

PROJECT NAME: THEODORE CREEK

SUMMARY OF ESTIMATED QUANTITIES

PAY ITEM	DESCRIPTION	METHOD OF MEASUREMENT	UNIT	QUANTITY
15101	MOBILIZATION	LSQ	LS	1
15201	CONSTRUCTION SURVEY AND STAKING	LSQ	LS	1
15713	SOIL EROSION, POLLUTION CONTROL, STREAM DIVERSION & DEWATERING PLAN	LSQ	LS	1
20304	REMOVAL OF CULVERT, DISPOSAL METHOD (A)	AQ	EA	1
20404	UNCLASSIFIED BORROW, GOVERNMENT SOURCE	CQ	CY	400
20478	ROADWAY EMBANKMENT	LSQ	LS	1
20806	STRUCTURE EXCAVATION	LSQ	LS	1
25101	PLACED RIPRAP, CLASS 3 (COMMERCIAL SOURCE)	CQ	CY	150
27250	GEOCELL ABUTMENT STABILIZATION, 6 INCH DEPTH	CQ	SY	29
30801	ROADWAY AGGREGATE, COMPACTION METHOD 2 (COMMERCIAL SOURCE)	CQ	CY	60
55301	PRECAST, PRESTRESSED CONCRETE STRUCTURAL MEMBERS, TRIDECK BEAMS	CQ	EA	3
553A05	PRECAST CONCRETE MEMBERS, GRADE BEAMS AND WINGWALLS	LSQ	LS	1
62201a	EQUIPMENT RENTAL, HYDRAULIC EXCAVATOR WITH THUMB	AQ	HR	8
62201b	EQUIPMENT RENTAL, LARGE DUMP TRUCK	AQ	HR	8
62528	SEEDING AND MULCHING, DRY METHOD	LSQ	LS	1
63305	POSTS, WOOD	CQ	LF	36
63306	OBJECT MARKERS TYPE 3	AQ	EA	4

CQ = CONTRACT QUANTITY; AQ = ACTUAL QUANTITY; LSQ = LUMP SUM QUANTITY

GENERAL NOTES:

SPECIFICATIONS: MATERIALS AND CONSTRUCTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS, FP-03, AS MODIFIED FOR THIS CONTRACT.

DESIGN: DESIGNS SHALL CONFORM WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS 5TH EDITION 2010 WITH CURRENT INTERIMS.

DESIGN DATA AS FOLLOWS:

- LIVE LOAD = HL-93
- TRUCK IMPACT = 33%
- SUPERIMPOSED DEAD LOAD = 35 PSF

PRESTRESSED CONCRETE: PRESTRESSED CONCRETE SHALL BE CLASS P, CONCRETE STRENGTH REQUIREMENTS SHALL BE DETERMINED BY THE PRESTRESSED BEAM FABRICATOR, BUT, SHOULD ATTAIN A MINIMUM RELEASE STRENGTH OF 4000 PSI (f_{cd}=4000 PSI) AND A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 5500 PSI, (f_c = 5500 PSI), THE PRESTRESSED CONCRETE BEAMS SHALL BE AIR ENTRAINED 5% ± 1%.

REINFORCED STEEL: ALL NON-PRESTRESSED REINFORCING SHALL BE OF THE DEFORMED TYPE CONFORMING TO AASHTO M31 (ASTM A615), GRADE 60, CONCRETE CLEAR COVER SHALL BE 2" UNLESS SHOWN OTHERWISE ON THE PLANS, BENDING AND SPLICING OF REINFORCEMENT SHALL BE IN ACCORDANCE WITH ACI 318.

PRESTRESSING STEEL: PRESTRESSING STEEL SHALL BE 0.60" OR 0.50", SEVEN WIRE LOW-RELAXATION PRESTRESSING STRAND CONFORMING TO AASHTO M203, GRADE 270. MAXIMUM JACKING FORCE FOR PRESTRESSING STRAND REINFORCEMENT SHALL BE 0.90 F_{py} OR 47.3 KIPS, MAXIMUM STRAND STRESS AT TRANSFER SHALL BE 0.75 F_{pu} OR 43.94 KIPS.

PRESTRESSING CONCRETE BEAMS: PRIOR TO CASTING ANY PRESTRESSED MEMBERS, CALCULATIONS AND SHOP DRAWINGS AND COMPLETE DETAILS OF THE METHOD, MATERIALS AND EQUIPMENT PROPOSED FOR USE IN THE PRESTRESSING OPERATIONS SHALL BE SUBMITTED A MINIMUM OF 21 DAYS IN ADVANCE OF PLANNED CONSTRUCTION AND SHALL BEAR THE SEAL AND SIGNATURE OF A PROFESSIONAL ENGINEER IN THE STATE OF MONTANA.

CONCRETE: ALL NON-PRESTRESSED CONCRETE SHALL BE CLASS (C/AE) CONCRETE, f_c = 4000 PSI AT 28 DAYS, CONCRETE SHALL BE GIVEN A CLASS 1 "ORDINARY SURFACE FINISH", CONCRETE SHALL BE AIR ENTRAINED 5% ± 1%.

ALL CONCRETE SHALL BE MADE IN ACCORDANCE WITH AN APPROVED MIX DESIGN, CHAMFER ALL EXPOSED EDGES OF CONCRETE AND FILLET ALL RE-ENTRANT ANGLES 3/4 UNLESS NOTED OTHERWISE.

FINISHING PRESTRESSED CONCRETE BEAMS: THE EXTERIOR FACE OF EXTERIOR BEAMS SHALL BE GIVEN A RUBBED FINISH, (A/AE) CONCRETE GRAY EPOXY MORTAR USING AASHTO M235 CLASS II EPOXY RESIN ADHESIVE MAY BE USED IN LIEU OF THE SPECIFIED SAND CEMENT MORTAR TO REDUCE CURING TIME, THE EPOXY MORTAR SHALL BE RUBBED WITH CEMENT PRIOR TO HARDENING, THE ENDS OF THE BEAMS SHALL HAVE ALL HOLES OR ACCEPTABLE ROCK POCKETS PATCHED AND STRANDS CUT OFF FLUSH OR BURNED BACK, TOP OF BEAMS SHALL BE GIVEN A ROUGH BROOM FINISH PERPENDICULAR TO CENTERLINE ROADWAY.

FABRICATION, TRANSPORTATION, AND INSTALLATION OF PRESTRESSED CONCRETE BEAMS: BEAMS SHALL BE ERECTED WITH A VERTICAL VARIATION OF NO MORE THAN 3/8" AT CENTERLINE OF BEARING AND NO MORE THAN 5/8" BETWEEN ADJACENT DECK SURFACES ALONG THE LENGTH OF THE BEAMS, AFTER BEAM ERECTION, PRIOR TO GROUTING KEYWAYS, CONTRACTOR SHALL PROVIDE MEASUREMENTS ALONG THE BEAM FLANGE JOINTS AT 10' ON CENTER INDICATING THE VERTICAL DIFFERENCE BETWEEN ADJACENT BEAMS AND SUPPLY THIS INFORMATION TO THE CO, CONTRACTOR SHALL NOT PROCEED WITH GROUTING KEYWAYS OR ANY LEVELING PROCEDURES UNTIL THE CO HAS REVIEWED AND EVALUATED THE MEASUREMENTS FOR TOLERANCES OR OTHER CAMBER OR ERECTION INCONSISTENCIES, IF CAMBER ADJUSTMENT / LEVELING IS DETERMINED BY CO TO BE NEEDED, CONTRACTOR SHALL SUBMIT THE CAMBER ADJUSTMENT / LEVELING PROCEDURE FROM THE MANUFACTURER, ANY CAMBER ADJUSTMENT / LEVELING WORK AUTHORIZED BY THE CO MUST BE DIRECTED BY A REPRESENTATIVE OF THE MANUFACTURER, ANY DAMAGE TO THE BEAMS DURING ERECTION, MUST IMMEDIATELY BE IDENTIFIED TO THE CO, NO REPAIRS SHALL BE IMPLEMENTED UNTIL AUTHORIZED BY THE CO

HARDWARE AND STRUCTURAL STEEL: ALL STEEL SHAPES, PLATES, AND BARS SHALL CONFORM TO AASHTO M270 GRADE 36 (ASTM A36) AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111 (ASTM A123) UNLESS NOTED OTHERWISE, ALL BOLTS AND NUTS SHALL CONFORM TO ASTM A307 EXCEPT AS NOTED AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M232 (ASTM A153).

ALL WELDING SHALL BE IN ACCORDANCE WITH AWS D1.5 BRIDGE WELDING CODE, ALL ELECTRODES SHALL BE E70XX,

HYDROLOGY AND HYDRAULICS: THIS STRUCTURE IS DESIGNED TO PASS A 100-YEAR FREQUENCY FLOOD WITH 2'-6" OF MINIMUM FREEBOARD, THE DESIGN VOLUMES ARE AS FOLLOWS:

BRIDGE NO. NFSR 4106-M.P. 4.5, Q₁₀₀ = 148 CFS

EROSION CONTROL PLAN: REFER TO SECTION 157 OF THE STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS.

PAINTING OF WELD TIE CONNECTIONS AND GUARD ANGLES: ALL WELD TIES NOT COVERED BY 1" OR MORE OF CONCRETE SHALL BE PAINTED WITH PRIMER COAT AND TWO FIELD COATS, THE FIELD COATS SHALL BE ALUMINUM PAINT CONFORMING TO AASHTO M69, TYPE II, THE GUARD ANGLES MAY BE PAINTED IN THE SAME WAY IN LIEU OF GALVANIZING.

DIMENSIONS: ALL LONGITUDINAL DIMENSIONS FOR THE STRUCTURE ARE MEASURED HORIZONTALLY AND INCLUDE NO CORRECTION FOR GRADE.

ELASTOMERIC BEARING PAD: BEARING PADS SHALL BE PLAIN ELASTOMERIC PAD 1/2" THICK, 70 DUROMETER, LOW TEMPERATURE, ZONE D.

Sec. 33 T, 15 N, R. 9 W.	DRAWING DATE: 8/1/2013
Length 32' Width 14.0'	△ Revised Date _____
Stew 0° Clear Height 5.65'	△ Revised Date _____
Grade 0% Super NA	△ Revised Date _____
Loading HL-93 Forest HELENA	△ Revised Date _____

THEODORE CREEK

NFSR 4106, M.P. 4.5

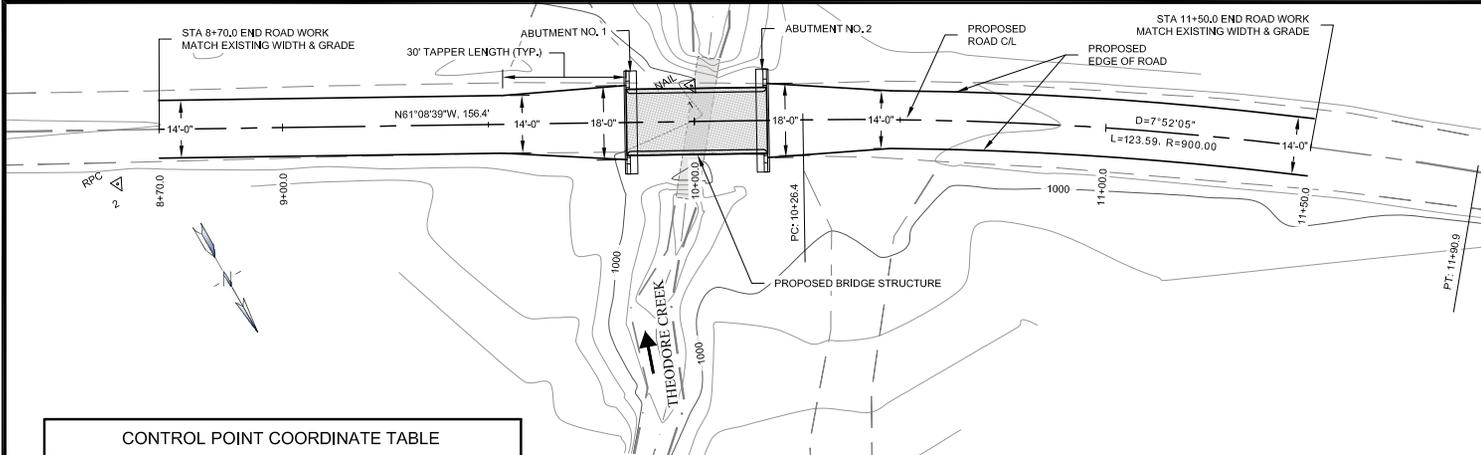
SUMMARY OF ESTIMATED QUANTITIES & GENERAL NOTES

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Drawn By: CRH	Drawing Checked: TDM	

M:\4835\02\CADD\SHEETS\THEODORE CREEK\QUANTITY SUMMARY GENERAL NOTES.DWG PLOTTED BY: TROY MONROE ON 8/1/2014

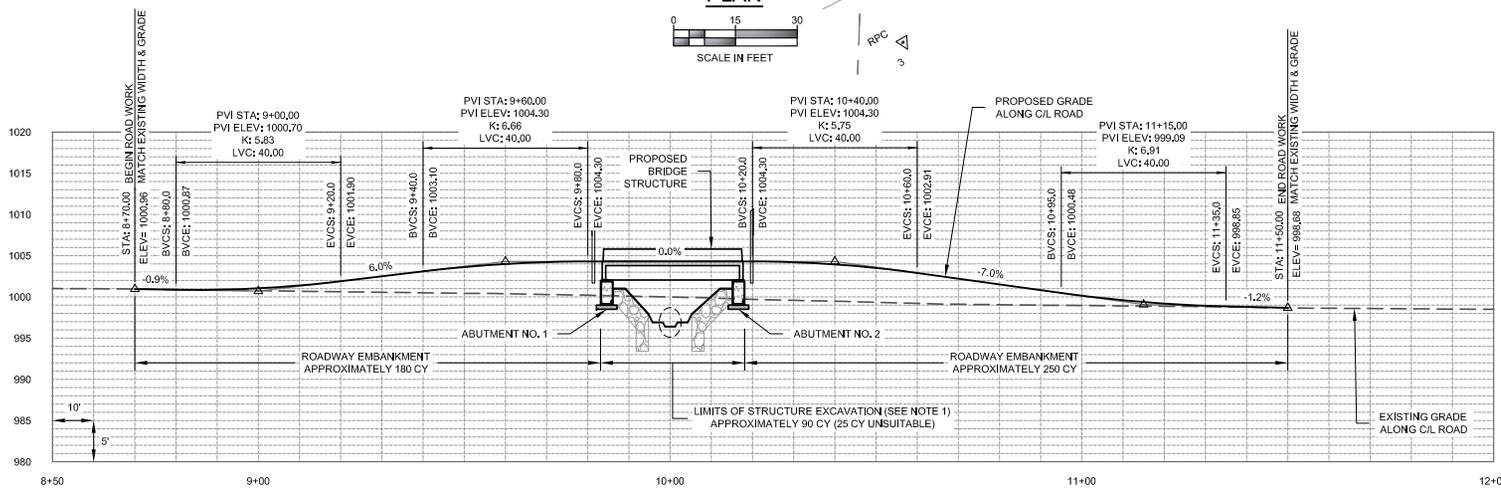
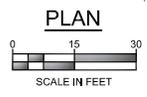


REGION ONE

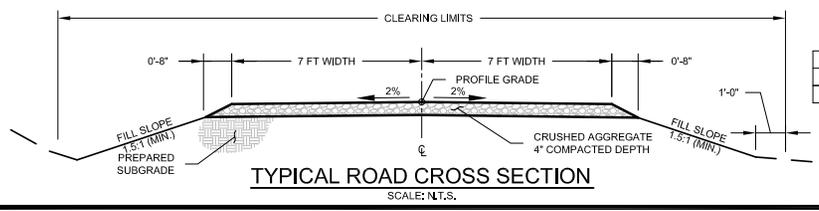


ROAD CENTERLINE COORDINATE TABLE				
STATION	DESCRIPTION	NORTHING	EASTING	ELEVATION
8+70.0	BEGIN ROAD WORK	19945.1538	40117.5049	1000.96
8+80.0	BEGIN VERTICAL CURVE	19949.9799	40108.7465	1000.67
9+20.0	END VERTICAL CURVE	19969.2842	40073.7130	1001.90
9+40.0	BEGIN VERTICAL CURVE	19978.9363	40056.1963	1003.10
9+80.0	END VERTICAL CURVE	19998.2405	40021.1628	1004.30
9+84.6	C/L BEARING ABUTMENT NO. 1	20000.4605	40017.1340	1004.30
10+00.0	THALWEG CROSSING	20007.8927	40003.6461	1004.30
10+16.6	C/L BEARING ABUT. NO. 2	20015.9039	39989.1072	1004.30
10+20.0	BEGIN VERTICAL CURVE	20017.5446	39986.1293	1004.30
10+26.4	PC	20020.6334	39980.5241	1004.27
10+60.0	END VERTICAL CURVE	20037.3946	39951.4053	1002.91
10+95.0	BEGIN VERTICAL CURVE	20055.9969	39921.7608	1000.48
11+35.0	END VERTICAL CURVE	20078.6492	39888.7970	998.85
11+50.0	END ROAD WORK	20087.5181	39876.7000	998.68

CONTROL POINT COORDINATE TABLE				
POINT NUMBER	DESCRIPTION	NORTHING	EASTING	ELEVATION
1	NAIL	20000.00	40000.00	1000.00
2	RPC	19951.67	40132.80	1001.82
3	RPC	20137.33	40016.02	1005.01



- NOTES:**
- INCLUDE ALL COSTS OF STRUCTURAL EXCAVATION, BACKFILL, WASTE, MISCELLANEOUS EXCAVATION AND CHANNEL WORK IN STRUCTURAL EXCAVATION PAY ITEM 20806.
 - QUANTITIES ARE ESTIMATED FOR INFORMATIONAL PURPOSES ONLY. QUANTITIES ARE ESTIMATED TO SUBGRADE AND DO NOT INCLUDE SHRINK/SWELL. ADDITIONAL EXCAVATION TO SUITABLE MATERIAL MAY BE REQUIRED. SUITABLE MATERIAL SALVAGED FROM STRUCTURE EXCAVATION MAY BE USED FOR ROAD EMBANKMENT. ADDITIONAL ROAD EMBANKMENT MATERIAL TO COME FROM BORROW SOURCE (GOVERNMENT FURNISHED).
 - A SOIL INVESTIGATION HAS NOT BEEN CONDUCTED AT THIS SITE.
 - CLEARING AND GRUBBING SHALL BE INCIDENTAL TO OTHER PAY ITEMS IN THIS PROJECT. DISPOSAL OF CLEARING AND GRUBBING DEBRIS PER FOREST SERVICE SPECIAL SPECIFICATIONS (FSS) 203.
 - CONTRACTOR SHALL DISPOSE OF EXCESS OR UNSUITABLE STRUCTURAL EXCAVATION MATERIAL AT DESIGNATED WASTE AREA. CO WILL DESIGNATE A WASTE AREA WITHIN 10 MILES OF THE PROJECT, ASSUME 25CY OF EXCAVATED MATERIAL WILL BE SATURATED AND UNSUITABLE FOR EMBANKMENT OR BACKFILL AND MUST BE DISPOSED.
 - ALL MATERIALS DESIGNATED FOR REMOVAL BECOME THE PROPERTY OF THE CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING AND DISPOSING OF THE EXISTING METAL CULVERTS FROM NATIONAL FOREST LAND IN ACCORDANCE WITH CURRENT STATE AND FEDERAL REQUIREMENTS.
 - SEED ALL DISTURBED AREAS AFTER CONSTRUCTION PER FSS 625.



NEW GRAVEL SURFACE

ROAD NO.	FROM STA.	TO STA.	WIDTH
NFSR 4106	8+70	9+83.5	14'
NFSR 4106	10+17.7	11+50	14'

PROFILE

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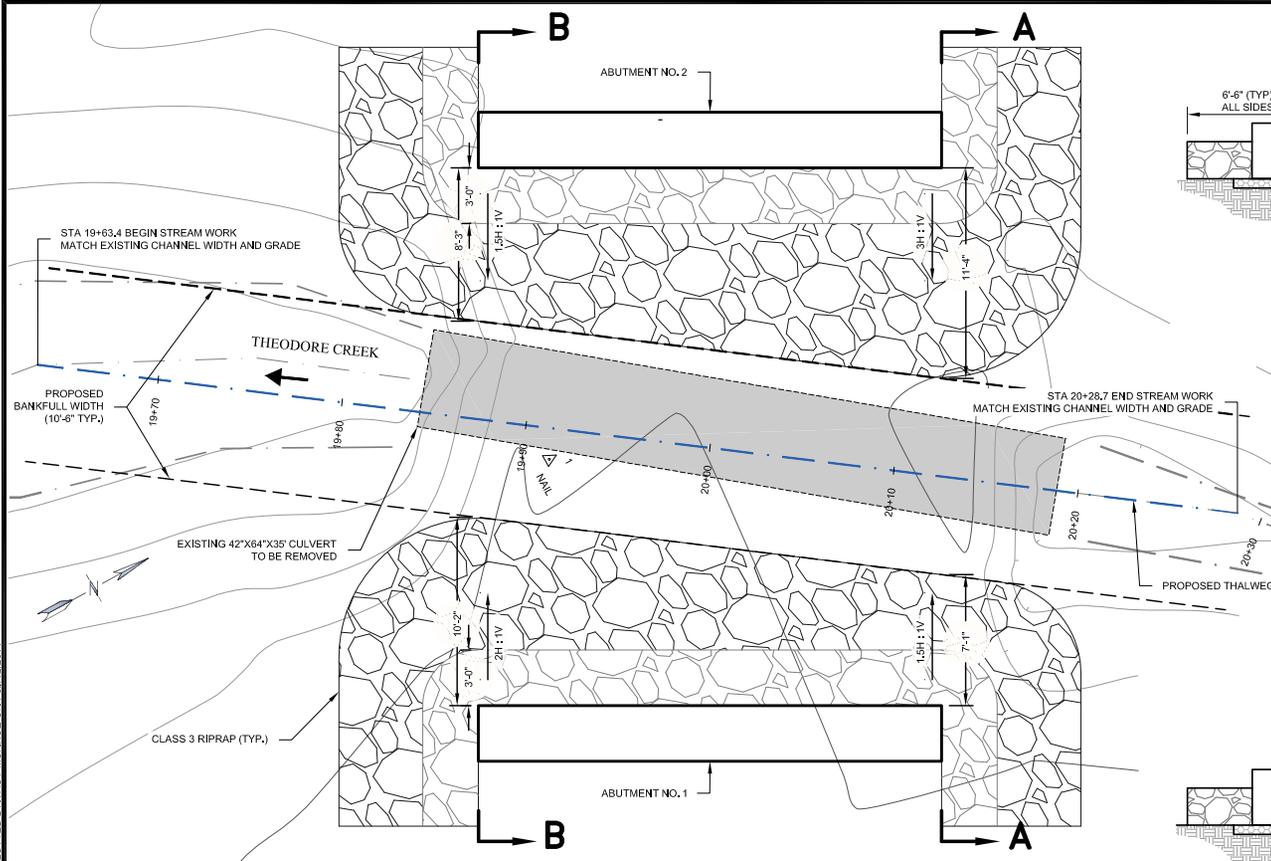
THEODORE CREEK
NFSR 4106, M.P. 4.5
ROAD PLAN AND PROFILE



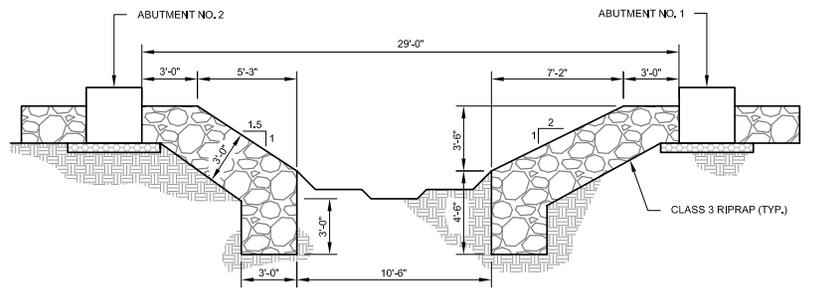
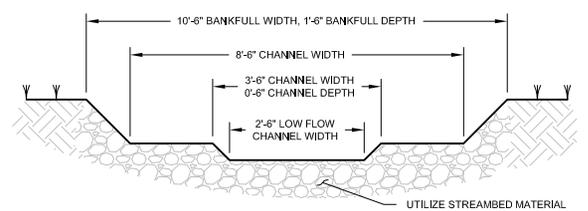
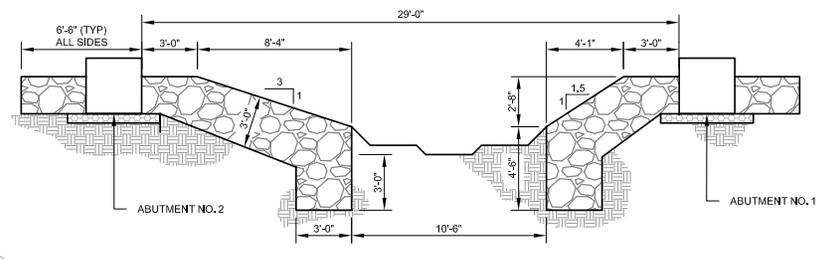
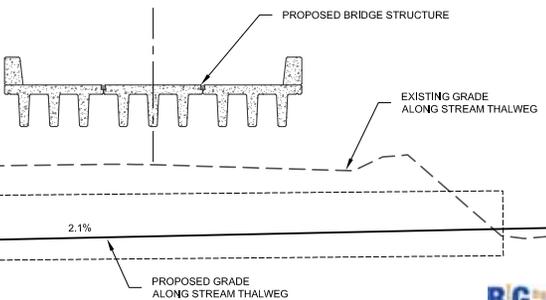
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CREEK THALWEG COORDINATE TABLE				
STATION	DESCRIPTION	NORTHING	EASTING	ELEVATION
19+63.4	BEGIN STREAM WORK	19978.2345	39982.2020	995.36
20+00.0	ROAD CENTERLINE CROSSING	20007.8902	40003.6444	996.14
20+28.7	END STREAM WORK	20031.1265	40020.4625	996.74



Sec. 33 T. 15 N. R. 9 W. Length 32' Width 14.0' Skew 0° Clear Height 5.65' Grade 0% Super NA Loading HL-93 Forest HELENA	DRAWING DATE: 8/1/2013 △ Revised Date _____ △ Revised Date _____ △ Revised Date _____ △ Revised Date _____
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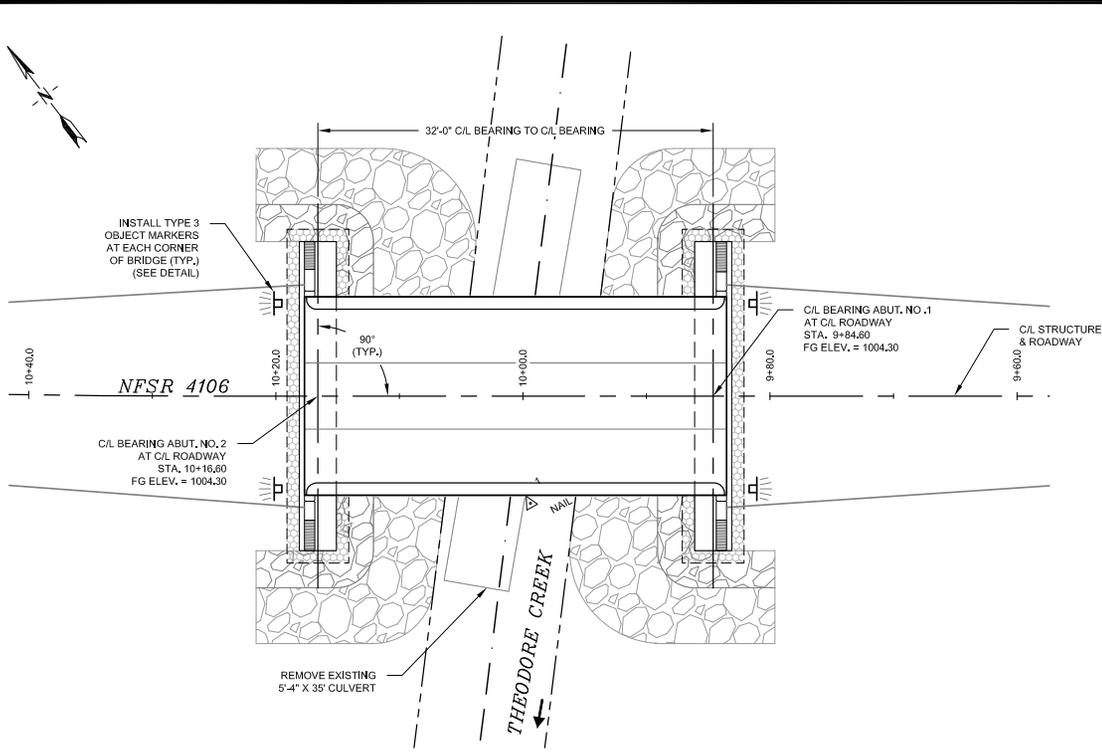
THEODORE CREEK
NFSR 4106, M.P. 4.5
CREEK PLAN AND PROFILE

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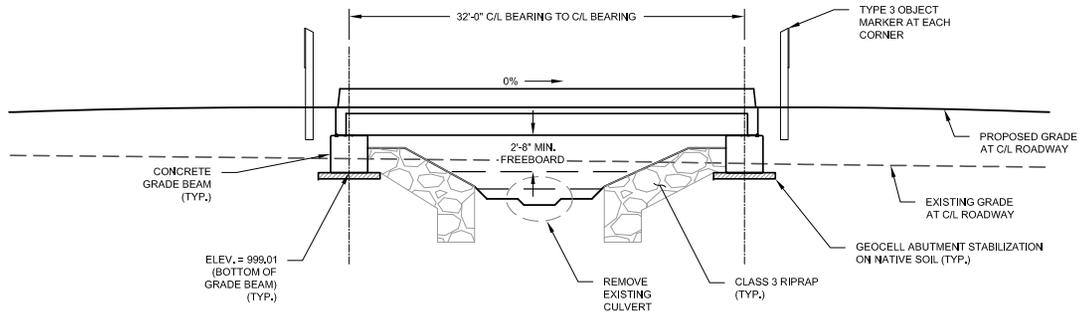
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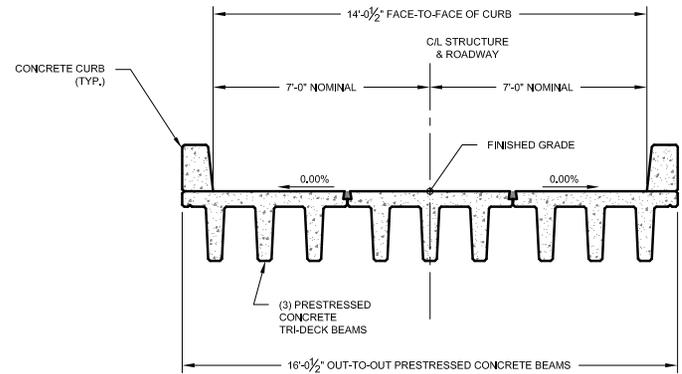
PLAN
SCALE: 1" = 10'-0"

C/L BEARING ABUT. NO. 2 AT C/L ROADWAY STA. 10+16.60 FG ELEV. = 1004.30

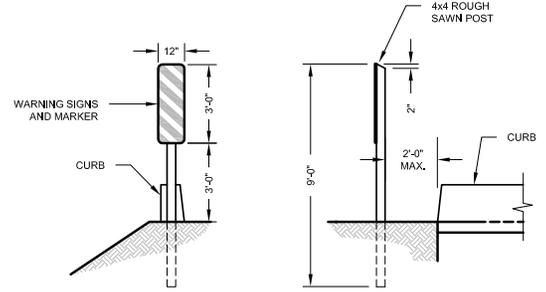
C/L BEARING ABUT. NO. 1 AT C/L ROADWAY STA. 9+84.60 FG ELEV. = 1004.30



ELEVATION
SCALE: 1" = 10'-0"



TYPICAL BRIDGE SECTION
SCALE: 1/4" = 1'-0"



OBJECT MARKERS: TYPE 3 OBJECT MARKERS SHALL BE 12" x 36" AND COLORED YELLOW AND BLACK. MATERIAL SHALL MEET MUTCD OM-3L OR OM-3R SPECIFICATIONS. FASTEN TO POST W/ (2)-1/4" Ø MACHINE BOLTS W/ WASHERS. FIELD DRILL BOLT HOLES. INSTALL POSTS SUCH THAT THE INSIDE EDGE OF THE REFLECTORIZED PANEL IS IN LINE WITH THE INSIDE EDGE OF THE CURB.

OBJECT MARKER TYPE 3 INSTALLATION
SCALE: NOT TO SCALE

NOTES:

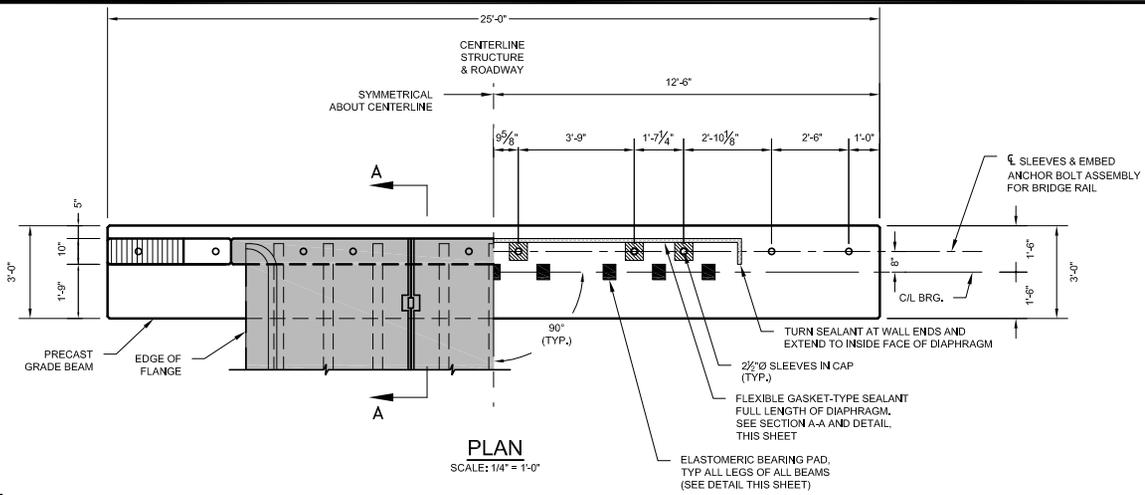
1. FOR RIPRAP, GEOCELL ABUTMENT STABILIZATION, AND STRUCTURAL BACKFILL DETAILS SEE SHEET
2. FOR GENERAL NOTES SEE SHEET 1.
3. ELEVATIONS OF STREAM BOTTOM, RIPRAP, AND WATER SURFACE VARIES ALONG CREEK PROFILE. ELEVATIONS ARE SHOWN AT CENTERLINE OF BRIDGE.

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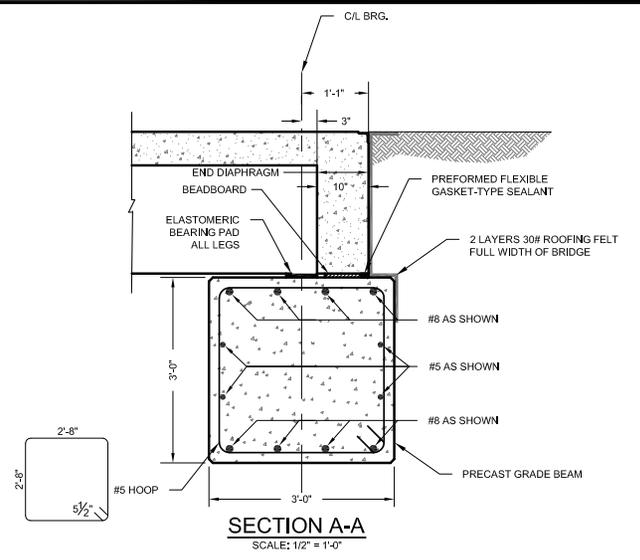
THEODORE CREEK
NFSR 4106, M.P. 4.5
BRIDGE GENERAL LAYOUT

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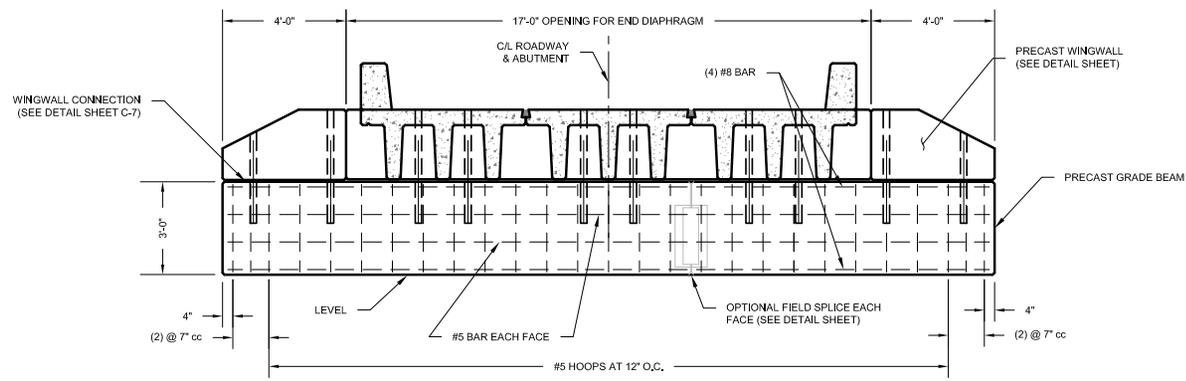
PLAN
SCALE: 1/4" = 1'-0"



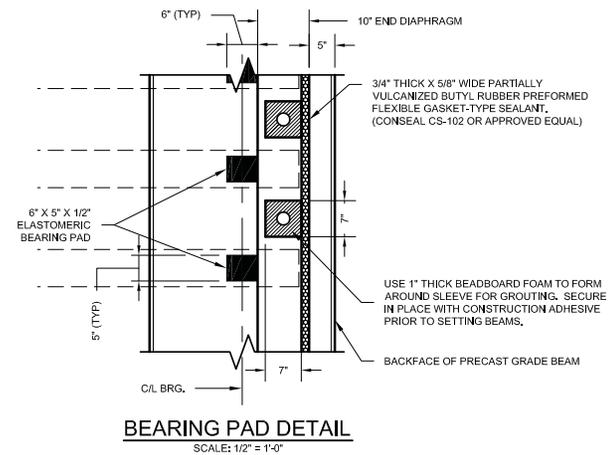
SECTION A-A
SCALE: 1/2" = 1'-0"

NOTES:

- GRADE BEAM AND WINGWALLS SHALL BE PRECAST CONCRETE. SUPPLY PRECAST GRADE BEAMS AND WINGWALLS BY THE SAME MANUFACTURER THAT FABRICATES THE PRESTRESSED TRI-DECK BEAMS.
- GEOCELL ABUTMENT STABILIZATION NOT SHOWN. SEE SHEET C-9 FOR DETAILS.
- INCLUDE ALL COSTS ASSOCIATED WITH PLACING THE 30# ROOFING FELT, GROUT, EPOXY, SEALANT AND SHIMS TO THE CONTRACT PAY ITEM PRECAST CONCRETE MEMBER, GRADE BEAMS AND WINGWALLS.



PROFILE
SCALE: 1/4" = 1'-0"
(LOOKING BACK STA ABUT. NO. 1)
(LOOKING AHEAD STA ABUT. NO. 2)



BEARING PAD DETAIL
SCALE: 1/2" = 1'-0"

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THEODORE CREEK

NFSR 4106, M.P. 4.5

ABUTMENT NO. 1 & 2

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Sheet: 6 of 12

M:\6835\02\ACAD\SHETS\THEODORE CREEK\6 ABUTMENT NO.1 & 2.DWG - PLOTTED BY TROY MONROE ON 8/1/2014

