TABULATION OF LENGTH

STATION	LINEAR FEET	
	CHANNEL	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+65.80 END TRAIL	215.80	
BELFORD AVENUE BRIDGE 93+64.92 BEGIN BRIDGE 95+63.15 END BRIDGE		198.23
TOTALS	4,796.05	244.61
SUMMARY	LIN. FT.	MILES
Channel	2,300.00	0.44
Trail & Access	2,496.05	0.48
Major Structures	244.61	0.05
GROSS AND NET LENGTH	5,040.66	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 TOWNS 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.

TOM WILLIAMS, P.E., DIRECTOR OF ENGINEERING & PUBLIC WORKS — DATE

CHRIS HUDSON, P.E., PUBLIC WORKS MANAGER — DATE

JACOB JAMES, P.E., STORMWATER MANAGER — DATE

PARKER
COLORADO

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



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.

INDEX OF SHEETS

SHEET NO.	SUBSET SHEETS	DESCRIPTION
1	T-1	TITLE SHEET
2	SP-1	STANDARD PLANS LIST
3	GN-1	GENERAL NOTES
4 - 5	SM-1 TO SM-2	SUMMARY OF APPROXIMATE QUANTITIES
6	TB-1	TABULATION OF TRAIL QUANTITIES
7 - 8	RM-1 TO RM-2	REMOVAL AND RESET PLANS
9 - 10	TY-1 TO TY-2	TRAIL TYPICAL SECTIONS
11 - 13	TD-1 TO TD-3	TRAIL DETAILS
14 - 15	TG-1 TO TG-2	TRAIL GEOMETRIC LAYOUT
16 - 27	TP-1 TO TP-12	TRAIL PLANS AND PROFILES
28 - 64	B-1 TO B-37	BRIDGE PLANS
65 - 87	DD-1 TO DD-22	HAPPY CANYON CHANNEL PLANS
88	EL-1	CBMP TITLE SHEET
89	ET-1	TABULATION OF EROSION CONTROL QUANTITIES
90 - 91	EI-1 TO EI-2	INITIAL GRADING AND EROSION CONTROL PLANS
92 - 93	EN-1 TO EN-2	INTERIM GRADING AND EROSION CONTROL PLANS
94 - 95	EF-1 TO EF-2	FINAL GRADING AND EROSION CONTROL PLANS
96 - 130	ED-1 TO ED-35	CBMP STANDARD NOTES & DETAILS

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

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

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fax 303.721.0832

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As Constructed	BELFORD-HAPPY CANYON CREEK TITLE SHEET			Project No./Code
No Revisions:				
Revised:	Designer: DCS	Structure Numbers		
Void:	Detailer: DCS			Sheet Number 1
	Subset: Title	Sheets: T-1 of 1		

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S-614-6	☐	CONCRETE FOOTINGS AND SIGN ISLANDS FOR CLASS III SIGNS (2 SHEETS) (REVISED ON SEPTEMBER 16, 2013)	~~167-168~~
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COLORADO
DEPARTMENT OF TRANSPORTATION

M&S STANDARDS PLANS LIST

July 04, 2012

Revised on February 23, 2017

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

NEW OR REVISED STANDARD PLAN SHEETS APPLICABLE TO THIS PROJECT, INDICATED BY A MARKED BOX ■, WILL BE ATTACHED TO THE PLANS.

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No Revisions:
Revised:
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BELFORD-HAPPY CANYON CREEK STANDARD PLANS LIST

Designer: SED
Detailer: SED
Subset: General
Structure Numbers:
Sheets: SP-1 of 1

Project No./Code

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 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.

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.

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

IT IS ESTIMATED THAT EIGHT (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.

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.

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:

IREA
BROOKS KAUFMAN (303) 688–3100 PHONE

CenturyLink
WILLIAM BENSON (303) 792–6069 PHONE

CDPHE
COLORADO DEPARTMENT OF HEALTH (303) 320–8333 PHONE

comcast
KEVIN YOUNG (720) 490–3867 PHONE

Xcel Energy
MICHELLE O'NAN (303) 329–1618 PHONE

PARKER COLORADO
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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Construction Managers • Environmental Scientists • Landscape Architects • Planners

As Constructed
No Revisions:
Revised:
Void:

BELFORD–HAPPY CANYON CREEK
GENERAL NOTES

Designer:	DCS	Structure Numbers	
Detailer:	DCS		
Subset:	General	Sheets:	GN–1 of 1

Project No./Code

Sheet Number 3

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Book	Page	Sheet				Plan	As Const.	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			274												274	
			202	REMOVAL OF FENCE	LF			2012												2012	
			203	EMBANKMENT MATERIAL (COMPLETE IN PLACE)	CY			35380												35380	
			203	POTHOLING	HOUR	20														20	
			206	STRUCTURE EXCAVATION	CY					358		130								488	
			206	STRUCTURE BACKFILL (CLASS 1)	CY					1695		118								1813	
			206	STRUCTURE BACKFILL (CLASS 2)	CY					436										436	
			206	MECHANICAL REINFORCEMENT OF SOIL	CY					1289										1289	
			206	FILTER MATERIAL (CLASS A)	CY					423		2019								2442	
			206	FILTER MATERIAL (CLASS C)	CY							37								37	
			207	TOPSOIL	CY							739								739	
			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 CONTROL	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			376												376	
			403	HOT MIX ASPHALT	TON					117										117	
			501	STEEL SHEET PILING (TYPE II)	SF							8770								8770	
			503	DRILLED CAISSON (24 INCH)	SY					753										753	
			503	DRILLED CAISSON (48 INCH)	SY					240										240	
			506	RIPRAP (12 INCH)	CY							76								76	
			506	RIPRAP (18 INCH)	CY					1324										1324	
			506	SOIL RIPRAP (12 INCH)	CY							2769								2769	
			506	SOIL RIPRAP (18 INCH)	CY							652								652	
			506	24 INCH GROUTED BOULDERS	CY							434								434	
			515	WATERPROOFING (MEMBRANE)	SY					889										889	
			515	CONCRETE SEALER	SY					172										172	
			519	MANUFACTURED STONE VENEER	SF					934										934	

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PEORIA & BELFORD INTERSECTION
SUMMARY OF APPROXIMATE QUANTITIES

Designer: SED
Detailer: SED
Subset: General
Structure Numbers:
Sheets: SM-1 of 2

Project No./Code

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.	Plan	As Const.
			601	CONCRETE CLASS D (BOX CULVERT)	CY							47								47	
			601	CONCRETE CLASS D (BRIDGE)	CY					733										733	
			601	STRUCTURAL CONCRETE COATING	SY					1164										1164	
			602	REINFORCING STEEL	LB					10084		2352								12436	
			602	REINFORCING STEEL (EPOXY COATED)	LB					162285		740								163025	
			603	18 INCH REINFORCED CONRETE PIPE (CIP)	LF					20										20	
			603	48 INCH REINFORCED CONRETE PIPE (CIP)	LF							187								187	
			603	48 INCH REINFORCED CONRETE 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					1										1	
			606	BRIDGE RAIL (SPECIAL)	LF					199										199	
			606	BRIDGE RAIL TYPE 10	LF					199										199	
			607	CONSTRUCTION FENCE	LF									8838						8838	
			607	FENCE CHAIN LINK (48 INCH)	LF					112										112	
			608	CONCRETE SIDEWALK (6 INCH)	SY			505												505	
			608	CONCRETE SIDEWALK (SPECIAL)	LF			263												263	
			613	1 INCH ELECTRICAL CONDUIT	LF					39										39	
			613	2 INCH ELECTRICAL CONDUIT	LF					424										424	
			613	LUMINAIRE (SPECIAL)	LF					3										3	
			618	PRESTRESSED CONCRETE I (BT42)	LF					927										927	
			619	8 INCH PLASTIC PIPE	LF							266								266	
			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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PEORIA & BELFORD INTERSECTION
SUMMARY OF APPROXIMATE QUANTITIES

Designer: SED
Detailer: SED
Subset: General
Structure Numbers:
Sheets: SM-2 of 2

Project No./Code

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	274	1228
SHEET RM-2			784
PROJECT TOTALS	3	274	2012

TABULATION OF TRAIL QUANTITIES

STATION/LOCATION	AGGREGATE BASE COURSE (CLASS 6)	CONCRETE SIDEWALK (6 INCH)	CONCRETE SIDEWALK (SPECIAL)
	CY	SY	LF
MAINTENANCE ACCESS	376		
REGIONAL TRAIL		205	263
CHEROKEE TRAIL		300	
PROJECT TOTALS	376	505	263

TABULATION OF EARTHWORK

INDEX BOOK	INDEX PAGE	INDEX SHEET	ITEM	PROJECT TOTALS	
			EMBANKMENT MATERIAL (FOR INFO. ONLY)	CU. YDS.	
			ROADWAY (FROM SURFACE COMPARISON)		
			HAPPY CANYON CREEK	0	
			MAINTENANCE ACCESS	34,899	
			REGIONAL TRAIL	73	
			CHEROKEE TRAIL	408	
			TOTAL FOR PAY QUANTITY	35,380	
			UNCLASSIFIED EXCAVATION (FOR INFO. ONLY)	CU. YDS.	
			ROADWAY (FROM SURFACE COMPARISON)		
			HAPPY CANYON CREEK	611	
			MAINTENANCE ACCESS	476	
			REGIONAL TRAIL	1,364	
			CHEROKEE TRAIL	1	
			TOTAL	2,452	
			COMPACTION	CU. YDS.	
			(MOISTURE & DENSITY CONTROL)		
			EMBANKMENT (NET)	35,380	
			BASES OF CUTS & FILLS (8 INCHES)	0	
			TOTAL	35,380	
			WETTING QUANTITIES	M. GAL.	
			COMPACTION		
			(35380 x 0.040 M. GAL./yd)	1,415	
			TOTAL	1,415	
			ROADWAY QUANTITIES BALANCE	CU. YDS.	
			EMBANKMENT (NET)	35,380	
			EMBANKMENT X FACTOR (1.15)	40,687	
			EMBANKMENT REQUIRED FOR SHRINKAGE BASES OF CUTS & FILLS	0	
			BALANCE TOTAL (EMBANKMENT)	40,687	
			UNCLASSIFIED EXCAVATION	2,452	
			TO BE IMPORTED BY CONTRACTOR	38,235	
			BALANCE TOTAL	40,687	

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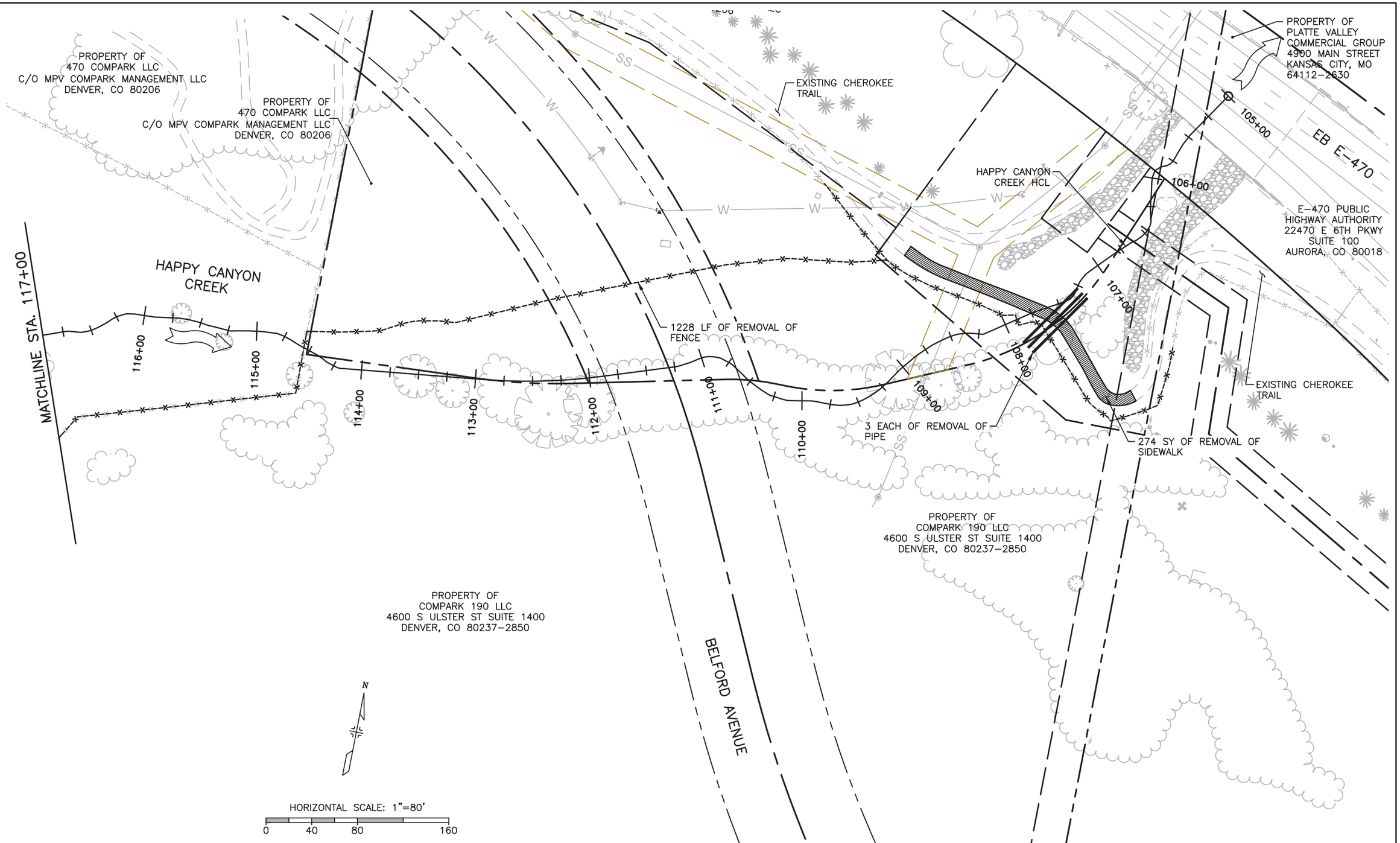
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PEORIA & BELFORD INTERSECTION
TABULATION OF TRAIL QUANTITIES

Designer: SED
Detailer: SED
Subset: Roadway
Structure Numbers:
Sheets: TB-1 of 1

Project No./Code

Sheet Number 6



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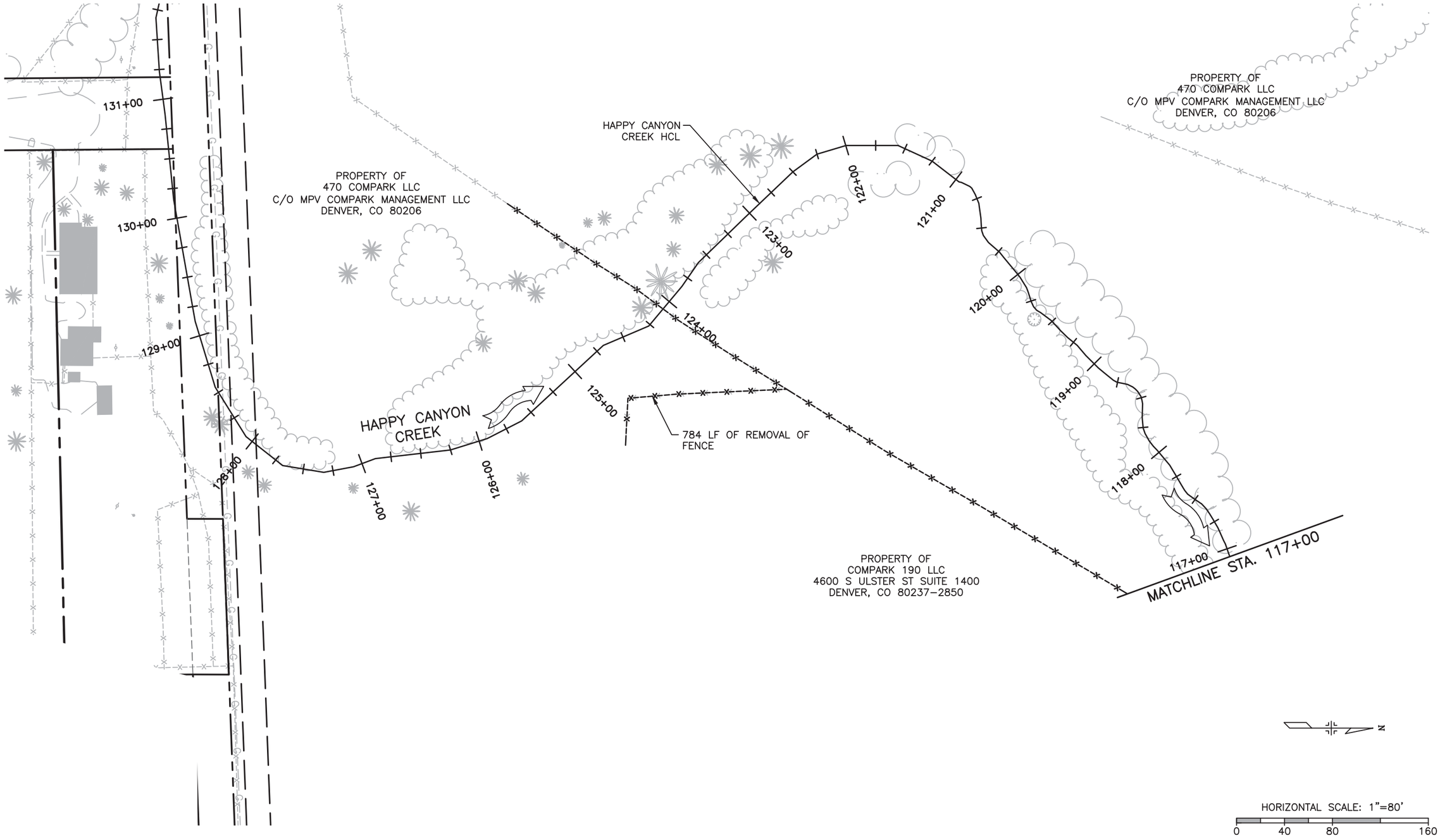
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BELFORD-HAPPY CANYON CREEK REMOVAL AND RESET PLANS

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

Project No./Code	
Sheet Number	7



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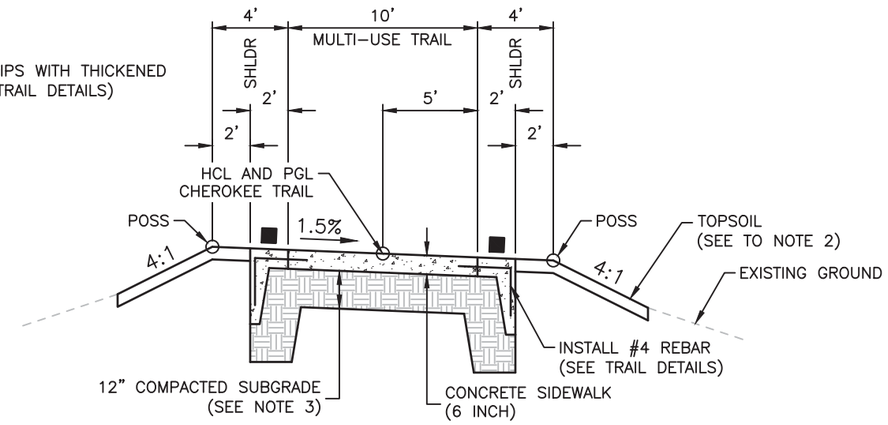
BELFORD-HAPPY CANYON CREEK REMOVAL AND RESET PLANS

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Detailer:	SED		
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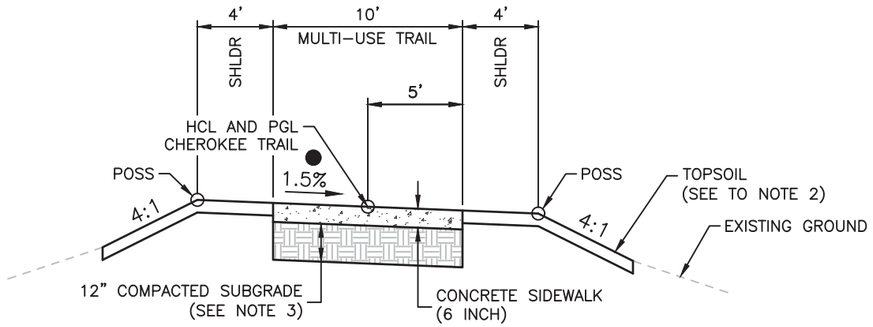
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Sheet Number 8

■ RUMBLE STRIPS WITH THICKENED EDGE (SEE TRAIL DETAILS)

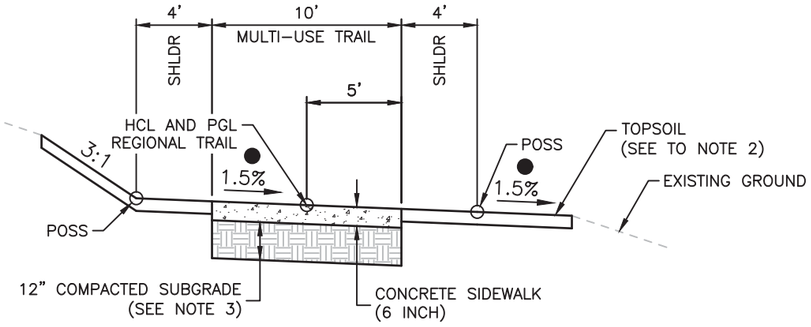


CHEROKEE TRAIL
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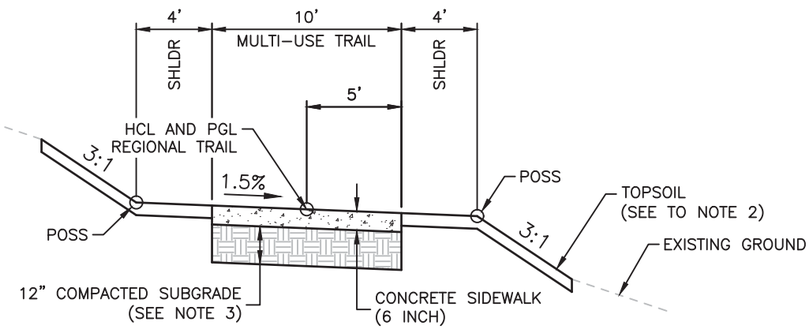
CHEROKEE TRAIL
STA 51+50.00 TO STA 52+20.00
STA 52+97.00 TO STA 53+65.80

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



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

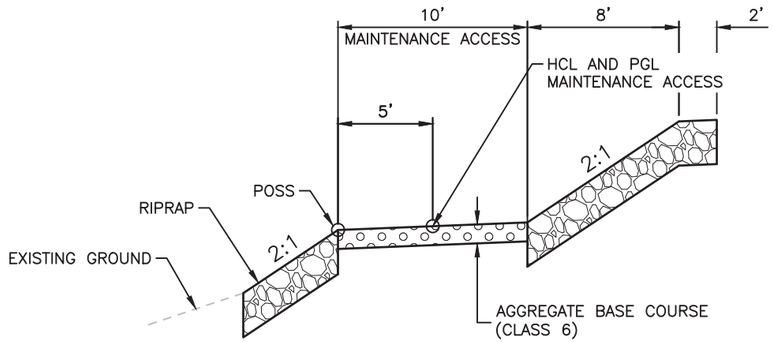
NOTES:

1. 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.
2. 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.
3. THE SUBGRADE SHALL BE THOROUGHLY COMPACTED TO NINETY–FIVE PERCENT (95%) MODIFIED PROCTER DENSITY AT ± TWO PERCENT (2%) OF OPTIMUM MOISTURE.

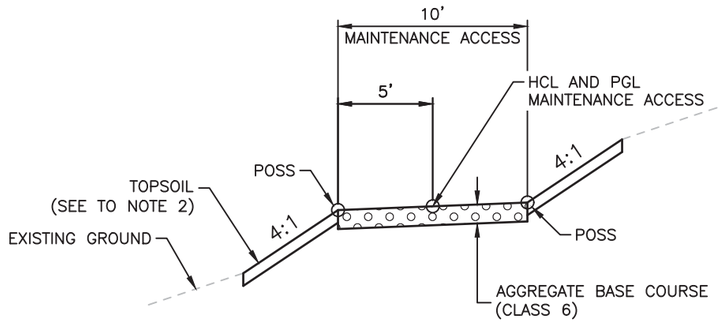
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MAINTENANCE ACCESS
STA 84+39.41 TO STA 85+39.63



MAINTENANCE ACCESS
STA 70+00.00 TO STA 84+39.41
STA. 85+39.63 TO STA. 88+51.74

NOTES:

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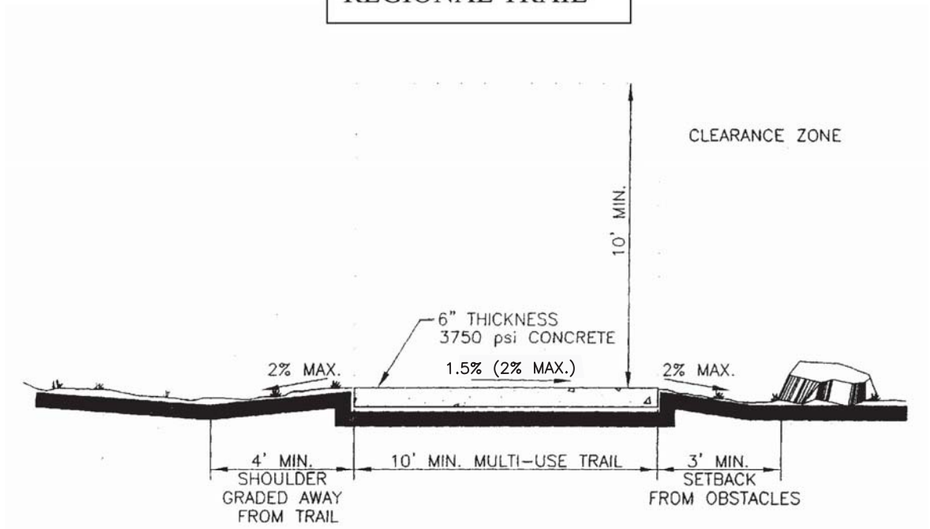
BELFORD–HAPPY CANYON CREEK TRAIL
TYPICAL SECTIONS

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Detailer:	DCS		
Subset:	Trail	Sheets:	TY–2 of 2

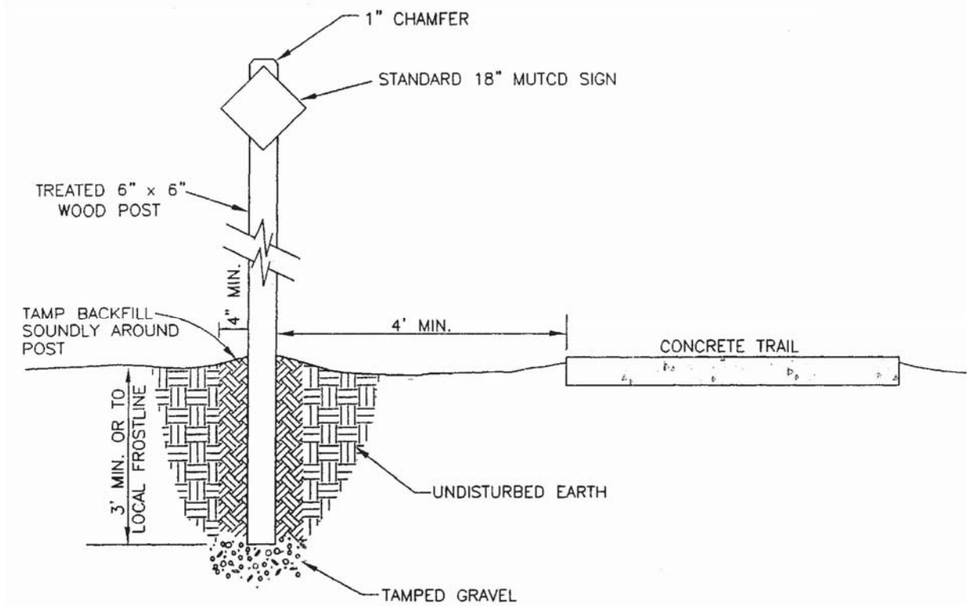
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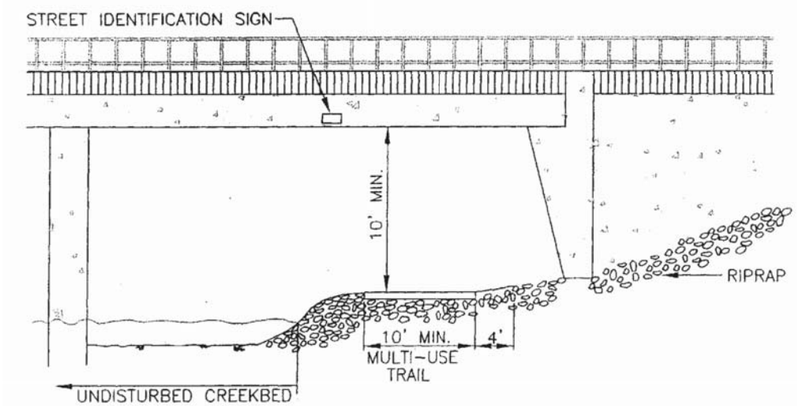
REGIONAL TRAIL



POST DETAIL



BRIDGE UNDERPASS



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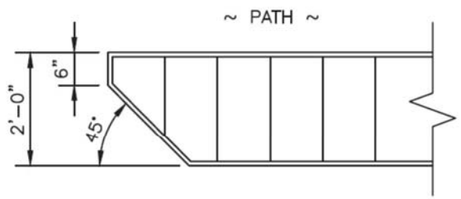
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BELFORD-HAPPY CANYON CREEK TRAIL DETAILS

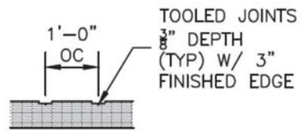
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Project No./Code

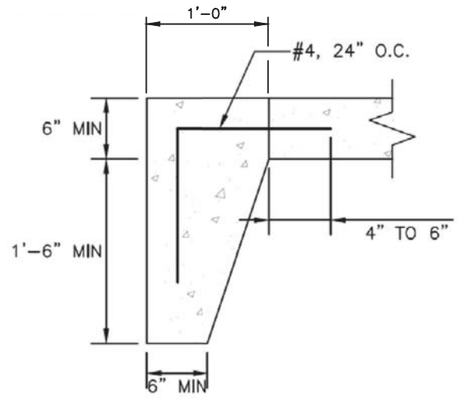
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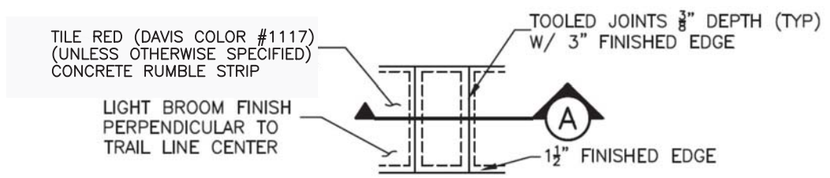
TYPICAL RETURN PLAN



SECTION A



THICKENED EDGE



TYPICAL SCORING PLAN

RUMBLE STRIPS WITH THICKENED EDGE DETAILS

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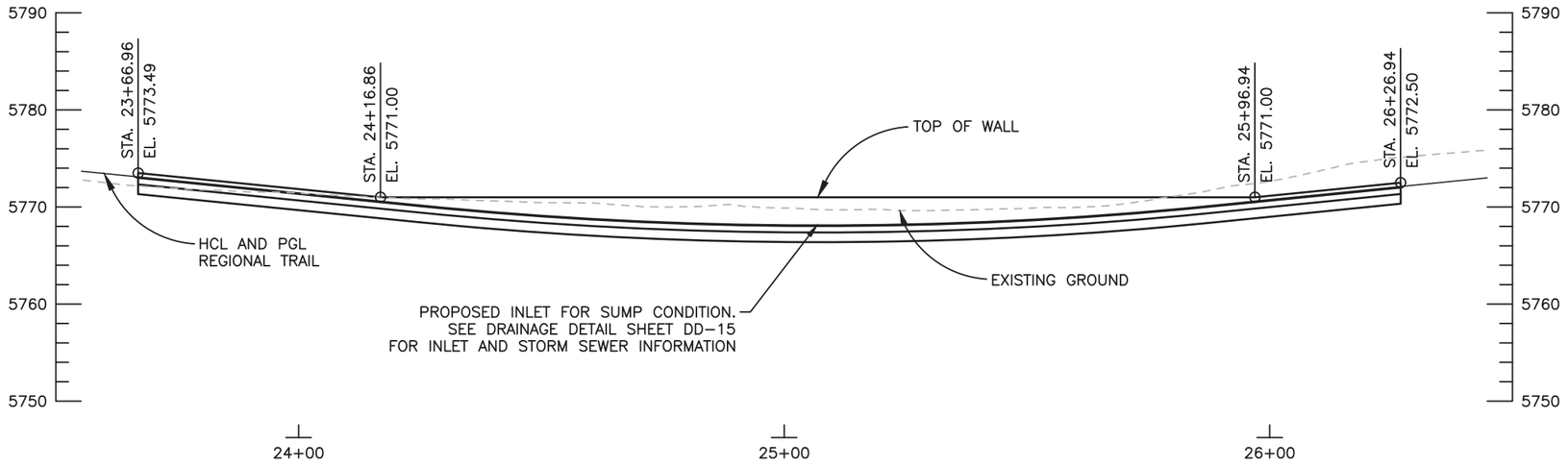
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Revised:
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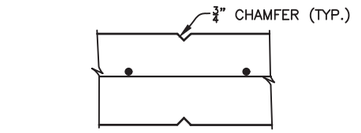
BELFORD-HAPPY CANYON CREEK TRAIL DETAILS

Designer:	DCS	Structure Numbers	
Detailer:	DCS		
Subset:	Trail	Sheets:	TD-2 of 3

Project No./Code

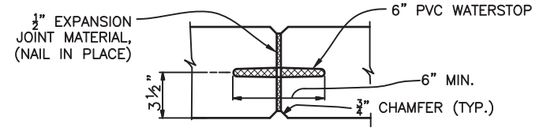
Sheet Number 12





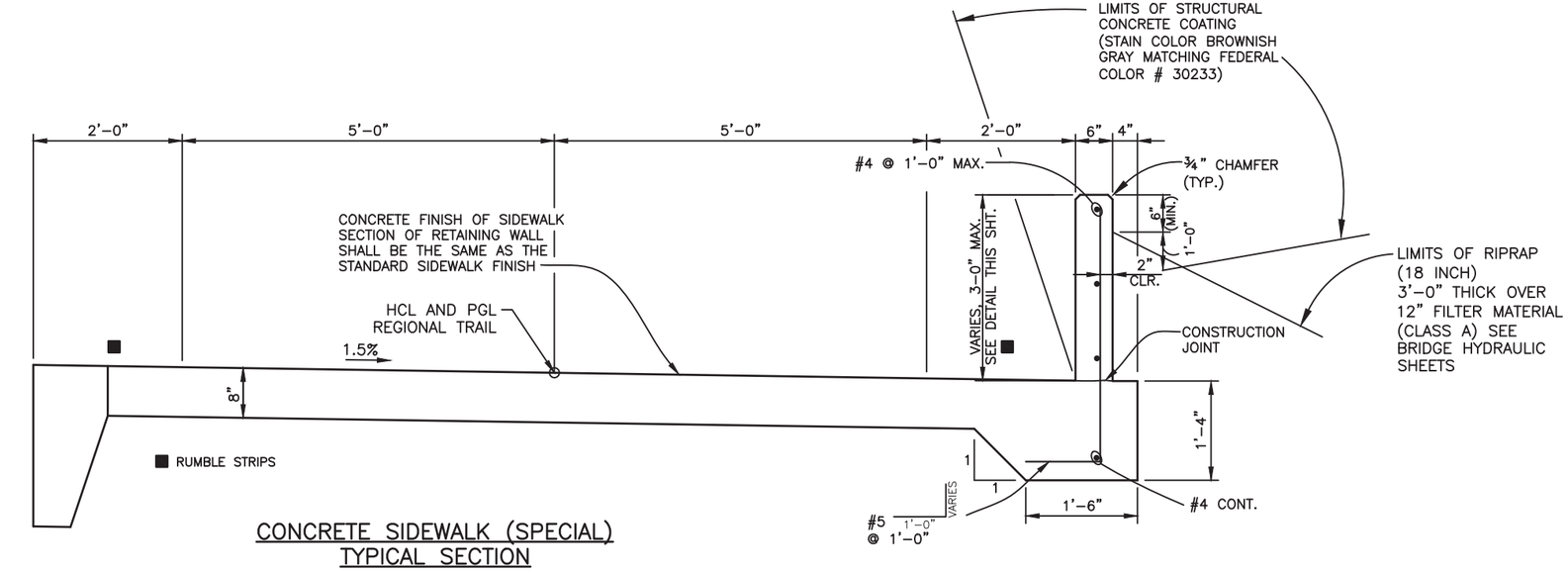
WALL STEM CONTROL JOINT

(CONTROL JOINTS SHALL BE SPACED @ 10'–0" ON CENTER)



WALL STEM EXPANSION JOINT

(PLACE MAXIMUM 60'–0" O.C.)



CONCRETE SIDEWALK (SPECIAL)
TYPICAL SECTION

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.

STA. 24+39.74 TO STA. 25+80.93

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

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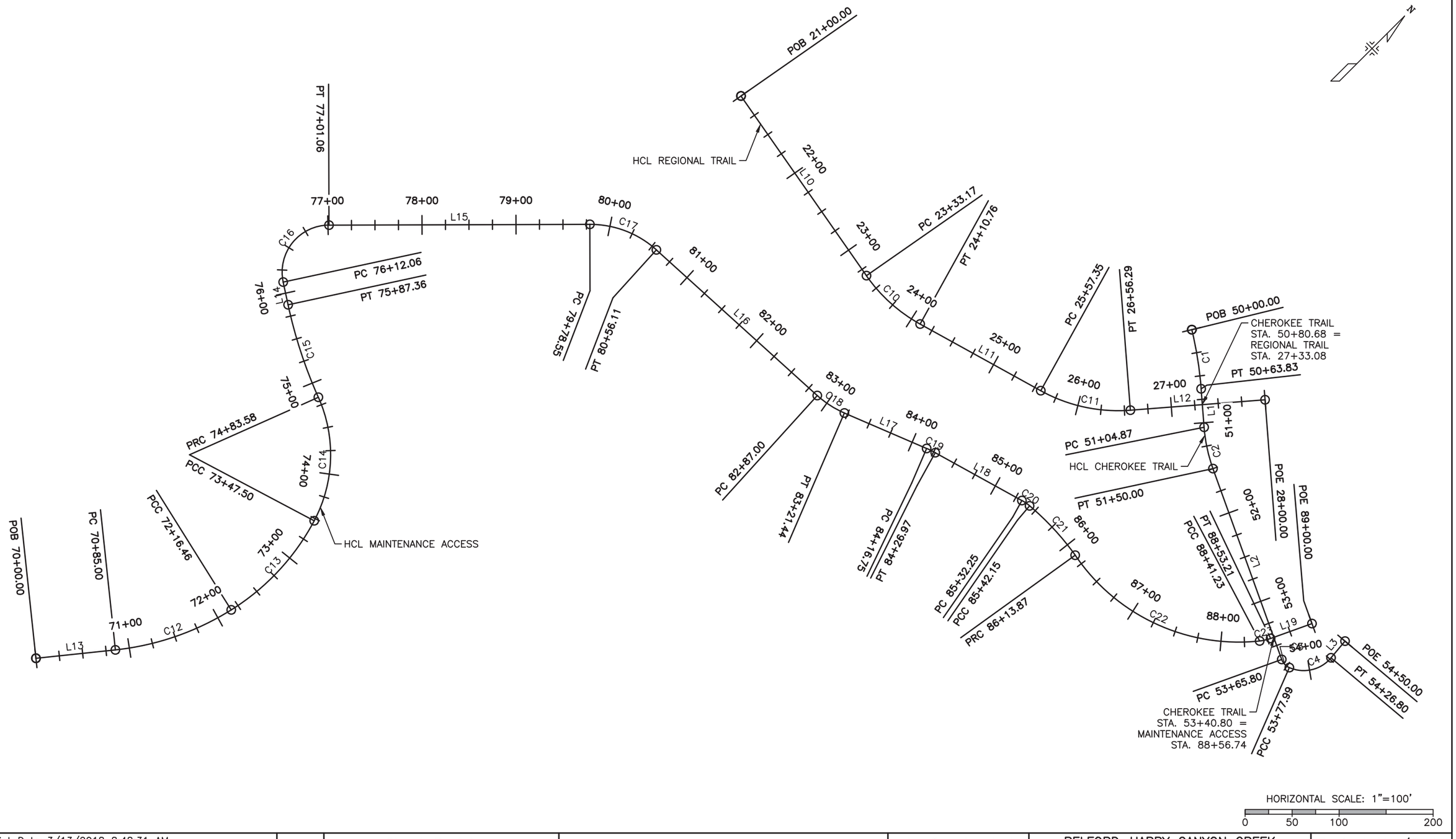
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No Revisions:
Revised:
Void:

BELFORD–HAPPY CANYON CREEK
TRAIL DETAILS

Designer: SED
Detailer: SED
Subset: Trail
Structure Numbers:
Sheets: TD–3 of 3

Project No./Code:

Sheet Number 13



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Print Date: 3/13/2018 8:48:31 AM	(R-X)	Sheet Revisions			As Constructed	BELFORD–HAPPY CANYON CREEK TRAIL GEOMETRIC LAYOUT			Project No./Code
File Name: T115360-01GEM01.dwg		Date	Comments	Initials	No Revisions:				
Horizontal Scale: 1"=100' Vertical Scale: NTS					Revised:	Designer: DCS	Structure Numbers		
FELSBURG HOLT & ULLEVIG 6300 South Syracuse Way, Suite 600 Centennial, CO 80111 tel 303.721.1440 fax 303.721.0832					Void:	Detailer: DCS			
						Subset: Trail	Sheets: TG–1 of 2		Sheet Number 14

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HCL – MAINTENANCE ACCESS

NO.		STATION	NORTHING	EASTING	LENGTH	LINE/CHORD BEARING	DELTA	TANGENT	RADIUS
L13		70+00.00 70+85.00	26922.9890 26989.1109	93954.9049 94008.3174	85.00'	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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No Revisions:
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BELFORD–HAPPY CANYON CREEK
T115360–01GEM01 – TG–2

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

Project No./Code

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)

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 WATER LINE
(BY OTHERS)

BEGIN CONSTRUCTION
REGIONAL TRAIL
STA 23+00.00

23+00
PC 23+33.17
PT 24+10.76
24+00
25+00
PC 25+57.35
PT 26+56.29
26+00
27+00
50+00
28+00
PT 50+63.83
PC 51+04.87
PT 51+50.00
82+00
PC 82+87.00
PT 83+21.44
83+00
84+00
85+00
PC 84+16.75
PT 84+26.97
PC 85+32.25
PCC 85+42.15
86+00
52+00

10'
5'
R=15'
2'
(TYP.)

END CONSTRUCTION
REGIONAL TRAIL
STA 27+28.51

MATCH EXISTING
TRAIL SLOPE

10' REGIONAL TRAIL

DROP STRUCTURE (TYP)
(SEE CHANNEL PLANS)

CONCRETE SIDEWALK
(SPEICAL)
(SEE TD-3)

STA 26+31.00
BEGIN TRAIL CROSS
SLOPE TRANSITON

RIPRAP
(SEE BRIDGE AND CHANNEL PLANS)

PROPOSED BELFORD
AVENUE BRIDGE
(SEE BRIDGE PLANS)

HCL CHEROKEE TRAIL

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

HAPPY CANYON CREEK

CHEROKEE TRAIL
(SEE TP-3)

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

FOR HYDRAULIC INFORMATION
(SEE CHANNEL PLANS)

PROPOSED BELFORD AVENUE
(BY OTHERS)

BELFORD AVE

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

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

LEGEND

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

HORIZONTAL SCALE: 1"=40'
0 20 40 80

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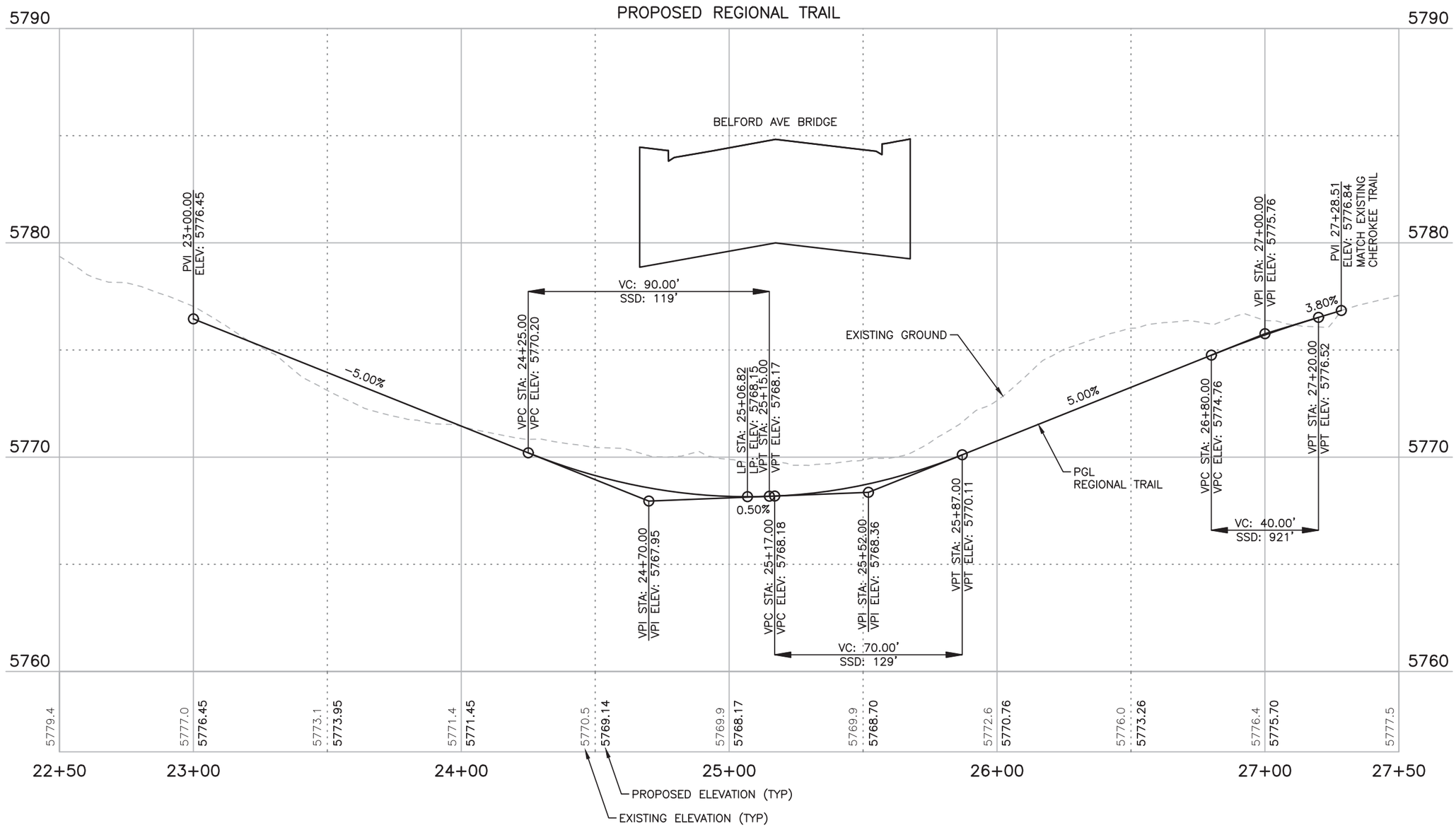
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BELFORD-HAPPY CANYON CREEK
REGIONAL TRAIL PLAN

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

Project No./Code

Sheet Number 16



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HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=5'
0 20 40 80

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BELFORD–HAPPY CANYON CREEK REGIONAL TRAIL PROFILE

Designer:	DCS	Structure Numbers	
Detailer:	DCS		
Subset:	Trail	Sheets:	TP–2 of 12

Project No./Code

Sheet Number 17

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

PROPOSED WATER LINE
(BY OTHERS)

BEGIN CONSTRUCTION
CHEROKEE TRAIL
STA 51+50.00

HCL CHEROKEE TRAIL

50+00

PC 51+04.87

PT 51+50.00

RUMBLE STRIPS WITH
THICKENED EDGE
STA 52+20 TO STA 52+97
(SEE TRAIL TYPICAL
SECTIONS AND DETAILS)

51+00

52+00

53+00

54+00

54+50

89+00

PT 54+26.80

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

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

END CONSTRUCTION
CHEROKEE TRAIL
STA 53+90.00

MATCH EXISTING
TRAIL SLOPE

FOR HYDRAULIC INFORMATION
(SEE CHANNEL PLANS)

PT 88+53.21

PCC 88+41.23

PCC 53+77.99

PC 53+65.80

STA 53+35.00
BEGIN TRAIL CROSS
SLOPE TRANSITON

10'

5'

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

PT 50+63.83

27+00

MATCH EXISTING
TRAIL SLOPE

STA 52+00.00
END TRAIL CROSS
SLOPE TRANSITON

PT 26+56.29

PROPOSED BELFORD AVENUE
(BY OTHERS)

PROPOSED REGIONAL TRAIL
(SEE TP–1)

88+00

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

HCL MAINTENANCE ACCESS

PC 25+57.35

26+00

RIPRAP
(SEE BRIDGE AND CHANNEL PLANS)

PROPOSED BELFORD
AVENUE BRIDGE
(SEE BRIDGE PLANS)

BELFORD AVE

HAPPY CANYON CREEK

87+00

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

86+00

PROPOSED SANITARY SEWER LINE
(BY OTHERS)

PROPOSED R.O.W.
BELFORD AVENUE

PERMANENT SLOPE AND
DRAINAGE EASEMENT
BELFORD AVENUE

PROPERTY OF
COMPARK 190 LLC
4600 S ULSTER ST SUITE 1400
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PCC 85+

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LEGEND

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

N

HORIZONTAL SCALE: 1"=40'

0 20 40 80

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As Constructed

No Revisions:

Revised:

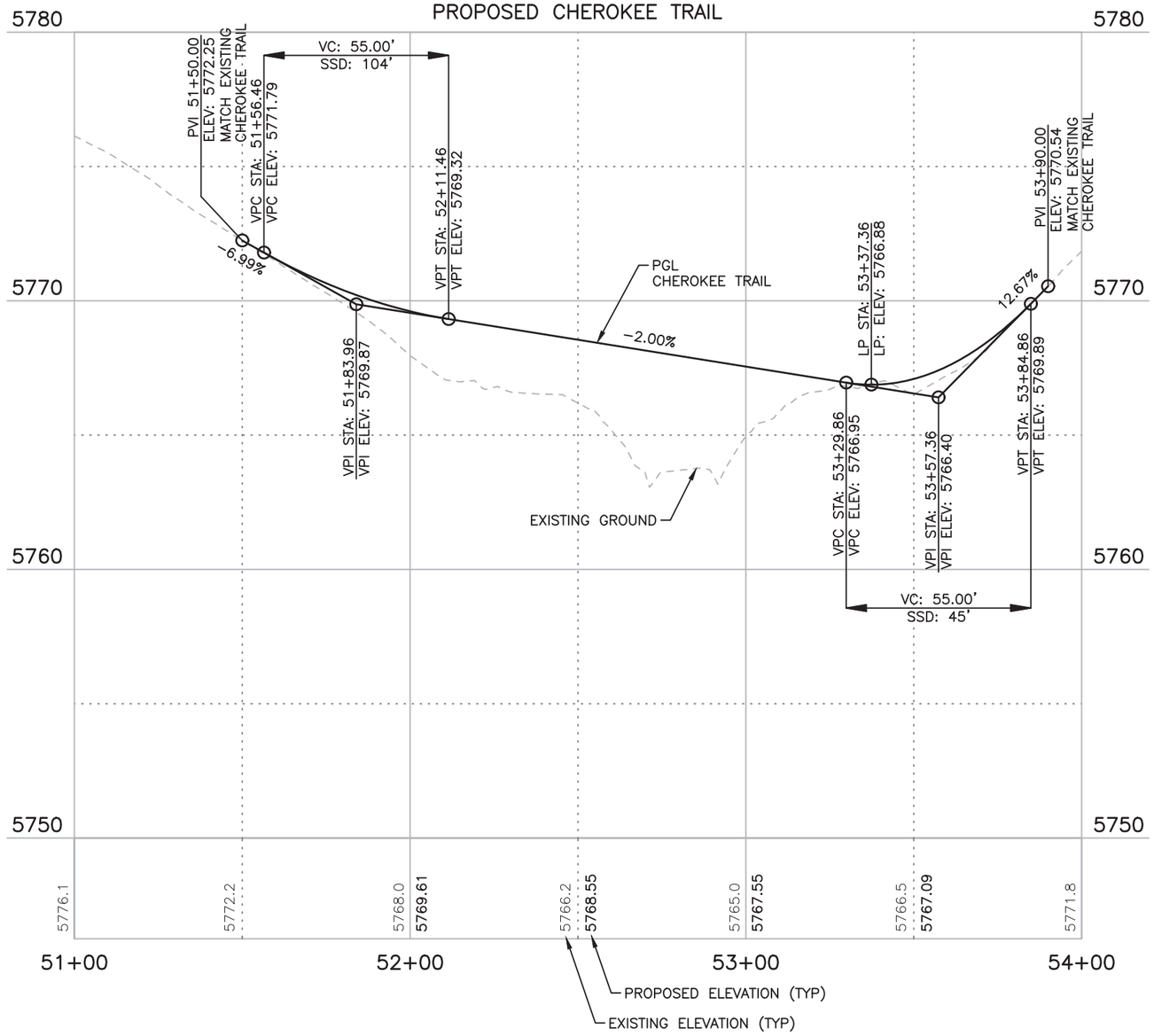
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BELFORD–HAPPY CANYON CREEK
CHEROKEE TRAIL PLAN

Designer:	DCS	Structure Numbers	
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Subset:	Trail	Sheets:	TP–3 of 12

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Sheet Number 18



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VERTICAL SCALE: 1"=5'
0 20 40 80

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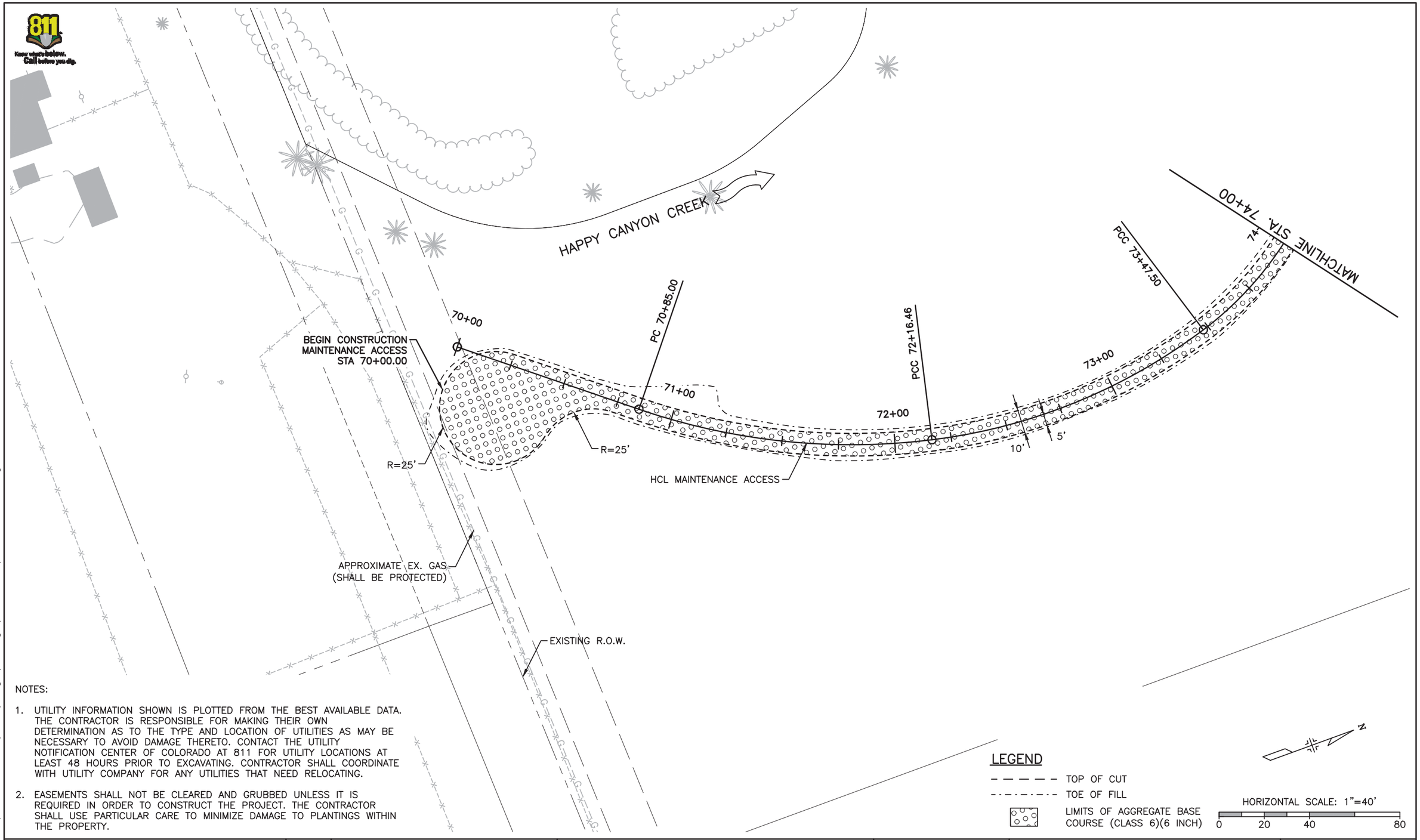
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BELFORD–HAPPY CANYON CREEK
CHEROKEE TRAIL PROFILE

Designer:	DCS	Structure Numbers	
Detailer:	DCS		
Subset:	Trail	Sheets:	TP–4 of 12

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Sheet Number 19



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. 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'
0 20 40 80

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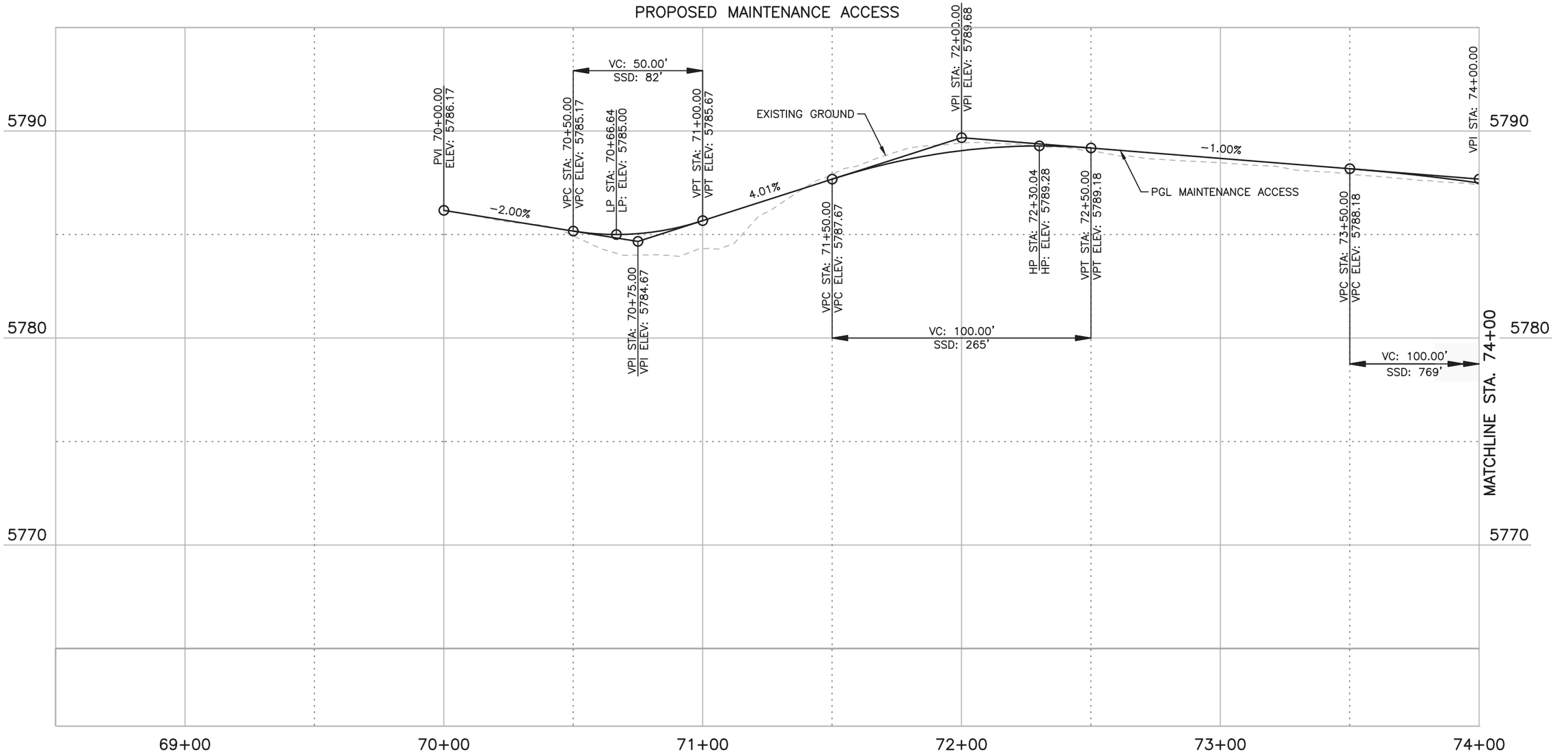
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Detailer: DCS
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Sheet Number 20



HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=5'

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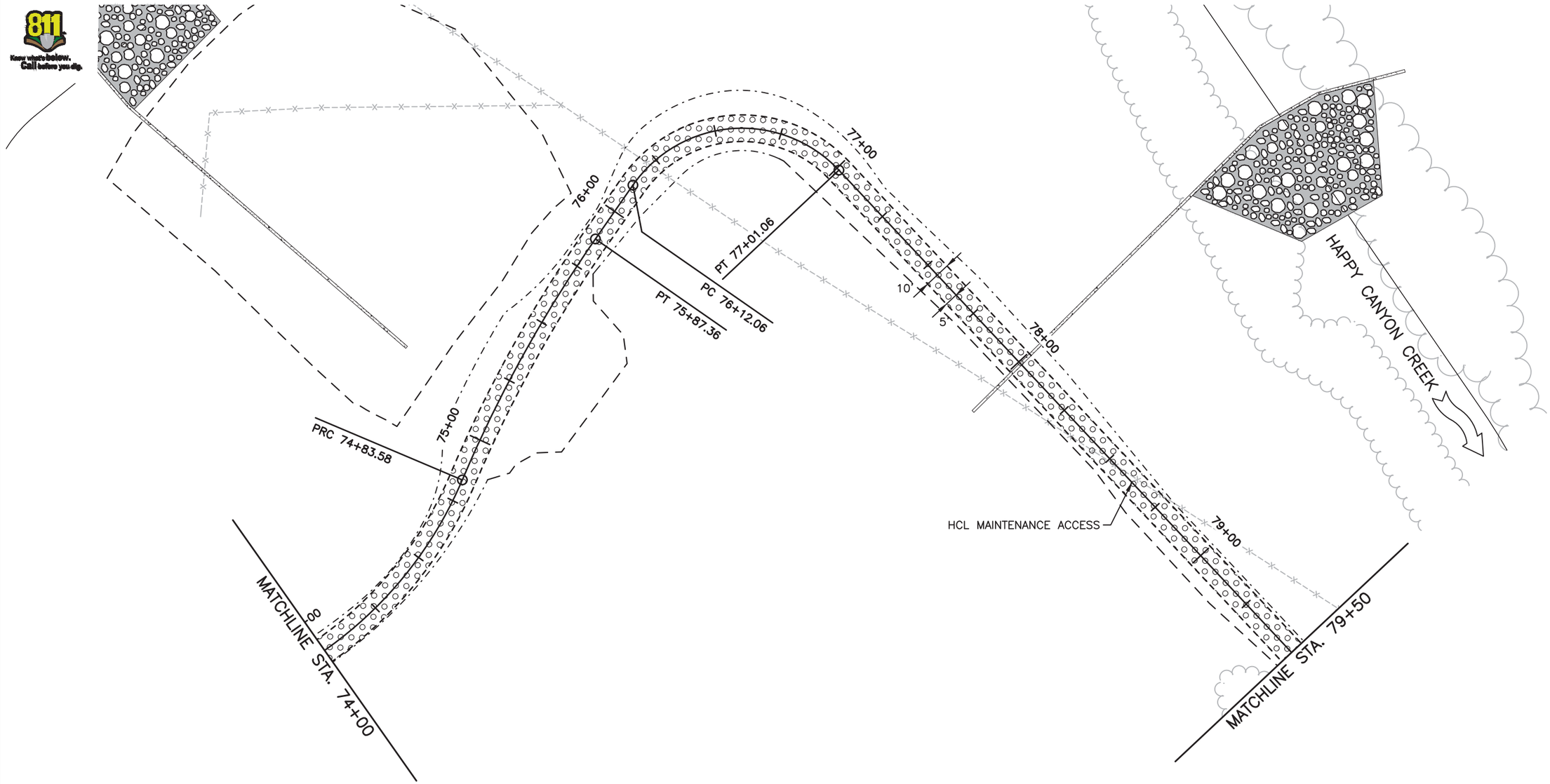
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BELFORD-HAPPY CANYON CREEK
MAINTENANCE ACCESS PROFILE

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Sheet Number 21



NOTES:

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LEGEND

- – – – – TOP OF CUT
- -·-·-·-·- TOE OF FILL
- LIMITS OF AGGREGATE BASE COURSE (CLASS 6)(6 INCH)

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0 20 40 80

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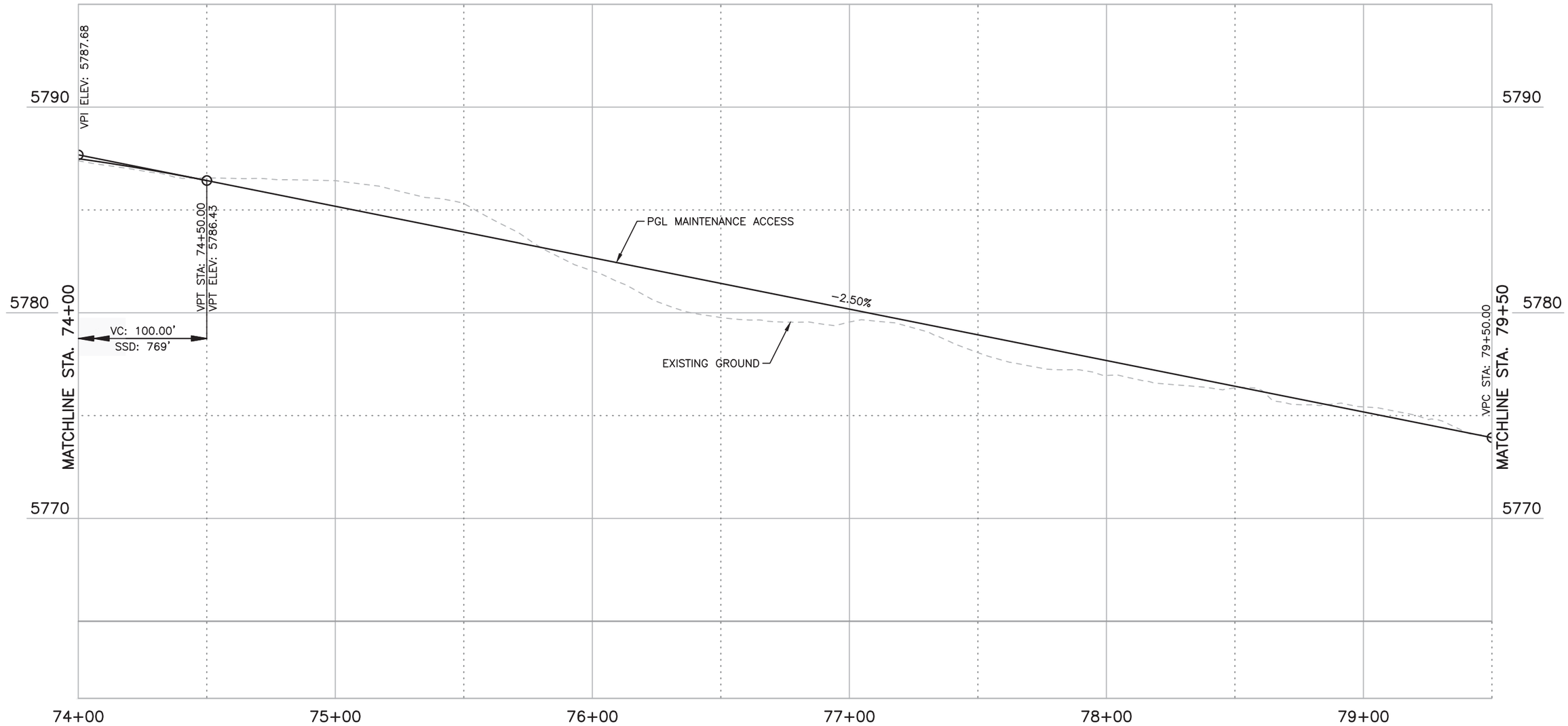
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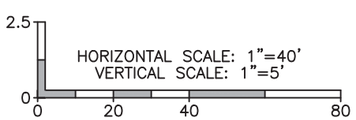
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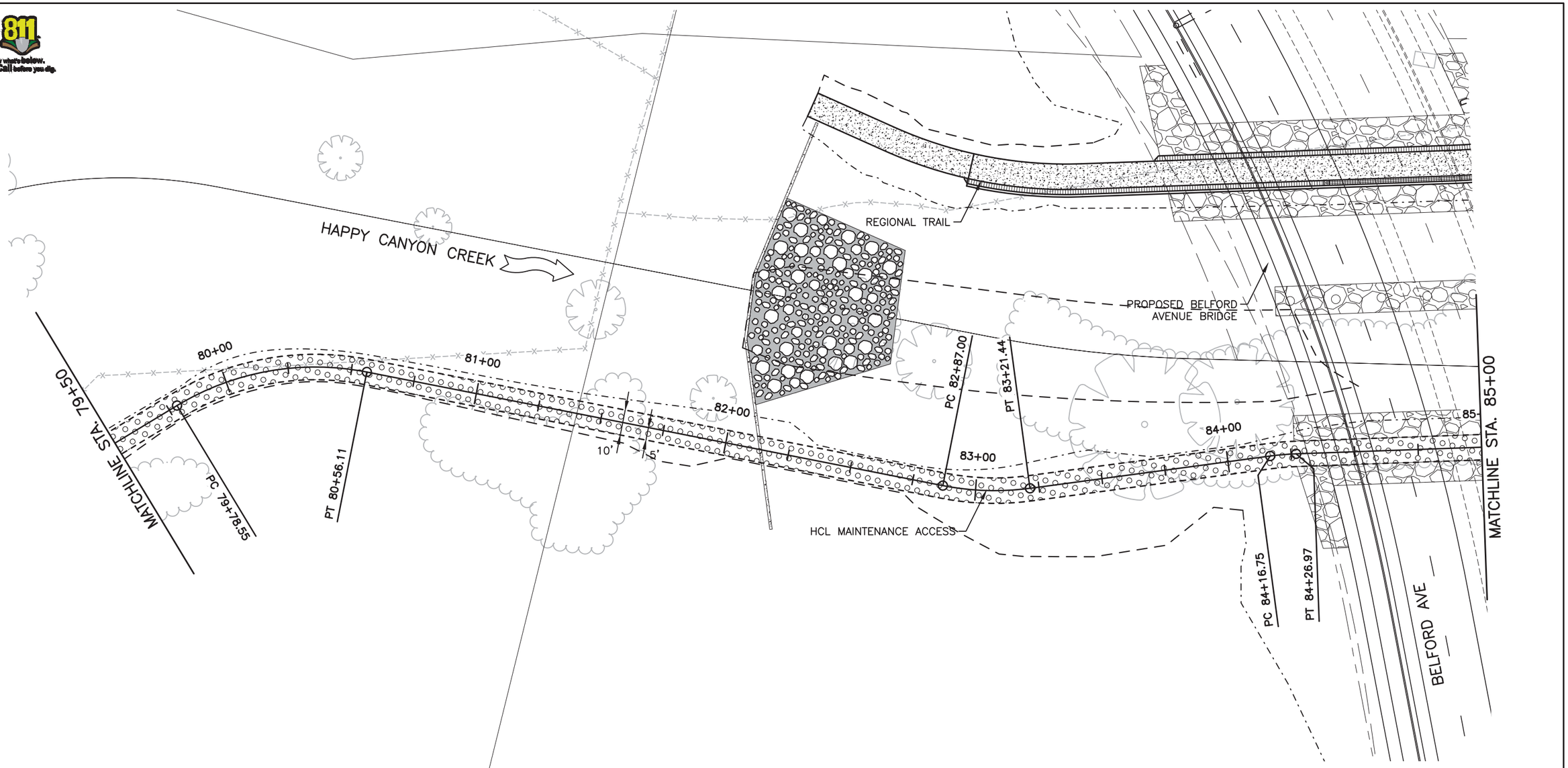
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Sheet Number 23

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LEGEND

- – – – – TOP OF CUT
- -·-·-·-·- TOE OF FILL
- LIMITS OF AGGREGATE BASE COURSE (CLASS 6)(6 INCH)

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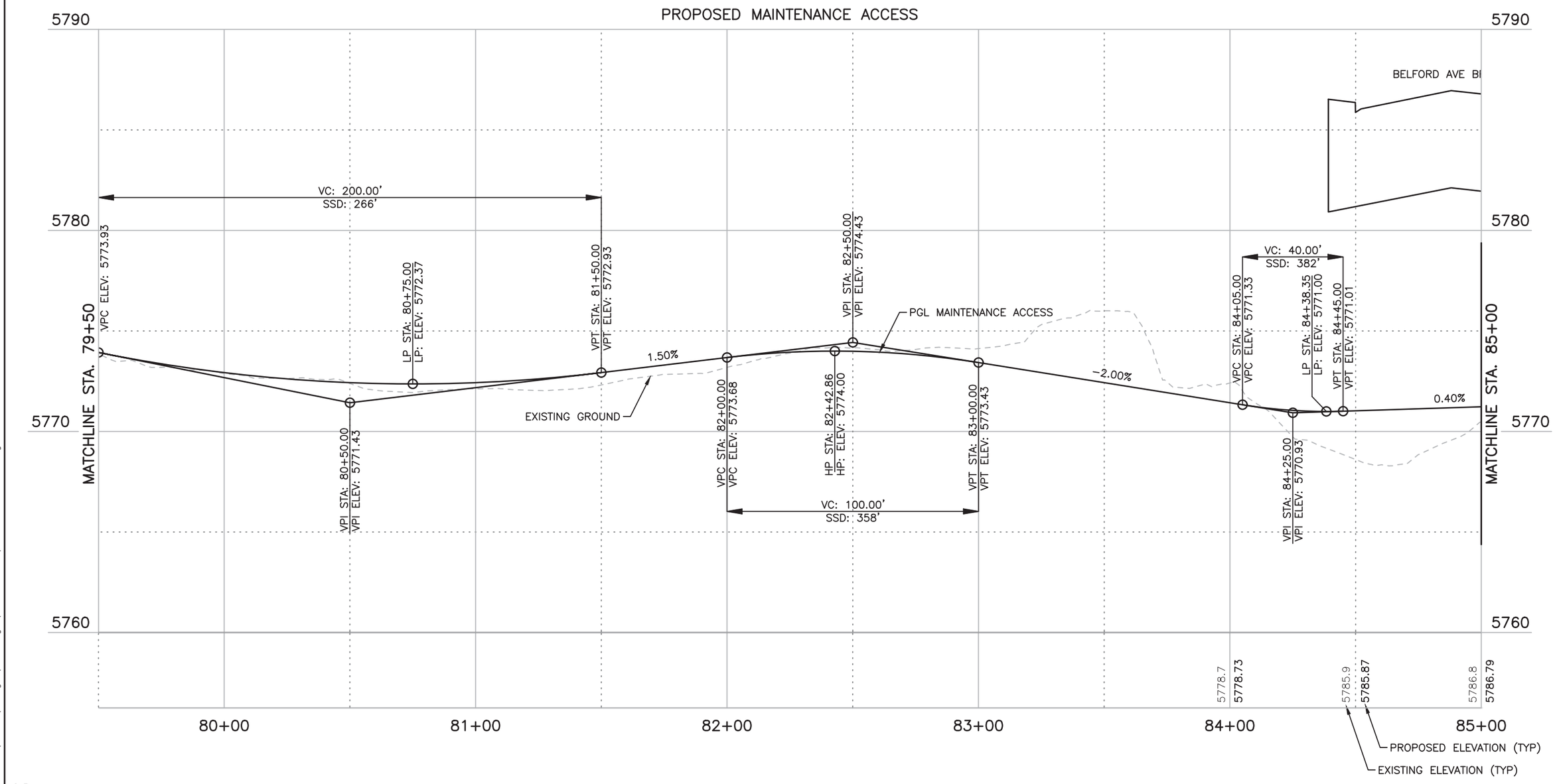
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Project No./Code

Sheet Number 25

Know what's below. Call before you dig.

REGIONAL TRAIL

PROPOSED BELFORD AVENUE BRIDGE

MATCHLINE STA. 85+00

HCL CHEROKEE TRAIL

CHEROKEE TRAIL (SEE TP-3)

HAPPY CANYON CREEK

PC 85+32.25

PCC 85+42.15

PRC 86+13.87

86+00

87+00

88+00

10'

5'

BELFORD AVE

HCL MAINTENANCE ACCESS

PT 51+50.00

52+00

PT 88+53.21

PCC 88+41.23

53+00

END CONSTRUCTION MAINTENANCE ACCESS STA. 88+51.74

89+00

54+50

54+00

PT 54+26.80

PC 53+65.80

PCC 53+77.99

W

SS

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LEGEND

- TOP OF CUT
- TOE OF FILL
- LIMITS OF AGGREGATE BASE COURSE (CLASS 6)(6 INCH)

N

HORIZONTAL SCALE: 1"=40'

0 20 40 80

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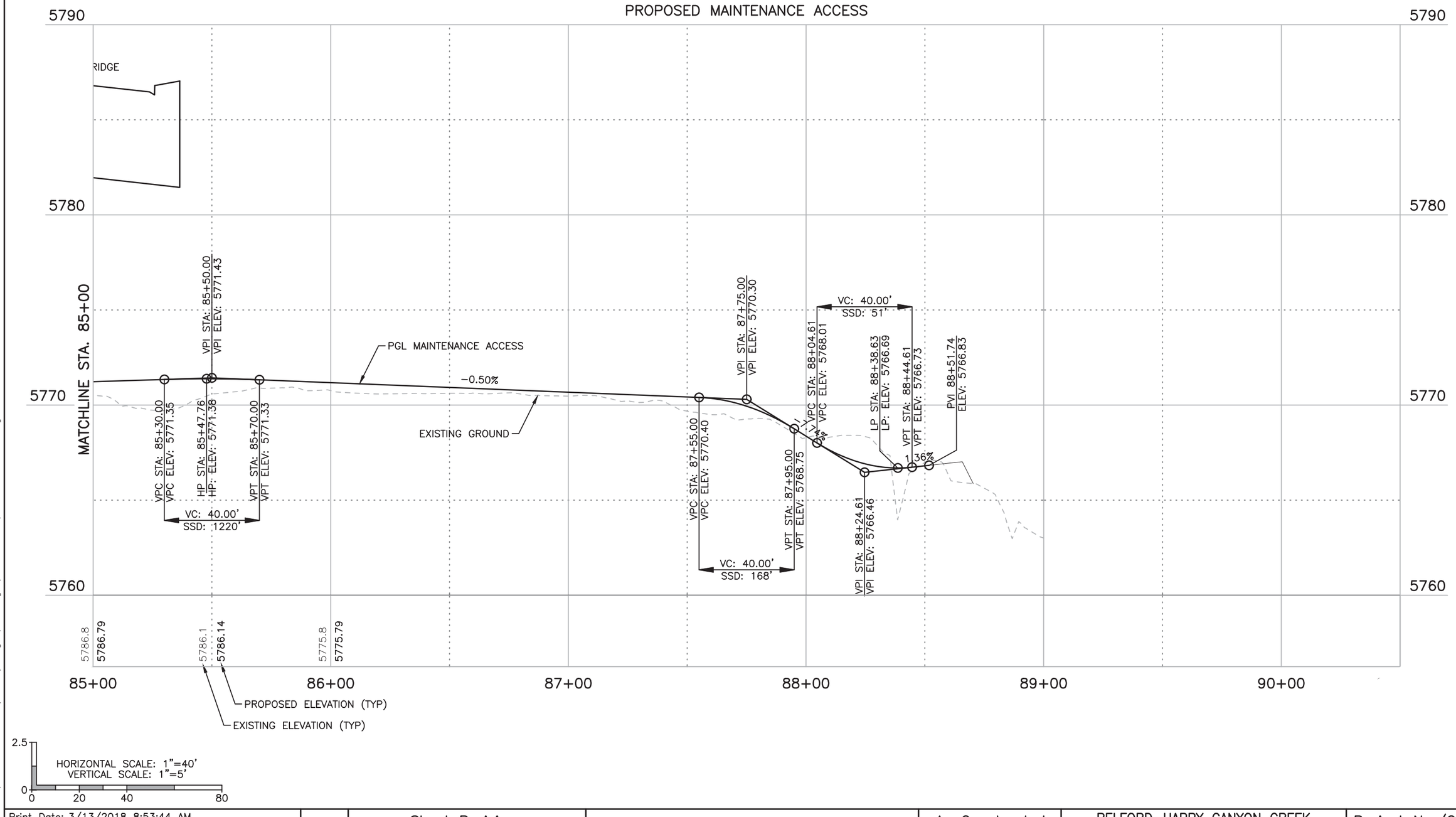
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Sheet Number 26

PROPOSED MAINTENANCE ACCESS



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Subset:	Trail	Sheets:	TP–12 of 12

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Sheet Number 27

GENERAL NOTES

ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE COLORADO DEPARTMENT OF TRANSPORTATION (CDOT) STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2017 EDITION (RED BOOK), 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 ¾" CHAMFERS, UNLESS OTHERWISE NOTED

STRUCTURAL STEEL PILING SHALL BE AASHTO M270 (ASTM A–572) GRADE 50. ALL OTHER 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.

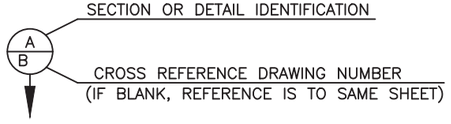
ALL THE PROVISIONS FOR BRIDGE DECK CONCRETE SHALL ALSO APPLY TO APPROACH SLAB CONCRETE.

THE DECK AND GIRDER DESIGN ASSUMES THE BRIDGE DECK CONCRETE CAN A SHALL BE PLACED IN A CONTINUOUS UNINTERRUPTED SEQUENCE. THE BRIDGE DECK GEOMETRY AND GIRDER DEFLECTIONS REFLECT THIS ASSUMPTION.

THE FOLLOWING TABLE GIVES THE MINIMUM CLASS B LAP SPLICE LENGTH FOR EPOXY COATED REINFORCING BARS PLACED IN ACCORDANCE WITH SUBSECTION 602.06. THESE SPLICE LENGTHS SHALL BE INCREASED BY 25% FOR BARS SPACED AT LESS THAN 6" ON CENTER.

BAR SIZE	#4	#5	#6	#7	#8	#9	#10	#11
SPLICE LENGTH FOR CLASS D CONCRETE	1'–3"	1'–7"	2'–5"	2'–10"	3'–8"	4'–8"	5'–11"	7'–3"

WHEN THE CONTRACTOR ELECTS TO SUBSTITUTE EPOXY COATED REINFORCEMENT FOR BLACK REINFORCING BARS, THE MINIMUM LAP SPLICE SHALL BE AS DESCRIBED ABOVE.



THE FOLLOWING TABLE GIVES THE MINIMUM CLASS B LAP SPLICE LENGTH FOR BLACK REINFORCING BARS PLACED IN ACCORDANCE WITH SUBSECTION 602.06. THESE SPLICE LENGTHS SHALL BE INCREASED BY 25% FOR BARS SPACED AT LESS THAN 6" ON CENTER.

BAR SIZE	#4	#5	#6	#7	#8	#9	#10	#11
SPLICE LENGTH FOR CLASS D CONCRETE	1'–1"	1'–4"	1'–7"	1'–11"	2'–6"	3'–1"	3'–11"	4'–10"

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

NO EXISTING UTILITIES ARE 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, SEVENTH EDITION LRFD WITH 2016 INTERIMS

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 Fy = 36,000 psi

PRESTRESSED CONCRETE: CLASS PS CONCRETE f'c = (SEE DETAILS)
f's = 270,000 psi

BRIDGE DESCRIPTION

TWO SPAN (77'–2 ½" / 77'–2 ½") 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, EDGE OF SIDEWALK TO EDGE OF SIDEWALK (ULTIMATE)
8'–6" SIDEWALKS

INDEX OF DRAWINGS

B1 GENERAL INFORMATION
B2 SUMMARY OF QUANTITIES
B3 GENERAL LAYOUT (1 OF 2)
B4 GENERAL LAYOUT (2 OF 2)
B5 ENGINEERING GEOLOGY
B6 BRIDGE HYDRAULIC INFORMATION (1 OF 2)
B7 BRIDGE HYDRAULIC INFORMATION (2 OF 2)
B8 CONSTRUCTION LAYOUT (1 OF 2)
B9 CONSTRUCTION LAYOUT (2 OF 2)
B10 CAISSON LAYOUT
B11 CAISSON DETAILS
B12 ABUTMENT 1 PLAN & ELEVATION
B13 ABUTMENT 3 PLAN & ELEVATION
B14 ABUTMENT SECTIONS & DETAILS
B15 WINGWALL DETAILS
B16 TEMPORARY BACKWALL DETAILS
B17 PIER 2 PLAN & ELEVATION
B18 PIER 2 SECTIONS & DETAILS
B19 PROPOSED SUPERSTRUCTURE SECTION
B20 FUTURE SUPERSTRUCTURE SECTION
B21 DECK REINFORCING PLAN
B22 PRECAST CONCRETE I GIRDER
B23 GIRDER DIAPHRAGM DETAILS
B24 OPTIONAL PRECAST PANEL DECK FORM (1 OF 2)
B25 OPTIONAL PRECAST PANEL DECK FORM (2 OF 2)
B26 PENDANT LUMINAIRE DETAILS
B27 BRIDGE RAIL (SPECIAL) DETAILS
B28 BRIDGE RAIL ELEVATION & PEDESTRIAN RAILING DETAILS
B29 BRIDGE RAIL TYPE 10 (1 OF 2)
B30 BRIDGE RAIL TYPE 10 (2 OF 2)
B31 APPROACH SLAB DETAILS
B32 APPROACH SLAB INLET DETAILS
B33 STRUCTURAL BACKFILL
B34 INTERIM ABUTMENT BACKFILL
B35 DECK GEOMETRY (1 OF 3)
B36 DECK GEOMETRY (2 OF 3)
B37 DECK GEOMETRY (3 OF 3)

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 GEARS (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

SPECTURAL RESPONSE ACCELERATIONS:
$A_S = F_{PGA} \times PGA$, $S_{DS} = F_A S_S$ AND $S_{D1} = F_V S$
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_{DS} – 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)

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Void:

BELFORD–HAPPY CANYON CREEK BRIDGE
GENERAL INFORMATION

Designer: J. LYNCH
Detailer: C. MIYAMOTO
Subset: BRIDGE
Structure Numbers:
Sheets: B01 of 37

Project No./Code

Sheet Number 28

SUMMARY OF QUANTITIES (PROPOSED SECTION)

ITEM NO.	DESCRIPTION	UNIT	SUPER–SUPERSTRUCTURE	ABUTMENT 1	PIER 2	ABUTMENT 3	APPROACH SLABS	TOTALS
206	STRUCTURE EXCAVATION	CY		210	88	60		358
206	STRUCTURE BACKFILL (CLASS 1)	CY		748	80	867		1,695
206	STRUCTURE BACKFILL (CLASS 2)	CY		222		214		436
206	MECHANICAL REINFORCEMENT OF SOIL	CY		588		701		1,289
206	FILTER MATERIAL (CLASS A)	CY		189	42	166		397
403	HOT MIX ASPHALT (GRADING ??)	TON	110				7	117
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
515	WATERPROOFING (MEMBRANE)	SY	650				239	889
515	CONCRETE SEALER	SY	137				35	172
519	MANUFACTURED STONE VENEER	SF	785				149	934
601	CONCRETE CLASS D (BRIDGE)	CY	303	112	96	128	94	733
601	STRUCTURAL CONCRETE COATING	SY	670	130	182	133	49	1,164
602	REINFORCING STEEL	LB					10,084	10,084
602	REINFORCING STEEL (EPOXY COATED)	LB	88,604	19,232	29,755	20,235	4,459	162,285
603	18 INCH REINFORCED CONCRETE PIPE	LF		20				20
604	VANE GRATE INLET (SPECIAL)	EA		1				1
606	BRIDGE RAIL (SPECIAL)	LF	158				41	199
606	BRIDGE RAIL TYPE 10	LF	158				41	199
607	FENCE CHAIN LINK (48 INCH)	LF		56		56		112
613	1 INCH ELECTRICAL CONDUIT	LF	39					39
613	2 INCH ELECTRICAL CONDUIT	LF	316				108	424
613	LUMINAIRE (SPECIAL)	EA	3					3
618	PRESTRESSSED CONCRETE I (BT42)	LF	927					927

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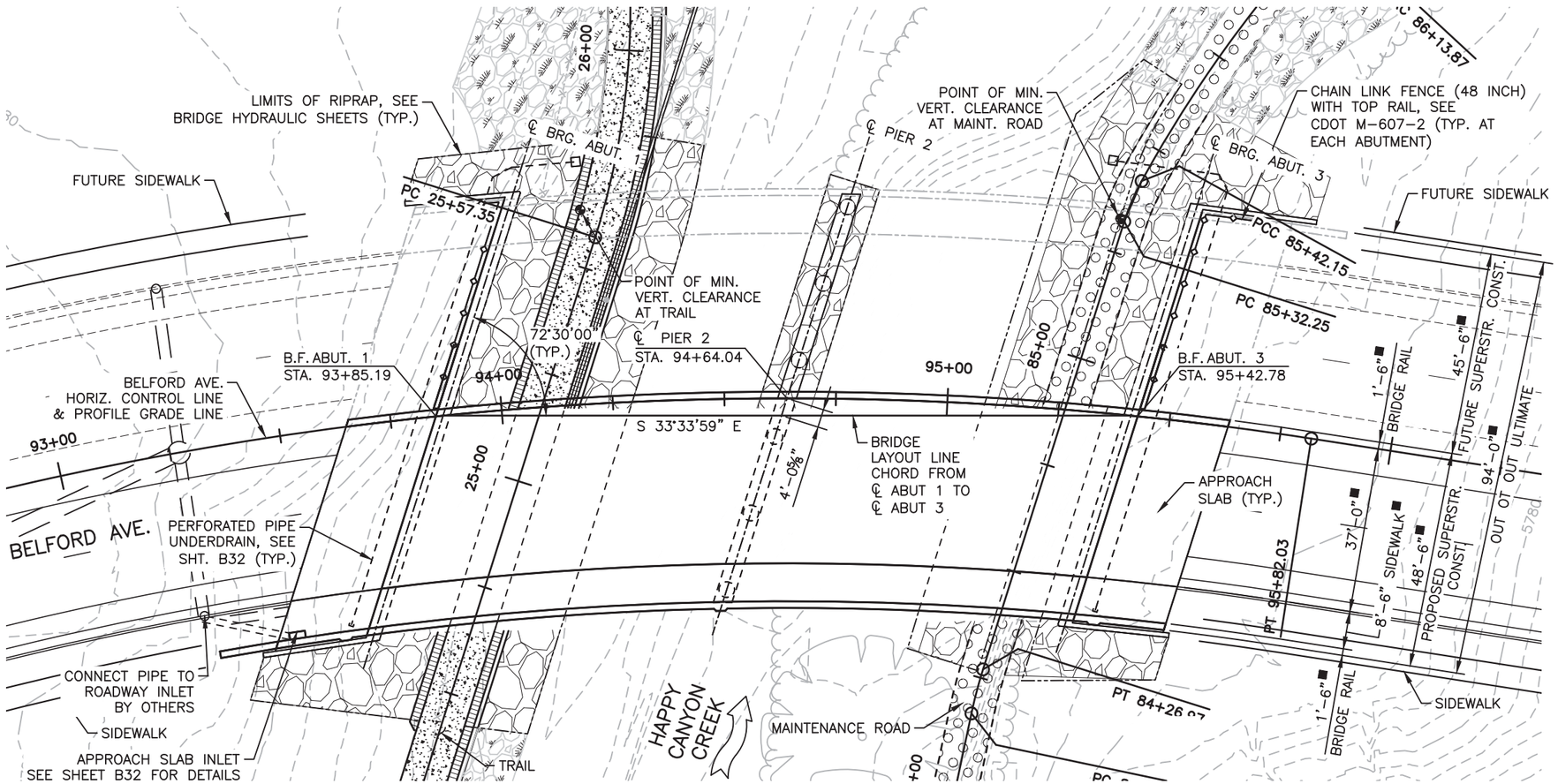
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Revised:
Void:

BELFORD–HAPPY CANYON CREEK BRIDGE
SUMMARY OF QUANTITIES

Designer: J. LYNCH
Detailer: R. DILLON
Subset: BRIDGE
Structure Numbers:
Sheets: B2 of 37

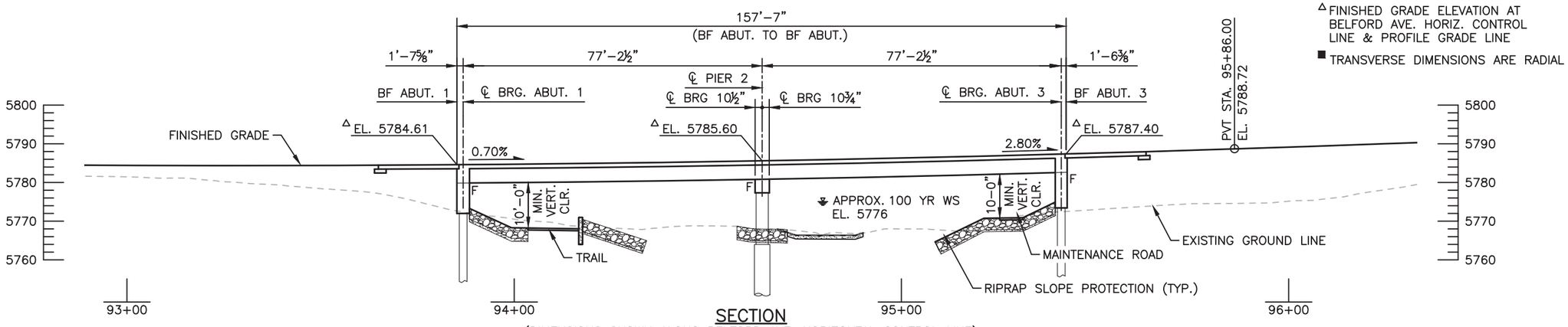
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Sheet Number 29



BELFORD AVE. HCL CURVE DATA
△ = 105°24'14"
D_c = 07°26'28"
R = 770.00'
L = 1416.53'
T = 1010.84'
PI STA. = 91+76.34

PLAN
(ULTIMATE ROADWAY SHOWN)



SECTION
(DIMENSIONS SHOWN ALONG BELFORD AVE. HORIZONTAL CONTROL LINE)

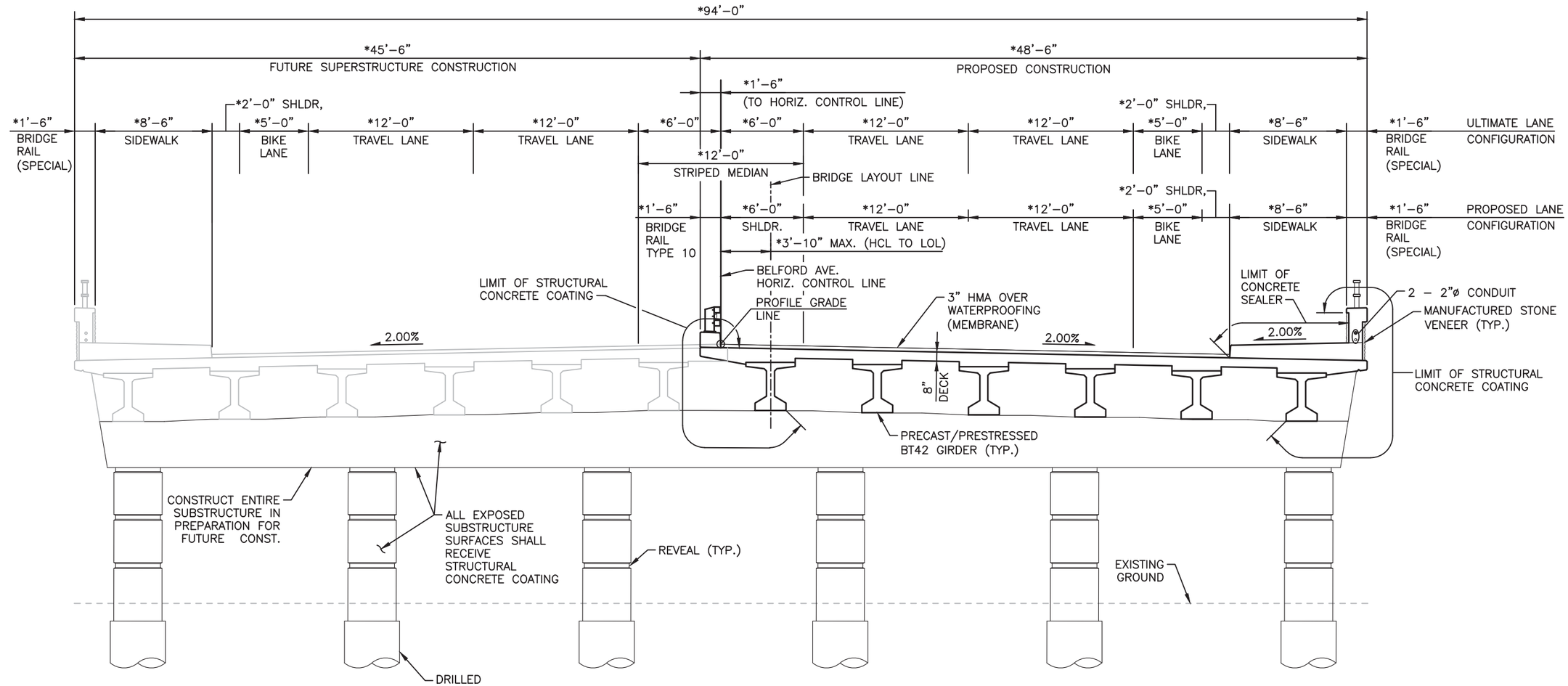
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			Structure Numbers:
			Sheets: B3 of 37

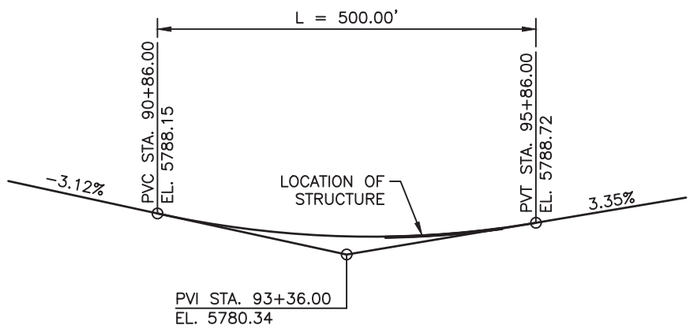
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Sheet Number 30



TYPICAL SECTION
(LOOKING UPSTATION)



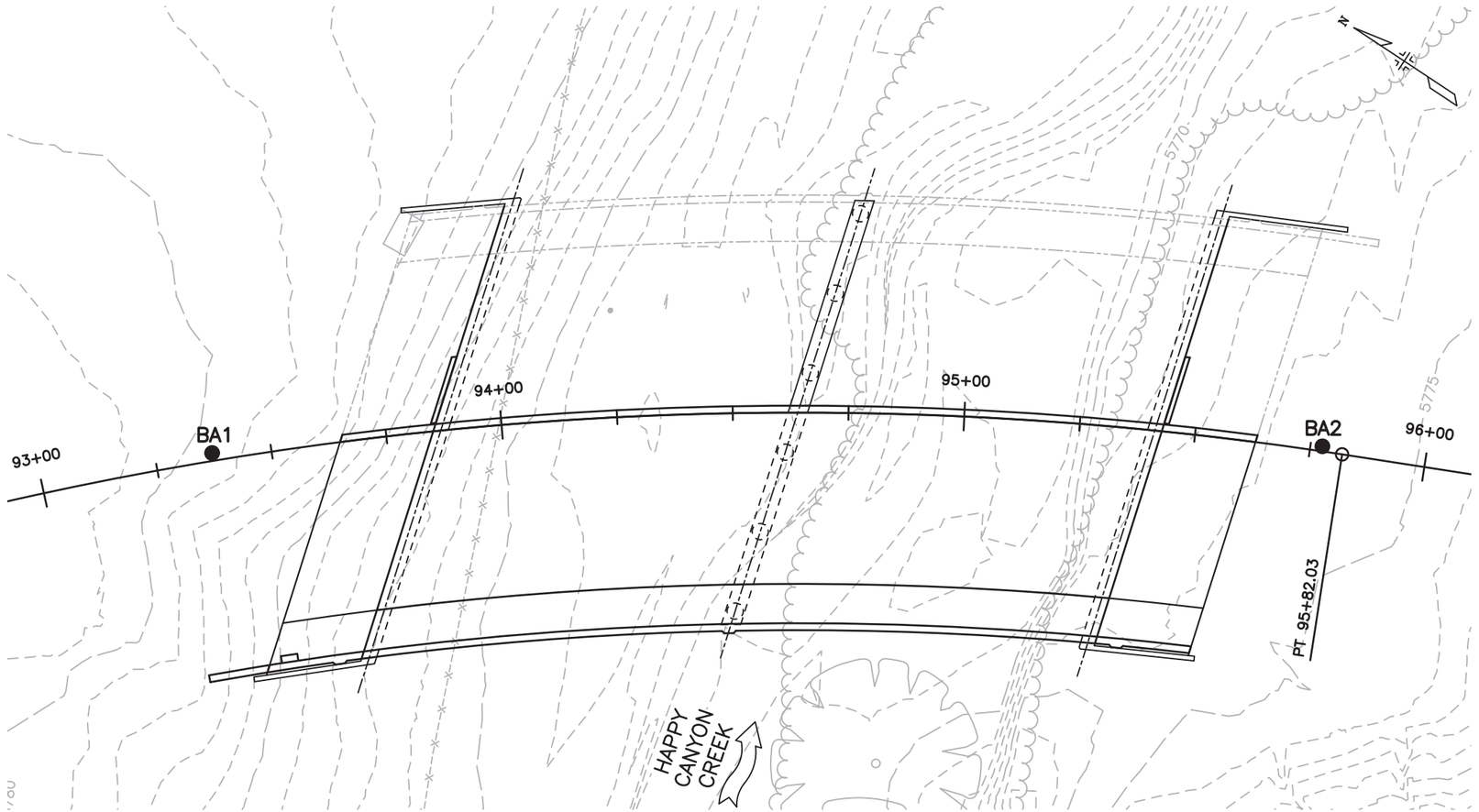
PROFILE GRADE

* TRANSVERSE DIMENSIONS ARE RADIAL.

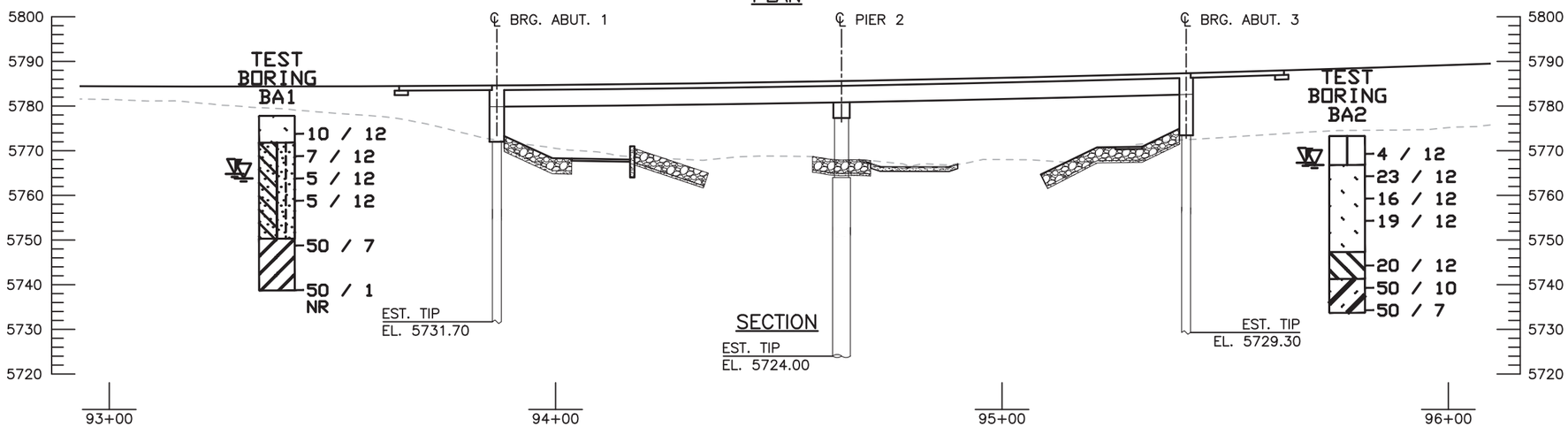
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					Subset: BRIDGE / Sheets: B4 of 37	Sheet Number 31

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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 Consultants

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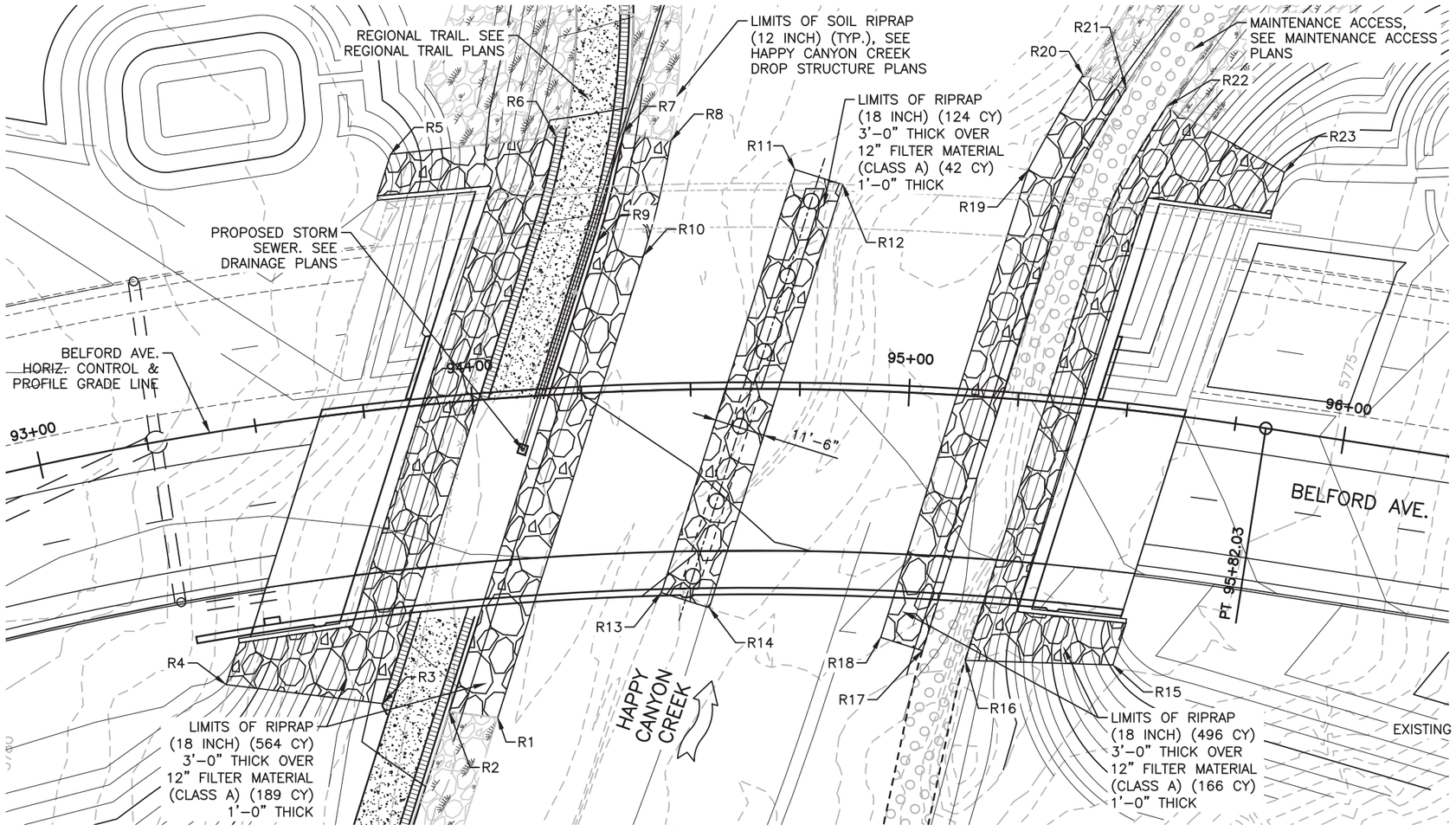
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BELFORD–HAPPY CANYON CREEK BRIDGE
ENGINEERING
GEOLOGY

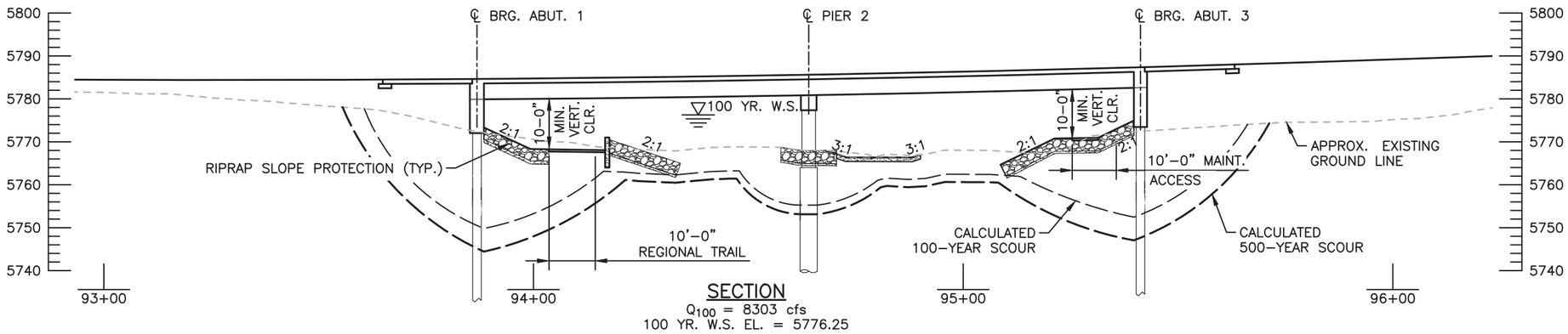
Designer:	A.McDaniels	Structure Numbers	
Detailer:	V.Miranda		
Subset:	BRIDGE	Sheets:	B5 of 37

Project No./Code

Sheet Number 32



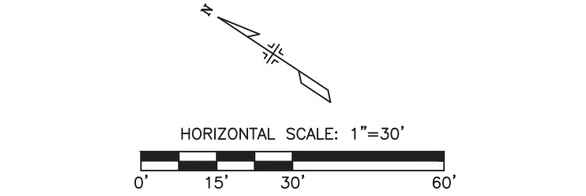
PLAN



SECTION

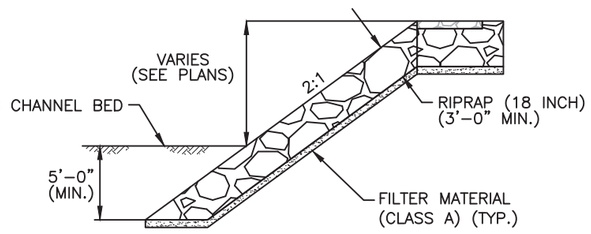
Q_{100} = 8303 cfs

100 YR. W.S. EL. = 5776.25



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	Structure Numbers	
Detailer:	R. DILLON		
Subset:	BRIDGE	Sheets:	B6 of 37

Project No./Code

Sheet Number 33

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 ____

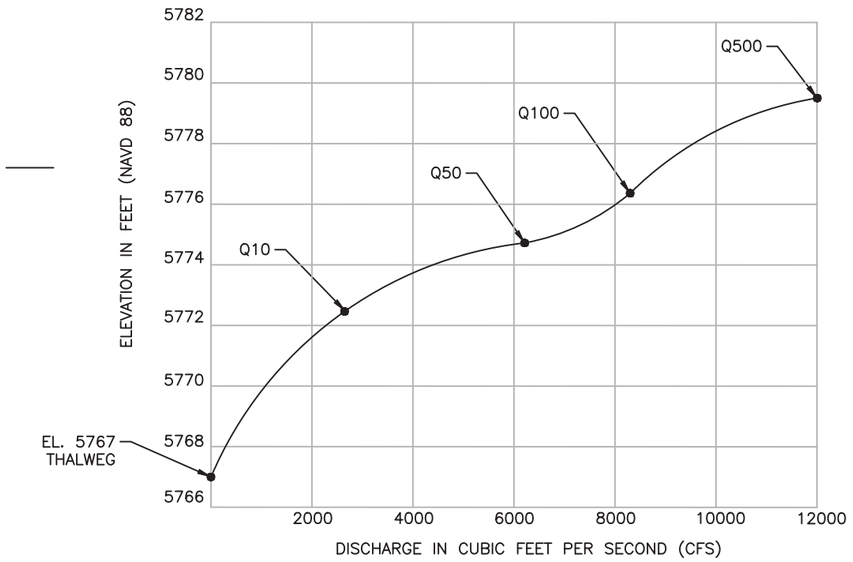
COMPARISON HYDRAULICS (100 YEAR EVENT)

(AT SECTION LOCATED 32 FEET UPSTREAM OF BRIDGE)

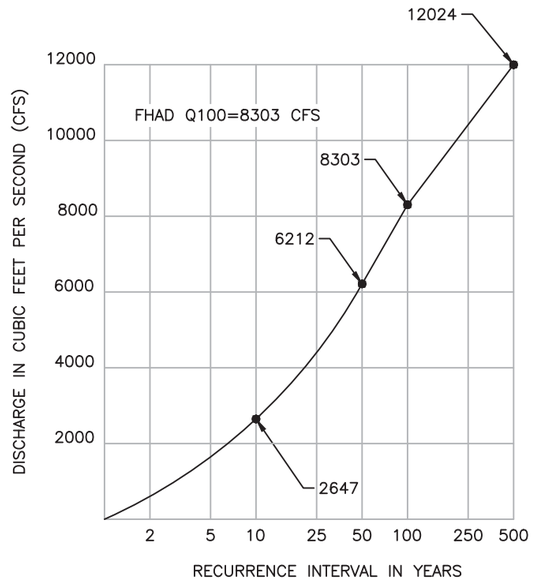
	VELOCITY (FT./SEC)		WS EL. (FT.)	MAX. BACKWATER (FT.)	FROUDE NO.
	AVERAGE	CHANNEL			
EXISTING CONDITIONS	9.90	13.70	5775.53	–	0.90
PROPOSED CONDITIONS	8.19	10.21	5776.35	–	0.63

HYDRAULIC DATA

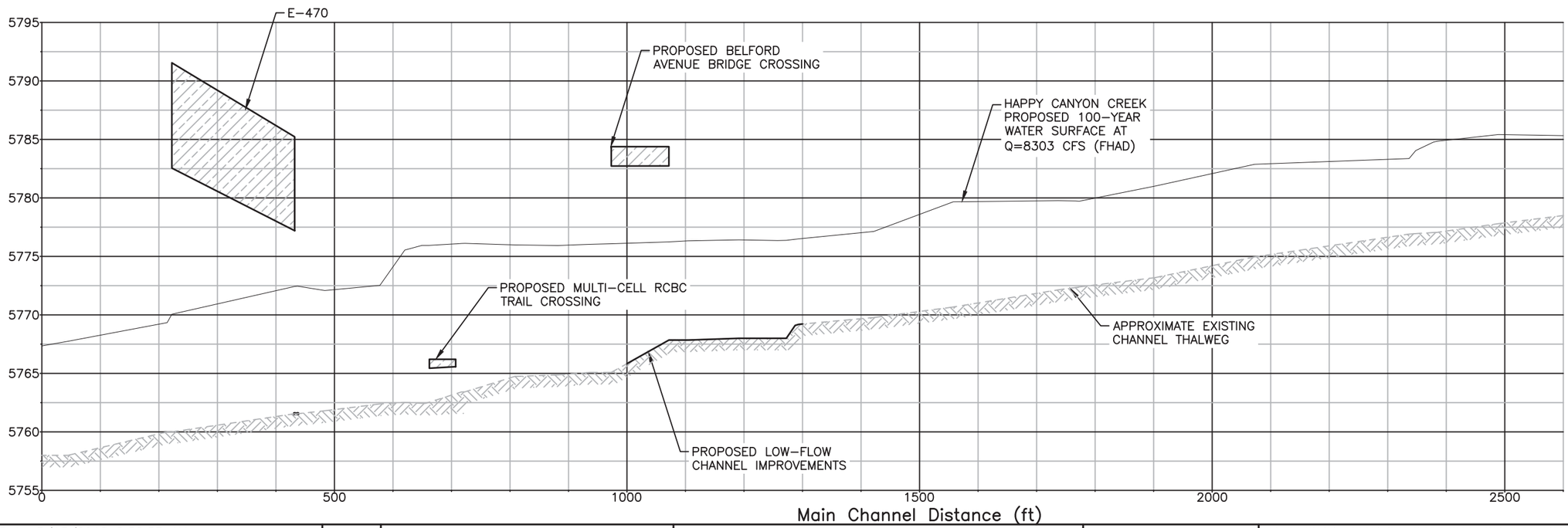
LOCATION	LOW CHORD ELEVATION AT ABUT. FRONT FACE		100–YEAR WATER SURFACE ELEVATION
	ABUT. 1	ABUT. 2	
S. SIDE (UPSTREAM)	5780.07	5782.73	5776.25
N. SIDE (DOWNSTREAM)	5780.07	5782.73	5776.10



STAGE–DISCHARGE CURVE AT UPSTREAM FACE OF BELFORD AVENUE



DISCHARGE–FREQUENCY CURVE



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BELFORD–HAPPY CANYON CREEK BRIDGE
BRIDGE HYDRAULIC INFORMATION
(2 OF 2)

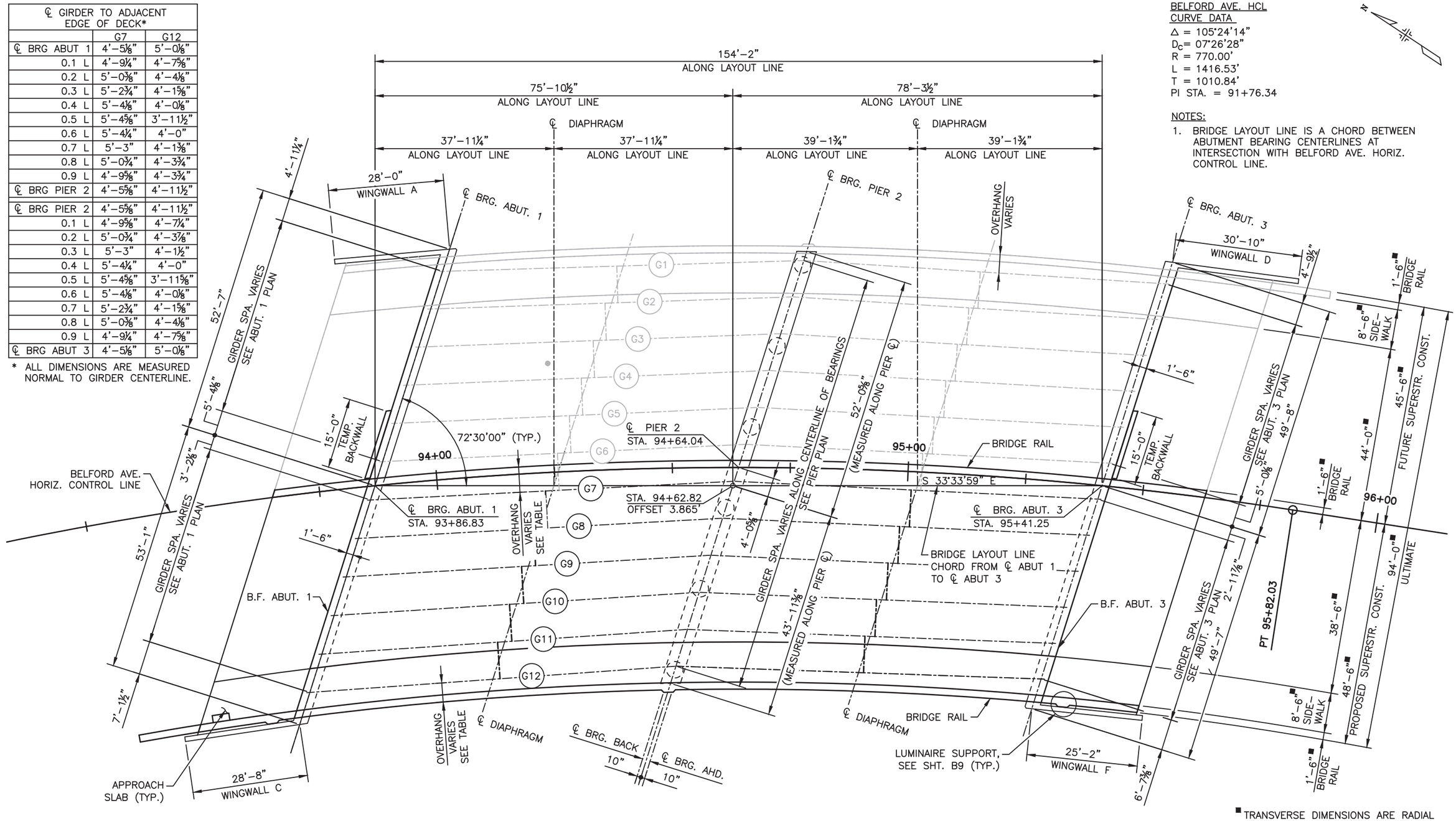
Designer:	C. TWISS	Structure Numbers	
Detailer:	K. TURNER		
Subset:	BRIDGE	Sheets:	B7 of 37

Project No./Code

Sheet Number 34

℄ GIRDER TO ADJACENT EDGE OF DECK*		
	G7	G12
℄ BRG ABUT 1	4'–5⅛"	5'–0⅛"
0.1 L	4'–9¼"	4'–7⅝"
0.2 L	5'–0⅜"	4'–4⅛"
0.3 L	5'–2¾"	4'–1⅝"
0.4 L	5'–4⅛"	4'–0⅛"
0.5 L	5'–4⅝"	3'–11½"
0.6 L	5'–4¼"	4'–0"
0.7 L	5'–3"	4'–1⅜"
0.8 L	5'–0¾"	4'–3¾"
0.9 L	4'–9⅝"	4'–3¾"
℄ BRG PIER 2	4'–5⅝"	4'–11½"
℄ BRG PIER 2	4'–5⅝"	4'–11½"
0.1 L	4'–9⅝"	4'–7¼"
0.2 L	5'–0¾"	4'–3⅞"
0.3 L	5'–3"	4'–1½"
0.4 L	5'–4¼"	4'–0"
0.5 L	5'–4⅝"	3'–11⅝"
0.6 L	5'–4⅛"	4'–0⅛"
0.7 L	5'–2¾"	4'–1⅝"
0.8 L	5'–0⅜"	4'–4⅛"
0.9 L	4'–9¼"	4'–7⅝"
℄ BRG ABUT 3	4'–5⅛"	5'–0⅛"

* ALL DIMENSIONS ARE MEASURED NORMAL TO GIRDER CENTERLINE.



BELFORD AVE. HCL
CURVE DATA
Δ = 105°24'14"
D_c = 07°26'28"
R = 770.00'
L = 1416.53'
T = 1010.84'
PI STA. = 91+76.34

NOTES:

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

■ TRANSVERSE DIMENSIONS ARE RADIAL

CONSTRUCTION LAYOUT

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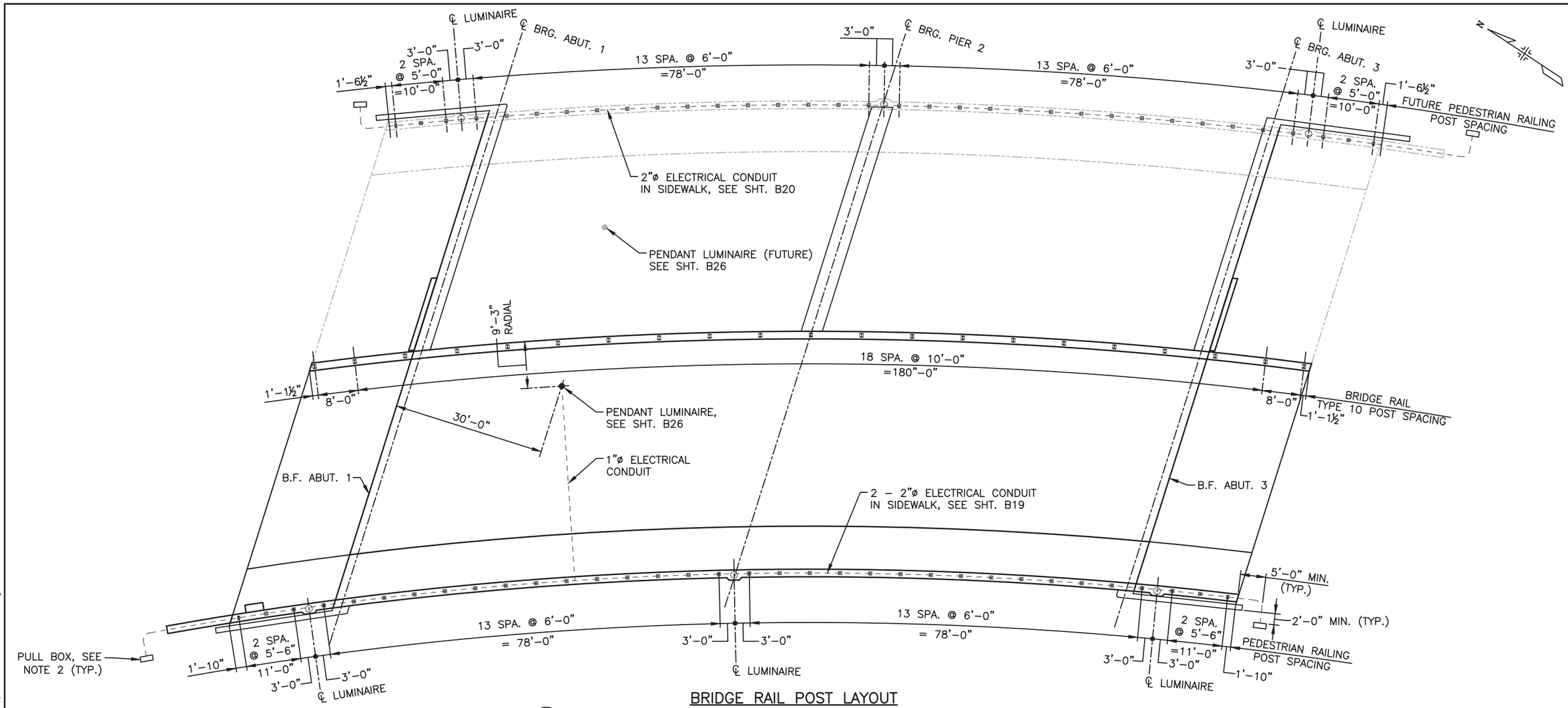
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Revised:
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BELFORD–HAPPY CANYON CREEK BRIDGE CONSTRUCTION LAYOUT

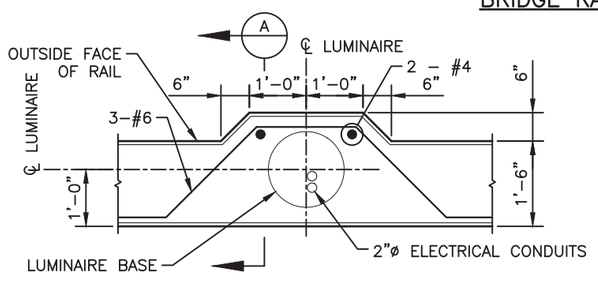
Designer: J. LYNCH
Detailer: C. MIYAMOTO
Subset: BRIDGE
Structure Numbers:
Sheets: B8 of 37

Project No./Code

Sheet Number 35

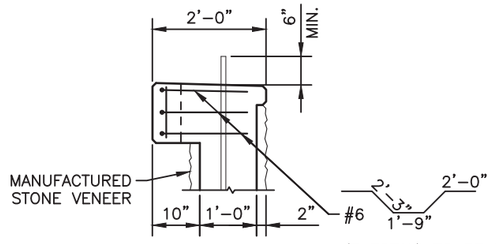


BRIDGE RAIL POST LAYOUT



PLAN–LUMINAIRE SUPPORT DETAIL

ANCHOR BOLTS FOR LUMINAIRES TO BE PROVIDED
AND PLACED PER LUMINAIRE MANUFACTURERS DRAWINGS



SECTION A

(3 TOTAL) TO BE INCLUDED
IN THE COST OF BRIDGE
RAIL (SPECIAL)

NOTES:

1. TYPICAL BRIDGE RAIL REINF. NOT SHOWN, SEE SHT. B27.
2. PULL BOXES WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF ITEM 613 – 2 INCH ELECTRICAL CONDUIT. SEE CDOT M–613–1, SHT. NO. 4 OF 4 FOR TYPICAL DETAIL AND NOTES.

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BELFORD–HAPPY CANYON CREEK BRIDGE
CONSTRUCTION LAYOUT (2 OF 2)

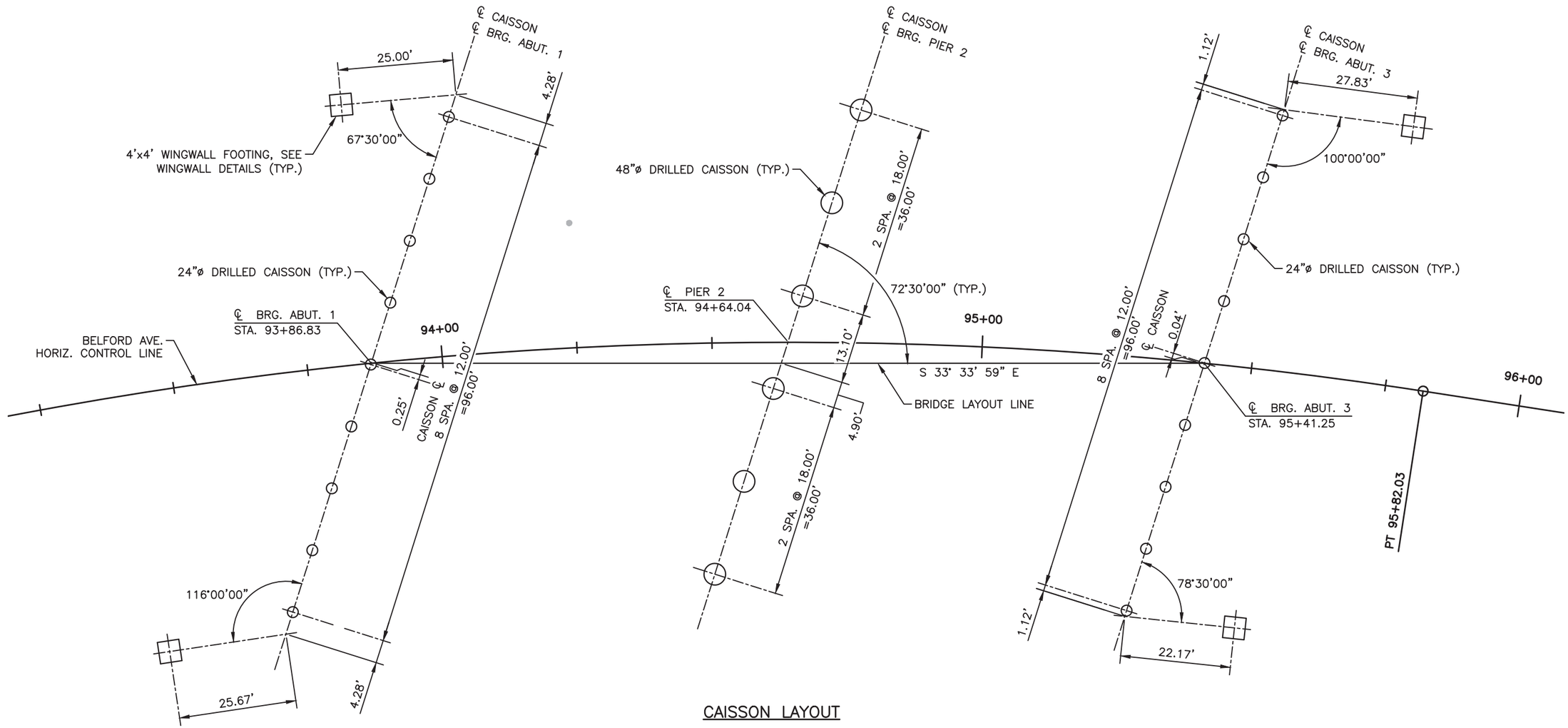
Designer: J. LYNCH
Detailer: C. MIYAMOTO
Subset: BRIDGE
Structure Numbers
Sheets: B9 of 37

Project No./Code

Sheet Number 36

Know what's below. Call before you dig.

BELFORD AVE. HCL
CURVE DATA
Δ = 105°24'14"
D_c = 07°26'28"
R = 770.00'
L = 1416.53'
T = 1010.84'
PI STA. = 91+76.34



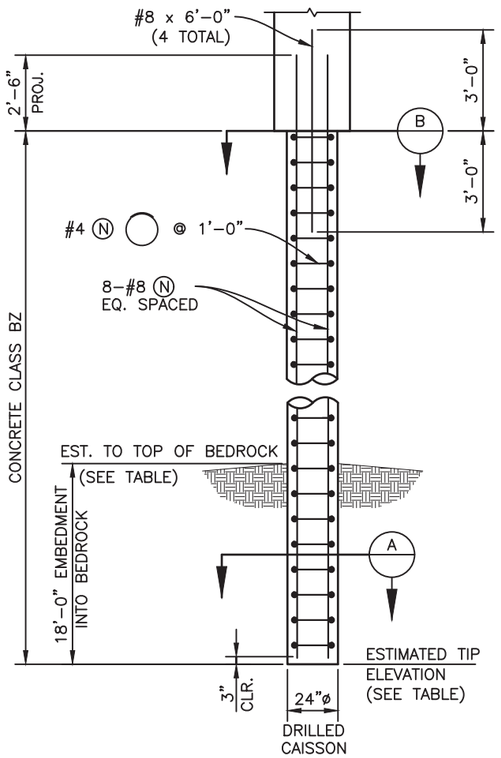
CAISSON LAYOUT

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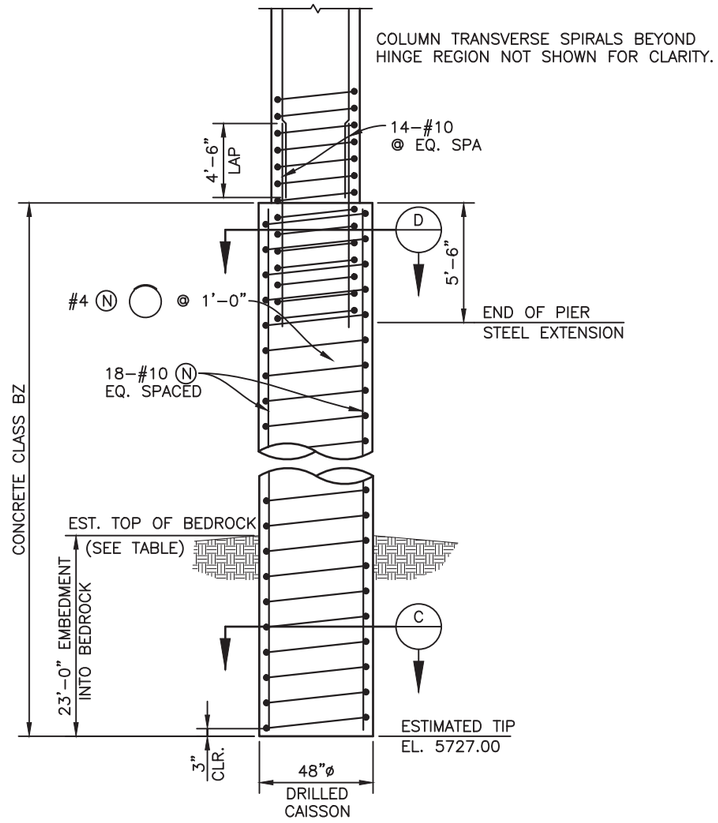
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No Revisions:				
Revised:	Designer: J. LYNCH	Structure Numbers		
Void:	Detailer: R. DILLON			
	Subset: BRIDGE	Sheets: B10 of 37		Sheet Number 37



24" CAISSON DETAIL



48" CAISSON DETAIL

	MAX. LOAD (service) (kips)	MAX. LOAD (factored) (kips)	TOP OF CAISSON ELEVATION	EST. TOP OF BEDROCK ELEVATION	EST. TIP ELEVATION
ABUTMENT 1	239	445	5771.64	5749.80	5731.70
PIER 2	510	1013	5764.00	5747.00	5724.00
ABUTMENT 3	239	445	5772.94	5747.30	5729.30

CAISSON NOTES:

1. CAISSONS SHALL EXTEND AT LEAST TO THE ESTIMATED TIP ELEVATION. CAISSONS SHALL BE FURTHER ADVANCED INTO HE 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.
2. TOP OF HARD BEDROCK ELEVATION SHALL BE VERIFIED AT TIME OF CONSTRUCTION BY THE ENGINEER.
3. 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 CASISSON (48 INCH).
4. EXPANSION JOINT MATERIAL SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN ITEM 503 – DRILLED CAISSON (24 INCH).

DESIGN DATA:

CAISSONS AND PILES ARE DESIGNED PER AASHTO LRFD

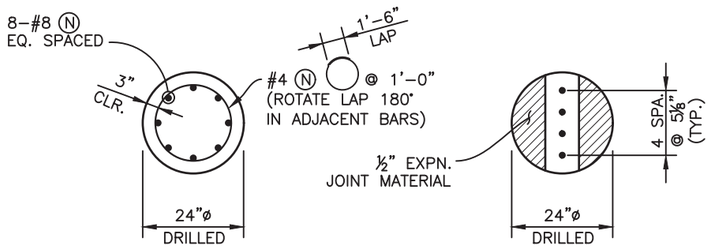
CAISSONS:

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.



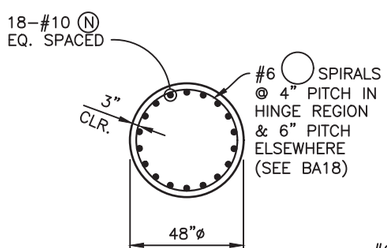
TYPICAL SECTION

SECTION (A)

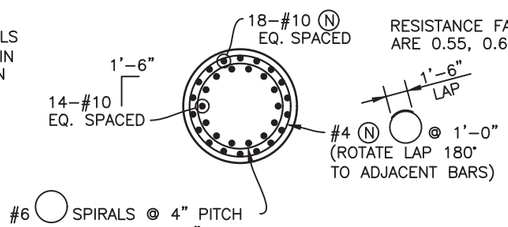
TOP CAISSON

SECTION (B)

ABUTMENT CAISSON DETAILS



SECTION (C)



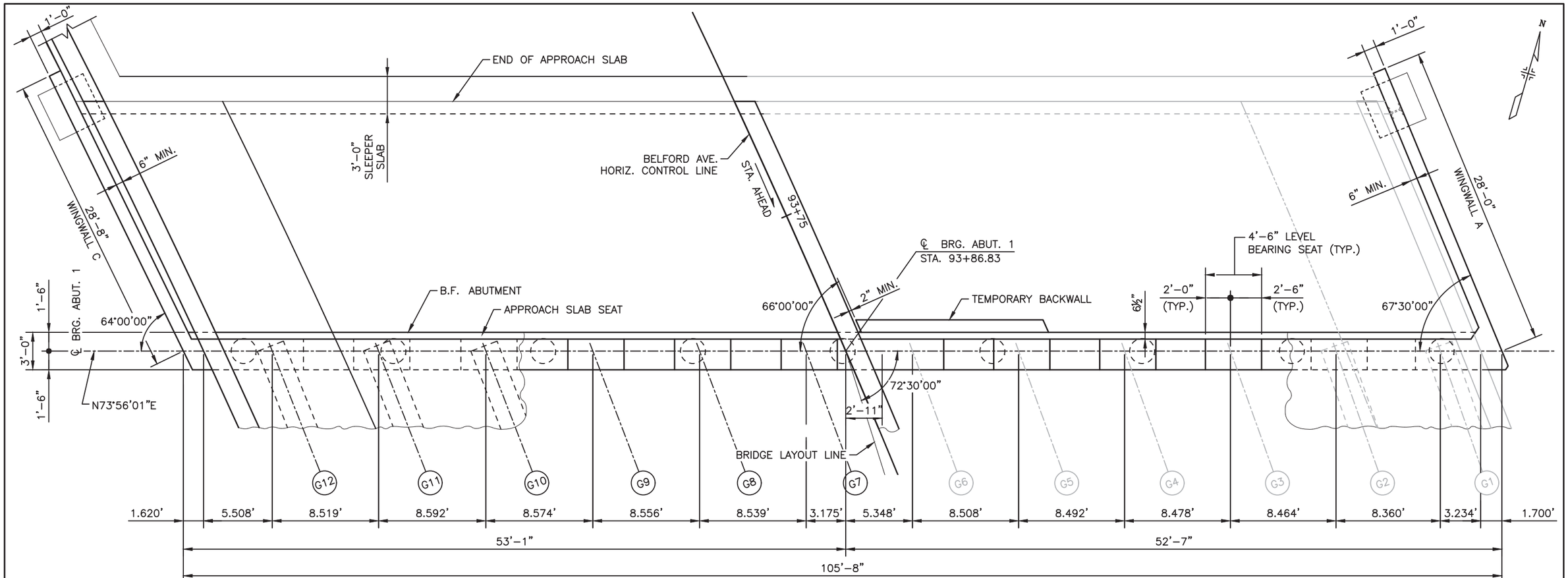
SECTION (D)

PIER CAISSON SECTION

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						Subset: BRIDGE	Sheets: B11 of 37		Sheet Number 38

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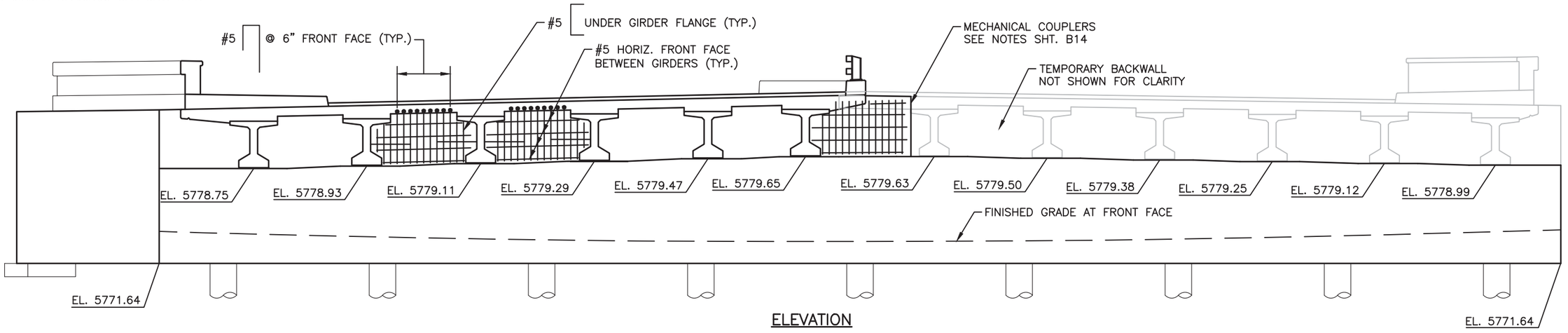
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PLAN

NOTE:

FOR GIRDER BEARINGS SEE SHT. B14.



ELEVATION

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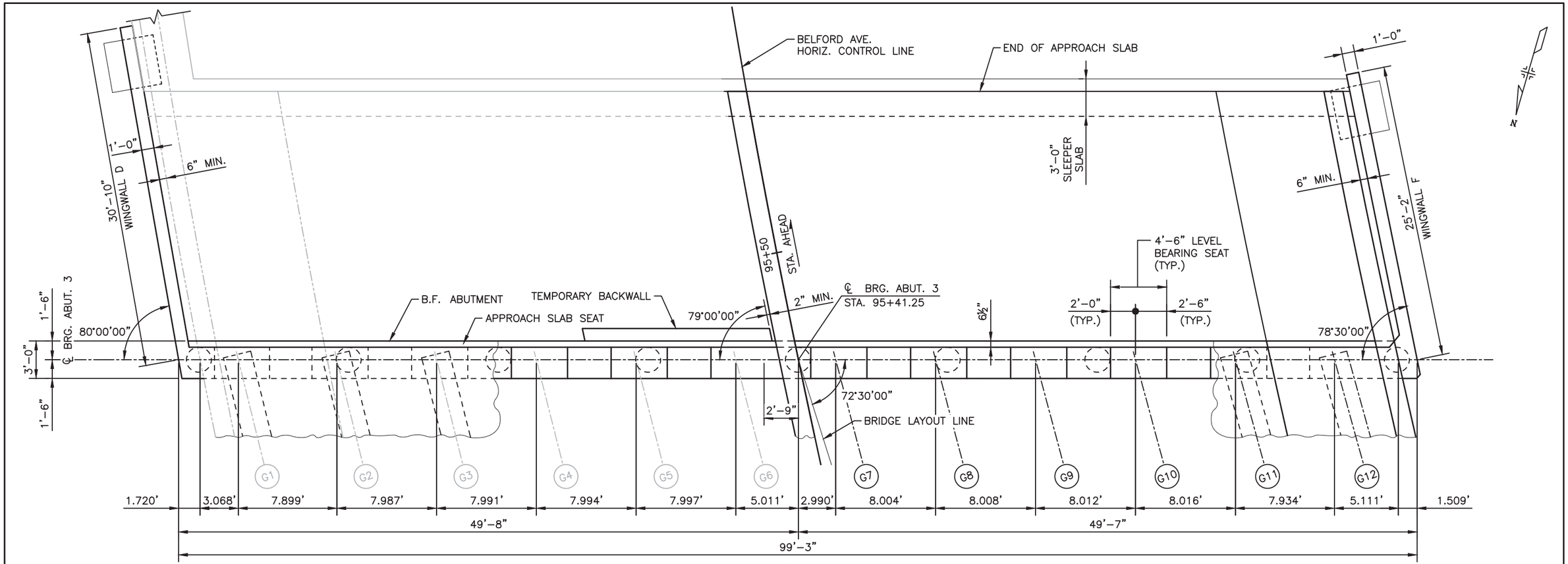
BELFORD–HAPPY CANYON CREEK BRIDGE
ABUTMENT 1
PLAN & ELEVATION

Designer:	J. LYNCH	Structure Numbers	
Detailer:	R. DILLON		
Subset:	BRIDGE	Sheets:	B12 of 37

Project No./Code

Sheet Number 39

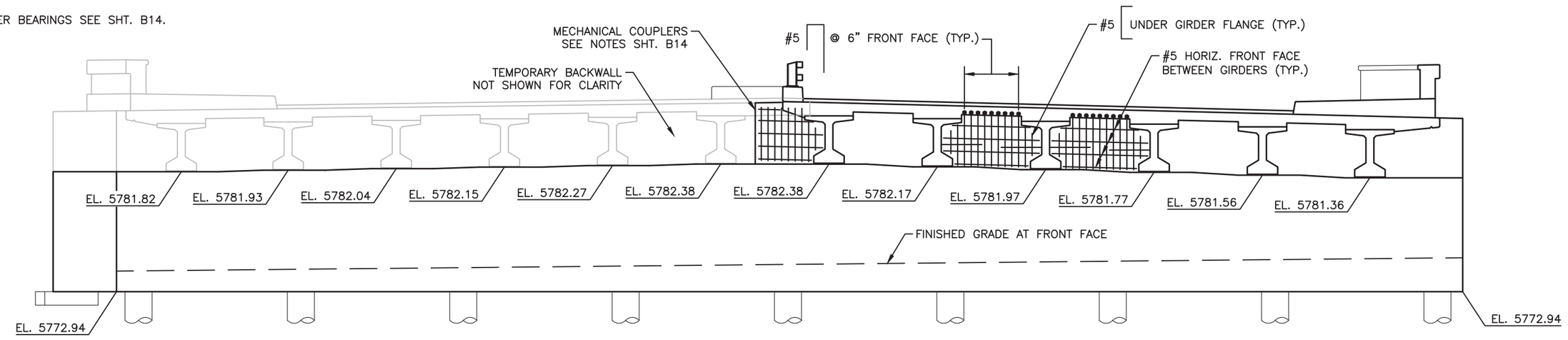
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PLAN

NOTE:

FOR GIRDER BEARINGS SEE SHT. B14.

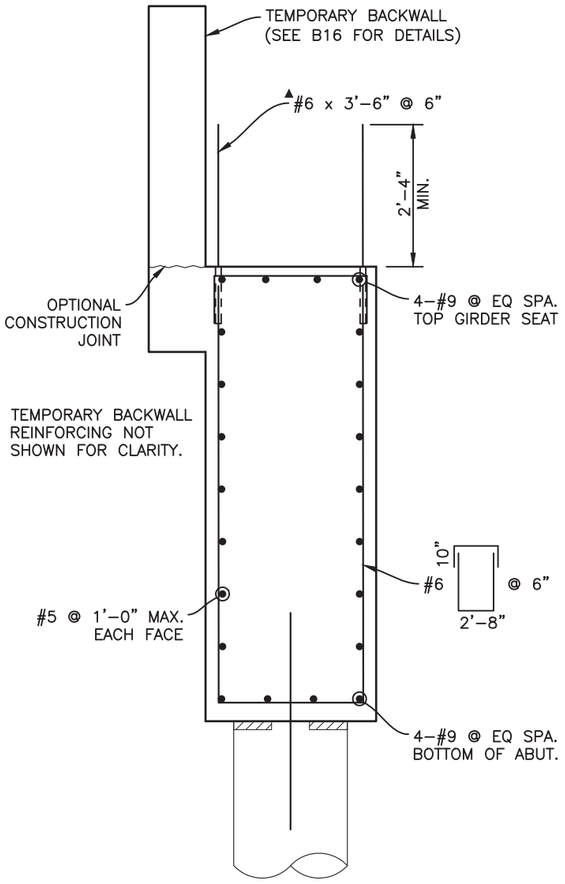


ELEVATION

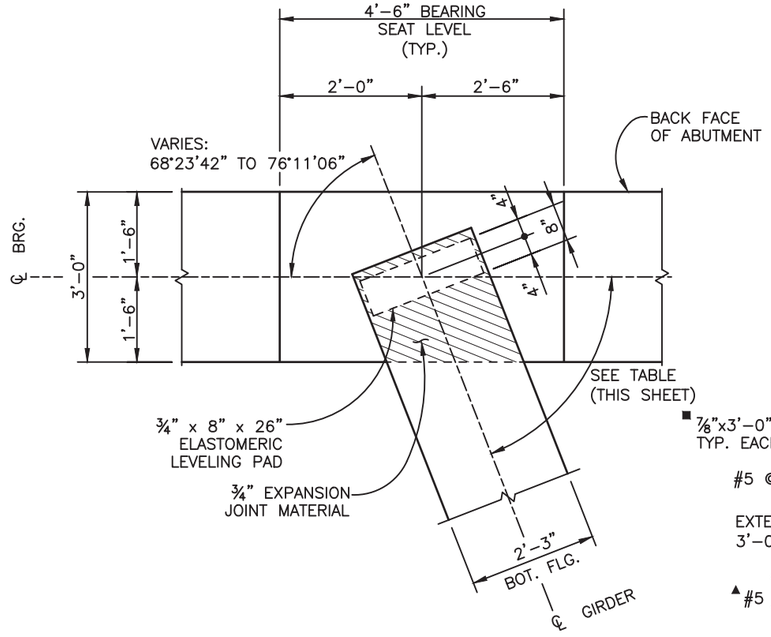
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File Name: B115360–01ABT02.dwg	Date	Comments	Initials	No Revisions:		
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						Sheet Number 40

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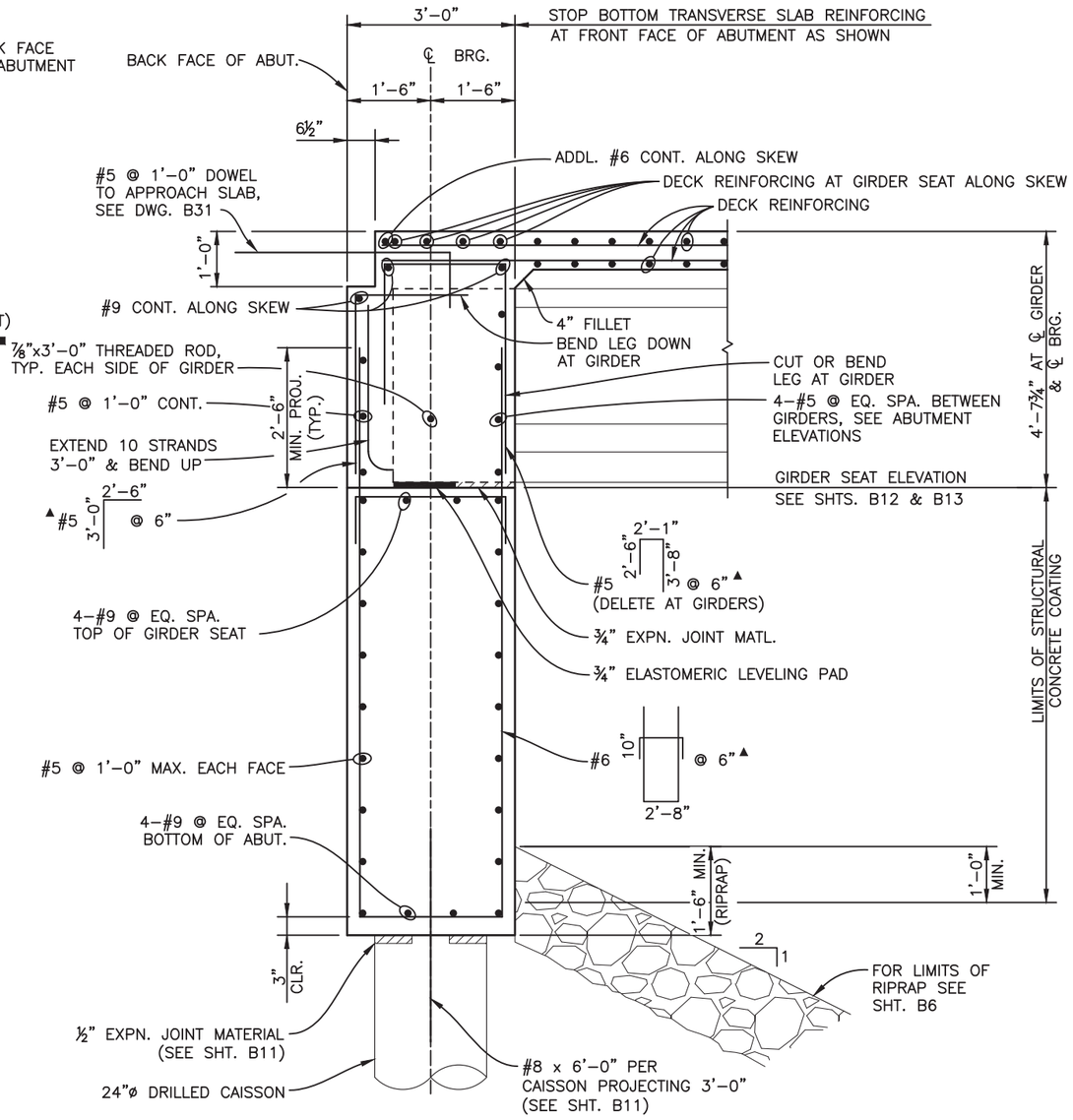
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TYPICAL ABUTMENT SECTION
(AT FUTURE ROADWAY)



BEARING DETAIL



TYPICAL ABUTMENT SECTION
(AT PROPOSED ROADWAY)

▲BARS TO BE DRILLED & EPOXY INTO GIRDER SEAT WITH APPROVED ADHESIVE, 1'–0" MIN. EMBEDMENT. WORK SHALL BE DONE DURING CONSTRUCTION OF FINAL LAYOUT.

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

▲TRANSVERSE STEEL SHALL BE ALIGNED WITH GIRDER CENTERLINE

NOTES:

1. SLAB AND PORTION OF ABUTMENT 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)
3. PROVIDE MECHANICAL COUPLERS FOR HORIZONTAL REINFORCEMENT FOR FUTURE WIDENING.
4. ALL APPROVED COUPLERS SHALL BE CAPABLE OF DEVELOPING 125% OF REINFORCING STEEL TENSILE STRENGTH. THE CONTRACTOR MUST SUBMIT A CERTIFICATION OF THE MECHANICAL COUPLERS TO ENGINEER PRIOR TO INSTALLATION.
5. THE COST OF THE MECHANICAL COUPLERS SHALL BE INCLUDED IN ITEM 602 – REINFORCING STEEL (EPOXY COATED).

℄ GIRDER TO ℄ PIER ANGLES		
GIRDER No.	ABUT. 1	ABUT. 3
G1	70°46'47"	76°11'06"
G2	70°35'29"	76°03'13"
G3	70°23'30"	75°54'46"
G4	70°11'08"	75°45'59"
G5	69°58'47"	75°37'20"
G6	69°46'01"	75°28'20"
G7	69°32'59"	75°19'09"
G8	69°19'38"	75°09'46"
G9	69°06'00"	75°00'10"
G10	68°52'03"	74°50'22"
G11	68°37'46"	74°40'20"
G12	68°23'43"	74°30'35"

GIRDER BEARINGS

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BELFORD–HAPPY CANYON CREEK BRIDGE
ABUTMENT SECTIONS & DETAILS

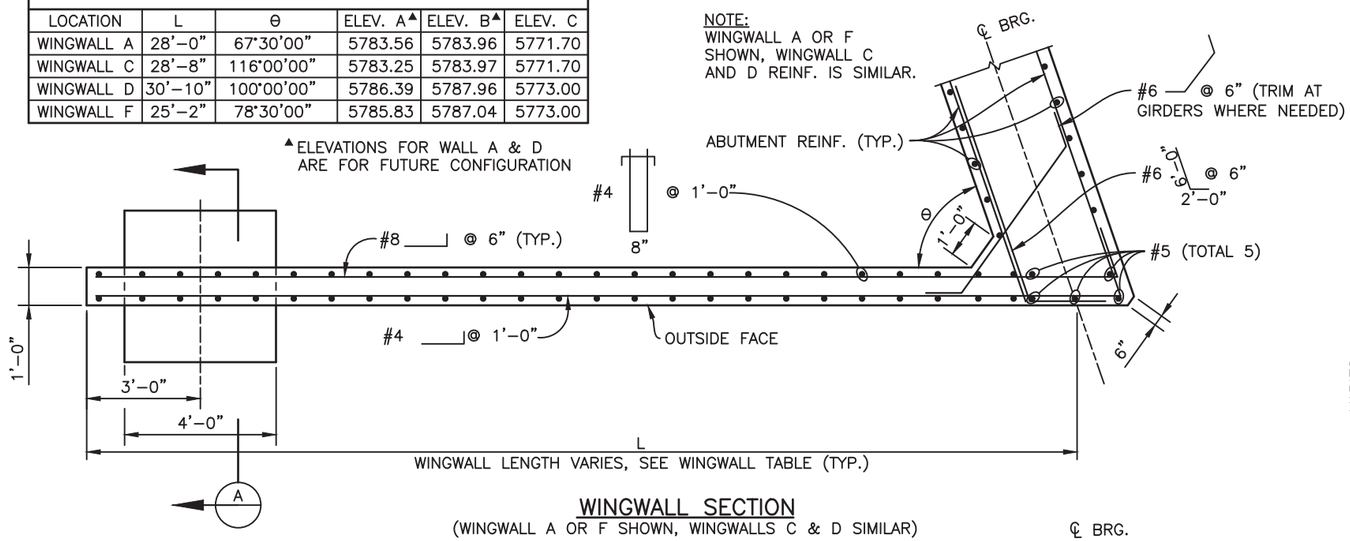
Designer: J. LYNCH
Detailer: C. MIYAMOTO
Subset: BRIDGE
Structure Numbers:
Sheets: B14 of 37

Project No./Code:
Sheet Number 41

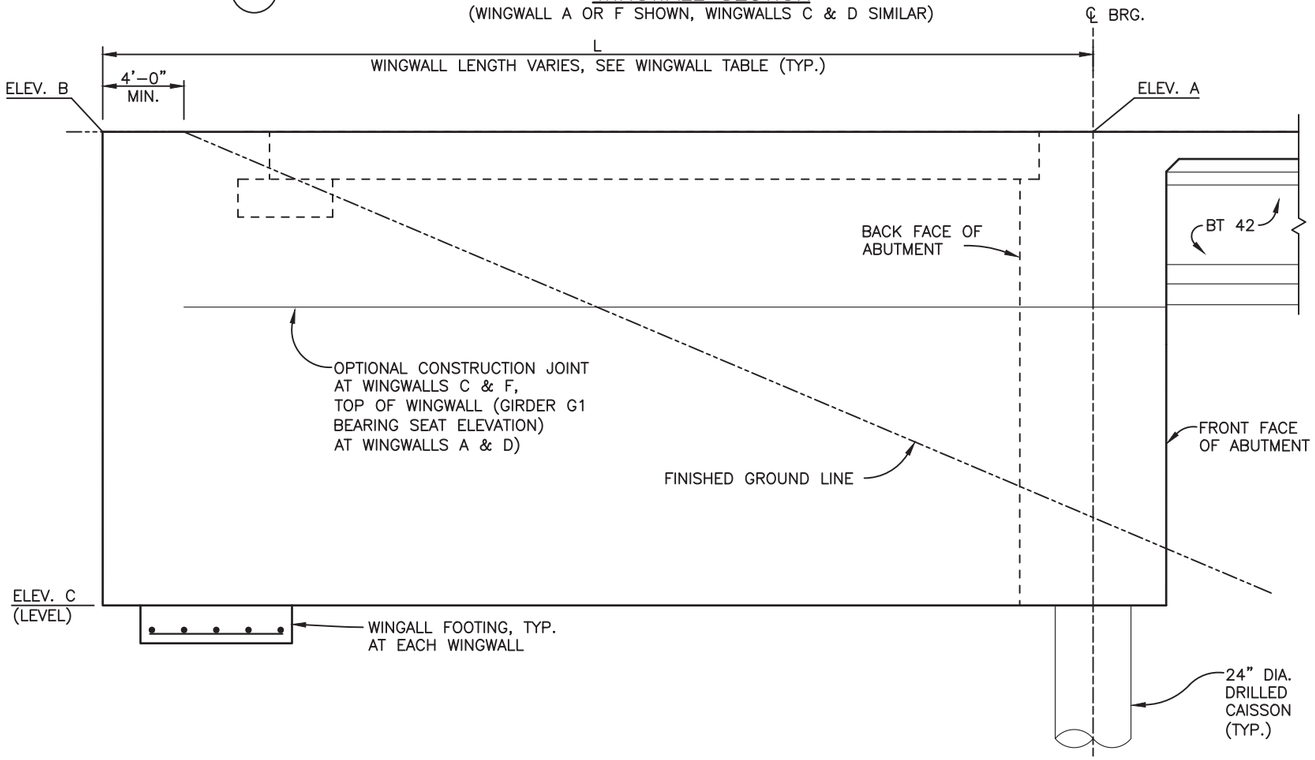
WINGWALL TABLE					
LOCATION	L	Θ	ELEV. A▲	ELEV. B▲	ELEV. C
WINGWALL A	28'–0"	67°30'00"	5783.56	5783.96	5771.70
WINGWALL C	28'–8"	116°00'00"	5783.25	5783.97	5771.70
WINGWALL D	30'–10"	100°00'00"	5786.39	5787.96	5773.00
WINGWALL F	25'–2"	78°30'00"	5785.83	5787.04	5773.00

▲ELEVATIONS FOR WALL A & D ARE FOR FUTURE CONFIGURATION

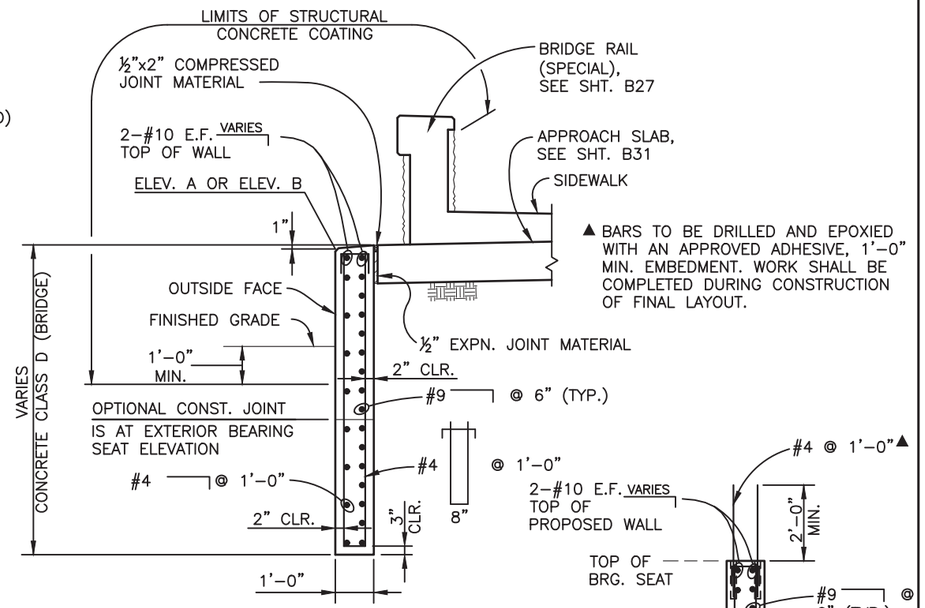
NOTE:
WINGWALL A OR F SHOWN, WINGWALL C AND D REINF. IS SIMILAR.



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



ELEVATION



TYPICAL WINGWALL SECTION
(WINGWALL C & F)
FINAL A & D SIMILAR

TYPICAL WINGWALL SECTION
(PROPOSED – WINGWALL A & D)

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

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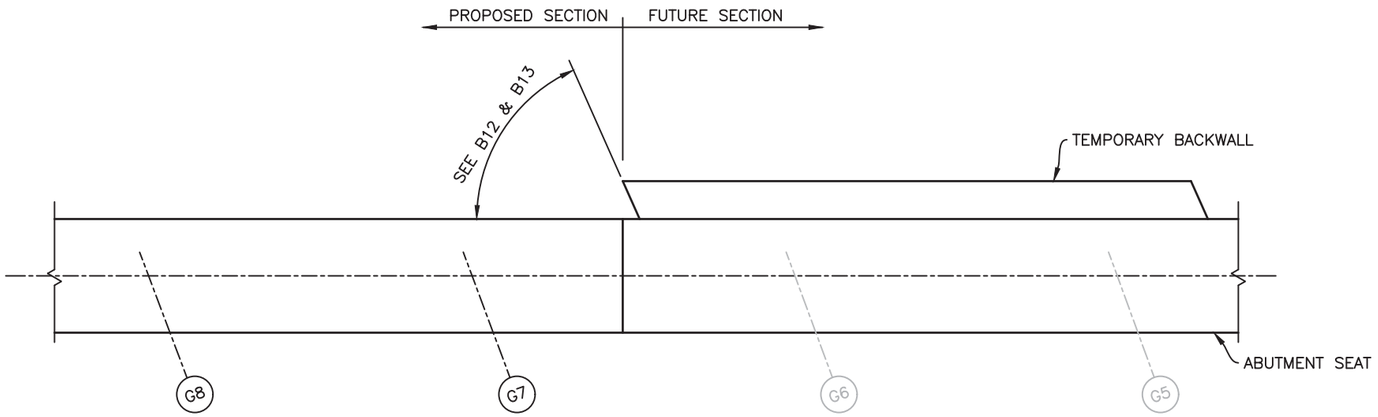
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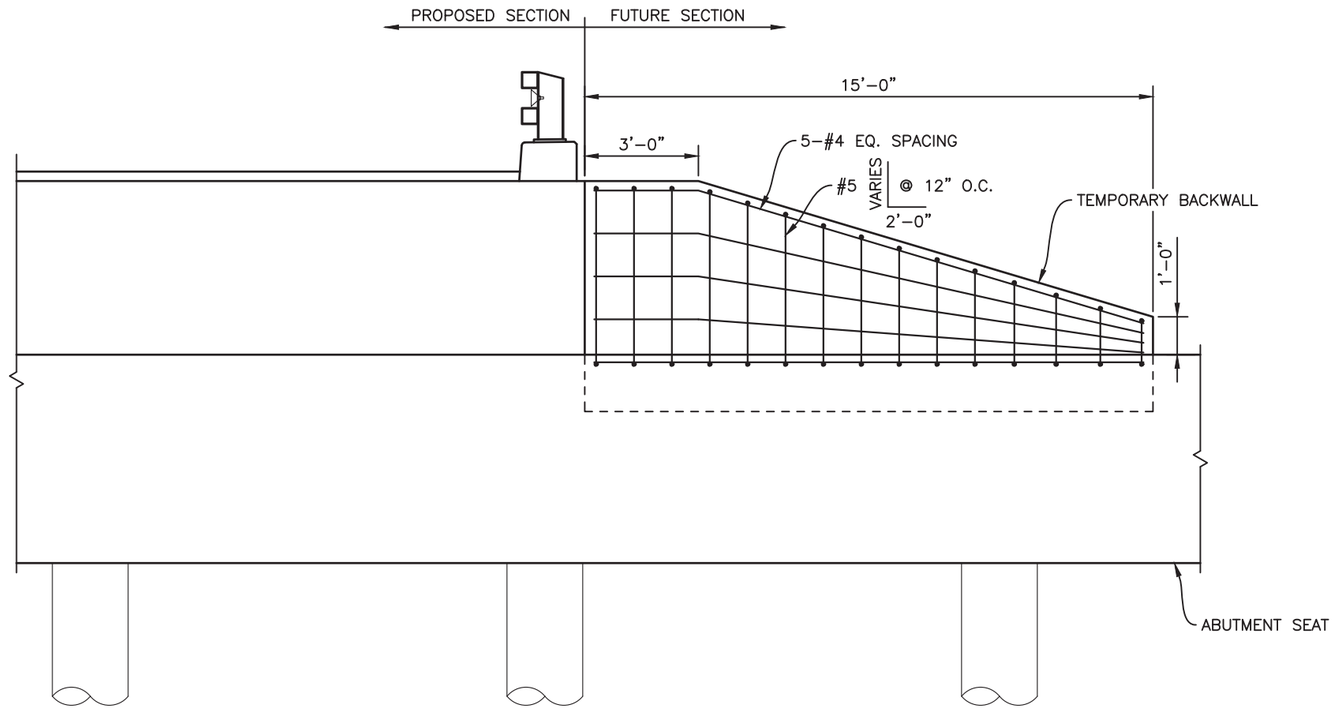
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No Revisions:			
Revised:	Designer: J. LYNCH	Structure Numbers	
Void:	Detailer: C. MIYAMOTO		
	Subset: BRIDGE	Sheets: B15 of 37	Sheet Number 42



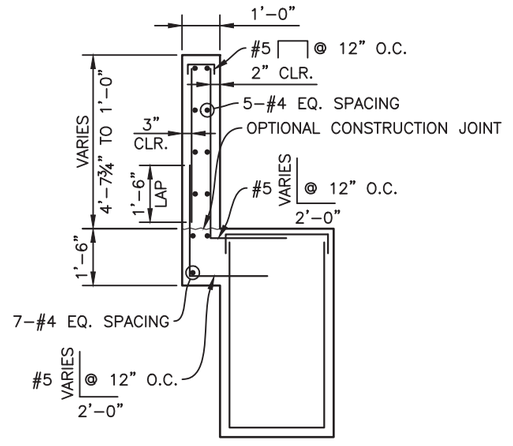
PLAN

(ABUT. 1 SHOWN, ABUT. 3 SIMILAR)



TYPICAL ABUTMENT REINFORCING NOT SHOWN FOR CLARITY.

ELEVATION



SECTION

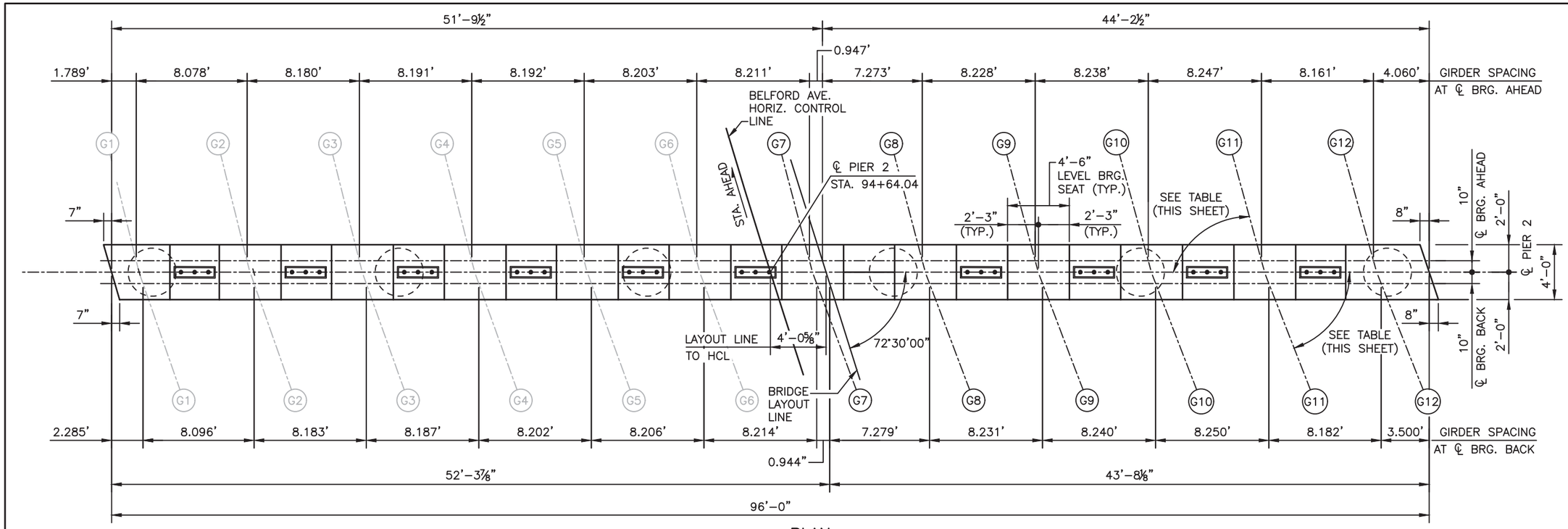
NOTES:

1. PRIOR TO CONSTRUCTION ON FUTURE LAYOUT, TEMPORARY BACKWALL SHALL BE REMOVED.

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℄ GIRDER TO ℄ PIER ANGLES		
G1	S	76°10'29.44"
	N	70°47'24.79"
G2	S	76°03'12.52"
	N	70°35'28.81"
G3	S	75°54'45.51"
	N	70°19'45.30"
G4	S	75°45'58.98"
	N	70°11'07.76"
G5	S	75°37'18.41"
	N	69°58'47.23"
G6	S	75°28'19.98"
	N	69°46'01.33"
G7	S	75°19'08.81"
	N	69°32'58.51"
G8	S	75°09'45.68"
	N	69°19'38.18"
G9	S	75°00'08.25"
	N	69°05'59.73"
G10	S	74°50'21.92"
	N	68°52'02.51"
G11	S	74°40'20.43"
	N	68°37'45.84"
G12	S	74°30'07.87"
	N	68°24'05.94"

BEARING SEAT ELEVATIONS	
EL. G1	5780.05
EL. G2	5780.16
EL. G3	5780.27
EL. G4	5780.39
EL. G5	5780.50
EL. G6	5780.61
EL. G7	5780.61
EL. G8	5780.41
EL. G9	5780.21
EL. G10	5780.01
EL. G11	5779.81
EL. G12	5779.61

(ELEVATIONS TO TOC)

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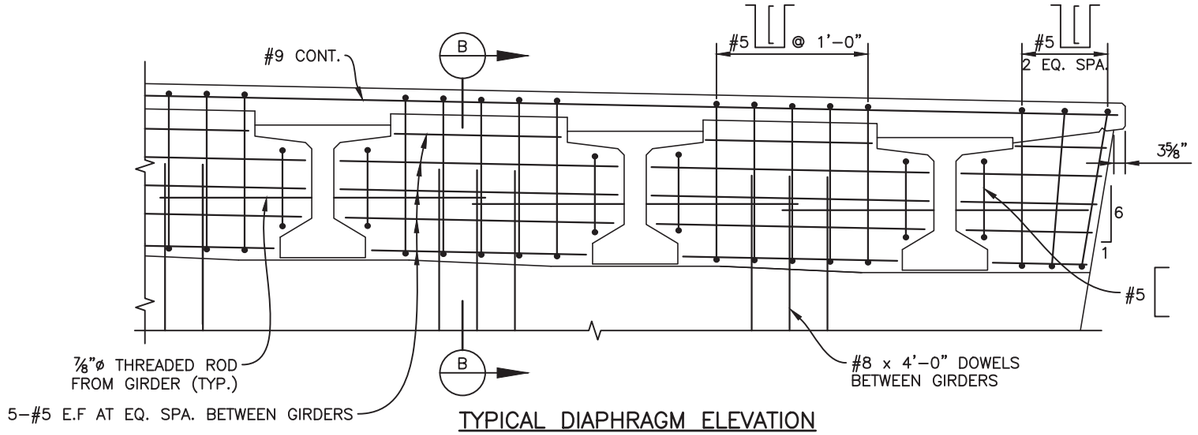
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Revised:
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BELFORD–HAPPY CANYON CREEK BRIDGE
PIER 2
PLAN & ELEVATION

Designer: J. LYNCH
Detailer: R. DILLON
Subset: BRIDGE
Structure Numbers:
Sheets: B17 of 37

Project No./Code

Sheet Number 44

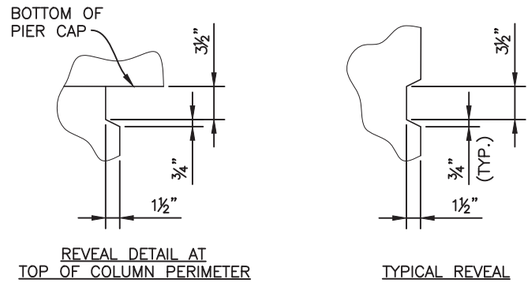


TYPICAL DIAPHRAGM ELEVATION

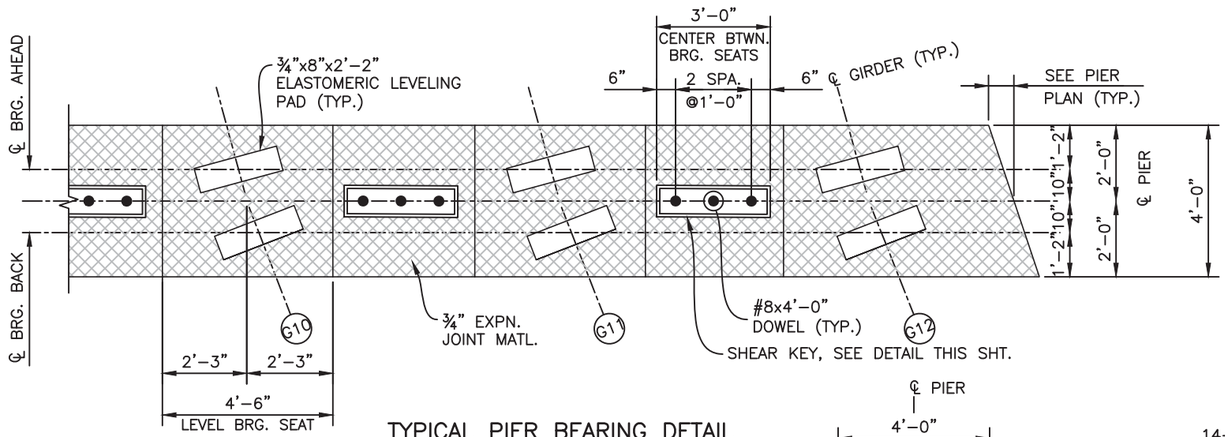
NOTES:

1. WITHIN "HINGE REGIONS", SPLICES IN SPIRAL REINFORCEMENT SHALL BE MADE WITH FULL-WELDED SPLICES OR FULL-MECHANICAL CONNECTIONS.
2. SPIRALS MUST COMPLETE TWO ROTATIONS BEYOND "HINGE REGION" BOUNDARY BEFORE PITCH CAN INCREASE.
3. SEE B11 FOR LIMITS OF PIER STEEL INTO CAISSON.

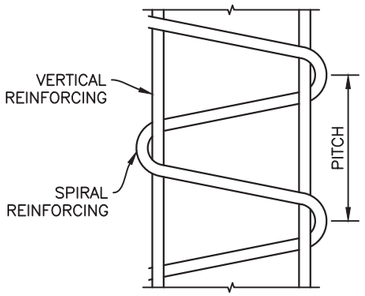
■ DOWELS SHALL BE INSTALLED BETWEEN PROPOSED GIRDERS AS SHOWN. BETWEEN FUTURE SECTION, DOWELS MUST BE DRILLED AND EPOXIED WITH AN APPROVED ADHESIVE, 1'-6" MIN. EMBEDMENT.



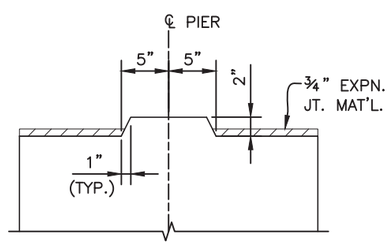
REVEAL DETAILS



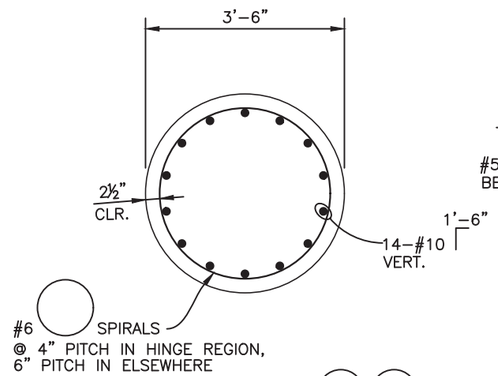
TYPICAL PIER BEARING DETAIL



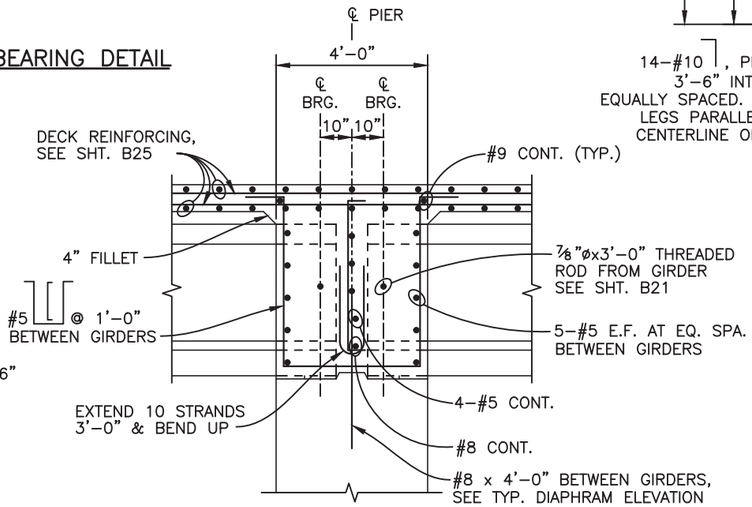
SPIRAL DETAIL



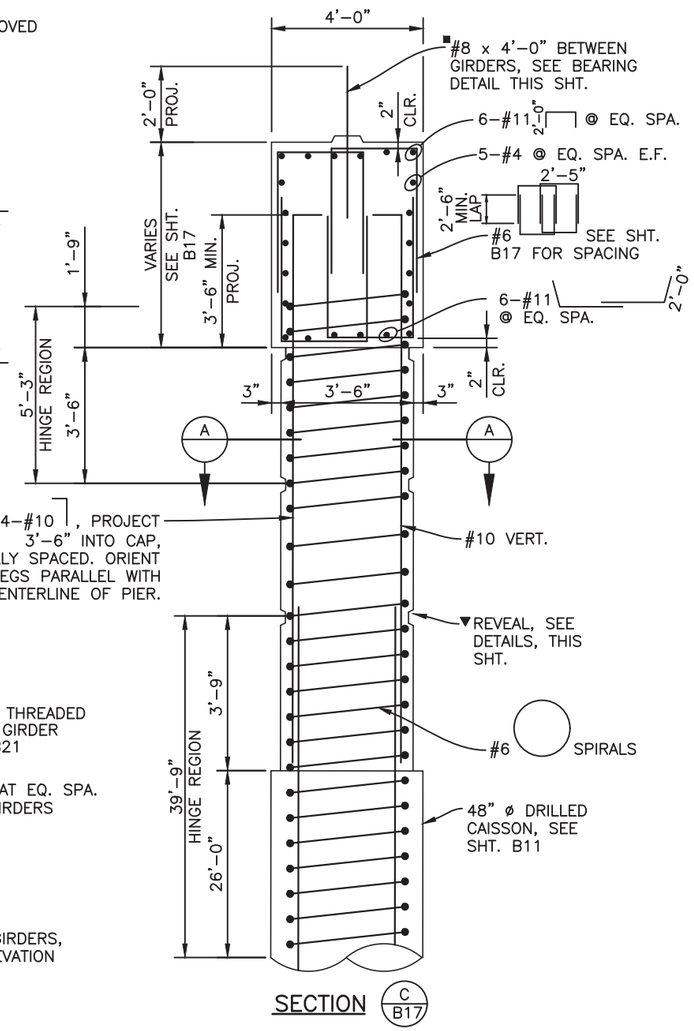
PIER CAP SHEAR KEY DETAIL



COLUMN SECTION A / A B17



SECTION B



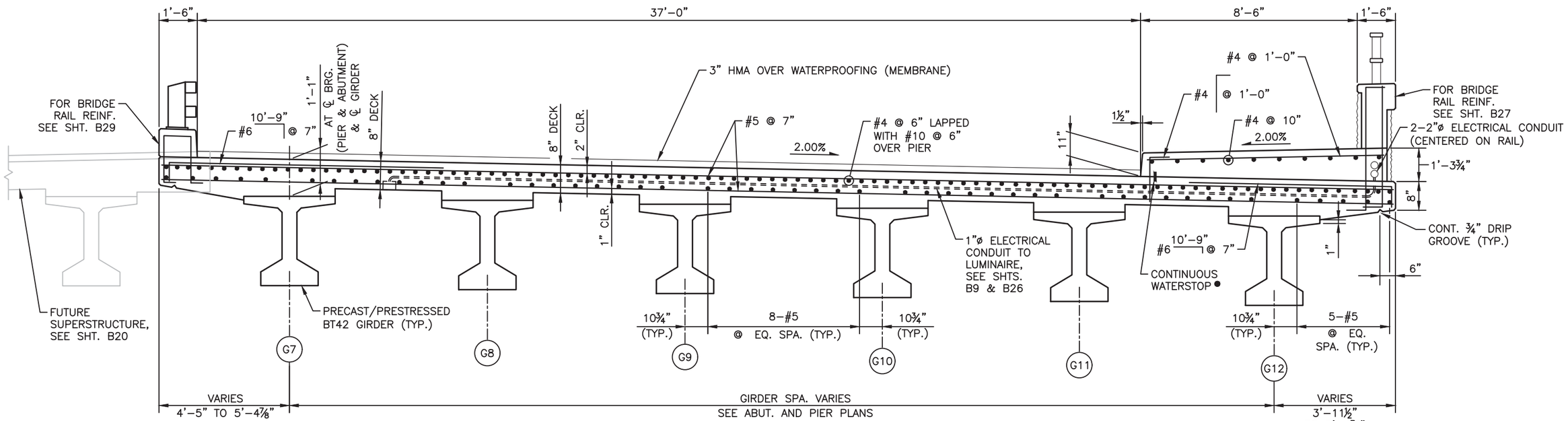
SECTION C B17

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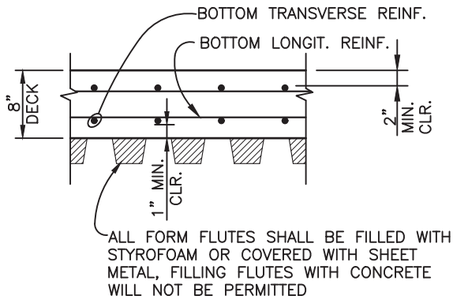
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As Constructed	BELFORD-HAPPY CANYON CREEK BRIDGE PIER 2 SECTIONS & DETAILS		Project No./Code
No Revisions:			
Revised:	Designer: J. LYNCH	Structure Numbers	
Void:	Detailer: DILLON/MIYAMOTO		
	Subset: BRIDGE	Sheets: B18 of 37	Sheet Number 45



TYPICAL PROPOSED SECTION
(LOOKING SOUTH)



PERMANENT STEEL DECK FORM DETAIL
(DETAILS FOR CONCRETE DECK FORMS FOUND ON B24)

NOTES:

1. DECK & SIDEWALK CONCRETE SHALL BE CLASS D (BRIDGE).
2. PROVIDE TRANSVERSE RAKE FINISH (¼"± 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, 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).

3. CONCRETE SEALER SHALL BE APPLIED TO CONCRETE SIDEWALK AND CURBS. SEALER SHALL AVOID AREAS REQUIRING STONE VENEER.
4. STAGGER ALL LONGITUDINAL REINFORCING BAR SPLICES.

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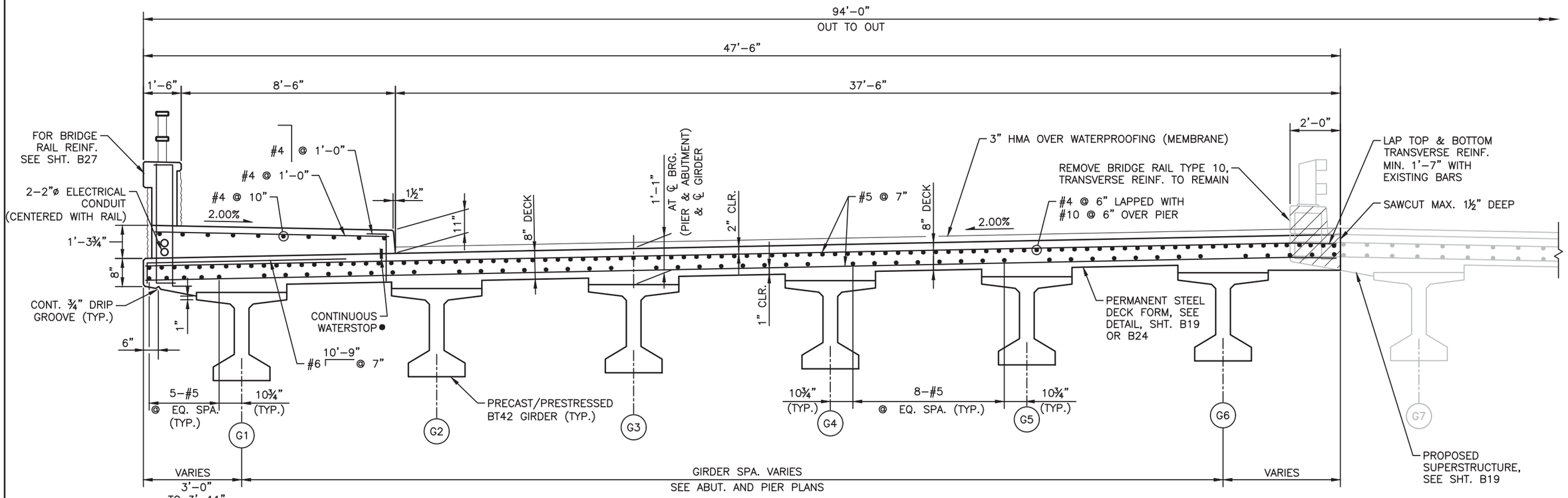
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Revised:
Void:

BELFORD–HAPPY CANYON CREEK BRIDGE
PROPOSED
SUPERSTRUCTURE SECTION

Designer: J. LYNCH
Detailer: C. MIYAMOTO
Subset: BRIDGE
Structure Numbers:
Sheets: B19 of 37

Project No./Code:

Sheet Number 46



TYPICAL FUTURE SECTION
(LOOKING SOUTH)

NOTES:

1. DECK & SIDEWALK CONCRETE SHALL BE CLASS D (BRIDGE).
2. PROVIDE TRANSVERSE RAKE FINISH (¼"± 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, 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).

3. CONCRETE SEALER SHALL BE APPLIED TO CONCRETE SIDEWALK AND CURBS. SEALER SHALL AVOID AREAS REQUIRING STONE VENEER.
4. STAGGER ALL LONGITUDINAL REINFORCING BAR SPLICES.

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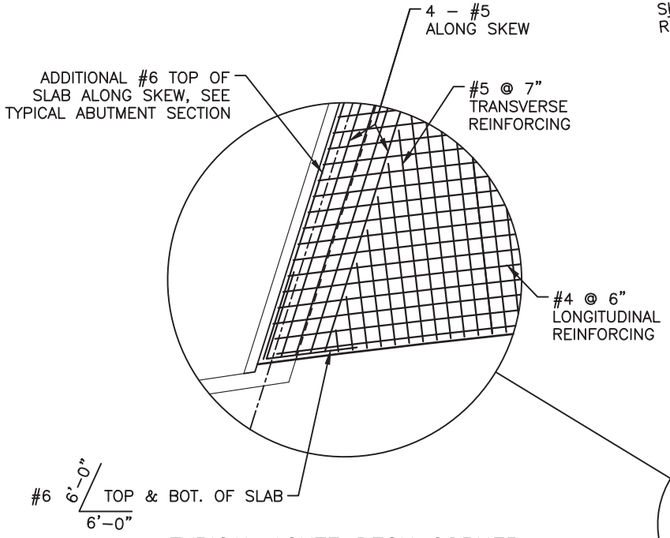
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Revised:
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BELFORD–HAPPY CANYON CREEK BRIDGE
FUTURE
SUPERSTRUCTURE SECTION

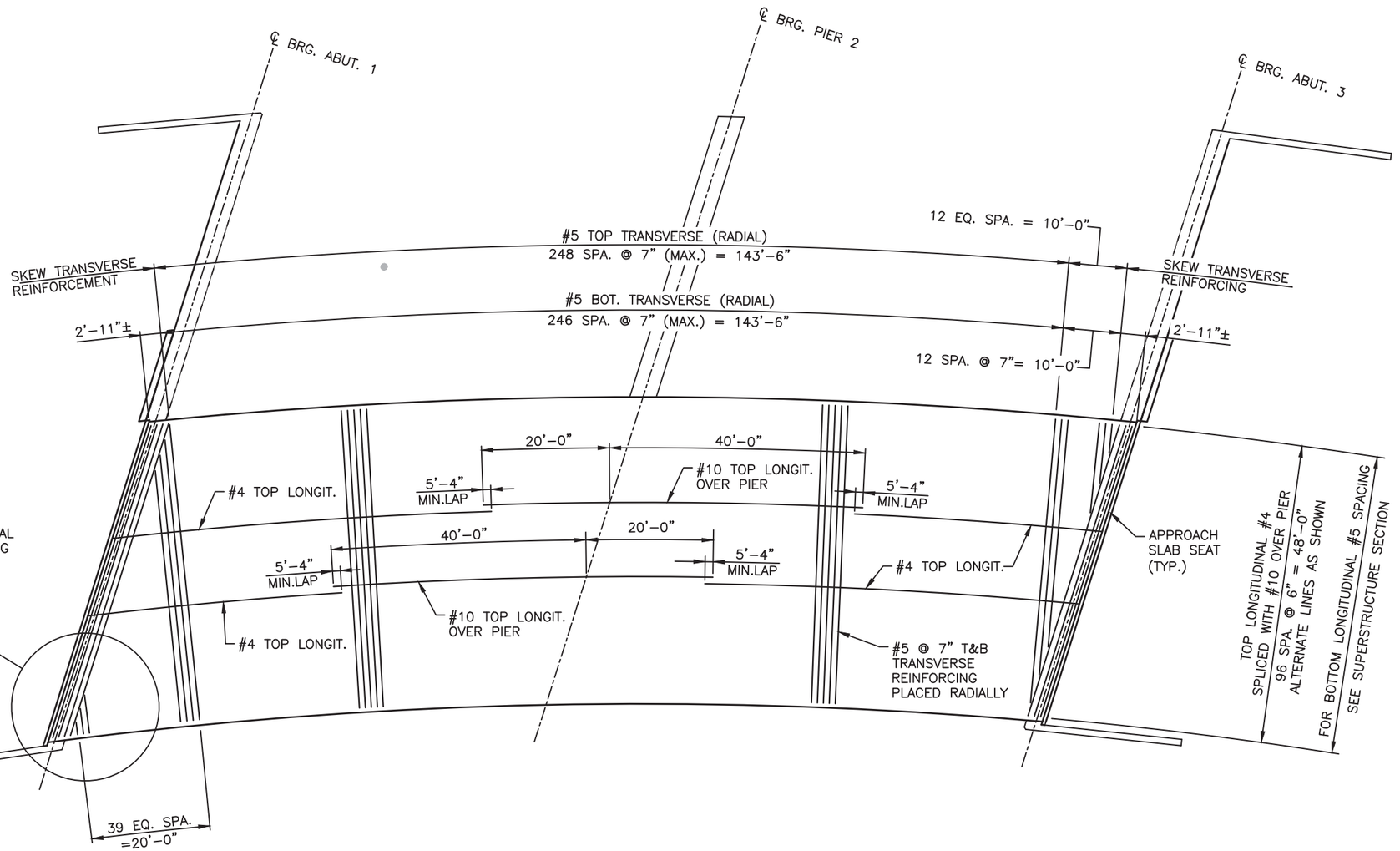
Designer: J. LYNCH
Detailer: C. MIYAMOTO
Subset: BRIDGE
Structure Numbers:
Sheets: B20 of 37

Project No./Code

Sheet Number 47



TYPICAL ACUTE DECK CORNER



REINFORCING PLAN

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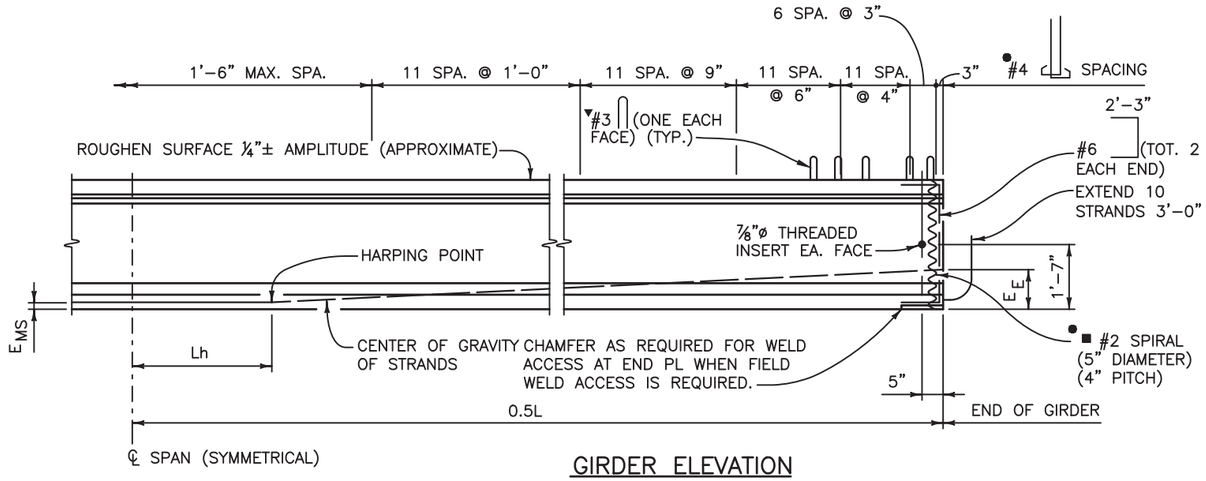
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BELFORD–HAPPY CANYON CREEK BRIDGE
DECK REINFORCING
PLAN

Designer: J. LYNCH
Detailer: MIYAMOTO/DILLON
Subset: BRIDGE
Structure Numbers
Sheets: B21 of 37

Project No./Code

Sheet Number 48



GIRDER ELEVATION

■ 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" OR MORE. SPACE AT 1'–0" FOR STIRRUP SPACINGS LESS THAN 9".

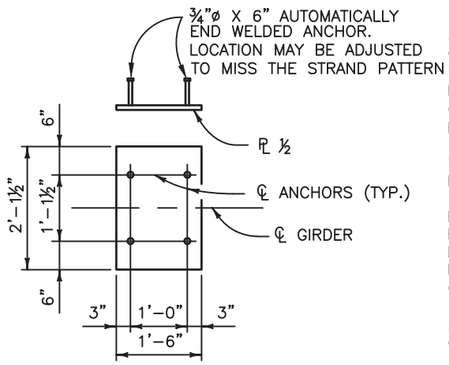
● D20 WIRES MAY BE USED IN LIEU OF #4.
2 – D20 WIRES MAY BE USED IN LIEU OF #6.
D11 OR W10.9 WIRES MAY BE USED IN LIEU OF #3.
W5 WIRES MY BE USED IN LIEU OF #2.

GIRDER SCHEDULE – PROPOSED GIRDERS

Girder Type	Span No.	Girder No.	L (ft)	Lh (ft)	A_S (in^2)	E_{MS} (in)	E_E (in)	F_j (kips)	F_f (kips)	f'_{ci} (psi)	f'_c (psi)	Δ (in)	Predicted Release Camber (in)	Predicted Camber (in)
BT42	1	G7	77.10	7.71	6.08	14.86	4.14	1230	1065	6000	8000	1.38	1.57	2.80
BT42	1	G8–G9	77.10	7.71	6.08	14.86	4.14	1230	1017	6000	8000	1.20	1.69	3.00
BT42	1	G10–G11	77.46	7.75	6.08	14.86	4.14	1230	1017	6000	8000	1.21	1.69	3.01
BT42	1	G12	77.46	7.75	6.08	14.86	4.14	1230	1026	6000	8000	1.31	1.70	3.02
BT42	2	G7	77.06	7.71	6.08	14.86	4.14	1230	1038	6000	8000	1.37	1.68	2.99
BT42	2	G8–G9	77.06	7.71	6.08	14.86	4.14	1230	1017	6000	8000	1.20	1.68	2.99
BT42	2	G10–G11	77.23	7.72	6.08	14.86	4.14	1230	1017	6000	8000	1.20	1.69	3.00
BT42	2	G12	77.23	7.72	6.08	14.86	4.14	1230	1026	6000	8000	1.29	1.69	3.00

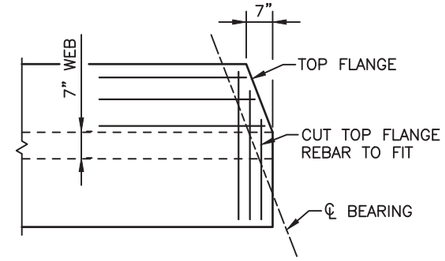
GIRDER SCHEDULE – FUTURE GIRDERS

Girder Type	Span No.	Girder No.	L (ft)	Lh (ft)	A_S (in^2)	E_{MS} (in)	E_E (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	76.48	7.65	6.08	14.86	4.14	1230	1023	6000	8000	1.19	1.67	2.96
BT42	1	G2–G3	76.48	7.65	6.08	14.86	4.14	1230	1015	6000	8000	1.14	1.67	2.97
BT42	1	G4	76.78	7.68	6.08	14.86	4.14	1230	1015	6000	8000	1.15	1.67	2.97
BT42	1	G5–G6	76.78	7.68	6.08	14.86	4.14	1230	1015	6000	8000	1.16	1.68	2.98
BT42	2	G1	76.75	7.68	6.08	14.86	4.14	1230	1023	6000	8000	1.21	1.67	2.98
BT42	2	G2–G3	76.75	7.68	6.08	14.86	4.14	1230	1015	6000	8000	1.15	1.68	2.98
BT42	2	G4	76.90	7.69	6.08	14.86	4.14	1230	1015	6000	8000	1.16	1.68	2.98
BT42	2	G5–G6	76.90	7.69	6.08	14.86	4.14	1230	1015	6000	8000	1.16	1.68	2.98



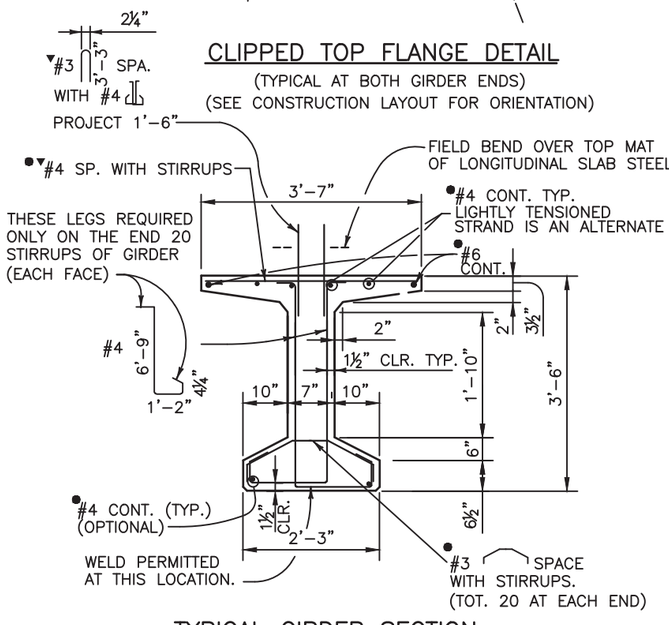
END PLATE DETAIL

GALVANIZE AFTER FABRICATION



CLIPPED TOP FLANGE DETAIL

(TYPICAL AT BOTH GIRDER ENDS)
(SEE CONSTRUCTION LAYOUT FOR ORIENTATION)



TYPICAL GIRDER SECTION

NOTES:

ALL WORK NECESSARY TO FABRICATE AND INSTALL THE INTEGRAL PARTS OF THE GIRDER (INCLUDING THE INTERMEDIATE DIAPHRAGMS, ⅞"ø THREADED RODS, AND LEVELING PADS), AS SHOWN ON THE PLANS, SHALL BE INCLUDED IN THE BID PRICE FOR ITEM NO. 618, PRESTRESSED CONCRETE I (BT42), WITH A PAY UNIT OF LF WHICH SHALL BE MEASURED BY DIMENSION L.

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" BELOW THE SURFACE OF THE CONCRETE AND FINISH WITH AN APPROVED EPOXY GROUT. AT GIRDER ENDS EMBEDDED IN CONCRETE DIAPHRAGMS, CUT STRANDS TO PROJECT 3", EXCEPT AS SHOWN. DO NOT MAKE COSMETIC REPAIRS (DAMAGE LESS THAN 1½" DEEP) TO THE PARTS OF THE GIRDERS EMBEDDED IN CONCRETE.

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 1¼". THE MINIMUM COVER FOR PRESTRESSING STEEL IS 1½".

A MINIMUM OF TWO HARPING POINTS SHALL BE USED PER GIRDER. HARPED STRANDS SHALL BE WELL DISTRIBUTED AT THE GIRDER ENDS, STARTING WITHIN 4" OF THE TOP OF THE GIRDER AND DISTRIBUTED SUCH THAT THERE IS NO SPACE BETWEEN STRANDS GREATER THAN 1'–0" AT THE END OF THE GIRDER. AS AN ALTERNATE THE CONTRACTOR MAY PLACE #4 ● X 10'–0" IN THE SIDES OF THE END OF THE WEB PARALLEL TO THE HARPED STRANDS SUCH THAT THERE IS NO SPACE GREATER THAN 1'–0".

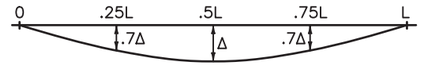
A_s* = MINIMUM AREA OF THE PRESTRESSING STEEL.
d_s = NOMINAL STRAND DIAMETER.
f'_s = ULTIMATE STRENGTH OF PRESTRESSING STEEL.
F_j = JACKING FORCE PER GIRDER.
F_f = FINAL FORCE PER GIRDER AFTER ALL LOSSES.
f'_{ci} = REQUIRED CONCRETE STRENGTH AT RELEASE OF PRESTRESS FORCE.
f'_c = REQUIRED CONCRETE STRENGTH 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 ½" CHAMFER ON ALL CORNERS, EXCEPT AS NOTED.

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.



DEAD LOAD DEFLECTION DIAGRAM

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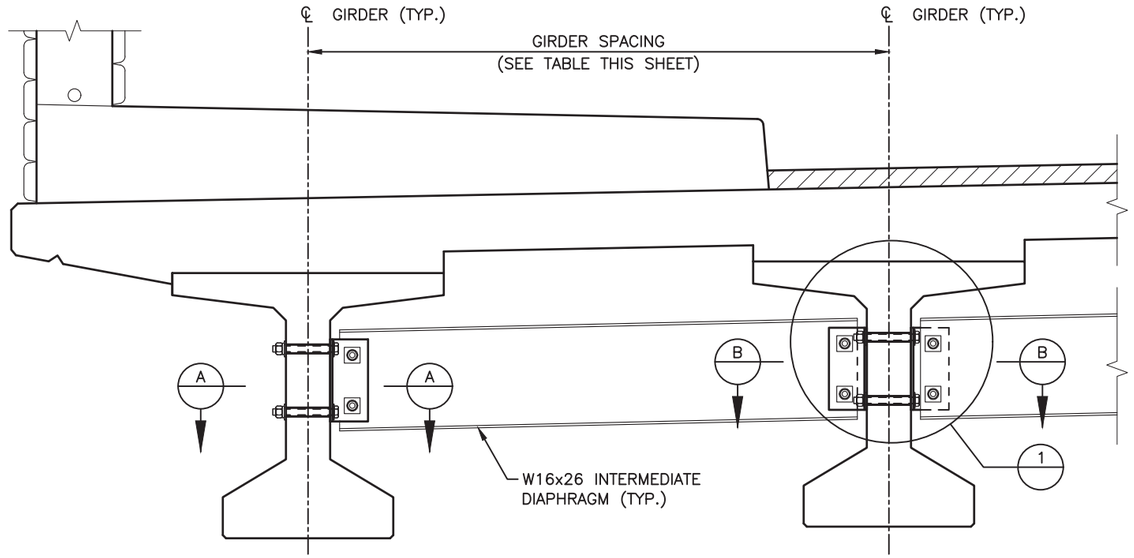
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BELFORD–HAPPY CANYON CREEK BRIDGE
PRECAST CONCRETE I GIRDER

Designer:	J. LYNCH	Structure Numbers	
Detailer:	C. MIYAMOTO		
Subset:	BRIDGE	Sheets:	B22 of 37

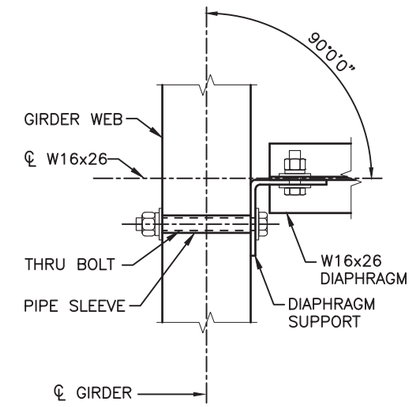
Project No./Code

Sheet Number 49

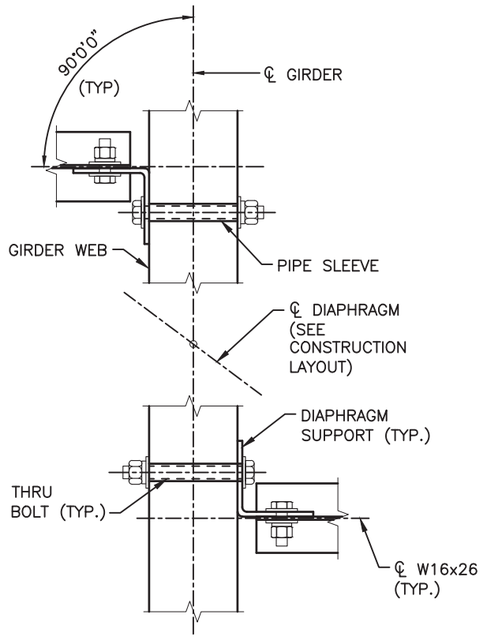


PARTIAL ELEVATION AT DIAPHRAGM
(TAKEN NORMAL TO GIRDER)

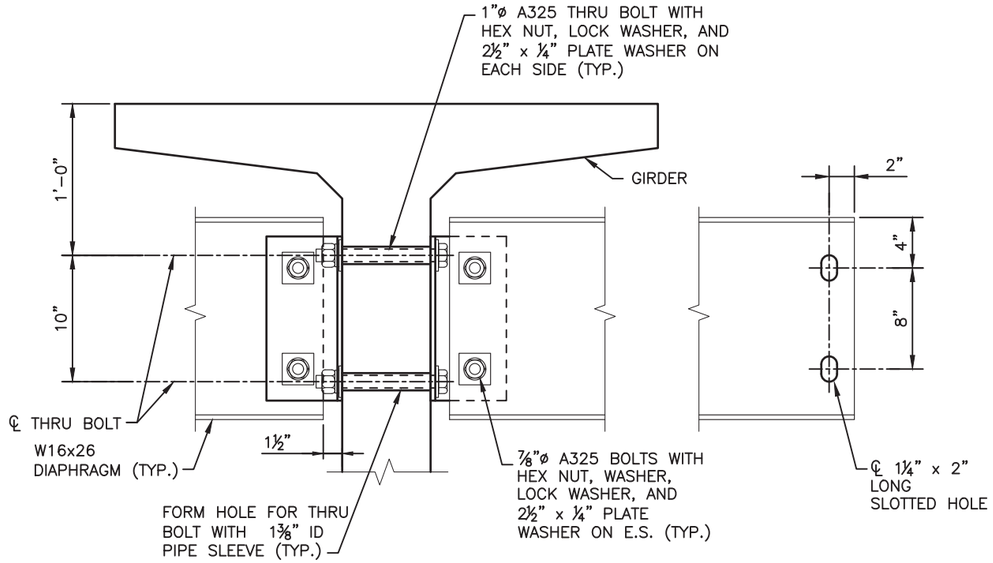
GIRDER SPACING MEASURED ALONG DIAPHRAGM CENTERLINE		
BETWEEN GIRDER CENTERLINES	SPAN 1	SPAN 2
G1–G2	7.76'	7.76'
G2–G3	7.85'	7.85'
G3–G4	7.85'	7.85'
G4–G5	7.85'	7.85'
G5–G6	7.85'	7.85'
G6–G7	7.85'	7.85'
G7–G8	7.85'	7.85'
G8–G9	7.85'	7.85'
G9–G10	7.85'	7.85'
G10–G11	7.85'	7.85'
G11–G12	7.76'	7.76'



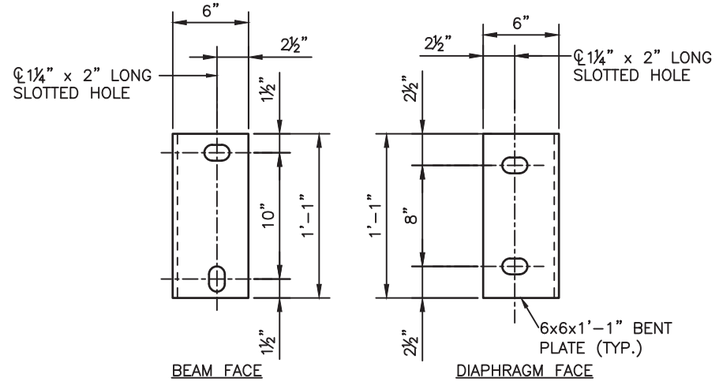
SECTION A



SECTION B



DETAIL 1



DIAPHRAGM SUPPORT DETAIL

NOTES:

1. SEE CONSTRUCTION LAYOUT FOR INTERMEDIATE DIAPHRAGM LOCATIONS.
2. ALL DIAPHRAGM MATERIALS, INCLUDING BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED. GALVANIZE AFTER FABRICATION.
3. BOLTS, NUTS AND LOCK WASHERS MAY BE ZINC PLATED IN LIEU OF BEING GALVANIZED.
4. 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.
5. 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.
6. 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.
7. THE COST OF THE DIAPHRAMS SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF THE GIRDER.

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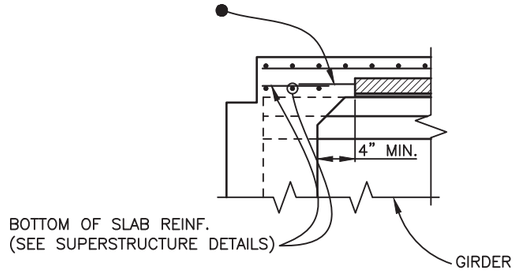
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BELFORD–HAPPY CANYON CREEK BRIDGE
GIRDER DIAPHRAGM
DETAILS

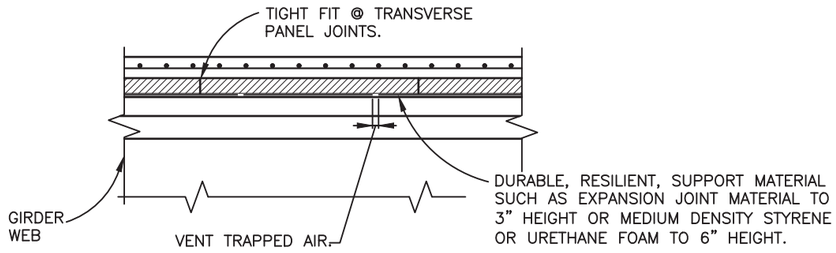
Designer:	J. LYNCH	Structure Numbers	
Detailer:	R. DILLON		
Subset:	BRIDGE	Sheets:	B23 of 37

Project No./Code

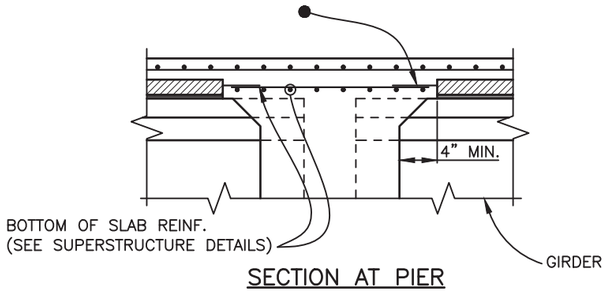
Sheet Number 50



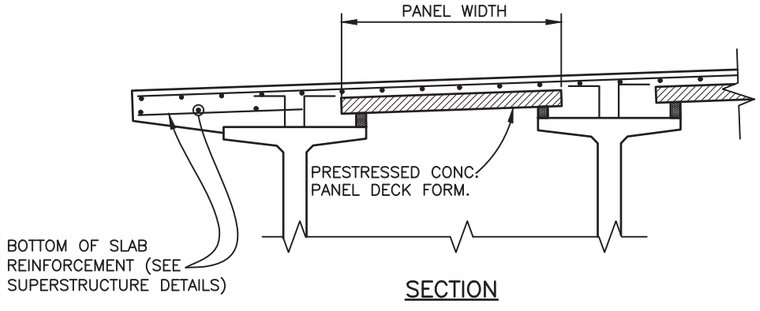
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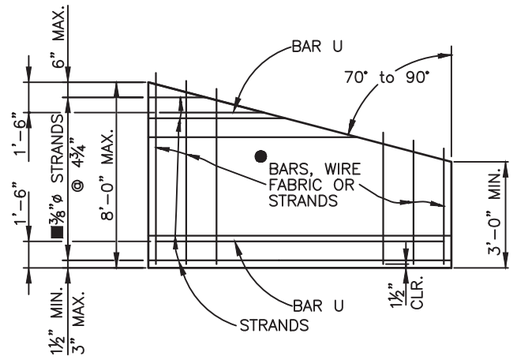
SECTION THRU TRANSVERSE
PANEL JOINTS



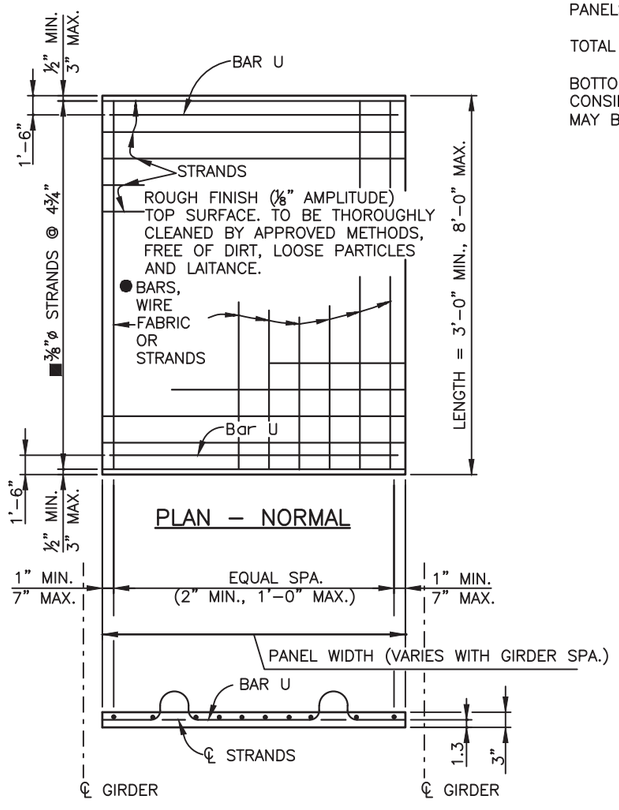
SECTION AT PIER



SECTION



PLAN – SKEWS 70°TO 90°
OPTIONAL END PANEL



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 ⅜"ø STRANDS AT 9½" 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.

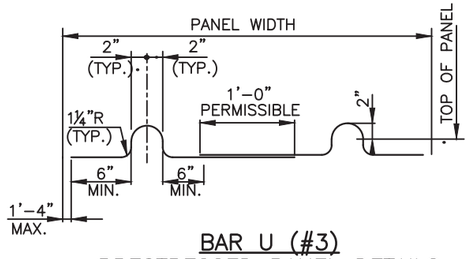
THE TOLERANCE ON STRAND PLACEMENT SHALL NOT EXCEED ± ¼".

THE TOLERANCE ON PANEL THICKNESS SHALL NOT EXCEED ± ¼".

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 ½", OR CAMBERS GREATER THAN ½",WILL BE CONSIDERED EVIDENCE OF MISHANDLING, OVERLOADING, OR EXCEEDING ALLOWABLE TOLERANCES, AND MAY BE CAUSE FOR REJECTING PANELS AT THE ENGINEER'S DISCRETION.



BAR U (#3)
PRESTRESSED PANEL DETAILS

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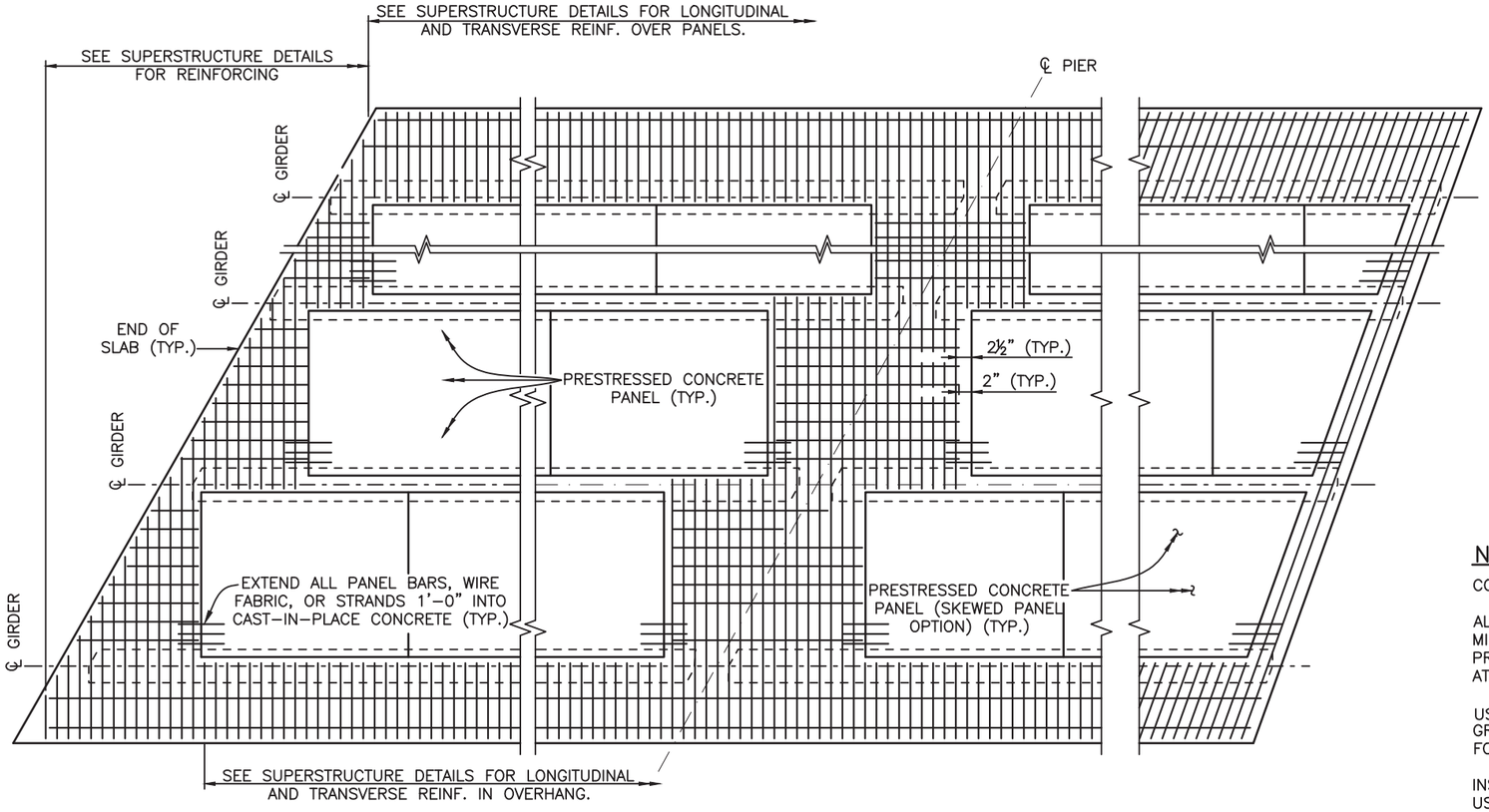
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BELFORD–HAPPY CANYON CREEK BRIDGE
OPTIONAL PRECAST PANEL
DECK FORM (1 OF 2)

Designer:	J. LYNCH	Structure Numbers	
Detailer:	C. MIYAMOTO		
Subset:	BRIDGE	Sheets:	B24 of 37

Project No./Code

Sheet Number 51



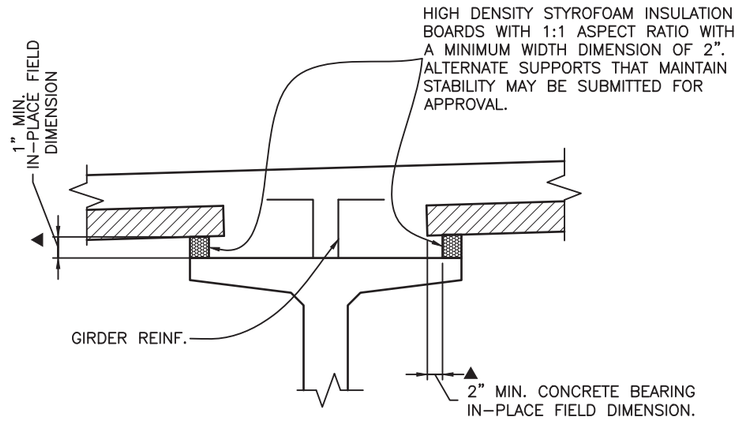
END OF SLAB
RECTANGULAR PANEL OPTION AND
SKEWS LESS THAN 70°

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



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 ⅜"ø LOW RELAXATION STRANDS MEETING THE REQUIREMENTS OF ASTM A416 GRADE 270. JACKING FORCE PER STRAND (f'_i) 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 (▲ 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.

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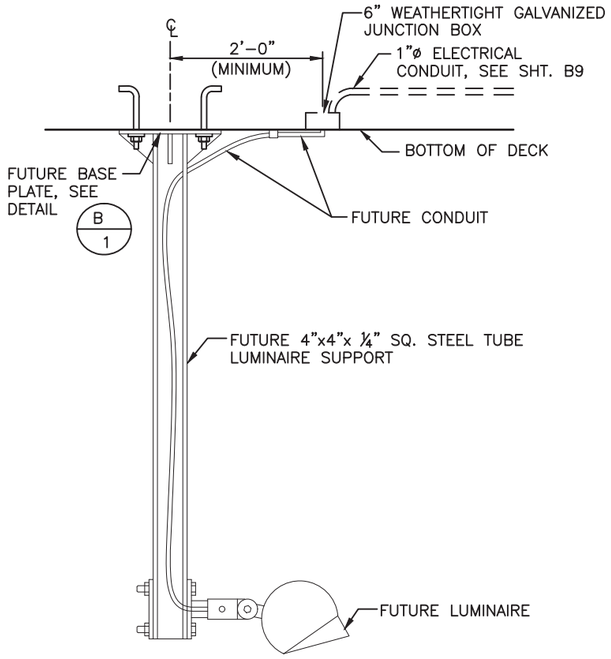
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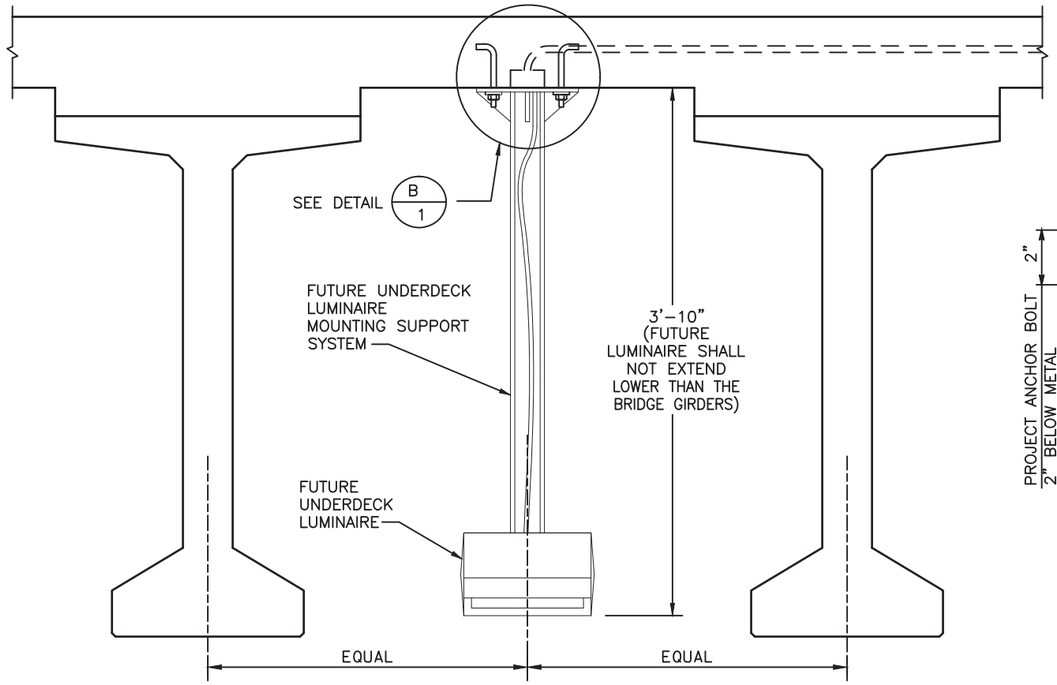
BELFORD–HAPPY CANYON CREEK BRIDGE
OPTIONAL PRECAST PANEL
DECK FORM (2 OF 2)

Designer: J. LYNCH
Detailer: C. MIYAMOTO
Subset: BRIDGE
Structure Numbers:
Sheets: B25 of 37

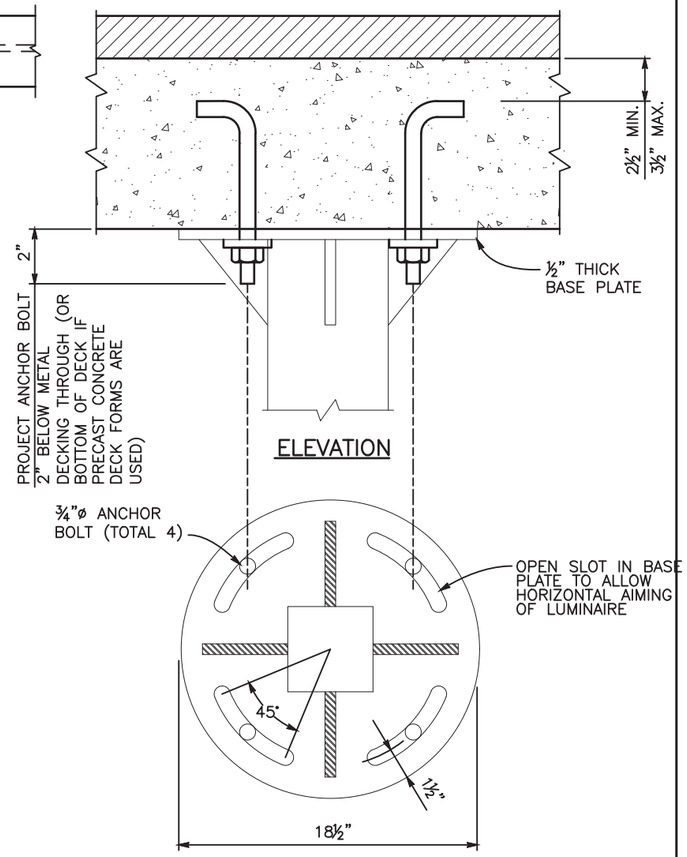
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SECTION VIEW
FUTURE UNDERDECK LUMINAIRE SUPPORT

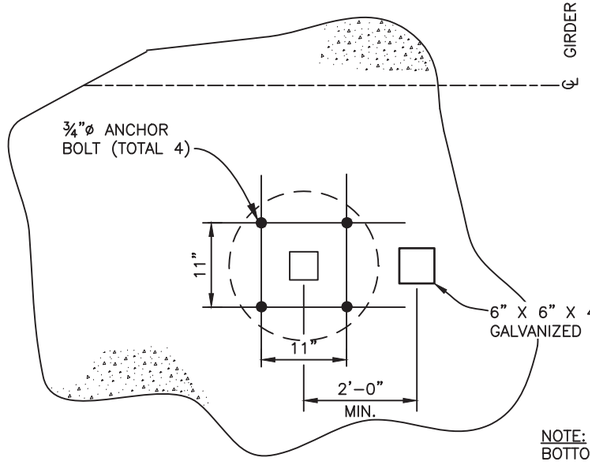


FRONT VIEW



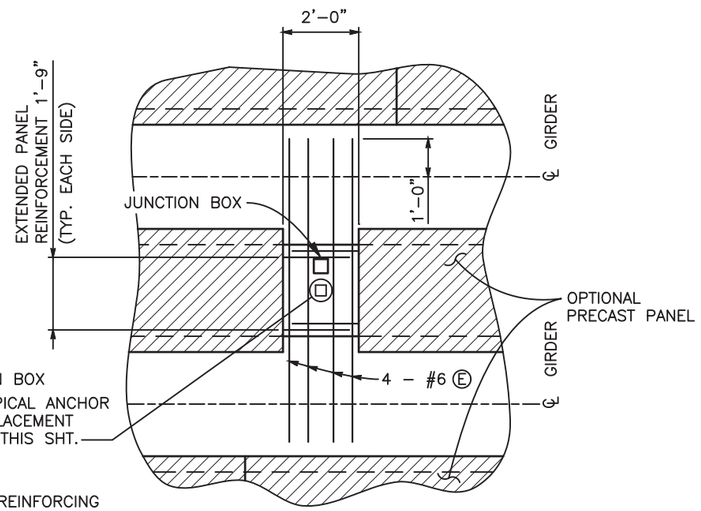
ELEVATION

PLAN
FUTURE BASE PLATE
DETAIL B/1

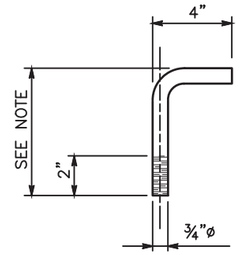


TYPICAL ANCHOR BOLT PLACEMENT DIAGRAM

NOTE:
BOTTOM SLAB REINFORCING SHOWN. SEE SLAB DETAILS SHEET FOR REQUIRED TOP SLAB REINFORCING.



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. 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 SEPERATELY, BUT SHALL BE INCLUDED IN THE COST OF ITEM 613, 1 INCH ELECTRICAL CONDUIT.

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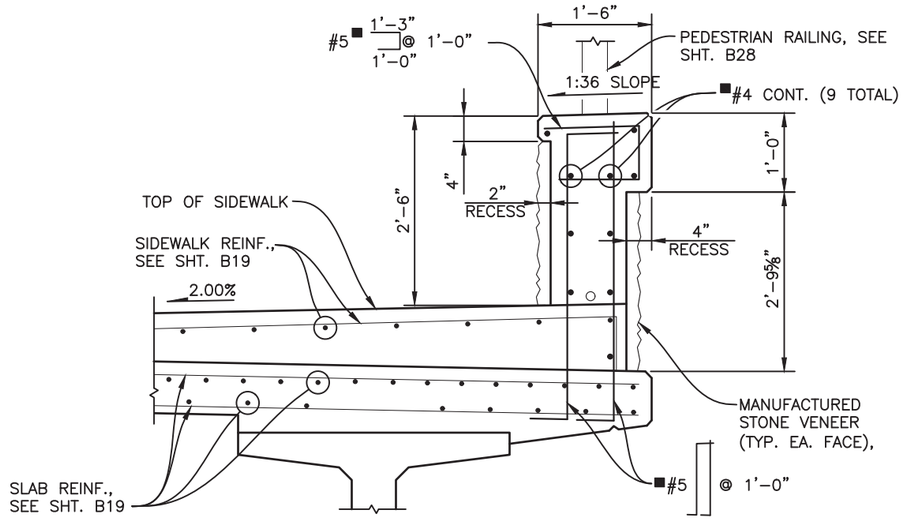
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BELFORD–HAPPY CANYON CREEK BRIDGE
PENDANT LUMINAIRE DETAILS

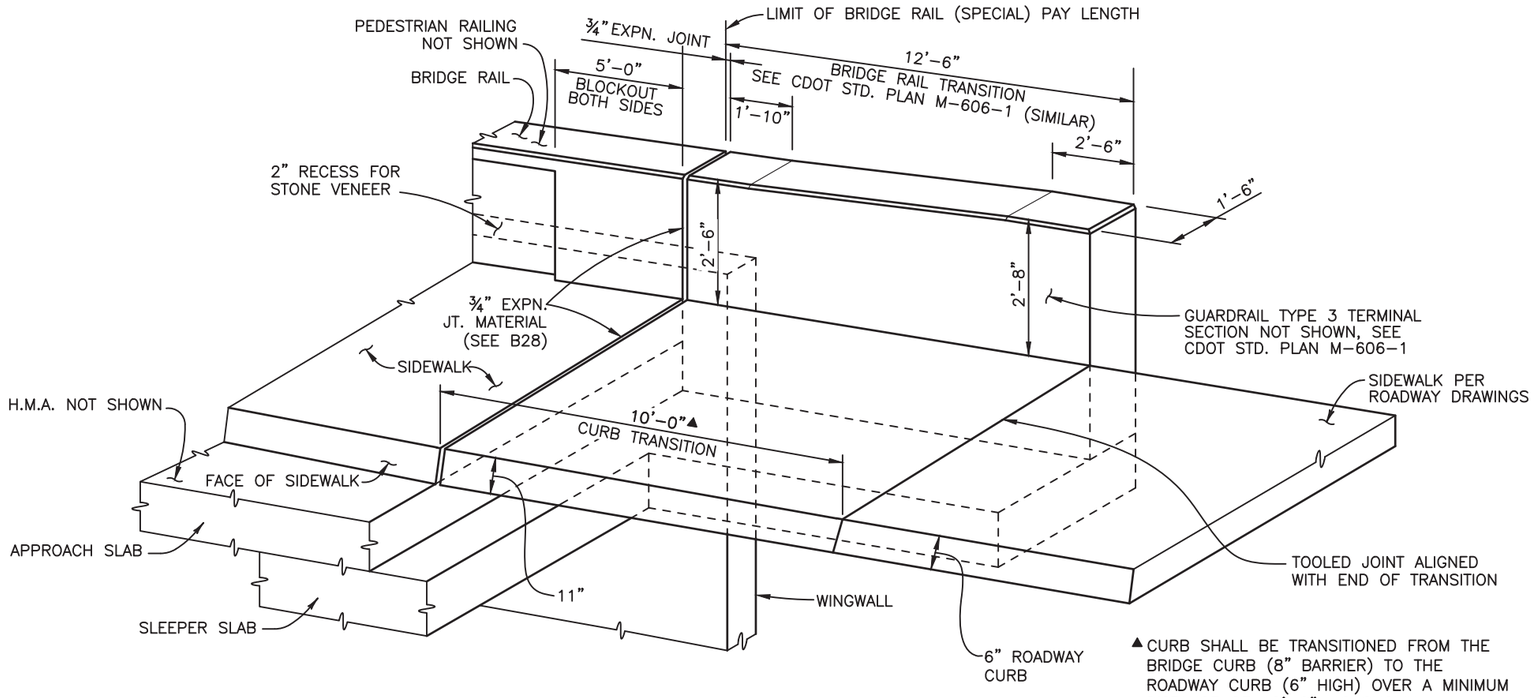
Designer: J. LYNCH
Detailer: R. DILLON
Subset: BRIDGE
Structure Numbers:
Sheets: B26 of 37

Project No./Code:
Sheet Number 53



TYPICAL SECTION

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



RAIL ISOMETRIC

▲ 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.

BRIDGE RAIL (SPECIAL) CONCRETE NOTES

CONCRETE & REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF SPECIFICATION SECTIONS 601 & 602, RESPECTIVELY.

ALL BRIDGE RAIL & SIDEWALK CONCRETE SHALL BE CONCRETE CLASS D (BRIDGE).

BRIDGE RAIL (SPECIAL) STEEL NOTES

SEE PROJECT SPECIAL PROVISION, REVISION OF SECTION 514 PEDESTRIAN RAILING (STEEL).

STRUCTURAL STEEL ELEMENTS SHALL CONFORM TO THE REQUIREMENTS OF SPECIFICATION SECTION 509.

ALL TUBES SHALL BE ASTM A–500 GRADE B.
ALL OTHER STEEL SHALL BE ASTM A–36 UNLESS OTHERWISE NOTED.

STRUCTURAL STEEL:
AASHTO M–183 (ASTM A–36) F_Y = 36,000 PSI
COLD FORMED ASTM A–500 GRADE B F_Y = 46,000 PSI

PEDESTRIAN RAILING (STEEL) SHALL BE FABRICATED IN ACCORDANCE WITH REVISION OF SECTION 514 OF THE STANDARD SPECIFICATIONS. STEEL POSTS, PLATES, TUBE EXPANSION JOINTS AND DEFORMED ANCHOR STUDS WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST OF ITEM 606–BRIDGE RAIL (SPECIAL).

PRIOR TO FABRICATION OF THIS ITEM, THREE SETS OF WORKING DRAWINGS WHICH COMPLY WITH THE REQUIREMENTS OF SECTION 105, SHALL BE SUBMITTED TO THE ENGINEER FOR INFORMATION ONLY.

THE TUBES SHALL BE SHOP BENT OR FABRICATED TO FIT HORIZONTAL CURVES.

TUBES SHALL BE CONTINUOUS OVER NOT LESS THAN TWO POSTS OR MORE THAN 3 POSTS. NO WELDED BUTT SPLICES WILL BE ALLOWED IN THE TUBE SECTIONS.

THE CENTERLINE OF THE TUBE SPLICE SHALL BE 1'–6" FROM POST, SEE SHT. B28.

ALL EXPOSED WELDS SHALL BE GROUND SMOOTH.

ALL PEDESTRIAN RAILING COMPONENTS SHALL BE FABRICATED AND INSTALLED WITH POSTS PLUMB AND RAILS TRUE TO LINE IN ACCORDANCE WITH THE PLANS.
STRUCTURAL STEEL SHALL BE PAINTED IN ACCORDANCE WITH REVISION OF SECTION 514, AND SECTION 509 AS APPLICABLE, OF THE STANDARD SPECIFICATIONS. COLOR SHALL BE "PARKER BROWN".

BRIDGE RAIL (SPECIAL) FOR INFORMATION ONLY		
DESCRIPTION	UNIT	PER LIN. FT.
CONCRETE CLASS D	CY	0.106
REINFORCING STEEL (EPOXY COATED)	LB	17.6

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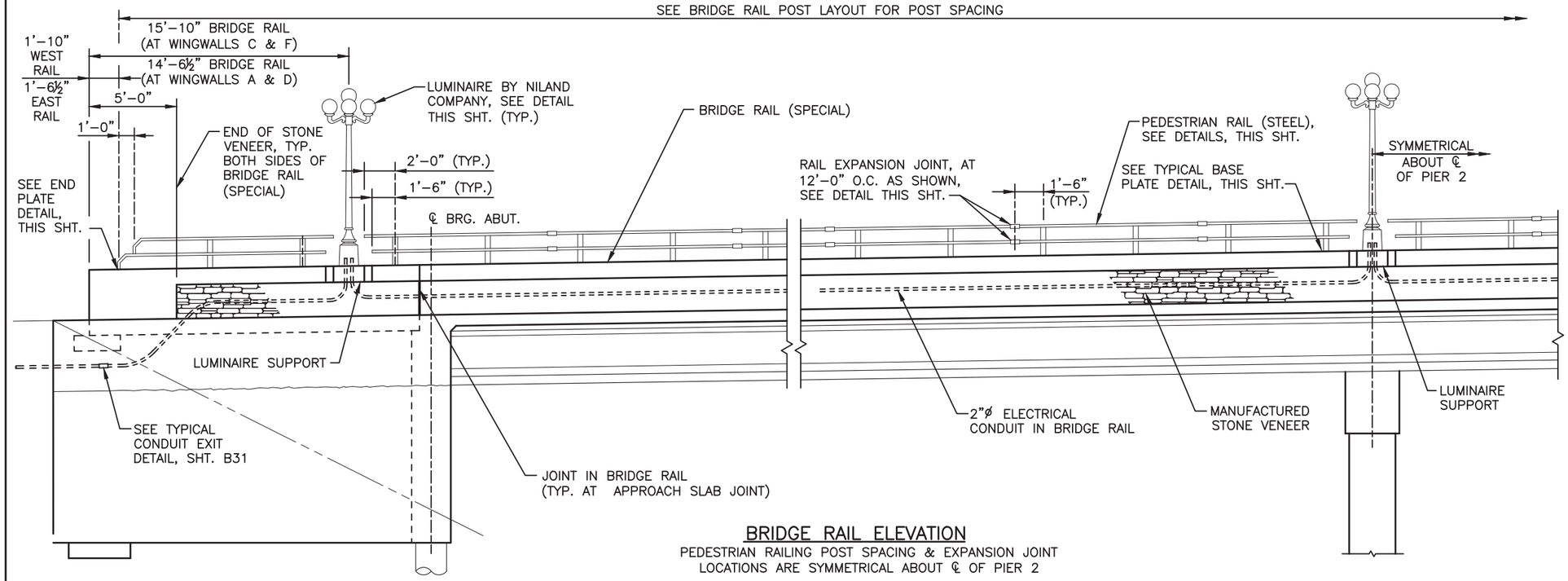
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BELFORD–HAPPY CANYON CREEK BRIDGE
BRIDGE RAIL (SPECIAL) DETAILS

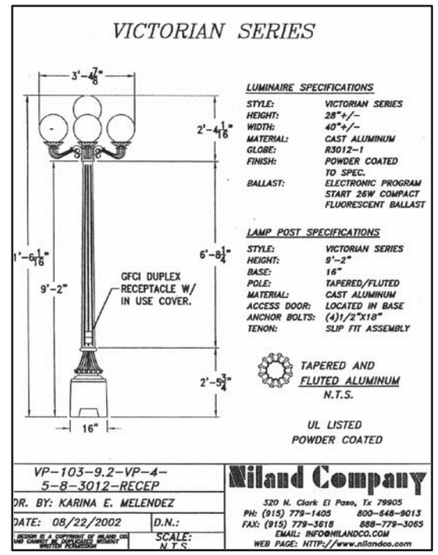
Designer: J. LYNCH
Detailer: R. DILLON
Subset: BRIDGE
Structure Numbers:
Sheets: B27 of 37

Project No./Code:
Sheet Number 54

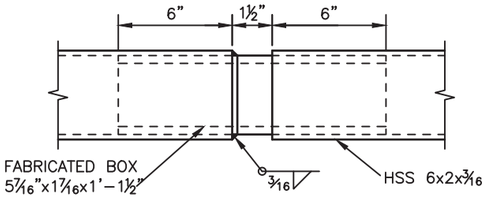


BRIDGE RAIL ELEVATION

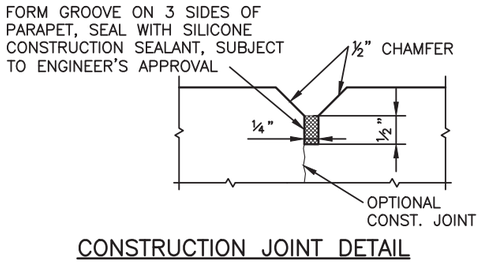
PEDESTRIAN RAILING POST SPACING & EXPANSION JOINT LOCATIONS ARE SYMMETRICAL ABOUT ℄ OF PIER 2



LUMINAIRE DETAIL

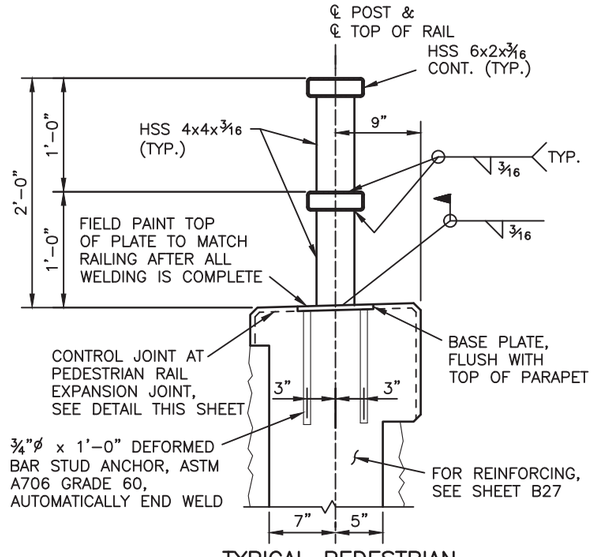


RAIL EXPANSION JOINT DETAIL

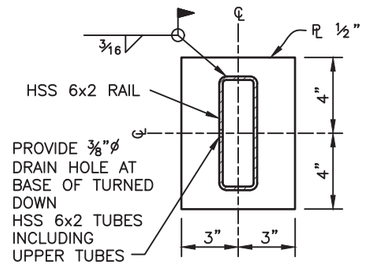


CONSTRUCTION JOINT DETAIL

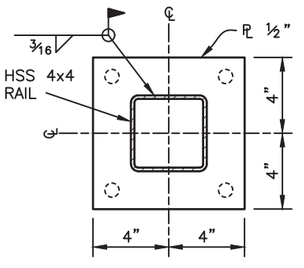
LOCATIONS TO COINCIDE WITH RAIL EXPANSION JOINT LOCATIONS



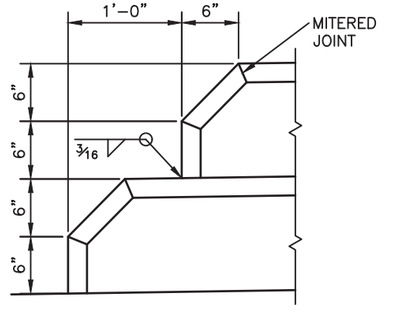
TYPICAL PEDESTRIAN RAILING SECTION



END PLATE DETAIL



TYPICAL BASE PLATE DETAIL



PEDESTRIAN RAIL END DETAIL

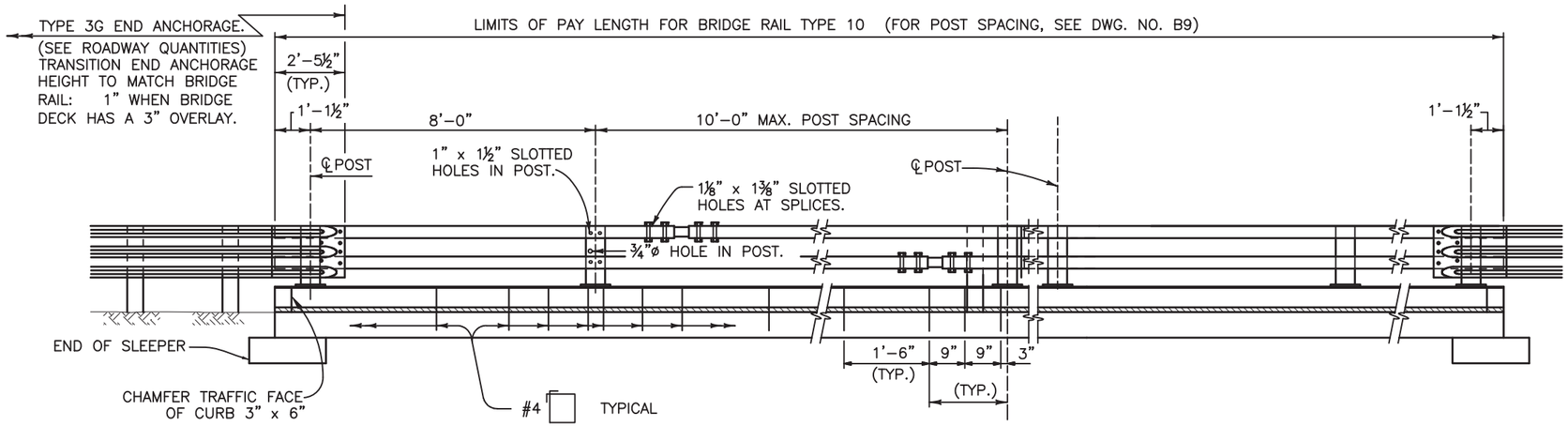
NOTES:

1. ALL PEDESTRIAN RAILING SHALL BE GALVANIZED & DUPLEX COATED. SEE REVISION OF SECTION 514 – PEDESTRIAN RAILING (STEEL).
2. ALL LABOR AND MATERIAL FOR LUMINAIRE SHALL BE PAID FOR UNDER ITEM 613 – LUMINAIRE (SPECIAL)

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Print Date: 3/13/2018 9:04:59 AM	Sheet Revisions	As Constructed	BELFORD–HAPPY CANYON CREEK BRIDGE BRIDGE RAIL ELEVATION & PEDESTRIAN RAILING DETAILS
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Horizontal Scale: VARIES Vertical Scale:		Revised:	Designer: J. LYNCH; Detailer: R. DILLON; Subset: BRIDGE; Structure Numbers; Sheets: B28 of 37
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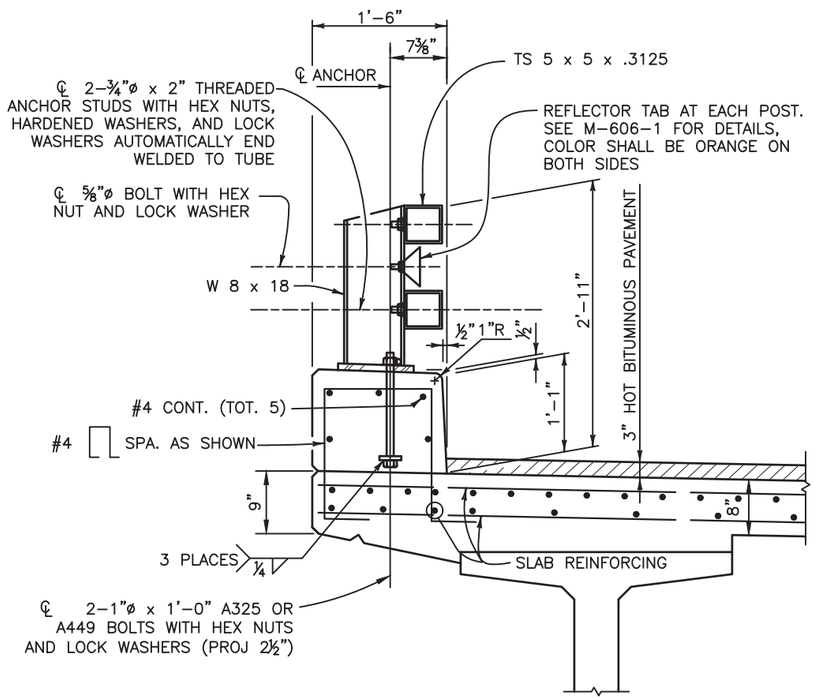
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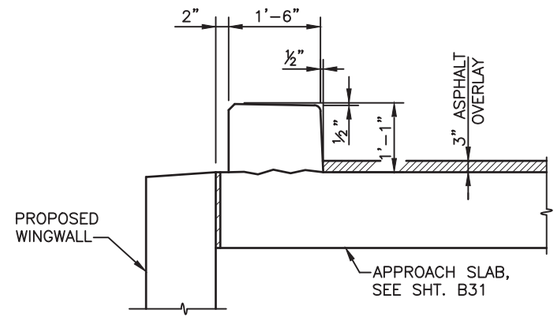
RAIL PANEL AT TRANSITION SECTION

(SEE ROADWAY PLANS FOR ENDS REQUIRING ATTACHMENT TO GUARD RAIL.)

BRIDGE RAIL ELEVATION TRAFFIC SIDE



TYPICAL SECTION



TYPICAL BRIDGE RAIL CURB SECTION ON APPROACH SLAB

INFORMATION ONLY

DESCRIPTION	Unit	Per Lin. Ft.
STRUCTURAL STEEL (GALVANIZED)	Lb.	45.1
CONCRETE CLASS D (BRIDGE)	Cu.Yd.	.06
REINFORCING STEEL (EPOXY COATED)	Lb.	8.0

NOTES

ALL TUBES SHALL BE ASTM A-500 GRADE B.
ALL POSTS AND BASE PLATES SHALL BE ASTM A-572 GRADE 50.
ALL OTHER STEEL SHALL BE ASTM A-36 UNLESS OTHERWISE NOTED.

THE ABOVE MATERIAL AND ALL ANCHOR BOLTS, BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH SECTION 509. CONCRETE, REINFORCING STEEL, AND STRUCTURAL STEEL ELEMENTS SHALL CONFORM TO THE REQUIREMENTS OF SECTIONS 601, 602 AND 509, REPECTIVELY.

POST ANCHOR, ENCASED IN CONCRETE, SHALL BE ASTM A-36 (AASHTO M-183) STEEL AND NEED NOT BE GALVANIZED.

THE TUBES SHALL BE SHOP BENT OR FABRICATED TO FIT HORIZONTAL CURVE WHEN RADIUS IS LESS THAN 1,500 FEET.

TUBES SHALL BE CONTINUOUS OVER NOT LESS THAN TWO POSTS. NO WELDED BUTT SPLICES WILL BE ALLOWED IN THE TUBE SECTIONS.

THE CENTERLINE OF THE TUBE SPLICE SHALL BE 1'-8" MINIMUM AND 2'-6" MAXIMUM FROM THE CENTERLINE OF THE POSTS.

ALL BOLTS THAT HAVE LOCK WASHERS SHALL BE TIGHTENED TO SNUG ONLY.

POSTS SHALL BE PERPENDICULAR TO THE LONGITUDINAL ROADWAY GRADE.

ONE OR MORE 10'-0" POST SPACINGS MAY BE REDUCED (6'-8" MIN.) IN ORDER TO MAINTAIN DIMENSIONS FROM THE END OF THE RAIL AND EXPANSION JOINTS.

PAYMENT WILL BE MADE UNDER ITEM 606, BRIDGE RAIL TYPE 10 FOR ALL POSTS, POST ANCHORS, BASE PLATES, BACKING PLATES, ANCHOR BOLTS, MISCELLANEOUS BOLTS, NUTS, WASHERS, TUBES, TUBE EXPANSION DEVICES, TUBE SPLICES, END PLATES, CURB CONCRETE (CLASS D), CURB REINFORCING STEEL, AND REFLECTOR TABS.

PRIOR TO FABRICATION OF THIS ITEM, THREE SETS OF WORKING DRAWINGS WHICH COMPLY WITH THE REQUIREMENTS OF SECTION 105, SHALL BE SUBMITTED TO THE ENGINEER FOR INFORMATION ONLY.

STRUCTURAL STEEL:

AASHTO M-183 (ASTM A-36)	F_Y = 36,000 PSI
AASHTO M-223 (ASTM A-572) GRADE 50	F_Y = 50,000 PSI
COLD FORMED ASTM A-500 GRADE B	F_Y = 46,000 PSI

FOR ADDITIONAL DETAILS SEE NEXT RAIL SHEETS.

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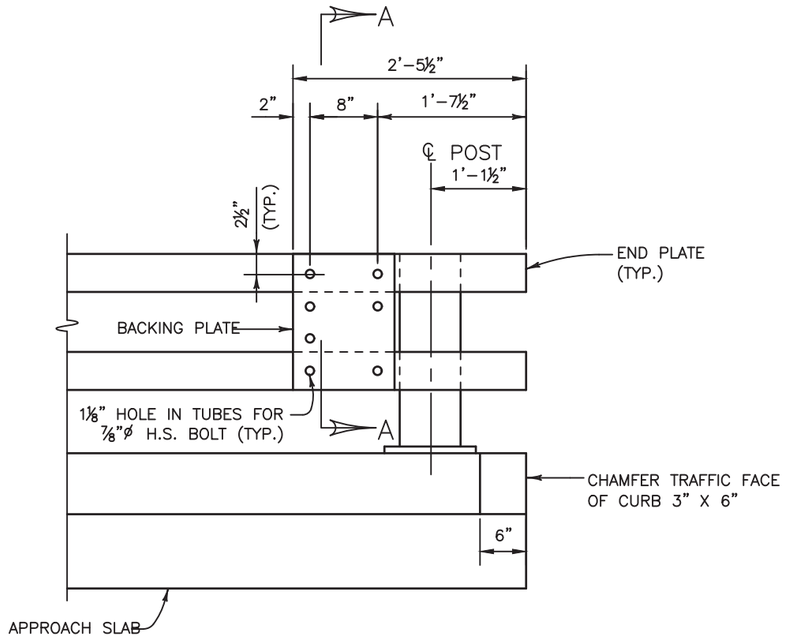
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BELFORD-HAPPY CANYON CREEK BRIDGE
BRIDGE RAIL TYPE 10
(1 OF 2)

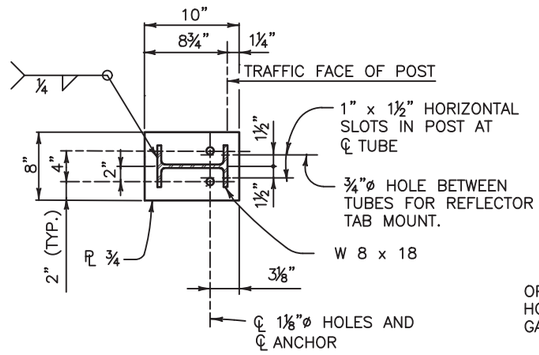
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Detailer:	C. MIYAMOTO		
Subset:	BRIDGE	Sheets:	B29 of 37

Project No./Code

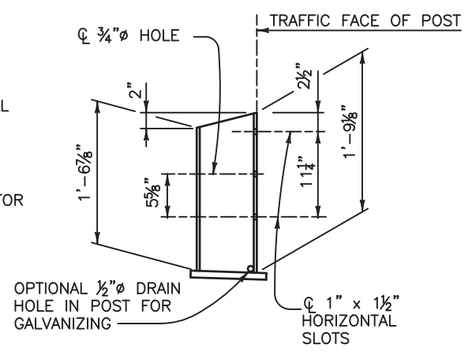
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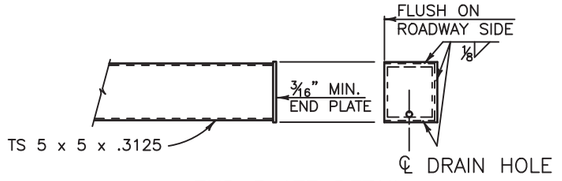
RAIL TUBE DETAILS
THRIE BEAM NOT SHOWN



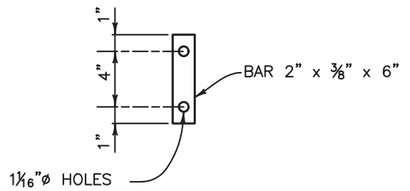
PLAN – POST DETAIL



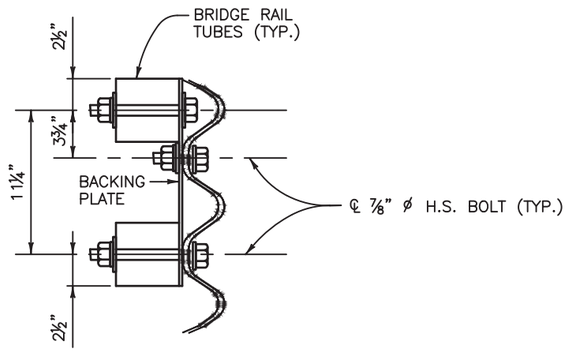
POST ELEVATION



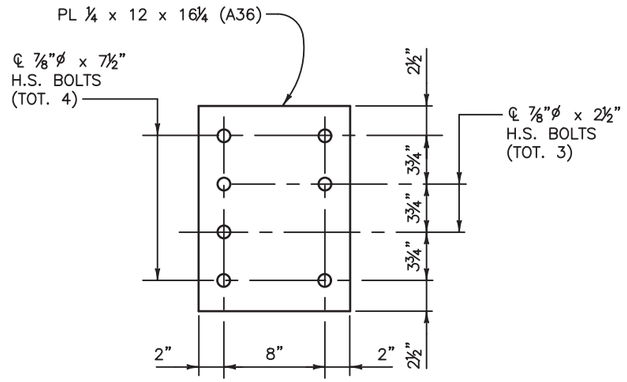
END PLATE DETAIL



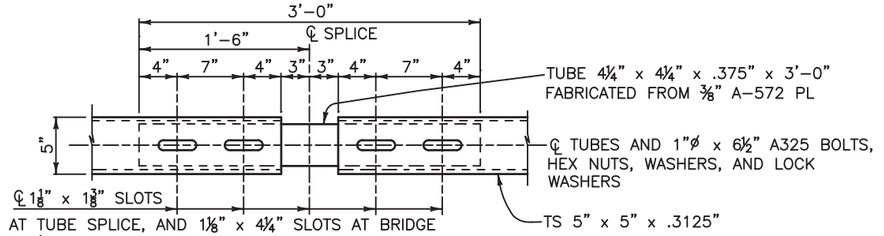
ANCHOR DETAIL



SECTION A–A



BACKING PLATE
HOLES ARE 1⅛" FOR ⅞"ø H.S. BOLTS WITH HEX NUTS, 2 ℄ WASHERS, AND 1 LOCK WASHER

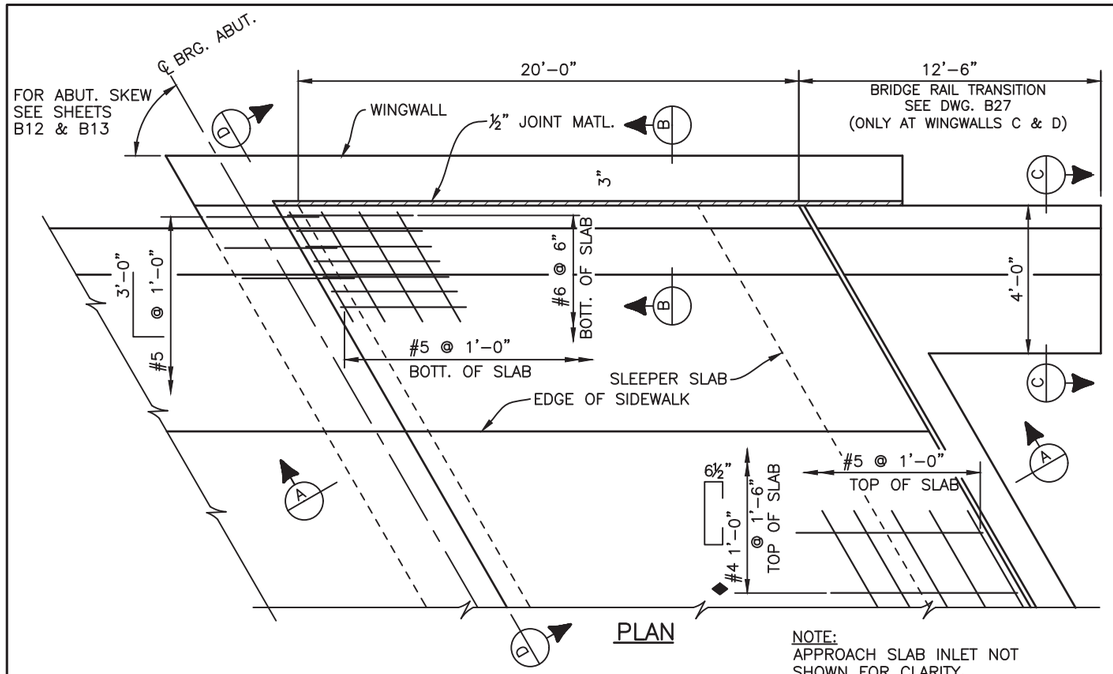


AT TUBE SPLICE, AND 1⅛" x 4¼" SLOTS AT BRIDGE EXP'N DEVICE. SLOT BOTH INNER AND OUTER TUBES. STAGGER TOP AND BOTTOM SPLICES INTO DIFFERENT POST SPACINGS EXCEPT AT EXPANSION JOINT, PLACE AT OPPOSITE ENDS OF SAME POST SPACE. (RANGE OF MOTION = 1'–0" AT BRIDGE. EXPANSION DEVICE.)

PLAN – TUBE SPLICE

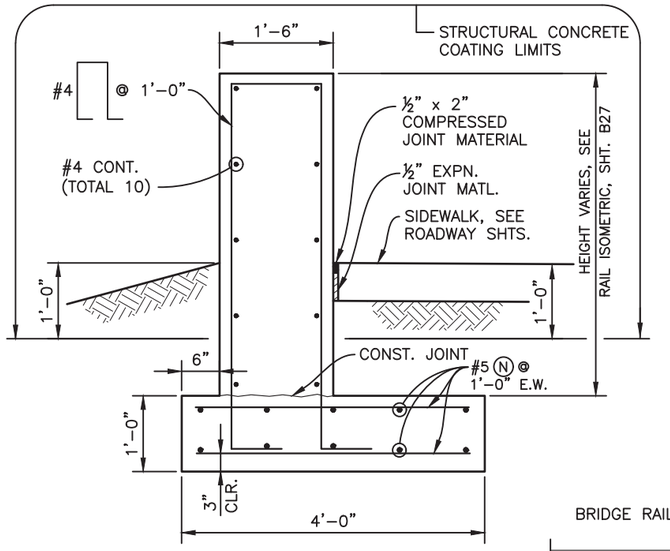
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File Name: B115360–01RAL04.dwg	Date	Comments	Initials	6008 E. Arapahoe Court, Suite 110, Centennial, CO 80112 ph:303.708.0500 fx:303.708.0400 manhard.com Civil Engineers • Surveyors • Water Resource Engineers • Water & Wastewater Engineers Construction Managers • Environmental Scientists • Landscape Architects • Planners	No Revisions:		
Horizontal Scale: VARIES Vertical Scale:					Revised:	Designer: J. LYNCH / Detailer: C. MIYAMOTO / Subset: BRIDGE	Structure Numbers
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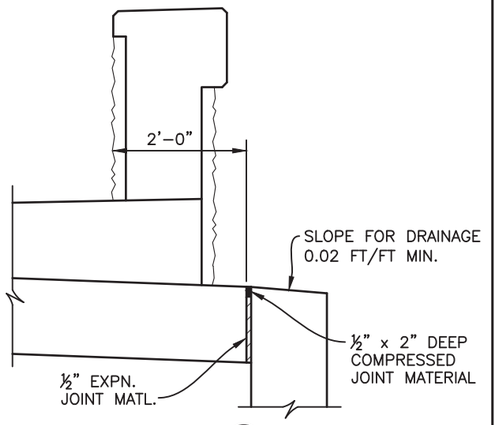


PLAN

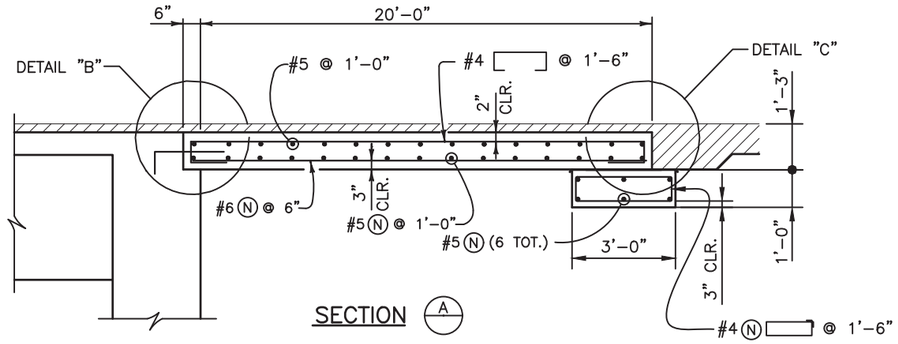
NOTE:
APPROACH SLAB INLET NOT SHOWN FOR CLARITY.



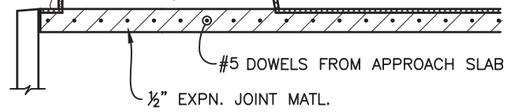
SECTION (C)



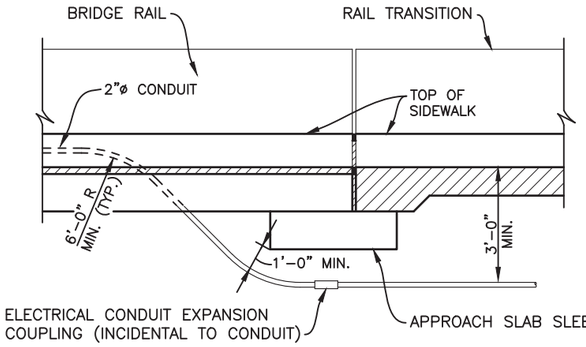
SECTION (B)



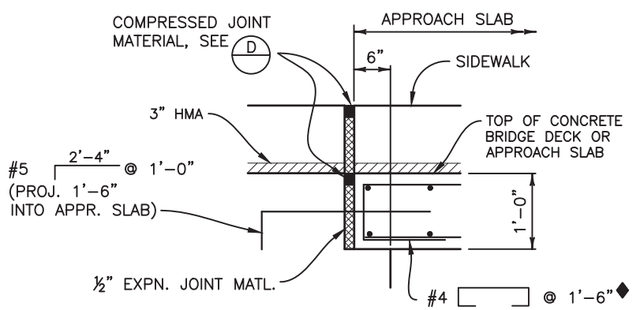
SECTION (A)



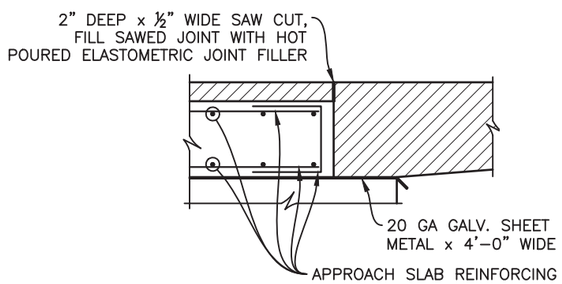
SECTION (D)



TYPICAL CONDUIT EXIT DETAIL



DETAIL "B"



DETAIL "C"

NOTES:

CONCRETE CLASS D (BRIDGE) SHALL BE USED FOR APPROACH SLABS.

APPROACH SLAB CONCRETE SHALL BE PLACED IN ACCDORDANCE WITH THE SPECIFICATIONS FOR BRIDGE DECK CONCRETE IN SUBSECTION 601.

½" EXPANSION JOINT MATERIAL SHALL MEET AASHTO SPEC. M213.

FOR BRIDGE RAIL DETAILS SEE SHT. B27.

COMPRESSED JOINT MATERIAL

COMPRESSED JOINT MATERIAL SHALL BE PRE–COMPRESSED, CHEMICALLY RESISTANT, OPEN CELL POLYURETHANE FOAM SEALANT, IMPREGNATED WITH A WATER–REPELLANT 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 COMPRESSED JOINT MATERIAL. THE COST SHALL BE INCLUDED IN THE COST OF ITEM 601 CLASS D CONCRETE.

ACCEPABLE COMPRESSED JOINT MATERIAL ALTERNATES

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

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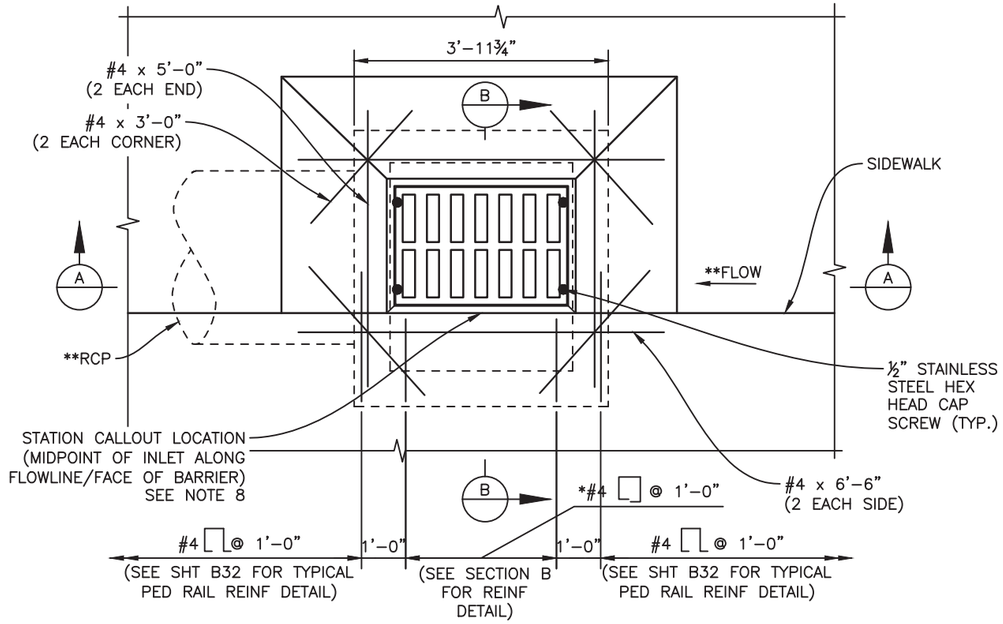
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BELFORD–HAPPY CANYON CREEK BRIDGE
APPROACH SLAB
DETAILS

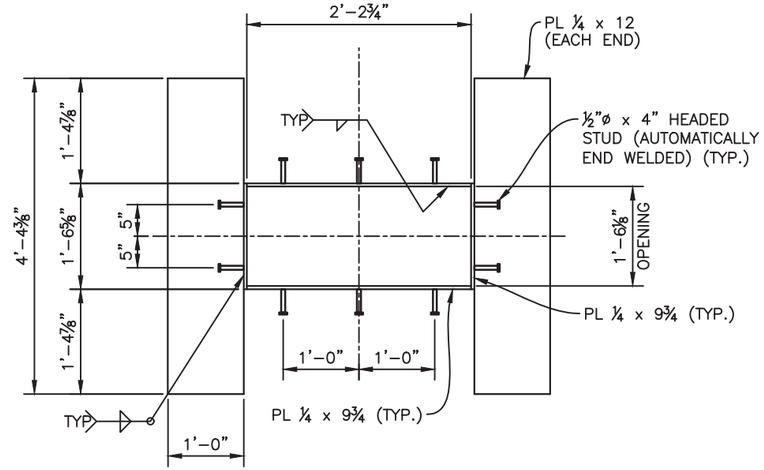
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Detailer: C. MIYAMOTO
Subset: BRIDGE
Structure Numbers:
Sheets: B31 of 37

Project No./Code:
Sheet Number 58

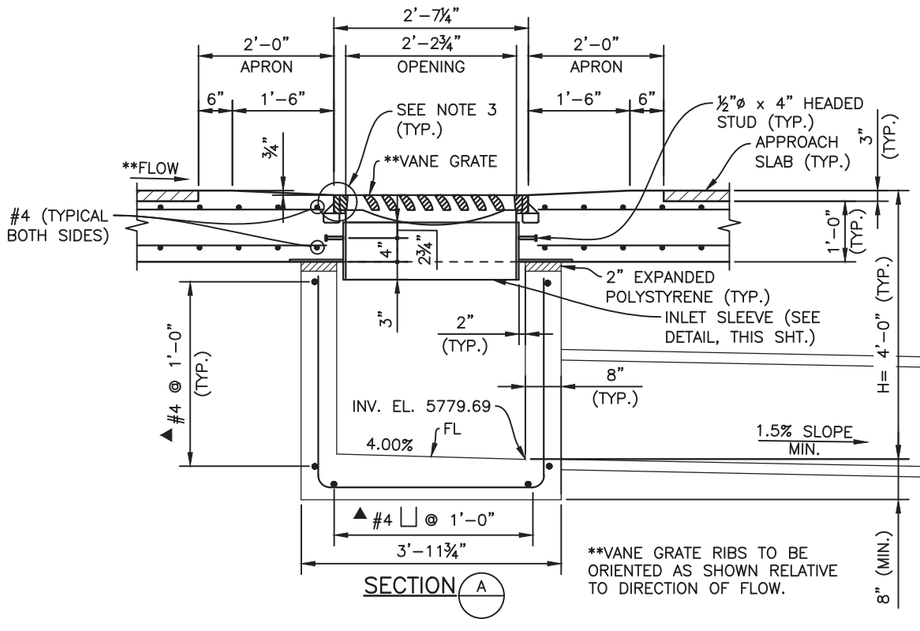


APPROACH SLAB
INLET PLAN

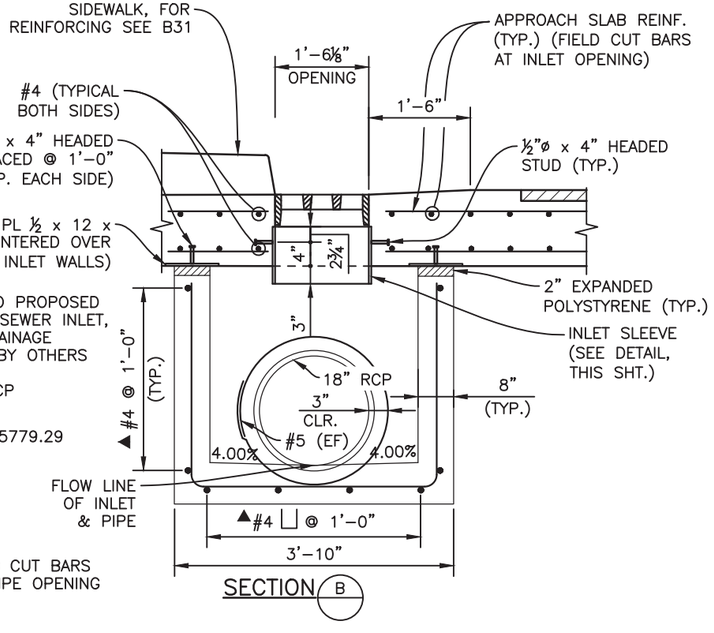
*NOTE TAIL ON #4 BAR IS ROTATED IN THE OPPOSITE DIRECTION TO CLEAR INLET OPENING.



PLAN – INLET SLEEVE



SECTION A



▲ FIELD CUT BARS AT PIPE OPENING

SECTION B

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+55.00, 37.0' RT

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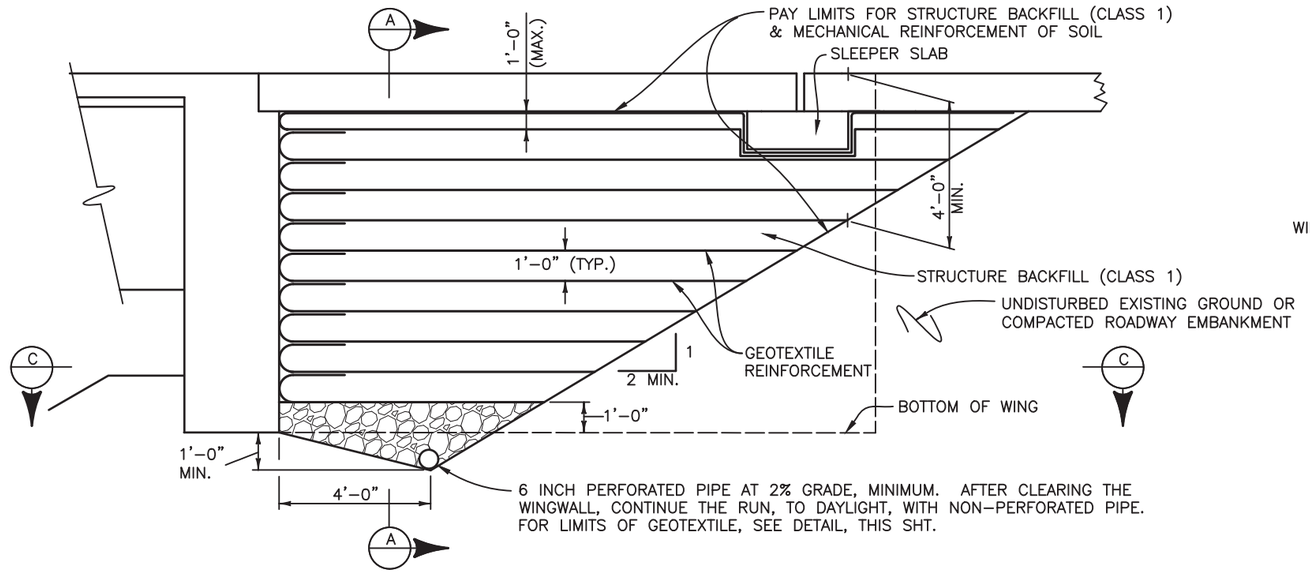
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BELFORD–HAPPY CANYON CREEK
APPROACH SLAB INLET DETAILS

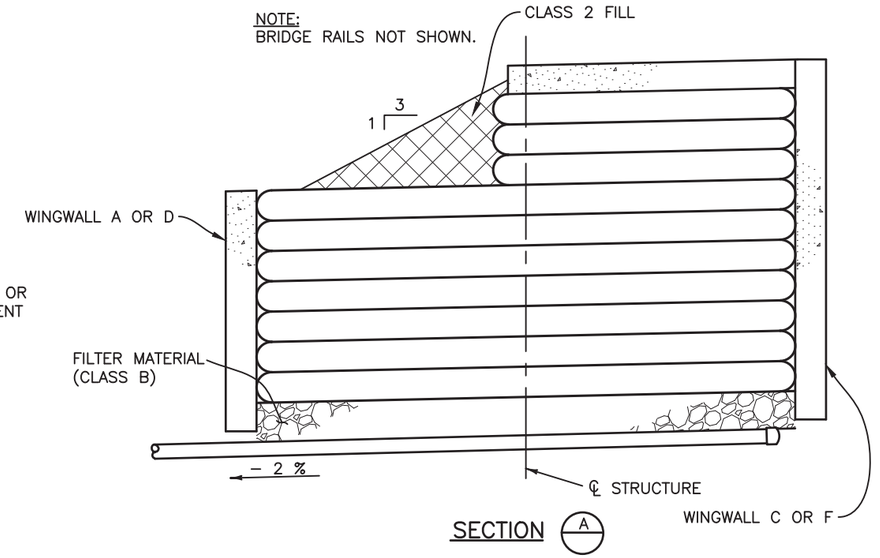
Designer:	J. LYNCH	Structure Numbers	
Detailer:	C.MIYAMOTO		
Subset:	BRIDGE	Sheets:	B32 of 49

Project No./Code

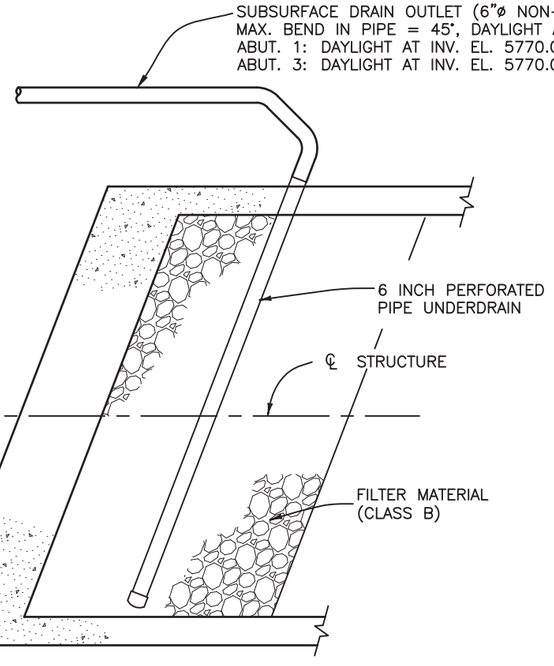
Sheet Number 59



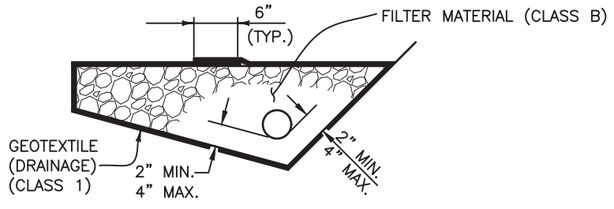
SECTION PERPENDICULAR TO ABUTMENT
(PROPOSED SECTION)



SECTION (A)

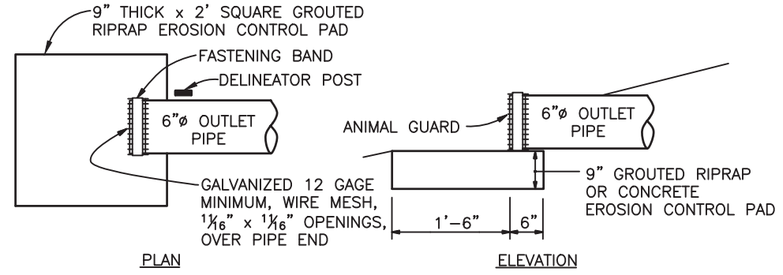


SECTION (C)



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 GEOFABRIC 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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6300 South Syracuse Way, Suite 600
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fax 303.721.0832

Sheet Revisions		
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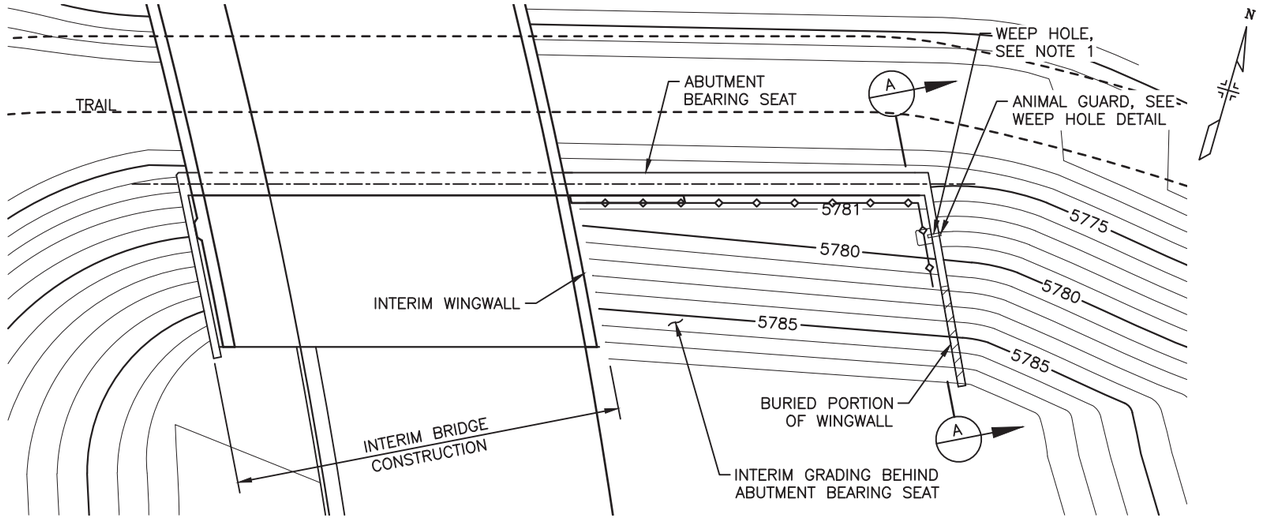
As Constructed
No Revisions:
Revised:
Void:

BELFORD–HAPPY CANYON CREEK BRIDGE
STRUCTURE BACKFILL
SPECIAL (PROPOSED)

Designer: J. LYNCH
Detailer: R. DILLON
Subset: BRIDGE
Structure Numbers
Sheets: B33 of 37

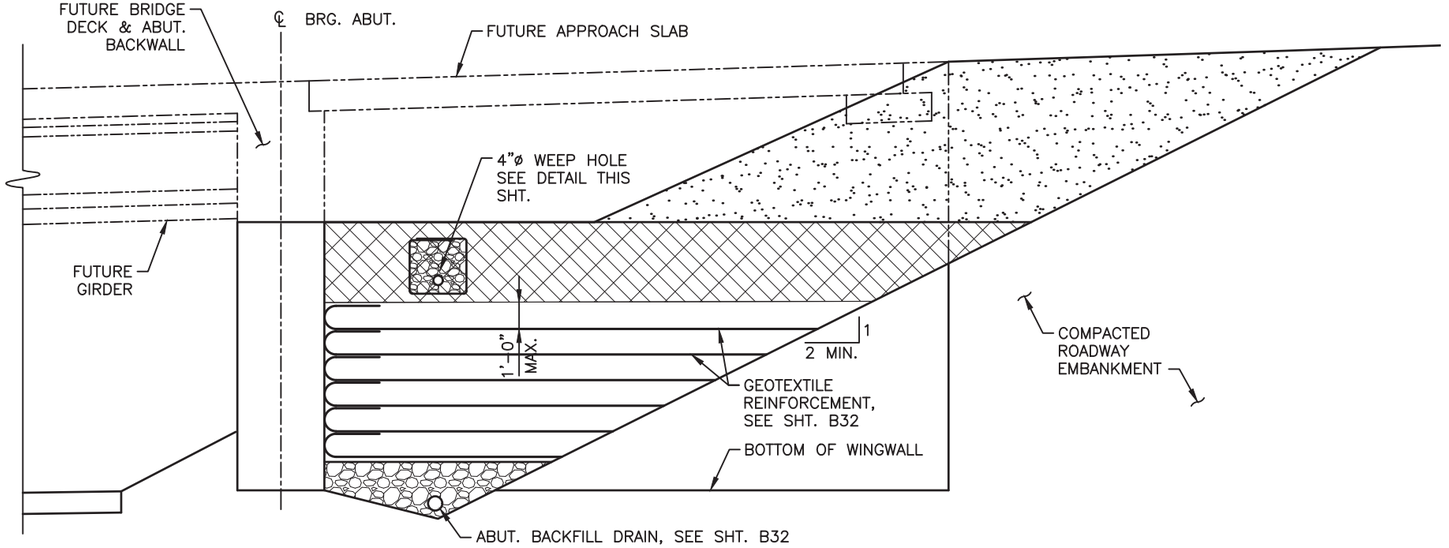
Project No./Code

Sheet Number 60



PLAN

(ABUTMENT 3 SHOWN, ABUTMENT 1 SIMILAR)



SECTION (A)

(ABUTMENT 3 SHOWN, ABUTMENT 1 SIMILAR)

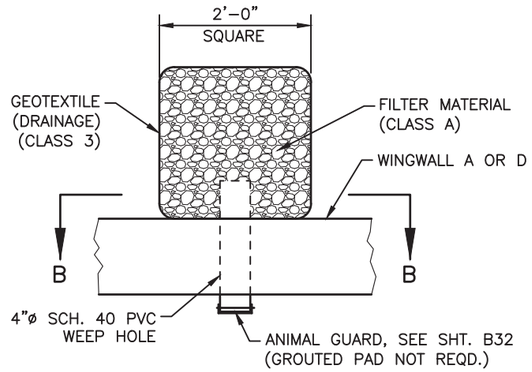
LEGEND:

- STRUCTURE BACKFILL (CLASS 2)
- ROADWAY EMBANKMENT MATERIAL
- FILTER MATERIAL (CLASS B)

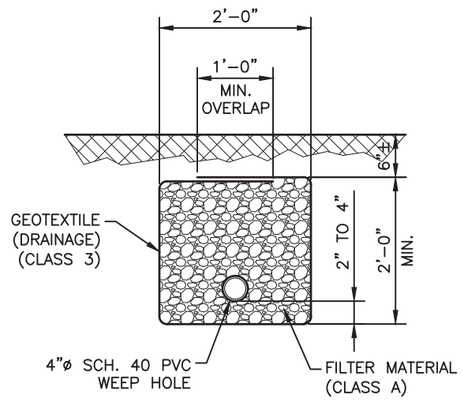
NOTES:

1. ABUTMENT 1:
   WEEP HOLE AT WINGWALL A INV. EL. 5775.0±

   ABUTMENT 3:
   WEEP HOLE AT WINGWALL D INV. EL. 5778.0±
2. SEE BRIDGE HYDRAULIC INFORMATION (1 OF 2) FOR RIPRAP LIMITS (NOT SHOWN ON THIS SHT. FOR CLARITY).
3. SEE BRIDGE HYDRAULIC INFORMATION (1 OF 2) FOR INTERIM GRADING AT ABUTMENT 1.
4. COST FOR ALL WEEP HOLE MATERIALS & ANIMAL GUARD SHALL BE INCLUDED IN THE COST OF ITEM 206, STRUCTURE BACKFILL (CLASS 1).



PLAN



SECTION B–B

WEEP HOLE DETAIL

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Print Date: 3/13/2018 9:14:06 AM	Sheet Revisions			As Constructed	BELFORD–HAPPY CANYON CREEK BRIDGE INTERIM ABUTMENT BACKFILL
File Name: B115360-01BAK01.dwg	Date	Comments	Initials	No Revisions:	Designer: J. LYNCH
Horizontal Scale: VARIES Vertical Scale:				Revised:	Detailer: R. DILLON
FELSBURG HOLT & ULLEVIG 6300 South Syracuse Way, Suite 600 Centennial, CO 80111 tel 303.721.1440 fax 303.721.0832				Void:	Subset: BRIDGE
					Structure Numbers
					Sheets: B34 of 37
Manhard CONSULTING LTD 6008 E. Arapahoe Court, Suite 110, Centennial, CO 80112 ph:303.708.0500 fx:303.708.0400 manhard.com Civil Engineers • Surveyors • Water Resource Engineers • Water & Wastewater Engineers Construction Managers • Environmental Scientists • Landscape Architects • Planners					Project No./Code
					Sheet Number 61

DESCRIPTION

Units: feet;
Project: 115360-01; Subaccount: ;
Designer: J. Lynch; Detailer: R. Dillon;
Location: Belford over Happy Canyon Creek;

SPAN 1 INTERIM BRIDGE DECK
Three Span (77'-2 1/2" / 77 2 1/2") Bridge
Composite Concrete Slab and Precast/Prestresssed Concrete BT42 Girders
94'-0" Width out to out (Ultimate)
74'-0" Width curb to curb (Ultimate)
8'-6" Sidewalk each side (Ultimate)
Bridge Rail (Special) (Ultimate)
48'-6" Width out to out (Interim)
45'-6" Width curb to curb (Interim)

HORIZONTAL ALIGNMENT DATA

PC	81+65.4994	T	1010.8406				
PI	91+76.3400	Lc	1416.5266	DELTA 105 24 14.00 RT	Dc 7 26 27.64	RADIUS	770.000000
PT	95+82.0259	T	1010.8406				

VERTICAL ALIGNMENT DATA

ELEVATION AT PI	ELEVATION AT GRADE		STATION	ELEVATION AT GRADE	ELEVATION AT PI	PERCENT GRADE
						-3.120000
	5788.1400	PC	90+86.0000			
5780.3400	5784.3837	PI	93+36.0000			
	5788.7150	PT	95+86.0000			
						3.350000

TABLE OF ROADWAY CROSS-SLOPES (SUPERELEVATION: E= -NC-)

STATION (ON TANGENT)	SLOPE LEFT	SLOPE RIGHT	VC LENGTH
	-0.0200	-0.0200	50.00 (MAX)

OFFSET PROFILE CONTROL TO PIVOT POINT = 0.0000 FEET

LIMITS OF VALID ELEVATION AND CROSS-SLOPE DATA	BEGIN	END
	* UNLIMITED *	* UNLIMITED *

LAYOUT LINE DATA

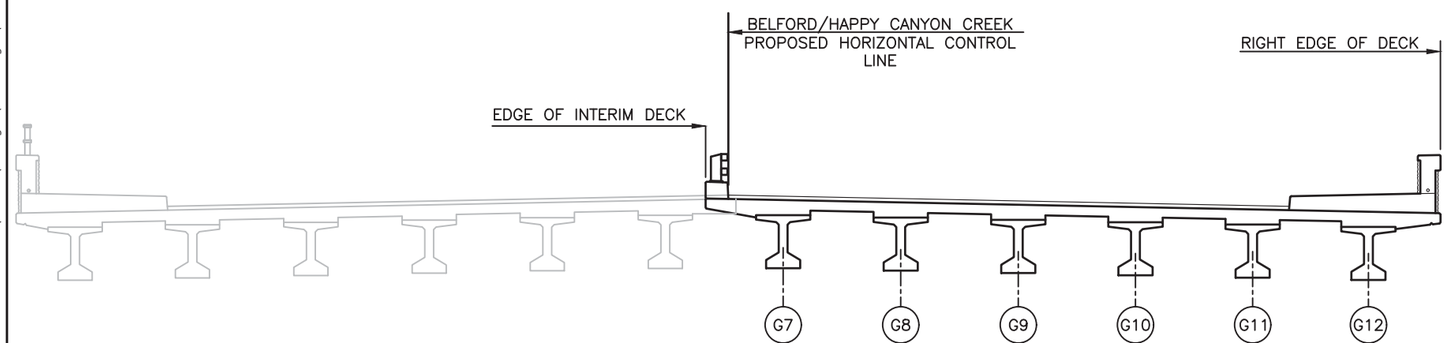
LAYOUT LINE DEFINED AS CHORD BETWEEN BENT LINES: CL BRG A3
AND: *REF LINE*

LAYOUT LINE DEFINED AS CHORD ON HORIZONTAL CONTROL LINE
A CURVE PARALLEL TO HORIZONTAL CONTROL AT OFFSET 3.8681
IS TANGENT TO LAYOUT LINE AT STATION 94+64.0426
Y FROM REF LINE 77.0833155

	HCL STA	SKEW	Y FROM REF LINE
LAYOUT LINE INTERSECTS HORIZONTAL CONTROL AT	93+86.8300	5 44 43.44	0.00000000

	HCL STA	OFFSET	X	Y
LAYOUT LINE INTERSECTS REF LINE AT	93+86.8300	0.00000000	0.0000	0.0000

BENT LINES TO DEFINE OFFSETS FOR FLARED GIRDER LINES
INITIAL BENT: *REF LINE*
TERMINAL BENT: P2 BRG BK



DEAD LOAD DEFLECTION DATA

DEFLECTIONS AT TENTH POINTS FROM FITTED CURVE

	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	
FOR BENT LINE: CL BRG A1 AND OTHERS 07 CARD(S): 1 GIRDER LINES REFERENCED BY: A												
INCH	0.0000	0.3776	0.7264	1.0024	1.1750	1.2271	1.1544	0.9663	0.6851	0.3467	0.0000	INCH
FOOT	0.0000	0.0315	0.0605	0.0835	0.0979	0.1023	0.0962	0.0805	0.0571	0.0289	0.0000	FOOT
SLOPE	0.311806										-0.275982	SLOPE
FOR BENT LINE: P2 BRG AHD AND OTHERS 07 CARD(S): 1 GIRDER LINES REFERENCED BY: A												
INCH	0.0000	0.3471	0.6839	0.9628	1.1487	1.2199	1.1675	0.9956	0.7214	0.3751	0.0000	INCH
FOOT	0.0000	0.0289	0.0570	0.0802	0.0957	0.1017	0.0973	0.0830	0.0601	0.0313	0.0000	FOOT
SLOPE	0.277442										-0.309954	SLOPE
FOR BENT LINE: CL BRG A1 AND OTHERS 07 CARD(S): 1 GIRDER LINES REFERENCED BY: B												
INCH	0.0000	0.3259	0.6255	0.8615	1.0081	1.0508	0.9867	0.8240	0.5827	0.2938	0.0000	INCH
FOOT	0.0000	0.0272	0.0521	0.0718	0.0840	0.0876	0.0822	0.0687	0.0486	0.0245	0.0000	FOOT
SLOPE	0.269849										-0.232656	SLOPE

	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	

DEAD LOAD DEFLECTION DATA (CONT)

DEFLECTIONS AT TENTH POINTS FROM FITTED CURVE

	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	
FOR BENT LINE: P2 BRG AHD AND OTHERS 07 CARD(S): 1 GIRDER LINES REFERENCED BY: B												
INCH	0.0000	0.2907	0.5767	0.8153	0.9756	1.0382	0.9947	0.8487	0.6148	0.3193	0.0000	INCH
FOOT	0.0000	0.0242	0.0481	0.0679	0.0813	0.0865	0.0829	0.0707	0.0512	0.0266	0.0000	FOOT
SLOPE	0.230123										-0.263218	SLOPE
FOR BENT LINE: CL BRG A1 AND OTHERS 07 CARD(S): 1 GIRDER LINES REFERENCED BY: Z												
INCH	0.0000	0.3528	0.6789	0.9369	1.0979	1.1458	1.0768	0.8999	0.6367	0.3211	0.0000	INCH
FOOT	0.0000	0.0294	0.0566	0.0781	0.0915	0.0955	0.0897	0.0750	0.0531	0.0268	0.0000	FOOT
SLOPE	0.291023										-0.254351	SLOPE
FOR BENT LINE: P2 BRG AHD AND OTHERS 07 CARD(S): 1 GIRDER LINES REFERENCED BY: Z												
INCH	0.0000	0.3180	0.6290	0.8875	1.0605	1.1273	1.0794	0.9204	0.6666	0.3463	0.0000	INCH
FOOT	0.0000	0.0265	0.0524	0.0740	0.0884	0.0939	0.0899	0.0767	0.0556	0.0289	0.0000	FOOT
SLOPE	0.252795										-0.285497	SLOPE

BENT LINE DESCRIPTION	INTERSECTION POINT STATION	OFFSET	ELEVATION		FROM LAYOUT LINE OFFSET X	ORDINATE Y	BENT LINE LENGTH FROM Y-AXIS	SKEW D M S	GIRDER LINE LENGTH FROM REF LINE	ROADWAY CROSS-SLOPE
* HORIZONTAL CONTROL LINE *			AT FINISHED GRADE							
END APPR	93+64.9262	0.0000	5784.4712	1	2.5024	-21.7596	2.6238	24 52 29.19	-21.9038	
BF ABUT 1	93+85.1967	0.0000	5784.5969	1	0.1652	-1.6249	0.1732	23 21 59.20	-1.6333	
CL BRG A1	93+86.8300	0.0000	5784.6094	10	0.0000	0.0000	0.0000	23 14 41.68	0.0000	
P2 BRG BK	94+63.1700	0.0000	5785.5763	1	-3.8676	76.2107	-4.0552	17 33 52.00	76.3400	
CL PIER 2	94+64.0439	0.0000	5785.5918	1	-3.8681	77.0846	-4.0558	17 29 57.90	77.2139	
P2 BRG AHD	94+64.9176	0.0000	5785.6073	10	-3.8676	77.9583	-4.0552	17 26 03.86	78.0876	
CL BRG A3	95+41.2553	0.0000	5787.3456	1	0.0000	154.1666	0.0000	11 45 14.79	154.4253	
BF ABUT 3	95+42.7872	0.0000	5787.3882	1	0.1549	155.6907	0.1624	11 38 24.43	155.9572	
END APPR	95+63.1540	0.0000	5787.9834	1	2.5018	175.9212	2.6232	10 07 28.65	176.3240	
* LAYOUT LINE *			AT FINISHED GRADE							
END APPR	93+66.0265	-2.3812	5784.4290		0.0000	-20.9707	0.0000	17 29 58.23	-20.9707	-0.020000
BF ABUT 1	93+85.2654	-0.1590	5784.5943		0.0000	-1.5728	0.0000	17 29 58.23	-1.5728	-0.020000
CL BRG A1	93+86.8300	0.0000	5784.6094		0.0000	0.0000	0.0000	17 29 58.23	0.0000	
P2 BRG BK	94+61.9400	3.8652	5785.4775		0.0000	74.9913	0.0000	17 29 58.23	74.9913	-0.020000
CL PIER 2	94+62.8182	3.8671	5785.4928		0.0000	75.8650	0.0000	17 29 58.23	75.8650	-0.020000
P2 BRG AHD	94+63.6965	3.8680	5785.5083		0.0000	76.7389	0.0000	17 29 58.23	76.7389	-0.020000
CL BRG A3	95+41.2553	0.0000	5787.3456		0.0000	154.1666	0.0000	17 29 58.23	154.1666	
BF ABUT 3	95+42.8200	-0.1590	5787.3859		0.0000	155.7395	0.0000	17 29 58.23	155.7395	-0.020000
END APPR	95+63.6136	-2.5824	5787.9458		0.0000	176.7100	0.0000	17 29 58.23	176.7100	-0.020000
* AHEAD TANGENT LINE *			AT FINISHED GRADE							
END APPR	93+77.4109	-28.0101	5783.9821		-26.8328	-12.5106	-28.1349	8 43 13.30	-20.2340	-0.020000
BF ABUT 1	93+94.9414	-23.3004	5784.2103		-23.9762	5.9866	-25.1397	8 43 13.30	-1.5176	-0.020000
CL BRG A1	93+96.3718	-22.9367	5784.2303		-23.7446	7.4864	-24.8968	8 43 13.30	0.0000	-0.020000
P2 BRG BK	94+65.9334	-8.8353	5785.4488		-12.7010	78.9957	-13.3173	8 43 13.30	72.3571	-0.020000
CL PIER 2	94+66.7576	-8.7091	5785.4662		-12.5723	79.8289	-13.1824	8 43 13.30	73.2001	-0.020000
P2 BRG AHD	94+67.5821	-8.5838	5785.4836		-12.4436	80.6622	-13.0475	8 43 13.30	74.0433	-0.020000
CL BRG A3	95+41.4774	-1.0689	5787.3304		-1.0412	154.4949	-1.0917	8 43 13.30	148.7513	-0.020000
BF ABUT 3	95+42.9910	-0.9905	5787.3741		-0.8096	155.9948	-0.8489	8 43 13.30	150.2689	-0.020000
END APPR	95+63.1951	-0.2303	5787.9801		2.2786	175.9916	2.3892	8 43 13.30	170.5028	-0.020000
ST OR PT	95+82.0259	0.0000	5788.5829		5.1533	194.6055			189.3373	

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No Revisions:
Revised:
Void:

BELFORD–HAPPY CANYON CREEK BRIDGE
STRUCTURE PLANS
DECK GEOMETRY (1 OF 3)

Designer: J. LYNCH
Detailer: C. MIYAMOTO
Subset: BRIDGE
Structure Numbers:
Sheets: B35 of 37

Project No./Code:
Sheet Number 62

RT EDGE OF DECK — PARALLEL TO HORIZONTAL CONTROL — 0.250000 FEET BELOW FINISHED GRADE

BENT LINE	STATION	OFFSET	ELEVATION	ELEV+DL	X	Y	BENT LNTH	SKEW	GIRDER LNTH	CRS-SLP
END APPR	93+41.5500	47.0000	5783.2021		52.2611	-37.4480	54.7972	26 36 51.13	-22.2031	-0.020000
BF ABUT 1	93+63.4349	47.0000	5783.2740		49.2947	-17.1149	51.6867	24 59 08.68	-1.6540	-0.020000
CL BRG A1	93+65.1964	47.0000	5783.2885	783.2825	49.0810	-15.4747	51.4628	24 51 16.80	0.0000	-0.020000
F-1	93+73.4040	47.0000	5783.3273	783.3567	48.1352	-7.8264			7.7066	-0.020000
F-2	93+81.6117	47.0000	5783.3808	783.4374	47.2709	-0.1684			15.4133	-0.020000
F-3	93+89.8193	47.0000	5783.4430	783.5211	46.4883	7.4983			23.1199	-0.020000
F-4	93+98.0269	47.0000	5783.5140	783.6055	45.7875	15.1730			30.8265	-0.020000
F-5	94+06.2345	47.0000	5783.5937	783.6892	45.1685	22.8547			38.5332	-0.020000
F-6	94+14.4421	47.0000	5783.6821	783.7718	44.6315	30.5426			46.2398	-0.020000
F-7	94+22.6498	47.0000	5783.7792	783.8542	44.1764	38.2357			53.9464	-0.020000
F-8	94+30.8574	47.0000	5783.8850	783.9381	43.8033	45.9333			61.6531	-0.020000
F-9	94+39.0650	47.0000	5783.9995	784.0263	43.5123	53.6344			69.3597	-0.020000
P2 BRG BK	94+47.2726	47.0000	5784.1228	784.1228	43.3034	61.3382	45.4048	18 44 50.53	77.0663	-0.020000
CL PIER 2	94+48.2096	47.0000	5784.1374	784.1400	43.2848	62.2178	45.3852	18 40 39.53	77.9462	-0.020000
P2 BRG AHD	94+49.1464	47.0000	5784.1522	784.1522	43.2672	63.0972	45.3668	18 36 28.59	78.8257	-0.020000
F-1	94+57.3142	47.0000	5784.2855	784.3120	43.1596	70.7657			86.4950	-0.020000
F-2	94+65.4821	47.0000	5784.4274	784.4798	43.1332	78.4349			94.1643	-0.020000
F-3	94+73.6500	47.0000	5784.5780	784.6519	43.1882	86.1040			101.8336	-0.020000
F-4	94+81.8178	47.0000	5784.7371	784.8255	43.3246	93.7730			109.5030	-0.020000
F-5	94+89.9857	47.0000	5784.9050	784.9989	43.5423	101.4382			117.1723	-0.020000
F-6	94+98.1536	47.0000	5785.0814	785.1714	43.8413	109.1017			124.8416	-0.020000
F-7	95+06.3214	47.0000	5785.2665	785.3432	44.2215	116.7615			132.5109	-0.020000
F-8	95+14.4893	47.0000	5785.4603	785.5158	44.6830	124.4169			140.1802	-0.020000
F-9	95+22.6572	47.0000	5785.6626	785.6915	45.2257	132.0669			147.8495	-0.020000
CL BRG A3	95+30.8250	47.0000	5785.8736	785.8736	45.8495	139.7108	48.0744	12 31 48.82	155.5188	-0.020000
BF ABUT 3	95+32.4612	47.0000	5785.9169	785.9169	45.9842	141.2412	48.2157	12 24 30.52	157.0551	-0.020000
END APPR	95+54.2061	47.0000	5786.5253		48.0829	161.5500	50.4162	10 47 25.57	177.4727	-0.020000

CL GIRDER G12 — FLARED GIRDER LINE — 0.250000 FEET BELOW FINISHED GRADE

BENT LINE	STATION	OFFSET	ELEVATION	ELEV+DL	X	Y	BENT LNTH	SKEW	GIRDER LNTH	CRS-SLP
END APPR	93+44.9676	40.5313	5783.3386		45.3683	-35.2748	47.5698	21 36 16.39	-21.5114	-0.020000
BF ABUT 1	93+65.9411	41.9108	5783.3880		43.9439	-15.4279	46.0763	21 36 16.39	-1.6134	-0.020000
CL BRG A1	93+67.6449	41.9989	5783.3950	783.3950	43.8284	-13.8186	45.9552	21 36 16.39	0.0000	-0.020000
F-1	93+75.7738	42.3700	5783.4344	783.4638	43.4777	-6.1459			7.6365	-0.020000
F-2	93+83.9101	42.8600	5783.4842	783.5407	42.7270	1.5269			15.2858	-0.020000
F-3	93+92.0520	42.8687	5783.5441	783.6222	42.1764	9.1996			23.0774	-0.020000
F-4	94+00.1976	42.9961	5783.6143	783.7058	41.8257	16.8724			30.7699	-0.020000
F-5	94+08.3452	43.4421	5783.6947	783.7902	41.6750	24.5451			38.4624	-0.020000
F-6	94+16.4929	43.0067	5783.7854	783.8751	40.5244	32.2179			46.1549	-0.020000
F-7	94+24.6389	42.8899	5783.8862	783.9612	39.9737	39.8906			53.8474	-0.020000
F-8	94+32.7913	42.6918	5783.9972	784.0479	39.5230	47.5634			61.5399	-0.020000
F-9	94+40.9154	42.4125	5784.1184	784.1351	39.1724	55.2361			69.2323	-0.020000
P2 BRG BK	94+49.0484	42.0517	5784.2496	784.2496	38.9217	62.9088	40.1813	21 36 16.39	76.9248	-0.020000
CL PIER 2	94+49.9951	42.0043	5784.2655	784.2655	38.8974	63.8029	40.1139	15 29 22.88	-0.8648	-0.020000
P2 BRG AHD	94+50.9086	42.0499	5784.2792	784.2792	38.8877	64.6671	40.1457	15 29 22.88	0.0000	-0.020000
F-1	94+59.0072	42.4090	5784.4060	784.4325	38.5565	72.3252			7.6628	-0.020000
F-2	94+67.1128	42.6875	5784.5430	784.5954	38.8852	79.9832			15.3255	-0.020000
F-3	94+75.2257	42.8853	5784.6902	784.7642	39.0940	87.6413			22.9883	-0.020000
F-4	94+83.3382	43.0025	5784.8477	784.9361	39.3627	95.2993			30.6511	-0.020000
F-5	94+91.4543	43.0389	5785.0153	785.1092	39.6314	102.9574			38.3138	-0.020000
F-6	94+99.5704	42.9945	5785.1930	785.2830	39.9002	110.6154			45.9766	-0.020000
F-7	95+07.6846	42.8694	5785.3809	785.4576	40.1689	118.2735			53.6393	-0.020000
F-8	95+15.7951	42.6635	5785.5788	785.6343	40.4377	125.9315			61.3021	-0.020000
F-9	95+23.9001	42.3770	5785.7866	785.8155	40.7064	133.5896			68.9648	-0.020000
CL BRG A3	95+31.9978	42.0100	5786.0044	786.0044	40.9751	141.2476	42.9635	15 29 22.88	76.6276	-0.020000
BF ABUT 3	95+33.6418	41.9256	5786.0499	786.0499	41.0297	142.8033	43.0207	15 29 22.88	78.1842	-0.020000
END APPR	95+55.5167	40.4839	5786.6943		41.7576	163.5443	43.7839	15 29 22.88	98.9380	-0.020000

CL GIRDER G11 — FLARED GIRDER LINE — 0.250000 FEET BELOW FINISHED GRADE

BENT LINE	STATION	OFFSET	ELEVATION	ELEV+DL	X	Y	BENT LNTH	SKEW	GIRDER LNTH	CRS-SLP
END APPR	93+48.9622	32.8035	5783.5035		37.1535	-32.6848	38.9564	21 22 12.39	-21.4767	-0.020000
BF ABUT 1	93+69.6833	34.1623	5783.5626		35.8125	-12.8641	37.5503	21 22 12.39	-1.6108	-0.020000
CL BRG A1	93+71.3665	34.2491	5783.5704	783.5704	35.7037	-11.2570	37.4363	21 22 12.39	0.0000	-0.020000
F-1	93+79.3970	34.6145	5783.6136	783.6404	35.1853	-3.5944			7.6801	-0.020000
F-2	93+87.4347	34.8997	5783.6661	783.7182	34.6669	4.0682			15.3602	-0.020000
F-3	93+95.4777	35.1049	5783.7289	783.8007	34.1484	11.7307			23.0403	-0.020000
F-4	94+03.5243	35.2298	5783.8018	783.8858	33.6300	19.3933			30.7204	-0.020000
F-5	94+11.5728	35.2745	5783.8847	783.9723	33.1116	27.0559			38.4005	-0.020000
F-6	94+19.6214	35.2388	5783.9776	784.0598	32.5931	34.7185			46.0806	-0.020000
F-7	94+27.6683	35.1229	5784.0804	784.1491	32.0747	42.3811			53.7607	-0.020000
F-8	94+35.7118	34.9268	5784.1932	784.2417	31.5563	50.0437			61.4408	-0.020000
F-9	94+43.7502	34.6505	5784.3158	784.3403	31.0378	57.7062			69.1209	-0.020000
P2 BRG BK	94+51.7816	34.2942	5784.4483	784.4483	30.5194	65.3688	32.0004	21 22 12.39	76.8010	-0.020000
CL PIER 2	94+52.7150	34.2613	5784.4641	784.4641	30.4759	66.2572	31.9517	15 19 37.73	-0.8641	-0.020000
P2 BRG AHD	94+53.6452	34.3063	5784.4779	784.4779	30.5057	67.1208	31.9860	15 19 37.73	0.0000	-0.020000
F-1	94+61.6224	34.6603	5784.6060	784.6303	30.7959	74.7720			7.6568	-0.020000
F-2	94+69.6365	34.9348	5784.7442	784.7922	31.0861	82.4233			15.3135	-0.020000
F-3	94+77.6556	35.1296	5784.8924	784.9603	31.3764	90.0746			22.9703	-0.020000
F-4	94+85.6782	35.2446	5785.0505	785.1318	31.6666	97.7258			30.6271	-0.020000
F-5	94+93.7024	35.2799	5785.2186	785.3051	31.9569	105.3771			38.2839	-0.020000
F-6	95+01.7265	35.2354	5785.3966	785.4795	32.2471	113.0284			45.9406	-0.020000
F-7	95+09.7487	35.1111	5785.5845	785.6553	32.5373	120.6796			53.5974	-0.020000
F-8	95+17.7674	34.9071	5785.7823	785.8335	32.8276	128.3309			61.2542	-0.020000
F-9	95+25.7807	34.6233	5785.9898	786.0164	33.1178	135.9822			68.9109	-0.020000
CL BRG A3	95+33.7870	34.2601	5786.2070	786.2070	33.4080	143.6334	35.0292	15 19 37.73	76.5677	-0.020000
BF ABUT 3	95+35.4124	34.1765	5786.2524	786.2524	33.4670	145.1877	35.0910	15 19 37.73	78.1231	-0.020000
END APPR	95+57.0415	32.7504	5786.8941		34.2531	165.9104	35.9152	15 19 37.73	98.8607	-0.020000

CL GIRDER G10 — FLARED GIRDER LINE — 0.250000 FEET BELOW FINISHED GRADE

BENT LINE	STATION	OFFSET	ELEVATION	ELEV+DL	X	Y	BENT LNTH	SKEW	GIRDER LNTH	CRS-SLP
END APPR	93+52.9071	24.9897	5783.6719		28.8681	-30.0725	30.2689	21 07 55.40	-21.4421	-0.020000
BF ABUT 1	93+73.3784	26.3303	5783.7405		27.6115	-10.2784	28.9513	21 07 55.40	-1.6082	-0.020000
CL BRG A1	93+75.0413	26.4159	5783.7489	783.7489	27.5096	-8.6735	28.8445	21 07 55.40	0.0000	-0.020000
F-1	93+82.9746	26.7765	5783.7950	783.8222	27.0238	-1.0212			7.6677	-0.020000
F-2	93+90.9147	27.0580	5783.8509	783.9030	26.5380	6.6311			15.3354	-0.020000
F-3	93+98.8600	27.2605	5783.9165	783.9883	26.0521	14.2834			23.0031	-0.020000
F-4	94+06.8088	27.3839	5783.9919	784.0759	25.5663	21.9357			30.6708	-0.020000
F-5	94+14.7594	27.4281	5784.0771	784.1647	25.0805	29.5880			38.3385	-0.020000
F-6	94+22.7101	27.3930	5784.1721	784.2543	24.5947	37.2403			46.0062	-0.020000
F-7	94+30.6598	27.2788	5784.2768	784.3454	24.1089	44.8926			53.6739	-0.020000
F-8	94+38.6050	27.0858	5784.3912	784.4397	23.6231	52.5449			61.3416	-0.020000
F-9	94+46.5458	26.8135	5784.5153	784.5397	23.1373	60.1972			69.0093	-0.020000
P2 BRG BK	94+54.4799	26.4622	5784.6490	784.6490	22.6515	67.8495	23.7507	21 07 55.40	76.6770	-0.020000
CL PIER 2	94+55.4004	26.4164	5784.6649	784.6649	22.6052	68.7378	23.7061	15 09 36.32	-0.9635	-0.020000
P2 BRG AHD	94+56.2934	26.4708	5784.6789	784.6789	22.5604	69.6006	23.7391	15 09 36.32	0.0000	-0.020000
F-1	94+64.2101	26.8208	5784.8083	784.8325	22.1527	77.2449			7.6507	-0.020000
F-2	94+72.1333	27.0921	5784.9476	784.9952	21.7450	84.8892			15.3014	-0.020000
F-3	94+80.0616	27.2847	5785.0965	785.1644	21.3373	92.5335			22.9521	-0.020000
F-4	94+87.9931	27.3985	5785.2553	785.3366	20.9296	100.1778			30.6028	-0.020000
F-5	94+95.9266	27.4336	5785.4238	785.5103	20.5219	107.8221			38.2534	-0.020000
F-6	95+03.8605	27.3897	5785.6019	785.6872	20.1142	115.4664			45.9041	-0.020000
F-7	95+11.7932	27.2670	5785.7897	785.8677	19.7065	123.1106			53.5548	-0.020000
F-8	95+19.7186	27.0656	5785.9875	786.0397	19.2988	130.7551			61.2055	-0.020000
F-9	95+27.6408	26.7855	5786.1947	786.2122	18.8911	138.3994			68.8562	-0.020000
CL BRG A3	95+35.5567	26.4268	5786.4115	786.4115	18.4834	146.0437	27.0136	15 09 36.32	76.5069	-0.020000
BF ABUT 3	95+37.1637	26.3443	5786.4564	786.4564	18.3968	147.5966	27.0901	15 09 36.32	78.0611	-0.020000
END APPR	95+58.5497	24.9358	5787.0955		26.6727	168.3004	27.9670	15 09 36.32	98.7821	-0.020000

CL GIRDER G9 — FLARED GIRDER LINE — 0.250000 FEET BELOW FINISHED GRADE

BENT LINE	STATION	OFFSET	ELEVATION	ELEV+DL	X	Y	BENT LNTH	SKEW	GIRDER LNTH	CRS-SLP
END APPR	93+56.7609	17.1754	5783.8420		20.6024	-27.4664	21.6022	20 53 58.29	-21.4087	-0.020000
BF ABUT 1	93+76.9888	18.4983	5783.9196		19.4280	-7.6983	20.3707	20 53 58.29	-1.6057	-0.020000
CL BRG A1	93+78.6218	18.5828	5783.9287	783.9287	19.3328	-6.0954	20.2709	20 53 58.29	0.0000	-0.020000
F-1	93+86.4703	18.9387	5783.9778	784.0050	18.8787	1.5469			7.6558	-0.020000
F-2	93+94.3155	19.2166	5784.0365	784.0886	18.4247	9.1891			15.3115	-0.020000
F-3	94+02.1636	19.4165	5784.1048	784.1766	17.9706	16.8314			22.9673	-0.020000
F-4	94+10.0130	19.5383	5784.1826	784.2666	17.5166	24.4737			30.6230	-0.020000
F-5	94+17.8742	19.5821	5784.2700	784.3575	17.0626	32.1160			38.2788	-0.020000
F-6	94+25.7296	19.5478	5784.3669	784.4491	16.6085	39.7583			45.9345	-0.020000
F-7	94+33.5833	19.4354	5784.4734	784.5420	16.1545	47.4005			53.5903	-0.020000
F-8	94+41.4339	19.2449	5784.5893	784.6379	15.7005	55.0428			61.2460	-0.020000
F-9	94+49.2797	18.9764	5784.7147	784.7392	15.2464	62.6851			68.9018	-0.020000
P2 BRG BK	94+57.1191	18.6301	5784.8496	784.8496	14.7924	70.3274	15.5102	20 53 58.29	76.5576	-0.020000
CL PIER 2	94+58.0297	18.5916	5784.8657	784.8657	14.7465	71.2156	15.4621	14 59 48.03	0.8658	-0.020000
P2 BRG AHD	94+58.9127	18.6356	5784.8798	784.8798	14.7842	72.0776	15.5016	14 59 48.03	0.0000	-0.020000
F-1	94+66.7409	18.9815	5784.9104	784.9346	15.1180	79.7131			7.6448	-0.020000
F-2	94+74.5756	19.2497	5784.9506	784.9986	15.4519	87.3586			15.2896	-0.020000
F-3	94+82.4150	19.4401	5785.0003	785.0683	15.7857	94.9901			22.9344	-0.020000
F-4	94+90.2576	19.5527	5785.4597	785.5410	16.1195	102.6277			30.5793	-0.020000
F-5	94+98.1017	19.5875	5785.6285	785.7151	16.4534	110.2636			38.2241	-0.020000
F-6	95+05.9459	19.5443	5785.8069	785.8898	16.7872	117.9027			45.8689	-0.020000
F-7	95+13.7881	19.4233	5785.9948	786.0655	17.1211	125.5402			53.5137	-0.020000
F-8	95+21.6271	19.2245	5786.1921	786.2434	17.4549	133.1777			61.1585	-0.020000
F-9	95+29.4615	18.9479	5786.3988	786.4214	17.7887	140.8153			68.8033	-0.020000
CL BRG A3	95+37.2886	18.5936	5786.6148	786.6148	18.1226	148.4528	19.0020	14 59 48.03	76.4481	-0.020000
BF ABUT 3	95+38.8777	18.5121	5786.6598	786.6598	18.1904	150.0043	19.0731	14 59 48.03	78.0011	-0.020000
END APPR	95+60.0261	17.1209	5787.2961		19.0946	170.6897	20.0212	14 59 48.03	98.7063	-0.020000

CL GIRDER G8 — FLARED GIRDER LINE — 0.250000 FEET BELOW FINISHED GRADE

BENT LINE	STATION	OFFSET	ELEVATION	ELEV+DL	X	Y	BENT LNTH	SKEW	GIRDER LNTH	CRS-SLP
END APPR	93+60.5270	9.3605	5784.0137		12.3556	-24.8663	12.9552	20 40 19.79	-21.3764	-0.020000
BF ABUT 1	93+80.5175	10.6663	5784.0998		11.2613	-5.1234	11.8077	20 40 19.79	-1.6033	-0.020000
CL BRG A1	93+82.1412	10.7497	5784.1096	784.1096	11.1725	-3.5226	11.7147	20 40 19.79	0.0000	-0.020000
F-1	93+89.8873	11.1009	5784.1616	784.1887	10.7495	4.1099			7.6442	-0.020000
F-2	93+97.6397	11.3753	5784.2230	784.2751	10.3264	11.7424			15.2885	-0.020000
F-3	94+05.3971	11.5727	5784.2927	784.3655	9.9033	19.3750			22.9327	-0.020000
F-4	94+13.1576	11.6931	5784.3738	784.4578	9.4803	27.0075			30.5769	-0.020000
F-5	94+20.9199	11.7364	5784.4633	784.5508	9.0572	34.6400			38.2212	-0.020000
F-6	94+28.6822	11.7027	5784.5621	784.6443	8.6341	42.2725			45.8654	-0.020000
F-7	94+36.4430	11.5920	5784.6702	784.7388	8.2110	49.9050			53.5096	-0.020000
F-8	94+44.2008	11.4042	5784.7876	784.8361	7.7880	57.5375			61.1539	-0.020000
F-9	94+51.9540	11.1394	5784.9142	784.9307	7.3649	65.1701			68.7981	-0.020000
P2 BRG BK	94+59.7010	10.7978	5785.0501	785.0501	6.9418	72.8026	7.2787	20 40 19.79	76.4423	-0.020000
CL PIER 2	94+60.6019	10.7569	5785.0664	785.0664	6.8964	73.6906	7.2311	14 50 12.41	-0.8622	-0.020000
P2 BRG AHD	94+61.4752	10.8003	5785.0807	785.0807	6.9365	74.5519	7.2731	14 50 12.41	0.0000	-0.020000
F-1	94+69.2170	11.1423	5785.2123	785.2365	7.2914	82.1827			7.6391	-0.020000
F-2	94+76.9650	11.4075	5785.3534	785.4014	7.6463	89.8136			15.2783	-0.020000
F-3	94+84.7177	11.5958	5785.5038	785.5718	8.0012	97.4445			22.9174	-0.020000
F-4	94+92.4734	11.7073	5785.6637	785.7450	8.3561	105.0754			30.5565	-0.020000
F-5	95+00.2306	11.7417	5785.8328	785.9194	8.7109	112.7063			38.1957	-0.020000
F-6	95+07.9877	11.6993	5786.0114	786.0943	9.0658	120.3372			45.8348	-0.020000
F-7	95+15.7431	11.5798	5786.1992	786.2699	9.4207	127.9680			53.4739	-0.020000
F-8	95+23.4954	11.3835	5786.3963	786.4474	9.7756	135.5989			61.1131	-0.020000
F-9	95+31.2438	11.1103	5786.6024	786.6290	10.1305	143.2298			68.7523	-0.020000
CL BRG A3	95+38.9873	10.7604	5786.8178	786.8178	10.4854	150.8607	10.9242	14 50 12.41	76.3913	-0.020000
BF ABUT 3	95+40.5955	10.6729	5786.8626	786.8626	10.5575	152.4109	10.9968	14 50 12.41	77.9431	-0.020000
END APPR	95+61.4717	9.3054	5787.4961		11.5187	173.0783	12.0776	14 50 12.41	98.6329	-0.020000

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Sheet Revisions

Date	Comments	Initials

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As Constructed
No Revisions:
Revised:
Void:

BELFORD–HAPPY CANYON CREEK BRIDGE
STRUCTURE PLANS
DECK GEOMETRY (2 OF 3)

Designer: J. LYNCH
Detailer: C. MIYAMOTO
Subset: BRIDGE
Structure Numbers:
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Project No./Code

Sheet Number 63

CL GIRDER G7 — FLARED GIRDER LINE — 0.250000 FEET BELOW FINISHED GRADE

BENT LINE	STATION	OFFSET	ELEVATION	ELEV+DL	X	Y	BENT LNTH	SKEW	GIRDER LNTH	CRS-SLP
END APPR	93+64.2082	1.5452	5784.1868		4.1271	-22.2719	4.3274	20 26 59.60	-21.3454	-0.020000
BF ABUT 1	93+83.9672	2.8343	5784.2811		3.1108	-2.5536	3.2618	20 26 59.60	-1.6009	-0.020000
CL BRG A1	93+85.5720	2.9166	5784.2914	784.2914	3.0284	-0.9548	3.1754	20 26 59.60	0.0000	-0.020000
F-1	93+93.2280	3.2634	5784.3462	784.3777	2.6356	6.6682			7.6331	-0.020000
F-2	94+00.8902	3.5343	5784.4101	784.4707	2.2427	14.2912			15.2662	-0.020000
F-3	94+08.5570	3.7293	5784.4832	784.5668	1.8498	21.9142			22.8994	-0.020000
F-4	94+16.2270	3.8482	5784.5655	784.6634	1.4569	29.5372			30.5325	-0.020000
F-5	94+23.8985	3.8911	5784.6569	784.7591	1.0640	37.1602			38.1656	-0.020000
F-6	94+31.5702	3.8580	5784.7574	784.8536	0.6711	44.7832			45.7987	-0.020000
F-7	94+39.2405	3.7488	5784.8671	784.9476	0.2782	52.4062			53.4318	-0.020000
F-8	94+46.9078	3.5637	5784.9859	785.0430	-0.1146	60.0292			61.0649	-0.020000
F-9	94+54.5706	3.3025	5785.1137	785.1426	-0.5075	67.6522			68.6981	-0.020000
P2 BRG BK	94+62.2275	2.9655	5785.2505	785.2505	-0.9004	75.2752	-0.9441	20 26 59.60	76.3312	-0.020000
CL PIER 2	94+63.1189	2.9222	5785.2670	785.2670	-0.9453	76.1630	-0.9911	14 40 49.01	-0.8615	-0.020000
P2 BRG AHD	94+63.9826	2.9652	5785.2814	785.2814	-0.9029	77.0235	-0.9467	14 40 49.01	0.0000	-0.020000
F-1	94+71.6400	3.3033	5785.4140	785.4430	-0.5274	84.6479			7.6336	-0.020000
F-2	94+79.3033	3.5656	5785.5559	785.6129	-0.1520	92.2723			15.2673	-0.020000
F-3	94+86.9712	3.7519	5785.7070	785.7872	0.2235	99.8967			22.9009	-0.020000
F-4	94+94.6420	3.8621	5785.8673	785.9630	0.5990	107.5211			30.5345	-0.020000
F-5	95+02.3142	3.8964	5786.0367	786.1384	0.9744	115.1455			38.1682	-0.020000
F-6	95+09.9864	3.8545	5786.2153	786.3126	1.3499	122.7699			45.8018	-0.020000
F-7	95+17.6569	3.7366	5786.4030	786.4859	1.7253	130.3943			53.4355	-0.020000
F-8	95+25.3244	3.5427	5786.5997	786.6598	2.1008	138.0187			61.0691	-0.020000
F-9	95+32.9872	3.2729	5786.8054	786.8367	2.4763	145.6431			68.7027	-0.020000
CL BRG A3	95+40.6439	2.9272	5787.0201	787.0201	2.8517	153.2675	2.9901	14 40 49.01	76.3364	-0.020000
BF ABUT 3	95+42.1984	2.8477	5787.0648	787.0648	2.9280	154.8163	3.0701	14 40 49.01	77.8871	-0.020000
END APPR	95+62.8875	1.4895	5787.6955		3.9449	175.4662	4.1363	14 40 49.01	98.5620	-0.020000

HCL — PARALLEL TO HORIZONTAL CONTROL — 0.250000 FEET BELOW FINISHED GRADE

BENT LINE	STATION	OFFSET	ELEVATION	ELEV+DL	X	Y	BENT LNTH	SKEW	GIRDER LNTH	CRS-SLP
END APPR	93+64.9262	0.0000	5784.2212		2.5024	-21.7596	2.6238	24 52 29.19	-21.9038	
BF ABUT 1	93+85.1967	0.0000	5784.3469		0.1652	-1.6249	0.1732	23 21 59.20	-1.6333	
CL BRG A1	93+86.8300	0.0000	5784.3594	784.3594	0.0000	0.0000	0.0000	23 14 41.68	0.0000	
F-1	93+94.4640	0.0000	5784.4221	784.4536	-0.7266	7.5993			7.6340	
F-2	94+02.0980	0.0000	5784.4924	784.5530	-1.3777	15.2055			15.2680	
F-3	94+09.7320	0.0000	5784.5703	784.6538	-1.9535	22.8177			22.9020	
F-4	94+17.3660	0.0000	5784.6557	784.7536	-2.4537	30.4352			30.5360	
F-5	94+25.0000	0.0000	5784.7486	784.8508	-2.8784	38.0574			38.1700	
F-6	94+32.6340	0.0000	5784.8491	784.9453	-3.2276	45.6834			45.8040	
F-7	94+40.2680	0.0000	5784.9571	785.0376	-3.5010	53.3124			53.4380	
F-8	94+47.9020	0.0000	5785.0726	785.1297	-3.6989	60.9438			61.0720	
F-9	94+55.5360	0.0000	5785.1957	785.2246	-3.8211	68.5768			68.7060	
P2 BRG BK	94+63.1700	0.0000	5785.3263	785.3263	-3.8676	76.2107	-4.0552	17 33 52.00	76.3400	
CL PIER 2	94+64.0439	0.0000	5785.3418	785.3418	-3.8681	77.0846	-4.0558	17 29 57.90	77.2139	
P2 BRG AHD	94+64.9176	0.0000	5785.3573	785.3573	-3.8676	77.9583	-4.0552	17 26 03.86	78.0876	
F-1	94+72.5514	0.0000	5785.4972	785.5261	-3.8210	85.5919			85.7214	
F-2	94+80.1851	0.0000	5785.6446	785.7016	-3.6988	93.2246			93.3551	
F-3	94+87.8189	0.0000	5785.7996	785.8798	-3.5010	100.8558			100.9889	
F-4	94+95.4527	0.0000	5785.9621	786.0579	-3.2275	108.4846			108.6227	
F-5	95+03.0864	0.0000	5786.1322	786.2338	-2.8784	116.1104			116.2564	
F-6	95+10.7202	0.0000	5786.3098	786.4071	-2.4537	123.7323			123.8902	
F-7	95+18.3540	0.0000	5786.4949	786.5779	-1.9534	131.3496			131.5240	
F-8	95+25.9878	0.0000	5786.6876	786.7477	-1.3777	138.9616			139.1578	
F-9	95+33.6215	0.0000	5786.8878	786.9191	-0.7265	146.5675			146.7915	
CL BRG A3	95+41.2553	0.0000	5787.0956	787.0956	0.0000	154.1666	0.0000	11 45 14.79	154.4253	
BF ABUT 3	95+42.7872	0.0000	5787.1382	787.1382	0.1549	155.6907	0.1624	11 38 24.43	155.9572	
END APPR	95+63.1540	0.0000	5787.7334		2.5018	175.9212	2.6232	10 07 28.65	176.3240	

EDGE OF INTERIM DECK — PARALLEL TO HORIZONTAL CONTROL — 0.250000 FEET BELOW FINISHED GRADE

BENT LINE	STATION	OFFSET	ELEVATION	ELEV+DL	X	Y	BENT LNTH	SKEW	GIRDER LNTH	CRS-SLP
END APPR	93+65.6202	-1.5000	5784.1946		0.9259	-21.2626	0.9708	24 49 23.29	-21.8953	-0.020000
BF ABUT 1	93+85.8434	-1.5000	5784.3218		-1.3329	-1.1337	-1.4605	23 19 05.97	-1.6327	-0.020000
CL BRG A1	93+87.4729	-1.5000	5784.3344	784.3344	-1.5567	0.4908	-1.6322	23 11 49.45	0.0000	-0.020000
F-1	93+95.0900	-1.5000	5784.3976	784.4291	-2.2768	8.0887			7.6319	-0.020000
F-2	94+02.7071	-1.5000	5784.4684	784.5289	-2.9217	15.6933			15.2639	-0.020000
F-3	94+10.3242	-1.5000	5784.5466	784.6302	-3.4913	23.3039			22.8958	-0.020000
F-4	94+17.9413	-1.5000	5784.6324	784.7303	-3.9857	30.9197			30.5277	-0.020000
F-5	94+25.5584	-1.5000	5784.7257	784.8279	-4.4047	38.5401			38.1596	-0.020000
F-6	94+33.1755	-1.5000	5784.8265	784.9227	-4.7482	46.1643			45.7916	-0.020000
F-7	94+40.7926	-1.5000	5784.9348	785.0153	-5.0164	53.7915			53.4235	-0.020000
F-8	94+48.4097	-1.5000	5785.0506	785.1077	-5.2091	61.4209			61.0554	-0.020000
F-9	94+56.0267	-1.5000	5785.1739	785.2028	-5.3262	69.0519			68.6874	-0.020000
P2 BRG BK	94+63.6438	-1.5000	5785.3047	785.3047	-5.3679	76.6837	-5.6284	17 31 45.07	76.3193	-0.020000
CL PIER 2	94+64.5159	-1.5000	5785.3201	785.3201	-5.3679	77.5575	-5.6284	17 27 51.47	77.1930	-0.020000
P2 BRG AHD	94+65.3877	-1.5000	5785.3357	785.3357	-5.3669	78.4310	-5.6273	17 23 57.93	78.0666	-0.020000
F-1	94+73.0056	-1.5000	5785.4758	785.5047	-5.3158	86.0635			85.6993	-0.020000
F-2	94+80.6235	-1.5000	5785.6233	785.6803	-5.1892	93.6952			93.3321	-0.020000
F-3	94+88.2414	-1.5000	5785.7784	785.8586	-4.9871	101.3252			100.9648	-0.020000
F-4	94+95.8593	-1.5000	5785.9410	786.0367	-4.7095	108.9529			108.5976	-0.020000
F-5	95+03.4772	-1.5000	5786.1111	786.2128	-4.3565	116.5775			116.2303	-0.020000
F-6	95+11.0952	-1.5000	5786.2887	786.3860	-3.9281	124.1981			123.8631	-0.020000
F-7	95+18.7131	-1.5000	5786.4738	786.5568	-3.4243	131.8142			131.4958	-0.020000
F-8	95+26.3310	-1.5000	5786.6664	786.7266	-2.8451	139.4242			139.1286	-0.020000
F-9	95+33.9489	-1.5000	5786.8666	786.8978	-2.1908	147.0296			146.7613	-0.020000
CL BRG A3	95+41.5668	-1.5000	5787.0742	787.0742	-1.4616	154.6273	-1.5321	11 43 51.35	154.3941	-0.020000
BF ABUT 3	95+43.0986	-1.5000	5787.1168	787.1168	-1.3057	156.1512	-1.3650	11 37 01.82	155.9258	-0.020000
END APPR	95+63.4213	-1.5000	5787.7116		1.0486	176.3794	1.0995	10 06 17.03	176.2912	-0.020000

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Sheet Revisions

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Revised:
Void:

BELFORD–HAPPY CANYON CREEK BRIDGE
STRUCTURE PLANS
DECK GEOMETRY (3 OF 3)

Designer: J. LYNCH
Detailer: C. MIYAMOTO
Subset: BRIDGE
Structure Numbers:
Sheets: B37 of 37

Project No./Code:

Sheet Number 64

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 DISSIPATERS, 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 ½ 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			ITEM NO.	CONTRACT ITEM	UNIT	GSB	
BOOK	PAGE	SHEET				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	9470	
			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.

I:\115360-01 – Compark at Belford\CADD\Hydraulics\Drawings\Happy Cyn Creek Drop Structure\, Scott.Dankenbring

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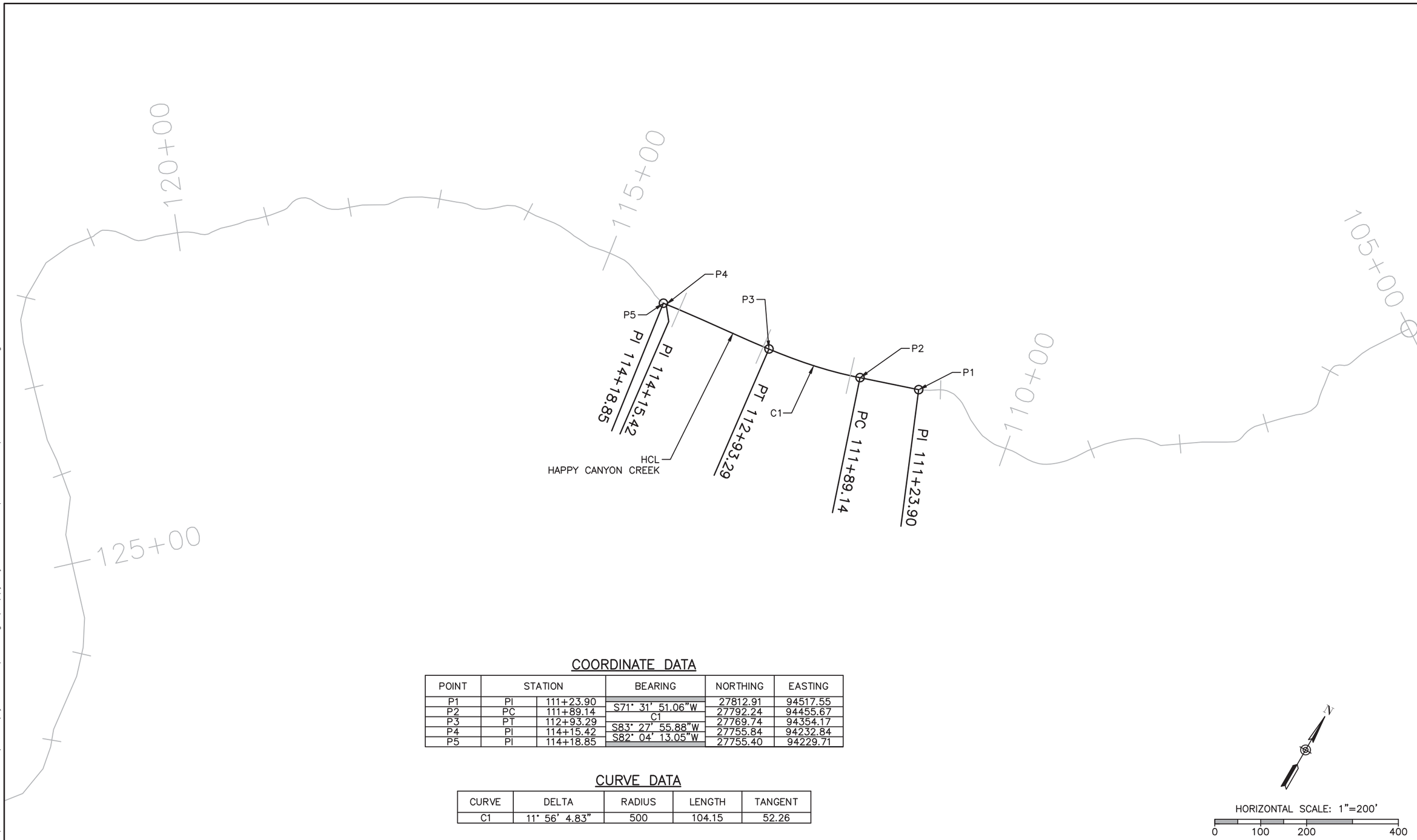
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No Revisions:
Revised:
Void:

BELFORD–HAPPY CANYON CREEK
HAPPY CANYON CREEK DROP STRUCTURE TABULATION

Designer:	CDT	Structure Numbers	
Detailer:	KLT		
Subset:	Drainage	Sheets:	DD–01 of 22

Project No./Code

Sheet Number 65



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

N

HORIZONTAL SCALE: 1"=200'

0 100 200 400

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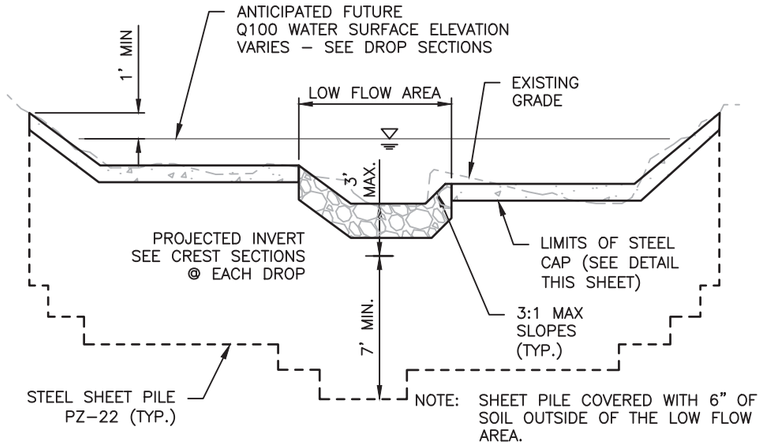
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BELFORD-HAPPY CANYON CREEK
HAPPY CANYON CREEK DROP STRUCTURE
HCL GEOMETRY LAYOUT

Designer: CDT
Detailer: KLT
Subset: Drainage
Structure Numbers:
Sheets: DD-02 of 22

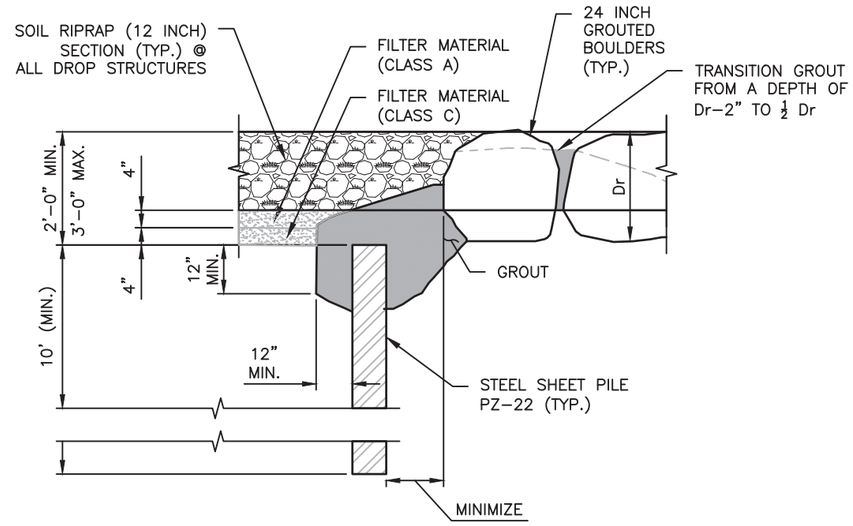
Project No./Code

Sheet Number 66



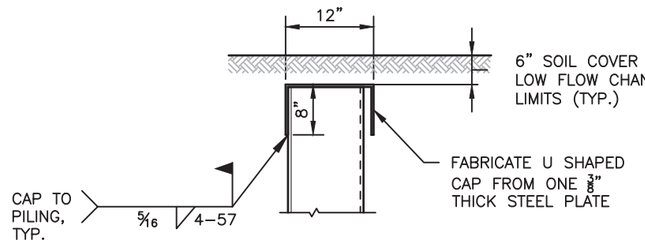
SHEET PILE TYPICAL SECTION

N.T.S.



SHEET PILE CUTOFF CONNECTION
(GROUTED BOULDER)

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).

STEEL SHEET PILE CAP DETAIL

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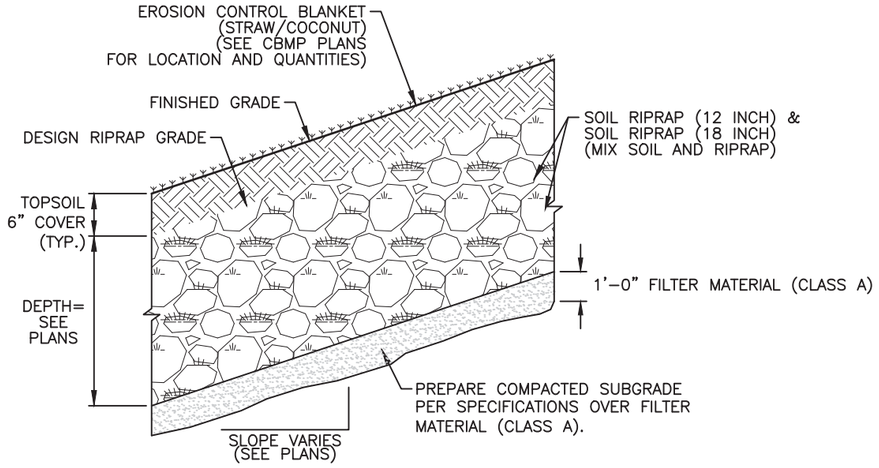
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BELFORD–HAPPY CANYON CREEK
HAPPY CANYON CREEK DROP STRUCTURE
SHEET PILE DETAILS

Designer: CDT
Detailer: KLT
Subset: Drainage
Structure Numbers:
Sheets: DD–03 of 22

Project No./Code:

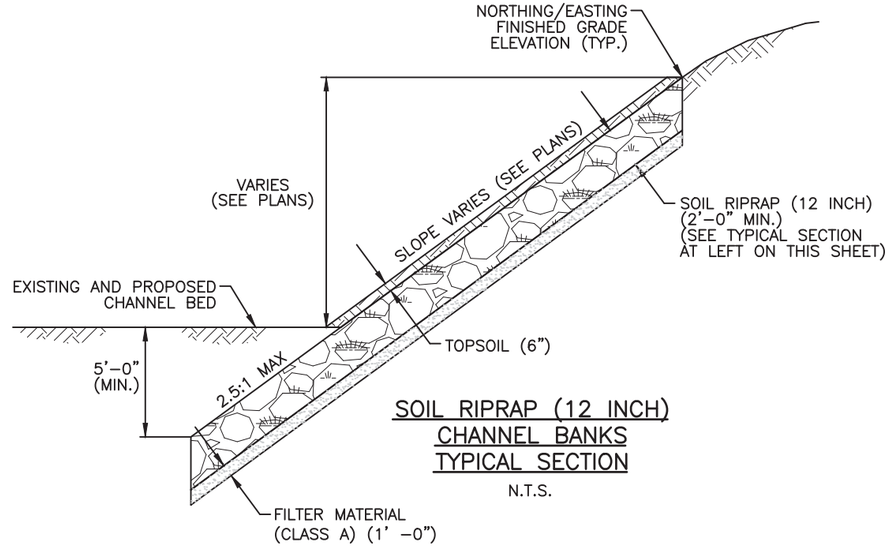
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SOIL RIPRAP (12 INCH) & SOIL RIPRAP (18 INCH) TYPICAL SECTION

N.T.S.

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 GROUTED BOULDER
	50 – 70	33		
	35 – 50	24		
	2 – 10	9		



SOIL RIPRAP (12 INCH) CHANNEL BANKS TYPICAL SECTION

N.T.S.

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

1. 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.

2. 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 MATERKAL 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.

3. 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.

4. ALL SOIL RIPRAP THAT IS BURIED WITH THE TOPSOIL SHALL BE REVIEWED AND APPROVED BY THE ENGINEER PRIOR TO ANY TOPSOIL PLACEMENT.

2. CRIMP MULCH AS CALLED FOR IN THE CBMP PLANS AND SPECIFICATIONS.

3. SEE DD–03 FOR SOIL RIPRAP AT DROP STRUCTURES.

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BELFORD–HAPPY CANYON CREEK
HAPPY CANYON CREEK DROP STRUCTURE
DETAILS

Designer: CDT
Detailer: KLT
Subset: Drainage
Structure Numbers:
Sheets: DD–04 of 22

Project No./Code:

Sheet Number 68

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GROUT NOTES

BOULDER PLACEMENT NOTES:

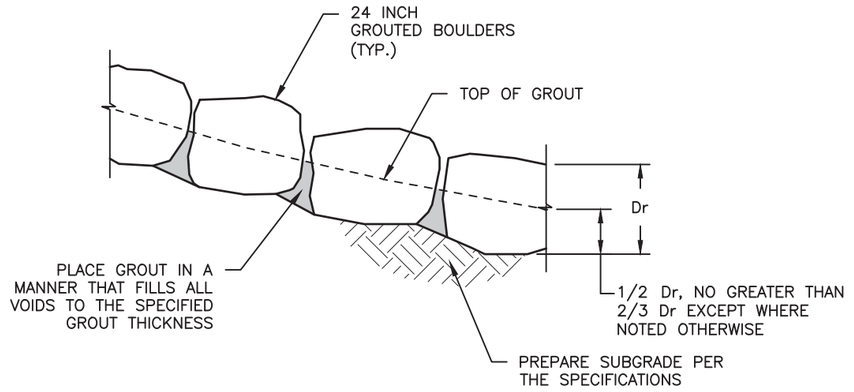
1. PLACE BOULDERS WITH THE REQUIRED BOULDER HEIGHT VERTICAL. PLACE BOULDERS AS TIGHTLY TOGETHER AS POSSIBLE (WITHOUT TOUCHING) WHILE PROVIDING ENOUGH ROOM BETWEEN THEM TO THOROUGHLY VIBRATE THE GROUT AND TO ENSURE NO GAPS IN THE GROUT. THE SMALL DIMENSION OF A 2X4 CAN BE USED AS A GUIDE TO CHECK MINIMUM 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.

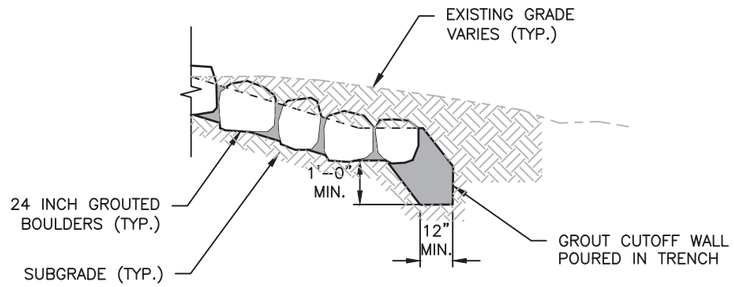
GROUT PLACEMENT SPECIFICATIONS:

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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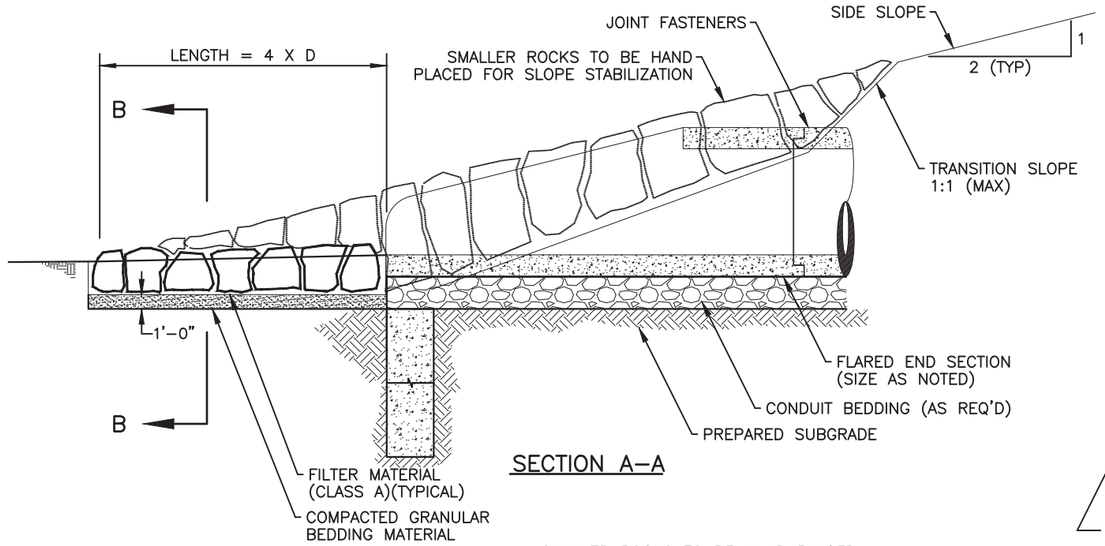
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BELFORD–HAPPY CANYON CREEK
HAPPY CANYON CREEK DROP STRUCTURE DETAIL

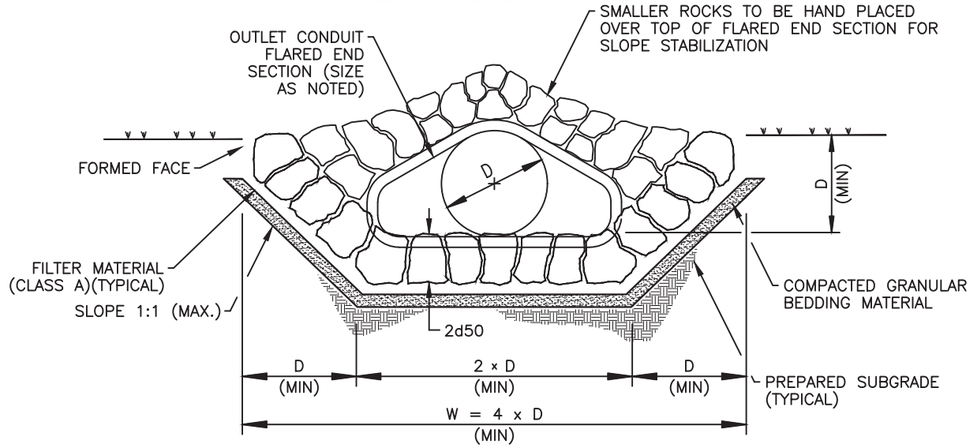
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Detailer:	KLT		
Subset:	Drainage	Sheets:	DD–05 of 22

Project No./Code

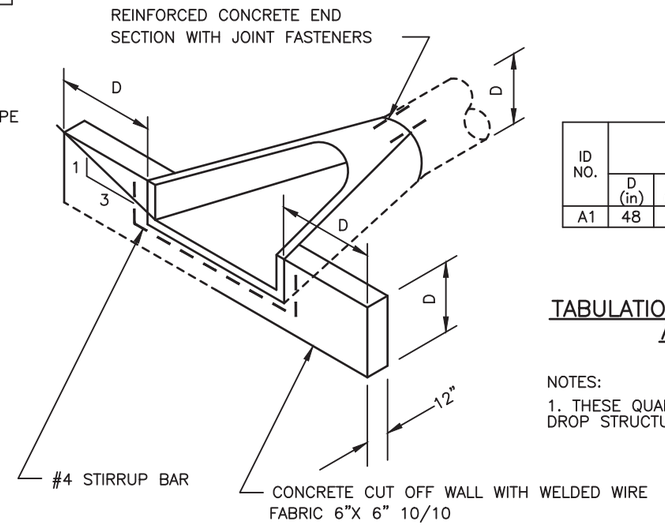
Sheet Number 69



SECTION A–A



SECTION B–B



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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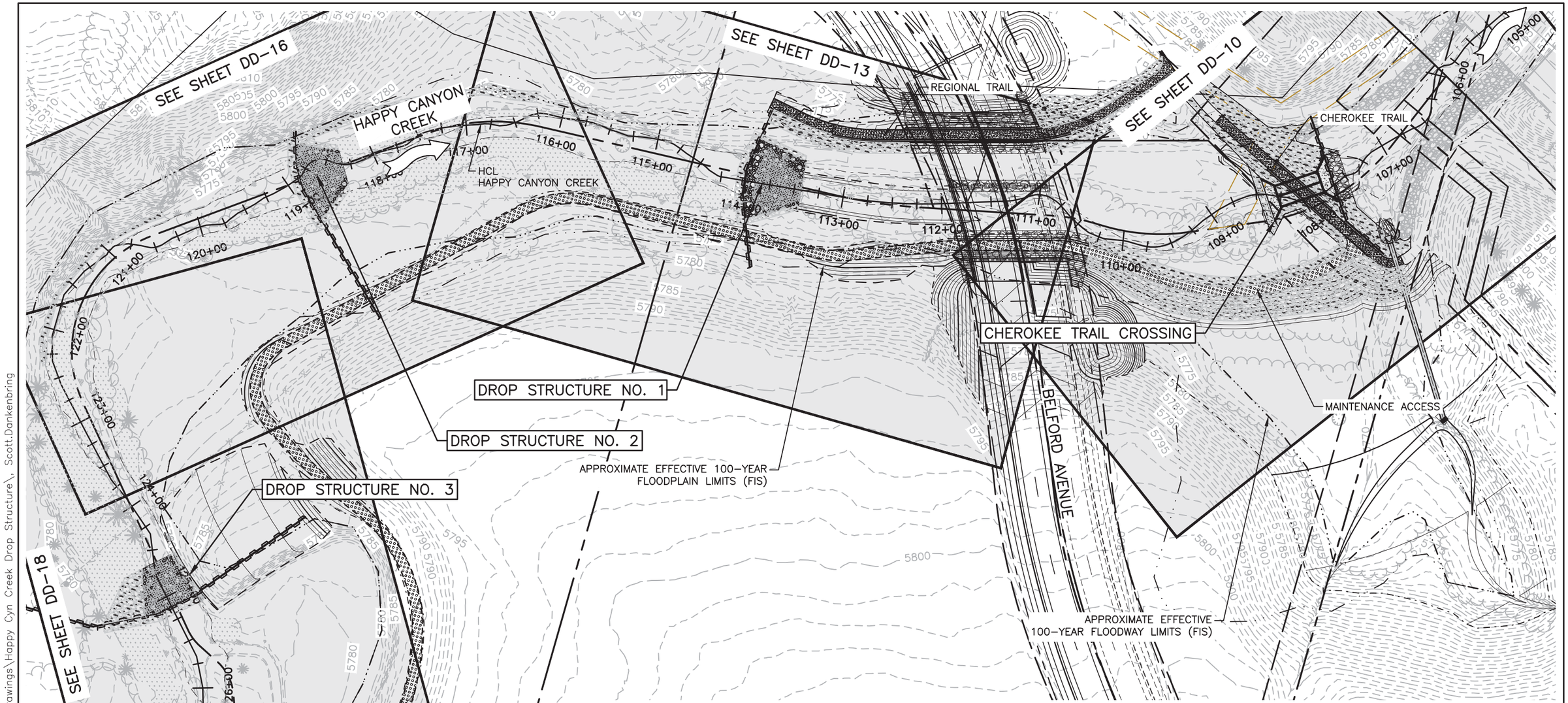
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BELFORD–HAPPY CANYON CREEK DRAINAGE
OUTLET PROTECTION DETAILS

Designer: CDT
Detailer: KLT
Subset: Drainage
Structure Numbers:
Sheets: DD–06 of 22

Project No./Code:

Sheet Number 70



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
- WETLANDS
- SOIL RIPRAP (12 INCH)
- RIPRAP (12 INCH)
- RIPRAP (18 INCH)
- 24" GROUTED BOULDERS

N

HORIZONTAL SCALE: 1"=100'

0 50 100 200

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BELFORD-HAPPY CANYON CREEK
HAPPY CANYON CREEK DROP STRUCTURE PLAN

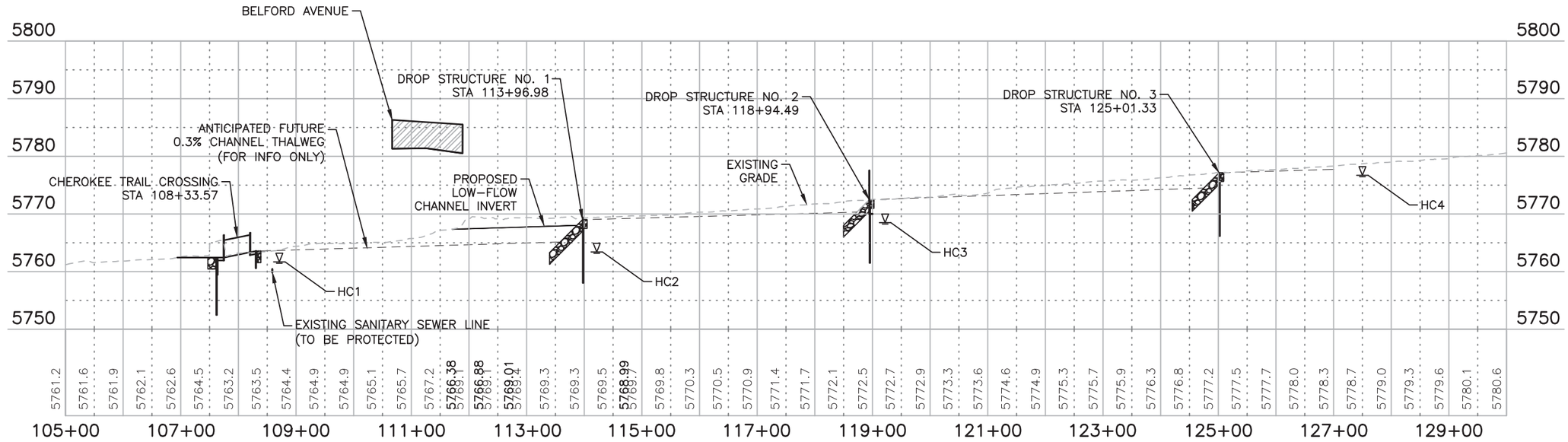
Designer:	CDT	Structure Numbers	
Detailer:	KLT		
Subset:	Drainage	Sheets:	DD-07 of 22

Project No./Code

Sheet Number 71

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.



HAPPY CANYON CREEK PROFILE

HORIZONTAL SCALE: 1"=200'
VERTICAL SCALE: 1"=20'

0' 100' 200' 400'

0' 10' 20' 40'

▽ 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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BELFORD-HAPPY CANYON CREEK
HAPPY CANYON CREEK DROP STRUCTURE
PROFILE

Designer: CDT
Detailer: ZJG
Subset: Drainage
Structure Numbers:
Sheets: DD-08 of 22

Project No./Code

Sheet Number 72

NOTES:

1. SEE SHEET DD–11 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.

BELFORD AVENUE

MAINTENANCE ACCESS

HAPPY CANYON CREEK

111+00

110+00

109+00

108+00

107+00

106+00

105+00

LIMITS OF RIPRAP (18 INCH) SEE BRIDGE HYDRAULIC SHEETS FOR INFORMATION.

STORM SEWER LINE "B". SEE SHEETS DD–12 AND DD–16 FOR INFORMATION

CHEROKEE TRAIL SEE TRAIL PLANS FOR INFORMATION.

LIMITS OF SOIL RIPRAP (18 INCH) 3'–0" THICK (313 CY) OVER FILTER MATERIAL (CLASS A) 1'–0" THICK (105 CY). SEE DD–04.

LIMITS OF SOIL RIPRAP (18 INCH) 3'–0" THICK (664 CY) OVER FILTER MATERIAL (CLASS A) 1'–0" THICK (222 CY). SEE DD–04.

STEEL SHEET PILING (TYP.) (1620 SF). SEE SHEET DD–03.

PROPOSED DUAL 10' X 3' RCBC. SEE DD–10.

LIMITS OF RIPRAP (12 INCH) (57 CY) OVER FILTER MATERIAL (CLASS A) (29 CY). SEE DD–10.

APPROXIMATE LIMITS OF EXISTING RIPRAP (TO REMAIN)

HAPPY CANYON CREEK HCL (TYP.)

LIMITS OF SOIL RIPRAP (12 INCH) 2'–0" THICK (685 CY) OVER FILTER MATERIAL (CLASS A) 1'–0" THICK (343 CY). SEE DD–04.

LIMITS OF RIPRAP (12 INCH) (19 CY) OVER FILTER MATERIAL (CLASS A) (9 CY). SEE DD–06.

APPROXIMATE EFFECTIVE 100–YEAR FLOODPLAIN LIMITS (FIS)

CHEROKEE TRAIL

EB E–470

EXISTING SANITARY SEWER LINE (TO BE PROTECTED)

LIMITS OF SOIL RIPRAP (12 INCH) 2'–0" THICK (435 CY) OVER FILTER MATERIAL (CLASS A) 1'–0" THICK (218 CY). SEE DD–04.

MAINTENANCE ACCESS SEE MAINTENANCE ACCESS PLANS FOR INFORMATION.

APPROXIMATE EFFECTIVE 100–YEAR FLOODWAY LIMITS (FIS)

STORM SEWER LINE "A". SEE SHEET DD–12.

LEGEND

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

HORIZONTAL SCALE: 1"=40'

0' 20' 40' 80'

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Revised:
Void:

BELFORD–HAPPY CANYON CREEK
HAPPY CANYON CREEK DROP STRUCTURE
CHEROKEE TRAIL PLAN

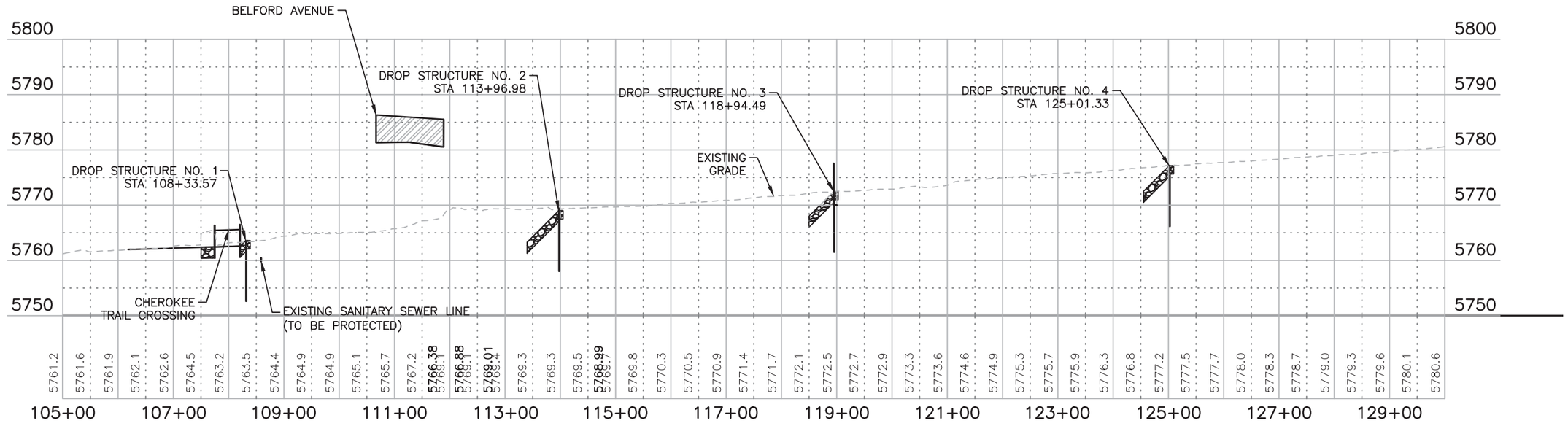
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Detailer: ZJG
Subset: Drainage
Structure Numbers:
Sheets: DD–09 of 22

Project No./Code:

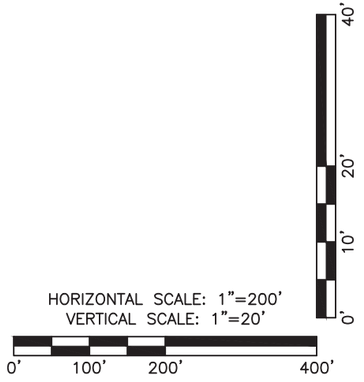
Sheet Number 73

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.



HAPPY CANYON CREEK PROFILE



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BELFORD–HAPPY CANYON CREEK
HAPPY CANYON CREEK DROP STRUCTURE PROFILE

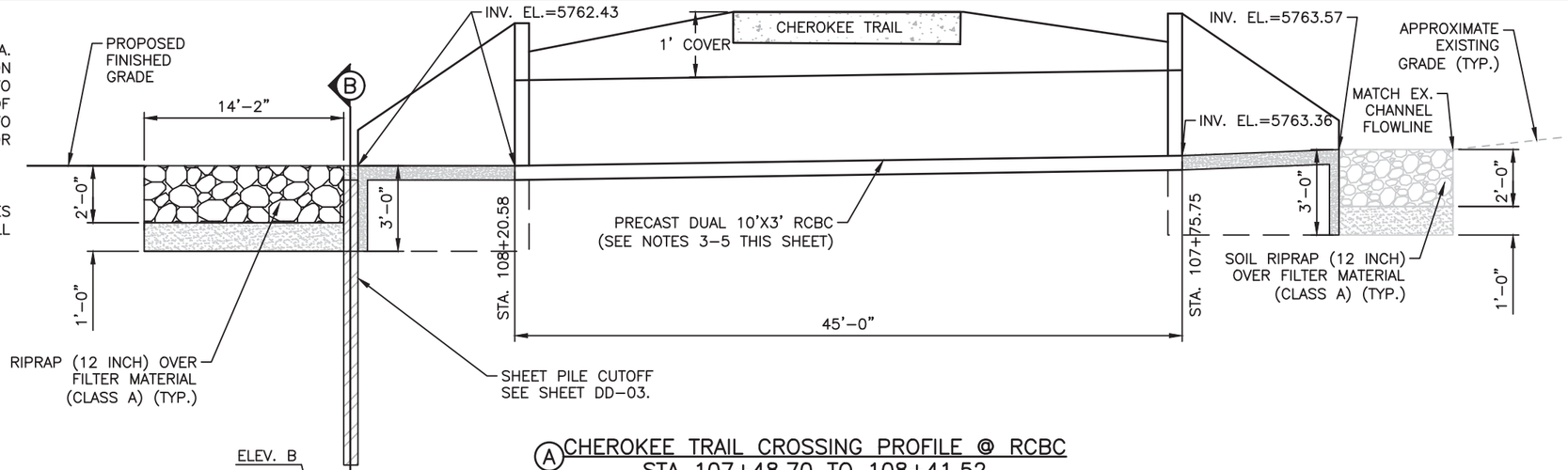
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Detailer:	KLT		
Subset:	Drainage	Sheets:	DD–09 of 19

Project No./Code

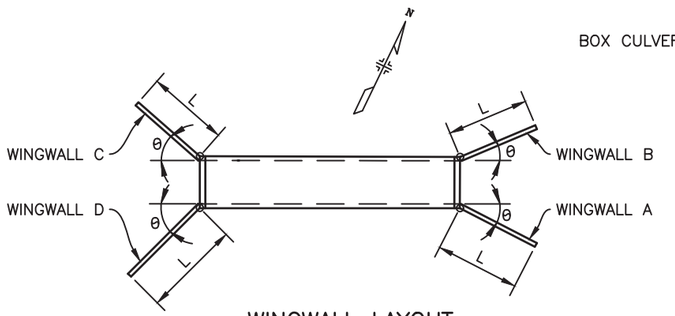
Sheet Number 74

NOTES:

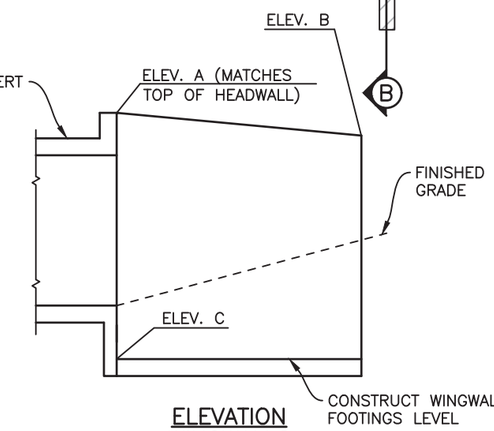
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2. SEE UTILITY PLANS FOR ADDITIONAL INFORMATION.
3. PRECAST BOX CULVERT MUST CONFORM TO CDOT M-STANDARDS M-603-2.
4. FOR CAST-IN-PLACE END SECTIONS, USE M-601-2 FOR WALL THICKNESSES AND REINFORCEMENT SIZE AND SPACINGS WITH S=10 FT, R=6 FT, AND FILL 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.

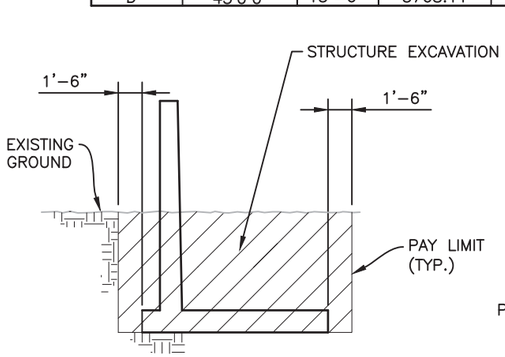


WINGWALL LAYOUT AT BOX CULVERT

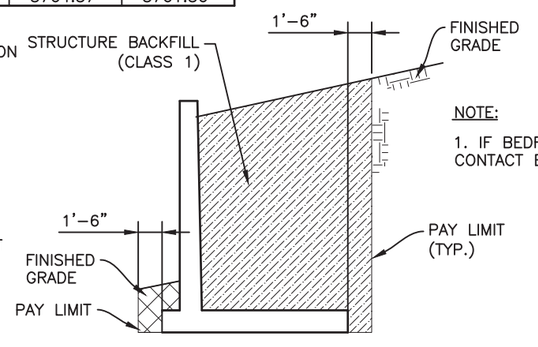


ELEVATION WINGWALLS

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



WINGWALLS EXCAVATION

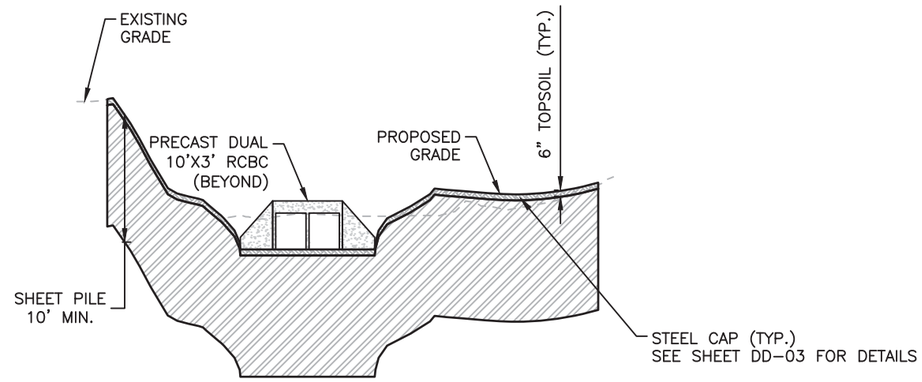


WINGWALLS BACKFILL

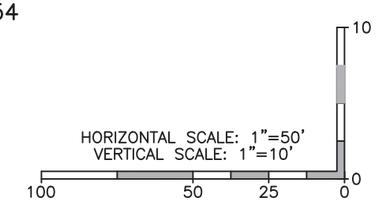
NOTE:

1. IF BEDROCK IS ENCOUNTERED, CONTACT ENGINEER PRIOR TO PROCEEDING.

CHEROKEE TRAIL CROSSING



(B) CREST SECTION
STA 107+63.54



HAPPY CANYON CREEK HYDRAULICS

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

FOR INFO ONLY

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BELFORD-HAPPY CANYON CREEK
HAPPY CANYON CREEK DROP STRUCTURE
CHEROKEE TRAIL PROFILE/DETAILS

Designer:	CDT	Structure Numbers	
Detailer:	ZJG		
Subset:	Drainage	Sheets:	DD-10 of 22

Project No./Code

Sheet Number 75

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	27979.15	94785.85	5774.82	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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Print Date: 3/13/2018 9:26:42 AM
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BELFORD–HAPPY CANYON CREEK
HAPPY CANYON CREEK DROP STRUCTURE
CHEROKEE TRAIL POINT DATA DETAIL

Designer: CDT
Detailer: ZJG
Subset: Drainage
Structure Numbers:
Sheets: DD–11 of 22

Project No./Code:

Sheet Number 76

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'				

NOTES:

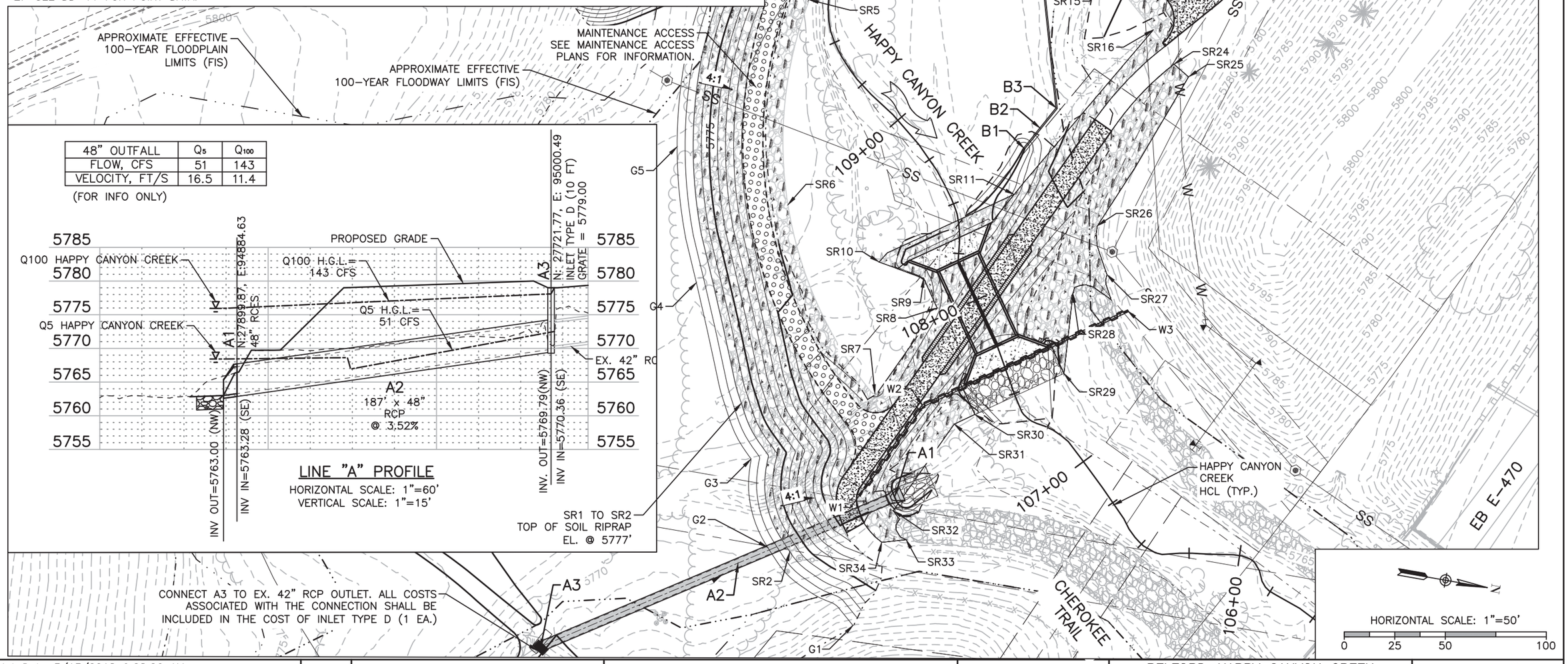
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2. SEE DD-11 FOR POINT DATA.

48" OUTFALL	Q_5	Q_{100}
FLOW, CFS	51	143
VELOCITY, FT/S	16.5	11.4

(FOR INFO ONLY)

LINE "A" PROFILE

HORIZONTAL SCALE: 1"=60'
VERTICAL SCALE: 1"=15'



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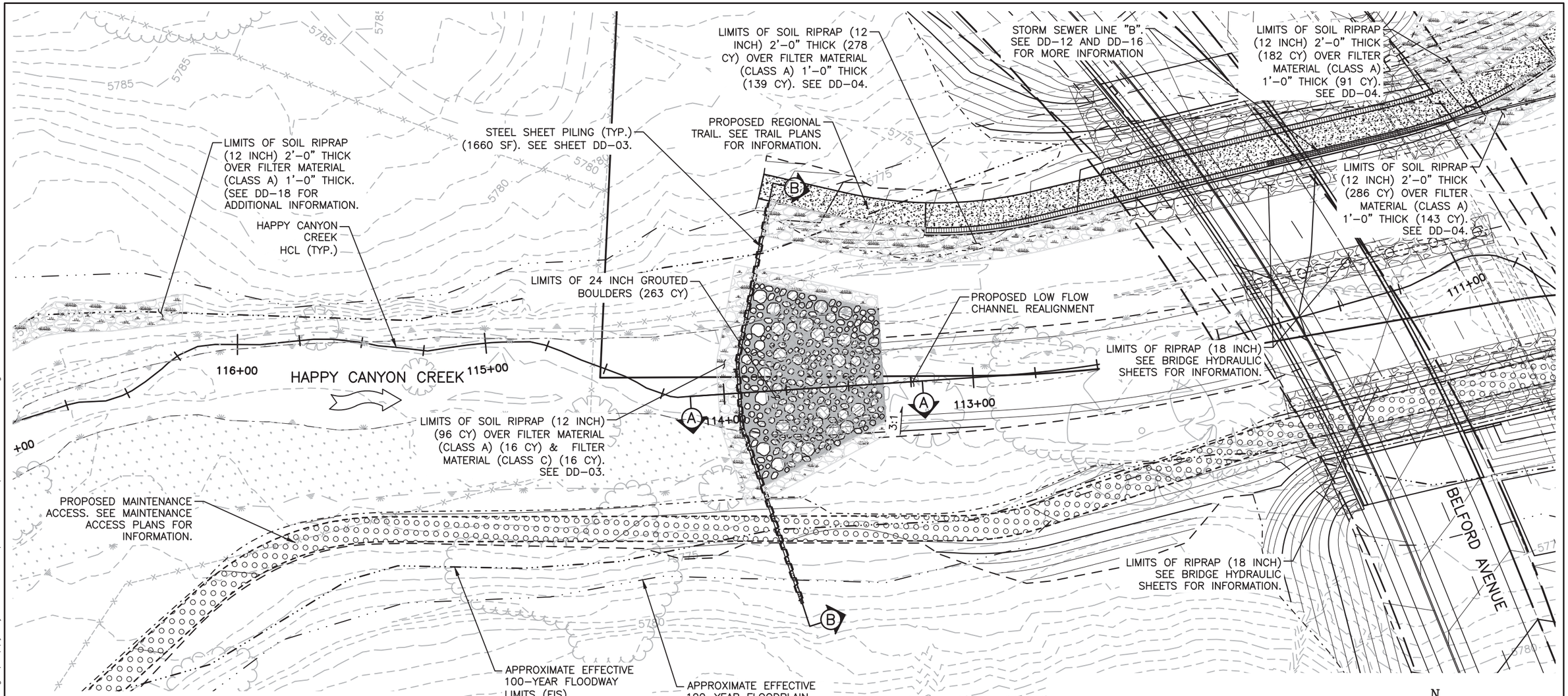
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BELFORD-HAPPY CANYON CREEK
HAPPY CANYON CREEK DROP STRUCTURE
CHEROKEE TRAIL GRADING DETAIL

Designer: CDT
Detailer: ZJG
Subset: Drainage
Structure Numbers:
Sheets: DD-12 of 22

Project No./Code:
Sheet Number 77



NOTES:

1. SEE SHEET DD-15 FOR DROP NO. 1 POINT DATA.
2. SEE SHEET DD-14 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)

N

HORIZONTAL SCALE: 1"=40'

0' 20' 40' 80'

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BELFORD-HAPPY CANYON CREEK
HAPPY CANYON CREEK DROP STRUCTURE
DROP NO. 1 PLAN

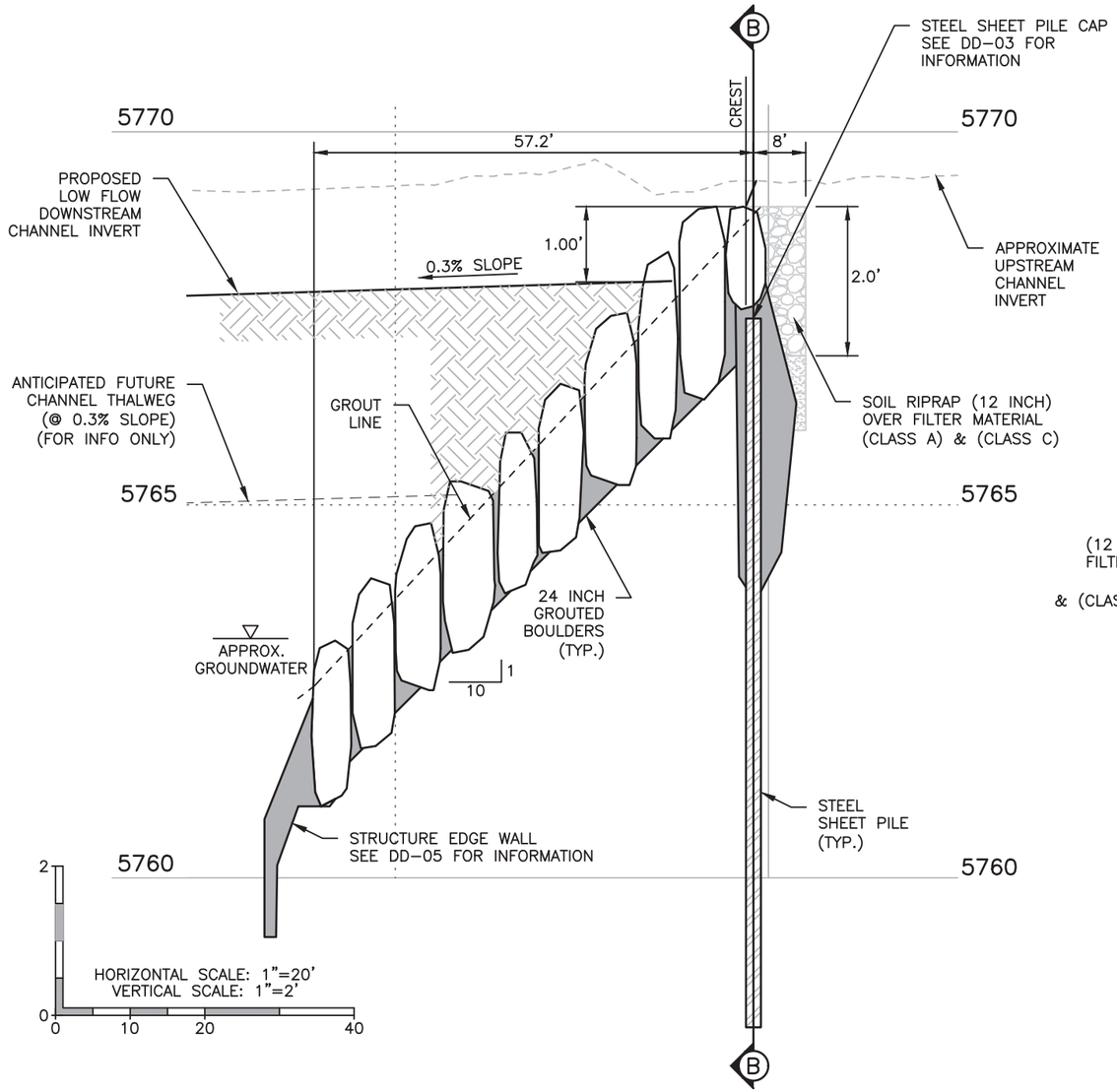
Designer:	CDT	Structure Numbers	
Detailer:	ZJG		
Subset:	Drainage	Sheets:	DD-13 of 22

Project No./Code

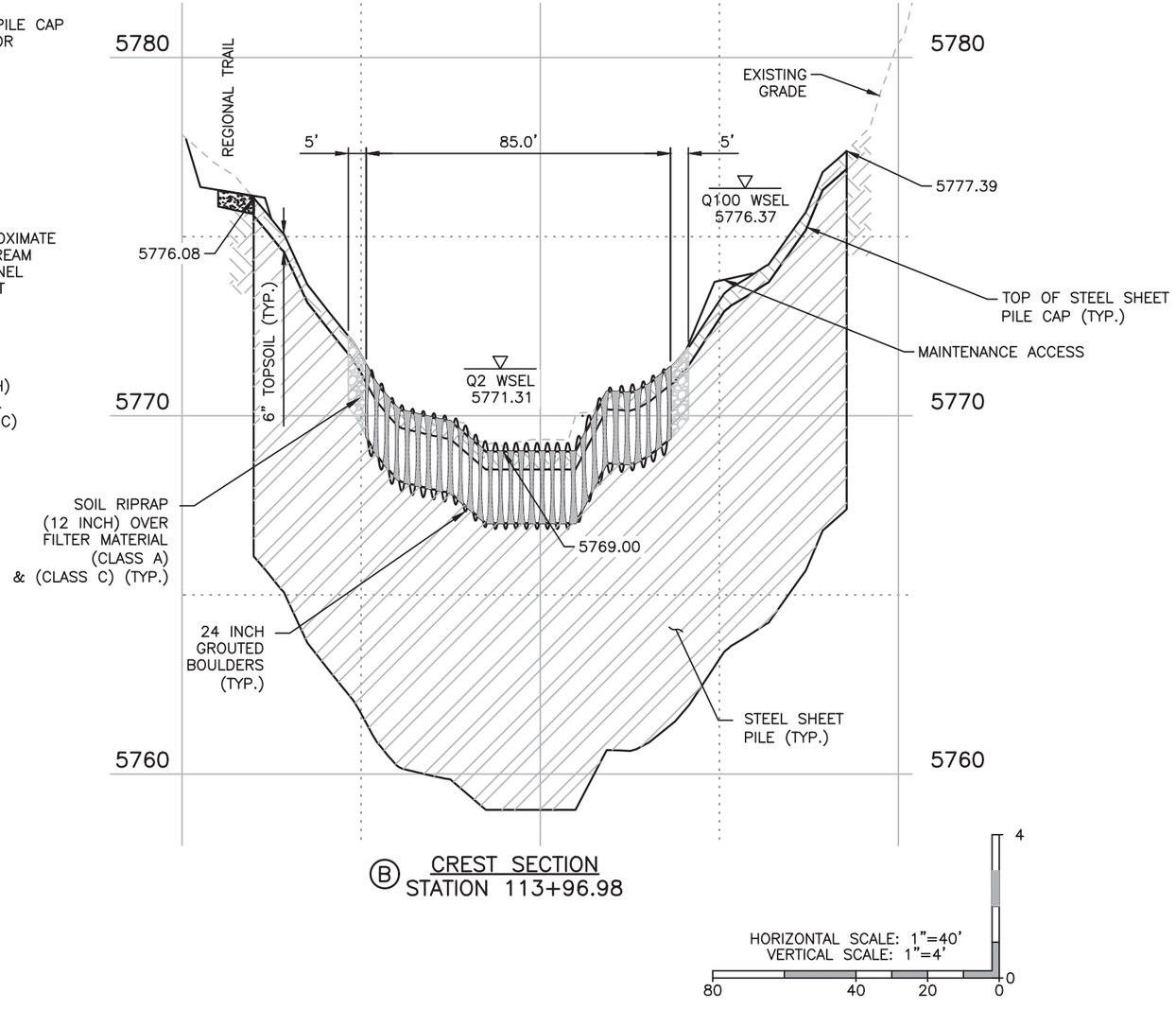
Sheet Number 78

NOTES

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2. SEE UTILITY PLANS FOR ADDITIONAL INFORMATION.



Ⓐ GROUTED BOULDER DROP NO. 1 PROFILE
STA 113+39.80 TO 114+04.98



Ⓑ 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

DROP STRUCTURE NO. 1

Print Date: 3/13/2018 9:32:03 AM	R-X	Sheet Revisions	
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Horizontal Scale: As Noted Vertical Scale: As Noted			

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No Revisions:				
Revised:	Designer: CDT	Structure Numbers		
Void:	Detailer: ZJG			
	Subset: Drainage	Sheets: DD–14 of 22		Sheet Number 79

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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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Print Date: 3/13/2018 9:32:11 AM
File Name: H115360-01DROP15Δrop1 Point Data.dwg
Horizontal Scale: N.T.S. Vertical Scale: N.T.S.

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Sheet Revisions

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Void:

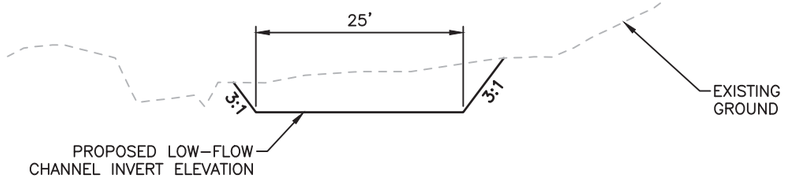
BELFORD–HAPPY CANYON CREEK
HAPPY CANYON CREEK DROP STRUCTURE
DROP NO. 1 POINT DATA DETAIL

Designer: CDT
Detailer: ZJG
Subset: Drainage
Structure Numbers:
Sheets: DD–15 of 22

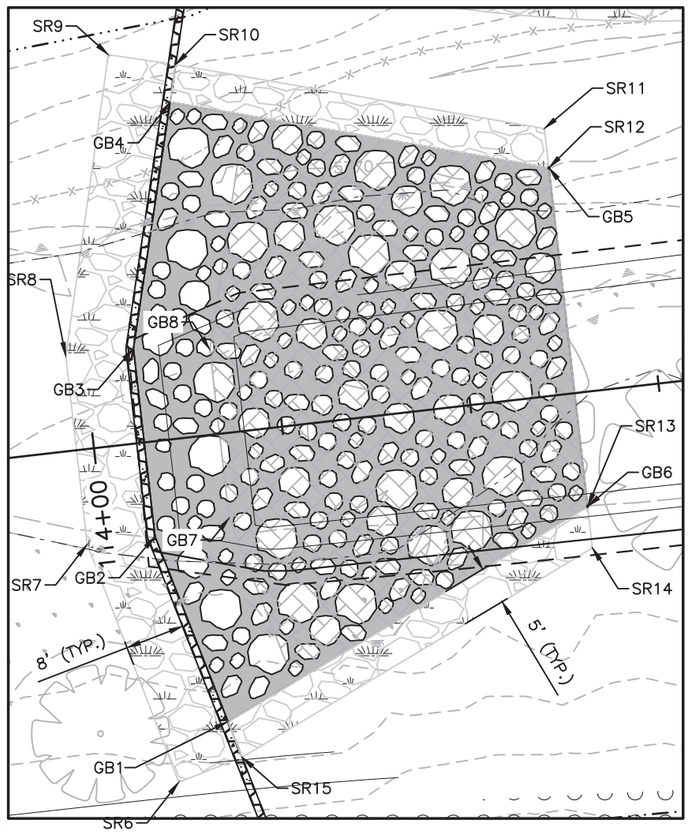
Project No./Code:

Sheet Number 80

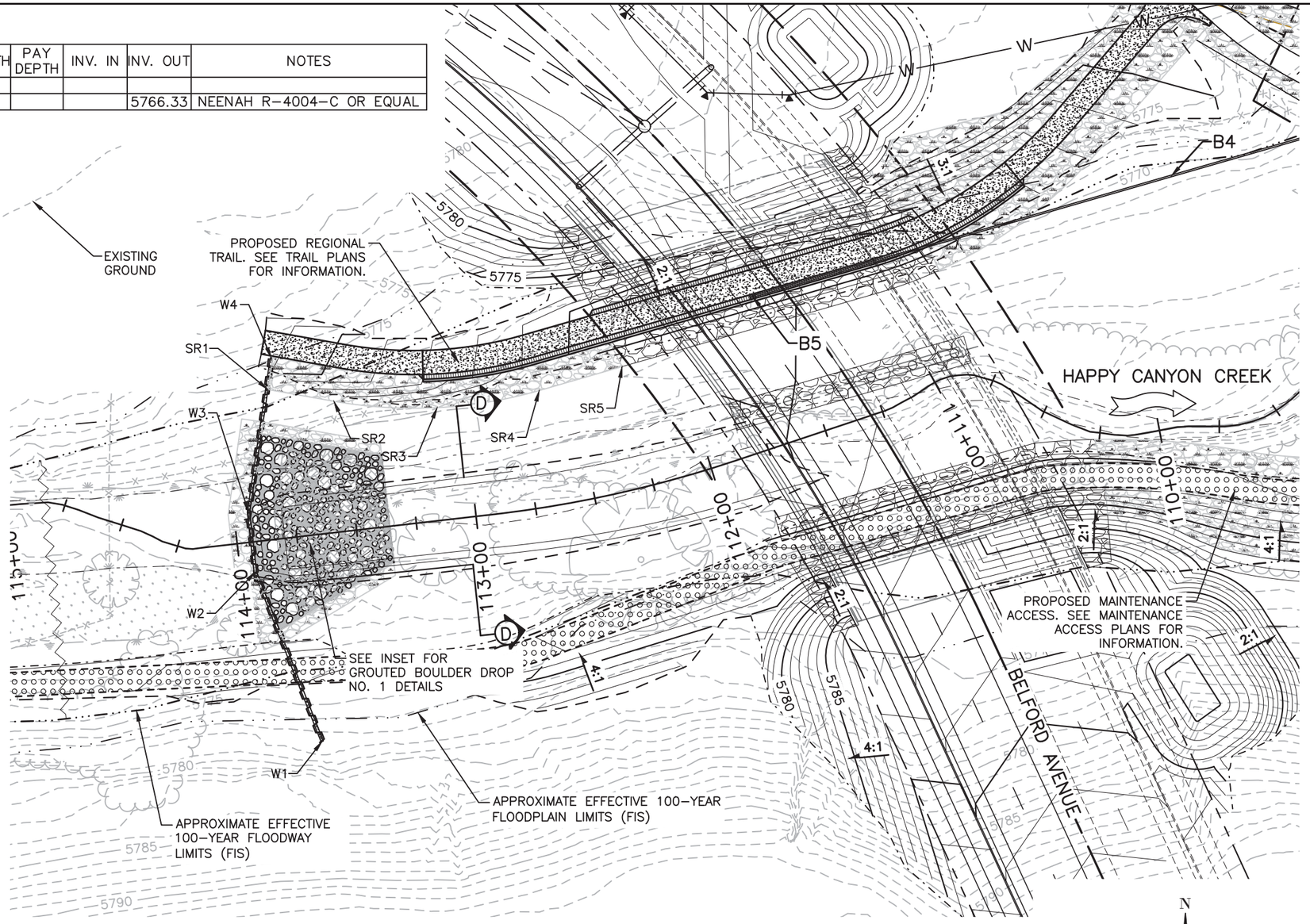
I.D.	NORTHING & EASTING	ITEM	LENGTH	PAY DEPTH	INV. IN	INV. OUT	NOTES
B4		8" PLASTIC PIPE	241'				
B5	N: 27860.43, E: 94462.48	INLET SPECIAL				5766.33	NEENAH R-4004-C OR EQUAL



Ⓓ TYPICAL CHANNEL SECTION
N.T.S.



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



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 SHEET DD-15 FOR DROP NO. 1 POINT DATA.

N

HORIZONTAL SCALE: 1"=50'
0 25 50 100

I:\115360-01 - Compark at Belford\CADD\Hydraulics\Drawings\Happy Cyn Creek Drop Structure\, Scott.Dankenbring

Print Date: 3/13/2018 9:33:52 AM	Sheet Revisions	As Constructed	BELFORD-HAPPY CANYON CREEK HAPPY CANYON CREEK DROP STRUCTURE DROP NO. 1 GRADING DETAIL
File Name: H115360-01DROP16Grading Drop 1.dwg	R-X | Date | Comments | Initials	No Revisions:	Project No./Code
Horizontal Scale: 1"=10' Vertical Scale: N.T.S.		Revised:	Designer: CDT; Detailer: ZJG; Subset: Drainage; Structure Numbers; Sheets: DD-16 of 22
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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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Print Date: 3/13/2018 9:34:02 AM
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No Revisions:
Revised:
Void:

BELFORD–HAPPY CANYON CREEK
HAPPY CANYON CREEK DROP STRUCTURE
DROP NO. 2 POINT DATA DETAIL

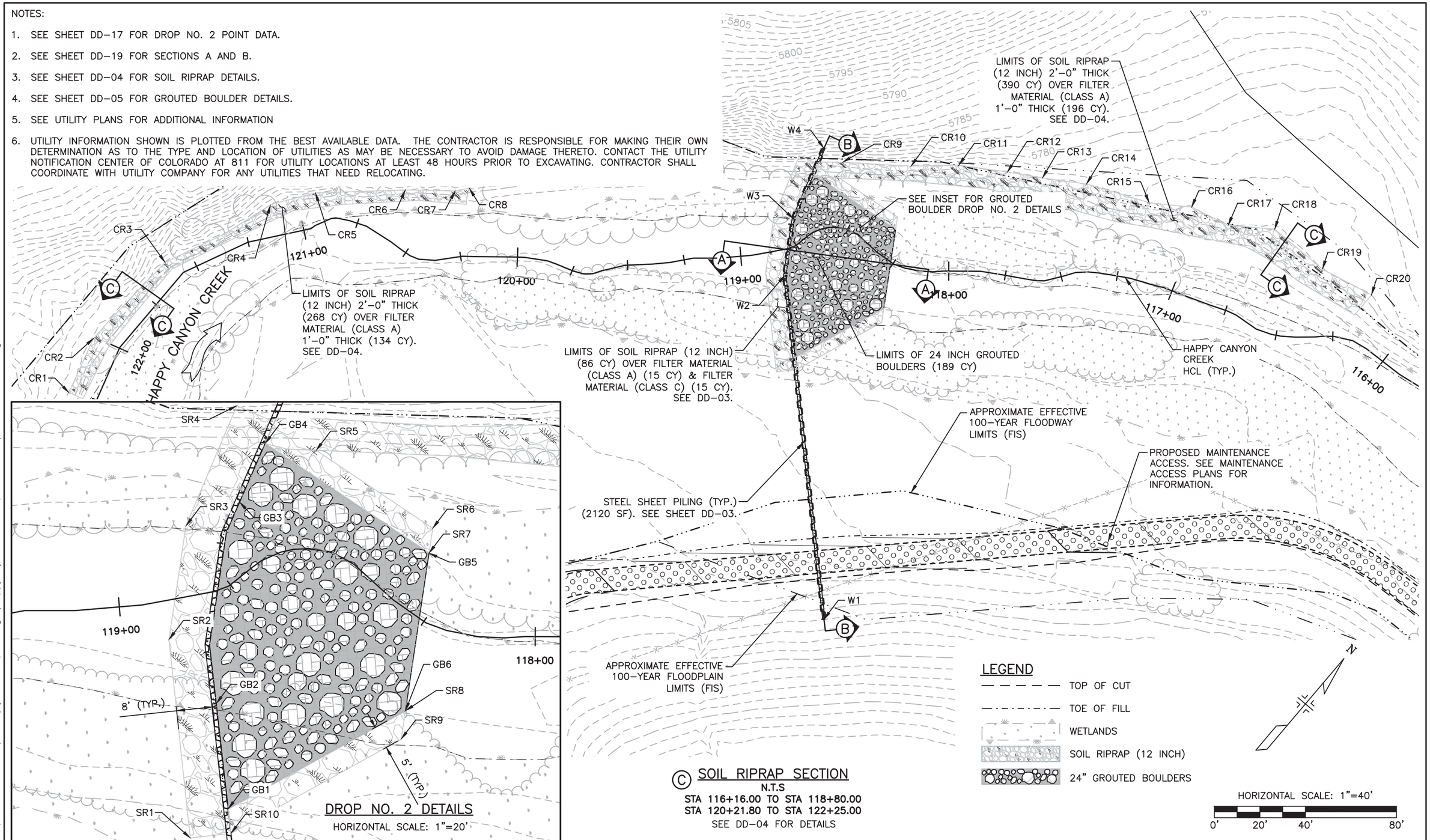
Designer: CDT
Detailer: ZJG
Subset: Drainage
Structure Numbers:
Sheets: DD–17 of 22

Project No./Code:

Sheet Number 82

NOTES:

1. SEE SHEET DD–17 FOR DROP NO. 2 POINT DATA.
2. SEE SHEET DD–19 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.



DROP NO. 2 DETAILS

HORIZONTAL SCALE: 1"=20'

© 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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Print Date: 3/13/2018 9:35:39 AM
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Horizontal Scale: 1"=20' Vertical Scale: N.T.S.

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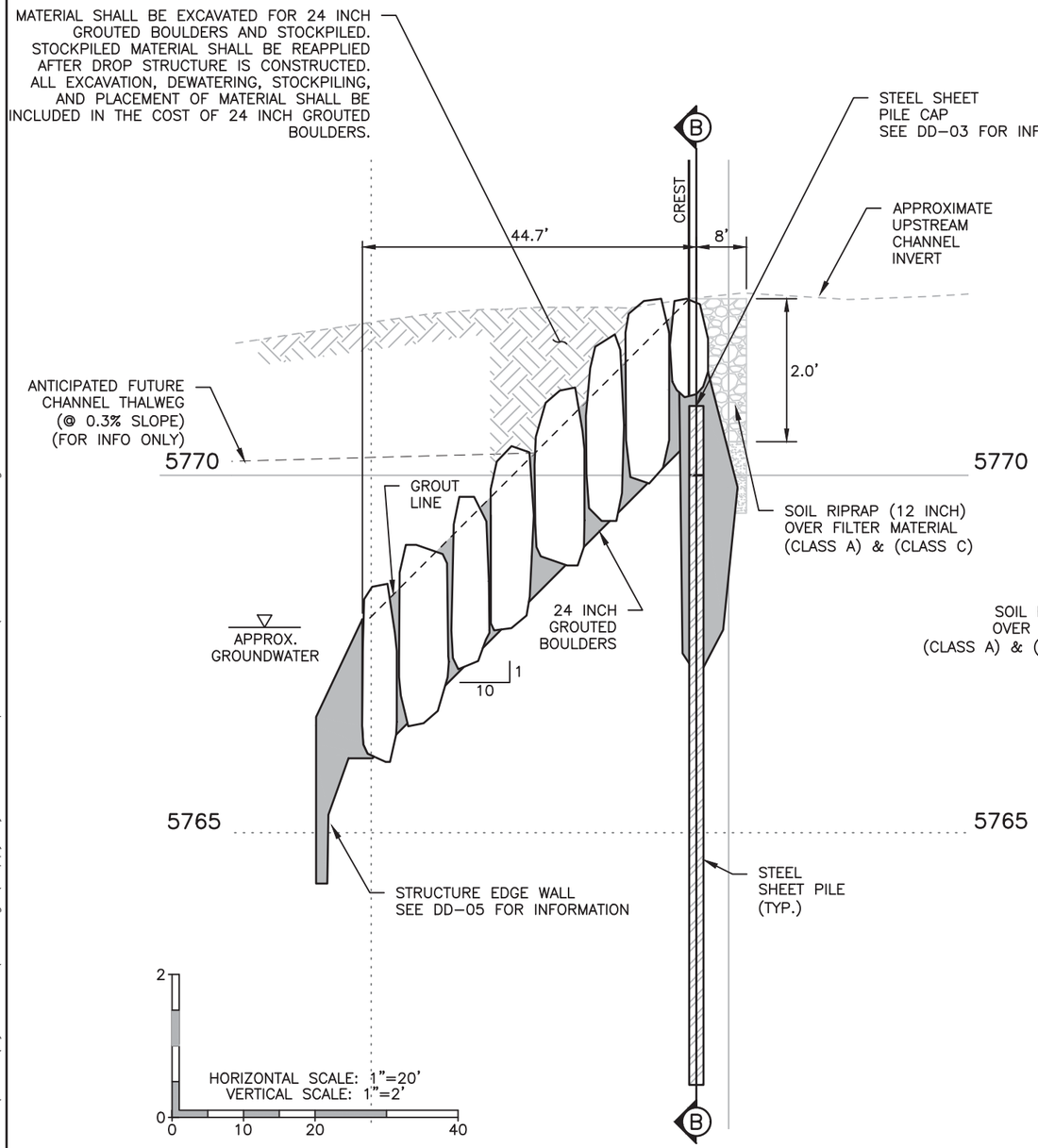
As Constructed
No Revisions:
Revised:
Void:

BELFORD–HAPPY CANYON CREEK
HAPPY CANYON CREEK DROP STRUCTURE
DROP NO. 2 PLAN

Designer:	CDT	Structure Numbers	
Detailer:	ZJG		
Subset:	Drainage	Sheets:	DD–18 of 22

Project No./Code

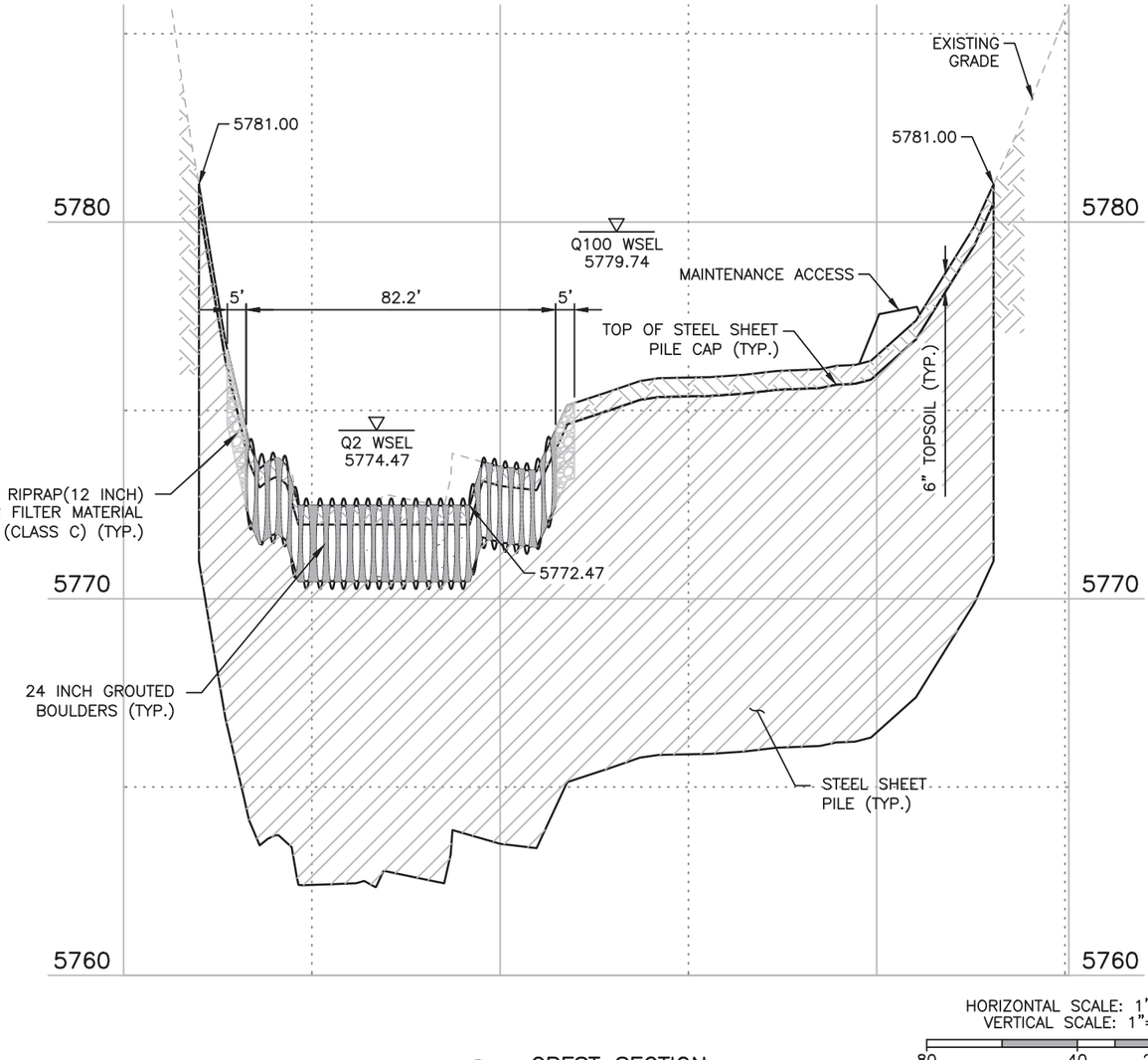
Sheet Number 83



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

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.



Ⓑ CREST SECTION
STATION 118+94.49

HAPPY CANYON CREEK HYDRAULICS

Q100= 8,303 C.F.S
Q100 VELOCITY = 11.93 F.P.S
FROUDE No.=0.79
FOR INFO ONLY

DROP STRUCTURE NO. 2

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Print Date: 3/13/2018 9:36:26 AM		Sheet Revisions			As Constructed	BELFORD–HAPPY CANYON CREEK HAPPY CANYON CREEK DROP STRUCTURE DROP NO. 2 PROFILE/DETAILS	Project No./Code
File Name: H115360-01DROP19\drop2 Prof Sect.dwg	(R-X)	Date	Comments	Initials	No Revisions:		
Horizontal Scale: As Noted Vertical Scale: As Noted					Revised:	Designer: CDT / Detailer: ZJG / Subset: Drainage / Structure Numbers / Sheets: DD-19 of 22	
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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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Date	Comments	Initials

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As Constructed
No Revisions:
Revised:
Void:

BELFORD–HAPPY CANYON CREEK
HAPPY CANYON CREEK DROP STRUCTURE
DROP NO. 3 POINT DATA DETAIL

Designer: CDT
Detailer: ZJG
Subset: Drainage
Structure Numbers:
Sheets: DD–20 of 22

Project No./Code:

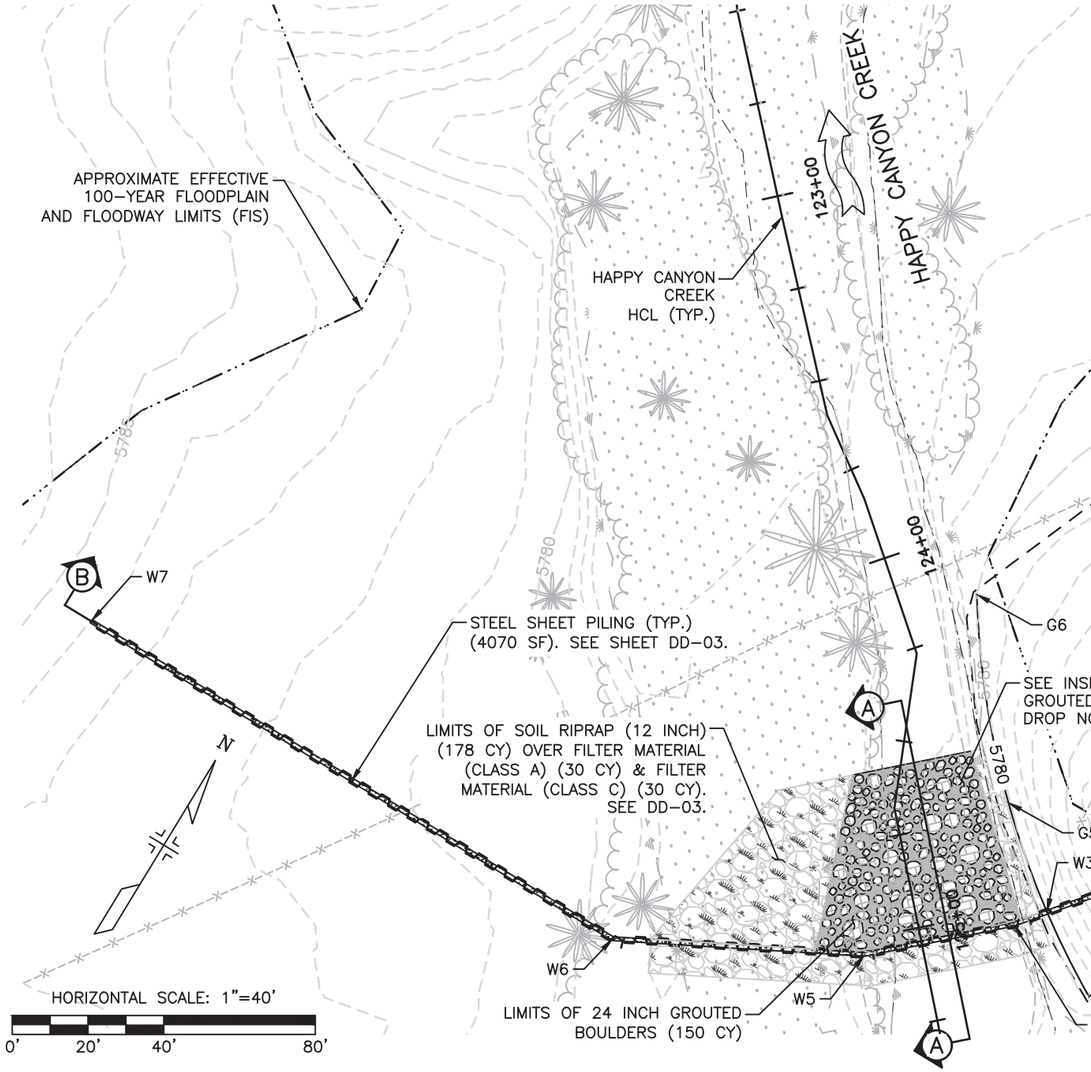
Sheet Number 85

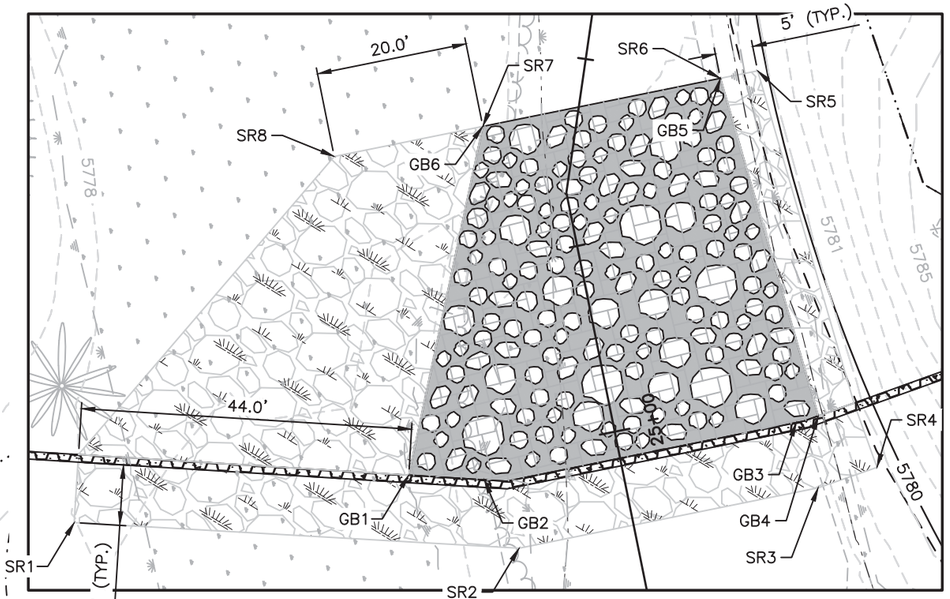
NOTES:

1. SEE SHEET DD-20 FOR DROP NO. 3 POINT DATA.
2. SEE SHEET DD-22 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
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)
- 24" GROUTED BOULDERS (BURIED)





DROP NO. 3 DETAILS

HORIZONTAL SCALE: 1"=20'

Print Date: 3/13/2018 9:38:19 AM		Sheet Revisions			As Constructed
File Name: H115360-01DROP21Δrop3 Plan.dwg	(R-X)	Date	Comments	Initials	No Revisions:
Horizontal Scale: 1"=20' Vertical Scale: N.T.S.					Revised:
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BELFORD-HAPPY CANYON CREEK
HAPPY CANYON CREEK DROP STRUCTURE
DROP NO. 3 PLAN

Designer:	CDT	Structure Numbers	
Detailer:	ZJG		
Subset:	Drainage	Sheets:	DD-21 of 22

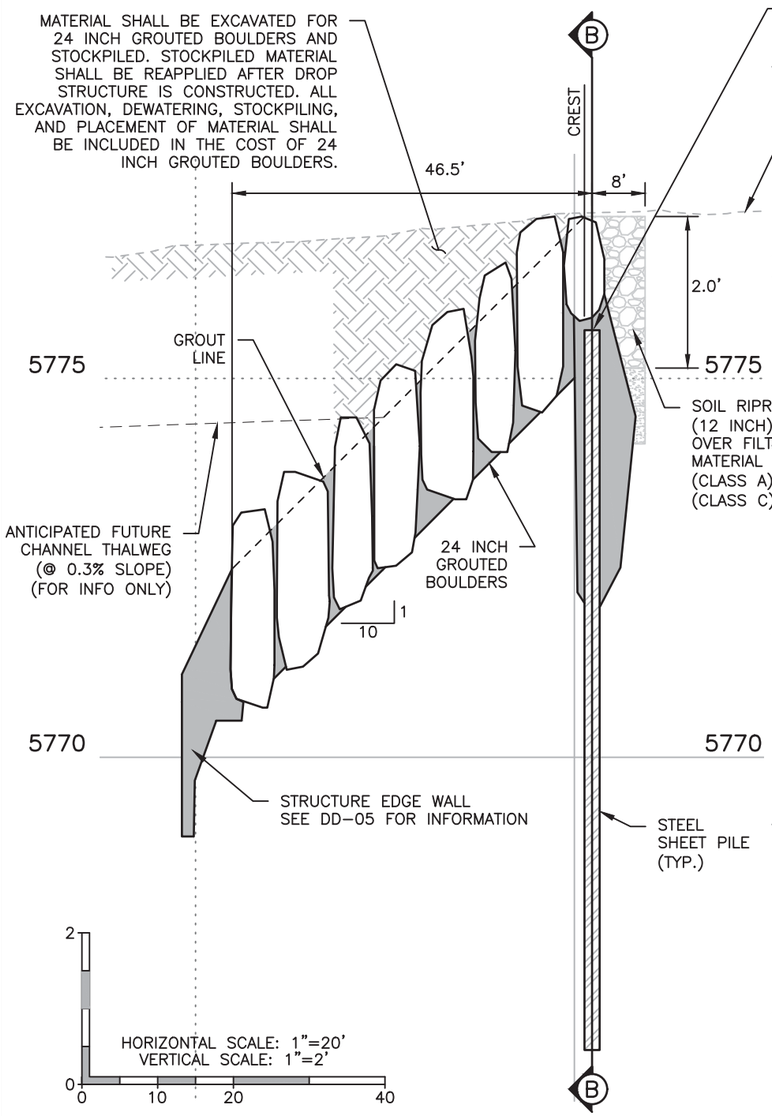
Project No./Code

Sheet Number 86

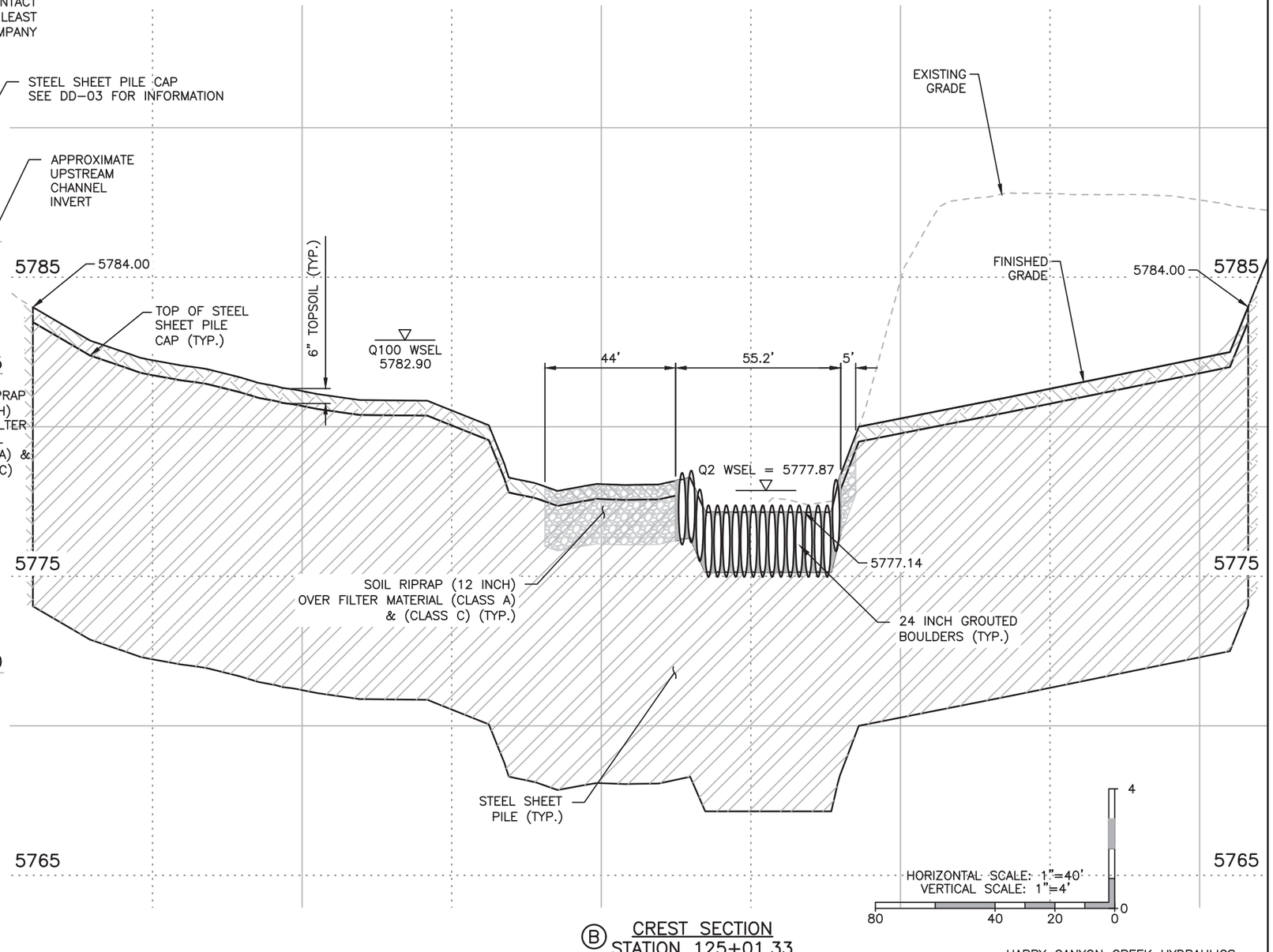
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NOTES

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.



Ⓐ GROUTED BOULDER DROP NO. 3 PROFILE
STA 124+54.81 TO 125+09.33



Ⓑ CREST SECTION
STATION 125+01.33

HAPPY CANYON CREEK HYDRAULICS

Q100= 8,303 C.F.S
Q100 VELOCITY = 10.80 F.P.S
FROUDE No.=0.77

FOR INFO ONLY

DROP STRUCTURE NO. 3

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As Constructed	BELFORD-HAPPY CANYON CREEK HAPPY CANYON CREEK DROP STRUCTURE DROP NO. 3 PROFILE/DETAILS			Project No./Code
No Revisions:				
Revised:	Designer: CDT	Structure Numbers		
Void:	Detailer: ZJG			
	Subset: Drainage	Sheets: DD-22 of 22		Sheet Number 87

PARKER
COLORADO

CONSTRUCTION PLANS

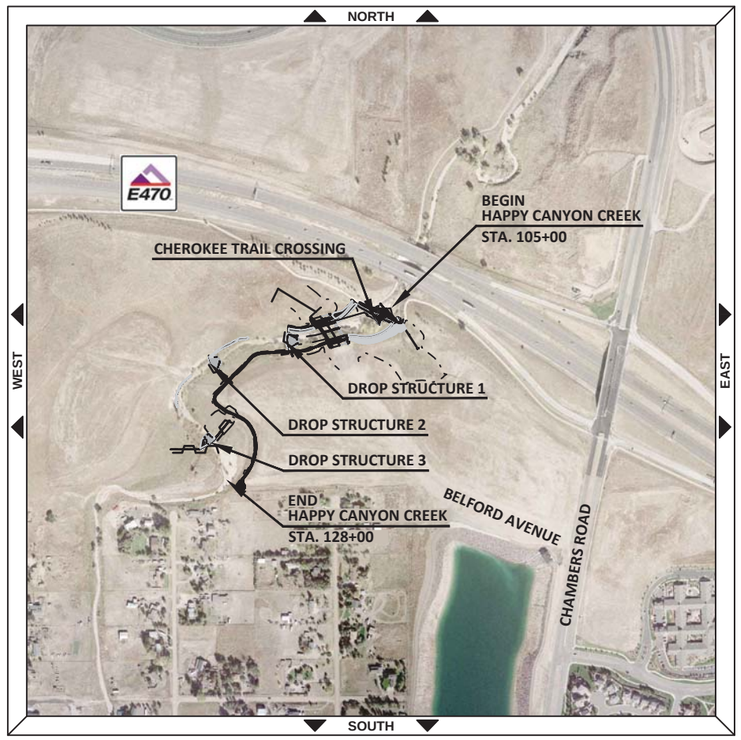
CONSTRUCTION BEST MANAGEMENT PRACTICES

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
83	EL–1	CBMP TITLE SHEET
84	ET–1	TABULATION OF EROSION CONTROL QUANTITIES
85–86	EI–1 TO EI–2	INITIAL CBMP PLAN
87–88	EN–1 TO EN–2	INTERIM CBMP PLAN
89–90	EF–1 TO EN–2	FINAL CBMP PLAN
91–125	ED–1 TO ED–35	CBMP STANDARD NOTES AND DETAILS

TOWN OF PARKER APPROVALS

THE TOWN OF PARKER REVIEW CONSTITUTES GENERAL COMPLIANCE WITH THE TOWNS 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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BELFORD–HAPPY CANYON CREEK
CBMP TITLE SHEET

Designer:	CDT	Structure Numbers	
Detailer:	KLT		
Subset:	EROSION	Sheets:	EL–1 of 1

Project No./Code

Sheet Number 88

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)	(PTP)
	LF	EACH	EACH	SY	ACRE	ACRE	LF	LS	LF	SY	LF	LF	LF	EA	LF	EA	EA	
INITIAL (EI–1)	275	2	2	2300			40		1798		312	8838	1361				4	
INTERIM (EN–1)							60	1	1885					1	480	2		
FINAL (EF–1)					6.3	6.3				6180								
PROJECT TOTALS	275	2	2	2300	6.3	6.3	100	1	3683	6180	312	8838	1361	1	480	2	4	

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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BELFORD–HAPPY CANYON CREEK
TABULATION OF
EROSION CONTROL QUANTITIES

Designer: CDT
Detailer: KLT
Subset: EROSION
Structure Numbers:
Sheets: ET–1 of 1

Project No./Code:

Sheet Number 89

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

HORIZONTAL SCALE: 1"=80'
0 40 80 160

APPROXIMATE 100-YR EFFECTIVE (FIS) FLOODPLAIN LIMITS

NO WORK SHALL OCCUR IN THESE AREAS

NO WORK SHALL OCCUR IN THESE AREAS

NO WORK SHALL OCCUR IN THESE AREAS

HAPPY CANYON CREEK

LOC
DD L=125'
CD CL=130'
CF 3648 LF
SF 170 LF
SCL 70 LF
SF 180 LF
SCL 50 LF
TSC 1 EA
SCL 580 LF
SCL 320 LF
DD L=37'
TSC 1 EA
CF 213 LF
SF 128 LF
LOC
CF 417 LF

131+00 130+00 129+00 128+00 127+00 126+00 125+00 124+00 123+00 122+00 121+00 120+00 119+00 118+00 117+00

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

MATCHLINE STA. 117+00

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.
2. ALL DIRTY STREETS, CURBS, GUTTER, SIDEWALKS, LITTER AND OTHER CONSTRUCTION TRASH/DEBRIS, ETC. MUST BE THOROUGHLY CLEANED THROUGHOUT THE DAY AS THESE AREAS BECOME SOILED. NO EXCEPTIONS WILL BE MADE.
3. NO WORK SHALL OCCUR ON ANY AREA ADJACENT TO THE PROJECT OUTSIDE THE LIMITS OF CONSTRUCTION.

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 (SEE WATER CONTROL NOTES ON ET-1)	
VTC	VEHICLE TRACKING CONTROL	

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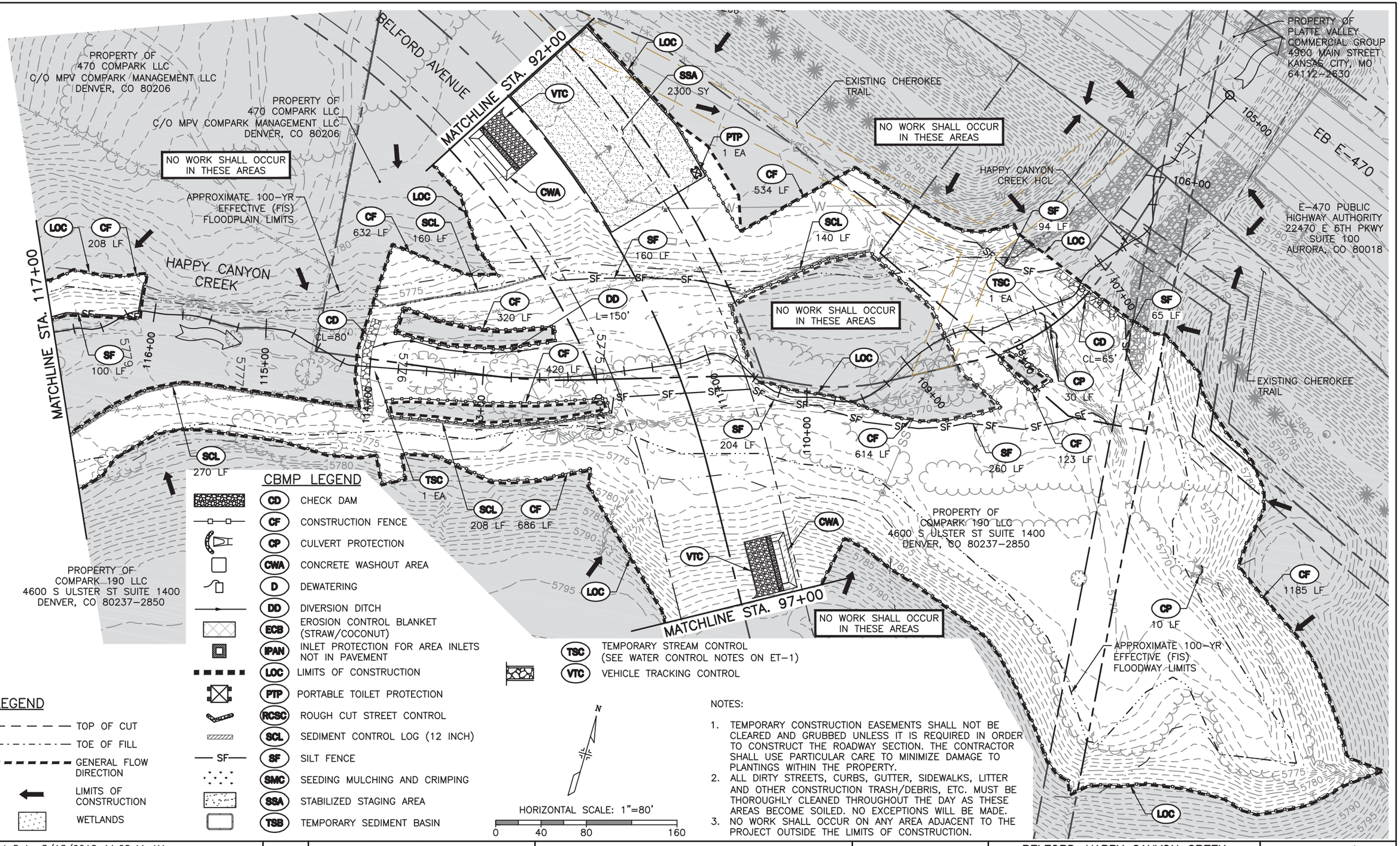
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PEORIA & BELFORD INTERSECTION
HAPPY CANYON CREEK DROP STRUCTURE
INITIAL CBMP PLAN

Designer: CDT
Detailer: KLT
Subset: Erosion
Structure Numbers:
Sheets: EI-1 of 2

Project No./Code:
Sheet Number 90

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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	
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SSA	STABILIZED STAGING AREA	
TSB	TEMPORARY SEDIMENT BASIN	
TSC	TEMPORARY STREAM CONTROL (SEE WATER CONTROL NOTES ON ET-1)	
VTC	VEHICLE TRACKING CONTROL	

LEGEND

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

HORIZONTAL SCALE: 1"=80'
0 40 80 160

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.
2. ALL DIRTY STREETS, CURBS, GUTTER, SIDEWALKS, LITTER AND OTHER CONSTRUCTION TRASH/DEBRIS, ETC. MUST BE THOROUGHLY CLEANED THROUGHOUT THE DAY AS THESE AREAS BECOME SOILED. NO EXCEPTIONS WILL BE MADE.
3. NO WORK SHALL OCCUR ON ANY AREA ADJACENT TO THE PROJECT OUTSIDE THE LIMITS OF CONSTRUCTION.

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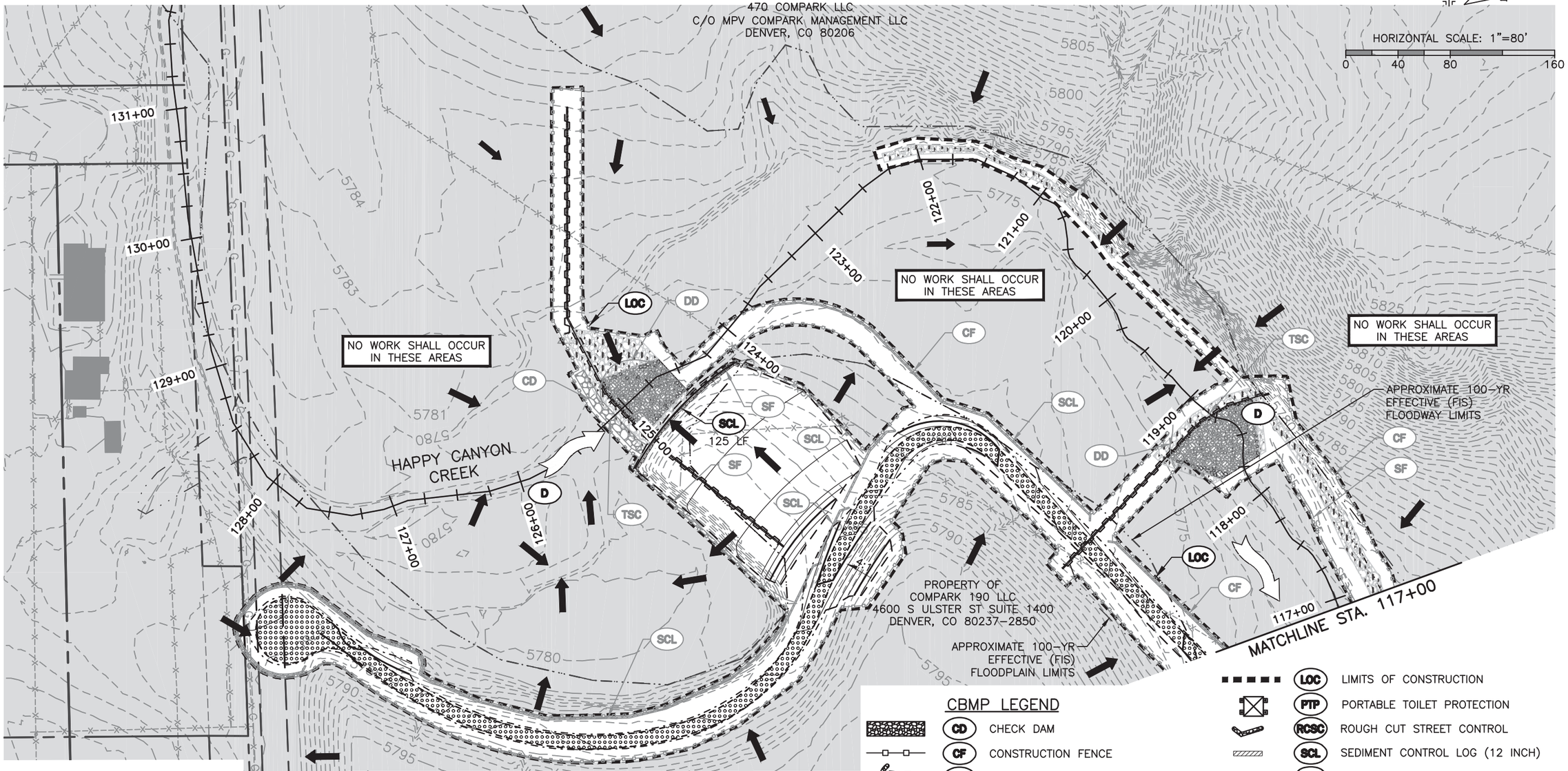
BELFORD-HAPPY CANYON CREEK
HAPPY CANYON CREEK DROP STRUCTURE
INITIAL CBMP PLAN

Designer:	CDT	Structure Numbers	
Detailer:	KLT		
Subset:	Erosion	Sheets:	EI-2 of 2

Project No./Code

Sheet Number 91

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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.
2. * EROSION CONTROL ITEMS INSTALLED IN THE INITIAL EROSION CONTROL PLAN SHALL REMAIN IN PLACE FOR INTERIM PHASES OF CONSTRUCTION AND SHALL BE REMOVED, MODIFIED OR REPLACED AT THE DIRECTION OF THE PROJECT ENGINEER. THESE ITEMS SHALL BE PAID FOR AS PLACE AND REMOVE.
3. NO WORK SHALL OCCUR ON ANY AREA ADJACENT TO THE PROJECT OUTSIDE THE LIMITS OF CONSTRUCTION.

CBMP LEGEND

CD	CHECK DAM	LOC	LIMITS OF CONSTRUCTION
CF	CONSTRUCTION FENCE	PTP	PORTABLE TOILET PROTECTION
CP	CULVERT PROTECTION	RCSC	ROUGH CUT STREET CONTROL
CWA	CONCRETE WASHOUT AREA	SCL	SEDIMENT CONTROL LOG (12 INCH)
D	DEWATERING	SF	SILT FENCE
DD	DIVERSION DITCH	SMC	SEEDING MULCHING AND CRIMPING
ECB	EROSION CONTROL BLANKET (STRAW/COCONUT)	SSA	STABILIZED STAGING AREA
IPAN	INLET PROTECTION FOR AREA INLETS NOT IN PAVEMENT	TSB	TEMPORARY SEDIMENT BASIN
		TSC	TEMPORARY STREAM CONTROL (SEE WATER CONTROL NOTES SHEET ET-1)
		VTC	VEHICLE TRACKING CONTROL

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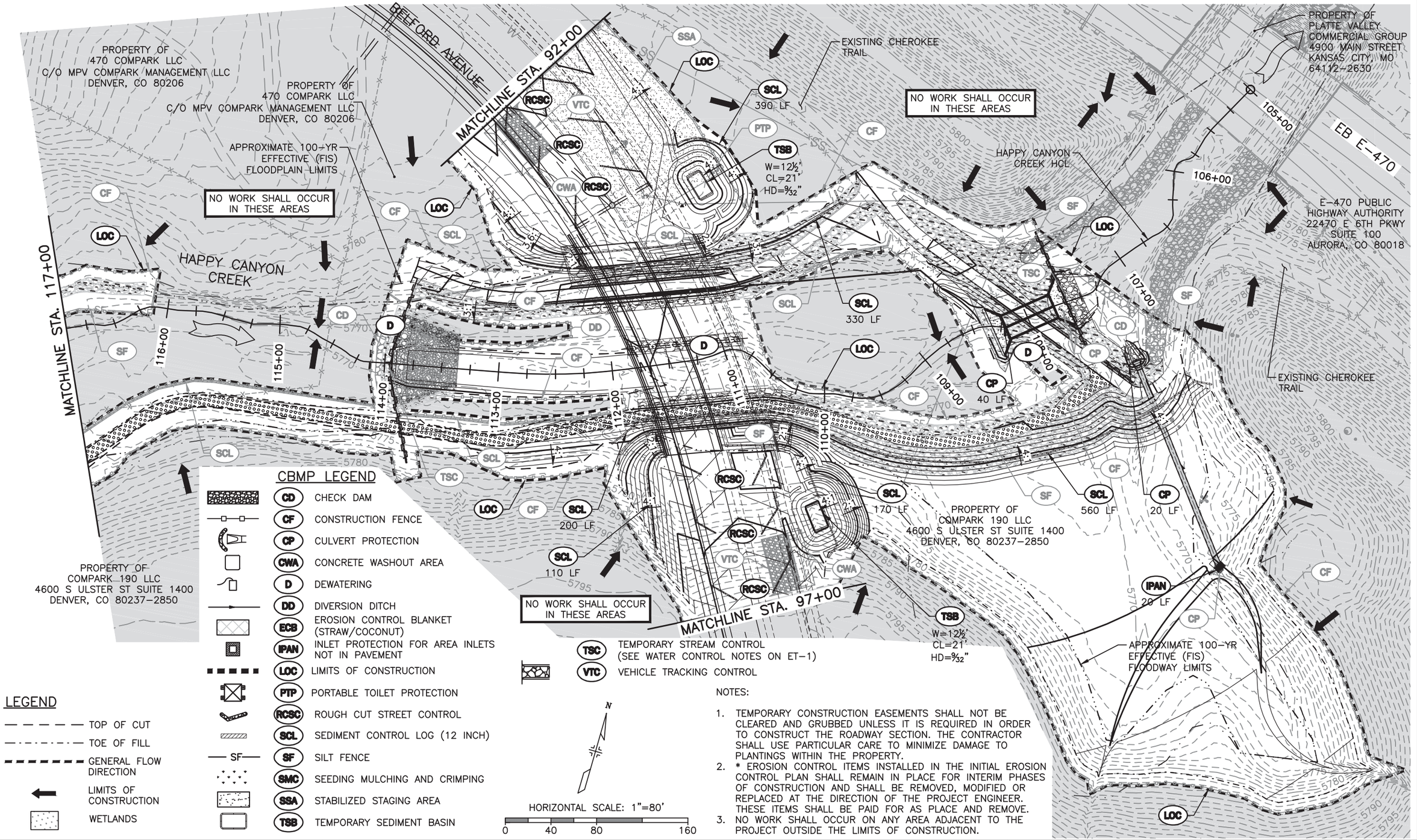
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BELFORD-HAPPY CANYON CREEK
HAPPY CANYON CREEK DROP STRUCTURE
INTERIM CBMP PLAN

Designer: CDT
Detailer: KLT
Subset: Erosion
Structure Numbers:
Sheets: EN-1 of 2

Project No./Code:

Sheet Number 92



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.
2. * EROSION CONTROL ITEMS INSTALLED IN THE INITIAL EROSION CONTROL PLAN SHALL REMAIN IN PLACE FOR INTERIM PHASES OF CONSTRUCTION AND SHALL BE REMOVED, MODIFIED OR REPLACED AT THE DIRECTION OF THE PROJECT ENGINEER. THESE ITEMS SHALL BE PAID FOR AS PLACE AND REMOVE.
3. NO WORK SHALL OCCUR ON ANY AREA ADJACENT TO THE PROJECT OUTSIDE THE LIMITS OF CONSTRUCTION.

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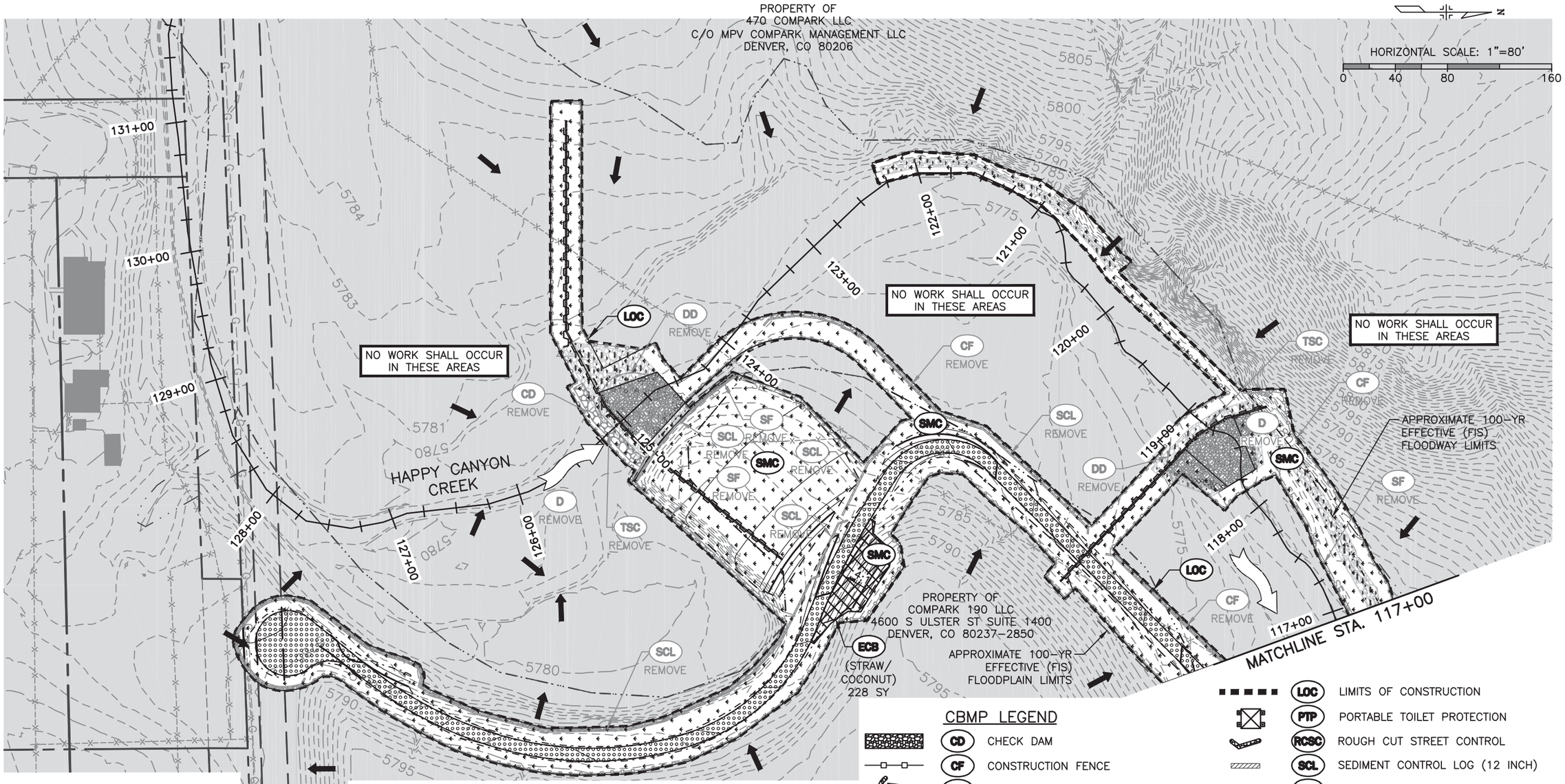
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BELFORD-HAPPY CANYON CREEK
HAPPY CANYON CREEK DROP STRUCTURE
INTERIM CBMP PLAN

Designer:	CDT	Structure Numbers	
Detailer:	KLT		
Subset:	Erosion	Sheets:	EN-2 of 2

Project No./Code

Sheet Number 93



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.
2. * EROSION CONTROL ITEMS INSTALLED IN THE INITIAL EROSION CONTROL PLAN SHALL REMAIN IN PLACE FOR INTERIM PHASES OF CONSTRUCTION AND SHALL BE REMOVED, MODIFIED OR REPLACED AT THE DIRECTION OF THE PROJECT ENGINEER. THESE ITEMS SHALL BE PAID FOR AS PLACE AND REMOVE.
3. NO WORK SHALL OCCUR ON ANY AREA ADJACENT TO THE PROJECT OUTSIDE THE LIMITS OF CONSTRUCTION.

CBMP LEGEND

CD	CHECK DAM	LOC	LIMITS OF CONSTRUCTION
CF	CONSTRUCTION FENCE	PTP	PORTABLE TOILET PROTECTION
CP	CULVERT PROTECTION	RCSC	ROUGH CUT STREET CONTROL
CWA	CONCRETE WASHOUT AREA	SCL	SEDIMENT CONTROL LOG (12 INCH)
D	DEWATERING	SF	SILT FENCE
DD	DIVERSION DITCH	SMC	SEEDING MULCHING AND CRIMPING
ECB	EROSION CONTROL BLANKET (STRAW/COCONUT)	SSA	STABILIZED STAGING AREA
IPAN	INLET PROTECTION FOR AREA INLETS NOT IN PAVEMENT	TSB	TEMPORARY SEDIMENT BASIN
		TSC	TEMPORARY STREAM CONTROL (SEE WATER CONTROL NOTES SHEET ET-1)
		VTC	VEHICLE TRACKING CONTROL

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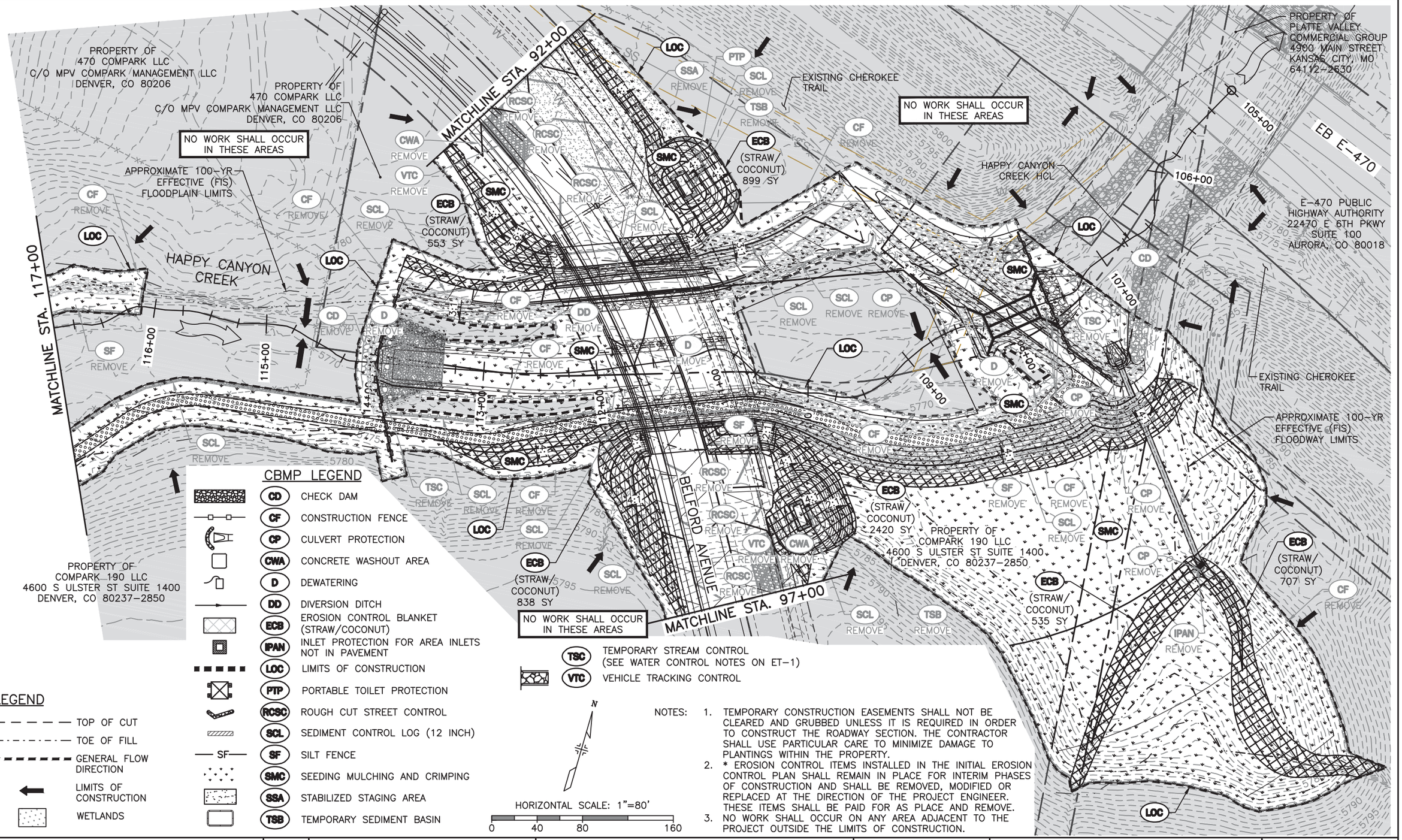
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BELFORD-HAPPY CANYON CREEK
HAPPY CANYON CREEK DROP STRUCTURE
FINAL CBMP PLAN

Designer: CDT
Detailer: KLT
Subset: Erosion
Structure Numbers:
Sheets: EF-1 of 2

Project No./Code:
Sheet Number 94

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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.
2. * EROSION CONTROL ITEMS INSTALLED IN THE INITIAL EROSION CONTROL PLAN SHALL REMAIN IN PLACE FOR INTERIM PHASES OF CONSTRUCTION AND SHALL BE REMOVED, MODIFIED OR REPLACED AT THE DIRECTION OF THE PROJECT ENGINEER. THESE ITEMS SHALL BE PAID FOR AS PLACE AND REMOVE.
3. NO WORK SHALL OCCUR ON ANY AREA ADJACENT TO THE PROJECT OUTSIDE THE LIMITS OF CONSTRUCTION.

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BELFORD-HAPPY CANYON CREEK
HAPPY CANYON CREEK DROP STRUCTURE
FINAL CBMP PLAN

Designer:	CDT	Structure Numbers	
Detailer:	KLT		
Subset:	Erosion	Sheets:	EF-2 of 2

Project No./Code

Sheet Number 95

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

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.

Town of Parker COLORADO

CBMP

CONSTRUCTION BEST MANAGEMENT PRACTICES

GEN NOTES 1 OF 4 Oct. 2013

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

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.

Town of Parker COLORADO

CBMP

CONSTRUCTION BEST MANAGEMENT PRACTICES

GEN NOTES 2 OF 4 Oct. 2013

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BELFORD-HAPPY CANYON CREEK
CBMP STANDARD
NOTES AND DETAILS

Designer: CDT
Detailer: KLT
Subset: Erosion
Structure Numbers:
Sheets: ED-1 of 35

Project No./Code:

Sheet Number 96

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

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.

Town of Parker COLORADO

CBMP

CONSTRUCTION BEST MANAGEMENT PRACTICES

GEN NOTES 3 OF 4 Oct. 2013

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

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 NCXIOUS 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.

Town of Parker COLORADO

CBMP

CONSTRUCTION BEST MANAGEMENT PRACTICES

GEN NOTES 4 OF 4 Oct. 2013

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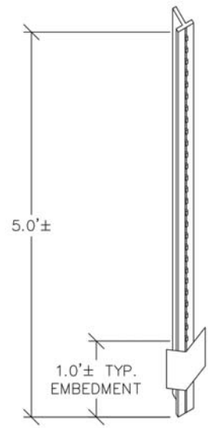
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CBMP STANDARD
NOTES AND DETAILS

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Detailer:	KLT		
Subset:	Erosion	Sheets:	ED-2 of 35

Project No./Code

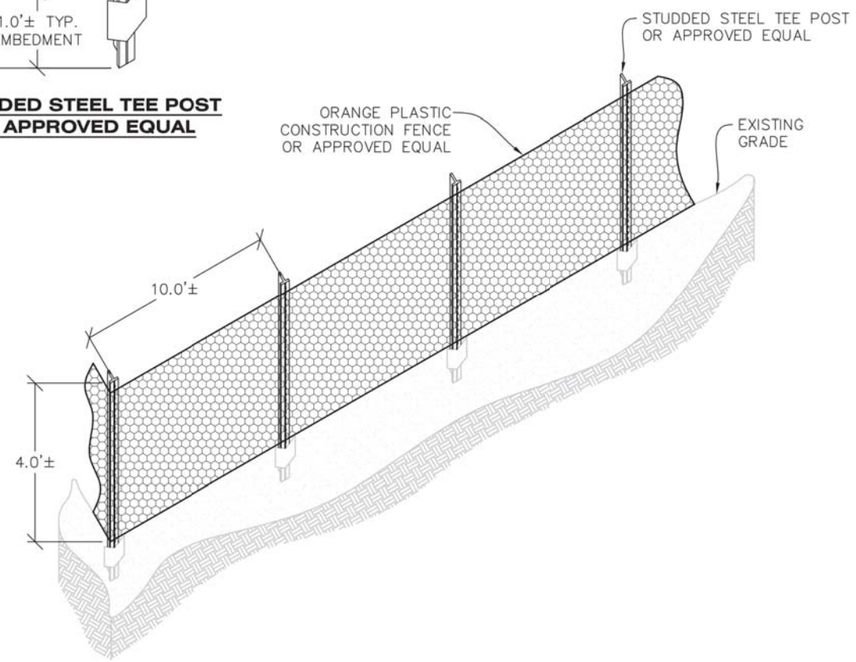
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STUDDED STEEL TEE POST OR APPROVED EQUAL

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



CF **CONSTRUCTION FENCE**

Town of Parker COLORADO | **CBMP** CONSTRUCTION BEST MANAGEMENT PRACTICES | CF 1 OF 2 Oct. 2013

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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.

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

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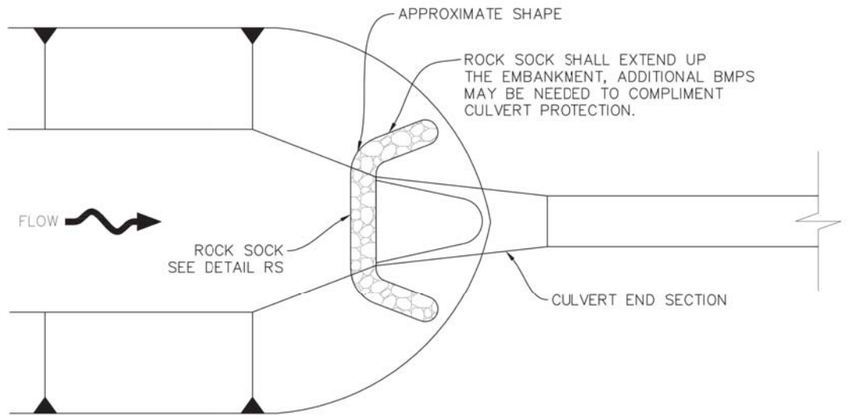
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CBMP STANDARD
NOTES AND DETAILS

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Detailer: KLT
Subset: Erosion
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Sheets: ED-3 of 35

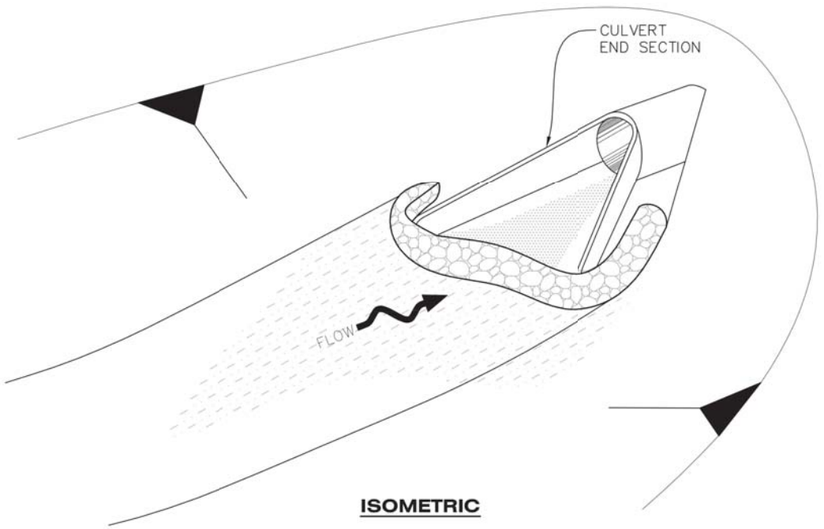
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PLAN



ISOMETRIC

CP

CULVERT PROTECTION (INLET)

CBMP — CONSTRUCTION BEST MANAGEMENT PRACTICES — CP — 1 OF 2 — Oct. 2013

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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).

CBMP — CONSTRUCTION BEST MANAGEMENT PRACTICES — CP — 2 OF 2 — Oct. 2013

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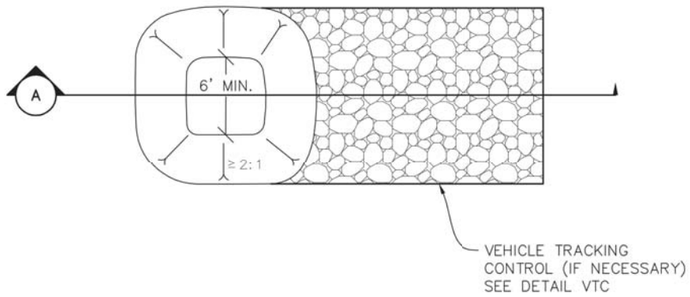
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	Subset: Erosion	Sheets: ED-4 of 35		Sheet Number 99

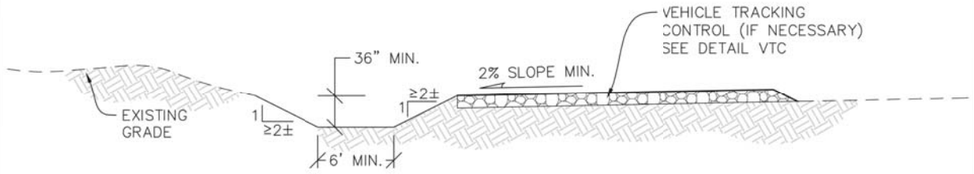
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NOTE:
A VTC PAD IS NOT NECESSARY IF THERE IS ANOTHER VTC PAD IN BETWEEN THE CWA AND ROADWAY, PARKING LOT, DRIVE AISLES, ETC.



PLAN VIEW



SECTION A

CWA **CONCRETE WASHOUT AREA**

Town of Parker COLORADO | **CBMP** CONSTRUCTION BEST MANAGEMENT PRACTICES | CWA 1 OF 2 Oct. 2013

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CONCRETE WASHOUT AREA INSTALLATION NOTES

1. CONCRETE WASHOUT AREAS SHALL BE INSTALLED PRIOR TO ANY CONCRETE PLACEMENT ON SITE.
2. A VEHICLE TRACKING CONTROL PAD IS REQUIRED AT THE ACCESS POINT TO ALL CONCRETE WASHOUT AREAS WHEN NO OTHER VTC PAD EXISTS IN BETWEEN THE CWA AND THE ROADWAY.
3. IF GROUNDWATER IS ENCOUNTERED WHEN DIGGING THE PIT, A NEW LOCATION SHOULD BE SELECTED. IF NO OTHER LOCATION CAN BE FOUND, A ONE-PIECE IMPERVIOUS LINER SHALL BE REQUIRED ALONG THE BOTTOM AND SIDES OF THE SUBSURFACE PIT.

CONCRETE WASHOUT AREA INSPECTION AND MAINTENANCE NOTES

1. THE EROSION CONTROL SUPERVISOR SHALL REGULARLY INSPECT THE CONCRETE WASHOUT AREA.
2. CONCRETE WASHOUT MATERIALS SHALL BE REMOVED BEFORE ITS CAPACITY HAS BEEN REACHED.
3. CONCRETE WASHOUT AREAS SHALL BE ENLARGED AS NECESSARY TO MAINTAIN CAPACITY FOR WASTED CONCRETE AND ASSOCIATED WASH WATER.
4. CONCRETE WASHOUT WATER, WASTED PIECES OF CONCRETE AND ALL OTHER DEBRIS IN THE SUBSURFACE PIT SHALL BE TRANSPORTED FROM THE JOB SITE AS NECESSARY TO ENSURE ADEQUATE CAPACITY.
5. CONCRETE WASHOUT AREAS SHALL REMAIN IN PLACE UNTIL ALL CONCRETE FOR THE PROJECT IS PLACED.
6. WHEN CONCRETE WASHOUT AREAS ARE REMOVED, THE TOWN'S INSPECTOR MAY REQUIRE EXCAVATIONS TO BE FILLED WITH SUITABLE COMPACTED BACKFILL AND TOPSOIL, ANY DISTURBED AREAS ASSOCIATED WITH THE INSTALLATION, MAINTENANCE, AND/OR REMOVAL OF THE CONCRETE WASHOUT AREAS SHALL BE ROUGHENED, SEEDED, MULCHED, AND CRIMPED PER THE TOWN'S SPECIFICATIONS (SEE DETAIL SMC).

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

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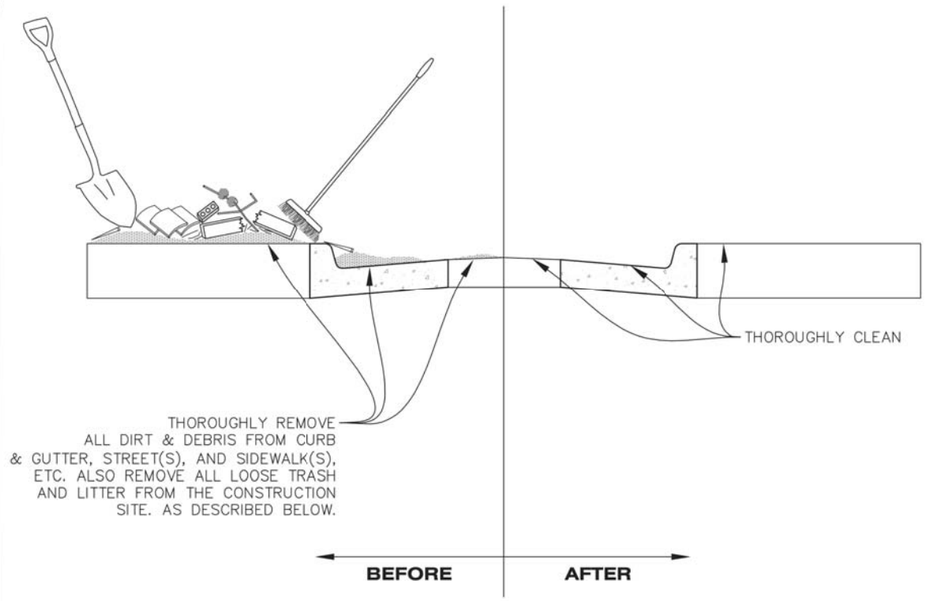
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NOTES AND DETAILS

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Subset: Erosion
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Sheets: ED-5 of 35

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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

Town of Parker COLORADO | CBMP CONSTRUCTION BEST MANAGEMENT PRACTICES | DTC 1 OF 2 Oct. 2013

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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.

Town of Parker COLORADO | CBMP CONSTRUCTION BEST MANAGEMENT PRACTICES | DTC 2 OF 2 Oct. 2013

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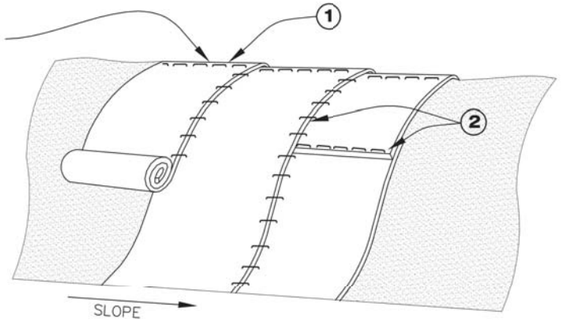
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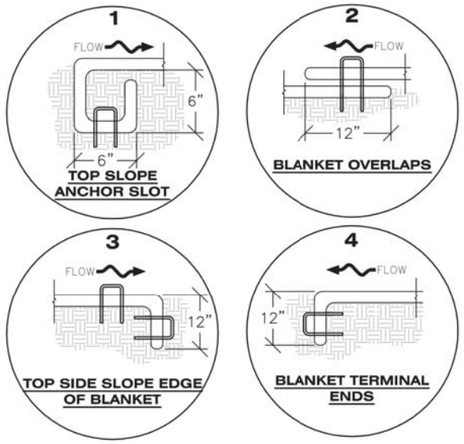
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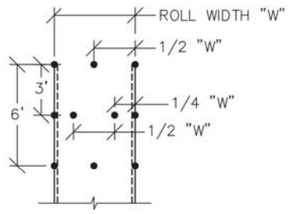
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START EROSION BLANKET AT THE TOP OF SLOPE AND EXTEND PAST THE TOE OF SLOPE. BLANKET SHALL BE PLACED PERPENDICULAR TO THE TOP AND BOTTOM OF THE SLOPE. COMPLETE SUBSEQUENT ROWS IN THE SAME MANNER, OVERLAPPING THE BLANKETS A MINIMUM OF 1.0'.







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)

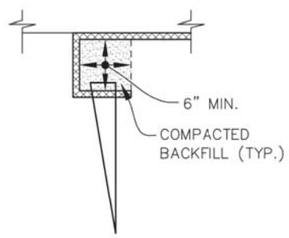
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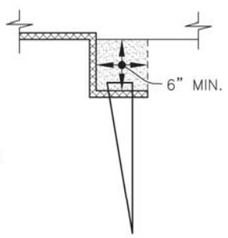
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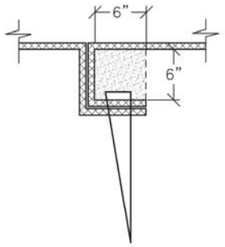
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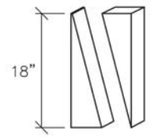
TOE OF SLOPE ANCHOR TRENCH



TOP OF SLOPE ANCHOR TRENCH

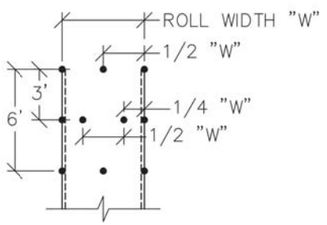


JOINT ANCHOR TRENCH
USED TO JOIN BLANKETS TOGETHER (LONGITUDINAL)



SAW 2" x 4" LUMBER ON DIAGONAL

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:
1. WOOD STAKES SHALL BE INSTALLED SUCH THAT ONLY 1" IS EXPOSED ABOVE THE GROUND.
2. 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)

Town of Parker COLORADO

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CONSTRUCTION BEST MANAGEMENT PRACTICES

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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.

Town of Parker COLORADO | CBMP CONSTRUCTION BEST MANAGEMENT PRACTICES | ECB 3 OF 3 Oct. 2013

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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.

Town of Parker COLORADO | CBMP CONSTRUCTION BEST MANAGEMENT PRACTICES | IPA 1 OF 1 Oct. 2013

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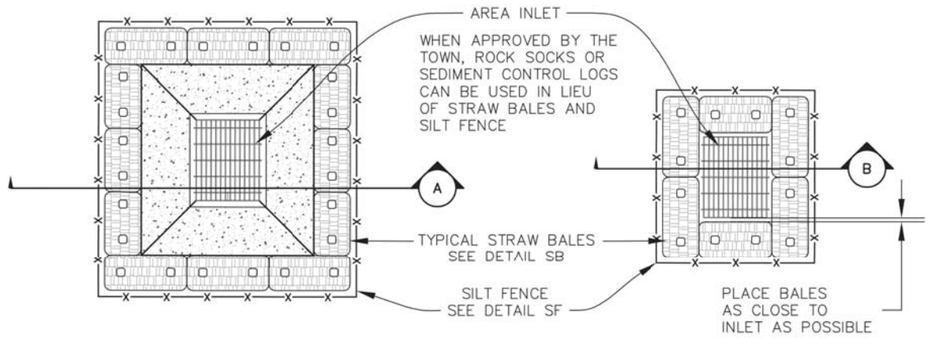
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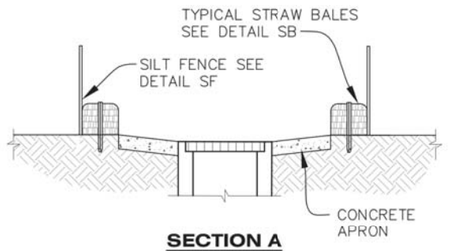
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THIS METHOD OF INLET PROTECTION SHALL NOT BE USED ON INLETS RECEIVING SIGNIFICANT FLOWS, SUCH AS IN CERTAIN SWALES/CHANNELS OR HIGHWAY MEDIANS. INLET PROTECTION FOR AREA INLETS IN PAVEMENT (SEE DETAIL IPAP) SHALL BE USED IN THESE CONDITIONS.

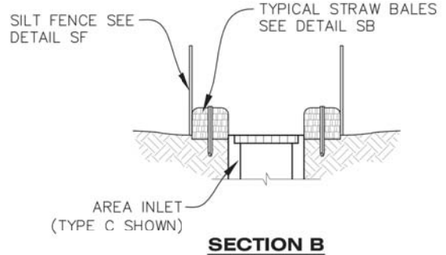


AREA INLET WITH CONCRETE APRON PLAN VIEW

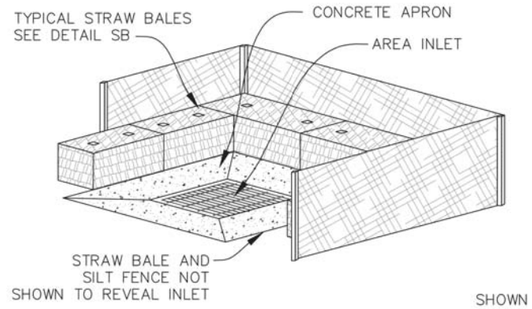
AREA INLET PLAN VIEW



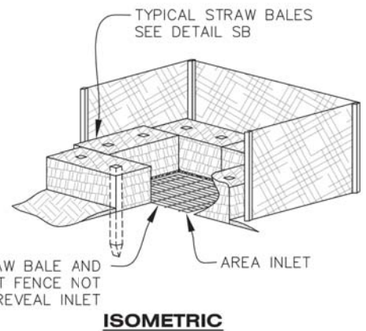
SECTION A



SECTION B



ISOMETRIC



ISOMETRIC

IPAN

INLET PROTECTION FOR AREA INLETS NOT IN PAVEMENT

Town of Parker COLORADO | CBMP | CONSTRUCTION BEST MANAGEMENT PRACTICES | IPAN 1 OF 1 Oct. 2013

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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.

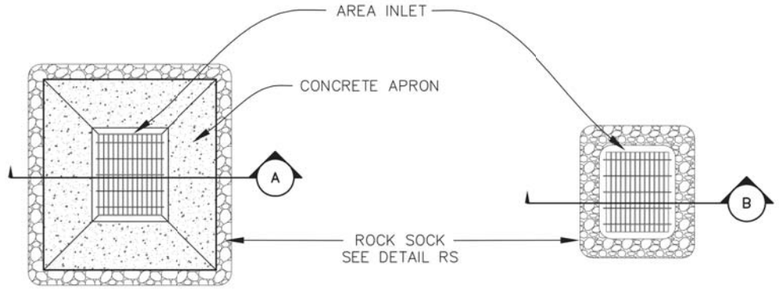
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Horizontal Scale: 1"=40' Vertical Scale: NTS		Revised:	Designer: CDT; Detailer: KLT; Subset: Erosion; Structure Numbers; Sheets: ED–9 of 35
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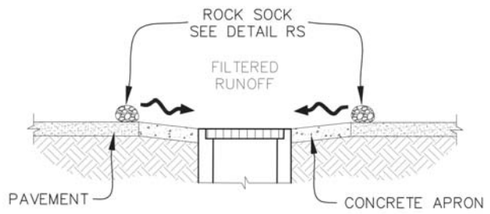
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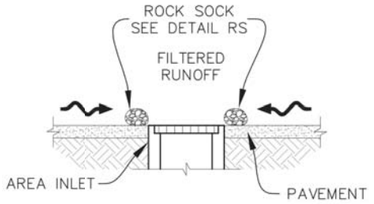


AREA INLET WITH CONCRETE APRON
PLAN VIEW

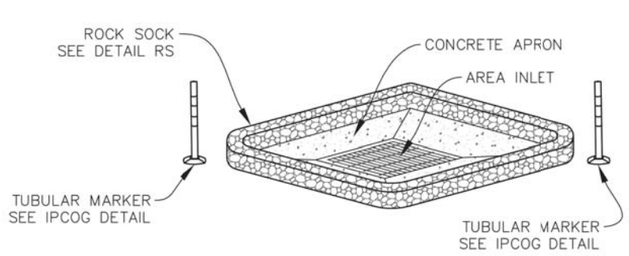
AREA INLET
PLAN VIEW



SECTION A



SECTION B



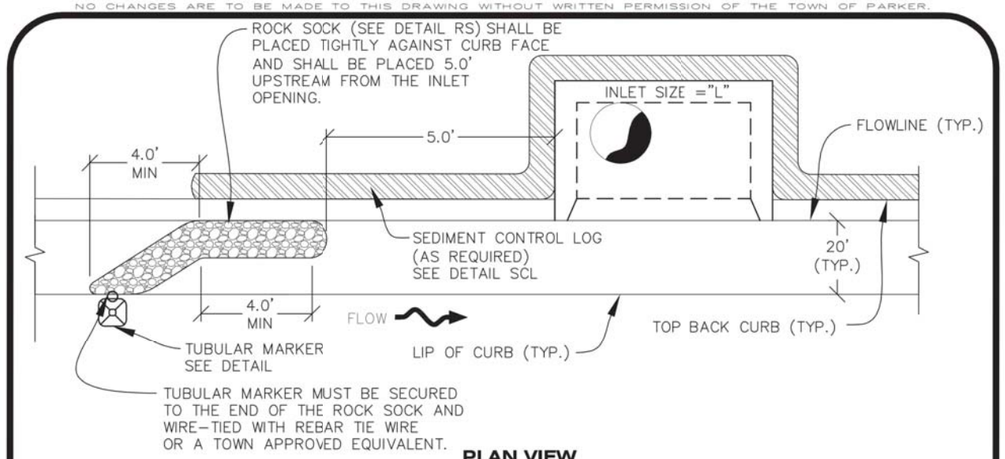
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IPAP

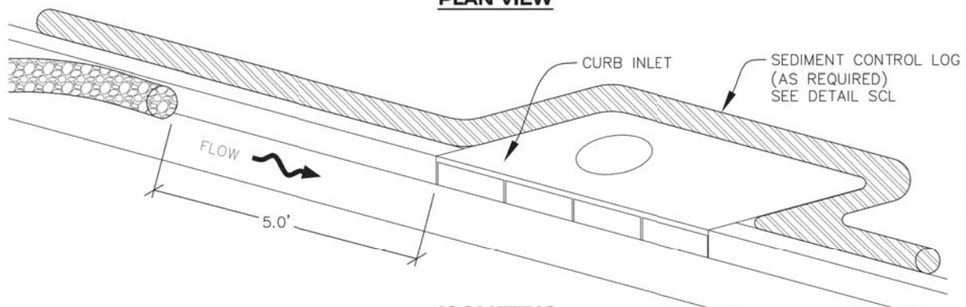
INLET PROTECTION FOR AREA INLETS IN PAVEMENT

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

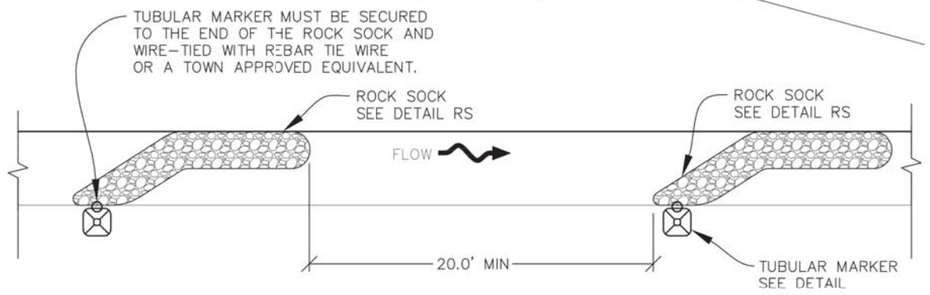
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PLAN VIEW



ISOMETRIC



PLAN VIEW FOR MULTIPLE ROCK SOCKS

IPCOG

INLET PROTECTION, CURB ON-GRADE, TYPE R INLET

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

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BELFORD-HAPPY CANYON CREEK
CBMP STANDARD
NOTES AND DETAILS

Designer:	CDT	Structure Numbers	
Detailer:	KLT		
Subset:	Erosion	Sheets:	ED-10 of 35

Project No./Code

Sheet Number 105

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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 EE 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.

Town of Parker COLORADO | CBMP CONSTRUCTION BEST MANAGEMENT PRACTICES | IPCOG 3 OF 3 Oct. 2013

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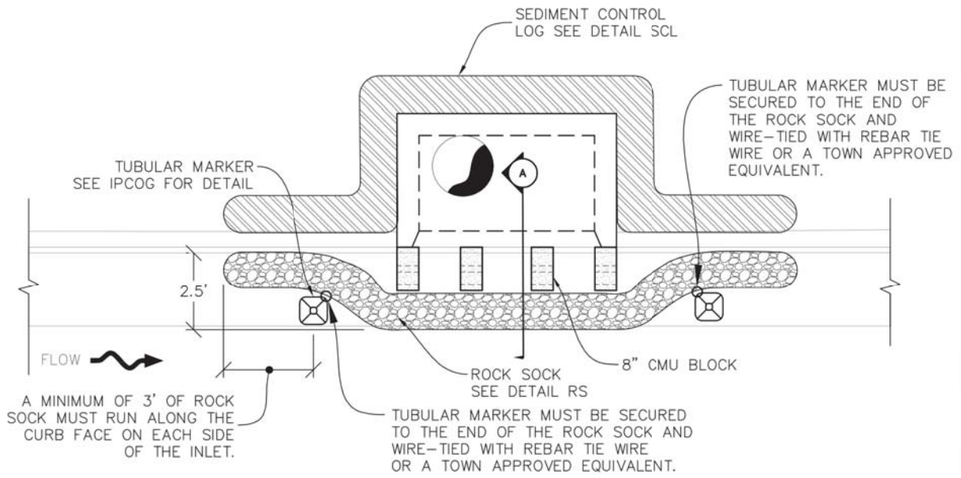
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CBMP STANDARD
NOTES AND DETAILS

Designer: CDT
Detailer: KLT
Subset: Erosion
Structure Numbers:
Sheets: ED-11 of 35

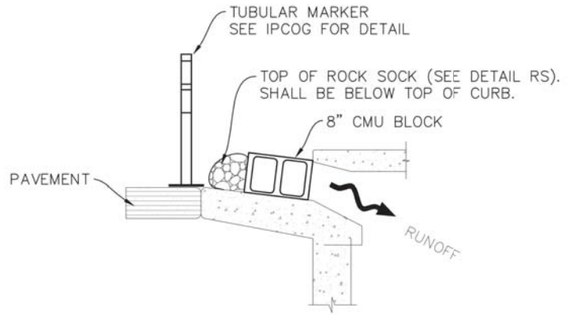
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PLAN VIEW



SECTION A

IPCOS

INLET PROTECTION, CURB ON SUMP, TYPE R INLET

Town of Parker COLORADO | CBMP CONSTRUCTION BEST MANAGEMENT PRACTICES | IPCOS 1 OF 2 Oct. 2013

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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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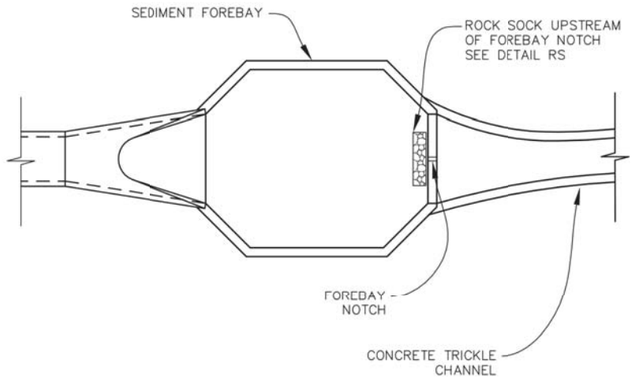
BELFORD–HAPPY CANYON CREEK
CBMP STANDARD
NOTES AND DETAILS

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Detailer: KLT
Subset: Erosion
Structure Numbers:
Sheets: ED–12 of 35

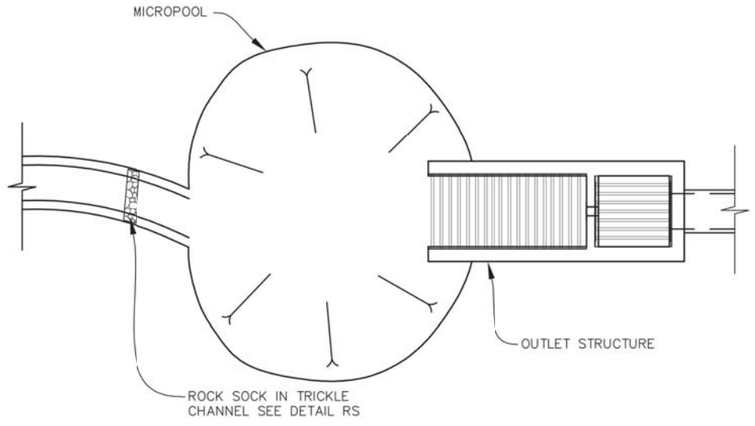
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FOREBAY



OUTLET / MICROPOOL

DP

DETENTION POND PROTECTION

Town of Parker COLORADO | 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 DENSTY 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.

Town of Parker COLORADO | CBMP CONSTRUCTION BEST MANAGEMENT PRACTICES | DP 2 OF 2 Oct. 2013

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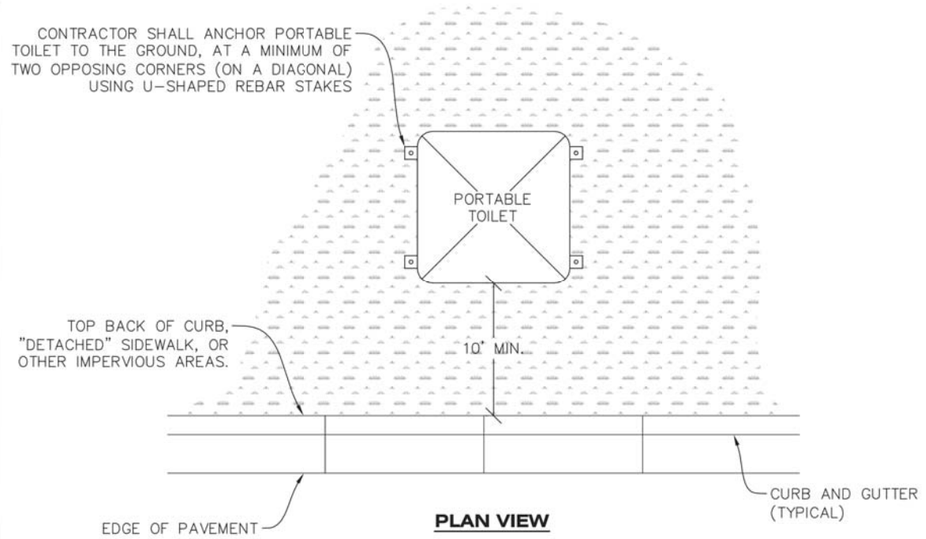
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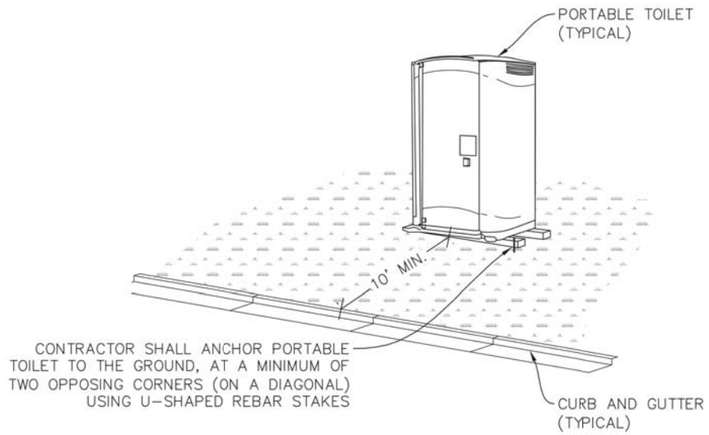
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No Revisions:				
Revised:	Designer: CDT	Structure Numbers		
Void:	Detailer: KLT			
	Subset: Erosion	Sheets: ED–13 of 35		Sheet Number 108

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PLAN VIEW



ISOMETRIC

PTP

PORTABLE TOILET PROTECTION

Town of Parker COLORADO | 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.

Town of Parker COLORADO | CBMP | CONSTRUCTION BEST MANAGEMENT PRACTICES | PTP 2 OF 2 Oct. 2013

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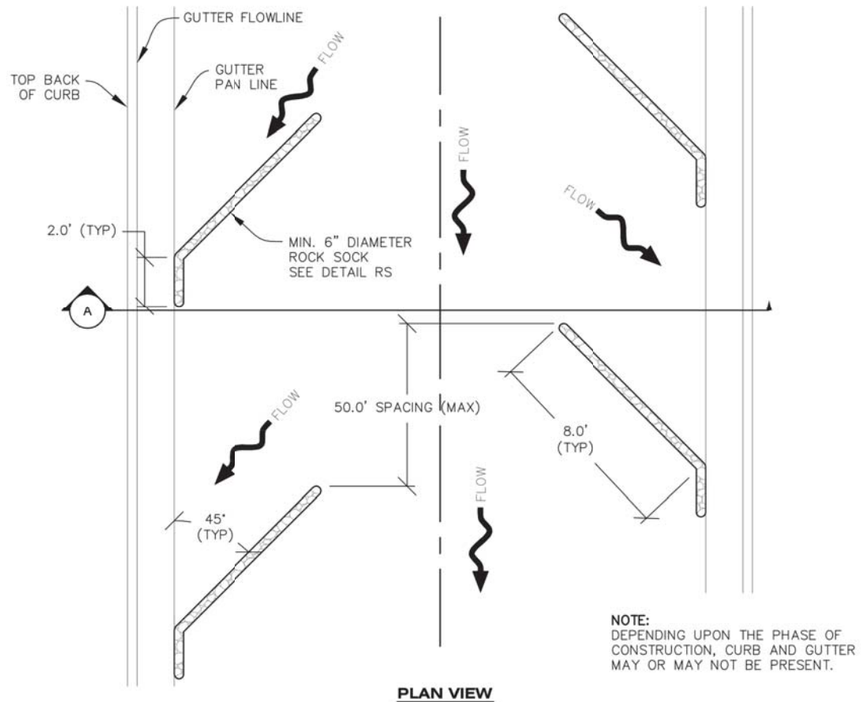
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NOTES AND DETAILS

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Detailer: KLT
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Sheets: ED-14 of 35

Project No./Code:

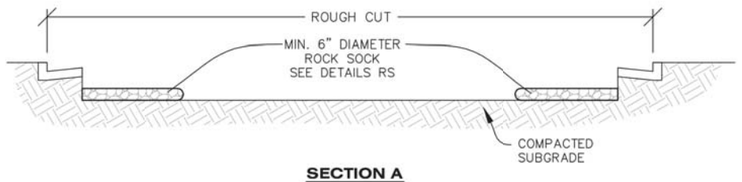
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NOTE:
DEPENDING UPON THE PHASE OF CONSTRUCTION, CURB AND GUTTER MAY OR MAY NOT BE PRESENT.

PLAN VIEW



SECTION A

RCSC

ROUGH CUT STREET CONTROL

Town of Parker COLORADO

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.

Town of Parker COLORADO

CBMP

CONSTRUCTION BEST MANAGEMENT PRACTICES

RCSC 2 OF 2 Oct. 2013

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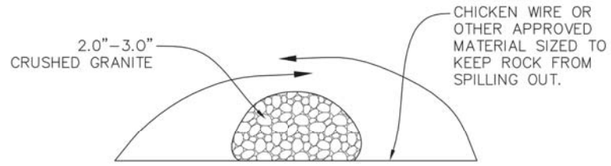
BELFORD-HAPPY CANYON CREEK
CBMP STANDARD
NOTES AND DETAILS

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Detailer: KLT
Subset: Erosion
Structure Numbers:
Sheets: ED-15 of 35

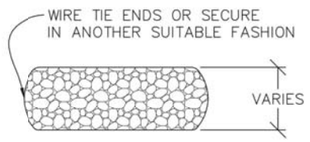
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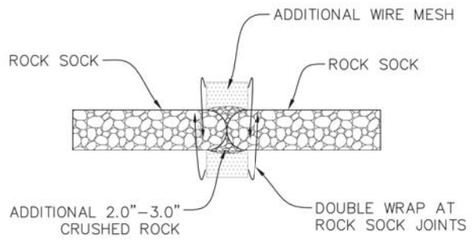
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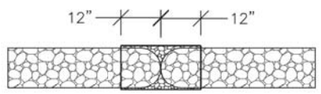
CROSS SECTION



COMPLETED ROCK SOCK



JOINT PLAN VIEW



ANY GAP AT JOINT SHALL BE FILLED WITH AN ADEQUATE AMOUNT OF 2.0"–3.0" CRUSHED ROCK AND DOUBLE WRAPPED WITH ADDITIONAL CHICKEN WIRE (OR APPROVED EQUAL) SECURED TO ENDS OF ROCK REINFORCED SOCK.

JOINT ELEVATION

RS

ROCK SOCK

Town of Parker COLORADO

CBMP

CONSTRUCTION BEST MANAGEMENT PRACTICES

RS
1 OF 2
Oct. 2013

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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.

Town of Parker COLORADO

CBMP

CONSTRUCTION BEST MANAGEMENT PRACTICES

RS
2 OF 2
Oct. 2013

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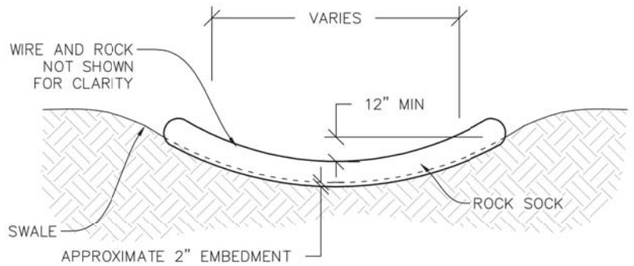
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Sheets: ED–16 of 35

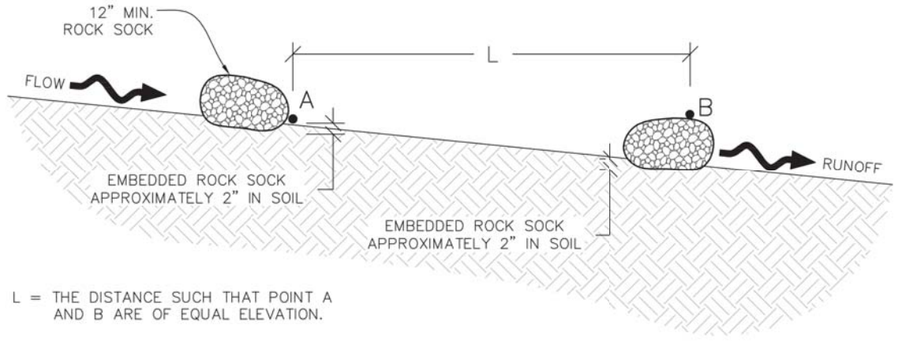
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SWALE ELEVATION



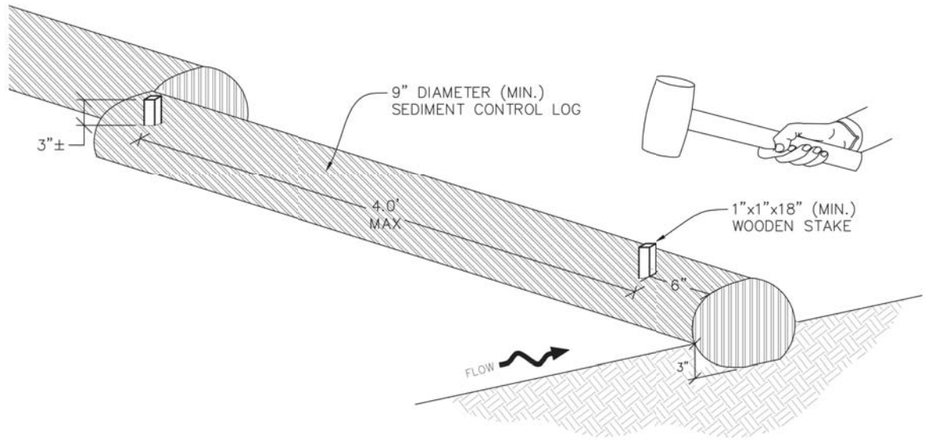
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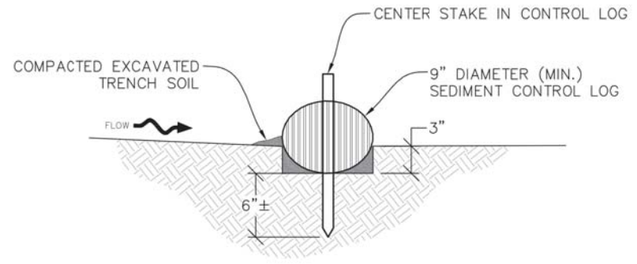
SWALE SPACING

RSS **ROCK SOCK IN SWALE**

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SECTION A

SCL **SEDIMENT CONTROL LOG**

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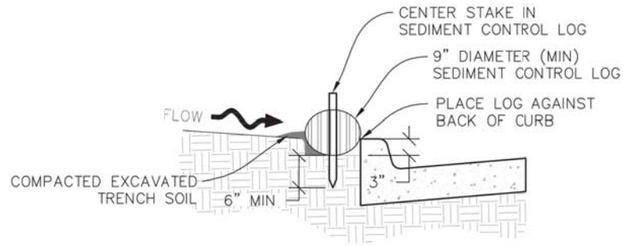
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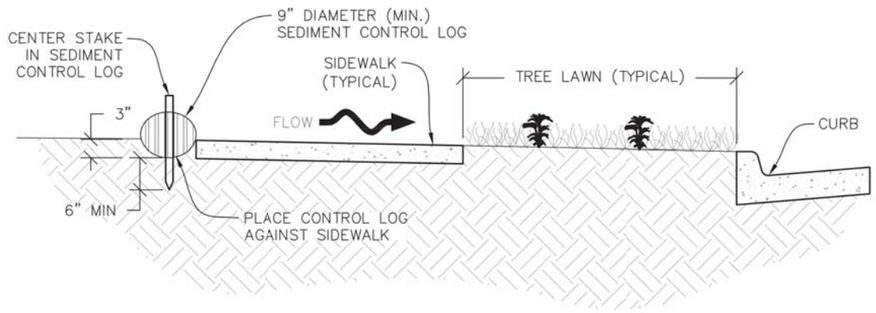
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BELFORD-HAPPY CANYON CREEK CBMP STANDARD NOTES AND DETAILS				Project No./Code
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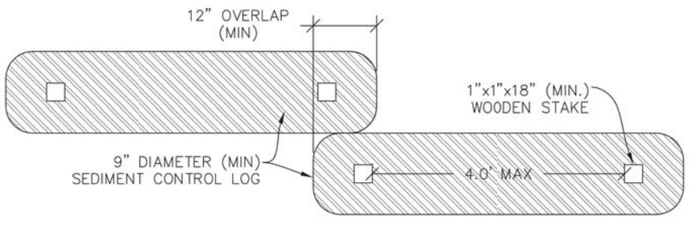
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SEDIMENT CONTROL LOG AT BACK OF CURB



SEDIMENT CONTROL LOG AT SIDEWALK WITH TREE LAWN



SEDIMENT CONTROL LOG JOINTS

SCL **SEDIMENT CONTROL LOG**

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

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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).

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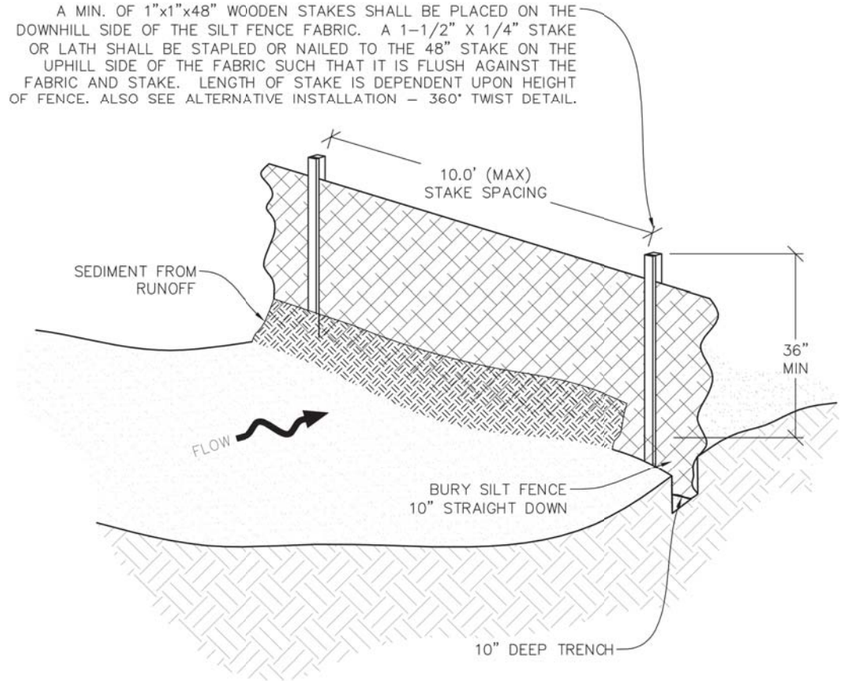
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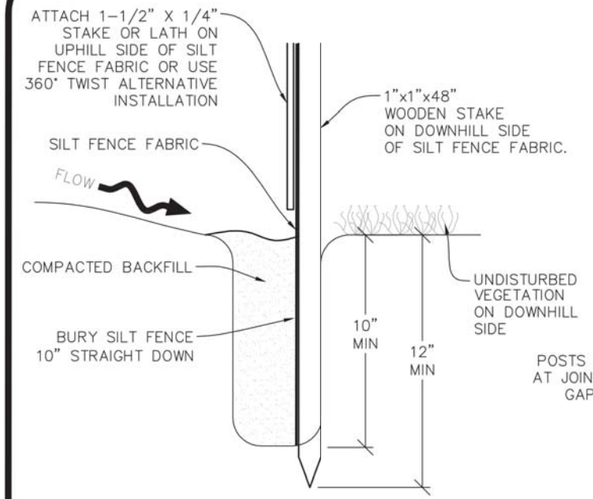
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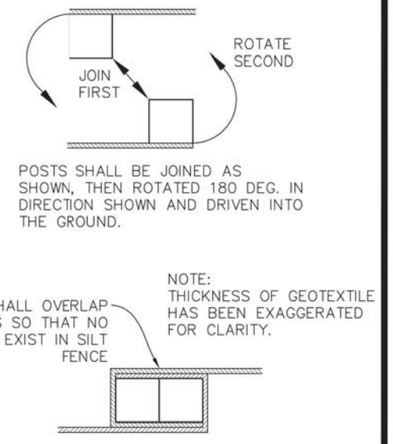
—X—X— SF **SILT FENCE**

Town of Parker COLORADO | **CBMP** CONSTRUCTION BEST MANAGEMENT PRACTICES | SF 1 OF 4 Oct. 2013

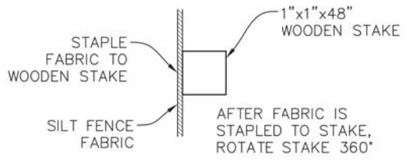
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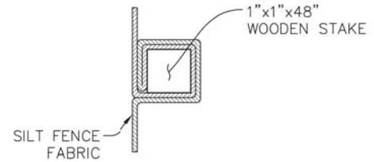
INSTALLATION DETAIL



JOINT SECTIONS



STEP 1



STEP 2

ALTERNATIVE INSTALLATION - 360° TWIST

—X—X— SF **SILT FENCE**

Town of Parker COLORADO | **CBMP** CONSTRUCTION BEST MANAGEMENT PRACTICES | SF 2 OF 4 Oct. 2013

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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"x¼"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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BELFORD-HAPPY CANYON CREEK
CBMP STANDARD
NOTES AND DETAILS

Designer: CDT
Detailer: KLT
Subset: Erosion
Structure Numbers:
Sheets: ED-20 of 35

Project No./Code:

Sheet Number 115

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

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.

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

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

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.

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

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BELFORD–HAPPY CANYON CREEK
CBMP STANDARD
NOTES AND DETAILS

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Sheet Number 116

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

TOWN OF PARKER, SEED MIX 1
20% CANADA WILDRYE
15% CRESTED WHEATGRASS
15% SLENDER WHEATGRASS
10% ANNUAL RYEGRASS
10% SHEEP FESCUE
10% BIG BLUESTEM
10% SIDEOATS GRAMA
5% CANADA BLUEGRASS
5% BLUE GRAMA

SEEDING RATE:
DRILLED: 25 LBS/ACRE
BROADCAST: 50 LBS/ACRE

TOWN OF PARKER, SEED MIX 2
22% SLENDER WHEATGRASS
18% SODAR STREAMBANK WHEATGRASS
13% ARIZONA FESCUE
13% BLUE GRAMA
12% BUFFALOGRASS
12% BARLEY OR OATS
5% SPIKE MUHLY
5% INDIAN RICEGRASS

SEEDING RATE:
DRILLED: 25 LBS/ACRE
BROADCAST: 50 LBS/ACRE

TOWN OF PARKER, SEED MIX 3 (LOW-GROWTH MIX)
25% EPHRAIM CRESTED WHEATGRASS
23% SHEEP FESCUE
18% PERENNIAL RYEGRASS
13% CANADA BLUEGRASS
12% BARLEY OR OATS
9% BLUE FESCUE

SEEDING RATE:
DRILLED: 25 LBS/ACRE
BROADCAST: 50 LBS/ACRE

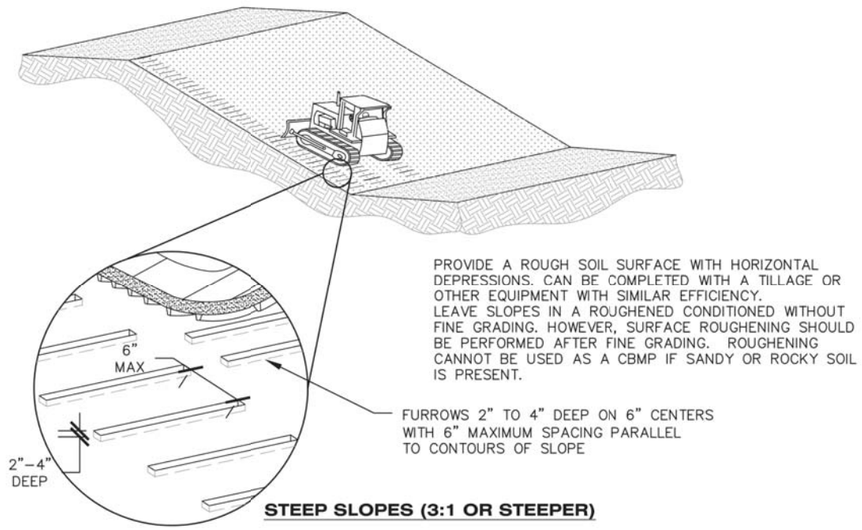
SEED MIX 4:
OTHER SEED MIXES APPROVED BY THE TOWN OF PARKER

Town of Parker COLORADO

CBMP
CONSTRUCTION BEST MANAGEMENT PRACTICES

SMC
3 OF 3
Oct. 2013

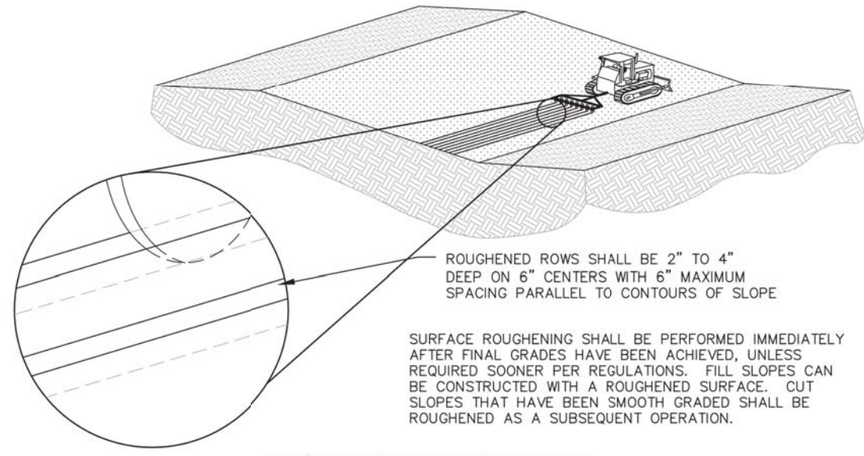
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PROVIDE A ROUGH SOIL SURFACE WITH HORIZONTAL DEPRESSIONS. CAN BE COMPLETED WITH A TILLAGE OR OTHER EQUIPMENT WITH SIMILAR EFFICIENCY. LEAVE SLOPES IN A ROUGHENED CONDITIONED WITHOUT FINE GRADING. HOWEVER, SURFACE ROUGHENING SHOULD BE PERFORMED AFTER FINE GRADING. ROUGHENING CANNOT BE USED AS A CBMP IF SANDY OR ROCKY SOIL IS PRESENT.

FURROWS 2" TO 4" DEEP ON 6" CENTERS WITH 6" MAXIMUM SPACING PARALLEL TO CONTOURS OF SLOPE

STEEP SLOPES (3:1 OR STEEPER)



ROUGHENED ROWS SHALL BE 2" TO 4" DEEP ON 6" CENTERS WITH 6" MAXIMUM SPACING PARALLEL TO CONTOURS OF SLOPE

SURFACE ROUGHENING SHALL BE PERFORMED IMMEDIATELY AFTER FINAL GRADES HAVE BEEN ACHIEVED, UNLESS REQUIRED SOONER PER REGULATIONS. FILL SLOPES CAN BE CONSTRUCTED WITH A ROUGHENED SURFACE. CUT SLOPES THAT HAVE BEEN SMOOTH GRADED SHALL BE ROUGHENED AS A SUBSEQUENT OPERATION.

LESSER SLOPES (LESS THAN 3:1)

SR
SURFACE ROUGHENING

Town of Parker COLORADO

CBMP
CONSTRUCTION BEST MANAGEMENT PRACTICES

SR
JUNE 2006

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SURFACE ROUGHENING INSTALLATION NOTES

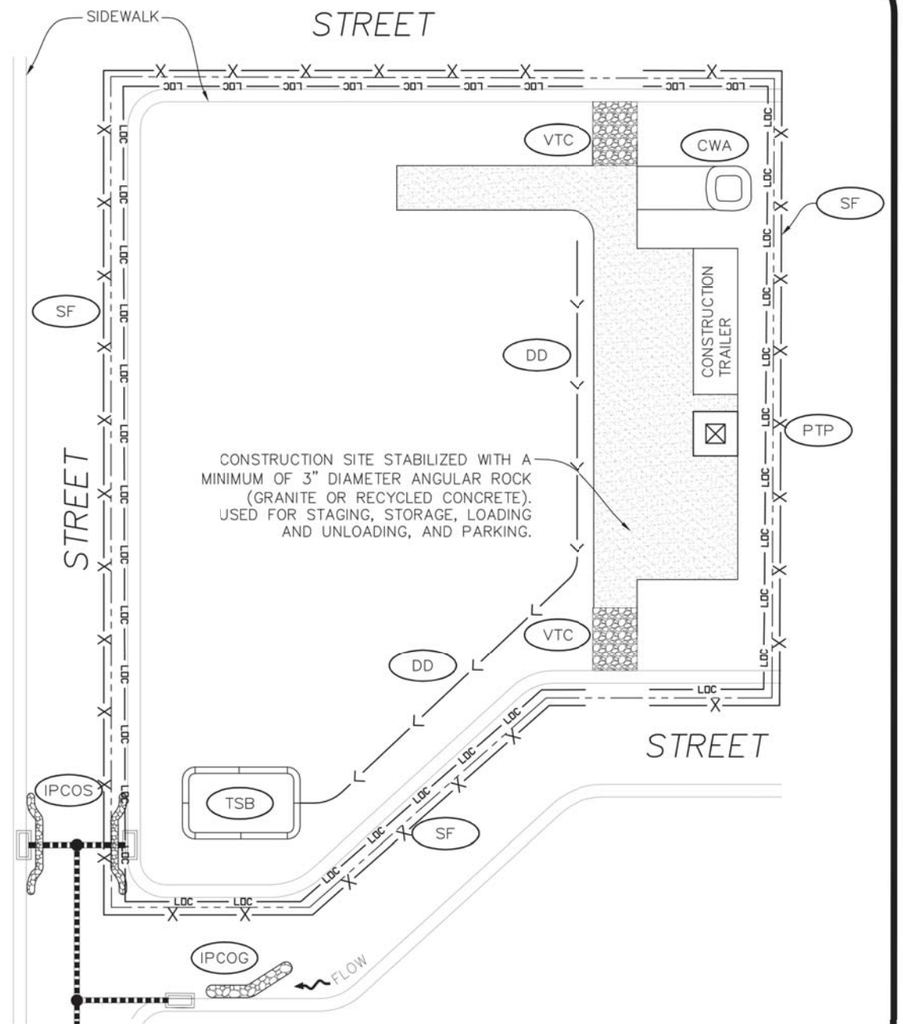
1. SEE CBMP PLAN FOR LOCATION(S) OF SURFACE ROUGHENING.
2. ANY DISTURBED LAND THAT REMAINS INACTIVE FOR MORE THAN 14 CONSECUTIVE DAYS MUST RECEIVE SURFACE ROUGHENING. DETERMINATION OF JOB SITE INACTIVITY IS AT THE DISCRETION OF THE TOWN'S INSPECTOR.
3. SURFACE ROUGHENING SHALL BE PERFORMED PERPENDICULAR 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.

Town of Parker COLORADO | CBMP CONSTRUCTION BEST MANAGEMENT PRACTICES | SR | JUNE 2006

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STABILIZED STAGING AREA

Town of Parker COLORADO | CBMP CONSTRUCTION BEST MANAGEMENT PRACTICES | SSA | 1 OF 2 | Oct. 2013

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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.

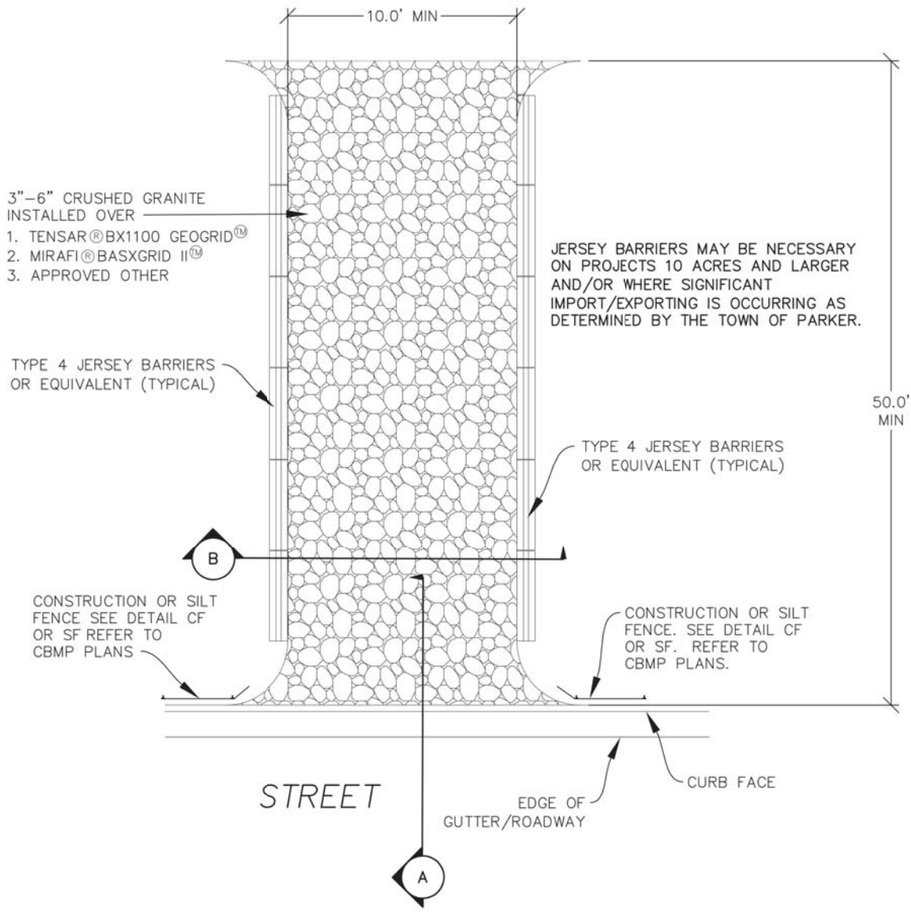
STABILIZED STAGING AREA INSPECTION AND MAINTENANCE NOTES

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.

Town of Parker COLORADO | CBMP | CONSTRUCTION BEST MANAGEMENT PRACTICES | SSA 2 OF 2 Oct. 2013

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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.



VTC **VEHICLE TRACKING CONTROL**

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

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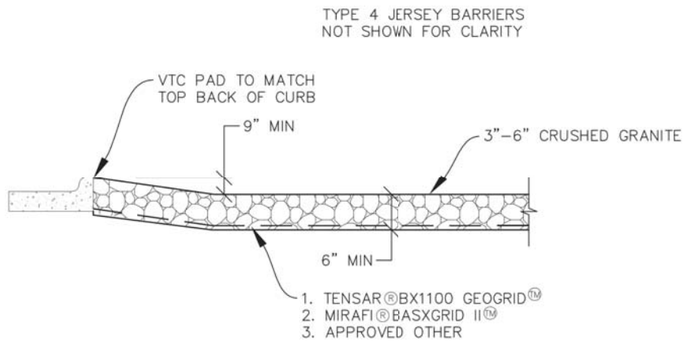
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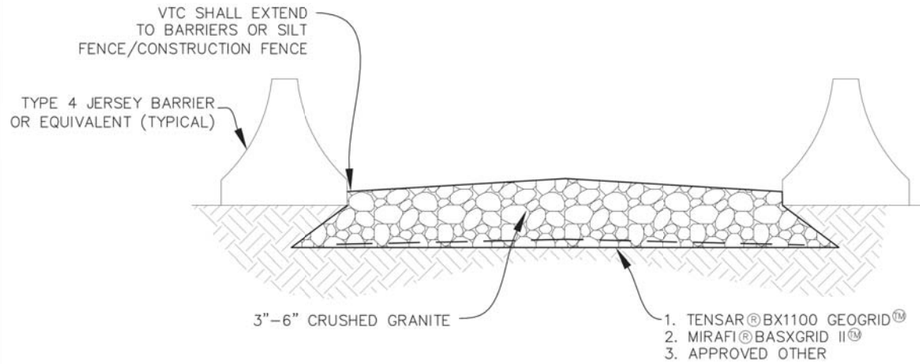
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SECTION A



SECTION B

VTC **VEHICLE TRACKING CONTROL**

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

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

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 DISTJRBING ACTIVITIES.
4. VEHICLE TRACKING CONTROL PADS SHALL BE A MINIMUM OF 50–FEET LONG AND 10–FEET 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.

Town of Parker COLORADO | CBMP CONSTRUCTION BEST MANAGEMENT PRACTICES | VTC 3 OF 3 Oct. 2013

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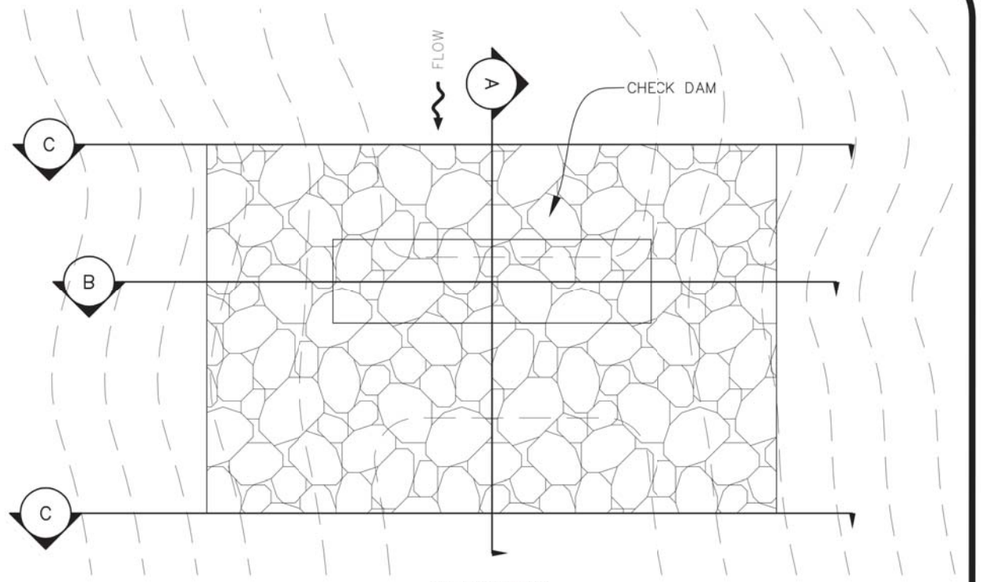
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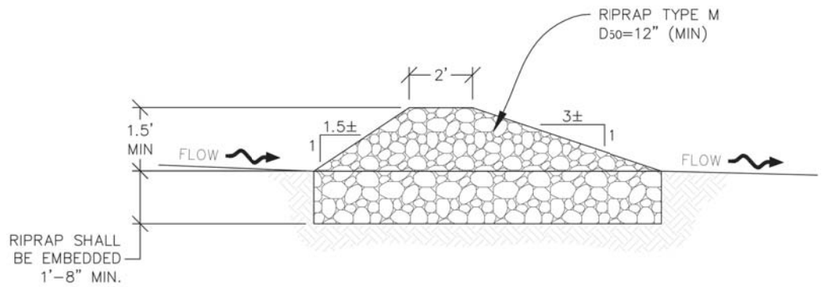
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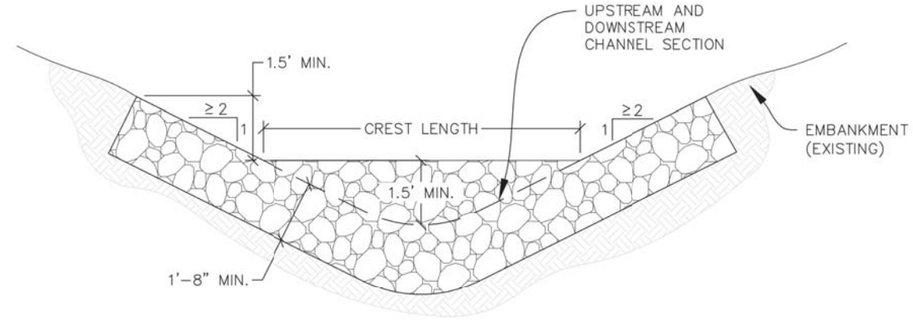
PLAN VIEW



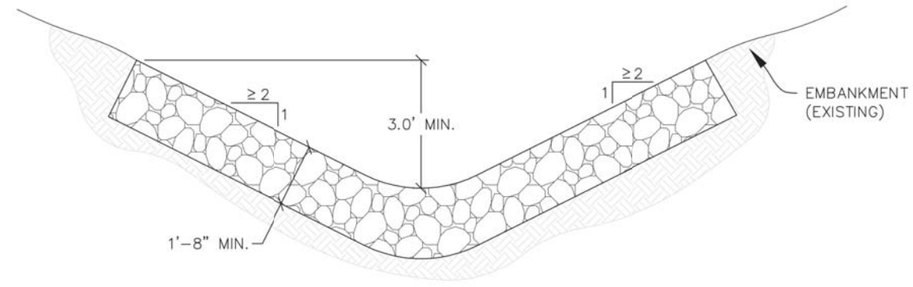
SECTION A

CD **CHECK DAM**

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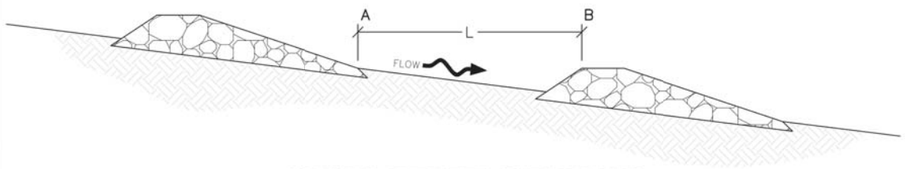
SECTION B



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

CD **CHECK DAM**

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

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

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CHECK DAM INSTALLATION NOTES

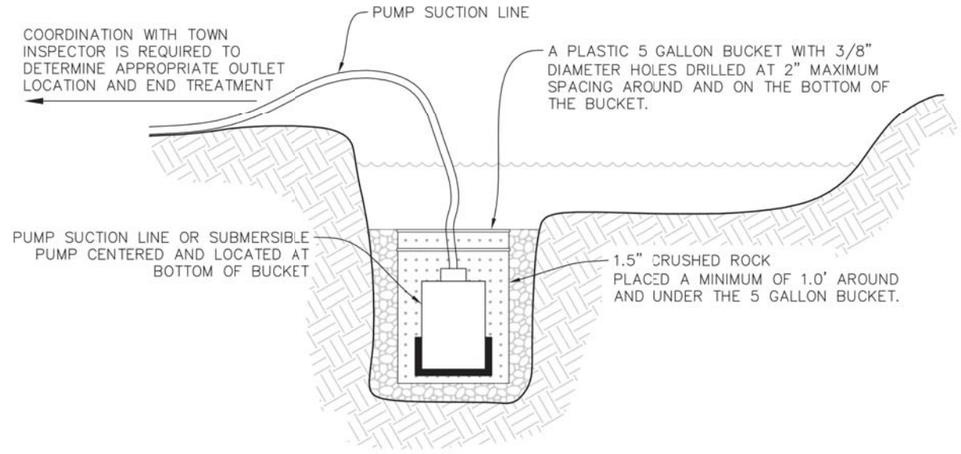
1. SEE PLAN VIEW FOR LOCATION(S) OF CHECK DAMS.
2. CHECK DAMS SHOWN ON CBMP PLAN SHALL BE INSTALLED WHEN DIRECTED BY THE TOWN'S INSPECTOR.
3. RIPRAP UTILIZED FOR CHECK DAMS SHALL HAVE A D50 MEDIAN STONE SIZE OF 12".
4. RIPRAP PAD SHALL BE TRENCHED INTO THE GROUND A MINIMUM OF 1'-8".
5. THE MAXIMUM SPACING 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 SEDIMEN~ 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.

Town of Parker COLORADO | CBMP CONSTRUCTION BEST MANAGEMENT PRACTICES | CD 3 OF 3 Oct. 2013

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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.

D **DEWATERING**

Town of Parker COLORADO | CBMP CONSTRUCTION BEST MANAGEMENT PRACTICES | D 1 OF 2 Oct. 2013

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BELFORD-HAPPY CANYON CREEK CBMP STANDARD NOTES AND DETAILS				Project No./Code
Designer: CDT	Structure Numbers			
Detailer: KLT				
Subset: Erosion	Sheets: ED-27 of 35			Sheet Number 122

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DEWATERING INSTALLATION NOTES

1. 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).

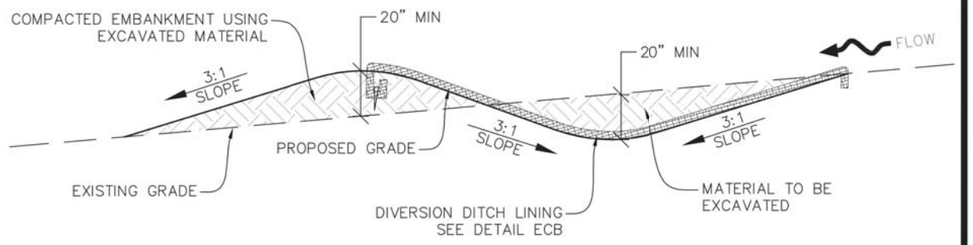
DEWATERING MAINTENANCE NOTES

1. 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.

Town of Parker COLORADO | CBMP | CONSTRUCTION BEST MANAGEMENT PRACTICES | D | 2 OF 2 | Oct. 2013

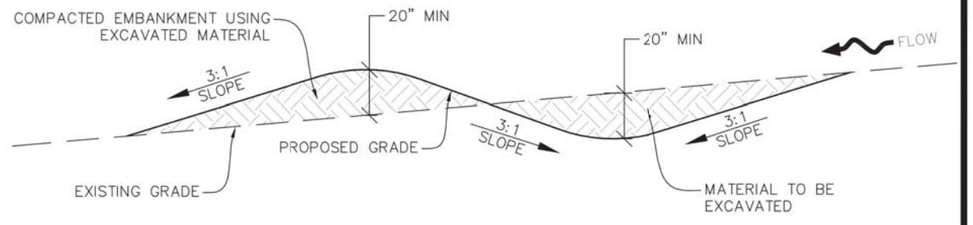
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NOTE:
DITCH LINING THICKNESS HAS BEEN EXAGGERATED FOR CLARITY.



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

DD

DIVERSION DITCH

Town of Parker COLORADO | CBMP | CONSTRUCTION BEST MANAGEMENT PRACTICES | DD | 1 OF 2 | Oct. 2013

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BELFORD-HAPPY CANYON CREEK
CBMP STANDARD
NOTES AND DETAILS

Designer: CDT
Detailer: KLT
Subset: Erosion
Structure Numbers:
Sheets: ED-28 of 35

Project No./Code:

Sheet Number 123

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DIVERSION DITCH INSTALLATION NOTES

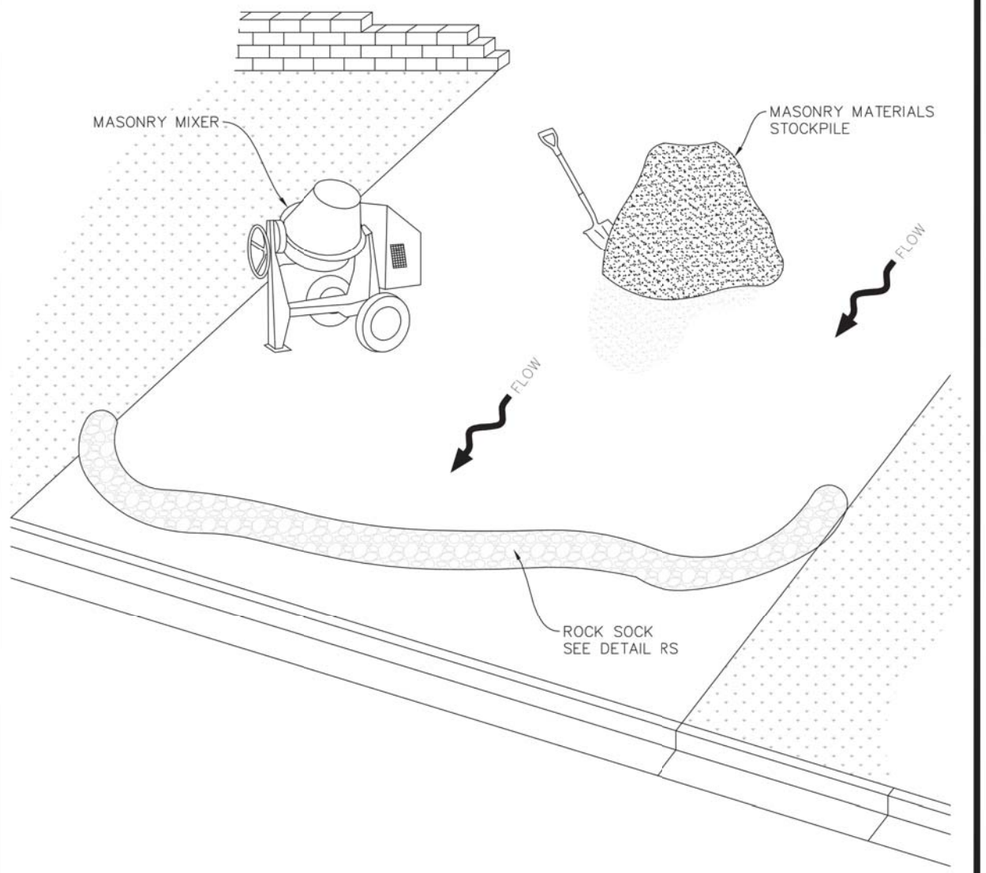
1. SEE THE PLAN VIEW FOR THE LOCATION(S) OF THE DIVERSION DITCHES.
2. A PLASTIC LINER, RIPRAP, OR EROSION CONTROL BLANKET MAY BE NECESSARY TO PROTECT THE DIVERSION DITCH. THE REQUIRED LINING MATERIAL SHALL BE OBTAINED FROM THE CBMP PLANS VIA THE DESIGN ENGINEER.
3. ALL MATERIAL EXCAVATED FROM THE DITCH 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.

Town of Parker COLORADO | CBMP | CONSTRUCTION BEST MANAGEMENT PRACTICES | DD | 2 OF 2 | Oct. 2013

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MWP **MASONRY WORK PROTECTION**

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BELFORD-HAPPY CANYON CREEK CBMP STANDARD NOTES AND DETAILS				Project No./Code
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Detailer:	KLT			
Subset:	Erosion	Sheets:	ED-29 of 35	Sheet Number 124

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MASONRY WORK PROTECTION INSTALLATION NOTES

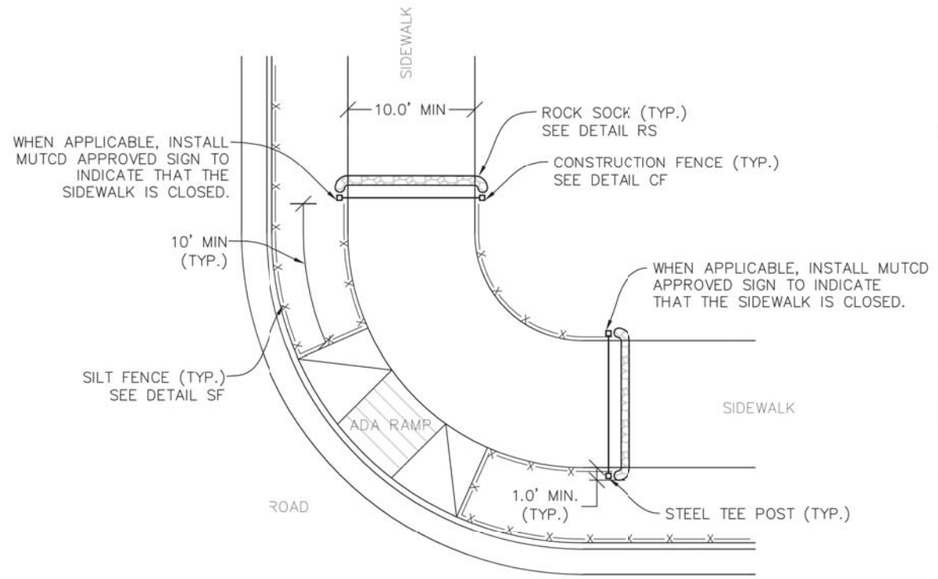
1. MASONRY WORK PROTECTION MAY NEED TO BE INSTALLED WHEN MASONRY WORK AND MIXING IS OCCURRING.
2. A ROCK SOCK SHALL BE INSTALLED IN A CRESCENT SHAPE ON THE DOWNHILL SIDE OF THE MASONRY WORK AND MIXER.
3. CRUSHED ROCK SHALL BE 2.0"–3.0" IN SIZE WITH A FRACTURED FACE (ALL SIDES).
4. ROCK SOCK SHALL BE ONE CONTINUOUS PIECE OR SHALL BE CONSTRUCTED USING WIRE WRAPPED JOINTS (SEE DETAIL RS).
5. 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

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

Town of Parker COLORADO | CBMP | CONSTRUCTION BEST MANAGEMENT PRACTICES | MWP 2 OF 2 Oct. 2013

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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)

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

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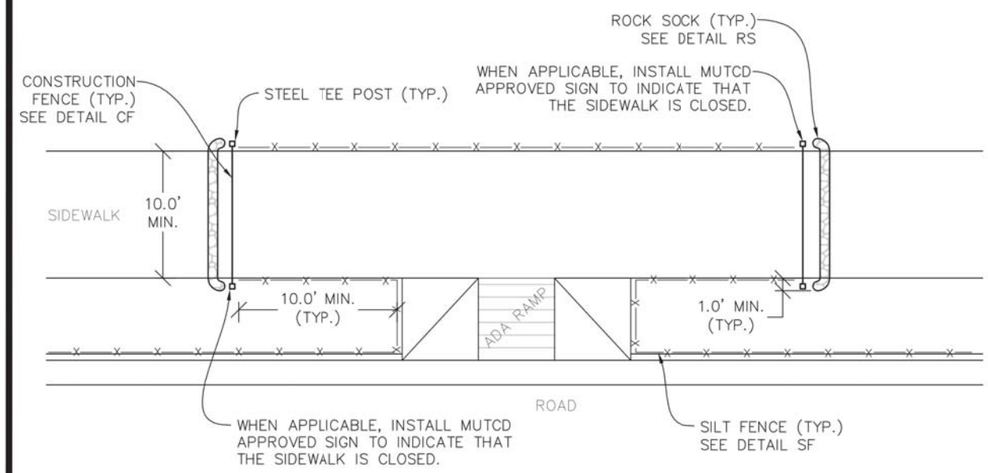
BELFORD–HAPPY CANYON CREEK
CBMP STANDARD
NOTES AND DETAILS

Designer: CDT
Detailer: KLT
Subset: Erosion
Structure Numbers:
Sheets: ED–30 of 32

Project No./Code:

Sheet Number 125

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

STP

SIDEWALK TRANSITION PROTECTION (ALONG STRAIGHT ROADWAY)

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

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SIDEWALK TRANSITION PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR LOCATION(S) OF SIDEWALK 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 IS LIEU OF SILT FENCE WITH PRIOR APPROVAL FROM THE TOWN.

SIDEWALK TRANSITION PROTECTION INSPECTION & MAINTENANCE NOTES

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

Town of Parker COLORADO | CBMP | CONSTRUCTION BEST MANAGEMENT PRACTICES | STP 3 OF 3 Oct. 2013

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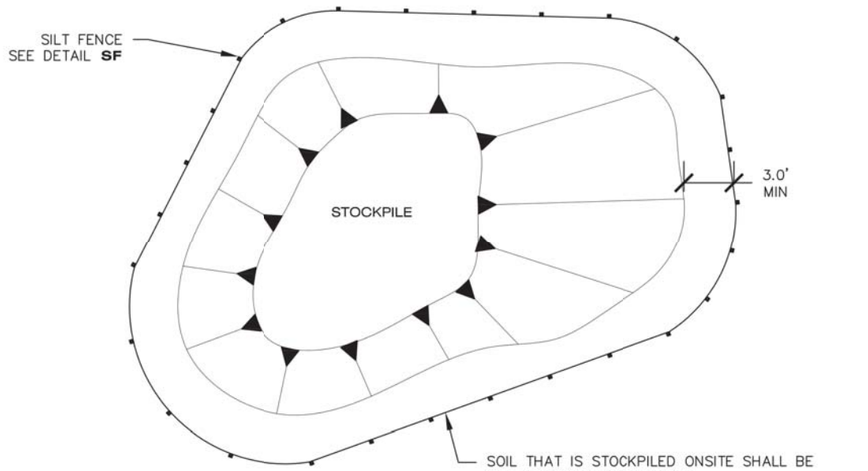
BELFORD-HAPPY CANYON CREEK
CBMP STANDARD
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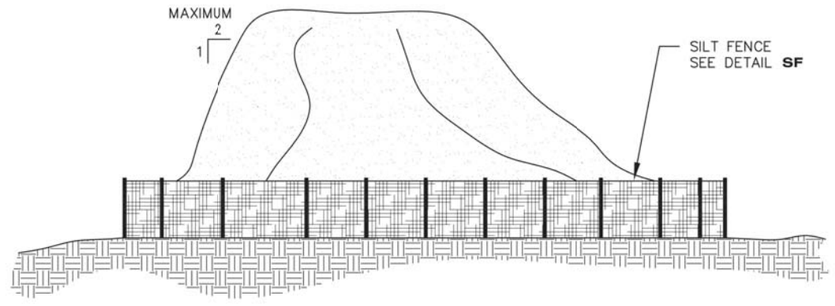
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Sheets: ED-31 of 35

Project No./Code:

Sheet Number 126

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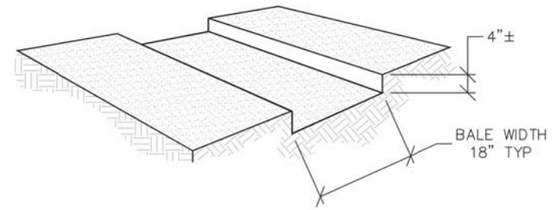
STOCKPILES SHALL BE LOCATED ONSITE PER THE APPROVED CBMP PLAN.

SP

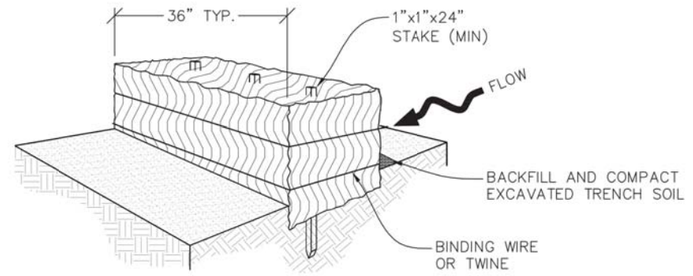
STOCKPILE PROTECTION

Town of Parker COLORADO | CBMP | CONSTRUCTION BEST MANAGEMENT PRACTICES | SP | JUNE 2006

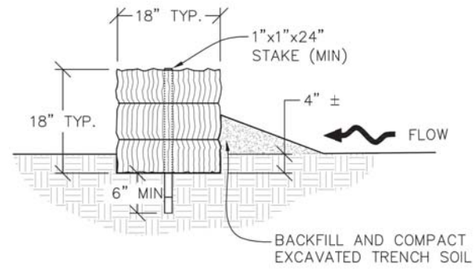
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TRENCH EXCAVATION



STRAW BALE INSTALLATION



SECTION

SB

STRAW BALE

Town of Parker COLORADO | CBMP | CONSTRUCTION BEST MANAGEMENT PRACTICES | SB | 1 OF 2 | Oct. 2013

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BELFORD-HAPPY CANYON CREEK CBMP STANDARD NOTES AND DETAILS				Project No./Code
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Subset:	Erosion	Sheets:	ED-32 of 35	Sheet Number 127

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

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).

Town of Parker COLORADO

CBMP

CONSTRUCTION BEST MANAGEMENT PRACTICES

SB

2 OF 2

Oct. 2013

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 outside of PWSD's jurisdiction, check with the applicable water provider regarding their specific requirements for temporary irrigation.

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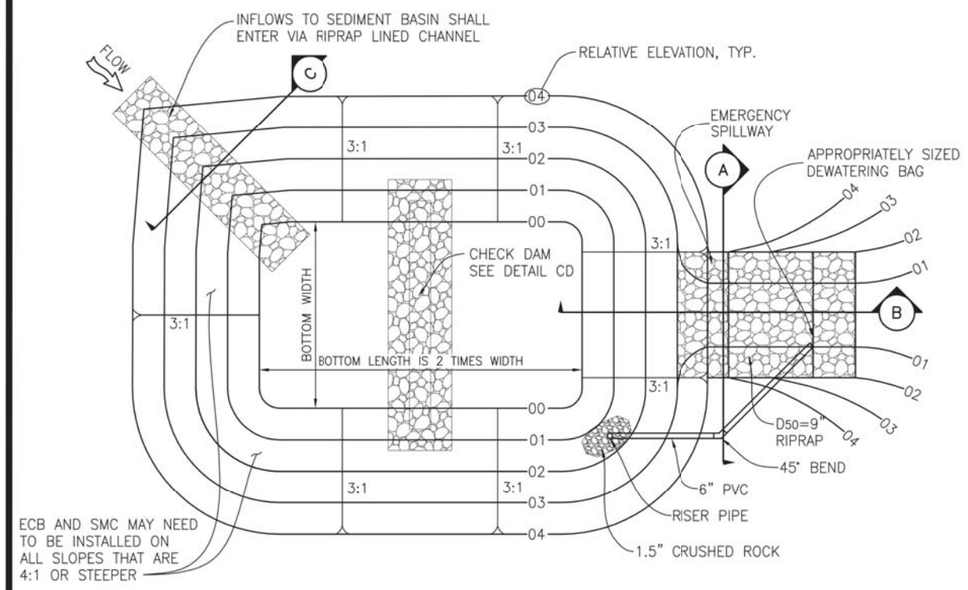
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Void:	Detailer: KLT			
	Subset: Erosion	Sheets: ED–33 of 35		Sheet Number 128

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

PLAN VIEW

TSB

TEMPORARY SEDIMENT BASIN

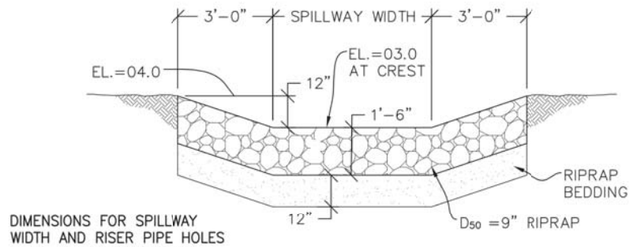
Town of Parker COLORADO

CBMP

CONSTRUCTION BEST MANAGEMENT PRACTICES

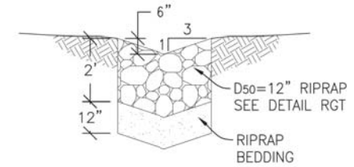
TSB
1 OF 3
Oct. 2013

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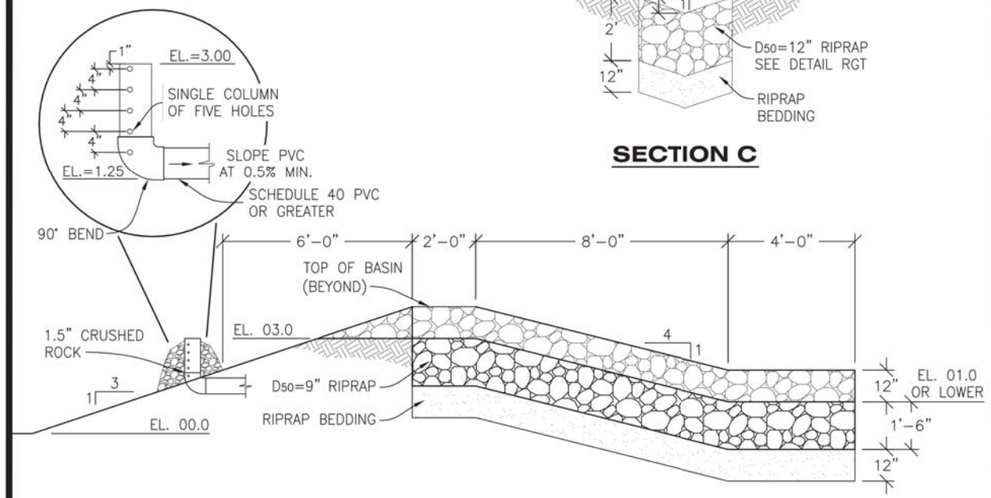


DIMENSIONS FOR SPILLWAY WIDTH AND RISER PIPE HOLES SHALL BE IN ACCORDANCE WITH UDFCD VOLUME 3, AS AMENDED.

SECTION A



SECTION C



SECTION B

TSB

TEMPORARY SEDIMENT BASIN

Town of Parker COLORADO

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CONSTRUCTION BEST MANAGEMENT PRACTICES

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Horizontal Scale: 1"=40' Vertical Scale: NTS					Revised:
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BELFORD-HAPPY CANYON CREEK CBMP STANDARD NOTES AND DETAILS				Project No./Code
Designer: CDT	Structure Numbers			
Detailer: KLT				
Subset: Erosion	Sheets: ED-34 of 35			Sheet Number 129

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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.

Town of Parker COLORADO

CBMP

CONSTRUCTION BEST MANAGEMENT PRACTICES

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Sheet Revisions

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BELFORD–HAPPY CANYON CREEK
CBMP STANDARD
NOTES AND DETAILS

Designer: CDT
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Structure Numbers:
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Project No./Code

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