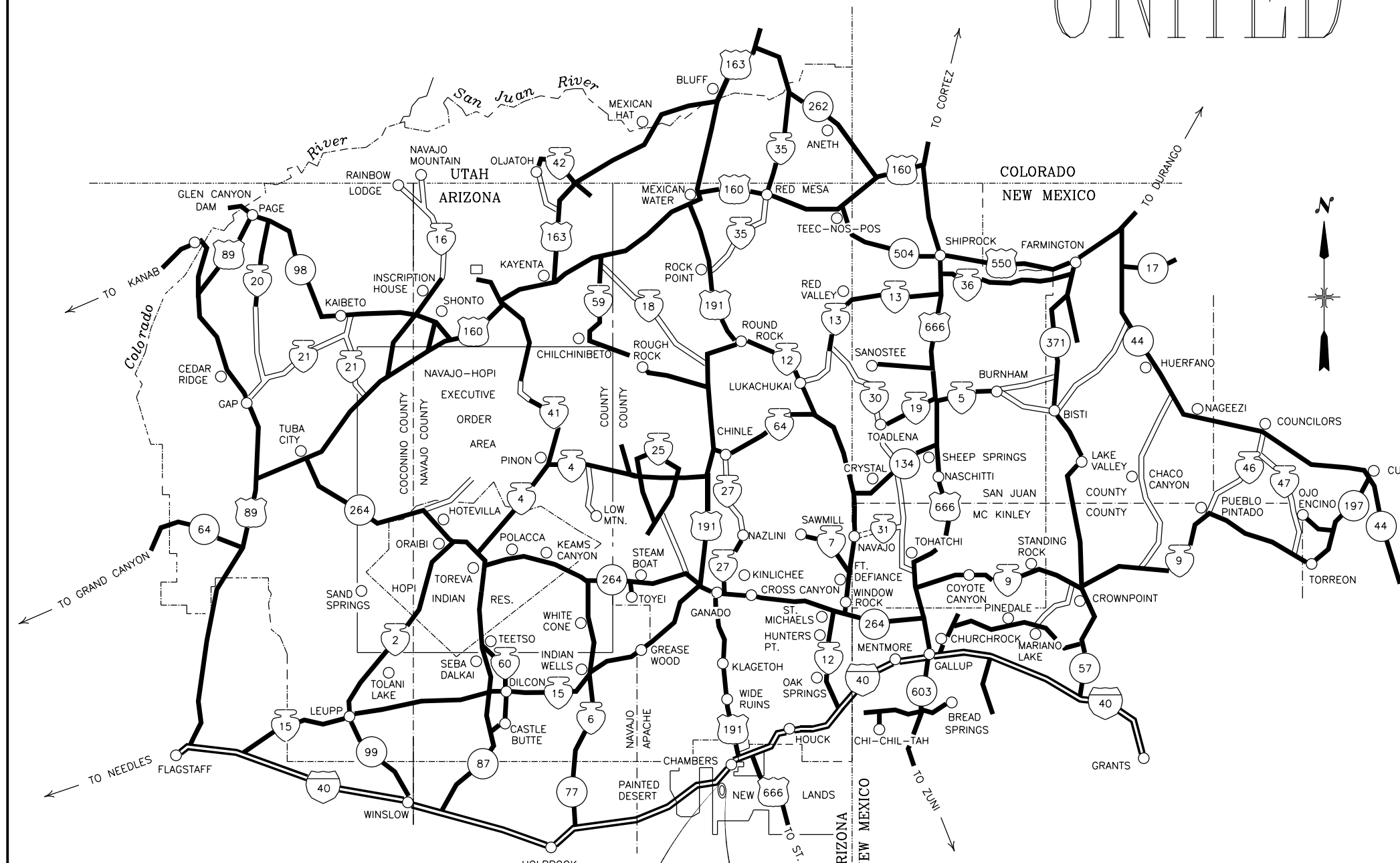


UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NAVAJO REGION
ROUTE

CONSTRUCTION PLANS APPROVED
DATE: 01/17/2014



NAVAJO RESERVATION MAP
N.T.S.

PROJECT N2007(1-1)1,2&4

DESIGN DATA

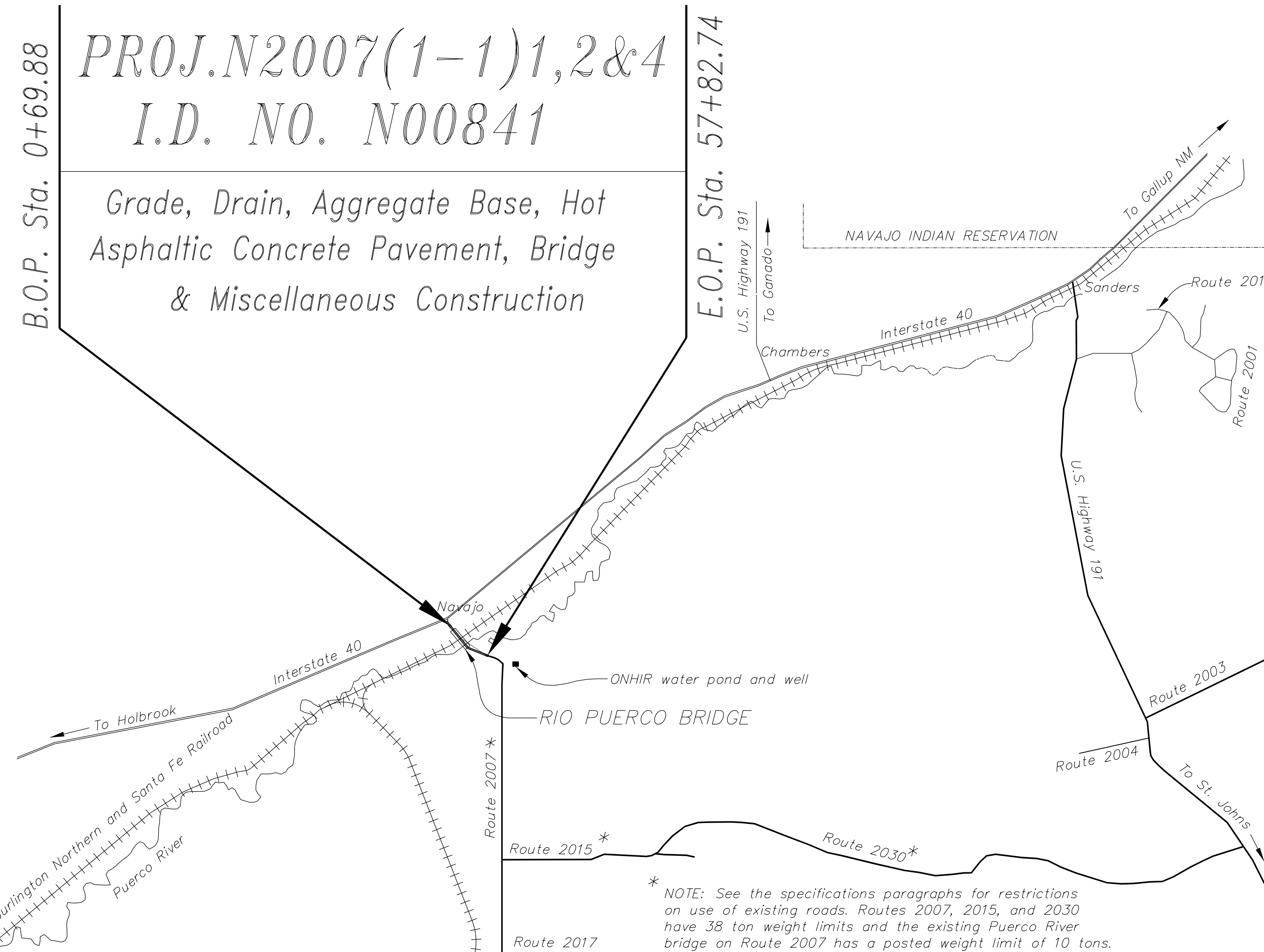
Design Speed	50 mph
Maximum Curvature	4°
Maximum Gradient	6%
Minimum Passing Sight Distance	1835.93 Ft.
Minimum Stopping Sight Distance	425.00 Ft.
Average Daily Traffic 1997	1275 vpd
Future ADT (2017)	1556 vpd
R.O.W. Width	See Table

N2007 RIGHT-OF-WAY TABLE

STATION TO STATION	Width (Lt.)	Width (Rt.)
0+68.94 to 19+56.34	50.00	50.00
19+56.34 to 28+94.00	75.00	150.00
28+94.00 to 31+58.00	100.00	150.00
31+58.00 to 57+82.74	100.00	50.00

LENGTH OF PROJECT

STATION TO STATION	FEET	MILES
B.O.P. Station 0+69.88		
B.O.B. Station 24+83.00	2413.12	0.4570
E.O.B. Station 30+07.50	524.50	0.0993
E.O.P. Station 57+82.74	2775.24	0.5256
TOTAL	5712.86	1.0819



* NOTE: See the specifications paragraphs for restrictions on use of existing roads. Routes 2007, 2015, and 2030 have 38 ton weight limits and the existing Puerco River bridge on Route 2007 has a posted weight limit of 10 tons.

INDEX TO SHEETS

SHEET No.	DESCRIPTION
1	TITLE SHEET
2	TYPICAL CROSS SECTION
3	GENERAL NOTES
4	ESTIMATED QUANTITIES
5-9	PLAN AND PROFILE SHEETS
10	ALIGNMENT AND CONTROL POINTS
11-12	FRONTAGE ROAD, PLAN & PROFILE AND DETOUR DETAILS
13	GABION LAYOUT DETAILS
14	DITCH CHANNEL PLAN & PROFILE SHEET
15	TEMPORARY TRAFFIC CONTROL
16	PERM. ROADSIDE, T.O. DETAIL & PAVEMENT MARKINGS
17	STANDARD GUARDRAIL DETAIL ET2000 PLUS
18	STANDARD GUARDRAIL BARRIER END TREATMENT-ET2000
19	STRUCTURE QUANTITIES
20	PERMANENT SIGNING DETAIL
21	LAP SPlice U-CHANNEL BREAKAWAY SYSTEM
22-23	STORMWATER POLLUTION & EROSION/SEDIMENT CONTROL DETAILS
24-25	PRECAST CONCRETE CATTLEGUARD DETAILS
26	STANDARD PIPE INSTALLATION AND DITCH DETAILS
27	PLACED RIPRAP DOWN DRAIN DETAIL
28	STANDARD FENCING DETAIL w/ TYPE I & II GATE
29	STANDARD CHAINLINK FENCE DETAIL
30	STANDARD MILE POST DETAIL
31	SIGNALS AND TURNOUT W/ CONCRETE PADS DETAILS
32	MISCELLANEOUS DETAILS
33	PIPE CROSS-SECTION
34-37	CROSS-SECTION FROM STA. 5+20 TO STA. 7+55
38	18' TYPE III LOCKING GATE DETAILS
B1-B25	BRIDGE DESIGN PLANS & QUANTITIES

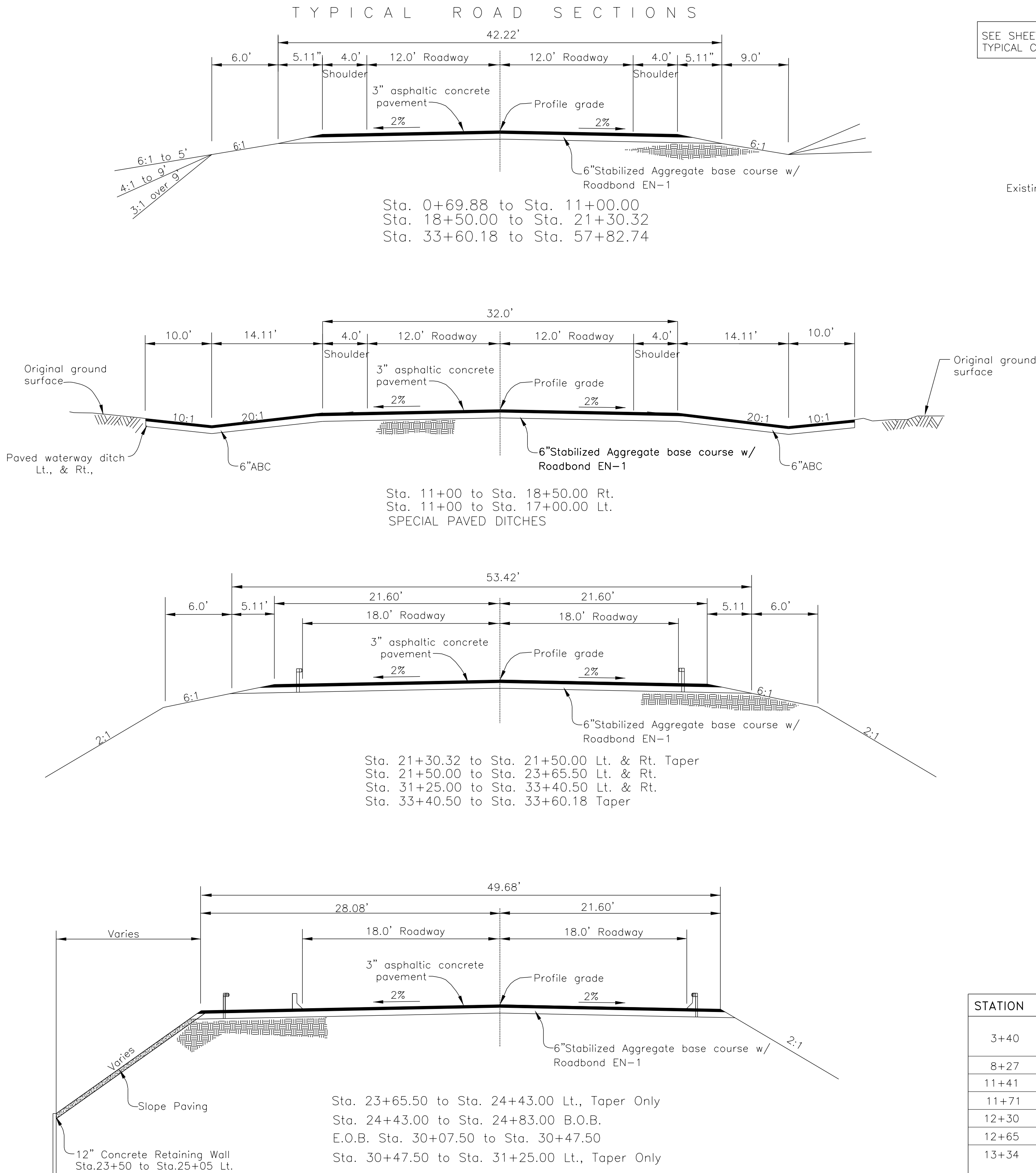
LEGEND

STATE LINE	---
RESERVATION LINE	---
COUNTY LINE	---
TOWNSHIP or RANGE LINE	---
SECTION LINE	---
NATIONAL FOREST LINE	---
HIGHWAY RIGHT-OF-WAY LINE	---
UNFENCED PROPERTY	---
SECTION CORNER and 1/4 CORNER	---
POWER LINE and POLES	---
TELEPHONE LINE and POLES	---
POLE GUY and ANCHOR	---
TRAFFIC SIGN	---
GUARD RAIL	---
DELINEATOR	---
BARBED WIRE FENCE	---
WOVEN WIRE FENCE	---
CATTLE GUARD	---
CULVERTS	---
CONCRETE BOX CULVERTS	---
GROUND LINE - EARTH	---
GROUND LINE - ROCK	---
EXISTING ROAD	---
SIDE ROAD TURNOUT	---
TREES and SHRUBS	---
CHANNEL or DITCH	---
DIKE or DITCH BLOCK	---
RIP-RAP	---
RAILROAD TRACK	---
GAS LINE	---
IRRIGATION LINE	---
WELL	---
DWELLING	---
SCHOOL	---
CHURCH	---
WINDMILL	---
RIGHT-OF-WAY MONUMENT	---
INDIAN SERVICE	---
COUNTY	---
STATE	---
FEDERAL	---
PAVED	---
GRADED	---
UNIMPROVED	---

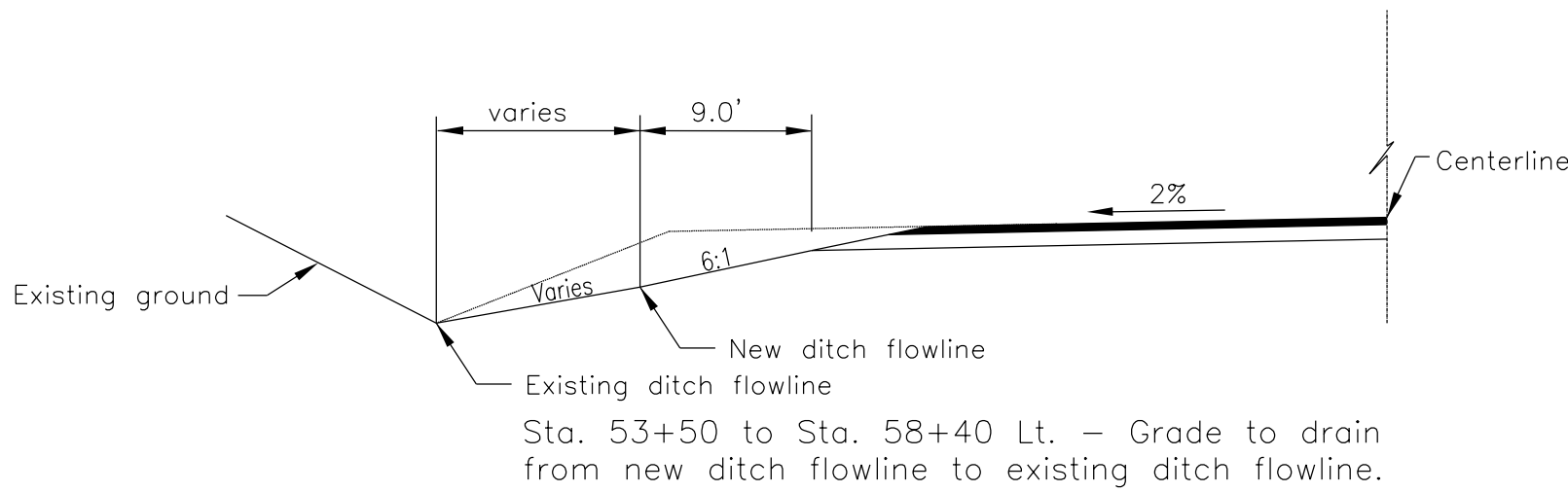
U. S. DEPARTMENT OF THE INTERIOR BUREAU OF INDIAN AFFAIRS NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION	
RECOMMENDED APPROVAL	APPROVAL
AGENCY ROAD ENGINEER <i>[Signature]</i> REGIONAL DIVISION MANAGER <i>[Signature]</i> PLANNING & DESIGN BRANCH CHIEF	08/28/2012 DATE 08/28/2012 DATE 08/28/2012 DATE Sharon A. Pinto REGIONAL DIRECTOR 08/28/2012 DATE

J:\DESIGN\Users\DESIGN2\CURRENT PROJECT_093008\N00_New Londs\N2007(1-1)2&4_092308\N2007 DESIGN DATA_092508\CADD Files 01-18-2013\N2007 Plans 01-18-2013

AREA	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N2007	N2007(1-1)1,2&4	2	63



SEE SHEET 12 FOR FRONTAGE ROAD
TYPICAL CROSS SECTION.



SPECIAL PAVED DITCH NOTES:

- 1-Constructed the paved ditches as shown through residential area on right and left.
- 2-The paved ditch structural section shall match the roadway section (3 inches of asphalt over 6 inches of ABC) for the entire width and length of the ditch. The ABC course to extend 6 inches beyond all free asphalt edges.
- 3-The paved ditch inslope shall be 20:1 starting at the roadway shoulder NO 6:1 EDGE TAPER TO BE INSTALLED.
- 4-At driveways the paved backslope shall be lengthen to the right of way line or at PCC driveways, to the existing PCC pavement.
- 5-The backslope grade shall be adjusted to fit each existing driveway as directed by the COR/AOTR.
- 6-At roadway turnout at sta.14+50 Lt., carry paved ditch around the radius to the right of way line on the north side of the turnout. On the south side restart the paved ditch at the right of way line

SEQUENCING NOTES:

- 1-The Contractor shall be required to break up all of the existing asphaltic concrete pavement structure in accordance with Section 204.10(b) of FP-03, including all existing paved turnouts. The Contractor has the option to utilized cold milling machine or other construction method to break up the existing pavement structure.
- 2-After processing the existing pavement, the contractor shall build up the subgrade with the material along with additional borrow with moisture and density control per Section 204 of FP-03.
- 3-At all new and reconstructed turnouts, and mainline, the contractor shall furnish and place 6" of new aggregate base course material on the finished and approved subgrade. The new placed ABC shall be treated with Roadbond EN-1.
- 4-The contractor shall then place 3" (2-1.5" lifts) of hot asphalt concrete pavement on the mainline, and all turnouts.
- 5-The Contractor shall provide for a safe and relatively dust free driving surface throughout the reconstruction process for all school, general traveling public, and local traffic use day and night. The contractor's traffic control and construction sequencing plan shall include these requirements and be submitted for review and approval prior to any ground disturbing activities taking place.

SPECIAL ROADWAY TYPICAL AND SPECIAL DITCH LOCATION

Station To Station	Roadway Width to Hinge		Remarks
	Lt.	Rt.	
6+60.00 To 11+00.00	16.00 ft.	16.00 ft.	Special Ditch Grade
10+90.00 To 11+00.00	16.00 ft.	16.00 ft.	Special Ditch Grade
11+00.00 To 17+00.00	---	16.00 ft.	Special Paved Ditch, Rt.
11+00.00 To 17+00.00	16.00 ft.	---	Special Paved Ditch, Lt.
20+30.32 To 21+50.00	Varies	Varies	19.68 ft. Taper Lt. & Rt.
21+50.00 To 23+65.50	21.60 ft.	21.60 ft.	Guardrail Location:
23+65.50 To 24+43.00	21.60 ft.	21.60 ft.	77.50 ft. of Taper with Guardrail, Left Side.
24+43.00 To 24+83.00	27.08 ft.	21.60 ft.	1:11/2 at Fill Slope Location, Lt.
24+83.00 To 30+07.50	---	---	Bridge Location.
30+07.50 To 30+47.50	27.08 ft.	21.60 ft.	2:1 at Fill Slope Location, Lt. & Rt.
30+47.50 To 31+25.00	27.08 ft.	21.60 ft.	77.50 ft. of Taper with Guardrail, Left Side.
31+25.00 To 33+40.50	21.60 ft.	21.60 ft.	Guardrail Location.
33+40.50 To 33+60.18	---	---	19.68 ft. Taper Lt. and Rt.

TURNOUT LOCATIONS

STATION	LOC.	SIZE	TYPE	REMARKS
3+40	Lt.	40' x 34'	A	Reconstruct existing T.O. to match existing concrete at R/W line. Remove existing 24" pipe and replace w/new pipe & end sections.
8+27	Rt.	14' x 34'	A	Reconstruct existing T.O.-No cattleguard w/type I gate and pipe.
11+41	Lt.	16' x 34'	A	Reconstruct existing T.O.-No cattleguard or pipe.
11+71	Rt.	16' x 34'	A	Reconstruct existing T.O.-No cattleguard or pipe.
12+30	Rt.	24' x 34'	A	Reconstruct existing T.O.-No cattleguard or Pipe.
12+65	Lt.	16' x 34'	A	Reconstruct existing T.O.-No cattleguard or Pipe.
13+34	Rt.	24' x 34'	A	Reconstruct existing T.O.-to match existing PCC driveway for new Business.
14+40	Rt.	24' x 34'	A	Reconstruct existing T.O.-to match existing PCC driveway.
14+50	Lt.	24' x 34'	A	Reconstruct existing T.O.-to newlands office.
15+16	Rt.	16' x 34'	A	Reconstruct existing T.O.-to match existing PCC driveway.
15+85	Rt.	16' x 34'	A	Reconstruct existing T.O.-to match existing PCC driveway.
15+85	Lt.	16' x 34'	A	Reconstruct existing T.O.-No cattleguard or pipe.
16+55	Rt.	16' x 34'	A	Reconstruct existing T.O.-to match existing PCC driveway.
17+25	Rt.	16' x 34'	A	Reconstruct existing T.O.-to match existing PCC driveway.
17+94	Rt.	16' x 34'	A	Reconstruct existing T.O.-to match existing PCC driveway.
19+75	Rt.	24' x 34'	A	Reconstruct existing T.O.-Paved 50' from C/L and install new cspe
19+75	Lt.	24' x 34'	A	Reconstruct existing T.O.-@ 113' skew-relocate 3-unit cattleguard 180' Lt of C/L on old 66 Route, pass the proposed BNSF Service Road Intersection. Pave Turnout to new cattleguard location match existing service road and turnout @ 100'.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

TYPICAL CROSS SECTION

DRAWN BY: Gerald.Hood DATE: 5/7/2009
DESIGNED BY: NRDOT DATE: 5/7/2009
REVISED: 1/31/2013 BY: Peterson.Yazzie
ANNOTATION SCALE: Full Size 1=1
FILENAME: Sht.2_Typical Sections Sheet.dgn



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GENERAL NOTES:

1.

ALL WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-03 ENGLISH UNITS), AND THE SUPPLEMENTAL SPECIFICATIONS FOR THIS PROJECT.

2.

ALL PERMANENT AND TEMPORARY ROADSIDE SIGNS, AND PAVEMENT MARKINGS SHALL BE PLACED IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) FOR STREETS AND HIGHWAYS (LATEST EDITION) AND IN ACCORDANCE WITH THE DETAILS ON THESE PLANS. PLACEMENT OF "STOP" BAR, PERMANENT TRAFFIC SIGNS AND PAVEMENT MARKINGS SHALL BE FIELD ADJUSTED AS DIRECTED BY THE COR/AOTR, AT NO ADDITIONAL COST TO THE GOVERNMENT.

3.

THE TEMPORARY TRAFFIC CONTROL DETAILS SHOWN REFLECTS GENERAL REQUIREMENTS FOR THIS PROJECT. THE CONTRACTOR IS RESPONSIBLE FOR PREPARING AND SUBMITTING A TRAFFIC CONTROL PLAN IN ACCORDANCE WITH THESE DETAILS, TAKING INTO ACCOUNT THE CONTRACTOR'S CONSTRUCTION SEQUENCING PLAN, MUTCD, AND THE SUPPLEMENTAL SPECIFICATIONS FOR SECTION 635.-TEMPORARY TRAFFIC CONTROL. THE CONTRACTOR SHALL ALSO SUBMIT A COPY OF HIS TRAFFIC CONTROL PLAN, RELATED TO I-40 FRONTAGE ROAD AND RAILROAD CROSSING, TO THE ARIZONA DEPARTMENT AND TRANSPORTATION (ADOT), AND BURLINGTON NORTHERN & SANTA FE (BNSF) (2)-WEEKS PRIOR TO START OF CONSTRUCTION.

4.

THE DESIGN FEATURES INCLUDING HORIZONTAL AND VERTICAL ALIGNMENTS, TYPICAL SECTIONS, AND OTHER DESIGN DETAILS SHOWN SHALL NOT BE ALTERED OR MODIFIED IN ANYWAY DURING CONSTRUCTION WITHOUT THE EXPRESSED WRITTEN DIRECTION AND WRITTEN APPROVAL OF THE NAVAJO REGION OFFICE- DIVISION OF TRANSPORTATION (NRDOT) DIVISION MANAGER THROUGH THE AWARING OFFICIAL (AO), UNLESS OTHERWISE NOTED IN THESE PLANS OR SPECIFICATIONS. DRAINAGE STRUCTURES AND TURNOUTS SHALL BE INSTALLED AS SHOWN WITH ONLY MINOR CORRECTIONS IN LOCATION, SKEW, AND/OR INVERT ELEVATIONS AS NEEDED TO FIT FIELD CONDITIONS. TURNOUTS MAY NOT BE SHIFTED MORE THAN 5.0 METERS FROM THE LOCATIONS SHOWN ON THE PLANS WITHOUT THE WRITTEN APPROVAL OF THE NRDOT DIVISION MANAGER THROUGH THE AWARING OFFICIAL.

5.

THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY AND EXPENSE FOR DISPOSAL OF TRASH AND/OR CONSTRUCTION DEBRIS IN ACCORDANCE WITH SECTIONS 107 AND 203 OF THE FP-03 AS WELL AS ANY AND ALL PERMIT REQUIREMENTS. THIS WORK SHALL BE INCIDENTAL OBLIGATIONS OF THE CONTRACTOR.

6.

THE BIDDER SHALL READ AND MAKE CAREFUL EXAMINATION OF THE PLANS, SPECIFICATIONS, QUANTITIES, MATERIAL, SURVEYING REQUIREMENTS, AND VISIT THE SITE OF THE PROPOSED CONSTRUCTION TO BECOME FAMILIAR WITH THE SITE CONDITIONS AND LIMITATIONS BEFORE MAKING A PROPOSAL. THE CONTRACTOR WILL BE RESPONSIBLE FOR ANY AND ALL ERRORS RESULTING FROM THE FAILURE TO MAKE SUCH AN EXAMINATION. ANY INFORMATION DERIVED FROM THE MAPS, PLANS, SPECIFICATIONS, PROFILES, DRAWINGS OR THE ENGINEER, SHALL NOT RELIEVE THE CONTRACTOR FROM ANY RISK OR FROM FULFILLING THE TERMS OF THE CONTRACT. THERE ARE SEVERAL AREAS WITH LIMITED WORKING ROOM WITHIN THE PROJECT RIGHT-OF-WAY, AND/OR WITH EXISTING FEATURES WITHIN OR NEAR THE PROJECT RIGHT-OF-WAY, THAT WILL REQUIRE 'SPECIAL' CONSTRUCTION PROCEDURES.

7.

THE CONTRACTOR IS REQUIRED TO SUBMIT A REVISED PIPE LIST TO THE NRDOT, PLANNING & DESIGN BRANCH CHIEF THROUGH THE AOTR/COR, BASED ON THE FIELD STAKING IN ACCORDANCE WITH SECTION 152 OF THE CONTRACT SUPPLEMENTAL SPECIFICATION. THE APPROVAL OF ANY AND ALL REVISED PIPE LISTS WITH ACCOMPANYING DRAWINGS IS RENDERED AS A SERVICE ONLY AND IS NOT CONSIDERED A GUARANTEE OF MEASUREMENTS, QUANTITIES, INSTALLATION PROCEDURES, AND/OR DIMENSIONS, NOR SHALL IT BE CONSIDERED AS RELIEVING THE CONTRACTOR FROM COMPLYING WITH THE CONTRACT SPECIFICATIONS AND DESIGN PLANS. THE CONTRACTOR IS HEREBY NOTIFIED THAT UNDER NO CIRCUMSTANCE SHALL ANY DRAINAGE STRUCTURE(S) BE INSTALLED BELOW THE NATURAL FLOW LINE OF THE WASH, CHANNEL, ARROYO, OR DITCH LINE.

8.

NO WORK SHALL BE PERFORMED OR GROUND DISTURBED OUTSIDE OF THE DESIGNATED CONSTRUCTION LIMITS IN ACCORDANCE WITH SECTION 107 OF THE FP-03 WITHOUT WRITTEN APPROVAL BY THE NRDOT DIVISION MANAGER UNLESS OTHERWISE SHOWN AND LABELED ON THESE PLANS AS "CONSTRUCTION ZONE". IN NO CASE SHALL ANY WORK BE PERFORMED OUTSIDE THE DESIGNATED RIGHTS-OF-WAY LIMITS WITHOUT WRITTEN APPROVAL FROM THE NRDOT DIVISION MANAGER, UNLESS OTHERWISE SHOWN AND CALLED OUT ON THESE PLANS AS "CONSTRUCTION ZONE". THE CONSTRUCTION LIMIT IS THE CATCH POINT EARTHWORK LIMIT PLUS 3.0 METERS, NOT TO EXCEED THE RIGHT-OF-ENTRY LIMITS.

9.

THE DETAILS SHOWN ON THE STORM WATER POLLUTION AND EROSION/SEDIMENT CONTROL DETAILS ARE GENERAL REQUIREMENTS TO BE USED BY THE CONTRACTOR IN PREPARING A STORM WATER POLLUTION PREVENTION PLAN ALONG WITH THE REQUIREMENTS IN SECTION 157 OF THE SUPPLEMENTAL SPECIFICATION AND SPECIAL CONTRACT REQUIREMENTS. THE SWPPP IS ONLY REQUIRED AT THE DRAINAGE PIPE REPLACEMENT LOCATIONS. THE CONTRACTOR IS REQUIRED TO SUBMIT COURTESY COPY OF THE APPROVED SWPPP TO THE NAVAJO NATION WATER QUALITY EPA OFFICE.

10.

THE QUANTITIES SHOWN ARE FOR ESTIMATING PURPOSES ONLY AND TO COMPARE AND CANVAS BIDS. ACTUAL PAY QUANTITIES WILL BE DETERMINED IN THE FIELD FOR AUTHORIZED CHANGES THAT AFFECT THE QUANTITIES. ANY OVER-RUN OR UNDER-RUN OF QUANTITIES SHALL BE SUBJECT TO FAR 52.211-18, VARIATION IN ESTIMATED QUANTITY.

11.

ALL TURNOUT/DRIVEWAYS, AS CALLED FOR ON THESE PLANS, SHALL EITHER BE CONSTRUCTED, REBUILT, RESHAPED AND/OR REMOVED UP TO THE RIGHT-OF-WAY LIMITS. ALL TURNOUTS SHALL BE PAVED TO THE CATTLEGUARD, THEN FROM THE BACK OF CATTLEGUARD TO THE R/W LINE. PLACE AGGREGATE BASE FOR ALL 14.0' WIDE TURNOUTS; PLACE AGGREGATE AND HOT ASPHALTIC CONCRETE FOR TURNOUTS WIDER THAN 14.0' TO MATCH THE STRUCTURAL SECTION. REQUIRED GRADING, SHAPING, AND EARTH COMPACTION OUTSIDE OF THE RIGHT-OF-WAY, TO CONNECT NEW TURNOUTS TO THE EXISTING ROADWAY/DRIVEWAY (AS SHOWN ON THE PLANS OR AS DIRECTED BY THE AOTR/COR) SHALL BE INCIDENTAL TO BID ITEM 20102-0000. ANY REQUIRED AGGREGATE BASE AND/OR ASPHALT MATERIAL SHALL BE PAID FOR UNDER THE APPROPRIATE BID ITEMS FOR THIS WORK AS SHOWN IN THE BID SCHEDULE.

12.

THE CONTRACTOR SHALL BE REQUIRED TO OBLITERATE ALL EXISTING ABANDONED TURNOUTS AND ROADWAY WITHIN THE RIGHT-OF-WAY LIMITS, AND ANY EXISTING TURNOUTS/ROADWAY OUTSIDE OF THE RIGHT-OF-WAY THAT ARE DESIGNATED ON THE PLANS FOR OBLITERATION. OBLITERATION SHALL BE AS PER FP-03, METHOD 2. SCARIFICATION SHALL BE TO A DEPTH OF 12-INCH OF THE SCARIFIED SURFACE SHALL BE LEFT ROUGH, WITH 4-INCH TO 12-INCH HIGH RIDGES PERPENDICULAR TO THE EXISTING ROAD CENTERLINE. ROADWAY OBLITERATION INCLUDES GRADING DRAINAGE CHANNELS ACROSS THE OLD ROADBED, TO RE-ESTABLISH NATURAL DRAINAGE CHANNELS AND/OR TO OPEN CHANNELS FOR THE NEWLY INSTALLED (IN NEW ROADWAY) DRAINAGE STRUCTURES. THIS WORK TO BE INCLUDED IN THE BID ITEM 21102-2000. PERMANENT SEEDING AND STRAW MULCHING SHALL BE APPLIED TO ALL AREAS WITHIN THE CONSTRUCTION LIMITS. SEEDING AND MULCHING TO BE PAID UNDER ITEM 62510-1000.
13.

STRUCTURAL EXCAVATION AND BEDDING/BACKFILL OF ALL DRAINAGE STRUCTURES SHALL BE CONSIDERED INCIDENTAL TO THE INSTALLATION OF STRUCTURES. BEDDING AND BACKFILL MATERIAL SHALL MEET ALL REQUIREMENTS OF FP-03, SECTIONS 209 AND 704. APPROVED EXCESS EXCAVATION MATERIAL MAY BE USED TO REBUILD TURNOUTS, EARTHEN DITCH BLOCKS, AND/OR PLACED ALONG ROADWAY SHOULDERS AS EMBANKMENT IN AREAS ADJACENT TO THE REMOVAL AND AS DIRECTED BY THE COR/AOTR.

14.

ALL FURROW AND DRAINAGE DITCHES SHALL BE STAKED AND GRADED TO DRAIN UP TO THE RIGHT-OF-WAY LIMITS. EARTHEN DITCH BLOCKS, DIKES AND DITCHES SHALL BE CONSTRUCTED AS SHOWN ON THESE PLANS AND/OR ADDED AT LOCATIONS DESIGNATED BY THE COR/AOTR. ALL DITCH BLOCKS, DIKES AND FURROW DITCHES SHALL BE PAID FOR UNDER THE APPROPRIATE BID ITEMS FOR THIS WORK AS SHOWN IN THE BID SCHEDULE. AT ALL DRAINAGE PIPE REPLACEMENTS, INSTALLATIONS, EXTENSIONS, AND IN-PLACE PIPE CLEANING LOCATIONS, THE CONTRACTOR SHALL CLEAN, REGRADE, AND RESHAPE THE INLET AND OUTLET CHANNELS TO THE RIGHT-OF-WAY LINE AS DIRECTED BY THE COR/AOTR.

15.

IMMEDIATELY PRIOR TO PLACING EMBANKMENT, AGGREGATE BASE AND/OR RECYCLED MATERIAL, THE TOP 6-INCH OF THE ORIGINAL GROUND, OR FINISHED SUBGRADE (INCLUDING TURNOUTS) SHALL BE CHECKED FOR COMPACTION AND GRADE. IF COMPACTION DOES NOT MEET THE MINIMUM SPECIFIED COMPACTION AND TOLERANCE REQUIREMENTS, THE ORIGINAL GROUND AND/OR SUBGRADE SHALL BE RE-WATERED AND/OR SCARIFIED AS NEEDED AND RE-COMPACTED TO THE REQUIRED DENSITY AND TOLERANCE, AT THE CONTRACTOR'S EXPENSE. IN NO CASE SHALL ANY EMBANKMENT OR SURFACING MATERIAL BE PLACED ON FROZEN, MUDDY OR UNSTABLE NATURAL GROUND OR SUBGRADE.

16.

THE EARTHWORK TABLE SHOWN IS TO ASSIST THE CONTRACTOR IN ESTABLISHING A BID UNDER THE EARTHWORK ITEMS SHOWN IN THE BID SCHEDULE. ANY BORROW MATERIAL CALLED FOR ON THE PLANS SHALL BE TAKEN FROM CONTRACTOR IDENTIFIED SOURCES OUTSIDE THE RIGHT-OF-WAY LIMITS. IT IS THE SOLE RESPONSIBILITY AND EXPENSE OF THE CONTRACTOR TO PROVIDE ANY NECESSARY BORROW MATERIAL FOR THIS PROJECT INCLUDING ALL NECESSARY PERMITS. ALL EXCAVATION, BORROW AND EMBANKMENT MATERIAL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEMS 20401-0000 AND 20403-0000.

17.

THE LOCATION OF UTILITIES AS SHOWN IN THESE PLANS ARE APPROXIMATE AND ARE ONLY TO ASSIST THE CONTRACTOR IN COMPLETING THE WORK. THE CONTRACTOR SHALL CONTACT ALL UTILITY OWNERS PRIOR TO STARTING ANY CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL CONTACT THE ARIZONA BLUE STAKES AT 1-800-782-5348, AND NAVAJO TRIBAL UTILITY AUTHORITY (NTUA) AT (928)-729-5721, PRIOR TO STARTING ANY CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITIES AND THEIR LOCATIONS WITH THE UTILITY OWNERS PRIOR TO CONSTRUCTION. ANY UTILITIES DAMAGED DUE TO NEGLIGENCE OF THE CONTRACTOR SHALL BE RESTORED TO CODE REQUIREMENTS AT THE CONTRACTOR'S EXPENSE.

18.

THE CONTRACTOR SHALL REMOVE, CLEAN, AND STOCKPILE ALL SALVAGEABLE EXISTING CULVERTS, CATTLE GUARDS AND FENCING MATERIALS, ETC., AS CALLED FOR ON THESE PLANS AND SECTIONS 203 AND 607. ALL SALVAGEABLE MATERIALS, EXCEPT THE BNSF AND COUNTY PROPERTY, SHALL BE STOCKPILED IN A DESIGNATED LOCATION FOR COMMUNITY USE. AOTR SHALL COORDINATE THIS WITH BNSF AND COUNTY PROPERTY REMOVED AS PART OF THIS PROJECT SHALL BE OFFERED TO THE COUNTY AND BNSF. IF THEY ACCEPT, THE MATERIAL SHALL BE HAUL AND STOCKPILED INSIDE THE RAILROAD'S PROPERTY LINE FOR BNSF PICK UP. ANY MATERIALS DETERMINED TO BE UNUSABLE BY THE COR/AOTR SHALL BE DISPOSED OF BY THE CONTRACTOR IN ACCORDANCE WITH SECTIONS 107, AND 203. THE SALVAGE WORK SHALL BE INCLUDED IN THE APPROPRIATE UNIT PRICE BID ITEMS FOR SECTIONS 203 AND/OR 607.

19.

THE ROADWAY TYPICAL SECTION SHOWN IS THE BASIC TEMPLATE TO WHICH THE PROJECT IS TO BE STAKED AND BUILT. HOWEVER, THERE WILL BE LOCATIONS WHERE, DUE TO EXISTING GROUND CONDITIONS, TURNOUTS, CULVERTS OR OTHER STRUCTURES, ETC., THE SHOWN TYPICAL SLOPES CANNOT BE CONSTRUCTED. IN THIS CASE, THE NRDOT PLANNING & DESIGN BRANCH CHIEF, THROUGH THE COR/AOTR, SHALL BE CONSULTED FOR CHANGES IN THE TYPICAL SECTIONS, DESIGN SLOPES, AND/OR OTHER ADJUSTMENTS BEFORE PROCEEDING WITH THE WORK UNLESS NOTED OTHERWISE ON THE PLANS. THE FINAL CONSTRUCTED ROAD SECTION SHALL BE BASED ON THE GOVERNMENT FURNISHED COMPUTERIZED STAKING REPORT AS ADJUSTED TO FIT FIELD CONDITIONS. THE CONTRACTOR SHALL STAY WITHIN THE LIMITS OF CONSTRUCTION, UNLESS OTHERWISE APPROVED. IN NO CASE SHALL THE CUT AND FILL BACK SLOPES BE BUILT STEEPER THAN THE MAXIMUM ALLOWED IN THE ROADWAY TYPICAL SECTION SHOWN.

20.

THE CONTRACTOR SHALL SAW CUT (FULL DEPTH) THE EXISTING ASPHALT PAVEMENT (INCLUDING TURNOUTS)WHERE NEW ASPHALT IS TO TIE INTO THE OLD ASPHALT PAVEMENT AT THE LOCATIONS NOTED ON THE PLANS. THE CONTRACTOR SHALL MATCH THE NEW ASPHALTIC CONCRETE PAVEMENT SURFACE TO EXISTING PAVEMENT SECTION AT TIE-IN POINTS AND TO PROVIDE FOR A SMOOTH TRANSITION AS DIRECTED BY THE COR/AOTR. ALL SAWED PAVEMENT EDGES TO RECEIVE ASPHALT TACK COAT. THIS WORK SHALL BE INCIDENTAL TO BID ITEM 40201-0500 AS SHOWN IN THE BID SCHEDULE.

21.

ANY EXISTING OR NEW ROADSIDE FEATURES OR OTHER IMPROVEMENTS NEGLIGENTLY DAMAGED BY THE CONTRACTOR, DURING CONSTRUCTION, SHALL BE RESTORED/REPLACED IN EQUAL OR BETTER CONDITION AT THE CONTRACTOR'S EXPENSE.

22.

REMOVAL AND RE-ATTACHMENT OF FENCING REQUIRED TO COMPLETE SPECIFIED WORK AT DRAINAGE STRUCTURES, CATTLE GUARDS, GATES, TURNOUTS, RIPRAP, ETC, SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEMS RELATED TO THE WORK REQUIRING SAID FENCE REMOVAL/RE-ATTACHMENT. FENCING REPAIRS, TEMPORARY FENCING AND/OR REMOVAL AND RE-ATTACHMENT OF FENCING, SHALL BE COMPLETED IN THE SAME WORK DAY SO AS NOT TO ALLOW LIVESTOCK ONTO THE PROJECT. IF WIRE TENSION IS LOST IN THE EXISTING FENCE, THE CONTRACTOR SHALL RE-TIGHTEN THE FENCE AS DIRECTED BY THE COR/AOTR.

23.

THE CONTRACTOR SHALL REMOVE BIA ROUTE N2007 EXISTING ROADSIDE SIGNS THAT INTERFERE WITH ROAD CONSTRUCTION AND/OR CONTRADICT THE CONTRACTOR'S TEMPORARY TRAFFIC CONTROL PLAN, AT THE START OF THE CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE COR/AOTR AT LEAST THREE (3) WORKING DAYS IN ADVANCE OF SUCH SIGN REMOVAL. THESE ROADSIDE SIGNS SHALL BE SALVAGED AND TAKEN TO THE NEW LANDS MAINTENANCE YARD. SIGNS NEEDED FOR SAFETY/INFORMATION SHALL BE TEMPORARILY RESET AS DIRECTED BY THE COR/AOTR. ALL COUNTY ROUTE SIGNS SHALL BE REMOVED AND STOCKPILED, AND NOTIFY THE MAINTENANCE DEPARTMENT AT (928)-688-2928 FOR MATERIAL PICK UP. THIS WORK SHALL BE CONSIDERED AN INCIDENTAL OBLIGATION OF THE CONTRACTOR.
24.

GRADE AND SHAPE THE SHOULDER AND DITCHES (AS DIRECTED BY COR/AOTR) FROM THE SUBGRADE HINGE POINTS TO AND INCLUDING THE EXISTING DITCH LINE AREAS FOR THE CONSTRUCTION OF RIPRAP DITCH LININGS, SLOPE PROTECTION, AND RUNDOWNS. THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE RIPRAP ITEMS SHOWN IN THE BID SCHEDULE.

25.

AT MAJOR DRAINAGE STRUCTURES AND LIVESTOCK PASS LOCATIONS THAT SPECIFY REPLACING OR INSTALLING WING FENCES, THE CONTRACTOR SHALL TIE WING FENCES TO THE EXISTING STRUCTURES IN ACCORDANCE WITH THE DETAILS ON SHEET _ OF _ IF NO CORNER FENCE POST/BRACE/STRAIN EXISTS AT TIE-IN TO RIGHT-OF-WAY FENCE, THE CONTRACTOR SHALL INSTALL A STRAIN POST ASSEMBLY AS PER PLAN SHEET 28 OF 61. ANY EXISTING CATTLE PASS CLOSURES ARE TO BE REMOVED. THIS WORK TO BE INCIDENTAL TO BID ITEM 61921-1000, AND NO ADDITIONAL PAYMENT SHALL BE MADE.

26.

ALL RIGHT-OF-WAY REFERENCE MARKERS SHALL BE LABELED IN THE ENGLISH UNITS OF MEASURE. ALL EXISTING AND NEW BRASS CAPS SHALL BE STAMPED WITH BOTH ALIGNMENT STATIONING AND ELEVATIONS IN ENGLISH, UNLESS OTHERWISE NOTED UNDER SECTION 152 OF THE SUPPLEMENTAL SPECIFICATIONS. ANY EXISTING R/W MONUMENTS AND BRASS CAPS MISSING SHALL BE RE-SURVEYED IN TO THEIR ORIGINAL POSITION AND LABELED AND STAMPED ACCORDINGLY. ALL EXISTING REFERENCE MARKERS SHALL BE SAND BLASTED, CLEAN, AND REPAINTED WITH ENGLISH STATIONS. ANY MISSING OR DAMAGED MARKERS SHALL BE RE-SURVEYED AND REPLACED. THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEMS 62101-0000 AND 62102-0000.

27.

DUE TO NARROW RIGHT-OF-WAY WIDTHS, THE COMPLETE TURNOUT RADIUS CAN NOT BE CONSTRUCTED AT NUMEROUS TURNOUTS. AT THESE LOCATIONS THE CONTRACTOR SHALL CONSTRUCT THE PLANNED RADIUS, BUT END THE RADIUS AT THE RIGHT-OF-WAY LIMIT. THE ACTUAL TURNOUT WIDTH (AT THE RIGHT-OF-WAY LINE) WILL BE WIDER THAN THE WIDTH GIVEN ON THE PLANS.

28.

THE GEO-TECHNICAL REPORT FOR THIS PROJECT SHALL BE PROVIDED UPON WRITTEN REQUEST FROM THE CONTRACTOR THRU COR/AOTR.

29.

ROADWAY ENDAREA AND PIPE CROSS SECTION DRAWINGS WILL BE PROVIDED IN EITHER HARD COPY OR ELECTRONIC FORMAT UPON WRITTEN REQUEST FROM THE CONTRACTOR THRU CO/AO.

30.

ANY EXISTING MAIL BOXES, ADVERTISING BILLBOARDS, OR HOUSE ADDRESS SIGNS LOCATED ALONG THE ROADWAY PRISM SHALL BE REMOVED AND RE-INSTALLED OUTSIDE OF THE RIGHT-OF-WAY LIMIT OR AS DIRECTED BY THE COR/AOTR. THE CONTRACTOR SHALL NOTIFY THE US-POSTAL SERVICE AND ATTEMPT TO CONTACT ALL AFFECTED RESIDENTS TEN (10) WORKING DAYS PRIOR TO RESETTING MAIL BOX (ES). THIS WORK SHALL BE INCIDENTAL TO BID ITEM 20304-1000.

31.

AT THE COMPLETION OF THE CONSTRUCTION, THE CONTRACTOR SHALL INSPECT THE INTERIOR OF ALL NEWLY INSTALLED OR EXTENDED/CLEANED CULVERTS, CATTLEGUARDS, AND/OR OTHER EXISTING DRAINAGE STRUCTURES. THESE STRUCTURES SHALL BE MAINTAINED IN A CLEAN CONDITION, FREE OF SILT AND OTHER DEBRIS UNTIL FINAL ACCEPTANCE OF THE PROJECT. THIS WORK SHALL BE CONSIDERED AN INCIDENTAL OBLIGATIONS OF THE CONTRACTOR UNDER THE APPROPRIATE BID ITEMS, FOR SECTIONS 602, 603, 607, AND 619.

32.

THERE ARE NUMBER OF LOCATIONS WHERE RIPRAP, CHANNEL FLOWLINE GRADING, TURNOUTS, ETC., WILL REQUIRE WORK AND IMPROVEMENTS PLACED THROUGH AND BEYOND THE RIGHT-OF-WAY FENCING LOCATIONS. IN THESE LOCATIONS, THE RIGHT-OF-WAY FENCING SHALL BE ADJUSTED (POST SPACING, VERTICAL ALIGNMENT, POST INSTALLATIONS THROUGH RIPRAP, RIGHT-OF-WAY MONUMENT/MARKER ADJUSTMENT, ETC.) AS DIRECTED BY THE COR/AOTR. THIS WORK TO BE INCIDENTAL TO BID ITEM 61901-1000, 62101-0000, AND 62102-0000, AND NO ADDITIONAL PAYMENT WILL BE MADE.

33.

IT IS EXPECTED A REVISED/FINAL RIGHTS-OF-WAY GRANT OF EASEMENT BE DEVELOPED DURING THE CONSTRUCTION OF THE N2007 PROJECT. THE CONTRACTOR SHALL NOT SURVEY FOR OR INSTALL R.O.W. MONUMENTS AND MARKERS OR FENCINGS UNTIL EXPRESSLY APPROVED BY THE NRDOT DIVISION MANAGER. RIGHT-OF-WAY FENCING CAN BE PLACED AT ALL ARCHAEOLOGICAL SITES IF SPECIFIED ON THE PLANS.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

GENERAL NOTES


DRAWN BY:Peterson.Yazzie DATE:7/16/2011

DESIGNED BY: NRDOT DATE:7/16/2011

REVISED: 1/31/2013 BY: Peterson.Yazzie

ANNOTATION SCALE: Full Size 1=1

FILENAME: Sht_3_General Notes_ 012813.dgn



ROADWAY AND BRIDGE ESTIMATED QUANTITIES

ITEM NO.	DESCRIPTION	N2007-QUANTITY	Frontage/Access Rd.	RIO PUERCO Bridge	UNIT
10901-0000	Miscellaneous and Extra Work Under Section 109.02(m)	All Req'd.	All Req'd.	All Req'd.	L.S.
15101-0000	Mobilization	All Req'd.	All Req'd.	All Req'd.	L.S.
15201-0000	Construction Survey and Staking	All Req'd.	All Req'd.	All Req'd.	L.S.
15301-0020	Contractor Quality Control	12,165.00	2,000.00	8,000.00	Mon-hr.
15708-1000	Temporary Erosion Control	All Req'd.	All Req'd.	All Req'd.	L.S.
15714-0000	Temporary Straw Mulching	12.40	5.00	0.00	Ac.
20102-0000	Clearing and Grubbing	All Req'd.	All Req'd.	All Req'd.	L.S.
20304-1000	Removal of Structures and Obstructions	All Req'd.	All Req'd.	All Req'd.	L.S.
20401-0000	Roadway Excavation	5,866.99	719.64	0.00	C.Y.
20403-0000	Borrow Excavation *	104,309.80	0.00	9,868.00	C.Y.
20410-2000	Furrow Ditches and Ditch Blocks	500.00	0.00	0.00	L.F.
20425-2000	Channel Reshaping, 3 ft. wide	0.00	369.00	0.00	L.F.
20601-0000	Development of Water Supply	4.82	0.03	0.00	M-Gal.
25101-2000	Placed Riprap Class 2	38.84	27.00	0.00	C.Y.
25112-3000	Articulated Concrete Block Revetment Type CC20	0.00	0.00	2,846.00	S.Y.
25302-1000	Gabions, Galvanized Coated, Class 2	0.00	0.00	721.00	C.Y.
30101-2000	Aggregate Base Course, Grading Special	8,084.18	710.44	0.00	Ton
30413-1000	Aggregate Base Course, Stabilization, Roadbond, EN-1	21,431.00	0.00	0.00	S.Y.
40201-0500	Hot Asphalt Concrete Pavement, Class B, Grade B, Type III Smoothne	3,896.04	266.25	0.00	Ton
40502-0800	Asphalt Cement Grade PG 58-28	233.71	16.13	0.00	Ton
41101-5000	Prime Coat, Grade PPE	29.58	2.88	0.00	Ton
55201-0200	Structural Concrete, Class A(AE)	0.00	0.00	1,888.00	C.Y.
55301-2000	Precast Prestressed Structural Member, BT-72, 130'-5' long girde	0.00	0.00	12.00	Ea.
55301-2010	Precast Prestressed Structural Member, BT-72, 129'-4' long girde	0.00	0.00	12.00	Ea.
55401-1000	Reinforcing Steel, Grade 60	0.00	0.00	238,029.00	Lb.
55401-2000	Epoxy Coated Reinforcing Steel, Grade 60	0.00	0.00	183,346.00	Lb.
56501-0600	Drilled Shafts, 4'-0" diameter	0.00	0.00	507.00	L.F.
56501-0800	Drilled Shafts, 5'-0" diameter	0.00	0.00	407.00	L.F.
60201-0810	24" Corrugated Steel Pipe Culvert	178.00	0.00	0.00	L.F.
60201-0910	36" Corrugated Steel Pipe Culvert	212.00	0.00	0.00	L.F.
60202-0510	28" Span x 20" Rise, Corrugated Steel Pipe Arch	0.00	142.00	0.00	L.F.
60202-0610	35" Span x 24" Rise, Corrugated Steel Pipe Arch	70.00	0.00	0.00	L.F.
60210-0810	End Section for 24" CSPC	5.00	0.00	0.00	Ea.
60210-1010	End Section for 36" CSPC	2.00	0.00	0.00	Ea.
60211-0910	End Section for 28" Span, 20" Rise CSPA	0.00	6.00	0.00	Ea.
60211-1010	End Section for 35" Span, 24" Rise CSPA	1.00	0.00	0.00	Ea.
60701-1000	Removing, Cleaning, and Stockpiling Salvageable Culverts	448.00	0.00	0.00	L.F.
60801-0500	Paved Waterway, Type 5	0.00	847.00	0.00	S.F.
61701-1250	Guardrail System: SGR04b, Type PDE02 w/ ET Plus	1,178.00	0.00	0.00	L.F.
61707-0000	Guardrail System: Thrie Beam Transition at Bridge	0.00	0.00	75.00	L.F.
61711-5000	Permanent Crash Attenuator, QUADGUARD or Approved equal	0.00	0.00	2.00	Ea.
61801-1000	Concrete Barrier	40.00	0.00	0.00	L.F.
61901-1000	Fence, 5 Strand Barbed Wire	5,900.00	0.00	0.00	L.F.
61901-1300	Fence, Chain Link, Bridge, Pedestrain, Curved 6"-6"	0.00	0.00	552.00	L.F.
61901-1800	Fence, Chain Link, Bridge, Pedestrain, Stright 5"-0"	0.00	0.00	552.00	L.F.
61901-2100	Fence, Chain Link 7 ft. High, with 2-12 ft. Swinging Gates (maint	0.00	150.00	0.00	L.F.
61901-3400	Temporary Safety Fence, HDPE-Type	200.00	0.00	0.00	L.F.
61902-0010	16 ft. wide Turnout w/ out gate	9.00	0.00	0.00	Ea.
61902-0020	24 ft. wide Turnout w/ out gate	7.00	0.00	0.00	Ea.
61902-1300	14 ft. wide Turnout w/ Type I Gate Only	1.00	1.00	0.00	Ea.
61902-1600	Gate, Metal, 20 Ft. Width, Type III	0.00	1.00	0.00	Ea.
61903-0710	18 ft. Type 3 Locking Gate	1.00	0.00	0.00	Ea.
61903-0810	40 ft. wide Turnout	1.00	0.00	0.00	Ea.
61903-1210	Cattleguard, 4 Unit, 30 ft. wide w/ out gate	3.00	0.00	0.00	Ea.
61921-1000	Remove and reset fence	675.00	0.00	0.00	L.F.
62101-0000	Right-of-Way Monument	21.00	0.00	0.00	Ea.
62102-0000	Reference Marker	21.00	0.00	0.00	Ea.
62510-1000	Seeding, Dry Method	8.50	0.00	0.00	Ac.
62901-1100	Erosion Control Matting, Type IV	2,723.00	0.00	0.00	S.Y.
63302-0003	Sign Installation, 1 Post and Hardware: 2.75 lb/ft.	38.00	0.00	0.00	S.F.
63302-0010	Sign Installation, 2 Posts and Hardware: 2.00 lb/ft.	41.65	0.00	0.00	S.F.
63308-2000	Object Markers, Flexible, Type 2	6.00	0.00	0.00	Ea.
63308-3000	Object Markers, Type 3, w/ 1- Post and Hardware, 2.00 lb/ft.	0.00	0.00	4.00	Ea.
63309-0010	Delineators, Flexible, Type "1a"	10.00	0.00	0.00	Ea.
63309-0020	Delineators, Flexible, Type "1b"	5.00	0.00	0.00	Ea.
63318-1000	Mile Markers, w/ 1 Post and Hardware; 2.00 lb/ft.	4.00	0.00	0.00	Ea.
63401-1510	Pavement Markings, Type "H", Solid Yellow	2,383.00	522.62	0.00	L.F.
63401-1520	Pavement Markings, Type "H", Solid White	9,650.00	0.00	0.00	L.F.
63401-1610	Pavement Markings, Type "H", Broken Yellow	6,661.00	0.00	0.00	L.F.
63501-0000	Temporary Traffic Control	All Req'd.	All Req'd.	0.00	L.S.
63502-3000	Temporary Traffic Control, Raised Pavement Markers, Yellow	700.00	0.00	0.00	Ea.
63509-1000	Flaggers	15,233.00	1,033.00	0.00	Mon-hr.

ITEM 61921-0000 - REMOVE AND RESET FENCE @ 675 L.F.

STATION TO STATION	LOCATION	REMARKS
20+50.0 to 23+75	Lt.	Remove/reset 325' barbed wire fence for BNSF service road
26+65.00	Lt. & Rt.	Remove 350' existing barbed wire fence, as necessary for construction activities. Reset fence under new bridge & across the removed bridge location. Tie reset fence onto existing fence.

ITEM 61901-2100 - CHAIN LINK FENCE w/2-12' SWINGING GATE

STATION TO STATION	LOCATION	DESCRIPTION
23+40.00 to 24+90.00	Left	150' install new chain link fence 2-12' swinging gates
TOTAL:		299 L.F.

ITEM 62901-1100 - EROSION CONTROL MATTING, TYPE IV

STATION	LOCATION	HEIGHT	LENGTH	2:1Factor	QUANTITY (S.Y.)
21+30. to 23+50	Lt.	17.18 Avg.	220	0.7071	296.86
21+30. to 24+68	Rt.	23.09 Avg.	338	0.7071	613.17
30+15. to 33+60	Lt.	33.46 Avg.	344.77	0.7071	906.35
21+30. to 24+68	Rt.	33.46 Avg.	344.77	0.7071	906.35
TOTAL:					2,722.72 S.Y.

Description:	Location:	Offset:	New aggregate base course (ton)	Aggregate stabilization Roadbond (S.Y.)	HACP (ton)	Asphalt Portland Cement (ton)	Asphalt Prime coat (ton)	Remark:
0+69.88 - 21+30.32	mainline	centerline	2,814.20	8,149.00	1,309.00	78.50	9.70	regular roadway section.
21+30.32 - 21+50.00	mainline	centerline	30.80	90.00	14.60	0.90	0.10	tapered guardrail section.
21+50.00 - 23+65.50	mainline	centerline	379.30	1,122.00	182.40	10.90	1.30	constant guardrail section.
23+65.50 - 24+43.00	mainline	centerline	132.30	411.00	68.60	4.10	0.50	tapered guardrail section on left side.
24+43.00 - 24+83.00	mainline	centerline	72.90	227.00	37.90	2.30	0.30	constant guardrail section to Beginning of Bridge.
30+07.50 - 30+47.50	mainline	centerline	72.90	227.00	37.90	2.30	0.30	Ending of Bridge to constant guardrail section.
30+47.50 - 31+25.00	mainline	centerline	132.30	411.00	68.60	4.10	0.50	tapered guardrail section on left side.
31+25.00 - 33+40.50	mainline	centerline	379.30	1,122.00	182.40	10.90	1.30	constant guardrail section.
33+40.50 - 33+60.18	mainline	centerline	30.80	90.00	14.60	0.90	0.10	tapered guardrail section.
33+60.18 - 57+82.74	mainline	centerline	3,308.80	9,582.00	1,539.10	92.30	11.40	regular roadway section.
turnout	3+40	left	64.00	0.00	39.00	2.37	0.36	40 ft wide x 34 ft driveway to business.
turnout with type 1 gate	8+27	right	32.33	0.00	19.17	1.15	0.18	14 ft wide x 34 ft turnout.
turnout	11+41	left	32.33	0.00	19.17	1.15	0.18	16 ft wide x 34 ft turnout.
turnout	11+71	right	32.33	0.00	19.17	1.15	0.18	16 ft wide x 34 ft turnout.
turnout	12+30	right	42.91	0.00	26.28	1.58	0.24	24 ft wide x 34 ft turnout.
turnout	12+65	left	32.33	0.00	19.17	1.15	0.18	16 ft wide x 34 ft turnout.
turnout	13+34	right	42.91	0.00	26.28	1.58	0.24	24 ft wide x 34 ft turnout.
turnout	14+40	right	42.91	0.00	26.28	1.58	0.24	24 ft wide x 34 ft turnout.
turnout	14+50	left	42.91	0.00	26.28	1.58	0.24	24 ft wide x 34 ft turnout.
turnout	15+16	right	32.33	0.00	19.17	1.15	0.18	16 ft wide x 34 ft turnout.
turnout	15+85	right	32.33	0.00	19.17	1.15	0.18	16 ft wide x 34 ft turnout.
turnout	15+85	left	32.33	0.00	19.17	1.15	0.18	16 ft wide x 34 ft turnout.
turnout	16+55	right	32.33	0.00	19.17	1.15	0.18	16 ft wide x 34 ft turnout.
turnout	17+25	left	42.91	0.00	26.28	1.58	0.24	24 ft wide x 34 ft turnout.
turnout	17+25	right	32.33	0.00	19.17	1.15	0.18	16 ft wide x 34 ft turnout.
turnout	17+94	right	32.33	0.00	19.17	1.15	0.18	16 ft wide x 34 ft turnout.
turnout	19+75	right	42.91	0.00	26.28	1.58	0.24	24 ft wide x 34 ft turnout to old HWY666
turnout	19+75	left	42.91	0.00	26.28	1.58	0.24	24 ft wide x 34 ft turnout to BNSF service road.
turnout with type 2 gate.	37+00	right	42.91	0.00	26.28	1.58	0.24	24 ft wide x 34 ft turnout with 3-unit cattleguard.
subtotal:			8,084.18	21,431.00	3,896.04	233.71	29.58	
0+17.38 - 5+75.00	Frontage	centerline	444.60	0.00	143.90	8.60	1.60	Frontage and Access Road
5+75.00 - 8+32.00	Access	centerline	150.60	0.00	46.90	2.80	0.50	Frontage and Access Road
turnout	14+35	left	42.91	0.00	26.28	1.58	0.24	24 ft wide x 80 ft
turnout with type 1 gate	4+80	left	32.33	0.00	19.17	1.15	0.18	14 ft wide x 10 ft
turnout	5+30	left	20.00	0.00	15.00	1.00	0.18	24 ft wide x 10 ft to BNSF service building.
turnout	6+35.62	left	20.00	0.00	15.00	1.00	0.18	24 ft wide x 20 ft to BNSF track.
subtotal:			710.44	0.00	266.25	16.13	2.88	
grand total:			8,794.62	21,431.00	4,162.29	249.84	32.46	

ITEM 20304-1000 - REMOVAL OF STRUCTURE & OBSTRUCTIONS

STATION	LOCATION	REMARKS
3+55.00	Left.	Remove and salvage metal post & wing fences at T.O. Set fence material out side R/W line.
8+27.00	Right	Remove existing cattleguard and foundation
19+25.00	Centerline	Remove existing 4-unit cattleguard & tie-in fencing back to R/W lines.
20+40.71	3.76 Rt.	Remove existing sign
20+30.00 to 24+90.00	Left	Remove meandering 465' barbed wire fence
23+80.00 to 24+90.00	Left	Remove 110' temporary chainlink fence segments
25+05.00	Right	Remove ±160' of BNSF barbed wire fencing
25+05.00	Right	Remove ±100' of BNSF barbed wire fencing
28+50.00 to 30+00.00	Left	Remove existing bridge SEE NOTE #15 on SHEET B-1
31+60.00	Rt. & Lt.	Remove ±400' of BNSF property barbed wire fencing
24+15.00	Left	Remove 2'x3' Steel Metal Gate & 2-14"x ±160' pipe
DETOUR - FRONTAGE ROAD		
5+35.00	Left.	Remove 10'x12' concrete slab at West Entrance of Service Building off Frontage Road
25+40±	Left	Relocate existing drainage pipes 18' Left under new Detour Road.

ITEM 20401-0000 - EARTHWORK QUANTITIES

STATION - STATION	CUT (yd³)	FILL (yd³)	BORROW (yd³)	WASTE (yd³)
0+69.88 to 21+60.15	4,281.25	4,281.25	0	0
21+60.15 to 24+83.0	0	32,790.48	0	0
*** EXCEPTION - BRIDGE ***				
30+07.50 to 57+82.7	1,585.74	73,105.05	71,519.32	0
Sub-total:				
		5,866.99	110,176.78	104,309.80
*** MAINTENANCE/DETOUR ROAD ***				
0+17.38 to 01+32.5	41.16	41.15	0	0
01+32.52 to 8+32	678.48	154.97	0	523.50
Sub-total:		719.63	196.13	523.50
TOTAL:		6,586.63	110,372.91	104,309.80

* 20% Shrinkage Factor applied

ITEM 61902-0010 - 16' TURNOUT NO GATE -9 REQ'D.

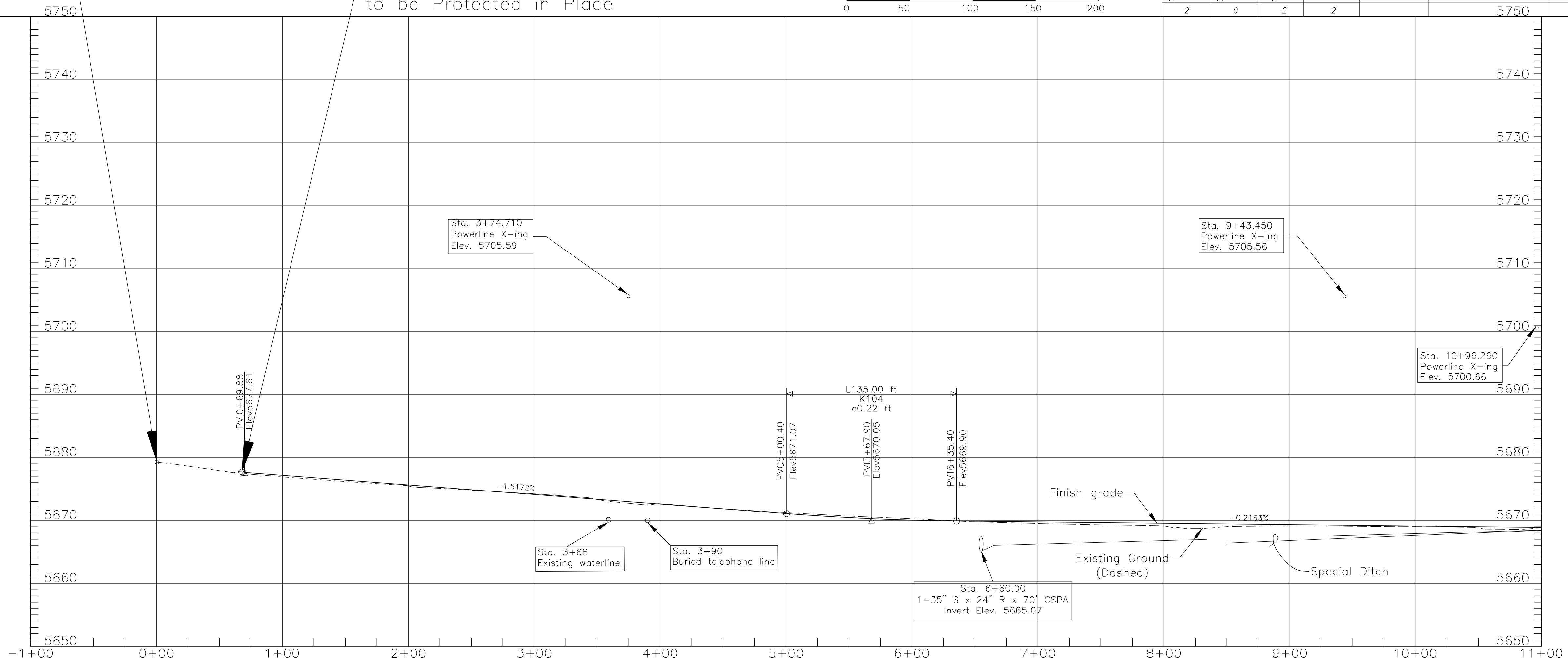
STATION	LOCATION	DESCRIPTION
11+41.00	Lt.	Reconstruct 16' turnout
11+71.00	Rt.	Reconstruct 16' turnout
12+65.00	Lt.	Reconstruct 16' turnout
15+16.00	Rt.	Reconstruct 16' turnout to match existing concrete driveway
15+85.00	Lt.	Reconstruct 16' Turnout
15+85.00	Rt.	Reconstruct 16' turnout to match existing concrete driveway
16+55.00	Rt.	Reconstruct 16' turnout to match existing concrete driveway
17+25.00	Rt.	Reconstruct 16' turnout to match existing concrete driveway
17+94.00	Rt.	Reconstruct 16' turnout to match existing concrete driveway

ITEM 61902-0020 - 24' TURNOUT NO GATE - 7 REQ'D.

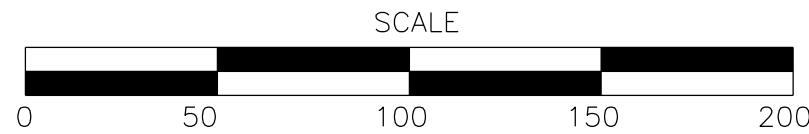
STATION	LOCATION	DESCRIPTION
12+30.00	Rt.	Reconstruct 24' turnout
13+66.00	Rt.	Reconstruct 24' turnout to match existing concrete driveway
14+40.00	Rt.	Reconstruct 24' turnout to match existing concrete driveway
14+50.00	Lt.	Reconstruct 24' turnout to New Lands Office
17+25.00	Lt.	Reconstruct 24' turnout
19+75.00	Rt.	Reconstruct 24' turnout
19+75.00	Lt.	Reconstruct 24' turnout @ 113 degree skew
MAINTENANCE ROAD - 24' TURNOUT NO GATE		
1+35.00*	Lt.	Reconstruct 24' turnout to Old Hwy. 66
5+30.00*	Lt.	Reconstruct 24' turnout to BNSF Service Building
6+35.62*	Lt.	Re

I:\DESIGN\Users\DESIGN2\CURRENT PROJECT_093008\N00_New Lands\N2007(1-1)2&4_092308\N2007 Plans 01-18-2013\

Sta. 0+00.00 Route N2007
CL-40 Frontage Road



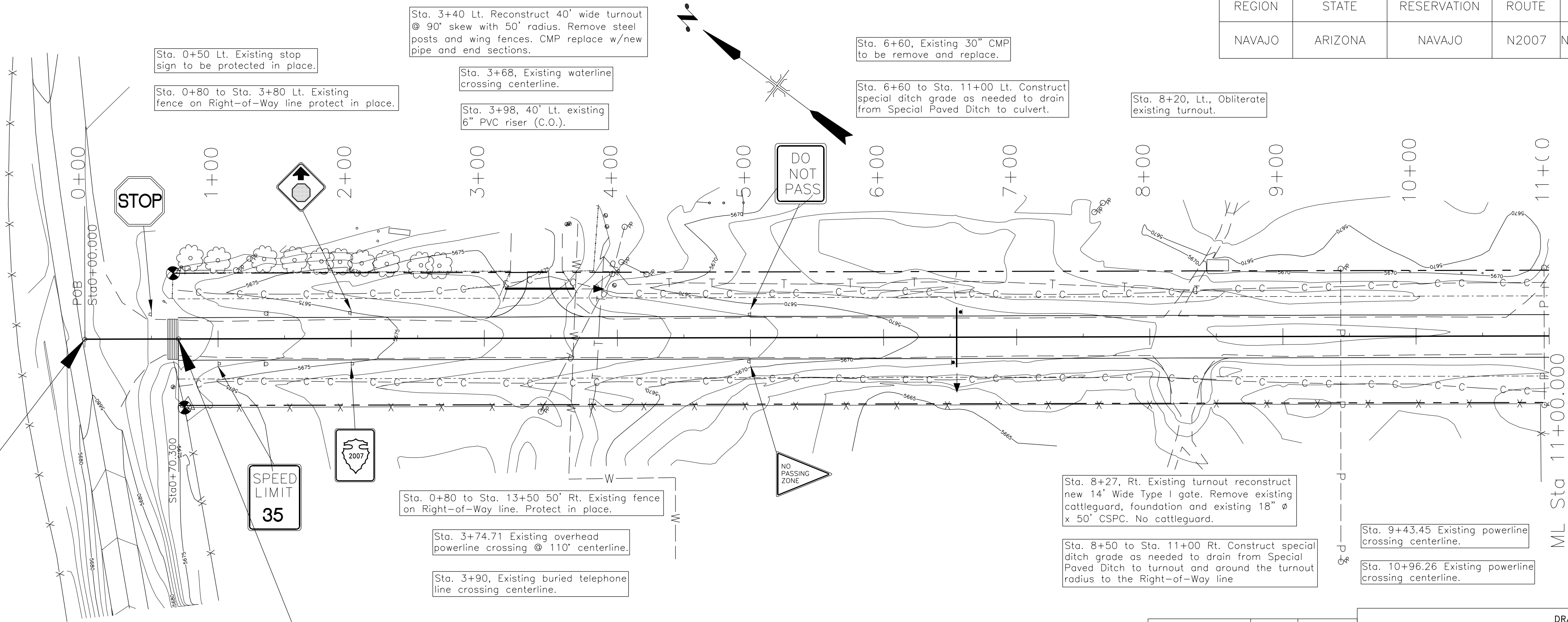
B.O.P. Station 0+69.88
Existing 5-Units Cattleguard
to be Protected in Place



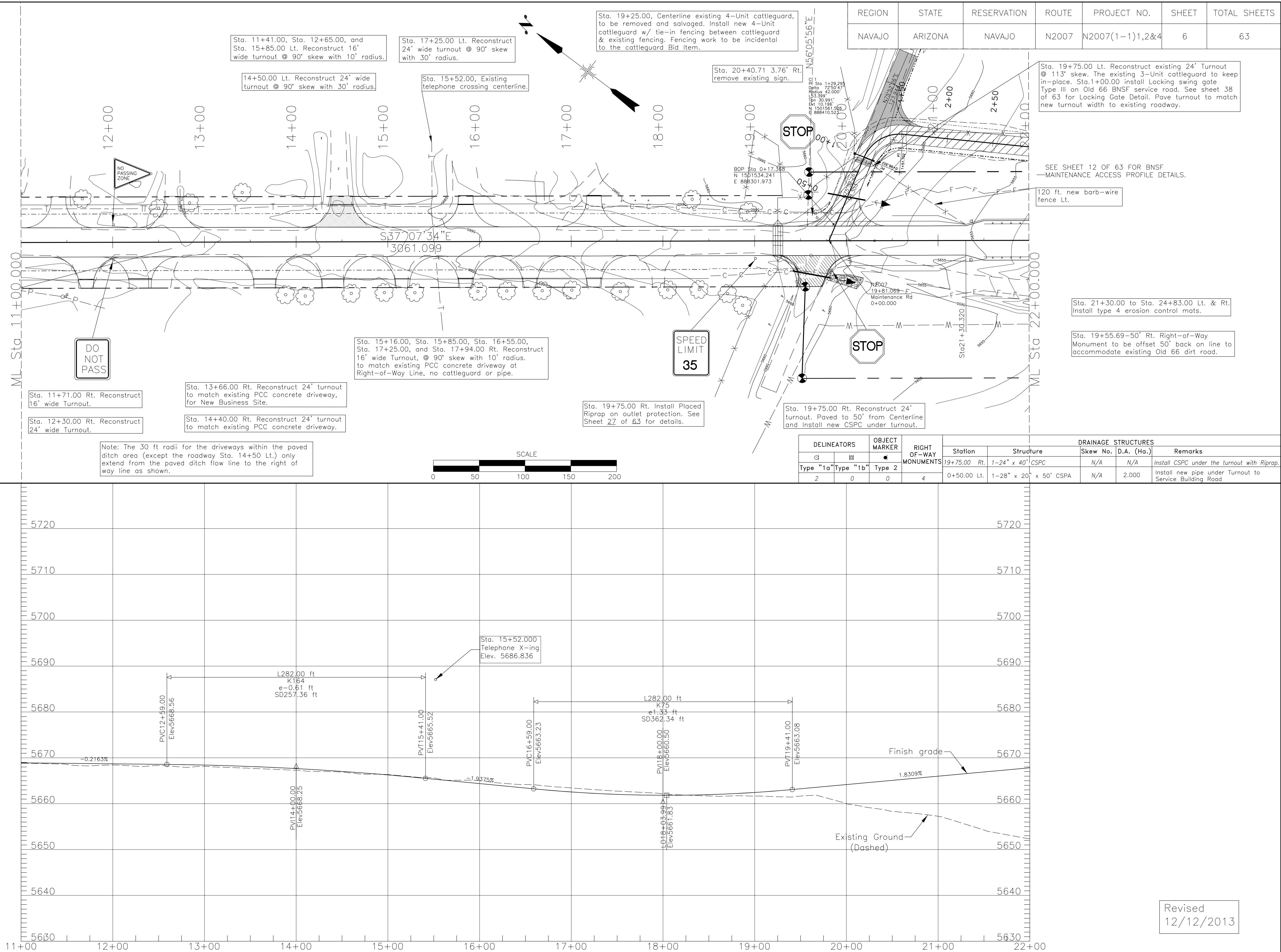
DELINEATORS		OBJECT MARKER	RIGHT OF-WAY MONUMENTS
Type "1a"	Type "1b"	Type 2	
2	0	2	2

DRAINAGE STRUCTURES				
Station	Structure	Skew No.	D.A. (Ha.)	Remarks
3+55.00	1-24" x 68' CSPC	90°	N/A	Under I.O.-Lt.
6+60.00	1-35" S x 24" R x 70' CSPC	90°	N/A	Remove/Salvaged Existing 30" CSPC

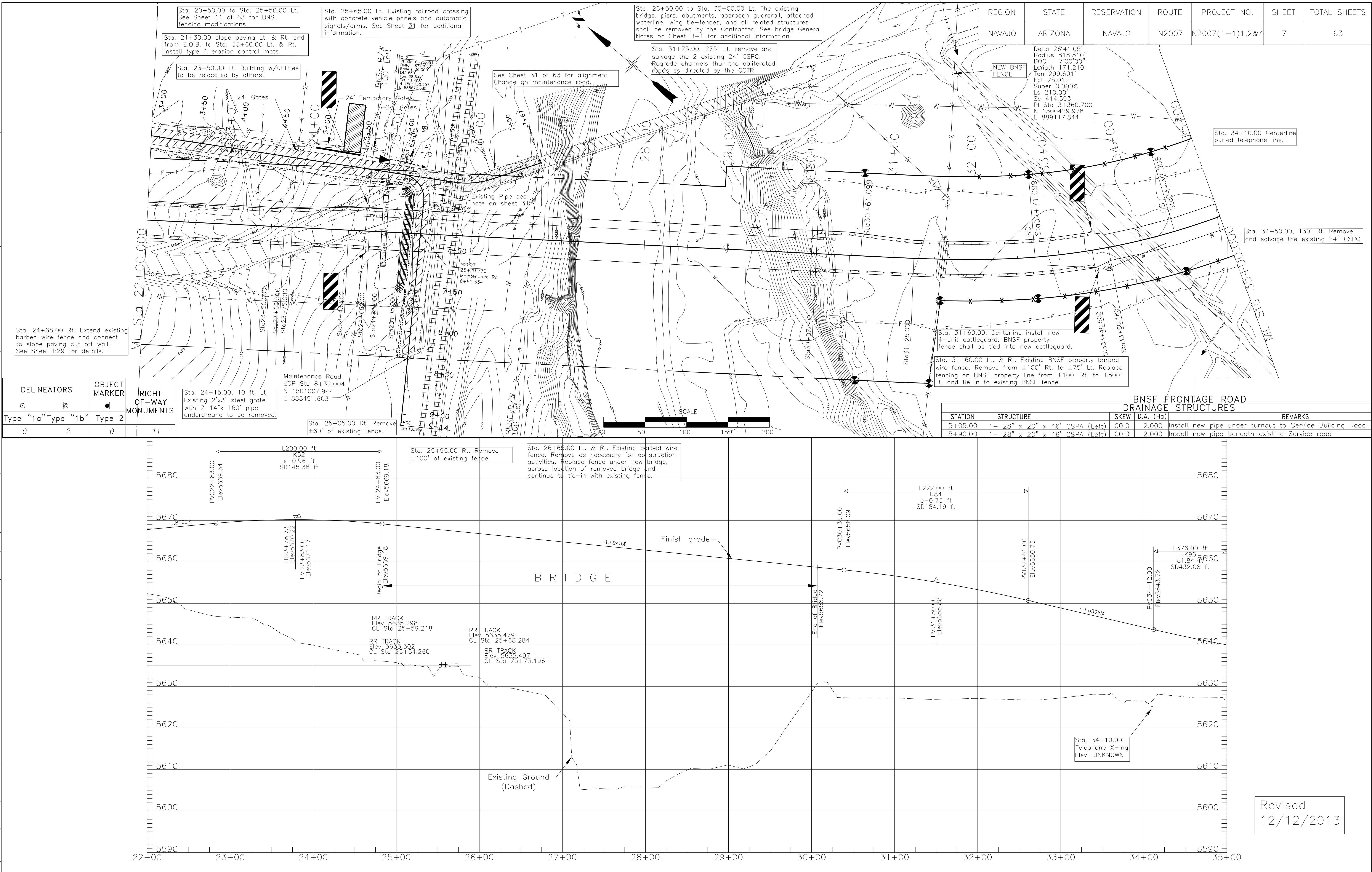
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N2007	N2007(1-1)1,2&4	5	63



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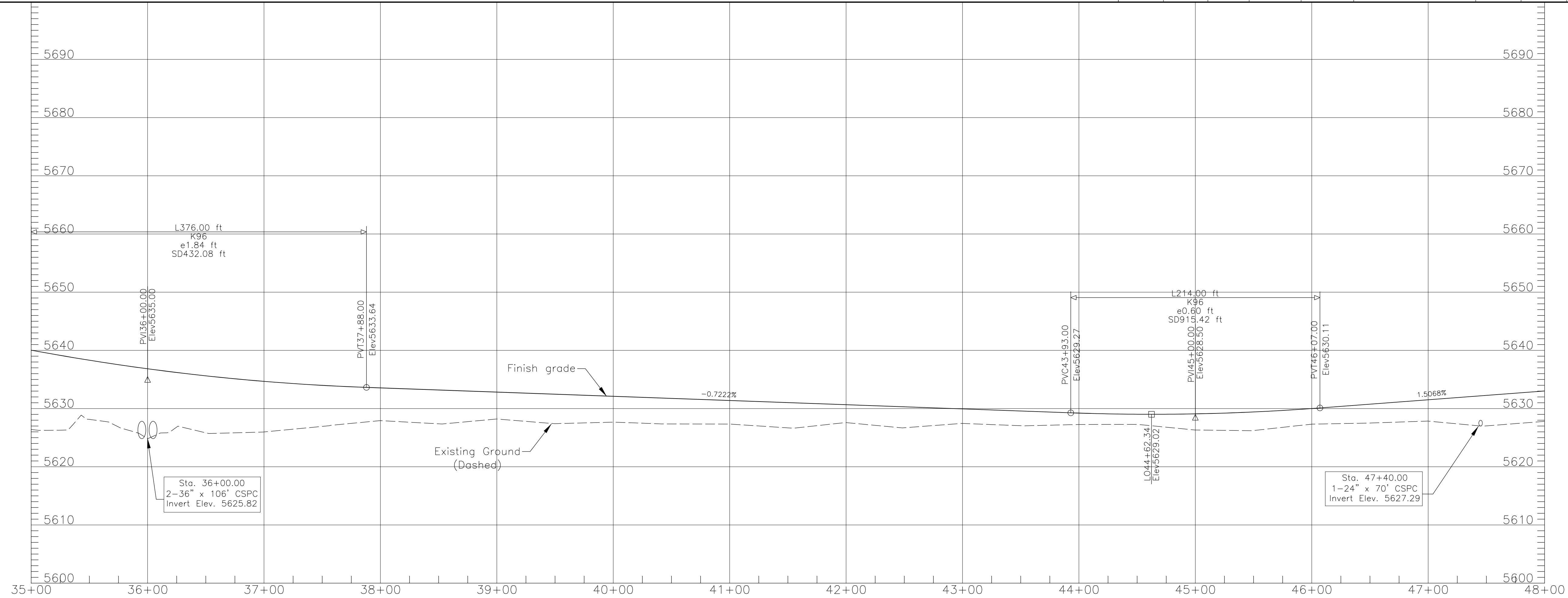
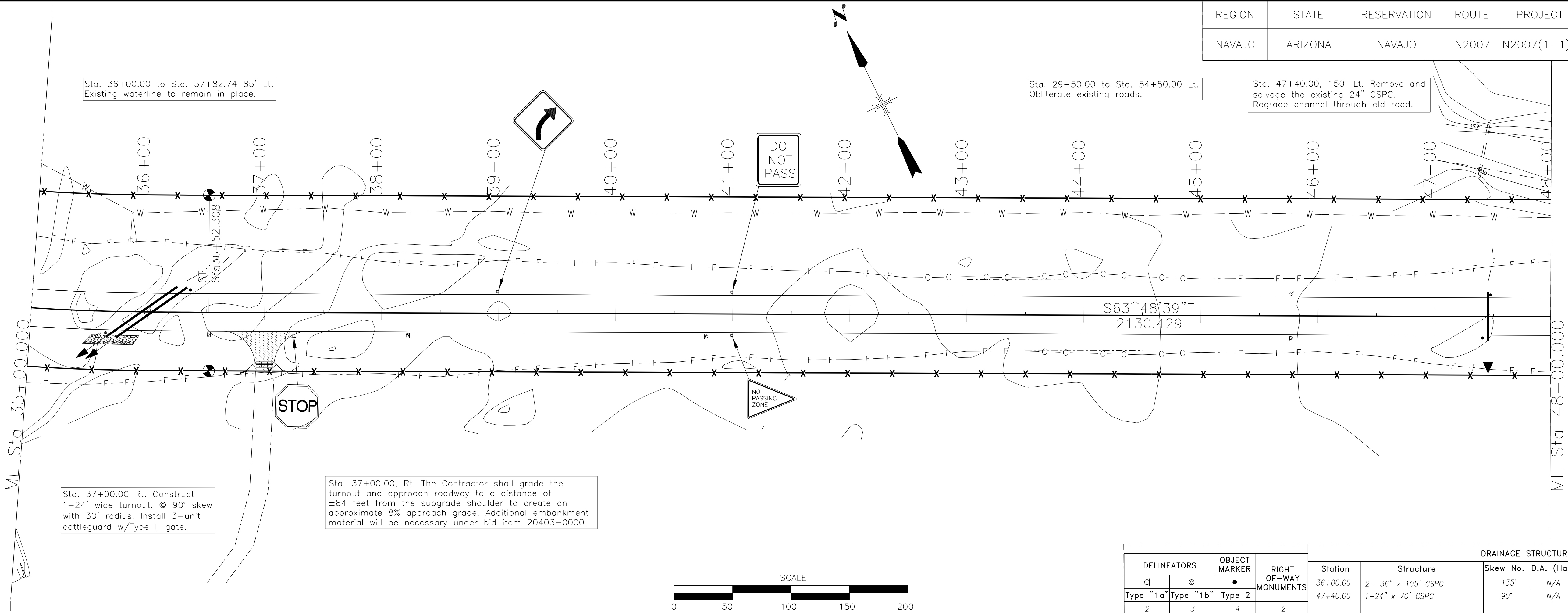


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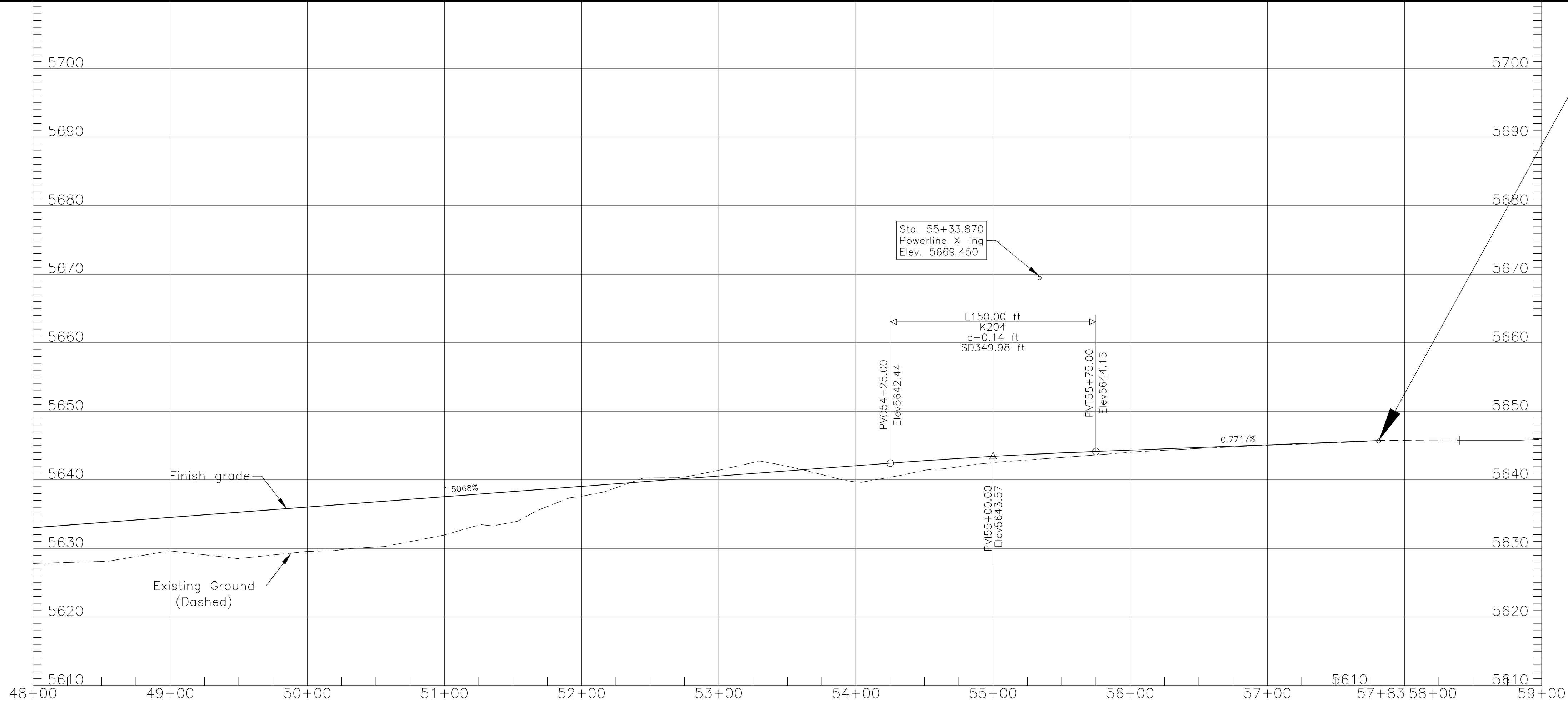
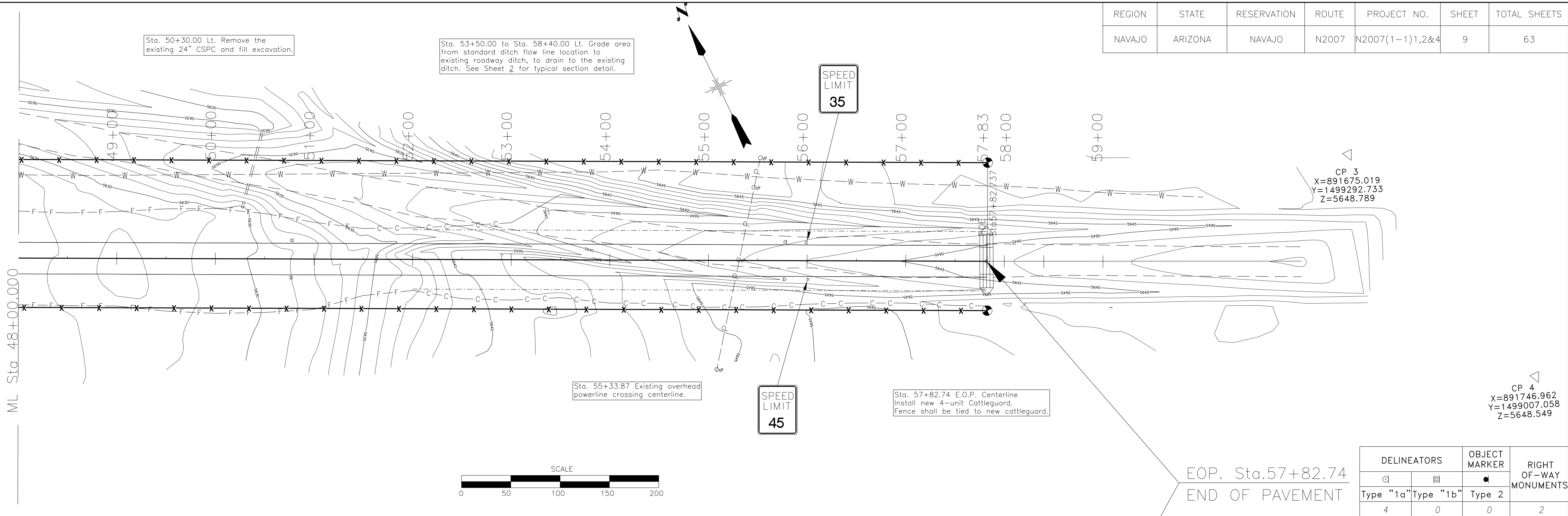


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REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N2007	N2007(1-1)1,2&4	8	63



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Sta. 57+82.74 to Sta. 58+40.00 Lt. & Rt.
Taper new roadway template to existing
28 ft. wide asphalt roadway. Sawcut
Existing Pavement, Grade and shape
ditch line tie in as needed for drainage.

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REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N2007	N2007(1-1)1,2&4	10	63

* SPC-NAD83-AZ-E
CSF: 1.0003293134 (0.9996708050) U.S. SURVEY FOOT

N2007 HORIZONTAL ALIGNMENT TABLE REPORT *

Point Type	Station	Direction	Style:	Northing	Easting	Radius	Length	Delta / Theta	Rotation Direction
POB	00+00.000		Tangent	1,503,109.49	887,089.42				
TS	30+61.099	S37°07'34"E	Tangent	1,500,668.85	888,937.01				
TS	30+61.099	S37°07'34"E	Clothoid	1,500,668.85	888,937.01				
SPI	32+01.220		Clothoid	1,500,557.13	889,021.59		210.00	7°21'00"	Left
SC	32+71.099		Clothoid	1,500,507.11	889,070.71				
SC	32+71.099		Arc	1,500,507.11	889,070.71				
PI	33+57.017		Arc	1,500,445.80	889,130.90	818.51	171.21	11°59'05"	Left
CC			Arc	1,501,080.57	889,654.75				
CS	34+42.308	S63°48'39"E	Arc	1,500,398.33	889,202.52				
CS	34+42.308		Clothoid	1,500,398.33	889,202.52				
SPI	35+12.418		Clothoid	1,500,359.59	889,260.95		210.00	7°21'00"	Left
ST	36+52.308		Clothoid	1,500,297.75	889,386.69				
ST	36+52.308	S63°48'39"E	Tangent	1,500,297.75	889,386.69				
POE	57+82.737		Tangent	1,499,357.52	891,298.41				

N2007 FRONTAGE ROAD ALIGNMENT *

DESCRIPT	STATION	DIRECTION	NORTHING (ft)	EASTING(ft)
POB	0+00.000	N 75°52'26" E	1,501,529.971	888,285.138
PC	0+98.303	N 75°52'26" E	1,501,553.962	888,380.469
PI	1+29.295	S 31°16'47" E	1,501,561.526	888,410.523
PT	1+51.702	S 31°16'47" E	1,501,535.039	888,426.614
PC	5+96.511	S 31°16'47" E	1,501,154.886	888,657.566
PI	6+25.054	S 55°52'03" W	1,501,130.493	888,672.385
PT	6+42.141	S 55°52'03" W	1,501,114.478	888,648.760
POE	9+13.599	S 55°52'03" W	1,500,962.160	888,424.063

N2007 CONTROL POINTS *

POINTS DESCRIPTION	STATION	LOCATION OFFSET (FT.)	NORTHING	EASTING	ELEVATION
102	33+56.704	25.012	1500429.978	889117.844	5,627.110
113	33+56.704	25.012	1500843.914	888977.977	5,626.370
122	26+38.067	-194.521	1501123.547	888836.777	5,632.681
129	29+32.510	-203.417	1500894.154	889021.587	5,631.985
808	31+63.893	-73.288	1500633.547	889056.937	5,627.260
CP1	31+52.056	-88.679	1500651.986	889061.887	5,627.424
CP2		50.209	1503016.643	887096.738	5,676.494
CP3			1499292.733	891675.019	5,648.789
CP4			1499007.058	891746.962	5,648.549

** UTILITY CROSSING INFORMATION

STATION	DESCRIPTION	LOCATION	DEPTH	HEIGHT	SKEW	OWNER	REMARKS
1+10.00	Power pole with anchor	50' Left	-	-	-	Navajo Tribal Utility Authority	To Remain in Place
3+68.00	Water Line	CL	3 ft.	-	90°	Navajo Tribal Utility Authority	To Remain in place
3+74.71	Power Line	CL	-	20 ft.	110°	Navajo Tribal Utility Authority	To Remain in Place
3+90.00	Telephone Line	CL	-	-	-	Unknown	To Remain in Place
3+95.00	Power pole	47' Left	-	-	-	Navajo Tribal Utility Authority	To Remain in Place
3+98.00	6-inch PVC Riser	40' Left	-	-	-	Navajo Tribal Utility Authority	To Remain in Place
9+43.45	Power Line	CL	-	20 ft.	90°	Navajo Tribal Utility Authority	To Remain in Place
10+96.26	Power Line	CL	-	20 ft.	90°	Navajo Tribal Utility Authority	To Remain in Place
15+52.00	Telephone Line	CL	-	-	-	Casing may be required	To be relocate by owner
25+00 to 32+00	Water line	Lt. & Rt.	Varies	-	-	Navajo Tribal Utility Authority	To be relocate by owner
25+20.00	Signal control panel and battery box	30', left	-	-	-	BNSF	To Remain In Place
33+40 - 34+40	Buried Telephone Line	Lt. & Rt.	-	-	60°	Table Top Telephone Co.	To Remain In Place
35+50 to 57+83	Water Line	85' Left	3 ft.	-	-	Navajo Tribal Utility Authority	To Remain In Place
55+31.00	Power Line	CL	-	20 ft.	100°	Navajo Tribal Utility Authority	To Remain In Place


** Remarks related to work by owners is work to be required by B.I.A. for Construction of Roadway and Structures. Actual work required / performed by utility owner(s) may vary.

REVISED ON
12/12/2013

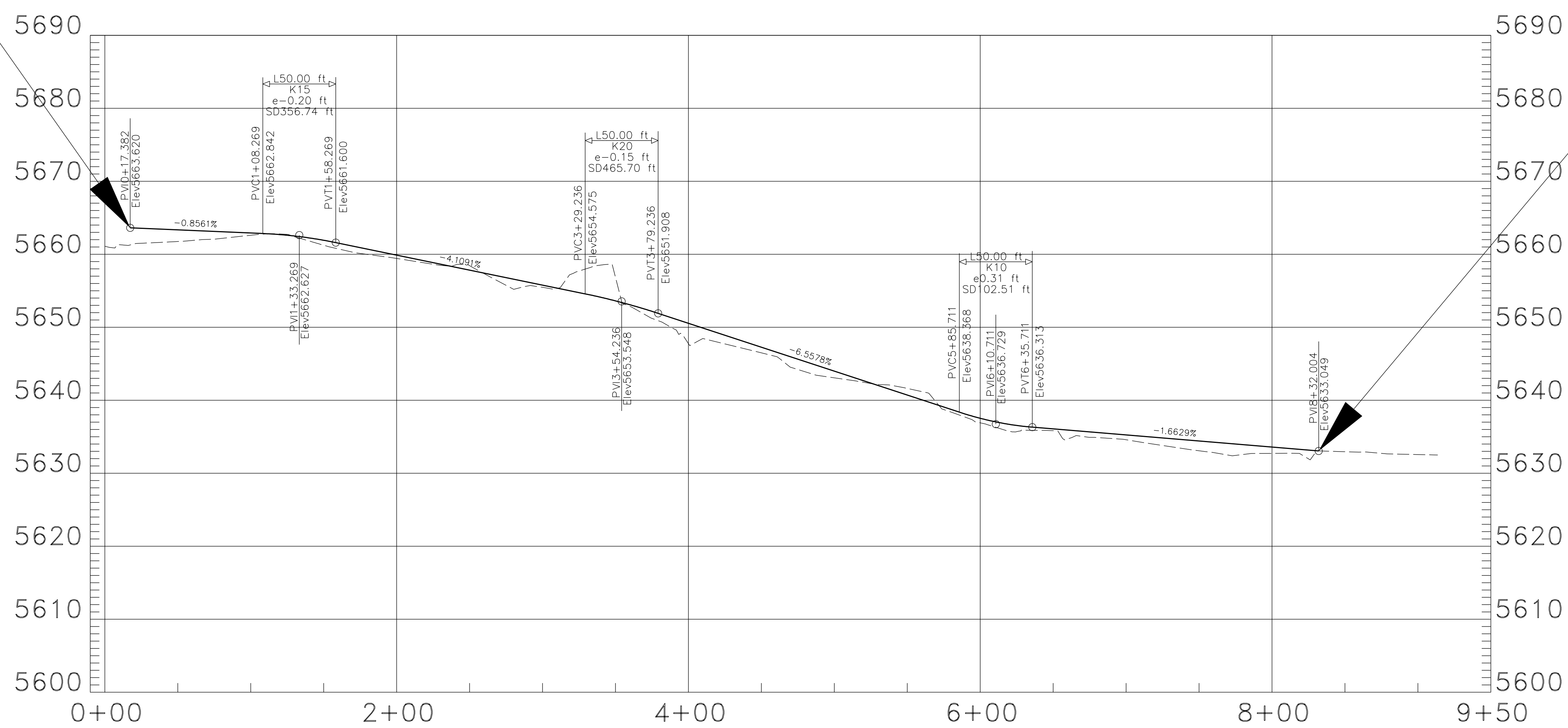
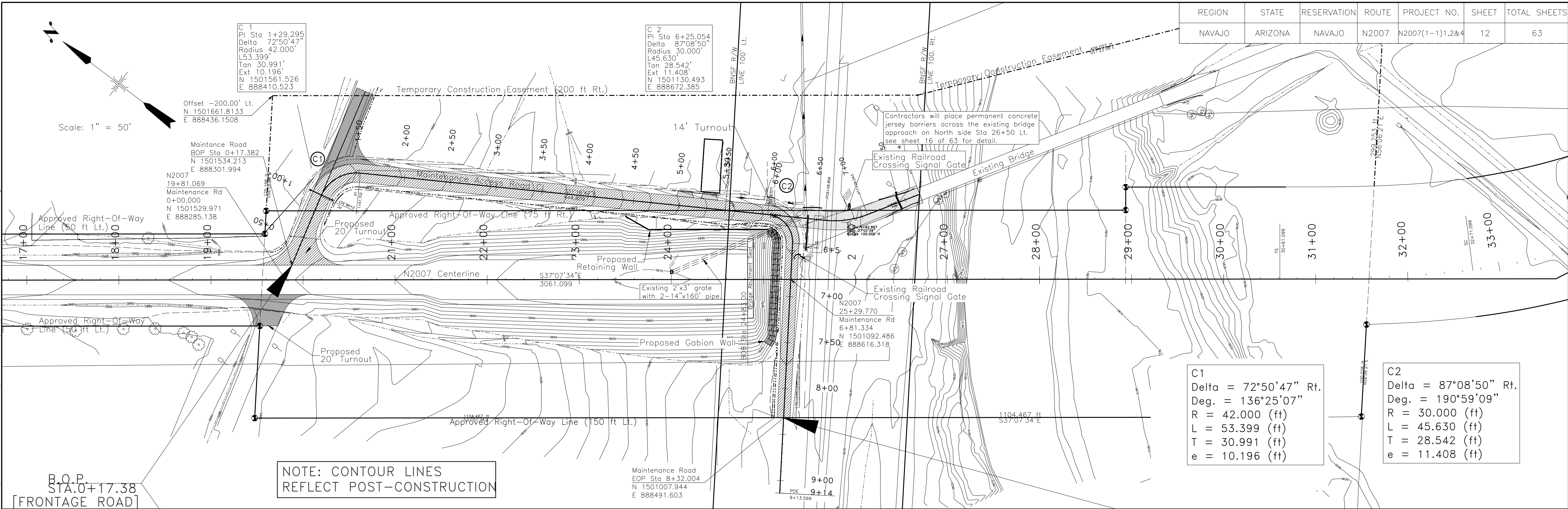
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

ALIGNMENTENT TABLE AND CONTROL
POINTS AND UTILITY CROSSING

DRAWN BY: Peterson.Yazzie DATE: 5/3/2010
DESIGNED BY: NRDOT DATE: 5/3/2010
REVISED: 1/25/2013 BY: Peterson.Yazzie
ANNOTATION SCALE: 1:10
FILENAME: Sht.10_Alignment Table.dgn



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LEGEND	
	Existing Railroad X-ing Signal Gate
	Existing Waterline Valve
	Existing Traffic Signs
	Concrete Pad At Railroad X-ing
	Waterline
	Fence
	Existing Road
	Right-Of-Way Line
	Temporay Construction Easement
	Proposed Roadway CL
	Railroad Tracks
	Existing Ditch Bottom
	Existing Guardrail
	Telephone Line
	Existing Concrete Pipe With Headwalls
	Flow or Drainage Line

Revised
12/12/2013

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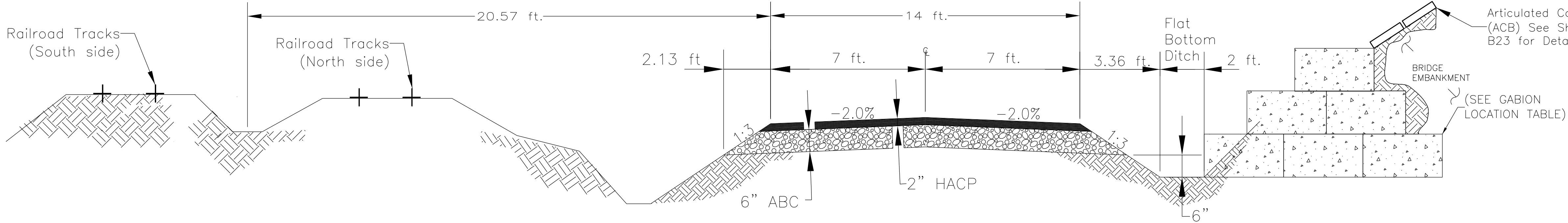
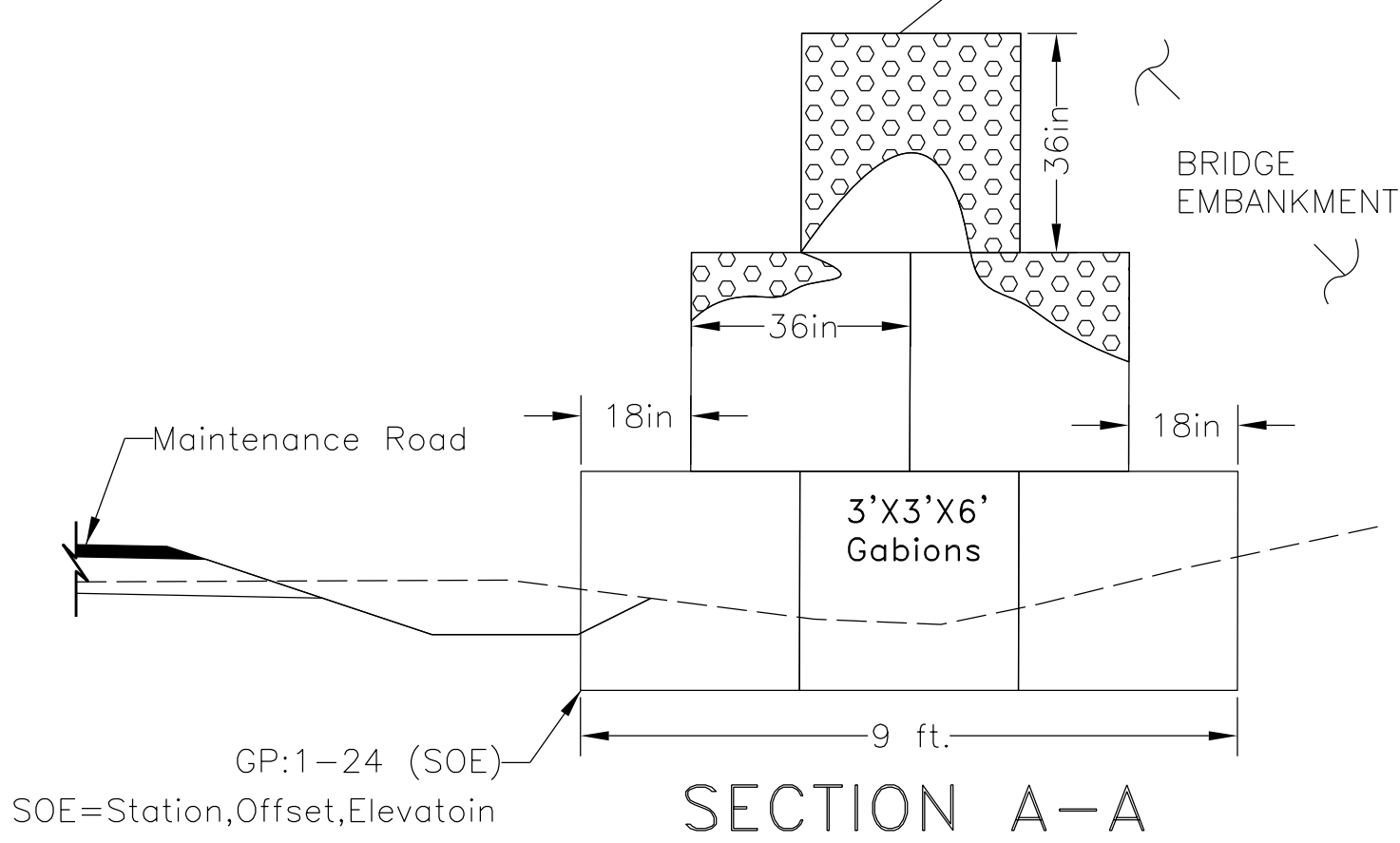
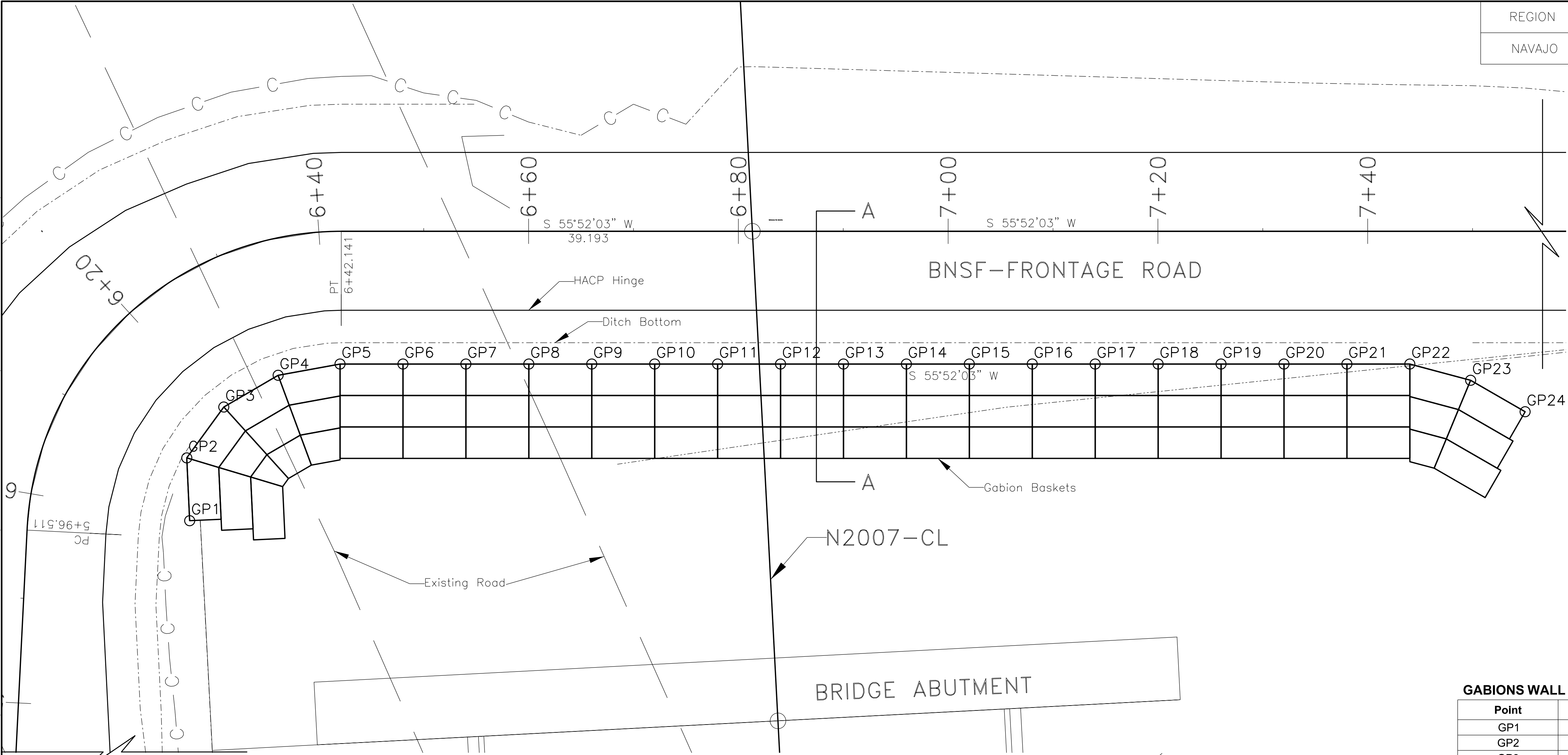
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N2007	N2007(1-1)1,2,4	13	63

NOTES

- Frontage Road with retaining wall must be constructed to finish subgrade to use as detour, before bridge approach work can proceed.
- Any existing railroad communication lines and poles that are affected by construction will be removed and relocated by the BNSF Railway Company.
- Additional temporary safety fences (Orange HDPE plastic fence) for protection of railroad traffic and public traffic shall be erected as directed by the COR/AOTR 25' left and right of centerline of railroad tracks under new bridge full length.
- After the detour road is no longer required, the detour road shall be scarified graded and compacted as specified to construct the railroad frontage road to the plan and profile grades. shown on sheet 12 of 63. The frontage road shall be 2" of asphaltic concrete over 6" of ABC material, finish asphalt top width to be 20' wide. Shoulder and ditch slopes to match detour road typical.
- The Contractor shall coordinate with the BNSF railway, the relocation of the existing at-grade railroad crossing for the detour road. This coordination shall include, but not necessary be limited to the items listed in the following notes.
 - The BNSF Railway shall remove and relocate the existing concrete vehicle panels, the existing flashing lights and arms, and all controls to establish the detour road. See Sheet 31 of 63 for relocation details.
 - The Contractor shall survey and stake out the centerline of the detour road crossing, extend the existing N2007 roadway CMP to cross the detour road, place asphalt or cold mix around and between the concrete panels to anchor in place and grade the detour road as needed to access the new crossing.
 - The BNSF Railway estimates N2007 will need to be closed for one(1) 8 hour day in order to relocate the at-grade crossing. The Contractor shall provide all necessary traffic control and advance notification of the public for the closing and detour.
 - After the detour is no longer required, the contractor shall remove the approaches to the crossing as directed by the COR/AOTR in conjunction with the BNSF Railway.

GABIONS WALL LAYOUT TABLE

Point	Frontage Rd.	Offset (ft.)	Northing	Easting	Elevation
GP1	5+99.935	15.347	1,501,145.442	888,645.234	5633.132
GP2	6+10.539	13.048	1,501,140.636	888,648.826	5633.132
GP3	6+21.069	12.658	1,501,134.640	888,648.627	5633.132
GP4	6+31.500	12.655	1,501,129.227	888,646.039	5633.132
GP5	6+41.932	12.66	1,501,125.025	888,641.756	5633.132
GP6	6+48.020	12.66	1,501,121.658	888,636.790	5633.132
GP7	6+54.020	12.66	1,501,118.291	888,631.823	5633.132
GP8	6+60.020	12.66	1,501,114.925	888,626.857	5633.132
GP9	6+66.020	12.66	1,501,111.558	888,621.890	5633.132
GP10	6+72.020	12.66	1,501,108.191	888,616.924	5633.132
GP11	6+78.020	12.66	1,501,104.825	888,611.957	5633.132
GP12	6+84.020	12.66	1,501,101.458	888,606.991	5633.132
GP13	6+90.020	12.66	1,501,098.091	888,602.025	5633.132
GP14	6+96.020	12.66	1,501,094.725	888,597.058	5633.132
GP15	7+02.020	12.66	1,501,091.358	888,592.092	5633.132
GP16	7+08.020	12.66	1,501,087.991	888,587.125	5633.132
GP17	7+14.020	12.66	1,501,084.625	888,582.159	5633.132
GP18	7+20.020	12.66	1,501,081.258	888,577.192	5633.132
GP19	7+26.020	12.66	1,501,077.891	888,572.226	5633.132
GP20	7+32.020	12.66	1,501,074.525	888,567.259	5633.132
GP21	7+38.020	12.66	1,501,071.158	888,562.293	5633.132
GP22	7+44.020	12.66	1,501,067.792	888,557.326	5633.132
GP23	7+49.816	14.213	1,501,065.825	888,551.658	5633.132
GP24	7+55.012	17.213	1,501,065.393	888,545.674	5633.132



REVISED ON
12/12/2013

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GABION LOCATION
DETAILS

DRAWN BY: B.O.R. DATE: 06/13/11

DESIGNED BY: Design 2 DATE: 06/03/11

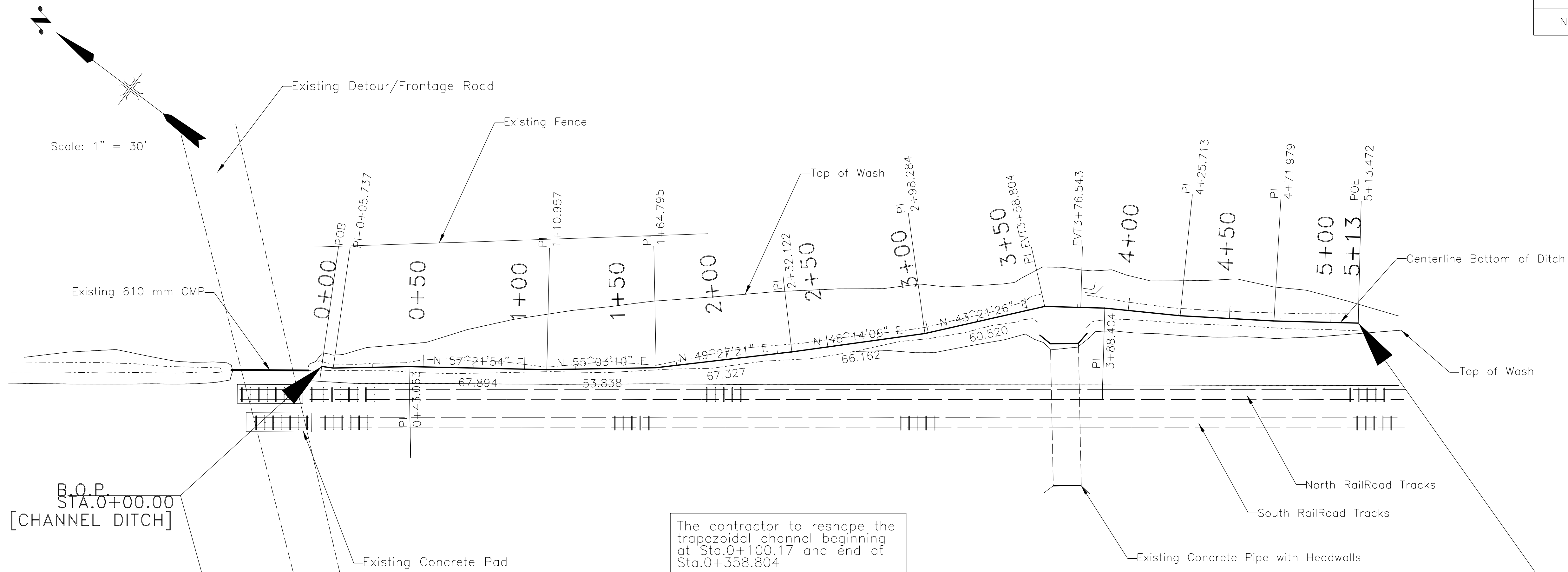
REVISED: 07/11 FILENAME: Gabion Details

BY: B.O.R. SCALE:1:10 (Horiz. & Vert.)

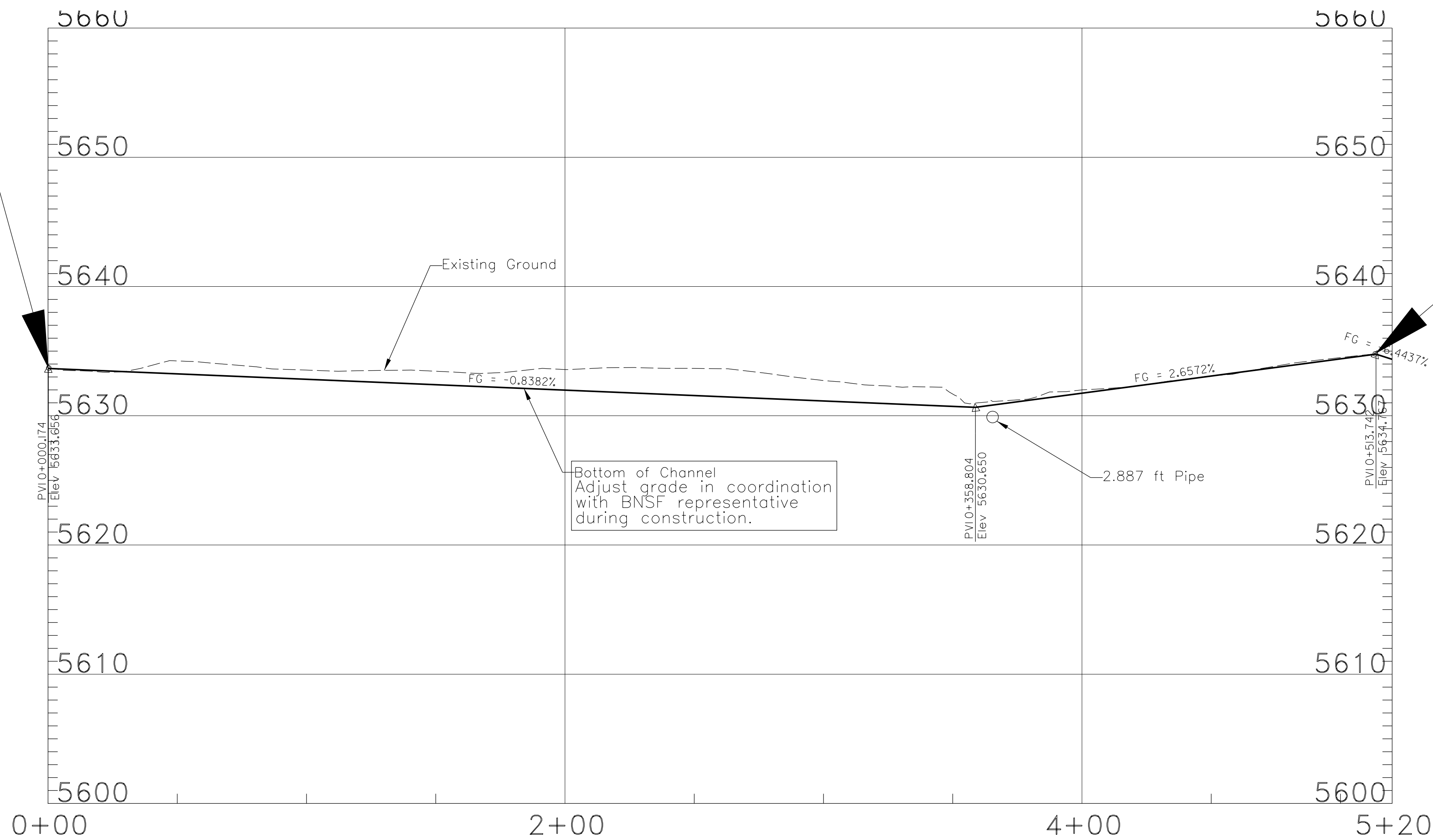


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REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N2007	N2007(1-1)1,2&4	14	63



LEGEND	
	Existing Railroad X-ing Signal Gate
	Concrete Pad At Railroad X-ing
	Fence
	Existing Road
	Proposed Roadway CL
	Railroad Tracks
	Existing Ditch Bottom
	Existing Concrete Pipe With Headwalls

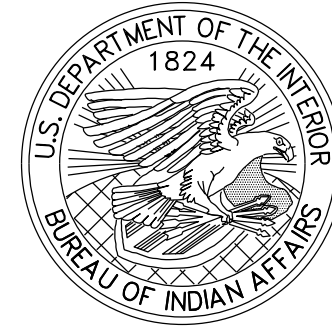


E.O.P. STA.5+13.472 [CHANNEL DITCH]

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NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

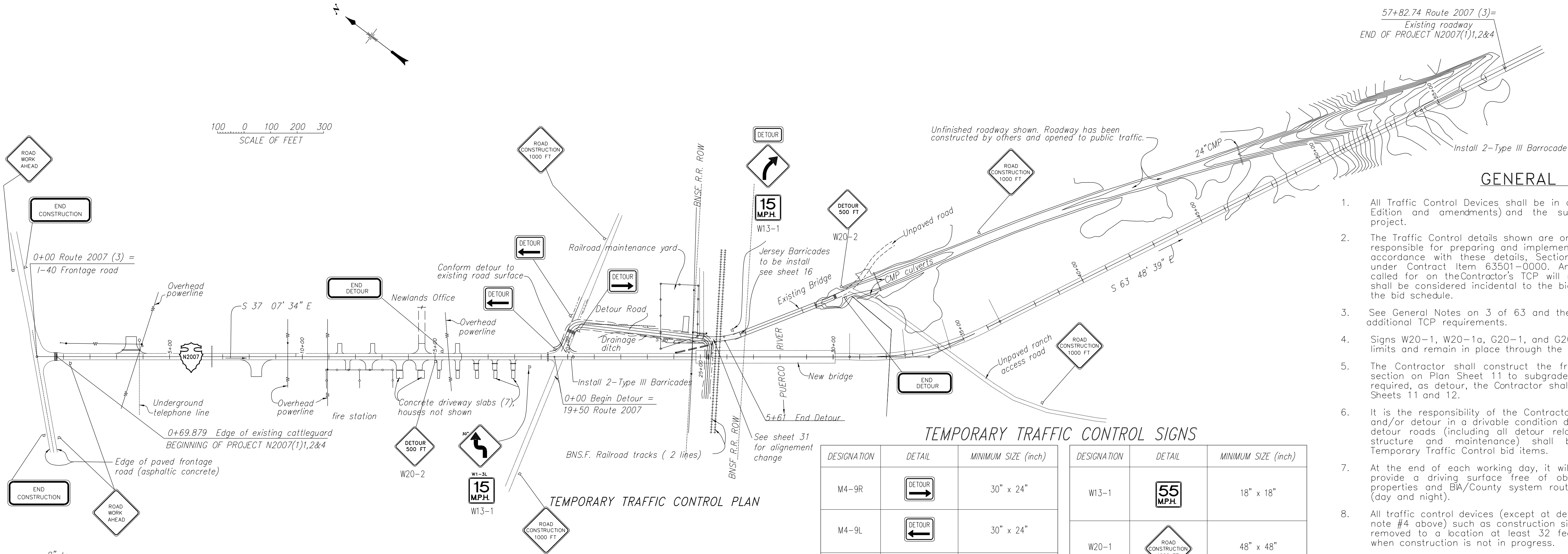
DITCH CHANNEL PLAN AND
PROFILE SHEET

DRAWN BY: NRODOT DATE: 5/17/13
DESIGNED BY: NRODOT DATE: 5/17/13
REVISED: 5/17/13 FILENAME: PLPDITCH_CHANNEL
BY: B.O.R. SCALE: NTS



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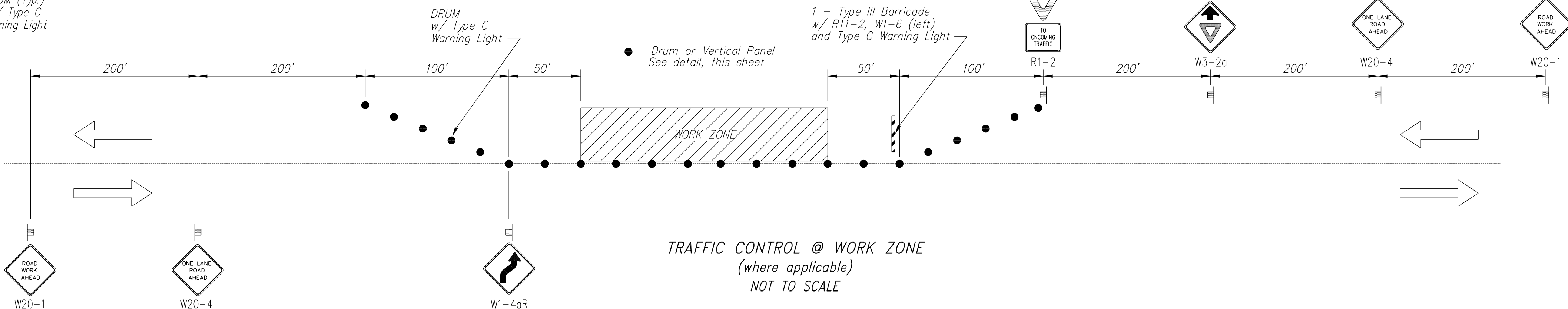
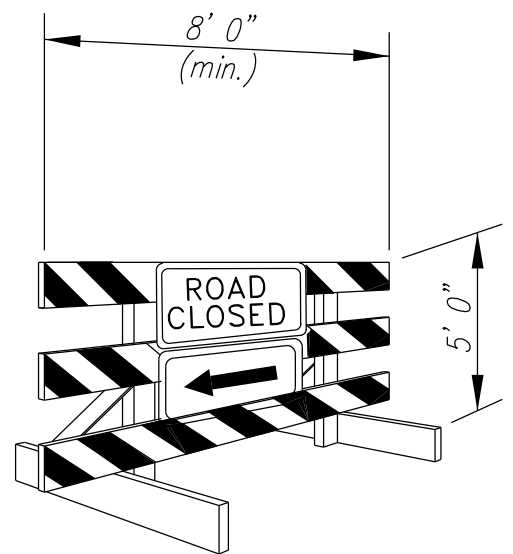
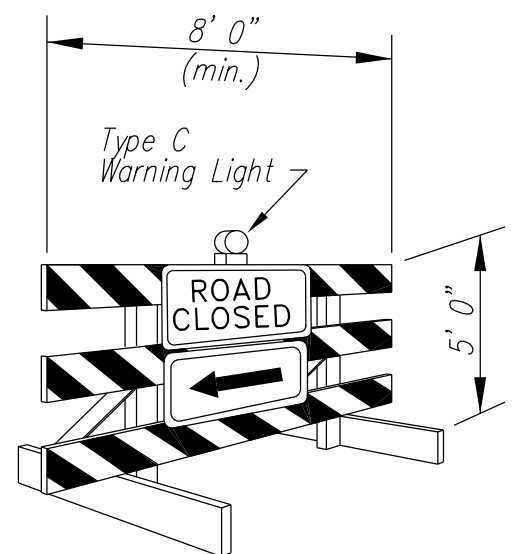
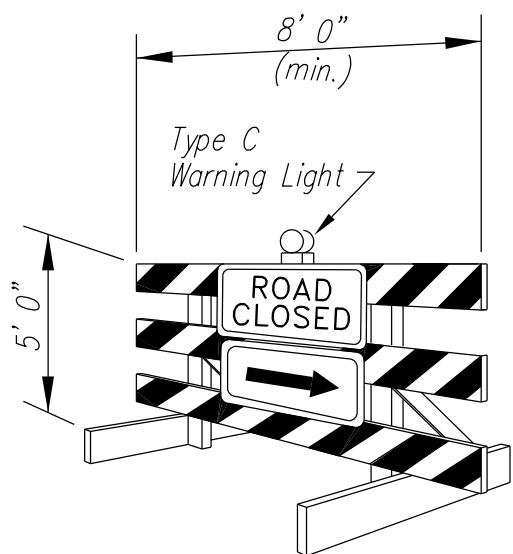
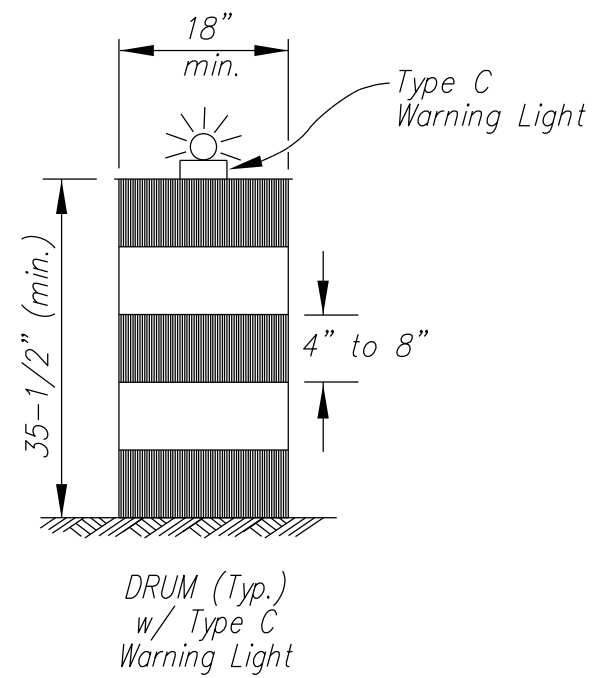
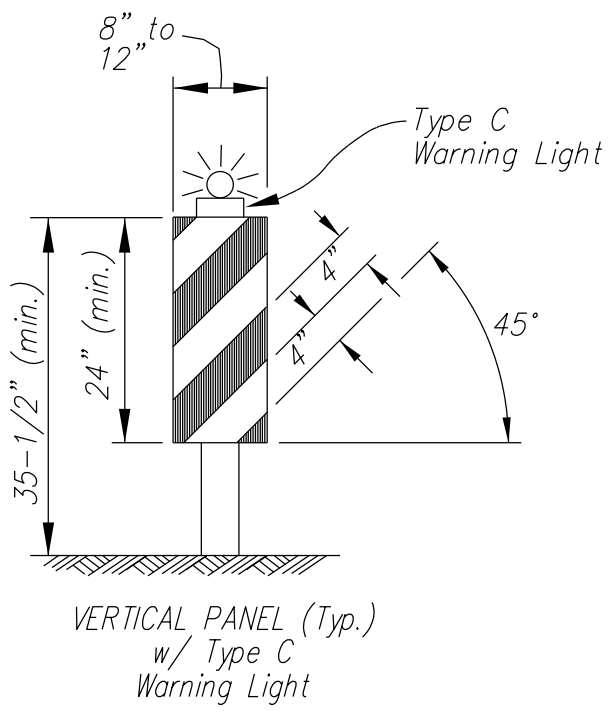
AREA	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N2007	N2007(1-1)1,2&4	15	63



TEMPORARY TRAFFIC CONTROL PLAN

TEMPORARY TRAFFIC CONTROL SIGNS

DESIGNATION	DETAIL	MINIMUM SIZE (inch)	DESIGNATION	DETAIL	MINIMUM SIZE (inch)
M4-9R		30" x 24"	W13-1		18" x 18"
M4-9L		30" x 24"	W20-1		48" x 48"
R1-2		36" x 36" x 36"	W20-1		48" x 48"
SUPPLEMENTAL PLATE		30" x 24"	W20-4		48" x 48"
G20-2		60" x 24"	W1-1L		30" x 30"
Type III Barricade w/ R11-2, W1-6 (right) and Type C Warning Light		As Shown	W1-3L		30" x 30"
Type III Barricade w/ R11-2, W1-6 (left) and Type C Warning Light		As Shown	W1-3R		30" x 30"
Type III Barricade		As Shown	W3-2a		36" x 36"
Drums or Vertical Panels		As Shown			



TRAFFIC CONTROL @ WORK ZONE
(where applicable)
NOT TO SCALE

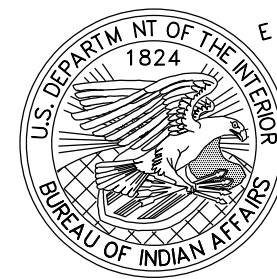
GENERAL NOTES

1. All Traffic Control Devices shall be in accordance with the MUTCD (Latest Edition and amendments) and the supplemental specifications for this project.
2. The Traffic Control details shown are only a guide. The Contractor is solely responsible for preparing and implementing a Traffic Control Plan (TCP) in accordance with these details, Section 635 of FP-03, and the MUTCD under Contract Item 63501-0000. Any additional traffic control devices called for on the Contractor's TCP will not be measured for payment but shall be considered incidental to the bid items for traffic control shown in the bid schedule.
3. See General Notes on 3 of 63 and the supplemental specifications for additional TCP requirements.
4. Signs W20-1, W20-1a, G20-1, and G20-2a shall be placed at the project limits and remain in place through the duration of the project.
5. The Contractor shall construct the frontage/detour road to the typical section on Plan Sheet 11 to subgrade only. After the road is no longer required, as detour, the Contractor shall complete the construction as Plan Sheets 11 and 12.
6. It is the responsibility of the Contractor to maintain the existing roadway and/or detour in a drivable condition during construction. The cost of any detour roads (including all detour-related earthwork, temporary drainage structure and maintenance) shall be considered incidental to the Temporary Traffic Control bid items.
7. At the end of each working day, it will be the Contractor's responsibility to provide a driving surface free of obstructions. Access to all adjoining properties and BIA/County system routes shall be maintained at all times (day and night).
8. All traffic control devices (except at detour road locations and as noted in note #4 above) such as construction signs, drums, barricades, etc., shall be removed to a location at least 32 feet from the edge of the shoulder when construction is not in progress.
9. During construction operations, traffic shall be moved through the work zone using pilot cars (as required). Applicable signs and other items (two-way radio contact) related to the pilot cars and traffic control shall be considered incidental obligations of the Contractor.
10. The Contractor has the option to either use drums or vertical panels, but shall not use a combination of both. No traffic cones are allowed.
11. At locations where new road construction intersects existing roadways and at tie-ins with existing roads at the end of the new construction "Special traffic control" procedures shall be included as needed in the Contractor's TCP. These include, but are not necessarily limited to the following: Type III barricades with "Road Closed/ detour sign", flaggers, drums, etc.
12. The Traffic Control on this project shall be coordinated with the project construction schedule. The Contractor's TCP shall reflect this coordination.
13. The Contractor may install temporary HDPE plastic fence 15 feet out from the outside rail of the railroad tracks so that all work, equipment, and materials are kept outside these limits. This fence installation shall be paid for under bid item 61901-3400. This may reduce the need for railroad flaggers.

UNITED STATES
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TEMPORARY TRAFFIC
CONTROL

DRAWN BY: Gerald.Hood DATE: 5/7/2009
DESIGNED BY: NRDOT DATE: 5/7/2009
REVISED: 05/20/2013 BY: Gerald.Hood
ANNOTATION SCALE: Full Size 1=1
FILENAME: Sht.15_Traffic Control Details.dgn

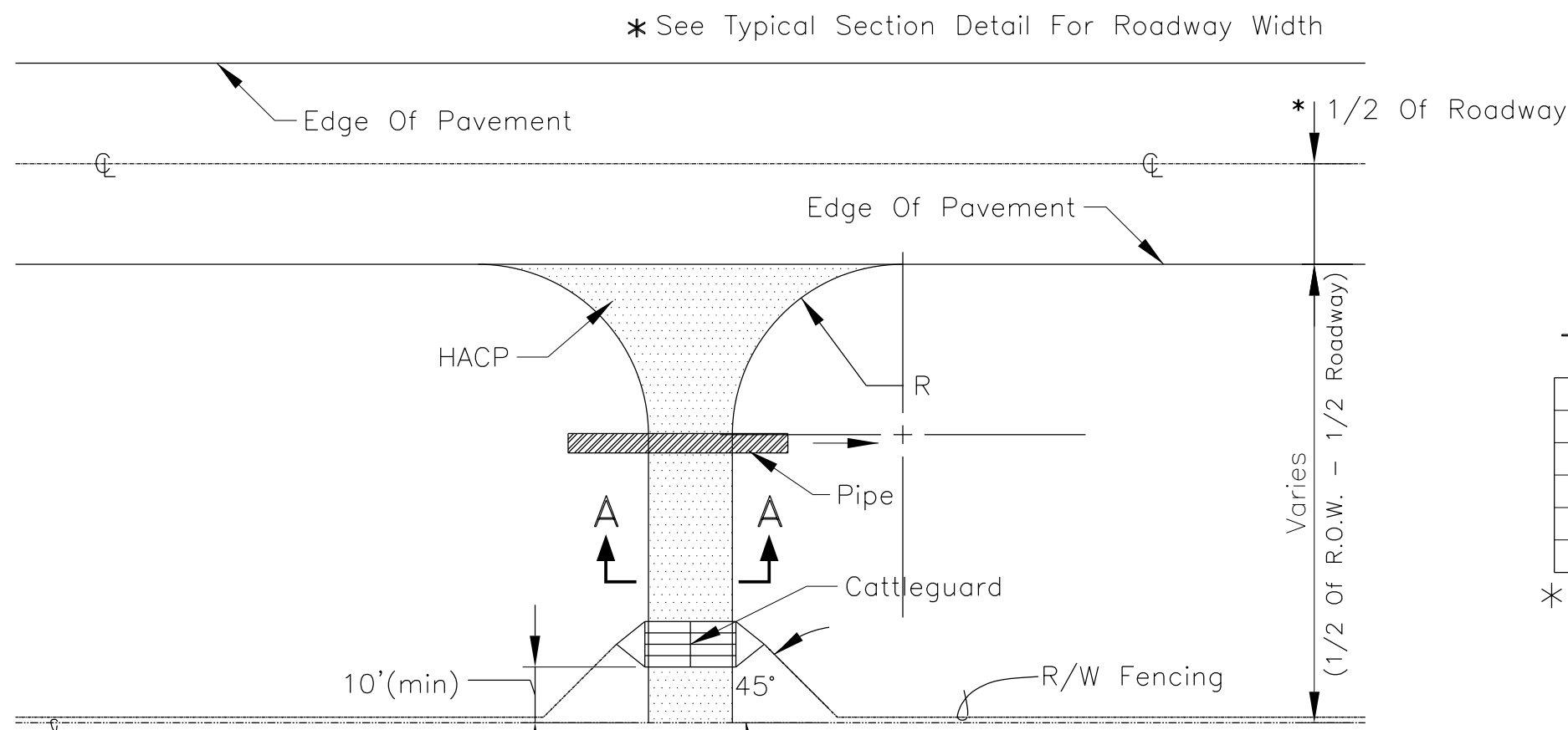


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REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N2007	N2007(1-1)1,2&4	16	63

PERMANENT ROADSIDE SIGNS

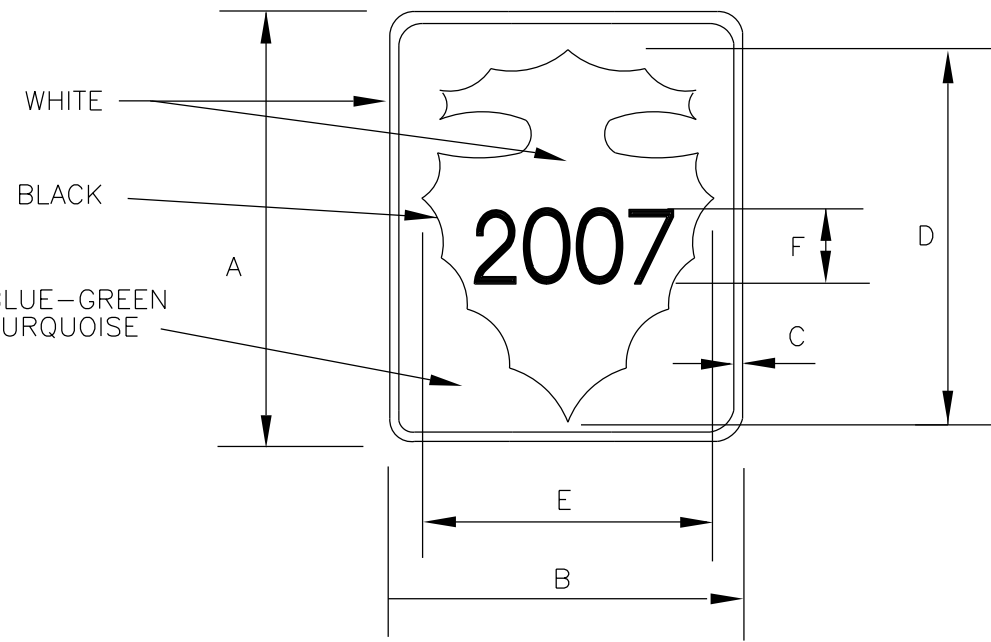
STATION	LOC.	SIZE DETAIL NO.	DESCRIPTION	SIGN PANEL SIZE	AREA OF SIGN ft ²	NO. OF POSTS	POST WEIGHT lb/ft	TOTAL PANELS
				INCH				
19+68.00 19+86.00	Lt. Rt.	R1-1 R1-1		30" x 30"	6.25	2 2	2.00	2
1+00.00 19+00.00 56+00.00	Rt. Rt. Lt.	R2-1(35)		24" x 30"	5.0	1 1 1	2.75	3
56+00.00	Rt.	R2-1(45)		24" x 30"	5.0	1	2.75	1
2+00.00	Rt.	M-1		18" x 24"	3.0	1	2.75	1
39+00.00	Lt.	W1-2R		30" x 30"	6.25	2	2.00	1
5+00.00 12+00.00 41+00.00	Lt. Rt. Lt.	M-1		24" x 30"	5.0	1 1 1	2.75	3
5+00.00 12+00.00 41+00.00	Rt. Lt. Rt.	R4-1		48" x 48" x 36"	5.55	2 2 2	2.00	3
2+00.00	Lt.	W3-1a		30" x 30"	6.25	2	2.00	1
63302-0003 Sign Installation, 1 Post & Hardware: 2.75 lbs/ft.____ 38.00 sq.ft.								
63302-0010 Sign Installation, 2 Post & Hardware: 2.00 lbs/ft.____ 41.65 sq.ft.								



TYPE "A" TURNOUT

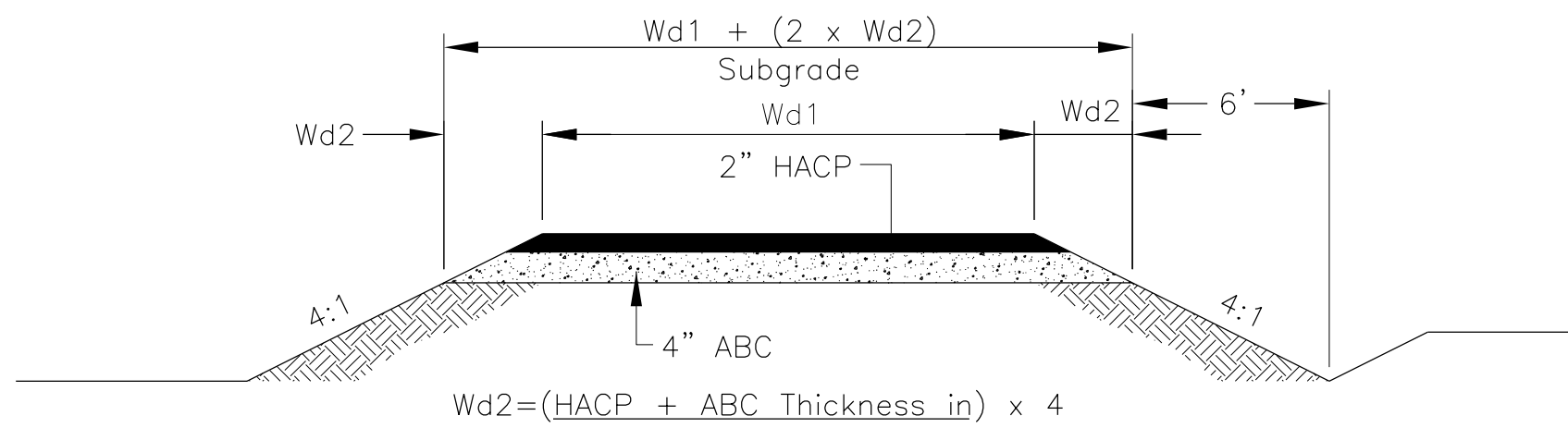
Wd1	Cattleguard	R *
14'	2-Unit	30'
16'	3-Unit	30'
24'	4-Unit	50'
30'	5-Unit	50'
30'	6-Unit	50'

*Radius 10', for housing street/
driveway approaches.



TYPICAL TYPE "A" TURNOUT

Special width turnouts at Sta.3+55 Lt.
and Sta.13+34 Rt., to be constructed
similar, Radii to be 30'.



SECTION A-A

Modify turnout shoulder/ditch grading
to fit existing drainage and ground
conditions, if directed by the C.O.R./AOTR

63401-1610 PAVEMENT MARKINGS: SOLID YELLOW

STATION TO STATION	LOCATION	DECRPTION	LENGTH (Ft.)
0+69.879 To 5+00.00	Center-Right	Solid Yellow	430.12
0+69.879 To 5+00.00	Center-Left	Solid Yellow	430.12
12+00.00 To 41+00.00	Center-Right	Solid Yellow	2,900.00
12+00.00 To 41+00.00	Center-Left	Solid Yellow	2,900.00
TOTAL:			6,660.24

63401-1520 PAVEMENT MARKINGS: SOLID WHITE

STATION TO STATION	LOCATION	DECRPTION	LENGTH (Ft.)
0+69.879 To 57+82.74	Right	Solid White	5,712.86
Minus (1) 14' T.O. @ 68'			-68.00
Minus (6) 16' T.O. @ 70'			-420.00
Minus (5) 24' T.O. @ 118'			-590.00
SUB-TOTAL:			4,634.86
0+69.879 To 57+82.74	Left	Solid White	5,712.86
Minus (1) 40' T.O. @ 134'			-134.00
Minus (3) 16' T.O. @ 70'			-210.00
Minus (3) 24' T.O. @ 118'			-354.00
SUB-TOTAL:			5,014.86
GRAND-TOTAL:			9,649.72

63401-1510 PAVEMENT MARKINGS: BROKEN YELLOW

STATION TO STATION	LOCATION	DESCRIPTION	LENGTH (Ft)
5+00.00 To 12+00.00	Center	Broken Yellow	700.00
41+00.00 To 57+82.74	Center	Broken Yellow	1,682.74
TOTAL:			2,382.74

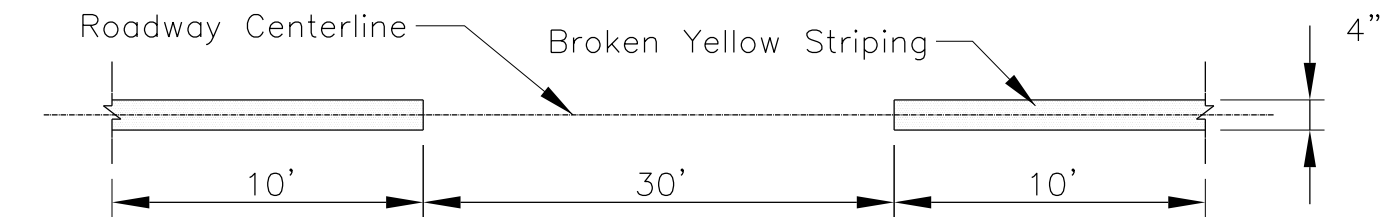
MAINTENANCE/DETOUR ROAD

63401-1510 PAVEMENT MARKINGS: SOLID YELLOW

STATION TO STATION	LOCATION	DESCRIPTION	LENGTH (ft)
0+17.38 To 5+40.00	Center	Solid Yellow	522.62
TOTAL:			522.62

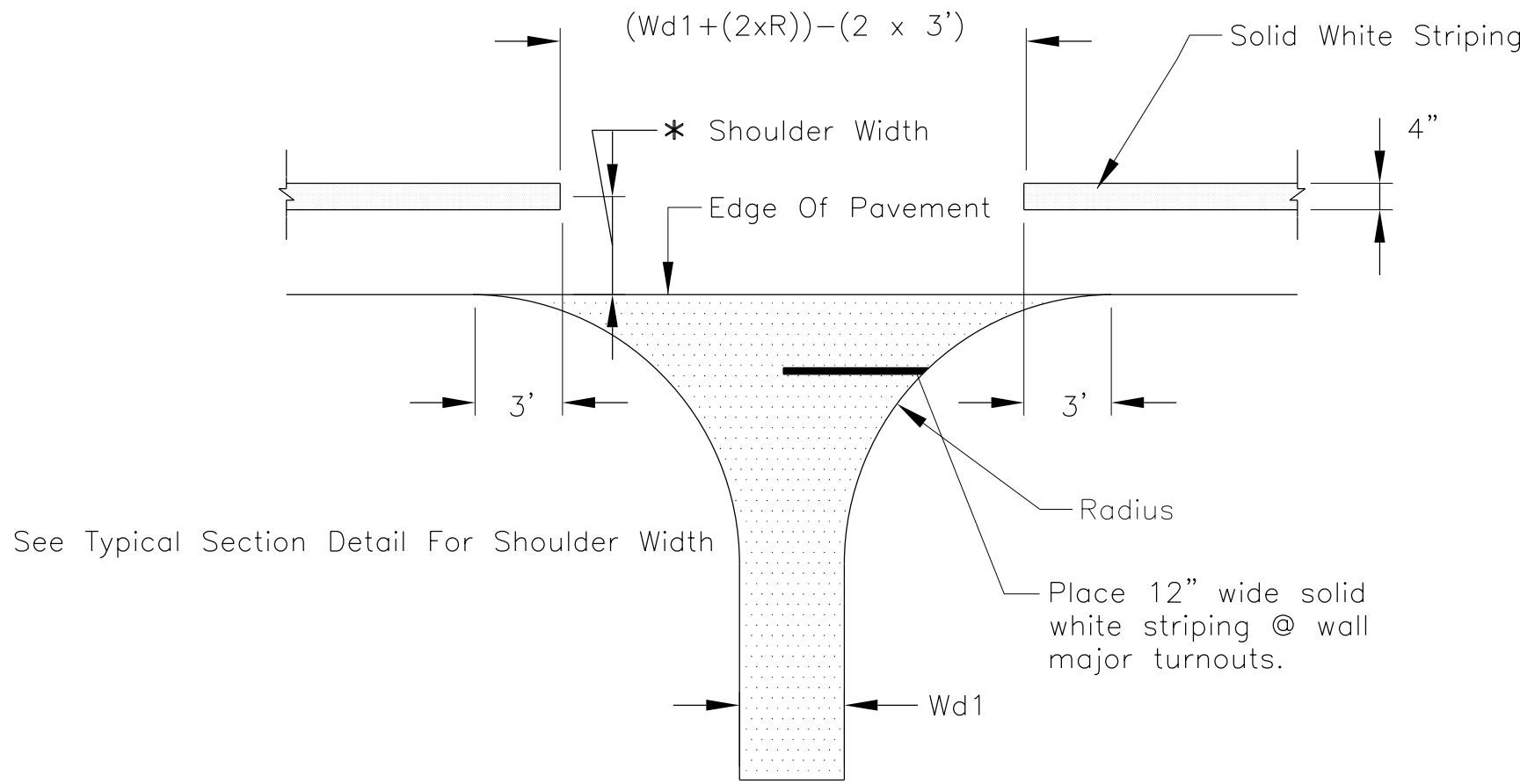
63502-3000 TTC, RAISED PAVEMENT MARKINGS:

63502-3000 TTC, RAISED PAVEMENT MARKERS @ 700 TOTAL



TYPICAL PAVEMENT MARKING "BROKEN YELLOW"

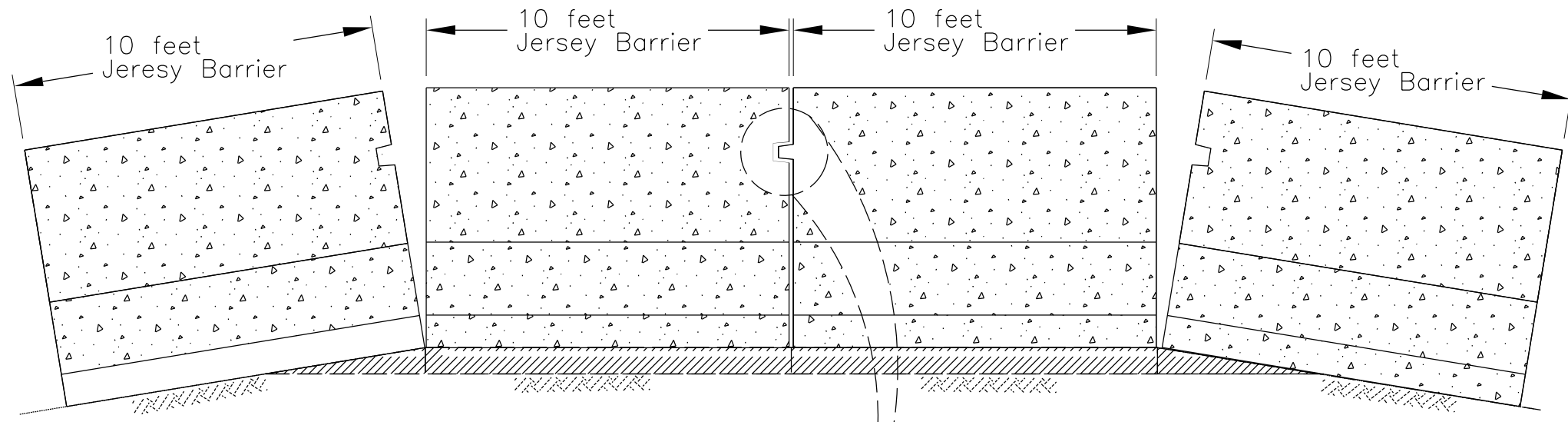
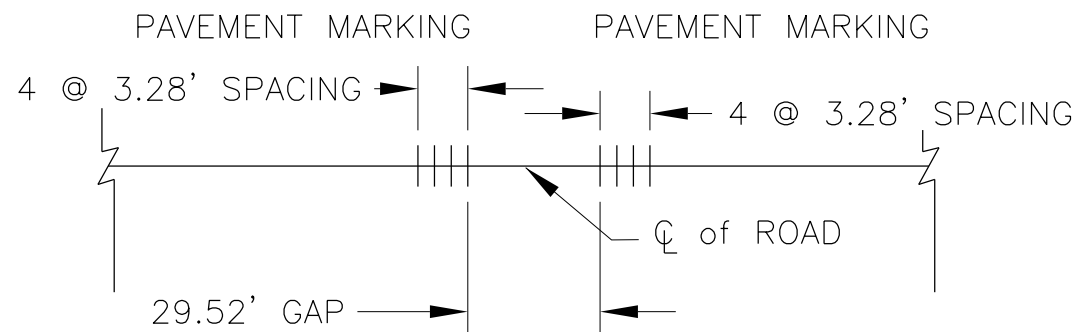
(See Table For Location)



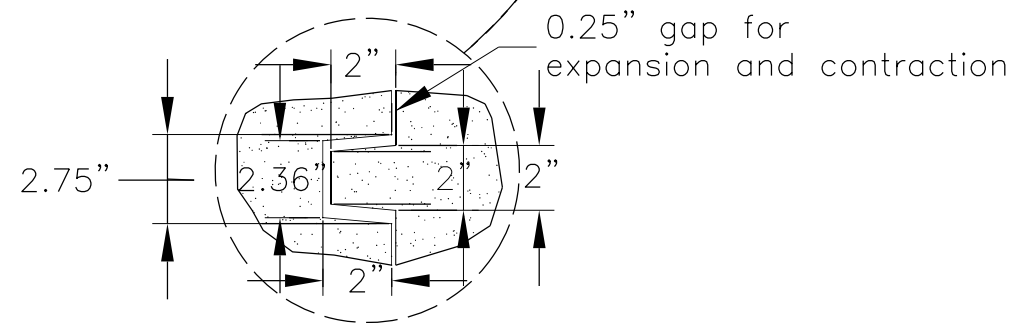
See Typical Section Detail For Shoulder Width

(See Table For Location)

ITEM 63502-3000 TEMP. TRAFFIC CONTROL
RAISED PAVEMENT MARKER, YELLOW



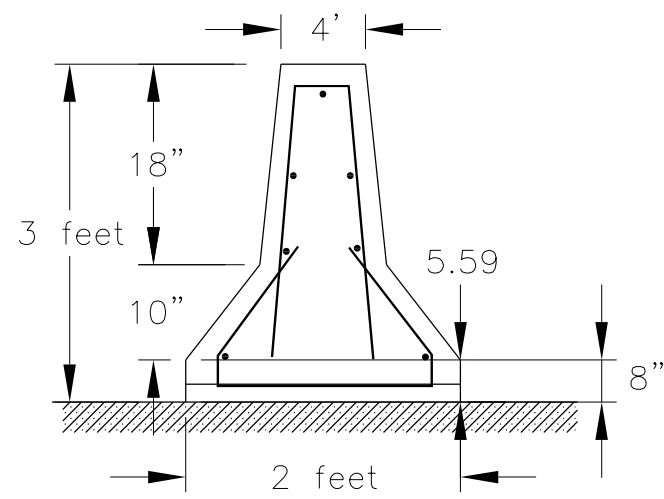
STA. 26+50.00 ± PRECAST CONCRETE JERSEY
BARRIER ON FRONTAGE ROADWAY ON EXISTING
BRIDGE APPROACH



PRECAST JOINT DETAIL

(a). The Precast Jersey Barrier shall be install on the North side
of the existing bridge approach as shown and location determined by AOTR.

(b). The Precast Jersey Barrier construction shall meet the requirements of
Safety-Shape Barrier (SGM11a-b) in the AASHTO-AGC-ARTBA Joint Committee
Task Force 13 Report.

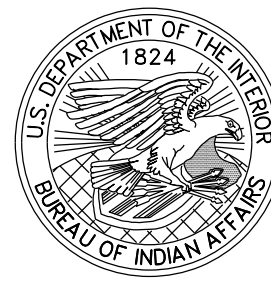


SIDE VIEW

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

PERMANENT PAVEMENT MARKINGS
ROADSIDE SIGNS & TURNOUT DETAIL

DRAWN BY: Gerald.Hood	DATE: 5/7/2009
DESIGNED BY: NRDOT	DATE: 5/7/2009
REVISED: 6/4/2013	BY: Gerald.Hood
ANNOTATION SCALE: Full Size 1=1	
FILENAME: Sht.16_PermSign & T.O Details.dgn	

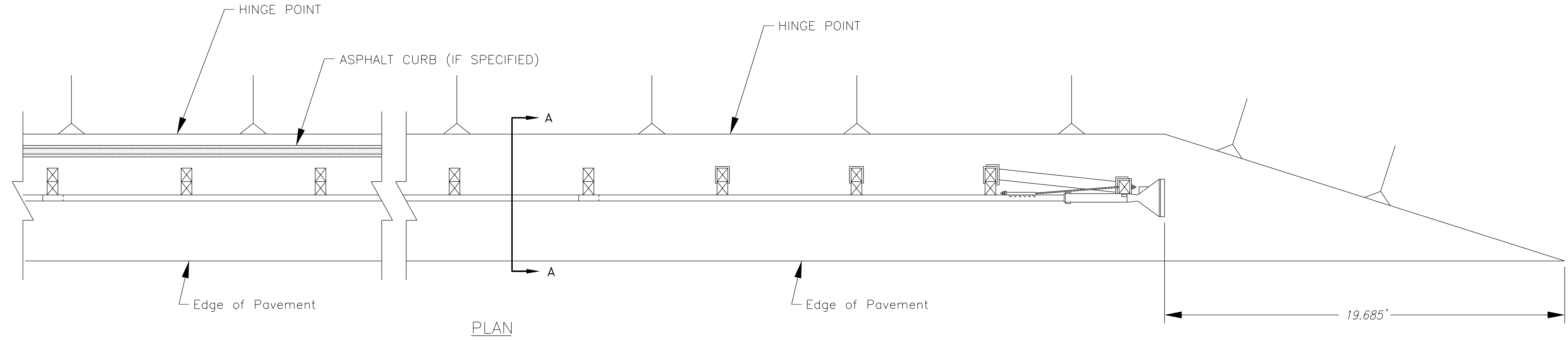


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REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N2007	N2007(1-1)1,2&4	17	63

GENERAL NOTES

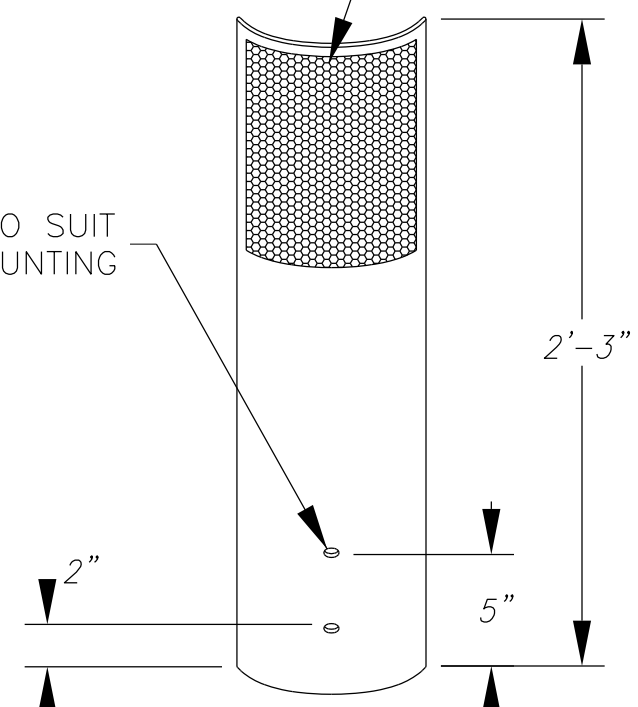
1. ALL W-BEAMS, THRIE-BEAMS, END TREATMENT, AND TERMINAL CONNECTORS SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M-180, CLASS A, TYPE-II SPECIFICATION. ALL HARDWARE SHALL CONFORM TO ASTM A-325, AND BE GALVANIZED IN ACCORDANCE WITH ASTM A-153.
2. ALL STRUCTURAL STEEL ITEMS SHALL CONFORM TO AASHTO M183/ ASTM A36, AND BE GALVANIZED IN ACCORDANCE WITH AASHTO M111 SPECIFICATION.
3. WIRE ROPE, FITTINGS, AND ASSEMBLIES OF HARDWARE SHALL CONFORM TO AASHTO M-30, TYPE-2 SPECIFICATION AND A CLASS B ZINC COATING.
4. WOOD POSTS AND BLOCKS SHALL BE ROUGH SAWN LUMBER OR TYPE S4S HAVING MINIMUM BENDING STRENGTH OF 8.27 MPa (SINGLE MEMBER) AND MEETING AASHTO M-168. ALL POSTS AND BLOCK SHALL BE TREATED IN ACCORDANCE WITH AASHTO M-133 SPECIFICATION.
5. ALL EMBANKMENT AND AGGREGATE BASE MATERIAL SHALL BE COMPACTED TO 95% OF MAXIMUM DRY DENSITY.
6. THE EMBANKMENT MATERIAL AND PLACING THEREOF SHALL BE INCIDENTAL TO EARTHWORK ITEMS AND NO DIRECT PAYMENT SHALL BE MADE.
7. THE CONTRACTOR SHALL BE REQUIRED TO COMPACT THE BACKFILL AND ASPHALT ALL AROUND EACH GUARDRAIL POSTS WITH HAND TAMPERS TO INSURE INTEGRITY OF THE PAVEMENT AND GUARDRAIL, AND TO PREVENT SEEPAGE OF WATER INTO THE PAVEMENT FROM THE GUARDRAIL POST HOLES. THIS WORK SHALL BE INCIDENTAL OBLIGATIONS OF THE WORK DESCRIBED HEREIN.
8. THE COST OF THE ET2000 ASSEMBLY AND PLACING THEREOF SHALL BE CONSIDERED INCIDENTAL TO ITEM 61701-1250, WHICH INCLUDES BREAKAWAY POSTS, STEEL FOUNDATION TUBE, AND HARDWARE.
9. PLACEMENT OF HOT ASPHALTIC CONCRETE AND AGGREGATE BASE MATERIAL FOR GUARDRAIL WIDENING SHALL BE INCLUDED WITH ITEMS 30101-2000 AND 40201-0500.
10. FURNISHING AND PLACEMENT OF REFLECTIVE SHEETING AND TABS SHALL BE CONSIDERED INCIDENTAL TO ITEM 61701-1250 AND NO DIRECT PAYMENT SHALL BE MADE.
11. ALL RELATED PATENT RIGHTS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AS PER SECTION 107.01 OF THE FP-03
12. GUARDRAIL POSTS TO BE INSTALLED PER SECTION 617.03 WITH THE PROPER HOLE TOLERANCE OF 9/16". FAILURE OF THE CONTRACTOR TO INSTALL THE GUARDRAIL POST INCORRECTLY SHALL RESULT IN THE GUARDRAIL BEING REJECTED AND RE-INSTALLED AT THE CONTRACTOR'S ENTIRE EXPENSE.



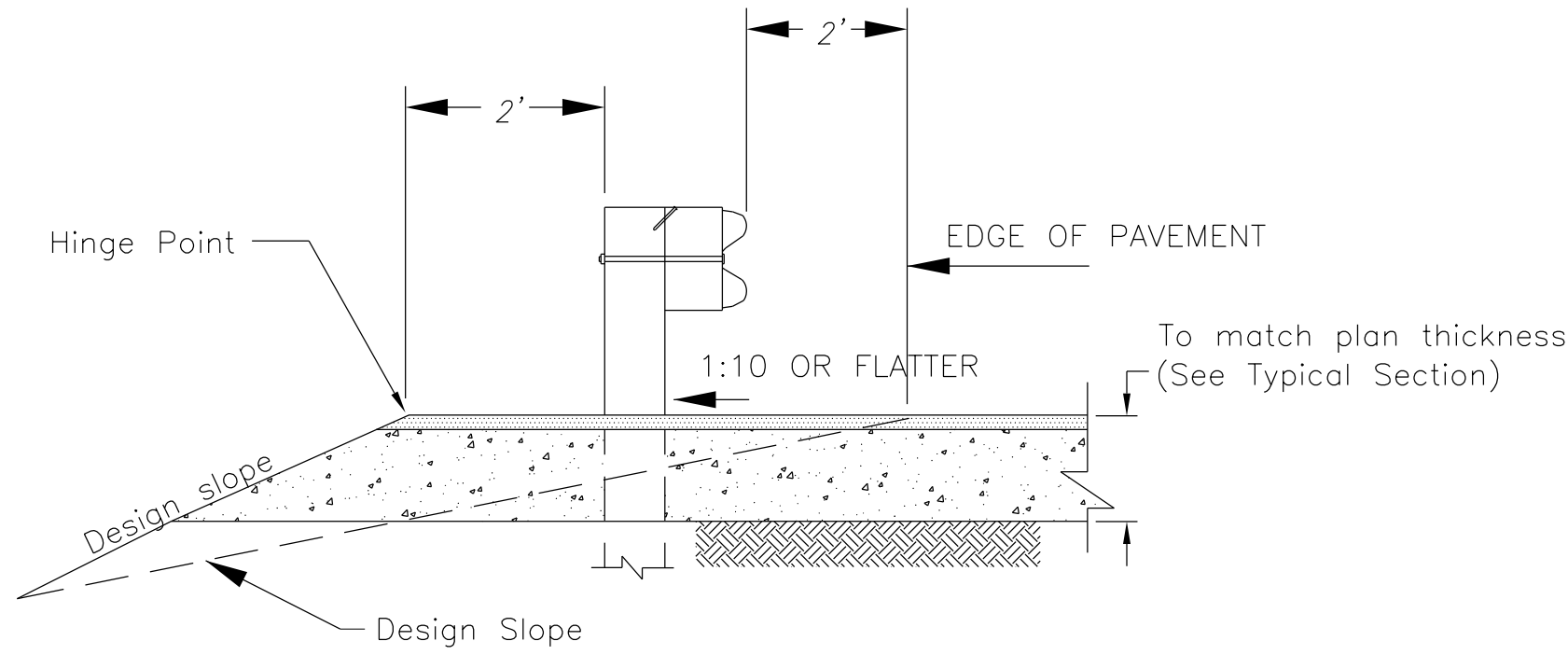
PLAN

3"x12" REFLECTIVE SHEETING
(THE COLOR OF THE SHEETING SHALL CONFORM
TO THE COLOR OF THE ADJACENT EDGE LINE WHITE)

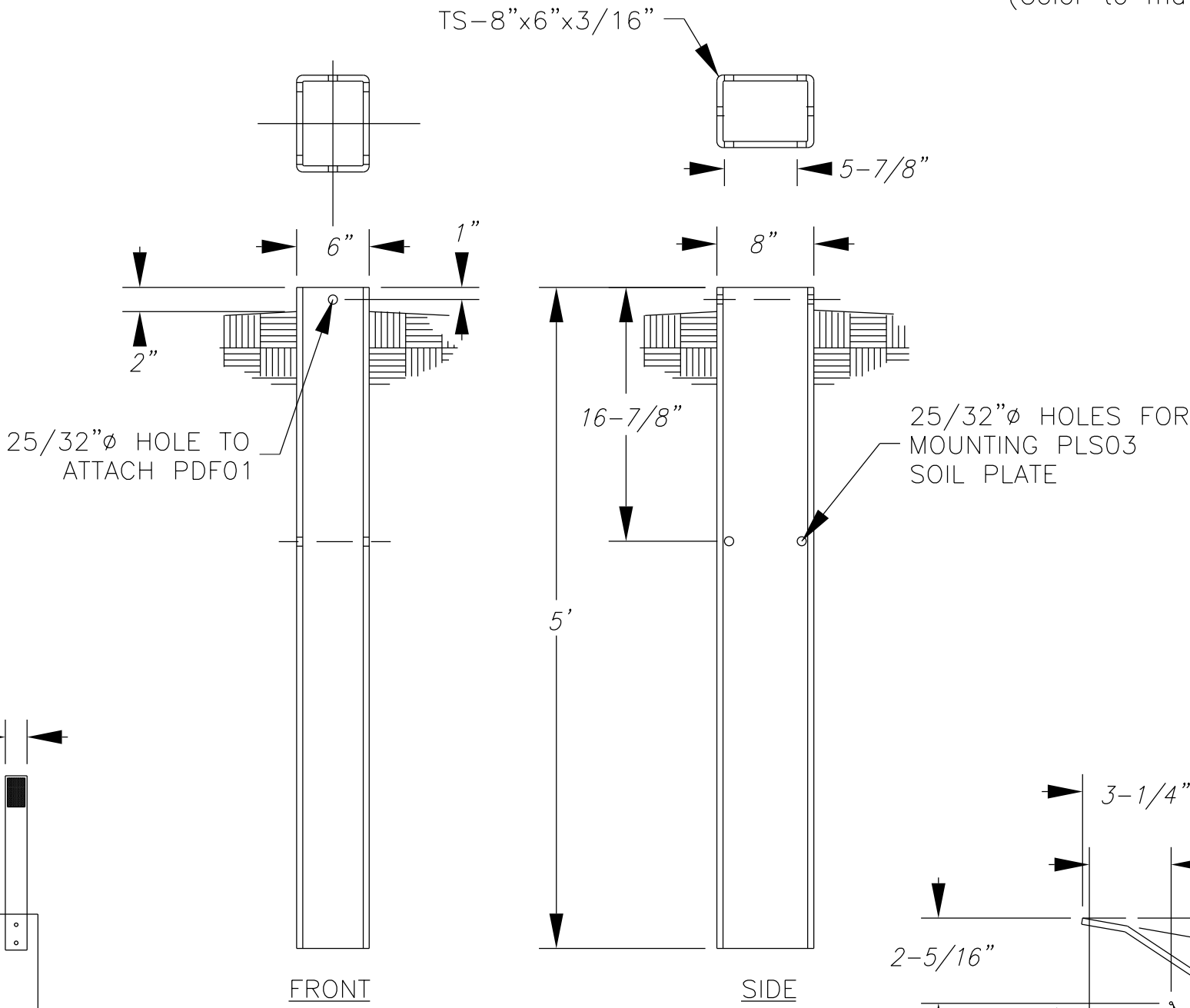
DIA. REQUIRED TO SUIT
METHOD OF MOUNTING



DELINEATOR DETAIL



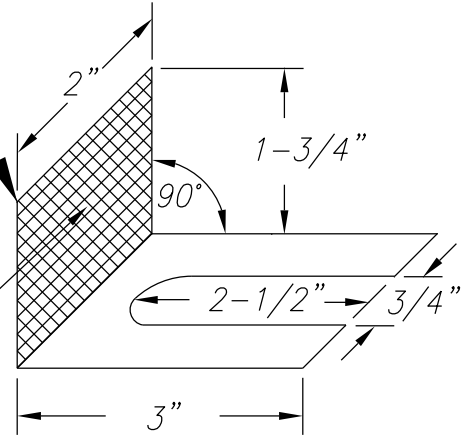
SECTION A-A
Without Asphalt Curb



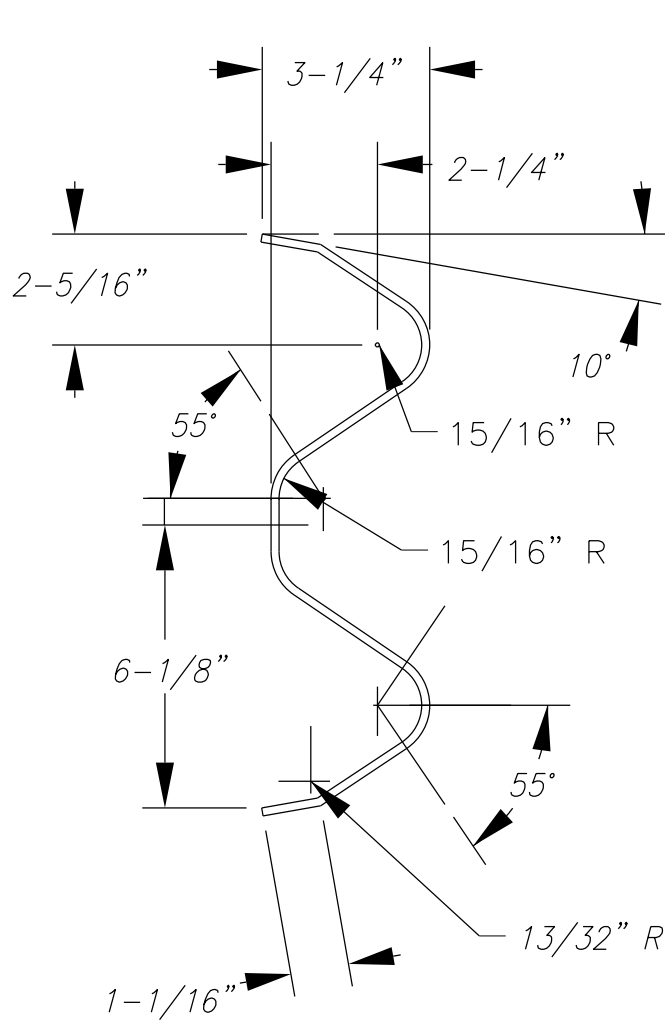
FOUNDATION TUBE

High Reflectivity Sheeting—facing traffic
(Color to match color of adjacent edge line)

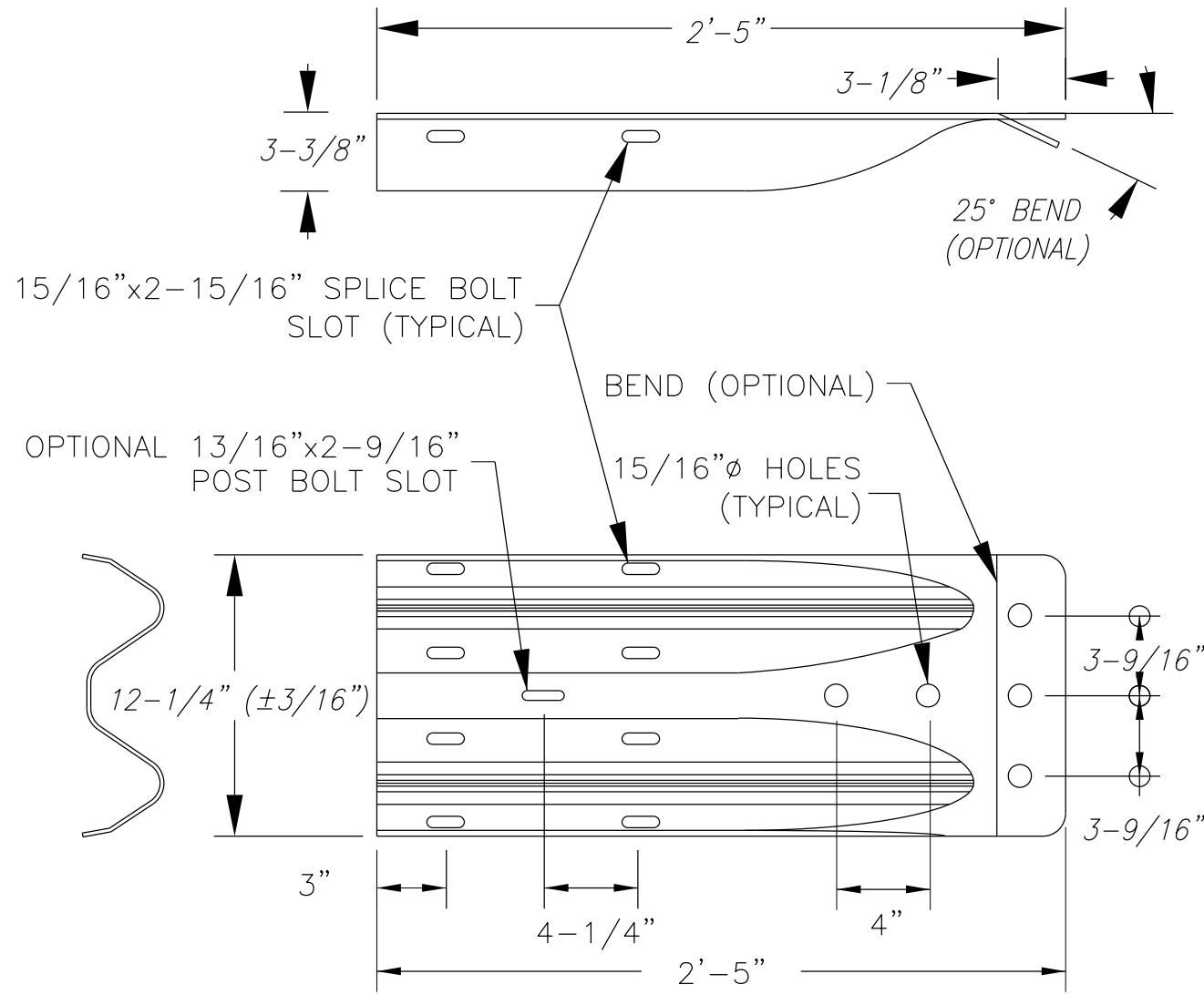
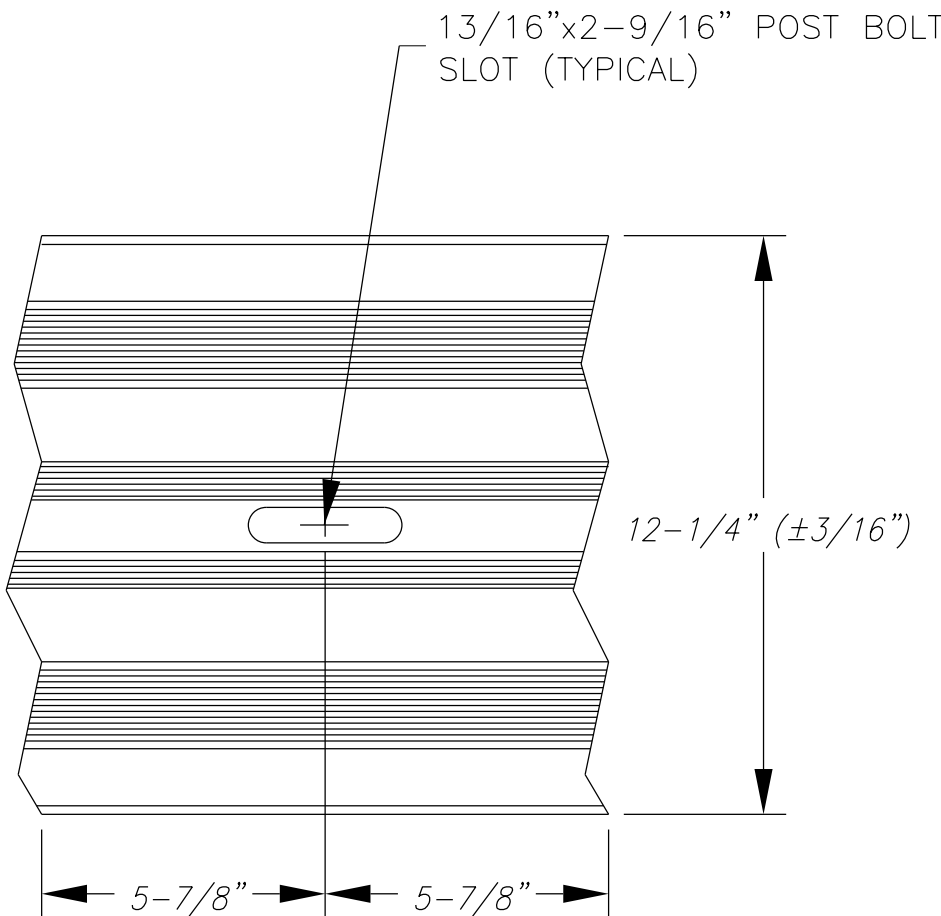
High Reflectivity
Sheeting (Yellow
on the face,
White on the back).



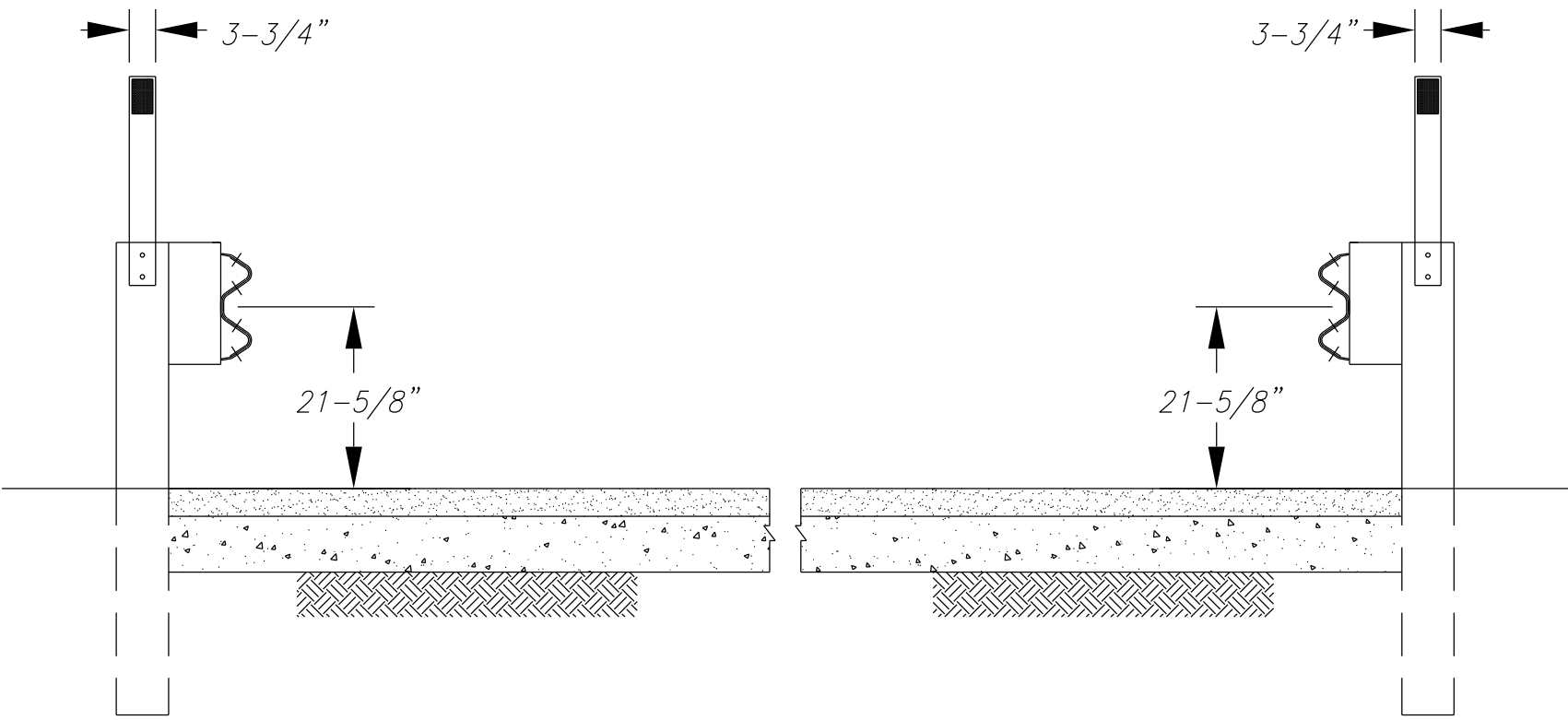
REFLECTOR TAB DETAIL
(Install on every fourth post,
starting on post #2)



SECTION THRU GUARDRAIL ELEMENT



TERMINAL CONNECTOR



The delineator shall be placed at 18'-9" spacing, around the outside of horizontal curve, or where the guardrail conflicts with Type "1a" delineator located on tangent segment of roadway.

GUARDRAIL MOUNTED DELINEATOR

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

STANDARD GUARDRAIL DETAIL
ET PLUS

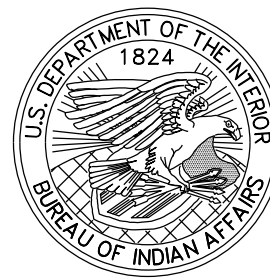
DRAWN BY: Gerald.Hood DATE: 5/6/2009

DESIGNED BY: NRDOT DATE: 5/6/2009

REVISED: 1/28/2013 BY: Peterson.Yazzie

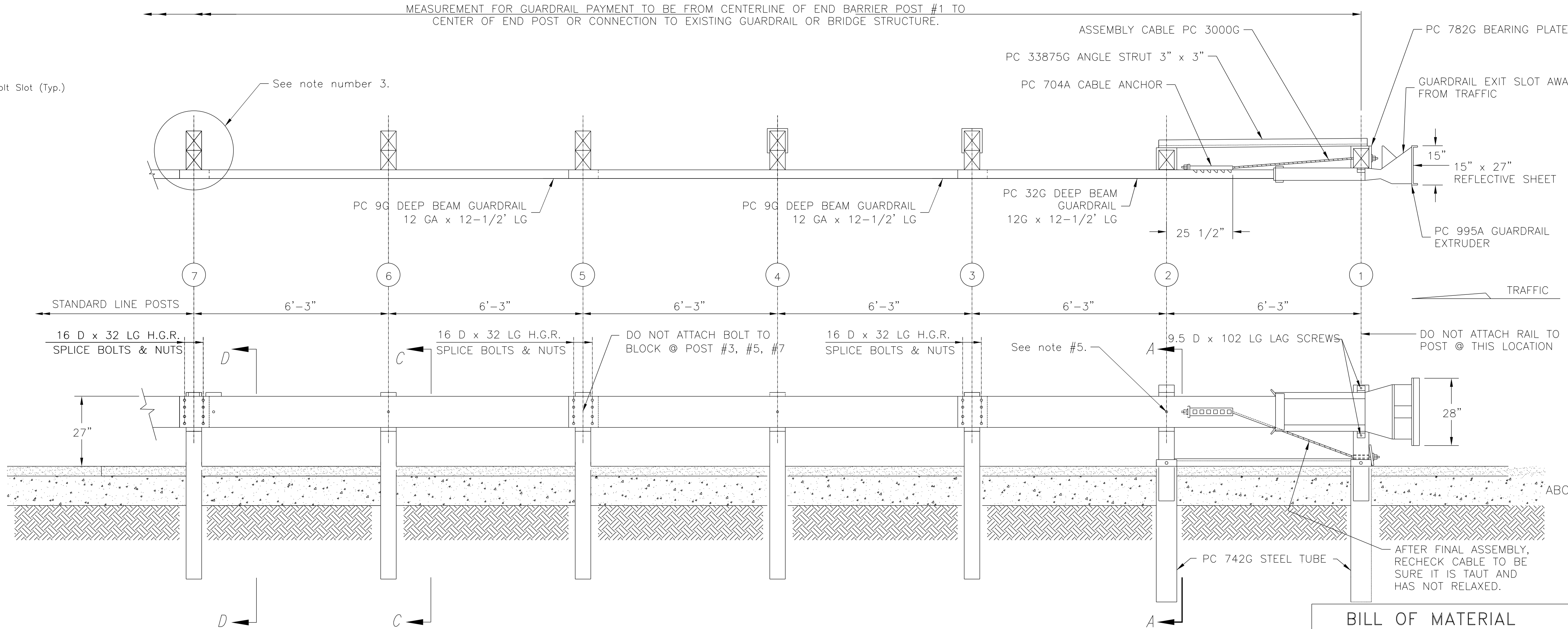
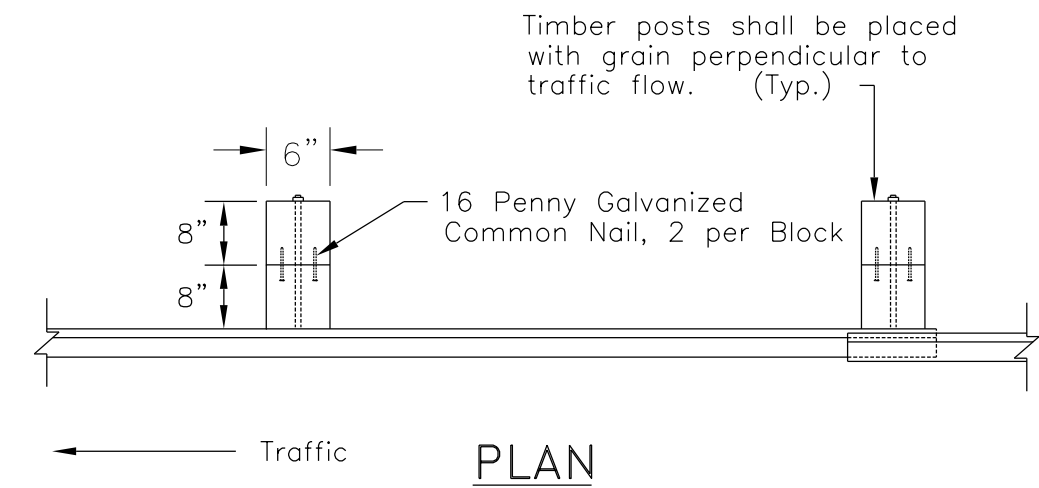
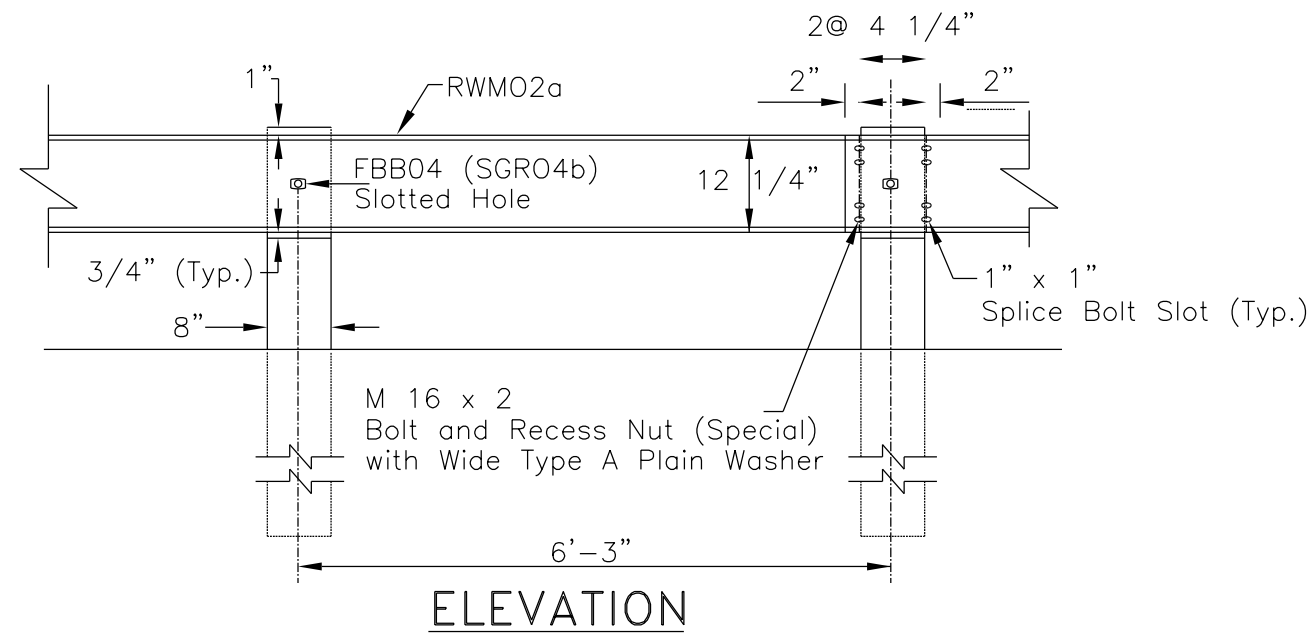
ANNOTATION SCALE: Full Size 1=1

FILENAME: Sht.17_Guardrail ET Plus2.dgn



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REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N2007	N2007(1-1)1,2&4	18	63

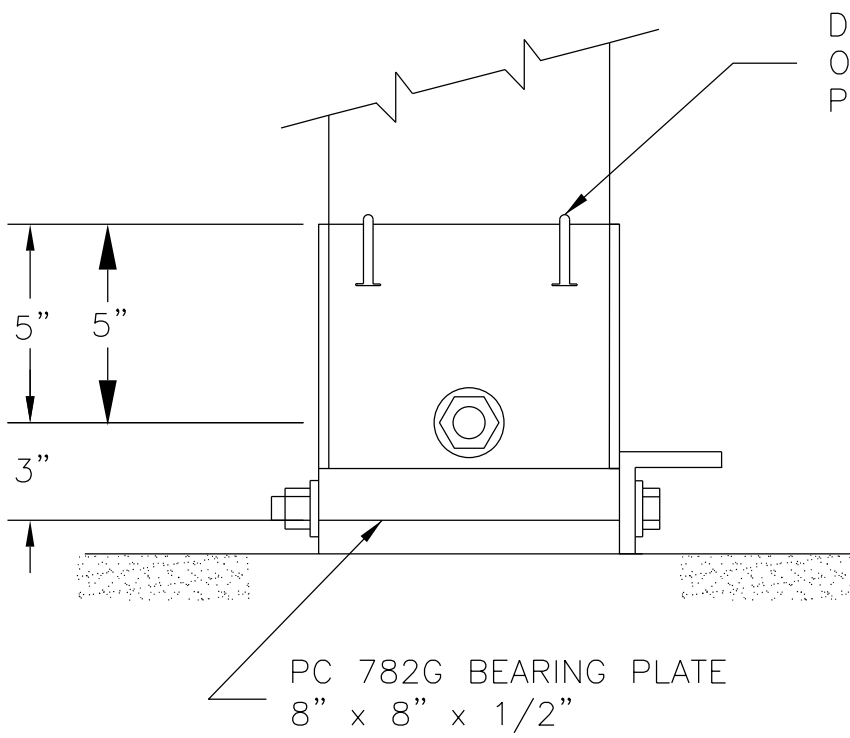
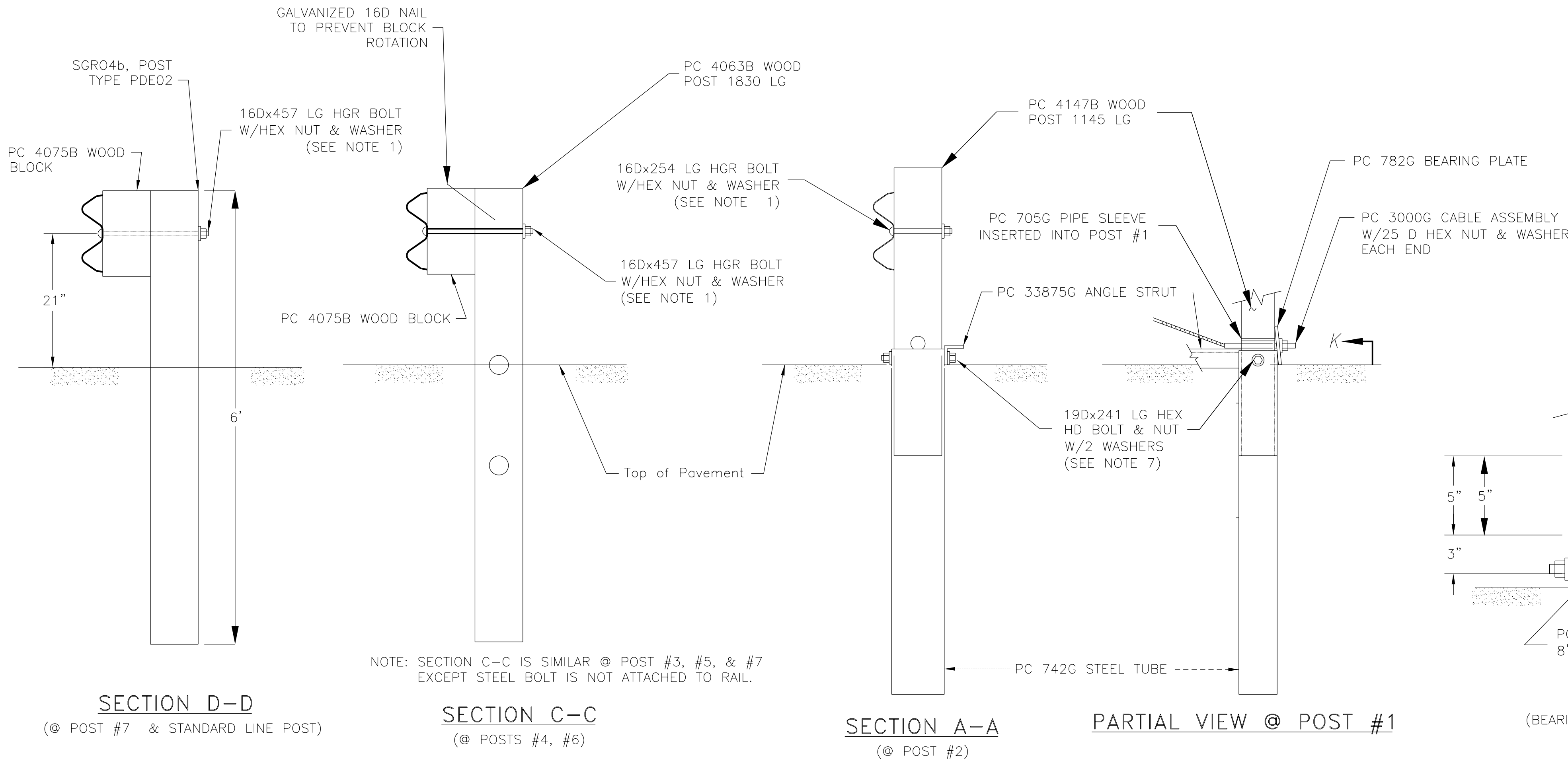


GENERAL NOTES

1. THE 16 D FLAT WASHER IS USED UNDER THE NUT, BEHIND THE POST ONLY. NO WASHER IS USED AT THE RAIL.
2. SEE SHEET 17 OF 63 FOR ADDITIONAL NOTES.
3. THE CONTRACTOR HAS THE OPTION TO USE ALL-STEEL POSTS W/WOODEN BLOCK AFTER POST #8 ON STANDARD LINE POSTS, UNLESS OTHERWISE NOTED ON THE DESIGN PLANS.
4. BEGIN/END ASPHALT CURB AT POST #6. 5. BEGIN REFLECTIVE TAB ON POST #2.
5. PLACE TABS ON THE W-BEAM AT EVERY FOURTH POST. THE COLOR OF THE TABS SHALL CONFORM TO THE COLOR OF THE ADJACENT EDGE LINE.
6. ANGLE STRUT MUST BE ATTACHED USING 19D HIGH STRENGTH BOLTS.
7. BOLT MUST BE HIGH STRENGTH. INSTALL SO NUT & WASHER ARE ON TRAFFIC SIDE OF POST. (SEE VIEW K)

BILL OF MATERIAL

PC	QTY	DESCRIPTION
9G	2	3.66/3.81/1.91/S (GUARDRAIL)
32G	1	3.66/3.81/1.91/S ANC (GUARDRAIL)
704A	1	CABLE ANCHOR BRACKET
705G	1	2" Ø x 140 PIPE SLEEVE
742G	2	72" FOUNDATION TUBE
782G	1	7 7/8" x 7 7/8" x 5/8" BEARING PLATE
995A	1	ET-2000 EXTRUDER
3000G	1	CABLE 3/4" Ø x 78"
3300G	6	16 D WASHER
3340G	30	16 D HEX NUT
3360G	24	16 D x 32 SPLICE BOLT
3500G	1	16 D x 254 HEX HD BOLT
3580G	5	16 D x 457 POST BOLT
3700G	4	19 D WASHER
3704G	2	19 D HEX NUT
3900G	2	25 D WASHER
3910G	2	25 D HEX NUT
4063B	5	WD 72" Post 6" x 8"
4075B	5	WD BLOCKOUT 6" x 8" x 14"
4147B	2	WD 45" POST 5 1/2" x 7 1/2"
4228G	2	3/8" D x 4" LAG SCREW
5148G	2	19 D x 241 HEX HD BOLT
33875G	1	78" STRUT
		GALVANIZED 16D NAIL



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS

NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

STANDARD GUARDRAIL BARRIER END
TREATMENT ET PLUS
FOR DESIGN SPEED 50 MPH

DRAWN BY: Gerald.Hood 5/6/2009

DESIGNED BY: NRDOT 5/6/2009

REVISED: 1/28/2013 Peterson.Yazzie

ANNOTATION SCALE: Full Size 1=1

FILENAME: Sht.18_Guardrail ET Plus1.dgn



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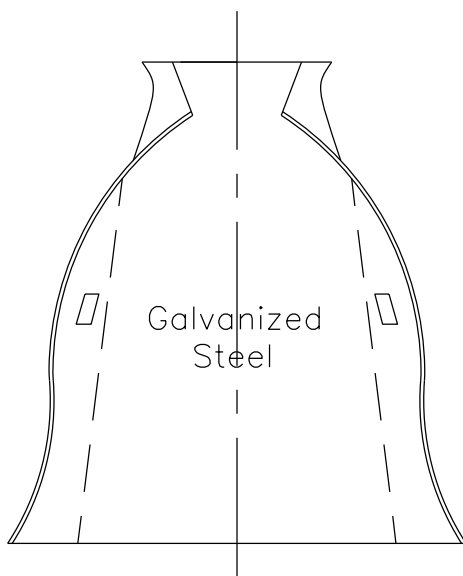
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N2007	N2007(1-1)1,2&4	19	63

ESTIMATED STRUCTURE QUANTITIES										ITEM NO.	25101- 2000	60201- 0810	60201- 0910	60202- 0510	60202- 0610	60210- 0810	60210- 1010	60211- 0910	60211- 1010
										Placed Riprap, Class 2	24" CSPC-16 Gauge 2 2/3" x 1/2" Corrugation	36" CSPC-16 Gauge 2 2/3" x 1/2" Corrugation	28" Span x 20" Rise CSPA-16 Gauge 2 2/3" x 1/2" Corrugation	35" Span x 24" Rise CSPA-16 Gauge 2 2/3" x 1/2" Corrugation	End Section For 24" CSPC-16 Gauge	End Section For 36" CSPC-16 Gauge	End Section For 28" Span x 20" Rise CSPA 16 Gauge	End Section For 35" Span x 24" Rise CSPA	
STATION	LOCATION	STRUCTURE DESCRIPTION	SKEW NO.	c.y.	ft.	ft.	ft.	ft.	Ea.	Ea.	Ea.	Ea.							
3+55.00	Lt.	1-24"ø x 68' CSPC (Under Turnout Lt.)			68'				2										
6+60.00	℄	1-35" Span x 24" Rise x 70' CSPA With End Section	90°					70'					1						
19+75.00	Rt.	1-24" x 40' CSPC (Under Turnout Rt.)		5.62	40'				2										
36+00.00	℄	2-36" x 106' CSPC	135°	33.22		212'				2									
47+40.00	℄	1-24" x 70' CSPC	90°		70'				1										
Sub-total :					38.84	178'	212'	0	70'	5	2	0	1						
MAINTENANCE ROAD RIGHT TURNOUT TO EXISTING BRIDGE																			
0+50.00	℄	1-28" Span x 20" Rise x 50' CSPA With End Section	90°					50'				2							
5+05.00	Lt.	1-28" Span x 20" Rise x 46' CSPA With End Section	90°					46'				2							
5+90.00	Lt.	1-28" Span x 20" Rise x 46' CSPA With End Section	90°					46'				2							
370 ft	--	Trapezoidal Channel Lining with Class-2 Rip Rap			27.0														
Sub-total :					0	0	0	142'	0	0	0	0	0						
GRAND TOTAL :					66.0	178'	212'	142'	70'	5	2	6	1						

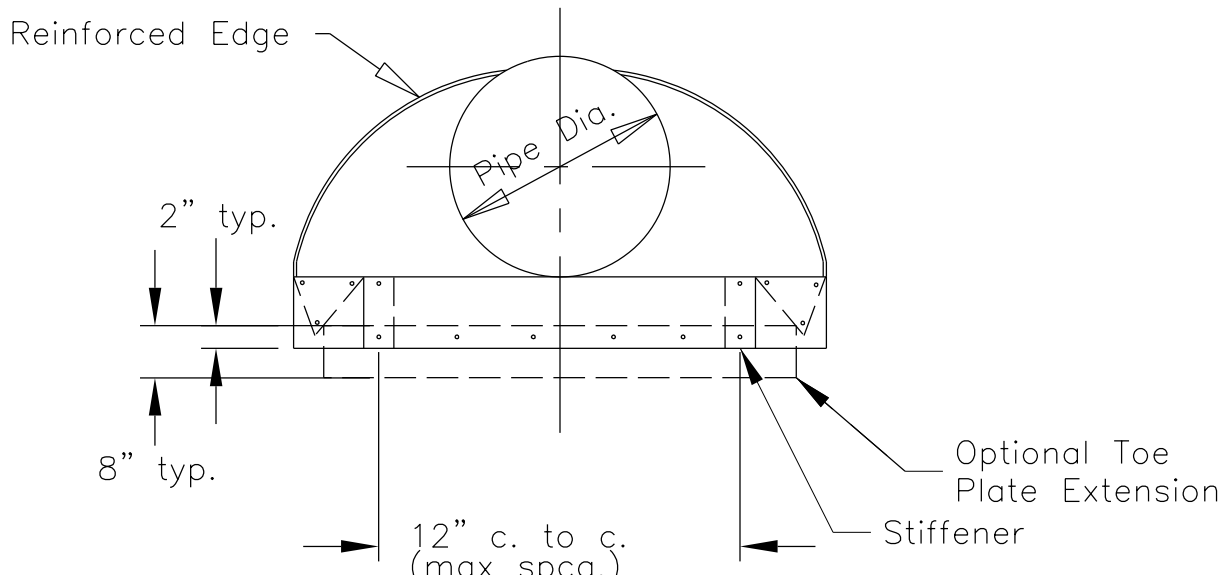
Reinforced Edge

2" typ.

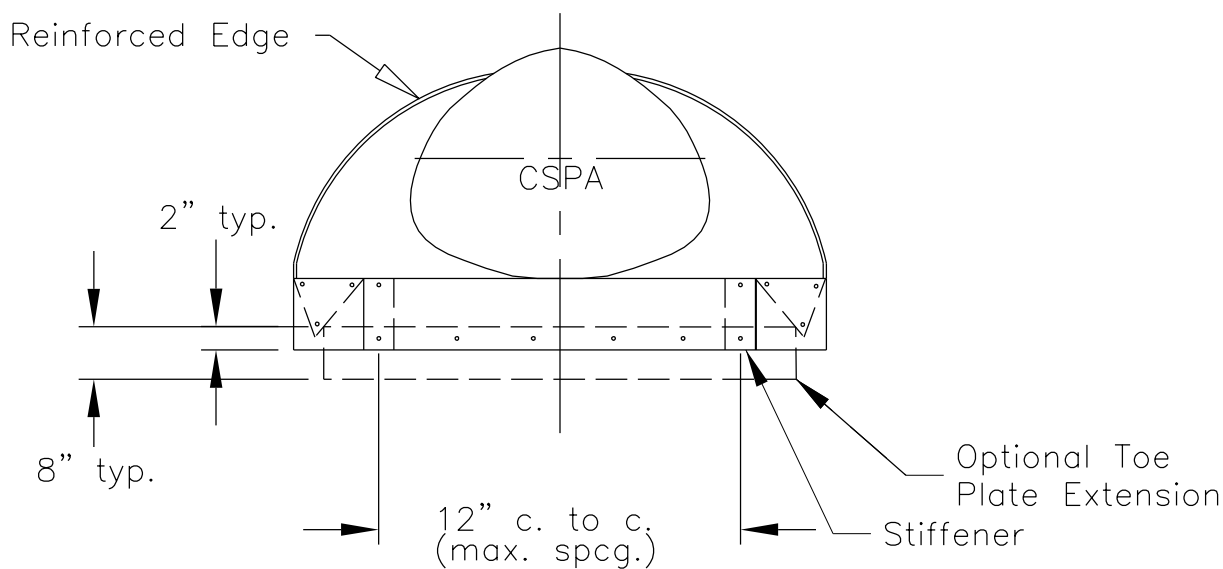
8" typ.



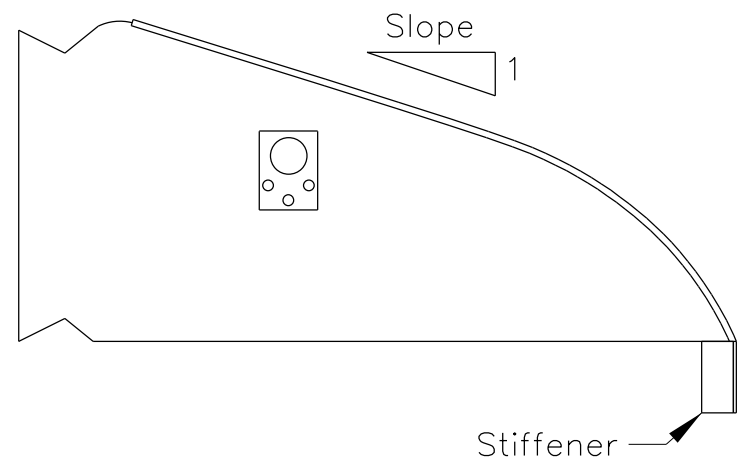
PLAN



ELEVATION



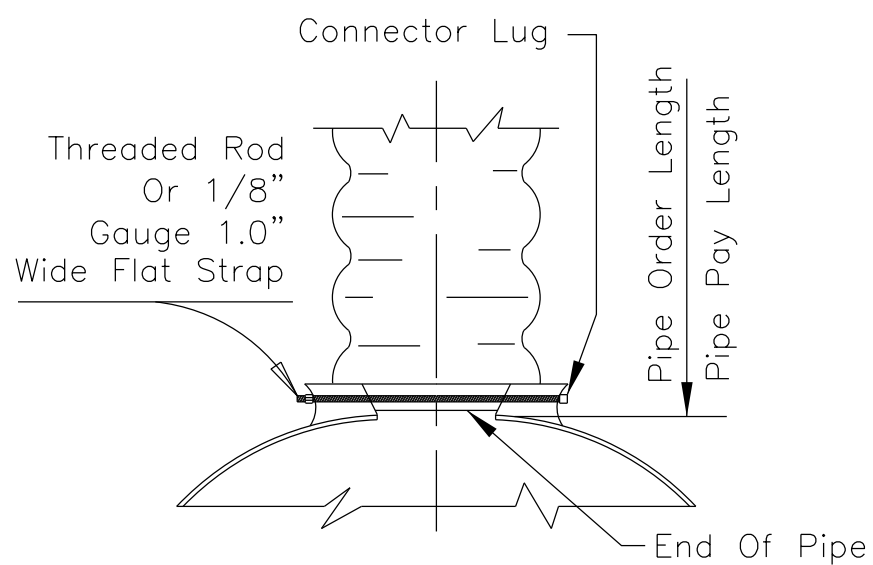
ELEVATION



TYPICAL CROSS SECTION

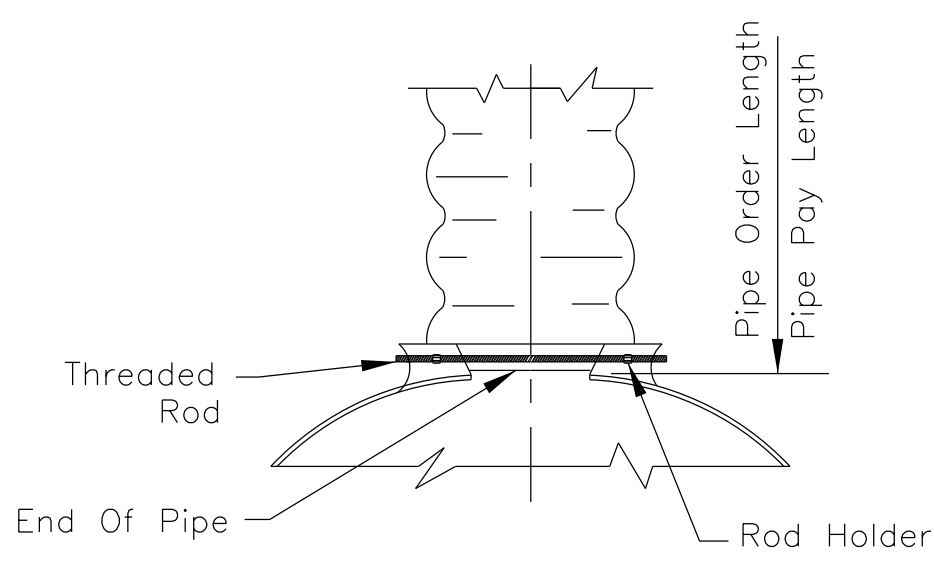
DIMENSIONS:

A, B, F, H, & L See Table 2.39, 2.40, And 2.41 In "Handbook Of Steel Drainage & Highway Construction Projects" Latest Editions.



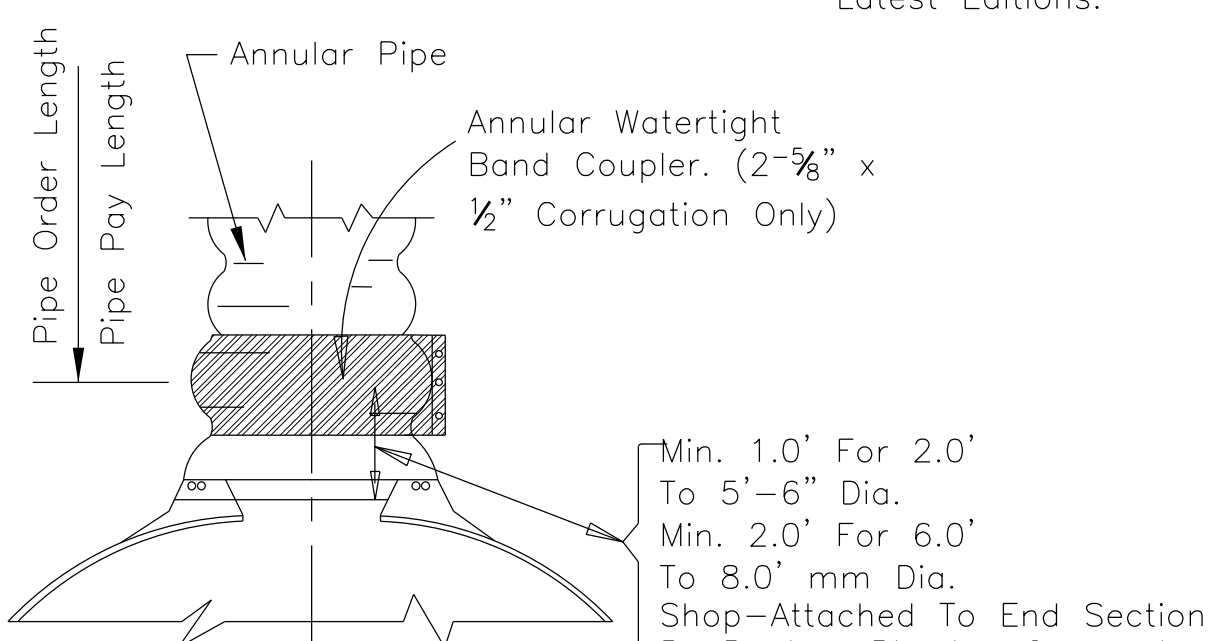
TYPE NO. 1

For 1.0' Thru 2.0' CSPC & 3'-3/8" x 1'-8" CSPA (See Note No. 6)



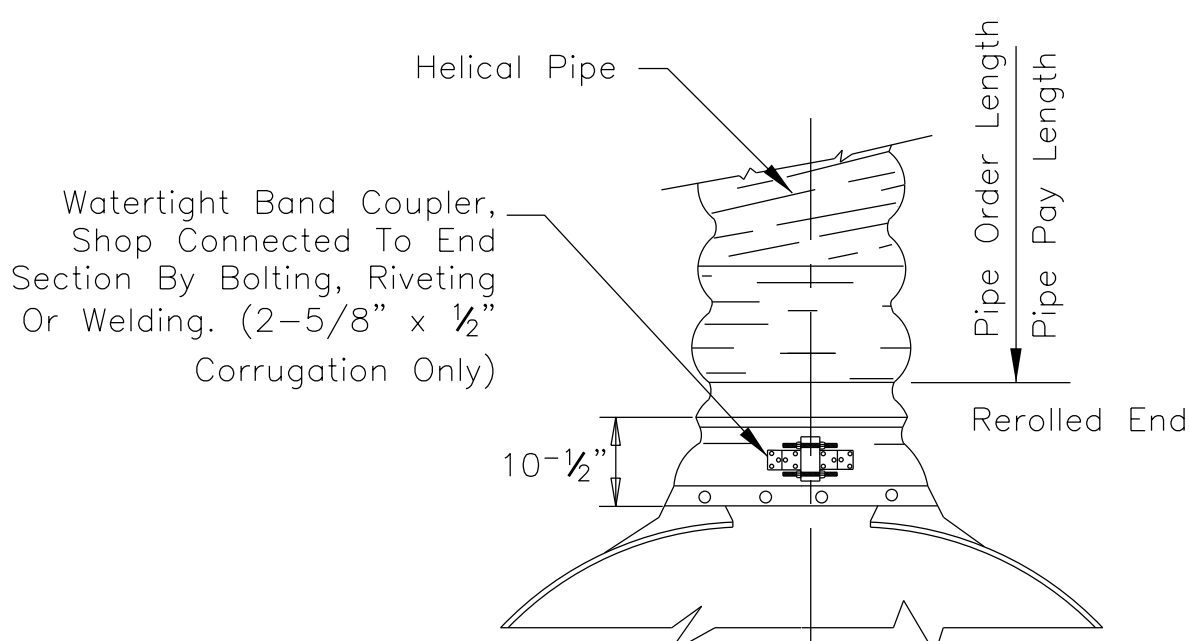
TYPE NO. 2

For 2'-6" & 3.0' CSP And 1'-5" x 1'-1" thru 4'-9" x 3'-2" CSPA Only (See Note No. 7)



TYPE NO. 3

Min. 1.0' For 2.0' To 5'-6" Dia.
Min. 2.0' For 6.0' To 8.0' mm Dia.
Shop-Attached To End Section By Bolting, Riveting Or Welding. (See Note No. 8)

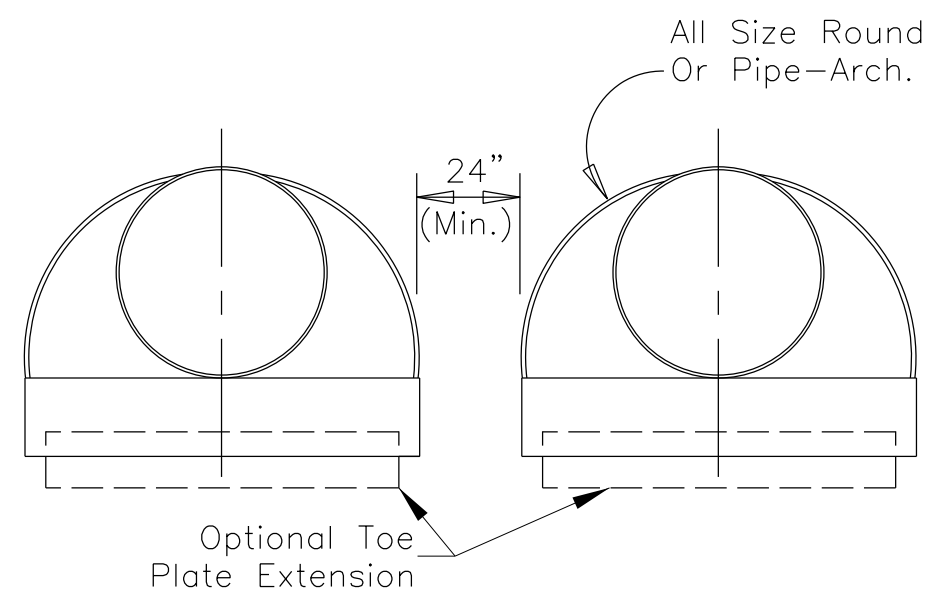


TYPE NO. 5

(SEE NOTE NO. 6)

GENERAL NOTES

- FOR MULTIPLE INSTALLATION OF ALL TYPES, A MINIMUM OF A 24" SPACING MEASURED ALONG THE HORIZONTAL BETWEEN FLARED END SECTIONS AT THEIR WIDEST CROSS SECTION SHALL BE USED.
- ALL THREE (3) PIECE BODIES TO HAVE 0.109" THICKNESS SIDES AND 0.138" THICKNESS CENTER PANELS. WIDTH OF CENTER PANELS TO BE GREATER THAN 20% OF THE PIPE PERIPHERY. MULTIPLE PANEL BODIES TO HAVE LAP SEAMS WHICH ARE TO BE TIGHTLY JOINED BY 0.375" ø GALVANIZED RIVETS OR BOLTS.
- END SECTIONS FOR STEEL PIPE-ARCHES: FOR THE 77" x 52" AND 83" x 57" SIZES, REINFORCED EDGE TO BE SUPPLEMENTED BY 2" x 0.25" GALVANIZED ANGLES. THE ANGLES TO BE ATTACHED BY 0.375" DIA. GALVANIZED NUTS AND BOLTS. ANGLE REINFORCEMENT WILL BE PLACED UNDER THE CENTER PANEL SEAMS.
- END SECTIONS FOR STEEL CIRCULAR PIPES: FOR 60" ø THRU 84" ø SIZES, REINFORCED EDGE TO BE SUPPLEMENTED WITH GALVANIZED STIFFENER ANGLES. THE ANGLES WILL BE 2" x 2" x 0.25" FOR 60" ø THRU 72" ø, AND 2.52" x 2.52" x 25" FOR 78" ø AND 84" ø. THE ANGLES TO BE ATTACHED BY 0.375" ø GALVANIZED NUTS AND BOLTS.
- WELDING SHALL NOT BE PERMITTED IN CONNECTING END SECTIONS TO CONNECTOR SECTIONS OR CONNECTOR SECTIONS TO PIPE.
- TYPE NO. 1 STEEL END SECTION, CONNECT END SECTION WITH THREADED ROD WITH CONNECTOR LUG, FOR 24" ø ROUND PIPE AND 28" x 20" CSPA.
- TYPE NO. 2 STEEL END SECTION, CONNECT END SECTION WITH THREADED ROD WITH ROD HOLDER FOR 30" ø AND 36" ø ROUND PIPE AND 17" x 13" THRU 57" x 38" CSPA.
- TYPE NO. 3 STEEL END SECTION, THE CONNECTION INCLUDES 12" OF THE PIPE LENGTH AS A CONNECTOR SECTION FOR PIPE ARCH SIZES 64" x 43" THRU 84" x 57" AND ROUND PIPE SIZES 42" ø THRU 84" ø. GAGES OF CONNECTOR SECTION SHALL BE THE SAME AS THE END SECTIONS AS MENTION ABOVE. THE CONNECTOR SECTION WILL BE ATTACHED TO THE END SECTION BY 0.374" ø GALVANIZED RIVETS OR BOLTS APPROXIMATELY 6" CENTERS.
- HELICALLY CORRUGATED PIPE, FOR TYPE NO. 5 AND TYPE NO. 3 THE DIMPLE BAND OR CORRUGATED PIPE CONNECTOR SECTION SHALL BE ATTACHED TO THE END SECTION BY 0.374" ø GALVANIZED STEEL RIVETS OR BOLTS SPACED AT APPROXIMATELY 6" CENTERS.
- TYPE NO. 1, TYPE NO. 2, AND TYPE NO. 3 CONNECTIONS MAY BE USED WITH WELDED SEAMS HELICALLY CORRUGATED PIPE WITH RE-ROLLED ENDS. RE-ROLLED ENDS SHALL INCLUDE A MINIMUM OF TWO (2) ANNULAR CORRUGATIONS OF THE SAME SIZE AS THE PIPE CORRUGATIONS.
- ALL CUT ENDS OF PIPE MUST BE CLEANED AND EITHER REGALVANIZED OR PAINTED AT THE FABRICATION PLANT USING GALVANIZED-ZINC PAINT PER THE MANUFACTURES RECOMMENDATIONS WITH MATERIAL CERTIFICATIONS SUBMITTED.



MULTIPLE INSTALLATION SPACING

NOTE: At Roadway Culverts Place End Sections On Inlet End Only.
At Driveway Culverts Place End Sections On Both Ends.

REVISED ON
12/12/2013

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

STRUCTURE QUANTITIES

DRAWN BY: Gerald.Hood DATE: 5/7/2009

DESIGNED BY: NRDOT DATE: 5/7/2009

REVISED: 1/28/2013 BY: Peterson.Yazzie

ANNOTATION SCALE: Full Size 1=1

FILENAME: Sht.19_Drainage Str. Quantity.dgn



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REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N2007	N2007(1-1)1,2&4	20	63

GENERAL NOTES

- The contractor shall be required to adjust the length of sign support posts. This work shall be included in the unit price for the appropriate bid items shown in the bid schedule.
- Sign dimension equal to or in exceed of 30" x 30" size shall be install with a minimum of two (2) steel posts.

illustration of posts/weight determination:

REQUIRED: Determine Post Requirement
For a 5.00 ft. wide x 4.00 ft. high traffic Sign.
Located On A Rural Highway.
GIVEN: W=5.00 ft.
D=4.00 ft.
C = 6.00 ft, for Rural areas

SOLUTION: 1) $B = C + (D/2)$
 $B = 6.00 \text{ ft.} + (4 \text{ ft.}/2)$
 $B = 8.00 \text{ ft.}$

2) $A = W \times D$
 $A = 5.00 \text{ ft.} \times 4.00 \text{ ft.}$
 $A = 20 \text{ ft.}^2$

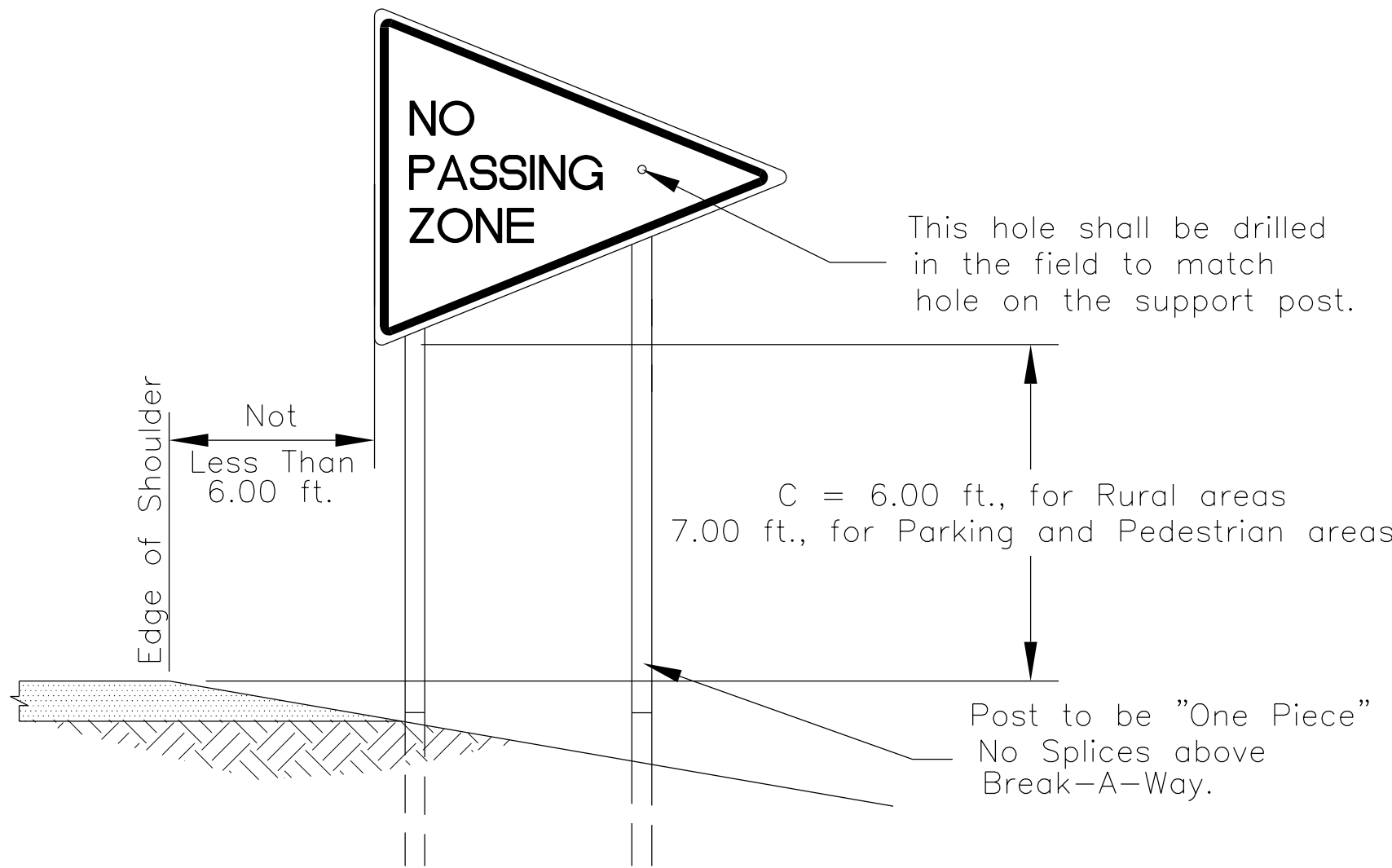
3) K factor = $A \times B$
 $K = 20 \times 8$
 $K = 160$

4. Begin with single post chart for column of B=8.00 ft. and continue down until area of sign equal or exceed 20 sq./ft. or down the K factor column until the value equals or exceeds 160. Both the Area and K factor exceed the single post chart so go to the double post chart.

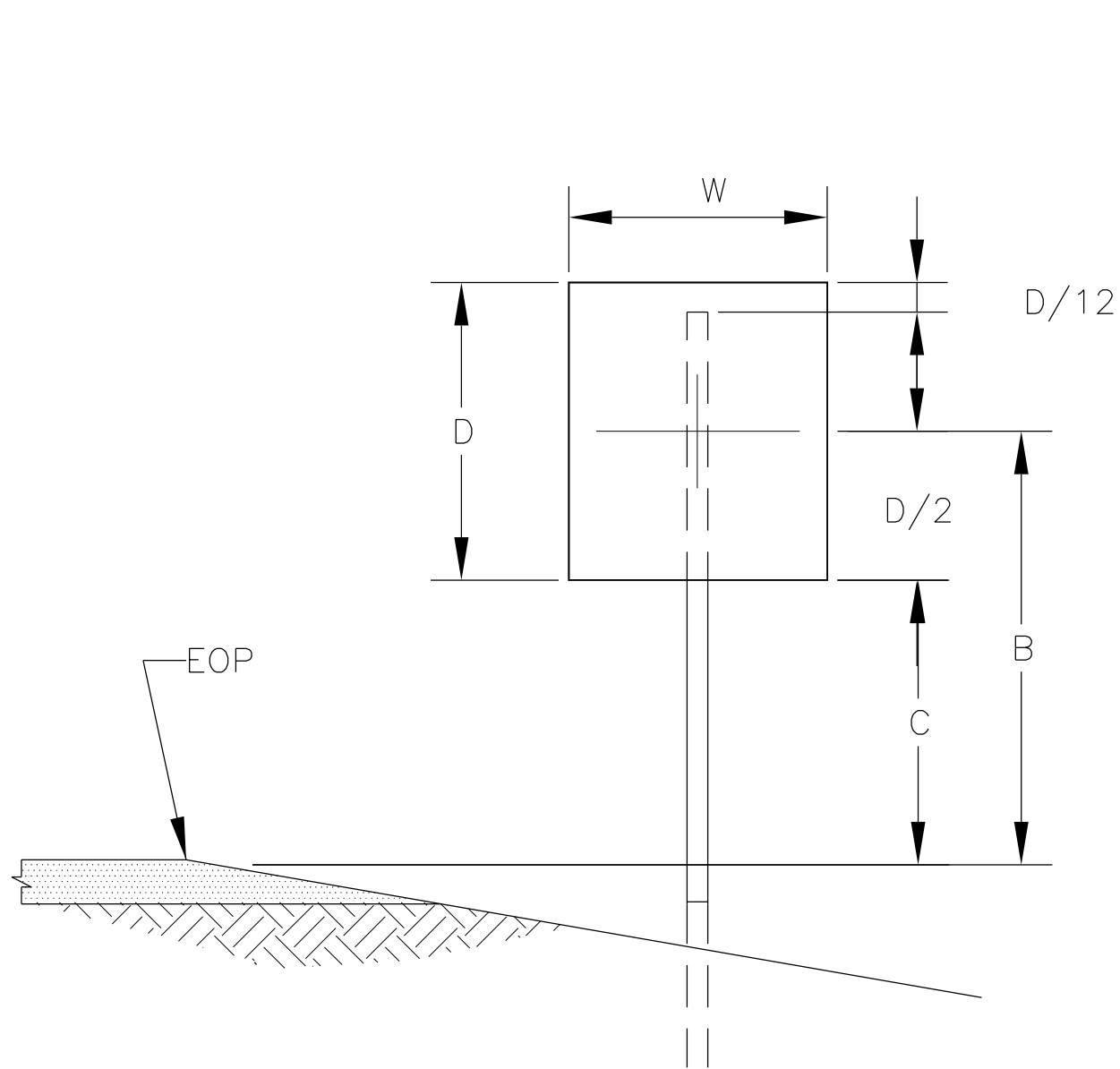
Select two (2) Posts of 3.00 lb/ft.
Yields a factor of 174
Which Is Optimum.

EXAMPLE:	K factor	Post weight	B=8
160 →	142	2.75 lb/ft	17.8
	174	3.00 lb/ft	21.8
	241	4.00 lb/ft	30.1

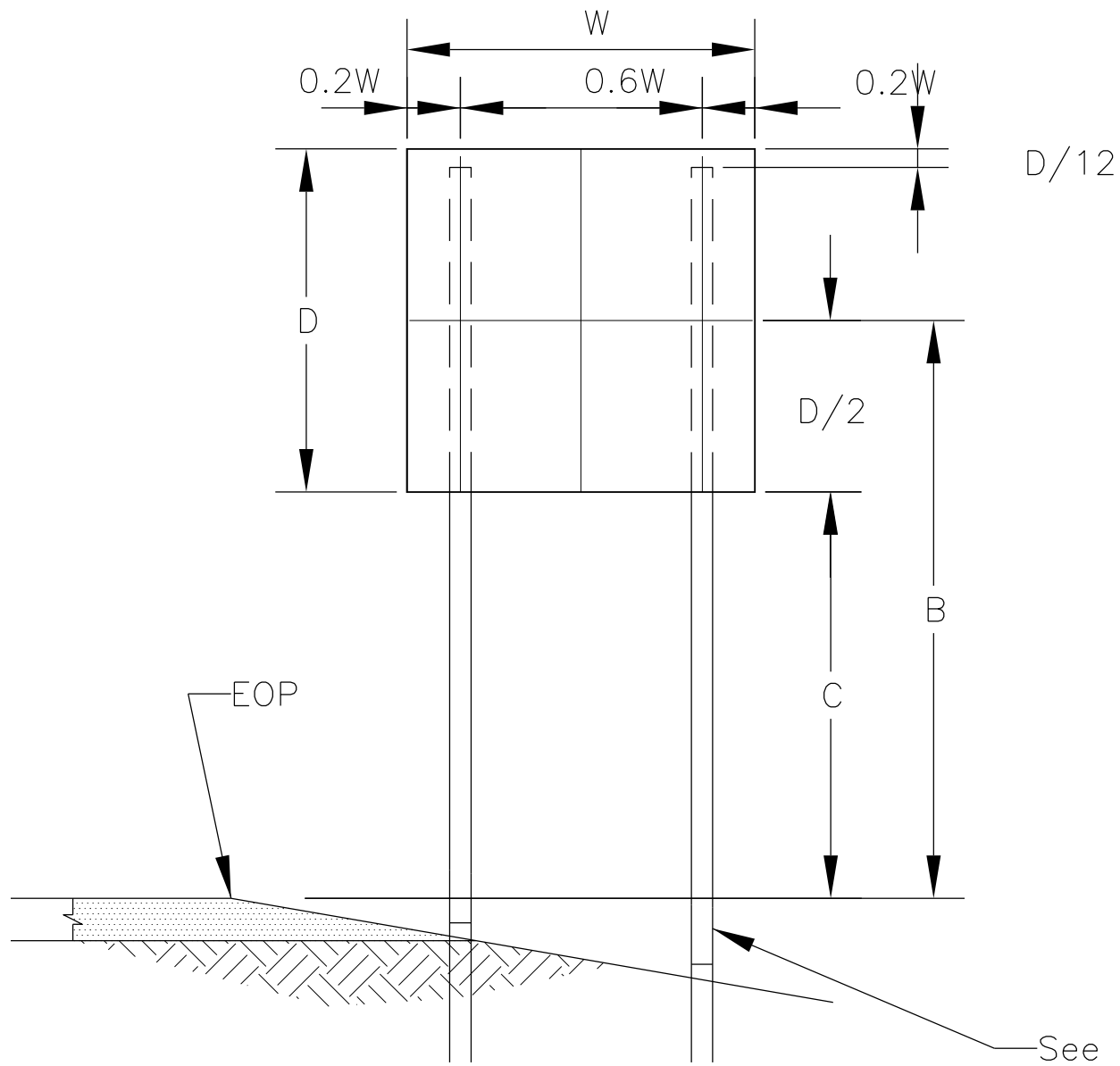
← 20



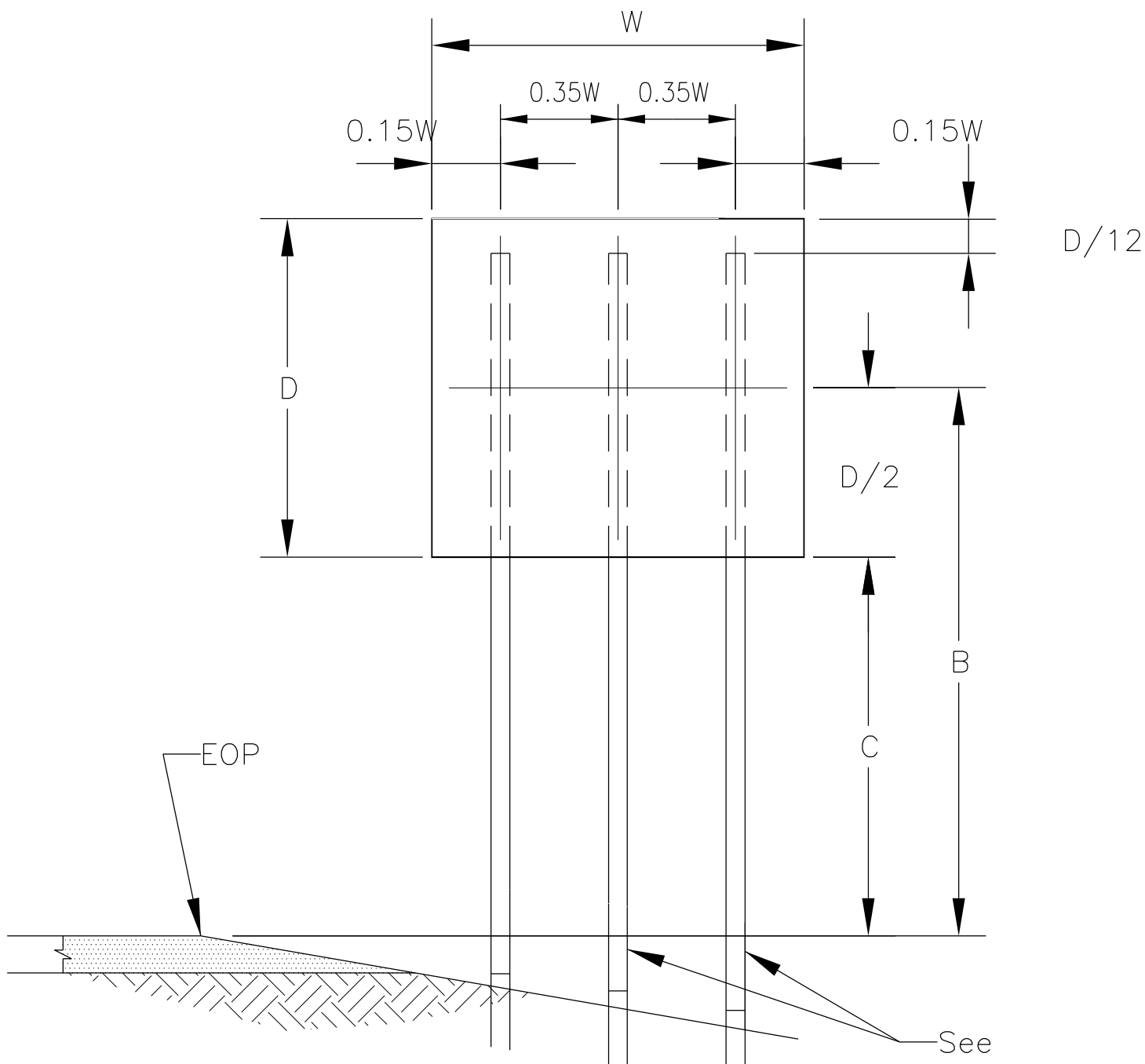
TYPICAL ROADSIDE SIGN LOCATION



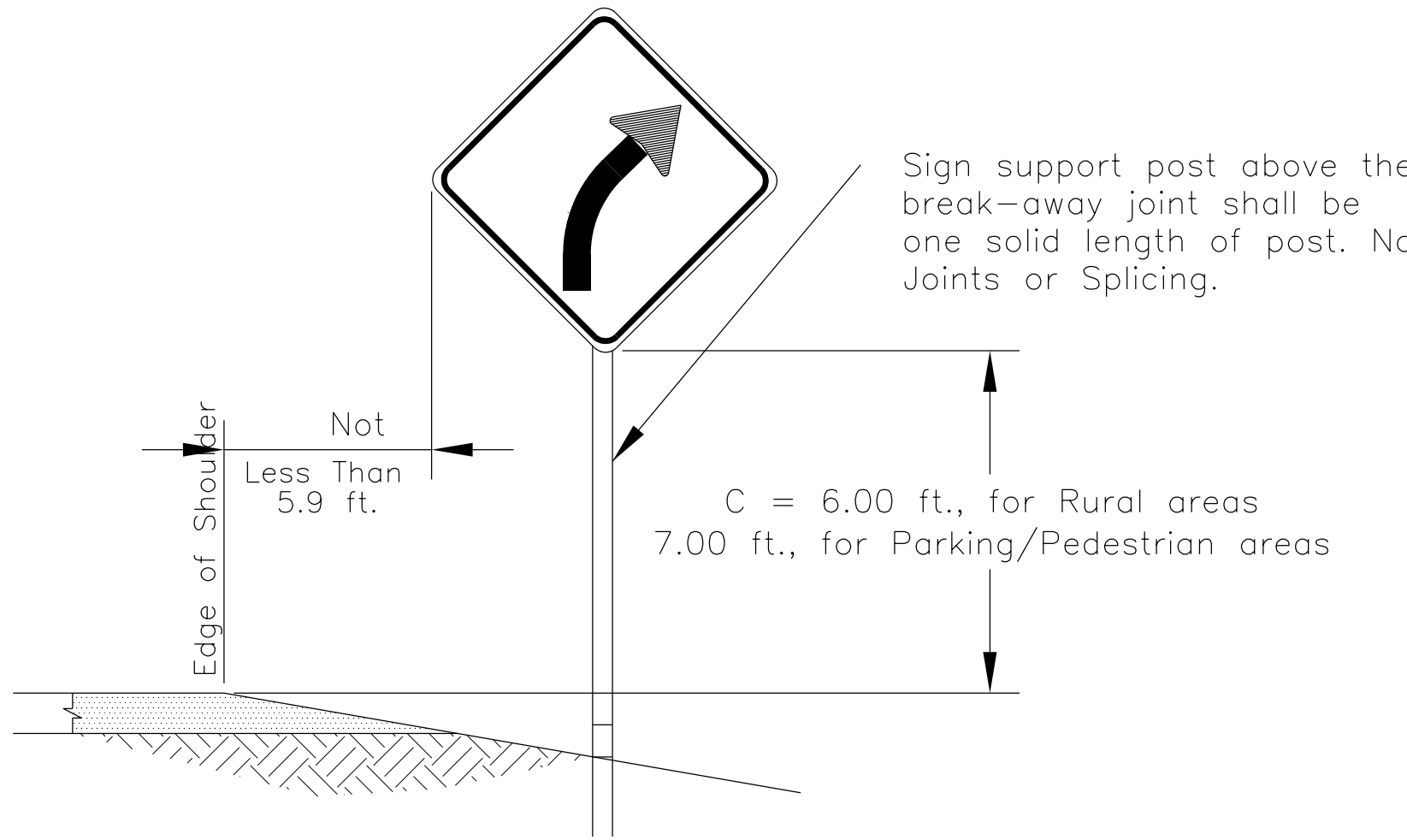
SINGLE POST SIZE (typ.)



DOUBLE POST SIZE (typ.)



THREE POST SIZE (typ.)



TYPICAL ROADSIDE SIGN LOCATION

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

PERMANENT SIGNING DETAIL

DRAWN BY: Gerald.Hood DATE: 5/7/2009
DESIGNED BY: NRDOT DATE: 5/7/2009
REVISED: 1/25/2013 BY: Peterson.Yazzie
ANNOTATION SCALE: Full Size 1=1
FILENAME: Sht.20 Perm Sign Std Details1.dgn

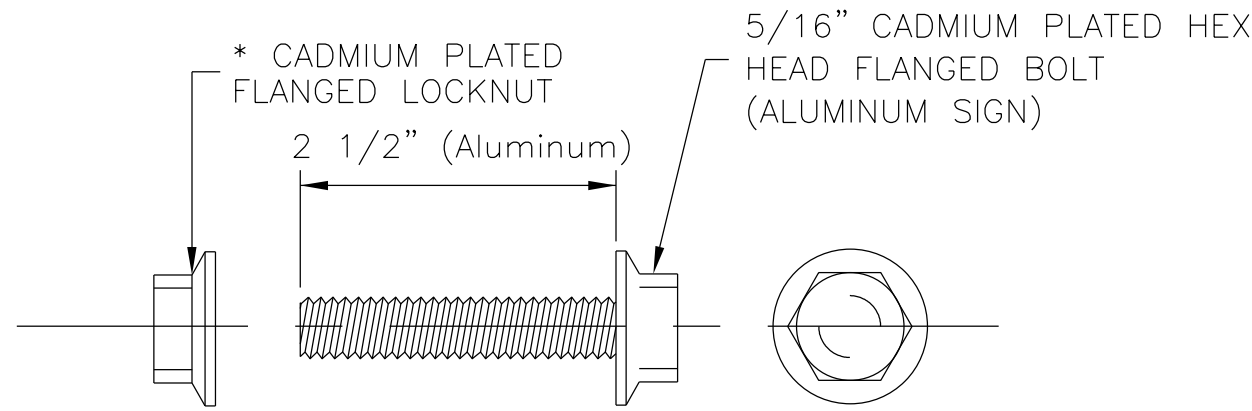


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RIB-BAK U-CHANNEL SIGN SUPPORTS

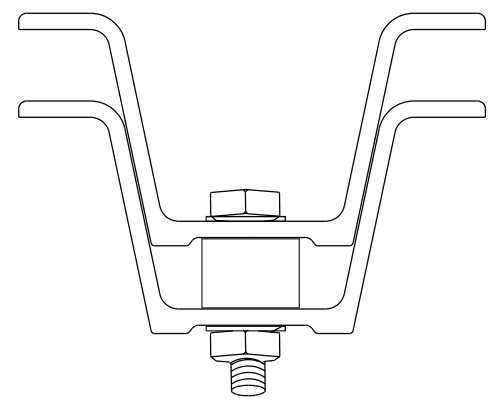
WEIGHT *lb/ft	DIMENSIONS (inches)				AREA in ²	X-X AXIS		Y-Y AXIS	
	A	B	C	D		in ⁴	in ³	in ⁴	in ³
2.0	1.462	3.062	1.278	.669	.556	.155	.195	.422	.276
2.5	1.516	3.062	1.278	.669	.701	.208	.249	.550	.359
2.75	1.536	3.062	1.278	.669	.756	.228	.270	.598	.391
3.0	1.881	3.500	1.336	.834	.840	.376	.340	.837	.478
4.0	1.968	3.500	1.336	.834	1.112	.540	.467	1.147	.655

* ±5%

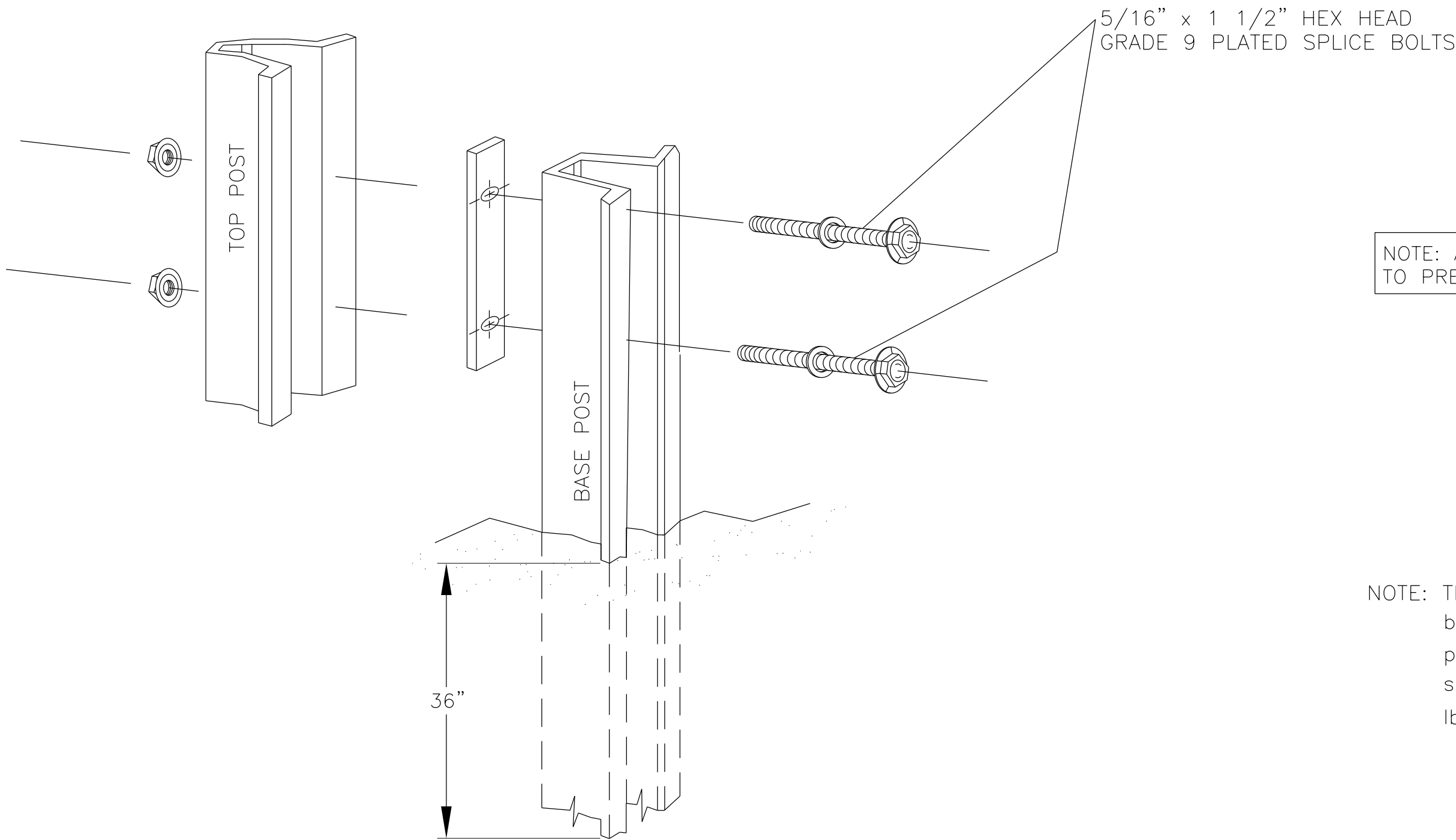


BOLTS AND LOCKNUT – SIGN ATTACHMENT

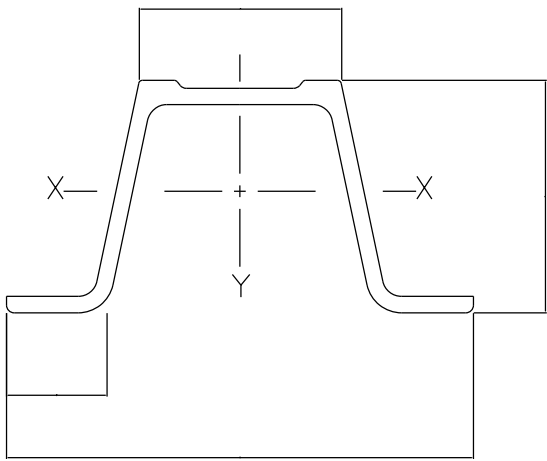
* FLANGED LOCKNUT REQUIRED FOR CARRIAGE AND HEX.



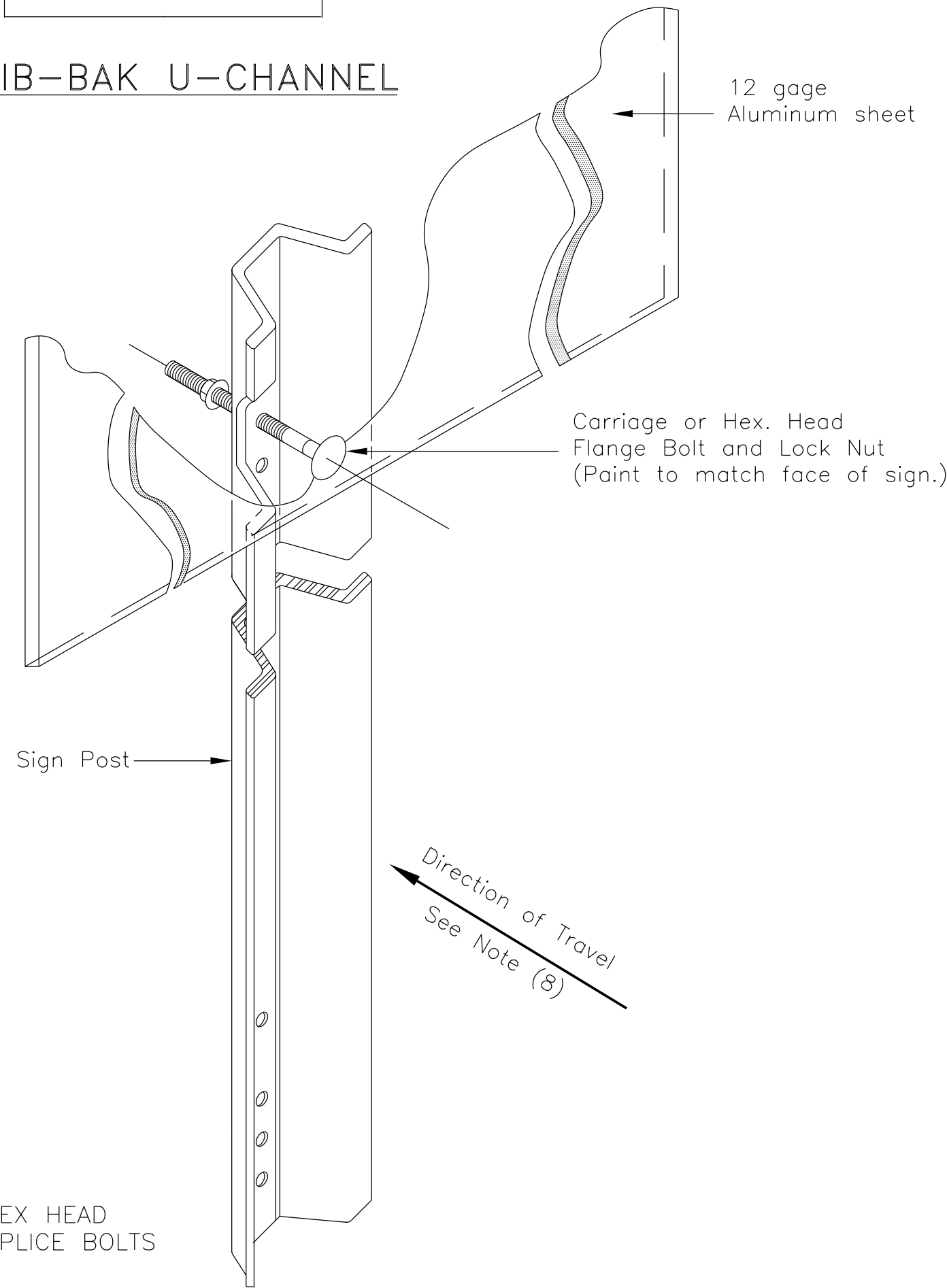
LAP SPLICE – TOP VIEW



LAP SPLICE CONNECTION DETAIL

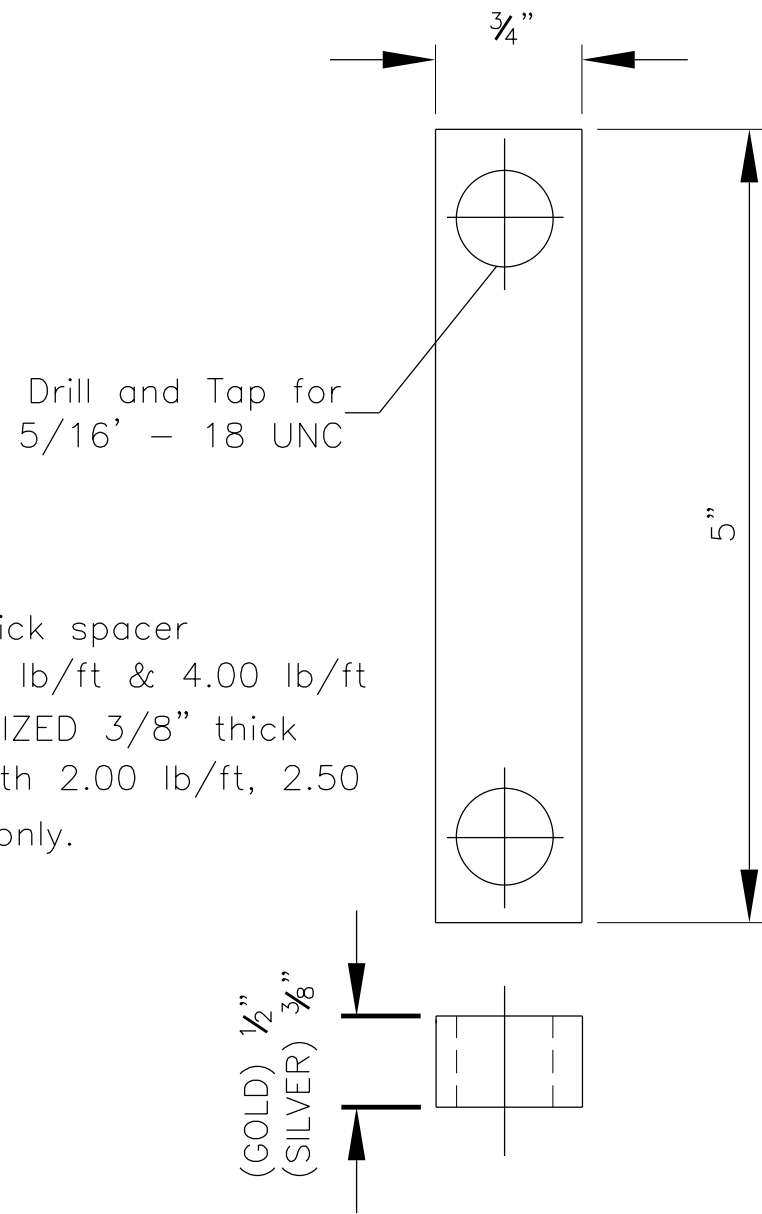


RIB-BAK U-CHANNEL



NOTE: ALL BOLTS TO BE "BURRED" TO PREVENT LOOSENING

NOTE: The GOLD ANODIZED 1/2" thick spacer bar is to be used with 3.00 lb/ft & 4.00 lb/ft posts only. The SILVER ANODIZED 3/8" thick spacer bar is to be used with 2.00 lb/ft, 2.50 lb/ft, and 2.75 lb/ft posts only.



LAP SPLICE SPACER BAR

GENERAL NOTES

1. BASE POST AND SIGN POST SHALL BE RIB-BAK U-CHANNEL FABRICATED FROM HOT ROLLED CARBON STEEL BARS CONFORMING TO THE REQUIREMENTS OF ASTM A499. YIELD POINT OF THE STEEL SHALL BE 550 MPa (MINIMUM) TENSILE SHALL BE 689.47 MPa (MINIMUM).
2. POSTS SHALL BE A UNIFORM, MODIFIED, FLANGED CHANNEL SECTION OF THE RIB-BAK DESIGN. WEIGHT OF THE POSTS SHALL BE AS SPECIFIED BY THE USER, ±5% BEFORE PUNCHING. THE POSTS SHALL BE PUNCHED WITH WITH CONTINUOUS 3/8" HOLES ON 1" CENTERS FOR THE ENTIRE LENGTH OF THE POST.
3. THE POSTS SHALL BE MACHINE STRAIGHTENED TO HAVE A SMOOTH UNIFORM FINISH, FREE FROM DEFECTS AFFECTING THEIR STRENGTH, DURABILITY, OR APPEARANCE. ALL HOLES AND ROUGH EDGES SHALL BE FREE FROM BURRS. THE PERMISSIBLE TOLERANCE FOR STRAIGHTNESS SHALL BE WITHIN 1/4" IN 5 FEET
4. POSTS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A 123. BOLTS, NUTS, WASHERS AND SPACER SHALL BE CADMIUM PLATED IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A 165 OR ZINC PLATED IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM B 633.
5. SPLICE HARDWARE SHALL CONSIST OF TWO FULLY THREADED, 5/16" x 1 1/2" GRADE 9 PLATED, HEX HEAD BOLTS, WITH FLAT WASHERS, AND SELF LOCKING HEX NUTS PER POST. IN ADDITION, ONE 3/4" x 5" PLATED SPACER BAR SHALL BE USED, PER POST, TO STIFFEN THE SPLICE CONNECTION. EACH SPACER BAR SHALL BE DRILLED AND TAPPED WITH 5/16"-18 UNC THREADS. THE SPACER SHALL BE FABRICATED FROM HOT ROLLED CARBON STEEL BARS CONFORMING TO ASTM A 36 OR M 1020. BOLTS SHALL BE RED IN COLOR, WITH THE HEAD MARKING "M180".
6. BOLTS AND LOCK NUT HARDWARE FOR SIGN ATTACHMENT SHALL BE HEX HEAD FLANGE TYPE, SIZE SHALL BE 5/16"-18 UNC.
7. AN APPROVED ALTERNATE BREAKAWAY POST ASSEMBLY MAY BE SUBMITTED TO THE C.O.R. FOR REVIEW AND APPROVAL.
8. SUPPLEMENTAL SIGNS ON THE OPPOSITE SIDE OF ROAD SHALL HAVE THE POST REVERSED SO THAT RIB-BAK IS FACING AWAY FROM THE OPPOSING TRAFFIC.
9. THE POST SHALL BE COATED WITH A BAKED ON GREEN ALKYD RESIN, PAINT, PAINTED WITH A POLYESTER POWDER OR GALVANIZED PER NOTE 4 ABOVE. POWDER COATING SHALL CONFORM TO AASHTO M 284-08.

INSTALLATION PROCEDURE

- STEP 1:**
DRIVE BASE POST TO WITHIN APPROXIMATELY ONE FEET ABOVE GROUND LEVEL. PLACE ONE BOLT AND CUT WASHER IN FIFTH HOLE FROM THE TOP, AND SECURELY TIGHTEN THREADED SPACER ONTO BOLT.
- STEP 2:**
DRIVE BASE POST TO 4" ABOVE GROUND LEVEL. PLACE REMAINING BOLT AND CUT WASHER IN FIRST HOLE FROM THE END, AND SECURELY TIGHTEN THREADED SPACER ONTO BOLT.
- STEP 3:**
DIG OUT APPROXIMATELY 2" FROM AROUND BACK OF GROUND POST TO ALLOW ROOM FOR TOP POST TO BE ATTACHED.
- STEP 4:**
NEST TOP POST ONTO PROTRUDING BASE POST BOLTS, THROUGH THE FIRST AND FIFTH HOLES OF THE TOP POST.
- STEP 5:**
PLACE A SELF-LOCKING FLANGE NUT ON EACH BOLT. TIGHTEN NUTS AND TAMP EARTH AROUND POST FIRMLY.

UNITED STATES
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NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

LAP SPLICE U-CHANNEL
BREAKAWAY SYSTEM

DRAWN BY: Gerald.Hood DATE: 5/7/2009
DESIGNED BY: NRDOT DATE: 5/7/2009
REVISED: 1/25/2013 BY: Peterson.Yazzie
ANNOTATION SCALE: Full Size 1=1
FILENAME: Sht.21 Perm Sign Std Details2.dgn

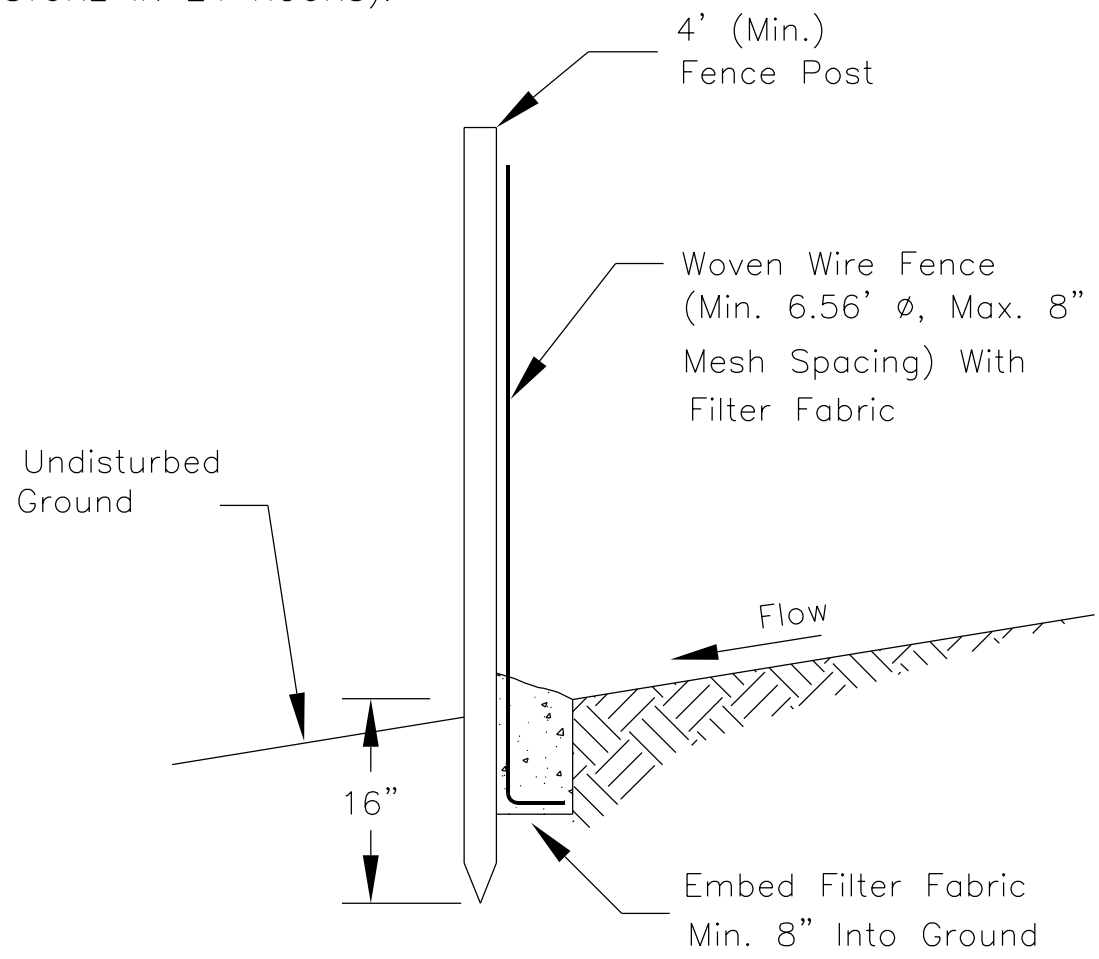


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REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N2007	N2007(1-1)1,2&4	22	63

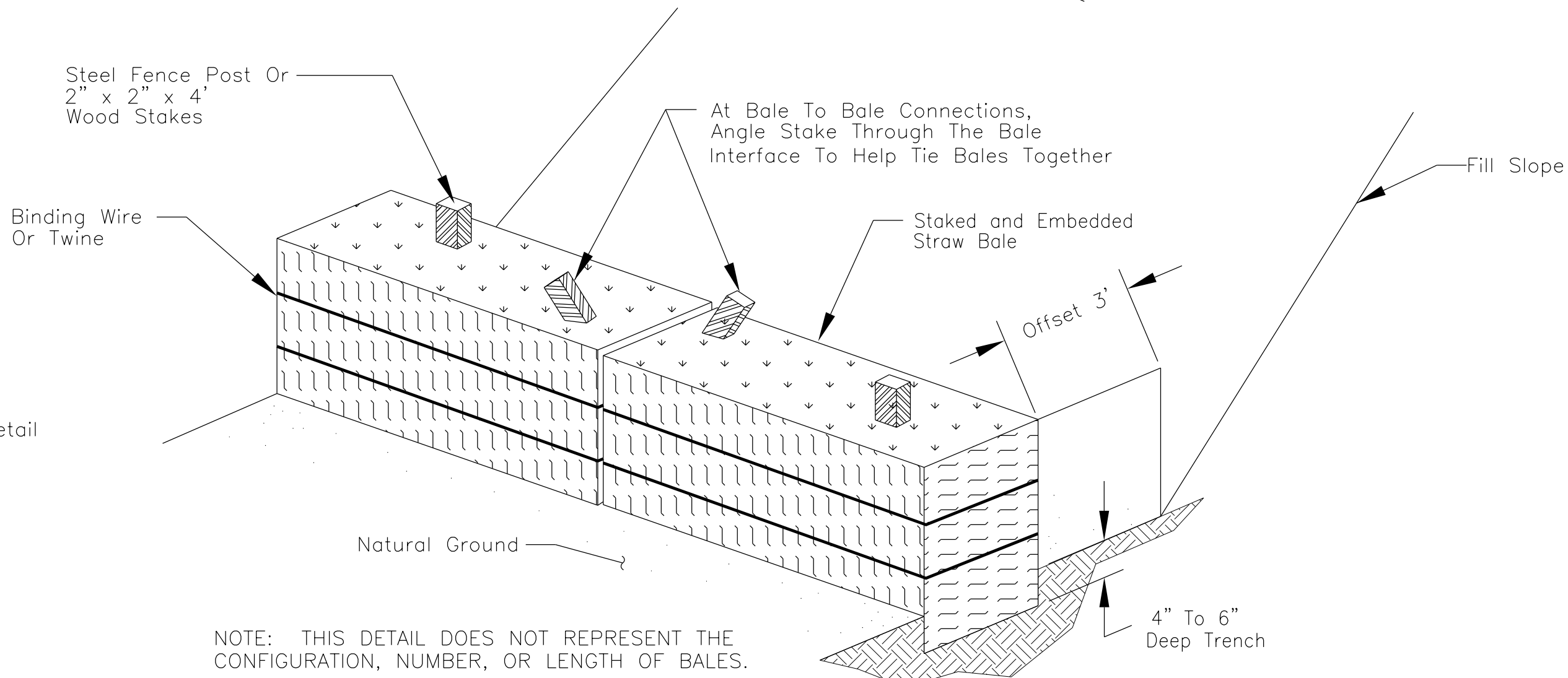
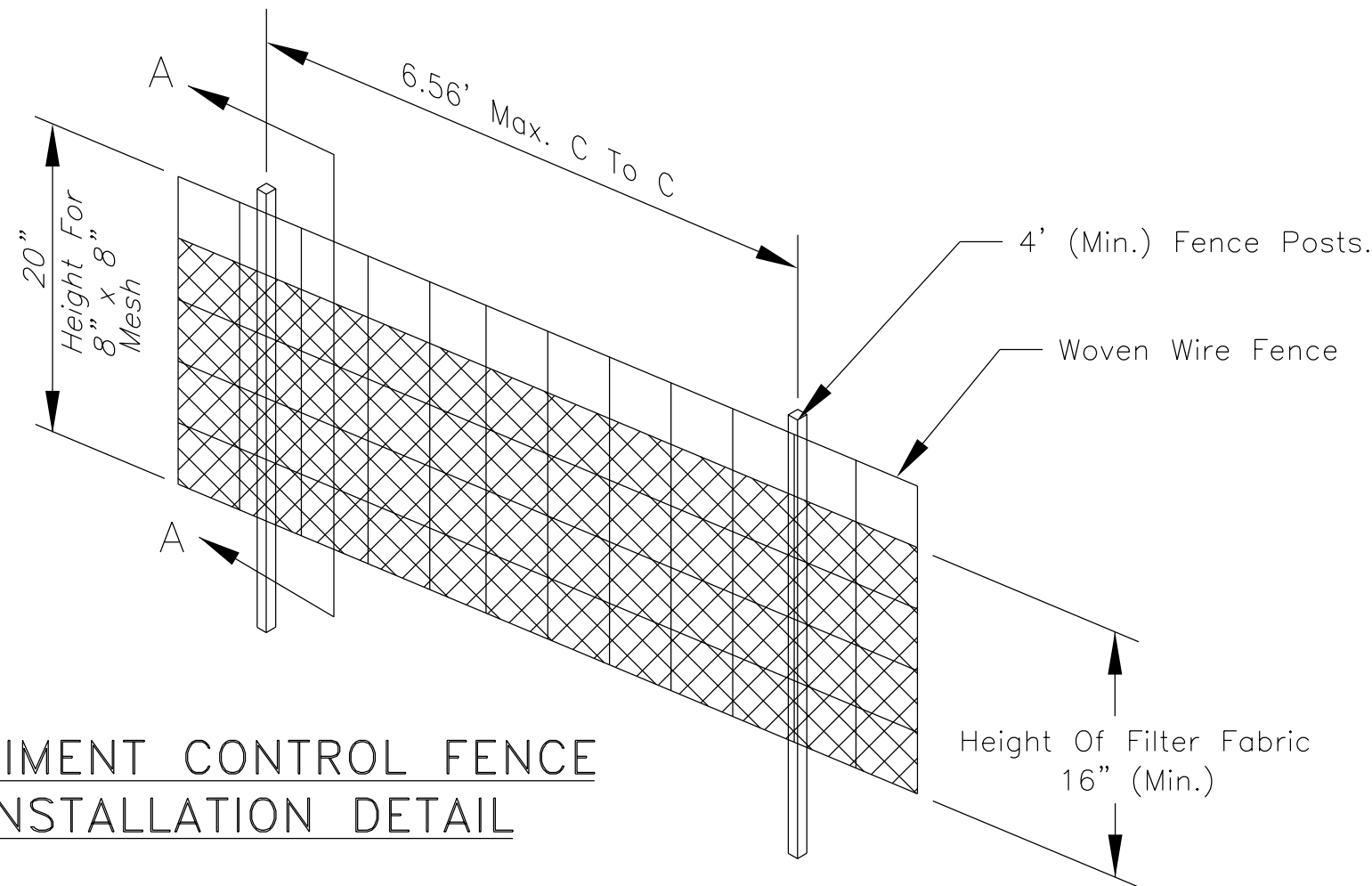
GENERAL NOTES

1. THE CONTRACTOR SHALL PREPARE AND SUBMIT A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IN FULL DETAIL FOR ALL PHASES OF THE WORK FOR REVIEW AND APPROVAL AT LEAST 14 CALENDAR DAYS BEFORE IMPLEMENTATION. THE PLAN SHALL MEET THE REQUIREMENTS HEREIN AND SECTION 157 OF THE FP-03 AS MODIFIED IN THE SUPPLEMENTAL SPECIFICATION. SEE SPECIAL CONTRACT REQUIREMENTS FOR NPDES PERMIT REQUIREMENTS.
2. THE SILT FENCING CONSISTS OF 36" SEDIMENT CONTROL FABRIC CLOTH WITH BURIED-TOE, AND STEEL POSTS (TEE OR U TYPE) SPACED AT 6.56' WITH 3/32" SIZE WELDED WIRE BACK-UP FENCE.
3. WOVEN WIRE FABRIC TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT THE TOP AND MID-SECTION. GEOTEXTILE MATERIAL FOR SILT FENCING SHALL BE TYPE-V UNDER SUB-SECTION 714.01 OF FP-03.
4. WHEN TWO SECTION OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY 6" AND FOLDED. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.
5. SILT FENCE SHALL BE INSTALLED PARALLEL TO THE TOE OF ALL ROADWAY EMBANKMENT FILLS IN LOCATIONS WHERE THE TOE OF THE FILLS ARE WITHIN 6.56' OF EXISTING STREAMS, CREEKS OR WASHES; IN AREAS WITH HIGHLY EROSION SOILS AND/OR WHERE EMBANKMENTS ARE AT A 1:3 OR STEEPER SLOPE. THE SILT FENCE SHALL BE PLACED 3' TO 6' DOWNHILL FROM THE TOE OF THE FILL AND IN ACCORDANCE WITH SECTION 157 OF THE FP-03 AND THE SUPPLEMENTAL SPECIFICATIONS.
6. STRAW BALES MAY BE USED AT THE TOP OF CUT BACKSLOPES AND FOR DIKES PROVIDED THEY ARE PROPERLY ANCHORED WITH STEEL FENCE POSTS OR 2" x 2" x 4' WOOD STAKES (TWO PER BALE) ANCHORED 508 mm INTO THE NATURAL GROUND. STRAW BALES SHALL BE CERTIFIED 0.5% WEED FREE. DO NOT USE STRAW BALES IN AREAS OF CONCENTRATED FLOW AND CUT DITCHES.
7. FURNISHING AND PLACEMENT OF SILT FENCE MATERIAL AND OTHER EROSION CONTROL MEASURES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 15708-1000.
8. SEDIMENT/SILT FENCING SHALL BE PLACED AT ALL LOCATIONS WHERE EMBANKMENTS HAVE SLOPE DISTANCES OF 100' OR GREATER. THE SEDIMENT FENCING WILL BE PLACED AT THE TOE OF SLOPES OFFSET 3-6 FEET.
9. THE CONTRACTOR SHALL INSPECT AND MAINTAIN ALL SWPPP MEASURES WEEKLY AND AFTER EACH SIGNIFICANT STORM EVENT (I.E. 1" OF MOISTURE IN 24 HOURS).



SECTION A-A

EROSION & SEDIMENT CONTROL FENCE
ALONG EDGE OF STREAM BANK (TOE OF SLOPE)



TYPICAL STRAW BALE STAKING
AND TRENCHING DETAIL

'TRACKING' WITH MACHINERY ON SANDY SOIL PROVIDES ROUGHENING WITHOUT UNDUE COMPACTION.

SPREAD
STRAW
MULCH
(TYPICAL)

Edge Of Shoulder

Tracking using a bulldozer
or other equipment that
runs on cleated tracks.

Stream Bank

Existing Creek Or Wash

Flow

See Installation Detail

EROSION & SEDIMENT CONTROL FENCE
AT DRAINAGE STRUCTURE

Sediment Traps @ Outlet Ends
See Plan Sheet 23 for details.

Edge Of Shoulder

Edge Of Pavement

Varies

Tracking using a bulldozer
or other equipment that
runs on cleated tracks.

Cut Ditch

See Installation Detail

EROSION & SEDIMENT CONTROL FENCE
IN MINOR SWALES OR CUT DITCHES
(APPROX 197' SPACING FOR FABRIC)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

STORMWATER POLLUTION & EROSION
SEDIMENT CONTROL DETAILS

DRAWN BY: Gerald.Hood DATE: 5/6/2009

DESIGNED BY: NRDOT DATE: 5/6/2009

REVISED: 1/25/2013 BY: Peterson.Yazzie

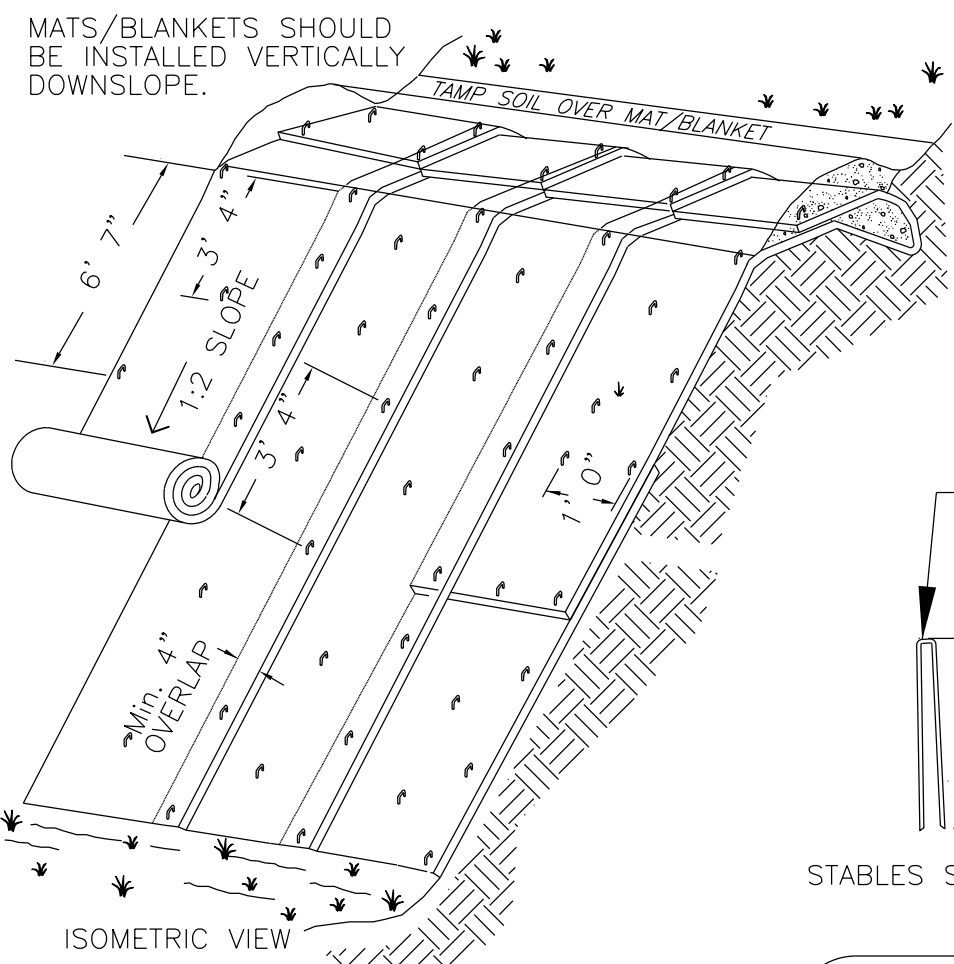
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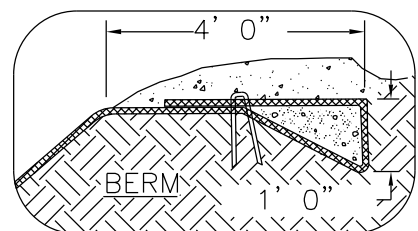
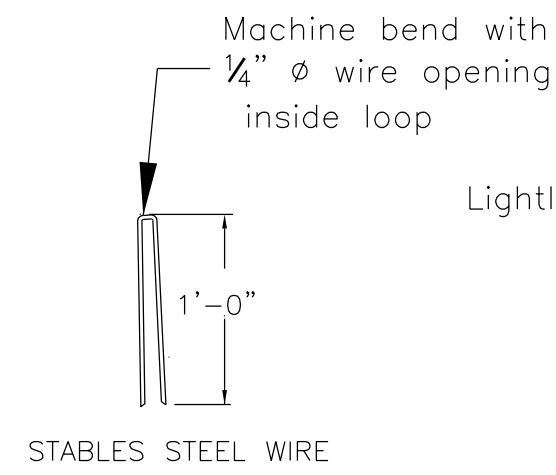
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REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N2007	N2007(1-1)1,2&4	23	63

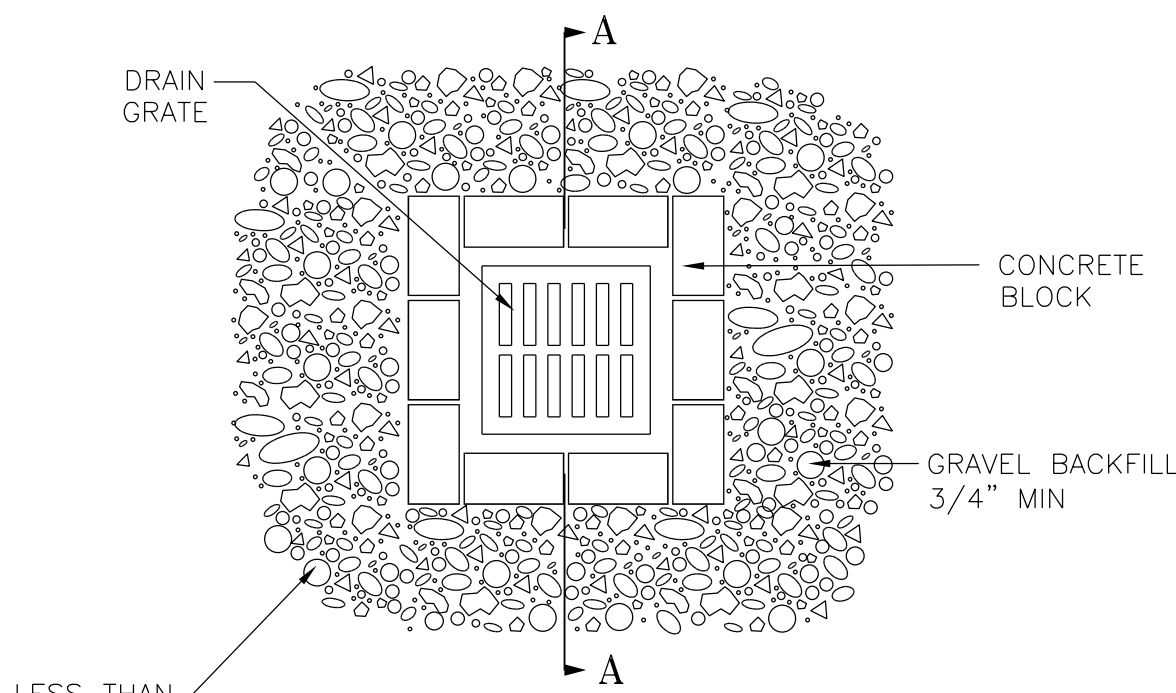


TYPICAL SLOPE SOIL STABILIZATION

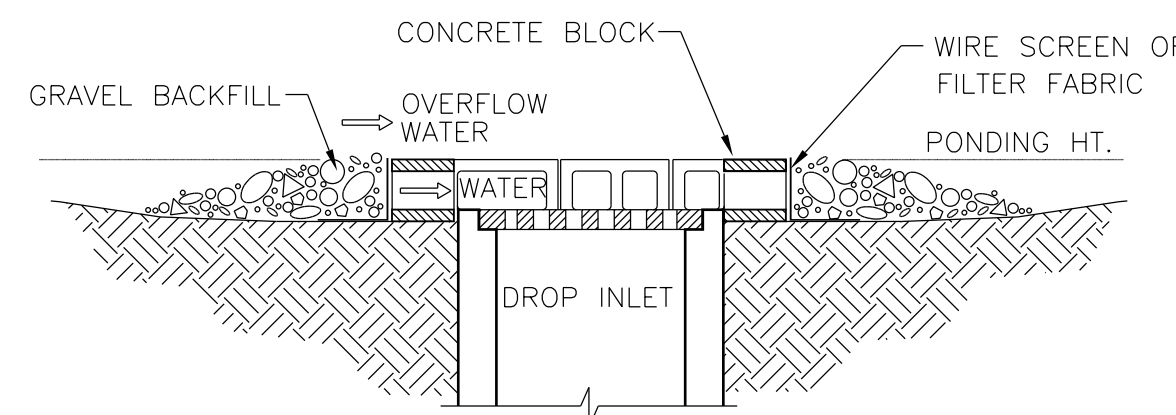
- NOTES:
1. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS. MATS/BLANKETS SHALL HAVE GOOD SOIL CONTACT.
 2. APPLY PERMANENT SEEDING BEFORE PLACING BLANKETS.
 3. LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.



EROSION BLANKETS & TURF REINFORCEMENT MATS SLOPE INSTALLATION



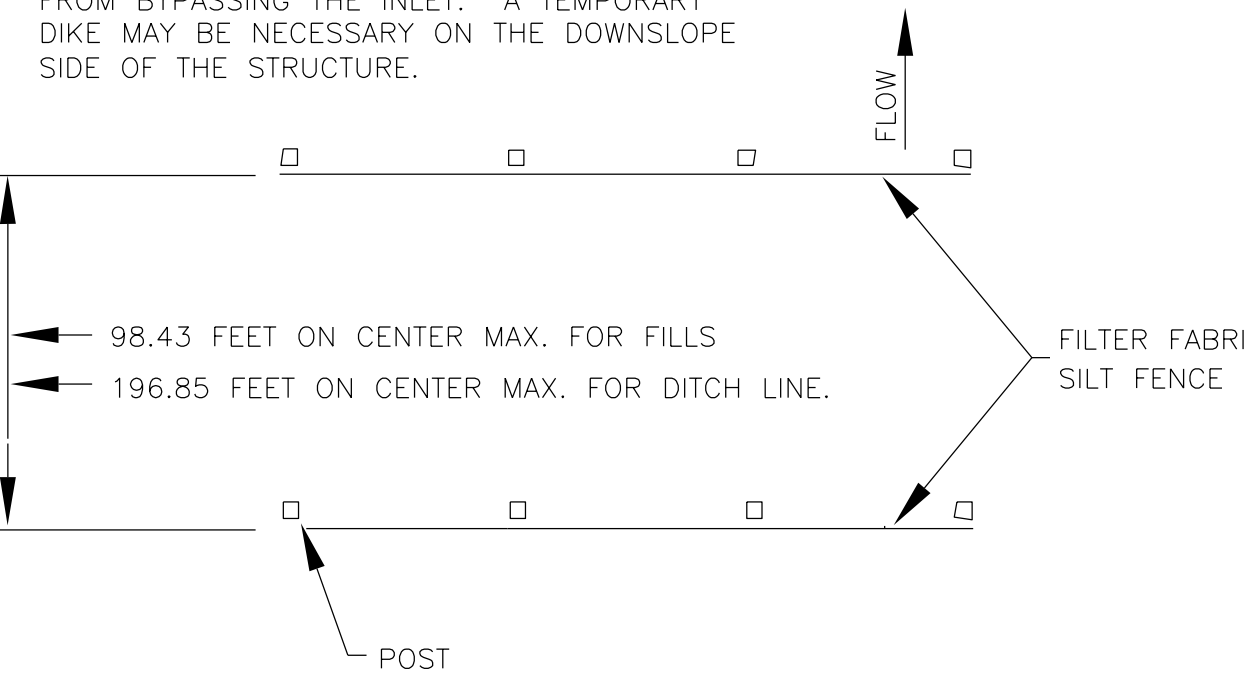
PLAN VIEW



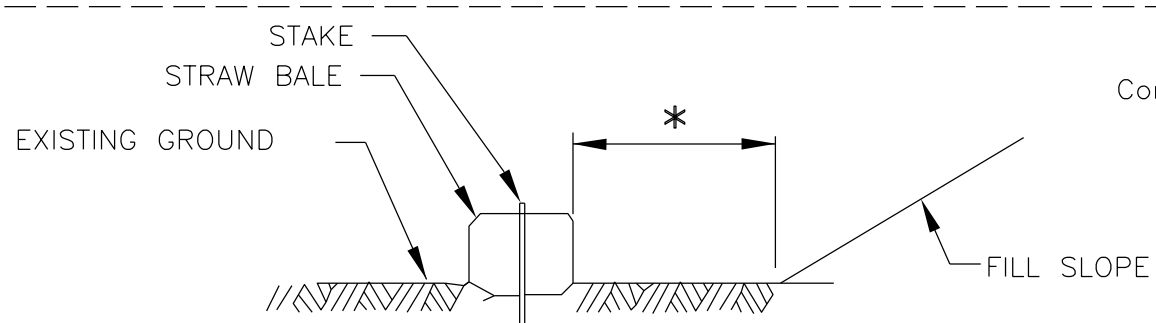
SECTION A - A

- NOTES:
1. DROP INLET SEDIMENT BARRIERS ARE TO BE USED FOR SMALL, NEARLY LEVEL DRAINAGE AREAS. (LESS THAN 5%)
 2. EXCAVATE A BASIN OF SUFFICIENT SIZE ADJACENT TO THE DROP INLET.
 3. THE TOP OF THE STRUCTURE (PONDING HEIGHT) MUST BE WELL BELOW THE GROUND ELEVATION DOWNSLOPE TO PREVENT RUNOFF FROM BYPASSING THE INLET. A TEMPORARY DIKE MAY BE NECESSARY ON THE DOWNSLOPE SIDE OF THE STRUCTURE.

BLOCK AND GRAVEL DROP INLET SEDIMENT BARRIER

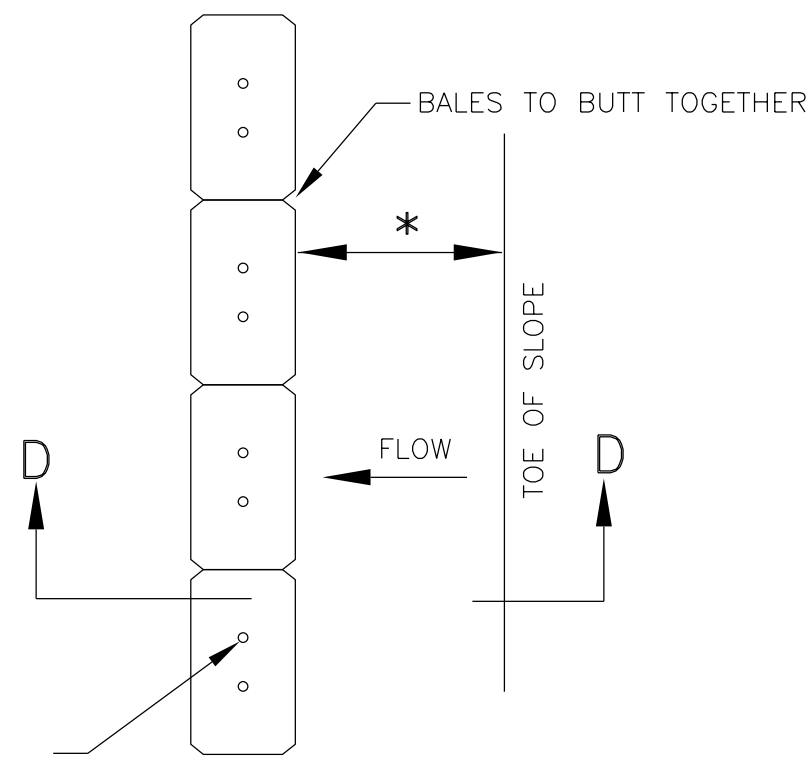
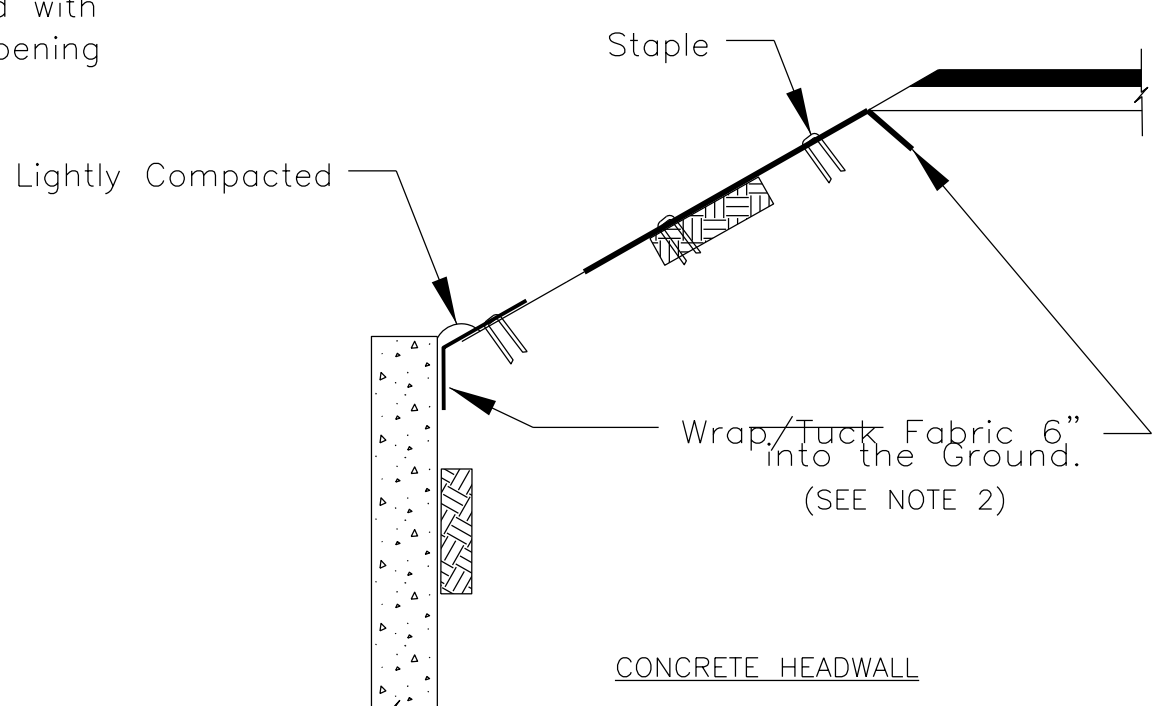


SILT FENCE EROSION CHECK



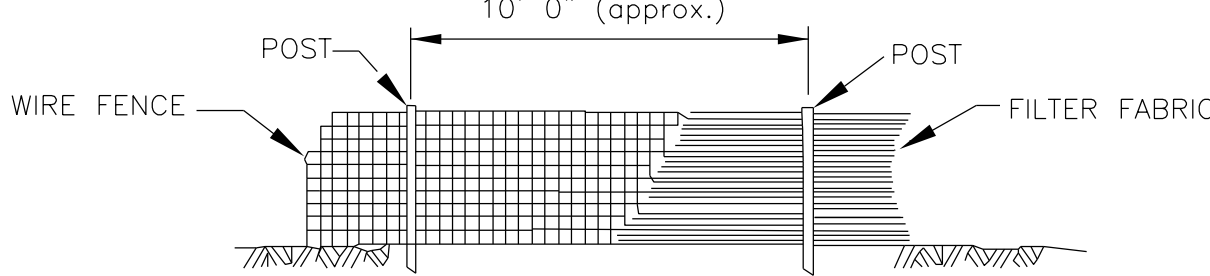
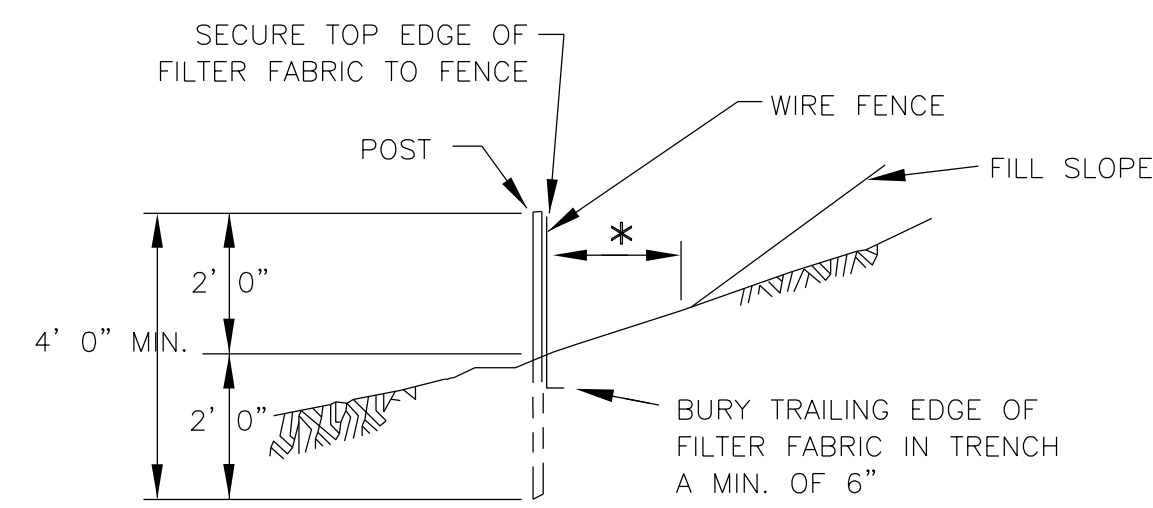
SECTION D-D

* See general notes.



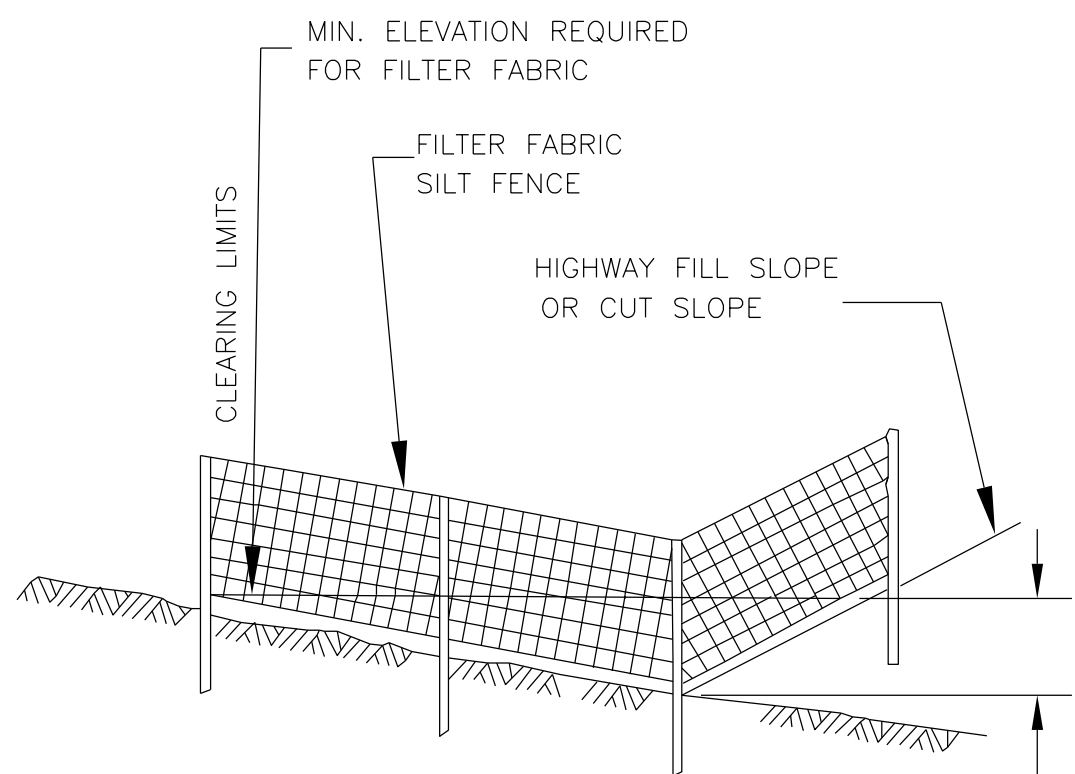
PLAN STRAW BALE SILT BARRIER

* See general notes.

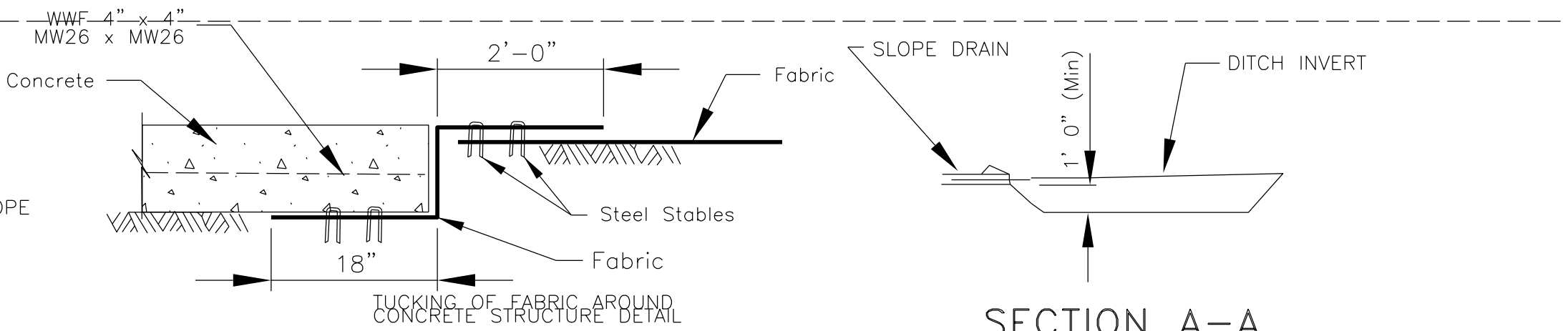


FILTER FABRIC SILT FENCE

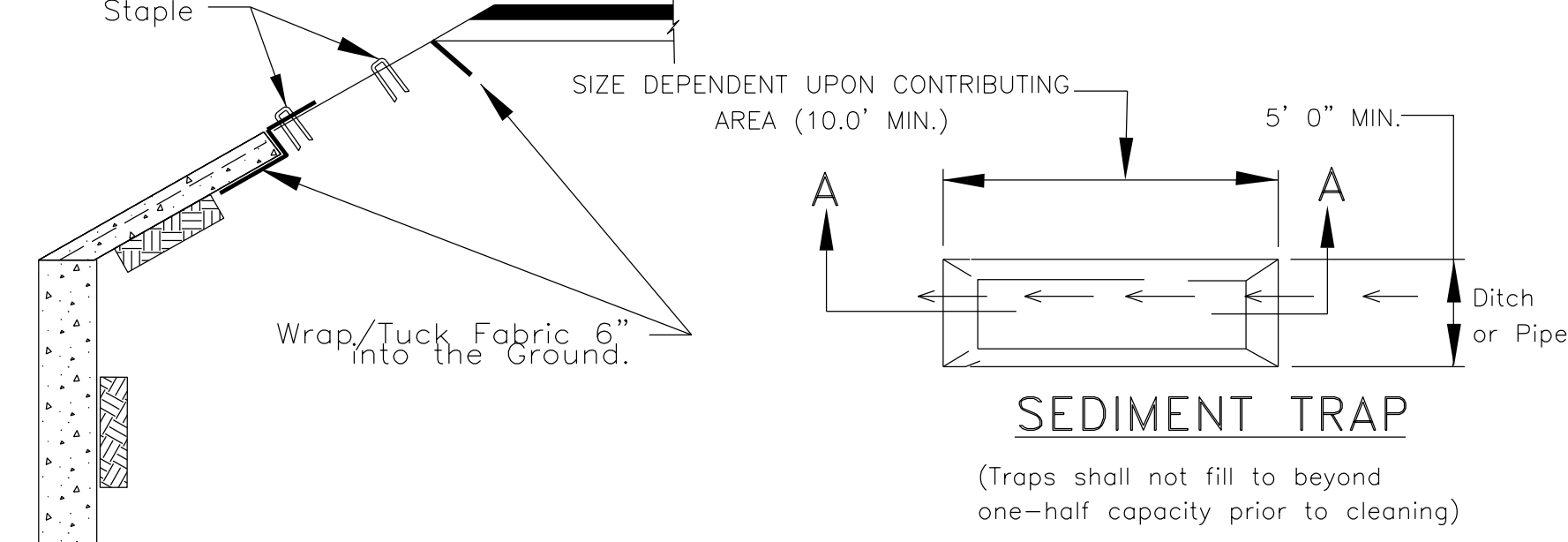
* See general notes.



ELEVATION

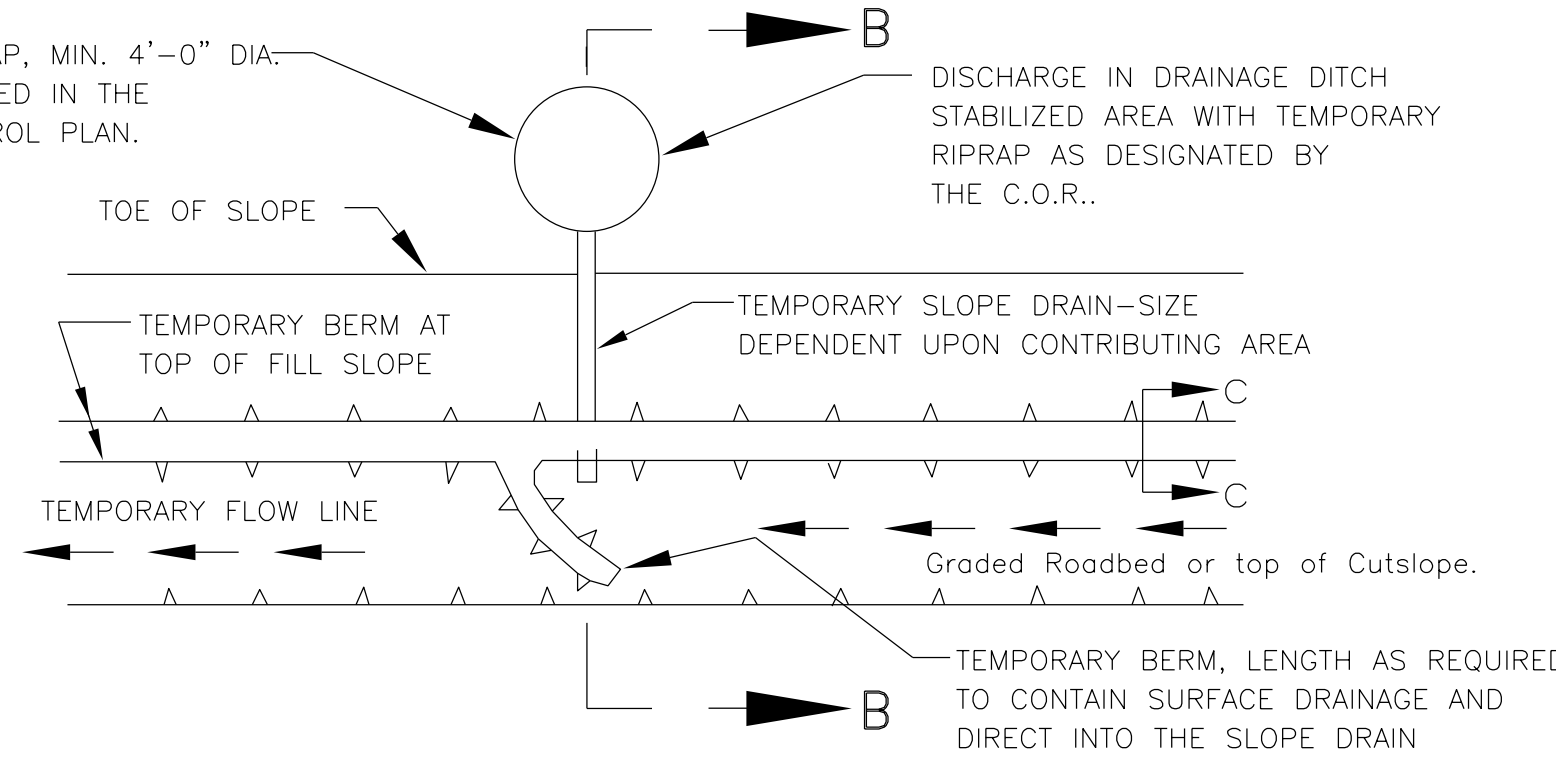


SECTION A-A

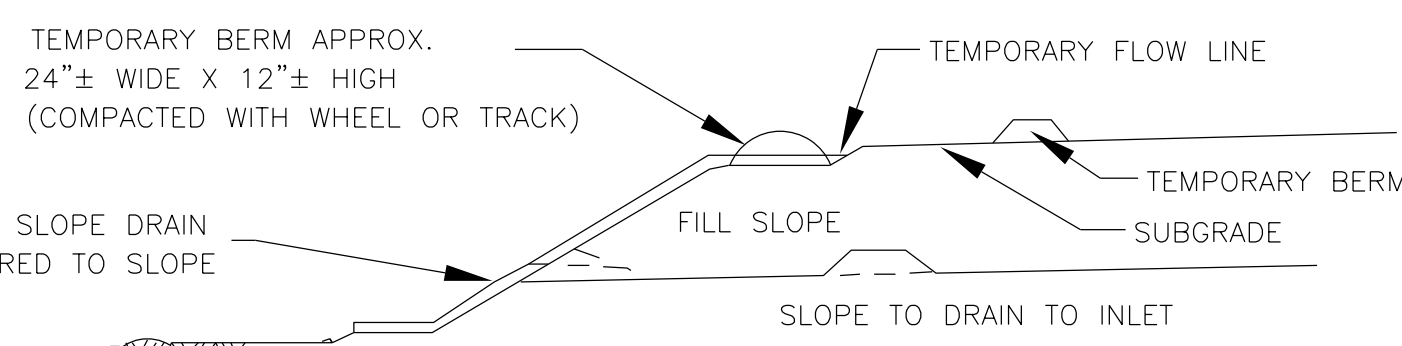


SEDIMENT TRAP

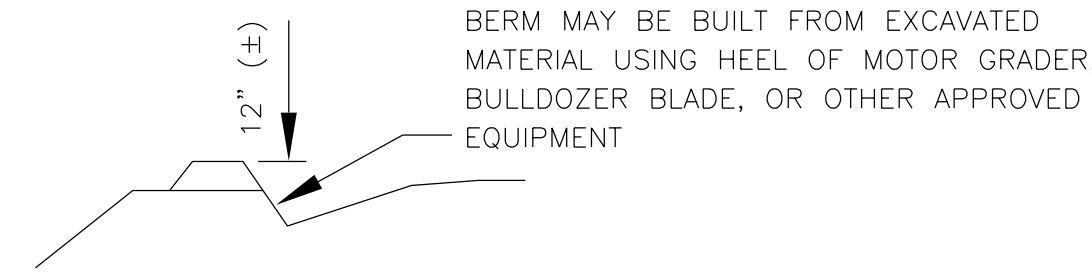
TEMPORARY CLASS I RIPRAP, MIN. 4'-0" DIA. AND 9" THICK, AS REQUIRED IN THE APPROVED EROSION CONTROL PLAN.



PLAN VIEW

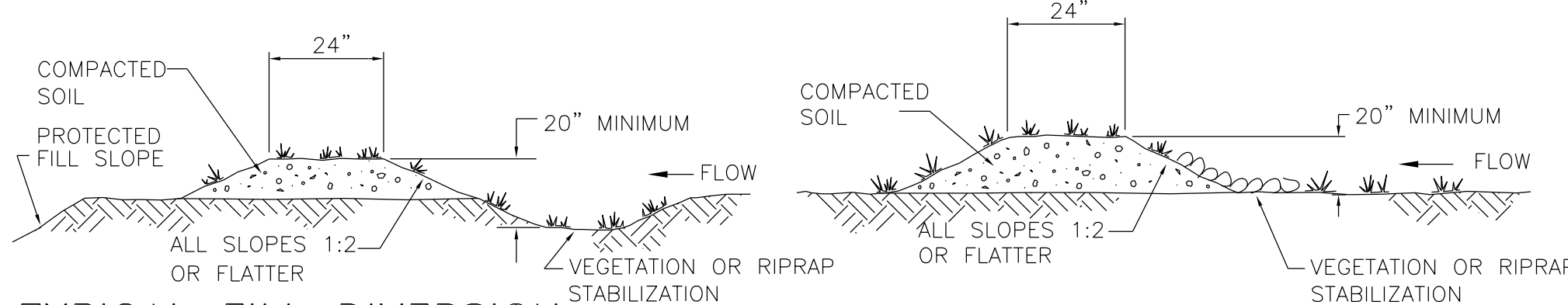


SECTION B-B



SECTION C-C

Temporary Slope Drain, Berm. (for fill and cutslopes)
[NOTE: Temporary berms may also be constructed of straw bales set 4" to 6" into ground.]



TYPICAL FILL DIVERSION

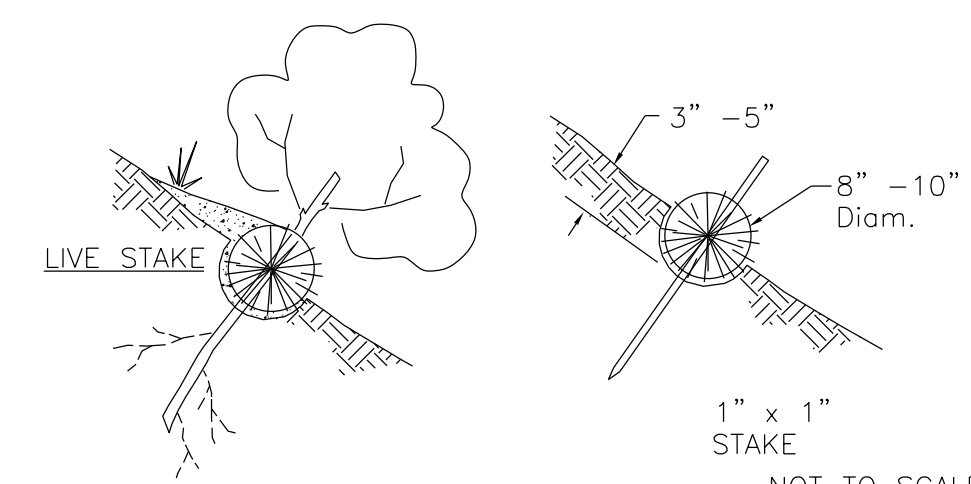
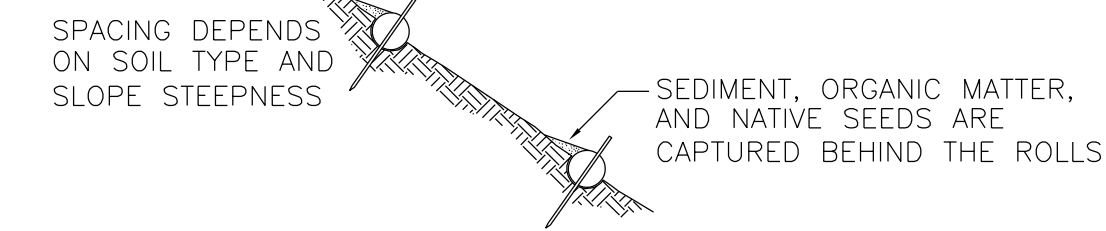
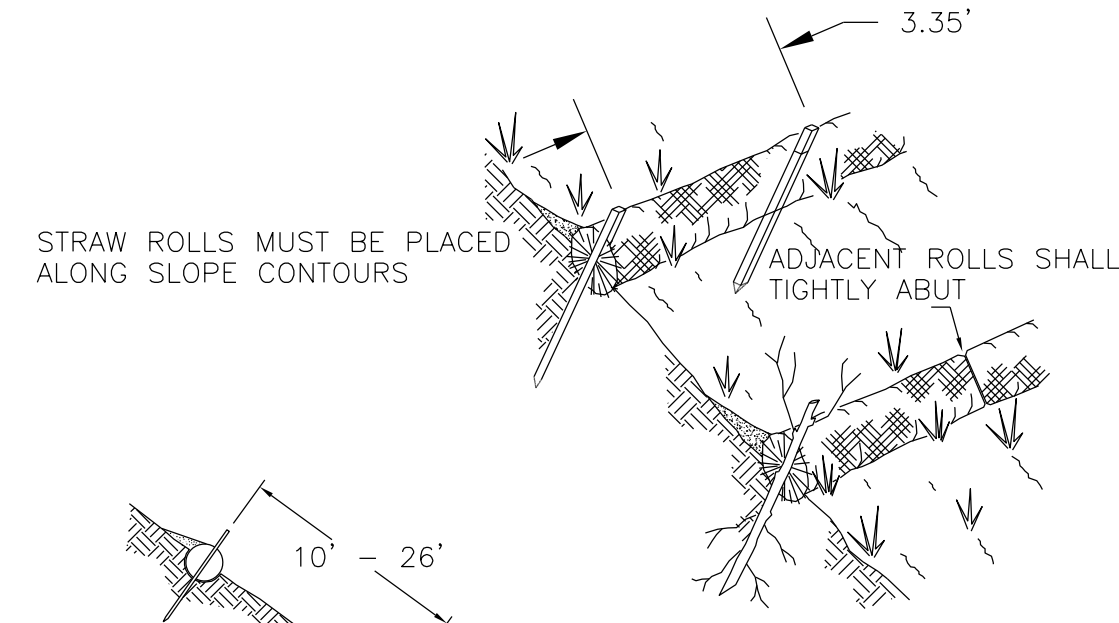
- NOTES:
1. THE CHANNEL BEHIND THE DIKE SHALL HAVE POSITIVE GRADE TO A STABILIZED OUTLET.
 2. THE DIKE SHALL BE ADEQUATELY COMPACTED TO PREVENT FAILURE.
 3. THE DIKE SHALL BE STABILIZED WITH TEMPORARY OR PERMANENT SEEDING OR RIPRAP.
 4. THE DIVERSION DIKE SHALL EXTEND TO THE BOTTOM OF CUT BACK SLOPE AND INTERCEPT THE CUT DITCH.

TYPICAL TEMPORARY DIVERSION DIKE

TEMPORARY DIVERSION DIKE

GENERAL NOTES

1. SEE SHEET 22 OF 63 FOR ADDITIONAL NOTES AND DETAILS.
2. THE CONTRACTOR SHALL INSTALL GEOTEXTILE FABRIC, TYPE IV, AROUND CONCRETE STRUCTURE, AS FOLLOWS:
 - a) Constructure finish grading around structure to be placed.
 - b) Cut trenches for footing of slab.
 - c) Install 4' of Geotextile Fabric anchored on floor and top, along the cut face of trench as shown.
 - d) Place concrete forms, reinforcements, and subsequent concrete.
3. CONSTRUCT SEDIMENT BASIN AND TRAPS, EROSION CHECKS, AND/OR FILTERS IN STRATEGIC LOCATIONS ON THE PROJECT TO FILTER STORM RUNOFF BEFORE IT LEAVES THE PROJECT CONSTRUCTION LIMITS OR ENTERS A STREAM AS SHOWN IN THE APPROVED SWPPP.
4. CLEAN ALL SEDIMENT BASIN AND TRAPS OF ACCUMULATED SEDIMENT WHEN HALF FULL OF SEDIMENT.
5. USE DRAIN PIPE, RIPRAP, GEOTEXTILE FABRIC, OR GRASS-LINED WATERWAY FOR TEMPORARY SLOPE DRAINS TO CHANNEL RUNOFF DOWN SLOPES. CHANNEL WATER INTO SLOPE DRAINS WITH STRAW BALES, WATTLES, OR EARTH BERMS CONSTRUCTED AT THE TOP OF A CUT SLOPE. ANCHOR SLOPE DRAINS TO THE SLOPE.
6. THE CONTRACTOR SHALL ADJUST THE DIMENSIONS AND/OR LOCATIONS OF TEMPORARY SEDIMENT AND EROSION CONTROL DEVICES TO FIT ACTUAL FIELD CONDITIONS.
7. REMOVE AND DISPOSE OF EROSION CONTROL MEASURES WHEN THE PERMANENT EROSION CONTROL MEASURES ARE SATISFACTORILY ESTABLISHED, DRAINAGE DITCHES, AND CHANNELS ARE LINED AND STABILIZED, IN ACCORDANCE WITH SECTION 157 OF FP-03.



- NOTE:
1. STRAW ROLL INSTALLATION REQUIRES THE PLACEMENT AND SECURE STAKING OF THE ROLL IN A TRENCH, 3"-5" DEEP, DUG ON CONTOUR. RUNOFF MUST NOT BE ALLOWED TO RUN UNDER OR AROUND ROLL.

NOT TO SCALE

STRAW ROLLS

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SEDIMENT CONTROL DETAILS EROSION/SEDIMENT CONTROL DETAIL

DRAWN BY: Gerald.Hood DATE: 5/6/2009

DESIGNED BY: NRDOT DATE: 5/6/2009

REVISED: 1/25/2013 BY: Peterson.Yazzie

ANNOTATION SCALE: Full Size 1=1

FILENAME: Sht.23_Erosion Control Details2.dgn



J:\DESIGN\Users\DESIGN2\CURRENT PROJECT_093008\N00_New Lands\N2007(1-1)&4_092308\N2007 DESIGN DATA_092508\CADD Files 01-18-2013\N2007 Plans 01-18-2013

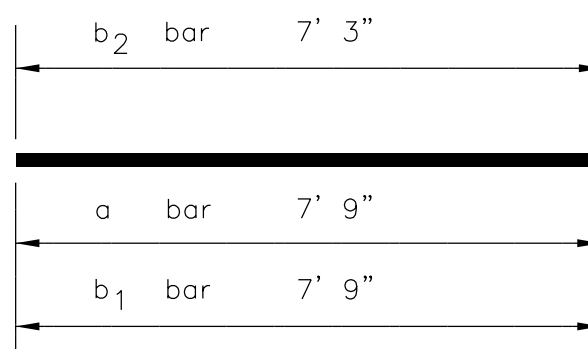
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N2007	N2007(1-1)1,2&4	24	62

GENERAL NOTE:

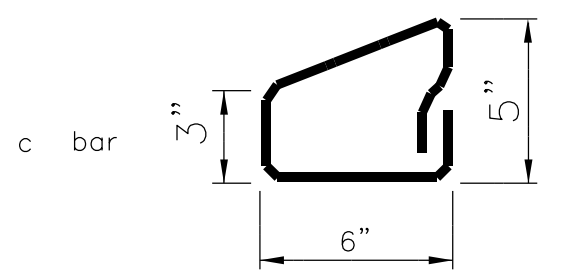
- Precast concrete shall attain 28-day compressive strength of 4,000 psi (minimum) in accordance with AASHTO T22 (ASTM C-39). The concrete shall be Class A(AE) conforming to Section 552 of FP-03.
- Reinforcing steel shall conform to ASTM A615, Grade 420. All structural steel shall conform to AASHTO M-183.
- The Contractor shall slope the bases of the cattle guards as required to provide roadway crowns or superelevation as shown on the plans.
- Bolts, washers, and nuts shall be galvanized to meet the requirements of AASHTO M 111 or AASHTO M298.
- All traffic grill unit, and wing brace structural steel and pipe, including the steel angles shall receive one (1) primer coat, one (1) intermediate coat, and one (1) finish coat in accordance with Section 563, Paint System 2, of FP-03.
- Wing braces shall be considered subsidiary items to the cattleguard unit.
- The Contractor has the option to use all steel frame cattleguard. If the Contractor elects to substitute for the steel frame cattleguard, he/her shall show they are more cost effective with supporting data. The Contractor is responsible for all patent protection rights, shop drawings, material certifications, and mill test reports. However, no steel frame cattleguard shall be used for concrete drainage pad cattleguard locations.
- Elastomeric bearing pads shall be seal with epoxy adhesive prior to the installation of traffic grill unit.
- Design Data: Design according to AASHTO LRFD Bridge Design Specifications, third edition, 2004.
Design Loads: HS20 and Design Tandem with 33% impact.

REINFORCING STEEL SCHEDULE

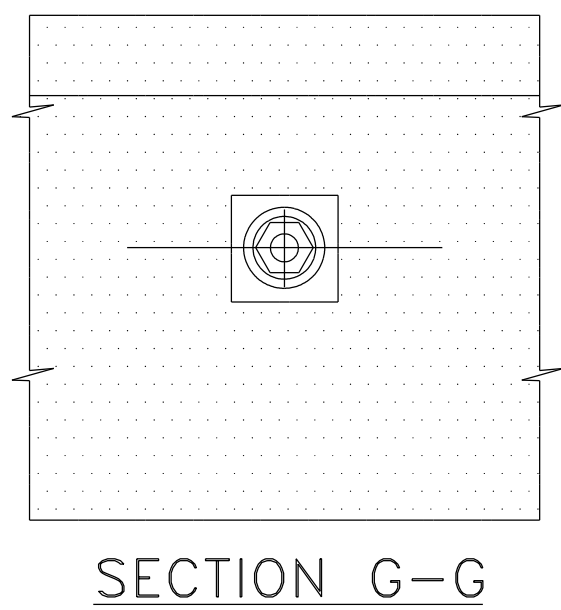
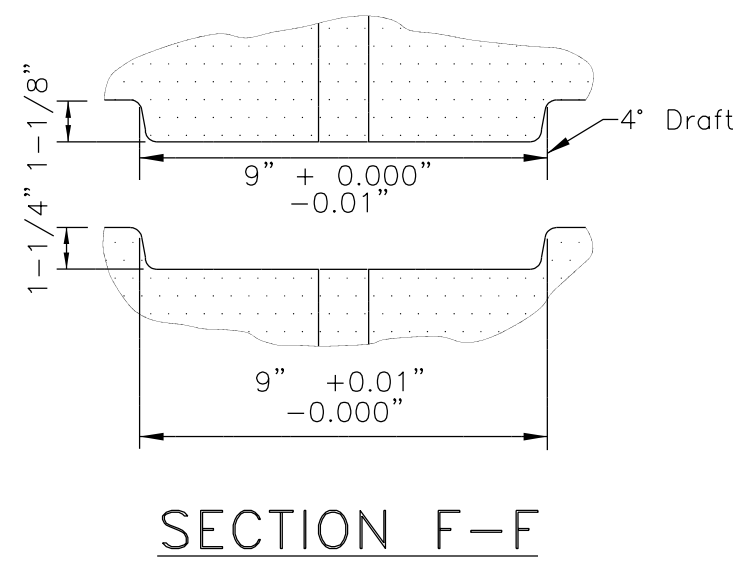
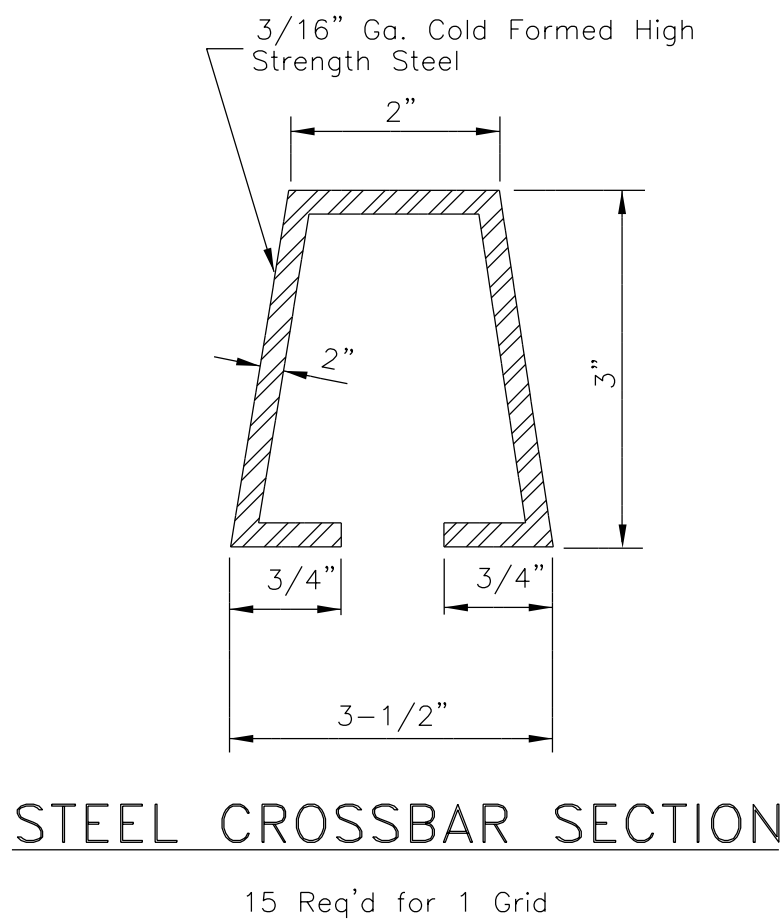
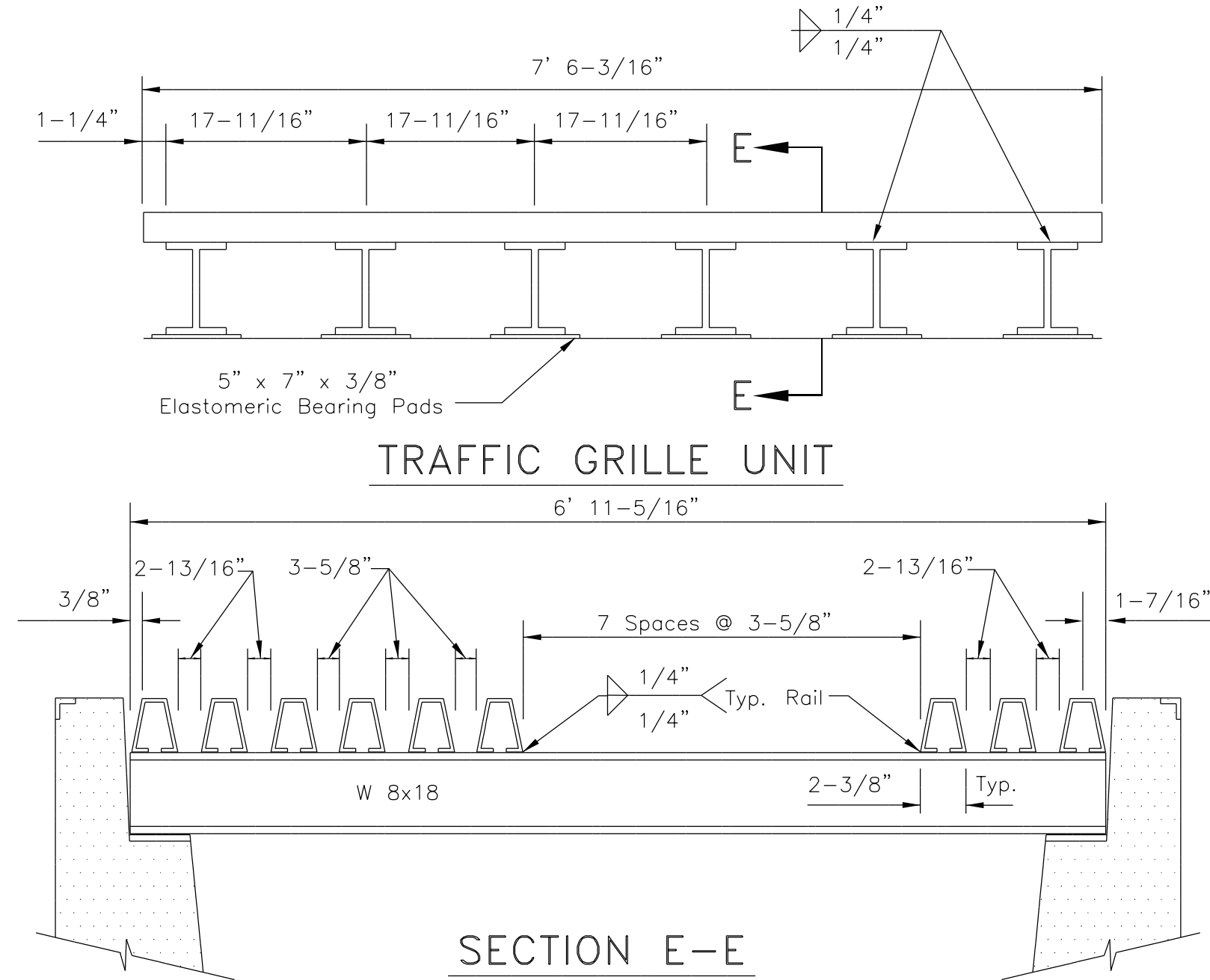
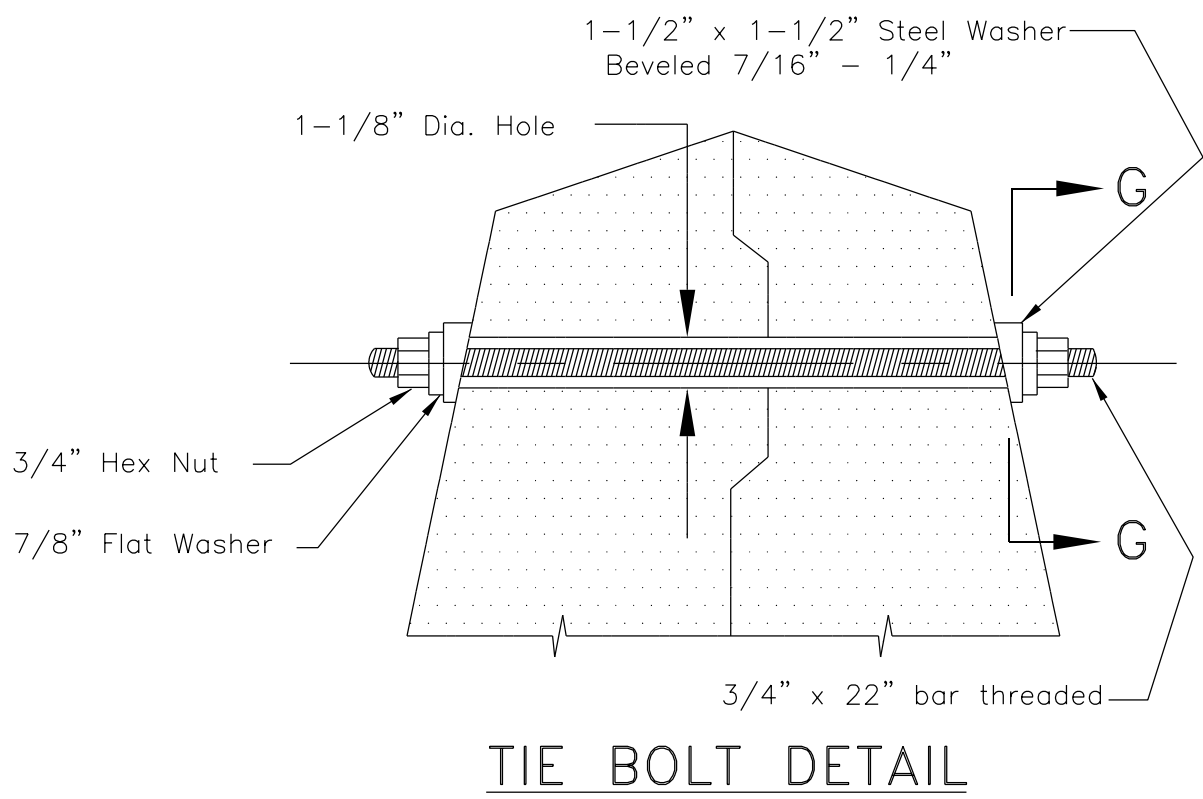
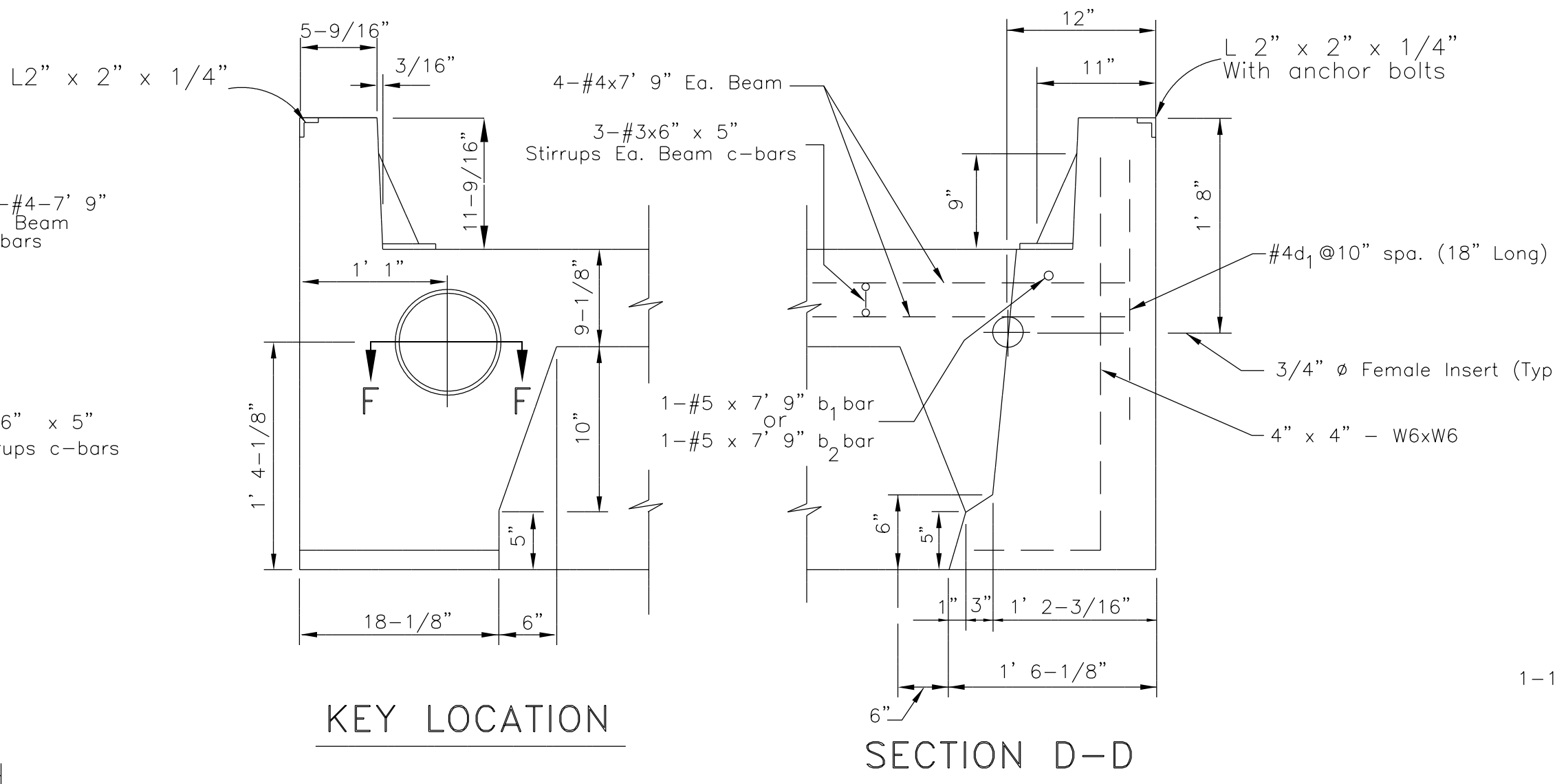
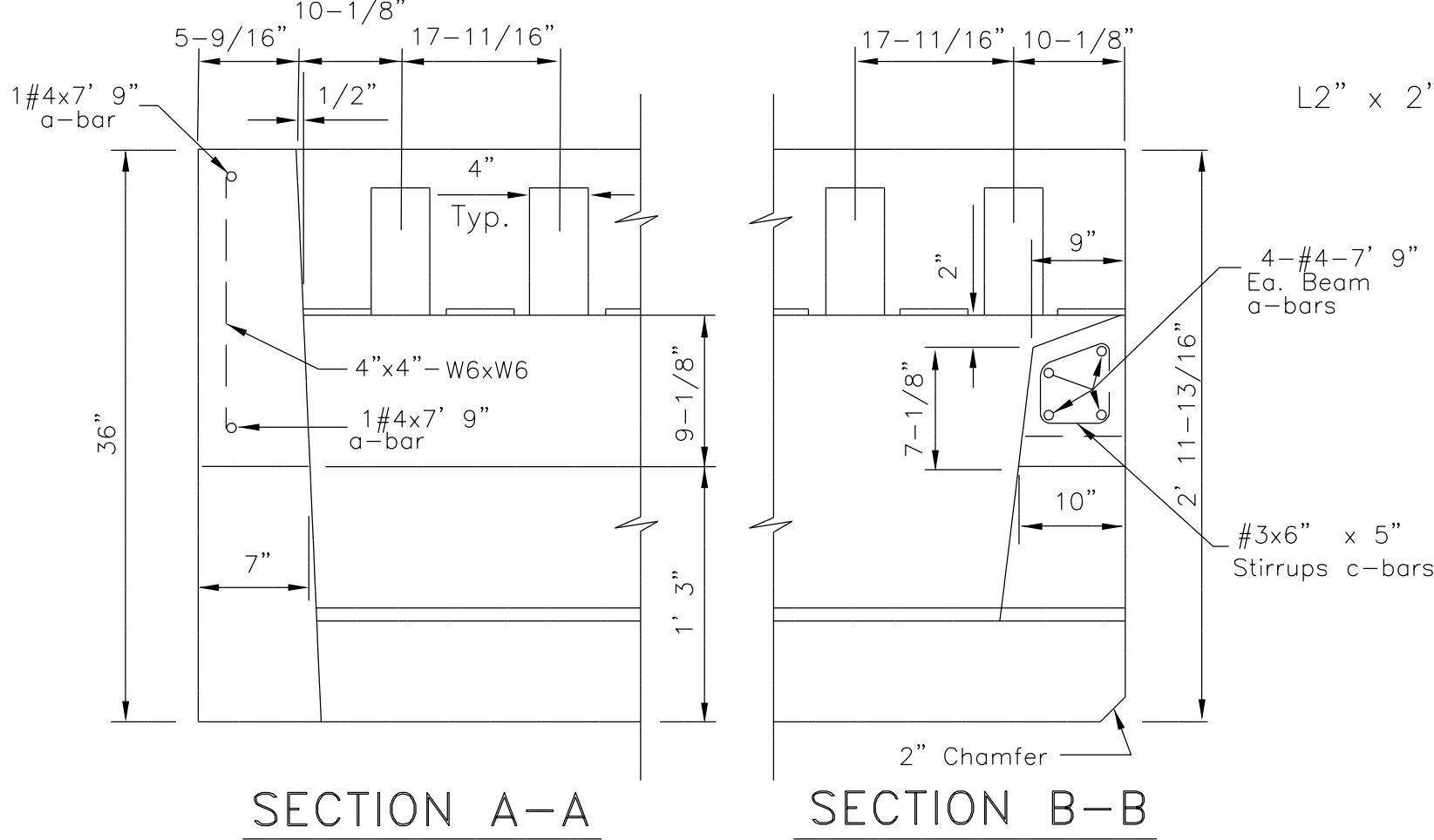
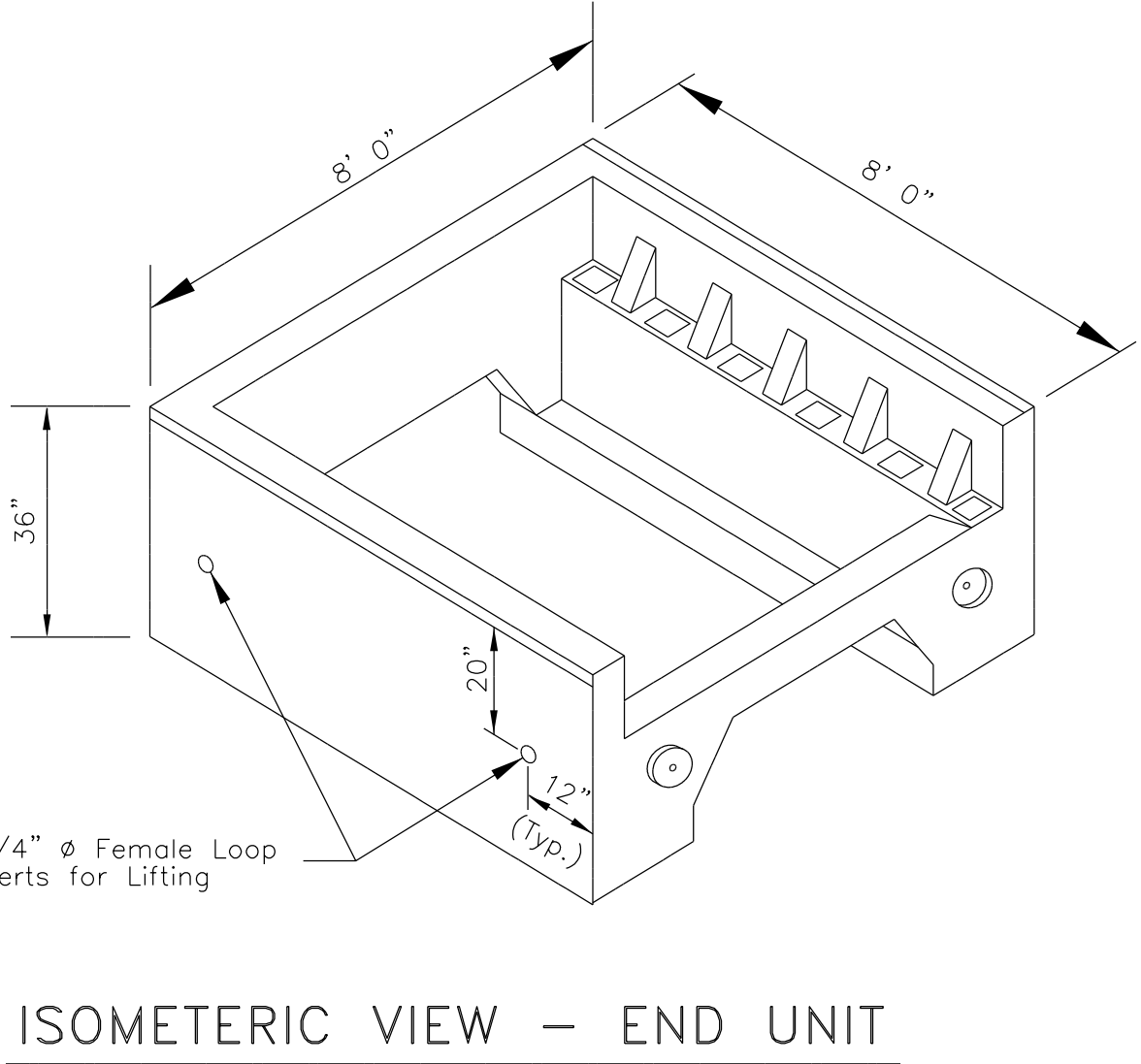
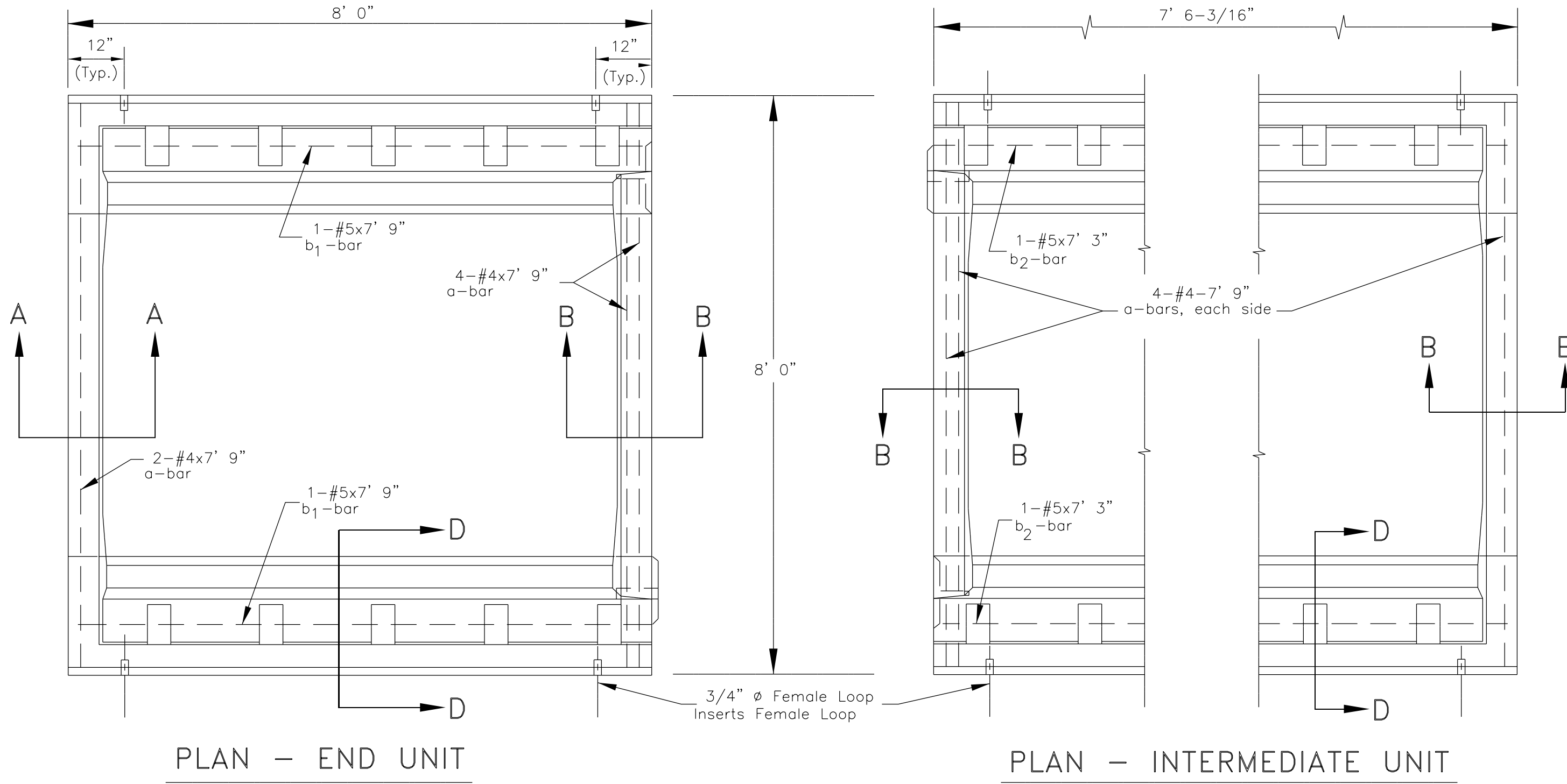
STRAIGHT BARS				BENT BARS				BENDING DIAGRAMS ALL DIMENSIONS ARE OUT TO OUT
MARK	NO.	SIZE	LENGTH	MARK	NO.	SIZE	LENGTH	
END UNIT								
a	6	4	7' 9"					
b ₁	2	5	7' 9"					
c				3	3		2' 0"	
D ₁	20	4	1' 6"					
INTERMEDIATE UNIT								
a	8	4	7' 9"					
b ₂	2	5	7' 3"					
c				6	3		2' 0"	
D ₁	18	4	1' 6"					



The bending diagram for the end unit shows four horizontal bars. The top bar is labeled 'b₂ bar' with a dimension of 7' 3". Below it is a thick black bar labeled 'a bar' with a dimension of 7' 9". Below that is another thick black bar labeled 'b₁ bar' with a dimension of 7' 9". The bottom bar is labeled 'c bar' with a dimension of 2' 0".



The bending diagram for the intermediate unit shows four horizontal bars. The top bar is labeled 'a bar' with a dimension of 7' 9". Below it is a thick black bar labeled 'b₂ bar' with a dimension of 7' 3". Below that is another thick black bar labeled 'b₁ bar' with a dimension of 7' 9". The bottom bar is labeled 'c bar' with a dimension of 2' 0".



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PRECAST CONCRETE
CATTLEGUARD DETAILS

DRAWN BY: Gerald.Hood DATE: 5/7/2009
DESIGNED BY: NRDOT DATE: 5/7/2009
REVISED: 1/25/2013 BY: Peterson.Yazzie
ANNOTATION SCALE: Full Size 1=1
FILENAME: Sht.24_Precast Cattleguard Std.dgn



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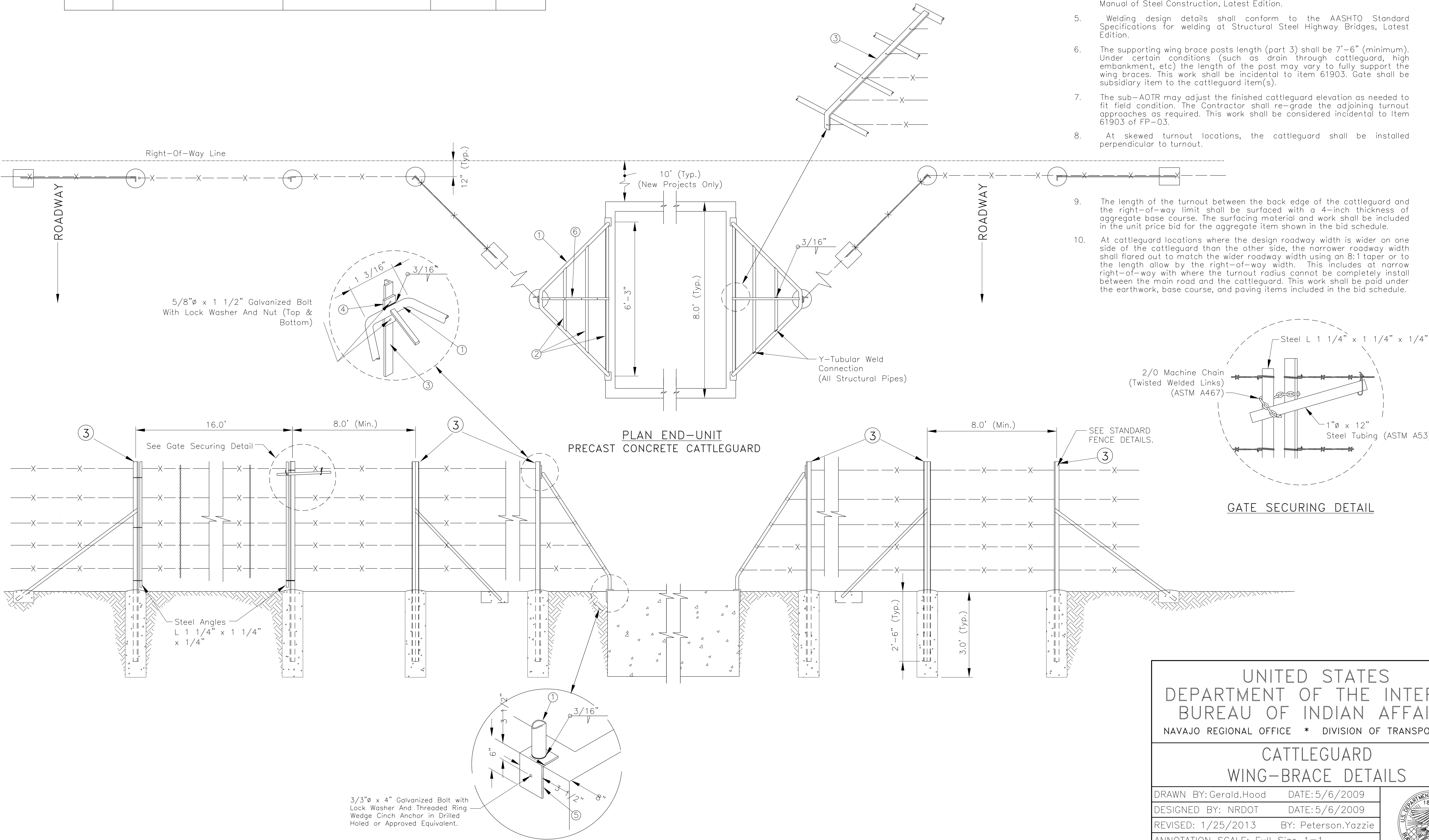
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N2007	N2007(1-1)1,2&4	25	63

ESTIMATED MATERIAL LIST

PART NO.	MATERIAL	SIZE AND THICKNESS	LENGTH	QUANTITY
1	Structural Steel Pipe	2 1/2" Ø Nominal	14'-2"	2
2	Structural Steel Pipe	1 1/4" Ø Nominal	13'-9"	2
3	Steel Angle (See Note 4 & 6)	L 2 1/2" x 2 1/2" x 3/8"	7' 6-3/16"	2
4	Steel Plate	3 1/2" x 3/8"	7"	2
5	Steel Angle	L 6" x 3 1/2" x 3/8"	3 1/2"	4
6	Bar	1" x 1/4"	5' 6-1/8"	2
	Bolts, Nuts and Washers	As Shown		

GENERAL NOTES

1. Structural pipe shall conform to ASTM A53-93a, Grade B. All other structural steel shall conform to ASTM-A36.
2. Bolts, nuts, and washers shall be galvanized in accordance with AASHTO M111 (ASTM A123).
3. All wing brace structural steel and pipe shall receive one (1) primer coat, one (1) intermediate coat, and one (1) finish coat in accordance with Section 563, Paint System 2 of FP-03.
4. All structural pipe joints shall be fabricated in accordance with AISC Manual of Steel Construction, Latest Edition.
5. Welding design details shall conform to the AASHTO Standard Specifications for welding at Structural Steel Highway Bridges, Latest Edition.
6. The supporting wing brace posts length (part 3) shall be 7'-6" (minimum). Under certain conditions (such as drain through cattleguard, high embankment, etc) the length of the post may vary to fully support the wing braces. This work shall be incidental to item 61903. Gate shall be subsidiary item to the cattleguard item(s).
7. The sub-AOTR may adjust the finished cattleguard elevation as needed to fit field condition. The Contractor shall re-grade the adjoining turnout approaches as required. This work shall be considered incidental to Item 61903 of FP-03.
8. At skewed turnout locations, the cattleguard shall be installed perpendicular to turnout.
9. The length of the turnout between the back edge of the cattleguard and the right-of-way limit shall be surfaced with a 4-inch thickness of aggregate base course. The surfacing material and work shall be included in the unit price bid for the aggregate item shown in the bid schedule.
10. At cattleguard locations where the design roadway width is wider on one side of the cattleguard than the other side, the narrower roadway width shall flared out to match the wider roadway width using an 8:1 taper or to the length allow by the right-of-way width. This includes at narrow right-of-way with where the turnout radius cannot be completely install between the main road and the cattleguard. This work shall be paid under the earthwork, base course, and paving items included in the bid schedule.



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CATTLEGUARD
WING-BRACE DETAILS

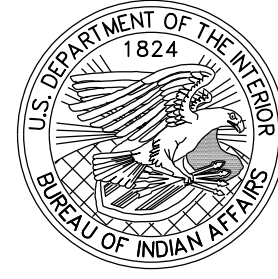
DRAWN BY: Gerald.Hood DATE: 5/6/2009

DESIGNED BY: NRDOT DATE: 5/6/2009

REVISED: 1/25/2013 BY: Peterson.Yazzie

ANNOTATION SCALE: Full Size 1=1

FILENAME: Sht.25_C-GuardWingBraceDetails.dgn

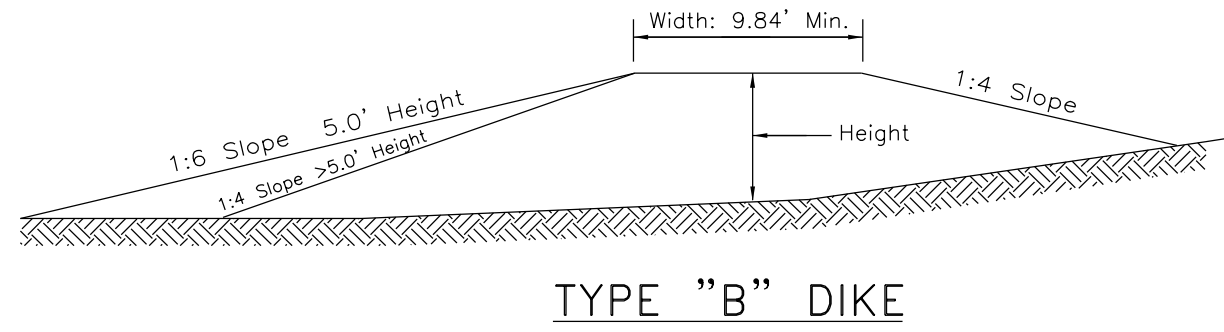
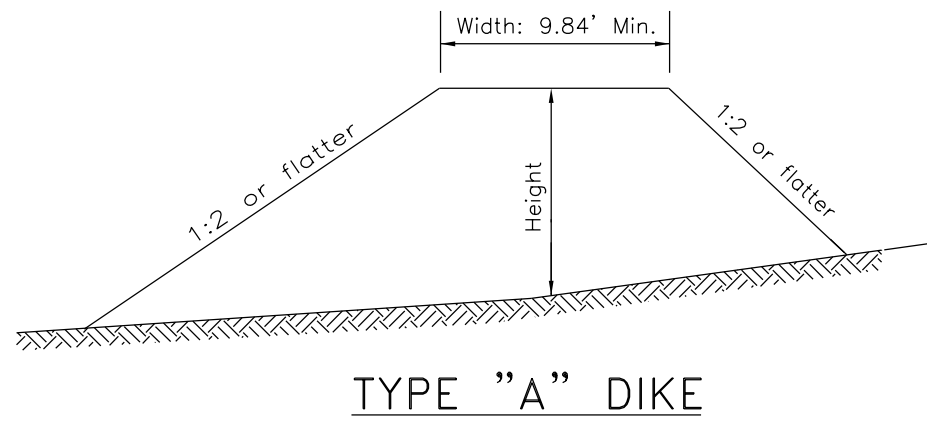
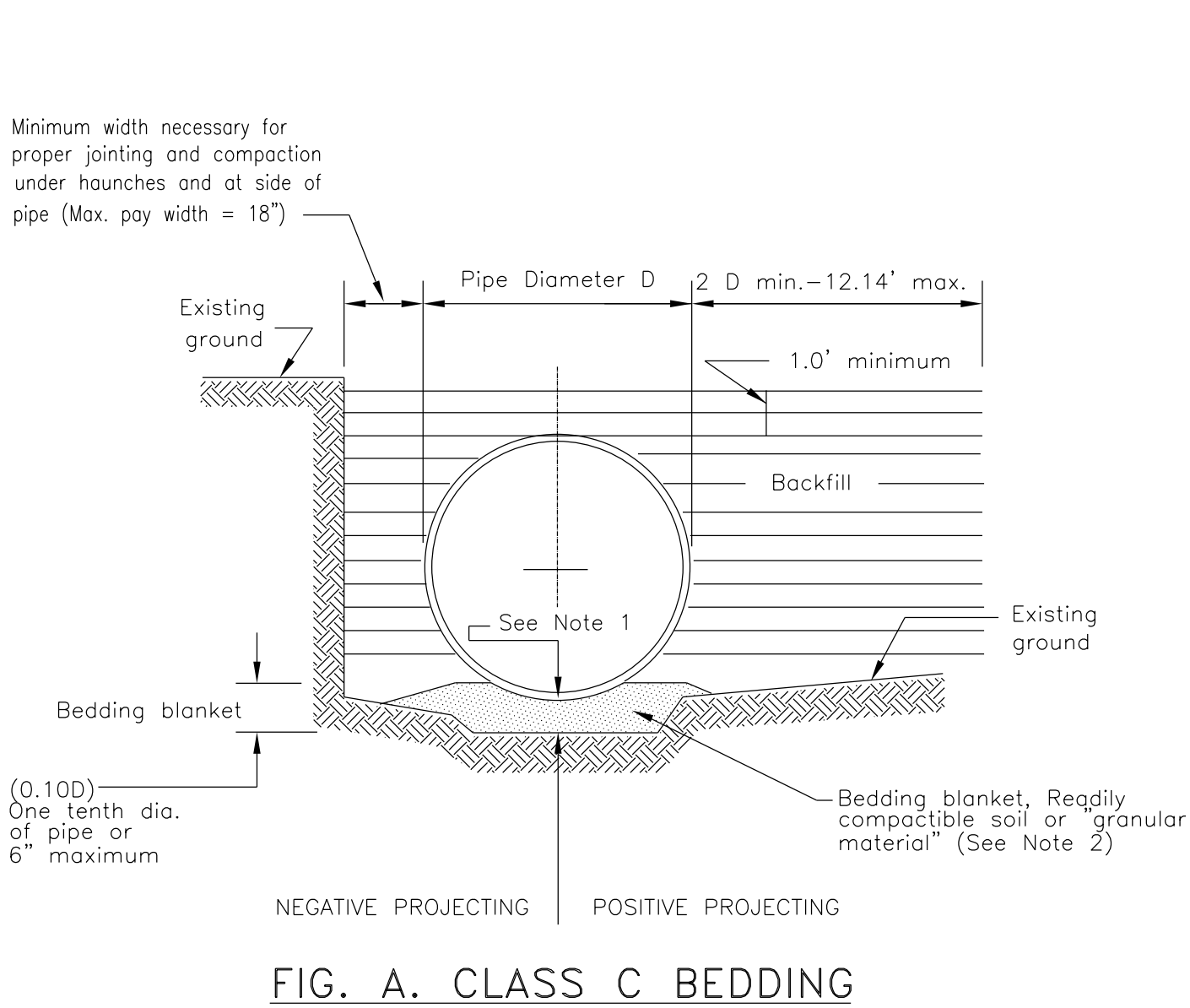


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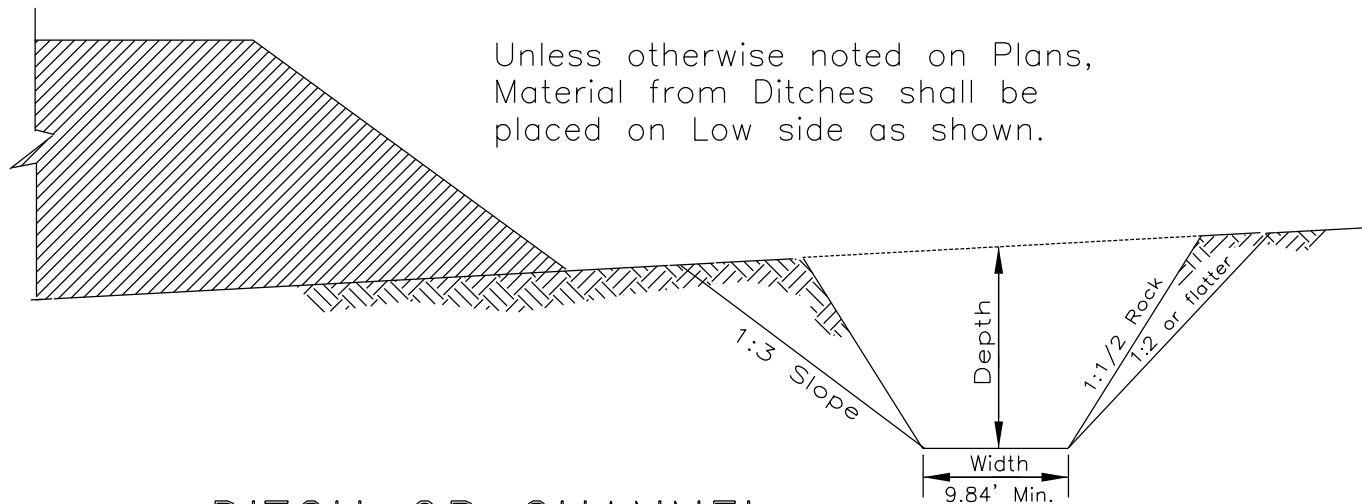
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N007	N2007(1-1)1,2&4	26	63

GENERAL NOTES

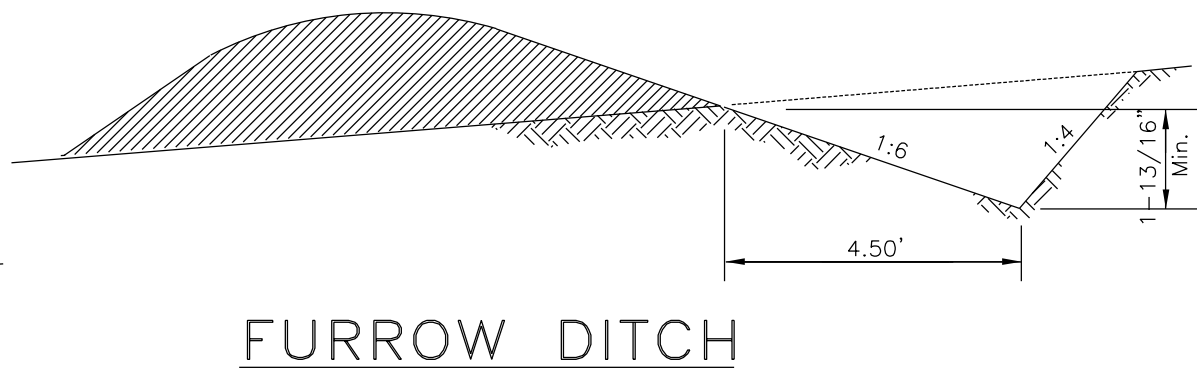
- PLACE LOOSE BEDDING ROUGHLY SHAPED TO BOTTOM OF PIPE, THEN COMPACTED UNDER HAUNCHES AFTER PIPE PLACEMENT.
- SEE SECTION 204, 209, 602, AND 704 OF FP-2003, INCLUDING THE SUPPLEMENTAL SPECIFICATION FOR ADDITIONAL NOTES.
- ALL DRAINAGE STRUCTURE MATERIAL SHALL BE UNLOADED AND HANDLED WITH REASONABLE CARE, NO STRUCTURE SHALL BE DRAGGED OR ALLOWED TO STRIKE ANY HARD SURFACE DURING PLACEMENT. ANY DAMAGED STRUCTURE SHALL BE REPAIRED OR REPLACED, BY THE CONTRACTOR, AT NO ADDITIONAL COST TO THE GOVERNMENT.
- ALL STRUCTURAL PLATE PIPE STRUCTURES SHALL BE ASSEMBLED AND INSTALLED IN ACCORDANCE WITH THE FABRICATOR'S RECOMMENDATION.
- BACKFILL MATERIAL SHALL BE PLACED 12-INCH (MIN.) TO 40-INCH (MAX.) PIPE DIAMETER WIDTH ON THE SIDES AND 12-INCH OVER THE PIPE. BACKFILL MATERIAL BEYOND THESE LIMITS SHALL BE REGULAR EARTHWORK EMBANKMENT MATERIAL. THE BACKFILL MATERIAL SHALL BE APPROVED BY THE AOTR/COR PRIOR TO IT'S USE AND SHALL BE PLACED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.
- PONDING OR JETTING PIPE BACKFILL SHALL NOT BE PERMITTED.
- ALL PIPE EXCAVATION, BACKFILLING, DE-WATERING, PUMPING OR COFFERDAMS, REQUIRED TO PROPERLY INSTALL THE DRAINAGE PIPE SHALL BE CONSIDERED INCIDENTAL TO COMPLETION OF THE PROJECT AND NO ADDITIONAL PAYMENT SHALL BE MADE.
- MULTIPLE PIPE INSTALLATIONS SHALL BE PLACED 24-INCH BETWEEN END SECTIONS UNLESS OTHERWISE DIRECTED BY THE AOTR/COR OR AS SHOWN ON THE PLANS.
- ALL PIPES SHALL BE PROTECTED BY A COVER OF NOT LESS THAN 36-INCH OF EMBANKMENT ABOVE PIPE BEFORE ANY HEAVY EQUIPMENT IS ALLOWED TO PASS OVER THE STRUCTURE(S) DURING CONSTRUCTION.
- ALL DRAINAGE STRUCTURES SHALL BE INSTALLED AT THE ORIGINAL GROUND LINE AND SLOPE TO ASSURE POSITIVE DRAINAGE UP TO THE R.O.W. LIMITS. IN NO CASE SHALL THE PIPE(S) BE PLACED BELOW THE ORIGINAL GROUND ELEVATIONS. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO COMPLETION OF PROJECT AND NO ADDITIONAL PAYMENT SHALL BE MADE.
- AT DRAINAGE PIPE REPLACEMENTS, INSTALLATIONS, EXTENSIONS, AND IN-PLACE PIPE CLEANING LOCATIONS, THE CONTRACTOR SHALL RESHAPE, REGRADE AND CLEAN THE INLET AND OUTLET CHANNELS TO THE RIGHT-OF-WAY LINE AND/OR EXISTING DRAINAGE CHANNEL, TO PRODUCE SMOOTH FLOWS AT CULVERT INTAKES AND DISCHARGES AS DIRECTED BY THE AOTR/COR. THIS WORK SHALL BE INCIDENTAL TO BID ITEMS UNDER SECTIONS 602, 603, AND 607.
- ALL CULVERTS UNDER TURNOUTS AND DRIVEWAYS SHALL BE PLACED AT THE PROPOSED DITCH FLOWLINE. THE CONTRACTOR SHALL BE REQUIRED TO FIELD ADJUST THE PROFILE GRADES OVER PIPE AS DIRECTED BY THE AOTR/COR TO PROVIDE FOR THE MINIMUM COVER.
- TYPE "B" DIKE SHALL BE USED ON THIS PROJECT UNLESS OTHERWISE NOTED ON THE PLANS. EMBANKMENT MATERIAL NEEDED TO BUILD EARTHEN DIKES SHALL BE CONSIDERED INCIDENTAL TO ITEM 20443-2000.
- IF DIRECTED BY THE AOTR/COR TO BETTER FIT FIELD CONDITIONS, TO MORE SMOOTHLY DIRECT THE FLOW INTO THE PIPE AND/OR LESSEN THE WATER'S IMPACT ON THE FACE OF THE DITCH BLOCKS, THE DITCH BLOCK TO BE CURVED. THIS WORK TO BE INCIDENTAL TO BID ITEM 20443-2000.



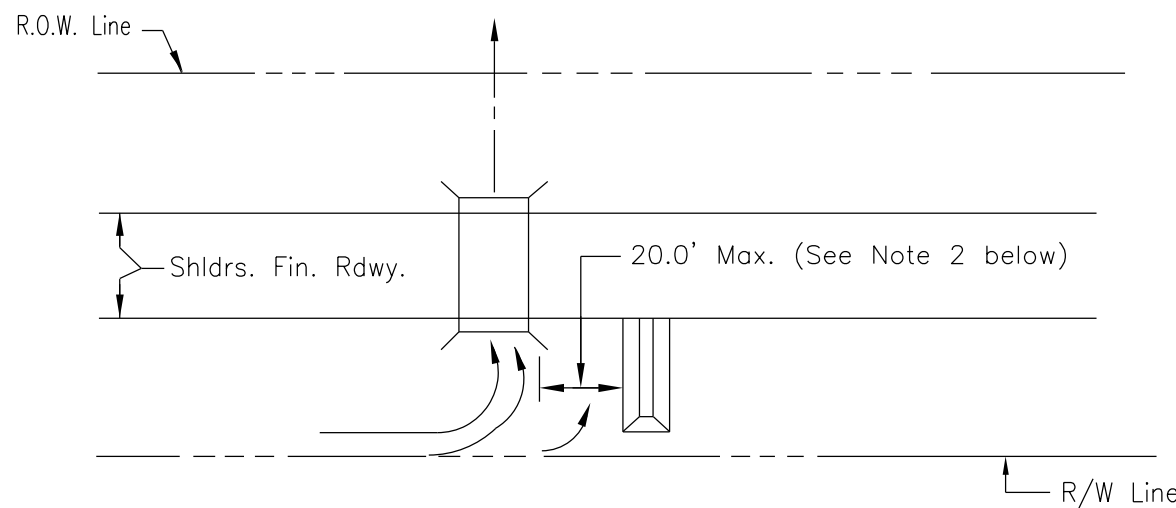
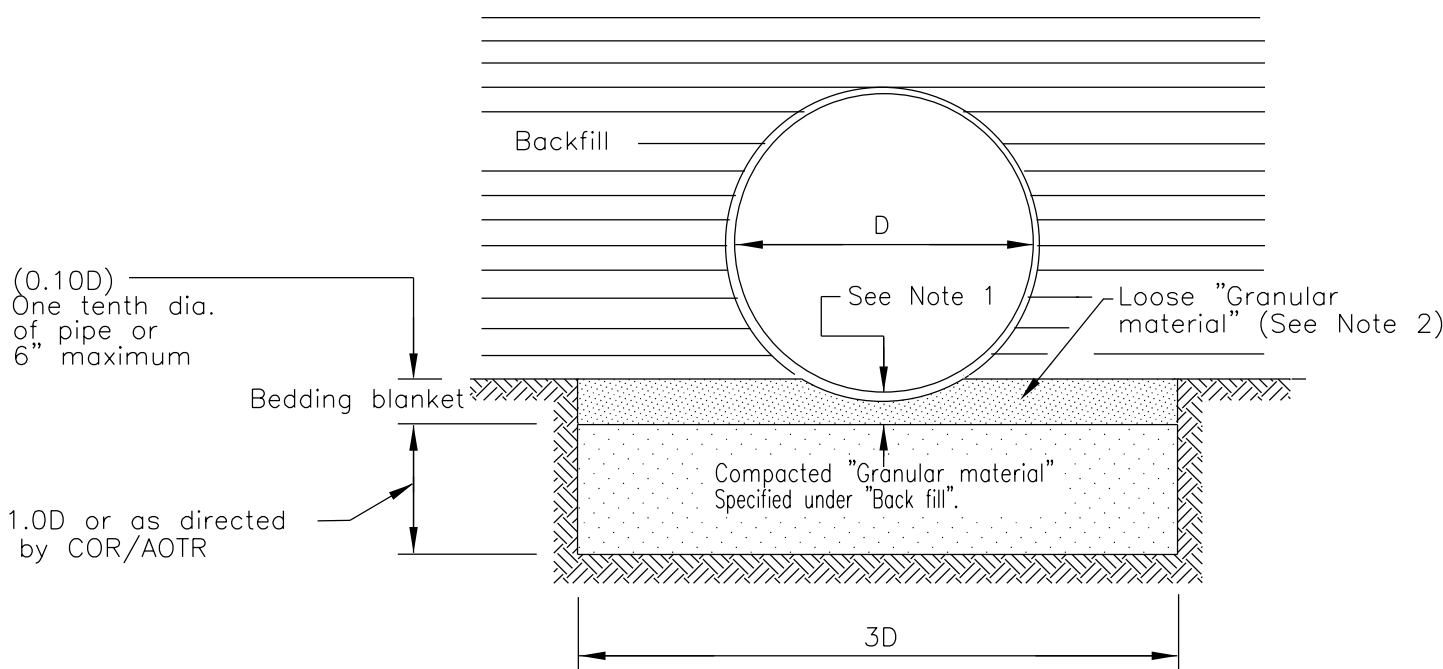
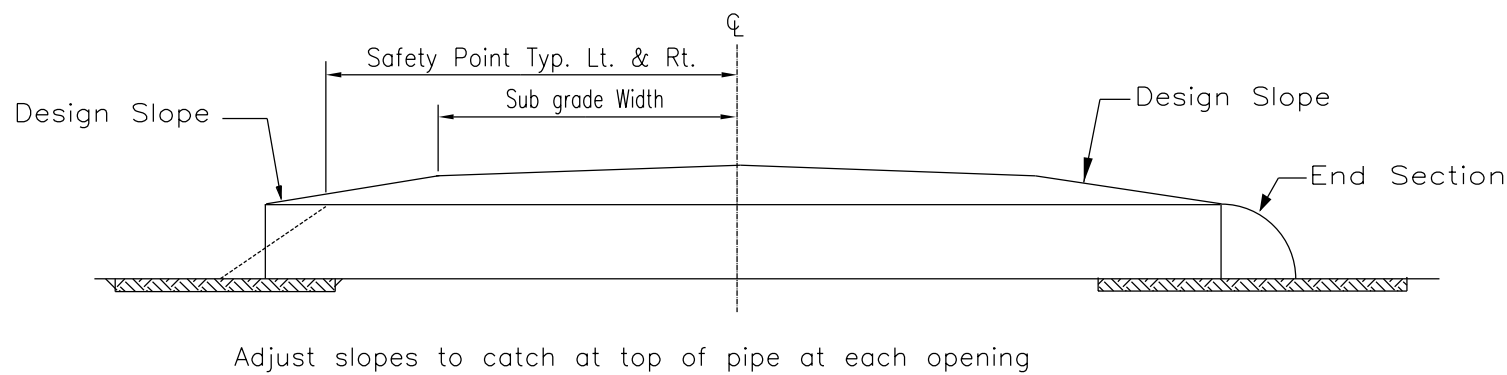
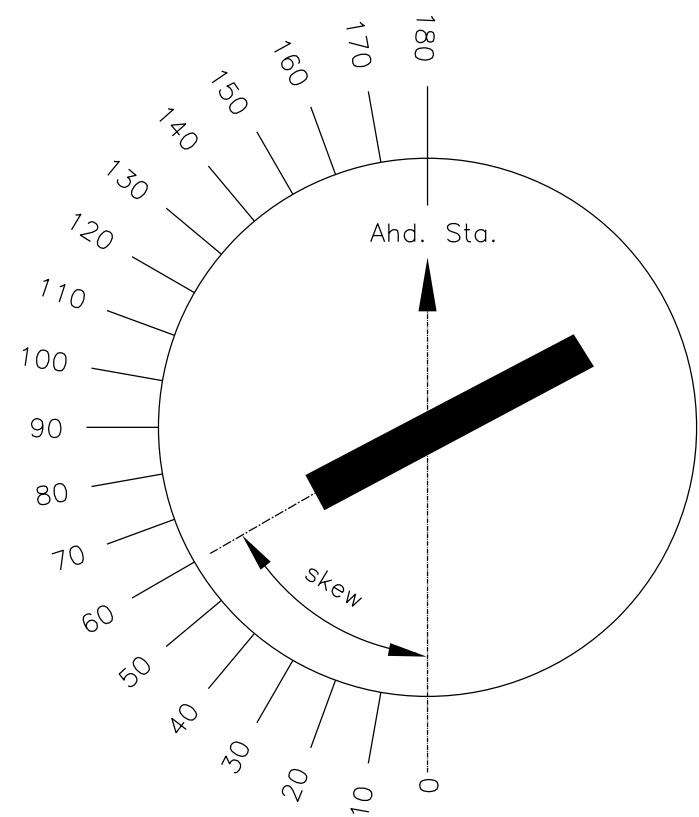
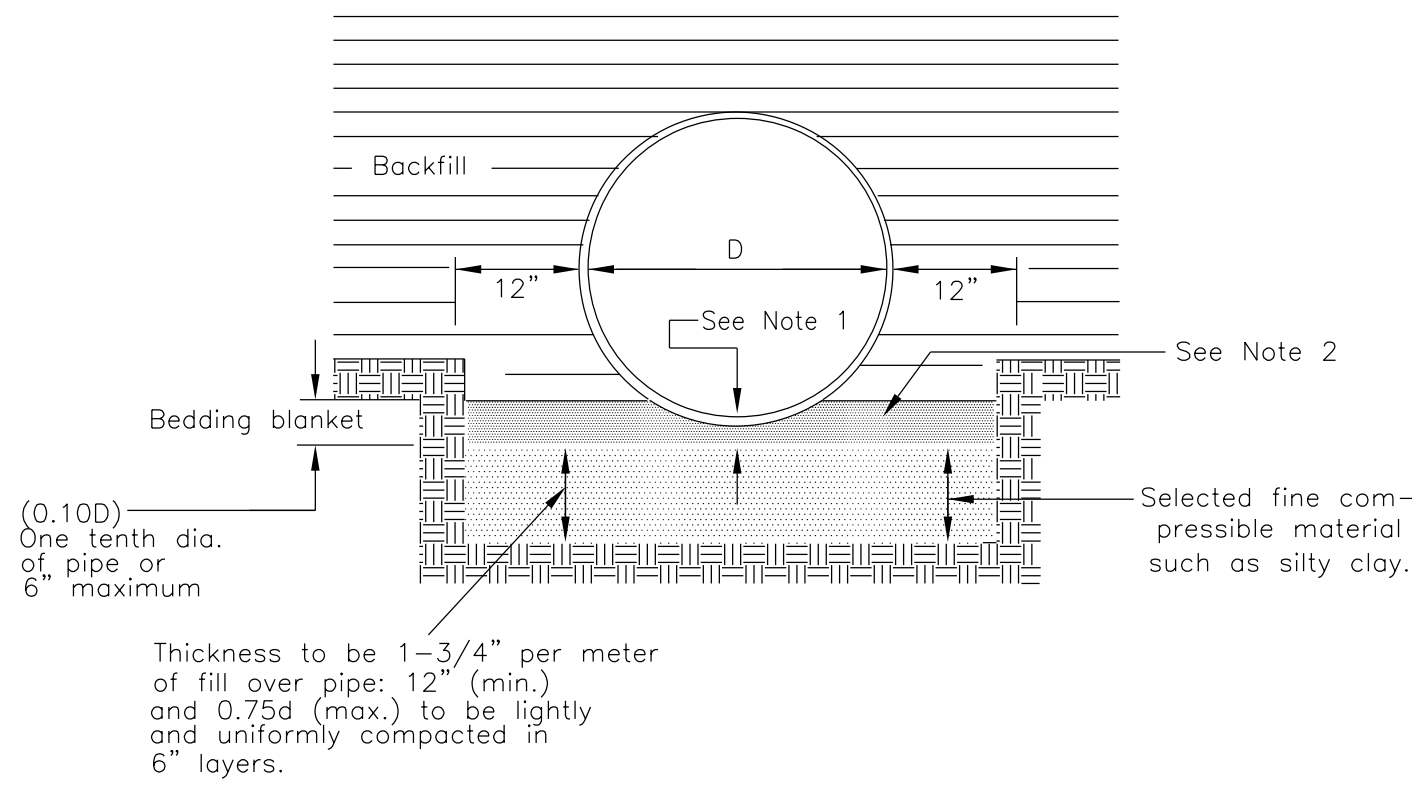
NOTE: When necessary the slope may be flattened to 1:6 with bit. mix or soil cement protection as called for on plans.



Note: DIMENSIONS OF DITCHES AND DIKES as shown on plans are respectively width, depth or height and length.



- To be paid for by linear measure.
- Furrow ditch sections as shown above or an approved equivalent may be built as directed by the C.O.R./AOTR




- Ditch Block at structures to be so placed that they create a water cushion. Elevation top of Ditch Block shall be 6" above elevation of top of pipe unless otherwise shown.
- Ditch Block shall be located a distance equal to the largest dimension of Box Culvert or pipe from the face of the drainage structure. In no case shall the distance exceed 20.0'.

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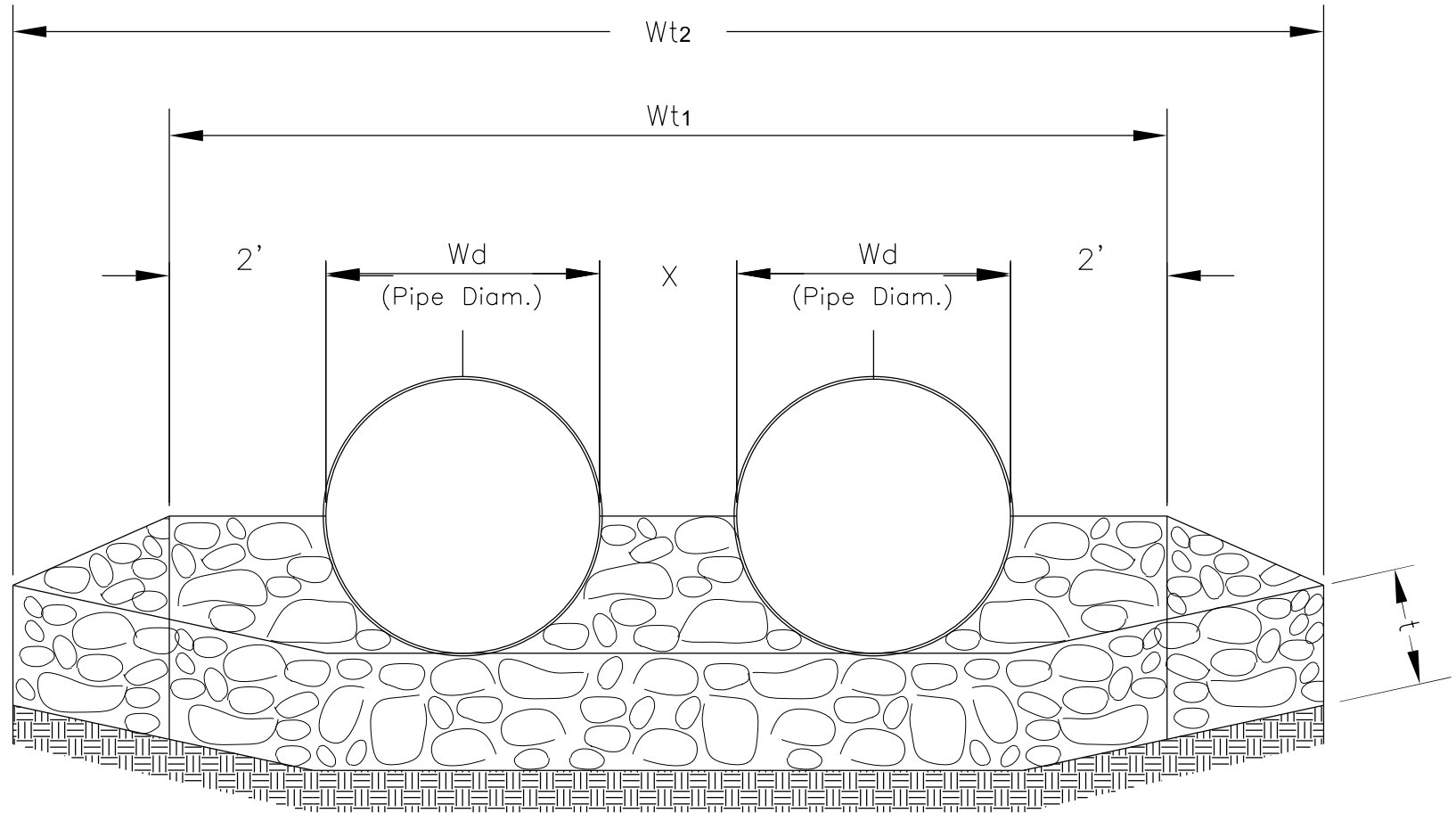
STANDARD PIPE INSTALLATION
AND DITCH DETAILS

DRAWN BY: Gerald.Hood	DATE: 5/7/2009
DESIGNED BY: NRDOT	DATE: 5/7/2009
REVISED: 1/25/2013	BY: Peterson.Yazzie
ANNOTATION SCALE: Full Size 1=1	
FILENAME: Sht.26_Std.DrainageStruct.Instn.Details.dgn	



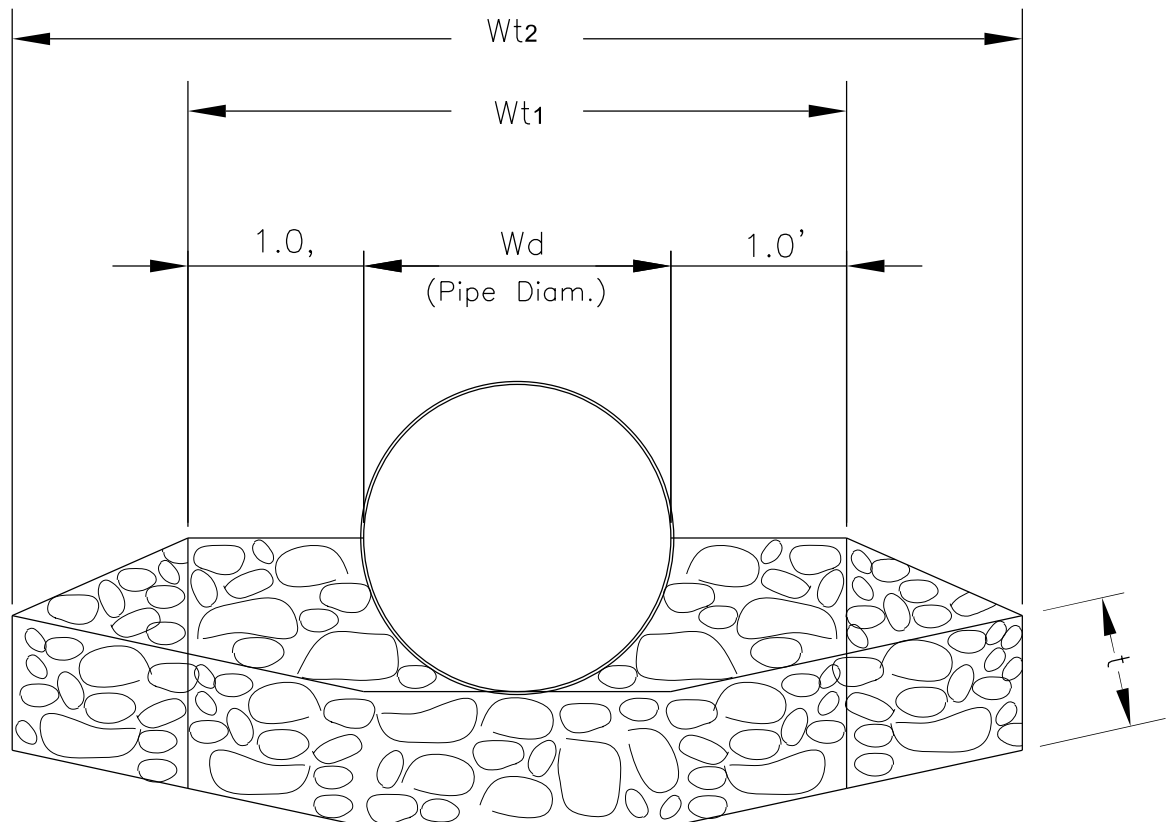
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REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N2007	N2007(1-1)1,2&4	27	63



SECTION A-A - DOUBLE BARREL

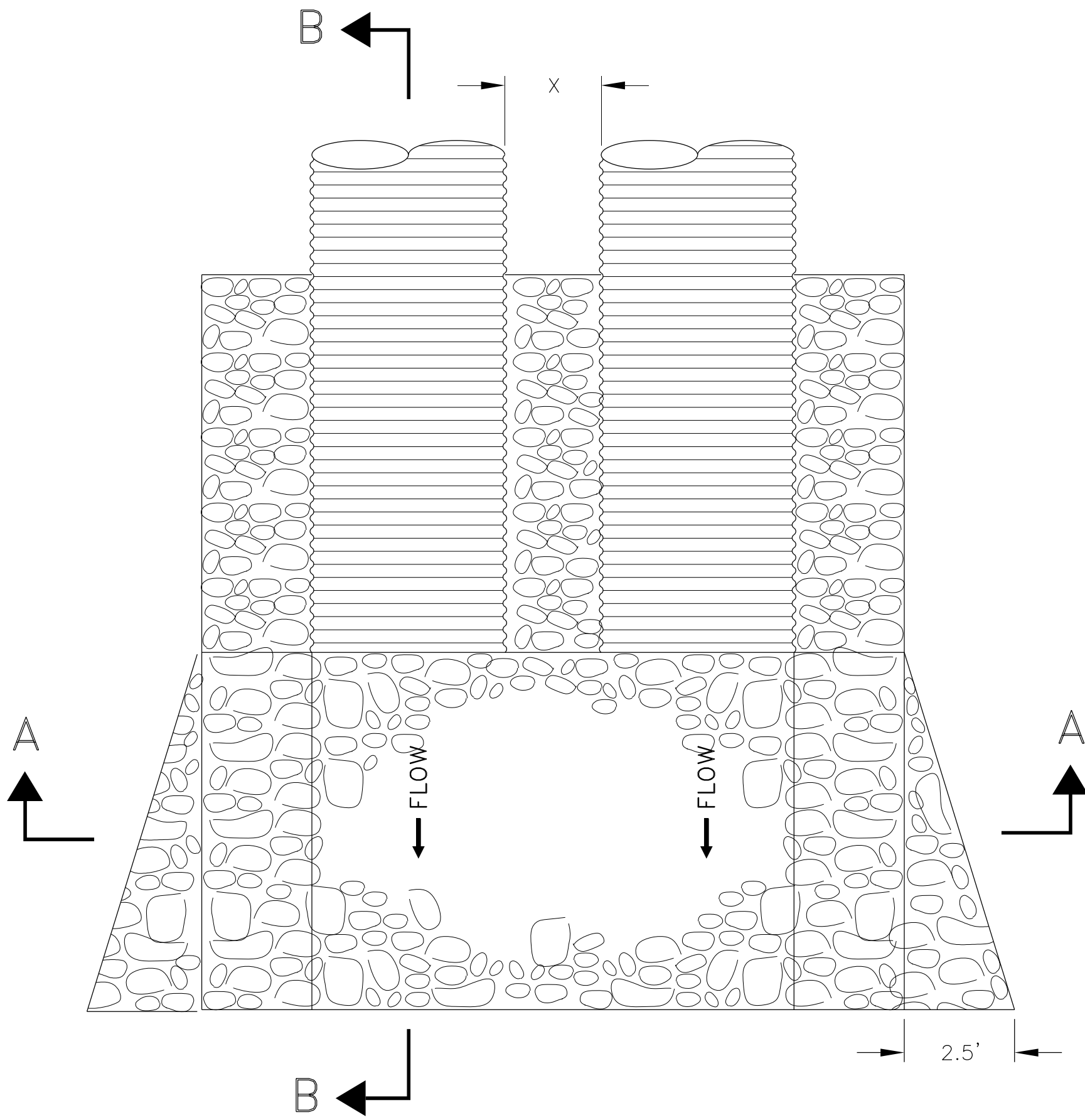
Distance Between Pipe's
X = 72" For 24" Ø CSPC
X = 82" For 30" Ø CSPC
X = 93" For 36" Ø CSPC



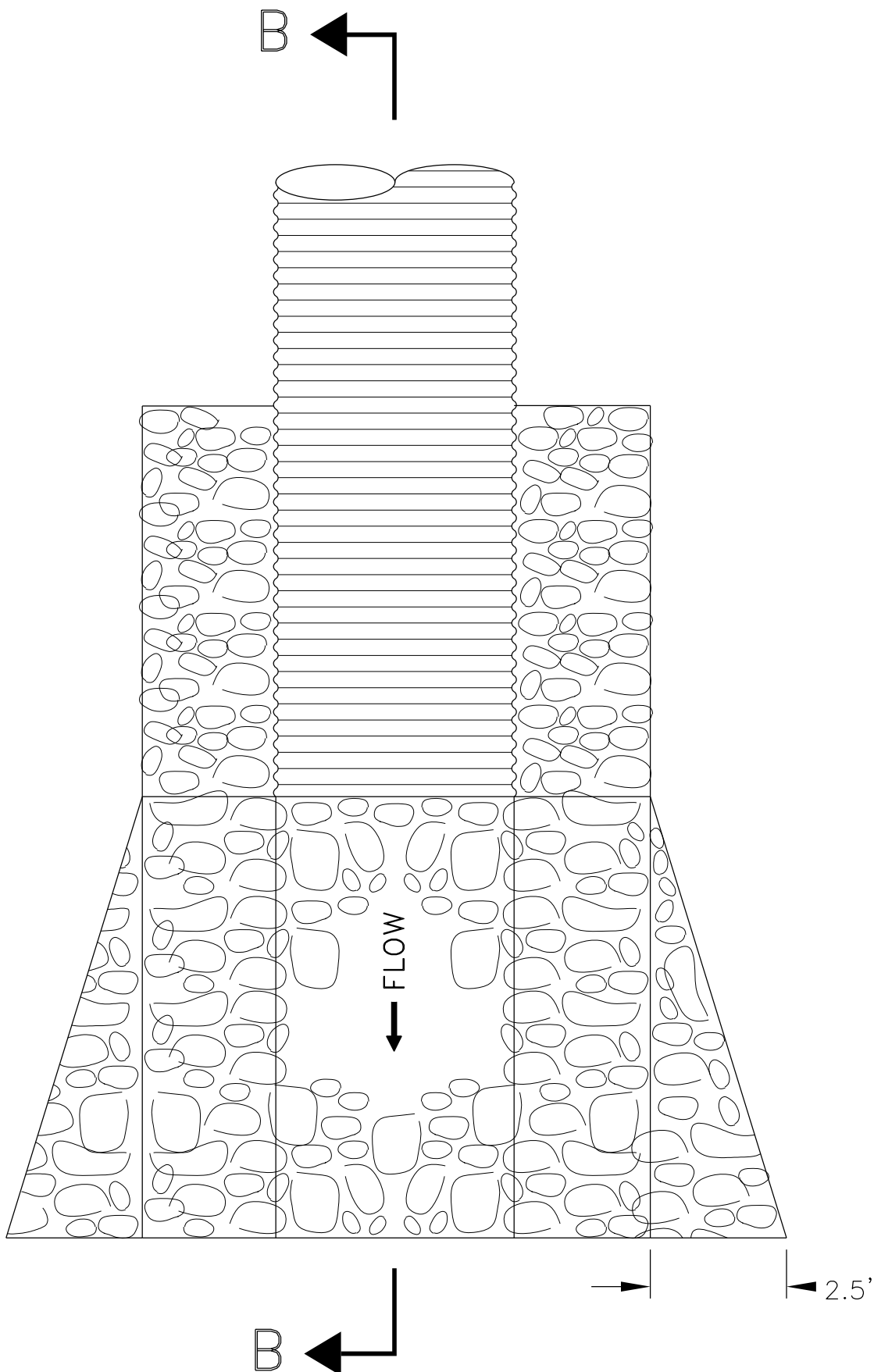
SECTION A-A - SINGLE BARREL

GENERAL NOTES

1. WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE STANDARD SPECIFICATION FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS [FP-03].
2. THE QUANTITIES SHOWN ARE ONLY AN ESTIMATE. ACTUAL QUANTITIES SHALL BE DETERMINED IN THE FIELD. THE CONTRACTOR WILL BE REQUIRED TO MAKE ANY NECESSARY ADJUSTMENTS IN THE FIELD TO MATCH EXISTING FIELD CONDITIONS. THESE FIELD ADJUSTMENTS ARE THE OBLIGATIONS OF THE CONTRACTOR.
3. EXCAVATION FOR RIPRAP BELOW FLOW LINE AS SHOWN SHALL BE CONSIDERED INCIDENTAL TO ITEM 25101-2000.
4. STONE SIZE SHALL CONFORM TO FP-03, TABLE 705-1, CLASS 2.
5. FILTER FABRIC TYPE IV-B SHALL BE INSTALLED UNDER ALL RIP RAP AND SHALL CONFORM TO SECTION 251, FP-03, AND SHALL BE CONSIDERED INCIDENTAL TO ITEM 25101-2000.
6. THE TOP OF THE RIPRAP SHALL BE INSTALLED TO MATCH THE EXISTING OR FINISHED GROUND ELEVATIONS.
7. FILTER FABRIC SHALL BE TUCKED OR EMBEDDED 16" INTO EMBANKMENT ALONG ALL EDGES AS SHOWN. FILTER FABRIC IS NOT REQUIRED UNDER GROUTED RIPRAP.
8. RIPRAP DOWN DRAIN SHALL BE CARRIED DOWN SLOPE TO INTERSECTION OF FILL SLOPE AND EXTENDED UNTIL A 2% OR LESS GRADE IS ACHIEVED BEFORE TERMINATION.
9. FOR GROUTED RIPRAP, FILL ALL ROCK VOIDS WITH GROUT AS FP-03 SECTION 251. LEAVE 0.5 TO .25 OF THE RIP RAP SURFACE ROCK EXPOSED.
10. THE QUANTITIES SHOWN ARE ONLY AN ESTIMATE. ACTUAL QUANTITIES SHALL BE DETERMINED IN THE FIELD. THE PROJECT MANAGER, AOTR/COR, AND CONTRACTOR SHALL REVIEW ALL ROCK CUT AREAS AFTER THE CONSTRUCTION OF DITCHES, DOWN DRAINS, AND RIPRAP BASINS HAVE BEEN "ROUGH IN". IF IN THE OPINION OF THE AOTR/COR, THAT THE ROCK CUT IS STABLE, THE AOTR/COR MAY ELECT TO DELETE SECTIONS OF THE RIP RAP PROTECTION.



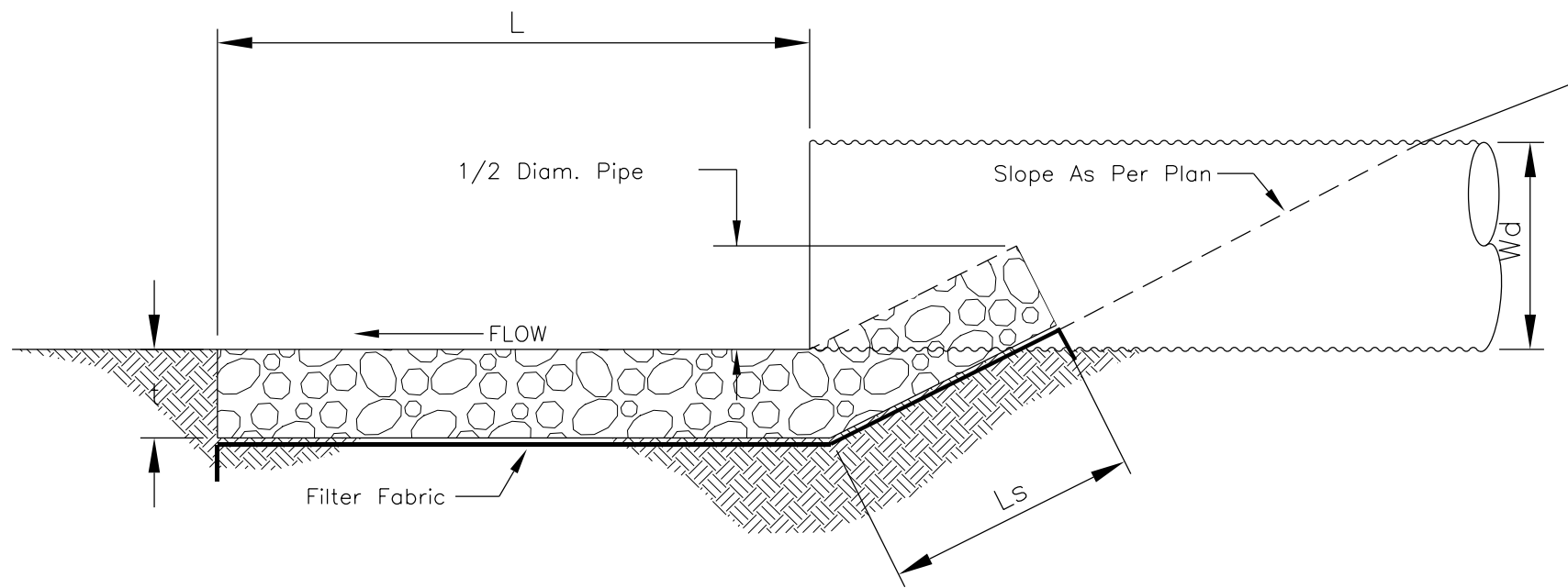
PLAN - DOUBLE BARREL



PLAN - SINGLE BARREL

ITEM 25101-2000 ESTIMATED QUANTITIES: PLACED RIPRAP, CLASS 2

STATION	STRUCTURE	LOCATION	Wd (FT.)	Wt. (FT.)	Wt.(FT.)	t(Inch)	L(Ft.)	VOLUME (cu yd)
19+75.00	1-24" @ 90	Outlet	2.0'	4.0	9.0	18	10.0	5.62
36+00.00	2-36" @ 135	Outlet	3.0	17.75	22.75	18	7.87	33.22
TOTAL								38.84



SECTION B-B

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

PLACE RIPRAP
DROWN DRAIN DETAIL

DRAWN BY: Gerald.Hood DATE: 5/7/2009
DESIGNED BY: NRDOT DATE: 5/7/2009
REVISED: 1/25/2013 BY: Peterson.Yazzie
ANNOTATION SCALE: Full Size 1=1
FILENAME: Sht.27_Riprap_DowndrainDetails.dgn

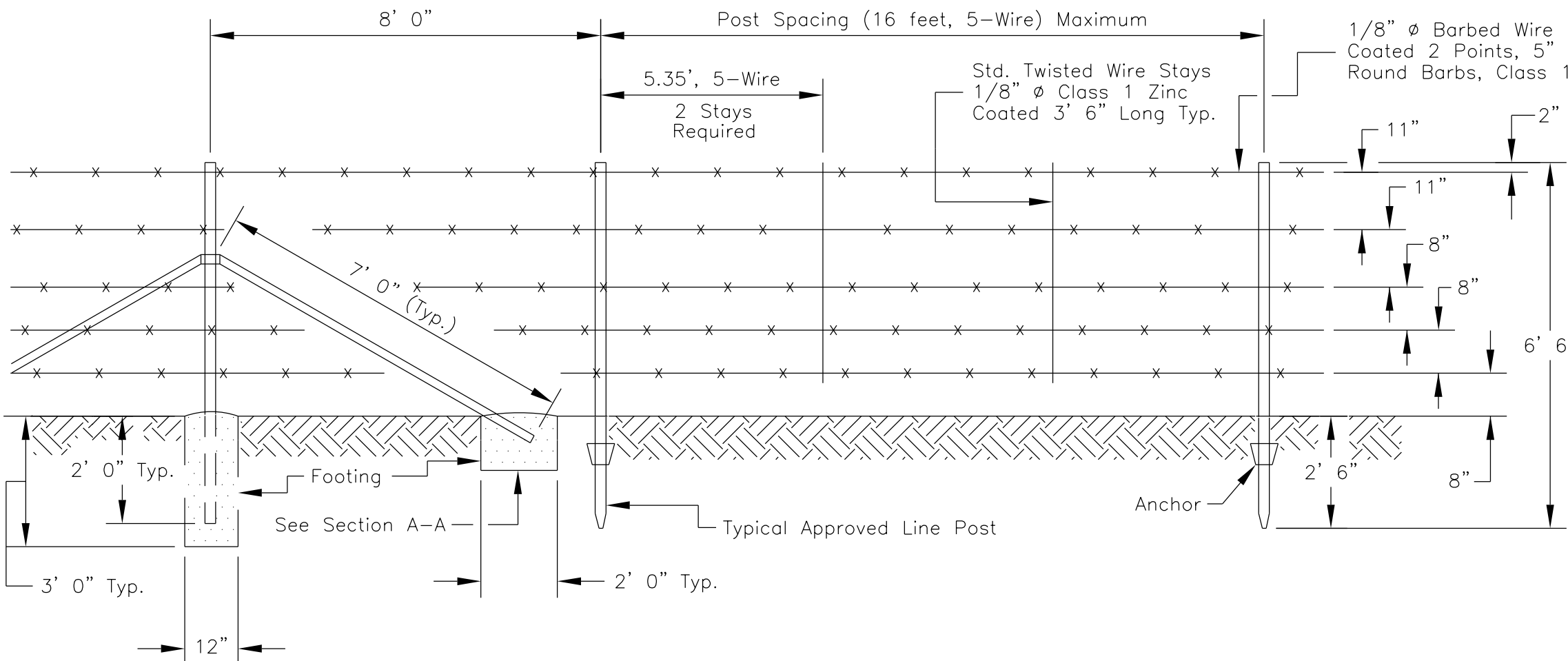


J:\DESIGN\Users\N2007(1-1)&4_092308\N2007 DESIGN DATA_092508\CADD Files 01-18-2013\N2007 Plans 01-18-2013

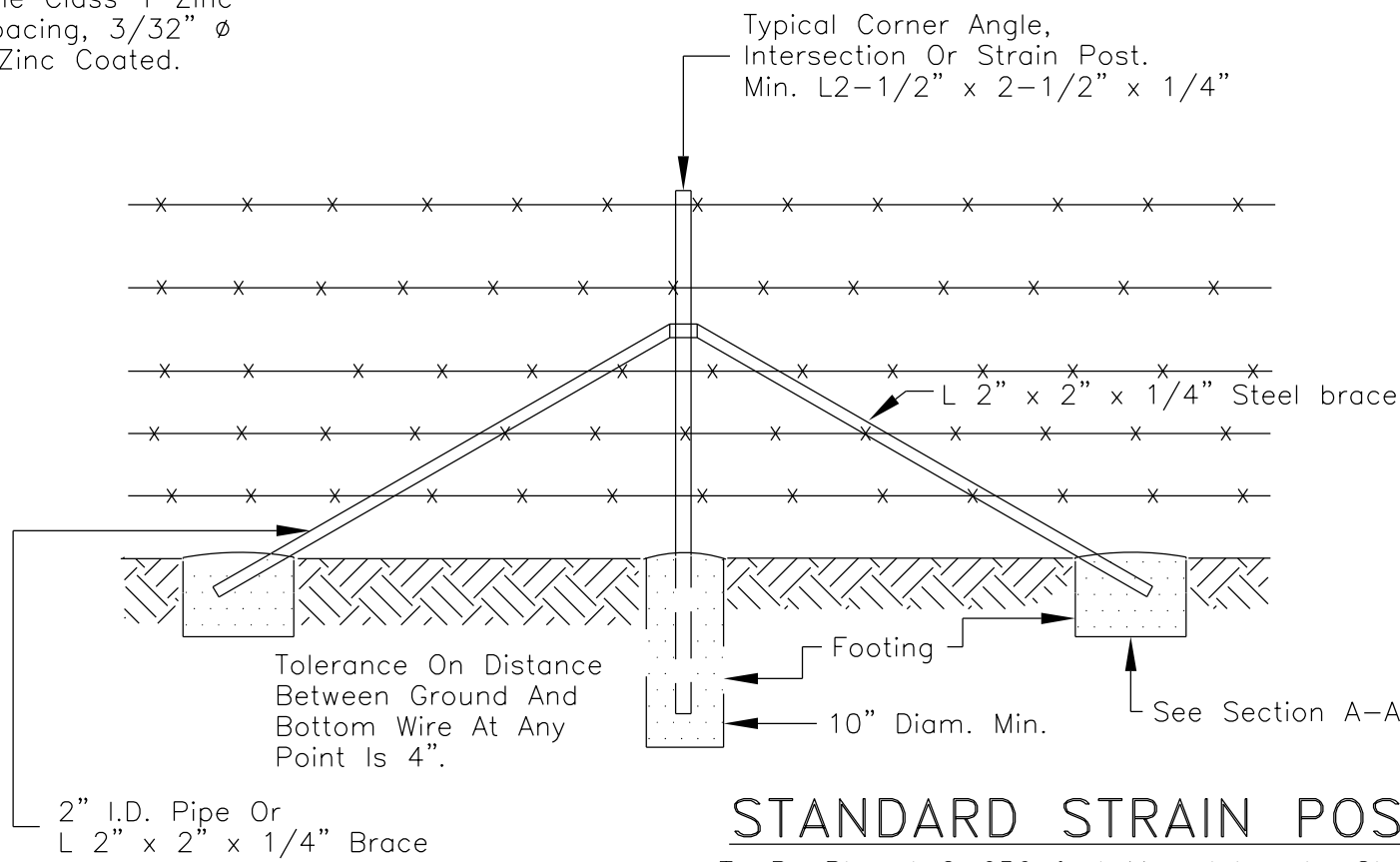
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N2007	N2007(1-1)1,2&4	28	63

GENERAL NOTES

- CORNER, GATE, INTERMEDIATE BRACE POSTS AND LINE POSTS SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M 281-88. METAL POST AND BRACES SHALL BE FABRICATED FROM RAIL, BILLETS, OR COMMERCIAL GRADE STEEL CONFORMING WITH THE REQUIREMENT OF ASTM A 702.
- LINE POSTS SHALL BE FABRICATED IN ACCORDANCE WITH AASHTO M 281, SECTION 7.1.2 WHICH INCLUDES THE ANCHOR PLATES.
- WHEN LINE POST ANCHORS ARE OMITTED, DUE TO CHANGE IN SOIL CONDITIONS SUCH AS ROCK, THEN THE POSTS SHALL BE SET IN CONCRETE. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO ITEM 61901-1000.
- TIE WIRE, WIRE FASTENERS OR WIRE CLIPS FOR FASTENING BARBED & WOVEN FABRIC FENCING TO THE STEEL POSTS SHALL BE 1/8" (Diam.) STEEL WIRE, CLASS 1 (ZINC COATED), SOFT TEMPER AND MEET THE REQUIREMENTS OF ASTM A 641. FURNISHING AND PLACEMENT OF FASTENERS SHALL BE INCLUDED WITH ITEM 61901-1000.
- CONCRETE FOR ANCHORS, POST HOLES, ETC. SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3.6 KSI IN 28 DAYS AND SHALL CONFORM TO SECTION 601 OF THE FP-03. FURNISHING AND PLACEMENT OF CONCRETE SHALL BE INCLUDED WITH ITEM 61901-1000.
- TWO SPLICES ON THE SAME LINE BETWEEN THE STRAIN POST ASSEMBLIES SHALL NOT BE PERMITTED. NO SPLICES SHALL BE PLACED CLOSER THAN 100 FEET OF ANY POST ASSEMBLIES.
- CONNECT ALL R.O.W. FENCING TO CATTLEGUARDS, CULVERTS (GREATER THAN 48" Diam.), CONCRETE STRUCTURES, AND BRIDGES AS SHOWN ON THESE PLANS AND/OR AS DIRECTED BY THE C.O.R/AOTR.
- CLEARING AND GRUBBING SHALL INCLUDE SHAPING AND/OR REMOVAL OF SMALL MOUNDS NECESSARY TO PRESENT A SMOOTH UNIFORM APPEARANCE OF BOTH GROUND AND FENCING LINE. THIS WORK SHALL BE INCIDENTAL TO THE INSTALLATION OF FENCING AND NO ADDITIONAL PAYMENT SHALL BE MADE.
- ALL DRILLING INTO ROCK MATERIAL, ETC. SHALL BE INCIDENTAL TO THE INSTALLATION OF FENCING AND NO ADDITIONAL PAYMENT SHALL BE MADE.
- THE CONTRACTOR SHALL BE REQUIRED TO INSTALL SAG WEIGHTS WHERE VERTICAL CLEARANCE BETWEEN THE BOTTOM WIRE AND NATURAL GROUND IS 2 FEET OR GREATER. THIS WORK SHALL BE INCIDENTAL TO THE INSTALLATION OF FENCING.
- GATE CLOSURE DEVICE SHALL BE STEEL PIPE, NPS 3/4" (1" Ø) SCHEDULE 40, CONFORMING TO THE REQUIREMENT OF ASTM A 53. THE GATE CLOSURE STEEL CHAIN SHALL BE WELDED TO THE STEEL PIPE AND ANGLE IRON FENCE POST. THIS WORK SHALL BE INCIDENTAL TO THE INSTALLATION OF FENCING AND NO ADDITIONAL PAYMENT SHALL BE MADE.
- CONTRACTOR SHALL BE REQUIRED TO INSTALL SAG WEIGHTS WHERE VERTICAL CLEARANCE BETWEEN THE BOTTOM WIRE AND NATURAL GROUND IS 24 INCH OR GREATER. THIS WORK SHALL BE INCIDENTAL TO THE INSTALLATION OF FENCING.

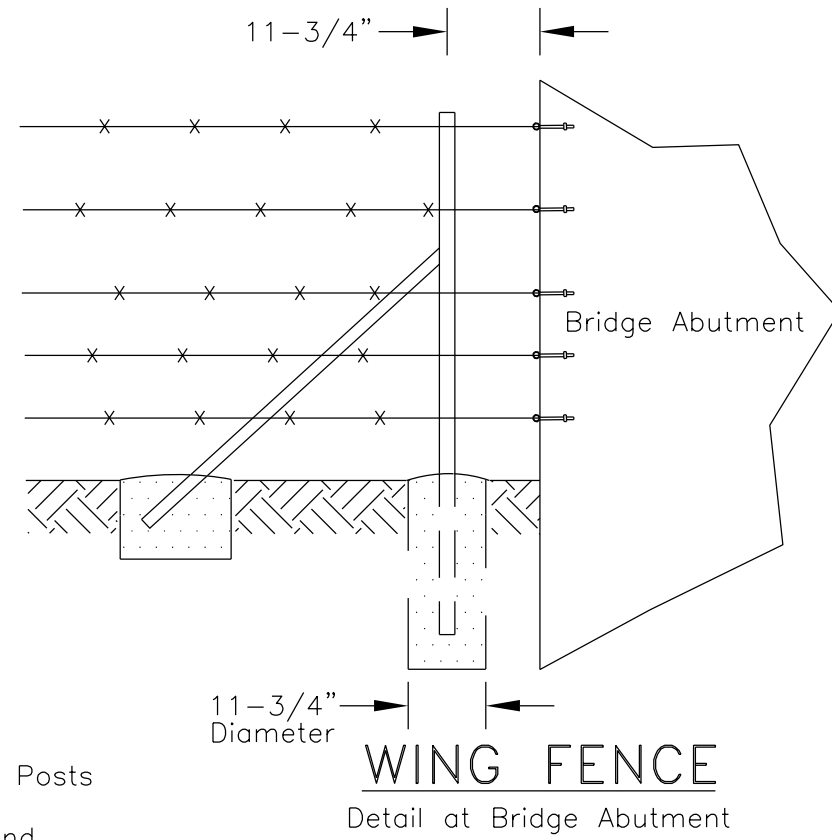


STANDARD 5 LINE GALVANIZED BARBED WIRE PANEL



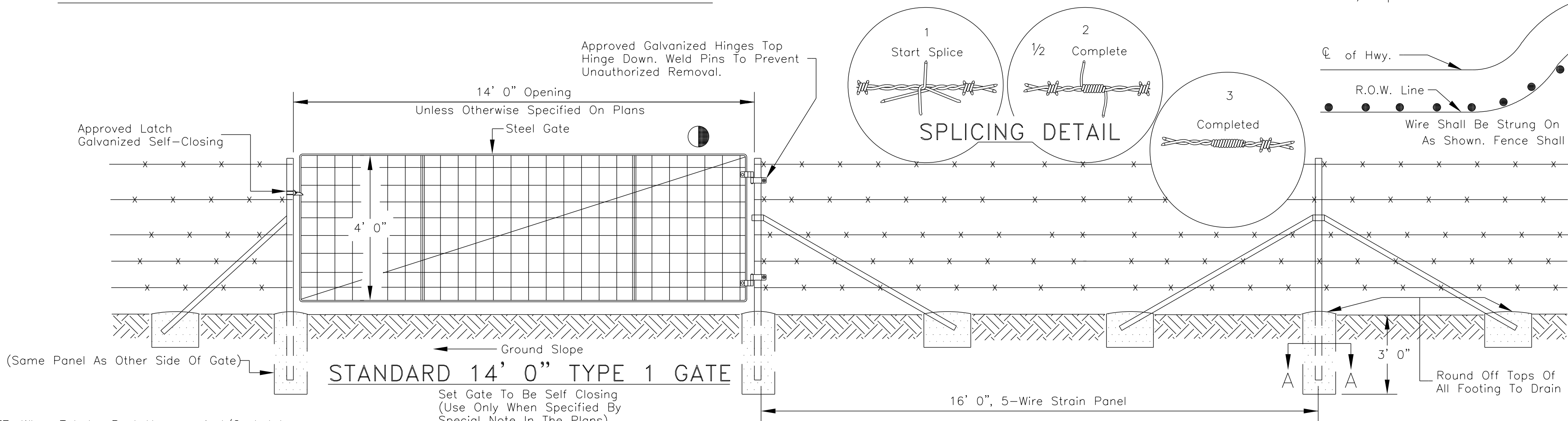
STANDARD STRAIN POST

To Be Placed @ 650 feet Max. Intervals. Strain Posts With Braces Shall Be Installed At All Corners (R/W Corners Etc.) And Angles Exceeding 15° And Fence Intersections. A Third Brace, In Line With Cross Fence, Required At Intersection.



WING FENCE

Detail at Bridge Abutment



STANDARD 14' 0" TYPE 1 GATE

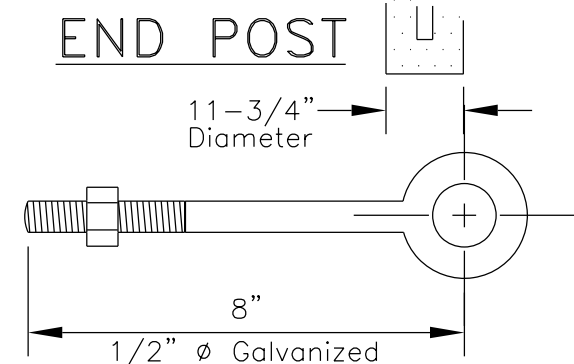
NOTE: When Tubular Post Hangers And/Or Latches Are Used, It Shall Be Drilled For A Single 1-1/8" Ø Min. Drive Pin To Prevent Rotation Of The Hangers And/Or Latches.

For Gate Details At Cattle guard Location See Standard Cattle guard Drawings.

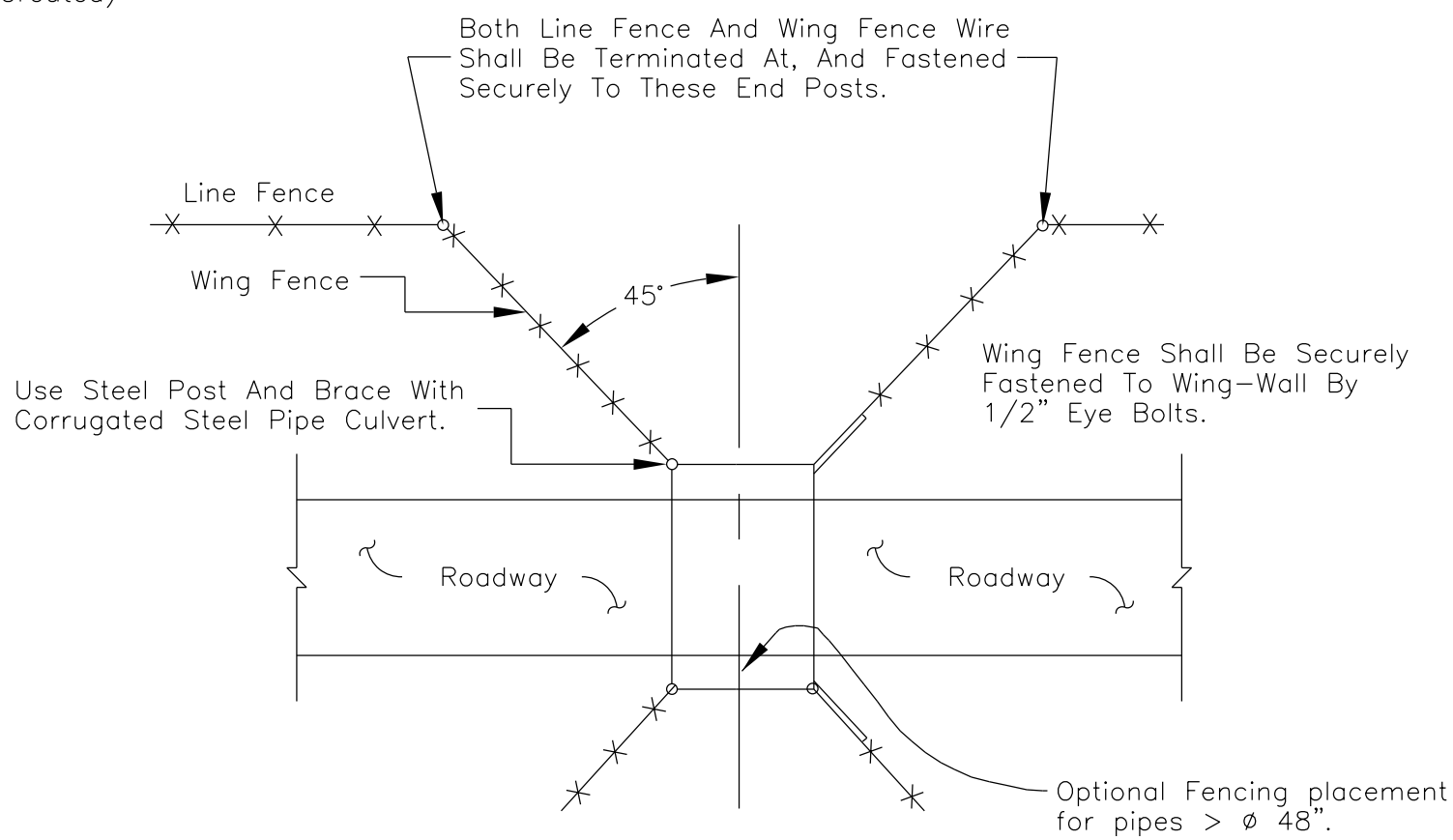
1-3/8"Ø Tubing 2 Vert. Braces Mesh 1/8" Ø Line Wires 1/8" Ø Crosswires, 1 Adjustable Diagonal Guy Fully Galvanized.

Additional Line Posts Required At Sharp Break In ground Line As Designated By The C.O.R/AOTR.

Strain Posts Required At Sharp Break In Ground Line As Designated By C.O.R/AOTR.



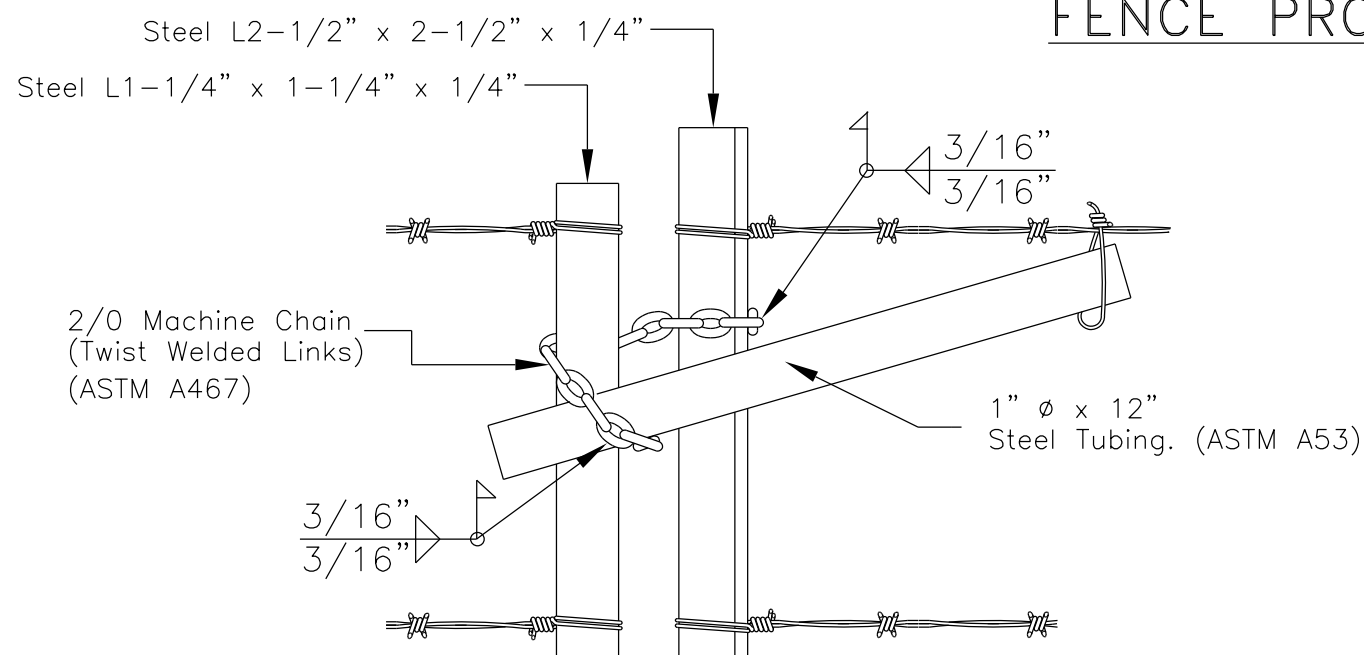
EYE BOLT DETAIL



WING FENCE DETAIL

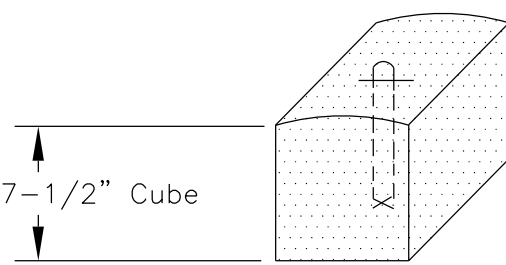
This Detail Shall Be Used Where Stock Passes Or Large Drainage Structures > 48" Ø Are Called For On Plans Unless Otherwise Directed By The C.O.R/AOTR.

FENCE PROFILE IN ROUGH TERRAIN



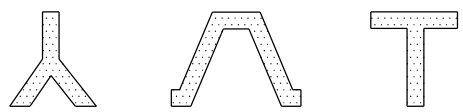
GATE SECURING DETAIL

1-1/2" x 5" Doubled And Twisted 1/8" (Diam.) Wire Loop Centered In Block. 1" Projection Twisted Ends Down.

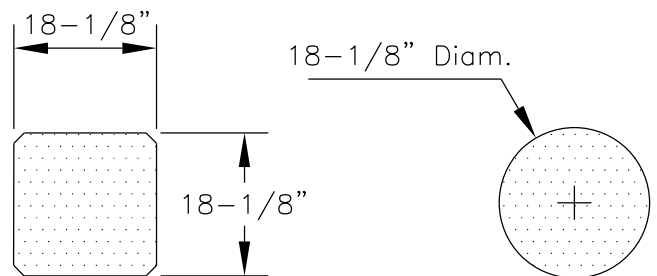


CONCRETE SAG WEIGHT DETAIL

Min. Weight Of Concrete Sag Shall Be 35.3 lb.



TYPICAL STEEL POST SECTION



SECTION A-A

(Alternates)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS

NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

STANDARD FENCING DETAIL
w/TYPE I & II GATE

DRAWN BY: Gerald.Hood DATE: 5/6/2009

DESIGNED BY: NRDOT DATE: 5/6/2009

REVISED: 1/25/2013 BY: Peterson.Yazzie

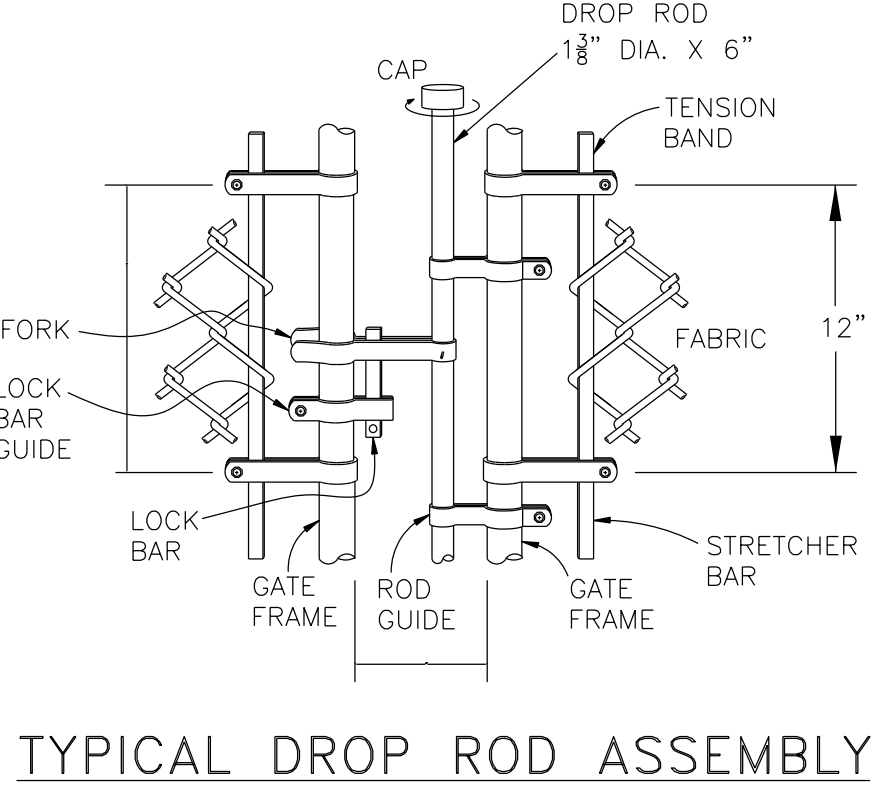
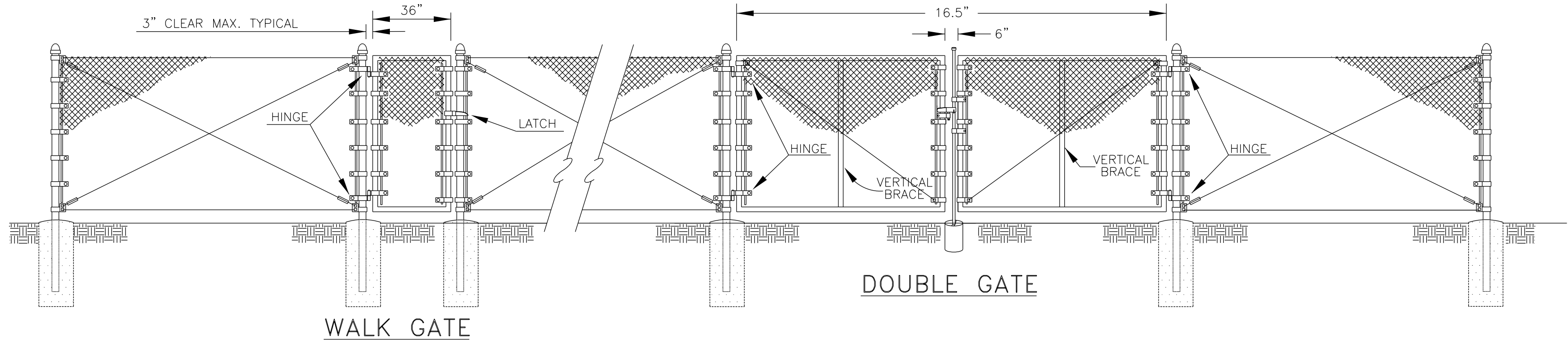
ANNOTATION SCALE: Full Size 1=1

FILENAME: Sht.28_Fencing Std Details.dgn



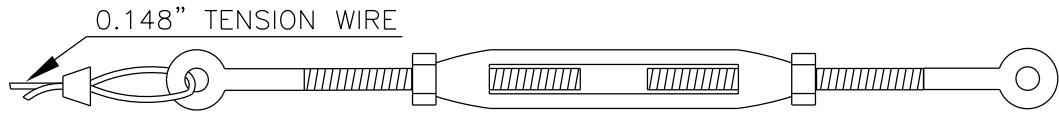
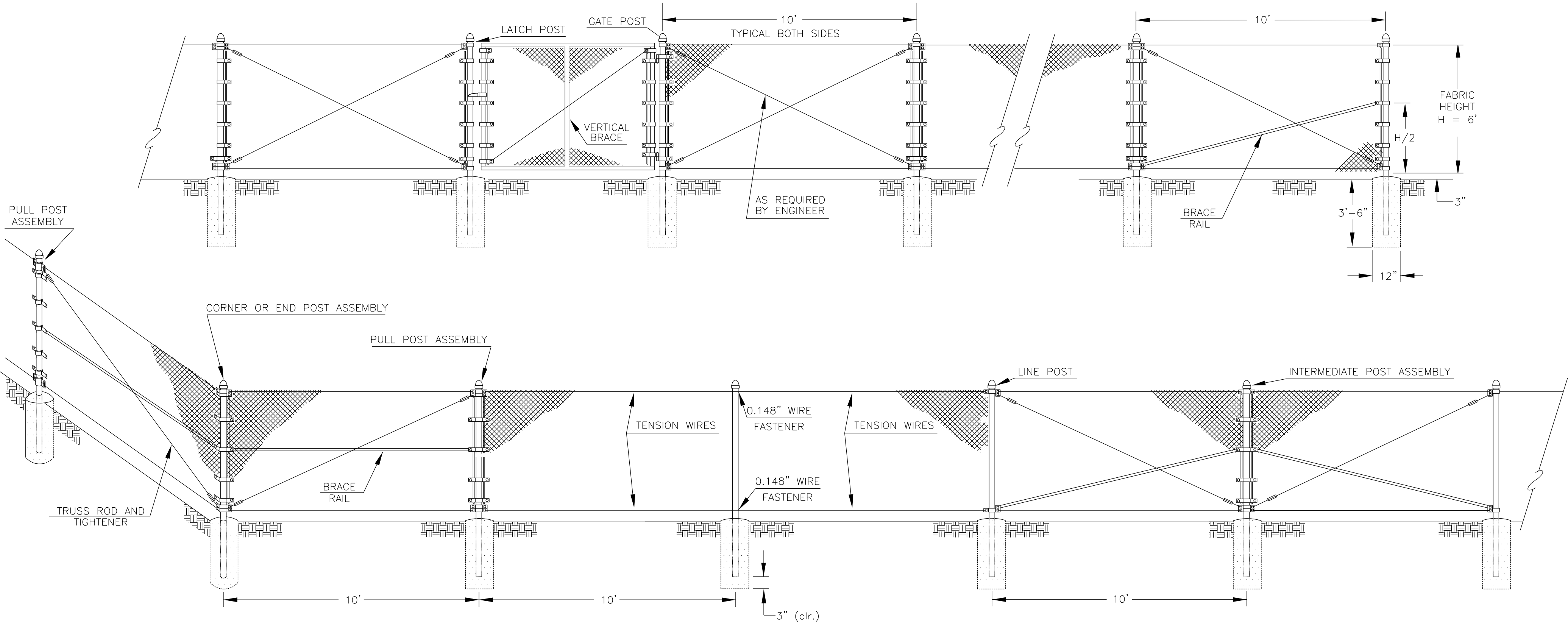
J:\DESIGN\Users\DESIGN2\CURRENT PROJECT_093008\N00_New Lands\N2007(1-1)2&4_092308\N2007 Files 01-18-2013\N2007 Plans 01-18-2013\

AREA	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N2007	N2007(1-1)1,2&4	29	63

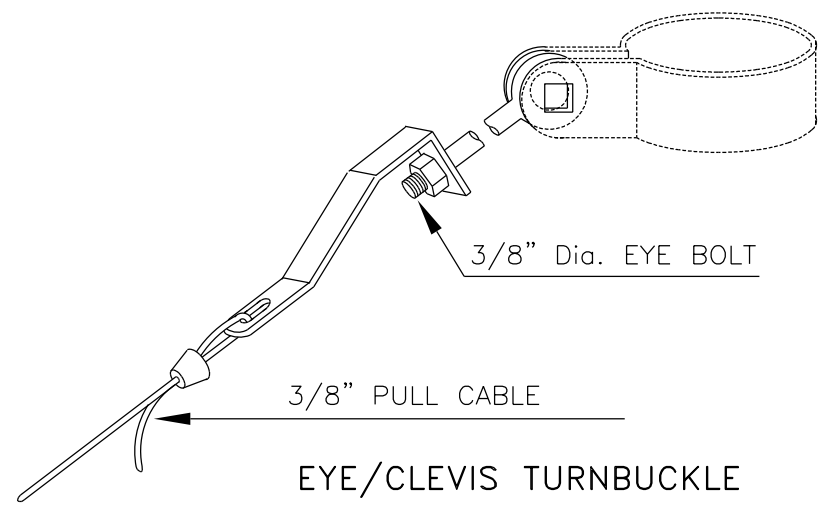


GENERAL NOTES

- POSTS SHALL BE ROUND PIPE, H-SECTION OR ROLL FORMED AND SHALL CONFORM TO THE NOMINAL DIMENSIONAL REQUIREMENTS SHOWN ON THE PLANS. IN ADDITION, THE MATERIAL OF WHICH POST ARE FABRICATED SHALL HAVE A NOMINAL THICKNESS, BEFORE GALVANIZING, OF NOT LESS THAN 0.111 INCH.
- CHAIN LINK FABRIC SHALL BE EITHER ZINC-COATED OR ALUMINUM-COATED STEEL WIRE FENCE FABRIC. ZINC-COATED STEEL FABRIC SHALL CONFORM TO THE REQUIREMENTS OF ASTM A392, CLASS 1 COATING. ALUMINUM-COATED STEEL FABRIC SHALL CONFORM TO THE REQUIREMENTS OF ASTM A491, WITH A MINIMUM WEIGHT OF COATING OF 0.40 OUNCE PER SQUARE FOOT OF WIRE SURFACE AREA. FABRIC SHALL BE 11 GAUGE FOR ALL FENCE FABRIC 60 INCHES OR LESS IN HEIGHT AND SHALL BE 9 GAUGE FOR FABRICS GREATER THAN 60 INCHES IN HEIGHT.
- TENSION WIRES SHALL BE 7 GAUGE (0.177 INCH DIAMETER) COIL SPRING STEEL WIRE WITH A MINIMUM TENSILE STRENGTH OF 75,000 PSI, AND SHALL BE ZINC-COATED OR ALUMINUM-COATED.
- TRUSS RODS SHALL BE 3/8-INCH DIAMETER ADJUSTABLE RODS. TRUSS TIGHTENERS SHALL HAVE A STRAP THICKNESS OF NOT LESS THAN 1/4-INCH.
- STRETCHER BARS SHALL BE 3/16-INCH BY 3/4-INCH STEEL FLAT BARS. STRETCHER BAR BANDS SHALL BE 1/8-INCH BY 1-INCH PREFORMED STEEL BANDS.
- BOTTOM TENSION WIRE SHALL BE 5-INCHES FROM TOP OF CROWN ON CONCRETE FOOTINGS.
- INTERMEDIATE POST ASSEMBLIES SHALL BE SPACED AT 500 FOOT INTERVALS OR MIDWAY BETWEEN PULL POSTS WHEN THE DISTANCE BETWEEN SUCH POSTS IS LESS THAN 1,000 FEET AND MORE THAN 500 FEET.
- CHAIN LINK FENCE POST DIAMETERS SHALL BE , AS FOLLOWS:
 - 1.66" O.D. TOP & BRACE RAILS AND GATE FRAMES TO 6' WIDTH.
 - 1.90" O.D. FOR LINE POSTS AND GATE FRAMES TO 13' WIDTH.
 - 2.875" O.D. FOR END POSTS, CORNER POSTS AND GATE POSTS FOR SINGLE GATE OPENINGS TO 6' WIDTHS.
 - 4.00" O.D. FOR GATE POSTS FOR SINGLE GATE OPENINGS TO 13' WIDTH AND DOUBLE GATE OPENINGS.
- NEW DOUBLE GATE ASSEMBLIES SHALL INCLUDE ALL MATERIALS AND LABOR BETWEEN AND INCLUDING THE OUTER GATE POSTS. WHEN NEW GATE ASSEMBLIES ARE A PART OF EXISTING FENCE RELOCATION, THE RESET (EXISTING) MATERIAL SHALL STOP AT AND CONNECT TO THE OUTER GATE POSTS. IF THE ADJOINING FENCE IS EQUIPPED WITH A BARBED WIRE TOP, INSTALL A MATCHING BARBED WIRE TOP ON THE GATE ASSEMBLY FROM OUTER GATE POST TO OUTER GATE POST INCLUDING THE GATE LEAFS. ON THE GATE LEAFS, INSTALL BARBED WIRE SUPPORTS AT BOTH GATE ENDS AND AT EACH VERTICAL BRACE. FENCING BETWEEN GATE ENDS SHALL INCLUDE TOP AND/OR BOTTOM TENSION WIRES OR TOP RAIL AS NEEDED TO MATCH ADJOINING FENCINGS.

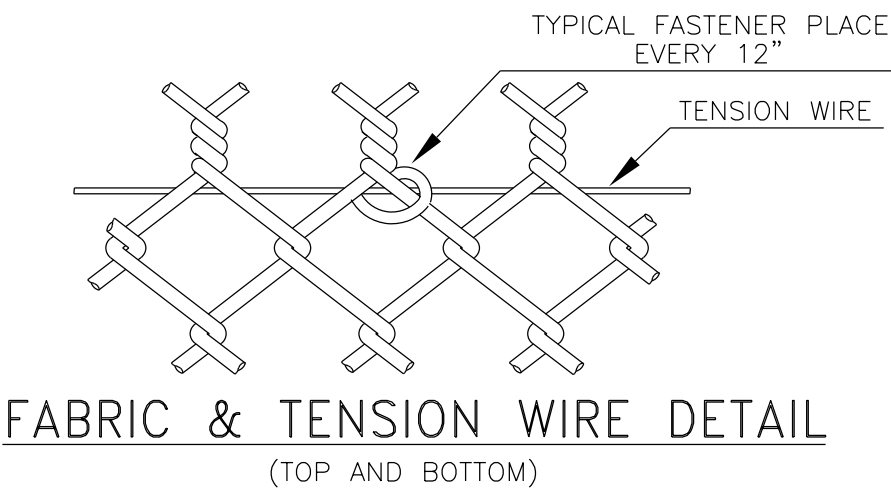


3/8" EYE & EYE/TURNBUCKLE

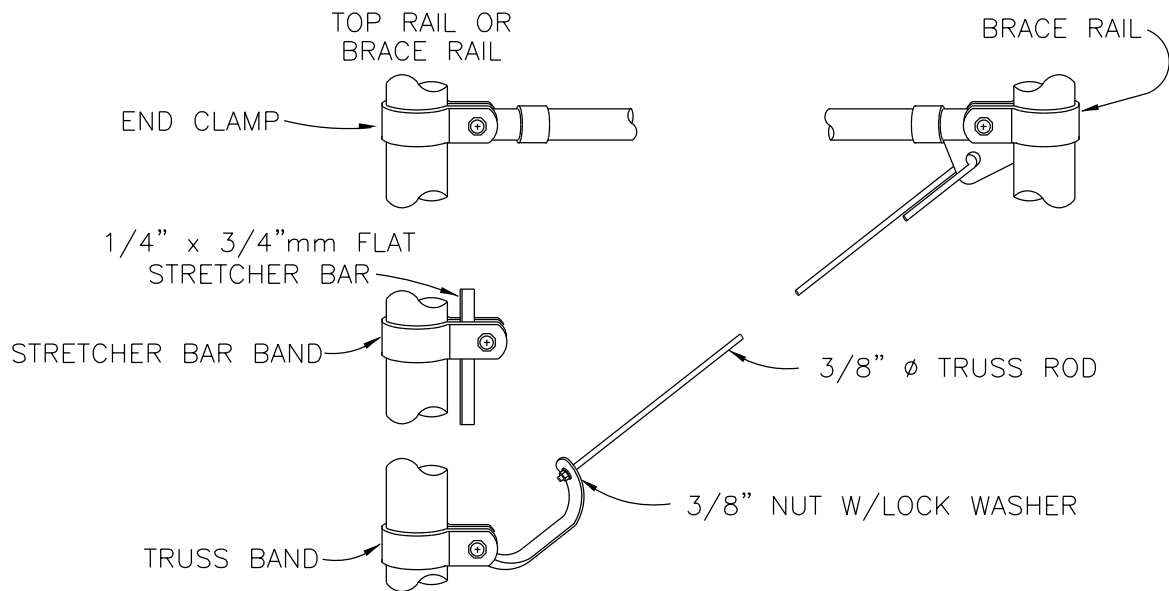


EYE/CLEVIS TURNBUCKLE

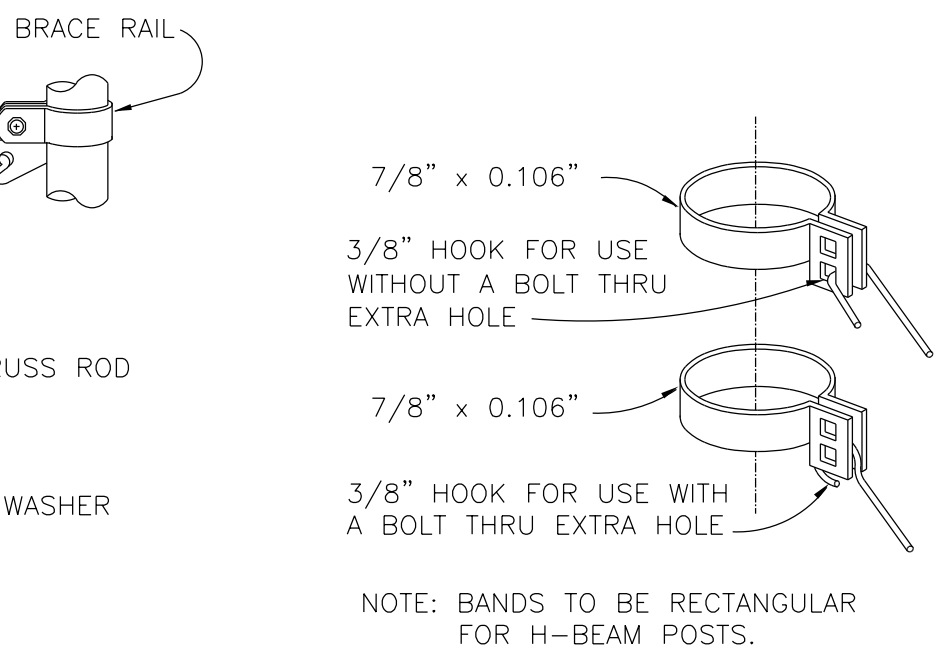
TYPICAL TENSION DEVICES



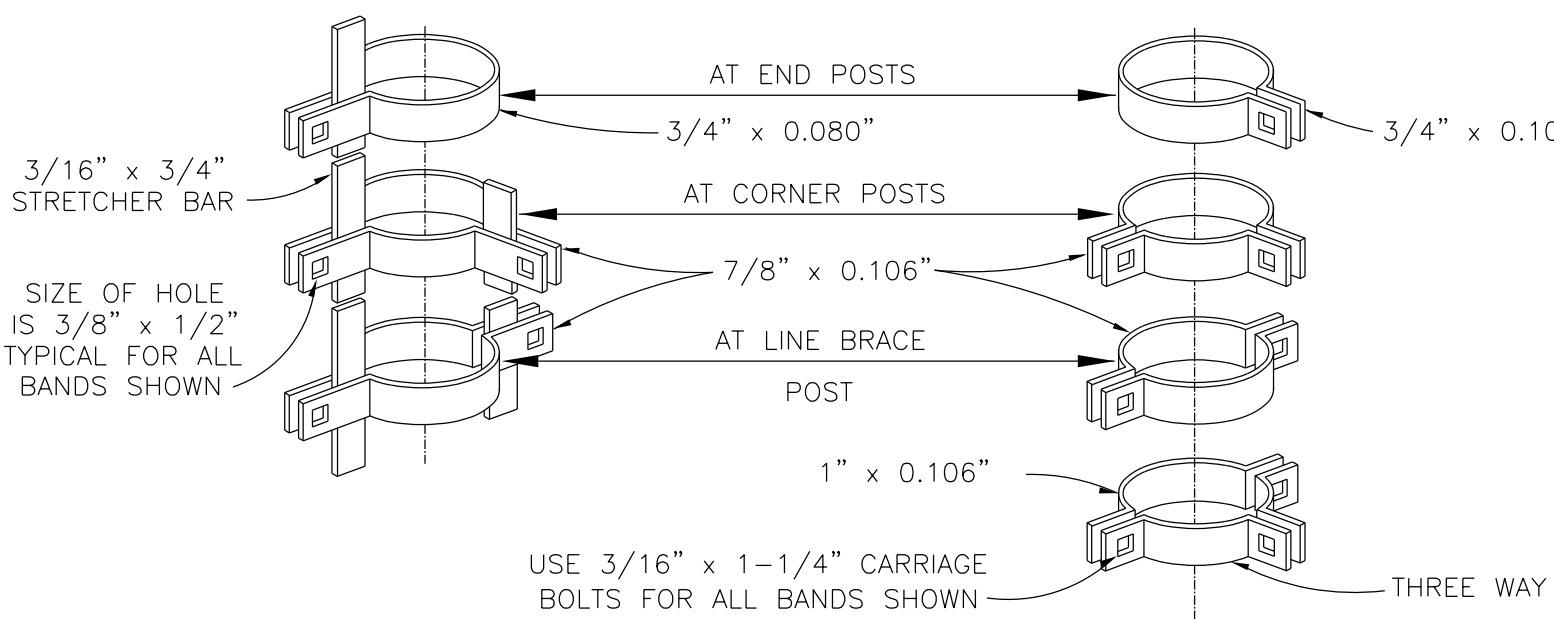
0.148" WIRE FASTENER
(TOP AND BOTTOM OF POST)



GATE DETAIL



BRACE & TRUSS BANDS



TENSION BANDS

BRACE BANDS

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

CHAIN LINK FENCE DETAILS

DRAWN BY: Gerald.Hood DATE: 1/24/2013
DESIGNED BY: NRDOT DATE: 1/24/2013
REVISED: 2/1/2013 BY: Peterson.Yazzie
ANNOTATION SCALE: Full Size 1=1
FILENAME: Sht.29_chain_link_fence.dgn



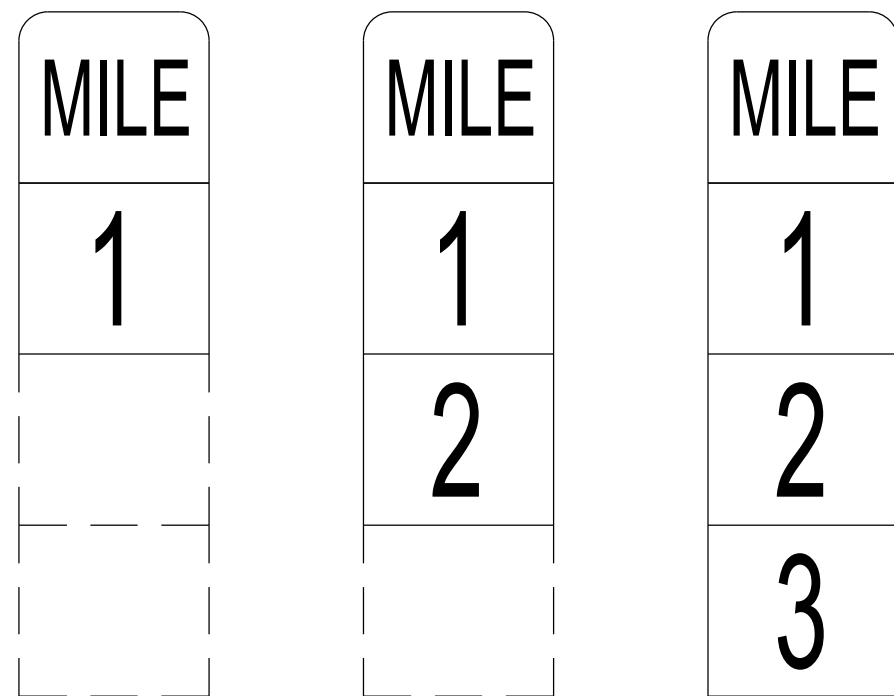
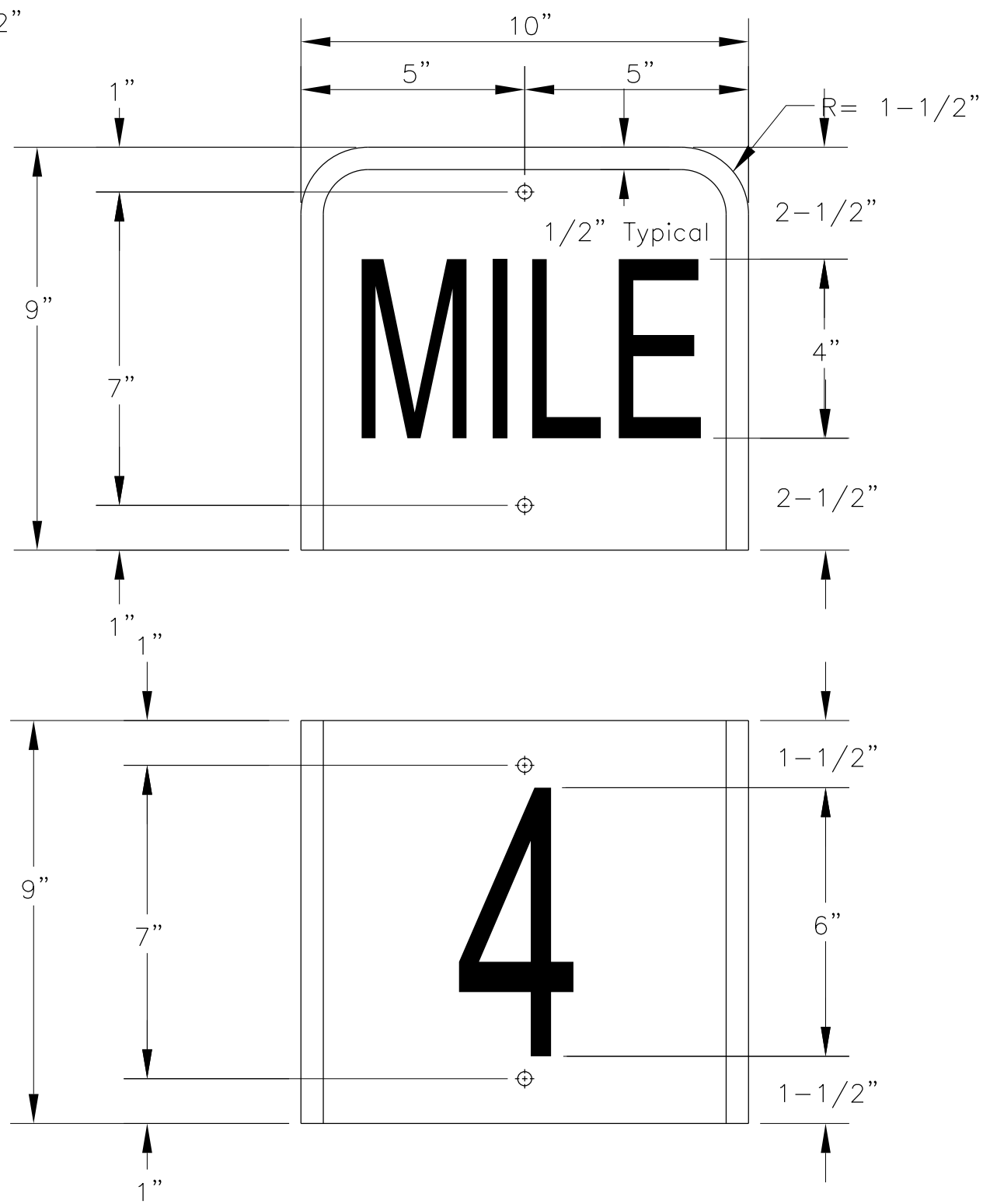
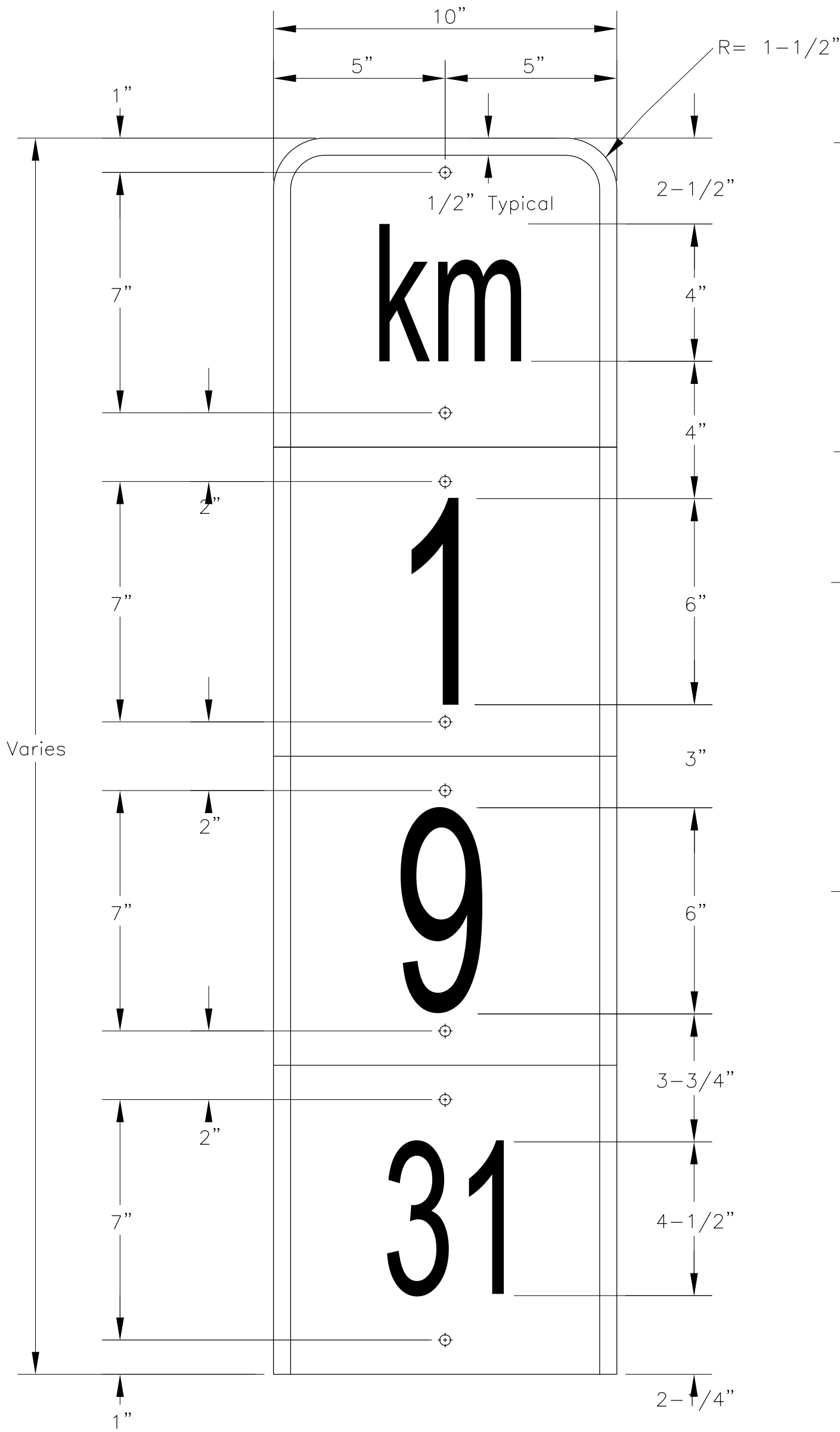
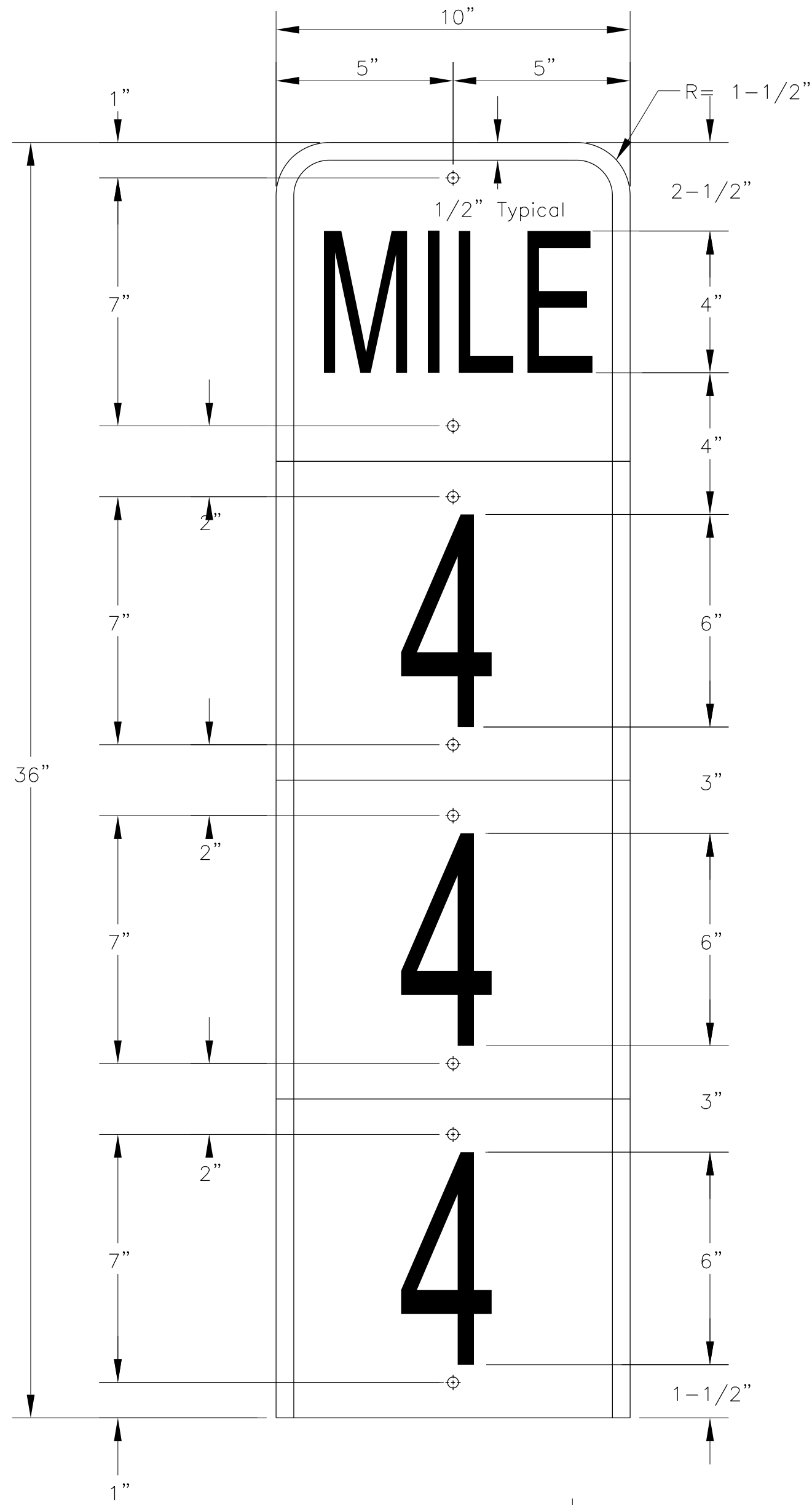
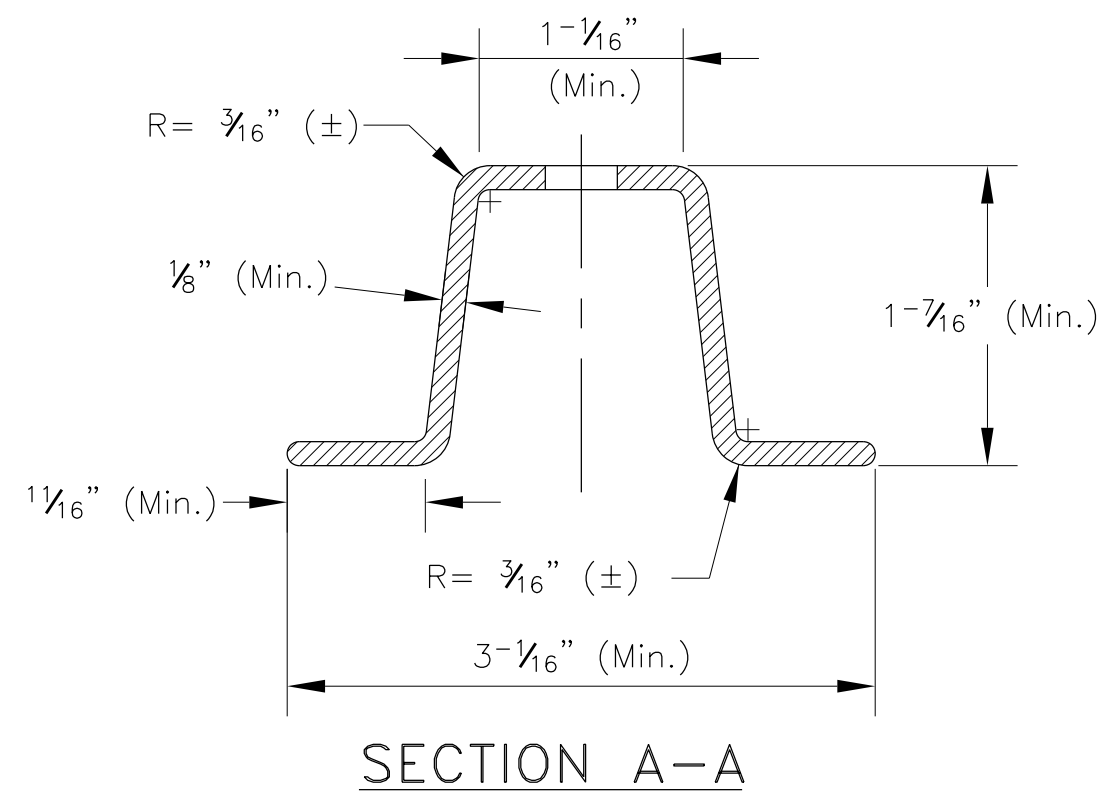
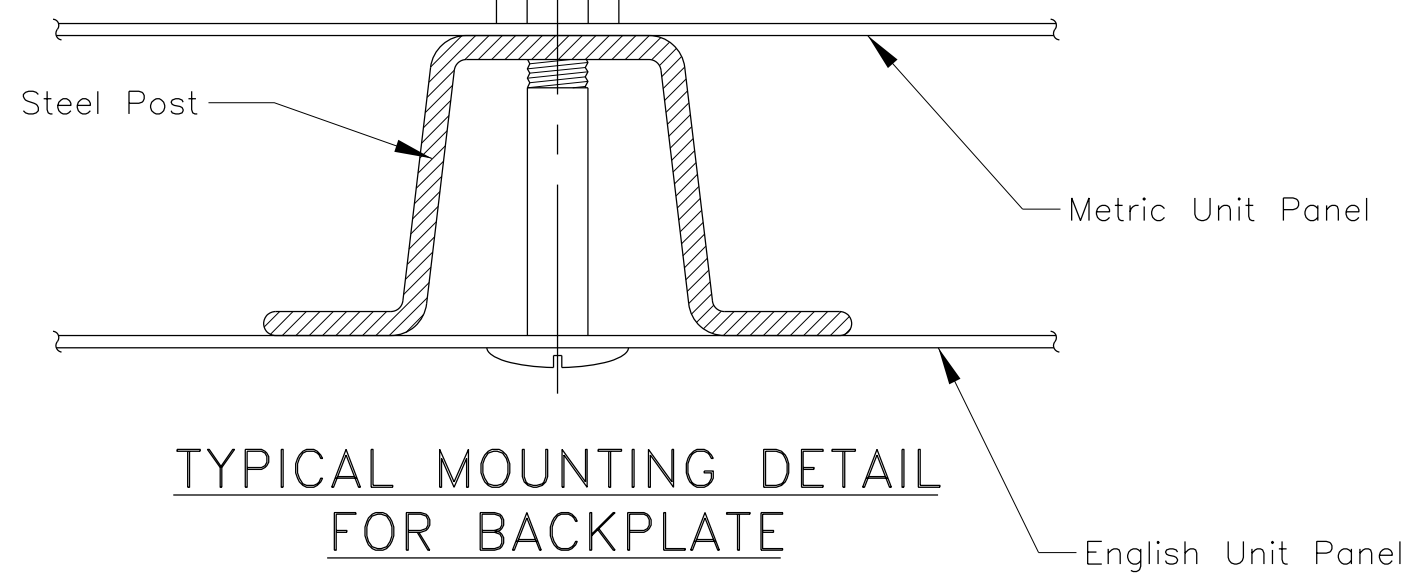
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REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N2007	N2007(1-1)1,2&4	30	63

GENERAL NOTES

1. THE MILEPOSTS SHALL BE PLACED ON BOTH SIDE OF THE ROADWAY WITH ENGLISH UNITS PANEL ON APPROACHING TRAFFIC AND METRIC UNITS PANEL ON OPPOSING TRAFFIC.
2. MILEPOST PLATES SHALL BE FABRICATED FROM 16 GAGE 3003 H14, 5052-H38 OR 6061-T6 ALUMINUM SHEET.
3. ALL SURFACES TO BE COVERED WITH REFLECTIVE SHEETING SHALL BE PREPARED IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE SHEETING MANUFACTURER.
4. THE BORDER AND LEGEND SHALL BE STANDARD REFLECTIVITY SILVER-WHITE. THE BACKGROUND SHALL BE STANDARD REFLECTIVITY GREEN AND MAY BE REVERSE SILK-SCREENED.
5. THE BACK SIDE OF THE ALUMINUM SHEETS SHALL BE ETCHED BY APPROVED METHODS TO REDUCE GLARE FROM REFLECTED SUNLIGHT.
6. STEEL POSTS SHALL CONFORM TO A.S.T.M.-A570 GRADE 30,36 OR 40 AND SHALL NOT WEIGH LESS THAN 2 LB/FT THEY SHALL BE GALVANIZED TO CONFORM TO A.S.T.M.-A123.
7. THE OFFSET DISTANCE SHALL BE 12 INCHES BEHIND THE CUT DITCH ON THE BACK SLOPE BUT NOT MORE THAN 20 FEET FROM THE EDGE OF THE PAVEMENT. IN FILL SECTION THE OFFSET SHALL BE AT THE HINGE POINT (OR AT THE EDGE OF CLEAR RECOVERY ZONE). OFFSET DISTANCE MAY HAVE TO VARY TO FIT EXISTING CROSS SECTION. AT GUARDRAIL LOCATIONS, THE MILE POST SIGNS SHALL LINE UP WITH THE GUARDRAIL POSTS.
8. POST LENGTH SHALL BE DETERMINED IN FIELD BASED ON FINISH GROUND ELEVATION WITH RESPECT TO EDGE OF PAVEMENT ELEVATION.
9. EACH MILE POST INCLUDES 2 SIGNS, ONE POST, AND HARDWARE INSTALLED AND ACCEPTED.

5/16" ϕ x 2-1/4" Corrosion Resistant Steel Bolt And Hex Nut. Deform Thread After Installation

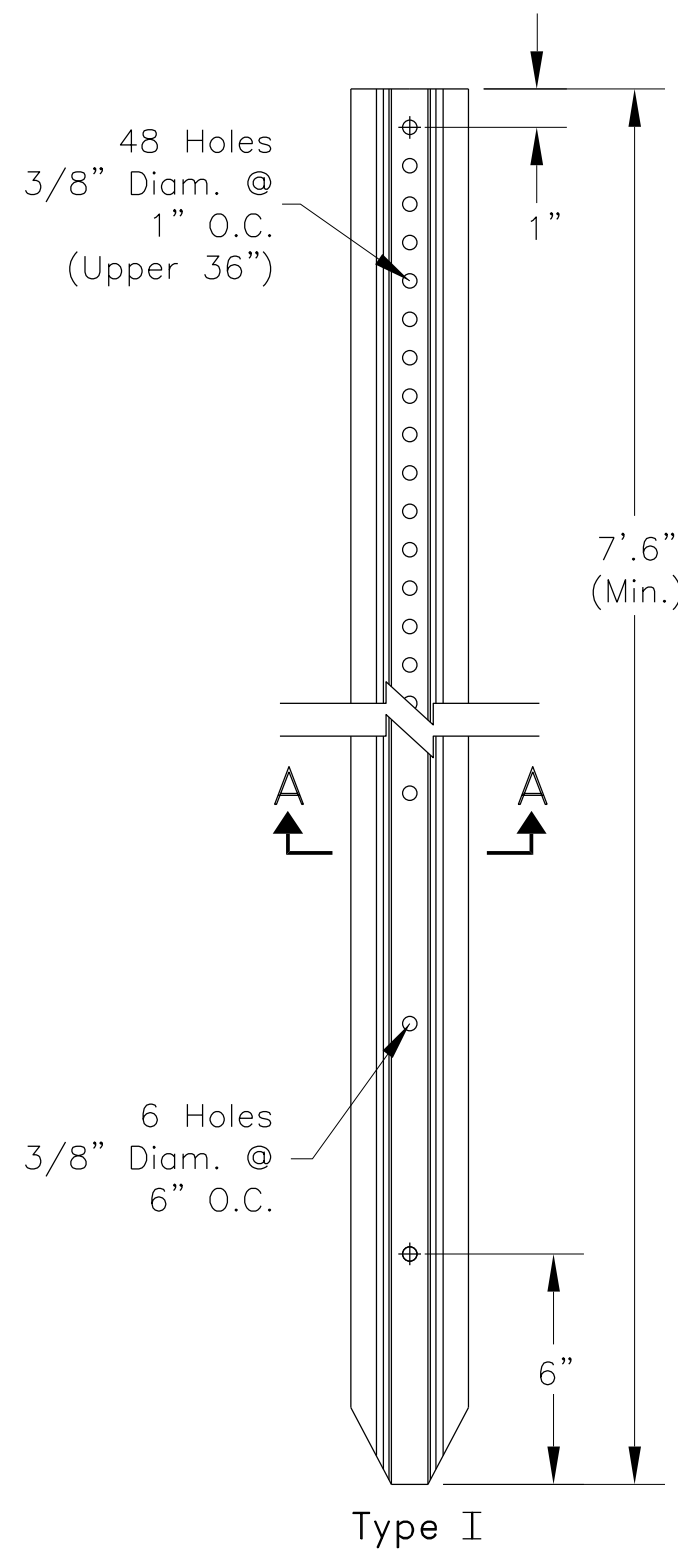


STANDARD NUMERAL POSITION

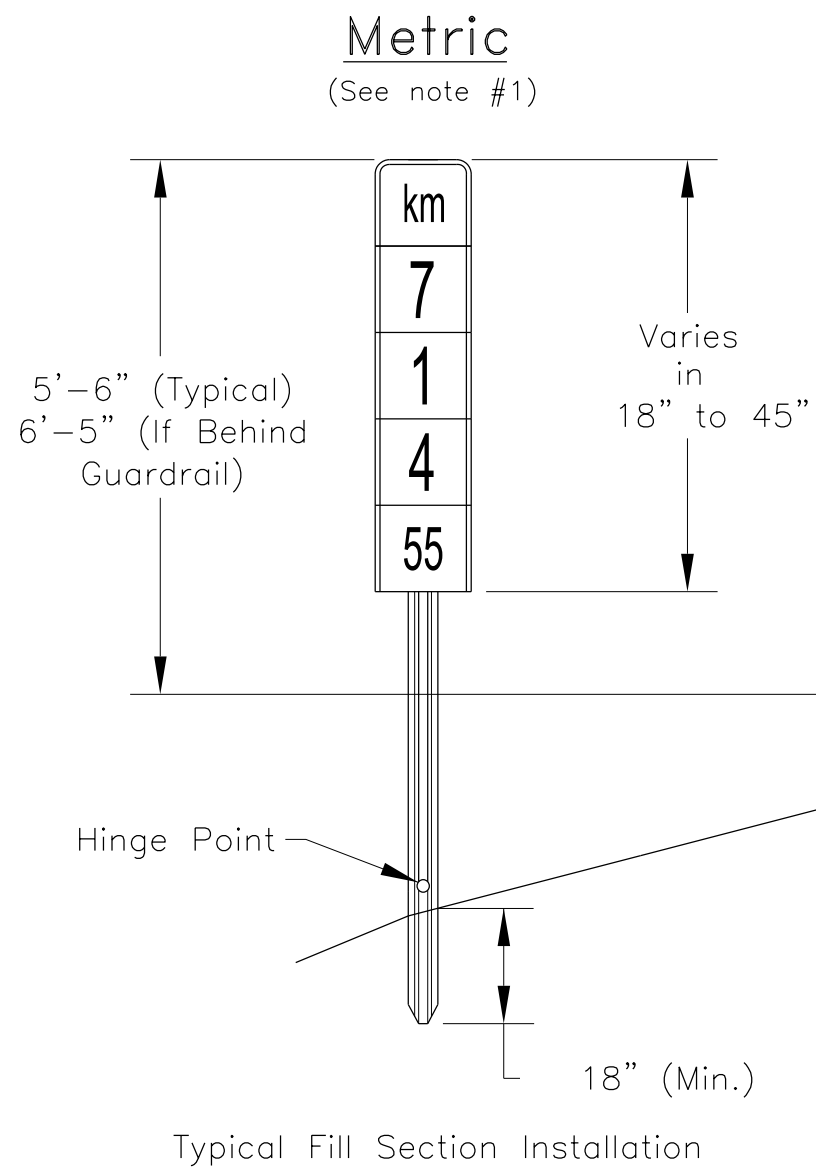
TYPICAL MILEPOST DETAIL

ITEM 63318-1000: MILEPOST, 1-POST & HARDWARE; 2 lb/ft

STATION	LOCATION	DESCRIPTION		QUANTITY (Ea.)	
		ENGLISH	METRIC	LEFT	RIGHT
52+80.00	Lt. & Rt.	Mile 1	1.60	2	2
SUB-TOTAL...				2	2
GRAND TOTAL...				4	

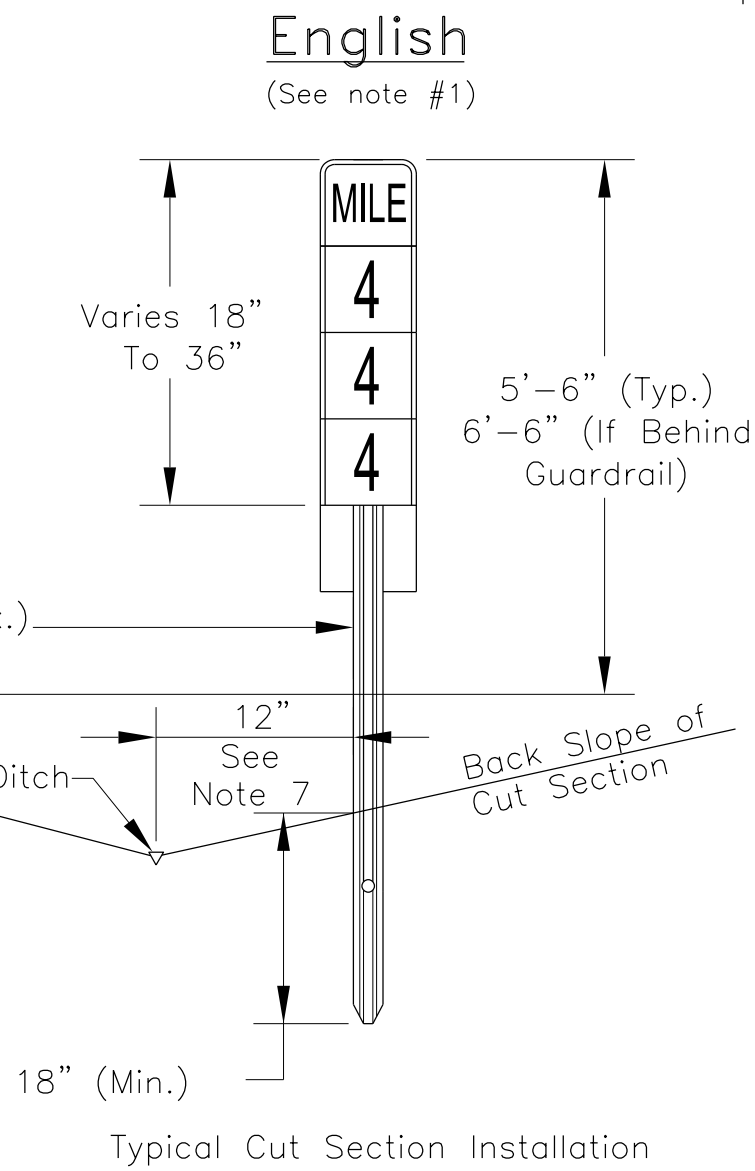


GALVANIZED STEEL POSTS



TYPICAL MILEPOST INSTALLATION DETAIL

Where Existing Milepost Are In Place, The New Milepost Shall Be Install At The Same Longitudinal Location.



UNITED STATES
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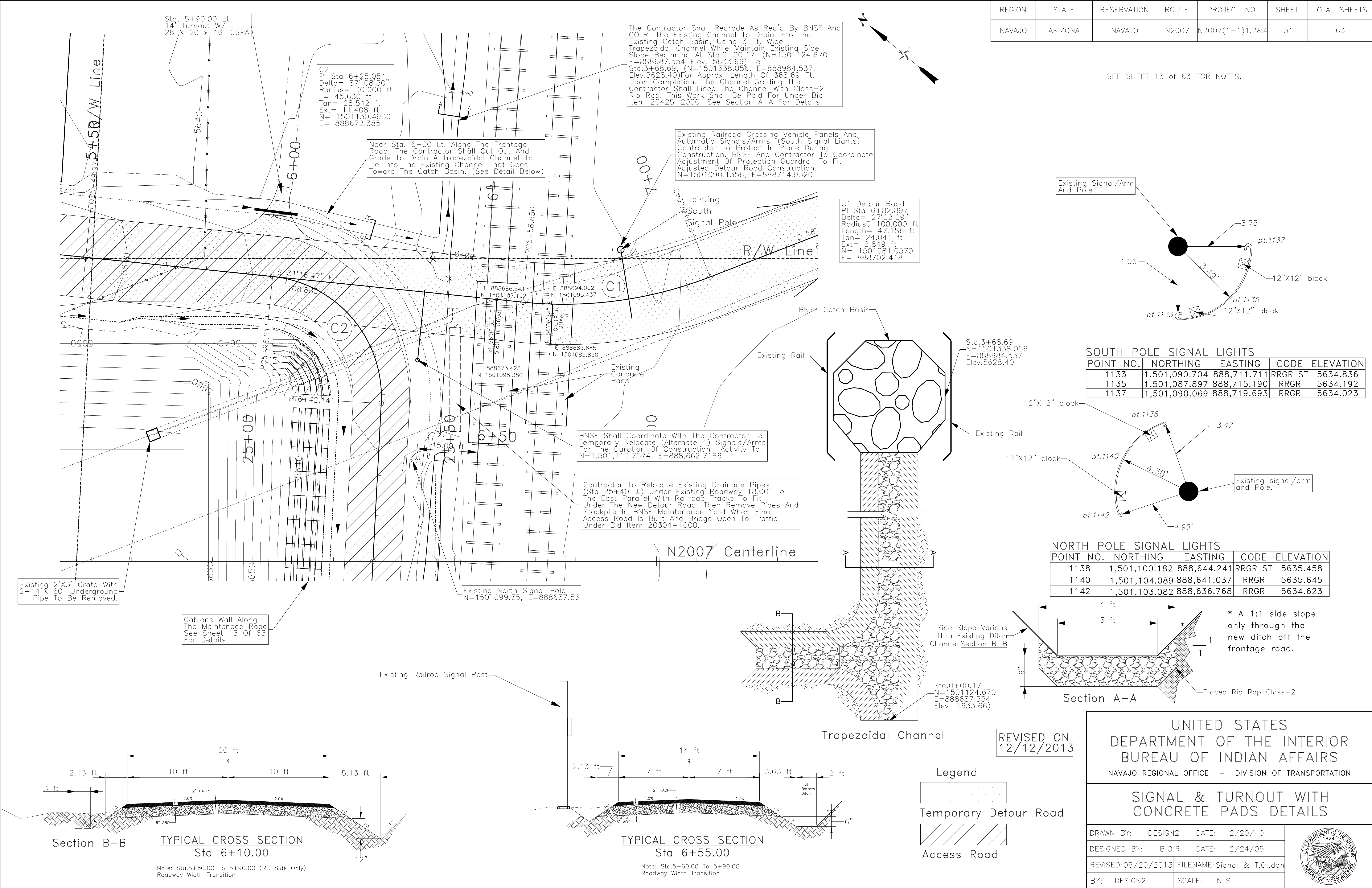
STANDARD MILE POST
DETAIL

DRAWN BY: Gerald.Hood DATE: 5/7/2009
DESIGNED BY: NRDOT DATE: 5/7/2009
REVISED: 1/25/2013 BY: Peterson.Yazzie
ANNOTATION SCALE: Full Size 1=1
FILENAME: Sht.30_MilepostDetails.dgn



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N2007	N2007(1-1)2&4	31	63

SEE SHEET 13 OF 63 FOR NOTES.

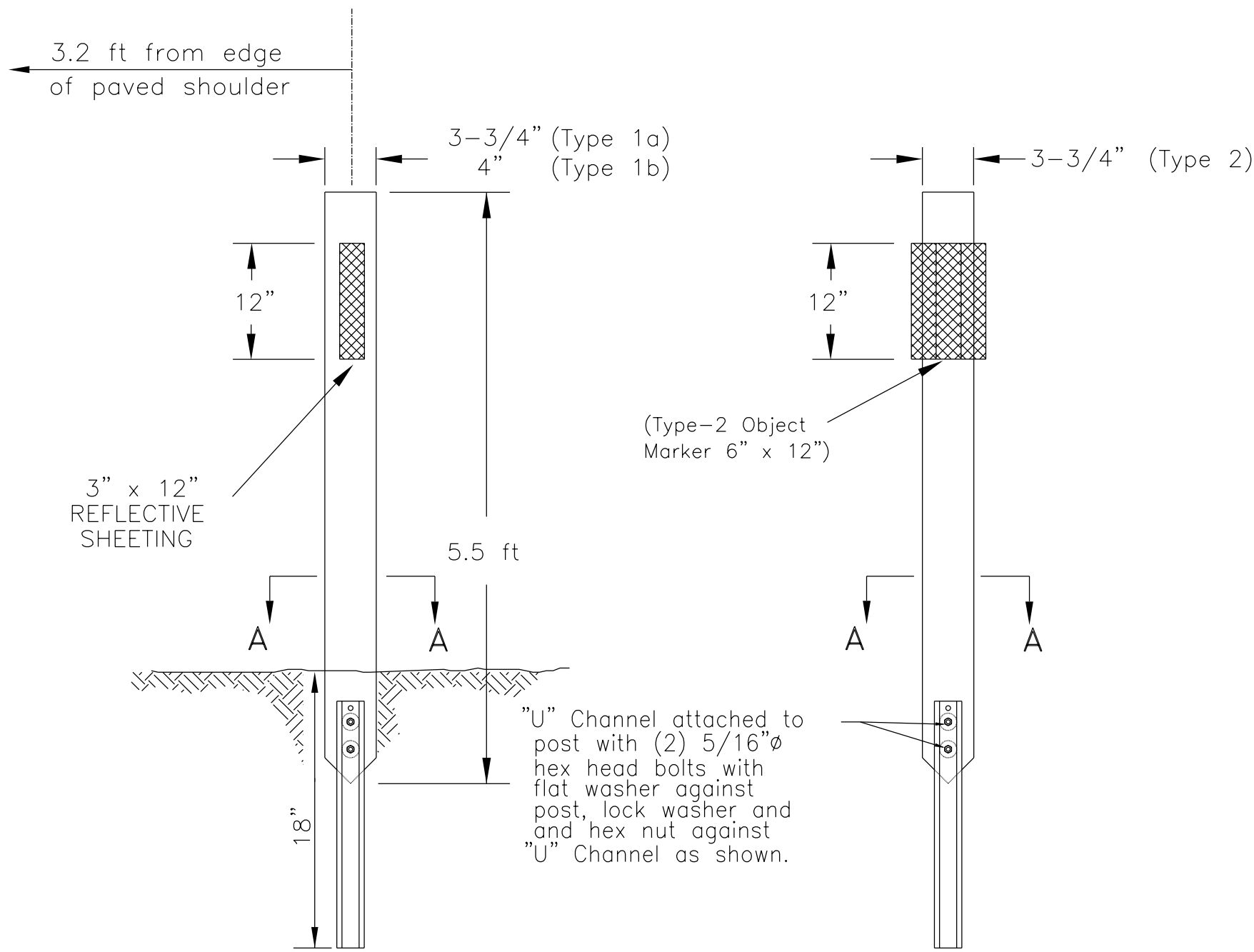


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REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N2007	N2007(1-1)1,2&4	32	63

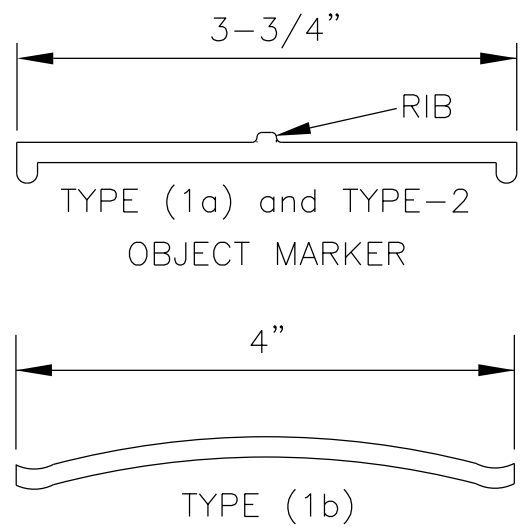
GENERAL NOTES

1. THE CONTRACTOR HAS THE OPTION TO EITHER USE GLASS FIBER OR ENGINEERED PLASTIC TYPE FOR DELINEATOR AND/OR TYPE II OBJECT MARKER. THE CONTRACTOR SHALL NOT USE A COMBINATION OF BOTH, STEEL "U" CHANNEL SHALL BE ATTACHED TO THE DELINEATOR, AND SHALL BE INCLUDED IN CONTRACT ITEM 63309-0010 AND 63309-0020.
2. TYPE "B" DIKE SHALL BE USED ON THIS PROJECT UNLESS OTHERWISE NOTED. EMBANKMENT MATERIAL NEEDED TO BUILD EARTHEN DIKE SHALL BE CONSIDERED INCIDENTAL TO ITEM 20410-2000, FURROW DITCHES, DITCH BLOCKS AND DIKES.



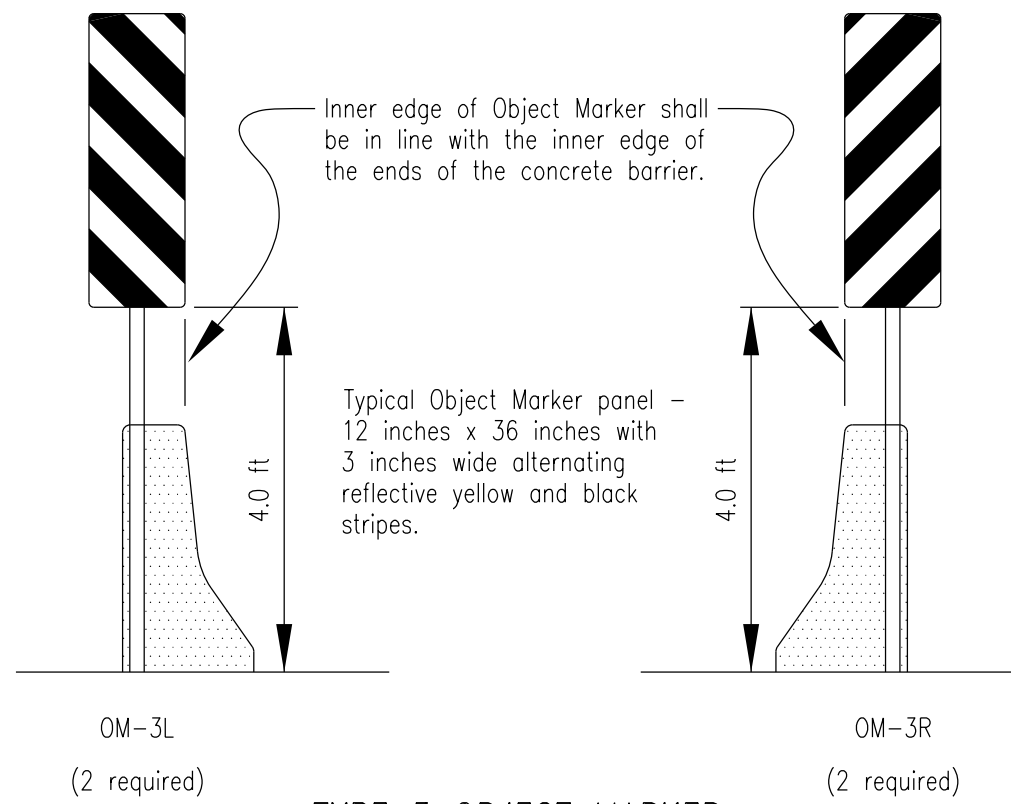
DELINEATOR
(FLEXIBLE TYPE)

TYPE	POST COLOR	HIGH INTENSITY REFLECTIVE SHEETING
1a	WHITE	WHITE, ONE SIDE
1b	WHITE	WHITE, BOTH SIDES
2	YELLOW	AMBER, ONE SIDE

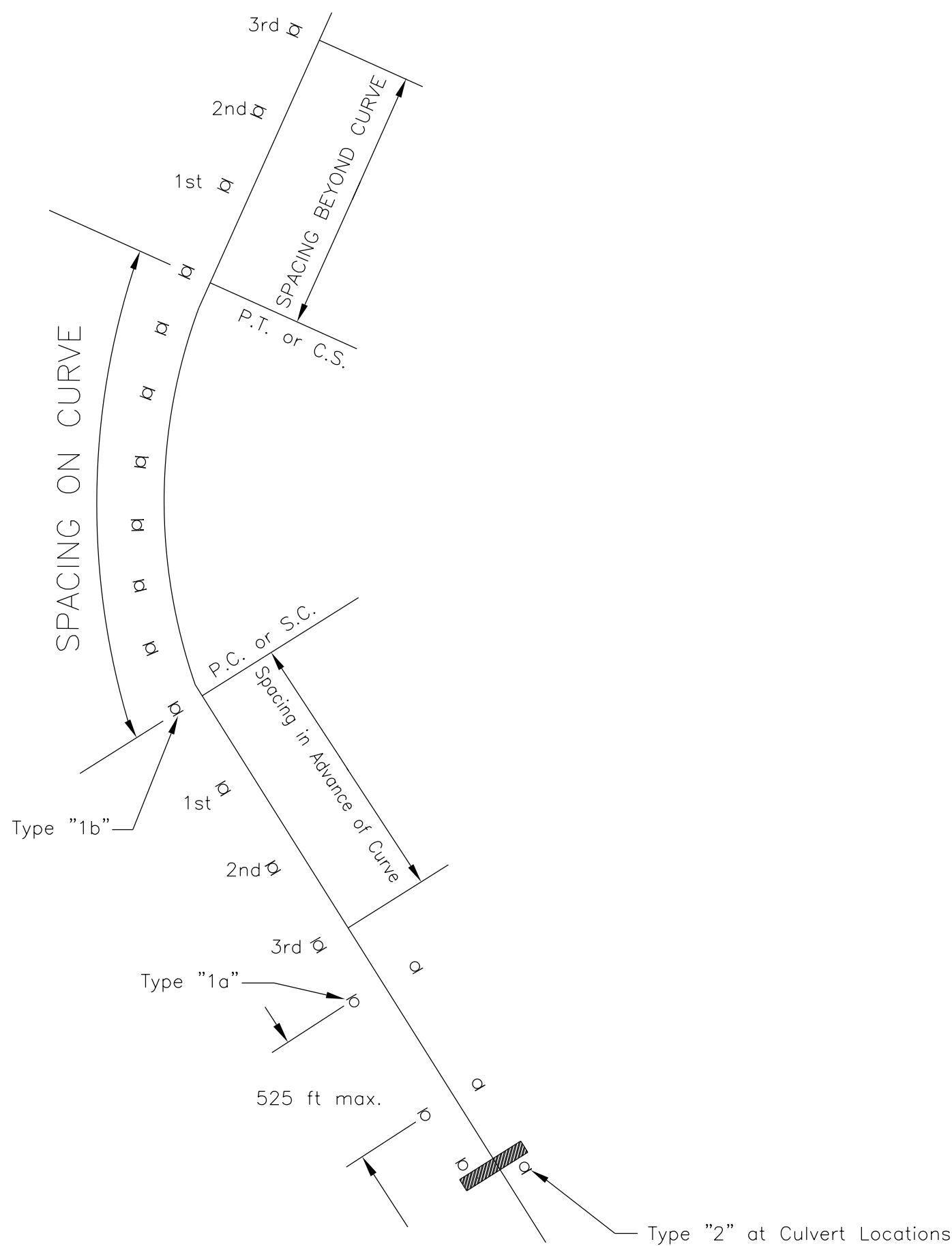


Glass Fiber Type

SECTION A-A



TYPE 3 OBJECT MARKER
INSTALLATION



Typical spacing on tangent = 525 ft

Radius of Curve (feet)	Approximate Spacing (S) on Curve (feet)	Spacing on Advance of or Beyond a Curve (feet)		
		A (2S)	B (3S)	C (6S)
50	20	40	60	120
115	25	50	75	150
180	35	70	105	210
250	40	80	120	240
300	50	100	150	300
400	55	110	165	330
500	65	130	195	390
600	70	140	210	420
700	75	150	225	450
800	80	160	240	480
900	85	170	255	510
1000	90	180	270	540
1100	97	194	292	583
1200	102	203	305	610
1300	106	212	318	636
1400	110	220	331	661
1500	114	228	343	685
1600	118	236	354	709
1700	122	244	366	731
1800	125	251	376	753
1900	129	258	387	774
2000	132	265	397	795
2500	148	297	445	891
3000	163	326	489	978
3500	176	352	529	1057
4000	189	377	566	1131
4500	200	400	600	1201
5000	211	422	633	1266
5500	221	443	664	1329
6000	231	463	694	1388
6500	241	482	723	1446
7000	250	500	750	1501
7500	259	518	777	1554

S= 3.0 * sq. rt.(R-50).
Spacing for specific radii may be interpolated from table.
The spacing on curves should not exceed 300 feet.
Shaded areas denotes to use 300 feet spacings.
Delineators should be spaced 200 to 530 feet apart on mainline tangent sections.
NOTE: When uniform spacing is interrupted by such features as culverts, signs, driveways, intersections, delineators which would ordinarily be located within the features may be relocated in either direction for a distance not exceeding one quarter of the uniform spacing. Delineators still falling within such features may be eliminated.

63309-0010 Delineators, Type "1a"
63309-0020 Delineators, Type "1b"

STATION	LOCATION	DESCRIPTION	Each
1+36.06	Lt. & Rt.	DL_1A	2
21+36.07	Lt. & Rt.	DL_1A	2
45+77.31	Lt. & Rt.	DL_1A	2
50+77.31	Lt. & Rt.	DL_1A	2
55+77.31	Lt. & Rt.	DL_1A	2
TOTAL			10
STATION	LOCATION	DESCRIPTION	
33+98.93	Rt.	DL_1B	1
34+83.39	Rt.	DL_1B	1
36+52.31	Rt.	DL_1B	1
38+22.31	Rt.	DL_1B	1
40+77.31	Rt.	DL_1B	1
TOTAL...			5

ITEM 63308-2000 FLEXIBLE
TYPE 2 OBJECT MARKER

STATION	LOCATION	QTY.
6+60	Lt. & Rt.	2
36+00	Lt. & Rt.	2
47+40	Lt. & Rt.	2
TOTAL...		6

ITEM 63308-3000 TYPE 3
OBJECT MARKER

STATION	LOCATION	QTY.
24+68.00	Rt.	1 (OM-3R)
24+68.00	Lt.	1 (OM-3L)
33+43.77	Rt.	1 (OM-3R)
33+43.77	Lt.	1 (OM-3L)
TOTAL...		4

NOTE:
Included with Bridge Quantities
on Sheet B-1

62101-0000 R/W MONUMENTS
62102-0000 Reference Markers

STATION	REQUIRED	LOCATION	REMARK
0+68.940	1	Left	
0+68.940	1	Right	
19+56.340	2	Left	
19+56.340	2	Right	
28+94.000	2	Left	
28+94.000	1	Right	
30+61.099	1	Left	
30+61.099	1	Right	
31+58.000	2	Right	
32+71.099	1	Left	
32+71.099	1	Right	
34+42.308	1	Left	
34+42.308	1	Right	
36+52.308	1	Left	
36+52.308	1	Right	
57+82.737	1	Left	
57+82.737	1	Right	
TOTAL... 21			

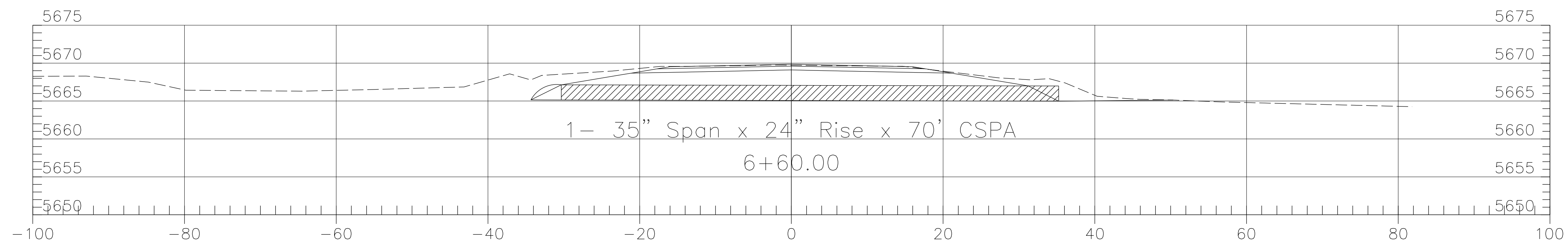
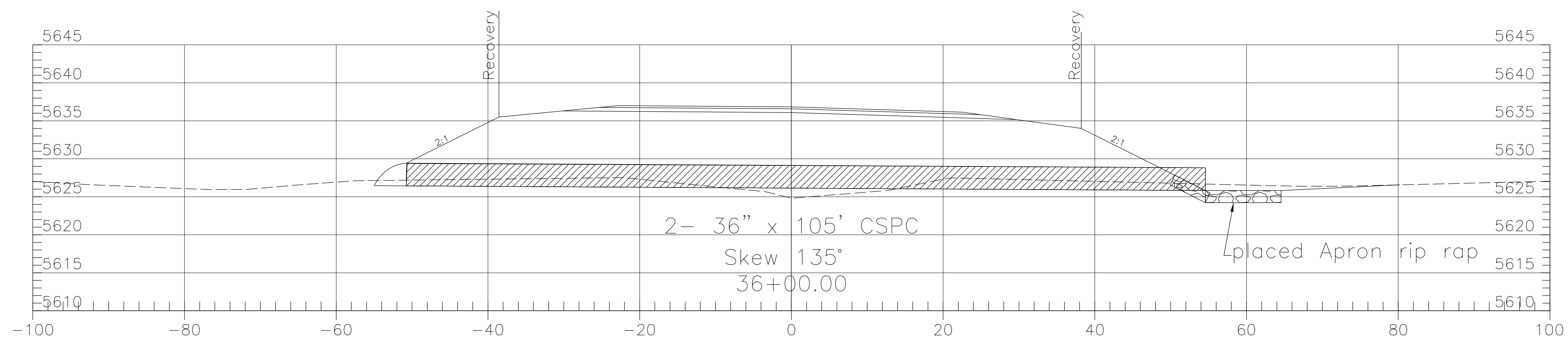
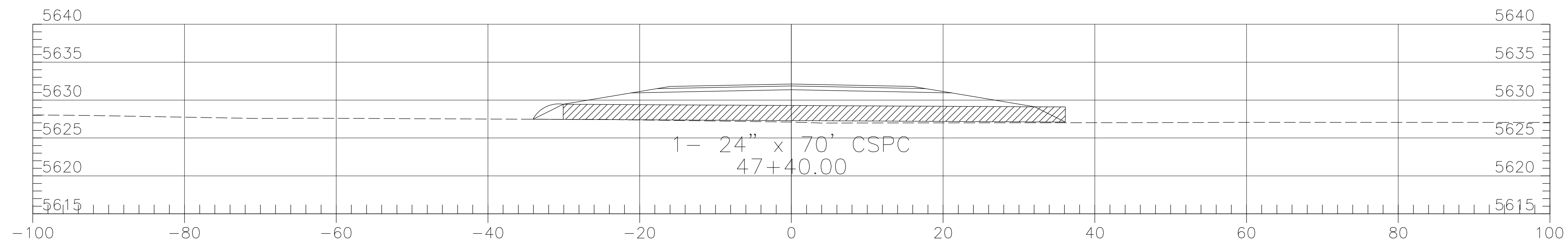
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

MISCELLANEOUS DETAILS

DRAWN BY: Gerald.Hood	DATE: 5/7/2009
DESIGNED BY: NRDOT	DATE: 5/7/2009
REVISED: 1/25/2013	BY: Peterson.Yazzie
ANNOTATION SCALE: Full Size 1=1	
FILENAME: Sht.32_Deliniators&Misc.Details.dgn	



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N2007	N2007(2)1,2&4	33	63



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PIPE CROSS SECTIONS

DRAWN BY: B.O.R. DATE: 07/29/05

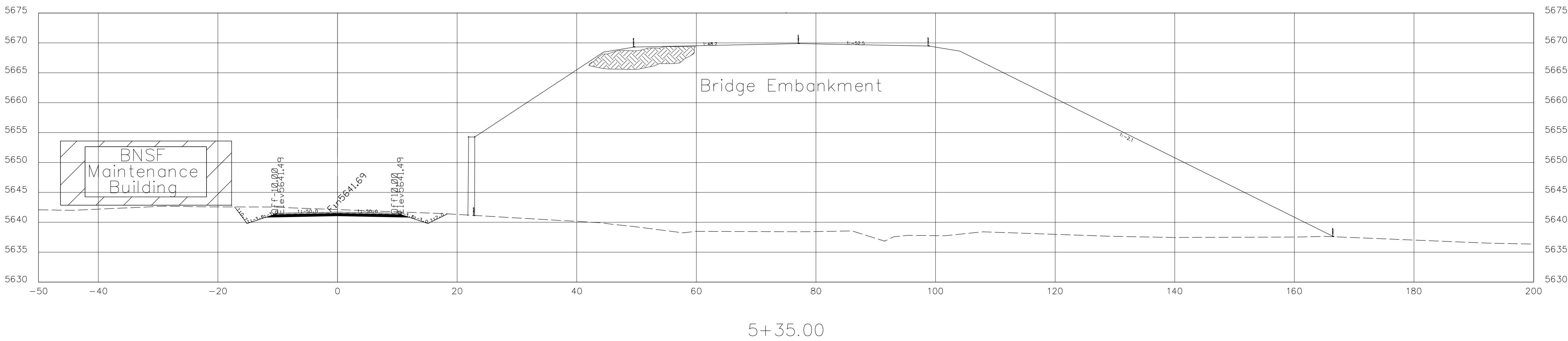
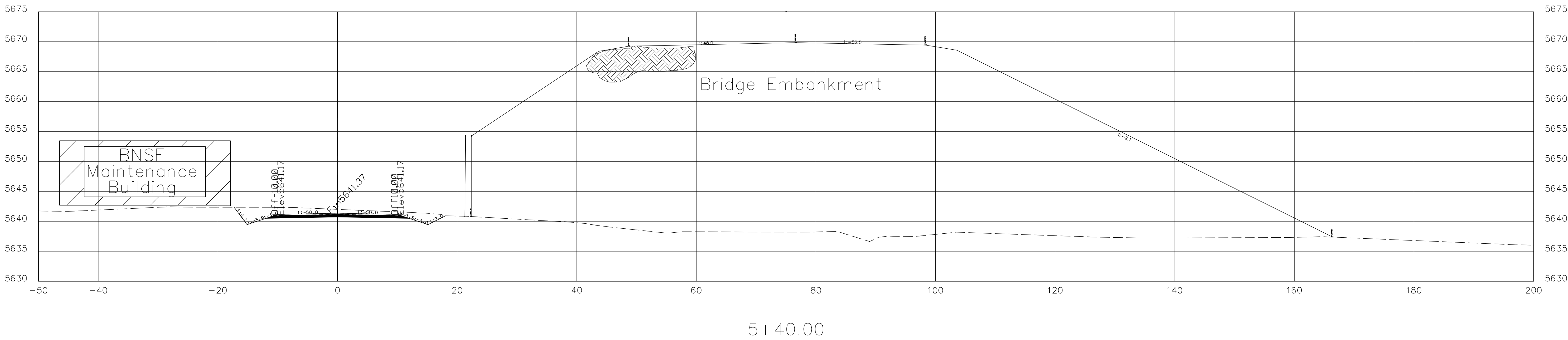
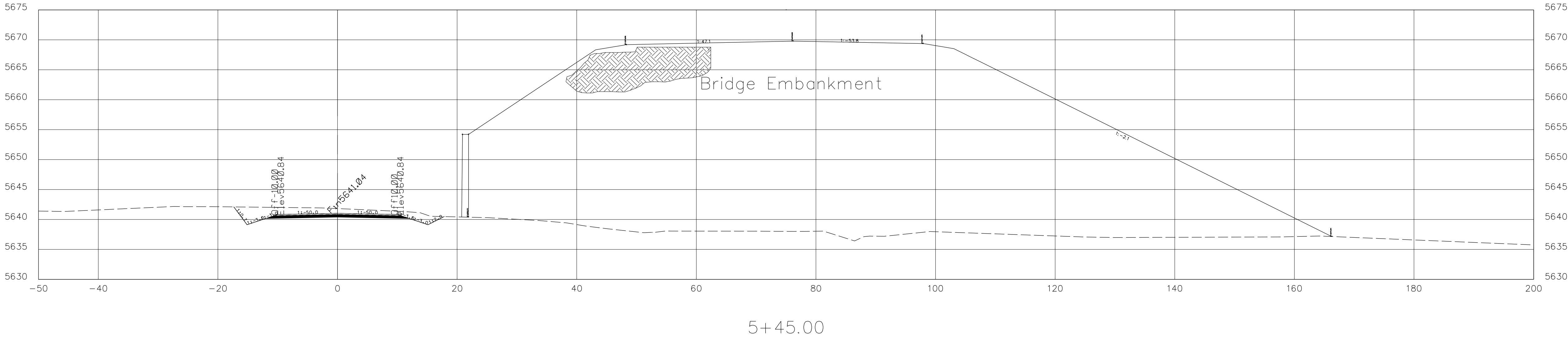
DESIGNED BY: Design 2 DATE: 07/29/05

REVISED: 07/16/11 FILENAME:Pipe X-SEC.dwg

BY: B.O.R. SCALE:1:10 (Horiz. & Vert.)



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N2007	N2007(1-1)1,2,4	35	63



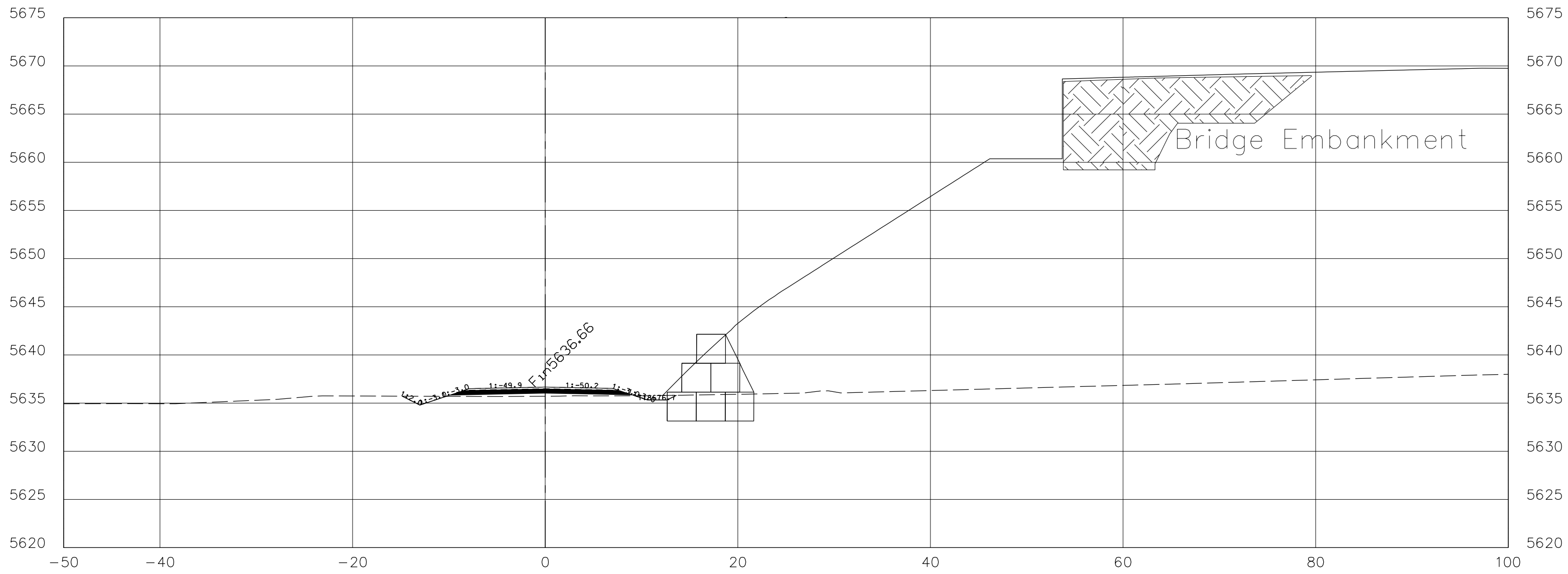
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FRONTAGE & DETOUR RD
SECTIONS

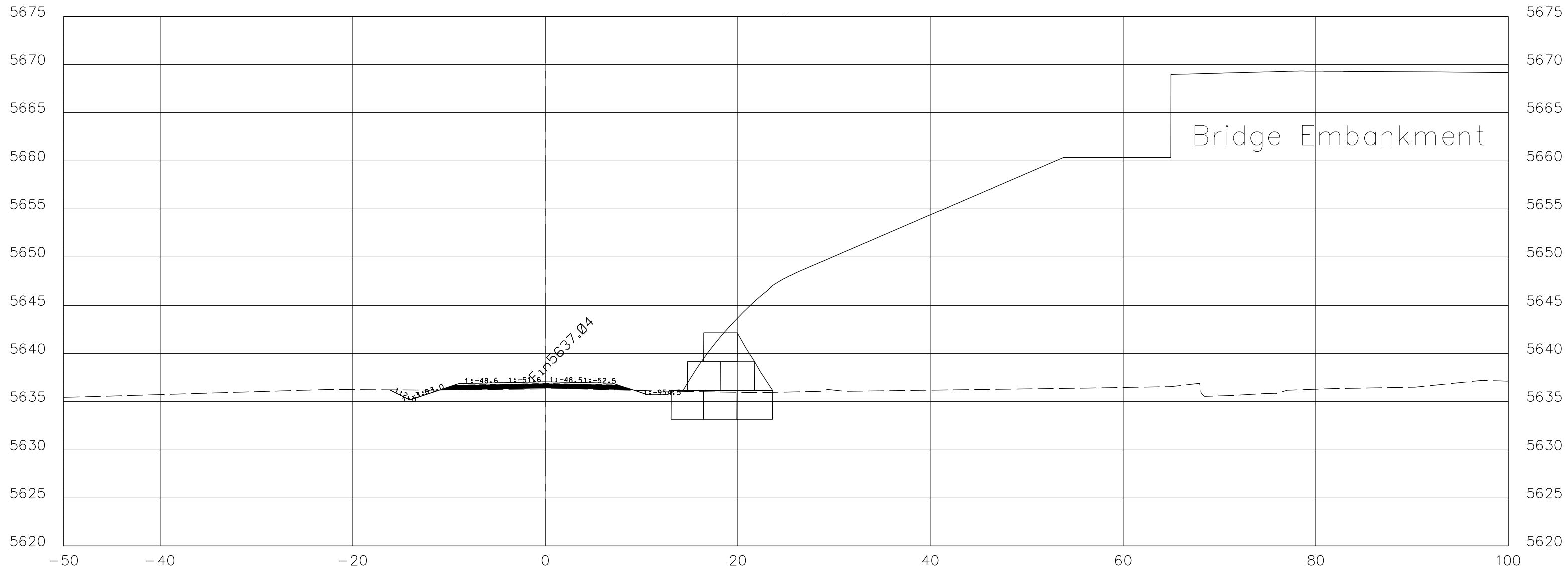
DRAWN BY: B.O.R.	DATE: 06/03/11
DESIGNED BY: Design 2	DATE: 06/03/11
REVISED: 07/11	FILENAME: Pipe.dwg.
BY: B.O.R.	SCALE:1:10 (Horiz. & Vert.)



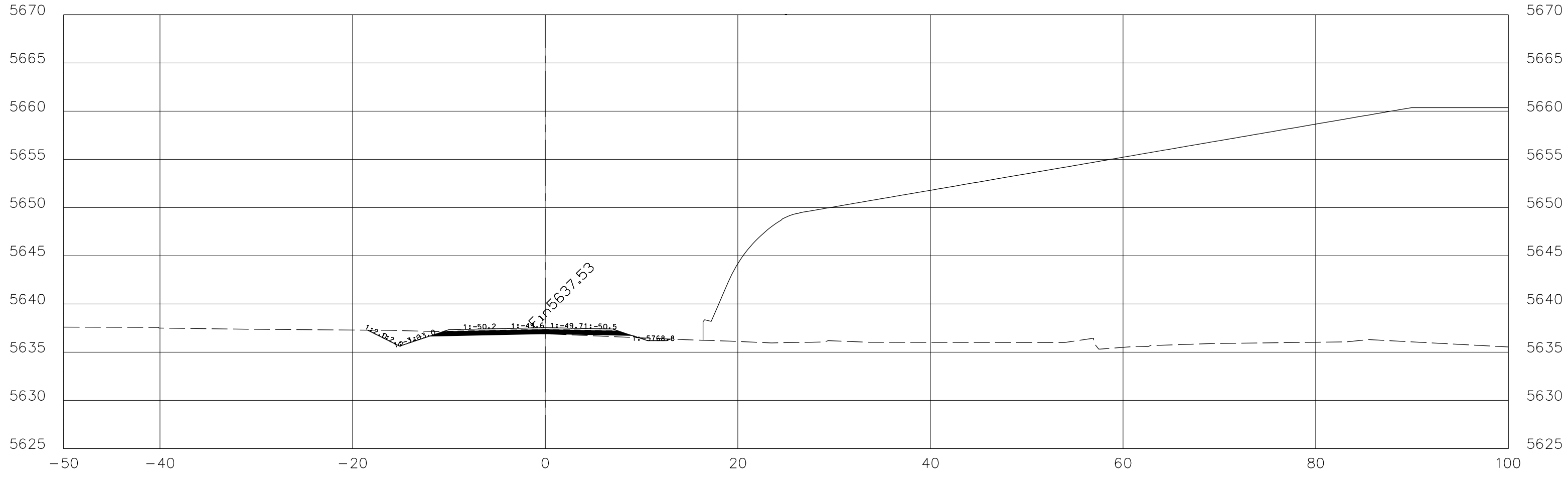
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N2007	N2007(1-1)1,2,4	36	63



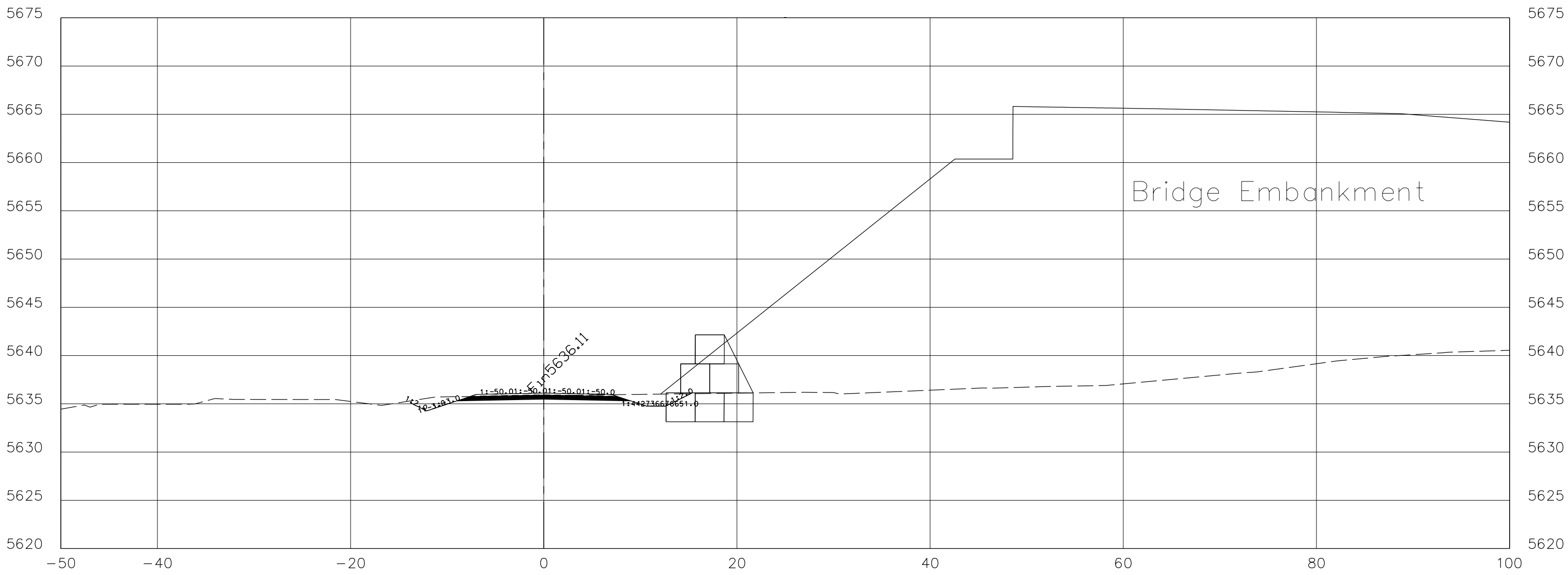
6+21.07



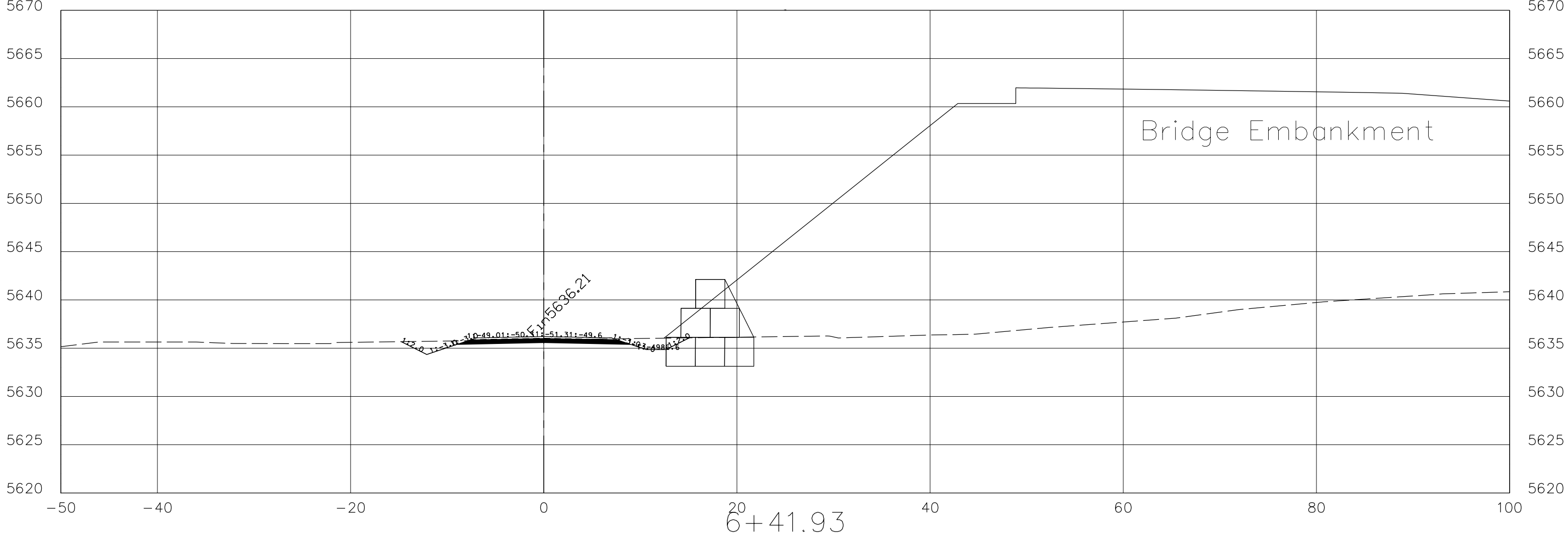
6+10.54



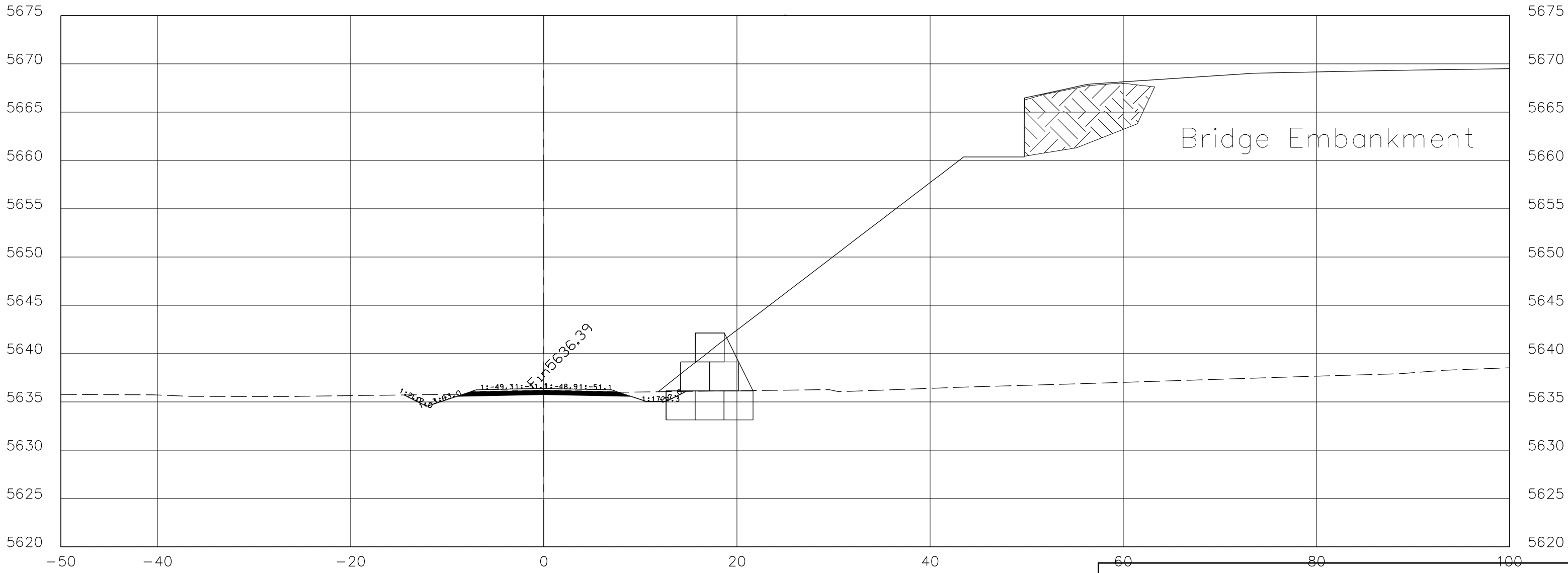
5+99.93



6+48.02



6+41.93



6+31.50

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FRONTAGE & DETOUR RD
SECTIONS

DRAWN BY: B.O.R. DATE: 06/03/11

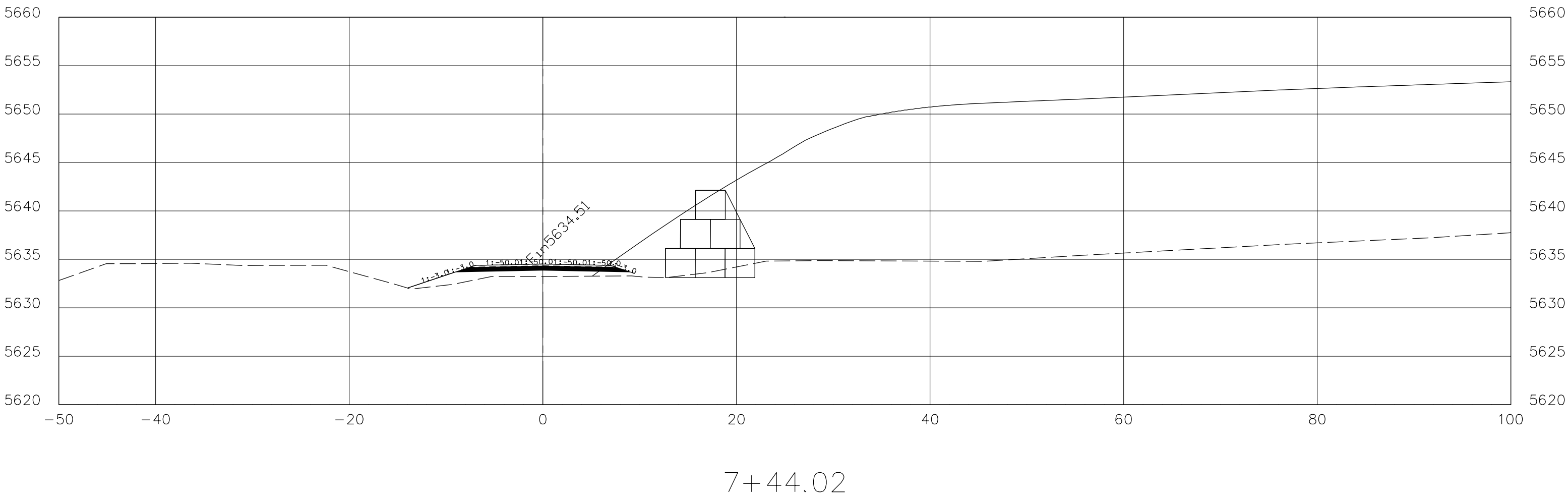
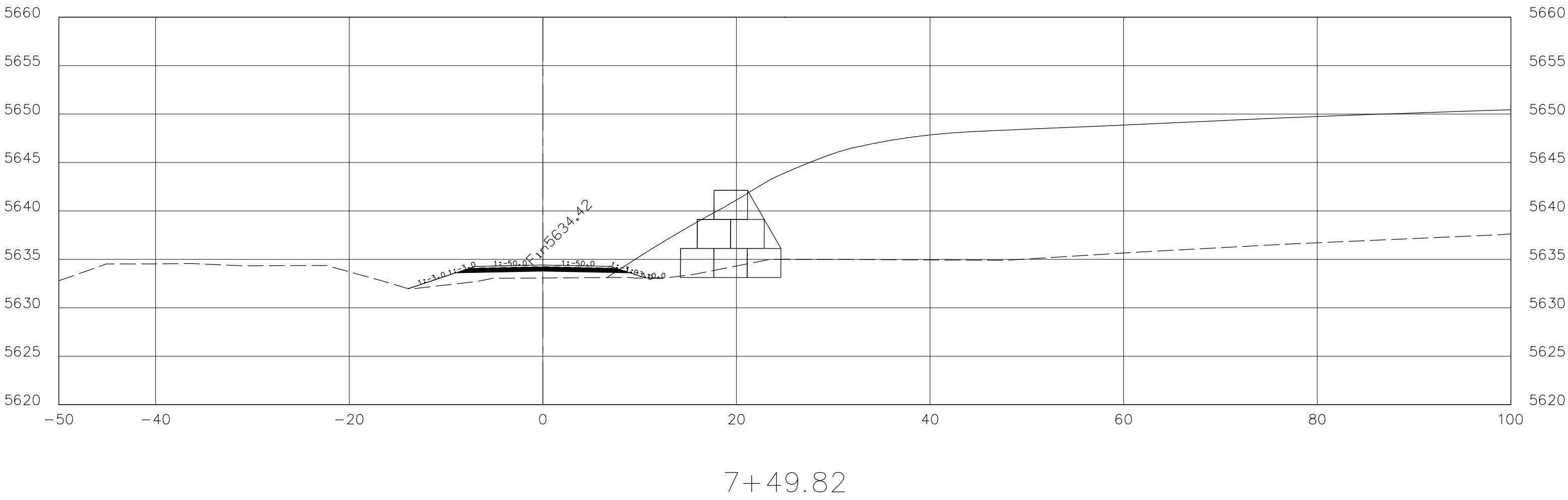
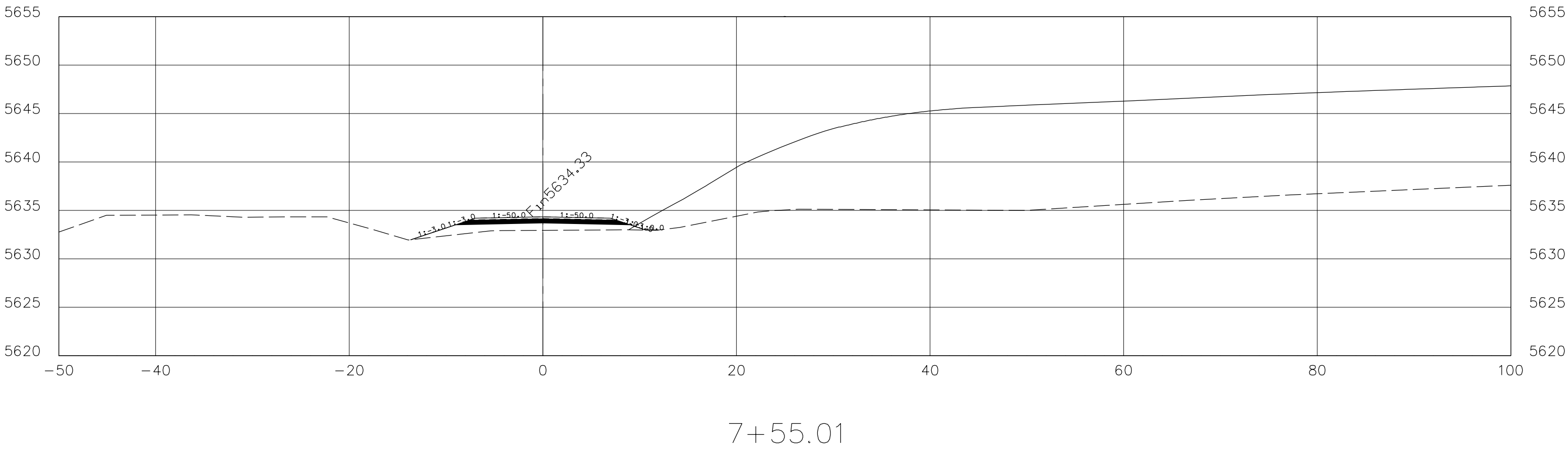
DESIGNED BY: Design 2 DATE: 06/03/11

REVISED: 07/11 FILENAME: Pipe.dwg.

BY: B.O.R. SCALE:1:10 (Horiz. & Vert.)



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N2007	N2007(1-1)1,2,4	37	63



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DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NAVAJO REGIONAL OFFICE - DIVISION OF TRANSPORTATION

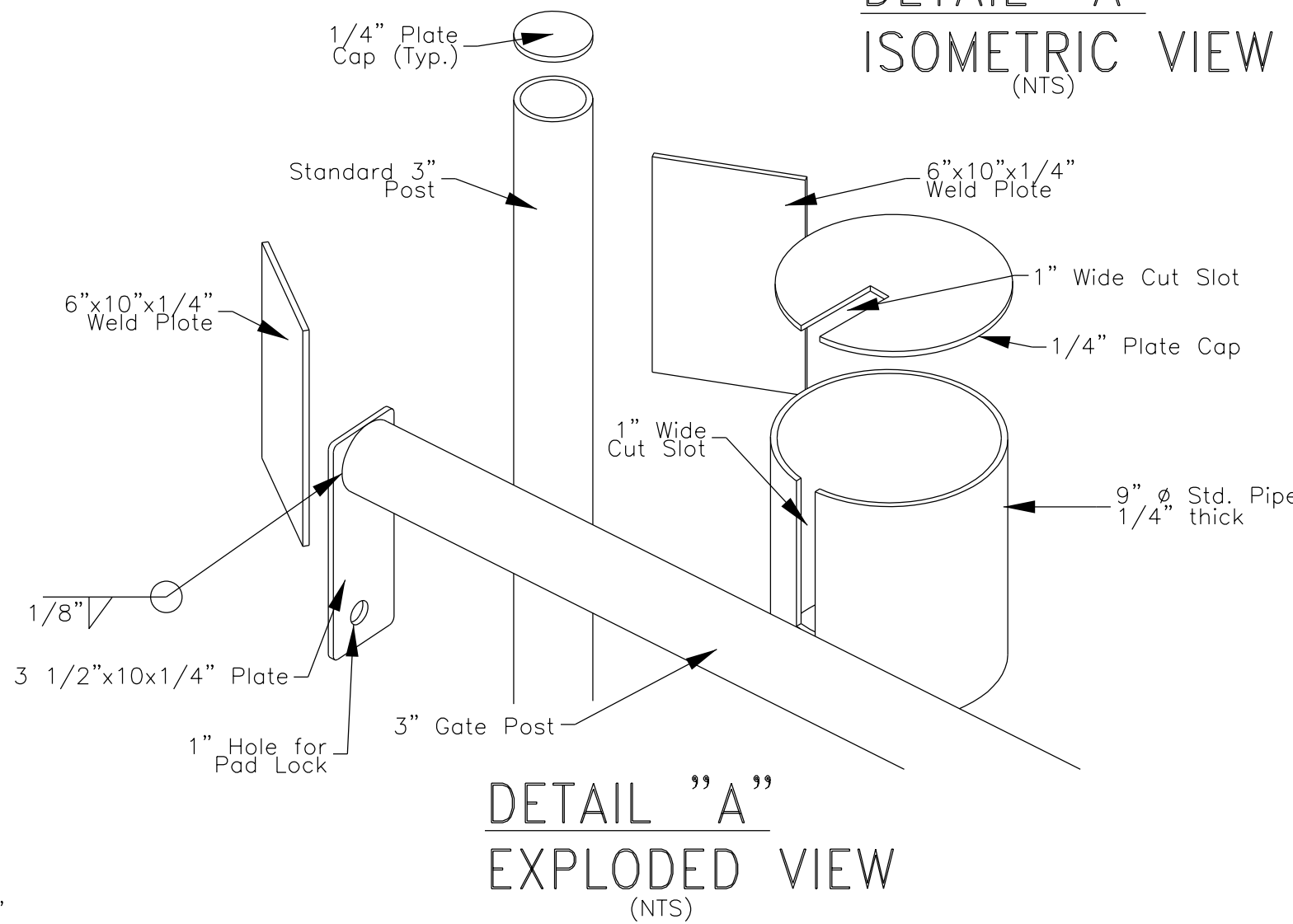
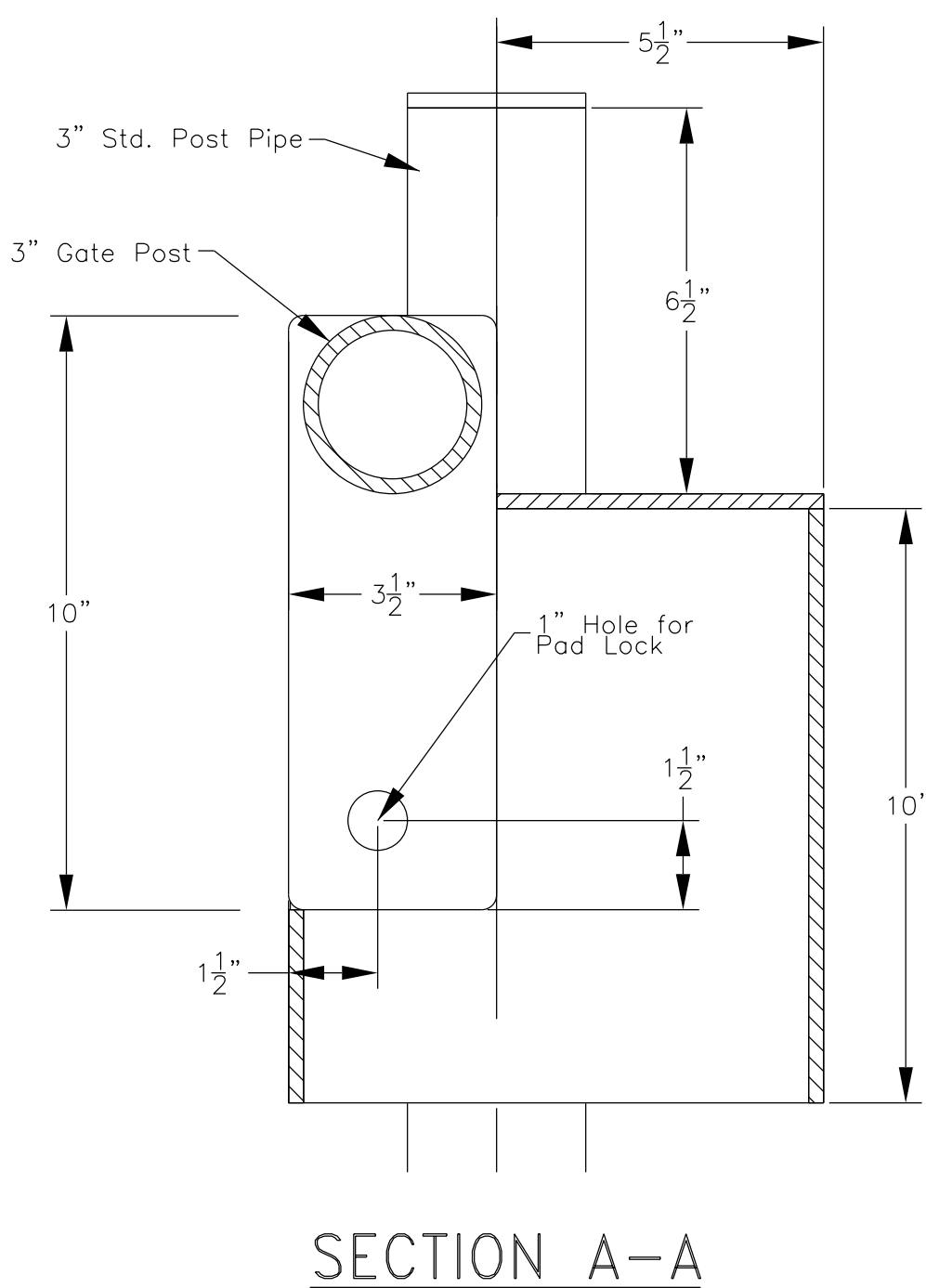
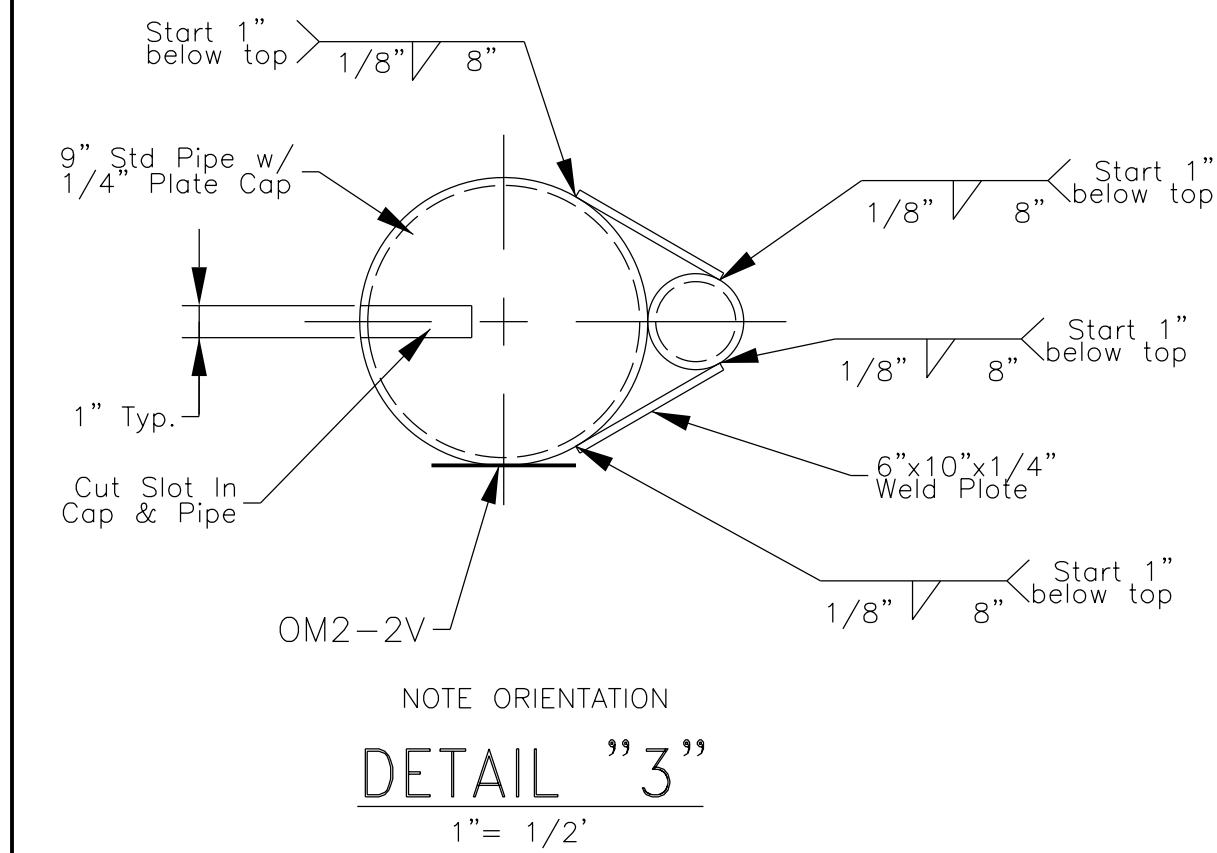
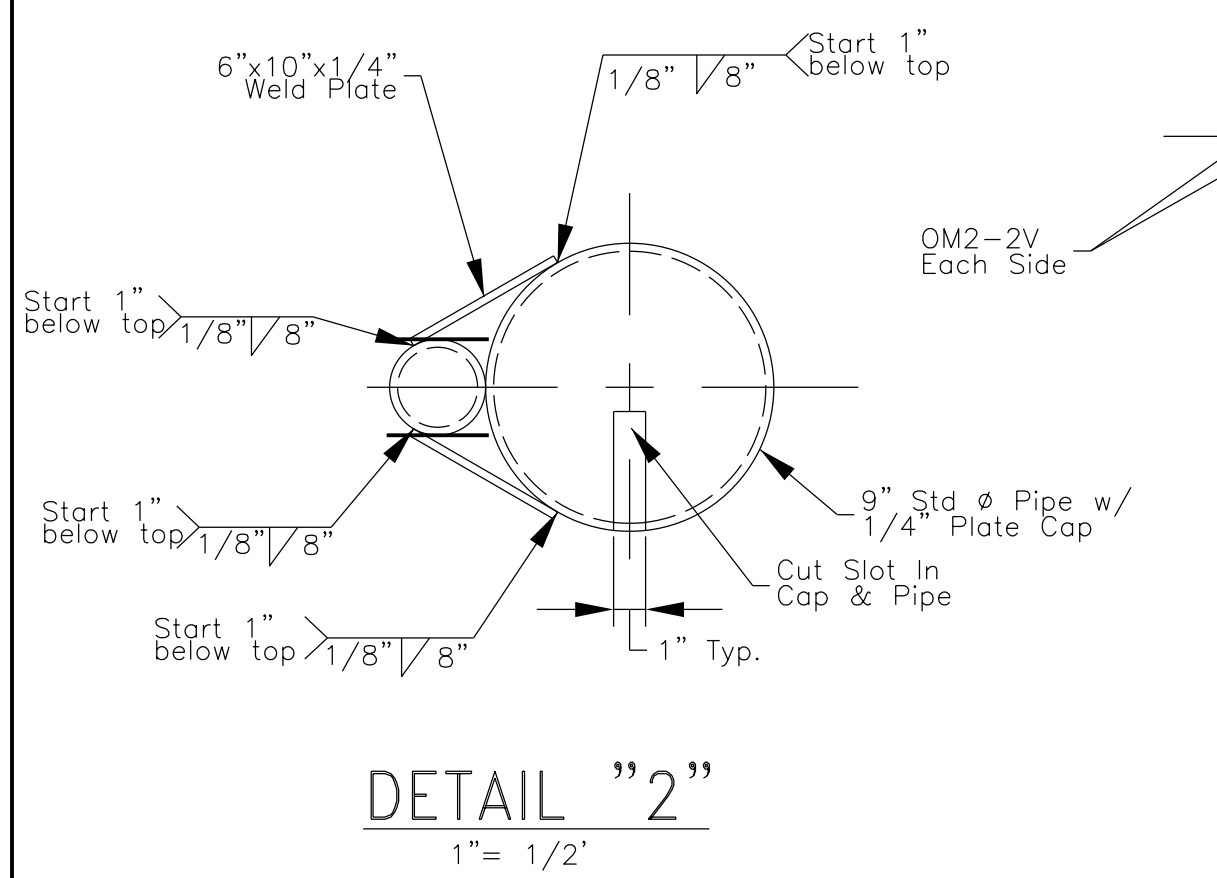
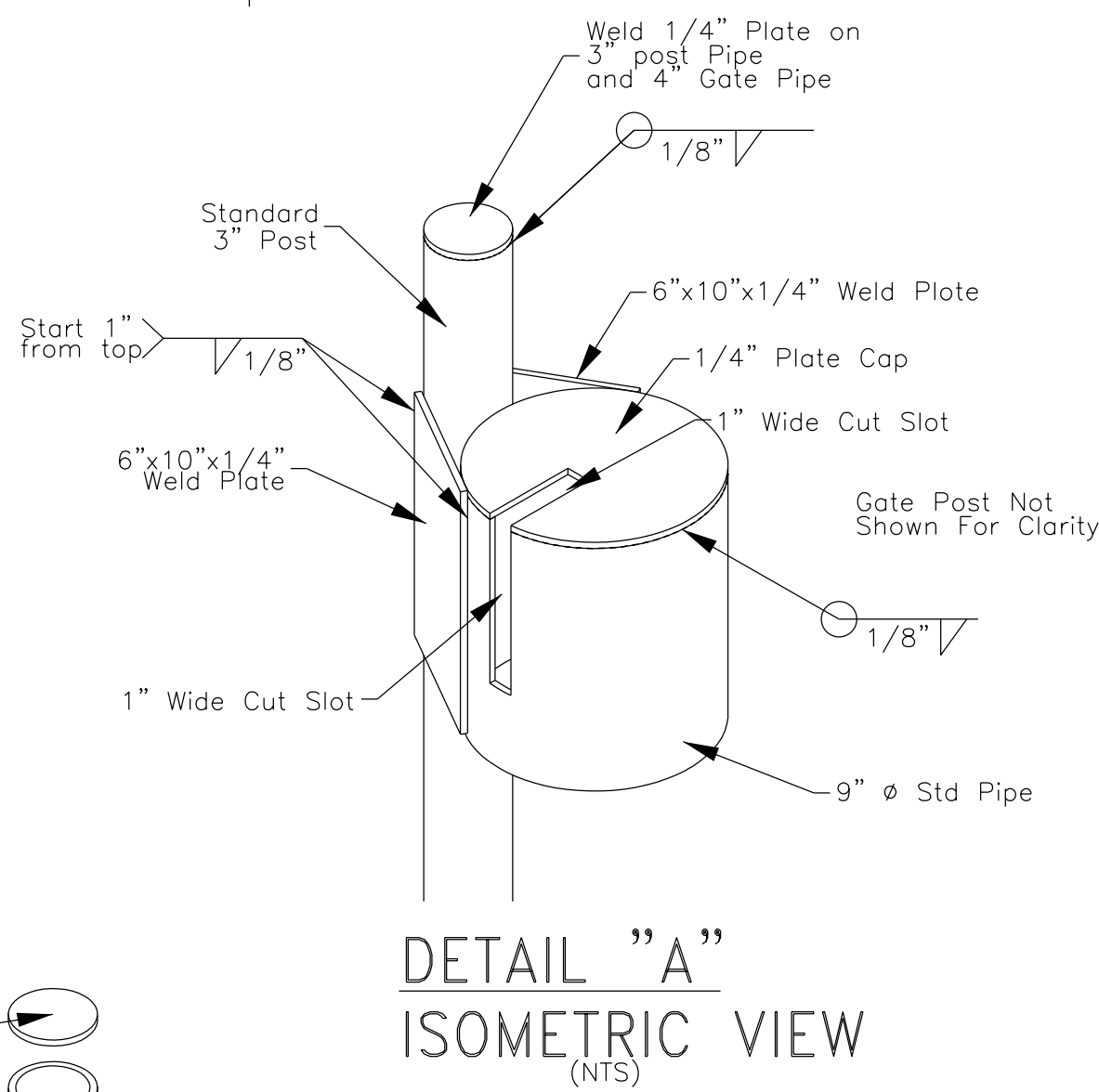
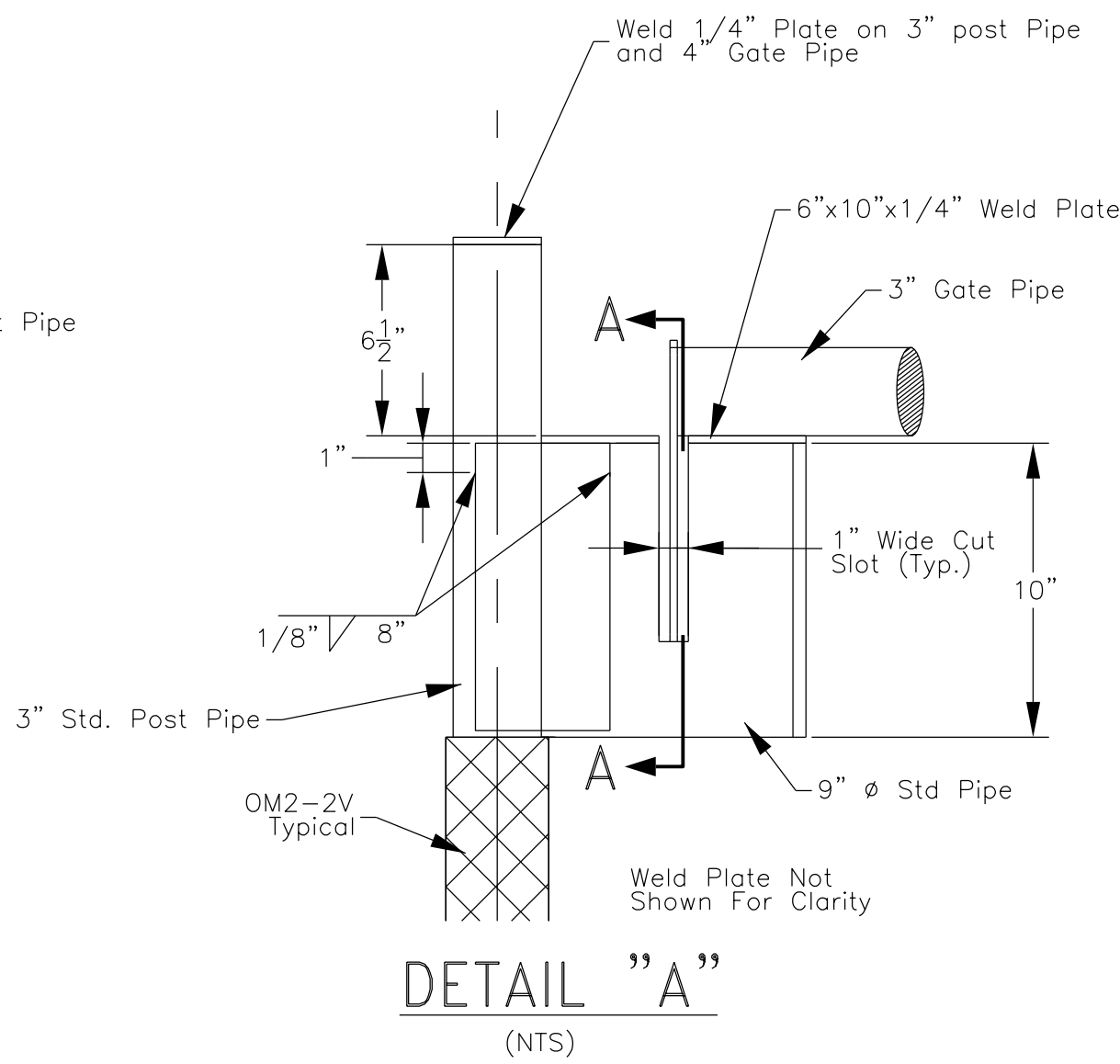
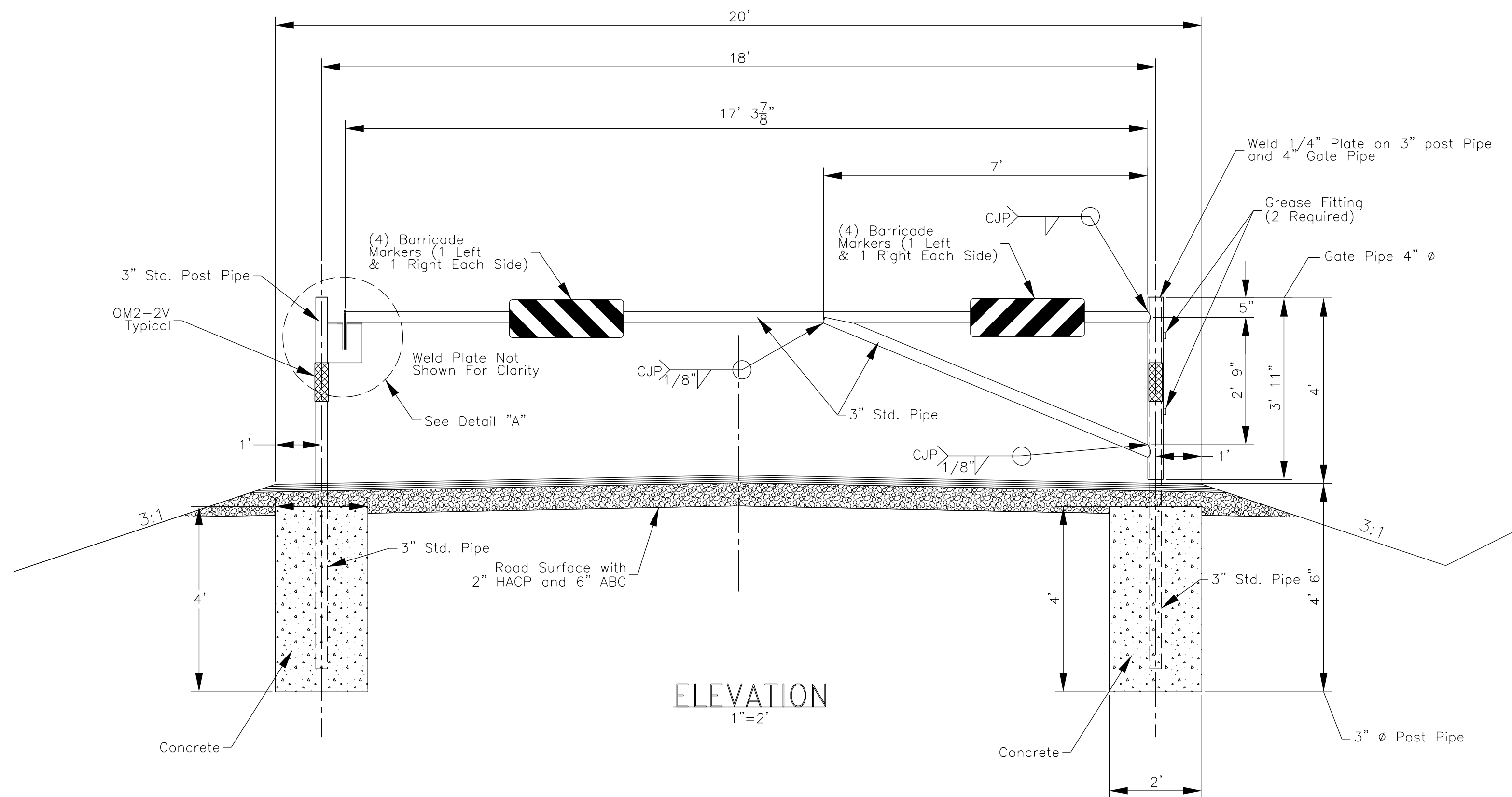
FRONTAGE & DETOUR RD
SECTIONS

DRAWN BY: B.O.R.	DATE: 06/03/11
DESIGNED BY: Design 2	DATE: 06/03/11
REVISED: 07/11	FILENAME: Pipe.dwg.
BY: B.O.R.	SCALE:1:10 (Horiz. & Vert.)

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N2007	N2007(1-1)1,2,4	38	63

GENERAL NOTES

1. All Pipe Shall be ASTM A53 Grade B Steel Pipe
2. Entire Structure Shall Receive a Steel Coating System 5 From FP-03 Table 563-1 or System 7 From Table 563-2 as Applicable. Surface Preparation Shall Conform to FP-03 563.07(b). All Coats will be Shop Applied. Paint Shall Comply With FP-03 708. Color Shall be Traffic Yellow as Approved by the AOTR.
3. Grind All Corner and Welds Smooth.
4. All Materials Shall be Free of Rust.
5. Concrete Shall be 3000 PSI and May be Blended Pre-Approved Bag Mix Conforming to ASTM C-387.
6. Closure Gate Pay Item Includes all Required Attached Signs.
7. Attach all Signs with Vandal-Proof Fitting to be Approved by the AOTR.
8. "OM2-2V" and Barricade Markers Shall Have Retroreflective Sheeting of ASTM D 4956 Type II "Super Engineering Grade".
9. Field Verify Post Length for Fill Slope Side.



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18' TYPE 3 STEEL LOCKING GATE DETAILS

DRAWN BY: NRDOT DATE: 1/16/2014
DESIGNED BY: NRDOT DATE: 1/16/2014
REVISED: 1/16/2014 BY: DESIGN 2
Locking Gate



K:\CURRENT PROJECTS\W00\W2007\1-1\ Navajo Bridge_032494\Design_BA_2001-02-28\CAD_073002\Bridge_Plan Drawings PRELIM_051109\01_BIAgrnL_2014-01-17.dgn

BRIDGE GENERAL NOTES

1. SPECIFICATIONS: DESIGN; AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 1992, 15th EDITION. CONSTRUCTION: STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS, FP-03, ENGLISH EDITION, AND SUPPLEMENTAL SPECIFICATIONS.
2. UNITS: THIS PROJECT HAS BEEN DESIGNED AND DRAWN USING THE U.S. CUSTOMARY (ENGLISH) SYSTEM OF UNITS. UNLESS OTHERWISE NOTED, ALL VALUES ARE GIVEN IN U.S. CUSTOMARY (ENGLISH) UNITS. SLOPES DESIGNATED ON THESE PLANS ARE IN ACCORDANCE WITH SECTION 101.03(d) OF THE FP-03, i.e.; V:H (VERTICAL : HORIZONTAL).
3. DESIGN LOADS: DEAD LOADS; CONCRETE = 150 pcf, STEEL = 490 pcf, FUTURE WEARING SURFACE = 25 psf OF ROADWAY SURFACE, EARTH PRESSURE = FLUID WEIGHING 36 pcf. LIVE LOADS; HS 20-44 PLUS IMPACT. IMPACT = 50/(L+125) WHERE L = SPAN LENGTH IN FEET. MAXIMUM IMPACT FACTOR = 0.30.
4. RATINGS: INVENTORY RATING = HS 22.0. OPERATING RATING = HS 36.8.
5. DESIGN PARAMETERS: REINFORCED CONCRETE DESIGNED BY LOAD FACTOR DESIGN WITH f'c = 4000 psi AND fy = 60,000 psi. TRANSVERSE DECK SLAB SERVICEABILITY STRESSES LIMITED TO f'c = 1,400 psi AND MAXIMUM STRESS IN REINFORCING STEEL OF fs = 20,000 psi. PRECAST, PRESTRESSED GIRDERS DESIGNED IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 1992, 15th EDITION CRITERIA. ULTIMATE STRENGTH OF ½" DIA. SEVEN WIRE, BRIGHT, STRESS RELEIVED, LOW RELAXATION, PRESTRESSING STRAND SHALL BE 41,300 POUNDS WITH A MINIMUM f's = 270,000 psi.
6. CONCRETE: ALL CAST IN PLACE CONCRETE SHALL BE CLASS A(AE) WITH THE 28 DAY COMPRESSIVE STRENGTH INDICATED IN THESE PLANS. THE AIR CONTENT FOR ALL CLASS A(AE) CONCRETE SHALL NOT BE LESS THAN THAT SPECIFIED IN THE FP-03. CONCRETE IN PRECAST, PRESTRESSED CONCRETE GIRDERS SHALL BE CLASS P AND SHALL HAVE THE MINIMUM STRENGTHS INDICATED IN THESE PLANS. CONCRETE FOR THE DECK SLAB AND ALL DIAPHRAGMS SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF f'c = 4,500 psi. ALL OTHER CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF f'c = 4,000 psi. CONCRETE IN PRESTRESSED GIRDERS SHALL HAVE A 28 DAY COMPRESSIVE STRENGTH f'c = 6,000 psi, WITH A MINIMUM INDICATED CONCRETE STRENGTH AT TIME OF TRANSFER OF PRESTRESS OF f'ci = 5,400 psi. CHAMFER EXPOSED CORNERS OF ALL CONCRETE 3/4" UNLESS OTHERWISE SHOWN ON THE PLANS. ALL SUBSTRUCTURE CONCRETE SHALL CONTAIN TYPE II PORTLAND CEMENT. ALL CONCRETE SHALL BE VIBRATED IN ACCORDANCE WITH SPECIFICATIONS. ALL CEMENT SHALL BE LOW ALKALAI CEMENT AND NO ADDITIVES CONTAINING CALCIUM CHLORIDE SHALL BE USED. THE TIME LIMITS FOR CONCRETE DISCHARGE SPECIFIED IN TABLE 552-4 OF THE FP-03 SHALL APPLY. IF CONCRETE CANNOT BE DISCHARGED WITHIN THE SPECIFIED TIME LIMIT, AN ALTERNATE METHOD OF DELIVERY SUCH AS DRY BATCHING, AN ONSITE BATCHING PLANT CONFORMING TO APPLICABLE SPECIFICATIONS, OR AN APPROVED CONCRETE MIX DESIGN CONTAINING SET RETARDING ADMIXTURES SHALL BE USED. ALTERNATE METHODS OF DELIVERY SHALL BE SUBMITTED FOR REVIEW AND APPROVAL PRIOR TO IMPLEMENTATION. APPROVAL OF ALTERNATE METHODS SHALL BE BASED ON DATA FROM PAST USE SHOWING CONFORMANCE TO THE SPECIFICATIONS FOR SIMILAR CONCRETE PLACED IN SIMILARLY REMOTE LOCATIONS. TOP SURFACES OF THE BRIDGE DECK AND APPROACH SLABS, INCLUDING WALK WAY, SHALL BE GIVEN A GROOVED FINISH IN ACCORDANCE WITH SECTION 552.14 (a), (b) AND (c)(1) OF THE FP-03. THE CONCRETE BARRIER AND PARAPET SURFACES, VERTICAL EDGE OF BRIDGE DECK SURFACES AND BOTTOM OF BRIDGE DECK OVERHANG SURFACES SHALL BE GIVEN A CLASS 2 RUBBED FINISH. ALL OTHER CONCRETE SURFACES SHALL BE IN ACCORDANCE WITH SECTION 552.16 OF THE FP-03. ALL STEEL OTHER THAN REINFORCING STEEL EMBEDDED IN CONCRETE SUCH AS EXPANSION JOINTS, GUARD ANGLES, ANCHOR BOLTS, ETC... SHALL BE CONSIDERED INCIDENTAL TO ITEM 55201-0200, STRUCTURAL CONCRETE CLASS A(AE) UNLESS OTHERWISE NOTED.
7. REINFORCING STEEL: ALL REINFORCING STEEL SHALL CONFORM TO AASHTO M31, GRADE 60. EPOXY COATED REINFORCING STEEL SHALL ALSO CONFORM TO AASHTO M284. CONVENTIONAL AND EPOXY COATED REINFORCING STEEL SHALL HAVE A MINIMUM YIELD STRENGTH OF fy = 60,000 psi. REINFORCING STEEL SIZES SHOWN ON THESE PLANS ARE U.S. CUSTOMARY (ENGLISH) REINFORCING STEEL SIZES. EPOXY COATED REINFORCING STEEL SHALL BE USED IN THE CONCRETE DECK, ALL DIAPHRAGMS, PARAPETS AND APPROACH SLABS. THE MINIMUM COVER FOR ALL REINFORCING STEEL SHALL BE 2 INCHES UNLESS OTHERWISE SPECIFIED. LENGTHS OF REINFORCING STEEL BARS SHOWN IN PLANS INCLUDE REQUIRED SPLICE LENGTHS FOR SPLICES SHOWN. ANY OTHER SPLICES FOR THE CONVENIENCE OF THE CONTRACTOR AND/OR NOT SHOWN ON THE PLANS SHALL FIRST BE REQUESTED FOR APPROVAL BY THE CONTRACTOR AND SHALL NOT BE UTILIZED UNTIL WRITTEN APPROVAL IS GRANTED BY THE AWARDING OFFICIAL/CONTRACTING OFFICER (AO/CO). REINFORCING STEEL QUANTITIES FOR APPROVED SPLICES FOR THE CONVENIENCE OF THE CONTRACTOR AND NOT SHOWN IN THE PLANS SHALL NOT BE PAID FOR BUT SHALL BE AT THE EXPENSE OF THE CONTRACTOR.
8. PRESTRESSING STEEL: PRETENSIONED, PRESTRESSING STEEL STRANDS SHALL BE 270 ksi, 1/2 INCH ø, SEVEN WIRE BRIGHT, LOW RELAXATION PRESTRESSING STEEL STRANDS CONFORMING TO AASHTO M203, INCLUDING THE REQUIREMENTS OF SUPPLEMENT 1. EACH STRAND SHALL BE PRETENSIONED TO A TOTAL LOAD OF 31,000 POUNDS AT fsi = 0.75 (f's) = 202,500 psi. ESTIMATED LOSSES AND FINAL PRESTRESSED FORCES ARE AS FOLLOWS; SPAN 1 AND 4 GIRDERS = 47,200 psi LOSSES, 23,800 POUNDS PER STRAND; SPAN 2 AND 3 = 48,400 psi LOSSES, 23,600 POUNDS PER STRAND.
9. PRESTRESSED CONCRETE GIRDERS: PRESTRESSED CONCRETE GIRDERS SHALL BE MANUFACTURED AS DETAILED IN THESE PLANS. ALL CONCRETE, REINFORCING STEEL, PRESTRESSING STEEL, LIFTING DEVICES, INSERTS AND ACCOMPANYING BOLTS, NEOPRENE ELASTOMERIC BEARING PADS, AND ANY OTHER MATERIALS NECESSARY FOR THE FABRICATION, TRANSPORTATION AND ERECTION OF THE PRESTRESSED CONCRETE GIRDERS SHALL BE CONSIDERED INCIDENTAL TO ITEM 55301-2000 AND ITEM 55301-2010. NEOPRENE ELASTOMERIC BEARING PADS SHALL CONFORM TO AASHTO M251 AND SHALL BE 60 DUROMETER HARDNESS.
10. STRUCTURAL STEEL: STRUCTURAL STEEL FOR EXPANSION JOINT RAILS AND PLATES SHALL CONFORM TO AASHTO M270 GR. 36. WELDED ANCHOR STUDS SHALL CONFORM TO AASHTO 169. DIAPHRAGM ANCHOR BOLTS SHALL CONFORM TO ASTM A307. ALL THE ABOVE ITEMS INCLUDING GIRDER SHOE PLATES AND ALL BOLTS, EXCEPT DIAPHRAGM ANCHOR BOLTS, SHALL BE GALVANIZED AFTER FABRICATION.
11. WELDING: ALL WELDING SHALL BE IN ACCORDANCE WITH ANSI/AASHTO/AWS D1.5M/D1.5:2008 BRIDGE WELDING CODE, INCLUDING MATERIALS, WORKMANSHIP, INSPECTION AND QUALITY CONTROL. INSPECTION OF SHOP WELDS SHALL BE OUTLINED AND PERFORMED IN THE SHOP AS PART OF THE QUALITY CONTROL PROCESS OF THE FABRICATION PLANT. QUALITY CONTROL PLANS OF THE FABRICATION PLANT SHALL BE SUBMITTED ALONG WITH SHOP DRAWINGS FOR ALL FABRICATED PRODUCTS. INSPECTION OF ALL FIELD WELDS SHALL BE IN ACCORDANCE WITH SPECIAL CONTRACT REQUIREMENT 16(k) AND SHALL BE MEASURED AND PAID UNDER ITEM 15301-0000.
12. STRUCTURE TRANSITION RAILINGS: QUANTITIES SHOWN UNDER ITEM 61707-0000 ARE FOR THE THRIEBEAM TRANSITIONS BETWEEN CONCRETE PARAPET AND STANDARD GUARDRAIL SHOWN ON SHEET B-21, INCLUDING THE THRIE BEAM TERMINAL CONNECTOR ATTACHMENT TO THE CONCRETE PARAPET, ALL ATTACHMENT HARDWARE AND WORK, THE W-BEAM TO THRIE BEAM TRANSITION RAIL, ALL POSTS AND BLOCKS AS DETAILED ON SHEET B-21, AND ALL ASSOCIATED HARDWARE. SEE SHEET 3 OF THE ROADWAY PLANS FOR STANDARD GUARDRAIL QUANTITIES AND SHEETS 12 AND 13 OF THE ROADWAY PLANS FOR STANDARD GUARDRAIL DETAILS.
13. DRILLED SHAFTS: CASING OF THE DRILLED SHAFTS MAY BE REQUIRED TO PREVENT CAVING OF SURROUNDING MATERIAL. PAYMENT FOR ANY NECESSARY CASING WORK, INCLUDING MATERIALS, EQUIPMENT AND LABOR, SHALL BE INCLUDED IN ITEMS 56501-0600 AND 56501-0800. ITEMS 56501-0600 AND 56501-0800 QUANTITIES INCLUDE DRILLED SHAFTS FROM THE APPROVED TIP ELEVATIONS TO THE BOTTOM OF ABUTMENT CAP ELEVATIONS AT ABUTMENTS, AND FROM THE APPROVED TIP ELEVATIONS TO THE CONSTRUCTION JOINT (CJ) ELEVATIONS SHOWN ON SHEET B-11 FOR ALL PIERS, AND INCLUDES ALL WORK, LABOR, MATERIALS (INCLUDING CONCRETE AND REINFORCING STEEL), EQUIPMENT AND WORKMANSHIP NECESSARY FOR THE CONSTRUCTION OF THE DRILLED SHAFTS. CONSTRUCTION OF THE CONCRETE COLUMNS FROM THE CJ ELEVATIONS TO THE PIER CAPS, INCLUDING THE HORIZONTAL STRUTS SHALL NOT BE PAID UNDER THE DRILLED SHAFT ITEMS BUT SHALL BE MEASURED AND PAID FOR UNDER ITEM 55201-0200, STRUCTURAL CONCRETE, CLASS A(AE) AND ITEM 55401-1000, REINFORCING STEEL, GRADE 60.
14. PERMANENT STEEL DECK FORMS: PERMANENT STEEL (STAY IN PLACE) DECK FORMS SHALL BE USED FOR THE CONSTRUCTION OF THE CONCRETE DECK OF SPAN 1. AT THE CONTRACTOR'S OPTION, PERMANENT STEEL (STAY IN PLACE) DECK FORMS MAY ALSO BE USED FOR THE CONSTRUCTION OF THE CONCRETE DECK FOR SPANS 2, 3 AND 4. COMPLETE SHOP DRAWINGS/PLANS, DESIGN CALCULATIONS, AND REQUIREMENTS SHALL BE SUBMITTED FOR REVIEW AND SHALL BE APPROVED IN WRITING BY THE AO/CO PRIOR UTILIZATION OF THE PROPOSED SYSTEM. ALL MATERIALS AND WORK (INCLUDING SUBMITTALS INDICATED ABOVE) SHALL BE IN ACCORDANCE WITH SECTION 562 OF THE FP-03 AND SUPPLEMENTAL SPECIFICATIONS.
15. REMOVAL OF EXISTING BRIDGE: EXISTING BRIDGE N666 IS TO REMAIN IN PLACE DURING AND AFTER CONSTRUCTION OF THE NEW BRIDGE. THE APPROACH ROADWAYS TO EXISTING BRIDGE N666 SHALL BE OBLITERATED AFTER THE NEW BRIDGE IS CONSTRUCTED AND TRAFFIC IS USING THE NEW BRIDGE, AND CONCRETE BARRIERS SHALL BE PLACED AT THE ENDS OF THE EXISTING BRIDGE N666 AS SHOWN ELSEWHERE IN THESE PLANS TO PREVENT VEHICLES FROM DIRVING ONTO EXISTING BRIDGE N666.
16. SPAN 1 CONSTRUCTION: THE CONTRACTOR SHALL COORDINATE THE CONSTRUCTION OF SPAN 1, INCLUDING ABUTMENT 1 AND PIER 1, WITH THE BURLINGTON NORTHERN SANTA FE (BNSF) RAILROAD IN ORDER TO PREVENT ANY UNNECESSARY DOWN TIME OR INTERRUPTION OF TRAIN TRAFFIC THROUGH THE CONSTRUCTION SITE. ALL PROJECT STAKEHOLDERS SHALL BE NOTIFIED OF COORDINATION EFFORTS SO THAT ALL WORK CAN BE PERFORMED AS SMOOTHLY AS POSSIBLE.
17. SEE SECTION 107 OF THE SUPPLEMENTAL SPECIFICATIONS FOR SECTION (c) AND (c1), RAIL ROAD REQUIREMENTS. THE CONTRACTOR IS ALSO REFERRED TO THE BNSF AGREEMENT WITH THE BIA, SECTION C-1 FOR ADDITIONAL REQUIREMENTS.
18. ARTICULATED CONCRETE BLOCK REVETMENT: THIS WORK SHALL CONSIST OF FURNISHING ALL LABOR, EQUIPMENT AND MATERIALS TO PLACE AN ARTICULATED CONCRETE BLOCK REVETMENT SYSTEM ON THE SLOPES OF THE ABUTMENT EMBANKMENTS AS DETAILED IN THESE PLANS. THE SYSTEM SHALL CONSIST OF 8 FT. BY 16 FT. SECTIONS PLACED ADJACENT TO EACH OTHER AND POSITIVELY CONNECTED BY THE MANUFACTURERS RECOMMENDED METHOD TO PROVIDE A HOMOGENEOUS EROSION PROTECTION SYSTEM. IF NECESSARY, IRREGULARLY SHAPED SECTIONS SHALL BE DESIGNED AND FABRICATED TO FIT CORNERS AND OTHER IRREGULAR AREAS. THE SECTIONS SHALL BE MADE OF CONCRETE BLOCKS INTERCONNECTED Laterally and Transversely by STAINLESS STEEL CABLES CAST INTO THE CONCRETE BLOCKS. A GEOTEXTILE FABRIC CONFORMING TO SPECIFICATIONS SHALL BE PLACED/ATTACHED TO THE BOTTOM OF EACH SECTION. THE CONCRETE BLOCKS SHALL BE A TRUNCATED PYRAMID SHAPE WITH THE TOP SURFACE 11.5 IN. BY 11.5 IN. SQUARE AND THE BASE SURFACE 15.5 IN. BY 15.5 IN. SQUARE. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND DESIGN DATA FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION AND USE OF THE SYSTEM.
19. CONCRETE BARRIER: ALL CONCRETE AND REINFORCING STEEL SHALL BE PAID UNDER ITEMS 55201-0200 AND 55401-2000.
20. THE CONTRACTOR SHALL HAVE A QUALIFIED GEOLOGIST PRESENT DURING THE DRILLING OF THE SHAFTS AND SHALL VERIFY THAT THE HOLES FOR THE SHAFTS ARE AT LEAST 3 m INTO COMPETENT SANDSTONE BEFORE DRILLING FOR THE NEXT SHAFT.

REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	TOTAL SHEETS
Navajo	AZ	Navajo	N2007	N2007(1-1)1,2&4	B-1	63

BRIDGE ESTIMATED QUANTITIES

ITEM	DESCRIPTION	QUANTITY	UNIT	AS BUILT
20403-0000	Unclassified Borrow (Bridge Abutment Embankments)	9868	c.y.	
25112-3000	Articulated Concrete Block Revetment	2846	s.y.	
25302-1000	Gabions, galvanized coated, Class 2.	721	c.y.	
55201-0200	Structural Concrete Class A(AE)	1888	c.y.	
55301-2000	Precast Prestressed Concrete BT-72 Grider 72", 130'-5" long	12	ea.	
55301-2010	Precast Prestressed Concrete BT-72 Girder 72", 129'-4" long	12	ea.	
55401-1000	Reinforcing Steel, Grade 60	186,034	lb	
55401-2000	Reinforcing Steel, Epoxy Coated, Grade 60	238,103	lb	
56501-0600	Drilled Shafts, 4'-0" diameter	507	lf	
56501-0800	Drilled Shafts, 5'-0" diameter	407	lf	
61707-0000	Structure Transisition Railing (Thrie Beam)	75	lf	
61711-5000	Impact Attenuator, QUADGUARD	2	ea.	
61901-1300	Fence, Chain Link Pedestrain Fence	552	lf	
61901-1800	Fence, Chain Link, 60-inch height	552	lf	
63308-3000	Object Markers, Type 3, 1 Post and Hardware; 2.00 lb/ft.	4	ea.	

The quantites shown above are related to bridge construction only and are not included in the quantities shown on Sheet 3. The quantities shown above shall be combined with the quantities shown on Sheet 3 to obtain the total estimated quantities for the entire project. The total estimated quantities for the entire project are shown on the Bid Schedule.

ITEM 61707-0000
STRUCTURE TRANSITION RAILING

STATION TO STATION	LOCATION	LENGTH (ft)
24+49.83 to 24+68.58	LT.	18.75
24+49.83 to 24+68.58	RT.	18.75
30+21.92 to 30+40.67	LT.	18.75
30+21.92 to 30+40.67	RT.	18.75
TOTAL:		75.00

The quantities show above include only thrie-beam transitions from concrete barriers to standard guardrailng as detailed on Sheet B-21.

ITEM 20403-0000
UNCLASSIFIED BORROW (Bridge Abutment Embankments)

LOCATION - STATION TO STATION	CUT (c.y.)	FILL (c.y.)	* BORROW (c.y.)	WASTE (c.y.)
ABUT 1 - 24+83.00 to 25+24.98	0	2246	2808	0
ABUT 2 - 29+23.75 to 30+07.50	299	5947	7060	0
TOTAL . . .	299	8193	9868	0

* 25% Shrinkage Factor applied

NOTE: The quantity shown above is not included in the quantity shown on Sheet 3 for Item 20403-0000.

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RIO PUERCO BRIDGE
BRIDGE GENERAL NOTES,
ESTIMATED QUANTITIES & TABLES

Designed by: cdh

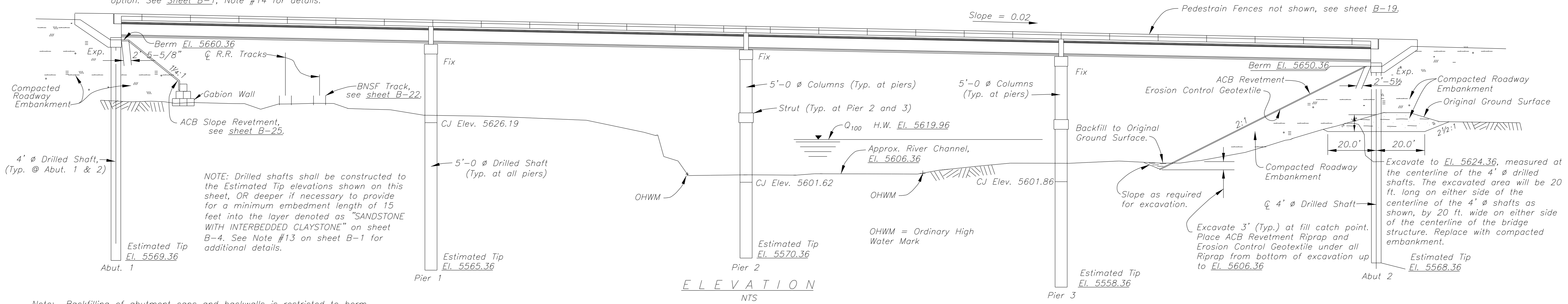
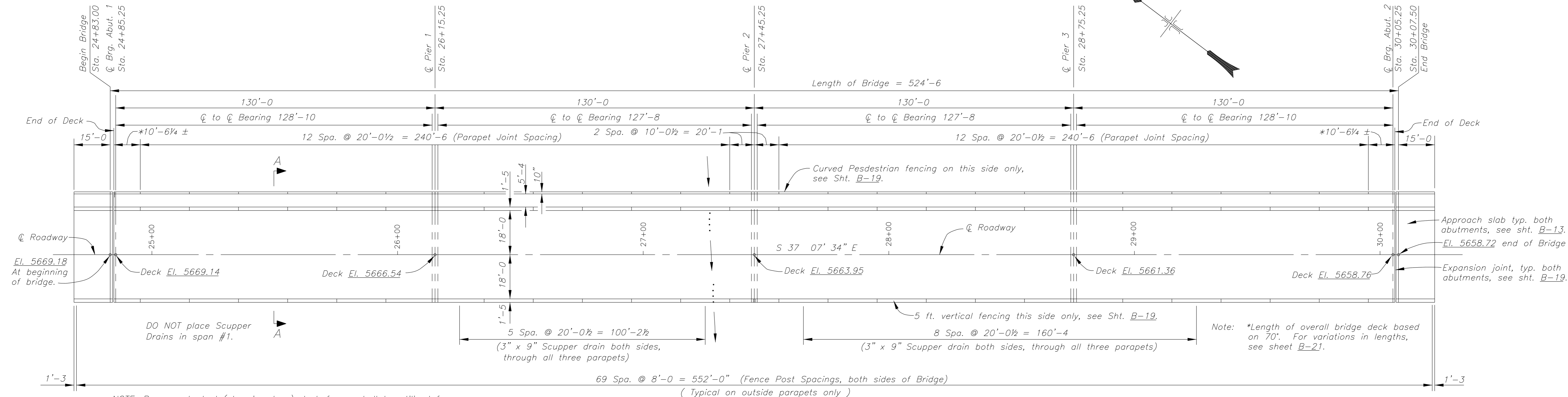
Drown by: rsh, dc, cdhDate: 01/17/14

Revised by:Date:

File Name: 01_BIAgrnrl



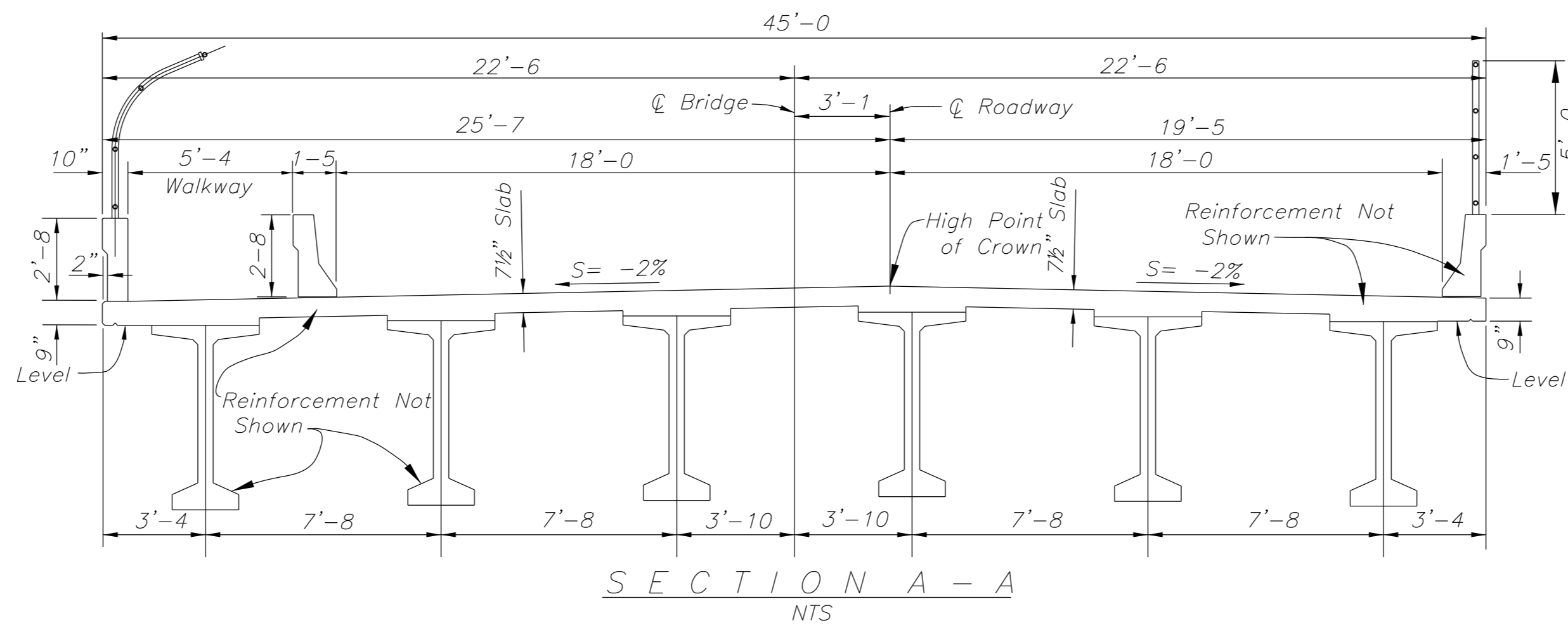
REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	TOTAL SHEETS
Navajo	AZ	Navajo	N2007	N2007(1-1)1,2&4	B-2	63



Note: Backfilling of abutment caps and backwalls is restricted to berm elevations shown, prior to girder placement. (Typ. at both abutments).

HYDRAULIC DATA
Drainage area = 2160 sq. mi.
 $Q_{50} = 23,200$ cfs $EL. 5619.46$ $V=10.0$ ft./s
 $Q_{100} = 26,100$ cfs $EL. 5619.96$ $V=10.0$ ft./s

APPLIED STRUCTURAL LOADS
Abutment #1 : 314 tons/shaft (max.)
Pier #1 : 527 tons/shaft (max.)
Pier #2 : 525 tons/shaft (max.)
Pier #3 : 545 tons/shaft (max.)
Abutment #2 : 308 tons/shaft (max.)



NOTE
For specific location of the beginning and ending Bridge stations, see Abutment Plan on Sheet B-9.

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RIO PUERCO BRIDGE
STRUCTURE LAYOUT

Designed by: BUREAU OF RECLAMATION
Drawn by: BOR, dc, rsh, cdh Date: 01/17/14
Revised by: - - Date: - -
File Name: 02_BIA_plan

K:\CURRENT PROJECTS\W00\N2007(1-1) Navajo Bridge_032494\Design_BIA_2001-02-28\CAD 073002\Bridge_Plan Drawings PRELIM 051109\03_BIAsoil_2014-01-17.dgn

REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	TOTAL SHEETS
Navajo	AZ	Navajo	N2007	N2007(1-1)1,2&4	B-3	62

WEATHERING

FRESH (W1): Body of rock that is not oxidized or discolored; fracture surfaces are not oxidized or discolored; no separation of grain boundaries; no change of texture and no solutioning. Hammer rings when crystalline rocks are struck.*

*SLIGHTLY WEATHERED TO FRESH (W2):***

SLIGHTLY WEATHERED (W3): Discoloration or oxidation is limited to surface of, or short distance from fracture; some feldspar crystals are dull; olivine or pyroxene phenocrysts may be altered to iddingsite; fracture surfaces have minor to complete discoloration or oxidation; no visible separation of grain boundaries; texture preserved and minor leaching of soluble minerals may present. Hammer rings when crystalline rocks are struck, body of rock is not weakened by weathering.

*MODERATELY TO SLIGHTLY WEATHERED (W4):***

MODERATELY WEATHERED (W5): Discoloration or oxidation extends from fractured, usually throughout body of rock; ferromagnesian minerals are "rusty", feldspar crystals are "cloudy;" all fracture surfaces are discolored or oxidized; partial opening of grain boundaries visible; texture generally preserved, but soluble minerals may be mostly leached. Hammer does not ring when rock is struck, body of rock is slightly weakened.

*INTENSELY TO MODERATELY WEATHERED (W6):***

INTENSELY WEATHERED (W7): Body of rock is discolored or oxidized throughout; all feldspar and ferromagnesian minerals are altered to clay to some extent. All fracture surfaces are discolored or oxidized, surface friable; partial separation of grain boundaries, rock is friable; in situdisaggregation of granitics common in semi-arid regions; texture altered and leaching of soluble minerals may be complete. Rock has dull sound when struck with hammer, rock is weakened, usually can be broken with moderate to heavy manual pressure or by light hammer blow without reference to planes of weakness.

*VERY INTENSELY WEATHERED (W8):***

DECOMPOSED (W9): Body of rock is discolored or oxidized throughout, but resistant minerals such as quartz may be unaltered; all feldspar and ferromagnesian minerals are completely altered to clay; complete separation of grain boundaries (disaggregated), partial or complete remnant rock structure may be preserved, but resembles a soil.

NOTE: Weathering categories are established primarily for crystalline rock and those with ferromagnesian minerals, weathering in various sedimentary rocks will not always fit the categories established. The term "weathering" includes all alterations due to any process including surface weathering and hydrothermal alteration.

**Characteristics of fracture surfaces does not include directional weathering along sherars or faults and their associated fracture zones; for example a shear that carries weathering to great depths in a fresh rock mass would not require the whole rock mass to be classified as weathered.*

*** Combination description are used where equal distribution of both weathering characteristics are present over signification intervals or where characteristics noted are "in between" the diagnostic characteristics.*

SOIL CONSISTENCY

<i>Vary soft</i>	<i>Thumb will penetrate soil more than 1 in. (25 mm).</i>
<i>Soft</i>	<i>Thumb will penetrate soil about 1 in. (25 mm).</i>
<i>Firm</i>	<i>Thumb will indent soil about 1/4 in. (5 mm).</i>
<i>Hard</i>	<i>Thumb will not indent soil but readily indented with thumbnail.</i>
<i>Very hard</i>	<i>Thumbnail will not indent soil.</i>

BEDROCK HARDNESS / STRENGTH

EXTREME HARD (H1): Core, fragment or exposure cannot be scratched with knife or sharp pick; can only be chipped with repeated heavy hammer blows.

VERY HARD (H2): Cannot be scratched with knife or sharp pick. Core or fragments breaks with repeated heavy hammer blows.

HARD (H3): Can be scratched with knife or sharp pick with difficulty (heavy pressure). Heavy hammer blow required to break specimen.

MODERATELY HARD (H4): Can be scratched with knife or sharp pick with light or moderate pressure. Core or fragment breaks with moderate hammer blow.

*MODERATELY SOFT (H5): *Can be grooved 1/16 in. (2 mm) deep by knife or sharp pick with (moderately or heavy) pressure. Core or fragment breaks with hammer blow or heavy manual pressure.*

SOFT (H6): Can be grooved or gouged easily by knife or sharp pick with light pressure, can be scratched with fingernail. Breaks with light to moderate manual pressure.

VERY SOFT (H7): Can be readily indented, grooved or gouged with fingernail, or carved with a knife. Breaks with light pressure.

NOTE: Bedrock units softer than H7, Very Soft, are described using USCS (soils) consistency descriptors.

FRACTURE DENSITY

Alpha- numeric descriptor	Descriptor	Criteria
FD0	Unfractured	No fractures.
FD1	Very slightly fractured	Core recovered mostly in lengths greater than 3 feet (1 m).
FD2	Slightly to very slightly fractured	
FD3	Slightly fractured	Core recovered mostly in lengths from 1 to 3 feet (300 to 1000 mm) with few scattered lengths less than 1 foot (300 mm) or greater than 3 feet (1000 mm).
FD4	Moderately to slightly fractured	
FD5	Moderately fractured	Core recovered mostly in 0.33 to 1.0 foot (100 to 300 mm) lengths with most lengths about 0.67 foot (200 mm)
FD6	Intensity to moderately fractured	
FD7	Intensity fractured	Lengths average from 0.1 to 0.33 foot (30 to 100 mm) with scattered fragmented intervals. Core recovered mostly in lengths less than 0.33 foot (100 mm).
FD8	Very intensely to intensely fractured	
FD9	Very intensely fractured	Core recovered mostly as chips and fragments with a few scattered short core lengths.

Sedimentary and Pyroclastic rock particle-size descriptors

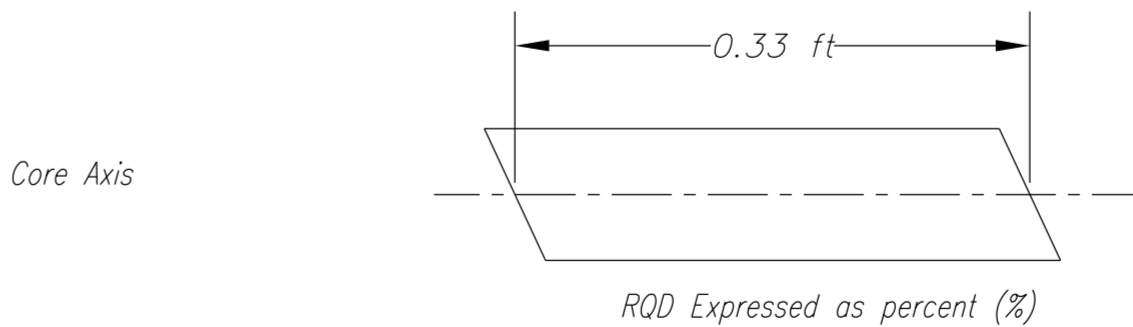
Size in mm (inches)	SEDIMENTARY Rounded, Subrounded, subangular		PYROCLASTIC	
	Particle or fragment	Lithified product	Fragment	Lithified product
300 (12) 256 (10) 75 (3) 64 (2.5) 20 (0.8) 4.75 (0.2) 2.00 (0.08) 0.42 (0.02) 0.074 (0.003) 0.005	Boulder	BOULDER CONGLOMERATE	Boulder	AGGLOMERATE (Boulder, cobble, gravel, and sand)
	Cobble	COBBLE CONGLOMERATE	Cobbler	
	Coarse gravel	PEBBLE CONGLOMERATE	Coarse gravel	
	Fine gravel		Fine gravel	
	Coarse sand	SANDSTONE (Coarse sand, medium sand and fine sand)	Coarse sand	TUFF (Coarse, gravel to fine sand, and ash)
	Medium sand		Medium sand	
	Fine sand		Fine sand	
	Silt	SILTSTONE/ SHALE	Ash	
	Clay	CLAYSTONE/ SHALE		

Rock Color

All colors used to describe rock are taken from the Geological Society of America Rock color Chart (7th pprinting, 1991, with revised text). Unless indicated all colors are described from wet samples.

ROCK QUALITY DESCRIPTION (RQD)

$$RQD = \frac{\text{Sum of length of solid core pieces greater than or equal to 0.33 ft long}}{\text{Length of the run in feet}} \times 100$$



UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF INDIAN AFFAIRS

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RIO PUERCO BRIDGE STANDARD DESCRIPTIONS AND DESCRIPTIVE CRITERIA FOR ROCK

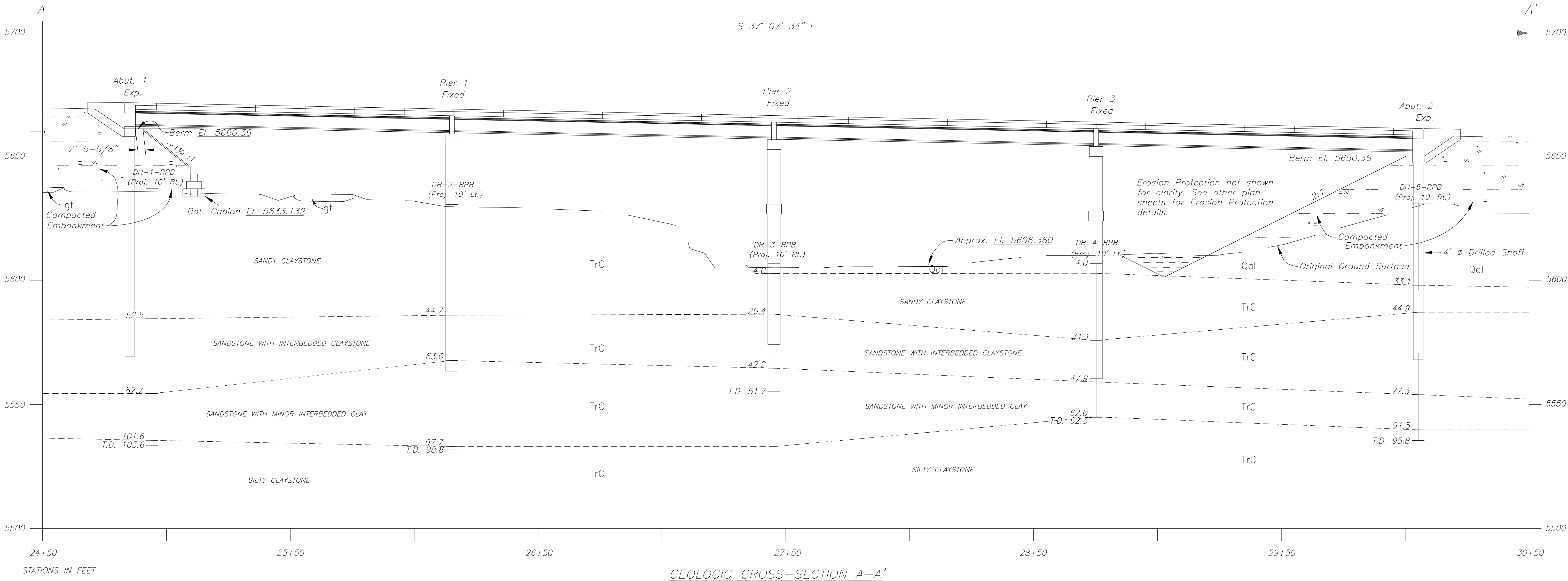
Designed by: BUREAU OF RECLAMATION

Drawn by: BOR, cdh, rsh Date: 01/24/13

Revised by: - - Date: - -

File Name: 03_BIAsoil





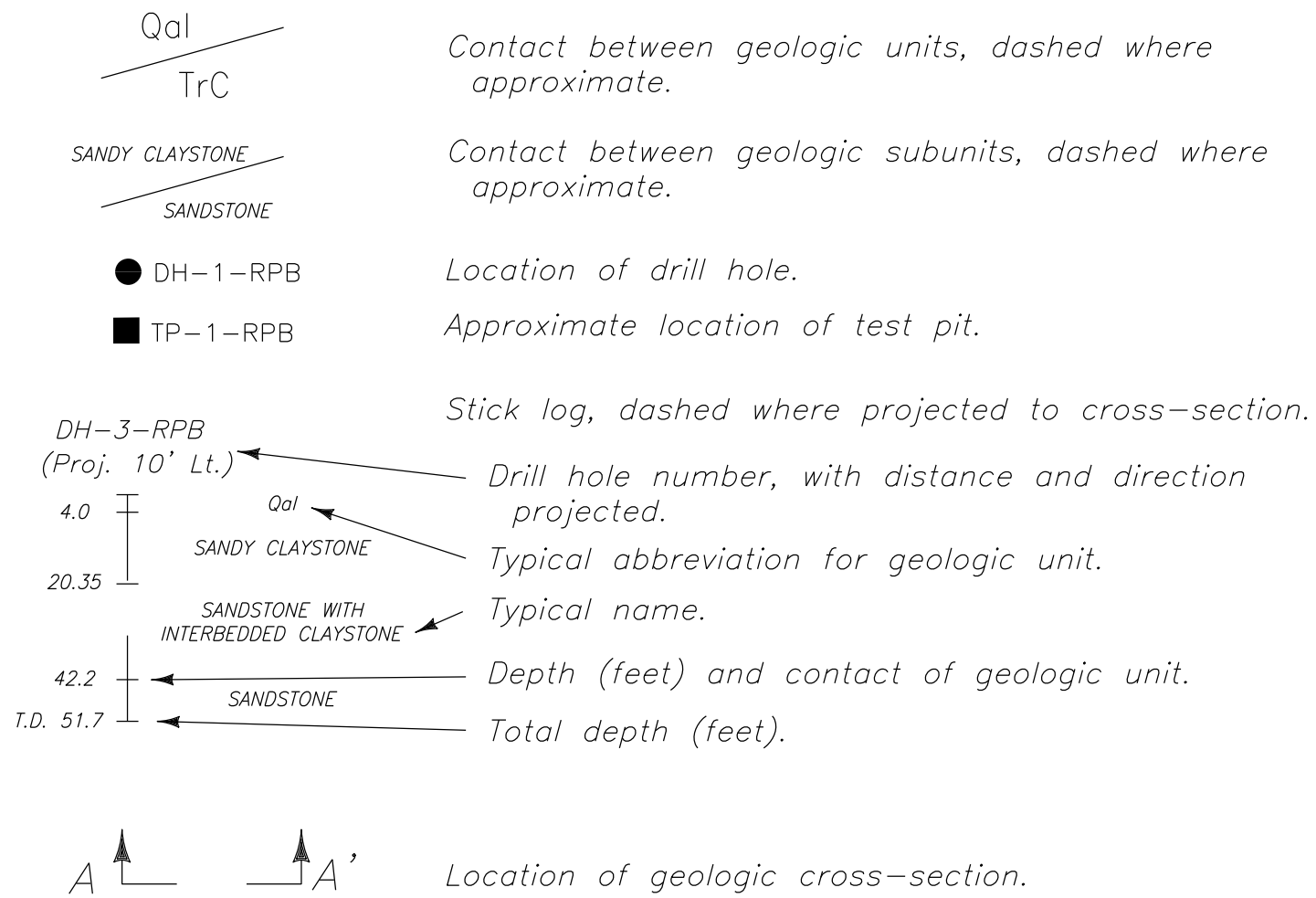
GENERAL GEOLOGIC LEGEND

gf **General Fill:** The railroad tracks have a foundation consisting of poorly graded gravel (GP) that varies in thickness from 1.0 to 3.0 feet. The dirt road is composed of a combination of poorly graded sand (SP) and sandy lean clay s(CL). The roadfill material is the same as the alluvium, but it has been reworked and graded.

Qal **Quaternary Alluvium:** In the river channel, alluvium is composed predominately of poorly graded sand (SP) that is generally medium to fine grained, subangular to subrounded, no reaction with HCl, with a trace of subrounded gravel and nonplastic fines. In thicker sections of alluvium (the southern river bank) the poorly graded sand (SP) is interbedded with lenses of sandy lean clay s(CL) and clay seams CL.

TrC **Triassic Chinle Formation:** For the purposes of this work, the section of rock encountered on the surface and in drill holes has been divided into four subunits. These units, from top to bottom, consist of a sandy claystone that ranges from 10 to 52 feet thick. A sandstone with interbedded claystone that ranges in thickness from 16 to 32 feet thick. The bottom of this subunit is marked by a pebble conglomerate which ranges in thickness from 1.1 to 3.3 feet. A sandstone with minor interbedded claystone that ranges in thickness from 10 to 35 feet. At the base of the sandstone with minor interbedded clay lies a silty claystone. Since all five drill holes were terminated in or above this unit its thickness is unknown.

GENERAL GEOLOGIC EXPLANATION



GENERAL GEOLOGIC NOTES

For Standard Descriptions and Descriptive Criteria for Rock, see Sheet B-3.

For complete descriptions of test pit and drill holes, see the geologic logs which can be provided upon written request.

Qal was not mapped when found in thicknesses of less than 2.5 feet.

NOTE: Subsurface investigation information has been obtained for designer use only. The Government shall not be responsible for any misinterpretation or assumptions made by the Contractor based on the subsurface investigation information presented on these plans.

NOTE: DRILLED SHAFTS HAVE BEEN DESIGNED TO BE FOUNDED IN THE LAYER DENOTED AS "SANDSTONE WITH INTERBEDDED CLAYSTONE". DRILLED SHAFTS SHALL BE CONSTRUCTED TO THE ESTIMATED TIP ELEVATIONS SHOWN ON THIS SHEET, OR DEEPER IF NECESSARY TO PROVIDE FOR A MINIMUM EMBEDMENT LENGTH OF 15 FEET INTO THE LAYER SPECIFIED LAYER. SEE NOTE #13 ON SHEET B-1 FOR ADDITIONAL DETAILS.

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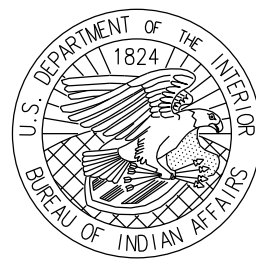
RIO PUERCO BRIDGE
SOIL PROFILE SHEET

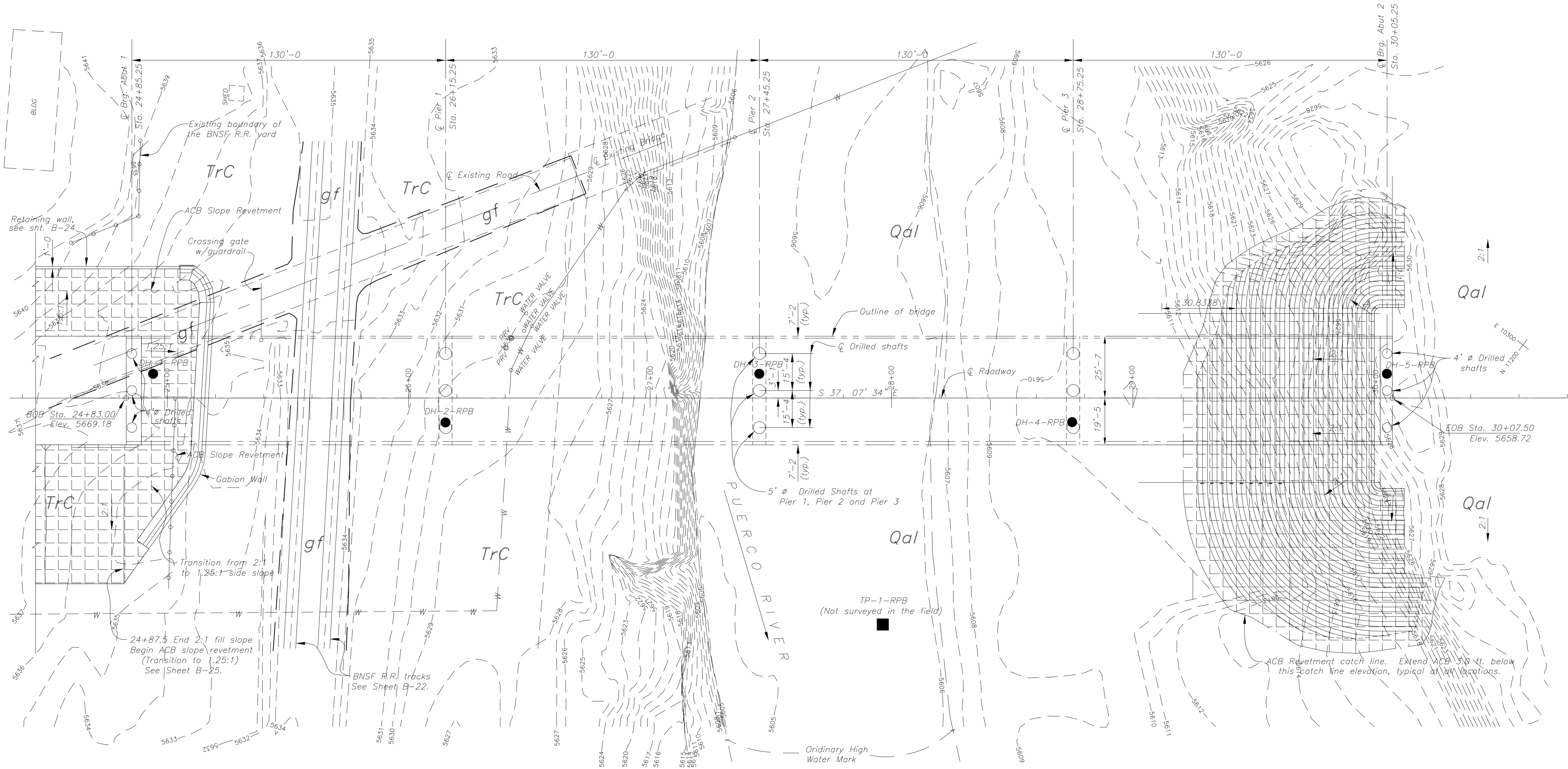
Designed by: BUREAU OF RECLAMATION

Drawn by: BOR, rsh, dc, cdh Date: 01/17/14

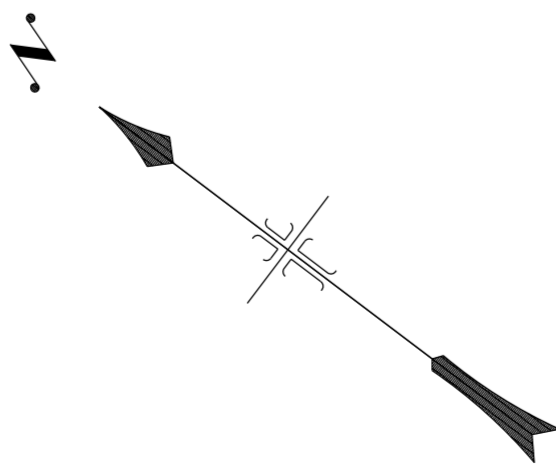
Revised by: - - Date: - -

File Name: 04_BIA0a33034





DRILL HOLE	STATION	OFFSET
DH-1-RPB	24+95.25	10' Lt.
DH-2-RPB	26+15.25	10' Rt.
DH-3-RPB	27+45.25	10' Lt.
DH-4-RPB	28+75.25	10' Rt.
DH-5-RPB	30+05.25	10' Lt.



FOUNDATION PLAN
NTS

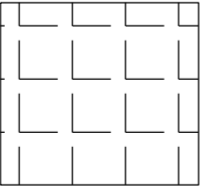
GEOLOGIC NOTES

For General Geologic Legend, Explanation, and Notes, see Sheet B-4.

For Standard Descriptions and Descriptive Criteria for Rock, see Sheet B-3.

Qal was not mapped when found in thicknesses of less than 2.5 feet.

For complete descriptions of drill holes, see the geologic logs which can be provided upon written request.



- Articulated Concrete Block-CC20 (ACB) Revetment erosion protection.

NOTE: The engineering data shown is preliminary only. for final design, see appropriate specification dwg's.

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RIO PUERCO BRIDGE
FOUNDATION PLAN
EXPLORATION AND SURFACE GEOLOGY LOCATION

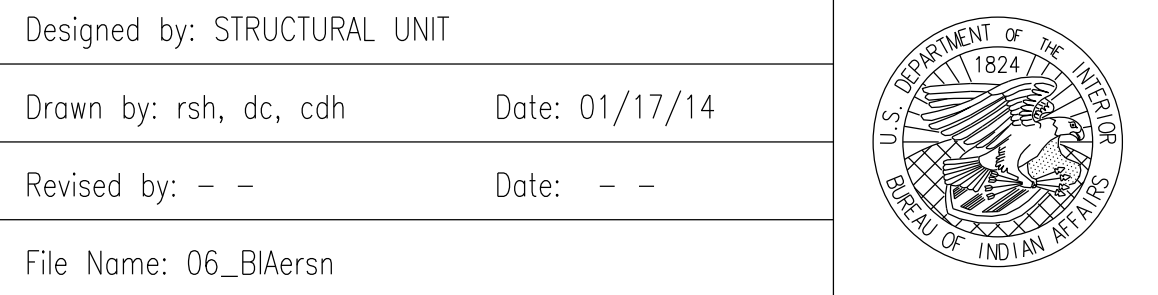
Designed by: BUREAU OF RECLAMATION

Drawn by: BOR, rsh, dc, cdh Date: 01/17/14

Revised by: - - Date: - -

File Name: 05_Rbio35

5. See sheets B-22 through B-25 for ABUTMENT 1 details and installation details.



REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	TOTAL SHEETS
Navajo	AZ	Navajo	N2007	N2007(1-1)1,2&4	B-7	63

GEOLOGIC LOG OF DRILL HOLE DH-1-RPB										SHEET 1 OF 1	
FEATURE: RIO PUERCO BRIDGE LOCATION: NORTHERN BANK OF RIVER CHANNEL BEGIN: 8/25/93 FINISHED: 8/26/93 DEPTH OF ELEV. OF WATER LEVEL AND DATE MEASURED: SEE NOTES			PROJECT: O.N.H.I.R. COORDINATES: N. 11645.26 E. 9947.98 TOTAL DEPTH: 103.6 DEPTH TO BEDROCK: 0.0			STATE: ARIZONA GROUND ELEVATION: 5637.21 ANGLE FROM HORIZONTAL AND BEARING: 90° HOLE LOGGED BY: R. LUNG REVIEWED BY:					
NOTES	LITHOLOGIC LOG	ELEVATION	DEPTH	CORE RECOVERY	ROD	FRACTURE DENSITY	HARDNESS	WEATHERING	GEOLOGIC DESCRIPTION		
PURPOSE OF HOLE: DETERMINE FOUNDATION CONDITIONS AT PROPOSED ABUTMENT NO. 1 (STA. 24+94.10, OFFSET 10 FT. LT.). DETERMINE DEPTH TO ROCK AND CORE BEDROCK FOR 20 FT.			10						0.0 TO 103.6 FT. TRASSIC CHINLE FORMATION (Tc)		
DRILL SITE AND SET-UP: SITE LOCATED ON ORIGINAL GROUND AT STA. 24+95.25 ABOUT 50 FEET NORTH OF THE NORTH BANK OF THE RIVER CHANNEL.			20						0.0 TO 52.5 FT. SANDY CLAYSTONE: DESCRIPTION BASED ON VISUAL ANALYSIS OF DRILLING CONDITIONS AND CUTTING IN AUGERED INTERVALS. COLOR RANGES FROM PALE RED (5R 6/2) TO MODERATE RED (5R 4/6). SANDY CLAYSTONE IS THINLY TO MODERATELY BEDDED AND INTENSELY (W7) TO MODERATELY (W5) WEATHERED WITH DEPTH (APPROXIMATELY 10 TO 12 FEET), VERY SOFT (H7) BREAKING WITH LIGHT MANUAL PRESSURE. LOWER CONTACT IS CONFORMABLE AND GRADATIONAL. MINOR SANDSTONE LENSES RANGING FROM 0.1 TO 0.5 FT. ARE ENCOUNTERED FROM 2.0 TO 5.0 FT. ABOVE THE LOWER CONTACT.		
DRILL EQUIPMENT: CME 1250 TRACK MOUNTED EARTH AUGER; 5 FT. LONG 7-1/2 INCH HOLLOW-STEM FLIGHT AUGERS; 9-INCH CARBIDE TIPPED BIT; 5 FT. LONG HQ CORE BARREL WITH SPLIT TUBE INNER BARREL; SURFACE SET, DIAMOND BIT; AND HQ RODS.			30						52.5 TO 82.7 FT. SANDSTONE WITH INTERBEDDED CLAYSTONE: COLOR RANGES FROM GRAYISH PINK (5R 8/2) TO VERY LIGHT GRAY (N8) WITH CLAYSTONE INTERBEDS RANGING FROM PALE RED (5R 6/2) TO MODERATE RED (5R 4/6). SANDSTONE IS FINE TO MEDIUM GRAINED, SUBANGULAR TO SUBROUNDED, THINLY BEDDED, SLIGHTLY (W3) TO PREDOMINATELY (W5) WEATHERED, AND MODERATELY HARD (H4). MODERATELY FRACTURED (FD5). RECOVERED PREDOMINATELY IN LENGTHS FROM 0.33 TO 1.0 FOOT FROM 56.0 TO 82.7 FEET. CLAYSTONE INTERBEDS ENCOUNTERED FROM 60.1 TO 61.2 FT., 64.4 TO 65.0 FT., AND 78.6 TO 80.1 FT., UPPER CONTACT IS CONFORMABLE AND GRADATIONAL WHILE LOWER CONTACT IS CONFORMABLE AND SHARP. THE LOWER CONGLOMERATE FROM 81.6 TO 82.7 FT. THIS CONGLOMERATE IS CLAST SUPPORTED (90R) WITH A CLAY MATRIX. CLASTS COMPOSED OF INTENSELY (W7) WEATHERED SANDSTONE; LARGEST CLAST 0.15 FT. .		
WATER TESTING EQUIPMENT; NO WATER TESTS REQUIRED.			40								
DRILLER: J. HAYDEN.			50								
DRILL FLUID: NO DRILL FLUID FROM 0.0 TO 52.5 FT., USED WATER AS DRILL FLUID FROM 52.5 TO 103.6 FT..	TrC		60	0							
DRILL FLUID RETURN: INTERVAL (FT.) % RETURN 0.0 - 52.5 FA-NA 52.5 - 103.6 95.			70	86	76						
DRILL FLUID RETURN COLOR: INTERVAL (FT.) COLOR 0.0 - 52.5 FA-NA 52.5 - 103.6 REDDISH BROWN			80	100	76						
DRILLING METHODS: INTERVAL METHOD/(FT.) BARREL SIZE 0.0 - 52.5 7-1/2 IN. FA 52.5 - 103.6 HQ CORE			90	100	86	5	4	4			
DRILLING CONDITIONS AND DRILLER'S COMMENTS: 0.0 - 40.5 FT. AUGERED SMOOTH; 40.5 TO 52.5 AUGERED ROUGH; AT 52.5 FT. AUGER REFUSAL.			100	100	96						
CASINS RECORD (FA): CASING CASING INTERVAL SIZE DEPTH DRILLED 7-1/2 IN. 0.0-52.5 0.0-52.5 7-1/2 IN. 52.5 52.5-103.6			110	100	100						
DEPTH TO WATER DURING DRILLING; NOT DETERMINED.			120	100	88	7		5			
HOLE COMPLETION: BACKFILLED WITH EXCAVATED MATERIAL.			130	100	100	2					
REASON FOR HOLE TERMINATION: HOLE TERMINATED AT THE DISCRETION OFFICE OF NAVAJO HOPI INDIAN RELLOCATION ON SITE REPRESENTATIVE (O.N.H.I.R.)			140	100	88	5	3	3	101.6 TO 103.6 FT. SILTY CLAYSTONE: COLOR IS PALE OLIVE (10Y 6/2). MODERATELY TO THICKLY BEDDED, SLIGHTLY WEATHERED TO FRESH (W2) BUT VERY SOFT (H7). MODERATELY FRACTURED (FD5). RECOVERED PREDOMINATELY IN LENGTHS FROM 0.33 TO 1.0 FOOT FROM 101.0 TO 103.6 FEET. UPPER CONTACT IS CONFORMABLE AND SHARP WHILE LOWER CONTACT IS UNKNOWN. ...		
ESTIMATED DRILLING TIME: 10-HOUR SHIFTS SET-UP AND DRILLING 2			150	100	98	2			PROBABLY REASON FOR CORE LOSS: INTERVAL (FT.) AMOUNT INTERPRETATION 52.5 - 56.0 3.5 BLOCKED OFF THROUGHOUT 56.0 - 61.0 0.7 WASHED OUT CLAY THROUGHOUT 71.0 - 76.0 0.2 WASHED OUT CLAY THROUGHOUT		
			160	100	69	5	7				
			170								
			180								
			190								
			200								
			210								
			220								
			230								
			240								
			250								
			260								
			270								
			280								
			290								
			300								
			310								
			320								
			330								
			340								

GEOLOGIC LOG OF DRILL HOLE DH-2-RPB											SHEET 1 OF 1				
FEATURE: RIO PUERCO BRIDGE LOCATION: NORTHERN BANK OF RIVER CHANNEL BEGIN: 8/24/93 FINISHED: 8/25/93 DEPTH OF ELEV. OF WATER LEVEL AND DATE MEASURED: SEE NOTES				PROJECT: O.N.H.I.R. COORDINATES: N. 11536.60 E. 10005.11 TOTAL DEPTH: 98.8 DEPTH TO BEDROCK: 0.0				STATE: ARIZONA GROUND ELEVATION: 5630.85 ANGLE FROM HORIZONTAL AND BEARING: 90° HOLE LOGGED BY: R. LUNG REVIEWED BY:							
NOTES			LITHOLOGIC LOG	ELEVATION	DEPTH	CORE RECOVERY	ROD	FRACURE DENSITY	HARDNESS	WEATHERING	GEOLOGIC DESCRIPTION				
<p>PURPOSE OF HOLE: DETERMINE FOUNDATION CONDITIONS AT PROPOSED PIER NO. 2 (STA. 26+15.25, OFFSET 10 FT. RT.). DETERMINE DEPTH TO ROCK AND CORE BEDROCK FOR 20 FT.</p> <p>DRILL SITE AND SET-UP: SITE LOCATED ON ORIGINAL GROUND AT STA. 26+15 ABOUT 50 FEET NORTH OF THE NORTH BANK OF THE RIVER CHANNEL.</p> <p>DRILL EQUIPMENT: CMC 1250 TRACK MOUNTED EARTH AUGER; 5 FT. LONG 7-1/2 INCH HOLLOW-STEM FLIGHT AUGERS; 9-INCH CARBIDE TIPPED BIT; 5 FT. LONG HD CORE BARREL WITH SPLIT TUBE INNER BARREL; SURFACE SET, DIAMOND BIT; AND HO RODS.</p> <p>WATER TESTING EQUIPMENT: NO WATER TESTS REQUIRED.</p> <p>DRILLER: J. HAYDEN.</p> <p>DRILL FLUID: NO DRILL FLUID FROM 0.0 TO 44.7 FT., USED WATER AS DRILL FLUID FROM 44.7 TO 98.8 FT.</p> <p>DRILL FLUID RETURN: INTERVAL (FT.) % RETURN 0.0 - 44.7 FA-NA 44.7 - 61.3 95 61.3 - 86.3 90 86.3 - 98.8 95</p> <p>DRILL FLUID RETURN COLOR: INTERVAL (FT.) COLOR 0.0 - 44.7 FA-NA 44.7 - 98.8 REDDISH BROWN</p> <p>DRILLING METHODS: INTERVAL METHOD/ (FT.) BARREL SIZE 0.0 - 44.7 7-1/2 IN. FA 44.7 - 98.8 HD CORE</p> <p>DRILLING CONDITIONS AND DRILLER'S COMMENTS: 0.0 - 20.3 FT. AUGERED SMOOTH; 20.3 TO 44.7 AUGERED ROUGH; AT 44.7 FT. AUGER MET REFUSAL.</p> <p>CASINGS RECORD (FA): CASING CASING INTERVAL SIZE DEPTH DRILLED 7-1/2 IN. 0.0-44.7 0.0-44.7 7-1/2 IN. 44.7 44.7-98.8</p> <p>DEPTH TO WATER DURING DRILLING; NOT DETERMINED.</p> <p>HOLE COMPLETION; BACKFILLED WITH EXCAVATED MATERIAL.</p> <p>REASON FOR HOLE TERMINATION: HOLE TERMINATED AT THE DISCRETION OF OFFICE OF NAVAJO HOP-INDIAN RELOCATION ON SITE REPRESENTATIVE (O.N.H.I.R.).</p> <p>ESTIMATED DRILLING TIME: 10-HOUR SHIFTS SET-UP AND DRILLING 2</p>				TrC		10							0.0 TO 98.8 FT. TRIASSIC CHINLE FORMATION (TrC) 0.0 TO 44.7 FT. SANDY CLAYSTONE: DESCRIPTION BASED ON VISUAL ANALYSIS OF DRILLING CONDITIONS AND CUTTING IN AUGERED INTERVALS. COLOR RANGES FROM PALE RED (SR 6/2) TO MODERATE RED (SR 4/6). SANDY CLAYSTONE IS THINLY TO MODERATELY BEDDED AND INTENSELY (W7) TO MODERATELY (W5) WEATHERED WITH DEPTH (APPROXIMATELY 10 TO 12 FEET). VERY SOFT (H7) BEAKING WITH LIGHT MANUAL PRESSURE. LOWER CONTACT IS CONFORMABLE AND GRADATIONAL. MINOR SANDSTONE LENSES RANGING FROM 0.1 TO 0.5 FT. ARE ENCOUNTERED FROM 2.0 TO 3.0 FT. ABOVE THE LOWER CONTACT. 44.7 TO 63.0 FT. SANDSTONE WITH INTERBEDDED CLAYSTONE: COLOR RANGES FROM GRAYISH PINK (SR 8/2) TO VERY LIGHT GRAY (N8) WITH CLAYSTONE INTERBEDS RANGING FROM PALE RED (SR 6/2) TO MODERATE RED (SR 4/6). SANDSTONE IS FINE TO MEDIUM GRAINED, SUBANGULAR TO SUBROUNDED, THINLY BEDDED, SLIGHTLY (W3) TO PREDOMINATELY MODERATELY (W5) WEATHERED, HARD (H3) TO PREDOMINATELY MODERATELY HARD (H4). MODERATELY FRACTURED (FD5), RECOVERED PREDOMINATELY IN LENGTHS FROM 0.33 TO 1.0 FOOT FROM 44.7 TO 61.3 FEET, INTENSELY FRACTURED (FD7), RECOVERED PREDOMINATELY IN LENGTHS FROM 0.1 TO 0.33 FOOT FROM 61.3 TO 63.0 FEET. CLAYSTONE INTERBEDS ENCOUNTERED FROM 53.7 TO 54.2 FT., 54.9 TO 55.4 FT., AND 58.2 TO 60.4 FT. UPPER CONTACT IS CONFORMABLE AND GRADATIONAL WHILE LOWER CONTACT IS CONFORMABLE AND SHARP. THE LOWER CONTACT IS LOCATED AT THE BASE OF A GRAVEL TO PEBBLE CONGLOMERATE FROM 61.3 TO 63.0 FT. THIS CONGLOMERATE IS CLAST SUPPORTED (S08) WITH A CLAY MATRIX. CLASTS COMPOSED OF INTENSELY (W7) WEATHERED SANDSTONE. LARGEST CLAST 0.15 FT. 63.0 TO 97.7 FT. SANDSTONE WITH MINOR INTERBEDDED CLAY: COLOR RANGES FROM VERY LIGHT GRAY (N8) TO DARK GRAY (N3). FINE TO MEDIUM GRAINED, SUBANGULAR TO SUBROUNDED, LAMINAR TO THINLY BEDDED, SLIGHTLY WEATHERED (W3), MODERATELY HARD (H4) TO HARD (H3). MODERATELY FRACTURED (FD5), RECOVERED PREDOMINATELY IN LENGTHS FROM 0.33 TO 1.0 FOOT FROM 63.0 TO 66.3 FEET, SLIGHTLY TO VERY SLIGHTLY FRACTURED (FD2). RECOVERED IN LENGTH FROM 1.0 TO MORE THAN 3 FEET FROM 66.3 TO 86.3 FEET. UPPER AND LOWER CONTACTS ARE CONFORMABLE AND SHARP. 97.7 TO 98.8 FT. SILTY CLAYSTONE: COLOR IS PALE OLIVE (10Y 6/2), MODERATELY TO THICKLY BEDDED, SLIGHTLY WEATHERED TO FRESH (W2) BUT VERY SOFT (H7). MODERATELY FRACTURED (FD5), RECOVERED PREDOMINATELY IN LENGTHS FROM 0.33 TO 1.0 FOOT FROM 96.3 TO 98.8 FEET. UPPER CONTACT IS CONFORMABLE AND SHARP WHILE LOWER CONTACT IS UNKNOWN. PROBABLE REASON FOR CORE LOSS: INTERVAL (FT.) AMOUNT INTERPRETATION 51.3 - 56.3 0.2 WASHED OUT CLAY THROUGHOUT 56.3 - 61.3 0.1 WASHED OUT CLAY THROUGHOUT 61.3 - 66.3 0.3 WASHED OUT CLAY THROUGHOUT 71.3 - 76.3 0.25 WASHED OUT CLAY THROUGHOUT 96.3 - 98.8 0.4 WASHED OUT CLAY THROUGHOUT		
						20									
						30									
						40									
						50			100	53					
									100	100					
									96	66	5			4	
						60			98	66					
										7				5	
									94	72	5				
						70			100	100			4		
									95	95					
						80			100	100			2		3
									100	100					
						90			100	98					
					100	92									
		5522.7	98.8		92	28	5	7							
			100												
COMMENTS: FA = 7-1/2 IN. FLIGHT AUGER NA = NOT APPLICABLE															

GEOLOGIC LOG OF DRILL HOLE DH-3-RPB

SHEET 1 of 1

OS

FEATURE: RIO PUERCO BRIDGE
LOCATION: MID CHANNEL OF RIO PUERCO
BEGIN: 8/17/93 FINISHED: 8/18/93
DEPTH AND ELEV. OF WATER
LEVEL AND DATE MEASURED: SEE NOTES

PROJECT: O.N.H.I.R.
COORDINATES: N. 11444.7 E. 10099.9
TOTAL DEPTH: 51.7
DEPTH TO BEDROCK: 4.0

STATE: ARIZONA
GROUND ELEVATION: 5606.96
ANGLE FROM HORIZONTAL AND BEARING: 90°
HOLE LOGGED BY: R. LUNG
REVIEWED BY:

NOTES	DEPTH	CORE RECOVERY	ROD	FRACURE DENSITY	HARDNESS	WEATHERING	LITHOLOGIC LOG	ELEVATION	USCS	PERCENT RECOVERY	PERCENT MOISTURE CONTENT	STANDARD PENETRATION	0-N-VALUE	50	GEOLOGIC DESCRIPTION
PURPOSE OF HOLE: DETERMINE FOUNDATION CONDITIONS AT PROPOSED PIER NO. 3 (STA. 27+45.3, OFFSET 10 FT. LT.). PERFORM STANDARD PENETRATION TESTING (SPTS), COLLECT SOIL SAMPLES FOR LABORATORY ANALYSIS AND DETERMINE DEPTH TO ROCK. DRILL SITE AND SET-UP: SITE LOCATED ON ORIGINAL GROUND STA. 27+45, ABOUT 20 FEET SOUTH OF THE NORTH BANK OF THE RIVER CHANNEL. DRILL EQUIPMENT: CME 1250 TRACK MOUNTED EARTH AUGER WITH AUTOMATIC PENETRATION TEST HAMMER, 5 FT. LONG 7-1/2 INCH HOLLOW-STEM FLIGHT AUGERS; 9-INCH CARBIDE TIPPED BIT; 1-3/8 IN. I.D. STANDARD SPLIT-SPOON SAMPLER; 5 FT. LONG HQ CORE BARREL WITH SPLIT TUBE INNER BARREL; SURFACE SET, DIAMOND BIT; AND HQ RODS. WATER TESTING EQUIPMENT; NO WATER TESTS REQUIRED. DRILLER: J. HAYDEN. DRILL FLUID: NO DRILL FLUID FROM 0.0 TO 20.2 FT., USED WATER AS DRILL FLUID FROM 20.2 TO 51.7 FT. DRILL FLUID RETURN: INTERVAL (FT.) % RETURN 0.0 - 20.2 FA-NA 20.2 - 51.7 90 DRILL FLUID RETURN COLOR: INTERVAL (FT.) COLOR 0.0 - 20.2 FA-NA 20.2 - 51.7 REDDISH BROWN DRILLING METHODS: INTERVAL METHOD/ (FT.) BARREL SIZE 0.0 - 52.5 7-1/2 IN. FA; SPTS AT 5 FT. INTERVALS 20.2 - 51.7 HQ CORE DRILLING CONDITIONS AND DRILLER'S COMMENTS: 0.0 - 4.0 AUGERED SMOOTH; 4.0 TO 19.0 FT. AUGERED PREDOMINATELY SMOOTH; AT 19.0 FT. AUGERED VERY HARD, PROBABLY FIRST SIGNIFICANT SANDSTONE LENSE AT 20.2 FT. AUGER REFUSAL. CASING RECORD (FA): CASING SIZE DEPTH DRILLED 7-1/2 IN. 0-20.2 0-20.2 7-1/2 IN. 20.2 20.2-51.7 DEPTH TO WATER DURING DRILLING; NOT DETERMINED. HOLE COMPLETION: BACKFILLED WITH EXCAVATED MATERIAL. REASON FOR HOLE TERMINATION: HOLE TERMINATED AT THE DISCRETION OFFICE OF HAWAII HONOLULU. RELOCATION ON SITE REPRESENTATIVE (O.N.H.I.R.) ESTIMATED DRILLING TIME: 10-HOUR SHIFTS SET-UP AND DRILLING 2	0.0	100					5598.6								0.0 TO 4.0 FT. QUATERNARY ALLUVIUM (Tc): POORLY GRADED, SUBANGULAR TO SUBROUND SAND WITH MINOR AMOUNTS OF FINE GRAVEL. DESCRIPTIONS BASED ON VISUAL ANALYSIS OF CUTTINGS IN AUGERED INTERVALS. 4.0 TO 51.7 FT. TRIASSIC CHINLE FORMATION (Tc): 4.0 TO 20.4 FT. SANDY CLAYSTONE: DESCRIPTION BASED ON VISUAL ANALYSIS OF DRILLING CONDITIONS AND CUTTING IN AUGERED INTERVALS. COLOR RANGES FROM PALE RED (SR 6/2) TO MODERATE RED (SR 4/6). SANDY CLAYSTONE IS THINLY TO MODERATELY BEDDED AND INTENSELY (W7) TO MODERATELY (W5) WEATHERED WITH DEPTH (APPROXIMATELY 10 TO 12 FEET), VERY SOFT (H7) BREAKING WITH LIGHT MANUAL PRESSURE. THE UPPER CONTACT IS UNCONFORMABLE AND SHARP WHILE LOWER CONTACT IS CONFORMABLE AND GRADATIONAL. MINOR SANDSTONE LENSES RANGING FROM 0.1 TO 0.5 FT. ARE ENCOUNTERED FROM 2.0 TO 5.0 FT. ABOVE THE LOWER CONTACT. 4.0 TO 5.8 FT. SANDY CLAYSTONE: DESCRIPTION BASED ON VISUAL ANALYSIS OF DRILLING CONDITIONS AND CUTTINGS. 5.8 TO 6.8 FT. CLAYSTONE VISUALLY CLASSIFIED AS A LEAN CLAY WITH SAND; (CL)s; ABOUT 80% FINES WITH MEDIUM PLASTICITY, SLOW DILATANCY, HIGH TOUGHNESS, HIGH DRY STRENGTH, ABOUT 20% FINE, SUBANGULAR TO SUBROUND SAND, MAX. SIZE FINE SAND; MODERATELY RED; WEAK REACTION WITH HCl. LAB DATA: 45% SAND; 55% FINES; 0% GRAVEL, PI 17%; LL 35%; MC 12.8%; LEAN CLAY TO CLAYEY SAND CL/SC. 6.8 TO 10.8 FT. SANDY CLAYSTONE: DESCRIPTION BASED ON VISUAL ANALYSIS OF DRILLING CONDITIONS AND CUTTINGS. 10.8 TO 11.8 FT. CLAYSTONE VISUALLY CLASSIFIED AS A LEAN CLAY; (CL); ABOUT 95% FINES WITH MEDIUM PLASTICITY, MEDIUM TOUGHNESS, SLOW DILATANCY, HIGH DRY STRENGTH, ABOUT 5% FINE, SUBANGULAR TO SUBROUND SAND, MAX. SIZE FINE SAND; MODERATELY RED; WEAK REACTION TO HCl. LAB DATA: 45% SAND; 55% FINES; 0% GRAVEL, PI 14%; LL 35%; MC 15.9%; LEAN CLAY TO CLAYEY SAND CL/SC. 42.2 TO 51.7 FT. SANDSTONE WITH MINOR INTERBEDDED CLAY: COLOR RANGES FROM VERY LIGHT GRAY (N8) TO DARK GRAY (N3). FINE TO MEDIUM GRAINED, SUBANGULAR TO SUBROUND, LAMINAR TO THINLY BEDDED, SLIGHTLY WEATHERED (W3) AND HARD (H3). SLIGHTLY TO VERY SLIGHTLY FRACTURED (F02); RECOVERED IN LENGTHS FROM 1.0 TO MORE THAN 3 FEET FROM 42.2 TO 51.7 FEET. UPPER CONTACT IS CONFORMABLE AND SHARP. LOWER CONTACT IS UNKNOWN. PROBABLE REASON FOR CORE LOSS: INTERVAL (FT.) AMOUNT INTERPRETATION 22.2 - 26.7 0.15 WASHED OUT CLAY THROUGHOUT 36.7 - 39.1 0.30 WASHED OUT CLAY THROUGHOUT
COMMENTS: FA = 7-1/2 IN. FLIGHT AUGER IS = INSUFFICIENT SAMPLE LL = LIQUID LIMIT PI = PLASTICITY INDEX NA = NOT APPLICABLE MC = MOISTURE CONTENT															PAGE 1 OF 1

DRILL HOLE DH-3-RPB

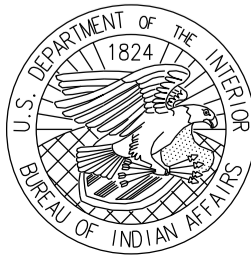
NOTE: Subsurface investigation information has been obtained for designer use only. The Government shall not be responsible for any misinterpretation or assumptions made by the Contractor based on the subsurface investigation information presented on these plans.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS

NAVAJO REGIONAL OFFICE – DIVISION OF TRANSPORTATION

RIO PUERCO BRIDGE
BORING LOGS - SHEET 1 OF 2

Designed by: BUREAU OF RECLAMATION		
Drawn by: BOR, rsh, dc Date: 01/17/14		
Revised by: -- Date: --		
File Name: 07_BIArdrillhole1		



K:\CURRENT PROJECTS\N00\N2007\1-1_ Navajo Bridge_032494\Design_BIA_2001-02-28\CAD 073002\Bridge_Plan Drawings PRELIM 051109\08_BIA\drillhole2_2014-01-17.dgn

NOTE: Subsurface investigation information has been obtained for designer use only. The Government shall not be responsible for any misinterpretation or assumptions made by the Contractor based on the subsurface investigation information presented on these plans.

612

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS

NAVAJO REGIONAL OFFICE – DIVISION OF TRANSPORTATION

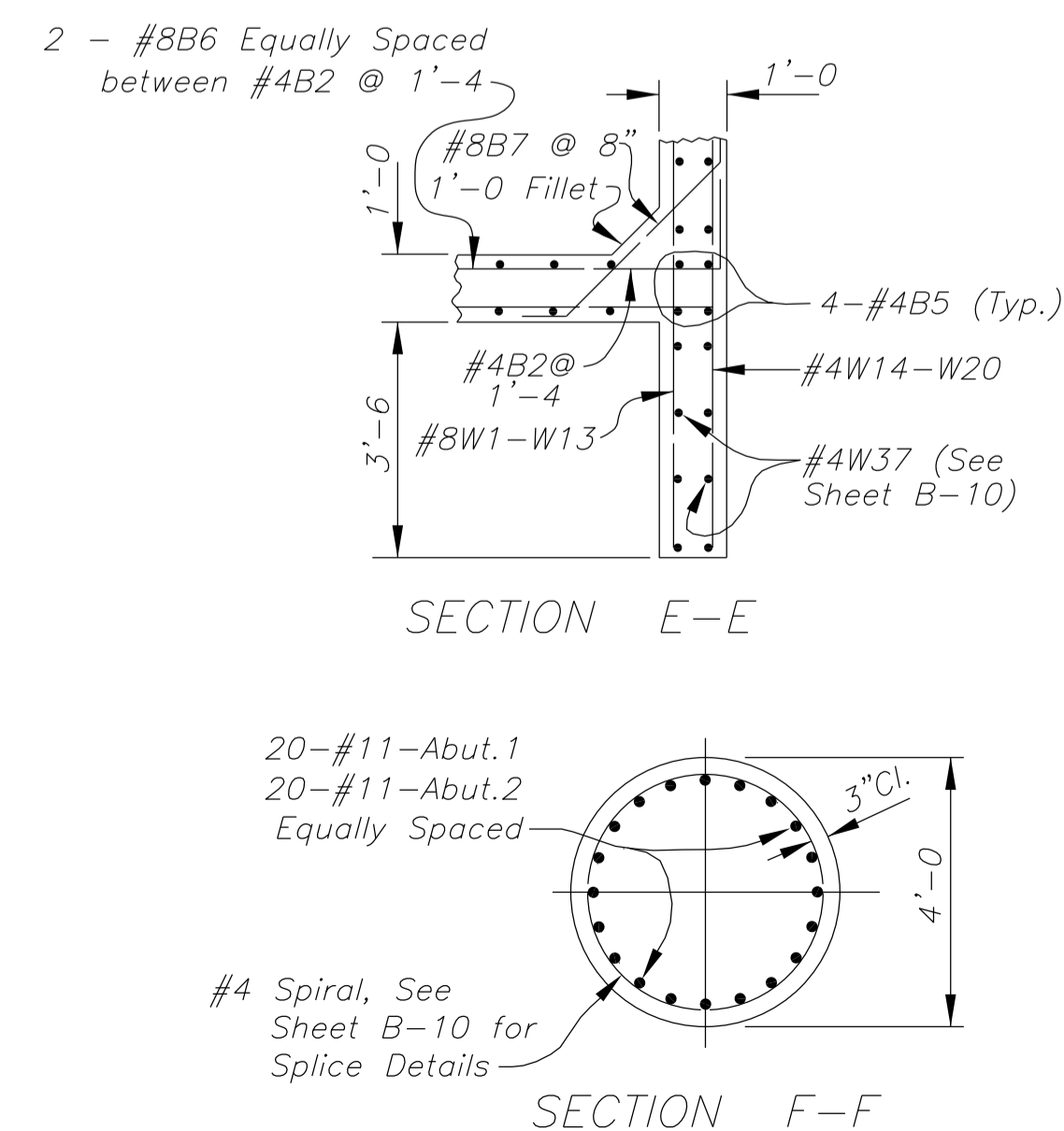
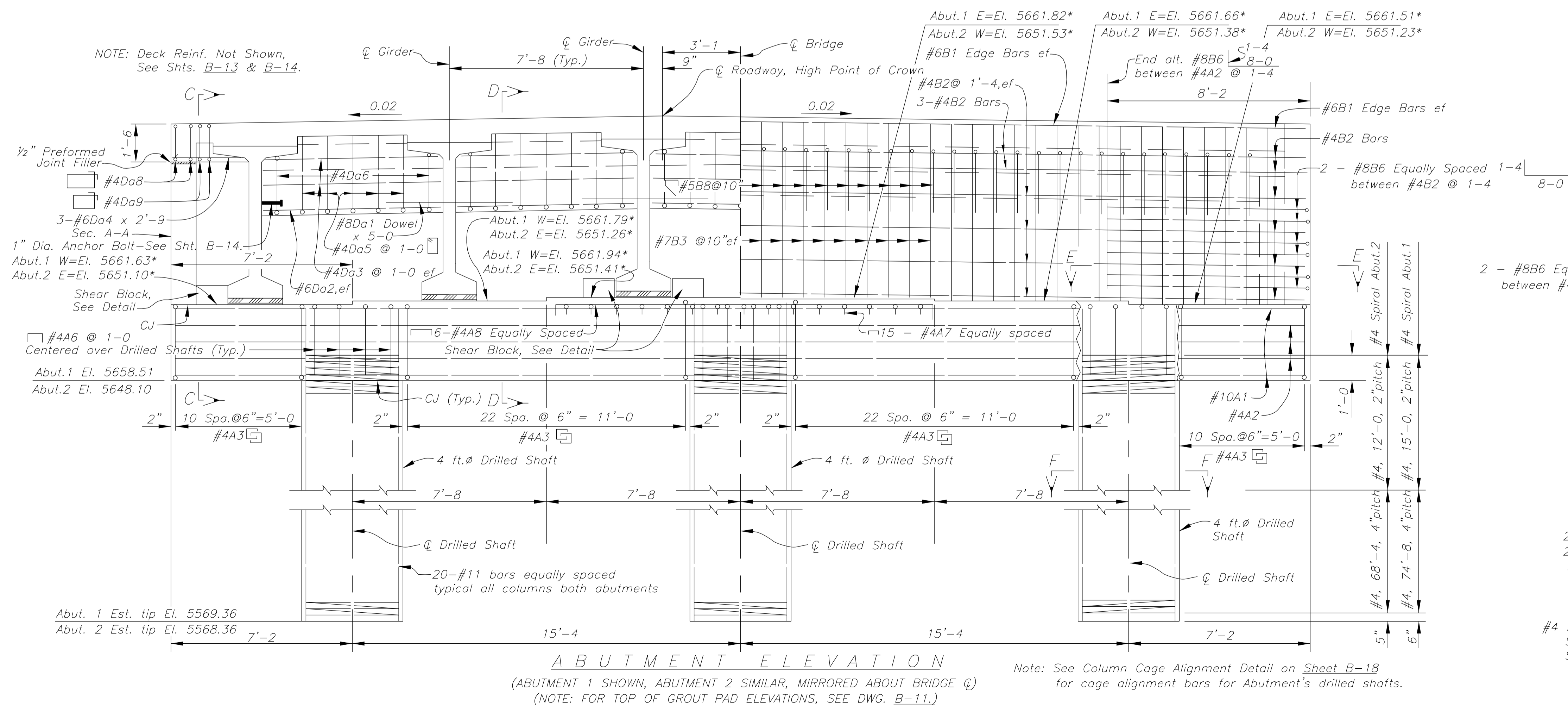
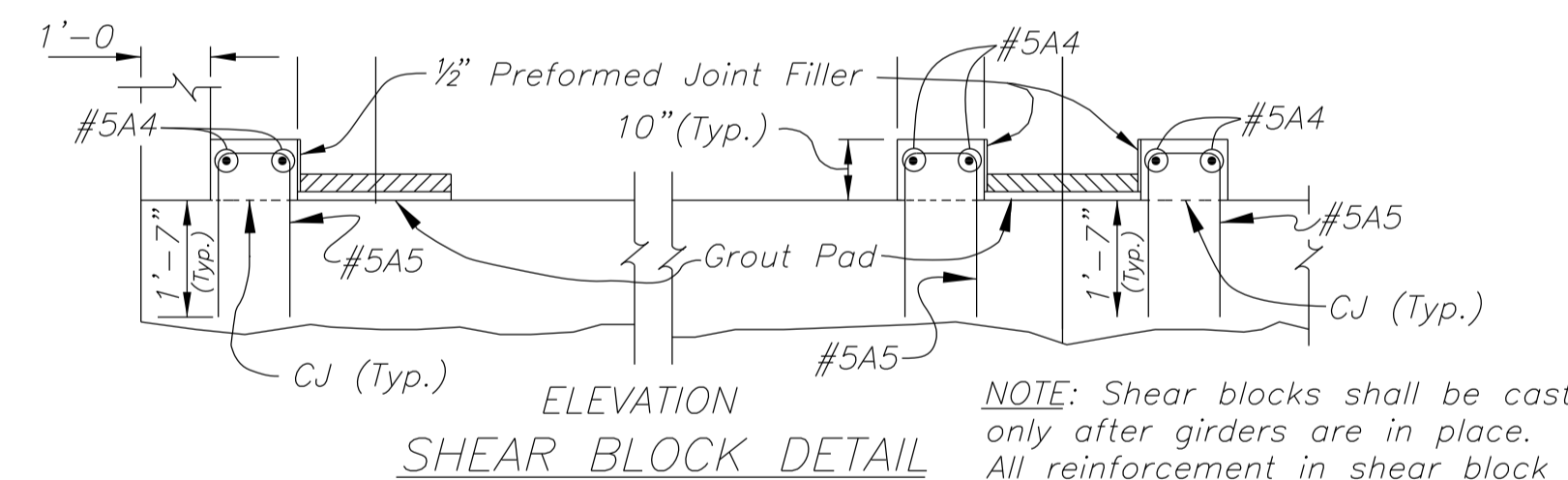
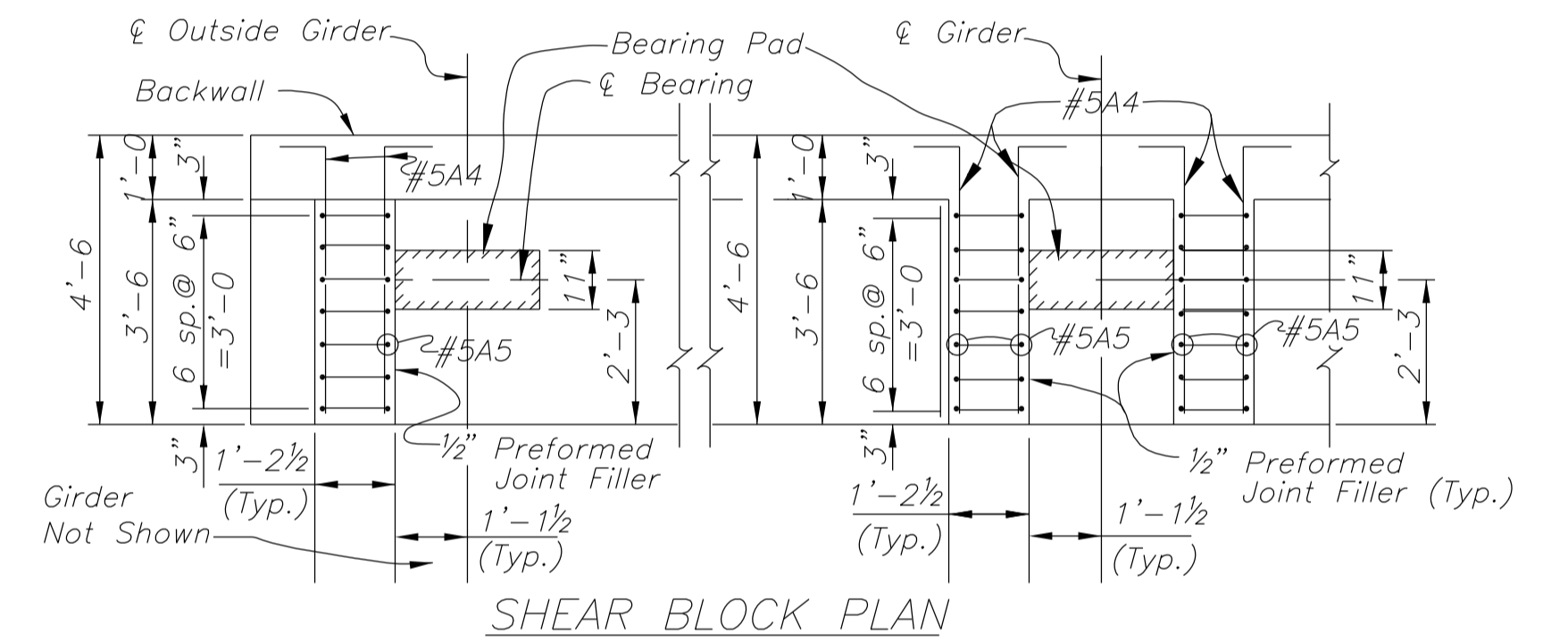
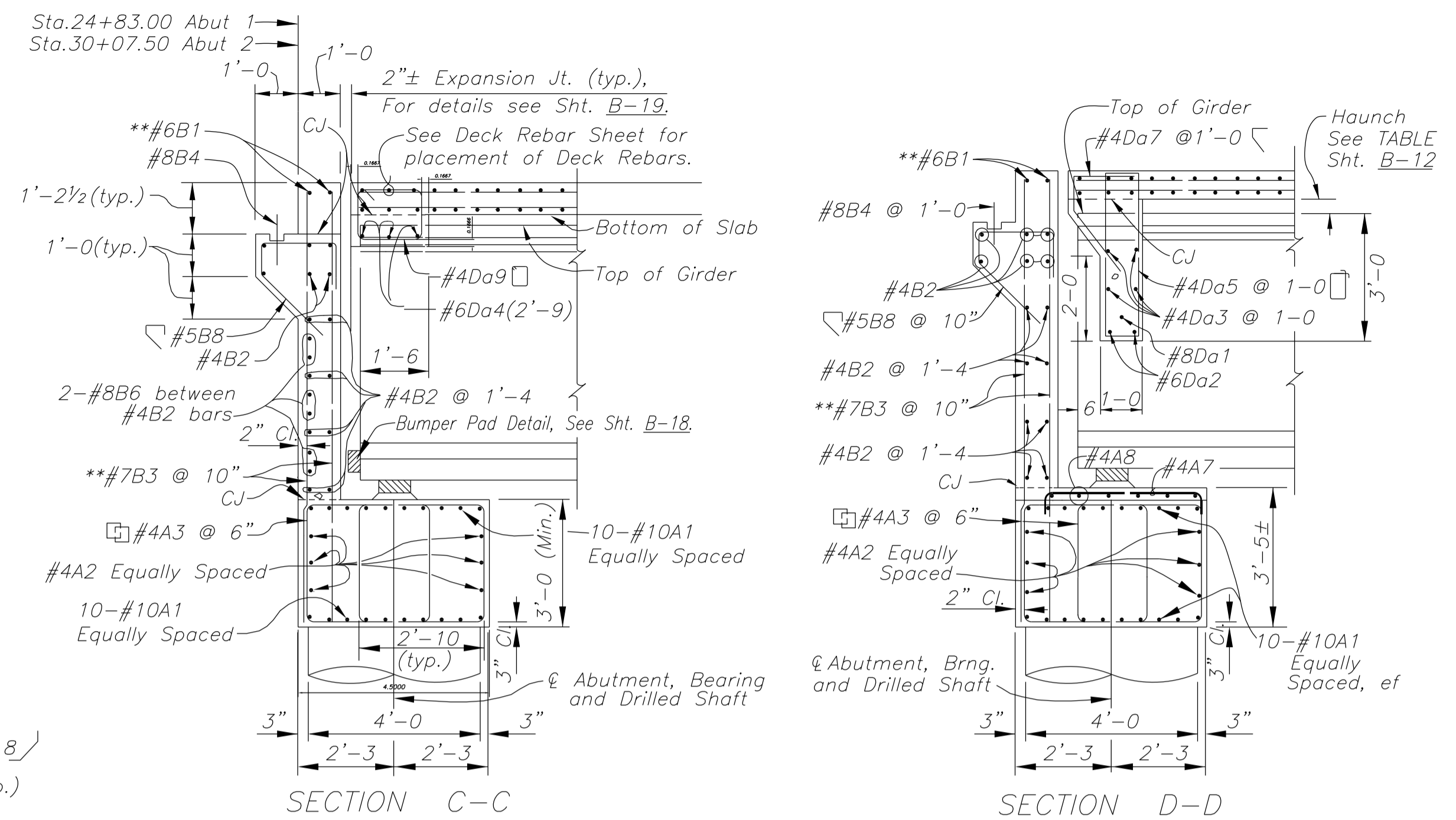
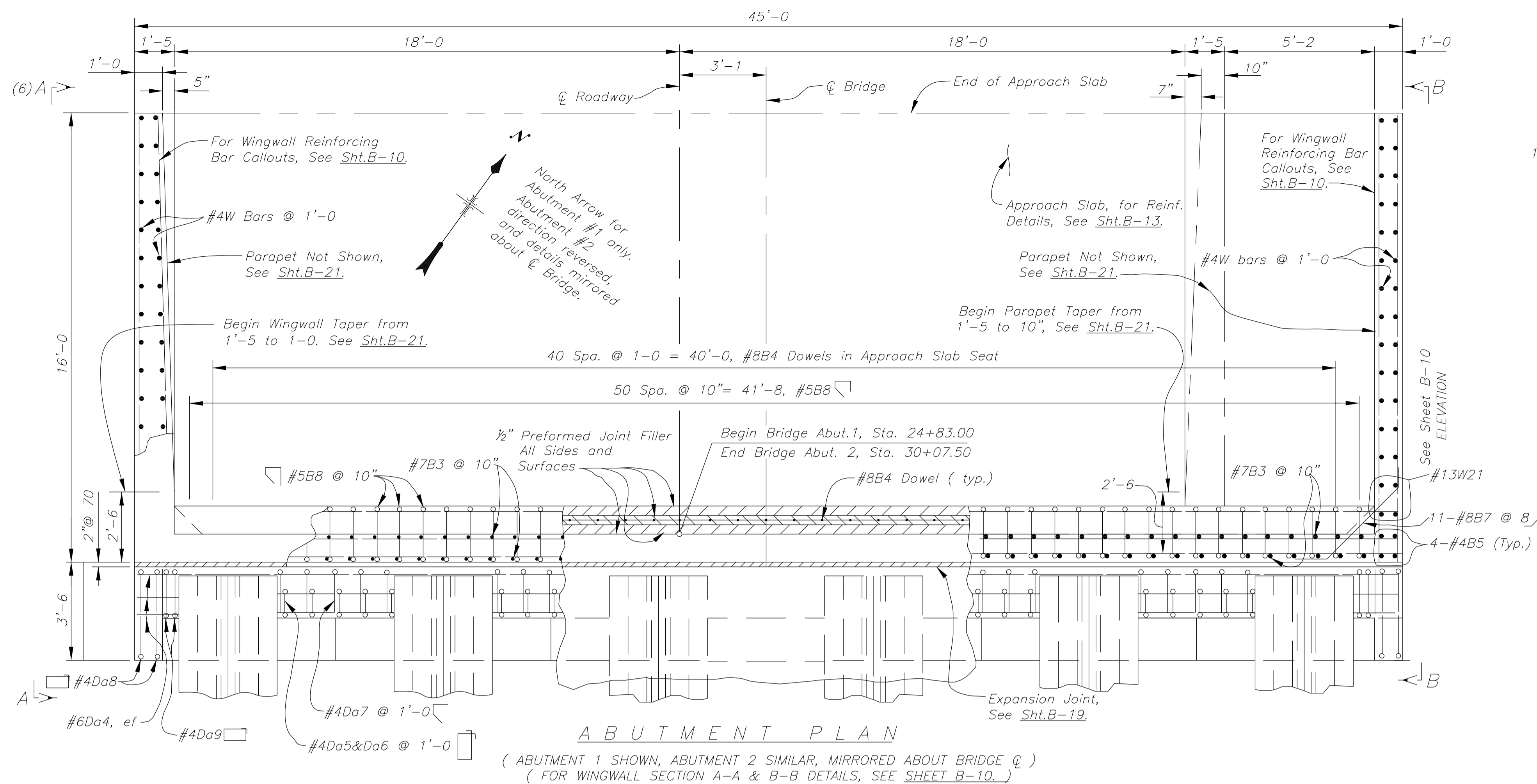
RIO PUERCO BRIDGE
BORING LOGS - SHEET 2 OF 2

Designed by: BUREAU OF RECLAMATION

Drawn by: BOR, rsh, dc Date: 01/

Revised by: - - Date: - -

REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	TOTAL SHEETS
Navajo	AZ	Navajo	N2007	N2007(1-1)1,2&4	B-9	63



NOTE

* W = West Side = Downstream Side of Abutment 1 and 2.
* E = East Side = Upstream Side Abutment 1 and 2.
** Epoxy Coated Reinforcing bars

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NAVAJO REGIONAL OFFICE - DIVISION OF TRANSPORTATION

RIO PUERCO BRIDGE
ABUTMENT 1 AND ABUTMENT 2
DETAILS, SHEET 1

Designed by: BUREAU OF RECLAMATION

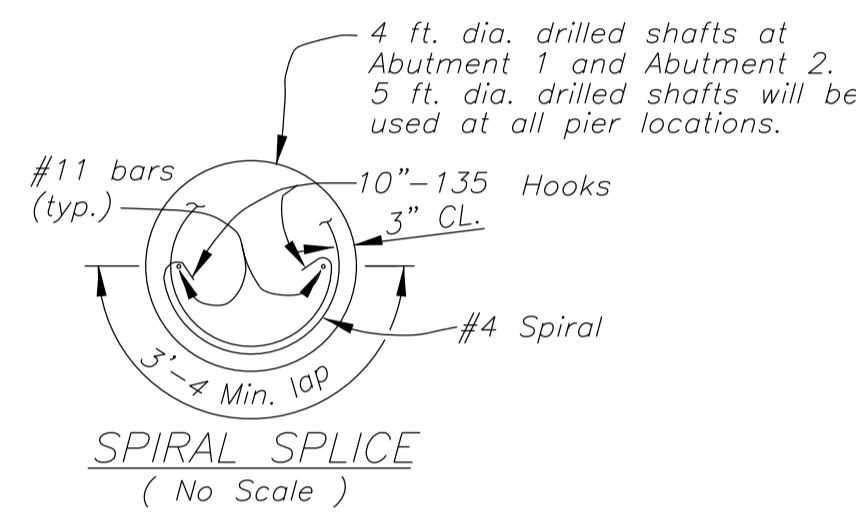
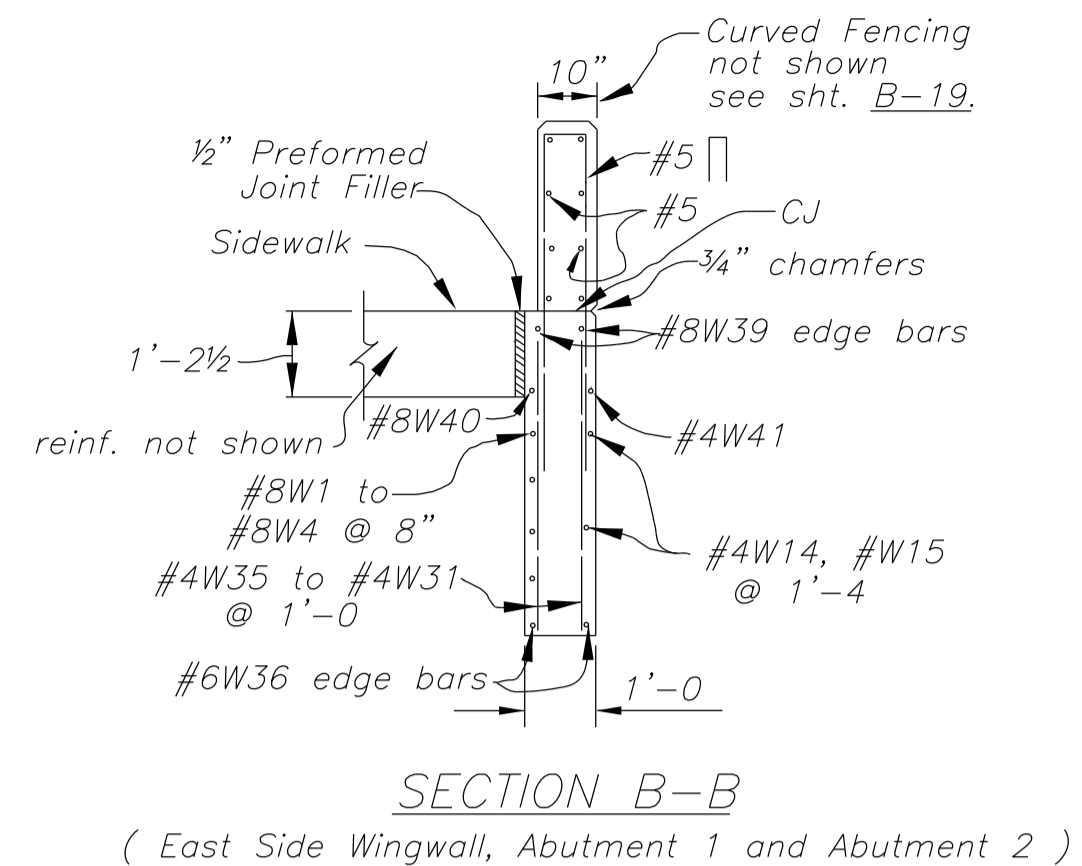
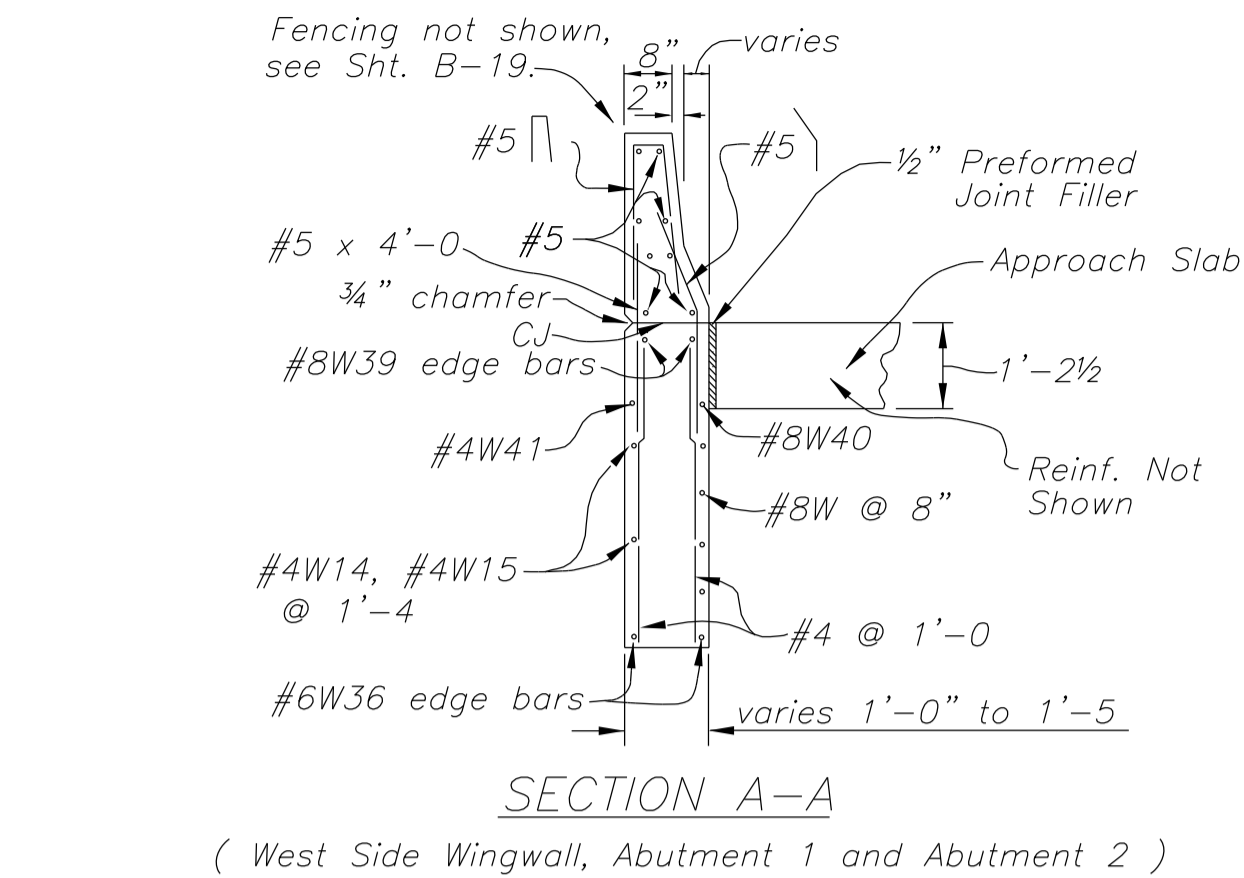
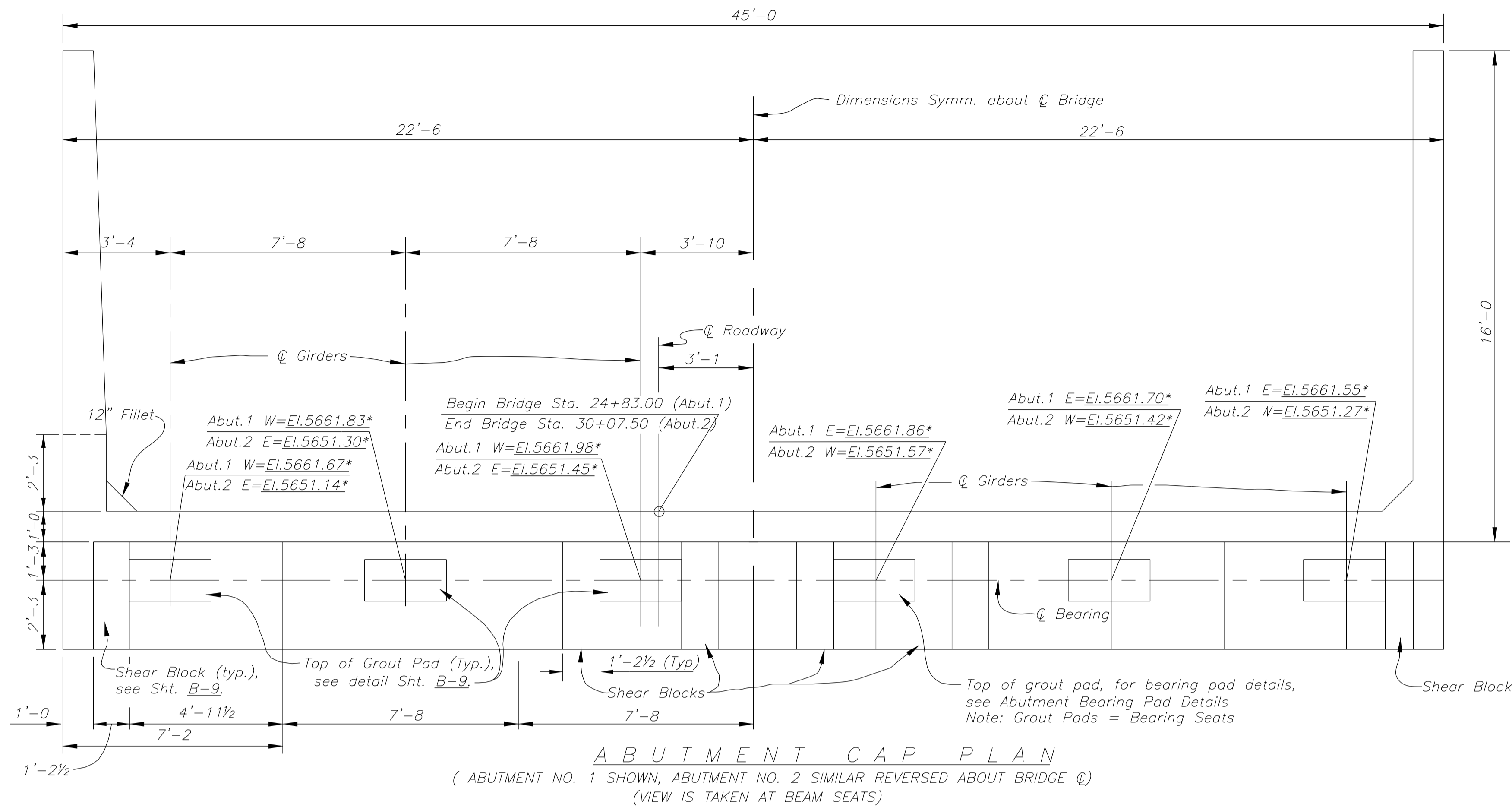
Drawn by: BOR, dc, rsh Date: 01/17/14

Revised by:

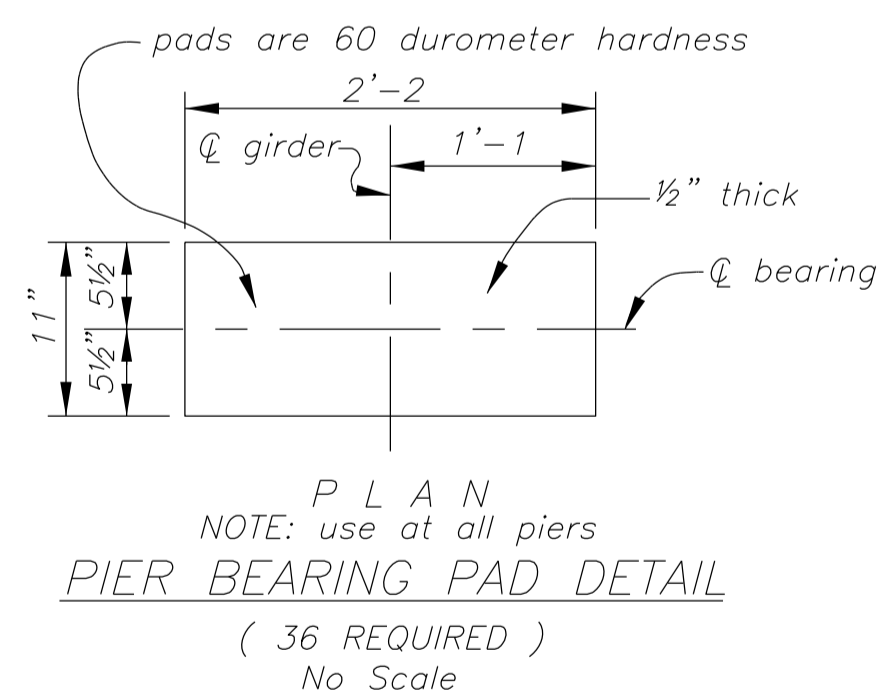
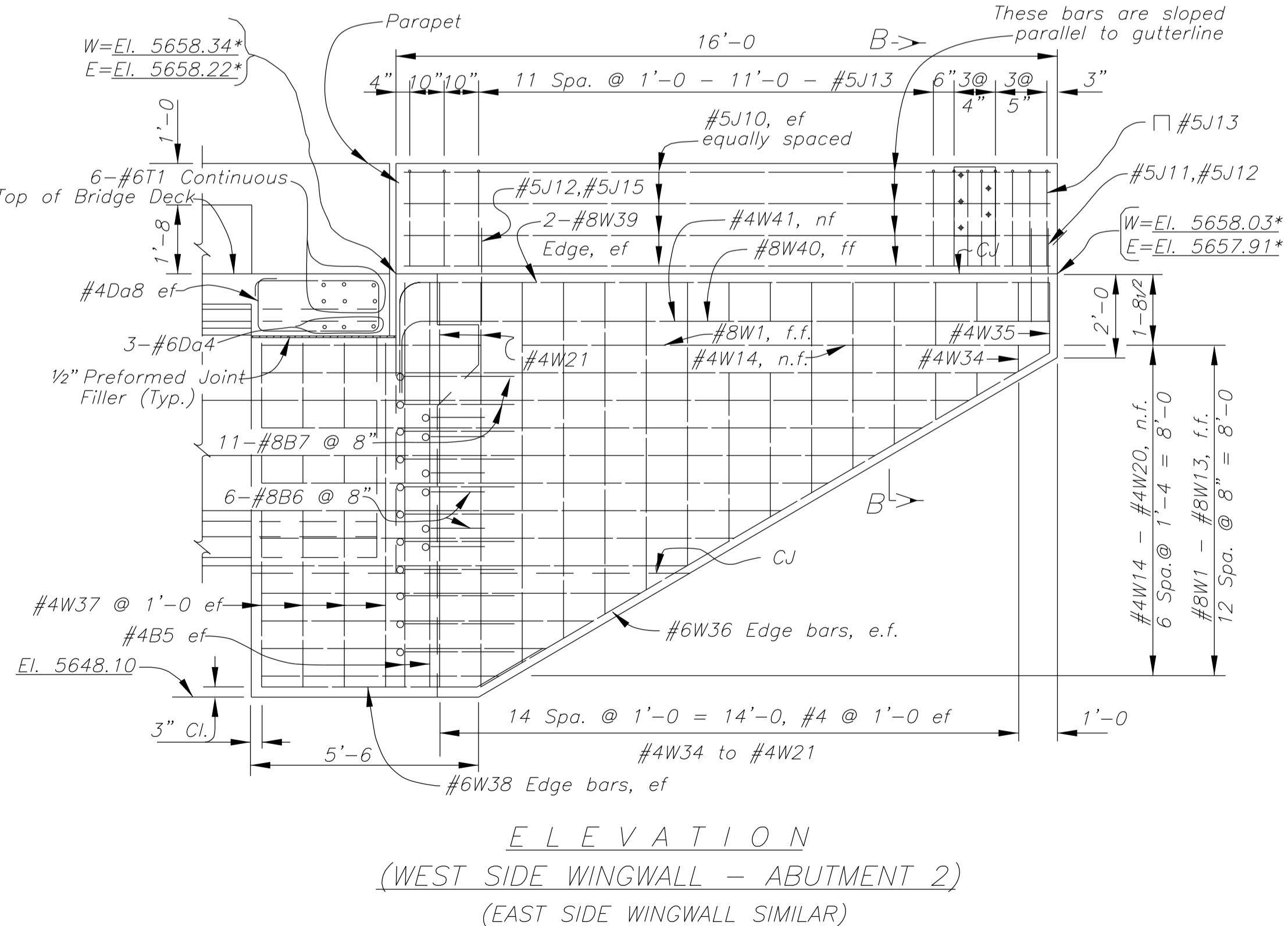
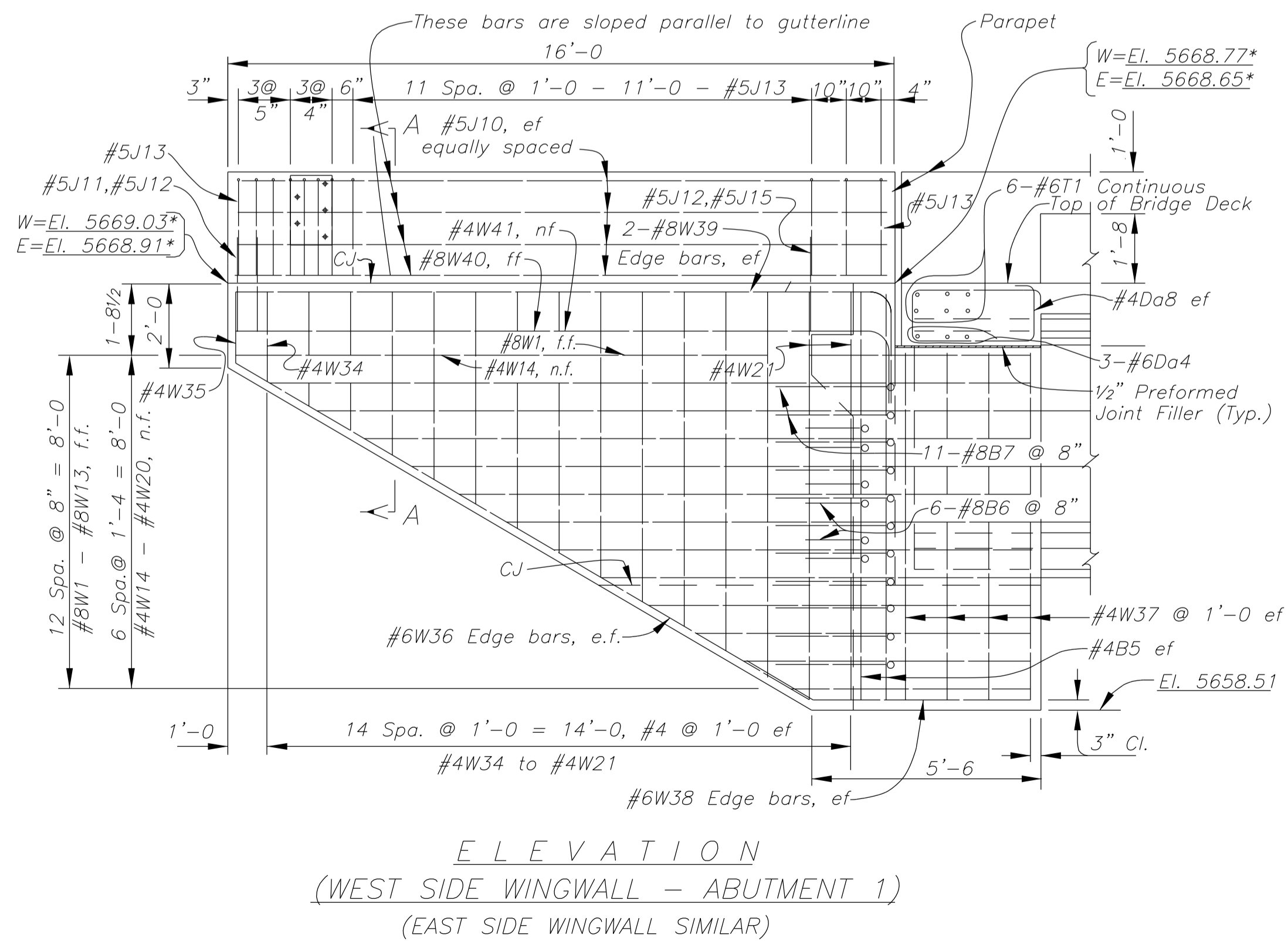
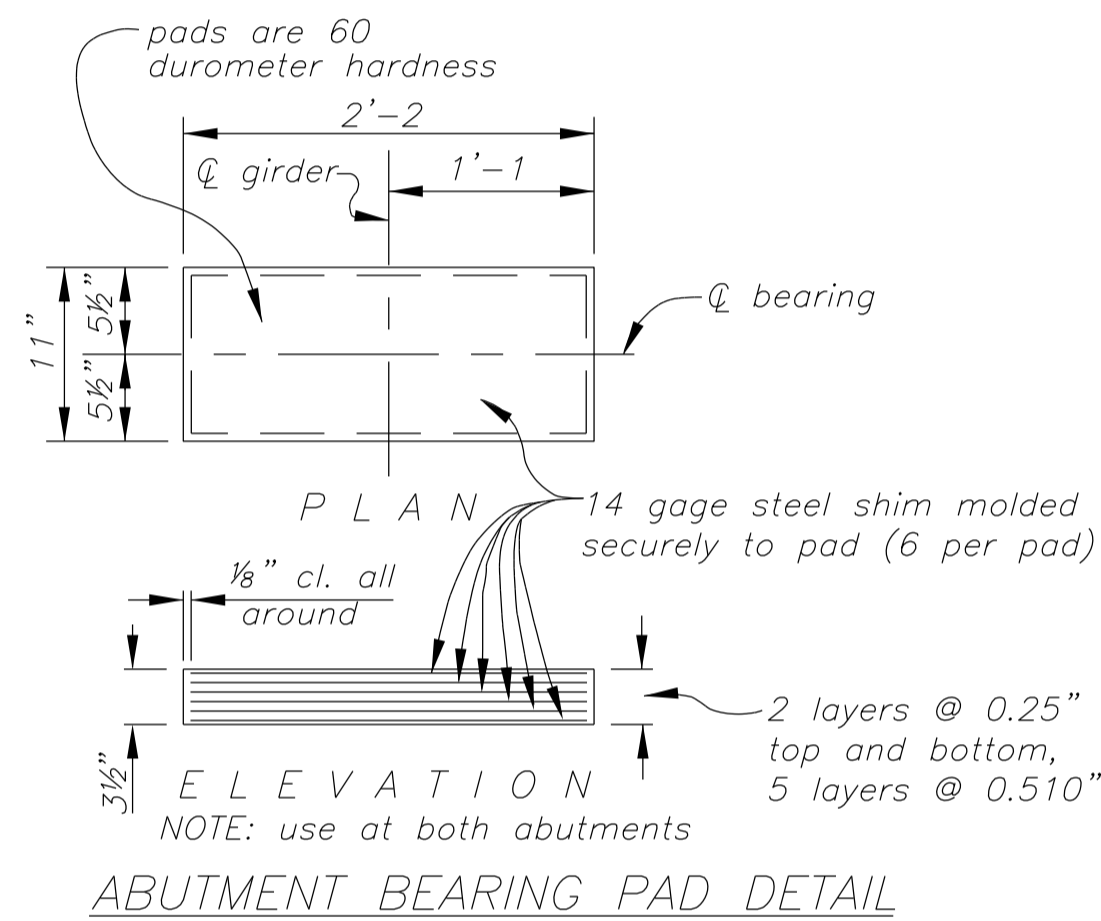
Date:



REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	TOTAL SHEETS
Navajo	AZ	Navajo	N2007	N2007(1-1)1,2&4	B-10	63



NOTE: Spiral reinf. shall conform to AASHTO M31, Grade 60 ($\frac{1}{2}$ " ϕ) or AASHTO M32 (W20 smooth). Splices shall be as detailed. Hooks may be field bent and shall go around vert. #11 bars as shown. Add $\frac{1}{2}$ turns of spiral and 135° hook with 10" tail at top and bottom of spiral length.



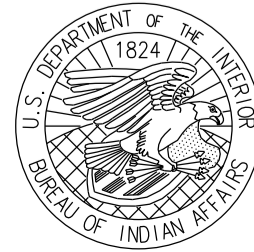
N O T E

* W = West Side = Downstream side of abutment 1 and 2
* E = East Side = Upstream side of abutment 1 and 2

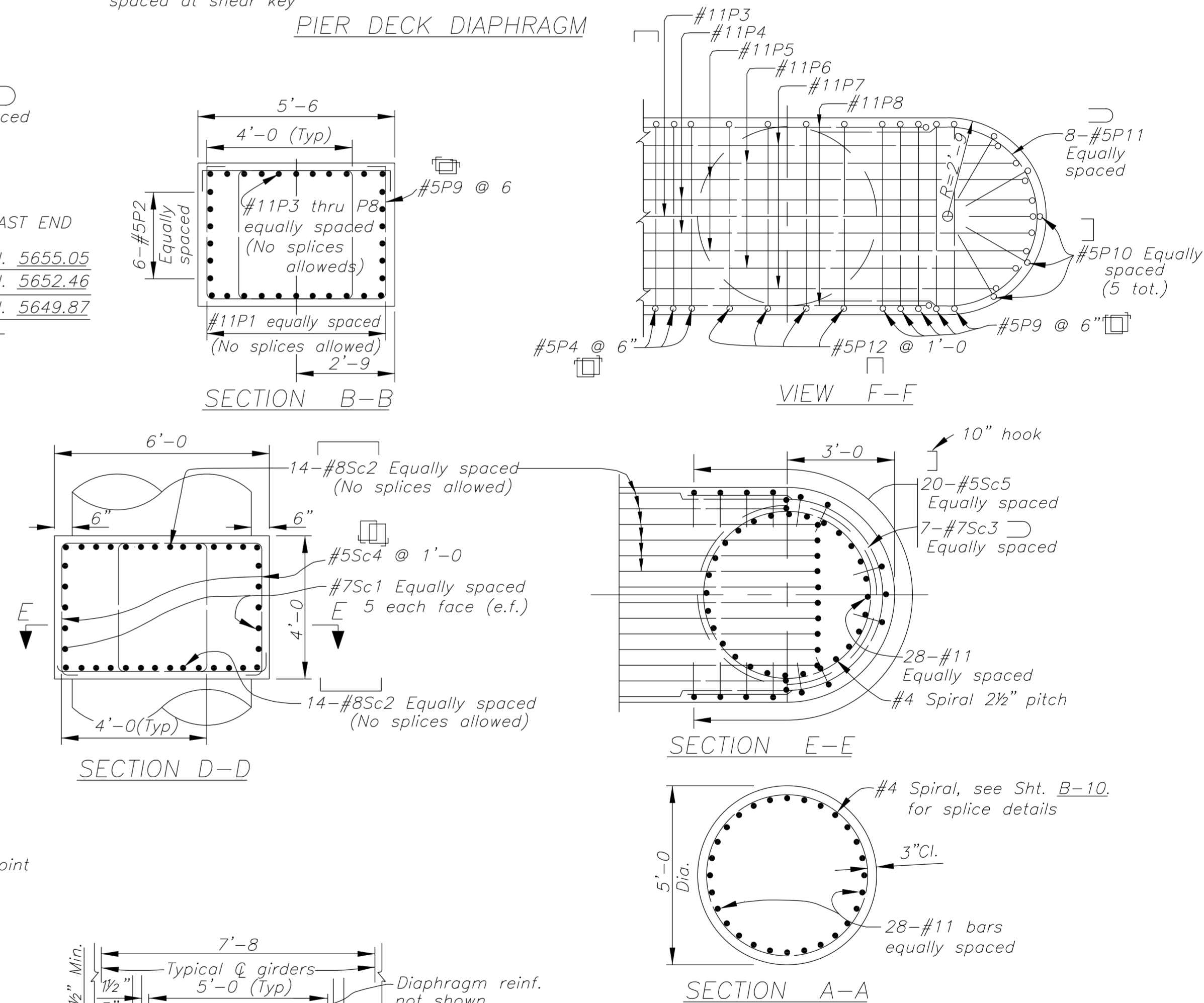
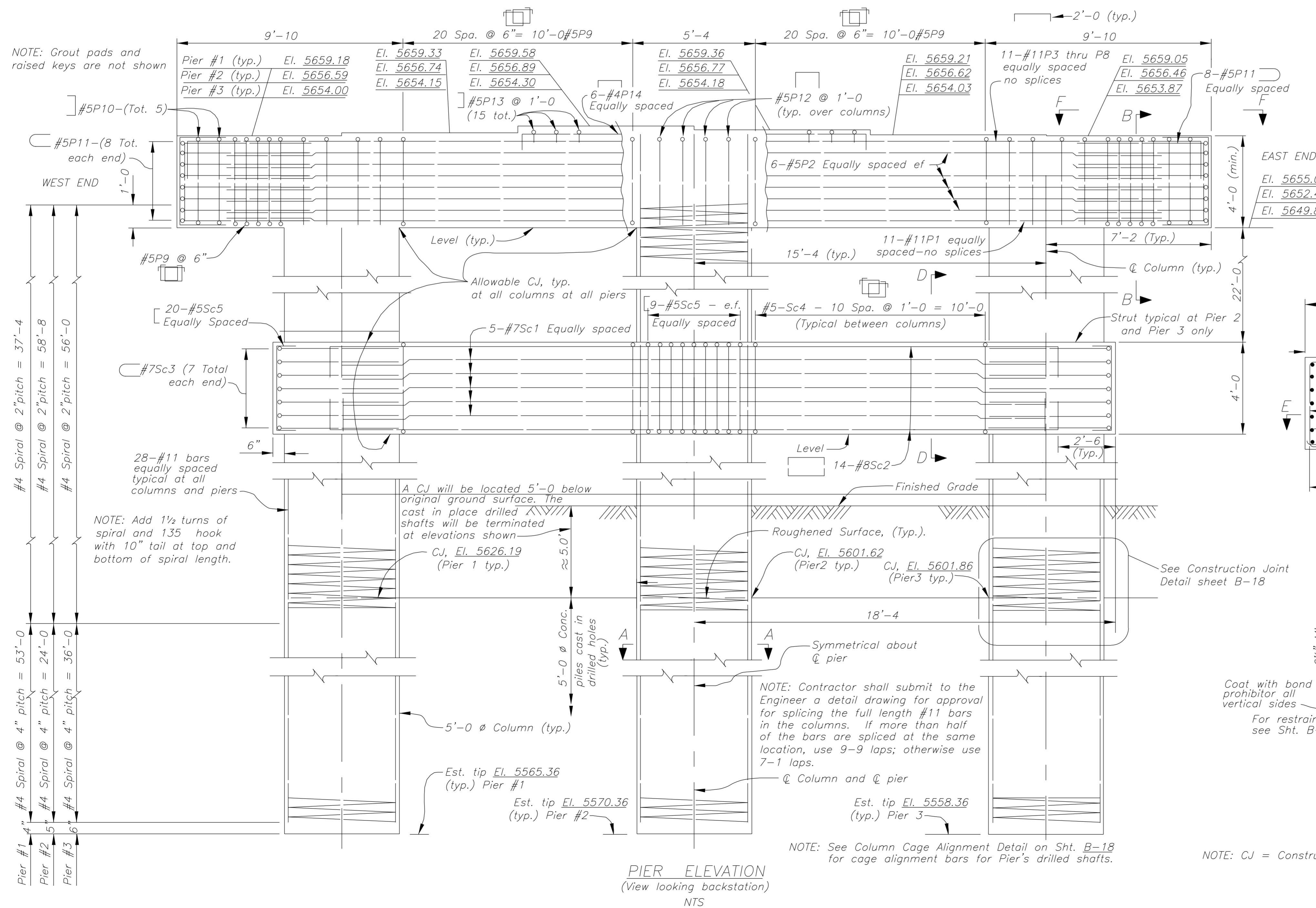
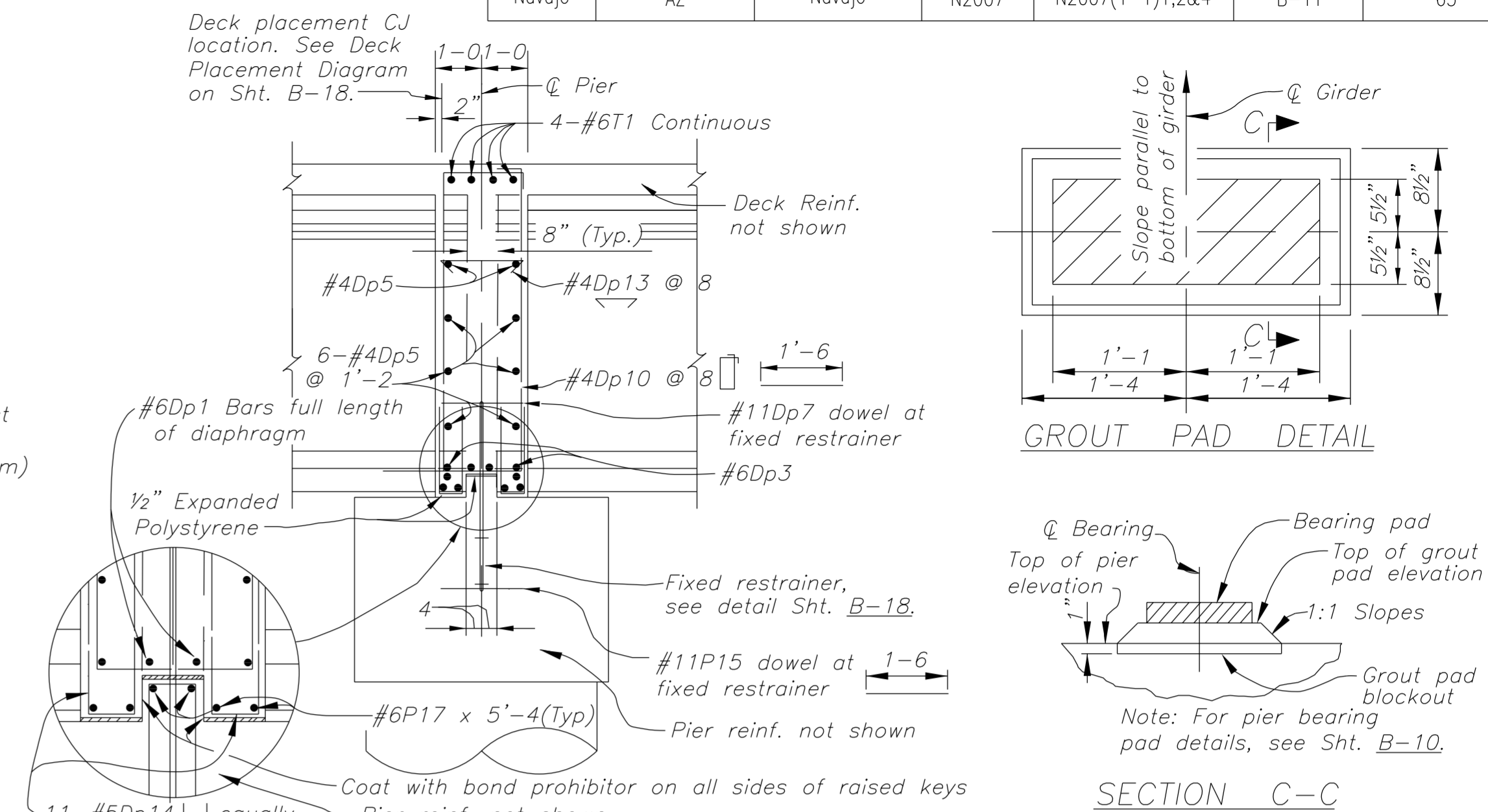
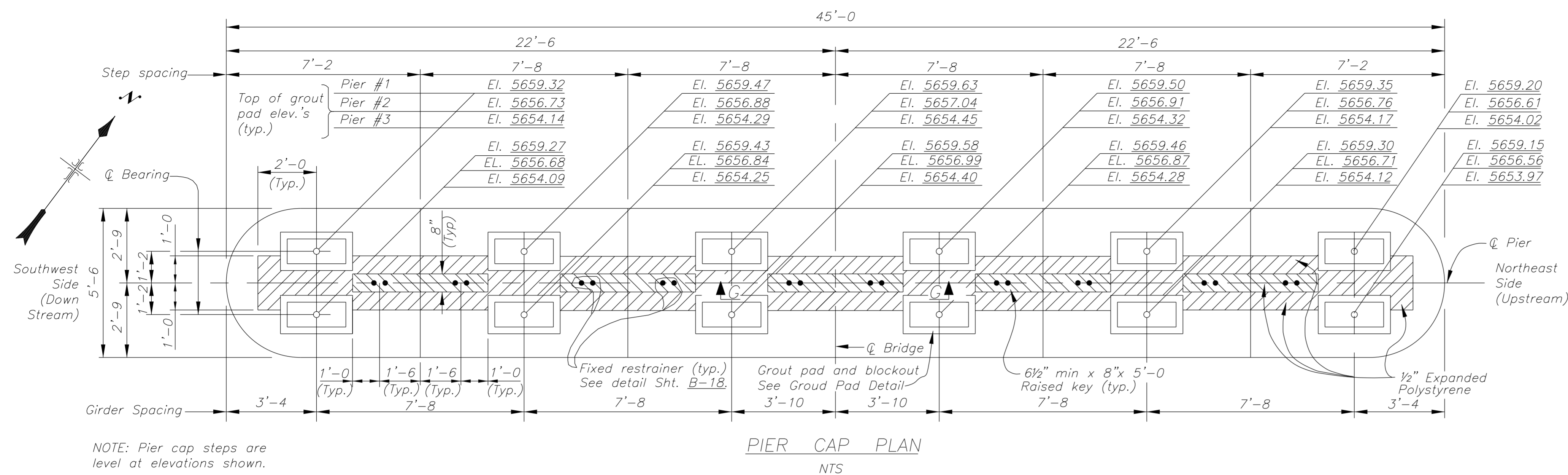
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NAVAJO REGIONAL OFFICE - DIVISION OF TRANSPORTATION

RIO PUERCO BRIDGE
ABUTMENT 1 AND ABUTMENT 2
DETAILS, SHEET 2

Designed by: BUREAU OF RECLAMATION	
Drawn by: BOR, dc, rsh	Date: 01/17/14
Revised by: - -	Date: - -
File Name: 10_BIAwing	



REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	TOTAL SHEETS
Navajo	AZ	Navajo	N2007	N2007(1-1)1,2&4	B-11	63



UNITED STATES
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NAVAJO REGIONAL OFFICE – DIVISION OF TRANSPORTATION

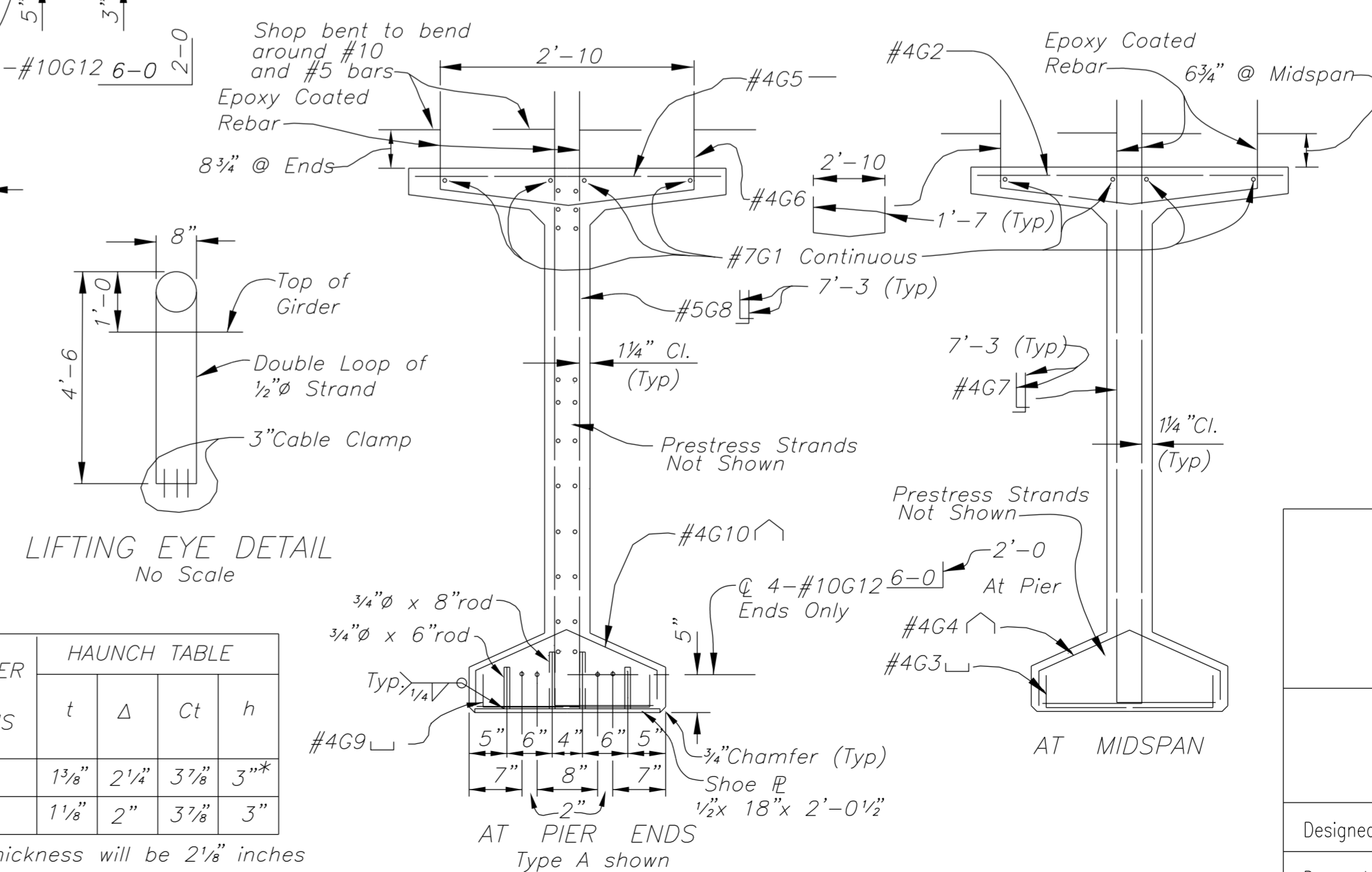
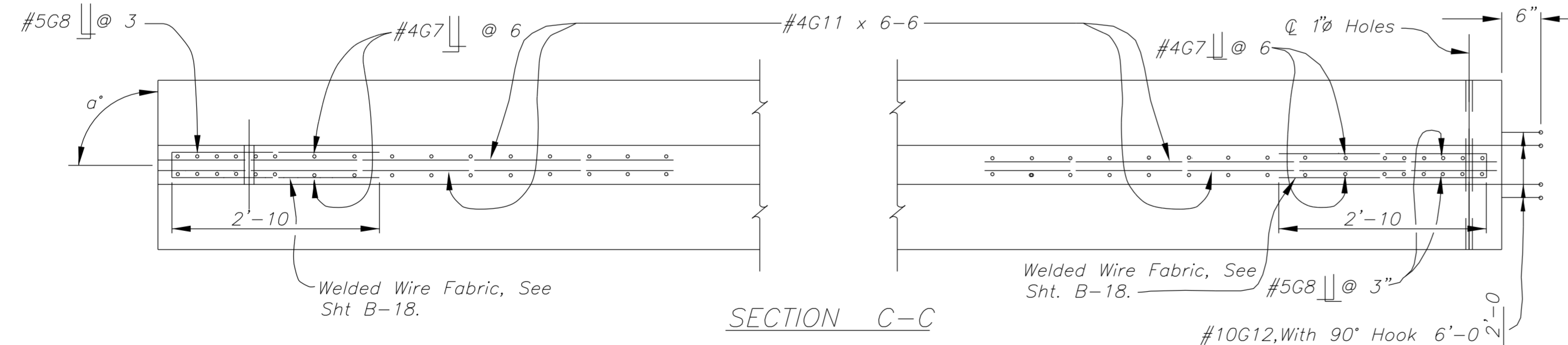
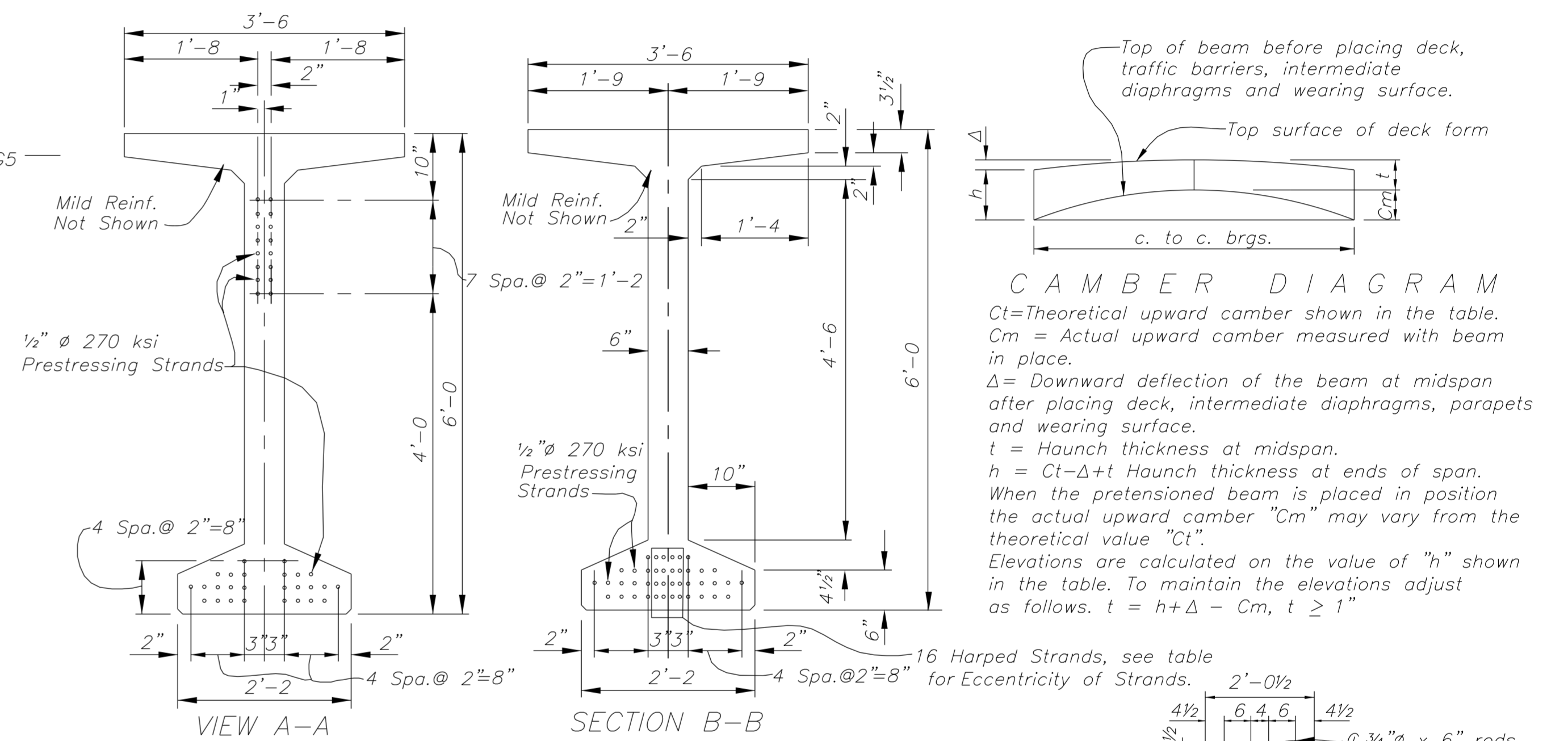
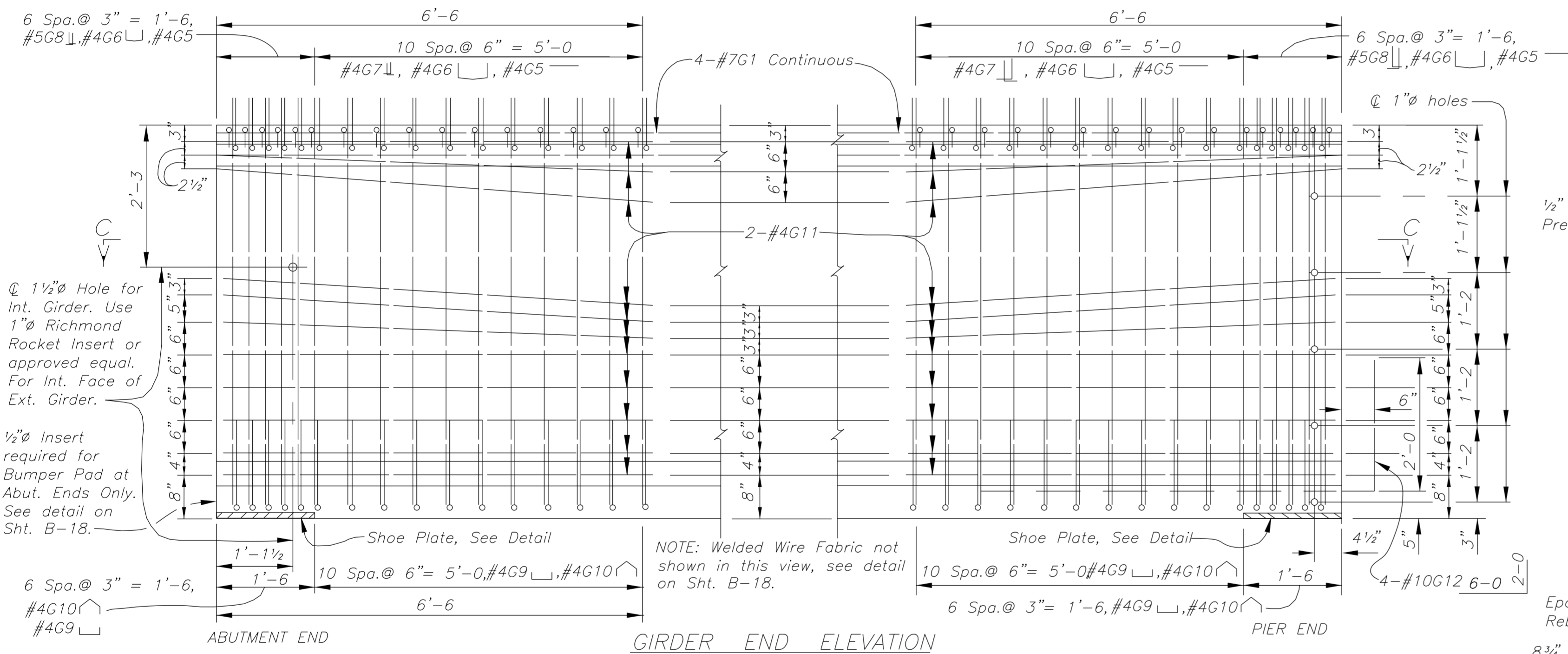
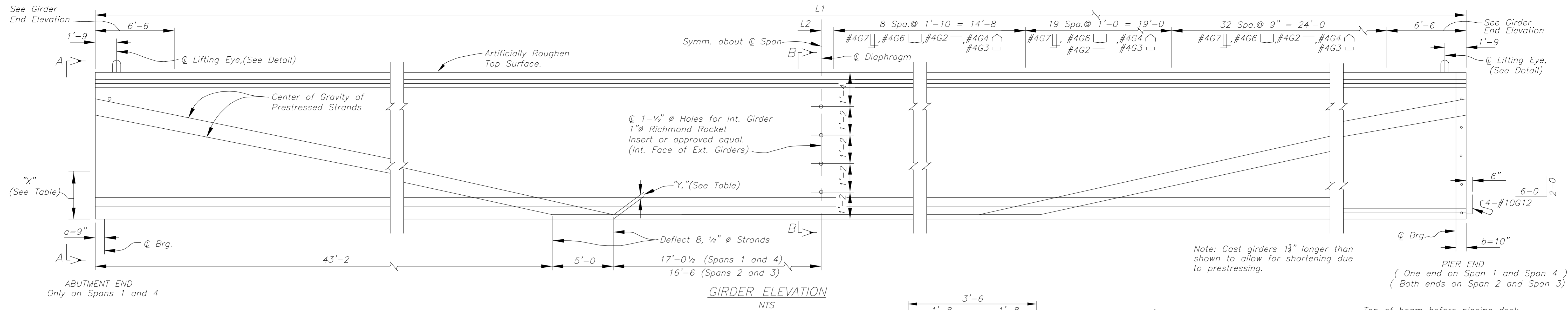
RIO PUERCO BRIDGE
PIER 1 , PIER 2 AND PIER 3
DETAILS

Designed by: BUREAU OF RECLAMATION	
Drawn by: BOR, dc, rsh	Date: 01/17/14
Revised by: - -	Date: - -
File Name: 11_BIApier	



K:\CURRENT PROJECTS\W00\W2007(1-1)_ Navajo Bridge_032494\Design_BIA_2001-02-28\CAD 073002\Bridge_Plan Drawings PRELIM 051109\11_BIApier_2014-01-17.dgn

REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	TOTAL SHEETS
Navajo	AZ	Navajo	N2007	N2007(1-1)1,2&4	B-12	63



BRIDGE	SPANS	α°	L_1	L_2	a AT ABUTMENTS	b AT PIERS	$1/2" \phi$ 270KSI PRESTRESSED STRANDS			CONCRETE		NUMBER OF BEAMS	HAUNCH TABLE			
							TOTAL NUMBER	y-INCHES	x-INCHES	MIN. COMP. 28 DAY STRENGTH f'_c (psi)	RELEASE STRENGTH f_{ci} (psi)		t	Δ	Ct	h
								C.G. of Pre- stressing strands	C.G. of Pre- stressing strands							
RIO PUERCO BRIDGE	1 and 4	90° 00'00"	130'-5"	1'-0'1/2"	9"	10"	42	4.26"	23.52"	6,000	5,400	12	1 3/8"	2'1/4"	3' 3/8"	3**
RIO PUERCO BRIDGE	2 and 3	90° 00'00"	129'-4"	6"	—	10"	42	4.26"	23.52"	6,000	5,400	12	1 1/8"	2"	3' 3/8"	3"

*This haunch thickness will be 2' $\frac{1}{8}$ " inches at abutment 1 on span 1 only.

TYPICAL GIRDER SECTIONS

UNITED STATES
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BUREAU OF INDIAN AFFAIRS

NAVAJO REGIONAL OFFICE – DIVISION OF TRANSPORTATION

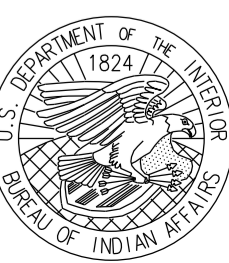
RIO PUERCO BRIDGE
PRESTRESSED GIRDER DETAILS
TYPE BT-72

Designed by: BUREAU OF RECLAMATION

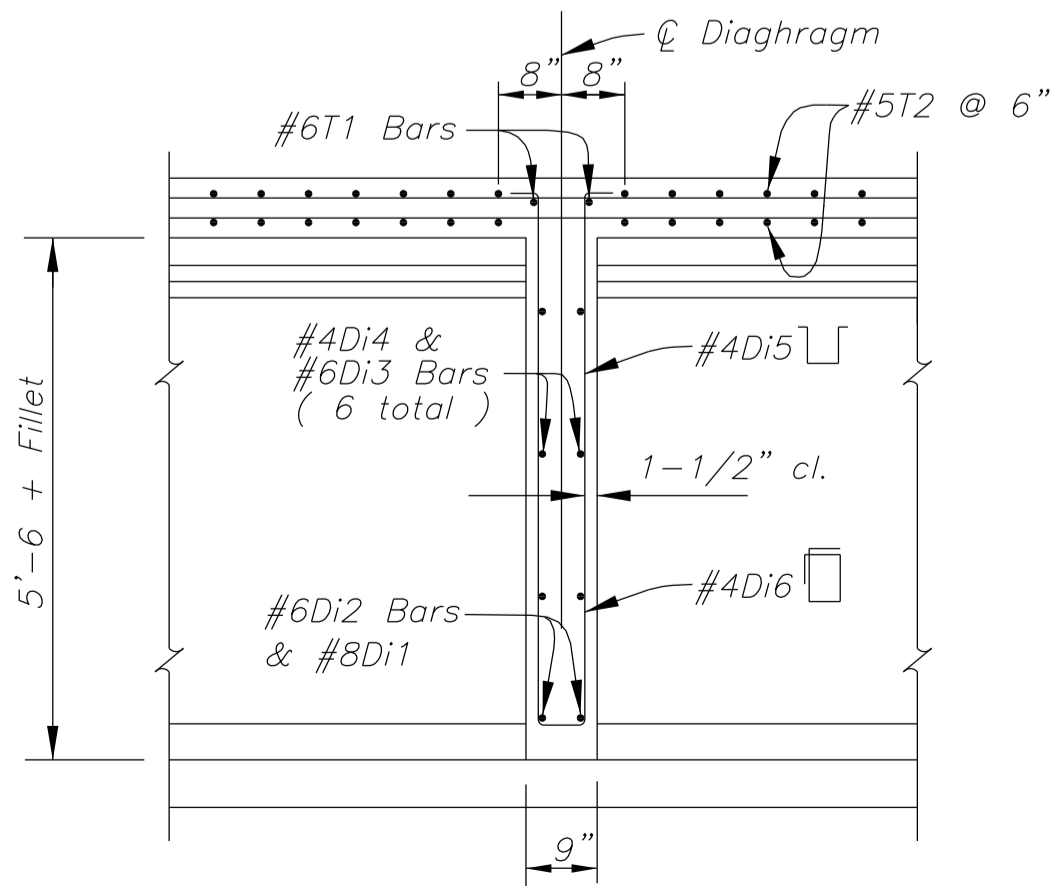
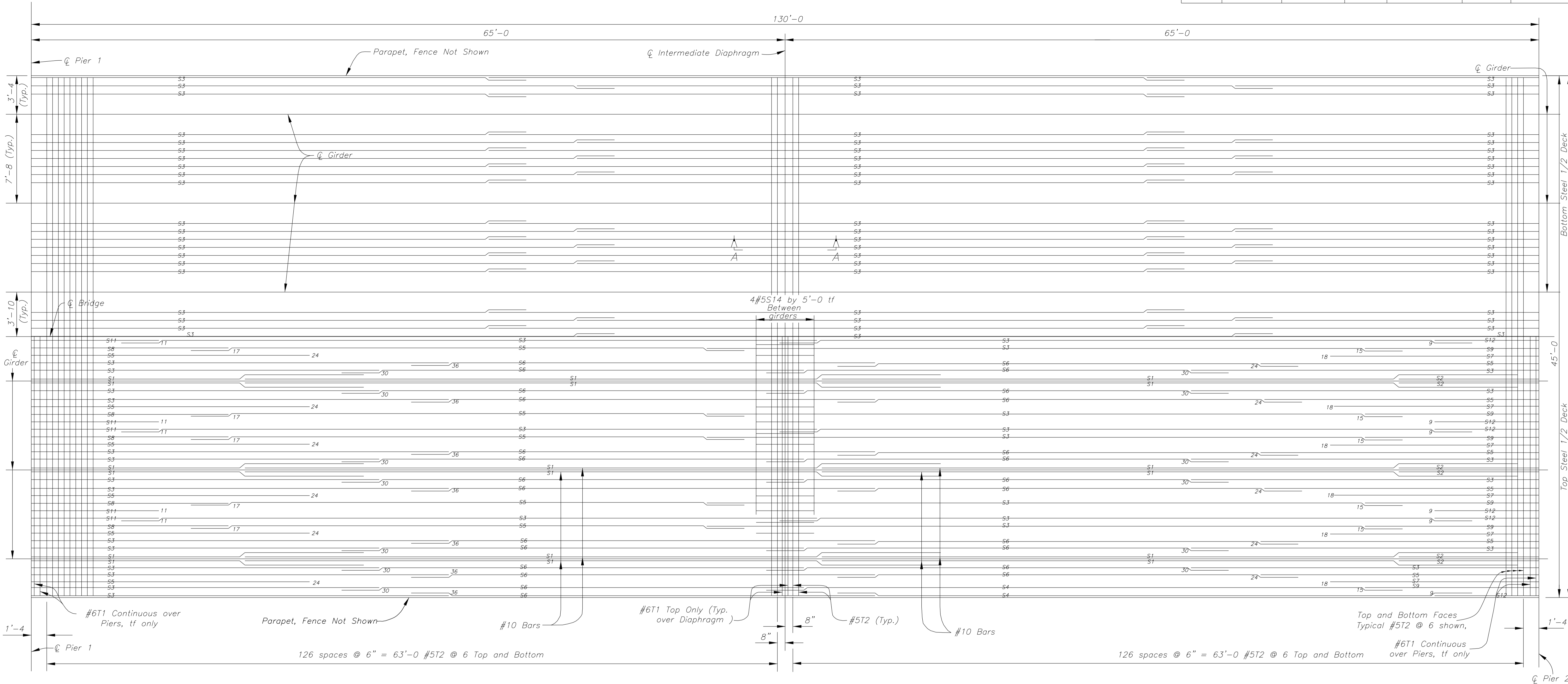
Drawn by: BOB_rsh_dc Date: 01/17/14

Revised by: - -

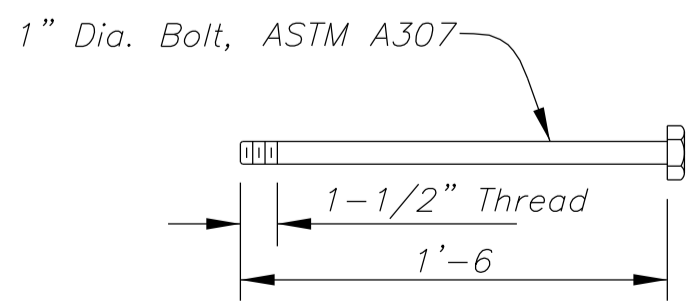
Date: - -



REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	TOTAL SHEETS
Navajo	AZ	Navajo	N2007	N2007(1-1)1,2&4	B-14	63



SECTION A - A
(Typical at all Intermediate Diaphragms)



DIAPHRAGM ANCHOR BOLT DETAIL
(36 REQUIRED)

DECK - SPAN 2
(SPAN 3 - OPPOSITE HAND)
NTS

DECK NOTES

Span #2 reinforcing layout shown, Span #3 reinforcing layout is mirrored about midpoint of bridge.

Numbers at ends of bars indicate distance in feet and inches from \varnothing pier to end of the longitudinal bars. Unless otherwise shown, #5 bars, as shown are spliced on at these points.

All the reinforcement bars in the deck slab are epoxy coated.

The #5 reinforcement bar splice length = 39"

The #10 reinforcement bar splice length = 123"

Mirror longitudinal deck steel about bridge centerline

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RIO PUERCO BRIDGE

SPAN 2 AND SPAN 3 - DETAILS

Designed by: BUREAU OF RECLAMATION

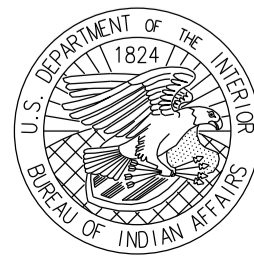
Drawn by: BOR, dc, rsh

Date: 01/17/14

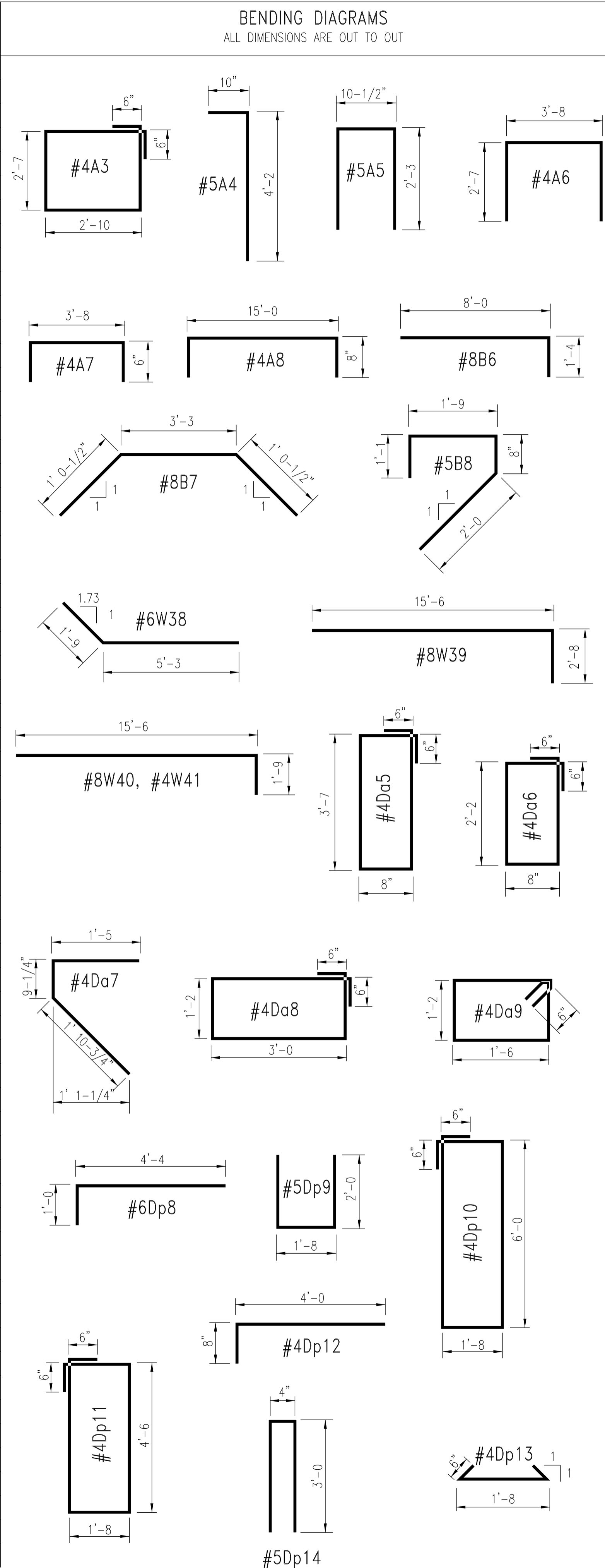
Revised by: - -

Date: - -

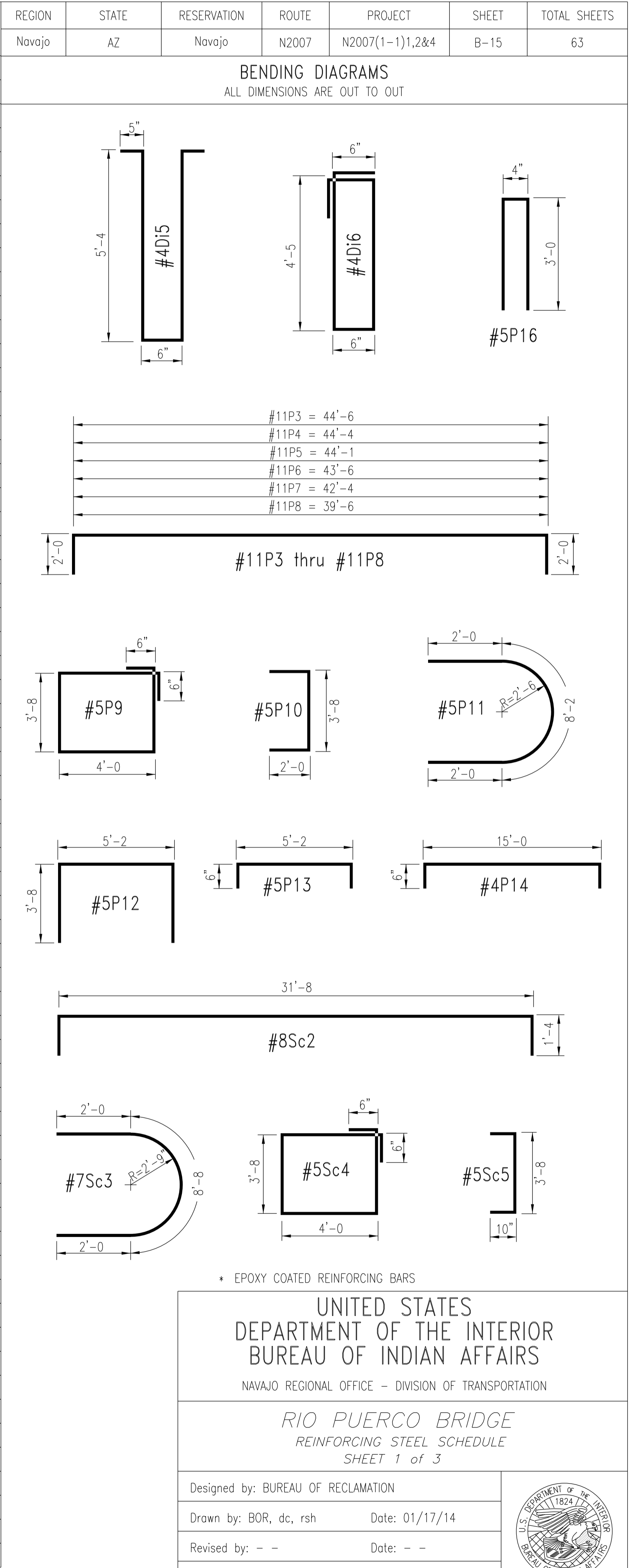
File Name: 14_BIAdck2



LOCATION	STRAIGHT BARS				BENT BARS				SPACING
	MARK	QTY.	SIZE	LENGTH	MARK	QTY.	SIZE	LENGTH	
ABUTMENT CAP (2)									
Cap, Top & Bottom, Transversal	10A1	40	10	44'-8"					As Shown
Cap, Sides, Transversal	4A2	12	4	44'-8"					As Shown
Cap, Abutment Seat					4A3	272	4	11'-10"	6"
Shear Cap, Longitudinal					5A4	24	5	5'-0"	As Shown
Shear Cap					5A5	84	5	5'-5"	As Shown
Cap, Over Drilled Shaft					4A6	24	4	8'-10"	As Shown
Cap, Over Center Seat					4A7	30	4	4'-8"	As Shown
Cap, Over Center Seat					4A8	12	4	16'-4"	As Shown
ABUTMENT BACKWALL (2)									
Backwall, Horizontal, Top	* 6B1	4	6	44'-8"					
Backwall, Horizontal, Bottom	4B2	28	4	44'-8"					
Backwall, Vertical	* 7B3	204	7	9'-10"					
Approach Slab Seat, Dowel	8B4	82	8	1'-6"					
Ends, Vertical	4B5	16	4	9'-10"					As Shown
Backwall, over sidewalk ends					8B6	24	8	9'-4"	As Shown
Backwall to Wingwall, Fillet					8B7	44	8	5'-4"	As Shown
Approach Slab Seat					5B8	102	5	5'-6"	As Shown
ABUTMENT WINGWALLS (2)									
Wingwall, Horizontal	8W1	4	8	19'-0"					As Shown
Wingwall, Horizontal	8W2	4	8	18'-2"					As Shown
Wingwall, Horizontal	8W3	4	8	17'-0"					As Shown
Wingwall, Horizontal	8W4	4	8	15'-11"					As Shown
Wingwall, Horizontal	8W5	4	8	14'-9"					As Shown
Wingwall, Horizontal	8W6	4	8	13'-8"					As Shown
Wingwall, Horizontal	8W7	4	8	12'-6"					As Shown
Wingwall, Horizontal	8W8	4	8	11'-5"					As Shown
Wingwall, Horizontal	8W9	4	8	10'-3"					As Shown
Wingwall, Horizontal	8W10	4	8	9'-2"					As Shown
Wingwall, Horizontal	8W11	4	8	8'-0"					As Shown
Wingwall, Horizontal	8W12	4	8	6'-11"					As Shown
Wingwall, Horizontal	8W13	4	8	5'-9"					As Shown
Wingwall, Horizontal	4W14	4	4	19'-0"					As Shown
Wingwall, Horizontal	4W15	4	4	17'-0"					As Shown
Wingwall, Horizontal	4W16	4	4	14'-9"					As Shown
Wingwall, Horizontal	4W17	4	4	12'-6"					As Shown
Wingwall, Horizontal	4W18	4	4	10'-3"					As Shown
Wingwall, Horizontal	4W19	4	4	8'-0"					As Shown
Wingwall, Horizontal	4W20	4	4	5'-9"					As Shown
Wingwall, Vertical	4W21	16	4	9'-9"					As Shown
Wingwall, Vertical	4W22	8	4	9'-2"					As Shown
Wingwall, Vertical	4W23	8	4	8'-7"					As Shown
Wingwall, Vertical	4W24	8	4	8'-0"					As Shown
Wingwall, Vertical	4W25	8	4	7'-5"					As Shown
Wingwall, Vertical	4W26	8	4	6'-10"					As Shown
Wingwall, Vertical	4W27	8	4	6'-3"					As Shown
Wingwall, Vertical	4W28	8	4	5'-8"					As Shown
Wingwall, Vertical	4W29	8	4	5'-0"					As Shown
Wingwall, Vertical	4W30	8	4	4'-5"					As Shown
Wingwall, Vertical	4W31	8	4	3'-10"					As Shown
Wingwall, Vertical	4W32	8	4	3'-3"					As Shown
Wingwall, Vertical	4W33	8	4	2'-8"					As Shown
Wingwall, Vertical	4W34	8	4	2'-0"					As Shown
Wingwall, Vertical	4W35	8	4	1'-8"					As Shown
Wingwall, Edge bars (2)	6W36	8	6	16'-0"					As Shown
Wingwall, abutment	4W37	16	4	8'-4"					As Shown
Wingwall, Bottom (2)					6W38	8	6	7'-0"	As Shown
Wingwall, Longitudinal, Top					8W39	8	8	18'-2"	Tie w/ W36
Wingwall, Longitudinal					8W40	4	8	17'-3"	FF
Wingwall, Longitudinal					4W41	4	4	17'-3"	NF



LOCATION	STRAIGHT BARS				BENT BARS				SPACING
	MARK	QTY.	SIZE	LENGTH	MARK	QTY.	SIZE	LENGTH	
DIAPHRAGM (Abutment 1&2)									
Dowel thru inside beams, horiz.	* 8Da1	8	8	5'-0"					As Shown
Between beams, bottom, horiz.	* 6Da2	20	6	6'-10"					As Shown
Between beams, horiz.	* 4Da3	40	4	6'-10"					As Shown
Outside beams, horiz.	* 6Da4	12	6	2'-9"					As Shown
Inside – between beams, Vertical					* 4Da5	50	4	9'-6"	As Shown
Inside – Between beams, Vertical					* 4Da6	20	4	6'-8"	As Shown
Outside – Vertical					* 4Da7	50	4	4'-0"	As Shown
Outside – Vertical					* 4Da8	8	4	9'-4"	As Shown
Outside – Vertical					* 4Da9	8	4	6'-4"	As Shown
DIAPHRAGM (Pier) 3									
Between beam ends	* 6Dp1	6	6	42'-0"					As Shown
Inside beams, dowel, horizontal	* 6Dp2	24	6	5'-8"					As Shown
Between beams, bottom	* 6Dp3	30	6	5'-4"					As Shown
Between beams, horizontal	* 4Dp4	80	4	6'-4"					As Shown
Inside Beams, dowel, horizontal	* 4Dp5	96	4	6'-0"					As Shown
Between beams, horizontal	* 4Dp6	30	4	5'-9"					As Shown
Restrainer, between beam ends	* 11Dp7	30	11	1'-6"					As Shown
Inside beams, dowel, horizontal					* 6Dp8	12	6	5'-4"	As Shown
Between beams, vertical					* 5Dp9	165	5	5'-8"	As Shown
Between beams, vertical					* 4Dp10	105	4	16'-4"	As Shown
Next to beams, vertical					* 4Dp11	66	4	13'-4"	As Shown
End tie-bars, horizontal					* 4Dp12	24	4	4'-8"	As Shown
Tie-bars					* 4Dp13	177	4	2'-8"	As Shown
U-bars, seat					* 5Dp14	330	5	6'-4"	As Shown
DIAPHRAGM (Intermediate) 4									
Between Beams, Bottom	* 8Di1	16	8	6'-0"					As Shown
Between Beams, Top	* 6Di2	40	6	7'-0"					As Shown
Between Beams, Middle	* 6Di3	48	6	6'-0"					As Shown
Between Beams, Middle	* 4Di4	120	4	7'-0"					As Shown
U-bars, Inside					* 4Di5	100	4	12'-0"	As Shown
Tie-bars, Inside					* 4Di6	40	4	10'-10"	As Shown
PIER CAP (3)									
Transverse, bottom	11P1	33	11	40'-8"					As Shown
Transverse, Sides	5P2	36	5	40'-8"					As Shown
Transverse, Top					11P3	3	11	48'-6"	No Splice
Transverse, Top					11P4	6	11	48'-4"	No Splice
Transverse, Top					11P5	6	11	48'-1"	No Splice
Transverse, Top					11P6	6	11	47'-6"	No Splice
Transverse, Top					11P7	6	11	46'-7"	No Splice
Transverse, Top					11P8	6	11	43'-6"	No Splice
Seat, Vertical					5P9	312	5	16'-4"	As Shown
Tie bar, Ends, Vertical					5P10	30	5	7'-8"	As Shown
Round End bars, Horizontal					5P11	48	5	12'-2"	As Shown
Over Column, Vertical					5P12	36	5	12'-6"	As Shown
Top of seat, Tie bars, Vertical					5P13	45	5	6'-2"	As Shown
Tie bars, Middle, Transverse					4P14	18	4	16'-0"	As Shown
Restrainer tie bars	11P15	30	11	1'-6"					As Shown
U-bars, seat					5P16	165	5	6'-4"	As Shown
Shear Key bars	6P17	90	6	5'-4"					
STRUTS (1)									
Transverse, Sides	7Sc1	20	7	30'-8"					As Shown
Transverse, Top & bottom					8Sc2	56	8	34'-4"	As Shown
Horizontal, Ends					7Sc3	28	7	12'-8"	As Shown
Seat, Vertical					5Sc4	88	5	16'-4"	As Shown
Tie bars, middle & ends, vertical					5Sc5	116	5	5'-4"	As Shown



K:\CURRENT PROJECTS\N2007(1-1)_Navajo Bridge_032494\Design_BA_2007-02-28\CAO 073002\Bridge_Plan Drawings PRELIM 051109\15_BIArnf_2014-01-17.dgn

* EPOXY COATED REINFORCING BARS

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NAVAJO REGIONAL OFFICE - DIVISION OF TRANSPORTATION

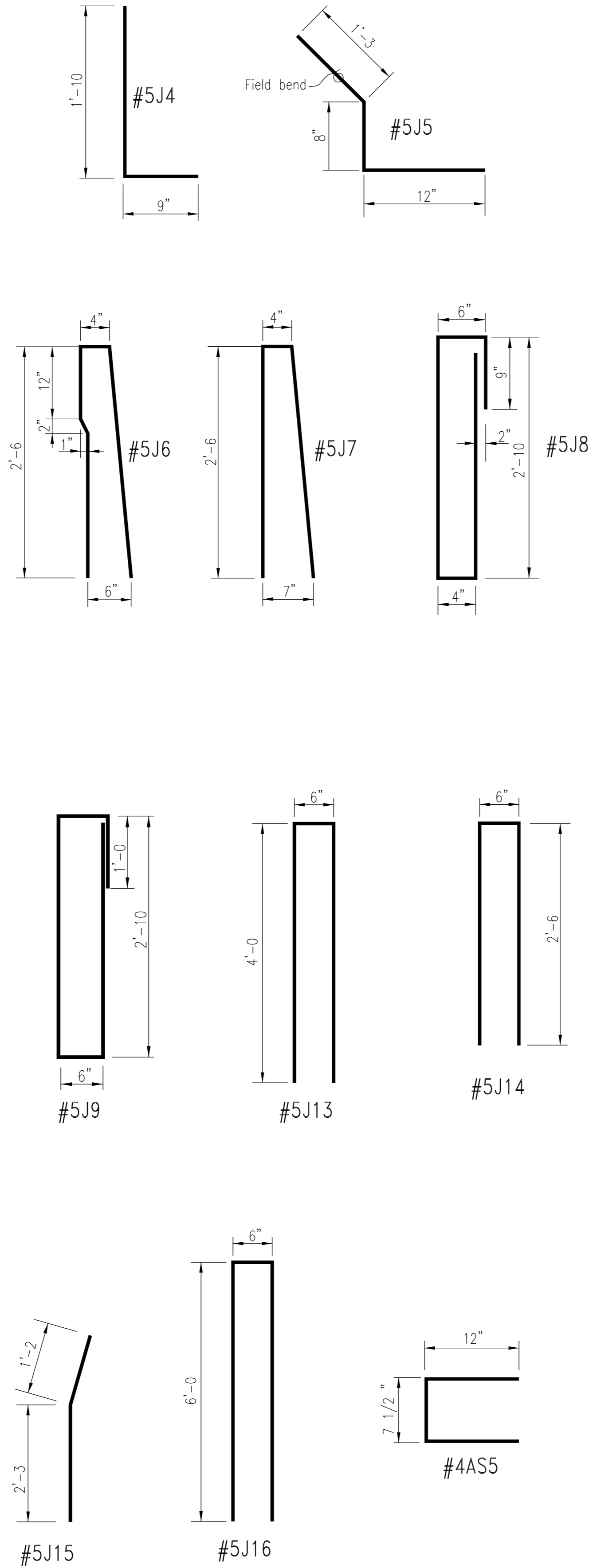
RIO PUERCO BRIDGE
REINFORCING STEEL SCHEDULE
SHEET 1 of 3

Designed by: BUREAU OF RECLAMATION

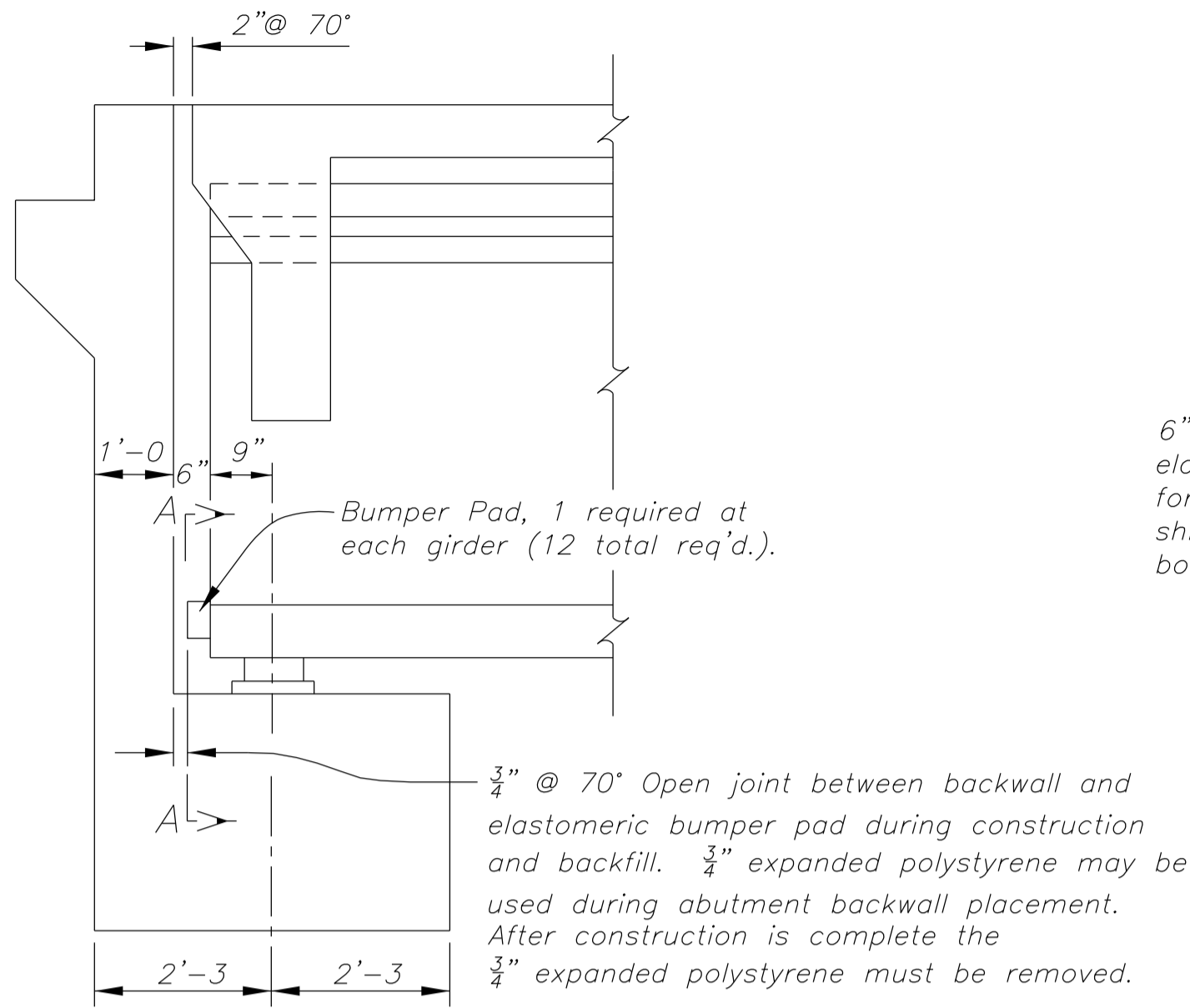
Drawn by: BOR, dc, rsh Date: 01/17/14

Revised by: - - Date: - -

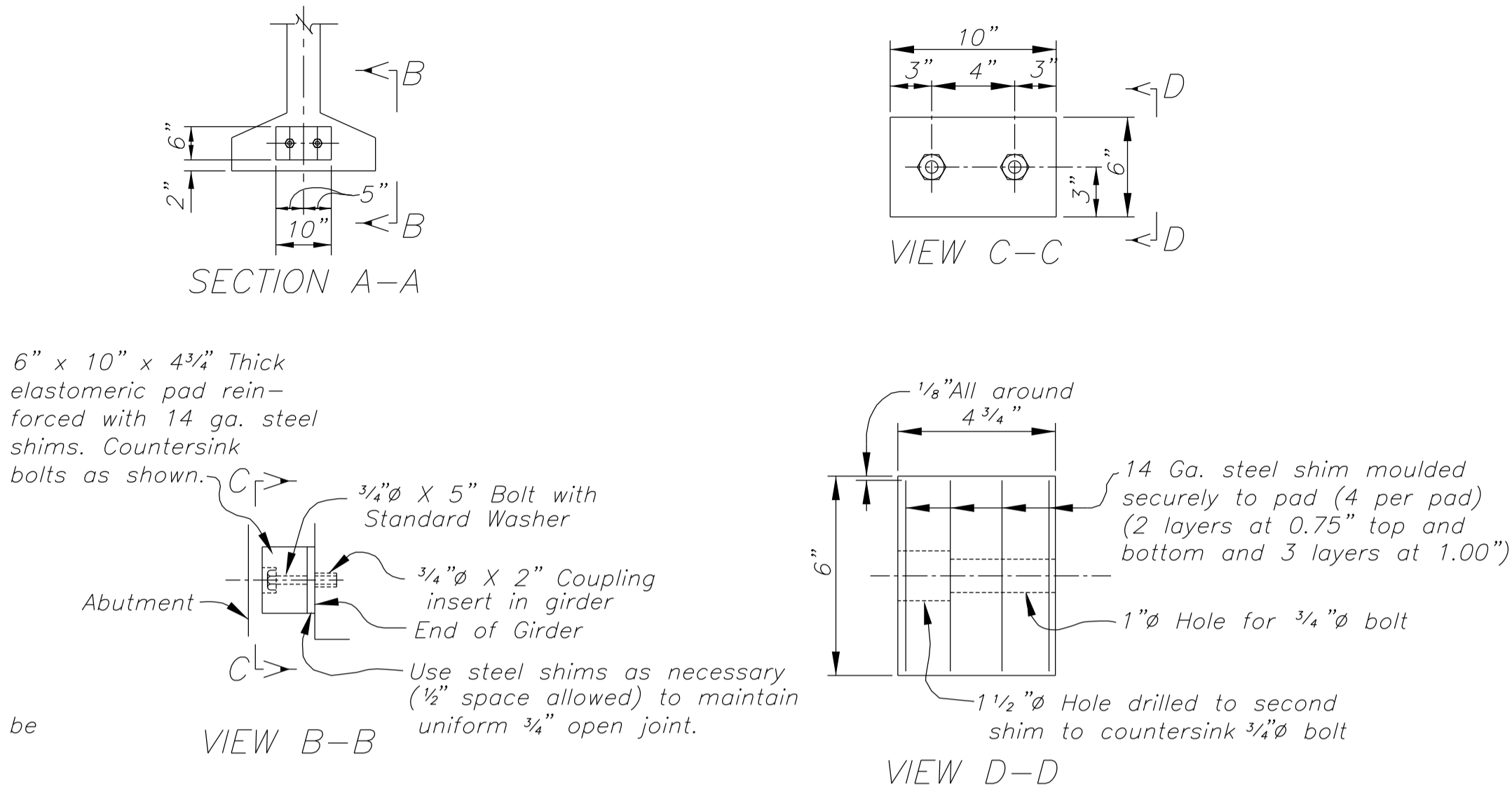
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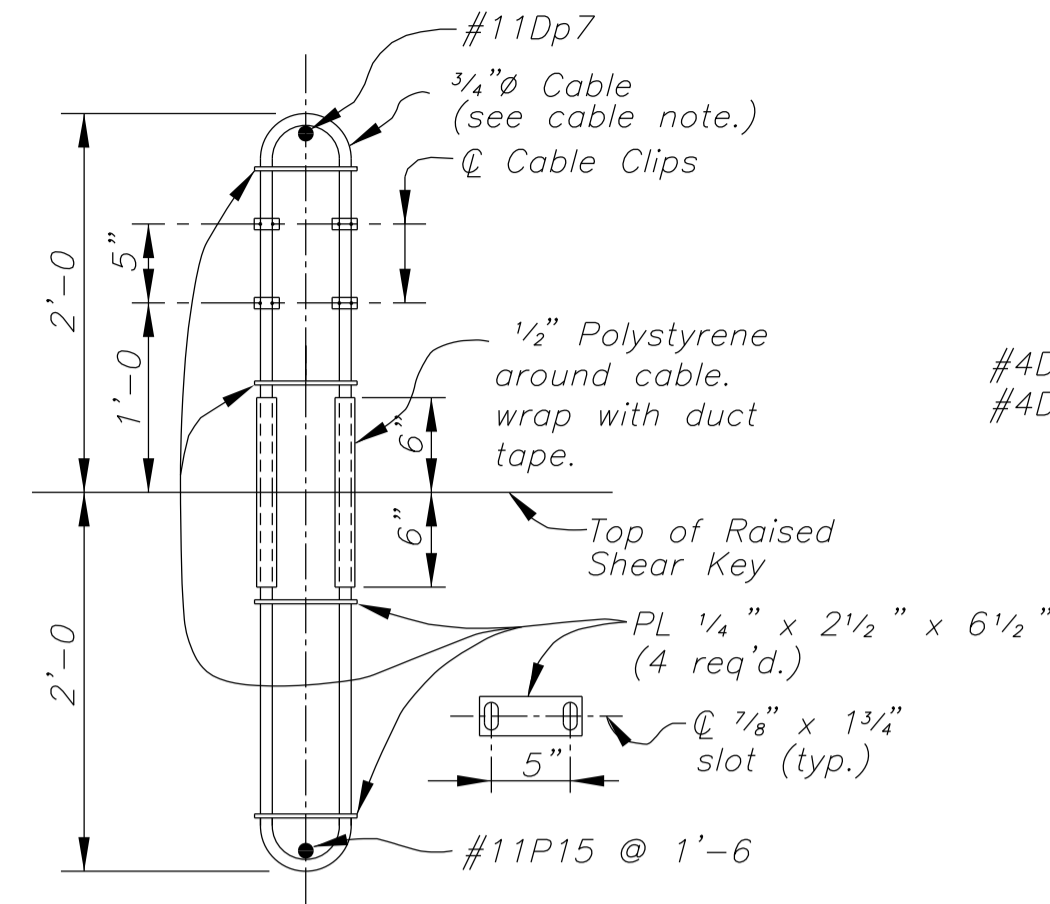
REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	TOTAL SHEETS
Navajo	AZ	Navajo	N2007	N2007(1-1)1,2&4	B-18	63



TYPICAL SECTION
AT ABUTMENT (B-9)

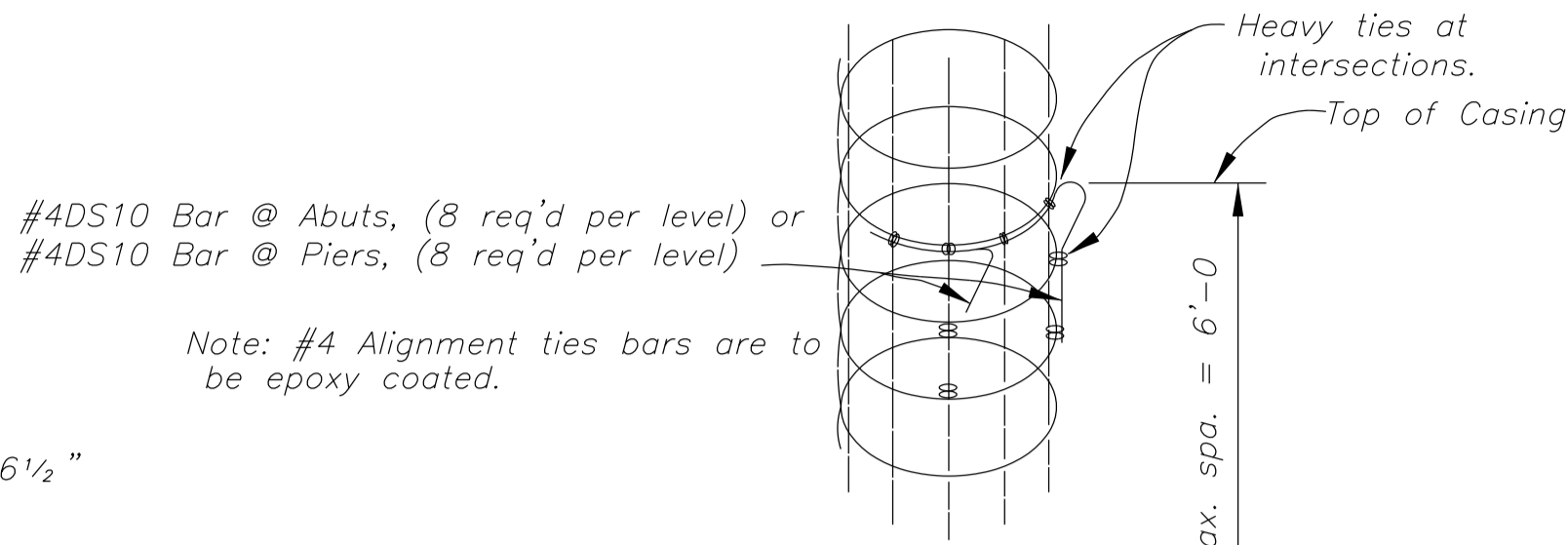


BUMPER PAD DETAILS (B-9)
(No Scale)



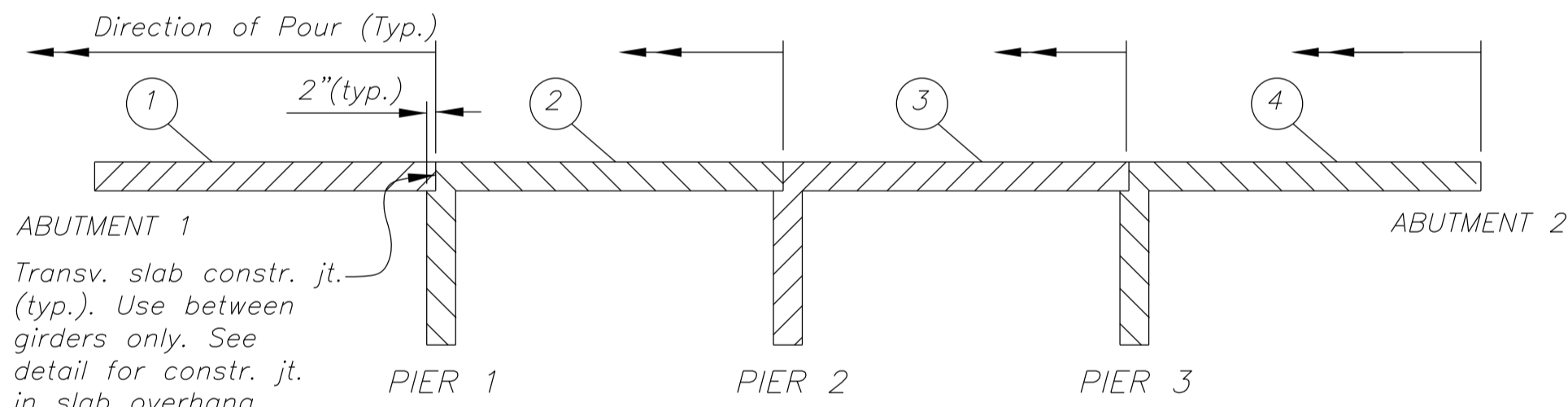
FIXED RESTRAINER DETAIL (B-11)

CABLE NOTE: Restrainer cables shall be 3/4" min. preformed 6 x 19 galvanized wire rope and shall meet the requirement of AASHTO M30 with a min. breaking strength of 42 kips.



COLUMN CAGE
ALIGNMENT DETAIL

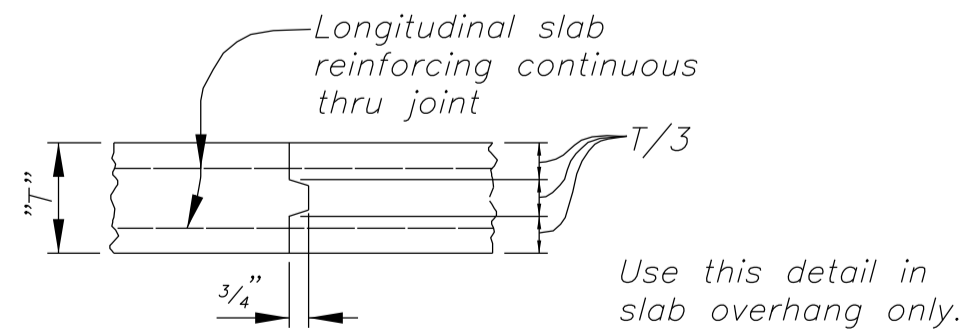
Note: Use this detail at all piers and abutments where column cage steel needs to be aligned inside a casing.



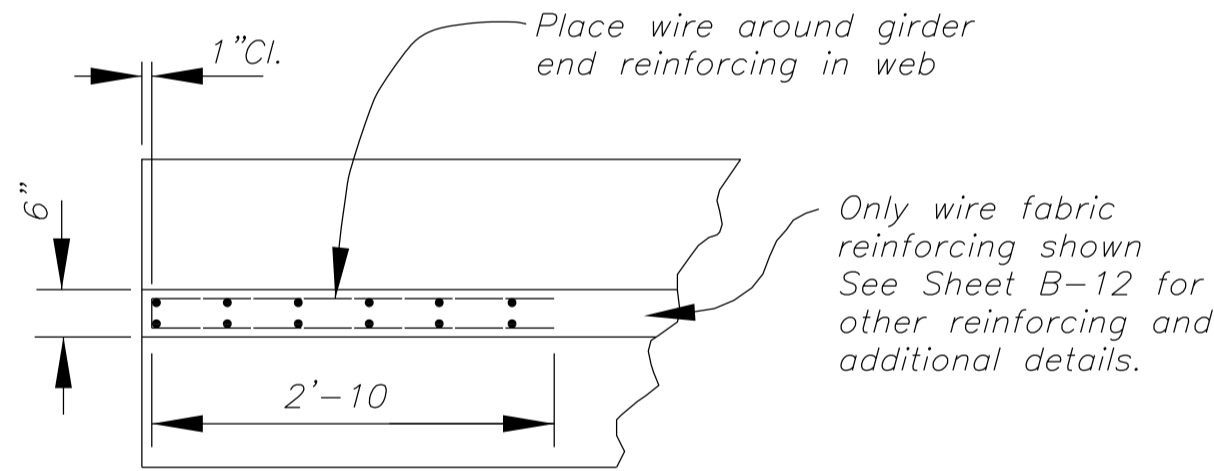
DECK POURING DIAGRAM
(No Scale)

NOTE: Pour end diaphragms and intermediate diaphragms first. Then deck pours shall be made in numerical sequence and in the direction shown. Place pier diaphragms just before deck closures.

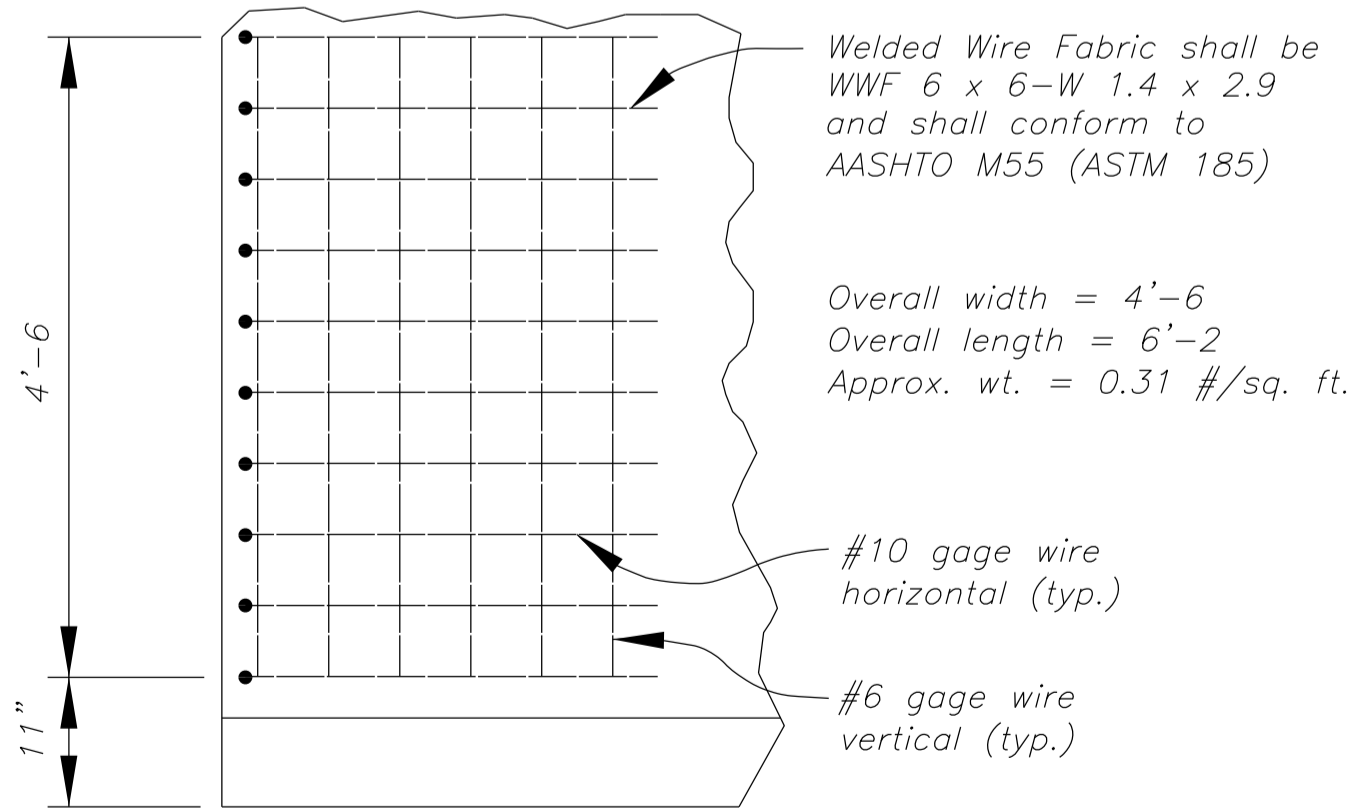
The purpose of this deck pouring diagram is to place all deck concrete on both sides of a pier diaphragm before casting the pier diaphragm. The contractor may submit an alternative sequence to the Engineer for approval provided that it accomplishes the same purpose.



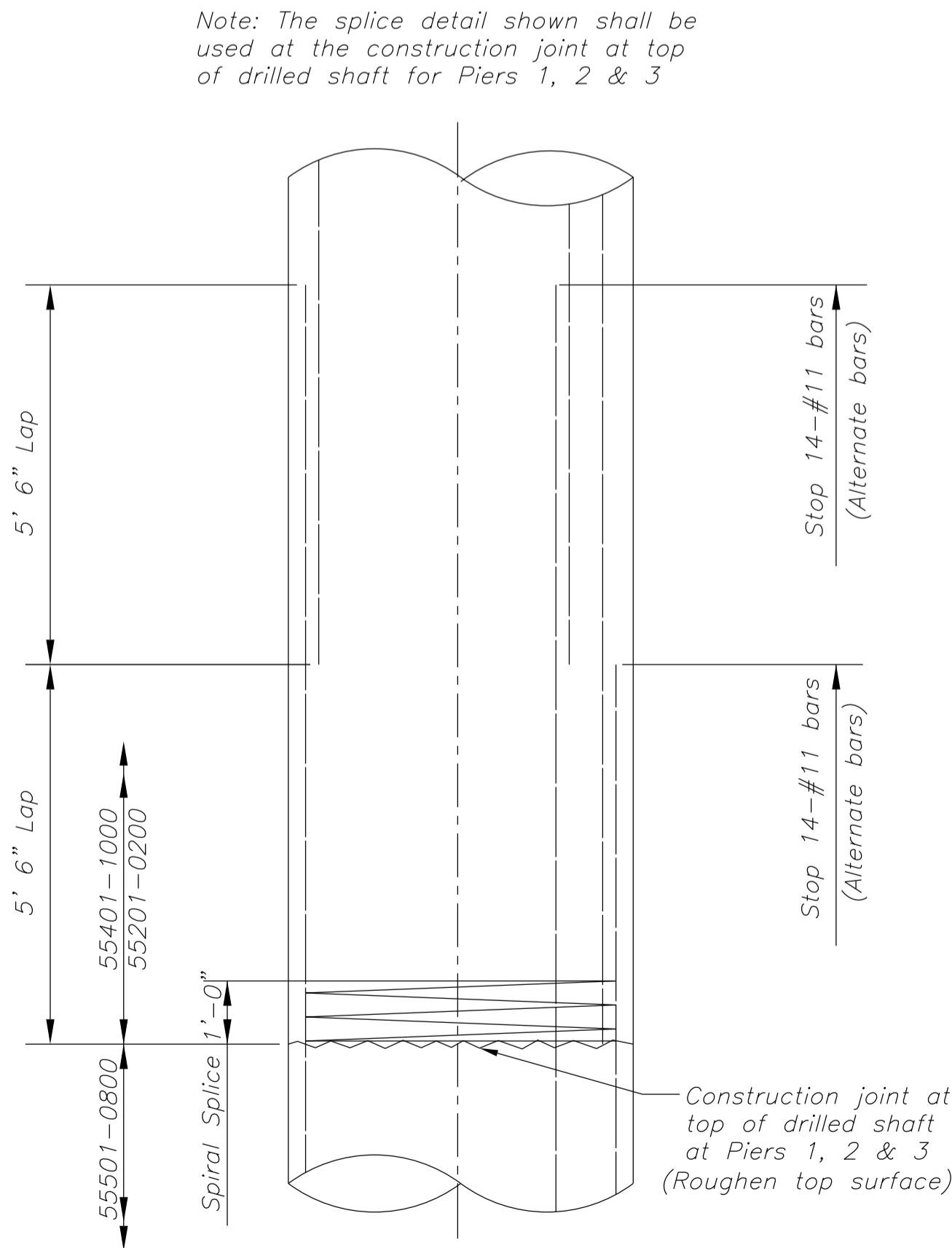
TRANSVERSE SLAB
CONSTRUCTION JOINT
(No Scale)



GIRDER END PLAN (B-12)



GIRDER END ELEVATION (B-12)

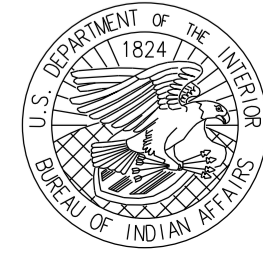


CONSTRUCTION JOINT DETAIL

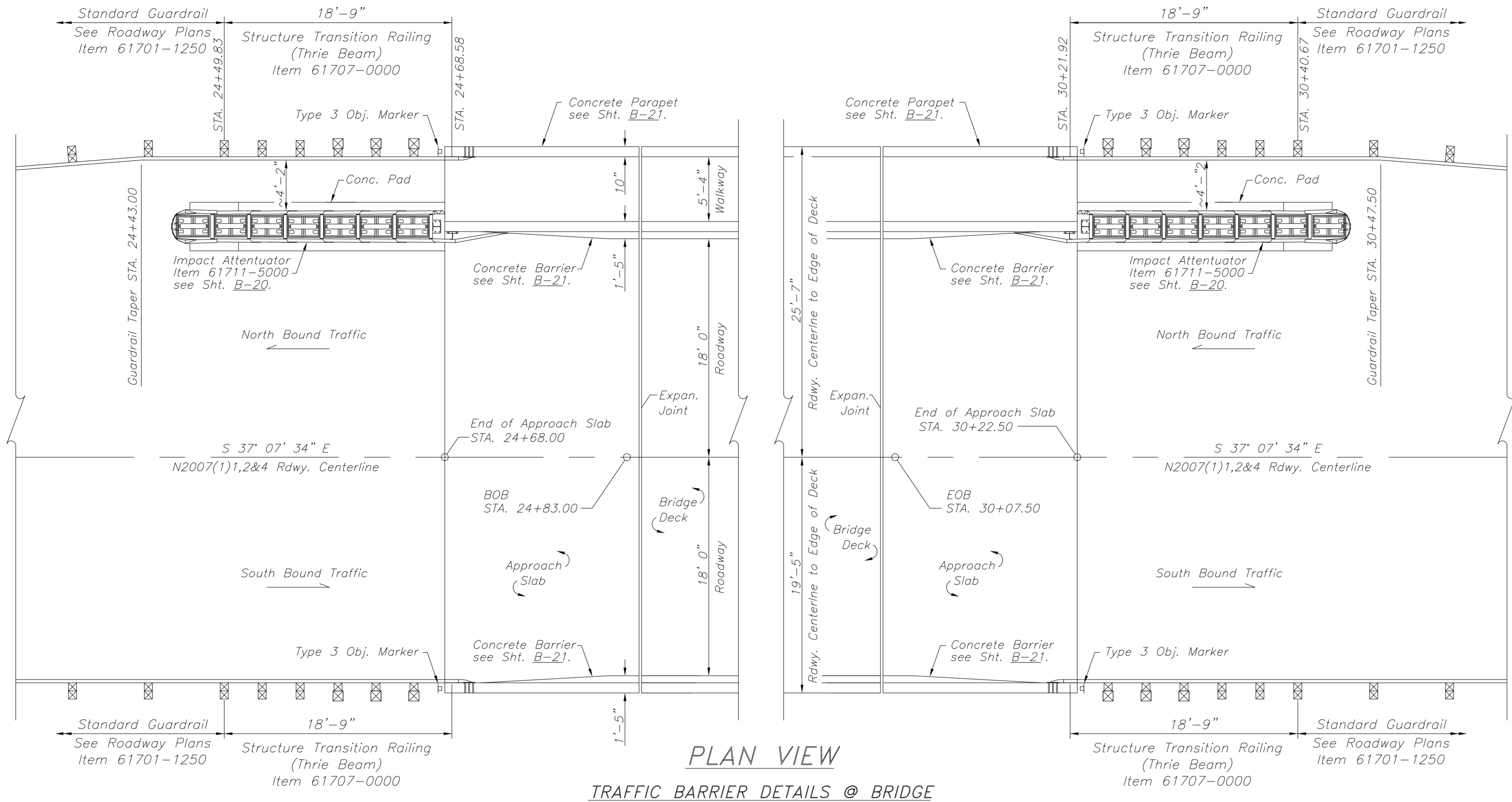
UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF INDIAN AFFAIRS NAVAJO REGIONAL OFFICE - DIVISION OF TRANSPORTATION	
RIO PUERCO BRIDGE MISCELLANEOUS DETAILS	
Designed by: BUREAU OF RECLAMATION	
Drawn by: BOR, dc, rsh, cdh	Date: 01/17/14
Revised by: - -	Date: - -
File Name: 18_BIAmisc	



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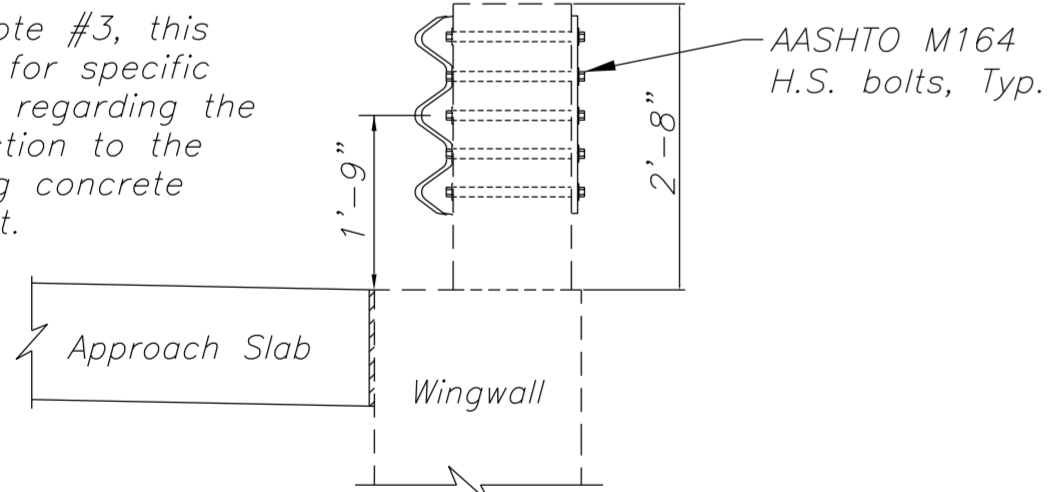


REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	TOTAL SHEETS
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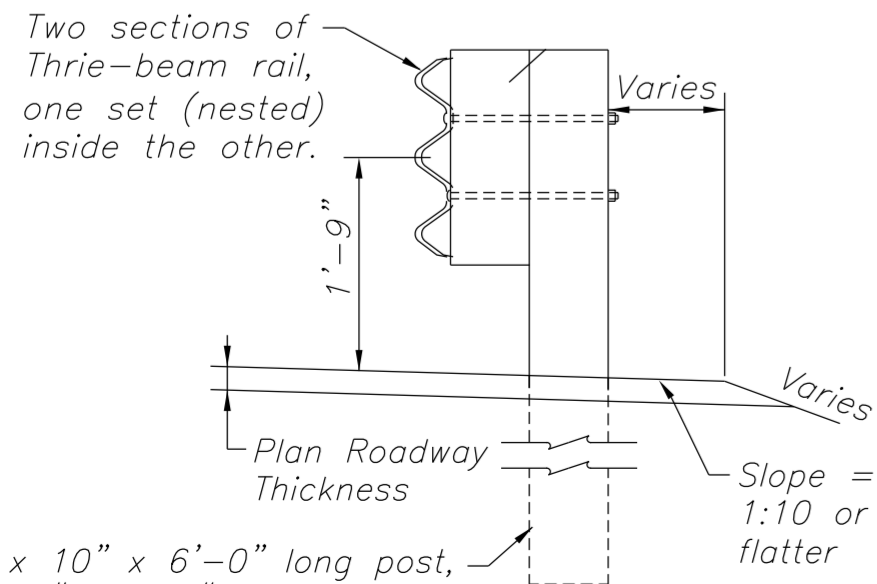


TRAFFIC BARRIER DETAILS @ BRIDGE

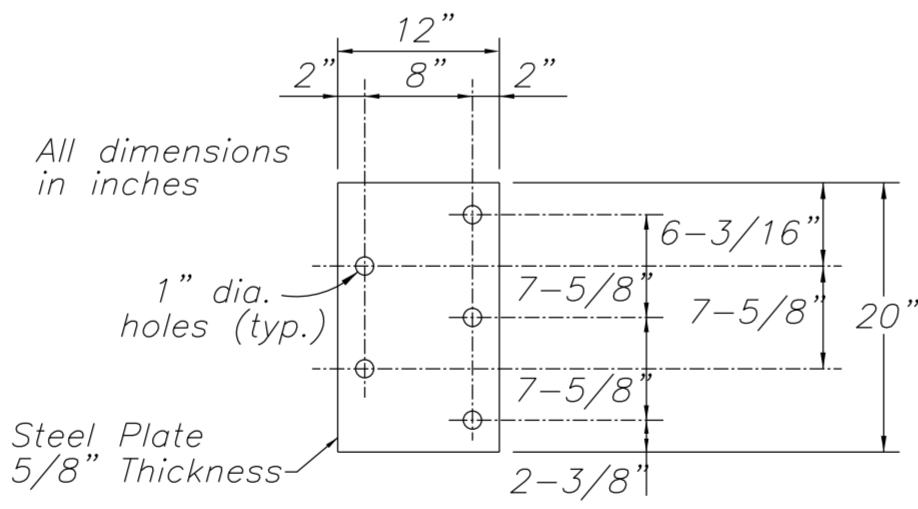
See Note #3, this sheet, for specific details regarding the connection to the existing concrete parapet.



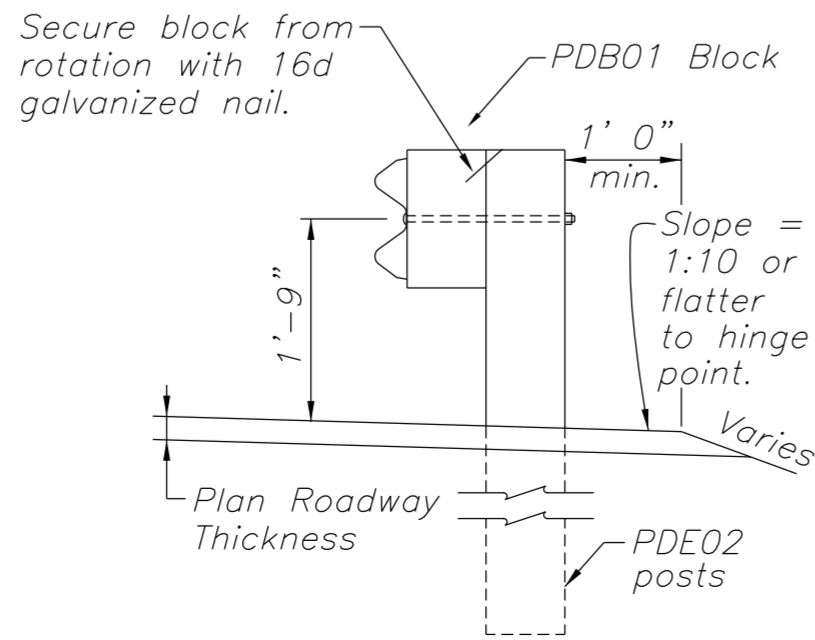
SECTION F-F
(from Sht. B-21)



SECTION G-G
(from Sht. B-21)



THRIE BEAM TERMINAL
CONNECTOR PLATE



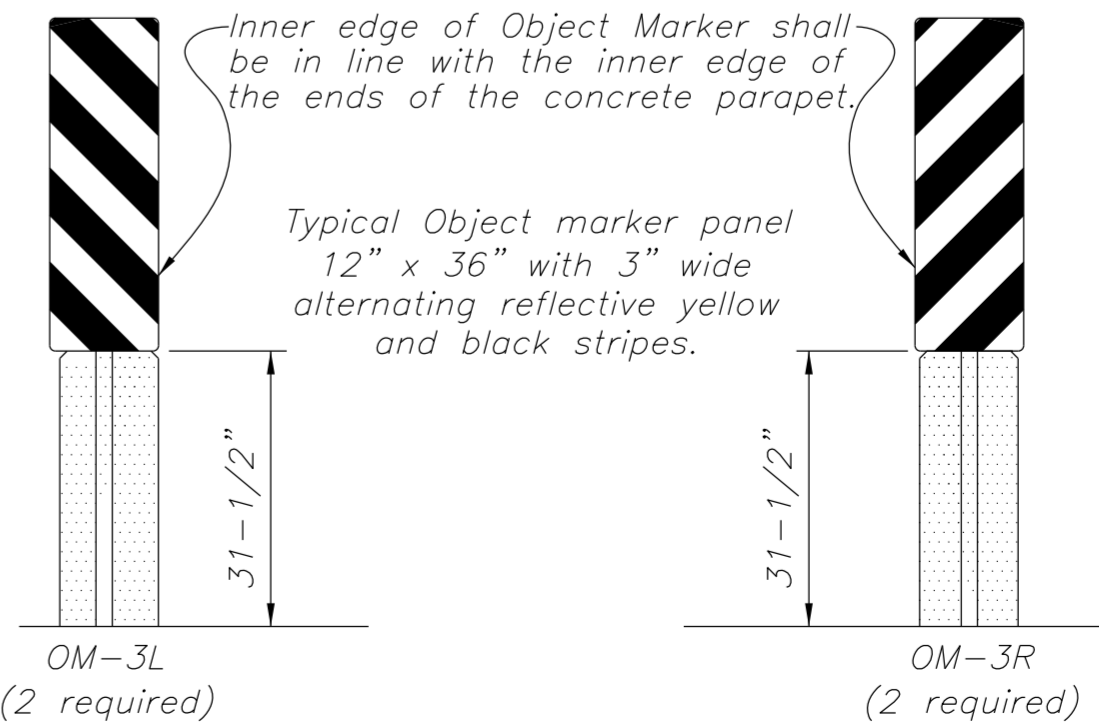
SECTION H-H
(from Sht. B-21)

STRUCTURE TRANSITION RAILING NOTES

NOTE: See Sheet B-21 for primary details regarding the STRUCTURE TRANSITION RAILING. See Sheet B-21 for location of Section views shown on this sheet.

- Terminal connectors, metal blocks, block plates shall be furnished and installed with, and shall be incidental to the W-beam guardrail item.
- The terminal connectors, blocks, and block plates shall be galvanized after fabrication in accordance with ASTM A123.
- Connect ARTBA Standard RE-8 terminal connectors to parapet with 4-7/8"Ø high strength bolts. Connect blocks to parapet with 5/8"Ø high strength bolts. All high strength bolts shall be ASTM A325, Type 3 and shall be galvanized in accordance with ASTM A153.
- ARTBA Standard RE-4 W-beam back-up plates shall be installed behind guardrail at metal blocks.
- Structural steel shall conform to ASTM A36, unless otherwise specified.
- The contractor shall be required to compact the asphalt all around each guardrail post with hand tampers to insure integrity of the pavement and guardrail and to prevent seepage of water into the pavement from the guard rail post holes.

NOTE: Place object marker posts between structure transition rail posts #1 and #2 if object marker posts can not fit between existing wingwall and approach guardrail post #1.



TYPE 3 OBJECT MARKER
@ PARAPET WALLS
N.T.S.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NAVAJO REGIONAL OFFICE - DIVISION OF TRANSPORTATION

RIO PUERCO BRIDGE
GUARDRAIL TRANSITION PLAN VIEW

Designed by: CDH - Structural Unit

Drawn by: rsh, cdh

Date: 01/17/14

Revised by:

Date: -/--/--

File Name: 20_BIAguardrail_layout



Chamfer all corners $\frac{3}{4}$ " unless otherwise noted.

No steel post to be used for post #1 thru #6 of Structure Transition Rail.

45 Req'd with scupper drains

Sheet B-2 for location of scuppe

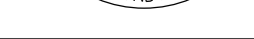
1 2 3 4 5 6

(6 Reg'd without scupper drains)

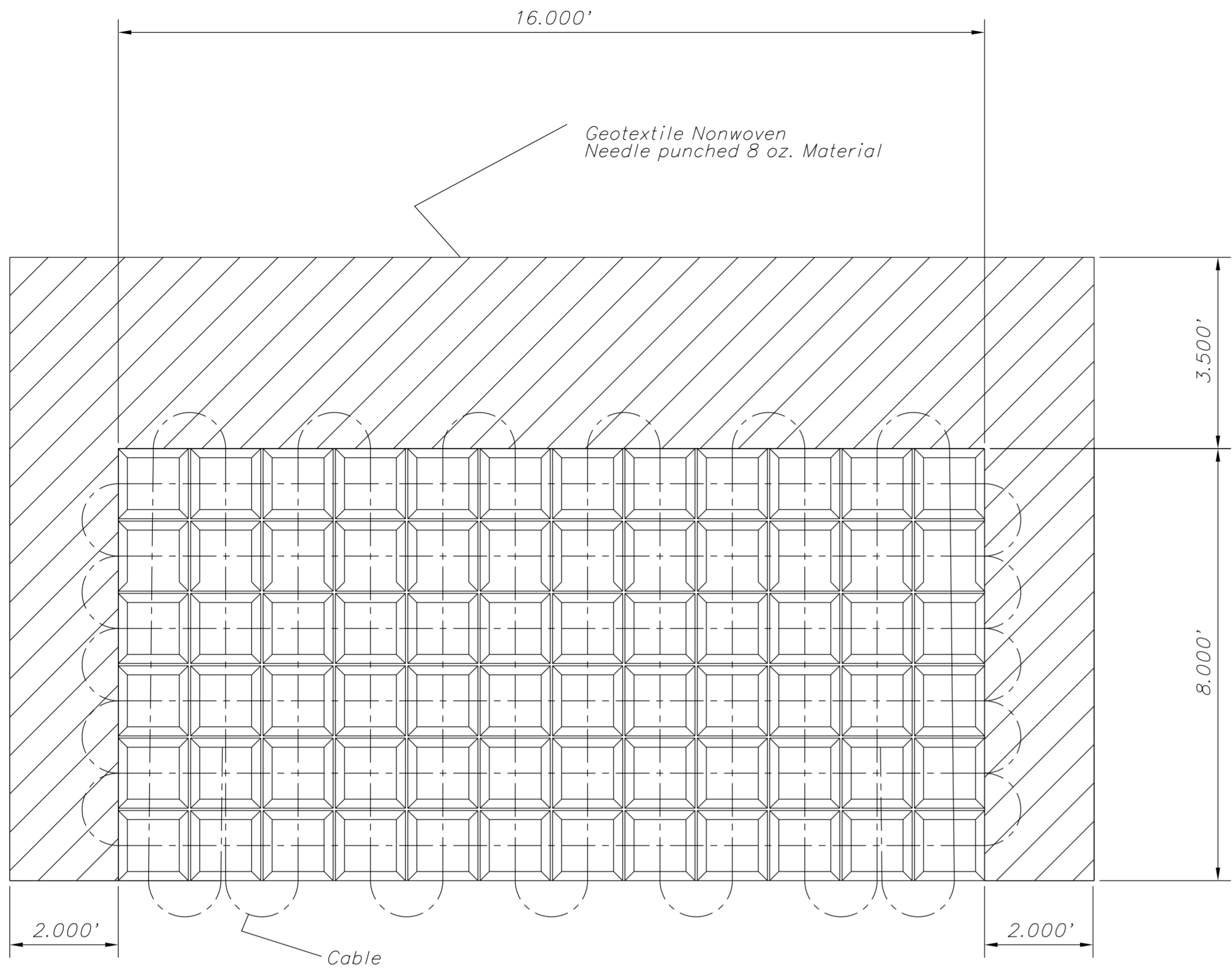
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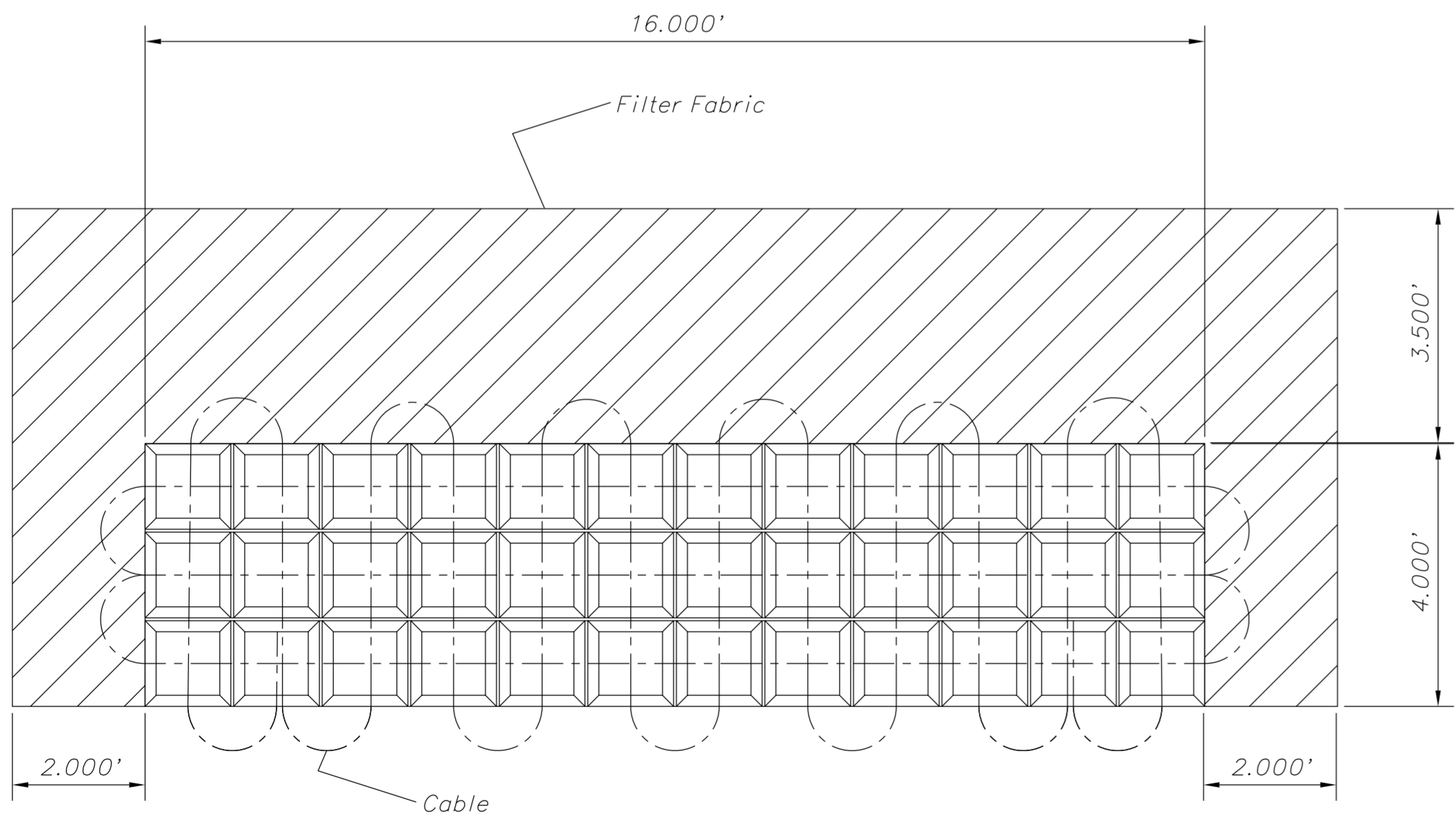
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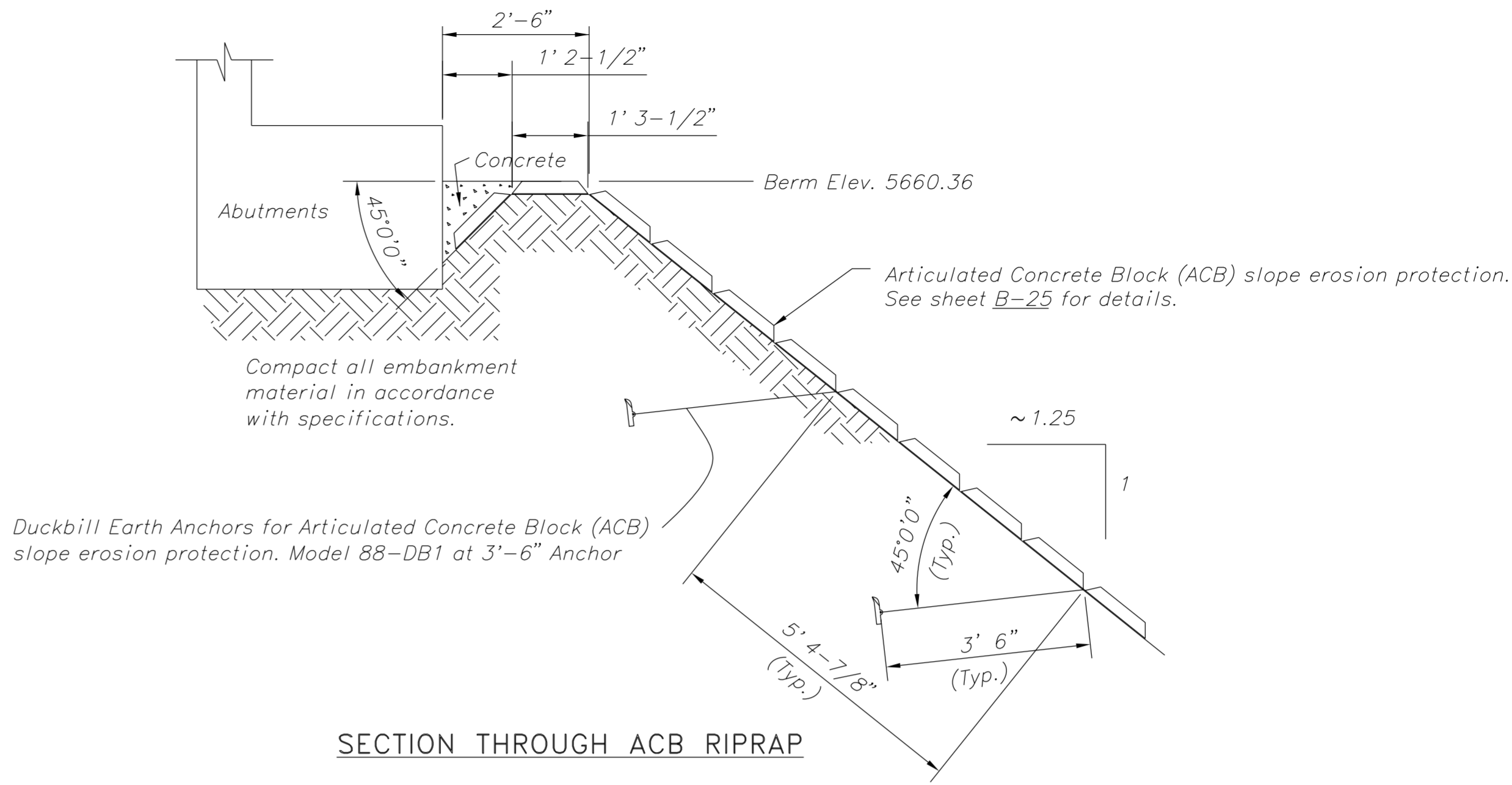
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N2007	N2007(1-1)1,2&4	B-23	63



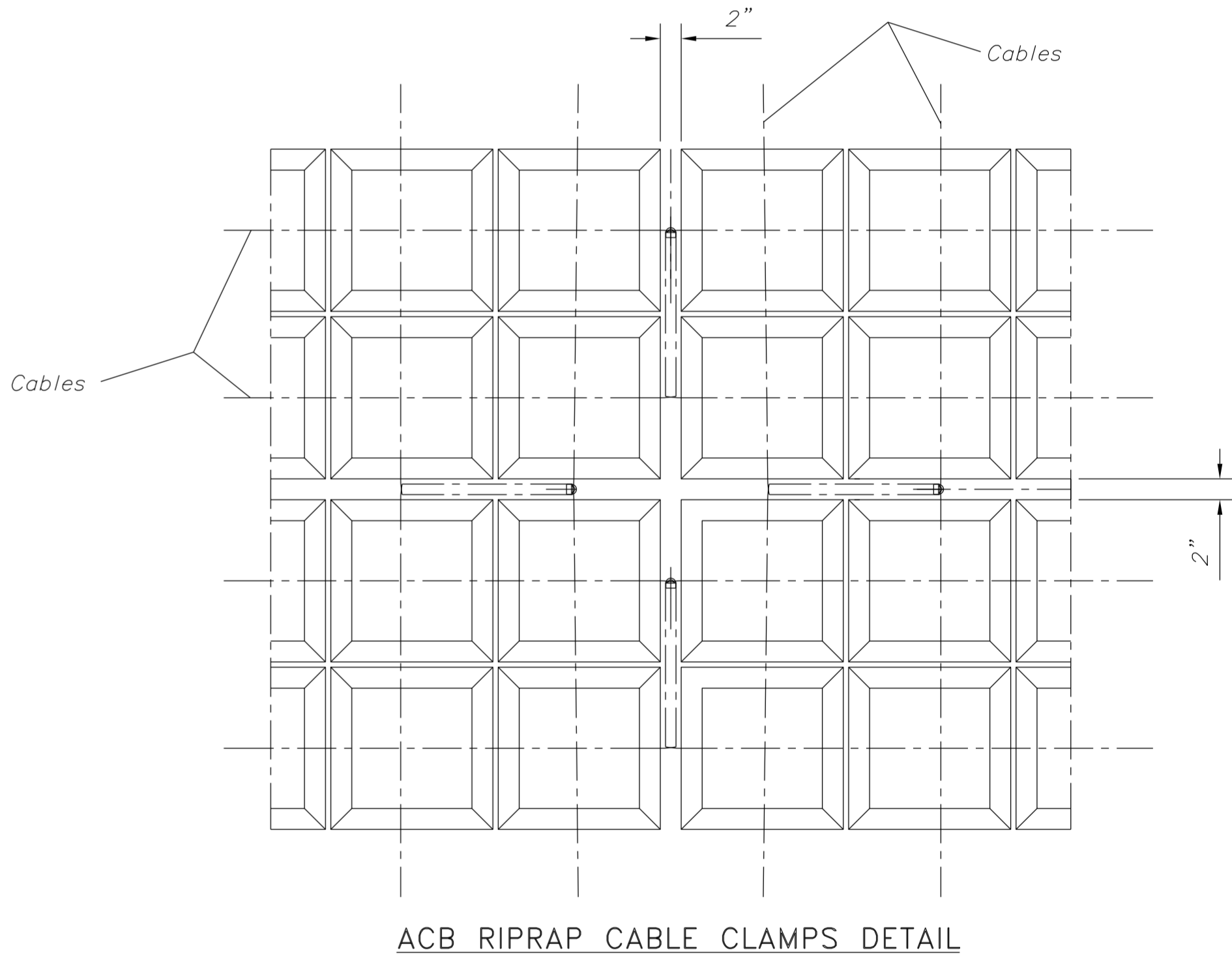
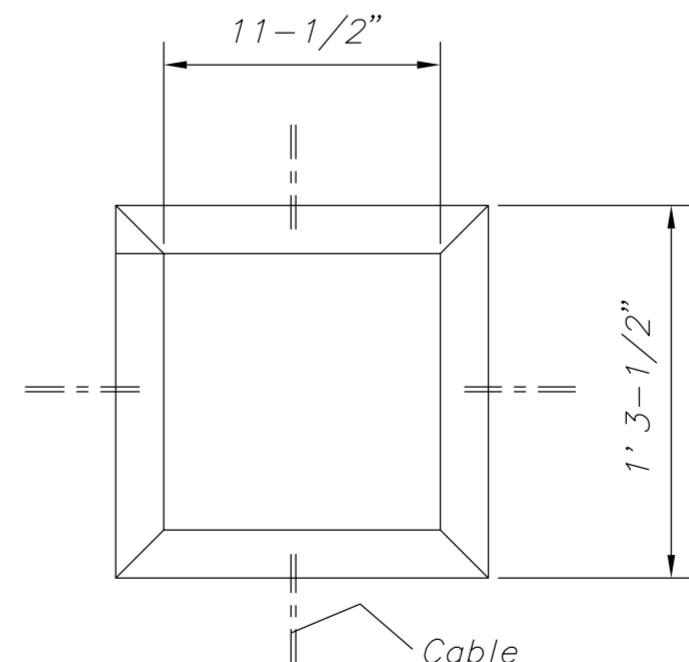
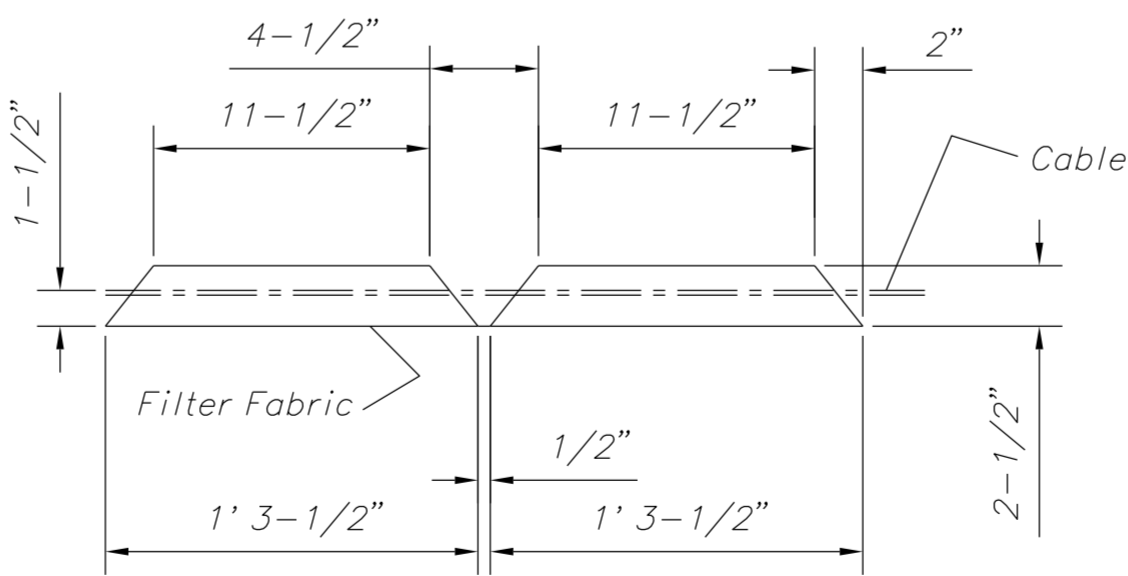
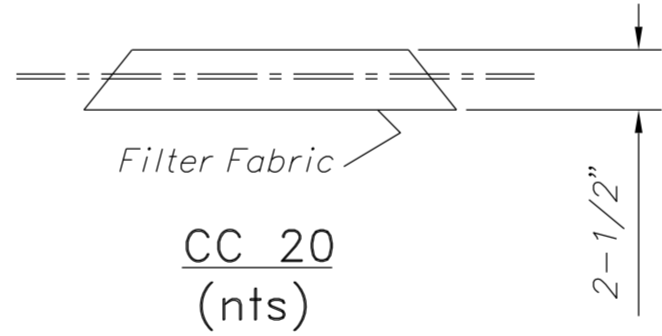
PLAN VIEW
8.000' x 16.000'
Articulated Concrete Block Revetment
(nts)



PLAN VIEW
4.000' x 16.000'
Articulated Concrete Block Revetment



Duckbill Earth Anchors for Articulated Concrete Block (ACB)
slope erosion protection. Model 88-DB1 at 3'-6" Anchor



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NAVAJO REGIONAL OFFICE - DIVISION OF TRANSPORTATION

RIO PUERCO BRIDGE
ARTICULATED CONCRETE BLOCK CC-20
SLOPE PROTECTION

Designed by: STRUCT

Drawn by: rsh, cdh

Date: 01/17/14

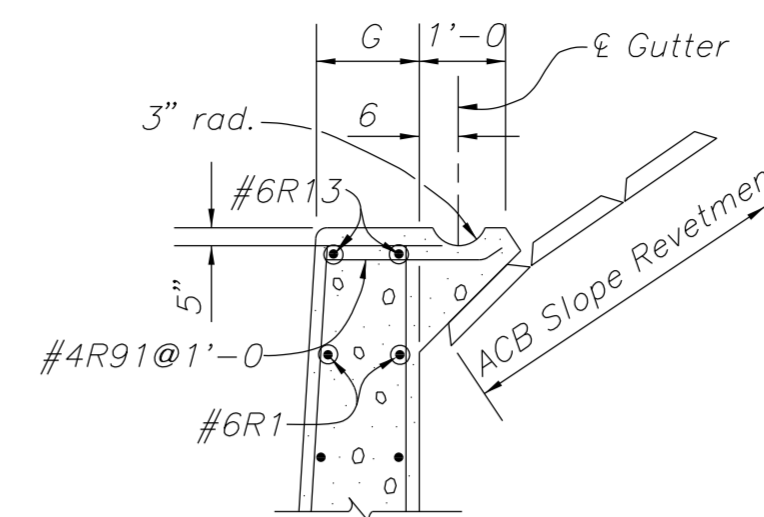
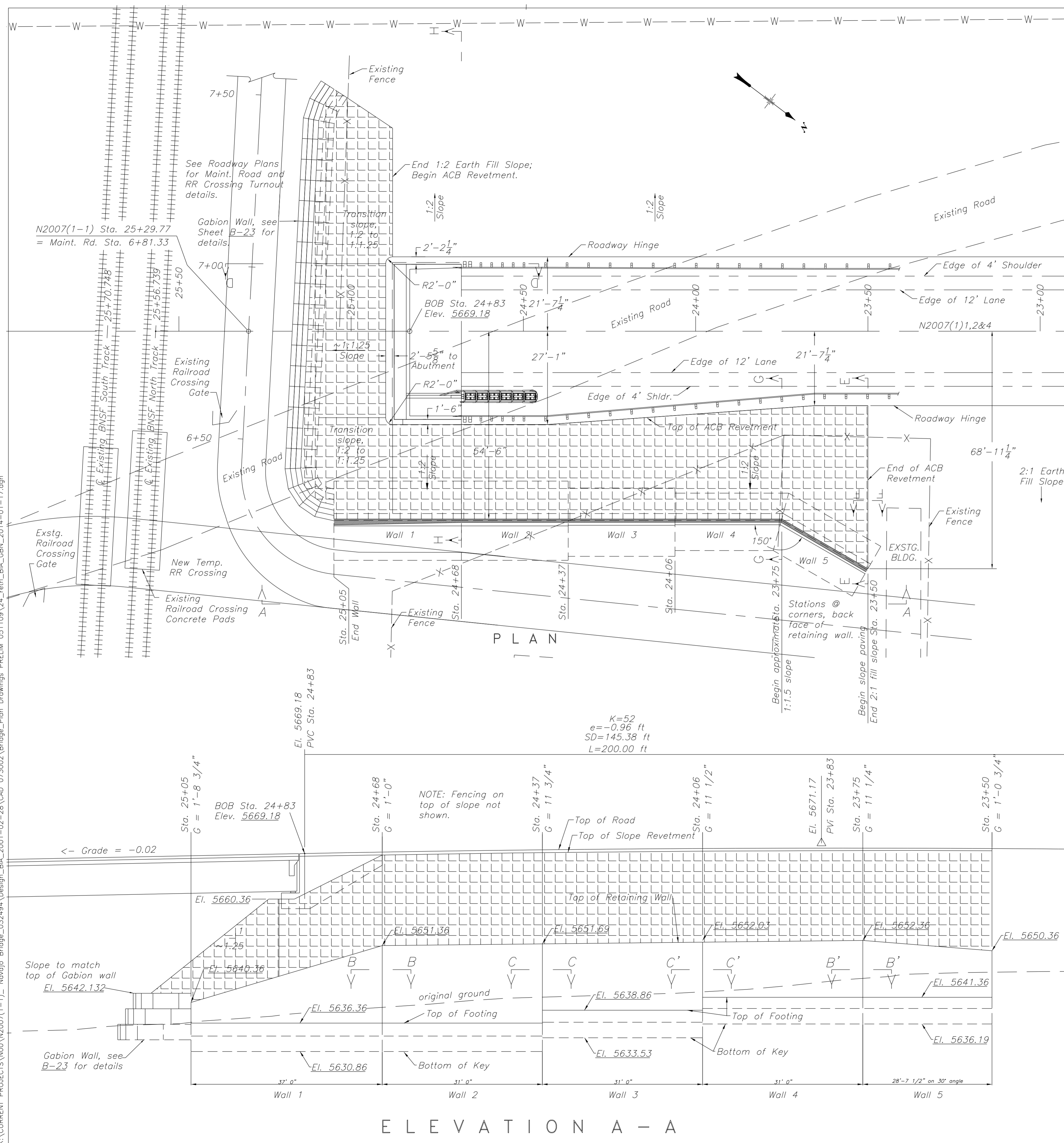
Revised by:

Date:

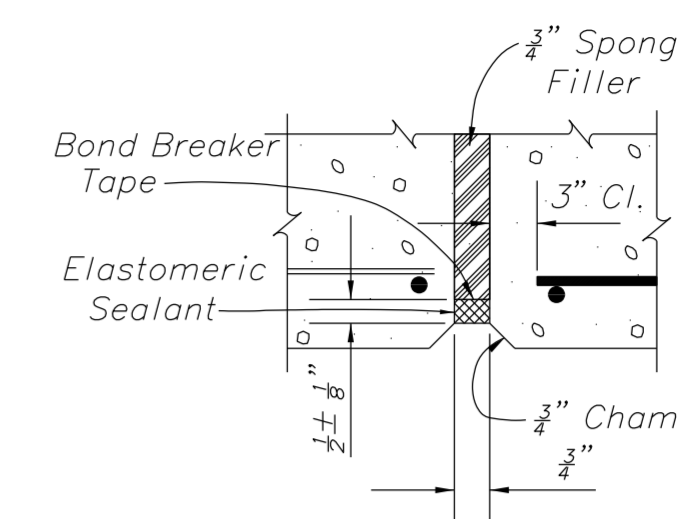
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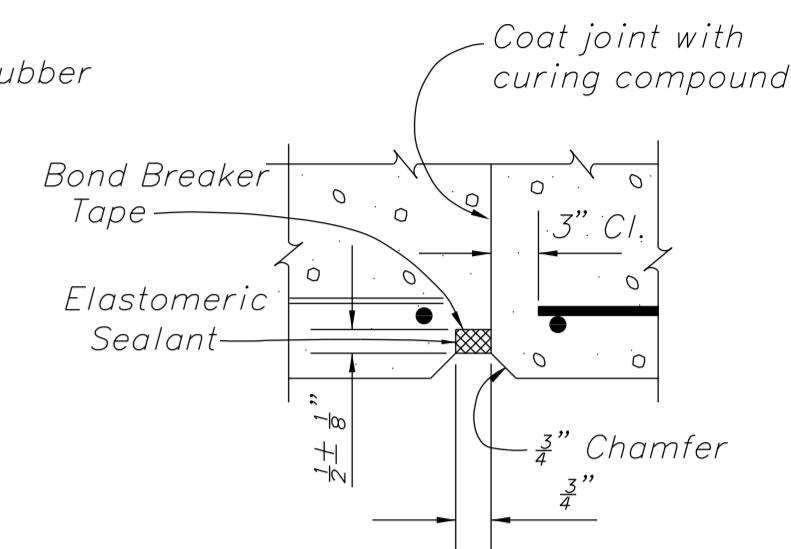
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N2007	N2007(1-1)1,2&4	B-24	63



D E T A I L 1



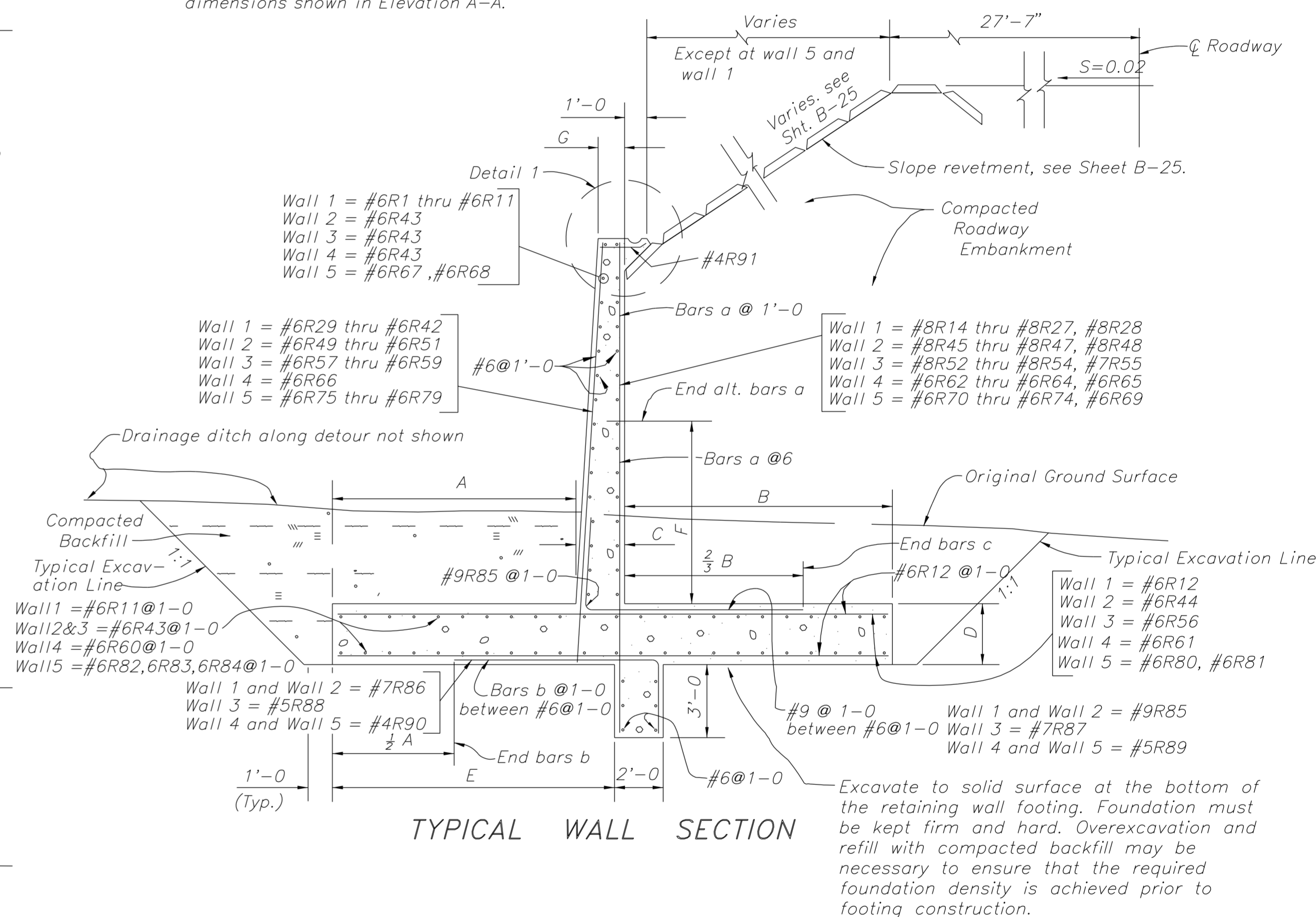
SECTION B-B
SECTION B'-B'



SECTION C-C
SECTION C'-C'

NOTES

Concrete for footing and key shall be placed against solid undisturbed earth or compacted foundation.
Vary dimension G (top of wall width) uniformly between dimensions shown in Elevation A-A.



TYPICAL WALL SECTION

TABLE OF DATA

	DIMENSIONS						REINF. BARS		
	A	B	C	D	E	F	a	b	c
WALL 1	10-0	11-0	2-0	2-6	11-7	7-6	#8	#7	#9
WALL 2	10-0	11-0	2-0	2-6	11-7	7-6	#8	#7	#9
WALL 3	9-0	9-0	1-10	2-4	10-5	6-6	#7	#5	#7
WALL 4	7-6	7-6	1-8	2-2	8-9	5-6	#6	#4	#5
WALL 5	7-6	7-6	1-8	2-2	8-9	5-6	#6	#4	#5

Note: For Dimension G, see Elevation A-A.

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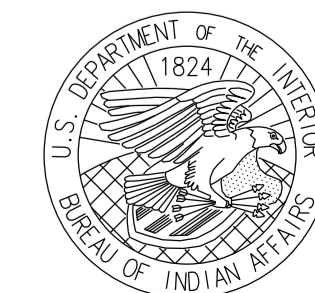
RIO PUERCO BRIDGE
RETAINING WALL & SLOPE PAVING, SHEET 1 OF 2

Designed by: BUREAU OF RECLAMATION

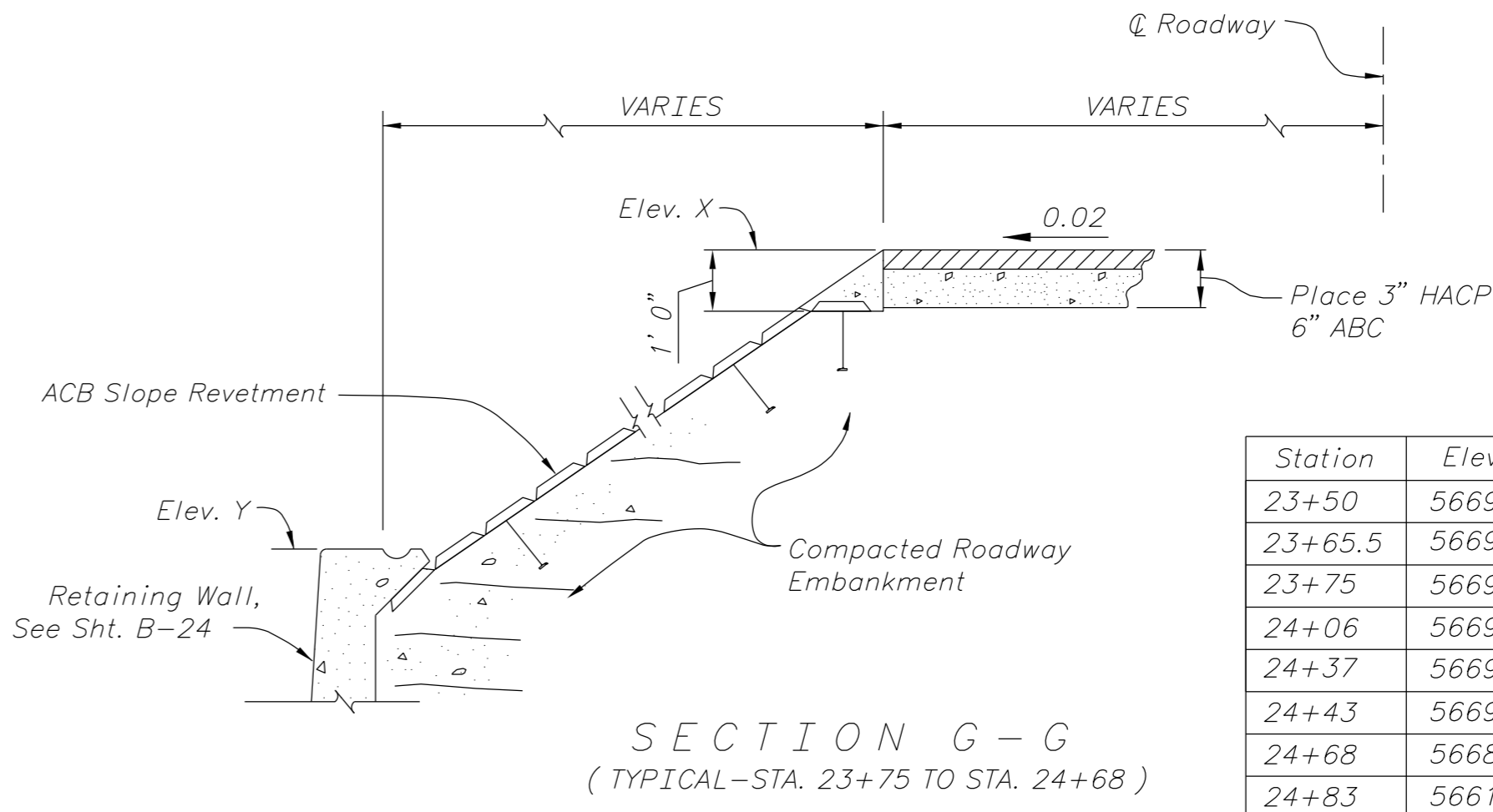
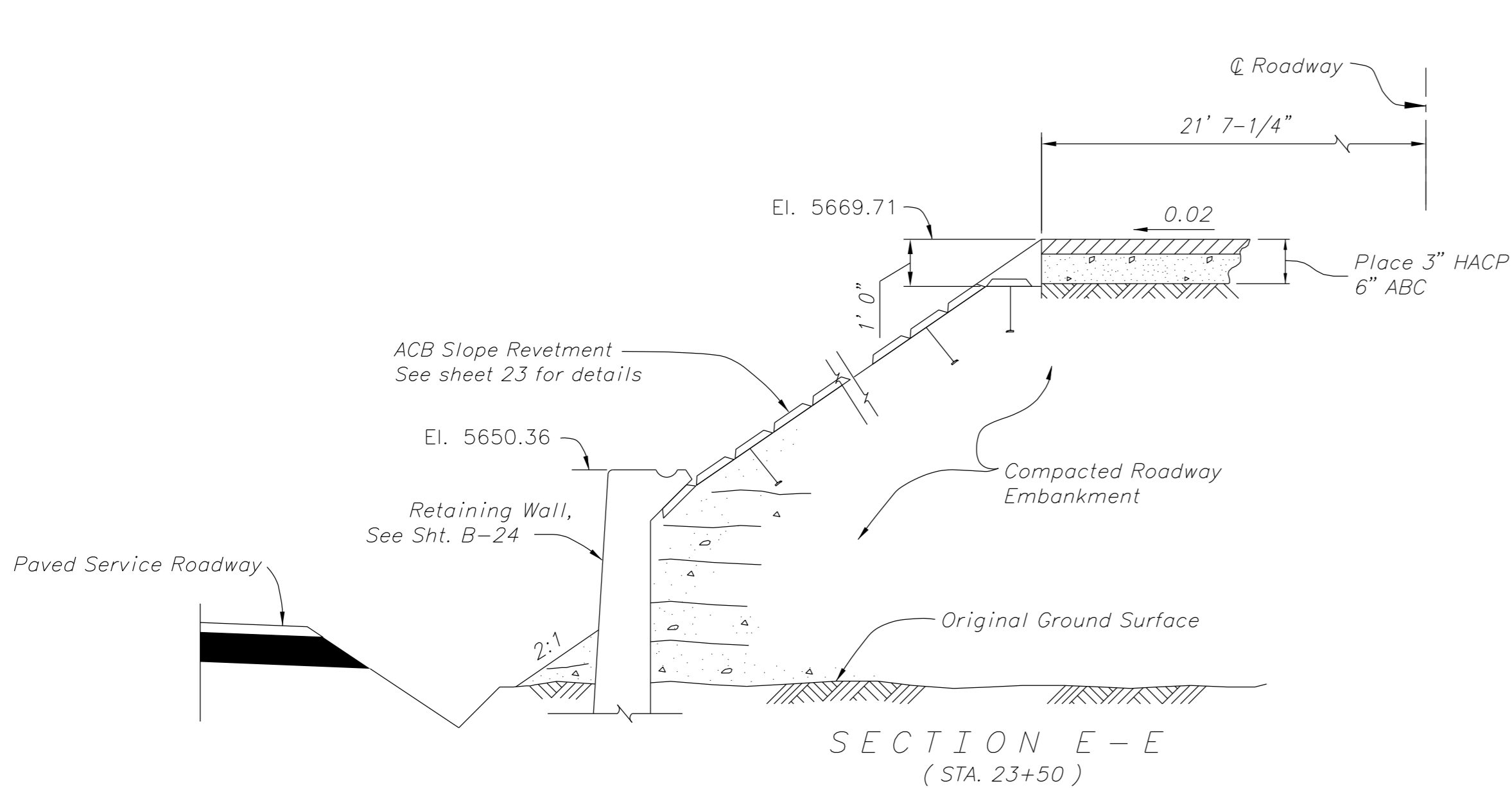
Drawn by: BOR, rsh, cdh, dc Date: 01/17/14

Revised by: _____ Date: _____

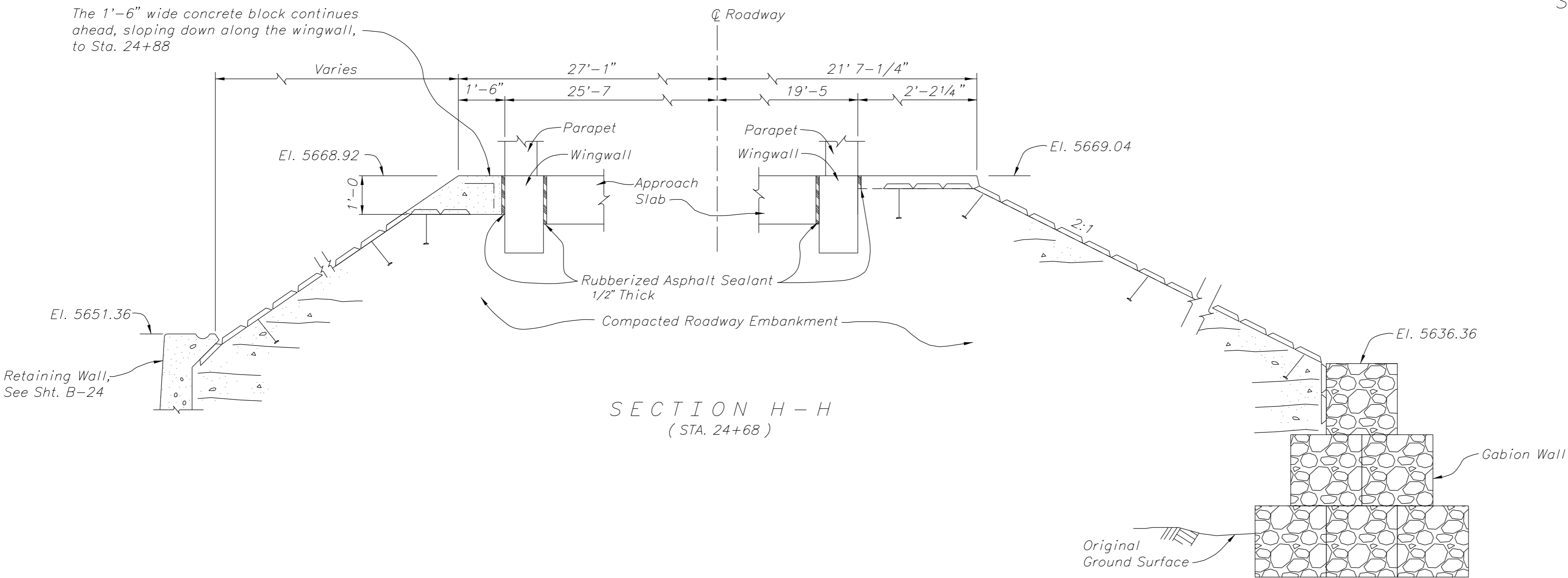
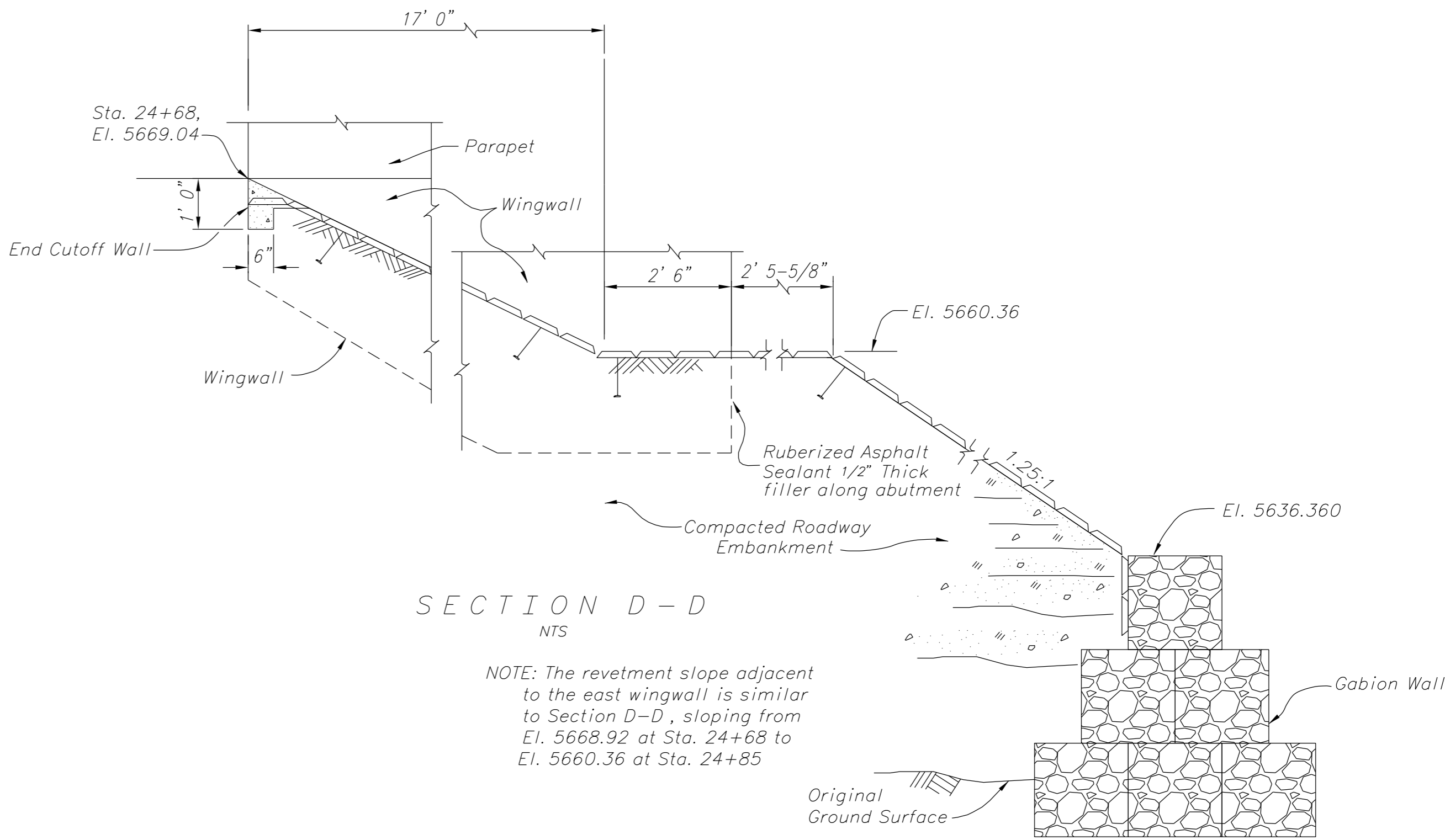
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REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N2007	N2007(1-1)1,2&4	B-25	63



Station	Elev. X	Elev. Y
23+50	5669.71	5650.36
23+65.5	5669.77	5651.60
23+75	5669.75	5652.36
24+06	5669.64	5652.03
24+37	5669.34	5651.69
24+43	5669.28	5651.63
24+68	5668.92	5651.36
24+83	5661.36	5646.90



See RETAINING WALL DETAILS sheet B-24 for section locations.

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BUREAU OF INDIAN AFFAIRS

NAVAJO REGIONAL OFFICE - DIVISION OF TRANSPORTATION

RIO PUERCO BRIDGE
RETAINING WALL & SLOPE PAVING, SHEET 2 OF 2

Designed by: BUREAU OF RECLAMATION

Drawn by: BOR, rsh, cdh

Revised by:

Date: 01/17/14

Date:

File Name: 25_slope_GBN

