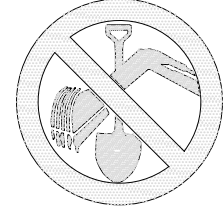


COUNTY OF EL PASO, STATE OF COLORADO

JULY 2018



FOR BURIED UTILITY INFORMATION
48 HRS BEFORE YOU DIG
CALL 1-800-922-1987

AGENCIES

OWNER/DEVELOPER: THE LANDHUIS COMPANY
212 N. WAHSATCH AVE, SUITE 101
COLORADO SPRINGS, CO 80903
JEFF MARK (719) 635-3200

CIVIL ENGINEER: M & S CIVIL CONSULTANTS, INC.
20 BOULDER CRESCENT, SUITE 110
COLORADO SPRINGS, CO 80903
VIRGIL A. SANCHEZ P.E. (719) 955-5485

COUNTY ENGINEERING: EL PASO COUNTY PLANNING
AND COMMUNITY DEVELOPMENT
2880 INTERNATIONAL CIRCLE, SUITE 110
COLORADO SPRINGS, CO 80910
MR. GILBERT LAFORCE (719) 520-7945

METRO DISTRICT: PAINT BRUSH HILLS METRO DISTRICT
9830 LIBERTY GROVE DR.
FALCON, CO 80831
MR. LEON GOMES (719) 495-8188

TRAFFIC ENGINEERING: EL PASO COUNTY DEPARTMENT OF PUBLIC WORKS
3275 AKERS DRIVE
COLORADO SPRINGS, CO 80922
JENNIFER IRVINE, P.E. (719) 520-6460

FIRE DEPARTMENT: FALCON FIRE PROTECTION DISTRICT
7030 N. MERIDIAN RD.
FALCON, CO 80831
CHIEF HARWIG (719) 495-4050

GAS DEPARTMENT: BLACKHILLS ENERGY
37 WIDEFIELD BOULEVARD
WIDEFIELD, CO 80911
MR. GEORGE M. PETERSON (719) 392-3491

ELECTRIC DEPARTMENT: MOUNTAIN VIEW ELECTRIC
11140 E. WOODMEN ROAD
FALCON, CO 80831
(719) 495-2283

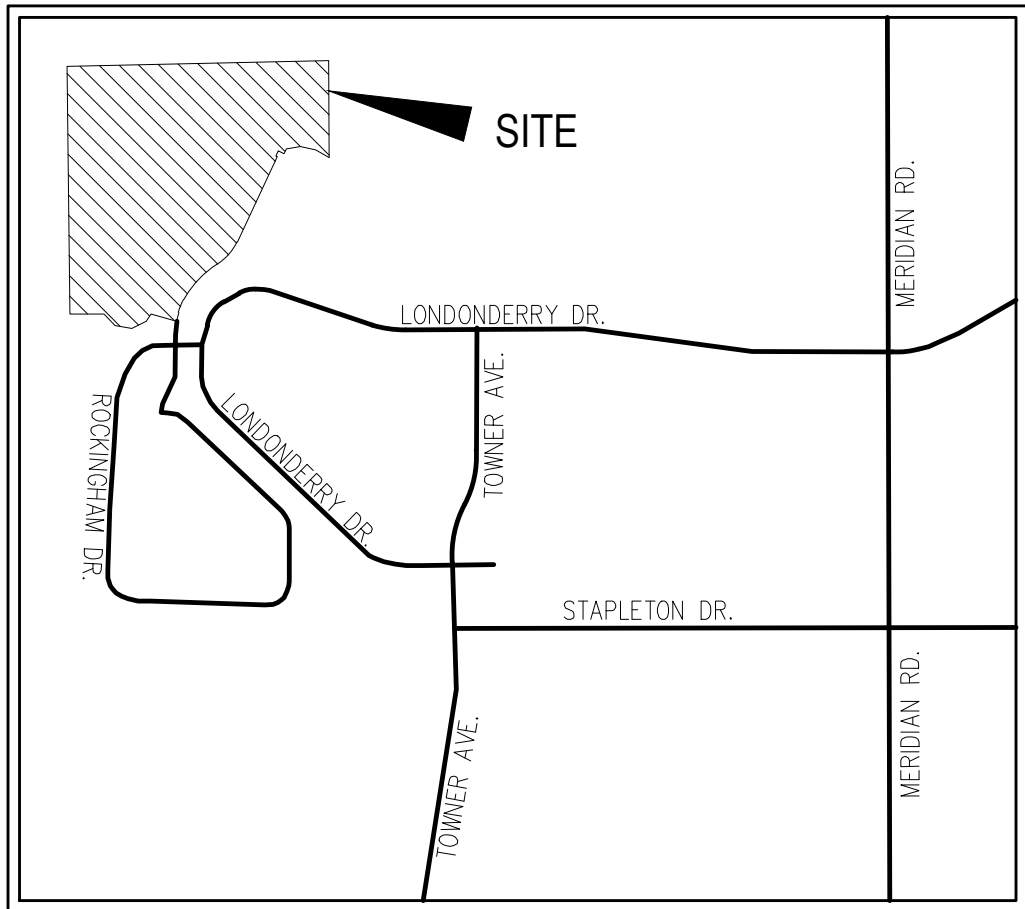
TELEPHONE COMPANY: CENTURY LINK
(LOCATORS) 811
AT&T
(LOCATORS) 811

BENCHMARKS

1. SOUTH $\frac{1}{4}$ CORNER OF SECTION 26,
TOP OF 2 $\frac{1}{2}$ " ALUMINUM CAP.
ELEV. = 7140.91
VERTICAL DATUM = NGVD 1929
2. SOUTHWEST CORNER OF SECTION 25
TOP OF 3 $\frac{1}{4}$ " ALUMINUM CAP.
ELEV. = 7136.34
VERTICAL DATUM = NGVD 1929

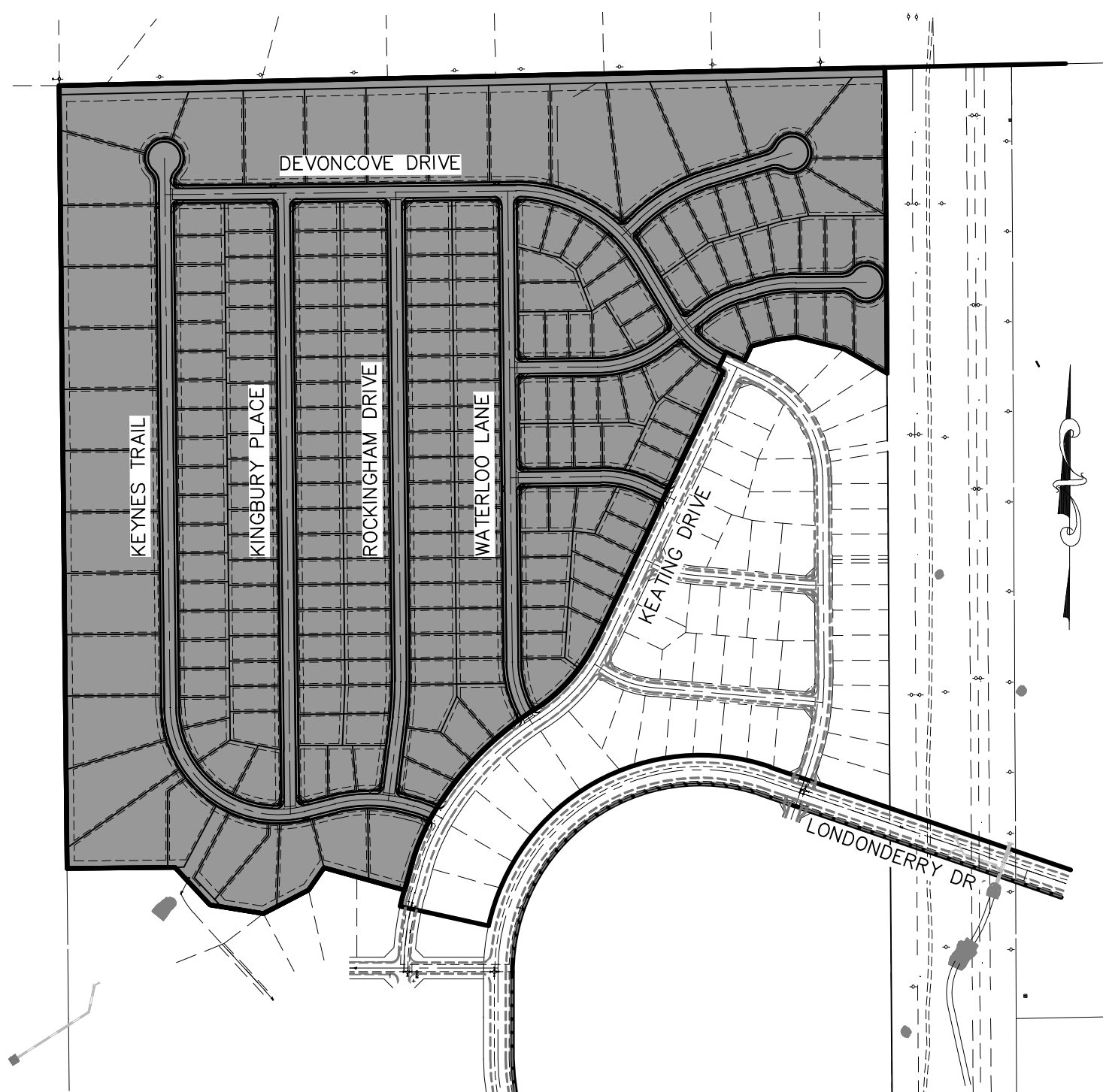
BASIS OF BEARINGS:

THE SOUTH LINE OF THE SOUTHEAST QUARTER OF SECTION 26, TOWNSHIP 12 SOUTH, RANGE 65 WEST OF THE SIXTH PRINCIPAL MERIDIAN BEING MONUMENTED AT THE EAST BY A 3.25" ALUMINUM CAP STAMPED P.L.S. 12103, PRINCIPAL MERIDIAN AND AT THE WEST END BY A NO. 6 REBAR WITH 2.5" ALUMINUM CAP STAMPED P.L.S. 4842, ASSUMED TO BEAR N89°02'00"W, A DISTANCE OF 2614.11 FEET AS SHOWN ON A LAND SURVEY PLAT BY W. K. CLARK AND ASSOCIATES, DATED AUGUST 13, 1999.



VICINITY MAP

N.T.S.



SITE MAP

N.T.S.

SHEET INDEX

SHEET 1	TITLE SHEET		
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SHEET 3	GENERAL NOTES AND DETAILS		
SHEET 4	PLAN & PROFILE	STORM 1, STORM 2	
SHEET 5	PLAN & PROFILE	STORM 3, STORM 4	STA 14+00.00 TO STA 14+00.00
SHEET 6	PLAN & PROFILE	STORM 3, STORM 4	STA 14+00.00 TO STA 15+74.79
SHEET 7	PLAN & PROFILE	STORM 3, LAT 1, LAT 2, LAT 3, LAT 4	
SHEET 8	PLAN & PROFILE	STORM 4, STORM 5, STORM 7	
SHEET 9	PLAN & PROFILE	STORM 6, LANNED STORM	(TO BE BUILT BY OTHERS)
SHEET 10	EXTENDED DETENTION	POND C	SITE PLAN
SHEET 11	EXTENDED DETENTION	POND C	DETAILS (FOREBAY, LOW FLOW CHAN, ETC)
SHEET 12	EXTENDED DETENTION	POND C	DETAILS (OUTLET STURCTURE)

APPROVALS:

ENGINEER'S STATEMENT

DETAILED DRAINAGE CONSTRUCTION PLANS AND SPECIFICATIONS ENGINEER'S STATEMENT:
 THESE DETAILED PLANS AND SPECIFICATIONS WERE PREPARED UNDER MY DIRECTION AND SUPERVISION. SAID DETAILED PLANS AND SPECIFICATIONS HAVE BEEN PREPARED ACCORDING TO THE CRITERIA ESTABLISHED BY THE COUNTY FOR DETAILED DRAINAGE PLANS AND SPECIFICATIONS, AND SAID DETAILED PLANS AND SPECIFICATIONS ARE IN CONFORMITY WITH THE MASTER PLAN OF THE DRAINAGE BASIN. SAID DETAILED DRAINAGE PLANS AND SPECIFICATIONS MEET THE PURPOSES FOR WHICH THE PARTICULAR DRAINAGE FACILITY(S) IS DESIGNED. I ACCEPT RESPONSIBILITY FOR ANY LIABILITY CAUSED BY ANY NEGLIGENT ACTS, ERRORS, OR OMISSIONS ON MY PART IN PREPARATION OF THE DETAILED IMPROVEMENT PLANS AND SPECIFICATIONS.

VIRGIL A SANCHEZ, COLORADO P.E. NO. 37160
FOR AND ON BEHALF OF M&S CIVIL CONSULTANTS, INC.

OWNER/DEVELOPER STATEMENT:

THE OWNER WILL COMPLY WITH THE REQUIREMENTS OF THE DRAINAGE REPORT AND PLAN AND THIS SET OF CONSTRUCTION DOCUMENTS. THE OWNER WILL COMPLY WITH THE REQUIREMENTS OF THE EROSION AND STORMWATER QUALITY CONTROL PLAN INCLUDING TEMPORARY BMP INSPECTION REQUIREMENTS AND FINAL STABILIZATION REQUIREMENTS. I ACKNOWLEDGE THE RESPONSIBILITY TO DETERMINE WHETHER THE CONSTRUCTION ACTIVITIES ON THESE PLANS REQUIRE COLORADO DISCHARGE PERMIT SYSTEM (CDPS) PERMITTING FOR STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY.

MR. JEFF MARK
THE LANDHUIS COMPANY, PRESIDENT

EL PASO COUNTY:

COUNTY PLAN REVIEW IS PROVIDED ONLY FOR GENERAL CONFORMANCE WITH COUNTY DESIGN CRITERIA. THE COUNTY IS NOT RESPONSIBLE FOR THE ACCURACY AND ADEQUACY OF THE DESIGN, DIMENSIONS, AND/OR ELEVATIONS WHICH SHALL BE CONFIRMED AT THE JOB SITE. THE COUNTY THROUGH APPROVAL OF THIS DOCUMENT ASSUMES NO RESPONSIBILITY FOR COMPLETENESS AND/OR ACCURACY OF THIS DOCUMENT.

FILED IN ACCORDANCE WITH THE REQUIREMENTS OF THE EL PASO COUNTY LAND DEVELOPMENT CODE, DRAINAGE CRITERIA, AND ENGINEERING CRITERIA MANUAL AS AMENDED.

JENNIFER IRVINE, P.E. _____ DATE _____
COUNTY ENGINEER / ECM ADMINISTRATOR

PAINT BRUSH HILLS METROPOLITAN DISTRICT:

THESE DOCUMENTS HAVE BEEN REVIEWED AND APPROVED FOR STORM DRAIN AND ASSOCIATED UTILITY SERVICE CONSTRUCTION

FOR AND ON BEHALF OF PAINT BRUSH HILLS METRO. DISTRICT

[illegible]

1. ALL DRAINAGE AND ROADWAY CONSTRUCTION SHALL MEET THE STANDARDS AND SPECIFICATIONS OF THE CITY OF COLORADO SPRINGS/EL PASO COUNTY DRAINAGE CRITERIA MANUAL VOLUMES 1 AND 2, AND THE EL PASO COUNTY ENGINEERING CRITERIA MANUAL.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR THE NOTIFICATION AND FIELD LOCATION OF ALL EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, BEFORE BEGINNING CONSTRUCTION. LOCATION OF EXISTING UTILITIES SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CALL 811 TO CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO (UNCC).
3. CONTRACTOR SHALL KEEP A COPY OF THESE APPROVED PLANS, THE GRADING AND EROSION CONTROL PLAN, THE STORMWATER MANAGEMENT PLAN (SWMP), THE SOILS AND GEOTECHNICAL REPORT AND THE APPROPRIATE DESIGN AND CONSTRUCTION STANDARDS AND SPECIFICATIONS AT THE JOB SITE AT ALL TIME INCLUDING THE FOLLOWING:
 - 3.1 EL PASO COUNTY ENGINEERING CRITERIA MANUAL (ECM)
 - 3.2 CITY OF COLORADO SPRINGS/EL PASO COUNTY ENGINEERING CRITERIA MANUAL VOLUMES 1 AND 2.
 - 3.3 COLORADO DEPARTMENT OF TRANSPORTATION (CDOT) STANDARDS SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION.
 - 3.4 CDOT M&S STANDARDS.
4. IT IS THE DESIGN ENGINEERS RESPONSIBILITY TO ACCURACY SHOW EXISTING CONDITION BOTH ONSITE AND OFFSITE ON THE CONSTRUCTION PLANS. ANY MODIFICATION NECESSARY DUE TO CONFLICT OMISSIONS OR CHANGED CONDITIONS WILL BE ENTIRELY THE DEVELOPERS RESPONSIBILITY TO RECTIFY.
5. IT IS THE CONTRACTORS RESPONSIBILITY TO UNDERSTAND THE REQUIREMENTS OF ALL JURISDICTIONAL AGENCIES AND TO OBTAIN ALL REQUIRED PERMITS, INCLUDING BUT NOT LIMITED TO EL PASO COUNTY EROSION AND STORM WATER QUALITY CONTROL PERMIT (ESQCP), REGIONAL BUILDING FLOODPLAIN DEVELOPMENT PERMIT, US ARMY CORPS OF ENGINEER ISSUED 401 AND/OR 404 PERMITS AND COUNTY AND STATE FUGITIVE DUST PERMITS.
6. ANY TEMPORARY SIGNAGE AND STRIPING SHALL COMPLY WITH EL PASO COUNTY DOW AND MUTCD CRITERIA.
7. CONTRACTOR SHALL OBTAIN ANY PERMITS REQUIRED BY EL PASO COUNTY DOT INCLUDING WORK WITHIN THE RIGHT-OF-WAY AND SPECIAL TRANSPORT PERMITS.
8. THE LIMITS OF CONSTRUCTION SHALL REMAIN WITHIN THE PROPERTY LINE UNLESS OTHERWISE NOTED. THE OWNER/DEVELOPER SHALL OBTAIN WRITTEN PERMISSION AND EASEMENTS, WHERE REQUIRED, FROM ADJOINING PROPERTY OWNER(S) PRIOR TO ANY OFFSITE DISTURBANCE GRADING, OR CONSTRUCTION.

1. ALL STATIONING IS ALONG STORM SEWER CENTERLINE UNLESS OTHERWISE INDICATED. ALL ELEVATIONS ARE INVERT UNLESS OTHERWISE INDICATED.
2. ALL STORM SEWER BENDS AND WYES SHOWN ON THE PLAN SHALL BE PREFABRICATED.
3. HORIZONTAL AND VERTICAL BENDS ARE INDICATED ON THE PLANS.
4. JOINTS SHALL BE IN ACCORDANCE WITH ASTM C443 "STANDARD SPECIFICATIONS FOR JOINTS FOR CIRCULAR CONCRETE SEWER AND CULVERT PIPE USING RUBBER GASKET." IN NO CASE SHALL THE MAXIMUM JOINT OPENING FOR STRAIGHT ALIGNMENT EXCEED 1 INCH OR ONE AND ONE-HALF INCH ON CURVED ALIGNMENT.
5. INLET DIMENSIONS SHOWN ON PLANS REFER TO DISTANCES FROM INSIDE FACES OF BOX BETWEEN THE WIDTHS AND LENGTHS.
6. MANHOLE WIDTHS AND LENGTHS SHOWN ON PLAN REFER TO THE EXTERIOR WALL DIMENSIONS.
7. ALL STORM SEWER SHALL BE A MINIMUM OF CLASS III REINFORCED CONCRETE PIPE. SPECIFIC SEGMENTS OF STORM SEWER SHALL BE REQUIRED TO BE CONSTRUCTED OF A MINIMUM OF 5000 PSI CONCRETE DUE TO EXCESSIVE VELOCITIES. REFER TO ADDITIONAL NOTES WITHIN CONSTRUCTION PLANS.
8. SINCE ALL PIPE ENTRIES INTO THE BASE ARE VARIABLE, THE DIMENSIONS SHOWN ARE TYPICAL. ACTUAL DIMENSIONS AND QUANTITIES FOR CONCRETE AND REINFORCEMENT SHALL BE AS REQUIRED IN THE WORK.
9. THE MH RING (FRAME) SHALL BE SET IN A BED OF GROUT. THE FRAME SHALL BE SURROUNDED WITH A GROUT IN UNPAVED AREA, OR A CONCRETE COLLAR IN PAVED AREA.
10. PRECAST MANHOLES AND REINFORCEMENT SHALL CONFORM TO ASTM C 478 (AASHTO M 199).
11. CAST IN PLACE MANHOLES SHALL BE CLASS B CONCRETE.
12. STEPS SHALL BE REQUIRED WHEN THE MANHOLE DEPTH EXCEEDS 3'-6" AND SHALL BE IN ACCORDANCE WITH AASHTO M 199.
13. ALL REINFORCING STEEL SHALL HAVE A MINIMUM YIELD STRENGTH OF 60,000 PSI. VERTICAL STEEL SHALL BE PLACED AT $\frac{1}{4}$ OF WALL. ALL BARS SHALL HAVE A 2" MINIMUM CLEARANCE.
14. FLOW CHANNELS AND INVERTS SHALL BE FORMED BY SHAPING WITH CLASS B CONCRETE OR APPROVED GROUT.
15. STUB-OUTS SHALL EXTEND 4 FT MINIMUM BEYOND OUTSIDE WALL SURFACE OF MANHOLE AND BE SATISFACTORILY PLUGGED.
16. CHECK WITH THE LOCAL GOVERNMENT AUTHORITY FOR ANY ADDITIONAL STORM SEWER SPECIFICATIONS, DETAILS, OR REGULATIONS.
17. THE SLOPE OF THE MANHOLE COVER SHALL MATCH THE ROADWAY PROFILE AND CROSS SLOPE.
18. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF ALL PREFABRICATED STRUCTURES TO THE ENGINEER FOR REVIEW PRIOR TO INSTALLATION.

1. THE SOIL MATERIAL SHALL BE NATIVE OR TOPSOIL AND MIXED WITH SIXTY FIVE PERCENT (65%) RIPRAP AND THIRTY FIVE PERCENT (35%) SOIL BY VOLUME.
2. SOIL RIPRAP SHALL CONSIST OF A UNIFORM MIXTURE OF SOIL AND RIPRAP WITHOUT VOIDS.
3. CONTRACTOR SHALL COOPERATE WITH ENGINEER IN OBTAINING AND PROVIDED SAMPLES OF ALL SPECIFIED MATERIALS.
4. CONTRACTOR SHALL SUBMIT CERTIFIED LABORATORY TEST CERTIFICATES FOR ALL ITEMS REQUIRED FOR SOIL RIPRAP.
5. RIPRAP USED SHALL BE THE TYPE DESIGNATED ON THE DRAWINGS AND SHALL CONFORM TO TABLE SHOWN TO THE RIGHT.
6. THE RIPRAP DESIGNATION AND TOTAL THICKNESS OF RIPRAP SHALL BE AS SHOWN ON THE DRAWINGS. THE MAXIMUM STONE SIZE SHALL NOT LARGER THAN THE THICKNESS OF THE RIPRAP.
7. NEITHER WIDTH NOR THICKNESS OF A SINGLE STONE OF RIPRAP SHALL BE LESS THAN ONE-THIRD ($\frac{1}{3}$) OF ITS LENGTH.
8. THE SPECIFIC GRAVITY OF THE RIPRAP SHALL BE TWO AND ONE-HALF (2.5) OR GREATER.
9. MINIMUM DENSITY FOR ACCEPTABLE RIPRAP SHALL BE ONE HUNDRED AND SIXTY FIVE (165) POUNDS PER CUBIC FOOT.
10. RIPRAP SPECIFIC GRAVITY SHALL BE ACCORDING TO THE BULK-SATURATED, SURFACE-DRY BASIS, IN ACCORDANCE WITH AASHTO T85.
11. BROKEN CONCRETE OR ASPHALT PAVEMENT SHALL NOT BE ACCEPTABLE FOR USE IN THE WORK.
12. ROUNDED RIPRAP (RIVER ROCK) IS NOT ACCEPTABLE, UNLESS SPECIFICALLY DESIGNATED ON THE DRAWINGS.

ALL CONSTRUCTION INVOLVING THE PLACEMENT OF STRUCTURAL CONCRETE SHALL BE COMPLETED IN ACCORDANCE WITH STANDARD SPECIFICATIONS, AND AS SUPPLEMENTED BY THE COLORADO DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROADWAY AND BRIDGE CONSTRUCTION.

2. STEEL REINFORCING SHALL BE GRADE 60 FOR ALL REINFORCING STEEL GREATER THAN #4. SPLICING, LAP SPLICING SHALL BE MINIMUM IN THE FOLLOWING TABLE UNLESS OTHERWISE SPECIFIED:

BAR SIZE	#4	#5	#6	#7	#8
SPLICE LENGTH	1'-9"	2'-2"	2'-7"	3'-4"	4'-3"

ALL REINFORCING SHALL HAVE A 2-INCH MINIMUM COVER UNLESS OTHERWISE SPECIFIED. ALL REINFORCED STEEL TO BE EPOXY COATED.

3. CAST-IN-PLACE CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH (f_c) OF 4,000 PSI AT 28 DAYS. ALL CONCRETE PLACED AGAINST SOIL SHALL BE TYPE II PORTLAND CEMENT. ALL EXPOSED CORNERS SHALL BE FORMED WITH A 3/4" CHAMFER UNLESS OTHERWISE SPECIFIED.

4. EXPANSION JOINT MATERIAL SHALL MEET AASHTO SPECIFICATION M-213.

5. BACKFILL AGAINST STRUCTURES SHALL NOT COMMENCE UNTIL ALL SUPPORTING DIAPHRAGMS ARE IN PLACE AND CONCRETE HAS OBTAINED ITS FULL SEVEN DAY STRENGTH. BACKFILL SHALL BE PLACED EQUALLY ON EACH SIDE OF RETAINING WALL STRUCTURES AND CUTOFF WALLS UNTIL THE FINAL GRADE IS REACHED.

6. FOOTING EXCAVATIONS SHALL BE EXAMINED BY THE GEOTECHNICAL ENGINEER WITH A 24-HOUR MINIMUM NOTIFICATION FOR SOIL AND/OR CONCRETE TESTING. PLACEMENT OF CONCRETE IN THE ABSENCE OF TESTING SHALL BE COMPLETED AT THE SOLE RISK OF THE CONTRACTOR.

7. PRIOR TO THE PLACEMENT OF CONCRETE IN AREAS WHERE SOIL IS PRESENT, THE SOIL SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 6-INCHES. THE MOISTURE CONTENT SHALL BE ADJUSTED TO WITHIN PLUS OR MINUS 2 PERCENT OF THE OPTIMUM MOISTURE CONTENT AND RECOMPACTED TO AT LEAST 95 PERCENT RELATIVE COMPACTION (AASHTO-T-180).

H¹" BARS

D¹" BARS

SECTION VIEW

BASE REINFORCING

PIPE ID	BW
48" AND SMALLER	6'-4"
54"	8'-10"
60" AND LARGER	OD + 16"

NOTES

- TYPE I MANHOLE SHALL BE USED WHEN APPROPRIATE AND TYPICALLY FOR PIPE SIZES LARGER THAN 30 INCHES I.D.
- VIEW AND DETAILS SHOWN ARE TYPICAL FOR STRAIGHT THROUGH DESIGN ONLY. DESIGN ENGINEER SHALL DETERMINE MANHOLE BASE CONFIGURATION AND DIMENSIONS FOR PARTICULAR PIPE SIZES AND ALIGNMENT.
- EITHER LADDER OR STEPS SHALL BE INSTALLED WHEN MANHOLE DEPTH EXCEEDS 30". LOWEST STEP SHALL BE A MAXIMUM OF 16" ABOVE THE FLOOR.
- FLOOR OF THE MANHOLE SHALL BE TROWELED TO A SMOOTH, HARD SURFACE AND SHALL SLOPE TOWARDS THE OUTLET (8:1 MAX., %" PER FT. MIN.). FLOOR SHALL BE SHAPED AND CHANNELLED; SEE SD-3.2 FOR TYPICAL CHANNEL DETAILS.

SCALE: NOT TO SCALE

DATE APPROVED:

André Brackin

DESIGN DATE: 7/9/09

FILE NAME: SD_3-1

DEPARTMENT OF TRANSPORTATION

STORM SEWER MANHOLE DETAIL

Type I

Standard Drawing

ST. CLAIR COUNTY

DEPARTMENT OF TRANSPORTATION

PLAN VIEW OF BASE

3" MIN. 3" MIN. 3" MIN. FLOW BASE MAY BE CAST SQUARE STEPS OVER BENCH

SECTION VIEW

5" 6" 3" MIN. 18" MAX. PRE-CAST RISER SEE SD_3-7 JOINT SEAL OR GROUT PIPE ID 30" MAX. FLOW #4 BARS @ 12" OC EACH WAY 3" CLR 5'-4" (MIN) 3" MIN. 4'-6" (MAX) 3" R 18" 3" MIN. 16" 16" TYP 16" MAX. MIN.

TYPICAL CHANNEL DETAILS

TOE POCKETS DETAILS

6" 2" 18" 4" 1" CHAMFER

NOTES

1. TYPE II MANHOLES SHALL BE USED WHEN APPROPRIATE AND TYPICALLY WHEN THE PIPE SIZES ARE 30" OR LESS INSIDE DIAMETER.
2. VIEW AND DETAILS ARE TYPICAL. DESIGN ENGINEER SHALL DETERMINE MANHOLE BASE CONFIGURATION AND DIMENSIONS FOR PARTICULAR PIPE SIZES AND ALIGNMENT.
3. EITHER LADDER OF STEPS SHALL BE INSTALLED WHEN MANHOLE DEPTH EXCEEDS 30". STEPS IN BASE SHALL BE INSTALLED IN "TOE POCKETS" (SEE DETAIL THIS SHEET). LOWEST STEP SHALL BE A MAXIMUM OF 18" ABOVE THE FLOOR.
4. PIPES SHALL BE TRIMMED TO FINAL SHAPE AND SET BEFORE MANHOLE IS POURED.
5. BENCH SHALL BE SLOPED TOWARD CENTER OF MANHOLE BASE (4:1 MAX., 1/2" PER FOOT. MIN.).
6. FLOOR OF MANHOLE SHALL BE TROWELLED TO A SMOOTH, HARD SURFACE AND SHALL SLOPE TOWARDS THE OUTLET (8:1, 1/2" PER FT. MIN.). FLOOR SHALL BE SHAPED AND CHANNELLED; SEE DETAILS THIS SHEET.

SCALE: NOT TO SCALE

DATE APPROVED: André P. Brackin

DESIGN DATE: 11/10/04

FILE NAME: SD_3-2

Storm Sewer Manhole Detail
Type II
Standard Drawing

EL PASO COUNTY
DEPARTMENT OF TRANSPORTATION

MANHOLE FRAME AND LID
(SD_3-5)

8" MIN

24"

ECCENTRIC FLAT TOP

HEIGHT OF RISER

4'-0"

5"

JOINT SEAL
OR GROUT

ECCENTRIC FLAT TOP

MORTARED 2"
PRECAST
GRADE RING
(2" MIN,
6" MAX)

24"

ECCENTRIC CONE TOP

ECCENTRIC CONE TOP

14" MIN

12" MIN
THRU 60"
MAX RINGS

TYPE I, II, III
MANHOLE BASES
SEE SD_3-1,
SD_3-2
AND SD_3-3

ECCENTRIC CONE TOP

NOTES

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE STANDARD AND SUPPLEMENTAL SPECIFICATIONS APPLICABLE TO THE PROJECT.
2. PRECAST RISERS SHALL CONFORM TO ASTM C478.
3. STEPS SHALL BE INSTALLED WHEN MANHOLE DEPTH EXCEEDS 30". STEPS SHALL BE CAST IRON OR EXTRUDED ALUMINUM, 1000 LB CAPACITY, 12" WIDE WITH NON-SKID GROOVES AND DROP FRONT ON SAFETY NOSES, IN ACCORDANCE WITH APPROVED OSHA REQUIREMENTS.

DRAFT

SCALE: NOT TO SCALE

DATE APPROVED:	Storm Sewer Manhole Riser and Cover Detail Standard Drawing	FILE NAME: SD_3-7
DEPARTMENT OF TRANSPORTATION	REVISION DATE: 11/23/04	

EL PASO COUNTY
SEAL OF EL PASO COUNTY, TEXAS

1-5/8"

2" STD LETTERING
FLUSH WITH TOP

3/4" DIA
LIFTHOLE
4" FROM EDGE

STORM
SEWER

TYPE "C" LID
DESIGN 1" X 1"
SCORED 1/32"±DEEP

26" 1 1/2"
5"

SECTION A-A
(APPROX 175 LBS)

26" 1 1/2"
5"

SECTION B-B
(APPROX 144 LBS)

DRAFT

SCALE: NOT TO SCALE

DATE APPROVED _____		Storm Sewer Manhole Lid Details Standard Drawing		
REVISION DATE: 11/10/04		FILE NAME: SD_3-5		
DEPARTMENT OF TRANSPORTATION				

 FOR LOCATING
& MARKING
GAS,
ELECTRIC,
WATER &
TELEPHONE
LINES

FOR BURIED UTILITY INFORMATION
8 HRS BEFORE YOU DIG
CALL 1-800-922-1987

PAINT BRUSH HILLS FILING NO. 14

GENERAL NOTES AND DETAILS

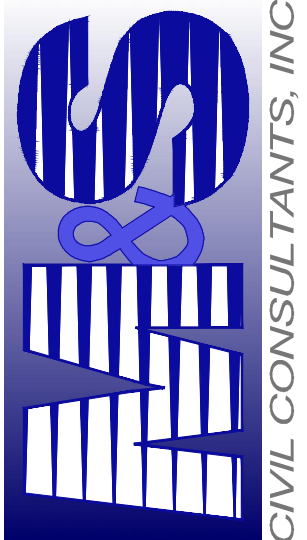
PROJECT NO. 10-014	FILE: \dwg\Const Dwg\Storm - District\ST02.dwg
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DESIGNED BY: CT	SCALE: DATE: 06/22/18
-----------------	-----------------------

DESIGNED BY:	SI	HORIZ. N/A	
DRAWN BY:	CMN		

ST02
SHEET 2 OF 12

20 BOULDER CRESCENT, SUITE 110
COLORADO SPRINGS, CO 80903
PHONE: 719.955.5485



VIRGIL A. SANCHEZ, COLORADO P.E. NO. 7160

FOR AND ON
BEHALF OF
M&S CIVIL
CONSULTANTS,
INC.

REVISIONS:

NO.	DATE:	BY:	DESCRIPTION:	APPR'D. BY:	DATE:
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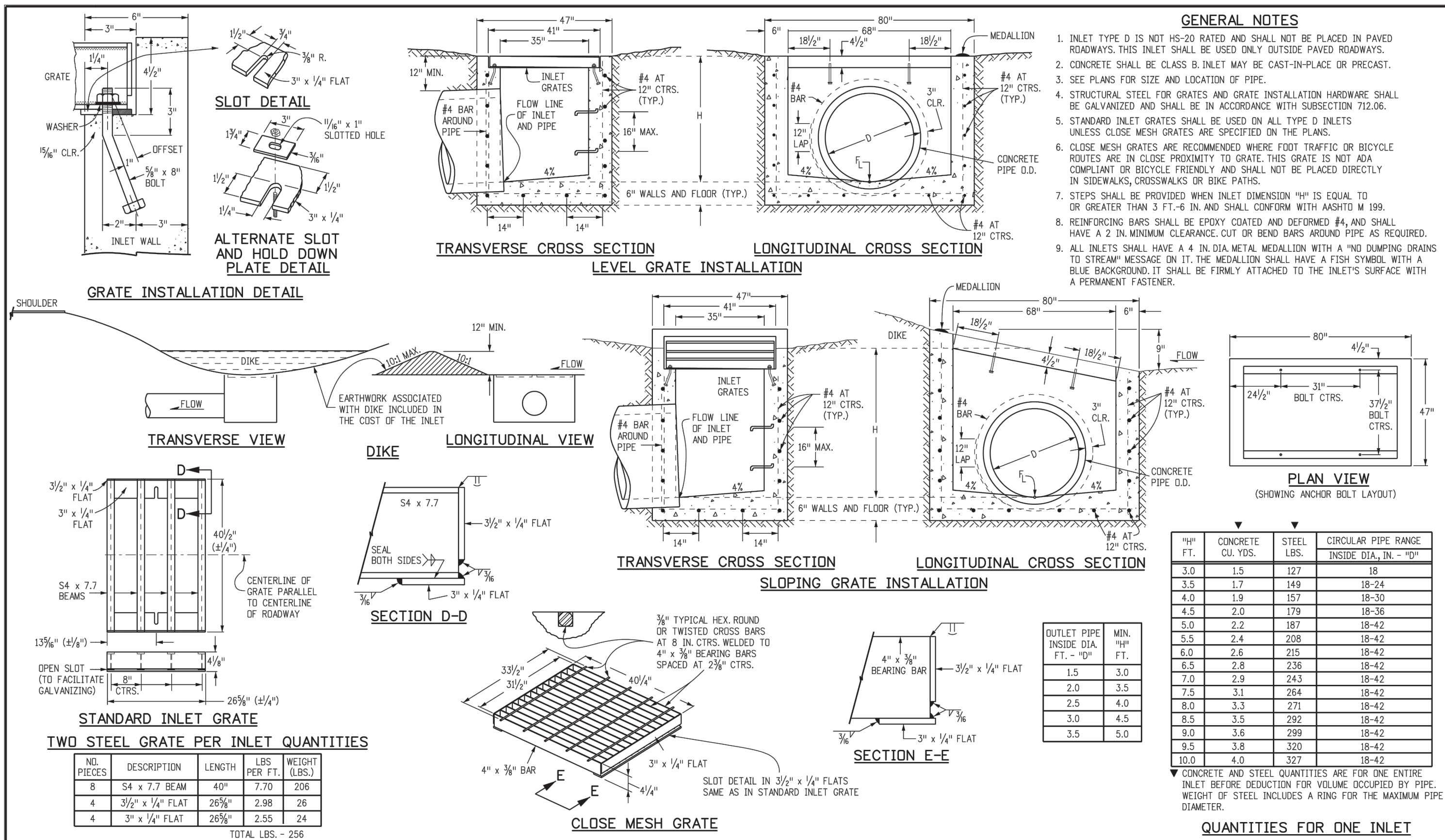
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CA

THE ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE, OR LIABLE FOR, UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL CHANGES TO THE PLANS MUST BE IN WRITING AND MUST BE APPROVED BY THE PREPARER

OF THESE PLANS.

N



Computer File Information		Sheet Revisions		Colorado Department of Transportation		STANDARD PLAN NO.	
Creation Date: 07/04/12 Initials: DD		Date: Comments:		<div><p>4201 East Arkansas Avenue Denver, Colorado 80222 Phone: (303) 757-9083 Fax: (303) 757-9820</p></div> <div>Project Development Branch DD/LTA</div>		INLET, TYPE D M-604-11	
Last Modification Date: 07/04/12 Initials: LTA							
Full Path: www.coloradodot.info/business/designs							
Drawing File Name: 604010101.dgn							
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English							
				Issued By: Project Development Branch July 4, 2012		Sheet No. 1 of 1	

GENERAL NOTES

1. CONCRETE SHALL BE CLASS B. INLET MAY BE CAST-IN-PLACE OR PRECAST.
2. CONCRETE WALLS SHALL BE FORMED IN BOTH SIDES AND SHALL BE 8 IN. THICK.
3. INLET STEPS SHALL BE IN CONFORMANCE WITH AASHTO M 199.
4. CURB FACE ASSEMBLY SHALL BE GALVANIZED AFTER WELDING.
5. EXPOSED CONCRETE CORNERS SHALL BE CHAMFERED $\frac{3}{4}$ IN. CURB AND GUTTER CORNERS SHALL BE FINISHED TO MATCH THE EXISTING CURB AND GUTTER BEYOND THE TRANSITION GUTTER.
6. REINFORCING BARS SHALL BE DEFORMED AND SHALL HAVE A 2 IN. MINIMUM CLEARANCE. ALL REINFORCING BARS SHALL BE "PROT" COATED.
7. DIMENSIONS AND WEIGHTS OF TYPICAL MANHOLE RING AND COVER ARE NOMINAL.
8. MATERIAL FOR MANHOLE RINGS AND COVERS SHALL BE GRAY OR DUCTILE CAST IRON IN ACCORDANCE WITH SUBSECTION 712.06.
9. SINCE PIPE ENTRIES INTO THE INLET ARE VARIABLE, THE DIMENSIONS SHOWN ARE TYPICAL. ACTUAL DIMENSIONS AND QUANTITIES FOR CONCRETE AND REINFORCEMENT SHALL BE AS REQUIRED IN THE WORK. QUANTITIES INCLUDE VOLUMES OCCUPIED BY PIPES.
10. STRUCTURAL STEEL SHALL BE GALVANIZED AND SHALL BE IN ACCORDANCE WITH SUBSECTION 712.06.
11. ALL MANHOLE COVERS SHALL BE CAST WITH A "NO DUMPING DRAINS TO STREAM" MESSAGE AND A FISH SYMBOL. THE SURFACE OF THE MANHOLE COVER SHALL HAVE A NON-SLIP PATTERN.

PLAN VIEW

ELEVATION VIEW

MANHOLE COVER (TYP.)

23 1/2" 1" 24" 23" 2 #4 BARS

FOR 5 FT. INLET
ONE 1 1/2 IN. HOLE

PLAN VIEW

30" 24 5/8" 1" 4"

ELEVATION VIEW

WEIGHTS: COVER = 125 LBS.
 = RING = 135 LBS.
 TOTAL = 260 LBS.

MANHOLE RING (TYP.)

CHANNEL LAYOUT DETAILS

SEE CURB FACE LAYOUT ON SHEET 1.

SECTION AT HOLE (TYP.)

1/2" HOLE 3" 8"

4 #4 BARS

29" 24" 24" 24" 29" 6" 12" 12" 6" 35" 30" 30" 30" 35" 10'-10"

FOR 10 FT. INLET
 THREE 1 1/4" IN. HOLES

8 #4 BARS

17" 22" 22" 22" 24" 22" 22" 22" 17" 4" 4" 12" 12" 4" 4" 35" 30" 30" 30" 30" 30" 35" 15'-10"

FOR 15 FT. INLET
 FIVE 1 1/2" IN. HOLES

TYPE II

TYPE III

31" 44" 41" 8"

TYPE IV

TYPE V

TYPE VI

TYPE VII

12"

TYPE VIII

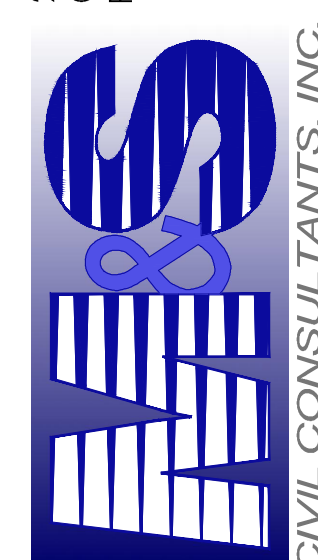
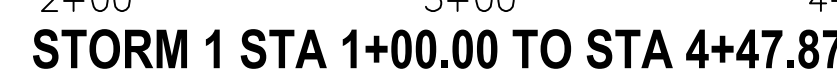
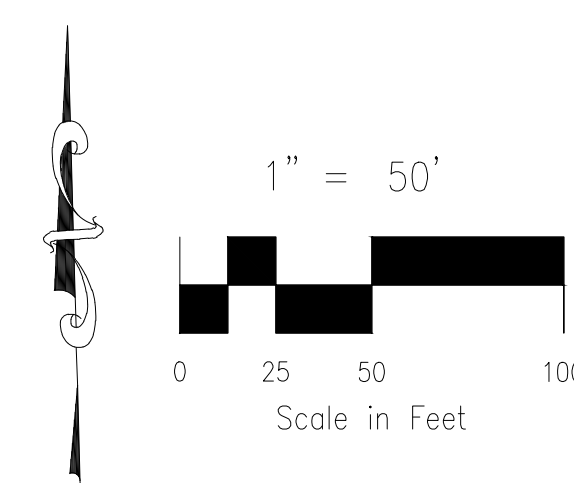
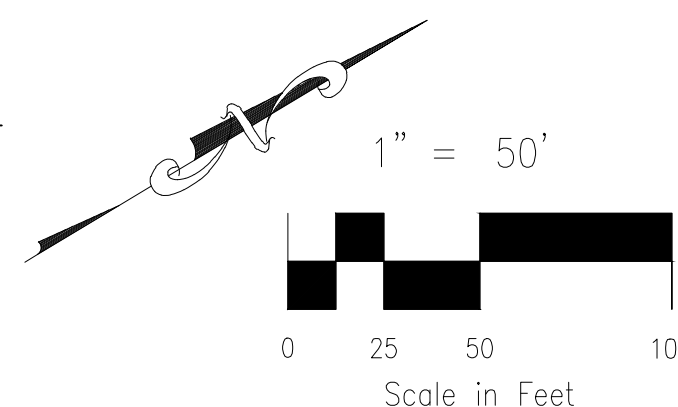
TYPE X

Technical drawings of various metal fasteners with dimensions:

- Bolt 502:** Length, 21" height, 501 width, 29" length, 11" width.
- Washer 405:** 20" diameter, 42" width, 30" height.
- Anchor 410:** VARIES, 410.
- Washer 406:** 20" diameter, VARIES width, 406.
- Anchor 504:** 22" height, 44" width, 34" length, 504.

Computer File Information		Sheet Revisions		Colorado Department of Transportation		STANDARD PLAN NO.			
Creation Date: 07/04/12 Initials: DD		Date: Comments		<div><div>4201 East Arkansas Avenue Denver, Colorado 80222 Phone: (303) 757-9083 Fax: (303) 757-9820</div><div>Project Development Branch DD/LTA</div></div>		INLET, TYPE D		M-604-11	
Last Modification Date: 07/04/12 Initials: LTA									
Full Path: www.coloradodot.info/business/designs									
Drawing File Name: 604010101.dgn									
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English									
						Issued By: Project Development Branch July 4, 2012		Sheet No. 1 of 1	

[illegible]



IRGIL A. SANCHEZ, COLORADO P.E. NO. 37160

FOR AND ON
BEHALF OF
M&S CIVIL
CONSULTANTS,
INC.

ID	DATE:	BY:	DESCRIPTION:	APPR'D. BY:	DATE:
REVISIONS:					

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CAUTIC

PAINT BRUSH HILLS FILING NO. 14

STORM PLAN & PROFILE

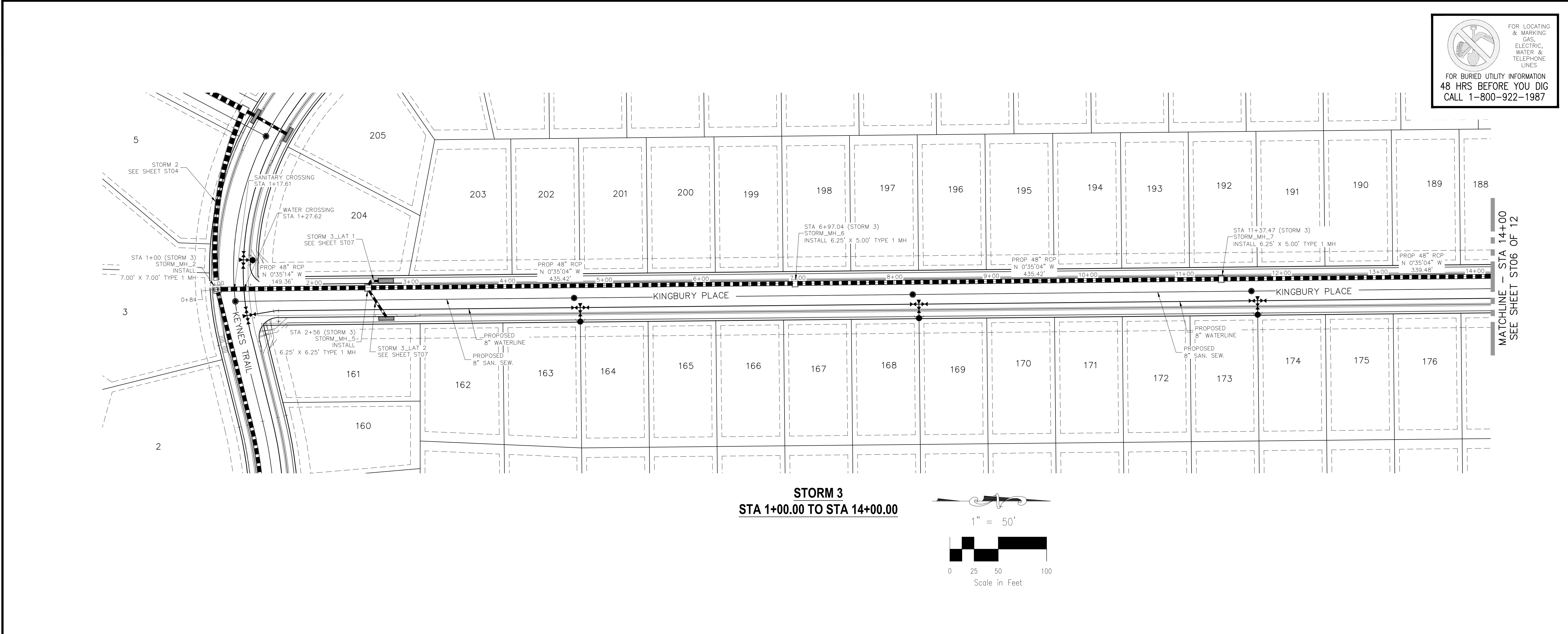
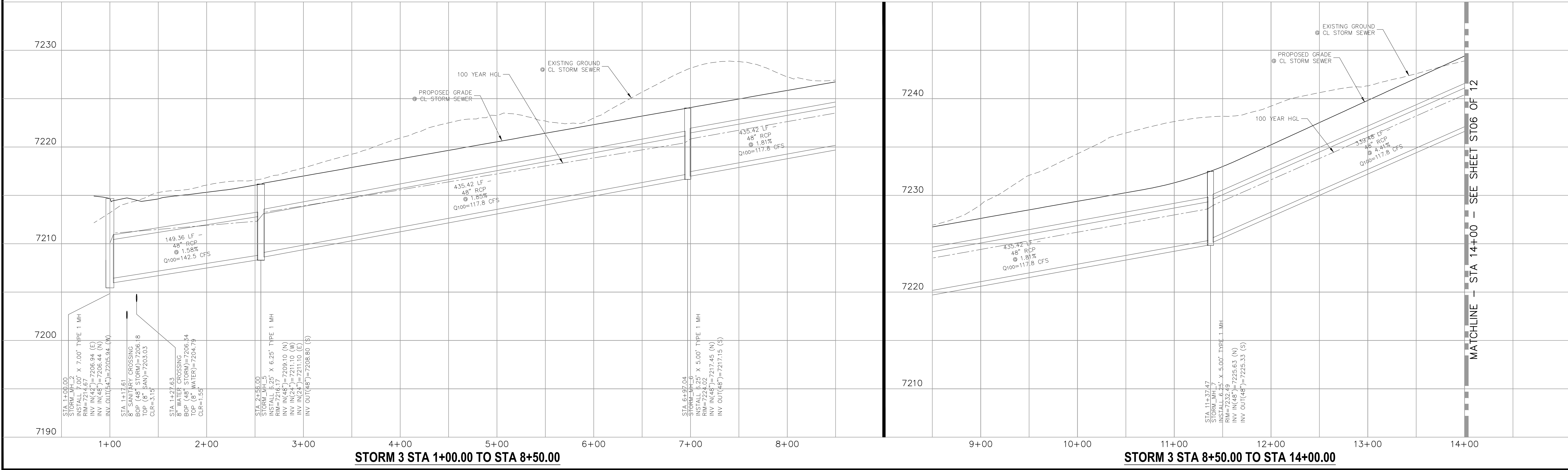
PROJECT NO. 10-014	SCALE:	DATE: 06/22/18
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DESIGNED BY: GT	1"=50'	SHEET 4 OF 12
DRAWN BY: CMN	VERTICAL: 4"=1'	
CHECKED BY: VAS		

14

ST04

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PAINT BRUSH HILLS FILING NO. 14

STORM PLAN & PROFILE

PROJECT NO. 10-014

DESIGNED BY: GT

DRAWN BY: GWN

CHECKED BY: VAS

DATE: 06/22/18

SHEET 5 OF 12

ST05

20 BOULDER CRESCENT, SUITE 110
COLORADO SPRINGS, CO 80903
PHONE: 719.555.5485

CIVIL CONSULTANTS, INC.

FOR AND ON BEHALF OF
M&S CIVIL CONSULTANTS, INC.

APPROVED BY: _____ DATE: _____

DESCRIPTION: _____

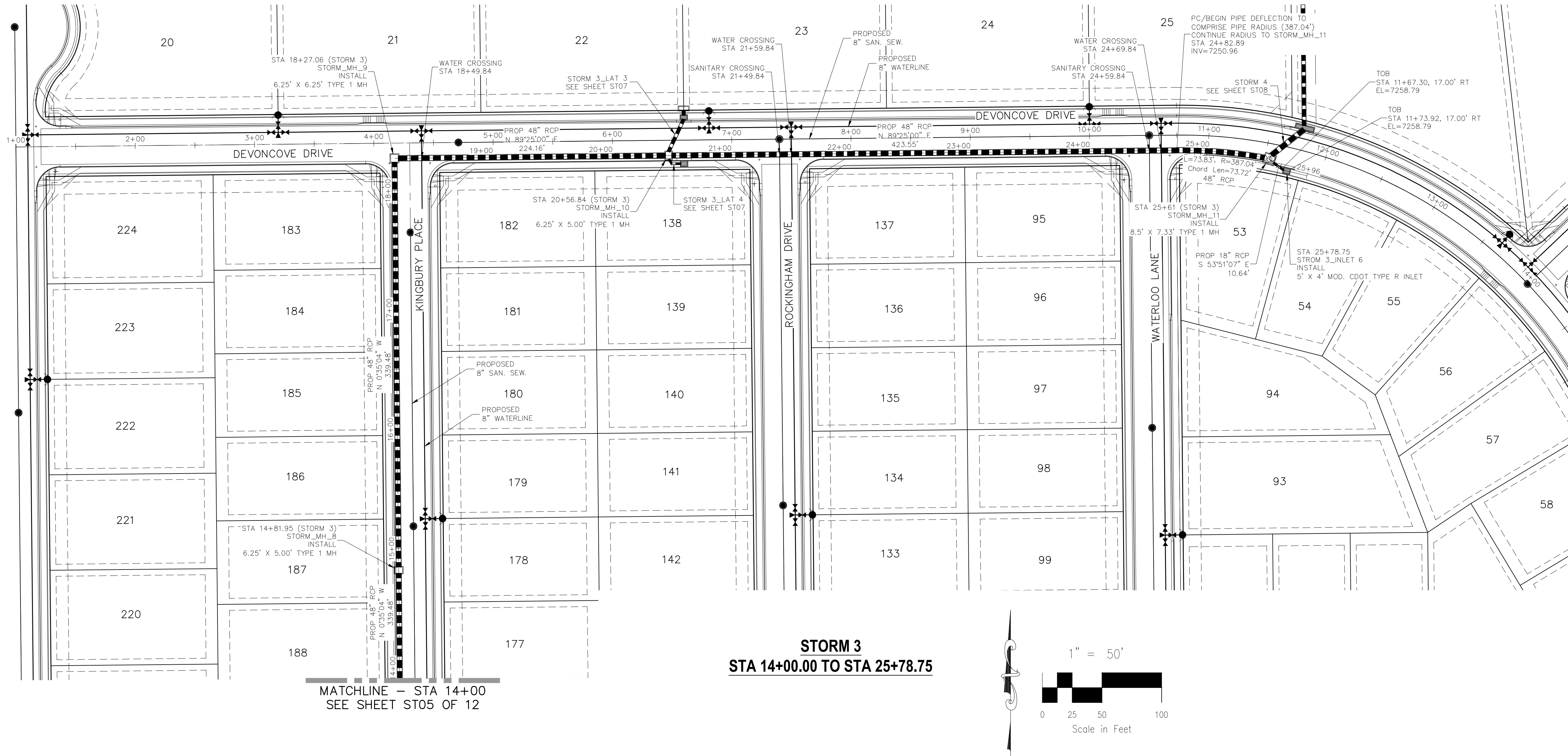
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BY: _____

DATE: _____

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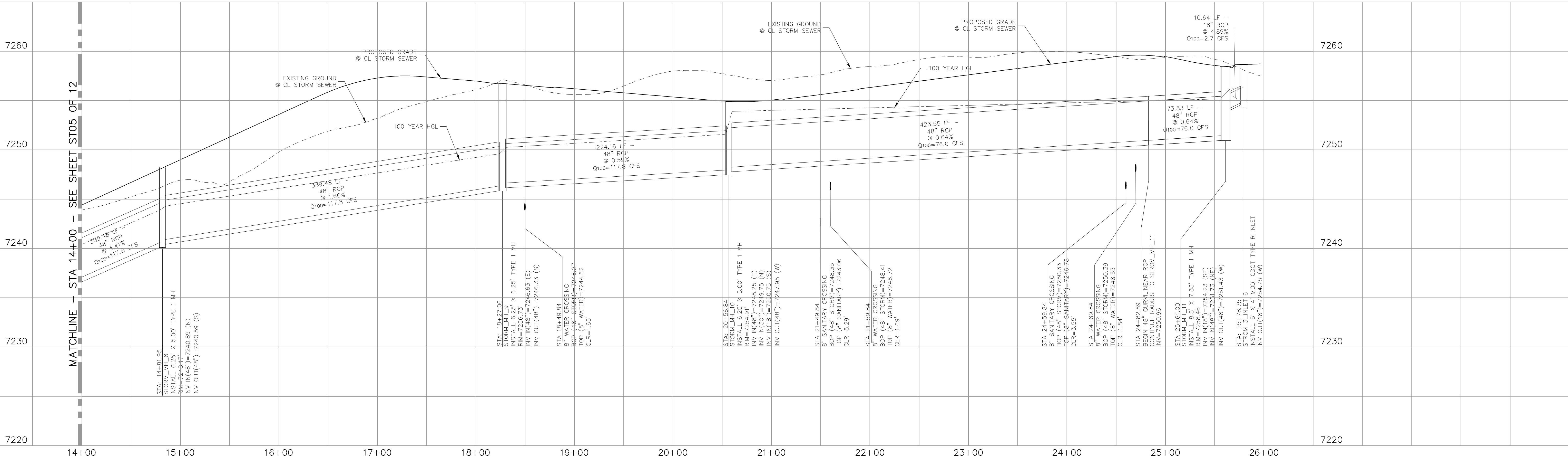
CAUTION



STORM 3
STA 14+00.00 TO STA 25+78.75

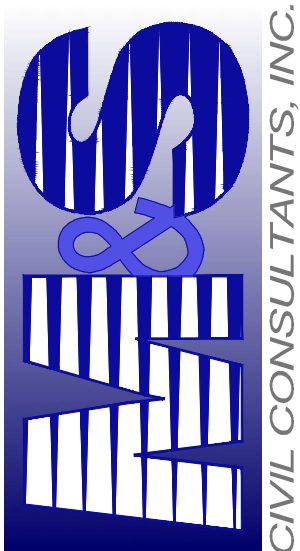
MATCHLINE - STA 14+00 - SEE SHEET ST05 OF 12

STORM 3 STA 14+00.00 TO STA 25+78.75



VERIL A. SANCHEZ, COLORADO P.E. NO. 37160

20 BOULDER CRESCENT, SUITE 110
COLORADO SPRINGS, CO 80903
PHONE: 719.555.5485



FOR AND ON
BEHALF OF
WAS CIVIL
CONSULTANTS,
INC.

REVISIONS: NO. DATE: BY: DESCRIPTION: APPROVED BY: DATE:

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CAUTION

PAINT BRUSH HILLS FILING NO. 14

STORM PLAN & PROFILE

PROJECT NO. 10-014 DATE: 06/22/18

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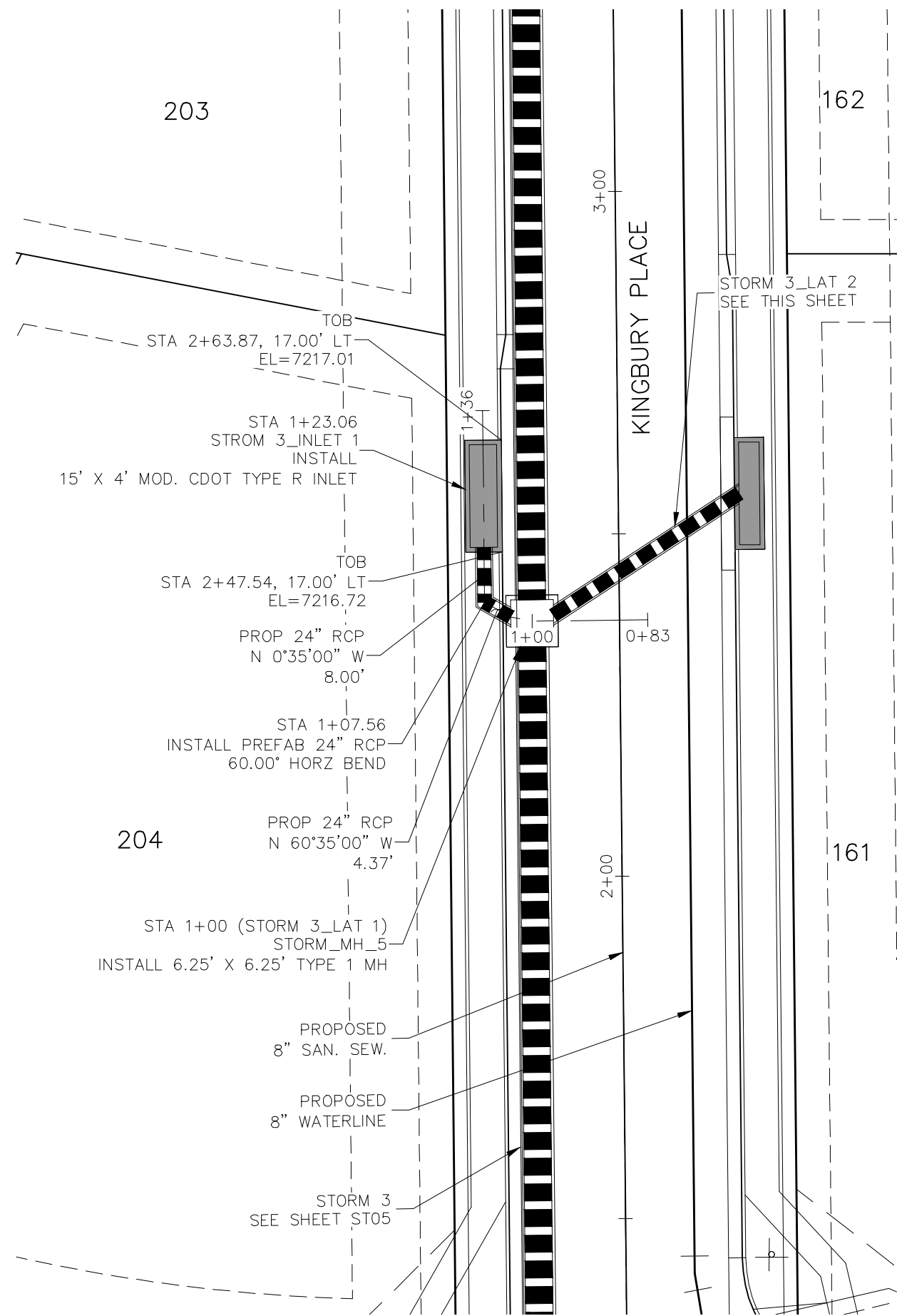
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CHECKED BY: VAS

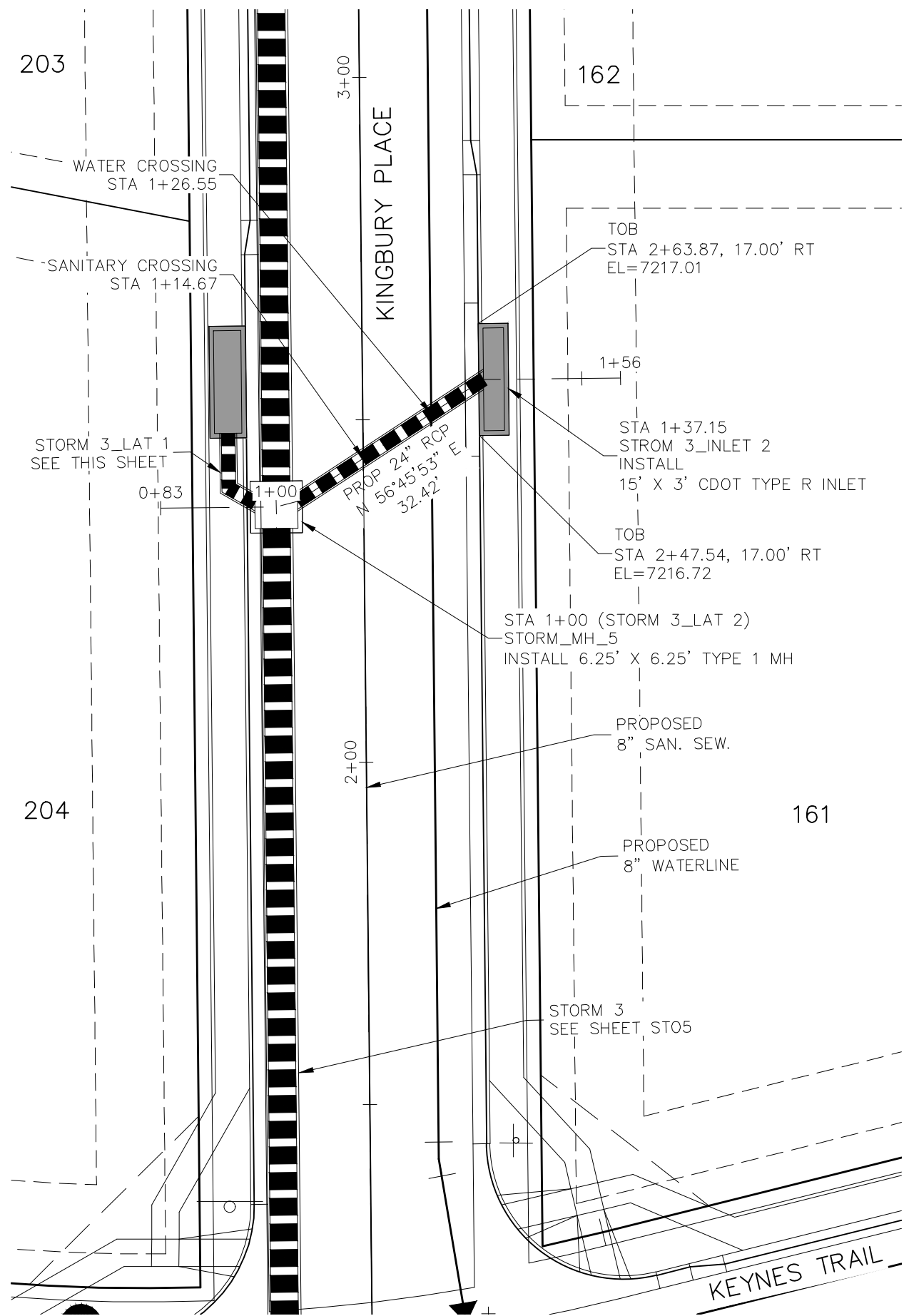
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ST06

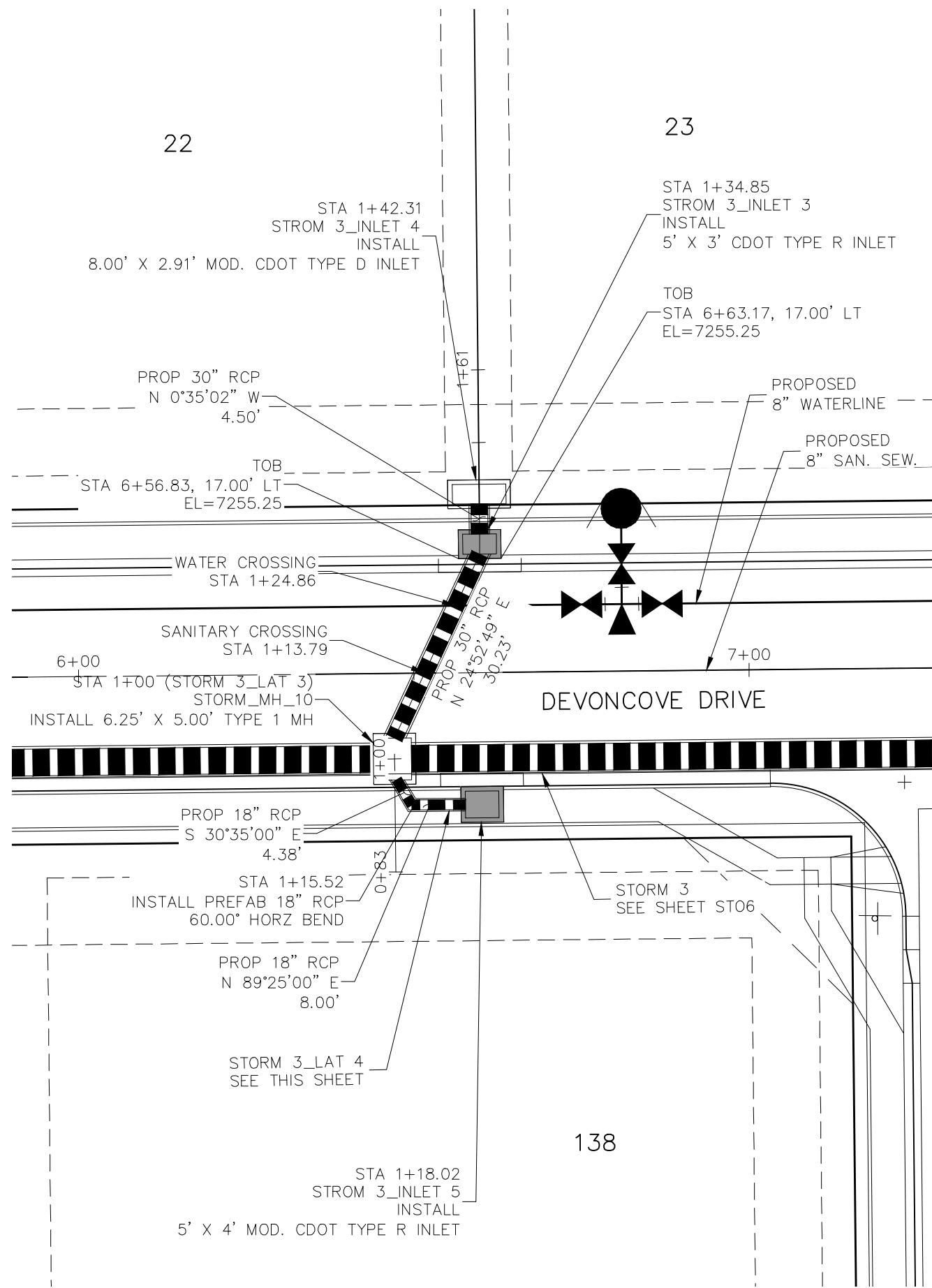
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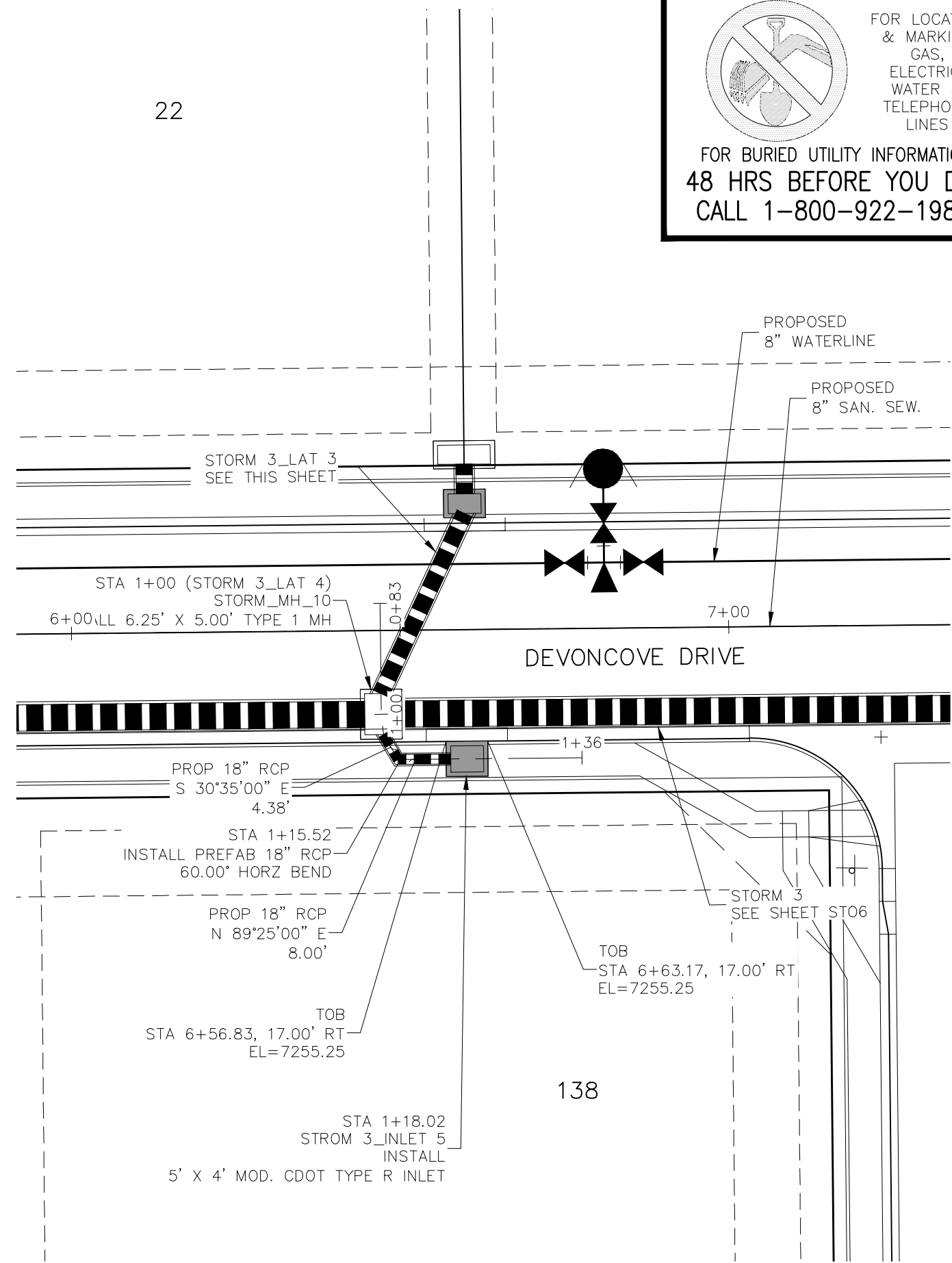
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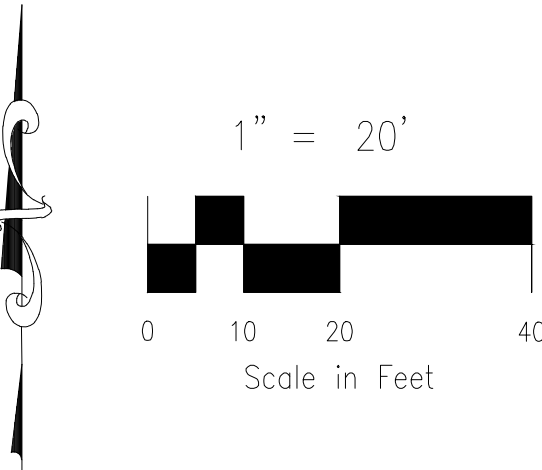
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STORM 3 LAT 3
STA 1+00.00 TO STA 1+42.31

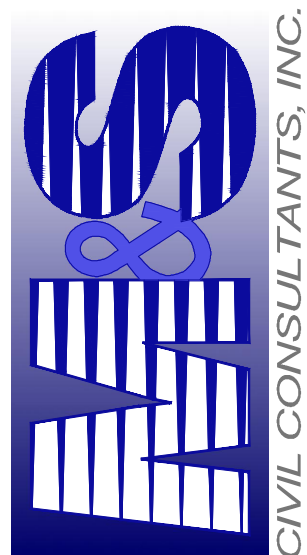


STORM 3 LAT 4
STA 1+00.00 TO STA 1+18.02



VERCIL A. SANCHEZ, COLORADO P.E. NO. 37160

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20 BOULDER CRESCENT, SUITE 110
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PHONE: 719.555.5485

PAINT BRUSH HILLS FILING NO. 14

STORM PLAN & PROFILE

PROJECT NO. 10-014

DESIGNED BY: GT

DRAWN BY: GWN

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DATE: 06/22/18

SCALE:

HORIZONTAL: 1"=50'

VERTICAL: 1"=5'

SHEET 7 OF 12

ST07

STORM 3 LAT 1 STA 1+00.00 TO STA 1+23.06

STORM 3 LAT 2 STA 1+00.00 TO STA 1+37.15

STORM 3 LAT 3 STA 1+00.00 TO STA 1+42.31

STORM 3 LAT 4 STA 1+00.00 TO STA 1+18.02

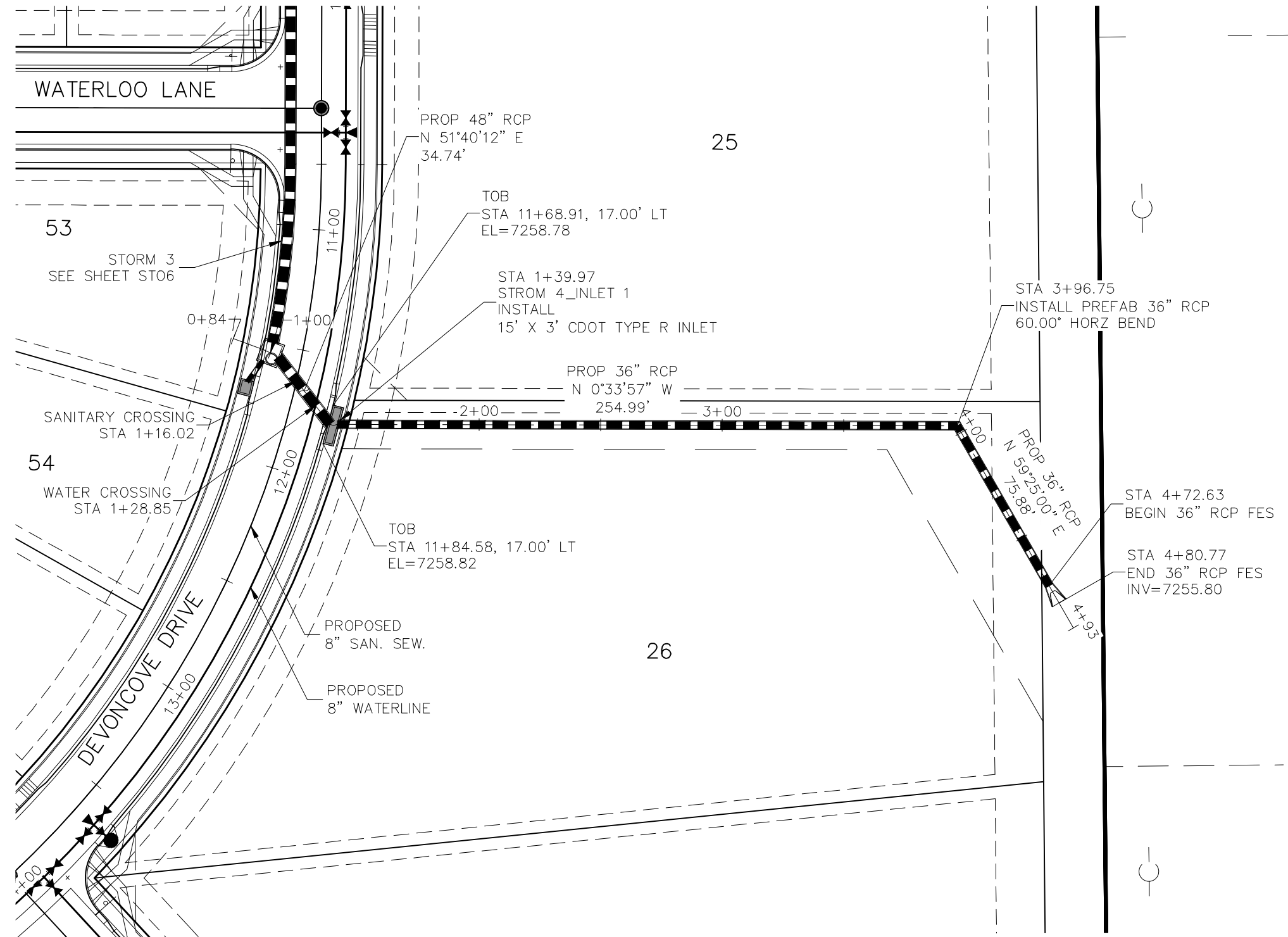
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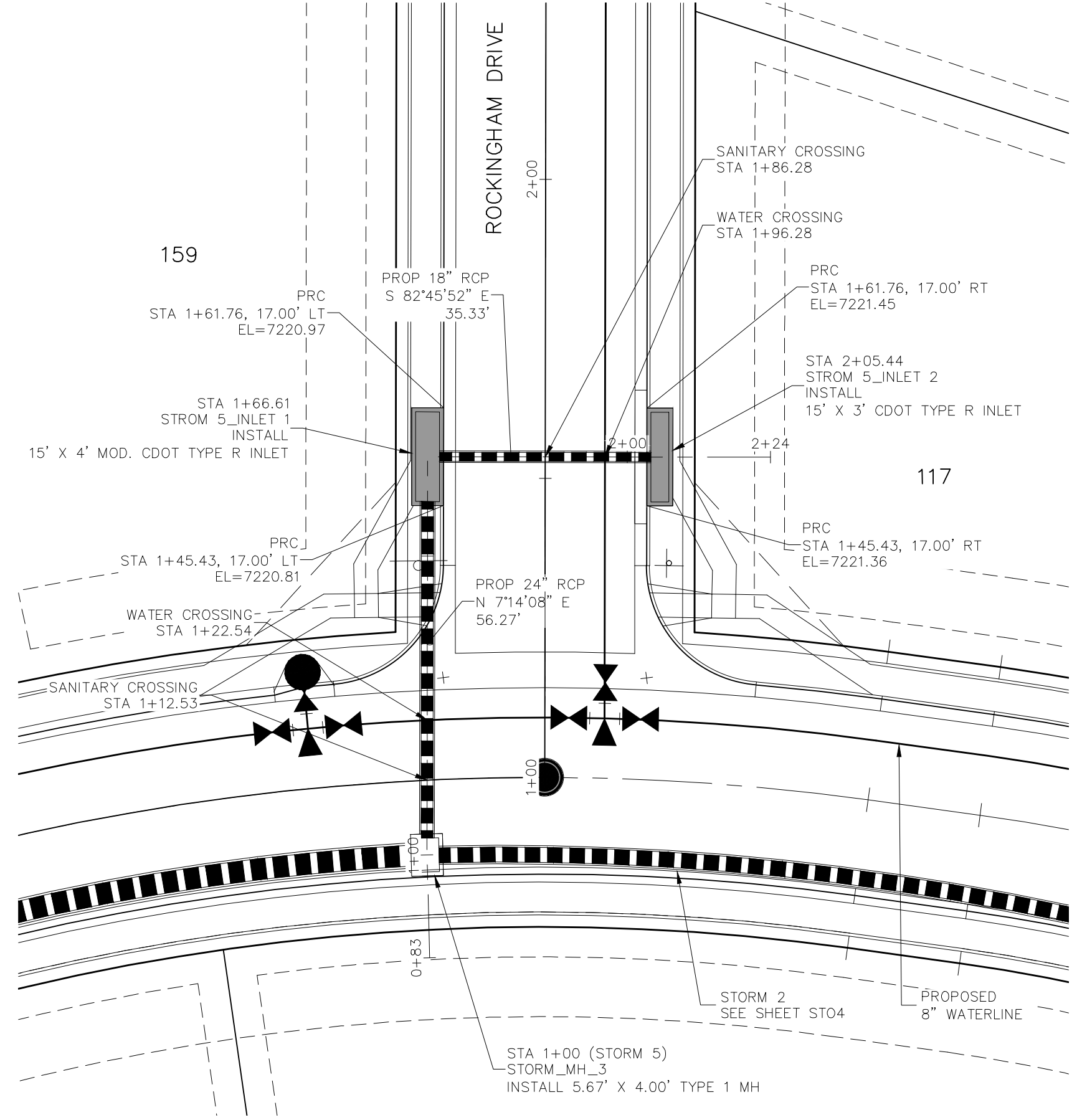
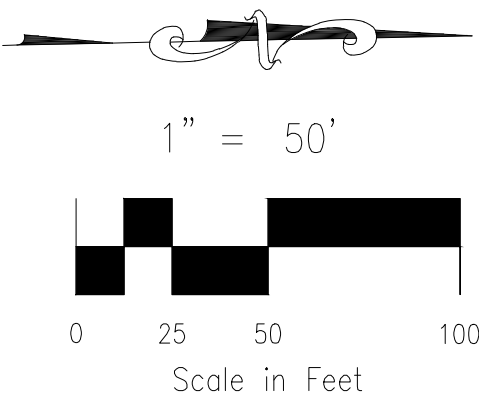
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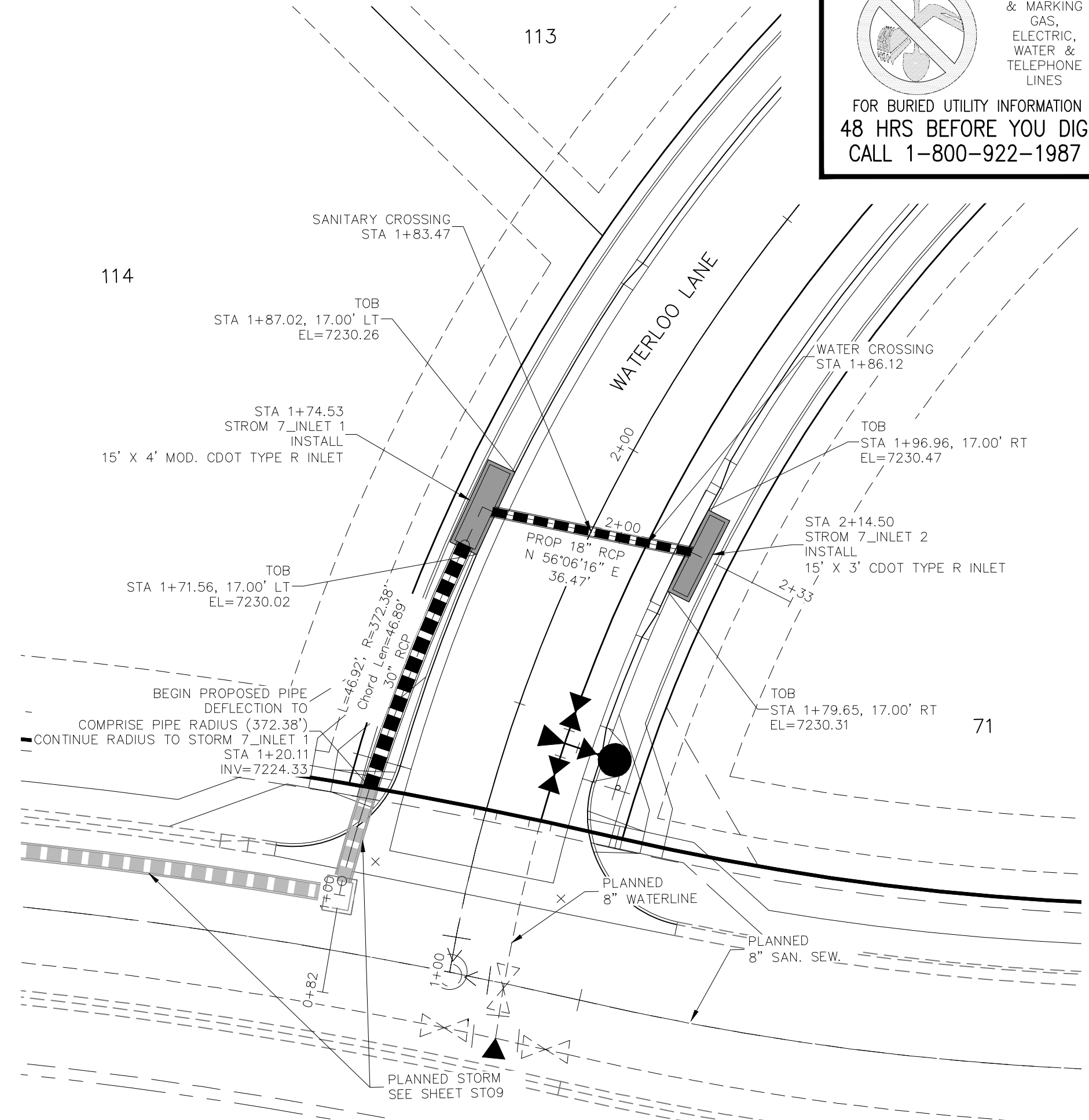
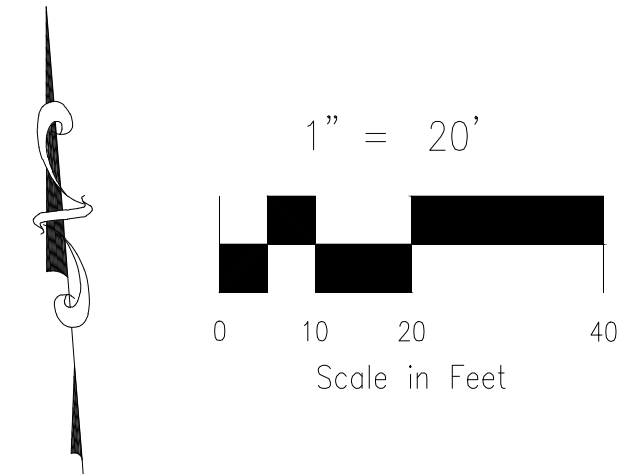
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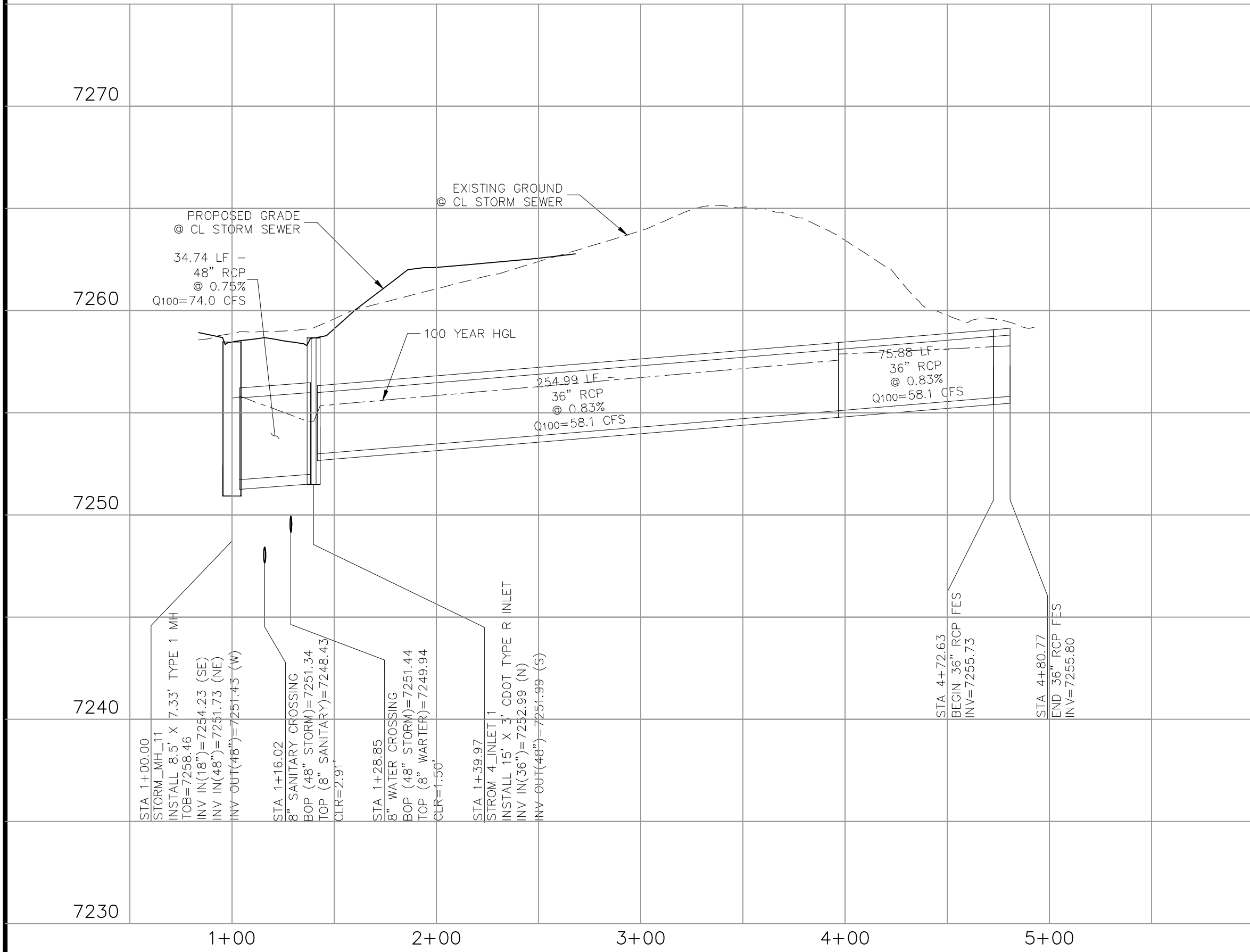
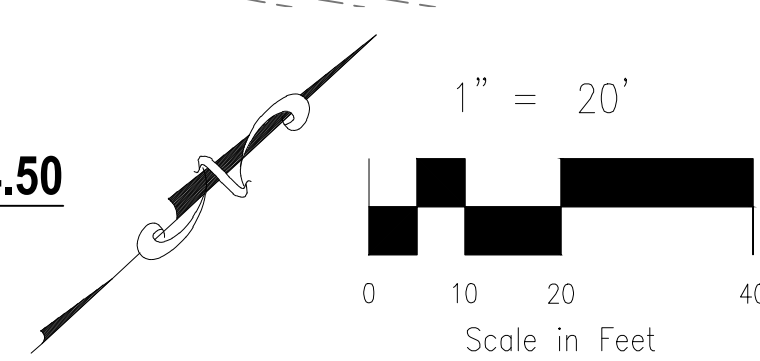
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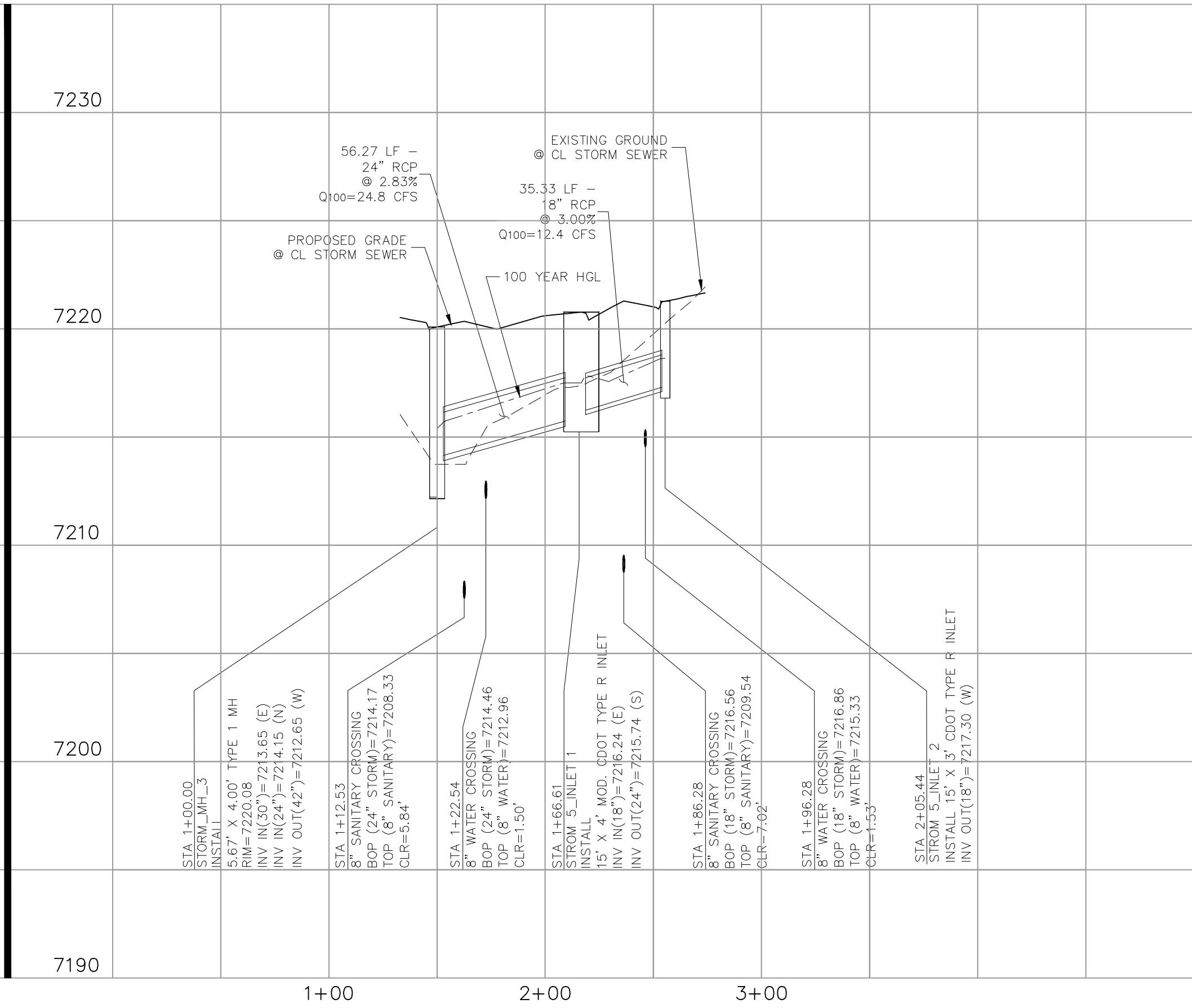
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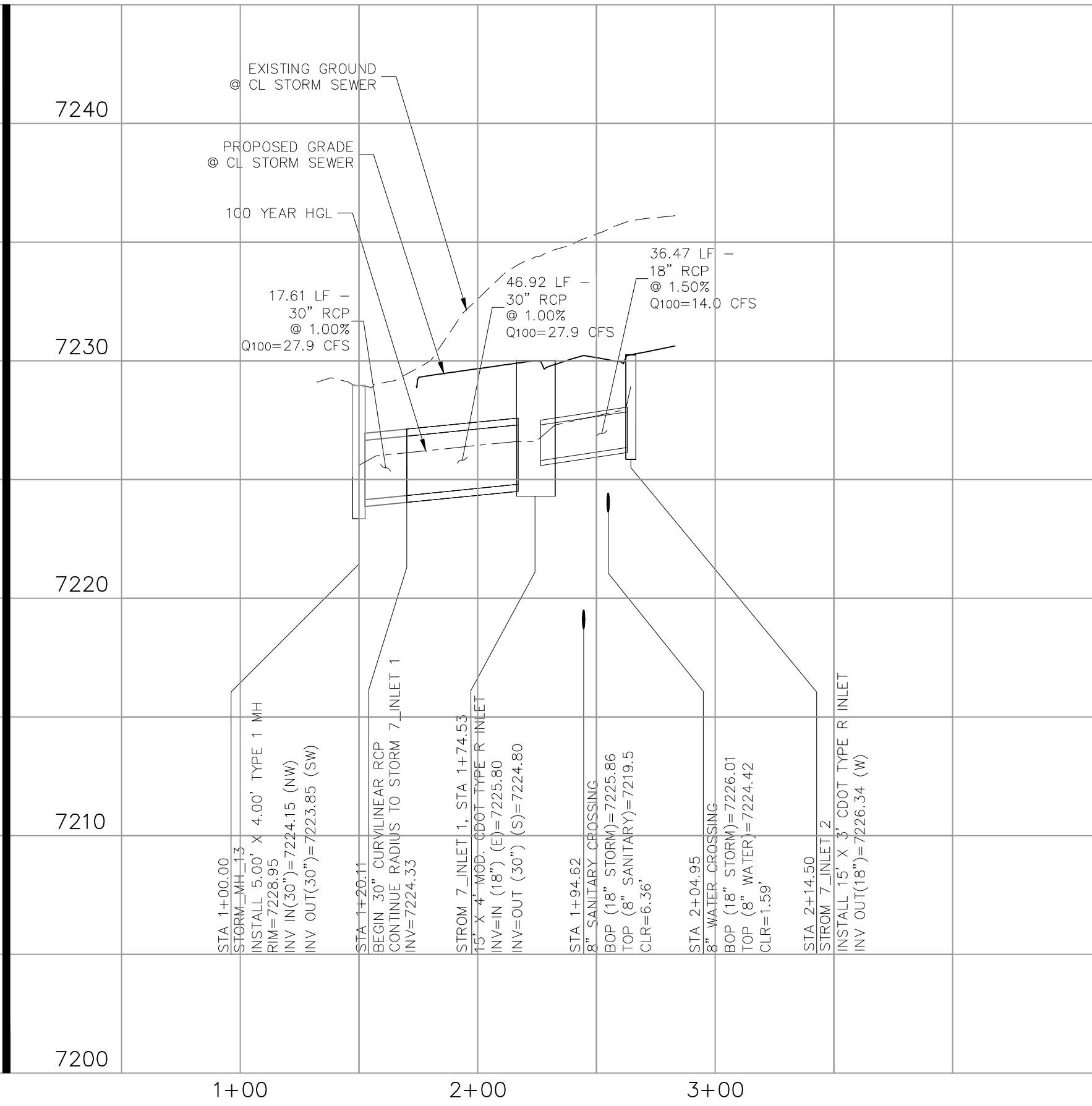
STORM 7
STA 1+00.00 TO STA 2+14.50



STORM 4 STA 1+00.00 TO STA 40+80.77



STORM 5 STA 1+00.00 TO STA 2+05.44



STORM 7 STA 1+00.00 TO STA 2+14.50



PAINT BRUSH HILLS FILING NO. 14

STORM PLAN & PROFILE

PROJECT NO. 10-014

DATE: 06/22/18

SCALE: HORIZONTAL: 1"=50' VERTICAL: 1"=5'

DESIGNED BY: GT

DRAWN BY: CMM

CHECKED BY: VAS

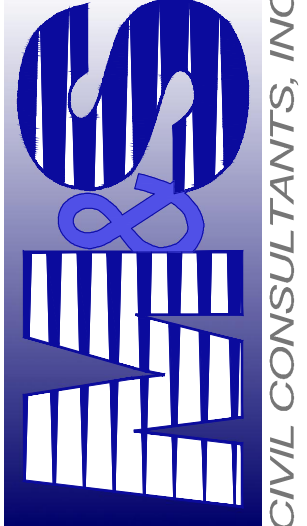
SHEET 8 OF 12

ST08

20 BOULDER CRESSENT SUITE 110

COLORADO SPRINGS, CO 80903

PHONE: 719.555.5485



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FOR AND ON BEHALF OF M&S CIVIL CONSULTANTS, INC.

APPROVED BY: _____ DATE: _____

DESIGNED BY: _____ DATE: _____

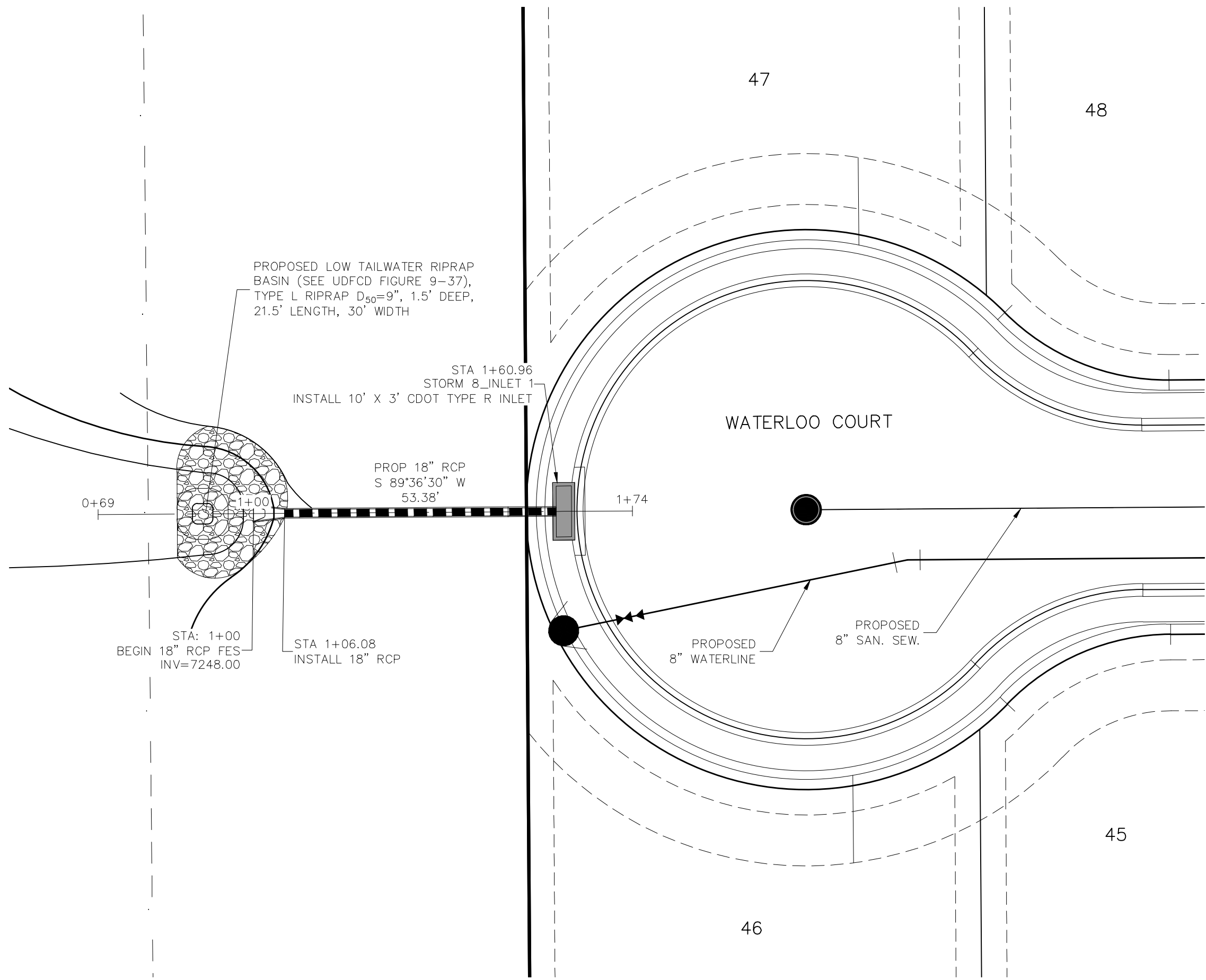
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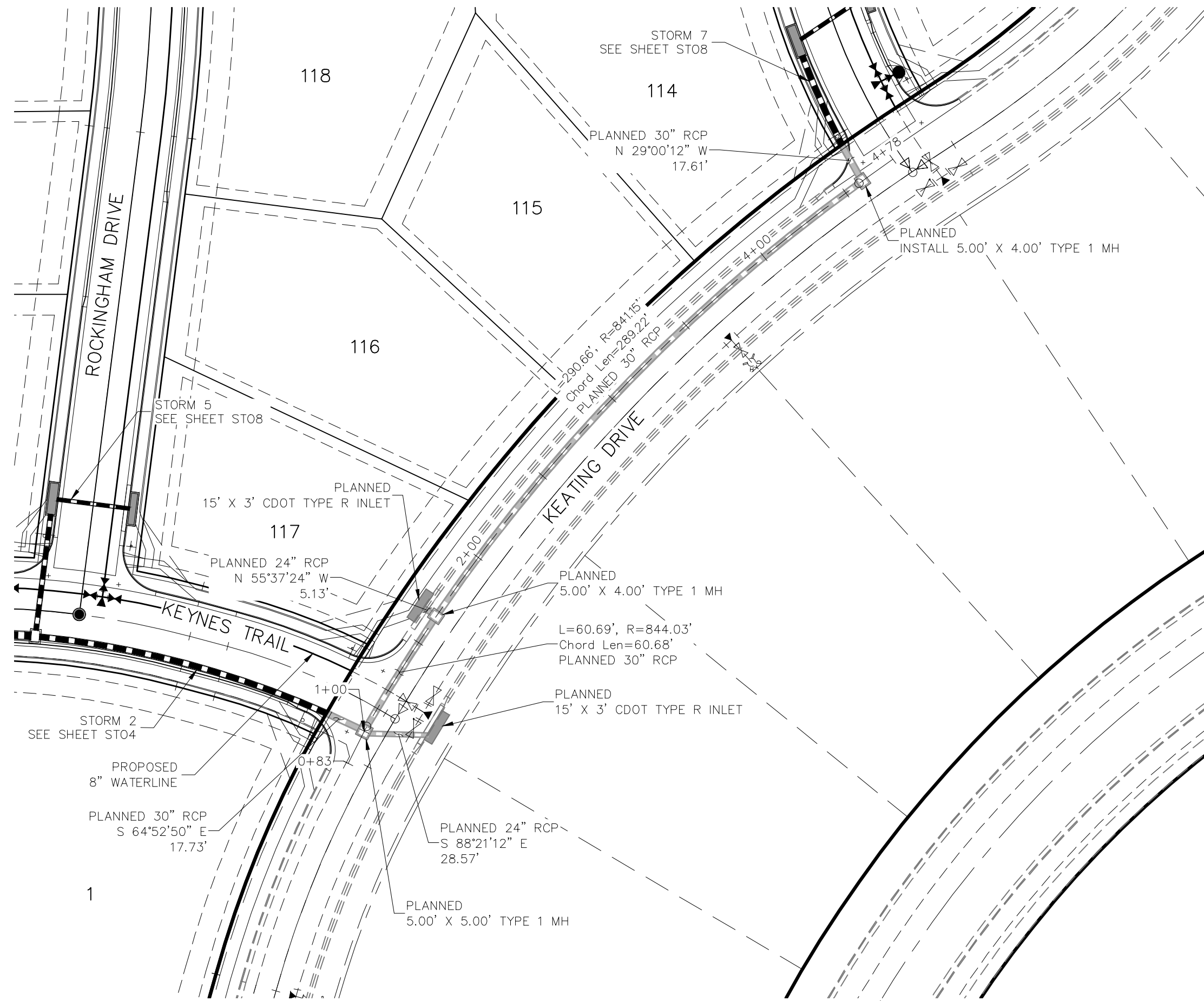
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CAUTION

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STORM 8
STA 1+00.00 TO STA 1+60.96



PLANNED STORM (TO BE BUILT BY OTHERS)
STA 1+00.00 TO STA 4+59.85

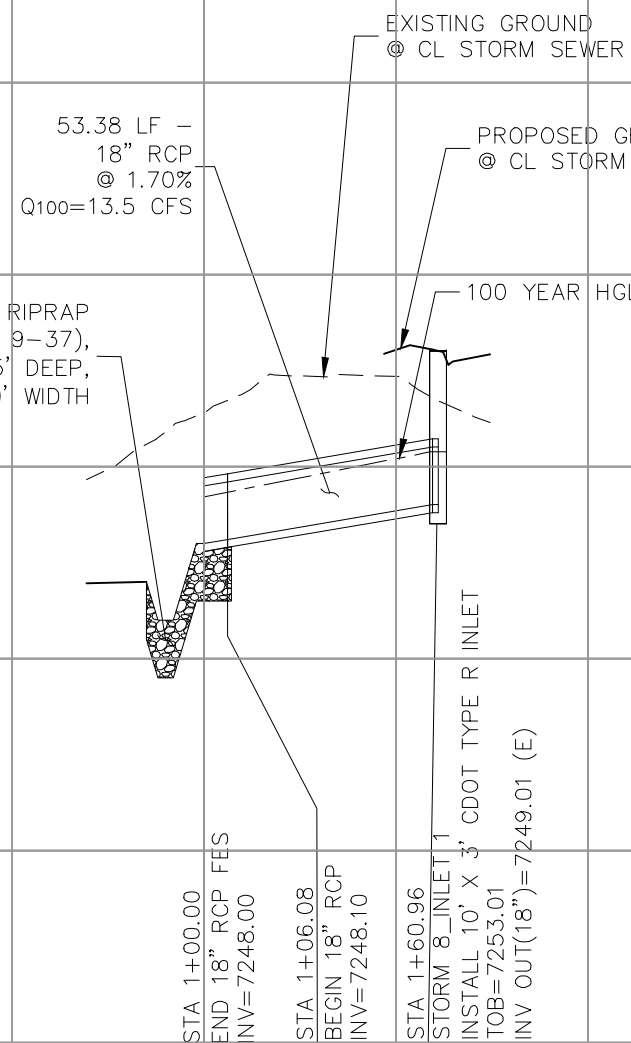
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7255

7245

7235

7225



STORM 8 STA 1+00.00 TO STA 1+60.96

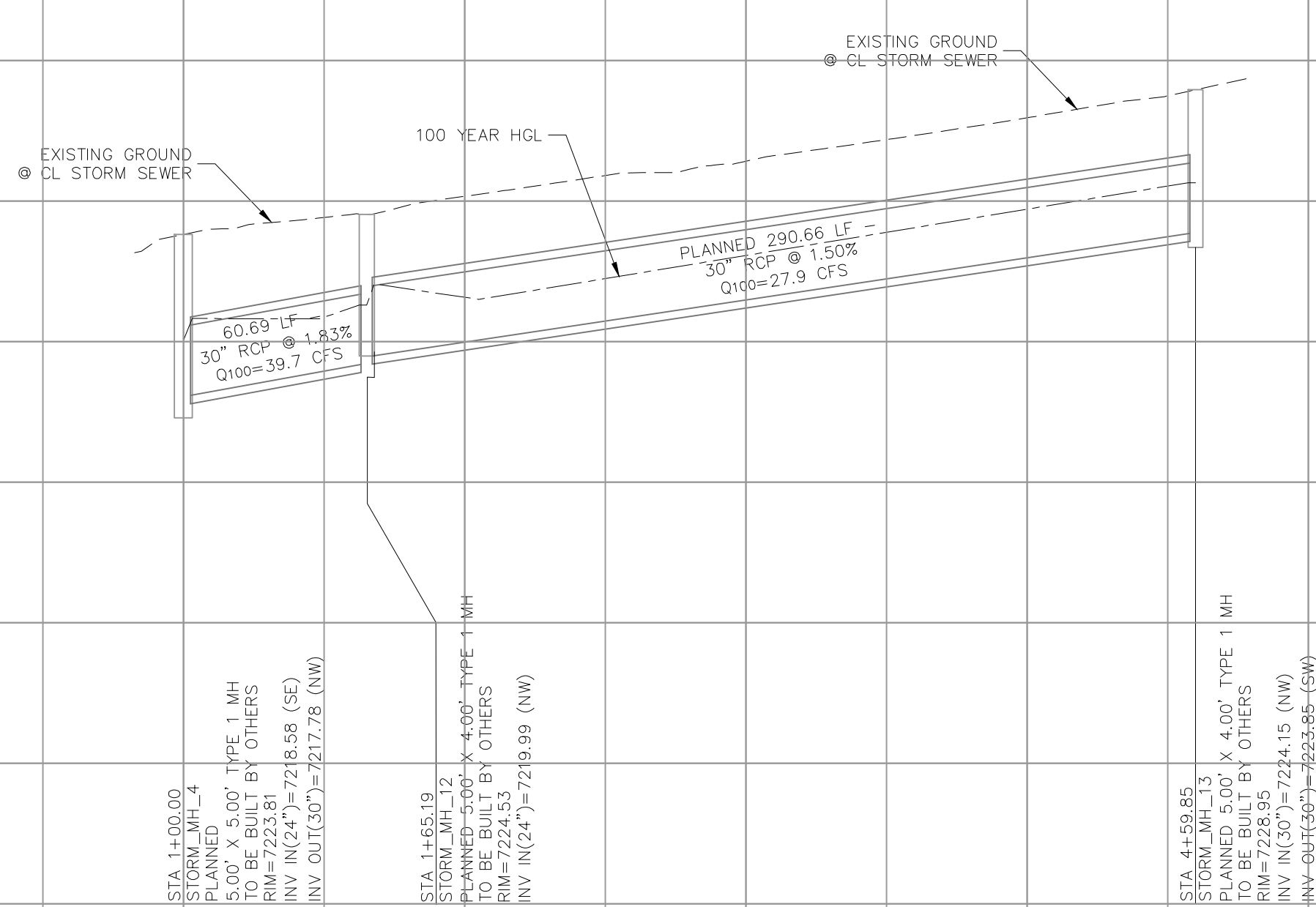
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7215

7205

7195



STORM 8 STA 1+00.00 TO STA 4+59.85



PAINT BRUSH HILLS FILING NO. 14

STORM PLAN & PROFILE

PROJECT NO. 10-014

DATE: 06/22/18

DESIGNED BY: GT

DRAWN BY: GWN

CHECKED BY: VAS

SCALE: HORIZONTAL: 1"=50' VERTICAL: 1"=5'

SHEET 9 OF 12

ST09

20 BOULDER CRESCENT SUITE 110
COLORADO SPRINGS, CO 80903
PHONE: 719.555.5485

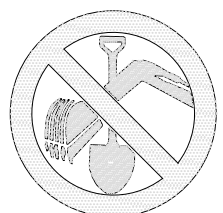
CIVIL CONSULTANTS, INC.

FOR AND ON BEHALF OF
M&S CIVIL CONSULTANTS, INC.

REVISIONS:
NO. DATE BY DESCRIPTION APPROVED BY DATE

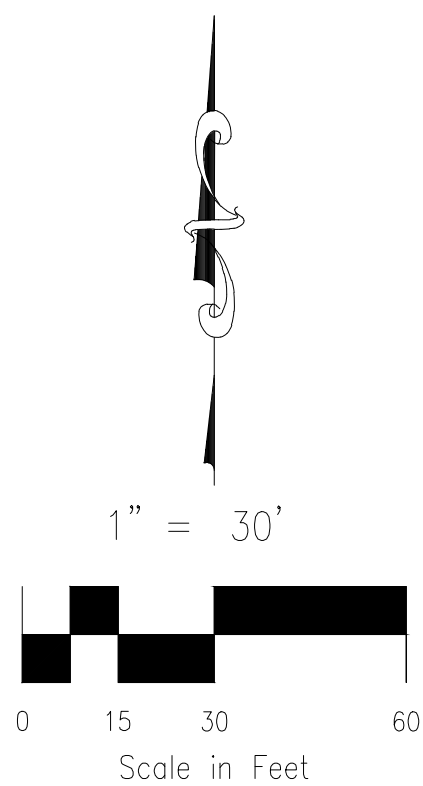
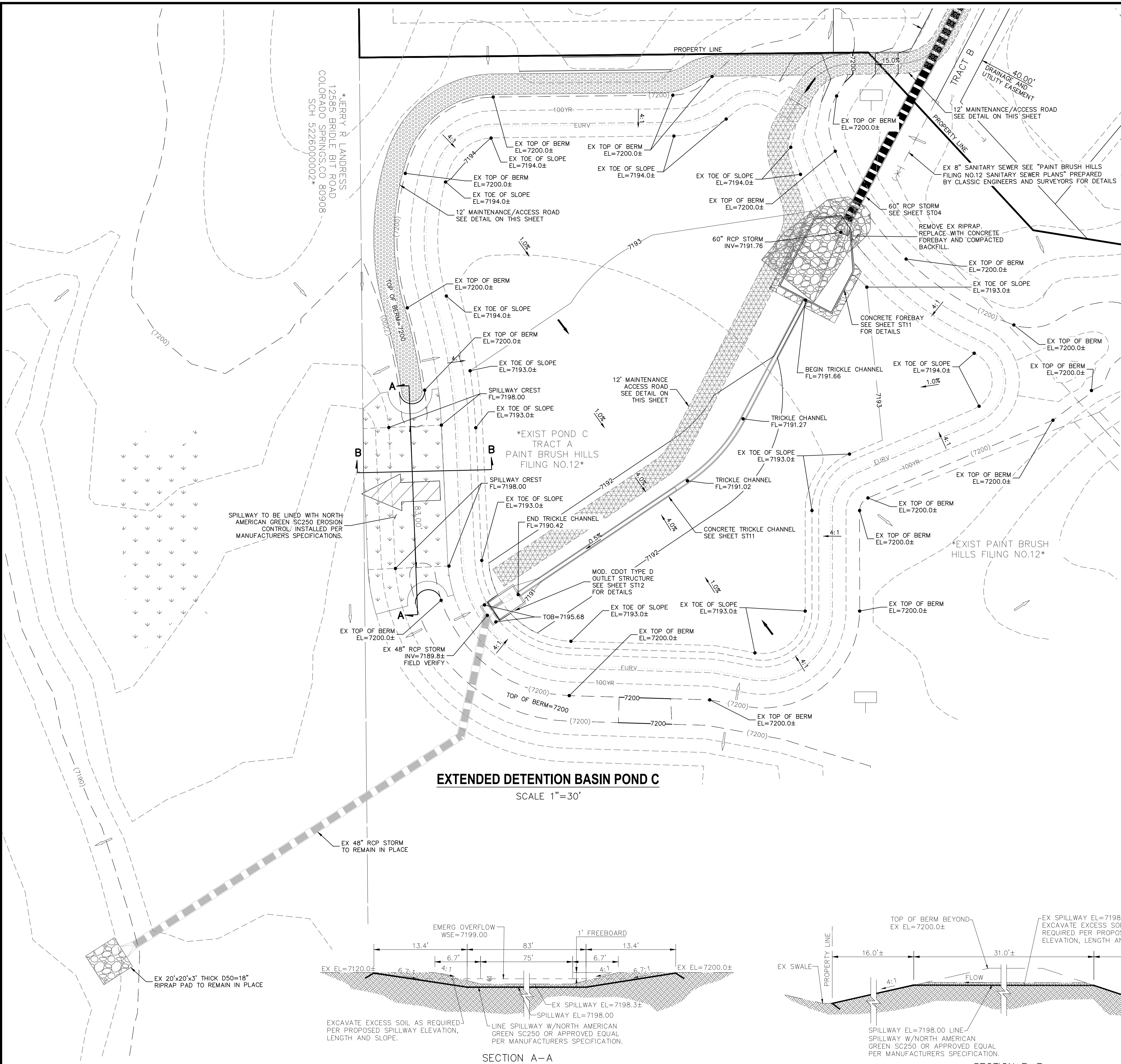
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CAUTION



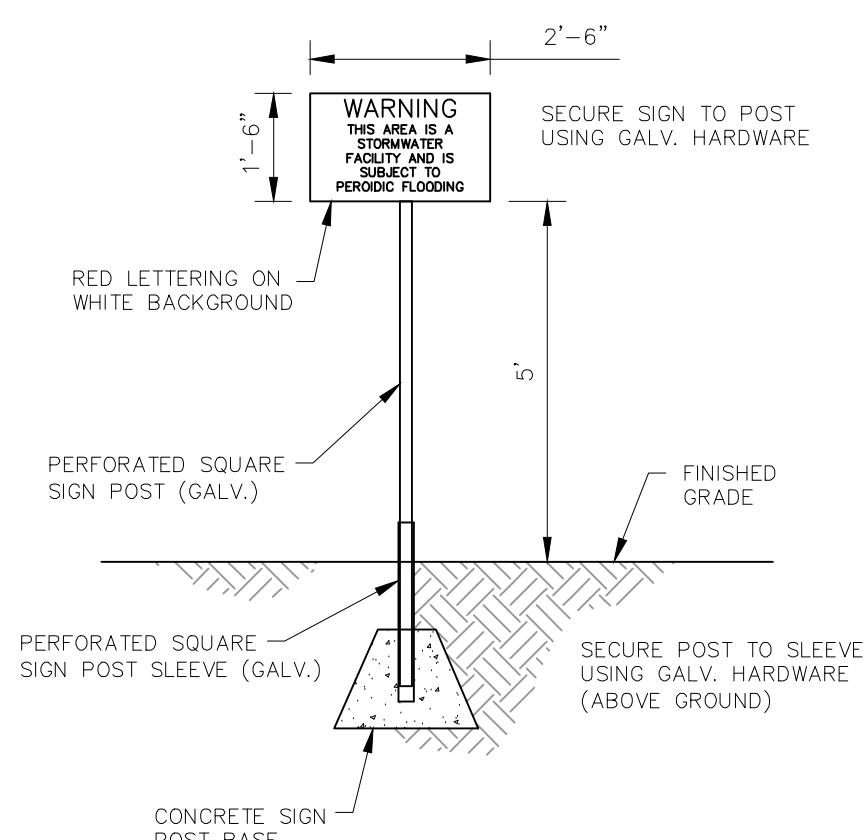
FOR LOCATING
& MARKING
GAS,
ELECTRIC,
WATER &
TELEPHONE
LINES

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48 HRS BEFORE YOU DIG
CALL 1-800-922-1987

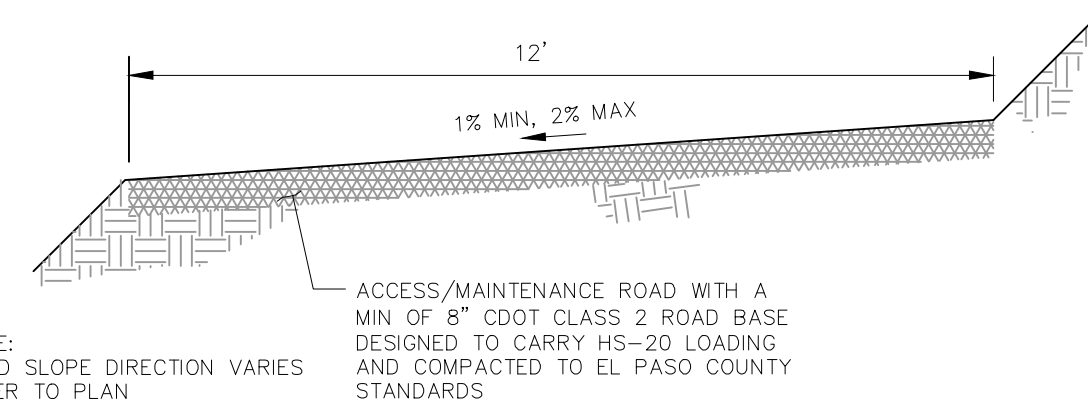


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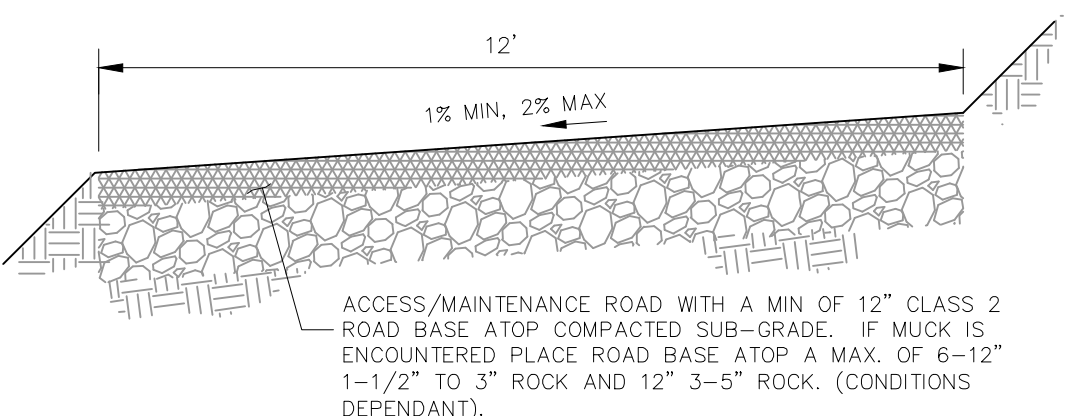
- | | |
|------|--|
| EXT | EXISTING |
| FUT | FUTURE |
| PROP | PROPOSED |
| | PROP MAJ CONT |
| | PROP MIN CONT |
| | EXIST MAJ CONT |
| | EXIST MIN CONT |
| | NORTH AMERICAN GREEN SC250 EROSION CONTROL BLANKET |
| | EX RIPRAP |
| | PROP RIPRAP |
| | STABILIZED MAINTENANCE ROAD ABOVE EURV |
| | STABILIZED MAINT. ROAD BELOW EURV |
| | CONC LOW FLOW CHANNEL |
| | EX. FLOW ARROW |
| | PROP. FLOW ARROW |
| | EMERGENCY OVERFLOW |
| | PROPERTY LINE |
| | PROP STORM SEWER PIPE |
| | EASEMENT LINE |
| | WARNING SIGN |



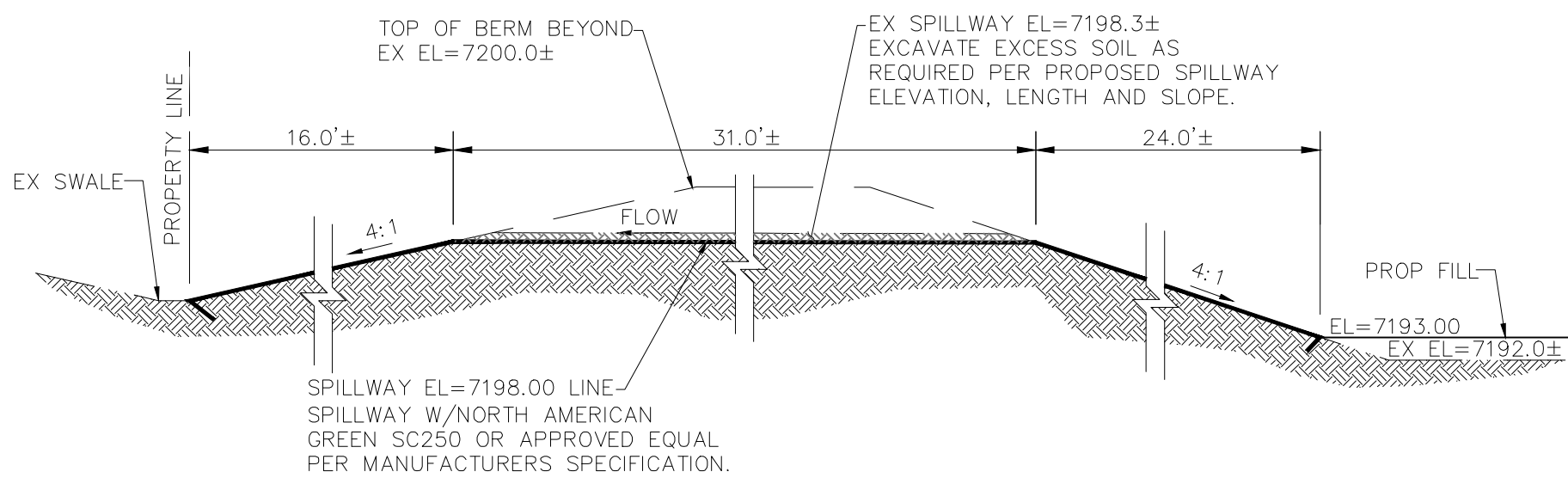
POND WARNING SIGN
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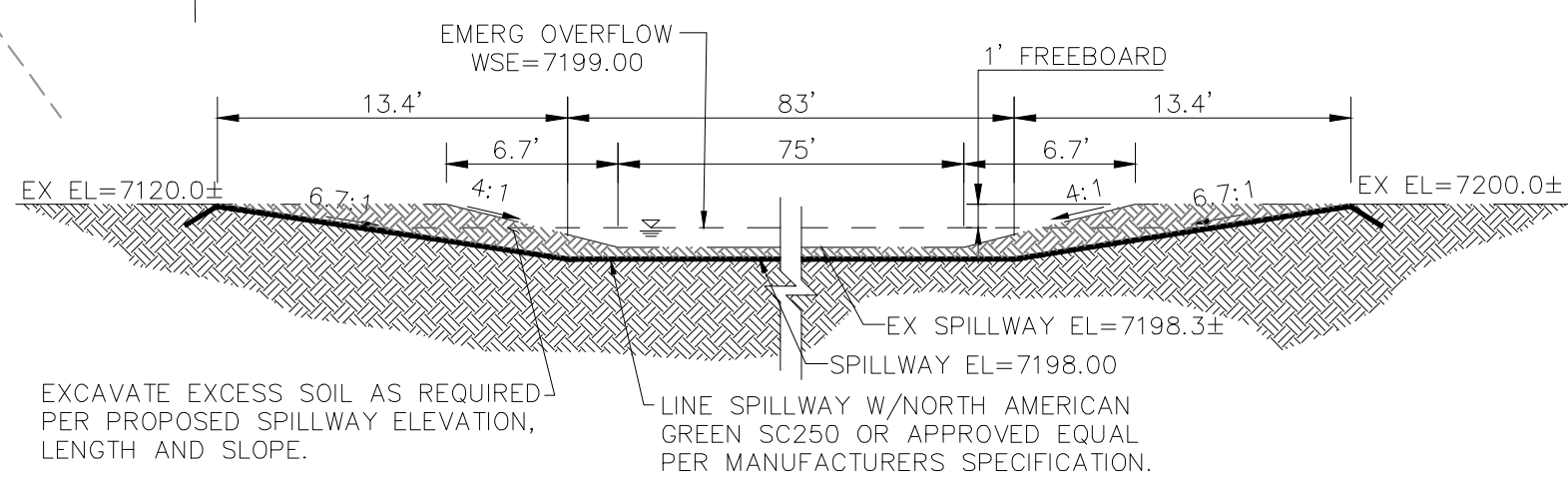
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ABOVE EURV TYPICAL SECTION**
NOT TO SCALE



**MAINTENANCE & ACCESS ROAD
BELOW EURV TYPICAL SECTION**
NOT TO SCALE



SECTION B-B



SECTION A-A

POND C EMERGENCY SPILLWAY
NOT TO SCALE

REVISIONS:
NO. DATE BY DESCRIPTION

APPROVED BY: DATE: DRAWN BY: GT CMM VAS CHECKED BY: NA

PROJECT NO. 10-014 SCALE: DATE: 06/22/18 SHEET 10 OF 12 ST10

EXTENDED DETENTION POND C

PAINT BRUSH HILLS FILING NO. 14

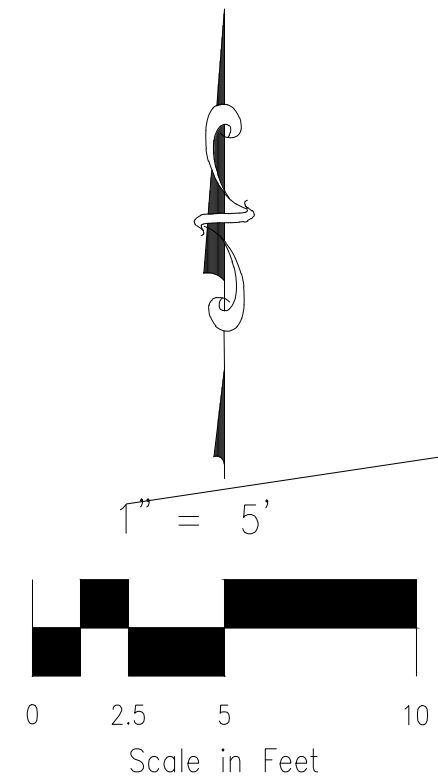
20 BOULDER CRESCENT SUITE 110
COLORADO SPRINGS, CO 80903
PHONE: 719.555.5485

CIVIL CONSULTANTS, INC.

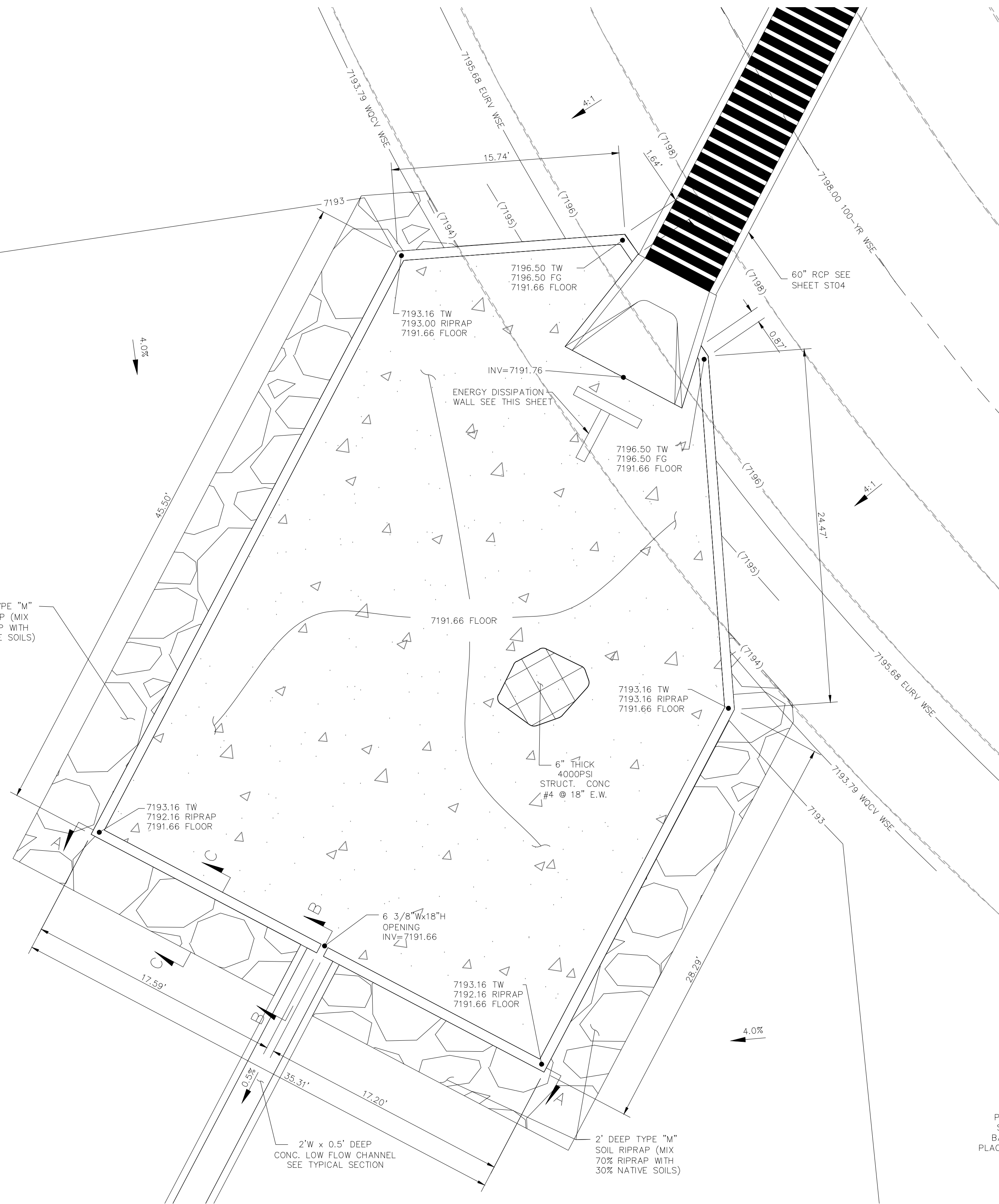
FOR AND ON BEHALF OF M&S CIVIL CONSULTANTS, INC.

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CAUTION



2' DEEP TYPE "M"
SOIL RIPRAP (MIX
70% RIPRAP WITH
30% NATIVE SOILS)

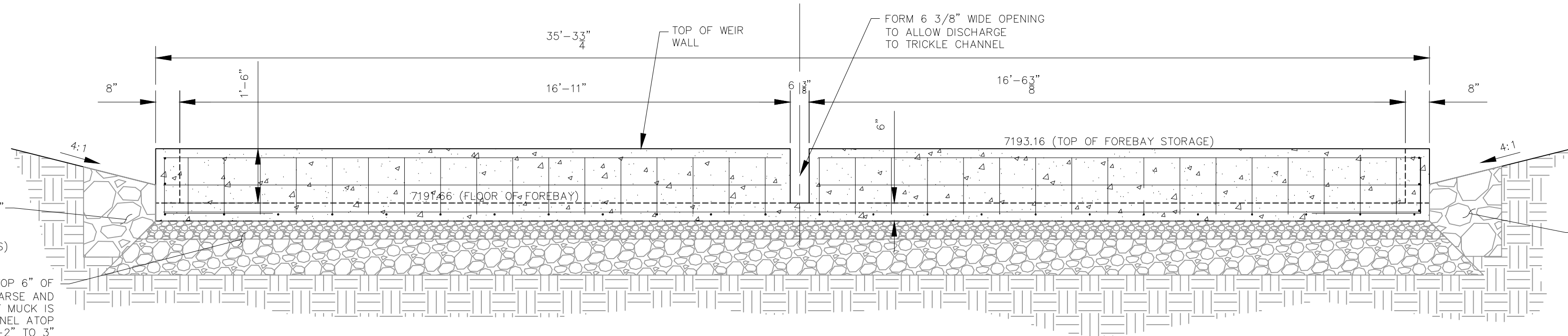


EXTENDED DETENTION BASIN POND C FOREBAY

NOT TO SCALE

2' DEEP TYPE "M"
SOIL RIPRAP (MIX
70% RIPRAP WITH
30% NATIVE SOILS)

PLACE CHANNEL ATOP 6" OF
AGGREGATE BASE COARSE AND
COMPACTED SUBGRADE. IF MUCK IS
ENCOUNTERED PLACE CHANNEL ATOP
A MAXIMUM OF 12" OF 1-2" TO 3"
ROCK ATOP 12" OF 3"-5" ROCK
(DEPENDANT UPON FIELD CONDITIONS)



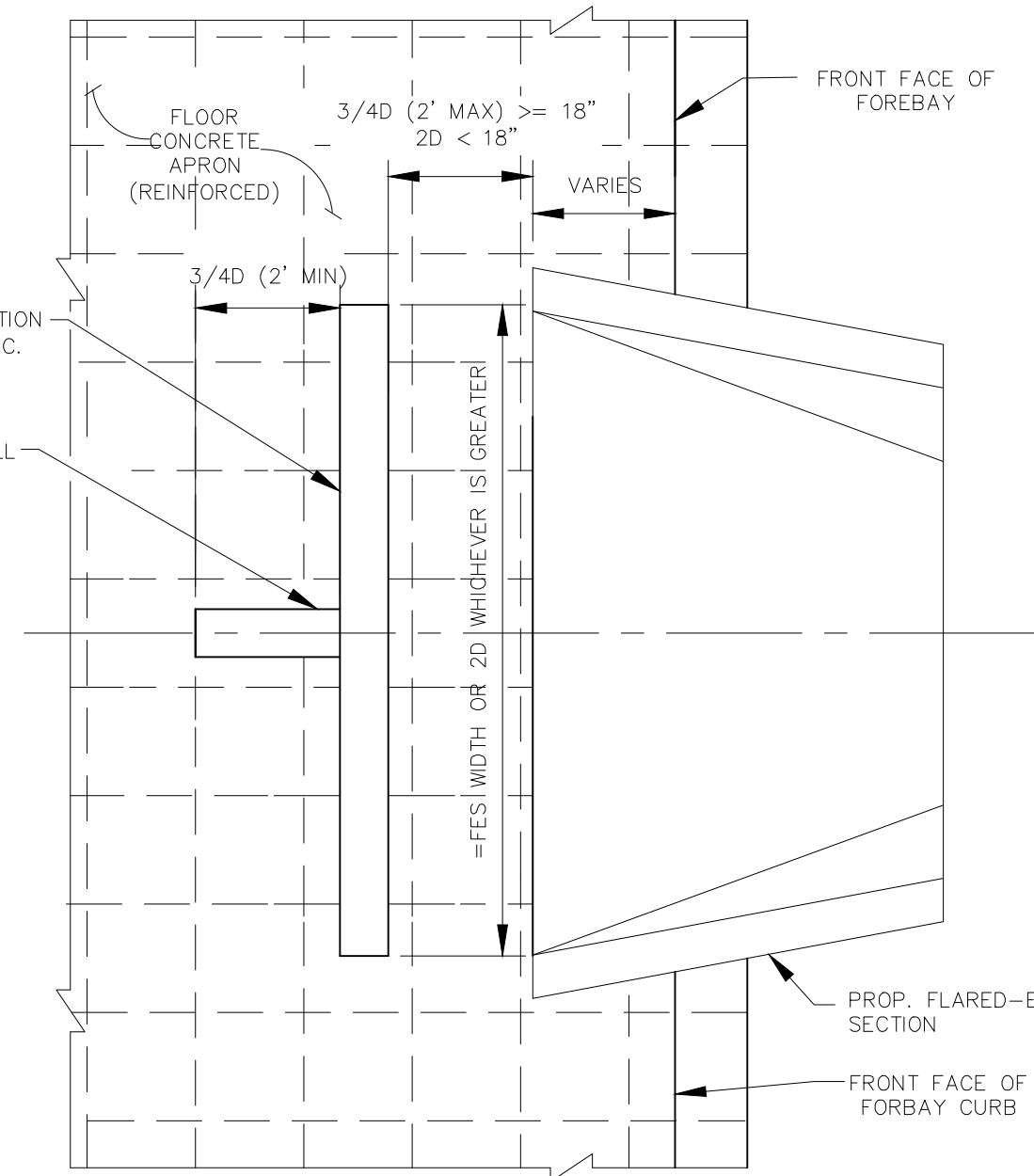
NORTH FOREBAY FRONT WALL W/NOTCH

SECTION A-A

NOT TO SCALE

8"W ENERGY DISSIPATION
WALL W/#5 @ 12" O.C.
E.W.

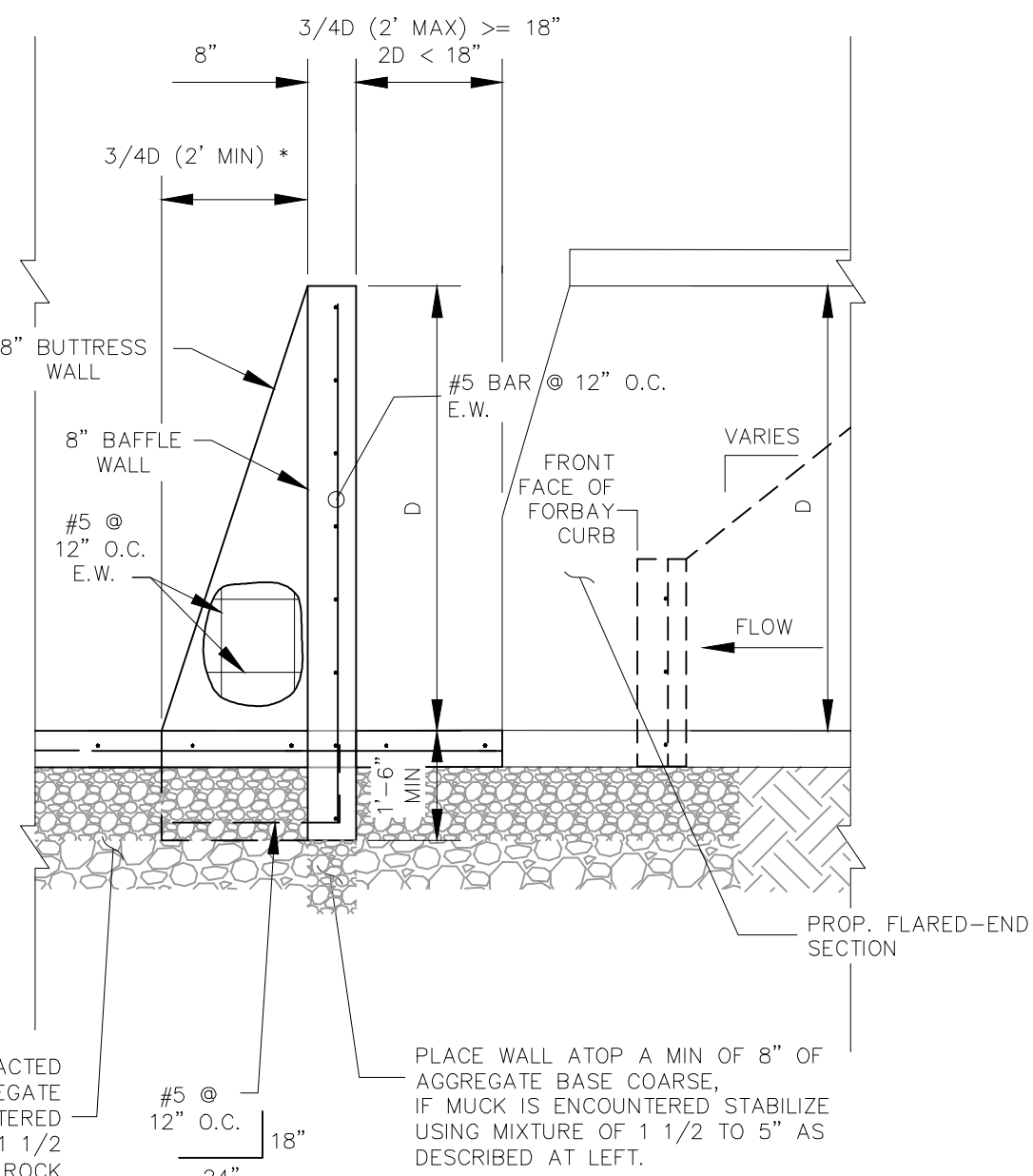
8"W BUTTRESS WALL
W/#5 @ 12" O.C.
E.W.



ENERGY DISSIPATION DETAILS

NOT TO SCALE

* 0.5' ON OUTFALL
FOR 12" STORM 05



PLACE FOREBAY FLOOR ATOP COMPACTED
SUBGRADE AND A MIN OF 6" AGGREGATE
BASED COARSE. IF MUCK IS ENCOUNTERED
PLACE FLOOR ATOP A MAX OF 12" OF 1 1/2
TO 3" ROCK ATOP 12" OF 3"-5" ROCK
(DEPENDANT UPON FIELD CONDITIONS)

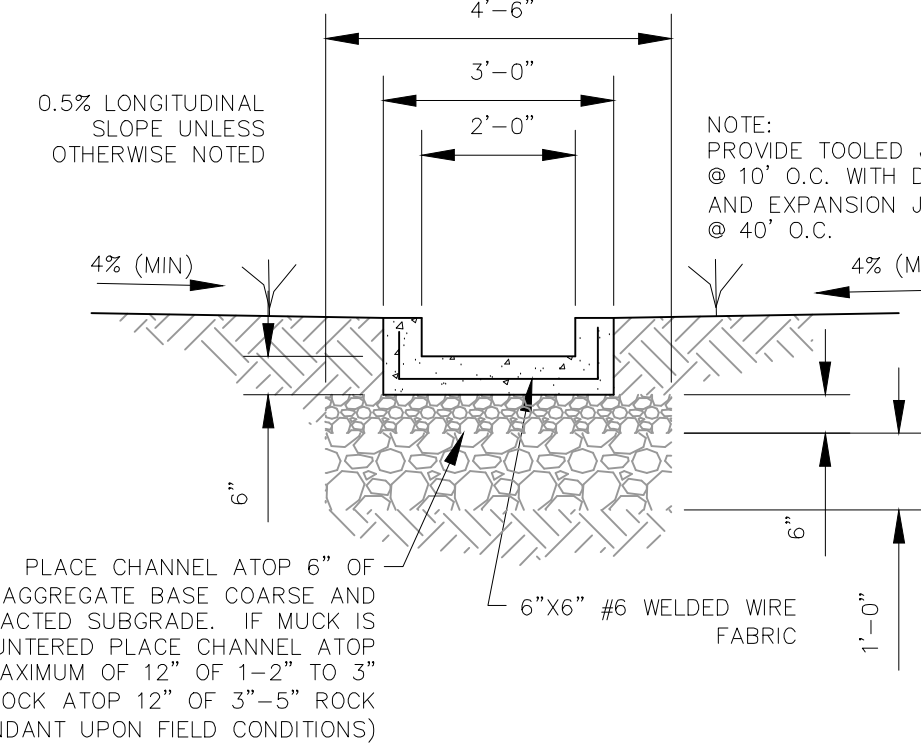
PLACE WALL ATOP A MIN OF 8" OF
AGGREGATE BASE COARSE.
IF MUCK IS ENCOUNTERED STABILIZE
USING MIXTURE OF 1 1/2 TO 5" AS
DESCRIBED AT LEFT.

ENERGY DISSIPATION DETAILS

NOT TO SCALE



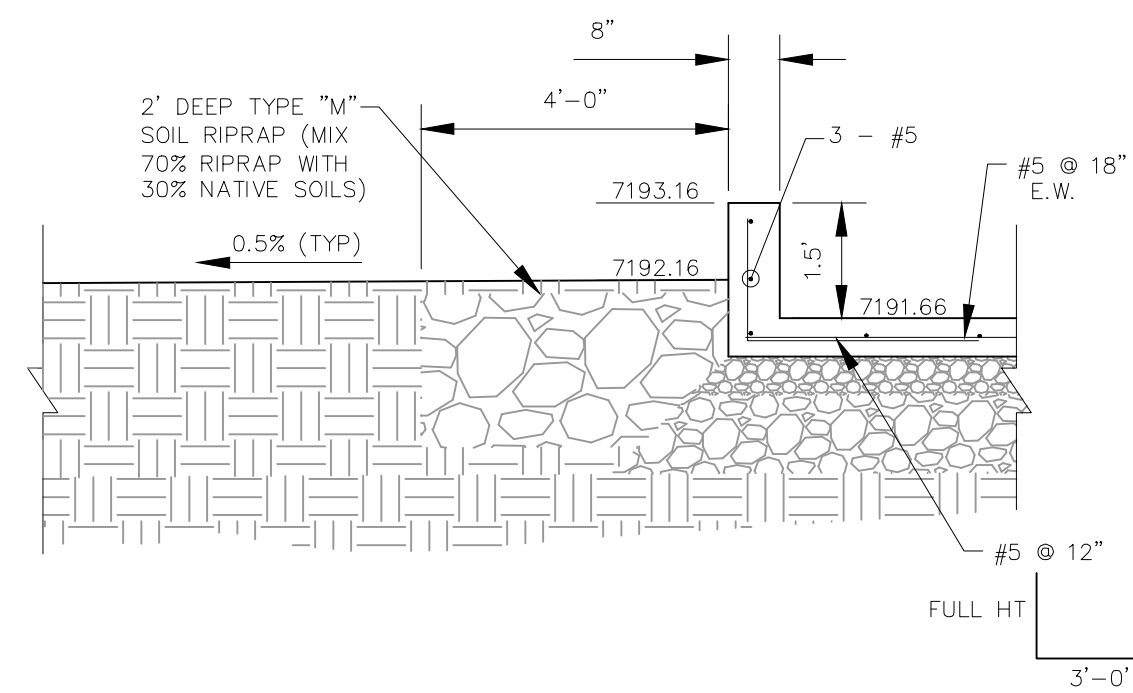
FOR BURIED UTILITY INFORMATION
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LOW FLOW CHANNEL

TYPICAL SECTION

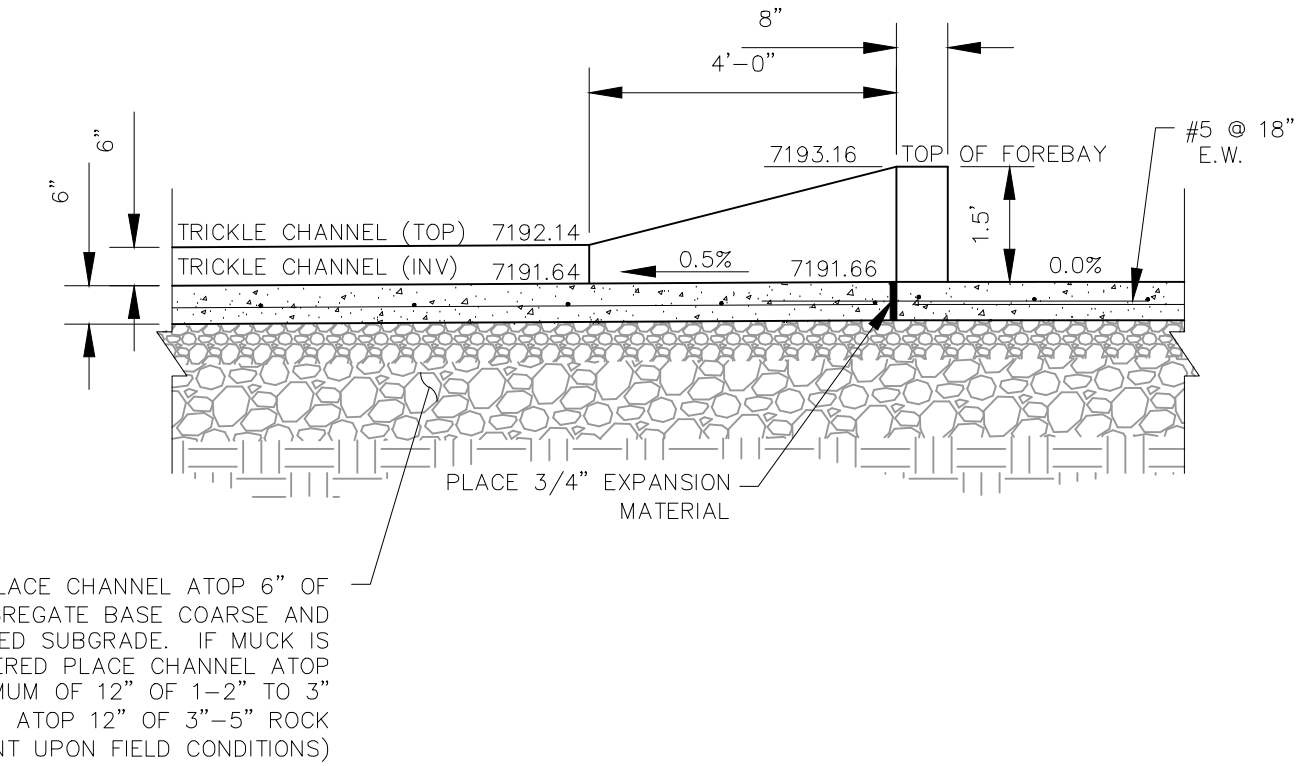
NOT TO SCALE



RIPRAP GRADING BELOW POND C FOREBAY

SECTION C-C

NOT TO SCALE

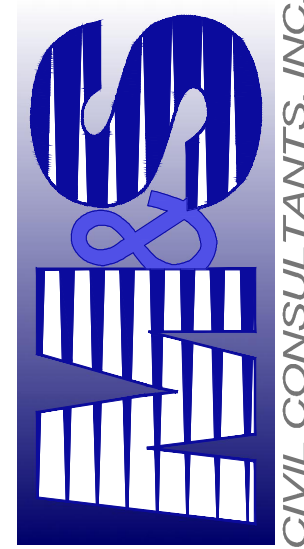


LOW FLOW CHANNEL POND C

SECTION B-B

NOT TO SCALE

20 BOULDER CRESCENT SUITE 110
COLORADO SPRINGS CO 80903
PHONE: 719.555.5485



FOR AND ON
BEHALF OF
W&S CIVIL
CONSULTANTS,
INC.

VERCIL A. SANCHEZ, COLORADO P.E. NO. 37160

REVISIONS: NO. DATE: BY: DESCRIPTION: APPROV. BY: DATE:

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CAUTION

PAINT BRUSH HILLS FILING NO. 14

EXTENDED DET. POND C FOREBAY DETAILS

PROJECT NO. 10-014 SCALE: DATE: 06/22/18

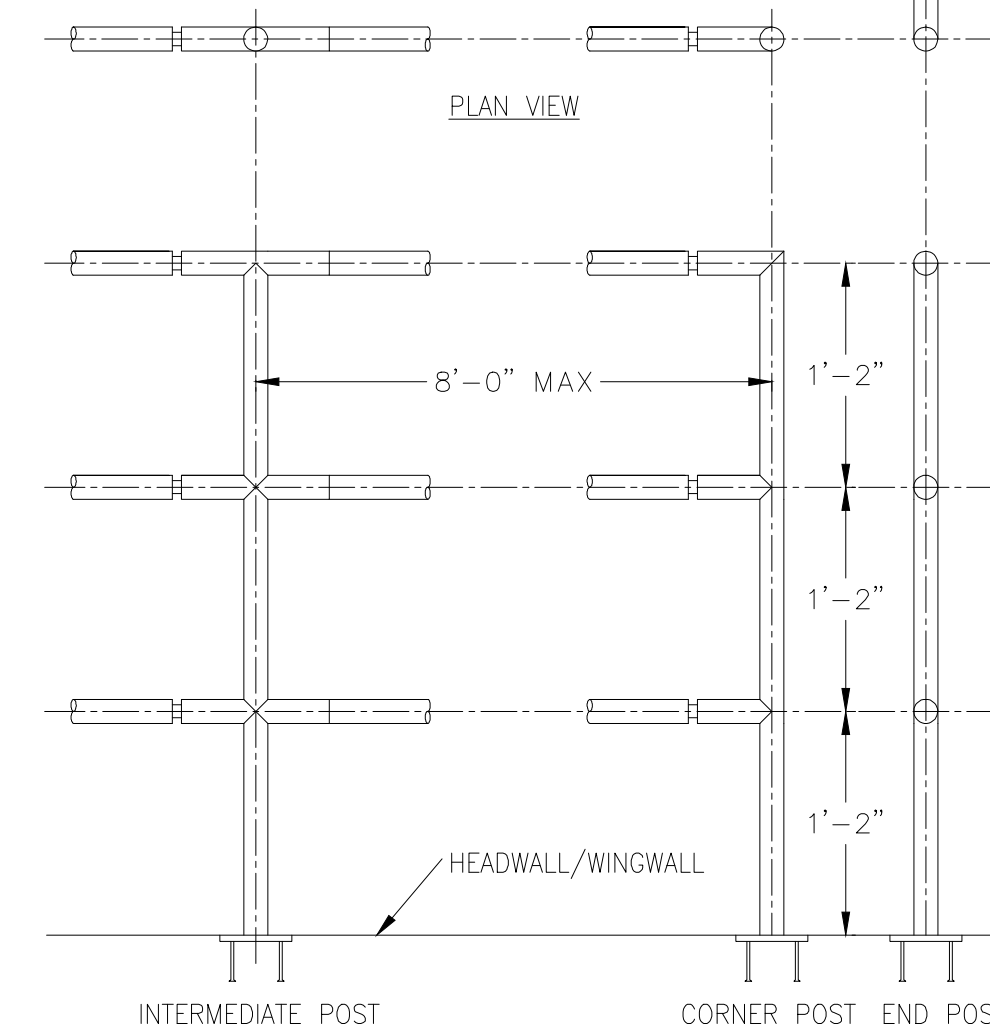
DESIGNED BY: GT HORIZONTAL: NA

DRAWN BY: CMN VERTICAL: NA

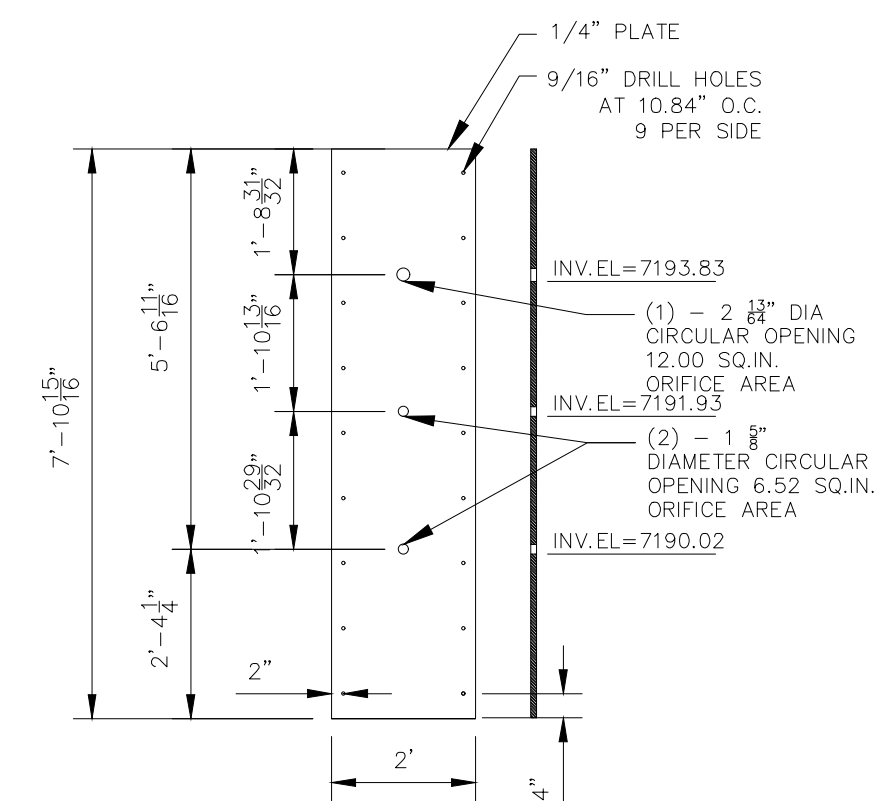
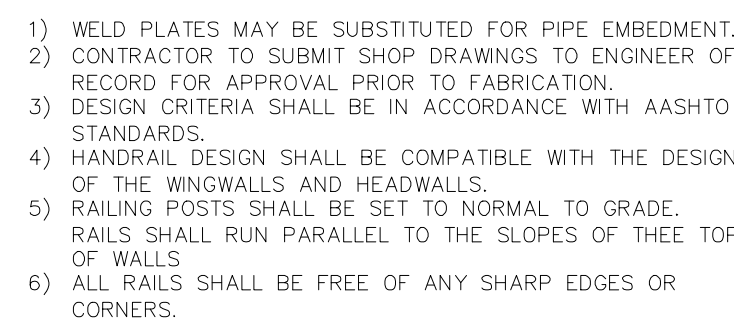
CHECKED BY:

SHEET 11 OF 12

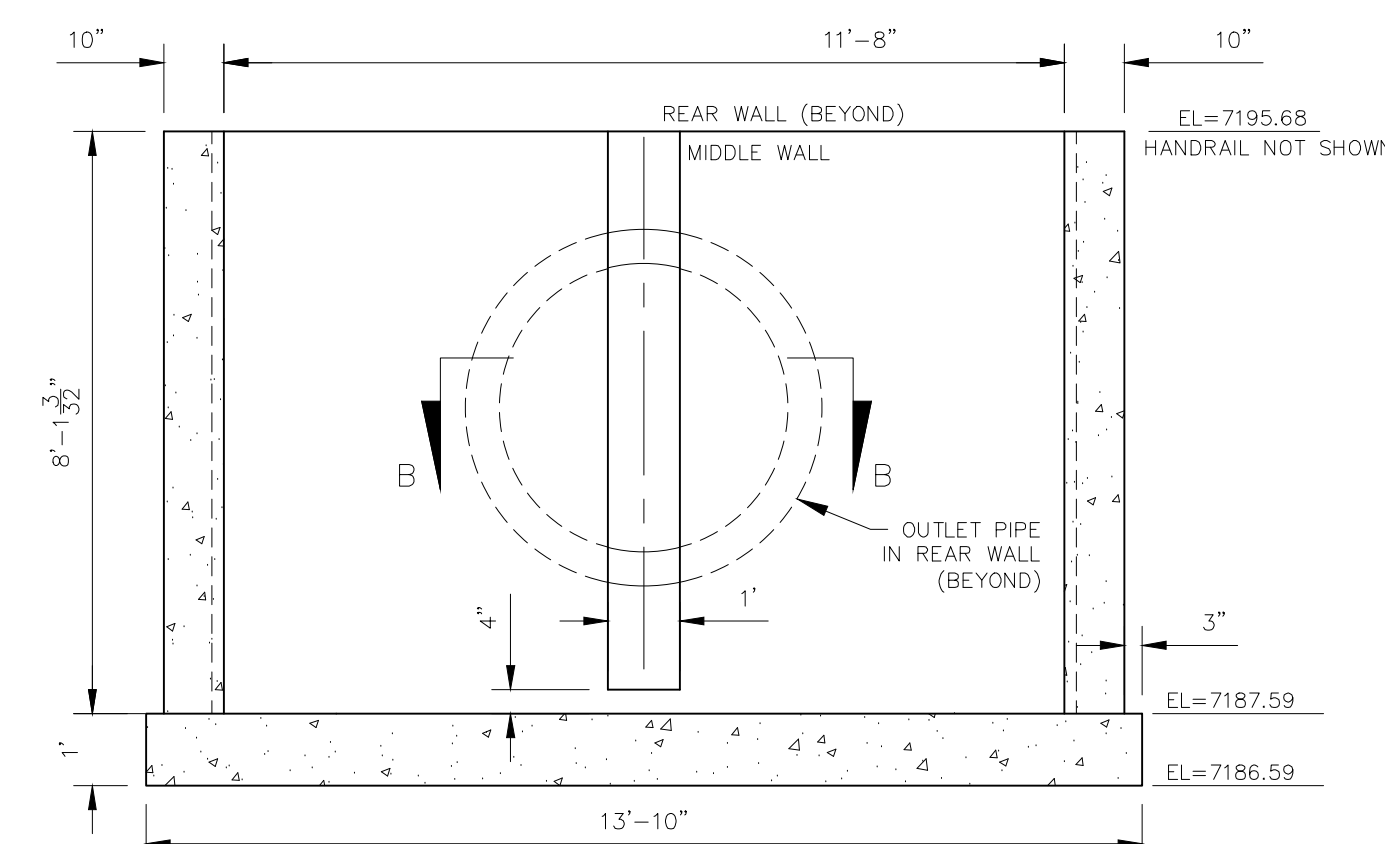
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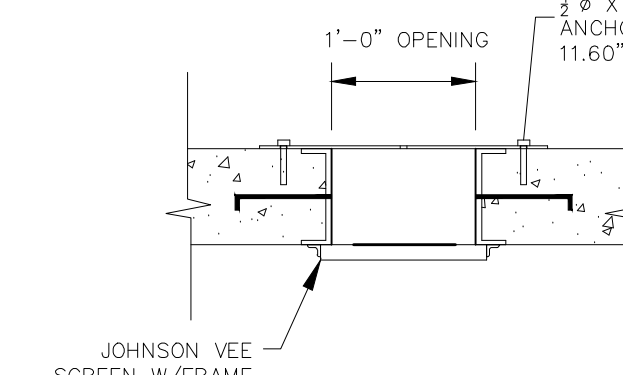
/ HEADWALL/WINGWAL



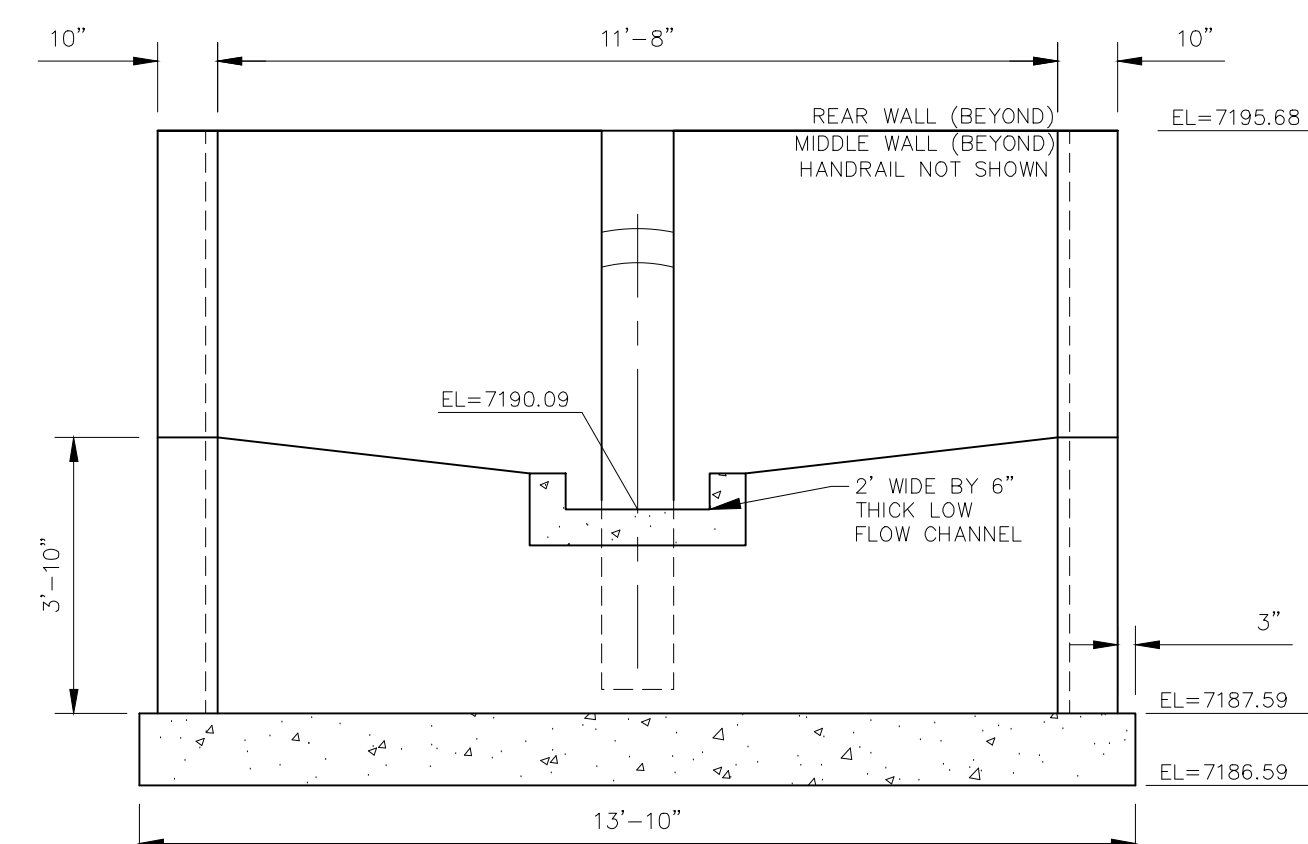
ORIFICE PLATE
NOT TO SCALE



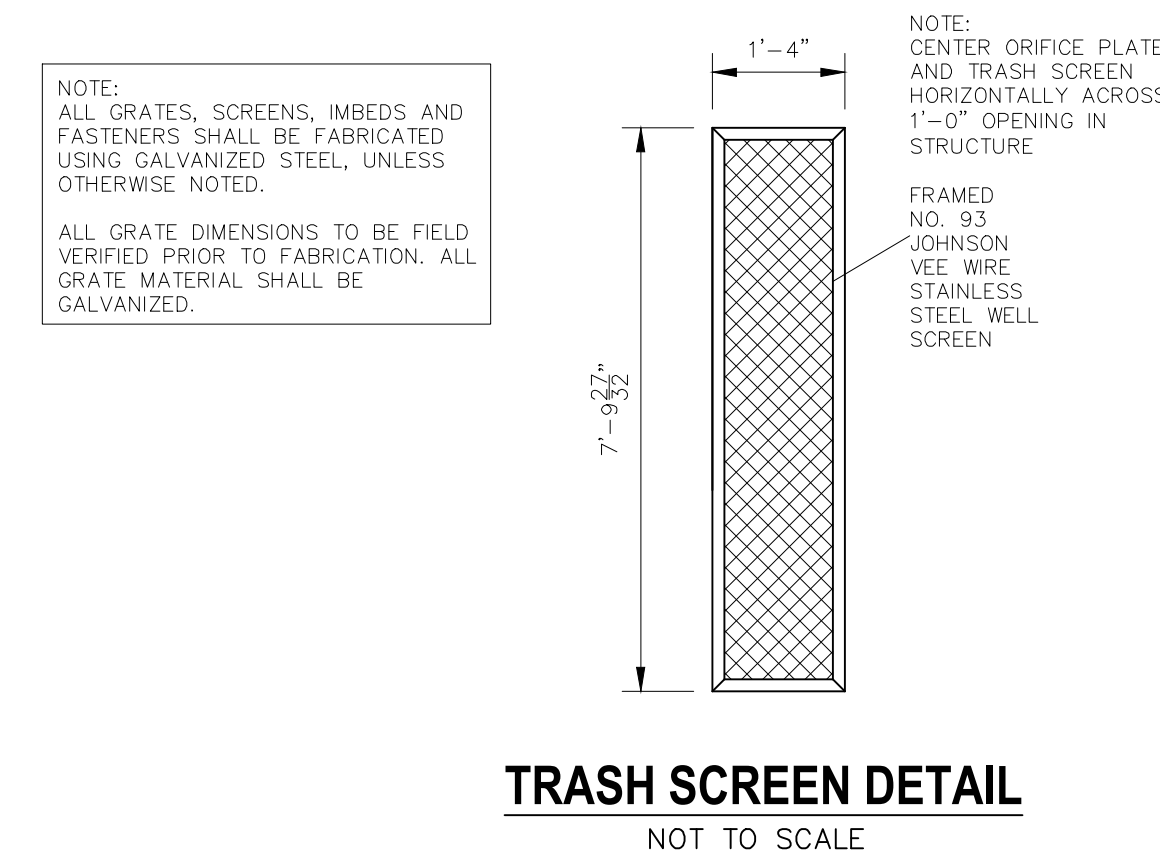
MIDDLE WALL
NOT TO SCALE



SECTION B-B
NOT TO SCALE



FRONT/STEM WALL
NOT TO SCALE



TRASH SCREEN DETAIL
NOT TO SCALE