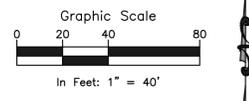
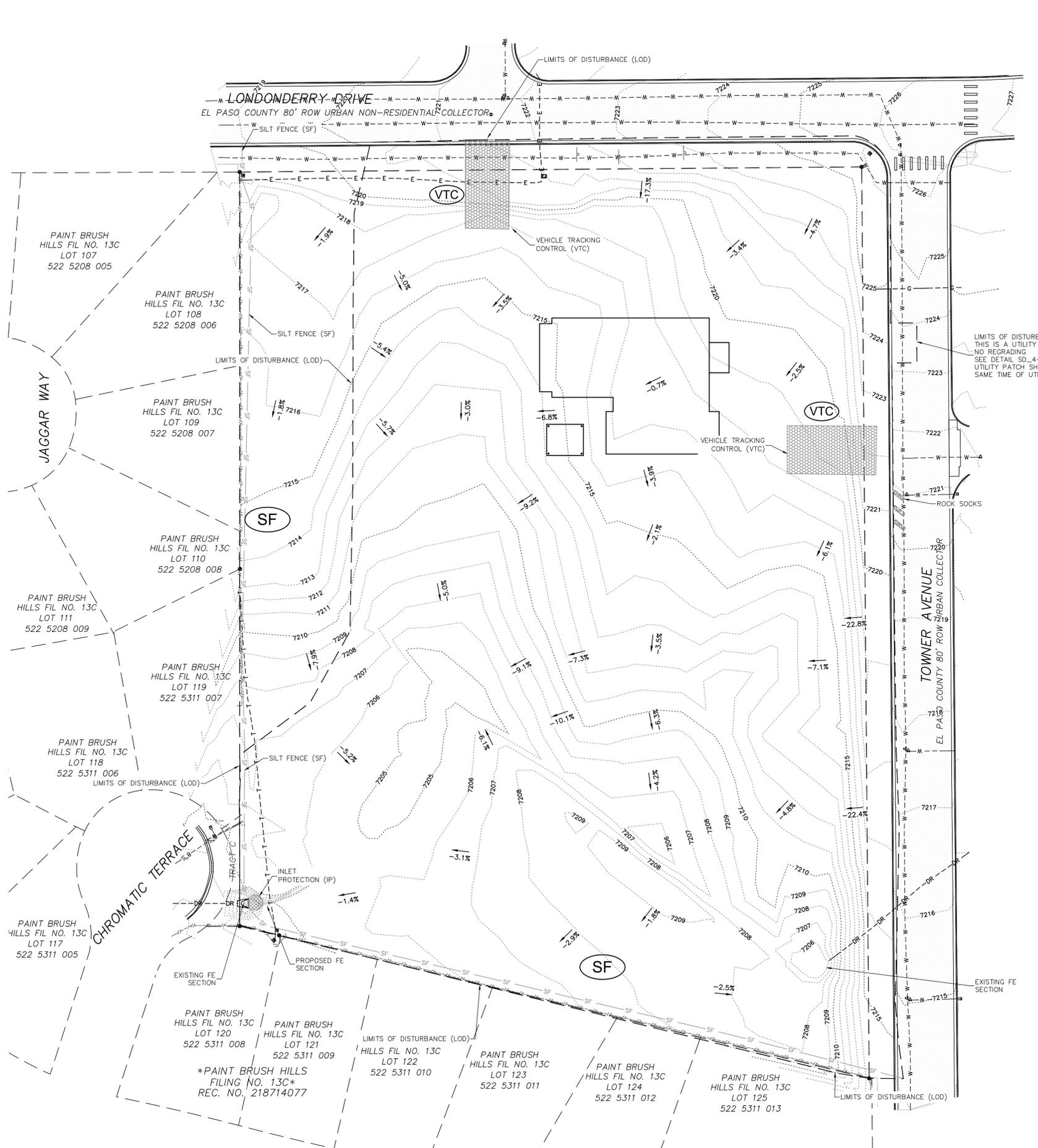


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LEGEND

	PROPERTY LINE
	EASEMENT LINE
	SETBACK LINE
	LIMITS OF DISTURBANCE / CONSTRUCTION
	PROPERTY CORNER/MONUMENT, BENCHMARK OR TEMPORARY BENCHMARK
	SHEET FLOW/DRAINAGE DIRECTION
	PROPOSED MINOR CONTOUR
	PROPOSED MAJOR CONTOUR
	EXISTING MINOR CONTOUR
	EXISTING MAJOR CONTOUR
	SPOT ELEVATION
	LIMITS OF DISTURBANCE LINE
	EXISTING UNDERGROUND ELECTRIC
	EXISTING WATER MAIN
	EXISTING STORM DRAIN
	EXISTING FENCE

SITE HATCHING

	PROP. ASPHALT PAVEMENT		PROP. RETAINING WALL
	PROP. CONCRETE PAVEMENT		EX. CONCRETE PAVEMENT
	PROP. STRUCTURE/BUILDING		EX. STRUCTURE/BUILDING

EROSION CONTROL LEGEND

	VTC	VEHICLE TRACKING CONTROL
	SSA	STABILIZED STAGING AREA (INITIAL)
	CWA	CONCRETE WASHOUT AREA
	SF	SILT FENCE
	PS	PERMANENT SEEDING & MULCHING
	ECB	EROSION CONTROL BLANKET
	RS	ROCK SOCKS
	SP	STOCKPILE AREA PROTECTION (INTERNAL)

GENERAL NOTES:

- ANTICIPATED START: BEGINNING OF AUGUST 2023; COMPLETION TIME PERIOD OF SITE GRADING: 3-4 WEEKS.
- EXPECTED DATE ON WHICH THE FINAL STABILIZATION WILL BE COMPLETED: MARCH 2024.
- TOTAL AREA TO BE CLEARED, EXCAVATED, OR GRADED: 225,205 SF (5.17 AC. MAX.)
- RECEIVING WATERS: FALCON DRAINAGE BASIN
- SOILS INFORMATION: USDA CLASSIFIED AS PRING COARSE SANDY LOAMS, HYDROLOGIC SOIL GROUP B.
- FULL SPECTRUM DETENTION IS PROVIDED OFF-SITE AT DETENTION FACILITY #1 WHICH IS OWNED AND MAINTAINED BY PAINT BRUSH HILLS METRO DISTRICT.
- EXISTING VEGETATION IS AN OPEN FIELD W/ GRASSES

SURVEY NOTES:

- THE PROPERTY WAS SURVEYED ON THE GROUND DECEMBER 14-16, 2020, AND WAS FOUND TO BE MONUMENTED AS SHOWN HEREON. THE LINEAL UNITS USED IN THIS SURVEY IS THE U.S. SURVEY FOOT. THE TOPOGRAPHIC SURVEY DATA SHOWN IS THE RESULT OF AN ON THE GROUND SURVEY OF THE TOPOGRAPHIC FEATURES OF THE SUBJECT PROPERTY. THE CONTOUR INTERVAL IS ONE FOOT. THE BENCHMARK IS THE SOUTHWEST CORNER OF SECTION 25, A 3 1/4" ALUMINUM CAP. ELEVATION = 7136.34, NGVD 1929.
- THE BASIS OF BEARINGS IS THE WEST LINE OF TRACT C AS SHOWN ON THE PLAT OF "PAINT BRUSH HILLS FILING NO. 133" UNDER RECEPTION NO. 213713413 OF THE RECORDS OF EL PASO COUNTY, COLORADO. SAID LINE IS ASSUME TO BEAR N00°00'00"E A DISTANCE OF 531.92 FEET.

RMG
 Architects
 Structural
 Geotechnical
 Engineers / Architects
 SOUTHERN COLORADO OFFICE
 2910 AUSTIN BLUFFS PKWY., SUITE 100, COLORADO SPRINGS, CO 80918
 SOUTHERN COLORADO, DENVER, KANSAS, NORTHERN COLORADO

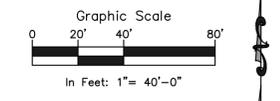
COLORADO LICENSED PROFESSIONAL ENGINEER
 3/01/24
 51909

FOUNDATION LUTHERAN CHURCH
 9960 TOWNERS AVE
 FALCON, COLORADO

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SHEET NAME		INITIAL EROSION CONTROL PLAN	
PROJECT STATUS		CONSTRUCTION DOCUMENTS	
ENG:	DOG	DATE	3/1/24
DRAWN:	AMB		
CHECKED:	TPT		
#	REVISION	DATE	
JOB NO.	191726		
SHEET NO.	02 of 12		

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Elevations Table					
Number	Minimum Elevation	Maximum Elevation	Color	Volume	
1	-4.98	-0.05	■	3127.23 CU. YD	CUT
2	-0.05	7.03	■	6832.51 CU. YD	FILL

*PAINT BRUSH HILLS
FILING NO. 13C*
REC. NO. 218714077

Michigan, Texas
Forensics
Civil / Planning

Engineers / Architects

SOUTHERN COLORADO OFFICE
2910 AUSTIN BLUFFS PKWY., SUITE 100, COLORADO SPRINGS, CO 80918
SOUTHERN COLORADO, DENVER, KANSAS, NORTHERN COLORADO

PROFESSIONAL ENGINEER
DAVID G. WILKINSON
3/01/24
51909

FOUNDATION LUTHERAN CHURCH

9960 TOWNERS AVE
FALCON, COLORADO

CUT AND FILL PLAN

CONSTRUCTION DOCUMENTS

SHEET NAME

PROJECT STATUS

ENG: DGW

DATE

DRAWN: FHZ

3/1/24

CHECKED: DWG

REVISION DATE

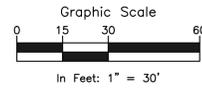
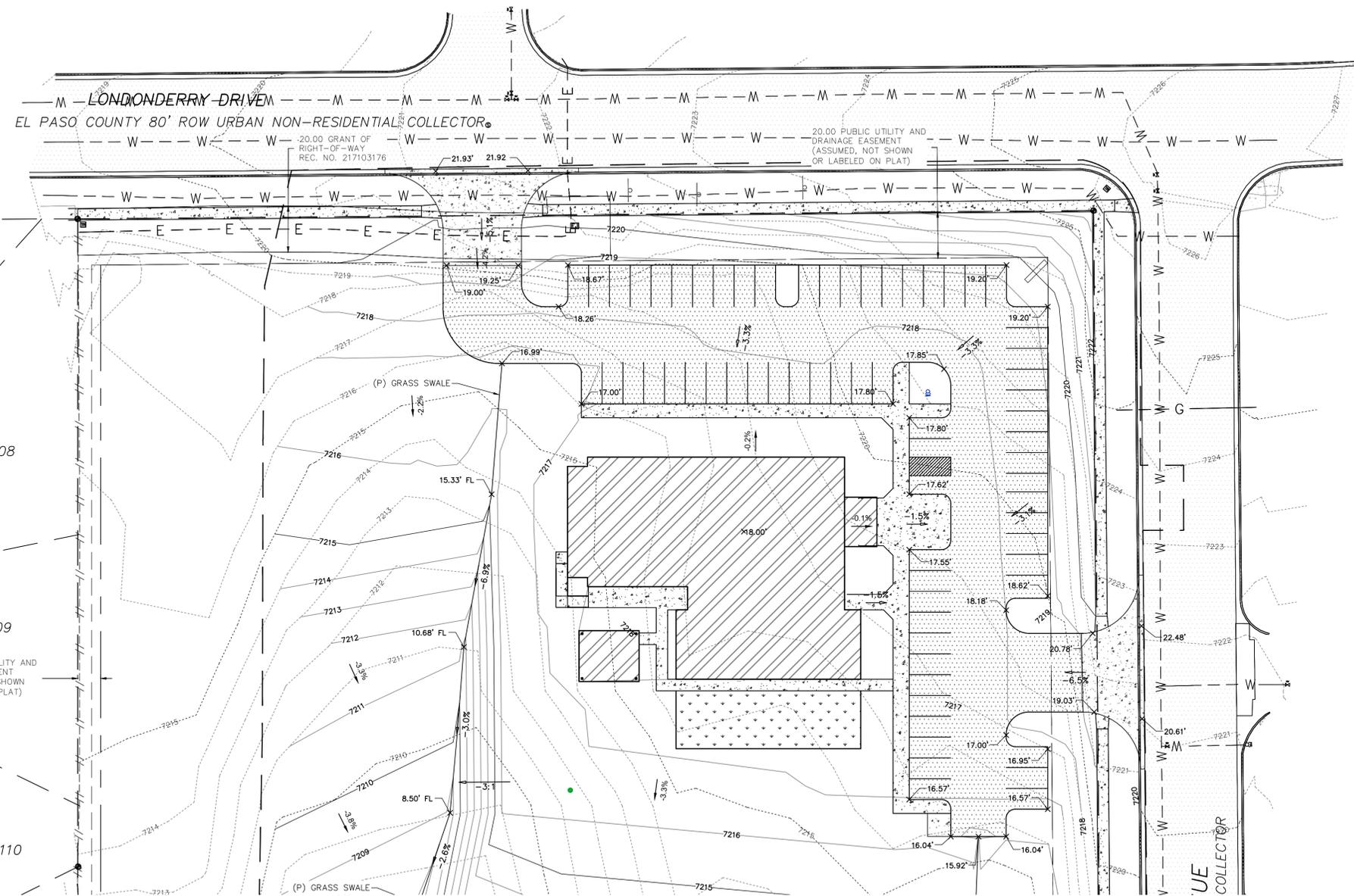
JOB NO.

191726

SHEET NO.

05 of 12

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NOTES:

- NO CLEARING, GRADING, EXCAVATION, OR OTHER LAND DISTURBING ACTIVITIES SHALL BE ALLOWED (EXCEPT FOR WORK DIRECTLY RELATED TO THE INSTALLATION OF INITIAL CONTROL MEASURES) UNTIL A CITY GEC PERMIT HAS BEEN ISSUED.
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- INDIVIDUALS SHALL COMPLY WITH THE "COLORADO WATER QUALITY CONTROL ACT" (TITLE 25, ARTICLE 8, CRS) AND THE "CLEAN WATER ACT" (33 USC 1344), INCLUDING REGULATIONS PROMULGATED AND CERTIFICATIONS OR PERMITS ISSUED, IN ADDITION TO THE REQUIREMENTS INCLUDED IN THE CITY'S MS4 PERMIT, STORMWATER CONSTRUCTION MANUAL, IN THE EVENT OF CONFLICTS BETWEEN THESE, REQUIREMENTS AND WATER QUALITY CONTROL LAWS, RULES, OR REGULATIONS OF OTHER FEDERAL OR STATE AGENCIES, THE MORE RESTRICTIVE LAWS, RULES, OR REGULATIONS SHALL APPLY.
- STORMWATER DISCHARGES FROM CONSTRUCTION SITES SHALL NOT CAUSE OR THREATEN TO CAUSE POLLUTION, CONTAMINATION, OR DEGRADATION OF STATE WATERS.
- ALL CONSTRUCTION CONTROL MEASURES SHALL BE MAINTAINED UNTIL PERMANENT STABILIZATION MEASURES ARE IMPLEMENTED. TEMPORARY CONSTRUCTION CONTROL MEASURES MUST BE REMOVED PRIOR TO PERMIT CLOSEOUT.
- CONCRETE WASH WATER SHALL NOT BE DISCHARGED TO OR ALLOWED TO RUNOFF TO STATE WATERS OR ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR FACILITIES.
- BUILDING, CONSTRUCTION, EXCAVATION, OR OTHER WASTE MATERIALS SHALL NOT BE TEMPORARILY PLACED OR STORED IN THE STREET, ALLEY OR OTHER PUBLIC WAY, UNLESS IN ACCORDANCE WITH AN APPROVED TRAFFIC CONTROL PLAN. CONSTRUCTION CONTROL MEASURES MAY BE REQUIRED BY THE GEC INSPECTOR IF DEEMED NECESSARY BASED ON SPECIFIC CONDITIONS AND CIRCUMSTANCES (E.G., ESTIMATED TIME OF EXPOSURE, SEASON OF THE YEAR, ETC.).
- ALL WASTES COMPOSED OF BUILDING MATERIALS MUST BE REMOVED FROM THE CONSTRUCTION SITE FOR DISPOSAL IN ACCORDANCE WITH LOCAL AND STATE REGULATORY REQUIREMENTS. NO BUILDING MATERIAL WASTES OR UNUSED BUILDING MATERIALS SHALL BE BURIED, DUMPED, OR DISCHARGED AT THE SITE.
- THE PERMITEE SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL CONSTRUCTION DEBRIS, DIRT, TRASH, ROCK, SEDIMENT, AND SAND THAT MAY ACCUMULATE IN THE STORM SEWER OR OTHER DRAINAGE CONVEYANCE SYSTEM AS A RESULT OF CONSTRUCTION ACTIVITIES.
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- SPILL PREVENTION AND CONTAINMENT MEASURES SHALL BE USED AT ALL STORAGE, EQUIPMENT FUELING, AND EQUIPMENT SERVICING AREAS SO AS TO CONTAIN ALL SPILLS AND PREVENT ANY SPILLED MATERIAL FROM ENTERING THE MS4, INCLUDING ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR FACILITY. BULK STORAGE STRUCTURES FOR PETROLEUM PRODUCTS AND OTHER CHEMICALS CONTAINMENT OR EQUIVALENT ADEQUATE PROTECTION. ALL SPILLS SHALL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY, OR CONTAINED UNTIL APPROPRIATE CLEANUP METHODS CAN BE EMPLOYED. MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEANUP SHALL BE FOLLOWED, ALONG WITH PROPER DISPOSAL METHODS.
- SEDIMENT (MUD AND DIRT) TRANSPORTED ONTO A PUBLIC ROAD, REGARDLESS OF SIZE OF THE SITE, SHALL BE CLEANED AS SOON AS POSSIBLE AFTER DISCOVERY.
- NO CHEMICALS ARE TO BE ADDED TO THE DISCHARGE UNLESS PERMISSION FOR THE USE OF SUCH CHEMICALS, SPECIAL CONDITIONS AND MONITORING MAY BE REQUIRED.
- CONTROL MEASURES FOR ALL SLOPES, CHANNELS, DITCHES, OR ANY DISTURBED AREA SHALL BE COMPLETED WITHIN FOURTEEN (14) CALENDAR DAYS AFTER FINAL GRADING OR FINAL LAND DISTURBANCE HAS BEEN COMPLETED. DISTURBED AREAS WHICH ARE NOT AT FINAL GRADE BUT WILL REMAIN DORMANT FOR LONGER THAN FOURTEEN (14) DAYS SHALL BE ROUGHENED, MULCHED, TACKIFIED, OR STABILIZED WITH TARPS WITHIN FOURTEEN (14) DAYS AFTER INTERIM GRADING. AN AREA THAT IS GOING TO REMAIN IN AN INTERIM STATE FOR MORE THAN SIXTY (60) DAYS SHALL ALSO BE SEEDING, UNLESS AN ALTERNATIVE STABILIZATION MEASURE IS ACCEPTED AT THE INSPECTOR'S DISCRETION. ALL TEMPORARY CONSTRUCTION CONTROL MEASURES SHALL BE MAINTAINED UNTIL FINAL STABILIZATION IS ACHIEVED.
- THE GEC PLAN WILL BE SUBJECT TO RE-REVIEW AND RE-ACCEPTANCE BY THE STORMWATER ENTERPRISE SHOULD ANY OF THE FOLLOWING OCCUR: GRADING DOES NOT COMMENCE WITHIN TWELVE (12) MONTHS OF THE CITY'S ACCEPTANCE OF THE PLAN, THE CONSTRUCTION SITE IS IDLE FOR TWELVE (12) CONSECUTIVE MONTHS, A CHANGE IN PROPERTY OWNERSHIP OCCURS, THE PLANNED DEVELOPMENT CHANGES, OR ANY OTHER MAJOR MODIFICATIONS ARE PROPOSED AS DEFINED IN THE STORMWATER CONSTRUCTION MANUAL.
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- ALL STORM DRAIN PIPE WILL BE PRIVATE ON THE PROPERTY AND PUBLIC IN THE RIGHT OF WAY.

GENERAL NOTES:

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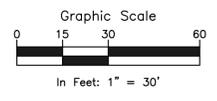
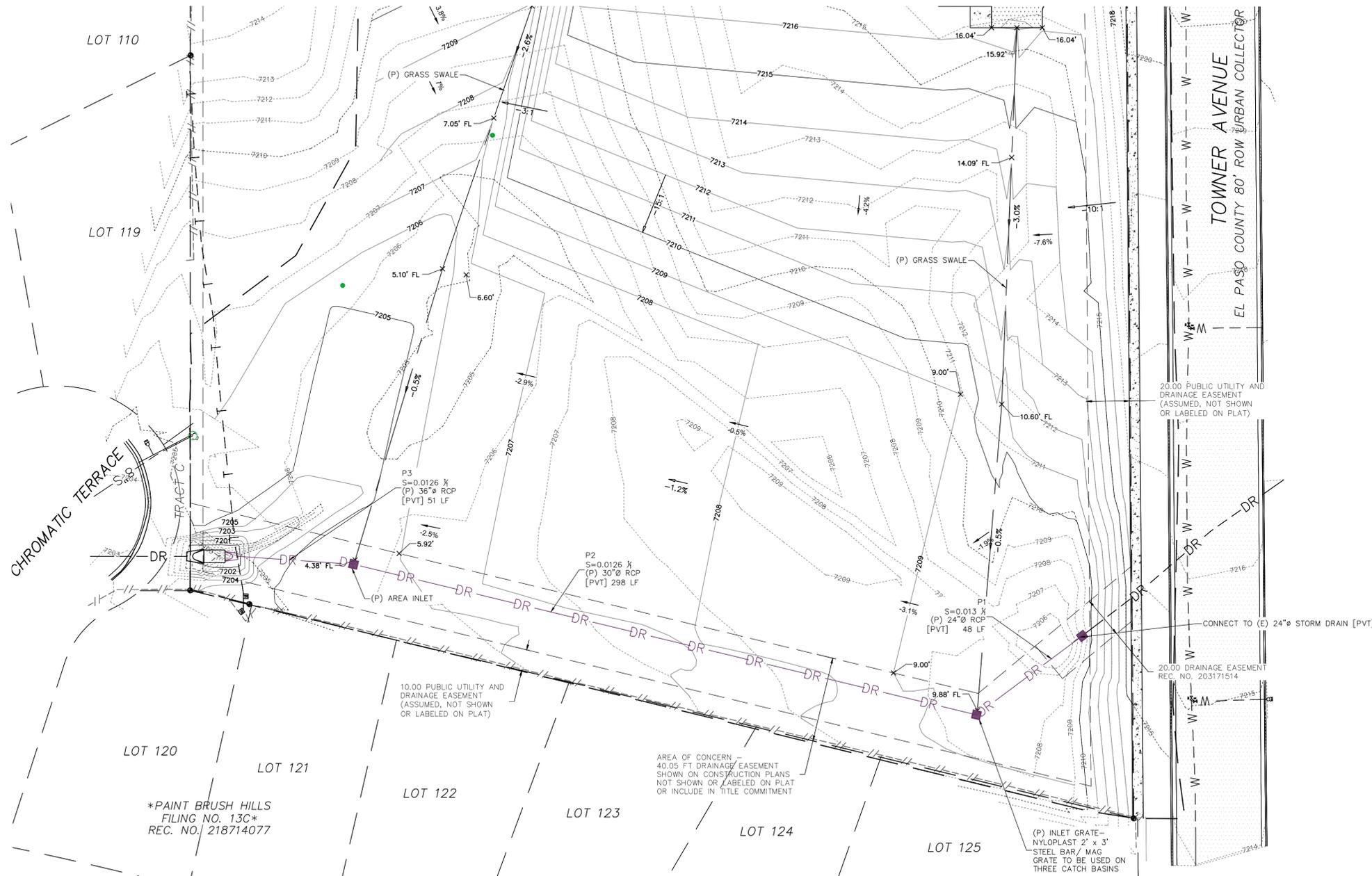

Engineers / Architects
 ARCHITECTURAL
 STRUCTURAL
 CIVIL / PLANNING
 SOUTHERN COLORADO OFFICE
 2911A AUSTIN BLUFFS PKWY., SUITE 100, COLORADO SPRINGS, CO 80918
 SOUTHERN COLORADO, DENVER, KANSAS, NORTHERN COLORADO


 COLORADO LICENSED
 PROFESSIONAL ENGINEER
 301/24
 51909

FOUNDATION LUTHERAN CHURCH
 9960 TOWNERS AVE
 FALCON, COLORADO
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SHEET NAME
GRADING PLAN NORTH
 PROJECT STATUS
CONSTRUCTION DOCUMENTS
 ENG: DGW
 DRAWN: AMH
 CHECKED: TPT
 DATE
3/1/24
 # REVISION DATE
 JOB NO.
191726
 SHEET NO.
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 of 12

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 - FULL SPECTRUM DETENTION IS PROVIDED OFF-SITE AT DETENTION FACILITY B1 WHICH IS OWNED AND MAINTAINED BY PAINT BRUSH HILLS METRO DISTRICT.

- SURVEY NOTES:
- THE PROPERTY WAS SURVEYED ON THE GROUND DECEMBER 14-16, 2020, AND WAS FOUND TO BE MONUMENTED AS SHOWN HEREON. THE LINEAL UNITS USED IN THIS SURVEY IS THE U.S. SURVEY FOOT. THE TOPOGRAPHIC SURVEY DATA SHOWN IS THE RESULT OF AN ON THE GROUND SURVEY OF THE TOPOGRAPHIC FEATURES OF THE SUBJECT PROPERTY. THE CONTOUR INTERVAL IS ONE FOOT. THE BENCHMARK IS THE SOUTHWEST CORNER OF SECTION 25, A 3 1/4" ALUMINUM CAP, ELEVATION - 7136.34, NGVD 1929.
 - THE BASIS OF BEARINGS IS THE WEST LINE OF TRACT C AS SHOWN ON THE PLAT OF "PAINT BRUSH HILLS FILING NO. 13A" UNDER RECEPTION NO. 213713413 OF THE RECORDS OF EL PASO COUNTY, COLORADO. SAID LINE IS ASSUME TO BEAR N00°00'00"E A DISTANCE OF 531.92 FEET.

SHEET NAME
GRADING PLAN SOUTH

PROJECT STATUS
CONSTRUCTION DOCUMENTS

ENG: DWG
 DRAWN: AMH
 CHECKED: TPT

DATE
3/1/24

REVISION DATE

JOB NO.
191726

SHEET NO.
07

of 12

FOUNDATION LUTHERAN CHURCH
 9960 TOWNERS AVE
 FALCON, COLORADO

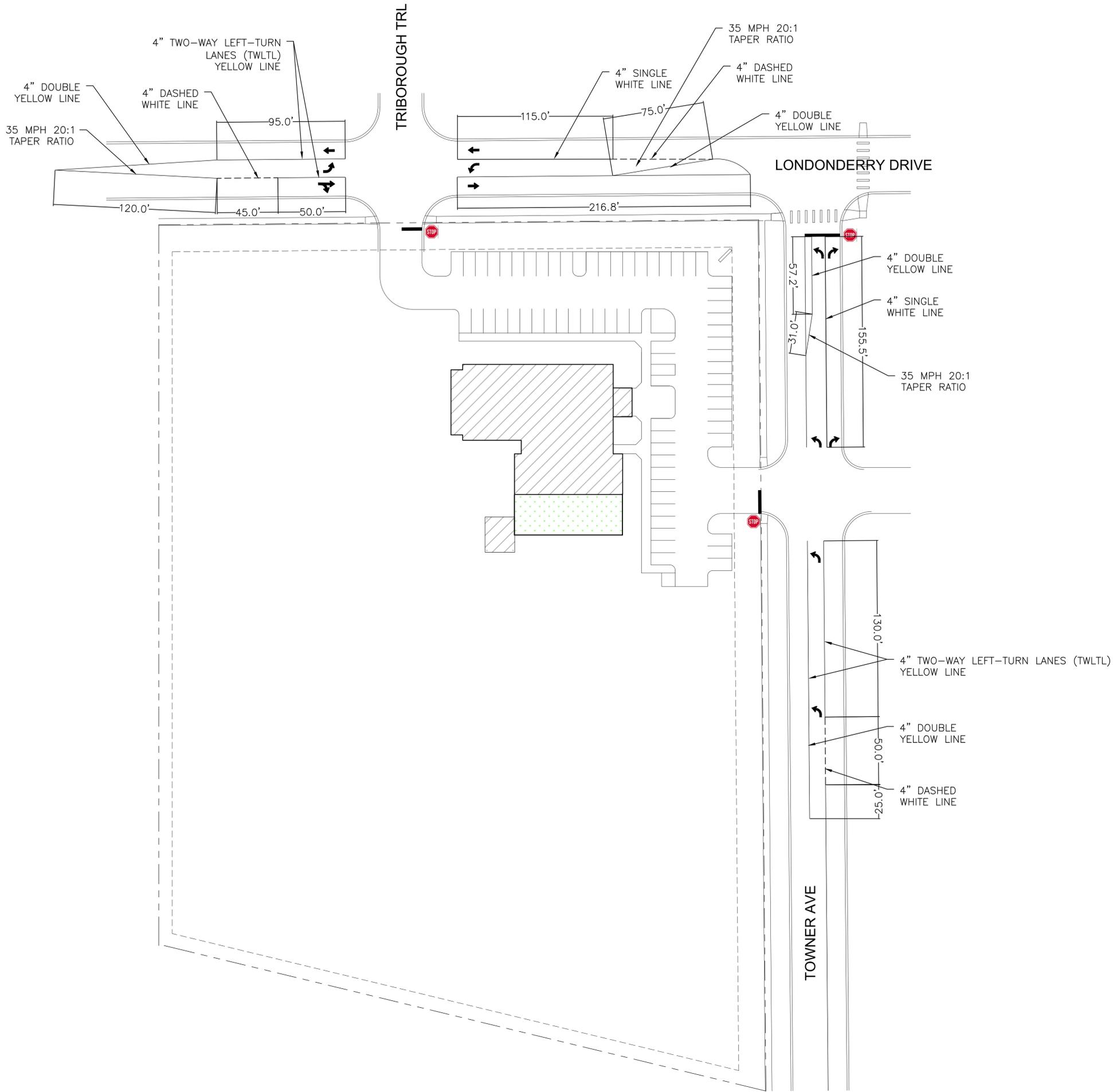
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 PROFESSIONAL ENGINEER
 3/01/24
 51909

ENGINEERS / ARCHITECTS
 SOUTHERN COLORADO OFFICE
 2910 AUSTIN BLUFFS PKWY., SUITE 100, COLORADO SPRINGS, CO 80918
 SOUTHERN COLORADO, DENVER, KANSAS, NORTHERN COLORADO

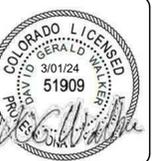
SIGNING AND STRIPING NOTES:

1. ALL SIGNS AND PAVEMENT MARKINGS SHALL BE IN COMPLIANCE WITH THE CURRENT MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
2. REMOVAL OF EXISTING PAVEMENT MARKINGS SHALL BE ACCOMPLISHED BY A METHOD THAT DOES NOT MATERIALLY DAMAGE THE PAVEMENT. THE PAVEMENT MARKINGS SHALL BE REMOVED TO THE EXTENT THAT THEY WILL NOT BE VISIBLE UNDER DAY OR NIGHT CONDITIONS. AT NO TIME WILL IT BE ACCEPTABLE TO PAINT OVER EXISTING PAVEMENT MARKINGS.
3. ANY DEVIATION FROM THE STRIPING AND SIGNING PLAN SHALL BE APPROVED BY EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT.
4. ALL SIGNS SHOWN ON THE SIGNING AND STRIPING PLAN SHALL BE NEW SIGNS. EXISTING SIGNS MAY REMAIN OR BE REUSED IF THEY MEET CURRENT EL PASO COUNTY AND MUTCD STANDARDS.
5. STREET NAME AND REGULATORY STOP SIGNS SHALL BE ON THE SAME POST AT INTERSECTIONS.
6. ALL REMOVED SIGNS SHALL BE DISPOSED OF IN A PROPER MANNER BY THE CONTRACTOR.
7. ALL STREET NAME SIGNS SHALL HAVE "D" SERIES LETTERS, WITH LOCAL ROADWAY SIGNS BEING 4" UPPER-LOWER CASE LETTERING ON 8" BLANK AND NON-LOCAL ROADWAY SIGNS BEING 6" LETTERING, UPPER-LOWER CASE ON 12" BLANK, WITH A WHITE BORDER THAT IS NOT RECESSED. MULTI-LANE ROADWAYS WITH SPEED LIMITS OF 35 MPH OR HIGHER SHALL HAVE 8" UPPER-LOWER CASE LETTERING ON 12" BLANK WITH A WHITE BORDER THAT IS NOT RECESSED. THE WIDTH OF THE NON-RECESSED WHITE BORDERS SHALL MATCH PAGE 255 OF THE 2012 MUTCD "STANDARD HIGHWAY SIGNS". SIGNAL POLE MOUNTED AND OVERHEAD STREET NAME SIGNS SHALL BE PER MUTCD SIZE STANDARDS.
8. ALL TRAFFIC SIGNS SHALL HAVE A MINIMUM HIGH INTENSITY PRISMATIC GRADE SHEETING.
9. ALL LOCAL RESIDENTIAL STREET SIGNS SHALL BE MOUNTED ON A 1.75" X 1.75" SQUARE TUBE SIGN POST AND STUB POST BASE. FOR OTHER APPLICATIONS, REFER TO THE CDOT STANDARD S-614-8 REGARDING USE OF THE P2 TUBULAR STEEL POST SLIPBASE DESIGN.
10. ALL SIGNS SHALL BE SINGLE SHEET ALUMINUM WITH 0.100" MINIMUM THICKNESS.
11. ALL LIMIT LINES/STOP LINES, CROSSWALK LINES, PAVEMENT LEGENDS, AND ARROWS SHALL BE A MINIMUM 125 MIL THICKNESS PREFORMED THERMOPLASTIC PAVEMENT MARKINGS WITH TAPERED LEADING EDGES PER CDOT STANDARD S-627-1. STOP BARS SHALL BE 24" IN WIDTH. CROSSWALKS LINES SHALL BE 24" WIDE AND A MINIMUM OF 9' LONG.
12. WORD AND SYMBOL MARKINGS SHALL BE THE NARROW TYPE.
13. ALL LONGITUDINAL LINES SHALL BE A MINIMUM 15MIL THICKNESS EPOXY PAINT. ALL NON-LOCAL RESIDENTIAL ROADWAYS SHALL INCLUDE BOTH RIGHT AND LEFT EDGE LINE STRIPING AND ANY ADDITIONAL STRIPING AS REQUIRED BY CDOT S-627-1.
14. THE CONTRACTOR SHALL NOTIFY EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT (719) 520-6819 PRIOR TO AND UPON COMPLETION OF SIGNING AND STRIPING.
15. THE CONTRACTOR SHALL OBTAIN A WORK IN THE RIGHT OF WAY PERMIT FROM THE EL PASO COUNTY DEPARTMENT OF PUBLIC WORKS (DPW) PRIOR TO ANY SIGNAGE OR STRIPING WORK WITHIN AN EXISTING EL PASO COUNTY ROADWAY.



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RMG
 Mechanical, Electrical, Plumbing, Fire, Structural, Geotechnical
Engineers / Architects
 SOUTHERN COLORADO OFFICE
 2910 AUSTIN BLUFFS PKWY., SUITE 100, COLORADO SPRINGS, CO 80918
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SHEET NAME PROPOSED RESTRIPIING PLAN		PROJECT STATUS SITE DEVELOPMENT PLAN
ENG: DOW	DRAWN: TRM	CHECKED: DOW
DATE 3/1/24		
#	REVISION	DATE
JOB NO. 191726		
SHEET NO. 08 of 12		

LAST SAVED: 2/29/2024 4:35:08 PM: PATH: \\visual.mcg-engineers.com\FS1\Tech\Projects\Site_Specs\2024\Colorado Commercial Construction, Inc.-11289665-Towner-Ave-18726\CAD\Drawings\From\RMGS\Sheet_Specs\GEC\B1738_Lutheran Church-Erosion Control - Final 12.12.23.dwg

EROSION LOGS SHOULD BE KEIED IN TO PREVENT UNDER-CUTTING

REMOVE ACCUMULATED SEDIMENT WHEN IT REACHES ONE HALF OF EXPOSED LOG HEIGHT. INSPECTIONS SHALL BE PERFORMED FREQUENTLY FOR PROPER FUNCTION.

PLAN VIEW

ELEVATION

EROSION LOG DETAIL DITCH INSTALLATION

NOTE: EROSION LOGS SHALL BE TIGHTLY ABUTTED WITH NO GAPS.

DATE APPROVED: 1/1/08	Erosion Log Check Dams		
John A. McCarty	Standard Drawing		
REVISION DATE: 7/17/07	FILE NAME: SD_3-85		

STAKES APPROXIMATELY 90° FROM EACH OTHER

WETLANDS OR FEATURES REQUIRING PROTECTION

EROSION LOG BURY IN SOIL 1/4 TO 1/2 LOG DIA.

SECTION A-A

EROSION LOG APPLICATION

EROSION LOGS SHOULD BE KEIED IN TO PREVENT UNDER-CUTTING

WHEN MORE THAN ONE EROSION LOG IS NEEDED, ENDS MUST BE TIGHTLY ABUTTED.

USE TWO WOOD STAKES 1 1/2" x 1 1/2" (NOMINAL) x SUFFICIENT LENGTH TO BE EMBEDDED AT LEAST 4" INTO THE SOIL AT ALL EROSION LOG ENDS OR JOINTS

USE A STAKE EVERY 24" AND CONTINUE ALTERNATE ORIENTATION THROUGHOUT THE LENGTH OF THE EROSION LOG

TYPICAL STAKE INSTALLATION

EROSION LOGS CAN ALSO BE USED ACROSS LONG SLOPES TO REDUCE EROSION AND SEDIMENT MOVEMENT

NOTE: X.XX must be entered in this spreadsheet in order for the "Solve" button to work.

Design flow, Q = 41 cfs
Slope, S = 0.05 ft/ft = 20.00 : 1
Bottom Width, W = 10 ft
Side slope, Z = 3 : 1
Safety factor = 1.2
Rock shape = Angular
Min. req'd D50 = 3.99 in
D50 used = 8.30 in
n = 0.041
Freeboard = 0.33 ft

Flow depth, d = 0.64 ft
Critical depth, d_c = 0.74 ft
Critical slope, S_c = 0.030 ft/ft

Design slope, S = 0.0500 ft/ft
Velocity = 5.37 fps

WV horz. Length = 10.0 ft
U/S WV F.L. elev = 3.0 ft
D/S WV F.L. elev = 2.5 ft
Waterway drop = 0.5 ft
WV length along slope = 10.0 ft

Spreadsheet formatting key:
XXX = input cells
X.XX = Output from "Solve" button
X.XX = Other computed output
Red text = Instructions, warnings, info

Calculated
0.7S_c = 0.0207 ft/ft
1.3S_c = 0.0384 ft/ft
Design slope OK, Flow is Supercritical.

Est. riprap unit wt = 1.4 Tons/CY
Rock Gs = 2.65

Required riprap gradation for D50 selected					
%	Rock dia., inches	Rock weight, lb			
	Smaller	min.	max.	min.	max.
100	12.5	16.6	141	333	
85	10.8	14.9	92	243	
50	8.3	12.5	42	141	
10	6.6	10.8	21	92	

Riprap thickness:
Minimum = 1.38 ft
Provided = 1.50 ft

Sideslope height:
Minimum = 0.97 ft
Provided = 1.00 ft

Quantities:
Riprap volume = 11.9 CY
Approx. weight = 16.6 Tons
Geotextile area = 51.7 SY*

*Geotextile area includes actual covered surfaces only (no extra for laps or anchorages)

DATE APPROVED: 1/1/08	Erosion Log Barrier		
John A. McCarty	Standard Drawing		
REVISION DATE: 7/17/07	FILE NAME: SD_3-87		

POINT TO TIE IN ADDITIONAL INLET PROTECTION

EROSION LOG STAKED INTO FILL SLOPE

PLAN VIEW

NOTE: REMOVE ACCUMULATED SEDIMENT WHEN IT REACHES ONE HALF OF EXPOSED LOG HEIGHT. INSPECTIONS SHALL BE PERFORMED FREQUENTLY FOR PROPER FUNCTION.

STAKES APPROXIMATELY 90° FROM EACH OTHER

EROSION LOG BURY IN SOIL 1/4 TO 1/2 LOG DIA.

SECTION A-A

EROSION LOGS SHOULD BE KEIED IN TO PREVENT UNDER-CUTTING

EROSION PROTECTION ABOVE CULVERT OUTLETS IS SIMILAR

SCALE: NOT TO SCALE

DATE APPROVED: 1/1/08	Culvert Inlet and Outlet Protection Erosion Logs Above Inlets and Outlets For Slopes 3:1 or Steeper		
John A. McCarty	Standard Drawing		
REVISION DATE: 7/17/07	FILE NAME: SD_3-86		

A SQUARE VERTICAL CUT SHALL BE MADE

NEW A.C. PAVEMENT REPLACEMENT

NEW BASE COURSE (T = THICKNESS)

FIRM EXCAVATION LINE

NATIVE MATERIAL COMPACTED IN 6" LIFTS IN ACCORDANCE WITH APPLICABLE SPECIFICATIONS

UTILITY TO BE INSTALLED IN ACCORDANCE WITH APPLICABLE SPECIFICATIONS

NOTES:

- THIS DETAIL MAY BE USED FOR PAVEMENT CUTS LESS THAN 200 SQ. FT.
- EXISTING PAVEMENT MAY BE ROUGH CUT INITIALLY IN CONJUNCTION WITH TRENCHING.
- A SQUARE VERTICAL CUT SHALL BE MADE IN THE EXISTING A.C. PAVEMENT AFTER PLACEMENT OF BACKFILL PRIOR TO PAVEMENT REPLACEMENT.
- THICKNESS OF NEW A.C. PAVEMENT REPLACEMENT SHALL MATCH EXISTING (4" MIN.)
- THICKNESS OF NEW BASE COURSE SHALL BE MINIMUM OF 6" OR EQUAL TO EXISTING, WHICHEVER IS GREATER.

SCALE: NOT TO SCALE

DATE APPROVED: 8/11/11	Utility Trench Repair Detail Asphalt Pavement		
André P. Brackin	Standard Drawing		
REVISION DATE: 11/10/04	FILE NAME: SD_4-20		

Trapezoidal Riprap-Lined Waterway Design.xlsx

Landowner: Found. Luth. Church
County: El Paso
Date: 2/29/2024
V1.02
2/11/2013

Computed By: DGW
Checked by: DGW

Design flow, Q = 41 cfs
Slope, S = 0.05 ft/ft = 20.00 : 1
Bottom Width, W = 10 ft
Side slope, Z = 3 : 1
Safety factor = 1.2
Rock shape = Angular
Min. req'd D50 = 3.99 in
D50 used = 8.30 in
n = 0.041
Freeboard = 0.33 ft

Flow depth, d = 0.64 ft
Critical depth, d_c = 0.74 ft
Critical slope, S_c = 0.030 ft/ft

Design slope, S = 0.0500 ft/ft
Velocity = 5.37 fps

WV horz. Length = 10.0 ft
U/S WV F.L. elev = 3.0 ft
D/S WV F.L. elev = 2.5 ft
Waterway drop = 0.5 ft
WV length along slope = 10.0 ft

Spreadsheet formatting key:
XXX = input cells
X.XX = Output from "Solve" button
X.XX = Other computed output
Red text = Instructions, warnings, info

Calculated
0.7S_c = 0.0207 ft/ft
1.3S_c = 0.0384 ft/ft
Design slope OK, Flow is Supercritical.

Est. riprap unit wt = 1.4 Tons/CY
Rock Gs = 2.65

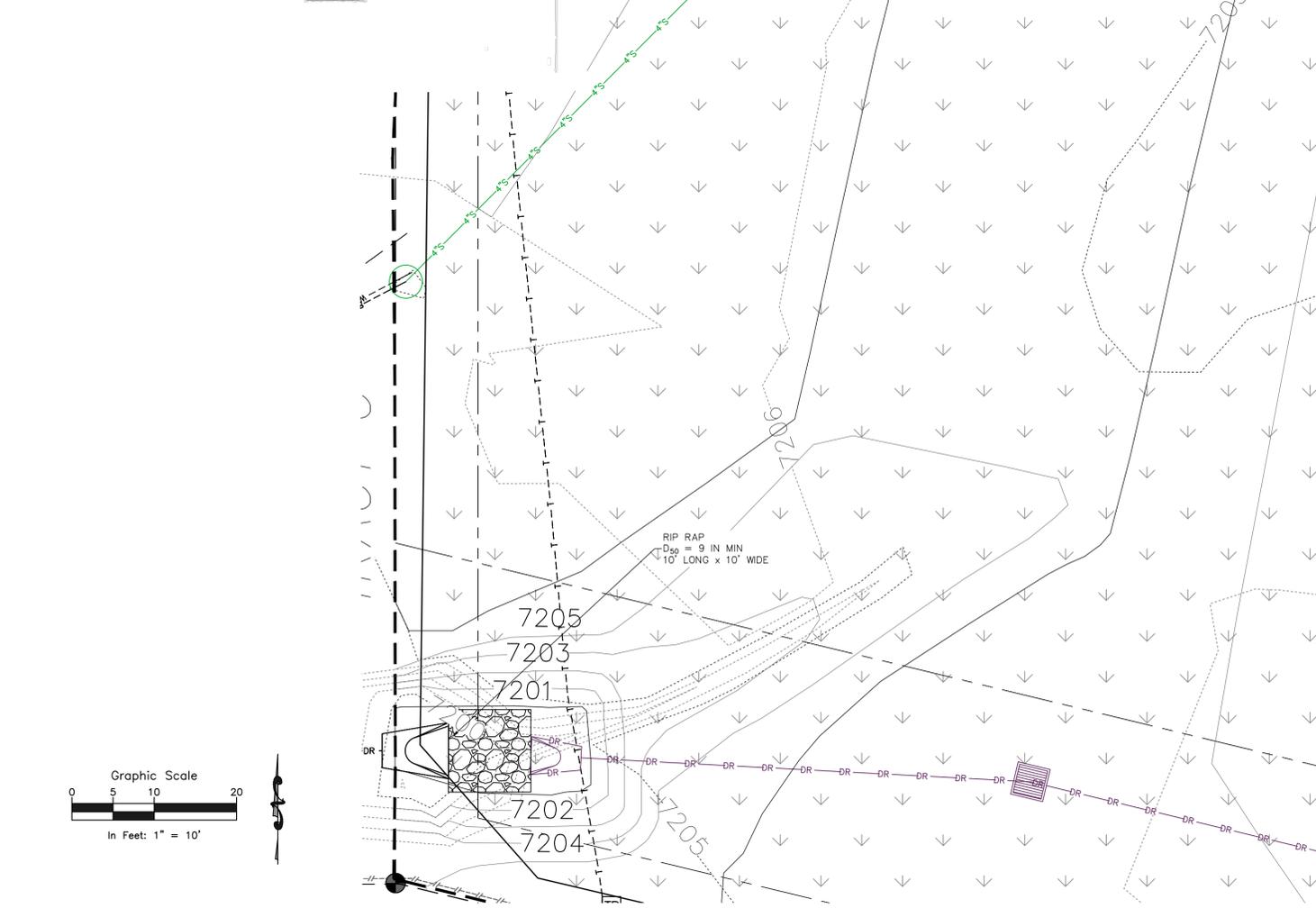
Required riprap gradation for D50 selected					
%	Rock dia., inches	Rock weight, lb			
	Smaller	min.	max.	min.	max.
100	12.5	16.6	141	333	
85	10.8	14.9	92	243	
50	8.3	12.5	42	141	
10	6.6	10.8	21	92	

Riprap thickness:
Minimum = 1.38 ft
Provided = 1.50 ft

Sideslope height:
Minimum = 0.97 ft
Provided = 1.00 ft

Quantities:
Riprap volume = 11.9 CY
Approx. weight = 16.6 Tons
Geotextile area = 51.7 SY*

*Geotextile area includes actual covered surfaces only (no extra for laps or anchorages)



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CONSTRUCTION DOCUMENTS

SHEET NAME: GEC DETAILS & ENLARGED SEDIMENTATION BASIN PLAN
PROJECT STATUS: CONSTRUCTION DOCUMENTS

ENG: DGW	DWG: AMH	
CHECKED: TPT	DATE: 3/1/24	
#	REVISION	DATE
JOB NO:	191726	
SHEET NO.:	9 of 12	

PCD FILE NO. PPR2321

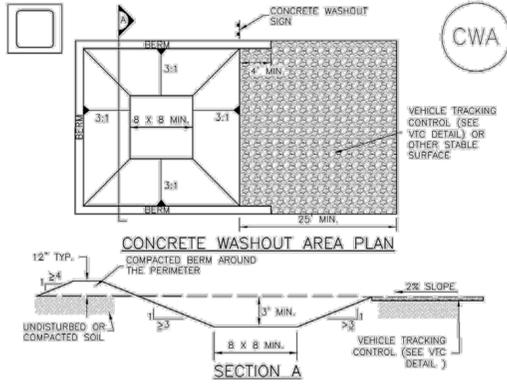
RMG
Engineers / Architects

Architectural
Structural
Geotechnical

Colorado Licensed Professional Engineer
3/01/24
51909

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Concrete Washout Area (CWA) MM-1



CWA-1. CONCRETE WASHOUT AREA

- CWA INSTALLATION NOTES**
- SEE PLAN VIEW FOR -CWA INSTALLATION LOCATION.
 - 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 (1/8" MIN. THICKNESS) OR SURFACE STORAGE ALTERNATIVES USING PREFABRICATED CONCRETE WASHOUT DEVICES OR A LINED ABOVE GROUND STORAGE AREA SHOULD BE USED.
 - THE CWA SHALL BE INSTALLED PRIOR TO CONCRETE PLACEMENT ON SITE.
 - 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.
 - BERM SURROUNDING SIDES AND BACK OF THE CWA SHALL HAVE MINIMUM HEIGHT OF 1'.
 - VEHICLE TRACKING PAD SHALL BE SLOPED 2% TOWARDS THE CWA.
 - 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.
 - USE EXCAVATED MATERIAL FOR PERIMETER BERM CONSTRUCTION.

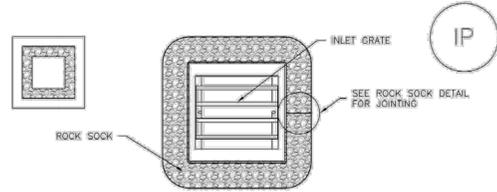
November 2010 Urban Drainage and Flood Control District Urban Storm Drainage Criteria Manual Volume 3 CWA-3

MM-1 Concrete Washout Area (CWA)

- CWA MAINTENANCE NOTES**
- 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.
 - FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
 - WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
 - 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'.
 - 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.
 - THE CWA SHALL REMAIN IN PLACE UNTIL ALL CONCRETE FOR THE PROJECT IS PLACED.
 - 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.

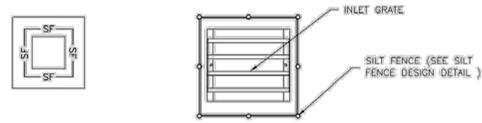
CWA-4 Urban Drainage and Flood Control District Urban Storm Drainage Criteria Manual Volume 3 November 2010

Inlet Protection (IP) SC-6



IP-3. ROCK SOCK SUMP/AREA INLET PROTECTION

- ROCK SOCK SUMP/AREA INLET PROTECTION INSTALLATION NOTES**
- SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.
 - STRAW WATTLES/SEDIMENT CONTROL LOGS MAY BE USED IN PLACE OF ROCK SOCKS FOR INLETS IN PVIOUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.



IP-4. SILT FENCE FOR SUMP INLET PROTECTION

- SILT FENCE INLET PROTECTION INSTALLATION NOTES**
- SEE SILT FENCE DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.
 - POSTS SHALL BE PLACED AT EACH CORNER OF THE INLET AND AROUND THE EDGES AT A MAXIMUM SPACING OF 3 FEET.
 - STRAW WATTLES/SEDIMENT CONTROL LOGS MAY BE USED IN PLACE OF SILT FENCE FOR INLETS IN PVIOUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.

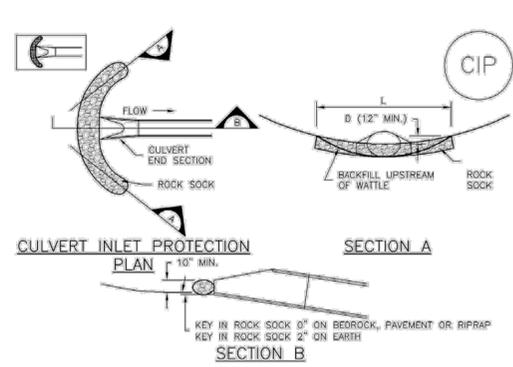
August 2013 Urban Drainage and Flood Control District Urban Storm Drainage Criteria Manual Volume 3 IP-5

SC-6 Inlet Protection (IP)

- GENERAL INLET PROTECTION INSTALLATION NOTES**
- SEE PLAN VIEW FOR: -LOCATION OF INLET PROTECTION. -TYPE OF INLET PROTECTION (IP-1, IP-2, IP-3, IP-4, IP-5, IP-6)
 - 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.
 - 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**
- 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.
 - FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
 - WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
 - 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 1/4" OF THE HEIGHT FOR STRAW BALES.
 - 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.
 - 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 SWAMP 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.

IP-8 Urban Drainage and Flood Control District Urban Storm Drainage Criteria Manual Volume 3 August 2013

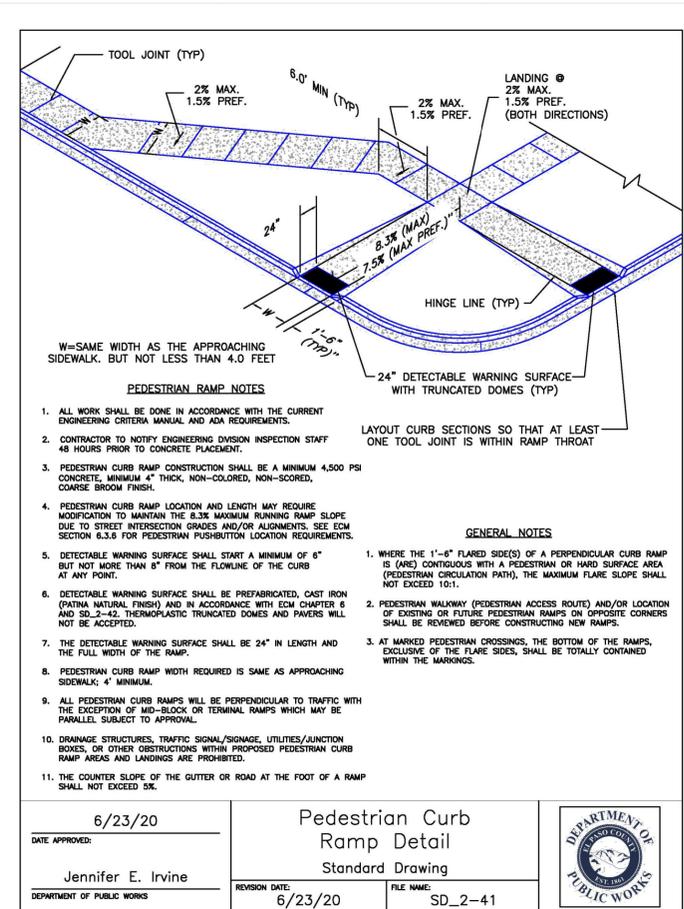
Inlet Protection (IP) SC-6



CIP-1. CULVERT INLET PROTECTION

- CULVERT INLET PROTECTION INSTALLATION NOTES**
- SEE PLAN VIEW FOR -LOCATION OF CULVERT INLET PROTECTION.
 - SEE ROCK SOCK DESIGN DETAIL FOR ROCK GRADATION REQUIREMENTS AND JOINTING DETAIL.
- CULVERT INLET PROTECTION MAINTENANCE NOTES**
- 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.
 - FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
 - WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
 - SEDIMENT ACCUMULATED UPSTREAM OF THE CULVERT SHALL BE REMOVED WHEN THE SEDIMENT DEPTH IS 1/2 THE HEIGHT OF THE ROCK SOCK.
 - 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.

August 2013 Urban Drainage and Flood Control District Urban Storm Drainage Criteria Manual Volume 3 IP-7

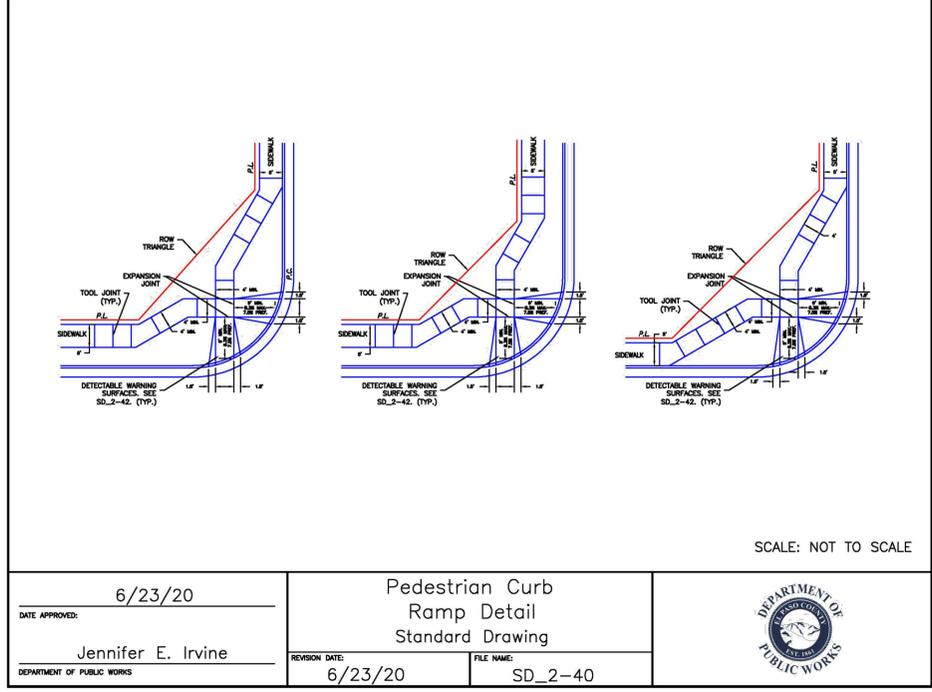


Pedestrian Curb Ramp Detail Standard Drawing

DATE APPROVED: 6/23/20
JENNIFER E. IRVINE
DEPARTMENT OF PUBLIC WORKS

REVISION DATE: 6/23/20
FILE NAME: SD_2-41

DEPARTMENT OF PUBLIC WORKS

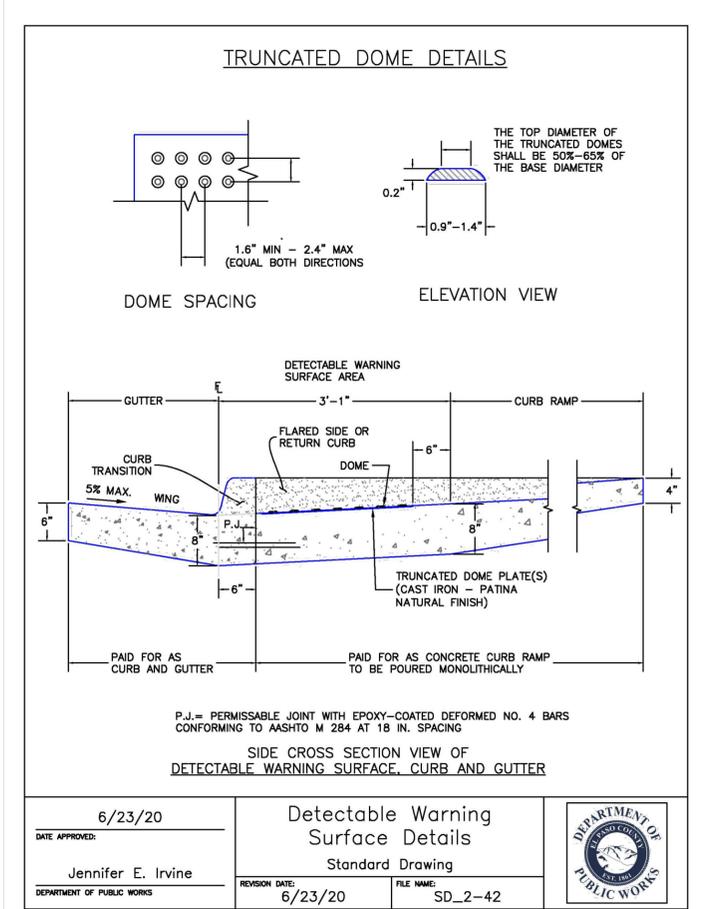


Pedestrian Curb Ramp Detail Standard Drawing

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FILE NAME: SD_2-40

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Detectable Warning Surface Details Standard Drawing

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REVISION DATE: 6/23/20
FILE NAME: SD_2-42

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RMG Engineers / Architects
Architectural Structural Geotechnical
SOUTHERN COLORADO OFFICE
2910 AUSTIN BLUFFS PKWY., SUITE 100, COLORADO SPRINGS, CO 80918
SOUTHERN COLORADO, DENVER, METRO, NORTHERN COLORADO

COLORADO LICENSED PROFESSIONAL ENGINEER
3/01/24
51909

FOUNDATION LUTHERAN CHURCH
9960 TOWNERS AVE
FALCON, COLORADO

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CONSTRUCTION DOCUMENTS

SHEET NAME: GEC DETAILS
PROJECT STATUS: PROJECT STATUS

ENG: DOW
DRAWN: AMH
CHECKED: TPT

DATE: 3/1/24

REVISION DATE

JOB NO: 191726
SHEET NO: 10 of 12

