


TABULATION OF LENGTH

STATION	LINEAR FEET	
	CIVIL	MAJOR STRUCTURE
HAPPY CANYON CREEK 105+00.00 BEGIN CHANNEL 128+00.00 END CHANNEL	2,300.00	
HAPPY CANYON CREEK BOX CULVERT 107+74.75 BEGIN BOX CULVERT 108+21.13 END BOX CULVERT		46.38
MAINTENANCE ACCESS 70+00.00 BEGIN ACCESS 88+51.74 END ACCESS	1,851.74	
REGIONAL TRAIL 23+00.00 BEGIN TRAIL 27+28.51 END TRAIL	428.51	
CHEROKEE TRAIL 51+50.00 BEGIN TRAIL 53+90.00 END TRAIL	240.00	
BELFORD AVENUE BRIDGE 93+64.92 BEGIN BRIDGE 95+63.15 END BRIDGE		198.23
TOTALS	4,820.25	244.61
SUMMARY		
	LIN. FT.	MILES
Channel	2,300.00	0.44
Trail & Access	2,520.25	0.48
Major Structures	244.61	0.05
GROSS AND NET LENGTH	5,064.86	0.97
BELFORD AVENUE DESIGN DATA		
Minimum Curve Radius (Feet)	762	
Maximum Grade	5.0%	
Minimum S.S.D. Horizontal (Feet)	305	
Minimum S.S.D. Vertical (Feet)	305	
Minimum Design Speed (MPH)	40	
Posted Speed Limit (MPH)	35	
Superelevation e(Max.)	NC	
2035 Design Traffic	N/A	
DHV Trucks %	N/A	

TOWN OF PARKER APPROVALS

The Town of Parker review constitutes general compliance with the Town's Standards and approved variances, subject to these plans being stamped, signed, and dated by the professional engineer of record. Review by the Town does not constitute approval of the plan design or accuracy and correctness of engineering calculations. Errors in the design or calculations remain the responsibility of the registered professional engineer whose stamp and signature are affixed to this document.

This review does not constitute approval of any private on-site improvements which may be shown. Construction cannot commence until all required drainage/traffic report(s), final development plan(s), special review(s), grading permit, and/or other permits are complete, approved and on file with the Town of Parker.


Town of Parker, Director of Engineering
Date: 11/02/2021



CONSTRUCTION PLANS
PLAN AND PROFILE OF PROPOSED
BELFORD AVENUE BRIDGE AND HAPPY CANYON CREEK
TOWN OF PARKER, COUNTY OF DOUGLAS, STATE OF COLORADO

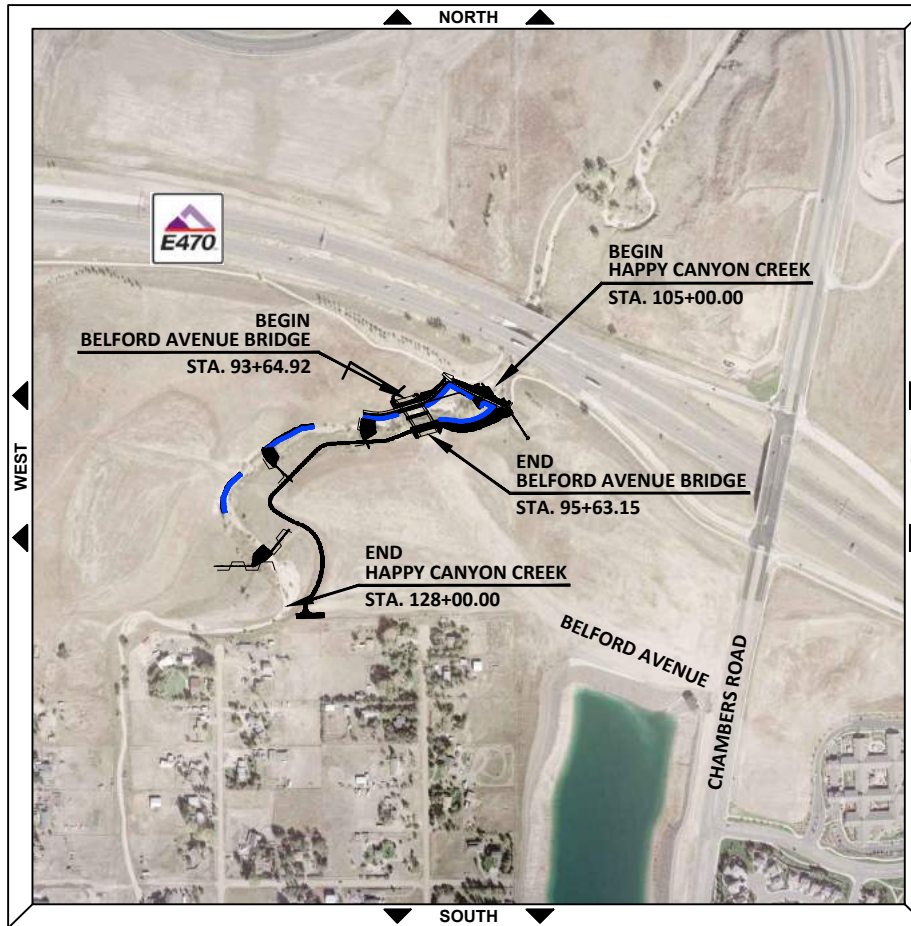
SCALE OF ORIGINAL DRAWINGS

ON PLAN 1" = 40'
ON PROFILE 1" = 40' HORIZONTAL
 1" = 4' VERTICAL



INDEX OF SHEETS

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BASIS OF BEARING:

THE WEST LINE OF THE SOUTHWEST QUARTER OF SECTION 6, TOWNSHIP 6 SOUTH, RANGE 66 WEST OF THE SIXTH PRINCIPAL MERIDIAN BEING MONUMENTED AS SHOWN HEREON HAVING A BEARING OF NORTH 00°29'49" WEST, AS DETERMINED BY GPS OBSERVATION FROM NGS CONTROL POINTS IN THE COLORADO CENTRAL ZONE, STATE PLAN COORDINATE SYSTEM, TOWN OF PARKER, COUNTY OF DOUGLAS, STATE OF COLORADO.

BENCHMARKS: (COMPARK SOUTH)

SOURCE BENCHMARKS:
DOUGLAS COUNTY BM 1.115010
A DOUGLAS COUNTY GIS MONUMENT SET IN CONCRETE LOCATED APPROXIMATELY 130 FEET SOUTHWESTERLY OF THE CENTERLINE OF CHAMBERS ROAD AND 95 FEET NORTHWESTERLY OF THE CENTERLINE OF COMPARK BOULEVARD.
ELEVATION = 5752.84 (NAVD 88)

SITE BENCHMARKS:
A NO. 5 REBAR WITH 2" ALUMINUM CAP STAMPED "LS 28286, 2001" FOUND AT THE SOUTHWEST CORNER OF SECTION 6, T6S, R66W LOCATED ON THE WEST LINE OF FIRST STREET APPROXIMATELY 1000 FEET NORTH OF ELM AVENUE.
ELEVATION = 5845.51

A 2.5" IRON PIPE WITH 3.25" ALUMINUM CAP STAMPED "PLS 12405, 1997" FOUND AT THE SOUTHEAST CORNER OF SECTION 6, T6S, R66W LOCATED APPROXIMATELY 960 FEET NORTH OF THE CENTERLINE OF AVENTERRA PARKWAY AND APPROXIMATELY 1050 FEET WEST OF THE CENTERLINE OF CHAMBERS ROAD.
ELEVATION = 5808.06



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Print Date: 10/18/2021 3:29:34 PM	(R-X)	Sheet Revisions			Manhard CONSULTING LTD <small>8008 E. Arapahoe Court, Suite 110, Centennial, CO 80112 ph:303.708.0900 fax:303.708.0400 manhard.com Civil Engineers • Surveyors • Water Resource Engineers • Water & Wastewater Engineers Construction Managers • Environmental Scientists • Landscape Architects • Planners</small>	As Constructed	BELFORD-HAPPY CANYON CREEK TITLE SHEET			Project No./Code
File Name: A115360-01TTL01.dwg		Date	Comments	Initials		No Revisions:	Designer: DCS	Structure		
Horizontal Scale: NTS Vertical Scale: NTS						Revised:	Detailer: DCS	Numbers		
 6400 South Fiddlers Green Circle, Suite 1500 Greenwood Village, CO 80111 Phone: 303.721.1440 www.FHUENG.com					Void:	Subset: Title	Sheets: T-1 of 1	Sheet Number 1		

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COLORADO
 DEPARTMENT OF TRANSPORTATION
M&S STANDARDS PLANS LIST
 July 31, 2019
 Revised on February 16, 2021

ALL OF THE M&S STANDARD PLANS, AS SUPPLEMENTED AND REVISED, APPLY TO THIS PROJECT WHEN USED BY DESIGNATED PAY ITEM OR SUBSIDIARY ITEM.

THE M&S STANDARD PLANS USED TO DESIGN THIS PROJECT ARE INDICATED BY A MARKED BOX , AND WILL BE ATTACHED TO THE PLANS. ALL THE OTHER M&S STANDARD PLANS ARE STILL ELIGIBLE FOR CONSTRUCTION IF APPROVED BY AN APPROPRIATE CDOT ENGINEER.



Print Date: 6/17/2021 8:43:03 PM		Sheet Revisions			As Constructed		BELFORD-HAPPY CANYON CREEK STANDARD PLANS LIST		Project No./Code		
File Name: G115360-01SPL01.dwg					No Revisions:						
Horizontal Scale: NTS Vertical Scale: NTS		<input type="checkbox"/> (R-X) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Date	Comments	Initials	Revised:	Designer: SED	Structure Numbers			
							Detailer: SED				
6400 South Fiddlers Green Circle, Suite 1500 Greenwood Village, CO 80111 Phone: 303.721.1440 www.FHUENG.com							Subset: General	Sheets: SP-1 of 1	Sheet Number 2		

GENERAL NOTES

ALL WORK TO BE CONDUCTED WITHIN THE PROJECT LIMITS SHALL BE COMPLETED IN ACCORDANCE WITH THE TOWN OF PARKER DESIGN AND CONSTRUCTION STANDARDS, LATEST EDITION, CDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION, AND ITS SUPPLEMENTS, CDOT STANDARD PLANS (M&S STANDARDS), LATEST EDITION, AND THE APPROVED PLANS AND SPECIFICATIONS.

ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION BY THE TOWN OF PARKER PUBLIC WORKS DEPARTMENT. THE TOWN RESERVES THE RIGHT TO ACCEPT OR REJECT ANY SUCH MATERIALS AND WORKMANSHIP THAT DOES NOT CONFORM TO ITS STANDARDS AND SPECIFICATIONS.

ALL WORK ZONE TRAFFIC CONTROL SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), LATEST EDITION, THE CURRENT COLORADO SUPPLEMENTS, AND THE APPROVED PLANS AND SPECIFICATIONS.

A PRECONSTRUCTION MEETING SHALL BE SCHEDULED A MINIMUM OF 48 HOURS AND A MAXIMUM OF 96 HOURS PRIOR TO THE START OF CONSTRUCTION. A PRECONSTRUCTION MEETING WILL NOT BE SCHEDULED UNTIL THE GRADING PERMIT AND ALL OTHER NECESSARY PERMITS HAVE BEEN OBTAINED.

ALL WORK SHALL BE DONE IN ACCORDANCE WITH TOWN OF PARKER DEPARTMENT OF ENGINEERING/PUBLIC WORKS STANDARD CONSTRUCTION NOTES.

UTILITIES

UTILITY INFORMATION AS SHOWN ON THE PLAN SHEETS ARE PLOTTED FROM THE BEST AVAILABLE INFORMATION. THE CONTRACTOR'S ATTENTION IS DIRECTED TO PARAGRAPH 105.11 OF THE STANDARD SPECIFICATIONS CONCERNING UTILITIES. THE CONTRACTOR SHALL CALL 811 FOR UTILITY LOCATIONS AT LEAST 2 WORKING DAYS PRIOR TO ANY DIGGING, NOT INCLUDING THE DAY OF ACTUAL CONTACT.



IT IS ESTIMATED THAT TWENTY (20) HOURS WILL BE REQUIRED FOR UTILITY POTHOLING.

EARTHWORK

WATER SHALL BE USED AS A DUST PALLIATIVE WHERE REQUIRED. LOCATIONS SHALL BE AS ORDERED BY THE ENGINEER AND WILL NOT BE PAID FOR SEPARATELY.

DEPTH OF MOISTURE – DENSITY CONTROL FOR THIS PROJECT SHALL BE AS FOLLOWS:

FULL DEPTH OF ALL EMBANKMENTS
BASES OF CUTS AND FILLS = 8 INCHES

EXCAVATION REQUIRED FOR COMPACTION OF BASES OF CUTS AND FILLS WILL BE CONSIDERED SUBSIDIARY TO THAT OPERATION AND WILL NOT BE PAID FOR SEPARATELY.

THE TYPE OF COMPACTION FOR EARTHWORK ON THIS PROJECT SHALL BE ASTM D698 FOR COHESIVE SOILS OR ASTM D 1557 FOR GRANULAR SOILS. THE FOLLOWING COMPACTION SPECIFICATIONS SHOULD BE FOLLOWED FOR EACH AREA:

BENEATH STRUCTURAL AREAS: 95% OF MAXIMUM DRY DENSITY
BENEATH NON-STRUCTURAL AREAS: 90% OF MAXIMUM DRY DENSITY

THE CONTRACTOR SHALL REFER TO THE FINAL GEOTECHNICAL REPORT FOR ADDITIONAL INFORMATION ON MOISTURE CONTROL AND COMPACTION.

A TYPICAL 1.5% CROSS SLOPE (2% MAX.) ON ALL SIDEWALKS SHALL BE USED.

ALL TRENCHES SHALL BE ADEQUATELY SUPPORTED AND THE SAFETY OF WORKERS PROVIDED FOR AS REQUIRED BY THE MOST RECENT OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) "SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION."

RIGHT OF WAY

EXISTING RIGHT OF WAY INFORMATION AS SHOWN ON THE PLAN SHEETS ARE PLOTTED FROM THE BEST AVAILABLE INFORMATION.

CONSTRUCTION

REMOVAL OF CONCRETE PAVEMENT REQUIRED ON THIS PROJECT SHALL BE SAW CUT TO A VERTICAL EDGE. COST TO BE INCLUDED IN THE WORK.

ANY CONCRETE PAVEMENT, WHICH IS TO REMAIN AND IS DAMAGED AS A RESULT OF THE CONTRACTOR'S OPERATION, SHALL BE REPLACED AT CONTRACTOR'S EXPENSE.

SHORING MAY BE REQUIRED TO CONSTRUCT THE IMPROVEMENTS IDENTIFIED FOR THIS PROJECT INCLUDING UTILITY RELOCATIONS, STORM SEWER PIPES, DRAINAGE STRUCTURES AND OTHER PROPOSED IMPROVEMENTS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO IDENTIFY REQUIRED SHORING AREAS. ALL REQUIRED SHORING FOR THIS PROJECT WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE WORK.

THE CONCENTRATION OF WATER-SOLUBLE SULFATES OF THE ONSITE SOILS INDICATED CONCENTRATIONS OF LESS THAN 100 PPM (PARTS PER MILLION) TO 100 PPM. THIS IS CONSIDERED TO BE A NEGLIGIBLE CONCENTRATION RELATIVE TO POTENTIAL CORROSIVE ATTACK ON CONCRETE. THEREFORE, ALL CONCRETE IN CONTACT WITH THE SOILS ON THE SITE MAY BE DESIGNED FOR NEGLIGIBLE SULFATE EXPOSURE (SØ) IN ACCORDANCE WITH THE CURRENT AMERICAN CONCRETE INSTITUTE (ACI) MANUAL.

WATER MAY BE PURCHASED FROM THE STONEGATE WATER AND SANITATION DISTRICT.

THE END POSTS AND CORNER POSTS ARE NOT PAID FOR SEPARATELY BUT ARE INCLUDED IN THE FENCE BID ITEM.

THE URBAN DRAINAGE AND FLOOD CONTROL DISTRICT WILL CONDUCT SITE VISITS DURING THE PROJECT CONSTRUCTION WITHIN OR NEAR THE CHANNEL TO OBSERVE CONSTRUCTION FOR CONFORMANCE WITH THE APPROVED PLANS AND SPECIFICATIONS. PLEASE CONTACT MIKE SARMENTO, UDFCD CONSTRUCTION MANAGER (303-455-6277), MSARMENTO@UDFCD.ORG TO SCHEDULE A PRECONSTRUCTION MEETING. ALL STRUCTURAL AND GROUTED BOULDER WORK REQUIRE 48-HOURS PRIOR NOTICE TO ANY CONSTRUCTION OR CONCRETE PLACEMENT. STANDARDS AND SPECIFICATIONS FOR ALL OUTFALL AND CHANNEL WORK CAN BE ACCESSED AT WWW.UDFCD.ORG UNDER THE REFERENCES SECTION. FAILURE TO NOTIFY MAY RESULT IN PROJECT INELIGIBILITY.

FOR THE REGIONAL TRAIL AND CHEROKEE TRAIL, CONTROL (CONTRACTION) JOINTS SHALL BE SAWCUT (OR OTHER APPROVED METHODS) TO A DEPTH OF 1½" AND SHALL BE ½" WIDE. TOOLING OF CONTROL JOINTS WILL NOT BE ACCEPTED.

This project is subject to a permit with the Colorado Department of Health for Stormwater Discharges Associated with Construction Activities. The permit shall be obtained by the Contractor. The Contractor shall prepare all applications required and submit to the Colorado Department of Health. The Contractor shall submit a copy of the permit to the Engineer prior to the start of Construction. The Contractor is Responsible for all permit application fees.

UTILITY LIST

THE FOLLOWING IS A LIST OF KNOWN UTILITIES WITH SERVICES WITHIN THE PROJECT LIMITS:



BROOKS KAUFMAN (303) 688-3100 PHONE



WILLIAM BENSON (303) 792-6069 PHONE



COLORADO DEPARTMENT OF HEALTH (303) 320-8333 PHONE



KEVIN YOUNG (720) 490-3867 PHONE



MICHELLE O'NAN (303) 329-1618 PHONE



PUBLIC WORKS (303) 840-9546 PHONE
STREETS – ALEX MESTDAGH
STORM WATER – JACOB JAMES
EROSION CONTROL – ADAM NELSON

STONEGATE VILLAGE METRO DISTRICT

DISTRICT ENGINEER: SCOTT BARNETT (303) 858-9909 PHONE

DISTRICT MANAGER: KURT SCHLIEGER (303) 381-4968 PHONE

COMPARK VILLAGE CAMPUS METRO DISTRICT

CLIFFTON LARSON ALLEN (303) 779-4525 PHONE

STANDARD ABBREVIATION/DEFINITIONS

THE FOLLOWING IS A LIST OF ABBREVIATIONS USED IN THE CONTRACT DOCUMENTS:

- HCL – HORIZONTAL CONTROL LINE
- PGL – PROFILE GRADE LINE
- HMA – HOT MIX ASPHALT
- NTS – NOT TO SCALE
- ROW – RIGHT OF WAY
- RCP – REINFORCED CONCRETE PIPE
- PVC – POLYVINYL CHLORIDE PIPE
- PI – POINT OF INTERSECTION
- PC – POINT OF CURVATURE
- PRC – POINT OF REVERSE CURVATURE
- PT – POINT OF TANGENT
- VPI – VERTICAL POINT OF INTERSECTION
- VPC – VERTICAL POINT OF CURVATURE
- VPT – VERTICAL POINT OF TANGENT
- NC – NORMAL CROWN
- NIC – NOT IN CONTRACT
- NA – NOT APPLICABLE
- POSS – POINT OF SLOPE SELECTION
- PL – PROPERTY LINE



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As Constructed	BELFORD-HAPPY CANYON CREEK GENERAL NOTES		Project No./Code
No Revisions:	Designer: DCS	Structure Numbers	
Revised:	Detailer: DCS		
Void:	Subset: General	Sheets: GN-1 of 1	Sheet Number 3

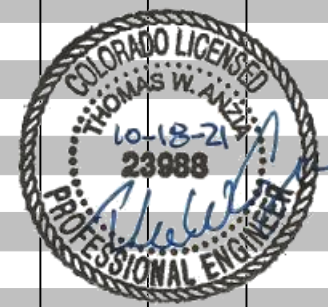
Index			Contract Item No.	Contract Item	Unit	General		Roadway		Bridge		Drainage		Erosion				Project Totals	
Book	Page	Sheet				Plan	As Const.	Plan	As Const.	Plan	As Const.	Plan	As Const.	Plan	As Const.	Plan	As Const.	Plan	As Const.
			201	CLEARING AND GRUBBING	LS	1												1	
			202	REMOVAL OF PIPE	EACH			3										3	
			202	REMOVAL OF SIDEWALK	SY			457										457	
			202	REMOVAL OF FENCE	LF			2012										2012	
			203	EMBANKMENT MATERIAL (COMPLETE IN PLACE)	CY			2995										2995	
			203	POTHOLING	HOUR	20												20	
			206	STRUCTURE EXCAVATION	CY					261		130						391	
			206	STRUCTURE BACKFILL (CLASS 1)	CY					1475		118						1593	
			206	MECHANICAL REINFORCEMENT OF SOIL	CY					1144								1144	
			206	FILTER MATERIAL (CLASS A)	CY					397		1690						2087	
			206	FILTER MATERIAL (CLASS C)	CY							61						61	
			207	TOPSOIL	CY							832						832	
			208	INLET PROTECTION	EACH								1					1	
			208	AGGREGATE BAG	LF								480					480	
			208	CONCRETE WASHOUT STRUCTURE	EACH								2					2	
			208	VEHICLE TRACKING CONTROL	EACH								2					2	
			208	STABILIZED STAGING AREA	SY								2300					2300	
			208	SILT FENCE	LF								1361					1361	
			208	CULVERT PROTECTION	LF								100					100	
			208	CHECK DAM	LF								275					275	
			208	SEDIMENT CONTROL LOG (12 INCH)	LF								3683					3683	
			208	SEDIMENT REMOVAL AND DISPOSAL	HR								40					40	
			208	EROSION CONTROL MANAGEMENT	DAY								30					30	
			208	DIVERSION DITCH	LF								312					312	
			208	TEMPORARY STREAM CROSSING	EACH								4					4	
			208	TEMPORARY SEDIMENT BASIN	EACH								2					2	
			208	PORTABLE TOILET PROTECTION	EACH								1					1	
			211	DEWATERING	LS								1					1	
			212	SEEDING (NATIVE)	ACRE								6.3					6.3	
			213	MULCHING (WEED FREE STRAW)	ACRE								6.3					6.3	
			216	EROSION CONTROL BLANKET (STRAW/COCONUT)	SY								6180					6180	
			304	AGGREGATE BASE COURSE (CLASS 6)	CY			386										386	
			403	HOT MIX ASPHALT	TON					270								270	
			501	STEEL SHEET PILING (TYPE II)	SF							11710						11710	
			503	DRILLED CAISSON (24 INCH)	LF					753								753	
			503	DRILLED CAISSON (48 INCH)	LF					240								240	
			506	RIPRAP (12 INCH)	CY							76						76	
			506	RIPRAP (18 INCH)	CY					1184								1184	
			506	SOIL RIPRAP (12 INCH)	CY							2884						2884	
			506	SOIL RIPRAP (18 INCH)	CY							977						977	
			506	24 INCH GROUTED BOULDERS	CY							602						602	
			514	PIPE RAILING	LF							107						107	
			514	PEDESTRIAN RAILING (STEEL)	LF					386								386	
			515	WATERPROOFING (MEMBRANE)	SY					1631								1631	



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Print Date: 10/18/2021 11:28:32 AM		Sheet Revisions		<p>8008 E. Arapahoe Court, Suite 110, Denver, CO 80112 ph:303.708.0900 fax:303.708.0400 manhard.com Civil Engineers • Surveyors • Water Resource Engineers • Water & Wastewater Engineers Construction Managers • Environmental Scientists • Landscape Architects • Planners</p>	As Constructed		BELFORD – HAPPY CANYON CREEK SUMMARY OF APPROXIMATE QUANTITIES			Project No./Code			
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								Subset:	General	Sheets:	SM-1 of 2	Sheet Number	4

Index			Contract Item No.	Contract Item	Unit	General		Roadway		Bridge		Drainage		Erosion				Project Totals	
Book	Page	Sheet				Plan	As Const.	Plan	As Const.	Plan	As Const.	Plan	As Const.	Plan	As Const.	Plan	As Const.	Plan	As Const.
			515	CONCRETE SEALER	SY					402								402	
			601	CONCRETE CLASS D (BOX CULVERT)	CY							47						47	
			601	CONCRETE CLASS D (BRIDGE)	CY					1074								1074	
			601	STRUCTURAL CONCRETE COATING	SY					1228								1228	
			601	STRUCTURAL CONCRETE COATING (ANTI-GRAFFITI)	SF					2200								2200	
			601	HAND STAINED STONE FORMLINER	SF					2200								2200	
			602	REINFORCING STEEL	LB					17634		2352						19986	
			602	REINFORCING STEEL (EPOXY COATED)	LB					241455		740						242195	
			603	18 INCH REINFORCED CONCRETE PIPE (CIP)	LF					40								40	
			603	48 INCH REINFORCED CONCRETE PIPE (CIP)	LF							187						187	
			603	48 INCH REINFORCED CONCRETE END SECTION	EACH							1						1	
			603	10X3 FOOT CONCRETE BOX CULVERT (PRECAST)	LF							90						90	
			604	INLET TYPE D (10 FOOT)	EACH							1						1	
			604	INLET SPECIAL	EACH							1						1	
			604	VANE GRATE INLET (SPECIAL)	EACH					2								2	
			606	BRIDGE RAIL (SPECIAL)	LF					388								388	
			607	CONSTRUCTION FENCE	LF									8838				8838	
			608	CONCRETE SIDEWALK (6 INCH)	SY			728										728	
			608	CONCRETE SIDEWALK (SPECIAL)	SY			433										433	
			613	1 INCH ELECTRICAL CONDUIT	LF					62								62	
			613	2 INCH ELECTRICAL CONDUIT	LF					958								958	
			613	LUMINAIRE (SPECIAL)	LF					6								6	
			614	SIGN PANEL (CLASS I)	SF			27										27	
			614	TIMBER SIGN POST 6x6 INCH	LF			90										90	
			618	PRESTRESSED CONCRETE I (BT42)	LF					1852								1852	
			619	8 INCH PLASTIC PIPE	LF							268						268	
			620	FIELD OFFICE (CLASS 2)	EACH			1										1	
			620	FIELD LAB (CLASS 2)	EACH			1										1	
			620	SANITARY FACILITY	EACH			1										1	
			625	CONSTRUCTION SURVEYING	LS			1										1	
			626	MOBILIZATION	LS			1										1	
			630	CONSTRUCTION TRAFFIC CONTROL	LS			1										1	
			700	F/A MINOR CONTRACT REVISIONS	FA			1										1	
			700	F/A EROSION CONTROL	FA									1				1	



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		○						Subset: General	Sheets: SM-2 of 2	Sheet Number 5			

TABULATION OF REMOVAL AND RESET QUANTITIES

STATION/LOCATION	REMOVAL OF PIPE	REMOVAL OF SIDEWALK	REMOVAL OF FENCE
	EACH	SY	LF
SHEET RM-1	3	457	1228
SHEET RM-2			784
PROJECT TOTALS	3	457	2012

TABULATION OF TRAIL QUANTITIES

STATION/LOCATION	AGGREGATE BASE COURSE (CLASS 6)	CONCRETE SIDEWALK (6 INCH)	CONCRETE SIDEWALK (SPECIAL)
	CY	SY	SY
MAINTENANCE ACCESS	386	40	
REGIONAL TRAIL		205	433
CHEROKEE TRAIL		483	
PROJECT TOTALS	386	728	433

TABULATION OF EARTHWORK

INDEX			ITEM	PROJECT TOTALS	
BOOK	PAGE	SHEET		CU. YDS.	
			EMBANKMENT MATERIAL (FOR INFO. ONLY) ROADWAY (FROM SURFACE COMPARISON)	0	
			HAPPY CANYON CREEK MAINTENANCE ACCESS	493	
			REGIONAL TRAIL CHEROKEE TRAIL	73	
			HAPPY CANYON CREEK FLOODPLAIN GRADING	408	
			TOTAL FOR PAY QUANTITY	2,021	

			UNCLASSIFIED EXCAVATION (FOR INFO. ONLY) ROADWAY (FROM SURFACE COMPARISON)	611	
			HAPPY CANYON CREEK MAINTENANCE ACCESS	493	
			REGIONAL TRAIL CHEROKEE TRAIL	476	
			HAPPY CANYON CREEK FLOODPLAIN GRADING	1	
			TOTAL	376	

			COMPACTION (MOISTURE & DENSITY CONTROL) EMBANKMENT (NET) BASES OF CUTS & FILLS (8 INCHES)	2,995	
			TOTAL	0	
			TOTAL	2,995	

			WETTING QUANTITIES COMPACTION (2995 x 0.040 M. GAL./yd)	120	
			TOTAL	120	

			ROADWAY QUANTITIES BALANCE	2,995	
			EMBANKMENT (NET)	3,444	
			EMBANKMENT X FACTOR (1.15)	0	
			EMBANKMENT REQUIRED FOR SHRINKAGE BASES OF CUTS & FILLS	3,444	
			BALANCE TOTAL (EMBANKMENT)	1,957	
			UNCLASSIFIED EXCAVATION	1,487	
			TO BE IMPORTED BY CONTRACTOR	3,444	
			BALANCE TOTAL		



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DENVER, CO 80206

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PROPERTY OF
PLATTE VALLEY
COMMERCIAL GROUP
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KANSAS CITY, MO
64112-2630

E-470 PUBLIC
HIGHWAY AUTHORITY
22470 E 6TH PKWY
SUITE 100
AURORA, CO 80018

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COMPARK 190 LLC
4600 S ULSTER ST SUITE 1400
DENVER, CO 80237-2850

PROPERTY OF
COMPARK 190 LLC
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DENVER, CO 80237-2850

MATCHLINE STA. 117+00

HAPPY CANYON
CREEK

EXISTING CHEROKEE
TRAIL

HAPPY CANYON
CREEK HCL

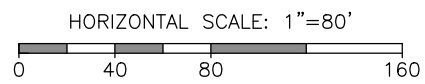
EXISTING CHEROKEE
TRAIL

1228 LF OF REMOVAL OF
FENCE

3 EACH OF REMOVAL OF
PIPE

457 SY OF REMOVAL OF
SIDEWALK

BELFORD AVENUE



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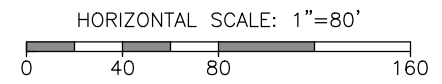
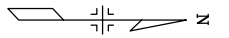
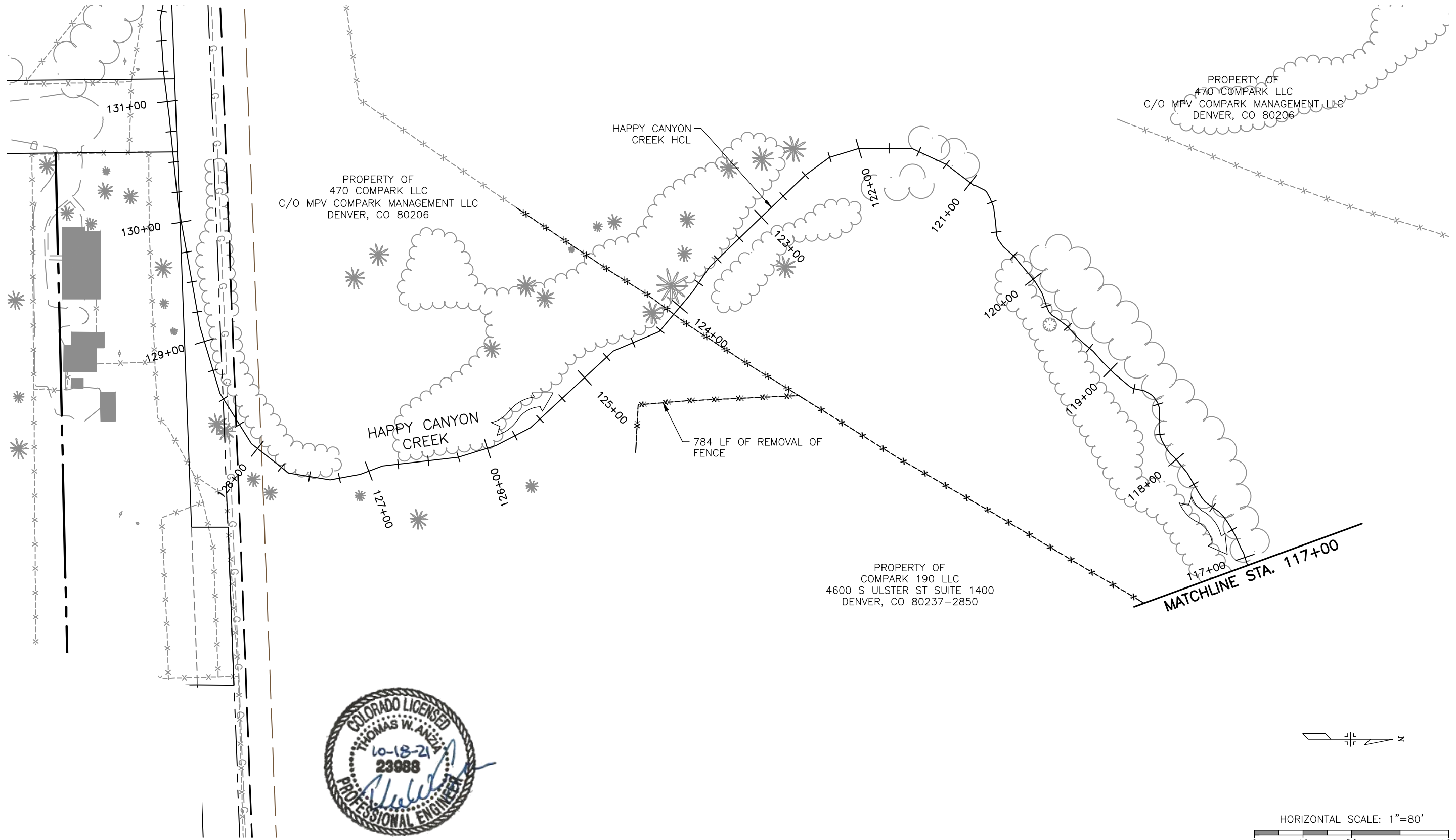
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**BELFORD-HAPPY CANYON CREEK
REMOVAL AND RESET PLANS**

Designer: SED Structure
Detailer: SED Numbers
Subset: Trail Sheets: RM-1 of 2

Project No./Code
Sheet Number 7

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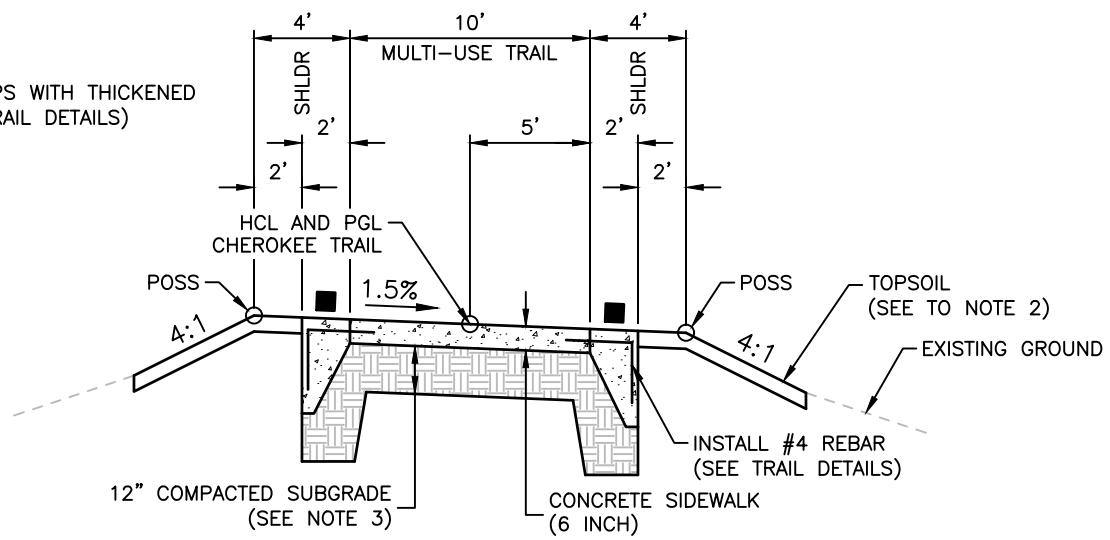
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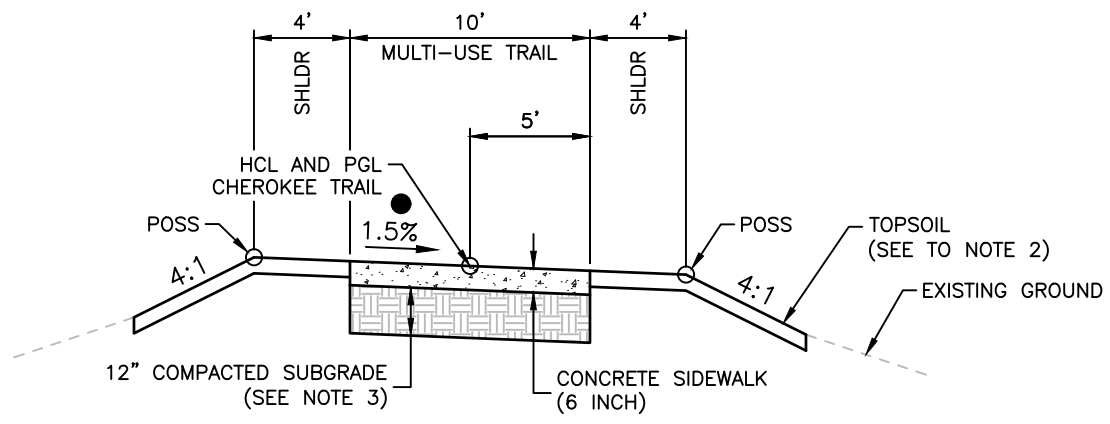
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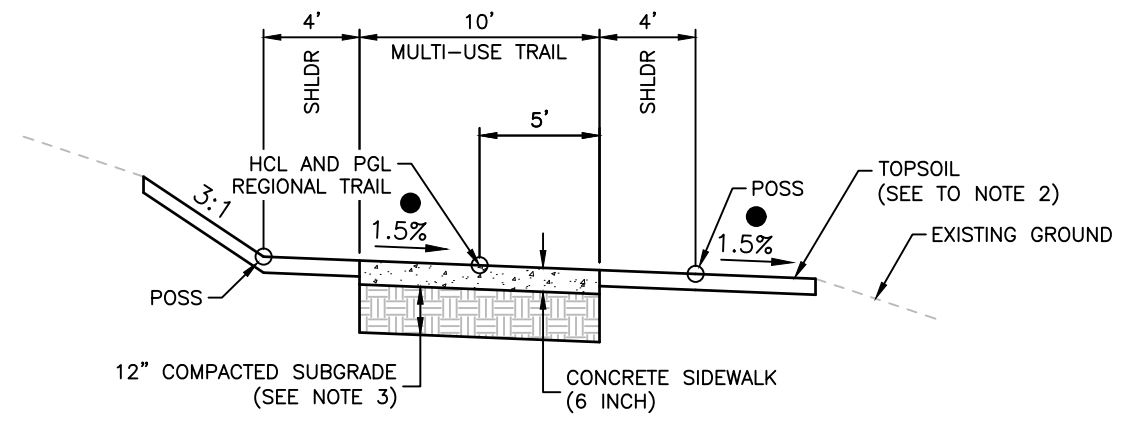
■ RUMBLE STRIPS WITH THICKENED EDGE (SEE TRAIL DETAILS)



CHEROKEE TRAIL
 STA 52+20.00 TO STA 52+97.00
 (REMOVE THICKENED EDGE AND JUST CONSTRUCT RUMBLE STRIP OVER CULVERT)

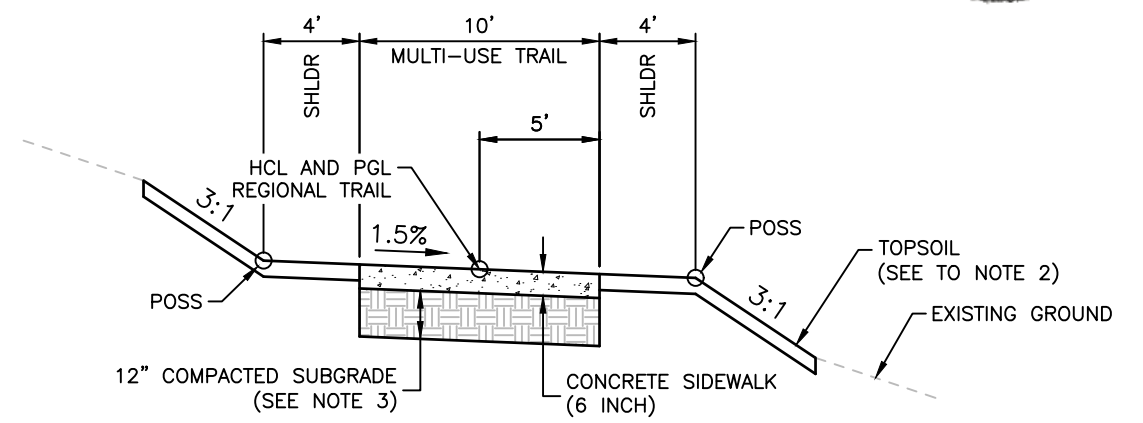


CHEROKEE TRAIL
 STA 50+50.00 TO STA 52+20.00
 STA 52+97.00 TO STA 54+10.80



REGIONAL TRAIL
 STA 26+26.94 TO STA 27+13.41

REGIONAL TRAIL
 STA 23+66.96 TO STA 26+26.94
 SEE TRAIL DETAILS FOR CONCRETE SIDEWALK (SPECIAL)



REGIONAL TRAIL
 STA 23+00.00 TO STA 23+66.96

● TRANSITION CROSS SLOPE AT TIE TO EXISTING TRAIL (SEE TRAIL PLANS)



NOTES:

- BREAK POINTS ON SLOPES AND IN BOTTOMS OF DITCHES SHALL BE ROUNDED DURING CONSTRUCTION FOR A PLEASING APPEARANCE. SEE STANDARDS FOR DETAILS OF CUT SLOPE TREATMENT, FLARING AND WIDENING.
- THE TOPSOIL SHALL BE PLACED AT A MINIMUM DEPTH OF 4 INCHES. DUE TO THE ANTICIPATED EXCESS AMOUNT OF TOPSOIL, SOME SURFACES WILL CONTAIN TOPSOIL EXCEEDING 4 INCHES IN DEPTH.
- THE SUBGRADE SHALL BE THOROUGHLY COMPACTED TO NINETY-FIVE PERCENT (95%) MODIFIED PROCTER DENSITY AT ± TWO PERCENT (2%) OF OPTIMUM MOISTURE.

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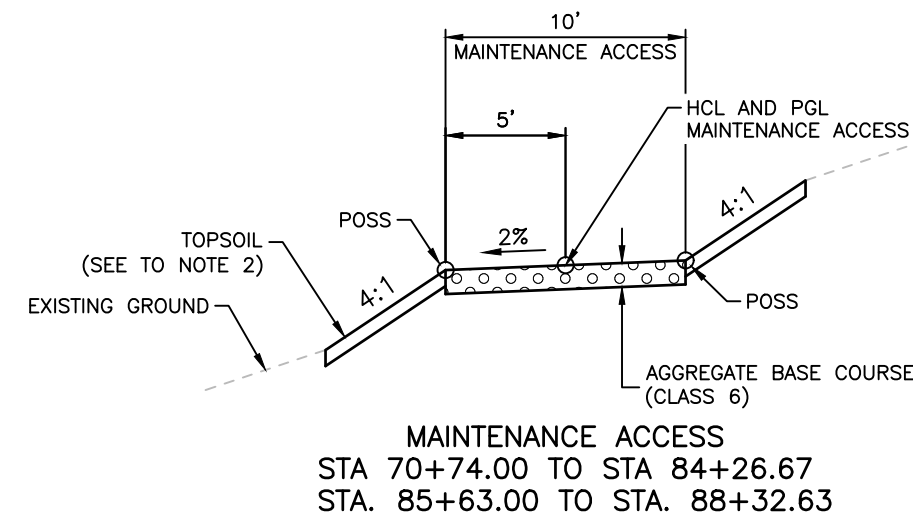
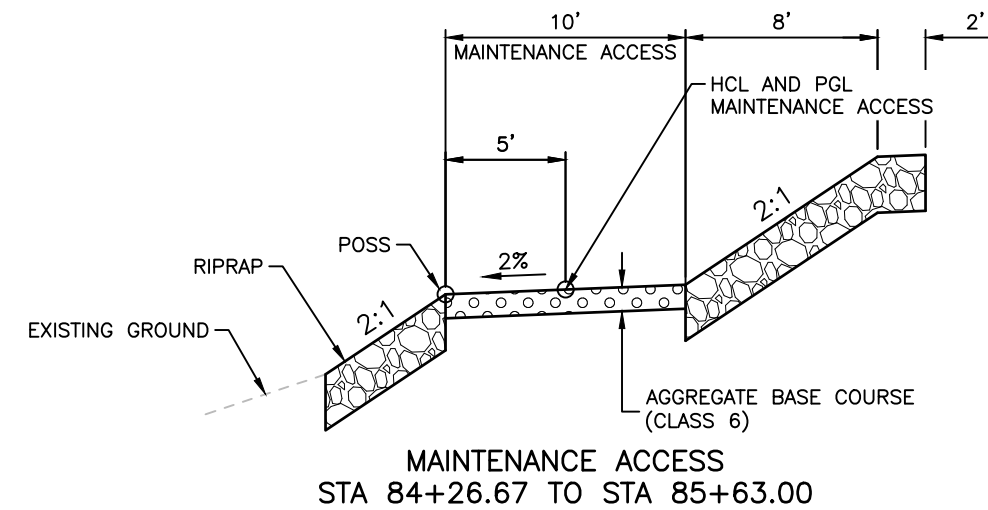
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No Revisions:	TYPICAL SECTIONS			
Revised:	Designer: DCS	Structure		
	Detailer: DCS	Numbers		
Void:	Subset: Trail	Sheets: TY-1 of 2		Sheet Number 9

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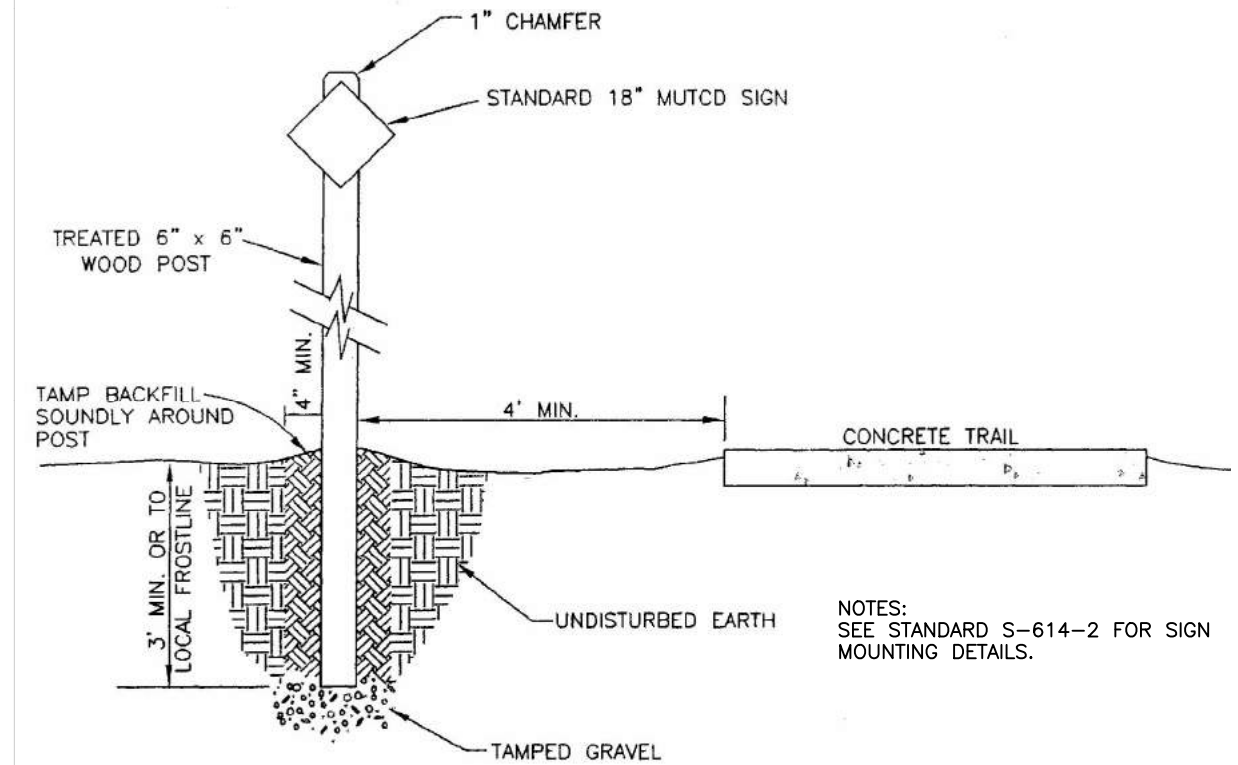
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- THE TOPSOIL SHALL BE PLACED AT A MINIMUM DEPTH OF 4 INCHES. DUE TO THE ANTICIPATED EXCESS AMOUNT OF TOPSOIL, SOME SURFACES WILL CONTAIN TOPSOIL EXCEEDING 4 INCHES IN DEPTH.
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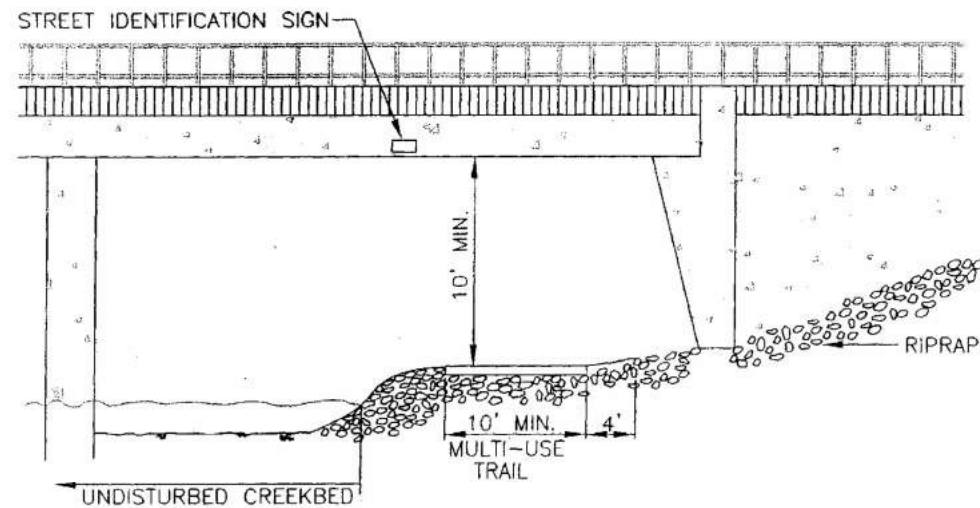
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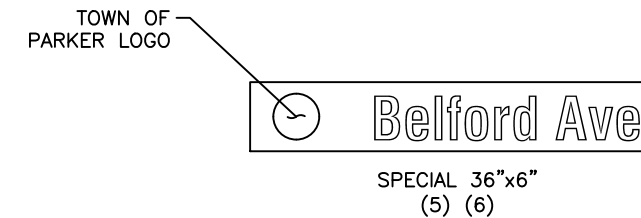
NOTES:
SEE STANDARD S-614-2 FOR SIGN MOUNTING DETAILS.

TOWN OF PARKER POST DETAIL AT TRAIL STANDARD

BRIDGE UNDERPASS



TOWN OF PARKER BRIDGE UNDERPASS TRAIL STANDARD



NOTE:
THE BELFORD AVE SIGN PANELS SHALL BE MOUNTED ABOVE THE TRAIL ON THE FACE OF THE BRIDGE DECK OVERHANG.



W12-2
18"x18"
YELLOW



PROPOSED UNDERPASS SIGNS

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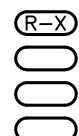
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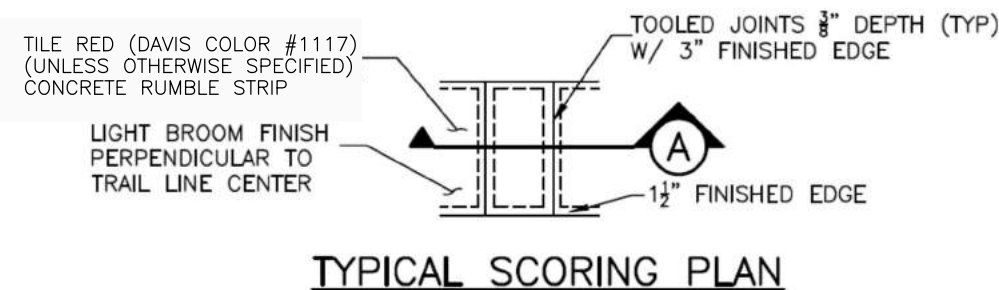
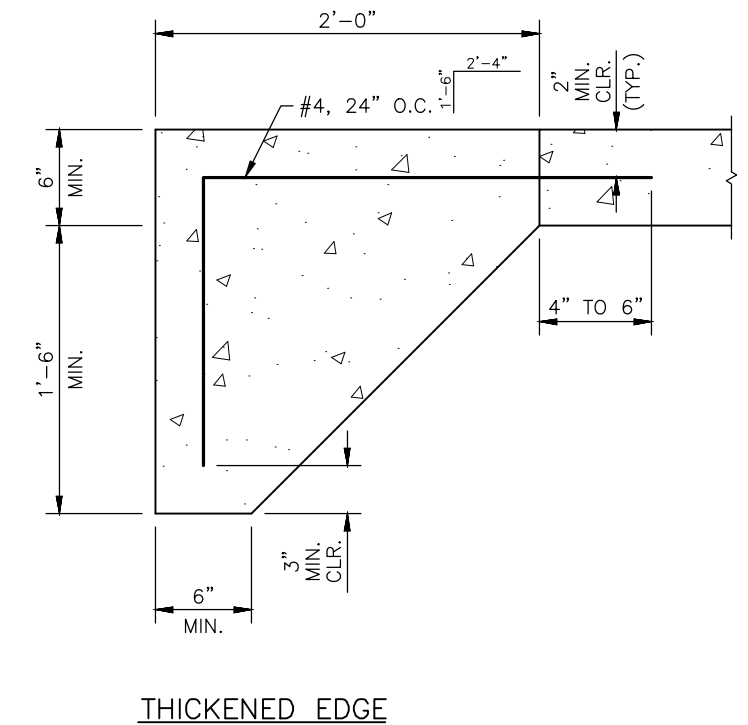
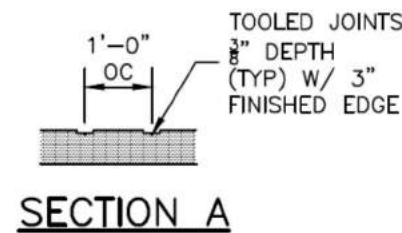
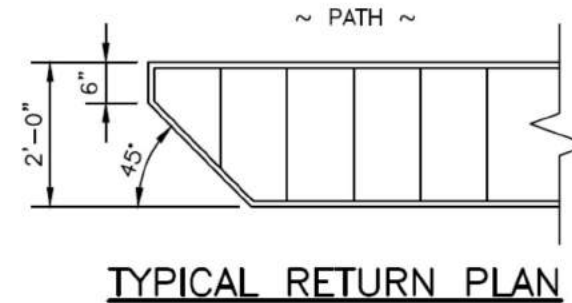
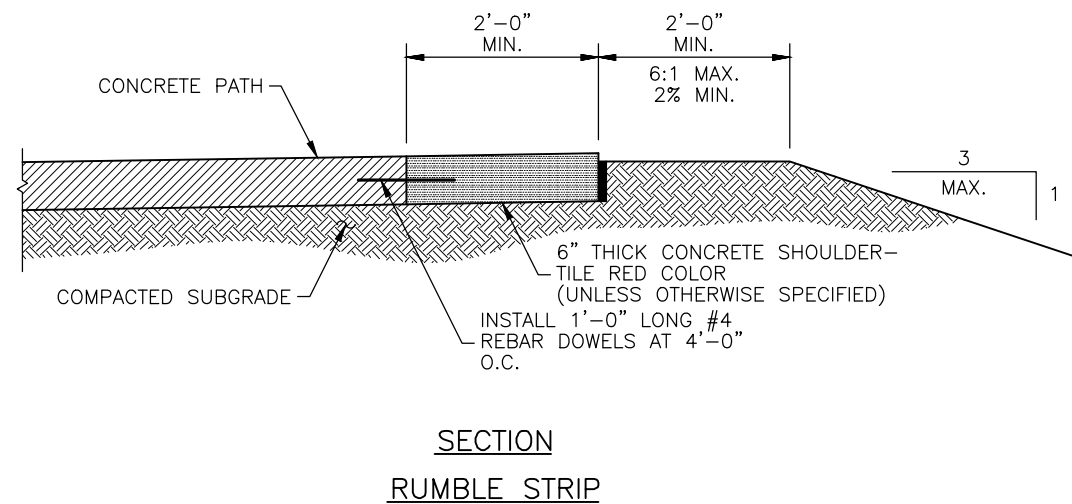
BELFORD-HAPPY CANYON CREEK TRAIL DETAILS

Designer:	DCS	Structure	
Detailer:	DCS	Numbers	
Subset:	Trail	Sheets:	TD-1 of 3

Project No./Code

Sheet Number 11

I:\115360-01 - Compare at Belford\CADD\Design\Drawings\BelfordHCC\, Scott.Dankenbring



RUMBLE STRIPS WITH THICKENED EDGE DETAILS



NOTES:

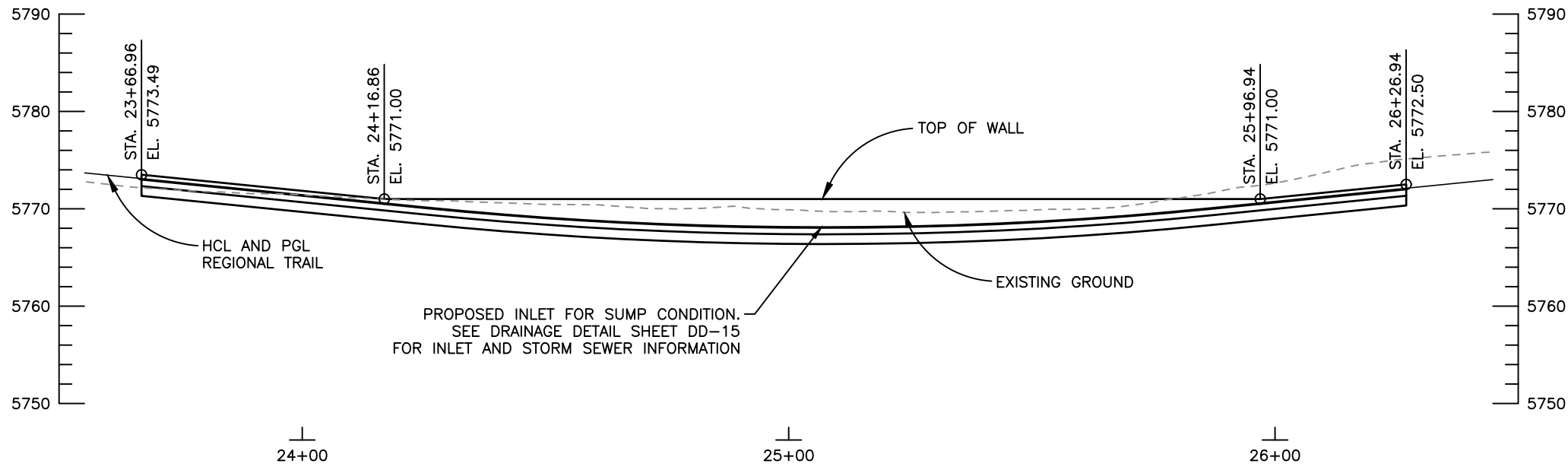
1. CONCRETE SHALL BE CLASS B.
2. REINFORCING SHALL BE GRADE 60.
3. COST OF CONCRETE, REINFORCING, STAIN, RUMBLE STRIP SCORING, AND ALL MISCELLANEOUS MATERIALS AND LABOR SHALL BE INCLUDED IN ITEM 608, CONCRETE SIDEWALK (6 INCH).

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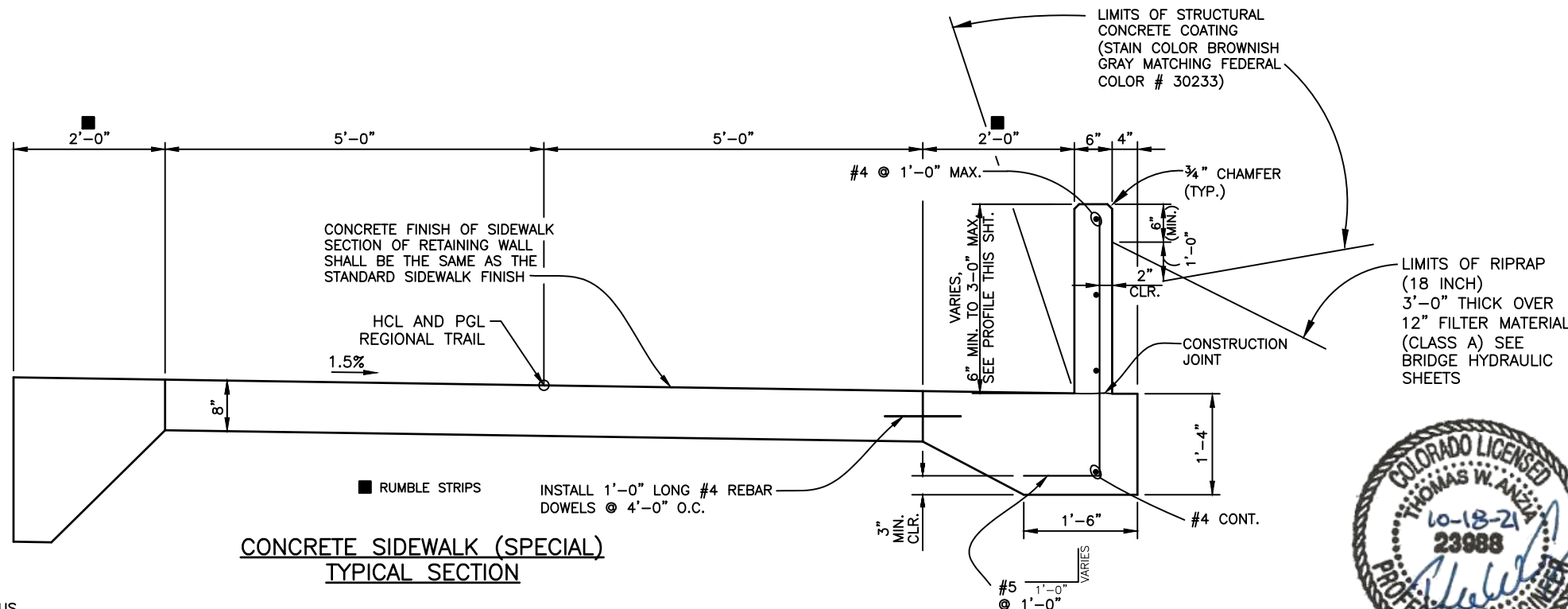
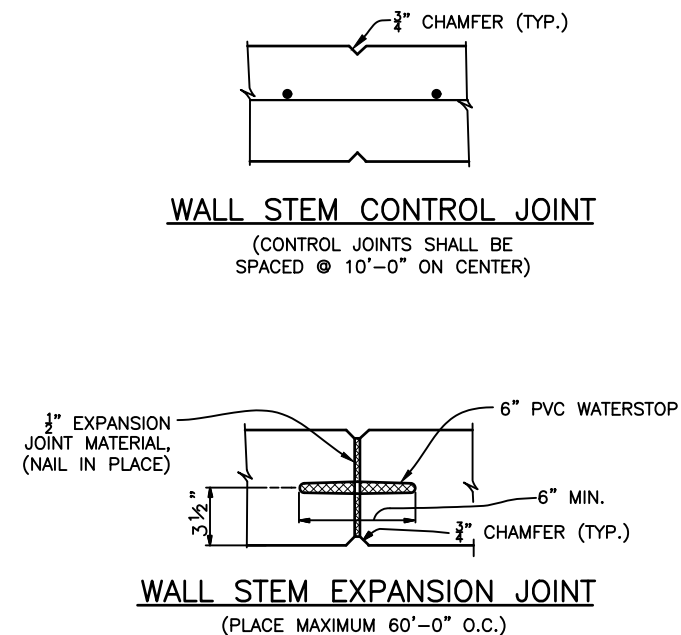
Sheet Revisions		
Date	Comments	Initials



As Constructed	BELFORD-HAPPY CANYON CREEK TRAIL DETAILS		Project No./Code
No Revisions:	Designer: DCS	Structure	
Revised:	Detailer: DCS	Numbers	
Void:	Subset: Trail	Sheets: TD-2 of 3	Sheet Number 12



**CONCRETE SIDEWALK (SPECIAL)
PROFILE**



**CONCRETE SIDEWALK (SPECIAL)
TYPICAL SECTION**

STA. 24+39.74 TO STA. 25+80.93
 STA. 23+66.96 TO STA. 24+39.74 (OMITS THE 2' RUMBLE STRIPS ON THE LEFT SIDE OF THE REGIONAL TRAIL)
 STA. 25+80.93 TO STA. 26+26.94

NOTES:

1. CONCRETE SHALL BE CLASS B.
2. REINFORCING SHALL BE GRADE 60.
3. COST OF CONCRETE, REINFORCING, STAIN, AND ALL MISCELLANEOUS MATERIALS AND LABOR SHALL BE INCLUDED IN ITEM 608, CONCRETE SIDEWALK SPECIAL.
4. SEE SHEET TD-2 FOR THICKENED EDGE REINFORCING DETAIL AND RUMBLE STRIP SCORING PLAN.



I:\115360-01 - Compark at Belford\CADD\Design\Drawings\BelfordHCC\, Chase.Miyamoto

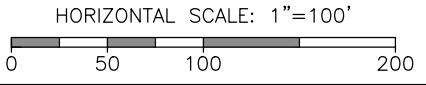
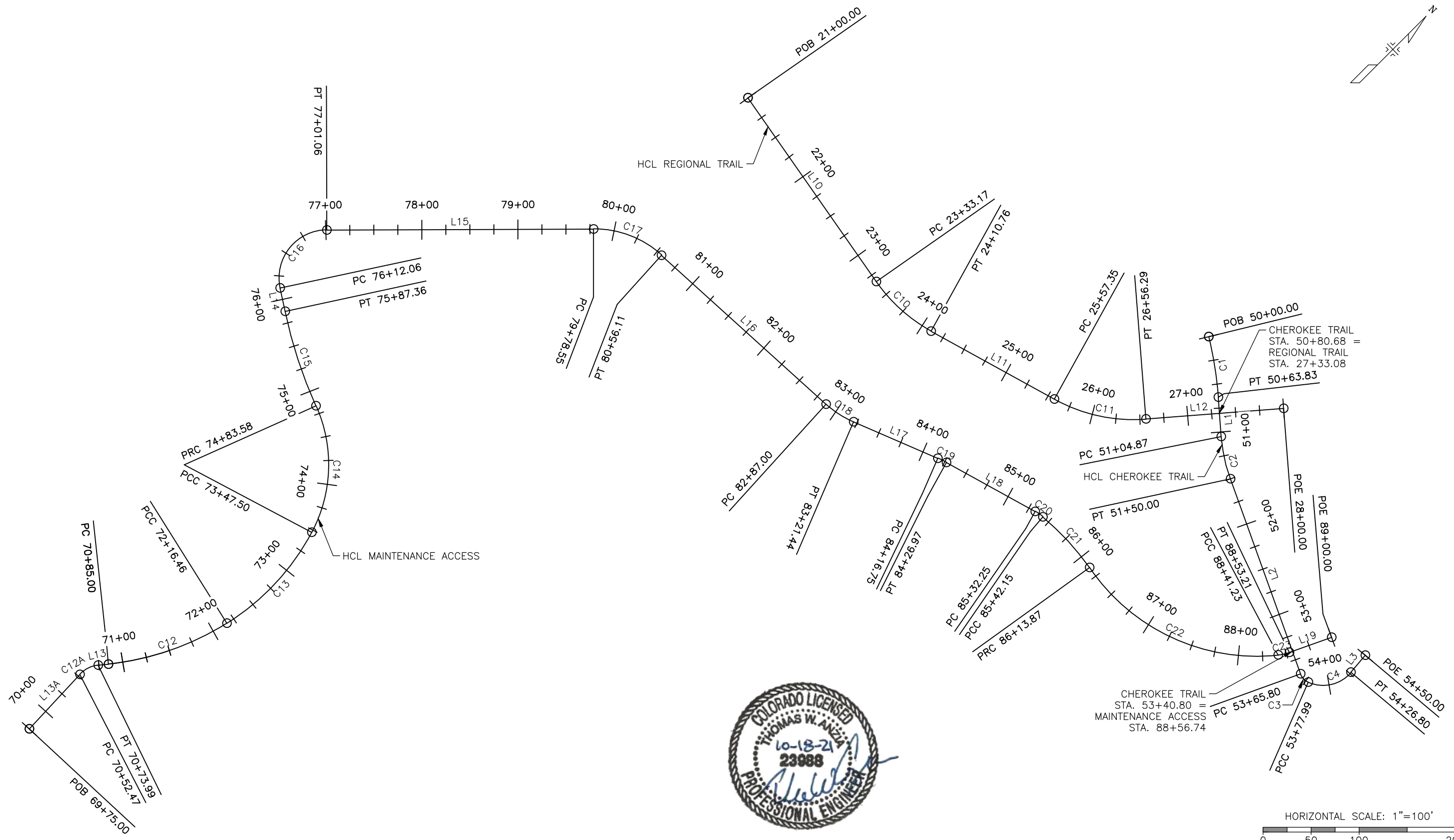
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As Constructed	No Revisions:		BELFORD-HAPPY CANYON CREEK TRAIL DETAILS		Project No./Code
	Revised:	Designer: SED	Structure		
	Void:	Detailer: SED	Numbers		
		Subset: Trail	Sheets: TD-3 of 3	Sheet Number 13	

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Sheet Revisions		
Date	Comments	Initials



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 No Revisions:
 Revised:
 Void:

BELFORD-HAPPY CANYON CREEK TRAIL GEOMETRIC LAYOUT

Designer: DCS Structure
 Detailer: DCS Numbers
 Subset: Trail Sheets: TG-1 of 2

Project No./Code
 Sheet Number 14

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HCL - MAINTENANCE ACCESS									
NO.		STATION	NORTHING	EASTING	LENGTH	LINE/CHORD BEARING	DELTA	TANGENT	RADIUS
L13A		69+75.00 70+52.47	26883.1452 26960.5544	93997.7018 93994.7576	77.47'	N02°10'41.36"W			
C12A	PC= PI= PT=	70+52.47 70+63.71 70+73.99	26960.5544 26971.7953 26980.5460	93994.7576 93994.3301 94001.3988	21.52'	N18°22'34.90"E	041°06'32.53"	11.25'	30.00'
L13		70+73.99 70+85.00	26980.5460 26989.1109	94001.3988 94008.3174	11.01'	N38°55'51.17"E			
C12	PC= PI= PT=	70+85.00 71+51.88 72+16.46	26989.1109 27041.1372 27106.3141	94008.3174 94050.3436 94065.3404	131.46'	N25°56'39.65"E	025°58'23.04"	66.88'	290.00'
C13	PC= PI= PT=	72+16.46 72+83.52 73+47.50	27106.3141 27171.6693 27235.7763	94065.3404 94080.3781 94060.6874	131.04'	N02°03'30.08"W	030°01'56.41"	67.06'	250.00'
C14	PC= PI= PT=	73+47.50 74+20.62 74+83.58	27235.7763 27305.6744 27331.8184	94060.6874 94039.2180 93970.9305	136.07'	N43°03'45.13"W	051°58'33.70"	73.12'	150.00'
C15	PC= PI= PT=	74+83.58 75+35.65 75+87.36	27331.8184 27350.4384 27378.6811	93970.9305 93922.2956 93878.5416	103.78'	N63°06'15.69"W	011°53'32.59"	52.08'	500.00'
L14		75+87.36 76+12.06	27378.6811 27392.0795	93878.5416 93857.7847	24.71'	N57°09'29.39"W			
C16	PC= PI= PT=	76+12.06 76+73.79 77+01.06	27392.0795 27425.5586 27469.3389	93857.7847 93805.9186 93849.4413	89.00'	N06°09'49.02"W	101°59'20.74"	61.73'	50.00'
L15		77+01.06 79+78.55	27469.3389 27666.1304	93849.4413 94045.0747	277.49'	N44°49'51.35"E			
C17	PC= PI= PT=	79+78.55 80+19.20 80+56.11	27666.1304 27694.9549 27696.9739	94045.0747 94073.7296 94114.3237	77.56'	N65°59'30.30"E	042°19'17.90"	40.64'	105.00'
L16		80+56.11 82+87.00	27696.9739 27708.4437	94114.3237 94344.9273	230.89'	N87°09'09.25"E			
C18	PC= PI= PT=	82+87.00 83+04.38 83+21.44	27708.4437 27709.3070 27715.7163	94344.9273 94362.2840 94378.4370	34.44'	N77°45'17.89"E	018°47'42.71"	17.38'	105.00'
L17		83+21.44 84+16.75	27715.7163 27750.8672	94378.4370 94467.0254	95.31'	N68°21'26.54"E			
C19	PC= PI= PT=	84+16.75 84+21.86 84+26.97	27750.8672 27752.7535 27754.1689	94467.0254 94471.7794 94476.6941	10.22'	N71°08'45.70"E	005°34'38.33"	5.11'	105.00'
L18		84+26.97 85+32.25	27754.1689 27783.3026	94476.6941 94577.8602	105.28'	N73°56'04.87"E			
C20	PC= PI= PT=	85+32.25 85+37.22 85+42.15	27783.3026 27784.6778 27785.0862	94577.8602 94582.6354 94587.5878	9.91'	N79°36'37.39"E	011°21'05.04"	4.97'	50.00'
C21	PC= PI= PT=	85+42.15 85+78.19 86+13.87	27785.0862 27788.0475 27782.2772	94587.5878 94623.5004 94659.0698	71.71'	S87°44'58.92"E	013°55'42.35"	36.03'	295.00'
C22	PC= PI= PT=	86+13.87 87+40.13 88+41.23	27782.2772 27758.2863 27856.5176	94659.0698 94783.0299 94862.3537	227.36'	N69°56'15.11"E	062°01'54.83"	126.26'	210.00'
C23	PC= PI= PT=	88+41.23 88+47.24 88+53.21	27856.5176 27861.2000 27866.6458	94862.3537 94866.1348 94868.6967	11.98'	N32°03'28.98"E	013°43'37.43"	6.02'	50.00'
L19		88+53.21 89+00.00	27866.6458 27908.9885	94868.6967 94888.6167	46.79'	N25°11'40.26"E			

HCL - CHEROKEE TRAIL										
NO.		STATION	NORTHING	EASTING	LENGTH	LINE/CHORD BEARING	DELTA	TANGENT	RADIUS	
C1	PC= PI= PT=	50+00.00 50+31.98 50+63.83	28039.6943 28023.0114 28002.2052	94577.0255 94604.3105 94628.5981	63.83'	S53°59'09.26"E	009°08'32.78"	31.98'	400.00'	
L1		50+63.83 51+04.87	28002.2052 27975.5018	94628.5981 94659.7697	41.05'	S49°24'52.87"E				
C2	PC= PI= PT=	51+04.87 51+27.57 51+50.00	27975.5018 27960.7331 27951.0696	94659.7697 94677.0095 94697.5507	45.13'	S57°06'36.30"E	015°23'26.87"	22.70'	168.00'	
L2		51+50.00 53+65.80	27951.0696 27859.2038	94697.5507 94892.8240	215.80'	S64°48'19.74"E				
C3	PC= PI= PT=	53+65.80 53+72.26 53+77.99	27859.2038 27856.4559 27858.8084	94892.8240 94898.6649 94904.6759	12.19'	S88°05'21.16"E	046°34'02.84"	6.45'	15.00'	
C4	PC= PI= PT=	53+77.99 54+06.42 54+26.80	27858.8084 27869.1674 27897.4855	94904.6759 94931.1459 94928.6846	48.81'	N31°49'47.19"E	073°35'40.47"	28.42'	38.00'	
L3		54+26.80 54+50.00	27897.4855 27920.5941	94928.6846 94926.6761	23.20'	N04°58'03.05"W				

HCL - REGIONAL TRAIL									
NO.		STATION	NORTHING	EASTING	LENGTH	LINE/CHORD BEARING	DELTA	TANGENT	RADIUS
L10		21+00.00 23+33.17	27876.4111 27835.5854	94062.1387 94291.7046	233.17'	S79°54'57.64"E			
C10	PC= PI= PT=	23+33.17 23+72.65 24+10.76	27835.5854 27828.6723 27839.5991	94291.7046 94330.5772 94368.5177	77.59'	N87°00'31.78"E	026°09'01.16"	39.48'	170.00'
L11		24+10.76 25+57.35	27839.5991 27880.1678	94368.5177 94509.3818	146.59'	N73°56'01.20"E			
C11	PC= PI= PT=	25+57.35 26+08.27 26+56.29	27880.1678 27894.2596 27932.9294	94509.3818 94558.3119 94591.4387	98.95'	N57°15'34.17"E	033°20'54.07"	50.92'	170.00'
L12		26+56.29 28+00.00	27932.9294 28042.0655	94591.4387 94684.9312	143.71'	N40°35'07.13"E			



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Date	Comments	Initials	



As Constructed	BELFORD-HAPPY CANYON CREEK T115360-01GEM01 - TG-2			Project No./Code
No Revisions:				
Revised:	Designer:	DCS	Structure	
	Detailer:	DCS	Numbers	
Void:	Subset:	Trail	Sheets: TG-2 of 2	Sheet Number 15



PROPERTY OF
470 COMPARK LLC
C/O MPV COMPARK MANAGEMENT LLC
DENVER, CO 80206

PROPOSED R.O.W.
BELFORD AVENUE
PERMANENT SLOPE AND
DRAINAGE EASEMENT
BELFORD AVENUE

PROPOSED INLET FOR SUMP CONDITION
SEE DRAINAGE DETAIL SHEET DD-15
FOR INLET AND STORM SEWER INFORMATION

PROPOSED SANITARY
SEWER LINE
(BY OTHERS)

POINT	STATION	OFFSET	ELEVATION
PT-01	27+28.08	20.00' RT.	5776.04
PT-02	27+26.08	20.00' RT.	5776.01
PT-03	27+11.08	5.00' RT.	5776.14
PT-04	27+11.07	5.00' LT.	5776.48
PT-05	27+26.07	20.13' LT.	5777.65
PT-06	27+28.07	20.14' LT.	5777.68

PROPERTY OF
470 COMPARK LLC
C/O MPV COMPARK MANAGEMENT LLC
DENVER, CO 80206

BEGIN CONSTRUCTION
REGIONAL TRAIL
STA 23+00.00

END CONSTRUCTION
REGIONAL TRAIL
STA 27+28.08

DROP STRUCTURE (TYP)
(SEE CHANNEL PLANS)

HCL REGIONAL TRAIL

CONCRETE SIDEWALK
(SPECIAL)
(SEE TD-3)

STA 26+31.00
BEGIN TRAIL CROSS
SLOPE TRANSITION

HAPPY CANYON CREEK

HCL CHEROKEE TRAIL

CHEROKEE TRAIL
(SEE TP-3)

MAINTENANCE ACCESS
(SEE TP-5, TP-7,
TP-9, TP-11)

PROPERTY OF
COMPARK 190 LLC
4600 S ULSTER ST SUITE 1400
DENVER, CO 80237-2850

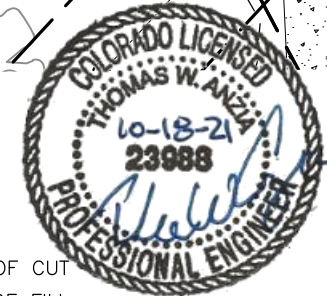
FOR HYDRAULIC INFORMATION
(SEE CHANNEL PLANS)

NOTES:

- UTILITY INFORMATION SHOWN IS PLOTTED FROM THE BEST AVAILABLE DATA. THE CONTRACTOR IS RESPONSIBLE FOR MAKING THEIR OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AT 811 FOR UTILITY LOCATIONS AT LEAST 48 HOURS PRIOR TO EXCAVATING. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY FOR ANY UTILITIES THAT NEED RELOCATING.
- EASEMENTS SHALL NOT BE CLEARED AND GRUBBED UNLESS IT IS REQUIRED IN ORDER TO CONSTRUCT THE PROJECT. THE CONTRACTOR SHALL USE PARTICULAR CARE TO MINIMIZE DAMAGE TO PLANTINGS WITHIN THE PROPERTY.

PROPOSED BELFORD AVENUE
(BY OTHERS)

PROPERTY OF
COMPARK 190 LLC
4600 S ULSTER ST SUITE 1400
DENVER, CO 80237-2850



LEGEND

- TOP OF CUT
 - TOE OF FILL
 - [Pattern] LIMITS OF CONCRETE SIDEWALK (6 INCH)
- HORIZONTAL SCALE: 1"=40'
-

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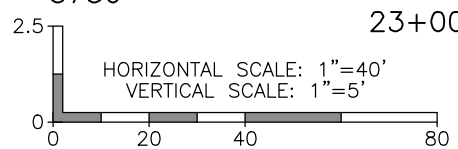
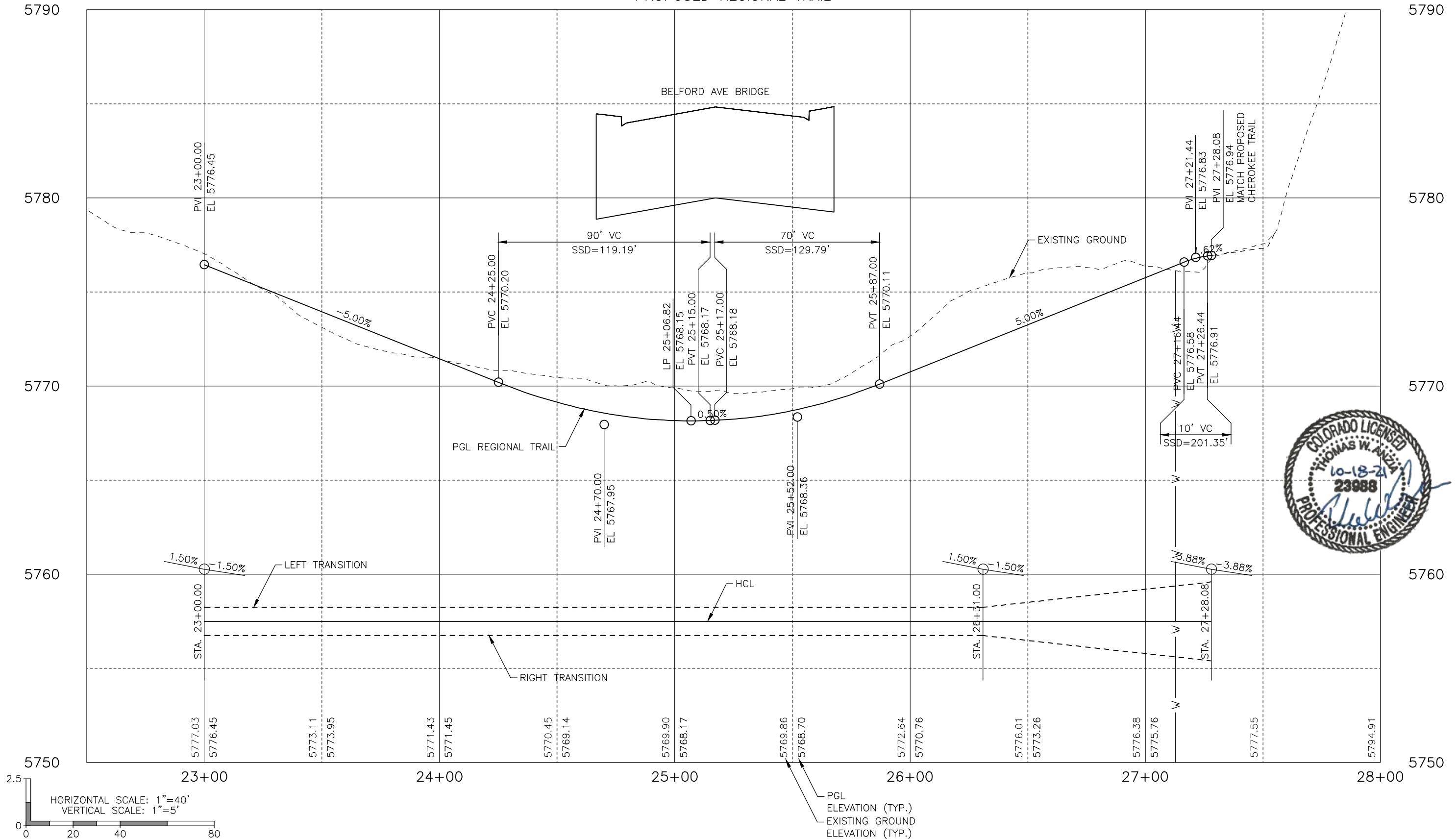
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As Constructed	BELFORD-HAPPY CANYON CREEK REGIONAL TRAIL PLAN
No Revisions:	
Revised:	
Void:	

Designer:	DCS	Structure	
Detailer:	DCS	Numbers	
Subset:	Trail	Sheets:	TP-1 of 12

Project No./Code	
Sheet Number	16

PROPOSED REGIONAL TRAIL



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Revised:
Void:

BELFORD-HAPPY CANYON CREEK REGIONAL TRAIL PROFILE		
Designer:	DCS	Structure
Detailer:	DCS	Numbers
Subset:	Trail	Sheets: TP-2 of 12

Project No./Code
Sheet Number 17

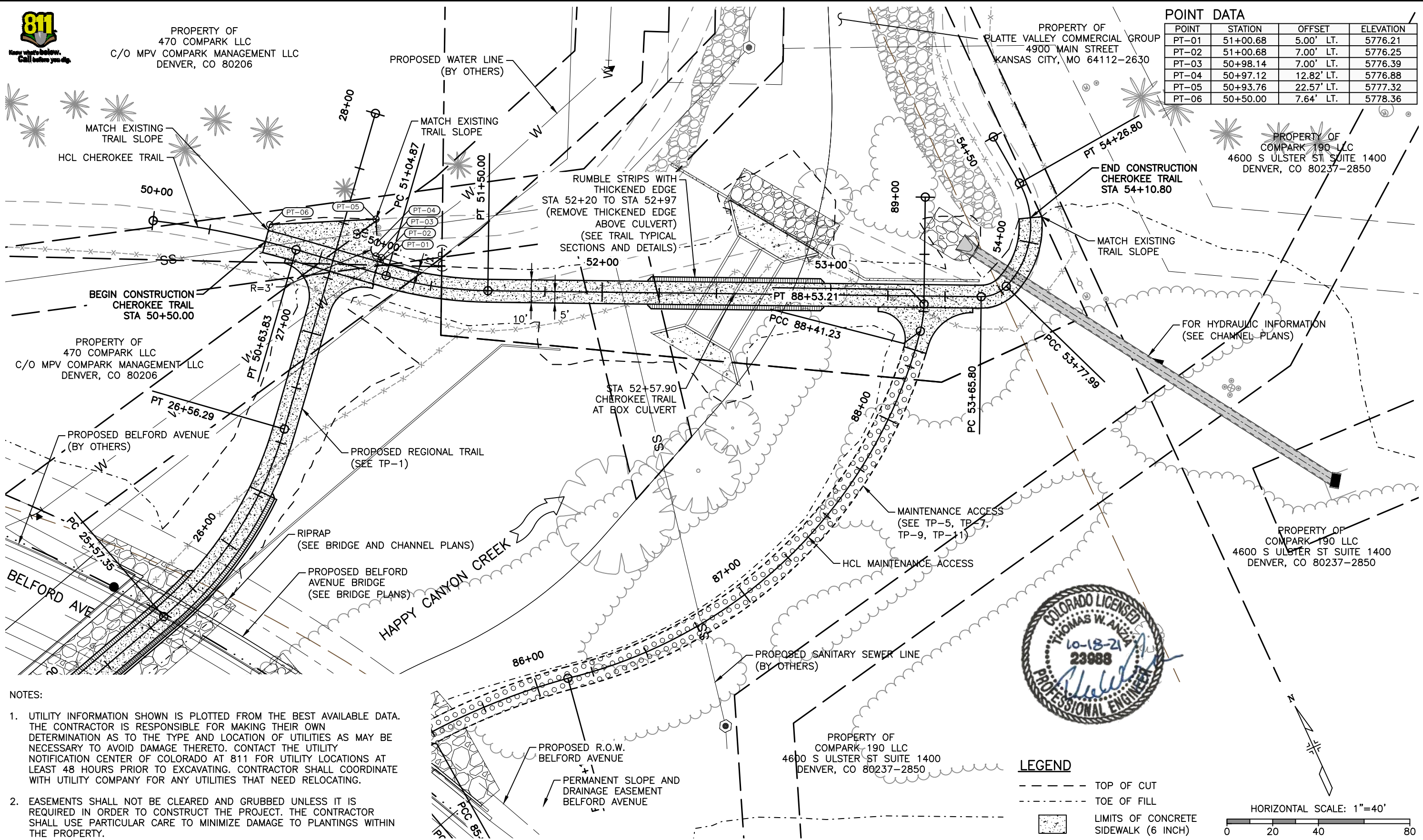


PROPERTY OF
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DENVER, CO 80206

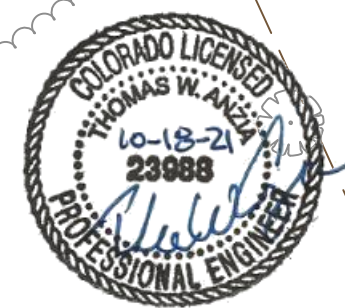
PROPERTY OF
PLATTE VALLEY COMMERCIAL GROUP
4900 MAIN STREET
KANSAS CITY, MO 64112-2630

POINT	STATION	OFFSET	ELEVATION
PT-01	51+00.68	5.00' LT.	5776.21
PT-02	51+00.68	7.00' LT.	5776.25
PT-03	50+98.14	7.00' LT.	5776.39
PT-04	50+97.12	12.82' LT.	5776.88
PT-05	50+93.76	22.57' LT.	5777.32
PT-06	50+50.00	7.64' LT.	5778.36

PROPERTY OF
COMPARK 190 LLC
4600 S ULSTER ST SUITE 1400
DENVER, CO 80237-2850



- NOTES:
- UTILITY INFORMATION SHOWN IS PLOTTED FROM THE BEST AVAILABLE DATA. THE CONTRACTOR IS RESPONSIBLE FOR MAKING THEIR OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AT 811 FOR UTILITY LOCATIONS AT LEAST 48 HOURS PRIOR TO EXCAVATING. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY FOR ANY UTILITIES THAT NEED RELOCATING.
 - EASEMENTS SHALL NOT BE CLEARED AND GRUBBED UNLESS IT IS REQUIRED IN ORDER TO CONSTRUCT THE PROJECT. THE CONTRACTOR SHALL USE PARTICULAR CARE TO MINIMIZE DAMAGE TO PLANTINGS WITHIN THE PROPERTY.



LEGEND

- TOP OF CUT
- - - TOE OF FILL
- [Pattern] LIMITS OF CONCRETE SIDEWALK (6 INCH)

HORIZONTAL SCALE: 1"=40'

I:\115360-01 - Compark at Belford\CADD\Design\Drawings\BelfordHCC\ - Chase.Miyamoto

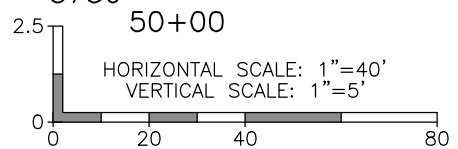
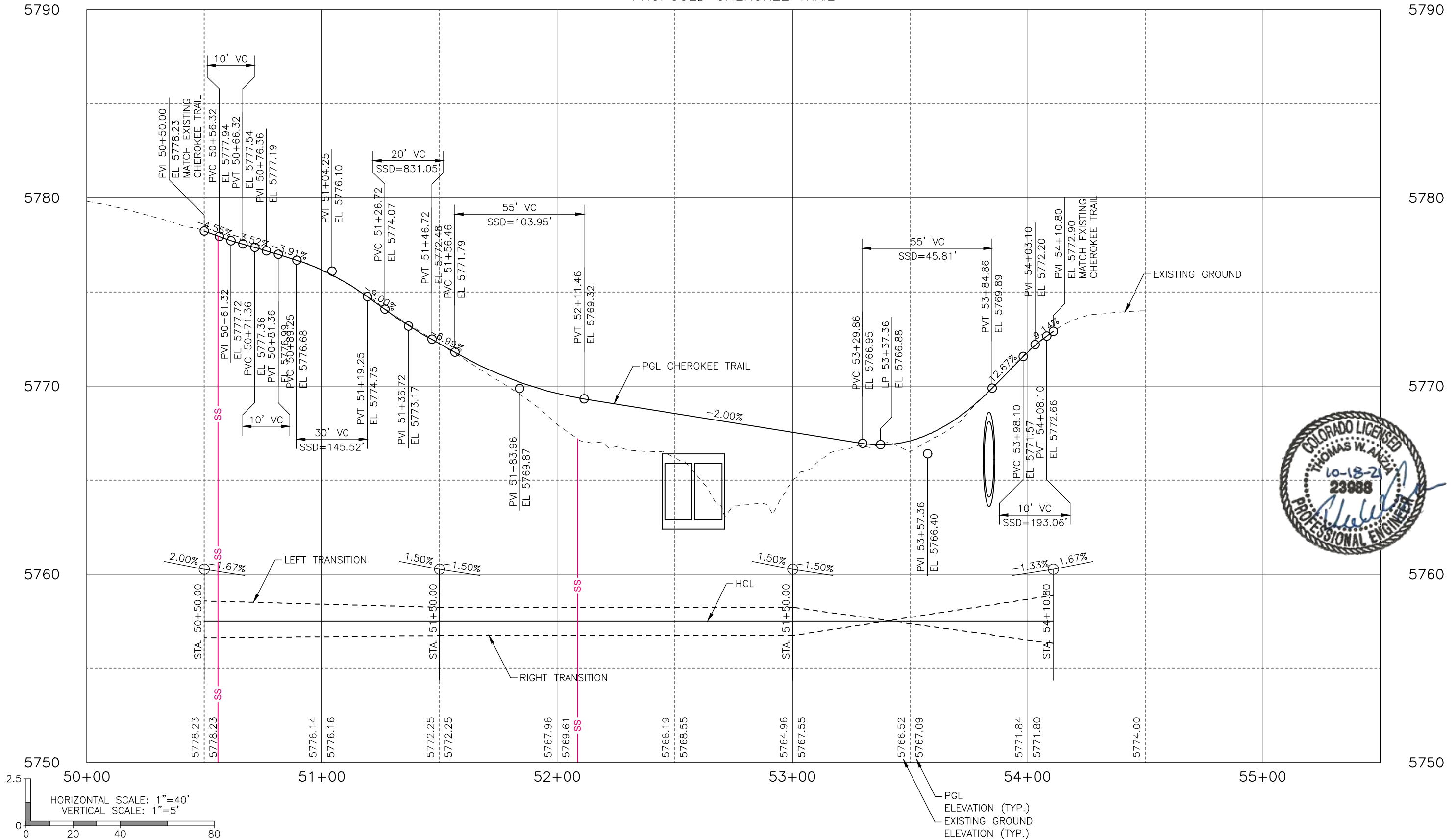
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No Revisions:	Designer: DCS	Structure	
Revised:	Detailer: DCS	Numbers	
Void:	Subset: Trail	Sheets: TP-3 of 12	Sheet Number 18

PROPOSED CHEROKEE TRAIL



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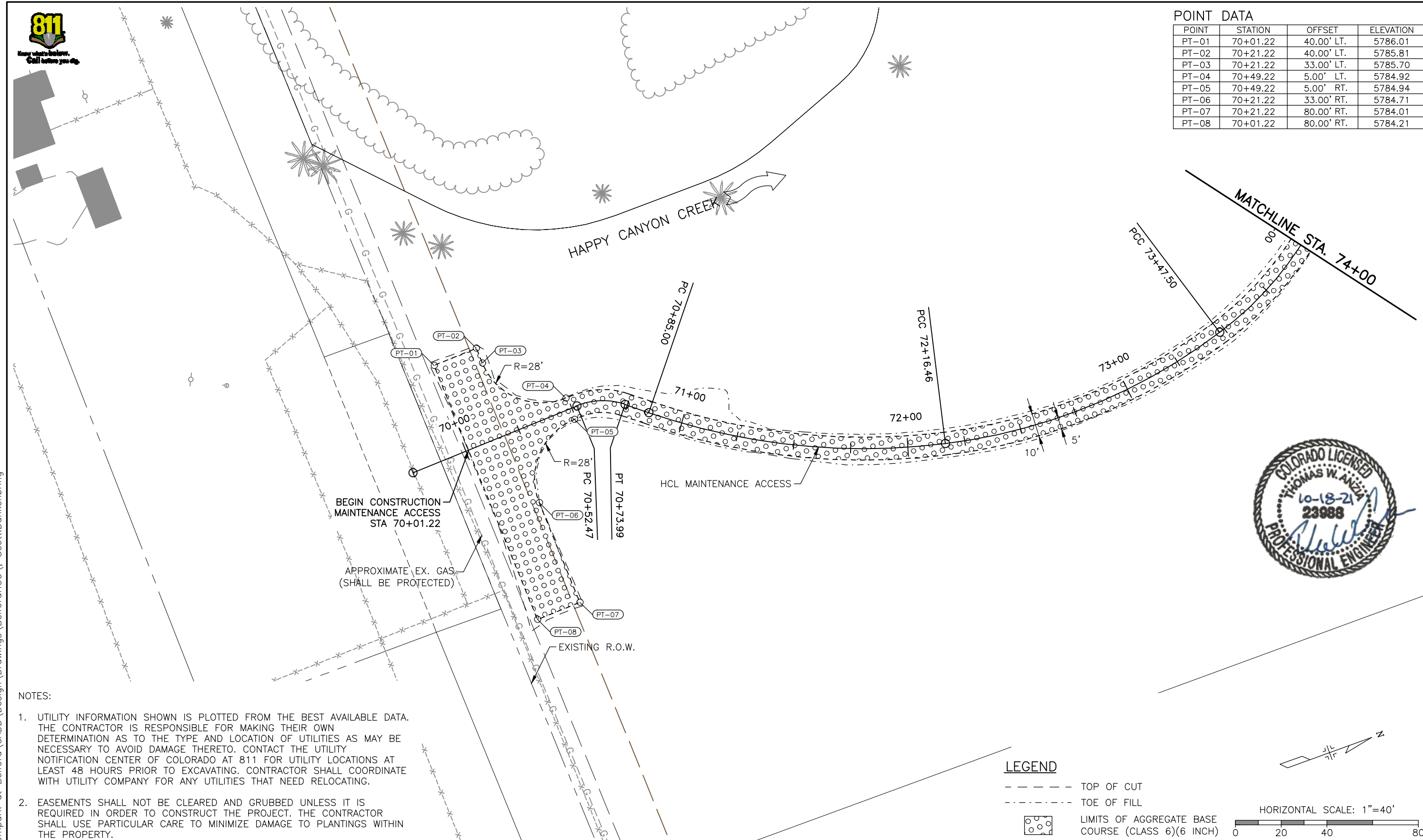
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No Revisions:	Designer:	DCS	Structure
Revised:	Detailer:	DCS	Numbers
Void:	Subset:	Trail	Sheets: TP-4 of 12
			Sheet Number 19



POINT	STATION	OFFSET	ELEVATION
PT-01	70+01.22	40.00' LT.	5786.01
PT-02	70+21.22	40.00' LT.	5785.81
PT-03	70+21.22	33.00' LT.	5785.70
PT-04	70+49.22	5.00' LT.	5784.92
PT-05	70+49.22	5.00' RT.	5784.94
PT-06	70+21.22	33.00' RT.	5784.71
PT-07	70+21.22	80.00' RT.	5784.01
PT-08	70+01.22	80.00' RT.	5784.21



NOTES:

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- EASEMENTS SHALL NOT BE CLEARED AND GRUBBED UNLESS IT IS REQUIRED IN ORDER TO CONSTRUCT THE PROJECT. THE CONTRACTOR SHALL USE PARTICULAR CARE TO MINIMIZE DAMAGE TO PLANTINGS WITHIN THE PROPERTY.

LEGEND

- TOP OF CUT
 - - - - - TOE OF FILL
 - LIMITS OF AGGREGATE BASE COURSE (CLASS 6)(6 INCH)
- HORIZONTAL SCALE: 1"=40'
-

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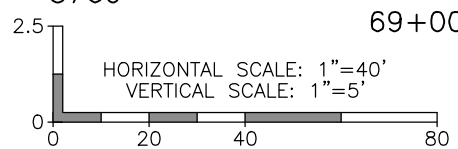
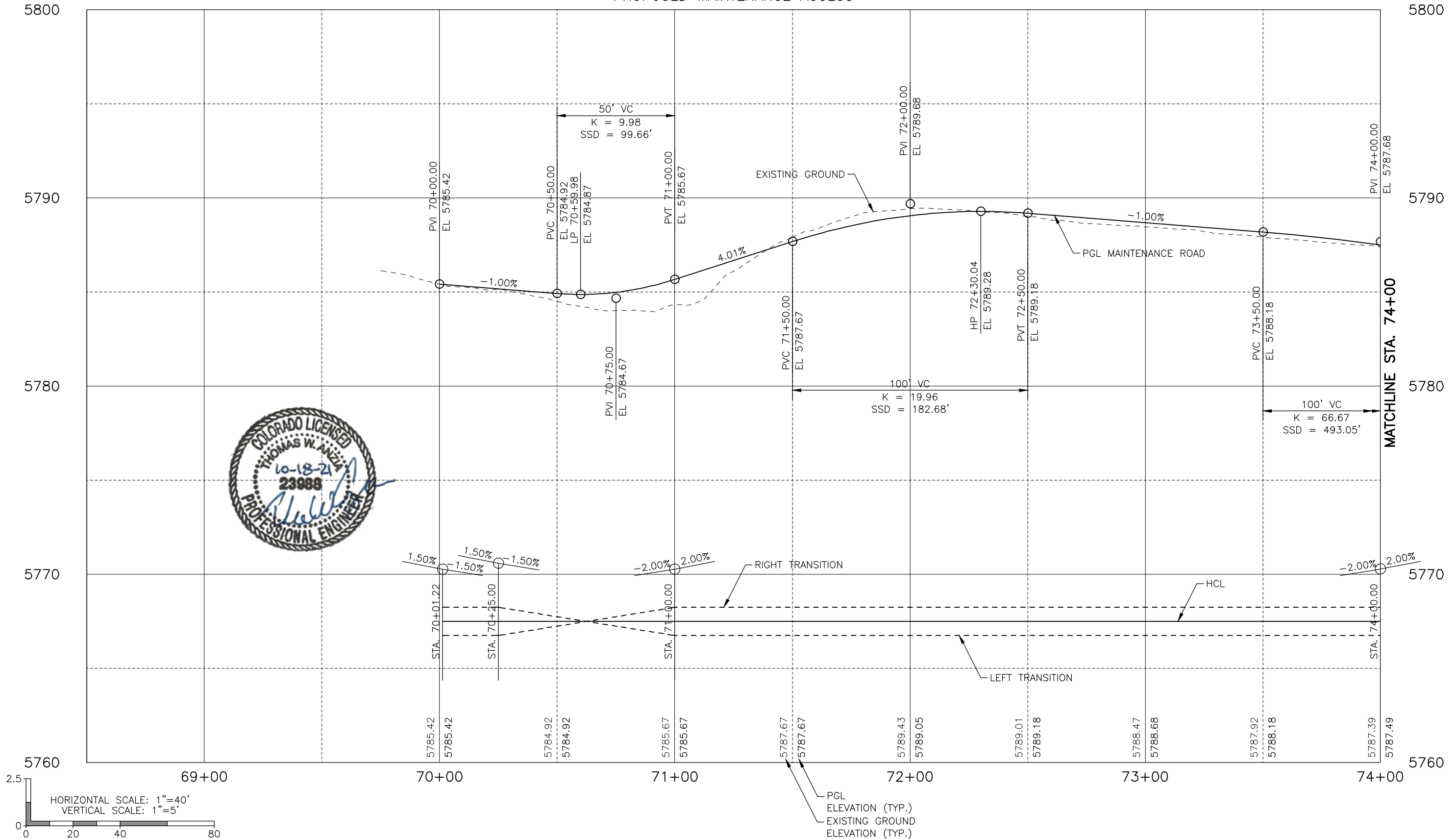
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Sheet Revisions			
Date	Comments	Initials	



As Constructed	BELFORD-HAPPY CANYON CREEK MAINTENANCE ACCESS PLAN			Project No./Code
No Revisions:	Designer:	DCS	Structure	
Revised:	Detailer:	DCS	Numbers	
Void:	Subset:	Trail	Sheets:	TP-5 of 12
				Sheet Number 20

PROPOSED MAINTENANCE ACCESS



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Sheet Revisions		
Date	Comments	Initials

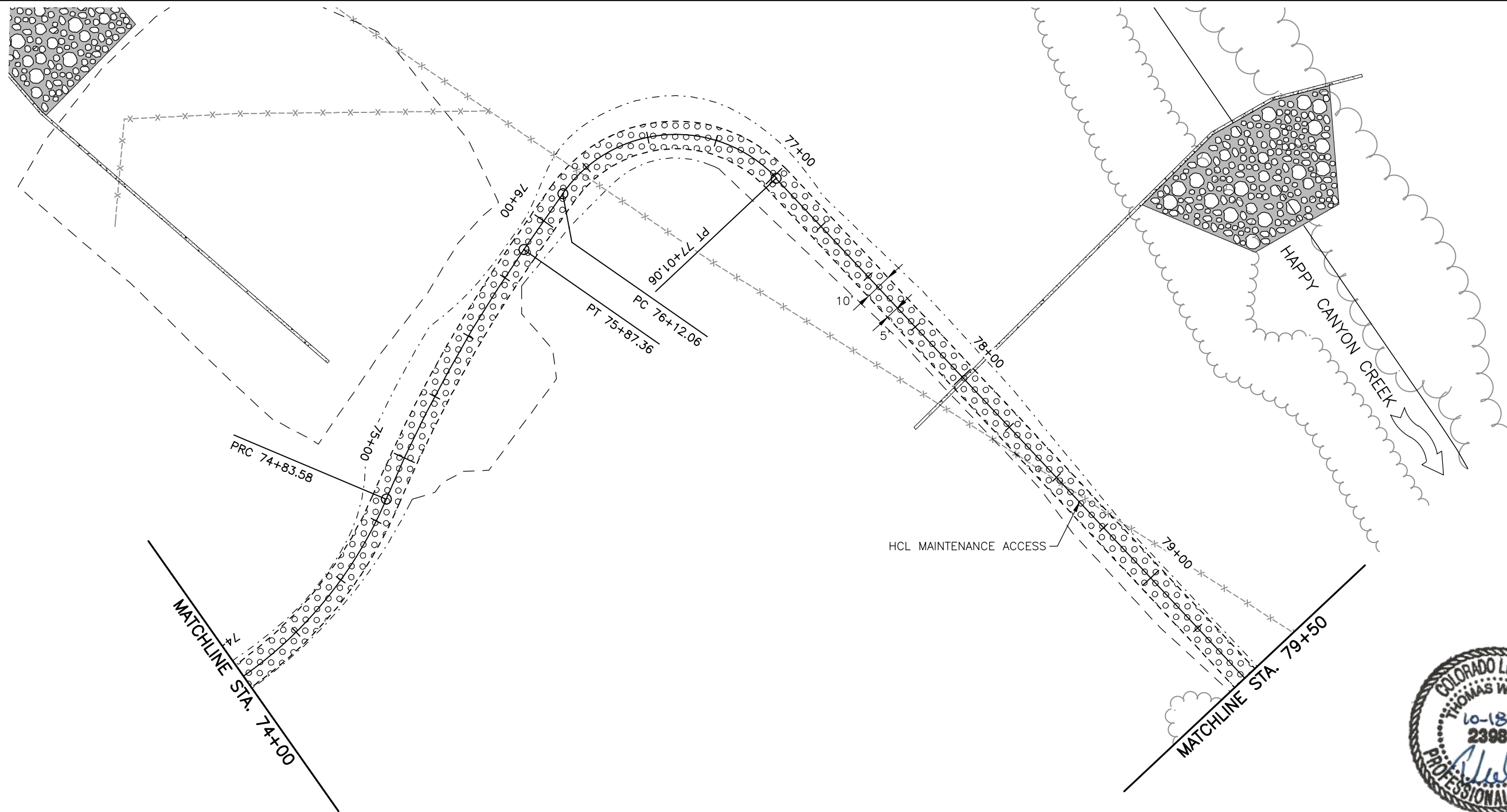


As Constructed
No Revisions:
Revised:
Void:

BELFORD-HAPPY CANYON CREEK MAINTENANCE ACCESS PROFILE		
Designer:	DCS	Structure
Detailer:	DCS	Numbers
Subset:	Trail	Sheets: TP-6 of 12

Project No./Code
Sheet Number 21

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- NOTES:
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LEGEND

- TOP OF CUT
 - TOE OF FILL
 - [Hatched Box] LIMITS OF AGGREGATE BASE COURSE (CLASS 6)(6 INCH)
- HORIZONTAL SCALE: 1"=40'
-

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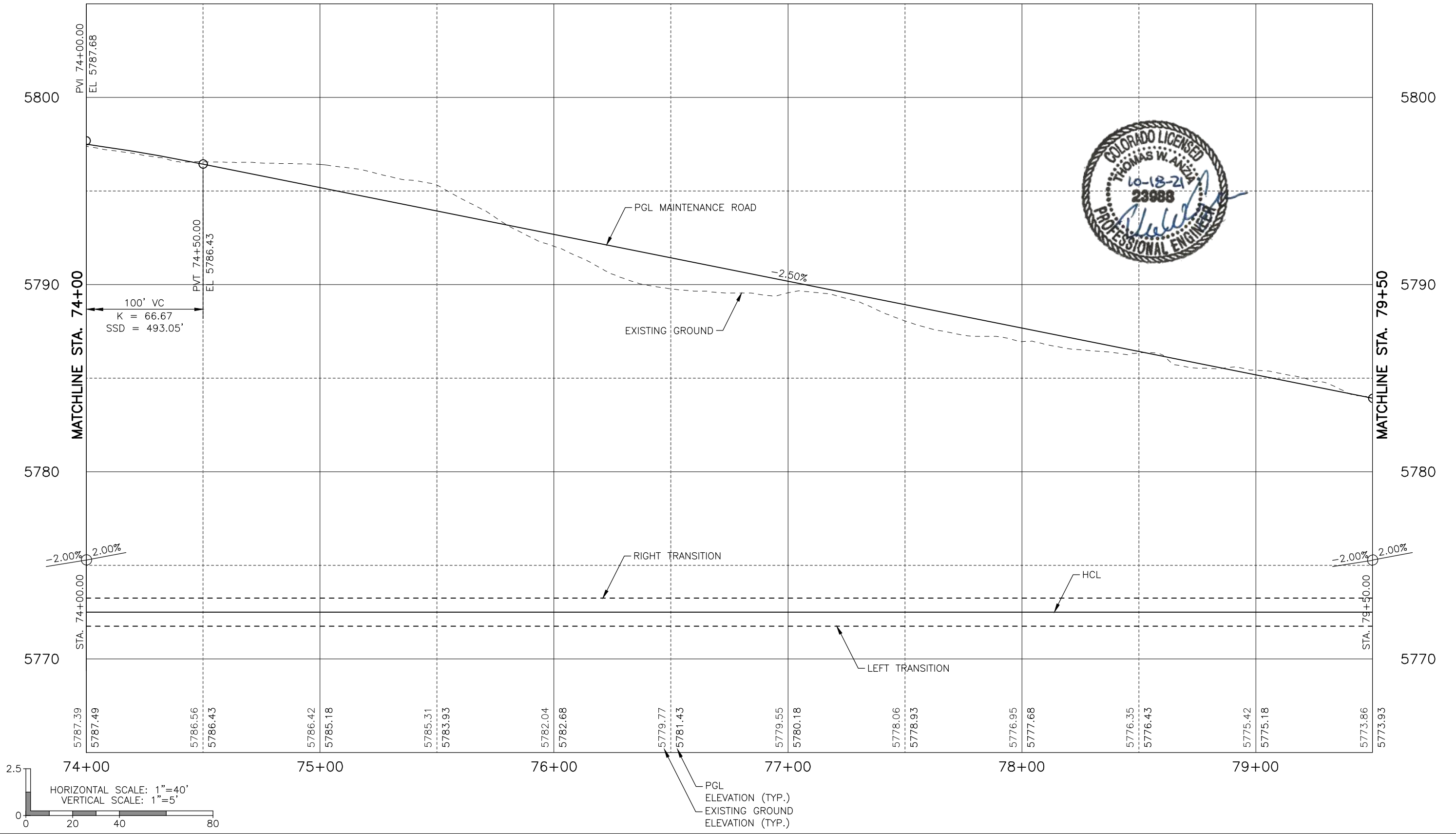
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No Revisions:	Designer: DCS	Structure		
Revised:	Detailer: DCS	Numbers		
Void:	Subset: Trail	Sheets: TP-7 of 12		Sheet Number 22

PROPOSED MAINTENANCE ACCESS



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Sheet Revisions		
Date	Comments	Initials

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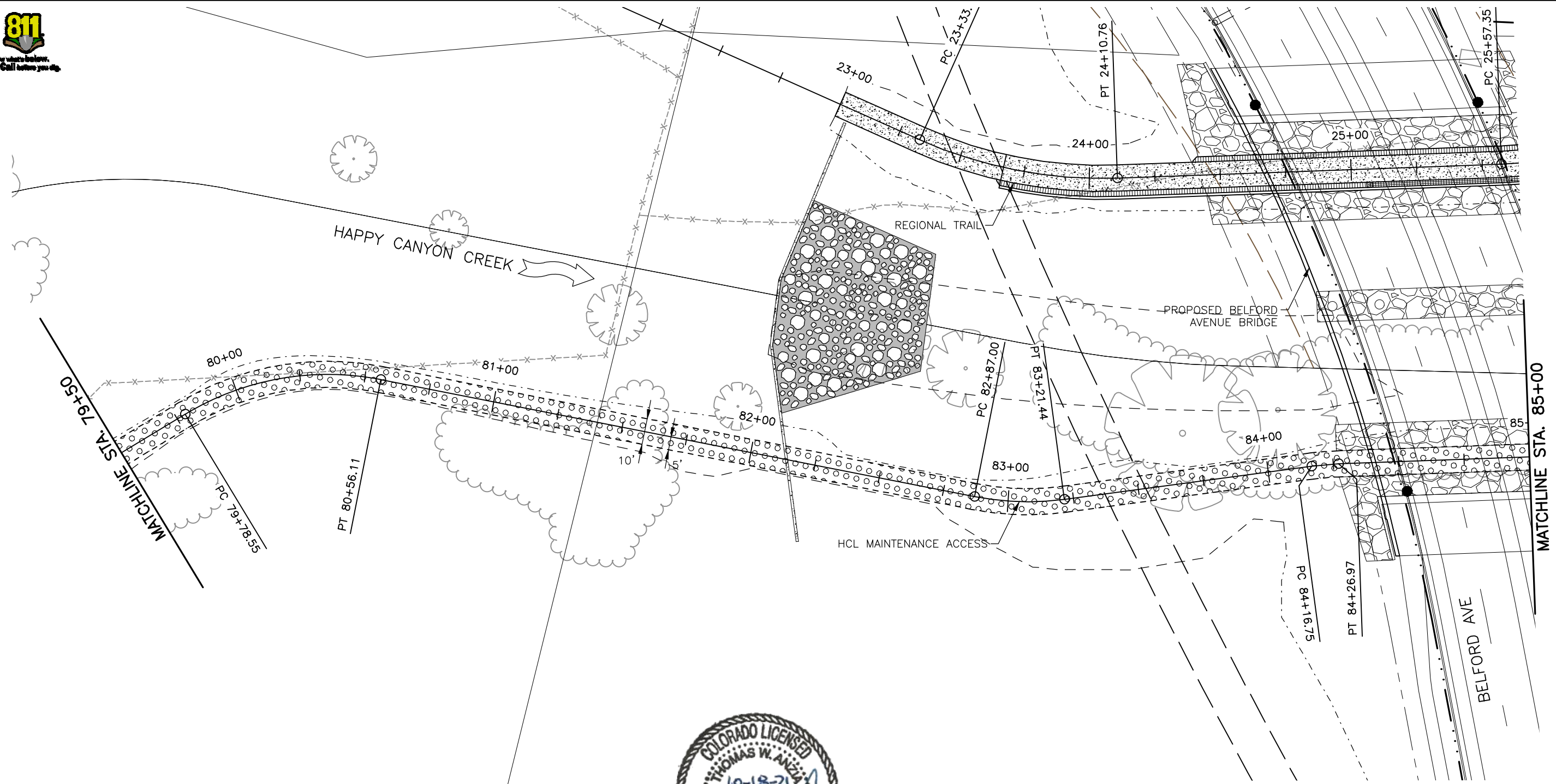
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**BELFORD-HAPPY CANYON CREEK
 MAINTENANCE ACCESS PROFILE**

Designer: DCS Structure
 Detailer: DCS Numbers
 Subset: Trail Sheets: TP-8 of 12

Project No./Code
 Sheet Number 23



NOTES:

- UTILITY INFORMATION SHOWN IS PLOTTED FROM THE BEST AVAILABLE DATA. THE CONTRACTOR IS RESPONSIBLE FOR MAKING THEIR OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AT 811 FOR UTILITY LOCATIONS AT LEAST 48 HOURS PRIOR TO EXCAVATING. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY FOR ANY UTILITIES THAT NEED RELOCATING.
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LEGEND

- TOP OF CUT
 - TOE OF FILL
 - ○ ○ ○ LIMITS OF AGGREGATE BASE COURSE (CLASS 6)(6 INCH)
- HORIZONTAL SCALE: 1"=40'
-

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Sheet Revisions			
Date	Comments	Initials	

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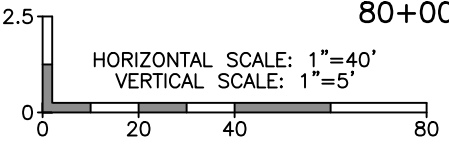
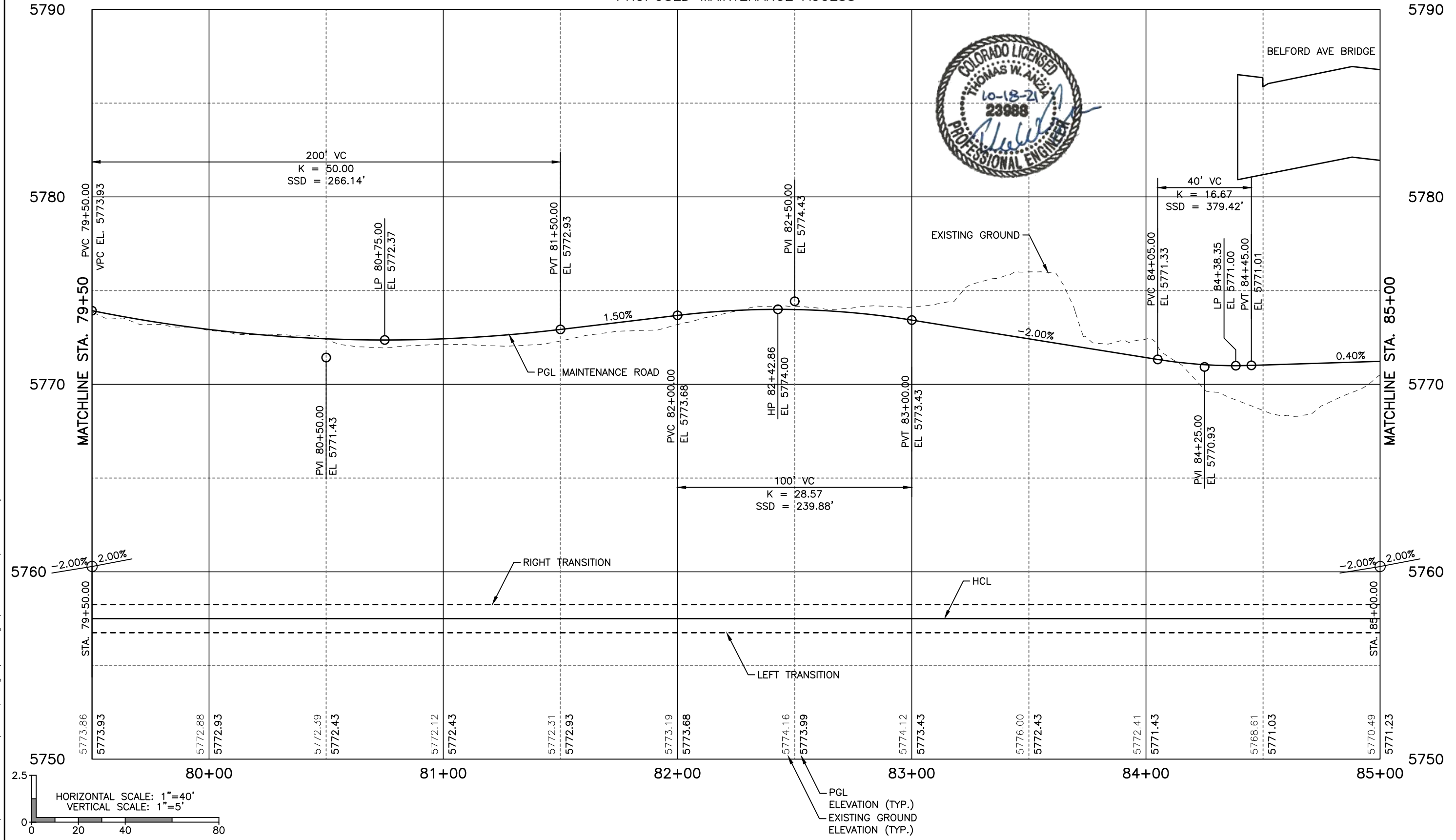
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Revised:
Void:

BELFORD-HAPPY CANYON CREEK MAINTENANCE ACCESS PLAN			
Designer:	DCS	Structure	
Detailer:	DCS	Numbers	
Subset:	Trail	Sheets:	TP-9 of 12

Project No./Code
Sheet Number 24

PROPOSED MAINTENANCE ACCESS



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Sheet Revisions			
Date	Comments	Initials	



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 No Revisions:
 Revised:
 Void:

BELFORD-HAPPY CANYON CREEK
 MAINTENANCE ACCESS PROFILE

Designer: DCS
 Detailer: DCS
 Subset: Trail

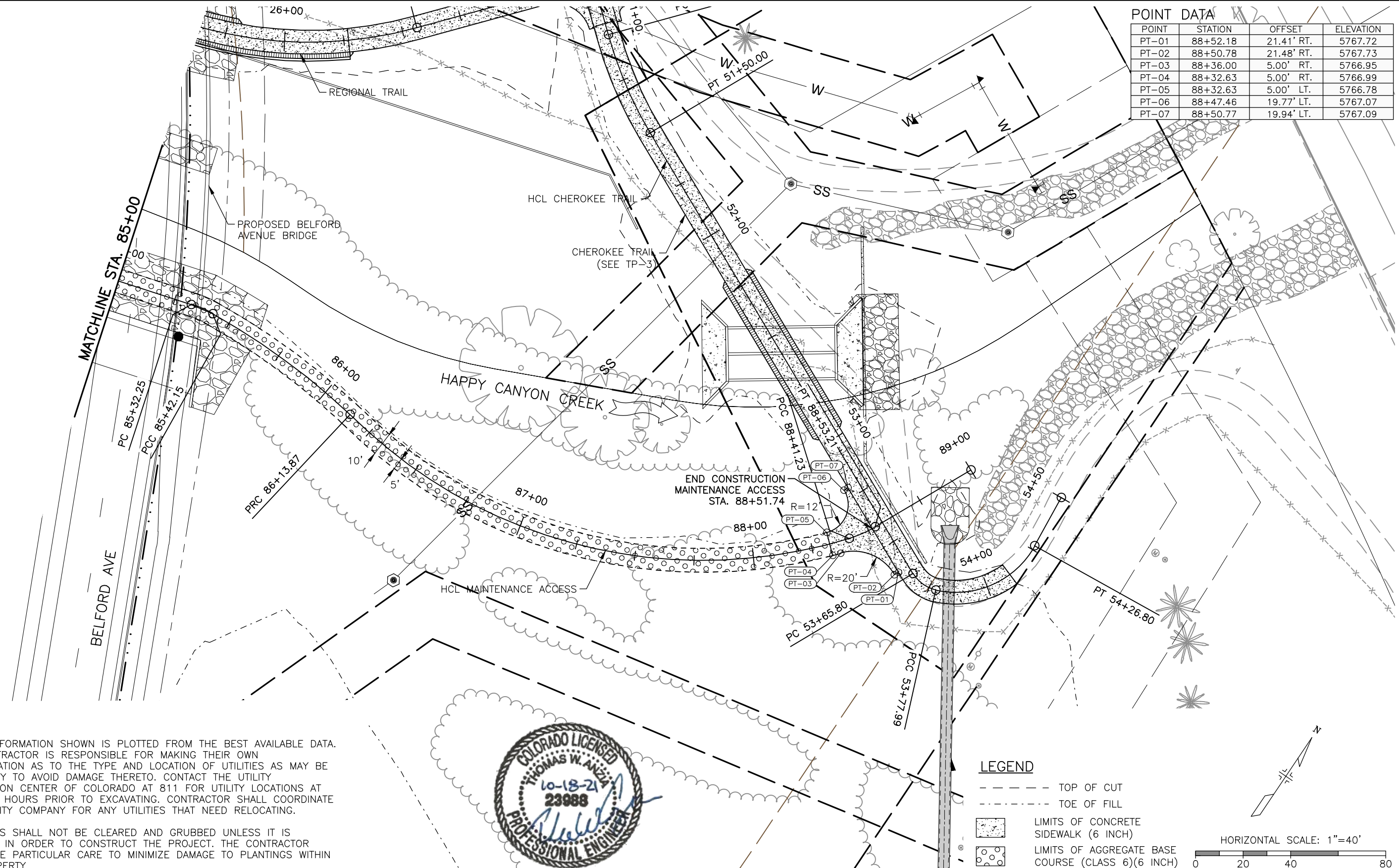
Structure Numbers
 Sheets: TP-10 of 12

Project No./Code
 Sheet Number 25

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POINT	STATION	OFFSET	ELEVATION
PT-01	88+52.18	21.41' RT.	5767.72
PT-02	88+50.78	21.48' RT.	5767.73
PT-03	88+36.00	5.00' RT.	5766.95
PT-04	88+32.63	5.00' RT.	5766.99
PT-05	88+32.63	5.00' LT.	5766.78
PT-06	88+47.46	19.77' LT.	5767.07
PT-07	88+50.77	19.94' LT.	5767.09



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LEGEND

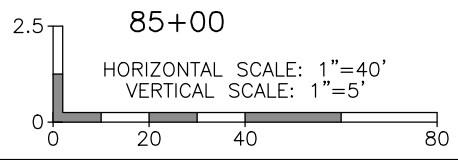
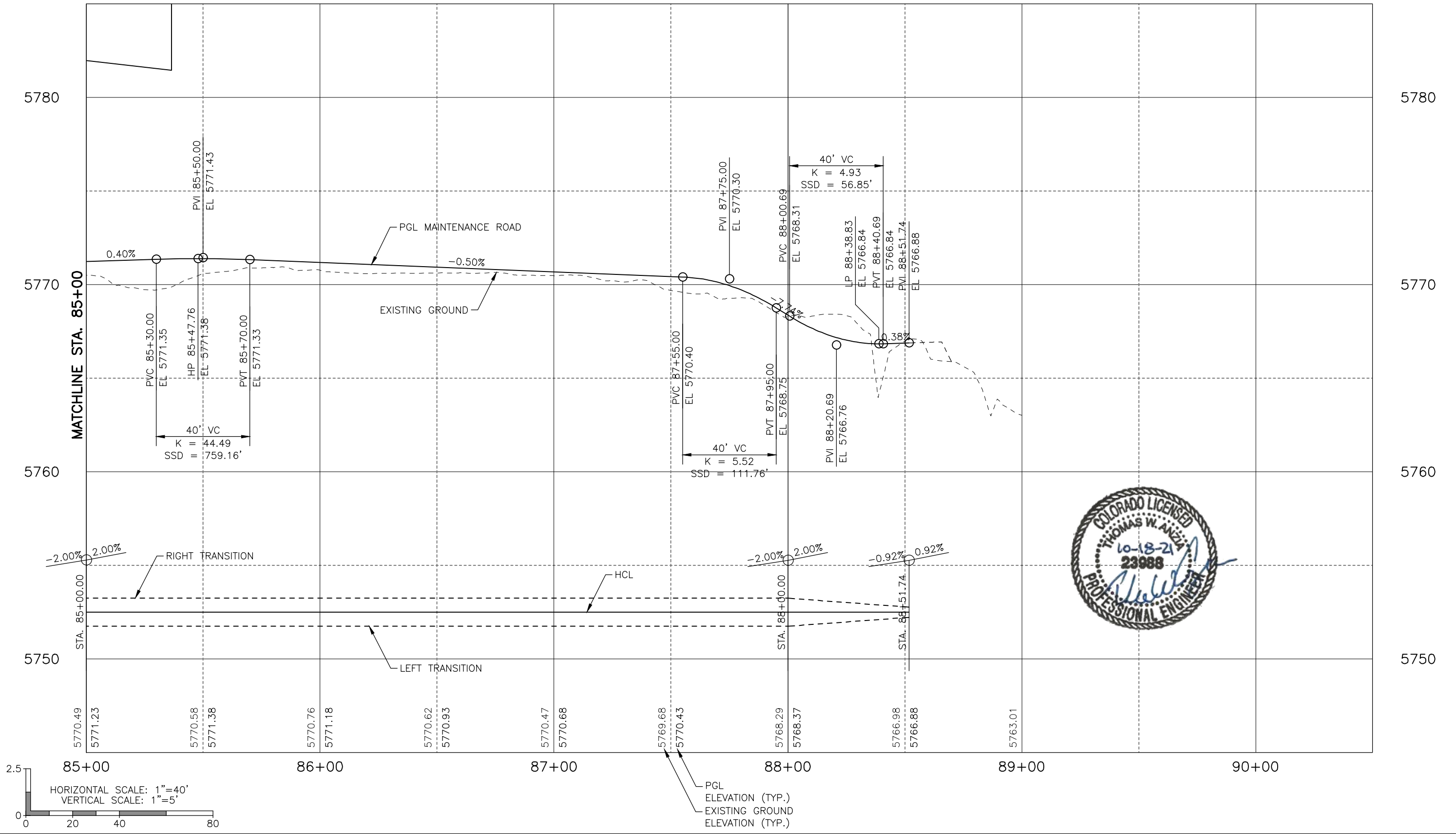
- TOP OF CUT
- TOE OF FILL
- [Pattern] LIMITS OF CONCRETE SIDEWALK (6 INCH)
- [Pattern] LIMITS OF AGGREGATE BASE COURSE (CLASS 6)(6 INCH)

HORIZONTAL SCALE: 1"=40'

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File Name: T115360-01PLN10.dwg	Date	Comments	Initials		No Revisions:	Designer: DCS	Structure		
Horizontal Scale: 1"=40' Vertical Scale: NTS				Revised:	Detailer: DCS	Numbers			
<p>6400 South Fiddlers Green Circle, Suite 1500 Greenwood Village, CO 80111 Phone: 303.721.1440 www.FHUENG.com</p>				Void:	Subset: Trail	Sheets: TP-11 of 12	Sheet Number 26		

PROPOSED MAINTENANCE ACCESS



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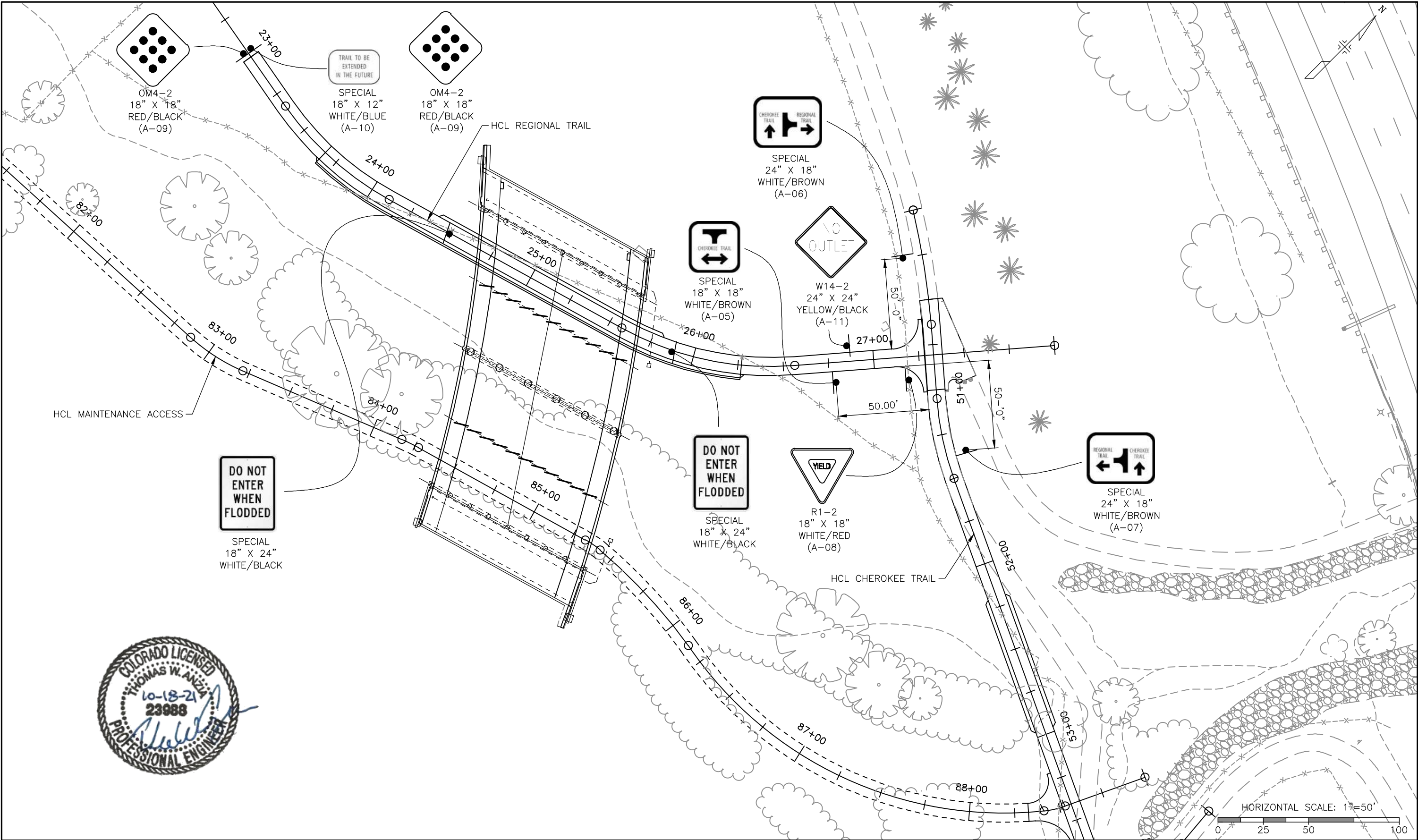
Sheet Revisions		
Date	Comments	Initials

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BELFORD-HAPPY CANYON CREEK MAINTENANCE ACCESS PROFILE			
Designer:	DCS	Structure	
Detailer:	DCS	Numbers	
Subset:	Trail	Sheets:	TP-12 of 12

Project No./Code
Sheet Number
27



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Date	Comments	Initials	

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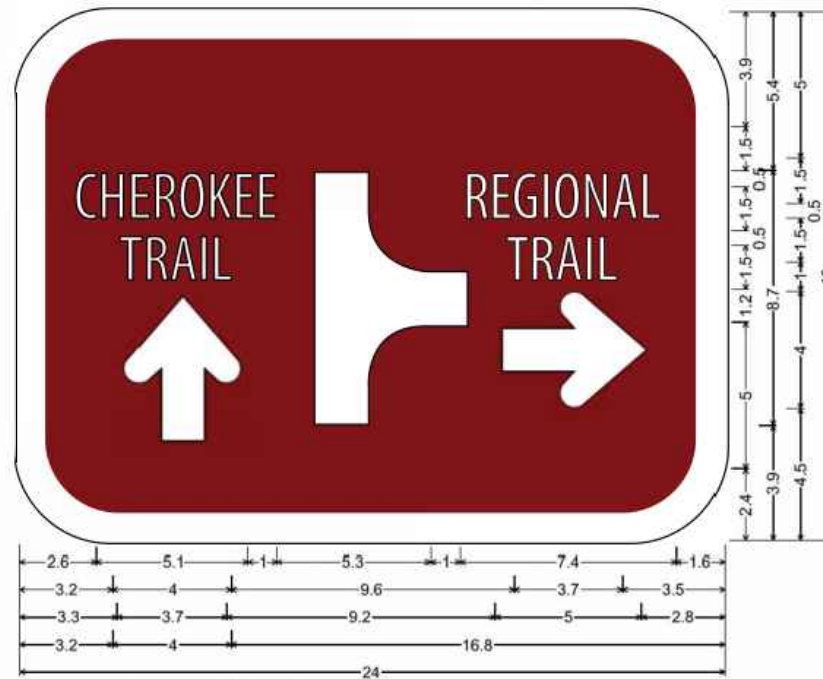
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As Constructed
No Revisions:
Revised:
Void:

BELFORD-HAPPY CANYON CREEK SIGNING AND STRIPING PLAN			
Designer:	AJP	Structure	
Detailer:	VM	Numbers	
Subset:	Trail	Sheets:	TS-1 of 2

Project No./Code
Sheet Number 28

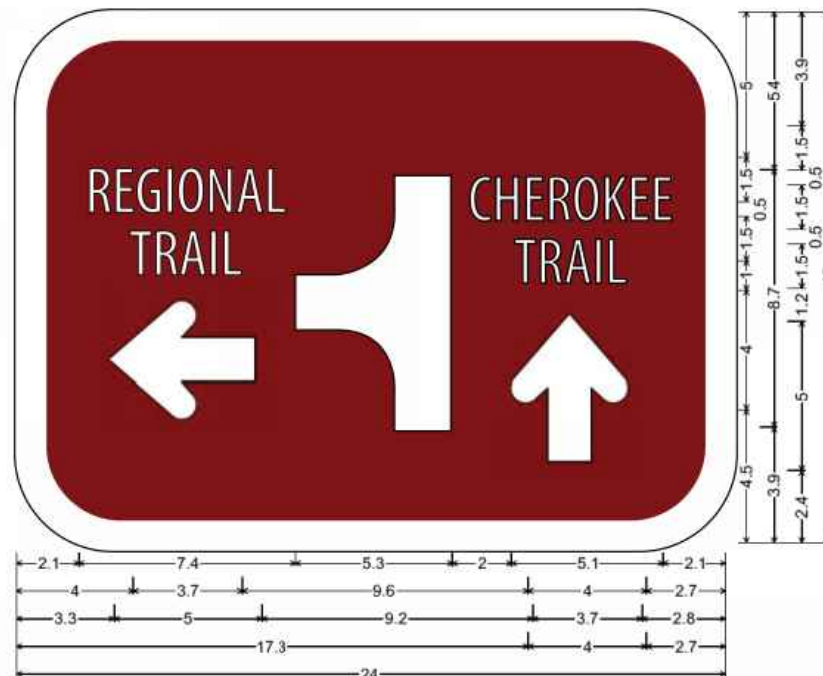
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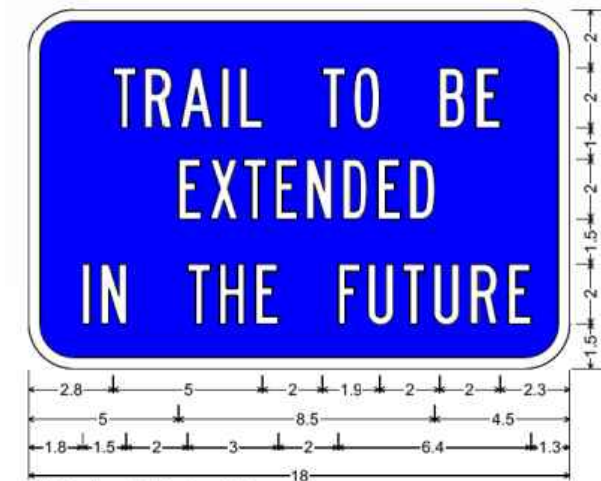
3.0" Radius, 1.0" Border, White on Brown;
 "CHERRY" B; "CREEK" B; "TRAIL" B; Arrow Custom - 5.0" 90"; sign int shape;
 "EAST-WEST" B; "TRAIL" B; Arrow Custom - 5.0" 0";



3.0" Radius, 1.0" Border, White on Brown;
 sign int shape; "CHERRY CREEK TRAIL" B specified length;
 Double Headed Arrow Custom - 12.0" 0";



3.0" Radius, 1.0" Border, White on Brown;
 "EAST-WEST" B; "TRAIL" B; Arrow Custom - 5.0" 180"; sign int shape; "CHERRY" B;
 "CREEK" B; "TRAIL" B; Arrow Custom - 5.0" 90";



1.5" Radius, 0.4" Border, White on Blue;
 "TRAIL TO BE" B; "EXTENDED" B; "IN THE FUTURE" B;



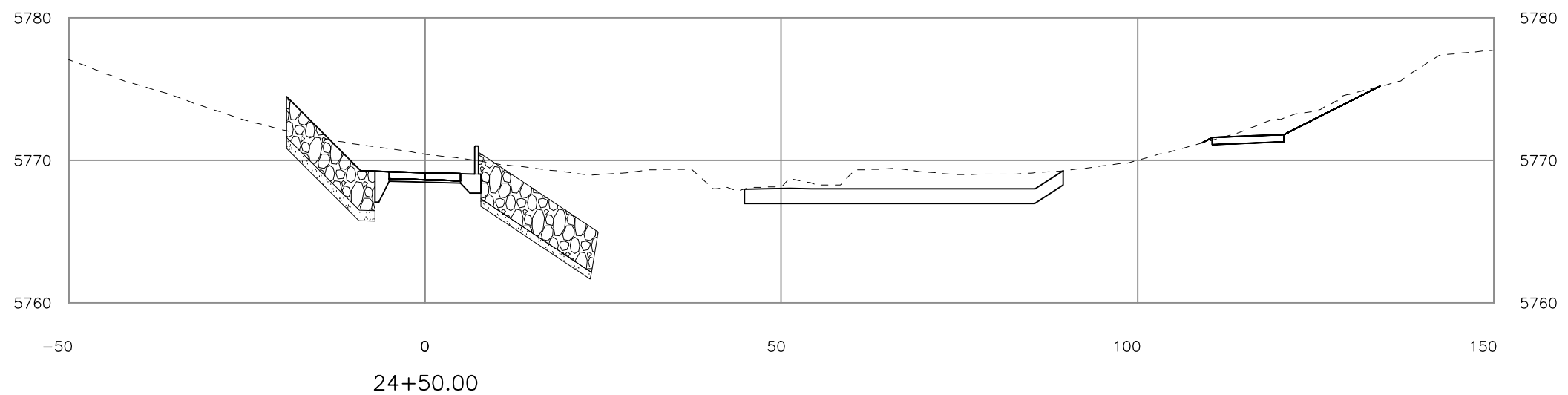
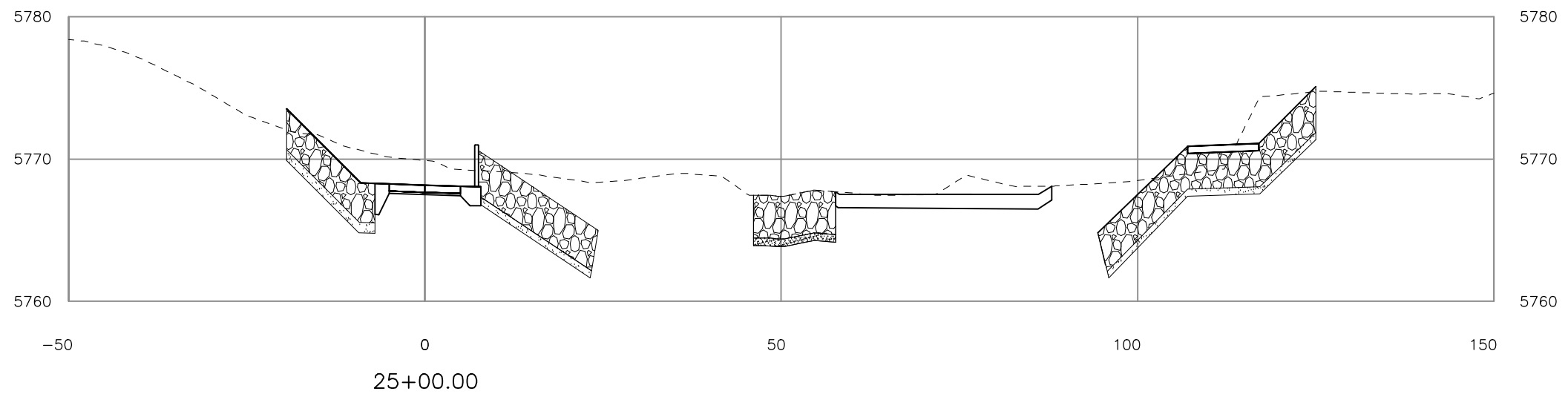
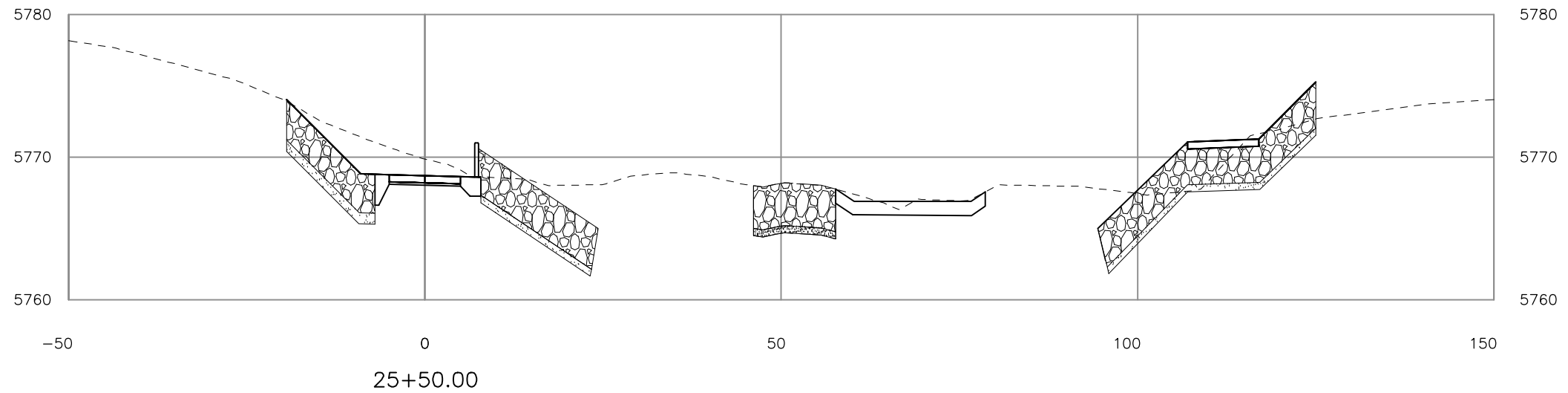
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Sheet Revisions		
Date	Comments	Initials



As Constructed	BELFORD-HAPPY CANYON CREEK BRIDGE SIGN LAYOUT DETAILS		Project No./Code
No Revisions:	Designer: AJP	Structure Numbers	
Revised:	Detailer: VM		
Void:	Subset: Trail	Sheets: TS-2 of 2	Sheet Number 29

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As Constructed	BELFORD-HAPPY CANYON CREEK TRAIL CROSS SECTIONS		Project No./Code
No Revisions:			
Revised:	Designer: SED	Structure Numbers	
Void:	Detailer: SED	Trail Sheets:	
	Subset:	CS-1 of 1	Sheet Number 30

GENERAL NOTES

ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE COLORADO DEPARTMENT OF TRANSPORTATION (CDOT) STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2019 EDITION, APPLICABLE TO THE PROJECT.

EXCEPT AS SHOWN IN THE PLANS, STRUCTURE EXCAVATION AND BACKFILL SHALL BE IN ACCORDANCE WITH M-206-2.

EXPANSION JOINT MATERIAL SHALL MEET AASHTO SPECIFICATION M-213.

STRUCTURAL CONCRETE EXPOSED TO SOIL SHALL CONFORM TO CEMENTITIOUS MATERIALS REQUIREMENTS CLASS 0, CORRESPONDING TO SULFATE EXPOSURE CLASS 0.

ALL ELECTRICAL CONDUIT IN BRIDGE CONCRETE LESS THAN 2" IN DIAMETER SHALL BE SEMIRIGID PLASTIC ELECTRICAL CONDUIT, SCHEDULE 80. CONDUIT THAT RUNS IN BRIDGE RAIL SHALL INCLUDE A PULL WIRE FOR WIRING INSTALLATION. PULL WIRE SHALL BE INCIDENTAL TO COST OF CONDUIT.

COMPRESSED JOINT MATERIAL SHALL BE PRE-COMPRESSED, CHEMICALLY RESISTANT, OPEN CELL POLYURETHANE FOAM SEALANT, IMPREGNATED WITH A WATER-REPELLENT MATERIAL, WITH ADHESIVE BACKING ON BOTH SIDES. THE JOINT MATERIAL SHALL BE EPOXIED IN PLACE, AND ALL SPLICES SEALED, AS RECOMMENDED BY THE SUPPLIER OF THE JOINT MATERIAL. THE COST SHALL BE INCLUDED IN THE COST OF ITEM 601, CLASS D CONCRETE.

ACCEPTABLE COMPRESSED JOINT MATERIAL ALTERNATIVES:

- WILL-SEAL
- SEAL-MATE #517
- POLY-TITE "N"

A COLORED STRUCTURAL CONCRETE COATING WILL BE REQUIRED ON EXPOSED CONCRETE SURFACES TO 1'-0" BELOW FINISHED GRADE, AS SHOWN ON THE PLANS. THE COLOR SHALL BE DAVIS COLOR "SEQUOIA SAND" (NO. 641)

THE FINAL FINISH FOR ALL EXPOSED CONCRETE SURFACES SHALL BE CLASS 2 TO 1'-0" BELOW FINISHED GRADE.

ALL EXTERIOR CONCRETE CORNERS SHALL BE CONSTRUCTED WITH 3/4" CHAMFERS, UNLESS OTHERWISE NOTED

ALL STRUCTURAL STEEL, UNLESS NOTED OTHERWISE, SHALL BE AASHTO M270 GRADE 36 (ASTM A-36).

LEVELING PADS ARE UNLAMINATED BEARINGS. THEY SHALL BE CUT OR MOLDED FROM AASHTO ELASTOMER GRADE 3, 4, OR 5 AS DESCRIBED IN TABLES 705-1 AND 705-2 WITH A DUROMETER (SHORE "A") HARDNESS OF 60.

GRADE 60 REINFORCING STEEL IS REQUIRED.

ALL REINFORCING STEEL SHALL HAVE 2" CONCRETE COVER UNLESS NOTED OTHERWISE.

ALL REINFORCING STEEL SHALL BE EPOXY COATED UNLESS OTHERWISE NOTED.

(N) DENOTES NON-COATED REINFORCING STEEL.

ALL THE PROVISIONS FOR BRIDGE DECK CONCRETE SHALL ALSO APPLY TO APPROACH SLAB CONCRETE.

AN EMERGENCY DECK CONSTRUCTION JOINT MAY BE LOCATED AT THE ONE QUARTER SPAN POINT BACK FROM A PIER OR ABUTMENT WITH RESPECT TO THE DIRECTION OF THE DECK PLACEMENT.

PERMANENT DECK FORMS ARE ALLOWED AND SHALL BE EITHER PRECAST CONCRETE DECK FORMS OR STEEL DECK FORMS.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE DURING CONSTRUCTION.

- B.F. = BACK FACE
- E.F. = EACH FACE
- HCL = HORIZONTAL CONTROL LINE
- HMA = HOT MIX ASPHALT
- I.D. = INSIDE DIAMETER
- I.F. = INSIDE FACE
- O.F. = OUTSIDE FACE
- PGL = PROFILE GRADE LINE

FOR BURIED UTILITY INFORMATION
THREE (3) BUSINESS DAYS
BEFORE YOU DIG
CALL 811
(or 1-800-922-1987)
UTILITY NOTIFICATION
CENTER OF COLORADO (UNCC)
www.uncc.org

NO EXISTING UTILITIES ARE KNOWN TO BE LOCATED IN THE LIMITS OF THE BRIDGE WORK. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES WHICH ARE LOCATED OUTSIDE THE BRIDGE LIMITS, AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. THE CONTRACTOR SHALL CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AT 811 OR 1-800-922-1987 AT LEAST 3 DAYS (2 DAYS NOT INCLUDING THE DAY OF NOTIFICATION) PRIOR TO ANY EXCAVATION OR OTHER EARTHWORK.

STATIONS, ELEVATIONS, AND DIMENSIONS CONTAINED IN THESE PLANS ARE BASED UPON A RECENT FIELD SURVEY. THE CONTRACTOR SHALL VERIFY ALL DEPENDENT DIMENSIONS IN THE FIELD BEFORE ORDERING OR FABRICATING ANY MATERIAL. IF THERE IS A DISCREPANCY, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING WITHIN 48 HOURS.

DESIGN DATA

AASHTO, NINTH EDITION LRFD

DESIGN METHOD: LOAD AND RESISTANCE FACTOR DESIGN (LRFD)

SEISMIC PERFORMANCE ZONE 1

LIVE LOAD: HL-93 (DESIGN TRUCK OR TANDEM, AND DESIGN LANE LOAD)
DEAD LOAD: ASSUMES 36 LBS. PER SQ. FT. FOR 3" HMA BRIDGE DECK OVERLAY
ASSUMES 5 LBS. PER SQ. FT. FOR FUTURE UTILITIES
ASSUMES 5 LBS. PER SQ. FT. FOR PERMANENT STEEL DECK FORMS
ASSUMES 500 LBS FOR EACH LUMINAIRE

REINFORCED CONCRETE:

CDOT CLASS D CONCRETE: $f'_c = 4,500$ psi
REINFORCING STEEL: $f_y = 60,000$ psi

CAISSON CONCRETE:

CLASS BZ CONCRETE: $f'_c = 4,000$ psi
REINFORCING STEEL: $f_y = 60,000$ psi

DIAPHRAGM STEEL: AASHTO M270 (ASTM A709) GRADE 36 $F_y = 36,000$ psi

PRESTRESSED CONCRETE: CLASS PS CONCRETE $f'_c =$ (SEE DETAILS)
 $f'_s = 270,000$ psi

SEISMIC DESIGN DATA

EARTHQUAKE DESIGN METHOD: FORCE BASED (GENERAL PROCEDURE PER LRFD 3.10.2.1)

LATITUDE N 39° 33' 12"
LONGITUDE W 104° 48' 49"

AASHTO SPECTRUM FOR 7% FOR PE IN 75 YEARS (1000 YEAR RETURN PERIOD)

PERIOD (sec)	SA (g)	
0	0.056	PGA - SITE CLASS E
0.2	0.120	S _s - SITE CLASS E
1.0	0.033	S ₁ - SITE CLASS E

SPECTRAL RESPONSE ACCELERATIONS:

$A_s = F_{PGA} \times PGA$, $S_{D1} = F_A S_s$ AND $S_{D1} = F_v S_1$
 $F_{PGA} = 2.5$, $F_A = 2.5$, $F_v = 3.5$

PERIOD (sec)	SA (g)	
0	0.140	A _s - SITE CLASS E
0.2	0.300	S _{ps} - SITE CLASS E
1.0	0.116	S _{D1} - SITE CLASS E

OPERATIONAL CLASS:

SEISMIC ZONE: ZONE 1

RESPONSE MODIFICATION FACTORS:

- R-FACTOR: 1.5 (RC PILE BENTS)
- R-FACTOR: 1.0 (PILE BENTS TO CAP BEAM, COLUMNS TO CAP BEAM & FOUNDATION)
- R-FACTOR: 0.8 (SUPERSTRUCTURE TO FOUNDATION)

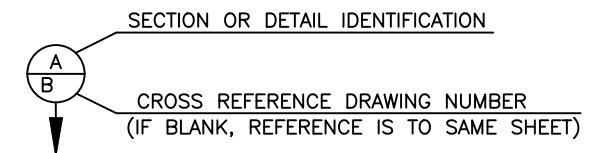
INDEX OF DRAWINGS

- B1 GENERAL INFORMATION
- B2 SUMMARY OF QUANTITIES
- B3 GENERAL LAYOUT
- B4 TYPICAL SECTION
- B5 ENGINEERING GEOLOGY
- B6 BRIDGE HYDRAULIC INFORMATION (1 OF 2)
- B7 BRIDGE HYDRAULIC INFORMATION (2 OF 2)
- B8 CONSTRUCTION LAYOUT (1 OF 2)
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- B12 ABUTMENT 1 PLAN & ELEVATION
- B13 ABUTMENT 3 PLAN & ELEVATION
- B14 ABUTMENT SECTIONS & DETAILS
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- B28 APPROACH SLAB DETAILS
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- B32 DECK GEOMETRY (2 OF 3)
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BRIDGE DESCRIPTION

TWO SPAN (77'-2 1/2" / 77'-2 1/2") BRIDGE COMPOSITE CONCRETE SLAB AND PRECAST/PRESTRESSED CONCRETE I GIRDERS (BT42)

BELFORD AVENUE OVER HAPPY CANYON CREEK
72'30"00" SKEW (TO LAYOUT LINE)
74'-0" ROADWAY WIDTH, CURB TO CURB
8'-6" SIDEWALKS, 1'-6" BRIDGE RAILS



		Shear LLLDF		Positive Moment LLLDF		Negative Moment LLLDF	
		1 Lane	2+ Lanes	1 Lane	2+ Lanes	1 Lane	2+ Lanes
Span 1	G1	0.912	0.749	0.856	0.711	0.856	0.711
	G2-G3; G10-G11	0.718	0.855	0.476	0.663	0.476	0.663
	G4-G5; G8-G9	0.673	0.803	0.476	0.663	0.476	0.663
	G6-G7	0.675	0.806	0.477	0.664	0.477	0.664
	G12	0.791	0.685	0.742	0.656	0.742	0.656
Span 2	G1	0.871	0.723	0.832	0.701	0.832	0.701
	G2-G3; G10-G11	0.842	0.706	0.477	0.665	0.477	0.665
	G4-G5; G8-G9	0.675	0.805	0.477	0.665	0.477	0.665
	G6-G7	0.675	0.806	0.478	0.665	0.478	0.665
	G12	0.802	0.685	0.767	0.666	0.767	0.666

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Horizontal Scale: VARIES Vertical Scale:			Revised:	Detailer: C. MIYAMOTO	
			Void:	Subset: BRIDGE	Sheet Number 31
				Structure Numbers	
				Sheets: B1 of 33	

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SUMMARY OF QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	SUPERSTRUCTURE	ABUTMENT 1	PIER 2	ABUTMENT 3	APPROACH SLABS	TOTALS
206	STRUCTURE EXCAVATION	CY		64	183	14		261
206	STRUCTURE BACKFILL (CLASS 1)	CY		623	116	736		1,475
206	MECHANICAL REINFORCEMENT OF SOIL	CY		532		612		1,144
206	FILTER MATERIAL (CLASS A)	CY		189	42	166		397
403	HOT MIX ASPHALT (GRADING SX)(75)(PG 64-22)	TON	214				56	270
503	DRILLED CAISSON (24 INCH)	LF		360		393		753
503	DRILLED CAISSON (48 INCH)	LF			240			240
506	RIPRAP (18 INCH)	CY		564	124	496		1,184
514	PEDESTRIAN RAILING (STEEL)	LF	306				80	386
515	WATERPROOFING (MEMBRANE)	SY	1,296				335	1,631
515	CONCRETE SEALER	SY	321				81	402
601	CONCRETE CLASS D (BRIDGE)	CY	1074	156	212	167	167	1,776
601	STRUCTURAL CONCRETE COATING	SY	745	141	152	141	49	1,228
601	STRUCTURAL CONCRETE COATING (ANTI-GRAFFITI)	SF	1,942				278	2,200
601	HAND STAINED STONE FORMLINER	SF	1,942				278	2,220
602	REINFORCING STEEL	LB		3,040	1,470	3,040	10,084	17,634
602	REINFORCING STEEL (EPOXY COATED)	LB	169,020	22,605	10,920	32,445	6,465	241,455
603	18 INCH REINFORCED CONCRETE PIPE	LF		40				40
604	VANE GRATE INLET (SPECIAL)	EA		2				2
606	BRIDGE RAIL (SPECIAL)	LF	306				82	388
613	1 INCH ELECTRICAL CONDUIT	LF	62					62
613	2 INCH ELECTRICAL CONDUIT	LF	794				164	958
613	LUMINAIRE (SPECIAL)	EA	2				4	6
618	PRESTRESSSED CONCRETE I (BT42)	LF	1,852					1,852



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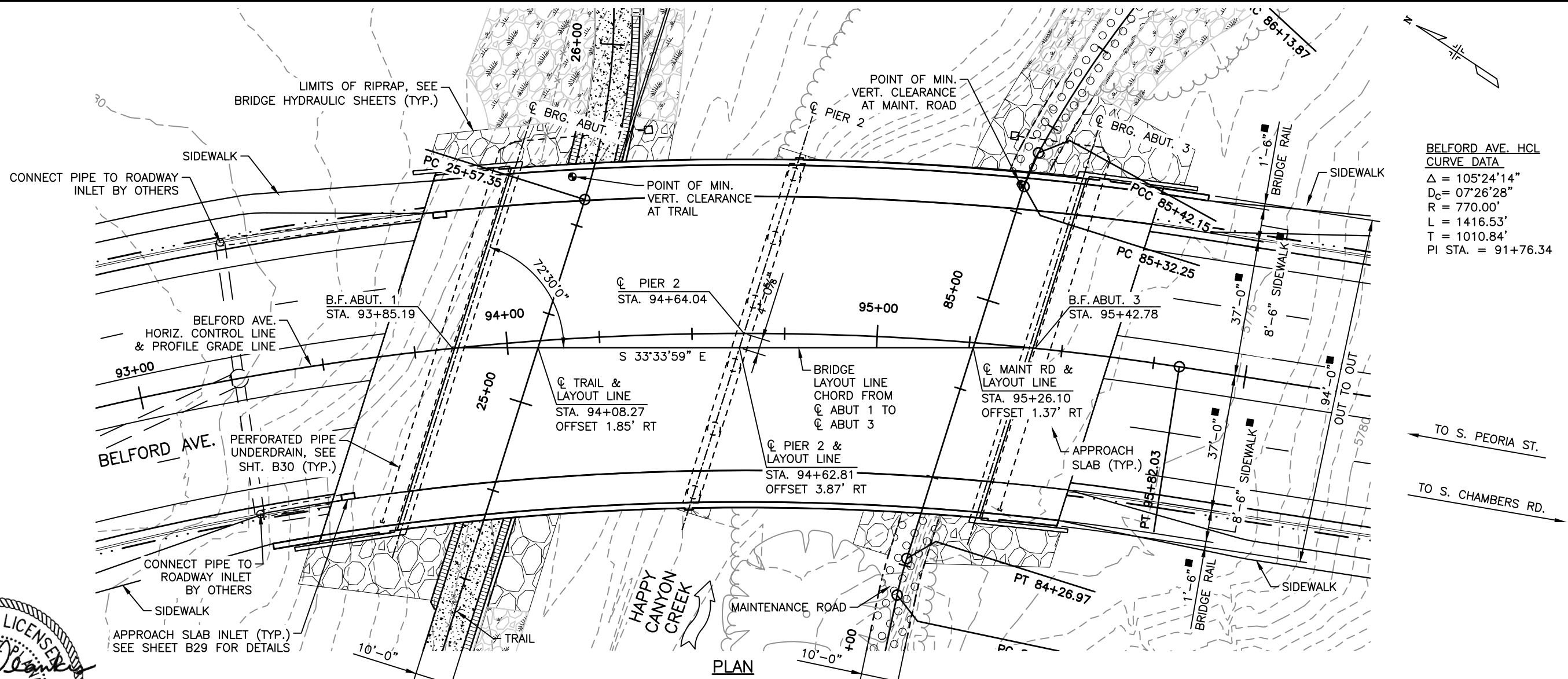
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Date	Comments	Initials



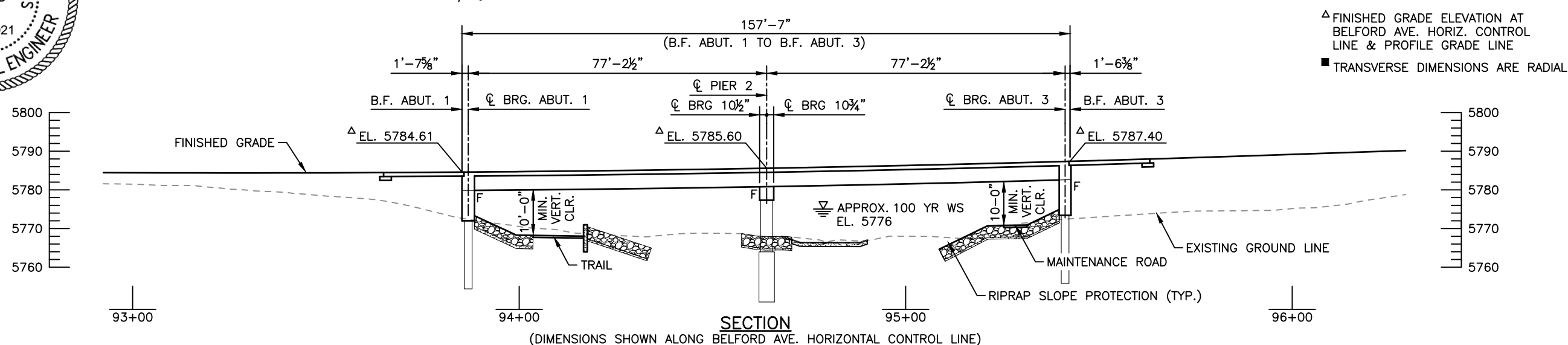
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As Constructed	BELFORD-HAPPY CANYON CREEK BRIDGE		Project No./Code
No Revisions:	SUMMARY OF QUANTITIES		
Revised:	Designer: J. LYNCH	Structure Numbers	
	Detailer: R. DILLON		
Void:	Subset: BRIDGE	Sheets: B2 of 33	Sheet Number 32



BELFORD AVE. HCL CURVE DATA
 $\Delta = 105^{\circ}24'14''$
 $D_c = 07^{\circ}26'28''$
 $R = 770.00'$
 $L = 1416.53'$
 $T = 1010.84'$
 $PI STA. = 91+76.34$



△ FINISHED GRADE ELEVATION AT BELFORD AVE. HORIZ. CONTROL LINE & PROFILE GRADE LINE
■ TRANSVERSE DIMENSIONS ARE RADIAL

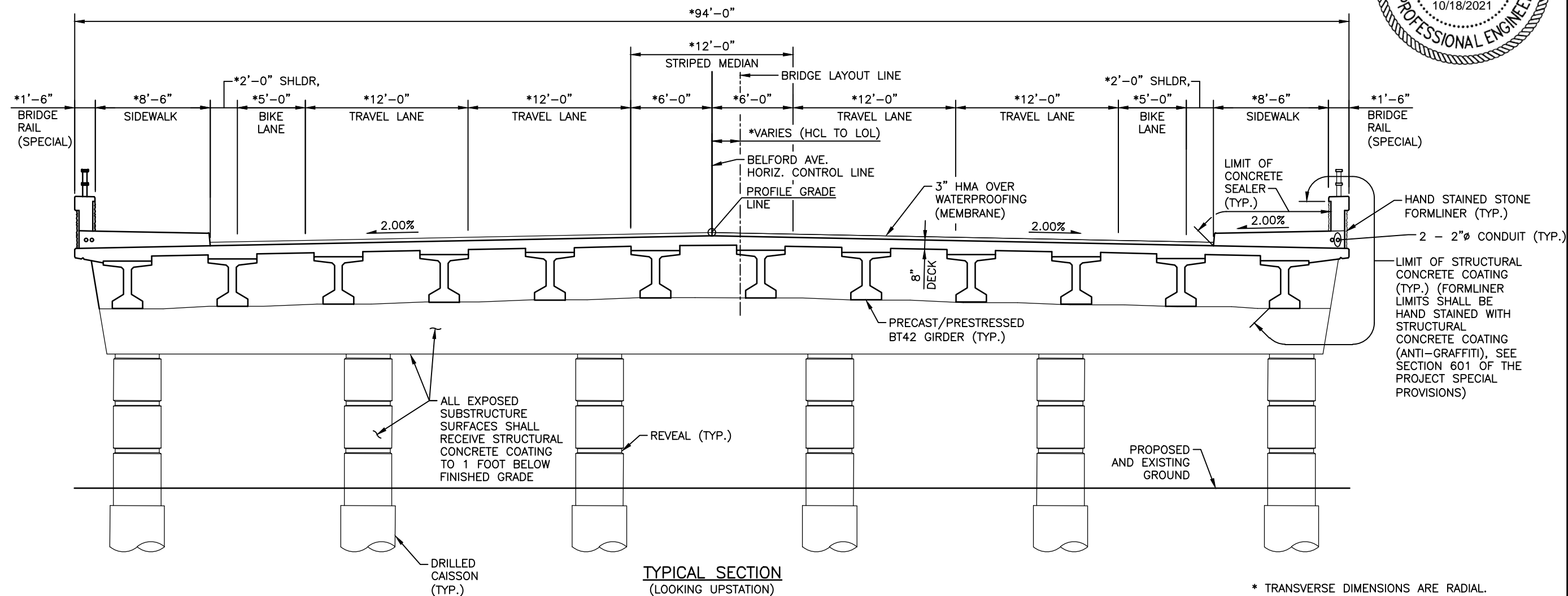
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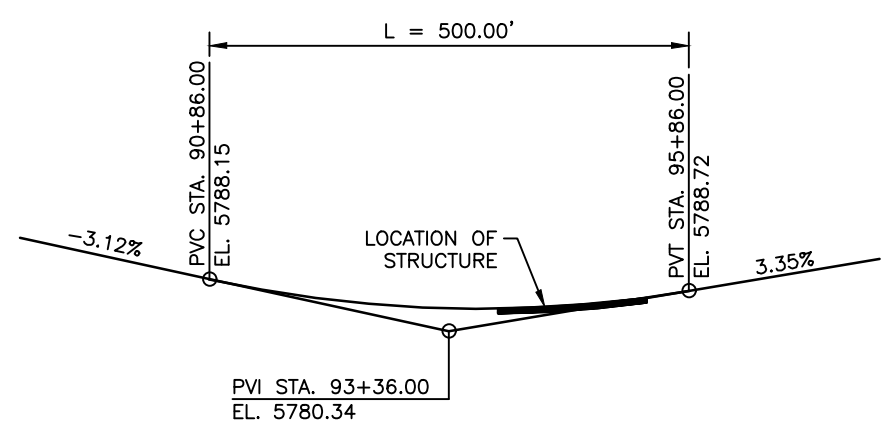


As Constructed	BELFORD-HAPPY CANYON CREEK BRIDGE GENERAL LAYOUT		Project No./Code
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Revised:	Detailer: R. DILLON		
Void:	Subset: BRIDGE	Sheets: B3 of 33	Sheet Number 33

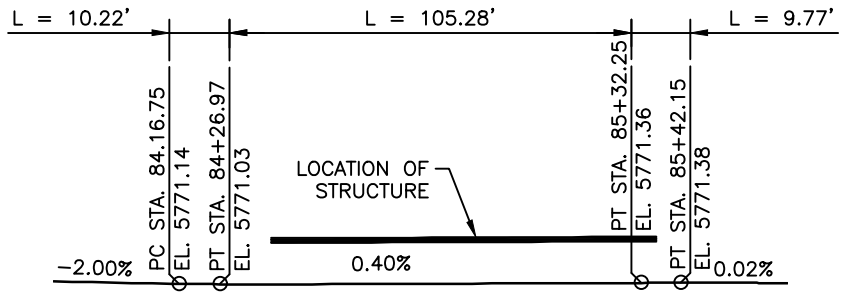


TYPICAL SECTION
(LOOKING UPSTATION)

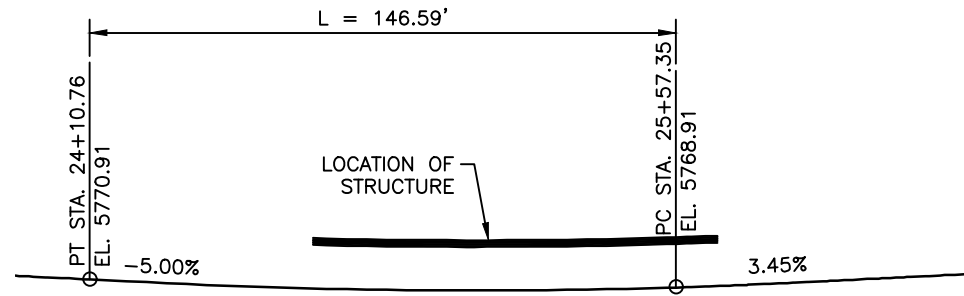
* TRANSVERSE DIMENSIONS ARE RADIAL.



BELFORD AVE. PROFILE GRADE



MAINTENANCE ROAD PROFILE GRADE



PARKER TRAIL PROFILE GRADE

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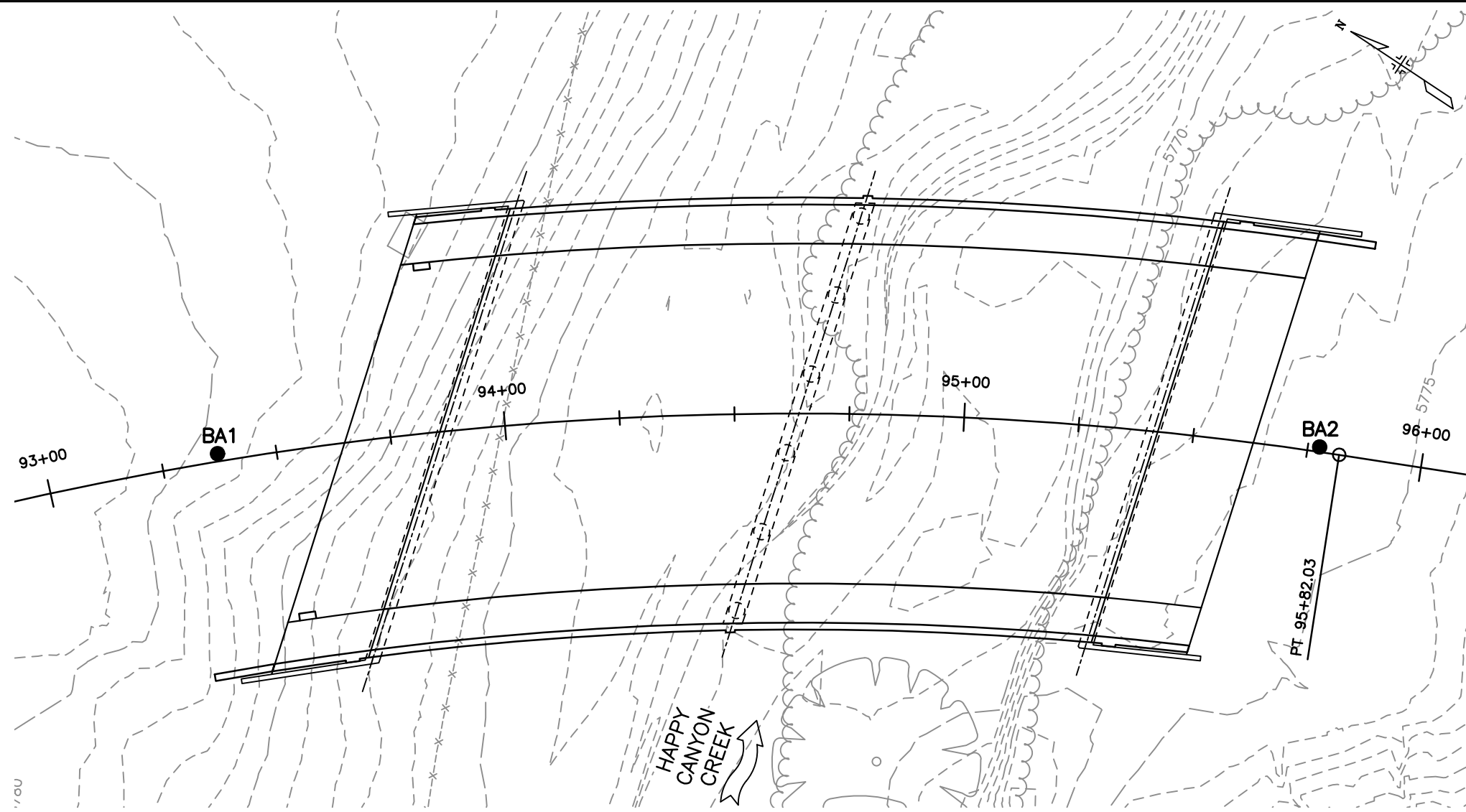
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No Revisions:	TYPICAL SECTION		
Revised:	Designer: J. LYNCH	Structure	Sheet Number 34
Void:	Detailer: R. DILLON	Numbers	
	Subset: BRIDGE	Sheets: B4 of 33	

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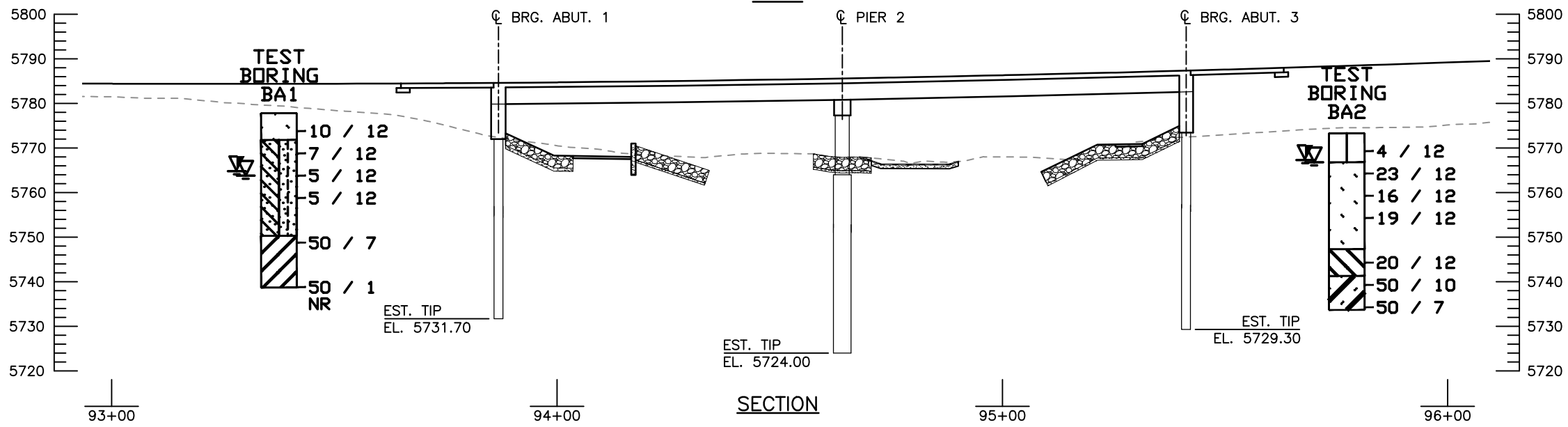


PLAN

- ### SOIL DESCRIPTIONS
- Clay, soft
 - Sand, medium dense, silty
 - Clay/sand, interbedded, medium stiff/loose to medium dense
 - Claystone (Bedrock), firm to medium hard
 - Claystone (Bedrock), hard to very hard
 - Sandstone (Bedrock), hard to very hard
 - Water level at time of drilling
 - Water level 4 to 71 days after drilling

- Notes:**
1. Test borings were drilled December 1, 2015 with a 4-inch diameter, continuous flight power auger.
 2. Location of the test borings were staked by others at locations chosen by this firm, unless noted otherwise.
 3. The horizontal lines shown on the logs are to differentiate materials and represent the approximate boundaries between materials. The transitions between materials may be gradual.
 4. Elevations were obtained from staking provided by others and have been rounded to the nearest foot, unless noted otherwise.
 5. Boring logs shown in this report are subject to the limitations, explanations, and conclusions of this report.

A.G. Wassenaar Inc.
Geotechnical and Environmental Consulting



SECTION

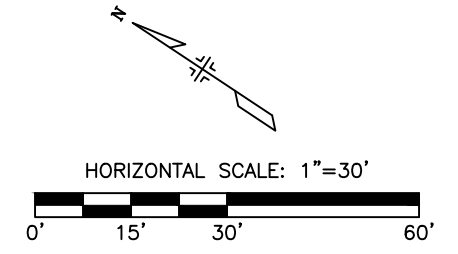
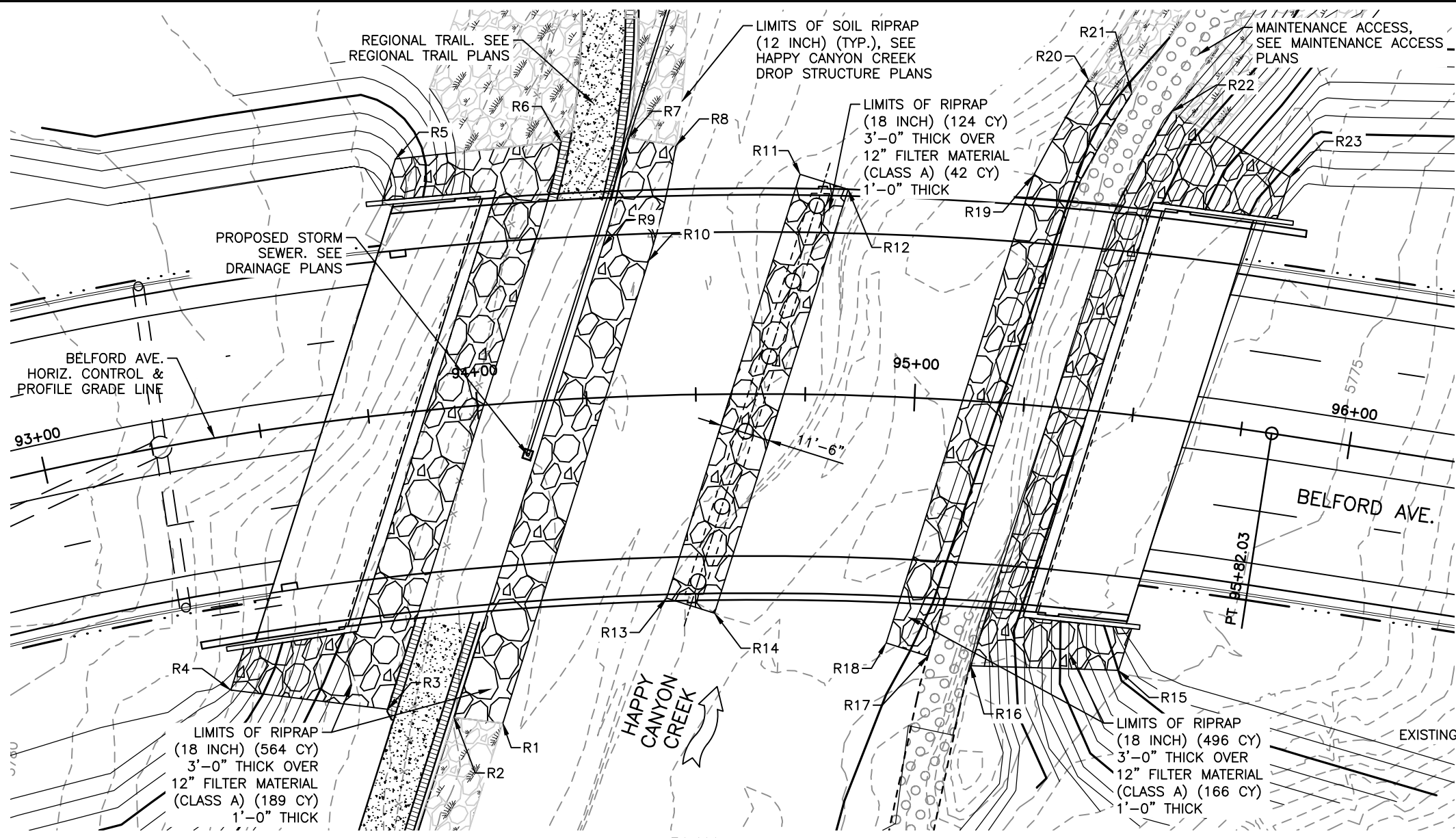
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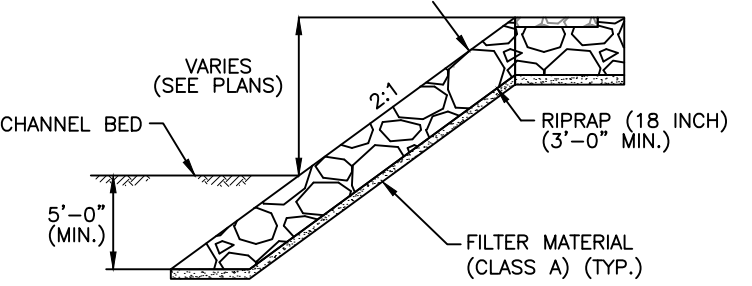
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No Revisions:	ENGINEERING	
Revised:	GEOLOGY	
Void:	Designer: A.McDaniels Structure Numbers	
	Detailer: V.Miranda	
	Subset: BRIDGE Sheets: B5 of 33	Sheet Number 35

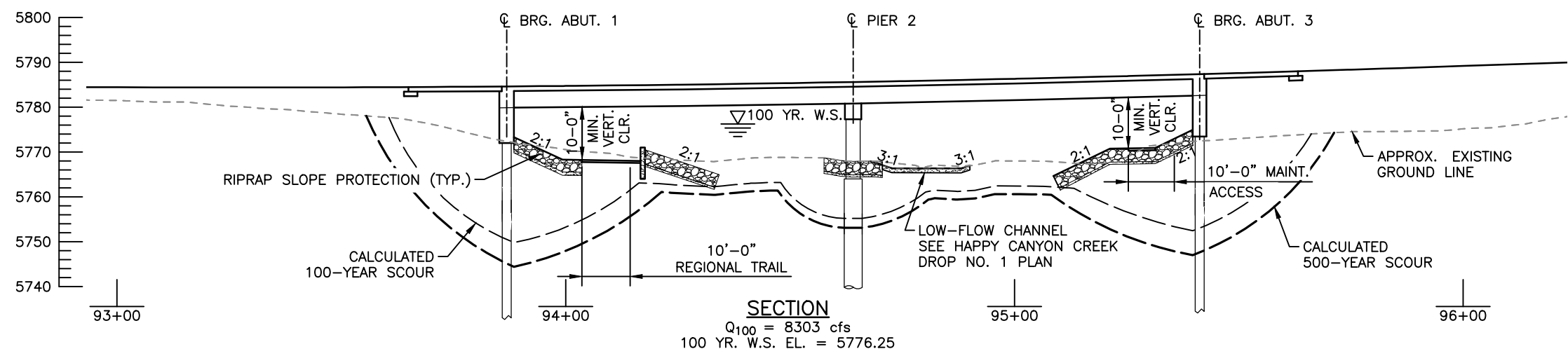


RIPRAP (18 INCH) POINT DATA

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
R1	27831.26	94408.21	5769.24	FINISHED GRADE
R2	27841.26	94403.19	5769.22	FINISHED GRADE
R3	27854.90	94396.36	5769.55	FINISHED GRADE
R4	27887.20	94380.16	5782.92	FINISHED GRADE
R5	27922.95	94502.06	5781.50	FINISHED GRADE
R6	27893.61	94526.31	5769.80	FINISHED GRADE
R7	27881.26	94535.51	5769.73	FINISHED GRADE
R8	27871.26	94540.03	5768.10	FINISHED GRADE
R9	27872.48	94511.60	5768.79	FINISHED GRADE
R10	27861.91	94514.64	5768.02	FINISHED GRADE
R11	27843.96	94550.26	5768.19	FINISHED GRADE
R12	27832.91	94553.44	5767.38	FINISHED GRADE
R13	27815.87	94452.72	5767.63	FINISHED GRADE
R14	27804.82	94455.90	5768.01	FINISHED GRADE
R15	27720.69	94496.05	5785.18	FINISHED GRADE
R16	27749.41	94478.25	5771.13	FINISHED GRADE
R17	27758.80	94474.71	5770.94	FINISHED GRADE
R18	27768.40	94471.94	5768.80	FINISHED GRADE
R19	27799.40	94579.55	5768.14	FINISHED GRADE
R20	27801.00	94604.71	5766.27	FINISHED GRADE
R21	27791.05	94607.58	5771.26	FINISHED GRADE
R22	27781.07	94609.21	5771.45	FINISHED GRADE
R23	27750.27	94611.63	5786.40	FINISHED GRADE



RIPRAP (18 INCH) TYPICAL SLOPE SECTION @ BRIDGE N.T.S.



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BELFORD-HAPPY CANYON CREEK BRIDGE BRIDGE HYDRAULIC INFORMATION (1 OF 2)
 Designer: C. TWISS
 Detailer: R. DILLON
 Subset: BRIDGE
 Structure Numbers
 Sheets: B6 of 33

Project No./Code
 Sheet Number 36

100-YEAR RECURRENCE INTERVAL

FLOW UPSTREAM OF BRIDGE = 8303 CFS (FHAD)
 DRAINAGE AREA = 17.5± SQ. MI.

CHANNEL DESCRIPTION

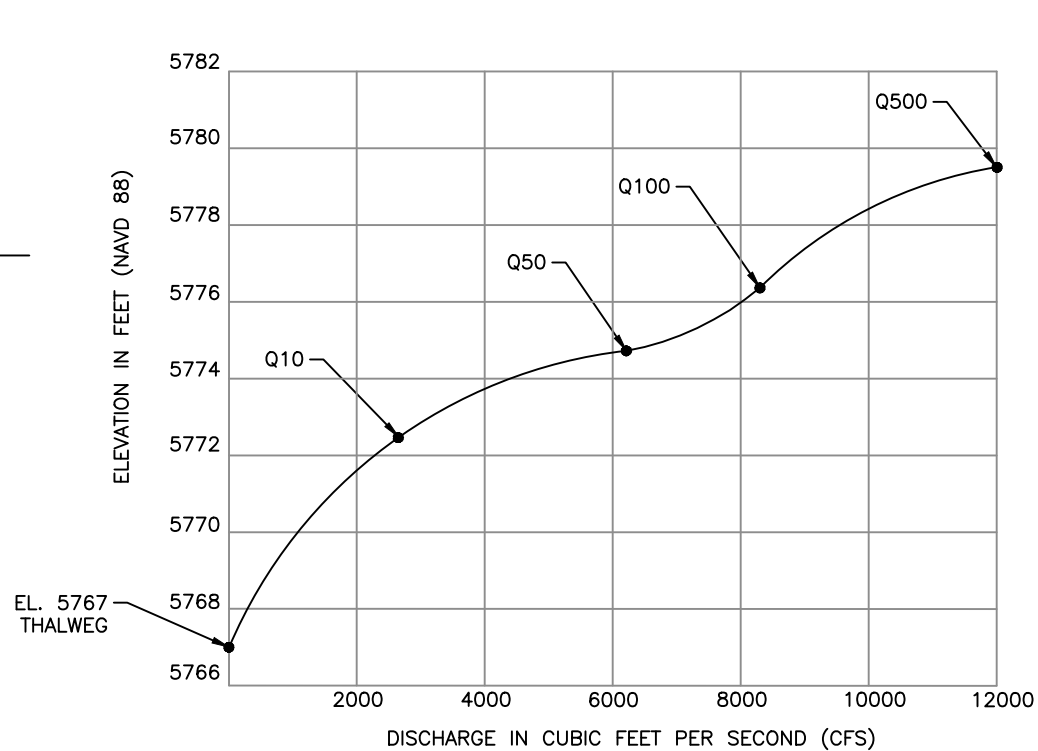
BOTTOM MATERIAL: COHESIVE NONCOHESIVE
 BOTTOM MAT. SIZE: CLAY SILT SAND GRAVEL COBBLES OTHERS _____
 STREAM FORM: STRAIGHT MEANDERING BRAIDED
 MANNING'S "n" FOR DESIGN: CHANNEL 0.030 OVERBANK 0.035
 DEBRIS -- BRUSH TREES/LOGS ICE OTHER _____

COMPARISON HYDRAULICS (100 YEAR EVENT)
 (AT SECTION LOCATED 32 FEET UPSTREAM OF BRIDGE)

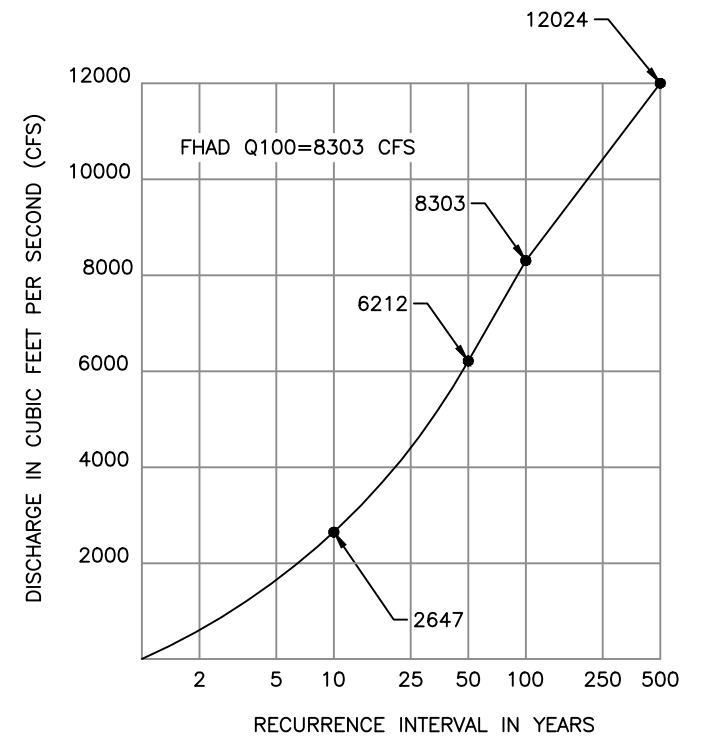
	VELOCITY (FT./SEC)		WS EL. (FT.)	MAX. BACKWATER (FT.)	FROUDE NO.
	AVERAGE	CHANNEL			
EXISTING CONDITIONS	9.90	13.70	5775.53	-	0.90
PROPOSED CONDITIONS	8.19	10.21	5776.35	-	0.63

HYDRAULIC DATA

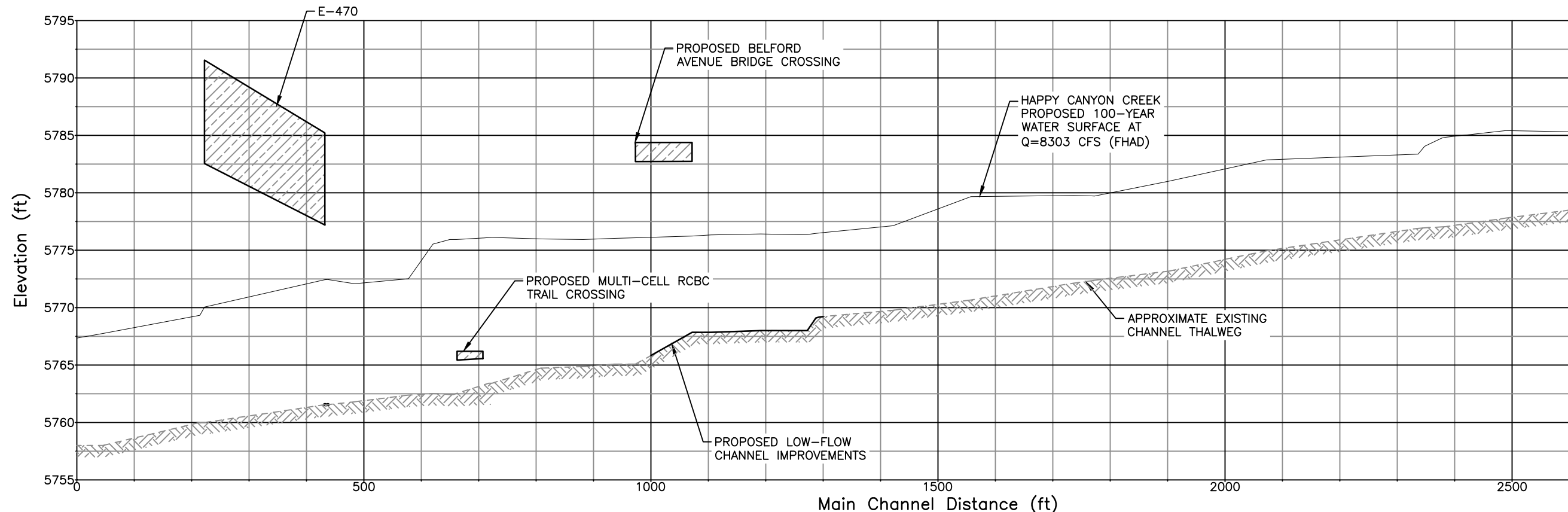
LOCATION	LOW CHORD ELEVATION AT ABUT. FRONT FACE		100-YEAR WATER SURFACE ELEVATION
	ABUT. 1	ABUT. 2	
S. SIDE (UPSTREAM)	5780.07	5782.73	5776.25
N. SIDE (DOWNSTREAM)	5780.07	5782.73	5776.10



STAGE-DISCHARGE CURVE AT UPSTREAM FACE OF BELFORD AVENUE



DISCHARGE-FREQUENCY CURVE



HORIZ. SCALE: 1"=200'
 VERT. SCALE: 1"=10'

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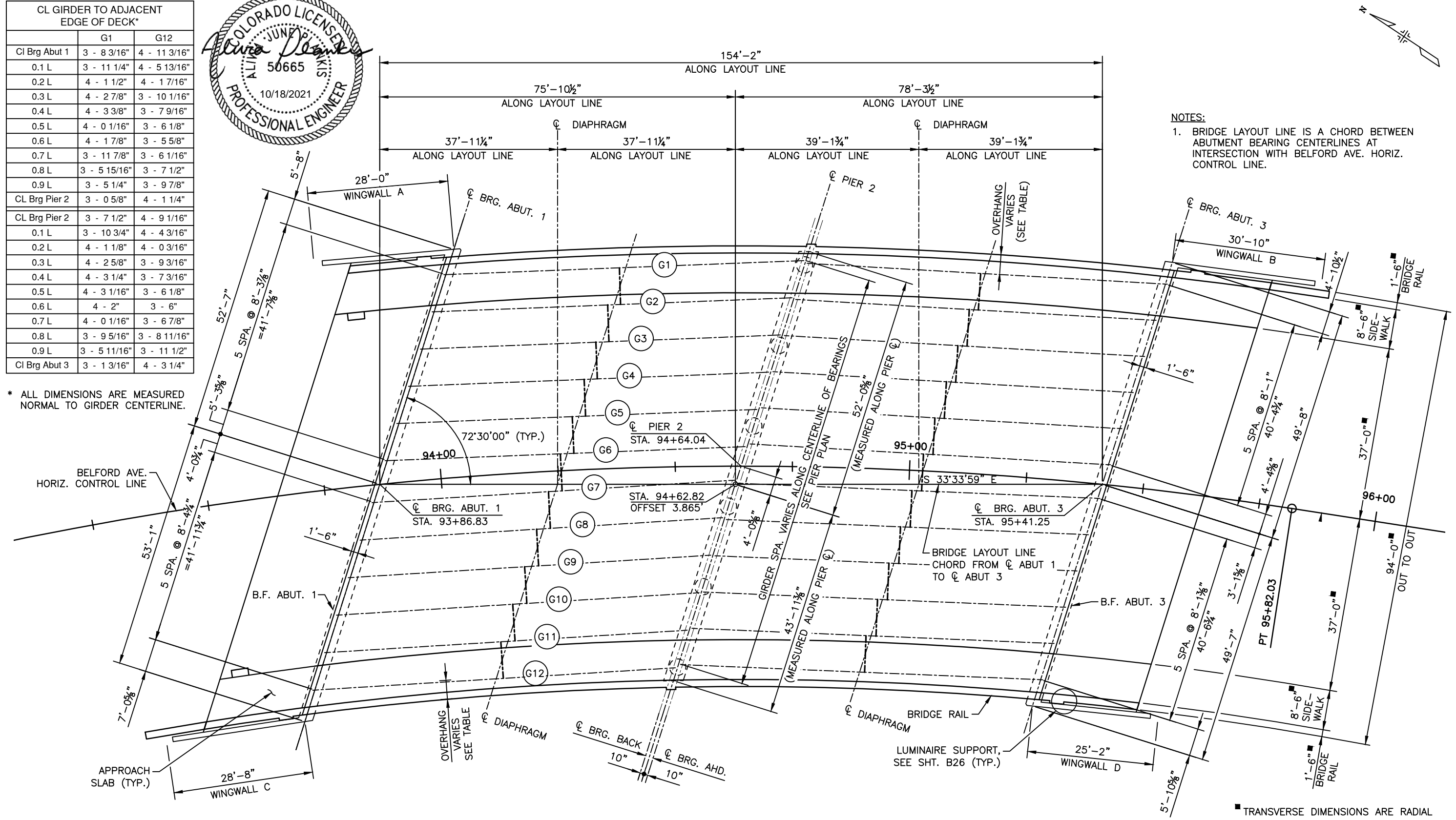
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No Revisions:	Designer: C. TWISS	Structure Numbers	
Revised:	Detailer: K. TURNER		
Void:	Subset: BRIDGE	Sheets: B7 of 37	Sheet Number 37

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CL GIRDER TO ADJACENT EDGE OF DECK*		
	G1	G12
Cl Brg Abut 1	3 - 8 3/16"	4 - 11 3/16"
0.1 L	3 - 11 1/4"	4 - 5 13/16"
0.2 L	4 - 1 1/2"	4 - 1 7/16"
0.3 L	4 - 2 7/8"	3 - 10 1/16"
0.4 L	4 - 3 3/8"	3 - 7 9/16"
0.5 L	4 - 0 1/16"	3 - 6 1/8"
0.6 L	4 - 1 7/8"	3 - 5 5/8"
0.7 L	3 - 11 7/8"	3 - 6 1/16"
0.8 L	3 - 5 15/16"	3 - 7 1/2"
0.9 L	3 - 5 1/4"	3 - 9 7/8"
CL Brg Pier 2	3 - 0 5/8"	4 - 1 1/4"
CL Brg Pier 2	3 - 7 1/2"	4 - 9 1/16"
0.1 L	3 - 10 3/4"	4 - 4 3/16"
0.2 L	4 - 1 1/8"	4 - 0 3/16"
0.3 L	4 - 2 5/8"	3 - 9 3/16"
0.4 L	4 - 3 1/4"	3 - 7 3/16"
0.5 L	4 - 3 1/16"	3 - 6 1/8"
0.6 L	4 - 2"	3 - 6"
0.7 L	4 - 0 1/16"	3 - 6 7/8"
0.8 L	3 - 9 5/16"	3 - 8 11/16"
0.9 L	3 - 5 11/16"	3 - 11 1/2"
Cl Brg Abut 3	3 - 1 3/16"	4 - 3 1/4"



* ALL DIMENSIONS ARE MEASURED NORMAL TO GIRDER CENTERLINE.



NOTES:
1. BRIDGE LAYOUT LINE IS A CHORD BETWEEN ABUTMENT BEARING CENTERLINES AT INTERSECTION WITH BELFORD AVE. HORIZ. CONTROL LINE.

CONSTRUCTION LAYOUT

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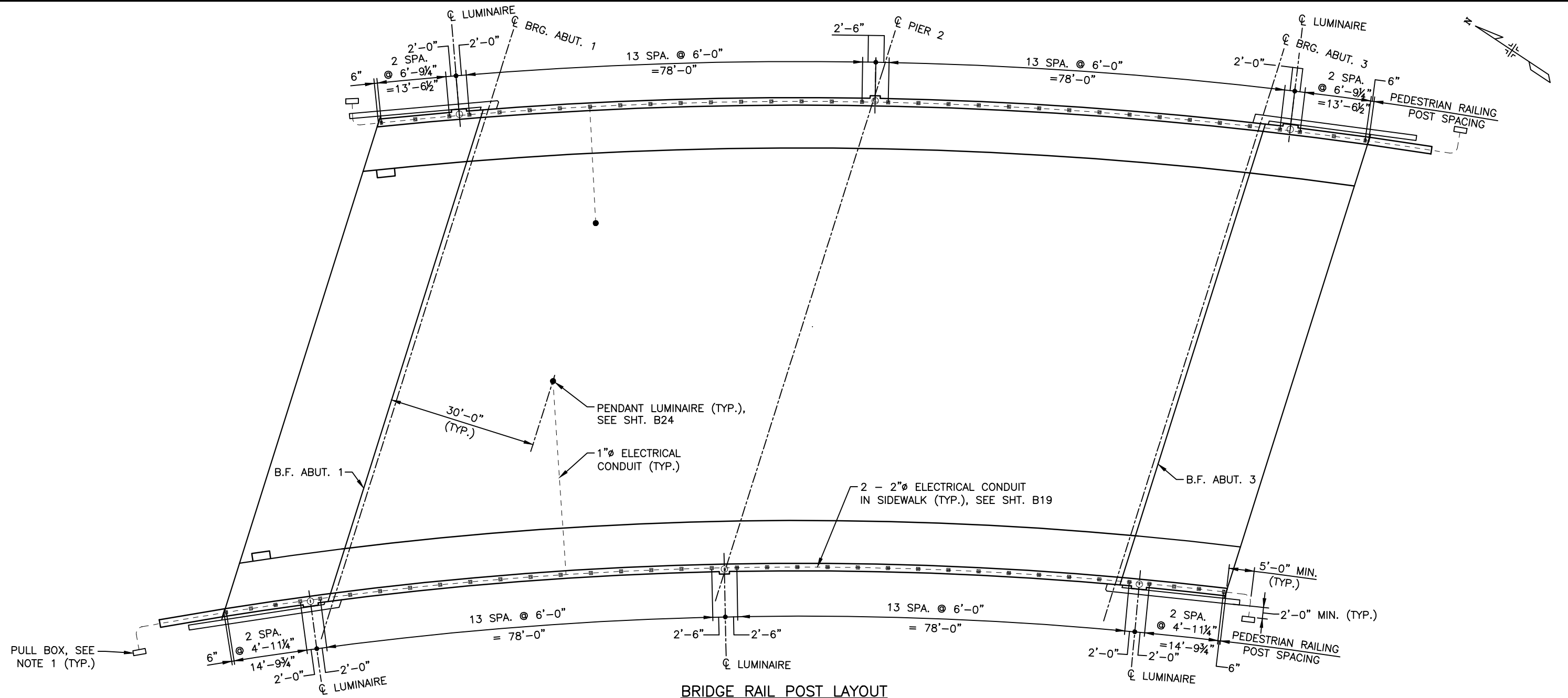
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No Revisions:	Designer: J. LYNCH	Structure Numbers	Sheet Number 38
Revised:	Detailer: C. MIYAMOTO		
Void:	Subset: BRIDGE	Sheets: B8 of 33	

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BRIDGE RAIL POST LAYOUT



- NOTES:**
- PULL BOXES WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF ITEM 613 - 2 INCH ELECTRICAL CONDUIT. SEE CDOT S-613-1, SHT. NO. 4 OF 6 FOR TYPICAL DETAIL AND NOTES.

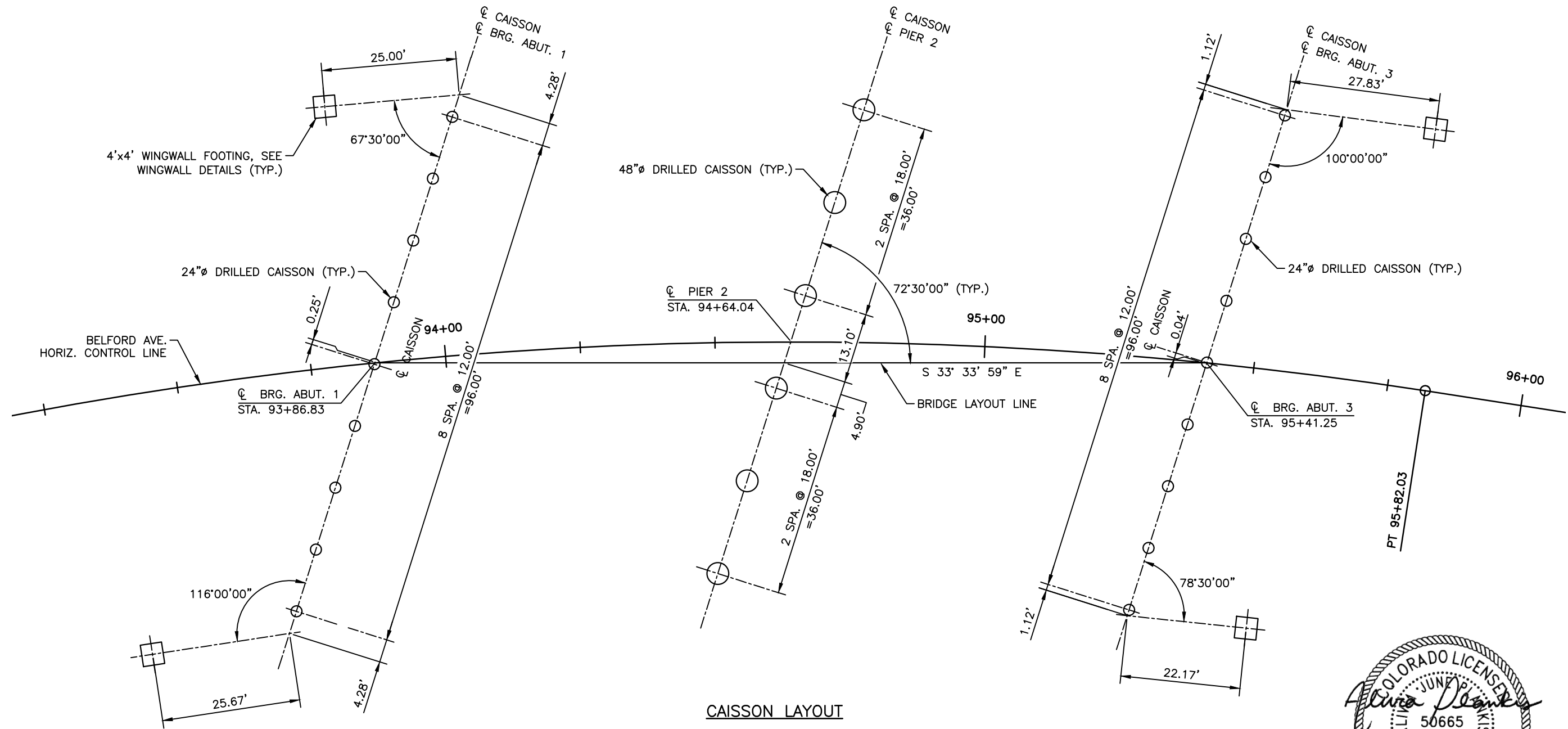
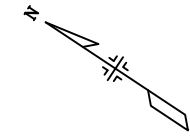
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No Revisions:	Designer: J. LYNCH	Structure Numbers	
Revised:	Detailer: C. MIYAMOTO		
Void:	Subset: BRIDGE	Sheets: B9 of 33	Sheet Number 39



CAISSON LAYOUT



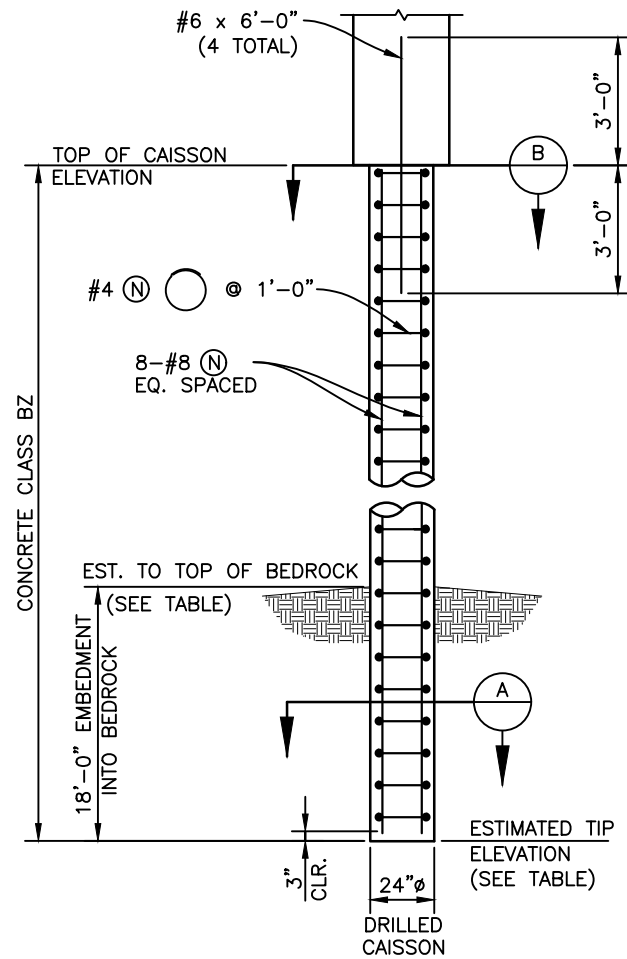
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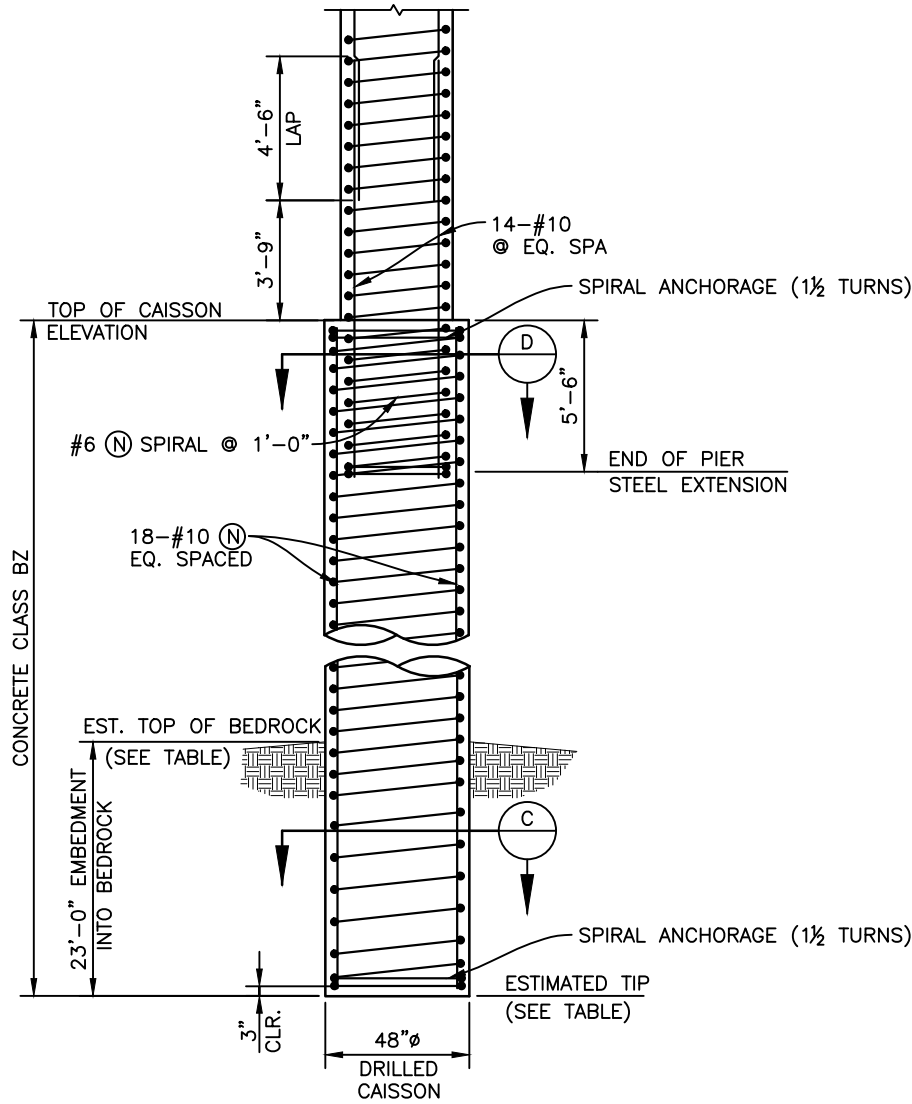
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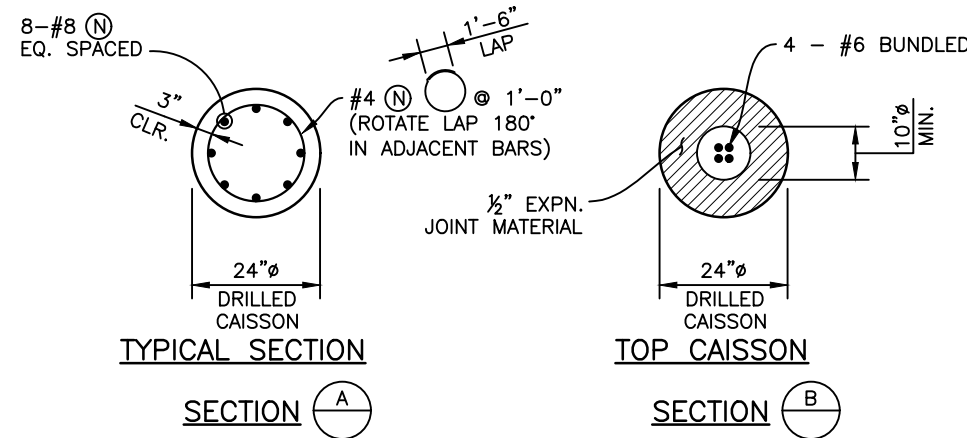
As Constructed	BELFORD-HAPPY CANYON CREEK BRIDGE		Project No./Code
No Revisions:	CAISSON LAYOUT		
Revised:	Designer: J. LYNCH	Structure Numbers	Sheet Number 40
Void:	Detailer: R. DILLON	Sheets: B10 of 33	
	Subset: BRIDGE		



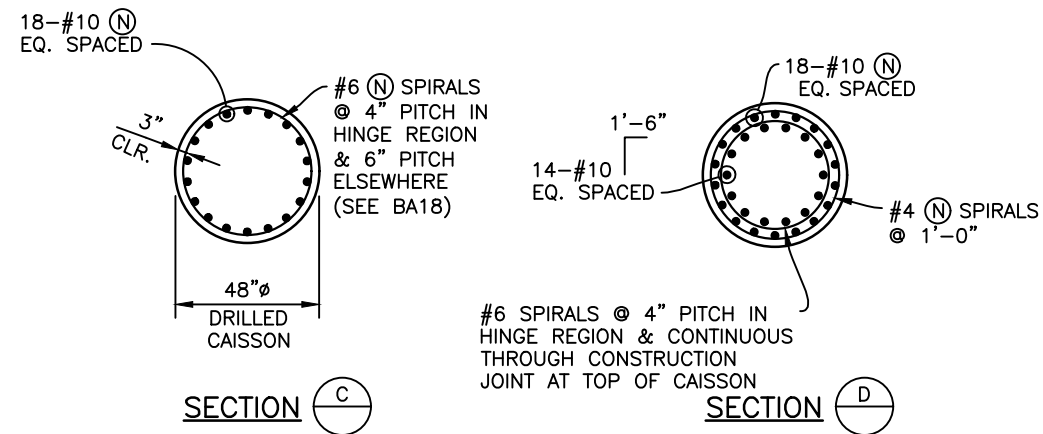
24" CAISSON DETAIL



48" CAISSON DETAIL



ABUTMENT CAISSON DETAILS



PIER CAISSON SECTION
(SEE NOTES REGARDING SPIRAL LAP SPLICES)

	MAX. LOAD (service) (kips)	MAX. LOAD (factored) (kips)	TOP OF CAISSON ELEVATION	EST. TOP OF BEDROCK ELEVATION	EST. TIP ELEVATION
ABUTMENT 1	316	437	5771.64	5749.80	5731.70
PIER 2	729	1008	5764.00	5747.00	5724.00
ABUTMENT 3	321	442	5772.94	5747.30	5729.30

CAISSON NOTES:

- CAISSONS SHALL EXTEND AT LEAST TO THE ESTIMATED TIP ELEVATION. CAISSONS SHALL BE FURTHER ADVANCED INTO THE HARD BEDROCK IF NECESSARY TO OBTAIN THE SPECIFIED MINIMUM EMBEDMENT BELOW THE ESTIMATED TOP OF HARD BEDROCK AS DETERMINED IN THE FIELD BY THE ENGINEER.
- TOP OF HARD BEDROCK ELEVATION SHALL BE VERIFIED AT TIME OF CONSTRUCTION BY THE GEOTECHNICAL ENGINEER.
- THE USE OF TEMPORARY CASING & DEWATERING DURING DRILLING CAISSONS WILL BE REQUIRED. THE COST OF TEMPORARY CASING & DEWATERING SHALL BE INCLUDED IN THE COST OF ITEM 503 - DRILLED CAISSON (24 INCH) AND ITEM 503 - DRILLED CAISSON (48 INCH).
- EXPANSION JOINT MATERIAL SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN ITEM 503 - DRILLED CAISSON (24 INCH).
- INSIDE "HINGE REGIONS", AS DEFINED ON BA18, SPIRAL REINFORCEMENT SHALL ONLY BE SPLICED WITH WELDED OR MECHANICAL CONNECTIONS THAT ARE CAPABLE OF DEVELOPING 125% OF REINFORCING STEEL TENSILE STRENGTH. OTHERWISE, SPIRALS MAY BE LAP SPLICED WITH THE FOLLOWING LAP LENGTHS:
 #4 SPIRALS: 3'-0" LAP LENGTH
 #6 SPIRALS: 4'-6" LAP LENGTH

DESIGN DATA:

CAISSONS AND PILES ARE DESIGNED PER AASHTO LRFD

CAISSONS:

- NOMINAL TIP RESISTANCE IN BEDROCK = 78.2 KSF
- NOMINAL SIDE RESISTANCE IN BEDROCK = 6.37 KSF
- NOMINAL UPLIFT RESISTANCE IN BEDROCK = 6.37 KSF

RESISTANCE FACTORS FOR TIP, SIDE AND UPLIFT RESISTANCE ARE 0.55, 0.60, 0.40, RESPECTIVELY.

BAR SIZE	SPLICE LENGTH
#8	3'-2"
#10	4'-10"



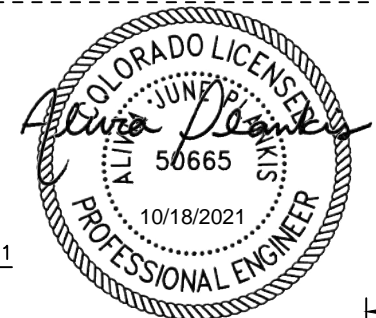
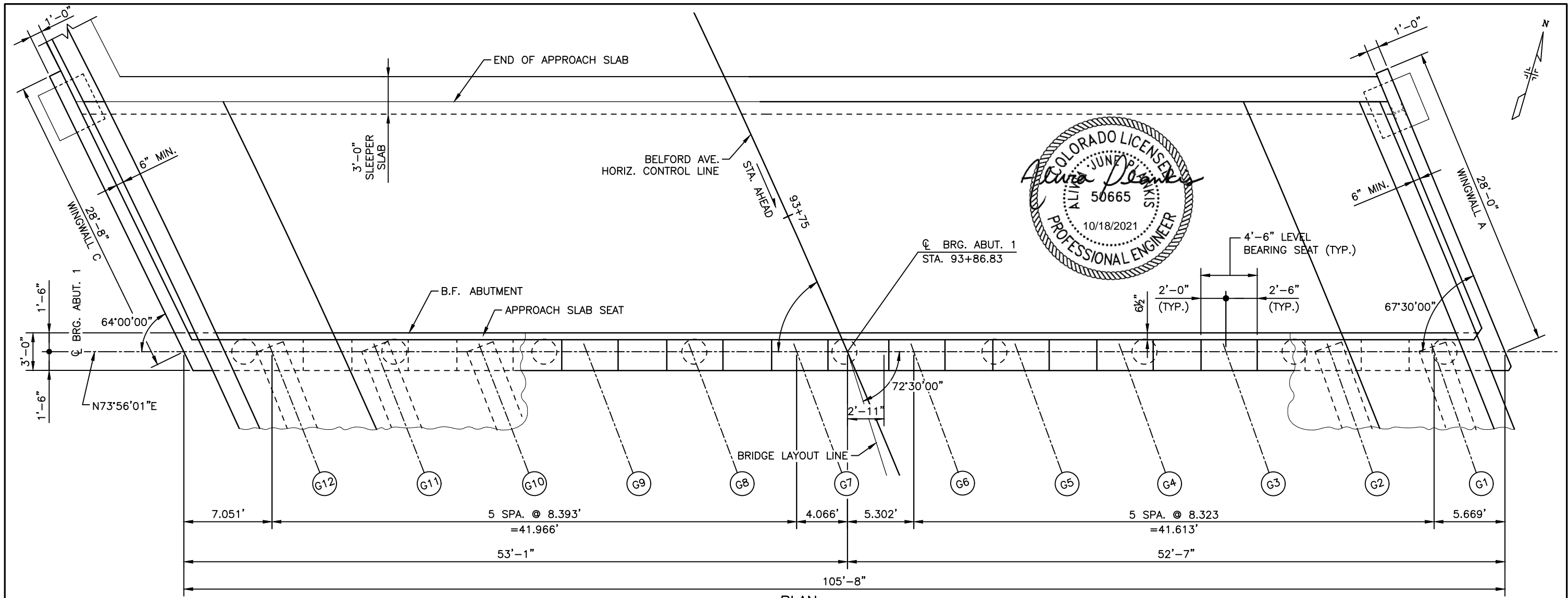
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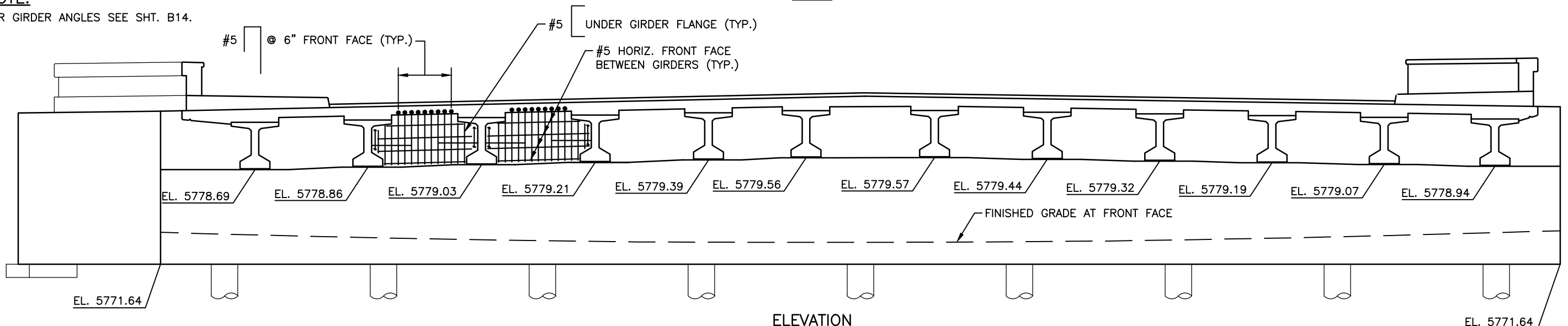
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No Revisions:	Designer: J. LYNCH	Structure Numbers	
Revised:	Detailer: C. MIYAMOTO		
Void:	Subset: BRIDGE	Sheets: B11 of 33	Sheet Number 41



NOTE:
FOR GIRDER ANGLES SEE SHT. B14.



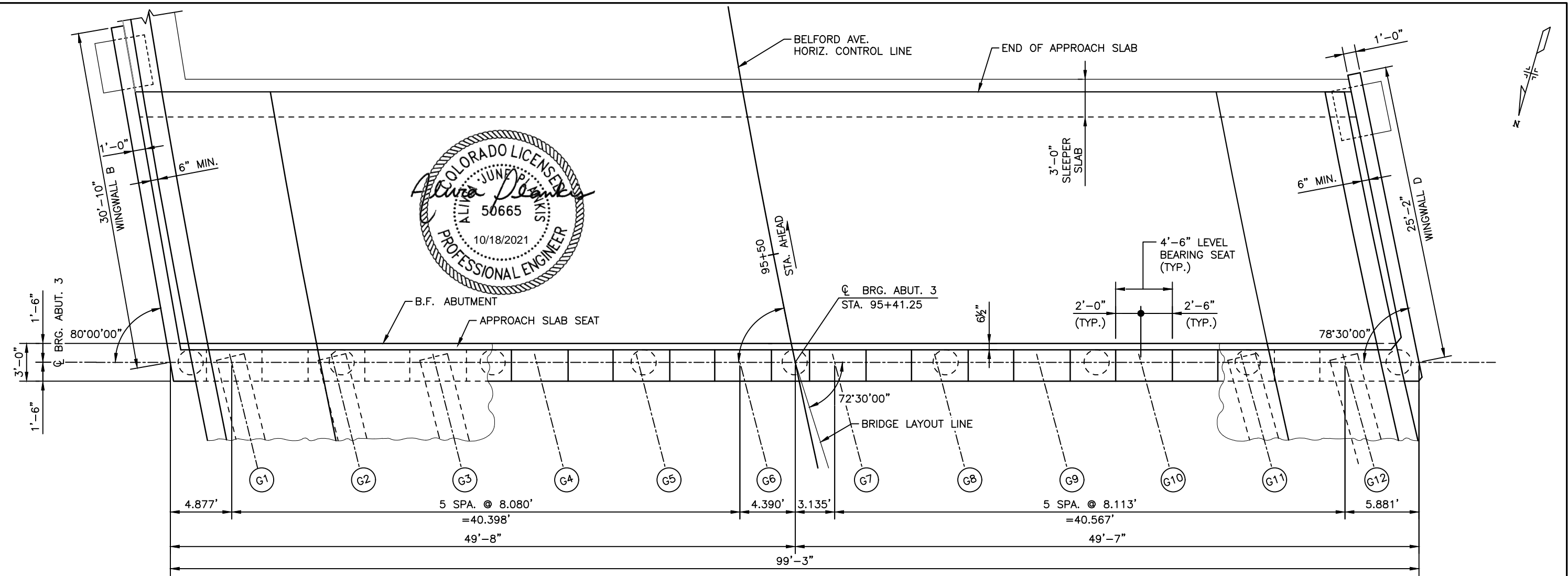
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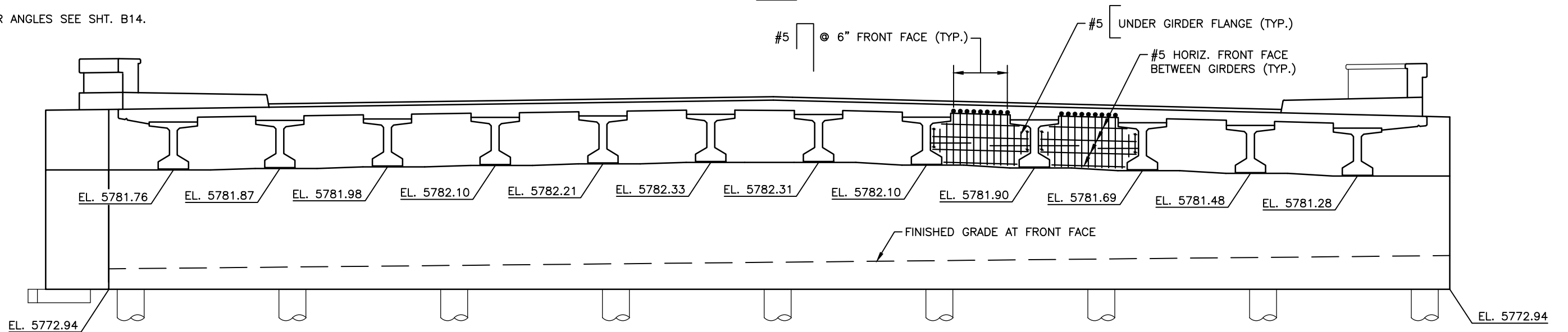


As Constructed	BELFORD-HAPPY CANYON CREEK BRIDGE ABUTMENT 1		Project No./Code
No Revisions:	PLAN & ELEVATION		
Revised:	Designer: J. LYNCH	Structure Numbers	
Void:	Detailer: R. DILLON		
	Subset: BRIDGE	Sheets: B12 of 33	Sheet Number 42



PLAN

NOTE:
FOR GIRDER ANGLES SEE SHT. B14.



ELEVATION

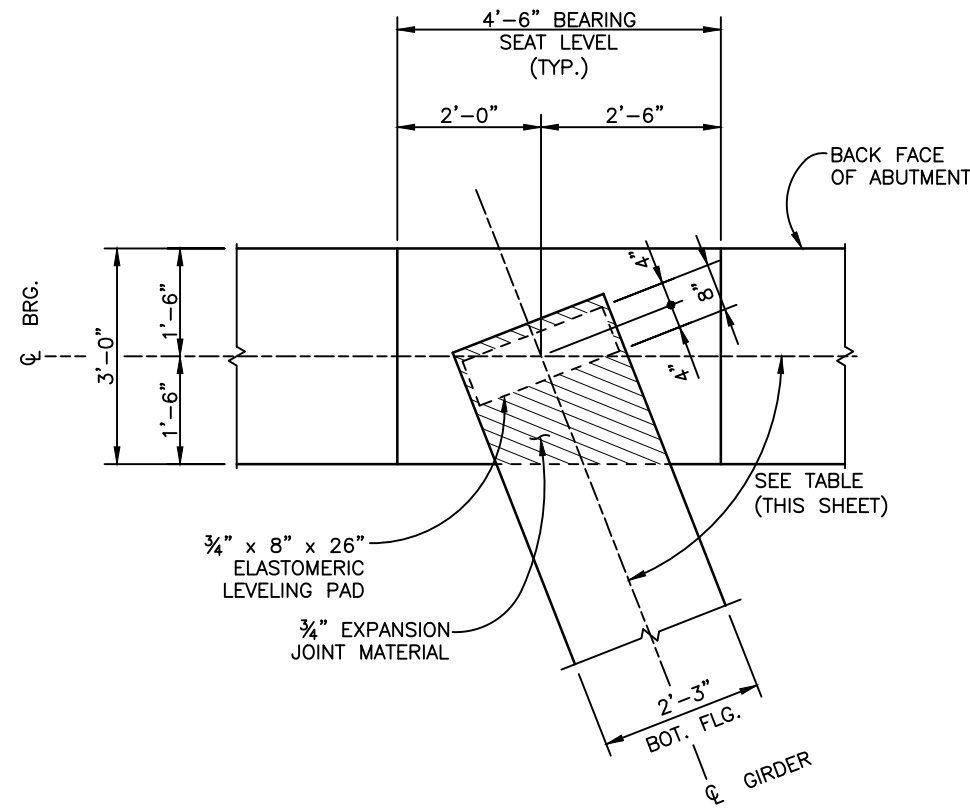
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Void:	Detailer: R. DILLON	Sheets: B13 of 33	Sheet Number 43
	Subset: BRIDGE		



BEARING DETAIL

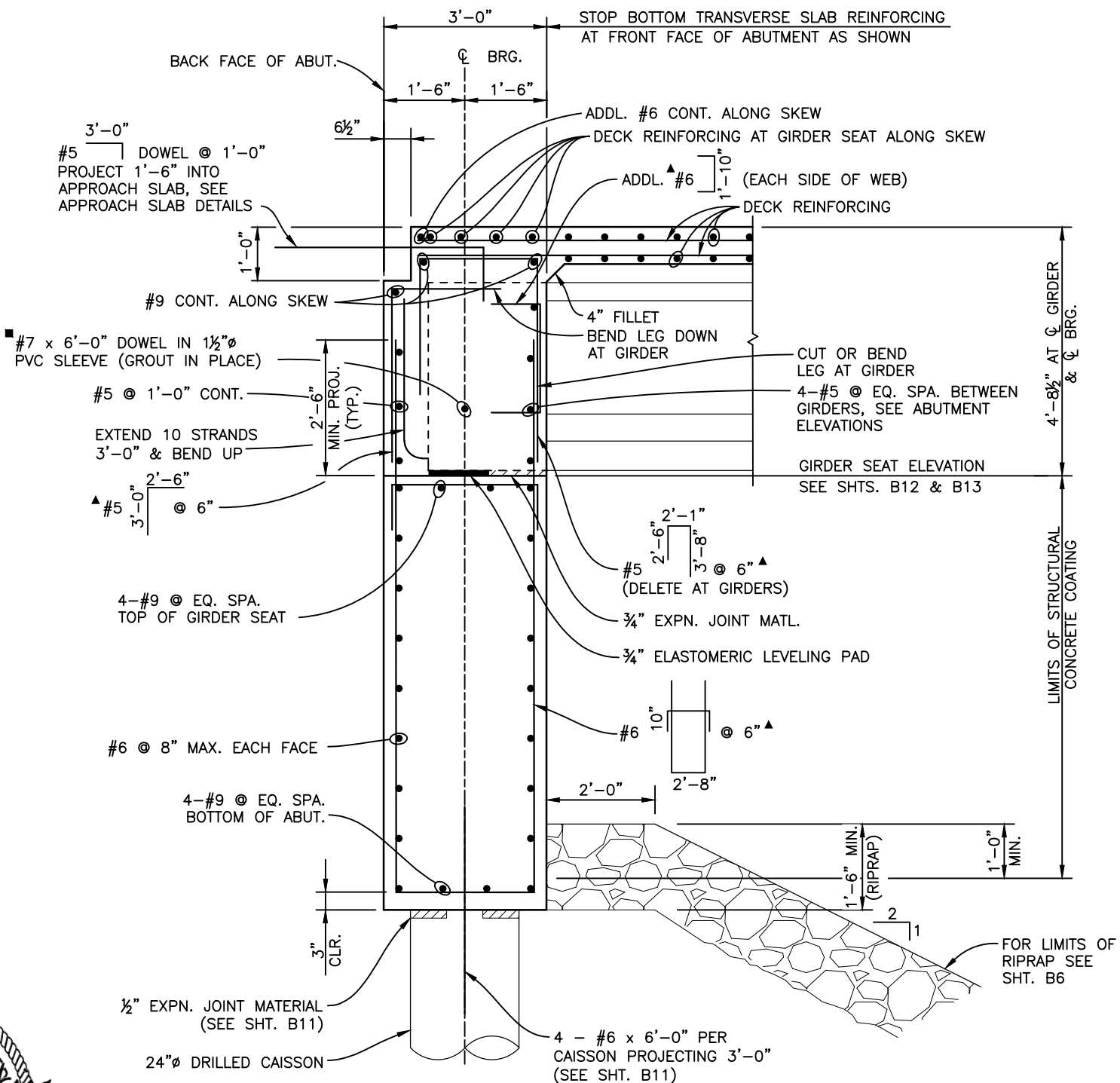
GIRDER ANGLES

CL GIRDER TO CL ABUT ANGLES		
GIRDER No.	ABUT. 1	ABUT. 3
G1-G6	70°15'28.35"	75°48'58.53"
G7-G12	68°57'14.35"	74°54'00.43"

LAP SPLICE TABLE	
BAR SIZE	SPLICE LENGTH
#5	2'-11"
#6	3'-6"
#9	6'-3"

NOTES:

1. SLAB AND PORTION OF ABUTMENT ABOVE BEARING SEAT TO BE POURED MONOLITHICALLY.
2. ELASTOMERIC LEVELING PAD AND EXPANSION JOINT MATERIAL SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN ITEM 618 - PRESTRESSED I (BT42)



TYPICAL ABUTMENT SECTION

■ DOWEL SHALL BE BENT IN FIELD, IF NECESSARY, TO MAINTAIN REQUIRED COVER

▲ TRANSVERSE STEEL SHALL BE ALIGNED WITH GIRDER CENTERLINE

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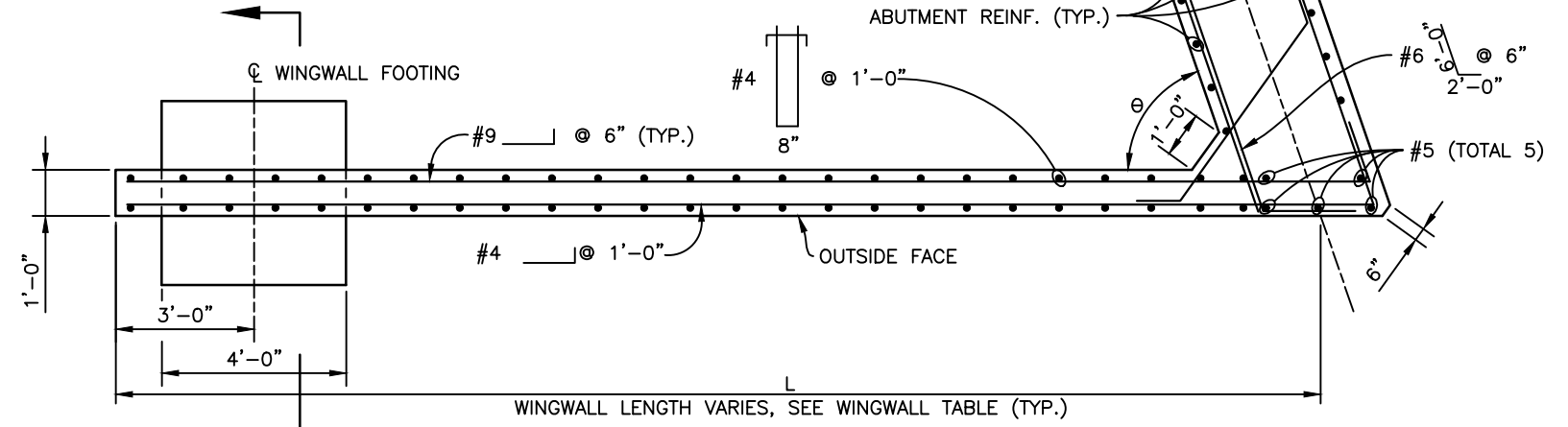
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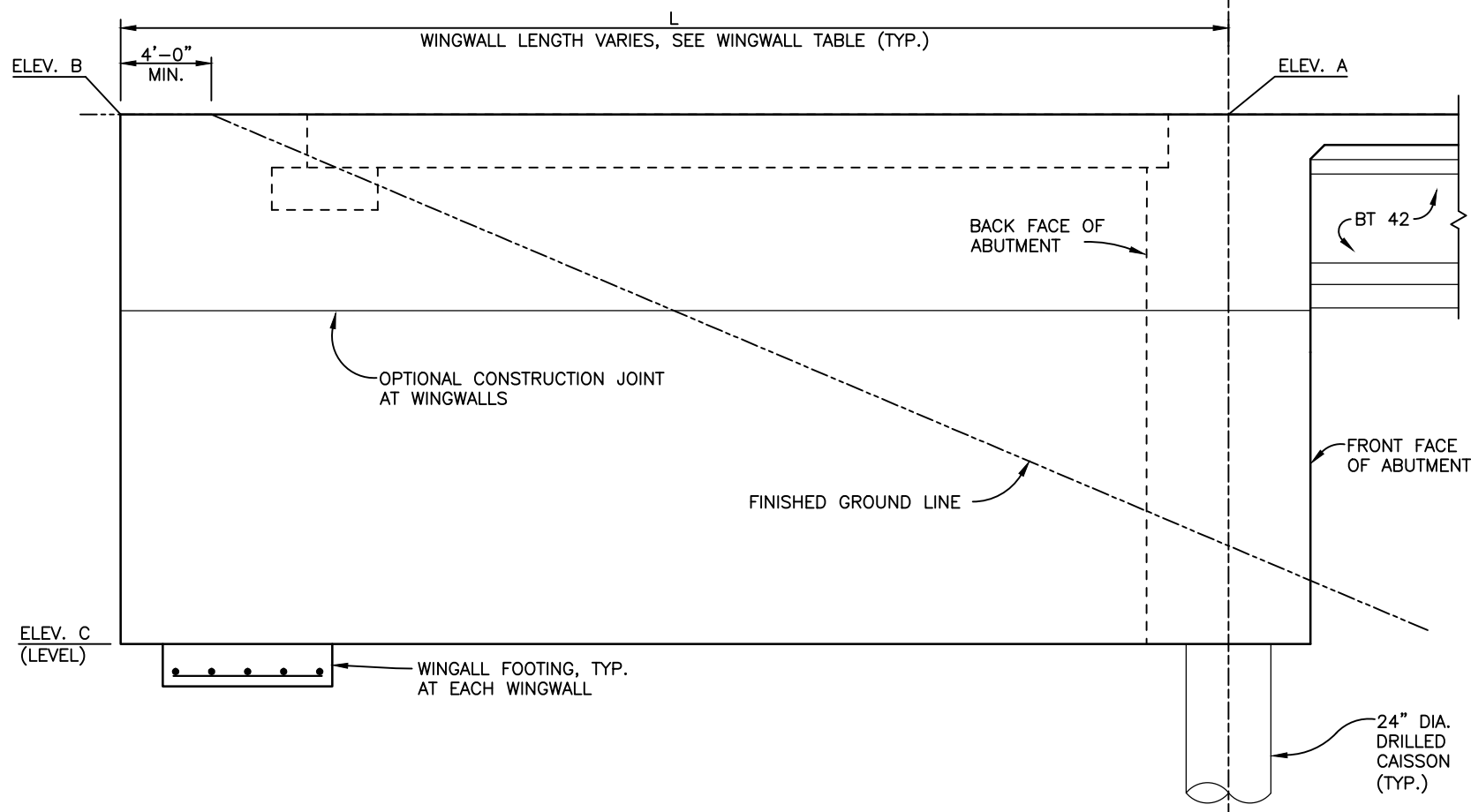
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Void:	Subset: BRIDGE	Sheets: B14 of 33	Sheet Number 44

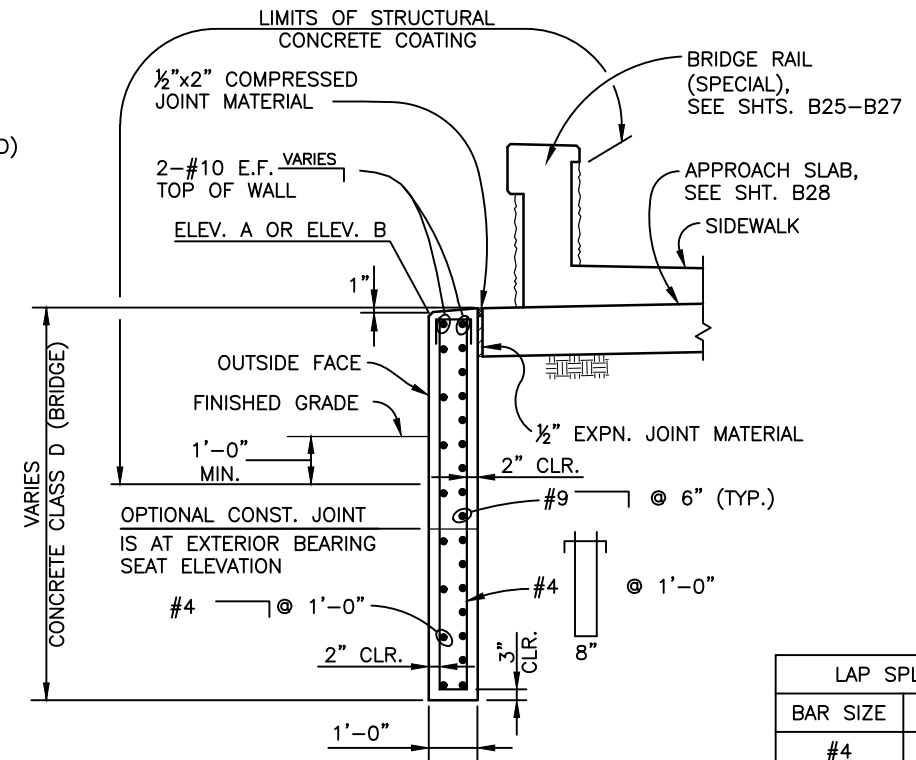
WINGWALL TABLE					
LOCATION	L	θ	ELEV. A	ELEV. B	ELEV. C
WINGWALL A	28'-0"	67°30'00"	5783.48	5783.25	5771.64
WINGWALL C	28'-8"	116°00'00"	5783.17	5783.08	5771.64
WINGWALL B	30'-10"	100°00'00"	5786.31	5787.20	5772.94
WINGWALL D	25'-2"	78°30'00"	5785.75	5786.51	5772.94



WINGWALL SECTION
(WINGWALL A OR D SHOWN, WINGWALLS B & C SIMILAR)

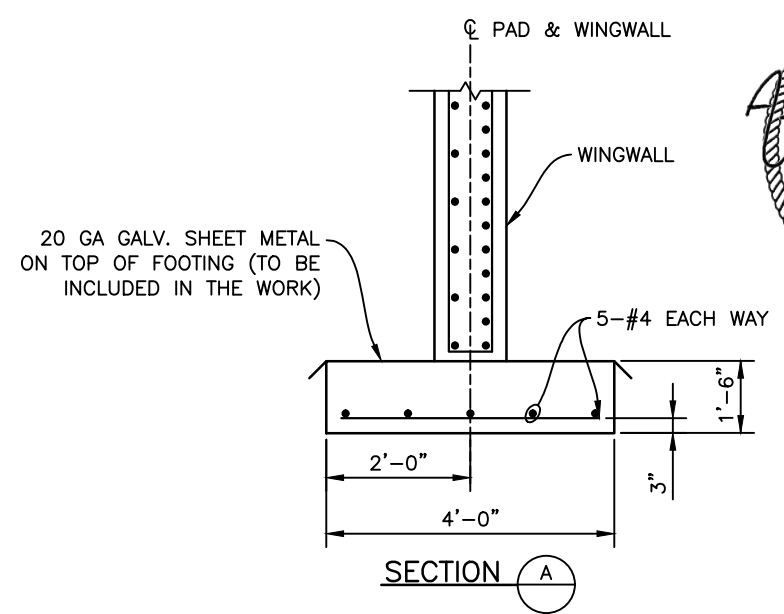


ELEVATION



TYPICAL WINGWALL SECTION

LAP SPLICE TABLE	
BAR SIZE	SPLICE LENGTH
#4	1'-10"
#9	5'-6"
#10	7'-8"



SECTION A

- NOTES:**
- ELEVATIONS A & B ARE AT THE OUTSIDE FACE OF THE WINGWALL AS SHOWN IN TYPICAL WINGWALL SECTION.
 - BACKFILL AT THE OUTSIDE FACE OF WINGWALLS SHALL BE PLACED CONCURRENTLY WITH BACKFILL BEHIND THE WALLS.



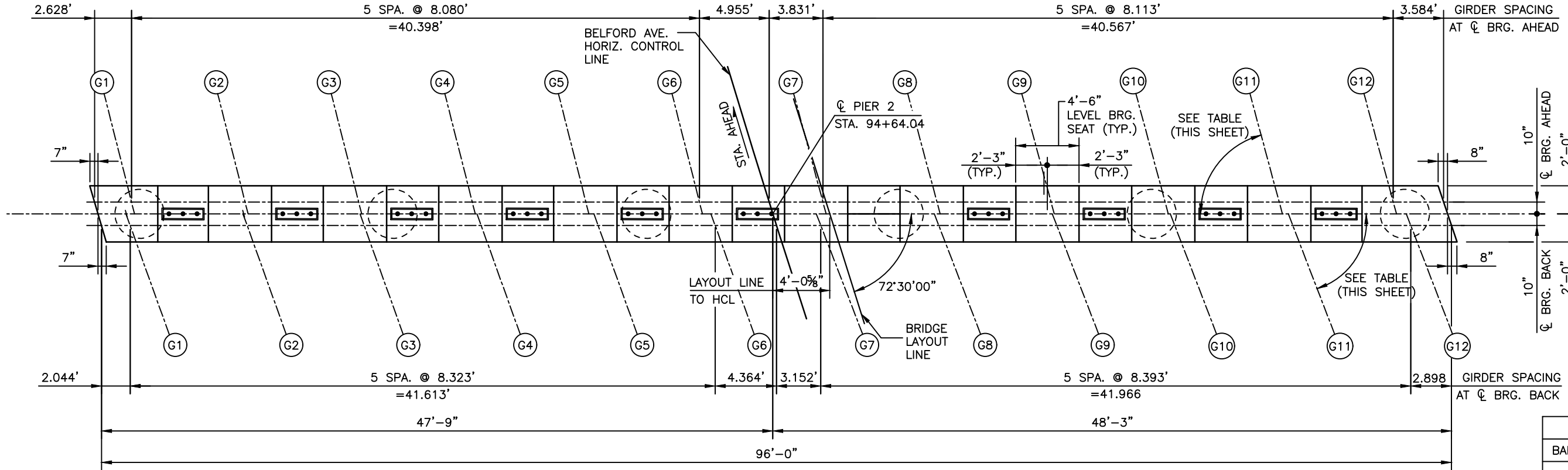
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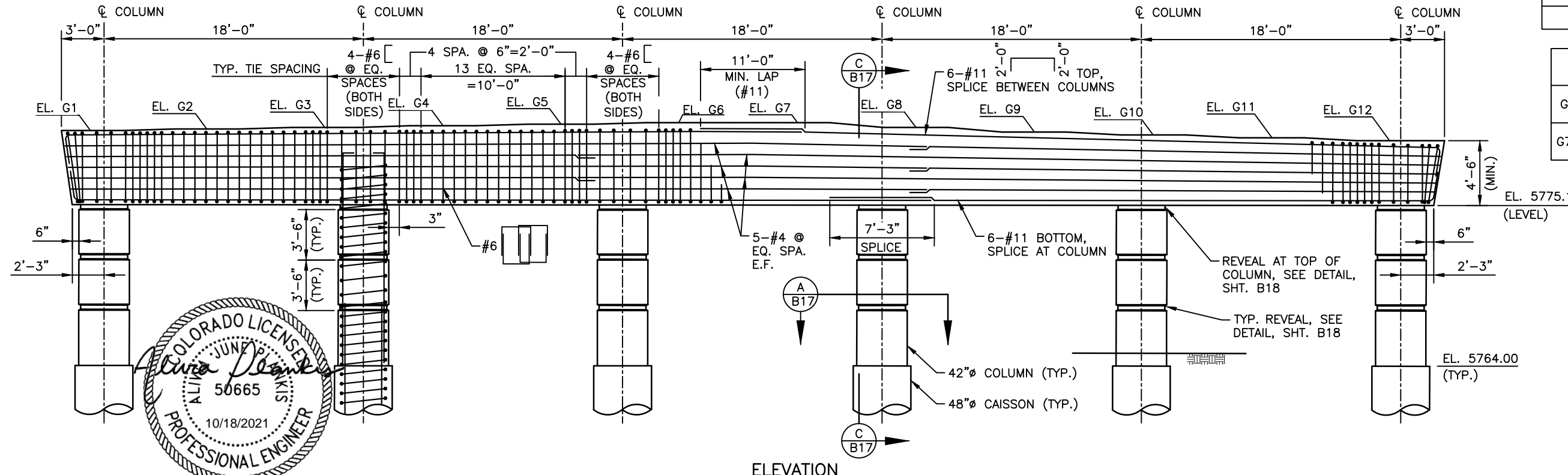
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Void:	Subset: BRIDGE	Sheets: B15 of 33	Sheet Number 45



PLAN



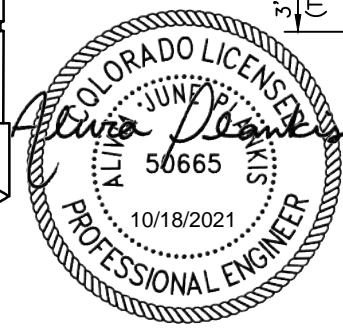
ELEVATION

LAP SPLICE TABLE	
BAR SIZE	SPLICE LENGTH
#4	1'-10"
#9	5'-6"
#11	8'-2"

CL GIRDER TO CL PIER ANGLES	
G1-G6	S 75°48'58.53"
	N 70°15'28.35"
G7-G12	S 74°54'00.43"
	N 68°57'14.35"

BEARING SEAT ELEVATIONS	
EL. G1	5780.00
EL. G2	5780.12
EL. G3	5780.23
EL. G4	5780.34
EL. G5	5780.46
EL. G6	5780.57
EL. G7	5780.55
EL. G8	5780.35
EL. G9	5780.15
EL. G10	5779.94
EL. G11	5779.74
EL. G12	5779.54

(ELEVATIONS TO TOC)



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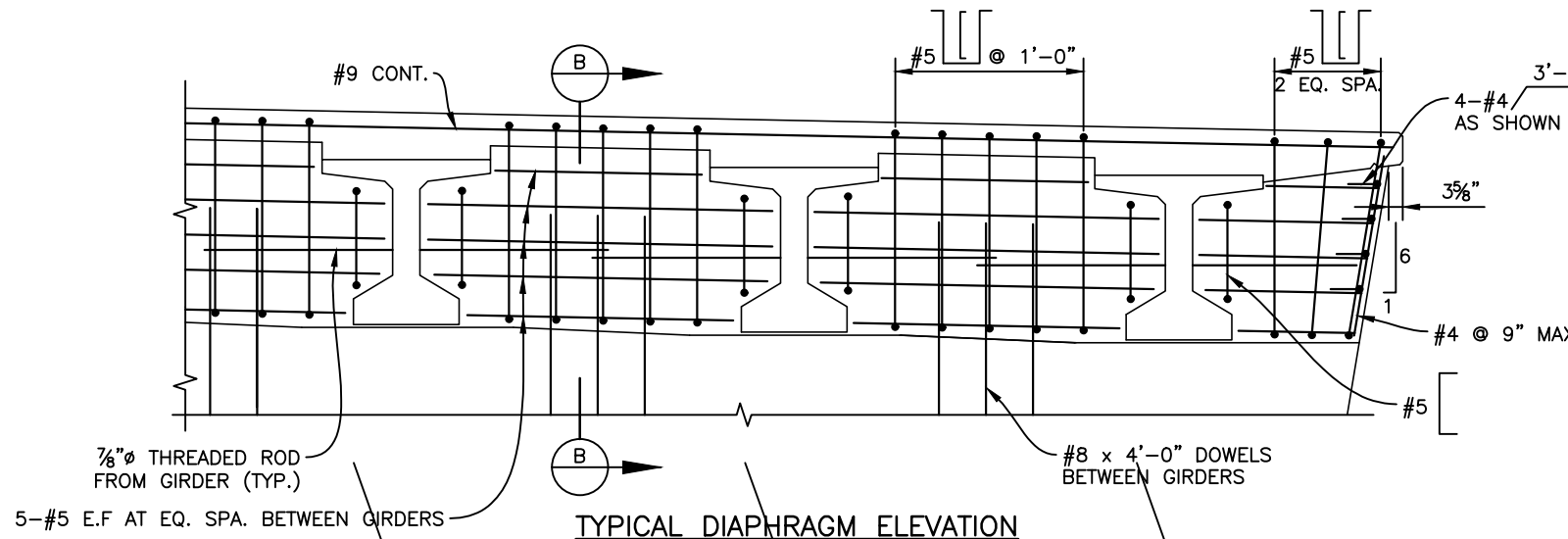
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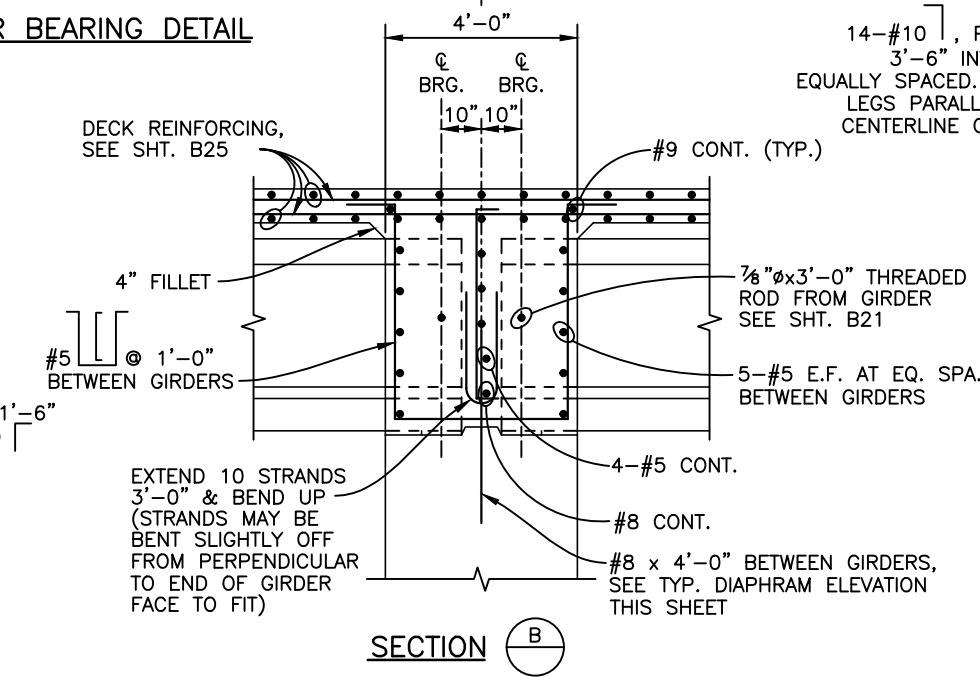
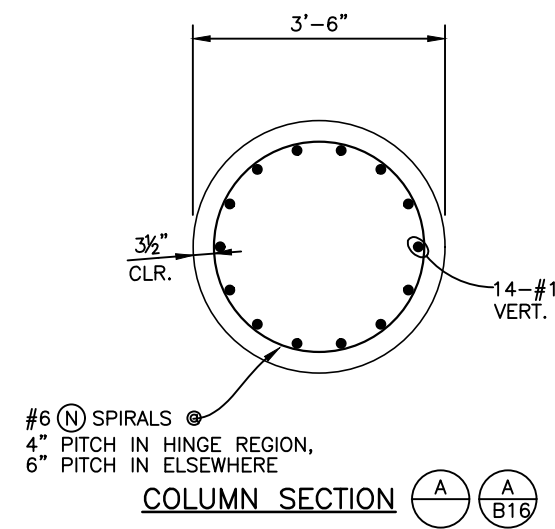
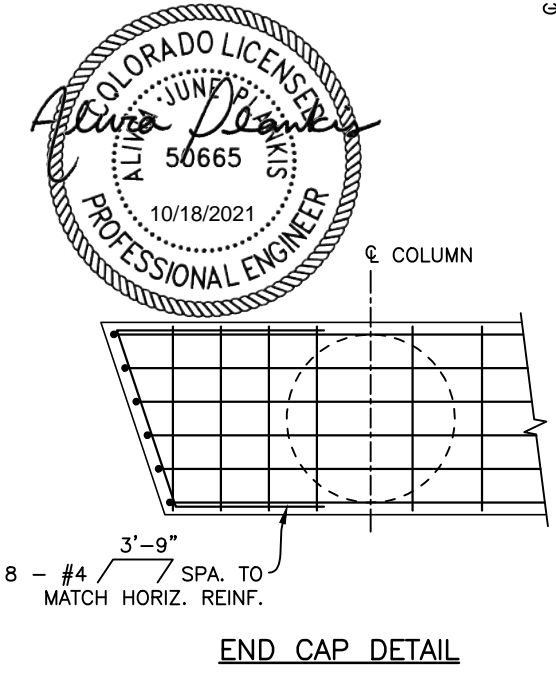
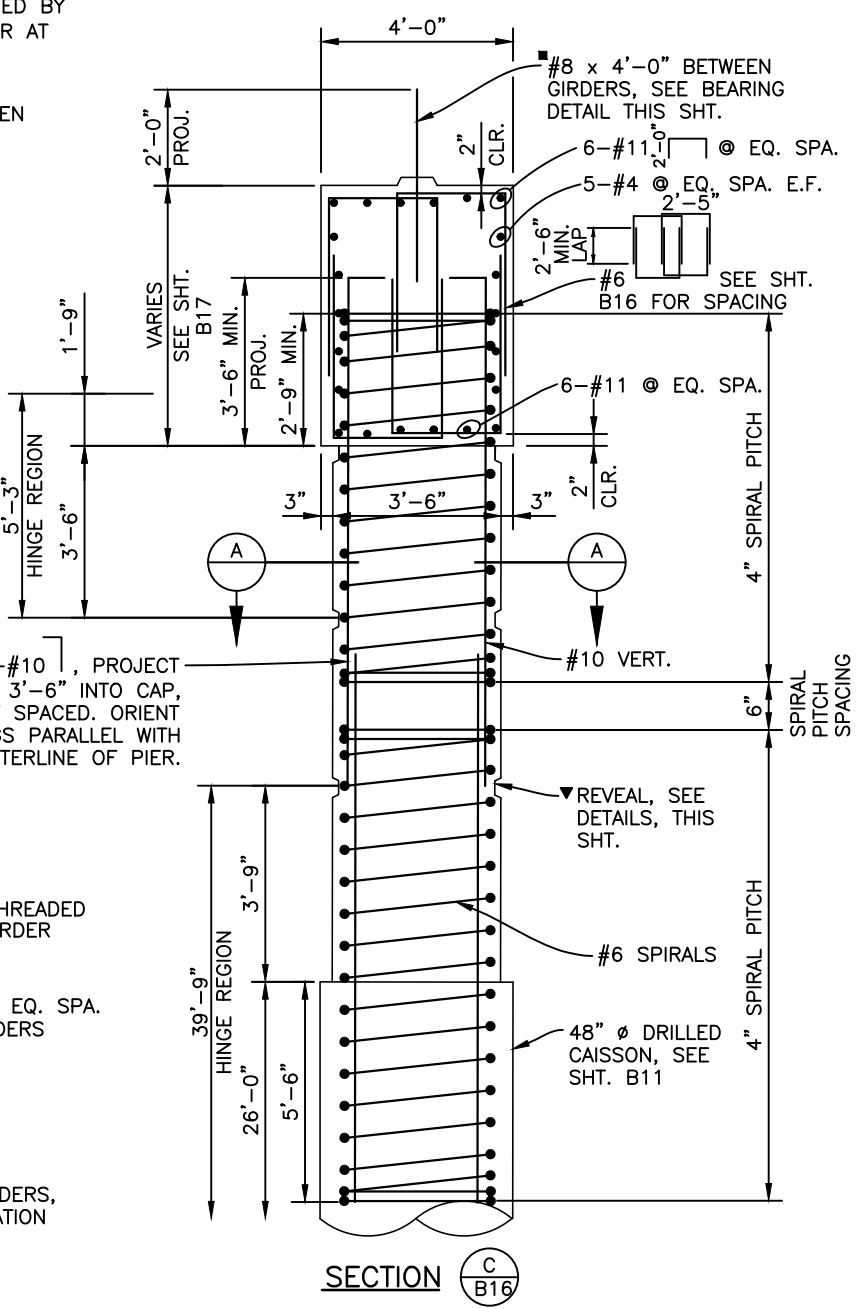
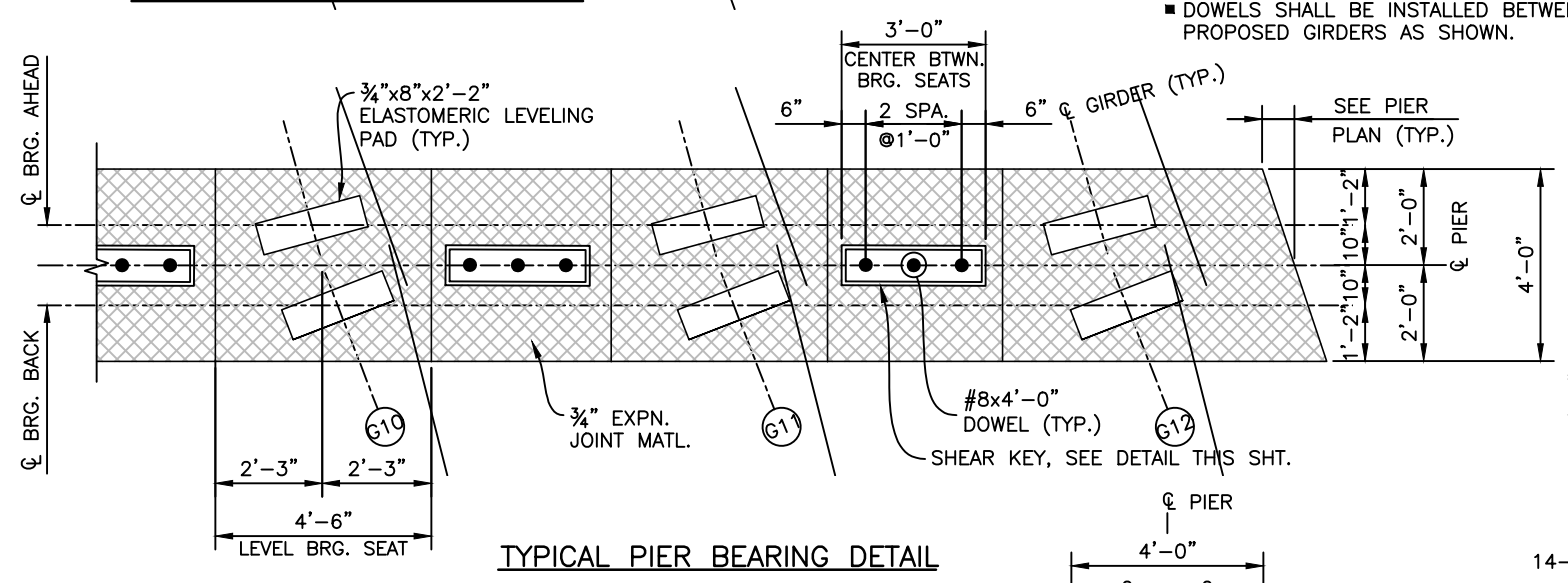
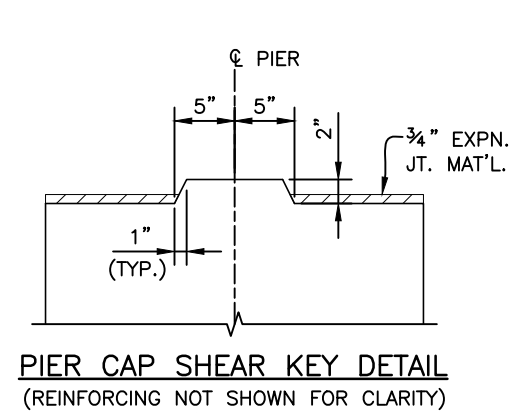
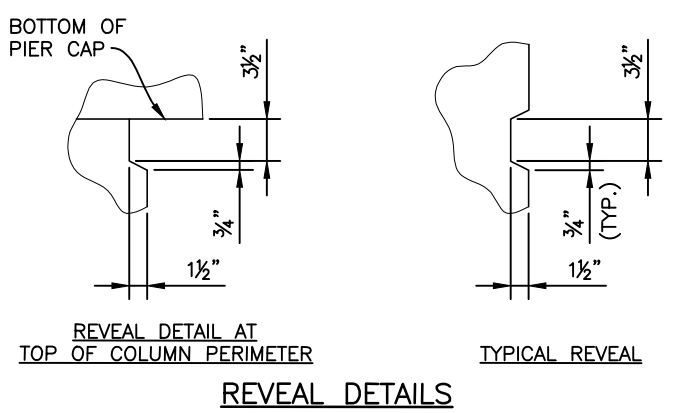
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No Revisions:	Designer: J. LYNCH	Structure Numbers
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Project No./Code
 Sheet Number 46



- NOTES:**
1. WITHIN "HINGE REGIONS", SPLICES IN SPIRAL REINFORCEMENT SHALL BE MADE WITH FULL-WELDED SPLICES OR FULL-MECHANICAL CONNECTIONS THAT DEVELOP 125% OF REINFORCING STEEL TENSILE STRENGTH.
 2. SPIRALS MUST COMPLETE TWO ROTATIONS BEYOND "HINGE REGION" BOUNDARY BEFORE PITCH CAN INCREASE.
 3. SEE B11 FOR LIMITS OF PIER STEEL INTO CAISSON.
 4. ALL SPIRALS SHALL BE ANCHORED BY 1½ EXTRA TURNS OF SPIRAL BAR AT EACH END.



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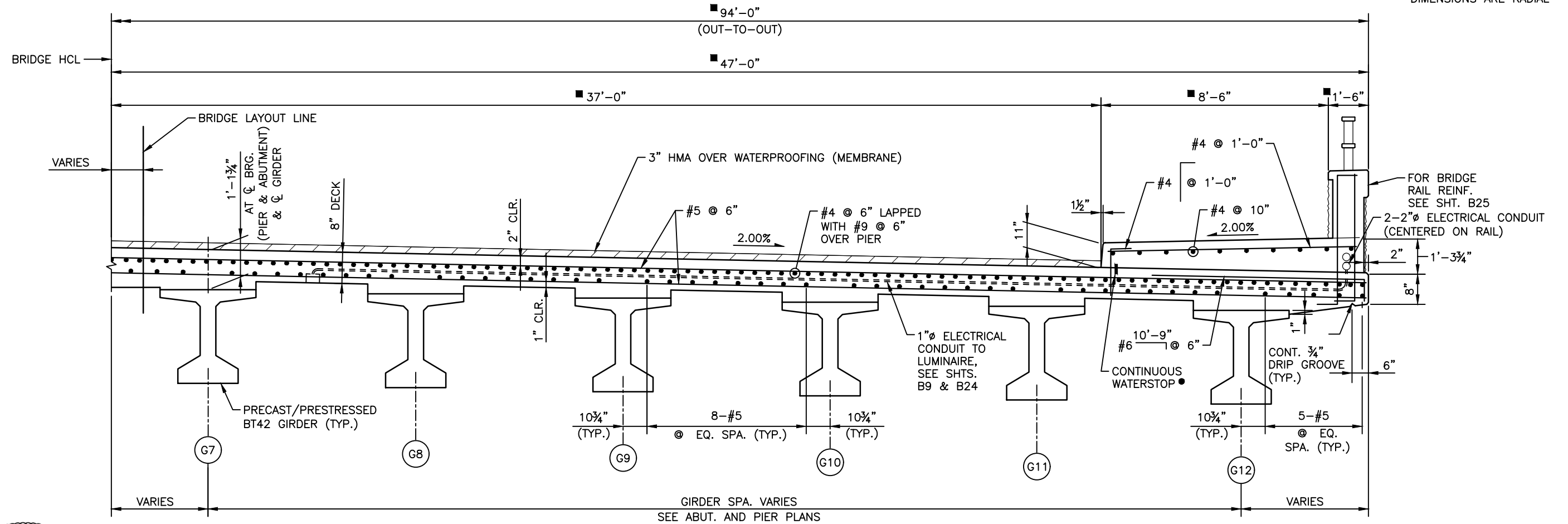
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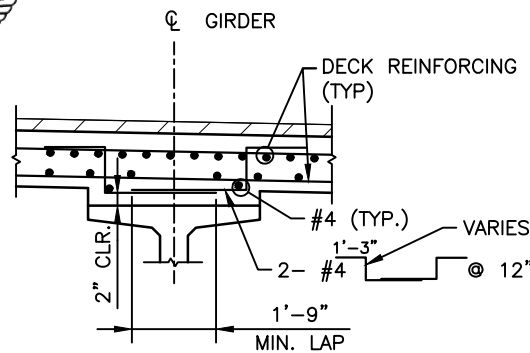


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Void:	Subset: BRIDGE	Sheets: B17 of 33	Sheet Number 47

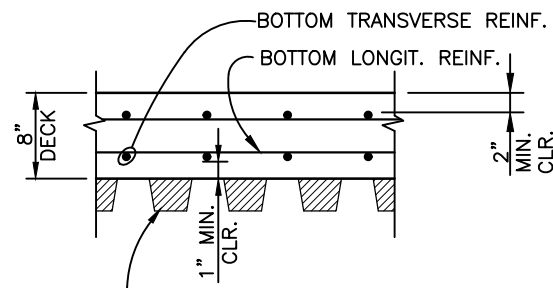
■ DIMENSIONS ARE RADIAL



PARTIAL TYPICAL SECTION
(LOOKING SOUTH)
(RIGHT SIDE SHOWN, LEFT SIMILAR)



HAUNCH REINFORCEMENT DETAIL
(PROVIDE WHEN HAUNCH DEPTH EXCEEDS 4 INCHES AT ϕ GIRDER)



PERMANENT STEEL DECK FORM DETAIL
(DETAILS FOR CONCRETE DECK FORMS FOUND ON B22-B23)

NOTES:

- DECK & SIDEWALK CONCRETE SHALL BE CLASS D (BRIDGE).
- PROVIDE TRANSVERSE RAKE FINISH ($\frac{1}{4}$ " \pm AMPLITUDE) ON THE BRIDGE DECK IN THE AREAS WHERE SIDEWALK IS TO BE PLACED, CLEAN PRIOR TO PLACING SIDEWALK CONCRETE.
- ▲ BAR MAY BE STABBED INTO WET CONCRETE WITH 6" MIN. EMBEDMENT, OR DRILLED & EPOXIED INTO DECK AFTER SLAB HAS CURED. USE HILTI HIT HY-150 EPOXY ADHESIVE, OR APPROVED EQUAL, 6" MIN. EMBEDMENT DEPTH. IF DRILL AND EPOXY OPTION IS USED, THE COST OF DRILLING & EPOXY WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN ITEM 601, CONCRETE CLASS D (BRIDGE).
- PROVIDE CONTINUOUS BENTONITE/BUTYL RUBBER BASED WATERSTOP (CARLISLE MIRASTOP OR APPROVED EQUAL). THE COST OF THE WATERSTOP WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN ITEM 601, CONCRETE CLASS D (BRIDGE).
- CONCRETE SEALER SHALL BE APPLIED TO CONCRETE SIDEWALK AND CURBS. SEALER SHALL AVOID AREAS REQUIRING STONE VENEER.
- STAGGER ALL LONGITUDINAL REINFORCING BAR SPLICES.

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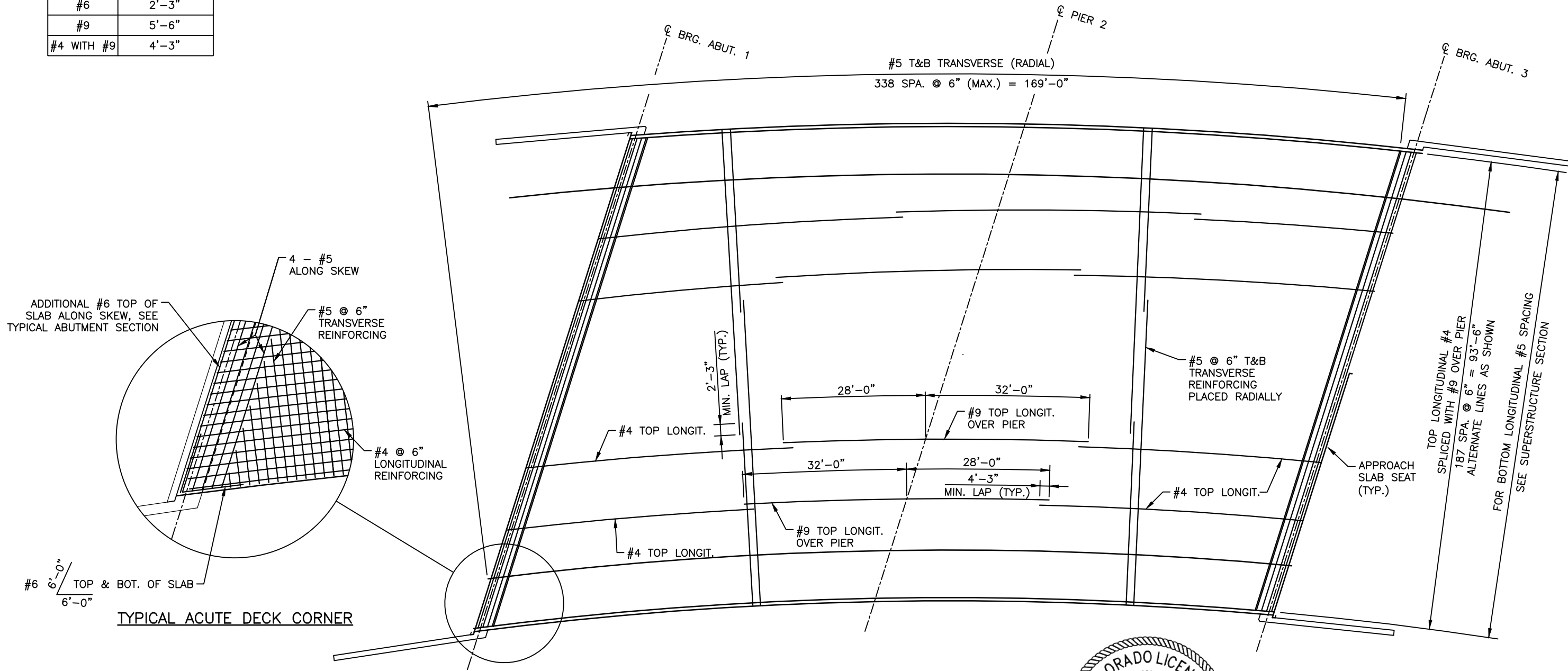
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No Revisions:	Designer: J. LYNCH	Structure Numbers	
Revised:	Detailer: C. MIYAMOTO		
Void:	Subset: BRIDGE	Sheets: B18 of 33	Sheet Number 48

LAP SPLICE TABLE	
BAR SIZE	SPLICE LENGTH
#5	1'-10"
#6	2'-3"
#9	5'-6"
#4 WITH #9	4'-3"



REINFORCING PLAN
(SIDEWALK REINFORCING NOT SHOWN FOR CLARITY)



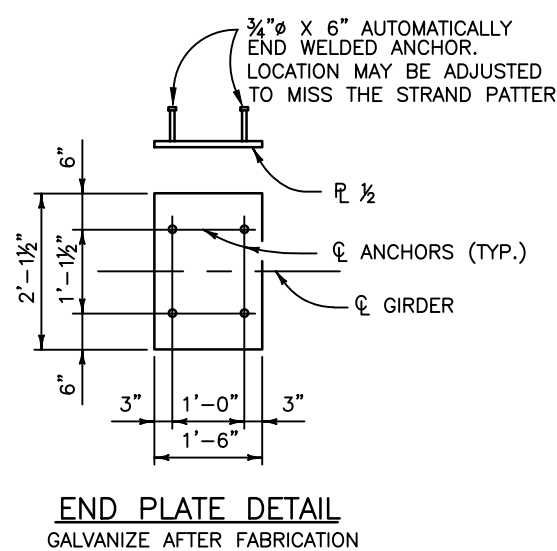
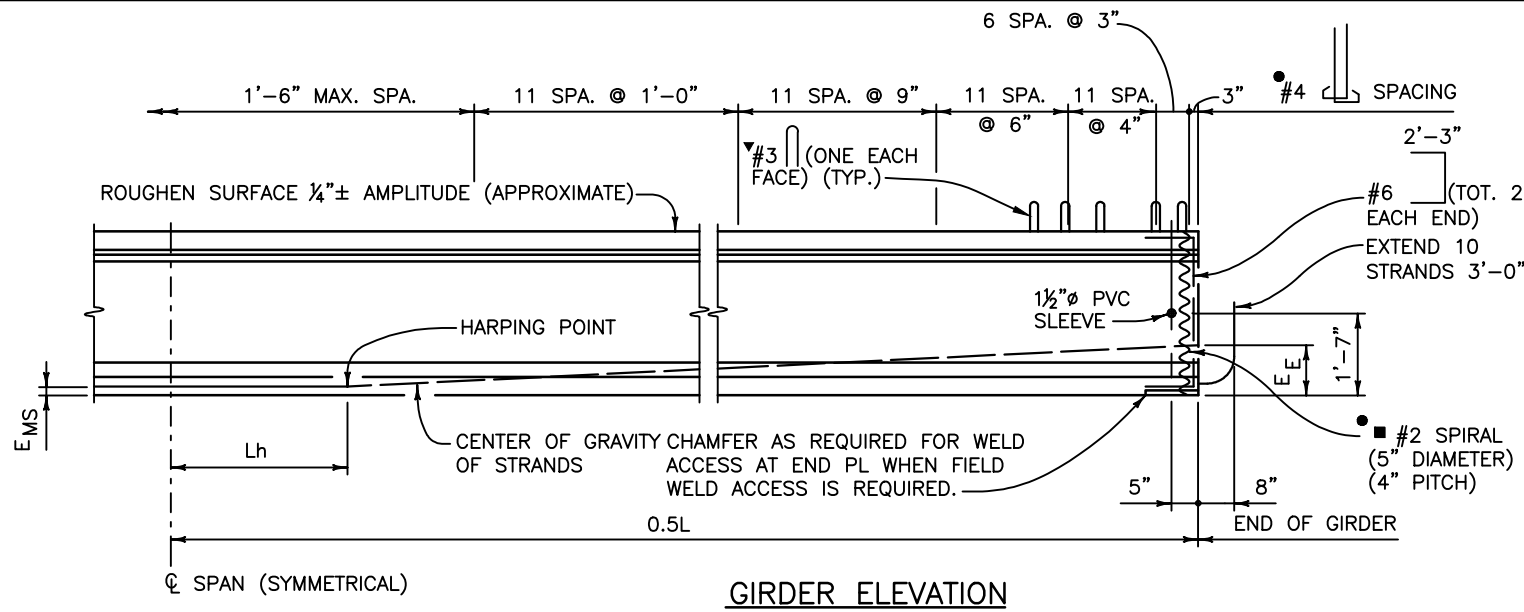
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As Constructed	BELFORD-HAPPY CANYON CREEK BRIDGE DECK REINFORCING PLAN		Project No./Code
No Revisions:	Designer: J. LYNCH	Structure Numbers	
Revised:	Detailer: MIYAMOTO/DILLON		
Void:	Subset: BRIDGE	Sheets: B19 of 33	Sheet Number 49



NOTES:
 ALL WORK NECESSARY TO FABRICATE AND INSTALL THE INTEGRAL PARTS OF THE GIRDER (INCLUDING THE INTERMEDIATE DIAPHRAGMS, 7/8\"/>

WHEN APPROVED BY THE ENGINEER, A MINIMUM OF TACK WELDING WILL BE PERMITTED ON ASTM A706 UNCOATED REINFORCING STEEL.

REINFORCING PROJECTING FROM THE TOP OF THE GIRDER AND REINFORCING WITHIN EIGHT FEET OF AN EXPANSION DEVICE IN THE BRIDGE DECK SHALL BE EPOXY COATED. DAMAGED COATING ON GIRDER REINFORCING WITHIN THE GIRDER NEED NOT BE REPAIRED. THE MINIMUM COVER FOR REINFORCING STEEL IS 1\"/>

AT GIRDER ENDS NOT EMBEDDED IN CONCRETE DIAPHRAGMS, CUT STRANDS OFF 1\"/>

USE LOW RELAXATION STRANDS MEETING THE REQUIREMENTS OF ASTM A-416 GRADE 270. THE MINIMUM CLEAR DISTANCE BETWEEN GROUPS OR INDIVIDUAL STRANDS SHALL BE 2.3(D_s) BUT NOT LESS THAN 1 1/4\"/>

A MINIMUM OF TWO HARPING POINTS SHALL BE USED PER GIRDER. HARPED STRANDS SHALL BE WELL DISTRIBUTED AT THE GIRDER ENDS, STARTING WITHIN 4\"/>

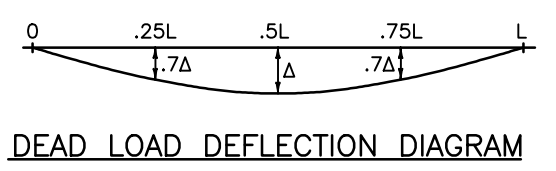
A_s* = MINIMUM AREA OF THE PRESTRESSING STEEL.
 d_s = NOMINAL STRAND DIAMETER.
 f'_s = ULTIMATE STRENGTH OF PRESTRESSING STEEL.
 F_j = JACKING FORCE PER GIRDER.
 F_f = FINAL FORCE PER GIRDER AFTER ALL LOSSES.
 f'_{ci} = REQUIRED CONCRETE STRENGTH AT RELEASE OF PRESTRESS FORCE.
 f'_c = REQUIRED CONCRETE STRENGTH AT 28 DAYS OF AGE.
 L = LENGTH OF GIRDER ALONG THE GRADE OF THE GIRDER.
 Δ = DEFLECTION AT CENTERLINE OF SPAN DUE TO CAST-IN-PLACE SLAB, DIAPHRAGMS, ASPHALT, CURBS, RAILS, AND WALKS.

CONCRETE SHALL BE CLASS PS.

ENTRAINED AIR IS NOT REQUIRED FOR GIRDER CONCRETE.

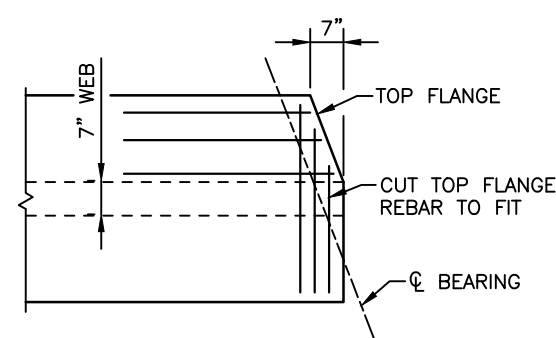
USE 1/2\"/>

PREDICTED CAMBER IS THE CAMBER FOR THE GIRDER ALONE AT 60 DAYS. ACCEPTABLE CAMBER VARIABILITY IS LIMITED TO 20% OVER THE PREDICTED CAMBER AND 50% UNDER THE PREDICTED CAMBER OR ± 1 INCH, WHICHEVER IS GREATER. THE CONTRACTOR SHALL REPORT TO THE ENGINEER VALUES OF CAMBER WHICH REQUIRE REMEDIAL MEASURES. THE REMEDIAL MEASURES SHALL BE REVIEWED AND APPROVED BY THE ENGINEER. THE COSTS ASSOCIATED WITH ALL REMEDIAL MEASURES SHALL BE BORNE BY THE CONTRACTOR.

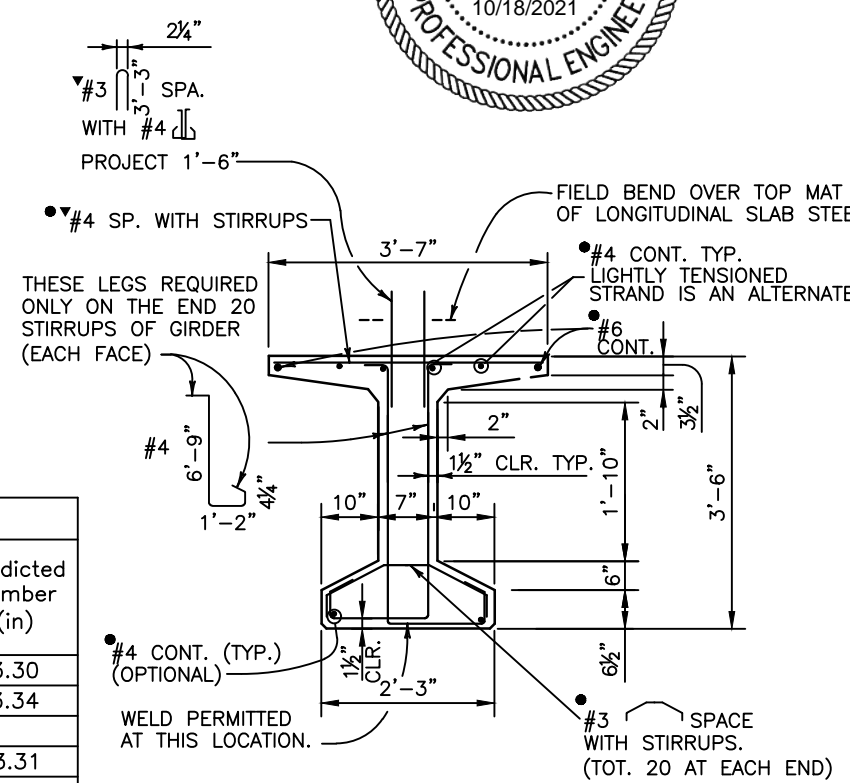


- THE CONTRACTOR MAY SUBMIT AN ALTERNATE CROSS TIE ARRANGEMENT, AT THE END OF THE WEB, FOR APPROVAL BY THE ENGINEER.
- SPACE WITH #4 FOR STIRRUP SPACINGS OF 9\"/>

- D20 WIRES MAY BE USED IN LIEU OF #4.
- 2 - D20 WIRES MAY BE USED IN LIEU OF #6.
- D11 OR W10.9 WIRES MAY BE USED IN LIEU OF #3.
- W5 WIRES MY BE USED IN LIEU OF #2.



CLIPPED TOP FLANGE DETAIL
 (TYPICAL AT BOTH GIRDER ENDS)
 (SEE CONSTRUCTION LAYOUT FOR ORIENTATION)



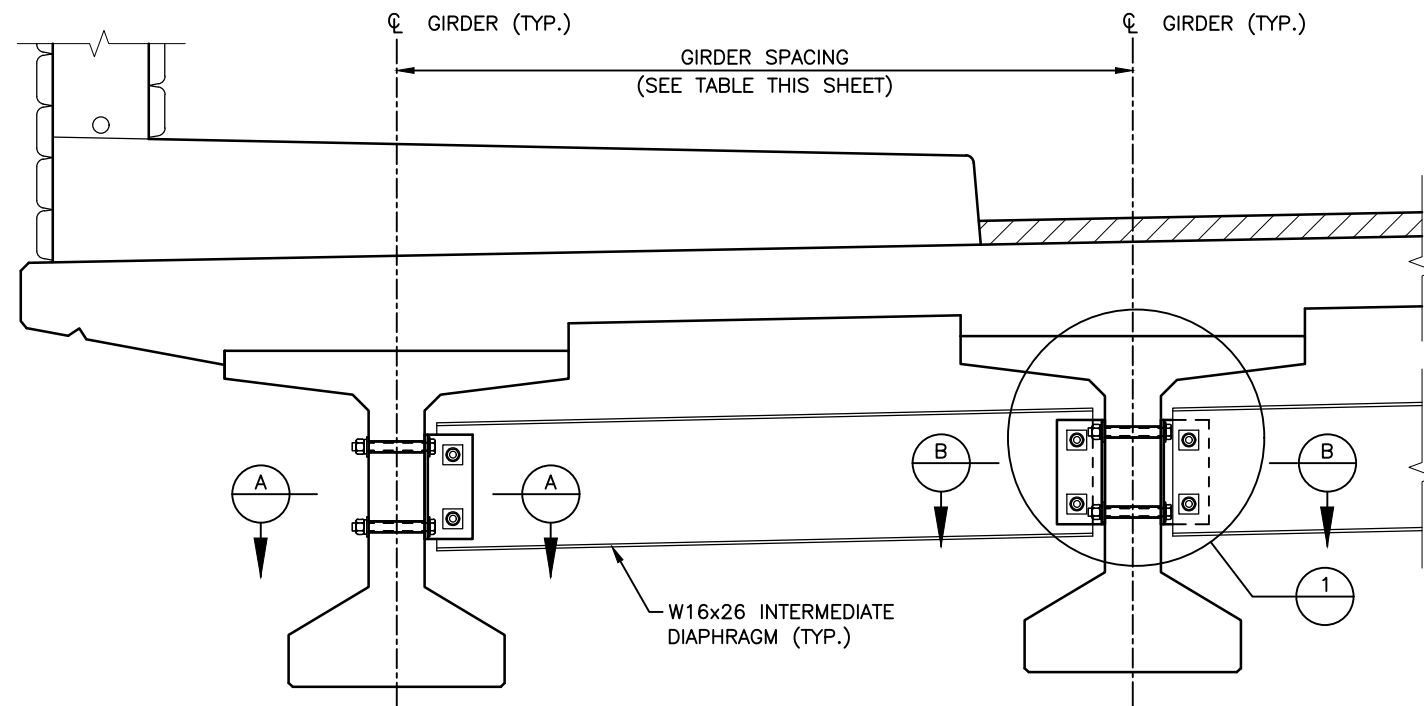
TYPICAL GIRDER SECTION

GIRDER SCHEDULE														
Girder Type	Span No.	Girder No.	L (ft)	Lh (ft)	A _s (in ²)	EMS (in)	EE (in)	F _j (kips)	F _f (kips)	f' _{ci} (psi)	f' _c (psi)	Δ (in)	Predicted Release Camber (in)	Predicted Camber (in)
BT42	1	G1-G6	76.82	7.68	6.08	4.14	14.14	1230	985	6000	8000	1.10	1.69	3.30
BT42	1	G7-G12	77.47	7.74	6.08	4.14	14.14	1230	985	6000	8000	1.10	1.70	3.34
BT42	2	G1-G6	77.00	7.70	6.08	4.14	14.14	1230	985	6000	8000	1.10	1.69	3.31
BT42	2	G7-G12	77.32	7.73	6.08	4.14	14.14	1230	985	6000	8000	1.10	1.70	3.33



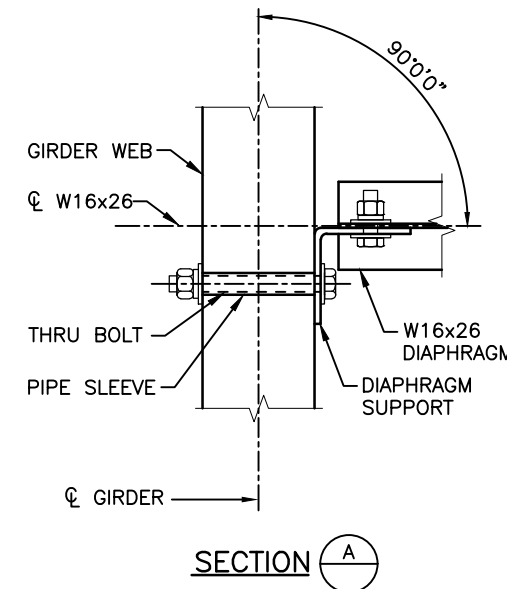
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Horizontal Scale: VARIES Vertical Scale:					Revised:		Designer: J. LYNCH	Structure Numbers			
		6400 South Fiddlers Green Circle, Suite 1500 Greenwood Village, CO 80111 Phone: 303.721.1440 www.FHUENG.com			8008 E. Arapahoe Court, Suite 110, Centennial, CO 80112 303.708.0900 303.708.0100 manhard.com Civil Engineers - Surveyors - Water Resource Engineers - Water & Wastewater Engineers Construction Managers - Environmental Scientists - Landscape Architects - Planners		Void:		Detailer: C. MIYAMOTO	Sheets: B20 of 33	Sheet Number 50

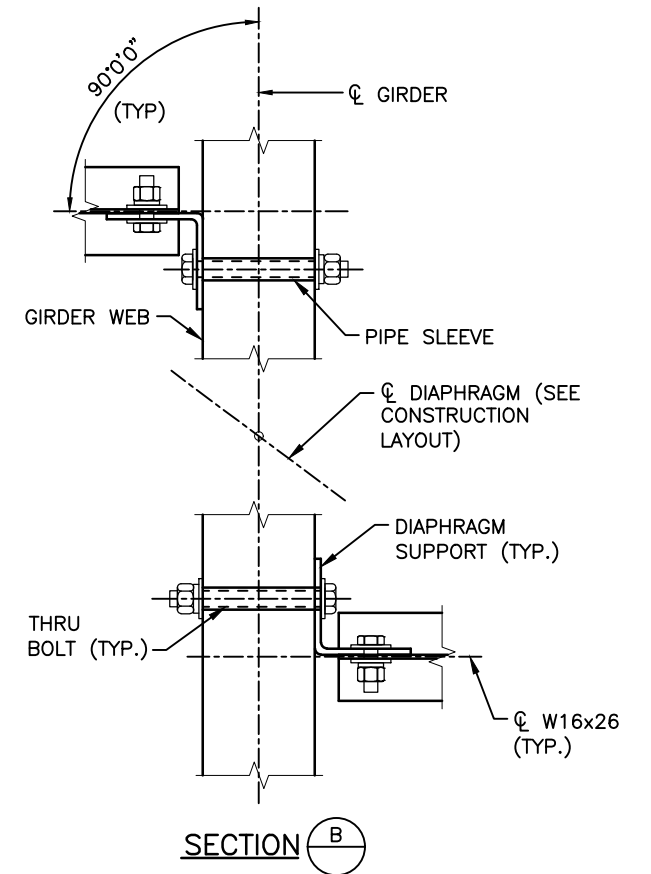


PARTIAL ELEVATION AT DIAPHRAGM
(TAKEN NORMAL TO GIRDER)

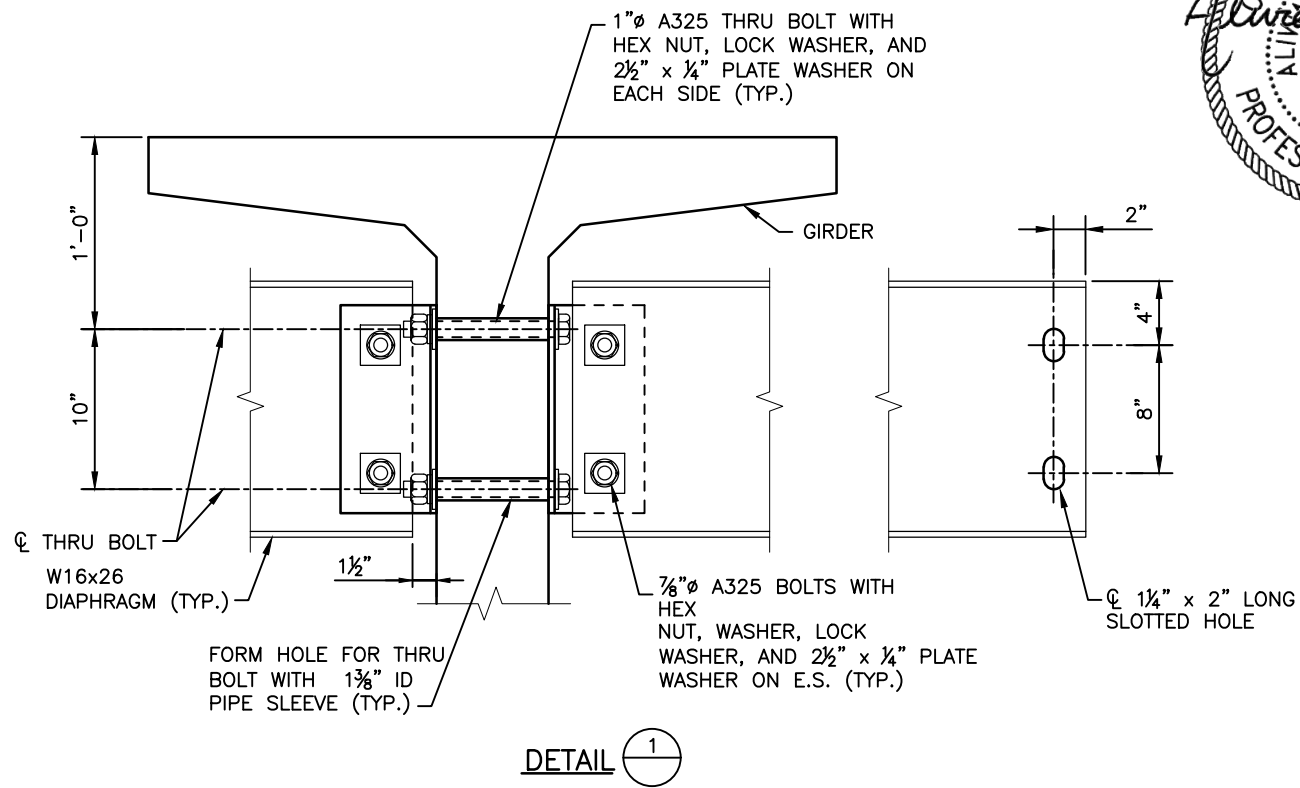
GIRDER SPACING MEASURED ALONG DIAPHRAGM CENTERLINE		
BETWEEN GIRDER CENTERLINES	SPAN 1	SPAN 2
G1-G6	8.32'	8.08'
G7-G12	8.40'	8.11'
G6-G7	8.43'	8.16'



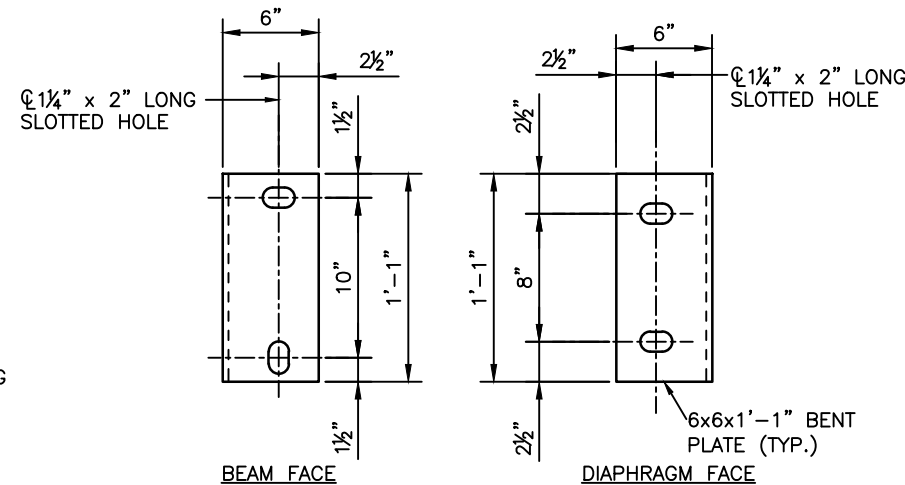
SECTION A



SECTION B



DETAIL 1



DIAPHRAGM SUPPORT DETAIL

NOTES:

- SEE CONSTRUCTION LAYOUT FOR INTERMEDIATE DIAPHRAGM LOCATIONS.
- ALL DIAPHRAGM MATERIALS, INCLUDING BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED. GALVANIZE AFTER FABRICATION.
- BOLTS, NUTS AND LOCK WASHERS MAY BE ZINC PLATED IN LIEU OF BEING GALVANIZED.
- THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING NECESSARY BRACING REQUIREMENTS AND FOR PROVIDING ADEQUATE BRACING FOR THE SPECIFIC WIND AND WEATHER CONDITIONS TO BE ENCOUNTERED FOR EACH SPECIFIC PROJECT.
- WHEN BRACING OR DIAPHRAGMS ARE REQUIRED, NO GIRDERS SHALL BE ERECTED AND LEFT UNBRACED. THE INTERMEDIATE DIAPHRAGMS (WHEN USED) SHALL BE CONNECTED TO THE ADJACENT GIRDERS SIMULTANEOUSLY WITH THE ERECTION OF THE GIRDERS.
- USE AND INSTALLATION OF THE INTERMEDIATE DIAPHRAGMS SHALL NOT RELIEVE THE CONTRACTOR OF FULL RESPONSIBILITY TO CONSTRUCT THE WORK IN A MANNER WHICH PROVIDES ALL NECESSARY RIGIDITY, SUPPORTS ALL LOADS IMPOSED, AND PROVIDES IN THE FINISHED STRUCTURE THE LINES AND GRADES INDICATED ON THE PLANS.
- THE COST OF THE DIAPHRAGMS SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF THE GIRDER.

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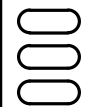
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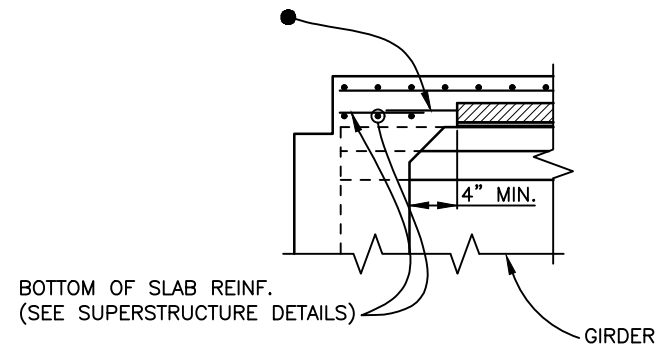
**BELFORD-HAPPY CANYON CREEK BRIDGE
GIRDER DIAPHRAGM
DETAILS**

Designer: J. LYNCH
Detailer: R. DILLON
Subset: BRIDGE

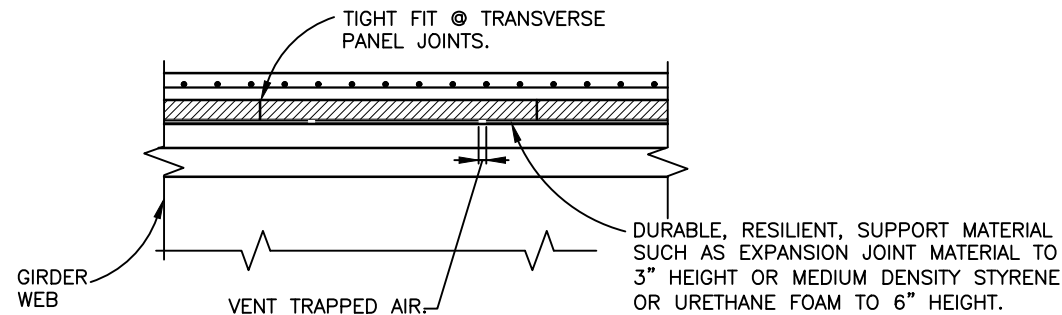
Project No./Code

Sheet Number 51

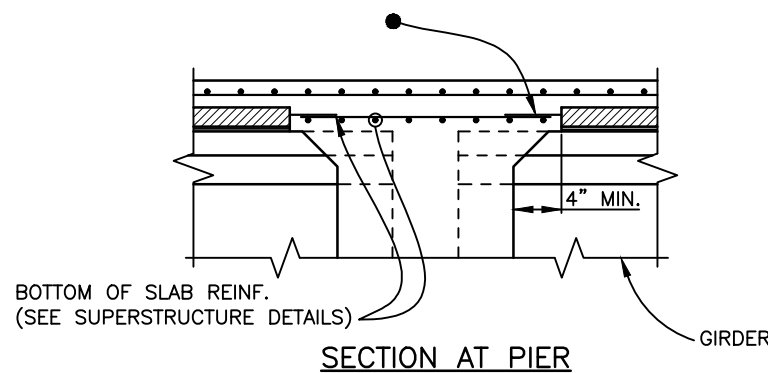
Structure Numbers
Sheets: B21 of 33



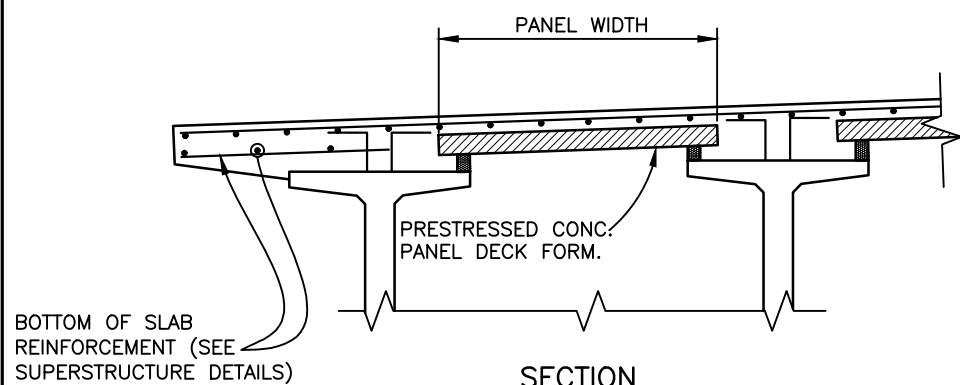
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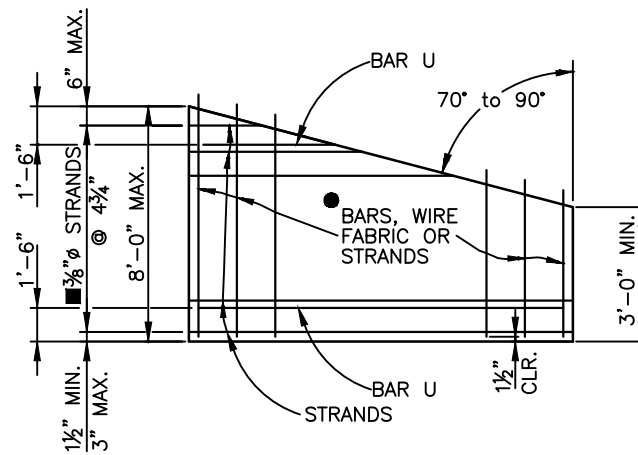
SECTION THRU TRANSVERSE PANEL JOINTS



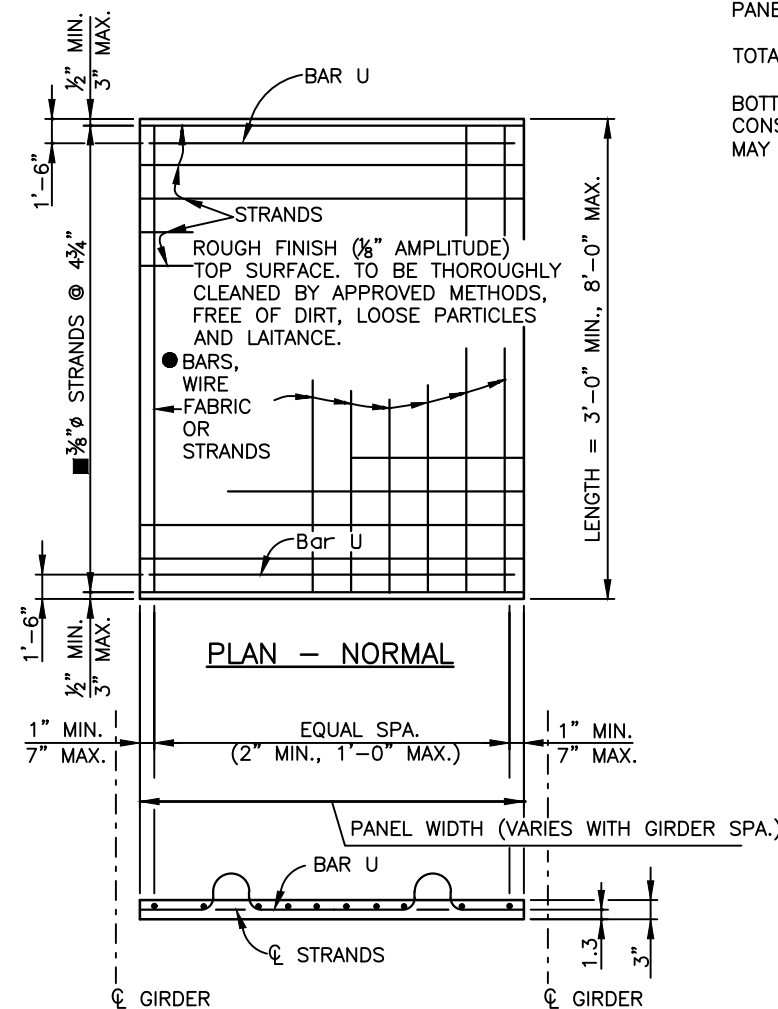
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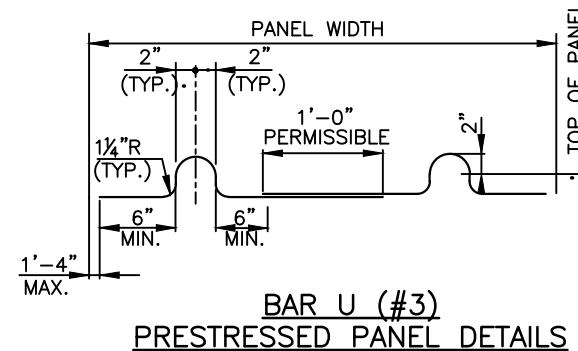
SECTION



PLAN - SKEWS 70° TO 90°
OPTIONAL END PANEL



PLAN - NORMAL
PRESTRESSED PANEL DETAILS



NOTES:

SAWING OF PANELS IS ACCEPTABLE IN AREAS WHERE PROJECTING REINFORCEMENT IS NOT REQUIRED. IT IS DESIRABLE TO HAVE THE PRESTRESSING STRANDS PROJECT FROM THE PANELS AS LONG AS THE PROJECTING STRANDS DO NOT INTERFERE WITH OTHER BRIDGE COMPONENTS.

REINFORCING PERPENDICULAR TO STRANDS MAY BE DEFORMED REINF. BARS, WELDED WIRE FABRIC, OR WELDED DEFORMED BAR MATS, AND SHALL BE PLACED DIRECTLY ABOVE THE STRANDS. MINIMUM AREA OF REINFORCING PERPENDICULAR TO STRANDS SHALL BE 0.11 SQ. IN. PER FT. TENSIONED OR UNTENSIONED STRANDS MAY ALSO BE USED. THESE INDIVIDUAL BARS OR WIRES SHALL BE NO LARGER THAN .375" DIAMETER. FOR LOCATION OF LONGITUDINAL BAR EXTENSIONS, SEE PRECAST PANEL DECK FORM SHEET (2 OF 2).

MAY BE REDUCED TO 3/8" STRANDS AT 9 1/2" WHEN THE PANEL WIDTH IS LESS THAN 5'-7" AND THE DESIGN SPAN IS LESS THAN 7'-7".

THE LONGITUDINAL REINFORCING STEEL IN THE CAST-IN-PLACE PORTION OF THE DECK MAY REST DIRECTLY ON THE PANELS AS NECESSARY TO OBTAIN CLEARANCES AT THE TOP OF DECK, UNLESS OTHERWISE NOTED.

THE TOLERANCE ON STRAND PLACEMENT SHALL NOT EXCEED ± 1/4".

THE TOLERANCE ON PANEL THICKNESS SHALL NOT EXCEED ± 1/4".

CONCENTRATED CONSTRUCTION LOADS SHALL NOT EXCEED 500 LB FOR 3" PANELS, 700 LB FOR 3.5" PANELS, NOR 1100 LB FOR 4" PANELS UNLESS THE LOAD IS DISTRIBUTED TO LESS THAN 117 PSF.

TOTAL LOADS APPLIED TO ANY PANEL DURING CONSTRUCTION SHALL NOT EXCEED 117 PSF.

BOTTOM FLEXURAL CRACKS, SAGS GREATER THAN 1/2", OR CAMBERS GREATER THAN 1/2", WILL BE CONSIDERED EVIDENCE OF MISHANDLING, OVERLOADING, OR EXCEEDING ALLOWABLE TOLERANCES, AND MAY BE CAUSE FOR REJECTING PANELS AT THE ENGINEER'S DISCRETION.

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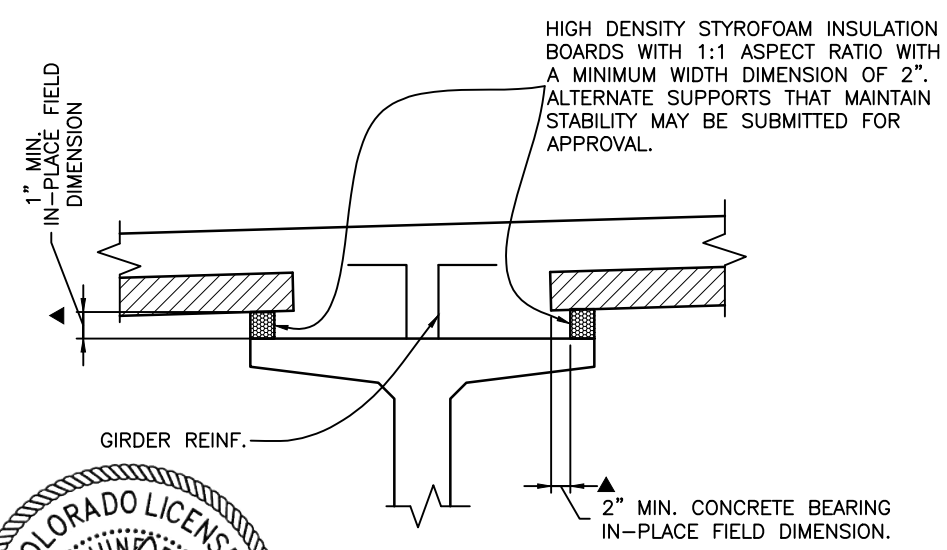
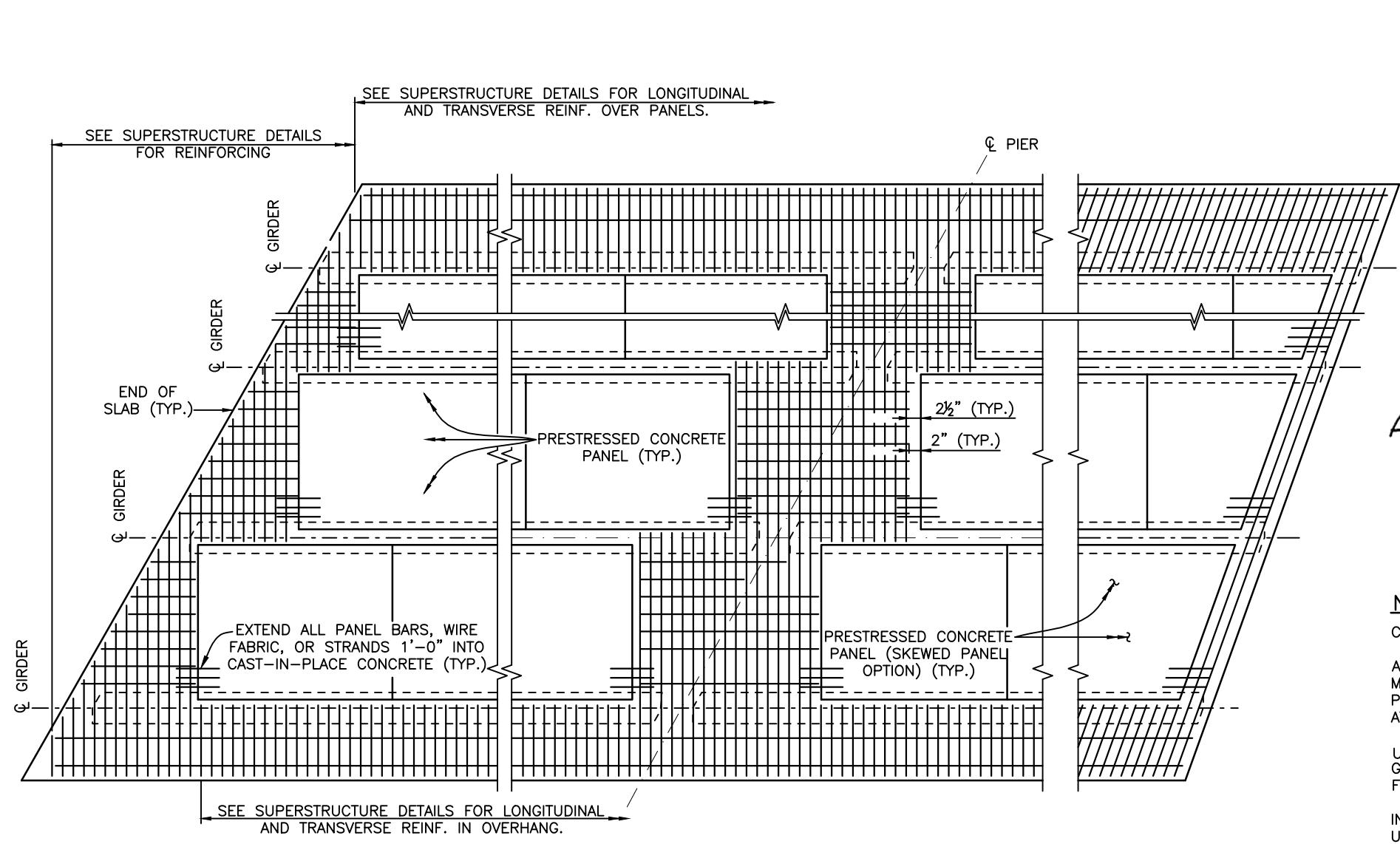
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As Constructed	BELFORD-HAPPY CANYON CREEK BRIDGE OPTIONAL PRECAST PANEL DECK FORM (1 OF 2)		Project No./Code
No Revisions:			
Revised:	Designer: J. LYNCH	Structure Numbers	
	Detailer: C. MIYAMOTO		
Void:	Subset: BRIDGE	Sheets: B22 of 33	Sheet Number 52





SUPPORT DETAIL

NOTES:

COMPOSITE TOTAL SLAB DESIGNED FOR HS 25-44 AND ALTERNATE MILITARY LOADING.

ALL CONCRETE SHALL BE CLASS PS WITH RELEASE STRENGTH $f'_{ci} = 4500$ PSI AND MINIMUM 28 DAY STRENGTH $f'_c = 6000$ PSI. ENTRAINED AIR IS NOT REQUIRED FOR PRECAST PANEL DECK FORM CONCRETE. THE STRENGTH SHALL BE AT LEAST 5000 PSI AT THE TIME OF THE DECK POUR.

USE $\frac{3}{8}$ " ϕ LOW RELAXATION STRANDS MEETING THE REQUIREMENTS OF ASTM A416 GRADE 270. JACKING FORCE PER STRAND (f_j) SHALL BE AT LEAST 17.2 KIPS. FINAL FORCE PER STRAND (F_f) IS ESTIMATED TO BE 14.2 KIPS.

INSTALLATION OF BAR U (#3) IS MANDATORY. ALL FOUR BAR U (#3) LOOPS SHALL BE USED SIMULTANEOUSLY FOR LIFTING THE PANELS.

CARE MUST BE TAKEN TO ENSURE PROPER CLEANING OF CONSTRUCTION DEBRIS OFF THE TOPS OF THE PANELS AND CONSOLIDATION OF CONCRETE MORTAR UNDER THE EDGES OF THE PANELS. WATER, DIRT OR OTHER DEBRIS ON TOP OF THE PANELS WILL INHIBIT THE BOND OF THE CAST-IN-PLACE CONCRETE. IT IS ALSO IMPORTANT THAT ADEQUATE SPACE (Δ MIN. 1" X 2") IS PROVIDED FOR THE CONCRETE TO FILL THE SPACE UNDER THE PANEL AS THE SLAB CONCRETE IS PLACED. PANEL LENGTHS AND WIDTH SHALL BE DETERMINED BY THE CONTRACTOR AND SHOWN ON THE SHOP PLANS.

THE CONTRACTOR IS RESPONSIBLE FOR THE STABILITY OF THE PANELS ON THE GIRDERS. ERECTED PANELS SHALL BE UNIFORMLY SUPPORTED ALONG THE LENGTH OF THE PANEL. THE CONTRACTOR IS RESPONSIBLE FOR MEETING THE TOTAL SLAB THICKNESS SHOWN ON THE SUPERSTRUCTURE DETAILS.

ALL PLANES OF REINFORCING STEEL SHOWN IN THE SUPERSTRUCTURE DETAILS ARE REQUIRED FOR AREAS NOT FORMED WITH PRECAST PANELS.

SEE LUMINAIRE DETAILS FOR REQUIRED GAP IN PANELS.

END OF SLAB RECTANGULAR PANEL OPTION AND SKEWS LESS THAN 70°
 RECTANGULAR PANEL OPTION SHALL BE USED FOR SKEWS LESS THAN 70°.

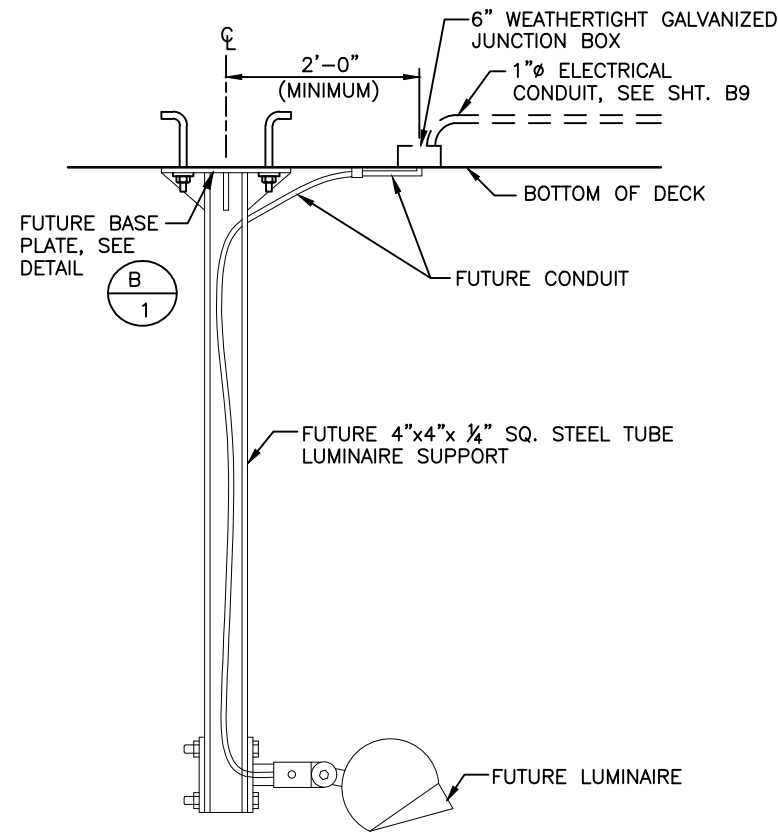
CONTINUOUS SLAB OVER PIER

END OF SLAB SKEWED PANEL OPTION FOR SKEWS 70° TO 90°

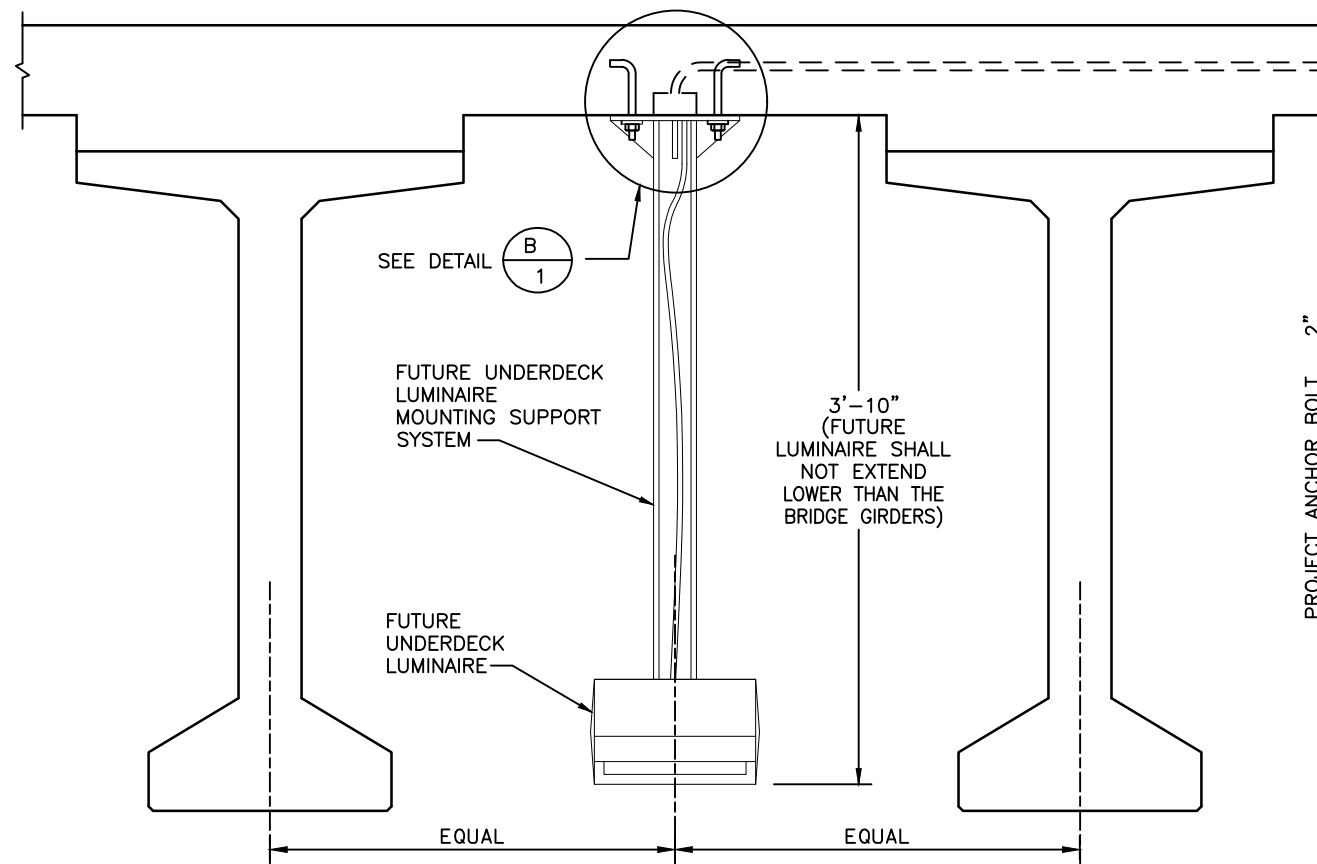
PART PLAN

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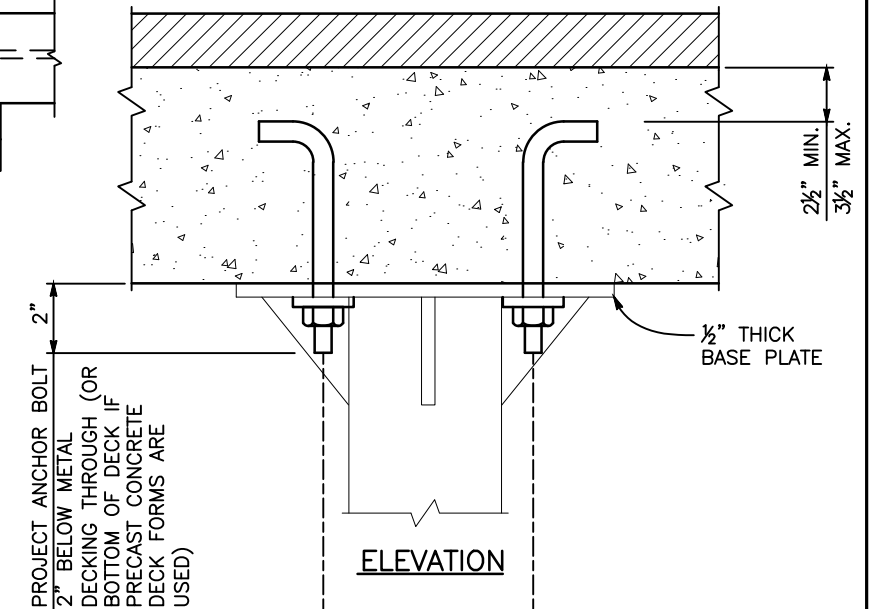
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Horizontal Scale: 100 Vertical Scale: N/A					Revised:	Designer: J. LYNCH	Structure Numbers	
					Void:	Detailer: C. MIYAMOTO		
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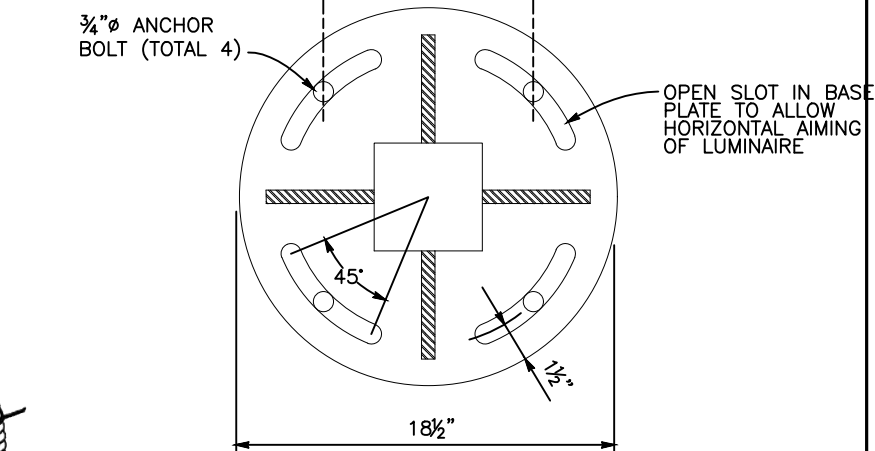
SECTION VIEW
FUTURE UNDERDECK LUMINAIRE SUPPORT



FRONT VIEW

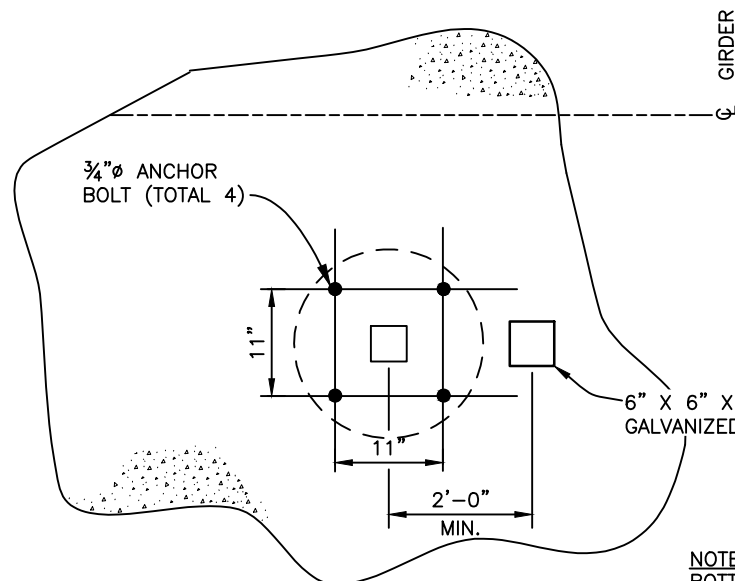


ELEVATION

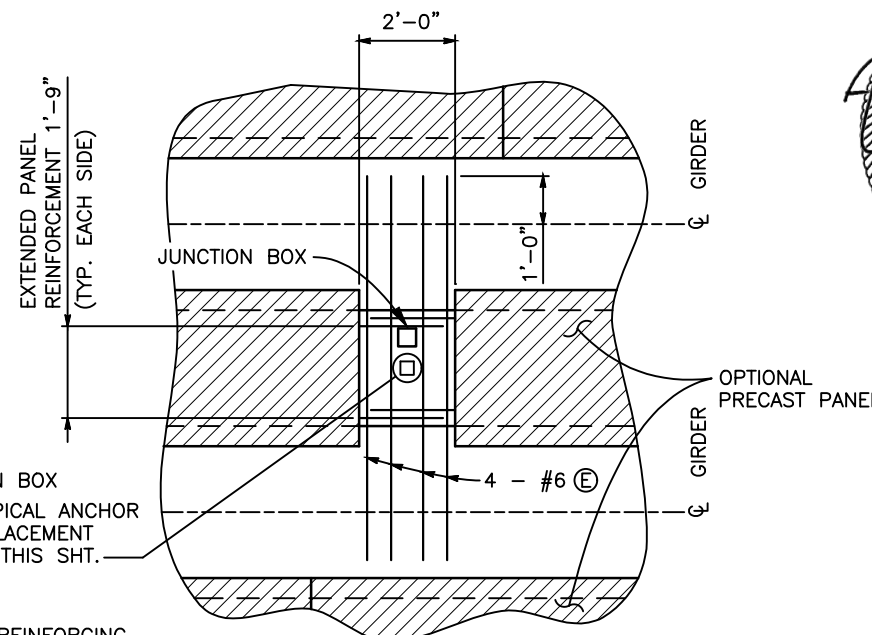


PLAN
FUTURE BASE PLATE

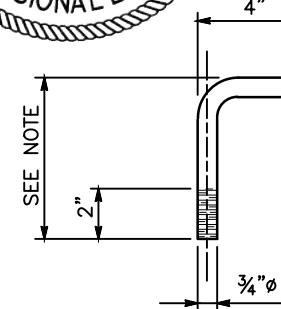
DETAIL B 1



TYPICAL ANCHOR BOLT PLACEMENT DIAGRAM



JUNCTION BOX DETAIL
(OPTIONAL PRECAST CONCRETE DECK FORMS SHOWN)



ANCHOR BOLT DETAIL
ANCHOR BOLT LENGTH SHALL BE DETERMINED BY CONTRACTOR BASED ON DECK THICKNESS & METAL DECKING DEPTH. (OR ON DECK THICKNESS ONLY IF OPTIONAL PRECAST CONCRETE DECK FORMS ARE USED)

NOTE:
CONTRACTOR SHALL PROVIDE AND INSTALL ONLY THE ANCHOR BOLTS, JUNCTION BOXES, AND CONDUIT WITHIN THE CONCRETE BRIDGE DECK AS PART OF THIS CONTRACT. CONTRACTOR SHALL PROVIDE COVER PLATE AT JUNCTION BOX. ALL OTHER ITEMS SHOWN ON THIS SHEET (STEEL PENDANTS AND LUMINAIRES) ARE FUTURE WORK AND NOT PART OF THIS CONTRACT. COST FOR JUNCTION BOXES AND ANCHOR BOLTS WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF ITEM 613, 1 INCH ELECTRICAL CONDUIT.

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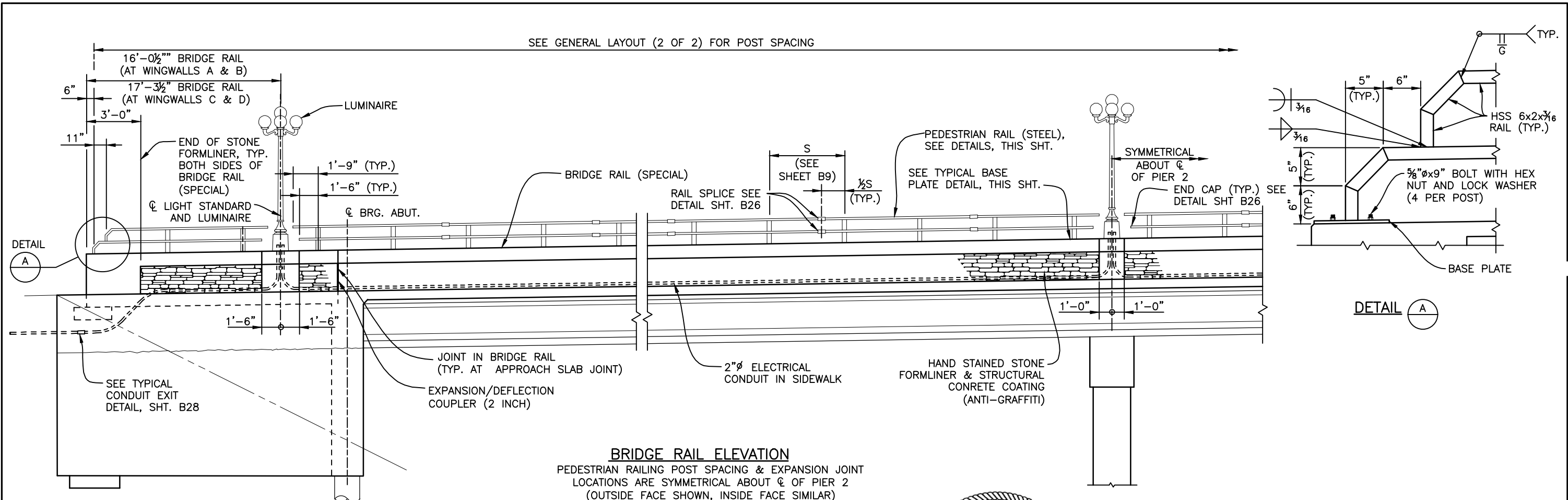
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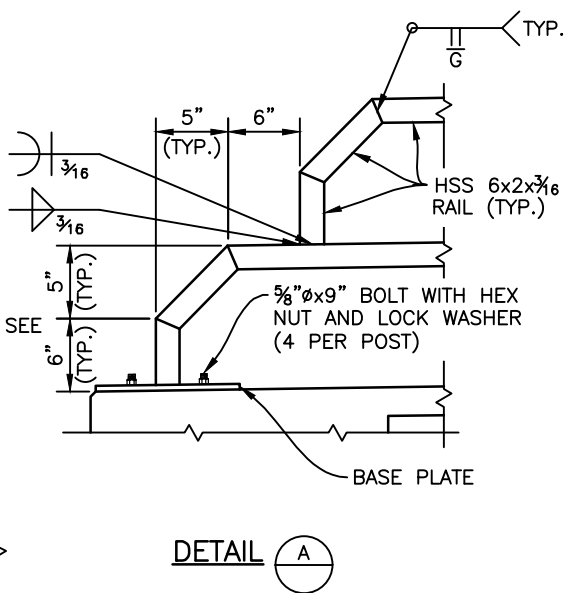
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No Revisions:	Designer: J. LYNCH	Structure Numbers	
Revised:	Detailer: R. DILLON		
Void:	Subset: BRIDGE	Sheets: B24 of 33	Sheet Number 54

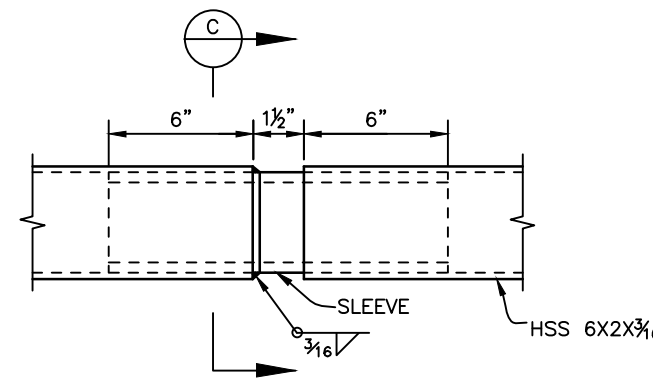


SEE GENERAL LAYOUT (2 OF 2) FOR POST SPACING

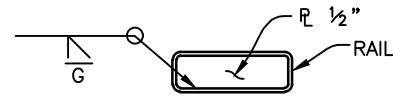


BRIDGE RAIL ELEVATION
 PEDESTRIAN RAILING POST SPACING & EXPANSION JOINT
 LOCATIONS ARE SYMMETRICAL ABOUT ϕ OF PIER 2
 (OUTSIDE FACE SHOWN, INSIDE FACE SIMILAR)

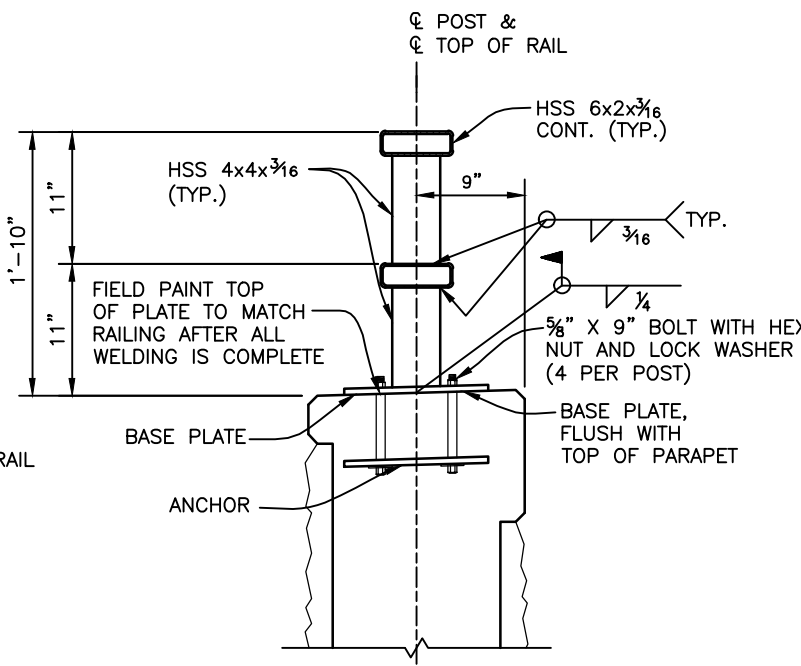
NOTE
 SEE SHEET B26 AND B27 FOR ADDITIONAL NOTES



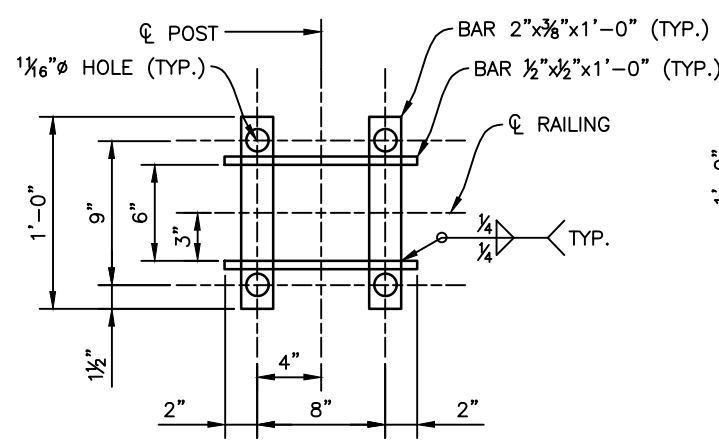
RAIL SPLICE DETAIL



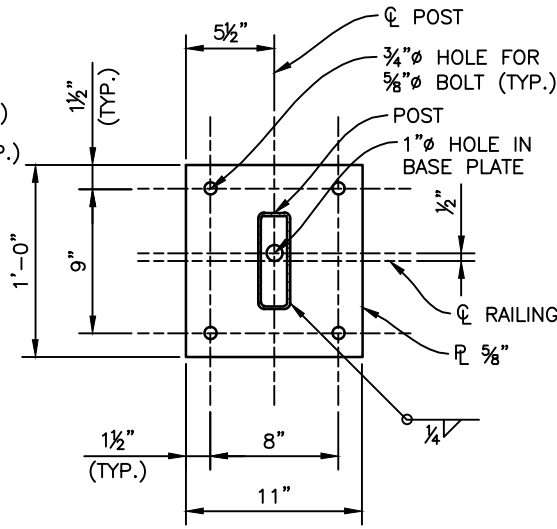
END CAP DETAIL



TYPICAL PEDESTRIAN RAILING SECTION



ANCHOR DETAIL



BASE PLATE DETAIL

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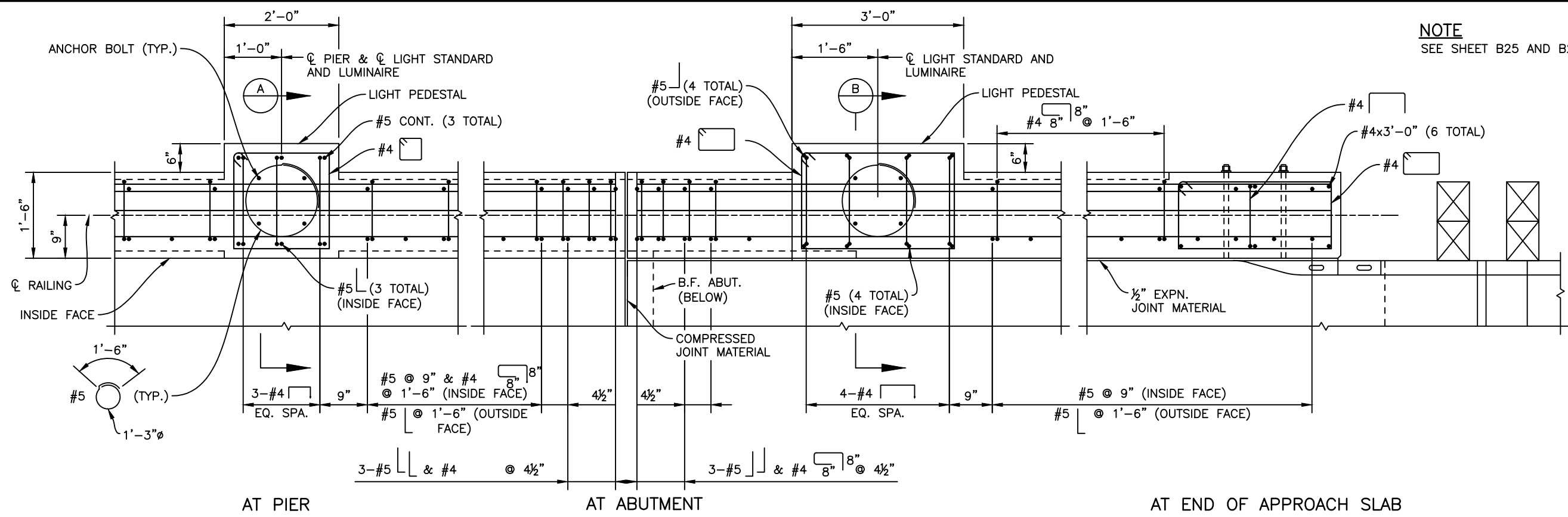
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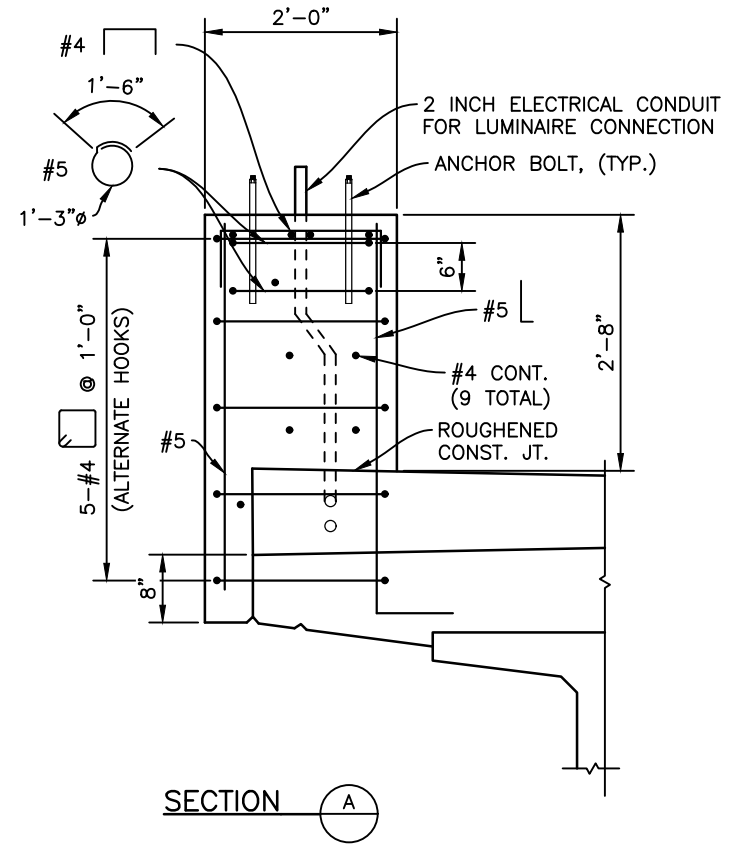
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 Civil Engineers • Surveyors • Water Resource Engineers • Water & Wastewater Engineers
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As Constructed	BELFORD-HAPPY CANYON CREEK BRIDGE BRIDGE RAIL ELEVATION & PEDESTRIAN RAILING DETAILS		Project No./Code
No Revisions:	Designer: J. LYNCH	Structure Numbers	
Revised:	Detailer: R. DILLON		
Void:	Subset: BRIDGE	Sheets: B25 of 33	Sheet Number 55

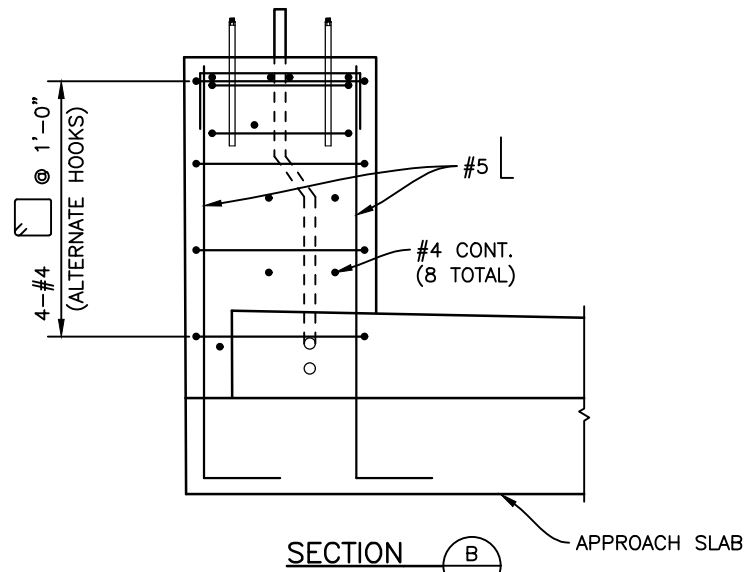
NOTE
SEE SHEET B25 AND B27 FOR ADDITIONAL NOTES



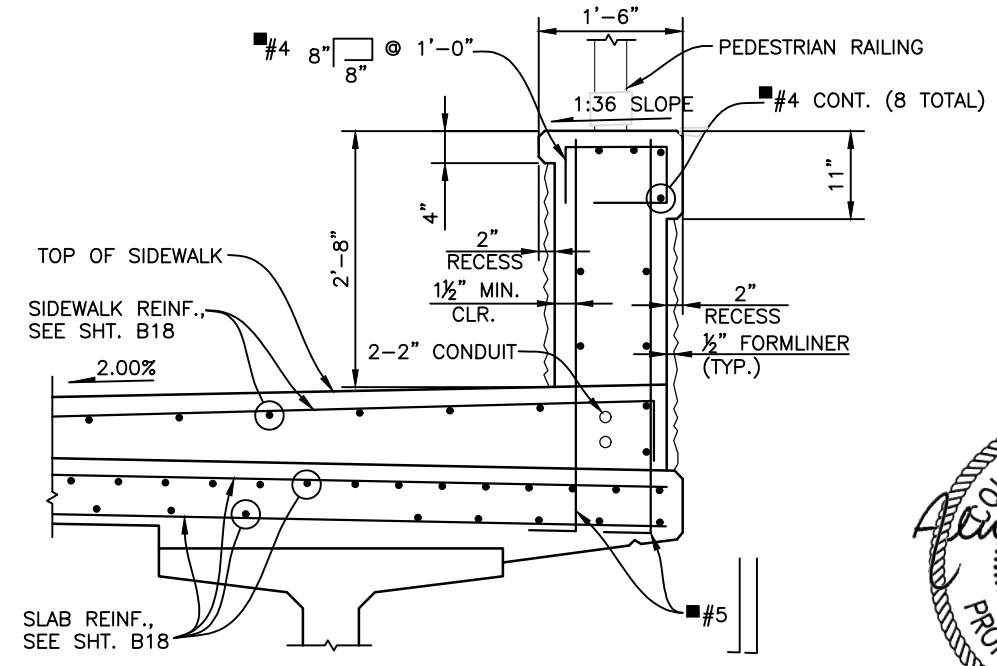
PARTIAL RAILING PLAN



SECTION A



SECTION B
(SIMILAR TO SECTION "A", EXCEPT AS SHOWN)



TYPICAL SECTION

REINFORCEMENT SHALL BE INCLUDED IN ITEM 606, BRIDGE RAIL (SPECIAL)



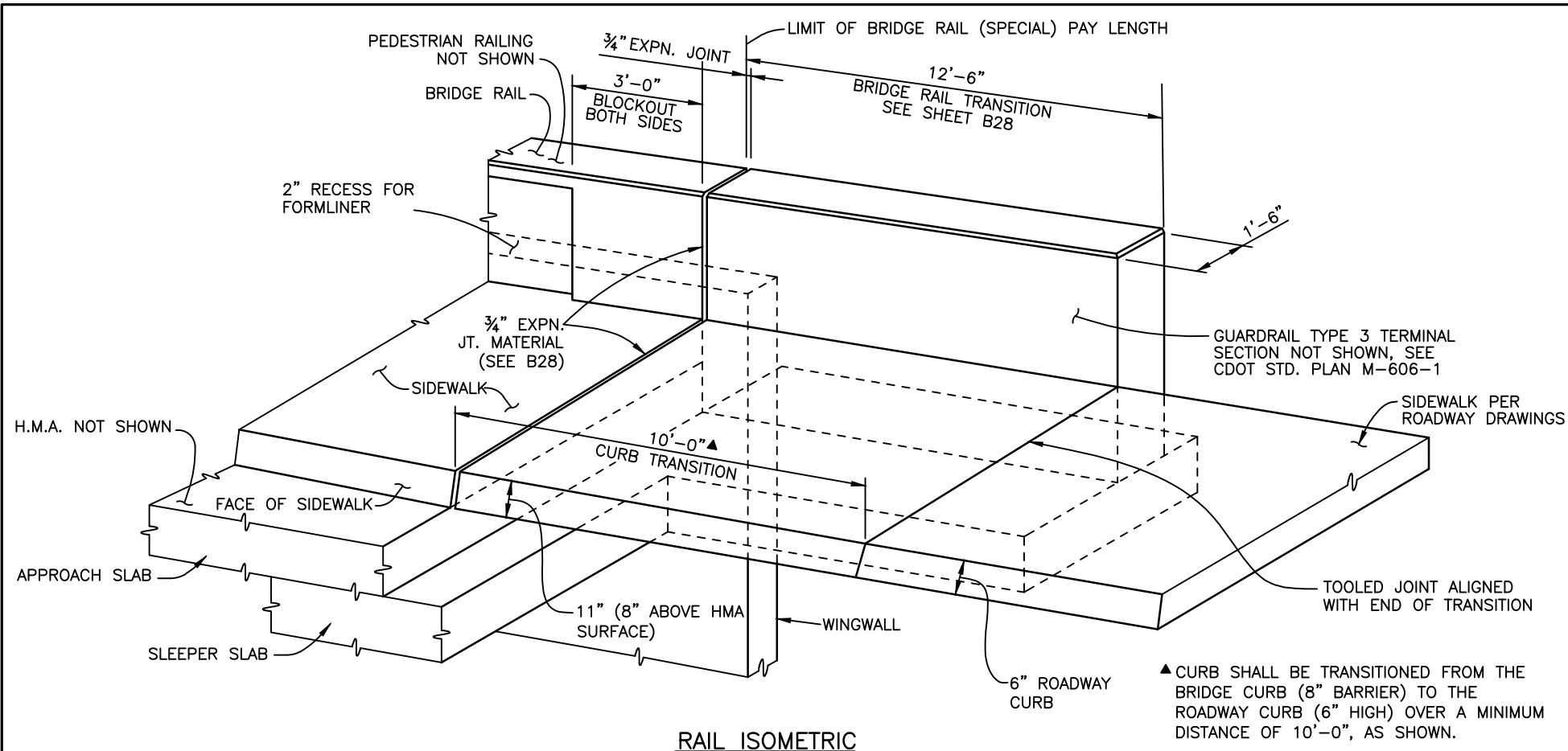
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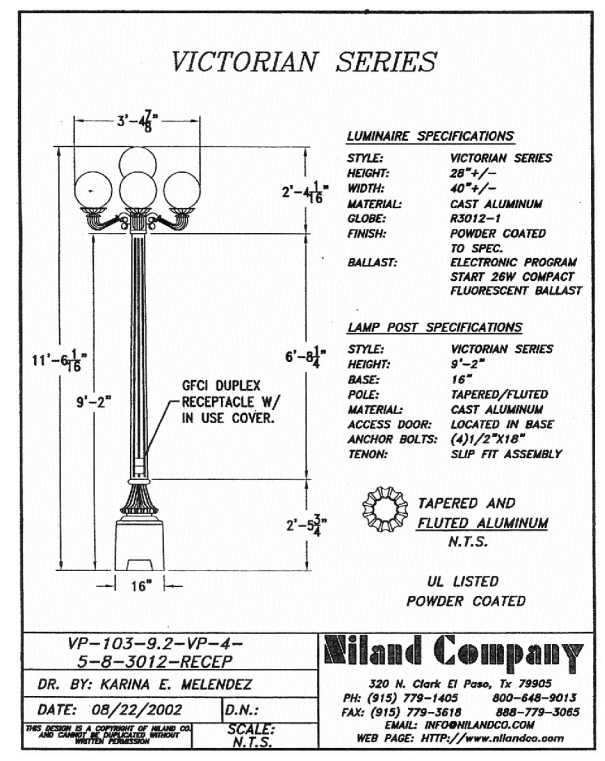
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As Constructed	BELFORD-HAPPY CANYON CREEK BRIDGE BRIDGE RAIL PLAN & SECTIONS		Project No./Code
No Revisions:	Designer: J. LYNCH	Structure	
Revised:	Detailer: R. DILLON	Numbers	
Void:	Subset: BRIDGE	Sheets: B26 of 33	Sheet Number 56



▲ CURB SHALL BE TRANSITIONED FROM THE BRIDGE CURB (8" BARRIER) TO THE ROADWAY CURB (6" HIGH) OVER A MINIMUM DISTANCE OF 10'-0", AS SHOWN.



LUMINAIRE DETAIL

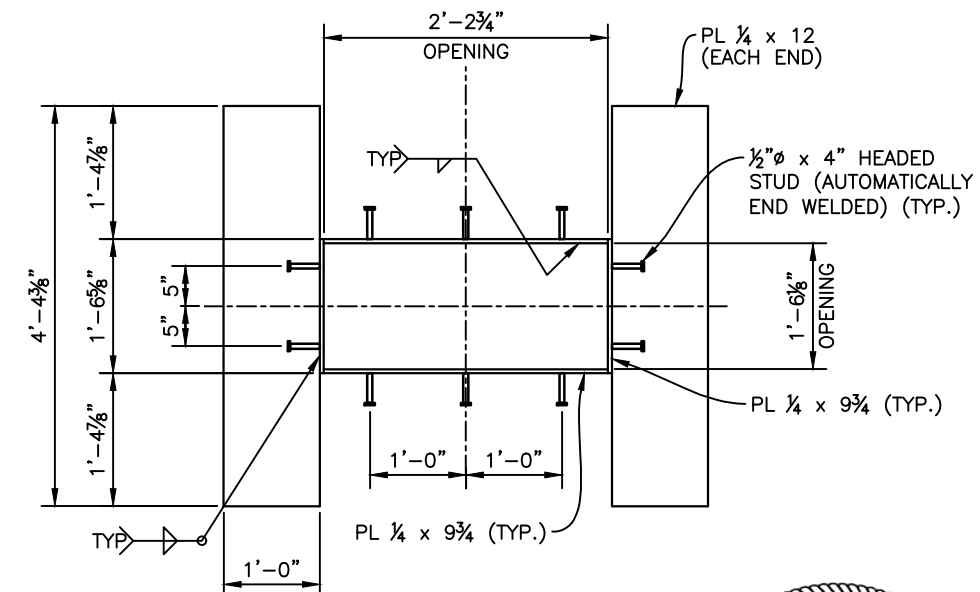
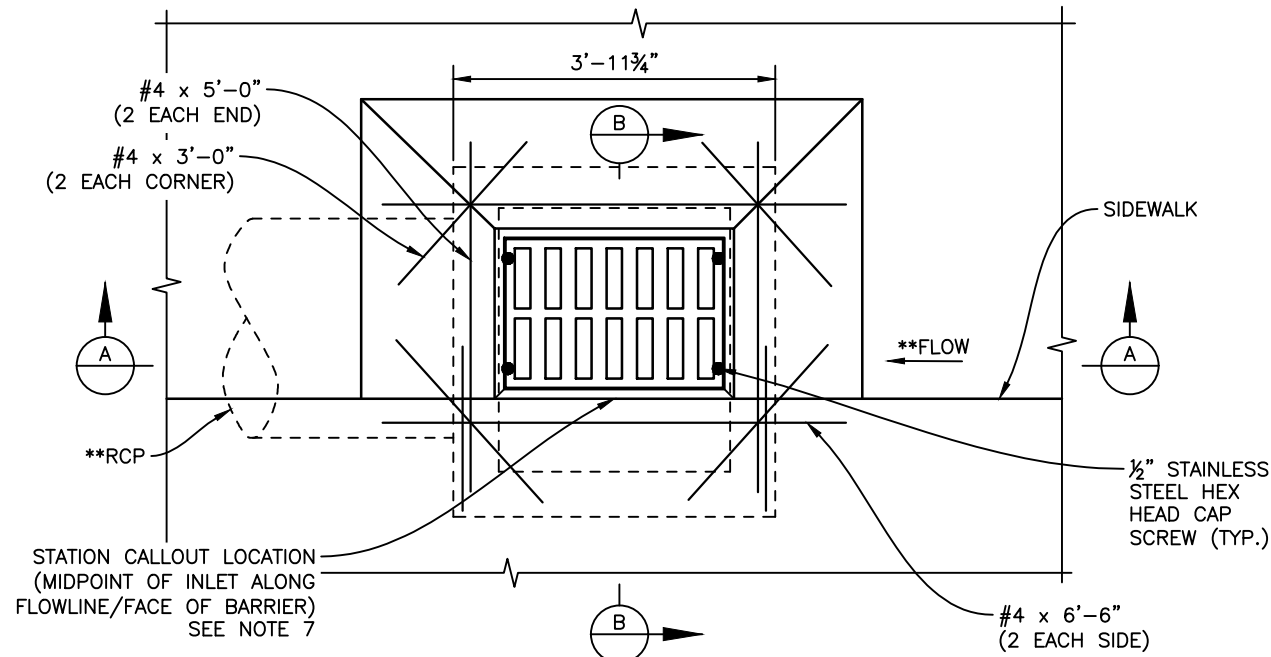
NOTES

1. ALL BRIDGE RAIL CONCRETE SHALL BE CLASS D.
2. BRIDGE RAIL SHALL BE CONSTRUCTED PLUMB.
3. RAIL TUBES SHALL BE CONTINUOUS OVER NOT LESS THAN TWO POSTS. MAXIMUM SPLICE SPACING SHALL BE 24'-0". NO WELDED BUTT SPLICES WILL BE ALLOWED IN THE RAIL SECTIONS.
4. TUBES SHALL BE SHOP BENT OR FABRICATED TO FIT HORIZONTAL CURVES.
5. CONCRETE AND REINFORCING STEEL SHALL CONFORM TO THE CONSTRUCTION, MEASUREMENT AND PAYMENT REQUIREMENTS OF SECTIONS 601 AND 602.
6. STEEL ELEMENTS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 509.
7. WELDING SHALL BE IN ACCORDANCE WITH AWS D1.1. EXPOSED WELDS SHALL BE GROUND SMOOTH.
8. ALL TUBE STEEL SHALL BE ASTM A500 GRADE B. BASE PLATES SHALL BE ASTM A572 GRADE 50. ALL OTHER STEEL SHALL BE ASTM A36.
9. ANCHOR BOLTS SHALL BE A325 OR ASTM A449.
10. ALL RAILING STEEL, EXCEPT ANCHOR BOLTS, SHALL BE GALVANIZED AND POWDER COATED AFTER FABRICATION IN ACCORDANCE WITH SECTION 522 OF THE PROJECT SPECIAL PROVISIONS. COLOR SHALL BE "PARKER BROWN" EQUIVALENT TO TNEMEC ENDURA SHIELD COLOR F073D3884A.
11. ALL MATERIALS AND LABOR NECESSARY FOR FABRICATION AND ERECTION OF THE STEEL RAILING SHALL BE INCLUDED IN ITEM 514, PEDESTRIAN RAILING (STEEL).
12. PRIOR TO FABRICATION OF THIS ITEM, THREE SETS OF SHOP DRAWINGS WHICH COMPLY WITH THE REQUIREMENTS OF SECTION 105, SHALL BE SUBMITTED TO THE ENGINEER, FOR APPROVAL.
13. ALL MATERIALS AND WORKMANSHIP NECESSARY FOR CONSTRUCTION OF STONE FORMLINER SHALL BE INCLUDED IN ITEM 601, HAND STAINED FORMLINER.



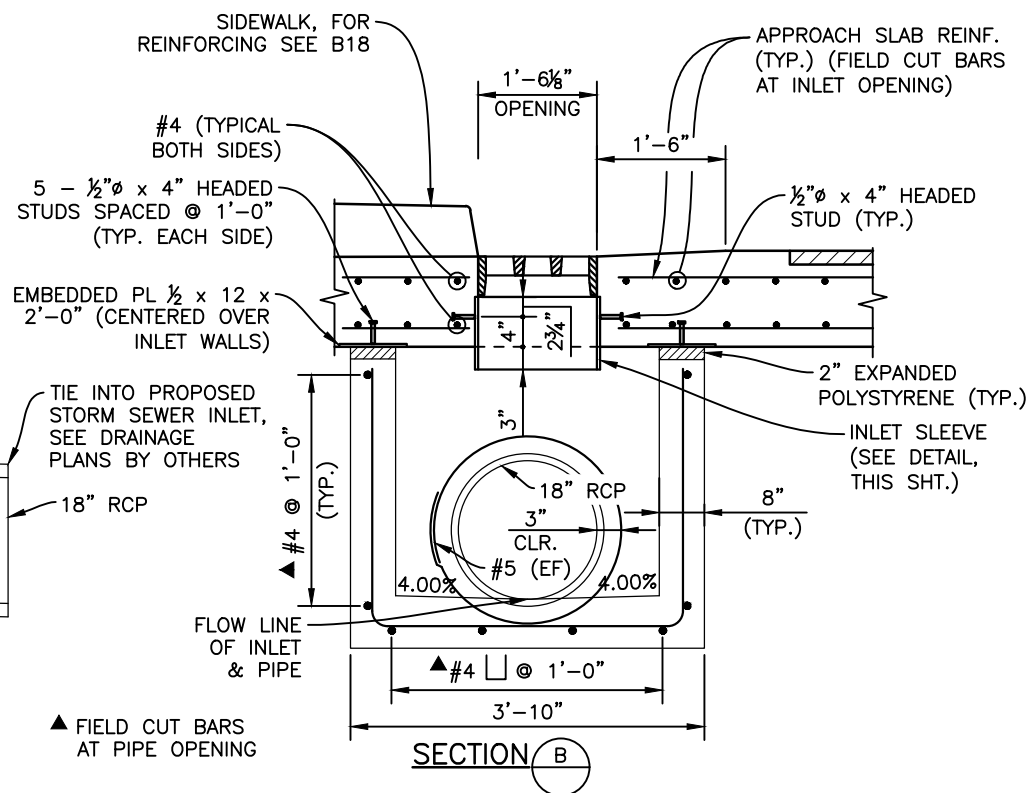
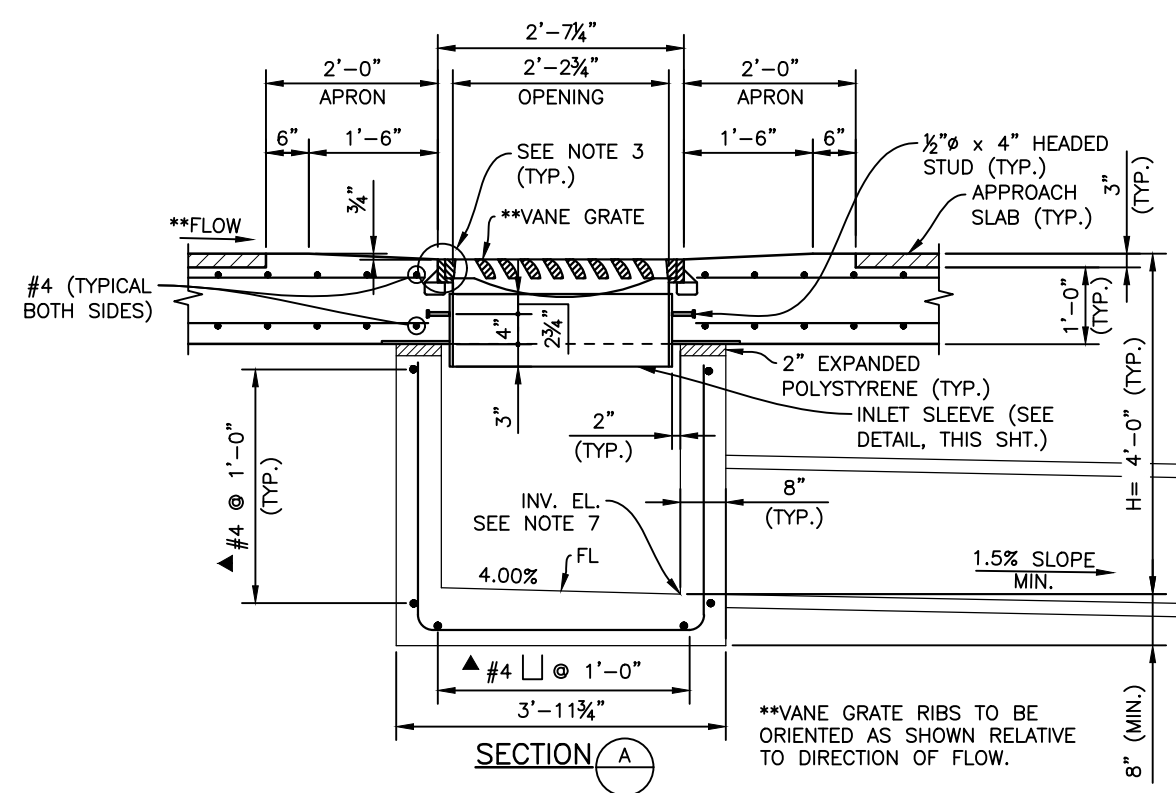
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Print Date: 6/17/2021 10:45:47 AM	Sheet Revisions	<p>8008 E. Arapahoe Court, Suite 110, Centennial, CO 80112 ph: 303.708.0800 fax: 303.708.0400 manhard.com Civil Engineers • Surveyors • Water Resource Engineers • Water & Wastewater Engineers Construction Managers • Environmental Scientists • Landscape Architects • Planners</p>	As Constructed	BELFORD-HAPPY CANYON CREEK BRIDGE BRIDGE RAIL (SPECIAL) DETAILS	Project No./Code
File Name: B115360-01RAL01.dwg			No Revisions:		
Horizontal Scale: VARIES Vertical Scale:	Date	Comments	Revised:	Designer: J. LYNCH	Structure
<p>6400 South Fiddlers Green Circle, Suite 1500 Greenwood Village, CO 80111 Phone: 303.721.1440 www.FHUENG.com</p>			Detailer: R. DILLON	Numbers	
			Void:	Subset: BRIDGE	Sheets: B27 of 33



APPROACH SLAB
INLET PLAN

PLAN - INLET SLEEVE



- NOTES:**
1. CONCRETE SHALL BE CLASS D.
 2. FOR VANE GRATE AND FRAME DETAILS, SEE STANDARD PLAN No. M-604-25 SHEET 4 OF 5.
 3. GRATE SHALL BE INSTALLED DURING CONSTRUCTION WITH THE GRATE BOLTED IN PLACE TO THE FRAME.
 4. THE COST FOR INLET, INCLUDING VANE GRATE, INLET SLEEVE, EMBEDDED PLATE, FRAME, AND ALL WORK NECESSARY TO INSTALL THESE ITEMS SHALL BE INCLUDED IN THE COST OF ITEM 604, VANE GRATE INLET SPECIAL.
 5. INLET SLEEVE AND EMBEDDED PLATE SHALL BE GALVANIZED FOLLOWING FABRICATION. CONTRACTOR SHALL COORDINATE SLEEVE DIMENSIONS RELATIVE TO GRATE AND FRAME.
 6. SEE DRAINAGE PLANS BY OTHERS FOR ADDITIONAL INFORMATION.
 7. LOCATIONS FOR SIDEWALK APPROACH SLAB INLETS ARE AS FOLLOWS:
 - ABUTMENT 1: 93+51.49, 37.00' RT INV. EL. = 5779.69
 - 93+85.47, 37.00' LT INV. EL. = 5779.86

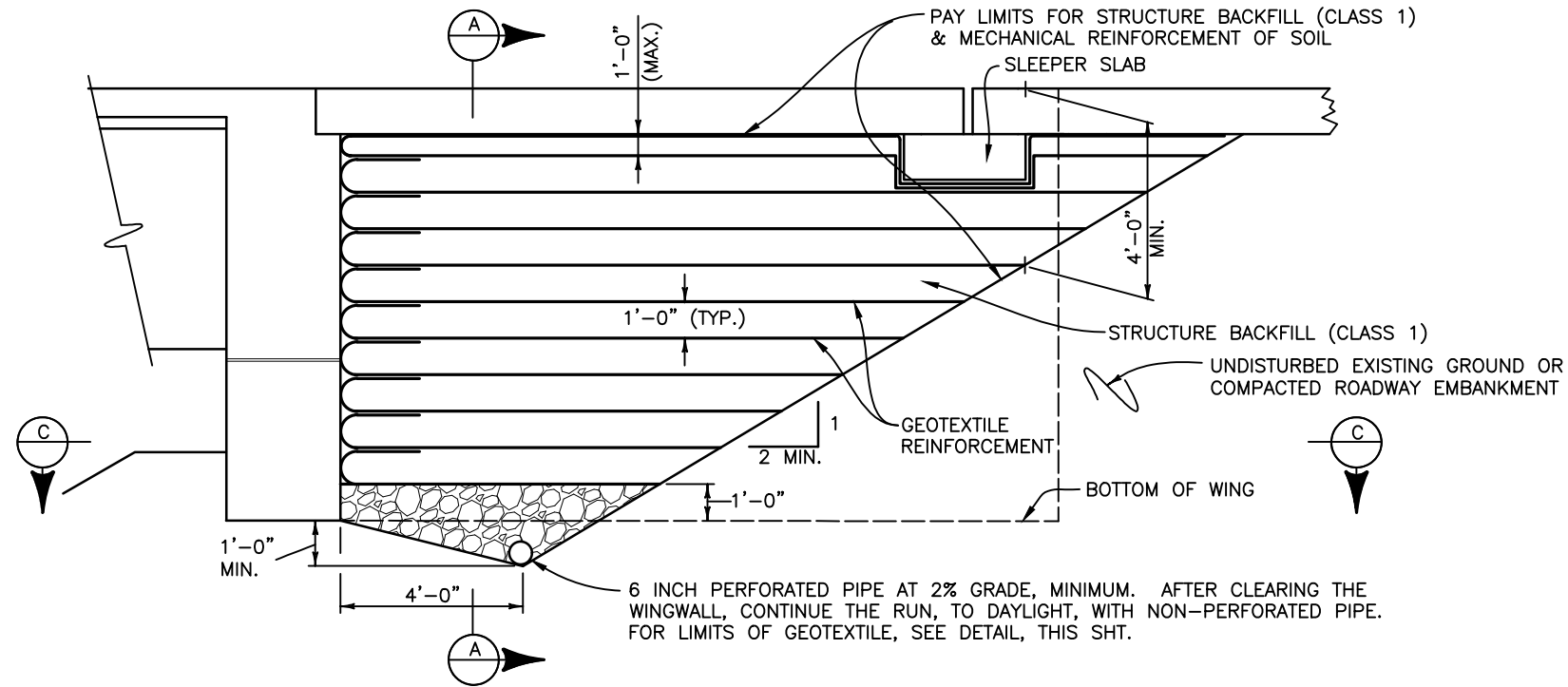
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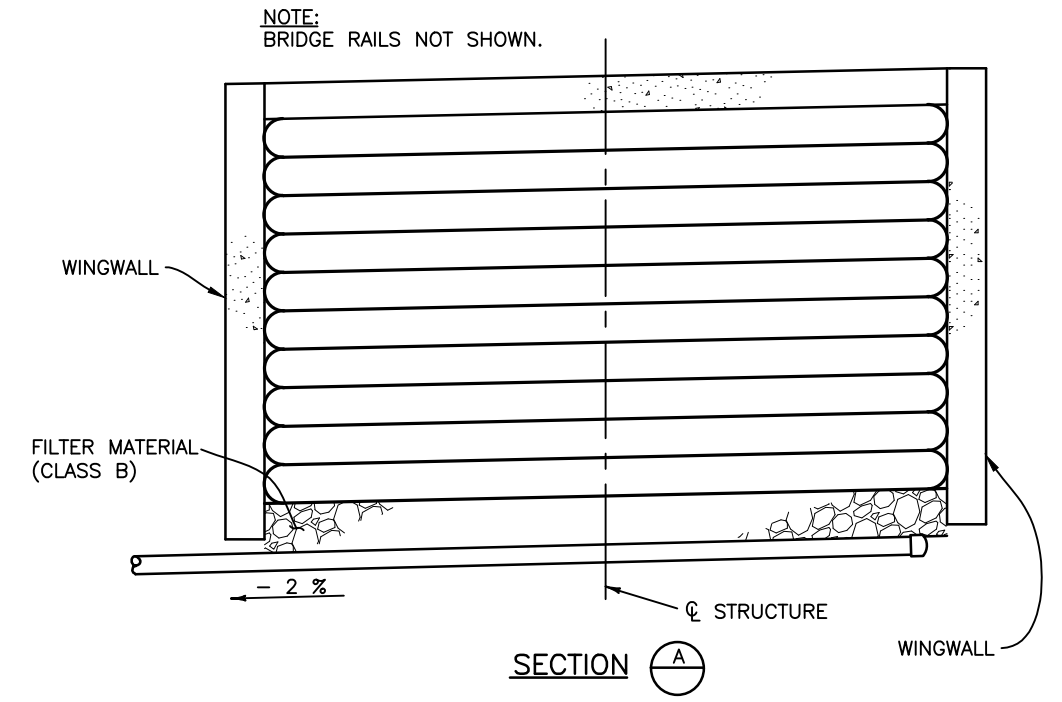
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As Constructed	BELFORD-HAPPY CANYON CREEK APPROACH SLAB INLET DETAILS		Project No./Code
No Revisions:	Designer: J. LYNCH	Structure Numbers	
Revised:	Detailer: C.MIYAMOTO		
Void:	Subset: BRIDGE	Sheets: B29 of 33	Sheet Number 59

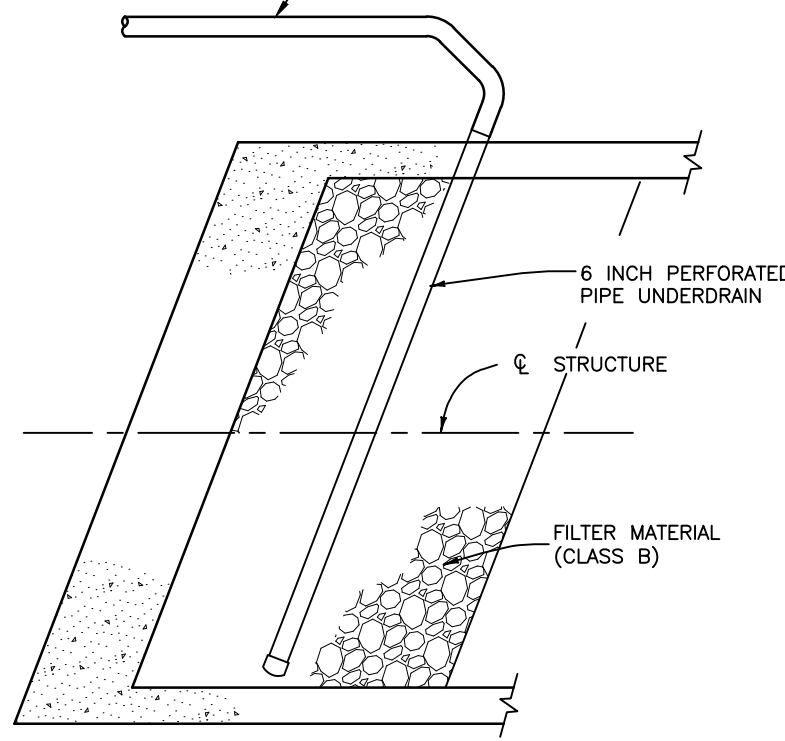


SECTION PERPENDICULAR TO ABUTMENT
(PROPOSED SECTION)

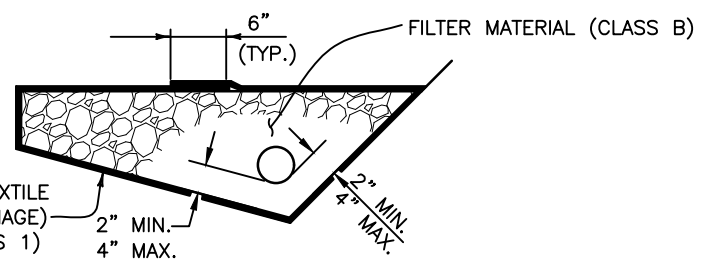


SECTION A-A

SUBSURFACE DRAIN OUTLET (6"Ø NON-PERFORATED PIPE),
MAX. BEND IN PIPE = 45°, DAYLIGHT AS SHOWN ON SHT. B3
ABUT. 1: DAYLIGHT AT INV. EL. 5769.0±
ABUT. 3: DAYLIGHT AT INV. EL. 5771.0±

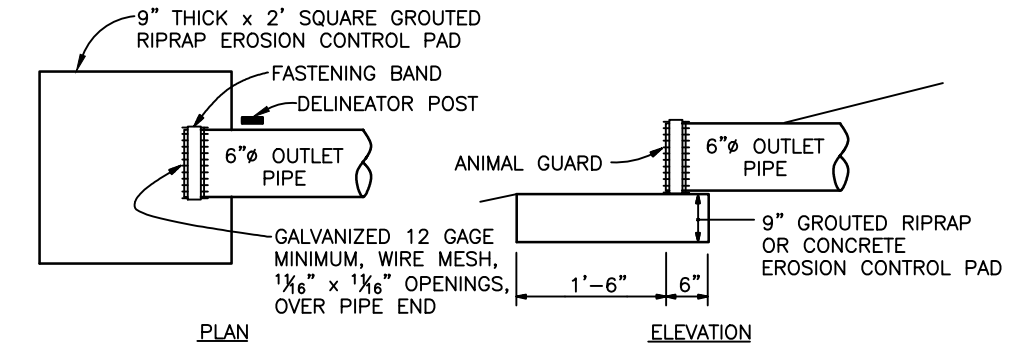


SECTION C-C



6 INCH PERFORATED PIPE UNDERDRAIN

6 INCH PERFORATED PIPE UNDERDRAIN INCLUDES ALL FILTER MATERIAL (CLASS B) AND GEOTEXTILE (DRAINAGE) (CLASS 1) SURROUNDING THE FILTER MATERIAL (CLASS B)



OUTLET PIPE END TREATMENT

NOTES:
 GEOTEXTILE REINFORCEMENT SHALL BE WOVEN FABRIC WITH A MINIMUM AVERAGE ROLL VALUE OF 4800 LB/FT FOR INSTALLATIONS WITH A GAP AND 2400 LB/FT FOR INSTALLATIONS WITHOUT A GAP BASED ON ASTM D4595.
 GEOTEXTILE REINFORCEMENT SHALL BE PLACED BY ALTERNATING MACHINE DIRECTION (MD) WITH CROSS MACHINE DIRECTION (XD) FROM LAYER TO LAYER.
 THE GEOTEXTILE REINFORCEMENT WRAP AT BACK FACE OF ABUTMENT SHALL BE PULLED BACK SLACK FREE WITH ITS END ANCHORED TO SOIL UNDERNEATH WITH STAPLES OR PINS.
 MINIMUM SPLICE OF ALL GEOTEXTILE SHALL CONSIST OF 12" OF OVERLAP.
 COST OF 6 INCH PERFORATED PIPE UNDERDRAIN, SUBSURFACE DRAIN OUTLET (6"Ø NON-PERFORATED PIPE) AND OUTLET PIPE END TREATMENT PAYMENT SHALL BE INCLUDED IN THE COST OF ITEM 206 STRUCTURE BACKFILL (CLASS 1).
 INSTALLATION OF PIPE UNDERDRAIN AND SUBSURFACE DRAIN OUTLET WILL CONFORM TO THE CONSTRUCTION REQUIREMENTS OF SECTION 605.03 AND 605.06, RESPECTIVELY.

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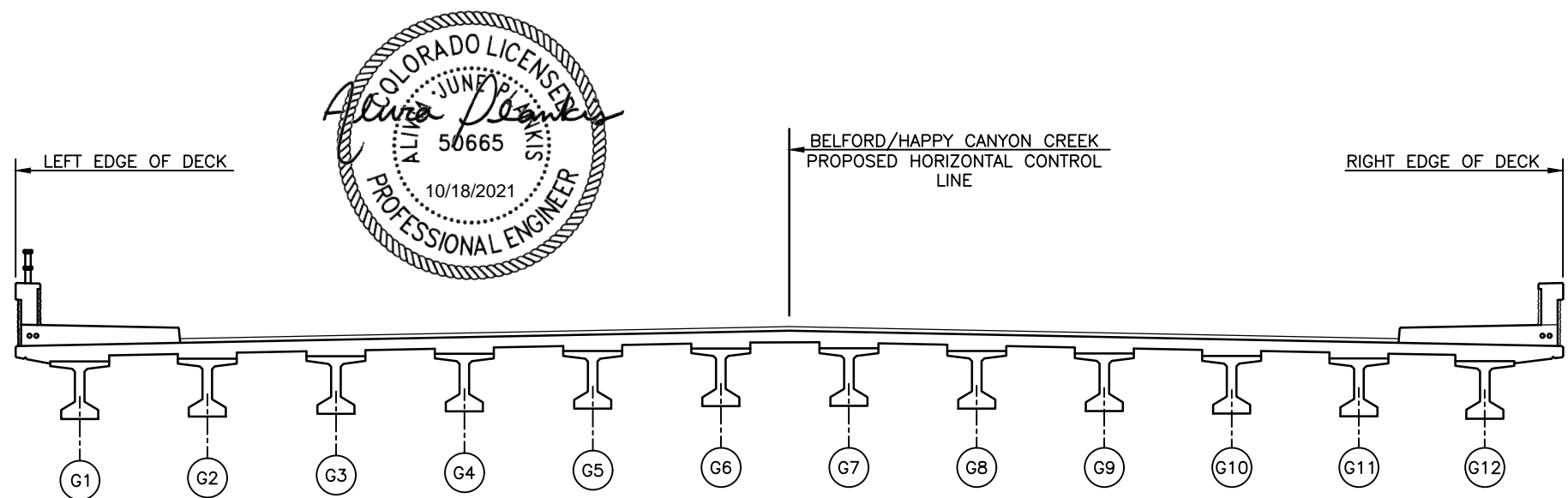
As Constructed	BELFORD-HAPPY CANYON CREEK BRIDGE STRUCTURE BACKFILL		Project No./Code
No Revisions:	Designer: J. LYNCH	Structure Numbers	
Revised:	Detailer: R. DILLON		
Void:	Subset: BRIDGE	Sheets: B30 of 33	Sheet Number 60

LT EDGE OF DECK BENT LINE	STATION	OFFSET	ELEVATION	ELEV + DL	NORTHING	EASTING
END APPR	93+85.29	-47.0000	5783.4111		27917.5060	94492.5209
BF ABUT 1	94+04.18	-47.0000	5783.5763		27901.8728	94505.0561
CL BRG AB1	94+05.70	-47.0000	5783.5916	5783.5916	27900.5988	94506.0502
F-1	94+12.84	-47.0000	5783.6675	5783.6980	27894.6006	94510.6766
F-2	94+19.98	-47.0000	5783.7500	5783.8075	27888.5597	94515.2471
F-3	94+27.12	-47.0000	5783.8391	5783.9175	27882.4768	94519.7614
F-4	94+34.26	-47.0000	5783.9348	5784.0261	27876.3522	94524.2191
F-5	94+41.40	-47.0000	5784.0371	5784.1322	27870.1865	94528.6198
F-6	94+48.54	-47.0000	5784.1460	5784.2356	27863.9803	94532.9632
F-7	94+55.68	-47.0000	5784.2615	5784.3370	27857.7342	94537.2489
F-8	94+62.82	-47.0000	5784.3836	5784.4379	27851.4485	94541.4764
F-9	94+69.96	-47.0000	5784.5123	5784.5403	27845.1239	94545.6455
P2 BRG BK	94+77.10	-47.0000	5784.6476	5784.6476	27838.7609	94549.7558
CL PIER 2	94+77.92	-47.0000	5784.6636		27838.0284	94550.2237
P2 BRG AHD	94+78.74	-47.0000	5784.6796	5784.6796	27837.2953	94550.6908
F-1	94+85.90	-47.0000	5784.8236	5784.8520	27830.8608	94554.7439
F-2	94+93.07	-47.0000	5784.9742	5785.0292	27824.3889	94558.7369
F-3	95+00.24	-47.0000	5785.1316	5785.2080	27817.8801	94562.6696
F-4	95+07.40	-47.0000	5785.2955	5785.3861	27811.3349	94566.5415
F-5	95+14.57	-47.0000	5785.4661	5785.5621	27804.7540	94570.3523
F-6	95+21.74	-47.0000	5785.6434	5785.7355	27798.1379	94574.1016
F-7	95+28.91	-47.0000	5785.8273	5785.9063	27791.4872	94577.7893
F-8	95+36.07	-47.0000	5786.0179	5786.0758	27784.8025	94581.4148
F-9	95+43.24	-47.0000	5786.2151	5786.2458	27778.0843	94584.9780
CL BRG AB3	95+50.41	-47.0000	5786.4190	5786.4190	27771.3332	94588.4785
BF ABUT 3	95+51.85	-47.0000	5786.4607		27769.9730	94589.1742
END APPR	95+69.57	-47.0000	5786.9966		27753.1300	94597.5257

GIRDER 1	BENT LINE	STATION	OFFSET	ELEVATION	ELEV + DL	NORTHING	EASTING
END APPR	93+84.25	-44.4309	5783.4546		27916.7287	94489.8330	
BF ABUT 1	94+02.81	-43.3990	5783.6347		27900.7944	94501.3267	
CL BRG AB1	94+04.32	-43.3361	5783.6509	5783.6509	27899.5024	94502.2586	
F-1	94+11.51	-43.0788	5783.7312	5783.7617	27893.3401	94506.7035	
F-2	94+18.70	-42.8925	5783.8169	5783.8744	27887.1779	94511.1485	
F-3	94+25.90	-42.7772	5783.9078	5783.9862	27881.0156	94515.5934	
F-4	94+33.10	-42.7329	5784.0041	5784.0954	27874.8533	94520.0383	
F-5	94+40.30	-42.7596	5784.1056	5784.2007	27868.6910	94524.4833	
F-6	94+47.49	-42.8574	5784.2125	5784.3020	27862.5287	94528.9282	
F-7	94+54.69	-43.0261	5784.3245	5784.4000	27856.3664	94533.3731	
F-8	94+61.88	-43.2659	5784.4418	5784.4961	27850.2042	94537.8181	
F-9	94+69.07	-43.5765	5784.5643	5784.5923	27844.0419	94542.2630	
P2 BRG BK	94+76.25	-43.9579	5784.6920	5784.6920	27837.8796	94546.7079	
CL PIER 2	94+76.99	-43.6721	5784.7121		27837.0644	94546.8905	
P2 BRG AHD	94+77.73	-43.3870	5784.7322	5784.7322	27836.2492	94547.0731	
F-1	94+84.94	-43.1200	5784.8815	5784.9099	27829.6706	94550.9129	
F-2	94+92.15	-42.9243	5785.0361	5785.0911	27823.0921	94554.7527	
F-3	94+99.37	-42.7999	5785.1961	5785.2725	27816.5135	94558.5925	
F-4	95+06.58	-42.7470	5785.3614	5785.4520	27809.9350	94562.4323	
F-5	95+13.80	-42.7654	5785.5321	5785.6281	27803.3564	94566.2722	
F-6	95+21.01	-42.8552	5785.7081	5785.8002	27796.7779	94570.1120	
F-7	95+28.23	-43.0163	5785.8893	5785.9683	27790.1993	94573.9518	
F-8	95+35.44	-43.2488	5786.0757	5786.1336	27783.6207	94577.7916	
F-9	95+42.64	-43.5525	5786.2673	5786.2980	27777.0422	94581.6314	
CL BRG AB3	95+49.84	-43.9274	5786.4641	5786.4641	27770.4636	94585.4713	
BF ABUT 3	95+51.30	-44.0122	5786.5047		27769.1277	94586.2510	
END APPR	95+69.29	-45.2990	5787.0221		27752.6508	94595.8684	

LT EDGE OF SIDEWALK	BENT LINE	STATION	OFFSET	ELEVATION	ELEV + DL	NORTHING	EASTING
END APPR	93+81.18	-37.0000	5783.5812		27914.4780	94482.0495	
BF ABUT 1	94+00.34	-37.0000	5783.7390		27898.8761	94494.6927	
CL BRG AB1	94+01.89	-37.0000	5783.7537	5783.7537	27897.6045	94495.6951	
F-1	94+09.13	-37.0000	5783.8272	5783.8577	27891.6199	94500.3578	
F-2	94+16.37	-37.0000	5783.9074	5783.9649	27885.5917	94504.9640	
F-3	94+23.60	-37.0000	5783.9944	5784.0728	27879.5205	94509.5133	
F-4	94+30.84	-37.0000	5784.0881	5784.1795	27873.4068	94514.0054	
F-5	94+38.08	-37.0000	5784.1887	5784.2838	27867.2512	94518.4398	
F-6	94+45.32	-37.0000	5784.2961	5784.3856	27861.0541	94522.8161	
F-7	94+52.56	-37.0000	5784.4102	5784.4857	27854.8162	94527.1340	
F-8	94+59.80	-37.0000	5784.5311	5784.5854	27848.5379	94531.3930	
F-9	94+67.04	-37.0000	5784.6588	5784.6868	27842.2199	94535.5928	
P2 BRG BK	94+74.28	-37.0000	5784.7933	5784.7933	27835.8627	94539.7331	
CL PIER 2	94+75.11	-37.0000	5784.8092		27835.1311	94540.2041	
P2 BRG AHD	94+75.94	-37.0000	5784.8252	5784.8252	27834.3989	94540.6744	
F-1	94+83.20	-37.0000	5784.9685	5784.9969	27827.9741	94544.7535	
F-2	94+90.46	-37.0000	5785.1186	5785.1736	27821.5112	94548.7719	
F-3	94+97.72	-37.0000	5785.2755	5785.3520	27815.0106	94552.7292	
F-4	95+04.98	-37.0000	5785.4393	5785.5299	27808.4730	94556.6250	
F-5	95+12.24	-37.0000	5785.6100	5785.7060	27801.8990	94560.4589	
F-6	95+19.50	-37.0000	5785.7874	5785.8795	27795.2890	94564.2307	
F-7	95+26.77	-37.0000	5785.9717	5786.0507	27788.6439	94567.9400	
F-8	95+34.03	-37.0000	5786.1628	5786.2207	27781.9640	94571.5865	
F-9	95+41.29	-37.0000	5786.3607	5786.3914	27775.2500	94575.1698	
CL BRG AB3	95+48.55	-37.0000	5786.5655	5786.5655	27768.5026	94578.6896	
BF ABUT 3	95+50.01	-37.0000	5786.6075		27767.1433	94579.3889	
END APPR	95+67.95	-37.0000	5787.1462		27750.3123	94587.7815	

GIRDER 2	BENT LINE	STATION	OFFSET	ELEVATION	ELEV + DL	NORTHING	EASTING
END APPR	93+81.10	-36.7978	5783.5847		27914.4167	94481.8376	
BF ABUT 1	93+99.83	-35.6878	5783.7604		27898.4824	94493.3312	
CL BRG AB1	94+01.35	-35.6187	5783.7762	5783.7762	27897.1904	94494.2632	
F-1	94+08.61	-35.3326	5783.8551	5783.8856	27891.0281	94498.7081	
F-2	94+15.87	-35.1180	5783.9393	5783.9968	27884.8658	94503.1530	
F-3	94+23.14	-34.9752	5784.0291	5784.1075	27878.7036	94507.5980	
F-4	94+30.41	-34.9040	5784.1242	5784.2156	27872.5413	94512.0429	
F-5	94+37.68	-34.9045	5784.2248	5784.3199	27866.3790	94516.4878	
F-6	94+44.94	-34.9768	5784.3308	5784.4204	27860.2167	94520.9328	
F-7	94+52.21	-35.1208	5784.4421	5784.5176	27854.0544	94525.3777	
F-8	94+59.47	-35.3364	5784.5588	5784.6131	27847.8921	94529.8226	
F-9	94+66.73	-35.6236	5784.6809	5784.7089	27841.7299	94534.2676	
P2 BRG BK	94+73.98	-35.9824	5784.8082	5784.8082	27835.5676	94538.7125	
CL PIER 2	94+74.77	-35.8107	5784.8265		27834.7861	94539.0118	
P2 BRG AHD	94+75.55	-35.6398	5784.8449	5784.8449	27834.0047	94539.3111	
F-1	94+82.83	-35.3512	5784.9939	5785.0223	27827.4260	94543.1506	
F-2	94+90.11	-35.1347	5785.1485	5785.2035	27820.8474	94546.9901	
F-3	94+97.39	-34.9902	5785.3085	5785.3849	27814.2688	94550.8297	
F-4	95+04.68	-34.9177	5785.4740	5785.5646	27807.6901	94554.6692	
F-5	95+11.96	-34.9173	5785.6449	5785.7409	27801.1115	94558.5087	
F-6	95+19.25	-34.9890	5785.8213	5785.9134	27794.5328	94562.3483	
F-7	95+26.53	-35.1327	5786.0030	5786.0820	27787.9542	94566.1878	
F-8	95+33.81	-35.3485	5786.1901	5786.2480	27781.3756	94570.0273	
F-9	95+41.09	-35.6362	5786.3825	5786.4132	27774.7969	94573.8669	
CL BRG AB3	95+48.36	-35.9959	5786.5802	5786.5802	27768.2183	94577.7064	
BF ABUT 3	95+49.84	-36.0777	5786.6209		27766.8823	94578.4861	
END APPR	95+68.01	-37.3296	5787.1413		27750.4052	94588.1027	

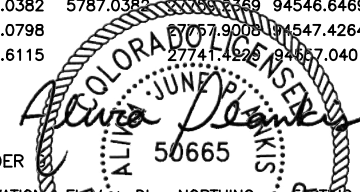


NOTE: ELEVATIONS ARE AT TOP OF CONCRETE DECK 3 INCHES BELOW FINISHED GRADE. ROADWAY CROSS SLOPE IS UPWARDS FROM THE PROFILE GRADE LINE. THESE STATIONS, COORDINATES, OFFSETS AND LENGTHS DEFINE THE LAYOUT OF THE STRUCTURE IN A TWO DIMENSIONAL HORIZONTAL PLANE. ELEVATIONS DEFINE THE FINAL GRADE OF THE FINISHED CONCRETE DECK. FABRICATION OF THE STRUCTURAL COMPONENTS THROUGH THE DIRECT USE OF THIS INFORMATION IS NOT INTENDED OR ADVISABLE.

Print Date: 6/17/2021 10:46:32 AM		As Constructed		BELFORD-HAPPY CANYON CREEK BRIDGE STRUCTURE PLANS DECK GEOMETRY (1 OF 3)	Project No./Code
File Name: B115360-01GEM01.dwg		No Revisions:			
Horizontal Scale: 100 Vertical Scale: N/A		Revised:			
				Designer: J. LYNCH Detailer: C. MIYAMOTO Subset: BRIDGE	Sheet Number 61

I:\115360-01 - Compark at Belford\CADD\Bridge Drawings - Chase Miyamoto

GIRDER 3						GIRDER 4						GIRDER 5						GIRDER 6									
BENT LINE	STATION	OFFSET	ELEVATION	ELEV + DL	NORTHING	EASTING	BENT LINE	STATION	OFFSET	ELEVATION	ELEV + DL	NORTHING	EASTING	BENT LINE	STATION	OFFSET	ELEVATION	ELEV + DL	NORTHING	EASTING	BENT LINE	STATION	OFFSET	ELEVATION	ELEV + DL	NORTHING	EASTING
END APPR	93+77.89	-29.1785	5783.7153		27912.1047	94473.8422	END APPR	93+74.61	-21.5734	5783.8466		27909.7927	94465.8467	END APPR	93+71.27	-13.9828	5783.9786		27907.4806	94457.8513	END APPR	93+67.87	-6.4073	5784.1115		27905.1686	94449.8559
BF ABUT 1	93+96.79	-27.9889	5783.8864		27896.1703	94485.3358	BF ABUT 1	93+93.70	-20.3027	5784.0128		27893.8583	94477.3404	BF ABUT 1	93+90.54	-12.6295	5784.1397		27891.5463	94469.3449	BF ABUT 1	93+87.32	-4.9697	5784.2672		27889.2343	94461.3495
CL BRG AB1	93+98.33	-27.9136	5783.9019	5783.9019	27894.8784	94486.2677	CL BRG AB1	93+95.25	-20.2210	5784.0280	5784.0280	27892.5664	94478.2723	CL BRG AB1	93+92.11	-12.5412	5784.1545	5784.1545	27890.2543	94470.2769	CL BRG AB1	93+88.90	-4.8748	5784.2816	5784.2816	27887.9423	94462.2814
F-1	94+05.66	-27.5980	5783.9792	5784.0097	27888.7161	94490.7127	F-1	94+02.65	-19.8753	5784.1036	5784.1341	27886.4041	94482.7172	F-1	93+99.58	-12.1650	5784.2284	5784.2589	27884.0920	94474.2718	F-1	93+96.44	-4.4673	5784.3537	5784.3842	27881.7800	94466.7264
F-2	94+12.99	-27.3546	5784.0620	5784.1195	27882.5538	94495.1576	F-2	94+10.05	-19.6026	5784.1850	5784.2425	27880.2418	94487.1622	F-2	94+07.05	-11.8624	5784.3082	5784.3657	27877.9298	94479.1667	F-2	94+03.99	-4.1342	5784.4317	5784.4892	27875.6177	94471.1713
F-3	94+20.33	-27.1837	5784.1505	5784.2289	27876.3915	94499.6025	F-3	94+17.46	-19.4030	5784.2720	5784.3504	27874.0795	94491.6071	F-3	94+14.53	-11.6335	5784.3938	5784.4722	27871.7675	94483.6117	F-3	94+11.55	-3.8756	5784.5157	5784.5941	27869.4555	94475.6162
F-4	94+27.67	-27.0851	5784.2444	5784.3358	27870.2292	94504.0475	F-4	94+24.87	-19.2765	5784.3647	5784.4561	27867.9172	94496.0520	F-4	94+22.02	-11.4785	5784.4851	5784.5765	27865.6052	94488.0566	F-4	94+19.11	-3.6915	5784.6057	5784.6970	27863.2932	94480.0612
F-5	94+35.01	-27.0589	5784.3440	5784.4391	27864.0670	94508.4924	F-5	94+32.28	-19.2231	5784.4631	5784.5582	27861.7549	94500.4970	F-5	94+29.50	-11.3973	5784.5823	5784.6774	27859.4429	94492.5015	F-5	94+26.67	-3.5819	5784.7016	5784.7967	27857.1309	94484.5061
F-6	94+42.35	-27.1052	5784.4490	5784.5386	27857.9047	94512.9373	F-6	94+39.69	-19.2428	5784.5672	5784.6568	27855.5927	94504.9419	F-6	94+36.99	-11.3900	5784.6853	5784.7749	27853.2806	94496.9465	F-6	94+34.23	-3.5470	5784.8034	5784.8930	27850.9686	94488.9511
F-7	94+49.68	-27.2239	5784.5596	5784.6351	27851.7424	94517.3823	F-7	94+47.11	-19.3357	5784.6769	5784.7524	27849.4304	94509.3868	F-7	94+44.48	-11.4566	5784.7941	5784.8696	27847.1184	94501.3914	F-7	94+41.79	-3.5868	5784.9112	5784.9867	27844.8063	94493.3960
F-8	94+57.02	-27.4149	5784.6756	5784.7299	27845.5801	94521.8272	F-8	94+54.52	-19.5017	5784.7922	5784.8464	27843.2681	94513.8318	F-8	94+51.96	-11.5970	5784.9086	5784.9628	27840.9561	94505.8364	F-8	94+49.36	-3.7011	5785.0248	5785.0791	27838.6440	94497.8409
F-9	94+64.35	-27.6783	5784.7971	5784.8251	27839.4178	94526.2721	F-9	94+61.92	-19.7408	5784.9131	5784.9411	27837.1058	94518.2767	F-9	94+59.44	-11.8113	5785.0288	5785.0568	27834.7938	94510.2813	F-9	94+56.91	-3.8900	5785.1444	5785.1724	27832.4418	94502.8589
P2 BRG BK	94+71.68	-28.0140	5784.9240	5784.9240	27833.2556	94530.7171	P2 BRG BK	94+69.32	-20.0529	5785.0395	5785.0395	27830.9435	94522.7217	P2 BRG BK	94+66.92	-12.0993	5785.1548	5785.1548	27828.6315	94514.7262	P2 BRG BK	94+64.47	-4.1535	5785.2697	5785.2697	27826.3195	94506.7308
CL PIER 2	94+72.50	-27.9561	5784.9406		27832.5079	94531.1331	CL PIER 2	94+70.19	-20.1086	5785.0544		27830.2296	94523.2544	CL PIER 2	94+67.83	-12.2684	5785.1679		27827.9513	94515.3757	CL PIER 2	94+65.43	-4.4356	5785.2811		27825.6730	94507.4970
P2 BRG AHD	94+73.32	-27.8991	5784.9573	5784.9573	27831.7602	94531.5491	P2 BRG AHD	94+71.05	-20.1653	5785.0694	5785.0694	27829.5156	94523.7871	P2 BRG AHD	94+68.74	-12.4385	5785.1811	5785.1811	27827.2711	94516.0251	P2 BRG AHD	94+66.38	-4.7189	5785.2926	5785.2926	27825.0266	94508.2631
F-1	94+80.67	-27.5887	5785.1060	5785.1345	27825.1814	94535.3883	F-1	94+78.47	-19.8325	5785.2178	5785.2462	27822.9368	94527.6260	F-1	94+76.23	-12.0829	5785.3292	5785.3576	27820.6920	94519.8638	F-1	94+73.94	-4.3400	5785.4402	5785.4687	27818.4476	94512.1015
F-2	94+88.02	-27.3509	5785.2604	5785.3154	27818.6027	94539.2276	F-2	94+85.89	-19.5730	5785.3720	5785.4270	27816.3580	94531.4650	F-2	94+83.73	-11.8013	5785.4831	5785.5381	27814.1133	94523.7024	F-2	94+81.51	-4.0360	5785.5939	5785.6489	27811.8686	94515.9399
F-3	94+95.38	-27.1858	5785.4204	5785.4968	27812.0240	94543.0668	F-3	94+93.32	-19.3870	5785.5319	5785.6083	27809.7792	94535.3040	F-3	94+91.23	-11.5939	5785.6430	5785.7194	27807.5344	94527.5411	F-3	94+89.09	-3.8067	5785.7536	5785.8000	27805.2897	94519.7782
F-4	95+02.73	-27.0935	5785.5860	5785.6766	27805.4453	94546.9061	F-4	95+00.75	-19.2744	5785.6976	5785.7882	27803.2004	94539.1429	F-4	94+98.73	-11.4607	5785.8087	5785.8993	27800.9556	94531.3798	F-4	94+96.67	-3.6524	5785.9193	5786.0009	27798.7107	94523.6166
F-5	95+10.09	-27.0739	5785.7572	5785.8532	27798.8665	94550.7453	F-5	95+08.18	-19.2353	5785.8690	5785.9650	27796.8216	94542.9819	F-5	95+06.23	-11.4017	5785.9803	5786.0763	27794.3767	94535.2184	F-5	95+04.25	-3.5731	5786.0910	5786.1870	27792.1317	94527.4550
F-6	95+17.45	-27.1271	5785.9340	5786.0260	27792.2878	94554.5845	F-6	95+15.61	-19.2697	5786.0461	5786.1382	27790.0428	94546.8208	F-6	95+13.74	-11.4169	5786.1577	5786.2497	27787.7978	94539.0571	F-6	95+11.83	-3.5688	5786.2687	5786.3608	27785.5528	94531.2934
F-7	95+24.81	-27.2531	5786.1162	5786.1952	27785.7091	94558.4238	F-7	95+23.04	-19.3776	5786.2288	5786.3078	27783.4640	94550.6598	F-7	95+21.25	-11.5064	5786.3408	5786.4198	27781.2189	94542.8958	F-7	95+19.41	-3.6394	5786.4523	5786.5313	27778.9738	94535.1318
F-8	95+32.16	-27.4519	5786.3039	5786.3618	27779.1304	94562.2630	F-8	95+30.47	-19.5590	5786.4171	5786.4751	27776.8852	94554.4987	F-8	95+28.75	-11.6701	5786.5298	5786.5877	27774.6400	94546.7344	F-8	95+26.99	-3.7851	5786.6418	5786.6997	27772.3948	94538.9701
F-9	95+39.51	-27.7233	5786.4971	5786.5278	27772.5516	94566.1023	F-9	95+37.89	-19.8138	5786.6110	5786.6417	27770.3064	94558.3377	F-9	95+36.25	-11.9079	5786.7244	5786.7551	27768.0611	94550.5731	F-9	95+34.56	-4.0056	5786.8371	5786.8678	27765.8158	94542.8085
CL BRG AB3	95+46.85	-28.0674	5786.6956	5786.6956	27765.9729	94569.9415	CL BRG AB3	95+45.31	-20.1420	5786.8105	5786.8105	27763.7276	94562.1766	CL BRG AB3	95+43.74	-12.2199	5786.9247	5786.9247	27761.4822	94554.4118	CL BRG AB3	95+42.14	-4.3011	5787.0382	5787.0382	27759.2369	94546.6469
BF ABUT 3	95+48.34	-28.1461	5786.7366		27764.6369	94570.7212	BF ABUT 3	95+46.82	-20.2176	5786.8516		27762.3915	94562.9562	BF ABUT 3	95+45.26	-12.2923	5786.9660		27760.1462	94555.1913	BF ABUT 3	95+43.67	-4.3702	5787.0798		27757.9008	94547.4264
END APPR	95+66.70	-29.3626	5787.2598		27748.1596	94580.3371	END APPR	95+65.36	-21.3980	5787.3777		27745.9140	94572.5714	END APPR	95+63.99	-13.4358	5787.4949		27743.6684	94564.8058	END APPR	95+62.60	-5.4761	5787.6115		27741.4925	94567.0401



HCL						GIRDER 7						GIRDER 8						GIRDER									
BENT LINE	STATION	OFFSET	ELEVATION	ELEV + DL	NORTHING	EASTING	BENT LINE	STATION	OFFSET	ELEVATION	ELEV + DL	NORTHING	EASTING	BENT LINE	STATION	OFFSET	ELEVATION	ELEV + DL	NORTHING	EASTING	BENT LINE	STATION	OFFSET	ELEVATION	ELEV + DL	NORTHING	EASTING
END APPR	93+64.94	0.0000	5784.2247		27903.2095	94443.0807	END APPR	93+63.74	2.5688	5784.1676		27902.4230	94440.3610	END APPR	93+60.16	10.1733	5783.9994		27900.0915	94432.2983	END APPR	93+56.51	17.7610	5783.8329		27897.7604	94424.3556
BF ABUT 1	93+85.20	0.0000	5784.3503		27887.7320	94456.1544	BF ABUT 1	93+83.61	3.6700	5784.2652		27886.6215	94452.3139	BF ABUT 1	93+80.22	11.3640	5784.0873		27884.2900	94444.2513	BF ABUT 1	93+76.77	19.0430	5783.9107		27881.9588	94435.1886
CL BRG AB1	93+86.83	0.0000	5784.3628	5784.3628	27886.4700	94457.1900	CL BRG AB1	93+85.22	3.7369	5784.2758	5784.2758	27885.3403	94453.2831	CL BRG AB1	93+81.85	11.4379	5784.0972	5784.0972	27883.0088	94445.2204	CL BRG AB1	93+78.41	19.1241	5783.9199	5783.9199	27880.0673	94437.1578
F-1	93+94.46	0.0000	5784.4255	5784.4560	27880.5400	94461.9969	F-1	93+92.92	4.0097	5784.3320	5784.3617	27879.2294	94457.9057	F-1	93+89.62	11.7439	5784.1500	5784.1797	27876.8979	94449.8430	F-1	93+86.26	19.4639	5783.9691	5783.9691	27873.9588	94441.7803
F-2	94+02.10	0.0000	5784.4958	5784.5533	27874.5626	94466.7448	F-2	94+00.62	4.2059	5784.3975	5784.4535	27873.1184	94462.5282	F-2	93+97.40	11.9725	5784.2122	5784.2683	27870.7870	94454.4655	F-2	93+94.12	19.7255	5784.0280	5784.0841	27868.4555	94446.4029
F-3																											

GIRDER 10							GIRDER 11							RT EDGE OF SIDEWALK							RT EDGE OF SIDEWALK						
BENT LINE	STATION	OFFSET	ELEVATION	ELEV + DL	NORTHING	EASTING	BENT LINE	STATION	OFFSET	ELEVATION	ELEV + DL	NORTHING	EASTING	BENT LINE	STATION	OFFSET	ELEVATION	ELEV + DL	NORTHING	EASTING	BENT LINE	STATION	OFFSET	ELEVATION	ELEV + DL	NORTHING	EASTING
END APPR	93+52.78	25.3315	5783.6682		27895.4286	94416.1730	END APPR	93+48.98	32.8841	5783.5055		27893.0971	94408.1103	END APPR	93+46.87	37.0000	5783.4175		27891.8242	94403.7082	END APPR	93+46.87	37.0000	5783.4175		27891.8242	94403.7082
BF ABUT 1	93+73.24	26.7066	5783.7356		27879.6271	94428.1259	BF ABUT 1	93+69.64	34.3542	5783.5620		27877.2956	94420.0632	BF ABUT 1	93+68.37	37.0000	5783.5023		27876.4878	94417.2699	BF ABUT 1	93+68.37	37.0000	5783.5023		27876.4878	94417.2699
CL BRG AB1	93+74.90	26.7950	5783.7439	5783.7439	27878.3459	94429.0951	CL BRG AB1	93+71.32	34.4502	5783.5695	5783.5695	27876.0144	94421.0324	CL BRG AB1	93+70.10	37.0000	5783.5117	5783.5117	27875.2367	94418.3430	CL BRG AB1	93+70.10	37.0000	5783.5117	5783.5117	27875.2367	94418.3430
F-1	93+82.83	27.1693	5783.7895	5783.8193	27872.2349	94433.7176	F-1	93+79.33	34.8596	5783.6113	5783.6410	27869.9035	94425.6550	F-1	93+78.18	37.0000	5783.5608	5783.5906	27869.3688	94423.3117	F-1	93+78.18	37.0000	5783.5608	5783.5906	27869.3688	94423.3117
F-2	93+90.77	27.4646	5783.8449	5783.9010	27866.1240	94438.3402	F-2	93+87.35	35.1894	5783.6630	5783.7191	27863.7926	94430.2775	F-2	93+86.26	37.0000	5783.6184	5783.6745	27863.4490	94428.2186	F-2	93+86.26	37.0000	5783.6184	5783.6745	27863.4490	94428.2186
F-3	93+98.71	27.6810	5783.9101	5783.9864	27860.0131	94442.9628	F-3	93+95.38	35.4394	5783.7247	5783.8010	27857.6816	94434.9001	F-3	93+94.34	37.0000	5783.6844	5783.7607	27857.4781	94433.0631	F-3	93+94.34	37.0000	5783.6844	5783.7607	27857.4781	94433.0631
F-4	94+06.66	27.8184	5783.9850	5784.0737	27853.9022	94447.5853	F-4	94+03.41	35.6095	5783.7964	5783.8851	27851.5707	94439.5226	F-4	94+02.41	37.0000	5783.7589	5783.8475	27851.4567	94437.8448	F-4	94+02.41	37.0000	5783.7589	5783.8475	27851.4567	94437.8448
F-5	94+14.61	27.8766	5784.0698	5784.1621	27847.7913	94452.2079	F-5	94+11.44	35.6998	5783.8781	5783.9704	27845.4598	94444.1452	F-5	94+10.49	37.0000	5783.8418	5783.9341	27845.3855	94442.5629	F-5	94+10.49	37.0000	5783.8418	5783.9341	27845.3855	94442.5629
F-6	94+22.56	27.8557	5784.1643	5784.2512	27841.6803	94456.8304	F-6	94+19.48	35.7100	5783.9697	5784.0566	27839.3489	94448.7678	F-6	94+18.57	37.0000	5783.9331	5784.0200	27839.2652	94447.2172	F-6	94+18.57	37.0000	5783.9331	5784.0200	27839.2652	94447.2172
F-7	94+30.51	27.7558	5784.2686	5784.3417	27835.5694	94461.4530	F-7	94+27.51	35.6403	5784.0713	5784.1445	27833.2380	94453.3903	F-7	94+26.65	37.0000	5784.0329	5784.1061	27833.0963	94451.8070	F-7	94+26.65	37.0000	5784.0329	5784.1061	27833.0963	94451.8070
F-8	94+38.46	27.5767	5784.3826	5784.4351	27829.4585	94466.0755	F-8	94+35.54	35.4907	5784.1828	5784.2353	27827.1270	94458.0129	F-8	94+34.72	37.0000	5784.1412	5784.1937	27826.8796	94456.3318	F-8	94+34.72	37.0000	5784.1412	5784.1937	27826.8796	94456.3318
F-9	94+46.40	27.3187	5784.5062	5784.5334	27823.3476	94470.6981	F-9	94+43.57	35.2612	5784.3042	5784.3314	27821.0161	94462.6354	F-9	94+42.80	37.0000	5784.2579	5784.2851	27820.6159	94460.7912	F-9	94+42.80	37.0000	5784.2579	5784.2851	27820.6159	94460.7912
P2 BRG BK	94+54.33	26.9817	5784.6396	5784.6396	27817.2367	94475.3207	P2 BRG BK	94+51.59	34.9519	5784.4355	5784.4355	27814.9052	94467.2580	P2 BRG BK	94+50.88	37.0000	5784.3831	5784.3831	27814.3056	94465.1846	P2 BRG BK	94+50.88	37.0000	5784.3831	5784.3831	27814.3056	94465.1846
CL PIER 2	94+55.26	26.9147	5784.6563		27816.5311	94475.8822	CL PIER 2	94+52.58	34.7552	5784.4554		27814.2385	94467.9540	CL PIER 2	94+51.80	37.0000	5784.3979		27813.5817	94465.6824	CL PIER 2	94+51.80	37.0000	5784.3979		27813.5817	94465.6824
P2 BRG AHD	94+56.20	26.8467	5784.6732	5784.6732	27815.8255	94476.4437	P2 BRG AHD	94+53.57	34.5573	5784.4755	5784.4755	27813.5718	94468.6500	P2 BRG AHD	94+52.72	37.0000	5784.4129	5784.4129	27812.8573	94466.1792	P2 BRG AHD	94+52.72	37.0000	5784.4129	5784.4129	27812.8573	94466.1792
F-1	94+64.11	27.2048	5784.8024	5784.8294	27809.2813	94480.4027	F-1	94+61.57	34.9411	5784.6029	5784.6300	27807.0277	94472.6090	F-1	94+60.77	37.0000	5784.5479	5784.5750	27806.5145	94470.4752	F-1	94+60.77	37.0000	5784.5479	5784.5750	27806.5145	94470.4752
F-2	94+72.04	27.4843	5784.9414	5784.9937	27802.7372	94484.3617	F-2	94+69.57	35.2455	5784.7403	5784.7927	27800.4836	94476.5680	F-2	94+68.82	37.0000	5784.6913	5784.7436	27800.1272	94474.7047	F-2	94+68.82	37.0000	5784.6913	5784.7436	27800.1272	94474.7047
F-3	94+79.97	27.6851	5785.0902	5785.1630	27796.1931	94488.3206	F-3	94+77.59	35.4704	5784.8877	5784.9606	27793.9395	94480.5270	F-3	94+76.86	37.0000	5784.8431	5784.9159	27793.6960	94478.8671	F-3	94+76.86	37.0000	5784.8431	5784.9159	27793.6960	94478.8671
F-4	94+87.90	27.8072	5785.2488	5785.3351	27789.6490	94492.2796	F-4	94+85.60	35.6156	5785.0452	5785.1315	27787.3953	94484.4859	F-4	94+84.91	37.0000	5785.0033	5785.0896	27787.2217	94482.9622	F-4	94+84.91	37.0000	5785.0033	5785.0896	27787.2217	94482.9622
F-5	94+95.84	27.8504	5785.4172	5785.5087	27783.1049	94496.2386	F-5	94+93.62	35.6813	5785.2126	5785.3041	27780.8512	94488.4449	F-5	94+92.96	37.0000	5785.1719	5785.2634	27780.7049	94486.9893	F-5	94+92.96	37.0000	5785.1719	5785.2634	27780.7049	94486.9893
F-6	95+03.77	27.8148	5785.5953	5785.6831	27776.5608	94500.1975	F-6	95+01.64	35.6672	5785.3899	5785.4777	27774.3071	94492.4039	F-6	95+01.01	37.0000	5785.3488	5785.4367	27774.1465	94490.9481	F-6	95+01.01	37.0000	5785.3488	5785.4367	27774.1465	94490.9481
F-7	95+11.71	27.7004	5785.7831	5785.8585	27770.0167	94504.1565	F-7	95+09.66	35.5735	5785.5771	5785.6525	27767.7630	94496.3628	F-7	95+09.05	37.0000	5785.5342	5785.6096	27767.5469	94494.8382	F-7	95+09.05	37.0000	5785.5342	5785.6096	27767.5469	94494.8382
F-8	95+19.64	27.5073	5785.9805	5786.0359	27763.4726	94508.1155	F-8	95+17.68	35.4002	5785.7742	5785.8295	27761.2189	94500.3218	F-8	95+17.10	37.0000	5785.7279	5785.7833	27760.9071	94498.6590	F-8	95+17.10	37.0000	5785.7279	5785.7833	27760.9071	94498.6590
F-9	95+27.56	27.2354	5786.1876	5786.2169	27756.9285	94512.0744	F-9	95+25.69	35.1473	5785.9810	5786.0104	27754.6748	94504.2808	F-9	95+25.15	37.0000	5785.9301	5785.9594	27754.2278	94502.4103	F-9	95+25.15	37.0000	5785.9301	5785.9594	27754.2278	94502.4103
CL BRG AB3	95+35.48	26.8849	5786.4041	5786.4041	27750.3844	94516.0334	CL BRG AB3	95+33.70	34.8150	5786.1976	5786.1976	27748.1307	94508.2397	CL BRG AB3	95+33.20	37.0000	5786.1406	5786.1406	27747.5096	94506.0916	CL BRG AB3	95+33.20	37.0000	5786.1406	5786.1406	27747.5096	94506.0916
BF ABUT 3	95+37.09	26.8041	5786.4493		27749.0554	94516.8374	BF ABUT 3	95+35.32	34.7378	5786.2428		27746.8018	94509.0437	BF ABUT 3	95+34.81	37.0000	5786.1838		27746.1589	94506.8207	BF ABUT 3	95+34.81	37.0000	5786.1838		27746.1589	94506.8207
END APPR	95+56.87	25.5421	5787.0378		27732.6648	94526.7532	END APPR	95+55.32	33.5169	5786.8324		27730.4111	94518.9595	END APPR	95+54.64	37.0000	5786.7424		27729.4266	94515.5546	END APPR	95+54.64	37.0000	5786.7424		27729.4266	94515.5546

GIRDER 12							RT EDGE OF DECK						
BENT LINE	STATION	OFFSET	ELEVATION	ELEV + DL	NORTHING	EASTING	BENT LINE	STATION	OFFSET	ELEVATION	ELEV + DL	NORTHING	EASTING
END APPR	93+45.09	40.4183	5783.3449		27890.7657	94400.0476	END APPR	93+41.63	47.0000	5783.2060		27888.7242	94392.9877
BF ABUT 1	93+65.96	41.9854	5783.3901		27874.9641	94412.0006	BF ABUT 1	93+63.50	47.0000	5783.2778		27873.4293	94406.6928
CL BRG AB1	93+67.66	42.0890	5783.3967	5783.3967	27873.6829	94412.9697	CL BRG AB1	93+65.26	47.0000	5783.2863	5783.2863	27872.1813	94407.7769
F-1	93+75.75	42.5344	5783.4345	5783.4642	27867.5720	94417.5923	F-1	93+73.47	47.0000	5783.3311	5783.3609	27866.3317	94412.7929
F-2	93+83.86	42.8994	5783.4824	5783.5385	27861.4611	94422.2148	F-2	93+81.67	47.0000	5783.3847	5783.4407	27860.4289	94417.7461
F-3	93+91.97	43.1837	5783.5405	5783.6168	27855.3502	94426.8374	F-3	93+89.88	47.0000	5783.4469	5783.5233	27854.4736	94422.6362
F-4	94+00.08	43.3873	5783.6087	5783.6974	27849.2393	94431.4600	F-4	93+98.09	47.0000	5783.5179	5783.6066	27848.4666	94427.4626
F-5	94+08.20	43.5102	5783.6872	5783.7795	27843.1283	94436.0825	F-5	94+06.29	47.0000	5783.5976	5783.6900	27842.4084	94432.2246
F-6	94+16.32	43.5523	5783.7758	5783.8628	27837.0174	94440.7051	F-6	94+14.50	47.0000	5783.6861	5783.7730	27836.2999	94436.9218
F-7	94+24.44	43.5135	5783.8746	5783.9478	27830.9065	94445.3276	F-7	94+22.71	47.0000	5783.7832	5783.8564	27830.1416	94441.5537
F-8	94+32.56	43.3940	5783.9836	5784.0361	27824.7956	94449.9502	F-8</						

STORM DRAINAGE INFRASTRUCTURE NOTES

1. ALL STORM DRAINAGE IMPROVEMENTS ARE SUBJECT TO COMPLIANCE WITH THE COLORADO DEPARTMENT OF TRANSPORTATION (CDOT) CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, M & S STANDARDS, AND ALL STANDARD SPECIAL PROVISIONS CURRENTLY USED BY CDOT, WITH THE MODIFICATIONS SET FORTH IN THE TOWN OF PARKER'S STORM DRAINAGE AND ENVIRONMENTAL CRITERIA MANUAL (SDECM), AS AMENDED.
2. THE CONTRACTOR SHALL COMPLY WITH THE "COLORADO WATER QUALITY CONTROL ACT" (TITLE 25, ARTICLE 8 CRS), THE "PROTECTION OF FISHING STREAMS" TITLE 33, ARTICLE 5, CRS), THE "CLEAN WATER ACT" (33 USC 1344), "CHERRY CREEK RESERVOIR CONTROL REGULATION NO. 72" (5 CCR 1002-72), THE REGULATION PROMULGATED, CERTIFICATION OR PERMITS ISSUES, AND THE REQUIREMENTS PRESENTED IN THE SDECM REVISION TO SECTION 107 AND THE CONSTRUCTION BMP PLAN. 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.
3. INSPECTIONS: CONSTRUCTION SHALL NOT BEGIN UNTIL A GRADING PERMIT HAS BEEN ISSUED FOR THE PROJECT. THE CONTRACTOR SHALL NOTIFY THE TOWN OF PARKER ENGINEERING DEPARTMENT (PUBLIC WORKS) TO SCHEDULE INSPECTIONS A MINIMUM OF 48 HOURS PRIOR THE CONSTRUCTION OF ALL DRAINAGE INFRASTRUCTURE (STORM SEWERS, INLETS, MANHOLES, ENERGY DISSIPATORS, RIPRAP, GROUTED BOULDERS, DETENTION POND OUTLET STRUCTURES, FOREBAYS, TRICKLE CHANNELS, ETC). FAILURE TO NOTIFY THE ENGINEERING DEPARTMENT FOR INSPECTIONS MAY RESULT IN NON-ACCEPTANCE OF THE INFRASTRUCTURE BY THE TOWN. URBAN DRAINAGE AND FLOOD CONTROL DISTRICT MUST ALSO BE NOTIFIED IN A SIMILAR MANNER FOR ALL MAINTENANCE ELIGIBLE DRAINAGE INFRASTRUCTURES (CONSULT WITH STORMWATER ENGINEERING DIVISION).
4. STRUCTURAL BACKFILL (CDOT CLASS 1) SHALL BE COMPACTED TO CONFORM TO CDOT STANDARD SPECIFICATION 203.03. STRUCTURAL BACKFILL (CDOT CLASS 2) SHALL CONFORM TO CDOT STANDARD SPECIFICATION 203.07. AT THE CONTRACTOR'S OPTION, STRUCTURAL BACKFILL (SQUEEGEE) MEETING THE GRADATION REQUIREMENTS CONTAINED IN REVISION OF SECTION 206 OF THE CDOT STANDARD SPECIFICATIONS AS PRESENTED IN THE SDECM, MAY BE SUBSTITUTED FOR STRUCTURE BACKFILL (CLASS 1) OR CLASS 2) FOR BACKFILLING OF CULVERT PIPES, STORM SEWER PIPES, MANHOLES AND INLET STRUCTURES; HOWEVER, THE TOP 2 FEET BELOW SUBGRADE ELEVATION SHALL BE THE REQUIRED EMBANKMENT MATERIAL.
5. ALL EXCAVATIONS SHALL MEET OSHA REQUIREMENTS.
6. TESTING: PROBATIONARY ACCEPTANCE OF STORM DRAINAGE IMPROVEMENTS WILL BE CONTINGENT UPON SATISFACTORY TESTING RESULTS. IN ALL CASES WHERE TESTS INDICATE COMPACTION LESS THAN THAT REQUIRED BY TOWN SPECIFICATIONS, ADDITIONAL COMPACTION AND TESTS WILL BE REQUIRED UNTIL THE SPECIFICATIONS ARE MET. FREQUENCY OF TESTING WILL BE AS FOLLOWS:
 1 TEST FOR SUBGRADE AND 1 TEST FOR BACKFILL AT EVERY ABOVE GROUND APPURTENANCE (MANHOLES, INLETS, ETC)
 1 TEST EVERY 200 LF OF MAINLINE TRENCH EVERY 1 FOOT OF BACKFILL LIFT AND WITHIN 1 FOOT FROM ALL STRUCTURES.
7. ALLOWABLE STORM SEWER CONDUIT MATERIAL WITHIN THE TOWN OF PARKER SHALL BE LIMITED TO REINFORCED CONCRETE PIPE (RCP) CONFORMING TO CDOT STANDARD SPECIFICATION 706.02.
8. ALL RCP JOINTS SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM C443. RUBBER GASKETS SHALL BE USED ON ALL PIPE JOINTS CONFORMING TO ASTM C443. ALL RCP SECTIONS SHALL BE JOINED IN SUCH A MANNER THAT THE ENDS ARE FULLY ENTERED AND THE INNER SURFACES ARE REASONABLE FLUSH. AVERAGE JOINT GAP THAT EXCEEDS 1/2 INCH SHALL BE FILLED WITH AN APPROVED FLEXIBLE PLASTIC SEALANT.
9. JOINT RESTRAINTS AND TOE-WALLS, CONFORMING TO CDOT M&S STANDARD PLAN NO. M-601-11 SHALL BE USED ON ALL RCP FLARED END SECTION OUTFALLS.
10. EPOXY COATED REBAR SHALL BE USED AS REINFORCING STEEL ON ALL STORM INLETS AND STRUCTURES. REFERENCE CDOT M&S STANDARD PLAN NO. M-604-10, 11, 12, AND 13.
11. CDOT CLASS D CONCRETE SHALL BE USED FOR ALL CONCRETE DRAINAGE STRUCTURES.
12. PRE-CAST INLETS AND MANHOLE BASES SHALL NOT BE USED WITHIN THE TOWN OF PARKER RIGHT-OF-WAY, WITH THE EXCEPTION OF CDOT TYPE C AND D INLETS.
13. TWO- (2) MANHOLE ACCESS POINTS ARE REQUIRED ON ALL TYPE "R" CURB INLETS GREATER THAN OR EQUAL TO TEN (10) FEET IN LENGTH AS PRESENTED IN CDOT M&S STANDARD PLAN NO. M-604-12.
14. ALL GROUTING (BOULDERS, RIPRAP) SHALL BE IN ACCORDANCE WITH THE REVISION OF SECTION 506 OF THE CDOT STANDARD SPECIFICATIONS AS PRESENTED IN THE SDECM.
15. ALL BOULDERS AND RIPRAP SHALL BE SELECTED AND PLACED IN ACCORDANCE WITH THE REVISION OF SECTION 506 OF THE CDOT STANDARD SPECIFICATIONS AS PRESENTED IN THE SDECM.
16. CONTRACTOR SHALL REFER TO THE TOWN OF PARKER'S CONSTRUCTION BEST MANAGEMENT PRACTICES DETAILS AND NOTES FOR ALL REQUIREMENTS RELATING TO RE-VEGETATION, SEDIMENT AND EROSION CONTROL REQUIREMENTS FOR CONSTRUCTION ACTIVITIES.
17. PIPE BELLS SHALL NOT BE CAST INTO MANHOLE BASES OR INLETS.

DROP STRUCTURE TABULATION

INDEX BOOK PAGE SHEET	ITEM NO.	CONTRACT ITEM	UNIT	GSB	
				PLAN	AS CONST.
	206	FILTER MATERIAL (CLASS A)	CY	1690	
	206	FILTER MATERIAL (CLASS C)	CY	61	
	206	STRUCTURE EXCAVATION	CY	130	
	206	STRUCTURE BACKFILL (CLASS 1)	CY	118	
	207	TOPSOIL	CY	832	
	501	STEEL SHEET PILING (TYPE II)	SF	11710	
	506	RIPRAP (12 INCH)	CY	76	
	506	SOIL RIPRAP (12 INCH)	CY	2884	
	506	SOIL RIPRAP (18 INCH)	CY	977	
	506	24 INCH GROUTED BOULDER	CY	602	
	601	CONCRETE CLASS D (BOX CULVERT)	CY	47	
	602	REINFORCING STEEL	LB	2352	
	602	REINFORCING STEEL (EPOXY COATED)	LB	740	
	603	48 INCH REINFORCED CONCRETE PIPE (CIP)	LF	187	
	603	48 INCH REINFORCED CONCRETE END SECTION	EA	1	
	603	10X3 FOOT CONCRETE BOX CULVERT (PRECAST)	LF	90	
	604	INLET TYPE D (10 FOOT)	EA	1	
	604	INLET SPECIAL	EA	1	
	619	8 INCH PLASTIC PIPE	LF	268	

NOTES:

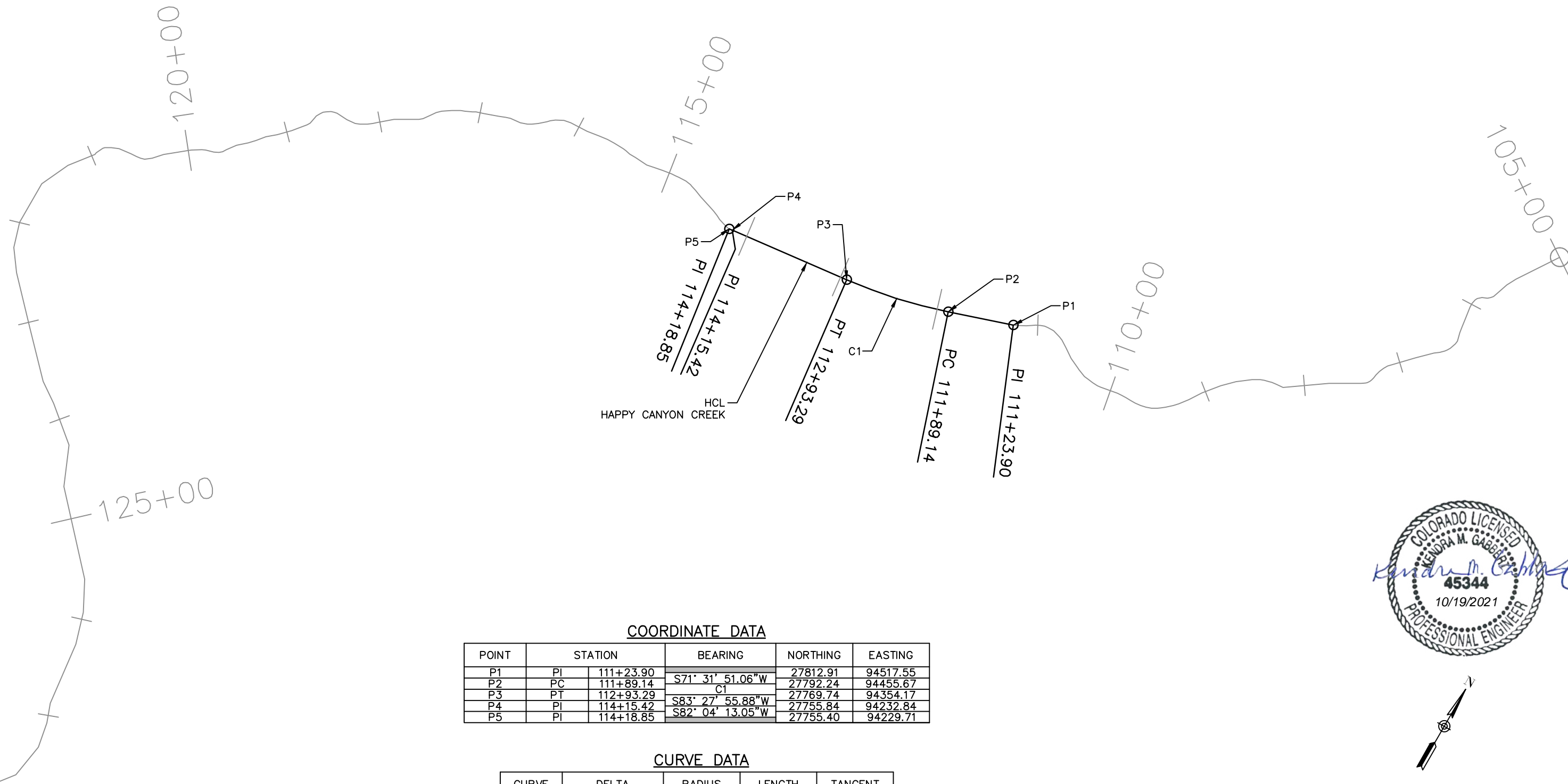
1. 24 INCH GROUTED RIPRAP SHALL BE PAID FOR AS 24 INCH GROUTED BOULDERS.
2. SEE CBMP PLANS FOR TABULATION OF EROSION CONTROL ITEMS.
3. FOR UNCLASSIFIED EXCAVATION SEE EARTHWORK SUMMARY. COST OF EXCAVATION FOR ALL GROUTED BOULDERS AND SOIL RIPRAP IS INCLUDED IN THE COST OF THE BID ITEM.
4. DROP STRUCTURE TABULATION QUANTITIES HAVE BEEN CARRIED FORWARD TO THE SUMMARY OF APPROXIMATE QUANTITIES SHEETS.
5. 10X3 FOOT CONCRETE BOX CULVERT (PRECAST) QUANTITY SHOWN IS FOR THE DUAL BOX CULVERT AT CHEROKEE TRAIL.
6. THE PRESENCE OF GROUNDWATER IS ANTICIPATED AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR DEWATERING DURING CONSTRUCTION FOR ALL STORM SEWER AND DROP STRUCTURE INFRASTRUCTURE. DEWATERING SHALL BE INCLUDED IN THE COST OF THE WORK AND NOT PAID FOR SEPARATELY.
7. THE SUGGESTED SEQUENCING FOR DEWATERING WHEN CONSTRUCTING THE DROP STRUCTURES INCLUDES CONSTRUCTING THE SHEET PILE CUTOFF WALLS FIRST, THEN INSTALLING DEWATERING WELLS OR TRENCHES TO DEWATER BELOW THE PROPOSED LOWEST EXCAVATION LIMITS.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL APPLICABLE DEWATERING PERMITS AND TREATMENT (AS REQUIRED) OF DISCHARGE FROM DEWATERING OPERATIONS.



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File Name: H115360-01DROP01?ab.dwg		Date	Comments	Initials		No Revisions:			
Horizontal Scale: N.T.S. Vertical Scale: N.T.S.					Revised:	Designer: CDT	Structure Numbers		
						Detailer: KLT			
6400 South Fiddlers Green Circle, Suite 1500 Greenwood Village, CO 80111 Phone: 303.721.1440 www.FHUENG.com						Subset: Drainage	Sheets: DD-01 of 23	Sheet Number 64	

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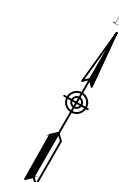


COORDINATE DATA

POINT	STATION	BEARING	NORTHING	EASTING
P1	PI 111+23.90		27812.91	94517.55
P2	PC 111+89.14	S71° 31' 51.06"W	27792.24	94455.67
P3	PT 112+93.29	C1	27769.74	94354.17
P4	PI 114+15.42	S83° 27' 55.88"W	27755.84	94232.84
P5	PI 114+18.85	S82° 04' 13.05"W	27755.40	94229.71

CURVE DATA

CURVE	DELTA	RADIUS	LENGTH	TANGENT
C1	11° 56' 4.83"	500	104.15	52.26



HORIZONTAL SCALE: 1"=100'
 0 50 100 200

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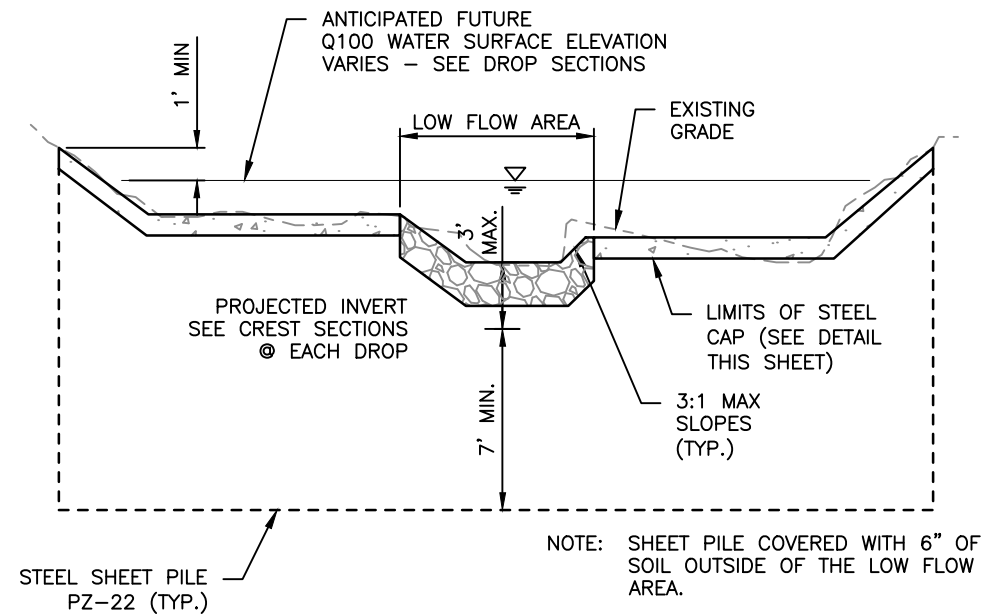
Sheet Revisions			
Date	Comments	Initials	



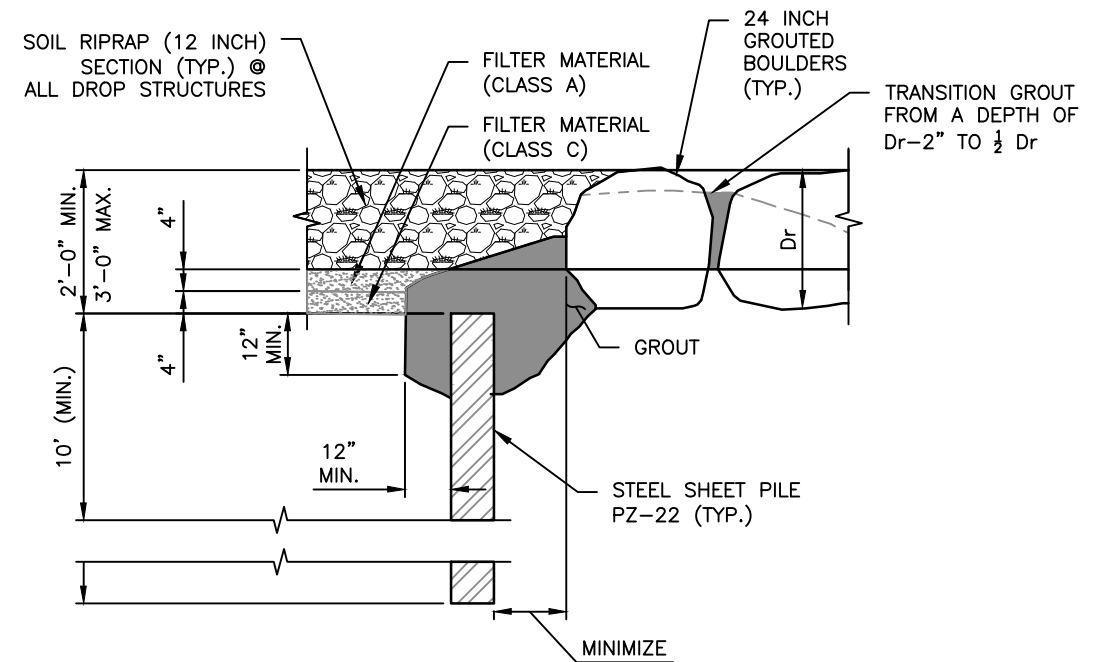
As Constructed	BELFORD-HAPPY CANYON CREEK HAPPY CANYON CREEK DROP STRUCTURE HCL GEOMETRY LAYOUT		Project No./Code
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Revised:	Detailer: KLT	Sheets: DD-02 of 23	Sheet Number 65
Void:	Subset: Drainage		



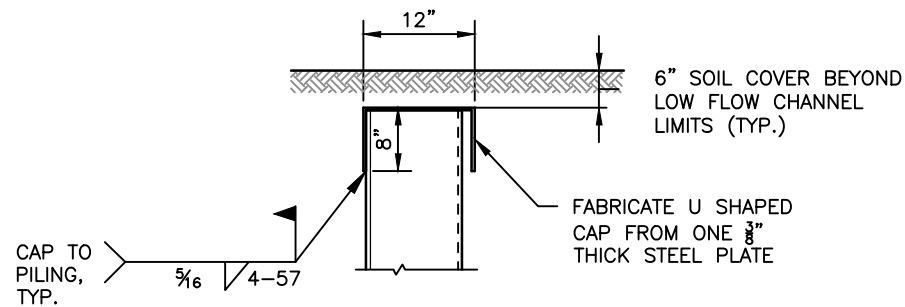
Know what's below.
Call before you dig.



SHEET PILE TYPICAL SECTION
N.T.S.



SHEET PILE CUTOFF CONNECTION (GROUTED BOULDER)
N.T.S.



STEEL SHEET PILE CAP DETAIL
N.T.S.

NOTE: STEEL CAP REQUIRED OUTSIDE OF GROUTED BOULDER SECTION ONLY. ALL INCIDENTAL ITEMS REQUIRED FOR THE STEEL SHEET PILE CAP SHALL BE INCLUDED IN THE COST OF STEEL SHEET PILING (TYPE II).



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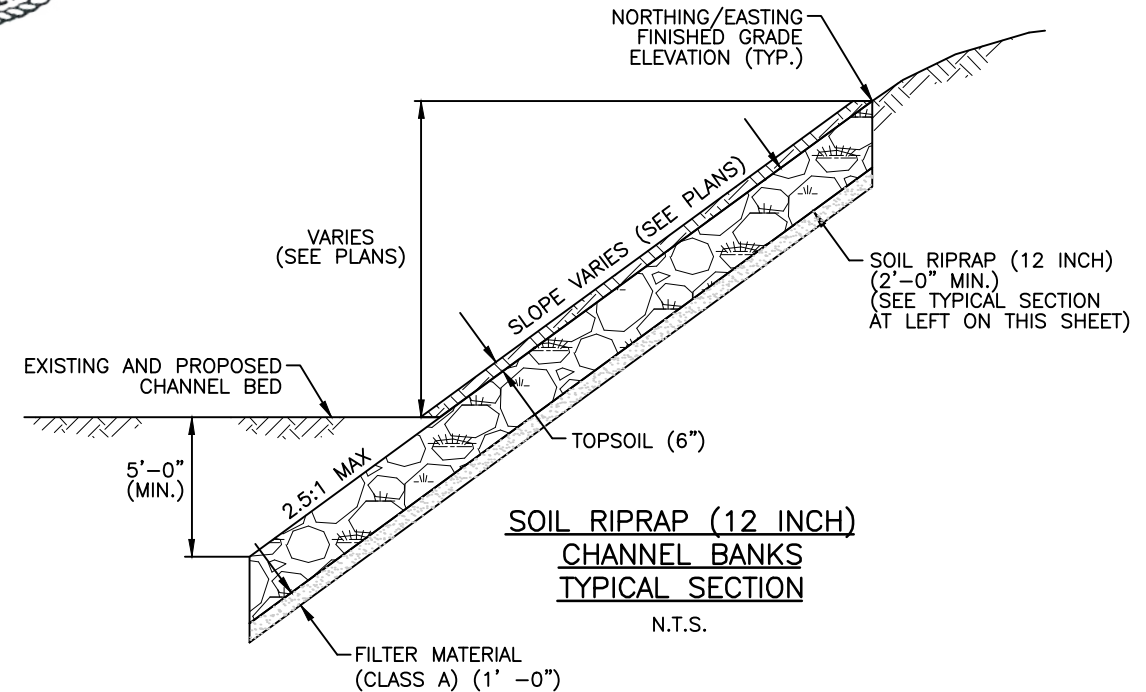
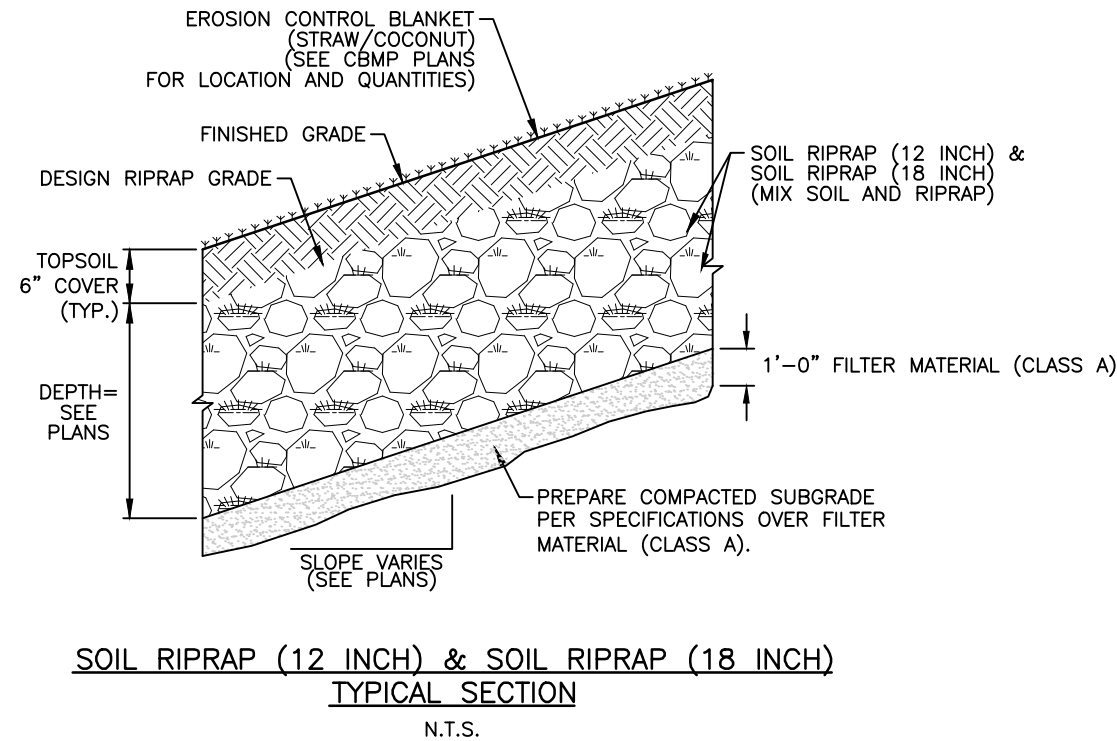
Sheet Revisions			
(R-X)	Date	Comments	Initials



As Constructed	BELFORD-HAPPY CANYON CREEK HAPPY CANYON CREEK DROP STRUCTURE SHEET PILE DETAILS		Project No./Code
No Revisions:	Designer: CDT	Structure Numbers	
Revised:	Detailer: KLT		
Void:	Subset: Drainage	Sheets: DD-03 of 23	Sheet Number 66



Know what's below.
Call before you dig.



SOIL RIPRAP (12 INCH) & SOIL RIPRAP (18 INCH) NOTES:

- ELEVATION TOLERANCES FOR THE SOIL RIPRAP SHALL BE 0.10 FEET. THICKNESS OF SOIL RIPRAP SHALL BE NO LESS THAN THICKNESS SHOWN AND NO MORE THAN 2-INCHES GREATER THAN THE THICKNESS SHOWN.
- WHERE "SOIL RIPRAP" IS DESIGNATED ON THE CONTRACT DRAWINGS, RIPRAP VOIDS ARE TO BE FILLED WITH NATIVE SOIL. THE RIPRAP SHALL BE PRE-MIXED WITH THE NATIVE SOIL AT THE FOLLOWING PROPORTIONS BY VOLUME: 65% RIPRAP AND 35% SOIL. THE SOIL USED FOR MIXING SHALL BE NATIVE TOPSOIL AND BE INSTALLED IN A MANNER THAT RESULTS IN A DENSE, INTERLOCKED LAYER OF RIPRAP WITH RIPRAP VOIDS FILLED COMPLETELY WITH SOIL. SEGREGATION OF MATERIALS SHALL BE AVOIDED AND IN NO CASE SHALL THE COMBINED MATERIAL CONSIST PRIMARILY OF SOIL; THE DENSITY AND INTERLOCKING NATURE OF RIPRAP IN THE MIXED MATERIAL SHALL ESSENTIALLY BE THE SAME AS IF THE RIPRAP WAS PLACED WITHOUT SOIL.
- WHERE SPECIFIED (TYPICALLY AS "BURIED SOIL RIPRAP"), A SURFACE LAYER OF TOPSOIL SHALL BE PLACED OVER THE SOIL RIPRAP ACCORDING TO THE THICKNESS SPECIFIED ON THE CONTRACT DRAWINGS. THE TOPSOIL SURFACE LAYER SHALL BE COMPACTED TO APPROXIMATELY 85% OF THE MAXIMUM DENSITY AND WITHIN TWO PERCENTAGE POINTS OF OPTIMUM MOISTURE IN ACCORDANCE WITH ASTM D698. TOPSOIL SHALL BE ADDED TO ANY AREAS THAT SETTLE.
- ALL SOIL RIPRAP THAT IS BURIED WITH THE TOPSOIL SHALL BE REVIEWED AND APPROVED BY THE ENGINEER PRIOR TO ANY TOPSOIL PLACEMENT.
- CRIMP MULCH AS CALLED FOR IN THE CBMP PLANS AND SPECIFICATIONS.
- SEE DD-03 FOR SOIL RIPRAP AT DROP STRUCTURES.

RIPRAP AND SOIL RIPRAP GRADATION				
UDFCD RIPRAP DESIGNATION	% SMALLER THAN GIVEN SIZE BY WEIGHT	INTERMEDIATE ROCK DIMENSION (INCHES)	D ₅₀ * (INCHES)	BID ITEM DESCRIPTION
TYPE M	70 - 100	21	12	RIPRAP (12 INCH)
	50 - 70	18		
	35 - 50	12		SOIL RIPRAP (12 INCH)
	2 - 10	4		
TYPE H	70 - 100	30	18	RIPRAP (18 INCH)
	50 - 70	24		
	35 - 50	18		SOIL RIPRAP (18 INCH)
	2 - 10	6		
TYPE VH	70 - 100	42	24	24 INCH GROUDED BOULDER
	50 - 70	33		
	35 - 50	24		
	2 - 10	9		

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As Constructed	BELFORD-HAPPY CANYON CREEK HAPPY CANYON CREEK DROP STRUCTURE DETAILS		Project No./Code
No Revisions:	Designer: CDT	Structure Numbers	Sheet Number 67
Revised:	Detailer: KLT		
Void:	Subset: Drainage	Sheets: DD-04 of 23	



Know what's below.
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GROUT NOTES

BOULDER PLACEMENT NOTES:

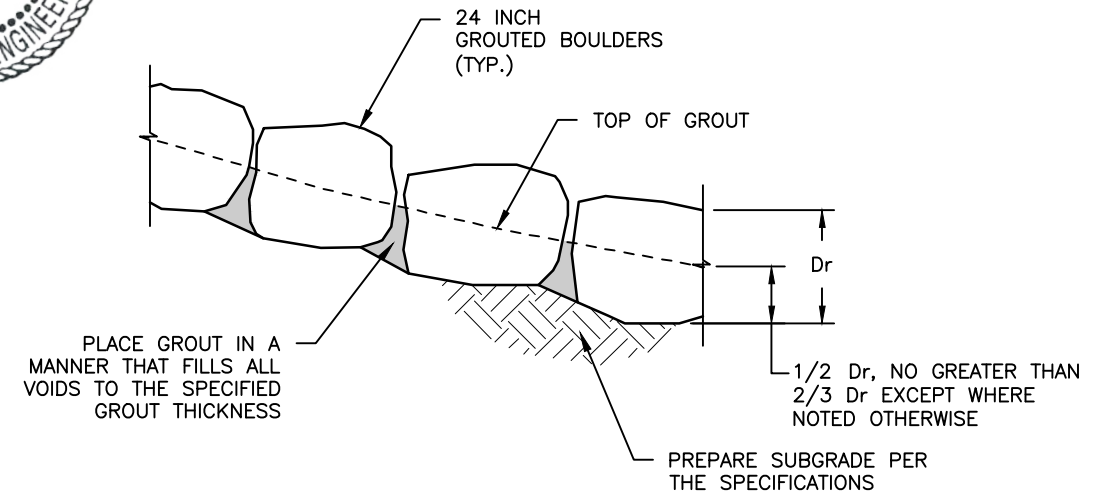
1. PLACE BOULDERS WITH THE REQUIRED BOULDER HEIGHT VERTICAL. PLACE BOULDERS AS TIGHTLY TOGETHER AS POSSIBLE (WITHOUT TOUCHING) WHILE PROVIDING ENOUGH ROOM BETWEEN THEM TO THOROUGHLY VIBRATE THE GROUT AND TO ENSURE NO GAPS IN THE GROUT. THE SMALL DIMENSION OF A 2X4 CAN BE USED AS A GUIDE TO CHECK MINIMUM SPACING.
2. BEFORE GROUTING, CLEAN ALL DIRT AND MATERIAL FROM ROCK THAT COULD PREVENT THE GROUT FROM BINDING TO THE ROCK. KEEP BOULDERS FROM TOUCHING. AVOID SLIDING BOULDERS AGAINST SUBGRADE TO PROPERLY POSITION.

MATERIAL SPECIFICATIONS:

1. ALL GROUT SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH EQUAL TO 3200 PSI.
2. ONE CUBIC YARD OF GROUT SHALL HAVE A MINIMUM OF SIX (6) SACKS OF TYPE II PORTLAND CEMENT.
3. A MAXIMUM OF 25% TYPE F FLY ASH MAY BE SUBSTITUTED FOR THE PORTLAND CEMENT.
4. THE AGGREGATE SHALL BE COMPRISED OF 70% NATURAL SAND (FINES) AND 30% 3/8-INCH ROCK (COARSE).
5. THE GROUT SLUMP SHALL BE BETWEEN 4-INCHES TO 6-INCHES.
6. AIR ENTRAINMENT SHALL BE BETWEEN 5.5% AND 7.5%.
7. TO CONTROL SHRINKAGE AND CRACKING, 1.5 POUNDS OF FIBERMESH, OR EQUIVALENT, SHALL BE USED PER CUBIC YARD OF GROUT.
8. COLOR ADDITIVE IN REQUIRED AMOUNTS SHALL BE USED WHEN SO SPECIFIED BY CONTRACT.

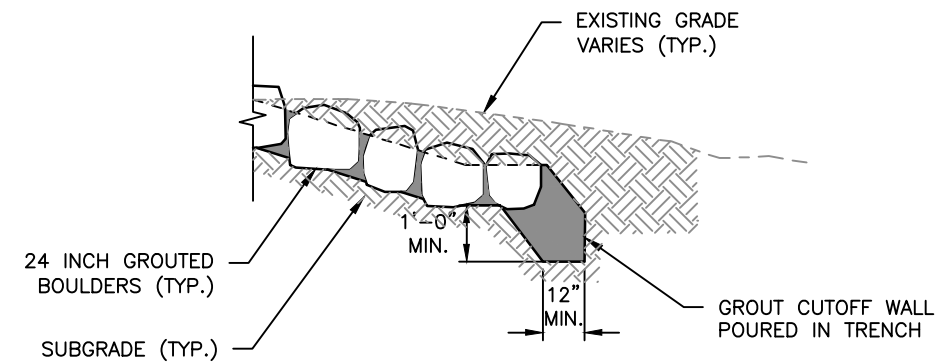
GROUT PLACEMENT SPECIFICATIONS:

1. SPECIAL PROCEDURES SHALL BE REQUIRED FOR GROUT PLACEMENT WHEN THE AIR TEMPERATURES ARE LESS THAN 40°F OR GREATER THAN 90°F. CONTRACTOR SHALL OBTAIN PRIOR APPROVAL FROM THE DESIGN ENGINEER OF THE PROCEDURES TO BE USED FOR PROTECTING THE GROUT.
2. GROUT SHALL BE DELIVERED BY MEANS OF A LOW PRESSURE (LESS THAN 10 PSI) GROUT PUMP USING A 2-INCH DIAMETER (MAXIMUM) NOZZLE.
3. FULL DEPTH PENETRATION OF THE GROUT INTO THE BOULDER VOIDS SHALL BE ACHIEVED BY INJECTING GROUT STARTING WITH THE NOZZLE NEAR THE BOTTOM AND RAISING IT AS THE GROUT FILLS, WHILE VIBRATING GROUT INTO PLACE USING A PENCIL VIBRATOR.
4. ALL GROUT BETWEEN BOULDERS SHALL BE TREATED WITH A BROOM FINISH.
5. AFTER GROUT PLACEMENT, EXPOSED BOULDER FACES SHALL BE CLEANED AND FREE OF GROUT.
6. ALL FINISHED GROUT SURFACES SHALL BE SPRAYED WITH A CLEAR LIQUID MEMBRANE CURING COMPOUND AS SPECIFIED IN ASTM C309.



GROUTED BOULDER PLACEMENT DETAIL

N.T.S.



STRUCTURE EDGE WALL DETAIL

N.T.S.

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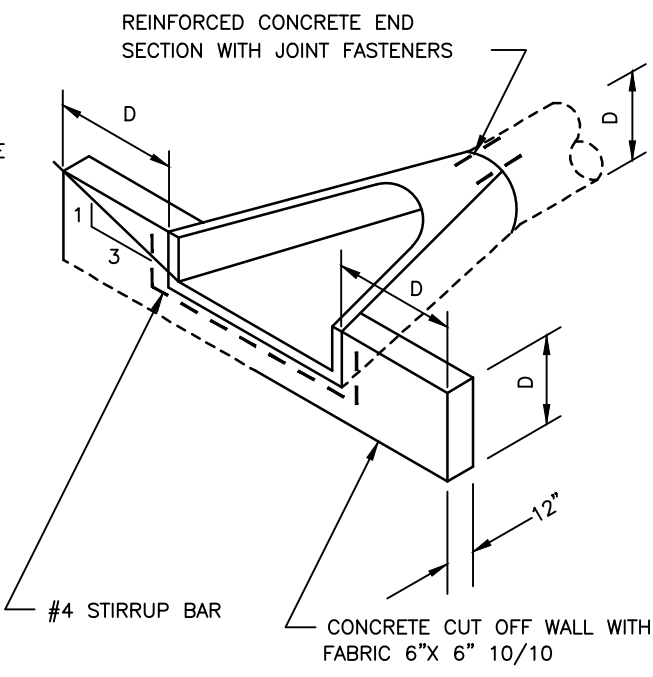
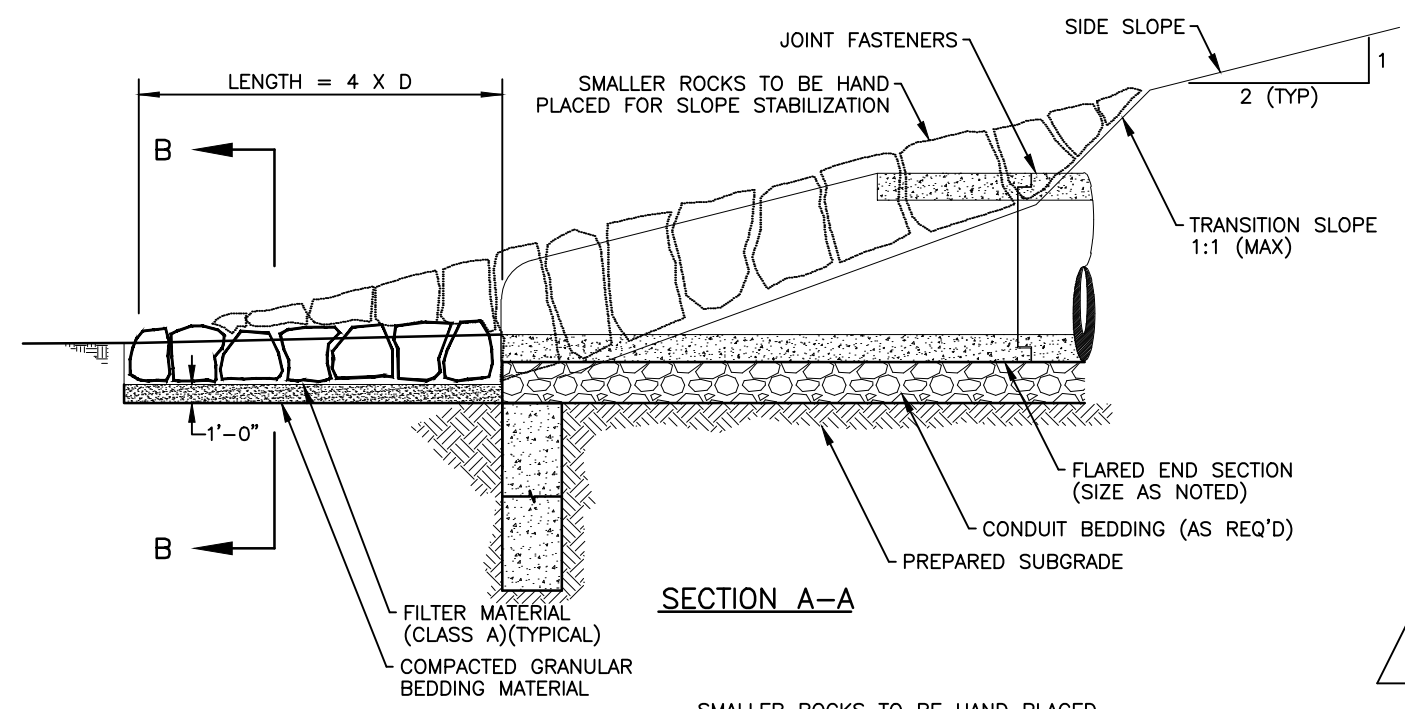
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(R-X)	Date	Comments	Initials



As Constructed	BELFORD-HAPPY CANYON CREEK		Project No./Code
No Revisions:	HAPPY CANYON CREEK DROP STRUCTURE		
Revised:	Designer: CDT	Structure Numbers	Sheet Number 68
Void:	Detailer: KLT	Sheets: DD-05 of 23	
	Subset: Drainage		

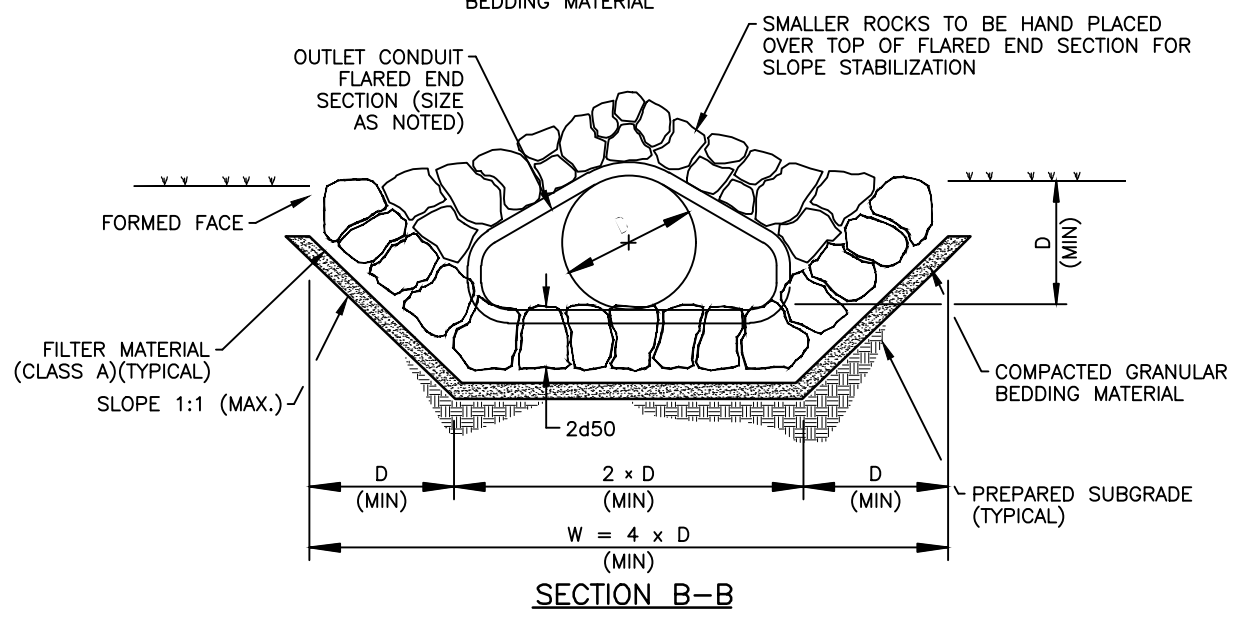
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ID NO.	DIMENSIONS					QUANTITIES	
	D (in)	W (ft)	L (ft)	RIPRAP TYPE	d50 (in)	RIPRAP (12 INCH) (CY)	FILTER MATERIAL (CLASS A) (CY)
A1	48	16	16	M	12	19	9

TABULATION OF RIPRAP AND GEOTEXTILE MATERIAL AT CULVERT INLETS & OUTLETS

NOTES:
1. THESE QUANTITIES HAVE BEEN CARRIED FORWARD TO THE DROP STRUCTURE TABULATION.



CONCRETE TOEWALL AND END SECTION FOR REINFORCED CONCRETE PIPE

- NOTES:
1. D= INSIDE DIAMETER OF REINFORCED CONCRETE PIPE.
 2. CONCRETE FOR THE TOEWALL SHALL BE CONCRETE CLASS D (WALL)
 3. EACH REINFORCED CONCRETE END SECTION SHALL BE CONNECTED TO THE REINFORCED CONCRETE PIPE WITH CONCRETE PIPE JOINT FASTENERS (2-EACH). CONCRETE PIPE JOINT FASTENERS SHALL BE INCLUDED IN THE COST OF THE REINFORCED CONCRETE END SECTION.
 4. ALL CONCRETE, REINFORCING, CONNECTIONS, STRUCTURE EXCAVATION, AND EXTRA WORK REQUIRED TO CONSTRUCT THE CONCRETE TOEWALL SHALL BE INCLUDED IN THE COST OF 48 INCH RCES.
 5. ALL REINFORCED CONCRETE PIPE EXTENSIONS SHALL HAVE A CONCRETE COLLAR AND SHALL BE INCLUDED IN THE COST OF THE REINFORCED CONCRETE PIPE.
 6. REMOVED RIPRAP MAY BE UTILIZED FOR RIPRAP (12 INCH) UNLESS DIRECTED OTHERWISE BY THE ENGINEER.

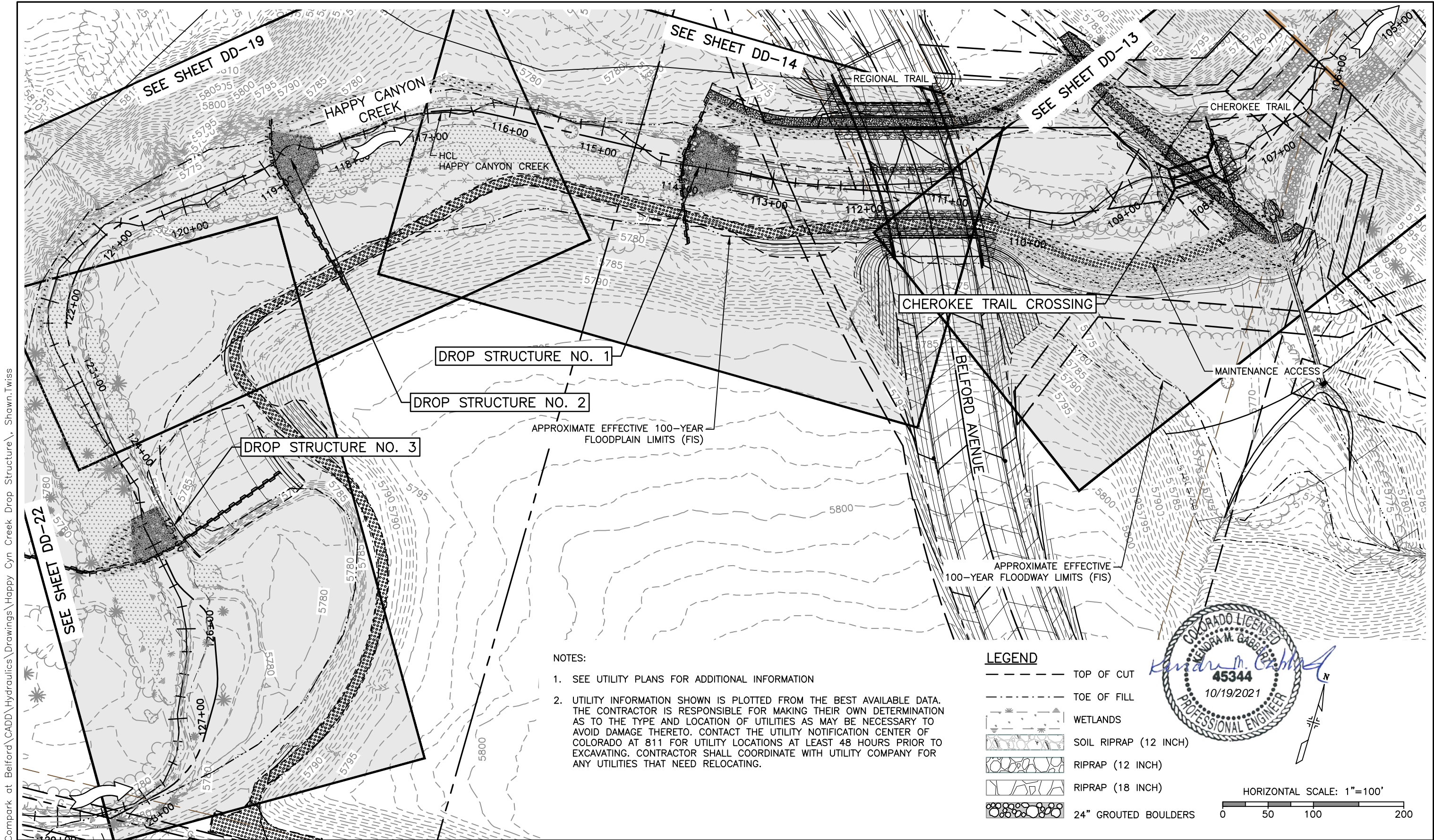


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Revised:	Designer: CDT	Structure Numbers	
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SEE SHEET DD-22

SEE SHEET DD-19

SEE SHEET DD-14

SEE SHEET DD-13

DROP STRUCTURE NO. 1

DROP STRUCTURE NO. 2

DROP STRUCTURE NO. 3

APPROXIMATE EFFECTIVE 100-YEAR FLOODPLAIN LIMITS (FIS)

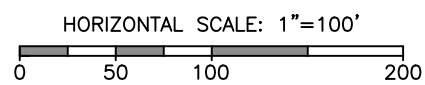
APPROXIMATE EFFECTIVE 100-YEAR FLOODWAY LIMITS (FIS)

NOTES:

1. SEE UTILITY PLANS FOR ADDITIONAL INFORMATION
2. UTILITY INFORMATION SHOWN IS PLOTTED FROM THE BEST AVAILABLE DATA. THE CONTRACTOR IS RESPONSIBLE FOR MAKING THEIR OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AT 811 FOR UTILITY LOCATIONS AT LEAST 48 HOURS PRIOR TO EXCAVATING. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY FOR ANY UTILITIES THAT NEED RELOCATING.

LEGEND

- TOP OF CUT
- TOE OF FILL
- [Symbol] WETLANDS
- [Symbol] SOIL RIPRAP (12 INCH)
- [Symbol] RIPRAP (12 INCH)
- [Symbol] RIPRAP (18 INCH)
- [Symbol] 24" GROUTED BOULDERS



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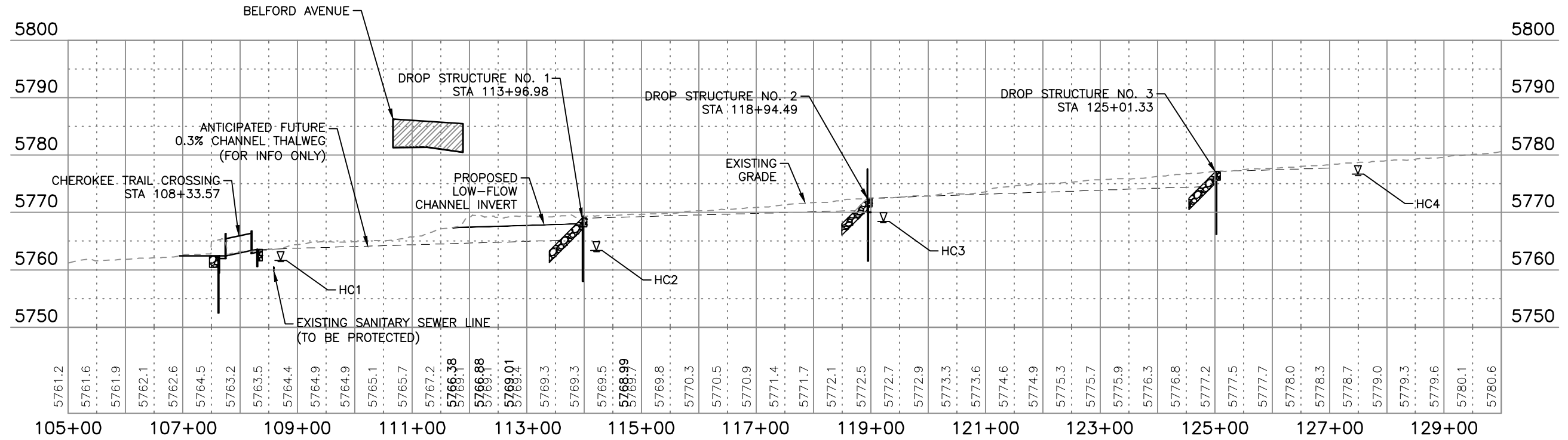
Sheet Revisions			
Date	Comments	Initials	



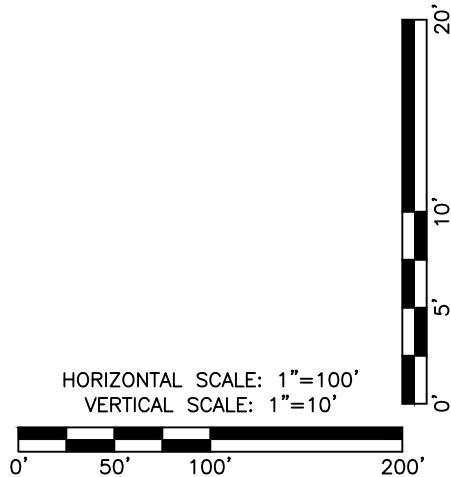
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No Revisions:	Designer: CDT	Structure Numbers	
Revised:	Detailer: KLT	Sheets: DD-07 of 23	Sheet Number 70
Void:	Subset: Drainage		

NOTES

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- SEE UTILITY PLANS FOR ADDITIONAL INFORMATION.



HAPPY CANYON CREEK PROFILE



▽ APPROX. GROUNDWATER ELEVATION

GROUNDWATER ELEVATIONS	
TEST BORING ID	APPROX. DEPTH BELOW SURFACE (FT.)
HC1	-2.0
HC2	-6.0
HC3	-4.0
HC4	-2.0



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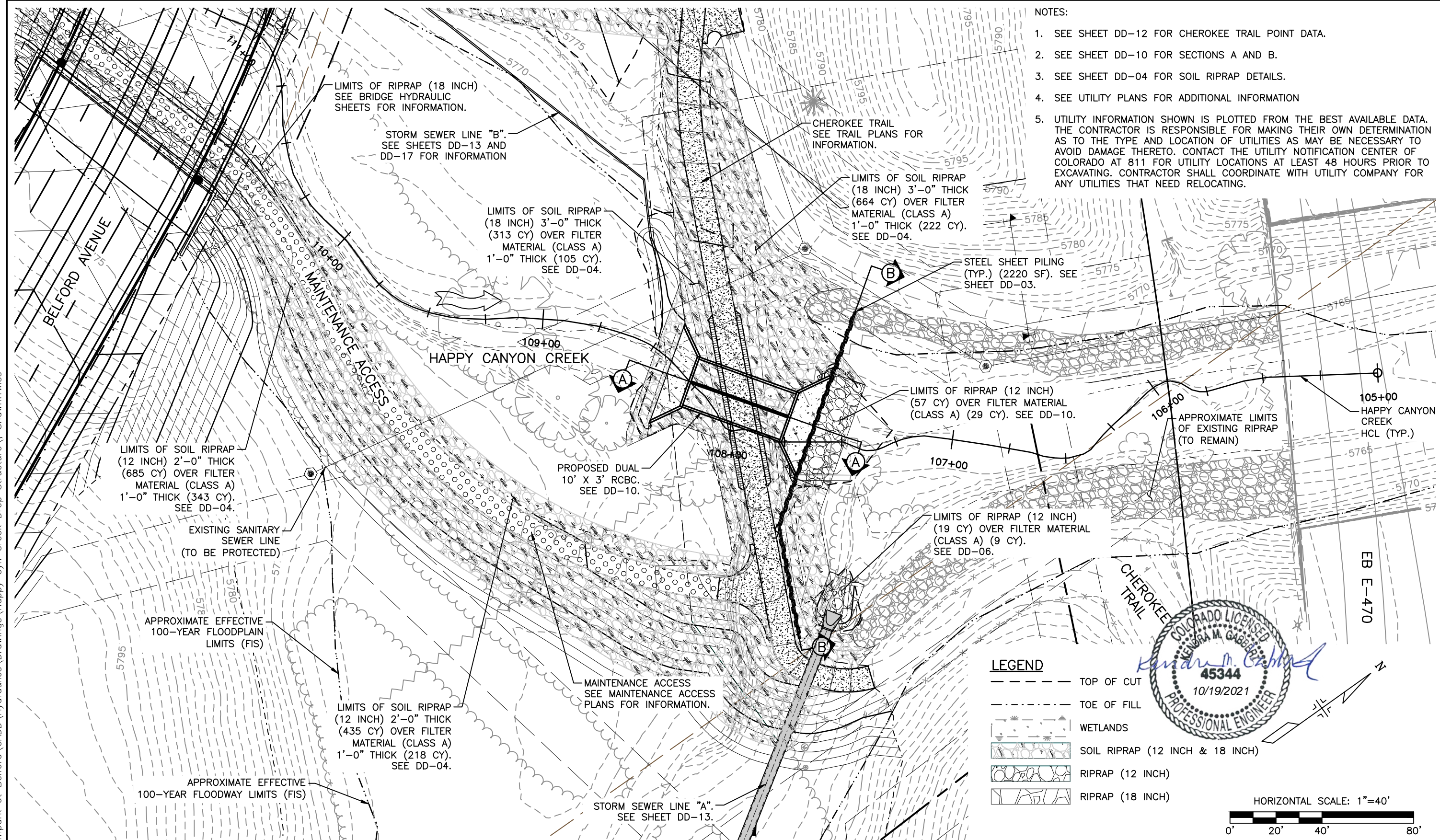
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Void:	Subset: Drainage	Sheets: DD-08 of 23	Sheet Number 71

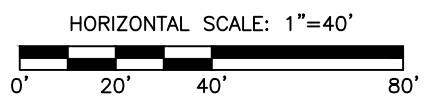
NOTES:

1. SEE SHEET DD-12 FOR CHEROKEE TRAIL POINT DATA.
2. SEE SHEET DD-10 FOR SECTIONS A AND B.
3. SEE SHEET DD-04 FOR SOIL RIPRAP DETAILS.
4. SEE UTILITY PLANS FOR ADDITIONAL INFORMATION
5. UTILITY INFORMATION SHOWN IS PLOTTED FROM THE BEST AVAILABLE DATA. THE CONTRACTOR IS RESPONSIBLE FOR MAKING THEIR OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AT 811 FOR UTILITY LOCATIONS AT LEAST 48 HOURS PRIOR TO EXCAVATING. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY FOR ANY UTILITIES THAT NEED RELOCATING.



LEGEND

- TOP OF CUT
- TOE OF FILL
- WETLANDS
- SOIL RIPRAP (12 INCH & 18 INCH)
- RIPRAP (12 INCH)
- RIPRAP (18 INCH)



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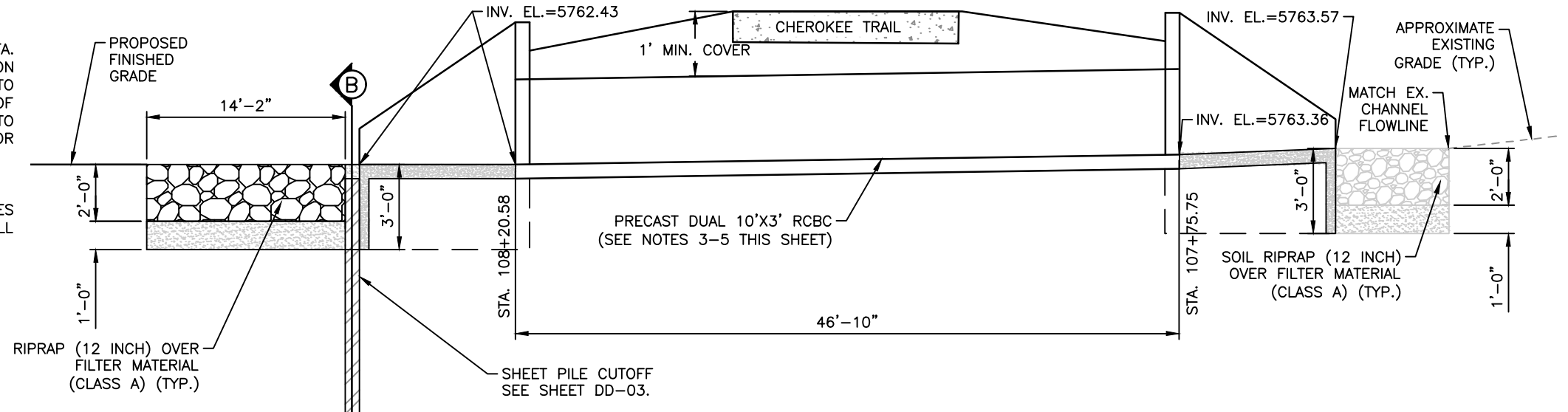
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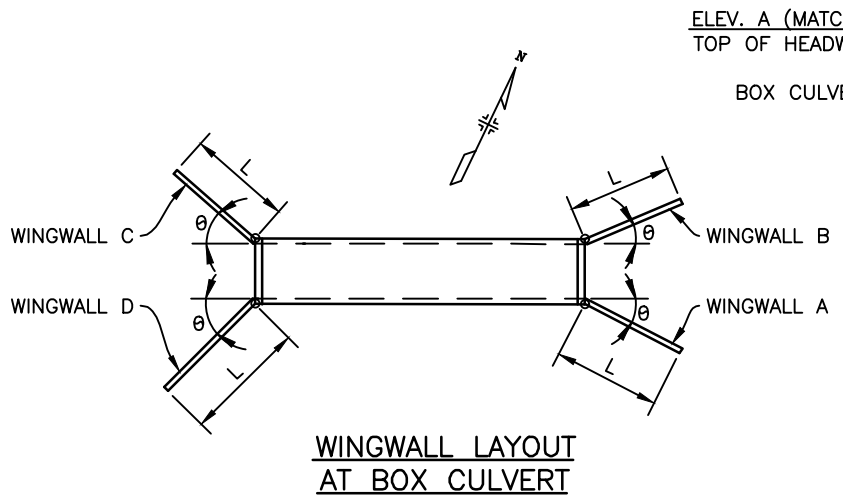
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No Revisions:	HAPPY CANYON CREEK DROP STRUCTURE		
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NOTES:

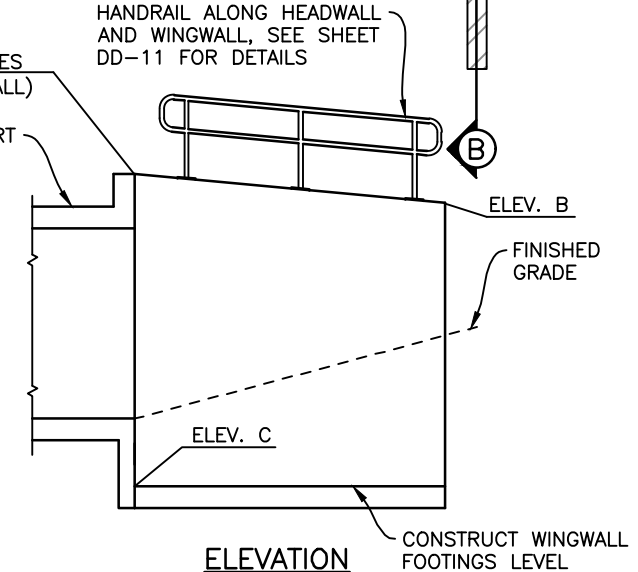
1. UTILITY INFORMATION SHOWN IS PLOTTED FROM THE BEST AVAILABLE DATA. THE CONTRACTOR IS RESPONSIBLE FOR MAKING THEIR OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AT 811 FOR UTILITY LOCATIONS AT LEAST 48 HOURS PRIOR TO EXCAVATING. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY FOR ANY UTILITIES THAT NEED RELOCATING.
2. SEE UTILITY PLANS FOR ADDITIONAL INFORMATION.
3. PRECAST BOX CULVERT MUST CONFORM TO CDOT M-STANDARDS M-603-2.
4. FOR CAST-IN-PLACE END SECTIONS, USE M-601-2 FOR WALL THICKNESSES AND REINFORCEMENT SIZE AND SPACINGS WITH S=10 FT, R=6 FT, AND FILL HEIGHT = 0-5 FT.
5. FOR WINGWALLS AND CONCRETE APRON, USE M-601-20.



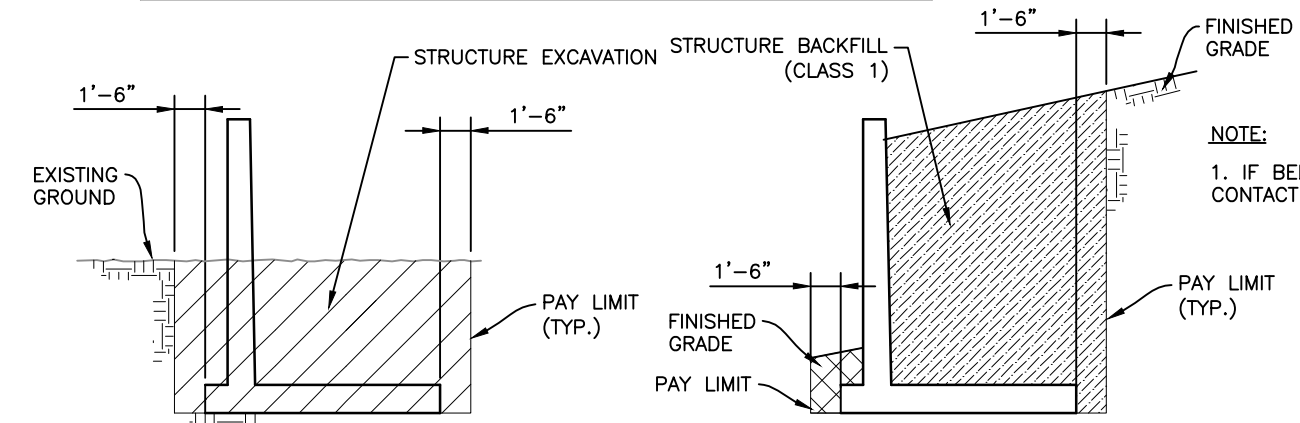
**(A) CHEROKEE TRAIL CROSSING PROFILE @ RCBC
STA 107+48.70 TO 108+41.52
N.T.S.**



WINGWALL	θ	L	ELEV. A	ELEV. B	ELEV. C
A	45°0'0"	15'-6"	5767.18	5763.43	5760.43
B	45°0'0"	15'-6"	5767.18	5763.43	5760.43
C	45°0'0"	15'-6"	5768.11	5764.57	5761.36
D	45°0'0"	15'-6"	5768.11	5764.57	5761.36

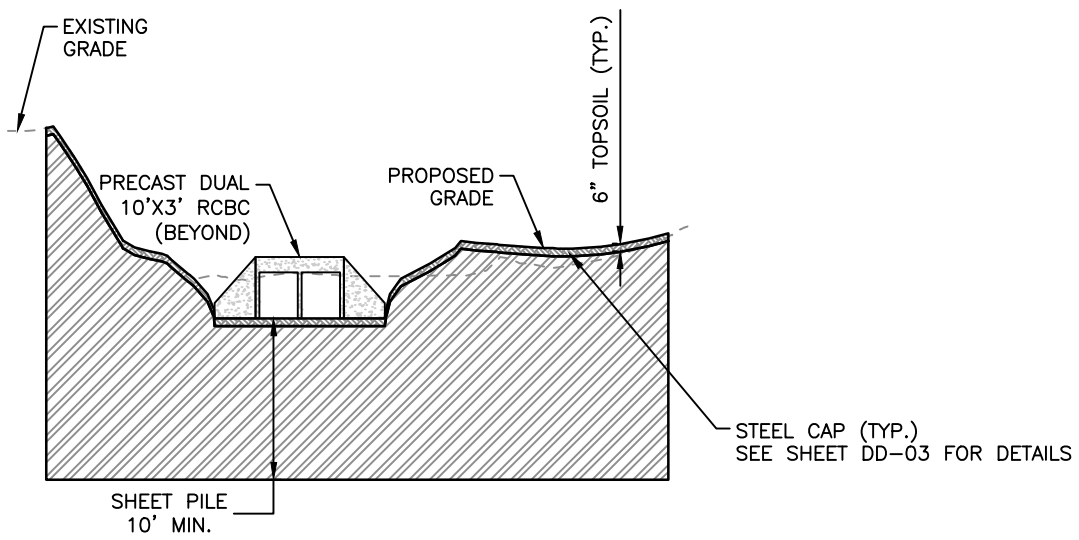


ELEVATION WINGWALLS



WINGWALLS EXCAVATION

WINGWALLS BACKFILL



**(B) CREST SECTION
STA 107+63.54**



HORIZONTAL SCALE: 1"=50'
VERTICAL SCALE: 1"=10'

HAPPY CANYON CREEK HYDRAULICS

Q100= 8,303 C.F.S
Q100 VELOCITY = 6.11 F.P.S
FROUDE No.=0.31

FOR INFO ONLY

CHEROKEE TRAIL CROSSING

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No Revisions:	Designer: CDT	Structure Numbers	
Revised:	Detailer: ZJG		
Void:	Subset: Drainage	Sheets: DD-10 of 23	Sheet Number 73

HAPPY CANYON CREEK CHEROKEE TRAIL STEEL SHEET PILE CUTOFF WALL POINT DATA

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
W1	27865.91	94895.02	5767.95	STEEL SHEET PILE WALL - TOP OF STEEL CAP EL.
W2	27887.19	94849.78	5767.36	STEEL SHEET PILE WALL - TOP OF STEEL CAP EL.
W3	27968.14	94793.51	5770.25	STEEL SHEET PILE WALL - TOP OF STEEL CAP EL.

HAPPY CANYON CREEK CHEROKEE TRAIL GRADING POINT DATA

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
G1	27872.10	94962.88	5779.00	FINISHED GRADE EL.
G2	27823.77	94932.12	5779.00	FINISHED GRADE EL.
G3	27808.04	94890.63	5779.00	FINISHED GRADE EL.
G4	27766.29	94809.24	5779.00	FINISHED GRADE EL.
G5	27745.18	94744.70	5779.00	FINISHED GRADE EL.

HAPPY CANYON CREEK CHEROKEE TRAIL SOIL RIPRAP POINT DATA

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
SR1	27769.57	94610.15	5777.00	SOIL RIPRAP (12 INCH) - FINISHED GRADE EL.
SR2	27835.00	94932.41	5777.00	SOIL RIPRAP (12 INCH) - FINISHED GRADE EL.
SR3	27801.00	94604.71	5765.86	SOIL RIPRAP (12 INCH) - FINISHED GRADE EL.
SR4	27800.34	94633.29	5767.10	SOIL RIPRAP (12 INCH) - FINISHED GRADE EL.
SR5	27797.05	94661.68	5769.72	SOIL RIPRAP (12 INCH) - FINISHED GRADE EL.
SR6	27804.21	94763.47	5770.47	SOIL RIPRAP (12 INCH) - FINISHED GRADE EL.
SR7	27862.90	94848.01	5766.25	SOIL RIPRAP (18 INCH) - FINISHED GRADE EL.
SR8	27885.85	94800.95	5767.60	SOIL RIPRAP (18 INCH) - FINISHED GRADE EL.
SR9	27876.75	94787.62	5765.88	SOIL RIPRAP (18 INCH) - FINISHED GRADE EL.
SR10	27853.55	94783.45	5766.72	SOIL RIPRAP (18 INCH) - FINISHED GRADE EL.
SR11	27913.61	94738.94	5766.30	SOIL RIPRAP (18 INCH) - FINISHED GRADE EL.
SR12	27871.26	94540.03	5768.10	SOIL RIPRAP (12 INCH) - FINISHED GRADE EL.
SR13	27892.28	94575.67	5770.18	SOIL RIPRAP (12 INCH) - FINISHED GRADE EL.
SR14	27920.57	94605.87	5772.85	SOIL RIPRAP (12 INCH) - FINISHED GRADE EL.
SR15	27943.91	94626.32	5774.60	SOIL RIPRAP (12 INCH) - FINISHED GRADE EL.
SR16	27967.25	94646.78	5775.74	SOIL RIPRAP (18 INCH) - FINISHED GRADE EL.
SR17	27912.28	94510.88	5777.00	SOIL RIPRAP (12 INCH) - FINISHED GRADE EL.
SR18	27925.40	94519.82	5777.00	SOIL RIPRAP (12 INCH) - FINISHED GRADE EL.
SR19	27937.08	94566.65	5777.00	SOIL RIPRAP (12 INCH) - FINISHED GRADE EL.
SR20	27941.85	94573.12	5777.00	SOIL RIPRAP (12 INCH) - FINISHED GRADE EL.
SR21	27962.56	94597.66	5777.00	SOIL RIPRAP (12 INCH) - FINISHED GRADE EL.
SR22	27970.79	94607.21	5777.00	SOIL RIPRAP (12 INCH) - FINISHED GRADE EL.
SR23	27995.66	94624.88	5777.00	SOIL RIPRAP (12 INCH) - FINISHED GRADE EL.
SR24	27980.34	94661.67	5776.11	SOIL RIPRAP (18 INCH) - FINISHED GRADE EL.
SR25	27988.53	94666.66	5776.90	SOIL RIPRAP (18 INCH) - FINISHED GRADE EL.
SR26	27956.85	94747.12	5773.49	SOIL RIPRAP (18 INCH) - FINISHED GRADE EL.
SR27	27965.72	94770.00	5773.56	SOIL RIPRAP (18 INCH) - FINISHED GRADE EL.
SR28	27950.72	94782.27	5766.42	SOIL RIPRAP (18 INCH) - FINISHED GRADE EL.
SR29	27953.26	94821.86	5765.14	SOIL RIPRAP (18 INCH) - FINISHED GRADE EL.
SR30	27913.37	94849.59	5764.89	SOIL RIPRAP (18 INCH) - FINISHED GRADE EL.
SR31	27904.16	94855.99	5765.02	SOIL RIPRAP (18 INCH) - FINISHED GRADE EL.
SR32	27881.83	94903.47	5766.84	SOIL RIPRAP (18 INCH) - FINISHED GRADE EL.
SR33	27890.55	94916.56	5771.36	SOIL RIPRAP (18 INCH) - FINISHED GRADE EL.
SR34	27878.94	94919.88	5772.38	SOIL RIPRAP (18 INCH) - FINISHED GRADE EL.



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 Horizontal Scale: N.T.S. Vertical Scale: N.T.S.
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 Greenwood Village, CO 80111
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Date	Comments	Initials	



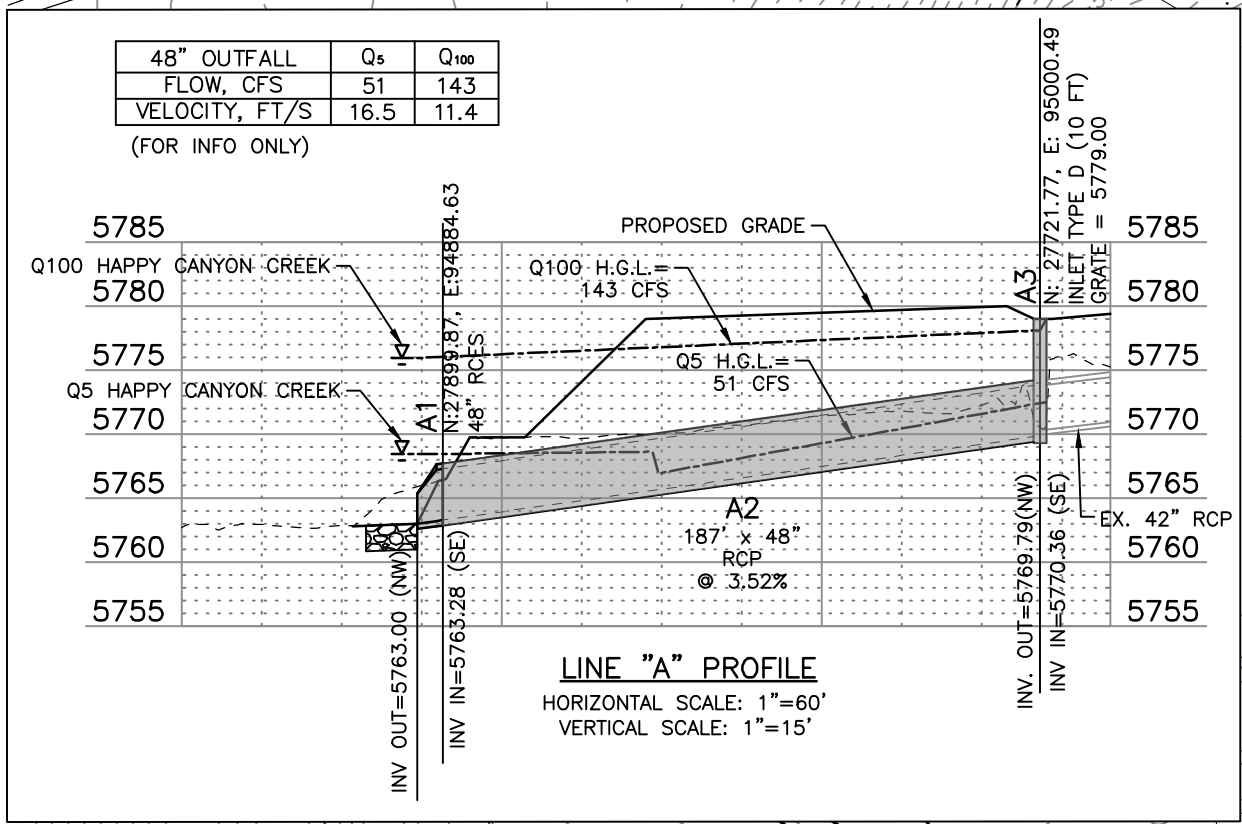
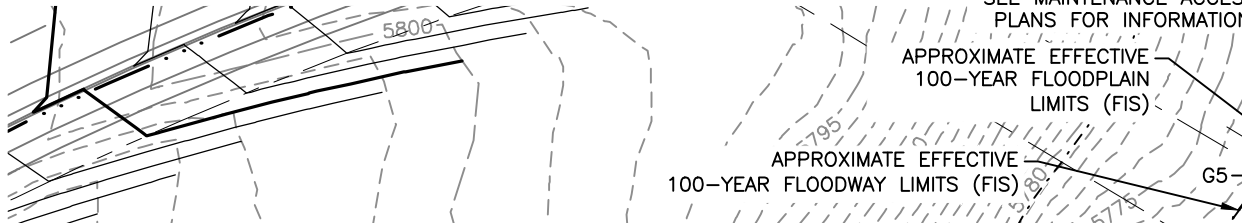
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No Revisions:	Designer: CDT	Structure Numbers	
Revised:	Detailer: ZJG	Sheets: DD-12 of 23	
Void:	Subset: Drainage		Sheet Number 75

I.D.	NORTHING & EASTING	ITEM	LENGTH	PAY DEPTH	INV. IN	INV. OUT	NOTES
A1	N: 27899.87, E: 94884.63	48" RCES, RIPRAP			5763.28	5763.00	SEE DD-06 FOR DETAIL
A2		48" RCP	187'				
A3	N: 27721.77, E: 95000.49	TYPE D INLET		10'	5770.36	5769.79	CONNECT TO EX. 42" RCP
B1	N: 27914.54, E: 94715.62					5765.00	
B2		8" PLASTIC PIPE	27'				
B3	N: 27926.90, E: 94693.26					5765.13	* 45 DEGREE ELBOW/CLEANOUT
B4		8" PLASTIC PIPE	241'				

* ELBOW AND CLEANOUT ARE INCLUDED IN THE COST OF THE PIPE.

NOTES:

- UTILITY INFORMATION SHOWN IS PLOTTED FROM THE BEST AVAILABLE DATA. THE CONTRACTOR IS RESPONSIBLE FOR MAKING THEIR OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AT 811 FOR UTILITY LOCATIONS AT LEAST 48 HOURS PRIOR TO EXCAVATING. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY FOR ANY UTILITIES THAT NEED RELOCATING.
- SEE DD-12 FOR POINT DATA.



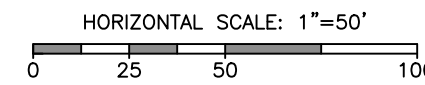
LEGEND

- TOP OF CUT
- TOE OF FILL
- WETLANDS
- SOIL RIPRAP (12 INCH & 18 INCH)
- RIPRAP (12 INCH)
- RIPRAP (18 INCH)

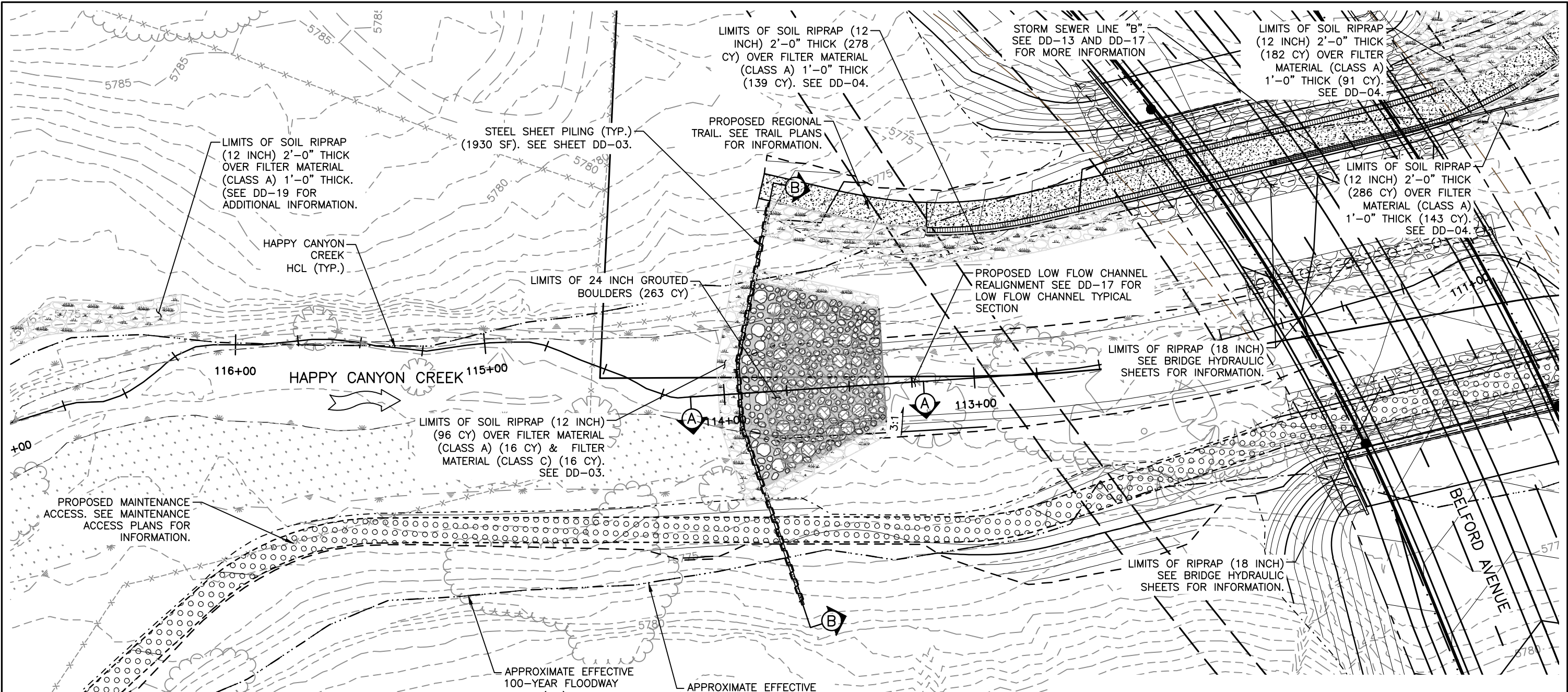


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CONNECT A3 TO EX. 42" RCP OUTLET. ALL COSTS ASSOCIATED WITH THE CONNECTION SHALL BE INCLUDED IN THE COST OF INLET TYPE D (1 EA.)



Print Date: 6/18/2021 8:52:06 AM File Name: CherokeeTrailCrossing.dwg Horizontal Scale: 1"=25' Vertical Scale: N.T.S.	<table border="1"> <thead> <tr> <th colspan="3">Sheet Revisions</th> </tr> <tr> <th>Date</th> <th>Comments</th> <th>Initials</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Sheet Revisions			Date	Comments	Initials				<p>8008 E. Arapahoe Court, Suite 110, Centennial, CO 80112 Civil Engineers • Surveyors • Water Resource Engineers • Water & Wastewater Engineers Construction Managers • Environmental Scientists • Landscape Architects • Planners</p>	<table border="1"> <tr> <td>As Constructed</td> <td colspan="2">BELFORD-HAPPY CANYON CREEK HAPPY CANYON CREEK DROP STRUCTURE CHEROKEE TRAIL GRADING DETAIL</td> <td rowspan="4">Project No./Code</td> </tr> <tr> <td>No Revisions:</td> <td>Designer: CDT</td> <td>Structure Numbers</td> </tr> <tr> <td>Revised:</td> <td>Detailer: ZJG</td> <td> </td> </tr> <tr> <td>Void:</td> <td>Subset: Drainage</td> <td>Sheets: DD-13 of 23</td> </tr> </table>	As Constructed	BELFORD-HAPPY CANYON CREEK HAPPY CANYON CREEK DROP STRUCTURE CHEROKEE TRAIL GRADING DETAIL		Project No./Code	No Revisions:	Designer: CDT	Structure Numbers	Revised:	Detailer: ZJG		Void:	Subset: Drainage	Sheets: DD-13 of 23	Sheet Number 76
Sheet Revisions																										
Date	Comments	Initials																								
As Constructed	BELFORD-HAPPY CANYON CREEK HAPPY CANYON CREEK DROP STRUCTURE CHEROKEE TRAIL GRADING DETAIL		Project No./Code																							
No Revisions:	Designer: CDT	Structure Numbers																								
Revised:	Detailer: ZJG																									
Void:	Subset: Drainage	Sheets: DD-13 of 23																								



- NOTES:
1. SEE SHEET DD-16 FOR DROP NO. 1 POINT DATA.
 2. SEE SHEET DD-15 FOR SECTIONS A AND B.
 3. SEE SHEET DD-04 FOR SOIL RIPRAP DETAILS.
 4. SEE SHEET DD-05 FOR GROUTED BOULDER DETAILS.
 5. SEE UTILITY PLANS FOR ADDITIONAL INFORMATION
 6. UTILITY INFORMATION SHOWN IS PLOTTED FROM THE BEST AVAILABLE DATA. THE CONTRACTOR IS RESPONSIBLE FOR MAKING THEIR OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AT 811 FOR UTILITY LOCATIONS AT LEAST 48 HOURS PRIOR TO EXCAVATING. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY FOR ANY UTILITIES THAT NEED RELOCATING.

LEGEND

- TOP OF CUT
- - - - - TOE OF FILL
- WETLANDS
- SOIL RIPRAP (12 INCH)
- RIPRAP (18 INCH)
- 24" GROUTED BOULDERS
- 24" GROUTED BOULDERS (BURIED)

HORIZONTAL SCALE: 1"=40'



Print Date: 6/18/2021 8:52:56 AM
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Sheet Revisions			
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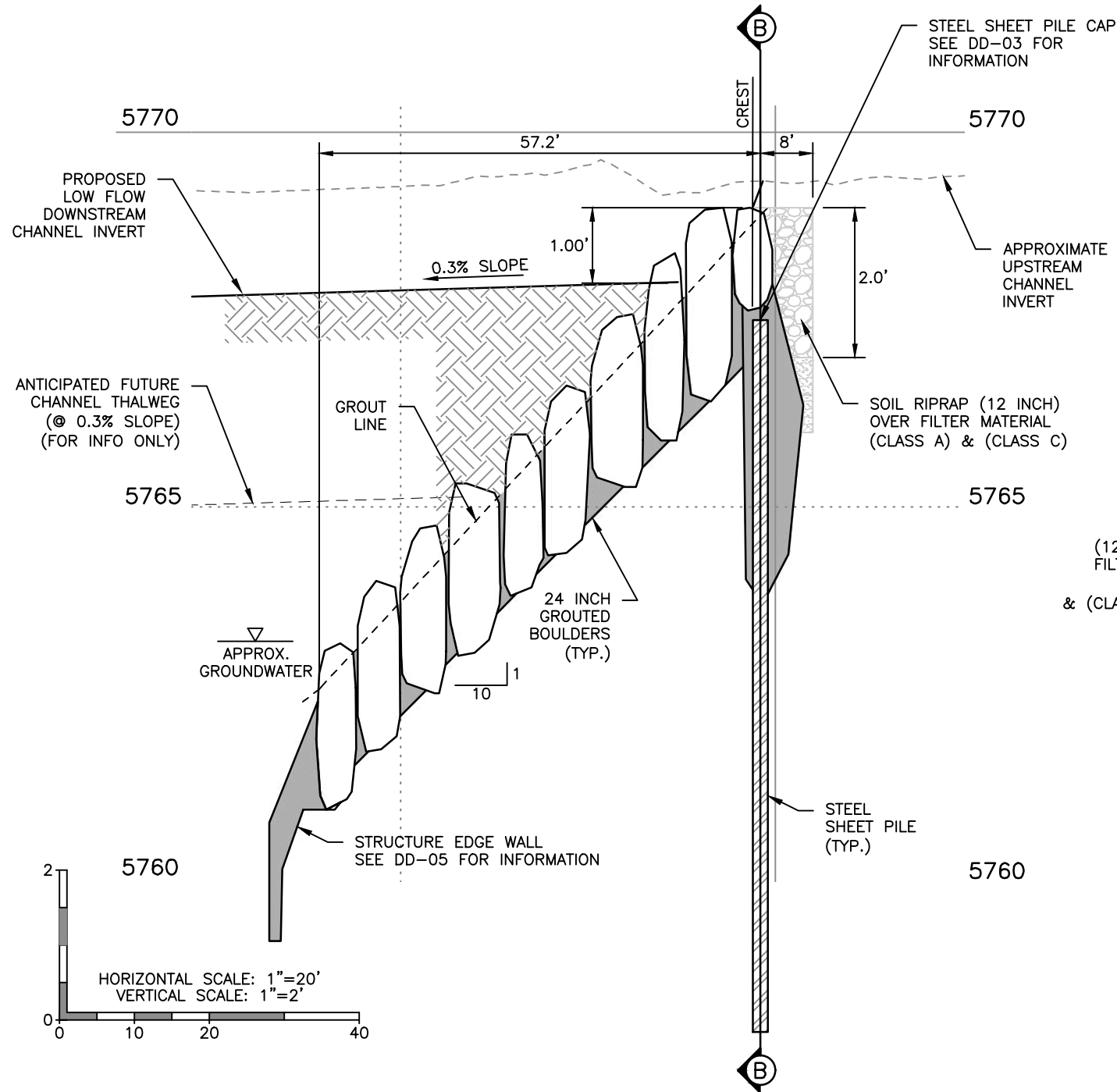


As Constructed	BELFORD-HAPPY CANYON CREEK		Project No./Code
No Revisions:	HAPPY CANYON CREEK DROP STRUCTURE		
Revised:	DROP NO. 1 PLAN		Sheet Number 77
Void:	Designer:	CDT	
	Detailer:	ZJG	
	Subset:	Drainage	Sheets: DD-14 of 23

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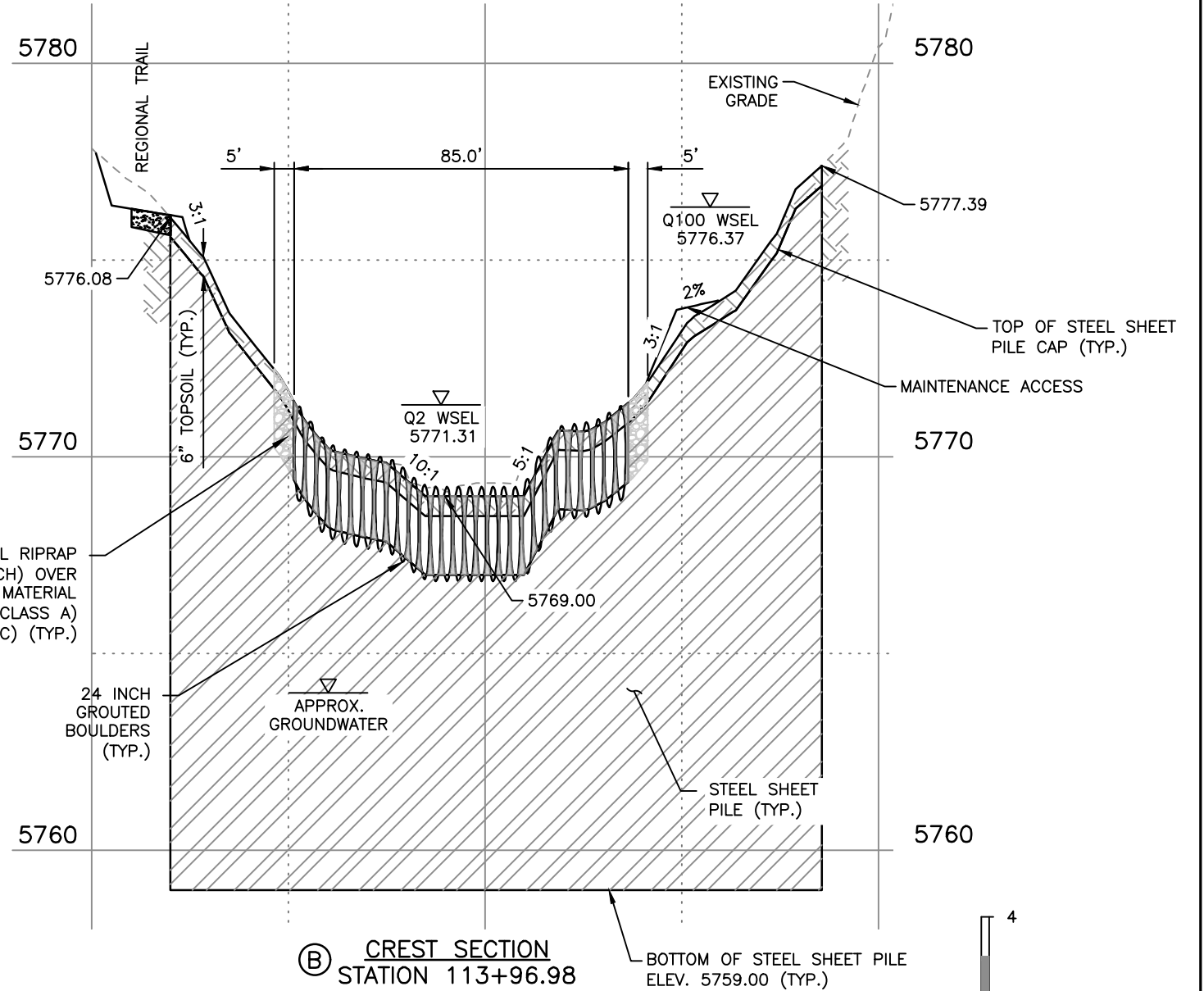
NOTES

- UTILITY INFORMATION SHOWN IS PLOTTED FROM THE BEST AVAILABLE DATA. THE CONTRACTOR IS RESPONSIBLE FOR MAKING THEIR OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AT 811 FOR UTILITY LOCATIONS AT LEAST 48 HOURS PRIOR TO EXCAVATING. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY FOR ANY UTILITIES THAT NEED RELOCATING.
- SEE UTILITY PLANS FOR ADDITIONAL INFORMATION.

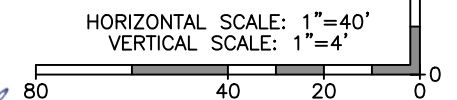


(A) **GRouted BOULDER DROP NO. 1 PROFILE**
STA 113+39.80 TO 114+04.98

DROP STRUCTURE NO. 1



(B) **CREST SECTION**
STATION 113+96.98



HAPPY CANYON CREEK HYDRAULICS	
Q100=	8,303 C.F.S
Q100 VELOCITY =	14.17 F.P.S
FROUDE No.=	0.93
FOR INFO ONLY	

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Print Date: 6/18/2021 6:42:29 AM
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Date	Comments	Initials	



As Constructed	BELFORD-HAPPY CANYON CREEK HAPPY CANYON CREEK DROP STRUCTURE DROP NO. 1 PROFILE/DETAILS		Project No./Code
No Revisions:	Designer: CDT	Structure Numbers	
Revised:	Detailer: ZJG		
Void:	Subset: Drainage	Sheets: DD-15 of 23	Sheet Number 78

HAPPY CANYON CREEK DROP STRUCTURE NO. 1 STEEL SHEET PILE CUTOFF WALL POINT DATA

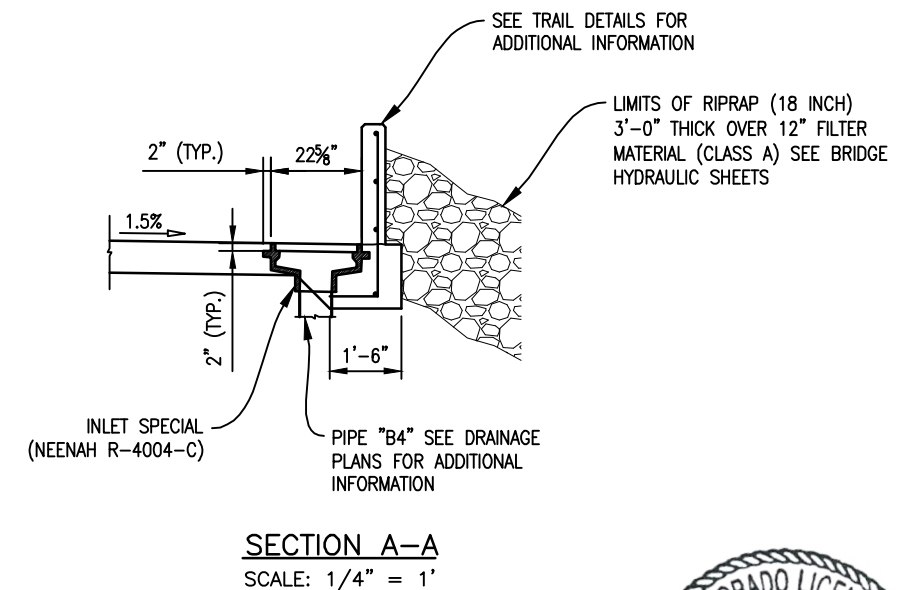
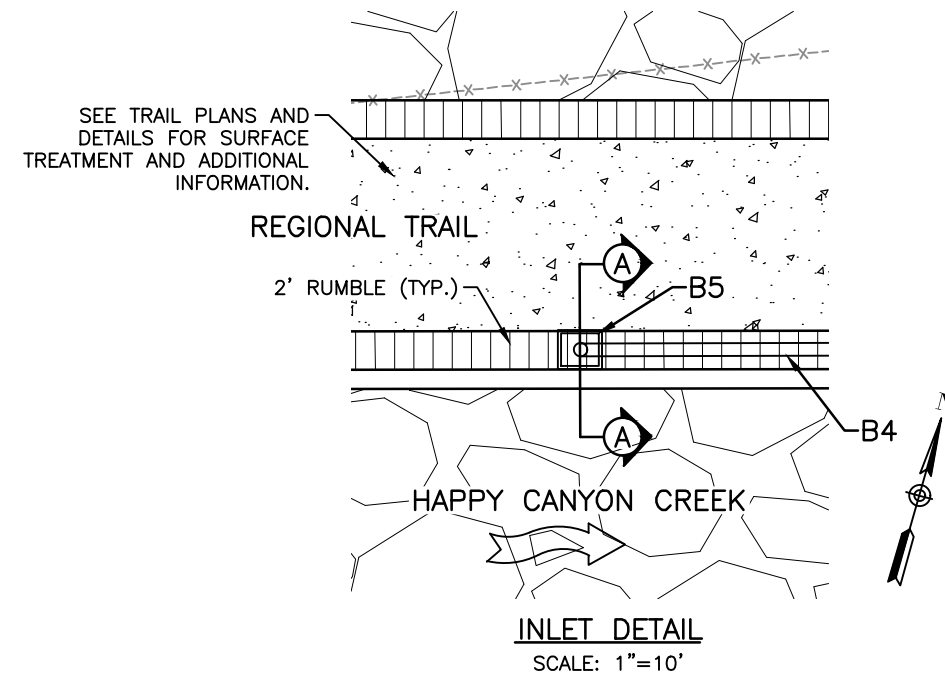
POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
W1	27675.42	94283.50	5777.39	STEEL SHEET PILE WALL - TOP OF STEEL CAP EL.
W2	27745.87	94255.72	5767.00	STEEL SHEET PILE WALL - TOP OF STEEL CAP EL.
W3	27770.71	94252.88	5767.00	STEEL SHEET PILE WALL - TOP OF STEEL CAP EL.
W4	27834.84	94262.40	5776.14	STEEL SHEET PILE WALL - TOP OF STEEL CAP EL.

HAPPY CANYON CREEK DROP STRUCTURE NO. 1 GROUTED BOULDER POINT DATA

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
GB1	27721.52	94265.85	5771.33	24 INCH GROUTED BOULDER - TOP OF BOULDER EL.
GB2	27745.93	94256.22	5769.00	24 INCH GROUTED BOULDER - TOP OF BOULDER EL.
GB3	27770.77	94253.37	5769.00	24 INCH GROUTED BOULDER - TOP OF BOULDER EL.
GB4	27803.26	94258.21	5771.31	24 INCH GROUTED BOULDER - TOP OF BOULDER EL.
GB5	27794.60	94308.20	5763.28	24 INCH GROUTED BOULDER - TOP OF BOULDER EL.
GB6	27749.89	94313.32	5763.28	24 INCH GROUTED BOULDER - TOP OF BOULDER EL.
GB7	27748.38	64266.00	5768.00	24 INCH GROUTED BOULDER - TOP OF BOULDER EL.
GB8	27770.60	94263.46	5768.00	24 INCH GROUTED BOULDER - TOP OF BOULDER EL.

HAPPY CANYON CREEK DROP STRUCTURE NO. 1 SOIL RIPRAP POINT DATA

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
SR1	27821.75	94260.96	5774.00	SOIL RIPRAP (12 INCH) - FINISHED GRADE EL.
SR2	27816.88	94288.38	5772.05	SOIL RIPRAP (12 INCH) - FINISHED GRADE EL.
SR3	27814.14	94331.42	5770.00	SOIL RIPRAP (12 INCH) - FINISHED GRADE EL.
SR4	27821.34	94373.78	5769.37	SOIL RIPRAP (12 INCH) - FINISHED GRADE EL.
SR5	27831.26	94408.21	5769.24	SOIL RIPRAP (12 INCH) - FINISHED GRADE EL.
SR6	27713.51	94259.36	5772.32	SOIL RIPRAP (12 INCH) - FINISHED GRADE EL.
SR7	27744.91	94247.28	5770.17	SOIL RIPRAP (12 INCH) - FINISHED GRADE EL.
SR8	27769.75	94244.43	5769.27	SOIL RIPRAP (12 INCH) - FINISHED GRADE EL.
SR9	27809.53	94250.06	5772.74	SOIL RIPRAP (12 INCH) - FINISHED GRADE EL.
SR10	27808.21	94258.94	5772.14	SOIL RIPRAP (12 INCH) - FINISHED GRADE EL.
SR11	27799.78	94307.61	5770.41	SOIL RIPRAP (12 INCH) - FINISHED GRADE EL.
SR12	27794.60	94308.20	5770.01	SOIL RIPRAP (12 INCH) - FINISHED GRADE EL.
SR13	27749.89	94313.32	5770.02	SOIL RIPRAP (12 INCH) - FINISHED GRADE EL.
SR14	27744.44	94313.95	5770.34	SOIL RIPRAP (12 INCH) - FINISHED GRADE EL.
SR15	27716.81	94267.71	5771.86	SOIL RIPRAP (12 INCH) - FINISHED GRADE EL.



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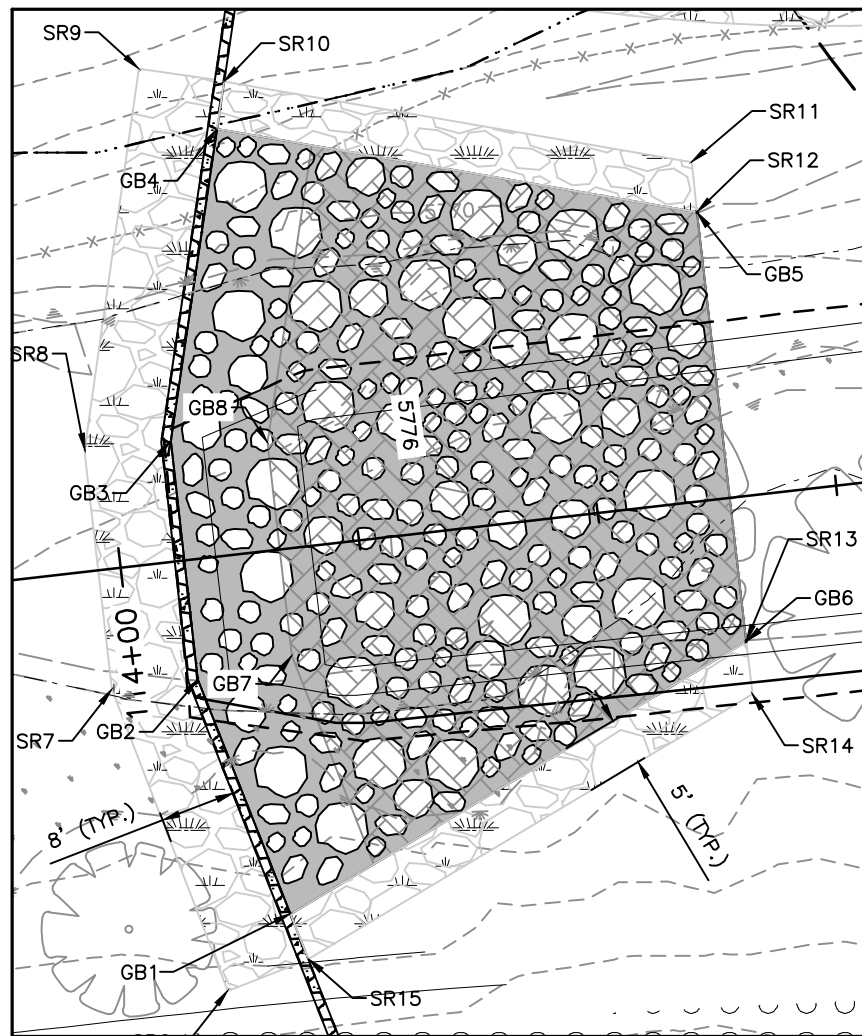
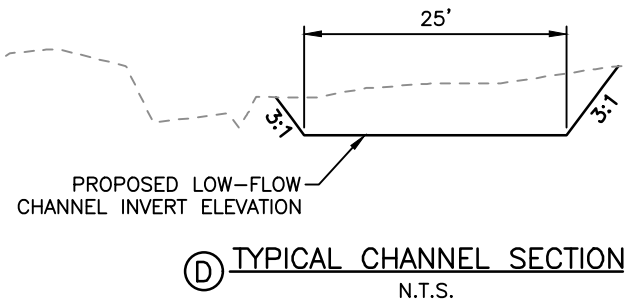
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Date	Comments	Initials	



As Constructed	BELFORD-HAPPY CANYON CREEK HAPPY CANYON CREEK DROP STRUCTURE DROP NO. 1 POINT DATA DETAIL		Project No./Code
No Revisions:	Designer: CDT	Structure Numbers	
Revised:	Detailer: SMT	Sheets: DD-16 of 23	Sheet Number 79
Void:	Subset: Drainage		

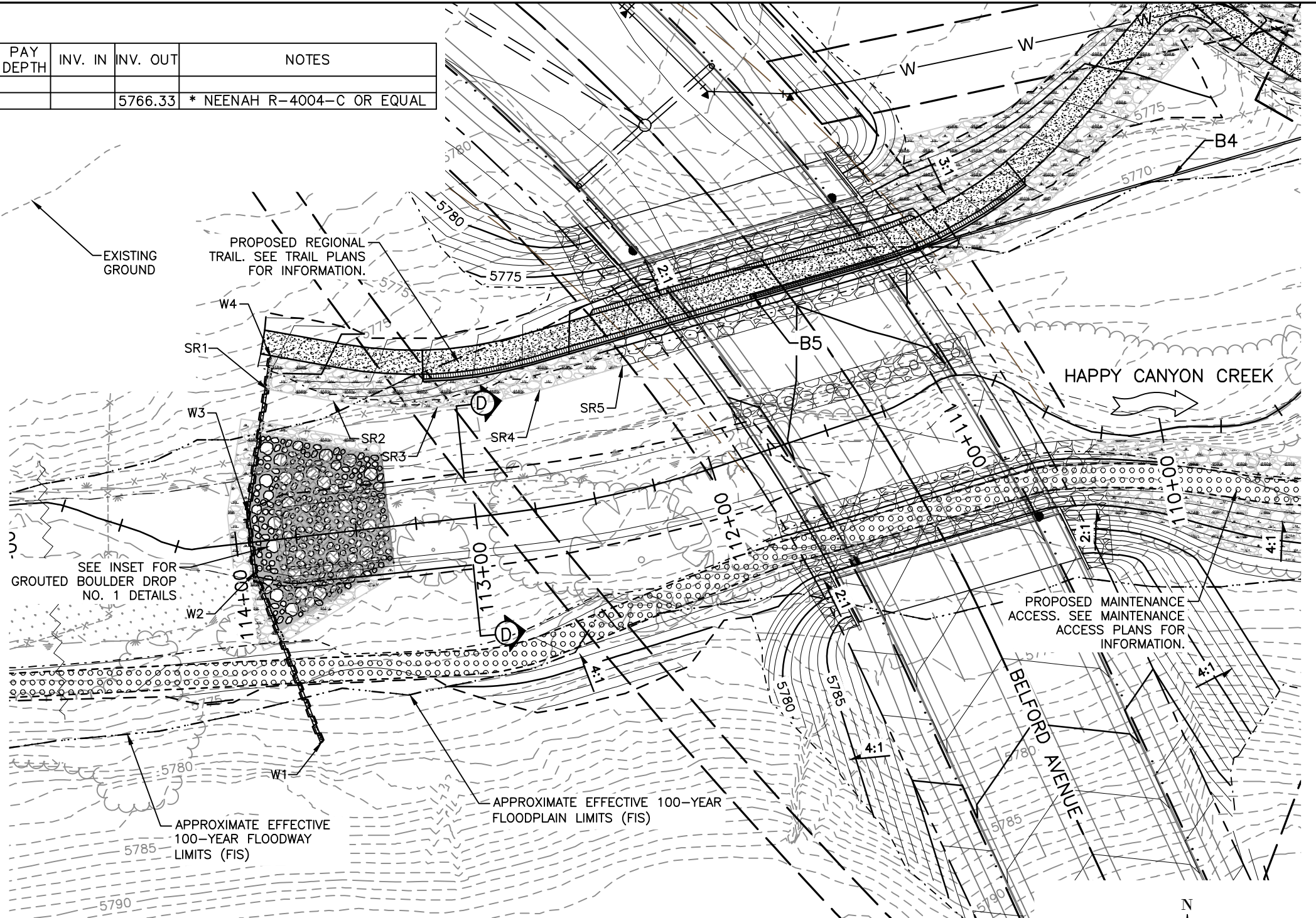
I.D.	NORTHING & EASTING	ITEM	LENGTH	PAY DEPTH	INV. IN	INV. OUT	NOTES
B4		8" PLASTIC PIPE	241'				
B5	N: 27860.43, E: 94462.48	INLET SPECIAL				5766.33	* NEENAH R-4004-C OR EQUAL

* SEE INLET SPECIAL DETAIL ON SHEET DD-16



DROP NO. 1 DETAILS

HORIZONTAL SCALE: 1"=20'



SEE INSET FOR GROUTED BOULDER DROP NO. 1 DETAILS

APPROXIMATE EFFECTIVE 100-YEAR FLOODWAY LIMITS (FIS)

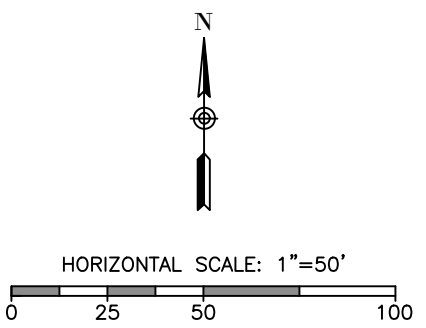
APPROXIMATE EFFECTIVE 100-YEAR FLOODPLAIN LIMITS (FIS)

PROPOSED MAINTENANCE ACCESS. SEE MAINTENANCE ACCESS PLANS FOR INFORMATION.



NOTES:

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- SEE SHEET DD-16 FOR DROP NO. 1 POINT DATA.



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As Constructed	BELFORD-HAPPY CANYON CREEK HAPPY CANYON CREEK DROP STRUCTURE DROP NO. 1 GRADING DETAIL		Project No./Code
No Revisions:	Designer: CDT	Structure Numbers	
Revised:	Detailer: ZJG		
Void:	Subset: Drainage	Sheets: DD-17 of 23	Sheet Number 80

HAPPY CANYON CREEK DROP STRUCTURE NO. 2 STEEL SHEET PILE CUTOFF WALL POINT DATA

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
W1	27522.92	93938.45	5780.50	STEEL SHEET PILE WALL – TOP OF STEEL CAP EL.
W2	27627.11	93827.62	5770.47	STEEL SHEET PILE WALL – TOP OF STEEL CAP EL.
W3	27648.48	93814.39	5770.47	STEEL SHEET PILE WALL – TOP OF STEEL CAP EL.
W4	27680.82	93804.64	5780.50	STEEL SHEET PILE WALL – TOP OF STEEL CAP EL.

HAPPY CANYON CREEK DROP STRUCTURE NO. 2 CHANNEL REVETMENT SOIL RIPRAP POINT DATA

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
CR1	27384.46	93620.98	5776.96	SOIL RIPRAP (12 INCH) – FINISHED GRADE EL.
CR2	27409.72	93613.85	5776.89	SOIL RIPRAP (12 INCH) – FINISHED GRADE EL.
CR3	27455.43	93616.23	5776.93	SOIL RIPRAP (12 INCH) – FINISHED GRADE EL.
CR4	27504.52	93635.29	5777.00	SOIL RIPRAP (12 INCH) – FINISHED GRADE EL.
CR5	27521.43	93646.91	5777.11	SOIL RIPRAP (12 INCH) – FINISHED GRADE EL.
CR6	27547.94	93676.17	5776.07	SOIL RIPRAP (12 INCH) – FINISHED GRADE EL.
CR7	27561.71	93693.16	5776.00	SOIL RIPRAP (12 INCH) – FINISHED GRADE EL.
CR8	27566.68	93697.18	5776.04	SOIL RIPRAP (12 INCH) – FINISHED GRADE EL.
CR9	27681.39	93814.88	5776.99	SOIL RIPRAP (12 INCH) – FINISHED GRADE EL.
CR10	27699.52	93838.94	5776.86	SOIL RIPRAP (12 INCH) – FINISHED GRADE EL.
CR11	27713.46	93854.66	5777.09	SOIL RIPRAP (12 INCH) – FINISHED GRADE EL.
CR12	27724.95	93872.92	5776.90	SOIL RIPRAP (12 INCH) – FINISHED GRADE EL.
CR13	27732.94	93886.34	5777.00	SOIL RIPRAP (12 INCH) – FINISHED GRADE EL.
CR14	27743.41	93902.84	5777.05	SOIL RIPRAP (12 INCH) – FINISHED GRADE EL.
CR15	27754.96	93929.13	5776.62	SOIL RIPRAP (12 INCH) – FINISHED GRADE EL.
CR16	27765.52	93944.63	5775.94	SOIL RIPRAP (12 INCH) – FINISHED GRADE EL.
CR17	27769.88	93961.99	5775.77	SOIL RIPRAP (12 INCH) – FINISHED GRADE EL.
CR18	27781.73	93978.73	5775.97	SOIL RIPRAP (12 INCH) – FINISHED GRADE EL.
CR19	27782.09	94006.03	5775.95	SOIL RIPRAP (12 INCH) – FINISHED GRADE EL.
CR20	27787.18	94029.84	5776.06	SOIL RIPRAP (12 INCH) – FINISHED GRADE EL.

HAPPY CANYON CREEK DROP STRUCTURE NO. 2 GROUTED BOULDER POINT DATA

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
GB1	27602.62	93854.40	5774.52	24 INCH GROUTED BOULDER – TOP OF BOULDER EL.
GB2	27618.57	93837.43	5772.47	24 INCH GROUTED BOULDER – TOP OF BOULDER EL.
GB3	27655.65	93812.75	5772.47	24 INCH GROUTED BOULDER – TOP OF BOULDER EL.
GB4	27669.08	93808.70	5774.43	24 INCH GROUTED BOULDER – TOP OF BOULDER EL.
GB5	27673.96	93851.91	5768.00	24 INCH GROUTED BOULDER – TOP OF BOULDER EL.
GB6	27644.22	93870.17	5768.00	24 INCH GROUTED BOULDER – TOP OF BOULDER EL.

HAPPY CANYON CREEK DROP STRUCTURE NO. 2 DROP STRUCTURE SOIL RIPRAP POINT DATA

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
SR1	27592.36	93852.18	5775.35	SOIL RIPRAP (12 INCH) – FINISHED GRADE EL.
SR2	27622.59	93820.43	5772.58	SOIL RIPRAP (12 INCH) – FINISHED GRADE EL.
SR3	27644.06	93807.13	5772.41	SOIL RIPRAP (12 INCH) – FINISHED GRADE EL.
SR4	27671.40	93798.60	5779.30	SOIL RIPRAP (12 INCH) – FINISHED GRADE EL.
SR5	27675.20	93818.23	5773.98	SOIL RIPRAP (12 INCH) – FINISHED GRADE EL.
SR6	27678.68	93848.83	5773.30	SOIL RIPRAP (12 INCH) – FINISHED GRADE EL.
SR7	27673.98	93851.74	5773.00	SOIL RIPRAP (12 INCH) – FINISHED GRADE EL.
SR8	27644.22	93870.17	5772.27	SOIL RIPRAP (12 INCH) – FINISHED GRADE EL.
SR9	27638.87	93873.48	5773.38	SOIL RIPRAP (12 INCH) – FINISHED GRADE EL.
SR10	27598.92	93858.34	5775.22	SOIL RIPRAP (12 INCH) – FINISHED GRADE EL.



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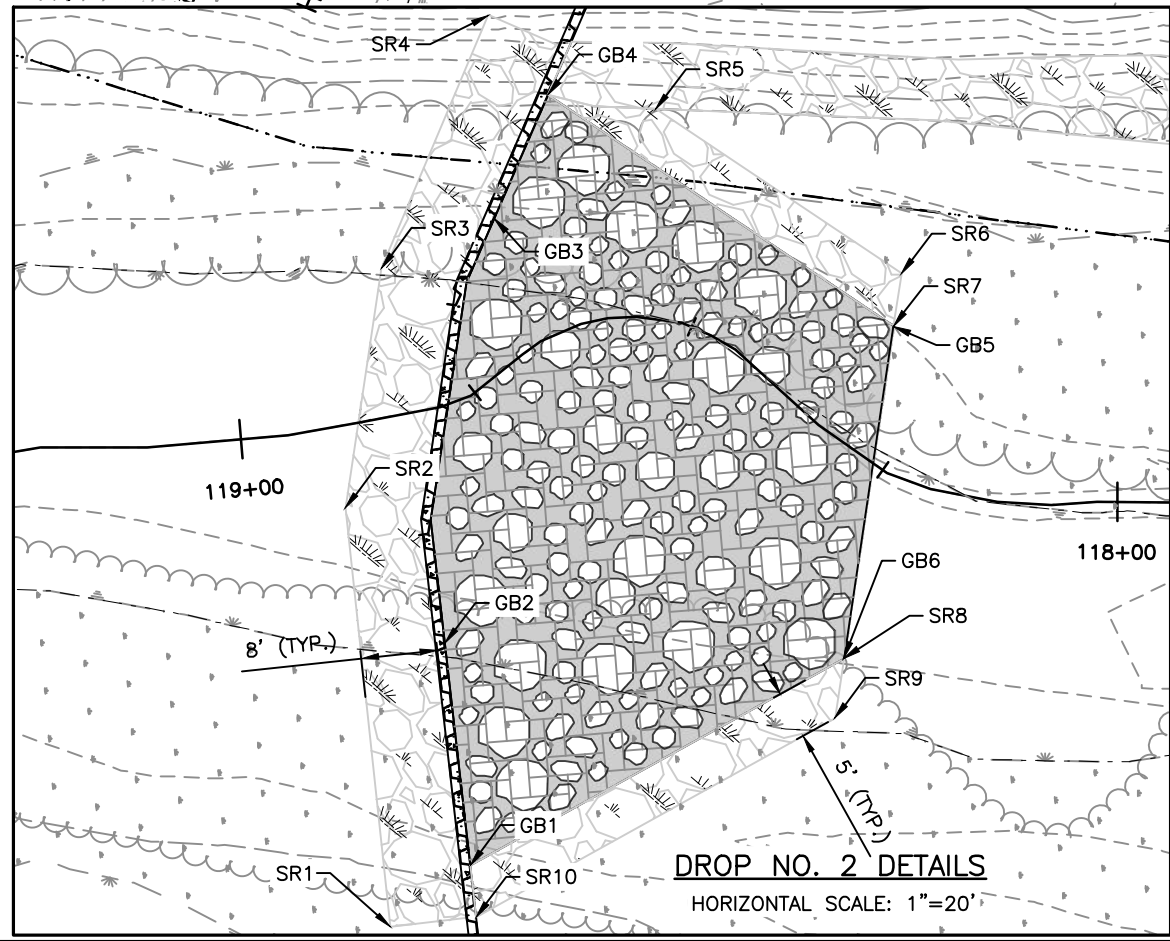
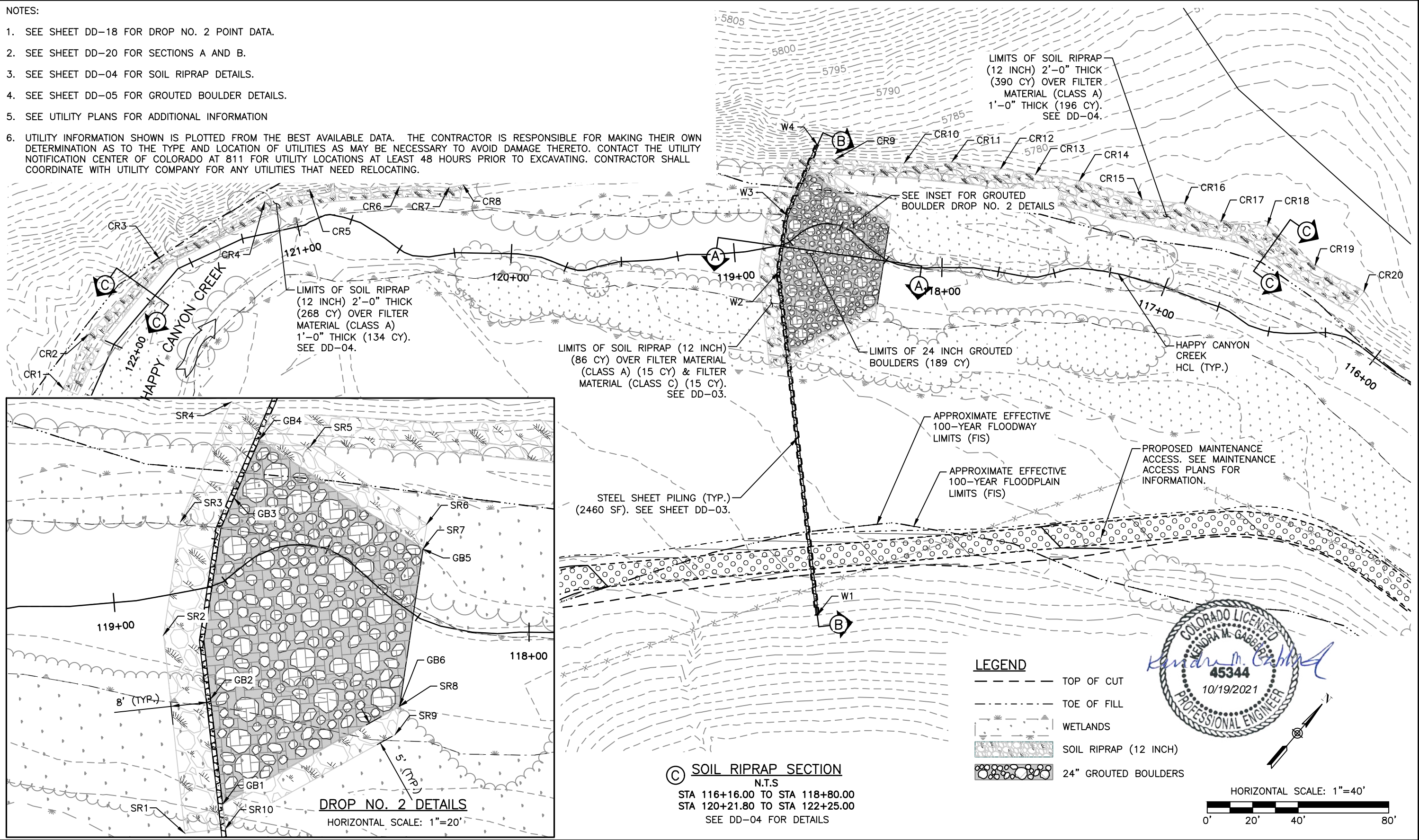
Sheet Revisions			
(R-X)	Date	Comments	Initials



As Constructed	BELFORD-HAPPY CANYON CREEK HAPPY CANYON CREEK DROP STRUCTURE DROP NO. 2 POINT DATA DETAIL		Project No./Code
No Revisions:	Designer: CDT	Structure	
Revised:	Detailer: ZJG	Numbers	
Void:	Subset: Drainage	Sheets: DD-18 of 23	Sheet Number 81

NOTES:

1. SEE SHEET DD-18 FOR DROP NO. 2 POINT DATA.
2. SEE SHEET DD-20 FOR SECTIONS A AND B.
3. SEE SHEET DD-04 FOR SOIL RIPRAP DETAILS.
4. SEE SHEET DD-05 FOR GROUTED BOULDER DETAILS.
5. SEE UTILITY PLANS FOR ADDITIONAL INFORMATION
6. UTILITY INFORMATION SHOWN IS PLOTTED FROM THE BEST AVAILABLE DATA. THE CONTRACTOR IS RESPONSIBLE FOR MAKING THEIR OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AT 811 FOR UTILITY LOCATIONS AT LEAST 48 HOURS PRIOR TO EXCAVATING. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY FOR ANY UTILITIES THAT NEED RELOCATING.



LIMITS OF SOIL RIPRAP (12 INCH) (86 CY) OVER FILTER MATERIAL (CLASS A) (15 CY) & FILTER MATERIAL (CLASS C) (15 CY). SEE DD-03.

LIMITS OF SOIL RIPRAP (12 INCH) 2'-0" THICK (390 CY) OVER FILTER MATERIAL (CLASS A) 1'-0" THICK (196 CY). SEE DD-04.

LIMITS OF SOIL RIPRAP (12 INCH) 2'-0" THICK (268 CY) OVER FILTER MATERIAL (CLASS A) 1'-0" THICK (134 CY). SEE DD-04.

SEE INSET FOR GROUTED BOULDER DROP NO. 2 DETAILS

LIMITS OF 24 INCH GROUTED BOULDERS (189 CY)

STEEL SHEET PILING (TYP.) (2460 SF). SEE SHEET DD-03.

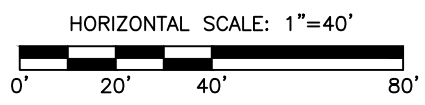
APPROXIMATE EFFECTIVE 100-YEAR FLOODWAY LIMITS (FIS)

APPROXIMATE EFFECTIVE 100-YEAR FLOODPLAIN LIMITS (FIS)

PROPOSED MAINTENANCE ACCESS. SEE MAINTENANCE ACCESS PLANS FOR INFORMATION.

LEGEND

- TOP OF CUT
- TOE OF FILL
- WETLANDS
- SOIL RIPRAP (12 INCH)
- 24" GROUTED BOULDERS



© SOIL RIPRAP SECTION
N.T.S.
STA 116+16.00 TO STA 118+80.00
STA 120+21.80 TO STA 122+25.00
SEE DD-04 FOR DETAILS

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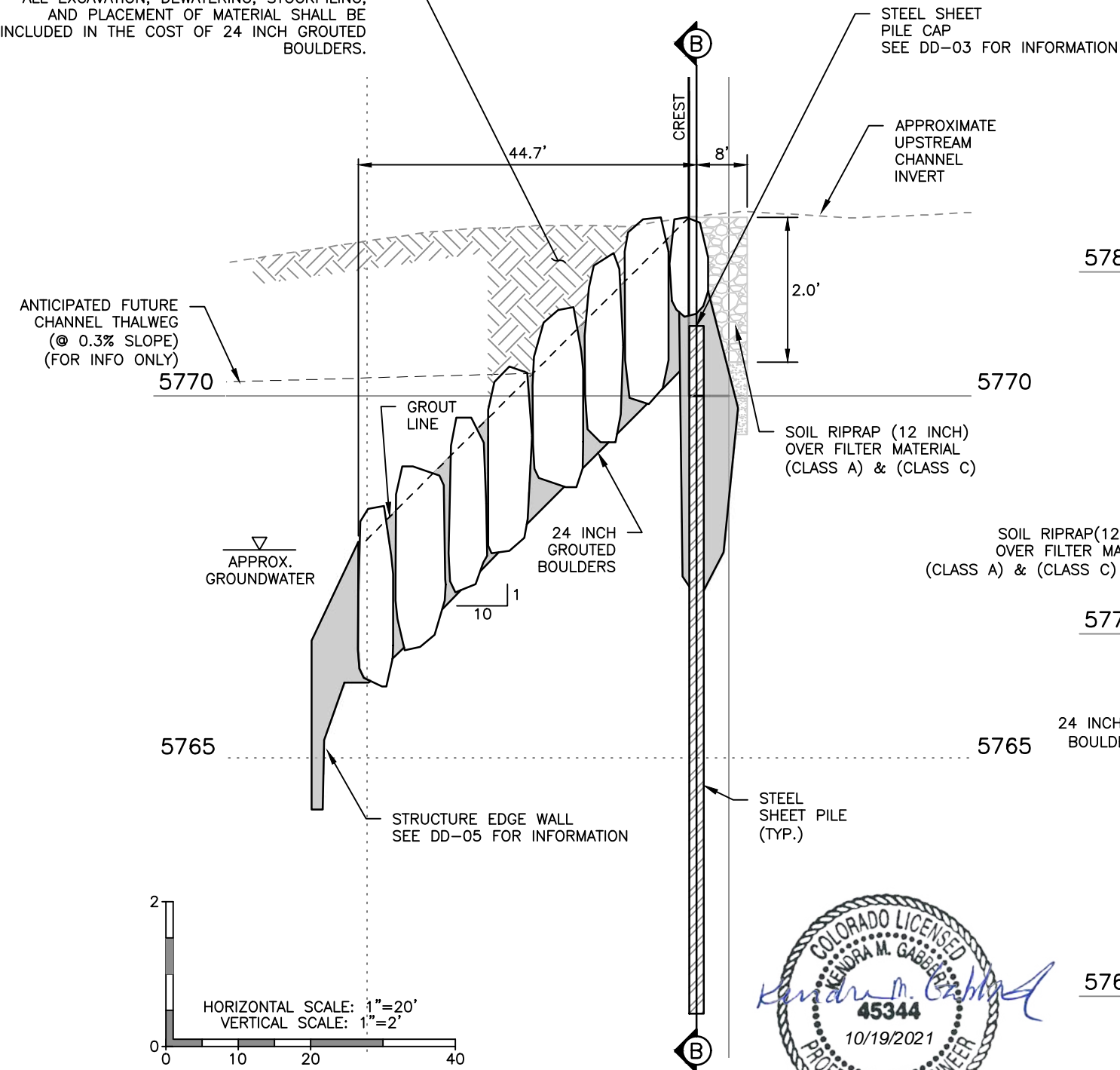
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No Revisions:	Designer: CDT	Structure Numbers	
Revised:	Detailer: ZJG	Sheets: DD-19 of 23	Sheet Number 82
Void:	Subset: Drainage		

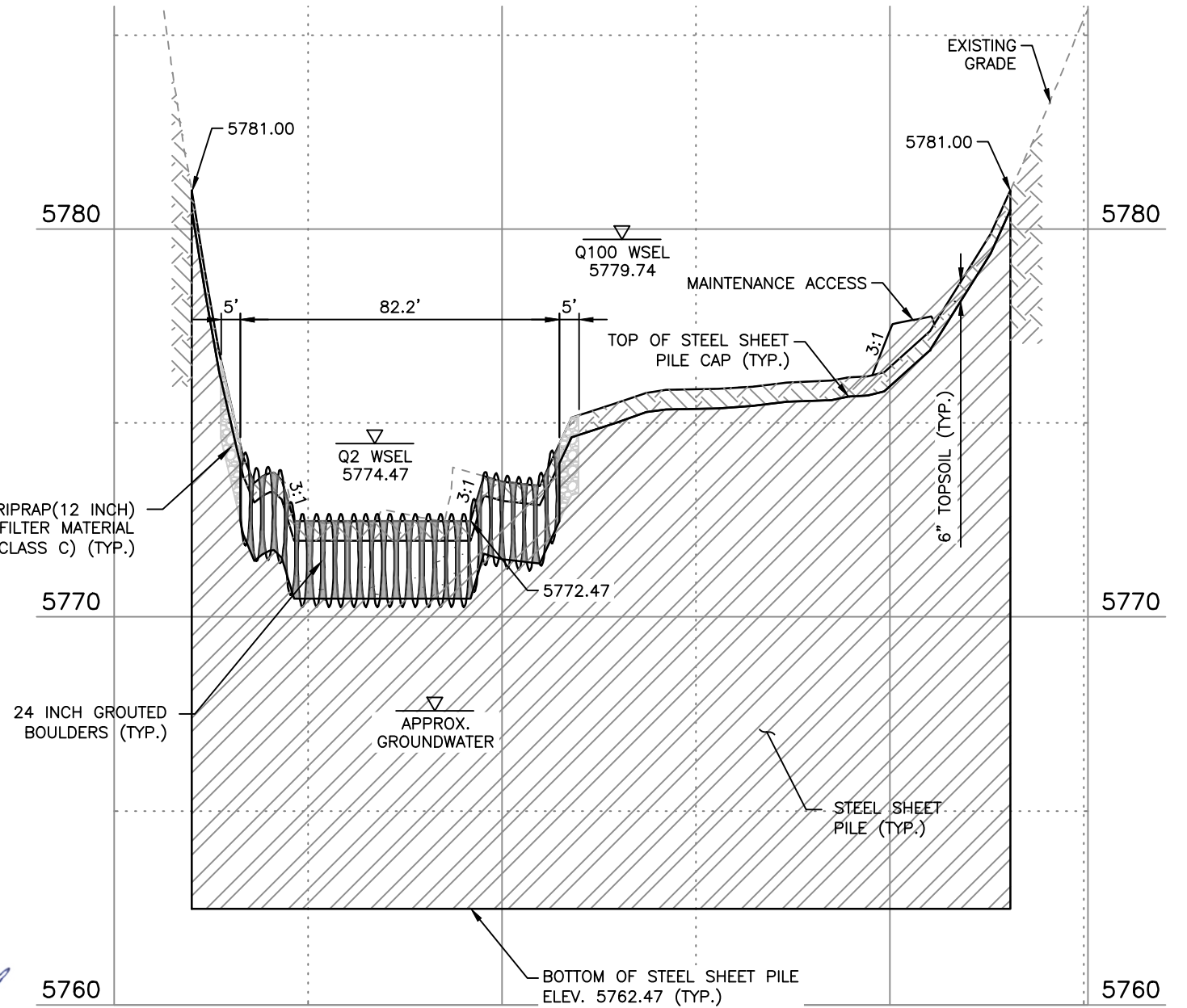
NOTES

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- SEE UTILITY PLANS FOR ADDITIONAL INFORMATION.

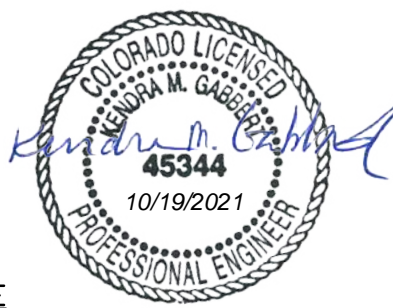
MATERIAL SHALL BE EXCAVATED FOR 24 INCH GROUTED BOULDERS AND STOCKPILED. STOCKPILED MATERIAL SHALL BE REAPPLIED AFTER DROP STRUCTURE IS CONSTRUCTED. ALL EXCAVATION, DEWATERING, STOCKPILING, AND PLACEMENT OF MATERIAL SHALL BE INCLUDED IN THE COST OF 24 INCH GROUTED BOULDERS.



(A) GROUTED BOULDER DROP NO. 2 PROFILE
STA 118+49.81 TO 119+02.49



(B) CREST SECTION
STATION 118+94.49



DROP STRUCTURE NO. 2

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

HAPPY CANYON CREEK HYDRAULICS
Q100= 8,303 C.F.S
Q100 VELOCITY = 11.93 F.P.S
FROUDE No.=0.79
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Revised:	Detailer: ZJG		
Void:	Subset: Drainage	Sheets: DD-20 of 23	Sheet Number 83

HAPPY CANYON CREEK DROP STRUCTURE NO. 3 STEEL SHEET PILE CUTOFF WALL POINT DATA

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
W1	27309.13	93921.77	5783.50	STEEL SHEET PILE WALL – TOP OF STEEL CAP EL.
W2	27304.40	93917.95	5780.00	STEEL SHEET PILE WALL – TOP OF STEEL CAP EL.
W3	27208.88	93840.75	5779.50	STEEL SHEET PILE WALL – TOP OF STEEL CAP EL.
W4	27201.63	93834.88	5775.63	STEEL SHEET PILE WALL – TOP OF STEEL CAP EL.
W5	27174.38	93805.42	5775.06	STEEL SHEET PILE WALL – TOP OF STEEL CAP EL.
W6	27143.34	93746.45	5777.76	STEEL SHEET PILE WALL – TOP OF STEEL CAP EL.
W7	27143.34	93585.23	5783.50	STEEL SHEET PILE WALL – TOP OF STEEL CAP EL.

HAPPY CANYON CREEK DROP STRUCTURE NO. 3 BANK GRADING POINT DATA

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
G1	27326.07	93919.34	5787.00	FINISHED GRADE EL.
G2	27306.20	93950.35	5787.00	FINISHED GRADE EL.
G3	27290.13	93942.45	5782.50	FINISHED GRADE EL.
G4	27195.58	93861.83	5780.00	FINISHED GRADE EL.
G5	27228.32	93816.93	5780.00	FINISHED GRADE EL.
G6	27270.93	93781.27	5780.00	FINISHED GRADE EL.
G7	27367.70	93861.41	5782.50	FINISHED GRADE EL.
G8	27322.50	93895.78	5782.50	FINISHED GRADE EL.
G9	27343.38	93895.03	5786.00	FINISHED GRADE EL.

HAPPY CANYON CREEK DROP STRUCTURE NO. 3 GROUTED BOULDER POINT DATA


POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
GB1	27168.76	93793.68	5778.19	24 INCH GROUTED BOULDER – TOP OF BOULDER EL.
GB2	27173.42	93802.52	5777.14	24 INCH GROUTED BOULDER – TOP OF BOULDER EL.
GB3	27201.27	93833.76	5777.14	24 INCH GROUTED BOULDER – TOP OF BOULDER EL.
GB4	27203.54	93835.78	5778.40	24 INCH GROUTED BOULDER – TOP OF BOULDER EL.
GB5	27234.88	93801.59	5772.49	24 INCH GROUTED BOULDER – TOP OF BOULDER EL.
GB6	27213.15	93778.09	5772.49	24 INCH GROUTED BOULDER – TOP OF BOULDER EL.

HAPPY CANYON CREEK DROP STRUCTURE NO. 3 SOIL RIPRAP POINT DATA

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
SR1	27140.46	93759.22	5778.01	SOIL RIPRAP (12 INCH) – FINISHED GRADE EL.
SR2	27168.09	93811.14	5777.07	SOIL RIPRAP (12 INCH) – FINISHED GRADE EL.
SR3	27195.43	93840.70	5777.55	SOIL RIPRAP (12 INCH) – FINISHED GRADE EL.
SR4	27201.78	93845.94	5779.67	SOIL RIPRAP (12 INCH) – FINISHED GRADE EL.
SR5	27238.29	93805.27	5779.59	SOIL RIPRAP (12 INCH) – FINISHED GRADE EL.
SR6	27234.88	93801.59	5778.14	SOIL RIPRAP (12 INCH) – FINISHED GRADE EL.
SR7	27213.15	93778.09	5777.80	SOIL RIPRAP (12 INCH) – FINISHED GRADE EL.
SR8	27199.57	93763.41	5777.80	SOIL RIPRAP (12 INCH) – FINISHED GRADE EL.



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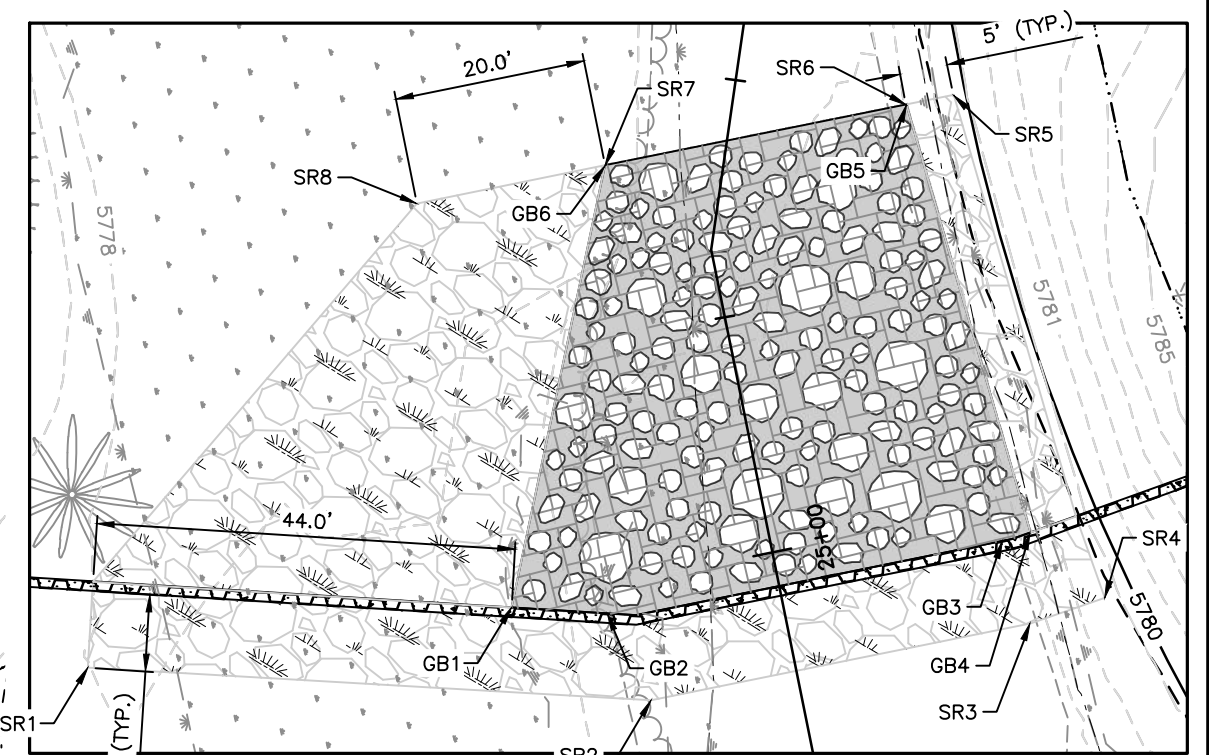
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No Revisions:	Designer: CDT	Structure Numbers	
Revised:	Detailer: ZJG		
Void:	Subset: Drainage	Sheets: DD-21 of 23	Sheet Number 84

NOTES:

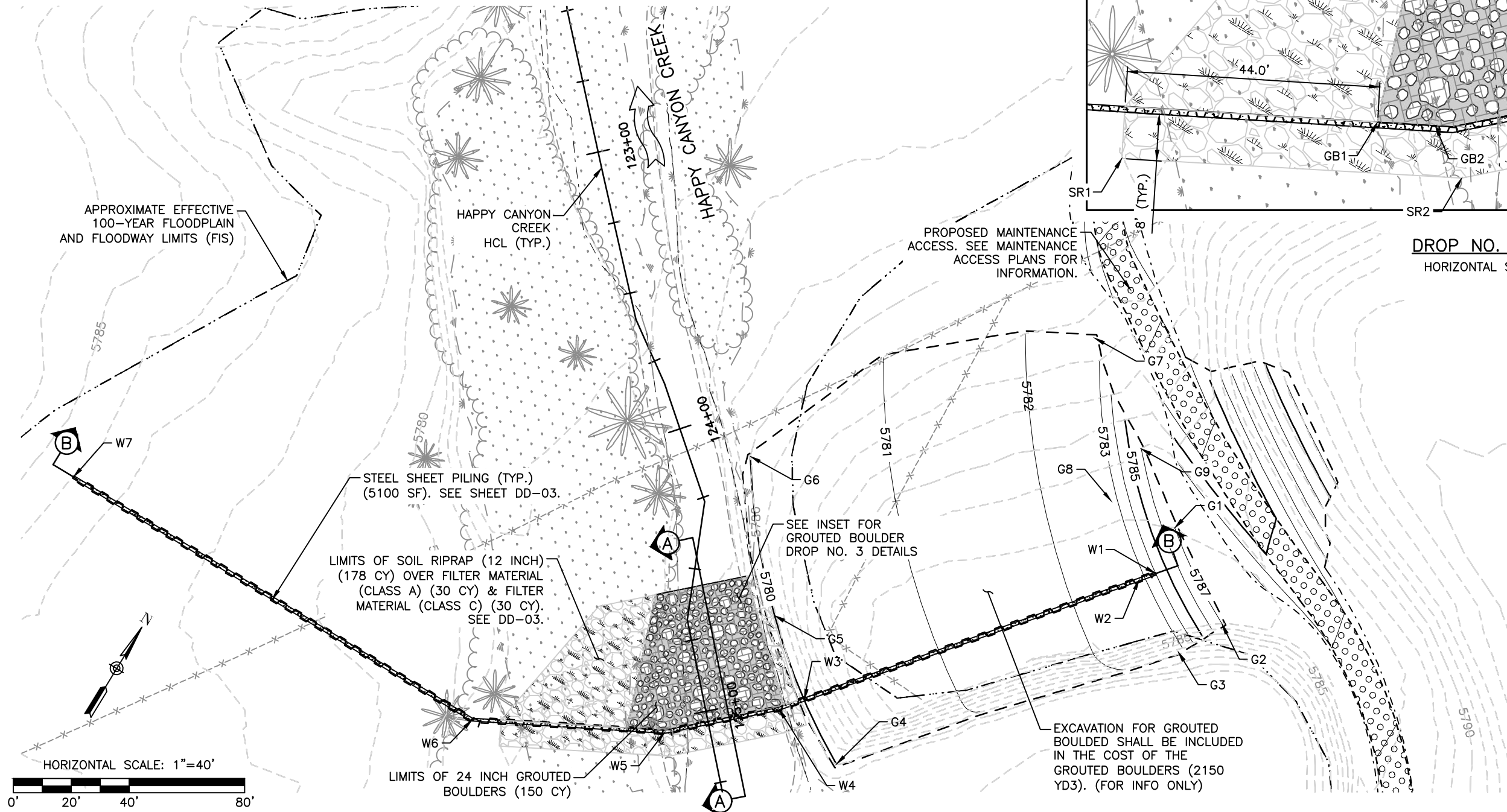
1. SEE SHEET DD-21 FOR DROP NO. 3 POINT DATA.
2. SEE SHEET DD-23 FOR SECTIONS A & B.
3. SEE SHEET DD-04 FOR SOIL RIPRAP DETAILS.
4. SEE SHEET DD-05 FOR GROUTED BOULDER DETAILS.
5. SEE UTILITY PLANS FOR ADDITIONAL INFORMATION
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LEGEND

- TOP OF CUT
- TOE OF FILL
- [Symbol] WETLANDS
- [Symbol] SOIL RIPRAP (12 INCH)
- [Symbol] 24" GROUTED BOULDERS (BURIED)



DROP NO. 3 DETAILS
HORIZONTAL SCALE: 1"=20'



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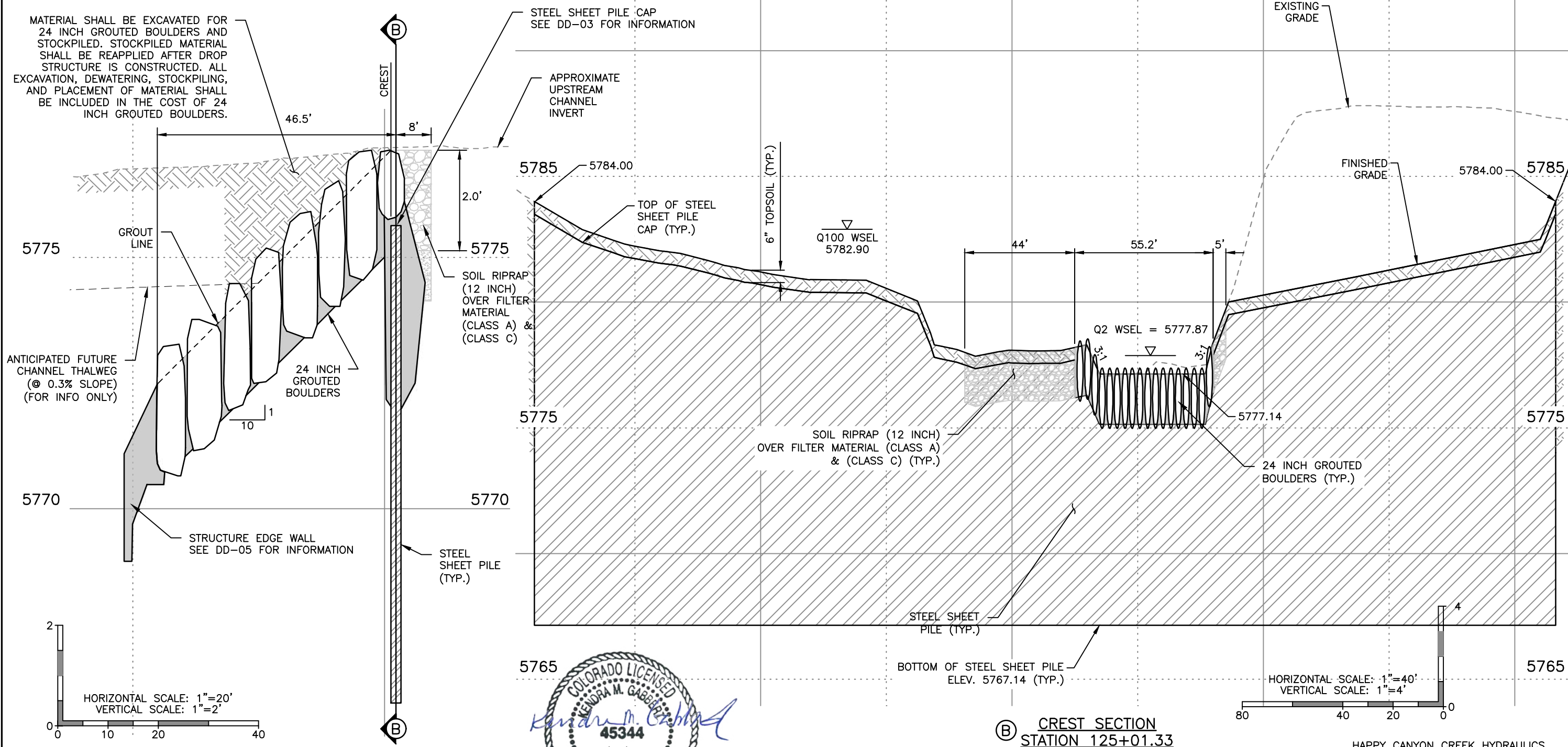
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No Revisions:	Designer: CDT	Structure	
Revised:	Detailer: ZJG	Numbers	
Void:	Subset: Drainage	Sheets: DD-22 of 23	Sheet Number 85

NOTES

- UTILITY INFORMATION SHOWN IS PLOTTED FROM THE BEST AVAILABLE DATA. THE CONTRACTOR IS RESPONSIBLE FOR MAKING THEIR OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AT 811 FOR UTILITY LOCATIONS AT LEAST 48 HOURS PRIOR TO EXCAVATING. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY FOR ANY UTILITIES THAT NEED RELOCATING.
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Ⓐ **GROUTED BOULDER DROP NO. 3 PROFILE**
STA 124+54.81 TO 125+09.33



DROP STRUCTURE NO. 3

HAPPY CANYON CREEK HYDRAULICS

Q100= 8,303 C.F.S
Q100 VELOCITY = 10.80 F.P.S
FROUDE No.=0.77
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Void:	Subset: Drainage	Sheets: DD-23 of 23

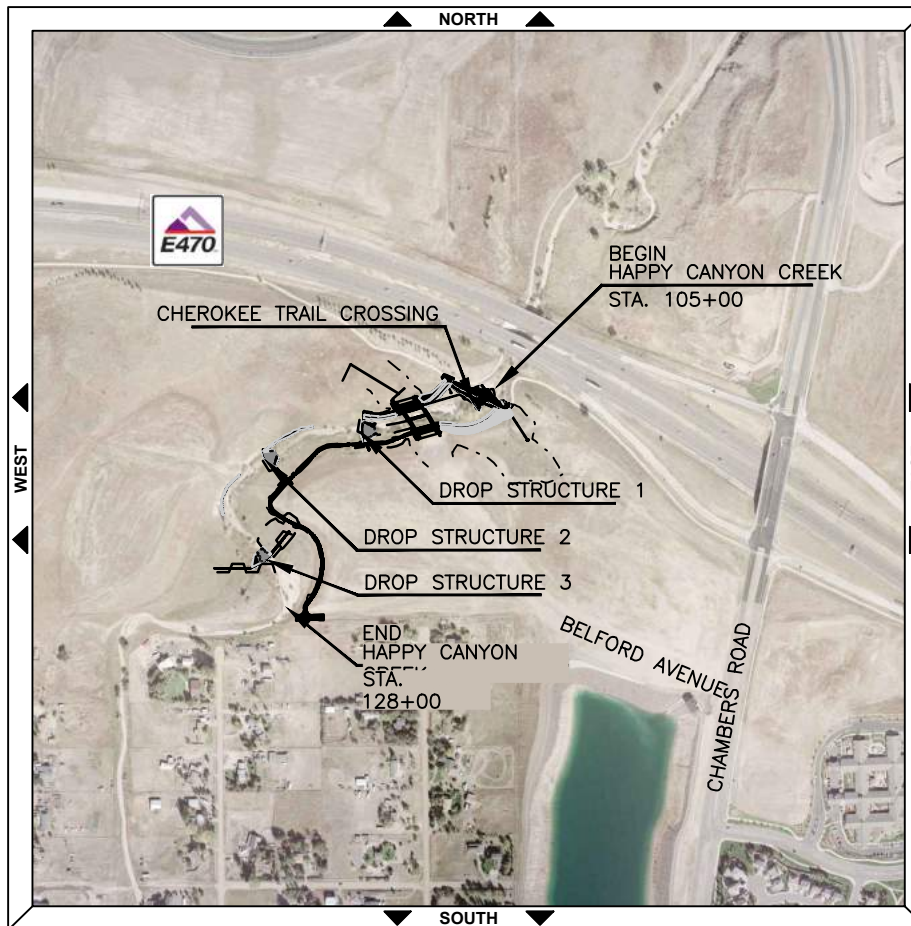
Project No./Code
Sheet Number 86



CONSTRUCTION PLANS
CONSTRUCTION BEST MANAGEMENT PRACTICES
BELFORD AVENUE BRIDGE AND HAPPY CANYON CREEK
TOWN OF PARKER, COUNTY OF DOUGLAS, STATE OF COLORADO

SCALE OF ORIGINAL DRAWINGS

ON PLAN 1" = 80'



INDEX OF SHEETS

SHEET NO.	SUBSET SHEETS	DESCRIPTION
87	EL-1	CBMP TITLE SHEET
88	ET-1	TABULATION OF EROSION CONTROL QUANTITIES
89-90	EI-1 TO EI-2	INITIAL CBMP PLAN
91-92	EN-1 TO EN-2	INTERIM CBMP PLAN
93-94	EF-1 TO EN-2	FINAL CBMP PLAN
95-129	ED-1 TO ED-35	CBMP STANDARD NOTES AND DETAILS

TOWN OF PARKER APPROVALS

THE TOWN OF PARKER REVIEW CONSTITUTES GENERAL COMPLIANCE WITH THE TOWN'S STANDARDS AND APPROVED VARIANCES, SUBJECT TO THESE PLANS BEING STAMPED, SIGNED, AND DATED BY THE PROFESSIONAL ENGINEER OF RECORD. REVIEW BY THE TOWN DOES NOT CONSTITUTE APPROVAL OF THE PLAN DESIGN OR ACCURACY AND CORRECTNESS OF ENGINEERING CALCULATION. ERRORS IN THE DESIGN OR CALCULATIONS REMAIN THE RESPONSIBILITY OF THE REGISTERED PROFESSIONAL ENGINEER WHOSE STAMP AND SIGNATURE ARE AFFIXED TO THIS DOCUMENT.

THIS REVIEW DOES NOT CONSTITUTE APPROVAL OF ANY PRIVATE ON-SITE IMPROVEMENTS WHICH MAY BE SHOWN. CONSTRUCTION CANNOT COMMENCE UNTIL ALL REQUIRED DRAINAGE/TRAFFIC REPORT(S), FINAL DEVELOPMENT PLAN(S), SPECIAL REVIEW(S), GRADING PERMIT, AND/OR OTHER PERMITS ARE COMPLETE, APPROVED AND ON FILE WITH THE TOWN OF PARKER.

TOWN OF PARKER, PUBLIC WORKS DIRECTOR	DATE
TOWN OF PARKER, PUBLIC WORKS MANAGER – STORMWATER	DATE
TOWN OF PARKER, PUBLIC WORKS MANAGER – TRANSPORTATION	DATE

BASIS OF BEARING:

THE WEST LINE OF THE SOUTHWEST QUARTER OF SECTION 6, TOWNSHIP 6 SOUTH, RANGE 66 WEST OF THE SIXTH PRINCIPAL MERIDIAN BEING MONUMENTED AS SHOWN HEREON HAVING A BEARING OF NORTH 00°29'49" WEST, AS DETERMINED BY GPS OBSERVATION FROM NGS CONTROL POINTS IN THE COLORADO CENTRAL ZONE, STATE PLAN COORDINATE SYSTEM, TOWN OF PARKER, COUNTY OF DOUGLAS, STATE OF COLORADO.

BENCHMARKS: (COMPARK SOUTH)

SOURCE BENCHMARKS:
 DOUGLAS COUNTY BM 1.115010
 A DOUGLAS COUNTY GIS MONUMENT SET IN CONCRETE LOCATED APPROXIMATELY 130 FEET SOUTHWESTERLY OF THE CENTERLINE OF CHAMBERS ROAD AND 95 FEET NORTHWESTERLY OF THE CENTERLINE OF COMPARK BOULEVARD.
 ELEVATION = 5752.84 (NAVD 88)

SITE BENCHMARKS:
 A NO. 5 REBAR WITH 2" ALUMINUM CAP STAMPED "LS 28286, 2001" FOUND AT THE SOUTHWEST CORNER OF SECTION 6, T6S, R66W LOCATED ON THE WEST LINE OF FIRST STREET APPROXIMATELY 1000 FEET NORTH OF ELM AVENUE.
 ELEVATION = 5845.51

A 2.5" IRON PIPE WITH 3.25" ALUMINUM CAP STAMPED "PLS 12405, 1997" FOUND AT THE SOUTHEAST CORNER OF SECTION 6, T6S, R66W LOCATED APPROXIMATELY 960 FEET NORTH OF THE CENTERLINE OF AVENTERRA PARKWAY AND APPROXIMATELY 1050 FEET WEST OF THE CENTERLINE OF CHAMBERS ROAD.
 ELEVATION = 5808.06

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Revised:	Designer: CDT	Structure Numbers	
	Detailer: KLT		
Void:	Subset: EROSION	Sheets: EL-1 of 1	Sheet Number 87

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TABULATION OF EROSION CONTROL QUANTITIES

DRAWING NUMBER	CHECK DAM (CD)	*CONCRETE WASHOUT STRUCTURE (CWA)	*VEHICLE TRACKING CONTROL (VTC)	*STABILIZED STAGING AREA (SSA)	SEEDING (NATIVE) (SMC)	MULCHING (WEED FREE STRAW) (SMC)	*CULVERT PROTECTION (CP)	DEWATERING (D)	*SEDIMENT CONTROL LOG (12 INCH) (SCL)	EROSION CONTROL BLANKET (STRAW/COCONUT) (ECB)	DIVERSION DITCH (DD)	CONSTRUCTION FENCE (CF)	SILT FENCE (SF)	#INLET PROTECTION AREA INLETS NOT IN PAVEMENT (IPAN)	##ROUGH CUT STREET CONTROL (RCSC)	TEMPORARY SEDIMENT BASIN (TSB)	TEMPORARY STREAM CONTROL (TSC)	PORTABLE TOILET PROTECTION (PTP)
	LF	EACH	EACH	SY	ACRE	ACRE	LF	LS	LF	SY	LF	LF	LF	EA	LF	EA	EA	EA
INITIAL (EI-1)	275	2	2	2300			40		1798		312	8838	1471				4	1
INTERIM (EN-1)							60	1	1885					1	480	2		
FINAL (EF-1)					6.3	6.3				7386								
PROJECT TOTALS	275	2	2	2300	6.3	6.3	100	1	3683	7386	312	8838	1471	1	480	2	4	1

1. THESE QUANTITIES HAVE BEEN TAKEN FORWARD TO THE SUMMARY OF APPROXIMATE QUANTITIES.
 2. FOR DETAILS, SEE CBMP STANDARD NOTES AND DETAILS.
 3. CHECK DAMS ARE NOT TO BE REMOVED UNLESS DIRECTED BY THE PROJECT ENGINEER.
 4. MULCH TACKIFIER IS REQUIRED AND IS INCLUDED IN THE COST OF MULCHING.
 5. SEE CBMP SHEETS FOR ADDITIONAL PLACEMENT INFORMATION.
 6. LOCATION OF STOCKPILES, INCLUDING TOPSOIL, IMPORTED AGGREGATES, EXCESS MATERIALS, STORAGE AND STAGING AREAS FOR EQUIPMENT FUEL, LUBRICANT, CHEMICAL (AND OTHER MATERIALS), WASTE STORAGE, BORROW AND DISPOSAL AREAS SHALL BE LOCATED PRIOR TO CONSTRUCTION WITH IN THE DEFINED LIMITS OF CONSTRUCTION BY THE PROJECT ENGINEER.
- * THESE ITEMS SHALL BE PAID FOR AS PLACE AND REMOVE.
 # THESE ITEMS SHALL BE PAID FOR AS INLET PROTECTION (EACH).
 ## ROUGH CUT STREET CONTROL SHALL BE PAID FOR AS AGGREGATE BAG (LF)



ADDITIONAL SEDIMENT/EROSION CONTROL:

IT IS ESTIMATED THAT BLADING (120 HORSEPOWER), DOZING (100 HORSEPOWER), COMBINATION LOADER (125 HORSEPOWER) AND/OR BACKHOE (75 HORSEPOWER) AND/OR LABORER MAY BE REQUIRED FOR MISCELLANEOUS EROSION CONTROL WORK AS DIRECTED BY THE ENGINEER. WORK SHALL BE PAID FOR AS 208 SEDIMENT REMOVAL AND DISPOSAL (40 HRS). EROSION CONTROL MANAGEMENT WILL BE REQUIRED FOR THIS PROJECT AND SHALL BE PAID FOR AS 208 EROSION CONTROL MANAGEMENT (30 DAYS).

WATER CONTROL NOTES – TEMPORARY STREAM CONTROL

1. THE CONTRACTOR SHALL DEVELOP AND SUBMIT A WATER CONTROL PLAN TO THE TOWN OF PARKER FOR REVIEW AND APPROVAL TWO WEEKS PRIOR TO BEGINNING CONSTRUCTION. WATER CONTROL INCLUDES CHANNEL BASE FLOW, STORMWATER RUNOFF, AND GROUNDWATER. THE CONTRACTOR'S WATER CONTROL PLAN SHALL INCLUDE ALL MEANS AND METHODS NECESSARY IN CONVEYING A CLEAN WATER DIVERSION FOR WATER THROUGH AND FROM THE PROJECT SITE SO THAT THE WATER QUALITY OR PROPERTY DOWNSTREAM OF THE PROJECT LIMITS ARE NOT IMPACTED NEGATIVELY FROM THE PROJECT'S CONSTRUCTION ACTIVITIES.
2. THE CONTRACTOR'S MEANS AND METHODS INCLUDED IN THE CONTRACTOR'S APPROVED WATER CONTROL PLAN MAY INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING: PLASTIC LINED DIVERSION DITCHES, TEMPORARY PIPING, HOSES, CUTOFF WALLS, CHECK DAMS, PUMPS, GENERATORS, SOUND PROOFING, TEMPORARY POWER, SHEET PILE, SHORING, SEDIMENT TRAPS, SEDIMENT BASINS, FILTER BAGS, REINFORCED ROCK BERMS, STREAM CROSSINGS, RIPRAP PADS, RIPRAP, CRUSHED ROCK AND ANY OTHER WATER CONTROL MEASURES NECESSARY AND APPROVED BY THE TOWN OF PARKER.
3. GIVEN THE NATURE OF THE PROJECT SITE'S TERRAIN AND SCOPE OF WORK, THE CONTRACTOR'S WATER CONTROL PLAN AND PROPOSAL SHALL ACCOUNT FOR THE NEED TO RELOCATE WATER CONTROL MEASURES AS NEEDED BASED ON THE CONTRACTOR'S ACTUAL CONSTRUCTION SEQUENCE AND SELECTED MEANS AND METHODS.
4. WATER QUALITY SHALL BE ONE OF THE CONTRACTOR'S PRIMARY CONCERNS. THE CONTRACTOR'S IMPLEMENTED WATER CONTROL PLAN WILL BE INSPECTED DAILY. IF FOR ANY REASON THE CONTRACTOR'S IMPLEMENTED WATER CONTROL PLAN NEEDS CORRECTIVE ACTION OR IF THE CONTRACTOR IS DIRECTED BY THE TOWN OF PARKER OR THE OWNER'S REPRESENTATIVE TO MAKE REPAIRS, THE CONTRACTOR SHALL MAKE SUCH CORRECTIONS IMMEDIATELY.
5. THE APPROXIMATE 2-YR DISCHARGE FOR HAPPY CANYON CREEK IS 309 CFS. THE AVERAGE BASE FLOW RATE IS UNKNOWN. THE ESTIMATED AVERAGE BASE FLOW RATE IS APPROXIMATELY 1 CFS.
6. ALL STREAM DIVERSION DITCHES NEED TO BE PLASTIC LINED AT A MINIMUM AS DIRECTED BY THE TOWN OF PARKER.
7. ALL TEMPORARY STREAM CROSSINGS SHALL BE COMPLETELY RIPRAP REINFORCED AND HAVE PLASTIC LINING UNDER THE RIPRAP. THE CONTRACTOR'S SELECTED STREAM CROSSING SHALL ACCOMMODATE PASSAGE FOR BASE FLOWS AND AT NO TIME SHALL CONTRACTORS' EQUIPMENT HAVE DIRECT CONTACT WITH ANY STREAM FLOW.
8. ALL INCIDENTAL WATER CONTROL ITEMS SHALL BE PAID FOR AS TEMPORARY STREAM CROSSING (EA).

CBMP LEGEND

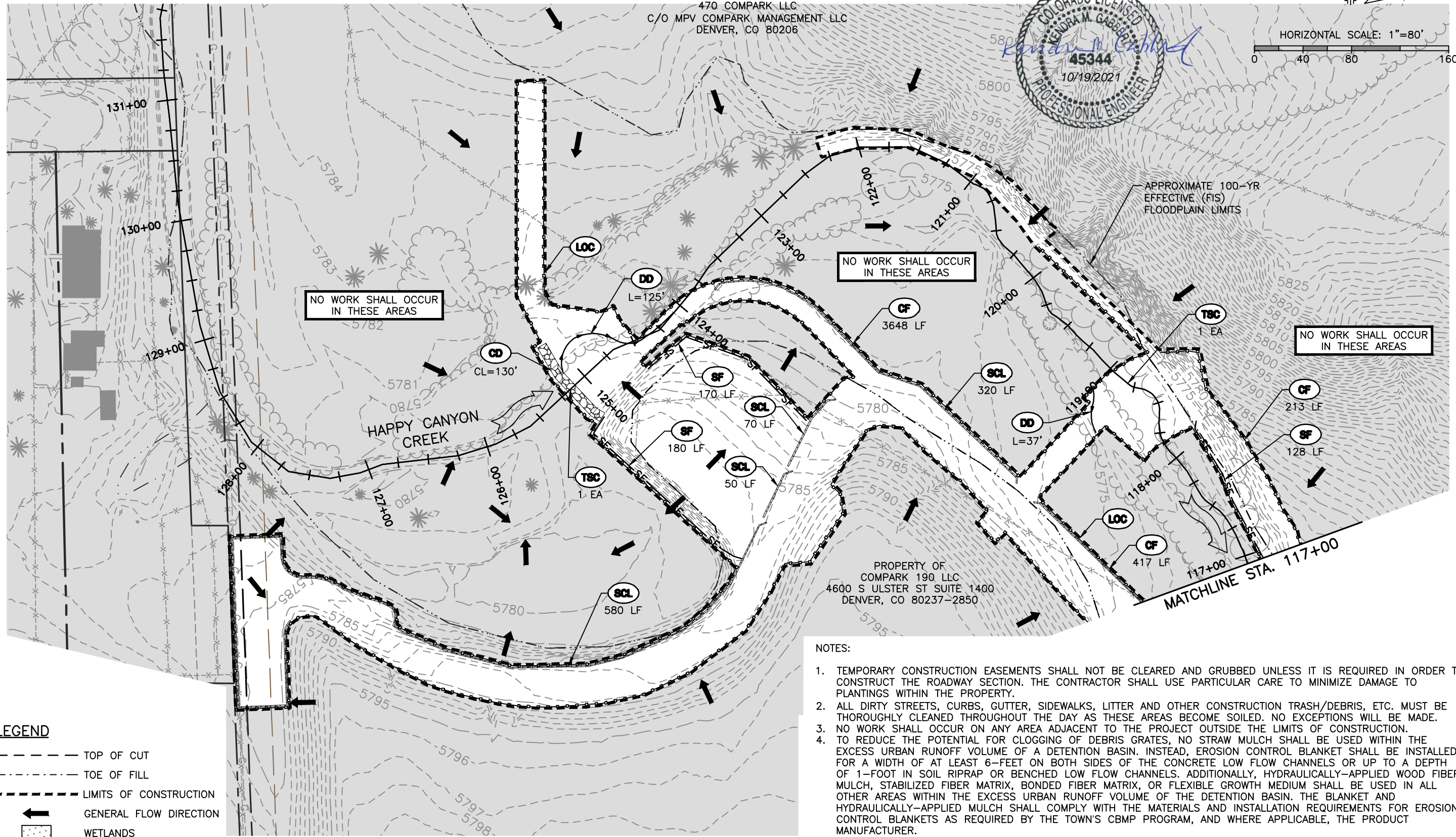
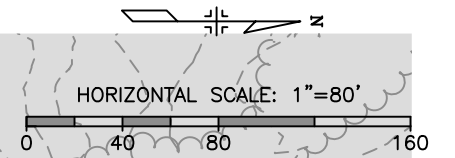
	(CD) CHECK DAM
	(CF) CONSTRUCTION FENCE
	(CP) CULVERT PROTECTION
	(CWA) CONCRETE WASHOUT AREA
	(D) DEWATERING
	(DD) DIVERSION DITCH
	(ECB) EROSION CONTROL BLANKET (STRAW/COCONUT)
	(IPAN) INLET PROTECTION FOR AREA INLETS NOT IN PAVEMENT
	(LOC) LIMITS OF CONSTRUCTION
	(PTP) PORTABLE TOILET PROTECTION
	(RCSC) ROUGH CUT STREET CONTROL
	(SCL) SEDIMENT CONTROL LOG (12 INCH)
	(SF) SILT FENCE
	(SMC) SEEDING MULCHING AND CRIMPING
	(SSA) STABILIZED STAGING AREA
	(TSB) TEMPORARY SEDIMENT BASIN
	(TSC) TEMPORARY STREAM CONTROL
	(VTC) VEHICLE TRACKING CONTROL

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Print Date: 6/17/2021 9:21:27 PM	<table border="1"> <thead> <tr> <th colspan="3">Sheet Revisions</th> </tr> <tr> <th>Date</th> <th>Comments</th> <th>Initials</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Sheet Revisions			Date	Comments	Initials										<p>Manhard CONSULTING LTD <small>8008 E. Arapahoe Court, Suite 110, Centennial, CO 80112 ph:303.708.0900 fax:303.708.0400 manhard.com Civil Engineers • Surveyors • Water Resource Engineers • Water & Wastewater Engineers Construction Managers • Environmental Scientists • Landscape Architects • Planners</small></p>	As Constructed	BELFORD-HAPPY CANYON CREEK TABULATION OF EROSION CONTROL QUANTITIES	Project No./Code
Sheet Revisions																				
Date	Comments	Initials																		
File Name: E115360-01TAB01AROP.dwg	<table border="1"> <tr> <td>Horizontal Scale: NTS</td> <td>Vertical Scale: NTS</td> </tr> </table>	Horizontal Scale: NTS	Vertical Scale: NTS	<table border="1"> <tr> <td>No Revisions:</td> <td>Designer: CDT</td> <td>Structure Numbers</td> </tr> <tr> <td>Revised:</td> <td>Detailer: KLT</td> <td></td> </tr> <tr> <td>Void:</td> <td>Subset: EROSION</td> <td>Sheets: ET-1 of 1</td> </tr> </table>	No Revisions:	Designer: CDT	Structure Numbers	Revised:	Detailer: KLT		Void:	Subset: EROSION	Sheets: ET-1 of 1	Sheet Number 88						
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C/O MPV COMPARK MANAGEMENT LLC
DENVER, CO 80206



NO WORK SHALL OCCUR
IN THESE AREAS

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NO WORK SHALL OCCUR
IN THESE AREAS

LEGEND

- TOP OF CUT
- - - - - TOE OF FILL
- LIMITS OF CONSTRUCTION
- ← GENERAL FLOW DIRECTION
- WETLANDS

NOTES:

1. TEMPORARY CONSTRUCTION EASEMENTS SHALL NOT BE CLEARED AND GRUBBED UNLESS IT IS REQUIRED IN ORDER TO CONSTRUCT THE ROADWAY SECTION. THE CONTRACTOR SHALL USE PARTICULAR CARE TO MINIMIZE DAMAGE TO PLANTINGS WITHIN THE PROPERTY.
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5. SEE TABULATION OF EROSION CONTROL QUANTITIES FOR CBMP LEGEND.

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No Revisions:	Designer: CDT	Structure Numbers	
Revised:	Detailer: KLT		
Void:	Subset: Erosion	Sheets: El-1 of 2	Sheet Number 89

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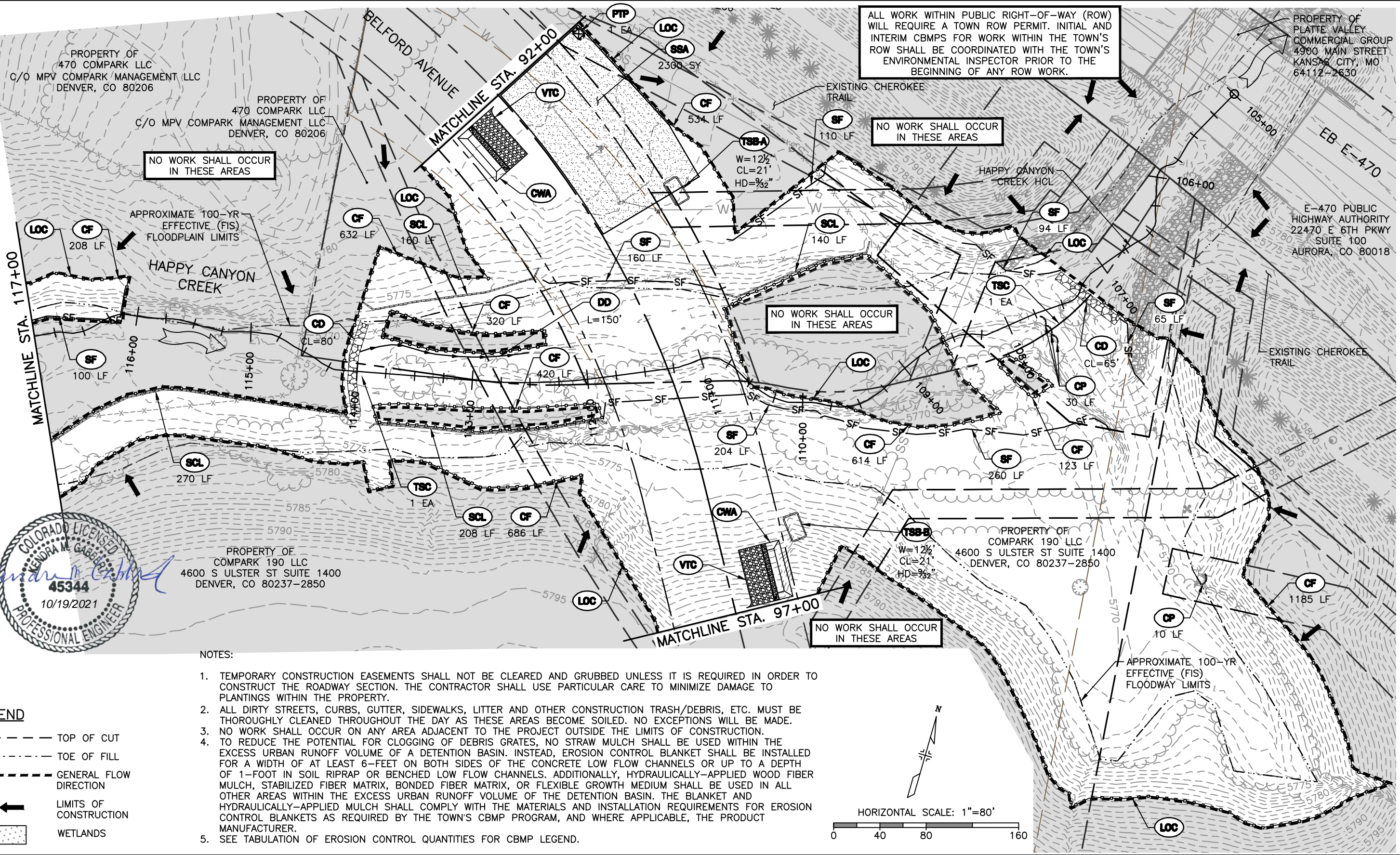
ALL WORK WITHIN PUBLIC RIGHT-OF-WAY (ROW) WILL REQUIRE A TOWN ROW PERMIT. INITIAL AND INTERIM CBMPs FOR WORK WITHIN THE TOWN'S ROW SHALL BE COORDINATED WITH THE TOWN'S ENVIRONMENTAL INSPECTOR PRIOR TO THE BEGINNING OF ANY ROW WORK.

NO WORK SHALL OCCUR IN THESE AREAS

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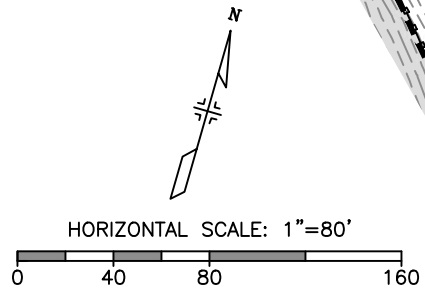


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- SEE TABULATION OF EROSION CONTROL QUANTITIES FOR CBMP LEGEND.

LEGEND

- TOP OF CUT
- TOE OF FILL
- GENERAL FLOW DIRECTION
- ← LIMITS OF CONSTRUCTION
- WETLANDS



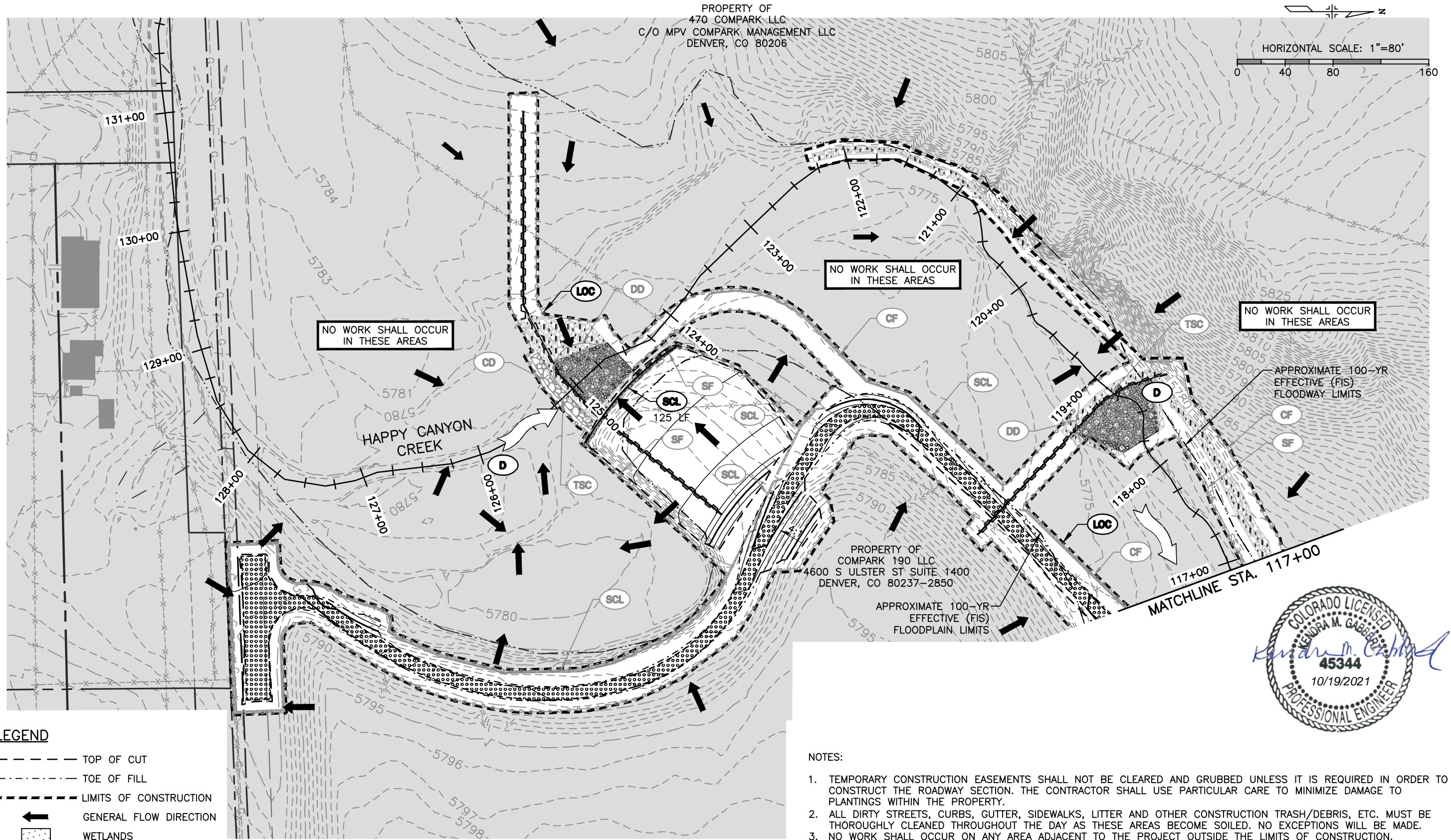
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No Revisions:	Designer: CDT	Structure Numbers	Sheet Number 90
Revised:	Detailer: KLT	Sheets: EI-2 of 2	
Void:	Subset: Erosion		

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LEGEND

- TOP OF CUT
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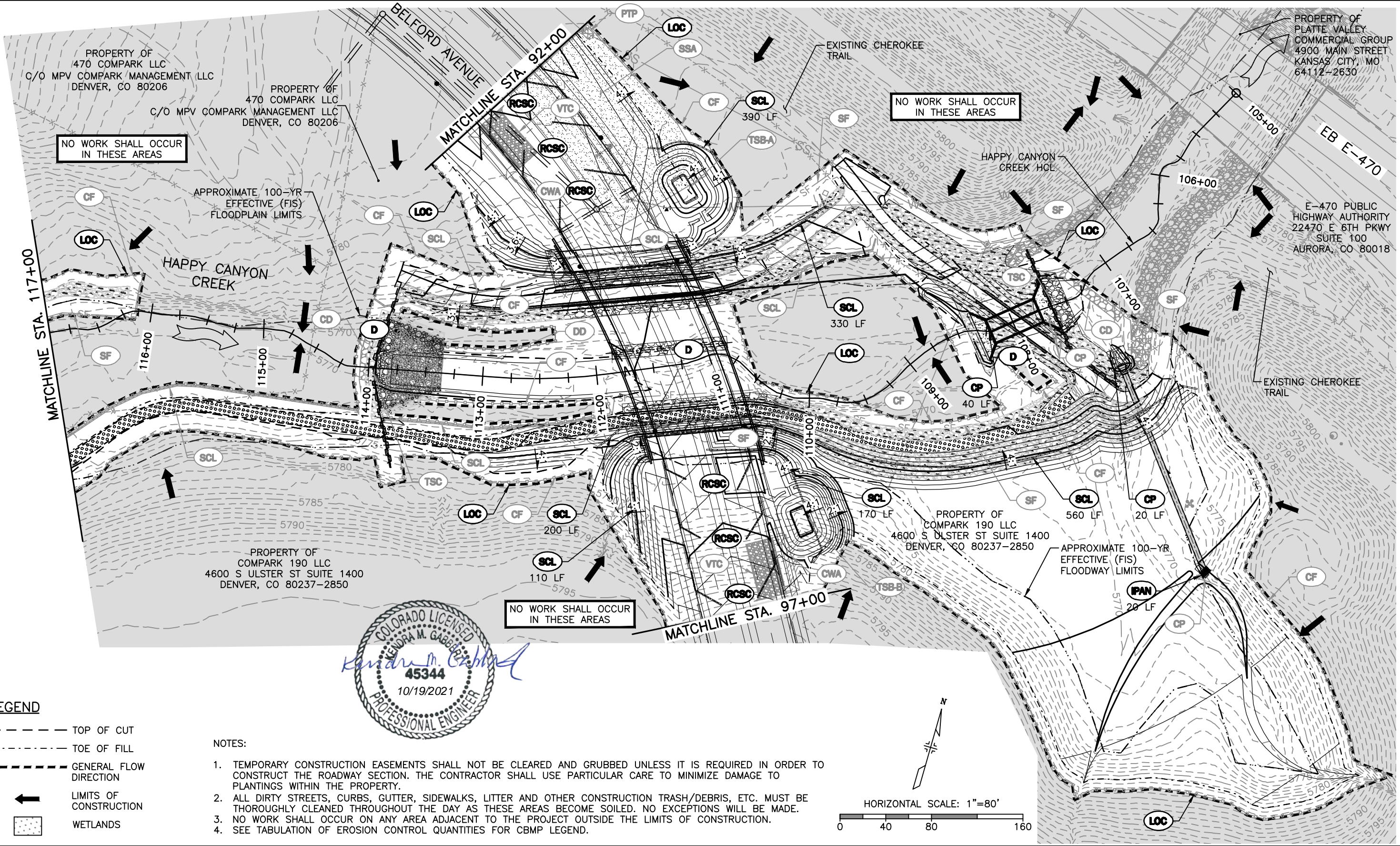
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Revised:	Detailer: KLT	Sheets: EN-1 of 2	Sheet Number 91
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NO WORK SHALL OCCUR IN THESE AREAS

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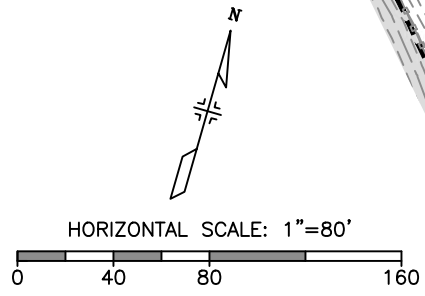
NO WORK SHALL OCCUR IN THESE AREAS

LEGEND

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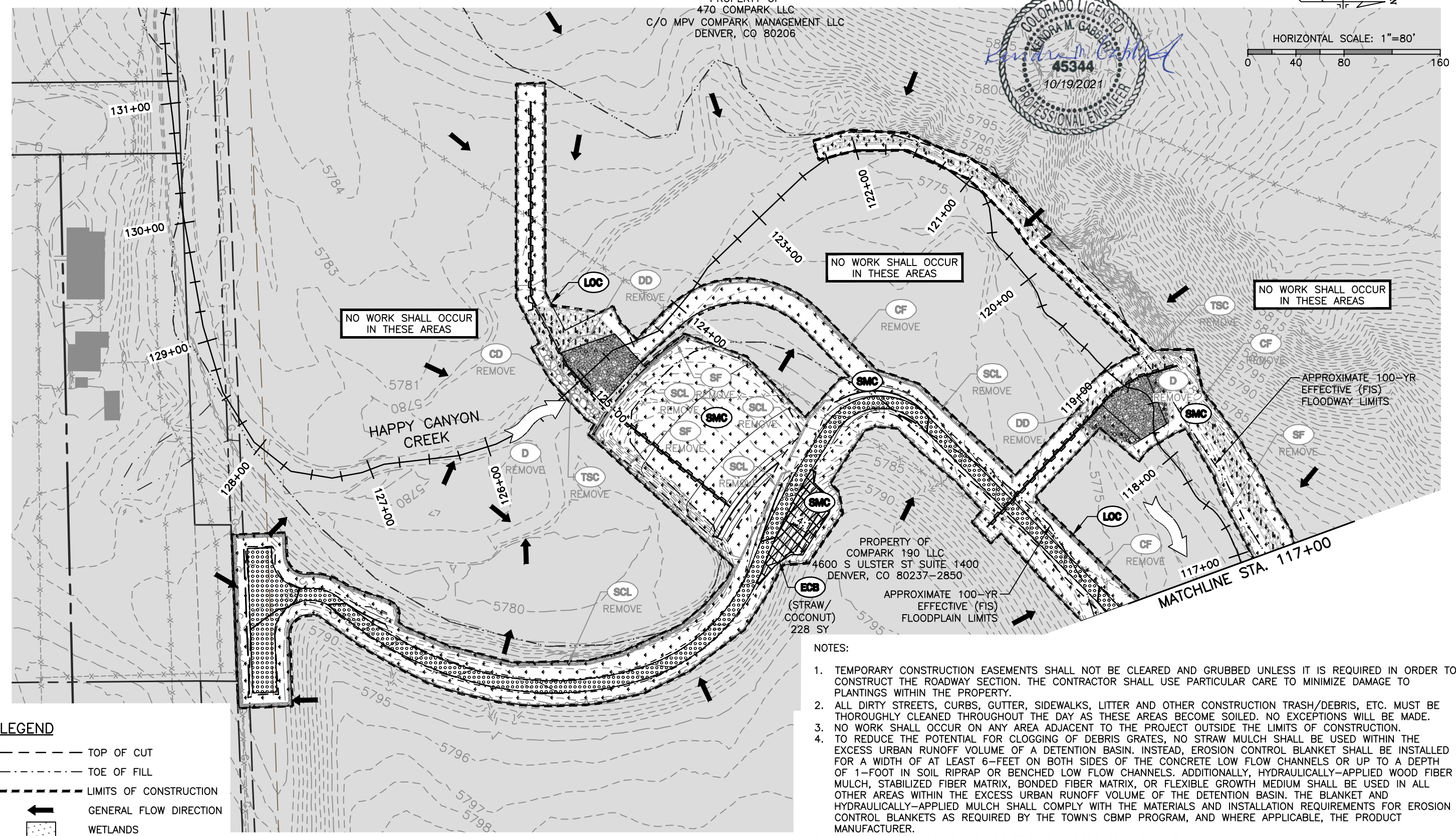
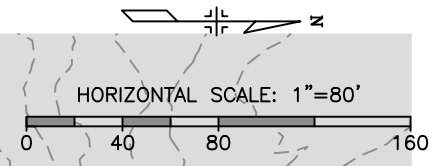
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LEGEND

- TOP OF CUT
- TOE OF FILL
- LIMITS OF CONSTRUCTION
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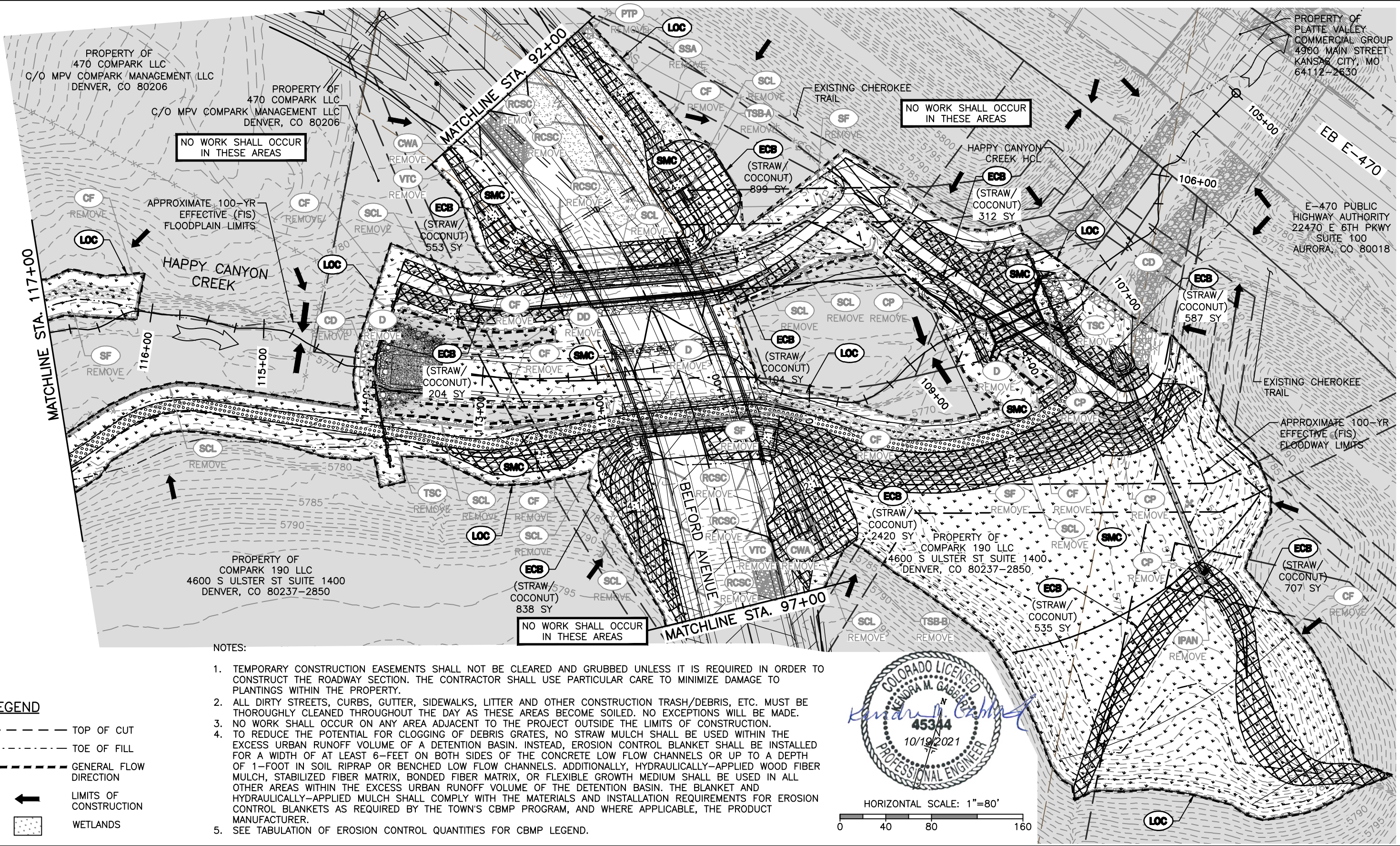
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No Revisions:	Designer: CDT	Structure Numbers	
Revised:	Detailer: KLT	Sheets: EF-1 of 2	Sheet Number 93
Void:	Subset: Erosion		

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LEGEND

- TOP OF CUT
- TOE OF FILL
- GENERAL FLOW DIRECTION
- ← LIMITS OF CONSTRUCTION
- WETLANDS



HORIZONTAL SCALE: 1"=80'
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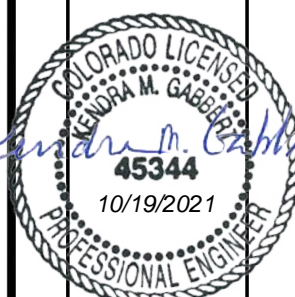
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Revised:	Detailer: KLT		
Void:	Subset: Erosion	Sheets: EF-2 of 2	Sheet Number 94

1. GRADING, DRILLING, CLEARING, EXCAVATING, BACK-FILLING, SOIL STRIPPING, SOIL IMPORTING EXPORTING OR ANY OTHER FORM OF SOIL DISTURBANCE SHALL NOT COMMENCE UNTIL A TOWN OF PARKER GRADING/EXCAVATION PERMIT HAS BEEN ISSUED.
2. THE TOWN OF PARKER GRADING/EXCAVATION PERMIT IS VALID FOR A PERIOD OF 2 YEARS FROM THE DATE OF ISSUANCE. ANY LAPSE IN PERMIT COVERAGE MAY RESULT IN THE ISSUANCE OF A STOP WORK ORDER AND/OR FINES.
3. ALL EROSION AND SEDIMENT CONTROL BMPs SHALL BE INSTALLED ACCORDING TO THE CBMP PLAN INSTALLATION NOTES AND DETAILS AND/OR PERMITTED VARIANCES. ALL MATERIALS, WORKMANSHIP AND INSTALLATION METHODS ARE SUBJECT TO INSPECTION BY THE TOWN'S INSPECTOR. THE TOWN OF PARKER RESERVES THE RIGHT TO ACCEPT OR REJECT ANY SUCH MATERIALS, WORKMANSHIP AND/OR INSTALLATION METHODS THAT DO NOT CONFORM TO THE CBMP PLAN AND/OR PERMITTED VARIANCES.
4. THE EROSION CONTROL SUPERVISOR SHALL REVISE OR MODIFY THE EROSION AND SEDIMENT CONTROL MEASURES IF IT BECOMES APPARENT THAT THE ORIGINAL PLAN IS INADEQUATE, OR AS A RESULT OF DEFICIENCIES IDENTIFIED DURING INSPECTIONS PERFORMED BY THE TOWN'S INSPECTOR.
5. THE INSTALLATION OF ADDITIONAL EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES (BMPs) MAY BE REQUIRED OF THE EROSION CONTROL SUPERVISOR, PROPERTY OWNER, SITE DEVELOPER, CONTRACTOR AND/OR THEIR AUTHORIZED AGENTS AT ANY TIME THROUGHOUT THE DURATION OF THE PROJECT CONSTRUCTION AND/OR SUBSEQUENT REVEGETATION PERIOD.
6. THE EROSION CONTROL SUPERVISOR SHALL BE RESPONSIBLE FOR ENSURING THAT THE SITE REMAINS IN COMPLIANCE WITH THE NOTICE OF NUISANCE REPORTS (a.k.a, CONSTRUCTION SITE RUNOFF CONTROL INSPECTION REPORTS), APPROVED CBMP PLAN(S) AND THE TOWN OF PARKER STORM DRAINAGE AND ENVIRONMENTAL CRITERIA MANUAL.
7. THE EROSION CONTROL SUPERVISOR SHALL BE READILY AVAILABLE TO DISCUSS AND CORRECT ANY PROBLEMS THAT MAY ARISE RELATING TO GRADING, EROSION AND SEDIMENT CONTROL.
8. IF IT IS ANTICIPATED THAT ALL OR A PORTION OF THE PROJECT WILL OCCUR DURING SEASONS SUSCEPTIBLE TO SNOWFALL, THE USE OF CERTAIN EROSION AND SEDIMENT CONTROL BMPs ADJACENT TO PUBLIC ROADWAYS MAY NEED TO BE RECONSIDERED DUE TO THE NATURE OF SNOW REMOVAL OPERATIONS. AN APPROVED ALTERNATIVE MAY BE NECESSARY TO MINIMIZE DAMAGE FROM THESE OPERATIONS. THE TOWN OF PARKER ASSUMES NO RESPONSIBILITY FOR DAMAGE TO ANY BMPs AS A RESULT OF SNOW PLOWING AND SNOW REMOVAL.
9. AREAS OF LAND DISTURBANCE EQUAL TO 40 ACRES OR GREATER SHALL NOT BE EXPOSED FOR MORE THAN 30 CONSECUTIVE DAYS WITHOUT TEMPORARY OR PERMANENT STABILIZATION.
10. AUTHORIZED EXEMPTIONS MAY BE ALLOWED TO THE 40-ACRE LIMIT FOR REMOVAL AND STORAGE OF CUT MATERIAL WHERE (A) GEOTECHNICAL LIMITATIONS RESTRICT THE USE OF TEMPORARY OR PERMANENT STABILIZATION OF THE STORED MATERIAL (E.G., SWELLING SOILS, ROCK) AND (B) WHEN THE OWNER CAN DEMONSTRATE THAT THE 40-ACRE LIMIT IS PHYSICALLY AND/OR FINANCIALLY IMPRACTICABLE. FOR SITES GRANTED THIS EXEMPTION, A PHASING AND EARTHWORK QUANTITIES PLAN SHALL BE SUBMITTED TO THE PUBLIC WORKS DEPARTMENT AND APPROVED PRIOR TO THE COMMENCEMENT OF LAND DISTURBANCE ACTIVITIES. SUBMITTAL REQUIREMENTS INCLUDE:
 - (I) PHASING PLAN SHOWING CUT AND FILL VOLUMES AND LOCATIONS FOR EACH PHASE AND PROJECT TOTALS.
 - (II) EARTHWORK QUANTITY PLAN SHOWING CUT AND FILL VOLUMES AND LOCATIONS FOR EACH PHASE AND PROJECT TOTALS.
 - (III) BMP PLAN SHOWING SPECIFIC EROSION AND SEDIMENT CONTROLS FOR EACH PHASE.



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11. ANY EROSION AND SEDIMENT CONTROL BMPs THAT ARE DAMAGED OR IN NEED OF MAINTENANCE OR REPLACEMENT SHALL BE CORRECTED AS SOON AS POSSIBLE, IMMEDIATELY IN MOST CASES.
12. ALL DEFICIENCIES LISTED ON THE NOTICE OF NUISANCE FORM SHALL BE COMPLETED AS SOON AS POSSIBLE, IMMEDIATELY IN MOST CASES. ALL REQUIRED ACTIONS MUST BE IN THE CORRECTED FORM DURING THE FOLLOW-UP INSPECTION.
13. THE EROSION CONTROL SUPERVISOR IS RESPONSIBLE FOR ENSURING THAT ALL STREETS, CURBS, GUTTERS, SIDEWALKS, DRIVEWAYS, PARKING LOTS, ALLEYS, TRICKLE CHANNELS, AND/OR OTHER IMPERVIOUS SURFACES IMPACTED BY CONSTRUCTION ACTIVITIES ARE THOROUGHLY CLEANED THROUGHOUT THE DAY IF THEY BECOME SOILED. THESE AREAS MUST ALSO BE THOROUGHLY CLEAN BEFORE THE END OF THE WORK DAY.
14. BULK STORAGE STRUCTURES FOR PETROLEUM PRODUCTS AND OTHER CHEMICALS SHALL HAVE ADEQUATE PROTECTION SO AS TO CONTAIN ALL SPILLS AND PREVENT ANY SPILLED MATERIAL FROM ENTERING STATE WATERS.
15. ALL TRASH RECEPTACLES ON SITE SHALL BE FREE OF HOLES, CRACKS, GAPS, AND/OR OTHER PERMEABLE AREAS THAT MAY ALLOW FOR THE DISCHARGE OF POLLUTANTS.
16. ALL TRASH RECEPTACLES ON SITE SHALL BE EMPTIED AT A FREQUENCY AS TO ENSURE THAT THE TRASH REMAINS CONFINED TO THE RECEPTACLE.
17. ALL LOOSE TRASH AND LITTER ASSOCIATED WITH THE PROJECT MUST BE REMOVED AND PROPERLY DISCARDED ON A DAILY BASIS.
18. ALL PORTABLE TOILETS SHALL BE STAKED DOWN AT ALL TIMES USING U-SHAPED REBAR STAKES. THE PORTABLE TOILETS SHALL ALSO BE PLACED A MINIMUM DISTANCE OF 10 FEET FROM ALL IMPERVIOUS SURFACES, INCLUDING, BUT NOT LIMITED TO STREETS CURBS, GUTTERS, SIDEWALKS AND PARKING LOTS.
19. THE EROSION CONTROL SUPERVISOR SHALL MAINTAIN STRICT ADHERENCE TO THE LIMITS OF CONSTRUCTION AND PROPERTY LIMITS FOR ALL MATERIALS, VEHICLES AND EQUIPMENT. FAILURE TO ABIDE BY THIS REQUIREMENT MAY RESULT IN THE ISSUANCE OF A STOP WORK ORDER.
20. ALL CONSTRUCTION TRAFFIC MUST ENTER AND EXIT THE SITE THROUGH THE APPROVED ACCESS POINT(S). A VEHICLE TRACKING CONTROL PAD IS REQUIRED AT ALL APPROVED ACCESS POINTS TO THE SITE. EXCEPTIONS MAY BE CONSIDERED FOR CONSTRUCTION ACTIVITY OCCURRING IMMEDIATELY ADJACENT TO PAVED AREAS AND WHERE ALTERNATIVE BMP'S ARE IMPLEMENTED. SUCH ACTIVITY MAY INCLUDE, BUT NOT BE LIMITED TO RESIDENTIAL CONSTRUCTION, UTILITY CONSTRUCTION, ETC.
21. NO PERMANENT SLOPES GREATER THAN 3:1 ARE ALLOWED.
22. ALL PERMANENT SLOPES STEEPER THAN 4:1 (HORIZONTAL TO VERTICAL) SHALL REQUIRE EROSION CONTROL BLANKET(S). TEMPORARY SLOPES IN TEMPORARY SEDIMENT BASINS THAT ARE STEEPER THAN 4:1 MAY REQUIRE EROSION CONTROL BLANKETS.
23. THE EROSION CONTROL SUPERVISOR SHALL BE RESPONSIBLE FOR CORRECTING ANY ADVERSE IMPACTS THAT OCCUR TO NEIGHBORING PROPERTIES. THE EROSION CONTROL SUPERVISOR MUST OBTAIN PERMISSION FROM LAND OWNERS PRIOR TO ENTERING SUCH PROPERTY.
24. A WATER SOURCE SHALL BE AVAILABLE ONSITE DURING CONSTRUCTION ACTIVITIES, AND UTILIZED TO MINIMIZE FUGITIVE DUST. ALTERNATIVE BMPs MAY BE REQUIRED IF INITIAL ATTEMPTS TO SUPPRESS DUST ARE UNSUCCESSFUL.

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Print Date: 3/12/2021 6:06:26 PM		Sheet Revisions	Manhard CONSULTING LTD	As Constructed	BELFORD-HAPPY CANYON CREEK CBMP STANDARD NOTES AND DETAILS	Project No./Code
File Name: E115360-01DET01.dwg		Date Comments Initials	<p style="font-size: 8px;">8008 E. Arapahoe Court, Suite 110, Centennial, CO 80112 phone: 708.0800 fax: 708.0400 manhard.com Civil Engineers • Surveyors • Water Resource Engineers • Water & Wastewater Engineers Construction Managers • Environmental Scientists • Landscape Architects • Planners</p>	No Revisions:	Designer: CDT Structure	
Horizontal Scale: 1"=40' Vertical Scale: NTS	(R-X)			Revised:	Detailer: KLT Numbers	
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25. ALL CHEMICAL OR HAZARDOUS MATERIAL SPILLS, INCLUDING CONCRETE WASHOUT WATER, WHICH MAY ENTER WATERS OF THE STATE OF COLORADO, WHICH INCLUDES BUT ARE NOT LIMITED TO, SURFACE WATER, GROUND WATER, DRY GULLIES OR STORM SEWERS LEADING TO SURFACE WATER, SHALL BE IMMEDIATELY REPORTED TO THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT (CDPHE) PER 25-8-601, AND THE TOWN OF PARKER. RELEASES OF PETROLEUM PRODUCTS AND CERTAIN HAZARDOUS SUBSTANCES LISTED UNDER THE FEDERAL CLEAN WATER ACT (40 CFR PART 116) MUST BE REPORTED TO THE NATIONAL RESPONSE CENTER AND THE CDPHE. SPILLS THAT POSE AN IMMEDIATE SAFETY HAZARD SHALL BE REPORTED TO 911.
26. THE CLEANING OF CONCRETE TRUCKS AND EQUIPMENT IS RESTRICTED TO THE APPROVED CONCRETE WASHOUT LOCATION ON THE JOB SITE. CONCRETE WASH WATER SHALL NOT BE DISCHARGED TO STATE WATERS OR STORM SEWER SYSTEMS.
27. VEHICLE AND EQUIPMENT DEGREASING IS PROHIBITED ON THE JOB SITE.
28. ALL DEWATERING ON SITE SHALL BE COORDINATED WITH THE TOWN'S INSPECTOR. A STATE PERMIT MAY BE REQUIRED FOR DEWATERING. THE EROSION CONTROL SUPERVISOR IS RESPONSIBLE FOR OBTAINING AND ADHERING TO ALL APPLICABLE PERMITS.
29. HYDRAULIC SEEDING AND/OR HYDRAULIC MULCHING ARE ONLY ALLOWED IN AREAS UNDER TEMPORARY OR PERMANENT IRRIGATION OR FOR THE PURPOSE OF TEMPORARY SOIL STABILIZATION.
30. APPLICABLE CONSTRUCTION BMPs SHALL REMAIN IN PLACE AND PROPERLY MAINTAINED UNTIL ALL LANDSCAPING HAS BEEN INSTALLED AND THE DESIRABLE VEGETATION HAS REACHED A POINT IN WHICH EROSION AND SEDIMENTATION IS NO LONGER A CONCERN AS DETERMINED BY THE TOWN'S INSPECTOR.
31. GRADING SECURITY RELEASE REQUIREMENTS:

1) DEVELOPABLE PROPERTY: IN ORDER FOR THE GRADING SECURITY TO BE RELEASED, THE SITE MUST MEET ITEMS A-H OR ITEM I (BELOW).

- A. ALL SOIL-DISTURBING ACTIVITIES ASSOCIATED WITH THE GRADING PERMIT HAVE PERMANENTLY CEASED.
- B. UNIFORM PERENNIAL VEGETATION COVER HAS BEEN ESTABLISHED WITH AN INDIVIDUAL PLANT DENSITY OF AT LEAST SEVENTY PERCENT (70%) OF PRE-DISTURBANCE LEVELS.
- C. ALL CBMPs HAVE BEEN PROPERLY REMOVED FROM THE SITE.
- D. IF ANY EROSION IS PRESENT, IT IS INSIGNIFICANT AND IS NOT LEAVING THE SITE AND/OR LEADING INTO ANY ON-SITE DRAINAGE INFRASTRUCTURE THAT MAY CONVEY SURFACE WATER OFF SITE.
- E. WEEDS REPRESENT NO MORE THAN FIFTY PERCENT (50%) OF THE TOTAL VEGETATION ON THE SITE.
- F. NO WEEDS ARE PRESENT FROM LIST A OF THE COLORADO NOXIOUS WEED LIST, AS AMENDED.
- G. THE SITE IS PREDOMINANTLY FREE OF WEEDS FROM LIST B OF THE COLORADO NOXIOUS WEED LIST, AS AMENDED.
- H. WEEDS ARE EVENLY DISTRIBUTED THROUGHOUT THE SITE WITH NO LARGE CONCENTRATIONS PRESENT.
- I. A NEW GRADING PERMIT AND REPLACEMENT SECURITY HAS BEEN SUBMITTED AND APPROVED

FOR THE APPLICABLE SITE OR ASSIGNMENT AS PROVIDED BY SECTION 11.10.150 OF THE TOWN OF PARKER MUNICIPAL CODE. IT IS THE PROPERTY OWNER'S OBLIGATION AT THE TIME OF CLOSING TO ENSURE THAT THE NEW SITE OWNER HAS PROVIDED THE TOWN WITH A REPLACEMENT SECURITY.



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- 2) NONDEVELOPABLE PROPERTY: IN ORDER FOR THE GRADING SECURITY TO BE RELEASED, THE SITE MUST MEET ITEMS A-H AND J, OR ITEMS I AND J (BELOW).
- A. ALL SOIL-DISTURBING ACTIVITIES ASSOCIATED WITH THE GRADING PERMIT HAVE PERMANENTLY CEASED.
- B. ALL CBMPs HAVE BEEN PROPERLY REMOVED FROM THE SITE.
- C. EROSION IS NEGLIGIBLE, IF EVEN PRESENT.
- D. THE VEGETATION REPRESENTS A PERENNIAL STAND OF A DENSE, UNIFORM SURFACE OF GRASS WITH NO AREA GREATER THAN ONE (1) SQUARE FOOT THAT IS BARREN OF DESIRABLE VEGETATION. INFREQUENT, WIDELY SCATTERED AREAS WHERE NATIVE VEGETATION HAS NOT YET TAKEN HOLD MAY QUALIFY FOR ACCEPTANCE AT THE DISCRETION OF THE TOWN.
- E. WEEDS REPRESENT NO MORE THAN TEN PERCENT (10%) OF THE TOTAL VEGETATION ON SITE.
- F. NO WEEDS ARE PRESENT FROM LIST A OF THE COLORADO NOXIOUS WEED LIST, AS AMENDED.
- G. THE SITE IS PREDOMINANTLY FREE OF WEEDS FROM LIST B OF THE COLORADO NOXIOUS WEED LIST, AS AMENDED.
- H. WEEDS ARE EVENLY DISTRIBUTED THROUGHOUT THE SITE WITH NO LARGE CONCENTRATIONS PRESENT.
- I. A NEW GRADING PERMIT AND REPLACEMENT SECURITY HAS BEEN SUBMITTED AND APPROVED FOR THE APPLICABLE SITE OR THE GRADING PERMIT HAS BEEN ASSIGNED AS PROVIDED BY SECTION 11.10.150 OF THE TOWN OF PARKER MUNICIPAL CODE. IT IS THE PROPERTY OWNER'S OBLIGATION, AT THE TIME OF CLOSING ON THE SALE OF A SITE THAT IS SUBJECT TO A GRADING PERMIT, TO ENSURE THAT THE NEW PROPERTY OWNER HAS PROVIDED THE TOWN WITH A REPLACEMENT SECURITY.
- J. ALL KNOWN DRAINAGE ISSUES ASSOCIATED WITH THE PROJECT HAVE BEEN MITIGATED AND A SUFFICIENT AMOUNT OF TIME HAS PASSED TO ENSURE THAT SUCH ISSUES HAVE BEEN CORRECTED. THIS REQUIREMENT DOES NOT INCLUDE THOSE DRAINAGE ISSUES ORIGINATING ON RESIDENTIAL LOTS.

(D) NOXIOUS WEEDS MUST BE CONTROLLED AS PROVIDED UNDER STATE LAW AND SECTION 6.01.260 OF THE TOWN OF PARKER MUNICIPAL CODE. FAILURE TO CONTROL NOXIOUS WEEDS ON THE SITE MAY CONSTITUTE A NUISANCE, SUBJECT TO THE PENALTIES CONTAINED IN THE CODE.

DEFINITIONS:

DEVELOPABLE PROPERTY MEANS ANY LAND THAT HAS BEEN GRADED AND IS PART OF A PLATTED LOT OR PLATTED TRACT OF RECORD, THAT WAS PLATTED FOR FUTURE DEVELOPMENT, INCLUDING RESIDENTIAL HOME CONSTRUCTION OR PUBLIC IMPROVEMENTS.

NONDEVELOPABLE PROPERTY MEANS LAND THAT HAS BEEN GRADED AND WILL NOT BE FURTHER DISTURBED AS PART OF ANY FUTURE DEVELOPMENT. EXAMPLES INCLUDE, BUT ARE NOT LIMITED TO: PARKS, OPEN SPACE, HOMEOWNER ASSOCIATION OR BUSINESS ASSOCIATION PLATTED TRACTS, DETENTION PONDS AND DRAINAGEWAYS.

32. FAILURE TO COMPLY WITH ANY OF THE REQUIREMENTS DESCRIBED IN THIS SECTION MAY RESULT IN THE ISSUANCE OF: A NOTICE OF INTENT TO ISSUE A STOP WORK ORDER, A STOP WORK ORDER AND/OR THE REMEDIES/PENALTIES DESCRIBED IN CHAPTER 11.10 OF THE TOWN OF PARKER MUNICIPAL CODE.

33. ANY PERSON CONVICTED OF VIOLATING ANY PROVISION OF THE TOWN OF PARKER, GRADING & EARTH MOVEMENT SECTION OF THE MUNICIPAL CODE SHALL BE GUILTY OF A MISDEMEANOR AND, UPON CONVICTION, BE PUNISHED BY A FINE OF NOT MORE THAN FOUR HUNDRED NINETY NINE DOLLARS (\$499.00) FOR EACH SEPARATE OFFENSE. EACH DAY A VIOLATION CONTINUES SHALL CONSTITUTE A SEPARATE OFFENSE. THE TOWN ALSO MAY SEEK IN MUNICIPAL COURT AN INJUNCTION, ABATEMENT, RESTITUTION OR ANY OTHER REMEDY TO PREVENT, ENJOIN, ABATE OR REMOVE THE VIOLATION. A PERSON CONVICTED OF VIOLATING CHAPTER 11.10 OF THE TOWN OF PARKER MUNICIPAL CODE SHALL BE LIABLE FOR THE ACTUAL COST OF REHABILITATING THE PROPERTY. THE COSTS MAY BE RECOVERED AS RESTITUTION IN MUNICIPAL COURT PROCEEDINGS OR IN A SEPARATE CIVIL ACTION.

34. THE TOWN OF PARKER RESERVES THE RIGHT TO ALLOW MODIFICATIONS AND SUBSTITUTIONS TO THE CBMP NOTES AND DETAILS WHEN SUCH MODIFICATIONS AND SUBSTITUTIONS OFFER THE SAME LEVEL OF PROTECTION AS THE STANDARD REQUIREMENTS BASED UPON THE SPECIFIC SITUATION, AS DETERMINED BY TOWN STAFF. DUE TO THE INSIGNIFICANCE AND REGULARITY OF SUCH MODIFICATIONS AND SUBSTITUTIONS, THE APPROVAL OF SUCH VARIATIONS MAY NOT BE DOCUMENTED BY TOWN STAFF.

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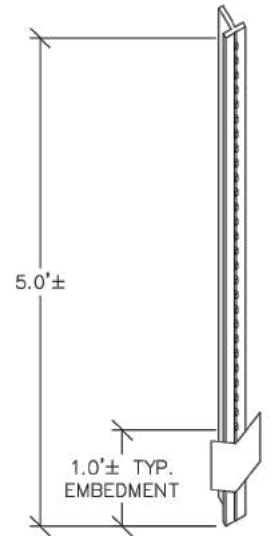
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Void:	Subset: Erosion	Sheets: ED-2 of 35	Sheet Number 96

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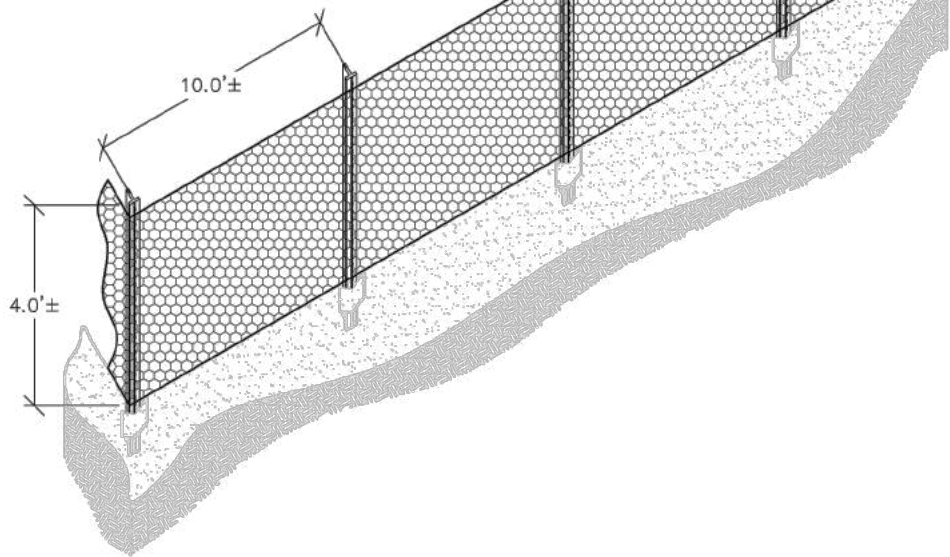
NOTE:
CONSTRUCTION FENCE SHALL BE SECURELY FASTENED TO EACH TEE POST OR APPROVED EQUAL.

STUDDED STEEL TEE POST OR APPROVED EQUAL

ORANGE PLASTIC CONSTRUCTION FENCE OR APPROVED EQUAL

STUDDED STEEL TEE POST OR APPROVED EQUAL

EXISTING GRADE



CF

CONSTRUCTION FENCE

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CONSTRUCTION FENCE INSTALLATION NOTES

1. THE CONSTRUCTION FENCE SHALL BE SECURELY FASTENED TO EACH POST OR APPROVED EQUAL.

CONSTRUCTION FENCE INSPECTION AND MAINTENANCE NOTES

1. THE EROSION CONTROL SUPERVISOR SHALL REGULARLY INSPECT THE CONSTRUCTION FENCE AND MAKE ANY NECESSARY REPAIRS.
2. CONSTRUCTION FENCE SHALL BE REPAIRED WHEN THE FENCING MATERIAL FALLS OUT OF COMPLIANCE WITH THE NOTES AND DETAILS.



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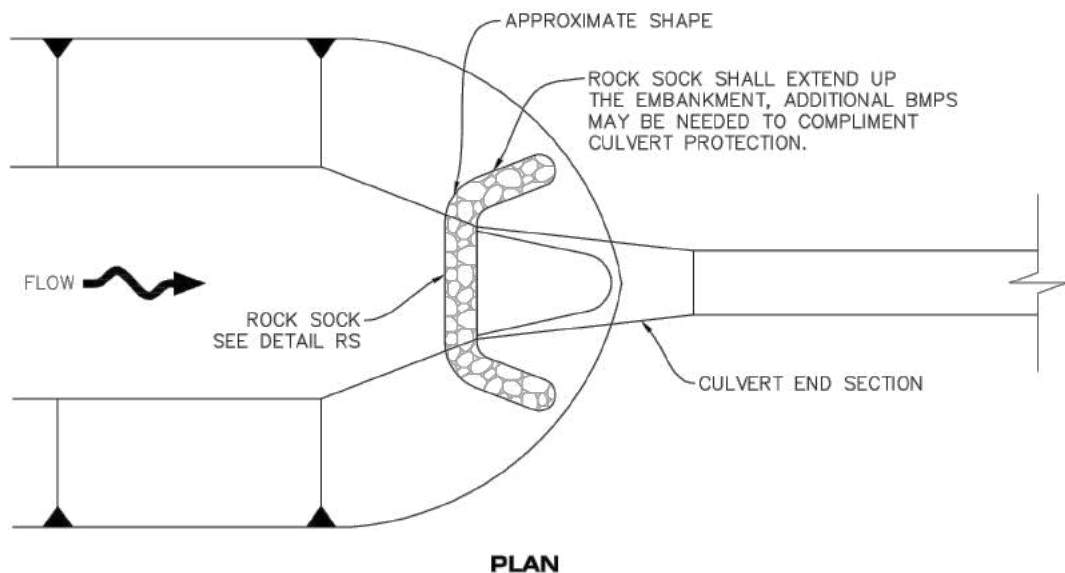
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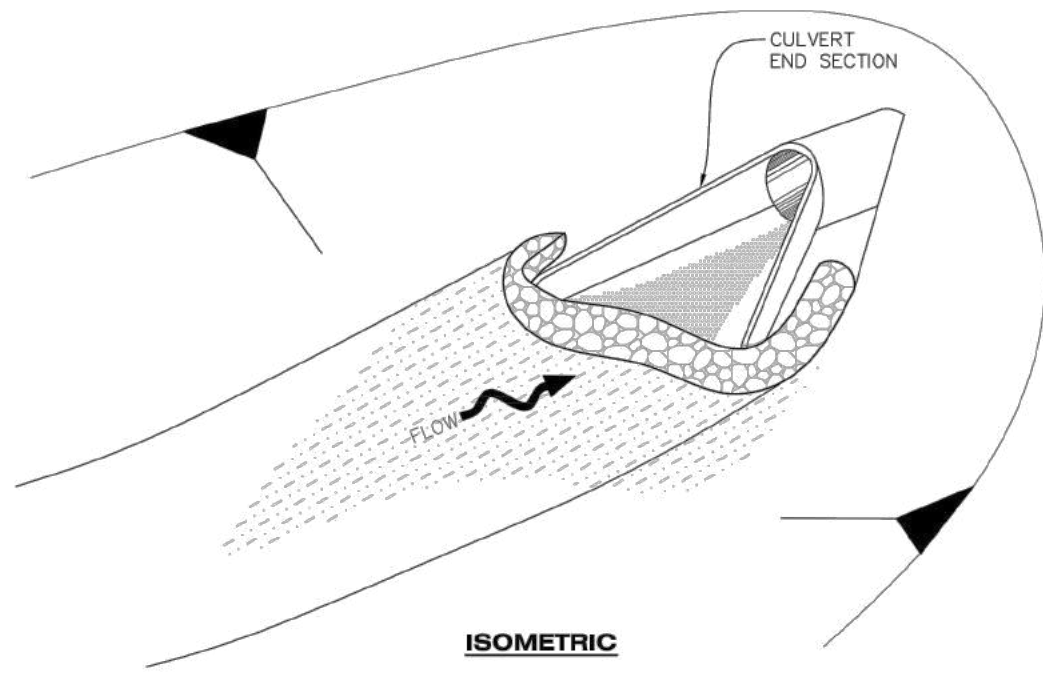
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PLAN



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CULVERT PROTECTION (INLET)



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CULVERT PROTECTION (INLET) INSTALLATION NOTES

1. SEE PLAN VIEW FOR LOCATION(S) OF CULVERT PROTECTION (INLET).
2. ROCK SOCK SHALL BE CONSTRUCTED ACCORDING TO THE DETAIL (SEE DETAIL RS).
3. ROCK SOCK SHALL BE APPROXIMATELY 12" IN DIAMETER.
4. ROCK SOCK SHALL EXTEND ABOVE THE FLOW LINE ELEVATION ON BOTH SIDES OF THE CULVERT END SECTION.

CULVERT PROTECTION (INLET) INSPECTION AND MAINTENANCE NOTES

1. THE EROSION CONTROL SUPERVISOR SHALL REGULARLY INSPECT THE CULVERT PROTECTION (INLET).
2. AT A MINIMUM, ACCUMULATED SEDIMENT SHALL BE REMOVED ONCE SEDIMENT HAS REACHED A DEPTH EQUAL TO 1/2 THE HEIGHT OF THE ROCK SOCK.
3. CULVERT PROTECTION (INLET) IS TO REMAIN IN PLACE AND PROPERLY MAINTAINED UNTIL VEGETATIVE COVER HAS REACHED A CONSISTENT DENSITY OF AT LEAST 70% OF FULL VEGETATIVE COVER AND EROSION AND SEDIMENTATION IS NO LONGER A POSSIBILITY AS DETERMINED BY THE TOWN'S INSPECTOR OR AS OTHERWISE DIRECTED BY THE TOWN'S INSPECTOR.
4. WHEN THE CULVERT INLET PROTECTION IS REMOVED, THE TOWN'S INSPECTOR MAY REQUIRE ANY DISTURBED AREAS ASSOCIATED WITH THE INSTALLATION, MAINTENANCE, AND/OR REMOVAL OF THE CULVERT INLET PROTECTION TO BE ROUGHENED, SEEDED, MULCHED, AND CRIMPED PER THE TOWN'S SPECIFICATIONS (SEE DETAIL SMC).



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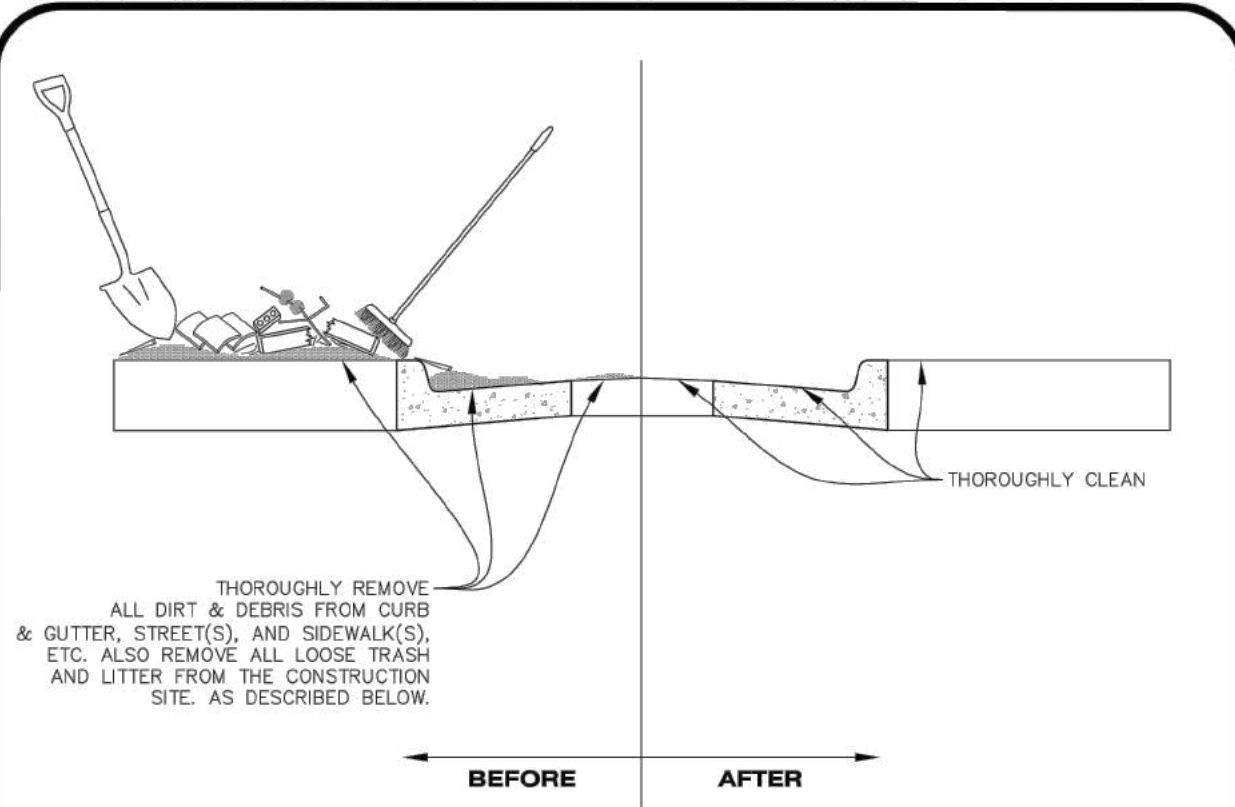
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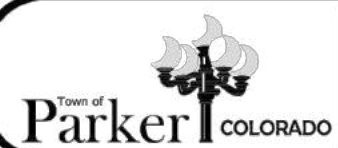
NOTE:

1. THE EROSION CONTROL SUPERVISOR IS RESPONSIBLE FOR ENSURING THAT ALL STREETS, CURBS, GUTTERS, SIDEWALKS, DRIVEWAYS, PARKING LOTS, ALLEYS, TRICKLE CHANNELS, AND/OR OTHER IMPERVIOUS SURFACES IMPACTED BY CONSTRUCTION ACTIVITIES ARE THOROUGHLY CLEANED THROUGHOUT THE DAY IF THEY BECOME SOILED. THESE AREAS MUST ALSO BE THOROUGHLY CLEAN BEFORE THE END OF THE WORK DAY. FURTHERMORE, ALL LOOSE TRASH AND LITTER ASSOCIATED WITH THE PROJECT MUST BE REMOVED AND PROPERLY DISCARDED ON A DAILY BASIS.



DTC

DEBRIS AND TRASH CONTROL



CBMP

CONSTRUCTION BEST MANAGEMENT PRACTICES

DTC

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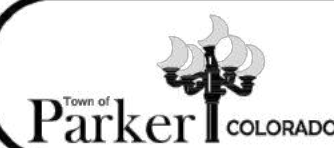
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DEBRIS CONTROL NOTES:

1. A COMBINATION OF SURFACE SCRAPING AND SWEEPING MAY BE NECESSARY TO PROPERLY CLEAN THESE AREAS.
2. ALL CHEMICAL SPILLS AND/OR STAINS ON THE SITE SHALL BE CLEANED TO THE MAXIMUM EXTENT PRACTICABLE. IN SOME CASES IT MAY BE NECESSARY TO USE PRESSURIZED WATER AND A VAC-TRUCK.
3. ON-SITE PERSONNEL, DELIVERY DRIVERS, ETC., SHOULD BE EDUCATED ON THE NEED FOR CONTINUAL DEBRIS AND TRASH CONTROL.



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CONSTRUCTION BEST MANAGEMENT PRACTICES

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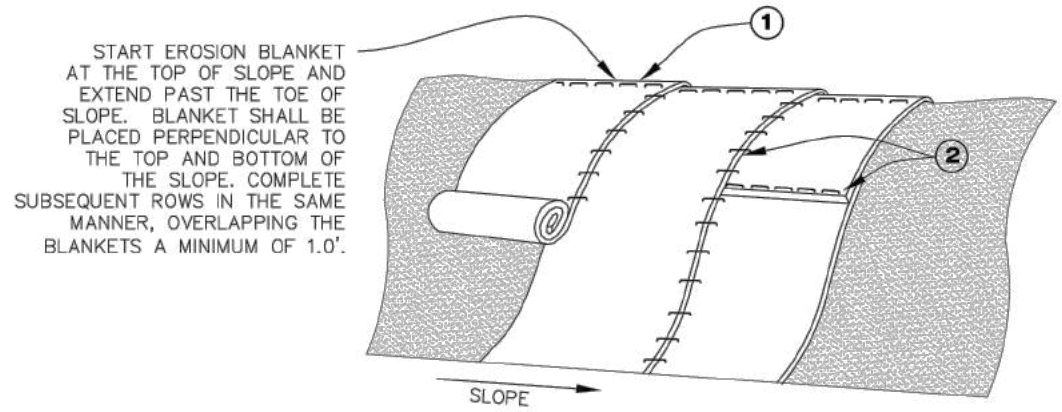
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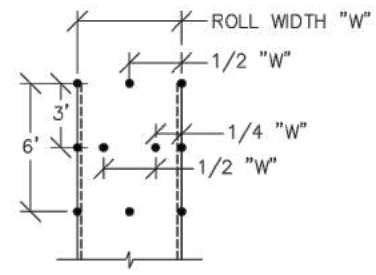
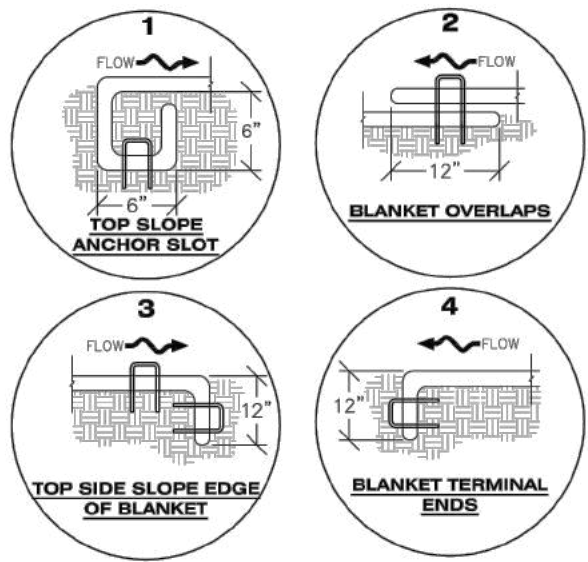


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START EROSION BLANKET AT THE TOP OF SLOPE AND EXTEND PAST THE TOE OF SLOPE. BLANKET SHALL BE PLACED PERPENDICULAR TO THE TOP AND BOTTOM OF THE SLOPE. COMPLETE SUBSEQUENT ROWS IN THE SAME MANNER, OVERLAPPING THE BLANKETS A MINIMUM OF 1.0'.



STAPLE PATTERN
 NOTE: STAPLES SHALL BE INSTALLED PER MANUFACTURERS RECOMMENDATION. IF MANUFACTURER INFO IS NOT AVAILABLE THEN ABOVE STAPLE PATTERN SHALL BE USED. WOODEN STAKES SHALL NOT BE USED FOR EROSION CONTROL BLANKET ON SLOPES.

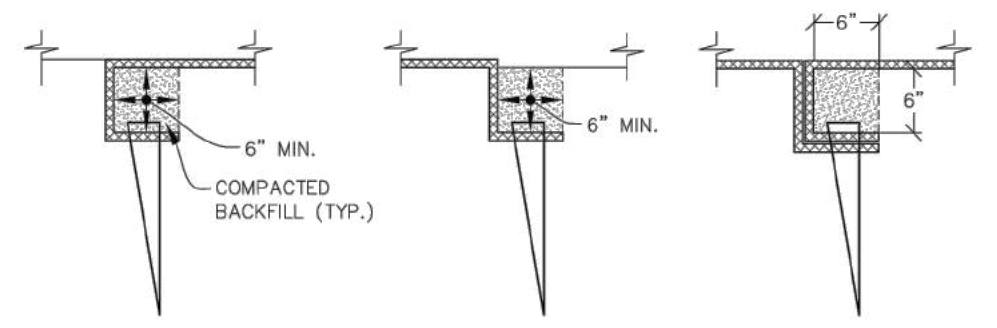
NOTE: WHEN NECESSARY, ALL SEEDING SHALL BE COMPLETED PRIOR TO THE PLACEMENT OF EROSION CONTROL BLANKETS. PLEASE SEE DETAIL SMC FOR SEEDING, MULCHING, AND CRIMPING REQUIREMENTS.

ECB **EROSION CONTROL BLANKET (SLOPE)**



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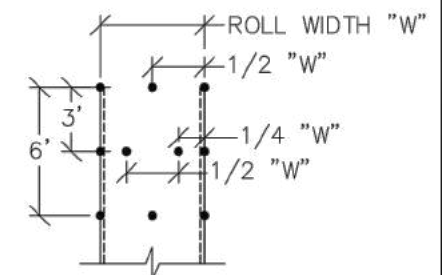
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TOE OF SLOPE ANCHOR TRENCH **TOP OF SLOPE ANCHOR TRENCH** **JOINT ANCHOR TRENCH USED TO JOIN BLANKETS TOGETHER (LONGITUDINAL)**



WOOD STAKE DETAIL
 ALTERNATIVE WOOD STAKE PRODUCTS MAY BE USED WITH APPROVAL FROM THE TOWN.



STAKING PATTERN
 NOTE: STAKES SHALL BE INSTALLED PER MANUFACTURERS RECOMMENDATION. IF MANUFACTURER INFO IS NOT AVAILABLE THEN ABOVE STAKING PATTERN SHALL BE USED. STAPLES SHALL NOT BE USED FOR EROSION CONTROL BLANKET IN CHANNELS.

- NOTES:**
- WOOD STAKES SHALL BE INSTALLED SUCH THAT ONLY 1" IS EXPOSED ABOVE THE GROUND.
 - WHEN NECESSARY, ALL SEEDING SHALL BE COMPLETED PRIOR TO THE PLACEMENT OF EROSION CONTROL BLANKETS. PLEASE SEE DETAIL SMC FOR SEEDING, MULCHING, AND CRIMPING REQUIREMENTS.

ECB **EROSION CONTROL BLANKET (CHANNEL)**

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EROSION CONTROL BLANKET INSTALLATION NOTES

1. SEE THE PLAN VIEW FOR THE LOCATION(S) OF THE EROSION CONTROL BLANKETS.
2. EROSION CONTROL BLANKETS USED FOR CHANNEL PROTECTION SHALL BE PROPERLY SELECTED BY THE DESIGN ENGINEER BASED ON CURRENT AND FUTURE FLOW RATES WITHIN THE CHANNEL. BASED ON THESE CALCULATIONS, TURF REINFORCEMENT MATTING OR RIPRAP MAY BE NECESSARY IN LIEU OF EROSION CONTROL BLANKETS.
3. IMMEDIATELY PRIOR TO BLANKET INSTALLATION, SOIL SURFACE SHALL BE SMOOTH. AND FREE OF ANY GAPS, VOIDS, WEEDS, ROCKS, STICKS, OR OTHER MISCELLANEOUS DEBRIS.
4. EROSION CONTROL BLANKET SHALL THEN BE INSTALLED ACCORDING TO THE DETAILED DRAWINGS.
5. ANY DAMAGED OR REMAINING STAPLES OR STAKES SHALL BE REMOVED FROM THE SITE.
6. ALL EROSION CONTROL BLANKETS FOR SLOPE PROTECTION INSTALLED IN THE TOWN SHALL BE DOUBLE NET, STRAW OR EXCELSIOR.

MANUFACTURER	PRODUCT NAME
NORTH AMERICAN GREEN	S150
APPROVED EQUAL	APPROVED EQUAL

7. IN MOST CASES, EROSION CONTROL BLANKETS FOR SLOPE PROTECTION ARE TO REMAIN IN PLACE PERMANENTLY.

EROSION CONTROL BLANKET MAINTENANCE NOTES

1. THE EROSION CONTROL SUPERVISOR SHALL REGULARLY INSPECT THE EROSION CONTROL BLANKETS AND MAKE ANY NECESSARY REPAIRS.



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CONSTRUCTION BEST MANAGEMENT PRACTICES

ECB

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Oct. 2013

AREA INLET PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR LOCATION(S) OF AREA INLET PROTECTION.
2. THE AREA INLET PROTECTION SHOWN ON CBMP PLANS SHALL BE INSTALLED ON EXISTING INLETS PRIOR TO ANY LAND DISTURBING ACTIVITIES OR IMMEDIATELY AFTER THE INSTALLATION OF NEW INLETS. AN INTERIM STYLE OF INLET PROTECTION MAY BE ALLOWED UNTIL THE INSTALLATION OF THE GUTTER AND/OR PAVEMENT.

AREA INLET PROTECTION INSPECTION AND MAINTENANCE NOTES

1. THE EROSION CONTROL SUPERVISOR SHALL REGULARLY INSPECT THE AREA INLET PROTECTION.
2. AREA INLET PROTECTION SHALL REMAIN IN PLACE AND PROPERLY MAINTAINED UNTIL VEGETATIVE COVER HAS REACHED A CONSISTENT DENSITY OF AT LEAST 70% OF FULL VEGETATIVE COVER AND EROSION AND SEDIMENTATION IS NO LONGER A POSSIBILITY AS DETERMINED BY THE TOWN'S INSPECTOR OR AS OTHERWISE DIRECTED BY THE TOWN'S INSPECTOR.
3. WHEN THE AREA INLET PROTECTION IS REMOVED, ANY DISTURBED AREAS ASSOCIATED WITH THE INSTALLATION, MAINTENANCE, AND/OR REMOVAL OF THE AREA INLET PROTECTION MAY NEED TO BE ROUGHENED, SEEDED, MULCHED, AND CRIMPED PER THE TOWN'S SPECIFICATIONS (SEE DETAIL SMC).
4. ACCUMULATED SEDIMENT SHALL BE REMOVED AS SOON AS POSSIBLE, IMMEDIATELY IN MOST CASES.



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CONSTRUCTION BEST MANAGEMENT PRACTICES

IPA

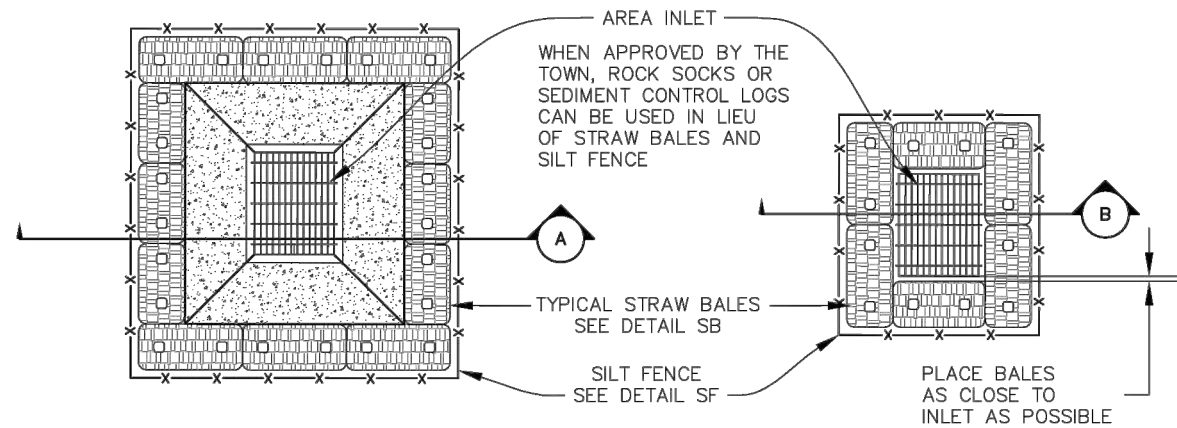
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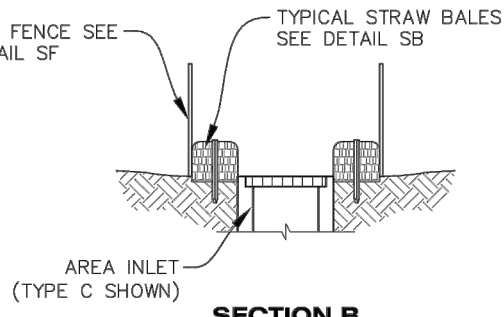
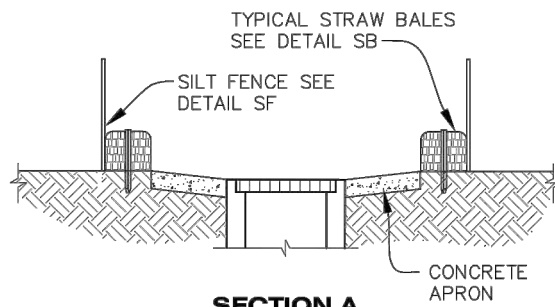
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THIS METHOD OF INLET PROTECTION SHALL NOT BE USED ON INLETS RECEIVING SIGNIFICANT FLOWS, SUCH AS IN CERTAIN SWALES/CHANNELS OR HIGHWAY MEDIANS. INLET PROTECTION FOR AREA INLETS IN PAVEMENT (SEE DETAIL IPAP) SHALL BE USED IN THESE CONDITIONS.



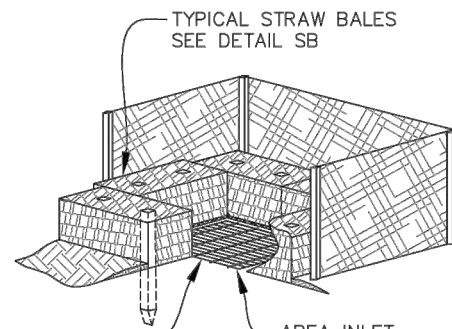
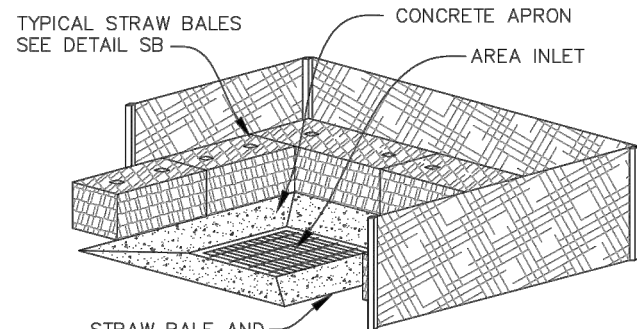
**AREA INLET WITH CONCRETE APRON
PLAN VIEW**

**AREA INLET
PLAN VIEW**



SECTION A

SECTION B



ISOMETRIC

ISOMETRIC

STRAW BALE AND SILT FENCE NOT SHOWN TO REVEAL INLET

STRAW BALE AND SILT FENCE NOT SHOWN TO REVEAL INLET



IPAN

INLET PROTECTION FOR AREA INLETS NOT IN PAVEMENT

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF THE TOWN OF PARKER.

AREA INLET PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR LOCATION(S) OF AREA INLET PROTECTION.
2. THE AREA INLET PROTECTION SHOWN ON CBMP PLANS SHALL BE INSTALLED ON EXISTING INLETS PRIOR TO ANY LAND DISTURBING ACTIVITIES OR IMMEDIATELY AFTER THE INSTALLATION OF NEW INLETS. AN INTERIM STYLE OF INLET PROTECTION MAY BE ALLOWED UNTIL THE INSTALLATION OF THE GUTTER AND/OR PAVEMENT.

AREA INLET PROTECTION INSPECTION AND MAINTENANCE NOTES

1. THE EROSION CONTROL SUPERVISOR SHALL REGULARLY INSPECT THE AREA INLET PROTECTION.
2. AREA INLET PROTECTION SHALL REMAIN IN PLACE AND PROPERLY MAINTAINED UNTIL VEGETATIVE COVER HAS REACHED A CONSISTENT DENSITY OF AT LEAST 70% OF FULL VEGETATIVE COVER AND EROSION AND SEDIMENTATION IS NO LONGER A POSSIBILITY AS DETERMINED BY THE TOWN'S INSPECTOR OR AS OTHERWISE DIRECTED BY THE TOWN'S INSPECTOR.
3. WHEN THE AREA INLET PROTECTION IS REMOVED, ANY DISTURBED AREAS ASSOCIATED WITH THE INSTALLATION, MAINTENANCE, AND/OR REMOVAL OF THE AREA INLET PROTECTION MAY NEED TO BE ROUGHENED, SEEDED, MULCHED, AND CRIMPED PER THE TOWN'S SPECIFICATIONS (SEE DETAIL SMC).
4. ACCUMULATED SEDIMENT SHALL BE REMOVED AS SOON AS POSSIBLE, IMMEDIATELY IN MOST CASES.



MY RESPONSIBILITY IS LIMITED TO THE SELECTION OF THESE STANDARD DETAILS



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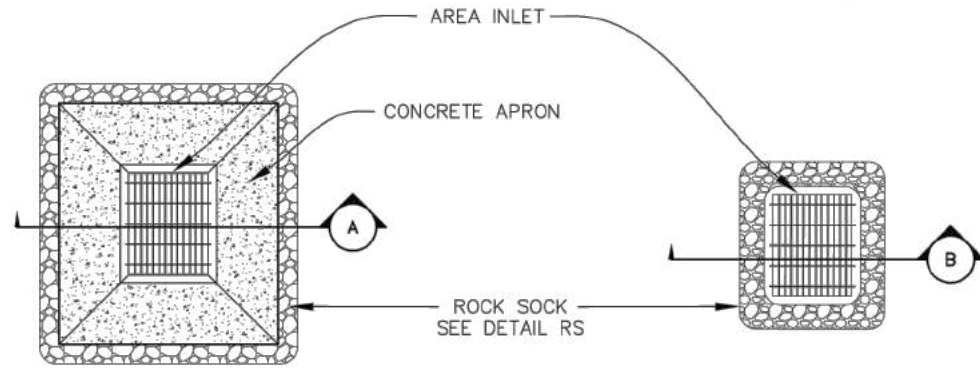
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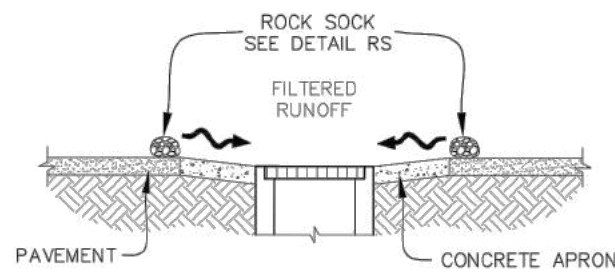
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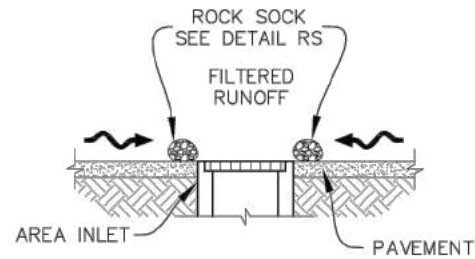


**AREA INLET WITH CONCRETE APRON
PLAN VIEW**

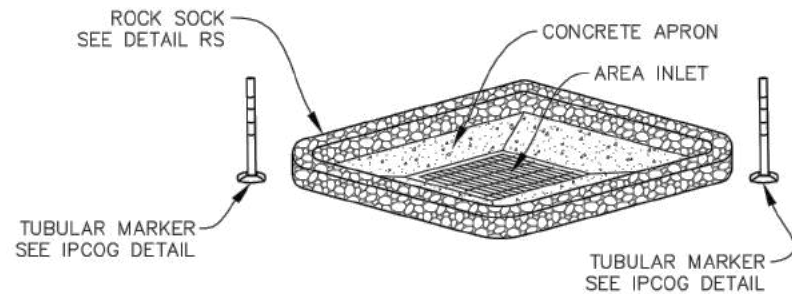
**AREA INLET
PLAN VIEW**



SECTION A



SECTION B



ISOMETRIC



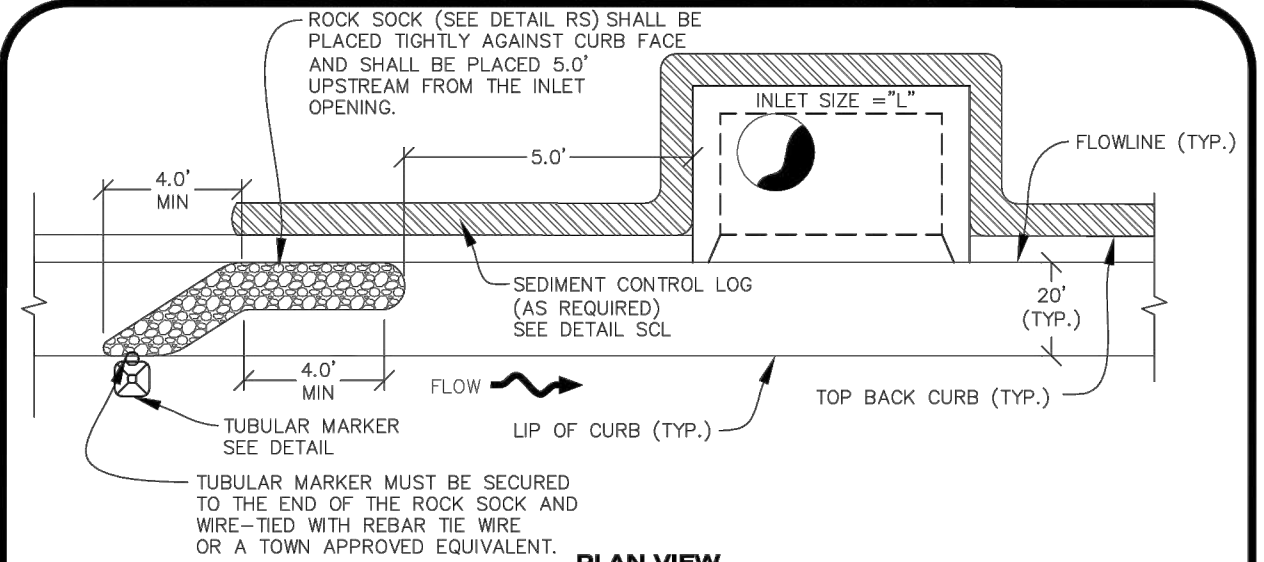
IPAP

INLET PROTECTION FOR AREA INLETS IN PAVEMENT

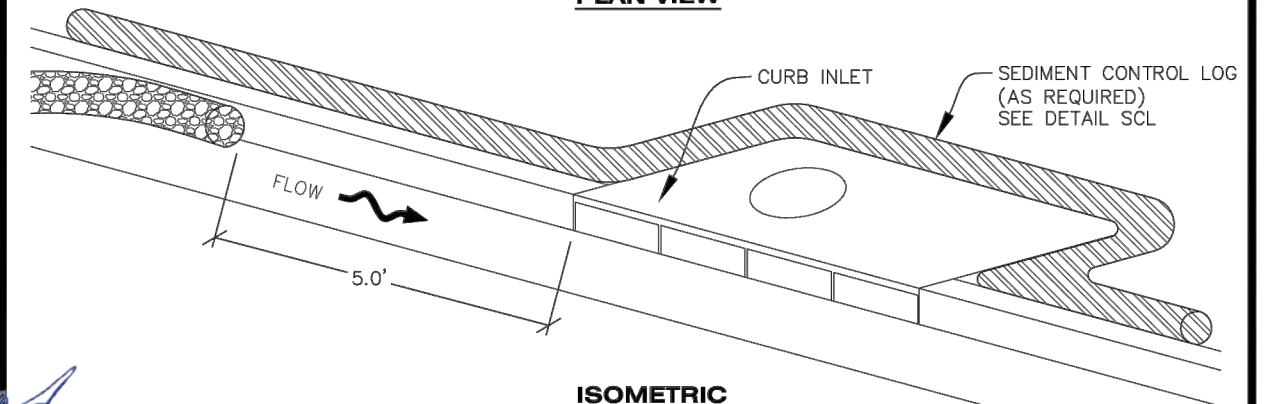


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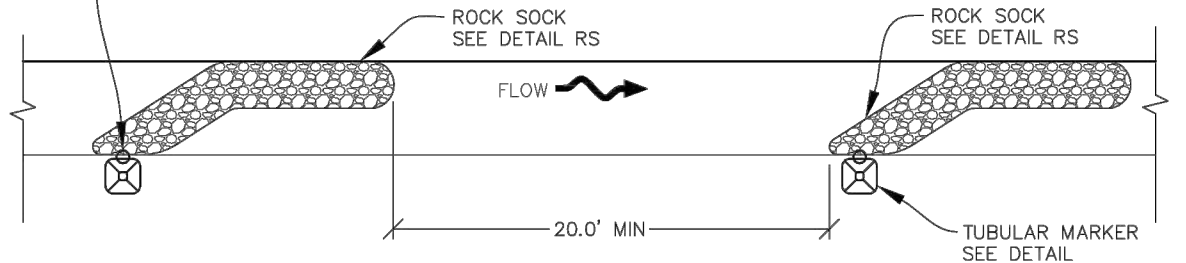


PLAN VIEW



ISOMETRIC

TUBULAR MARKER MUST BE SECURED TO THE END OF THE ROCK SOCK AND WIRE-TIED WITH REBAR TIE WIRE OR A TOWN APPROVED EQUIVALENT.



PLAN VIEW FOR MULTIPLE ROCK SOCKS



IPCOG

INLET PROTECTION, CURB ON-GRADE, TYPE R INLET



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IPAP

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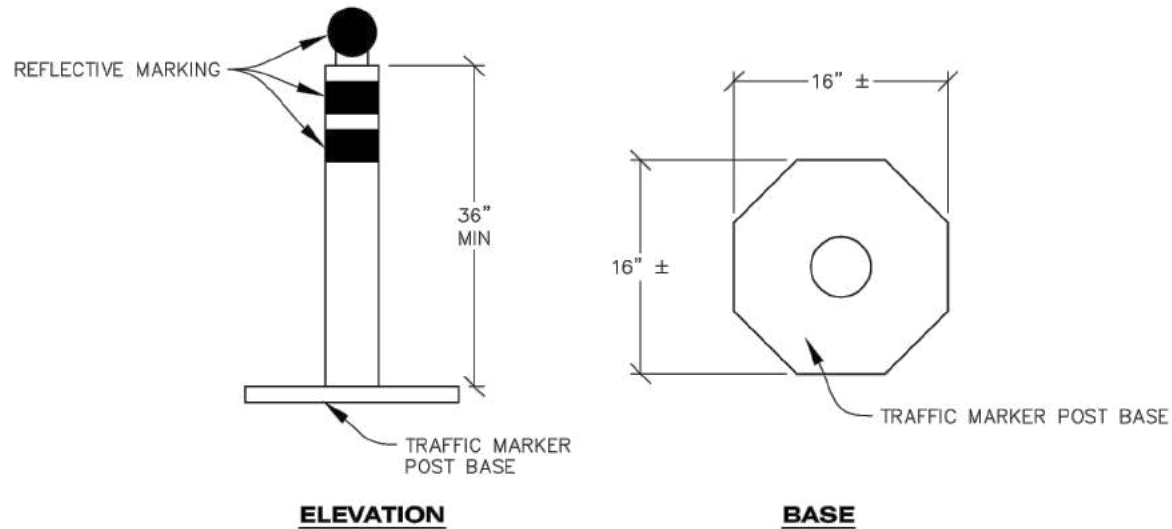
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ELEVATION

BASE

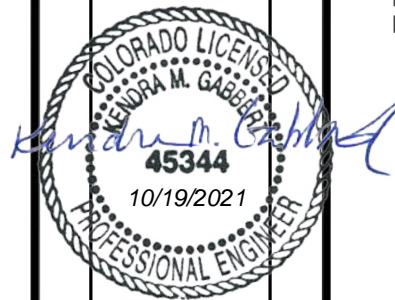
TUBULAR TRAFFIC MARKER DETAIL

INLET PROTECTION, CURB ON-GRADE INSTALLATION NOTES

1. SEE CBMP PLAN FOR LOCATION(S) OF ON-GRADE INLET PROTECTION.
2. CRUSHED ROCK SHALL BE 2.0"–3.0" IN SIZE WITH A FRACTURED FACE (ALL SIDES).
3. ROCK SOCK FOR ON-GRADE INLET PROTECTION SHALL BE ONE CONTINUOUS PIECE.
4. ROCK SOCK SHALL BE CONSTRUCTED USING CHICKEN WIRE OR OTHER APPROVED MATERIAL, SIZED TO KEEP ROCK FROM SPILLING OUT.
5. ROCK SOCK SHALL BE PLACED 5.0' UPHILL OF THE INLET OPENING.
6. TUBULAR MARKER SHALL BE A MINIMUM OF 3.0' HIGH WITH REFLECTIVE BANDS AND OCTAGON SHAPED BASES.
7. THE CURB INLET PROTECTION SHOWN ON CBMP PLAN SHALL BE INSTALLED ON EXISTING INLETS PRIOR TO ANY LAND DISTURBING ACTIVITIES OR IMMEDIATELY AFTER THE APPLICABLE INSTALLATION OF THE FIRST LIFT OF ASPHALT ON ROADWAYS DRAINING TO THE INLET.

ON-GRADE INLET PROTECTION INSPECTION AND MAINTENANCE NOTES

1. THE EROSION CONTROL SUPERVISOR SHALL REGULARLY INSPECT THE ON-GRADE INLET PROTECTION.
2. ACCUMULATED SEDIMENT SHALL BE REMOVED AS SOON AS POSSIBLE, IMMEDIATELY IN MOST CASES.
3. ROCK SOCKS SHALL BE REPLACED IF THEY BECOME HEAVILY SOILED OR DAMAGED.
4. ON-GRADE INLET PROTECTION SHALL REMAIN IN PLACE AND PROPERLY MAINTAINED UNTIL VEGETATIVE COVER HAS REACHED A CONSISTENT DENSITY OF AT LEAST 70% OF FULL VEGETATIVE COVER AND EROSION AND SEDIMENTATION IS NO LONGER A POSSIBILITY AS DETERMINED BY THE TOWN'S INSPECTOR OR AS OTHERWISE DIRECTED BY THE TOWN'S INSPECTOR.



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CBMP

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IPCOG

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IPCOG

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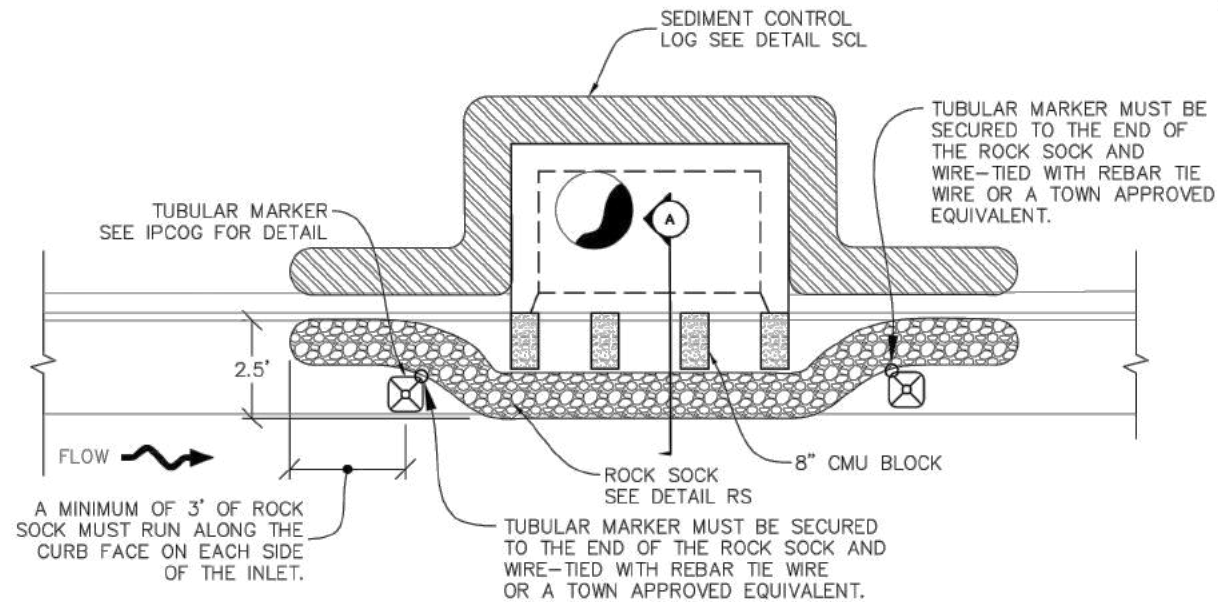
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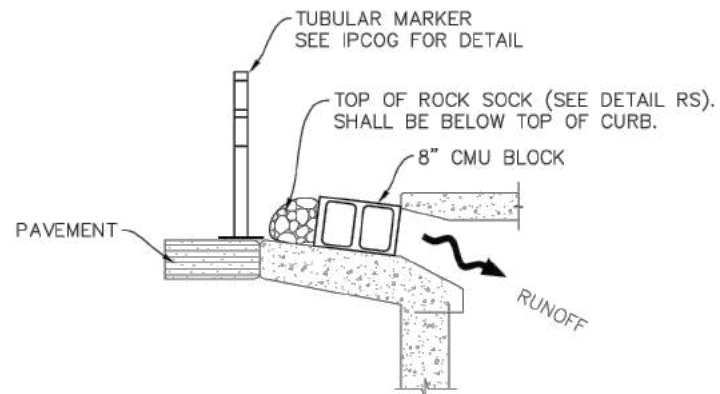


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PLAN VIEW



SECTION A



INLET PROTECTION, CURB ON SUMP, TYPE R INLET

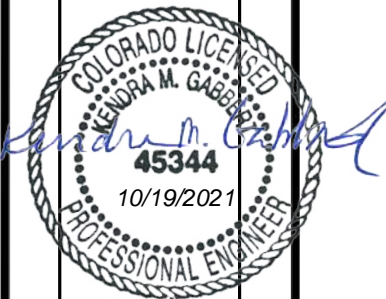
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CURB INLET PROTECTION INSTALLATION NOTES

1. SEE CBMP PLAN FOR LOCATION(S) OF CURB INLET PROTECTION.
2. CRUSHED ROCK SHALL BE 2.0"–3.0" IN SIZE WITH A FRACTURED FACE (ALL SIDES).
3. ROCK SOCK SHALL BE ONE CONTINUOUS PIECE OR SHALL BE CONSTRUCTED USING WIRE WRAPPED JOINTS (SEE DETAIL RS).
4. ROCK SOCK SHALL BE CONSTRUCTED USING CHICKEN WIRE OR OTHER APPROVED MATERIAL SIZED TO KEEP ROCK FROM SPILLING OUT.
5. ROCK SOCK SHALL EXTEND 3.0' ALONG THE CURB BEYOND LOCATIONS WHERE IT RETURNS TO CONTACT CURB FACE.
6. TUBULAR TRAFFIC MARKERS SHALL BE A MINIMUM OF 36" IN HEIGHT WITH REFLECTIVE BANDS AND OCTAGON SHAPED BASES.
7. THE CURB INLET PROTECTION SHOWN ON CBMP PLAN SHALL BE INSTALLED ON EXISTING INLETS PRIOR TO ANY LAND DISTURBING ACTIVITIES OR IMMEDIATELY AFTER THE INSTALLATION OF THE FIRST LIFT OF ASPHALT ON ROADWAYS DRAINING TO THE CURB INLET. CMU BLOCKS OR THE ROCK SOCK SHALL BE USED AS INTERIM PROTECTION UNTIL THE FIRST LIFT OF ASPHALT IS INSTALLED.

CURB INLET PROTECTION INSPECTION AND MAINTENANCE NOTES

1. THE EROSION CONTROL SUPERVISOR SHALL REGULARLY INSPECT THE CURB INLET PROTECTION.
2. ACCUMULATED SEDIMENT SHALL BE REMOVED AS SOON AS POSSIBLE, IMMEDIATELY IN MOST CASES.
3. ROCK SOCKS SHALL BE REPLACED IF THEY BECOME HEAVILY SOILED OR DAMAGED.
4. CURB INLET PROTECTION SHALL REMAIN IN PLACE AND PROPERLY MAINTAINED UNTIL VEGETATIVE COVER HAS REACHED A CONSISTENT DENSITY OF AT LEAST 70% OF FULL VEGETATIVE COVER AND EROSION AND SEDIMENTATION IS NO LONGER A POSSIBILITY AS DETERMINED BY THE TOWN'S INSPECTOR OR AS OTHERWISE DIRECTED BY THE TOWN'S INSPECTOR.



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IPCOS

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CBMP

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IPCOS

2 OF 2
Oct. 2013

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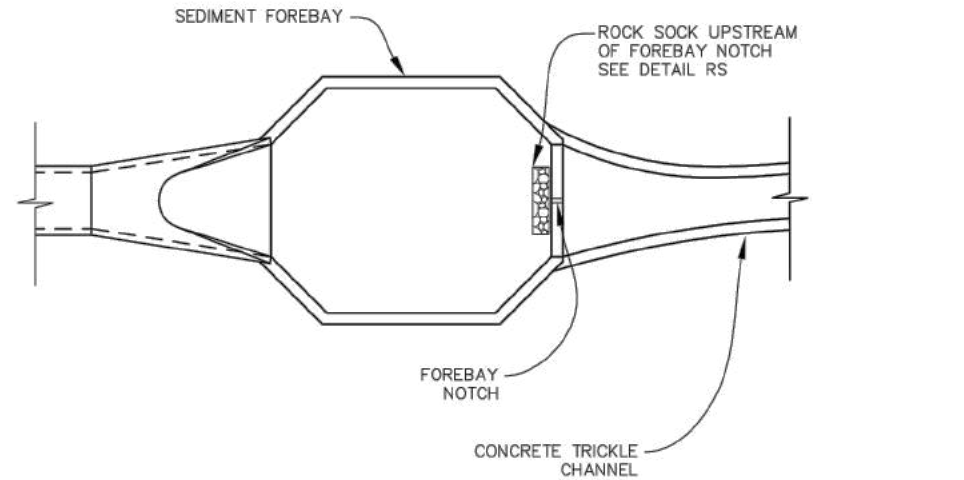
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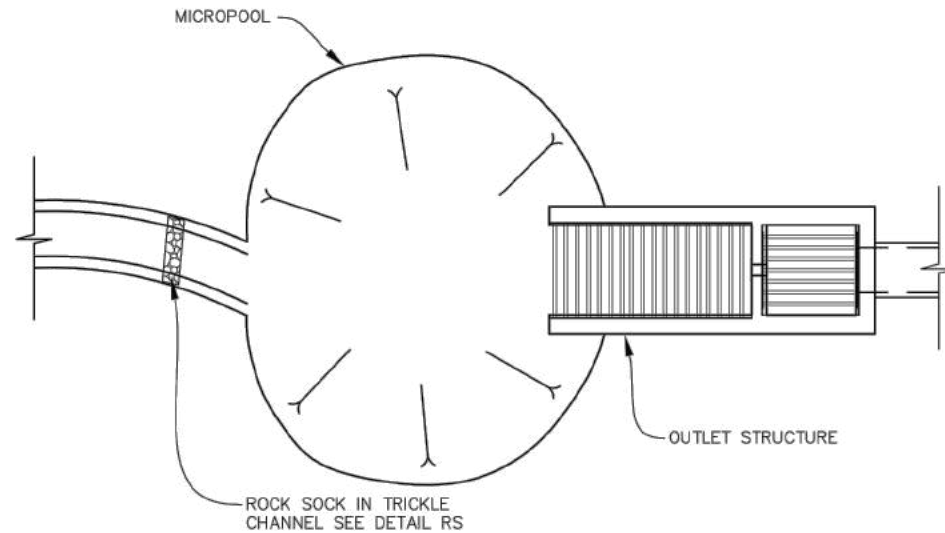


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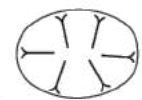
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FOREBAY



OUTLET / MICROPOL



DETENTION POND PROTECTION



CBMP
CONSTRUCTION BEST MANAGEMENT PRACTICES

DP
1 OF 2
Oct. 2013

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DETENTION POND PROTECTION INSTALLATION NOTES

1. DETENTION POND PROTECTION SHALL BE INSTALLED IMMEDIATELY FOLLOWING THE CONSTRUCTION OF THE TRICKLE CHANNEL AND FOREBAY.
2. CRUSHED ROCK SHALL BE 2.0"–3.0" IN SIZE WITH A FRACTURED FACE (ALL SIDES).
3. ROCK SOCK FOR OUTLET STRUCTURE AND FOREBAY PROTECTION SHALL BE ONE CONTINUOUS PIECE (SEE DETAIL RS).

DETENTION POND PROTECTION INSPECTION AND MAINTENANCE NOTES

1. THE EROSION CONTROL SUPERVISOR SHALL REGULARLY INSPECT THE OUTLET STRUCTURE PROTECTION.
2. ACCUMULATED SEDIMENT SHALL BE REMOVED IMMEDIATELY.
3. OUTLET STRUCTURE PROTECTION SHALL REMAIN IN PLACE AND PROPERLY MAINTAINED UNTIL VEGETATIVE COVER HAS REACHED A CONSISTENT DENSITY OF AT LEAST 70% OF FULL VEGETATIVE COVER AND EROSION AND SEDIMENTATION IS NO LONGER A POSSIBILITY AS DETERMINED BY THE TOWN'S INSPECTOR OR AS OTHERWISE DIRECTED BY THE TOWN'S INSPECTOR.



MY RESPONSIBILITY IS LIMITED TO THE SELECTION OF THESE STANDARD DETAILS



CBMP
CONSTRUCTION BEST MANAGEMENT PRACTICES

DP
2 OF 2
Oct. 2013

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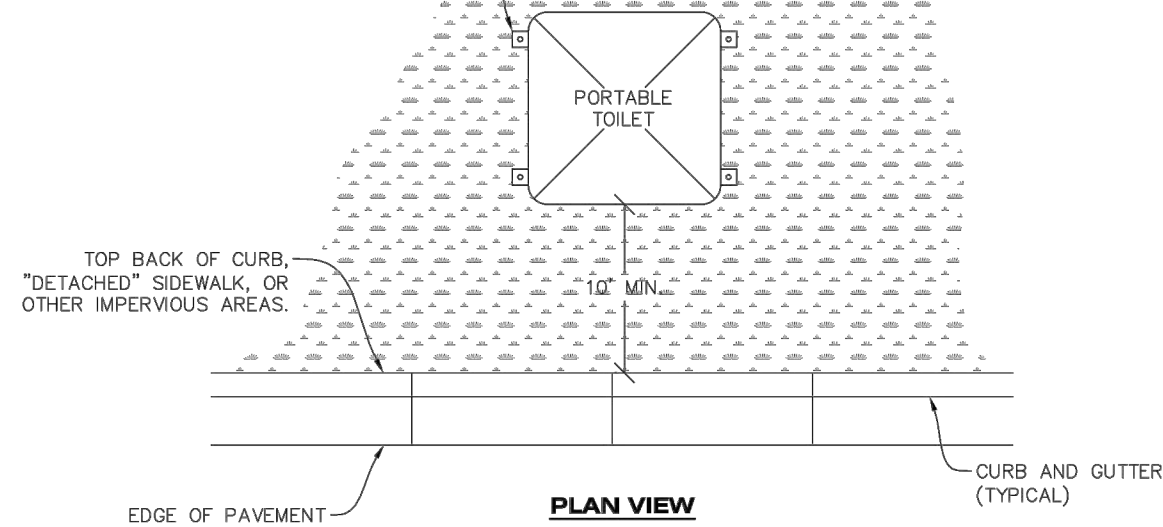
Sheet Revisions			
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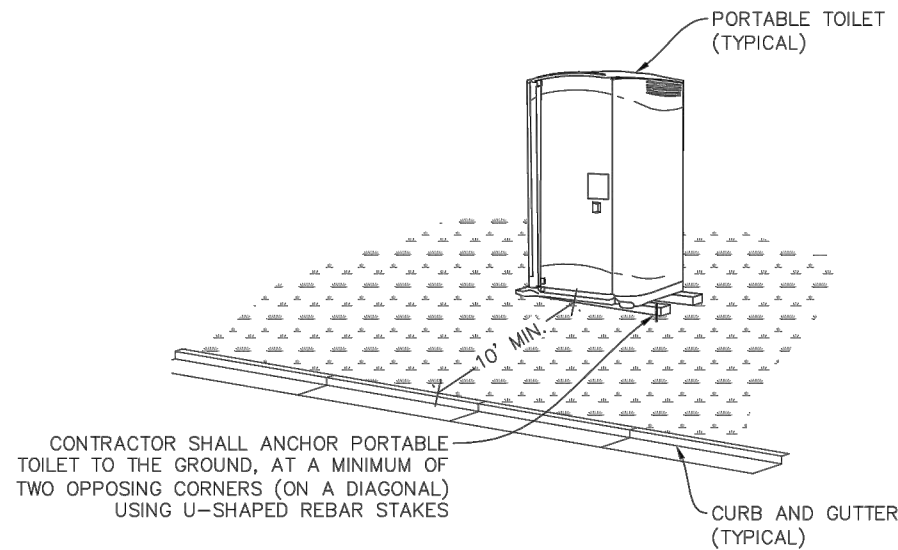
CONTRACTOR SHALL ANCHOR PORTABLE TOILET TO THE GROUND, AT A MINIMUM OF TWO OPPOSING CORNERS (ON A DIAGONAL) USING U-SHAPED REBAR STAKES



EDGE OF PAVEMENT

PLAN VIEW

CURB AND GUTTER (TYPICAL)



CONTRACTOR SHALL ANCHOR PORTABLE TOILET TO THE GROUND, AT A MINIMUM OF TWO OPPOSING CORNERS (ON A DIAGONAL) USING U-SHAPED REBAR STAKES

CURB AND GUTTER (TYPICAL)

ISOMETRIC



PTP

PORTABLE TOILET PROTECTION



CBMP

CONSTRUCTION BEST MANAGEMENT PRACTICES

PTP

1 OF 2
Oct. 2013

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PORTABLE TOILET PROTECTION INSTALLATION NOTES

1. PORTABLE TOILETS SHALL BE PLACED A MINIMUM OF 10.0' BEHIND ALL CURBS, SIDEWALKS, AND OTHER IMPERVIOUS AREAS.
2. ALL PORTABLE TOILETS MUST BE GROUPED TOGETHER.
3. PORTABLE TOILETS SHALL BE SECURELY ANCHORED TO THE GROUND USING U-SHAPED REBAR STAKES.
4. U-SHAPED REBAR STAKES SHALL BE POSITIONED ON AT LEAST 2 OPPOSING (DIGITAL) CORNERS.

PORTABLE TOILET PROTECTION INSPECTION AND MAINTENANCE NOTES

2. THE EROSION CONTROL SUPERVISOR SHALL REGULARLY INSPECT THE PORTABLE TOILET PROTECTION.
3. PORTABLE TOILETS SHALL BE SERVICED AT THE NECESSARY INTERVALS TO ELIMINATE THE POSSIBILITY OF OVERFLOW.
4. WHEN THE PORTABLE TOILETS ARE REMOVED, ANY DISTURBED AREAS ASSOCIATED WITH THE INSTALLATION, MAINTENANCE, AND/OR REMOVAL OF THE TOILETS MAY NEED TO BE LANDSCAPED OR ROUGHENED, SEEDED, MULCHED, AND CRIMPED PER THE TOWN'S SPECIFICATIONS (SEE DETAIL SMC).
5. PORTABLE TOILETS THAT ARE NOT CONSISTENTLY MAINTAINED IN ACCORDANCE WITH THESE REQUIREMENTS MAY NEED TO BE CLUSTERED TOGETHER, IN ONE CENTRALIZED LOCATION IN ORDER TO INCREASE COMPLIANCE AND REDUCE THE CHANCE OF A SPILL.



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CBMP

CONSTRUCTION BEST MANAGEMENT PRACTICES

PTP

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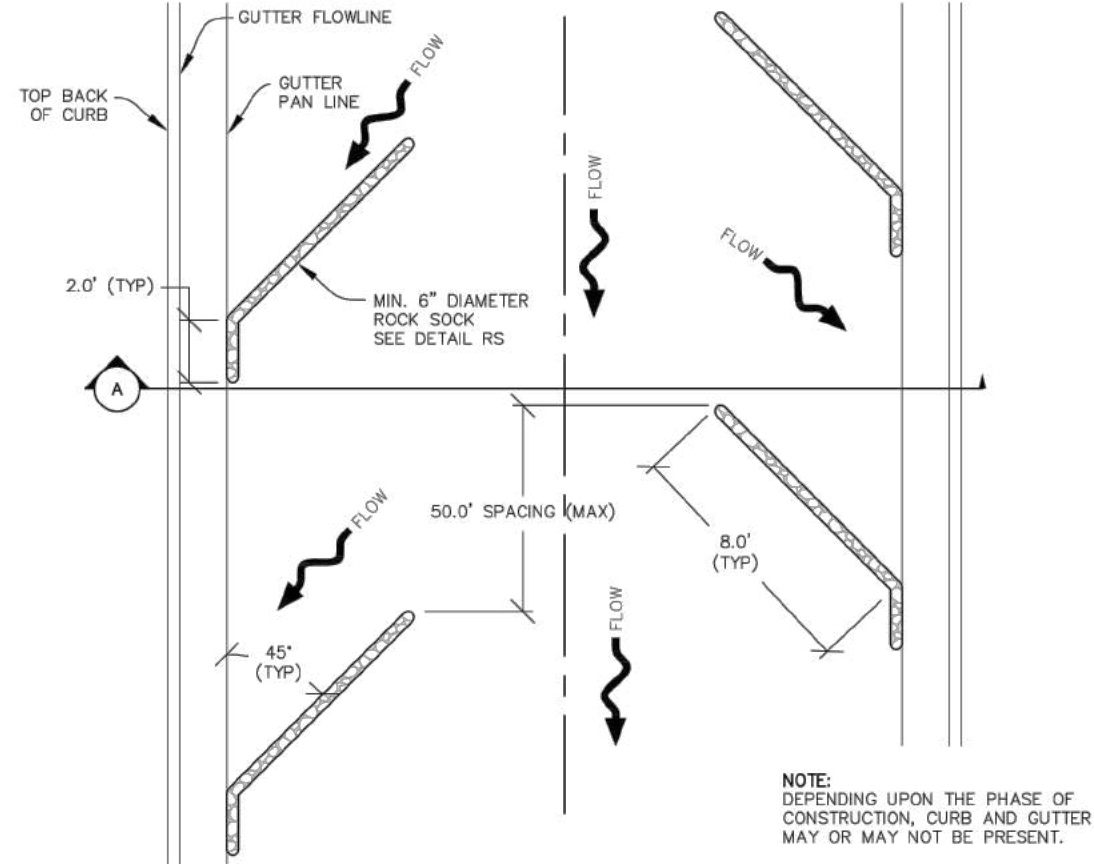
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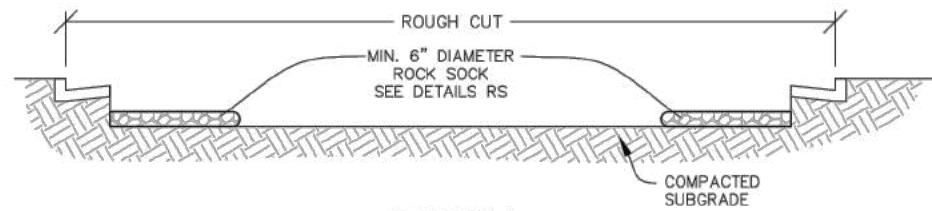
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PLAN VIEW

NOTE:
DEPENDING UPON THE PHASE OF
CONSTRUCTION, CURB AND GUTTER
MAY OR MAY NOT BE PRESENT.



SECTION A



RCSC

ROUGH CUT STREET CONTROL



CBMP
CONSTRUCTION BEST MANAGEMENT PRACTICES

RCSC
1 OF 2
Oct. 2013

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ROUGH CUT STREET CONTROL INSTALLATION NOTES

1. SEE CBMP PLAN FOR LOCATION(S) OF ROUGH CUT STREET CONTROL.
2. THE SPACING OF THE ROUGH CUT STREET CONTROL MAY BE DETERMINED BY THE DESIGN ENGINEER AND SHOWN ON THE CBMP PLAN.

ROUGH CUT STREET CONTROL INSPECTION AND MAINTENANCE NOTES

1. THE EROSION CONTROL SUPERVISOR SHALL REGULARLY INSPECT THE ROUGH CUT STREET CONTROL.
2. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN THE SEDIMENT DEPTH IS 1/2 THE HEIGHT OF THE ROCK SOCK.
3. ROUGH CUT STREET CONTROL SHALL BE REPAIRED IMMEDIATELY FOLLOWING ANY SIGN OF WEAR OR ALTERATION OF THE ORIGINAL SHAPE AND DIMENSIONS.
4. ROUGH CUT STREET CONTROL SHALL BE KEPT IN PLACE AND MAINTAINED UNTIL SUB-GRADE PREPARATION BEGINS FOR PAVING. AT THAT POINT, THE RCSC SHOULD BE REMOVED IN INCREMENTS BASED ON SUBGRADE PREPARATION.



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CBMP
CONSTRUCTION BEST MANAGEMENT PRACTICES

RCSC
2 OF 2
Oct. 2013

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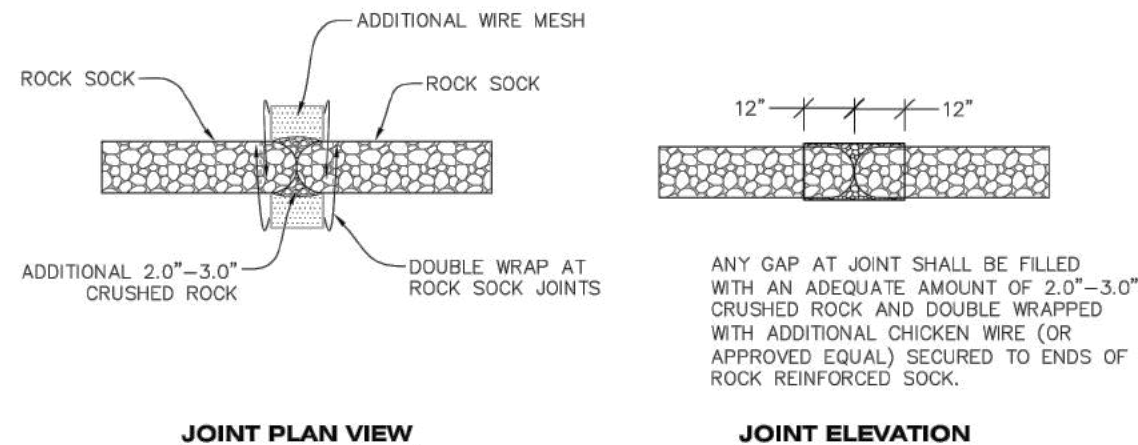
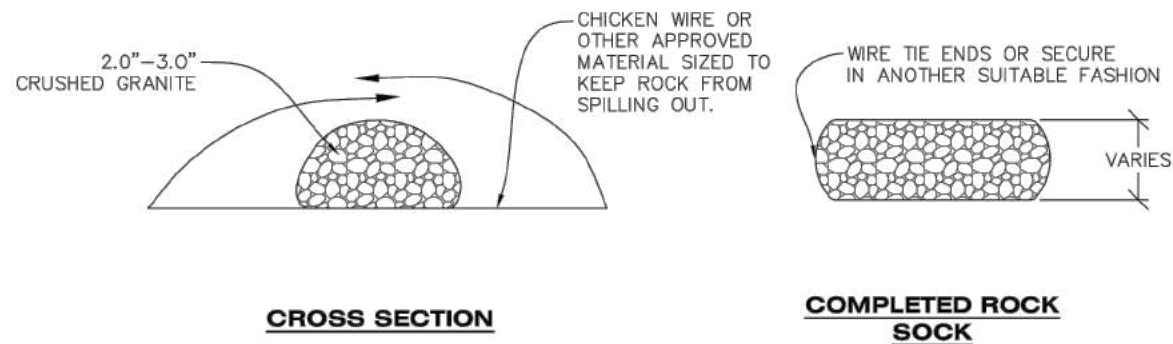
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ROCK SOCK INSTALLATION NOTES

1. SEE CBMP PLAN FOR LOCATION(S) OF ROCK SOCK.
2. CRUSHED ROCK SHALL BE APPROXIMATELY 2.0"–3.0" GRANITE IN SIZE WITH A FRACTURED FACE (ALL SIDES).
3. ROCK SOCK SHALL BE APPROXIMATELY ONE CONTINUOUS PIECE OR SHALL BE CONSTRUCTED USING WIRE WRAPPED JOINTS (SEE DETAIL RS).
4. ROCK SOCK SHALL BE CONSTRUCTED USING CHICKEN WIRE OR OTHER APPROVED MATERIAL SIZED TO KEEP ROCK FROM SPILLING OUT.
5. MINIMUM ROCK SOCK DIAMETER SHALL VARY BASED ON APPLICATION (7" MIN).
6. TUBULAR MARKERS MAY NEED TO BE USED IN CONJUNCTION WITH ROCKS SOCKS ANYTIME THE ROCK SOCK IS PLACED ON A ROADWAY, SIDEWALK, PARKING LOT OR OTHER LOCATION SUSCEPTIBLE TO VEHICLE OR PEDESTRIAN TRAFFIC. TUBULAR MARKERS SHALL CONFORM TO THE TUBULAR MARKER DETAIL.

ROCK SOCK INSPECTION AND MAINTENANCE NOTES

1. THE EROSION CONTROL SUPERVISOR SHALL REGULARLY INSPECT THE ROCK SOCKS.
2. ROCK SOCKS SHALL BE REPLACED IF THEY BECOME HEAVILY SOILED OR DAMAGED.
3. ROCK SOCKS SHALL REMAIN IN PLACE AND PROPERLY MAINTAINED UNTIL VEGETATIVE COVER HAS REACHED A CONSISTENT DENSITY OF AT LEAST 70% OF FULL VEGETATIVE COVER AND EROSION AND SEDIMENTATION IS NO LONGER A POSSIBILITY AS DETERMINED BY THE TOWN'S INSPECTOR OR AS OTHERWISE DIRECTED BY THE TOWN'S INSPECTOR.



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CBMP
CONSTRUCTION BEST MANAGEMENT PRACTICES

RS
1 OF 2
Oct. 2013

CBMP
CONSTRUCTION BEST MANAGEMENT PRACTICES

RS
2 OF 2
Oct. 2013

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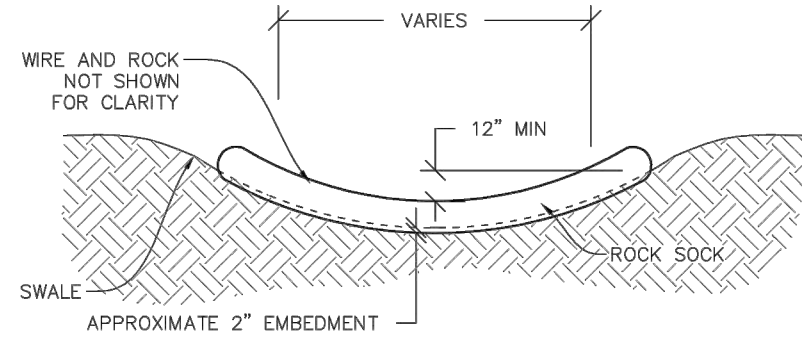
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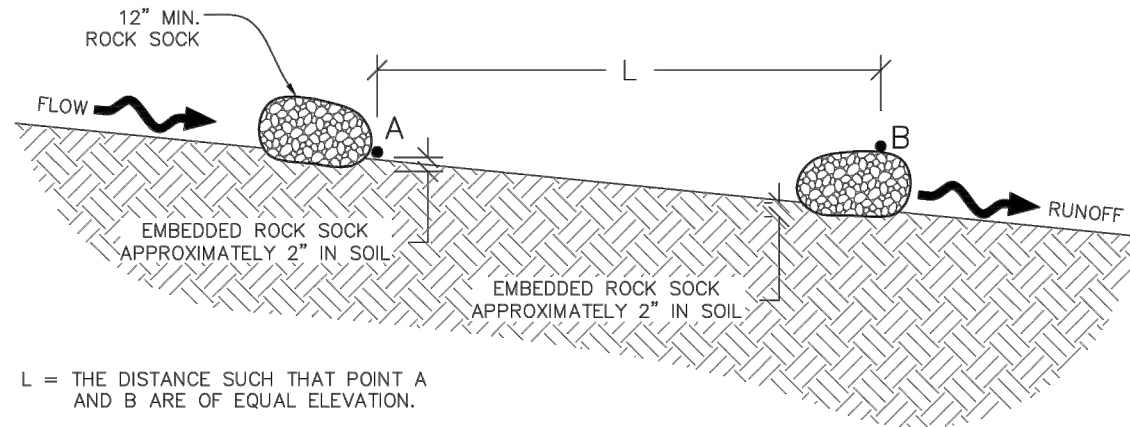
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SWALE ELEVATION

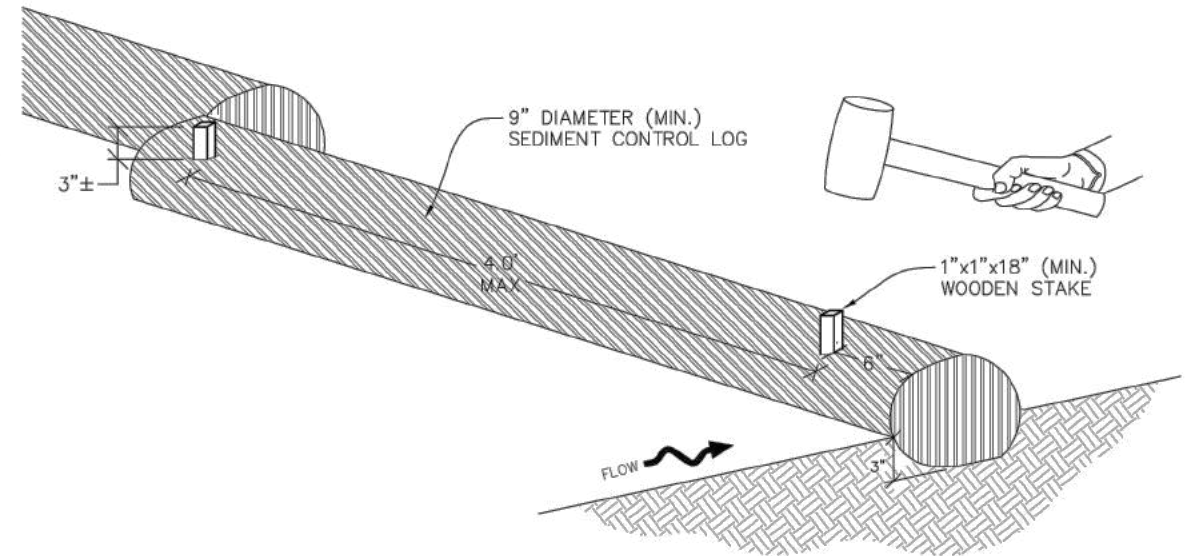


SWALE SPACING



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SECTION A



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 CONSTRUCTION BEST MANAGEMENT PRACTICES | 1 OF 1
 Oct. 2013

Town of Parker COLORADO | **CBMP** | **SCL**
 CONSTRUCTION BEST MANAGEMENT PRACTICES | 1 OF 3
 Oct. 2013

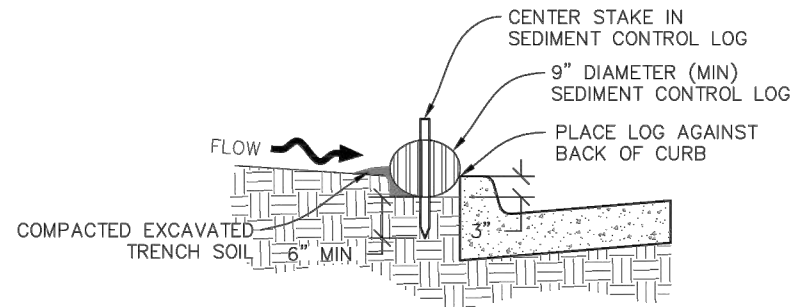
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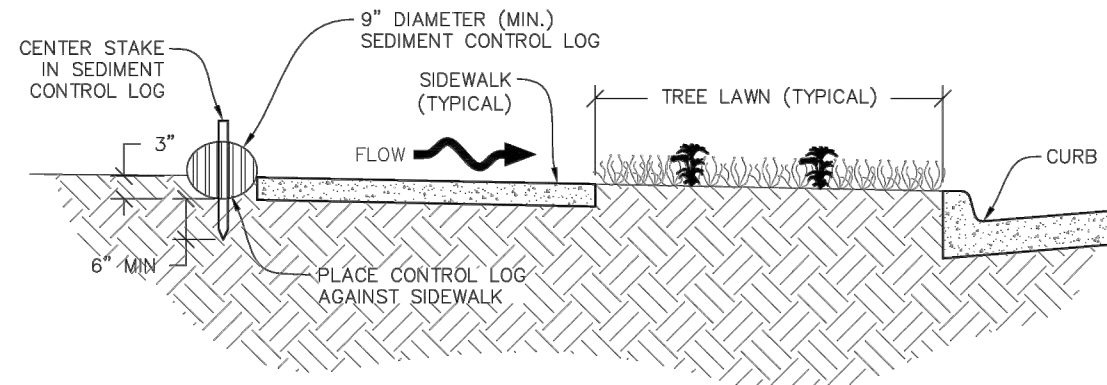
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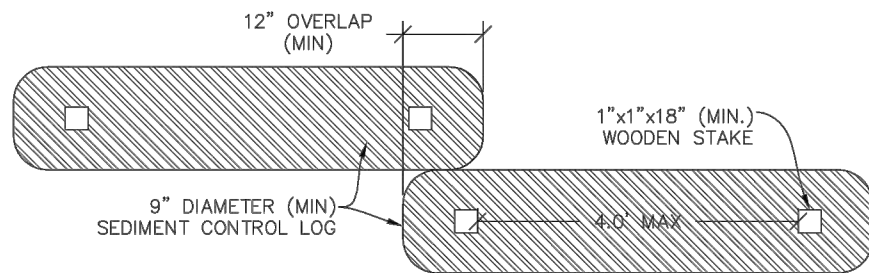
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SEDIMENT CONTROL LOG AT BACK OF CURB



SEDIMENT CONTROL LOG AT SIDEWALK WITH TREE LAWN



SEDIMENT CONTROL LOG JOINTS



SEDIMENT CONTROL LOG



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SEDIMENT CONTROL LOG INSTALLATION NOTES

1. SEE CBMP PLAN FOR LOCATION(S) OF SEDIMENT CONTROL LOGS.
2. ALL SEDIMENT CONTROL LOGS SHALL BE INSTALLED FREE OF DEFECTS INCLUDING RIPS, HOLES AND OBVIOUS WEAR.
3. SEDIMENT CONTROL LOGS SHALL BE INSTALLED IMMEDIATELY ADJACENT TO AN IMPERVIOUS SURFACE SUCH AS A CURB HEAD, SIDEWALK, INLET LID, ETC. NO GAPS SHALL EXIST BETWEEN THE SEDIMENT CONTROL LOG AND THE IMPERVIOUS SURFACE.
4. A UNIFORM 3" DEEP ANCHOR TRENCH (APPROX.) IN THE SHAPE OF A HALF-SPHERE SHALL BE EXCAVATED USING A TRENCHER, SPADE-SHAPED SHOVEL, OR PICK. THE ANCHOR TRENCH SHALL BE SIZED TO ALLOW FOR THE SEDIMENT CONTROL LOG TO SEAT TIGHTLY AGAINST THE ANCHOR TRENCH.
5. EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF THE ANCHOR TRENCH AND PROPERLY COMPACTED.
6. ANCHOR TRENCH SHALL BE RELATIVELY FREE OF ROCKS OR OTHER DEBRIS PRIOR TO THE PLACEMENT.
7. ALL SEDIMENT CONTROL LOGS SHALL BE PLACED 3" (APPROX.) BELOW THE GROUND AND PULLED TIGHT ON BOTH ENDS TO REMOVE ANY CURVES OR SNAGS.
8. THE UPHILL SIDE OF THE SEDIMENT CONTROL LOG SHALL BE BACKFILLED WITH SOIL THAT IS RELATIVELY FREE OF ROCKS AND DEBRIS. THE SOIL SHALL BE TIGHTLY COMPACTED AGAINST THE GROUND AND SEDIMENT CONTROL LOG USING A SHOVEL, OR SIMILAR DEVICE.
9. SEDIMENT CONTROL LOG STAKES SHALL BE MADE OF WOOD AND SECURELY ANCHOR THE SCL IN PLACE.
10. STAKES SHALL BE PLACED ON 4.0' CENTERS AND EMBEDDED APPROXIMATELY 6" INTO THE GROUND. STAKES THAT ARE BROKEN PRIOR TO OR DURING INSTALLATION SHALL BE REPLACED.
11. SEDIMENT CONTROL LOGS SHALL OVERLAP A MINIMUM OF 12". THE OVERLAPPING SHALL OCCUR ON THE UP-GRADIENT SIDE OF THE LOGS.
12. SEDIMENT CONTROL LOGS SHALL BE STAKED WITHIN 6" FROM EACH END.
13. SEDIMENT CONTROL LOGS THAT ARE INSTALLED BEHIND CURBS AND SIDEWALKS MUST BE DONE SO THAT NO MORE THAN A 2" GAP EXISTS BETWEEN THE CONCRETE AND THE LOG. EROSION CONTROL BLANKETING (ECB) BETWEEN THE GAP MAY BE REQUIRED IN INSTANCES WHERE THIS DOES NOT OCCUR.

SEDIMENT CONTROL LOG INSPECTION AND MAINTENANCE NOTES

1. THE EROSION CONTROL SUPERVISOR SHALL REGULARLY INSPECT THE SEDIMENT CONTROL LOGS.
2. ACCUMULATED SEDIMENT SHALL BE REMOVED ONCE THE SEDIMENT HAS REACHED A DEPTH EQUAL TO 1/2 THE HEIGHT OF EXPOSED LOG.
3. SEDIMENT CONTROL LOGS SHALL REMAIN IN PLACE AND PROPERLY MAINTAINED UNTIL VEGETATIVE COVER HAS REACHED A CONSISTENT DENSITY OF AT LEAST 70% OF FULL VEGETATIVE COVER AND EROSION AND SEDIMENTATION IS NO LONGER A POSSIBILITY AS DETERMINED BY THE TOWN'S INSPECTOR OR AS OTHERWISE DIRECTED BY THE TOWN'S INSPECTOR.
4. SEDIMENT CONTROL LOGS SHALL BE REPLACED WHEN THERE ARE ANY SIGNS OF WEAR OR DAMAGE THAT WOULD PREVENT THE SCL FROM FUNCTIONING AS DESIGNED.
5. WHEN THE SEDIMENT CONTROL LOGS ARE REMOVED, ANY DISTURBED AREAS ASSOCIATED WITH THE INSTALLATION, MAINTENANCE, AND/OR REMOVAL OF THE SEDIMENT CONTROL LOGS MAY NEED TO BE ROUGHENED, SEEDED, MULCHED, AND CRIMPED PER THE TOWN'S SPECIFICATIONS (SEE DETAIL SMC).

Town of Parker COLORADO | **CBMP** | **SCL**
 CONSTRUCTION BEST MANAGEMENT PRACTICES | 2 OF 3
 Oct. 2013

Town of Parker COLORADO | **CBMP** | **SCL**
 CONSTRUCTION BEST MANAGEMENT PRACTICES | 3 OF 3
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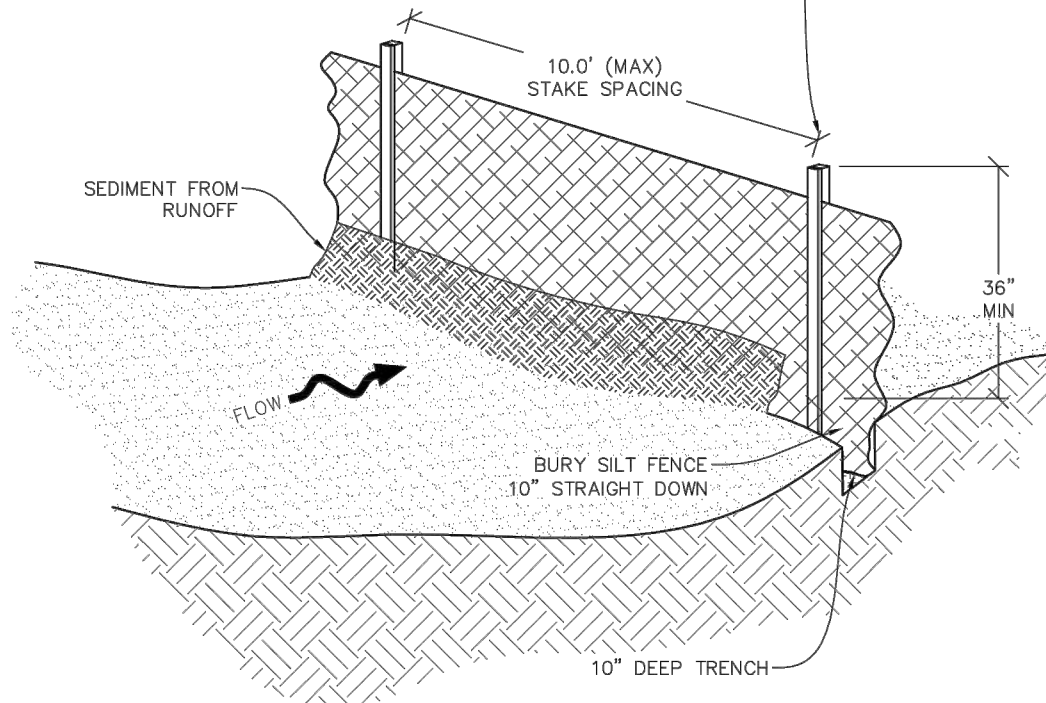
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A MIN. OF 1"x1"x48" WOODEN STAKES SHALL BE PLACED ON THE DOWNHILL SIDE OF THE SILT FENCE FABRIC. A 1-1/2" X 1/4" STAKE OR LATH SHALL BE STAPLED OR NAILED TO THE 48" STAKE ON THE UPHILL SIDE OF THE FABRIC SUCH THAT IT IS FLUSH AGAINST THE FABRIC AND STAKE. LENGTH OF STAKE IS DEPENDENT UPON HEIGHT OF FENCE. ALSO SEE ALTERNATIVE INSTALLATION - 360° TWIST.



X X

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SILT FENCE



CBMP

CONSTRUCTION BEST MANAGEMENT PRACTICES

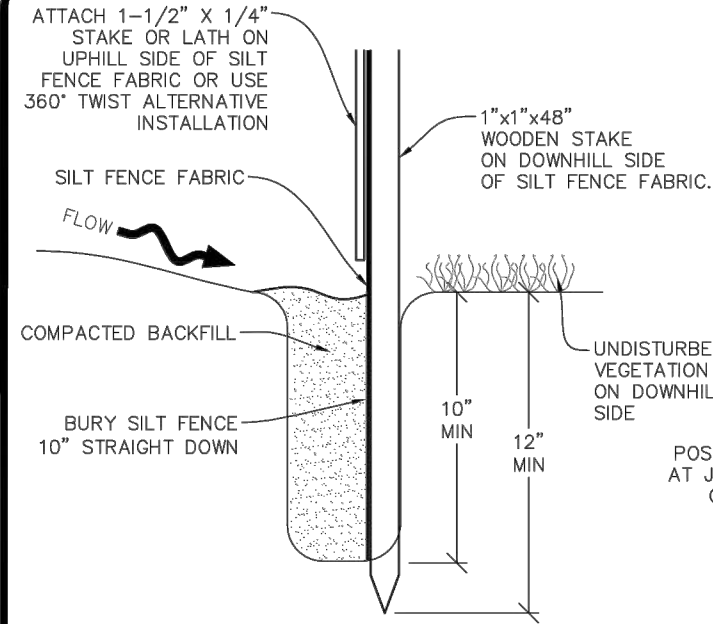
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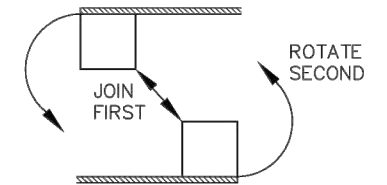


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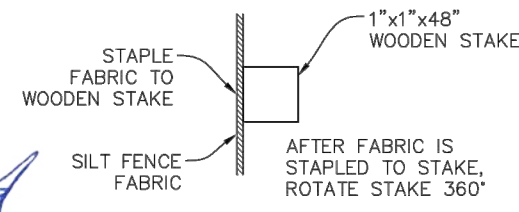
INSTALLATION DETAIL



POSTS SHALL BE JOINED AS SHOWN, THEN ROTATED 180 DEG. IN DIRECTION SHOWN AND DRIVEN INTO THE GROUND.

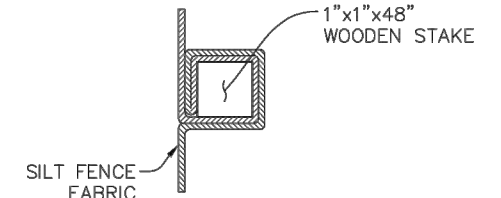
NOTE: THICKNESS OF GEOTEXTILE HAS BEEN EXAGGERATED FOR CLARITY.
POSTS SHALL OVERLAP AT JOINTS SO THAT NO GAPS EXIST IN SILT FENCE

JOINT SECTIONS



STEP 1

AFTER FABRIC IS STAPLED TO STAKE, ROTATE STAKE 360°



STEP 2

ALTERNATIVE INSTALLATION - 360° TWIST

X X

SF

SILT FENCE



CBMP

CONSTRUCTION BEST MANAGEMENT PRACTICES

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BELFORD-HAPPY CANYON CREEK
CBMP STANDARD
NOTES AND DETAILS

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Project No./Code

Sheet Number 113

SILT FENCE INSTALLATION NOTES

1. SEE CBMP PLAN FOR LOCATION(S) OF SILT FENCE.
2. ALL SILT FENCE SHALL BE INSTALLED IN GOOD CONDITION AND FREE OF ANY DEFECTS INCLUDING RIPS, HOLES AND OBVIOUS WEAR.
3. A UNIFORM 10" DEEP ANCHOR TRENCH SHALL BE EXCAVATED USING A TRENCHER.
4. A 10" DEEP ANCHOR SLIT SHALL BE FORMED IF USING A STATIC SLICING METHOD.
5. EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF THE ANCHOR TRENCH.
6. ANCHOR TRENCH SHALL BE GENERALLY FREE OF ROCKS OR OTHER DEBRIS PRIOR TO THE PLACEMENT OF THE SILT FENCE.
7. THE ANCHOR TRENCH SHALL BE THOROUGHLY BACKFILLED WITH SOIL THAT IS GENERALLY FREE OF ROCKS AND DEBRIS.
8. ALL EXCAVATED MATERIAL SHALL BE PLACED ON THE UP-GRADIENT SIDE OF THE SILT FENCE.
9. STAKES SHALL BE POSITIONED ON THE DOWNHILL SIDE OF THE SILT FENCE FABRIC AND PLACED ON 10.0' CENTERS OR LESS. STAKES SHALL BE EMBEDDED A MINIMUM OF 12" INTO THE GROUND. A WOODEN LATH SHALL BE ATTACHED TO THE OPPOSING (UPHILL) SIDE OF THE STAKE FOR ADDED STRENGTH AND SUPPORT. THE LATH SHALL HAVE THE FOLLOWING DIMENSIONS: 1"x1/4"x24".
10. SILT FENCE SHALL BE PULLED TIGHT AS IT IS ANCHORED TO THE STAKES. THERE SHOULD NOT BE SIGNIFICANT SAGGING ALONG ANY PORTION OF THE SILT FENCE AFTER IT HAS BEEN ANCHORED TO THE STAKES.
11. SILT FENCE FABRIC SHALL BE ANCHORED TO THE STAKES AND LATHS USING STAPLES OR NAILS OF AN APPROXIMATE LENGTH. ENOUGH STAPLES AND NAILS SHOULD BE PLACED ALONG THE LATH TO ENSURE PROPER ATTACHMENT.
12. SILT FENCE FABRIC SHALL MEET THE FOLLOWING MANDATORY REQUIREMENTS:

PROPERTIES	TEST METHOD	MANDATORY REQUIREMENTS
GRAB TENSILE STRENGTH	ASTM D 4632	≥ 124 LBS
MULLEN BURST STRENGTH	ASTM D 3786	≥ 300 PSI
PUNCTURE STRENGTH	ASTM D 4833	≥ 60 LBS
TRAPEZOID TEAR STRENGTH	ASTM D 4533	≥ 65 LBS
UV RESISTANCE	ASTM D 4355	≥ 80% AT 500 HOURS OF UV EXPOSURE
FLOW RATE	ASTM D 4491	≥ 10 GAL/MIN/FT2

13. AN ORIGINAL PRODUCT SPECIFICATION SHEET FROM THE SILT FENCE MANUFACTURER SHALL BE MADE AVAILABLE AT THE REQUEST OF THE TOWN'S INSPECTOR. THE PRODUCT SPECIFICATION SHEET SHALL PROVIDE THE RESULTS FOR THE TEST METHODS ABOVE.
14. SILT FENCE JOINTS SHALL BE CONNECTED ACCORDING TO THE ATTACHED DRAWING.
15. SILT FENCE THAT IS INSTALLED BEHIND CURBS AND SIDEWALKS MUST BE DONE SO THAT NO MORE THAN A 2" GAP EXISTS BETWEEN CONCRETE AND THE SILT FENCE. EROSION CONTROL BLANKETING (ECB) BETWEEN THE GAP MAY BE REQUIRED IN INSTANCES WHERE THIS DOES NOT OCCUR.



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SILT FENCE INSPECTION AND MAINTENANCE NOTES

1. THE EROSION CONTROL SUPERVISOR SHALL REGULARLY INSPECT THE SILT FENCE.
2. ACCUMULATED SEDIMENT SHALL BE REMOVED REGULARLY.
3. SILT FENCE SHALL REMAIN IN PLACE AND PROPERLY MAINTAINED UNTIL VEGETATIVE COVER HAS REACHED A CONSISTENT DENSITY OF AT LEAST 70% OF FULL VEGETATIVE COVER AND EROSION AND SEDIMENTATION IS NO LONGER A POSSIBILITY AS DETERMINED BY THE TOWN'S INSPECTOR OR AS OTHERWISE DIRECTED BY THE TOWN'S INSPECTOR.
4. SILT FENCE SHALL BE REPLACED WHEN THERE ARE ANY SIGNS OF WEAR AND/OR DAMAGE.
5. WHEN THE SILT FENCE IS REMOVED, ANY DISTURBED AREAS ASSOCIATED WITH THE INSTALLATION, MAINTENANCE, AND/OR REMOVAL OF THE SILT FENCE MAY NEED TO BE ROUGHENED, SEEDED, MULCHED, AND CRIMPED PER THE TOWN'S SPECIFICATIONS (SEE DETAIL SMC).



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SEEDING AND MULCHING SHALL BE PERFORMED ACCORDING TO THE ACCOMPANYING DETAIL(S) AND TEXT. NO EXCEPTIONS SHALL BE MADE

1. SEE PLAN VIEW FOR:
 - LOCATION(S) OF SEEDING AND MULCHING
 - TYPE OF SEED MIX
2. SEED MIXES MAY CONFORM TO THE TABLE PROVIDED WITH THE SMC NOTES OR ALTERNATIVES MAY BE ALLOWED WITH PRIOR PERMISSION BY THE TOWN'S INSPECTOR.
3. SEEDING MAY BE PERFORMED YEAR ROUND ASSUMING THE SOIL IS NOT FROZEN. SEEDING DURING TIMES OF EXTREME TEMPERATURES SHOULD BE AVOIDED IF POSSIBLE.
4. AT THE BEGINNING OF THE LAND DISTURBANCE ACTIVITIES, IT IS HIGHLY RECOMMENDED THAT AN APPROPRIATE AMOUNT OF NATIVE TOPSOIL BE STRIPPED FROM THE SITE AND STOCKPILED. ALL AREAS, PRIOR TO PERMANENT SEEDING AND MULCHING, WILL LIKELY NEED TO BE COVERED WITH AN APPROPRIATE LAYER OF TOPSOIL. THIS REQUIREMENT APPLIES TO ALL AREAS WHERE NATIVE SEEDING IS SPECIFIED ON THE CBMP PLAN AND/OR LANDSCAPING PLANS.
5. IT IS STRONGLY RECOMMENDED THAT SAMPLES FROM THE STRIPPED TOPSOIL BE PROPERLY COLLECTED AND TESTED BY A QUALIFIED LABORATORY TO ENSURE ADEQUATE NUTRIENT CONTENT PRIOR TO SEEDING AND MULCHING. IF IT IS DISCOVERED THAT THE TOPSOIL IS VOID OF THE NUTRIENTS NECESSARY TO SUCCESSFULLY ESTABLISH THE REQUIRED VEGETATION, THEN THE APPROPRIATE AMENDMENTS SHALL BE ADDED.
6. ALL AREAS TO BE SEEDED AND MULCHED SHALL BE SURFACE ROUGHENED ACCORDING TO THE SURFACE ROUGHENING DETAILS AND NOTES. SURFACE ROUGHENING SHALL OCCUR AFTER PLACEMENT OF THE TOPSOIL.
7. WHEN INSTALLED WITH A DRILL SEEDER, SEED SHALL BE PLACED AT A DEPTH OF ¼ - ½ INCH. ROW SPACING SHALL BE NO MORE THAN 6-INCHES.
8. ALL AREAS INCAPABLE OF BEING DRILL SEEDED SHALL BE SURFACE ROUGHENED ACCORDING TO THE SURFACE ROUGHENING NOTES OR EFFECTIVELY ROUGHENED USING A HARROW OR OTHER SUCH IMPLEMENT. ALL AREAS SHALL BE UNIFORMLY HAND BROADCASTED WITH THE PROPER SEED MIX APPLIED AT TWO TIMES THE DRILL SEEDED RATE. BROADCASTED AREAS SHALL THEN BE RE-HARROWED OR RE-RAKED USING A HARD-TIPPED RAKE TO ENSURE THAT SEEDS ARE BURIED TO AN APPROXIMATE DEPTH OF ¼ - ½ INCH.
9. AFTER SEEDING HAS BEEN COMPLETED, MULCH SHALL BE UNIFORMLY APPLIED AT A RATE OF 2 TONS/ACRE (4,000 LBS/ACRE). MULCH SHALL BE MECHANICALLY CRIMPED TO A DEPTH OF 2 INCHES USING A CRIMPER. MULCH SHALL BE HAND CRIMPED AND COVERED WITH A TACKIFIER IN AREAS WHERE MECHANICAL CRIMPING IS NOT POSSIBLE. WHEN SOILS PERMIT, ALL MULCH SHALL BE CRIMPED SUCH THAT THE INDIVIDUAL PIECES OF STRAW OR HAY FORM EXAGGERATED V-SHAPES PROTRUDING OUT OF THE GROUND SEVERAL INCHES.
10. IN CERTAIN INSTANCES, IT MAY BE NECESSARY TO APPLY A TACKIFIER IN ORDER TO HELP WITH STRAW DISPLACEMENT. TACKIFIER SHALL BE APPLIED ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS.

SEEDING AND MULCHING MAINTENANCE NOTES

1. THE EROSION CONTROL SUPERVISOR SHALL REGULARLY INSPECT THE SEEDING AND MULCHING.
2. ANY SEEDED AND MULCHED AREAS THAT BECOME DAMAGED SHALL BE REPAIRED WITHIN THE TIME FRAME SPECIFIED BY THE TOWN'S INSPECTOR.

WEED MANAGEMENT

1. ALL HERBICIDES SHALL BE APPLIED BY COMMERCIAL PESTICIDE APPLICATORS LICENSED BY THE COLORADO DEPARTMENT OF AGRICULTURE AS QUALIFIED APPLICATORS. THE CONTRACTOR SHALL FURNISH DOCUMENTATION OF SUCH LICENSING PRIOR TO HERBICIDE APPLICATION.
2. HERBICIDE APPLICATION METHOD SHALL BE SUCH THAT PLANT GROWTH OUTSIDE THE DESIGNATED TREATMENT AREAS WILL NOT BE DAMAGED. ALL DAMAGE CAUSED BY IMPROPER HERBICIDE APPLICATION SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
3. HERBICIDES SHALL BE APPLIED DURING THE APPROPRIATE SEASONS, WHEN TARGET PLANTS ARE ACTIVELY GROWING.
4. AFTER THE GRASS SEED IS ESTABLISHED, APPROPRIATE HERBICIDES SHALL BE APPLIED TO CONTROL THE REMAINING WEEDS TO ENSURE A TIMELY RETURN OF THE FINANCIAL SECURITY. PROPER TIMING OF HERBICIDE APPLICATIONS ARE NECESSARY TO ACHIEVE THE SUPPRESSION OF WEED SEED PRODUCTION AND DEPLETION OF WEED ROOT MASS. ULTIMATELY, THE HERBICIDES USED SHALL BE BASED UPON THE TARGET WEEDS.
5. HERBICIDE TREATMENTS SHALL CONTINUE AT AN APPROPRIATE RATE UNTIL IT IS EVIDENT THAT WEED GROWTH PRESENCE AND GROWTH IS MINIMAL AND MAY BE CONTROLLED THROUGH MOWING AND/OR ANNUAL HERBICIDE TREATMENT.



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SURFACE ROUGHENING INSTALLATION NOTES

1. SEE CBMP PLAN FOR LOCATION(S) OF SURFACE ROUGHENING.
2. ANY DISTURBED LAND THAT REMAINS INACTIVE FOR MORE THAN 14 CONSECUTIVE DAYS MUST RECEIVE SURFACE ROUGHENING. DETERMINATION OF JOB SITE INACTIVITY IS AT THE DISCRETION OF THE TOWN'S INSPECTOR.
3. SURFACE ROUGHENING SHALL BE PERFORMED PERPENDICULAR TO THE SLOPE.
4. SOIL SHALL BE ROUGHENED A MINIMUM OF 6-INCHES DEEP USING RIGID SHANKS.
5. A FARMING DISC SHALL NOT BE USED FOR SURFACE ROUGHENING.
6. FOR STEEP SLOPES (3:1 OR STEEPER), IT IS ACCEPTABLE TO "TRACK" THE SLOPES, ACCORDING TO THE CBMP DETAILS.

SURFACE ROUGHENING INSPECTION AND MAINTENANCE NOTES

1. THE EROSION CONTROL SUPERVISOR SHALL INSPECT THE SURFACE ROUGHENING AT THE FOLLOWING INTERVALS:
 - IMMEDIATELY FOLLOWING INITIAL INSTALLATION.
 - EVERY 7 DAYS DURING ACTIVE CONSTRUCTION.
 - IMMEDIATELY FOLLOWING ANY STORM EVENT.



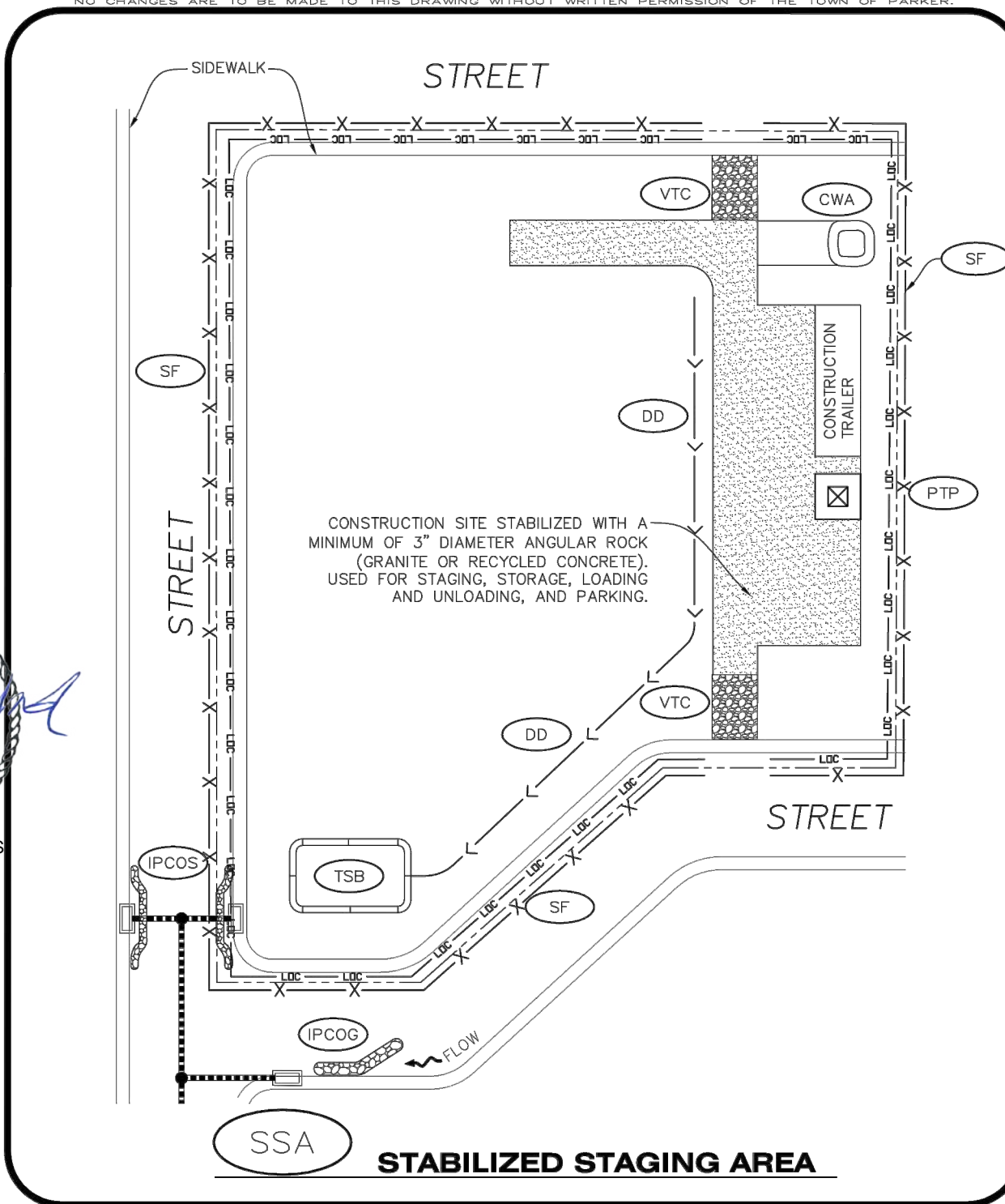
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STABILIZED STAGING AREA INSTALLATION NOTES

1. SEE CBMP PLAN FOR LOCATION OF STAGING AREA. CONTRACTOR MAY MODIFY LOCATION AND SIZE OF STABILIZED STAGING AREA WITH TOWN APPROVAL.
2. STABILIZED STAGING AREA SHALL BE LARGE ENOUGH TO FULLY CONTAIN PARKING, STORAGE, AND LOADING OPERATIONS.
3. THE STABILIZED STAGING AREA SHALL CONSIST OF A MINIMUM OF 3" DIAMETER OF ANGULAR ROCK (GRANITE OR RECYCLED CONCRETE).
4. SSA FOR SMALLER SITES MAY NOT BE PRACTICAL. IN THESE AND SIMILAR SITUATIONS, VARIANCES MAY BE PERMITTED BY THE TOWN.

STABILIZED STAGING AREA INSPECTION AND MAINTENANCE NOTES

1. THE EROSION CONTROL SUPERVISOR SHALL REGULARLY INSPECT THE STAGING AREA.
2. STABILIZED STAGING AREA SHALL BE ENLARGED AS NECESSARY TO CONTAIN PARKING, STORAGE, LOADING, AND UNLOADING.



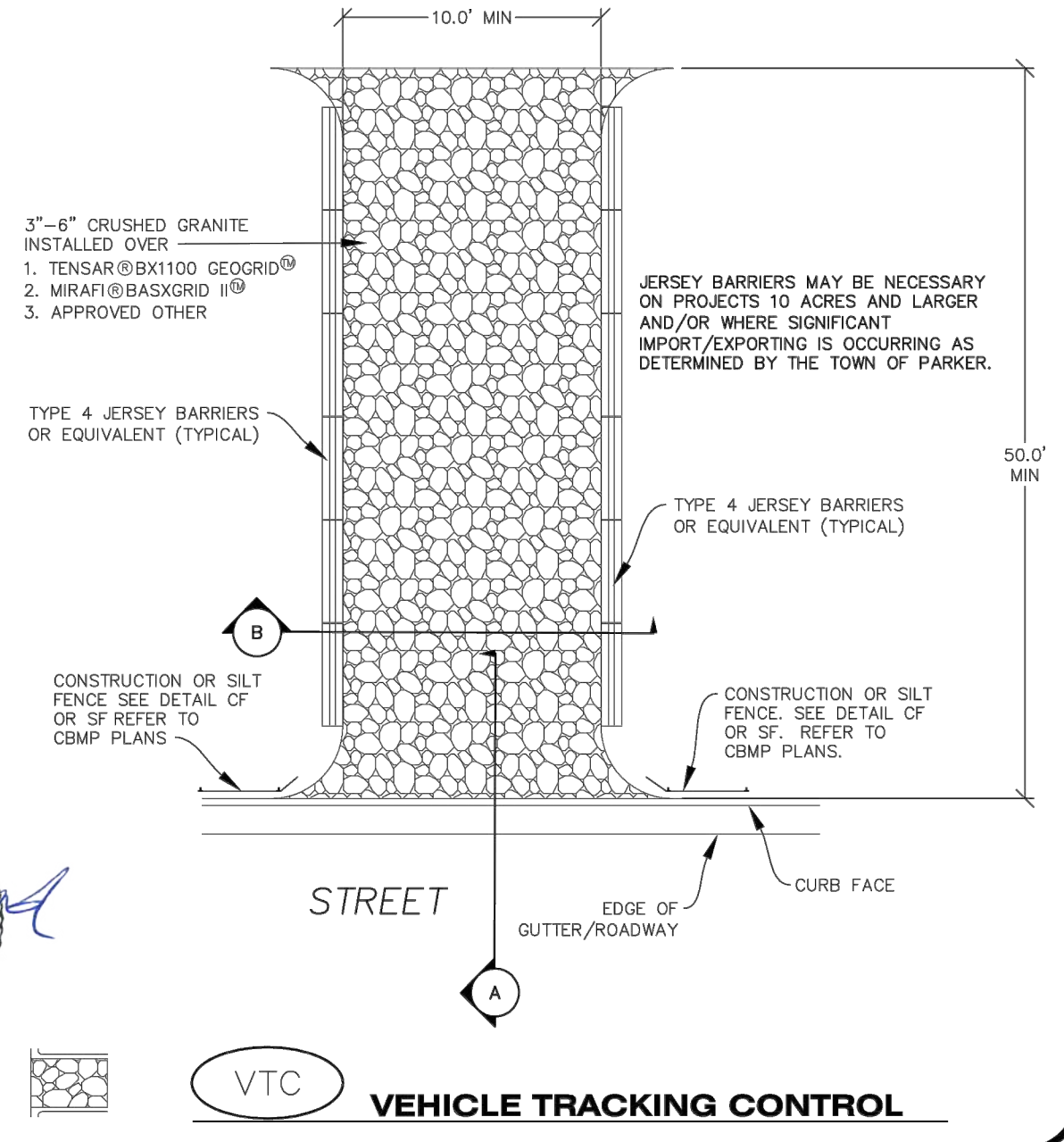
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ON SITES LESS THAN 10 ACRES AND WHERE SIGNIFICANT SOIL IMPORTING/EXPORTING IS NOT OCCURRING, CONSTRUCTION FENCE (CF) OR SILT FENCE (SF) MAY BE USED IN LIEU OF THE TYPE 4 JERSEY BARRIERS WITH PRIOR APPROVAL FROM THE TOWN'S INSPECTOR.



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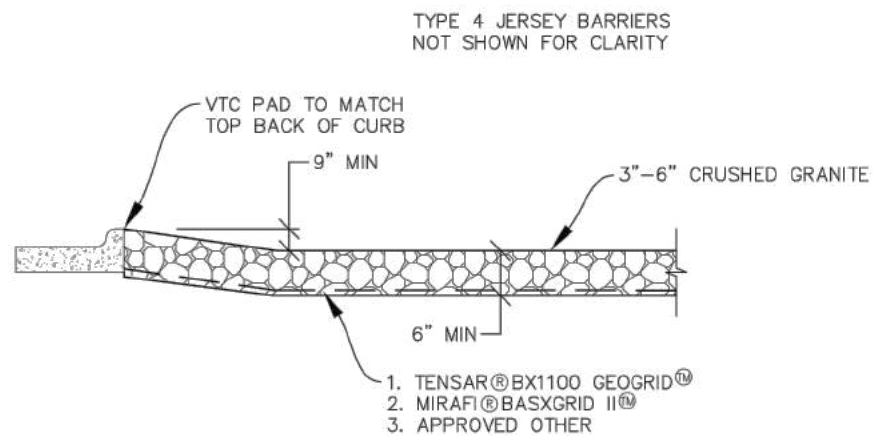
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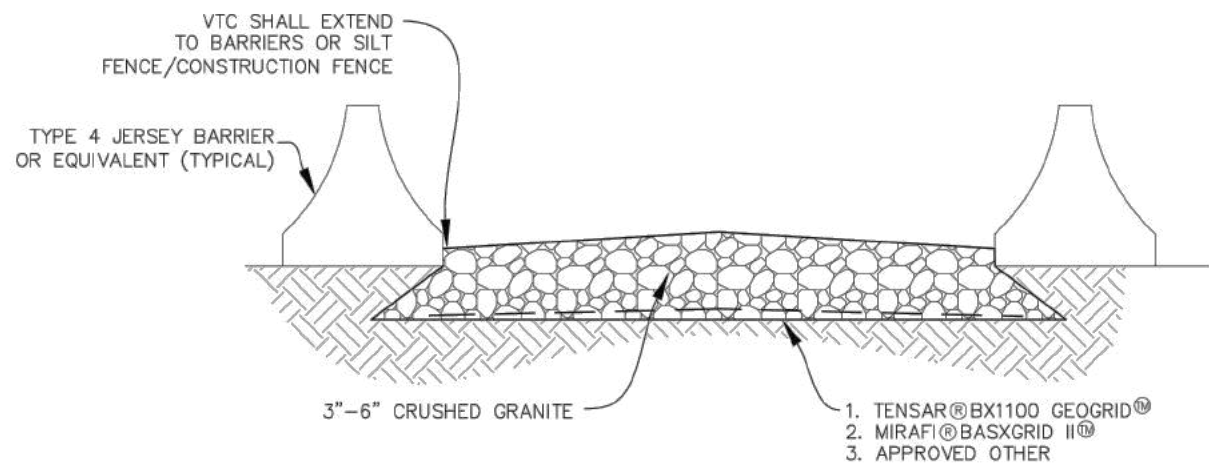
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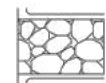
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SECTION A



SECTION B



VTC

VEHICLE TRACKING CONTROL

VEHICLE TRACKING CONTROL PAD INSTALLATION NOTES

1. SEE CBMP PLAN FOR LOCATION(S) OF VEHICLE TRACKING CONTROL PAD(S).
2. ALL CONSTRUCTION TRAFFIC MUST ENTER AND EXIT THE SITE THROUGH THE APPROVED ACCESS POINT(S). A VEHICLE TRACKING CONTROL PAD IS REQUIRED AT ALL APPROVED ACCESS POINTS TO THE SITE. EXCEPTIONS MAY BE CONSIDERED FOR CONSTRUCTION ACTIVITY OCCURRING IMMEDIATELY ADJACENT TO PAVED AREAS AND WHERE ALTERNATIVE BMP'S ARE IMPLEMENTED. SUCH ACTIVITY MAY INCLUDE, BUT NOT BE LIMITED TO RESIDENTIAL CONSTRUCTION, UTILITY CONSTRUCTION, ETC.
3. THE VEHICLE TRACKING CONTROL PAD(S) INDICATED ON CBMP PLAN SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.
4. VEHICLE TRACKING CONTROL PADS SHALL BE A MINIMUM OF 50-FOOT LONG AND 10-FOOT WIDE, UNLESS A VARIANCE HAS BEEN GRANTED BY THE TOWN'S INSPECTOR.
5. A BIAXIAL GEO-GRID SHALL BE PLACED UNDER THE VEHICLE TRACKING CONTROL PAD PRIOR TO THE PLACEMENT OF ROCK. THE AREA SHALL BE FREE FROM ANY VOIDS, ROCKS AND DEBRIS. THE BIAXIAL GEO-GRID SHALL BE TENSAR BX1100, MIRAFI BASXGRID II, OR AN APPROVED EQUAL. GEO-GRID SHALL BE PLACED, AND APPROPRIATELY OVERLAPPED IF NECESSARY, TO COVER THE ENTIRE LENGTH AND WIDTH OF THE VEHICLE TRACKING CONTROL PAD.
6. CRUSHED ROCK SHALL BE A MINIMUM OF 3-6" GRANITE WITH A FRACTURED FACE (ALL SIDES).

VEHICLE TRACKING CONTROL PAD INSTALLATION AND MAINTENANCE NOTES

1. THE EROSION CONTROL SUPERVISOR SHALL REGULARLY INSPECT THE VEHICLE TRACKING CONTROL PAD.
2. WHEN THE VEHICLE TRACKING CONTROL PAD IS REMOVED, ANY DISTURBED AREAS ASSOCIATED WITH THE INSTALLATION, MAINTENANCE, AND/OR REMOVAL OF THE VEHICLE TRACKING CONTROL PAD SHALL BE ROUGHENED, SEEDED, MULCHED, AND CRIMPED PER THE TOWN'S SPECIFICATIONS (SEE DETAIL SMC).
3. THE VEHICLE TRACKING CONTROL PAD SHALL BE MAINTAINED SUCH THAT THE ROCK REMAINS RELATIVELY LOOSE AND ACCUMULATED MUD AND OTHER DEBRIS IS REGULARLY REMOVED.



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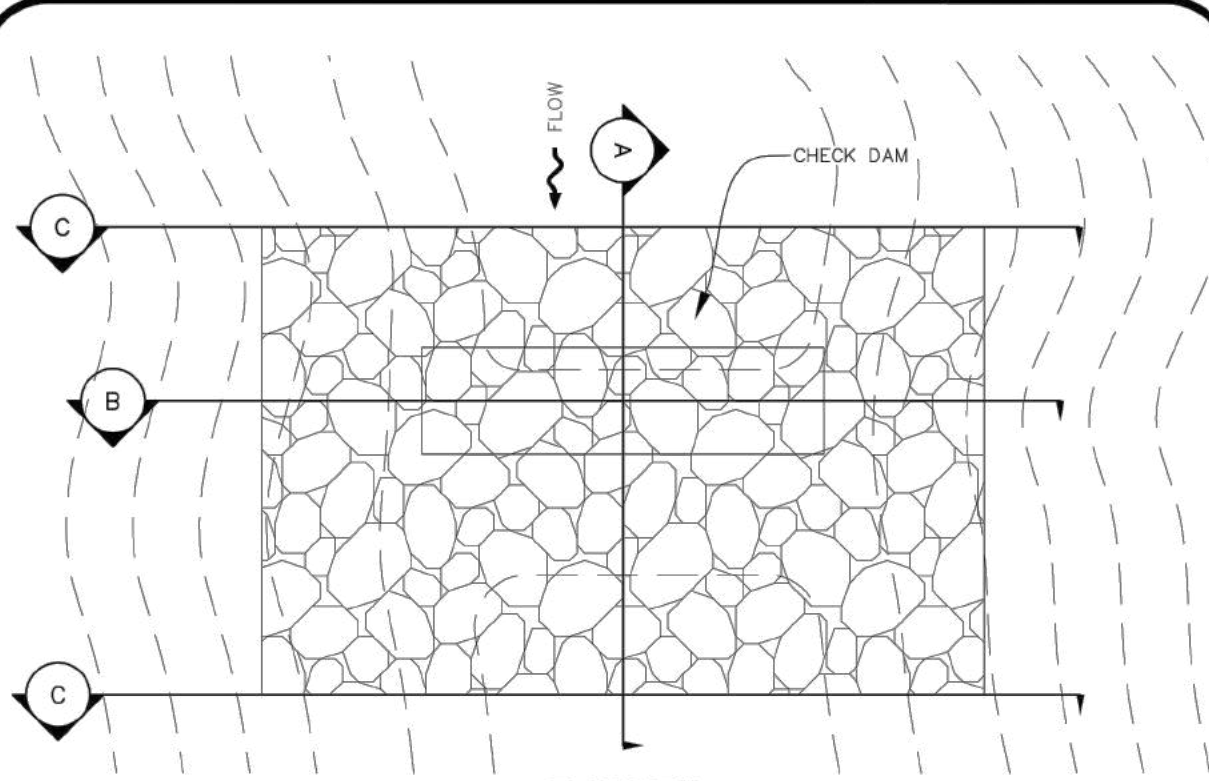
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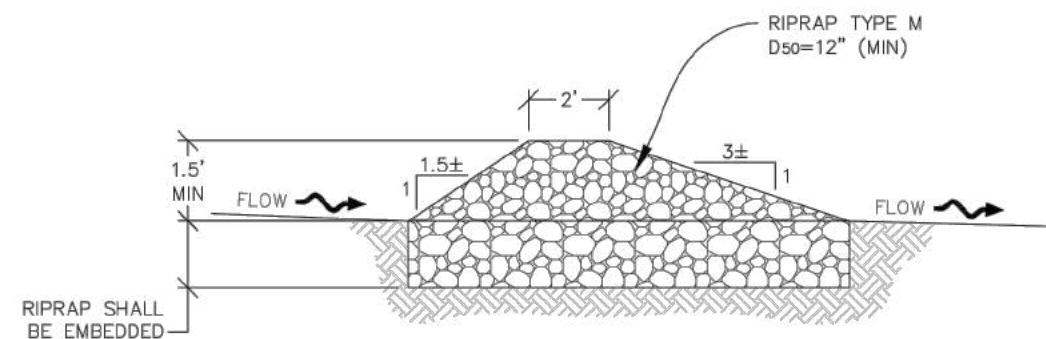
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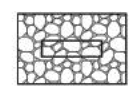


PLAN VIEW



SECTION A

RIPRAP SHALL BE EMBEDDED 1'-8" MIN.



CHECK DAM

Parker COLORADO

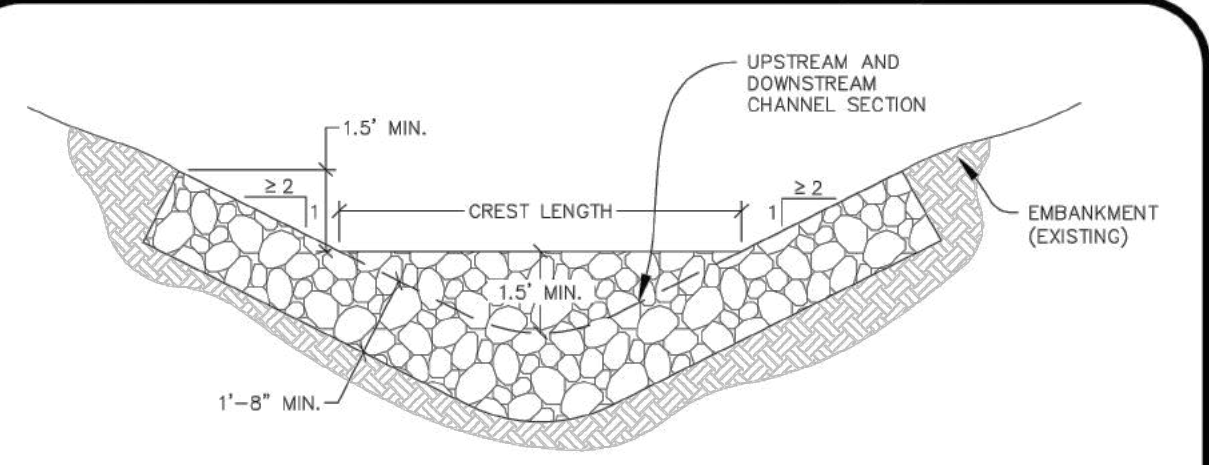
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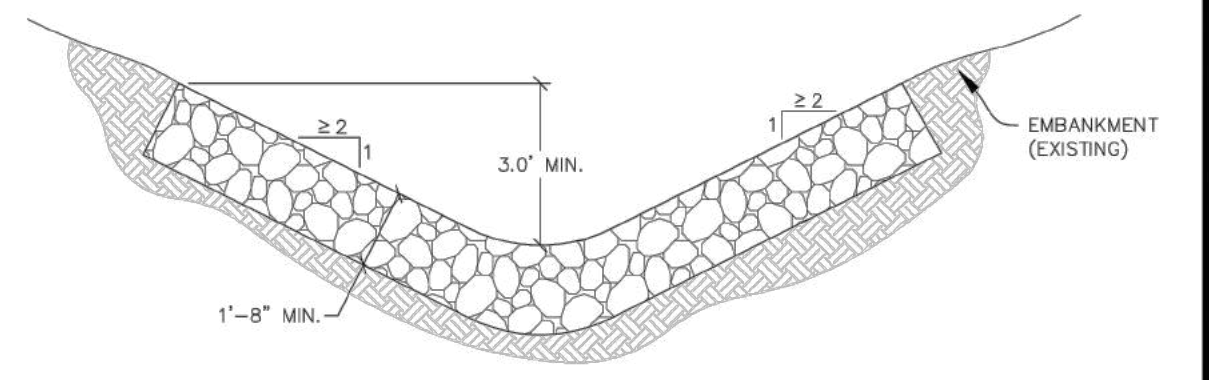
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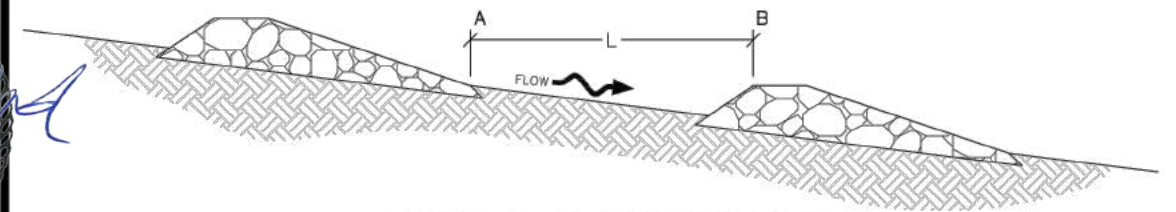
SECTION B



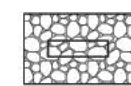
SECTION C

NOTE: SECTION C IS LOCATED IMMEDIATELY UPSTREAM AND DOWNSTREAM OF THE CHECK DAM, THEREFORE NO ROCK IS SHOWN WITHIN THE CHANNEL FLOW AREA.

L = THE DISTANCE SUCH THAT POINT A AND B ARE OF EQUAL ELEVATION.



SPACING BETWEEN CHECK DAMS



CHECK DAM

Parker COLORADO

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CHECK DAM INSTALLATION NOTES

1. SEE PLAN VIEW FOR LOCATION(S) OF CHECK DAMS.
2. CHECK DAMS SHOWN ON CBMP PLAN SHALL BE INSTALLED WHEN DIRECTED BY THE TOWN'S INSPECTOR.
3. RIPRAP UTILIZED FOR CHECK DAMS SHALL HAVE A D50 MEDIAN STONE SIZE OF 12".
4. RIPRAP PAD SHALL BE TRENCHED INTO THE GROUND A MINIMUM OF 1'-8".
5. THE MAXIMUM SPACING BETWEEN CHECK DAMS SHOULD BE SUCH THAT THE BOTTOM OF THE UPSTREAM DAM IS AT THE SAME ELEVATION AS THE TOP OF THE DOWNSTREAM DAM AS SHOWN IN THE DETAIL.

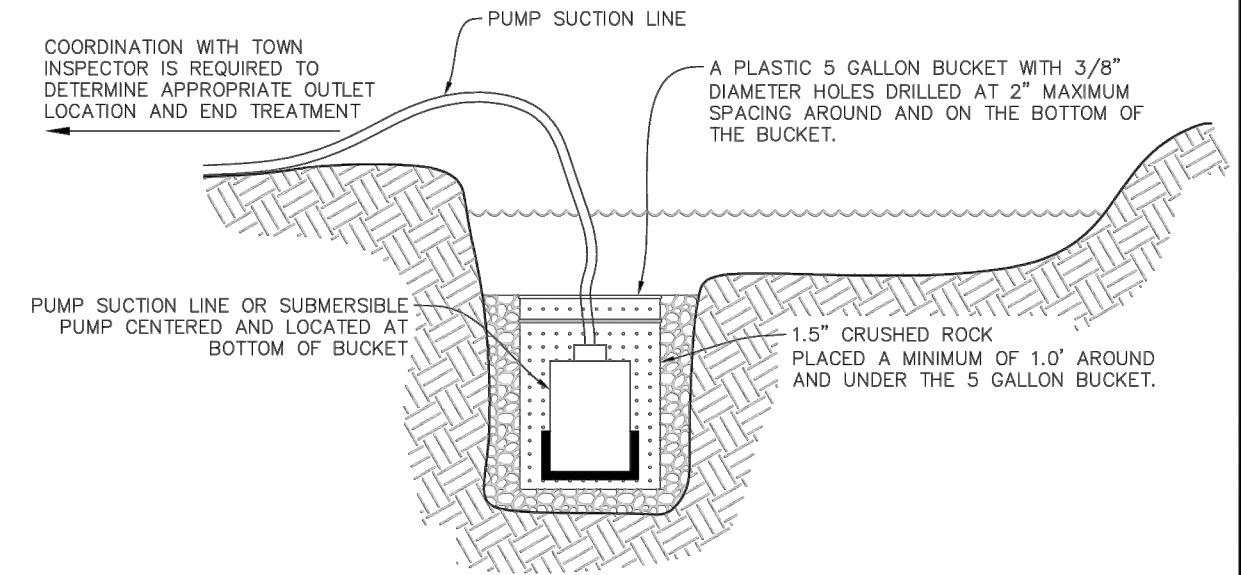
CHECK DAM INSPECTION AND MAINTENANCE NOTES

1. THE EROSION CONTROL SUPERVISOR SHALL REGULARLY INSPECT THE CHECK DAMS.
2. ACCUMULATED SEDIMENT SHALL BE REMOVED ONCE SEDIMENT HAS REACHED A DEPTH EQUAL TO 1/2 THE HEIGHT OF THE CREST OR AS OTHERWISE DIRECTED BY THE TOWN'S INSPECTOR.
3. CHECK DAMS SHALL REMAIN IN PLACE AND PROPERLY MAINTAINED UNTIL VEGETATIVE COVER HAS REACHED A CONSISTENT DENSITY OF AT LEAST 70% OF FULL VEGETATIVE COVER AND EROSION AND SEDIMENTATION IS NO LONGER A POSSIBILITY AS DETERMINED BY THE TOWN'S INSPECTOR OR AS OTHERWISE DIRECTED BY THE TOWN'S INSPECTOR.
4. WHEN CHECK DAMS ARE REMOVED, THE TOWN'S INSPECTOR MAY REQUIRE EXCAVATIONS TO BE FILLED WITH SUITABLE COMPACTED TOPSOIL AND ANY DISTURBED AREAS ASSOCIATED WITH THE INSTALLATION, MAINTENANCE, AND/OR REMOVAL OF THE CHECK DAMS BE ROUGHENED, SEEDED, MULCHED, AND CRIMPED PER THE TOWN'S SPECIFICATIONS (SEE DETAIL SMC).
5. IN SOME INSTANCES, CHECK DAMS MAY REMAIN IN PLACE PERMANENTLY.

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TYPICAL DEWATERING SUMP

NOTE:
IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE APPROPRIATE MEASURES TO PROTECT PUMPING EQUIPMENT AND MINIMIZE SEDIMENT. USE OF A PLASTIC 5 GALLON BUCKET IS SUGGESTED BUT NOT REQUIRED. THE CONTRACTOR SHALL NOT HOLD THE TOWN LIABLE FOR DAMAGE TO PUMPING EQUIPMENT REGARDLESS OF METHODS USED.



DEWATERING


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DEWATERING INSTALLATION NOTES

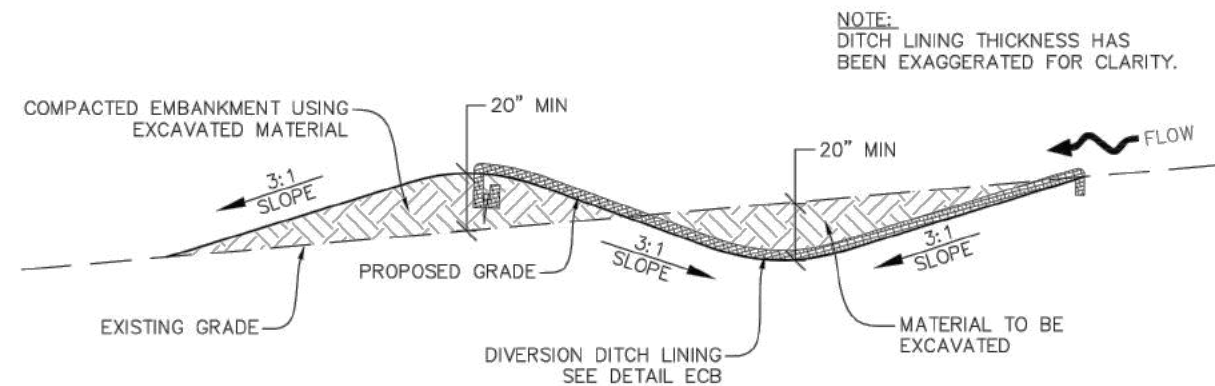
- IT IS THE EROSION CONTROL SUPERVISOR'S RESPONSIBILITY TO ENSURE THAT ALL DEWATERING IS PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT (CDPHE).

DEWATERING MAINTENANCE NOTES

- THE EROSION CONTROL SUPERVISOR SHALL INSPECT THE DEWATERING OPERATION TO ENSURE THAT THE DISCHARGE WATER IS DRAINING TO THE PROPER LOCATION(S) AND PERFORM ANY NECESSARY REPAIRS OR MAINTENANCE ON A FREQUENT BASIS.

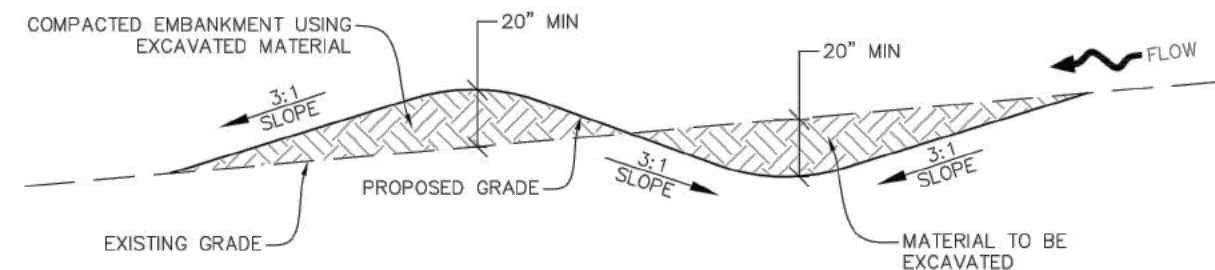


MY RESPONSIBILITY IS LIMITED TO THE SELECTION OF THESE STANDARD DETAILS



DIVISION DITCH GEOMETRY AND REQUIRED LINING MATERIAL SHALL BE OBTAINED FROM ASSOCIATED CBMP PLANS VIA THE DESIGN ENGINEER. IF THIS INFORMATION IS NOT PROVIDED ON THE CBMP PLANS, THE CONTRACTOR SHALL NOTIFY THE TOWN PRIOR TO CONSTRUCTION

DIVERSION DITCH SECTION LINED CHANNEL



DIVERSION DITCH SECTION UNLINED CHANNEL



DIVERSION DITCH

CBMP

CONSTRUCTION BEST MANAGEMENT PRACTICES

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CBMP

CONSTRUCTION BEST MANAGEMENT PRACTICES

DD

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BELFORD-HAPPY CANYON CREEK CBMP STANDARD NOTES AND DETAILS			
Designer:	CDT	Structure	
Detailer:	KLT	Numbers	
Subset:	Erosion	Sheets:	ED-28 of 35

Project No./Code	
Sheet Number	122

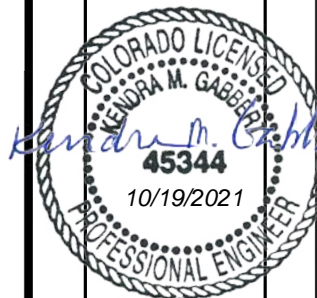
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DIVERSION DITCH INSTALLATION NOTES

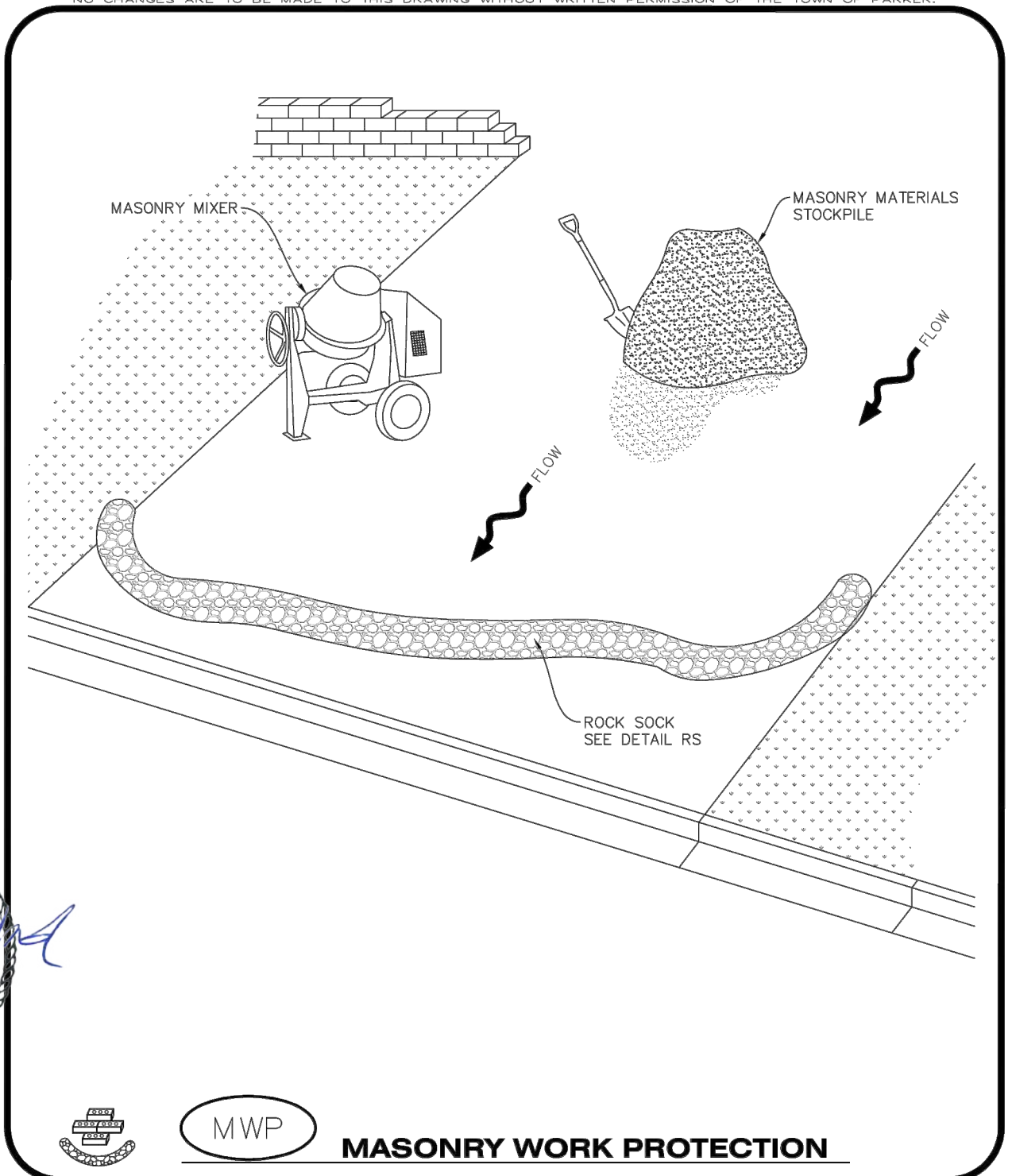
1. SEE THE PLAN VIEW FOR THE LOCATION(S) OF THE DIVERSION DITCHES.
2. A PLASTIC LINER, RIPRAP, OR EROSION CONTROL BLANKET MAY BE NECESSARY TO PROTECT THE DIVERSION DITCH. THE REQUIRED LINING MATERIAL SHALL BE OBTAINED FROM THE CBMP PLANS VIA THE DESIGN ENGINEER.
3. ALL MATERIAL EXCAVATED FROM THE DITCH MAY BE USED TO CONSTRUCT THE BERM ON THE DOWNHILL SIDE OF THE DITCH.
4. THE DIVERSION DITCH SHALL BE A MINIMUM OF 20" DEEP WITH APPROX. 3:1 SIDE SLOPES. THE ADJACENT BERM SHALL BE A MINIMUM OF 20" IN HEIGHT WITH APPROX. 3:1 SIDE SLOPES. ALL EMBANKMENTS SHALL BE FIRMLY COMPACTED.
5. THE DISCHARGE FROM THE DIVERSION DITCH SHALL BE DIRECTED TOWARDS AN APPROPRIATELY SIZED TEMPORARY SEDIMENT BASIN OR OTHER APPROVED AREA.

DIVERSION DITCH INSPECTION AND MAINTENANCE NOTES

1. THE EROSION CONTROL SUPERVISOR SHALL REGULARLY INSPECT THE DIVERSION DITCH.
2. ACCUMULATED SEDIMENT SHALL BE REMOVED ONCE THE SEDIMENT HAS REACHED A DEPTH EQUAL TO 1/2 (10") THE CREST HEIGHT.
3. DIVERSION DITCHES SHALL BE RE-GRADED FOLLOWING THE SIGNS OF MODERATE OR MORE SOIL EROSION OR ANY DAMAGE.
4. DIVERSION DITCHES ARE TO REMAIN IN PLACE AND PROPERLY MAINTAINED UNTIL VEGETATIVE COVER HAS REACHED A CONSISTENT DENSITY OF AT LEAST 70% OF FULL VEGETATIVE COVER AND EROSION AND SEDIMENTATION IS NO LONGER A POSSIBILITY AS DETERMINED BY THE TOWN'S INSPECTOR OR AS OTHERWISE DIRECTED BY THE TOWN'S INSPECTOR. ALTERNATIVELY, THE DIVERSION DITCHES MAY BE REMOVED WHEN THE SITE'S TOPOGRAPHY CHANGES SUCH THAT SIGNIFICANT RUNOFF IS NO LONGER POSSIBLE. IN SOME INSTANCES, THE DIVERSION DITCHES MAY REMAIN IN PLACE PERMANENTLY.



MY RESPONSIBILITY IS LIMITED TO THE SELECTION OF THESE STANDARD DETAILS



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 CONSTRUCTION BEST MANAGEMENT PRACTICES | 2 OF 2
 Oct. 2013

Town of Parker COLORADO | **CBMP** | **MWP**
 CONSTRUCTION BEST MANAGEMENT PRACTICES | 1 OF 2
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Revised:	Detailer: KLT	Sheets: ED-29 of 35	Sheet Number 123
Void:	Subset: Erosion		

MASONRY WORK PROTECTION INSTALLATION NOTES

- MASONRY WORK PROTECTION MAY NEED TO BE INSTALLED WHEN MASONRY WORK AND MIXING IS OCCURRING.
- A ROCK SOCK SHALL BE INSTALLED IN A CRESCENT SHAPE ON THE DOWNHILL SIDE OF THE MASONRY WORK AND MIXER.
- CRUSHED ROCK SHALL BE 2.0"-3.0" IN SIZE WITH A FRACTURED FACE (ALL SIDES).
- ROCK SOCK SHALL BE ONE CONTINUOUS PIECE OR SHALL BE CONSTRUCTED USING WIRE WRAPPED JOINTS (SEE DETAIL RS).
- ROCK SOCK SHALL BE CONSTRUCTED USING CHICKEN WIRE OR OTHER APPROVED MATERIAL, SIZED TO KEEP ROCK FROM SPILLING OUT.

MASONRY WORK PROTECTION INSPECTION AND MAINTENANCE NOTES

- THE EROSION CONTROL SUPERVISOR SHALL REGULARLY INSPECT THE MASONRY WORK PROTECTION.
- ALL CONCRETE WASTE SHALL BE REGULARLY CLEANED AND PLACED IN THE CONCRETE WASH OUT AREA.
- ROCK SOCKS SHALL BE REPLACED IF THEY BECOME HEAVILY SOILED OR DAMAGED.



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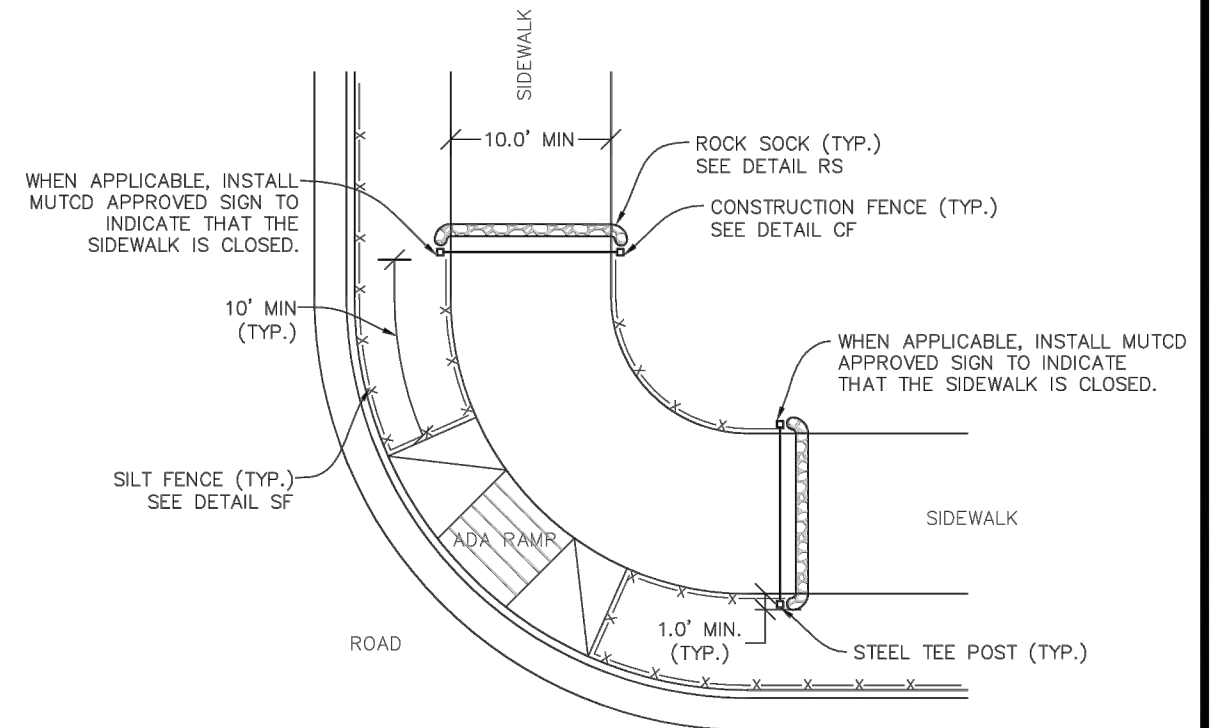


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CONSTRUCTION BEST MANAGEMENT PRACTICES

MWP

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Oct. 2013



NOTE:
SEDIMENT CONTROL LOGS (SCL) MAY BE USED IN LIEU OF SILT FENCE (SF) WITH PRIOR APPROVAL FROM TOWN.



STP

SIDEWALK TRANSITION PROTECTION (AT INTERSECTION)



CBMP

CONSTRUCTION BEST MANAGEMENT PRACTICES

STP

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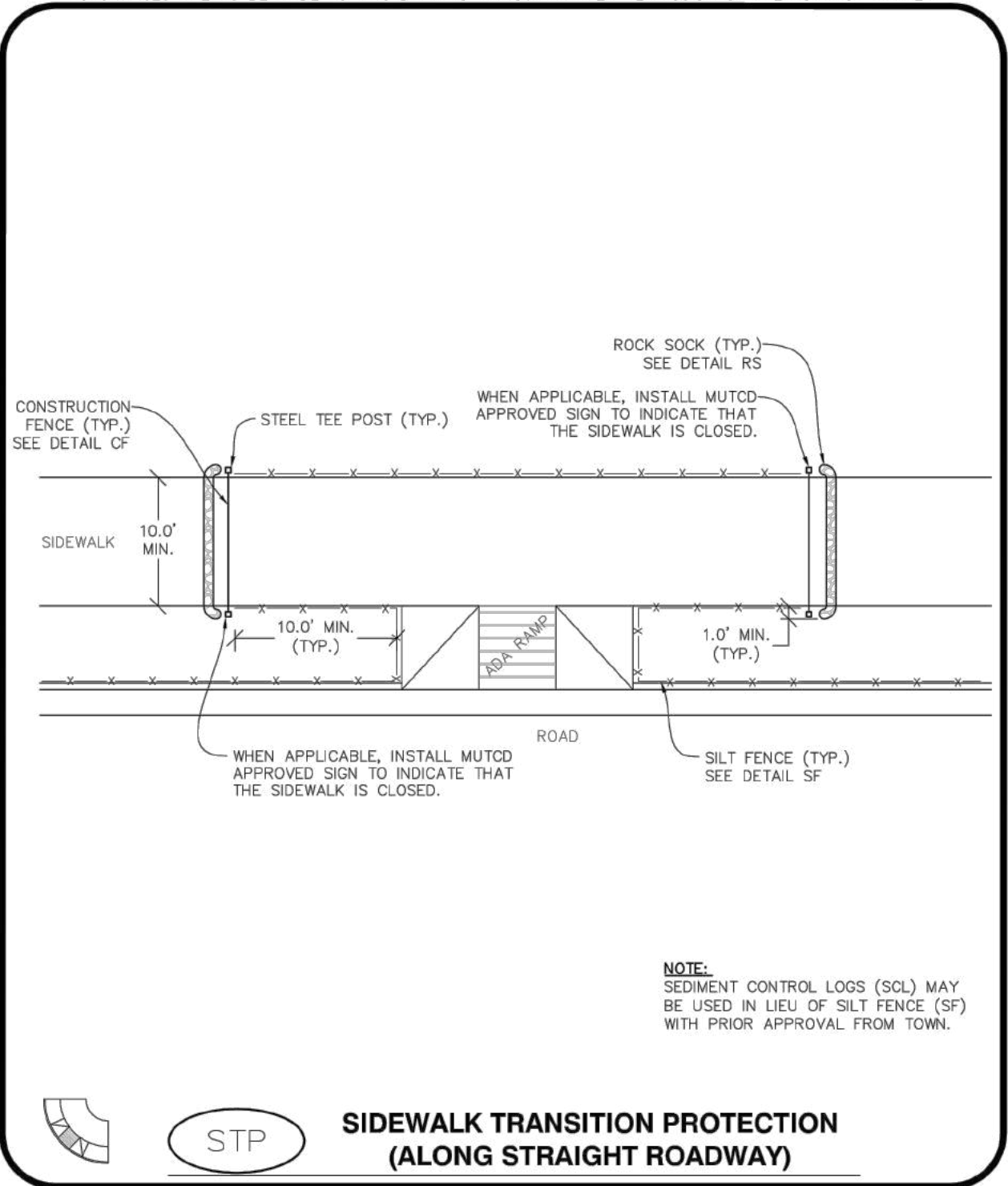
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 **SIDWALK TRANSITION PROTECTION (ALONG STRAIGHT ROADWAY)**

 **CBMP** CONSTRUCTION BEST MANAGEMENT PRACTICES **STP** 2 OF 3 Oct. 2013

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SIDWALK TRANSITION PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR LOCATION(S) OF SIDWALK TRANSITION PROTECTION.
2. ROCK SOCK SHALL BE CONSTRUCTED ACCORDING TO THE DETAIL (SEE DETAIL RS).
3. SILT FENCE SHALL BE CONSTRUCTED ACCORDING TO THE DETAIL (SEE DETAIL SF).
4. CONSTRUCTION FENCE SHALL BE CONSTRUCTED ACCORDING TO THE DETAIL (SEE DETAIL CF).
5. SEDIMENT CONTROL LOGS MAY BE USED IN LIEU OF SILT FENCE WITH PRIOR APPROVAL FROM THE TOWN.

SIDWALK TRANSITION PROTECTION INSPECTION & MAINTENANCE NOTES

1. THE EROSION CONTROL SUPERVISOR SHALL REGULARLY INSPECT THE SIDWALK TRANSITION INSPECTION.



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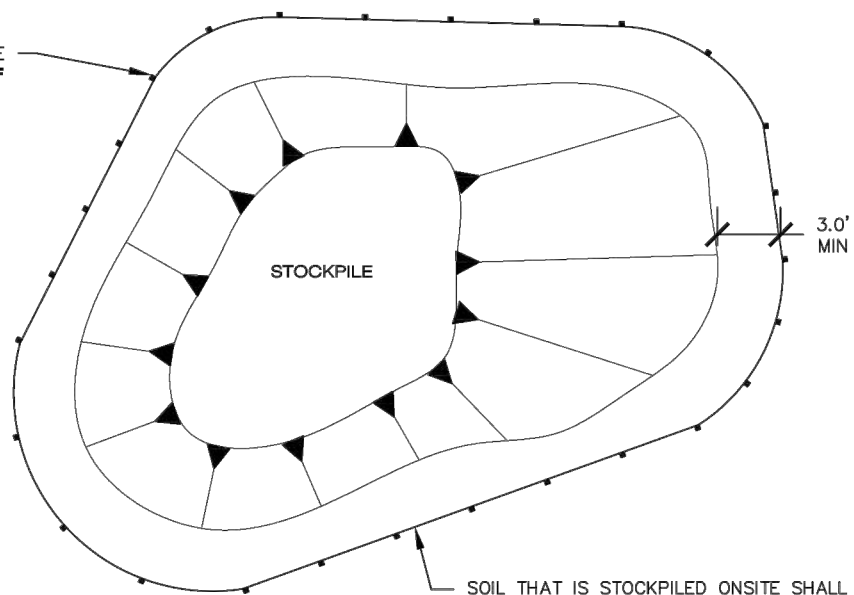
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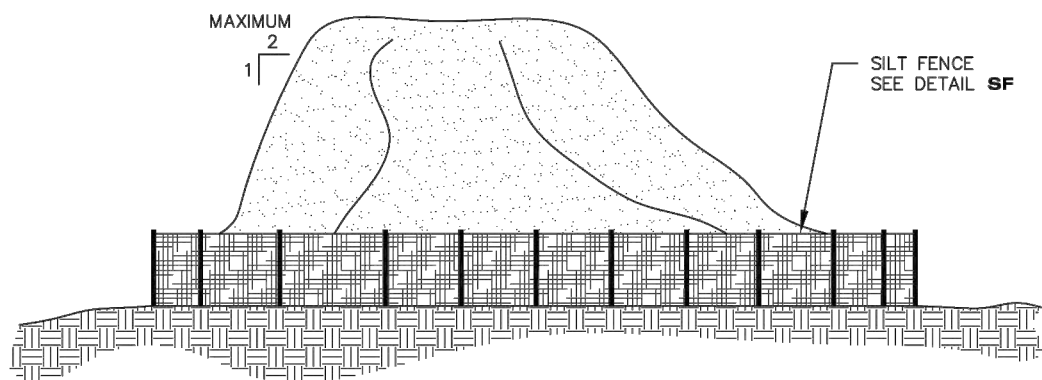
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SILT FENCE
SEE DETAIL SF



SOIL THAT IS STOCKPILED ONSITE SHALL BE ENCLOSED WITH SILT FENCE. IF THE SOIL IS TO REMAIN EXPOSED FOR MORE THAN 30 DAYS, IT SHALL BE HAND BROADCASTED OR DRILL SEEDED AND MULCHED ACCORDING TO THE TOWN'S DETAILS (SEE DETAIL SMC).



STOCKPILES SHALL BE LOCATED ONSITE PER THE APPROVED CBMP PLAN.



SP

STOCKPILE PROTECTION



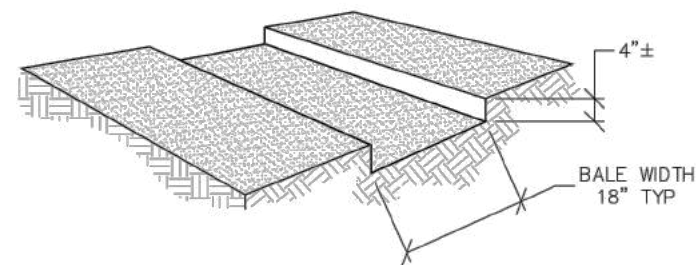
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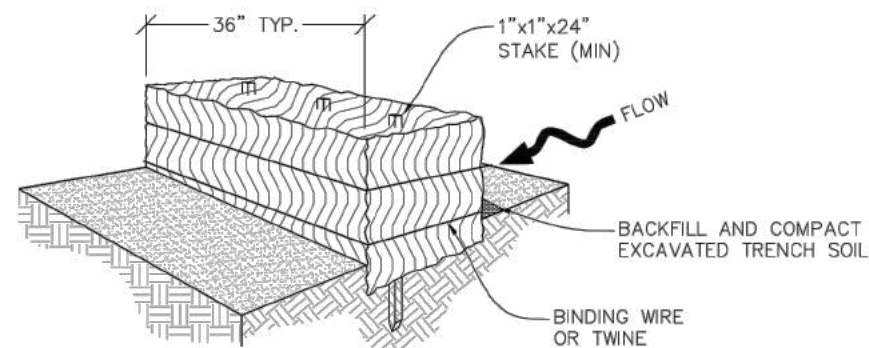
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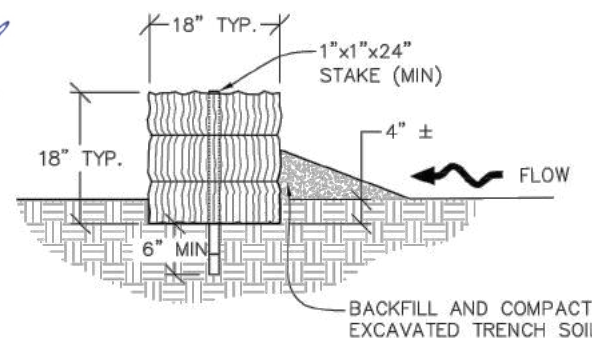
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TRENCH EXCAVATION



STRAW BALE INSTALLATION



SECTION



SB

STRAW BALE



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CONSTRUCTION BEST MANAGEMENT PRACTICES

SB

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STRAW BALE INSTALLATION NOTES

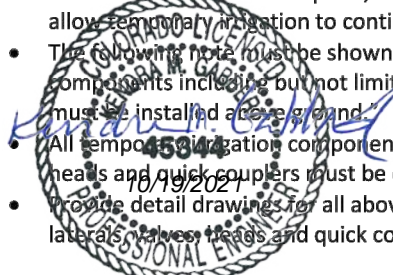
1. SEE CBMP PLAN FOR LOCATION(S) OF STRAW BALES.
2. TYPICAL STRAW BALES SHALL BE APPROXIMATELY 36"X18"X18".
3. TWO (2) WOODEN STAKES SHALL BE USED TO HOLD EACH BALE IN PLACE. WOODEN STAKES SHALL BE A MINIMUM OF 1"X1"X24".
4. WOODEN STAKES SHALL BE PLACED APPROXIMATELY 6" INTO THE GROUND.
5. STRAW BALES SHALL BE SPACED AND POSITIONED ACCORDING TO DETAILS.

STRAW BALE INSPECTION AND MAINTENANCE NOTES

1. THE EROSION CONTROL SUPERVISOR SHALL REGULARLY INSPECT THE STRAW BALES.
2. ACCUMULATED SEDIMENT SHALL BE REMOVED ONCE THE SEDIMENT HAS REACHED A DEPTH EQUAL TO 1/2 THE HEIGHT OF THE STRAW BALE.
3. STRAW BALES MAY NEED TO BE REPLACED IF THEY BECOME HEAVILY SOILED, ROTTEN, OR OTHERWISE DAMAGED.
4. STRAW BALES SHALL REMAIN IN PLACE AND PROPERLY MAINTAINED UNTIL VEGETATIVE COVER HAS REACHED A CONSISTENT DENSITY OF AT LEAST 70% OF FULL VEGETATIVE COVER AND EROSION AND SEDIMENTATION IS NO LONGER A POSSIBILITY AS DETERMINED BY THE TOWN'S INSPECTOR OR AS OTHERWISE DIRECTED BY THE TOWN INSPECTOR.
5. WHEN THE STRAW BALES ARE REMOVED, ANY DISTURBED AREAS ASSOCIATED WITH THE INSTALLATION, MAINTENANCE, AND/OR REMOVAL OF THE STRAW BALES MAY NEED TO BE ROUGHENED, SEEDED, MULCHED, AND CRIMPED PER THE TOWN'S SPECIFICATIONS (SEE DETAIL SMC).

To allow for a proper and timely establishment of native grasses, temporary irrigation is required over all areas where permanent native seeding is proposed. This includes, but is not limited to: detention ponds, drainageways, park and trail areas, general open space, etc. **In addition to the landscape plans, please show the temporary irrigation symbol (TI) on the CBMP Plan over all areas where permanent native seeding is proposed.** As a reminder, when working within Parker Water and Sanitation District's (PWSD) jurisdiction, the following is required:

- Temporary irrigation for native seed must be supplied by a fire hydrant hook-up. Use of proposed/existing landscape irrigation taps is not allowed. Please indicate on the irrigation plans fire hydrants that are to be used for the temporary irrigation mainline and provide a detail for the connection. This detail should show the hydrant, PRV, PWSD water meter, a 2" backflow assembly, a 2" x 2" cam lock for fire department quick disconnect and a support system for all components
- The following note must be shown on the Irrigation plan set "Temporary irrigation for establishment of native vegetation must be installed above ground, and removed immediately after establishment is complete, or in no case, any longer than one growing season." PWSD may allow temporary irrigation to continue for one additional growing season with prior approval.
- The following note must be shown on the Irrigation plan set "All temporary irrigation components including but not limited to mainlines, laterals, valves, heads and quick couplers must be installed above ground."
- All temporary irrigation components including but not limited to mainlines, laterals, valves, heads and quick couplers must be clearly labeled on the plans.
- Provide detail drawings for all above ground components including but not limited to mainlines, laterals, valves, heads and quick couplers.



If the project is in PWSD's jurisdiction, check with the applicable water provider regarding their specific requirements for temporary irrigation.
SELECTION OF THESE STANDARD DETAILS



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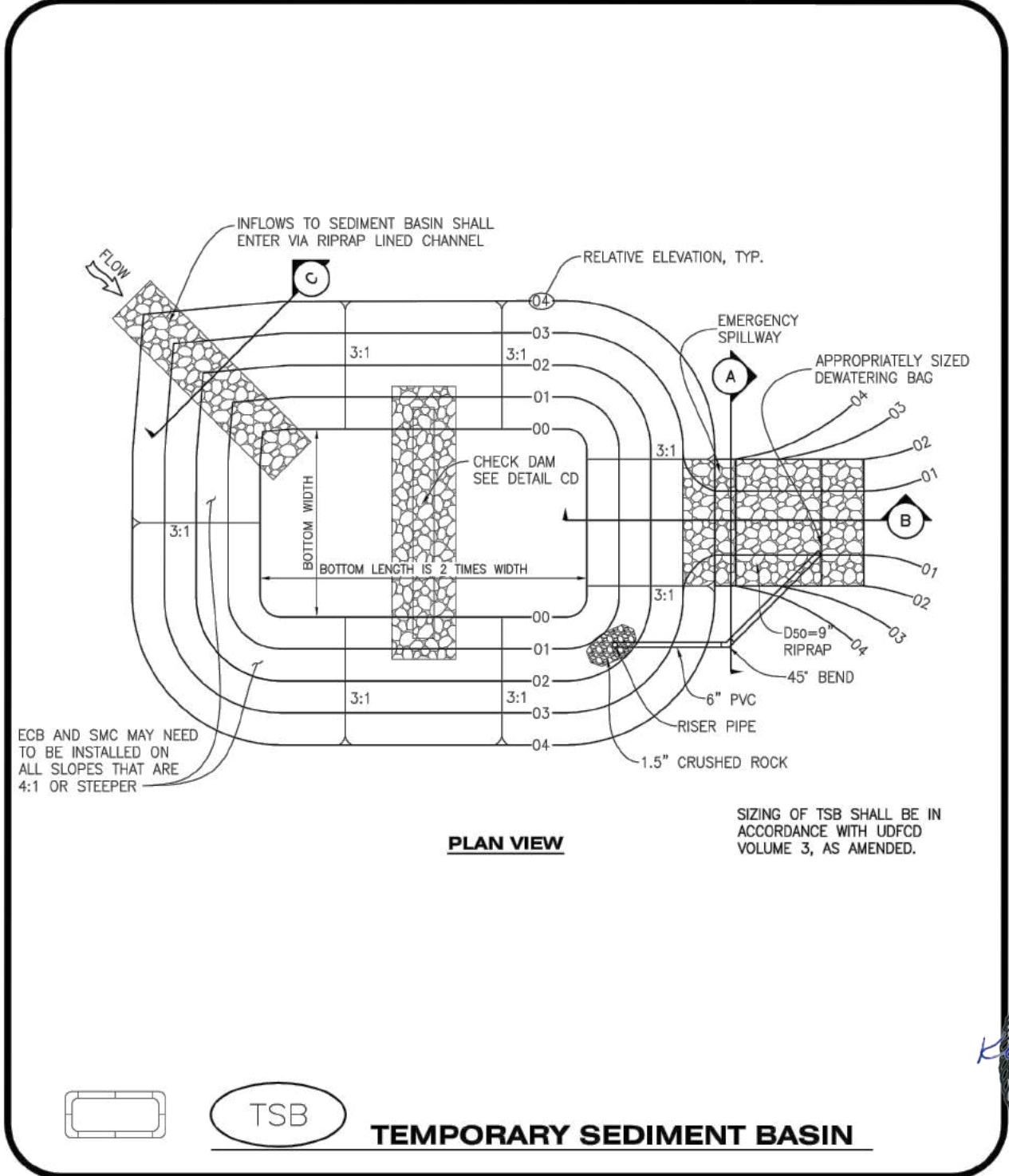
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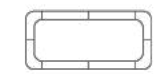
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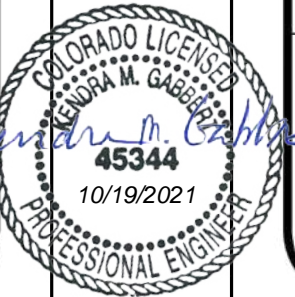
PLAN VIEW

SIZING OF TSB SHALL BE IN ACCORDANCE WITH UDFCD VOLUME 3, AS AMENDED.



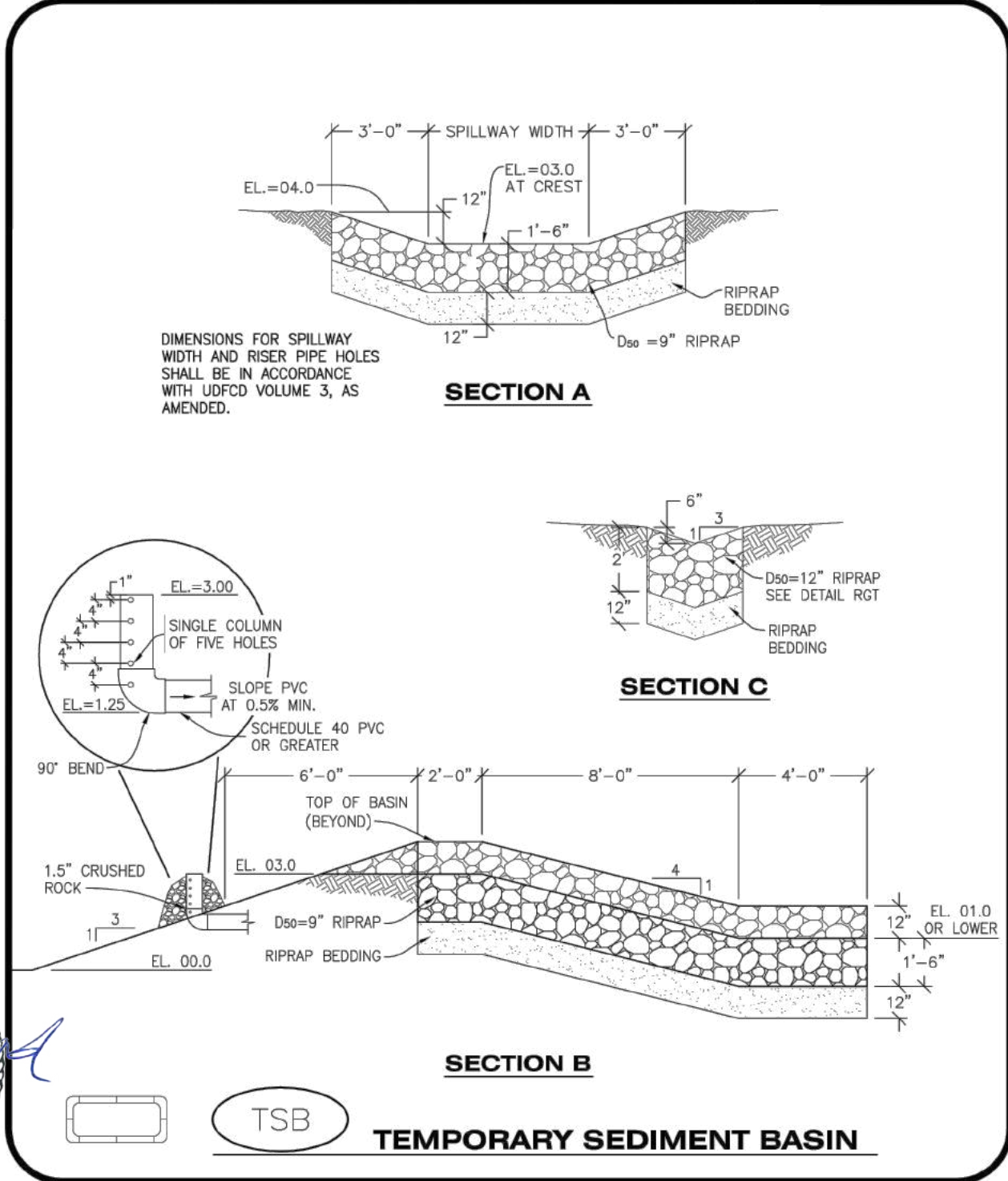
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TEMPORARY SEDIMENT BASIN



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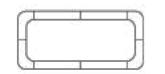


SECTION A

DIMENSIONS FOR SPILLWAY WIDTH AND RISER PIPE HOLES SHALL BE IN ACCORDANCE WITH UDFCD VOLUME 3, AS AMENDED.

SECTION C

SECTION B



TSB

TEMPORARY SEDIMENT BASIN

Parker COLORADO

CBMP

CONSTRUCTION BEST MANAGEMENT PRACTICES

TSB

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Parker COLORADO

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TEMPORARY SEDIMENT BASIN INSTALLATION NOTES

1. SEE CBMP PLAN FOR LOCATION(S) OF SEDIMENT BASIN(S).
2. THE TEMPORARY SEDIMENT BASIN(S) SHALL BE INSTALLED AND FUNCTIONING PRIOR TO ANY OTHER GRADING ACTIVITIES.
3. THE EXACT DIMENSIONS AND DETAILS OF THE TEMPORARY SEDIMENT BASIN SHALL BE DETERMINED BY THE DESIGN ENGINEER, IN ACCORDANCE WITH UDFCD VOLUME 3, AS AMENDED.
4. EMBANKMENT MATERIAL SHALL CONSIST OF SOIL FREE OF DEBRIS, ORGANIC MATERIAL, AND ROCKS OR CONCRETE GREATER THAN 3" AND SHALL HAVE A MINIMUM OF 15% BY WEIGHT PASSING THE NO. 200 SIEVE.
5. EMBANKMENT MATERIAL SHALL BE COMPACTED TO A MINIMUM OF 95% DENSITY, AND WITHIN +/- 2% OF OPTIMUM MOISTURE IN ACCORDANCE WITH ASTM D698.
6. AN APPROPRIATELY SIZED DEWATERING BAG SHALL BE SECURED TO THE END OF THE DISCHARGE PIPE. THE DEWATERING BAG SHALL BE REPLACED ONCE SEDIMENT ACCUMULATION REACHES 50%.

TEMPORARY SEDIMENT BASIN INSPECTION AND MAINTENANCE NOTES

1. THE EROSION CONTROL SUPERVISOR SHALL REGULARLY INSPECT THE TEMPORARY SEDIMENT BASIN.
2. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN THE SEDIMENT REACHES A DEPTH OF 2.0', OR WITHIN 2.0' OF THE SPILLWAY CREST, OR AS OTHERWISE DIRECTED BY THE TOWN'S INSPECTOR.
3. SEDIMENT BASINS SHALL REMAIN IN PLACE AND PROPERLY MAINTAINED UNTIL UPSTREAM VEGETATIVE COVER HAS REACHED A CONSISTENT DENSITY OF AT LEAST 70% OF FULL VEGETATIVE COVER AND EROSION AND SEDIMENTATION IS NO LONGER A POSSIBILITY AS DETERMINED BY THE TOWN'S INSPECTOR.



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Town of Parker
COLORADO


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