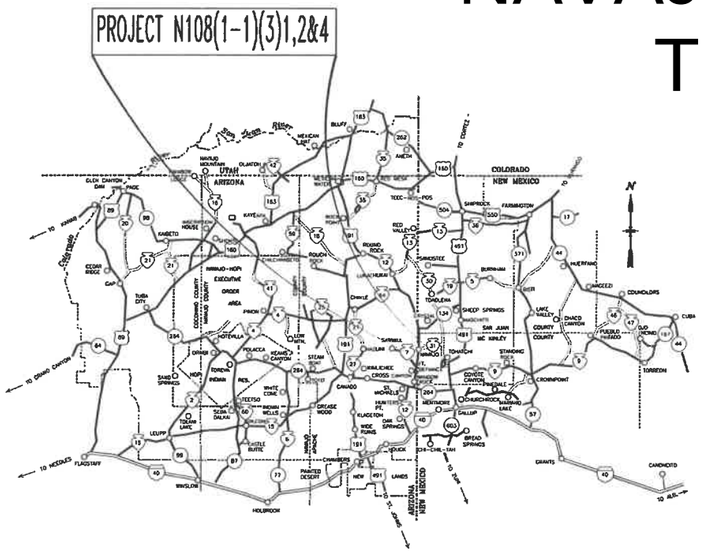
NAVAJO NATION DIVISION OF TRANSPORTATION



NAVAJO RESERVATION MAP
N.T.S.

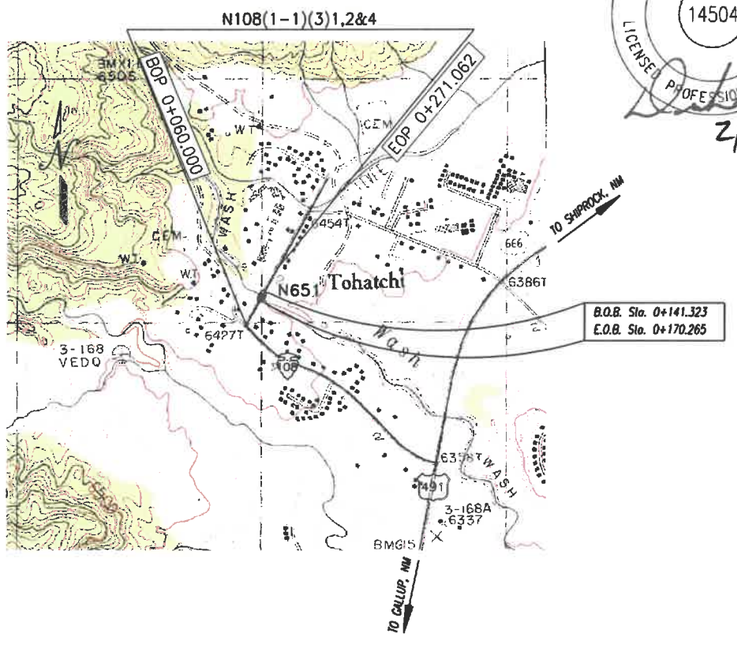
N108

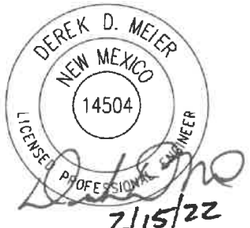
PROJ. N108(1-1)(3)1,2&4
TOHATCHI BRIDGE
I.D. NO. N36481

INDEX TO SHEETS	
SHT. NO.	DESCRIPTION
1	TITLE SHEET
2	TYPICAL ROADWAY SECTION & GENERAL NOTES
3A	ESTIMATED QUANTITIES
3B	BRIDGE GENERAL NOTES, QUANTITIES
4	ROADWAY PLAN AND PROFILE
5	STRUCTURE LAYOUT
6	SOIL PROFILE AND BORING LOCATION PLAN
7	NOT USED
8	EROSION CONTROL PLAN
9	ABUTMENT DETAILS
10	SUPERSTRUCTURE DETAILS @ ABUTMENTS
11	PRESTRESSED CONCRETE BEAM DETAILS - TYPE V
12	BEAM FRAMING PLAN
13	LONGITUDINAL DECK SECTION AND BEARING DETAILS
14	DECK SLAB PLAN
15	DECK SECTION AND DETAILS
16	TOP OF DECK ELEVATIONS
17	APPROACH SLAB DETAILS
18	REINFORCING BAR SCHEDULE
19	BRIDGE RAILING
20	PEDESTRAIN FENCE
21	GUARDRAIL TRANSITION AND THRIE BEAM DETALS
22,23A,23B,23C	STANDARD GUARDRAIL DETAILS
24	MISC. ROADWAY DETAILS
25	PERMANENT SIGNING DETAILS
26	SQUARE POST AND SIGN MOUNTING DETAILS
27	TYPICAL TURNOUT TRAFFIC MARKINGS, CURB RAMP DETAILS
28	STANDARD DELINEATOR AND OBJECT MARKER DETAILS
29	SPILLWAY DETAILS
30-31	STORMWATER POLLUTION AND EROSION CONTROL DETAILS
32	TRAFFIC CONTROL DETOUR DETAILS
33	ROW MONUMENTS AND MARKER DETAILS

DESIGN DATA	
Design Speed	45 km/h
Min. Radius of Curve	67 m
Max. Gradient	5%
Min. Stopping Sight Dist.	58m
Min. Passing Sight Dist.	150m
2019 ADT	240 VPD
2039 ADT	357 VPD
Design Hourly Volume	54 VEHICLES PER HOUR
Max. Super Elevation	4%
Right of Way Width	STA 0+022.000 TO STA 0+110.558 - VARIES STA 0+110.558 TO STA 0+202.000 30 m Lt. & Rt. STA 0+202.000 TO STA 0+271.062 22 m Lt. & Rt.

LENGTH OF PROJECT		
STATION TO STATION	LIN. METERS	KILOMETERS
B.O.P. Station 0+022.000 B.O.B. Station 0+141.323 E.O.B. Station 0+170.265 E.O.P. Station 0+271.062	119.323 28.942 100.797	0.119 0.029 0.101
TOTAL	249.062	0.249





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
RIPRAP
RAILROAD TRACK
GAS LINE
IRRIGATION LINE
WELL
DWELLING
SCHOOL
CHURCH
WINDMILL
RIGHT-OF-WAY MONUMENT

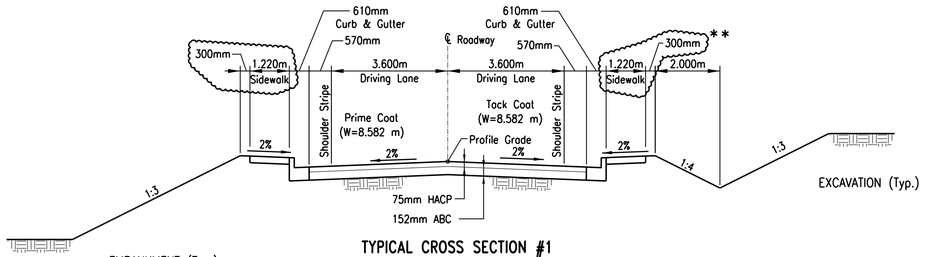
INDIAN SERVICE | COUNTY | STATE | FEDERAL
PAVED | GRADED | UNIMPROVED

RECOMMENDED: _____ DATE: 5/27/26
PRINCIPAL ENGINEER
NAVAJO DIVISION OF TRANSPORTATION

APPROVED: _____ DATE: 5/27/2026
DIRECTOR
NAVAJO DIVISION OF TRANSPORTATION

REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	TOTAL SHEETS
Navajo	NM	Navajo	N108	N108(1-1)(3)1,2&4	2	33

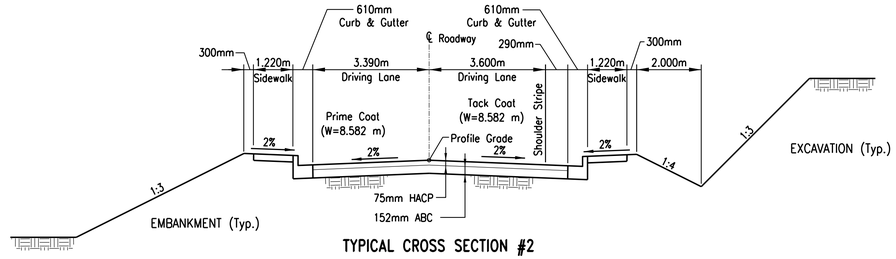
TYPICAL ROAD SECTION
Project N108(1-1)(3)1,2&4 Tohatchi Bridge



TYPICAL CROSS SECTION #1

Station 0+022.000 to Station 0+141.323
Station 0+170.265 to Station 0+230.000
Station 0+230.00 to Station 0+240.000 TAPER (Roadway width 8.34 m to 7.28m)

** NOTE: PROVIDE A 1.5m x 1.5m WIDE PASSING AREA AT LOCATIONS CALLED OUT ON SHEET 4.



TYPICAL CROSS SECTION #2

Station 0+240.000 to Station 0+271.062

ROADWAY GENERAL NOTES

1. ALL WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-14), AND THE SUPPLEMENTAL SPECIFICATIONS FOR THIS PROJECT.

2. ALL PERMANENT AND TEMPORARY ROADSIDE SIGNS SHALL BE PLACED IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) FOR STREETS AND HIGHWAYS (LATEST EDITION AND AMENDMENTS) AND IN ACCORDANCE WITH THE DETAILS ON THESE PLANS.

3. THE DETAILS SHOWN FOR TEMPORARY TRAFFIC CONTROL (TCP) REFLECTS GENERAL REQUIREMENTS FOR THIS PROJECT. THE CONTRACTOR IS RESPONSIBLE FOR PREPARING AND SUBMITTING A TRAFFIC CONTROL PLAN IN ACCORDANCE WITH THESE DETAILS, THE CONTRACTOR'S CONSTRUCTION SEQUENCING PLAN, MUTCD, AND THE SUPPLEMENTAL SPECIFICATIONS FOR SECTION 635, TEMPORARY TRAFFIC CONTROL. THE CONTRACTOR SHALL COORDINATE DETAILS AND SCHEDULING OF THE PROPOSED DETOUR WITH THE TOHATCHI (IHS) HEALTH CLINIC; THE LOCAL SCHOOLS; POLICE, FIRE AND AMBULANCE; AND OTHER AFFECTED PARTIES. THE CONTRACTOR SHALL ALSO SUBMIT A COPY OF HIS TRAFFIC CONTROL PLAN, RELATED TO US491, TO THE NEW MEXICO DOT DISTRICT 6 (2)-WEEKS PRIOR TO START OF CONSTRUCTION.

4. THE DESIGN FEATURES INCLUDING HORIZONTAL AND VERTICAL ALIGNMENTS, TYPICAL SECTIONS, TURNOUTS, AND OTHER DESIGN DETAILS SHOWN ON THESE DESIGN PLANS SHALL NOT BE ALTERED OR MODIFIED IN ANYWAY DURING CONSTRUCTION WITHOUT THE EXPRESSED WRITTEN DIRECTION AND APPROVAL OF THE CONSTRUCTION MANAGER. DRAINAGE STRUCTURES AND TURNOUTS SHALL BE INSTALLED AS SHOWN ON THE PLANS WITH ONLY MINOR CORRECTIONS IN LOCATION, SKEW AND/OR ELEVATIONS AS NEEDED TO FIT FIELD CONDITIONS.

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-14. THIS WORK SHALL BE PAID FOR UNDER BID ITEM 20304-1000..

6. THE BIDDER SHALL READ AND MAKE CAREFUL EXAMINATION OF THE PLANS, SPECIFICATION, QUANTITIES, MATERIALS 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, WILL NOT RELIEVE THE CONTRACTOR FROM ANY RISK OR FROM FULFILLING THE TERMS OF THE CONTRACT.

7. NO WORK SHALL BE PERFORMED OR GROUND DISTURBED OUTSIDE OF THE DESIGNATED CONSTRUCTION LIMITS WITHOUT APPROVAL BY THE CM UNLESS OTHERWISE SHOWN ON THESE PLANS. IN NO CASE SHALL ANY WORK BE PERFORMED OUTSIDE THE DESIGNATED RIGHTS-OF-WAY LIMITS WITHOUT WRITTEN APPROVAL FROM THE CM. THE CONSTRUCTION LIMIT IS THE CATCH POINT EARTHWORK LIMIT PLUS 3.0 METERS, NOT TO EXCEED THE RIGHT-OF-WAY LIMITS.

8. THE DETAILS SHOWN ON THE "STORMWATER POLLUTION AND EROSION/SEDIMENT CONTROL DETAILS" DRAWINGS ARE GENERAL DETAILS TO BE USED BY THE CONTRACTOR IN PREPARING A STORM WATER POLLUTION PREVENTION PLAN ALONG WITH THE REQUIREMENTS IN SECTION 157 OF THE SUPPLEMENTAL SPECIFICATIONS AND SPECIAL CONTRACT REQUIREMENTS. THE CONTRACTOR IS REQUIRED TO SUBMIT A COURTESY COPY OF THE APPROVED SWPPP TO THE NAVAJO NATION EPA OFFICE.

9. 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. EARTHWORK QUANTITIES SHALL BE BASED ON THE "AS STAKED" CROSS SECTIONS. FINAL EARTHWORK QUANTITIES SHALL BE BASED ON FINAL CROSS SECTION SURVEY DATA SUBMITTED TO THE CM IN AN APPROVED FORMAT.

10. ALL TURNOUTS AND DRIVEWAYS SHALL EITHER BE CONSTRUCTED, REBUILT AND/OR RESHAPED OR REMOVED UP TO THE R/W LIMITS AS SHOWN ON THESE PLANS AND PAVED TO THE R/W LIMITS AS REQUIRED. THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE APPROPRIATE EARTHWORK AND PAVING BID ITEMS SHOWN IN THE BID SCHEDULE.

11. STRUCTURAL EXCAVATION AND BACKFILL OF ANY CULVERTS AND OTHER DRAINAGE STRUCTURES SHALL BE CONSIDERED INCIDENTAL TO INSTALLATION OF THE STRUCTURE. EXCESS MATERIAL REMOVED MAY BE USED TO REBUILD TURNOUTS OR PLACED ALONG ROADWAY SHOULDERS IN AREAS DESIGNATED AND AS DIRECTED BY THE CM.

12. ALL FURROW DITCHES AND DRAINAGE DITCHES SHALL BE STAKED AND GRADED TO DRAIN UP TO THE RIGHTS-OF-WAY LIMITS. DITCH BLOCKS, DIKES AND DITCHES MAY BE ADDED AT LOCATIONS DESIGNATED BY THE CM AND/OR AS SHOWN ON THESE PLANS. 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. IF NO BID ITEM IS SHOWN IN THE BID SCHEDULE, PAYMENT WILL BE CONSIDERED INCIDENTAL TO ITEM 20401.

13. IMMEDIATELY PRIOR TO PLACING AGGREGATE SURFACE, THE TOP 152 mm OF FINISHED SUBGRADE SHALL BE CHECKED FOR COMPACTION AND GRADE. IF COMPACTION DOES NOT MEET THE MINIMUM SPECIFIED COMPACTION REQUIREMENTS, THE SUBGRADE SHALL BE WATERED AND/OR SCARIFIED AS NEEDED AND RE-COMPACTED TO THE REQUIRED DENSITY. IN NO CASE SHALL ANY EMBANKMENT OR SURFACING MATERIAL BE PLACED ON FROZEN, MUDDY OR UNSTABLE NATURAL GROUND. THIS WORK SHALL BE CONSIDERED AN INCIDENTAL OBLIGATION OF THE CONTRACTOR.

14. 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, WASTE AND EMBANKMENT MATERIAL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE EARTHWORK BID ITEMS SHOWN. ANY WASTE MATERIAL SHOWN ON THESE PLANS SHALL BE USED AS NECESSARY TO CONSTRUCT TURNOUTS AND DITCH BLOCKS AND BE PLACED AS EMBANKMENT ALONG THE SHOULDERS IN AREAS AS DIRECTED BY THE CM.

15. THE LOCATION OF UTILITIES SHOWN ON SHEET 4 ARE APPROXIMATE AND ARE ONLY TO ASSIST THE CONTRACTOR IN COMPLETING THE WORK. THE CONTRACTOR SHALL VERIFY ALL UTILITIES WITH THE OWNERS PRIOR TO CONSTRUCTION. ANY DAMAGE TO ANY UTILITIES THROUGH THE NEGLIGENCE OF THE CONTRACTOR SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.

16. THE CONTRACTOR SHALL REMOVE AND CLEAN AND STOCKPILE ALL EXISTING CULVERTS, CATTLEGUARD AND FENCING MATERIALS AS CALLED FOR ON THESE PLANS AND SECTIONS 203. ALL SALVAGEABLE MATERIALS AS DETERMINED BY THE CM SHALL BE TAKEN TO THE TOHATCHI CHAPTER MAINTENANCE YARD AND STOCKPILED. ANY MATERIALS DETERMINED TO BE UNUSABLE BY THE CM SHALL BE DISPOSED OF BY THE CONTRACTOR IN ACCORDANCE WITH SECTIONS 107 AND 203. THIS WORK SHALL BE INCLUDED IN THE APPROPRIATE UNIT PRICE BID ITEMS FOR SECTIONS 203. SEE PLAN SHEET #3, NOTE #13 FOR BRIDGE REMOVAL INFORMATION.

17. THE ROADWAY TYPICAL SECTION SHOWN IS THE BASIC TEMPLATE TO WHICH THE PROJECT IS TO BE STAKED AND BUILT. THERE WILL HOWEVER, BE LOCATIONS WHERE, DUE TO EXISTING GROUND CONDITIONS, TURNOUTS, CULVERTS OR OTHER STRUCTURES, ETC., THE SHOWN TYPICAL SECTION CAN NOT BE CONSTRUCTED. THE FINAL CONSTRUCTED ROAD SECTION SHALL BE BASED ON THE COMPUTERIZED STAKING NOTES AS ADJUSTED TO FIT FIELD CONDITIONS.

18. THE CONTRACTOR SHALL BE REQUIRED TO SAW CUT THE EXISTING ASPHALT PAVEMENT WHERE OLD ASPHALT IS TO TIE INTO THE NEW ASPHALT PAVEMENT. THE CONTRACTOR SHALL BE REQUIRED TO TAPER THE NEW ASPHALTIC CONCRETE SURFACING TO MATCH EXISTING PAVEMENT SECTION AT TIE-IN POINTS AND TO PROVIDE FOR A SMOOTH TRANSITION AS DIRECTED BY THE CM. THIS WORK SHALL BE INCIDENTAL TO THE PAVING ITEMS SHOWN.

19 THE CONTRACTOR SHALL BE REQUIRED TO OBLITERATE ALL EXISTING/ABANDONED ROADS WITHIN THE RIGHT-OF-WAY LIMITS AS CALLED FOR IN THESE PLANS. THIS WORK SHALL BE CONSIDERED INCIDENTAL OBLIGATIONS OF THE CONTRACTOR UNDER THE EARTHWORK ITEMS SHOWN.

20. IN NO CASE SHALL ANY CALLED FOR DRAINAGE STRUCTURE(S) BE INSTALLED BELOW THE NATURAL FLOW LINE OF THE WASH OR DITCH. THE CONTRACTOR AND CM SHALL ADJUST THE LENGTH OF PIPE(S) TO MATCH FIELD CONDITIONS AND SUBMIT A REVISED PIPE LIST FOR REVIEW AND APPROVAL BEFORE THE CONTRACTOR ORDERS THE MATERIAL.

21. EXISTING CATTLE GUARDS, CULVERTS, ROADSIDE SIGNS, OR OTHER IMPROVEMENTS NEGLIGENTLY DAMAGED BY THE CONTRACTOR, DURING CONSTRUCTION, SHALL BE RESTORED IN EQUAL OR BETTER CONDITION AT THE CONTRACTOR'S EXPENSE.

22. THE CONTRACTOR SHALL REMOVE ALL EXISTING ROADSIDE SIGNS AT THE TIME NEW PERMANENT ROADSIDE SIGNS ARE INSTALLED, IF THEY ARE IN THE WAY OF CONSTRUCTION. AND/OR CONTRADICT THE CONTRACTOR'S TEMPORARY TRAFFIC CONTROL PLAN. THE CONTRACTOR SHALL NOTIFY THE CM AT LEAST THREE (3) WORKING DAYS IN ADVANCE OF SUCH SIGN REMOVAL. THIS WORK SHALL BE CONSIDERED AN INCIDENTAL OBLIGATION OF THE CONTRACTOR.

23. CONSTRUCTION SURVEY STAKING SHALL BE IN ACCORDANCE WITH SECTION 152 OF THE FP-14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE GOVERNMENT FURNISHED REFERENCE AND CONTROL POINTS DURING CONSTRUCTION. THE COST OF ANY GOVERNMENT RE-STAKING DUE TO THE NEGLIGENCE OF THE CONTRACTOR SHALL BE DEDUCTED FROM THE CONTRACTOR'S PROGRESS PAYMENTS.

24. GRADE AND SHAPE THE NEW SHOULDERS (AS DIRECTED) FROM THE SUBGRADE HINGE POINTS TO AND INCLUDING THE EXISTING DITCH LINING AREAS FOR THE CONSTRUCTION OF NEW RIPRAP WATERWAY DITCHES AND RIPRAP/CONCRETE RUNDOWNS. THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE PAVING ITEMS SHOWN IN THE BID SCHEDULE.

25. ALL RIGHT-OF-WAY REFERENCE MARKERS SHALL BE LABELED IN THE METRIC UNITS OF MEASURE.

26. AN EXISTING WALKING TRAIL FALLS WITHIN THE LIMITS OF PROJECT ONSTRUCTION FROM STA 0+170 RT TO 0+250 LT. THE CONTRACTOR WILL SALVAGE ANY TRAIL MARKERS WITHIN THE PROJECT LIMITS AND MOVE THEM TO FACILITATE PROJECT CONSTRUCTION. THIS WORK SHALL BE INCLUDED IN BID ITEM 20304.

BASIS OF ESTIMATED QUANTITIES

ITEM No.	DESCRIPTION	GRADE	UNIT WT.	APPLICATION
30101-2000	Untreated Aggregate Base Course	"D"	2,244 kg/m^3	152 mm-Mainline 102 mm Turnouts
40201-0500	Hot Asphaltic Conc. Pvmt., Class "B"	"B"	2.404 ton/m^3	(2-38 mm Lifts)-Mainline 1-51 mm-Turnouts
40930-0600	Asphalt Cement	PG 58-28	0.9806 L/kg	6.0% by wt. of total weight of mixture
41101-5000	Cut Back Asphalt, Prime Coat	MC-70	1.056 L/m^2	1.36 L/m^2
41201-1000	Asphalt Emulsion, Tack Coat	SS-1	1.000 L/m^2	0.23 L/m^2

NAVAJO NATION
DIVISION OF TRANSPORTATION
NAVAJO D.O.T.

TYPICAL ROADWAY SECTION AND GENERAL NOTES

Designed by: DDM
Drawn by: ELO Date: 2021
Checked by: Date:
File Name: 02_N108_Rdtyp

M:\TPW\17-100-090-39\2_Disciplines_SHEETS\02_N108_Rdtyp_2016-11-29.dgn

REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	TOTAL SHEETS
Navajo	NM	Navajo	N108	N108(1-1)(3)1,2&4	3A	33

BRIDGE AND ROADWAY ESTIMATED QUANTITIES

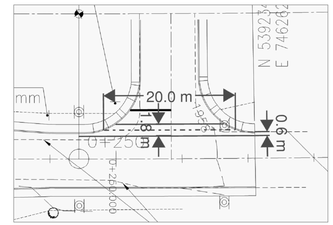
ITEM NO.	DESCRIPTION	QUANTITY	UNIT	AS-BUILT
10901-0000	Extra and Miscellaneous Work Authorized Under Section 109.02(s)	All Req'd	Lump Sum	
15101-0000	Mobilization	All Req'd	Lump Sum	
15201-0000	Construction Survey and Staking	All Req'd	Lump Sum	
~~15301-0000~~	~~Contractor Quality Control~~	~~All Req'd~~	~~Lump Sum~~	
15701-0000	Soil Erosion Control, Temporary	All Req'd	Lump Sum	
15703-1000	Soil Erosion Control, Temporary Straw Mulch	0.60	Hectare	
20102-0000	Clearing and Grubbing	All Req'd	Lump Sum	
20304-1000	Removal of Structures and Obstructions	All Req'd	Lump Sum	
20401-0000	Roadway Excavation	920	Cubic meter	
20403-0000	Unclassified Borrow	1,390	Cubic meter	
20801-0000	Structure Excavation	106	Cubic meter	
20803-0000	Structure Backfill	19	Cubic meter	
25112-1000	Wire Enclosed Riprap, Class 1	780	Cubic meter	
30101-0000	Aggregate Base Course, Grading D	717	Metric ton	
40301-0000	Asphalt Concrete Pavement, Type 1	379	Metric ton	
~~40600-0600~~	~~Asphalt Cement, Grade PG 64-22~~	~~22~~	~~Metric ton~~	
41101-5000	Prime Coat, Penetrating Emulsified Prime (PEP)	4.2	Metric ton	
41201-1000	Tack Coat, Grade SS-1	0.50	Metric ton	
55102-1900	HP 360 x 152 Steel Piles, In Place	105	Meter	
55115-1000	Preboring	104	Meter	
55120-0000	Test Piles	21	Meter	
55201-0200	Structural Concrete Class A(AE)	241	Cubic meter	
55301-0500	Precast, Prestressed, Concrete Structural Members, Type V - Modified, (28.346 m)	5	Each	
55401-1000	Reinforcing Steel	5,805	Kilogram	
55401-2000	Reinforcing Steel, Epoxy Coated	18,950	Kilogram	
55601-0900	Bridge Railing, Steel	68	Meter	
60405-0000	Manhole Adjustment	1	Each	
60812-0000	Portland Cement Concrete Spillway, Type III and Type IV	4	Each	
60902-0400	Portland Cement Concrete Curb and Gutter, 152 mm Depth	460	Meter	
60906-1000	Valley Gutter, Concrete, 152 mm Depth	40	Square Meter	
61501-0100	Sidewalk, Concrete, 102 mm Depth	560	Square Meter	
61701-5000	Guardrail System SGR-20B Type PDE 02 w/ MSKT-TL3-8 End Terminal & Thrie Beam Transition	91	Meter	
61901-1701	Fence, Chain Link, 1372mm Height	68	Meter	
62101-0000	Right of Way Monument	16	Each	
62102-0000	Reference Marker	16	Each	
62510-1000	Seeding, Dry Method	0.60	Hectare	
63302-0003	Sign Installation, 1 Post & Hardware: 4.10 kg/m	0.92	Square Meter	
63302-0010	Sign Installation, 2 Posts & Hardware: 2.98 kg/m	1.16	Square Meter	
63308-3000	Object Markers, Type 3 with 1 Post and Hardware: 2.98 kg/m	4	Each	
63309-0020	Delineators, Flexible, Type 1b	10	Each	
63401-1510	Pavement Markings, Type H, Solid Yellow	490	Meter	
63401-1520	Pavement Markings, Type H, Solid White	470	Meter	
63405-3260	Pavement Marking, Type H, Stop Bar	2	Each	
63501-0000	Temporary Traffic Control	All Req'd	Lump Sum	

62101-0000 & 62102-0000 R/W MONUMENTS AND REFERENCE MARKERS

STATION	OFFSET (m)	LOCATION	REQUIRED
0+027.000	22	Left & Right	2
0+051.130	22	Left & Right	2
0+110.558	22	Left & Right	2
0+110.558	30	Left & Right	2
0+201.998	30	Left & Right	2
0+201.998	22	Left & Right	2
0+244.380	22	Left & Right	2
0+271.068	22	Left & Right	2
TOTAL REQ'D :			16

ITEM NO. 60906-1000 VALLEY GUTTER, CONCRETE, 152mm DEPTH

STATION	STATION	LOC	LENGTH (m)	WIDTH (m)	AREA (sq.m.)
0+248.200	0+268.100	LT	20.0	1.8	36.00
				TOTAL	36.00
				USE	40



ITEM NO. 20401-0000 ROADWAY EXCAVATION
ITEM NO. 20403-0000 UNCLASSIFIED BORROW

STATION	CUT (cu.m.)	FILL * (cu.m.)	BORROW (cu.m.)	WASTE (cu.m.)
0+022.000 to 0+141.323	713.836	1525.817	811.980	
0+169.815 to 0+271.062	203.046	776.234	573.187	
TOTALS	916.883	2302.051	1385.168	
PROJECT USE	**920**		**1390**	

* FILL quantities assume a 15% fill factor

ITEM NO. 15708-1000 SOIL EROSION CONTROL, TEMPORARY STRAW MULCH
and
ITEM NO. 62510-1000 SEEDING, DRY METHOD

STATION	STATION	LOC	AREA (ha)
0+025.900	0+141.773	LT	0.1029
0+025.900	0+141.773	RT	0.1098
0+141.773	0+169.815	LT & RT	0.1020
0+169.815	0+271.062	LT	0.1060
0+169.815	0+271.062	RT	0.1097
		TOTAL	0.53
		USE	0.60

ITEM NO. 60902-0400 PORTLAND CEMENT CONCRETE CURB and GUTTER, 152mm DEPTH

STATION	STATION	LOC	LENGTH (m)
0+025.900	0+136.528	RT	124.055
0+175.060	0+271.062	RT	96.0
0+025.900	0+136.528	LT	120.855
0+175.060	0+253.500	LT	91.555
0+262.400	0+271.062	LT	21.8
		TOTALS	454.27
		USE	460

ITEM NO. 61701-5000 GUARDRAIL SYSTEM SGR-20B, TYPE PDE 02 WITH MSKT-TL3-8 END TERMINL & THRIE BEAM GUARDRAIL TRANSITION

STATION	STATION	LOC	LENGTH (m)
0+113.788	0+139.030	RT	25.242
0+119.030	0+139.030	LT	20.006
0+172.558	0+192.558	RT	20.006
0+172.558	0+197.800	LT	25.242
		TOTALS	90.496
		USE	91

20304-1000 REMOVAL OF STRUCTURES AND OBSTRUCTIONS

STATION	LOCATION	REMARKS
0+140.005 to 0+172.571	CL	Remove Existing Bridge
0+166.806 to 0+177.369	Rt.	Remove Existing Fence
0+170.839 to 0+186.421	Lt.	Remove Existing Fence
0+223.920 to 0+271.062	Lt. & Rt.	Remove Existing Curb & Gutter
0+223.920 to 0+271.062	CL	Remove Existing Asphalt Pavement
0+170.000 to 0+250.000	Rt & Lt	Salvage Existing Trail Markers

ITEM NO. 61501-0100 SIDEWALK, CONCRETE, 102mm DEPTH

STATION	STATION	LOC	LENGTH (m)	WIDTH (m)	AREA (sq.m.)	REMARKS
0+025.900	0+136.528	RT	124.055	1.22	151.35	Includes ADA wheelchair ramp
0+112.000	0+113.500	RT	1.5	0.3	0.45	Extra 0.3m width for passing area
0+116.500	0+118.000	LT	1.5	0.3	0.45	Extra 0.3m width for passing area
0+175.060	0+271.062	RT	96.0	1.22	117.12	
0+025.900	0+136.528	LT	120.855	1.22	147.44	Includes ADA wheelchair ramp
0+175.060	0+253.500	LT	91.555	1.22	111.70	Includes ADA wheelchair ramp
0+193.500	0+195.000	RT	1.5	0.3	0.45	Extra 0.3m width for passing area
0+199.000	0+200.500	LT	1.5	0.3	0.45	Extra 0.3m width for passing area
0+262.400	0+271.062	LT	21.8	1.22	26.60	Includes ADA wheelchair ramp
				TOTALS	556.01	
				USE	560	

EXISTING UTILITIES

STATION	LOC.	OWNER	DESCRIPTION	SKEW	REMARKS
0+022 - 0+271.062	Right	NTUA	Under ground water	---	To Remain in Place
0+097± - 0+180±	Right	NTUA	Over Head Power	---	To Remain in Place
0+117.610	℄	NTUA	Over Head Power	85°	To Remain in Place
0+110	℄	NTUA	SSA Manhole	---	To Be Adjusted

NOTE: Protection/Relocate comments noted are assumed and are based on the best available information. The Utility Owners may elect to select other options.

NAVAJO NATION
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ESTIMATED QUANTITIES

Designed by: DDM	
Drawn by: ELO	Date: 2021
Checked by:	Date:
File Name: 03_N108_Gennote	

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REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	TOTAL SHEETS
Navajo	NM	Navajo	N108	N108(1-1)(3)1,2&4	3B	33

ITEM NO. 30101-0000 AGGREGATE BASE COURSE, GRADING D

N108 MAINLINE					
STATION	STATION	LENGTH (m)	WIDTH	AREA (sq.m.)	UNIT
0+022.00	0+037.30	15.30	Varies	330.000	
0+037.30	0+136.53	99.23	8.34	827.562	
0+175.06	0+230.00	54.94	8.34	458.200	
0+230.00	0+240.00	10.00	7.81	78.100	
0+240.00	0+271.06	31.06	7.28	226.131	
			AREA=	1919.992	
BC THICKNESS	152 mm			291.839	cu.m.
UNIT WEIGHT	2244 kg/cu.m.			654,886	kg
			kg/1000 = Metric Ton	654.89	Metric Ton
TURNOUTS					
STATION	STATION	LENGTH (m)	WIDTH	AREA (sq.m.)	UNIT
0+245.20	0+271.06	25.86	Varies	181.700	
			AREA=	181.700	
BC THICKNESS	152 mm			27.618	cu.m.
UNIT WEIGHT	2244 kg/cu.m.			61,976	kg
			kg/1000 = Metric Ton	61.98	Metric Ton
			PROJECT TOTAL =	717.0	Metric Ton

ITEM NO. 40301-0000 ASPHALT CONCRETE PAVEMENT, TYPE 1

N108 MAINLINE					
STATION	STATION	LENGTH (m)	WIDTH	AREA (sq.m.)	UNIT
0+022.00	0+037.30	15.30	Varies	330.000	
0+037.30	0+136.53	99.23	8.34	827.562	
0+175.06	0+230.00	54.94	8.34	458.200	
0+230.00	0+240.00	10.00	7.81	78.100	
0+240.00	0+271.06	31.06	7.28	226.131	
			AREA=	1919.992	
HACP THICKNESS	75 mm			143.999	cu.m.
UNIT WEIGHT	2.404 Metric Ton/cu.m.			346	Metric Ton
TURNOUTS					
STATION	STATION	LENGTH (m)	WIDTH	AREA (sq.m.)	UNIT
0+245.20	0+271.06	25.86	Varies	181.700	
			AREA=	181.700	
HACP THICKNESS	75 mm			13.628	cu.m.
UNIT WEIGHT	2.404 Metric Ton/cu.m.			33	Metric Ton
			PROJECT TOTAL =	379.0	Metric Ton

ITEM NO. 41101-5000 PRIME COAT, PENETRATING EMULSIFIED PRIME (PEP)

HACP BID ITEM AREA TO APPLY PRIME			2101.7	sq. m.
PRIME APPLICATION RATE	2.0	L/sq. m.	4203.38	Liters
PRIME UNIT WEIGHT	1001	L/Metric Ton	4.2	Metric Ton

ITEM NO. 55201-0200 STRUCTURAL CONCRETE CLASS A(AE)

LOCATION	VOLUME (cu.m.)
ABUTMENT #1	43.680
ABUTMENT #2	43.680
APPROACH SLABS (2)	30.800
SLEEPER SLABS (2)	13.306
APPROACH SLAB SIDEWALKS (4)	4.557
DECK SIDEWALKS (2)	17.881
DECK SLAB	81.246
INTERMEDIATE DIAPHRAGMS (2)	5.518
TOTALS	240.667
USE	241

ITEM NO. 55601-0900 BRIDGE RAILING, STEEL
and
ITEM NO. 61901-1701 FENCE, CHAIN LINK, 1372mm height

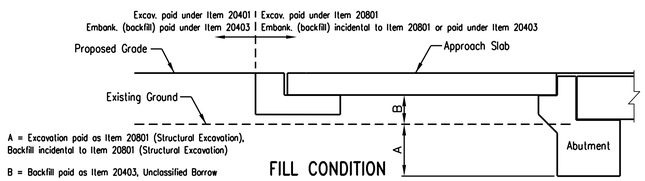
STATION	STATION	LOC	LENGTH (m)
0+139.030	0+172.558	LT	33.528
0+139.030	0+172.558	LT	33.528
		TOTALS	67.06
		USE	68

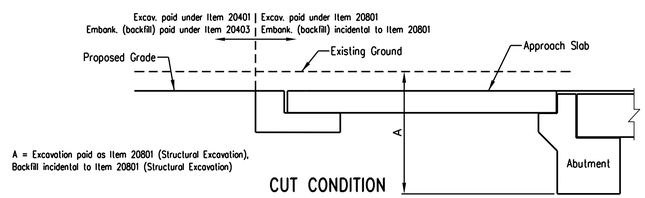
ITEM NO. 20801-0000 STRUCTURE EXCAVATION

LOCATION	UNIT	QUANTITY
Abutment #1	cu.m.	62
Abutment #2	cu.m.	44
TOTALS	cu.m.	106

ITEM NO. 20803-0000 STRUCTURE BACKFILL

LOCATION	UNIT	QUANTITY
Abutment #1	cu.m.	6
Abutment #2	cu.m.	13
TOTALS	cu.m.	19





STRUCTURAL EXCAVATION & BACKFILL DETAIL

Not to Scale

BRIDGE GENERAL NOTES

1. SPECIFICATIONS: Design; AASHTO LRFD Bridge Design Specifications, 8th Edition, November 2017. Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-14 and Supplemental Specifications.
2. UNITS: This project has been designed and drawn using the SI (metric) system of units.
3. DESIGN LOADS: Dead Loads; Concrete = 23.56 kN/m^3, Steel = 76.97 kN/m^3, Paving Allowance = 1.20 kPa of Roadway Surface, Backfill Earth Pressure = 4.7 kPa/m LIVE LOADS; HS-20 plus impact.
4. RATINGS: Inventory Rating = MS 21.2 Operating Rating = MS 35.5.
5. DESIGN & CONSTRUCTION: Superstructure designed using AASHTO Load Factor Design (LFD) and substructure (including Bearings) using Service Design. Material strengths are F'c = 31.1 MPa for reinforced concrete, Fy = 413.7 MPa for reinforcing steel and Fy = 420.0 MPa for H-piling. Prestressed beams designed in accordance with current AASHTO design criteria. Material strengths are F'c = 41.4 MPa for prestressed concrete and Fs = 1861.6 MPa for prestressing steel. This structure utilizes integral abutments. The beams are "fixed" to the abutments but the abutment piles are free to flex, in order to take any temperature movement. Therefore, although "fixed" type bearings are used at the abutments, the structure is indeed free to expand.
6. CONCRETE: Concrete in precast, prestressed concrete AASHTO Type V-Modified beams and shall be Class P and shall have a F'ci = 34.50 MPa at release of prestressing strands and the minimum design strength indicated above at 28 days. Cast in place concrete in superstructure and substructure shall be Class A(AE) with the minimum design strength indicated above at 28 days. The air content for Class A(AE) concrete shall not be less than that specified in the FP-14, Table 552-2. Chamfer exposed corners of all concrete 19mm unless otherwise shown. The time limits specified in the FP-14, Table 552-4 shall apply. If concrete can not be discharged within the specified time limit, alternatives such as dry batching, a site batching plant conforming to the specifications or retardant admixtures shall be used. If required, such alternatives shall be discussed at pre-construction meeting. Approval of alternative methods shall be based on review of historical data for identical strength concrete placed at similarly remote locations. Historical data shall show conformance to the required specifications. Driving surfaces of the bridge deck and approach slab shall be given a finish in accordance with Section 552.14(a),(b) and (c)(1) of the FP-14. Exposed surfaces of the substructure down to 300mm below the ground line and edges and bottom of bridge deck overhang, shall be given a Class 2 rubbed finish as specified in Section 552.16 of the FP-14, (b). All other surfaces of concrete shall be given a Class 1 ordinary finish.
7. REINFORCING STEEL: All reinforcing steel shall conform to AASHTO M31M, Grade 420 and epoxy coated reinforcing steel shall conform to AASHTO M284M AND AASHTO M31M, Grade 420. All reinforcement in deck, or protruding into the deck shall be epoxy coated. The minimum cover of any reinforcing steel shall be 50mm unless otherwise specified. Lengths of reinforcing steel bars shown include required splice lengths for splices shown. Any additional splices not shown in the plans shall be requested for approval by the Contractor and shall not be utilized until written approval is granted by the CM. Additional reinforcing steel quantities required for additional splices not shown in the plans shall not be paid for. Reinforcing steel sizes shown in these plans are in accordance with AASHTO M31M
8. PRESTRESSING STEEL: Prestressing steel shall be 15.3 mm ø, seven wire, low relaxation prestressing steel strands conforming to AASHTO M203M, Grade 1860.
9. PRESTRESSED BEAMS: Prestressed beams shall be manufactured as detailed in these plans. All concrete, reinforcing steel, prestressing steel, lifting devices, inserts, bearing plates, elastomeric bearing pads, and any other materials necessary for the transportation, and fabrication of the prestressed beams shall be considered incidental to Item 55301-0500, Precast, Prestressed Concrete Structural Members, AASHTO Type V-Modified. Elastomeric bearing pads shall conform to AASHTO M251M and shall be 60 Durometer hardness.
10. STRUCTURAL STEEL: Structural steel for expansion joint extrusions and guard angles shall conform to ASTM A572, Grade 50. Diaphragm anchor bolts shall conform to AASHTO M164M. Anchor studs for expansion joints and guard angles shall conform to AASHTO M169M, Grades 1015, 1018 or 1020.
11. STEEL PILES: Steel piles shall be HP310 x 110 w/ heavy duty pile tips. Piles shall conform to AASHTO M270M Grade 250. Pile shall be driven to three times the Applied Structural Load shown in the plans. Piles shall be driven utilizing the dynamic formula given in Section 551.08 (b) of the FP-14. The ultimate pile capacity shall be the Applied Structural Load multiplied by a factor of safety of 3. Piles shall be driven to at the minimum tip elevation as determined for lateral load stability or below to attain the specified RU bearing capacity. Splicing shall be in accordance with Sections 551.10 and 551.11 of the FP-14 except that splice details shall be as shown in the plans. Piles shall be driven to the tolerances given in Section 551.10 of the FP-14. Axial alignment deviations shall be measured starting from the planned pile location at the cutoff elevation and shall not exceed the tolerance given in Section 551.10 of the FP-14. Assure correct pile placement and alignment (within applicable tolerances) by providing horizontal bracing between the crane and pile driving leads. Prebore all abutment piles to a depth of 3.000m below bottom of abutment cap with an oversized 587mm diameter auger and backfill with select granular backfill per Section 704.08 of the FP-14 after placement of pile. Any additional preboring shall be in accordance with Section 551.09 of the FP-14. Backfill for top 3.0 m of preboring shall not contain cement. This bridge project includes test piles. See supplemental specificatoins Section 551 for IMPORTANT information, including determination of pile quantities required for the project.
12. STRUCTURE EXCAVATION AND BACKFILL: All structure excavation and backfill shall be done according to FP-14, Section 208 - Structure Excavation and Backfill for Select Major Structures. Structure Backfill for filling the Structure Excavation back to natural ground is considered incidental to Item 20801-0000, Structure Excavation as per the Specification Section 208.13. Structure Backfill placed above natural ground to reach the proposed final grade shall be paid for under Item 20803-0000, Structure Backfill in accordance with the FP-14, Section 208.13.
13. REMOVAL OF EXISTING BRIDGE: The contractor shall remove, clean (if so directed) and stockpile all existing salvageable material, as indicated by the CM and as called for on these plans under Item 203. Salvageable material shall be Delivered To The Chapter Yard by the contractor. Any existing materials determined to be unsalvageable by the CM shall be disposed of by the contractor in accordance with Section 107 and 203 of the FP-14 and supplemental specifications. Any existing piling shall be removed to one meter below planned flowline, or lower, to accommodate new construction. All work involving salvageable and unsalvageable material shall be included in the unit price for item 203, as applicable.

NAVAJO NATION
DIVISION OF TRANSPORTATION
NAVAJO D.O.T.

BRIDGE GENERAL NOTES AND QUANTITIES

Designed by: DDM	
Drawn by: ELO	Date: 2021
Checked by:	Date:
File Name: 03_N108_Gennote	

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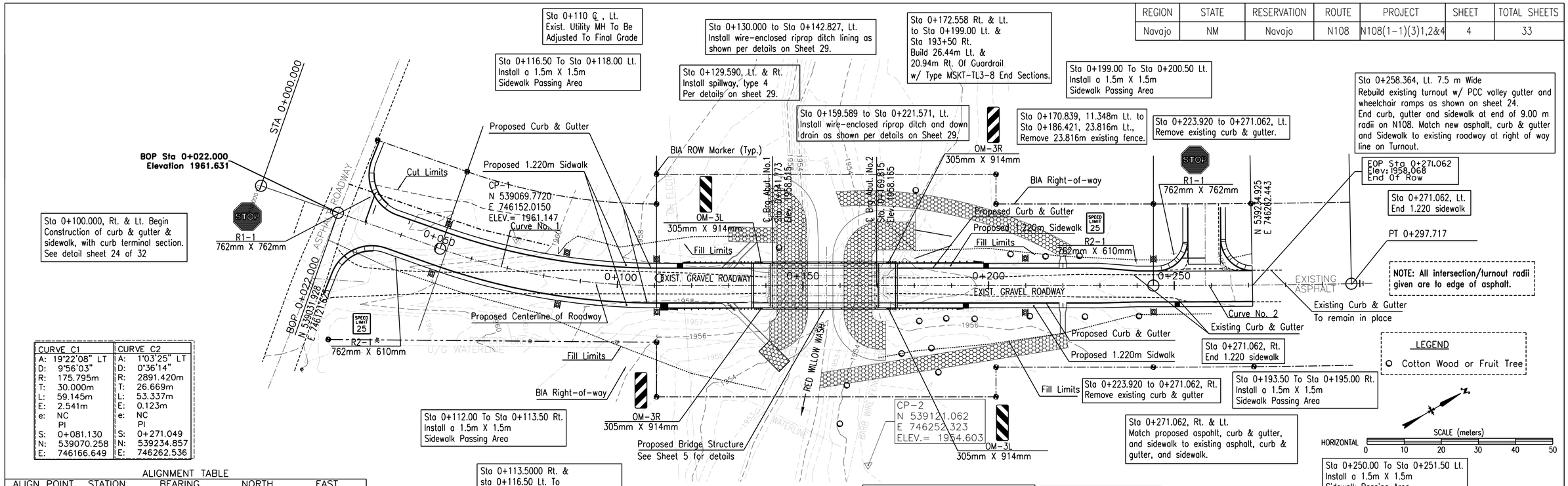
REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	TOTAL SHEETS
Navajo	NM	Navajo	N108	N108(1-1)(3)1,2&4	4	33

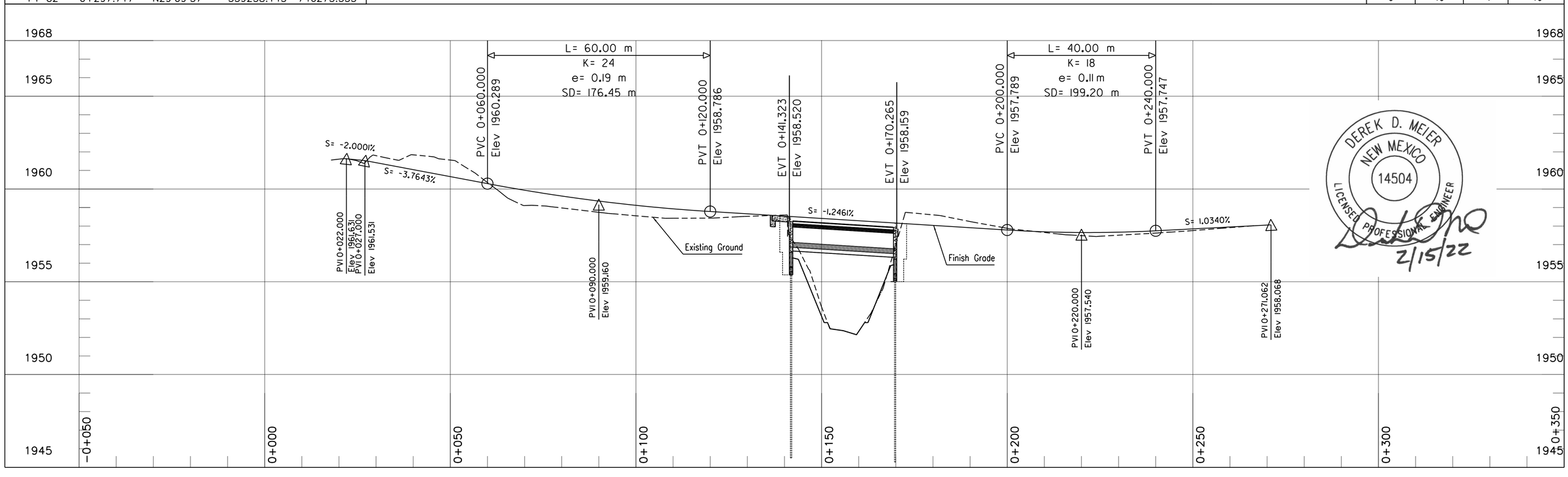


CURVE C1		CURVE C2	
A:	19°22'08" LT	A:	1°03'25" LT
D:	9°56'03"	D:	0°36'14"
R:	175.795m	R:	2891.420m
T:	30.000m	T:	26.669m
L:	59.145m	L:	53.337m
E:	2.541m	E:	0.123m
e:	NC	e:	NC
	PI		PI
S:	0+081.130	S:	0+271.049
N:	539070.258	N:	539234.857
E:	746166.649	E:	746262.536

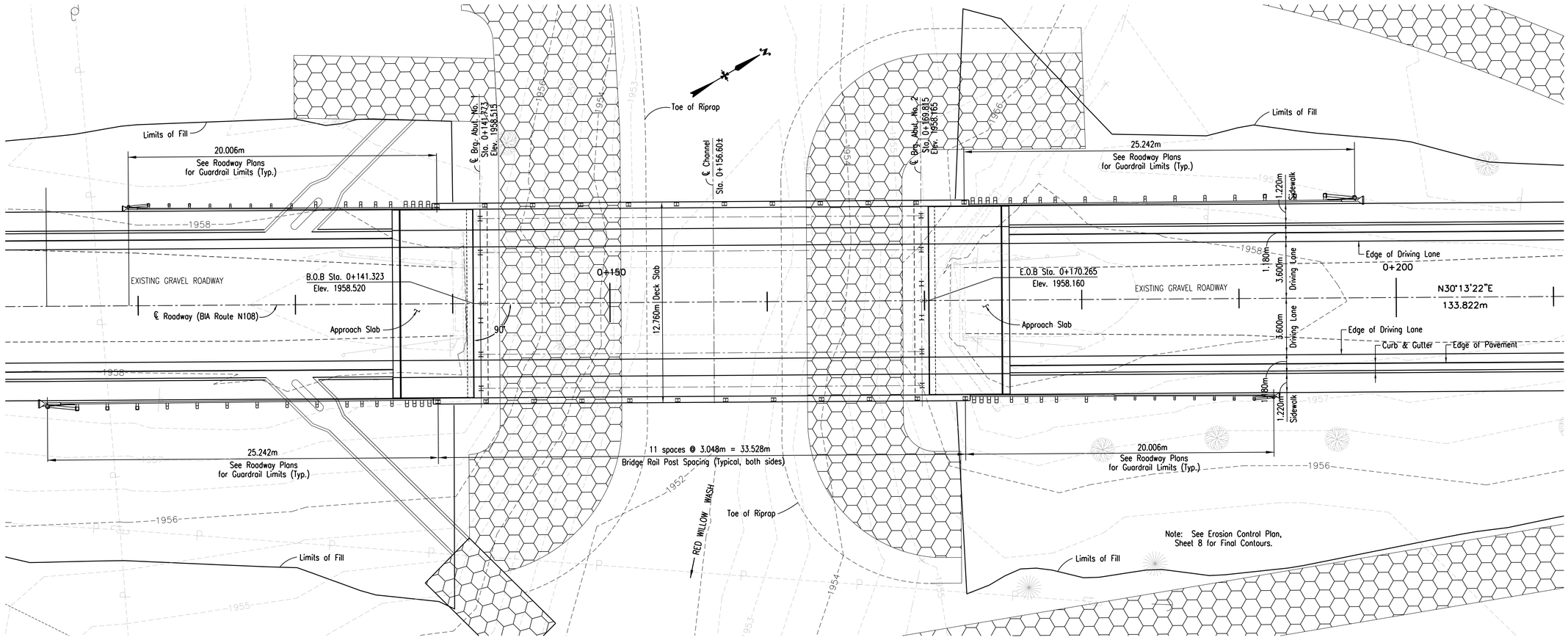
ALIGNMENT TABLE

ALIGN POINT	STATION	BEARING	NORTH	EAST
BOP	0+022.000		539031.928	746121.625
PC C1	0+051.130	N49°35'30"	539050.811	746143.806
PI C1	0+081.130	N49°35'30"	539070.258	746166.649
PT C1	0+110.558	N30°13'22"	539096.181	746181.750
PC C2	0+244.380	N30°13'22"	539211.813	746249.111
PI C2	0+271.049	N30°13'22"	539234.857	746262.536
EOP	0+271.062	N29°47'08"	539234.925	746262.443
PT C2	0+297.717	N29°09'57"	539258.145	746275.533

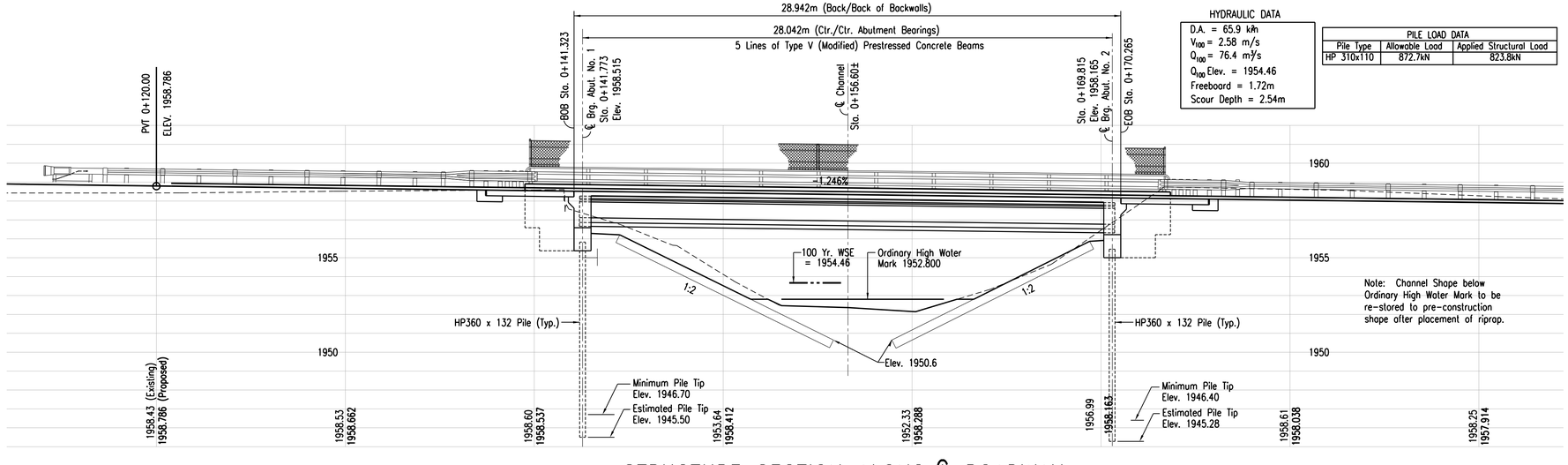
DELINEATORS		OBJECT MARKER	RIGHT OF WAY AND REFERENCE MARKERS
Type "1a"	Type "1b"	Type 3	
0	10	4	16



REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	TOTAL SHEETS
Navajo	NM	Navajo	N108	N108(1-1)(3)1,2&4	5	33



STRUCTURE LOCATION PLAN



HYDRAULIC DATA

D.A.	= 65.9 km
V_{100}	= 2.58 m/s
Q_{100}	= 76.4 m^3/s
Q_{100} Elev.	= 1954.46
Freeboard	= 1.72m
Scour Depth	= 2.54m

PILE LOAD DATA

Pile Type	Allowable Load	Applied Structural Load
HP 310x110	872.7kN	823.8kN

STRUCTURE SECTION ALONG ℄ ROADWAY

KELLY R. HEATH
NEW MEXICO
18915
PROFESSIONAL ENGINEER
12/8/2022

NOTE:
B.O.B. = Begining of Bridge
E.O.B. = End of Bridge

Note: Channel Shape below Ordinary High Water Mark to be re-stored to pre-construction shape after placement of riprap.

NAVAJO NATION
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NAVAJO D.O.T.

STRUCTURE LAYOUT

Designed by: DDM	
Drawn by: ELO	Date: 2021
Checked by:	Date:
File Name: 05_N108_Struloc	

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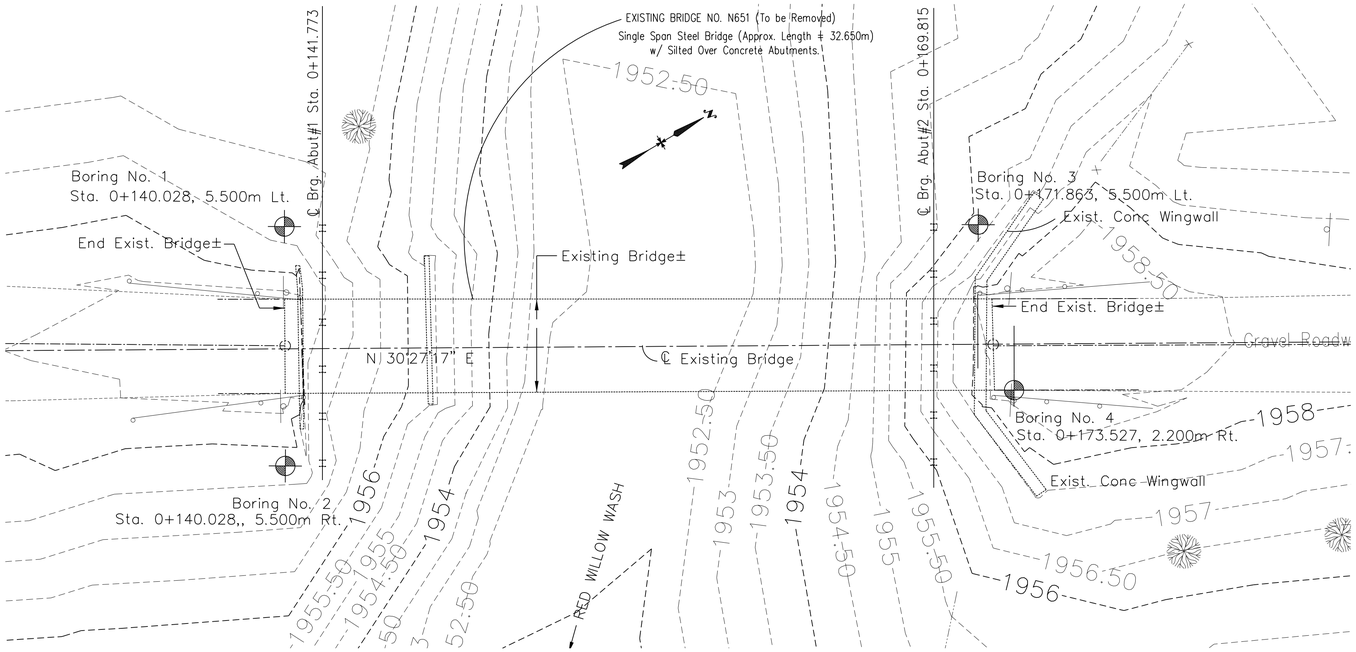
REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	TOTAL SHEETS
Navajo	NM	Navajo	N108	N108(1-1)(3)1,2&4	6	33



BORING LOCATION PLAN

Not to Scale

FOUNDATION INFORMATION		
	ABUTMENT NO. 1	ABUTMENT NO. 2
PILE TYPE:	HP360 x 152	HP360 x 152
NUMBER OF PILES:	6	6
APPLIED STRUCTURAL LOAD/PILE:	823.8 kN	823.8 kN
RU/PILE:	2471.4 kN	2471.4 kN
MINIMUM TIP ELEVATION:	1946.70	1946.40
ESTIMATED PILE TIP ELEVATION:	1945.50	1945.28
ESTIMATED PREBORE ELEVATION:	1947.24	1947.21

UNIFIED SOIL CLASSIFICATION SYSTEM

Soils are visually classified by the Unified Soil Classification system on the boring logs presented in this report. Grain-size analysis and Atterberg Limits Tests are often performed on selected samples to aid in classification. The classification system is briefly outlined in this chart. For a more detailed description of the system, see "The Unified Soil Classification System", Corp of Engineers, U.S. Army Technical Memorandum No. 3-357 (Revised April 1960) or ASTM Designation: D2487-66T.

MAJOR DIVISIONS				GRAPHIC SYMBOL	GROUP SYMBOL	TYPICAL NAMES
COARSE-GRAINED SOILS (Less than 50% passes No. 200 sieve)	GRAVELS (50% or less of coarse fraction passes No. 4 sieve)	CLEAN GRAVELS (Less than 5% passes No. 200 sieve)			GW	Well graded gravel, gravel-sand mixtures, or sand-gravel-cobble mixtures.
					GP	Poorly graded gravels, gravel-sand mixtures, or sand-gravel-cobble mixtures.
		GRAVELS WITH FINES (More than 12% passes No. 200 sieve)	Limits plot below "A" line and hatched zone on plasticity chart.		GM	Silty gravels, gravel-sand-silt mixtures.
			Limits plot above "A" line and hatched zone on plasticity chart.		GC	Clayey gravels, gravel-sand-clay mixtures.
	SANDS (More than 50% coarse fraction passes No. 4 sieve)	CLEAN SANDS (Less than 5% passes No. 200 sieve)			SW	Well graded sands, gravelly sands.
					SP	Poorly graded sands, gravelly sands.
		SANDS WITH FINES (More than 12% passes No. 200 sieve)	Limits plot below "A" line and hatched zone on plasticity chart.		SM	Silty sands, sand-silt mixtures.
			Limits plot above "A" line and hatched zone on plasticity chart.		SC	Clayey sands, sand-clay mixtures.
FINE-GRAINED SOILS (50% or more passes No. 200 sieve)	SILTS Limits plot below "A" line and hatched zone on plasticity chart.	SILTS OF LOW PLASTICITY (Liquid Limit less than 50)			ML	Inorganic silts, clayey silts with slight plasticity.
		SILTS OF HIGH PLASTICITY (Liquid Limit more than 50)			MH	Inorganic silts, micaceous or diatomaceous silty soils, elastic silts.
	CLAYS Limits plot above "A" line and hatched zone on plasticity chart.	CLAYS OF LOW PLASTICITY (Liquid Limit less than 50)			CL	Inorganic clays of low to medium plasticity, gravelly, sandy, silty and/or lean clays.
		CLAYS OF HIGH PLASTICITY (Liquid Limit more than 50)			CH	Inorganic clays of high plasticity, fat clays, sandy clays of high plasticity.

NOTE: Coarse grained soils with between 5% and 12% passing the No. 200 sieve and fine grained soils with limits plotting in the hatched zone on the plasticity chart are to be denoted by double symbols.

NOTE: Limited data is shown from the Geotechnical Investigation performed for this project. Upon request, a copy of the original Geotechnical Investigation report will be furnished. Use of the data contained here or in the original report is at the discretion of the user who is responsible for all interpretations or assumptions based on this data.

NOTE: HSA = Hollow Stem Auger (CME-75)
SS = Split Spoon Sampler with SPT value
T = Thin Walled Tube Sampler
B = Bulk Sample
N = SPT value
SPT = Standard Penetration Test (616 N hammer free falling 762 mm)

SAMPLE TYPE: G = Grab Sample
R = Ring Sample
N = Split-barrel Sample

KELLY R. HEATH
NEW MEXICO
18915
PROFESSIONAL ENGINEER
2/8/2022

NAVAJO NATION
DIVISION OF TRANSPORTATION
NAVAJO D.O.T.

SOIL PROFILE & BORING PLAN (1 OF 1)

Designed by: DDM	
Drawn by: ELO	Date: 2021
Checked by:	Date:
File Name: 06_N108_Soilpro1	

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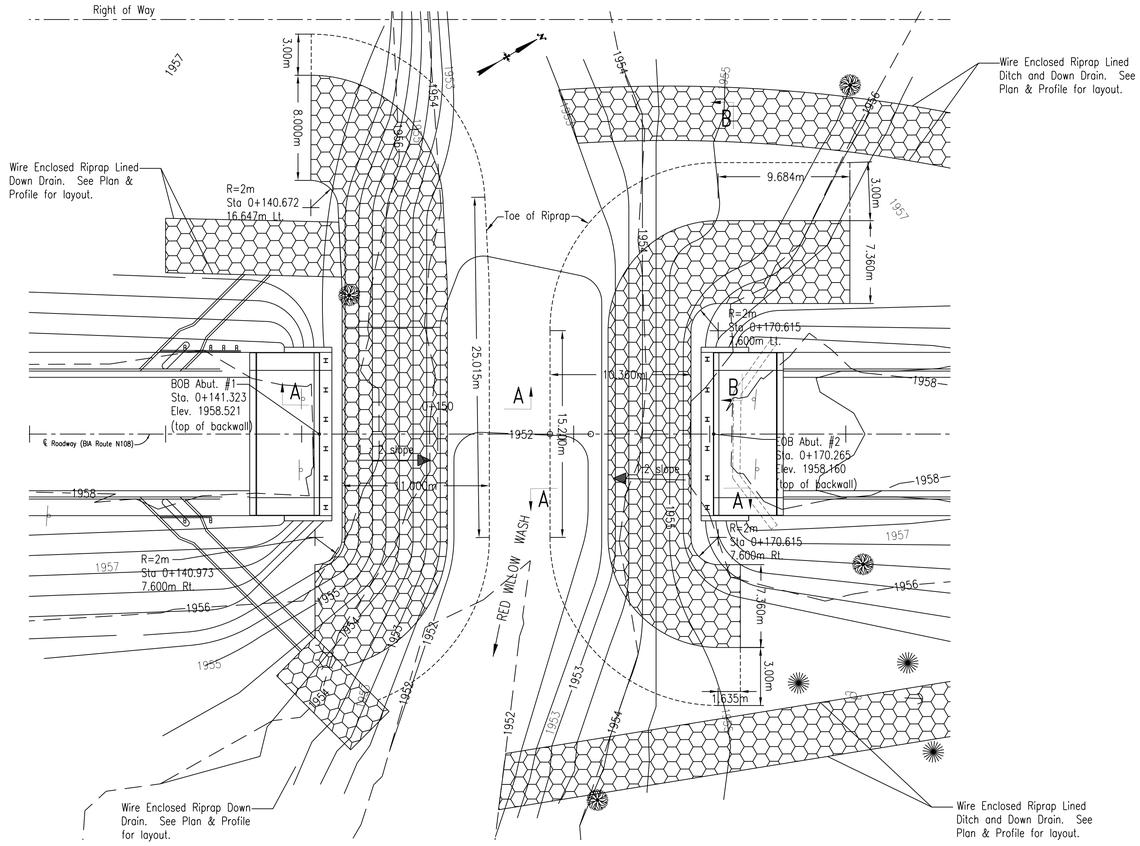
REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	TOTAL SHEETS
Navajo	NM	Navajo	N108	N108(1-1)(3)1,2&4	8	33

LEGEND
Existing Contour — — —
Planned Contour ———

Note: All riprap dimensions all horizontal.

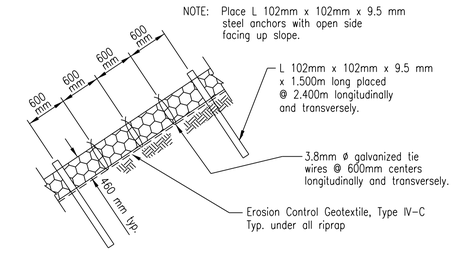


ABUTMENT RIPRAP LAYOUT PLAN

Scale 1:200

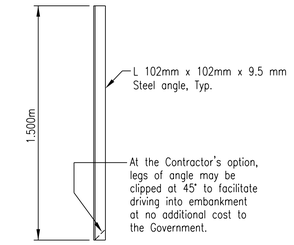
GENERAL NOTES

1. Wire Enclosed Riprap shall conform to Section 251 of the FP-14, The Supplemental Specifications and to the details shown in these construction plans.
2. Wire fabric shall be galvanized and be of the configuration shown on this sheet. An alternate wire fabric may be submitted for review and approval. Any wire fabric used shall have a Class 3 zinc coating (galvanizing), have a maximum opening dimension of 100 mm, and shall not allow a 75mm ø sphere to pass through a wire fabric opening.
3. Wire Enclosed Riprap shall be anchored as shown by L 102mm x 102mm x 9.5 mm steel angles. Steel angles shall extend 75mm above the top surface of wire enclosed riprap when placed.
4. Embankment below riprap shall conform to Section 204 of the FP-14; Excavation for riprap foundation shall conform to Section 209 of the FP-14. All embankment for wire enclosed riprap above natural ground is included in the quantity for Item 20403-0000, Unclassified Borrow and shall be paid for under that Item. All excavation for riprap construction shall be considered incidental to Item 25112-2000, Wire Enclosed Riprap.
5. Rock size shall conform to FP-14, Section 705, Table 705-1, Class 2.
6. Erosion Control Geotextile shall be installed under all riprap as shown and shall be incidental to Item 25112-2000, Wire Enclosed Riprap. Erosion Control Geotextile shall conform to Section 714.01 (a) Class 1 Type C of the FP-14.
7. Slope designations shown on this sheet are in accordance with Section 101.03 (d) of the FP-14 (vertical : horizontal). All areas to recieve riprrap to be filled, excavated and/or shaped as directed by the CM.
8. All areas to receive riprap to be filled, excavated and/or shaped as directed by the CM.
9. See sheet 29 for abutment riprap quantities.



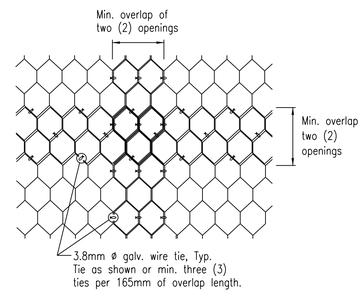
TYPICAL SECTION

N.T.S.
In rock areas, anchors shall be driven to refusal. A minimum depth of 450 mm into riprap subgrade is required through drilling or other means.



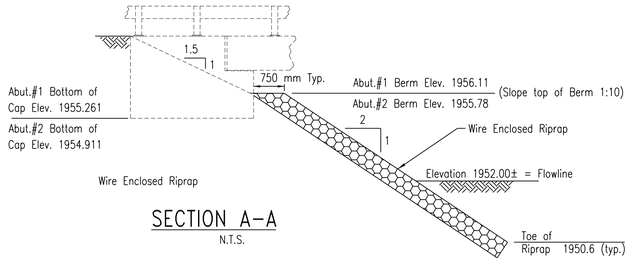
STEEL ANCHOR DETAIL

N.T.S.



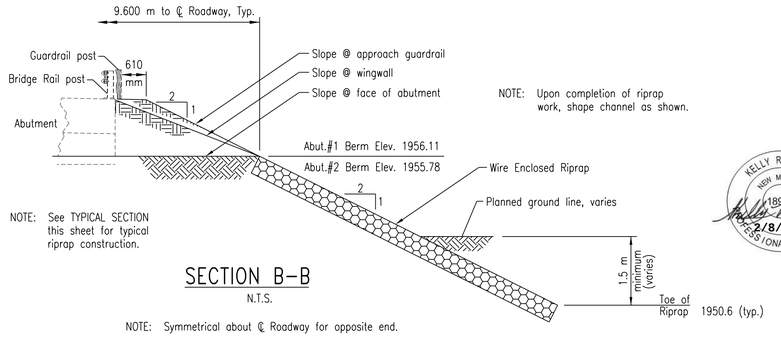
FABRIC SPLICING DETAIL

N.T.S.



SECTION A-A

N.T.S.



NOTE: See TYPICAL SECTION this sheet for typical riprap construction.

SECTION B-B

N.T.S.

NOTE: Upon completion of riprap work, shape channel as shown.

NOTE: Symmetrical about ℄ Roadway for opposite end.

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DIVISION OF TRANSPORTATION
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EROSION CONTROL PLAN

Designed by: DDM	
Drawn by: ELO	Date: 2021
Checked by:	Date:
File Name: 08_N108_Erosion	

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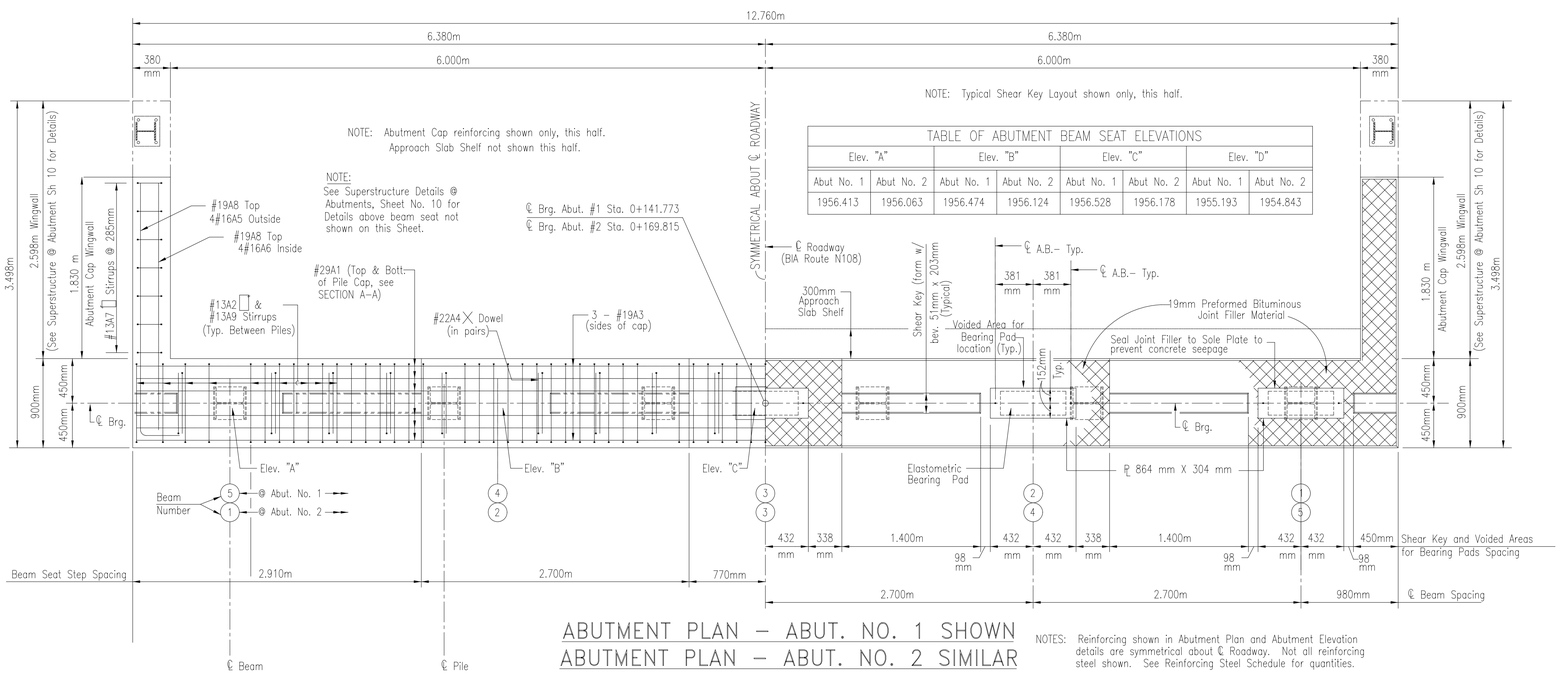
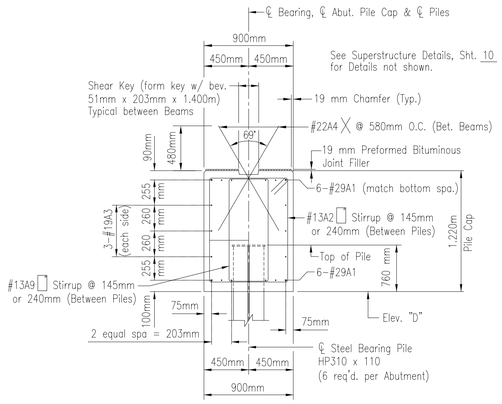
REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	TOTAL SHEETS
Navajo	NM	Navajo	N108	N108(1-1)(3)1,2&4	9	33



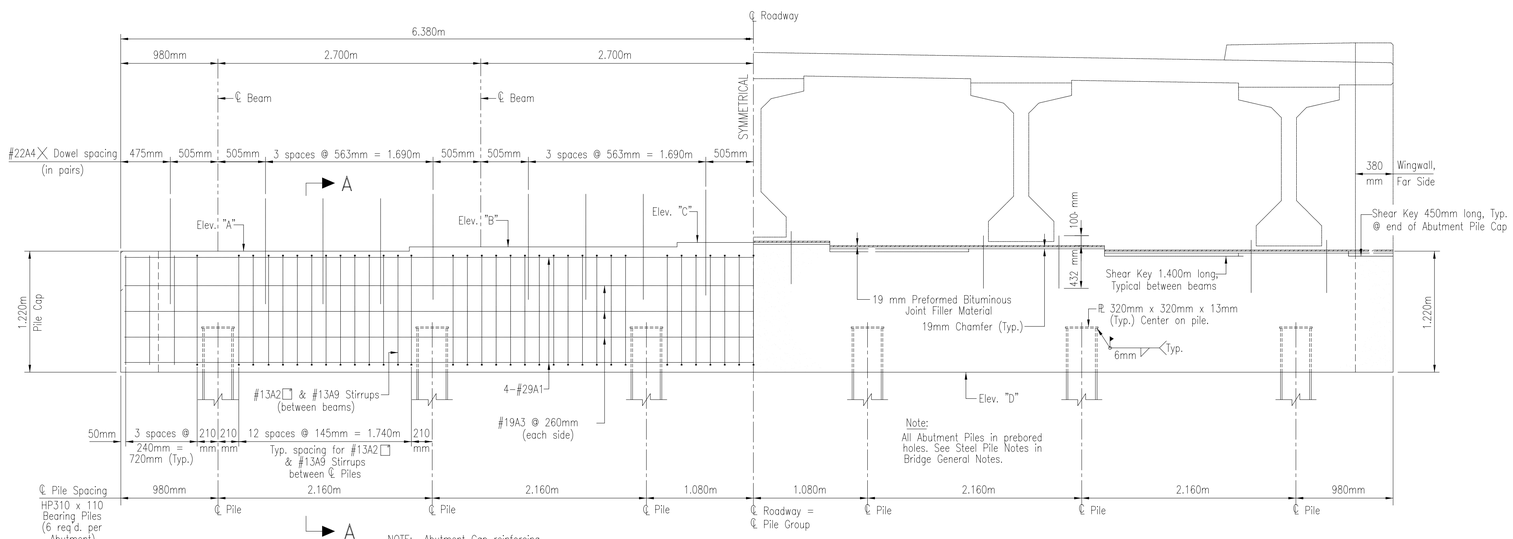
ABUTMENT PLAN – ABUT. NO. 1 SHOWN
ABUTMENT PLAN – ABUT. NO. 2 SIMILAR
Not to Scale

NOTES: Reinforcing shown in Abutment Plan and Abutment Elevation details are symmetrical about ℄ Roadway. Not all reinforcing steel shown. See Reinforcing Steel Schedule for quantities.

Reinforcing bars may be adjusted no more than 25mm to miss Anchor Bolt Holes.

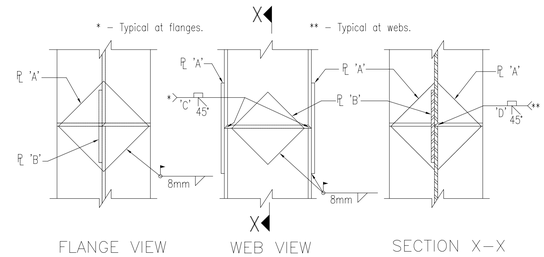


SECTION A–A
Not to Scale



ABUTMENT ELEVATION
Not to Scale

NOTE: Abutment Cap reinforcing shown only, this half. See Sht 10 for details above beam seat.



PILE SPLICE DETAIL (TYP.)
N.T.S.

TABLE OF SPLICE PLATE DIMENSIONS AND WELD SIZES				
mm x kg/m	℄ 'A' (mm)	℄ 'B' (mm)	Weld Size 'C'	Weld Size 'D'
HP360 x 152	210 x 210 x 16	170 x 170 x 16	16mm	16mm

NOTE: Bevel ends of piles (web and flanges) as shown prior to welding.

NAVAJO b.q.t.
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ABUTMENT DETAILS

Designed by: DDM	
Drawn by: ELO	Date: 2021
Checked by:	Date:
File Name: 09_N108_Abutdet	

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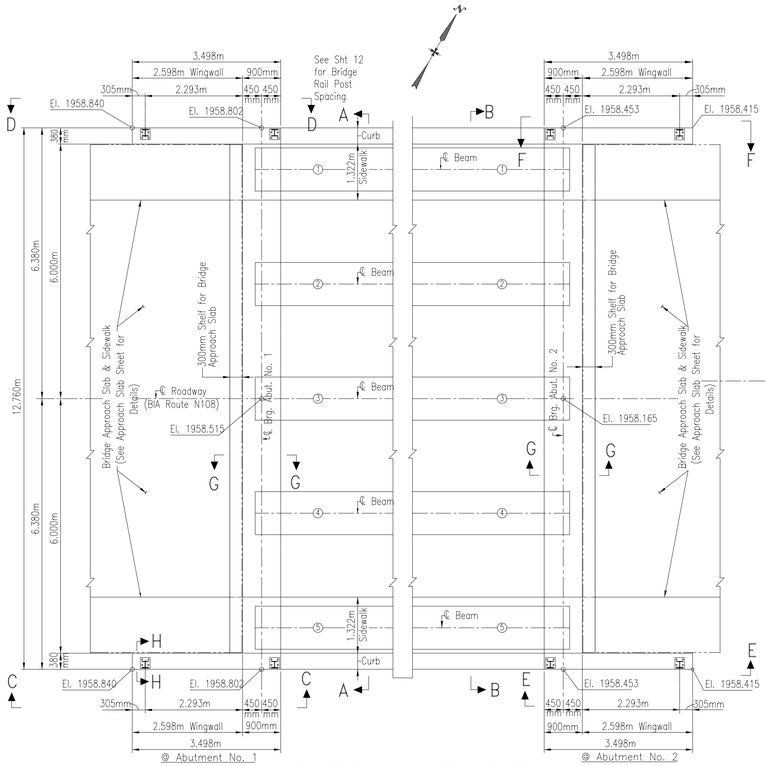
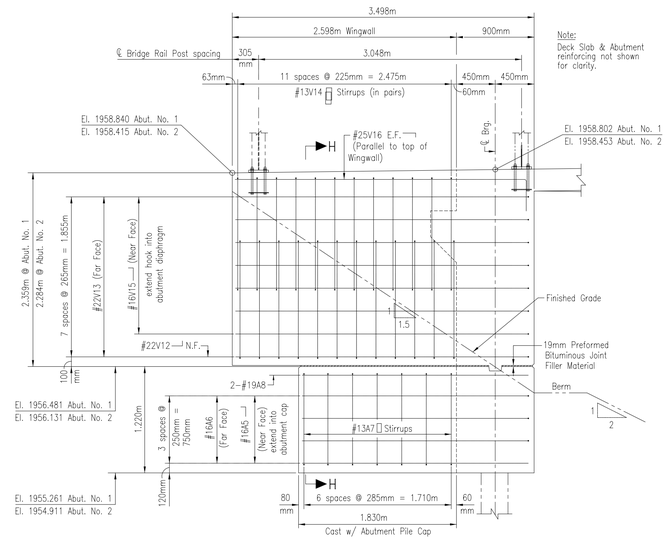
REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	TOTAL SHEETS
Navajo	NM	Navajo	N108	N108(1-1)(3)1,2&4	10	33



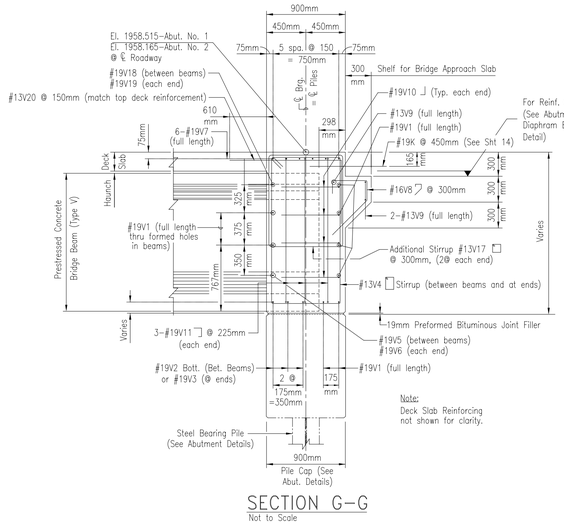
PART PLAN @ ABUTMENTS

Not to Scale



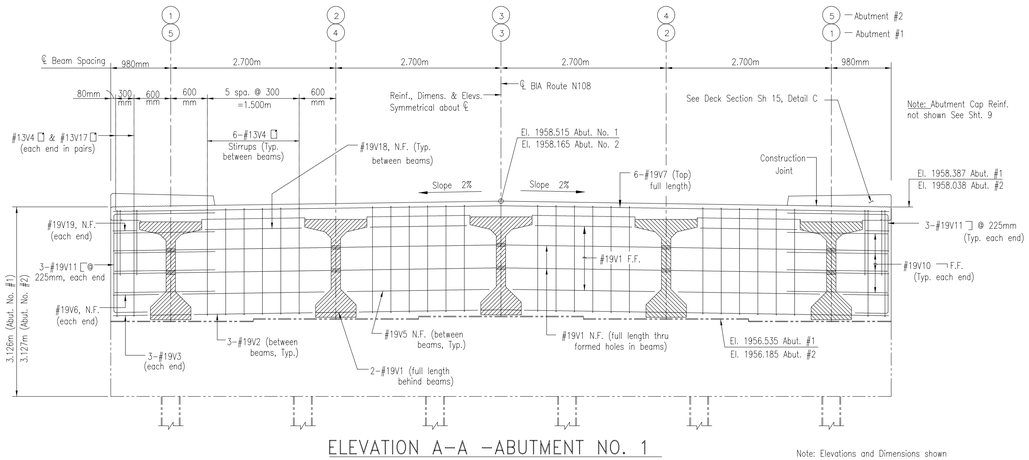
ELEVATION C-C (@ ABUT. NO.1) & ELEVATION F-F (@ ABUT. NO. 2)-AS SHOWN
ELEVATION D-D (@ ABUT. NO.1) & ELEVATION E-E (@ABUT. NO. 2)-OPP. HAND

Not to Scale



SECTION G-G

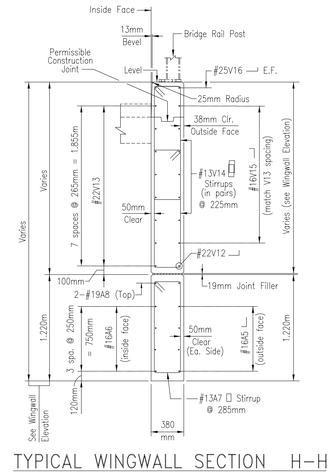
Not to Scale



ELEVATION A-A -ABUTMENT NO. 1
ELEVATION B-B -ABUTMENT NO. 2

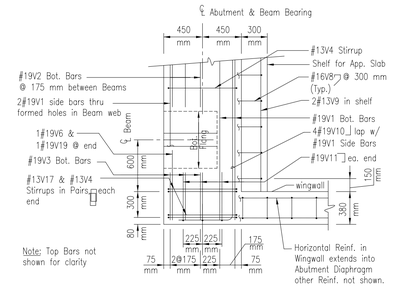
Not to Scale

Note: Elevations and Dimensions shown are along ℄ Brg. Abutment.



TYPICAL WINGWALL SECTION H-H

Not to Scale



ABUTMENT DIAPHRAGM END DETAIL

Not to Scale

NAVAJO B.Q.T.

NAVAJO NATION
DIVISION OF TRANSPORTATION

SUPERSTRUCTURE DETAILS @ ABUTMENTS

Designed by: DDM	
Drawn by: ELO	Date: 2021
Checked by:	Date:
File Name: 10_N108_Supdet	

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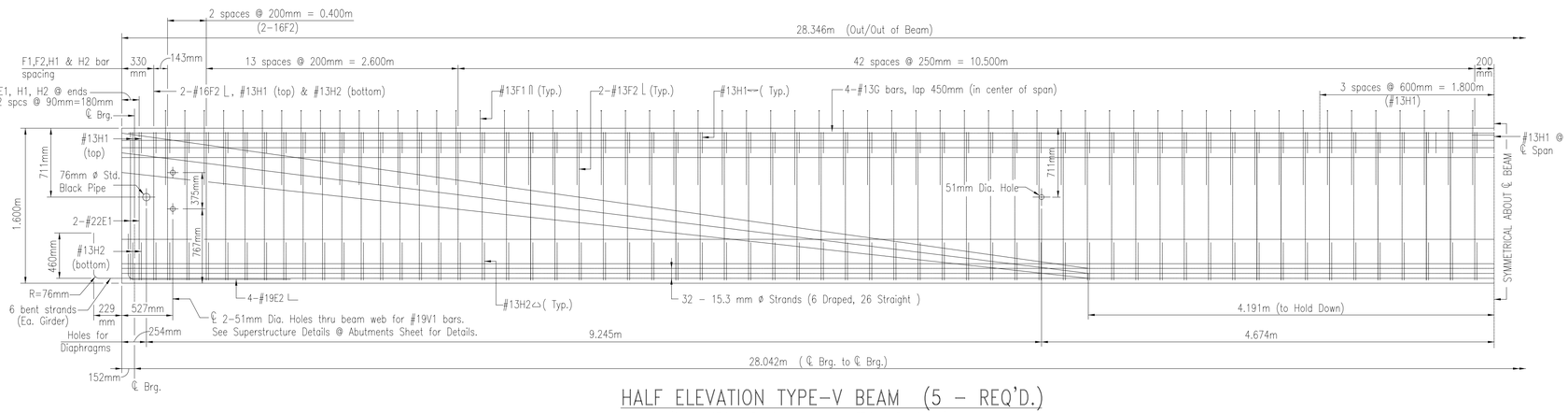
REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	TOTAL SHEETS
Navajo	NM	Navajo	N108	N108(1-1)(3)1,2&4	11	33



HALF ELEVATION TYPE-V BEAM (5 - REQ'D.)

(fse = 163.0 kN Per Strand; Losses = 37.0 kN Per Strand)

GENERAL NOTES

1. Cost of Reinforcing Bars and Structural Steel embedded in Bridge Beams is to be included in Item 55301-0500, Prestressed Concrete Bridge Member Type V-Modified.
2. Beams to be lifted by means of devices satisfactory to the C.O. Devices shall be inserted thru 75mm ø pipe at the ends. Beams to be cast, stored, and hauled in upright position. Alternate lifting devices must be approved by the C.O. prior to use.
3. The top surfaces of the beams are to be thoroughly wire brushed and scored transversely after initial set (Min. depth = 6mm, max. depth = 13 mm).
4. The Camber at erection dimension listed is the calculated value due to the effect of prestressing with the weight of the Beam acting, with an allowance for camber growth to 90 days. The Contractor shall limit the camber growth to a value not to exceed the predicted camber at erection dimension by 25mm at the time of Deck Slab placement. Camber Growth is to be limited by weighing, fabrication scheduling or other approved means.
5. Dead Load Deflection is the computed deflection due to weight of Slab, Diaphragms, and Superimposed Dead Load.
6. The Design shown is based on the use of 15.3mm Diameter Low-Relaxation Strands meeting the requirements of A.A.S.H.T.O. M203M (Grade 1860). Initial Prestressing Force shall be 200.0 kN per strand. Slight overstressing up to 213.1 kN per strand will be allowed to offset seating losses.
7. Type III Cement may be used at the Fabricator's option.
8. Shoe Plates must be straightened prior to casting into Beam. Shoe plates are M270M, Grade 250 plain steel. Welded Stud Shear Connectors are M169M.
9. Reinforcing Bars projecting from the top of the Beam shall be epoxy coated.
10. Adjust vertical reinforcemment to miss holes or inserts.

DESIGN DATA

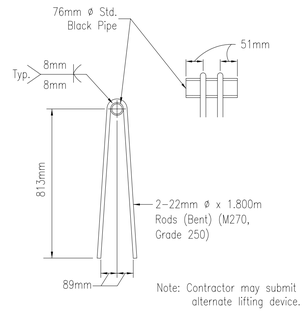
Design According To A.A.S.H.T.O. LRFD Bridge Design Specifications, 8th Edition, November 2017

BEAMS:
f'ci (Min. Compressive Strength of Concrete at Time of Initial Prestress) = 34.5 MPa
f'c = 41.4 MPa; n = 7

PRESTRESSING STEEL:
15.3mm Diameter Seven Wire Low Relaxation Strands.
f's = 266.6 kN Per Strand;
f'y = 239.5 kN Per Strand.

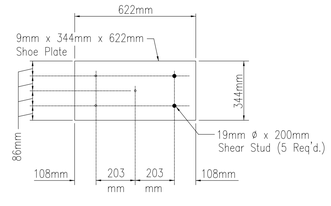
CONVENTIONAL REINFORCING BARS:
f'y = 420.0 MPa

COMPOSITE SLAB:
f'c = 31.1 MPa
Allowance for Future Wearing Surface = 12.0 kPa
Live Load = HS-20.



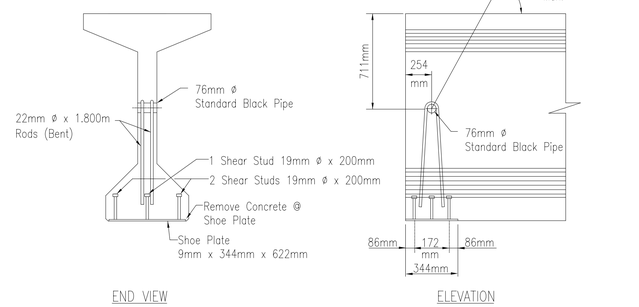
75mm ø STANDARD BLACK PIPE LIFTING DETAIL

Not to Scale



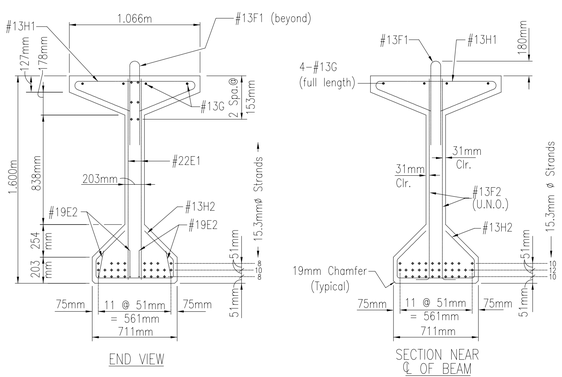
SHOE ℙ DETAIL

Not to Scale



END VIEW ELEVATION

SHOE PLATE AND LIFTING DEVICE DETAILS



TYPE-V BEAM

ESTIMATED QUANTITIES PER BEAM

Concrete	16.22 m³
Plain Reinforcement	1162 kg
Epoxy Coated Reinforcement	184 kg

BEAM DATA

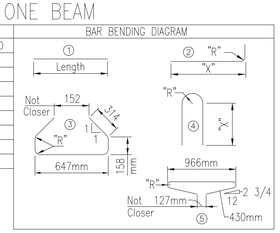
WEIGHT	CAMBER @ RELEASE	CAMBER @ ERECTION @ MIDSPAN	DEAD LOAD DEFLECTION
38977 kg	41mm	52mm	59mm

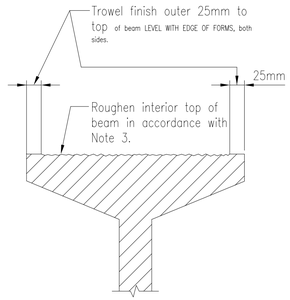
REINFORCING BARS REQ'D FOR ONE BEAM

	BAR	TYPE	BEAM SIZE	"R"	"X"	LENGTH	NO. REQ'D
	E1	①	#22			1.524m	8
	E2	②	#19	57mm	1.676m	1.858m	8
⊛	F1	④	#13	32mm	734mm	1.590m	116
	F2	②	#13	32mm	1.524m	1.681m	220
	G	①	#13	---	---	14.326m	8
	H1	⑤	#13	32mm	---	1.836m	122
	H2	③	#13	32mm	---	1.420m	122
	F2	②	#16	32mm	1.524m	1.681m	16

⊛ EPOXY COATED

BAR BENDING DIAGRAM





TOP FLANGE DETAIL

Scale 1:60

NAVAJO D.O.T.

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DIVISION OF TRANSPORTATION

PRESTRESSED CONCRETE BEAM DETAILS-TYPE V

Designed by: DDM	
Drawn by: ELO	Date: 2021
Checked by:	Date:
File Name: 11_N108_Beamdet	

CARLOS V. AGUILAR NEW MEXICO 25656 REGISTERED PROFESSIONAL ENGINEER April 12, 2021

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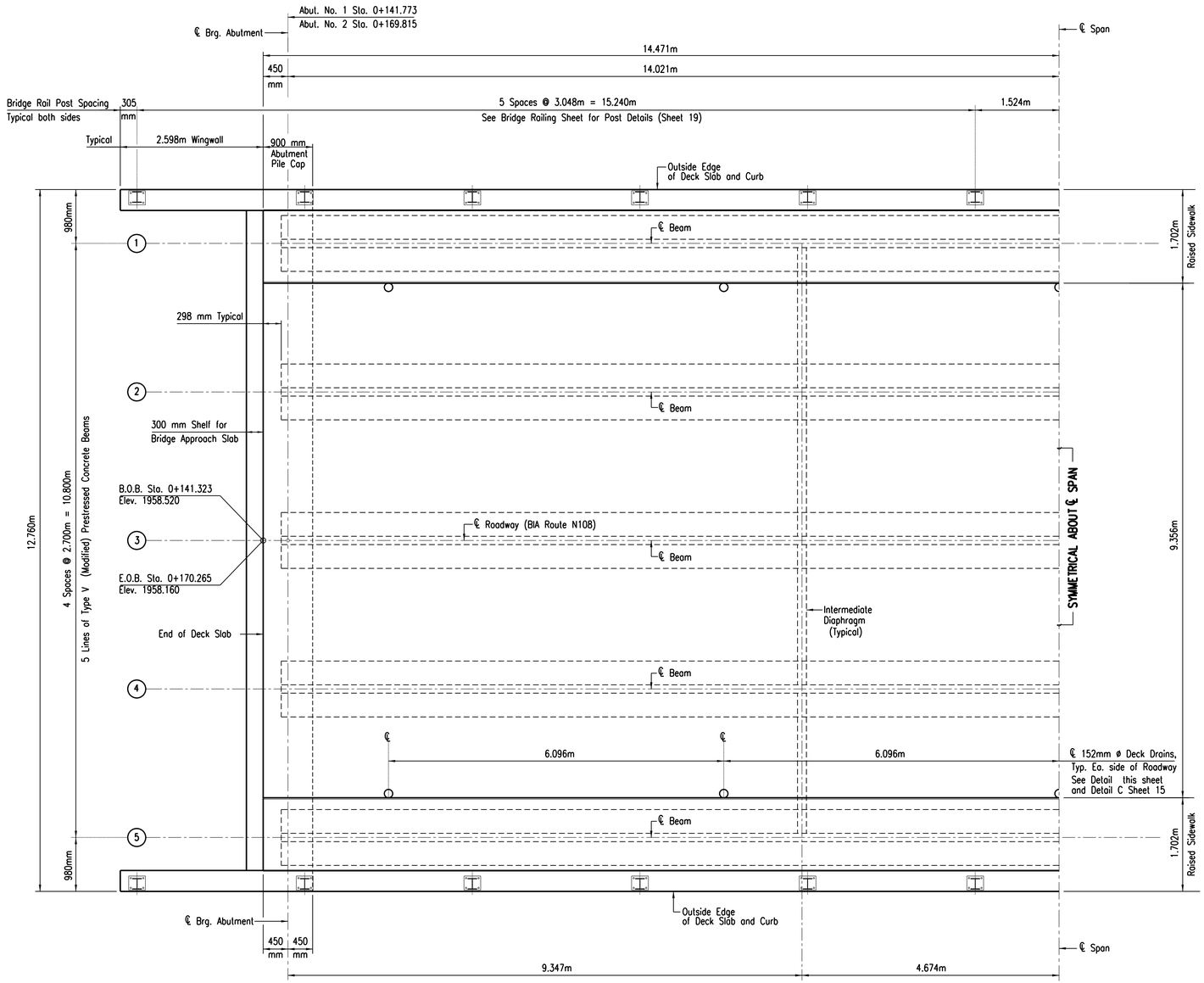
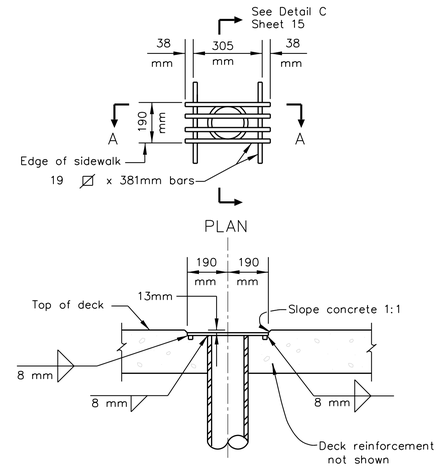
REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	TOTAL SHEETS
Navajo	NM	Navajo	N108	N108(1-1)(3)1,2&4	12	33



BEAM FRAMING PLAN & BRIDGE RAIL POST SPACING

Scale= 1:25



DECK DRAIN DETAILS

Not to Scale (10 Required)

NAVAJO NATION
DIVISION OF TRANSPORTATION

NAVAJO D.O.T.

BEAM FRAMING PLAN

Designed by: DDM	
Drawn by: ELO Date: 2021	
Checked by: Date:	
File Name: 12_N108_Frampln	

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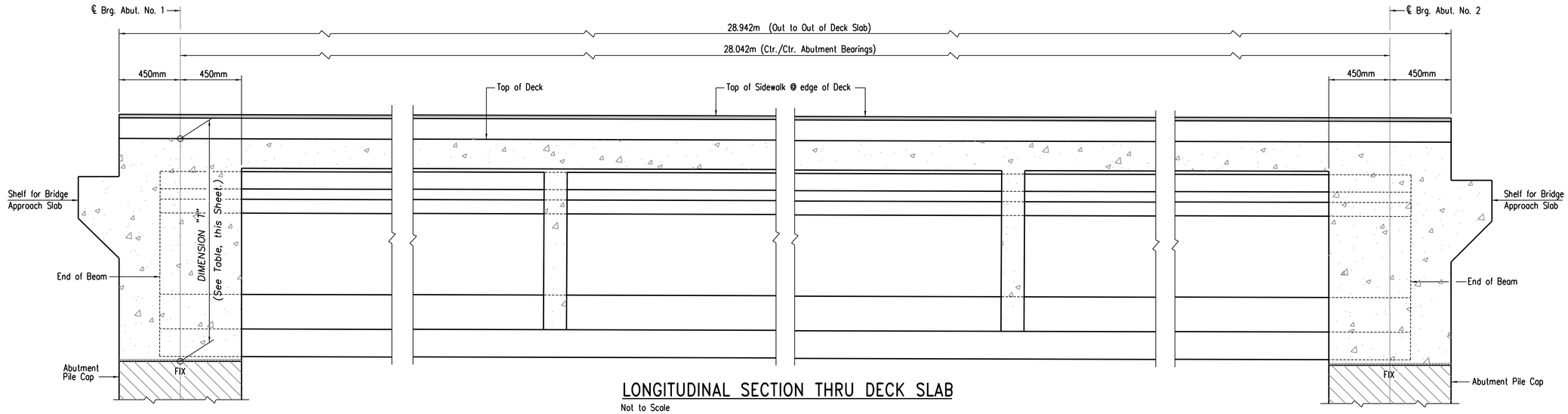
REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	TOTAL SHEETS
Navajo	NM	Navajo	N108	N108(1-1)(3)1,2&4	13	33



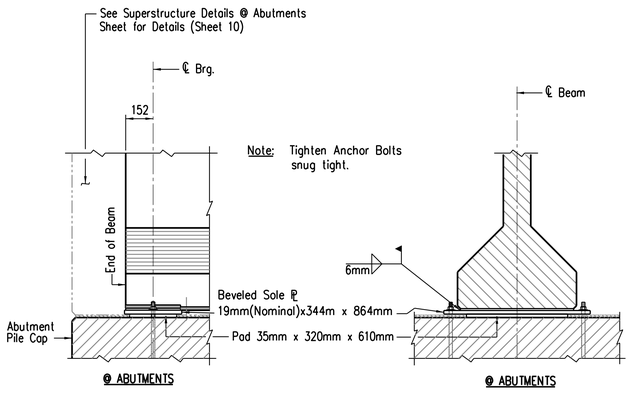
LONGITUDINAL SECTION THRU DECK SLAB

Not to Scale

LOCATION	W (mm)	L (mm)	NO. INTERNAL LAMS	EXTERIOR LAM THICKNESS (mm)	INTERNAL LAM THICKNESS (mm)	NO. SHIMS	SHIM THICKNESS (mm)	TOTAL THICKNESS (mm)	DESIGN LOAD (K) DL (kN)	DESIGN LOAD (K) LL (kN)	NO. REQUIRED	MOVEMENT LENGTH (mm)
ABUT. NO. 1	610	320	1	6.35	15.875	2	3.175	34.925	659.5	418.7	5	0
ABUT. NO. 2	610	320	1	6.35	15.875	3	3.175	34.925	659.5	418.7	5	0

NOTES:

1. Top & Bottom Surfaces of Sole Plates shall be Flat within 0.75mm Total Indicator Reading. Surface Finishes shall be ANSI 1000 or better The Plate Thickness is the Finished Thickness.
2. If Machining Processes are used to achieve the required flatness tolerances of the Sole Plates, the direction of Machining on the surface to be in contact with the Elastomeric Pad shall be perpendicular to the Longitudinal Axis of the Beam.
3. Sole Plate shall be delivered to the job site with one coat of Primer applied to all surfaces except for masked-off strips where the Sole Plates will be welded to the Shoe Plates of the Prestressed Beams and the surfaces to be in contact with the Elastomeric Bearing Pad. Before Installation, surfaces to be in contact with the Pads shall be cleaned to SSPC-SP 6 Requirements and sand blasted to provide a slip resistant surface. After installing the Pad and welding the Sole Plate to the Shoe Plates, the Contractor shall touch up the Primer and apply the top coat to all exposed surfaces. Weld Sole Plate to the Shoe Plate before placing reinforcing steel in the abutment diaphragms.



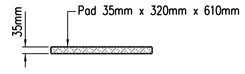
SIDE ELEVATION

END ELEVATION

BEARING DETAILS

Not to Scale

Note: See Sheet 9 for Anchor Bolt Placement Details.

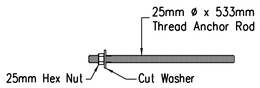


ELASTOMERIC BEARING PADS

Not to Scale

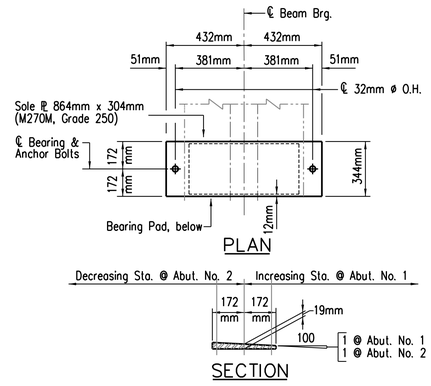
DESIGN LOAD FOR ELASTOMERIC PADS

DESCRIPTION	@ ABUT. NO. 1	@ ABUT. NO. 2
DEAD LOAD	982 kN	982 kN
LIVE LOAD	419 kN	419 kN
TOTAL	1401 kN	1401 kN



ANCHOR BOLT DETAIL

20 REQ'D.



PLAN

SECTION

SOLE ℙ DETAIL

Not to Scale

TABLE OF DIMENSION "T" @ C.L. Bearing

ITEM	@ ABUT. NO. 1	@ ABUT. NO. 2
SLAB & HAUNCH THICKNESS @ ℄ BEAM	340mm	340mm
BEAM (TYPE V)	1.600 m	1.600 m
SOLE PLATE	19mm	19mm
BRG. PAD	35mm	35mm
TOTAL	1.994m	1.994m

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NAVAJO NATION
DIVISION OF TRANSPORTATION

NAVAJO D.O.T.

LONGITUDINAL DECK SECTION AND BEARING DETAILS

Designed by: DDM	
Drawn by: ELO	Date: 2021
Checked by:	Date:
File Name: 13_N108_Longsec	

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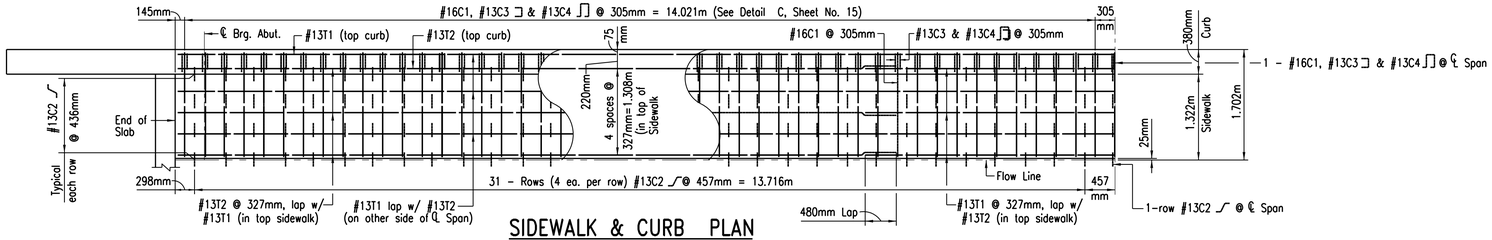
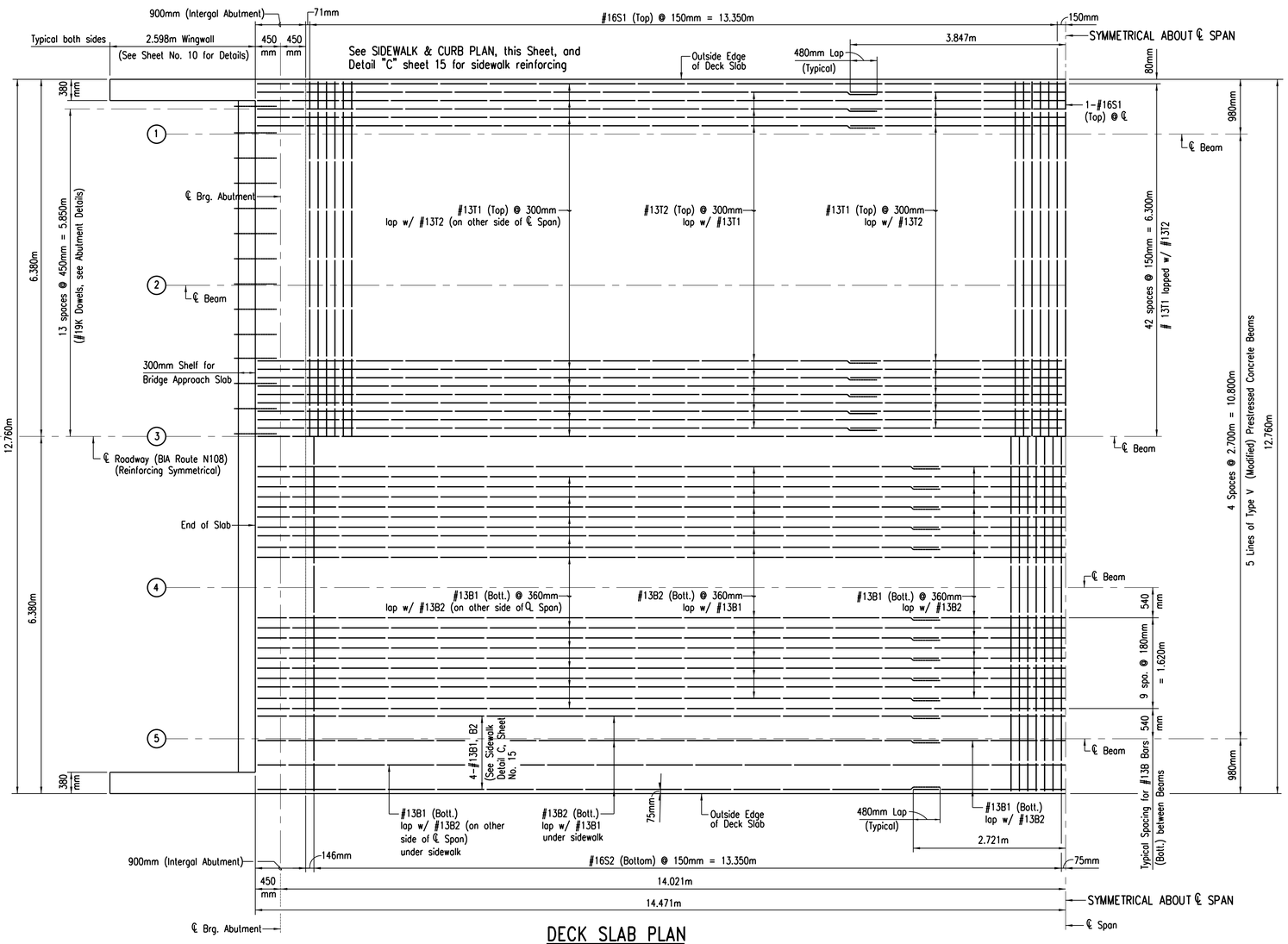
REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	TOTAL SHEETS
Navajo	NM	Navajo	N108	N108(1-1)(3)1,2&4	14	33



SIDEWALK & CURB PLAN

Typical each side of Bridge



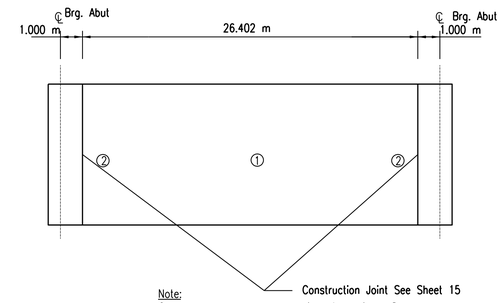
DECK SLAB PLAN

(Top Sidewalk Reinforcing not shown)

Scale: 1 = 40

Note:
See Sheet 15 for reinforcing details for sidewalks that require casting into deck slab.

See Sheet 12 and Detail "C" on Sheet 15 for deck drain location and details.



Note:
Concrete shall be placed the full width of the Deck Slab in the sequence shown above at a forward rate of progress of 9 meters per hour. Placements ② may be made on the same day or separate days. Placements ② shall not be made until Placement ① has been in place at least 48 hours. An alternate placement sequence maybe submitted for approval. Placement sequence shall allow for beam rotation at abutments due to dead load prior to placing abutment diaphragm.

CONCRETE DECK PLACEMENT DETAIL

Not to Scale

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2/8/2022

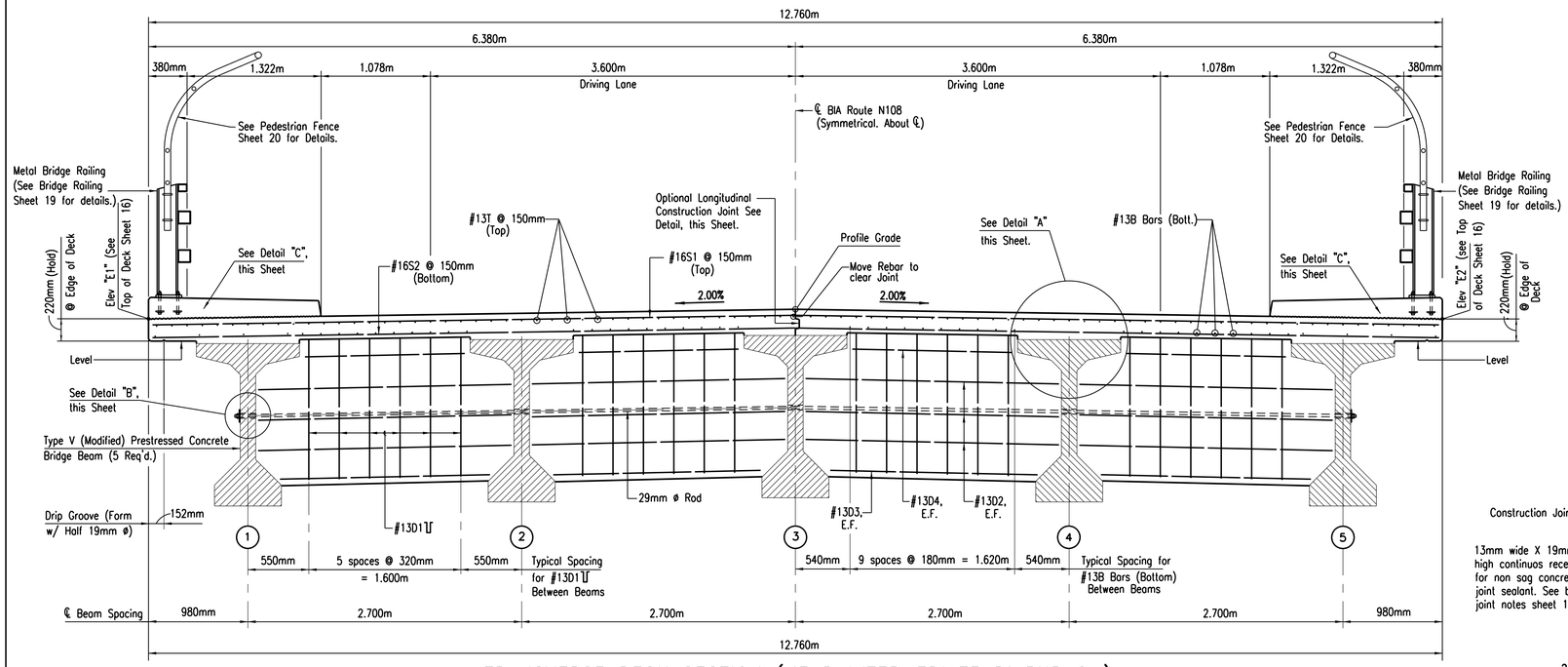
NAVAJO NATION
DIVISION OF TRANSPORTATION
NAVAJO D.O.T.

DECK SLAB PLAN

Designed by: DDM	
Drawn by: ELO	Date: 2021
Checked by:	Date:
File Name: 14_N108_Deckslab	

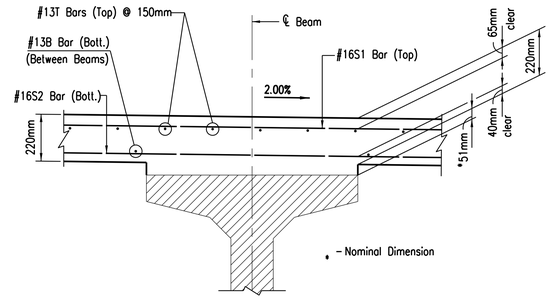
M:\TRN\17-100-090-39\2_Disciplines_SHEETS\14_N108_Deckslab_2016-12-01.dgn

REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	TOTAL SHEETS
Navajo	NM	Navajo	N108	N108(1-1)(3)1,2&4	15	33



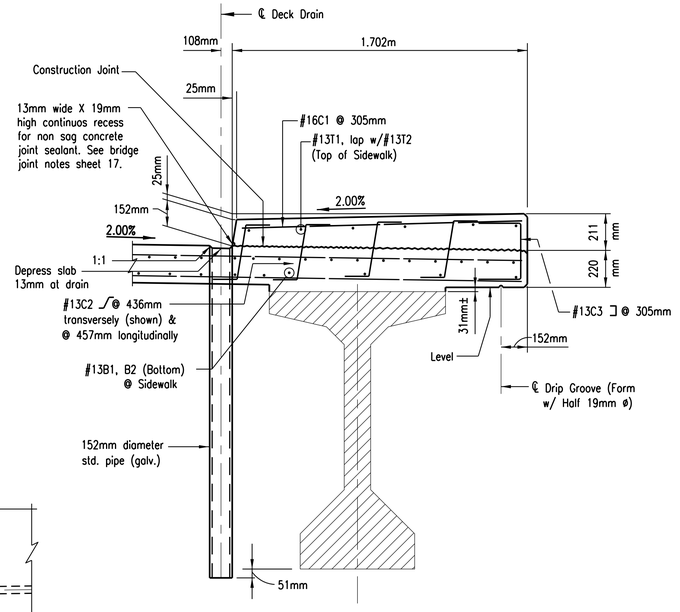
TRANSVERSE DECK SECTION (NEAR INTERMEDIATE DIAPHRAGM)

Scale: 1 = 25



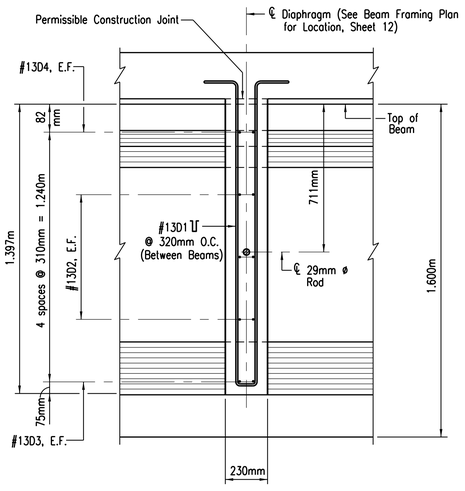
DETAIL A

Not to Scale



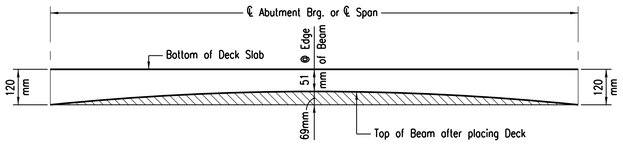
DETAIL C

Scale: 1 = 15



INTERMEDIATE DIAPHRAGM DETAIL

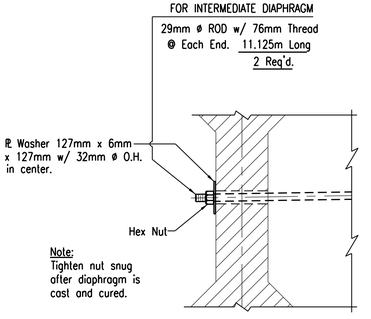
Not to Scale



HAUNCH THICKENING SKETCH

Not to Scale

NOTE:
Haunch thickening compensates for Net Camber after Dead Load Deflection. It is the amount that the Haunch over the Beam must be adjusted from the 51mm Nominal Dimension shown on DETAIL "A". This information is for quantity purposes, Only, and is not to be used for Construction.



DETAIL B

Not to Scale

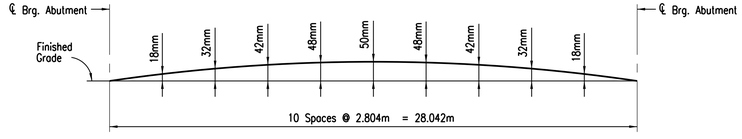
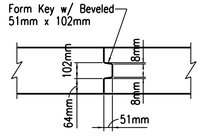


DIAGRAM FOR PLACING CONCRETE DECK

Not to Scale

NOTE:
To Compensate for Dead Load Deflection, set Screeds for Top of Concrete Deck above Finished Grade as shown above.



CONSTRUCTION JOINT DETAIL

Not to Scale

NAVAJO NATION
DIVISION OF TRANSPORTATION

NAVAJO D.O.T.

DECK SECTION & DETAILS

Designed by: DDM	
Drawn by: ELO	Date: 2021
Checked by:	Date:
File Name: 15_N108_Trvsec	

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2/8/2022

M:\TRN\17-100-090-39\2_Disciplines_SHEETS\15_N108_Trvsec_2016-12-01.dgn

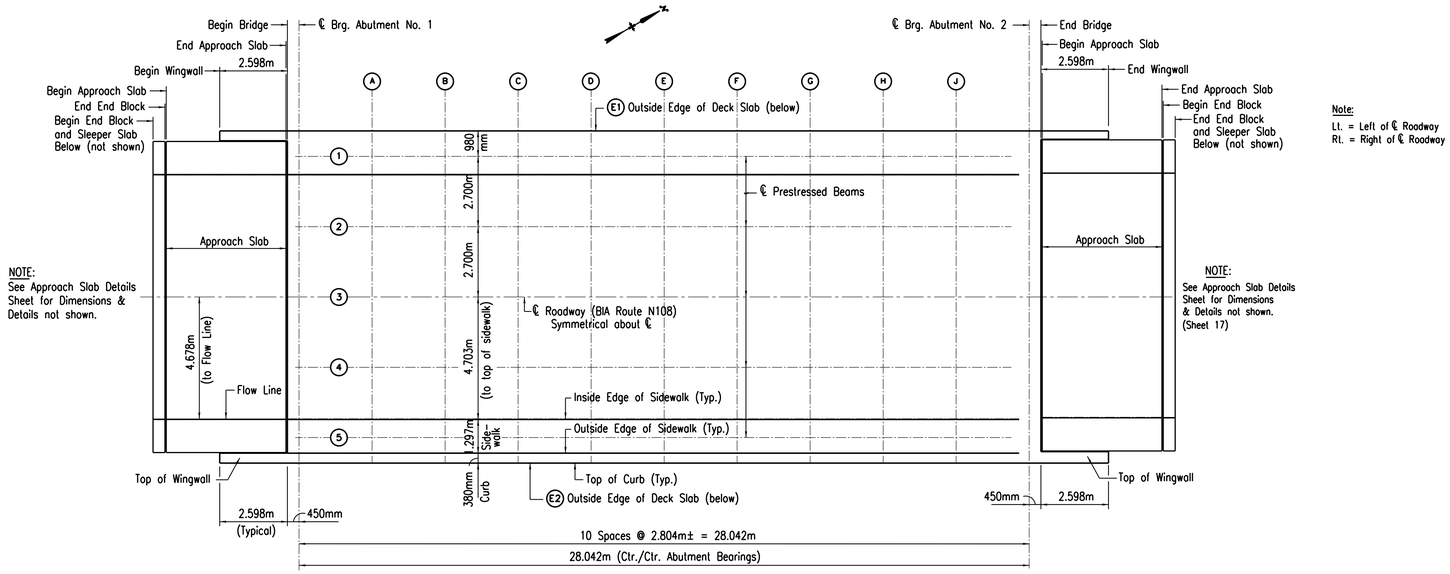
REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	TOTAL SHEETS
Navajo	NM	Navajo	N108	N108(1-1)(3)1,2&4	16	33

ELEVATIONS

		ABUTMENT NO. 1			
		END BLOCK		APPROACH SLAB	
LOCATION	DISTANCE from ℄	BEGIN	END	BEGIN	END
Sidewalk, Outside Edge, Lt.	6.000m	1958.664	1958.659	1958.658	1958.605
Sidewalk, Inside Edge, Lt.	4.703m	1958.639	1958.633	1958.632	1958.579
Flow Line, Lt.	4.678m	1958.487	1958.481	1958.480	1958.427
℄ Crown	0.000m	1958.580	1958.575	1958.574	1958.521
Flow Line, Rt.	4.678m	1958.487	1958.481	1958.480	1958.427
Sidewalk, Inside Edge, Rt.	4.703m	1958.639	1958.633	1958.632	1958.579
Sidewalk, Outside Edge, Lt.	6.000m	1958.664	1958.659	1958.658	1958.605

ELEVATIONS

		ABUTMENT NO. 2			
		APPROACH SLAB		END BLOCK	
LOCATION	DISTANCE from ℄	BEGIN	END	BEGIN	END
Sidewalk, Outside Edge, Lt.	6.000m	1958.244	1958.190	1958.190	1958.184
Sidewalk, Inside Edge, Lt.	4.703m	1958.218	1958.165	1958.164	1958.158
Flow Line, Lt.	4.678m	1958.066	1958.013	1958.012	1958.006
℄ Crown	0.000m	1958.160	1958.106	1958.106	1958.100
Flow Line, Rt.	4.678m	1958.066	1958.013	1958.012	1958.006
Sidewalk, Inside Edge, Rt.	4.703m	1958.218	1958.165	1958.164	1958.158
Sidewalk, Outside Edge, Lt.	6.000m	1958.244	1958.190	1958.190	1958.184



NOTE:
See Approach Slab Details Sheet for Dimensions & Details not shown.

NOTE:
See Approach Slab Details Sheet for Dimensions & Details not shown. (Sheet 17)

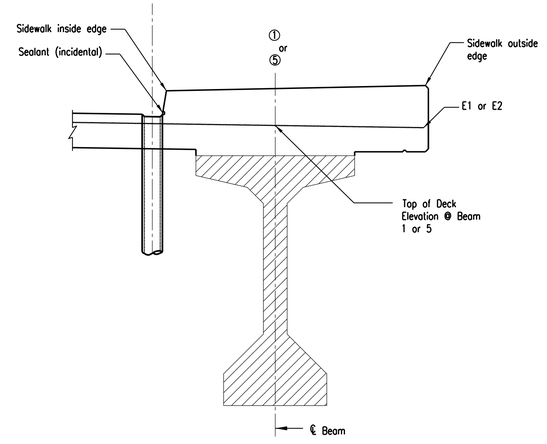
Note:
Lt. = Left of ℄ Roadway
Rt. = Right of ℄ Roadway

LOCATION DIAGRAM

Scale: 1 = 100

TABLE OF ELEVATIONS

LOCATION	DISTANCE from ℄ Rdwy	Begin Wingwall	Beginning of Bridge End Wingwall/ Backwall Abut. No. 1	℄ Brg. Abut. No. 1	A	B	C	D	E	F	G	H	J	℄ Brg. Abut. No. 2	End of Bridge Begin Wingwall /Backwall Abut. No. 2	End Wingwall
Top of Curb/Wingwall, Lt.	6.380m	1958..637	1958.605	1958.599	1958.564	1958.529	1958.494	1958.459	1958.424	1958.390	1958.355	1958.320	1958.285	1958.250	1958.244	1958.212
Sidewalk, Outside Edge, Lt.	6.000m		1958.605	1958.599	1958.564	1958.529	1958.494	1958.459	1958.424	1958.390	1958.355	1958.320	1958.285	1958.250	1958.244	
Sidewalk, Inside Edge, Lt.	4.703m		1958.579	1958.573	1958.538	1958.503	1958.468	1958.433	1958.399	1958.364	1958.329	1958.294	1958.259	1958.224	1958.218	
E1	6.380m		1958.393	1958.387	1958.352	1958.317	1958.282	1958.247	1958.213	1958.178	1958.143	1958.108	1958.073	1958.038		
Beam 1	5.400m			1958.407	1958.372	1958.337	1958.302	1958.267	1958.232	1958.197	1958.162	1958.127	1958.092	1958.057		
Beam 2	2.700m			1958.461	1958.426	1958.391	1958.356	1958.321	1958.286	1958.251	1958.216	1958.181	1958.146	1958.111		
℄ Roadway, Beam 3	0.000m		1958.520	1958.515	1958.480	1958.445	1958.410	1958.375	1958.340	1958.305	1958.270	1958.235	1958.200	1958.165	1958.160	
Beam 4	2.700m			1958.461	1958.426	1958.391	1958.356	1958.321	1958.286	1958.251	1958.216	1958.181	1958.146	1958.111		
Beam 5	5.400m			1958.407	1958.372	1958.337	1958.302	1958.267	1958.232	1958.197	1958.162	1958.127	1958.092	1958.057		
E2	6.380m		1958.393	1958.387	1958.352	1958.317	1958.282	1958.247	1958.213	1958.178	1958.143	1958.108	1958.073	1958.038		
Sidewalk, Inside Edge, Rt.	4.703m		1958.579	1958.573	1958.538	1958.503	1958.468	1958.433	1958.399	1958.364	1958.329	1958.294	1958.259	1958.224	1958.218	
Sidewalk, Outside Edge, Rt.	6.000m		1958.605	1958.599	1958.564	1958.529	1958.494	1958.459	1958.424	1958.390	1958.355	1958.320	1958.285	1958.250	1958.244	
Top of Curb/Wingwall, Rt.	6.380m	1958.637	1958.605	1958.599	1958.564	1958.529	1958.494	1958.459	1958.424	1958.390	1958.355	1958.320	1958.285	1958.250	1958.244	1958.212



PARTIAL DECK DETAIL

Scale: 1 = 15

NAVAJO D.O.T.

NAVAJO NATION
DIVISION OF TRANSPORTATION

TOP OF DECK ELEVATIONS

Designed by: DDM	
Drawn by: ELO	Date: 2021
Checked by:	Date:
File Name: 16_N108_Slabelev	

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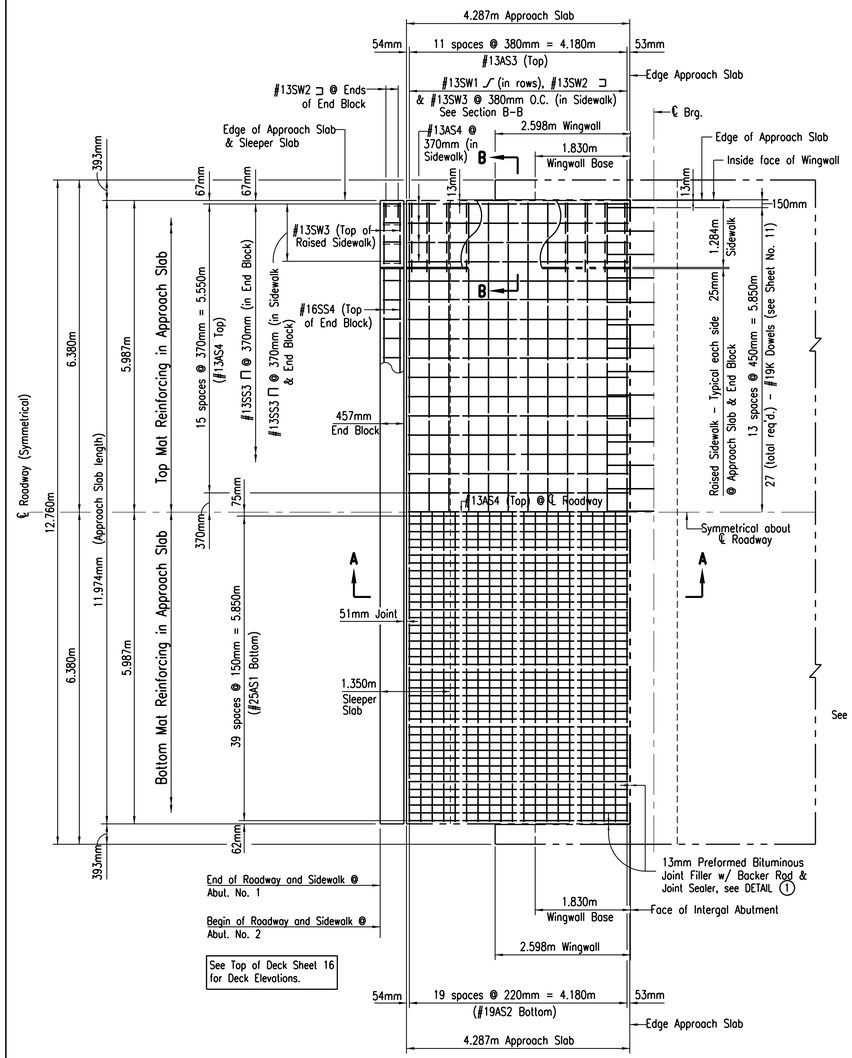
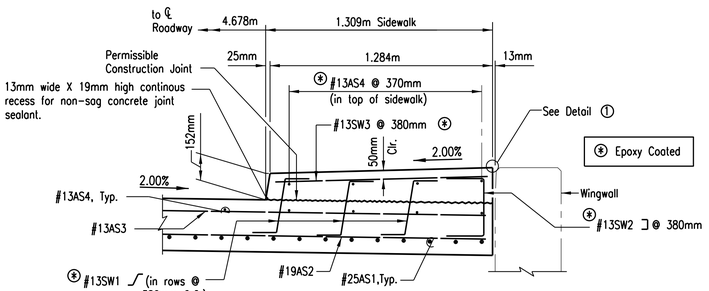
REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	TOTAL SHEETS
Navajo	NM	Navajo	N108	N108(1-1)(3)1,2&4	17	33



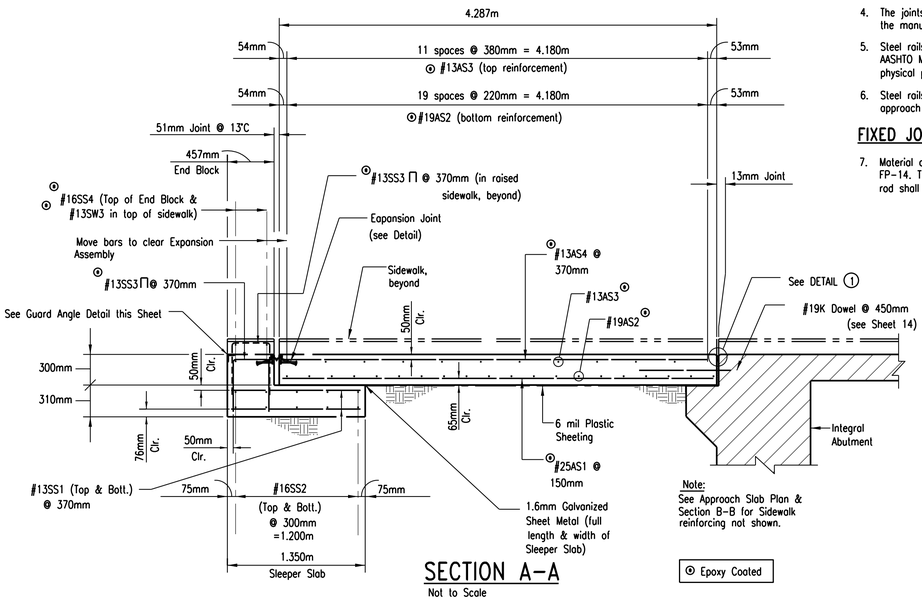
APPROACH SLAB PLAN - ABUTMENT NO. 1 - AS SHOWN
ABUTMENT NO. 2 - OPPOSITE HAND

Scale: 1 = 50



SECTION B-B @ SIDEWALK

Scale: 1 = 15

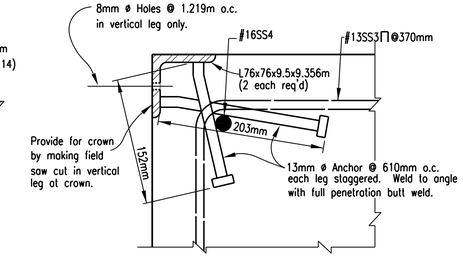


SECTION A-A

Not to Scale

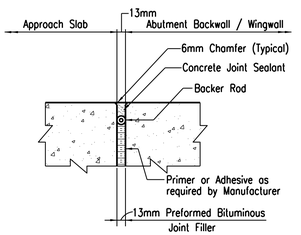
Note:
See Approach Slab Plan & Section B-B for Sidewalk reinforcing not shown.

⊙ Epoxy Coated

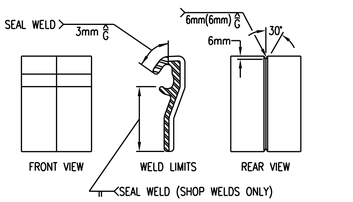


GUARD ANGLE DETAIL

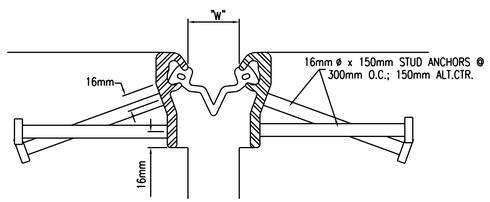
Not to Scale



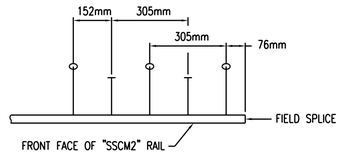
DETAIL ①



"SSCM2" SHOP & FIELD SPLICE DETAIL



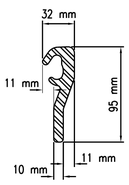
SECTION THRU EXPANSION JOINT



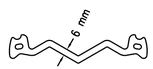
TYP. 16 mm ø STUD LAYOUT FROM SPLICE

FABRICATION NOTES

AFTER RAILS HAVE BEEN CUT.
1) PLACE STUDS ON RAIL ACCORDING TO THE LAYOUT DETAIL.
2) IF STUD ANCHOR PLACEMENT EXCEEDS 150mm FROM A SPLICE, PLACE A STUD @ 75mm FROM SPLICE.



"SSCM2" FRAME RAIL



"A2R" SERIES STRIP SEAL

MINIMUM JOINT OPENING FOR EASE OF INSTALLATION = 38 mm

STRUCT. TEMP.	"W"
MAX.	13mm
MID.	63mm
MIN.	114mm

BRIDGE JOINT NOTES

The cost of furnishing and installing these joints and all materials shall be considered incidental to the cost of Structural Concrete, Class A(AE), Item no. 55201-0200 and no direct payment will be made therefor.

EXPANSION JOINT STRIP SEAL

1. Joints shall be one of the following or an approved equal:

(a) Watson, Bowman and Acme Corp. joint with a Type SE steel rail and a SE-500 strip seal.
(b) Structural Accessories Inc. joint with Onflex 40 SEO steel rail and strip seal.
(c) D.S. Brown Steel Flex strip seal rail expansion joint, with a type L2 steel rail and A2 400 strip seal.

2. Joints other than those listed above may be submitted for approval provided they are similar to that shown in section above and can demonstrate by test, the design movements from an initial joint width setting "A" of 51mm at a midpoint installation temperature T_o of 21 degrees C (Centigrade). Joint movement shall be for a range of temperatures from -7 degrees C to 50 degrees C. For installation temperatures below the midpoint temperature, increase the width of joint "A" by the amount shown below. For installation temperature above the midpoint temperature, decrease the width of joint "A" by the amount shown below.
Change in "A" = $0.0000108 \times L \times \Delta T$
Where:

Change in "A" is in meters
L = movement length = 18.771 m
ΔT = change in temperature from to in degrees C.

3. Contractor shall submit shop drawings for the joints showing all fabrication details and material specifications according to specification requirements. (see Note No. 5)
4. The joints shall be installed in accordance with the manufacturer's instruction. A representative of the manufacturer shall be present at the site during installation.
5. Steel rails shall conform to AASHTO M183 M and shall be galvanized in accordance with AASHTO M298, Class 50 or M232 after fabrication. Neoprene strip seal shall conform to the physical properties prescribed in Table 1 AASHTO M220.
6. Steel rails shall be fabricated to conform to the longitudinal grade and roadway crown at approach slabs on sleeper footings.

FIXED JOINT SEAL

7. Material and construction of joint sealant shall conform to the requirements of Section 712 of FP-14. The concrete joint-sealant shall meet all requirements of AASHTO M173 and the backer rod shall meet the requirements of ASTM D 3204 Type 1.

NAVAJO NATION
DIVISION OF TRANSPORTATION
NAVAJO D.O.T.

APPROACH SLAB DETAILS

Designed by: DDM	
Drawn by: ELO	Date: 2021
Checked by:	Date:
File Name: 17_N108_Appslab	

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M:\TRN\17-100-090-39\2_Disciplines_SHEETS\17_N108_Appslab_2016-12-02.dgn

REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	TOTAL SHEETS
Navajo	NM	Navajo	N108	N108(1-1)(3)1,2&4	18	33

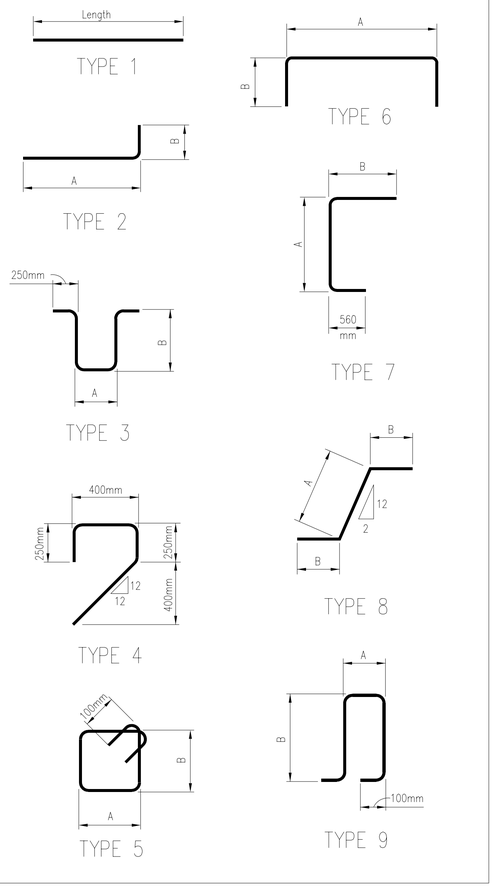
	LOCATION	STRAIGHT BARS					BENT BARS							SPACING	
		MARK	TYPE	QTY.	SIZE	LENGTH	MARK	TYPE	QTY.	SIZE	A	B	LENGTH		
	-- ABUTMENT --														
	Pile Cap (Bott./Top)	#29A1	1	24	#29	12.660m								As Shown	
	Pile Cap (Stirrup)						#13A2	5	146	#13	800mm	1.085m	3.887m	145mm, 240mm	
	Pile Cap (Sides)	#19A3	1	12	#19	12.660m								260mm	
	Pile Cap (Dowels)	#22A4	1	72	#22	1.320m								580mm, 480mm	
	Wingwall Base (O.F.)						#16A5	2	16	#16	2.617m	300mm	2.877m	250mm	
	Wingwall Base (I.F.)	#16A6	1	16	#16	2.617m								250mm	
	Wingwall Base (Stirrup)						#13A7	5	28	#13	280mm	1.035m	2.747m	285mm	
	Wingwall Base (Top)	#19A8	1	8	#19	2.617m								As Shown	
	Pile Cap (Stirrup)						#13A9	5	146	#13	400mm	1.085m	3.170m	145mm, 240mm	
	--INTEGRAL ABUTMENT--														
	Bottom, Sides	#19V1	1	16	#19	12.660m								As Shown	
	Bottom	#19V2	1	24	#19	1.963m								175mm	
	Bottom	#19V3	1	12	#19	574mm								175mm	
*	Stirrups						#13V4	5	56	#13	800mm	1.790m	5.297m	300mm	
	Between Beams	#19V5	1	8	#19	2.390m								As Shown	
	Ends	#19V6	1	4	#19	785mm								As Shown	
*	Top	#19V7	1	12	#19	12.660m								As Shown	
	Shelf						#16V8	4	78	#16	As Shown	As Shown	1.370m	300mm	
	Shelf	#13V9	1	6	#13	11.924m								As Shown	
	Ends, Horiz.						#19V10	2	16	#19	1.930m	750mm	2.633m	350mm	
	Ends, Vert.						#19V11	7	12	#19	1.727m	1.930m	4.123m	225mm	
	Wingwall (Bott. O.F.)						#22V12	2	4	#22	3.385m	457mm	3.787m	As Shown	
	Wingwall (Inside Face)	#22V13	1	32	#22	3.385m								265mm±	
*	Wingwall (Stirrups)						#13V14	5	96	#13	292mm	1.380m	3.461m	225mm	
	Wingwall (Outside Face)						#16V15	2	28	#16	3.385m	300mm	3.645m	265mm±	
*	Wingwall (Top)						#25V16	2	8	#25	3.385m	1.000m	4.323m	As Shown	
*	Additional Stirrups (@ ends)						#13V17	5	8	#13	800mm	1.100m	3.917m	300mm	
	Between Beams	#19V18	1	8	#19	1.608m								As Shown	
	Ends	#19V19	1	4	#19	396mm								As Shown	
*	Dowels	#19K	1	54	#19	920mm								450mm	
*	Top						#13V20	2	160	#13	1.435m	800mm	2.045m	150mm	
	--DECK SLAB, SIDEWALK & CURB--														
*	Top Mat (Transv.)	#16S1	1	181	#16	12.660m								150mm	
*	Bottom Mat (Transv.)	#16S2	1	180	#16	12.660m								150mm	
*	Bottom Mat (Long.)	#13B1	1	50	#13	17.154m								180mm	**
*	Bottom Mat (Long.)	#13B2	1	50	#13	12.192m								180mm	**
*	Top Mat (Long.)	#13T1	1	97	#13	18.280m								150mm	**
*	Top Mat (Long.)	#13T2	1	97	#13	11.066m								150mm	**
*	Sidewalk (Transv.)	#16C1	1	190	#16	1.600m								305mm	
*	Sidewalk						#13C2	8	504	#13	287mm	133mm	513mm	436mm, 457mm	
*	Curb						#13C3	6	190	#13	300mm	267mm	780mm	305mm	
*	Curb						#13C4	9	190	#13	267mm	343mm	1.045m	305mm	
	--INTERMEDIATE DIAPHRAGM--														
*	Stirrups						#13D1	3	48	#13	130mm	1.505m	3.532m	320mm	
	Middle Bars	#13D2	1	48	#13	2.472m								As Shown	
	Bottom Bars	#13D3	1	16	#13	1.964m								As Shown	
	Top Bars	#13D4	1	16	#13	1.608m								As Shown	
	--APPROACH SLAB--														
*	Bottom Mat	#25AS1	1	160	#25	4.210m								150mm	
*	Bottom Mat	#19AS2	1	40	#19	11.898m								220mm	
*	Top Mat	#13AS3	1	24	#13	11.898m								380mm	
*	Top Mat (Sidewalk)	#13AS4	1	64	#13	4.210m								370mm	**
	Sleeper Slab (Ftg.)	#13SS1	1	132	#13	1.274m								370mm	
	Sleeper Slab (Ftg.)	#16SS2	1	20	#16	11.898m								300mm	
*	End Block (Sidewalk)						#13SS3	6	64	#13	355mm	500mm	1.300m	370mm	
*	End Block	#16SS4	1	8	#16	11.898m									
*	Sidewalk (Zee Bar)						#13SW1	8	144	#13	316mm	133mm	542mm	380mm	
*	Sidewalk (Ends)						#13SW2	6	56	#13	363mm	267mm	843mm	380mm	
*	Sidewalk (End Block)	#13SW3	1	56	#13	1.208m								380mm	

* - EPOXY COATED

** - and as shown in Sidewalk

BENDING DIAGRAMS

ALL DIMENSIONS ARE OUT TO OUT



NAVAJO NATION
DIVISION OF TRANSPORTATION

NAVAJO D.O.T.

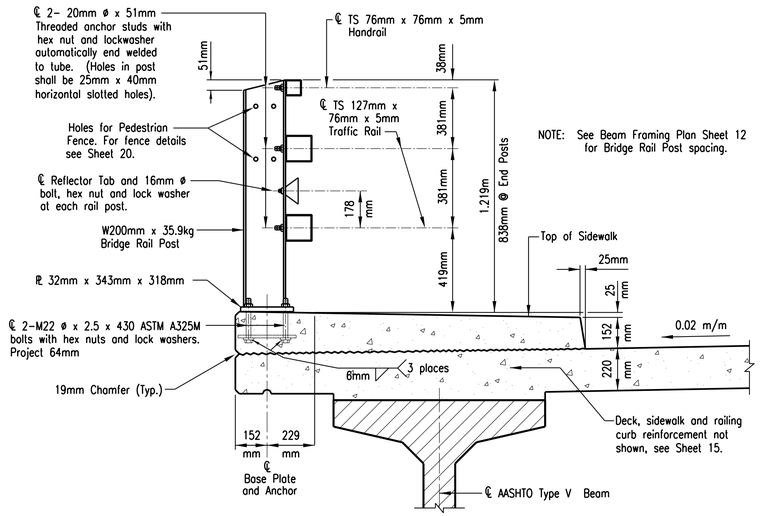
CARLOS V. AGUILAR
NEW MEXICO
25656
PROFESSIONAL ENGINEER
06/11/2020

REINFORCING BAR SCHEDULE

Designed by: DDM	
Drawn by: ELO	Date: 2021
Checked by:	Date:
File Name: 18_N108_Rnfschd	

M:\TRN\17-100-090-39\2_Disciplines_SHEETS\18_N108_Rnfschd_2016-12-02.dgn

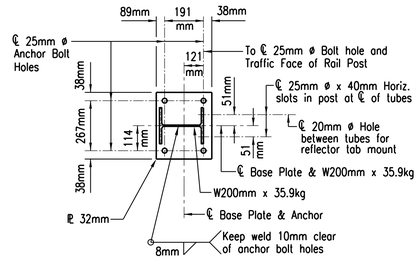
REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	TOTAL SHEETS
Navajo	NM	Navajo	N108	N108(1-1)(3)1,2&4	19	33



NOTE: See Beam Framing Plan Sheet 12 for Bridge Rail Post spacing.

SECTION THRU RAIL

Not to Scale

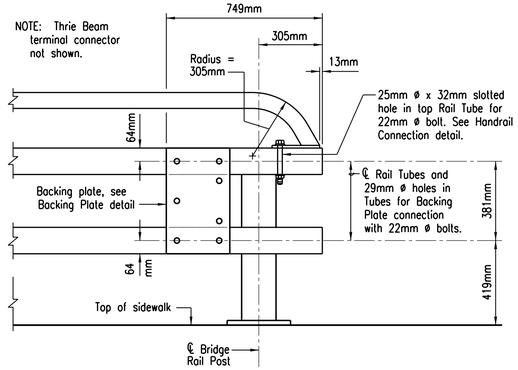


BASE PLATE DETAIL

Not to Scale

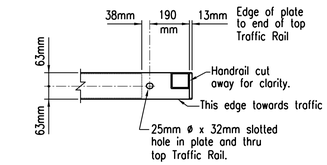
NOTES

1. Units, dimensions and designations shown are metric units.
2. All tubes shall be fabricated from ASTM A500, Grade B.
3. All posts shall be fabricated from AASHTO M183 (ASTM A36) steel.
4. The above material and all anchor bolts and miscellaneous bolts, nuts, and washers shall be galvanized after fabrication in accordance with the AASHTO M111 specifications.
5. Welding shall be in accordance with ANSI/AASHTO/AWS D1.5, Bridge Welding Code.
6. Post anchor, encased in concrete, shall be AASHTO M183 (ASTM A36) steel and need not be galvanized.
7. All H.S. (high strength) bolts shall conform to ASTM A325 (ASTM A325M).
8. Tubes shall be continuous over not less than two posts.
9. All bolts that have lock washers shall be tightened to snug only.
10. Posts shall be perpendicular to the grade of the deck. For post spacing, see Sheet 12.
11. Optional drain hole for galvanizing may be drilled, punched, or clipped leaving smooth surfaces and transitions. No flame cutting or air carbon arc gouging is allowed.
12. Posts, post anchors, base plates, backing plates, anchors, anchor bolts, miscellaneous bolts, nuts, washers, tubes, tube expansion devices, tube splices, end plates and reflector tabs shall be included in Item 55601-0900, "Steel bridge railing".
13. Prior to fabrication of this item, two sets of shop drawings which comply with the requirements of Section 55601-0900 shall be submitted to the Government for review and approval in accordance with Section 104.03 of the FP-14.
14. Concrete for bridge railing curb to be paid for under Item 55201-0200, Structural Concrete; Reinforcing Steel for bridge railing curb to be paid for under Item 55401-2000, Epoxy Coated Reinforcing Steel.

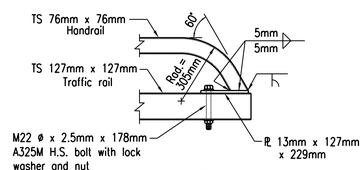


ELEVATION @ END OF BRIDGE RAIL

Not to Scale



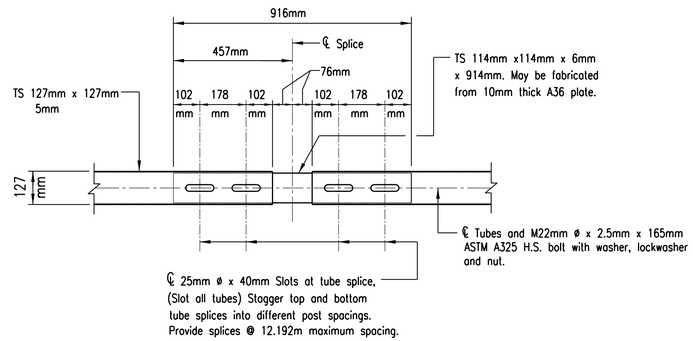
PLAN



ELEVATION

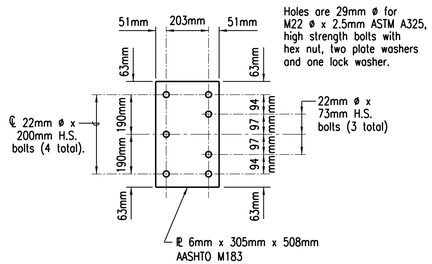
HANDRAIL CONNECTION DETAIL

Not to Scale



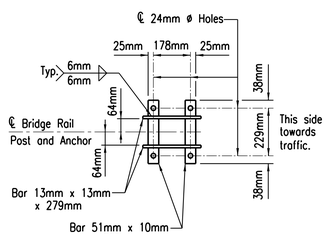
TRAFFIC RAIL TUBE SPLICE

Scale= 1:100



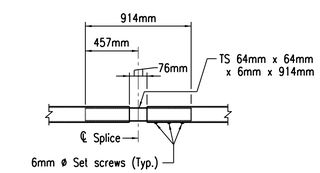
BACKING PLATE

Not to Scale



ANCHOR DETAIL

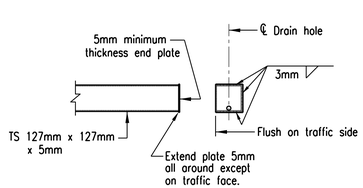
Not to Scale



HANDRAIL TUBE SPLICE

Not to Scale

Place at same location as top traffic rail splice



END DETAIL

Not to Scale

NAVAJO NATION
DIVISION OF TRANSPORTATION

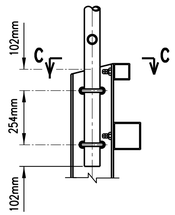
BRIDGE RAILING

Designed by: DDM	
Drawn by: ELO	Date: 2021
Checked by:	Date:
File Name: 19_N108_Brrail	

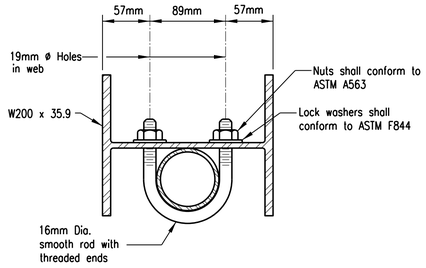
KELLY R. HEATH NEW MEXICO 18915 PROFESSIONAL ENGINEER
2/8/2022

M:\TRN\17-100-090-39\2_Disciplines_SHEETS\19_N108_Brrail_2016-12-02.dgn

REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	TOTAL SHEETS
Navajo	NM	Navajo	N108	N108(1-1)(3)1,2&4	20	33

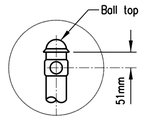


ELEVATION

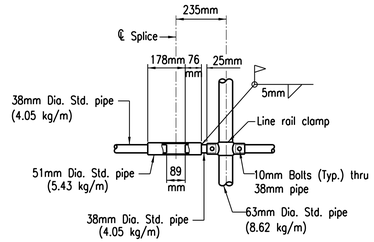


SECTION C-C

DETAIL 1
Not to Scale



DETAIL 2
Not to Scale



FENCE RAIL SPLICE DETAIL
Not to Scale

Provide @ 12.192m (max.) spacing.

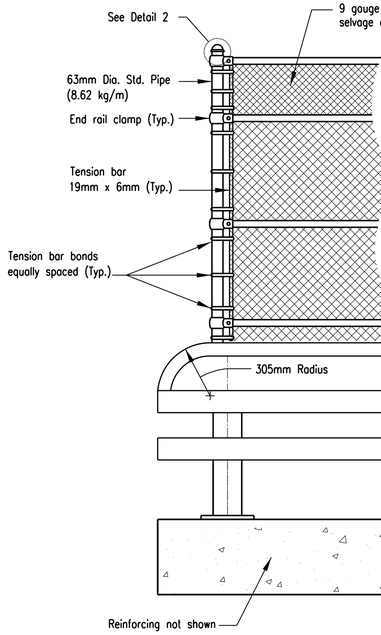
NOTES:

Chain link fence fabric, posts, fittings and hardware shall conform to AASHTO M181 - Type I or II. For Type I the wire fabric coating shall be Class A.

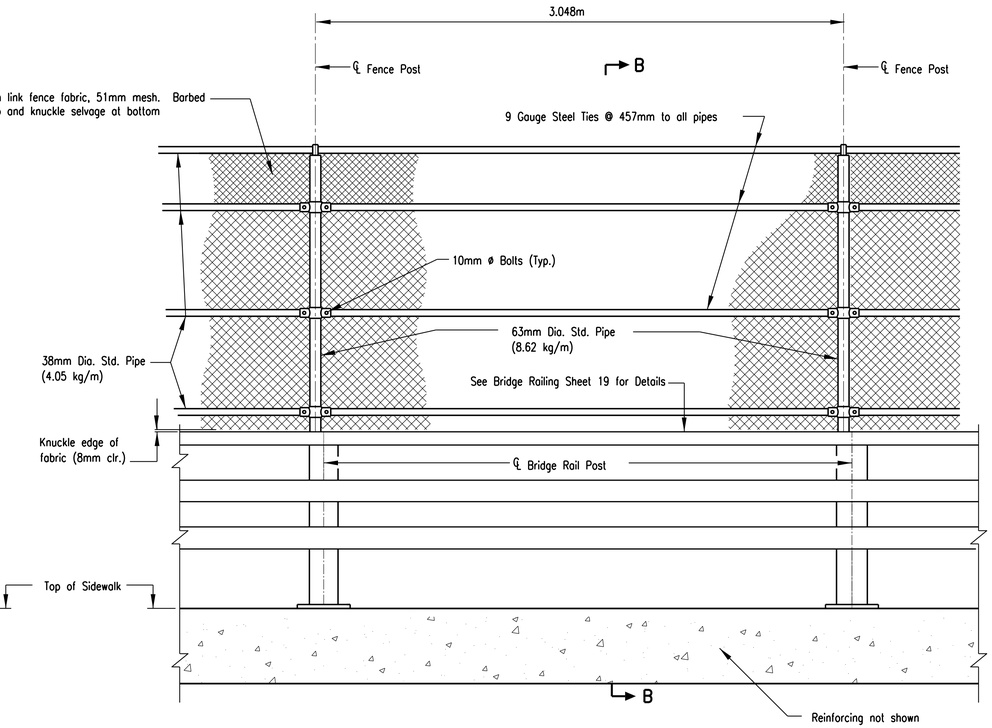
All galvanizing shall be in accordance with AASHTO M111 specification.

All galvanizing that has been damaged in handling, transportation or welding shall be repaired by the application of a paste compound of an approved zinc powder and flux.

All exposed edges shall be smooth. All bolt heads shall be to the inside.

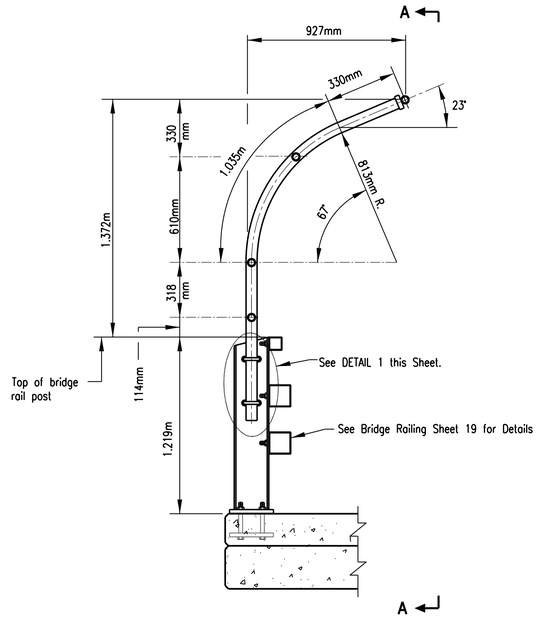


TYPICAL END POST ELEVATION



TYPICAL PANEL ELEVATION

SECTION A-A
Not to Scale



SECTION B-B
Not to Scale

NAVAJO NATION
DIVISION OF TRANSPORTATION

NAVAJO D.Q.T.

PEDESTRIAN FENCE

Designed by: DDM	
Drawn by: ELO	Date: 2021
Checked by:	Date:
File Name: 20_N108_Pedfence	

KELLY R. HEATH
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18915
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12/8/2022

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REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	TOTAL SHEETS
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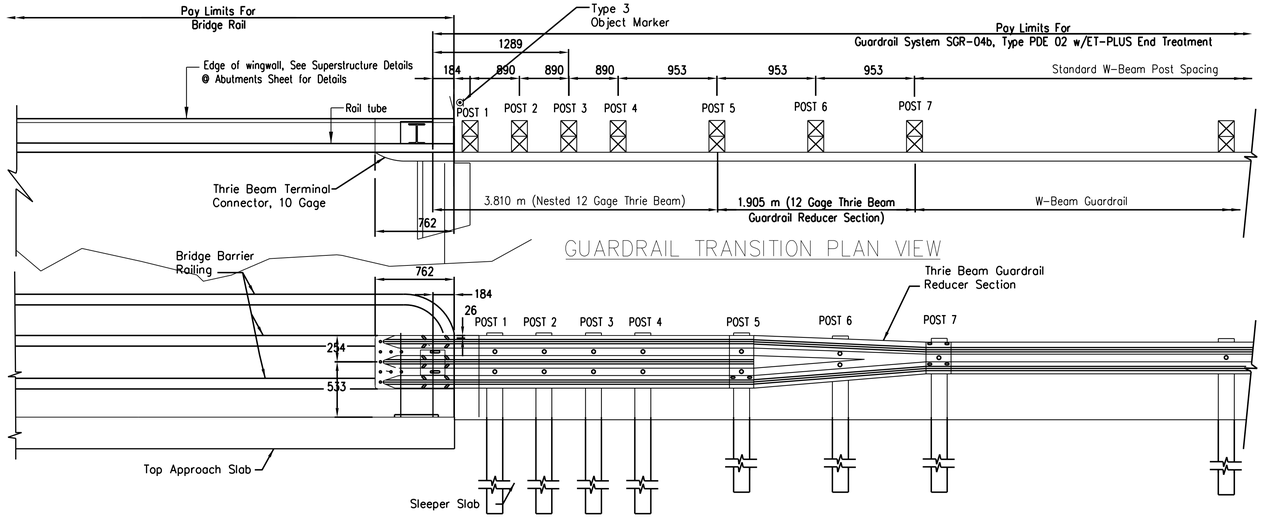
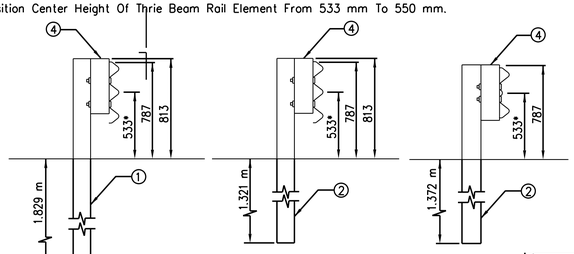
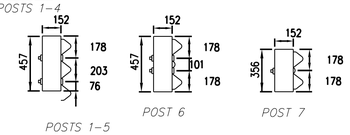


GUARDRAIL TRANSITION PLAN VIEW

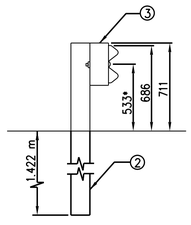
GUARDRAIL TRANSITION ELEVATION VIEW

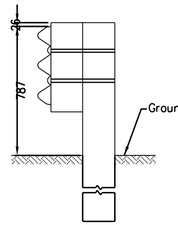
* Transition Center Height Of Thrie Beam Rail Element From 533 mm To 550 mm.



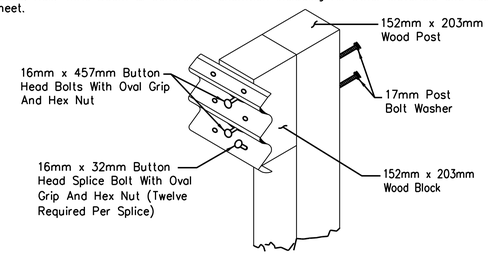


BLOCK DETAILS

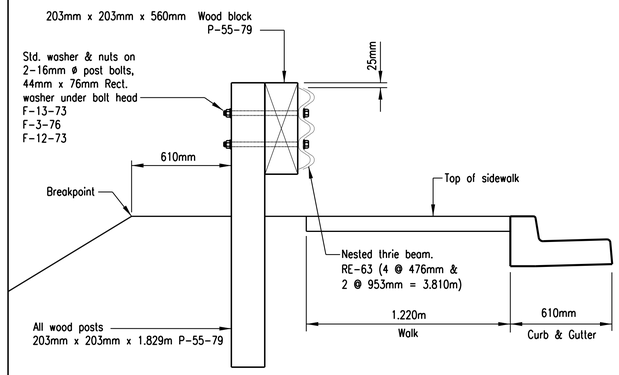




THRIE BEAM RAIL ASSEMBLY



THRIE BEAM POST ASSEMBLY



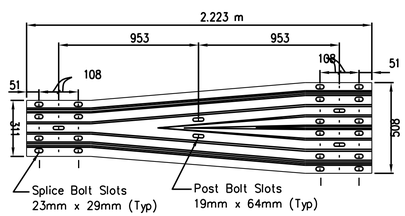
SECTION A-A

Not to Scale

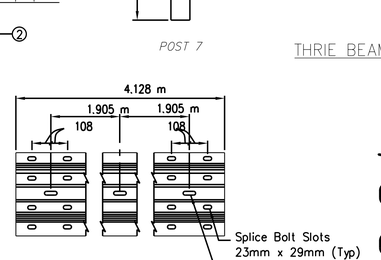
Backup plate not required at guardrail posts.

LEGEND

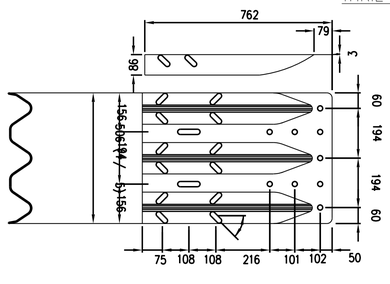
1. *W152 x 635 x 2.591 m or W203 x 533 x 2.591 m Post*
2. *W152 x 508 x 2.134 m or W203 x 457 x 2.134 m Post*
3. *152 x 203 x 356 Treated Timber Offset Block*
4. *152 x 203 x 457 Treated Timber Offset Block*
5. *152 x 152 x 203 Treated Timber Offset Block*



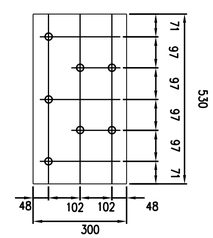
THRIE BEAM GUARDRAIL REDUCER SECTION



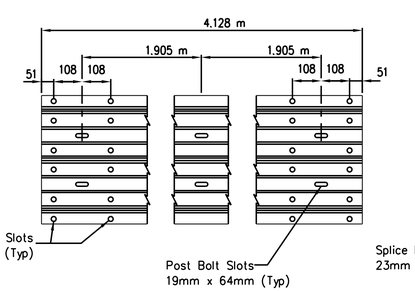
W-BEAM RAIL ELEMENT



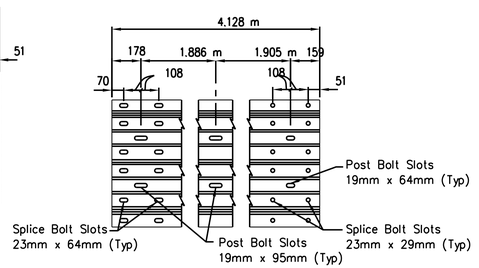
STANDARD THRIE BEAM TERMINAL CONNECTOR



16 mm BEARING PLATE



THRIE BEAM RAIL ELEMENT



THRIE BEAM EXPANSION SECTION

GENERAL NOTES

1. All Dimensions In Millimeters Unless Otherwise Shown.
2. All Materials and Workmanship Shall Conform To FP-14.
3. All Hardware Shall Meet FHWA Crash Worthiness Requirements As Per NCHRP 350 Guidelines.
4. Five 22 mm H.T. S. Bolts Are Required For The Attachment Of The Thrie Beam Terminal Connector To The Concrete Barrier, Length To Be Determined In The Field By The AOTR/COR Holes For Bolts Shall Be 25 mm Dia. And Shall Be Either Formed Or Core Drilled.
5. Furnishing And Placing Of Bolts, Washers, And Bearing Plate Shall Be Considered Incidental To The Cost Of Metal Barrier And No Direct Payment Will Be Made Therefor.
6. Install Thrie Beam Terminal Connector Between Nested Guardrail Elements On The Approach Section.
7. Install Thrie Beam Terminal Connector Outside Of The Nested Guardrail Elements On The Departure Section.
8. Bolts Are To Be Installed As Shown So That The Threaded End Of The Bolts And Nuts Are Placed Away From Traffic Side Of Rail.
9. Do Not Place Any Washers Under The Bolts On The Traffic Side Of The Barrier.
10. Reflector Tabs Shall Be Placed At 7.62 m Intervals On All Guardrail Installations.
11. The Color Of The Reflective Sheeting On The Reflector Tabs Shall Be The Same As The Color Of The Edgeline Pavement Marking In Front Of The Barrier.
12. Reflector Tabs Shall Hove a Minimum Of 76 mm x 127 mm Reflective Sheeting On Both Sides And Shall Attach Securely To The Blockout.
13. Splices Shall Be Lapped So The Free End Does Not Face Traffic Flow.
14. Construction Tolerance For Height Of Guardrail Is 13 mm.
15. The Payment for Item 61701-5000 Includes Posts, Blocks, Rail, Thrie Beam & Concrete Transitition including All Other Materials and Labor to Construct Guardrail Transition as Shown on This Sheet.

DEREK D. MEIER
NEW MEXICO
14504
LICENSED PROFESSIONAL ENGINEER
2/15/22

NAVAJO NATION
DIVISION OF TRANSPORTATION
NAVAJO D.O.T.

GUARDRAIL TRANSITION AND THRIE BEAM DETAILS

Designed by: DDM	
Drawn by: ELO	Date: 2021
Checked by:	Date:
File Name: 21_N108_Graildet	

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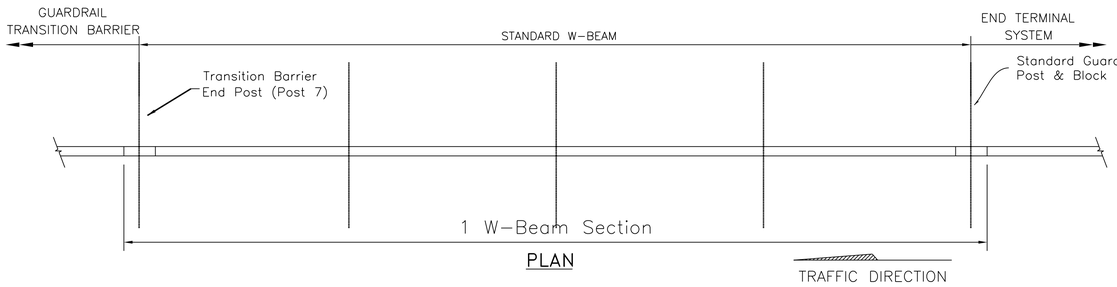
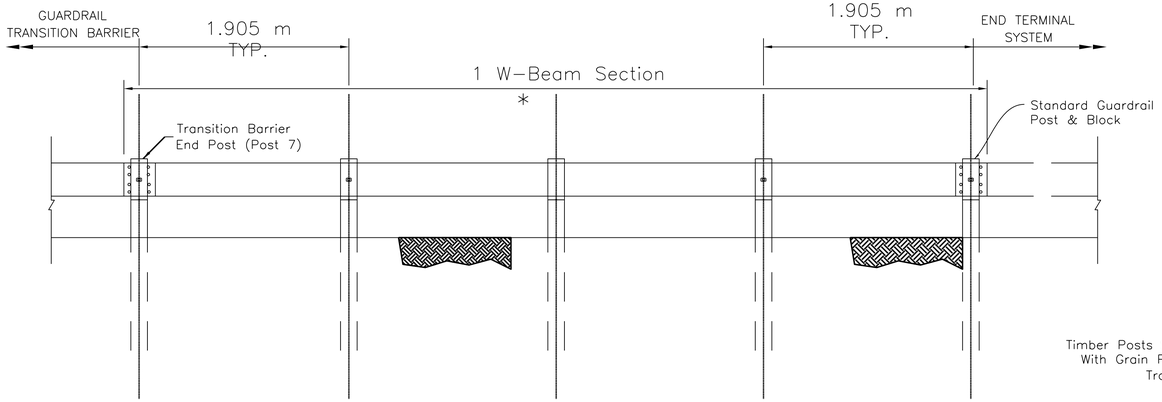
REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	TOTAL SHEETS
NAVAJO	NM	NAVAJO	N108	N108(1-1)(3)1,2&4	22	33

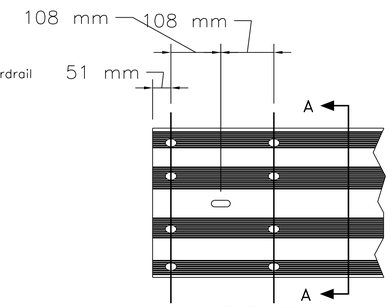


PLAN



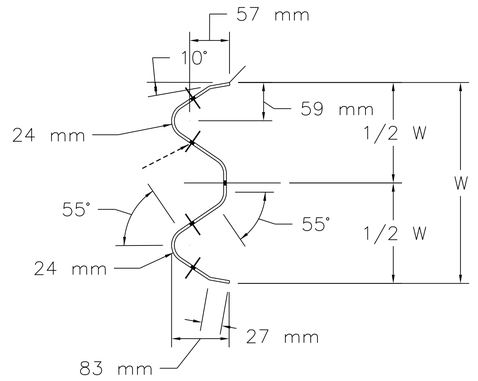
ELEVATION

* SEE GUARD RAIL SCHEDULE FOR FINAL SYSTEM AND W-BEAM LENGTHS

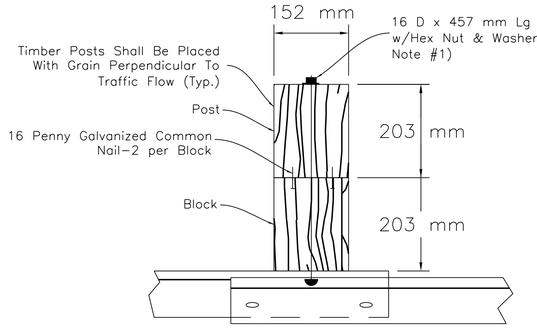


ELEVATION
RAIL

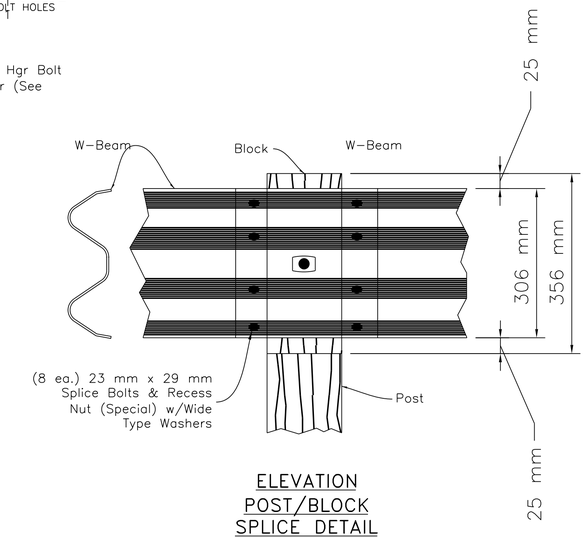
DESIGNATOR	COMPONENT	NUMBER
FBB01	Splice Bolt and Nut	2
FBB02	Guardrail-Post Bolt and Nut	2
FBB03	Guardrail-Post Bolt and Nut	2
FBB04	Guardrail-Post Bolt and Nut	2
FBX16a	Post Blockout Bolt (40 mm)	4
FWC16a	Round Washer	2
PDB01a	Timber Post Blockout	2
PDB01b	Timber Post Blockout	2
PDE02	Timber Post	2
PDE13	Timber Post	2
PWB01	Steel Post Blockout	2
PWE01	Steel Post	2
PWE02	Steel Post	2
RWB01a	W-Beam Backup Plate	FBB01 SPLICE BOLT HOLES
RWM02a	W-Beam Rail	



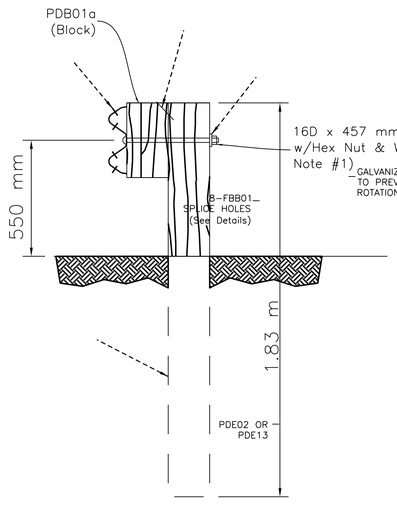
SECTION A-A
W-BEAM (RWM02A)



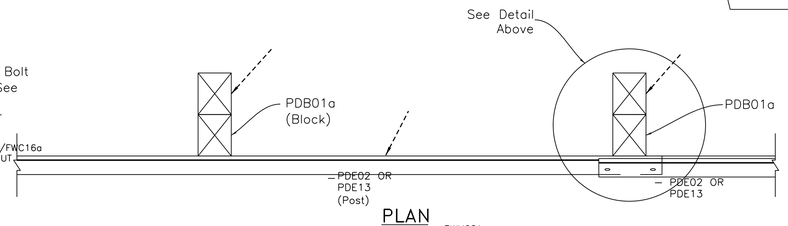
PLAN
POST/BLOCK &
SPLICE DETAIL



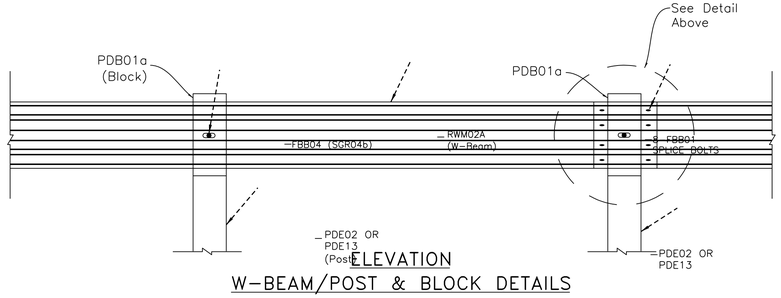
ELEVATION
POST/BLOCK
SPLICE DETAIL



ELEVATION
STRONG-POST W-BEAM



PLAN
W-BEAM/POST & BLOCK DETAILS



ELEVATION
W-BEAM/POST & BLOCK DETAILS

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 51 OF 72 FOR ADDITIONAL NOTES.
3. THE CONTRACTOR HAS THE OPTION TO USE ALL-STEEL POSTS W/WOODEN BLOCK ON STANDARD LINE POSTS, UNLESS OTEHERWISE NOTED ON THE DESIGN PLANS.
4. IF STEEL POSTS ARE APPROVED THEN RUBBER OR RECYCLED PLASTIC BLOCKS WILL BE REQUIRED AS SPECIFIED BY SUPPLIER.
5. BEGIN/END ASPHALT CURB AT POST #2.
6. BEGIN REFLECTIVE TABS ON THE W-BEAM AT EVERY FOURTH POST. THE COLOR OF THE TABS SHALL CONFORM TO THE COLOR OF THE ADJACENT EDGE LINE.
7. ANGLE STRUT MUST BE ATTACHED USING 19D HIGH STRENGTH BOLTS.

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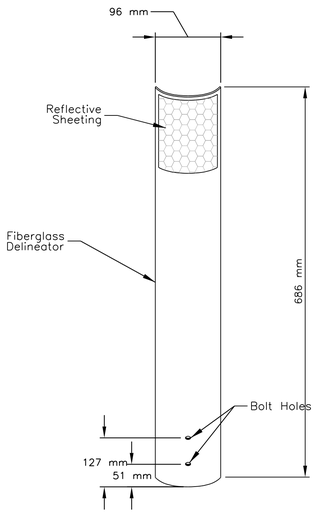
NAVAJO REGIONAL OFFICE - DIVISION OF TRANSPORTATION

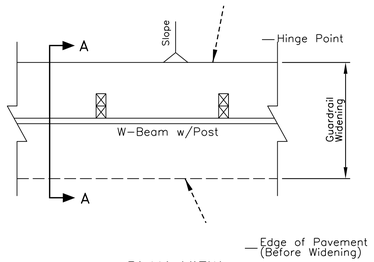
GUARDRAIL END TREATMENT MSKT-TL3-8 LAYOUT; SHEET 1 of 3

Designed by: BIA NRO-DOT Structural Unit	
Drawn by: - - -	Date: 12/02/2016
Revised by: - - -	Date: - - -
File Name: 22_N108_SKT-350 Sht 1 of 3	

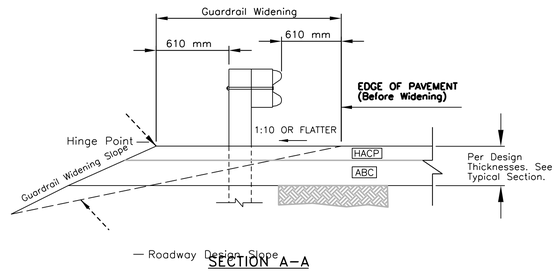
REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	TOTAL SHEETS
NAVAJO	NM	NAVAJO	N108	N108(1-1)(3)1,2&4	23A	33



DELINEATOR DETAIL
(Reflective Sheeting Shall Face Traffic)



PLAN VIEW
w/NO CURBING

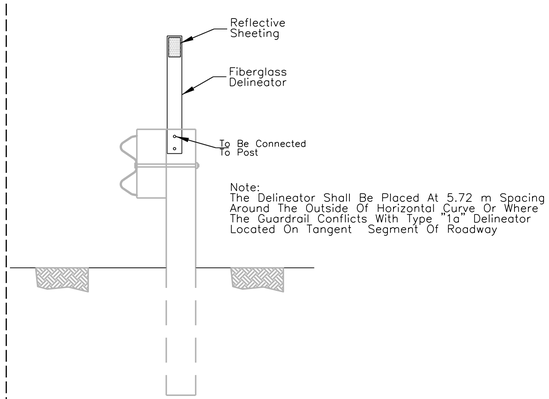


SECTION A-A
w/No Curbing

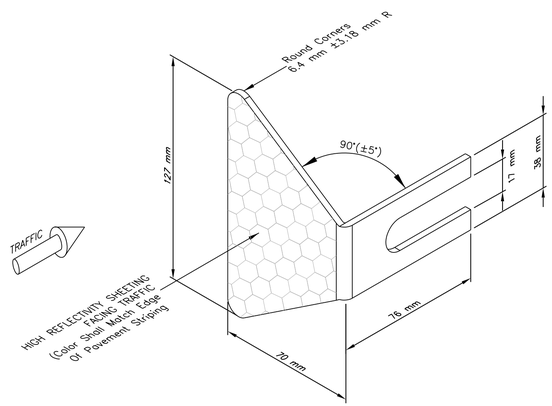
GENERAL NOTES

1. ALL GUARDRAIL "W" BEAMS, SHALL BE GALVANIZED IN ACCORDANCE WITH (AASHTO M-180, CLASS A, TYPE 1) SPECIFICATION. ALL HARDWARE SHALL CONFORM TO (ASTM A-325) AND GALVANIZED IN ACCORDANCE WITH (ASTM A-153).
2. ALL STRUCTURAL STEEL ITEMS SHOWN SHALL CONFORM TO (AASHTO N183/ASTM A36) AND BE GALVANIZED IN ACCORDANCE WITH (AASHTO M-111) SPECIFICATION.
3. WIRE ROPE, FITTINGS AND HARDWARE SHALL CONFORM TO (ASSHTO M-30) SPECIFICATION TYPE II WITH A 19 mm DIAMETER AND A CLASS B ZINC COATING.
4. WOOD POSTS AND BLOCKS SHALL BE ROUGH SAWN LUMBER OR (S4S) HAVING MINIMUM BENDING STRENGTH OF 8.27 MPa (SINGLE MEMBER USE) AND MEETING AASHTO N168 (21TH EDITION). ALL POSTS SHALL BE TREATED IN ACCORDANCE WITH (AASHTO M-133) SPECIFICATION.
5. ASPHALT CONCRETE CURBING SHALL BE INSTALLED IN ACCORDANCE WITH SECTION B-B, AND CONSIDERED INCIDENTAL TO PAVING ITEMS AND NO DIRECT PAYMENT SHALL BE MADE.
6. ALL EMBANKMENT AND AGGREGATE BASE COURSE MATERIALS SHALL BE COMPACTED TO 95% OF MAXIMUM DRY DENSITY.
7. THE EMBANKMENT MATERIALS AND THE PLACING THEREOF SHALL BE INCLUDED IN CONTRACT BID ITEM 20401-0000 AND NO DIRECT PAYMENT SHALL BE MADE.
8. THE CONTRACTOR SHALL BE REQUIRED TO COMPACT THE BACKFILL AND THE ASPHALT ALL AROUND EACH GUARD RAIL 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. THIS WORK SHALL BE INCIDENTAL OBLIGATIONS OF THE WORK DESCRIBED HEREIN.
9. PLACEMENT OF HOT ASPHALT AND ABC MATERIAL FOR GUARDRAIL WIDENING SHALL BE INCLUDED IN BID ITEMS 30101-2000 AND 40201-0500.
10. FURNISHING & PLACEMENT OF 371 mm x 701 mm REFLECTIVE SHEETING AND REFLECTIVE TABS SHALL BE CONSIDERED INCIDENTAL TO ITEM 61701-5000 AND NO DIRECT PAYMENT SHALL BE MADE.
11. ANY RELATED PATENT RIGHTS WILL BE THE RESPONSIBILITY OF THE CONTRACTOR AS PER SECTION 107.01 OF THE FP-14.
12. THE CONTRACTOR HAS THE OPTION TO USE STEEL POSTS. IF STEEL POSTS ARE APPROVED THEN RUBBER OR RECYCLED PLASTIC BLOCKS WILL BE REQUIRED.
13. PLACE REFLECTIVE TABS ON POSTS AT EVERY FOURTH POST. THE COLOR OF THE TABS SHALL CONFORM TO THE COLOR OF THE ADJACENT EDGE LINE

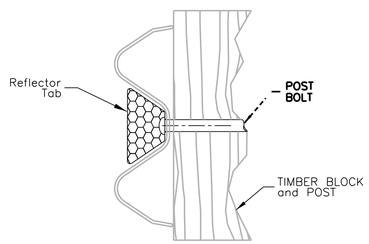
.



ELEVATION
GUARDRAIL/POST MOUNTED
DELINEATOR (TYP.)



ISOMETRIC VIEW
REFLECTOR TAB DETAIL



SECTION
REFLECTOR TAB
MOUNTING DETAIL
Install Tab on Every Second Post

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NAVAJO REGIONAL OFFICE - DIVISION OF TRANSPORTATION

STANDARD GUARDRAIL
DETAIL 2

Designed by: BIA NRO-DOT Structural Unit	
Drawn by: - - -	Date: 12/02/16
Revised by: - - -	Date: - - -
File Name: 23_N108_SKT-350 Sht 2 OF 3	

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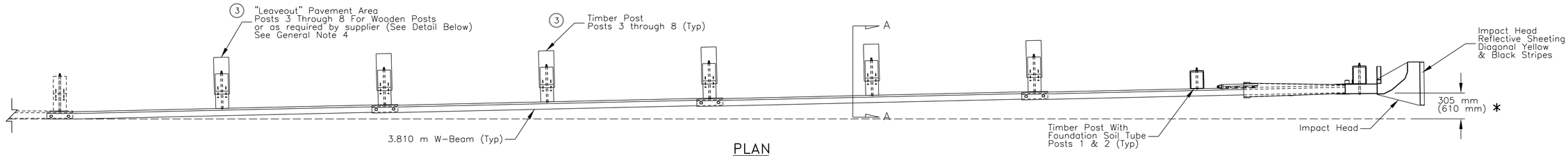
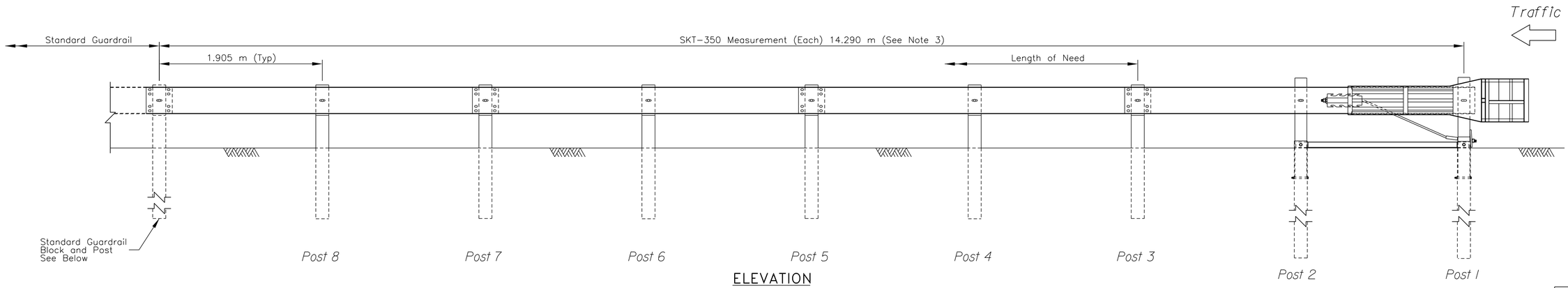
REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	TOTAL SHEETS
NAVAJO	NM	NAVAJO	N108	N108(1-1)(3)1,2&4	23B	33

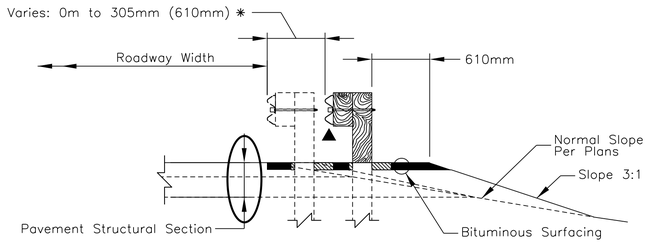
*FOR ELEVATIONS ABOVE (1,220 m) USE THE VALUES IN PARENTHESES



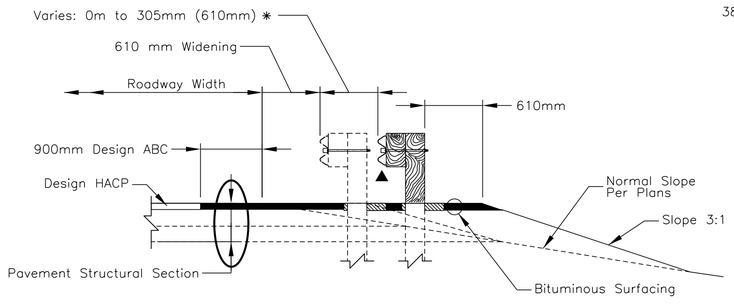
PLAN



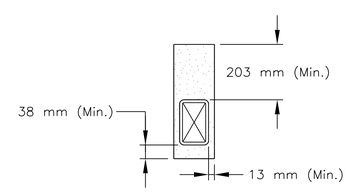
ELEVATION



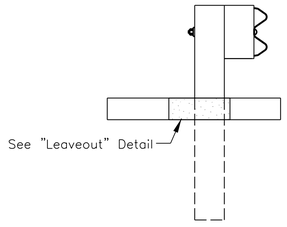
TYPE A SECTION



TYPE B SECTION

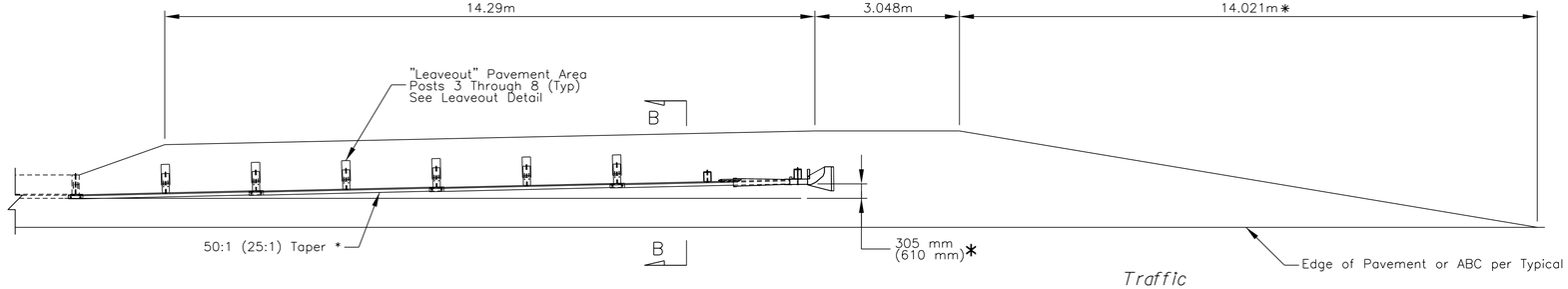


LEAVEOUT DETAIL



SECTION A-A
Typical At Post 3 Thru 8

See Sheet 51 For General Notes.



TYPE B GUARDRAIL INSTALLATION
(FACE OF RAIL OFFSET 610mm FROM NORMAL EDGE OF PAVEMENT)

GENERAL NOTES

1. THIS DETAIL IS FOR ROADWAY LAYOUT ONLY.
2. THE MSKT-TL3-8 SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND CURRENT APPROVED DRAWINGS INCLUDING ALL MATERIALS, HARDWARE, AND OTHER INFORMATION AS SHOWN IN THESE PLANS.
3. THE 14.290 m W-BEAM LENGTH SHALL CONSIST OF FOUR SECTIONS. THE END SECTION BEING A PROPRIETARY SPLIT RAIL.
4. IF SPECIFIED BY THE SUPPLIER, THE"LEAVEOUT" IN ASPHALTIC CONCRETE SHALL BE PROVIDED IN THE AC PAVEMENT AROUND THE GUARDRAIL POSTS AT THE LOCATIONS AND DIMENSIONS SPECIFIED BY SUPPLIER APPROVED SHOP DRAWING. "LEAVEOUT" MATERIAL SHALL CONSIST OF A 1-SACK GROUT MIX OR OTHER NON-COHESIVE MATERIAL AS APPROVED BY THE COR/COTR.

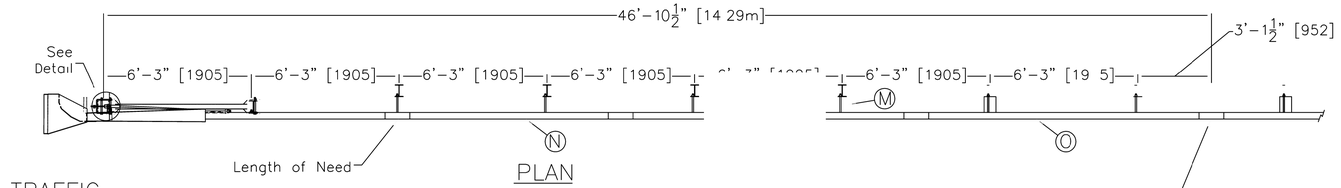
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NAVAJO REGIONAL OFFICE - DIVISION OF TRANSPORTATION

GUARDRAIL END TREATMENT
MSKT-TL3-8 LAYOUT; SHEET 1 of 2

Designed by: BIA NRO-DOT Structural Unit	
Drawn by: - - -	Date: 12/02/2016
Revised by: - - -	Date: - - -
File Name: 22_N108_SKT-350 Sht 1 of 3	

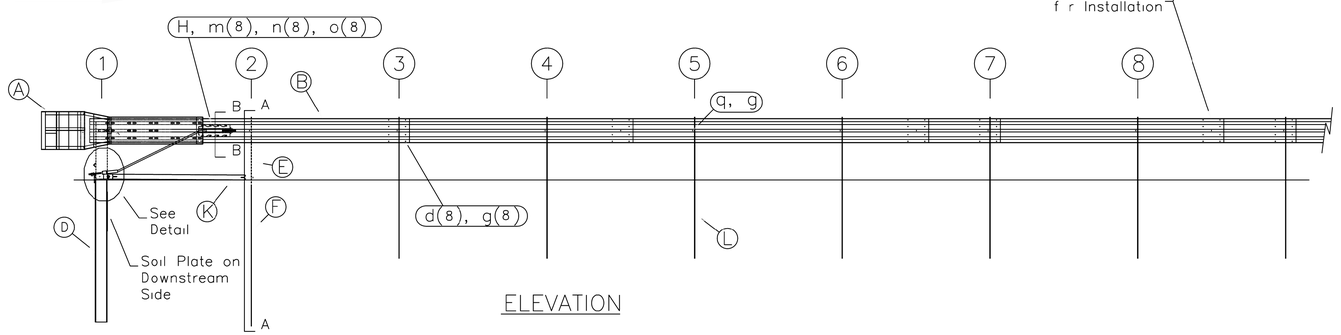
M:\TRN\17-100-090-39\2_Disciplines_SHEETS\23B_N108_SKT-350 Sht 1 of 3_2016-12-05.dgn

REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	TOTAL SHEETS
NAVAJO	NM	NAVAJO	N108	N108(1-1)(3)1,2&4	23C	33



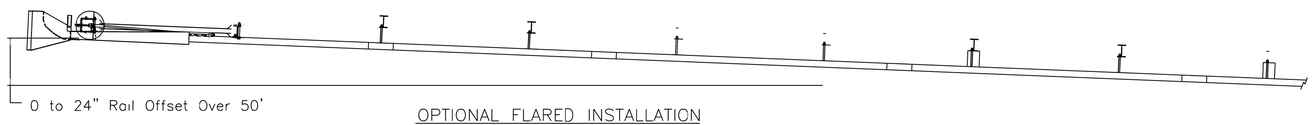
PLAN

TRAFFIC

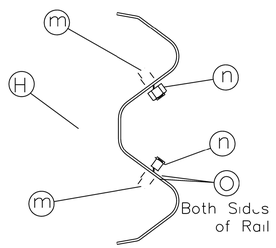


ELEVATION

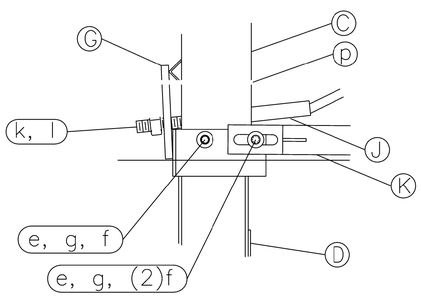
End of Payment for Installation



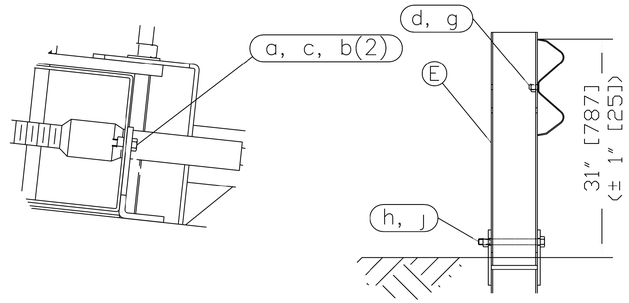
OPTIONAL FLARED INSTALLATION
25 1 maximum flare rate



SECTION B–B
Anchor Bracket



Post #1 Connection Detail



Impact Head Connection Detail

SECTION A–A
P st =2//

ITEM	QTY	BILL OF MATERIALS	ITEM NO
A	1	IMPACT HEAD	MS3000
B	1	W-BEAM GUAR RAIL END SECTION, 12 Ga	SF1303
C	1	FIRST POST TOP (6X6X$\frac{11}{8}$" Tube)	MTPHP1A
D	1	FIRST POST BOTTOM (6' W6X15)	MTPHP1B
E	1	SECOND POST ASSEMBLY TOP	UHP2A
F	1	SECOND POST ASSEMBLY BOTTOM	HP2B
G	1	BEARING PLATE	E750
H	1	CABLE ANCHOR BOX	S760
J	1	BCT CABLE ANCHOR ASSEMBLY	E770
K	1	STRUT	MS785
L	6	6x9 (6x8 5) STEEL POST	P621
M	6	RECYCLED PLASTIC BLOCK OR EQUIV	CBSP-14
N	1	W-BEAM MGS RAIL SECTION (9'-4 1/2")	G12025
O	2	W-BEAM MGS RAIL SECTION (12'-6")	G1203A
		HARDWARE (ALL DIMENSIONS IN INCHES)	
a	2	5/16 x 1 HEX BOLT GRD 5	B5160104
b	4	5/16 WASHER	W0516
c	2	5/16 HEX NUT	N0516
d	25	5/8 Dia x 1 1/4 SPLICE BOLT (POST #2)	B580122
e	2	5/8 Dia x 9 HEX BOLT A449	B580904A
f	3	5/8 WASHER	W050
g	33	5/8 Dia HGR NUT	N050
h	1	3/4 Dia x 8 1/2 HEX BOLT GRD A449	B340854A
j	1	3/4 Dia HEX NUT	N030
k	2	1 ANCHOR CABLE HEX NUT	N100
l	2	1 ANCHOR CABLE WASHER	W100
m	8	1/2 RSI SHOULDER BOLT W/WASHER	SB12A
n	8	1/2 STRUCTURAL NUT	N012A
o	8	1/2 STRUCTURAL WASHER	W012A
p	1	BEARING PLATE RETAINER TIE	CT-100ST
q	6	5/8" x 10" HGR BOLT	B581002

D

NOTES:

1. BREAKAWAY POSTS ARE REQUIRED WITH SEQUENTIAL KINKING TERMINAL.
2. ALL BOLTS, NUTS, CABLE ASSEMBLIES, CABLE ANCHORS AND BEARING SHALL BE GALVANIZED.

   SKT-TL3-8 CAN BE FLARED AT A RATE OF 25:1 TO PREVENT PACT HEAD FROM ENCROACHING ON THE SHOULDER. THE IS NOT REQUIRED MAY BE DECREASED OR ELIMINATED FOR IC INSTALLATIONS.
3. THE SOIL TUBES SHALL NOT PROTRUDE MORE THAN 102 mm ABOVE GROUND (MEASURED ALONG A 1.5 m CHORD). SITE GRADING MAY BE NECESSARY TO MEET THIS REQUIREMENT.
5. THE SOIL TUBES MAY BE DRIVEN WITH AN APPROVED DRIVING HEAD. SOIL TUBES SHOULD NOT BE DRIVEN WITH THE POST IN THE TUBE. IF THE ARE PLACED IN DRILLED HOLES, THE BACKFILL MATERIAL MUST BE SATISFACTORILY COMPACTED TO PREVENT SETTLEMENT.
6. WHEN ROCK IS ENCOUNTERED DURING EXCAVATION, A 308 mm DIA. POST HOLE, 508 mm INTO ROCK MAY BE USED IF APPROVED BY THE ENGINEER. GRANULAR MATERIAL WILL BE PLACED IN THE BOTTOM OF THE HOLE APPROX. 64 mm DEEP TO PROVIDE DRAINAGE. THE SOIL TUBES WILL BE FIELD CUT TO LENGTH, PLACED IN THE HOLE, AND BACKFILLED WITH ADEQUATELY COMPACTED MATERIAL EXCAVATED FROM HOLE.
7. THE BREAKAWAY CABLE ASSEMBLY MUST BE TAUT. A LOCKING DEVICE, (VICE-GRIPS OR CHANNEL-LOCK PLIERS) SHOULD BE USED TO PREVENT CABLE FROM TWISTING WHEN TIGHTENING NUTS.
8. A SPECIAL SITE EVALUATION SHOULD BE CONSIDERED PRIOR TO USING THE MSKT-TL3-8 WHERE THERE IS LESS THAN 7.620 m BETWEEN THE OUTLET SIDE AND ANY ADJACENT DRIVING LANE.
9. THE WOOD BLOCKOUTS SHOULD BE "TOE-NAILED" TO THE WOOD POSTS TO PREVENT THEM FROM TURNING WHEN WOOD SHRINKS.
10. GUARDRAIL SPLICE SHALL BE OVERLAPPED IN HE DIRECTION OF THE ADJACENT TRAFFIC.
11. BILL OF MATERIALS AND SOME OF THE DETAILS HEREIN WERE PROVIDED BY ROAD SYSTEMS INC.
12. ALL BOLTS, NUTS, CABLES ASSEMBLIES, CABLE ANCHORS AND BEARING PLATES SHALL BE GALVANIZED.
13. THE LOWER SECTION OF THE POSTS 1 & 2 SHALL NOT PROTRUDE MORE 4 in. (100 m) ABOVE THE GROUND (MEASURED ALONG A 5' [1.5M] CORD LONGITUDINAL TO THE SYSTEM). SITE GRADING MAY BE NECESSARY TO MEET THIS REQUIREMENT.
14. THE LOWER SECTION OF THE HINGED POST SHOULD NOT BE DRIVEN WITH THE UPPER POST ATTACHED. IF THE POST IS PLACED IN A DRILLED HOLE, THE BACKFILL MATERIAL MUST BE SATISFACTORILY COMPACTED TO PREVENT SETTLEMENT.
15. THE TERMINAL BREAK-AWAY SYSTEM SHALL MEET THE CRASH TEST AND EVALUATION CRITERIA ASSHTO MASH (TL3).
16. THE DETAILS PROVIDED ARE FROM ROAD SYSTEMS INC. THE CONTRACTOR SHALL PROVIDE THE SKT IMPACT HEAD WITH 350 SKT TERMINALS OR EQUAL FROM ANY APPROVED VENDER.
17. DIMENSIONS IN BRACKETS [ ] ARE METRIC.
18. SEE THE CONTRACT SUPPLEMENTAL SPECIFICATION FOR SECTION 617 FOR ADDITIONAL REQUIREMENTS.

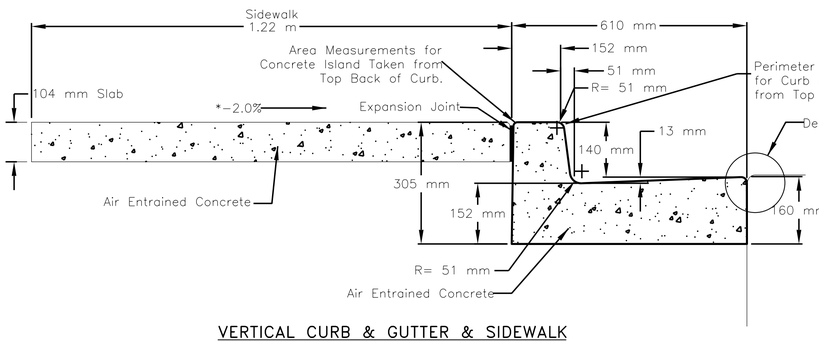
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NAVAJO REGIONAL OFFICE – DIVISION OF TRANSPORTATION

GUARDRAIL END TREATMENT
MSKT-TL3-8 350 LAYOUT; SHEET 3 of 3

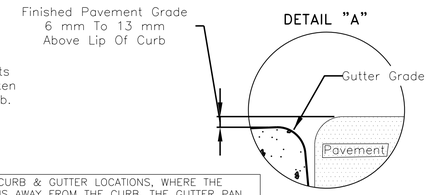
Designed by: BIA NRO-DOT Structural Unit	
Drawn by: dc	Date: 12/02/2016
Revised by: - - -	Date: - - -
File Name: 23a_N108_SKT-350 Sht3of3	

M:\TRN\17-100-090-39\2_Disciplines_SHEETS\23C_N108_SKT-350_sht3of3_2016-12-02.dgn

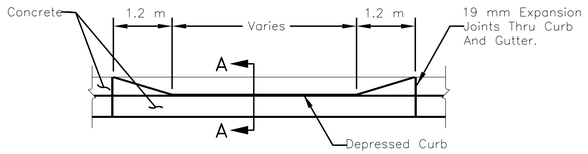
REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	TOTAL SHEETS
Navajo	New Mexico	Navajo	N108	N108(1-1)(3)1,2&4	24	33



VERTICAL CURB & GUTTER & SIDEWALK



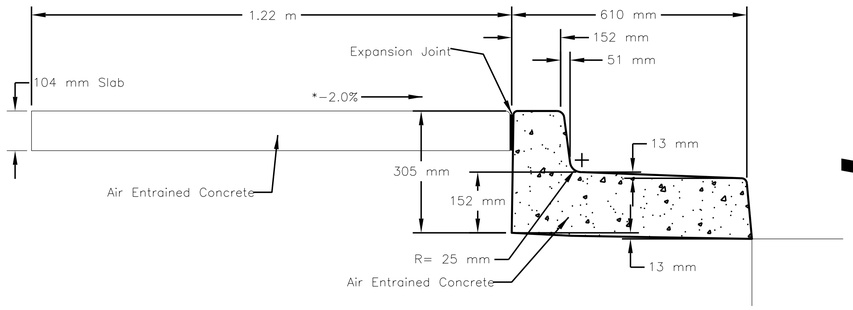
NOTE: AT CURB & GUTTER LOCATIONS, WHERE THE DRAINAGE IS AWAY FROM THE CURB, THE GUTTER PAN SHALL BE OUTSLOPED WITH A 13 mm FALL TOWARD THE ASPHALT. THE GUTTER LIP SHALL BE FLUSH WITH THE FINISHED ASPHALT SURFACE. GUTTER PAN THICKNESS TO RETAIN THE SPECIFIED 152mm THICKNESS.



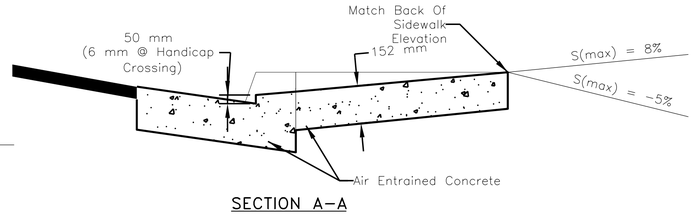
WING-TYPE DRIVEWAY

*2.0 METER @ HANDICAP ACCESS AREAS

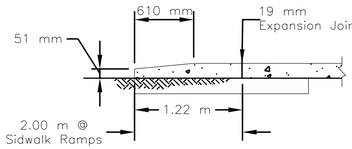
*UNLESS SHOWN OTHERWISE ON DRAWINGS



OUT SLOPE GUTTER

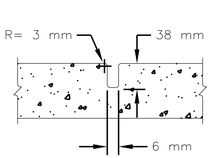


SECTION A-A

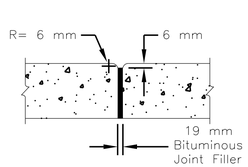


CURB TERMINAL SECTION

(Unless Noted Otherwise On Plans)

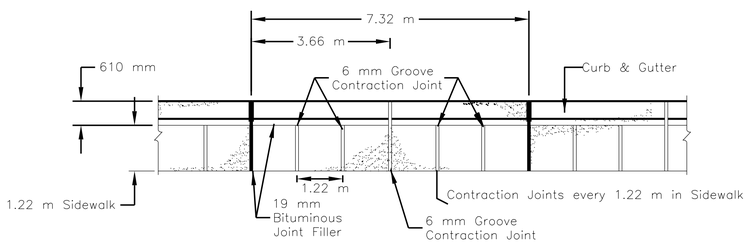


CONTRACTION JOINT

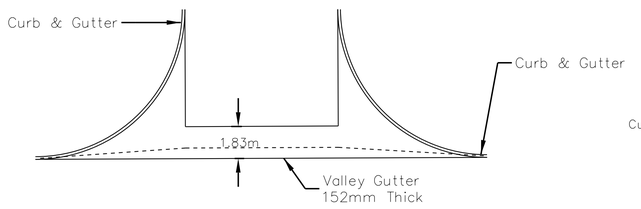


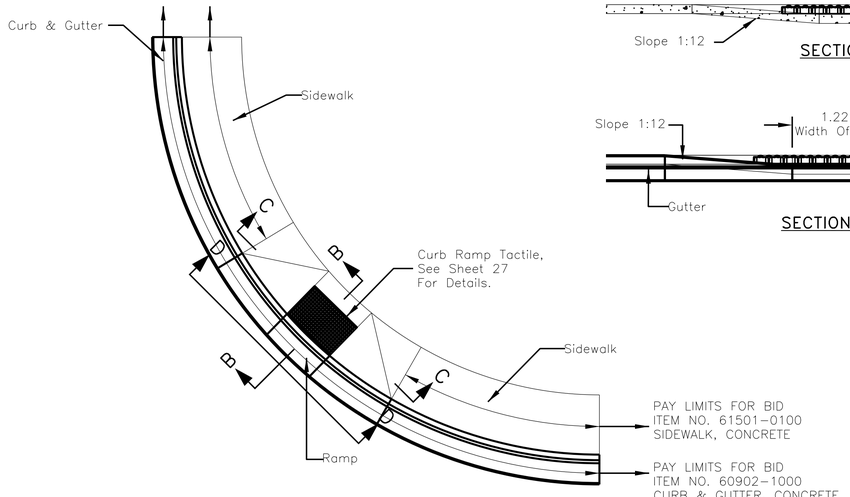
EXPANSION JOINT

* WHERE CURB TAPERS ARE NEEDED (AS PER CM) TO MATCH SIDEWALKS AND/OR ARE RELATED TO A SIDEWALK RAMP, THE LENGTH OF THE TAPER SHALL BE 2m LONG AND THE TOE OF THE TAPER TO BE FLUSH WITH THE MATCHING SURFACE.

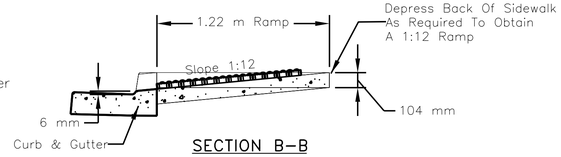


CURB GUTTER & SIDEWALK JOINT DETAIL

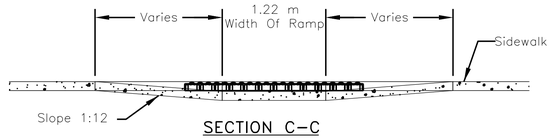




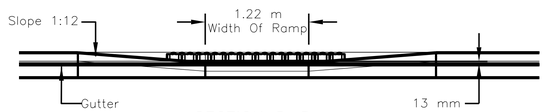
PLAN VIEW



SECTION B-B



SECTION C-C



SECTION D-D

GENERAL NOTES

1. WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE STANDARD SPECIFICATION FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-14) ALONG WITH ALL SUPPLEMENTAL SPECIFICATIONS FOR THIS PROJECT.
2. ALL CONCRETE TO BE AIR ENTRAINED WITH A MINIMUM COMPRESSIVE STRENGTH OF 25.0 MPa IN 28 DAYS. ALL CONCRETE SHALL CONFORM TO SECTION "601 "MINOR CONCRETE STRUCTURES" OF THE FP-14, TABLE 601-1.
3. IN NO CASE SHALL ANY BACKFILLING OR PAVING BE ALLOWED UNTIL THE CONCRETE HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 17.2 MPa.
4. ALL SUBGRADE SOILS IN AREAS WHERE CONCRETE CURB, GUTTER, VALLEY GUTTER, AND SIDEWALK IS BEING PLACED SHALL BE COMPACTED TO AT LEAST 95% OF MAXIMUM DENSITY AS DETERMINED BY AASHTO T-99, METHOD (C). ANY UNSUITABLE SUBGRADE MATERIALS ENCOUNTERED SHALL BE REMOVED AND REPLACED WITH SELECT BACKFILL MATERIAL CONFORMING TO AASHTO (A-2-4) OR BETTER, AS DIRECTED BY THE C.O.R. IN ACCORDANCE WITH SECTION 105.02 (m).
5. ALL DEPRESSED CURB, WHEELCHAIR RAMPS AND FILLET SECTIONS SHALL BE CONSIDERED INCIDENTAL TO INSTALLATION OF THE SIDEWALK AND CURBING.
6. ALL PERFORM JOINT FILLER SHALL BE IN ACCORDANCE WITH SECTION 712.01, OF THE FP-14, TABLE 712-1. THE CONTRACTOR SHALL SUBMIT A PROPOSAL ON THE TYPE OF FILLER AND METHOD OF INSTALLATION TO BE USED FOR REVIEW AND APPROVAL BY THE C.O.R. PRIOR TO INSTALLATION, THIS MATERIAL AND THE INSTALLATION THEROF SHALL BE CONSIDERED INCIDENTAL TO ITEMS 60902-0400 AND 61501-0100.
7. THE CONTRACTOR WILL BE REQUIRED TO MAKE ANY AND ALL NECESSARY FIELD ADJUSTMENTS TO MATCH FIELD CONDITIONS AS DIRECTED BY THE C.O.R. AFTER THE CURB, CURB RETURNS, AND VALLY GUTTERS ARE FORMED AND PRIOR TO POURING THE CONTRACTOR SHALL NOTIFY THE C.O.R. AND ALLOW TIME FOR THE C.O.R. TO CHECK DRAINAGE. IF POSITIVE DRAINAGE IS NOT FOUND ELEVATIONS SHALL BE ADJUSTED TO ENSURE DRAINAGE AROUND CURB RETURNS AND ALONG CURBS AND VALLEY GUTTERS. THIS WORK SHALL BE INCIDENTAL TO COMPLETION OF THE PROJECT AND NO ADDITIONAL PAYMENT WILL BE MADE.
8. SURFACE TEXTURE OF WHEELCHAIR RAMP SHALL BE OBTAINED BY HEAVY BROOMING (TEXTURE DEPTH, 1.0 mm), TRANSVERSE TO THE SLOPES OF THE RAMP. THIS WORK SHALL BE INCIDENTAL TO ITEM 60902-0400 & 61501-0100.
9. CURB RETURN FILLET SECTIONS SHALL BE POURED INTEGRALLY WITH THE CURB AND GUTTER FROM CURB RETURN PC TO PT.
10. ALL CURB RAMPS SHALL MEET CURRENT AMERICANS WITH DISABILITIES ACT (ADA) REQUIREMENTS, INCLUDING PROVIDING A DETECTABLE WARNING SURFACE TACTILE COMFORMING WITH THE ADA ACCESSIBILITY GUIDELINES FOR BUILDINGS AND FACILITIES (ADAAG). THIS WORK SHALL BE INCIDENTAL TO ITEM 61501-0100 SEE SHEET 27 FOR DETAILS.
11. AT CONNECTION TO BRIDGE SIDEWALK, TAPER ROADWAY CURB, GUTTER AND SIDEWALK TO MATCH BRIDGE SIDEWALK. TAPER LENGTH TO BE 1.0 METER.
12. TACK COAT MATERIAL SHALL MEET FP-14 SECTION 412, SHALL BE APPLIED TO ALL VERTICAL PCC EDGES (CURB & GUTTER, VALLEY GUTTER, SLABS, ETC.) ABUTTED BY NEW ASPHALT SURFACING. TACK COAT SHALL BE APPLIED USING BRUSHES OR SPRAY EQUIPMENT TO THE SATISFACTION OF THE CO/COR TACK COAT SHALL NOT BE 'DRIBBLED' OR 'POURED' ON USING SHOVELS, BUCKETS OR SIMILAR EQUIPMENT. PCC EDGES SHALL BE CLEAN AND DRY AS APPROVED BY THE CO/COR TACK COAT WILL BE INCIDENTAL TO BID ITEM 41201-1000.

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

MISC. ROADWAY DETAILS

Designed by: HRC	
Drawn by: TAY, HRC Date: 12/02/16	
Checked by: Date:	
File Name: 24_N108_miscrdwy	

M:\TRN\17-100-090-39\2_Disciplines_SHEETS\24_N108_miscrdwy_2016-12-02.dgn

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N108	N108(1-1)(3)1,2&4	25	33

Square Tube Selection: Single Post – 2.80 mm thickness

Post Size	H = Panel Height To Bottom Of sign + 1/2 Height Of Traffic Sign (meter)					
	1.52	1.83	2.13	2.44	2.74	<--- H
38 mm x 38 mm	0.51	0.43	0.37	0.31	n/a	Maximum Sign Area (m²)
44 mm x 44 mm	0.81	0.68	0.58	0.47	0.41	
50 mm x 50 mm	1.14	0.95	0.84	0.70	0.58	
57 mm x 57 mm	1.49	1.27	1.07	0.95	0.84	
64 mm x 64 mm	1.88	1.68	1.41	1.25	1.07	

Square Tube Selection: Double Post – 2.80 mm thickness

Post Size	H = Panel Height To Bottom Of sign + 1/2 Height Of Traffic Sign (meter)					
	1.52	1.83	2.13	2.44	2.74	<--- H
50 mm x 50 mm	n/a	n/a	1.49	0.84	0.58	Maximum Sign Area (m²)
57 mm x 57 mm	n/a	n/a	2.15	1.97	1.81	
64 mm x 64 mm			2.68	2.46	2.26	

Square Tube Selection: Triple Post – 2.80 mm thickness

Post Size	H = Panel Height To Bottom Of sign + 1/2 Height Of Traffic Sign (meter)					
	1.52	1.83	2.13	2.44	2.74	<--- H
57 mm x 57 mm	n/a	n/a	3.08	2.83	2.61	Maximum Sign Area (m²)
64 mm x 64 mm			3.82	3.52	3.26	

Guide Sign Post Dimensions

(Not for use with Warning, Regulatory or Marker Panels)

Panel Width	914 mm	1.22 m	1.52 m	1.83 m	2.13 m	2.44 m	2.74 m	3.05 m
two posts spacing (A)	559 mm	711 mm	914 mm	1.12 m	1.27 m	1.47 m	1.63 m	1.83m
bolts to panel (per stringer)			3	3	3	3	4	4
lenght of each stringer			1.22 m	1.42 m	1.57 m	1.78 m	1.93 m	2.13 m
two posts spacing (B)			533 mm	635 mm	737 mm	864 mm	965 mm	1.07 m
bolts to panel (per stringer)			3	3	4	4	4	4
length of each stringer			1.37 m	1.57 m	1.78 m	2.03 m	2.24 m	2.44 m

PERMANENT ROADSIDE SIGNS

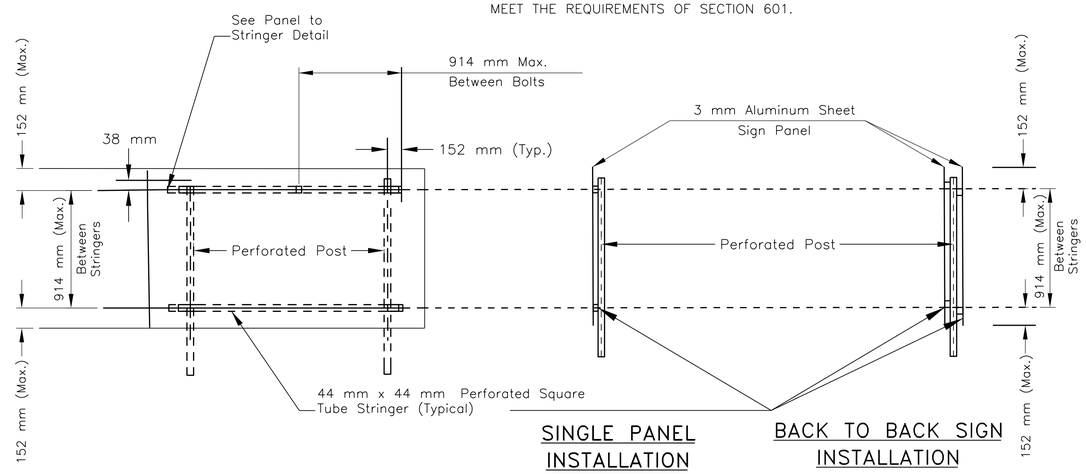
STATION	LOC.	SIZE DETAIL NO.	DESCRIPTION	SIGN PANEL SIZE (mm)	AREA OF SIGN (Sq. m.)	NO. Of POSTS	POST WT. kg/m	TOTAL SIGN PANELS
0+024.000	Lt.	R1-1	STOP	762 x 762	0.58	2	2.98	1
0+250.515	Lt.	R1-1		762 x 762	0.58	2	2.98	1
				TOTAL	1.16			
0+040.000	Rt.	R2-1	SPEED LIMIT 25	610 x 762	0.46	1	4.10	1
0+240.000	Lt.	R2-1		610 x 762	0.46	1	4.10	1
				TOTAL	0.92			

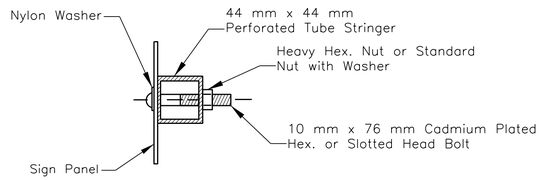
GENERAL NOTES:

1. 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.

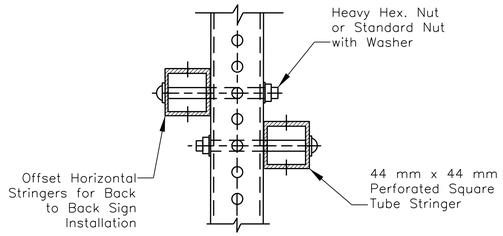
2. SIGNS GREATER THAN 762 mm IN WIDTH SHALL BE MOUNTED ON TWO OR MORE POSTS.

3. SIGN POST CONCRETE FOUNDATION SHALL BE USED IN LOOSE FINE GRAVITY SOILS THAT ARE HARD TO COMPACT AS DIRECTED BY COTR. THE CONCRETE SHALL MEET THE REQUIREMENTS OF SECTION 601.



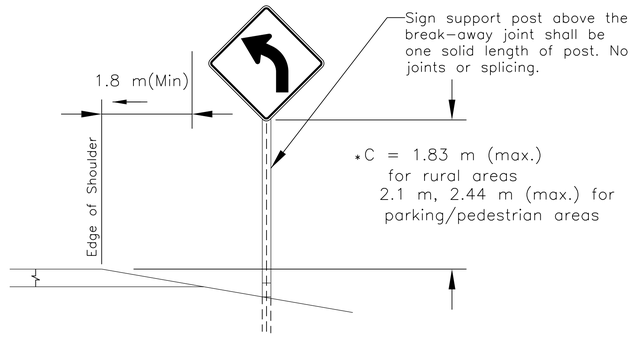


PANEL TO STRINGER OR POST



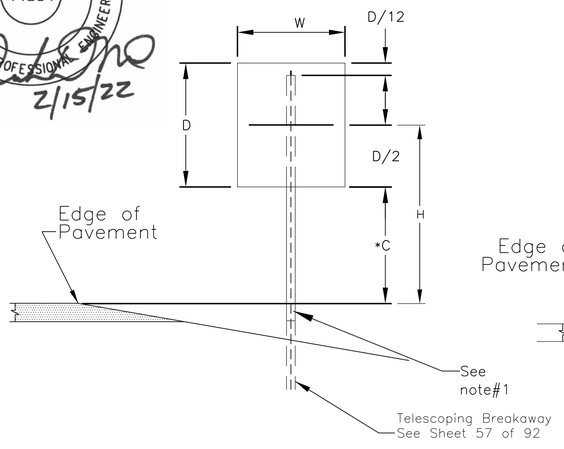
STRINGER TO POST

STRINGER DETAILS (FOR GUIDE SIGNS UP TO AND INCLUDING 3.05 mm WIDE)

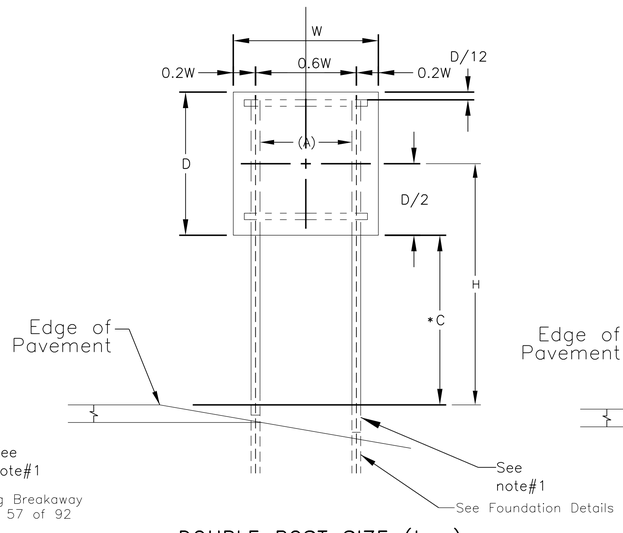


TYPICAL ROADSIDE SIGN LOCATION

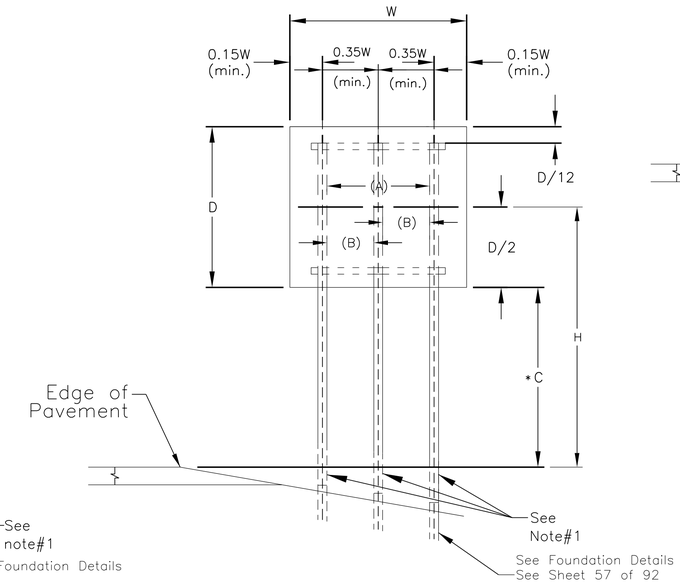
DEREK D. MEIER NEW MEXICO 14504 LICENSED PROFESSIONAL ENGINEER 2/15/22



SINGLE POST SIZE (typ.)



DOUBLE POST SIZE (typ.)



THREE POST SIZE (typ.)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF INDIAN AFFAIRS

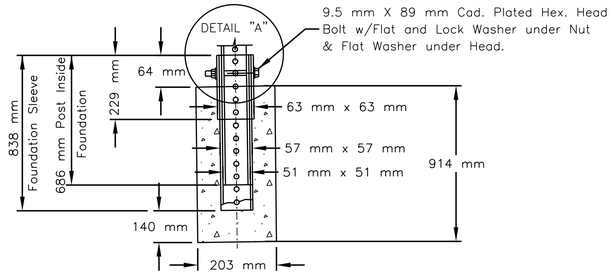
NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

PERMANENT SIGNING DETAILS

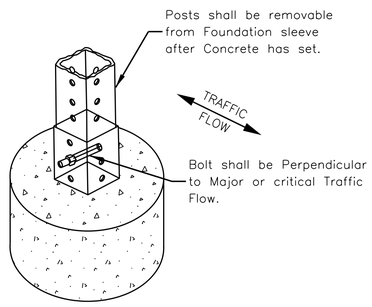
DRAWN BY: NRDOT	DATE: 10/25/2017
DESIGNED BY: NRDOT	DATE: 10/25/2017
REVISED: 10/17	BY: rsh
FILE NAME: 25_N108_Permsign2	

$FILEL$

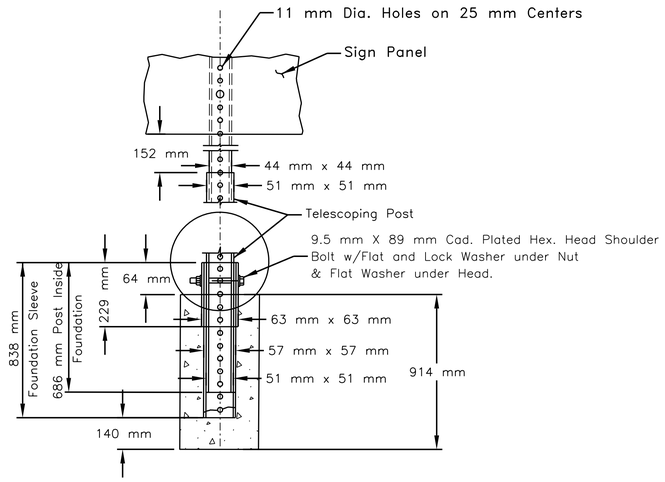
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N108	N108(1-1)(3)1,2&4	26	33



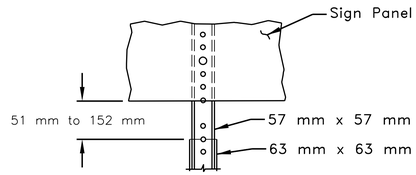
SINGLE POST FOUNDATION DETAIL



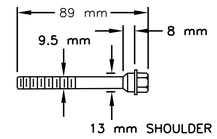
DETAIL "A"



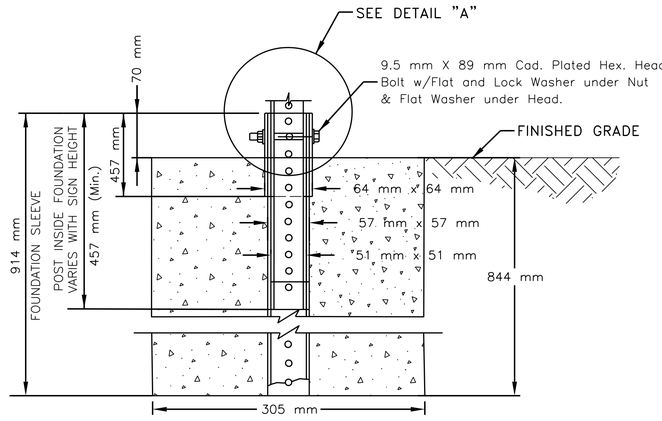
TELESCOPING POST DETAIL



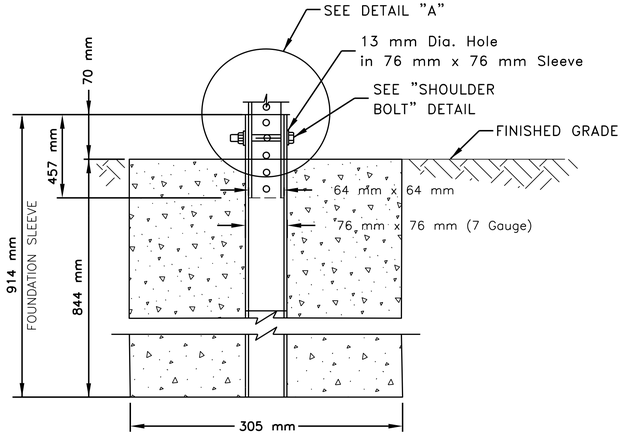
TELESCOPING POST INSTALLATION



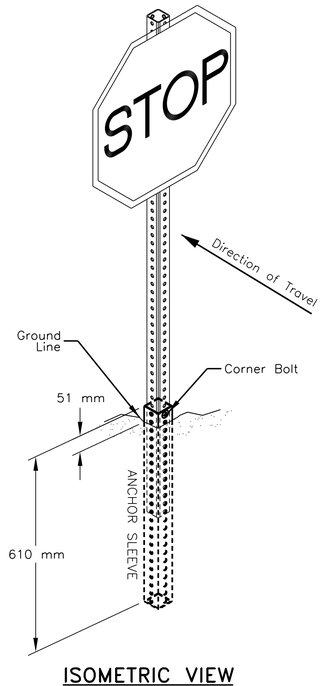
SHOULDER BOLT (HEAD)



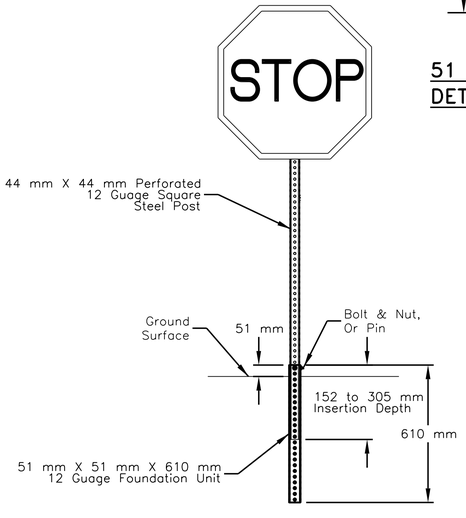
51 mm SINGLE POST CONCRETE FOUNDATION DETAIL (IN WEAK SOILS)



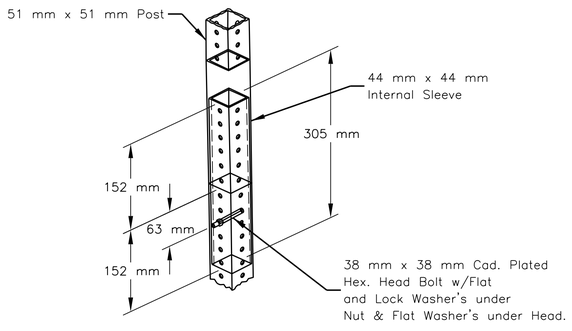
64 mm SINGLE POST CONCRETE FOUNDATION DETAIL (IN WEAK SOILS)



ISOMETRIC VIEW



TELESCOPING BREAKAWAY
(Single Post)



SINGLE POST PERMISSIBLE FIELD SPLICE
(Not allowed on Telescoping Post)

UNITED STATES
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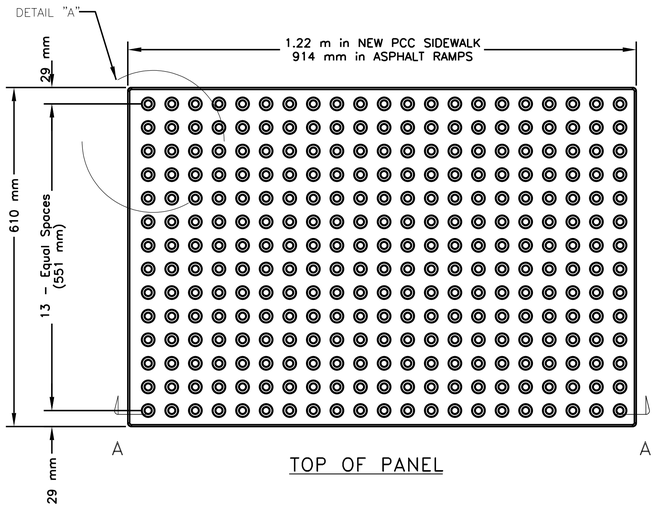
NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

SQUARE POST AND SIGN MOUNTING DETAILS

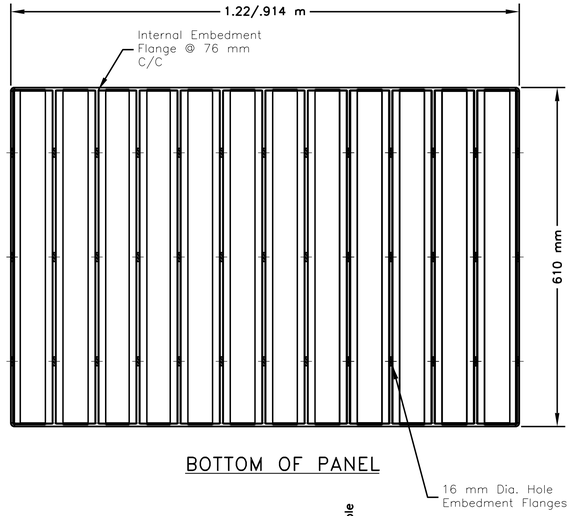
DRAWN BY: NRDOT	DATE: 10/25/2017
DESIGNED BY: NRDOT	DATE: 10/25/2017
REVISED: 10/17	BY: rsh
FILE NAME: 26_N108_Permsig	

$FILE$

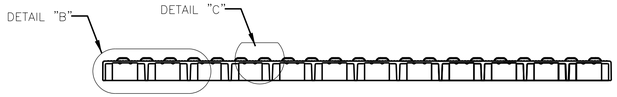
REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	TOTAL SHEETS
Navajo	NM	Navajo	N108	N108(1-1)(3)1,2&4	27	33



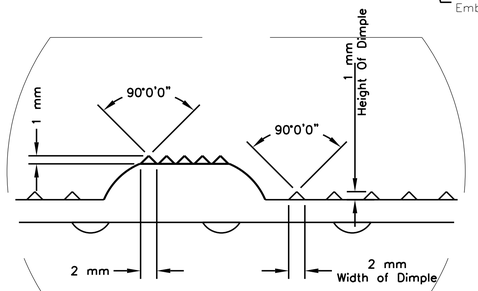
TOP OF PANEL



BOTTOM OF PANEL



SECTION A-A



RAISED TRUNCATED DOME
DETAIL "C"

GENERAL NOTES

1. ALL WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-14).
2. THE CONTRACTOR SHALL INSTALL YELLOW COLORED CAST-IN-PLACE COMPOSITE TACTILE, AS FOLLOWS:

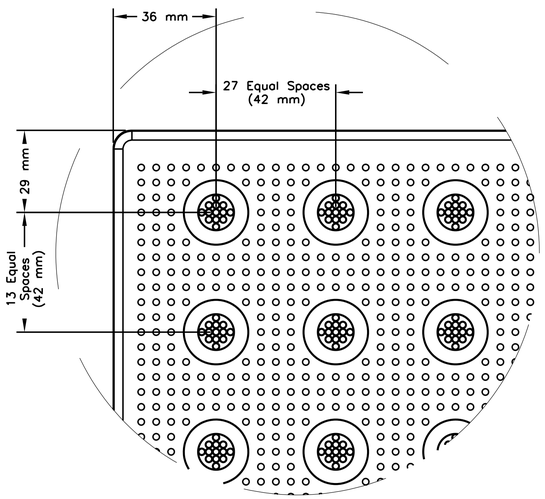
a) THE CONCRETE SHALL BE POURED AND FINISHED LEVEL, TRUE AND SMOOTH TO THE REQUIRED DIMENSIONS PRIOR TO THE PLACEMENT OF THE TACTILE UNIT.

b) PLACE THE TACTILE UNIT 152 – 203mm FROM THE CURB LINE. WORKING IN A GRID PATTERN, TAMP THE TACTILE UNIT INTO THE WET CONCRETE USING A RUBBER MALLET AND A SCRAP PIECE OF WOOD. CONTINUE THIS PROCESS UNTIL ALL OF THE AIR HAS BEEN RELEASED, AND THE TACTILE UNIT SURFACE IS FLUSH WITH THE SURROUNDING AREA.

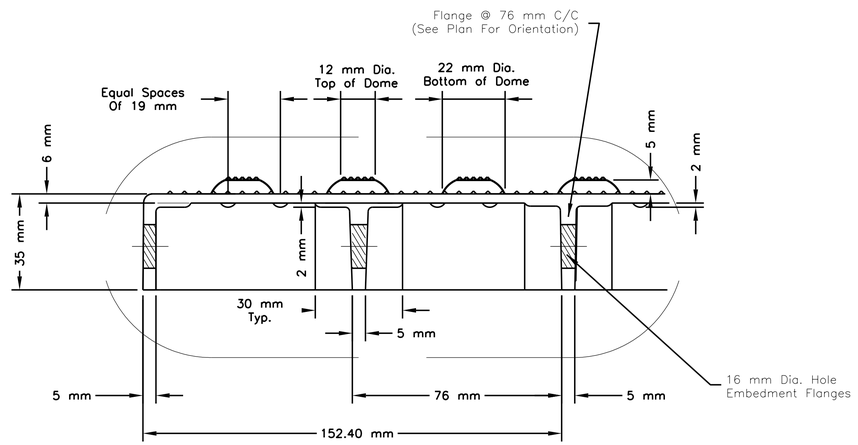
c) FOLLOWING THE PLACEMENT, THE TACTILE UNIT ELEVATION SHOULD BE CHECKED TO THE ADJACENT SURFACE WITH A STRAIGHT EDGE. ANY REQUIRED ADJUSTMENTS MUST BE MADE PRIOR TO THE TIME WHEN THE CONCRETE BEGINS TO SET.

d) DURING AND AFTER THE TACTILE UNIT INSTALLATION, AS WELL AS THE CONCRETE CURING STAGE, NO WALKING OR EXTERNAL FORCES BE PLACED ON THE TACTILE UNIT. THE AREA MUST BE PROTECTED FROM PEDESTRIAN TRAFFIC UNTIL CONCRETE IS CURED.

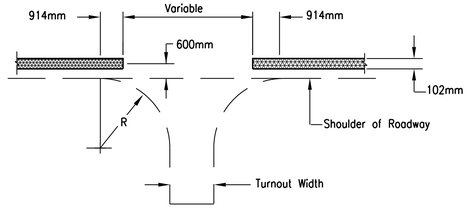
3. THE COST OF SUPPLYING ALL MATERIALS AND INSTALLATION OF THE TACTILE UNIT SHALL BE INCLUDED IN THE UNIT PRICE BID UNDER ITEM 61505-0100.
4. THE CONTRACTOR SHALL BE REQUIRED TO MAKE ANY NECESSARY FIELD ADJUSTMENTS TO MATCH IN-PLACED SIDEWALK, CURB AND GUTTER ACTUAL CONDITIONS. THESE FIELD ADJUSTMENTS ARE INCIDENTAL OBLIGATIONS OF THE CONTRACTOR.



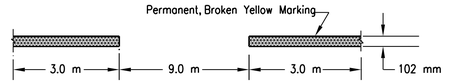
RAISED TRUNCATED DOME
PLAN VIEW
DETAIL "A"



SIDE VIEW
DETAIL "B"



TYPICAL TURNOUT TRAFFIC MARKING



TYPICAL CENTERLINE TRAFFIC MARKING

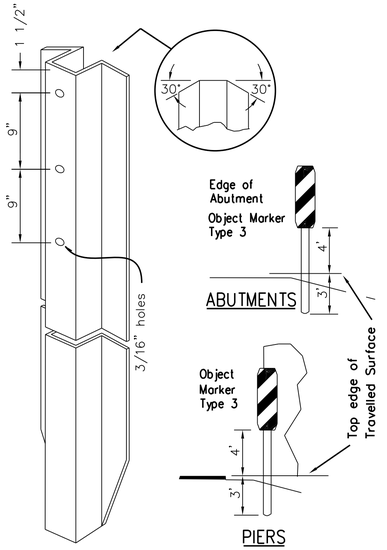
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NAVAJO REGIONAL OFFICE - DIVISION OF TRANSPORTATION

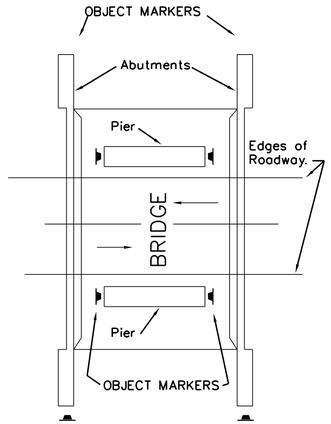
TYPICAL TURNOUT TRAFFIC MARKINGS
CURB RAMP DETAILS

Designed by: D.O.T.	
Drawn by: JLB, rsh	Date: 12/02/16
Checked by:	Date:
File Name: 27_N108_Stdpipe	

M:\TRN\17-100-090-39\2_Disciplines_SHEETS\27_N108_Stdpipe_2016-12-02.dgn

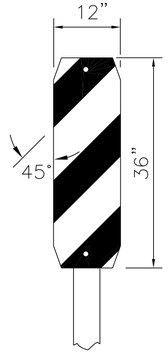
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N108	N108(1-1)(3)1,2&4	28	33



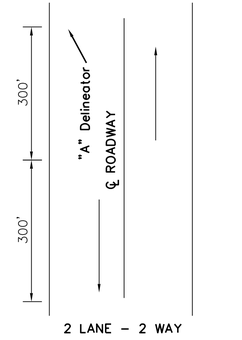


PLACEMENT OF DELINEATORS AT BRIDGE ABUTMENTS AND PIERS

Above plan for 2 lane – 2 way roadways. Use delineators on approach side only on 2 lane – 1 way roadways. (One half of divided highway.)

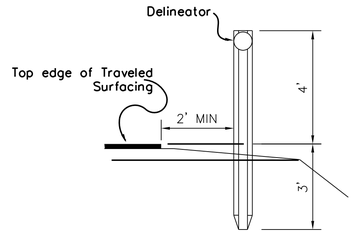


OBJECT MARKER TYPE 3



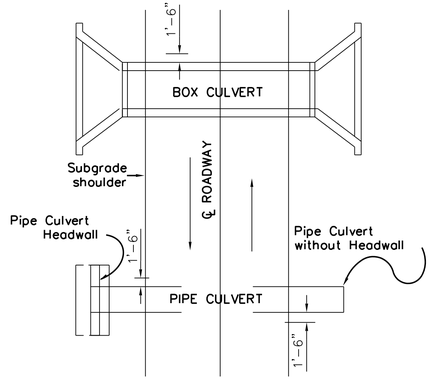
PLAN ON HIGH FILLS

Not neccessarily needed on both sides. Use only on side of roadway that meets high fill requirements.

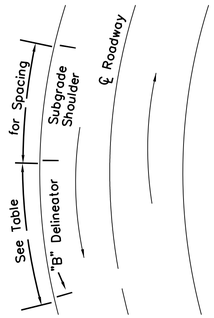


DELINEATOR PLACEMENT

(In relation to Roadway Edge) AT STRUCTURE HEADWALLS ON HIGH FILLS AND CURVES



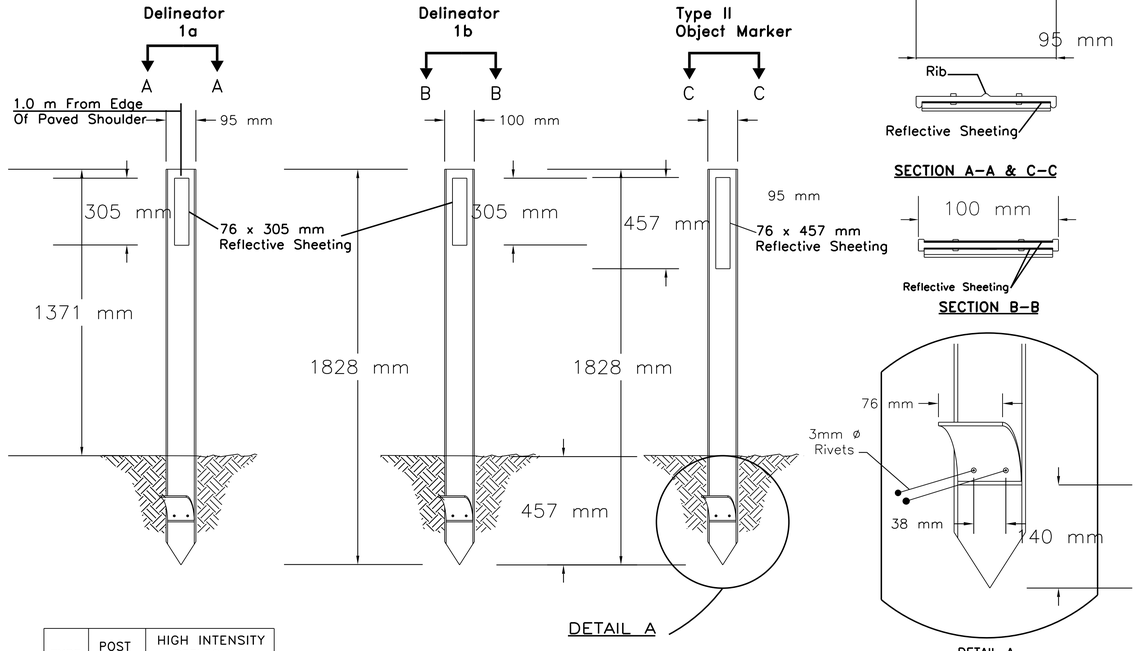
PLAN AT STRUCTURES



NOTE:

Other Delineator System Support which are commercially available and which have been approved for use by the State Highway Department of the state where this project is located, may be submitted to the Construction Manager. for consideration as alternate to the Delineator System shown on the plans.

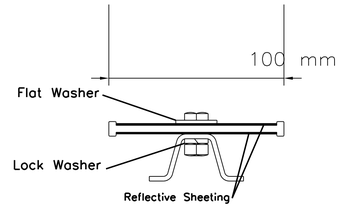
GLASS FIBER TYPE DELINEATOR AND OBJECT MARKER

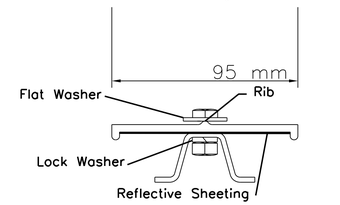


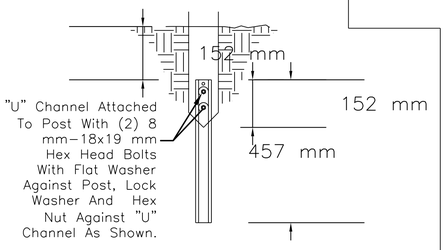
SECTION A–A & C–C

SECTION B–B

DETAIL A







ALTERNATE DETAIL

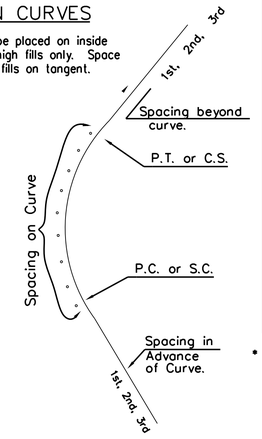
TYPE	POST COLOR	HIGH INTENSITY REFLECTIVE SHEETING
1a	WHITE	WHITE, ONE SIDE
1b	WHITE	WHITE, BOTH SIDES
2	YELLOW	AMBER, ONE SIDE

NOTE:

The Contractor shall use glass fiber type highway delineators. The cost of supplying materials and installation of U–channel shall be included in the unit price bid under Items 63306–2000, 63309–0010, and 63309–0020.

PLAN ON CURVES

Delineator to be placed on inside of curves on high fills only. Space same as high fills on tangent.



DEGREE OF CURVE	RADIUS IN FEET	SPACING ON CURVE*	SPACING IN ADVANCE AND BEYOND CURVE		
			1st Space	2nd Space	3rd Space
1°00'	5730	226'	300'	300'	300'
1°30'	3820	184'	300'	300'	300'
2°00'	2865	159'	300'	300'	300'
2°30'	2292	142'	284'	300'	300'
3°00'	1910	129'	258'	300'	300'
3°30'	1638	120'	240'	300'	300'
4°00'	1432	112'	224'	300'	300'
4°30'	1274	105'	210'	300'	300'
5°00'	1146	99'	198'	297'	300'
6°00'	955	90'	180'	270'	300'
7°00'	818	83'	166'	249'	300'
8°00'	716	77'	154'	231'	300'
9°00'	636	73'	146'	219'	300'
10°00'	573	69'	138'	207'	300'
12°00'	478	62'	124'	186'	300'
15°00'	382	55'	110'	165'	300'
18°00'	318	49'	98'	147'	294'

* For spacing on curve S=3 R=60 where R=radius in feet. 1st. Space = 2(S), 2nd. Space = 3(S), 3rd = 6(S), but not to exceed 300'. Minimum spacing = 20 feet.

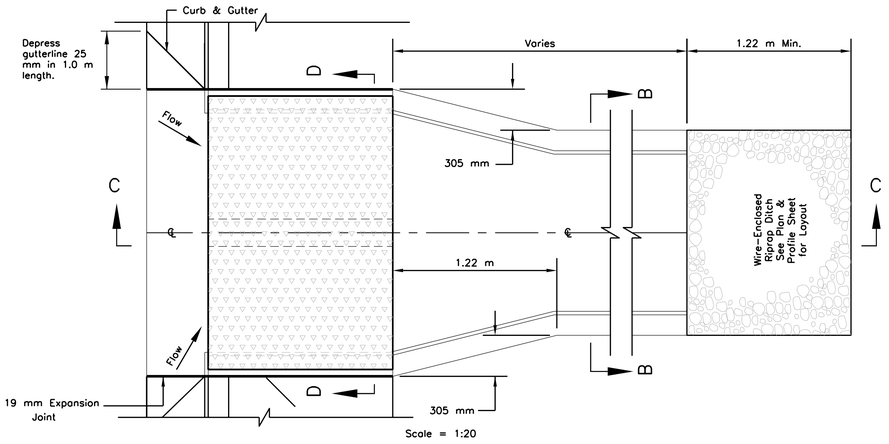
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

STANDARD DELINEATORS AND OBJECT MARKER DETAILS

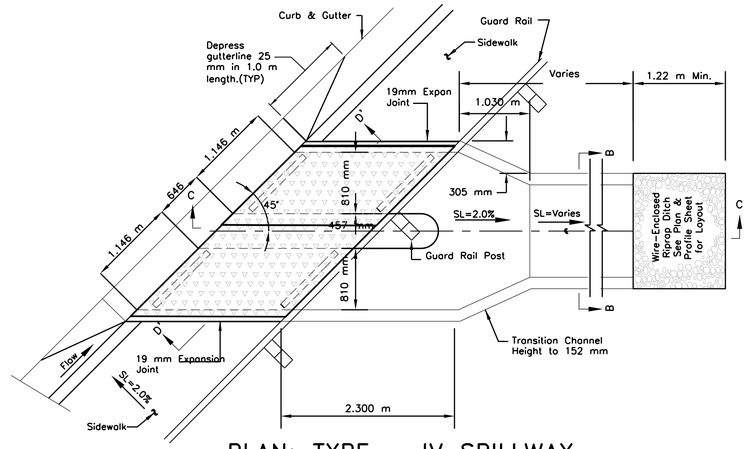
DRAWN BY: NRDOT DATE: 10/25/2017
DESIGNED BY: NRDOT DATE: 10/25/2017
REVISED: 10/17 BY: rsh
FILE NAME: 28_N108_Delindet

$FILE\$

REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	TOTAL SHEETS
Navajo	NM	Navajo	N108	N108(1-1)(3)1,2&4	29	33



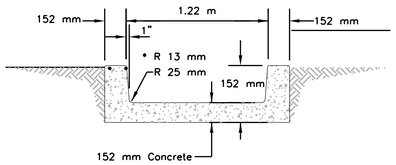
PLAN; TYPE – III SPILLWAY



PLAN; TYPE – IV SPILLWAY

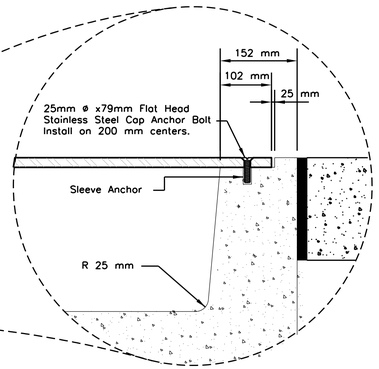
GENERAL NOTES

1. WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-14) ALONG WITH ALL SUPPLEMENTAL SPECIFICATIONS FOR THIS PROJECT.
2. ALL CONCRETE TO BE CLASS A(AE) WITH CLASS 1 FINISH. CHAMFER ALL EXPOSED EDGES AS SHOWN. ALL CONCRETE SHALL CONFORM TO SECTION 601 "MINOR CONCRETE STRUCTURES" OF THE FP-14, TABLE 601-1.
3. ANY UNSUITABLE MATERIAL ENCOUNTERED DURING THE FOOTING EXCAVATIONS SHALL BE REMOVED AS DIRECTED BY THE ENGINEER AND REPLACED WITH STRUCTURAL BACKFILL MATERIAL CONFORMING TO AASHTO A-2-4 SOIL CLASSIFICATION OR BETTER AND SHALL BE CONSIDERED INCIDENTAL TO COMPLETION OF STRUCTURES.
4. IN NO CASE SHALL ANY BACKFILL BE PLACED UNTIL THE CONCRETE HAS ATTAINED COMPRESSIVE STRENGTH OF 17.24 MPa. ALL CONCRETE SHALL BE 20.68 MPa STRENGTH IN 28 DAYS.
5. ALL STONE FOR RIPRAP TO BE CLASS (1) MEETING THE GRADING REQUIREMENTS OF TABLE 705-1; SECTION 251- "RIPRAP" OF THE FP-14.
6. ALL EXCAVATIONS AND BACKFILL OPERATIONS SHALL BE DONE TO NEAT LINES IN ACCORDANCE WITH SECTION 209 OF THE FP-14, AND THE DETAILS SHOWN. THIS WORK SHALL BE INCIDENTAL TO INSTALLATION OF RIPRAP AND SPILLWAYS.
7. THE CONTRACTOR WILL BE REQUIRED TO MAKE ANY NECESSARY ADJUSTMENTS IN THE FIELD TO MATCH EXISTING FIELD CONDITIONS. THESE FIELD ADJUSTMENTS ARE INCIDENTAL OBLIGATIONS OF THE CONTRACTOR.
8. THE 10 mm THICK, GALVANIZED STEEL PLATE SHALL BE A-36 STEEL. SUPPLYING OF PLATE, HARDWARE & #4 STIRRUPS, INSTALLATION SHALL BE INCIDENTAL TO THE UNIT PRICE BID FOR ITEM 60911a.
9. SEE SHEET 8 FOR ADDITIONALI WIRE ENCLOSED RIPRAP DETAILS AND NOTES.

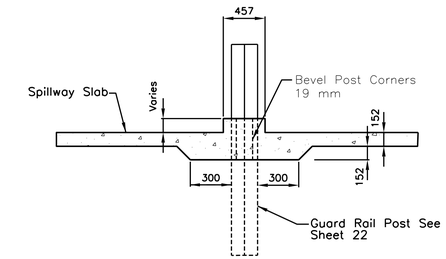


SECTION B–B

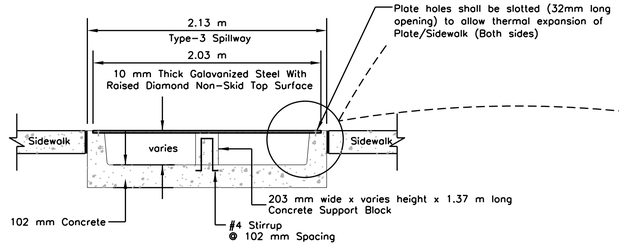
NTS



ANCHOR DETAIL



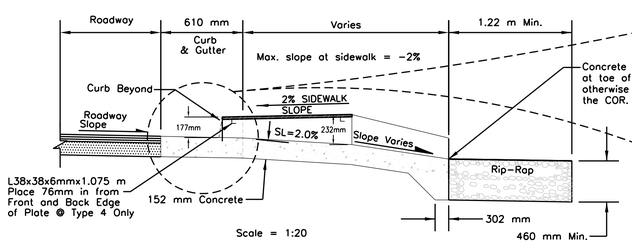
GUARD RAIL POST AT SPILLWAY



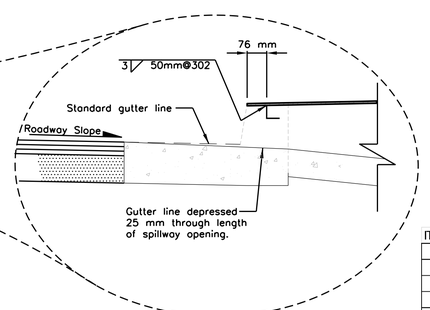
SECTION D–D
SECTION D'–D' (similar)

NTS

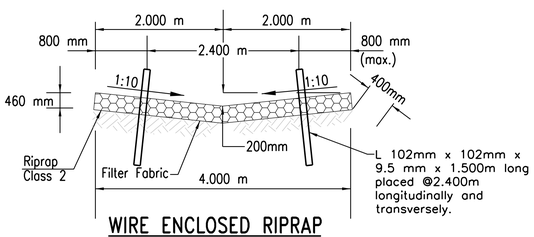
NOTE: Some of the dimensions shown in this detail need to be adjusted to fit Type IV spillways due to the 45 degree angle between the sidewalk and spillway.



SECTION C–C

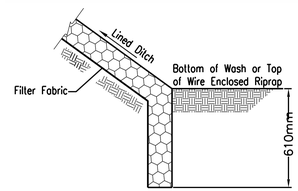


DEPRESSED GUTTER DETAIL



WIRE ENCLOSED RIPRAP LINED DITCH DETAIL

N.T.S.



END TREATMENT DETAIL FOR DOWNDRAINS AND DITCH LINING

N.T.S.

ITEM NO. 60812 PORTLAND CEMENT CONCRETE SPILLWAY, TYPE III and TYPE IV

STATION	STATION	LOC	QUANTITY
0+135.077		LT & RT	2
0+220.000		LT & RT	2
		TOTAL	4

ITEM NO. 25112-1000 WIRE ENCLOSED RIPRAP, CLASS 1

STATION	STATION	LOC	LENGTH (m)	WIDTH (m)	DEPTH (m)	VOLUME (cu.m.)
0+130.000	0+142.827	LT	12.827	4.0	0.46	23.60
0+139.531	0+147.229	RT	7.690	4.0	0.46	14.15
0+159.589	0+221.571	LT	66.103	4.0	0.46	121.63
0+154.734	0+221.571	RT	67.882	4.0	0.46	124.90
LOCATION	STATION	LOC		AREA (m^2)	DEPTH (m)	VOLUME (cu.m.)
Abutment #1	0+141.773	LT & RT		540.368	0.46	248.57
Abutment #2	0+169.815	LT & RT		521.549	0.46	239.91
				TOTALS		772.77
				USE		780

DEREK D. MEIER
NEW MEXICO
14504
LICENSED PROFESSIONAL ENGINEER
2/15/22

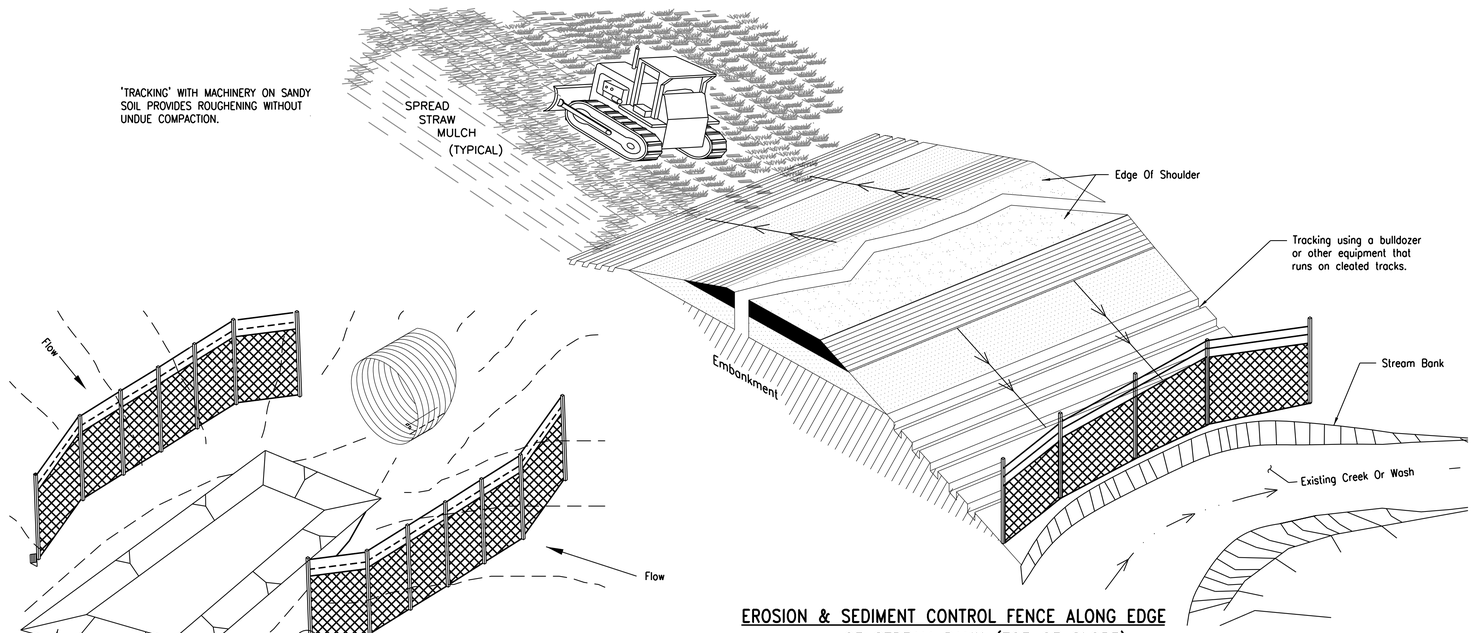
NAVAJO D.O.T.
NAVAJO NATION
DIVISION OF TRANSPORTATION

SPILLWAY DETAILS

Designed by: DDM	
Drawn by: ELO	Date: 2021
Checked by:	Date:
File Name: 29_N108_SPILLWAY	

M:\TRN\17-100-090-39\2_Disciplines_SHEETS\29_N108_SPILLWAY_2016-12-02.dgn

REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	TOTAL SHEETS
Navajo	NM	Navajo	N108	N108(1-1)(3)1,2&4	30	33

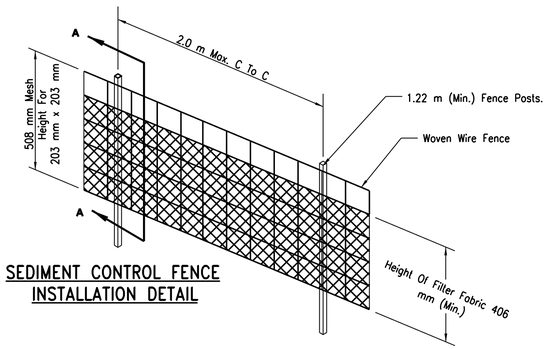


EROSION & SEDIMENT CONTROL FENCE ALONG EDGE OF STREAM BANK (TOE OF SLOPE)

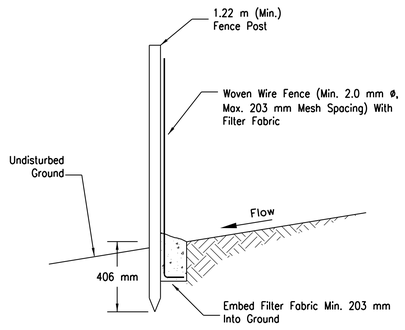
EROSION & SEDIMENT CONTROL FENCE AT DRAINAGE STRUCTURE

GENERAL NOTES

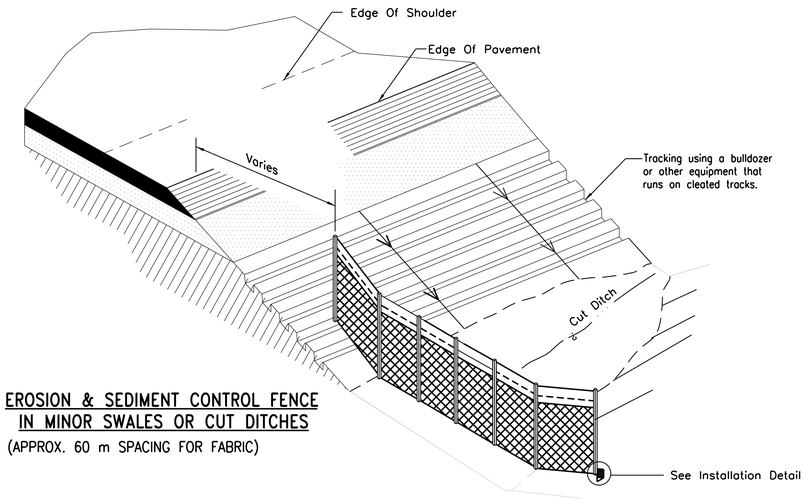
1. THE CONTRACTOR SHALL PREPARE AND SUBMIT A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IN FULL DETAIL FOR ALL PHASES OF THE WORK FOR REVIEW AND APPROVAL AT LEAST 14 CALENDAR DAYS BEFORE IMPLEMENTATION. THE PLAN SHALL MEET THE REQUIREMENTS HEREIN AND SECTION 157 OF THE FP-14 AS MODIFIED IN THE SUPPLEMENTAL SPECIFICATION. SEE SPECIAL CONTRACT REQUIREMENTS FOR NPDES PERMIT REQUIREMENTS.
2. THE SILT FENCING CONSISTS OF 914mm SEDIMENT CONTROL FABRIC CLOTH WITH BURIED-TOE, AND STEEL POSTS (TEE OR U TYPE) SPACED AT 2.00 m WITH 2mm 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 610mm AT THE TOP AND MID-SECTION. GEOTEXTILE MATERIAL FOR SILT FENCING SHALL BE TYPE C UNDER SUB-SECTION 714.01 OF FP-14.
4. WHEN TWO SECTION OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY 152mm AND FOLDED. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOPING IN THE SILT FENCE.
5. THE SILT FENCE SHALL BE INSTALLED ALONG THE ROADWAY DITCHES, ALONG THE BOTTOM OF ALL EMBANKMENT FILLS THAT ARE WITH 2.0 m OF EXISTING STREAMS, CREEKS, OR WASHES, AND IN AREAS WITH HIGHLY EROSIVE SOILS. SILT FENCES TO BE PLACED 1-2 METERS TOWARD THE R/W LINES FROM THE BASE OF FILL SLOPES 1:3 OR STEEPER IN ACCORDANCE WITH SECTION 157 OF FP-14 AND THE SUPPLEMENTAL SPECIFICATION.
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 51mm X 51mm X 1.22 m WOOD STAKES (TWO PER BALE) ANCHORED 508mm 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 15714 AND/OR 15715.
8. SEDIMENT/SILT FENCING SHALL BE PLACED AT ALL LOCATIONS WHERE EMBANKMENTS HAVE SLOPE DISTANCES OF 30.0 m OR GREATER. THE SEDIMENT FENCING WILL BE PLACED AT THE TOE OF SLOPES OFFSET 1-2 METERS.
9. THE CONTRACTOR SHALL INSPECT AND MAINTAIN ALL SWPPP MEASURES WEEKLY AND AFTER EACH SIGNIFICANT STORM EVENT (I.E. 25mm OF MOISTURE IN 24 HOURS).
10. PRIOR TO ACCEPTANCE, ALL PROJECT AREAS (AS DETERMINED BY THE R.R.E) SHOWING EROSION DAMAGE CAUSED BY THE CONTRACTOR'S FAILURE TO PROPERLY MAINTAIN HIS EROSION CONTROL STRUCTURES SHALL BE REPAIRED. ANY SPECIFIED EROSION CONTROL MATERIALS, STRUCTURES, OR DEVICES DAMAGED OR LOST DUE TO IMPROPER MAINTENANCE, SHALL ALSO BE REPAIRED AND/OR REPLACED PRIOR TO FINAL ACCEPTANCE AT THE CONTRACTOR'S ENTIRE EXPENSE.



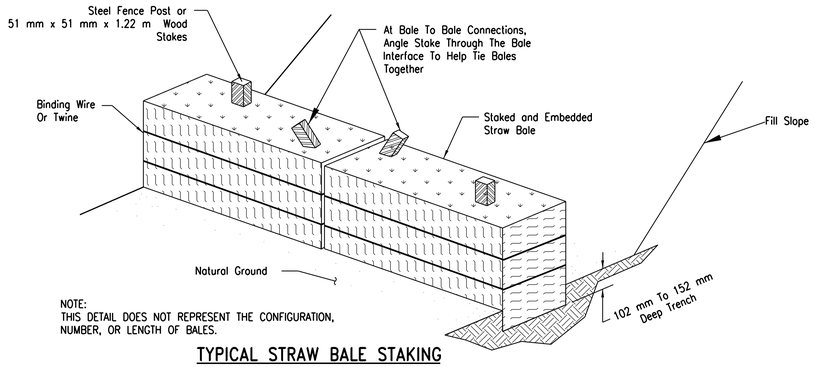
SEDIMENT CONTROL FENCE INSTALLATION DETAIL



SECTION A-A



EROSION & SEDIMENT CONTROL FENCE IN MINOR SWALES OR CUT DITCHES
(APPROX. 60 m SPACING FOR FABRIC)



NOTE:
THIS DETAIL DOES NOT REPRESENT THE CONFIGURATION, NUMBER, OR LENGTH OF BALES.

TYPICAL STRAW BALE STAKING AND TRENCHING DETAIL

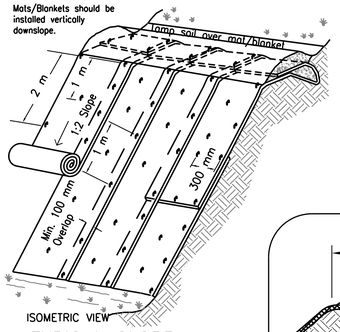
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NAVAJO REGIONAL OFFICE – DIVISION OF TRANSPORTATION

STORMWATER POLLUTION AND EROSION/SEDIMENT CONTROL DETAILS

Designed by: MAZ	
Drawn by: TAY, MAZ	Date: 12/02/16
Checked by:	Date:
File Name: 30_N108_Spesc1	

M:\TRN\17-100-090-39\2_Disciplines_SHEETS\30_N108_Spesc1_2016-12-02.dgn

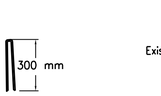
REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	TOTAL SHEETS
Navajo	NM	Navajo	N108	N108(1-1)(3)1,2&4	31	33



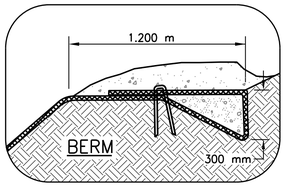
TYPICAL SLOPE SOIL STABLIZATION

NOTES:

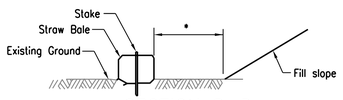
1. Slope surface shall be free of rocks, clods, sticks and grass. mats/ blankets shall have good soil contact.
2. Apply permanent seeding before placing blankets.
3. Lay blankets loosely and stake or staple to maintain direct contact with the soil. do not stretch.



STAPLE DETAIL

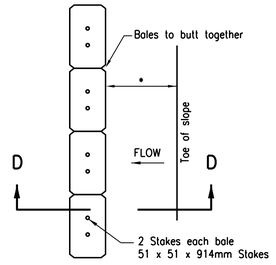


EROSION BLANKETS & TURF REINFORCEMENT MATS SLOPE INSTALLATION



SECTION D-D

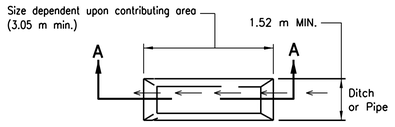
* See General Notes.



PLAN

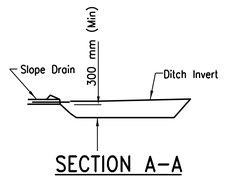
STRAW BALE SILT BARRIER

* See General Notes.



SEDIMENT TRAP

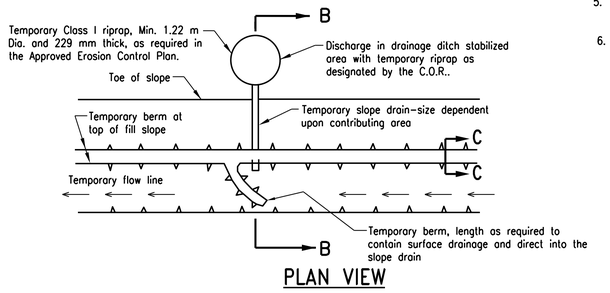
(Traps shall not fill to beyond one-half capacity prior to cleaning)



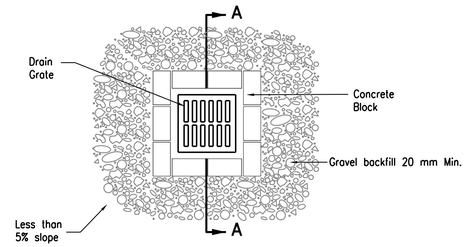
SECTION A-A

GENERAL NOTES

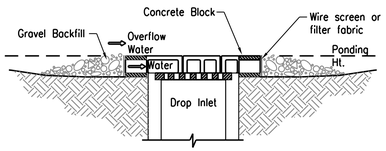
1. SEE SHEET 30 FOR ADDITIONAL NOTES AND DETAILS.
2. CONSTRUCT SEDIMENT BASIN AND TRAPS, EROSION CHECKS AND/OR FILTERS IN STRATEGIC LOCATIONS ON THE PROJECT TO FILTER STORM RUNOFF BEFORE IT LEAVES THE PROJECT CONSTRUCTION LIMITS OR ENTERS A STREAM AS SHOWN IN THE APPROVED SWPPP.
3. CLEAN ALL SEDIMENT BASIN AND TRAPS OF ACCUMULATED SEDIMENT WHEN HALF FULL OF SEDIMENT.
4. 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.
5. THE CONTRACTOR SHALL ADJUST THE DIMENSIONS AND LOCATIONS OF TEMPORARY SEDIMENT AND EROSION CONTROL DEVICES TO FIT ACTUAL FIELD CONDITIONS.
6. REMOVE AND DISPOSE OF EROSION CONTROL MEASURES WHEN THE PERMANENT EROSION CONTROL MEASURES ARE SATISFACTORILY ESTABLISHED AND DRAINAGE DITCHES AND CHANNELS ARE LINED AND STABILIZED, IN ACCORDANCE WITH SECTION 157 OF FP-14.



PLAN VIEW



PLAN VIEW

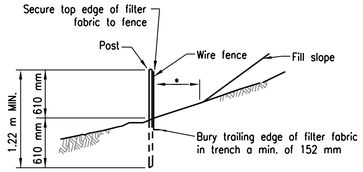


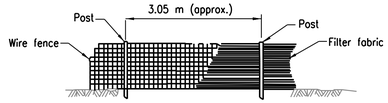
SECTION A - A

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. The top of the structure (ponding height) must be well below
3. the ground elevation downslope to prevent runoff from bypassing the inlet. a temporary dike may be necessary on the downslope side of the structure.

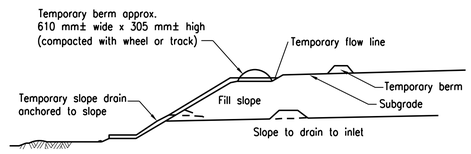
BLOCK AND GRAVEL DROP INLET SEDIMENT BARRIER



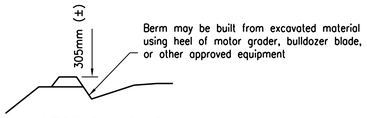


FILTER FABRIC SILT FENCE

*See general notes.



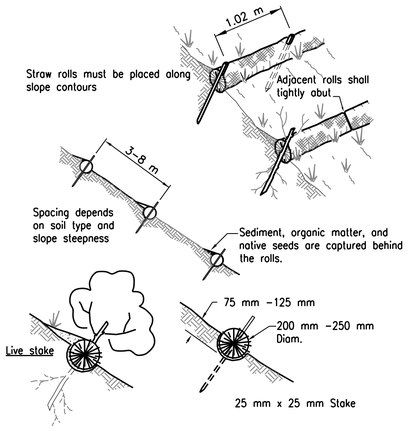
SECTION B-B



SECTION C-C

Temporary Slope Drain, Berm. (for fill and cutslopes)

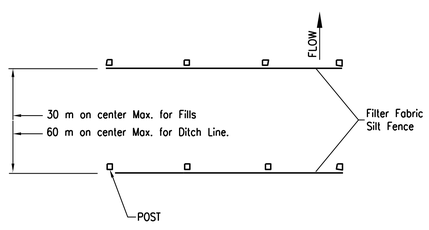
NOTE:
Temporary berms may also be constructed of straw bales set 104-152mm into ground.



NOTE:

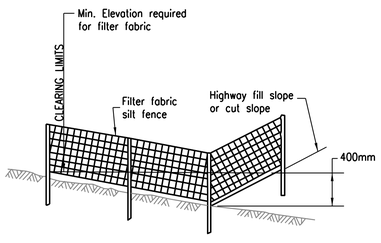
Straw roll installation requires the placement and secure staking of the roll in a trench, 75-125 mm deep, dug on contour. runoff must be allowed to run under or around roll.

STRAW ROLLS

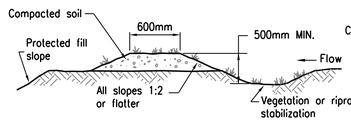


PLAN

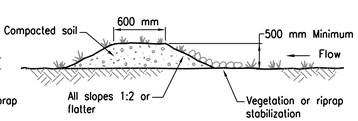
SILT FENCE EROSION CHECK



ELEVATION



TYPICAL FILL DIVERSION



TYPICAL TEMPORARY DIVERSION DIKE

(FOR TOP OF CUT BACK SLOPES.)

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 stablilized 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.

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

STORMWATER POLLUTION AND EROSION/SEDIMENT CONTROL DETAILS

Designed by: MAZ	
Drawn by: TAY, MAZ	Date: 12/02/16
Checked by:	Date:
File Name: 31_N108_Specs2	

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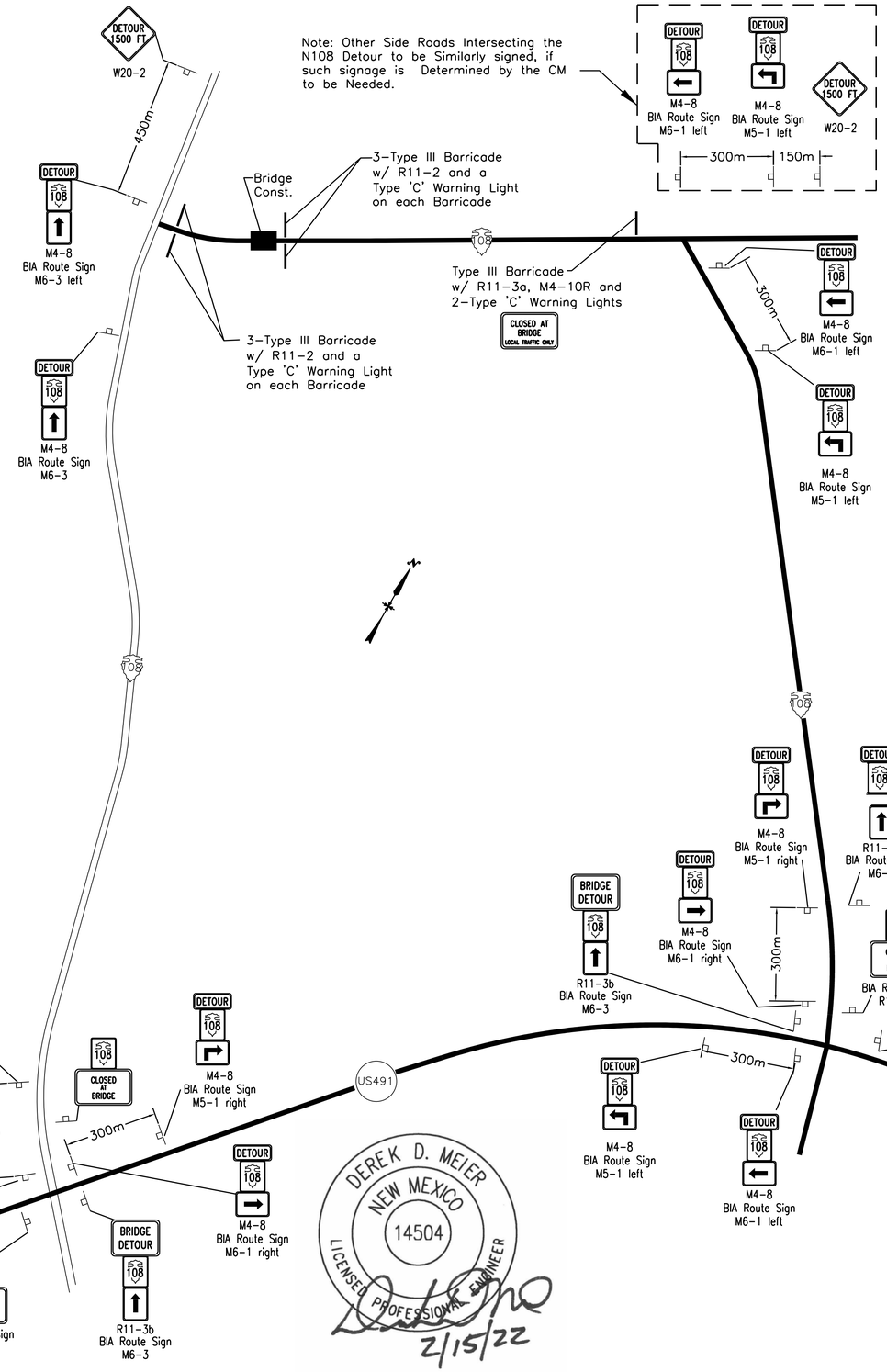
REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	TOTAL SHEETS
Navajo	NM	Navajo	N108	N108(1-1)(3)1,2&4	32	33

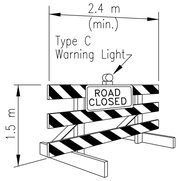


TEMPORARY TRAFFIC CONTROL SIGNS

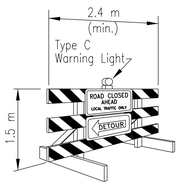
QUANTITY	DESIGNATION	DETAIL	MINIMUM SIZE (mm)
2	W20-2	DETOUR 1500 FT	1220 X 1220
15	M4-8	DETOUR	610 x 305
21	BIA Route Sign	108	460 x 610
4	M5-1 left		535 x 380
2	M5-1 right		535 x 380
4	M6-1 left		535 x 380
2	M6-1 right		535 x 380
5	M6-3		525 x 375
7	Type III Barricade		As Shown
6	R11-2	ROAD CLOSED	1220 x 760
1	M4-10L	DETOUR	1220 x 460
1	M4-10R	DETOUR	1220 x 460
6	R11-3C	CLOSED AT BRIDGE	1220 x 760
2	R11-3a	CLOSED AT BRIDGE LOCAL TRAFFIC ONLY	1525 x 760
2	R11-3b	BRIDGE DETOUR	1220 x 610

GENERAL NOTES

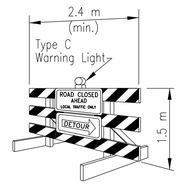
1. ALL TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH THE MUTCD (LATEST EDITION AND AMENDMENTS) AND THE SUPPLEMENTAL SPECIFICATION FOR THIS PROJECT.
2. THE TRAFFIC CONTROL DETAILS SHOWN ARE ONLY A GUIDE. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PREPARING AND IMPLEMENTING A TRAFFIC CONTROL PLAN (TCP) IN ACCORDANCE WITH THESE DETAILS, SECTION 635, AND THE MUTCD UNDER CONTRACT ITEM 63501. ANY ADDITIONAL TRAFFIC CONTROL DEVICES CALLED FOR IN 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. SEE SUPPLEMENTAL SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
3. AT THE END OF EACH WORKING DAY, IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE A DRIVING SURFACE FREE OF OBSTRUCTIONS AS SHOWN ON THE PHASED AND FILLET CONSTRUCTION DETAILS AS APPLICABLE ACCESS TO ALL ADJOINING PROPERTIES AND BIA SYSTEM ROUTES SHALL BE MAINTAINED AT ALL TIMES DAY AND NIGHT.
4. ALL TRAFFIC CONTROL DEVICES (EXCEPT AT DETOUR ROAD LOCATIONS) SUCH AS CONSTRUCTION SIGNS, DRUMS, BARRICADES, ETC., SHALL BE REMOVED TO A LOCATION AT LEAST NINE (9) METERS FROM EDGE OF THE SHOULDER WHEN CONSTRUCTION IS NOT PROGRESS.
5. NOT USED
6. THE CONTRACTOR HAS THE OPTION TO EITHER USE DRUMS OR VERTICAL PANELS; BUT SHALL NOT USE A COMBINATION OF BOTH. CONES ARE NOT ALLOWED TO BE USED ON THIS PROJECT.
7. TRAFFIC SHALL BE ROUTED AROUND CONSTRUCTION AREA ONTO N108 AND US ROUTE 491. THE CONTRACTOR WILL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND CLEARANCES. THE DETOUR ROAD, INCLUDING ALL TRAFFIC CONTROL, DRAINAGE STRUCTURES, MAINTENANCE, EARTHWORK AND OBLITERATION SHALL BE PAID FOR UNDER ITEM 63501-0000, TEMPORARY TRAFFIC CONTROL. THE DETOUR ROAD SHALL BE MAINTAINED IN A DRIVABLE CONDITION AT ALL TIMES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE DETOUR ROAD. THE MAINTENANCE OF THE DETOUR ROAD SHALL BE CONSIDERED AS INCIDENTAL TO ITEM 63501-0000, TEMPORARY TRAFFIC CONTROL.
8. AT LOCATION WHERE NEW ROAD CONSTRUCTION CROSSES EXISTING ROADWAY AND AT TIE-INS WITH EXISTING ROADS AT THE END OF THE NEW CONSTRUCTION, SPECIAL TRAFFIC CONTROL PROCEDURES SHALL BE INCLUDED IN THE CONTRACTOR'S TCP. THESE INCLUDE BUT ARE NOT NECESSARILY LIMITED TO THE FOLLOWING; TYPE III BARRICADES WITH "ROAD CLOSE": DETOUR; SIGNS; FLAGMAN; DRUMS; AND/OR DETOURS.
9. IF DURING CONSTRUCTION, THE CM DETERMINES THE TRAFFIC CONTROL/DETOUR PLAN IS NOT FUNCTIONING AS NEEDED FOR SAFETY, TRAFFIC EFFICIENCY, OR OTHER REASONS, THE CONTRACTOR SHALL MODIFY THE PLAN(S) AS REQUIRED TO CORRECT ANY DEFICIENCIES. THIS IS REGARDLESS OF RATHER OR NOT THE PLAN(S) WAS ORIGINALLY APPROVED. TRAFFIC CONTROL/DETOUR MODIFICATIONS SHALL BE CONSIDERED INCIDENTAL OBLIGATIONS OF THE CONTRACTOR, AND NO ADDITIONAL PAYMENTS WILL BE MADE.



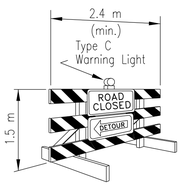
TYPE III BARRICADE w/ R11-2 and Type C Warning Light



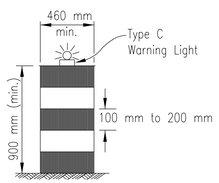
TYPE III BARRICADE w/ R11-3, M4-10L and Type C Warning Light



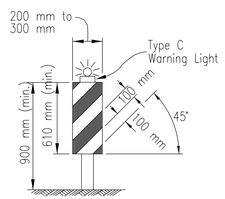
TYPE III BARRICADE w/ R11-3, M4-10R and Type C Warning Light



TYPE III BARRICADE w/ R11-2, M4-10L and Type C Warning Light



DRUM (Typ.) w/ Type C Warning Light



VERTICAL PANEL (Typ.) w/ Type C Warning Light

DEREK D. MEIER
NEW MEXICO
14504
LICENSED PROFESSIONAL ENGINEER
2/15/22

NAVAJO NATION
DIVISION OF TRANSPORTATION
NAVAJO D.O.T.

TRAFFIC CONTROL DETOUR DETAILS

Designed by: DDM	
Drawn by: ELO	Date: 2021
Checked by:	Date:
File Name: 32_N108-detour	

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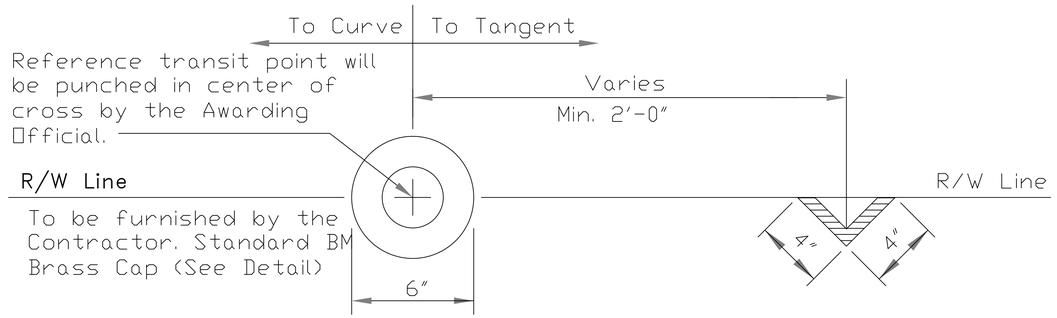
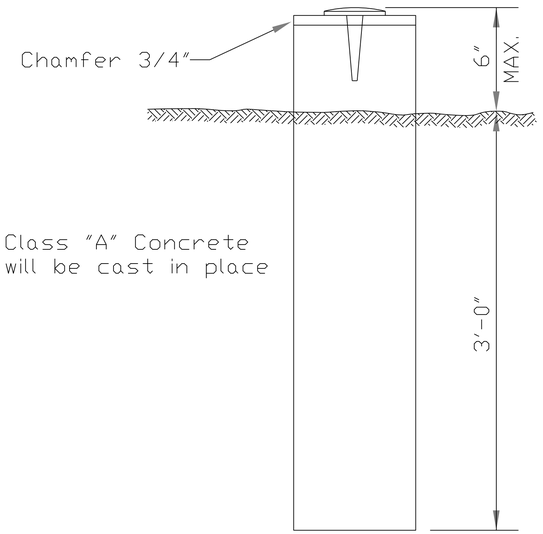
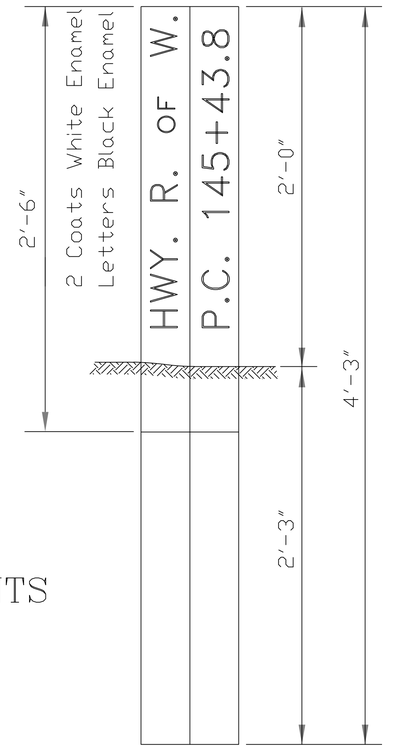
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N108	N108(1-1)(3)1,2&4	33	33

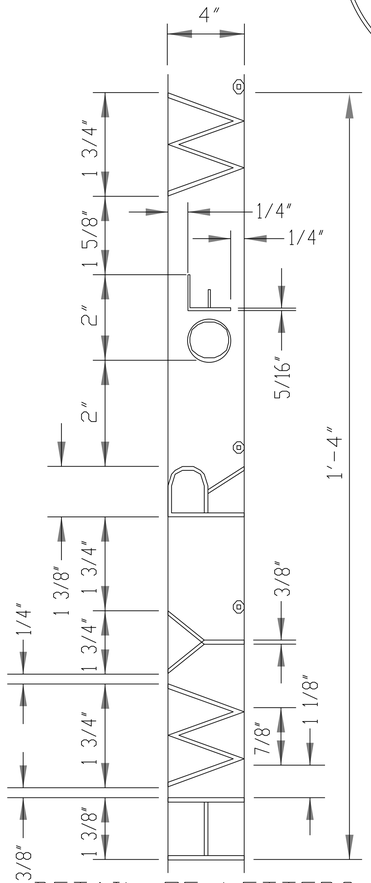




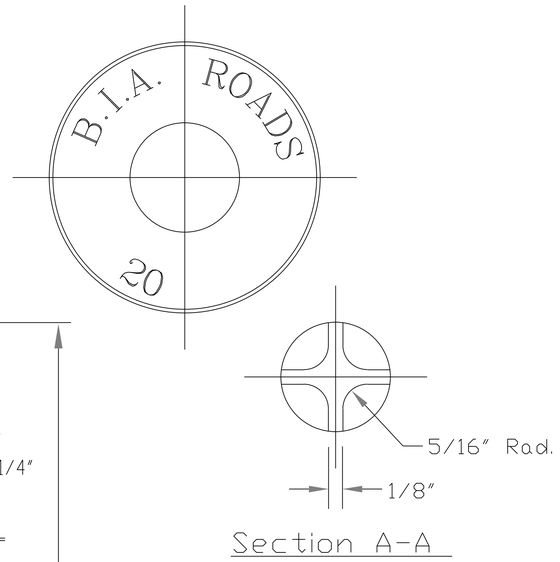
TRANSIT POINT MARKER



REFERENCE MARKER



DETAIL OF LETTERS



Section A-A

STANDARD BRASS CAP DETAIL

RIGHT-OF-WAY MONUMENTS

Complete in place, including Brass Cap.
Note:
R/W monuments will be placed where shown on plans or as directed by the Contracting Officer. R/W monuments will consist of transit point, and reference marker.

UNITED STATES
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ROW MONUMENTS AND MAKER DETAILS

DRAWN BY: NRDOT	DATE: 10/25/2017
DESIGNED BY: NRDOT	DATE: 10/25/2017
REVISED: 10/17	BY: rsh
FILE NAME:	33_N108_DelinObjMkr_detail

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