A MUNICIPAL CORPORATION, AS TO PARCEL C.
   OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY SHALL HAVE NO LIABILITY FOR ANY LIENS ARISING FROM WORK OR MATERIAL FURNISHED AT THE SPECIFIC, DIRECT REQUEST, AND WITH THE ACTUAL KNOWLEDGE OF EVERGREEN DEVCO, INC., A CALIFORNIA CORPORATION.

   NOTE: ITEM 5 OF THE STANDARD EXCEPTIONS WILL BE DELETED IF LAND TITLE GUARANTEE COMPANY CONDUCTS THE CLOSING OF THE CONTEMPLATED TRANSACTION(S) AND RECORDS THE DOCUMENTS IN CONNECTION THEREWITH.

   NOTE: UPON PROOF OF PAYMENT OF CURRENT TAXES DUE TAXES, ITEM 6 WILL BE AMENDED TO READ:

   TAXES AND ASSESSMENTS FOR THE YEAR OF CLOSING AND SUBSEQUENT YEARS, A LIEN NOT YET DUE AND PAYABLE.

   NOTE: ITEM NOS. 7(A) AND 7(B) OF THE STANDARD EXCEPTIONS ARE HEREBY DELETED.

ALTA COMMITMENT

Old Republic National Title Insurance Company

Schedule B-1

(Requirements)

Order Number: ABZ70471321-15

The following are the requirements to be complied with:

TAX ACCOUNT INFORMATION:

FOR 2018: R0606745; R0606746; R0084551; R0021598

FOR 2019: R0606745; R0606746; R0611670; R0611671; R0611672; R0611673

NOTE: THE ISSUANCE OF THE POLICIES AND/OR ENDORSEMENTS REFERENCED IN THIS COMMITMENT ARE SUBJECT TO THE APPROVAL OF THE UNDERWRITER OF SAID POLICIES AND/OR ENDORSEMENTS. THIS COMMITMENT MAY BE REVISED AS REQUIRED BY THE UNDERWRITER TO ISSUE THE POLICIES AND/OR ENDORSEMENTS REQUESTED. THIS NOTE WILL BE DELETED UPON THE RECEIPT OF SAID APPROVAL.

ALTA COMMITMENT

Old Republic National Title Insurance Company

Schedule B-2

(Exceptions)

Order Number: ABZ70471321-15

The policy or policies to be issued will contain exceptions to the following unless the same are disposed of to the satisfaction of the Company:

1. **ANY FACTS, RIGHTS, INTERESTS, OR CLAIMS THEREOF, NOT SHOWN BY THE PUBLIC RECORDS BUT THAT COULD BE ASCERTAINED BY AN INSPECTION OF THE LAND OR THAT MAY BE ASSERTED BY PERSONS IN POSSESSION OF THE LAND.**
2. **EASEMENTS, LIENS OR ENCUMBRANCES, OR CLAIMS THEREOF, NOT SHOWN BY THE PUBLIC RECORDS.**
3. **ANY ENCROACHMENT, ENCUMBRANCE, VIOLATION, VARIATION, OR ADVERSE CIRCUMSTANCE AFFECTING THE TITLE THAT WOULD BE DISCLOSED BY AN ACCURATE AND COMPLETE LAND SURVEY OF THE LAND AND NOT SHOWN BY THE PUBLIC RECORDS.**
4. **ANY LIEN, OR RIGHT TO A LIEN, FOR SERVICES, LABOR OR MATERIAL HERETOFORE OR HEREAFTER FURNISHED, IMPOSED BY LAW AND NOT SHOWN BY THE PUBLIC RECORDS.**
5. **DEFECTS, LIENS, ENCUMBRANCES, ADVERSE CLAIMS OR OTHER MATTERS, IF ANY, CREATED, FIRST APPEARING IN THE PUBLIC RECORDS OR ATTACHING SUBSEQUENT TO THE EFFECTIVE DATE HEREOF BUT PRIOR TO THE DATE OF THE PROPOSED INSURED ACQUIRES OF RECORD FOR VALUE THE ESTATE OR INTEREST OR MORTGAGE THEREON COVERED BY THIS COMMITMENT.**
6. **(A) TAXES OR ASSESSMENTS THAT ARE NOT SHOWN AS EXISTING LIENS BY THE RECORDS OF ANY TAXING AUTHORITY THAT LEVIES TAXES OR ASSESSMENTS ON REAL PROPERTY OR BY THE PUBLIC RECORDS; (B) PROCEEDINGS BY A PUBLIC AGENCY THAT MAY RESULT IN TAXES OR ASSESSMENTS, OR NOTICES OF SUCH PROCEEDINGS, WHETHER OR NOT SHOWN BY THE RECORDS OF SUCH AGENCY OR BY THE PUBLIC RECORDS.**
7. **(A) UNPATENTED MINING CLAIMS; (B) RESERVATIONS OR EXCEPTIONS IN PATENTS OR IN ACTS AUTHORIZING THE ISSUANCE THEREOF; (C) WATER RIGHTS, CLAIMS OR TITLE TO WATER.**
8. ALL COAL THAT MAY BE UNDERNEATH THE SURFACE OF THE LAND HEREIN DESCRIBED, ALSO SUCH RIGHT OF WAY AND OTHER GROUNDS AS MAY BE NECESSARY FOR THE PROPER WORKING OF ANY COAL MINES THAT MAY BE DEVELOPED UPON SAID PREMISES AND FOR THE TRANSPORTATION OF THE COAL FROM THE SAME, AS RESERVED UNTO THE UNION PACIFIC RAILWAY COMPANY IN THE DEED RECORDED JUNE 11, 1891 IN BOOK 138 AT PAGE **469**, AND ANY AND ALL ASSIGNMENTS THEREOF OR INTERESTS THEREIN.

   (AFFECTS PARCEL C (III))
9. (THIS ITEM WAS INTENTIONALLY DELETED)
10. ALL COAL THAT MAY BE UNDERNEATH THE SURFACE OF THE LAND, AND THE EXCLUSIVE RIGHT TO PROSPECT, SINK SHAFT OR SHAFTS AND MINE FOR THE SAME; ALSO RESERVING SUCH RIGHT OF WAY AND OTHER GROUNDS AS MAY BE NECESSARY FOR THE PROPER WORKING OF ANY COAL MINE THAT MAY BE DEVELOPED UPON SAID PREMISES AND FOR THE TRANSPORTATION OF COAL FROM THE SAME, AS RESERVED UNTO THE COLORADO MORTGAGE AND INVESTMENT CO., LTD., A CORPORATION ORGANIZED AND EXISTING UNDER THE LAWS OF GREAT BRITAIN AND IRELAND; ANDREW WHITTON; JAMES GUTHRIE; AND ALEXANDER GOURLAY IN THE DEED RECORDED OCTOBER 18, 1901 IN BOOK 249 AT PAGE **209**, AND ANY AND ALL ASSIGNMENTS THEREOF OR INTERESTS THEREIN.

    NOTE: MINERAL DEED RECORDED FEBRUARY 27, 1907 IN BOOK 296 AT PAGE **299**.

ALTA COMMITMENT

Old Republic National Title Insurance Company

Schedule B-2

(Exceptions)

Order Number: ABZ70471321-15

The policy or policies to be issued will contain exceptions to the following unless the same are disposed of to the satisfaction of the Company:

NOTE: MINERAL DEED RECORDED SEPTEMBER 11, 1929 IN BOOK 566 AT PAGE **360**.

(AFFECTS PARCELS A AND B)

11. ALL COAL OR OTHER MINERALS THAT MAY BE UNDERNEATH THE SURFACE OF THE LAND; AND THE EXCLUSIVE RIGHT TO PROSPECT, SINK SHAFT OR SHAFTS, AND MINE FOR THE SAME, AS RESERVED UNTO THE COLORADO MORTGAGE & INVESTMENT COMPANY, LIMITED, A CORPORATION ORGANIZED AND EXISTING UNDER THE LAWS OF GREAT BRITAIN AND IRELAND; ANDREW WHITTON; JAMES GUTHRIE; AND ALEXANDER GOURLEY IN THE DEED RECORDED JANUARY 21, 1904 IN BOOK 251 AT PAGE **460**, AND ANY AND ALL ASSIGNMENTS THEREOF OR INTERESTS THEREIN.

    (AFFECTS PARCELS B AND C(I))

12. AN UNDIVIDED ONE-HALF INTEREST IN THE COAL AND OTHER MINERALS LYING UNDERNEATH THE SURFACE OF THE LAND AS CONVEYED TO GEORGE MURRAY, EDWARD E. HOLMES AND ALFRED N. GOSSETT BY THE DEED RECORDED FEBRUARY 27, 1907 IN BOOK 296 AT PAGE **299**.

    (AFFECTS PARCELS A, B AND C(II))

13. ALL COAL AND OTHER MINERALS UNDERNEATH THE SURFACE OF THE LAND, AND THE EXCLUSIVE RIGHT TO PROSPECT, SINK SHAFT OR SHAFTS, AND MINE FOR THE SAME; ALSO RESERVING SUCH RIGHT OF WAY AND OTHER GROUNDS AS MAY BE NECESSARY FOR THE PROPER WORKING OF ANY COAL OR OTHER MINE OR MINES THAT MAY BE DEVELOPED UPON SAID PREMISES AND FOR THE TRANSPORTATION OF THE PRODUCTS THEREFROM, AND FOR SUCH SURFACE AREA SO REQUIRED, AS RESERVED UNTO THE COLORADO MORTGAGE AND INVESTMENT COMPANY, LIMITED, A CORPORATION ORGANIZED AND EXISTING UNDER THE LAWS OF GREAT BRITAIN AND IRELAND; ANDREW WHITTON; JAMES GUTHRIE; AND ALEXANDER GOURLAY IN THE DEED RECORDED JANUARY 15, 1910 IN BOOK 340 AT PAGE **259**, AND ANY AND ALL ASSIGNMENTS THEREOF OR INTERESTS THEREIN.

    (AFFECTS A, B AND C(II))

14. AN UNDIVIDED 2½% INTEREST IN AND TO ALL THE OIL AND GAS IN AND UNDER AND THAT MAY BE PRODUCED FROM THE LAND, AS CONVEYED TO ROY R. CARPENTER BY THE DEED RECORDED JULY 22, 1924 IN BOOK 511 AT PAGE **168**, AND ANY AND ALL ASSIGNMENTS THEREOF OR INTERESTS THEREIN.

    (AFFECTS ALL PARCELS)

15. (THIS ITEM WAS INTENTIONALLY DELETED)

16. ANY RIGHTS OR INTERESTS OF THIRD PARTIES WHICH EXIST OR ARE CLAIMED TO EXIST IN AND OVER THE PRESENT AND PAST BED, BANKS OR WATERS OF SOUTH BOULDER CANYON DITCH, SAID DITCH BEING REFERRED TO IN THE LEGAL DESCRIPTION CONTAINED IN DEED RECORDED APRIL 29, 1968 UNDER RECEPTION NO. **877395** AND DEED RECORDED MAY 21, 1969 UNDER RECEPTION NO. **913694**.

    (AFFECTS PARCELS A, AND C(II))

ALTA COMMITMENT

Old Republic National Title Insurance Company

Schedule B-2

(Exceptions)

Order Number: ABZ70471321-15

The policy or policies to be issued will contain exceptions to the following unless the same are disposed of to the satisfaction of the Company:

17. ANY CHANGES IN AREA DUE TO THE RELOCATION OR MOVEMENT OF SOUTH BOULDER CANYON DITCH, SAID DITCH BEING DESCRIBED IN THE LEGAL DESCRIPTION CONTAINED IN DEED RECORDED APRIL 29, 1968 UNDER RECEPTION NO. **877395** AND DEED RECORDED MAY 21, 1969 UNDER RECEPTION NO. **913694**.

    (AFFECTS PARCELS A AND C(II))

18. AN EASEMENT FOR ROADWAY AND FOR THE MAINTENANCE AND REPAIR OF RESERVOIR, AS RESERVED UNTO THE TOWN OF ERIE IN THE DEED RECORDED APRIL 29, 1968 UNDER RECEPTION NO. **877396**.

    NOTE: THE ABOVE EXCEPTION WILL BE DELETED UPON RECORDATION OF A RELEASE OR TERMINATION AS SET FORTH IN THE REQUIREMENT #6 HEREIN.

    (AFFECTS PARCEL B)

19. EASEMENT GRANTED TO PUBLIC SERVICE COMPANY OF COLORADO, FOR NATURAL GAS FACILITIES, AND INCIDENTAL PURPOSES, BY INSTRUMENT RECORDED AUGUST 04, 1981, UNDER RECEPTION NO. **457820**.

    (AFFECTS PARCEL A)

20. (THIS ITEM WAS INTENTIONALLY DELETED)

21. (THIS ITEM WAS INTENTIONALLY DELETED)

22. RIGHT OF WAY EASEMENT FOR PIPELINE, AND INCIDENTAL PURPOSES, AS GRANTED TO CDM PIPELINE COMPANY, INC., A COLORADO CORPORATION IN INSTRUMENT RECORDED JULY 16, 1984 UNDER RECEPTION NO. **634026**, AND CORRECTION AND AMENDMENT OF PIPELINE RIGHT-OF-WAY GRANT RECORDED OCTOBER 15, 1984 UNDER RECEPTION NO. **652036**.

    PIPELINE SURVEY MAP RECORDED SEPTEMBER 28, 1984 UNDER RECEPTION NO. **649253**.

    (AFFECTS PARCEL A)

23. (ITEM INTENTIONALLY DELETED)

24. ANY TAX, LIEN, FEE, OR ASSESSMENT BY REASON OF INCLUSION OF SUBJECT PROPERTY IN THE LONGMONT FIRE PROTECTION DISTRICT, AS EVIDENCED BY INSTRUMENT RECORDED APRIL 29, 1985, UNDER RECEPTION NO. **685397** AND MODIFIED ORDER OF INCLUSION RECORDED SEPTEMBER 3, 1985 UNDER RECEPTION NO. **710155**.

    (AFFECTS ALL PARCELS)

25. (THIS ITEM WAS INTENTIONALLY DELETED)

26. OIL AND GAS LEASE BETWEEN ROY N. AUSTIN, LESSOR, AND O.D. PRESLEY, LESSEE, RECORDED MAY 06, 1985 UNDER RECEPTION NO. **686626**, AND ANY AND ALL ASSIGNMENTS THEREOF, OR INTEREST THEREIN.

    NOTE: AFFIDAVIT OF PRODUCTION RECORDED JULY 30, 1985 UNDER RECEPTION NO. **702639**. REVISED AFFIDAVIT OF PRODUCTION RECORDED APRIL 21, 1986 UNDER RECEPTION NO. **754068** AND RECORDED JUNE 12, 1986 UNDER RECEPTION NO. **766082**.

    (AFFECTS ALL PARCELS)

ALTA COMMITMENT

Old Republic National Title Insurance Company

Schedule B-2

(Exceptions)

Order Number: ABZ70471321-15

The policy or policies to be issued will contain exceptions to the following unless the same are disposed of to the satisfaction of the Company:

27. OIL AND GAS LEASE BETWEEN JANE KUEHNER, MARY F. DEHAAN, MICHAEL R. SHELTON, MARK L. SHELTON, BRUCE D. CARPENTER, JEAN K. CARPENTER, GLENN C. CARPENTER AND SARAH A. CARPENTER, LESSORS, AND O.D. PRESLEY, LESSEE, RECORDED AUGUST 06, 1985 UNDER RECEPTION NO. **703693**, AND ANY AND ALL ASSIGNMENTS THEREOF, OR INTEREST THEREIN.

    NOTE: REVISED AFFIDAVIT OF PRODUCTION RECORDED APRIL 21, 1986 UNDER RECEPTION NO. **754068** AND RECORDED JUNE 12, 1986 UNDER RECEPTION NO. **766082**.

    NOTE: RATIFICATIONS OF OIL AND GAS LEASE RECORDED JUNE 12, 1986 UNDER RECEPTION NOS. **766084**, **766085** AND **766086**.

    (AFFECTS ALL PARCELS)

28. OIL AND GAS LEASE BETWEEN CLAUDE JONES AND ALINE JONES, LESSORS, AND O.D. PRESLEY, LESSEE, RECORDED AUGUST 06, 1985 UNDER RECEPTION NO. **703694**, AND ANY AND ALL ASSIGNMENTS THEREOF, OR INTEREST THEREIN.

    NOTE: REVISED AFFIDAVIT OF PRODUCTION RECORDED APRIL 21, 1986 UNDER RECEPTION NO. **754068** AND RECORDED JUNE 12, 1986 UNDER RECEPTION NO. **766082**.

    (AFFECTS ALL PARCELS)

29. (THIS ITEM WAS INTENTIONALLY DELETED)

30. OIL AND GAS LEASE BETWEEN WINNIFRED H. EWALT, LESSOR, AND O.D. PRESLEY, LESSEE, RECORDED OCTOBER 08, 1985 UNDER RECEPTION NO. **717948**, AND ANY AND ALL ASSIGNMENTS THEREOF, OR INTEREST THEREIN.

    NOTE: REVISED AFFIDAVIT OF PRODUCTION RECORDED APRIL 21, 1986 UNDER RECEPTION NO. **754068** AND RECORDED JUNE 12, 1986 UNDER RECEPTION NO. **766082**.

    NOTE: RATIFICATION OF OIL AND GAS LEASE RECORDED JUNE 12, 1986 UNDER RECEPTION NO. **766083**.

    (AFFECTS ALL PARCELS)

31. OIL AND GAS LEASE BETWEEN JAY P. WALKER, LESSOR, AND O.D. PRESLEY, LESSEE, RECORDED JULY 09, 1986 UNDER RECEPTION NO. **772253**, AND ANY AND ALL ASSIGNMENTS THEREOF, OR INTEREST THEREIN.

    (AFFECTS ALL PARCELS)

32. MINERAL DEED RECORDED MARCH 5, 1992 UNDER RECEPTION NO. **1165768**.

    (AFFECTS SE 1/4 OF SECTION 27 AND THE N 1/2 OF THE NE 1/4 OF SECTION 34)

33. OIL AND GAS LEASE BETWEEN PAUL K. LASNIK, LESSOR, AND MARTIN EXPLORATION MANAGEMENT COMPANY, LESSEE, RECORDED MARCH 17, 1992 UNDER RECEPTION NO. **1168168**, AND ANY AND ALL ASSIGNMENTS THEREOF, OR INTEREST THEREIN.

    (AFFECTS ALL PARCELS)

34. OIL AND GAS LEASE BETWEEN HELEN M. MASTRIONA AND FRANK M. MASTRIONA, LESSORS, AND MARTIN EXPLORATION MANAGEMENT COMPANY, LESSEE, RECORDED MARCH 24, 1992 UNDER RECEPTION NO. **1169721**, AND ANY AND ALL ASSIGNMENTS THEREOF, OR INTEREST THEREIN.

ALTA COMMITMENT

Old Republic National Title Insurance Company

Schedule B-2

(Exceptions)

Order Number: ABZ70471321-15

The policy or policies to be issued will contain exceptions to the following unless the same are disposed of to the satisfaction of the Company:

(AFFECTS ALL PARCELS)

35. OIL AND GAS LEASE BETWEEN DOROTHY J. BLACKBURN AND JOSEPH BLACKBURN, LESSORS, AND MARTIN EXPLORATION MANAGEMENT COMPANY, LESSEE, RECORDED MARCH 24, 1992 UNDER RECEPTION NO. **1169722**, AND ANY AND ALL ASSIGNMENTS THEREOF, OR INTEREST THEREIN.

    (AFFECTS ALL PARCELS)

36. OIL AND GAS LEASE BETWEEN DOLORES T. FORBIS AND DERL D. FORBIS, LESSORS, AND MARTIN EXPLORATION MANAGEMENT COMPANY, LESSEE, RECORDED MARCH 30, 1992 UNDER RECEPTION NO. **1171195**, AND ANY AND ALL ASSIGNMENTS THEREOF, OR INTEREST THEREIN.

    (AFFECTS ALL PARCELS)

37. OIL AND GAS LEASE BETWEEN MARTIN EXPLORATION MANAGEMENT COMPANY, LESSOR, AND BASIN EXPLORATION INCORPORATED, LESSEE, RECORDED NOVEMBER 08, 1993 UNDER RECEPTION NO. **1358710**, AND ANY AND ALL ASSIGNMENTS THEREOF, OR INTEREST THEREIN.

    NOTE: NOTICE OF OIL AND GAS INTERESTS AND SURFACE USE IN CONNECTION WITH THE ABOVE LEASE RECORDED JANUARY 23, 2001 UNDER RECEPTION NO. **2112332**.

    (AFFECTS ALL PARCELS)

38. RESOLUTION #94-25, PERTAINING TO ANNEXATION, RECORDED NOVEMBER 9, 1994 UNDER RECEPTION NO. **1477392** AND MAP IN CONNECTION THEREWITH RECORDED NOVEMBER 9, 1994 UNDER RECEPTION NO. **1477393**.

    (AFFECTS PARCEL C (I, II & III) AND A PORTION OF PARCEL B)

39. TERMS, CONDITIONS, PROVISIONS, BURDENS AND OBLIGATIONS AS SET FORTH IN NELSON AGREEMENT REGARDING USE OF PUBLIC STREET RECORDED JULY 24, 1998 UNDER RECEPTION NO. **1827415**.

    (AFFECTS PARCEL A)

40. REQUEST FOR NOTIFICATION OF SURFACE DEVELOPMENT AS EVIDENCED BY INSTRUMENT RECORDED MAY 17, 2002 UNDER RECEPTION NO. **2288464**.

    (AFFECTS PARCEL C(III))

41. REQUEST FOR NOTIFICATION OF SURFACE DEVELOPMENT AS EVIDENCED BY INSTRUMENT RECORDED OCTOBER 23, 2007 UNDER RECEPTION NO. **2890878**.

    (AFFECTS PARCEL C(III))

42. REQUEST FOR NOTIFICATION OF SURFACE DEVELOPMENT AS EVIDENCED BY INSTRUMENT RECORDED DECEMBER 21, 2007 UNDER RECEPTION NO. **2900941**.

    (AFFECTS PARCEL C(III))

43. (THIS ITEM WAS INTENTIONALLY DELETED)

44. OIL AND GAS LEASE BETWEEN NOBLE ENERGY, INC., A DELAWARE CORPORATION AND EXTRACTION OIL & GAS, LLC, A DELAWARE LIMITED LIABILITY COMPANY, RECORDED MARCH 11, 2015 UNDER RECEPTION NO. **3432573** AND ANY AND ALL ASSIGNMENTS THEREOF, OR INTEREST THEREIN.

ALTA COMMITMENT

Old Republic National Title Insurance Company

Schedule B-2

(Exceptions)

Order Number: ABZ70471321-15

The policy or policies to be issued will contain exceptions to the following unless the same are disposed of to the satisfaction of the Company:

(AFFECTS PARCEL C (III))

45. RESOLUTION #05-2015, PERTAINING TO ANNEXATION, RECORDED APRIL 21, 2015 UNDER RECEPTION NO. **3440934** AND MAP IN CONNECTION THEREWITH RECORDED APRIL 21, 2015 UNDER RECEPTION NO. **3440932**.

46. RESOLUTION #06-2015, PERTAINING TO ZONING, RECORDED APRIL 21, 2015 UNDER RECEPTION NO. **3440935** AND MAP IN CONNECTION THEREWITH RECORDED APRIL 21, 2015 UNDER RECEPTION NO. **3440933**.

(ITEMS 45-46 AFFECT PARCEL A AND A PORTION OF PARCEL B)

47. EXISTING UNRECORDED LEASES AND TENANCIES, IF ANY.

48. ANY AND ALL RIGHTS OF THE BOULDER CANYON DITCH COMPANY RELATING TO BOULDER CANYON DITCH, WHICH TRAVERSES PARCELS A, B AND C-II OF SUBJECT PROPERTY, INCLUDING BUT NOT LIMITED TO DITCH MAINTENANCE AND ACCESS RIGHTS TO LANDS ADJOINING THE DITCH, APPROXIMATE LOCATION OF WHICH DITCH IS DISCLOSED BY ALTA/NSPS LAND TITLE SURVEY BY GALLOWAY, DATED DECEMBER 9, 2016, LAST REVISED _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _, JOB NO. ED1000018..

49. ANY FACTS, RIGHTS, INTERESTS OR CLAIMS WHICH MAY EXIST OR ARISE BY REASON OF THE FOLLOWING FACTS SHOWN ON ALTA/NSPS LAND TITLE SURVEY DATED DECEMBER 09, 2016, LAST REVISED _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _, PREPARED BY GALLOWAY, JOB #ED1000018
SAID DOCUMENT STORED AS OUR ESI **33770381**

A. FENCES ARE NOT ENTIRELY COINCIDENT WITH BOUNDARY LINES.

B. PORTION OF ARAPAHOE ROAD ENCROACHES ONTO PARCEL C-III OF SUBJECT PROPERTY.

C. WELL SITE MAY BE LOCATED OUTSIDE OF GRANTED OPERATION AREA.

D. GAS LINE TRAVERSES PARCELS A AND B WITHOUT BENEFIT OF A RECORDED EASEMENT.

50. TERMS, CONDITIONS, PROVISIONS, BURDENS AND OBLIGATIONS AS SET FORTH IN APPROVED NINE MILE CORNER PD-DEVELOPMENT PLAN RECORDED SEPTEMBER 26, 2017 UNDER RECEPTION NO. **03616633**, AND ORDINANCE NO. 16-2017 IN CONNECTION THEREWITH RECORDED SEPTEMBER.26, 2017 UNDER RECEPTION NO. 03616632.

51. TERMS, CONDITIONS, PROVISIONS, BURDENS, OBLIGATIONS AND EASEMENTS AS SET FORTH AND GRANTED IN DEED OF CONSERVATION EASEMENT IN GROSS RECORDED OCTOBER 18, 2019 UNDER RECEPTION NO. **03743529**.

LAND TITLE GUARANTEE COMPANY
DISCLOSURE STATEMENTS

Note: Pursuant to CRS 10-11-122, notice is hereby given that:

(A) The Subject real property may be located in a special taxing district.

(B) A certificate of taxes due listing each taxing jurisdiction will be obtained from the county treasurer of the county in which the real property is located or that county treasurer's authorized agent unless the proposed insured provides written instructions to the contrary. (for an Owner's Policy of Title Insurance pertaining to a sale of residential real property).

(C) The information regarding special districts and the boundaries of such districts may be obtained from the Board of County Commissioners, the County Clerk and Recorder, or the County Assessor.

Note: Effective September 1, 1997, CRS 30-10-406 requires that all documents received for recording or filing in the clerk and recorder's office shall contain a top margin of at least one inch and a left, right and bottom margin of at least one half of an inch. The clerk and recorder may refuse to record or file any document that does not conform, except that, the requirement for the top margin shall not apply to documents using forms on which space is provided for recording or filing information at the top margin of the document.

Note: Colorado Division of Insurance Regulations 8-1-2 requires that "Every title entity shall be responsible for all matters which appear of record prior to the time of recording whenever the title entity conducts the closing and is responsible for recording or filing of legal documents resulting from the transaction which was closed". Provided that Land Title Guarantee Company conducts the closing of the insured transaction and is responsible for recording the legal documents from the transaction, exception number 5 will not appear on the Owner's Title Policy and the Lenders Policy when issued.

Note: Affirmative mechanic's lien protection for the Owner may be available (typically by deletion of Exception no. 4 of Schedule B, Section 2 of the Commitment from the Owner's Policy to be issued) upon compliance with the following conditions:

(A) The land described in Schedule A of this commitment must be a single family residence which includes a condominium or townhouse unit.

(B) No labor or materials have been furnished by mechanics or material-men for purposes of construction on the land described in Schedule A of this Commitment within the past 6 months.

(C) The Company must receive an appropriate affidavit indemnifying the Company against un-filed mechanic's and material-men's liens.

(D) The Company must receive payment of the appropriate premium.

(E) If there has been construction, improvements or major repairs undertaken on the property to be purchased within six months prior to the Date of Commitment, the requirements to obtain coverage for unrecorded liens will include: disclosure of certain construction information; financial information as to the seller, the builder and or the contractor; payment of the appropriate premium fully executed Indemnity Agreements satisfactory to the company, and, any additional requirements as may be necessary after an examination of the aforesaid information by the Company.

No coverage will be given under any circumstances for labor or material for which the insured has contracted for or agreed to pay.

Note: Pursuant to CRS 10-11-123, notice is hereby given:

This notice applies to owner's policy commitments disclosing that a mineral estate has been severed from the surface estate, in Schedule B-2.

(A) That there is recorded evidence that a mineral estate has been severed, leased, or otherwise conveyed from the surface estate and that there is substantial likelihood that a third party holds some or all interest in oil, gas, other minerals, or geothermal energy in the property; and

(B) That such mineral estate may include the right to enter and use the property without the surface owner's permission.

Note: Pursuant to CRS 10-1-128(6)(a), It is unlawful to knowingly provide false, incomplete, or misleading facts or information to an insurance company for the purpose of defrauding or attempting to defraud the company. Penalties may include imprisonment, fines, denial of insurance, and civil damages. Any insurance company or agent of an insurance company who knowingly provides false, incomplete, or misleading facts or information to a policyholder or claimant for the purpose of defrauding or attempting to defraud the policyholder or claimant with regard to a settlement or award payable from insurance proceeds shall be reported to the Colorado Division of Insurance within the Department of Regulatory Agencies.

Note: Pursuant to Colorado Division of Insurance Regulations 8-1-3, notice is hereby given of the availability of a closing protection letter for the lender, purchaser, lessee or seller in connection with this transaction.

JOINT NOTICE OF PRIVACY POLICY OF LAND TITLE GUARANTEE COMPANY, LAND TITLE GUARANTEE COMPANY OF SUMMIT COUNTY LAND TITLE INSURANCE CORPORATION AND OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY

This Statement is provided to you as a customer of Land Title Guarantee Company as agent for Land Title Insurance Corporation and Old Republic National Title Insurance Company.

We want you to know that we recognize and respect your privacy expectations and the requirements of federal and state privacy laws. Information security is one of our highest priorities. We recognize that maintaining your trust and confidence is the bedrock of our business. We maintain and regularly review internal and external safeguards against unauthorized access to your non-public personal information ("Personal Information").

In the course of our business, we may collect Personal Information about you from:

- applications or other forms we receive from you, including communications sent through TMX, our web-based transaction management system;
- your transactions with, or from the services being performed by us, our affiliates, or others;
- a consumer reporting agency, if such information is provided to us in connection with your transaction;

  and
- The public records maintained by governmental entities that we obtain either directly from those entities, or from our affiliates and non-affiliates.

Our policies regarding the protection of the confidentiality and security of your Personal Information are as follows:

- We restrict access to all Personal Information about you to those employees who need to know that information in order to provide products and services to you.
- We may share your Personal Information with affiliated contractors or service providers who provide services in the course of our business, but only to the extent necessary for these providers to perform their services and to provide these services to you as may be required by your transaction.
- We maintain physical, electronic and procedural safeguards that comply with federal standards to protect your Personal Information from unauthorized access or intrusion.
- Employees who violate our strict policies and procedures regarding privacy are subject to disciplinary action.
- We regularly assess security standards and procedures to protect against unauthorized access to Personal Information.

WE DO NOT DISCLOSE ANY PERSONAL INFORMATION ABOUT YOU WITH ANYONE FOR ANY PURPOSE THAT IS NOT STATED ABOVE OR PERMITTED BY LAW.

Consistent with applicable privacy laws, there are some situations in which Personal Information may be disclosed. We may disclose your Personal Information when you direct or give us permission; when we are required by law to do so, for example, if we are served a subpoena; or when we suspect fraudulent or criminal activities. We also may disclose your Personal Information when otherwise permitted by applicable privacy laws such as, for example, when disclosure is needed to enforce our rights arising out of any agreement, transaction or relationship with you.

Our policy regarding dispute resolution is as follows: Any controversy or claim arising out of or relating to our privacy policy, or the breach thereof, shall be settled by arbitration in accordance with the rules of the American Arbitration Association, and judgment upon the award rendered by the arbitrator(s) may be entered in any court having jurisdiction thereof.

<

Commitment to Insure

ALTA Commitment - 2006 Rev.

OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY, a Minnesota corporation, (Company), for a valuable consideration, commits to issue its policy or policies of title insurance, as identified in Schedule A, in favor of the Proposed Insured named in Schedule A, as owner or mortgagee of the estate or interest in the land described or referred to in Schedule A, upon payment of the premiums and charges and compliance with the requirements; all subject to the provisions of Schedule A and B and to the Conditions of this Commitment.

This Commitment shall be effective only when the identity of the Proposed Insured and the amount of the policy or policies committed for have been inserted in Schedule A by the Company. All liability and obligation under this commitment shall cease and terminate six months after the Effective Date or when the policy or policies committed for shall issue, whichever first occurs, provided that the failure to issue such policy or policies is not the fault of the Company.

Conditions and Stipulations

1. The term "mortgage", when used herein, shall include deed of trust, trust deed, or other security instrument.
2. If the proposed Insured has or acquires actual knowledge of any defect, lien, encumbrance, adverse claim or other matter affecting the estate or interest or mortgage thereon covered by this Commitment other than those shown in Schedule B hereof, and shall fail to disclose such knowledge to Company in writing, the Company shall be relieved from liability for any loss or damage resulting from any act of reliance hereon to the extent the Company is prejudiced by failure to so disclose such knowledge. If the proposed Insured shall disclose such knowledge to the Company, or if the Company otherwise acquires actual knowledge of any such defect, lien, encumbrance, adverse claim or other matter, the Company at its option may amend Schedule B of this Commitment accordingly, but such amendment shall not relieve the Company from liability previously incurred pursuant to paragraph 3 of these Conditions and Stipulations.
3. Liability of the Company under this Commitment shall be only to the named proposed Insured and such parties included under the definition of Insured in the form of policy or policies committed for and only for actual loss incurred in reliance hereon in undertaking in good faith (a) to comply with the requirements hereof or (b) to eliminate exceptions shown in Schedule B, or (c) to acquire or create the estate or interest or mortgage thereon covered by this Commitment. In no event shall such liability exceed the amount stated in Schedule A for the policy or policies committed for and such liability is subject to the insuring provisions and the Conditions and Stipulations and the Exclusions from Coverage of the form of policy or policies committed for in favor of the proposed Insured which are hereby incorporated by reference and are made a part of this Commitment except as expressly modified herein.
4. This commitment is a contract to issue one or more title insurance policies and is not an abstract of title or a report of the condition of title. Any action or actions or rights of action that the proposed Insured may have or may bring against the Company arising out of the status of the title to the estate or interest or the status of the mortgage thereon covered by this Commitment must be based on and are subject to the provisions of this Commitment.
5. The policy to be issued contains an arbitration clause. All arbitrable matters when the Amount of Insurance is $2,000,000 or less shall be arbitrated at the option of either the Company or the Insured as the exclusive remedy of the parties. You may review a copy of the arbitration rules at www.alta.org.

Standard Exceptions

In addition to the matters contained in the Conditions and Stipulations and Exclusions from Coverage above referred to, this Commitment is also subject to the following:

1. Rights or claims of parties in possession not shown by the Public records.
2. Easements, or claims of easements, not shown by the Public Records.
3. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, and any facts which a correct survey or inspection of the Land would disclose and which are not shown by the Public Records.
4. Any lien, or right to a lien, for services, labor or material theretofore or hereafter furnished, imposed by law and not shown by the Public Records.
5. Defects, liens, encumbrances, adverse claims or other matters, if any, created, first appearing in the Public Records or attaching subsequent to the effective date hereof but prior to the date the proposed insured acquires of record for value the estate or interest or mortgage thereon covered by this Commitment.

IN WITNESS WHEREOF, Old Republic National Title Insurance Company has caused its corporate name and seal to be affixed by its duly authorized officers on the date shown in Schedule A to be valid when countersigned by a validating officer or other authorized signatory.

Issued by:
Land Title Guarantee Company
3033 East First Avenue Suite 600
Denver, Colorado 80206
303-321-1880

President

Old Republic National Title Insurance Company, a Stock Company
400 Second Avenue South
Minneapolis, Minnesota 55401
(612)371-1111

Mark Bilbrey, President

Rande Yeager, Secretary

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OUTLOOK NINE MILE

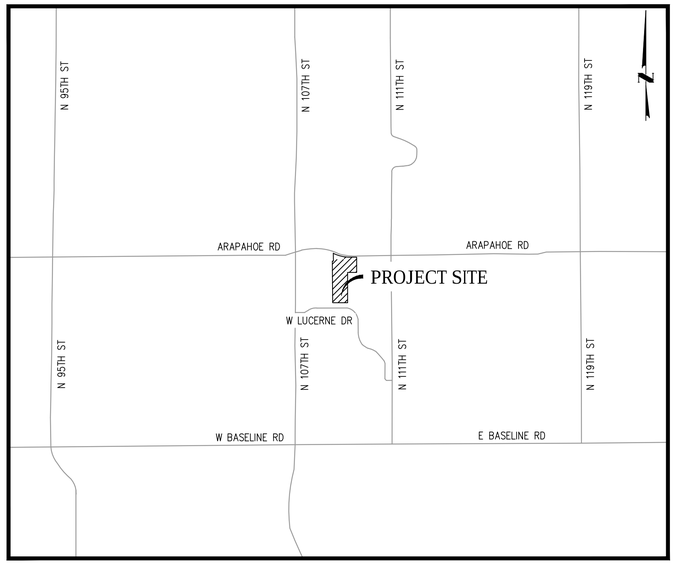
A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

12.54 ACRES

SITE PLAN - SP-000832-2016

SITE DATA SUMMARY CHART		
ZONE DISTRICT: NINE MILE CORNER PD-DEVELOPMENT PLAN		
290 DWELLING UNITS		
ITEM	SQUARE FOOTAGE	% OF GROSS SITE
GROSS SITE AREA	546,151	
BUILDING FOOTPRINT	131,278	24.0%
PARKING/ROADS (INCLUDING PLANTED INTERIOR ISLANDS)	242,627	44.4%
HARDSCAPE TOTAL	373,905	68.5%
PLANTED AREA (EXCLUDING PLANTED INTERIOR PARKING ISLANDS)	129,663	23.7%
EXISTING VEGETATION	0	0.0%
TRAILS, SIDEWALKS AND PLAZAS	42,583	7.8%
LANDSCAPE TOTAL	172,246	31.5%
BUILDING TYPE	SQUARE FOOTAGE	
TYPE A - 18-PLEX	18,388	
TOTAL (2 BUILDINGS)	36,776	
TYPE B - 28-PLEX	27,751	
TOTAL (5 BUILDINGS)	138,755	
TYPE C - 51-PLEX	57,383	
TOTAL (2 BUILDINGS)	114,766	
TYPE D - CARRIAGE	3,753	
TOTAL (4 BUILDINGS)	15,012	
CLUBHOUSE	6,350	
TOTAL (1 BUILDING)	6,350	
GARAGE A	1,898	
TOTAL (7 BUILDINGS)	13,286	
GARAGE B	3,872	
TOTAL (1 BUILDING)	3,872	

PARKING DATA			
		REQUIRED	PROVIDED
REQUIRED VEHICLE PARKING SPACES			
ONE BEDROOM	158 DU X 1.5 SP/DU	237	
TWO BEDROOM	132 DU X 2.0 SP/DU	264	
GUEST SPACES	1 SP/4 DU	72.5	
TOTAL		574	
PROVIDED VEHICLE PARKING SPACES			
DETACHED GARAGE SPACES			72
ATTACHED GARAGE SPACES			90
TANDEM SPACES			66
SURFACE SPACES			321
SURFACE SPACES (COMPACT)			35
ACCESSIBLE SPACES			14
TOTAL PARKING SPACES			584
BICYCLE PARKING SPACES		32	32



VICINITY MAP

SCALE: 1" = 2000'

LEGAL DESCRIPTION

LOT 11, TRACTS H AND G
NINE MILE CORNER FILING NO. 1
TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

SHEET INDEX

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4	SITE PLAN
5	SITE PLAN
6	UTILITY PLAN
7	UTILITY PLAN
8	UTILITY PLAN
9	GRADING PLAN
10	GRADING PLAN
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20	LANDSCAPE PLAN
21	LANDSCAPE DETAILS
22	LANDSCAPE DETAILS
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24	LANDSCAPE DETAILS
25	IRRIGATION PLAN
26	IRRIGATION PLAN
27	IRRIGATION PLAN
28	IRRIGATION PLAN
29	IRRIGATION PLAN
30	IRRIGATION PLAN
31	BLDG. TYPE A ELEVATIONS
32	BLDG. TYPE A ELEVATIONS
33	BLDG. TYPE A ELEVATIONS
34	BLDG. TYPE B ELEVATIONS
35	BLDG. TYPE B ELEVATIONS
36	BLDG. TYPE B ELEVATIONS
37	BLDG. TYPE B ELEVATIONS
38	BLDG. TYPE C ELEVATIONS
39	BLDG. TYPE C ELEVATIONS
40	BLDG. TYPE C ELEVATIONS
41	BLDG. TYPE D ELEVATIONS
42	BLDG. TYPE D ELEVATIONS
43	BLDG. TYPE D ELEVATIONS
44	BLDG. TYPE D ELEVATIONS
45	CLUBHOUSE ELEVATIONS
46	CLUBHOUSE ELEVATIONS
47	ACCESSORY ELEVATIONS
48	ACCESSORY ELEVATIONS
49	SITE PHOTOMETRIC PLAN 1
50	SITE PHOTOMETRIC PLAN 2
51	PHOTOMETRIC CUT SHEETS

SITE PLAN APPROVAL CERTIFICATE

THIS SITE PLAN HAS BEEN REVIEWED AND FOUND TO BE COMPLETE AND IN ACCORDANCE WITH APPLICABLE TOWN OF ERIE REGULATIONS.

DIRECTOR OF COMMUNITY DEVELOPMENT _____ DATE _____

PLANNING COMMISSION CHAIR (IF APPLICABLE) _____ DATE _____

THE UNDERSIGNED AS THE OWNER OR OWNER'S REPRESENTATIVE OF THE LANDS DESCRIBED HEREIN, HEREBY AGREES ON BEHALF OF HIMSELF/HERSELF, THEIR HEIRS, SUCCESSORS, AND ASSIGNS TO DEVELOP AND MAINTAIN THE PROPERTY DESCRIBED HEREON IN ACCORDANCE WITH THIS APPROVED SITE PLAN AND IN COMPLIANCE WITH THE TOWN OF ERIE UNIFIED DEVELOPMENT CODE AND MUNICIPAL CODE.

OWNER SIGNATURE _____ OWNER PRINTED NAME _____

ACKNOWLEDGED BEFORE ME THIS _____ DAY OF _____, 2017

BY _____ AS _____.

WITNESS MY HAND AND OFFICIAL SEAL

NOTARY PUBLIC

MY COMMISSION EXPIRES: _____

DEVELOPER:
EVERGREEN DEVCO, INC.
P.O. Box 271066
Littleton, Colorado 80127
Ph: 602-808-8600
Fax: 602-567-7147

ARCHITECT:
KEPHART ARCHITECTS
2555 Walnut Street
Denver, Colorado 80205
Ph: 303-832-4474
Fax: 303-623-6311

CIVIL ENGINEER:
GALLOWAY
6162 S. Willow Drive, Suite 320
Greenwood Village, CO 80111
Ph: 303.770.8884
Fax: 303.770.3636

CIVIL ENGINEER:
HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

LANDSCAPE ARCHITECT:
NORRIS DESIGN
Planning | Landscape Architecture
1101 Bannock Street
Denver, Colorado 80204
P 303.892.1166
F 303.892.1186
www.norris-design.com

PHOTOMETRIC:
KLOK GROUP
801 12TH STREET
GOLDEN, COLORADO 80401
PH: 720-399-2410

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

PROJECT NUMBER: 160602

11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

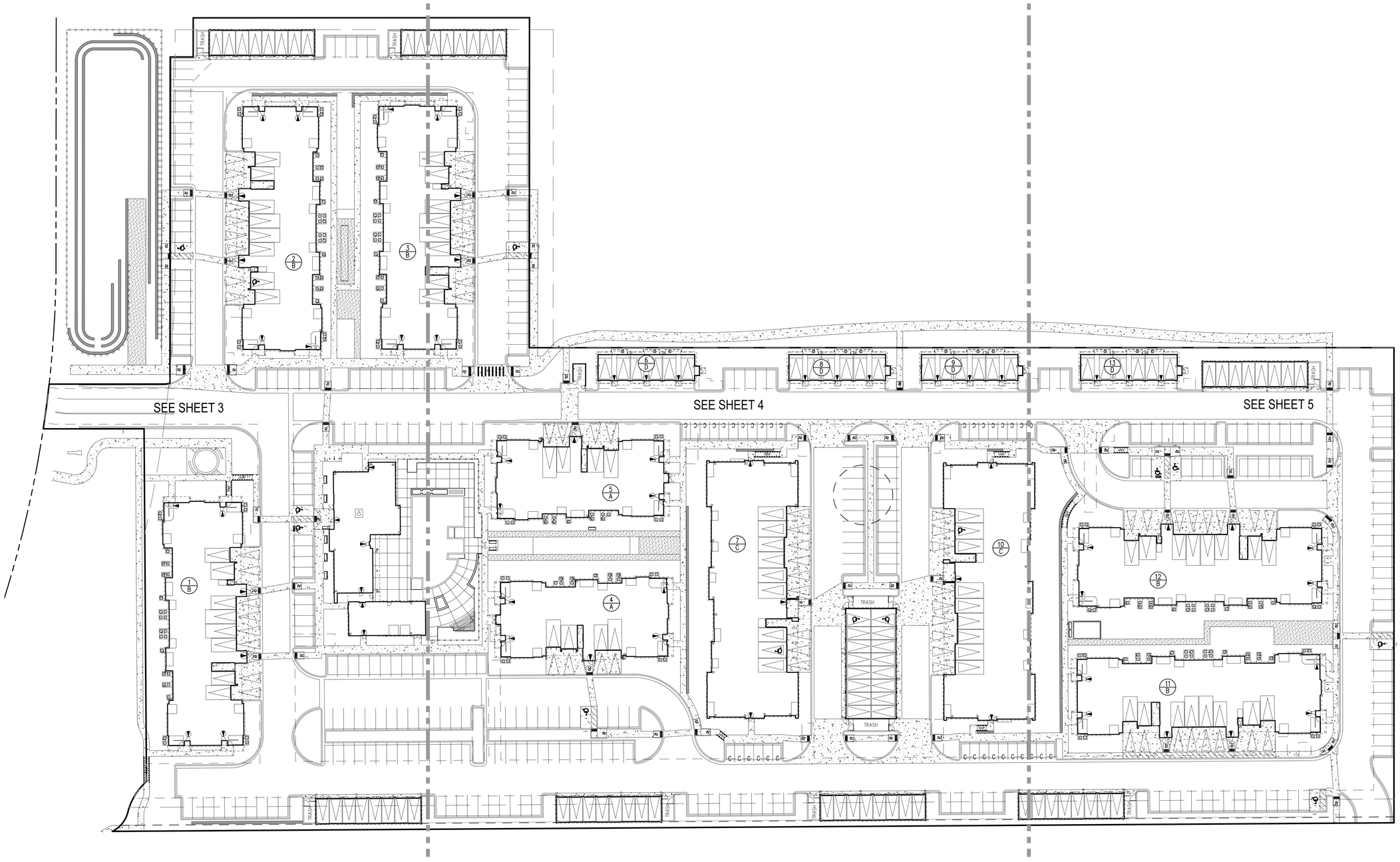
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NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.

OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
12.54 ACRES

SITE PLAN - SP-000832-2016



HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

40 0 40 80
SCALE: 1" = 40'

PROJECT NUMBER: 160602

11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

OVERALL SITE PLAN
SHEET 2 OF 51

OUTLOOK NINE MILE

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Printed: Fri, 11/08/19 at 8:39P By: Rachel Patton

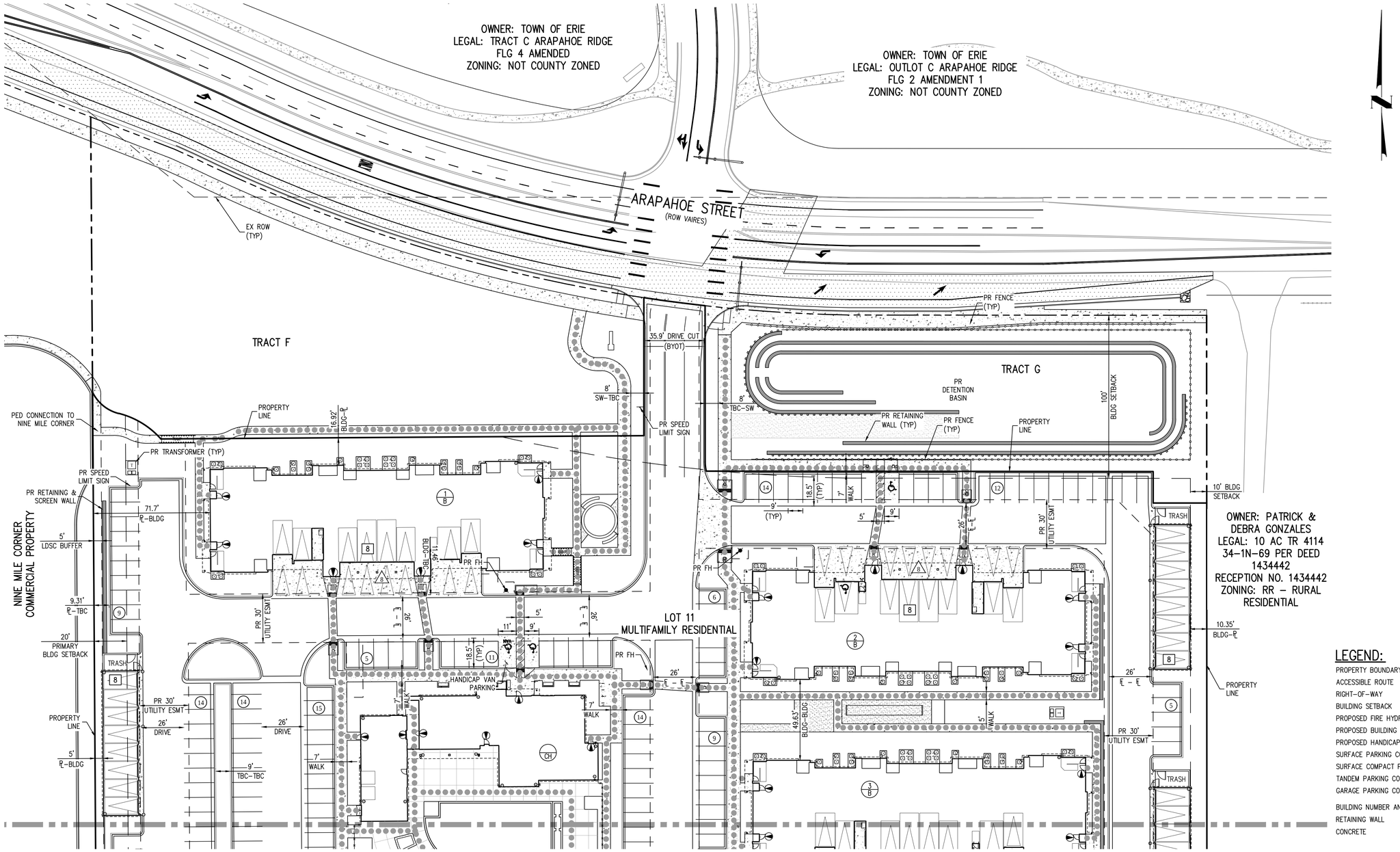
NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.

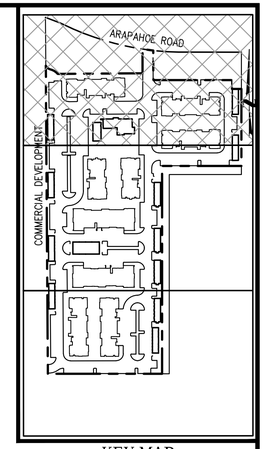
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12.54 ACRES

SITE PLAN - SP-000832-2016





KEY MAP
SCALE: 1" = 250'

LEGEND:

- PROPERTY BOUNDARY
- ACCESSIBLE ROUTE
- RIGHT-OF-WAY
- BUILDING SETBACK
- PROPOSED FIRE HYDRANT
- PROPOSED BUILDING ENTRANCE
- PROPOSED HANDICAP RAMP
- SURFACE PARKING COUNT
- SURFACE COMPACT PARKING COUNT
- TANDEM PARKING COUNT
- GARAGE PARKING COUNT
- BUILDING NUMBER AND TYPE
- RETAINING WALL
- CONCRETE

NOTES:

1. STANDARD PARKING SPOTS HAVE A WIDTH OF 9' AND LENGTH OF 18.5'.
2. COMPACT PARKING SPOTS HAVE A WIDTH OF 8' AND A LENGTH OF 16'.

MATCHLINE - SEE SHEET 4

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

PROJECT NUMBER: 160602

30 0 30 60
SCALE: 1" = 30'

11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

SITE PLAN
SHEET 3 OF 51

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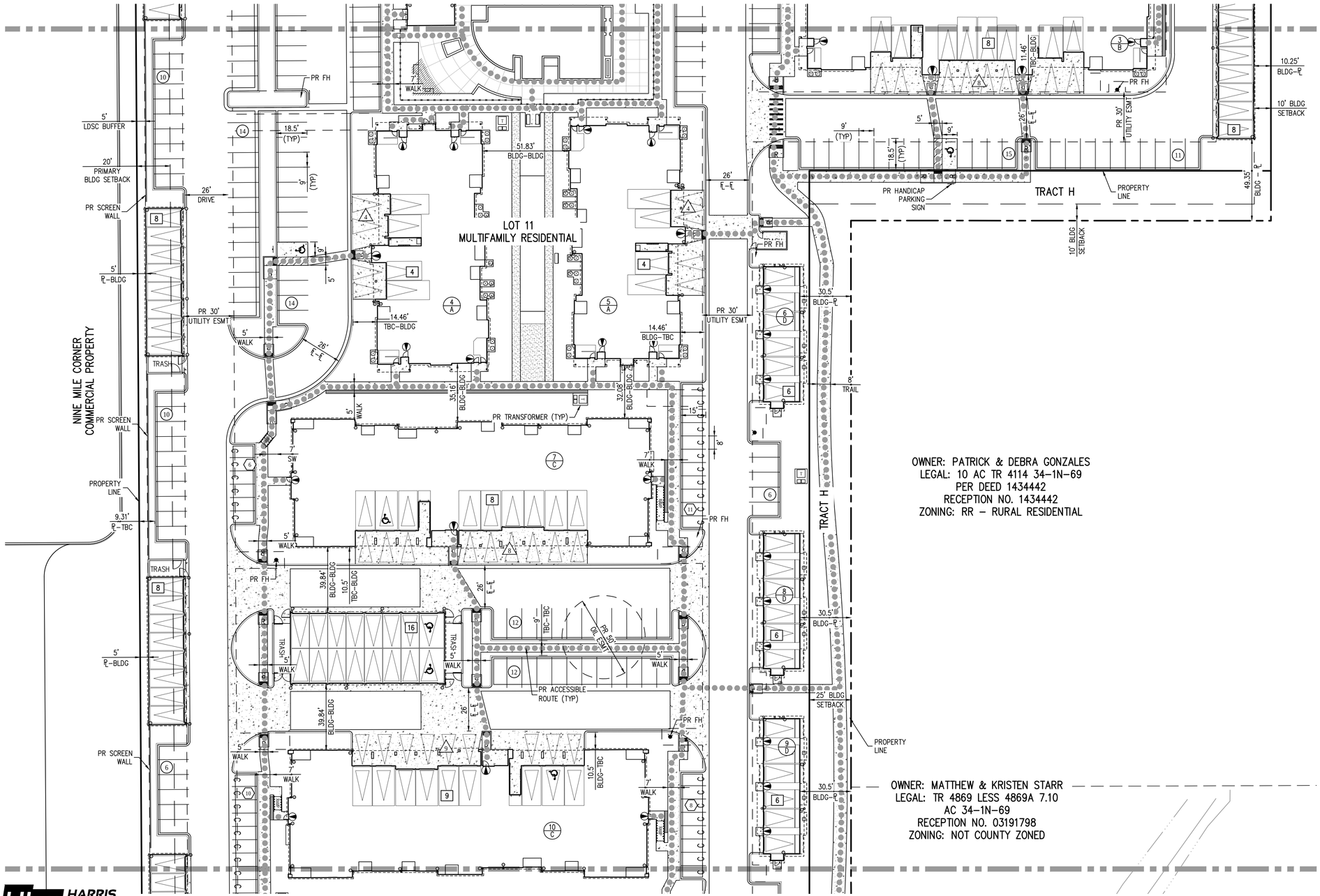
OUTLOOK NINE MILE

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12.54 ACRES

SITE PLAN - SP-000832-2016

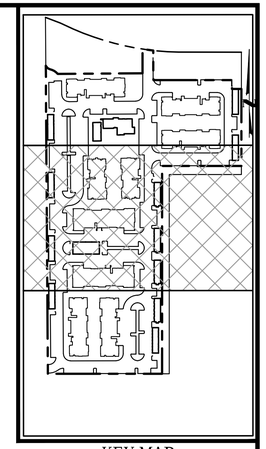
MATCHLINE - SEE SHEET 3



OWNER: PATRICK & DEBRA GONZALES
LEGAL: 10 AC TR 4114 34–1N–69
PER DEED 1434442
RECEPTION NO. 1434442
ZONING: RR – RURAL RESIDENTIAL

OWNER: MATTHEW & KRISTEN STARR
LEGAL: TR 4869 LESS 4869A 7.10
AC 34–1N–69
RECEPTION NO. 03191798
ZONING: NOT COUNTY ZONED

MATCHLINE - SEE SHEET 5



KEY MAP
SCALE: 1" = 250'

LEGEND:

- PROPERTY BOUNDARY
- ACCESSIBLE ROUTE
- RIGHT–OF–WAY
- BUILDING SETBACK
- PROPOSED FIRE HYDRANT
- PROPOSED BUILDING ENTRANCE
- PROPOSED HANDICAP RAMP
- SURFACE PARKING COUNT
- SURFACE COMPACT PARKING COUNT
- TANDEM PARKING COUNT
- GARAGE PARKING COUNT
- BUILDING NUMBER AND TYPE
- RETAINING WALL
- CONCRETE

NOTES:

1. STANDARD PARKING SPOTS HAVE A WIDTH OF 9' AND LENGTH OF 18.5'.
2. COMPACT PARKING SPOTS HAVE A WIDTH OF 8' AND A LENGTH OF 16'.

30 0 30 60
SCALE: 1" = 30'

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

PROJECT NUMBER: 160602

11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

SITE PLAN
SHEET 4 OF 51

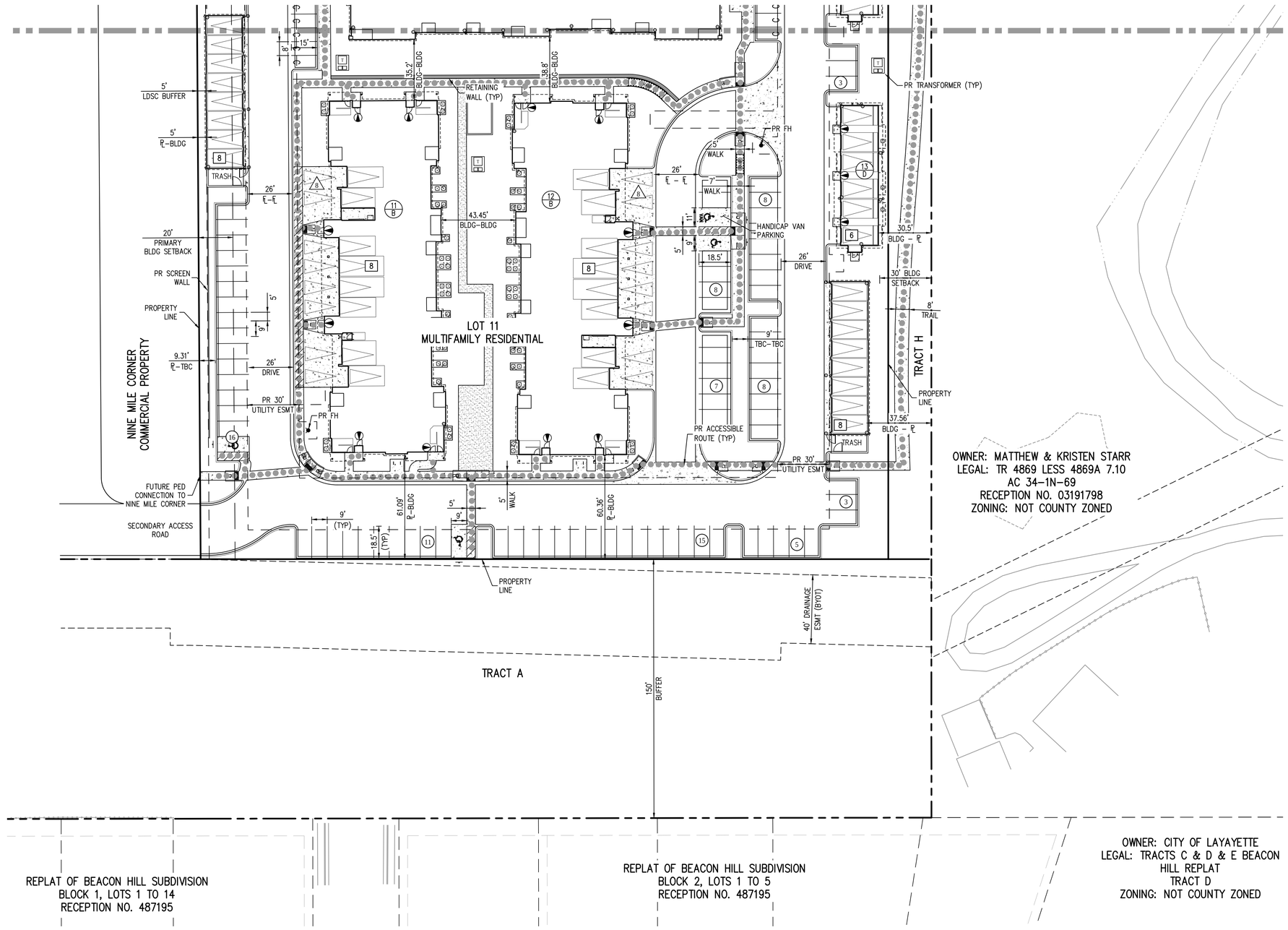
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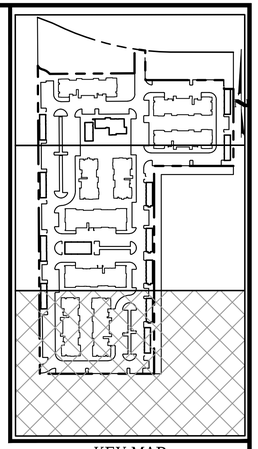
NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH

OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOUNDER, STATE OF COLORADO.
12.54 ACRES

SITE PLAN - SP-000832-2016





LEGEND:

- PROPERTY BOUNDARY
- ACCESSIBLE ROUTE
- RIGHT–OF–WAY
- BUILDING SETBACK
- PROPOSED FIRE HYDRANT
- PROPOSED BUILDING ENTRANCE
- PROPOSED HANDICAP RAMP
- SURFACE PARKING COUNT
- SURFACE COMPACT PARKING COUNT
- TANDEM PARKING COUNT
- GARAGE PARKING COUNT
- BUILDING NUMBER AND TYPE
- RETAINING WALL
- CONCRETE

NOTES:

1. STANDARD PARKING SPOTS HAVE A WIDTH OF 9' AND LENGTH OF 18.5'.
2. COMPACT PARKING SPOTS HAVE A WIDTH OF 8' AND A LENGTH OF 16'.

30 0 30 60
SCALE: 1" = 30'

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1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

PROJECT NUMBER: 160602

11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017 SHEET 5 OF 51

SITE PLAN

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Plotted: THU 11/07/19 6:18:46P By: Jackie Peterson

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.

OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

12.54 ACRES

SITE PLAN - SP-000832-2016

LEGEND:

- PROPERTY BOUNDARY
- RIGHT-OF-WAY
- BUILDING SETBACK
- EXISTING FIRE HYDRANT & WATER VALVE
- EXISTING TRANSFORMER & STREET LIGHT
- EXISTING STORM MANHOLE & INLETS
- EXISTING SANITARY MANHOLE
- EXISTING GAS LINE
- EXISTING TELECOM LINE
- EXISTING ELECTRIC LINE
- REMOVED UTILITIES
- PROPOSED STM SEWER W/ MH & INLET
- PROPOSED SS W/ MH
- PROPOSED SAN SERIVE LINE W/ CO
- PROPOSED WAT LINE W/ VALVE & TEE
- PROPOSED FIRE HYDRANT ASSEMBLY
- PROPOSED FIRE SERVICE LINE
- PROPOSED DOMESTIC SERVICE LINE W/ METER

OWNER: TOWN OF ERIE
LEGAL: TRACT C ARAPAHOE RIDGE FLG 4 AMENDED
ZONING: NOT COUNTY ZONED

OWNER: TOWN OF ERIE
LEGAL: OUTLOT C ARAPAHOE RIDGE FLG 2 AMENDMENT 1
ZONING: NOT COUNTY ZONED

ARAPAHOE STREET (ROW VARIES)

PR WAT BEND (TYP)

TRACT F

TRACT G

PR WATER QUALITY & DETENTION BASIN

PR STM OUTLET STRUCTURE

PR STM MAIN (TYP)

PR STM INLET (TYP)

PR STM MH (TYP)

STM MH (BYOT)

SS MH (BYOT)

36" STM LINE (BYOT)

8" SS MAIN (BYOT)

PR 8" WAT LINE (TYP)

12" WAT LINE (BYOT)

PROPERTY LINE

PR CONNECTION TO NINE MILE CORNER

PR 30' UTILITY ESMT

PR WAT VALVE (TYP)

PR WAT TEE (TYP)

PR DOMESTIC TAP (TYP)

PR SS MAIN (TYP)

PR SS MH (TYP)

PR SS SVC CLEANOUT (TYP)

10' WAT-SS

10' SS-WAT

PR FIRE SVC TEE (TYP)

PR FH (TYP)

PR FIRE SVC (TYP)

PR WAT METER (TYP)

PR TRANSFORMER (TYP)

LOT 11
MULTIFAMILY RESIDENTIAL

TRASH

OUTLOOK NINE MILE
COMMERCIAL PROPERTY

NOTE:
CONTRACTOR SHALL BURY ANY OVERHEAD UTILITY LINES.

OWNER: PATRICK & DEBRA GONZALES
LEGAL: 10 AC TR 4114 34-1N-69 PER DEED 1434442
RECEPTION NO. 1434442
ZONING: RR – RURAL RESIDENTIAL

KEY MAP
SCALE: 1" = 250'

MATCHLINE - SEE SHEET 7

SCALE: 1" = 30'

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

PROJECT NUMBER: 160602

11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

UTILITY PLAN
SHEET 6 OF 51

Filepath: P:\160602\ENGINEERING\UTILITIES\SP- OVERALL UTILITY PLAN.DWG Layout: OVERALL UTILITY PLAN
Last Modified: Wednesday, November 06, 2019 - 8:48am By: Rachel Patton
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NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH

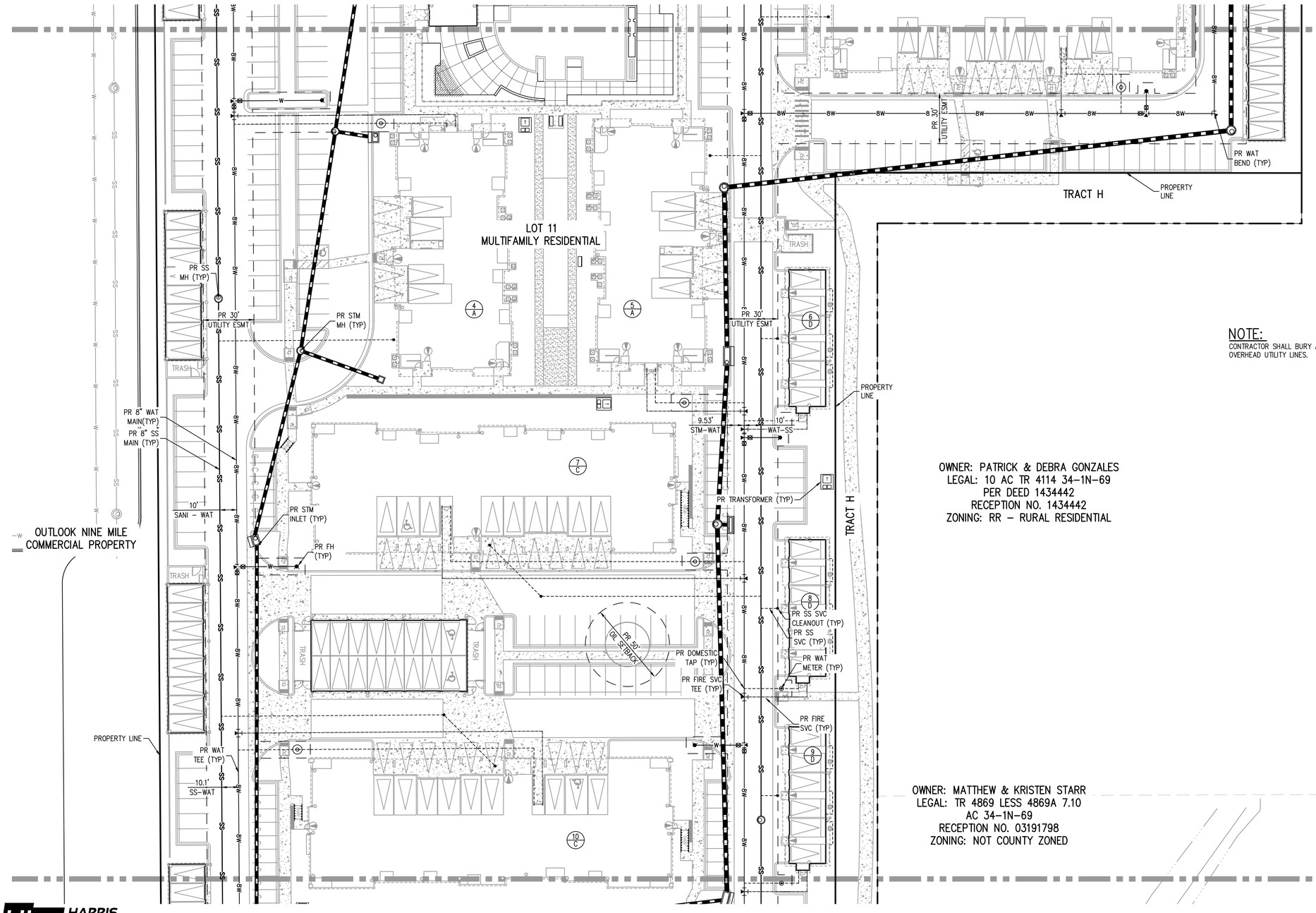
OUTLOOK NINE MILE

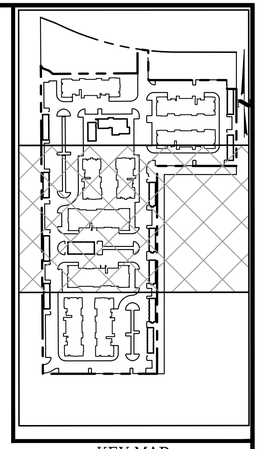
A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

12.54 ACRES

SITE PLAN - SP-000832-2016

MATCHLINE - SEE SHEET 6





KEY MAP
SCALE: 1" = 250'

NOTE:
CONTRACTOR SHALL BURY ANY OVERHEAD UTILITY LINES.

OWNER: PATRICK & DEBRA GONZALES
LEGAL: 10 AC TR 4114 34-1N-69
PER DEED 1434442
RECEPTION NO. 1434442
ZONING: RR – RURAL RESIDENTIAL

OWNER: MATTHEW & KRISTEN STARR
LEGAL: TR 4869 LESS 4869A 7.10
AC 34-1N-69
RECEPTION NO. 03191798
ZONING: NOT COUNTY ZONED

LEGEND:

- PROPERTY BOUNDARY
- RIGHT-OF-WAY
- BUILDING SETBACK
- EXISTING FIRE HYDRANT & WATER VALVE
- EXISTING TRANSFORMER & STREET LIGHT
- EXISTING STORM MANHOLE & INLETS
- EXISTING SANITARY MANHOLE
- EXISTING GAS LINE
- EXISTING TELECOM LINE
- EXISTING ELECTRIC LINE
- REMOVED UTILITIES
- PROPOSED STM SEWER W/ MH & INLET
- PROPOSED SS W/ MH
- PROPOSED SAN SERIVE LINE W/ CO
- PROPOSED WAT LINE W/ VALVE & TEE
- PROPOSED FIRE HYDRANT ASSEMBLY
- PROPOSED FIRE SERVICE LINE
- PROPOSED DOMESTIC SERVICE LINE W/ METER

MATCHLINE - SEE SHEET 8

30 0 30 60
SCALE: 1" = 30'

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

PROJECT NUMBER: 160602

11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

UTILITY PLAN
SHEET 7 OF 51

OUTLOOK NINE MILE

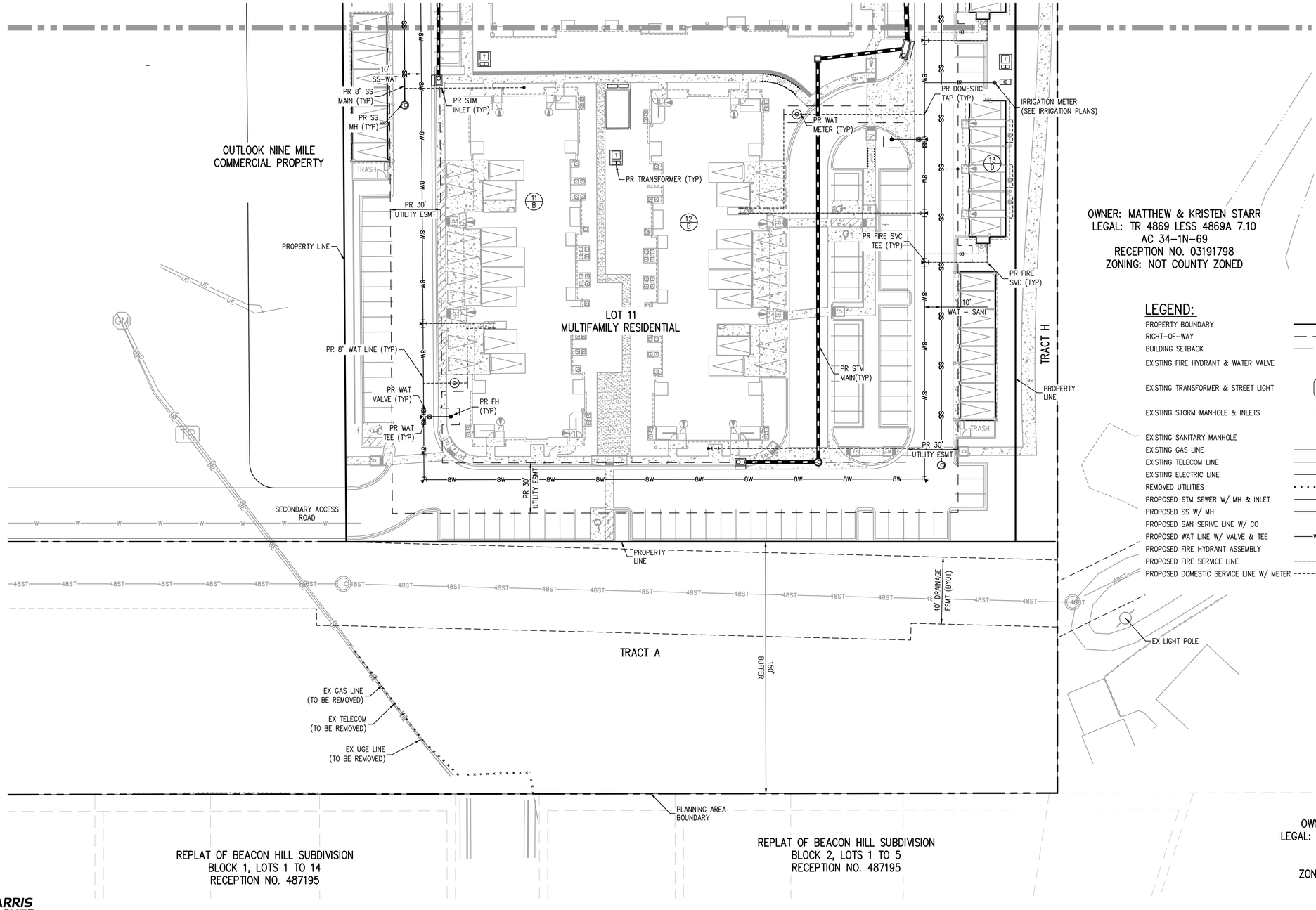
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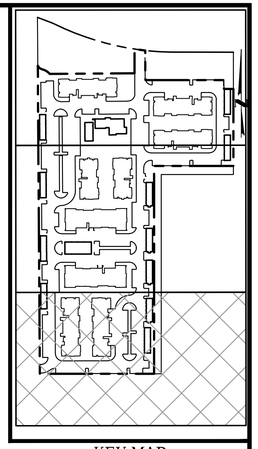
NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH

OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
12.54 ACRES

SITE PLAN - SP-000832-2016





OWNER: MATTHEW & KRISTEN STARR
LEGAL: TR 4869 LESS 4869A 7.10
AC 34-1N-69
RECEPTION NO. 03191798
ZONING: NOT COUNTY ZONED

OWNER: CITY OF LAYAYETTE
LEGAL: TRACTS C & D & E BEACON HILL REPLAT
TRACT D
ZONING: NOT COUNTY ZONED

NOTE:
CONTRACTOR SHALL BURY ANY OVERHEAD UTILITY LINES.

LEGEND:

- PROPERTY BOUNDARY
- RIGHT-OF-WAY
- BUILDING SETBACK
- EXISTING FIRE HYDRANT & WATER VALVE
- EXISTING TRANSFORMER & STREET LIGHT
- EXISTING STORM MANHOLE & INLETS
- EXISTING SANITARY MANHOLE
- EXISTING GAS LINE
- EXISTING TELECOM LINE
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- REMOVED UTILITIES
- PROPOSED STM SEWER W/ MH & INLET
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- PROPOSED SAN SERIVE LINE W/ CO
- PROPOSED WAT LINE W/ VALVE & TEE
- PROPOSED FIRE HYDRANT ASSEMBLY
- PROPOSED FIRE SERVICE LINE
- PROPOSED DOMESTIC SERVICE LINE W/ METER

30 0 30 60
SCALE: 1" = 30'

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1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

PROJECT NUMBER: 160602

11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

UTILITY PLAN
SHEET 8 OF 51

Filepath: P:\160602\ENGINEERING\UTILITIES\SP - OVERALL UTILITY PLAN.DWG Layout: 1S OVERALL UTILITY PLAN
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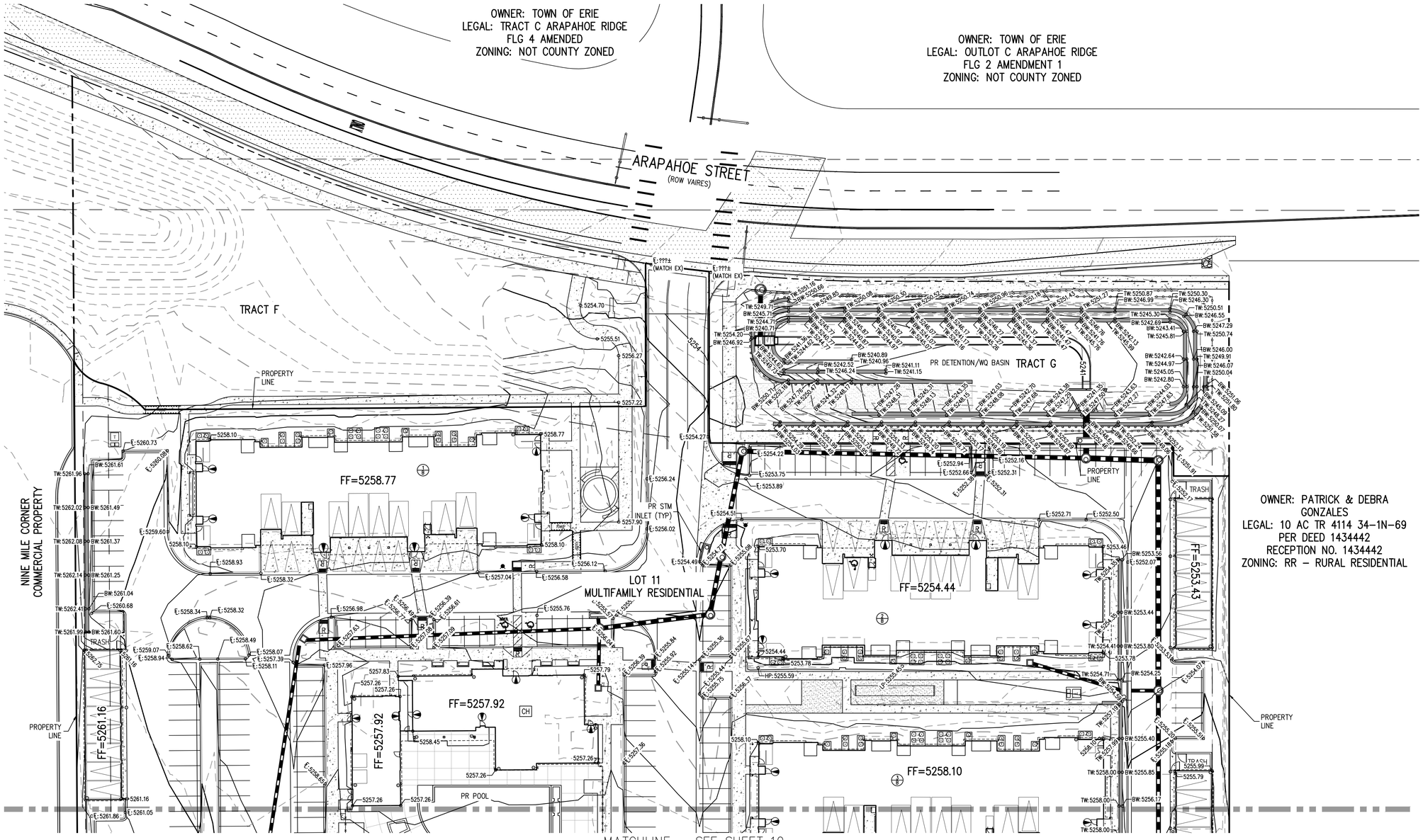
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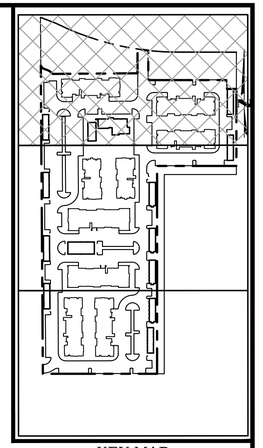
OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

12.54 ACRES

SITE PLAN - SP-000832-2016





KEY MAP
SCALE: 1" = 250'

SCALE: 1" = 30'

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

PROJECT NUMBER: 160602

11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

GRADING PLAN
SHEET 9 OF 51

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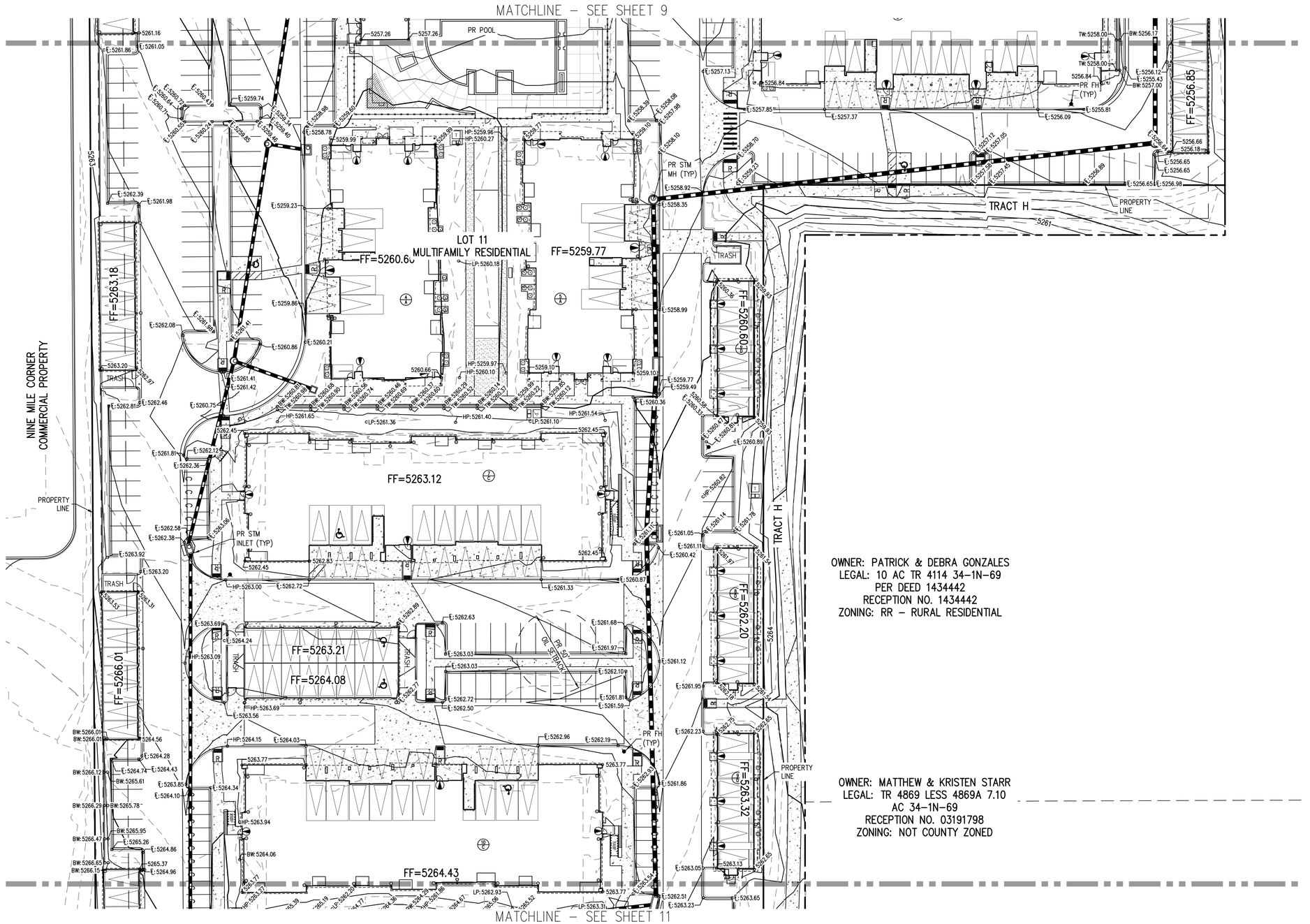
NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.

OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

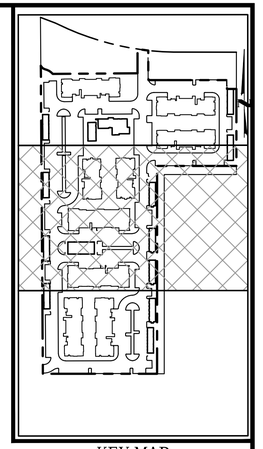
12.54 ACRES

SITE PLAN - SP-000832-2016



OWNER: PATRICK & DEBRA GONZALES
LEGAL: 10 AC TR 4114 34-1N-69
PER DEED 1434442
RECEPTION NO. 1434442
ZONING: RR – RURAL RESIDENTIAL

OWNER: MATTHEW & KRISTEN STARR
LEGAL: TR 4869 LESS 4869A 7.10
AC 34-1N-69
RECEPTION NO. 03191798
ZONING: NOT COUNTY ZONED



KEY MAP
SCALE: 1" = 250'

SCALE: 1" = 30'

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
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P: 303.623.6300 F: 303.623.6311
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PROJECT NUMBER: 160602

11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

GRADING PLAN
SHEET 10 OF 51

Filepath: P:\160602\ENGINEERING\GRADING\SP - GRADING.DWG Layout: 21 GRADING PLAN
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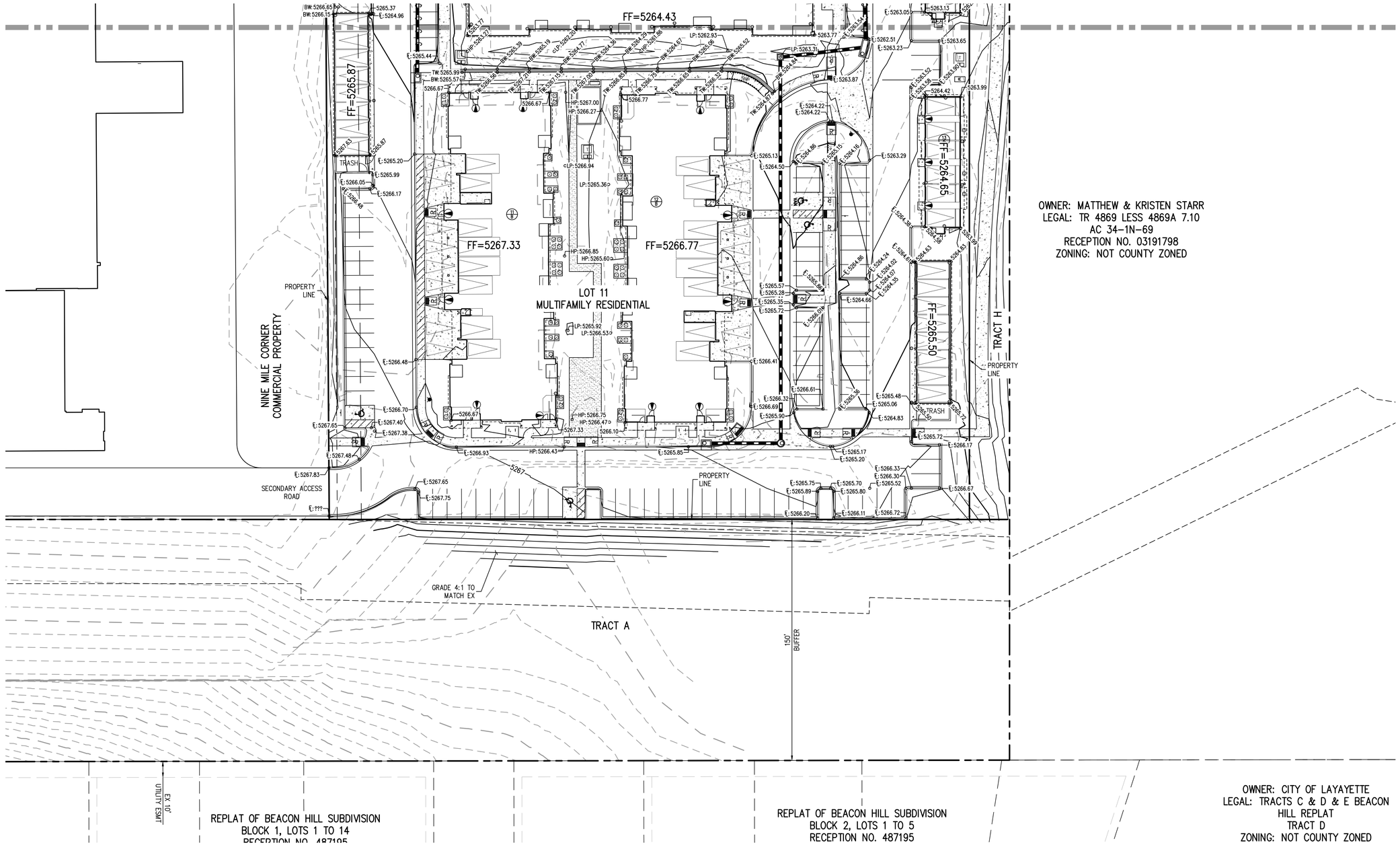
NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.

OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
12.54 ACRES

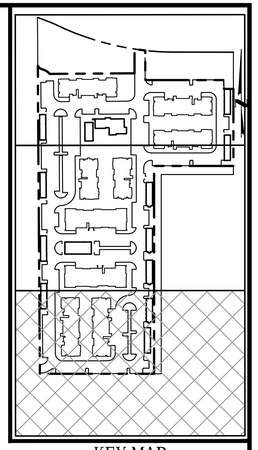
SITE PLAN - SP-000832-2016

MATCHLINE – SEE SHEET 10



OWNER: MATTHEW & KRISTEN STARR
LEGAL: TR 4869 LESS 4869A 7.10
AC 34-1N-69
RECEPTION NO. 03191798
ZONING: NOT COUNTY ZONED

OWNER: CITY OF LAYAYETTE
LEGAL: TRACTS C & D & E BEACON HILL REPLAT
TRACT D
ZONING: NOT COUNTY ZONED



KEY MAP
SCALE: 1" = 250'

SCALE: 1" = 30'

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
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P: 303.623.6300 F: 303.623.6311
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PROJECT NUMBER: 160602

11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

GRADING PLAN
SHEET 11 OF 51

Filepath: P:\160602\ENGINEERING\GRADING\SP1 - GRADING.DWG Layout: 22 GRADING PLAN
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Plotted: THU 11/07/19 6:19:03P By: Rachel Patton

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF FORBES KOCHER SMITH

OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

12.54 ACRES

SITE PLAN - SP-000832-2016

GENERAL NOTES

1. THE CONTRACTOR AND OWNER'S REPRESENTATIVE SHALL CONTACT THE LANDSCAPE ARCHITECT FOR A PRE-CONSTRUCTION MEETING PRIOR TO START OF ANY WORK SHOWN ON THESE PLANS.
2. THESE PLANS SHALL NOT BE UTILIZED FOR CONSTRUCTION OR PERMITTING UNLESS STATED FOR SUCH USE IN THE TITLE BLOCK.
3. DRAWINGS ARE INTENDED TO BE PRINTED ON 24 X 36 PAPER. PRINTING THESE DRAWINGS AT A DIFFERENT SIZE WILL IMPACT THE SCALE. VERIFY THE GRAPHIC SCALE BEFORE REFERENCING ANY MEASUREMENTS ON THESE SHEETS. THE RECIPIENT OF THESE DRAWINGS SHALL BE RESPONSIBLE FOR ANY ERRORS RESULTING FROM INCORRECT PRINTING, COPYING, OR ANY OTHER CHANGES THAT ALTER THE SCALE OF THE DRAWINGS.
4. VERIFY ALL PLAN DIMENSIONS PRIOR TO START OF CONSTRUCTION. NOTIFY THE OWNER'S REPRESENTATIVE TO ADDRESS ANY QUESTIONS OR CLARIFY ANY DISCREPANCIES.
5. WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALED DIMENSIONS.
6. SUBMIT A CHANGE ORDER FOR APPROVAL FOR ANY CHANGES TO WORK SCOPE RESULTING FROM FIELD CONDITIONS OR DIRECTION BY OWNER'S REPRESENTATIVE WHICH REQUIRE ADDITIONAL COST TO THE OWNER PRIOR TO PERFORMANCE OF WORK.
7. THE CONTRACTOR SHALL PROVIDE A STAKED LAYOUT OF ALL SITE IMPROVEMENTS FOR INSPECTION BY THE OWNER'S REPRESENTATIVE AND MAKE MODIFICATIONS AS REQUIRED. ALL LAYOUT INFORMATION IS AVAILABLE IN DIGITAL FORMAT FOR USE BY THE CONTRACTOR.
8. IF A GEOTECHNICAL SOILS REPORT IS NOT AVAILABLE AT THE TIME OF CONSTRUCTION, NORRIS DESIGN RECOMMENDS A REPORT BE AUTHORIZED BY THE OWNER AND THAT ALL RECOMMENDATIONS OF THE REPORT ARE FOLLOWED DURING CONSTRUCTION. THE CONTRACTOR SHALL USE THESE CONTRACT DOCUMENTS AS A BASIS FOR THE BID. IF THE OWNER ELECTS TO PROVIDE A GEOTECHNICAL REPORT, THE CONTRACTOR SHALL REVIEW THE REPORT AND SUBMIT AN APPROPRIATE CHANGE ORDER TO THE OWNER'S REPRESENTATIVE IF ADDITIONAL COSTS ARE REQUESTED.
9. CONTRACTOR SHALL CONFIRM THAT SITE CONDITIONS ARE SIMILAR TO THE PLANS, WITHIN TOLERANCES STATED IN THE CONTRACT DOCUMENTS, AND SATISFACTORY TO THE CONTRACTOR PRIOR TO START OF WORK. SHOULD SITE CONDITIONS BE DIFFERENT THAN REPRESENTED ON THE PLANS OR UNSATISFACTORY TO THE CONTRACTOR, THE CONTRACTOR SHALL CONTACT THE OWNER'S REPRESENTATIVE FOR CLARIFICATION AND FURTHER DIRECTION.
10. CONTRACTOR IS RESPONSIBLE TO PAY FOR, AND OBTAIN, ANY REQUIRED APPLICATIONS, PERMITTING, LICENSES, INSPECTIONS AND METERS ASSOCIATED WITH WORK.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY FINES OR PENALTIES ASSESSED TO THE OWNER RELATING TO ANY VIOLATIONS OR NON-CONFORMANCE WITH THE PLANS, SPECIFICATIONS, CONTRACT DOCUMENTS, JURISDICTIONAL CODES, AND REGULATORY AGENCIES.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION OF ALL UTILITY LOCATES PRIOR TO ANY EXCAVATION. REFER TO ENGINEERING UTILITY PLANS FOR ALL PROPOSED UTILITY LOCATIONS AND DETAILS. NOTIFY OWNER'S REPRESENTATIVE IF EXISTING OR PROPOSED UTILITIES INTERFERE WITH THE ABILITY TO PERFORM WORK.
13. UNLESS IDENTIFIED ON THE PLANS FOR DEMOLITION OR REMOVAL, THE CONTRACTOR IS RESPONSIBLE FOR THE COST TO REPAIR UTILITIES, ADJACENT OR EXISTING LANDSCAPE, ADJACENT OR EXISTING PAVING, OR ANY PUBLIC AND PRIVATE PROPERTY THAT IS DAMAGED BY THE CONTRACTOR OR THEIR SUBCONTRACTOR'S OPERATIONS DURING INSTALLATION, ESTABLISHMENT OR DURING THE SPECIFIED MAINTENANCE PERIOD. ALL DAMAGES SHALL BE REPAIRED TO PRE-CONSTRUCTION CONDITIONS AS DETERMINED BY THE OWNER'S REPRESENTATIVE. CONTRACTOR SHALL BE RESPONSIBLE FOR LOGGING ANY DAMAGES PRIOR TO START OF CONSTRUCTION AND DURING THE CONTRACT PERIOD.
14. ALL WORK SHALL BE CONFINED TO THE AREA WITHIN THE CONSTRUCTION LIMITS AS SHOWN ON THE PLANS. ANY AREAS OR IMPROVEMENTS DISTURBED OUTSIDE THESE LIMITS SHALL BE RETURNED TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE. IN THE EVENT THE CONTRACTOR REQUIRES A MODIFICATION TO THE CONSTRUCTION LIMITS, WRITTEN PERMISSION MUST BE OBTAINED FROM THE OWNER'S REPRESENTATIVE PRIOR TO ANY DISTURBANCE OUTSIDE OF THE LIMITS OF WORK.
15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OF ANY OF THEIR TRENCHES OR EXCAVATIONS THAT SETTLE.
16. THE CONTRACTOR SHALL BE RESPONSIBLE TO PREPARE AND SUBMIT A TRAFFIC CONTROL PLAN TO THE APPROPRIATE JURISDICTIONAL AGENCIES AND THE OWNER'S REPRESENTATIVE IF THEIR WORK AND OPERATIONS AFFECT OR IMPACT THE PUBLIC RIGHTS-OF-WAY. OBTAIN APPROVAL PRIOR TO ANY WORK WHICH AFFECTS OR IMPACTS THE PUBLIC RIGHTS-OF-WAY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY FINES OR PENALTIES ASSESSED TO THE OWNER RELATING TO THIS REQUIREMENT DURING THE CONTRACT PERIOD.
17. SIGHT TRIANGLES AND SIGHT LINES SHALL REMAIN UNOBSTRUCTED BY EQUIPMENT, CONSTRUCTION MATERIALS, PLANT MATERIAL OR ANY OTHER VISUAL OBSTACLE DURING THE CONTRACT PERIOD AND AT MATURITY OF PLANTS PER LOCAL JURISDICTIONAL REQUIREMENTS.
18. NO PLANT MATERIAL OTHER THAN GROUND COVER IS ALLOWED TO BE PLANTED ADJACENT TO FIRE HYDRANTS AS STIPULATED BY JURISDICTIONAL REQUIREMENTS.
19. COORDINATE SITE ACCESS, STAGING, STORAGE AND CLEANOUT AREAS WITH OWNER'S REPRESENTATIVE.
20. CONTRACTOR IS RESPONSIBLE FOR PROVIDING TEMPORARY SAFETY FENCING AND BARRIERS AROUND ALL IMPROVEMENTS SUCH AS WALLS, PLAY STRUCTURES, EXCAVATIONS, ETC. ASSOCIATED WITH THEIR WORK UNTIL SUCH FACILITIES ARE COMPLETELY INSTALLED PER THE PLANS, SPECIFICATIONS AND MANUFACTURER'S RECOMMENDATIONS.
21. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF THEIR MATERIAL STOCK PILES AND WORK FROM VANDALISM, EROSION OR UNINTENDED DISTURBANCE DURING THE CONSTRUCTION PERIOD AND UNTIL FINAL ACCEPTANCE IS ISSUED.
22. THE CONTRACTOR SHALL KNOW, UNDERSTAND AND ABIDE BY ANY STORM WATER POLLUTION PREVENTION PLAN (SWPPP) ASSOCIATED WITH THE SITE. IF A STORM WATER POLLUTION PREVENTION PLAN IS NOT PROVIDED BY THE OWNER'S REPRESENTATIVE, REQUEST A COPY BEFORE PERFORMANCE OF ANY SITE WORK.
23. MAINTAIN ANY STORM WATER MANAGEMENT FACILITIES THAT EXIST ON SITE FOR FULL FUNCTIONALITY. THE CONTRACTOR SHALL INSTALL AND MAINTAIN ANY NEW STORM WATER MANAGEMENT FACILITIES THAT ARE IDENTIFIED IN THE SCOPE OF WORK TO FULL FUNCTIONALITY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY FINES OR PENALTIES ASSESSED TO THE OWNER FOR FAILURE TO MAINTAIN STORM WATER MANAGEMENT FACILITIES DURING THE CONTRACT PERIOD.
24. THE CONTRACTOR SHALL PREVENT SEDIMENT, DEBRIS AND ALL OTHER POLLUTANTS FROM EXITING THE SITE OR ENTERING THE STORM SEWER SYSTEM DURING ALL DEMOLITION OR CONSTRUCTION OPERATIONS THAT ARE PART OF THIS PROJECT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY FINES OR PENALTIES ASSESSED TO THE OWNER RELATING TO THESE REQUIREMENTS DURING THEIR CONTRACTED COURSE OF WORK.
25. THE CONTRACTOR SHALL BE RESPONSIBLE TO PREVENT ANY IMPACTS TO ADJACENT WATERWAYS, WETLANDS, OR OTHER ENVIRONMENTALLY SENSITIVE AREAS RESULTING FROM WORK DONE AS PART OF THIS PROJECT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY FINES OR PENALTIES ASSESSED TO THE OWNER RELATING TO THESE STANDARDS DURING THEIR CONTRACTED COURSE OF WORK.
26. THE CONTRACTOR AND/OR THEIR AUTHORIZED AGENTS SHALL INSURE THAT ALL LOADS OF CONSTRUCTION MATERIAL IMPORTED TO OR EXPORTED FROM THE PROJECT SITE SHALL BE PROPERLY COVERED TO PREVENT LOSS OF MATERIAL DURING TRANSPORT. TRANSPORTATION METHODS ON PUBLIC RIGHT-OF WAYS SHALL CONFORM TO JURISDICTIONAL REQUIREMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY FINES OR PENALTIES ASSESSED TO THE OWNER RELATING TO THESE REQUIREMENTS.
27. THE CLEANING OF EQUIPMENT IS PROHIBITED AT THE JOB SITE UNLESS AUTHORIZED BY THE OWNER'S REPRESENTATIVE IN A DESIGNATED AREA. THE DISCHARGE OF WATER, WASTE CONCRETE, POLLUTANTS, OR OTHER MATERIALS SHALL ONLY OCCUR IN AREAS DESIGNED FOR SUCH USE AND APPROVED BY THE OWNER'S REPRESENTATIVE.
28. THE CLEANING OF CONCRETE EQUIPMENT IS PROHIBITED AT THE JOB SITE EXCEPT IN DESIGNATED CONCRETE WASHOUT AREAS. THE DISCHARGE OF WATER CONTAINING WASTE CONCRETE IN THE STORM SEWER IS PROHIBITED.
29. 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.
30. LOCAL, STATE AND FEDERAL JURISDICTIONAL REQUIREMENTS, RESTRICTIONS OR PROCEDURES SHALL SUPERSEDE THESE PLANS, NOTES AND SPECIFICATIONS WHEN MORE STRINGENT. NOTIFY THE OWNER'S REPRESENTATIVE IF CONFLICTS OCCUR.

GENERAL LANDSCAPE NOTES

1. THE CONTRACTOR SHALL FOLLOW THE LANDSCAPE PLANS AND SPECIFICATIONS AS CLOSELY AS POSSIBLE. ANY SUBSTITUTION OR ALTERATION SHALL NOT BE ALLOWED WITHOUT APPROVAL OF THE OWNER'S REPRESENTATIVE. OVERALL PLANT QUANTITY AND QUALITY SHALL BE CONSISTENT WITH THE PLANS.
2. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL PLANT QUANTITIES. GRAPHIC QUANTITIES TAKES PRECEDENCE OVER WRITTEN QUANTITIES.
3. THE OWNER'S REPRESENTATIVE RESERVES THE RIGHT TO INSPECT AND TAG ALL PLANT MATERIAL PRIOR TO SHIPPING TO THE SITE. IN ALL CASES, THE OWNER'S REPRESENTATIVE MAY REJECT PLANT MATERIAL AT THE SITE IF MATERIAL IS DAMAGED, DISEASED, OR DECLINING IN HEALTH AT THE TIME OF ONSITE INSPECTIONS OR IF THE PLANT MATERIAL DOES NOT MEET THE MINIMUM SPECIFIED STANDARD IDENTIFIED ON THE PLANS AND IN THE SPECIFICATIONS. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER'S REPRESENTATIVE FOR INSPECTION AND APPROVAL OF ALL MATERIALS AND PRODUCTS PRIOR TO INSTALLATION.
4. THE OWNER'S REPRESENTATIVE MAY ELECT TO UPSIZE PLANT MATERIAL AT THEIR DISCRETION BASED ON SELECTION, AVAILABILITY, OR TO ENHANCE SPECIFIC AREAS OF THE PROJECT. THE CONTRACTOR SHALL VERIFY PLANT MATERIAL SIZES WITH OWNER'S REPRESENTATIVE PRIOR TO PURCHASING, SHIPPING OR STOCKING OF PLANT MATERIALS. SUBMIT CHANGE ORDER REQUEST TO OWNER'S REPRESENTATIVE FOR APPROVAL IF ADDITIONAL COST IS REQUESTED BY THE CONTRACTOR PRIOR TO INSTALLATION. RE-STOCKING CHARGES WILL NOT BE APPROVED IF THE CONTRACTOR FAILS TO SUBMIT A REQUEST FOR MATERIAL CHANGES.
5. THE CONTRACTOR SHALL WARRANTY ALL CONTRACTED WORK AND MATERIALS FOR A PERIOD OF ONE YEAR AFTER SUBSTANTIAL COMPLETION HAS BEEN ISSUED BY THE OWNER'S REPRESENTATIVE FOR THE ENTIRE PROJECT UNLESS OTHERWISE SPECIFIED IN THE CONTRACT DOCUMENTS OR SPECIFICATIONS.
6. REFER TO IRRIGATION PLANS FOR LIMITS AND TYPES OF IRRIGATION DESIGNED FOR THE LANDSCAPE. IN NO CASE SHALL IRRIGATION BE EMITTED WITHIN THE MINIMUM DISTANCE FROM BUILDING OR WALL FOUNDATIONS AS STIPULATED IN THE GEOTECHNICAL REPORT. ALL IRRIGATION DISTRIBUTION LINES, HEADS AND EMITTERS SHALL BE KEPT OUTSIDE THE MINIMUM DISTANCE AWAY FROM ALL BUILDING AND WALL FOUNDATIONS AS STIPULATED IN THE GEOTECHNICAL REPORT.
7. LANDSCAPE MATERIAL LOCATIONS SHALL HAVE PRECEDENCE OVER IRRIGATION MAINLINE AND LATERAL LOCATIONS. COORDINATE INSTALLATION OF IRRIGATION EQUIPMENT SO THAT IT DOES NOT INTERFERE WITH THE PLANTING OF TREES OR OTHER LANDSCAPE MATERIAL.
8. THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING POSITIVE DRAINAGE EXISTS IN ALL LANDSCAPE AREAS. SURFACE DRAINAGE ON LANDSCAPE AREAS SHALL NOT FLOW TOWARD STRUCTURES AND FOUNDATIONS. MAINTAIN SLOPE AWAY FROM FOUNDATIONS PER THE GEOTECHNICAL REPORT RECOMMENDATIONS. ALL LANDSCAPE AREAS BETWEEN WALKS AND CURBS SHALL DRAIN FREELY TO THE CURB UNLESS OTHERWISE IDENTIFIED ON THE GRADING PLAN. IN NO CASE SHALL THE GRADE, TURF THATCH, OR OTHER LANDSCAPE MATERIALS DAM WATER AGAINST WALKS. MINIMUM SLOPES ON LANDSCAPE AREAS SHALL BE 2%; MAXIMUM SLOPE SHALL BE 25% UNLESS SPECIFICALLY IDENTIFIED ON THE PLANS OR APPROVED BY THE OWNER'S REPRESENTATIVE.
9. PRIOR TO INSTALLATION OF PLANT MATERIALS, AREAS THAT HAVE BEEN COMPACTED OR DISTURBED BY CONSTRUCTION ACTIVITY SHALL BE THOROUGHLY LOOSENED TO A DEPTH OF 8" - 12" AND AMENDED PER SPECIFICATIONS.
10. ALL LANDSCAPED AREAS ARE TO RECEIVE ORGANIC SOIL PREPARATION AT 3 cu.yrds/1,000sf OR AS NOTED IN THE TECHNICAL SPECIFICATIONS.
11. TREES SHALL NOT BE LOCATED IN DRAINAGE SWALES, DRAINAGE AREAS, OR UTILITY EASEMENTS. CONTACT OWNER'S REPRESENTATIVE FOR RELOCATION OF PLANTS IN QUESTIONABLE AREAS PRIOR TO INSTALLATION.
12. THE CENTER OF EVERGREEN TREES SHALL NOT BE PLACED CLOSER THAN 8' AND THE CENTER OF ORNAMENTAL TREES CLOSER THAN 6' FROM A SIDEWALK, STREET OR DRIVE LANE. EVERGREEN TREES SHALL NOT BE LOCATED ANY CLOSER THAN 15' FROM IRRIGATION ROTOR HEADS. NOTIFY OWNER'S REPRESENTATIVE IF TREE LOCATIONS CONFLICT WITH THESE STANDARDS FOR FURTHER DIRECTION.
13. ALL EVERGREEN TREES SHALL BE FULLY BRANCHED TO THE GROUND AND SHALL NOT EXHIBIT SIGNS OF ACCELERATED GROWTH AS DETERMINED BY THE OWNER'S REPRESENTATIVE.
14. ALL TREES ARE TO BE STAKED AND GUYED PER DETAILS FOR A PERIOD OF 1 YEAR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING STAKES AT THE END OF 1 YEAR FROM ACCEPTANCE OF LANDSCAPE INSTALLATION BY THE OWNER'S REPRESENTATIVE. OBTAIN APPROVAL BY OWNER'S REPRESENTATIVE PRIOR TO REMOVAL.
15. ALL TREES INSTALLED ABOVE RETAINING WALLS UTILIZING GEO-GRID MUST BE HAND DUG TO PROTECT GEO-GRID. IF GEO-GRID MUST BE CUT TO INSTALL TREES, APPROVAL MUST BE GIVEN BY OWNER'S REPRESENTATIVE PRIOR TO DOING WORK.
16. ALL TREES IN SEED OR TURF AREAS SHALL RECEIVE MULCH RINGS. OBTAIN APPROVAL FROM OWNER'S REPRESENTATIVE FOR ANY TREES THAT WILL NOT BE MULCHED FOR EXCESSIVE MOISTURE REASONS.
17. SHRUB, GROUNDCOVER AND PERENNIAL BEDS ARE TO BE CONTAINED BY 6" x 14 GAUGE GREEN, ROLL TOP, INTERLOCKING TYPE EDGER, RYERSON OR EQUAL. EDGER IS NOT REQUIRED WHEN ADJACENT TO CURBS, WALLS, WALKS OR SOLID FENCES WITHIN 3" OF PRE-MULCHED FINAL GRADE. EDGER SHALL NOT BE REQUIRED TO SEPARATE MULCH TYPES UNLESS SPECIFIED ON THE PLANS.
18. ALL SHRUB BEDS ARE TO BE MULCHED WITH MIN. 3" DEPTH, LOCAL RIVER ROCK LANDSCAPE MULCH OVER SPECIFIED GEOTEXTILE WEED CONTROL FABRIC. ALL GROUND COVER AND PERENNIAL FLOWER BEDS SHALL BE MULCHED WITH 4 " DEPTH GORILLA HAIR CEDAR LANDSCAPE MULCH. NO WEED CONTROL FABRIC IS REQUIRED IN GROUNDCOVER OR PERENNIAL AREAS.
19. CONTRACTOR SHALL OVER SEED ALL MAINTENANCE OR SERVICE ACCESS BENCHES AND ROADS WITH SPECIFIED SEED MIX UNLESS OTHERWISE NOTED ON THE PLANS.
20. ALL SEEDED SLOPES EXCEEDING 25% IN GRADE (4:1) SHALL RECEIVE EROSION CONTROL BLANKETS. PRIOR TO INSTALLATION, NOTIFY OWNER'S REPRESENTATIVE FOR APPROVAL OF LOCATION AND ANY ADDITIONAL COST IF A CHANGE ORDER IS NECESSARY.
21. WHEN COMPLETE, ALL GRADES SHALL BE WITHIN +/- 1/8" OF FINISHED GRADES AS SHOWN ON THE PLANS.
22. WHEN PLANTER URNS ARE SHOWN ON PLANS, CONTRACTOR SHALL INCLUDE THE FOLLOWING: PLANTER MIX, ANNUAL FLOWER PLANTING PROGRAM (INCLUDES 2 PLANTINGS FOR THE 1ST YEAR (SPRING AND FALL) AND WINTER HAND-WATERING AS NEEDED. UNLESS OTHERWISE SPECIFIED, CONTRACTOR TO PROVIDE ANNUAL PLANTING SELECTION FOR REVIEW BY OWNER. IRRIGATION FOR PLANTERS TO BE ON SEPARATE ZONE(S). CONTRACTOR TO COORDINATE PLACEMENT OF NECESSARY SLEEVING PRIOR TO PLACEMENT OF PAVEMENT.
23. THE CONTRACTOR IS EXPECTED TO KNOW AND UNDERSTAND THE TOWN OF ERIE'S SPECIFICATIONS FOR LANDSCAPE AND IRRIGATION. IN CASES OF DISCREPANCIES THE HIGHER OF THE TWO STANDARDS SHALL HAVE PRECEDENCE.
24. THE DEVELOPER, HIS SUCCESSORS AND ASSIGNS SHALL BE RESPONSIBLE FOR THE INSTALLATION, MAINTENANCE AND REPLACEMENT OF ALL IMPROVEMENTS SHOWN OR INDICATED ON THE APPROVED LANDSCAPE PLAN ON FILE IN THE PLANNING DEPARTMENT.
25. ALL HOA/DISTRICT MAINTAINED LANDSCAPING TO BE INSPECTED BY A COLORADO LANDSCAPE ARCHITECT IN GOOD STANDING AND PAID FOR BY THE DEVELOPER. ALL TOWN OF ERIE LANDSCAPE ACCEPTANCE PROCEDURES SHALL BE FOLLOWED, UNLESS OTHERWISE NOTED IN THE PLANS (SEE NOTES)
26. ALL STREET TREE SPECIES AND THEIR LOCATIONS SHALL BE APPROVED BY PARKS AND RECREATION DIRECTOR OR DESIGNEE FOR TREES PLANTED ADJACENT TO RESIDENTIAL HOMES, WHETHER THEY BE INSTALLED BY THE DEVELOPER/CONTRACTOR OR INDIVIDUAL HOMEOWNER. ASH TREES SHALL NOT BE PLANTED UNDER ANY CIRCUMSTANCES.

TOWN OF ERIE NOTES

1. IF TRANSFORMERS, GROUND MOUNTED HVAC EQUIPMENT, UTILITY PEDESTALS, ETC. ARE NOT SHOWN ON THE SITE IMPROVEMENT PLAN, ADDITIONAL LANDSCAPING/SCREENING MAY BE REQUIRED BASED UPON FIELD CONDITIONS DISCOVERED VIA THE SITE INSPECTION BY STAFF, MADE PRIOR TO THE ISSUANCE OF THE CERTIFICATE OF OCCUPANCY, OR FINAL INSPECTION AS APPLICABLE.

Plotted: FRI 11/09/19 12:39:26P By: Chris Mar
Flepath: P:\EYECAKES\ERIE NINE MILE - MULTIFAMILY - 0038-01-22\5\DRAWINGS\SUBMITTALS\SD-LADS\SP-PLAN.DWG Layout: 6 LANDSCAPE NOTES

PROJECT NUMBER: 160602

11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

LANDSCAPE NOTES
SHEET 12 OF 51

OUTLOOK NINE MILE

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF FORBES KOCHER SMITH

OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

12.54 ACRES

SITE PLAN - SP-000832-2016

LANDSCAPE PLANT LIST

QTY.	SYM.	BOTANICAL NAME	COMMON NAME	SIZE & COND. (UNLESS OTHERWISE NOTED)
DECIDUOUS TREES				
7	ACE	ACER SACCHARUM 'BAILSTA'	FALL FIESTA SUGAR MAPLE	2.5" CAL. B&B
4	CAL	CATALPA SPECIOSA	WESTERN CATALPA	2.5" CAL. B&B
6	GIN	GINKGO BILOBA 'AUTUMN GOLD'	AUTUMN GOLD GINKGO	2.5" CAL. B&B
4	GRT	KOELREUTERIA PANICULATA	GOLDENRAIN TREE	2.5" CAL. B&B
9	KCT	GYMNOCLADUS DIOICUS	KENTUCKY COFFEETREE	2.5" CAL. B&B
2	OAK	QUERCUS X MACDANIELII 'CLEMONS'	HERITAGE OAK	2.5" CAL. B&B
4	RLI	TILIA CORDATA 'GLENLEVEN'	GLENLEVEN LINDEN	2.5" CAL. B&B
12	SHU	QUERCUS SHUMMARDI	SHUMMARD OAK	2.5" CAL. B&B
6	SCH	SOPHORA JAPONICA 'REGENT'	JAPANESE PAGODA TREE	2.5" CAL. B&B
EVERGREEN TREES				
8	AUS	PINUS NIGRA	AUSTRIAN PINE	6' HT. MIN.
5	BOP	PINUS LEUCODERMIS	BOSNIAN PINE 'MINT TRUFFLE'	6' HT. MIN.
8	BSP	PICEA PUNGENS 'BAKERI'	BAKERI SPRUCE	6' HT. MIN.
20	FSP	PICEA PUNGENS 'FASTIGIATA'	FASTIGATE BLUE SPRUCE	6' HT. MIN.
8	PON	PINUS PONDEROSA	PONDEROSA PINE	6' HT. MIN.
9	PVP	PINUS FLEXILIS 'VANDERWOLF'S PYRAMID'	VANDERWOLF PINE	6' HT. MIN.
ORNAMENTAL TREES				
44	ABS	AMELANCHIER X GRANDIFLORA	AUTUMN BRILLIANCE SERVICEBERRY	6' HT. CLUMP
15	CCH	CRATAEGUS LAEVIGATA 'CRIMSON CLOUD'	CRIMSON CLOUD HAWTHORN	2.0" CAL. B&B
14	CSM	ACER PLATANOIDES 'CRIMSON SENTRY'	CRIMSON SENTRY MAPLE	2.0" CAL. B&B
3	GMT	ACER GINNALA	GINNALA MAPLE	6' HT. CLUMP
8	LTR	SYRINGA RETICULATA	JAPANESE TREE LILAC	2.0" CAL. B&B
DECIDUOUS SHRUBS (3' SPREAD)				
41	ART	CORNUS SERICEA 'ARCTIC FIRE'	ARCTIC FIRE DOGWOOD	#5 CONT.
40	DCM	DAPHNE X BURKWOODI 'CAROL MACKIE'	CAROL MACKIE DAPHNE	#5 CONT.
41	GFS	SPIREA JAPONICA 'GOLDFLAME'	GOLDFLAME SPIREA	#5 CONT.
16	HKO	DIERVILLA X KODIAK ORANGE	KODIAK ORANGE HONEYSUCKLE	#5 CONT.
65	KEL	CORNUS SERICEA 'KELSEYI'	KELSEY DOGWOOD	#5 CONT.
94	LMS	SPIREA X BUMALDA 'LIMEMOUND'	LIMEMOUND SPIREA	#5 CONT.
77	WMM	WEIGELA FLORIDA 'VERWIG'	MY MONET WEIGELA	#5 CONT.
DECIDUOUS SHRUBS (5' SPREAD)				
21	FLA	PRUNUS GLANDULOSA	FLOWERING ALMOND	#5 CONT.
32	FQP	CHAENOMELES JAPONICA 'CAMEO	PINK FLOWERING QUINCE	#5 CONT.
63	GLS	RHUS AROMATICA 'GROW-LOW'	GRO-LOW FRAGRANT SUMAC	#5 CONT.
76	IVO	CORNUS ALBA 'BAIL HALO'	IVORY HALO DOGWOOD	#5 CONT.
73	MKL	SYRINGA PATULA 'MISS KIM'	MISS KIM LILAC	#5 CONT.
31	PBS	PRUNUS BESSEYI 'PAWNEE BUTTES'	PAWNEE BUTTES SANDCHERRY	#5 CONT.
38	URC	ARONIA ARBUTIFOLIA 'ERECTA'	UPRIGHT RED CHOKEBERRY	#5 CONT.
47	WRP	WEIGELA FLORIDA 'RED PRINCE'	RED PRINCE WEIGELA	#5 CONT.
DECIDUOUS SHRUBS (7' SPREAD)				
21	DFV	VIBURNUM PLICATUM TOMENTOSUM 'SUMMER SNOWFLAKE'	DOUBLEFILE VIBURNUM	#5 CONT.
29	MOC	PHILADELPHUS LEWISII 'CHEYENNE'	CHEYENNE MOCKORANGE	#5 CONT.
35	NCG	PHYSOCARPUS OPULIFOLIUS 'CENTER GLOW"	CENTER GLOW NINEBARK	#5 CONT.
30	PLS	PRUNUS X CISTENA	CISTENA PLUM	#5 CONT.
42	VBM	VIBURNUM DENTATUM 'CHRISTOM'	BLUE MUFFIN VIBURNUM	#5 CONT.
EVERGREEN SHRUBS/UPRIGHT JUNIPERS				
208	BCH	JUNIPERUS HORIZONTALIS 'BLUE CHIP'	BLUE CHIP JUNIPER	#5 CONT.
30	BOX	BUXUS 'GREEN VELVET'	GREEN VELVET BOXWOOD	#5 CONT.
125	GMJ	JUNIPERUS PROCUMBENS 'GREEN MOUND'	GREEN MOUND JUNIPER	#5 CONT.
9	BUF	JUNIPERUS SABINA 'BUFFALO'	BUFFALO JUNIPER	
25	GSP	PICEA PUNGENS 'GLAUCA GLOBOSA'	GLOBE BLUE SPRUCE	#5 CONT.
54	MOO	JUNIPERUS SCOPULORUM 'MOONGLOW'	MOONGLOW JUNIPER	6' HT. MIN.
55	MSL	PINUS MUGO 'SLOWMOUND'	SLOWMOUND MUGO PINE	#5 CONT.
73	SYL	PINUS SYLVESTRIS 'ALBYN PROSTRATA'	SPREADING SCOTS PINE	#5 CONT.
49	YBE	YUCCA FILAMENTOSA 'BRIGHT EDGE'	ADAMS NEEDLE	#5 CONT.
ORNAMENTAL GRASSES				
309	BAG	BOUTELOUA GRACILIS 'BLONDE AMBITION'	BLONDE AMBITION GRASS	#1 CONT.
23	BFE	FESTUCA GLAUCA 'ELIJAH BLUE'	BLUE FESCUE	#1 CONT.
349	FRG	CALAMAGROSTIS ACUTIFLORA 'KARL FOERSTER'	FEATHER REED GRASS	#1 CONT.
119	GHM	PANICUM VIRGATUM 'HEAVY METAL'	HEAVY METAL SWITCHGRASS	#1 CONT.
269	HFG	PENNISETUM ALOPECUROIDES 'HAMELN'	HARDY FOUNTAIN GRASS	#1 CONT.
125	PMG	MISCANTHUS SINENSIS 'PURPURASCENS'	PURPLE MAIDEN GRASS	#1 CONT.
96	RSG	PANICUM VIRGATUM 'SHENANDOAH'	RED SWITCHGRASS	#1 CONT.
PERENNIALS				
	AGA	AGASTACHE RUPESTRIS	SUNSET HYSSOP	#1 CONT.
	AQU	AQUILEGIA CHRYSANTHA 'DENVER GOLD'	YELLOW COLUMBINE	#1 CONT.
	CPM	ECHINACEA PURPUREA 'MAGNUS'	MAGNUS CONEFLOWER	#1 CONT.
	GAI	G. ARISTATA	GAILLARDIA/ BLANKET FLOWER	#1 CONT.
	HOS	HOSTA 'ROYAL STANDARD'	ROYAL STANDARD HOSTA	#1 CONT.
	HOV	HOSTA 'UNDULATA ALBOMARGINATA'	VERIGATED HOSTA	#1 CONT.
	HYS	AGASTACHE AURANTIACA 'P012S'	CORONADO HYSSOP	#1 CONT.
	LAV	LAVANDULA ANGUSTIFOLIA 'MUNSTEAD'	ENGLISH LAVENDER	#1 CONT.
	PEN	PENSTEMON BARBATUS 'PRAIRIE DUSK'	ROSE-PURPLE PENSTEMON	#1 CONT.
	RGD	R. FULGIDA 'GOLDSTRUM'	RUDBECKIA/BLACK EYED SUSAN	#1 CONT.
	SMN	S. SYLVESTRIS X 'MAINACHT'	MAY NIGHT SALVIA	#1 CONT.
	VAL	CENTRANTHUS RUBER 'ALBUS'	WHITE VALERIAN	#1 CONT.
	VFA	ARTEMISIA LUDOVICIANA 'VALERIE FINNIS'	VALERIE FINNIS SAGE	#1 CONT.

NOTE: IN THE EVENT OF A DISCREPENCY BETWEEN THE PLAN GRAPHIC AND THE LANDSCAPE LEGEND, THE PLANT MATERIAL QUANTITY AS DETERMINED BY THE PLAN GRAPHIC SHALL TAKE PRECEDENCE.

WETLAND SEED MIX

"WET DETENTION POND MIX" BY PAWNEE BUTTES SEED, INC, OR APPROVED EQUAL

COMMON NAME	SCIENTIFIC NAME	% OF TOTAL	PLS PER ACRE
AMERICAN SLOUGHGRASS	BECKMANNIA SYZIGACHNE	12%	2.40
AQUATIC SEDGE	CAREX AQUATILIS	1%	0.20
NEBRASKA SEDGE	CAREX NEBRASCENSIS	3%	0.60
WOOLLY SEDGE	CAREX LANUGINOSA	1%	0.20
CREEPING SPIKERUSH	ELEOCHARIS PALUSTRIS	10%	2.00
CANADA WILDRYE	ELYMUS CANADENSIS	15%	3.00
BALTIC RUSH	JUNCUS BALTICUS	1%	0.20
TORREY'S RUSH	JUNCUS TORREYI	1%	0.20
SWITCHGRASS	PANICUM VIRGATUM	12%	2.40
HARDSTEM BULRUSH	SCIRPUS ACUTUS	10%	2.00
PALE BULRUSH	SCIRPUS PALLIDUS	1%	0.20
ALKALI BULRUSH	SCIRPUS PALUDOSUS	10%	2.00
THREE SQUARE BULRUSH	SCIRPUS PUNGENS	4%	0.80
SOFT STEM BULRUSH	SCIRPUS VALIDUS	10%	2.00
GIANT BUR-REED	SPARGANIUM EURYSCARPUM	4%	0.80
PRAIRIE CORDGRASS	SPARTINA PECTINATA	5%	1.00
TOTAL		100%	20 LBS / ACRE

TURF GRASS BLEND: SOD

"90/10 FESCUE/ BLUEGRASS BLEND" BY BITTERSWEET TURF FARMS, INC, OR APPROVED EQUAL

COMMON NAME	% OF TOTAL
EXCALIBER FESCUE	30%
REBEL JR. FESCUE	30%
CREW CUT FESCUE	30%
FREEDOM BLUEGRASS	5%
RAM I BLUEGRASS	5%
TOTAL	100%

DRYLAND SEED MIX

COMMON NAME	SCIENTIFIC NAME	% OF TOTAL	PLS PER ACRE
WESTERN WHEATGRASS	AGROPYRON SMITHII	28%	6.2 LBS.
BIG BLUESTEM	ANDROPOGON GRARDII	28%	6.2 LBS.
SIDE OATS GRAMA	BOUTELOUA CURTIPENDULA	10%	2.2 LBS.
BLUE GRAMA	BOUTELOUA GRACILIS	6%	1.2 LBS.
SWITCHGRASS	PANICUM VIRGATUM	10%	2.2 LBS.
INDIANGRASS	SORGHASTRUM NUTANS	10%	2.2 LBS.
LITTLE BLUESTEM	SCHIZACHYRIUM SCOPARIUS	8%	1.8 LBS.
TOTAL		100%	22.0 LBS.

REQUIRED PLANT MATERIAL CHART

LANDSCAPE AREA	AREAS/CALCULATIONS	REQUIRED TREES	PROVIDED TREES	REQUIRED SHRUBS	PROVIDED SHRUBS[1]
PARKING AREA: 1 TREE AND 15 SHRUBS PER 15 PARKING SPACES	371 PARKING SPACES	25	34	371	377[1]
INTERIOR AREA: 1 TREE /1000 SQ FT. 1 SHRUB/ 150 SQ FT.	156,852 SQ FT	157	162	1046	1,267
TREE MITIGATION: REPLACE EXISTING HEALTHY TREES WITH 1 1/2 CALIPER OF EXISTING TREES	TWO 30" CALIPER COTTONWOODS[2]	45 (2" CALIPER TREES) 90" CALIPER[2]	35 (2" CALIPER TREES) 1 (4" CALIPER TREE) 122" CALIPER		
TOTAL		227	232	1,417	1,644

NOTES:
1. SHRUB EQUIVALENT, 3 ORNAMENTAL GRASSES = 1 SHRUB
2. BASED ON THE MARCH 20, 2015 "NATIVE AND TREE VEGETATION SURVEY" BY MIKE MCGILL, TWO LARGE PLAINS COTTONWOODS WERE IDENTIFIED AS SUITABLE FOR PRESERVATION. THE REMAINING VEGETATION ON THE SITE WAS NOTED AS A MIIX OF NATIVE AND NON-NATIVE, UNDESIRABLE, AND IN POOR CONDITION. NO TREE CALIPER WAS SPECIFIED IN THE SURVEY. 30" CALIPER FOR THE TWO COTTONWOODS IS ASSUMED.

LANDSCAPING SHALL BE PLANTED AND MAINTAINED IN A NEAT, CLEAN AND HEALTHY CONDITION BY THE OWNER. THIS SHALL INCLUDE PROPER PRUNING, MOWING AND AERATION OF LAWNS, REPLACEMENT OF MULCH, WEEDING, REMOVAL OF LITTER AND THE REGULAR WATERING OF ALL PLANTINGS. IRRIGATION SHALL BE MAINTAINED TO MAXIMIZE WATER CONSERVATION. SHOULD ANY PLANT MATERIAL DIE, THE OWNER, SUCCESSOR, OR ASSIGNS SHALL BE RESPONSIBLE FOR THE REPLACEMENT OF PLANT(S) WITHIN ONE PLANTING SEASON. REPLACEMENT OF PLANT MATERIALS SHALL OCCUR AT THE FOLLOWING RATE.

TYPE	PLANT REPLACEMENT WITHIN	
	1 YEAR	2+ YEARS
TREE - DECIDUOUS	INCREASE CALIPER BY 1"	INCREASE CALIPER BY 1.5"
TREE - CONIFEROUS	INCREASE HEIGHT BY 1.5'	INCREASE HEIGHT BY 2'
SHRUB	REPLACE WITH PLANTS OF AT LEAST 1/2 MATURE SIZE	REPLACE WITH PLANTS OF AT LEAST 1/2 MATURE SIZE

Flepath: P:\EVERGREEN ERIE, NINE MILE - MULTIFAMILY - 0038-01.2255\DRAWINGS\SUBMITTALS\ND-LNDS-MF-PLAN.DWG Layout: 7 SCHEDULE & CHARTS
Plotted: FRI 11/09/19 12:59:26PM By: Chris Mair

PROJECT NUMBER: 160602

11-08-2019 LANDSCAPE SCHEDULE AND CHARTS

REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017 SHEET 13 OF 51

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF FORBES KOCHER SMITH

OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

12.54 ACRES

SITE PLAN - SP-000832-2016

REQUIREMENTS PER TOWN OF ERIE POCKET PARK DESIGN STANDARD

LIST A - BENCHES (13); BICYCLE RACKS (16); PET WASTE STATION (5); PERGOLA WITH (2) PICNIC TABLES; IRRIGATION, OPEN TURF AREA (4,425 SF); SIDEWALKS; TRASH RECEPTACLES (6);

PLANT TYPE	REQUIRED QTY	PROVIDED QTY
DEC. TREE	5	19
ORN. TREE	3	18
CONF. TREE	2	18
SHRUB	20	228
PER.	24	35
GRASS	3	170

* THESE QUANTITIES DO NOT INCLUDE DISPLAY GARDEN PLANT MATERIALS

LIST B - DISPLAY GARDEN; NATURAL AREA (26,000 SF)

LIST C - PERGOLA WITH (2) PICNIC TABLES; BOULDER PLAY; HORSESHOE PITS

LIST D - PEDESTAL GAS GRILL (2); LOUNGE CHAIRS (11); ELECTRICITY AND LIGHTING TO PERGOLAS

LIST "A" REQUIRED POCKET PARK PLANT MATERIAL QUANTITIES*

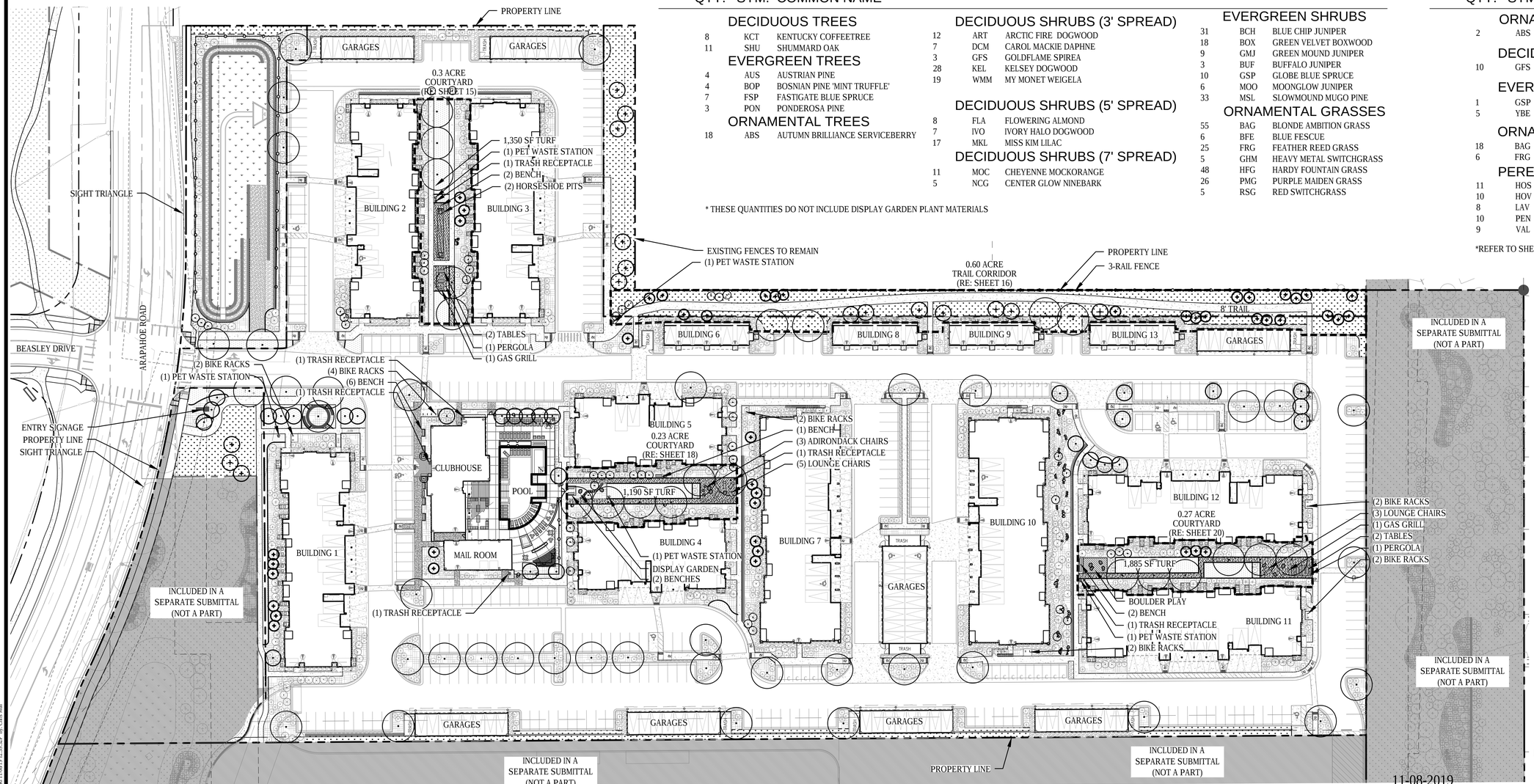
QTY.	SYM.	COMMON NAME
DECIDUOUS TREES		
8	KCT	KENTUCKY COFFEETREE
11	SHU	SHUMMARD OAK
EVERGREEN TREES		
4	AUS	AUSTRIAN PINE
4	BOP	BOSNIAN PINE 'MINT TRUFFLE'
7	FSP	FASTIGATE BLUE SPRUCE
3	PON	PONDEROSA PINE
ORNAMENTAL TREES		
18	ABS	AUTUMN BRILLIANCE SERVICEBERRY
DECIDUOUS SHRUBS (3' SPREAD)		
12	ART	ARCTIC FIRE DOGWOOD
7	DCM	CAROL MACKIE DAPHNE
3	GFS	GOLDFLAME SPIREA
28	KEL	KELSEY DOGWOOD
19	WMM	MY MONET WEIGELA
DECIDUOUS SHRUBS (5' SPREAD)		
8	FLA	FLOWERING ALMOND
7	IVO	IVORY HALO DOGWOOD
17	MKL	MISS KIM LILAC
DECIDUOUS SHRUBS (7' SPREAD)		
11	MOC	CHEYENNE MOCKORANGE
5	NCG	CENTER GLOW NINEBARK
EVERGREEN SHRUBS		
31	BCH	BLUE CHIP JUNIPER
18	BOX	GREEN VELVET BOXWOOD
9	GMJ	GREEN MOUND JUNIPER
3	BUF	BUFFALO JUNIPER
10	GSP	GLOBE BLUE SPRUCE
6	MOO	MOONGLOW JUNIPER
33	MSL	SLOWMOUND MUGO PINE
ORNAMENTAL GRASSES		
55	BAG	BLONDE AMBITION GRASS
6	BFE	BLUE FESCUE
25	FRG	FEATHER REED GRASS
5	GHM	HEAVY METAL SWITCHGRASS
48	HFG	HARDY FOUNTAIN GRASS
26	PMG	PURPLE MAIDEN GRASS
5	RSG	RED SWITCHGRASS

* THESE QUANTITIES DO NOT INCLUDE DISPLAY GARDEN PLANT MATERIALS

DISPLAY GARDEN PLANT MATERIAL QUANTITIES

QTY.	SYM.	COMMON NAME
ORNAMENTAL TREES		
2	ABS	AUTUMN BRILLIANCE SERVICEBERRY
DECIDUOUS SHRUBS (3' SPREAD)		
10	GFS	GOLDFLAME SPIREA
EVERGREEN SHRUBS		
1	GSP	GLOBE BLUE SPRUCE
5	YBE	ADAMS NEEDLE
ORNAMENTAL GRASSES		
18	BAG	BLONDE AMBITION GRASS
6	FRG	FEATHER REED GRASS
PERENNIALS		
11	HOS	ROYAL STANDARD HOSTA
10	HOV	VARIEGATED HOSTA
8	LAV	ENGLISH LAVENDER
10	PEN	ROSE-PURPLE PENSTEMON
9	VAL	WHITE VALERIAN

*REFER TO SHEET 24, DETAIL 2 FOR DISPLAY GARDEN ENLARGMENT



11-08-2019

REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

OVERALL PARK AREA PLAN

SHEET 14 OF 51

PROJECT NUMBER: 160602

OUTLOOK NINE MILE

Plotted: FRI 11/08/19 12:39:32P By: Cres Nair
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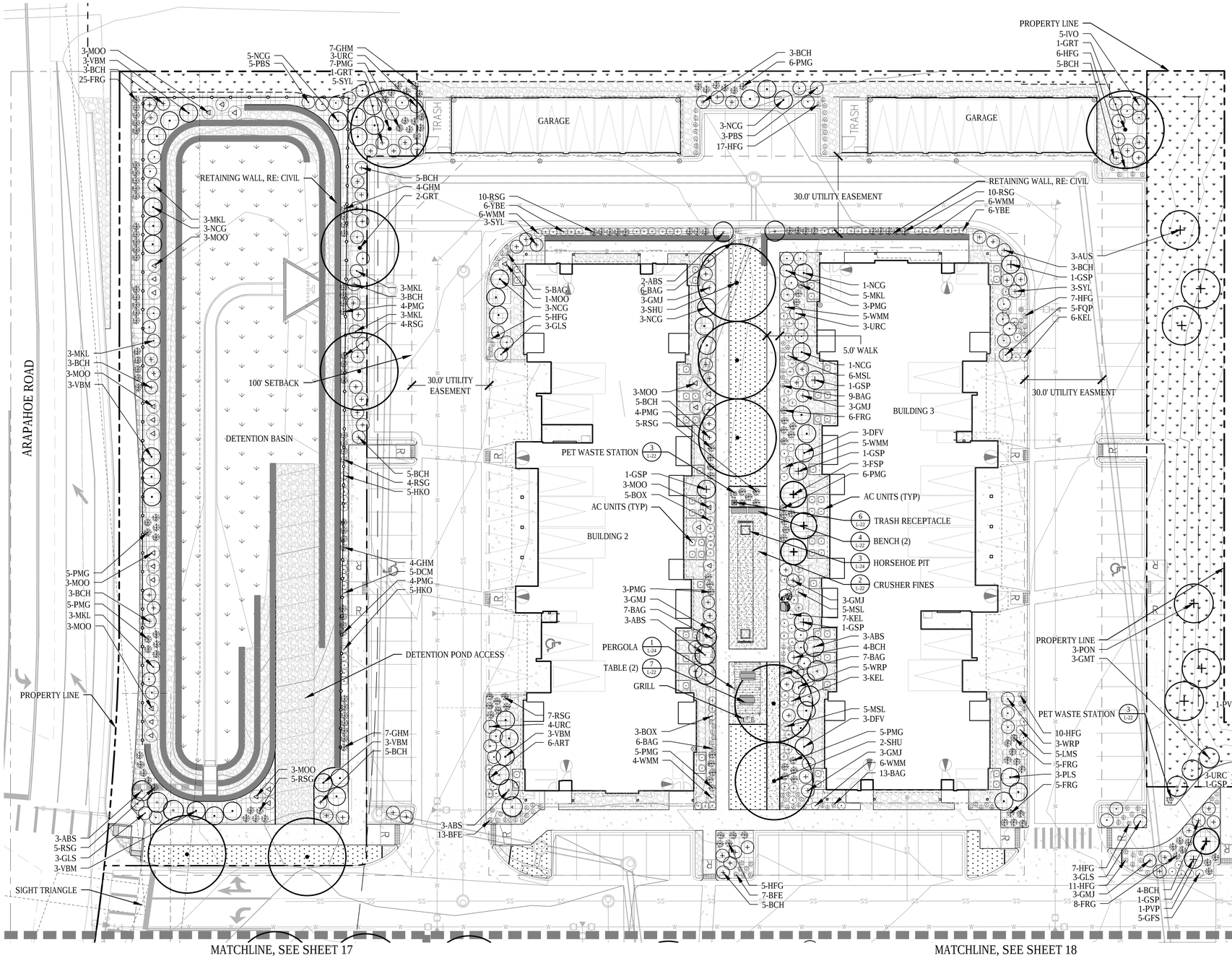
NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH

OUTLOOK NINE MILE

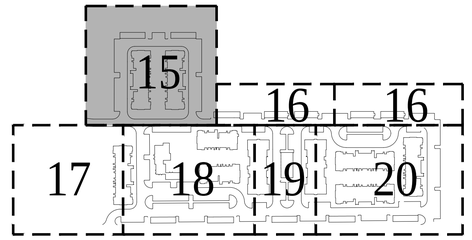
A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

12.54 ACRES

SITE PLAN - SP-000832-2016



KEY MAP



LEGEND

- CANOPY TREE
- EVERGREEN TREE
- ORNAMENTAL TREE
- DECIDUOUS SHRUB
- EVERGREEN SHRUB
- ORNAMENTAL GRASSES
- PERENNIALS
- STEEL EDGER
- POOL FENCE
- 3 RAIL FENCE
- MATCHLINE
- PROPERTY LINE
- R.O.W.
- LIMIT OF WORK
- LIMIT OF WORK
- WETLAND SEED
- SOD
- NATIVE SEED
- 4"-6" RIVER COBBLE
- CRUSHER FINES
- LANDSCAPE BED
- FIBAR PLAY SURFACE
- BENCH (RE: DET.4/22)
- TABLE (RE: DET. 7/22)
- LOUNGE CHAIR (RE: DET. 8/22)
- BIKE RACK (RE: DET. 5/22)
- PET WASTE STATION (RE: DET. 3/22)
- LANDSCAPE BOULDERS (RE: DET. 6/21)
- STEPPERS (RE: DET. 7/21)
- TRASH RECEPTACLE (RE: DET. 6/22)
- PLANTER (RE: DET. 4/23)

811

NORTH

0 10 20 40

SCALE 1" = 20'

11-08-2019

REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

LANDSCAPE PLAN

SHEET 15 OF 51

OUTLOOK NINE MILE

PROJECT NUMBER: 160602

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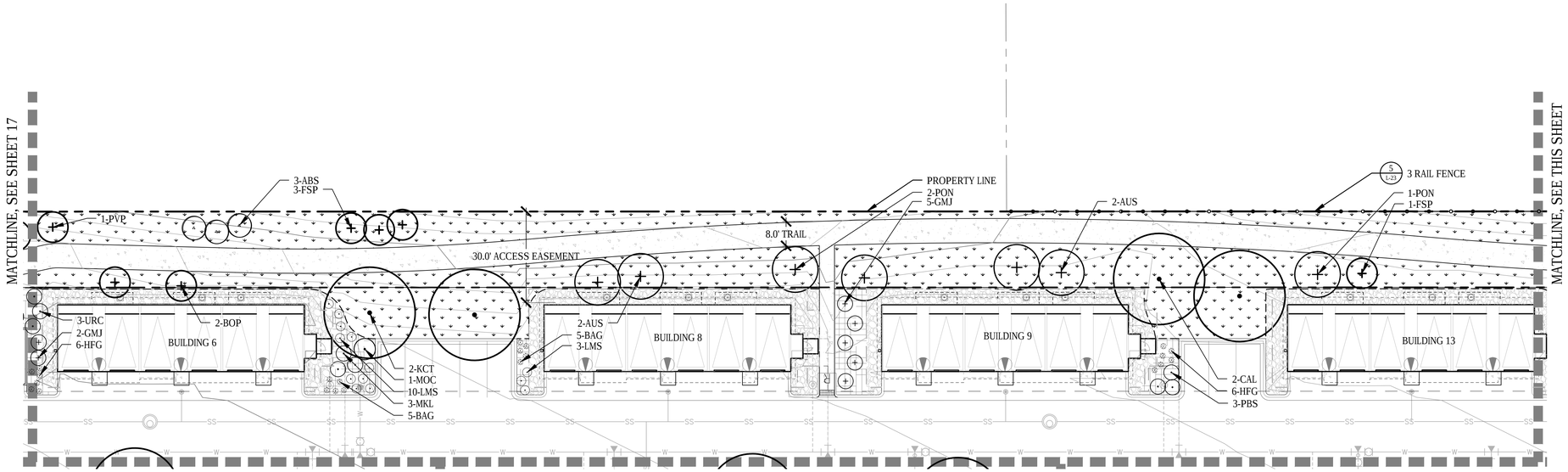
NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF FORBES KOCHER SMITH

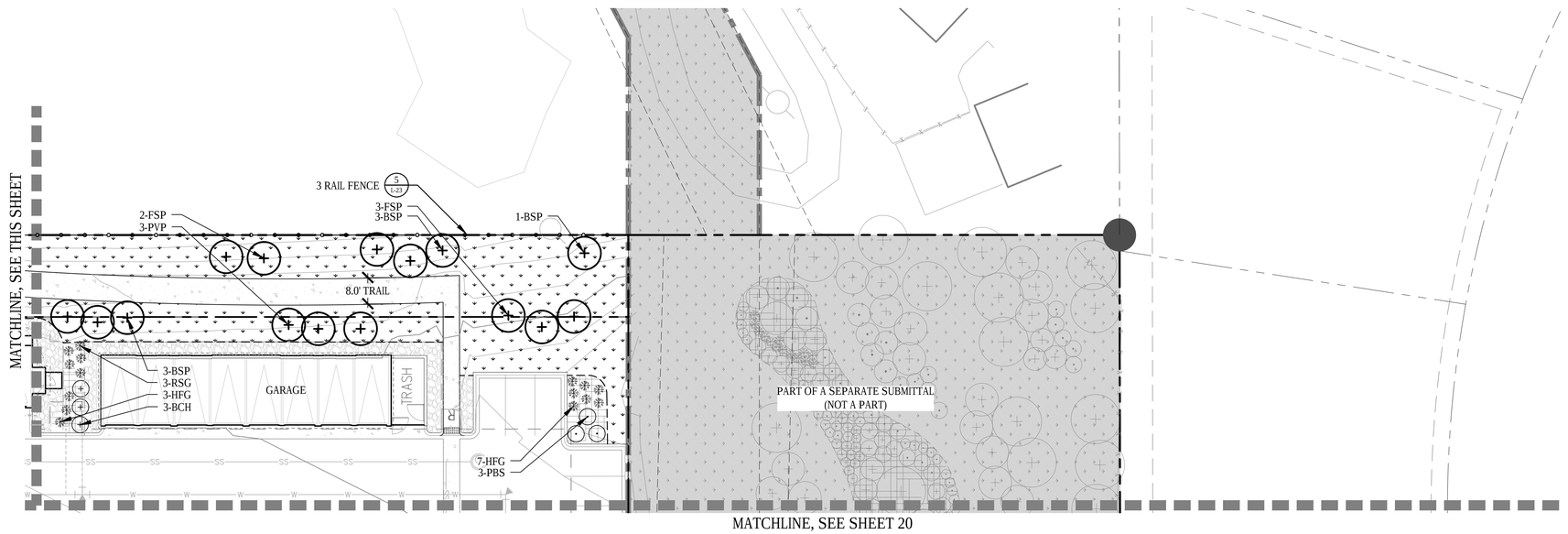
OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

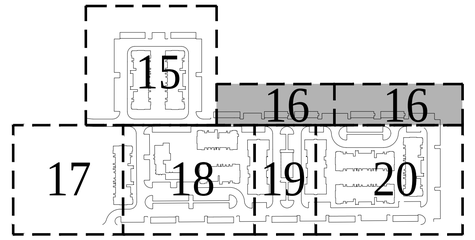
12.54 ACRES

SITE PLAN - SP-000832-2016





KEY MAP



LEGEND

- CANOPY TREE
- EVERGREEN TREE
- ORNAMENTAL TREE
- DECIDUOUS SHRUB
- EVERGREEN SHRUB
- ORNAMENTAL GRASSES
- PERENNIALS
- STEEL EDGER
- POOL FENCE
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- LANDSCAPE BOULDERS (RE: DET. 6/21)
- STEPPERS (RE: DET. 7/21)
- TRASH RECEPTACLE (RE: DET. 6/22)
- PLANTER (RE: DET. 4/23)

811

NORTH

0 10 20 40

SCALE 1" = 20'

11-08-2019

REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

LANDSCAPE PLAN

SHEET 16 OF 51

OUTLOOK NINE MILE

PROJECT NUMBER: 160602

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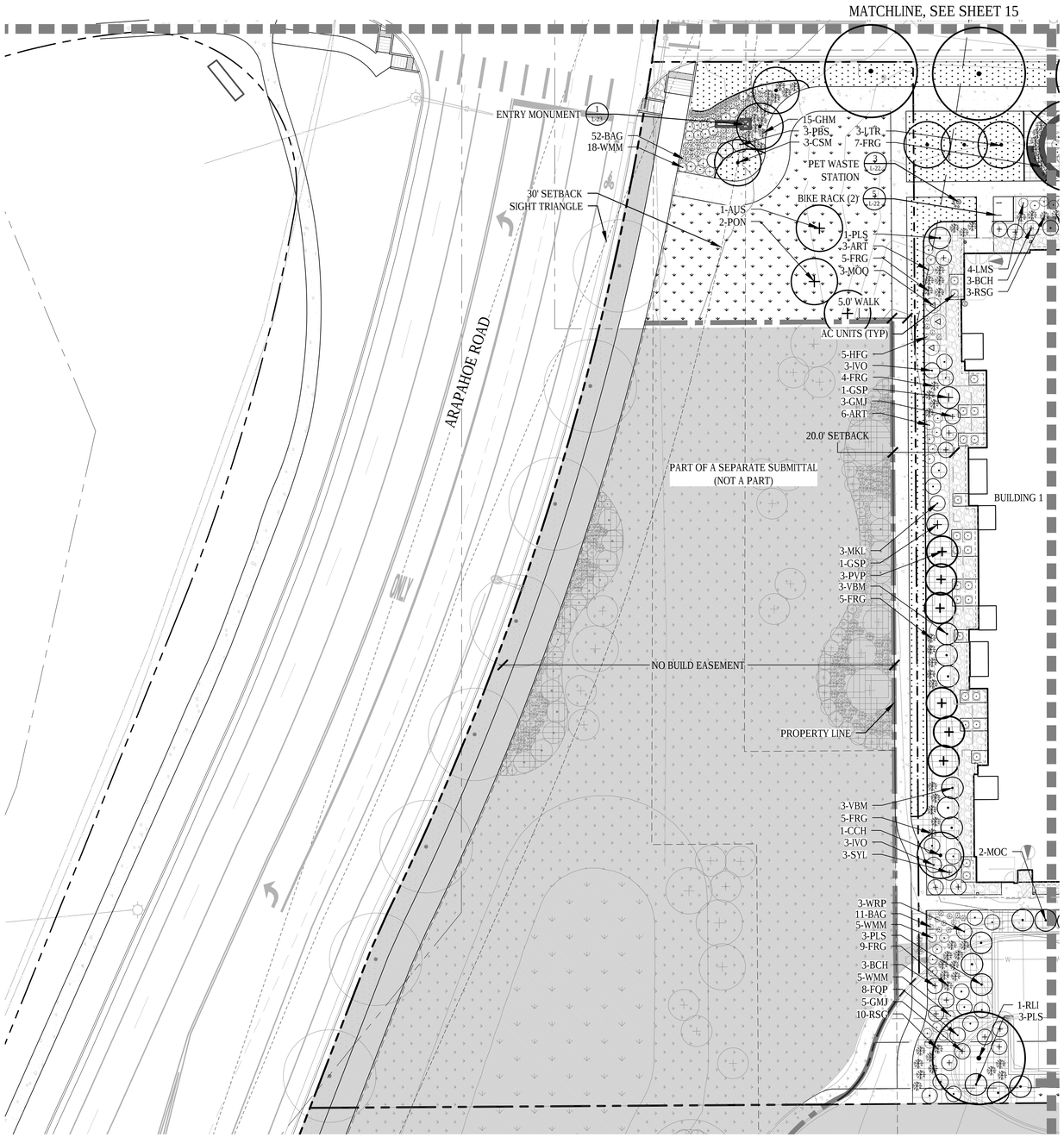
NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF FORBES KOCHER SMITH

OUTLOOK NINE MILE

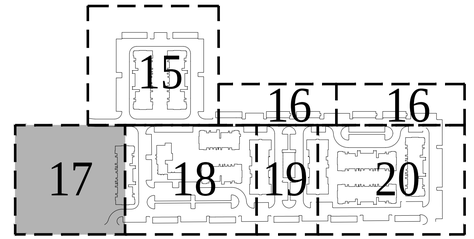
A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

12.54 ACRES

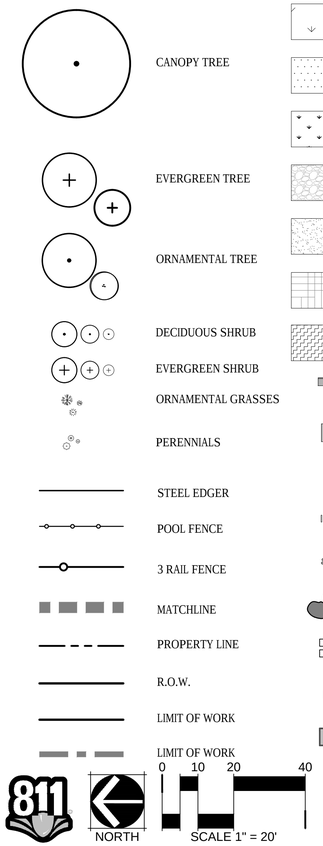
SITE PLAN - SP-000832-2016



KEY MAP



LEGEND



11-08-2019

REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

LANDSCAPE PLAN

SHEET 17 OF 51

OUTLOOK NINE MILE

PROJECT NUMBER: 160602

Filepath: P:\EVERGREEN ERIE NINE MILE - MULTIFAMILY - 003840\-22\SP\DRAWINGS\SUBMITTALS\SP03-LNDS-SHT-PLAN.DWG Layout: 11 LS PLAN
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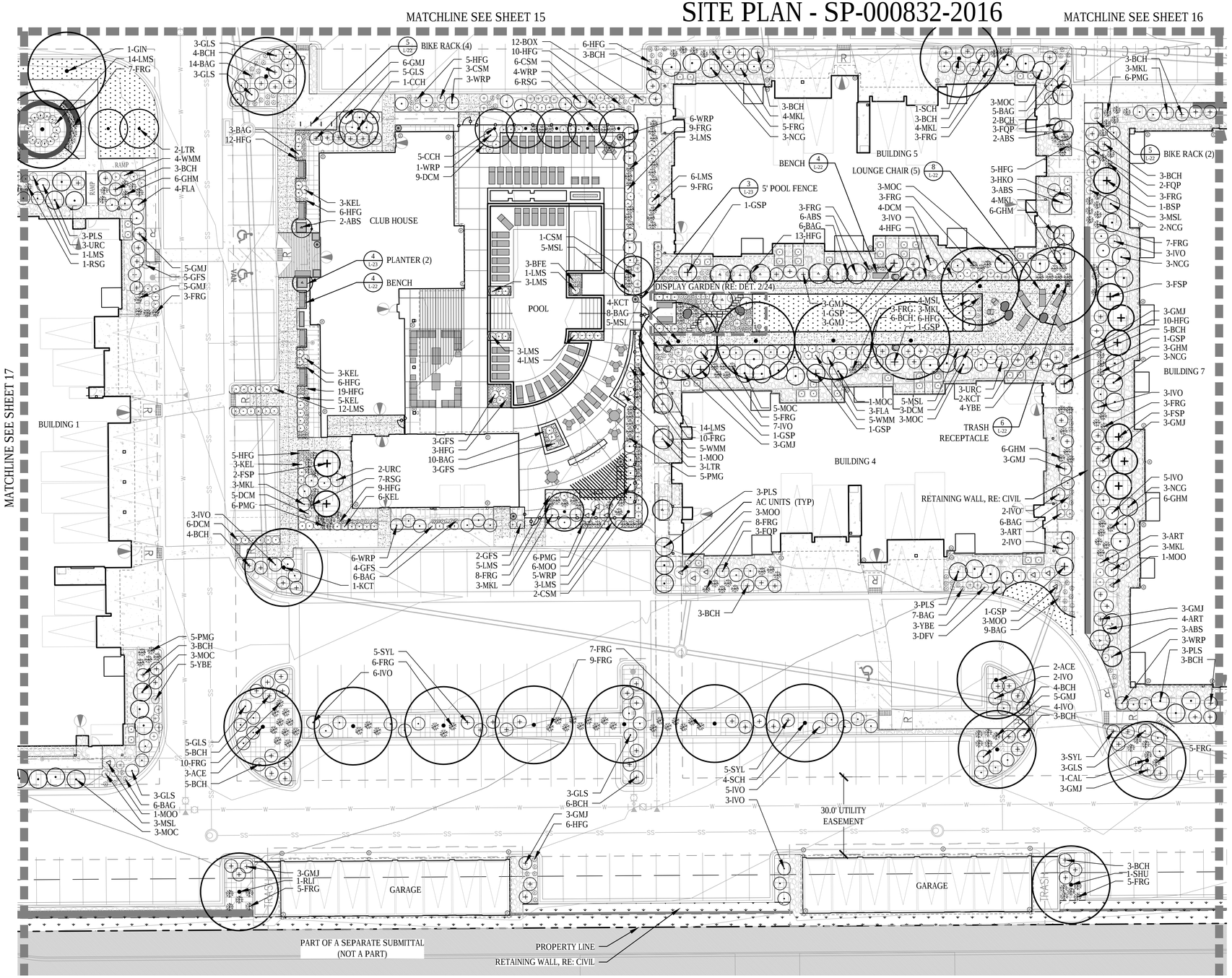
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OUTLOOK NINE MILE

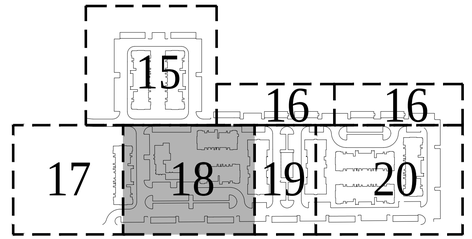
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12.54 ACRES

SITE PLAN - SP-000832-2016



KEY MAP



LEGEND

- CANOPY TREE
- EVERGREEN TREE
- ORNAMENTAL TREE
- DECIDUOUS SHRUB
- EVERGREEN SHRUB
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- NATIVE SEED
- 4"-6" RIVER COBBLE
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- PET WASTE STATION (RE: DET. 3/22)
- LANDSCAPE BOULDERS (RE: DET. 6/21)
- STEPPERS (RE: DET. 7/21)
- TRASH RECEPTACLE (RE: DET. 6/22)
- PLANTER (RE: DET. 4/23)

811

NORTH

0 10 20 40

SCALE 1" = 20'

11-08-2019

REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

LANDSCAPE PLAN

SHEET 18 OF 51

OUTLOOK NINE MILE

PROJECT NUMBER: 160602

Filepath: P:\EVERGREEN ERIE NINE MILE - MULTIFAMILY - 0038-01-2235\DRAWINGS\SUBMITTALS\ND-LNDS-MP-PLN.DWG Layout: 12 LS PLAN
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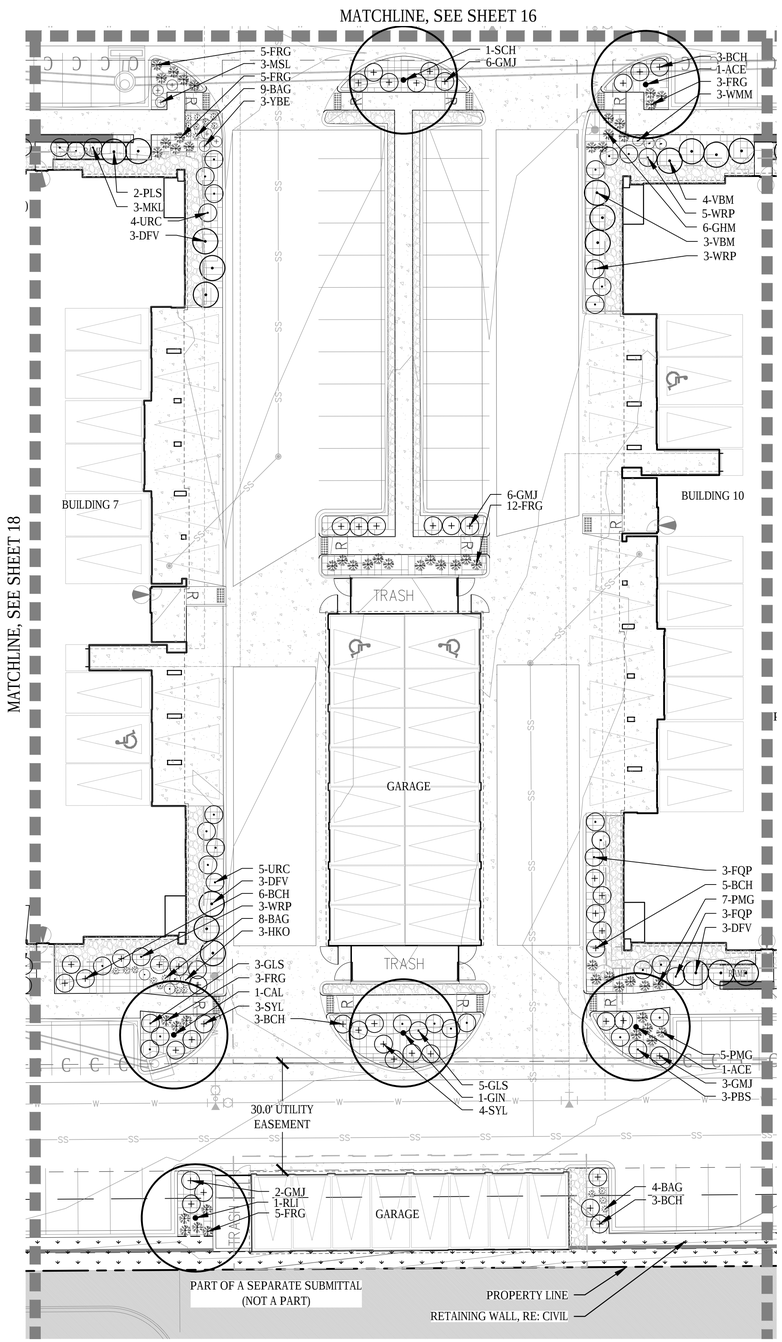
NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF FORBES KOCHER SMITH

OUTLOOK NINE MILE

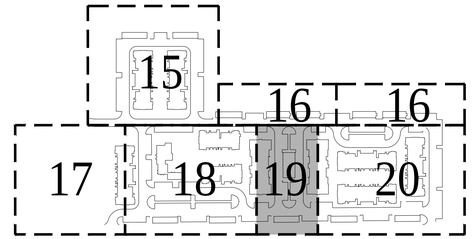
A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

12.54 ACRES

SITE PLAN - SP-000832-2016



KEY MAP



LEGEND

- CANOPY TREE
- EVERGREEN TREE
- ORNAMENTAL TREE
- DECIDUOUS SHRUB
- EVERGREEN SHRUB
- ORNAMENTAL GRASSES
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- PLANTER (RE: DET. 4/23)

811

NORTH

0 10 20 40

SCALE 1" = 20'

11-08-2019

REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

LANDSCAPE PLAN

SHEET 19 OF 51

OUTLOOK NINE MILE

PROJECT NUMBER: 160602

Filepath: P:\EVERGREEN ERIE NINE MILE - MULTIFAMILY - 003840-2235\DRAWINGS\SUBMITTALS\SD-LADS-SP-PLAN.DWG Layout: 13.5 PLAN
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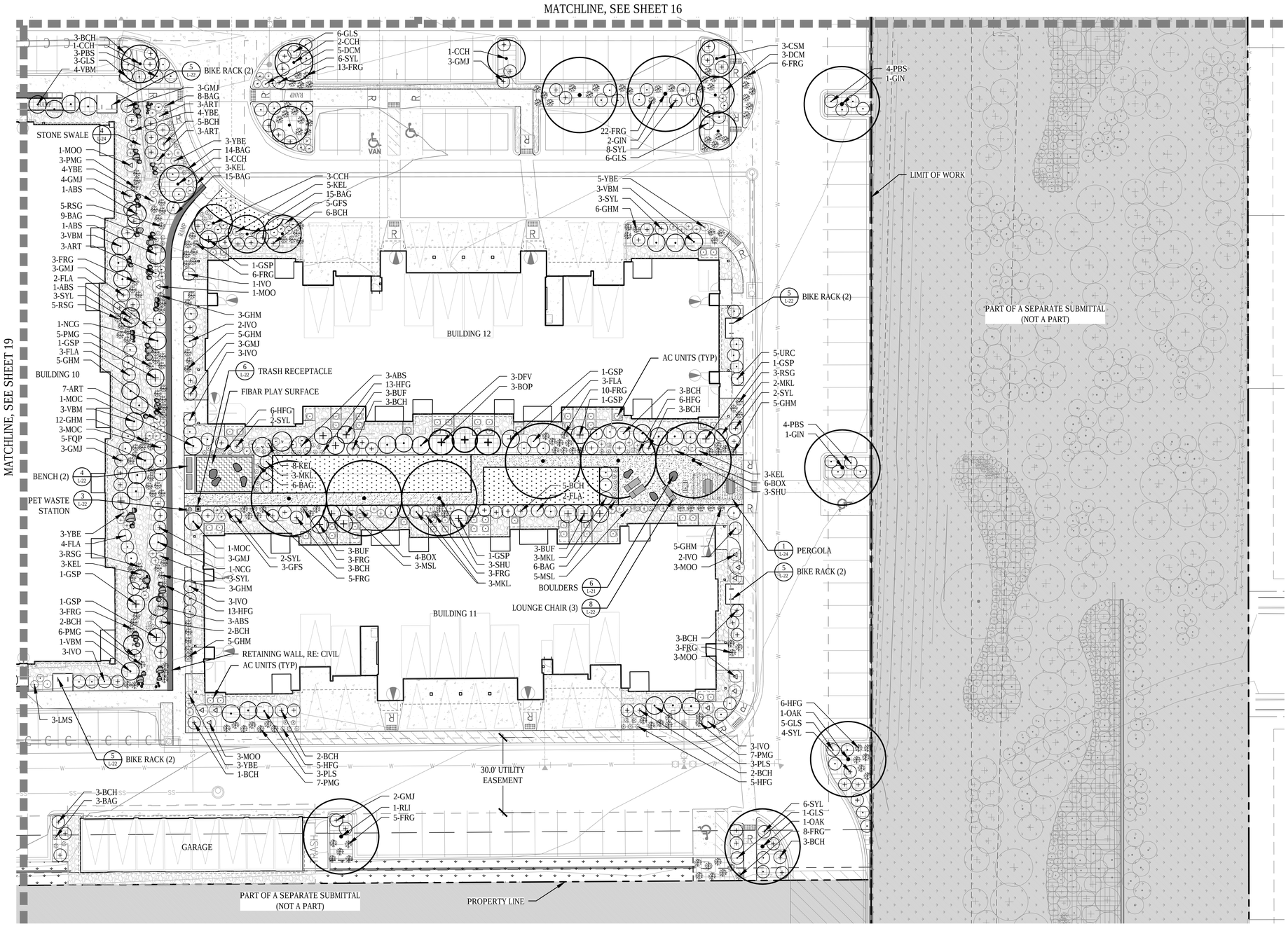
NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF FORBES KOCHER SMITH

OUTLOOK NINE MILE

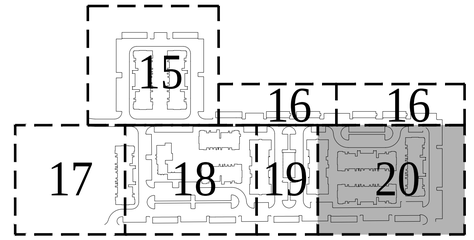
A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

12.54 ACRES

SITE PLAN - SP-000832-2016



KEY MAP



LEGEND

- CANOPY TREE
- EVERGREEN TREE
- ORNAMENTAL TREE
- DECIDUOUS SHRUB
- EVERGREEN SHRUB
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- LANDSCAPE BOULDERS (RE: DET. 6/21)
- STEPPERS (RE: DET. 7/21)
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- PLANTER (RE: DET. 4/23)

811

NORTH

0 10 20 40

SCALE 1" = 20'

11-08-2019

REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

LANDSCAPE PLAN

SHEET 20 OF 51

OUTLOOK NINE MILE

PROJECT NUMBER: 160602

Flepath: P:\EVERGREEN ERIE NINE MILE - MULTIFAMILY - 003810\1-225\DRAWINGS\SUBMITTALS\SD-LSDS-MF-PLAN.DWG Layout: 14 LS PLAN
Plotted: FRI 11/08/19 12:40:15P By: Chris Muir

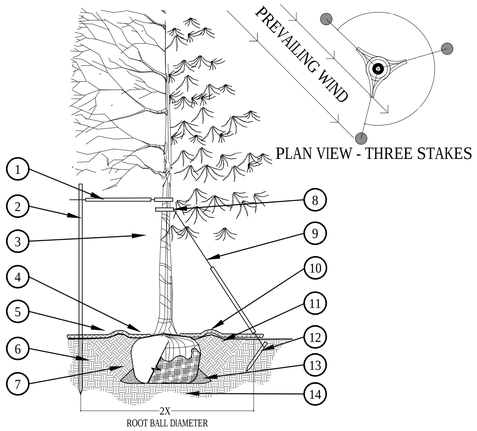
NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF FORBES KOCHER SMITH

OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

12.54 ACRES

SITE PLAN - SP-000832-2016



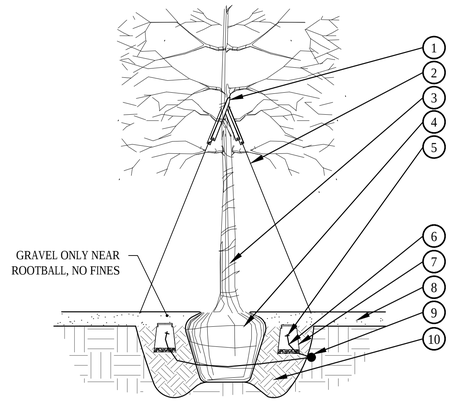
PRUNING NOTES:
1. ALL PRUNING SHALL COMPLY WITH ANSI A300 STANDARDS.
2. DO NOT HEAVILY PRUNE THE TREE AT PLANTING. PRUNE ONLY CROSSOVER LIMBS, CO-DOMINANT LEADERS AND BROKEN BRANCHES. SOME INTERIOR TWIGS AND LATERAL BRANCHES MAY BE PRUNED. HOWEVER, DO NOT REMOVE THE TERMINAL BUDS OF BRANCHES THAT EXTEND TO THE EDGE OF THE CROWN.

STAKING NOTES:
1. STAKE TREES PER FOLLOWING SCHEDULE, THEN REMOVE AT END OF FIRST GROWING SEASON.
   - 1.1 1-½" CALIPER SIZE - MIN. 1 STAKE ON SIDE OF PREVAILING WIND (GENERALLY N.W. SIDE)
   - 1.2 1-½" - 3" CALIPER SIZE - MIN. 2 STAKES - ONE ON N.W. SIDE, ONE ON S.W. SIDE (OR PREVAILING WIND SIDE AND 180° FROM THAT SIDE)
   - 1.3 3" CALIPER SIZE AND LARGER - 3 STAKES PER DIAGRAM
2. WIRE OR CABLE SHALL BE MIN. 12 GAUGE, TIGHTEN WIRE OR CABLE ONLY ENOUGH TO KEEP FROM SLIPPING. ALLOW FOR SOME TRUNK MOVEMENT. NYLON STRAPS SHALL BE LONG ENOUGH TO ACCOMMODATE 1-½" OF GROWTH AND BUFFER ALL BRANCHES FROM WIRE.

1. PLACE MIN. 2" PVC PIPE AROUND EACH WIRE. EXPOSED WIRE SHALL BE MAX. 2" EACH SIDE
2. 6 FT. UNTREATED WOOD POST (MIN. 1.5" DIAMETER). ALL SHALL BE DRIVEN OUTSIDE ROOTBALL AND IN UNDISTURBED SOIL.
3. TREE WRAP TO BE INSTALLED ONLY FROM OCTOBER 1 THROUGH APRIL 30. (DECIDUOUS ONLY)
4. PLANT TREE SO THAT FIRST ORDER MAJOR ROOT IS 1"-2" ABOVE FINAL GRADE.
5. 3" DEEP MULCH RING PLACED A MINIMUM OF 4 FT. IN DIAMETER. DO NOT PLACE MULCH IN CONTACT WITH TREE TRUNK (FINISHED GRADE REFERENCES TOP OF MULCH).
6. 1:1 SLOPE ON SIDES OF PLANTING HOLE.
7. REMOVE ALL TWINE, ROPE, BURLAP AND WIRE FROM ENTIRE ROOT BALL AND TRUNK
8. GROMMETED NYLON STRAPS
9. GALVANIZED WIRE, MIN. 12 GAUGE CABLE - TWIST WIRE ONLY TO KEEP FROM SLIPPING.
10. 4-6" HIGH WATER SAUCER IN NON-TURF AREAS.
11. BACKFILL WITH BLEND OF EXISTING SOIL AND A MAXIMUM 20% (BY VOLUME) ORGANIC MATERIAL. WATER THOROUGHLY WHEN BACKFILLING
12. 2 FT. STEEL T-POST. ALL SHALL BE DRIVEN BELOW GRADE AND OUTSIDE ROOTBALL IN UNDISTURBED SOIL.
13. PLACE SOIL AROUND ROOT BALL FIRMLY, DO NOT COMPACT OR TAMP. SETTLE SOIL WITH WATER TO FILL ALL AIR POCKETS.
14. PLACE ROOT BALL ON UNDISTURBED SOIL TO PREVENT SETTLEMENT.

1 TREE PLANTING DETAIL

SCALE: 3/16" = 1'-0"

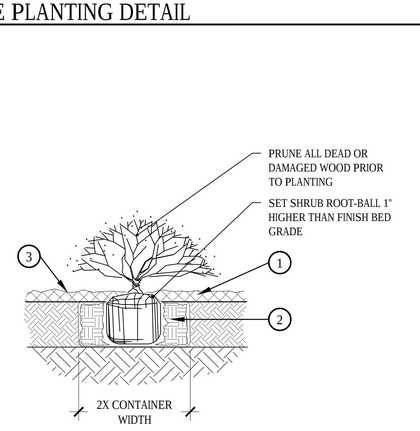


1. USE NYLON TREE STRAPS AT END OF WIRE.
2. 12 GAUGE GALVANIZED WIRE USE TWO PER TREE
3. 4" TREE TAPE (DECIDUOUS TREES ONLY). WRAP ENTIRE TRUNK TO SECOND BRANCH SECURED AT 2" INTERVALS WITH GRAFTING CORD OR STAPLES.
4. REMOVE WIRE BASKET AFTER TREE IS IN THE PIT. REMOVE TWINE, & PULL BURLAP FROM TREE TRUNK.
5. DRIP EMITTER
6. DRIP EMITTER MICRO TUBING
7. EMITTER BOX (6" RD.)
8. SPECIFIED CRUSHER FINES
9. POLY DRIP TUBING
10. 1/3 BACKFILL MIX AND 2/3 PIT SOIL.

NOTE: SET TOP OF ROOT BALL 2"-3" ABOVE GRADE. ANY BROKEN OR CRUMBLING ROOTBALL WILL BE REJECTED.

2 TREE IN CRUSHER FINES

SCALE: 1/2" = 1'-0"

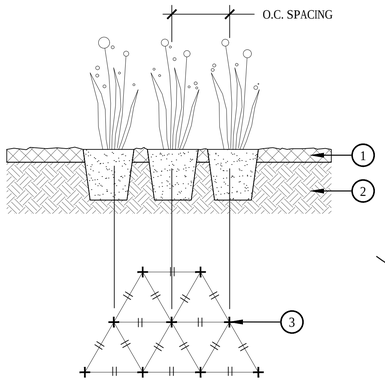


1. SPECIFIED MULCH
2. AMENDED SOIL IN PLANTING BED PER SPECIFICATIONS. TILL SOIL TO A DEPTH OF EIGHT INCHES.
3. FINISH GRADE (TOP OF MULCH)

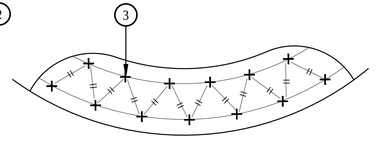
NOTE:
1. BROKEN OR CRUMBLING ROOT-BALLS WILL BE REJECTED
2. CARE SHOULD BE TAKEN NOT TO DAMAGE THE SHRUB OR ROOT-BALL WHEN REMOVING IT FROM ITS CONTAINER
3. ALL JUNIPERS SHOULD BE PLANTED SO THE TOP OF THE ROOT-BALL OCCURS ABOVE THE FINISH GRADE OF THE MULCH LAYER
4. DIG PLANT PIT TWICE AS WIDE AND HIGH AS THE CONTAINER

3 SHRUB PLANTING

SCALE: 1-1/2" = 1'-0"



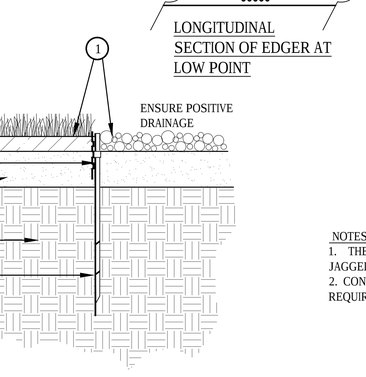
1. SPECIFIED MULCH
2. AMENDED PLANTING BED TILLED TO A DEPTH OF 6"
3. CENTER OF PLANT



WHEN PLANTED ON A CURVE ORIENT ROWS TO FOLLOW THE LONG AXIS OF AREAS WHERE PLANTS ARE MASSED.

4 PERENNIAL PLANT LAYOUT

SCALE: 1" = 1'-0"

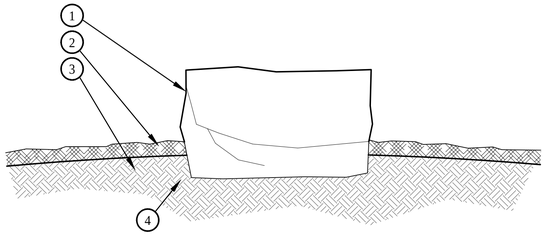


1. FINISHED GRADE - TOP OF SOD THATCH LAYER AND TOP OF MULCH OR CRUSHER FINES SHALL BE FLUSH WITH TOP OF EDGER
2. TURF THATCH
3. AMENDED SOIL PER SPECIFICATIONS
4. SUBGRADE
5. STEEL EDGER - DRILL (16) 1/2" DIA. HOLES 1" O.C. MIN. AT ALL LOW POINTS OR POORLY DRAINING AREAS IN ORDER TO ENSURE ADEQUATE DRAINAGE
6. EDGER STAKE

NOTES:
1. THERE SHALL BE NO EXPOSED SHARP / JAGGED EDGES.
2. CONTRACTOR SHALL INSTALL STAKES AS REQUIRED BY THE MANUFACTURER.

5 STEEL EDGER

SCALE: 1" = 1'-0"

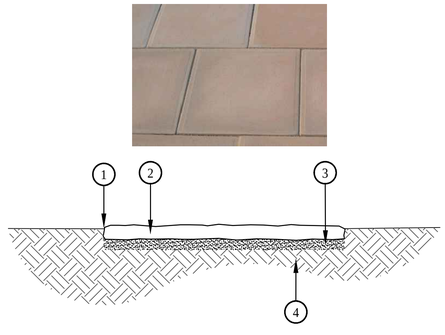


1. SILOAM STONE. CONTRACTOR SHALL SUBMIT PHOTOS FOR APPROVAL.
2. SPECIFIED MULCH, COBBLE OR CRUSHER FINES, RE: PLAN
3. AMENDED TOPSOIL
4. PARTIALLY BURY BOULDER FOR NATURAL APPEARANCE

REQUIRED BOULDERS:
(7) : 18-24" TALL x 18-24" WIDE x 2.5'-4' LONG

6 BOULDER

SCALE: 3/4" = 1'-0"



1. SET EDGE OF STONE 2 1/2" ABOVE GRADE IN BED AREAS
2. SANDSTONE COLORED CONCRETE PAVER - 1' x 2' x 3" THICK
3. 2" DEEP BED OF SAND
4. COMPACTED SUBGRADE
5. MANUFACTURER: STONEBILT CONCEPTS
6. CONTACT: STONEBILT CONCEPTS P: 1.303.867.6700

7 PAVER STEPPER

SCALE: 1" = 1'-0"

PROJECT NUMBER: 160602

11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

LANDSCAPE DETAILS
SHEET 21OF 51

OUTLOOK NINE MILE

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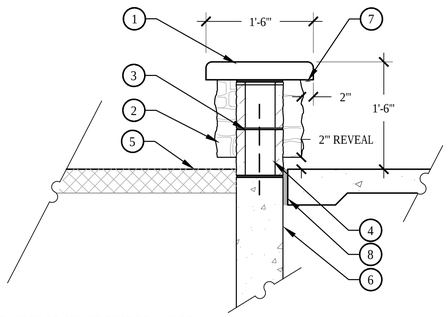
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OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

12.54 ACRES

SITE PLAN - SP-000832-2016



1. PRECAST CONCRETE CAP (COLOR TO MATCH ARCHITECTURE)
2. STONE VENEER - TO MATCH ARCHITECTURE
3. 3/8" GROUTED JOINTS
4. CMU CORE
5. FINISHED GRADE. REFER TO LANDSCAPE PLANS FOR MATERIAL
6. CONCRETE FOOTER, RE: STRUCTURAL
7. STRIP LIGHTING, ADHERED AND PERMANENTLY SECURE TO CAP PER MANUFACTURES SPECIFICATIONS. STRIP LIGHTING ON WALL SHALL BE INSTALLED ON WALKWAY SIDE.
8. EXPANSION JOINT

NOTES:

1. CONTRACTOR TO SUBMIT SHOP DRAWINGS
2. REFER TO STRUCTURAL DRAWINGS FOR CMU DESIGN.
3. NORRIS DESIGN HAS PROVIDED THIS DETAIL FOR REFERENCE PURPOSE, THIS DETAIL HAS NOT BEEN ENGINEERED.
4. NORRIS DESIGN IS NOT RESPONSIBLE FOR STRUCTURAL DESIGN AND CALCULATIONS.

1 FREE STANDING SEATWALL

SCALE: 1" = 1'-0"



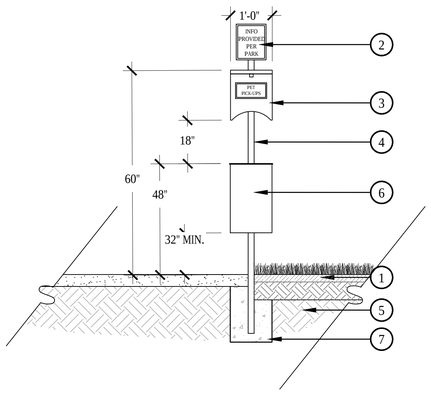
1. COMPACTED CRUSHER FINES
2. SLOPE ADJACENT GRADE AWAY
3. COMPACTED SUBGRADE
4. 4" STEEL EDGER

COMPACTION NOTES:

1. COMPACT WET FOR BEST RESULTS.
2. USE A SMALL (4') RIDING ROLLER TO COMPACT
3. CROWN TRAIL IN FLAT AREAS (AS SHOWN).
4. CROSS-SLOPE TRAIL AT 1-2% WITH GRADE WHERE TOPOGRAPHY DICTATES.

2 CRUSHER FINES DETAIL

SCALE: 3/4" = 1'-0"



1. SURFACING VARIES, RE: PLAN SHEETS
2. REFLECTIVE ALUMINUM SIGN
3. TRASH BAG DISPENSER
4. SQUARE TUBING
5. COMPACTED SUBGRADE
6. PET WASTE RECEPTACLE
7. SECURE POST IN FOOTING PER MANUFACTURER'S RECOMMENDATIONS

NOTES:
1.REFER TO PLAN FOR PET STATION LOCATION AND SURFACING MATERIAL

MANUFACTURER: LIVIN THE DOG LIFE
MODEL: PET WASTE STATION
COLOR: NATURAL

OR APPROVED EQUAL

3 PET WASTE STATION

SCALE: 1/2" = 1'-0"



1. MANUFACTURER: VICTOR STANLEY
2. MODEL: EVA BENCH, WITH ARM REST
3. FINISH: BLACK POWDERCOAT SUPPORTS, IPE WOOD
4. SURFACE MOUNT
5. CONTACT: VICTOR STANLEY
   P: 1.800.368.2573
   E: INFO@VICTORSTANLEY.COM

4 BENCH

SCALE: N.T.S.



1. MANUFACTURER: VICTOR STANLEY
2. MODEL: BRHS-101, 2 BIKE CAPACITY
3. FINISH: BLACK POWDERCOAT
4. MOUNT PER MANUFACTURER'S INSTRUCTIONS
5. CONTACT: VICTOR STANLEY
   P: 1.800.368.2573
   E: INFO@VICTORSTANLEY.COM

5 BIKE RACK

SCALE: N.T.S.



1. MANUFACTURER: VICTOR STANLEY
2. MODEL: S-42
3. FINISH: BLACK POWDERCOAT
4. SURFACE MOUNT
5. CONTACT: VICTOR STANLEY
   P: 1.800.368.2573
   E: INFO@VICTORSTANLEY.COM

6 TRASH RECEPTACLE

SCALE: N.T.S.



1. MANUFACTURER: VICTOR STANLEY
2. MODEL: CAMILLE TABLE, REVERIE COLLECTION, 6'
3. FINISH: BLACK POWDERCOAT SUPPORTS, IPE WOOD
4. SURFACE MOUNT
5. CONTACT: VICTOR STANLEY
   P: 1.800.368.2573
   E: INFO@VICTORSTANLEY.COM

7 TABLE

SCALE: N.T.S.



1. MANUFACTURER: LANDSCAPE FORMS
2. MODEL: 35 COLLECTION — CHILL
3. MATERIAL: ROTATIONALLY MOLDED POLYETHYLENE IN A HABANERO RED COLOR
4. ANCHOR SURFACE MOUNT
5. CONTACT: LANDSCAPE FORMS
   P: 1.800.430.6209
   E: comments@landscapeforms.com

8 LOUNGE CHAIR

SCALE: N.T.S.

Filepath: P:\ET\ERGREEN ERIE NINE MILE - MULTIFAMILY - 0038-01-2235\DRAWINGS\SUBMITTALS\ND-LRDS-MF-PLAN.DWG Layout: 16 DETAILS
Plotted: FRI 11/08/19 12:40:19P By: Chris Mair

PROJECT NUMBER: 160602

11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

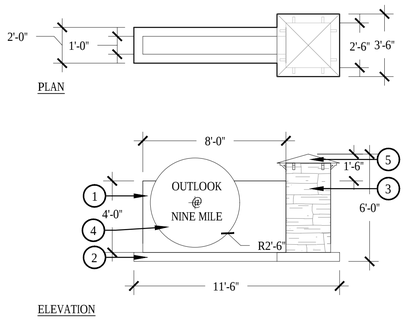
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OUTLOOK NINE MILE

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12.54 ACRES

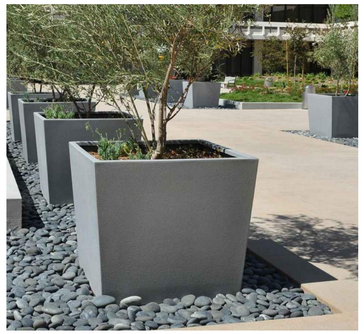
SITE PLAN - SP-000832-2016



1. STONE WALL FACE, DOUBLE SIDED SIGN, STONE TO MATCH ARCHITECTURE
2. STONE OR CONCRETE BASE
3. STONE TO MATCH ARCHITECTURE
4. METAL LOGO PANEL
5. METAL CAP, COLOR TO MATCH ARCHITECTURE

1 ENTRY MONUMENT

SCALE: 1/4" = 1'-0"

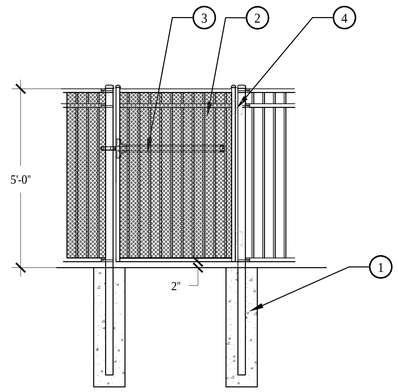


1. MANUFACTURER: TOURNESOL SITEWORKS
2. MODEL: URBAN COLLECTION
   SQUARES:
   UR-4800 (48"Tx42"Bx42H")
   UR-3600 (36"Tx30"Bx34H")
   RECTANGLES:
   UR-602424 (60"Lx24"Wx24"T)
3. FINISH: FRP SHADOW
4. CONTACT: JOHN DENMAN
   T: 925-286-1784
   E:JDENMAN@TOURNESOLSITEWORKS.COM

NOTES:
1. PLANTER TYPE SHOWN OR APPROVED EQUAL.
2. WHEN PLANTER URNS ARE SHOWN ON PLANS, CONTRACTOR SHALL INCLUDE THE FOLLOWING: PLANTER MIX, ANNUAL FLOWER PLANTING PROGRAM (INCLUDES 2 PLANTINGS FOR THE 1ST YEAR (SPRING AND FALL) AND WINTER HAND-WATERING AS NEEDED. UNLESS OTHERWISE SPECIFIED, CONTRACTOR TO PROVIDE ANNUAL PLANTING SELECTION FOR REVIEW BY OWNER. IRRIGATION FOR PLANTERS TO BE ON SEPARATE ZONE(S). CONTRACTOR TO COORDINATE PLACEMENT OF NECESSARY SLEEVING PRIOR TO PLACEMENT OF PAVEMENT.

4 PLANTER

SCALE: N.T.S.

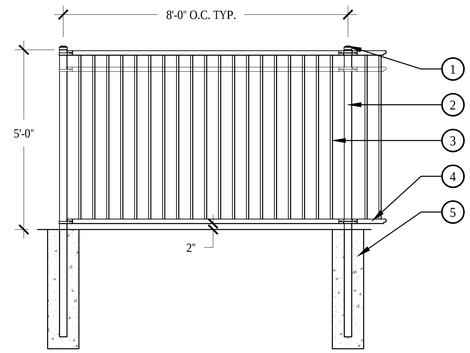


1. CONCRETE FOOTING PER MANUFACTURER, SLOPE CONCRETE AWAY FROM POST FOR POSITIVE DRAINAGE
2. PERFORATED METAL PANEL POWDER COATED TO MATCH FENCE
3. PANIC BAR ON POOL GATES, DETEX V40xERxWx711xFC WITH 81-800 POWER SUPPLY, REF. DCE-18133 LINE ITEM 1. INSTALL PER MANUFACTURER'S INSTRUCTIONS.
4. SELF-CLOSING HINGES

NOTES:
1. ENSURE GATES MEET ALL APPLICABLE CODES
2. KEY FOB HARDWARE AT POOL GATES

2 POOL FENCE GATE

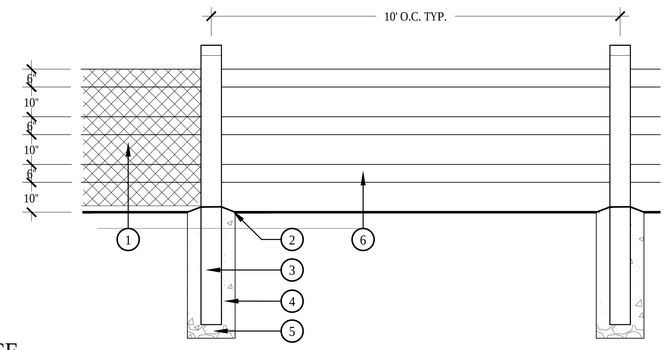
SCALE: 1/2" = 1'-0"

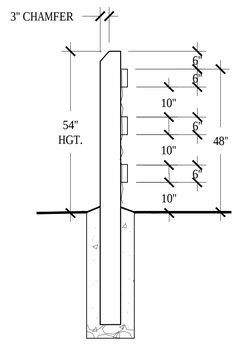


1. 2½" POST CAP
2. 2½" SQ. POST
3. ¾" PICKET, 3" O.C.
4. 1½" X 1½" TOP AND BOTTOM RAILS
5. CONCRETE FOOTING PER MANUFACTURER, SLOPE CONCRETE AWAY FROM POST FOR POSITIVE DRAINAGE
6. FINISH: POWERCOATED BLACK

3 POOL FENCE

SCALE: 1/2" = 1'-0"





1. OPTIONAL 2"x2" WOVEN WIRE MESH (SANDWICH FENCE BETWEEN POST AND RAIL)
2. SLOPE AWAY FROM POST AND TROWEL SMOOTH
3. 6"x6" ROUGH SAWN CEDAR POST
4. CONCRETE FOOTING
5. 4" DEPTH, ¾" GRAVEL BASE
6. 2"x6" ROUGH SAWN CEDAR RAILS ATTACHED WITH A MINIMUM TWO WOOD SCREWS PER RAIL PER POST

5 3 RAIL FENCE

SCALE: 1/2" = 1'-0"

Flepath: P:\ERICA\ERIE\ERIE NINE MILE - MULTIFAMILY - 00304-01-2235\DRAWINGS\SUBMITTALS\SDP-LADS\MF-PLAN.DWG Layout: 17 DETAILS
Plotted: FRI 11/08/19 12:40:22P By: Chris Nutr

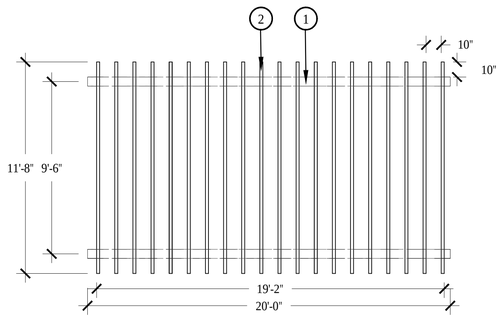
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OUTLOOK NINE MILE

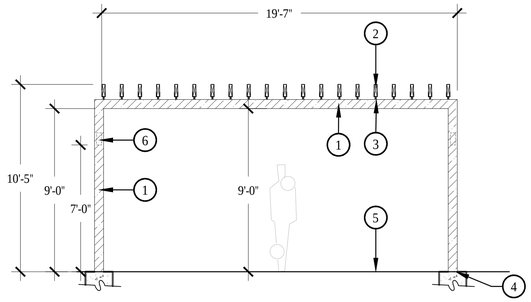
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12.54 ACRES

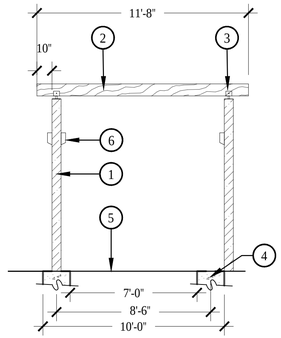
SITE PLAN - SP-000832-2016



PLAN



FRONT ELEVATION



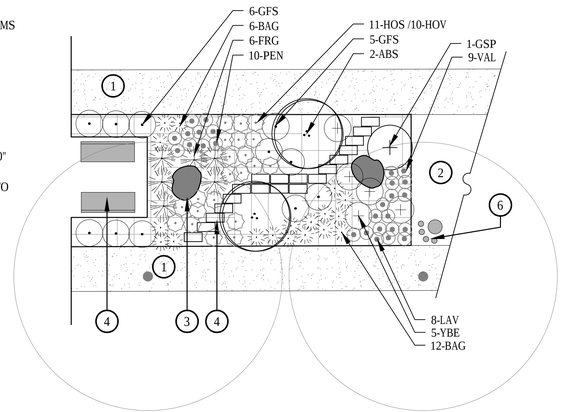
SIDE ELEVATION

1. 6" x 6" TUBE STEEL BEAMS
2. 2" x 8" TREATED CEDAR BEAMS
3. WELDED U BRACKET. REF: STRUCTURAL
4. CONCRETE FOOTING. REF: STRUCTURAL
5. FINISH SURFACE
6. POST-MOUNTED LIGHTS, 7'-0" MINIMUM CLEARANCE TO BOTTOM OF LIGHT. REFER TO LIGHTING.

NOTE:
1. THIS DETAIL SHOWS DESIGN INTENT ONLY. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL. DESIGN BY OTHERS.
2. REFER TO STRUCTURAL DRAWINGS FOR ALL STRUCTURAL INFORMATION

1 PERGOLA

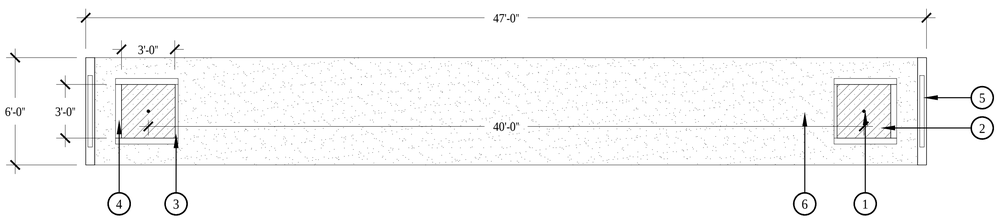
SCALE: 1/4" = 1'-0"



1. CRUSHER FINES
2. ADJACENT LANDSCAPE (RE: LANDSCAPE PLANS)
3. LANDSCAPE BOULDER (RE: DET. 6/21)
4. PAVER STEPPERS (RE: DET. 7/21)
5. BENCH (TYP) (RE: DET. 4/22)
6. PET WASTE STATION (RE: DET. 3/22)

2 DISPLAY GARDEN

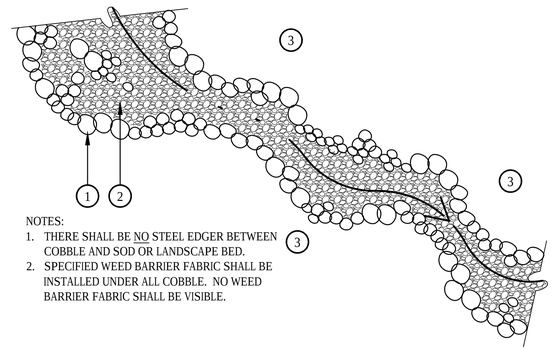
SCALE: 1/8" = 1'-0"



3 HORSESHOE PITS

SCALE: 1/4" = 1'-0"

1. 1/2" REBAR
2. SAND PIT
3. 2 X 6 WOOD DIVIDER, MECHANICALLY ANCHORED
4. 4 X 4 TREATED LUMBER, MECHANICALLY ANCHORED
5. WOOD BACKSTOP
6. GRAY CRUSHER FINES



NOTES:
1. THERE SHALL BE NO STEEL EDGER BETWEEN COBBLE AND SOD OR LANDSCAPE BED.
2. SPECIFIED WEED BARRIER FABRIC SHALL BE INSTALLED UNDER ALL COBBLE. NO WEED BARRIER FABRIC SHALL BE VISIBLE.

1. 4"-6" TAN COBBLE - SET ON EDGE OF SWALE AS WELL AS IN A FEW INTERIOR AREAS TO CREATE A LOOSE, NATURALISTIC BORDER AS SHOWN.
2. ¾" TAN STONE IN INTERIOR AREAS OF SWALE. 4"-5" DEPTH.
3. LANDSCAPE BED, RE: LANDSCAPE PLAN

4 STONE SWALE

SCALE: 1/4" = 1'-0"

Flepath: P:\EVERGREEN ERIE NINE MILE - MULTIFAMILY - 003641\2235\DRAWINGS\SUBMITTALS\SD\2-LSDS-MF-PLAN.DWG Layout: 18 DETAILS
Plotted: FRI 11/08/19 12:40:22P By: Chris Nur

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH

OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

12.54 ACRES

SITE PLAN - SP-000832-2016

IRRIGATION SCHEDULE

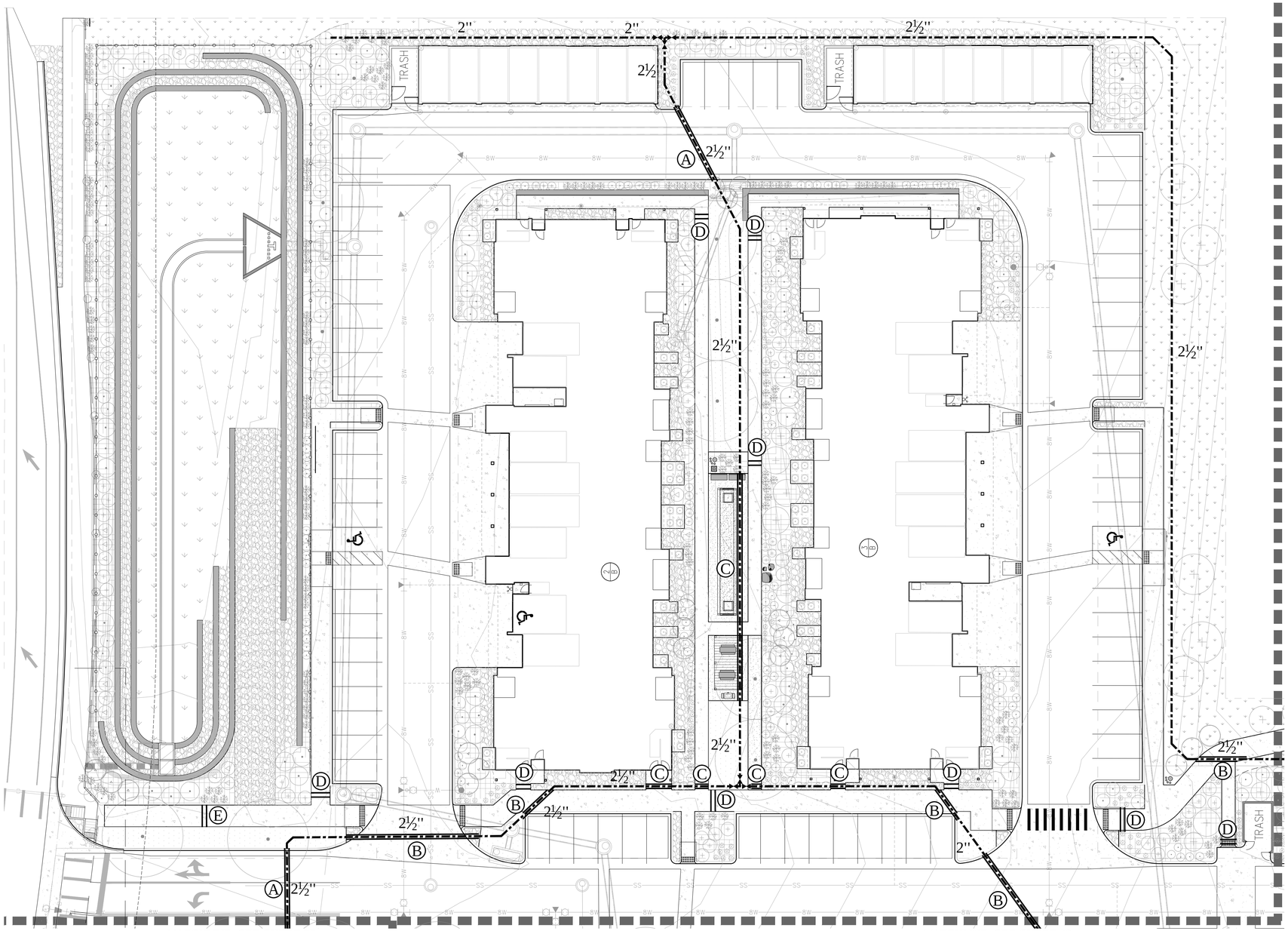
SYMBOL	DESCRIPTION
Ⓐ	TWO-WIRE ELECTRIC CONTROLLER - 120 VAC
	PVC MAINLINE - CL200
	PVC SLEEVING - CL200
P	BOOSTER PUMP
Ⓜ	WATER METER - PER WATER DEPARTMENT

SLEEVE LEGEND

SYMBOL	SLEEVE (COUNT) SIZE
Ⓐ	(1)6" & (1)2"
Ⓑ	(1)6" & (2)2"
Ⓒ	(1)6" & (3)2"
Ⓓ	(1)2"
Ⓔ	(2)2"
Ⓕ	(1)4"
PIPE MATERIAL	CL. 160 PVC
INSTALLATION DEPTH	24"

IRRIGATION DESIGN STRATEGY

HATCH	DESCRIPTION	AREAS < 6'	AREAS 6'-25'	AREAS > 25'
	TURF GRASS	INLINE SUBSURFACE DRIP	6" POPUP SPRAY	6" ROTOR
	NATIVE GRASS	N/A	12" POPUP SPRAY	12" ROTOR
	TREES & SHRUBS	POINT SOURCE DRIP	POINT SOURCE DRIP	POINT SOURCE DRIP


2"
2"
2½"
2½"
TRASH
TRASH
2½"
2½"
2½"
2½"
2½"
2½"
2½"
2"
2½"
2½"
2½"
2½"
2½"
2½

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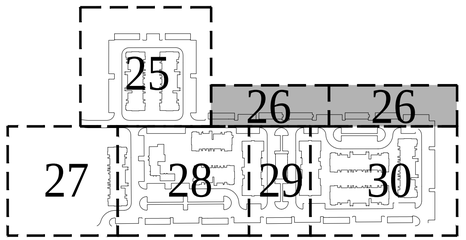
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12.54 ACRES

SITE PLAN - SP-000832-2016

KEY MAP



IRRIGATION DEVELOPMENT DESIGN NOTES

1. THE IRRIGATION SYSTEM SHALL BE DESIGNED TO PROVIDE PEAK SEASON IRRIGATION WITHIN AN THREE NIGHT, SIX HOUR PER NIGHT WATERING PERIOD IRRIGATION SHALL OCCUR BETWEEN THE HOURS OF 10:00 PM AND 6:00 AM.
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IRRIGATION SCHEDULE

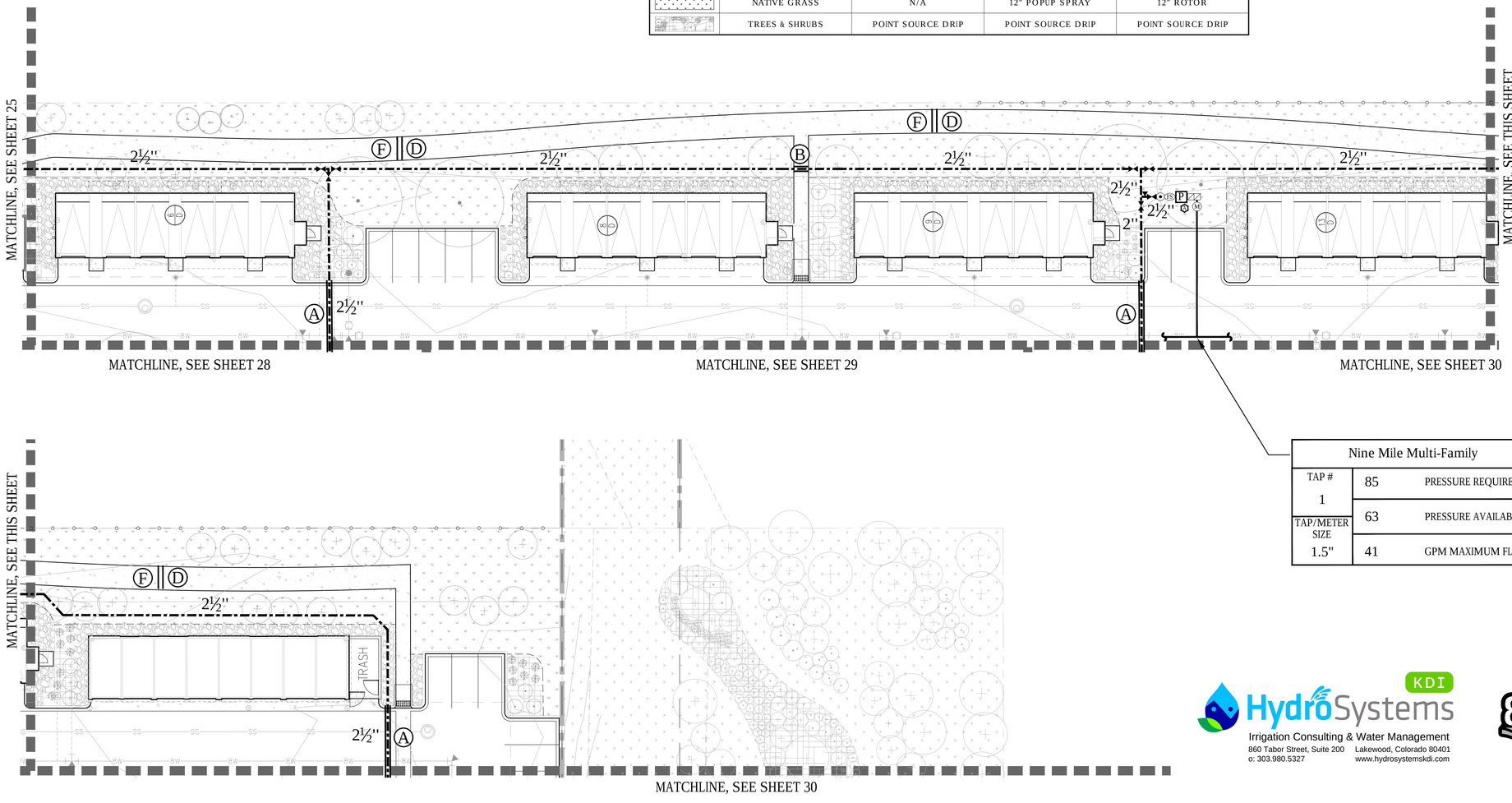
SYMBOL	DESCRIPTION
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	PVC MAINLINE - CL200
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P	BOOSTER PUMP
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SLEEVE LEGEND

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	TREES & SHRUBS	POINT SOURCE DRIP	POINT SOURCE DRIP	POINT SOURCE DRIP



Nine Mile Multi-Family		
TAP # 1	85	PRESSURE REQUIRED
	63	PRESSURE AVAILABLE
TAP/METER SIZE 1.5"	41	GPM MAXIMUM FLOW

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811

NORTH

0 10 20 40
SCALE 1" = 20'

PROJECT NUMBER: 160602

11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

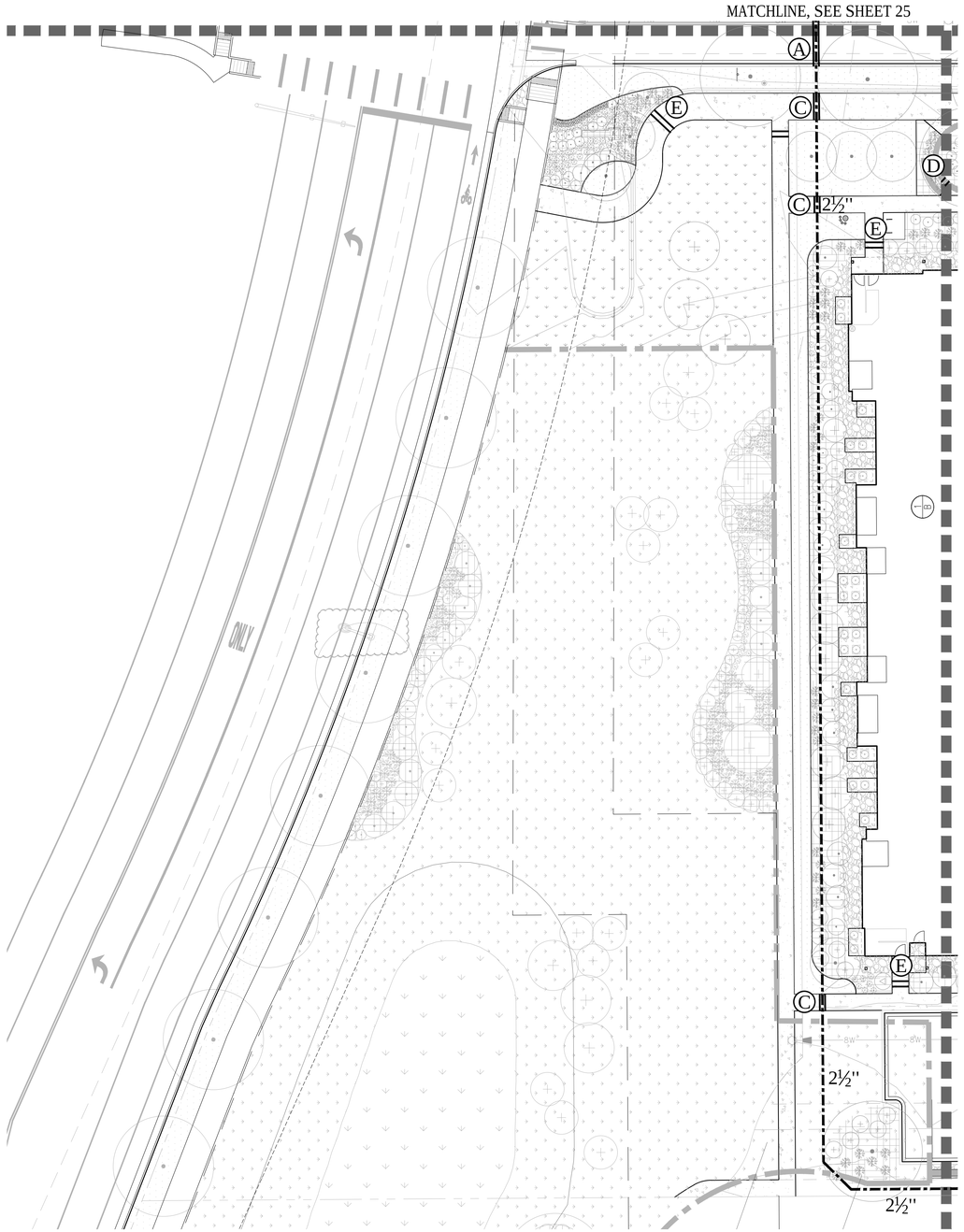
IRRIGATION PLAN
SHEET 26 OF 51
OUTLOOK NINE MILE

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH

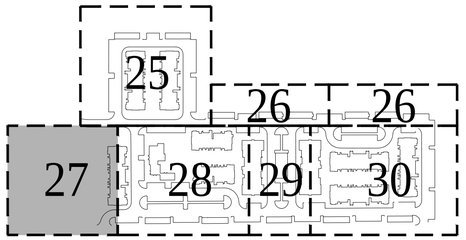
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12.54 ACRES

SITE PLAN - SP-000832-2016



KEY MAP



IRRIGATION SCHEDULE	
SYMBOL	DESCRIPTION
A	TWO-WIRE ELECTRIC CONTROLLER - 120 VAC
	PVC MAINLINE - CL200
	PVC SLEEVING - CL200
P	BOOSTER PUMP
M	WATER METER - PER WATER DEPARTMENT

IRRIGATION DESIGN STRATEGY				
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	TREES & SHRUBS	POINT SOURCE DRIP	POINT SOURCE DRIP	POINT SOURCE DRIP

IRRIGATION DEVELOPMENT DESIGN NOTES

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SLEEVE LEGEND	
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PIPE MATERIAL	CL. 160 PVC
INSTALLATION DEPTH	24"

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o: 303.980.5327 www.hydrosystemskdi.com

811

NORTH

0 10 20 40
SCALE 1" = 20'

PROJECT NUMBER: 160602

11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

IRRIGATION PLAN
SHEET 27 OF 51

OUTLOOK NINE MILE

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OUTLOOK NINE MILE

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12.54 ACRES

SITE PLAN - SP-000832-2016

IRRIGATION SCHEDULE	
SYMBOL	DESCRIPTION
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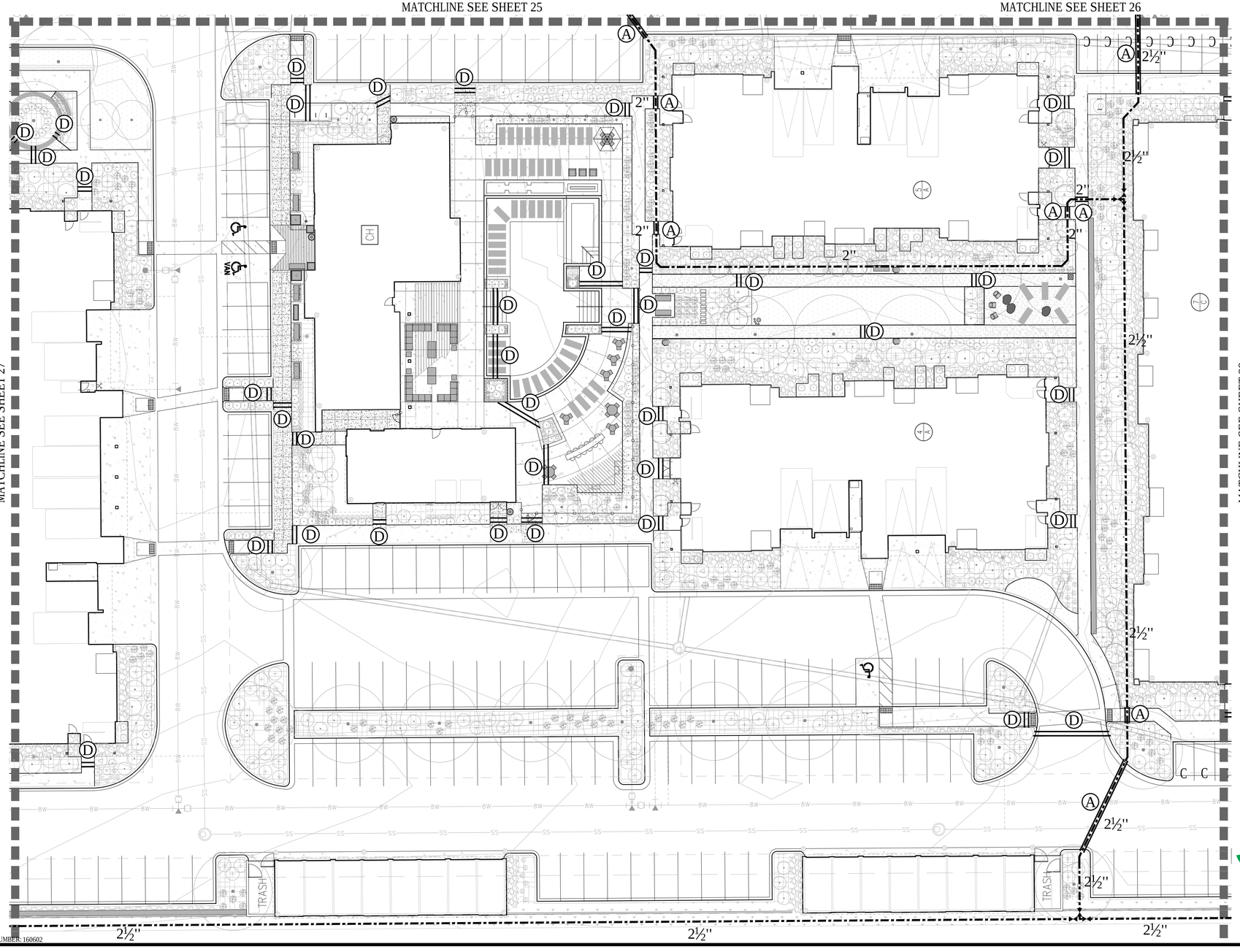
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	TREES & SHRUBS	POINT SOURCE DRIP	POINT SOURCE DRIP	POINT SOURCE DRIP

MATCHLINE SEE SHEET 25

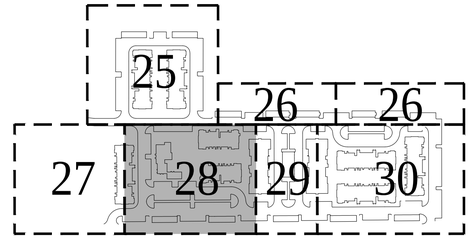
MATCHLINE SEE SHEET 26

MATCHLINE SEE SHEET 27

MATCHLINE SEE SHEET 29



KEY MAP



SLEEVE LEGEND	
SYMBOL	SLEEVE (COUNT) SIZE
A	(1)6" & (1)2"
B	(1)6" & (2)2"
C	(1)6" & (3)2"
D	(1)2"
E	(2)2"
F	(1)4"
PIPE MATERIAL	CL. 160 PVC
INSTALLATION DEPTH	24"

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811

NORTH

0 10 20 40
SCALE 1" = 20'

11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

IRRIGATION PLAN
SHEET 28 OF 51

PROJECT NUMBER: 160602

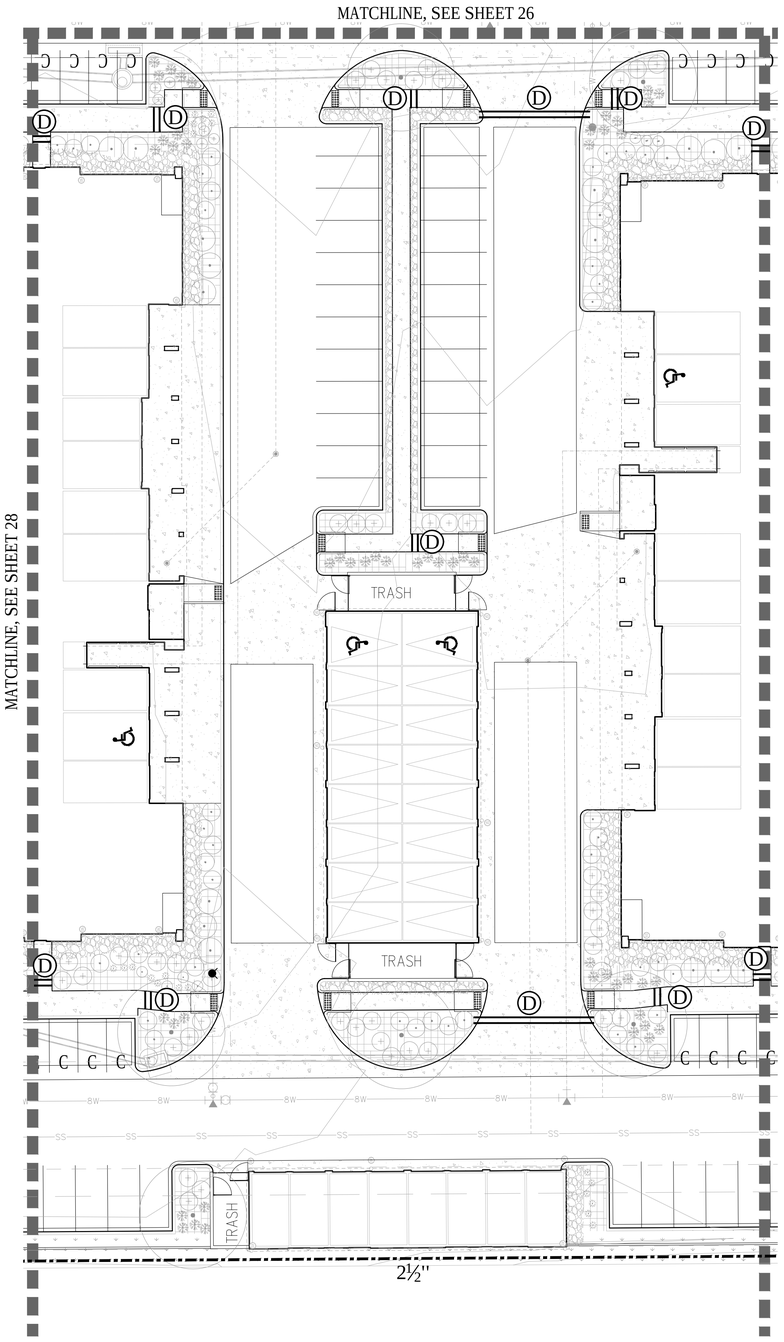
OUTLOOK NINE MILE

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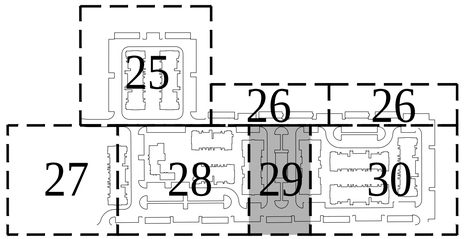
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12.54 ACRES

SITE PLAN - SP-000832-2016



KEY MAP



IRRIGATION SCHEDULE	
SYMBOL	DESCRIPTION
A	TWO-WIRE ELECTRIC CONTROLLER - 120 VAC
	PVC MAINLINE - CL200
	PVC SLEEVING - CL200
P	BOOSTER PUMP
M	WATER METER - PER WATER DEPARTMENT

IRRIGATION DESIGN STRATEGY				
HATCH	DESCRIPTION	AREAS < 6'	AREAS 6'-25'	AREAS > 25'
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811 NORTH 0 10 20 40 SCALE 1" = 20'

PROJECT NUMBER: 160602

11-08-2019
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IRRIGATION PLAN
SHEET 29 OF 51

OUTLOOK NINE MILE

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OUTLOOK NINE MILE

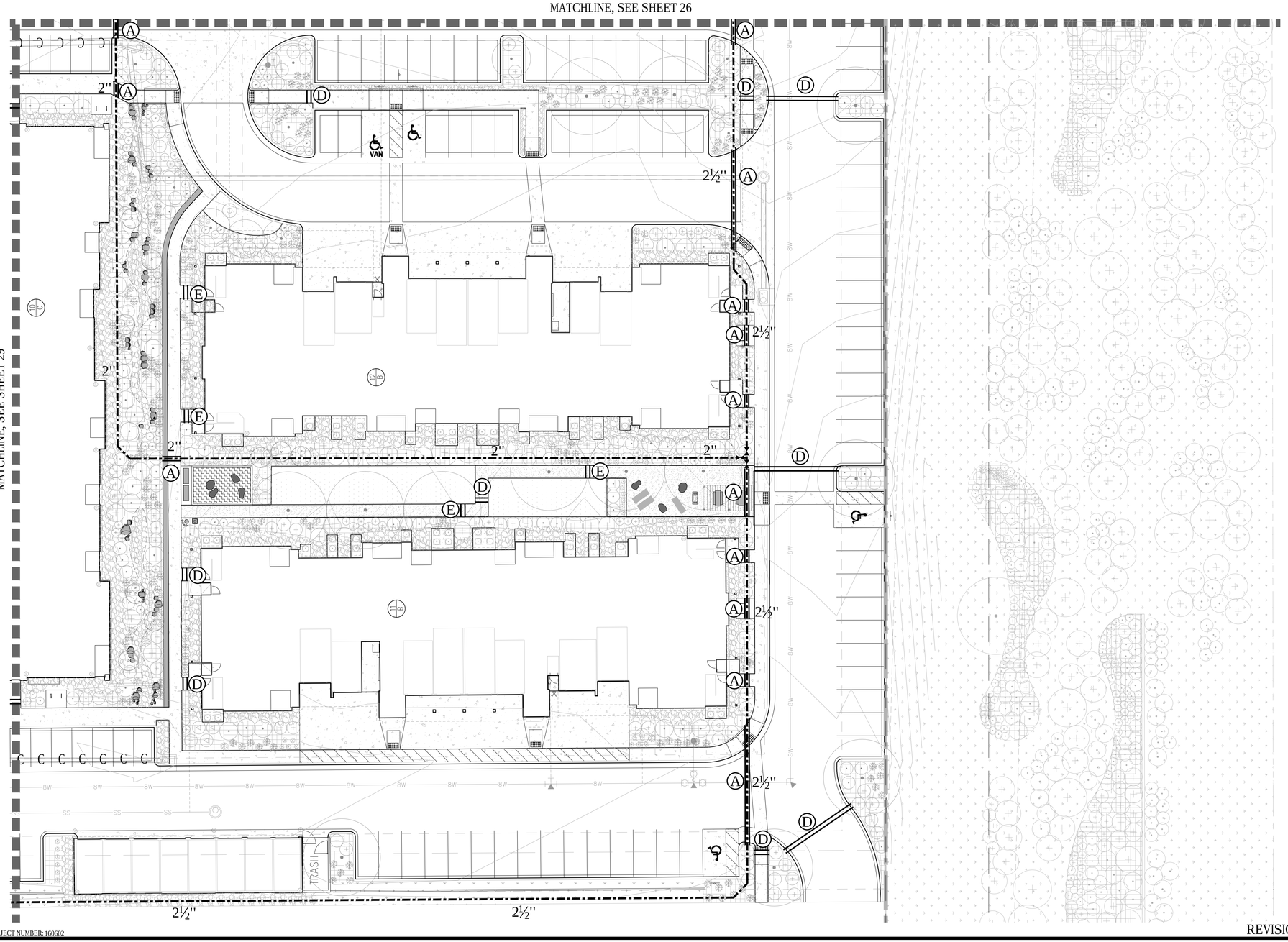
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12.54 ACRES

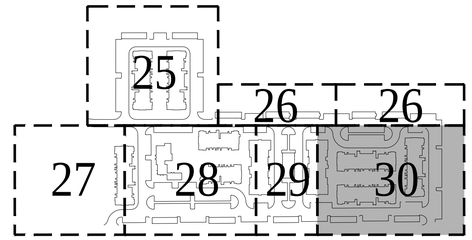
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KEY MAP



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NORTH

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SCALE 1" = 20'

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IRRIGATION PLAN
SHEET 30 OF 51

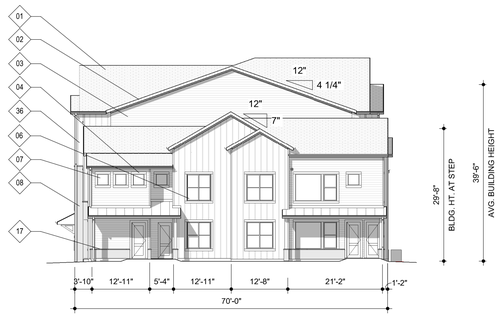
OUTLOOK NINE MILE

NINE MILE FILING NO.1, LOT 1

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

12.54 ACRES

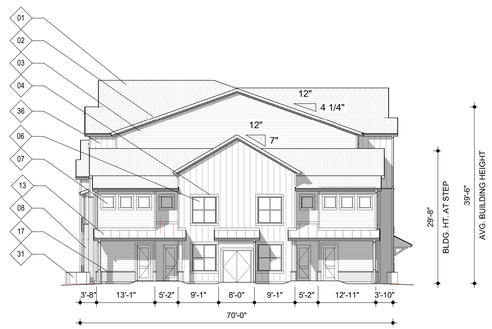
SITE PLAN - SP-000832-2016



4 BLDG. TYPE A - RIGHT ELEVATION
1/16" = 1'-0"



3 BLDG. TYPE A - REAR ELEVATION
1/16" = 1'-0"



2 BLDG. TYPE A - LEFT ELEVATION
1/16" = 1'-0"



1 BLDG. TYPE A - FRONT ELEVATION
1/16" = 1'-0"

KEYNOTES	
#	Keynote Text
01	ARCHITECTURAL COMPOSITE SHINGLE ROOF
02	5/4" X 8" PAINTED FASCIA
03	6" CEMENTITIOUS LAP SIDING
04	5/4" X 6" PAINTED CEMENTITIOUS ACCENT TRIM
06	VINYL SINGLE-HUNG WINDOW
07	VINYL FIXED WINDOW
08	STONE VENEER
09	OVERHEAD GARAGE DOOR; STEEL
10	42" HIGH GUARD RAIL
12	BUILDING ENTRY DOOR, MAINTAIN ACCESSIBLE ROUTE TO THIS LOCATION
13	STANDING SEAM METAL ROOF
14	BUILDING NUMBER SIGNAGE LOCATION
17	STONE SILL/CAP
23	SECURITY GATE
31	GROUND-MOUNTED A/C CONDENSING UNIT
36	CEMENTITIOUS BOARD AND BATTEN SIDING

EXTERIOR COLOR SCHEME 1

• BOARD AND BATTEN SIDING	SW 6012 BROWSE BROWN
• 6" CEMENTITIOUS LAP SIDING	SW 7646 SILVERPLATE
• ACCENT TRIM	SW 7069 IRON ORE
• DOORS	TYPICAL: SW 6991 BLACK MAGIC UTILITY DOORS: MATCH FIELD
• STOREFRONT	BRONZE
• GARAGE DOORS	SW 7069 IRON ORE
• ASPHALT ROOF	TAMKO "RUSTIC BLACK"
• STANDING SEAM METAL ROOF	BERRIDGE METALS "CHARCOAL GREY"
• MASONRY	SUNSET STONE LIMESTONE "WINTERSKY"
• METAL RAILINGS	POWDER COAT FLAT BLACK BK247

NOTES:

ALL PAINT COLORS BY SHERWIN WILLILAMS UNLESS OTHERWISE NOTED

RETURN WALLS TO MATCH EXTERIOR WALLS

EXTERIOR COLOR SCHEME 2

• BOARD AND BATTEN SIDING	SW 7662 HORNBURG GRAY
• 6" CEMENTITIOUS LAP SIDING	SW 7649 SILVERPLATE
• ACCENT TRIM	SW 7069 IRON ORE
• DOORS	TYPICAL: SW 6991 BLACK MAGIC UTILITY DOORS: MATCH FIELD
• STOREFRONT	BRONZE
• GARAGE DOORS	7069 IRON ORE
• ASPHALT ROOF	TAMKO "RUSTIC BLACK"
• STANDING SEAM METAL ROOF	BERRIDGE METALS "CHARCOAL GRAY"
• MASONRY	SUNSET STONE LIMESTONE "WINTERSKY"
• METAL RAILINGS	POWDER COAT FLAT BLACK BK247

NOTES:

ALL PAINT COLORS BY SHERWIN WILLILAMS UNLESS OTHERWISE NOTED

RETURN WALLS TO MATCH EXTERIOR WALLS

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11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

BLDG. TYPE A - ELEVATIONS
SHEET 31 OF 51

OUTLOOK NINE MILE

NINE MILE FILING NO.1, LOT 1

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

12.54 ACRES

SITE PLAN - SP-000832-2016



8 BLDG. TYPE A - FRONT ELEVATION - COLOR
1/16" = 1'-0"



7 BLDG. TYPE A - LEFT ELEVATION - COLOR
1/16" = 1'-0"

EXTERIOR COLOR SCHEME 1	
• BOARD AND BATTEN SIDING	SW 6012 BROWSE BROWN
• 6" CEMENTITIOUS LAP SIDING	SW 7646 SILVERPLATE
• ACCENT TRIM	SW 7069 IRON ORE
• DOORS	TYPICAL: SW 6991 BLACK MAGIC UTILITY DOORS: MATCH FIELD
• STOREFRONT	BRONZE
• GARAGE DOORS	SW 7069 IRON ORE
• ASPHALT ROOF	TAMKO "RUSTIC BLACK"
• STANDING SEAM METAL ROOF	BERRIDGE METALS "CHARCOAL GREY"
• MASONRY	SUNSET STONE LIMESTONE "WINTERSKY"
• METAL RAILINGS	POWDER COAT FLAT BLACK BK247

NOTES:

ALL PAINT COLORS BY SHERWIN WILLILAMS UNLESS OTHERWISE NOTED

RETURN WALLS TO MATCH EXTERIOR WALLS



6 BLDG. TYPE A - REAR ELEVATION - COLOR
1/16" = 1'-0"



5 BLDG. TYPE A - RIGHT ELEVATION - COLOR
1/16" = 1'-0"



4 BLDG. TYPE A - FRONT-LEFT CORNER



3 BLDG. TYPE A - FRONT-RIGHT CORNER



2 BLDG. TYPE A - REAR-LEFT CORNER



1 BLDG. TYPE A - REAR-RIGHT CORNER

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11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

BLDG. TYPE A - ELEVATIONS
SHEET 32 OF 51

OUTLOOK NINE MILE

NINE MILE FILING NO.1, LOT 1

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

12.54 ACRES

SITE PLAN - SP-000832-2016



8 BLDG. TYPE A - FRONT ELEVATION - COLOR
1/16" = 1'-0"



7 BLDG. TYPE A - LEFT ELEVATION - COLOR
1/16" = 1'-0"



6 BLDG. TYPE A - REAR ELEVATION - COLOR
1/16" = 1'-0"



5 BLDG. TYPE A - RIGHT ELEVATION - COLOR
1/16" = 1'-0"



4 BLDG. TYPE A - FRONT-LEFT CORNER



3 BLDG. TYPE A - FRONT-RIGHT CORNER



2 BLDG. TYPE A - REAR-LEFT CORNER



1 BLDG. TYPE A - REAR-RIGHT CORNER

EXTERIOR COLOR SCHEME 2	
• BOARD AND BATTEN SIDING	SW 7662 HORNBURG GRAY
• 6" CEMENTITIOUS LAP SIDING	SW 7649 SILVERPLATE
• ACCENT TRIM	SW 7069 IRON ORE
• DOORS	TYPICAL: SW 6991 BLACK MAGIC UTILITY DOORS: MATCH FIELD
• STOREFRONT	BRONZE
• GARAGE DOORS	7069 IRON ORE
• ASPHALT ROOF	TAMKO "RUSTIC BLACK"
• STANDING SEAM METAL ROOF	BERRIDGE METALS "CHARCOAL GRAY"
• MASONRY	SUNSET STONE LIMESTONE "WINTERSKY"
• METAL RAILINGS	POWDER COAT FLAT BLACK BK247

NOTES:

ALL PAINT COLORS BY SHERWIN WILLILAMS UNLESS OTHERWISE NOTED

RETURN WALLS TO MATCH EXTERIOR WALLS

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REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

BLDG. TYPE A - ELEVATIONS
SHEET 33 OF 51

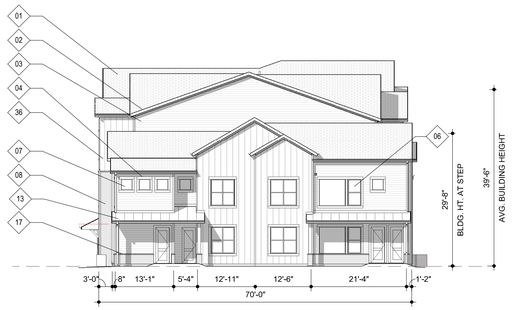
OUTLOOK NINE MILE

NINE MILE FILING NO.1, LOT 1

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

12.54 ACRES

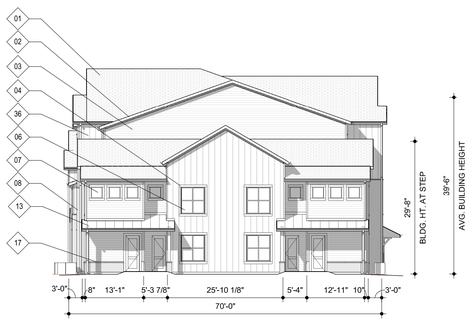
SITE PLAN - SP-000832-2016



4 BLDG. TYPE B - RIGHT ELEVATION
1/16" = 1'-0"



3 BLDG. TYPE B - REAR ELEVATION
1/16" = 1'-0"



2 BLDG. TYPE B - LEFT ELEVATION
1/16" = 1'-0"



1 BLDG. TYPE B - FRONT ELEVATION
1/16" = 1'-0"

KEYNOTES	
#	Keynote Text
01	ARCHITECTURAL COMPOSITE SHINGLE ROOF
02	5/4" X 8" PAINTED FASCIA
03	6" CEMENTITIOUS LAP SIDING
04	5/4" X 6" PAINTED CEMENTITIOUS ACCENT TRIM
06	VINYL SINGLE-HUNG WINDOW
07	VINYL FIXED WINDOW
08	STONE VENEER
09	OVERHEAD GARAGE DOOR; STEEL
10	42" HIGH GUARD RAIL
12	BUILDING ENTRY DOOR, MAINTAIN ACCESSIBLE ROUTE TO THIS LOCATION
13	STANDING SEAM METAL ROOF
14	BUILDING NUMBER SIGNAGE LOCATION
17	STONE SILL/CAP
23	SECURITY GATE
36	CEMENTITIOUS BOARD AND BATTEN SIDING

EXTERIOR COLOR SCHEME 1	
• BOARD AND BATTEN SIDING	SW 6012 BROWSE BROWN
• 6" CEMENTITIOUS LAP SIDING	SW 7646 SILVERPLATE
• ACCENT TRIM	SW 7069 IRON ORE
• DOORS	TYPICAL: SW 6991 BLACK MAGIC UTILITY DOORS: MATCH FIELD
• STOREFRONT	BRONZE
• GARAGE DOORS	SW 7069 IRON ORE
• ASPHALT ROOF	TAMKO "RUSTIC BLACK"
• STANDING SEAM METAL ROOF	BERRIDGE METALS "CHARCOAL GREY"
• MASONRY	SUNSET STONE LIMESTONE "WINTERSKY"
• METAL RAILINGS	POWDER COAT FLAT BLACK BK247

NOTES:

ALL PAINT COLORS BY SHERWIN WILLILAMS UNLESS OTHERWISE NOTED

RETURN WALLS TO MATCH EXTERIOR WALLS

EXTERIOR COLOR SCHEME 2	
• BOARD AND BATTEN SIDING	SW 7662 HORNBURG GRAY
• 6" CEMENTITIOUS LAP SIDING	SW 7649 SILVERPLATE
• ACCENT TRIM	SW 7069 IRON ORE
• DOORS	TYPICAL: SW 6991 BLACK MAGIC UTILITY DOORS: MATCH FIELD
• STOREFRONT	BRONZE
• GARAGE DOORS	7069 IRON ORE
• ASPHALT ROOF	TAMKO "RUSTIC BLACK"
• STANDING SEAM METAL ROOF	BERRIDGE METALS "CHARCOAL GRAY"
• MASONRY	SUNSET STONE LIMESTONE "WINTERSKY"
• METAL RAILINGS	POWDER COAT FLAT BLACK BK247

NOTES:

ALL PAINT COLORS BY SHERWIN WILLILAMS UNLESS OTHERWISE NOTED

RETURN WALLS TO MATCH EXTERIOR WALLS

EXTERIOR COLOR SCHEME 2	
• BOARD AND BATTEN SIDING	SW 7674 PEPPERCORN
• 6" CEMENTITIOUS LAP SIDING	SW 7649 SILVERPLATE
• ACCENT TRIM	SW 7069 IRON ORE
• DOORS	TYPICAL: SW 6991 BLACK MAGIC UTILITY DOORS: MATCH FIELD
• STOREFRONT	BRONZE
• GARAGE DOORS	7069 IRON ORE
• ASPHALT ROOF	TAMKO "RUSTIC BLACK"
• STANDING SEAM METAL ROOF	BERRIDGE METALS "CHARCOAL GRAY"
• MASONRY	SUNSET STONE LIMESTONE "WINTERSKY"
• METAL RAILINGS	POWDER COAT FLAT BLACK BK247

NOTES:

ALL PAINT COLORS BY SHERWIN WILLILAMS UNLESS OTHERWISE NOTED

RETURN WALLS TO MATCH EXTERIOR WALLS

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REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

BLDG. TYPE B - ELEVATIONS

KA PROJECT #216002

OUTLOOK NINE MILE

NINE MILE FILING NO.1, LOT 1

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

12.54 ACRES

SITE PLAN - SP-000832-2016



8 BLDG. TYPE B - FRONT ELEVATION - COLOR
1/16" = 1'-0"



7 BLDG. TYPE B - RIGHT ELEVATION - COLOR
1/16" = 1'-0"

EXTERIOR COLOR SCHEME 1	
• BOARD AND BATTEN SIDING	SW 6012 BROWSE BROWN
• 6" CEMENTITIOUS LAP SIDING	SW 7646 SILVERPLATE
• ACCENT TRIM	SW 7069 IRON ORE
• DOORS	TYPICAL: SW 6991 BLACK MAGIC UTILITY DOORS: MATCH FIELD
• STOREFRONT	BRONZE
• GARAGE DOORS	SW 7069 IRON ORE
• ASPHALT ROOF	TAMKO "RUSTIC BLACK"
• STANDING SEAM METAL ROOF	BERRIDGE METALS "CHARCOAL GREY"
• MASONRY	SUNSET STONE LIMESTONE "WINTERSKY"
• METAL RAILINGS	POWDER COAT FLAT BLACK BK247

NOTES:

ALL PAINT COLORS BY SHERWIN WILLILAMS UNLESS OTHERWISE NOTED

RETURN WALLS TO MATCH EXTERIOR WALLS



6 BLDG. TYPE B - REAR ELEVATION - COLOR
1/16" = 1'-0"



5 BLDG. TYPE B - LEFT ELEVATION - COLOR
1/16" = 1'-0"



4 BLDG. TYPE B - FRONT-LEFT CORNER



3 BLDG. TYPE B - FRONT-RIGHT CORNER



2 BLDG. TYPE B - REAR-LEFT CORNER



1 BLDG. TYPE B - REAR-RIGHT CORNER

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REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

BLDG. TYPE B - ELEVATIONS
SHEET 35 OF 51

KA PROJECT #216002

OUTLOOK NINE MILE

NINE MILE FILING NO.1, LOT 1

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

12.54 ACRES

SITE PLAN - SP-000832-2016



8 BLDG. TYPE B - FRONT ELEVATION - COLOR
1/16" = 1'-0"



7 BLDG. TYPE B - RIGHT ELEVATION - COLOR
1/16" = 1'-0"

EXTERIOR COLOR SCHEME 2	
• BOARD AND BATTEN SIDING	SW 7662 HORNBURG GRAY
• 6" CEMENTITIOUS LAP SIDING	SW 7649 SILVERPLATE
• ACCENT TRIM	SW 7069 IRON ORE
• DOORS	TYPICAL: SW 6991 BLACK MAGIC UTILITY DOORS: MATCH FIELD
• STOREFRONT	BRONZE
• GARAGE DOORS	7069 IRON ORE
• ASPHALT ROOF	TAMKO "RUSTIC BLACK"
• STANDING SEAM METAL ROOF	BERRIDGE METALS "CHARCOAL GRAY"
• MASONRY	SUNSET STONE LIMESTONE "WINTERSKY"
• METAL RAILINGS	POWDER COAT FLAT BLACK BK247

NOTES:

ALL PAINT COLORS BY SHERWIN WILLILAMS UNLESS OTHERWISE NOTED

RETURN WALLS TO MATCH EXTERIOR WALLS



6 BLDG. TYPE B - REAR ELEVATION - COLOR
1/16" = 1'-0"



5 BLDG. TYPE B - LEFT ELEVATION - COLOR
1/16" = 1'-0"



4 BLDG. TYPE B - FRONT-LEFT CORNER



3 BLDG. TYPE B - FRONT-RIGHT CORNER



2 BLDG. TYPE B - REAR-LEFT CORNER



1 BLDG. TYPE B - REAR-RIGHT CORNER

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BLDG. TYPE B - ELEVATIONS
SHEET 36 OF 51

KA PROJECT #216002

OUTLOOK NINE MILE

NINE MILE FILING NO.1, LOT 1

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

12.54 ACRES

SITE PLAN - SP-000832-2016



8 BLDG. TYPE B - FRONT ELEVATION - COLOR
1/16" = 1'-0"



7 BLDG. TYPE B - RIGHT ELEVATION - COLOR
1/16" = 1'-0"



6 BLDG. TYPE B - REAR ELEVATION - COLOR
1/16" = 1'-0"



5 BLDG. TYPE B - LEFT ELEVATION - COLOR
1/16" = 1'-0"



4 BLDG. TYPE B - FRONT-LEFT CORNER



3 BLDG. TYPE B - FRONT-RIGHT CORNER



2 BLDG. TYPE B - REAR-LEFT CORNER



1 BLDG. TYPE B - REAR-RIGHT CORNER

EXTERIOR COLOR SCHEME 2	
• BOARD AND BATTEN SIDING	SW 7674 PEPPERCORN
• 6" CEMENTITIOUS LAP SIDING	SW 7649 SILVERPLATE
• ACCENT TRIM	SW 7069 IRON ORE
• DOORS	TYPICAL: SW 6991 BLACK MAGIC UTILITY DOORS: MATCH FIELD
• STOREFRONT	BRONZE
• GARAGE DOORS	7069 IRON ORE
• ASPHALT ROOF	TAMKO "RUSTIC BLACK"
• STANDING SEAM METAL ROOF	BERRIDGE METALS "CHARCOAL GRAY"
• MASONRY	SUNSET STONE LIMESTONE "WINTERSKY"
• METAL RAILINGS	POWDER COAT FLAT BLACK BK247

NOTES:

ALL PAINT COLORS BY SHERWIN WILLILAMS UNLESS OTHERWISE NOTED

RETURN WALLS TO MATCH EXTERIOR WALLS

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BLDG. TYPE B - ELEVATIONS
SHEET 37 OF 51

KA PROJECT #216002

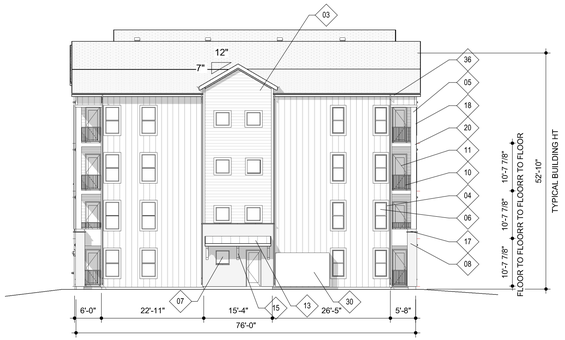
OUTLOOK NINE MILE

NINE MILE FILING NO.1, LOT 1

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

12.54 ACRES

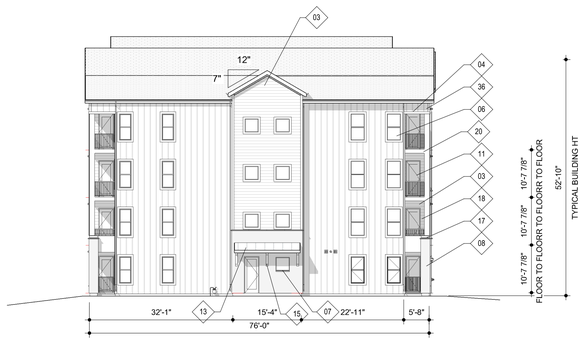
SITE PLAN - SP-000832-2016



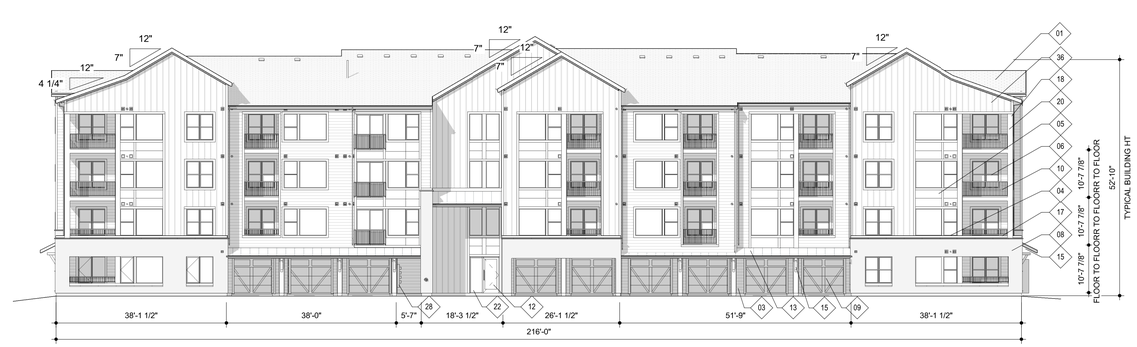
4 RIGHT ELEVATION - BLDG TYPE B
1/16" = 1'-0"



3 REAR ELEVATION - BLDG TYPE B
1/16" = 1'-0"



2 LEFT ELEVATION - BLDG TYPE B
1/16" = 1'-0"



1 FRONT ELEVATION - BLDG TYPE
1/16" = 1'-0"

KEYNOTES	
01	ARCHITECTURAL COMPOSITE SHINGLE ROOF
03	6" CEMENTITIOUS LAP SIDING
04	5/4" X 6" PAINTED CEMENTITIOUS ACCENT TRIM
05	CEMENTITIOUS PANEL SIDING
06	VINYL SINGLE-HUNG WINDOW
07	VINYL FIXED WINDOW
08	STONE VENEER
09	OVERHEAD GARAGE DOOR; STEEL
10	42" HIGH GUARD RAIL
11	FULL-LITE UNIT BALCONY DOOR
12	BUILDING ENTRY DOOR, MAINTAIN ACCESSIBLE ROUTE TO THIS LOCATION
13	STANDING SEAM METAL ROOF
15	DECORATIVE ROOF BRACKET
17	STONE SILL/CAP
18	LOW-PROFILE METAL CORNER TRIM
20	5/4" X 10" PAINTED CEMENTITIOUS ACCENT TRIM
22	STOREFRONT
28	ELECTRIC METER
30	MAIN DISTRIBUTION PANEL
32	ROOFTOP MECHANICAL SCREENING; HEIGHT TO MATCH CURB-MOUNTED EQUIPMENT; CEMENTITIOUS PANEL; PAINT TO MATCH ROOF COLOR
36	CEMENTITIOUS BOARD AND BATTEN

EXTERIOR COLOR SCHEME 3	
• BOARD AND BATTEN SIDING	SW 6012 BROWSE BROWN
• 6" CEMENTITIOUS LAP SIDING	SW 7649 SILVERPLATE
• ACCENT TRIM	SW 7069 IRON ORE
• DOORS	TYPICAL: SW 6991 BLACK MAGIC UTILITY DOORS: MATCH FIELD
• STOREFRONT	BERRIDGE METALS CHARCOAL GREY
• GRARAGE DOORS	SW 7069 IRON ORE
• ASPHALT ROOF	TAMKO "RUSTIC BLACK"
• MASONRY	SUNSET STONE LIMESTONE "WINTERSKY"
• METAL RAILINGS	CARDINAL PWDR. COAT BLACK FLAT BK247

NOTES:

ALL PAINT COLORS BY SHERWIN WILLILAMS UNLESS OTHERWISE NOTED

RETURN WALLS TO MATCH EXTERIOR WALLS

EXTERIOR COLOR SCHEME 3	
• BOARD AND BATTEN SIDING	SW 67674 PEPPERCORN
• 6" CEMENTITIOUS LAP SIDING	SW 7649 SILVERPLATE
• ACCENT TRIM	SW 7069 IRON ORE
• DOORS	TYPICAL: SW 6991 BLACK MAGIC UTILITY DOORS: MATCH FIELD
• STOREFRONT	BERRIDGE METALS CHARCOAL GREY
• GRARAGE DOORS	SW 7069 IRON ORE
• ASPHALT ROOF	TAMKO "RUSTIC BLACK"
• MASONRY	SUNSET STONE LIMESTONE "WINTERSKY"
• METAL RAILINGS	CARDINAL PWDR. COAT BLACK FLAT BK247

NOTES:

ALL PAINT COLORS BY SHERWIN WILLILAMS UNLESS OTHERWISE NOTED

RETURN WALLS TO MATCH EXTERIOR WALLS

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11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

BLDG. TYPE C - ELEVATIONS
SHEET 38 OF 51

OUTLOOK NINE MILE

NINE MILE FILING NO.1, LOT 1

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

12.54 ACRES

SITE PLAN - SP-000832-2016



1 BLDG. TYPE C - FRONT ELEVATION - COLOR
1/16" = 1'-0"



2 BLDG. TYPE C - RIGHT ELEVATION - COLOR
1/16" = 1'-0"

EXTERIOR COLOR SCHEME 3	
• BOARD AND BATTEN SIDING	SW 6012 BROWSE BROWN
• 6" CEMENTITIOUS LAP SIDING	SW 7649 SILVERPLATE
• ACCENT TRIM	SW 7069 IRON ORE
• DOORS	TYPICAL: SW 6991 BLACK MAGIC UTILITY DOORS: MATCH FIELD
• STOREFRONT	BERRIDGE METALS CHARCOAL GREY
• GRARAGE DOORS	SW 7069 IRON ORE
• ASPHALT ROOF	TAMKO "RUSTIC BLACK"
• MASONRY	SUNSET STONE LIMESTONE "WINTERSKY"
• METAL RAILINGS	CARDINAL PWDR. COAT BLACK FLAT BK247
NOTES:	
ALL PAINT COLORS BY SHERWIN WILLILAMS UNLESS OTHERWISE NOTED	
RETURN WALLS TO MATCH EXTERIOR WALLS	



3 BLDG. TYPE C - REAR ELEVATION - COLOR
1/16" = 1'-0"



4 BLDG. TYPE C - LEFT ELEVATION - COLOR
1/16" = 1'-0"



5 BLDG. TYPE C - FRONT LEFT CORNER



6 BLDG. TYPE C - FRONT RIGHT CORNER



7 BLDG. TYPE C - REAR-LEFT CORNER



8 BLDG. TYPE C - REAR RIGHT CORNER

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BLDG. TYPE C - ELEVATIONS

KA PROJECT #215093

OUTLOOK NINE MILE

NINE MILE FILING NO.1, LOT 1

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

12.54 ACRES

SITE PLAN - SP-000832-2016



1 BLDG. TYPE C - FRONT ELEVATION - COLOR
1/16" = 1'-0"



2 BLDG. TYPE C - RIGHT ELEVATION - COLOR
1/16" = 1'-0"

EXTERIOR COLOR SCHEME 3	
• BOARD AND BATTEN SIDING	SW 67674 PEPPERCORN
• 6" CEMENTITIOUS LAP SIDING	SW 7649 SILVERPLATE
• ACCENT TRIM	SW 7069 IRON ORE
• DOORS	TYPICAL: SW 6991 BLACK MAGIC UTILITY DOORS: MATCH FIELD
• STOREFRONT	BERRIDGE METALS CHARCOAL GREY
• GRARAGE DOORS	SW 7069 IRON ORE
• ASPHALT ROOF	TAMKO "RUSTIC BLACK"
• MASONRY	SUNSET STONE LIMESTONE "WINTERSKY"
• METAL RAILINGS	CARDINAL PWDR. COAT BLACK FLAT BK247

NOTES:

ALL PAINT COLORS BY SHERWIN WILLILAMS UNLESS OTHERWISE NOTED

RETURN WALLS TO MATCH EXTERIOR WALLS



3 BLDG. TYPE C - REAR ELEVATION - COLOR
1/16" = 1'-0"



4 BLDG. TYPE C - LEFT ELEVATION - COLOR
1/16" = 1'-0"



5 BLDG. TYPE C - FRONT LEFT CORNER



6 BLDG. TYPE C - FRONT RIGHT CORNER



7 BLDG. TYPE C - REAR-LEFT CORNER



8 BLDG. TYPE C - REAR RIGHT CORNER

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BLDG. TYPE C - ELEVATIONS
SHEET 40 OF 51

KA PROJECT #215093

OUTLOOK NINE MILE

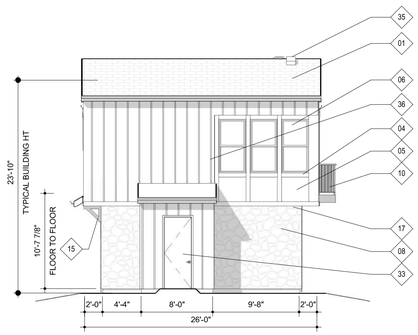
NINE MILE FILING NO.1, LOT 1

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

12.54 ACRES

SITE PLAN - SP-000832-2016

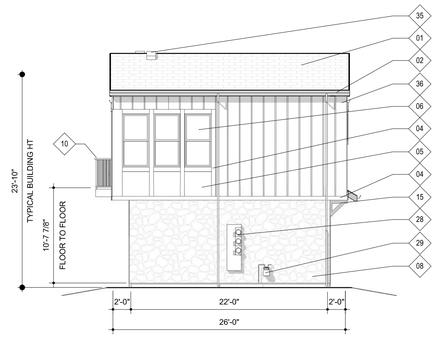
KEYNOTES	
#	DESCRIPTION
01	ARCHITECTURAL COMPOSITE SHINGLE ROOF
02	5/4" X 8" PAINTED FASCIA
03	6" CEMENTITIOUS LAP SIDING
04	5/4" X 6" PAINTED CEMENTITIOUS ACCENT TRIM
05	CEMENTITIOUS PANEL SIDING
06	VINYL SINGLE-HUNG WINDOW
07	VINYL FIXED WINDOW
08	STONE VENEER
09	OVERHEAD GARAGE DOOR; STEEL
10	42" HIGH GUARD RAIL
11	FULL-LITE UNIT BALCONY DOOR
15	DECORATIVE ROOF BRACKET
17	STONE SILL/CAP
28	ELECTRIC METER
29	GAS METER
31	GROUND-MOUNTED A/C CONDENSING UNIT
33	RISER ROOM DOOR
35	ROOF VENT; MATCH ROOF COLOR
36	CEMENTITIOUS BOARD AND BATTEN



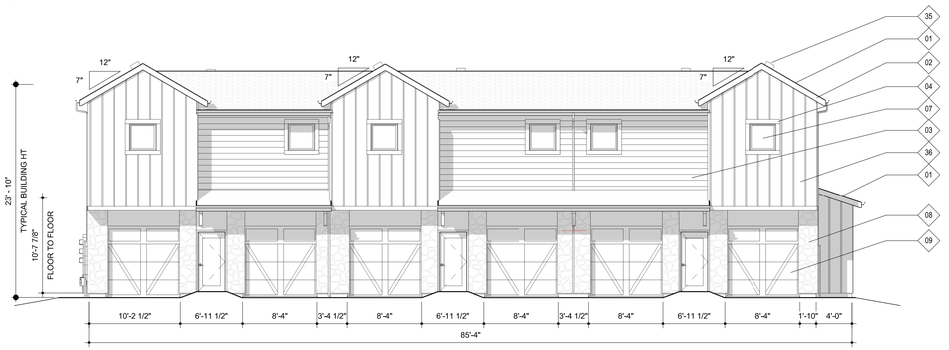
4 CARRIAGE RIGHT ELEVATION
1/8" = 1'-0"



3 CARRIAGE REAR ELEVATION
1/8" = 1'-0"



2 CARRIAGE LEFT ELEVATION
1/8" = 1'-0"



1 CARRIAGE FRONT ELEVATION
1/8" = 1'-0"

EXTERIOR COLOR SCHEME 1	
• BOARD AND BATTEN SIDING	SW 6012 BROWSE BROWN
• 6" CEMENTITIOUS LAP SIDING	SW 7649 SILVERPLATE
• ACCENT TRIM	SW 7069 IRON ORE
• DOORS	TYPICAL: SW 6991 BLACK MAGIC UTILITY DOORS: MATCH FIELD
• GRARAGE DOORS	SW 7069 IRON ORE
• ASPHALT ROOF	TAMKO "RUSTIC BLACK"
• MASONRY	SUNSET STONE LIMESTONE "WINTERSKY"
• METAL RAILINGS	PWDR. COAT BLACK FLAT BK247

NOTES:

ALL PAINT COLORS BY SHERWIN WILLILAMS UNLESS OTHERWISE NOTED

RETURN WALLS TO MATCH EXTERIOR WALLS

EXTERIOR COLOR SCHEME 2	
• BOARD AND BATTEN SIDING	SW 7622 HORNBURG GRAY
• 6" CEMENTITIOUS LAP SIDING	SW 7649 SILVERPLATE
• ACCENT TRIM	SW 7069 IRON ORE
• DOORS	TYPICAL: SW 6991 BLACK MAGIC UTILITY DOORS: MATCH FIELD
• GRARAGE DOORS	SW 7069 IRON ORE
• ASPHALT ROOF	TAMKO "RUSTIC BLACK"
• MASONRY	SUNSET STONE LIMESTONE "WINTERSKY"
• METAL RAILINGS	PWDR. COAT BLACK FLAT BK247

NOTES:

ALL PAINT COLORS BY SHERWIN WILLILAMS UNLESS OTHERWISE NOTED

RETURN WALLS TO MATCH EXTERIOR WALLS

EXTERIOR COLOR SCHEME 3	
• BOARD AND BATTEN SIDING	SW 7674 PEPEPRCORN
• 6" CEMENTITIOUS LAP SIDING	SW 7649 SILVERPLATE
• ACCENT TRIM	SW 7069 IRON ORE
• DOORS	TYPICAL: SW 6991 BLACK MAGIC UTILITY DOORS: MATCH FIELD
• GRARAGE DOORS	SW 7069 IRON ORE
• ASPHALT ROOF	TAMKO "RUSTIC BLACK"
• MASONRY	SUNSET STONE LIMESTONE "WINTERSKY"
• METAL RAILINGS	PWDR. COAT BLACK FLAT BK247

NOTES:

ALL PAINT COLORS BY SHERWIN WILLILAMS UNLESS OTHERWISE NOTED

RETURN WALLS TO MATCH EXTERIOR WALLS

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BLDG. TYPE D - ELEVATIONS

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OUTLOOK NINE MILE