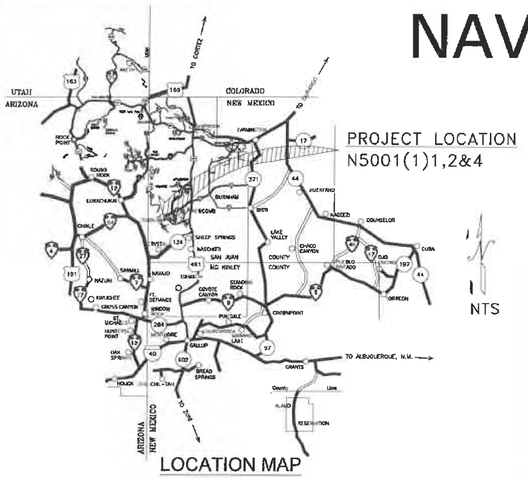
NAVAJO DIVISION OF TRANSPORTATION



LOCATION MAP
NTS

PLANS FOR PROPOSED

N5001(1)1,2&4
TOADLENA TO TWO GREY HILLS

I.D. N3242100
SAN JUAN COUNTY
LENGTH 4.481 km

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4 ,4A, 5-7	ESTIMATED QUANTITIES & INFORMATION TABLES
8	STRUCTURE QUANTITIES
9	TEMPORARY TRAFFIC CONTROL DETAILS
10-24	PLAN & PROFILE SHEETS
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29	NAVAJO NATION FISH HATCHERY GABION WALL DETAILS
30	STA. 2+380 - STOCKPASS & EARTH EMBANKMENT DETAILS
31	CONCRETE SLOPE PAVING DETAILS & QUANTITIES
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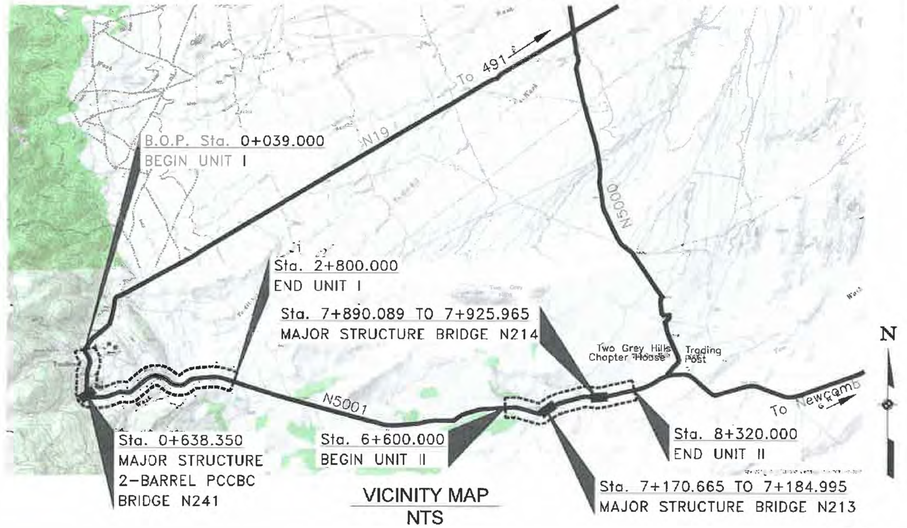
TYPE OF CONSTRUCTION:
GRADE & DRAINAGE, PLACEMENT OF UNTREATED AGGREGATE BASE COURSE AND DOUBLE CHIP SEAL PAVEMENT, DRAINAGE STRUCTURES, PCCBC, TWO (2) BRIDGES AND MISCELLANEOUS CONSTRUCTION



VICINITY MAP
NTS

RIGHT-OF-WAY TABLE			
BEGIN STATION	END STATION	RIGHT	LEFT
0+039.000	0+190.000	15.00	
0+190.000	0+240.000	8.30	
0+240.000	0+501.100	15.00	
0+039.778	0+560.000		15.00
0+501.100	0+606.000	10.00	
0+560.000	0+629.490		12.00
0+606.000	1+224.830	15.00	
0+629.490	0+714.736		20.00
0+714.736	1+564.487		15.00
1+224.830	1+830.000	20.00	
1+564.487	2+126.220		20.00
1+830.000	5+156.386	15.00	
2+126.220	4+150.000		15.00
4+150.000	4+400.000		17.00
4+400.000	5+614.800		15.00
5+156.386	5+624.800	30.00	
5+614.800	5+684.800		30.00
5+624.800	5+860.000	15.00	
5+860.000	6+620.000	20.00	
5+684.000	6+340.000		15.00
6+620.000	7+113.000	15.00	
6+340.000	6+350.000		20.00
6+350.000	6+570.000		15.00
6+570.000	6+580.000		20.00
6+580.000	7+113.000		15.00
7+113.000	7+200.000	35.00	40.00
7+200.000	7+742.136		15.00
7+200.000	7+305.000	15.00	
7+305.000	7+315.000	20.00	
7+315.000	7+742.136	15.00	
7+742.136	7+818.730	22.86	
7+739.110	7+928.930		40.00
7+818.730	7+978.730	90.00	
7+928.930	9+010.000		15.00
7+978.730	9+010.000	15.00	
9+010.000	9+050.000	25.00	25.00
9+050.000	9+375.000	15.00	15.00
9+375.000	9+445.000	20.00	20.00
9+445.000	9+570.000	15.00	15.00
9+570.000	9+600.000	25.00	25.00
9+600.000	9+900.000	15.00	
9+600.000	10+407.000		15.00
9+900.000	10+260.000	20.00	
10+407.000	10+417.000		20.00
10+417.000	10+578.730		15.00
10+260.000	10+578.730	15.00	

LENGTH OF PROJECT			
STATION TO STATION		Meters	Km
UNIT I			
B.O.P. STA.	0+039.000	2,761.000	2.7610
END UNIT I	2+800.000		
UNIT II			
BEGIN UNIT II	6+800.000	1,720.000	1.7200
END UNIT II	8+320.000		
TOTAL:		4,481.000	4.481

DESIGN DATA		
Sta. 0+039.778 To Sta. 2+130.000		
DESIGN SPEED	50	km/h
MAXIMUM RADIUS OF CURVE	79	m
MAXIMUM GRADIENT	10	%
MINIMUM STOPPING SIGHT DISTANCE	65	m
MINIMUM PASSING SIGHT DISTANCE	160	m
AVERAGE DAILY TRAFFIC (2018)	212	vpd
ESTIMATED ADT (2038)	315	vpd
MAXIMUM SUPER ELEV. (e max.)	6	%
DESIGN HOURLY VOLUME (DHV)	38	vph
Sta. 2+130.000 To Sta. 10+600.000		
DESIGN SPEED	80	km/h
MAXIMUM RADIUS OF CURVE	252	m
MAXIMUM GRADIENT	8	%
MINIMUM STOPPING SIGHT DISTANCE	130	m
MINIMUM PASSING SIGHT DISTANCE	245	m
AVERAGE DAILY TRAFFIC (2018)	212	vpd
ESTIMATED ADT (2038)	315	vpd
MAXIMUM SUPER ELEV. (e max.)	6	%
DESIGN HOURLY VOLUME (DHV)	38	vph

METRIC DIMENSIONS:
SLOPES ARE EXPRESSED AS RISE:RUN

SPECIFICATIONS:
"STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS, FP-14"

PROJECT MANAGER	LEAD DESIGNER
SML	SML

NAVAJO D.O.T

PLANS PREPARED BY:

WILSON & COMPANY, INC.

4401 MASTHEAD ST. NE SUITE 150
ALBUQUERQUE, NM 87109

STEPHEN M. LUNA
26338
11/01/24
PROFESSIONAL ENGINEER

RECOMMENDED:

PRINCIPAL ENGINEER
NAVAJO DIVISION OF TRANSPORTATION

DATE: 2/3/25

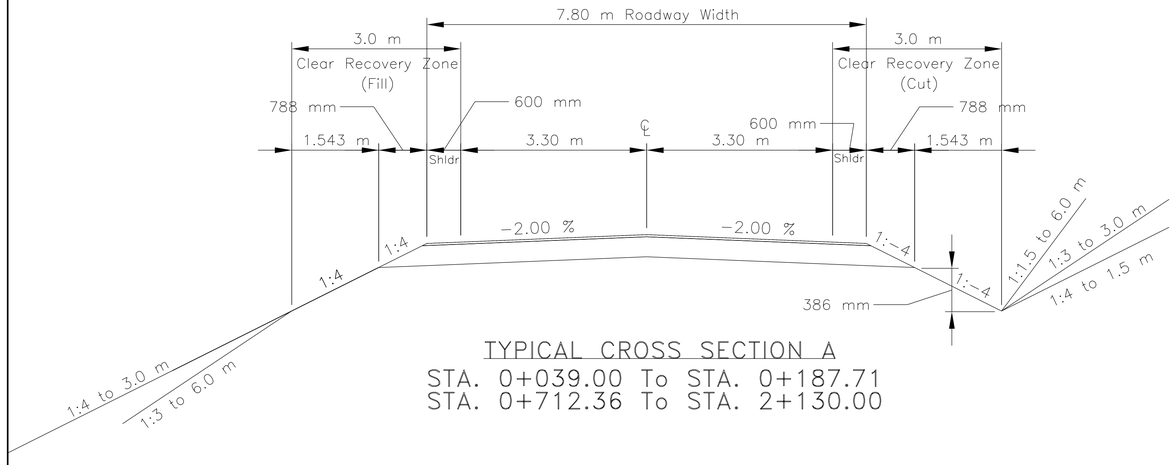
APPROVED:

DIRECTOR
NAVAJO DIVISION OF TRANSPORTATION

DATE: 2/3/2025

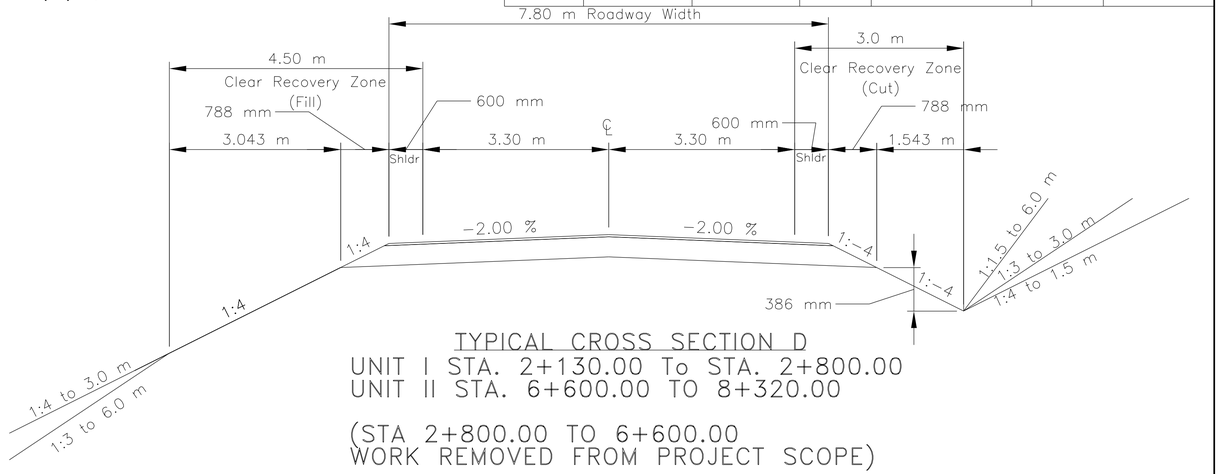
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	2	106

PROJECT N5001(1)1,2&4



TYPICAL CROSS SECTION A

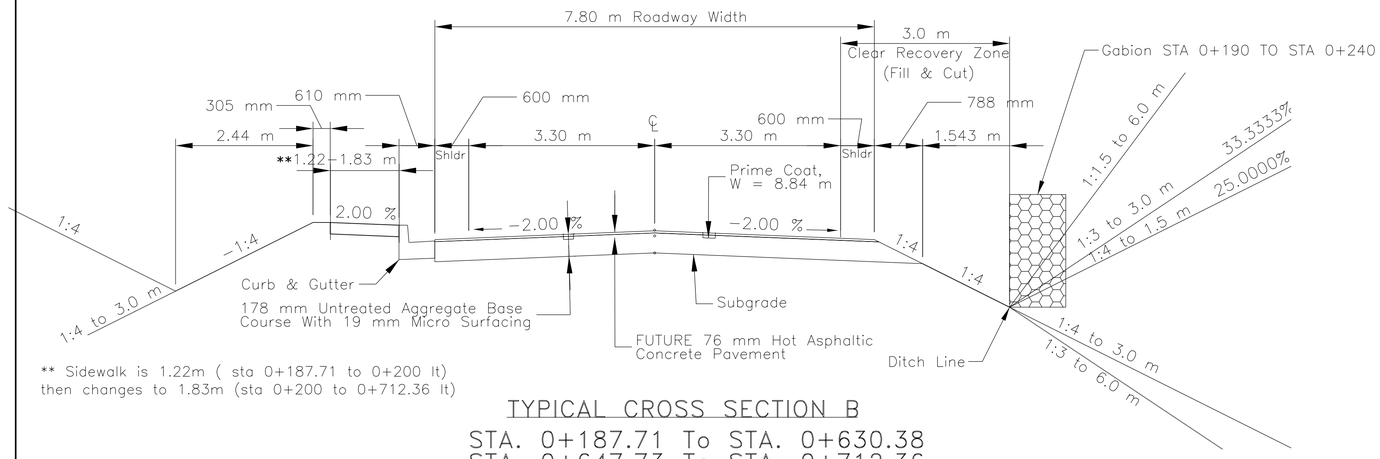
STA. 0+039.00 To STA. 0+187.71
STA. 0+712.36 To STA. 2+130.00



TYPICAL CROSS SECTION D

UNIT I STA. 2+130.00 To STA. 2+800.00
UNIT II STA. 6+600.00 TO 8+320.00

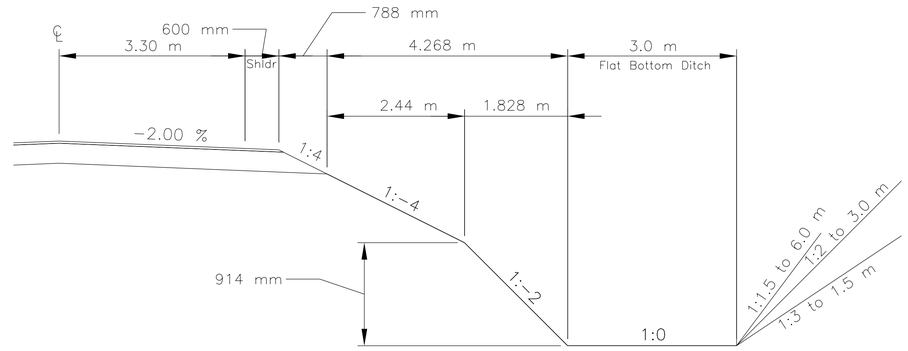
(STA 2+800.00 TO 6+600.00
WORK REMOVED FROM PROJECT SCOPE)



** Sidewalk is 1.22m (sta 0+187.71 to 0+200 lt)
then changes to 1.83m (sta 0+200 to 0+712.36 lt)

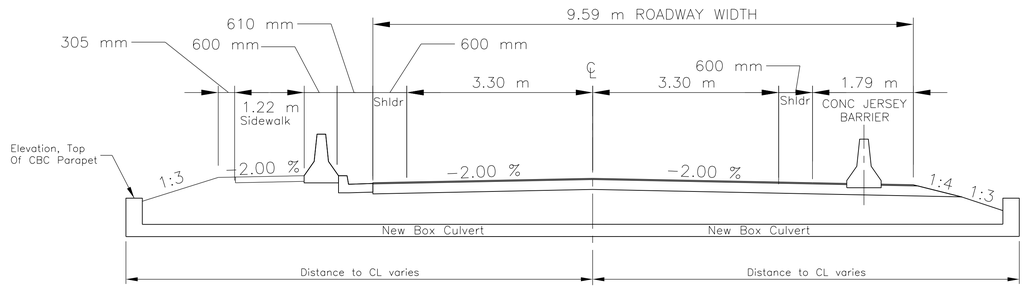
TYPICAL CROSS SECTION B

STA. 0+187.71 To STA. 0+630.38
STA. 0+647.73 To STA. 0+712.36



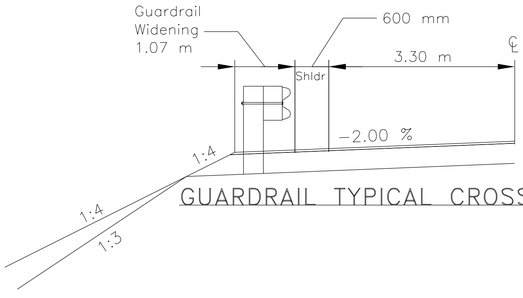
FLAT BOTTOM DITCH TYPICAL CROSS SECTION

*STA. 5+880 To STA. 6+360, RT.
*STA. 6+400 To STA. 6+594, RT.
*WORK REMOVED FROM PROJECT SCOPE



TYPICAL CROSS SECTION C

STA.0+630.38 To STA. 0+647.73



GUARDRAIL TYPICAL CROSS SECTION

TYPICAL PAVEMENT SECTION

SCALE: NONE

STEPHEN M. LUJAN
NEW MEXICO
26338
10/27/23
PROFESSIONAL ENGINEER

NAVAJO DIVISION
OF TRANSPORTATION

TYPICAL CROSS SECTION DETAILS

DRAWN BY: WCI	DATE: 10/23
DESIGNED BY: SML	DATE: 10/23
REVISED: --/--	BY: DESIGN 1
$FILES$	

NAVAJO D.O.T

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	3	106

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, AND PAVEMENT MARKINGS SHALL BE PLACED IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) FOR STREETS AND HIGHWAYS (LATEST EDITION) AND IN ACCORDANCE WITH THE DETAILS ON THESE PLANS. PLACEMENT OF "STOP" BAR, PERMANENT TRAFFIC SIGNS AND PAVEMENT MARKINGS SHALL BE FIELD ADJUSTED AS DIRECTED BY THE CONSTRUCTION MANAGER (CM), AT NO ADDITIONAL COST TO THE GOVERNMENT.
3. THE TEMPORARY TRAFFIC CONTROL DETAILS SHOWN REFLECTS GENERAL REQUIREMENTS FOR THIS PROJECT. THE CONTRACTOR IS RESPONSIBLE FOR PREPARING AND SUBMITTING A TRAFFIC CONTROL PLAN IN ACCORDANCE WITH THESE DETAILS, TAKING INTO ACCOUNT THE CONTRACTOR'S CONSTRUCTION SEQUENCING PLAN, MUTCD, AND THE SUPPLEMENTAL SPECIFICATIONS FOR SECTION 635.-TEMPORARY TRAFFIC CONTROL.
4. THE DESIGN FEATURES INCLUDING HORIZONTAL AND VERTICAL ALIGNMENTS, TYPICAL SECTIONS, AND OTHER DESIGN DETAILS SHOWN SHALL NOT BE ALTERED OR MODIFIED IN ANYWAY DURING CONSTRUCTION WITHOUT THE EXPRESSED WRITTEN DIRECTION AND WRITTEN APPROVAL OF THE ENGINEER OF RECORD (EOR) THROUGH THE CONSTRUCTION MANAGER (CM), UNLESS OTHERWISE NOTED IN THESE PLANS OR SPECIFICATIONS. DRAINAGE STRUCTURES AND TURNOUTS SHALL BE INSTALLED AS SHOWN WITH ONLY MINOR CORRECTIONS IN LOCATION, SKEW, AND/OR INVERT ELEVATIONS AS NEEDED TO FIT FIELD CONDITIONS. TURNOUTS MAY NOT BE SHIFTED MORE THAN 5.0 METERS FROM THE LOCATIONS SHOWN ON THE PLANS WITHOUT THE CONSTRUCTION MANAGER'S WRITTEN APPROVAL.
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 AS WELL AS ANY AND ALL PERMIT REQUIREMENTS. THIS WORK SHALL BE INCIDENTAL OBLIGATIONS OF THE CONTRACTOR.
6. THE BIDDER SHALL READ AND MAKE CAREFUL EXAMINATION OF THE PLANS, SPECIFICATIONS, QUANTITIES, MATERIAL, SURVEYING REQUIREMENTS, AND VISIT THE SITE OF THE PROPOSED CONSTRUCTION TO BECOME FAMILIAR WITH THE SITE CONDITIONS AND LIMITATIONS BEFORE MAKING A PROPOSAL. THE CONTRACTOR WILL BE RESPONSIBLE FOR ANY AND ALL ERRORS RESULTING FROM THE FAILURE TO MAKE SUCH AN EXAMINATION. ANY INFORMATION DERIVED FROM THE MAPS, PLANS, SPECIFICATIONS, PROFILES, DRAWINGS OF THE ENGINEER, SHALL NOT RELIEVE THE CONTRACTOR FROM ANY RISK OR FROM FULFILLING THE TERMS OF THE CONTRACT. THERE ARE SEVERAL AREAS WITH LIMITED WORKING ROOM WITHIN THE PROJECT RIGHT-OF-WAY, AND/OR WITH EXISTING FEATURES WITHIN OR NEAR THE PROJECT RIGHT-OF-WAY, THAT WILL REQUIRE 'SPECIAL' CONSTRUCTION PROCEDURES.
7. THE CONTRACTOR IS REQUIRED TO SUBMIT A REVISED PIPE LIST TO THE CONSTRUCTION MANAGER, BASED ON THE FIELD STAKING IN ACCORDANCE WITH SECTION 152 OF THE CONTRACT SUPPLEMENTAL SPECIFICATION. THE APPROVAL OF ANY AND ALL REVISED PIPE LISTS WITH ACCOMPANYING DRAWINGS IS RENDERED AS A SERVICE ONLY AND IS NOT CONSIDERED A GUARANTEE OF MEASUREMENTS, QUANTITIES, INSTALLATION PROCEDURES, AND/OR DIMENSIONS, NOR SHALL IT BE CONSIDERED AS RELIEVING THE CONTRACTOR FROM COMPLYING WITH THE CONTRACT SPECIFICATIONS AND DESIGN PLANS. THE CONTRACTOR IS HEREBY NOTIFIED THAT UNDER NO CIRCUMSTANCE SHALL ANY DRAINAGE STRUCTURE(S) BE INSTALLED BELOW THE NATURAL FLOW LINE OF THE WASH, CHANNEL, ARROYO, OR DITCH LINE.
8. NO WORK SHALL BE PERFORMED OR GROUND DISTURBED OUTSIDE OF THE DESIGNATED CONSTRUCTION LIMITS IN ACCORDANCE WITH SECTION 107 OF THE FP-14 WITHOUT WRITTEN APPROVAL BY THE CONSTRUCTION MANAGER (CM) UNLESS OTHERWISE SHOWN AND LABELED ON THESE PLANS AS "CONSTRUCTION ZONE". THE CONSTRUCTION LIMIT IS THE CATCH POINT EARTHWORK LIMIT PLUS 3.0 METERS, NOT TO EXCEED THE RIGHT-OF-WAY LIMITS.
9. THE DETAILS SHOWN ON THE STORM WATER POLLUTION AND EROSION/SEDIMENT CONTROL DETAILS ARE GENERAL REQUIREMENTS TO BE USED BY THE CONTRACTOR IN PREPARING A STORM WATER POLLUTION PREVENTION PLAN ALONG WITH THE REQUIREMENTS IN SECTION 157 OF THE SUPPLEMENTAL SPECIFICATION AND SPECIAL CONTRACT REQUIREMENTS. THE SWPPP IS ONLY REQUIRED AT THE DRAINAGE PIPE REPLACEMENT LOCATIONS.THE CONTRACTOR IS REQUIRED TO SUBMIT COURTESY COPY OF THE APPROVED SWPPP TO THE NAVAJO NATION WATER QUALITY EPA OFFICE.
10. THE QUANTITIES SHOWN ARE FOR ESTIMATING PURPOSES ONLY AND TO COMPARE AND CANVAS BIDS. ACTUAL PAY QUANTITIES WILL BE DETERMINED IN THE FIELD FOR AUTHORIZED CHANGES THAT AFFECT THE QUANTITIES. ANY OVER-RUN OR UNDER-RUN OF QUANTITIES SHALL BE SUBJECT TO FAR 52.211-18, VARIATION IN ESTIMATED QUANTITY.
11. ALL TURNOUT/DRIVEWAYS, AS CALLED FOR ON THESE PLANS, SHALL EITHER BE CONSTRUCTED, REBUILT, RESHAPED AND/OR REMOVED UP TO THE RIGHT-OF-WAY LIMITS. ALL TURNOUTS SHALL BE PAVED TO THE CATTLEGUARD, THEN FROM THE BACK OF CATTLEGUARD TO THE R/W LINE, PLACE AGGREGATE BASE FOR ALL 4.5m WIDE TURNOUTS; PLACE AGGREGATE AND HOT ASPHALTIC CONCRETE FOR TURNOUTS WIDER THAN 4.5m TO MATCH THE STRUCTURAL SECTION. REQUIRED GRADING, SHAPING, AND EARTH COMPACTION OUTSIDE OF THE RIGHT-OF-WAY, TO CONNECT NEW TURNOUTS TO THE EXISTING ROADWAY/DRIVEWAY (AS SHOWN ON THE PLANS OR AS DIRECTED BY THE CM SHALL BE INCIDENTAL TO BID ITEM 20401-0000. ANY REQUIRED AGGREGATE BASE AND/OR ASPHALT MATERIAL SHALL BE PAID FOR UNDER THE APPROPRIATE BID ITEMS FOR THIS WORK AS SHOWN IN THE BID SCHEDULE.
12. THE CONTRACTOR SHALL BE REQUIRED TO OBLITERATE ALL EXISTING ABANDONED TURNOUTS AND ROADWAY WITHIN THE RIGHT-OF-WAY LIMITS, AND ANY EXISTING TURNOUTS/ROADWAY OUTSIDE OF THE RIGHT-OF-WAY THAT ARE DESIGNATED ON THE PLANS FOR OBLITERATION. OBLITERATION SHALL BE AS PER FP-14, METHOD 2. SCARIFICATION SHALL BE TO A DEPTH OF 300mm. THE SCARIFIED SURFACE SHALL BE LEFT ROUGH, WITH 100mm TO 300mm HIGH RIDGES PERPENDICULAR TO THE EXISTING ROAD CENTERLINE. ROADWAY OBLITERATION INCLUDES GRADING DRAINAGE CHANNELS ACROSS THE OLD ROADBED, TO RE-ESTABLISH NATURAL DRAINAGE CHANNELS AND/OR TO OPEN CHANNELS FOR THE NEWLY INSTALLED (IN NEW ROADWAY) DRAINAGE STRUCTURES. THIS WORK TO BE INCLUDED IN THE BID ITEM 21102-2000. PERMANENT SEEDING AND STRAW MULCHING SHALL BE APPLIED TO ALL OBLITERATION AREAS, WITHIN THE CONSTRUCTION LIMITS. SEEDING AND MULCHING TO BE PAID UNDER ITEM 62510-1000.
14. STRUCTURAL EXCAVATION AND BEDDING/BACKFILL OF ALL DRAINAGE STRUCTURES (CULVERTS AND CONCRETE HEAD/WING WALLS) SHALL BE CONSIDERED INCIDENTAL TO THE INSTALLATION OF STRUCTURES. BEDDING AND BACKFILL MATERIAL SHALL MEET ALL REQUIREMENTS OF FP-14, SECTIONS 209 AND 704. APPROVED EXCESS EXCAVATION MATERIAL MAY BE USED TO REBUILD TURNOUTS, EARTHEN DITCH BLOCKS, AND/OR PLACED ALONG ROADWAY SHOULDERS AS EMBANKMENT IN AREAS ADJACENT TO THE REMOVAL AND AS DIRECTED BY THE CM.
15. ALL DRAINAGE DITCHES SHALL BE STAKED AND GRADED TO DRAIN UP TO THE RIGHT-OF-WAY LIMITS. EARTHEN DITCH BLOCKS, DIKES AND DITCHES SHALL BE CONSTRUCTED AS SHOWN ON THESE PLANS AND/OR ADDED AT LOCATIONS DESIGNATED BY THE CM. ALL DITCH BLOCKS, DIKES AND DITCHES SHALL BE PAID FOR UNDER THE APPROPRIATE BID ITEMS FOR THIS WORK AS SHOWN IN THE BID SCHEDULE. AT ALL DRAINAGE PIPE REPLACEMENTS, INSTALLATIONS, EXTENSIONS, AND IN-PLACE PIPE CLEANING LOCATIONS, THE CONTRACTOR SHALL CLEAN, REGRADE, AND RESHAPE THE INLET AND OUTLET CHANNELS TO THE RIGHT-OF-WAY LINE AS DIRECTED BY THE CM. THIS WORK SHALL BE INCIDENTAL TO BID ITEMS FOR SECTIONS 602, 603, AND/OR 607.
16. IMMEDIATELY PRIOR TO PLACING EMBANKMENT, AGGREGATE BASE AND/OR RECYCLED MATERIAL, THE TOP 152 mm OF THE ORIGINAL GROUND, OR FINISHED SUBGRADE (INCLUDING TURNOUTS) SHALL BE CHECKED FOR COMPACTION AND GRADE. IF COMPACTION DOES NOT MEET THE MINIMUM SPECIFIED COMPACTION AND TOLERANCE REQUIREMENTS, THE ORIGINAL GROUND AND/OR SUBGRADE SHALL BE RE-WATERED AND/OR SCARIFIED AS NEEDED AND RE-COMPACTED TO THE REQUIRED DENSITY AND TOLERANCE, AT THE CONTRACTOR'S EXPENSE. IN NO CASE SHALL ANY EMBANKMENT OR SURFACING MATERIAL BE PLACED ON FROZEN, MUDDY OR UNSTABLE NATURAL GROUND OR SUBGRADE. THIS WORK SHALL BE CONSIDERED AN INCIDENTAL OBLIGATION OF THE CONTRACTOR.
17. THE EARTHWORK TABLE SHOWN IS TO ASSIST THE CONTRACTOR IN ESTABLISHING A BID UNDER THE EARTHWORK ITEMS SHOWN IN THE BID SCHEDULE. ANY BORROW MATERIAL CALLED FOR ON THE PLANS SHALL BE TAKEN FROM CONTRACTOR IDENTIFIED SOURCES OUTSIDE THE RIGHT-OF-WAY LIMITS. IT IS THE SOLE RESPONSIBILITY AND EXPENSE OF THE CONTRACTOR TO PROVIDE ANY NECESSARY BORROW MATERIAL FOR THIS PROJECT INCLUDING ALL NECESSARY PERMITS. ALL EXCAVATION, BORROW, WASTE AND EMBANKMENT MATERIAL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEMS 20401-0000 AND 20403-0000. IF MATERIAL IS APPROVED, THE WASTE MATERIAL SHOWN ON THESE PLANS SHALL BE USED AS NECESSARY TO CONSTRUCT TURNOUTS, DITCH BLOCKS, AND/OR BE PLACED AS EMBANKMENT ALONG THE SHOULDERS IN AREAS AS DIRECTED BY THE CM. WASTE MATERIAL NOT USED WITHIN THE PROJECT LIMITS, SHALL BE DISPOSED OF AS PER FP-14, SECTION 204.14.
18. AT ALL TOP EDGES OF CUT SLOPES 3.0 METER OR HIGHER THAN THE DITCH FLOWLINE, THE CONTRACTOR SHALL REMOVE ALL LOOSE AND UNSTABLE ROCK OR ROCK THAT AS DETERMINED BY THE CM, MAY BECOME LOOSE WITHIN 5.0 METER OF THE TOP CUT SLOPE. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO BID ITEM 20401-0000, AND NO ADDITIONAL PAYMENT WILL BE MADE.
19. THE LOCATION OF UTILITIES AS SHOWN IN THESE PLANS ARE APPROXIMATE AND ARE ONLY TO ASSIST THE CONTRACTOR IN COMPLETING THE WORK. THE CONTRACTOR SHALL CONTACT ALL UTILITY OWNERS PRIOR TO STARTING ANY CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL CONTACT THE NEW MEXICO ONE-CALL AT (800)-321-2537, NAVAJO TRIBAL UTILITY AUTHORITY (NTUA) AT (928)-729-5721, FRONTIER COMMUNICATION COMPANY AT (928)-871-3748, NAVAJO HOUSING AUTHORITY (NHA) AT (928)-729-6605, AND NAVAJO NATION DIVISION OF NATURAL RESOURCES AT (928)-729-4003, PRIOR TO STARTING ANY CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITIES AND THEIR LOCATIONS WITH THE UTILITY OWNERS PRIOR TO CONSTRUCTION. ANY UTILITIES DAMAGED DUE TO NEGLIGENCE OF THE CONTRACTOR SHALL BE RESTORED TO CODE REQUIREMENTS AT THE CONTRACTOR'S EXPENSE.
20. THE CONTRACTOR SHALL REMOVE, CLEAN, AND STOCKPILE ALL SALVAGEABLE EXISTING CULVERTS, GUARDRAIL, CATTLE GUARDS, FENCING MATERIALS, ETC, AS CALLED FOR ON THESE PLANS AND/OR SECTIONS 203 AND 607 IN A DESIGNATED LOCATION ADJACENT TO THE REMOVAL LOCATION BUT OUTSIDE OF THE PROPOSED CONSTRUCTION LIMITS. THE CM SHALL OFFER THIS SALVAGED MATERIALS TO THE COMMUNITY MEMBERS AND/OR PROPERTY OWNERS. ANY PIPE MATERIALS DETERMINED TO BE UNUSEABLE BY THE CM OR UNACCEPTABLE BY THE LAND OWNER/ COMMUNITY MEMBERS SHALL BE DISPOSED OF BY THE CONTRACTOR IN ACCORDANCE WITH SECTIONS 107, AND 203. THE SALVAGE WORK SHALL BE INCLUDED IN THE APPROPRIATE UNIT PRICE BID ITEMS FOR SECTIONS 203 AND/OR 607.
21. THE CONTRACTOR SHALL BE REQUIRED TO REPAIR ALL DENTED, BENT OR OTHERWISE DAMAGED PIPE EDGES FOR THE SECTION AS CALLED FOR REPAIR WORK. THIS WORK SHALL MEET THE APPROVAL OF THE CM, AND IS EXPECTED TO INCLUDE STRAIGHTENING OF DENTED/BENTED CULVERT EDGES, WELDING OF CUTS/TEARS IN THE EXISTING CULVERTS, TRIMMING BACK THE EXISTING CULVERT TO CREATE AN END SUITABLE FOR AN EXTENSION COLLAR, ETC. NO SEPARATE PAYMENT FOR THIS WORK WILL BE MADE. THE CONTRACTOR SHALL CONSIDER THESE REPAIRS INCIDENTAL TO THE DRAINAGE PIPE BID ITEMS UNDER SECTION 602, AND 603.
22. THE ROADWAY TYPICAL SECTION SHOWN IS THE BASIC TEMPLATE TO WHICH THE PROJECT IS TO BE STAKED AND BUILT. HOWEVER, THERE WILL BE LOCATIONS WHERE, DUE TO EXISTING GROUND CONDITIONS, TURNOUTS, CULVERTS OR OTHER STRUCTURES, ETC., THE SHOWN TYPICAL SLOPES CANNOT BE CONSTRUCTED. IN THIS CASE, THE ENGINEER OF RECORD AND CM, SHALL BE CONSULTED FOR CHANGES IN THE TYPICAL SECTIONS, DESIGN SLOPES, AND/OR OTHER ADJUSTMENTS BEFORE PROCEEDING WITH THE WORK UNLESS NOTED OTHERWISE ON THE PLANS. THE FINAL CONSTRUCTED ROAD SECTION SHALL BE BASED ON THE TYPICAL SECTIONS AND CROSS SECTIONS IN THE PLANS. THE CONTRACTOR SHALL STAY WITHIN THE LIMITS OF CONSTRUCTION, UNLESS OTHERWISE APPROVED. IN NO CASE SHALL THE CUT AND FILL BACK SLOPES BE BUILT STEEPER THAN THE MAXIMUM ALLOWED IN THE ROADWAY TYPICAL SECTION SHOWN.
23. THE CONTRACTOR SHALL SAW CUT (FULL DEPTH) THE EXISTING ASPHALT PAVEMENT (INCLUDING TURNOUTS) WHERE NEW ASPHALT IS TO TIE INTO THE OLD ASPHALT PAVEMENT AT THE LOCATIONS NOTED ON THE PLANS. THE CONTRACTOR SHALL MATCH THE NEW ASPHALTIC CONCRETE PAVEMENT SURFACE TO EXISTING PAVEMENT SECTION AT TIE-IN POINTS AND TO PROVIDE FOR A SMOOTH TRANSITION AS DIRECTED BY THE CO/COTR. ALL SAWED PAVEMENT EDGES TO RECEIVE ASPHALT TACK COAT. THIS WORK SHALL BE INCIDENTAL TO BID ITEM 40201-0500 AS SHOWN IN THE BID SCHEDULE.
24. THERE ARE MANY ARCHEAOLOGICAL SITES ALONG THE PROJECT CORRIDOR THAT REQUIRE AN ARCHAEOLOGIST PRESENT DURING CONSTRUCTION IN THE AREA AND OTHER SITES REQUIRING TEMPORARY ORANGE SAFETY FENCE TO BE PLACED BEFORE ANY WORK IN THE AREA CAN BEGIN. THE CONTRACTOR & CM SHALL COORDINATE THIS WORK WITH THE NDOT PROJECT MANAGEMENT OFFICE, ANJANETTE OWENS 505-371-8368. THE CONTRACTOR SHALL NOTIFY THE NDOT PROJECT MANAGEMENT OFFICE NO LESS THAN TWO WEEKS OF PLANNED WORK IN THE AREA OF ALL ARCHEOLOGOICAL SITES THAT HAVE MITIGATION REQUIREMENTS. UNDER NO CIRCUMSTANCE CAN THE CONTRACTOR DO ANY CONSTRUCTION WORK IN AREAS REQUIRING THESE MITIGATION REQUIREMENTS UNTIL THE SAFETY FENCING AND/OR AN NDOT ARCHAEOLOGIST IS PRESENT.

   ALL CONSTRUCTION ACTIVITIES WILL BE CONFINED TO THE EXISTING ROAD FOOTPRINT & RIGHT-OF-WAY AVOIDING THE SITE BOUNDARIES. THE SITES SHALL BE TEMPORARILY FENCED & AN ARCHAEOLOGIST SHALL MONITOR ALL GROUND ACTITIVITES WITHIN 50-FT OF THE SITE BOUNDARIES. A BRIEF LETTER/REPORT DOCUMENTING THE RESULT OF THE MONITORING WILL BE SUBMITTED TO NNHPD COMPLIANCE SECTION, WITHIN 30 DAYS OF THE MONITORING.

   MARKERS WILL BE PLACED ALONG THE ROAD TO ENSURE FUTURE MAINTENANCE ACTIVITIES DO NOT DAMAGE SITES.

   ALL FUTURE MAINTENANCE ACTIVITIES SHALL AVOID THE SITES BY A MINIMUM OF 50-FT FROM THE SITE BOUNDARY.

   SEE SHEET 4A AND SHEETS 10 THRU 24 FOR ALL SITE LOCATIONS AND MITIGATION REQUIREMENTS.

STEPHEN M. LUJAN
NEW MEXICO
26338
01/20/25
PROFESSIONAL ENGINEER

NAVAJO DIVISION OF TRANSPORTATION

GENERAL NOTES

DRAWN BY: WCI	DATE: 10/23
DESIGNED BY: SML	DATE: 10/23
REVISED: --/--	BY: DESIGN 1
sht 3 N5001_GEN_NOTES	

NAVAJO D.O.T

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REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	4	106

SUMMARY OF QUANTITIES

FP-14 ITEM NO.	DESCRIPTION	UNITS	UNIT I			UNIT II				PROJECT TOTAL
			N5001	BRIDGE 241	UNIT I TOTAL	N5001	BRIDGE N213	BRIDGE N214	UNIT II TOTAL	
10901-0000	EXTRA & MISCELLANEOUS WORK AUTHORIZED UNDER SECTION 109.02(s)	LPSM	LPSM	LPSM	**LPSM**	LPSM	LPSM	LPSM	LPSM	**LPSM**
15101-0000	MOBILIZATION	LPSM	LPSM	LPSM	**LPSM**	LPSM	LPSM	LPSM	LPSM	**LPSM**
15201-0000	CONSTRUCTION SURVEY AND STAKING	LPSM	LPSM	LPSM	**LPSM**	LPSM	LPSM	LPSM	LPSM	**LPSM**
15701-0000	SOIL EROSION CONTROL, TEMPORARY	LPSM	LPSM	LPSM	**LPSM**	LPSM	LPSM	LPSM	LPSM	**LPSM**
15703-1000	SOIL EROSION CONTROL, TEMPORARY STRAW MULCHING	ha	4	-	**4**	4	-	-	**4**	**8**
20102-0000	CLEARING AND GRUBBING	LPSM	LPSM	LPSM	**LPSM**	LPSM	LPSM	LPSM	**LPSM**	**LPSM**
20304-1000	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	LPSM	LPSM	LPSM	**LPSM**	LPSM	LPSM	LPSM	**LPSM**	**LPSM**
20304-2000	REMOVAL OF BRIDGE STRUCTURE	LPSM	-	LPSM	**LPSM**	-	LPSM	-	**LPSM**	**LPSM**
20401-0000	ROADWAY EXCAVATION	m^3	22,000	-	**22,000**	22,000	-	-	**22,000**	**44,000**
20403-0000	UNCLASSIFIED BORROW	m^3	22,000	-	**22,000**	-	-	-	**0**	**22,000**
20443-2000	EARTHEN DIKE/BERM TYPE "B"	m	40	-	**40**	-	-	-	**0**	**40**
20801-0000	STRUCTURE EXCAVATION	m^3	-	310	**310**	-	106	24	**130**	**440**
20803-0000	STRUCTURAL BACKFILL	m^3	-	150	**150**	-	482	70	**552**	**702**
21101-2000	ROADWAY OBLITERATION, METHOD 2	m^2	2,280	-	**2,280**	1,400	-	-	**1,400**	**3,680**
25101-0100	PLACED RIPRAP CLASS 1	m^3	160	-	**160**	60	-	-	**60**	**220**
25110-0100	GROUTED RIPRAP CLASS 1	m^3	25	-	**25**	-	-	-	**0**	**25**
25112-2000	WIRE ENCLOSED RIPRAP, CLASS 1	m^3	120	60	**180**	140	32	355	**527**	**707**
25302-1000	GABIONS, GALVANIZED OR ALUMINIZED COATED	m^3	20	-	**20**	-	-	-	**0**	**20**
25306-1000	REVETMENT MAT, ARTICULATED CONCRETE BLOCK	m^2	-	-	**0**	1,500	-	-	**1,500**	**1,500**
30101-2000	AGGREGATE BASE, GRADE D	t	10,500	-	**10,500**	6,800	-	-	**6,800**	**17,300**
40702-1100	CHIP SEAL, TYPE 2A	m^2	23,540	-	**23,540**	13,830	-	-	**13,830**	**37,370**
41101-5000	ASPHALT PRIME COAT, PENETRATING EMULSIFIED PRIME (PEP)	t	35	-	**35**	22	-	-	**22**	**57**
55101-1800	STEEL H-PILE, 360 x 108, IN PLACE	m	-	-	**0**	-	-	110	**110**	**110**
55115-1000	PREBORING	m	-	-	**0**	-	-	85	**85**	**85**
55120-0000	TEST PILES	m	-	-	**0**	-	-	25	**25**	**25**
55201-0200	STRUCTURAL CONCRETE CLASS A(AE)	m^3	-	-	**0**	-	117	157	**274**	**274**
55301-0100	PRECAST PRESTRESSED CONCRETE STRUCTURAL MEMBERS, TYPE III, (17.525m)	EACH	-	-	**0**	-	-	8	**8**	**8**
55401-1000	REINFORCING STEELGRADE 420	kg			**0**	-	-	4,061	**4,061**	**4,061**
55401-2000	REINFORCING STEEL EPOXY COATED GRADE 420	kg	-		**0**	-	7,180	12,816	**19,996**	**19,996**
55601-0900	BRIDGE RAILING STEEL	m	-	-	**0**	-	28	79	**107**	**107**
56302-2000	PAINTING HP 360X108 STEEL PILES	m^2	-	-	**0**	-	-	38	**38**	**38**
56601-0000	SHOTCRETE	m^2	-	-	**0**	-	123	-	**123**	**123**
57401-0000	GRS-IBS, GEOSYNTHETIC REINFORCEMENT	m^2	-	-	**0**	-	3,661	-	**3,661**	**3,661**
57402-1000	GRS-IBS, OPEN GRADED BACKFILL	m^3	-	-	**0**	-	538	-	**538**	**538**
57403-0000	GRS-IBS, CONCRETE MASONRY UNIT	m^2	-	-	**0**	-	312	-	**312**	**312**
60101-0000	CONCRETE, MINOR CLASS A(AE)	m^3	30	-	**30**	-	-	-	**0**	**30**
60201-0810	610 mm CORRUGATED STEEL PIPE CULVERT	m	135	-	**135**	60	-	-	**60**	**195**
60201-1810	2134 mm CORRUGATED STEEL PIPE CULVERT	m	45	-	**45**	0	-	-	**0**	**45**
60202-0510	711 mm SPAN x 508 mm RISE, CORRUGATED STEEL PIPE ARCH CULVERT	m	65	-	**65**	0	-	-	**0**	**65**
60210-0810	END SECTION FOR 610 mm CSPC	EACH	10	-	**10**	4	-	-	**4**	**14**
60211-0910	END SECTION FOR 711 mm x 508 mm CSPA	EACH	6	-	**6**	-	-	-	**0**	**6**
60222-4500	2- BARREL 2.438m SPAN x 1.82m RISE PCCBC WITH WINGWALLS, HEADWALLS, CUTOFF WALLS, & APRONS	m	-	25	**25**	-	-	-	**0**	**25**
60405-0000	MANHOLE/VAULT ADJUSTMENT	EACH	1	-	**1**	-	-	-	**0**	**1**
60701-1000	REMOVE, CLEAN AND STOCKPILE CULVERTS	m	160	-	**160**	70	-	-	**70**	**230**
60902-1000	CURB AND GUTTER, CONCRETE	m	530	-	**530**	-	-	-	**0**	**530**
61102-1700	50mm WATERLINE POLYVINYL CHLORIDE (PVC)	m	100	-	**100**	-	-	-	**0**	**100**
61102-2700	100mm WATERLINE POLYVINYL CHLORIDE (PVC)	m	130	-	**130**	-	-	-	**0**	**130**
61103-1100	300mm ENCASEMENT PIPE, STEEL	m	100	-	**100**	-	-	-	**0**	**100**
61104-0600	VALVE, GATE, 50mm	EACH	4	-	**4**	-	-	-	**0**	**4**
61104-0700	VALVE, GATE, 100mm	EACH	2	-	**2**	-	-	-	**0**	**2**
61501-0100	SIDEWALK, CONCRETE	m^2	620	-	**620**	-	-	-	**0**	**620**
61504-3000	HANDICAP RAMP	EACH	6		**6**	-	-	-	**0**	**6**
61701-5000	GUARDRAIL SYSTEM SGR-04b, TYPE PDE 02 WITH MSKT-TL3-8 END TERMINAL & THRIE BEAM GUARDRAIL TRANSITION	m	-	100	**100**	-	135	95	**230**	**330**
61801-0000	CONCRETE BARRIER	m	-	20	**20**	-	-	-	**0**	**20**
61901-0100	FENCE, WOVEN WIRE	m	1,400	-	**1,400**	-	-	-	**0**	**1,400**
61901-1000	FENCE, BARBED-WIRE, 5 STRAND	m	4,300	-	**4,300**	4,200	-	-	**4,200**	**8,500**
61901-3400	TEMPORARY SAFETY FENCE, PLASTIC HDPE TYPE	m	470	-	**470**	1,100	-	-	**1,100**	**1,570**
61902-4510	GATE, WOVEN WIRE TYPE 3, 1219 mm WIDTH (PEDESTRIAN)	EACH	4	-	**4**	-	-	-	**0**	**4**
61902-5010	GATE, WOVEN WIRE TYPE I, 4267 mm WIDTH	EACH	4	-	**4**	-	-	-	**0**	**4**
61903-0310	CATTLEGUARD, 4900 mm WITH TYPE II GATE	EACH	11	-	**11**	2	-	-	**2**	**13**
61903-0710	CATTLEGUARD, 7190 mm WITH TYPE II GATE	EACH	6	-	**6**	-	-	-	**0**	**6**
61903-1000	CATTLEGUARD, 9480 mm WITHOUT GATE	EACH	5	-	**5**	2	-	-	**2**	**7**
62101-0000	RIGHT-OF-WAY MONUMENT	EACH	48	-	**48**	36	-	-	**36**	**84**
62102-0000	RIGHT-OF-WAY MARKERS	EACH	48	-	**48**	36	-	-	**36**	**84**
62510-1000	SEEDING, DRY METHOD	ha	4	-	**4**	4	-	-	**4**	**8**
62901-1100	ROLLED EROSION CONTROL PRODUCT, TYPE 4	m^2	350	-	**350**	-	-	-	**0**	**350**
63304-0400	SIGNS, STEEL PANELS, TYPE 9 SHEETING	m^2	25	-	**25**	5	-	-	**5**	**30**
63305-0200	POSTS, STEEL, 50mm DIAMETER	m	175	-	**175**	30	-	-	**30**	**205**
63308-2000	OBJECT MARKER, TYPE 2	EACH	18	-	**18**	2	-	-	**2**	**20**
63308-3000	OBJECT MARKER, TYPE 3	EACH	-	4	**4**	-	4	4	**8**	**12**
63309-0010	DELINEATOR, TYPE "1a", 38 mm x 38 mm SQUARE STEEL TUBE	EACH	4	-	**4**	6		-	**6**	**10**
63309-0020	DELINEATOR, TYPE "1b", 38 mm x 38 mm SQUARE STEEL TUBE	EACH	83	-	**83**	34	-	-	**34**	**117**
63318-1000	MILEPOST, 38 mm X 38 mm SQUARE STEEL POST	EACH	4	-	**4**	2	-	-	**2**	**6**
63401-2300	PAVEMENT MARKINGS, TYPE "L", SOLID	m	10,600	-	**10,600**	6,840	-	-	**6,840**	**17,440**
63401-2310	PAVEMENT MARKINGS, TYPE "L", STOP BAR, SOLID WHITE	EACH	8	-	**8**	0	-	-	**0**	**8**
63401-2320	PAVEMENT MARKINGS, TYPE "L", PEDESTRIAN WALKWAY, SOLID WHITE	EACH	1	-	**1**	-	-	-	**0**	**1**
63501-0000	TEMPORARY TRAFFIC CONTROL	LPSM	LPSM	LPSM	**LPSM**	LPSM	LPSM	LPSM	**LPSM**	**LPSM**

SURFACING SCHEDULE

TYPICAL SECTION	STATION	STATION	LENGTH (m)	DESCRIPTION	30101-2000 UNTREATED AGGREGATE BASE, GRADE "SPECIAL"				41101-5000 ASPHALT PRIME COAT, PENETRATING EMULSIFIED PRIME (PEP)		40702-1100 CHIP SEAL, TYPE 2A	
					WIDTH (m)	DEPTH (m)	AREA (m^2)	METRIC TON	WIDTH (m)	METRIC TON	WIDTH (m)	AREA (m^2)
N5001 UNIT I												
A	0+039.78	0+187.71	147.932		8.59	0.18	1,270.44	512.88	8.59	1.64	7.93	1,172.51
B	0+187.71	0+630.38	442.670		8.19	0.18	3,627.24	1,464.33	8.19	4.67	7.86	3,480.71
C	0+630.38	0+647.73	17.350	TOHAALI WASH CBC	9.98	0.18	173.22	69.93	9.98	0.22	9.65	167.48
B	0+647.73	0+712.36	64.630		8.19	0.18	529.58	213.79	8.19	0.68	7.86	508.19
A	0+712.36	2+130.00	1417.640		8.59	0.18	12,174.69	4,914.97	8.59	15.68	7.93	11,236.21
D	2+130.00	2+800.00	670.000		8.59	0.18	5,753.96	2,322.90	8.59	7.41	7.93	5,310.42
-	2+800.00	2+915.00	115.000	TRANSITION TO EXISTING	8.59	0.18	987.62	398.71	8.59	1.27	0.00	0.00
TURNOUTS	0+000.00	2+800.00	-		VARIES	0.10	2,554.13	590.86	VARIES	3.29	VARIES	1,660.85
				UNIT I SUBTOTAL				10,488.37		34.86		23,536.37
				UNIT I USE				**10,500.00**		**35.00**		**23,540.00**
N5001 UNIT II												
-	6+490.00	6+600.00	110.000	TRANSITION FROM EXISTING	8.59	0.18	944.68	381.37	8.59	1.22	0.00	0.00
D	6+600.00	7+108.27	508.271		8.59	0.18	4,365.03	1,762.18	8.59	5.62	7.93	4,028.56
D	7+108.27	7+122.29	14.021	TRANSITION RT	9.50	0.18	133.24	53.79	9.50	0.17	8.84	123.96
D	7+122.29	7+142.49	20.200	GUARDRAIL RT	10.42	0.18	210.44	84.96	10.42	0.27	9.76	197.07
D	7+142.49	7+156.51	14.021	TRANSITION LT & GUARDRAIL RT	11.33	0.18	158.90	64.15	11.33	0.20	10.67	149.62
D	7+156.51	7+172.91	16.397	GUARDRAIL RT & LT	12.25	0.18	200.83	81.08	12.25	0.26	11.59	189.98
-	7+172.91	7+183.68	10.770	N213 BRIDGE DECK	-	-	-	-	-		-	-
D	7+183.68	7+200.08	16.397	GUARDRAIL RT & LT	12.25	0.18	200.83	81.08	12.25	0.26	11.59	189.98
D	7+200.08	7+214.10	14.021	TRANSITION RT & GUARDRAIL LT	11.33	0.18	158.90	64.15	11.33	0.20	10.67	149.62
D	7+214.10	7+234.30	20.202	GUARDRAIL LT	10.42	0.18	210.46	84.97	10.42	0.27	9.76	197.09
D	7+234.30	7+248.32	14.021	TRANSITION LT	9.50	0.18	133.24	53.79	9.50	0.17	8.84	123.96
D	7+248.32	7+826.17	577.848		8.59	0.18	4,962.56	2,003.40	8.59	6.39	7.93	4,580.02
D	7+826.17	7+840.19	14.021	TRANSITION RT	9.50	0.18	133.24	53.73	9.50	0.17	8.72	122.19
D	7+840.19	7+860.39	20.200	GUARDRAIL RT	10.42	0.18	210.44	84.96	10.42	0.27	9.00	181.72
D	7+860.39	7+874.41	14.021	TRANSITION LT & GUARDRAIL RT	11.33	0.18	158.90	64.15	11.33	0.20	10.55	147.85
D	7+874.41	7+887.76	13.350	GUARDRAIL RT & LT	12.25	0.18	163.51	66.01	12.25	0.21	11.59	154.67
-	7+887.76	7+928.29	40.531	N214 BRIDGE DECK	-	-	-	-	-		-	-
D	7+928.29	7+941.64	13.348	GUARDRAIL RT & LT	12.25	0.18	163.49	66.00	12.25	0.21	11.59	154.65
D	7+941.64	7+955.66	14.021	TRANSITION RT & GUARDRAIL LT	11.33	0.18	158.90	64.15	11.33	0.20	10.67	149.62
D	7+955.66	7+975.86	20.202	GUARDRAIL LT	9.66	0.18	195.11	78.77	9.66	0.25	9.00	181.74
D	7+975.86	7+989.88	14.018	TRANSITION LT	9.50	0.18	133.21	53.78	9.50	0.17	8.84	123.93
D	7+989.88	8+320.00	330.119		8.59	0.18	2,835.06	1,144.53	8.59	3.65	7.93	2,616.52
-	8+320.00	8+430.00	110.000	TRANSITION TO EXISTING	8.59	0.18	944.68	381.37	8.59	1.22	0.00	0.00
TURNOUTS	6+600.00	8+320.00	-		VARIES	0.10	1,349.47	17.01	VARIES	0.09	VARIES	58.60
				UNIT II SUBTOTAL				6,789.35		21.70		13,821.35
				UNIT II USE				**6,800.00**		**22.00**		**13,830.00**
WORK REMOVED FROM THE PROJECT (FOR INFORMATION ONLY)												
D	2+800.00	6+600.00	3800.000		8.59	0.18	32,634.40	13,174.64	8.59	42.03	7.93	30,118.80
TURNOUTS	2+800.00	6+600.00	3800.000		VARIES	0.10	658.18	152.26	VARIES	0.85	VARIES	508.24
D	8+320.00	10+600.00	2280.000		8.59	0.18	19,580.64	7,904.78	8.59	25.22	7.93	18,071.28
TURNOUTS	8+320.00	10+600.00	2280.000		VARIES	0.10	816.87	188.97	VARIES	1.05	VARIES	686.01
				(FOR INFORMATION ONLY) SUBTOTAL				21,420.65		69.15		49,384.33
				(FOR INFORMATION ONLY) PROJECT USE				21,430.00		70.00		49,390.00

ITEM NO. 61701-5000 GUARDRAIL SYSTEM SGR-04b, TYPE PDE 02 WITH MSKT-TL3-8 END TERMINAL & THRIE BEAM GUARDRAIL TRANSITION

ID	STATION	TO	STATION	LT/RT	LENGTH (M)	LOCATION	REMARKS
N5001							
MB-01	0+610.378		0+630.380	RT	20.00	N241 TOHAALI WASH	INCLUDES END TERMINAL SYSTEM, AND THRIE BEAM GUARDRAIL TRANSITION. STATIONS TO BE VERIFIED, BEGIN TRANSITION FROM CONCRETE BARRIER TRANSITION DETAILED ON SHEET 53.
MB-02	0+614.986		0+634.988	LT	20.00	N241 TOHAALI WASH	INCLUDES END TERMINAL SYSTEM AND THRIE BEAM GUARDRAIL TRANSITION. STATIONS TO BE VERIFIED, BEGIN TRANSITION FROM CONCRETE BARRIER TRANSITION DETAILED ON SHEET 53.
MB-03	0+641.760		0+651.290	RT	31.43	N241 TOHAALI WASH	INCLUDES END TERMINAL SYSTEM, W-BEAM GUARDRAIL (11.43m) AND THRIE BEAM GUARDRAIL TRANSITION, WRAPPED AROUND TURNOUT. STATIONS TO BE VERIFIED, BEGIN TRANSITION FROM CONCRETE BARRIER TRANSITION DETAILED ON SHEET 53.
MB-04	0+647.734		0+667.734	LT	20.00	N241 TOHAALI WASH	INCLUDES END TERMINAL SYSTEM AND THRIE BEAM GUARDRAIL TRANSITION. STATIONS TO BE VERIFIED, BEGIN TRANSITION FROM CONCRETE BARRIER TRANSITION DETAILED ON SHEET 53.
			UNIT I SUBTOTAL:		91.43		
			UNIT I USE:		**100**		

ESTIMATED SURFACING FACTORS

ITEM	*41101 PRIME COAT	**UNIT WEIGHT	**UNIT WEIGHT
	L/m^2	L/kg	kg/m^3
BASE COURSE			2268
ASPHALT FOR PRIME COAT	1.36	1.056	

*FOR ESTIMATING PURPOSES ONLY, APPLICATION RATE SHALL BE DETERMINED BY THE PROJECT MANAGER

**FOR ESTIMATING PURPOSES ONLY, ACUTAL UNIT WEIGHTS SHALL BE DETERMINED BY APPROVED MIX DESIGN

STEPHEN M. LUJAN NEW MEXICO 26338 PROFESSIONAL ENGINEER 02/05/25

NAVAJO DIVISION OF TRANSPORTATION

ESTIMATED QUANTITIES

DRAWN BY: WCI DATE: 10/23

DESIGNED BY: SML DATE: 10/23

REVISED: --/-- BY: DESIGN 1

sht 4 N5001_QNT

NAVAJO D.O.T

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	4A	106

PROJECT: N5001(1)1,2,&4

ITEM No. 60701-1000: REMOVE, CLEAN & STOCKPILE CULVERTS

STATION	LOCATION	DESCRIPTION								LENGTH (m)
N5001 UNIT I										
0+170.962	CENTERLINE	EXISTING	1	-	BURIED	mm x	10.95	m	CSPC	10.95
0+306.114	CENTERLINE	EXISTING	1	-	610	mm x	11.60	m	CSPC	11.60
0+399.316	CENTERLINE	EXISTING	1	-	610	mm x	12.31	m	CSPC	12.31
0+521.104	CENTERLINE	EXISTING	1	-	457	mm x	12.29	m	CSPC	12.29
0+669.750	CENTERLINE	EXISTING	1	-	BURIED	mm x	12.91	m	CSPC	12.91
0+686.240	CENTERLINE	EXISTING	1	-	BURIED	mm x	19.87	m	CSPC	19.87
0+796.850	RIGHT TURNOUT	EXISTING	1	-	457	mm x	26.60	m	CSPC	26.60
1+152.120	5.7 m LEFT	EXISTING	1	-	1829	mm x	19.33	m	CSPC	19.33
1+366.210	12.1 m LEFT	EXISTING	1	-	610	mm x	9.16	m	CSPC	9.16
1+963.380	14.5 m LEFT	EXISTING	1	-	1829	mm x	22.83	m	CSPC	22.83
									UNIT I SUBTOTAL	157.85
									UNIT I USE	**160.00**
N5001 UNIT II										
7+863.340	44.9 m RIGHT	EXISTING	1	-	1828	mm x	11.30	m	CSPC	11.30
7+866.830	48.1 m RIGHT	EXISTING	1	-	1219	mm x	14.14	m	CSPC	14.14
7+868.660	51.1 m RIGHT	EXISTING	1	-	1219	mm x	13.51	m	CSPC	13.51
7+871.270	54.9 m RIGHT	EXISTING	1	-	1828	mm x	11.13	m	CSPC	11.13
7+875.700	60.5 m RIGHT	EXISTING	1	-	1828	mm x	10.90	m	CSPC	10.90
									UNIT II SUBTOTAL	60.97
									UNIT II USE	**70.00**
WORK REMOVED FROM PROJECT SCOPE (FOR INFORMATION ONLY)										
3+654.151	CENTERLINE	EXISTING	1	-	914	mm x	9.23	m	CSPC	9.23
5+202.239	7 m LEFT	EXISTING	1	-	457	mm x	9.13	m	CSPC	9.13
5+205.930	6.4 m LEFT	EXISTING	1	-	457	mm x	8.60	m	CSPC	8.60
5+707.474	14.8 m LEFT	EXISTING	1	-	BURIED	mm x	9.07	m	CSPC	9.07
6+012.496	6.6 m LEFT	EXISTING	1	-	1067	mm x	8.82	m	CSPC	8.82
6+135.244	10.7 m LEFT	EXISTING	1	-	1067	mm x	8.09	m	CSPC	8.09
6+374.135	CENTERLINE	EXISTING	1	-	914	mm x	12.23	m	CSPC	12.23
8+420.633	3.7 m LEFT	EXISTING	1	-	BURIED	mm x	7.49	m	CSPC	7.49
9+051.931	CENTERLINE	EXISTING	1	-	610	mm x	18.31	m	CSPC	18.31
9+053.489	CENTERLINE	EXISTING	1	-	BURIED	mm x	16.98	m	CSPC	16.98
9+608.736	16.7 m LEFT	EXISTING	1	-	BURIED	mm x	21.99	m	CSPC	21.99

ITEM No. 61903-0310: 2-UNIT 4900mm CATTLEGUARD WITH TYPE II GATE

STATION	LOCATION	TURNOUT WIDTH (m)	QTY	DESCRIPTION	CSPC SIZE
NN5001 UNIT I					
0+345.000	Lt.	4.50	1	INSTALL 2-UNIT CATTLEGUARD W/TYPE II GATE	N/A
0+653.550	Rt.	4.50	1	INSTALL 2-UNIT CATTLEGUARD W/TYPE II GATE	N/A
0+674.000	Lt.	4.50	1	INSTALL 2-UNIT CATTLEGUARD W/TYPE II GATE	N/A
0+924.588	Lt.	4.50	1	INSTALL 2-UNIT CATTLEGUARD W/TYPE II GATE	N/A
1+466.600	Rt.	4.50	1	INSTALL 2-UNIT CATTLEGUARD W/TYPE II GATE	N/A
1+934.891	Lt.	4.50	1	INSTALL 2-UNIT CATTLEGUARD W/TYPE II GATE	N/A
2+001.369	Rt.	4.50	1	INSTALL 2-UNIT CATTLEGUARD W/TYPE II GATE	N/A
2+274.500	Lt.	4.50	1	INSTALL 2-UNIT CATTLEGUARD W/TYPE II GATE	WITH 610 mm PIPE
2+374.801	Rt.	4.50	1	INSTALL 2-UNIT CATTLEGUARD W/TYPE II GATE	WITH 610 mm PIPE
2+402.801	Lt.	4.50	1	INSTALL 2-UNIT CATTLEGUARD W/TYPE II GATE	N/A
2+608.801	Lt.	4.50	1	INSTALL 2-UNIT CATTLEGUARD W/TYPE II GATE	WITH 610 mm PIPE
		UNIT I SUBTOTAL:	11		
		UNIT I USE:	**11**		
N5001 UNIT II					
7+251.700	Rt.	4.50	1	INSTALL 2-UNIT CATTLEGUARD W/TYPE II GATE	N/A
8+271.790	Rt.	4.50	1	INSTALL 2-UNIT CATTLEGUARD W/TYPE II GATE	N/A
		UNIT II SUBTOTAL:	2		
		UNIT II USE:	**2**		
WORK REMOVED FROM PROJECT SCOPE (FOR INFORMATION ONLY)					
2+908.801	Rt.	4.50	1	INSTALL 2-UNIT CATTLEGUARD W/TYPE II GATE	N/A
3+074.801	Lt.	4.50	1	INSTALL 2-UNIT CATTLEGUARD W/TYPE II GATE	N/A
3+586.800	Rt.	4.50	1	INSTALL 2-UNIT CATTLEGUARD W/TYPE II GATE	N/A
3+634.800	Lt.	4.50	1	INSTALL 2-UNIT CATTLEGUARD W/TYPE II GATE	N/A
3+978.800	Rt.	4.50	1	INSTALL 2-UNIT CATTLEGUARD W/TYPE II GATE	N/A
5+146.631	Rt.	4.50	1	INSTALL 2-UNIT CATTLEGUARD W/TYPE II GATE	WITH 610 mm PIPE
5+640.000	Lt.	4.50	1	INSTALL 2-UNIT CATTLEGUARD W/TYPE II GATE	WITH 610 mm PIPE
8+448.731	Rt.	4.50	1	INSTALL 2-UNIT CATTLEGUARD W/TYPE II GATE	N/A
9+417.000	Lt.	4.50	1	INSTALL 2-UNIT CATTLEGUARD W/TYPE II GATE	N/A
9+420.000	Rt.	4.50	1	INSTALL 2-UNIT CATTLEGUARD W/TYPE II GATE	N/A
10+178.731	Rt.	4.50	1	INSTALL 2-UNIT CATTLEGUARD W/TYPE II GATE	WITH 610 mm PIPE

ITEM No. 61903-0710: 3-UNIT 7190mm CATTLEGUARD WITH TYPE II GATE

STATION	LOCATION	TURNOUT WIDTH (m)		DESCRIPTION	CSPC SIZE
N5001 UNIT I					
0+075.000	Lt.	7.00	1	INSTALL 3-UNIT CATTLEGUARD W/TYPE II GATE	N/A
0+320.000	Rt.	7.00	1	INSTALL 3-UNIT CATTLEGUARD W/TYPE II GATE	N/A
0+696.500	Rt.	7.00	1	INSTALL 3-UNIT CATTLEGUARD W/TYPE II GATE	N/A
0+923.000	Rt.	7.00	1	INSTALL 3-UNIT CATTLEGUARD W/TYPE II GATE	WITH 610 mm PIPE
1+132.600	Lt.	7.00	1	INSTALL 3-UNIT CATTLEGUARD W/TYPE II GATE	N/A
1+180.600	Rt.	7.00	1	INSTALL 3-UNIT CATTLEGUARD W/TYPE II GATE	N/A
		UNIT I SUBTOTAL:	6		
		UNIT I USE:	**6**		
WORK REMOVED FROM PROJECT SCOPE (FOR INFORMATION ONLY)					
9+079.800	Lt.	7.00	1	INSTALL 3-UNIT CATTLEGUARD W/TYPE II GATE	WITH 610 mm PIPE
9+201.730	Lt.	7.00	1	INSTALL 3-UNIT CATTLEGUARD W/TYPE II GATE	N/A

ITEM No. 61903-1000: 4-UNIT 9480mm CATTLEGUARD WITH NO GATE

STATION	LOCATION	TURNOUT WIDTH		DESCRIPTION	CSPC SIZE
N5001 UNIT I					
0+182.530	Lt.	10.00	1	INSTALL 4-UNIT CATTLEGUARD W/TYPE 3 GATE	N/A
0+481.430	Lt.	9.50	1	INSTALL 4-UNIT CATTLEGUARD W/TYPE 3 GATE	WITH 610 mm PIPE
0+496.000	Rt.	9.50	1	INSTALL 4-UNIT CATTLEGUARD W/TYPE 3 GATE	N/A
0+792.313	Rt.	9.10	1	INSTALL 4-UNIT CATTLEGUARD W/TYPE 3 GATE	
2+800.000	CL	7.80	1	INSTALL 4-UNIT CATTLEGUARD (NO GATE) END OF UNIT I	
		UNIT I SUBTOTAL:	5		
		UNIT I USE:	**5**		
N5001 UNIT II					
6+600.000	CL	7.80	1	INSTALL 4-UNIT CATTLEGUARD (NO GATE) BEGINNING OF UNIT II	
8+320.000	CL	7.80	1	INSTALL 4-UNIT CATTLEGUARD (NO GATE) END OF UNIT II	
		UNIT I SUBTOTAL:	2		
		UNIT II USE:	**2**		
WORK REMOVED FROM PROJECT SCOPE (FOR INFORMATION ONLY)					
0+790.890	Rt.	9.10		INSTALL 4-UNIT CATTLEGUARD W/TYPE II GATE	
10+600.000	CENTERLINE	N/A		INSTALL 4-UNIT CATTLEGUARD AT E.O.P.	

LENGTH OF TURNOUT IS TO INSIDE OF CATTLEGUARD AND DOES NOT INCLUDE CATTLEGUARD, AGGREGATE SURFACING BEYOND THE CATTLEGUARD, OR ADDITIONAL TIE-IN LENGTH REQUIRED.

ITEM No. 61902-5010: GATE, TYPE I, 4267 mm WIDTH

STATION	LOC.	QTY	DESCRIPTION
N5001 UNIT I			
0+027.000	RT.	1	TOHAALI SCHOOL WATER PUMP ACCESS
0+650.000	RT.	1	WATER PUMP STATION ACCESS
2+380.000	RT./LT.	2	LIVESTOCK ACCESS AT RIGHT-OF-WAY LINE
UNIT I USE:		**4**	
WORK REMOVED FROM PROJECT SCOPE (FOR INFORMATION ONLY)			
2+980.000	RT.		UTILITY ACCESS GATE AT RIGHT-OF-WAY LINE

ITEM No. 61902-4510: GATE, TYPE 3, 1219 mm WIDTH (PEDESTRIAN)

STATION	LOC.	QTY	DESCRIPTION
N5001 UNIT I			
0+188.230	LT.	1	SCHOOL ACCESS
0+488.000	LT.	1	HOUSING ACCESS
0+600.000	LT.	1	HOUSING ACCESS
0+711.357	RT.	1	PEDESTRIAN CROSSWALK
UNIT I USE:		**4**	

ITEM NO.: 61501-0100 CONCRETE SIDEWALK

STATION	TO	STATION	LOC.	LENGTH (m)	WIDTH (m)	AREA (SM)	DESCRIPTION
0+188.23		0+339.17	LT.	150.94	1.22	184.147	SCHOOL ACCESS
0+350.99		0+472.99	LT.	122.00	1.22	148.840	RESIDENT TURNOUT
0+489.86		0+712.45	LT.	222.59	1.22	271.560	HOUSING ACCESS
					UNIT I TOTAL:	604.547	
					UNIT I USE:	**620**	

ITEM NO. 61701-5000 GUARDRAIL SYSTEM SGR-04b, TYPE PDE 02 WITH MSKT-TL3-8 END TERMINAL & THRIE BEAM GUARDRAIL TRANSITION

MB-05	7+126.240		7+172.910	RT	46.67	N213 BRIDGE	INCLUDES END TERMINAL SYSTEM, W-BEAM GUARDRAIL (26.67m) AND THRIE BEAM GUARDRAIL TRANSITION.
MB-06	7+149.345		7+169.350	LT	20.01	N213 BRIDGE	INCLUDES END TERMINAL SYSTEM AND THRIE BEAM GUARDRAIL TRANSITION.
MB-07	7+183.680		7+230.350	LT	46.67	N213 BRIDGE	INCLUDES END TERMINAL SYSTEM, W-BEAM GUARDRAIL (26.67m) AND THRIE BEAM GUARDRAIL TRANSITION.
MB-08	7+186.840		7+206.845	RT	20.01	N213 BRIDGE	INCLUDES END TERMINAL SYSTEM AND THRIE BEAM GUARDRAIL TRANSITION.
MB-09	7+863.950		7+887.761	LT	23.81	N214 BRIDGE	INCLUDES END TERMINAL SYSTEM, W-BEAM GUARDRAIL (3.81m) AND THRIE BEAM GUARDRAIL TRANSITION.
MB-10	7+863.950		7+887.761	RT	23.81	N214 BRIDGE	INCLUDES END TERMINAL SYSTEM, W-BEAM GUARDRAIL (3.81m) AND THRIE BEAM GUARDRAIL TRANSITION.
MB-11	7+928.260		7+952.070	LT	23.81	N214 BRIDGE	INCLUDES END TERMINAL SYSTEM, W-BEAM GUARDRAIL (3.81m) AND THRIE BEAM GUARDRAIL TRANSITION.
MB-12	7+928.260		7+952.070	LT	23.81	N214 BRIDGE	INCLUDES END TERMINAL SYSTEM, W-BEAM GUARDRAIL (3.81m) AND THRIE BEAM GUARDRAIL TRANSITION.
		UNIT II SUBTOTAL:			228.59		
		UNIT II USE:			**230**		

ITEM No. 61901-1000: FENCING, BARBED WIRE, 5 STRAND QUANTITY

STA	TO	STA	LOC	OFFSET (m)	LENGTH (m)	REMARKS
N5001 UNIT I						
0+714.74		1+564.49	LT	15	859.75	
0+714.74		1+224.83	RT	20	520.09	
1+224.83		1+830.00	RT	20	615.17	
1+567.49		2+126.22	LT	20	568.73	
1+830.00		2+800.00	RT	15	980.00	
2126.22		2+800.00	LT	15	683.78	
					-66.10	SUBTRACT TURNOUTS STA 0+714.74 TO STA 2+800
				UNIT I SUBTOTAL	**4,286.26**	3% ADDED TO ACCOUNT FOR TERRAIN SLOPE
				UNIT I USE	**4,300.00**	
N5001 UNIT II						
6+600.00		7+113.00	LT	15	523.00	
6+600.00		7+113.00	RT	15	523.00	
7+113.00		7+200.00	RT	35	127.00	
7+113.00		7+200.00	LT	40	137.00	
7+200.00		7+742.14	LT	15	592.14	
7+200.00		7+305.00	RT	15	145.00	
7+305.00		7+315.00	RT	20	20.00	
7+305.00		7+742.14	RT	15	447.14	
7+742.14		7+818.73	RT	22.86	92.31	
7+739.11		7+928.93	LT	40	239.82	
7+817.73		7+978.73	RT	90	295.28	
7+928.93		8+320.00	LT	15	441.07	
7+978.73		8+320.00	RT	15	491.27	
					-10.00	SUBTRACT TURNOUTS STA 6+600 TO STA 8+320
				UNIT II SUBTOTAL	**4,185.95**	3% ADDED TO ACCOUNT FOR TERRAIN SLOPE
				UNIT II USE	**4,200.00**	
WORK REMOVED FROM PROJECT SCOPE (FOR INFORMATION ONLY)						
2+800.00		4+150.00	LT	15	1,360.00	
4+150.00		4+400.00	LT	17	254.00	
4+440.00		5+614.80	LT	15	1,178.80	
5+156.86		5+624.80	RT	30	497.94	
5+614.80		5+684.80	LT	30	100.00	
5+624.00		5+860.00	RT	15	266.00	
5+860.00		6+600.00	RT	20	750.00	
5+684.00		6+340.00	LT	15	686.00	
6+340.00		6+350.00	LT	20	20.00	
6+350.00		6+570.00	LT	15	230.00	
6+570.00		6+580.00	LT	20	20.00	
6+580.00		6+600.00	LT	20	20.00	
8+320.00		9+010.00	LT	25	700.00	
8+320.00		9+010.00	RT	15	700.00	
9+010.00		9+050.00	RT	25	60.00	
9+010.00		9+050.00	LT	25	60.00	
9+050.00		9+375.00	RT	15	345.00	
9+050.00		9+375.00	LT	15	345.00	
9+375.00		9+445.00	RT	20	80.00	
9+375.00		9+445.00	LT	20	80.00	
9+445.00		9+570.00	RT	15	135.00	
9+445.00		9+570.00	LT	15	135.00	
9+570.00		9+600.00	RT	25	50.00	
9+570.00		9+600.00	LT	25	50.00	
9+600.00		10+407.00	LT	15	827.00	
9+600.00		9+900.00	RT	15	320.00	
9+900.00		10+260.00	RT	20	370.00	
10+407.00		10+417.00	LT	20	20.00	
10+417.00		10+578.73	LT	15	171.73	
10+260.00		10+578.73	RT	15	328.73	
						SUBTRACT TURNOUTS STA 2+800 TO STA 6+600 & STA
					-65.00	8+300 TO STA 10+600

ITEM No. 61901-0100; FENCING, WOVEN WIRE QUANTITY

STA	TO	STA	LOC	OFFSET (m)	LENGTH (m)	REMARKS
N5001 UNIT I						
0+039.78		0+190.00	RT	15	150.22	
0+039.78		0+560.00	LT	15	520.22	
0+190.00		0+240.00	RT	8.3	63.40	
0+240.00		0+501.10	RT	15	274.50	
0+501.10		0+606.00	RT	10	114.90	
0+560.00		0+629.49	LT	12	75.49	
0+606.00		0+714.74	RT	15	108.74	
0+629.49		0+714.74	LT	20	101.25	
					-60.00	SUBTRACT TURNOUTS
				UNIT I SUBTOTAL:	**1,389.18**	3% ADDED TO ACCOUNT FOR TERRAIN SLOPE
				UNIT I USE:	**1,400.00**	

ITEM No. 21102-2000: ROADWAY OBILTERATION, METHOD 2

STATION	TO	STATION	LOC.	LENGTH	WIDTH	AREA (m^2)	DESCRIPTION
N5001 UNIT I							
1+033.55	-	1+129.00	LT.	95.45	5.8	553.61	OBLITERATE EXISTING ROADWAY WITHIN THE RIGHT-OF-WAY
1+375.00	-	1+540.00	LT.	165.00	6.1	1006.50	OBLITERATE EXISTING ROADWAY WITHIN THE RIGHT-OF-WAY
1+733.00	-	1+842.00	LT.	109.00	6.5	708.50	OBLITERATE EXISTING ROADWAY WITHIN THE RIGHT-OF-WAY
					UNIT I SUBTOTAL:	2268.61	
					UNIT I USE:	**2280.00**	
N5001 UNIT II							
7+780.00	-	7+980.00	RT.	200.00	5.8	1160.00	OBLITERATE EXISTING ROADWAY WITHIN THE RIGHT-OF-WAY (N241)
8+000.00	-	8+040.00	RT.	40.00	5.8	232.00	
					UNIT II SUBTOTAL:	1392.00	
					UNIT II USE:	**1400.00**	
WORK REMOVED FROM PROJECT SCOPE (FOR INFORMATION ONLY)							
5+614.80	-	5+691.80	LT.	77.00	5	385.00	OBLITERATE EXISTING ROADWAY WITHIN THE RIGHT-OF-WAY
5+988.15	-	6+093.00	LT.	104.85	3	314.55	OBLITERATE EXISTING ROADWAY WITHIN THE RIGHT-OF-WAY
9+480.00	-	9+678.00	LT.	198.00	6.5	1287.00	OBLITERATE EXISTING ROADWAY WITHIN THE RIGHT-OF-WAY

EARTHWORK QUANTITIES

STATION TO STATION	ITEM NO. 20401-0000 ROADWAY EXCAVATION (m^3) CUT	FILL	ITEM NO. 20403-0000 UNCLASSIFIED BORROW (m^3) *BORROW	WASTE
N5001 UNIT I				
BOP - 2+800	21,901.40	39,432.66	21,911.55	
UNIT I USE:	**22,000**		**22,000**	
N5001 UNIT II				
6+600 - 8+320	21,507.55	16,285.76	0	4,301.51
UNIT II USE:	**22,000**		**0**	

*20% SHRINKAGE FACTOR APPLIED

ITEM No. 61901-3400: TEMPORARY SAFETY FENCE, PLASTIC, HDPE

STATION TO STATION		LOCATION	LENGTH (m)
N5001 UNIT I			
0+340.000	0+380.000	15.2 m LEFT	40.00
0+670.000	0+780.000	2.3 m RIGHT	110.00
1+190.000	1+280.000	15.2 m LEFT	90.00
2+070.000	2+150.000	15.2 m RIGHT	80.00
2+150.000	2+195.000	15.2 m LEFT	45.00
2+441.338	2+459.212	15 m RIGHT	17.87
2+640.000	2+720.000	15.2 m RIGHT	80.00
		UNIT I SUBTOTAL	462.87
		UNIT I USE	**470.00**
N5001 UNIT II			
7+080.000	7+180.000	15.2 m RIGHT	100.00
7+200.000	7+780.000	CENTERLINE	580.00
7+890.000	7+940.000	CENTERLINE	50.00
8+160.000	8+370.000	CENTERLINE	210.00
8+220.000	8+280.000	15 m RIGHT	100.00
		UNIT II SUBTOTAL	1,040.00
		UNIT II USE	**1,100.00**
WORK REMOVED FROM PROJECT SCOPE (FOR INFORMATION ONLY)			
4+320.000	4+410.000	15.2 m LEFT	90.00
10+080.000	10+120.000	15.2 m RIGHT	40.00
10+300.000	10+330.000	15.2 m RIGHT	30.00

ITEM NO. 60405-0000: MANHOLE/VAULT ADJUSTMENT

STATION	LOC.	QUANTITY	DESCRIPTION
0+986.080	7.8 m RT.	1	EXISTING WATER VAULT
UNIT I TOTAL:		1	
UNIT USE:		**1**	

ITEM NO. : 60902-1000 CURB AND GUTTER, CONCRETE

STATION	STATION	LOCATION	LENGTH (m)
0+187.71	0+199.72	LT.	21.27
0+199.72	0+339.17	LT.	150.44
0+350.99	0+472.99	LT.	130.73
0+489.86	0+712.46	LT.	218.88
		UNITI TOTAL:	521.32
		UNIT I USE:	**530.00**

ITEM NO.: 61504-3000 HANDICAP RAMP

STATION	LOC.	QUANTITY	DESCRIPTION
N5001 UNIT 1			
0+188.23	LT.	1	SCHOOL ACCESS
0+335.96	LT.	1	RESIDENT TURNOUT
0+354.20	LT.	1	RESIDENT TURNOUT
0+469.78	LT.	1	HOUSING ACCESS
0+493.07	LT.	1	HOUSING ACCESS
0+712.45	LT.	1	PEDESTRIAN WALKWAY
UNIT I TOTAL:		6	
UNIT I USE:		**6**	

NAVAJO DIVISION OF TRANSPORTATION

ESTIMATED QUANTITIES

DRAWN BY: WCI DATE: 10/23

DESIGNED BY: SML DATE: 10/23

REVISED: --/-- BY: DESIGN 1

sht 4A N5001_QNT

STEPHEN M. LUJAN NEW MEXICO 26338 10/31/24 PROFESSIONAL ENGINEER

NAVAJO D.O.T

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	5	106

Alignment Name: N5001(1) FINAL ALG Ground
Description: NMSPC-WZ

POINT	STATION	NORTHING	EASTING	RADIUS	LENGTH	TANGENT
BOP	00+0-0.00	581804.743	7349188.386			
PC	0+110.200	581710.516	734975.529			
PC	0+110.200	581710.516	734975.529			
PI	0+160.948	581667.124	735001.843	112.668	95.362	50.748
PT	0+205.562	581618.662	734986.785			
PT	0+205.562	581618.662	734986.785			
PC	0+249.155	581577.033	734973.85			
PC	0+249.155	581577.033	734973.85			
PI	0+414.044	581419.57	734924.923	970.267	326.657	164.889
PT	0+575.812	581254.785	734930.759			
PT	0+575.812	581254.785	734930.759			
PC	0+587.785	581242.819	734931.183			
PC	0+587.785	581242.819	734931.183			
PI	0+667.952	581162.703	734934.020	82.000	126.951	80.166
PT	0+714.736	581163.728	735014.180			
PT	0+714.736	581163.728	735014.180			
PC	0+869.606	581165.708	735169.037			
PC	0+869.606	581165.708	735169.037			
PI	0+931.591	581166.501	735231.016	582.280	123.504	61.984
PT	0+993.110	581180.323	735291.440			
PT	0+993.110	581180.323	735291.440			
PC	1+224.830	581231.997	735517.325			
PC	1+224.830	581231.997	735517.325			
PI	1+309.228	581250.818	735599.598	411.023	166.483	84.398
PT	1+391.312	581300.536	735667.797			
PT	1+391.312	581300.536	735667.797			
PC	1+564.487	581402.552	735807.733			
PC	1+564.487	581402.552	735807.733			
PI	1+660.832	581459.308	735885.586	145.000	170.075	96.345
PT	1+734.562	581409.527	735968.074			
PT	1+734.562	581409.527	735968.074			
PC	1+915.015	581316.286	736122.572			
PC	1+915.015	581316.286	736122.572			
PI	2+035.627	581253.966	736225.835	175.000	211.207	120.612
PT	2+126.222	581328.286	736320.828			
PT	2+126.222	581328.286	736320.828			
PC	2+129.906	581330.556	736323.730			
PC	2+129.906	581330.556	736323.730			
PI	2+212.807	581381.639	736389.022	252.000	160.180	82.900
PT	2+290.086	581383.982	736471.889			
PT	2+290.086	581383.982	736471.889			
PC	2+487.502	581389.561	736669.226			
PC	2+487.502	581389.561	736669.226			
PI	2+539.493	581391.030	736721.196	280.000	102.813	51.992
PT	2+590.314	581373.749	736770.232			
PT	2+590.314	581373.749	736770.232			
PC	3+333.750	581097.055	737555.352			
PC	3+333.750	581097.055	737555.352			
PI	3+422.764	581097.055	737555.352	3492.760	177.989	89.014
PT	3+511.739	581071.783	737640.702			
PT	3+511.739	581071.783	737640.702			
PC	4+921.471	580671.542	738992.424			
PC	4+921.471	580671.542	738992.424			
PI	5+040.223	580637.826	739106.289	650.151	234.915	118.752
PT	5+156.386	580646.541	739224.722			
PT	5+156.386	580646.541	739224.722			
PC	5+819.889	580695.233	739886.435			
PC	5+819.889	580695.233	739886.435			
PI	5+886.508	580700.121	739952.874	498.965	132.455	66.619
PT	5+952.343	580722.269	740015.704			
PT	5+952.343	580722.269	740015.704			
PC	6+261.739	580825.131	740307.500			
PC	6+261.739	580825.131	740307.500			
PI	6+316.840	580843.450	740359.467	332.643	109.210	55.101
PT	6+370.949	580844.034	740414.565			
PT	6+370.949	580844.034	740414.565			
PC	6+706.798	580847.593	740750.394			
PC	6+706.798	580847.593	740750.394			
PI	6+751.712	580848.070	740795.306	280.061	89.070	44.914
PT	6+795.867	580834.478	740838.114			

POINT	STATION	NORTHING	EASTING	RADIUS	LENGTH	TANGENT
PT	6+795.867	580834.478	740838.114			
PC	6+954.602	580786.442	740989.406			
PC	6+954.602	580786.442	740989.406			
PI	7+048.335	580758.077	741078.744	280.061	180.902	93.733
PT	7+135.503	580789.203	741167.157			
PT	7+135.503	580789.203	741167.157			
PC	7+641.136	580957.108	741644.098			
PC	7+641.136	580957.108	741644.098			
PI	7+692.191	580974.062	741692.255	280.000	101.000	51.055
PT	7+135.690	580793.618	741141.127			
PT	7+742.136	580972.928	741743.298			
PC	8+020.442	580966.746	742021.534			
PC	8+020.442	580966.746	742021.534			
PI	8+045.768	580966.183	742046.855	280.000	50.516	25.327
PT	8+070.957	580970.173	742071.865			
PT	8+070.957	580970.173	742071.865			
PC	8+465.969	581032.402	742461.944			
PC	8+465.969	581032.402	742461.944			
PI	8+506.642	581038.810	742502.110	280.000	80.502	40.674
PT	8+546.751	581056.380	742538.792			
PT	8+546.751	581056.380	742538.792			
PC	8+891.359	581205.250	742849.586			
PC	8+891.359	581205.250	742849.586			
PI	8+969.542	581239.024	742920.097	280.000	152.481	78.183
PT	9+043.841	581231.384	742997.905			
PT	9+043.841	581231.384	742997.905			
PC	9+149.217	581221.087	743102.778			
PC	9+149.217	581221.087	743102.778			
PI	9+249.565	581211.282	743202.645	280.057	192.713	100.348
PT	9+341.930	581140.283	743273.559			
PT	9+341.930	581140.283	743273.559			
PC	9+504.326	581025.384	743388.322			
PC	9+504.326	581025.384	743388.322			
PI	9+661.529	580914.158	743499.416	280.056	286.496	157.203
PT	9+790.822	580951.068	743652.224			
PT	9+790.822	580951.068	743652.224			
PC	10+122.355	581028.904	743974.469			
PC	10+122.355	581028.904	743974.469			
PI	10+214.609	581050.570	744064.164	280.056	178.275	92.275
PT	10+300.609	581014.673	744149.171			
PT	10+300.609	581014.673	744149.171			
EOP	10+600.000	580898.205	744424.979			

SUPERELEVATION DATA REPORT

N5001 CL-L_CHIP Type: Linear		SUPER CONTROL LINE	N5001 CL-R_CHIP Type: Linear	
STATION	CROSS SLOPE	POINT TYPE	STATION	CROSS SLOPE
0+000.000	-2.00%	Normal Crown	0+000.000	-2.00%
0+089.296	-2.00%	Normal Crown	0+089.296	-2.00%
0+097.096	0.00%	Zero Cross Slope		
0+104.896	2.00%	Reverse & Normal Crown	0+104.896	-2.00%
0+118.936	5.60%	Full Super	0+118.936	-5.60%
0+196.826	5.60%	Full Super	0+196.826	-5.60%
0+210.866	2.00%	Reverse & Normal Crown	0+210.866	-2.00%
0+218.666	0.00%	Zero Cross Slope		
0+226.466	-2.00%	Normal Crown	0+226.466	-2.00%
		Normal Crown	0+238.547	-2.00%
		Normal Crown	0+246.347	-2.00%
		Normal Crown	0+251.027	-2.00%
		Normal Crown	0+565.945	-2.00%
		Normal Crown	0+576.345	-2.00%
		Normal Crown	0+573.940	-2.00%
		Normal Crown	0+578.620	-2.00%
0+586.420	-2.00%	Normal Crown	0+586.420	-2.00%
0+586.745	-2.00%	Normal & Reverse Crown	0+586.745	2.00%
0+597.145	-4.00%	Full Super	0+597.145	4.00%
0+705.376	-4.00%	Full Super	0+705.376	4.00%
0+715.776	-2.00%	Normal & Reverse Crown	0+715.776	2.00%
		Zero Cross Slope	0+726.176	0.00%
0+736.576	-2.00%	Normal Crown	0+736.576	-2.00%
		Normal Crown	0+857.360	-2.00%
		Zero Cross Slope	0+864.120	0.00%
		Full Super	0+872.570	2.50%
		Full Super	0+990.146	2.50%
		Zero Cross Slope	0+998.596	0.00%
1+005.356	-2.00%	Normal Crown	1+005.356	-2.00%
		Normal Crown	1+210.946	-2.00%
		Zero Cross Slope	1+217.846	0.00%
1+224.746	-2.00%	Normal Crown	1+224.746	2.00%
1+228.886	-3.20%	Full Super	1+228.886	3.20%
1+387.256	-3.20%	Full Super	1+387.256	3.20%
1+391.396	-2.00%	Normal & Reverse Crown	1+391.396	2.00%
		Zero Cross Slope	1+398.296	0.00%
1+405.196	-2.00%	Normal Crown	1+405.196	-2.00%
1+544.987	-2.00%	Normal Crown		
1+552.570	0.00%	Zero Cross Slope		
1+560.153	2.00%	Reverse & Reverse Crown	1+560.153	-2.00%
1+572.287	5.20%	Full Super	1+572.287	-5.20%
1+726.762	5.20%	Full Super	1+726.762	-5.20%
1+738.895	2.00%	Reverse & Normal Crown	1+738.895	-2.00%
1+746.478	0.00%	Zero Cross Slope		
1+754.062	-2.00%	Normal Crown	1+754.062	-2.00%
		Normal Crown	1+896.685	-2.00%
		Zero Cross Slope	1+904.141	0.00%
1+911.597	-2.00%	Normal & Reverse Crown	1+911.597	2.00%
1+922.035	-4.80%	Full Super	1+922.035	4.80%
2+113.418	-4.80%	Full Super		
2+119.202	-4.80%	Full Super	2+119.202	4.80%
2+120.633	-4.42%	Full Super		
2+127.848	-2.48%	Reverse & Normal Crown	2+127.848	2.48%
2+129.640	-2.00%	Normal & Reverse Crown	2+129.640	2.00%
		Zero Cross Slope	2+137.096	0.00%
2+144.552	-2.00%	Normal Crown	2+144.552	-2.00%
2+142.278	-2.00%		2+142.278	-1.39%
2+277.982	6.00%	Full Super	2+277.982	-6.00%
2+292.279	2.00%	Reverse & Normal Crown	2+292.279	-2.00%
2+299.427	0.00%	Zero Cross Slope		
2+306.575	-2.00%	Normal Crown	2+306.575	-2.00%
2+468.470	-2.00%	Normal Crown		
2+475.270	0.00%	Zero Cross Slope		
2+482.070	2.00%	Reverse & Normal Crown	2+482.070	-2.00%
2+494.990	5.80%	Full Super	2+494.990	-5.80%
2+582.826	5.80%	Full Super	2+582.826	-5.80%
2+595.746	2.00%	Reverse & Normal Crown	2+595.746	-2.00%
2+602.546	0.00%	Zero Cross Slope		
2+609.346	-2.00%	Normal Crown	2+609.346	-2.00%
		Normal Crown	3+325.014	-2.00%
		Normal Crown	3+332.814	-2.00%
		Normal Crown	3+334.374	-2.00%
		Normal Crown	3+511.115	-2.00%
		Normal Crown	3+512.675	-2.00%
3+520.475	-2.00%	Normal Crown	3+520.475	-2.00%
		Normal Crown	4+908.991	-2.00%
		Zero Cross Slope	4+916.791	0.00%
4+924.591	-2.00%		4+924.591	-4.10%
			5+153.266	-4.10%
		Zero Cross Slope	5+161.066	0.00%
5+168.866	-2.00%	Normal Crown	5+168.866	-2.00%
		Normal Crown	5+806.005	-2.00%
		Zero Cross Slope	5+811.281	0.00%
5+816.558	-2.00%	Normal & Reverse Crown	5+816.558	2.00%
5+823.945	-4.80%	Full Super	5+823.945	4.80%
5+948.287	-4.80%	Full Super	5+948.287	4.80%
5+955.674	-2.00%	Normal & Reverse Crown	5+955.674	2.00%
		Zero Cross Slope	5+960.951	0.00%
5+966.227	-2.00%	Normal Crown	5+966.227	-2.00%
6+244.579	-2.00%	Normal Crown		
6+250.657	0.00%	Zero Cross Slope		
6+256.735	2.00%	Reverse & Normal Crown	6+256.735	-2.00%
6+267.979	5.70%	Full Super	6+267.979	-5.70%
6+364.709	5.70%	Full Super	6+364.709	-5.70%
6+375.953	2.00%	Reverse & Normal Crown	6+375.953	-2.00%
6+382.031	0.00%	Zero Cross Slope		
6+388.109	-2.00%	Normal Crown	6+388.109	-2.00%
6+687.766	-2.00%	Normal Crown		
6+694.566	0.00%	Zero Cross Slope		
6+701.366	2.00%	Reverse & Normal Crown	6+701.366	-2.00%
6+714.286	5.80%	Full Super	6+714.286	-5.80%
6+788.379	5.80%	Full Super	6+788.379	-5.80%
6+801.299	2.00%	Reverse & Normal Crown	6+801.299	-2.00%
6+808.099	0.00%	Zero Cross Slope		
6+814.899	-2.00%	Normal Crown	6+814.899	-2.00%
		Normal Crown	6+935.570	-2.00%
		Zero Cross Slope	6+942.370	0.00%

SUPERELEVATION DATA REPORT

N5001 CL-L_CHIP Type: Linear		SUPER CONTROL LINE	N5001 CL-R_CHIP Type: Linear	
6+949.170	-2.00%	Normal & Reverse Crown	6+949.170	2.00%
6+962.090	-5.80%	Full Super	6+962.090	5.80%
7+128.015	-5.80%	Full Super	7+128.015	5.80%
7+140.935	-2.00%	Normal Crown	7+140.935	2.00%
		Zero Cross Slope	7+147.735	0.00%
7+154.535	-2.00%	Normal Crown	7+154.535	-2.00%
7+622.104	-2.00%	Normal Crown		
7+628.904	0.00%	Zero Cross Slope		
7+635.704	2.00%	Reverse & Normal Crown	7+635.704	-2.00%
7+648.624	5.80%	Full Super	7+648.624	-5.80%
7+734.648	5.80%	Full Super	7+734.648	-5.80%
7+747.568	2.00%	Reverse & Normal Crown	7+747.568	-2.00%
7+754.368	0.00%	Zero Cross Slope		
7+761.168	-2.00%	Normal Crown	7+761.168	-2.00%
		Normal Crown	8+001.410	-2.00%
		Zero Cross Slope	8+008.210	0.00%
8+015.010	-2.00%	Normal & Reverse Crown	8+015.010	2.00%
8+027.930	-5.80%	Full Super	8+027.930	5.80%
8+063.469	-5.80%	Full Super	8+063.469	5.80%
8+076.389	-2.00%	Normal & Reverse Crown	8+076.389	2.00%
		Zero Cross Slope	8+083.189	0.00%
8+089.989	-2.00%	Normal Crown	8+089.989	-2.00%
		Normal Crown	8+446.937	-2.00%
		Zero Cross Slope	8+453.737	0.00%
8+460.537	-2.00%	Normal Crown	8+460.537	2.00%
8+473.457	-5.80%	Full Super	8+473.457	5.80%
8+539.263	-5.80%	Full Super	8+539.263	5.80%
8+552.183	-2.00%	Normal & Reverse Crown	8+552.183	2.00%
		Zero Cross Slope	8+558.983	0.00%
8+565.783	-2.00%	Normal Crown	8+565.783	-2.00%
8+872.327	-2.00%	Normal Crown		
8+879.127	0.00%	Zero Cross Slope		
8+885.927	2.00%	Reverse & Normal Crown	8+885.927	-2.00%
8+898.847	5.80%	Full Super	8+898.847	-5.80%
9+036.353	5.80%	Full Super	9+036.353	-5.80%
9+049.273	2.00%	Reverse & Normal Crown	9+049.273	-2.00%
9+056.073	0.00%	Zero Cross Slope		
9+062.873	-2.00%	Normal Crown	9+062.873	-2.00%
9+130.185	-2.00%	Normal Crown		
9+136.985	0.00%	Zero Cross Slope		
9+143.785	2.00%	Reverse & Normal Crown	9+143.785	-2.00%
9+156.705	5.80%	Full Super	9+156.705	-5.80%
9+334.442	5.80%	Full Super	9+334.442	-5.80%
9+347.362	2.00%	Reverse & Normal Crown	9+347.362	-2.00%
9+354.162	0.00%	Zero Cross Slope		
9+360.962	-2.00%	Normal Crown	9+360.962	-2.00%
		Normal Crown	9+485.294	-2.00%
		Zero Cross Slope	9+492.094	0.00%
9+498.894	-2.00%	Normal & Reverse Crown	9+498.894	2.00%
9+511.814	-5.80%	Full Super	9+511.814	5.80%
9+783.334	-5.80%	Full Super	9+783.334	5.80%
9+796.254	-2.00%	Normal & Reverse Crown	9+796.254	2.00%
		Zero Cross Slope	9+803.054	0.00%
9+809.854	-2.00%	Normal Crown	9+809.854	-2.00%
10+103.303	-2.00%	Normal Crown		
10+111.103	0.00%	Zero Cross Slope		
10+118.903	2.00%	Reverse & Normal Crown	10+118.903	-2.00%
10+129.823	4.80%	Full Super	10+129.823	-4.80%
10+293.121	4.80%	Full Super	10+293.121	-4.80%
10+304.041	2.00%	Reverse & Normal Crown	10+304.041	-2.00%
10+311.841	0.00%	Zero Cross Slope		
10+319.641	-2.00%	Normal Crown	10+319.641	-2.00%
10+599.732	-2.00%	Normal Crown	10+599.732	-2.00%

STEPHEN M. LUJAN
NEW MEXICO
26338
10/27/23
PROFESSIONAL ENGINEER

NAVAJO DIVISION OF TRANSPORTATION

ESTIMATED QUANTITIES, SUPERELEVATION, & ALIGNMENT TABLES

DRAWN BY: WCI DATE: 10/23
DESIGNED BY: SML DATE: 10/23
REVISED: --/-- BY: DESIGN 1
$FILES$

NAVAJO D.O.T

$FILES$ 10/22/2023 $TIME$

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	6	106

EXISTING UTILTIY INFORMATION

STATION	DESCRIPTION	LOCATION	DEPTH	CLEARANCE	SKEW NO.	OWNER	REMARKS
0+022.361	EXISTING OVERHEAD POWER	CENTERLINE	-	8.179	93.674	NTUA	
0+022.361 To 0+080.967	EXISTING OVERHEAD TELEPHONE	6.8 m To 4.1 m RIGHT	-	-	-	FRONTIER	TO BE RELOCATED OUT OF CONSTRUCTION LIMITS. WORK DONE BY OTHERS.
0+022.361	EXISTING POWER/TELEPHONE POLE	6.8 m RIGHT	-	-	-	NTUA/FRONTIER	TO BE PROTECTED IN PLACE DURING CONSTRUCTION
0+055.468	EXISTING POWER POLE	4.9 m LEFT	-	-	-	NTUA	TO BE RELOCATED OUTSIDE OF CONSTRUCTION LIMITS. WORK DONE BY OTHERS.
0+080.764	EXISTING FIRE HYDRANT	8.46 m LEFT	-	-	-	NTUA/SCHOOL	TO BE RELOCATED. WORK DONE BY OTHERS.
0+080.967	EXISTING POWER/TELEPHONE POLE	4.1 m RIGHT	-	-	-	NTUA/FRONTIER	TO BE RELOCATED BY OUTSIDE OF CONSTRUCTION LIMITS. WORK DONE BY OTHERS
0+081.248	EXISTING OVERHEAD TELEPHONE	CENTERLINE	-	UNKNOWN	93.674	FRONTIER	
0+081.651	EXISTING WATER VALVE	6.6 m LEFT	UNKNOWN	-	-	NTUA	TO BE RELOCATED OR ADJUSTED BY OTHERS
0+121.618	EXISTING OVERHEAD POWER	CENTERLINE	-	7.714	85.799	NTUA	POLE TO RELOCATED OUTSIDE OF CONSTRUCTION LIMITS
0+121.967	EXISTING POWER POLE & GUY LINE	4.5m RIGHT	-	-	-	NTUA	TO BE RELOCATED OUTSIDE OF CONSTRUCTION LIMITS
0+175.986	EXISTING OVERHEAD POWER	CENTERLINE	-	7.221	184.414	NTUA	
0+188.033 To 0+198.914	EXISTING UNDERGROUND TELEPHONE	23.2 m To 9.4 m LEFT	UNKNOWN	-	-	FRONTIER	TO BE RELOCATED BY OTHERS
0+197.040	EXISTING POWER POLE & GUY LINE	9.8 m LEFT	-	-	-	NTUA	TO BE PROTECTED IN PLACE
0+317.917	EXISTING TELEPHONE POLE	11.6m				FRONTIER	TO BE PROTECTED IN PLACE
0+317.917 To 0+386.009	EXISTING OVERHEAD TELEPHONE	11.7 m To 13.5 m LEFT	-	UNKNOWN	-	FRONTIER	TO BE PROTECTED IN PLACE
0+322.265	EXISTING WATER VALVE	13.6 m LEFT	UNKNOWN	-	-	NTUA	TO BE PROTECTED IN PLACE
0+327.830	EXISTING WATER VALVE	23.48 m RIGHT	UNKNOWN	-	-	NTUA	TO BE PROTECTED IN PLACE
0+327.818 To 0+479.211	EXISTING WATER LINE	12.8m to 23.5m RIGHT	UNKNOWN			NTUA	TO BE PROTECTED IN PLACE
0+345.105	EXISTING OVERHEAD POWER	CENTERLINE	-	9.275	84.572	NTUA	TO BE PROTECTED IN PLACE
0+386.000	EXISTING TELEPHONE POLE & GUY LINE	13.5m LEFT					
0+361.414	EXISTING WATERLINE	CENTERLINE	UNKNOWN	-	87.250	NTUA	TO BE PROTECTED IN PLACE
0+365.87 To 0+479.211	EXISTING UNDERGROUND WATERLINE	15 m To 12.8 m RIGHT	UNKNOWN	-	-	NTUA	TO BE PROTECTED IN PLACE
0+426.471	EXISTING WATER VALVE	12.8 m RIGHT	UNKNOWN	-	-	NTUA	TO BE PROTECTED IN PLACE
0+473.864	EXISTING WATER VALVE	11.8 m LEFT	UNKNOWN	-	-	NTUA	TO BE PROTECTED IN PLACE
0+487.019 To 0+487.237	EXIST TELEPHONE JCT BOX/UNDERGROUND LINE	20.5 m To 13.5 m LEFT	-	UNKNOWN	-	FRONTIER	TO BE RELOCATED BY OTHERS
0+566.860	EXISTING POWER POLE	8.6 m RIGHT	-	-	-	NTUA	TO BE PROTECTED IN PLACE.
0+566.916	EXISTING OVERHEAD POWER	CENTERLINE	-	7.121	90.657	NTUA	TO BE PROTECTED IN PLACE
0+588.649 To 0+599.517	EXISTING UNDERGROUND WATERLINE	15.2 m To 14.6 m RIGHT	UNKNOWN	-	-	NTUA	TO BE PROTECTED IN PLACE
0+624.348	EXISTING OVERHEAD TELEPHONE POLE/LINE	1.8m LEFT	-	-	-	FRONTIER	TO BE RELOCATED OUTSIDE OF CONSTRUCTION LIMITS. RELOCATED BY OTHERS.
0+648.329 To 1+100.00 RT	EXISTING UNDERGROUND WATERLINE	32.63m To 15m RIGHT	UNKNOWN	-	-	NTUA	TO BE PROTECTED IN PLACE
0+649.420	EXISTING WATER METERS (2) OR TANK	17.4 m RIGHT	UNKNOWN	-	-	NTUA	TO BE PROTECTED IN PLACE
0+651.845	EXISTING WATER VALVE	32.63m RIGHT	-	-	-	NTUA	TO BE PROTECTED IN PLACE
0+660.560	EXISTING TELEPHONE JUNCTION BOX, POLE & GUY LINE	1.0m LEFT	-	-	-	FRONTIER	TO BE RELOCATED BY OTHERS
0+810.046	EXISTING WATER TANKS	23.25m to 25.75m RIGHT	-	-	-	NTUA	OUTSIDE OF ROW TO REMAIN IN-PLACE
0+820.822	EXISTING WATER VALVE	22.14 m RIGHT	UNKNOWN	-	-	NTUA	OUTSIDE OF ROW TO REMAIN IN-PLACE
0+821.623	EXISTING WATER VALVE	22.6 m RIGHT	UNKNOWN	-	-	NTUA	OUTSIDE OF ROW TO REMAIN IN-PLACE
0+907.68 To 1+104.956	EXISTING UNDERGROUND WATERLINE	4.49m to 15.0 m RIGHT	UNKNOWN	-	-	NTUA	TO BE PROTECTED IN PLACE
0+933.808	EXISTING UNDERGROUND WATERLINE	CENTERLINE	UNKNOWN	-	79.119	NTUA	CONTRACTOR TO VERIFY EXISTING STEEL CASING LIMITS. CONTRACTOR TO RELOCATE WITH STEEL CASING PER DETAILS ON SHEET 73 IF EXISTING CASING DOES NOT EXTEND PAST PROPOSED ROADWAY DITCH LINES
0+986.080	EXISTING WATER MANHOLE	7.8 m RIGHT	UNKNOWN	-	-	NTUA	CONTRACTOR TO ADJUST EXISTING MANHOLE/VAULT TO GRADE
1+360.430	EXISTING TELEPHONE JUNCTION BOX	13.6 m RIGHT	UNKNOWN	-	-	FRONTIER	TO BE REMOVED AND RESET BY OTHERS
1+360.43 To 1+472.75	EXISTING UNDERGROUND TELEPHONE	13.6m RIGHT To 4.6m LEFT	UNKNOWN	-	-	FRONTIER	TO BE RELOCATED BY OTHERS
1+441.964	EXISTING UNDERGROUND TELEPHONE	CENTERLINE	UNKNOWN	-	171.462	FRONTIER	TO BE RELOCATED BY OTHERS
1+472.750	EXISTING TELEPHONE JUNCTION BOX	4.6 m LEFT	UNKNOWN	-	-	FRONTIER	TO BE REMOVED AND RESET BY OTHERS
1+588.205	EXISTING OVERHEAD POWER	CENTERLINE	-	11.516	56.413	NTUA	TO BE PROTECTED IN PLACE
1+724.950	EXISTING POWER POLE	27.9m RIGHT	-	-	-	NTUA	OUTSIDE OF ROW TO REMAIN IN-PLACE
1+733.013	EXISTING POWER POLE	24.m RIGHT	-	-	-	NTUA	OUTSIDE OF ROW TO REMAIN IN-PLACE
1+779.610	EXISTING OVERHEAD POWER	CENTERLINE	-	UNKNOWN	151.983	NTUA	TO BE PROTECTED IN PLACE
1+797.36 To 1+816.938	EXISTING UNDERGROUND WATERLINE	CENTERLINE To 20m LEFT	UNKNOWN	-	153.564	NTUA	CONTRACTOR TO RELOCATE WITH STEEL CASING PER DETAILS ON SHEET 73
1+830.000	EXISTING CONCRETE PRV VAULT	50m LT	UNKNOWN	-	-	NTUA	TO BE PROTECTED IN PLACE
1+938.442	EXISTING TELEPHONE POLE & GUY LINE	15.3m RIGHT	-	-	-	FRONTIER	TO BE PROTECTED IN PLACE
1+939.365 To 1+989.497	EXISTING OVERHEAD TELEPHONE	13.6m To 15.3m RIGHT	UNKNOWN	-	168.314	FRONTIER	TO BE RELOCATED BY OTHERS
1+989.550	EXISTING TELEPHONE POLE	15.3m RT	-	-	-	FRONTIER	TO BE PROTECTED IN PLACE
2+138.700	EXISTING OVERHEAD POWER	CENTERLINE	-	11.729	113.337	NTUA	TO BE PROTECTED IN PLACE
2+143.740	EXISTING POWER POLE & GUY LINE	12.4m LEFT	-	-	-	NTUA	TO BE RELOCATED BY OTHERS
2+149.458	EXISTING TELEPHONE POLE	6.7m RIGHT	UNKNOWN	-	-	FRONTIER	TO BE REMOVED AND RESET BY OTHERS
2+148.48 To 2+213.325	EXISTING UNDERGROUND TELEPHONE	6.7m To 5.3m RIGHT	UNKNOWN	-	-	FRONTIER	TO BE RELOCATED BY OTHERS
2+150.690	EXISTING TELEPHONE JUNCTION BOX	9.4m RIGHT	UNKNOWN	-	-	FRONTIER	TO BE REMOVED AND RESET BY OTHERS
2+201.950	EXISTING OVERHEAD POWER	CENTERLINE	-	7.830	24.650	NTUA	TO BE REMOVED AND RESET BY OTHERS
2+213.540	EXISTING POWER/TELEPHONE POLE	5.3 m RIGHT	-	-	-	NTUA/FRONTIER	TO BE REMOVED & RESET OUTSIDE THE CONSTRUCTION LIMITS BY OTHERS
2+216.659	EXISTING UNDERGROUND WATERLINES (2)	CENTERLINE	UNKNOWN	-	92.649	NTUA	CONTRACTOR TO RELOCATE WITH STEEL CASING PER DETAILS ON SHEET 73
2+219.570	EXISTING OVERHEAD POWER	CENTERLINE	-	6.497	137.655	NTUA	TO BE ADJUSTED BY OTHERS.
2+418.050	EXISTING TELEPHONE JUNCTION BOX	4.5 m RIGHT	UNKNOWN	-	-	FRONTIER	TO BE REMOVED AND RESET BY OTHERS
2+418.050	EXISTING UNDERGROUND TELEPHONE	CENTERLINE	UNKNOWN	-	90.255	FRONTIER	TO BE PROTECTED IN PLACE
2+417.99 To 2+418.05	EXISTING UNDERGROUND TELEPHONE	4.5 m To 25.75 m RIGHT/LEFT	UNKNOWN	-	-	FRONTIER	TO BE PROTECTED IN PLACE
2+647.079	EXISTING OVERHEAD POWER	CENTERLINE	-	5.956	105.065	NTUA	TO BE PROTECTED IN PLACE
2+869.658	EXISTING 3-LINE HIGH VOLTAGE POWERLINE	CENTERLINE	-	18.560	105.913	NTUA	TO BE PROTECTED IN PLACE
2+907.730	EXISTING 3-LINE HIGH VOLTAGE POWERLINE	CENTERLINE	-	18.570	105.632	NTUA	TO BE PROTECTED IN PLACE
3+068.514	EXISTING OVERHEAD POWER	CENTERLINE	-	7.011	98.824	NTUA	TO BE PROTECTED IN PLACE
3+086.731	EXISTING UNDERGROUND WATERLINE	CENTERLINE	UNKNOWN	-	97.485	NTUA	TO BE PROTECTED IN PLACE
3+322.467 To 3+3881.049	EXISTING UNDERGROUND WATERLINE	12m to 15m RIGHT	UNKNOWN	-	-	NTUA	TO BE PROTECTED IN PLACE
3+550.066	EXISTING WATER VALVE	12.87 m RIGHT	UNKNOWN	-	-	NTUA	TO BE PROTECED IN PLACE
3+610.680	EXISTING WATER VALVE	12.6 m RIGHT	UNKNOWN	-	-	NTUA	TO BE PROTECTED IN PLACE
3+651.094	EXISTING TELEPHONE JUNCTION BOX	15.1 m LEFT	UNKNOWN	-	-	FRONTIER	TO BE PROTECTED IN PLACE
3+967.500	EXISTING WATER VALVE	15.6 m RIGHT	UNKNOWN	-	-	NTUA	TO BE PROTECTED IN PLACE
4+722.920	EXISTING TELEPHONE JUNCTION BOX	15.3 m LEFT	UNKNOWN	-	-	FRONTIER	TO BE PROTECTED IN PLACE
4+745.617 To 5+028.609	EXISTING UNDERGROUND TELEPHONE	12.0m to 15.0m LEFT	UNKNOWN	-	-	FRONTIER	TO BE PROTECTED IN PLACE
4+921.471	EXISTING TELEPHONE JUNCTION BOX	12.7 m LEFT	UNKNOWN	-	-	FRONTIER	TO BE PROTECTED IN PLACE
4+988.286	EXISTING TELEPHONE JUNCTION BOX	12 m LEFT	UNKNOWN	-	-	FRONTIER	TO BE PROTECTED IN PLACE
5+032.407 To 5+113.071	EXISING OVERHEAD POWER	15m RIGHT to CENTERLINE	UNKNOWN			NTUA	TO BE RESET BY OTHERS
5+084.709	EXISTING TELEPHONE POLE & GUY LINE	15.3 m LEFT	UNKNOWN	-	-	FRONTIER	TO BE PROTECED IN PLACE
5+111.600	EXISTING POWER POLE	13.6 m RIGHT	-	UNKNOWN	-	NTUA	TO BE REMOVED AND RESET BY OTHERS
5+113.071	EXISTING POWER POLE	0.6 m LEFT	-	UNKNOWN	-	NTUA	TO BE REMOVED AND OUTSIDE OF CONSTRUCTION LIMITS
5+182.656	EXISTING TELEPHONE JUNCTION BOX	16.8 m LEFT	UNKNOWN	-	-	FRONTIER	TO BE PROTECTED IN PLACE
5+240.841 To 5+431.556	EXISTING UNDERGROUND TELEPHONE	12.5m To 15.0 m LEFT	UNKNOWN	-	-	FRONTIER	TO BE PROTECTED IN PLACE
5+258.466	EXISTING POWER POLE	12.0 m LEFT	-	UNKNOWN	-	NTUA	TO BE PROTECTED IN PLACE
5+291.939 To 5+403.863	EXISTING UNDERGROUND WATERLINE	28.54m to 30m RIGHT	UNKNOWN			NTUA	TO BE PROTECTED IN PLACE
5+312.688	EXISTING TELEPHONE JUNCTION BOX	12.8 m LEFT	UNKNOWN	-	-	FRONTIER	TO BE PROTECTED IN PLACE
5+320.964	EXISTING POWER POLE	14.8 m LEFT	-	UNKNOWN	-	NTUA	TO BE PROTECTED IN PLACE
5+350.533	EXISTING TELEPHONE POLE & GUY LINE	12.5 m LEFT	UNKNOWN	-	-	FRONTIER	TO BE PROTECED IN PLACE

EXISTING UTILTIY INFORMATION

STATION	DESCRIPTION	LOCATION	DEPTH	CLEARANCE	SKEW NO.	OWNER	REMARKS
5+420.788	EXISTING TELEPHONE POLE & GUY LINE	14.3 m LEFT	UNKNOWN	-	-	FRONTIER	TO BE PROTECTED IN PLACE
5+537.450	EXISTING UNDERGROUND WATERLINE	CENTERLINE	UNKNOWN	-	93.456	NTUA	TO BE PROTECTED IN PLACE
5+624.796 To 5+684.801	EXISTING UNDERGROUND TELEPHONE	24.36m To 30.0m LEFT	UNKNOWN	-	-	FRONTIER	TO BE PROTECTED IN PLACE
5+753.37 To 6+019.863	EXISTING UNDERGROUND TELEPHONE	0.76m LEFT To 19.5m RIGHT				FRONTIER	TO BE REMOVED AND RESET BY OTHERS
5+820.000	EXISTING TELEPHONE JUNCTION BOX	6.2 m LEFT	UNKNOWN	-	-	FRONTIER	TO BE REMOVED AND RESET BY OTHERS
5+865.040	EXISTING TELEPHONE JUNCTION BOX	1.3 m LEFT	UNKNOWN	-	-	FRONTIER	TO BE REMOVED AND RESET BY OTHERS
5+896.750	EXISTING TELEPHONE JUNCTION BOX	0.8 m RIGHT	UNKNOWN	-	-	FRONTIER	TO BE REMOVED AND RESET BY OTHERS
5+929.150	EXISTING TELEPHONE JUNCTION BOX	0.3 m LEFT	UNKNOWN	-	-	FRONTIER	TO BE REMOVED AND RESET BY OTHERS
6+018.690	EXISITING OVERHEAD POWER	CENTERLINE	-	8.267	98.776	NTUA	TO BE PROTECTED IN PLACE
6+112.280	EXISTING POWER POLE	4.3 m LEFT	-	UNKNOWN	-	NTUA	TO BE RELOCATED OUTSIDE OF CONSTRUCTION LIMITS
6+132.950	EXISITING OVERHEAD POWER	CENTERLINE	-	6.793	11.816	NTUA	TO BE ADJUSTED BY OTHERS
6+180.826 To 6+264.57	EXISTING UNDERGROUND TELEPHONE	15.0 m To 9.2 m LEFT	UNKNOWN	-	-	FRONTIER	TO BE PROTECTED IN PLACE
6+264.570	EXISTING TELEPHONE JUNCTION BOX	9.2 m LEFT	UNKNOWN	-	-	FRONTIER	TO BE REMOVED AND RESET BY OTHERS
6+264.57 To 6+320.346	EXISTING UNDERGROUND TELEPHONE	15.0 m To 8.5 m LEFT	UNKNOWN	-	-	FRONTIER	TO BE RELOCATED OUTSIDE OF CONSTRUCTION LIMITS
6+320.346	EXISTING TELEPHONE JUNCTION BOX	8.5 m LEFT	UNKNOWN	-	-	FRONTIER	TO BE REMOVED AND RESET BY OTHERS
6+320.346 To 6+371.085	EXISTING UNDERGROUND TELEPHONE	8.5 m To 5.3 m LEFT	UNKNOWN	-	-	FRONTIER	TO BE PROTECTED IN PLACE
6+371.085 To 6+405.84	EXISTING UNDERGROUND TELEPHONE	5.3 m To 5.7 m LEFT	UNKNOWN	-	-	FRONTIER	TO BE RELOCATED OUTSIDE OF CONSTRUCTION LIMITS
6+405.84 To 6+480.00	EXISTING UNDERGROUND TELEPHONE	5.7 m To 6.3 m LEFT	UNKNOWN	-	-	FRONTIER	TO BE PROTECTED IN PLACE
6+480.00 To 6+512.60	EXISTING UNDERGROUND TELEPHONE	6.3 m To 6.6 m LEFT	UNKNOWN	-	-	FRONTIER	TO BE RELOCATED OUTSIDE OF CONSTRUCTION LIMITS
6+512.600	EXISTING TELEPHONE JUNCTION BOX	6.6 m LEFT	UNKNOWN	-	-	FRONTIER	TO BE REMOVED AND RESET BY OTHERS
6+730.910	EXISTING POWER POLE	12.0 m RIGHT	-	UNKNOWN	-	NTUA	TO BE PROTECTED IN PLACE
6+781.400	EXISTING OVERHEAD POWER	CENTERLINE	-	8.746	161.995	NTUA	TO BE PROTECTED IN PLACE
7+101.586	EXISTING TELEPHONE POLE & GUY LINE	15.4 m LEFT	-	UNKNOWN	-	FRONTIER	TO BE PROTECTED IN PLACE
7+209.310	EXISTING TELEPHONE POLE & GUY LINE	28.15 m LEFT	-	UNKNOWN	-	FRONTIER	TO BE PROTECTED IN PLACE
7+360.000	EXISTING POWER POLE	17.2 m LEFT	-	UNKNOWN	-	NTUA	TO BE PROTECTED IN PLACE
7+420.000	EXISTING OVERHEAD POWER	CENTERLINE	-	10.499		NTUA	TO BE ADJUSTED BY OTHERS
7+769.690	EXISTING TELEPHONE JUNCTION BOX	4.4 m LEFT	UNKNOWN	-	-	FRONTIER	TO BE REMOVED AND RESET BY OTHERS
7+816.570 To 8+048.905	EXISTING UNDERGROUND TELEPHONE	ALONG C/L ON RT.	UNKNOWN	-	-	FRONTIER	TO BE RELOCATED BY OTHERS
7+818.731 To 7+978.733	EXISTING OVERHEAD POWER	60.3 m To 44.8 m RIGHT	-	UNKNOWN	-	NTUA	TO BE PROTECTED IN PLACE
7+867.000	EXISTING TELEPHONE POLE & GUY LINE	4.7 m RIGHT	UNKNOWN	-	-	FRONTIER	TO BE REMOVED AND RESET BY OTHERS
7+912.230	EXISTING POWER POLE	51.4 m RIGHT	-	-	UNKNOWN	NTUA	TO BE PROTECTED IN PLACE
7+933.061	EXISTING TELEPHONE POLE & GUY LINE	10.3 m RIGHT	UNKNOWN	-	-	FRONTIER	TO BE RELOCATED BY OTHERS
7+969.330	EXISTING TELEPHONE JUNCTION BOX	11.6 m RIGHT	UNKNOWN	-	-	FRONTIER	TO BE RELOCATED BY OTHERS
8+024.090	EXISTING TELEPHONE JUNCTION BOX	0.7 m RIGHT	UNKNOWN	-	-	FRONTIER	TO BE RELOCATED BY OTHERS
8+027.548	EXISTING UNDERGROUND TELEPHONE	CENTERLINE	UNKNOWN	-	-	FRONTIER	TO BE RELOCATED BY OTHERS
8+027.548 To 8+137.12	EXISTING UNDERGROUND TELEPHONE	C/L To 5.1 m LEFT	UNKNOWN	-	-	FRONTIER	TO BE RELOCATED BY OTHERS
8+123.880	EXISTING TELEPHONE POLE & GUY LINE/JUNCTION BOX	6.2 m LEFT	UNKNOWN	-	-	FRONTIER	TO BE RELOCATED BY OTHERS
8+132.946	EXISTING TELEPHONE JUNCTION BOX	4.7 m LEFT	UNKNOWN	-	-	FRONTIER	TO BE RELOCATED BY OTHERS
8+137.011	EXISTING TELEPHONE JUNCTION BOX	5.1 m LEFT	UNKNOWN	-	-	FRONTIER	TO BE RELOCATED BY OTHERS
8+137.011 To 8+181.61	EXISTING OVERHEAD TELEPHONE	5.1 m To 11.9 m LEFT	-	UNKNOWN	-	FRONTIER	TO BE RELOCATED BY OTHERS
8+181.610	EXISTING TELEPHONE POLE/JUNCTION BOX	11.9 m LEFT	UNKNOWN	-	-	FRONTIER	TO BE RELOCATED BY OTHERS
8+181.610 To 8+306.52	EXISTING UNDERGROUND TELEPHONE	11.9 m To 17.2 m LEFT	UNKNOWN	-	-	FRONTIER	TO BE PROTECTED IN PLACE
8+526.640	EXISTING OVERHEAD POWER	CENTERLINE	-	8.960	114.115	NTUA	TO BE PROTECTED IN PLACE
8+534.197To 8+905.873	EXISTING UNDERGROUND TELEPHONE	2.1 m To 15.0 m LEFT	UNKNOWN	-	-	FRONTIER	TO BE RELOCATED BY OTHERS
8+591.270	EXISTING TELEPHONE JUNCTION BOX	2.1 m LEFT	UNKNOWN	-	-	FRONTIER	TO BE REMOVED AND RESET BY OTHERS
8+625.540	EXISTING TELEPHONE JUNCTION BOX	3.6 m LEFT	UNKNOWN	-	-	FRONTIER	TO BE REMOVED AND RESET BY OTHERS
8+686.620	EXISTING TELEPHONE JUNCTION BOX	2.6 m LEFT	UNKNOWN	-	-	FRONTIER	TO BE REMOVED AND RESET BY OTHERS
8+786.120	EXISTING TELEPHONE JUNCTION BOX	6.6 m LEFT	UNKNOWN	-	-	FRONTIER	TO BE REMOVED AND RESET BY OTHERS
8+882.048	EXISTING TELEPHONE JUNCTION BOX	10.3 m LEFT	UNKNOWN	-	-	FRONTIER	TO BE REMOVED AND RESET BY OTHERS
8+901.43	EXISTING UNDERGROUND WATERLINE	CENTERLINE	UNKNOWN	-	114.363	NTUA	TO BE RELOCATED BY OTHERS
9+185.405 To 9+197.391	EXISTING UNDERGROUND TELEPHONE	24 m LEFT To 3 m RIGHT	UNKNOWN	-	-	FRONTIER	TO BE RELOCATED BY OTHERS
9+197.410	EXISTING TELEPHONE JUNCTION BOX	3.1 m RIGHT	UNKNOWN	-	-	FRONTIER	TO BE REMOVED AND RESET BY OTHERS
9+198.740	EXISTING TELEPHONE POLE/JUNCTION BOX	4.4 m RIGHT	-	UNKNOWN	-	FRONTIER	TO BE REMOVED AND RESET BY OTHERS
9+196.960	EXISTING OVERHEAD POWER	CENTERLINE	-	8.896	69.263	NTUA	TO BE REMOVED AND RESET BY OTHERS
9+400.640	EXISTING POWER POLE	14.6 m LEFT	-	UNKNOWN	-	NTUA	TO BE REMOVED AND RESET BY OTHERS
9+407.320	EXISTING OVERHEAD POWER	CENTERLINE	-	10.959	65.301	NTUA	TO BE REMOVED AND RESET BY OTHERS
9+412.160	EXISTING UNDERGROUND WATERLINE	CENTERLINE	UNKNOWN	-	95.809	NTUA	TO BE RELOCATED BY OTHERS
9+503.830	EXISTING OVERHEAD POWER	CENTERLINE	-	7.445	130.982	NTUA	TO BE PROTECTED IN PLACE

NOTE: The Locations And Elevations Given For Utilities Are Approximate And Items Noted In The "REMARKS" Column Are Based On The 'Best Available Information' During The Planning And Design Phase Of This Project.

10/23/2023 $TIME$

$FILES$

NAVAJO DIVISION
OF TRANSPORTATION

UTILITY
LOCATION TABLES

DRAWN BY: WCI	DATE: 10/23
DESIGNED BY: SML	DATE: 10/23
REVISED: --/--	BY: DESIGN 1
$FILES$	

STEPHEN M. LUJAN
NEW MEXICO
26338
10/27/23
PROFESSIONAL ENGINEER

NAVAJO D.O.T

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	7	106

EXISTING TURNOUT LOCATIONS

STATION	LOCATION	REMARKS
0+030.301	RT.	EXISTING PARTIALLY PAVED TURNOUT
0+075.107	LT.	EXISTING PARTIALLY PAVED TURNOUT WITH CATTLEGUARD TO SCHOOL
0+184.701	LT.	EXISTING PARTIALLY PAVED TURNOUT WITH CATTLEGUARD TO SCHOOL
0+321.305	RT.	EXISTING TURNOUT TO NAVAJO NATION FISH HATCHERY
0+340.705	LT.	EXISTING DIRT TURNOUT
0+482.988	LT.	EXISTING PARTIALLY PAVED TURNOUT WITH CATTLEGUARD TO SCHOOL HOUSING
0+494.381	RT.	EXISTING DIRT TURNOUT
0+675.528	RT.	EXISTING DIRT TURNOUT
0+682.154	RT.	EXISTING DIRT TURNOUT TO TOADLENA TRADING POST
0+805.059	RT.	EXISTING DIRT TURNOUT WITH CSPC TO TOADLENA TRADING POST
0+927.741	RT.	EXISTING DIRT TURNOUT
1+142.004	LT.	EXISTING DIRT TURNOUT
1+190.241	RT.	EXISTING DIRT TURNOUT
1+476.073	RT.	EXISTING DIRT TURNOUT
1+489.517	RT.	EXISTING DIRT TURNOUT
1+684.710	LT.	EXISTING DIRT TURNOUT
1+941.579	LT.	EXISTING DIRT TURNOUT
2+009.279	RT.	EXISTING DIRT TURNOUT
2+278.136	LT.	EXISTING DIRT TURNOUT
2+386.708	RT.	EXISTING DIRT TURNOUT
2+428.126	LT.	EXISTING DIRT TURNOUT
2+605.964	RT.	EXISTING DIRT TURNOUT
2+636.723	LT.	EXISTING DIRT TURNOUT
2+890.027	LT.	EXISTING DIRT TURNOUT
2+914.354	RT.	EXISTING DIRT TURNOUT
3+100.000	LT.	EXISTING DIRT TURNOUT
3+255.568	LT.	EXISTING DIRT TURNOUT
3+270.097	RT.	EXISTING DIRT TURNOUT
3+610.771	RT.	EXISTING DIRT TURNOUT
3+664.758	LT.	EXISTING DIRT TURNOUT
4+005.065	RT.	EXISTING DIRT TURNOUT
4+027.896	LT.	EXISTING DIRT TURNOUT
5+175.916	RT.	EXISTING DIRT TURNOUT
5+669.278	LT.	EXISTING DIRT TURNOUT
6+887.756	RT.	EXISTING DIRT TURNOUT
7+261.531	RT.	EXISTING DIRT TURNOUT
7+288.255	LT.	EXISTING DIRT TURNOUT
7+309.380	RT.	EXISTING DIRT TURNOUT
7+586.586	RT.	EXISTING DIRT TURNOUT
8+286.458	RT.	EXISTING DIRT TURNOUT
8+474.492	RT.	EXISTING DIRT TURNOUT
9+111.762	LT.	EXISTING N5000 TURNOUT
9+233.262	LT.	EXISTING DIRT TURNOUT TO TWO GREY HILLS TRADING POST
9+253.530	LT.	EXISTING DIRT TURNOUT
9+346.050	LT.	EXISTING DIRT TURNOUT
9+449.132	RT. & LT.	EXISTING DIRT TURNOUT
9+639.000	RT	EXISTING DIRT TURNOUT
10+207.000	LT.	EXISTING DIRT TURNOUT

PROPOSED TURNOUTS

STATION	LOC.	*SIZE				TYPE	REMARKS
UNIT I							
0+075.000	LT.	7.0	m Wide x	5.660	m	A	ACCESS SECONDARY SCHOOL
0+182.550	LT.	9.1	m Wide x	9.702	m	A	TOHAALI SCHOOL ACCESS, DRAIN THR CATTLEGUARD
0+320.000	RT.	7.0	m Wide x	5.660	m	A	ACCESS TO NAVAJO NATION FISH HATCHERY
0+345.000	LT.	4.5	m Wide x	5.622	m	A	N/A
0+481.430	LT.	9.5	m Wide x	5.660	m	A	SCHOOL RESIDENT HOUSING
0+496.000	RT.	9.5	m Wide x	5.712	m	A	N/A
0+653.550	RT.	4.5	m Wide x	11.100	m	A	WITH TYPE I GATE ONLY
0+674.000	RT.	4.5	m Wide x	5.660	m	A	N/A
0+696.500	RT.	7.0	m Wide x	5.660	m	A	TOHAALI TRADING POST
0+792.313	RT.	9.1	m Wide x	5.660	m	A	WATER TANK/TRADING POST
0+923.000	RT.	7.0	m Wide x	5.743	m	A	DRAIN THRU CATTLEGUARD
0+924.588	LT.	4.5	m Wide x	5.578	m	A	N/A
1+132.600	LT.	7.0	m Wide x	5.660	m	A	N/A
1+180.600	RT.	7.0	m Wide x	5.660	m	A	N/A
1+466.600	RT.	4.5	m Wide x	5.660	m	A	CONSTR. WORK ZONE
1+934.891	LT.	4.5	m Wide x	5.660	m	A	N/A
2+001.369	RT.	4.5	m Wide x	5.660	m	A	N/A
2+274.500	LT.	4.5	m Wide x	5.658	m	A	WITH CSPC
2+374.800	RT.	4.5	m Wide x	5.660	m	A	WITH CSPC
2+402.801	LT.	4.5	m Wide x	5.660	m	A	N/A
2+608.801	LT.	4.5	m Wide x	5.660	m	A	WITH CSPC
UNIT II							
7+251.700	RT.	4.5	m Wide x	5.660	m	A	N/A
8+271.790	RT.	4.5	m Wide x	6.660	m	A	N/A
WORK REMOVED FROM PROJECT SCOPE (FOR INFORMATION ONLY)							
2+908.801	RT.	4.5	m Wide x	11.100	m	A	WITH TYPE I GATE ONLY
3+074.801	LT.	4.5	m Wide x	5.660	m	A	WITH CSPC
3+586.800	RT.	4.5	m Wide x	5.660	m	A	WITH CSPC
3+634.800	LT.	4.5	m Wide x	5.660	m	A	N/A
3+978.800	RT.	4.5	m Wide x	5.660	m	A	N/A
5+146.631	RT.	4.5	m Wide x	5.595	m	A	WITH CSPC
5+640.000	LT.	4.5	m Wide x	20.660	m	A	WITH CSPC
8+448.731	RT.	4.5	m Wide x	5.660	m	A	N/A
9+080.015	LT.	7.0	m Wide x	9.880	m	A	N5000
9+201.731	LT.	7.0	m Wide x	5.751	m	A	TWO GREY HILLS TRADING POST
9+417.000	LT.	4.5	m Wide x	6.751	m	A	
9+420.000	RT.	4.5	m Wide x	7.751	m	A	
10+178.731	RT.	4.5	m Wide x	5.656	m	A	N/A

* THE LENGTH OF TURNOUT IS FROM THE SUBGRADE SHOULDER TO THE INSIDE EDGE OF CATTLEGUARD AND DOES NOT INCLUDE CATTLEGUARD, AGGREGATE SURFACING, OR ADDITION TIE-IN LENGTH REQUIRED. IF NO CATTLEGUARD IS REQUIRED, THE TURNOUT LENGTH IS TO THE TIE-IN POINT WITH EXISTING ROADWAY.

* * THE TURNOUT LENGTHS GIVEN FOR THE NHA SITE ACCESS ROADWAYS ASSUMES THE TURNOUTS WILL BE RECONSTRUCTED TO A POINT APPROXIMATELY 2.5 METERS BEHIND THE EXISTING NHA BOUNDARY FENCE. THIS LOCATION MAY BE ADJUSTED BY THE COR TO ENSURE A PROPER TIE-IN POINT WITH THE EXISTING ASPHALT ROADWAY SURFACING.

POINT ID	NORTHING	EASTING	ELEVATION	REMARKS
PRIMARY CONTROL				
GPS0	586537.519	751441.121	1713.822	BRASS CAP
GPS1	584999.738	750501.367	1739.992	BRASS CAP
GPS2	584401.349	749493.650	1750.882	BRASS CAP
GPS3	583313.898	748303.789	1763.916	BRASS CAP
GPS4	582307.188	746832.314	1783.347	BRASS CAP
GPS5	581256.006	745813.483	1804.951	BRASS CAP
GPS6	581019.496	744378.190	1811.290	BRASS CAP
GPS7	581086.473	742753.325	1810.600	BRASS CAP
GPS8	580891.616	741198.659	1841.811	BRASS CAP
GPS9	580645.035	739767.836	1874.272	BRASS CAP
GPS10	581014.083	738203.040	1927.970	BRASS CAP
GPS11A	581281.975	736488.701	2002.939	BRASS CAP
GPS12	581928.033	734956.721	2055.222	BRASS CAP
SECONDARY CONTROL				
SCP1	581583.850	734993.036	2059.788	CAPPED REBAR
SCP2	581355.998	734907.062	2064.310	CAPPED REBAR
SCP3	581209.326	734951.693	2061.677	CAPPED REBAR
SCP5	581188.970	735270.439	2045.303	CAPPED REBAR
SCP6	581210.410	735567.155	2029.687	CAPPED REBAR
SCP7	581347.581	735693.043	2020.245	CAPPED REBAR
SCP8	581405.271	735880.915	2013.718	CAPPED REBAR
SCP9	581365.028	736075.209	1997.266	CAPPED REBAR
SCP10	581246.301	736248.167	1995.177	CAPPED REBAR
SCP11	581351.089	736403.124	1990.050	CAPPED REBAR
SCP12 BC	581339.246	736584.762	1990.163	CAPPED REBAR
SCP13	581386.590	736804.554	1976.366	CAPPED REBAR
SCP14	581271.475	736981.825	1966.726	CAPPED REBAR
SCP15	581252.478	737186.065	1958.884	CAPPED REBAR
SCP16 TILT	581138.389	737359.597	1951.285	CAPPED REBAR
SCP17	581124.142	737552.372	1945.452	CAPPED REBAR
SCP18	581063.134	737753.159	1938.051	CAPPED REBAR
SCP19	580958.247	737930.995	1929.779	CAPPED REBAR
SCP20	580950.685	738136.202	1925.622	CAPPED REBAR
SCP21	580844.346	738315.890	1924.233	CAPPED REBAR
SCP22	580789.179	738504.045	1918.618	CAPPED REBAR
SCP23	580778.773	738712.954	1912.176	CAPPED REBAR
SCP24	580673.292	738894.447	1904.071	CAPPED REBAR
SCP25	580672.290	739094.260	1893.626	CAPPED REBAR
SCP26	580625.540	739295.774	1884.566	CAPPED REBAR
SCP27	580686.183	739488.213	1879.934	CAPPED REBAR
SCP28	580660.671	739699.483	1872.742	CAPPED REBAR
SCP29	580715.807	739887.823	1871.084	CAPPED REBAR
SCP 30A	581149.007	735028.171	2061.247	CAPPED REBAR
SCP30	580734.826	740110.769	1862.234	CAPPED REBAR
SCP31	580855.557	740318.837	1855.073	CAPPED REBAR
SCP32	580867.221	740539.335	1851.194	CAPPED REBAR
SCP33	580818.174	740764.247	1850.150	CAPPED REBAR
SCP34	580820.025	740969.855	1843.556	CAPPED REBAR
SCP35	580773.192	741182.635	1834.542	CAPPED REBAR
SCP36	580839.847	741371.045	1832.983	CAPPED REBAR
SCP37	580901.698	741579.937	1824.747	CAPPED REBAR
SCP38	580993.246	741765.543	1818.388	CAPPED REBAR
SCP39	580917.371	741981.122	1817.804	CAPPED REBAR
SCP40	581003.501	742187.061	1814.361	CAPPED REBAR
SCP41	580985.506	742401.968	1816.761	CAPPED REBAR
SCP42	581101.324	742601.835	1812.023	CAPPED REBAR
SCP43	581138.140	742790.521	1809.454	CAPPED REBAR
SCP44	581249.614	742960.638	1803.122	CAPPED REBAR
SCP45	581185.644	743160.978	1805.759	CAPPED REBAR
SCP46	581098.249	743350.817	1811.393	CAPPED REBAR
SCP47	580937.555	743476.244	1807.439	CAPPED REBAR
SCP48	580983.618	743682.948	1808.658	CAPPED REBAR
SCP49	581032.270	743876.649	1808.629	CAPPED REBAR
SCP50	581011.793	744066.324	1815.798	CAPPED REBAR
BRIDGE CONTROL				
ASCG-1	580906.419	741925.595	1818.336	CAPPED REBAR
ASCG-2	580977.612	741788.676	1818.828	CAPPED REBAR
ASCG-3	580979.389	741922.117	1815.511	CAPPED REBAR
ASCG-411	581164.064	734955.745	2062.665	CAPPED REBAR
SCHOOL CONTROL				
AP2-BC	581205.761	734944.621	2062.004	BRASS CAP
AP34	581398.269	734946.970	2062.943	BRASS CAP

NOTE:

STEPHEN M. LUJAN
NEW MEXICO
26338
10/27/23
PROFESSIONAL ENGINEER

NAVAJO DIVISION OF TRANSPORTATION

TURNOUT LOCATION & CONTROL TABLES

DRAWN BY: WCI	DATE: 10/23
DESIGNED BY: SML	DATE: 10/23
REVISED: --/--	BY: DESIGN 1
$FILES$	

NAVAJO D.O.T

10/19/2023 $TIME$

$FILES$

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	8	106

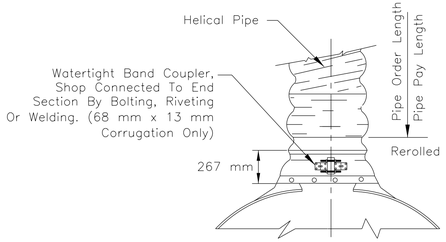
ESTIMATED STRUCTURES QUANTITIES

ITEM NO.				25112-2000	25110-0100	60201 - 0810	60201 - 0910	60201 - 1010	60201 - 1410	60201 - 1810	60202 - 0510	60302 - 2410	60210 - 0810	60210 - 0910	60210 -1010	60211 - 0910	60222 - 0450
				WIRE-ENCLOSED RIPRAP, CLASS 1	GROUTED RIPRAP, CLASS 1	610 mm CSPC - 2.01 mm THICKNESS 68 mm X 13mm CORRUGTATION	762 mm CSPC - 2.01 mm THICKNESS 68 mm x 13 mm CORRUGATION	914 mm CSPC - 2.01 mm THICKNESS 68 mm x 13 mm CORRUGATION	1524 mm CSPC - 2.01 mm THICKNESS 68 mm x 13 mm CORRUGATION	2134 mm CSPC - 2.01 mm THICKNESS 68 mm x 13 mm CORRUGATION	711 mm SPAN x 508 mm RISE CSPA - 2.01 mm THICKNESS 68 mm x 13 mm CORRUGATION	4309 mm SPAN x 2845 mm RISE CSPA - 2.01 mm THICKNESS 152 mm x 51 mm CORRUGATION	END SECTION FOR 610 mm CSPC 2.01 mm THICKNESS	END SECTION FOR 762 mm CSPC 2.01 mm THICKNESS	END SECTION FOR 914 mm CSPC 2.01 mm THICKNESS	END SECTION FOR 711 mm SPAN x 508 mm RISE CSPA 2.01 mm THICKNESS	2-BARREL 2.438m SPAN x 1.82m RISE PCCBC WITH WINGWALLS, HEADWALLS, CUTOFF WALLS & APRONS
MARK	STATION	STRUCTURE DESCRIPTION	SKEW NO.	m^3	m^3	m	m	m	m	m	m	m	Ea.	Ea.	Ea.	Ea.	m
	N5001 UNIT I																
1	0+168.63	1 - 711 mm x 508 mm x 21.95 m CSPA	122.36	10.09							21.95					2	
2	0+306.13	1 - 711 mm x 508 mm x 18.90 m CSPA	90.36	10.09							18.90					2	
3	0+395.98	1 - 711 mm x 508 mm x 19.51 m CSPA	84.03	10.09							19.51					2	
4*	0+638.35	TOHAALI WASH PCCBC - BRIDGE N241	120.00	26.97													22
5	1+143.29	1 - 610 mm x 39.63 m CSPC	157.63	9.77		39.63							2				
6	1+323.93	1 - 610 mm x 53.64 m CSPC	147.41	9.77		53.64							2				
7	1+963.05	1 - 2134 mm x 27.44 m CSPC	104.37		19.37					27.44							
T1	2+274.00	1 - 610 mm x 13.42 m CSPC, UNDER T/O RT.	N/A			13.42							2				
T2	2+374.80	1 - 610 mm x 13.42 m CSPC, UNDER T/O RT.	N/A			13.42							2				
8	2+355.09	1 - 2134 mm x 17.07 m CSPC	90.00	19.37						17.07							
T2	2+608.80	1 - 610 mm x 13.42 m CSPC, UNDER T/O LT.	N/A			13.42							2				
			UNIT I TOTAL:	96.16	19.37	133.53	0.00	0.00	0.00	44.51	60.36	0.00	10	0	0	6	22
			UNIT I USE:	**100**	**20**	**135**	**0**	**0**	**0**	**45**	**65**	**0**	**10**	**0**	**0**	**6**	**25**
	N5001 UNIT II																
9*	7+180.96	GRS IBS BRIDGE - N213	62.27														
10	7+322.38	2 - 610 mm x 28.67 m CSPCs	126.00	19.55		57.34							4				
11*	7+926.50	CAPTAIN TOM WASH - BRIDGE N214	90.00														
			UNIT II TOTAL:	19.55	0.00	57.34	0.00	0.00	0.00	0.00	0.00	0.00	4	0	0	0	0
			UNIT II USE:	**20**	**0**	**60**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**
	WORK REMOVED FROM PROJECT SCOPE (FOR INFORMATION ONLY)																
	3+643.34	3 - 914 mm x 40.85 m CSPCs	34.58					122.55							3		
	4+002.89	1 - 610 mm x 15.85 m CSPC	90.00			15.85							1				
	4+718.38	1 - 610 mm x 14.63 m CSPC	72.77			14.63							1				
	5+146.00	1 - 610 mm x 15.00 m CSPC, UNDER T/O RT.	N/A			15.00							2				
	5+192.46	2 - 762 mm x 35.59 m CSPCs	39.75				71.18							2			
	5+385.66	1 - 610 mm x 20.12 m CSPC	44.25			20.12							1				
	5+419.82	1 - 610 mm x 16.46 m CSPC	85.52			16.46							1				
	5+499.85	1 - 2134 mm x 18.29 m CSPC	89.34							18.29							
	5+624.64	1 - 610 mm x 15.00 m CSPC, UNDER T/O LT.	N/A			15.00							2				
	5+633.53	3 - 914 mm x 49.38 m CSPCs	147.60		42.41			148.14							3		
	6+335.13	3 - 762 mm x 26.83 m CSPCs	123.10				80.49								3		
	6+568.78	3 - 610 mm x 23.78 m CSPCs	112.90			71.34							3				
	8+393.28	3 - 914 mm x 25.00 m CSPCs	125.20					75.00							3		
	9+029.21	1 - 2134 mm x 30.48 m CSPC	92.90		19.35					30.48							
	9+079.80	1 - 610 mm x 15.00 m CSPC, UNDER T/O LT.	N/A			15.00							2				
	9+584.63	1 - 2134 mm x 30.48 m CSPC	99.10		19.50					30.48							
	10+408.58	2 - 1524 mm x 23.17 m CSPCs	104.40		21.04				46.34								

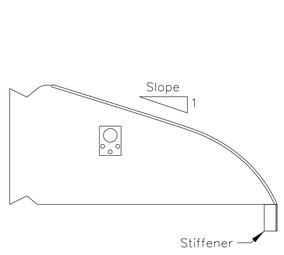
* SEE THE FOLLOWING SHEETS FOR BRIDGE QUANTITIES:
BRIDGE N241 - SHEET 53
BRIDGE N213 - SHEET 94
BRIDGE N214 - SHEET 74

GENERAL NOTES

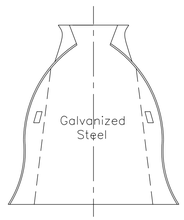
1. FOR MULTIPLE PIPE INSTALLATION OF ALL TYPES, A MINIMUM OF A 610 mm SPACING MEASURED ALONG THE HORIZONTAL BETWEEN FLARED END SECTIONS AT THEIR WIDEST CROSS SECTION SHALL BE USED.
2. ALL THREE (3) PIECE BODIES TO HAVE 2.77 mm THICKNESS SIDES AND 3.5mm THICKNESS CENTER PANELS. WIDTH OF CENTER PANELS TO BE GREATER THAN 20% OF THE PIPE PERIPHERY. MULTIPLE PANEL BODIES TO HAVE LAP SEAMS WHICH ARE TO BE TIGHTLY JOINED BY 9.53mmø GALVANIZED RIVETS OR BOLTS.
3. END SECTIONS FOR STEEL PIPE-ARCHES: FOR THE 1956 mm x 1321 mm AND 2108 mm x 1448 mm SIZES, REINFORCED EDGE TO BE SUPPLEMENTED BY 51 mm x 51 mm x 6.35 mm GALVANIZED ANGLES. THE ANGLES TO BE ATTACHED BY 9.53 mm DIA. GALVANIZED NUTS AND BOLTS. ANGLE REINFORCEMENT WILL BE PLACED UNDER THE CENTER PANEL SEAMS.
4. END SECTIONS FOR STEEL CIRCULAR PIPES: FOR 1524 mmø THRU 2134 mmø SIZES, REINFORCED EDGE TO BE SUPPLEMENTED WITH GALVANIZED STIFFENER ANGLES. THE ANGLES WILL BE 51 mm x 51 mm x 6.35 mm FOR 1524 mmø THRU 1829 mmø, AND 64 mm x 64 mm x 6.35 mm FOR 1981 mmø AND 2134 mmø. THE ANGLES TO BE ATTACHED BY 9.53 mmø GALVANIZED NUTS AND BOLTS.
5. WELDING SHALL NOT BE PERMITTED IN CONNECTING END SECTIONS TO CONNECTOR SECTIONS OR CONNECTOR SECTIONS TO PIPE.
6. TYPE NO. 1 STEEL END SECTION, CONNECT END SECTION WITH THREADED ROD WITH CONNECTOR LUG, FOR 610 mmø ROUND PIPE AND 711 mm x 508 mm CSPA.
7. TYPE NO. 2 STEEL END SECTION, CONNECT END SECTION WITH THREADED ROD WITH ROD HOLDER FOR 762mmø AND 914mmø ROUND PIPE AND 432mm x 330mm THRU 1448mm x 965mm CSPA.
8. TYPE NO. 3 STEEL END SECTION, THE CONNECTION INCLUDES 305mm OF THE PIPE LENGTH AS A CONNECTOR SECTION FOR PIPE ARCH SIZES 1626 mm x 1092 mm THRU 2108 mm x 1448 mm AND ROUND PIPE SIZES 1067 mmø THRU 2134 mmø. GAGES OF CONNECTOR SECTION SHALL BE THE SAME AS THE END SECTIONS AS MENTION ABOVE. THE CONNECTOR SECTION WILL BE ATTACHED TO THE END SECTION BY 9.5 mmø GALVANIZED RIVETS OR BOLTS APPROXIMATELY 152 mm CENTERS.
9. HELICALLY CORRUGATED PIPE, FOR TYPE NO. 5 AND TYPE NO. 3 THE DIMPLE BAND OR CORRUGATED PIPE CONNECTOR SECTION SHALL BE ATTACHED TO THE END SECTION BY 9.5 mmø GALVANIZED STEEL RIVETS OR BOLTS SPACED AT APPROXIMATELY 152 mm CENTERS.
10. TYPE NO. 1, TYPE NO. 2, AND TYPE NO. 3 CONNECTIONS MAY BE USED WITH WELDED SEAMS HELICALLY CORRUGATED PIPE WITH RE-ROLLED ENDS. RE-ROLLED ENDS SHALL INCLUDE A MINIMUM OF TWO (2) ANNULAR CORRUGATIONS OF THE SAME SIZE AS THE PIPE CORRUGATIONS.
11. PIPE BEDDING AND BACKFILL MATERIAL SHALL BE TESTED FOR RESISTIVITY AT EACH PIPE LOCATION. THE MINIMUM ACCEPTABLE RESISTIVITY TO BE PER SECTION 704 OF THE SUPPLEMENTAL SPECIFICATIONS.



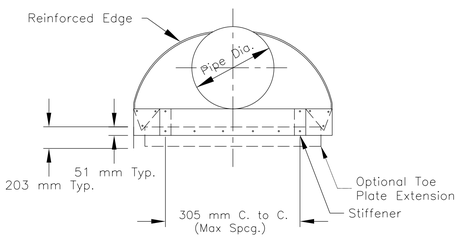
TYPE NO. 5
(SEE NOTE NO. 9)



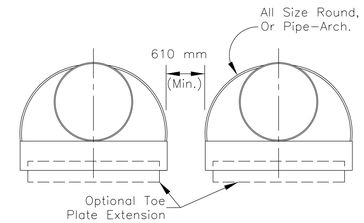
TYPICAL CROSS SECTION



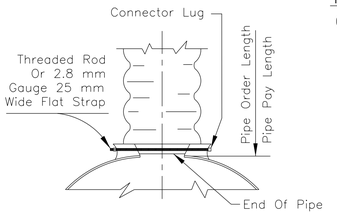
PLAN



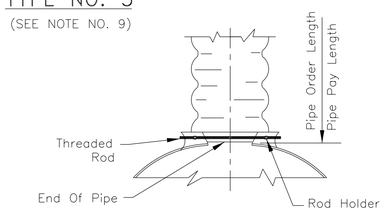
ELEVATION



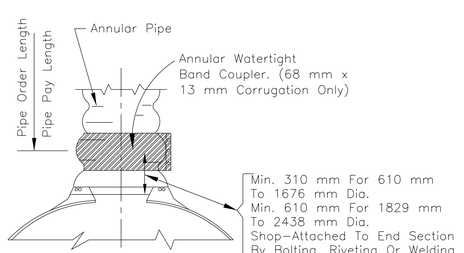
MULTIPLE INSTALLATION SPACING



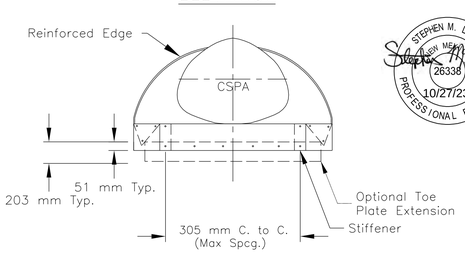
TYPE NO. 1
For 305 mm Thru 610 mm CSPC & 711 mm x 508 mm CSPA
(See Note No. 6)



TYPE NO. 2
For 762 mm & 914 mm CSP And 432 mm x 330 mm Thru 1448 mm x 965 mm CSPA Only
(See Note No. 7)



TYPE NO. 3



ELEVATION

NAVAJO DIVISION OF TRANSPORTATION

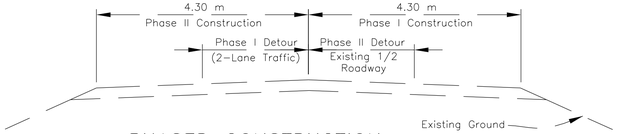
STRUCTURE QUANTITIES

DRAWN BY: WCI	DATE: 10/23
DESIGNED BY: SML	DATE: 10/23
REVISED: --/--	BY: DESIGN 1
$FILES$	

NAVAJO D.O.T

10/26/2023 $TIME$
$FILES$

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	9	106



PHASED CONSTRUCTION

1. THE CONTRACTOR MAY ELECT TO CONSTRUCT 1/2 THE NEW ROADWAY (UNDER PHASED CONSTRUCTION PLAN SHOWN) WHILE DETOURING TWO-WAY TRAFFIC ON THE OTHER (EXISTING) HALF. ONCE THE FIRST ½ OF ROADWAY IS BUILT UP TO THE NEW GRADES, THEN TRAFFIC SHALL BE DIRECTED TO THE NEW HALF OF ROADWAY WHILE THE OTHER (EXISTING) HALF IS CONSTRUCTED.

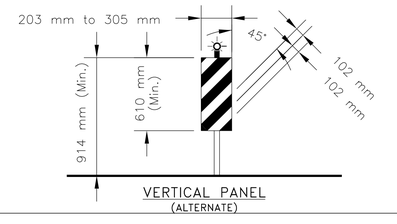
2. THIS PHASED CONSTRUCTION SHALL BE CONSIDERED INCIDENTAL TO THE T.C.P. SHOWN AND NO ADDITIONAL PAYMENT SHALL BE MADE.

3. THE CONTRACTOR'S CONSTRUCTION SCHEDULE, CONSTRUCTION SEQUENCING PLAN, AND STORM WATER POLLUTION PREVENTION PLAN SHALL REFLECT THIS PHASED CONSTRUCTION.

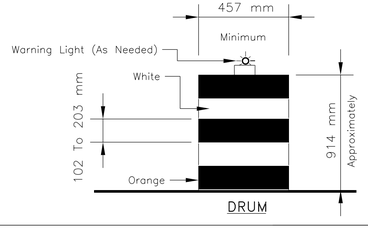
4. WHEN CONSTRUCTIING N241 TOHAALI WASH PCCBC, CONRACTOR MAY CLOSE N5001 FOR UP TO TWO WEEKS. CONTRACTOR SHALL NOTIFY PM NO LESS THAN 14 DAYS OF INTENTION TO CLOSE N5001.

5. ALL TRAFFIC CONTROL DEVICES SHALL BE CONSIDERDED INCIDENTAL AND INCLUDED IN BID ITEM 63501-0000 TEMPORARY TRAFFIC CONTROL. NO ADDITIONAL PAYMENT FOR INDIVIDUAL DEVICES SHALL BE MADE.

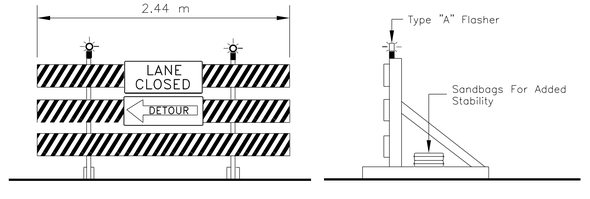
TRAFFIC THRU CONSTRUCTION ZONES



VERTICAL PANEL
(ALTERNATE)



DRUM



TYPE III BARRICADE

GENERAL NOTES

1. ALL TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH THE MUTCD MANUAL (LATEST EDITION AND AMENDMENTS) AND THE SUPPLEMENTAL SPECIFICATIONS FOR THIS PROJECT.

2. THE TRAFFIC CONTROL DETAILS SHOWN ARE ONLY A GUIDE AND REFLECTS GENERAL REQUIREMENTS. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR IMPLEMENTING HIS TCP IN ACCORDANCE WITH THIS PLAN AND THE MUTCD UNDER CONTRACT ITEM 63501-0000. ANY ADDITIONAL TRAFFIC CONTROL DEVICES CALLED FOR ON THE CONTRACTOR'S TCP WILL NOT BE MEASURED FOR PAYMENT BUT SHALL BE CONSIDERED INCIDENTAL TO CONTRACT ITEM 63501-0000. SEE SUPPLEMENTAL SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

3. SIGNS (G20-1, W20-1A & B, AND G20-2A) SHALL BE PLACED AT THE PROJECT LIMITS AND REMAIN IN PLACE THROUGH THE DURATION OF THE PROJECT.

4. FLAGGERS SHALL BE STATIONED LEFT & RIGHT AS SHOWN WHEN EQUIPMENT IS CROSSING OR WORKING WITHIN EXISTING ROADWAY PRISM OR AT DETOURS.

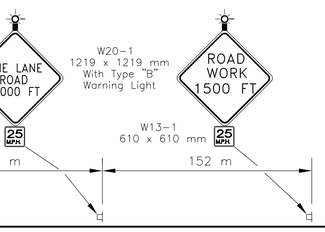
5. AT THE END OF EACH WORKING DAY, IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE A DRIVING SURFACE FREE OF OBSTRUCTIONS AS SHOWN ON THE PHASED CONSTRUCTION DETAIL. ACCESS TO ALL ADJOINING PROPERTIES AND BIA/COUNTY SYSTEM ROUTES SHALL BE MAINTAINED AT ALL TIMES DAY AND NIGHT.

6. ALL TRAFFIC CONTROL DEVICES (EXCEPT AT DETOUR ROAD LOCATIONS AND AS NOTED IN ABOVE NOTE #3) 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 IN PROGRESS.

7. DURING CONSTRUCTION OPERATIONS, TRAFFIC SHALL BE MOVED THROUGH THE WORK ZONE USING PILOT CARS (AS REQUIRED). APPLICABLE SIGNS AND OTHER ITEMS (TWO-WAY RADIO CONTACT) RELATED TO THE USE OF THE PILOT CARS SHALL BE CONSIDERED INCIDENTAL TO CONSTRUCTION AND NO PAYMENT OR MEASUREMENT SHALL BE MADE.

8. THE CONTRACTOR HAS THE OPTION TO EITHER USE DRUMS OR VERTICAL PANELS, BUT SHALL NOT USE A COMBINATION OF BOTH. NO TRAFFIC CONES ARE ALLOWED.

9. THE CONTRACTOR HAS THE OPTION TO UTILIZE DETOUR ROADS IN ACCORDANCE WITH THE MUTCD MANUAL IN CONJUNCTION WITH OR IN LIEU OF THE PHASE CONSTRUCTION PLAN SHOWN AND IN ACCORDANCE WITH SECTION 107 AND 204. THE COST OF ANY DETOUR ROADS (INCLUDING ALL DETOUR RELATED EARTHWORK AND MAINTENANCE) SHALL BE CONSIDERED INCIDENTAL TO THE TEMPORARY TRAFFIC CONTROL BID ITEMS. THE CONTRACTOR IS RESPONSIBLE FOR ALL NECESSARY PERMITS AND CLEARANCES FOR ANY DETOUR ROADS.



FILLET DETAIL

STEPHEN M. LUNA
NEW MEXICO
26338
PROFESSIONAL ENGINEER
10/27/23

NAVAJO DIVISION OF TRANSPORTATION

TEMPORARY TRAFFIC CONTROL DETAILS

DRAWN BY: WCI	DATE: 10/23
DESIGNED BY: SML	DATE: 10/23
REVISED: --/--	BY: DESIGN 1
$FILES$	

NAVAJO D.O.T

10/10/2023
10/10/2023
$FILES$

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	10	106

STA. 0+080.764, 8.46 m LT., EXISTING FIRE HYDRANT TO BE RELOCATED BY THE SCHOOL

STA. 0+146.232 To 0+172.045, 7.8 m To 5.9 m LT., REMOVE EXISTING MASONERY WALL

STA. 0+078.894 To 0+082.066, 7.4 m LT., REMOVE EXISTING BOLLARD PAD

STA. 0+085.162 To 0+146.1262, 5.9 m To 7.5 m LT., REMOVE EXISTING FENCE

STA. 0+083.353 To 0+085.162, 15.0 m To 5.9 m LT., REMOVE EXISTING MASONERY WALL

STA. 0+081.651, 6.60 m LT., EXISTING WATER VALVE TO BE RELOCATED BY THE SCHOOL

STA. 0+075.107, 23.4 m LT., REMOVE EXISTING CATTLEGUARD & FENCING

STA. 0+075.000, LT., REBUILD 7.0 m WIDE TURNOUT WITH 3-UNIT CATTLEGUARD

STA. 0+055.468, 4.9 m LT., EXISTING POWER POLE TO BE RELOCATED BY OTHERS

STA. 0+052.872 To 0+071.609, 3.9 m To 15.0 m LT., REMOVE EXISITING MASONERY WALL

STA. 0+189.659 To 0+320.324, 15.0 m To 15.0 m LT., REMOVE EXISTING FENCE

STA. 0+180.090, 22.1 m LT., REMOVE EXISTING CATTLEGUARD, WING BRACES & FENCING

STA. 0+182.53, LT., REBUILD 9.1 m WIDE TURNOUT WITH 4-UNIT CATTLEGUARD.

STA. 0+188.033 To 0+198.914, 23.2 m To 9.4 m LT., EXISTING UNDERGROUND TELEPHONE TO BE RELOCATED BY OTHERS

STA. 0+188.829, LT., INSTALL NEW PEDESTRIAN TYPE III GATE

STA. 0+197.040, 9.8 m LT., EXISTING POWER POLE & GUY LINE TO BE PROTECTED IN-PLACE

TOHAALI COMMUNITY SCHOOL →

SCHOOL SPEED LIMIT 15

STA. 0+187.708 To 0+338.080, 14.8 m To 5.7 m LT., CONSTRUCT 1.83m CONCRETE SIDEWALK & 0.6m CURB & GUTTER

1.83m sidewalk & 0.6m curb and gutter

STA. 0+361.414, EXISTING 100mm (4-INCH) WATERLINE CENTERLINE X-ING
DEPTH = 1.82m FROM EXISTING GRADE
SKEW NO. = 87.2497
TO BE PROTECTED IN PLACE

STA. 0+345.050, LT., REBUILD 4.5 m WIDE TURNOUT WITH 2-UNIT CATTLEGUARD.

STA. 0+340.000 To 0+380.000, 15.2 m LT., INSTALL TEMPORARY SAFETY FENCING FOR ARCHEOLOGY SITE - NM-H49-103. ALL CONSTRUCTION ACTIVITIES TO BE MONITORED BY NDOT. SEE SHT 4A FOR LOCATION.

STA. 0+352.080 To 0+471.900, 5.7 m To 5.7 m LT., CONSTRUCT 1.83m CONCRETE SIDEWALK & 0.6m CURB & GUTTER

C2
PI = 0+414.044
A = 19°17'23"Lt
R = 970.267
L = 326.657
T = 164.889
E = 13.911
N = 581419.570
E = 734924.923
SE = 1.2%

STOP

TOHAALI COMMUNITY ← SCHOOL

STA. 0+175.986, EXISTING OVERHEAD POWERLINE X-ING
ELEV. = 2066.893
SKEW NO. = 184.4138

STA. 0+190.000 To 0+240.000, RT., SEE SHEET 29 FOR THE GABION RETAINING WALL DETAILS

STA. 0+121.618, 4.5 m RT., EXISTING POWER POLE & GUY LINE TO BE RELOCATED BY OTHERS

STA. 0+121.269, EXISTING OVERHEAD POWERLINE X-ING
ELEV. = 2067.347
SKEW NO. = 85.7989

STA. 0+081.248, EXISTING OVERHEAD TELEPHONE X-ING
CONTRACTOR TO VERIFY 6.5m CLEARANCE
SKEW NO. = 93.6739

STA. 0+080.967, 4.1 m RT., EXISTING POWER & TELEPHONE POLE TO BE RELOCATED BY OTHERS

STA. 0+190.017 To 0+241.415, 7.2 m To 29.2 m RT., REMOVE & RESET EXISTING CHAINLINK FENCE TO NEW ROW LINE.
CONTRACTOR TO MAINTAIN FENCING AND SECURITY OF FISH HATCHERY DURING CONSTRUCTION.

NAVAJO NATION FISH HATCHERY →

STA. 0+320.000, RT., RECONSTRUCT 7.0 m WIDE TURNOUT WITH 3-UNIT CATTLEGUARD

STA. 0+345.105, EXISTING OVERHEAD POWERLINE X-ING
ELEV = 2072.70
SKEW NO. = 84.5721

STA. 0+364.063 To 0+479.211, 15.2 m To 12.8 m RT., EXISTING UNDERGROUND WATERLINE TO BE RELOCATED BY OTHERS

STA. 0+396.913 To 0+467.074, 15.4 m To 23.3 m RT., REMOVE EXISTING FENCE

C1
PI = 0+160.948
A = 48°29'43"Rt
R = 112.668
L = 95.362
T = 50.748
E = 10.901
N = 581667.124
E = 735001.843
SE = 5.6%

SCALE: Meters
0 10 20 30 40 50

DELINEATORS		TYPE 2	RIGHT-OF-WAY
TYPE "1a"	TYPE "1b"	OBJECT MARKER	MARKER
◻	◻	●	◔
		6	10

DRAINAGE STRUCTURES

MARK	STATION		SKEW No.	D.A. (Ha.)	REMARKS
1	0+168.63	1 - 711 mm x 508 mm x 21.95m CSPA	122.36	0.49	NEW CORRUGATED STEEL PIPE CULVERT WITH END SECTION AT INLET AND OUTLET
2	0+306.13	1 - 711 mm x 508 mm x 18.90m CSPA	90.36	8.11	NEW CSPCS WITH END SECTIONS AND DITCH BLOCK AT INLET
3	0+395.95	1 - 711 mm x 508 mm x 19.51m CSPA	84.03	5.27	NEW CORRUGATED STEEL PIPE CULVERT WITH END SECTION AT INLET AND OUTLET
1a	0+170.962	1 - BURIED mm x 10.95 m CSPC	117.45	N/A	EXISTING CSPC TO BE REMOVED, CLEANED, & STOCKPILED
2a	0+306.114	1 - 610 mm x 11.60 m CSPC	93.3	N/A	EXISTING CSPC TO BE REMOVED, CLEANED, & STOCKPILED
3a	0+399.316	1 - 610 mm x 12.31 m CSPC	82.1	N/A	EXISTING CSPC TO BE REMOVED, CLEANED, & STOCKPILED

BOP - N5001(1)1,2,&4 - Sta. 0+039.000
N19(1-1) - Sta. 19+581.912
BEGIN UNIT I

STA. 0+236.952 BM No. SCP1
16.299 LEFT CAPPED REBAR
ELEV. = 2059.788

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10/27/23
PROFESSIONAL ENGINEER

L= 52.00 m
K= 30
e= -0.11 m
SD= 427.51 m

L= 60.00 m
K= 22
e= 0.20 m
SD= 148.74 m

L= 60.00 m
K= 21
e= -0.22 m
SD= 270.34 m

EVT 0+039.000 Elev 2059.421
FG = 1.4573%
HI 0+082.476 Elev 2059.738
PVT 0+091.000 Elev 2059.726
FG = -0.2857%
PVC 0+140.000 Elev 2059.586
PVT 0+200.000 Elev 2060.224
FG = 2.4118%
PVC 0+310.000 Elev 2062.876
HI 0+359.697 Elev 2063.476
PVT 0+370.000 Elev 2063.450
FG = -0.5000%
PVI 0+065.000 Elev 2059.800
LO 0+146.355 Elev 2059.577
PVI 0+170.000 Elev 2059.500
PVI 0+340.000 Elev 2063.600

STA. 0+022.361, EXISTING POWERLINE X-ING
CLEARANCE = 8.179 m
SKEW NO. = 85.7989

STA. 0+121.618, FINISH POWERLINE X-ING
CLEARANCE = 7.714 m
SKEW NO. = 85.7989

STA. 0+175.986, FINISH POWERLINE X-ING
CLEARANCE = 7.221 m
SKEW NO. = 184.4138

STA. 0+345.105, FINISH POWERLINE X-ING
CLEARANCE = 9.275 m
SKEW NO. = 84.5721

STA. 0+361.41, EXISTING 50mm WATERLINE X-ING
DEPTH=1.82M EXIST. GRND
SKEW NO. = 87.2497

B1
101.6 mm Asphalt
177.6 mm Base Course
101.6 mm Black
0.5 m Clayey Sand Silt

B-2
76.2 mm Asphalt
177.6 mm Base Course
76.2 mm Black
0.5 m Sandy Silty Clay

B-3
76.2 mm Asphalt
177.8 mm Base Course
50.8 mm Black
0.5 m Sandy Silty Clay

Sta. 0+081.248, EXISTING OVERHEAD TELEPHONELINE X-ING
CLEARANCE = UNKNOWN
SKEW NO. = 93.6739

STA. 0+168.63, INSTALL NEW
1- 711mm x 508mm x 21.95m CSPA
INVERT ELEV.= 2057.771
Q_{50} = 0.0030 m^3/sec

STA. 0+306.13, INSTALL NEW
1- 711mm x 508mm x 18.90m CSPA
INVERT ELEV.= 2060.812
Q_{50} = 0.039 m^3/sec

STA. 0+395.98, INSTALL NEW
1- 711mm x 508mm x 19.51m CSPA
INVERT ELEV.= 2061.083
Q_{50} = 0.026 m^3/sec

2088 2084 2080 2076 2072 2068 2064 2060 2056 2052 2048 2044 2040

0+000 0+050 0+100 0+150 0+200 0+250 0+300 0+350 0+400

$FILES$

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	11	106

SCALE: Meters
0 10 20 30 40 50

C2
PI = 0+414.044
Δ = 19°17'23" Lt
R = 970.267
L = 326.657
T = 164.889
E = 13.911
N = 581419.570
E = 734924.923
SE = -1.20%

C3
PI = 0+667.952
Δ = 88°42'15" Lt
R = 82
L = 126.951
T = 80.166
E = 32.676
N = 581162.703
E = 734934.020
SE = -4.0%

NM-H-49-097

STA. 0+469.350, C/L EXISTING UNDERGROUND WATERLINE CROSSING TO BE PROTECTED IN PLACE

STA. 0+472.783 To 0+633.05, 15.2 m To 7.6 m LT., REMOVE EXISTING FENCE

STA. 0+566.934, EXISTING OVERHEAD POWERLINE X-ING ELEV. = 2069.591 SKEW NO. = 90.657

STA. 0+487.019 To 0+487.237, 15.2 m To 13.5 m LT., EXISTING TELEPHONE JUNCTION BOX & UNDERGROUND TELEPHONE TO BE RELOCATED BY OTHERS

STA. 0+481.43, LT., REBUILD 9.5 m WIDE TURNOUT WITH NEW 4-UNIT CATTLEGUARD WITH TYPE III PEDESTRIAN GATE. TIE-IN NEW PCC CURB, GUTTER & SIDEWALK ON EACH SIDE TO EXISTING CURBING

STA. 0+481.632, 13.9 m LT., REMOVE EXISTING CATTLEGUARD & FENCING

STA. 0+678.522 To 0+988.997, 9.0 m To 15.0 m LT., REMOVE EXISTING FENCE

STA. 0+660.44, 1.0 m LT., EXISTING TELEPHONE JUNCTION BOX TO BE RELOCATED BY OTHERS

STA. 0+624.35, 1.80 m LT., EXISTING OVERHEAD TELEPHONE POLE/LINE TO BE RELOCATED BY OTHERS

STA. 0+600.000, LT., INSTALL TYPE III PEDESTRIAN GATE AT ROW

STA. 0+366.568, TO 0+479.211 15.2m TO 12.8m RT. EXISTING UNDERGROUND WATERLINE TO BE PROTECTED IN PLACE

STA. 0+496.000, RT., RECONSTRUCT 7.0 m WIDE TURNOUT WITH 4-UNIT CATTLEGUARD. RUN DITCH THROUGH CATTLEGUARD.

STA. 0+504.892 To 0+623.500 8.9 m To 5.6 m RT., REMOVE EXISTING MANMADE PIPE FENCE AND SALVAGE TO PROPERTY OWNER

STA. 0+792.313, RT., REBUILD 9.1 m WIDE TURNOUT WITH 4-UNIT CATTLEGUARD

STA. 0+670.000 To 0+780.000, 2.3 m RT., INSTALL TEMPORARY SAFETY FENCING AT ROW LINE BEFORE ALL CONSTRUCTION ACTIVITIES BEGIN WITH MONITORING BY NDOT ARCHAEOLOGIST SITE NM-H-49-098. SEE SHT 4A FOR LOCATIONS.

STA. 0+712.46 CENTERLINE, PLACE PEDESTRIAN CROSSWALK AND INSTALL 1-TYPE III GATE ON RIGHT SIDE

STA. 0+696.500, 19.588m RT., REBUILD 4.5 m WIDE TURNOUT WITH 3-UNIT CATTLEGUARD

STA. 0+674.000, 19.58m RT., REBUILD 4.5 m WIDE TURNOUT WITH 2-UNIT CATTLEGUARD

DELINEATORS		RIGHT-OF-WAY MARKER
TYPE "1a"	TYPE "1b"	
◘	◘	◕
		16

DRAINAGE STRUCTURES

MARK	STATION		SKEW No.	D.A. (Ha.)	REMARKS
4	0+638.354	TOHAALI WASH PCCBC BRIDGE N241	120.00		
4a	0+521.104	1 457 mm x 12.29m CSPC	90.83	N/A	EXISTING CSPC TO BE REMOVED, CLEANED, & STOCKPILED
5a	0+669.75	1- BURIED mm x 12.91m CSPC	108.99	N/A	EXISTING CSPC TO BE REMOVED, CLEANED, & STOCKPILED
6a	0+686.24	1- BURIED mm x 19.87m CSPC	126.08	N/A	EXISTING CSPC TO BE REMOVED, CLEANED, & STOCKPILED
7a	0+796.85	1- 457 mm x 26.60m CSPC	N/A	N/A	EXISTING CSPC UNDER T/O TO BE REMOVED, CLEANED, & STOCKPILED

STA. 0+636.84, CENTERLINE, REMOVE EXISTING MILITARY BRIDGE & ALL COMPONENTS

STA. 0+649.442, RT. PROTECT EXISTING WATER TANK IN PLACE

STA. 0+648.329 TO STA. 1+100.00 RT PROTECT EXISTING WATERLINES IN PLACE

STA. 0+629.627 BM No. AP2-BC
7.368 LEFT BRASS CAP
ELEV. = 2062.004

STA. 0+630.222 BM No. SCP3
15.275 LEFT CAPPED REBAR
ELEV. = 2061.677

STA. 0+667.681 BM No. ASCG-411
10.254 RIGHT CAPPED REBAR
ELEV. = 2062.665

STA. 0+735.950 BM No. SCP 30A
14.899 RIGHT CAPPED REBAR
ELEV. = 2061.247

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10/27/23
PROFESSIONAL ENGINEER

STA. 0+430.876 BM No. AP34
10.593 LEFT BRASS CAP
ELEV. = 2062.94

STA. 0+476.244 BM No. SCP2
25.337 RIGHT CAPPED REBAR
ELEV. = 2064.310

STA. 0+566.934, FINISH POWERLINE X-ING
CLEARANCE = 7.121 m
SKEW NO. = 90.657

FG = -0.5000%

FG = -0.6712%

FG = -0.5000%

FG = -5.3696%

B-4
50.8 mm Asphalt
0.9492 m Sandy Silty Clay

B-5
50.8 mm Millings
0.9492 m Cloyey Sand Silt

PVI 0+540.000
Elev 2062.600

PVI 0+620.000
Elev 2062.063

EVT 0+636.064
Elev 2061.983

EVT 0+642.007
Elev 2061.953

PVC 0+666.390
Elev 2061.831

L= 45.00 m
K= 9
e= -0.27 m
SD= 166.21 m

PVT 0+711.390
Elev 2060.510

PVI 0+688.890
Elev 2061.719

STA. 0+638.350
INSTALL NEW PCCBC
SEE SHEETS 66 & 73
FOR DETAILS

$TIME$ 10/16/2023 $FILES$

2076 2072 2068 2064 2060 2056 2052 2048 2044 2040 2036

0+400 0+450 0+500 0+550 0+600 0+650 0+700 0+750 0+800

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	12	106

STA. 0+678.522 To 0+989.110, 9.0 m To 15.2 m LT., REMOVE EXISTING FENCE

STA. 0+874.00, 5.73 m LT., REMOVE EXISTING TURNOUT AND GATE

C4
PI = 0+931.591
A = 12°09'10" Lt
R = 582.280
L = 123.504
T = 61.984
E = 3.290
N = 581166.501
E = 735231.016
SE = -1.90%

STA. 1+003.55 TO STA. 1+129.00 LT., OBLITERATE EXISTING DIRT ROAD WITHIN THE NEW RIGHT-OF-WAY USING METHOD 2. SEE SHEET 4A FOR DETAILS

STA. 0+933.320, C/L, EXISTING 50mm (2-INCH) UNDERGROUND WATERLINE X-ING DEPTH = UNKNOWN, SKEW NO. = 79.64
CONTRACTOR TO VERIFY STEEL CASING LIMITS
CONTRACTOR TO RELOCATE WITH 300MM (12-INCH) STEEL CASING PER SHEET 73 IF EXISTING CASING DOES NOT EXTEND PAST PROPOSED ROADWAY DITCH LINES

STA. 1+190.000 To 1+280.000, 15.2 m LT., INSTALL TEMPORARY SAFETY FENCE AT ROW LINE BEFORE ALL CONSTRUCTION ACTIVITIES BEGIN WITH MONITORING BY NDOT ARCHAEOLOGIST SITE HP-5001-E11 & NM-H-49-099. SEE SHT 4A FOR LOCATIONS

C5
PI = 1+309.228
A = 23°12'26" Lt
R = 411.023
L = 166.483
T = 84.398
E = 8.576
N = 581250.818
E = 735599.598
SE = -2.60%

STA. 1+472.750, 4.6 m LT., EXISTING TELEPHONE JUNCTION BOX TO BE REMOVED AND RESET BY OTHERS

STA. 1+588.205, C/L, EXISTING OVERHEAD POWER X-ING
ELEV. = 2025.208
SKEW NO. = 56.413

STA. 0+924.588, LT., REBUILD 4.5 m WIDE TURNOUT WITH 2-UNIT CATTLEGUARD

STA. 1+132.600, LT., REBUILD 7.0 m WIDE TURNOUT WITH 3-UNIT CATTLEGUARD

STA. 1+123.116, C/L, EXISTING OVERHEAD POWERLINE X-ING
ELEV. = 2046.473
SKEW NO. = 127.155

STA. 1+375.000 To 1+540.000, LT., OBLITERATE EXISTING DIRT ROAD WITHIN THE NEW RIGHT-OF-WAY USING METHOD 2. SEE SHEET 4A DETAILS

STA. 1+360.431 To 1+472.750, 13.6 m To 4.6 m RT./LT., EXISTING UNDERGROUND TELEPHONE TO BE RELOCATED BY OTHERS

PROPOSED WATERLINE RELOCATION CONNECT TO EXISTING

PROPOSED WATERLINE RELOCATION CONNECT TO EXISTING

STA. 0+810.046, RT., WATER TANK TO REMAIN IN PLACE (OUTSIDE OF ROW)

STA. 0+820.822, 21.6 m RT., EXISTING WATER VALVE PROTECT IN PLACE

STA. 0+907.685, TO STA 1+104.957, 15.0m RT EXISTING UNDERGROUND WATERLINE TO BE PROTECTED IN PLACE

STA. 0+923.000, RT., REBUILD 7.0 m WIDE TURNOUT WITH 3-UNIT CATTLEGUARD DRAIN THRU CATTLEGUARD

STA. 0+986.080, 7.80 m RT., EXISTING WATERLINE VAULT RAISE TO GRADE

STA. 1+152.924 C/L, REMOVE EXISTING CONCRETE HEAD & WING WALLS

STA. 1+180.600, RT., REBUILD 7.0 m WIDE TURNOUT WITH 3-UNIT CATTLEGUARD

STA. 1+360.430, 13.6 m RT., EXISTING TELEPHONE JUNCTION BOX TO BE REMOVED AND RESET BY OTHERS

STA. 1+466.600, RT., REBUILD 4.5 m WIDE TURNOUT WITH 2-UNIT CATTLEGUARD

C6
PI = 1+660.832
A = 67°12'14" Rt
R = 145.000
L = 170.075
T = 96.345
E = 29.090
N = 581459.308
E = 735885.586
SE = 5.0%

STEPHEN M. LUJAN
NEW MEXICO
26338
09/04/24
PROFESSIONAL ENGINEER

SCALE: Meters
0 20 40 60 80 100

DELINEATORS		TYPE 2	RIGHT-OF-WAY
TYPE "1a"	TYPE "1b"	OBJECT MARKER	MARKER
		4	12

DRAINAGE STRUCTURES

MARK	STATION		SKEW No.	D.A. (Ha.)	REMARKS
5	1+143.29	1 – 610 mm x 39.63 m CSPC	157.63	37.38	NEW CORRUGATED STEEL PIPE CULVERT WITH END SECTION AT INLET AND OUTLET
6	1+323.93	1 – 610 mm x 53.64 m CSPC	147.41	5.42	NEW CORRUGATED STEEL PIPE CULVERT WITH END SECTION AT INLET AND OUTLET
8a	1+152.12	1 – 1829 mm x 19.33 m CSPC	149.61	N/A	EXISTING CSPC TO BE REMOVED, CLEANED, & STOCKPILED
9a	1+366.21	1 – 610 mm x 9.16 m CSPC	N/A	N/A	EXISTING CSPC TO BE REMOVED, CLEANED, & STOCKPILED

STA. 0+981.557 BM No. SCP5
12.81 LEFT CAPPED REBAR
ELEV. = 2045.303

STA. 1+272.697 BM No. SCP6
34.311 RIGHT CAPPED REBAR
ELEV. = 2029.687

STA. 1+446.838 BM No. SCP7
23.143 LEFT CAPPED REBAR
ELEV. = 2020.245

B-6
50.8 mm Millings
0.9492 m Clayey Sand Silt

STA. 0+933.830, EXISTING 50mm WATERLINE X-ING
DEPTH = UNKNOWN
SKEW NO. = 79.64

B-7
9.52 mm Trace Gravel
0.9905 m Silty Sand

STA. 1+123.416, FINISH POWERLINE X-ING
CLEARANCE = 7.247 m
SKEW NO. = 127.155

FG = -5.3696%

STA. 1+143.29, INSTALL NEW
1- 610 mm x 39.63 m CSPC
INVERT ELEV.= 2035.263
Q_{50} = 0.120 m³/sec

B-8
12.7 mm Trace Gravel
0.9873 m Sandy Clay

STA. 1+323.93, INSTALL NEW
1- 610 mm x 53.64 m CSPC
INVERT ELEV.= 2023.693
Q_{50} = 0.021 m³/sec

STA. 1+441.964, EXISTING UNDERGROUND TELEPHONELINE X-ING
DEPTH = UNKNOWN
SKEW NO. = 171.4623

STA. 1+588.205, FINISH POWERLINE X-ING
CLEARANCE = 11.515 m
SKEW NO. = 56.413

B-9
25.4 mm Trace Gravel
0.9746 m Clayey Sand

$TIME$
7/2/2024
$FILES$

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	13	106

STA. 1+733.000 To 1+842.000, LT., OBLITERATE EXISTING DIRT ROAD WITHIN THE NEW RIGHT-OF-WAY USING METHOD 2. SEE SHEET 4A FOR DETAILS

STA. 1+779.610, C/L, EXISTING OVERHEAD POWERLINE X-ING
CONTRACTOR TO VERIFY 6.5m CLEARANCE
SKEW NO. = 151.983

STA. 1+797.357, C/L, EXISTING 100mm (4-INCH) UNDERGROUND WATERLINE X-ING
DEPTH = UNKNOWN, SKEW NO. = 153.564
TO BE RELOCATED WITH 300mm (12-INCH) STEEL CASING
SEE SHEET 73 FOR DETAILS

STA. 1+830.000, 50 m LT., EXISTING CONCRETE PRV VAULT TO BE PROTECTED IN PLACE

STA. 1+934.891, LT., RECONSTRUCT 4.5 m WIDE TURNOUT WITH 2-UNIT CATTLEGUARD

C7
PI = 2+035.627
A = 69°09'00" Lt
R = 175.00
L = 211.207
T = 120.612
E = 37.538
N = 581253.966
E = 736225.835
SE = -4.50%

STA. 2+213.540, 5.4 m RT., EXISTING POWER & TELEPHONE POLE TO BE RELOCATED BY OTHERS

STA. 2+143.721, 12.3 m LT., EXISTING POWER POLE TO BE RELOCATED BY OTHERS

STA. 2+138.697, C/L, EXISTING OVERHEAD POWERLINE X-ING
ELEV. = 2002.701
SKEW NO. = 113.337

STA. 2+150.000 To 2+195.000, 15.2 m LT., INSTALL TEMPORARY SAFETY FENCE AT ROW LINE BEFORE ALL CONSTRUCTION ACTIVITIES BEGIN WITH MONITORING BY NDOT ARCHAEOLOGIST SITE NM-H-49-100-B. SEE SHT 4A FOR LOCATIONS.

STA. 2+274.500, LT., RECONSTRUCT 4.5 m WIDE TURNOUT WITH 2-UNIT CATTLEGUARD. INSTALL NEW DRAINAGE PIPE THROUGH CATTLE GUARD

PROPOSED WATERLINE RELOCATION CONNECT TO EXISTING

C6
PI = 1+660.832
A = 67°12'14" Rt
R = 145.00
L = 170.075
T = 96.345
E = 29.090
N = 581459.308
E = 735885.586
SE = 5.0%

C8
PI = 2+212.807
A = 36°25'09" Rt
R = 252.00
L = 160.180
T = 82.900
E = 13.286
N = 581381.639
E = 736389.022
SE = 6.0

STA. 2+219.57, C/L, EXISTING OVERHEAD POWERLINE X-ING
ELEV. = 1996.716
SKEW NO. = 137.655

STA. 2+216.67, C/L, EXISTING 50mm (2-INCH) UNDERGROUND WATERLINE (2) X-ING
DEPTH = 1.68m BELOW EXISTING GRADE, SKEW NO.=92.6485
CONTRACTOR TO VERIFY STEEL CASING LIMITS
CONTRACTOR TO RELOCATE WITH 300mm (12-INCH) CASING PER SHEET 73 IF EXISTING CASING DOES NOT EXTEND PAST PROPOSED ROADWAY DITCH LINES

STA. 2+148.48 To 2+213.325, 6.1 m To 3.6 m RT., EXISTING UNDERGROUND TELEPHONE LINE RELOCATED BY OTHERS

STA. 2+213.79, 6.1 m RT., EXISTING TELEPHONE JUNCTION BOX TO BE REMOVED AND RESET BY OTHERS

STA. 2+201.905, C/L, EXISTING OVERHEAD POWERLINE X-ING
ELEV. = 1998.176
SKEW NO. = 24.650

STA. 2+070.000 To 2+150.000, 15.2 m RT., INSTALL TEMPORARY SAFETY FENCE AT ROW LINE BEFORE ALL CONSTRUCTION ACTIVITIES BEGIN WITH MONITORING BY NDOT ARCHAEOLOGIST SITE NM-H-99-100-A. SEE SHT 4A FOR LOCATIONS.

STA. 2+149.458, 8.7 m RT., EXISTING TELEPHONE JUNCTION BOX TO BE REMOVED AND RESET BY OTHERS

STA. 2+001.369, RT., RECONSTRUCT 4.5 m WIDE TURNOUT WITH 2-UNIT CATTLEGUARD

SCP8 SCP9 SCP10 SCP11 SCP12 BC

SPEED LIMIT 25 SPEED LIMIT 45

STEPHEN M. LUJAN NEW MEXICO 26338 PROFESSIONAL ENGINEER 09/04/24

DRAINAGE STRUCTURES

MARK	STATION		SKEW No.	D.A. (Ha.)	REMARKS
7	1+963.04	1 – 2134 mm x 27.44 m CSPC	104.37	578.42	NEW CSPC W CONCRETE SLOPE PAVING BLANKET & GROUTED RIPRAP @ OUTLET
T1	2+274.00	1 – 610 mm x 13.42 m CSPC, UNDER T/O LT.	N/A	N/A	NEW CSPC UNDER TURNOUT LEFT WITH END SECTIONS AT INLET & OUTLET
8	2+355.09	1 – 2134 mm x 17.07 m CSPC	90.0		NEW DUAL PURPOSE SPBC WITH EARTHEN BERMS AT INLET & OUTLET
T2	2+374.80	1 – 610 mm x 13.42 m CSPC, UNDER T/O RT.	N/A	N/A	NEW CSPC UNDER TURNOUT RIGHT WITH END SECTIONS AT INLET & OUTLET
10a	1+963.38	1 – 1829 mm x 22.83 m CSPC	103.79	N/A	EXISTING CSPC TO BE REMOVED, CLEANED, & STOCKPILED

DELINEATORS		TYPE 2	RIGHT-OF-WAY
TYPE "1a"	TYPE "1b"	OBJECT MARKER	MARKER
⊡	⊡	●	◔
0	0	4	13

SCALE: Meters
0 20 40 60 80 100

STA. 1+660.892 BM No. SCP8
24.373 RIGHT CAPPED REBAR
ELEV. = 2013.718

STA. 1+855.528 BM No. SCP9
31.82 LEFT CAPPED REBAR
ELEV. = 1997.266

STA. 2+052.567 BM No. SCP10
26.379 RIGHT CAPPED REBAR
ELEV. = 1995.177

STA. 2+238.620 BM No. SCP11
18.741 RIGHT CAPPED REBAR
ELEV. = 1990.050

STA. 2+329.208 BM No. GPS11A
102.441 RIGHT BRASS CAP
ELEV. = 2002.939

STA. 1+779.610, FINISH POWERLINE X-ING
CLEARANCE = UNKNOWN
SKEW NO. = 151.983

B-10
1 m Sandy Clay

FG = -5.3696%

STA. 1+797.357, EXISTING 100 mm WATERLINE X-ING
DEPTH = UNKNOWN
SKEW NO. = 153.564

PVC 1+941.000 Elev 1994.485
L= 100.00 m
K= 19
e= 0.65 m
SD= 92.71 m
PVT 2+041.000 Elev 1991.701

FG = -0.1983%

PVC 2+075.000 Elev 1991.633
L= 50.00 m
K= 54
e= -0.06 m
SD= 776.89 m
PVT 2+125.000 Elev 1991.302

FG = -1.1290%

PVC 2+327.000 Elev 1989.021
L= 110.00 m
K= 27
e= -0.57 m
SD= 224.43 m
PVI 2+382.000 Elev 1988.400

PVI 1+991.000 Elev 1991.800

PVI 2+100.000 Elev 1991.584

STA. 2+138.700, FINISH POWERLINE X-ING
CLEARANCE =11.729 m
SKEW NO. = 113.337

STA. 2+201.950, FINISH POWERLINE X-ING
CLEARANCE =7.830 m
SKEW NO. = 24.650

STA. 2+219.570, FINISH POWERLINE X-ING
CLEARANCE =6.497 m
SKEW NO. = 137.665

B-11
31.75 mm Trace Gravel
0.9683 m Clayey Sand

B-12
25.4 mm Trace Gravel
0.9746 m Clayey Sand

B-13
25.4 mm Trace Gravel
177.8 mm Cobbles
0.7968 m Clayey Sand

STA. 1+963.04, INSTALL NEW
1-2134 mm x 27.44 m CSPC
INVERT ELEV.= 1987.811
Q_{50}= 0.935 ^{3}m /sec

STA. 2+216.659, EXISITING 50 mm WATERLINE X-ING
DEPTH=1.68m BELOW EX.
SKEW NO. = 92.6485

STA. 2+355.09, INSTALL NEW
1-2134 mm x 17.07 m CSPC
INVERT ELEV.=1985.594
STOCK PASS

2023 2020 2015 2010 2005 2000 1995 1990 1985 1980 1975

1+600 1+700 1+800 1+900 2+000 2+100 2+200 2+300 2+400

$TIME$
7/2/2024
$FILE$

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	14	106

STA. 2+402.801, LT., RECONSTRUCT 4.5 m WIDE TURNOUT WITH 2-UNIT CATTLEGUARD

STA. 2+608.801, LT., RECONSTRUCT 4.5 m WIDE TURNOUT WITH 2-UNIT CATTLEGUARD. INSTALL NEW PIPE UNDER TURNOUT

STA. 2+647.080, C/L, EXISTING OVERHEAD POWERLINE CROSSING
ELEV. = 1980.506
SKEW NO. = 105.065°

STA. 2+800.000 TO STA. 2+915.000 TRANSITION ROADWAY GRADE & WIDTH TO MATCH EXISTING

STA. 3+068.514, C/L, EXISTING OVERHEAD POWERLINE CROSSING
ELEV. = 1963.963
SKEW NO. = 98.8243

STA. 3+074.801, LT., RECONSTRUCT 4.5 m WIDE TURNOUT WITH 2-UNIT CATTLEGUARD. INSTALL NEW PIPE UNDER TURNOUT

ML Sta 2+400.000

ML Sta 3+200.000

SCP12 BC

SCP13

SCP14

SCP15

T3

T4

C9
PI = 2+539.493
A = 21°01'59"Rt
R = 280.070
L = 102.813
T = 51.992
E = 4.785
N = 581391.030
E = 736721.196

STA. 2+820.000, RT., CONSTRUCT 20 m FURROW DITCH

STA. 2+908.801, RT., RECONSTRUCT 4.5 m WIDE TURNOUT WITH TYPE I GATE ONLY

STA. 3+086.731, C/L, EXISTING UNDERGROUND WATERLINE CROSSING
DEPTH = 1.5m FROM EXISTING GROUND, SKEW NO. = 97.4849
CONTRACTOR TO VERIFY STEEL CASING LIMITS
CONTRACTOR TO RELOCATE WITH 300mm (12-INCH) CASING PER SHEET 7A IF EXISTING CASING DOES NOT EXTEND PAST PROPOSED ROADWAY DITCH LINES

STA. 2+418.05, 4.5 m RT., EXISTING TELEPHONE JUNCTION BOX TO BE REMOVED AND RESET BY OTHERS

STA. 2+422.811 To 2+426.401, 12.6 m To 12.2 m RT., PROTECT EXISTING BUILDING IN PLACE

STA. 2+441.338 To 2+459.212, RT., INSTALL TEMPORARY SAFETY FENCE AT ROW LINE BEFORE ALL CONSTRUCTION ACTIVITIES BEGIN WITH MONITORING BY NNHPD. ARCHAEOLOGY SITE NM-H-50-132

STA. 2+374.801, RT., RECONSTRUCT 4.5 m WIDE TURNOUT WITH 2-UNIT CATTLEGUARD. INSTALL NEW PIPE UNDER TURNONT

STA. 2+800.000
END UNIT I - FULL CONSTRUCTION

STA. 2+869.590, C/L, EXISTING 3 LINE HIGH VOLTAGE POWERLINE CROSSING
ELEV. = 1982.904
SKEW NO. = 105.9126

STA. 2+907.732, C/L, EXISTING 3 LINE HIGH VOLTAGE POWERLINE CROSSING
ELEV. = 1981.834
SKEW NO. = 105.6317

STA. 2+640.000 To 2+720.000, 15.2 m RT., INSTALL TEMPORARY SAFETY FENCE AT ROW LINE BEFORE ALL CONSTRUCTION ACTIVITIES BEGIN WITH MONITORING BY NDOT ARCHAEOLOGIST SITE NM-H-50-133. SEE SHT 4A FOR LOCATIONS.

WORK REMOVED FROM PROJECT SCOPE

STEPHEN M. LUNA
NEW MEXICO
26338
10/27/23
PROFESSIONAL ENGINEER

SCALE: Meters
0 20 40 60 80 100

DELINEATORS		RIGHT-OF-WAY MARKER
TYPE "1a"	TYPE "1b"	
◻	◻	◔
0	0	4

DRAINAGE STRUCTURES

MARK	STATION		SKEW No.	D.A. (Ha.)	REMARKS
T3	2+608.80	1 - 610 mm x 13.42 m CSPC, UNDER T/O LT.	N/A	N/A	NEW CSPC UNDER TURNOUT LEFT WITH END SECTIONS AT INLET & OUTLET
~~T4~~	~~3+074.80~~	~~1 - 610 mm x 13.42 m CSPC, UNDER T/O LT.~~	~~N/A~~	~~N/A~~	~~NEW CSPC UNDER TURNOUT LEFT WITH END SECTIONS AT INLET & OUTLET~~

L= 110.00 m
K= 27
e= -0.57 m
SD= 224.43 m
PVT 2+437.000
Elev 1985.507

STA. 2+426.849 BM No. SCP12 BC
47.908 RIGHT CAPPED REBAR
ELEV. = 1990.163

STA. 2+643.616 BM No. SCP13
23.519 LEFT CAPPED REBAR
ELEV. = 1976.366

STA. 2+849.071 BM No. SCP14
26.129 RIGHT CAPPED REBAR
ELEV. = 1966.726

STA. 3+048.013 BM No. SCP15
23.841 LEFT CAPPED REBAR
ELEV. = 1958.884

L= 100.00 m
K= 66
e= 0.19 m
SD= 260.61 m

PVC 2+650.000
Elev 1974.305

PVT 2+750.000
Elev 1969.805

PVI 2+700.000
Elev 1971.675

FG = -5.2595%

FG = -3.7398%

Sta. 2+418.050, Existing Underground Telephoneline X-ing.
Depth = UNKNOWN
Skew No. = 90.2551

B-14
76.2 mm Trace Gravel
254 mm Cobbles
0.6698 m Clayey Sand

STA. 2+647.09
FINISH POWERLINE X-ING
CLEARANCE =5.956 m
SKEW NO. = 105.065

B-15
25.4 mm Trace Gravel
152.4 mm Cobbles
0.2286 m Clayey Sand
Refusal At 0.4064 m

STA. 2+800.000
END UNIT I - FULL CONSTRUCTION

STA. 2+869.590, EXISTING 3-LINE HIGH VOLTAGE POWERLINE X-ING
CLEARANCE =18.56 m
SKEW NO. = 105.9126

STA. 2+907.730, EXISTING 3-LINE HIGH VOLTAGE POWERLINE X-ING
CLEARANCE =18.87 m
SKEW NO. = 105.6317

WORK REMOVED FROM PROJECT SCOPE

STA. 2+800.000 TO STA. 2+915.000
TRANSITION PROFILE GRADE TO MATCH EXISTING

STA. 3+068.514, FINISH POWERLINE X-ING
CLEARANCE =7.011 m
SKEW NO. = 98.8243

STA. 3+086.731, EXISTING WATERLINE X-ING
DEPTH =1.5m EXIST. GRND
SKEW NO. = 97.4849

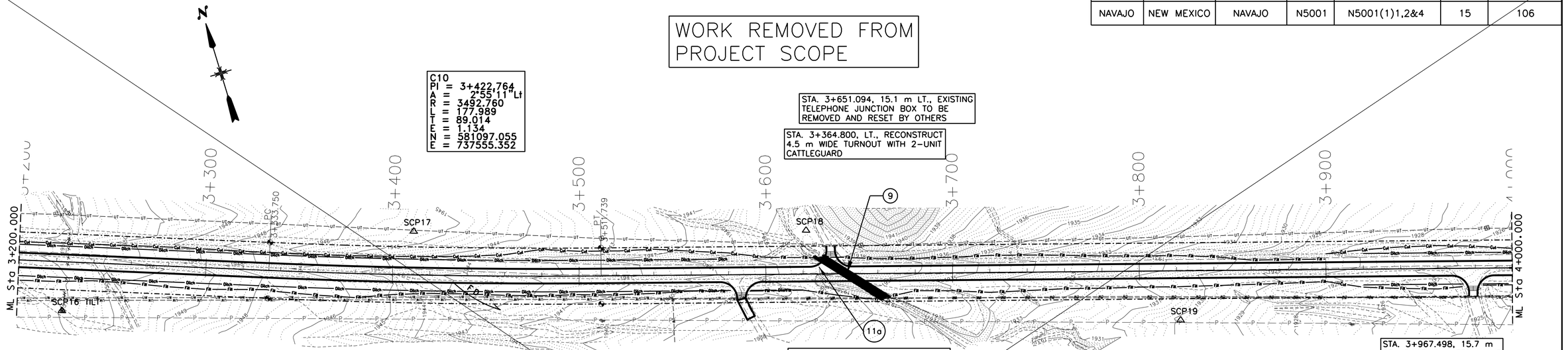
B-16
25.4 mm Millings
0.9746 m Clayey Sand

1998 1995 1990 1985 1980 1975 1970 1965 1960 1955 1950

2+400 2+500 2+600 2+700 2+800 2+900 3+000 3+100 3+200

$TIME$
8/20/2023
$FILES$

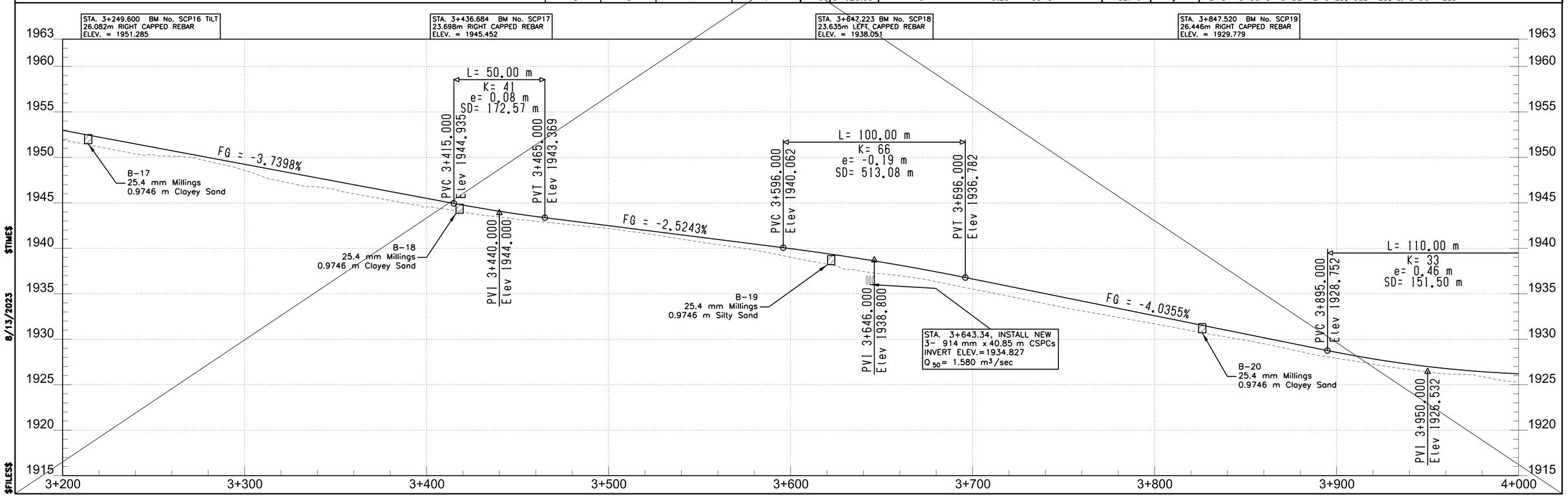
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	15	106



DELINEATORS		TYPE 2	RIGHT-OF-WAY
TYPE "1a"	TYPE "1b"	OBJECT MARKER	MARKER
⊡	⊡	●	◔
0	0	2	4

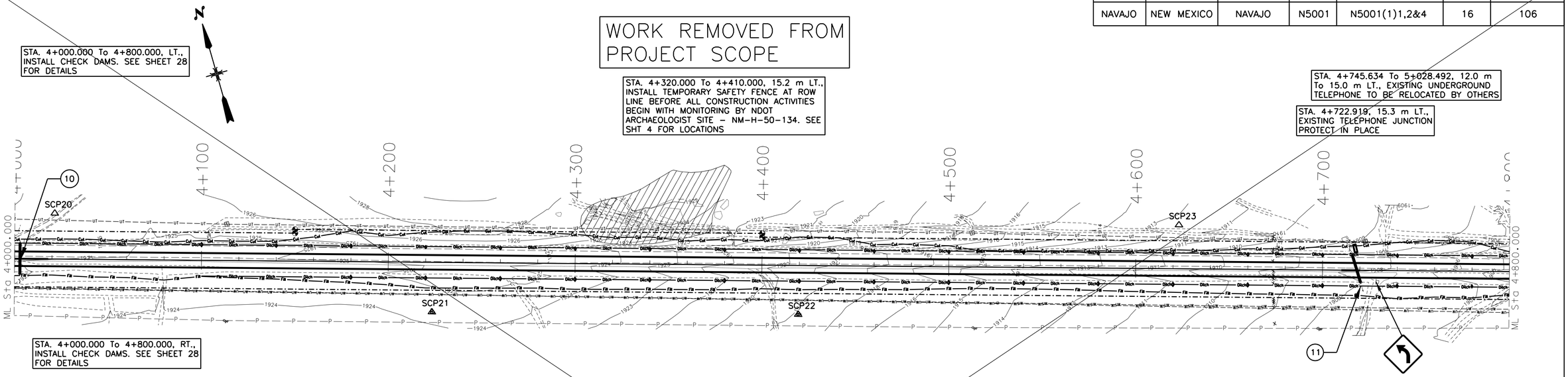
DRAINAGE STRUCTURES

MARK	STATION		SKEW No.	D.A. (Ha.)	REMARKS
9	3+643.34	3 - 914 mm x 40.85 m CSPCs	32.58	45.32	NEW CORRUGATED STEEL PIPE CULVERTS WITH END SECTIONS AT INLET
11a	3+628.95	1 - 914 mm x 9.23 m CSPC	82.46	N/A	EXISTING CSPC TO BE REMOVED, CLEANED, & STOCKPILED



$TIME$
8/13/2023
$FILES$

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	16	106



SCALE: Meters

0 20 40 60 80 100

DELINEATORS		TYPE 2
TYPE "1a"	TYPE "1b"	OBJECT MARKER
⊡	⊡	●
0	0	4

DRAINAGE STRUCTURES

MARK	STATION		SKEW No.	D.A. (Ha.)	REMARKS
10	4+002.89	1 – 610 mm x 15.85 m CSPC	90.0	10.68	NEW CORRUGATED STEEL PIPE CULVERT WITH END SECTION AT INLET
11	4+718.38	1 – 610 mm x 14.63 m CSPC	72.77	8.78	NEW CSPC WITH END SECTION AND DITCH BLOCK AT INLET

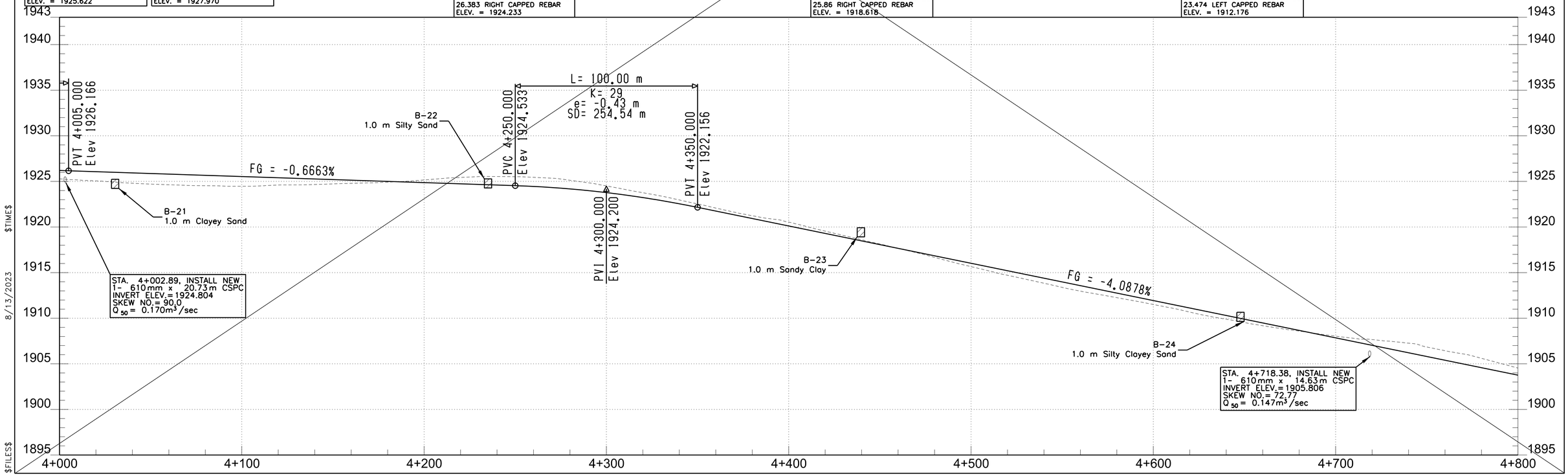
STA. 4+046.430 BM No. SCP20
24.564 LEFT CAPPED REBAR
ELEV. = 1925.622

STA. 4+092.518 BM No. GPS10
104.33 LEFT BRASS CAP
ELEV. = 1927.970

STA. 4+248.915 BM No. SCP21
26.383 RIGHT CAPPED REBAR
ELEV. = 1924.233

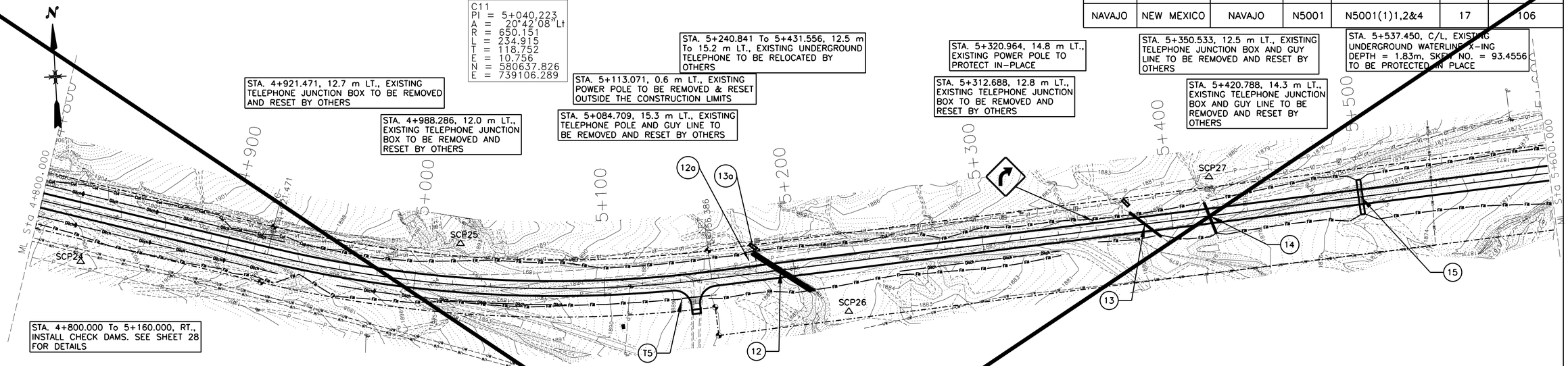
STA. 4+444.990 BM No. SCP22
25.86 RIGHT CAPPED REBAR
ELEV. = 1918.618

STA. 4+648.256 BM No. SCP23
23.474 LEFT CAPPED REBAR
ELEV. = 1912.176



$TIME$
8/13/2023
$FILES$

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	17	106



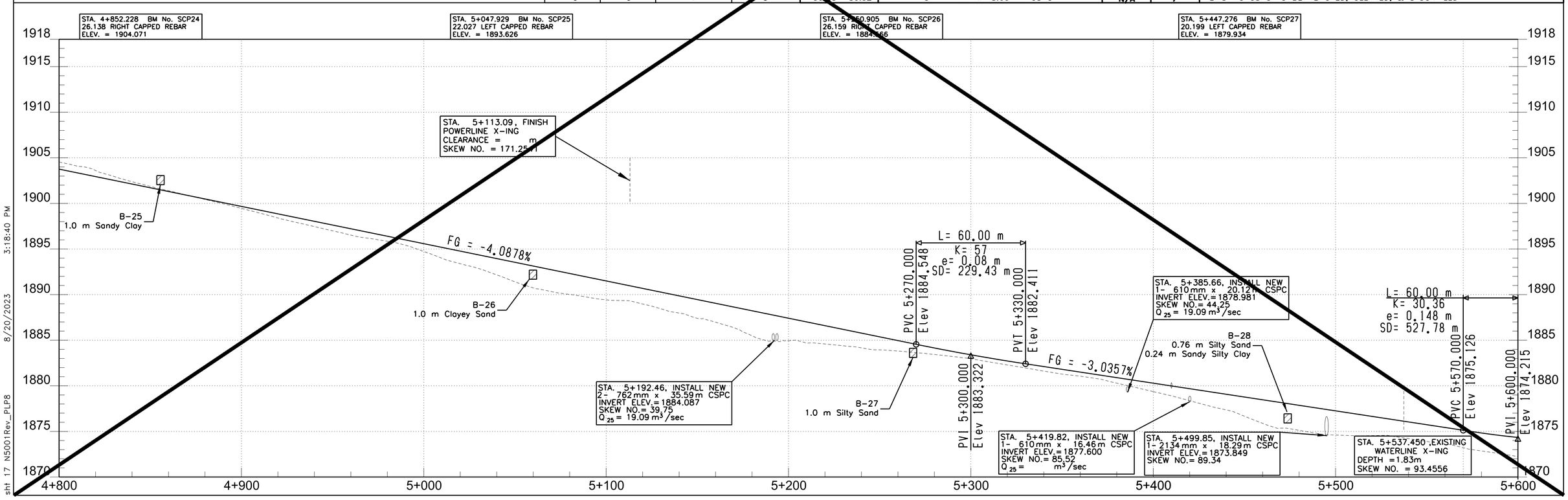
WORK REMOVED FROM PROJECT SCOPE

SCALE: Meters
0 20 40 60 80 100

DELINEATORS		TYPE 2	RIGHT-OF-WAY
TYPE "1a"	TYPE "1b"	OBJECT MARKER	MARKER
⊡	⊡	●	⊙
0	0	8	5

DRAINAGE STRUCTURES

MARK	STATION		SKEW No.	D.A. (Ha.)	REMARKS
T5	5+146.631	1 – 610 mm x 13.42 m CSPC, UNDER T/O RT.	N/A	N/A	NEW CSPC UNDER TURNOUT RIGHT WITH END SECTIONS AT INLET & OUTLET
12	5+192.46	2 – 762 mm x 35.59 m CSPCs	39.75	13.48	NEW CSPCS WITH END SECTIONS AND DITCH BLOCK AT INLET
13	5+385.66	1 – 610 mm x 20.12 m CSPC	44.25		NEW CSPC WITH END SECTION AND DITCH BLOCK AT INLET
14	5+419.82	1 – 610 mm x 16.46 m CSPC	85.52		NEW CORRUGATED STEEL PIPE CULVERT WITH END SECTION AT INLET
15	5+499.85	1 – 2134 mm x 18.29 m CSPC	89.34		NEW CSPC W CONCRETE SLOPE PAVING BLANKET & GROUTED RIPRAP @ OUTLET
12a	5+177.00	1 – 457 mm x 9.13 m CSPC	N/A	N/A	EXISTING CSPC TO BE REMOVED, CLEANED, & STOCKPILED
13a	5+180.52	1 – 457 mm x 8.60 m CSPC	N/A	N/A	EXISTING CSPC TO BE REMOVED, CLEANED, & STOCKPILED



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	18	94

STA. 5+640.000, LT., RECONSTRUCT 4.5 m WIDE TURNOUT WITH 2-UNIT CATTLEGUARD. INSTALL NEW PIPE UNDER TURNOUT

STA. 5+753.373 To 6+019.863, 0.76m To 15.2 m LT., EXISTING UNDERGROUND TELEPHONE TO BE RELOCATED BY OTHERS

STA. 5+820.00, 6.2 m LT., EXISTING TELEPHONE JUNCTION BOX TO BE REMOVED AND RESET BY OTHERS

STA. 5+865.00, 1.3 m LT., EXISTING TELEPHONE JUNCTION BOX TO BE REMOVED AND RESET BY OTHERS

STA. 5+983.00 To 5+990.36, 12.0 m To 13.0 m LT., REMOVE EXISTING CONCRETE HEAD & WING WALL

STA. 5+984.00 To 5+991.00, 1.0 m To 2.5 m LT., REMOVE EXISTING CONCRETE HEAD & WING WALL

STA. 5+988.150 To 6+093.000, LT., OBLITERATE EXISTING DIRT ROAD WITHIN THE NEW RIGHT-OF-WAY USING METHOD 2. SEE SHEET 4 FOR DETAILS

STA. 6+109.329 To 6+114.083, 15.1 m To 14.9 m LT., REMOVE EXISTING CONCRETE HEAD & WING WALL

STA. 6+112.28, 4.3 m LT., EXISTING POWER POLE TO BE RELOCATED BY OTHERS OUTSIDE THE CONSTRUCTION LIMITS

STA. 6+106.28 To 6+110.35, 6.7 m To 4.9 m LT., REMOVE EXISTING CONCRETE HEAD & WING WALL

STA. 6+132.950, C/L, EXISTING OVERHEAD POWERLINE X-ING
ELEV.= 1866.665
SKEW NO. = 118.156

STA. 6+180.826 To 6+512.160, 15.2 m TO 6.6 LT., EXISTING UNDERGROUND TELEPHONE TO BE RELOCATED BY OTHERS

C12
PI = 5+886.508
Δ = 15°12'35" Lt
R = 498.965
L = 132.455
T = 66.619
E = 4.428
N = 580700.121
E = 739952.874

STA. 5+614.800 To 5+691.800, LT., OBLITERATE EXISTING DIRT ROAD WITHIN THE NEW RIGHT-OF-WAY USING METHOD 2. SEE SHEET 4 FOR DETAILS

STA. 5+896.758, 0.8 m RT., EXISTING TELEPHONE JUNCTION BOX TO BE REMOVED AND RESET BY OTHERS

STA. 5+896.758 To 5+937.520, 0.6 m RT., EXISTING UNDERGROUND TELEPHONE TO BE RELOCATED BY OTHERS

STA. 5+929.159, 0.3 m LT., EXISTING TELEPHONE JUNCTION BOX TO BE REMOVED AND RESET BY OTHERS

STA. 6+264.57, 9.2 m LT., EXISTING TELEPHONE JUNCTION BOX TO BE REMOVED AND RESET BY OTHERS

C13
PI = 6+316.840
Δ = 18°48'39" Rt
R = 332.643
L = 109.210
T = 55.101
E = 4.533
N = 580843.450
E = 740359.467

STA. 6+320.346, 8.5 m LT., EXISTING TELEPHONE JUNCTION BOX TO BE REMOVED AND RESET BY OTHERS

SCALE: Meters
0 20 40 60 80 100

DELINEATORS		TYPE 2	RIGHT-OF-WAY
TYPE "1a"	TYPE "1b"	OBJECT MARKER	MARKER
0	0	4	18

DRAINAGE STRUCTURES

MARK	STATION		SKEW No.	D.A. (Ha.)	REMARKS
T6	5+640.00	1 – 610 mm x 13.42 m CSPC, UNDER T/O LT.	N/A	N/A	NEW CSPC UNDER TURNOUT LEFT WITH END SECTIONS AT INLET & OUTLET
16	5+633.53	3 – 914 mm x 49.38 m CSPCs	147.6	74.22	NEW CSPCS WITH END SECTIONS AND DITCH BLOCK AT INLET
17	6+335.13	3 – 762 mm x 26.83 m CSPCs	123.1	9.45	NEW CSPCS WITH END SECTIONS AND DITCH BLOCK AT INLET
14a	5+675.61	1 – * BURIED mm x 9.07 m CSPC	N/A	N/A	EXISTING CSPC TO BE REMOVED, CLEANED, & STOCKPILED
15a	5+988.02	1 – 1067 mm x 8.82 m CSPC	N/A	N/A	EXISTING CSPC TO BE REMOVED, CLEANED, & STOCKPILED
16a	6+108.80	1 – 1067 mm x 8.09 m CSPC	N/A	N/A	EXISTING CSPC TO BE REMOVED, CLEANED, & STOCKPILED
17a	6+349.15	1 – 914 mm x 12.23 m CSPC	91.6	N/A	EXISTING CSPC TO BE REMOVED, CLEANED, & STOCKPILED

STA. 5+656.104 BM No. SCP28
20.749 RIGHT CAPPED REBAR
ELEV. = 1872.742

STA. 5+723.125 BM No. GPS9
41.359 RIGHT BRASS CAP
ELEV. = 1874.272

STA. 5+848.106 BM No. SCP29
20.408 m LEFT CAPPED REBAR
ELEV. = 1871.084

STA. 6+071.375 BM No. SCP30
19.763 RIGHT CAPPED REBAR
ELEV. = 1862.234

STA. 6+306.273 BM No. SCP31
25.531 LEFT CAPPED REBAR
ELEV. = 1855.073

WORK REMOVED FROM PROJECT SCOPE

PVI 5+600.000
Elev 1874.215

L= 60.00 m
K= 30.36
e= 0.148 m
SD= 527.78 m
PVT 5+630.000
Elev 1873.897

FG = -1.0597%

B-29
1.0 m Sandstone

STA. 5+633.53, INSTALL NEW
3- 914mm x 49.38m CSPC
INVERT ELEV.= 1870.388
SKEW NO.= 147.60
Q_{25} = m³/sec

L= 110.00 m
K= 29
e= -0.52 m
SD= 238.51 m
PVC 5+845.000
Elev 1871.619
PVT 5+955.000
Elev 1868.355

B-30
1.0 m Silty Sand

PVI 5+900.000
Elev 1871.036

STA. 6+018.690 , FINISH
POWERLINE X-ING
CLEARANCE =8.267 m
SKEW NO. = 98.7757

FG = -4.8734%

B-31
1.0 m Sand

L= 125.00 m
K= 32
e= 0.61 m
SD= 142.00 m
PVC 6+112.500
Elev 1860.680
PVT 6+237.500
Elev 1857.013

STA. 6+132.95 , FINISH
POWERLINE X-ING
CLEARANCE =6.793 m
SKEW NO. = 11.8156

PVI 6+175.000
Elev 1857.634

FG = -0.9929%

B-32
1.0 m Silty Sand

L= 100.00 m
K= 77
e= -0.16 m
SD= 592.33 m
PVC 6+350.000
Elev 1855.896
PVT 6+400.000
Elev 1855.400

STA. 6+335.13, INSTALL NEW
3- 762mm x 26.83m CSPC
INVERT ELEV.= 1852.918
SKEW NO.= 123.10
Q_{50} = 0.750m³/sec

1893 1890 1885 1880 1875 1870 1865 1860 1855 1850 1845

5+600 5+700 5+800 5+900 6+000 6+100 6+200 6+300 6+400

$TIME$
8/13/2023
$FILES$

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	19	106

STA. 6+180.826 To 6+512.160, 15.2 m TO 6.6 LT., EXISTING UNDERGROUND TELEPHONE TO BE RELOCATED BY OTHERS

STA. 6+512.60, 6.6 m LT., EXISTING POWER POLE/JUNCTION BOX TO BE REMOVED AND RESET BY OTHERS

STA. 6+600.000
BEGIN UNIT II – FULL CONSTRUCTION

STA. 6+781.400, C/L, EXISTING OVERHEAD POWERLINE X-ING
ELEV. = 1854.862
SKEW NO. = 161.9946

C15
PI = 7+048.335
A = 37°00'34" Lt
R = 280.061
L = 180.902
T = 93.733
E = 15.269
N = 580758.077
E = 741078.744

C14
PI = 6+751.712
A = 18°13'20" Rt
R = 280.061
L = 89.070
T = 44.914
E = 3.579
N = 580848.070
E = 740795.306

STA. 6+490 TO STA. 6+600
TRANSITION ROADWAY GRADE & WIDTH TO MATCH EXISTING

STA. 6+730.910, 12.0 m RT., EXISTING POWER POLE TO BE PROTECTED IN PLACE

STA. 7+080.000 To 7+180.000, 15.2 m RT., INSTALL TEMPORARY SAFETY FENCE AT ROW LINE BEFORE ALL CONSTRUCTION ACTIVITIES BEGIN WITH MONITORING BY NDOT ARCHAEOLOGIST SITE – NM-H-50-111. SEE SHT 4A FOR LOCATIONS.

STA. 7+165.000 To 7+175.00,
10m To 13m Lt
REMOVE EXISTING SINGLE SPAN BRIDGE UNDER BID ITEM 20304-1000 AND DISPOSE OF AT APPROVED DISPOSAL FACILITY

WORK REMOVED FROM PROJECT SCOPE

SCALE: Meters
0 20 40 60 80 100

DELINEATORS		TYPE 2	RIGHT-OF-WAY MARKER
TYPE "1a"	TYPE "1b"	OBJECT MARKER	
0	0	2	21

DRAINAGE STRUCTURES

MARK	STATION		SKEW No.	D.A. (Ha.)	REMARKS
18	6+568.78	3 – 610 mm x 23.78 m CSPCs	112.9	9.47	NEW CSPCS WITH END SECTIONS AND DITCH BLOCK AT INLET
19	7+170.665	N213 BRIDGE SEE SHEETS 92-106			

STA. 6+521.157 BM No. SCP32
21.863 LEFT CAPPED REBAR
ELEV. = 1851.194

STA. 6+747.120 BM No. SCP33
29.199 RIGHT CAPPED REBAR
ELEV. = 1850.150

STA. 6+951.004 BM No. SCP34
26.092 LEFT CAPPED REBAR
ELEV. = 1843.556

STA. 7+166.443 BM No. SCP35
32.327 RIGHT CAPPED REBAR
ELEV. = 1834.542

L= 100.00 m
K= 77
e= -0.16 m
SD= 592.33

PVI 6+400.000
Elev 1855.400

PVT 6+450.000
Elev 1854.258

STA. 6+490.00 TO STA. 6+600.00
TRANSITION PROFILE GRADE FROM EXISTING TO PROPOSED

STA. 6+600.000
BEGIN UNIT II – FULL CONSTRUCTION
ELEVATION: 1850.83

FG = -2.2833%

B-33
1.0 m Sandy Clay

B-34
1.0 m Silty Sand

STA. 6+568.780, INSTALL NEW
3 – 610 mm x 23.78 m CSPCs
INVERT ELEV.= 1848.058
SKEW NO.= 112.90
Q_{50} = 0.645 m^3/sec

STA. 6+781.400, FINISH
POWERLING X-ING
CLEARANCE = 8.746 m
SKEW NO. = 161.9946

L= 100.00 m
K= 70
e= -0.18 m
SD= 541.51 m

PVC 6+810.000
Elev 1846.039

PVI 6+860.000
Elev 1844.897

PVT 6+910.000
Elev 1843.043

B-35
12.7 mm Trace Gravel
0.9873 m Silty Sand

FG = -3.7071%

L= 80.00 m
K= 31
e= 0.26 m
SD= 200.41 m

PVC 7+060.000
Elev 1837.483

PVI 7+100.000
Elev 1836.000

PVT 7+140.000
Elev 1835.541

FG = -1.1467%

B-36
25.4 mm Trace Gravel
0.9746 m Silty Sand

STA 7+177.830
GRS-IBC BRIDGE LENGTH = 14.329m

SEE BRIDGE N213 REPLACEMENT PLANS SHEET 92 TO 106

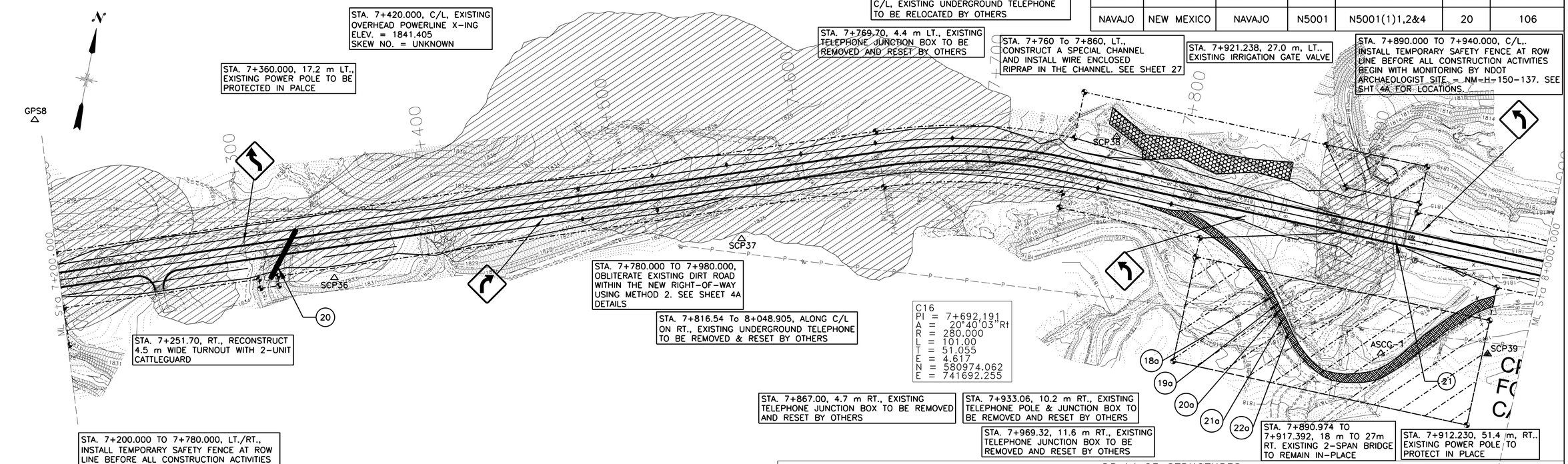
WORK REMOVED FROM PROJECT SCOPE

STEPHEN M. LUJAN
NEW MEXICO
26338
10/27/23
PROFESSIONAL ENGINEER

1868 1865 1860 1855 1850 1845 1840 1835 1830 1825 1820

6+400 6+500 6+600 6+700 6+800 6+900 7+000 7+100 7+200

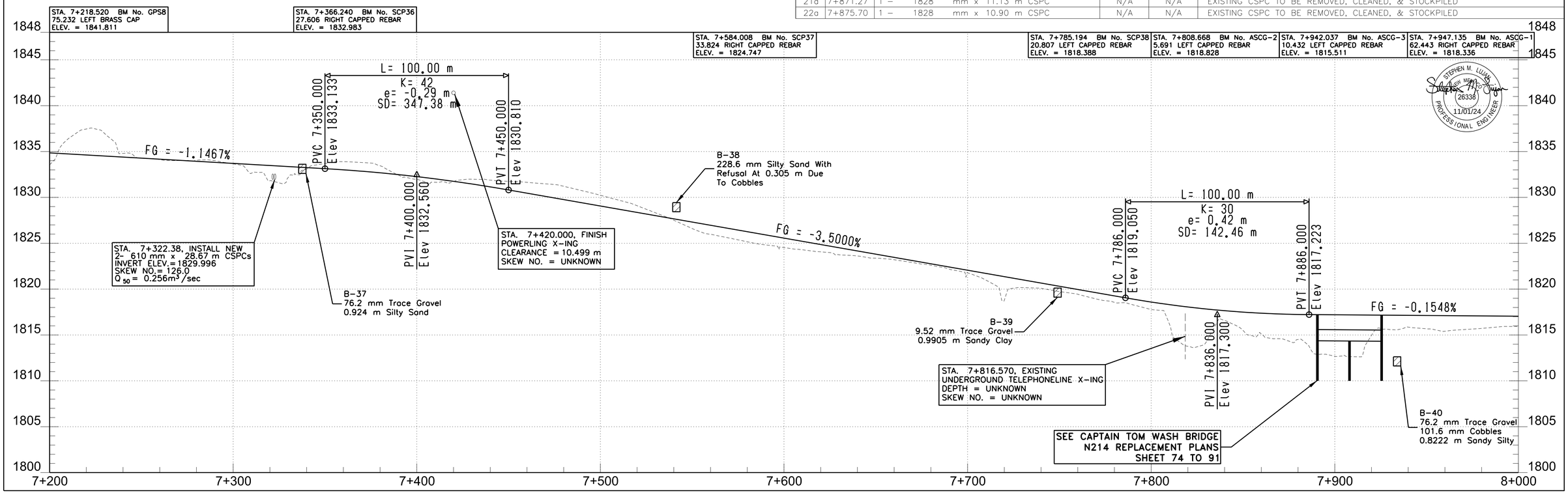
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	20	106



DELINEATORS		TYPE 2	RIGHT-OF-WAY
TYPE "1a"	TYPE "1b"	OBJECT MARKER	MARKER
0	0	4	16

DRAINAGE STRUCTURES

MARK	STATION		SKEW No.	D.A. (Ha.)	REMARKS
10	7+322.38	2 – 610 mm x 28.67 m CSPCs	126.0	1.50	NEW CORRUGATED STEEL PIPE CULVERTS WITH END SECTIONS AT INLET
11	7+926.50	CAPTAIN TOM WASH BRIDGE	90.0		35 m LONG, 2-SPAN PRESTRESSED CONCRETE BEAM BRIDGE
18a	7+863.34	1 – 1828 mm x 11.30 m CSPC	N/A	N/A	EXISTING CSPC TO BE REMOVED, CLEANED, & STOCKPILED
19a	7+866.83	1 – 1219 mm x 14.14 m CSPC	N/A	N/A	EXISTING CSPC TO BE REMOVED, CLEANED, & STOCKPILED
20a	7+868.66	1 – 1219 mm x 13.51 m CSPC	N/A	N/A	EXISTING CSPC TO BE REMOVED, CLEANED, & STOCKPILED
21a	7+871.27	1 – 1828 mm x 11.13 m CSPC	N/A	N/A	EXISTING CSPC TO BE REMOVED, CLEANED, & STOCKPILED
22a	7+875.70	1 – 1828 mm x 10.90 m CSPC	N/A	N/A	EXISTING CSPC TO BE REMOVED, CLEANED, & STOCKPILED



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	21	106

C17
PI = 8+045.768
A = 10°20'13" Lt
R = 280.000
L = 50.516
T = 25.327
E = 1.143
N = 580966.183
E = 742046.855

STA. 8+027.64 To 8+137.120, C/L To 5.1 m LT., EXISTING UNDERGROUND TELEPHONE TO BE RELOCATED BY OTHERS

STA. 8+137.13 To 8+181.61, 5.1 m To 11.9 m LT., EXISTING OVERHEAD TELEPHONE TO BE RELOCATED BY OTHERS

STA. 8+137.13, 5.1 m LT., EXISTING TELEPHONE JUNCTION BOX TO BE REMOVED AND RESET BY OTHERS

STA. 8+181.67 To 8+306.52, 11.9 m To 17.2 m LT., EXISTING UNDERGROUND TELEPHONE TO BE RELOCATED BY OTHERS

STA. 8+181.61, 11.9 m LT., EXISTING TELEPHONE POLE/JUNCTION BOX TO BE REMOVED AND RESET BY OTHERS

STA. 8+132.95, 4.7 m LT., EXISTING TELEPHONE JUNCTION BOX TO BE REMOVED AND RESET BY OTHERS

STA. 8+123.88, 6.2 m LT., EXISTING TELEPHONE POLE & GUY LINE/JUNCTION BOX TO BE REMOVED AND RESET BY OTHERS

STA. 8+320.000 END UNIT II – FULL CONSTRUCTION

STA. 8+526.65, C/L, EXISTING OVERHEAD POWERLINE X-ING
ELEV. = 1822.814
SKEW NO. = 114.1146

STA. 8+534.197 To 8+905.873, 2.1m TO 15.2 m LT., EXISTING UNDERGROUND TELEPHONE TO BE RELOCATED BY OTHERS

STA. 8+397.17 To 8+402.12, 7.5 m To 7.6 m LT., REMOVE EXISTING CONCRETE HEAD AND WING WALL

STA. 8+625.49, 3.6 m LT., EXISTING TELEPHONE JUNCTION BOX TO BE REMOVED AND RESET BY OTHERS

STA. 8+686.62, 2.6 m LT., EXISTING TELEPHONE JUNCTION BOX TO BE REMOVED AND RESET BY OTHERS

STA. 8+591.270, 2.1 m LT., EXISTING TELEPHONE JUNCTION BOX TO BE REMOVED AND RESET BY OTHERS

SCP39 SCP40 SCP41 SCP42 GPS7

STA. 8+024.09, 0.7 m RT., EXISTING TELEPHONE JUNCTION BOX TO BE REMOVED AND RESET BY OTHERS

STA. 8+160.000 To 8+370.000, LT./RT., INSTALL TEMPORARY SAFETY FENCE AT ROW LINE BEFORE ALL CONSTRUCTION ACTIVITIES BEGIN WITH MONITORING BY NDOT ARCHAEOLOGIST SITE – NM-H-50-113. SEE SHT 4A FOR LOCATIONS.

STA. 8+320.000 TO STA. 8+430.000 TRANSITION ROADWAY GRADE & WIDTH TO MATCH EXISTING

STA. 8+271.790 RT., RECONSTRUCT 4.5M WIDE TURNOUT WITH 2-UNIT CATTLEGUARD

STA. 8+220.000, 77 m RT. To 8+280.000, 15 m RT., INSTALL 100 m OF TEMPORARY SAFETY FENCE ALONG THE WEST EDGE OF THE EXISTING ROAD BEFORE ALL CONSTRUCTION ACTIVITIES BEGIN WITH MONITORING BY NNHPD.

STA. 8+397+00 To 8+400.32, C/L, REMOVE EXISTING CONCRETE HEAD AND WING WALL

STA. 8+448.731, RT., RECONSTRUCT 4.5 m WIDE TURNOUT WITH 2-UNIT CATTLEGUARD

C18
PI = 8+506.642
A = 16°31'49" Lt
R = 280.000
L = 80.782
T = 40.674
E = 2.939
N = 581038.810
E = 742502.110

WORK REMOVED FROM PROJECT SCOPE

SCALE: Meters
0 20 40 60 80 100

DELINEATORS		TYPE 2	RIGHT-OF-WAY MARKER
TYPE "1a"	TYPE "1b"	OBJECT MARKER	
◪	⊠	●	◕
0	0	2	8

DRAINAGE STRUCTURES

MARK	STATION		SKEW No.	D.A. (Ha.)	REMARKS
22	8+393.28	3 - 914 mm x 25.0 m CSPCs	125.2	28.68	NEW CORRUGATED STEEL PIPE CULVERTS WITH END SECTIONS AT INLET
23a	8+398.76	1 - * BURIED mm x 7.13 m CSPC	99.4	N/A	EXISTING CSPC TO BE REMOVED, CLEANED, & STOCKPILED

STA. 8+002.405 BM No. SCP39
50.26 RIGHT CAPPED REBAR
ELEV. = 1817.804

STA. 8+211.234 BM No. SCP40
14.764 LEFT CAPPED REBAR
ELEV. = 1814.361

STA. 8+420.623 BM No. SCP41
36.862 RIGHT CAPPED REBAR
ELEV. = 1816.761

STA. 8+644.292 BM No. SCP42
13.299 LEFT CAPPED REBAR
ELEV. = 1812.023

STA. 8+774.502 BM No. GPS7
65.537 RIGHT BRASS CAP
ELEV. = 1810.600

STEPHEN M. LUJAN
NEW MEXICO
26338
10/27/23
PROFESSIONAL ENGINEER

L= 40.00 m
K= 82
e= 0.02 m
SD= 318.29 m

PVC 8+030.000 Elev 1817.000
PVT 8+070.000 Elev 1817.035
LO 8+042.708 Elev 1816.990
PVI 8+050.000 Elev 1816.969

FG = -0.1548%

L= 65.00 m
K= 32
e= -0.17 m
SD= 376.47 m

PVC 8+252.500 Elev 1817.642
HI 8+263.121 Elev 1817.660
PVT 8+317.500 Elev 1817.197
PVI 8+285.000 Elev 1817.750

FG = 0.3324%

FG = -1.7021%

STA. 8+320.000 END UNIT II ELEVATION: 1817.154

STA. 8+320.00 TO STA. 8+430.00 TRANSITION PROFILE GRADE TO MATCH EXISTING

STA. 8+526.640, FINISH POWERLINE X-ING CLEARANCE =8.9604 m SKEW NO. = 114.1146

STA. 8+027.548, EXISTING UNDERGROUND TELEPHONELINE X-ING DEPTH = UNKNOWN SKEW NO. = UNKNOWN

B-41
19.05 mm Trace Gravel
0.9810 m Sandy Silty Clay

B-42
101.6 mm Trace Cobbles
0.8984 m Gravelly Silty Sand

STA. 8+393.28 INSTALL NEW 3- 914 mm x 25.00m CSPCs
INVERT ELEV.=1812.881
Q_{25}= 2.38 m^3/sec

B-43
25.4 mm Trace Gravel & Cobbles
0.9746 m Silty Sand

B-44
76.2 mm Trace Gravel
0.9238 m Gravelly Silty Sand

WORK REMOVED FROM PROJECT SCOPE

1848 1845 1840 1835 1830 1825 1820 1815 1810 1805 1800
8+000 8+100 8+200 8+300 8+400 8+500 8+600 8+700 8+800

$TIME$ 8/13/2023 $FILES$

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	22	106

STA. 8+882.05, 10.3 m LT., EXISTING TELEPHONE JUNCTION BOX TO BE REMOVED AND RESET BY OTHERS

STA. 8+786.12, 6.6 m LT., EXISTING TELEPHONE JUNCTION BOX TO BE REMOVED AND RESET BY OTHERS

STA. 8+534.197 To 8+905.71, 2.0m TO 15.2m LT., EXISTING UNDERGROUND TELEPHONE TO BE RELOCATED BY OTHERS

STA. 9+080.15, 22 m, LT., REMOVE EXISTING 3-UNIT CATTLE GUARD, WING BRACES, AND PERPENDICULAR FENCINGS

STA. 9+185.405 To 9+197.391, 24m TO 3m LT., EXISTING UNDERGROUND TELEPHONE TO BE RELOCATED BY OTHERS

STA. 9+196.960, C/L, EXISTING UNDERGROUND TELEPHONE X-ING
DEPTH = ?
SKEW NO. = 69.263

STA. 9+201.73, LT., RECONSTRUCT 7.0 m WIDE TURNOUT WITH 3-UNIT CATTLEGUARD

STA. 9+198.740, 4.5 m RT., EXISTING TELEPHONE POLE TO BE REMOVED AND RESET BY OTHERS

STA. 9+400.64, 14.6 m LT., EXISTING POWER POLE TO BE PROTECTED IN-PLACE

STA. 9+480.000 TO 9+678.000, OBLITERATE EXISTING DIRT ROAD WITHIN THE NEW RIGHT-OF-WAY USING METHOD 2. SEE SHEET 4 DETAILS

STA. 9+420.00, LT RECONSTRUCT 4.5m WIDE TURNOUT WITH 2-UNIT CATTLEGUARD. INSTALL NEW PIPE UNDER TURNOUT

STA. 9+503.830, C/L, EXISTING OVERHEAD POWERLINE X-ING
ELEV. = 1816.0904
SKEW NO. = 130.9819

C21
PI = 9+661.529
A = 58°36'48"Lt
R = 280.056
L = 286.496
T = 157.203
E = 41.105
N = 580914.158
E = 743499.416

C19
PI = 8+969.542
A = 31°12'07"Rt
R = 280.000
L = 152.481
T = 78.183
E = 10.710
N = 581239.024
E = 742920.097

C20
PI = 9+249.565
A = 39°25'35"Rt
R = 280.057
L = 192.713
T = 100.348
E = 17.435
N = 581211.282
E = 743202.645

STA. 8+901.44, C/L, EXISTING UNDERGROUND WATERLINE X-ING
DEPTH = UNKNOWN, SKEW NO. = 114.363
TO BE RELOACTED WITH 300mm (12-INCH) STEEL CASING
SEE SHEET 73 FOR DETAILS

STA. 9+196.96, C/L, EXISTING OVERHEAD POWERLINE/TELEPHONE X-ING
ELEV. = 1814.5920
SKEW NO. = 69.2629

STA. 9+196.96, 4.4 m RT., EXISTING POWER/TELEPHONE POLE TO BE RELOCATED OUTSIDE OF CONSTRUCTION ZONE BY OWNER

STA. 9+199.05, 3.1 m RT., EXISTING TELEPHONE JUNCTION BOX TO BE REMOVED AND RESET BY OTHERS

STA. 9+417.00, RT RECONSTRUCT 4.5m WIDE TURNOUT WITH 2-UNIT CATTLEGUARD. INSTALL NEW PIPE UNDER TURNOUT

STA. 9+407.320, C/L, EXISTING OVERHEAD POWERLINE X-ING
ELEV. = 1819.5004
SKEW NO. = 65.3009

STA. 9+412.160, C/L, EXISTING UNDERGROUND WATERLINE X-ING
DEPTH = 1.98m FROM EXISTING GROUND
SKEW NO. = 95.8087
TO BE RELOCATED WITH 300mm (12-INCH) STEEL CASING
SEE SHEET 73 FOR DETAILS

STA. 9+216.63, C/L REMOVE EXISTING WOODEN SCHOOL BUS SHELTER

SCP43 △ SCP44 △ SCP45 △ SCP46 △

WORK REMOVED FROM PROJECT SCOPE

SCALE: Meters
0 20 40 60 80 100

DELINEATORS		TYPE 2	RIGHT-OF-WAY
TYPE "1a"	TYPE "1b"	OBJECT MARKER	MARKER
⊡	⊡	■	
0	0	4	33

DRAINAGE STRUCTURES

MARK	STATION		SKEW No.	D.A. (Ha.)	REMARKS
23	9+029.21	1 - 2134 mm x 30.48 m CSPC	92.9	40.87	NEW CSPC W CONCRETE SLOPE PAVING BLANKET & GROUTED RIPRAP @ OUTLET
T7	9+079.80	1 - 610 mm x 13.42 m CSPC, UNDER T/O LT.	N/A	N/A	NEW CSPC UNDER TURNOUT LEFT WITH END SECTIONS AT INLET & OUTLET
24a	9+030.75	1 - 610 mm x 18.31 m CSPC	88.9	N/A	EXISTING CSPC TO BE REMOVED, CLEANED, & STOCKPILED
25a	9+032.41	1 - • BURIED mm x 16.98 m CSPC	87.8	N/A	EXISTING CSPC TO BE REMOVED, CLEANED, & STOCKPILED
24	9+584.63	1 - 2134 mm x 30.48 m CSPC	99.1	166.17	NEW CSPC W CONCRETE SLOPE PAVING BLANKET & GROUTED RIPRAP @ OUTLET
26a	9+586.41	1 - • BURIED mm x 21.99 m CSPC	N/A	N/A	EXISTING CSPC TO BE REMOVED, CLEANED, & STOCKPILED

STA. 8+830.368 BM No. SCP43
35.009 RIGHT CAPPED REBAR
ELEV. = 1809.454

STA. 9+028.366 BM No. SCP44
17.055 LEFT CAPPED REBAR
ELEV. = 1803.122

STA. 9+237.796 BM No. SCP45
22.174 RIGHT CAPPED REBAR
ELEV. = 1805.759

STA. 9+447.536 BM No. SCP46
24.957 LEFT CAPPED REBAR
ELEV. = 1811.393

STA. 8+901.440, EXISTING mm WATERLINE X-ING
DEPTH = UNKNOWN
SKEW NO. = 114.363

FG = -1.7021%

B-45
76.2 mm Trace Gravel
127 mm Cobbles
0.4572 m Silty Sand With Refusal Due To Cobbles

STA. 9+029.210, INSTALL NEW
1-2134mm x 30.48m CSPC
INVERT ELEV.=1800.208
SKEW NO.= 92.90
Q_{50} = 2.47 m³/sec

PVC 9+034.324
Elev 1804.996

L= 117.00 m
K= 38
e= 0.45 m
SD= 182.94 m

PVI 9+092.824
Elev 1804.000

LO 9+099.514
Elev 1804.441

PVT 9+151.324
Elev 1804.791

STA. 9+196.960, FINISH POWERLINE X-ING
CLEARANCE =8.8960 m
SKEW NO. = 69.2629

FG = 1.3528%

B-46
Asphalt Millings On Surface
1.0 m Sandy Clay

STA. 9+196.960, EXISTING UNDERGROUND TELEPHONELINE X-ING
DEPTH = m
SKEW NO. = 65.6713

STA. 9+407.320, FINISH POWERLINE X-ING
CLEARANCE =10.9584 m
SKEW NO. = 65.3009

L= 80.00 m
K= 38
e= -0.21 m
SD= 371.72 m

PVC 9+393.058
Elev 1808.061

PVI 9+433.058
Elev 1808.603

HI 9+444.356
Elev 1808.408

PVT 9+473.058
Elev 1808.300

B-47
Asphalt Millings On Surface
1.0 m Silty Sand

STA. 9+412.160, EXISTING mm WATERLINE X-ING
DEPTH = 1.98m
SKEW NO. = 95.8087

STA. 9+503.830, FINISH POWERLINE X-ING
CLEARANCE = 7.4454 m
SKEW NO. = 130.9819

FG = -0.7569%

PVC 9+585.000
Elev 1807.452

STA. 9+584.63, INSTALL NEW
1-2134mm x 30.48m CSPC
INVERT ELEV.=1802.188
SKEW NO.= 99.10
Q_{50} = 3.77 m³/sec

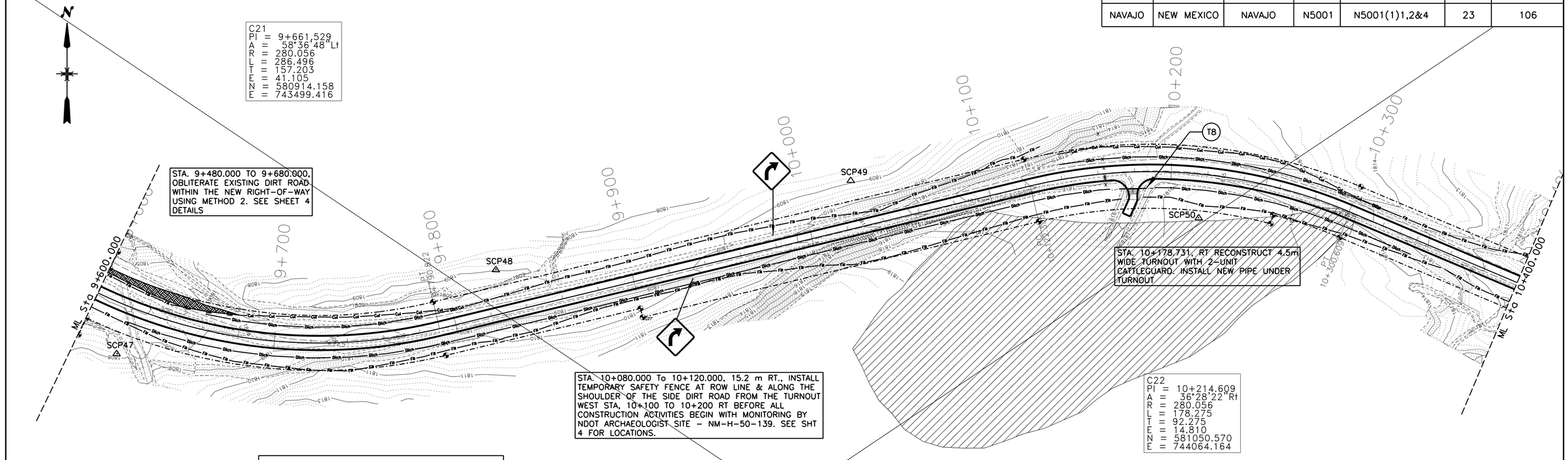
B-48
19.05 mm Trace Gravel & Cobbles
0.981 m Silty Sand

1838 1835 1830 1825 1820 1815 1810 1805 1800 1795 1790

8+800 8+900 9+000 9+100 9+200 9+300 9+400 9+500 9+600

$TIME$ 8/20/2023 $FILES$

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	23	106



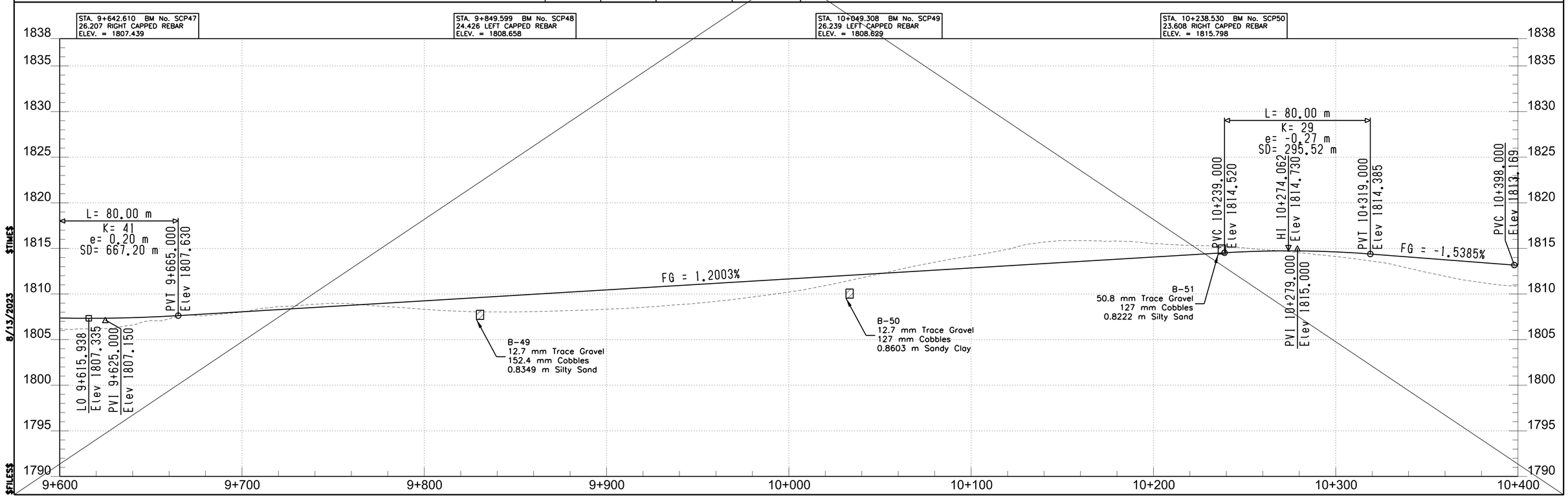
WORK REMOVED FROM PROJECT SCOPE

SCALE: Meters
0 20 40 60 80 100

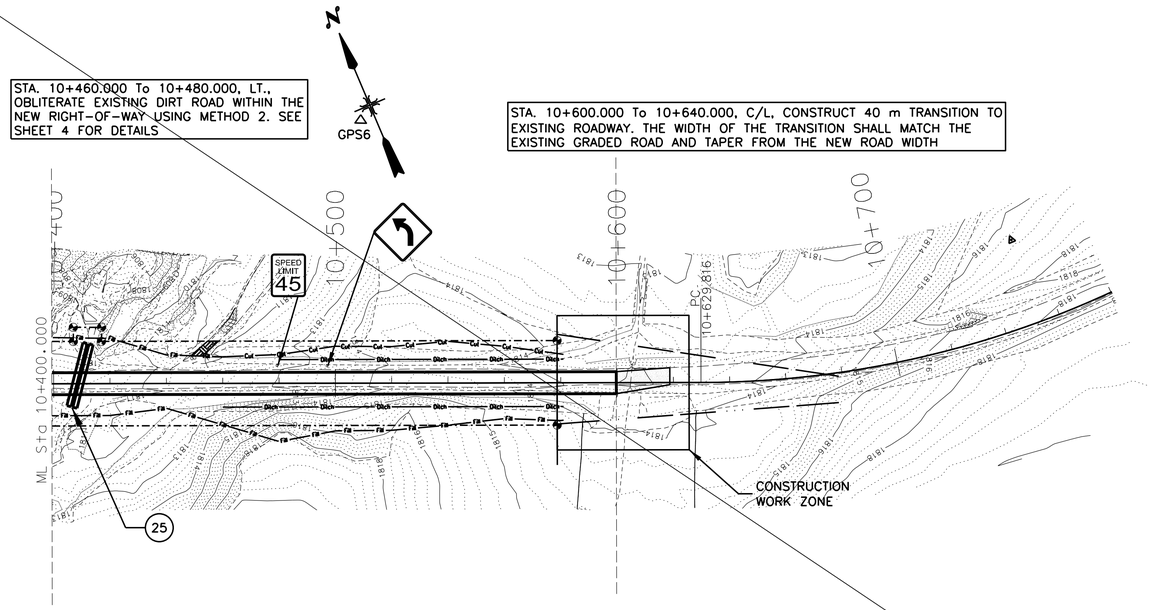
DELINEATORS		TYPE 2	RIGHT-OF-WAY MARKER
TYPE "1a"	TYPE "1b"	OBJECT MARKER	
0	0	0	10

DRAINAGE STRUCTURES

MARK	STATION		SKEW	No.	D.A. (Ha.)	REMARKS
T8	10+178.32	1 - 610 mm x 13.42 m CSPC, UNDER T/O RT.	N/A	N/A		NEW CSPC UNDER TURNOUT LEFT WITH END SECTIONS AT INLET & OUTLET



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	24	106



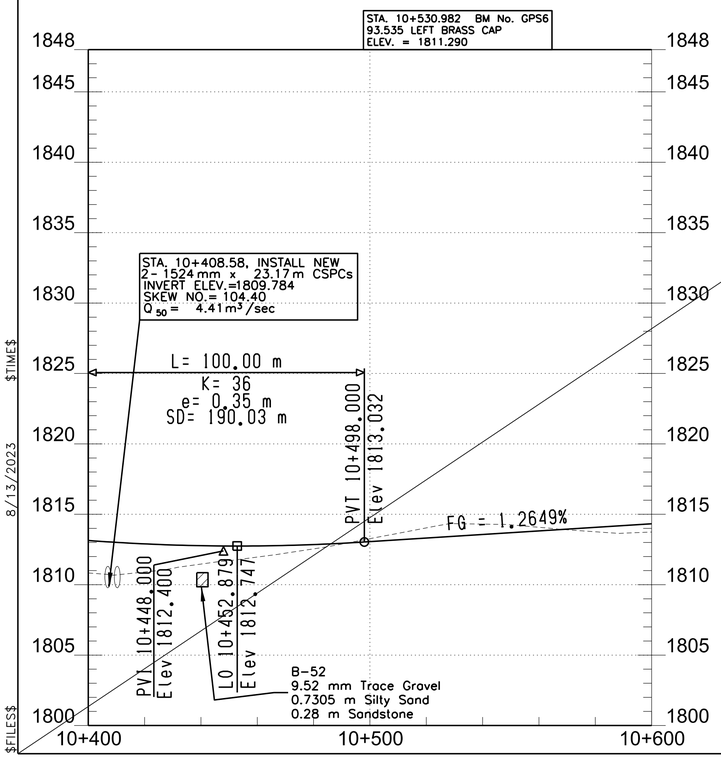
SCALE: Meters

0 20 40 60 80 100

TYPE 2 OBJECT MARKER	TYPE 2 OBJECT MARKER	RIGHT-OF-WAY MARKER
0	0	6

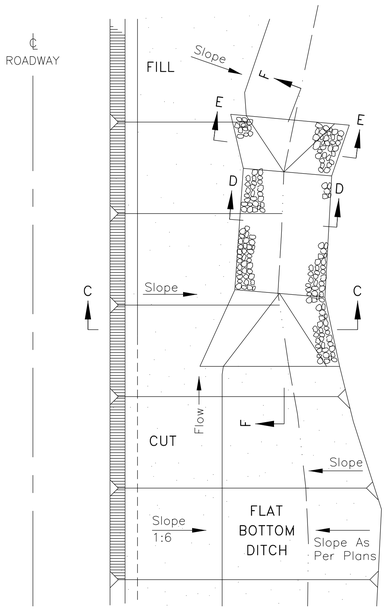
DRAINAGE STRUCTURES

MARK	STATION		SKEW No.	D.A. (Ha.)	REMARKS
25	10+408.58	2 – 1524 mm x 23.17 m CSPCs	104.4	62.49	NEW CSPC W CONCRETE SLOPE PAVING BLANKET & GROUTED RIPRAP @ OUTLET

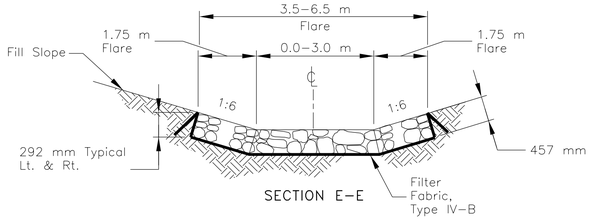


WORK REMOVED FROM PROJECT SCOPE

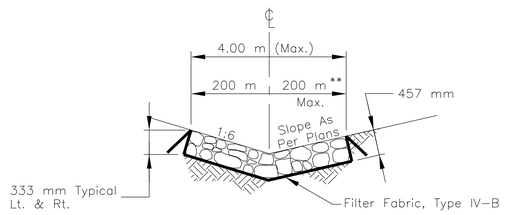
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	25	106



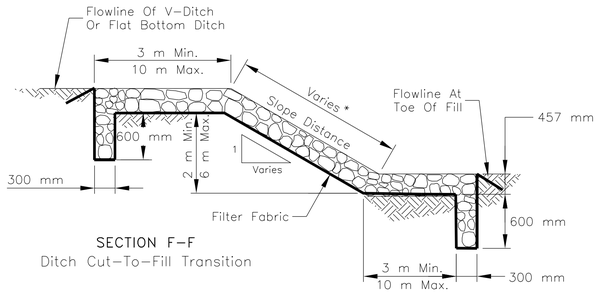
CUT–TO–FILL TRANSITION
For Flat Bottom Ditch



SECTION E–E

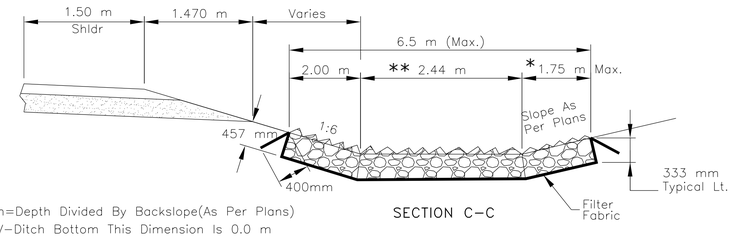


SECTION D–D
** Width=Depth Divided By Backslope (As Per Plans)



SECTION F–F
Ditch Cut–To–Fill Transition

* Extend Riprap Down Ditch Line Until The Slope Is 2% Or Less Before Construction Of The Toe Pad



*Width=Depth Divided By Backslope(As Per Plans)
**At V–Ditch Bottom This Dimension Is 0.0 m

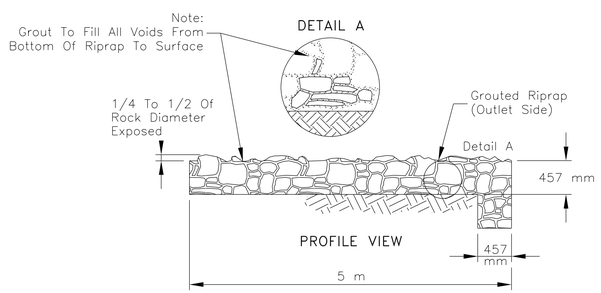
SECTION C–C

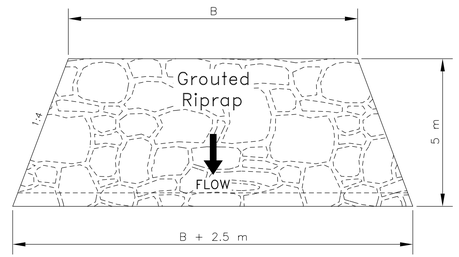
GENERAL NOTES

1. ALL WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP–14).
2. ALL STONE FOR RIPRAP SHALL BE CLASS 2 OR CLASS 3 AS NOTED MEETING THE REQUIREMENTS OF TABLE 705–1 OF THE FP–14. THERE SHALL BE NO ROCK LESS THAN 75 mm IN SIZE USED FOR THE RIPRAP.
3. ALL EXCAVATIONS AND BACKFILL OPERATIONS SHALL BE DONE TO NEAT LINES IN ACCORDANCE WITH SECTION 209 OF THE FP–14 AND WILL BE INCIDENTAL TO INSTALLATION OF RIPRAP. SEE SUPPLEMENTAL SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
4. THE QUANTITIES SHOWN ARE ONLY AN ESTIMATE. ACTUAL QUANTITIES SHALL BE DETERMINED IN THE FIELD. THE CO/COTR AND CONTRACTOR SHALL REVIEW ALL ROCK CUT AREAS THAT ARE TO RECEIVE RIPRAP AFTER THEY HAVE BEEN "ROUGHED IN". IF IN THE OPINION OF THE CO/COTR, THE ROCK CUT IS STABLE, THE CO/COTR MAY ELECT TO DELETE SECTIONS OF THE RIPRAP PROTECTION.
5. ANY FILL MATERIAL NEEDED TO BRING EXISTING OUTLET CHANNEL UP TO GRADE SHALL BE TAKEN FROM AREAS ADJACENT TO THE STRUCTURE AS DIRECTED BY THE CO/COTR.
6. SHOWN RIPRAP LAYOUT DIMENSIONS AND SHAPES ARE APPROXIMATE, THE CONTRACTOR SHALL ADJUST AS NECESSARY TO FIT FIELD CONDITIONS. ADJUSTMENTS AND/OR THE FINAL RIP RAP LAYOUT SHALL BE APPROVED BY THE CO/COTR. SAID ADJUSTMENTS ARE INCIDENTAL TO THE RIPRAP ITEMS AND NO ADDITIONAL PAYMENT WILL BE MADE.
7. PRIOR TO PLACING RIPRAP THE GROUND AT THE RIPRAP PLACEMENT AREA SHALL BE AT THE FINAL GRADE AND/OR SLOPE. IF DURING FINAL GROUND SHAPING THE RIPRAP IS FOUND TO BE INCORRECTLY PLACED/SHAPED, AS PER THE CO/COTR, THE RIPRAP SHALL BE REMOVED AND REPLACED TO FIT THE FINISH GROUND PROFILE.
8. FILTER FABRIC SHALL BE INSTALLED UNDER ALL RIPRAP SHOWN ON THIS SHEET, AND SHALL CONFORM TO SECTION 714, TYPE IV–B, AND SHALL BE CONSIDERED INCIDENTAL TO RIPRAP BID ITEMS. FILTER FABRIC SHALL BE TUCKED OR EMBEDDED 400 mm INTO THE GROUND ALONG ALL EDGES AS SHOWN.
9. AT ALL LOCATIONS WHERE RIPRAP DITCH LINING CONNECTS TO CULVERTS OR CULVERT RIPRAP INLET/OUTLET STRUCTURE, THE CONTRACTOR SHALL SHAPE THE DITCH LINING TO CONNECT TO THE DRAINAGE STRUCTURE(S) AS DIRECTED BY THE CO/COTR. THIS WORK SHALL BE CONSIDERED INCIDENTAL OBLIGATIONS OF THE CONTRACTOR.
10. THE FINISHED SURFACE OF ALL RIPRAP SHALL BE SET 30 mm BELOW THE GROUND SURFACE EXCEPT AT RIPRAP DISCHARGE ENDS, WHICH SHALL BE SET 30 mm ABOVE THE GROUND SURFACE.
11. THE RIPRAP LENGTHS GIVEN FOR CUT–TO–FILL TRANSITIONS, FURROW DITCHES, OUTLET PROTECTION, AND CHECK DAMS ARE APPROXIMATE, THE ACTUAL LENGTHS WILL BE DETERMINED UPON COMPLETION OF FINISHED SUBGRADE CONSTRUCTION.

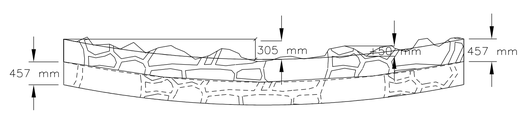
CUT TO FILL TRANSITION
ITEM No. 25101-0100: PLACED RIPRAP, CLASS 1

STATION TO STATION		LOC.	WIDTH (m)	THICKNESS (m)	TOTAL LENGTH (m)	TOTAL VOL. RIPRAP (m^3)	KEY-IN (m^3)	APPROACH (m^3)	LENGTH (m^3)	FLARE (m^3)	KEY-IN (m^3)
UNIT I											
0+610.00	0+630.00	RIGHT	VARIES	0.457	20.00	77.90	1.22	4.91	65.81	4.80	1.17
0+640.00	0+670.00	LEFT	VARIES	0.457	100.00	77.90	1.22	4.91	65.81	4.80	1.17
				UNIT I SUBTOTAL:		155.81					
				UNIT I USE:		**160.00**					

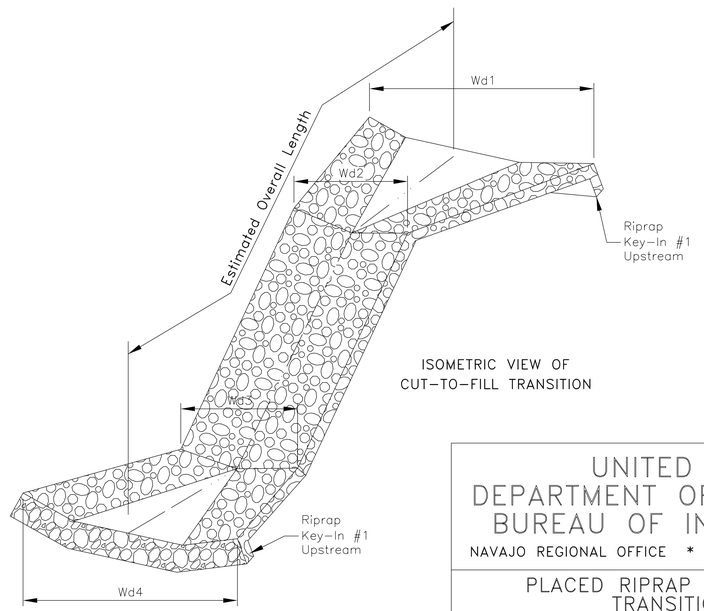




GROUTED RIPRAP PAD DETAIL
@ OUTLET SIDE ONLY



PROFILE VIEW
OUTLET PAD FOR CONCRETE SLOPE PAVING



ISOMETRIC VIEW OF
CUT–TO–FILL TRANSITION

ITEM NO. 25110-0100: GROUTED RIPRAP, CLASS 1 - OUTLET PAD FOR CONCRETE SLOPE PAVING

STATION	NO. OF PIPES	Wd (m)	Ws (m)	RISE (m)	A (m)	B (m)	t (m)	LENGTH (m)	FLARE (m)	PAD (m^3)	KEY-IN (m^3)	TOTAL VOL. RIPRAP (m^3)
UNIT I												
1+963.04	1	2.134	2.134	4.406	6.609	0.457	5.00	9.11	17.96	1.90	19.86	
										UNIT I SUBTOTAL:		19.86
										UNIT I USE:		**25.00**
WORK REMOVED FROM PROJECT SCOPE												
5+633.53	3	0.914	0.914	8.529	10.235	0.457	5.00	12.73	26.24	2.66	28.90	
9+029.21	1	2.134	2.134	4.273	6.410	0.457	5.00	8.91	17.50	1.86	19.36	
9+584.63	1	2.134	2.134	4.322	6.484	0.457	5.00	8.98	17.67	1.88	19.55	
10+408.58	2	1.524	1.524	5.507	7.080	0.457	5.00	9.58	19.04	2.00	21.04	
										(FOR INFORMATION ONLY) TOTAL:		**88.85**

STEPHEN M. LUJAN
NEW MEXICO
26338
10/27/23
PROFESSIONAL ENGINEER

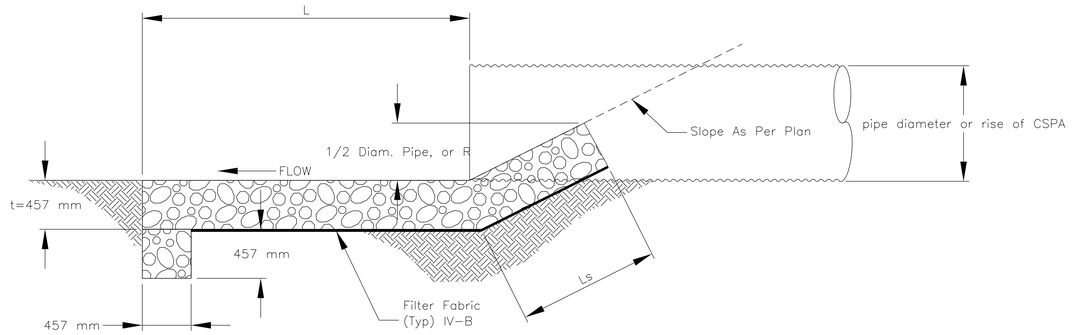
UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF INDIAN AFFAIRS

NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

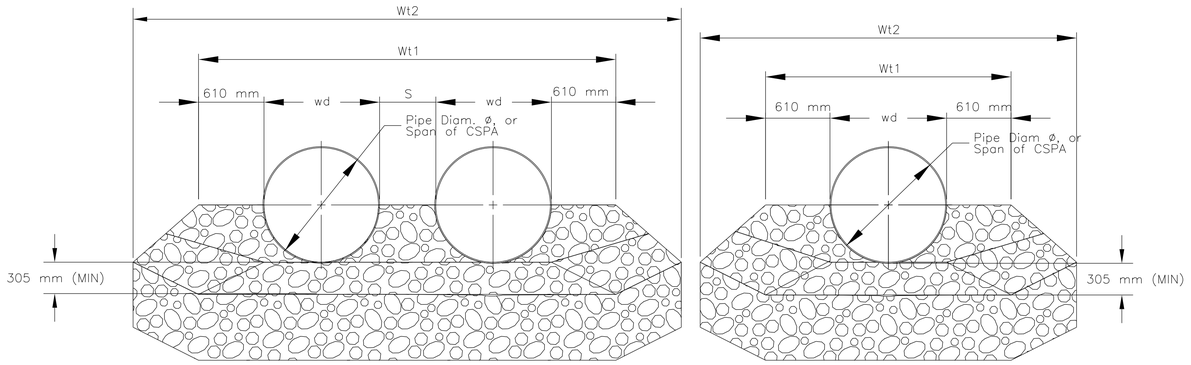
PLACED RIPRAP AT CUT–TO–FILL TRANSITIONS AND GROUTED RIPRAP DETAILS

DRAWN BY: NRDOT	DATE: 11/2014
DESIGNED BY: NRDOT	DATE: 11/2014
REVISED: --/----	BY: DESIGN 1
$FILES$	

10/26/2023 $TIME$
$FILES$



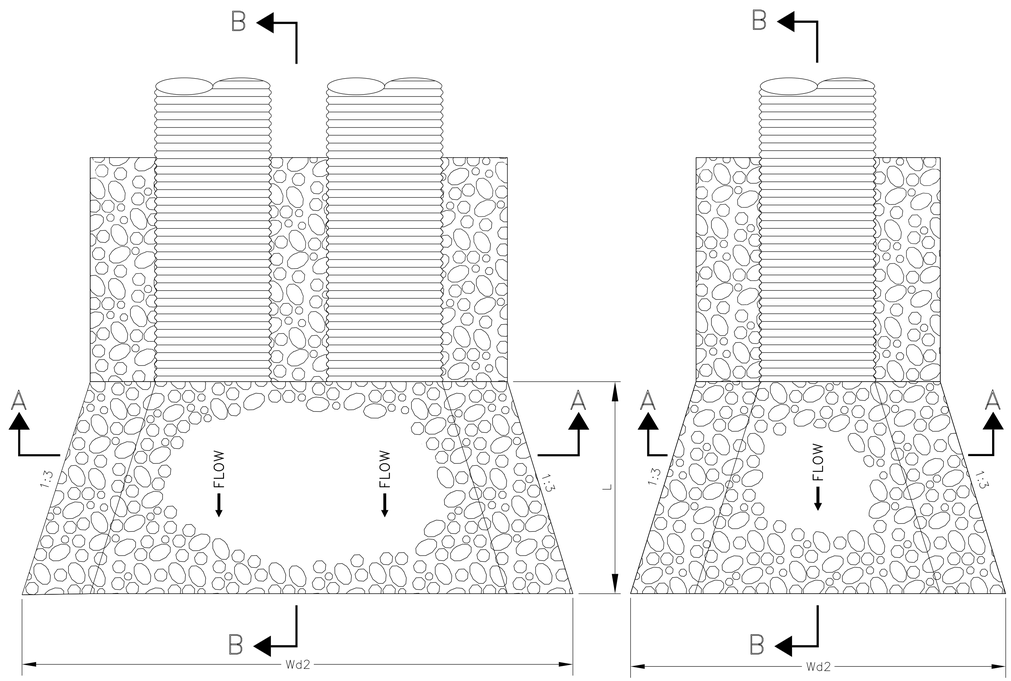
SECTION B–B



ELEVATION – MULTIPLE BARREL

ELEVATION – SINGLE BARREL

SECTION A–A



PLAN – MULTIPLE BARREL

PLAN – SINGLE BARREL

Distance Between Pipe'(s)
S= 1829 mm for 610 mm ø
S= 2083 mm for 762 mm ø
S= 2363 mm for 914 mm ø
S= 2642 mm for 1067 mm ø
S= 1677 mm for 711 x 508 CSPA
S= 1880 mm for 889 x 610 CSPA
S= 2185 mm for 1067 x 737 CSPA
S= 2337 mm for 1245 x 838 CSPA
S= 2515 mm for 1245 x 965 CSPA

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	26	106

GENERAL NOTE:

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 CLEAR AND GRUB ALL DEBRIS, BRUSHES, AND VEGETATION THAT WILL INTERFERE WITH THE PLACEMENT OF DOWNDRAIN, CUT/FILL TRANSITIONS, EMBANKMENT PROTECTION, APRON AND STILLING BASIN RIPRAP OUTLET PROTECTION. THIS WORK SHALL BE INCIDENTAL OBLIGATIONS OF THE CONTRACTOR UNDER BID ITEMS 251.
3. THE CONTRACTOR SHALL BE REQUIRED TO MAKE ANY NECESSARY FIELD ADJUSTMENTS TO MATCH ACTUAL FIELD CONDITIONS, AS DIRECTED BY THE CO/COTR. THESE FIELD ADJUSTMENTS ARE INCIDENTAL OBLIGATIONS OF THE CONTRACTOR.
4. IF UNSUITABLE MATERIAL FOUND AT THE RIPRAP OR CUTOFF WALLS LOCATION AND ELEVATIONS, THE MATERIAL SHALL BE REMOVED AND REPLACED WITH APPROVED STRUCTURAL BACKFILL AS DETERMINED BY THE CO/COTR. ALL STRUCTURAL BACKFILL SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY AS DETERMINED BY AASHTO T99 METHOD C, BEFORE AND AFTER FOOTINGS ARE PLACED. THE STRUCTURAL BACKFILL MATERIAL SHALL CONFORM TO SECTION 208 AND 209 OF THE FP–14. THIS WORK SHALL BE MEASURED AND INCIUDED IN THE UNIT PRICE BID FOR ITEM 20403–0000.
5. THE QUANTITIES SHOWN ARE ONLY AN ESTIMATE. ACTUAL QUANTITIES SHALL BE DETERMINED IN THE FIELD. THE CO/COTR, AND CONTRACTOR SHALL REVIEW ALL ROCK CUT AREAS AFTER THE CONSTRUCTION OF DITCHES, DOWNDRAINS, AND RIPRAP BASINS HAVE BEEN "ROUGH IN". IF IN THE OPINION OF THE CO/COTR, THAT THE ROCK CUT IS STABLE, THE CO/COTR MAY ELECT TO DELETE SECTIONS OF THE RIPRAP PROTECTION.
6. WIRE ENCLOSED RIPRAP SHALL CONFORM TO SECTION 251 OF THE FP–14 AND THE SUPPLEMENTAL SPECIFICATIONS. WIRE MESH SHALL BE PLACED TO ENCLOSE THE STONE LAYER ON ALL SIDES AND FACES. THE WIRE MESH SHALL BE JOINED ON ALL EDGES AND SHALL BE DRAWN TIGHTLY AGAINST THE STONE BY MEANS OF 3.8mm WIRE TIES SPACED 610mm LONGITUDINALLY AND TRANSVERSELY.
7. WIRE FABRIC MESH SHALL BE GALVANIZED AND BE OF THE CONFIGURATION SHOWN ON THESE PLANS. 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 100mm, AND SHALL NOT ALLOW A 75mm ø SPHERE TO PASS THROUGH A WIRE FABRIC OPENING.
8. STONE SIZE SHALL CONFORM TO TABLE 705–1, SECTION 705, STONE FOR RIPRAP, CLASS 1.
9. RIPRAP SHALL BE ANCHORED AS SHOWN WITH L 102mm x 102mm x 9.5mm STEEL ANGLES SPACED AT 2.44 m EACH WAY. STEEL ANGLE SHALL EXTEND 75mm ABOVE THE TOP OF THE MESH. STEEL ANGLES SHALL CONFORM TO AASHTO M270M, GRADE 250. IN ROCKY AREAS, DRIVE ANGLE IRON ANCHORS TO REFUSAL (MIN. EMBEDDED 500mm). THEN CUT AT 75mm ABOVE RIPRAP. ANCHORS SHALL BE SAW CUT TO LEAVE A SMOOTH EDGE. DO NOT USE A CUTTING TORCH. FURNISHING AND PLACEMENT OF STEEL ANGLES SHALL BE INCIDENTAL TO ITEM 25112–2000.
10. EXCAVATION OF TOE TRENCH TO PLACE RIPRAP BELOW THE FLOW LINE AND PLACEMENT OF RIPRAP BEYOND THE TOE TO THE RIGHT–OF–WAY LIMIT SHALL BE INCLUDED IN THE APPROPRIATE RIPRAP BID ITEMS.
11. FILTER FABRIC SHALL BE INSTALLED UNDER ALL RIPRAP (EXCEPT GROUTED RIPRAP) AND SHALL CONFORM TO SECTION 714, TYPE IV–B, AND SHALL BE INCLUDED IN THE APPROPRIATE RIPRAP BID ITEMS. ROUND ALL SHARP CONTOURS AS REQUIRED TO FIT THE SOIL EROSION MATERIAL FLUSH WITH THE EXISTING GROUND.
12. FOR CUT TO FILL TRANSITIONS EXTEND LENGTH (L) DOWN UNTIL A 2% OR LESS GRADE IS ACHIEVED BEFORE INSTALLING SPLASH APRON.
13. FOR ALL RIPRAP DOWNDRAINS AND CULVERT OUTLETS, PROVIDE CENTER OF RIPRAP 305 mm (MIN) DIP BELOW OUTER EDGES AT OUTLET END. PLACE RIPRAP TO FIT CHANNEL BANKS WHERE POSSIBLE. ALL EXCAVATION AND APRON WARP RESHAPING SHALL BE CONSIDERED INCIDENTAL TO COMPLETION OF THE STRUCTURE.

STEPHEN M. LUAN
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26338
10/27/23
PROFESSIONAL ENGINEER

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

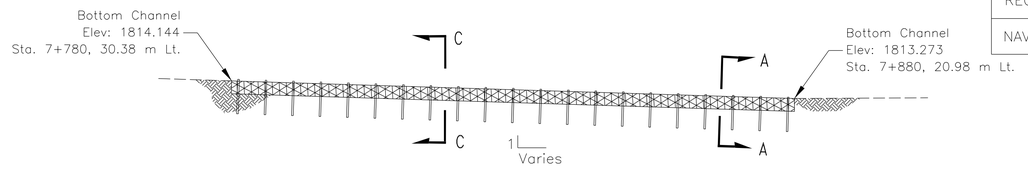
RIPRAP APRON OUTLET PROTECTION DETAILS

DRAWN BY: NRDOT	DATE: 06/15
DESIGNED BY: NRDOT	DATE: 06/15
REVISED: --/--	BY: DESIGN 1
$FILES$	

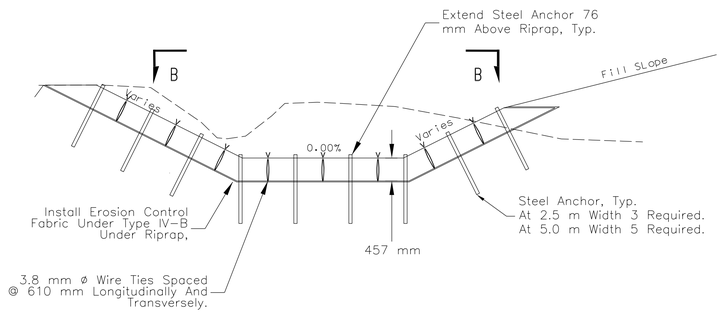
U.S. DEPARTMENT OF THE INTERIOR 1824 BUREAU OF INDIAN AFFAIRS

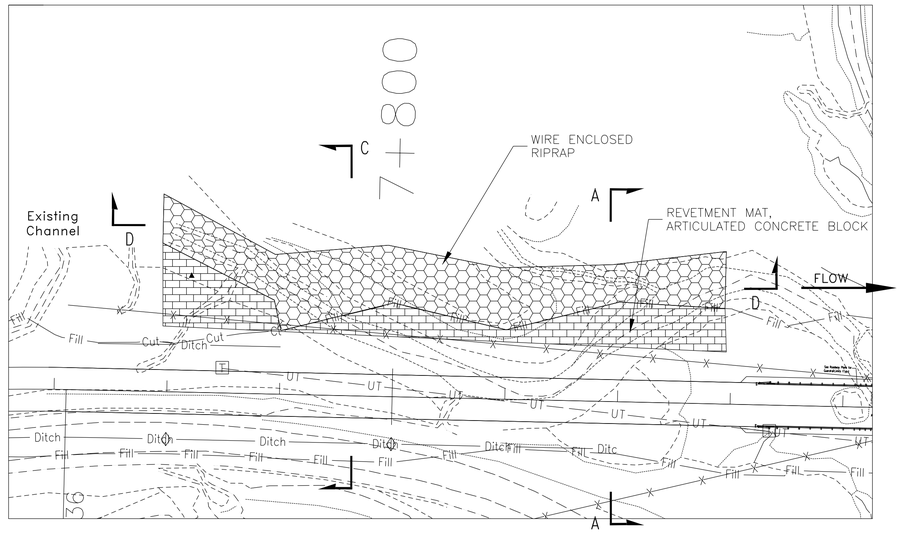
$TIME$ 10/27/2023 $FILES$

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	27	106



SECTION D–D



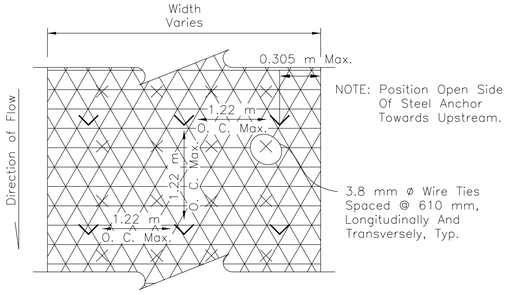


PLAN

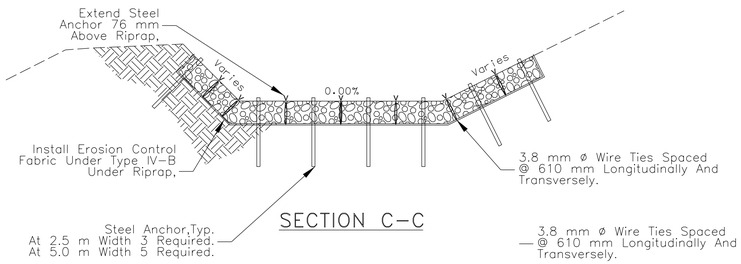
SECTION A–A

ITEM No. 25112-2000: WIRE ENCLOSED RIPRAP, CLASS 1						
SPECIAL CHANNEL						
			WIDTH	THICKNESS	LENGTH	TOTAL VOL.
STATION		LOCATION	(m)	(m)	(m)	RIPRAP
						(m3)
UNIT II						
7+760.00	7+860.00	LEFT	VARIES	0.457	100.00	138.00
					UNIT II TOTAL	138.00
					UNIT II USE	140.00

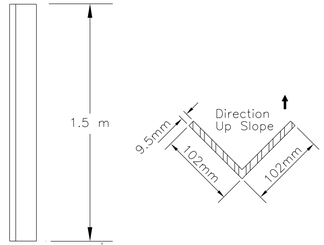
ITEM No. 25306-1000: REVETMENT MAT, ARTICULATED CONCRETE BLOCK					
SPECIAL CHANNEL					
			WIDTH	LENGTH	TOTAL VOL.
STATION		LOCATION	(m)	(m)	(m^2)
UNIT II					
7+760.00	7+860.00	LEFT	VARIES 3m to 15m	100.00	1,500.00
				UNIT II TOTAL	1,500.00
				UNIT II USE	1,500.00



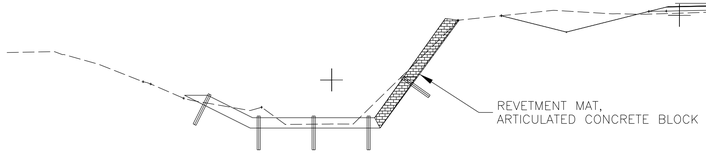
SECTION B–B



SECTION C–C

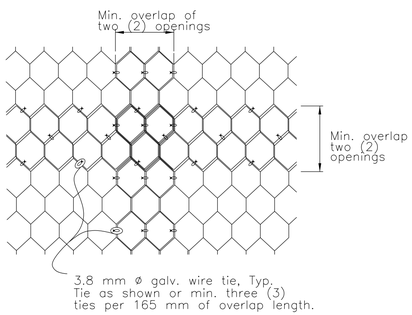


STEEL ANCHOR DETAIL

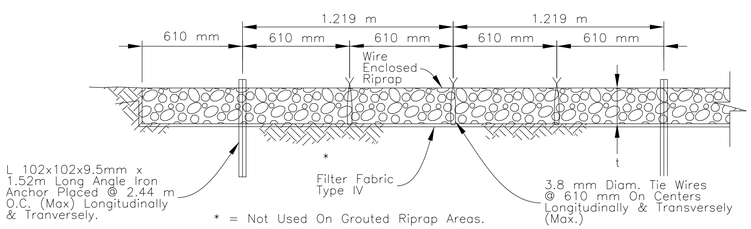


LINE	SURFAC
———	N500
- - - - - - - - - - - - - - -	N500
	Sca

7+780.00



FABRIC SPLICING DETAIL



ANGLE IRON ANCHOR DETAILS
WIRE ENCLOSED SPECIAL CHANNEL

STEPHEN M. LUNA
NEW MEXICO
26338
10/27/23
PROFESSIONAL ENGINEER

NAVAJO DIVISION OF TRANSPORTATION

WIRE–ENCLOSED RIPRAP SPECIAL CHANNEL DETAIL

DRAWN BY: WCI	DATE: 10/23
DESIGNED BY: SML	DATE: 10/23
REVISED: --/--	BY: DESIGN 1
$FILES$	

NAVAJO D.O.T

10/26/2023 $TIME$

$FILES$

CHECK DAMS

ITEM No. 25101-0100: PLACED RIPRAP, CLASS 1

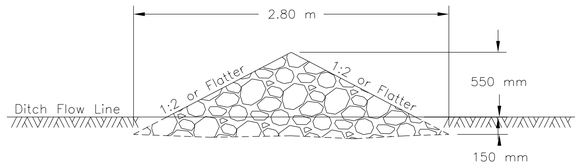
STATION	ELEV.	STATION	ELEV.	LOC.	LENGTH	SLOPE (%)	L	No. OF DAMS
4+100.00	1924.33	4+860.00	1903.37	LT.	760	2.76	40	19
STATION	**LOC. (m)**	**LENGTH**	**WIDTH**	**HEIGHT**	**VOLUME**	**WORK REMOVED FROM PROJECT SCOPE**		
4+100.00	8.41 LT	2.40	2.8	0.75	2.52			
4+140.00	8.41 LT	2.10	2.8	0.75	2.21			
4+180.00	8.41 LT	2.10	2.8	0.75	2.21			
4+220.00	8.41 LT	1.80	2.8	0.75	1.89			
4+260.00	8.41 LT	1.80	2.8	0.75	1.89			
4+300.00	8.41 LT	1.80	2.8	0.75	1.89			
4+340.00	8.41 LT	1.80	2.8	0.75	1.89			
4+380.00	8.41 LT	1.80	2.8	0.75	1.89			
4+420.00	8.41 LT	1.80	2.8	0.75	1.89			
4+460.00	8.41 LT	1.80	2.8	0.75	1.89			
4+500.00	8.41 LT	1.80	2.8	0.75	1.89			
4+540.00	8.41 LT	1.80	2.8	0.75	1.89			
4+580.00	8.41 LT	1.80	2.8	0.75	1.89	**FOR INFORMATION ONLY**		
4+620.00	8.41 LT	1.80	2.8	0.75	1.89			
4+660.00	8.41 LT	1.80	2.8	0.75	1.89			
4+700.00	8.41 LT	1.80	2.8	0.75	1.89			
4+740.00	8.41 LT	1.80	2.8	0.75	1.89			
4+780.00	8.41 LT	1.80	2.8	0.75	1.89			
4+820.00	8.41 LT	2.40	2.8	0.75	2.52			
4+860.00	8.41 LT	1.80	2.8	0.75	1.89			
				SUBTOTAL:	**39.70**			
STATION	**ELEV.**	**STATION**	**ELEV.**	**LOC.**	**LENGTH**	**SLOPE (%)**	**L**	**No. OF DAMS**
4+180.00	1923.80	4+980.00	1895.10	RT.	800	3.59	40	20
STATION	**LOC. (m)**	**LENGTH**	**WIDTH**	**HEIGHT**	**VOLUME**	**WORK REMOVED FROM PROJECT SCOPE**		
4+180.00	8.41 RT	2.40	2.8	0.75	2.52			
4+220.00	8.41 RT	2.40	2.8	0.75	2.52			
4+260.00	8.41 RT	2.10	2.8	0.75	2.21			
4+300.00	8.41 RT	2.40	2.8	0.75	2.52			
4+340.00	8.41 RT	2.40	2.8	0.75	2.52			
4+380.00	8.41 RT	2.40	2.8	0.75	2.52			
4+420.00	8.41 RT	2.40	2.8	0.75	2.52			
4+460.00	8.41 RT	2.40	2.8	0.75	2.52			
4+500.00	8.41 RT	2.40	2.8	0.75	2.52			
4+540.00	8.41 RT	2.40	2.8	0.75	2.52			
4+580.00	8.41 RT	2.40	2.8	0.75	2.52			
4+620.00	8.41 RT	2.40	2.8	0.75	2.52			
4+660.00	8.41 RT	2.40	2.8	0.75	2.52	**FOR INFORMATION ONLY**		
4+700.00	8.41 RT	2.40	2.8	0.75	2.52			
4+740.00	8.41 RT	2.10	2.8	0.75	2.21			
4+780.00	8.41 RT	1.80	2.8	0.75	1.89			
4+820.00	8.41 RT	1.80	2.8	0.75	1.89			
4+860.00	8.41 RT	2.10	2.8	0.75	2.21			
4+900.00	8.41 RT	2.10	2.8	0.75	2.21			
4+980.00	8.41 RT	2.10	2.8	0.75	2.21			
				SUBTOTAL:	**47.59**			
5+920.00	1858.51	6+540.00	1850.39	RT.	620.00	1.31	60	10
STATION	**LOC. (m)**	**LENGTH**	**WIDTH**	**HEIGHT**	**VOLUME**	**WORK REMOVED FROM PROJECT SCOPE**		
5+920.00	10.33 RT.	5.20	2.8	0.75	5.46			
5+960.00	10.44 RT.	4.93	2.8	0.75	5.18			
6+000.00	10.69 RT.	4.93	2.8	0.75	5.18			
6+040.00	10.52 RT.	5.75	2.8	0.75	6.04			
6+120.00	10.52 RT.	5.20	2.8	0.75	5.46			
6+180.00	10.52 RT.	5.20	2.8	0.75	5.46	**FOR INFORMATION ONLY**		
6+300.00	10.69 RT.	4.93	2.8	0.75	5.18			
6+420.00	10.52 RT.	4.93	2.8	0.75	5.18			
6+480.00	10.52 RT.	4.93	2.8	0.75	5.18			
6+540.00	10.52 RT.	4.93	2.8	0.75	5.18			
				SUBTOTAL:	**53.50**			

UNIT II								
6+800.00	1845.04	7+100.00	1835.96	RT.	300	3.03	40	8
STATION	**LOC. (m)**	**LENGTH**	**WIDTH**	**HEIGHT**	**VOLUME**			
6+800.00	8.41 RT.	1.65	2.8	0.75	1.74			
6+800.00	8.41 RT.	1.80	2.8	0.75	1.89			
6+800.00	8.80 RT.	1.80	2.8	0.75	1.89			
6+800.00	8.80 RT.	1.80	2.8	0.75	1.89			
6+800.00	8.80 RT.	1.80	2.8	0.75	1.89			
6+800.00	8.80 RT.	1.80	2.8	0.75	1.89			
6+800.00	8.80 RT.	1.80	2.8	0.75	1.89			
6+800.00	8.80 RT.	1.80	2.8	0.75	1.89			
				SUBTOTAL:	**14.97**			
6+800.00	1845.27	7+080.00	1835.41	LT.	280	3.52	40	7
STATION	**LOC. (m)**	**LENGTH**	**WIDTH**	**HEIGHT**	**VOLUME**			
6+800.00	8.28 LT.	2.10	2.8	0.75	2.21			
6+800.00	8.28 LT.	2.10	2.8	0.75	2.21			
6+800.00	8.28 LT.	2.10	2.8	0.75	2.21			
6+800.00	8.28 LT.	2.10	2.8	0.75	2.21			
6+800.00	8.28 LT.	2.10	2.8	0.75	2.21			
6+800.00	8.28 LT.	2.10	2.8	0.75	2.21			
6+800.00	8.28 LT.	2.10	2.8	0.75	2.21			
6+800.00	8.28 LT.	2.10	2.8	0.75	2.21			
				SUBTOTAL:	**17.68**			
7+480.00	1828.55	7+700.00	1821.21	LT.	220.00	3.34	40	6
STATION	**LOC. (m)**	**LENGTH**	**WIDTH**	**HEIGHT**	**VOLUME**			
7+480.00	8.41 LT.	2.10	2.8	0.75	2.21			
7+520.00	8.41 LT.	2.10	2.8	0.75	2.21			
7+560.00	8.41 LT.	2.10	2.8	0.75	2.21			
7+600.00	8.41 LT.	2.10	2.8	0.75	2.21			
7+640.00	8.41 LT.	2.10	2.8	0.75	2.21			
7+680.00	8.41 LT.	2.10	2.8	0.75	2.21			
				SUBTOTAL:	**13.26**			
7+480.00	1828.55	7+800.00	1821.21	LT.	320.00	2.29	40	8
STATION	**LOC. (m)**	**LENGTH**	**WIDTH**	**HEIGHT**	**VOLUME**			
7+480.00	8.29 RT.	2.40	2.8	0.75	2.52			
7+520.00	8.29 RT.	2.40	2.8	0.75	2.52			
7+760.00	8.29 RT.	2.40	2.8	0.75	2.52			
7+800.00	8.29 RT.	2.40	2.8	0.75	2.52			
				SUBTOTAL:	**10.08**			
				UNIT II TOTAL	**55.99**			
				UNIT II USE	**60.00**			

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	28	106

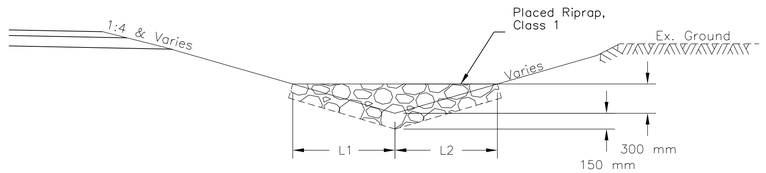
GENERAL NOTES

1. WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS, FP-14.
2. ROUND ALL SHARP CONTOURS AS REQUIRED TO FIT THE SOIL EROSION MATERIAL FLUSH WITH THE EXISTING GROUND.
3. THE CONTRACTOR SHALL BE REQUIRED TO MAKE FIELD ADJUSTMENTS TO MATCH ACTUAL FIELD CONDITIONSAS DIRECTED BY THE COR/COTR. NO ADDITIONAL PAYMENT SHALL BE MADE FOR SUCH ADJUSTMENTS.
4. EMBANKMENT SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY AS DETERMINED BY AASHTO T-99, METHOD C AND CONFORM TO SECTION 204 OF FP-14.
5. STONE SIZE SHALL CONFORM TO TABLE 705-1, SECTION 705, STONE FOR RIPRAP, CLASS 1. NO FILTER FABRIC UNDER CHECK DAMS.
6. ROCK CHECK DAM SHALL BE INCLUDED IN BID ITEM 25101-0100.



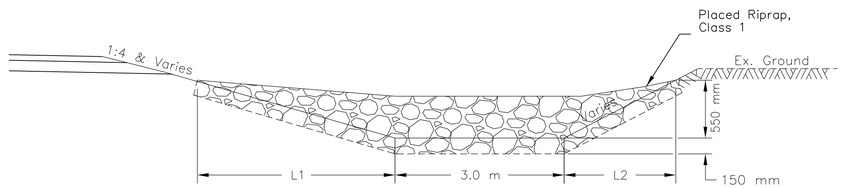
RIPRAP CHECK DAM PROFILE

(No Filter Fabric Required Under Check Dams)



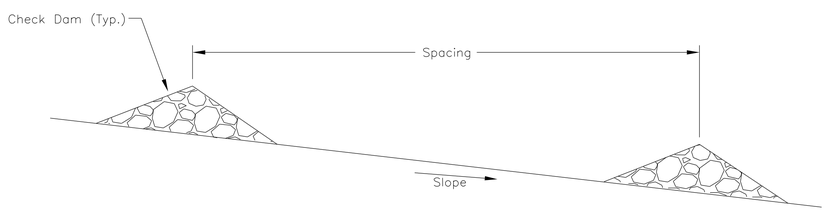
RIPRAP CHECK DAM IN V-DITCH

CROSS SECTION



RIPRAP CHECK DAM IN FLAT-BOTTOM DITCH

CROSS SECTION



CHECK DAM SPACING

SIDE VIEW

STEPHEN M. LUJAN
NEW MEXICO
26338
10/27/23
PROFESSIONAL ENGINEER

Stephen M. Lujan

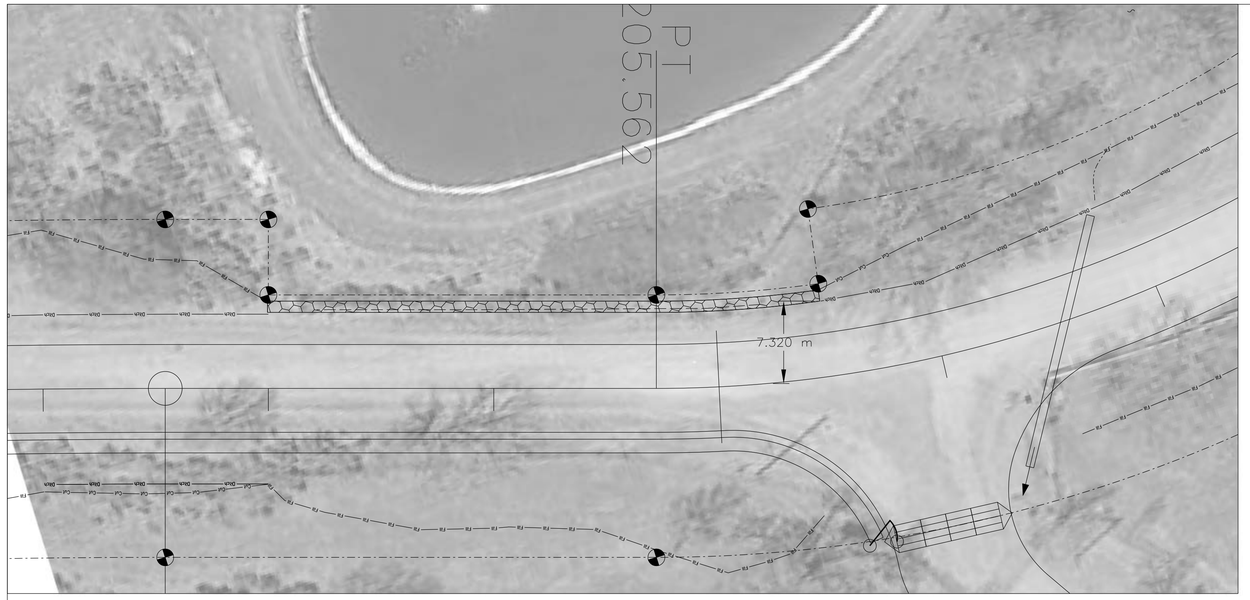
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

RIPRAP QUANTITY TABLES
& CHECK DAM DETAILS

DRAWN BY: NRDOT DATE: 07/2015
DESIGNED BY: NRDOT DATE: 07/2015
REVISED: --/---- BY: DESIGN 1
$FILES$

$TIME$
10/26/2023
$FILES$

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	29	106



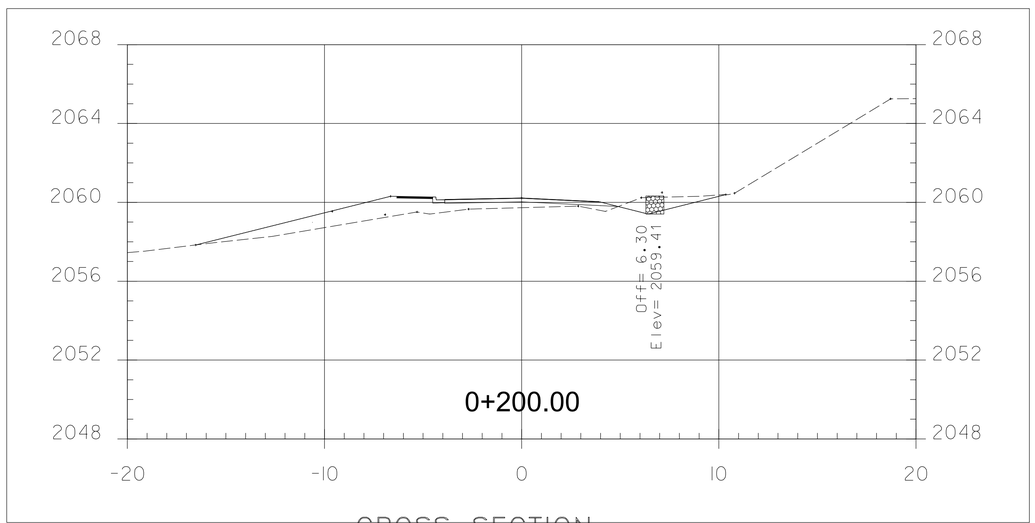
PLAN

GABION LOCATION @ Sta. 0+190 TO 0+240

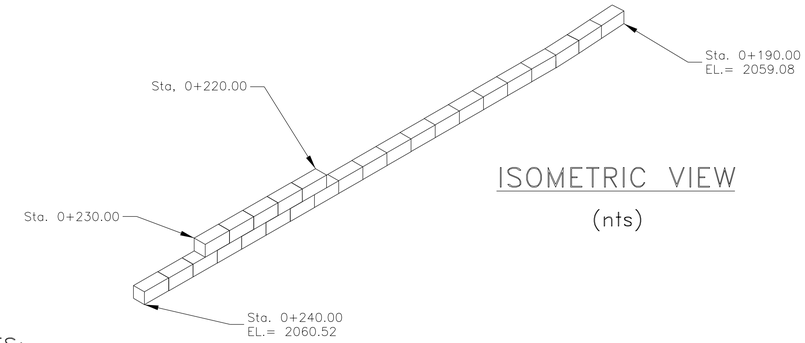
ITEM No. 25302-1000: GABIONS, CLASS 2

NAVAJO FISH HATCHERY

STATION	LOC.	SIZE OF BASKET	CAPACITY m^3 (Each Basket):	LAYER	BASKET(s) REQUIRED	VOLUME (m^3)	REMARK
0+190.00	6.30m Rt.	1.0m high x 1.0m x 1.00m long	0.76	Bottom	1	0.76	Gabion Retaining Wall First Row At Ground Level.
0+195.00	6.30m Rt.	1.0m high x 1.0m x 1.00m long	0.76	Bottom	1	0.76	Gabion Retaining Wall First Row At Ground Level.
0+200.00	6.30m Rt.	1.0m high x 1.0m x 1.00m long	0.76	Bottom	1	0.76	Gabion Retaining Wall First Row At Ground Level.
0+205.00	6.30m Rt.	1.0m high x 1.0m x 1.00m long	0.76	Bottom	1	0.76	Gabion Retaining Wall First Row At Ground Level.
0+210.00	6.30m Rt.	1.0m high x 1.0m x 1.00m long	0.76	Bottom	1	0.76	Gabion Retaining Wall First Row At Ground Level.
0+215.00	6.30m Rt.	1.0m high x 1.0m x 1.00m long	0.76	Bottom	1	0.76	Gabion Retaining Wall First Row At Ground Level.
0+220.00	6.30m Rt.	2.0m high x 1.0m x 2.00m long	1.53	Bottom & Top	2	3.06	Gabion Retaining Wall First & Second Row.
0+225.00	6.30m Rt.	2.0m high x 1.0m x 2.00m long	1.53	Bottom & Top	2	3.06	Gabion Retaining Wall First & Second Row.
0+230.00	6.30m Rt.	2.0m high x 1.0m x 2.00m long	1.53	Bottom & Top	2	3.06	Gabion Retaining Wall First & Second Row.
0+235.00	6.30m Rt.	1.0m high x 1.0m x 1.00m long	0.76	Bottom	1	0.76	Gabion Retaining Wall First Row At Ground Level.
0+240.00	6.30m Rt.	1.0m high x 1.0m x 1.00m long	0.76	Bottom	1	0.76	Gabion Retaining Wall First Row At Ground Level.
* Table of sizes for Gabions (8 x 10 mesh):					UNIT I TOTAL	15.26	
					UNIT I USE	**20.00**	



CROSS SECTION



ISOMETRIC VIEW

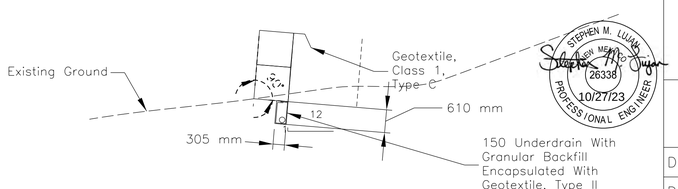
(nts)

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. THE QUANTITIES SHOWN ARE ONLY AN ESTIMATE. ACTUAL QUANTITIES SHALL BE DETERMINED IN THE FIELD. THE CONTRACTOR SHALL BE REQUIRED TO MAKE ANY NECESSARY ADJUSTMENTS IN THE FIELD TO MATCH EXISTING FIELD CONDITIONS. THESE FIELD ADJUSTMENTS ARE INCIDENTAL OBLIGATIONS OF THE CONTRACTOR.
3. GABION MATERIAL SHALL BE RECTANGULAR, COMPARTMENTED CONTAINERS FABRICATED FROM STYLE 1 DOUBLE-TWISTED HEXAGONAL MESH OF METALLIC COATED STEEL WIRE.
4. WIRE SHALL CONFORM TO ASTM A-641, CLASS 3 COATING, SOFT TAMPER. 8x10 cm MESH TYPE HAVING A NOMINAL MESH OPENING OF 83 mm x 114 mm.

MESH WIRE:	3.05 mm dia.
WIRE FOR NETTING:	3.00 mm dia.
WIRE FOR SELVEDGES & CORNERS:	3.80 mm dia.
WIRE FOR BINDING:	2.20 mm dia.
ZINC COATING:	260 g/m'

5. GABIONS SHALL BE PLACED TO THE DETAIL SHOWN. IF UNSUITABLE MATERIAL IS FOUND AT THE FOOTING LOCATION AND ELEVATIONS, THE MATERIAL SHALL BE REMOVED AND REPLACED WITH APPROVED SELECTED BACKFILL AS DESIGNED BY THE COR/COTR. ALL SELECTED BACKFILL SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY AS DETERMINED BY AASHTO T-99 METHOD C, BEFORE AND AFTER FOOTINGS ARE PLACED. THE STRUCTURAL BACKFILL MATERIAL SHALL BE CONFORM TO AASHTO "A-2-4" SOIL CLASS OR BETTER. THIS WORK AND MATERIAL SHALL BE CONSIDERED INCIDENTAL TO ITEM 25303.
6. WELDED WIRE FABRIC SHALL CONFORM TO AASHTO M 221 (ASTM A497), 483 MPa YIELD STRENGTH, AND SECTION 554 OF FP-14. FURNISHING AND PLACEMENT OF WIRE FABRIC SHALL BE INCLUDED IN THE PRICE BID OF ITEM 25303.
7. ALL FOOTING EXCAVATIONS SHALL BE INSPECTED AND APPROVED BY THE COR/COTR PRIOR TO PLACEMENT OF FORMS, WELDED WIRE FABRIC, HARDWARE AND SUBSEQUENT CONCRETE. ALL FOOTINGS EXCAVATIONS SHALL BE KEPT FREE OF WATER AT ALL TIMES.
8. BACK SLOPES RESHAPING, CLEANING, AND EXCAVATION SHALL BE DONE IN ACCORDANCE WITH THE PLANS AND AS DIRECTED BY THE COR/COTR. ANY WASTE MATERIAL SHALL BE USED AS BORROW WHERE NEEDED IN OTHER PROJECT LOCATIONS AS DESIGNATED AND APPROVAL BY THE COR/COTR. ALL BACK SLOPES EXCAVATION, CLEANING, AND RESHAPING SHALL BE CONSIDERED INCIDENTAL TO COMPLETION OF THE STRUCTURE.
9. ALL STONE FOR WIRE ENCLOSED RIP-RAP TO BE CLASS 2 MEETING THE GRADING REQUIREMENTS OF TABLE 705-1, AND SECTION 251 OF THE FP-03.
10. WARP EXISTING CUT BACK SLOPES AROUND ENDS OF GABION WALLS AND COMPACT SO THAT THE ENDS OF THE GABION STRUCTURE ARE BURIED INTO THE CUT BACK SLOPES. THIS WORK IS AN INCIDENTAL OBLIGATION OF THE CONTRACTOR.
11. FILTER FABRIC SHALL CONFORM TO SECTION 207 AND 714.01(a) OF THE FP-03 FOR TYPE 1V-B MATERIAL AND SHALL BE INCLUDED IN THE UNIT PRICE FOR ITEM 25303.
12. BACKFILL MATERIAL SHALL CONFORM TO AASHTO A-2-4 SOIL CLASSIFICATION OR BETTER. ALL APPROVED SELECT BACKFILL SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY AS DETERMINED BY AASHTO T-99, METHOD C. FURNISHING AND PLACEMENT OF SELECT BACKFILL SHALL BE INCIDENTAL TO INSTALLATION OF THE RETAINING WALL.
13. ALL BACKFILLING BEHIND WALLS SHALL BE DONE BY HAND W/HAND TAMPERS AS TO NOT DAMAGE THE FISH HATCHERY POND. THE PLACEMENT OF BACKFILL LIFTS SHALL BE BY FRONT END LOADED USED ONLY ON THE ROADWAY SIDE OF THE RETAINING WALL. A QUALIFIED ARCHEOLOGIST AND NAVAJO NATION FISH & WILDLIFE OFFICER IS REQUIRED DURING THE RETAINING WALL CONSTRUCTION AND PLACEMENT OF EROSION CONTROL FABRIC. UNLESS OTHERWISE SHOWN, DIMENSIONS ARE IN MILLIMETERS.
14. FOR DESIGN AND LAYOUT, H' AND B' MAY BE CONSIDERED EQUAL TO H AND B, RESPECTIVELY.



TYPICAL LAYOUT

NAVAJO DIVISION OF TRANSPORTATION

NAVAJO NATION FISH HATCHERY GABION WALL LAYOUT & DETAILS

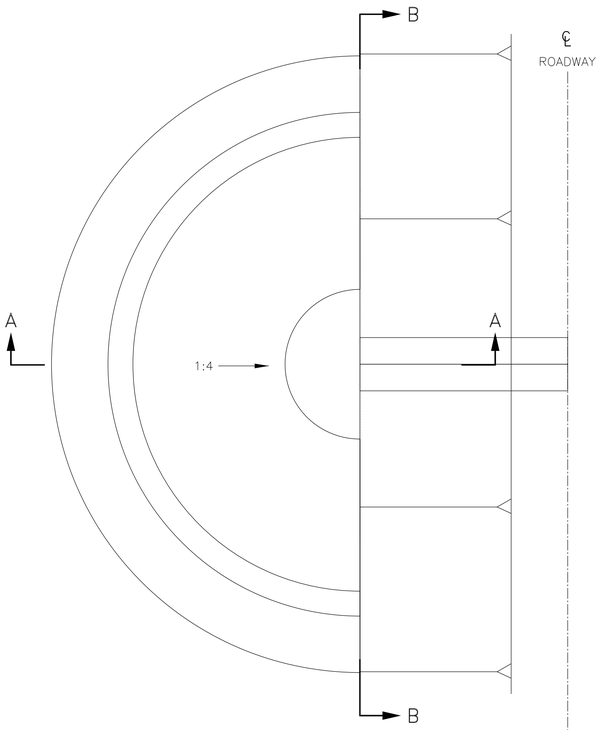
DRAWN BY: WCI	DATE: 10/23
DESIGNED BY: SML	DATE: 10/23
REVISED: --/--	BY: DESIGN 1
$FILES$	

NAVAJO D.O.T

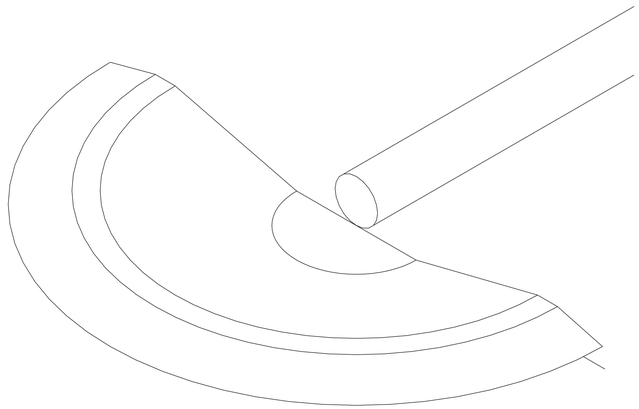
10/12/2023 $TIME$

$FILES$

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	30	106



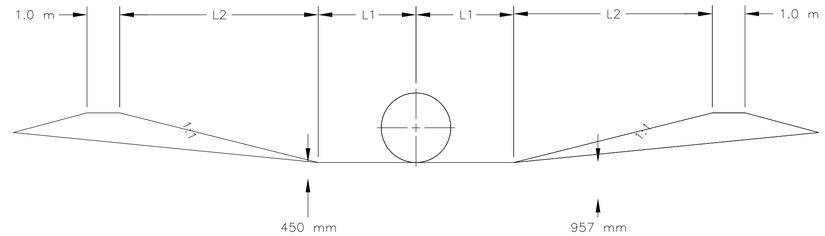
PLAN VIEW



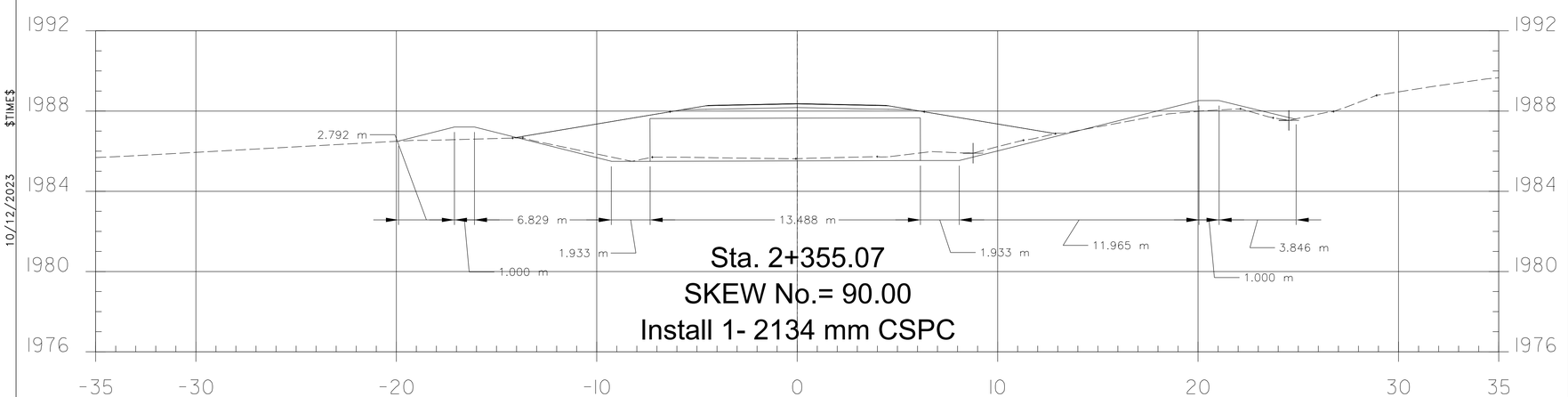
ISOMETRIC VIEW

GENERAL NOTES

1. WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-14).
2. THE DIMENSIONS SHOWN ARE ONLY AN ESTIMATE. ACTUAL DIMENSIONS SHALL BE DETERMINED IN THE FIELD. THE CONTRACTOR WILL BE REQUIRED TO MAKE ANY NECESSARY ADJUSTMENTS IN THE FIELD TO MATCH EXISTING FIELD CONDITIONS. THESE FIELD ADJUSTMENTS ARE INCIDENTAL OBLIGATIONS OF THE CONTRACTOR.
3. EXCAVATE, CLEAN, AND RESHAPE INLET TO INSTALL ROCK BERM AS SHOWN. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO ITEM 25110-2000.
4. STONE SIZE SHALL CONFORM TO FP-14, TABLE 705-1, CLASS 2.
5. FILL ROCK VOIDS WITH GROUTED PER SECTION 251 & 712.05. LEAVE ROCK ON SURFACE EXPOSED 1/4 TO 1/2 ROCK DEPTH. SEE DETAIL BELOW.
6. ALL EXCAVATIONS AROUND THE ROCK BERM INLET STRUCTURES SHALL BE BACKFILLED WITH COMPACTED MATERIAL AS PER FP-14 SECTION 204.10.



SECTION B-B



Sta. 2+355.07
SKEW No.= 90.00
Install 1- 2134 mm CSPC

STEPHEN M. LUNA
NEW MEXICO
26338
10/27/23
PROFESSIONAL ENGINEER

NAVAJO DIVISION
OF TRANSPORTATION

STA. 2+355.07
STOCKPASS &
EARTH EMBANKMENT DETAILS

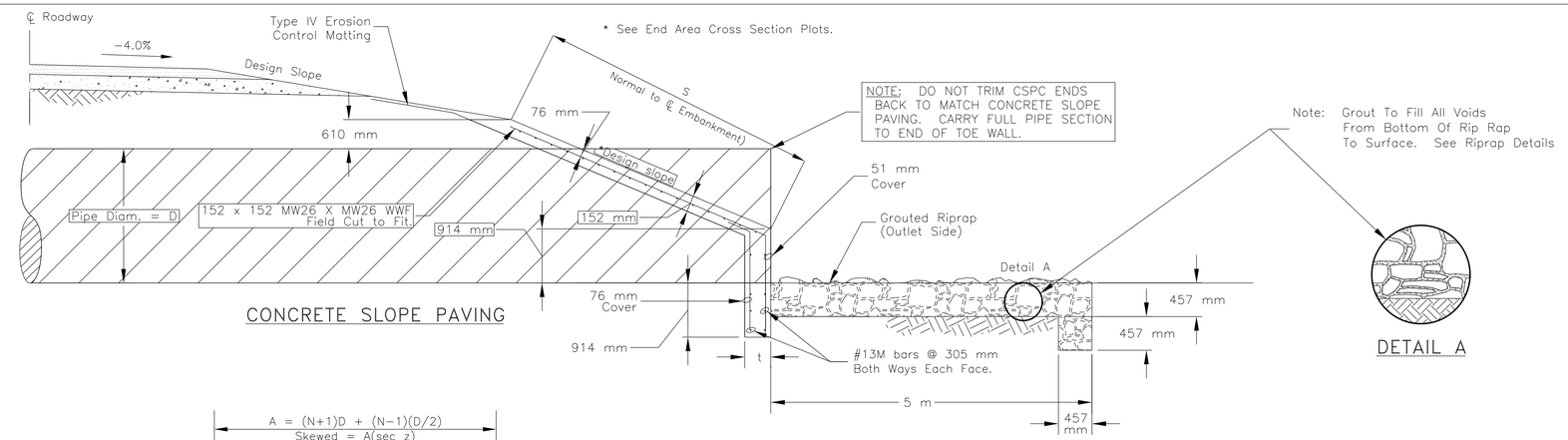
DRAWN BY: WCI	DATE: 10/23
DESIGNED BY: SML	DATE: 10/23
REVISED: --/--	BY: DESIGN 1
$FILES$	

NAVAJO D.O.T

10/12/2023 $TIME$

$FILES$

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	31	106

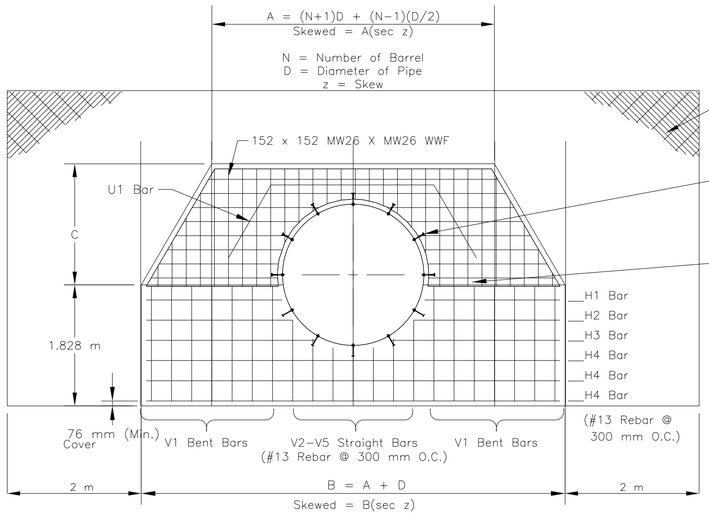


CONCRETE SLOPE PAVING

DETAIL A

GENERAL NOTES

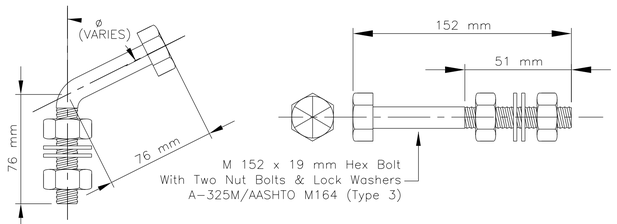
1. ALL WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-14).
2. ALL CONCRETE SHALL BE CLASS A(AE) WITH CLASS 1 FINISH. CHAMFER ALL EXPOSED EDGES 19 mm. THE CONCRETE SHALL CONFORM TO SECTION 552 "STRUCTURAL CONCRETE" OF FP-14. F'c = 20.68 MPa.
3. REINFORCING STEEL SHALL CONFORM TO AASHTO SPECIFICATION M-31 (ASTM A 615M), GRADE 420, AND SECTION 554 OF FP-14. FURNISHING AND PLACEMENT OF REBARS, ANCHOR BOLT, AND WELDED WIRE FABRIC SHALL BE CONSIDERED INCIDENTAL TO CONTRACT BID ITEM 60101-0000.
4. ALL STRUCTURE EXCAVATION AND EMBANKMENT AROUND THE CONCRETE BLANKET SHALL BE DONE TO NEAT LINES AND WILL BE CONSIDERED INCIDENTAL TO COMPLETION OF THE STRUCTURE.
5. THE CONTRACTOR SHALL BE REQUIRED TO MAKE ANY NECESSARY FIELD ADJUSTMENTS TO FIT EXISTING FIELD CONDITIONS, AS DIRECTED BY THE CO/COTR. NO ADDITIONAL PAYMENT SHALL BE MADE FOR SUCH ADJUSTMENTS.
6. IF UNSUITABLE MATERIAL IS FOUND AT THE FOOTING LOCATION AND ELEVATIONS, THE MATERIAL SHALL BE REMOVED AND REPLACED WITH APPROVED UNCLASSIFIED BACKFILL AS DETERMINED BY THE CO/COTR. ALL UNCLASSIFIED BACKFILL SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY AS DETERMINED BY AASHTO T99 METHOD C, BEFORE AND AFTER FOOTINGS ARE PLACED. THE UNCLASSIFIED BACKFILL MATERIAL SHALL CONFORM TO SECTION 208 AND 209 OF FP-14. FURNISHING AND PLACEMENT OF UNCLASSIFIED BACKFILL SHALL BE ACCORDANCE WITH SECTION 204 AND 209.
7. ALL FOOTING EXCAVATIONS SHALL BE INSPECTED AND APPROVED BY THE CO/COTR PRIOR TO PLACEMENT OF FORMS, REINFORCING STEEL, AND SUBSEQUENT CONCRETE.
8. CHANNEL RESHAPING, CLEANING, AND EXCAVATION SHALL BE DONE IN ACCORDANCE WITH THE PLANS AND AS DETERMINED BY THE CO/COTR. ANY WASTE MATERIAL SHALL BE USED AS BORROW WHERE NEEDED IN OTHER PROJECT LOCATION AS DESIGNATED AND APPROVAL BY THE CO/COTR. ALL CHANNEL EXCAVATION, CLEANING, AND RESHAPING SHALL BE CONSIDERED INCIDENTAL TO COMPLETION OF THE STRUCTURE.
9. IN NO CASE SHALL ANY BACKFILL BE PLACED UNTIL THE CONCRETE HAS ATTAINED A COMPRESSIVE STRENGTH OF 17.24 MPa.
10. REINFORCING STEEL ESTIMATED QUANTITIES ARE FOR ONE (1) SLOPE BLANKET AT A GIVEN STATION AND SIZE OF STRUCTURE(S). CONCRETE BLANKETS ARE REQUIRED AT INLET AND OUTLET SIDE OF THE DRAINAGE STRUCTURE(S).
11. WHERE THE CONCRETE BLANKET CAN NOT BE INSTALLED DUE TO SHALLOW DEPTH OF COVER OVER THE PIPE(S), AND/OR THE PARAPET HEIGHT IS ABOVE THE AGGREGATE BASE HINGE POINT, THE CONTRACTOR SHALL BE REQUIRED ADJUST THE PARAPET WALL HEIGHT TO 305 mm, AND INSTALL ADDITIONAL TWO (2) - #13M REBARS ON THE TOP WALL ACROSS THE ENTIRE LENGTH OF STRUCTURE AND WILL BE CONSIDERED INCIDENTAL TO COMPLETION OF THE STRUCTURE.
12. EROSION CONTROL MATTING SHALL CONFORM TO SECTION 629 AND 713.17(k) OF THE FP-14 FOR TYPE IV-B MATERIAL, AND SHALL BE INCLUDED IN THE UNIT PRICE FOR ITEM 62901-1100. MATS SHALL BE TUCKED OR EMBEDDED INTO EMBANKMENT ALONG ALL EDGES AS SHOWN. SEE SHEET 38 FOR EROSION CONTROL MAT INSTALLATION DETAILS.
13. SEE SHEET 25 FOR GROUTED RIPRAP DETAILS.



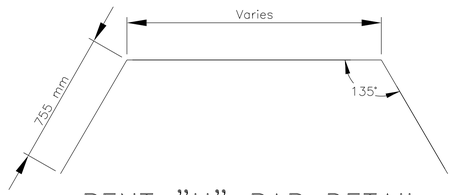
Note:
Minimum Rebar Cover = 76 mm

FRONT ELEVATION REINFORCING BARS LAYOUT DETAIL

At All Edges Of The Concrete Blankets, A 900 mm Strip Of Type IV Matting Shall Be Laid So That 300 m m Is Under The Blanket Edges. After The Concrete Is Set, The Remaining Material Shall Be Folded Around The Edge Of The Concrete, The Edge Backfilled And The Matting Unfolded On Top Of The Finished Surface. The Main Matting Installation Shall Overlap The Exposed Portion Of The 900 mm Wide Strip.



BENT AND STRAIGHT ANCHOR BOLT DETAIL

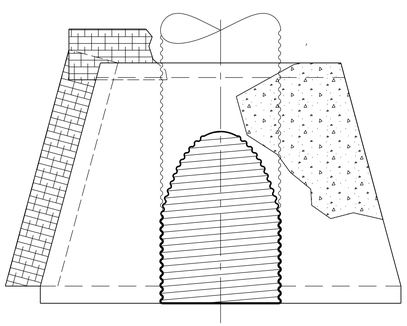


BENT "U" BAR DETAIL

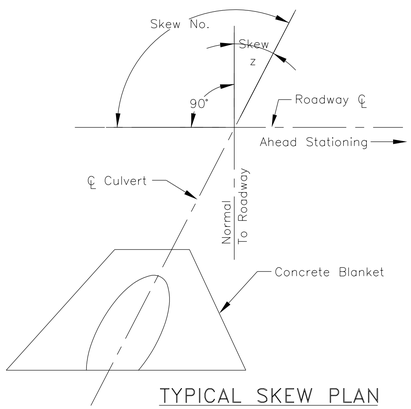
ESTIMATED QUANTITIES

STATION	PIPE SIZE (mm)	No. OF PIPES	SKEW No.	SLOPE Left	SLOPE Right	A (m)	B (m)	C (mm)	S (m) Left	S (m) Right	T (mm)	VOLUME OF CONC. (m^3) ITEM No.: 60101-0000 (See Note 2) Left	VOLUME OF CONC. (m^3) ITEM No.: 60101-0000 (See Note 2) Right	TOTAL WEIGHT* OF REINFORCING BARS (kg)	TOTAL WEIGHT* OF WWF @ 2.83 kg/m^2 Left	TOTAL WEIGHT* OF WWF @ 2.83 kg/m^2 Right	TOTAL AREA OF ROLLED EROSION CONTROL PRODUCT TYPE 4 (m^2) ITEM No. : 62901-1100 Left	TOTAL AREA OF ROLLED EROSION CONTROL PRODUCT TYPE 4 (m^2) ITEM No. : 62901-1100 Right
N5001 UNIT I																		
1+963.050	2134	1	104.4	1:3	1:4	4.406	6.609	2134	10.881	12.981	292	10.164	11.921	287.252	82.188	103.345	174.495	166.073
										UNIT I SUBTOTAL:		22.09		287.25	185.53		340.57	
										UNIT I USE:		30		300	190		350	
WORK REMOVED FROM PROJECT SCOPE (FOR INFORMATION ONLY)																		
5+658.730	2134	1	155.9	1:8	1:9	10.435	15.652	2134	12.981	12.981	292	28.822	28.822	197.561	281.665	281.665	336.128	406.944
9+052.480	2134	1	89.2	1:3	1:3	4.268	6.403	2134	12.981	12.981	292	11.538	11.538	142.397	99.285	99.285	192.610	180.372
9+605.900	2134	1	97.9	1:3	1:3	4.309	6.463	2134	12.981	12.981	292	11.651	11.651	142.758	100.479	100.479	201.899	192.048
10+429.880	1524	2	104.4	1:4	1:6	5.508	7.082	1524	9.270	9.270	292	9.561	9.561	146.446	91.240	91.240	186.461	155.425

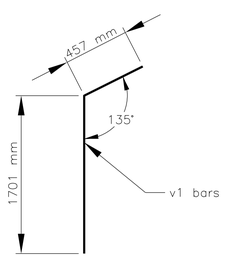
*NOTE: FOR INFORMATION ONLY. REINFORCING BARS AND WELDED WIRE FABRIC SHALL BE CONSIDERED INCIDENTAL TO ITEM 60101-0000.



PLAN VIEW



TYPICAL SKEW PLAN



BENT "V" BAR DETAIL

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

CONCRETE SLOPE PAVING DETAILS & QUANTITIES

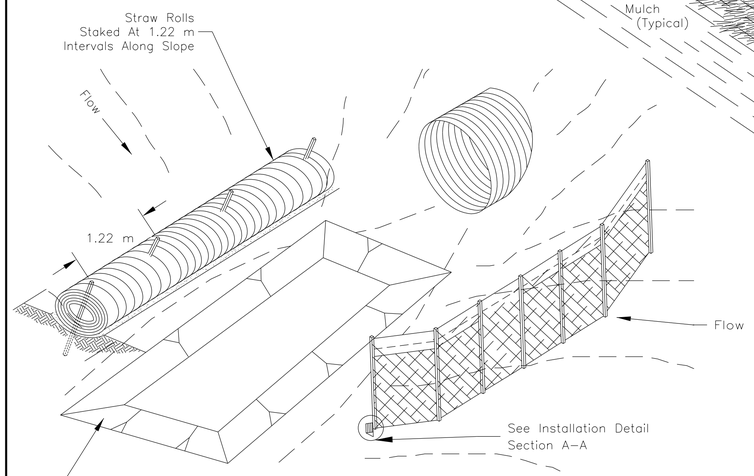
DRAWN BY: NRDOT	DATE: 02/2015
DESIGNED BY: NRDOT	DATE: 02/2015
REVISED: --/----	BY: DESIGN 1
sht 31 N5001_SLOPE_PAV	

STEPHEN M. LUNA — 26338 — 10/31/24 — PROFESSIONAL ENGINEER

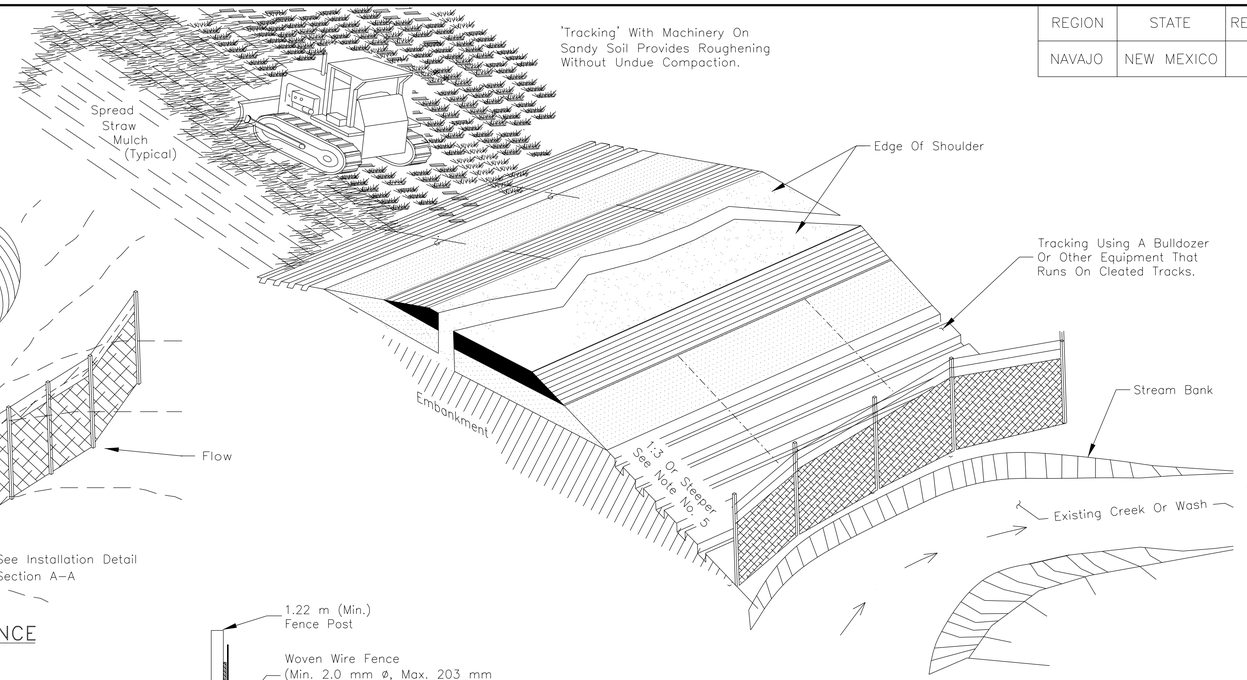
U.S. DEPARTMENT OF THE INTERIOR 1824 BUREAU OF INDIAN AFFAIRS

sht 31 N5001_SLOPE_PAV 10/31/2024 11:08:35 PM

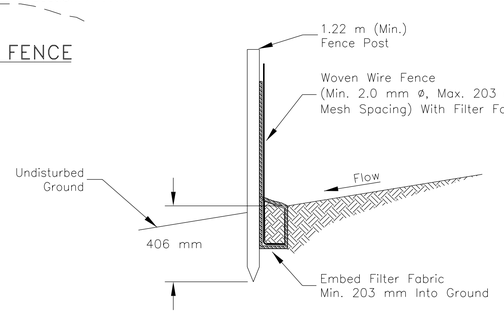
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	32	106



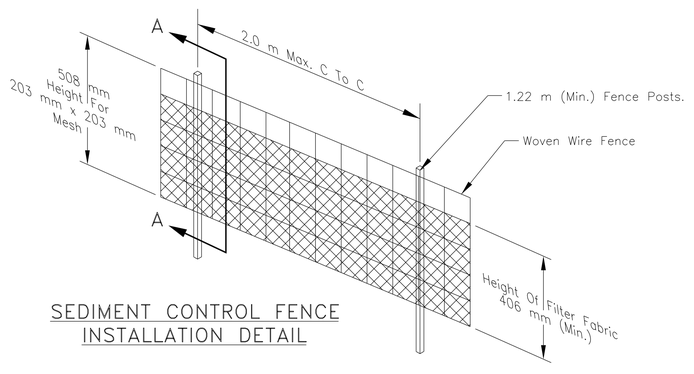
EROSION & SEDIMENT CONTROL FENCE
AT DRAINAGE STRUCTURE



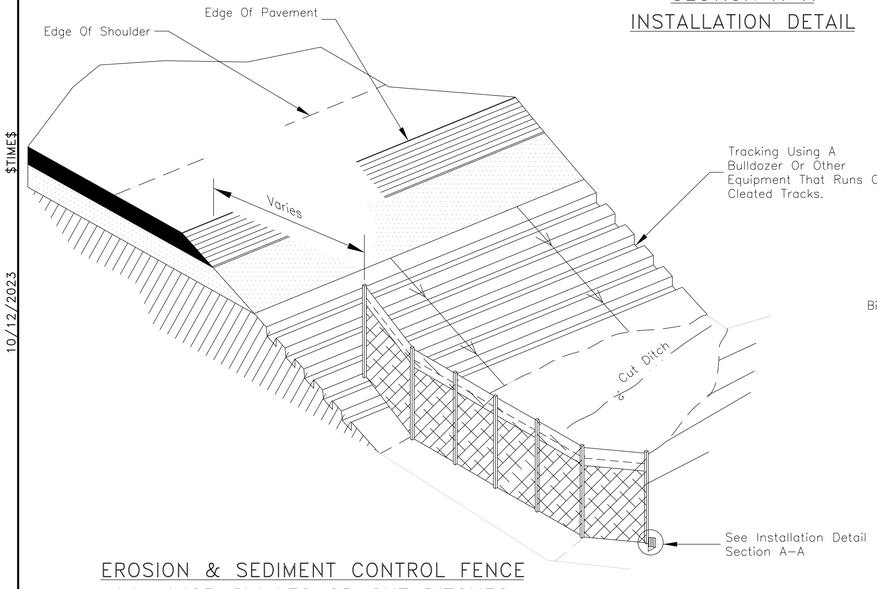
EROSION & SEDIMENT CONTROL FENCE
ALONG EDGE OF STREAM BANK (TOE OF SLOPE)



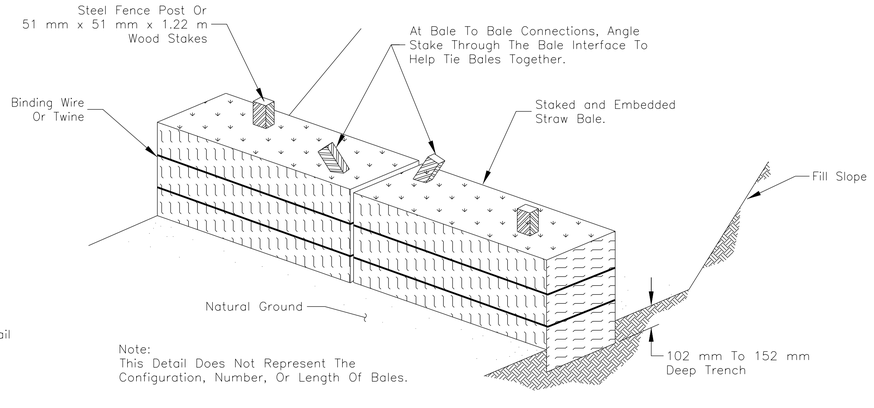
SECTION A–A
INSTALLATION DETAIL



SEDIMENT CONTROL FENCE
INSTALLATION DETAIL



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



TYPICAL STRAW BALE STAKING
AND TRENCHING DETAIL

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 CALANDER 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 914 mm SEDIMENT CONTROL FABRIC CLOTH WITH BURIED–TOE, AND STEEL POSTS (TEE OR U TYPE) SPACED AT 2.00 m WITH 2 mm 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 610 mm AT THE TOP AND MID–SECTION. GEOTEXTILE MATERIAL FOR SILT FENCING SHALL BE TYPE–V UNDER SUB–SECTION 714.01 OF FP–14.
4. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY 305 mm AND FOLDED. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED BEFORE "BULGES" DEVELOP IN THE SILT FENCE.
5. SILT FENCE SHALL BE INSTALLED PARALLEL TO THE TOE OF ALL ROADWAY EMBANKMENT FILLS IN LOCATIONS WHERE THE TOE OF THE FILLS ARE WITHIN 2.0 m OF EXISTING STREAMS, CREEKS OR WASHES; IN AREAS WITH HIGHLY EROSIVE SOILS AND/OR WHERE EMBANKMENTS ARE AT A 1:3 OR STEEPER SLOPE. THE SILT FENCE SHALL BE PLACED 1 m TO 2 m DOWNHILL FROM THE TOE OF FILL AND IN ACCORDANCE WITH SECTION 157 OF THE FP–14 AND THE SUPPLEMENTAL SPECIFICATIONS.
6. STRAW BALES MAY BE USED AT THE TOP OF CUT BACKSLOPES AND FOR DIKES PROVIDED THEY ARE PROPERLY ANCHORED WITH STEEL FENCE POSTS OR 51 mm X 51 mm X 1.22 m WOOD STAKES (TWO PER BALE) ANCHORED 508 mm INTO THE NATURAL GROUND. STRAW BALES SHALL BE CERTIFIED 0.5% WEED FREE. DO NOT USE STRAW BALES IN AREAS OF CONCENTRATED FLOW AND CUT DITCHES.
7. FURNISHING AND PLACEMENT OF SILT FENCE MATERIAL AND OTHER EROSION CONTROL MEASURES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 15701–0000, AND/OR 15708–1000.
8. SEDIMENT/SILT FENCING SHALL BE PLACED AT ALL LOCATIONS WHE RE 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. 25 mm OF MOISTURE IN 24 HOURS).
10. PRIOR TO ACCEPTANCE, ALL PROJECT AREAS (AS DETERMINED BY THE CO/COTR) SHOWING EROSION DAMAGE CAUSED BY THE CONTRACTOR'S FAILURE TO PROPERLY MAINTAIN HIS EROSION CONTROL STRUCTURES SHALL BE REPAIRED TO REMOVE DAMAGE, ANY SPECIFIED EROSION CONTROL MATERIALS, STRUCTURES, OR DEVICES DAMAGED OR LOST DUE TO IMPROPER INSTALLATION, THE CONTRACTOR'S NEGLIGENCE OR IMPROPER MAINTENANCE, SHALL ALSO BE REPAIRED AND/OR REPLACE PRIOR TO FINAL ACCEPTANCE AT THE CONTRACTOR'S ENTIRE EXPENSE.

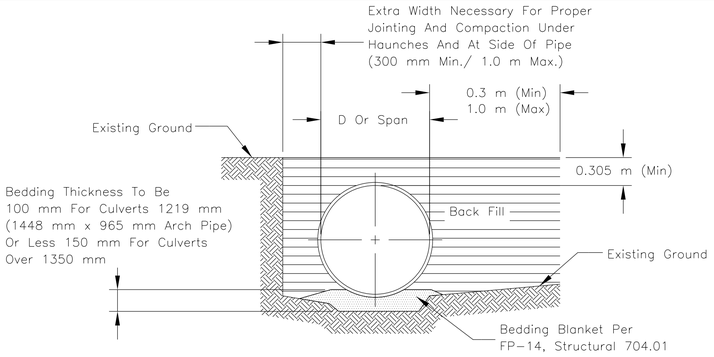
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

STORMWATER POLLUTION AND
EROSION/SEDIMENT CONTROL DETAILS

DRAWN BY: NRDOT	DATE: 08/2020
DESIGNED BY: NRDOT	DATE: 08/2020
REVISED: --/----	BY: DESIGN 1
$FILES$	

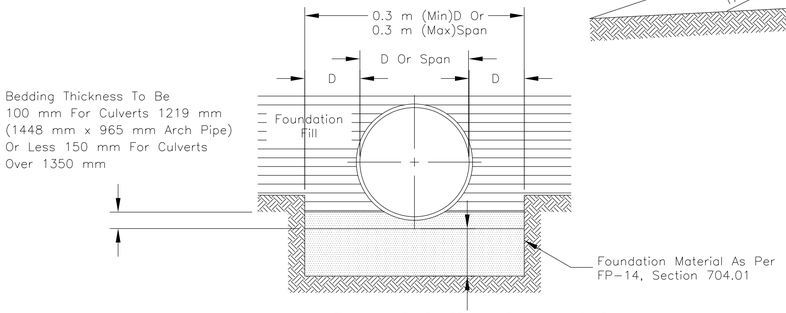
$TIME$
10/12/2023
$FILES$

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	34	106



NEGATIVE PROJECTING POSITIVE PROJECTING

FIGURE A: BEDDING



Thickness To Be 75 mm Per Meter Of Fill
Over Pipe: 305 mm (Min) And 0.75(D Or Rise) Max
To Be Lightly And Uniformly Compacted In 152 mm Layers,
Up To 1.0(D Or Rise) Or As Directed By CO/COTR.

FIGURE B: ROCK BEDDING

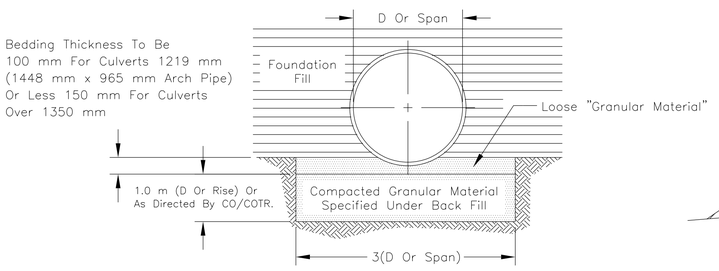
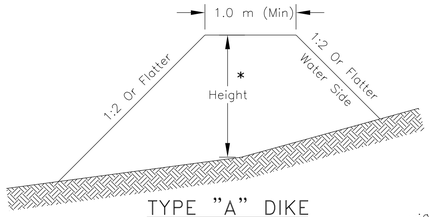
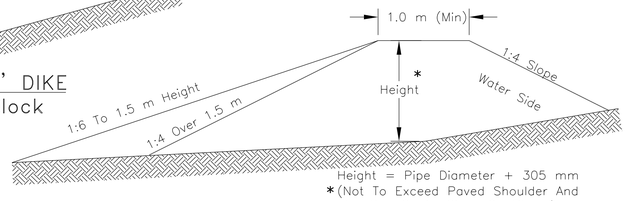


FIGURE C: FOUNDATION STABILIZATION BEDDING



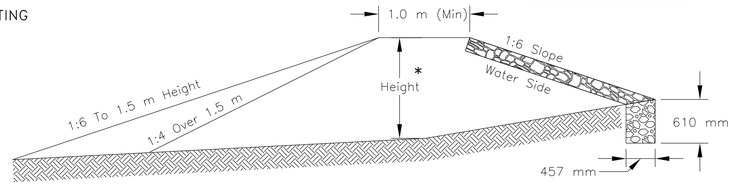
TYPE "A" DIKE
Ditch Block



Height = Pipe Diameter + 305 mm
*(Not To Exceed Paved Shoulder And Elevation Or As Given On Plans.)

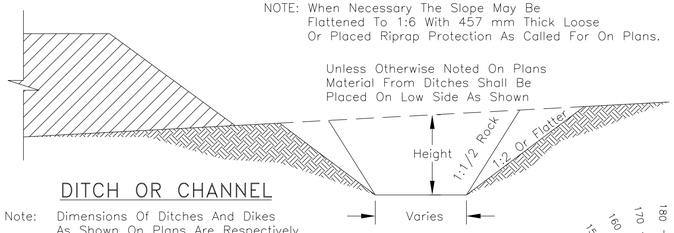
TYPE "B" DIKE

DITCH BLOCK DETAILS



TYPE "B" DIKE

NOTE: When Necessary The Slope May Be Flattened To 1:6 With 457 mm Thick Loose Or Placed Riprap Protection As Called For On Plans.



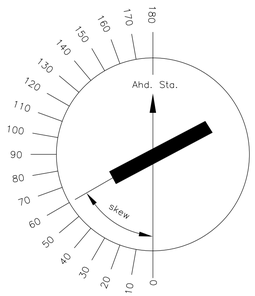
DITCH OR CHANNEL

Note: Dimensions Of Ditches And Dikes As Shown On Plans Are Respectively Width, Depth Or Height, And Length.

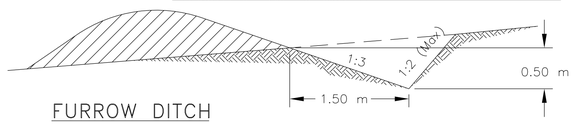
Project: N5001(1)1,2&4

ITEM No. 20443-2000: EARTHEN DIKE/BERM TYPE "B"

STATION	LOCATION	LENGTH	DESCRIPTION
N5001 UNIT I			
0+310.000	RT.	12.00	DITCH BLOCK AT INLET
2+355.090	LT.	12.00	DITCH BLOCK AT OUTLET
2+355.090	RT.	12.00	DITCH BLOCK AT INLET
UNIT I SUBTOTAL		36.00	
UNIT I USE		40	
WORK REMOVED FROM PROJECT SCOPE (FOR INFORMATION ONLY)			
4+720.000	LT.	12.00	DITCH BLOCK AT INLET
5+180.000	LT.	12.00	DITCH BLOCK AT INLET
5+211.000	LT.	12.00	DITCH BLOCK AT INLET
5+388.000	LT.	12.00	DITCH BLOCK AT INLET
5+414.000	LT.	12.00	DITCH BLOCK AT INLET
5+620.000	LT.	12.00	DITCH BLOCK AT INLET
6+365.000	RT.	12.00	DITCH BLOCK AT INLET
6+570.000	RT.	12.00	DITCH BLOCK AT INLET

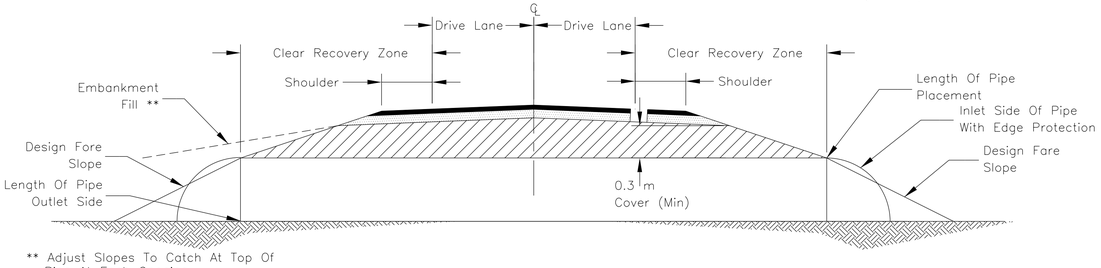


STRUCTURE SKEW DIAGRAM



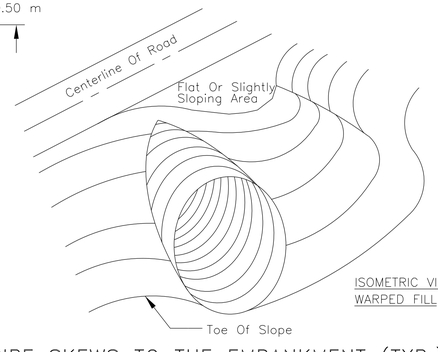
FURROW DITCH

1. To Be Paid For By The Meter.
2. Furrow Ditch Sections As Shown Above Or And Approved Equivalent Shall Be Built As Directed By The CO/COTR.



** Adjust Slopes To Catch At Top Of Pipe At Each Opening

TYPICAL PIPE INSTALLATION



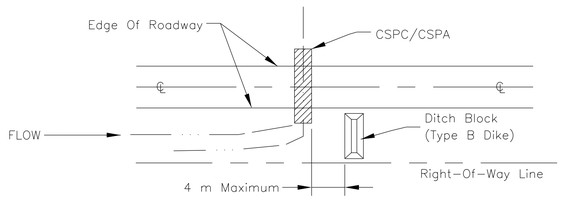
ISOMETRIC VIEW
WARPED FILL

PIPE SKEWS TO THE EMBANKMENT (TYP.)

The Contractor Shall Be Required To Build The Warped Embankment Around The Skewed Drainage Pipe(s). This Work Shall Be Incidental To The Earthwork And Installation Of Drainage Pipe Items Shown.

GENERAL NOTES

1. PLACE LOOSE BEDDING ROUGHLY SHAPED TO BOTTOM OF PIPE, THEN COMPACT UNDER HAUNCHES AFTER PIPE PLACEMENT.
2. SEE SECTION 204, 209, 602, AND 704 OF FP-14, INCLUDING THE SUPPLEMENTAL SPECIFICATION FOR ADDITIONAL NOTES.
3. ALL DRAINAGE STRUCTURE MATERIAL SHALL BE UNLOADED AND HANDLED WITH REASONABLE CARE. NO STRUCTURE SHALL BE DRAGGED OR ALLOWED TO STRIKE ANY HARD SURFACE DURING PLACEMENT. ANY DAMAGED STRUCTURE SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR, AT NO ADDITIONAL COST TO THE GOVERNMENT.
4. ALL STRUCTURAL PLATE PIPE STRUCTURES SHALL BE ASSEMBLED AND INSTALLED IN ACCORDANCE WITH THE FABRICATORS RECOMMENDATION.
5. BACKFILL MATERIAL SHALL BE PLACED PIPE DIAMETER WIDE ON THE SIDES AND 300 mm(MIN)/1.0 m(MAX) OVER THE PIPE. BACKFILL MATERIAL BEYOND THE LIMITS SHALL BE REGULAR EARTHWORK EMBANKMENT MATERIAL, THE BACKFILL MATERIAL SHALL BE APPROVED BY THE CO/COTR PRIOR TO IT'S USE AND SHALL BE PLACED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.
6. PONDING OR JETTING PIPE BACKFILL SHALL NOT BE PERMITTED.
7. ALL PIPE EXCAVATION, BACKFILLING, DE-WATERING PUMPING OR COFFERDAMS REQUIRED TO PROPERLY INSTALL THE DRAINAGE PIPE SHALL BE CONSIDERED INCIDENTAL TO COMPLETION OF THE PROJECT AND NO ADDITIONAL PAYMENT SHALL BE MADE.
8. MULTIPLE PIPE INSTALLATIONS SHALL BE PLACED 610 mm BETWEEN END SECTIONS UNLESS OTHERWISE DIRECTED BY THE CO/COTR OR AS SHOWN ON THE PLANS.
9. ALL PIPES SHALL BE PROTECTED BY A COVER OF NOT LESS THAN 0.91 m OF EMBANKMENT ABOVE PIPE BEFORE ANY HEAVY EQUIPMENT IS ALLOWED TO PASS OVER THE STRUCTURE(S) DURING CONSTRUCTION.
10. ALL CULVERTS SHALL BE INSTALLED AT THE ORIGINAL GROUND LINE AND SLOPE TO ASSURE POSITIVE DRAINAGE UP TO THE R.O.W. LIMITS, IN NO CASE SHALL THE PIPE BE PLACED BELOW THE ORIGINAL GROUND ELEVATIONS, UNLESS DIRECTED BY THE NRDOT DIVISION MANAGER. THIS SHALL BE CONSIDERED INCIDENTAL TO COMPLETION OF PROJECT AND NO ADDITIONAL PAYMENT SHALL BE MADE.
11. ALL CULVERTS UNDER TURNOUT AND DRIVEWAYS SHALL BE PLACED AT THE PROPOSED DITCH FLOWLINE. THE CONTRACTOR SHALL BE REQUIRED TO FIELD ADJUST THE PROFILE GRADES OVER THE PIPE AS DIRECTED BY CO/COTR TO PROVIDE FOR MINIMUM COVER.
12. TYPE "B" DIKE SHALL BE USED ON THIS PROJECT UNLESS OTHERWISE NOTED ON THE PLANS. EMBANKMENT MATERIAL NEEDED TO BUILD EARTHEN DIKE SHALL BE CONSIDERED INCIDENTAL TO ITEM 20443-1000.
13. IF DIRECTED BY THE CO/COTR TO BETTER FIT FIELD CONDITIONS, TO MORE SMOOTHLY DIRECT THE FLOW INTO THE PIPE AND/OR TO LESSEN THE WATER'S IMPACT ON THE FACE OF THE DITCH BLOCK, DITCH BLOCKS TO BE "CURVED". THIS WORK TO BE INCIDENTAL TO BID ITEM 20443-2000.



DITCH BLOCK INSTALLATION AT STRUCTURE

1. Ditch Block At Structures To Be So Placed That They Create A Water Cushion. Elevation At Top Of Ditch Block Shall Be 305 mm Above Elevation Of Top Of Pipe Unless Otherwise Shown Or Directed By The CO/COTR.
2. Ditch Block Shall Be Located A Distance Equal To The Largest Dimension Of Box Culvert Or Pipe From The Face Of The Drainage Structure. In No Case Shall The Distance Exceed 4.0 m.

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STANDARD PIPE INSTALLATION AND DITCH DETAILS

DRAWN BY: NRDOT	DATE: 08/2020
DESIGNED BY: NRDOT	DATE: 08/2020
REVISED: --/----	BY: DESIGN 1
$FILES$	

$TIME$ 10/12/2023 $FILES$

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	35	106

SQUARE TUBE SELECTION, SINGLE POST - 2.80 mm THICKNESS

POST SIZE	H = C + D/2 (meter)						SLEEVE SIZE
	1.52	1.83	2.13	2.44	2.74	<--- H (m)	
38 mm x 38 mm	0.51	0.43	0.37	0.31	n/a	MAXIMUM SIGN AREA (m^2)	44 mm x 44 mm
44 mm x 44 mm	0.81	0.68	0.58	0.47	0.41		50 mm x 50 mm
50 mm x 50 mm	1.14	0.95	0.84	0.70	0.58		57 mm x 57 mm
57 mm x 57 mm	1.49	1.27	1.07	0.95	0.84		64 mm x 64 mm
64 mm x 64 mm	1.88	1.68	1.41	1.25	1.07		70 mm x 70 mm

SQUARE TUBE SELECTION, DOUBLE POST - 2.80 mm THICKNESS

POST SIZE	H = C + D/2 (meter)						SLEEVE SIZE
	1.52	1.83	2.13	2.44	2.74	<--- H (m)	
57 mm x 57 mm	n/a	n/a	2.15	1.97	1.81	MAXIMUM SIGN AREA (m^2)	64 mm x 64 mm
64 mm x 64 mm	n/a	n/a	2.68	2.46	2.26		70 mm x 70 mm

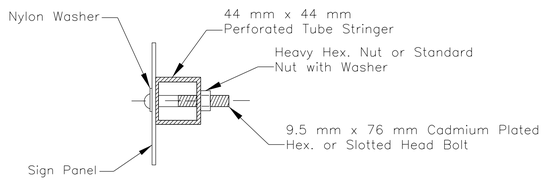
SQUARE TUBE SELECTION, TRIPLE POST - 2.80 mm THICKNESS

POST SIZE	H = C + D/2 (meter)						SLEEVE SIZE
	1.52	1.83	2.13	2.44	2.74	<--- H (m)	
57 mm x 57 mm	n/a	n/a	3.08	2.83	2.61	MAXIMUM SIGN AREA (m^2)	64 mm x 64 mm
64 mm x 64 mm	n/a	n/a	3.82	3.52	3.26		70 mm x 70 mm

GUIDE SIGN POST DIMENSIONS

(NOT FOR USE WITH WARNING, REGULATORY OR MARKER PANELS)

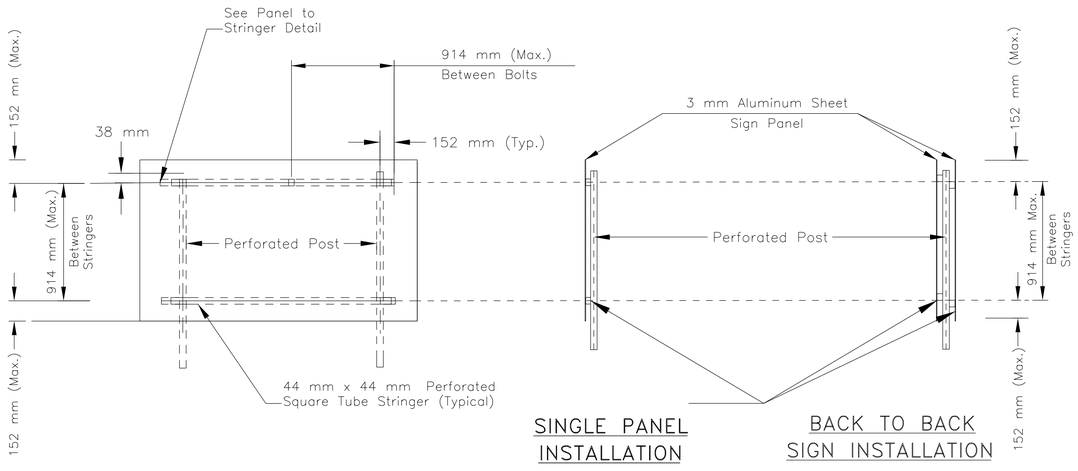
PANEL WIDTH	914 mm	1.22 m	1.52 m	1.83 m	2.13 m	2.44 m	2.74 m	3.05 m
TWO POSTS SPACING (A)	559 mm	711 mm	914 mm	1.12 m	1.27 m	1.47 m	1.63 m	1.83 m
BOLTS TO PANEL (PER STRINGER)	-	-	3	3	3	3	4	4
LENGTH OF EACH STRINGER	-	-	1.22 m	1.42 m	1.57 m	1.78 m	1.93 m	2.13 m
TWO POSTS SPACING (B)	-	-	533 mm	635 mm	737 mm	864 mm	965 mm	1.07 m
BOLTS TO PANEL (PER STRINGER)	-	-	3	3	3	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



PANEL TO STRINGER OR POST

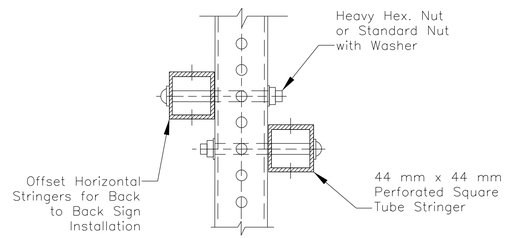
GENERAL NOTES:

1. THE CONTRACTOR SHALL BE REQUIRED TO ADJUST THE LENGTH OF SIGN SUPPORT POST(S). 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. CONCRETE FOUNDATION SHOULD NOT BE USED IN LOCATIONS PROTECTED BY GUARDRAIL,BARRIER, OR OUTSIDE THE CLEAR ZONE.
4. STEEL POSTS SHALL BE UNIFORM DESIGN. THE POST SHALL BE PUNCHED WITH CONTINOUS 9mm HOLES ON 25mm INTERVAL ON CENTERS FOR THE ENTIRE LENGTH OF POST.
5. STEEL POSTS SHALL BE MACHINED STRAIGHTENED TO HAVE A SMOOTH UNIFORM FINISH, FREE FROM DEFECTS AFFECTING STRENGTH, DURABILITY, AND APPEARANCE. ALL HOLES AND EDGES SHALL BE FREE OF BURRS. THE PERMISSABLE TOLERANCE FOR STRAIGHTNESS SHALL BE WITHIN 6.35mm IN 1.52 METER.
6. STEEL POSTS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM 123. BOLTS, NUTS, AND WASHERS SHALL BE CADMIUM PLATED IN ACCORDANCE WITH ASTM A-165 OR ZINC PLATED IN ACCORDANCE WITH ASTM B-633.
7. SPLICE HARDWARE SHALL CONSIST OF TWO FULLY THREADED, 8mm X 38mm GRADE-9 PLATED HEX HEAD BOLTS, FLAT WASHERS, AND SELF LOCKING HEX NUTS PER POST. IN ADDITION, ONE 19mm X 127mm PLATED SPACER BAR PER POST, TO STIFFEN THE SPLICE CONNECTION. EACH SPACER SHALL BE DRILLED AND TAPPED WITH 8mm-18 UNC THREADS. THE SPACER SHALL BE FABRICATED FROM HOT ROLLED CARBON STEEL BAR CONFORMING TO ASTM A-36 OR M-1020.
8. BOLTS AND LOCK NUT HARDWARE FOR SIGN ATTACHMENT SHALL BE CARRIAGE HEAD TYPE, 8mm-18 UNC, AND SHALL BE CADMIUM PLATED CONFORMING TO ASTM B-766.
9. AN APPROVED ALTERNATE BREAKAWAY SYSTEM AND SIGN SUPPORT POST ASSEMBLY MAY BE SUBMITTED TO THE COTR FOR REVIEW AND APPROVAL PRIOR TO IT'S USE.
10. THE CONTRACTOR HAS THE OPTION TO USE "ANTI-THIEF" NUTS IN LIEU OF JAMMING THE BOLT THREADS. NO ADDITIONAL PAYMENT WILL BE MADE IN RELATION TO USING ANTI-THIEF BOLTS.

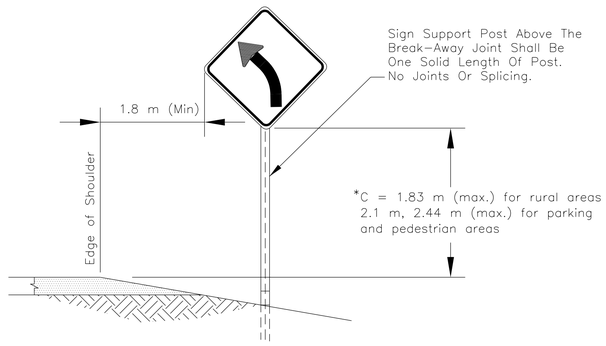


SINGLE PANEL INSTALLATION

BACK TO BACK SIGN INSTALLATION

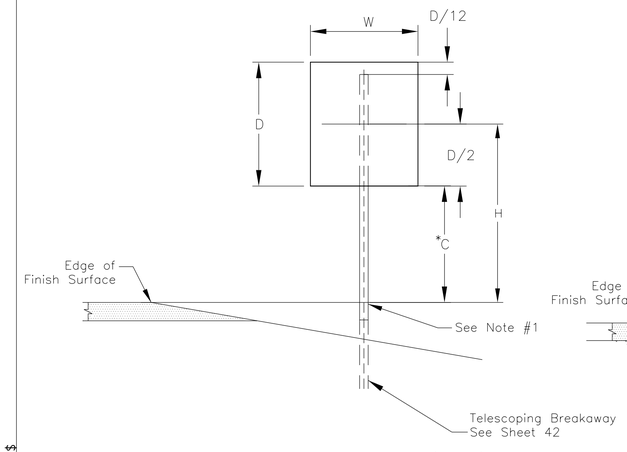


STRINGER TO POST

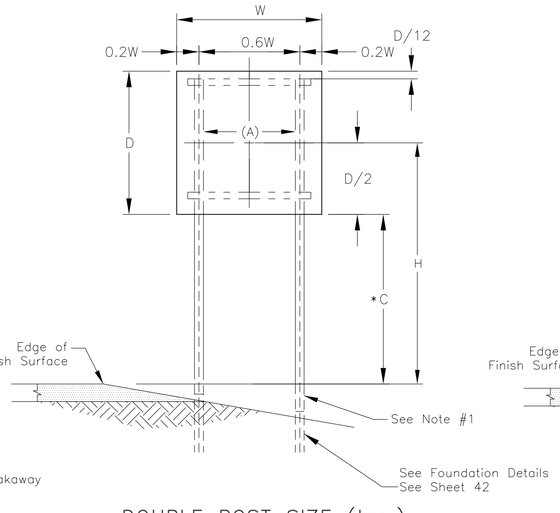


TYPICAL ROADSIDE SIGN LOCATION

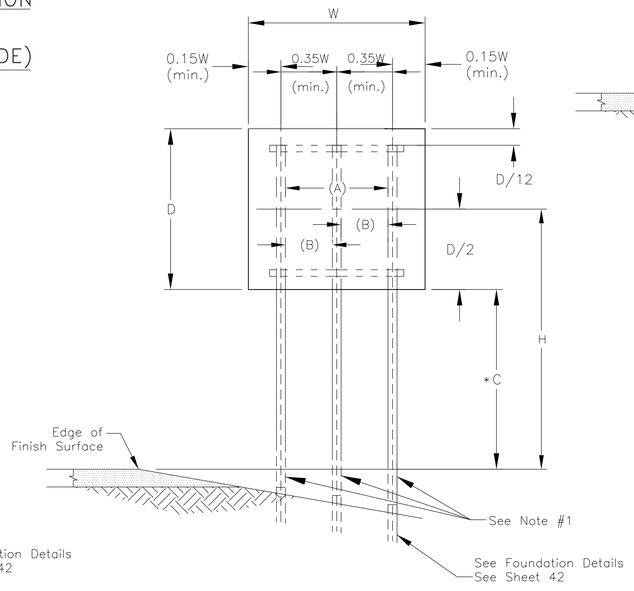
STRINGER DETAILS (FOR GUIDE SIGNS UP TO AND INCLUDING 3.05 mm WIDE)



SINGLE POST SIZE (typ.)



DOUBLE POST SIZE (typ.)



THREE POST SIZE (typ.)

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NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

SQUARE TUBE POST SELECTION AND SIGN MOUNTING DETAILS

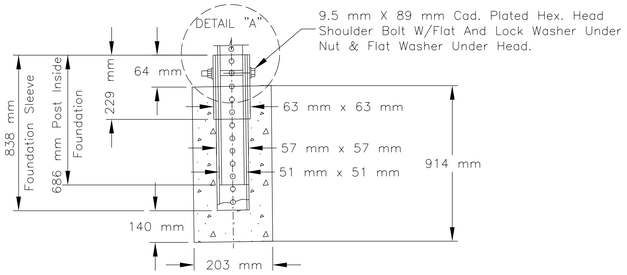
DRAWN BY: NRDOT	DATE: 02/2015
DESIGNED BY: NRDOT	DATE: 02/2015
REVISED: --/----	BY: DESIGN 1
$FILES$	

$TIME$

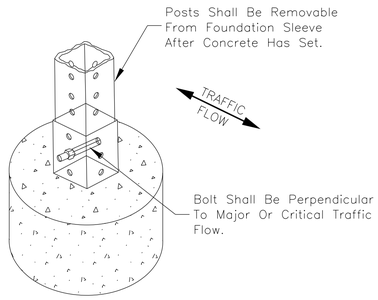
10/12/2023

$FILES$

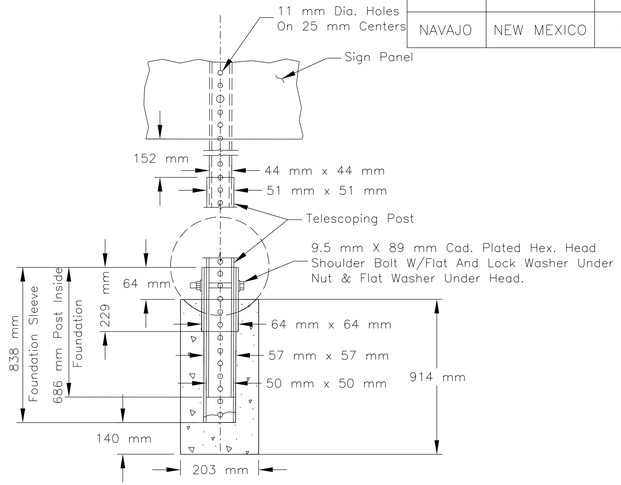
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	36	106



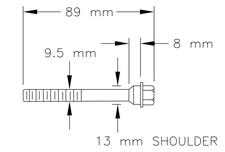
SINGLE POST FOUNDATION DETAIL



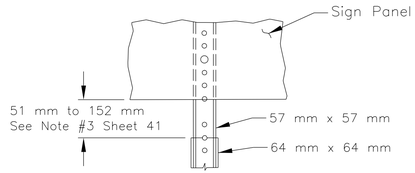
DETAIL "A"



TELESCOPING POST DETAIL



SHOULDER BOLT (HEAD)

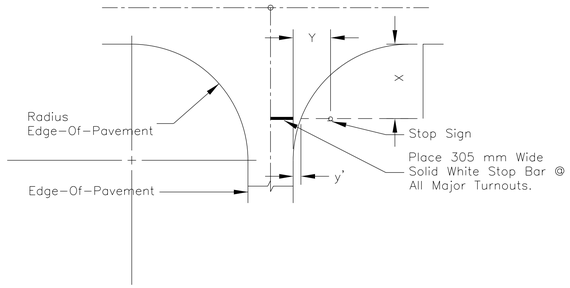


TELESCOPING POST INSTALLATION

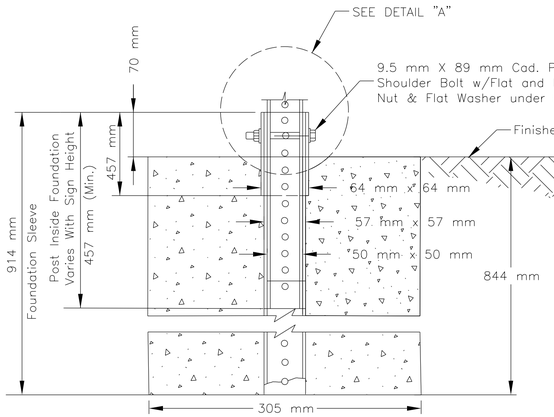
STOP SIGN AND LINE LOCATION TABLE

			Y (m) =	
RADIUS OF TURNOUT (m)	X (m)	Y' (m)	Y' + L0 (m)	LENGTH of STOP BAR
3.00	1.80	0.25	2.05	1/2 ROADWAY WIDTH + Y'
6.00	3.00	0.80	2.60	1/2 ROADWAY WIDTH + Y'
9.00	4.50	1.21	3.01	1/2 ROADWAY WIDTH + Y'
12.00	6.00	1.61	3.41	1/2 ROADWAY WIDTH + Y'
15.00	7.50	2.01	3.81	1/2 ROADWAY WIDTH + Y'

Y'= DISTANCE FROM ROADWAY EOP TO RADIUS EOP. LATERAL OFFSET (L0) FROM EOP (m) = 1.80

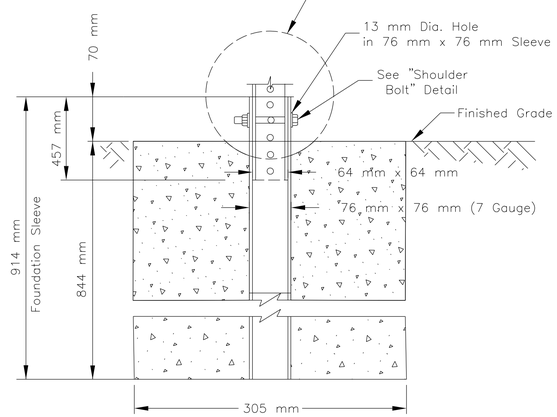


STOP SIGN LOCATION AT INTERSECTION

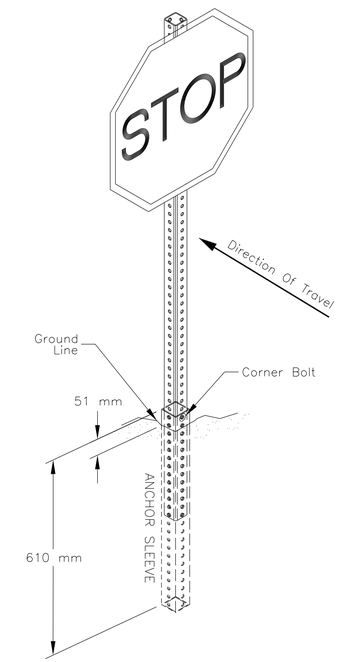


51 mm SINGLE POST CONCRETE FOUNDATION DETAIL (IN WEAK SOILS)

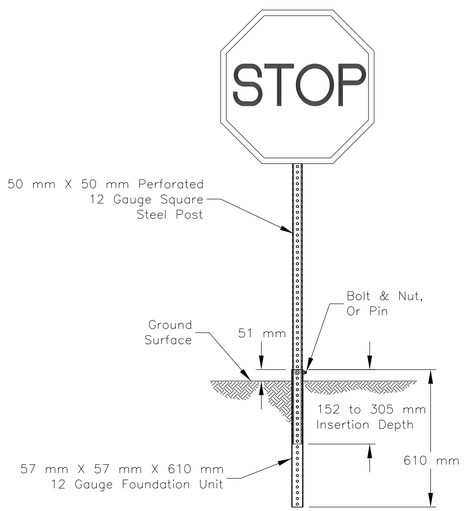
See Sheet 41 For General Notes



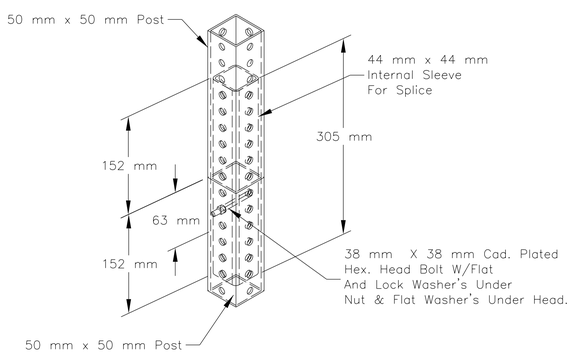
64 mm SINGLE POST CONCRETE FOUNDATION DETAIL (IN WEAK SOILS)



ISOMETRIC VIEW



TELESCOPING BREAKAWAY ASSEMBLY
(Single Post)



SINGLE POST PERMISSIBLE FIELD SPLICE
(Not Allowed On Telescoping Post)

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

POST SELECTION AND SIGN MOUNTING DETAILS

DRAWN BY: NRDOT	DATE: 02/2015
DESIGNED BY: NRDOT	DATE: 02/2015
REVISED: --/----	BY: DESIGN 1
$FILES$	

10/12/2023 $TIME$

$FILES$

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	37	106

ITEM No. 63401-2300: PAVEMENT MARKINGS, TYPE L, SOLID

STATION	-	STATION	LOC.	SOLID YELLOW	SOLID WHITE
UNIT I				LENGTH (m)	LENGTH (m)
0+039.78	-	2+800.00	RT & LT SHOULDER	5,520.44	5,520.44
MINUS	14	4.5 m T/O @ RT.: (No. x 20.73)		-	-290.22
MINUS	4	7.0 m T/O @ LT.: (No. x 23.17)		-	-92.68
MINUS	2	9.1 m T/O @ RT.: (No. x 37.27)		-	-74.54
			UNIT I SUBTOTAL	10,583.44	
			UNIT I USE	10,600.00	
UNIT II					
6+600.00		8+320.00	RT & LT SHOULDER	3,440.00	3,440.00
MINUS	2	4.5 m T/O @ RT.: (No. x 20.73)		-	-41.46
			UNIT II SUBTOTAL	6,838.54	
			UNIT II USE	6,840.00	
WORK REMOVED FROM PROJECT SCOPE (FOR INFORMATION ONLY)					
2+800.00	-	6+600.00	RT & LT SHOULDER	7,600.00	7,600.00
8+320.00	-	10+600.00	RT & LT SHOULDER	4,560.00	4,560.00
MINUS	11	4.5 m T/O @ LT.: (No. x 20.73)		-	-228.03
MINUS	2	7.0 m T/O @ LT.: (No. x 23.17)		-	-76.80
			(FOR INFORMATION ONLY) TOTAL	24,015.17	

NOTE: CONTRACTOR SHALL APPLY TWO APPLICATIONS OF PAVEMENT MARKINGS PER LINEAR METER.

ITEM No. 63401-2310: PAVEMENT MARKINGS, TYPE "L", STOP BAR, SOLID WHITE

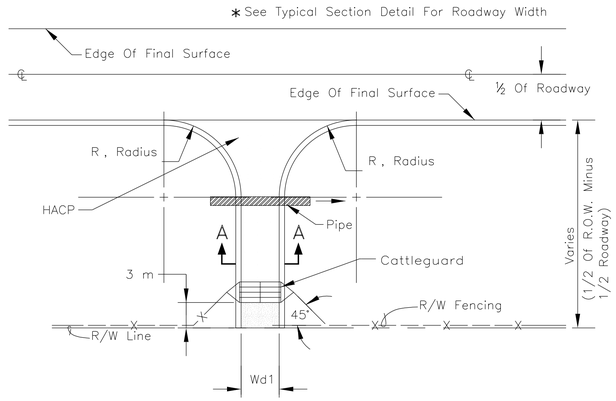
STATION	LOC.	QUANTITY (EA)	DESCRIPTION
UNIT I			
0+075.000	LT.	1	7.0 m TURNOUT
0+182.550	LT.	1	9.0 m TURNOUT
0+320.000	LT.	1	7.0 m TURNOUT
0+481.430	LT.	1	9.5 m TURNOUT
0+696.500	RT.	1	7.0 m TURNOUT
0+923.000	RT.	1	7.0 m TURNOUT
1+132.600	LT.	1	7.0 m TURNOUT
1+180.600	RT.	1	7.0 m TURNOUT
	UNIT I TOTAL	8	
	UNIT I USE	8	
WORK REMOVED FROM PROJECT SCOPE			
9+080.150	LT.	1	7.0 m TURNOUT
9+201.731	LT.	1	7.0 m TURNOUT

NOTE: CONTRACTOR SHALL APPLY TWO APPLICATIONS OF PAVEMENT MARKINGS.

ITEM No. 63401-2320: PAVEMENT MARKINGS, TYPE "L", PEDESTRIAN WALKWAY, SOLID WHITE

STATION	LOCATION	EACH
0+712.46	CENTERLINE	1
	UNIT I USE	1

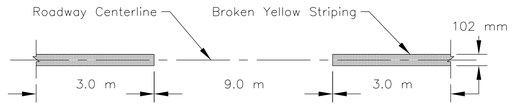
NOTE: CONTRACTOR SHALL APPLY TWO APPLICATIONS OF PAVEMENT MARKINGS.



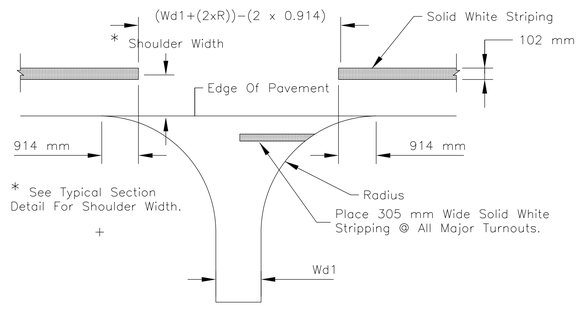
TYPICAL TYPE "A" TURNOUT

TYPE "A" TURNOUT

Wd1	Cattleguard	R
4.50 m	2-Unit	9.00 m
7.00 m	3-Unit	9.00 m
9.10 m	4-Unit	15.00 m
11.50 m	5-Unit	15.00 m
14.00 m	6-Unit	15.00 m



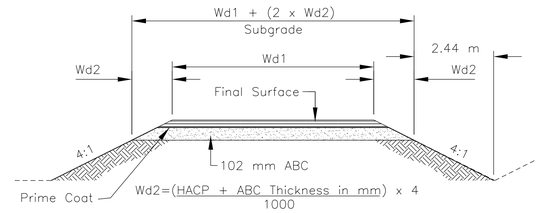
TYPICAL PAVEMENT MARKING "BROKEN YELLOW"



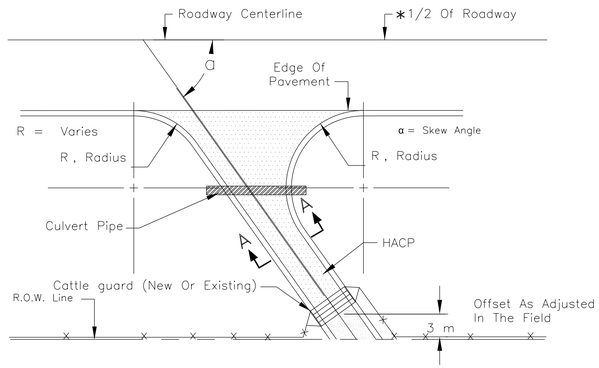
TYPICAL PAVEMENT MARKING @ TURNOUT

GENERAL NOTES

1. SEE SECTION 634 OF THE FP-14 AND THE SUPPLEMENTAL SPECIFICATIONS FOR ADDITIONAL NOTES.



SECTION A-A



TYPICAL TYPE "S" TURNOUT

STEPHEN M. LUJAN
NEW MEXICO
26338
02/05/25
PROFESSIONAL ENGINEER

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF INDIAN AFFAIRS

NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

PERMANENT PAVEMENT MARKINGS & TURNOUT DETAILS

DRAWN BY: NRDOT	DATE: 02/2015
DESIGNED BY: NRDOT	DATE: 02/2015
REVISED: --/----	BY: DESIGN 1
sht 37 N5001_PPM	

U.S. DEPARTMENT OF THE INTERIOR 1824 BUREAU OF INDIAN AFFAIRS

2/5/2025 10:28:13 AM

sht 37 N5001_PPM

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	38	106

PROJECT: N5001 - PERMANENT TRAFFIC CONTROL

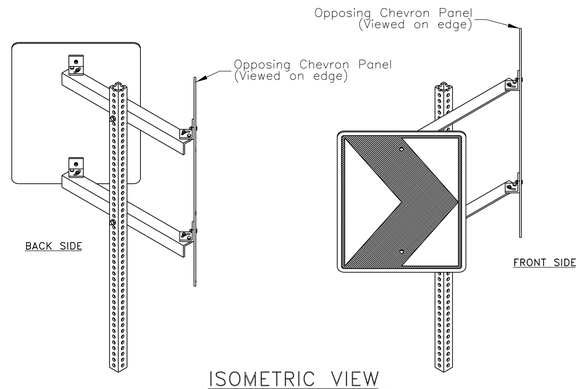
STATION	LOC.	DETAIL No.	DESCRIPTION	SIZE OF SIGN PANELS	AREA sq/m	No. OF POST	POST SIZE (mm)	TOTAL SIGN PANELS
UNIT I						6		UNIT I TOTAL 6
0+065 .000	5.7 m LT.							
0+175 .000	14.5 m LT.							
0+475 .000	11.0 m LT.	R1-1	STOP	762 x 762mm	0.58		50	
0+700 .000	5.7 m RT.							
0+800 .000	5.7 m LT.							
1+125 .000	5.7 m LT.							
UNIT II						1		UNIT II TOTAL 1
9+075 .000	5.7 m LT.							
UNIT I						3		UNIT I TOTAL 3
0+100 .000	5.7 m RT.							
0+240 .000	5.7 m LT.	R2-1-15	SPEED LIMIT 15	610 X 762mm	0.46		44	
0+760 .000	5.7 m LT.							
UNIT I						2		UNIT I TOTAL 2
0+760 .000	5.7 m RT.							
2+440 .000	5.7 m LT.	R2-1-25	SPEED LIMIT 25	610 X 762mm	0.46		44	
UNIT I						1		UNIT I TOTAL 1
2+130 .000	5.7 m RT.							
REMOVED FROM PROJECT SCOPE		R2-1-45	SPEED LIMIT 45	610 X 762mm	0.46		44	WORK REMOVED FROM PROJECT SCOPE
6+280 .000	5.7 m RT.							
6+280 .000	5.7 m LT.							
10+480 .000	5.7 m LT.							
UNIT I						6		UNIT I TOTAL 6
0+400 .000	5.7 m LT.							
0+460 .000	5.7 m RT.							
0+725 .000	5.7 m RT.							
1+080 .000	5.7 m RT.							
1+800 .000	5.7 m LT.							
2+740 .000	5.7 m RT.							
UNIT II		W1-2L		762 x 762mm	0.58	2	50	UNIT II TOTAL 2
7+840 .000	5.7 m RT.							
7+925 .000	5.7 m LT.							
REMOVED FROM PROJECT SCOPE								WORK REMOVED FROM PROJECT SCOPE
4+730 .000	5.7 m RT.							
5+640 .000	5.7 m LT.							
6+650 .000	5.7 m LT.							
9+310 .000	5.7 m RT.							
9+525 .000	5.7 m RT.							
10+500 .000	5.7 m RT.							
UNIT I						5		UNIT I TOTAL 5
0+785 .000	5.7 m LT.							
1+100 .000	5.7 m RT.							
1+445 .000	5.7 m RT.							
1+540 .000	5.7 m LT.							
2+345 .000	5.7 m RT.							
UNIT II						2		UNIT II TOTAL 2
7+460 .000	5.7 m RT.	W1-2R		762 x 762mm	0.58		50	
8+260 .000	5.7 m LT.							
REMOVED FROM PROJECT SCOPE								WORK REMOVED FROM PROJECT SCOPE
5+360 .000	5.7 m LT.							
6+070 .000	5.7 m LT.							
6+145 .000	5.7 m LT.							
8+700 .000	5.7 m RT.							
8+740 .000	5.7 m LT.							
9+930 .000	5.7 m RT.							
9+980 .000	5.7 m LT.							
UNIT I						1		UNIT I TOTAL 1
2+440 .000	5.7 m LT.	W1-4L		762 x 762mm	0.58	0	50	
REMOVED FROM PROJECT SCOPE								WORK REMOVED FROM PROJECT SCOPE
6+540 .000	5.7 m RT.							
UNIT I						1		UNIT I TOTAL 1
1+810 .000	5.7 m RT.							
UNIT II		W1-4R		762 x 762mm	0.58	1	50	UNIT II TOTAL 1
7+300 .000	5.7 m LT.							
UNIT I						3		UNIT I TOTAL 6
0+608 .500	5.7 m RT.							
0+608 .500	5.7 m RT.	W1-8		762 x 762mm	0.58		50	
0+665 .000	5.7 m RT.							
REMOVED FROM PROJECT SCOPE		W1-7		1219 x 610mm	0.74	4	57	WORK REMOVED FROM PROJECT SCOPE
9+080 .000	5.7 m RT.	WL-RB		1524 x 610mm	0.93	4	57	
		WR-RB						
REMOVED FROM PROJECT SCOPE		W2-2L		762 x 762mm	0.58	1	50	WORK REMOVED FROM PROJECT SCOPE
8+890 .000	5.7 m RT.							
REMOVED FROM PROJECT SCOPE		W2-2R		762 x 762mm	0.58	1	50	WORK REMOVED FROM PROJECT SCOPE
9+270 .000	5.7 m LT.							
UNIT II		RouteNo	EAST 5001	457 x 610mm	0.28	1	50	UNIT II TOTAL 1
6+880 .000	5.7 m RT.	M3-2		375 x 525mm	0.20	-	50	
UNIT II		RouteNo	WEST 5001	457 x 610mm	0.28	1	50	UNIT II TOTAL 1
6+880 .000	5.7 m RT.	M3-4		375 x 525mm	0.20	-	50	
REMOVED FROM PROJECT SCOPE		RouteNo	5000	457 x 610mm	0.28	1	50	WORK REMOVED FROM PROJECT SCOPE
8+980 .000	5.7 m RT.	M6-1L		375 x 525mm	0.20	1	50	

PROJECT: N5001 - PERMANENT TRAFFIC CONTROL

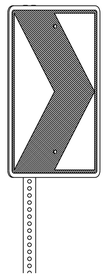
STATION	LOC.	DETAIL No.	DESCRIPTION	SIZE OF SIGN PANELS	AREA sq/m	No. OF POST	POST SIZE (mm)	TOTAL SIGN PANELS
REMOVED FROM PROJECT SCOPE		RouteNo	5000	457 x 610mm	0.28	1	50	WORK REMOVED FROM PROJECT SCOPE
9+180 .000	5.7 m LT.	M6-1R		375 x 525mm	0.20	1	50	
UNIT I						2		UNIT I TOTAL 1
0+150 .000	5.7 m RT.	D1-1	TOHAALI COMMUNITY ← SCHOOL	1779 X 533mm	0.95		57	
UNIT I						2		UNIT I TOTAL 1
0+220 .000	5.7 m LT.	D1-1	TOHAALI COMMUNITY SCHOOL →	1779 X 533mm	0.95		57	
UNIT I		S4-3P	SCHOOL	375 x 525mm	0.20	-	50	UNIT I TOTAL 2
0+100 .000	5.7 m RT.							
0+240 .000	5.7 m LT.							
UNIT I						2		UNIT I TOTAL 2
0+010 .000	5.7 m RT.	S4-5-15	SCHOOL AHEAD UNIT 15	914 x 914mm	0.84		57	
0+320 .000	6.5 m LT.							
UNIT I		W11-2		762 x 762mm	0.58	2	50	UNIT I TOTAL 2
0+709 .500	5.7 m RT.							
0+712 .500	5.7 m LT.							
UNIT I		M6-2		375 x 525mm	0.20	-	50	UNIT I TOTAL 2
0+709 .500	5.7 m RT.							
0+712 .500	5.7 m LT.							
UNIT I		D7-1	NAVAJO NATION FISH HATCHERY →	1219 X 762mm	0.93	2	57	UNIT I TOTAL 1
0+270 .000	5.7 m LT.							

SIGNING QUANTITY SUMMARY

ITEM NUMBER	DESCRIPTION	UNIT	PROJECT TOTAL	PROJECT USE
	UNIT I			
63304-0400	SIGNS, STEEL PANELS, TYPE 9 SHEETING	m2	23.73	**25**
63305-0200	POSTS, STEEL, 50mm DIAMETER	m	174.57	**175**
	UNIT II			
63304-0400	SIGNS, STEEL PANELS, TYPE 9 SHEETING	m2	4.44	**5**
63305-0200	POSTS, STEEL, 50mm DIAMETER	m	28.72	**30**



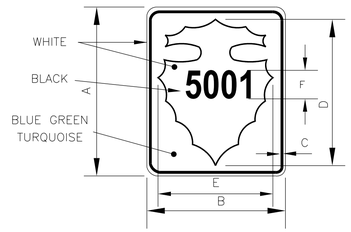
ISOMETRIC VIEW
CHEVRON DETAILS
(NTS)



SIDE VIEW
CHEVRON SIGN
(NTS)

Note: Each Chevron Symbol/Panel (2 ea.) Shall Face On-Coming Traffic And Shall Follow The Direction Of Curvature.

SIGN	DIMENSION (mm)					F NUMERALS				
	A	B	C	D	E	DIGITS IN ROUTE	1	2	3	4
MIN.	610	457	13	495	343	SIZE & SERIES (mm)	152E	152D	152C	152B



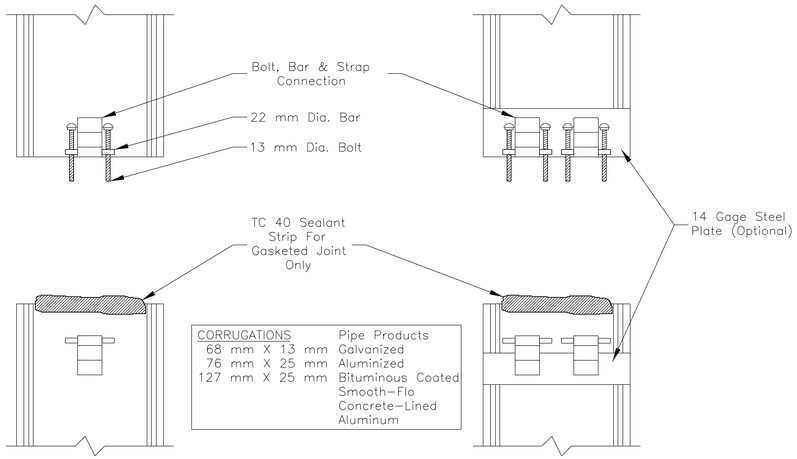
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

PERMANENT TRAFFIC
CONTROL DETAILS

DRAWN BY: NRDOT	DATE: 06/15
DESIGNED BY: NRDOT	DATE: 06/15
REVISED: --/--	BY: DESIGN 1
$FILES$	

$TIME$
10/15/2023
$FILES$

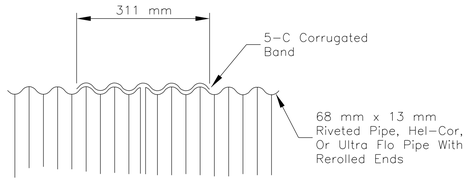
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	39	106



CONNECTION DETAIL
SINGLE
BOLT, BAR & STRAP

CONNECTION DETAIL
DOUBLE
BOLT, BAR & STRAP

H-10 HUGGER BAND



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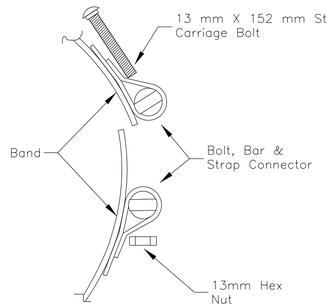
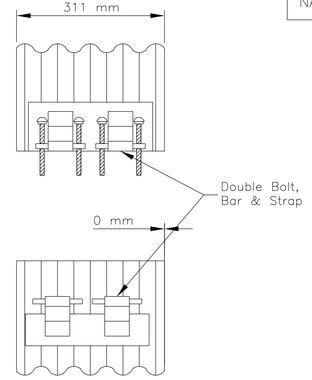


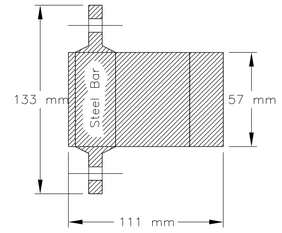
BOLT, BAR & STRAP
CONNECTION DETAIL

STRAP DETAIL

CORRUGATIONS	PIPE PRODUCTS
68 mm X 13 mm ULTRA FLO	GALVANIZED ALUMINIZED BITUMINOUS COATED FIBER-BONDED

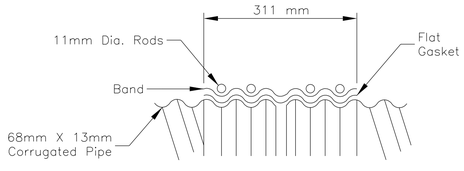


CONNECTION DETAIL

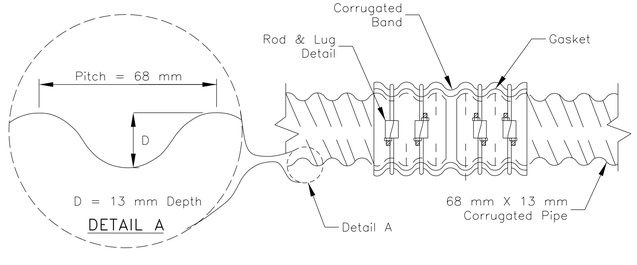


TOP VIEW

5-C CORRUGATED BAND



SECTION



5-C CORRUGATED BAND
SIDE VIEW

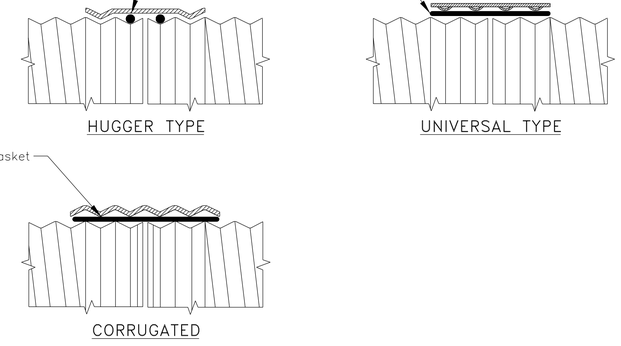
FLAT GASKET INSTALLATION GUIDELINES

1. CLEAN THE PIPE EDGES.
2. APPLY A LIBERAL AMOUNT OF LUBRICANT TO THE FIRST TWO ANNULAR CORRUGATIONSON THE OUTSIDE OF THE PIPE.
3. SNAP THE FLAT GASKET INTO POSITION SUCH THAT THE GASKET COVERS THE FIRST ANNULAR CORRUGATION OR THE RECORRUGATED END. HALF OF THE GASKET WILL BE HANGING OVER THE END OF THE PIPE.
4. FOLD THE REMAINING HALF OF THE GASKET THAT IS EXTENDED OVER THE PIPE END BACK OVER THE SECTION OF THE GASKET POSITIONED ON THE END OF THE PIPE.
5. APPLY A LIBERAL AMOUNT OF LUBRICANT TO THE ENTIRE INNER SURFACE OF THE BAND.
6. PLACE THE BAND INTO POSITION ON THE INSTALLED LENGTH OF PIPE SO THAT THE NEXT LENGTH OF PIPE CAN BE INDEXED CORRECTLY AND THE FLAT GASKET ROLLED OVER THE SECOND PIPE END.
7. APPLY A LIBERAL AMOUNT OF LUBRICANT TO THE END OF THE SECOND LENGTH OF PIPE.
8. PLACE THE SECOND LENGTH OF PIPE INTO POSITION. THE TWO PIPE LENGTHS MUST BE POSITIONED PROPERLY FOR THE GASKET TO FIT OVER, AND THE BAND TO INDEX, ONTO THE SECOND PIPE END.
9. UNFOLD THE GASKET INTO POSITION OVER THE SECOND LENGTH OF PIPE. TAKE CARE TO INSURE THAT THE GASKET FITS OVER THE END OF THE SECOND PIPE SECTION. ALSO, THE BAND MUST BE INDEXED INTO THE PROPER ANNULAR CORRUGATION ON EACH LENGTH OF PIPE.
10. CHECK THE COMPLETE PERIPHERY OF THE PIPE TO INSURE THAT THE GASKET IS CENTERED EVENLY ON THE TWO LENGTHS OF PIPE.
11. SLIDE THE BAND INTO POSITION AND TIGHTEN THE BOLTS. FOR MAXIMUM COMPRESSION OF THE GASKET, THE BAND CORRUGATIONS MUST BE FULL SEATED INTO THE PROPER CORRUGATION ON EACH PIPE END. THIS WILL INSURE THAT THE PIPE LENGTHS ARE POSITIONED PROPERLY FOR THE GASKET.

GENERAL NOTES

1. CARE SHALL BE TAKEN THAT NO FOREIGN MATERIAL IS ALLOWED TO ENTER BETWEEN THE OUTER PIPE SURFACE AND THE INSIDE OF THE BAND.
2. TIGHTENING OF THE BOLTS MAY BE ACCOMPLISHED WITH THE USE OF SPANNER OR SOCKETHEAD DEEPWELL WRENCHES, EITHER MANUAL OR POWER. FASTENERS SHOULD BE TIGHTENED UNIFORMLY TO PREVENT UNEVEN COMPRESSION AGAINST THE PIPE WALL. FELTON BAND PULLER SHALL BE USED TO TIGHTEN BAND ON LARGER DIAMETER STRUCTURES, WHICH QUICKLY DRAWS THE BAND CONNECTORS TOGETHER TO FACILITATE BOLT AND NUT TIGHTENING. BOLTS SHOULD BE TIGHTENED TO THE RECOMMENDED TORQUE OF 25-30 FT/LBS.
3. BANDS FOR PIPE-ARCH ARE THE SAME AS FOR EQUIVALENT DIAMETER ROUND PIPE.
4. BANDS ARE NORMALLY FURNISHED AS FOLLOWS:

   305mm THRU 1219mm; 1-PIECE
   1372mm THRU 2438mm; 2-PIECE
   2591mm THRU 3658mm; 3-PIECE
5. BAND FASTENERS ARE ATTACHED WITH SPOT WELDS, RIVETS OR HAND WELDS. ALL ALUMINUM BANDS ARE FURNISHED WITH A 14-GAGE ALUMINUM BACK-UP PLATE WELDED TO THE BAND AND THE STRAP.
6. THE GASKET AND BAND INSTALLATION SHALL BE ASSEMBLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. A REPRESENTATIVE OF THE MANUFACTURER MAY BE PRESENT AT THE SITE DURING INSTALLATION.
7. THE COST OF SUPPLYING ALL MATERIALS AND INSTALLATION OF THE GASKET AND BAND ASSEMBLY SHALL BE INCLUDED IN THE BID ITEMS FOR SECTION 602.
8. ANY RELATED PATENT RIGHTS WILL BE THE RESPONSIBILITY OF THE CONTRACTOR AS PER SECTION 107.01 OF THE FP-14.



HUGGER TYPE

UNIVERSAL TYPE

CORRUGATED

TYPICAL GASKET/BAND COUPLERS

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

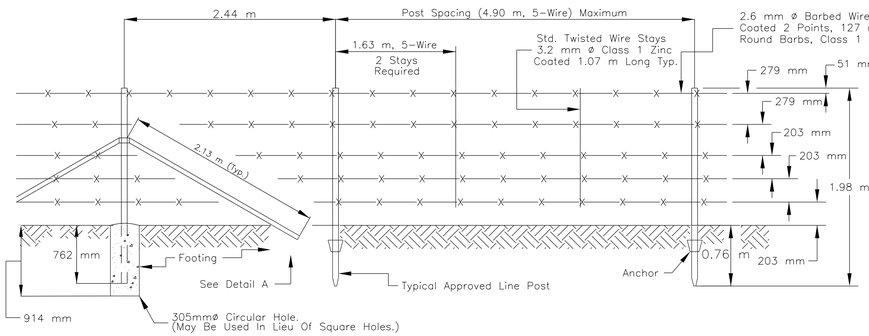
GASKET/HUGGER BAND DETAILS

DRAWN BY: NRDOT	DATE: 02/2015
DESIGNED BY: NRDOT	DATE: 02/2015
REVISED: --/----	BY: DESIGN 1
$FILES$	

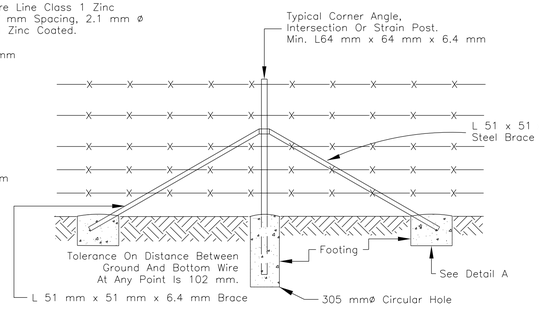
10/15/2023 $TIME$

$FILES$

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	40	106

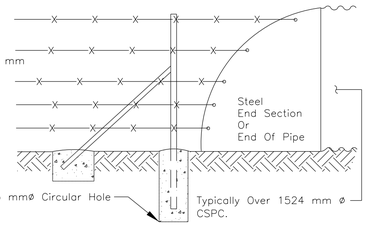


STANDARD 5 LINE GALVANIZED BARBED WIRE PANEL



STANDARD STRAIN POST

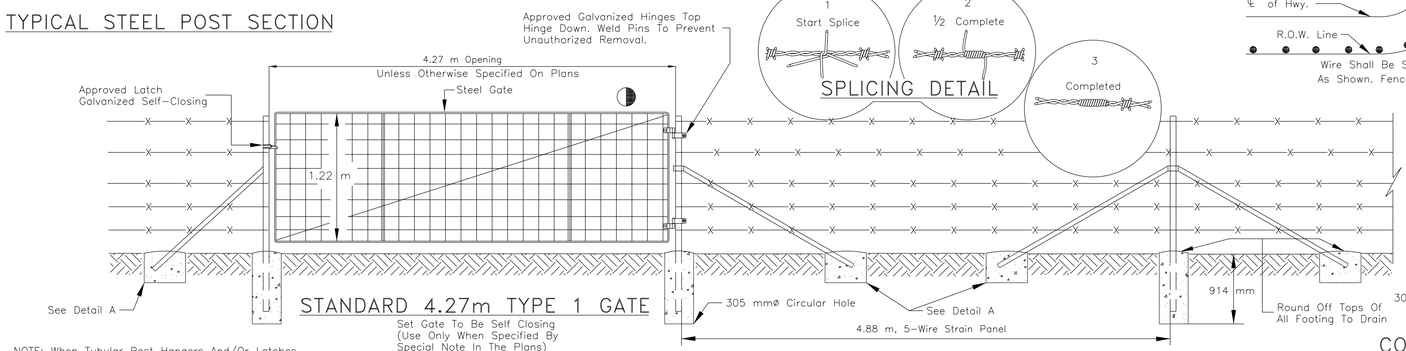
To Be Placed @ 198 m Max. Intervals. Strain Posts With Braces Shall Be Installed At All Corners (R/W Corners Etc.) And Angles Exceeding 15° And Fence Intersections. A Third Brace, In Line With Cross Fence, Required At Intersection.



WING FENCE

Detail For Corrugated Metal Culvert

TYPICAL STEEL POST SECTION

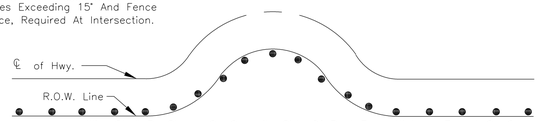


STANDARD 4.27m TYPE 1 GATE

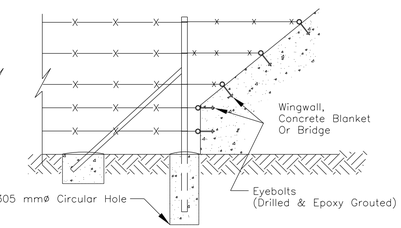
Set Gate To Be Self Closing (Use Only When Specified By Special Note In The Plans)

NOTE: When Tubular Post Hangers And/Or Latches Are Used, It Shall Be Drilled For A Single 2.38 mm ø Min. Drive Pin To Prevent Rotation Of The Hangers And/Or Latches.

SPLICING DETAIL



Wire Shall Be Strung On Opposite Side Of Post From Highway Except On Curve As Shown. Fence Shall Be Constructed 305 mm Inside Right-Of-Way Line.

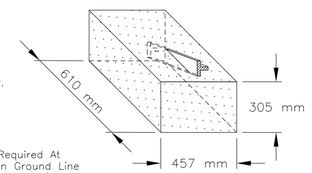


CONNECTION TO MAJOR STRUCTURES

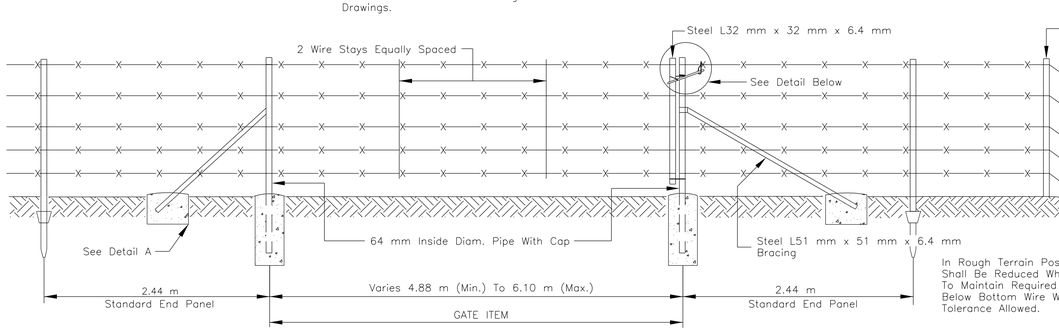
35 mm ø Tubing 2 Vert. Braces Mesh □, △, ◇, 3.2 mm ø Line Wires 2.6 mm ø Crosswires. 1 Adjustable Diagonal Guy Fully Galvanized.

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

END POST



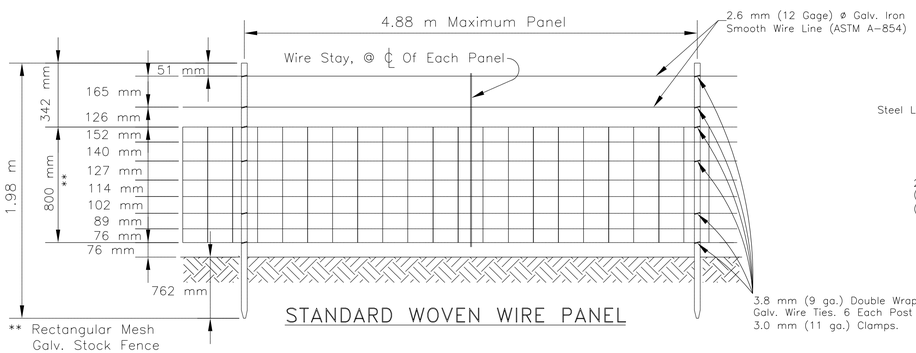
DETAIL A



STANDARD TYPE-2 GATE

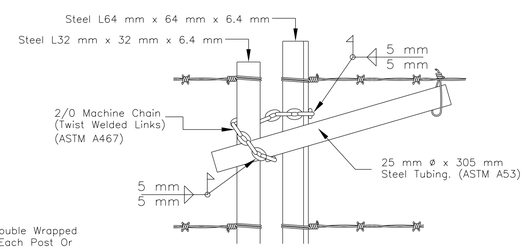
Use At Locations Noted On Plans

FENCE PROFILE IN ROUGH TERRAIN

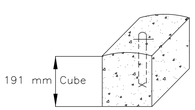


STANDARD WOVEN WIRE PANEL

3.8 mm (9 ga.) Double Wrapped Galv. Wire Ties. 6 Each Post Or 3.0 mm (11 ga.) Clamps.



GATE SECURING DETAIL



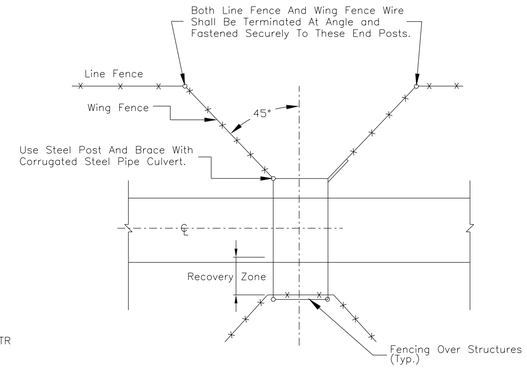
CONCRETE SAG WEIGHT DETAIL

Min. Weight Of Concrete Sag Shall Be 16 kg.

38 mm x 127 mm Doubled And Twisted 3.8 mm (Diam.) Wire Loop Centerd In Block. 25.4 mm Projection Twisted Ends Down.

GENERAL NOTES

1. CORNER, GATE, INTERMEDIATE BRACE POSTS AND LINE POSTS SHALL BE EITHER GALVANIZED OR PAINTED IN ACCORDANCE WITH AASHTO M 281-96. METAL POST AND BRACES SHALL BE FABRICATED FROM RAIL, BILLET, OR COMMERCIAL GRADE STEEL CONFORMING WITH THE REQUIREMENT OF ASTM A 702.
2. LINE POSTS SHALL BE FABRICATED IN ACCORDANCE WITH AASHTO M 281-96, AND SHALL A NOMINAL WEIGHT OF 1.98 kg/m EXCLUSIVE OF ANCHOR PLATES. ANCHOR PLATES SHALL BE CLAMPED, WELDED OR RIVETED TO THE SECTION IN SUCH A MANNER AS TO PREVENT DISPLACEMENT WHEN THE POSTS ARE DRIVEN.
3. WHEN LINE POST ANCHORS ARE OMITTED, DUE TO CHANGE IN SOIL CONDITIONS SUCH AS ROCK, THEN THE POSTS SHALL BE SET IN CONCRETE. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO ITEM 61901-1000.
4. TIE WIRE, WIRE FASTENERS OR WIRE CLIPS FOR FASTENING BARBED AND WOVEN FABRIC FENCING TO THE STEEL POSTS SHALL BE 3.0 mm DIA. (11 GAGE) STEEL WIRE, CLASS 1 (ZINC COATED), SOFT TEMPER AND MEET THE REQUIREMENTS OF ASTM A 641. FURNISHING AND PLACEMENT OF FASTENERS SHALL BE INCLUDED WITH ITEM 61901-1000.
5. CONCRETE FOR ANCHORS, POST HOLES, ETC. SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 20.7 MPa IN 28 DAYS AND SHALL CONFORM TO SECTION 601 OF THE FP-14. FURNISHING AND PLACEMENT OF CONCRETE SHALL BE INCLUDED WITH ITEM 61901-1000.
6. TWO SPLICES ON THE SAME LINE BETWEEN THE STRAIN POST ASSEMBLIES SHALL NOT BE PERMITTED. NO SPLICES SHALL BE PLACED CLOSER THAN 30 METER OF ANY POST ASSEMBLIES.
7. CONNECT ALL R.O.W. FENCING TO CATTLEGUARDS, CULVERTS (GREATER THAN 1524 mm DIA.), AND CONCRETE STRUCTURES AS SHOWN ON THESE PLANS, AND/OR AS DIRECTED BY THE CO/COTR.
8. ANY CONFLICT IN PLACEMENT OF THE R/W FENCING AT DRAINAGE PIPE LOCATION, DUE TO NARROW R/W WIDTH OR OTHER CONSTRICTIONS, THE FENCE MAY BE PLACED OVER THE DRAINAGE STRUCTURE. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO ITEM 61901-1000.
9. CLEARING AND GRUBBING SHALL INCLUDE SHAPING AND/OR REMOVAL OF SMALL MOUNDS NECESSARY TO PRESENT A SMOOTH UNIFORM APPEARANCE OF BOTH GROUND AND FENCING LINE. THIS WORK SHALL BE INCIDENTAL TO THE INSTALLATION OF FENCING AND NO ADDITIONAL PAYMENT SHALL BE MADE.
10. ALL DRILLING INTO ROCK MATERIAL, ETC. SHALL BE INCIDENTAL TO THE INSTALLATION OF FENCING AND NO ADDITIONAL PAYMENT SHALL BE MADE.
11. GATE CLOSURE DEVICE SHALL BE STEEL PIPE, NPS 3/4 (26.7 mmø) SCHEDULE 40, CONFORMING TO THE REQUIREMENT OF ASTM A 53. THE GATE CLOSURE STEEL CHAIN SHALL BE WELDED TO THE STEEL PIPE AND ANGLE IRON FENCE POST. THIS WORK SHALL BE INCIDENTAL TO THE INSTALLATION OF FENCING AND NO ADDITIONAL PAYMENT SHALL BE MADE.
12. CONTRACTOR SHALL BE REQUIRED TO INSTALL SAG WEIGHTS WHERE VERTICAL CLEARANCE BETWEEN THE BOTTOM WIRE AND NATURAL GROUND IS 610 mm OR GREATER. THIS WORK SHALL BE INCIDENTAL TO THE INSTALLATION OF FENCING.
13. CONTRACTOR MUST COORDIANTE WITH THE LAND OWNERS WHEN REMOVING THE EXISTING FENCES.



WING FENCE DETAIL

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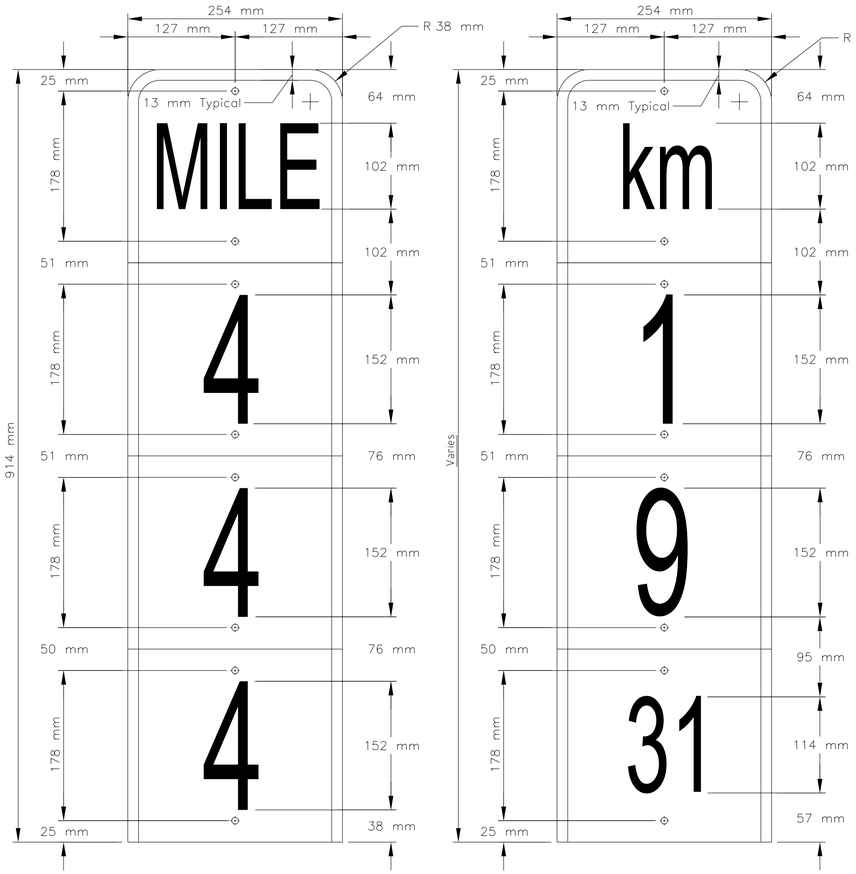
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

STANDARD FENCING DETAILS

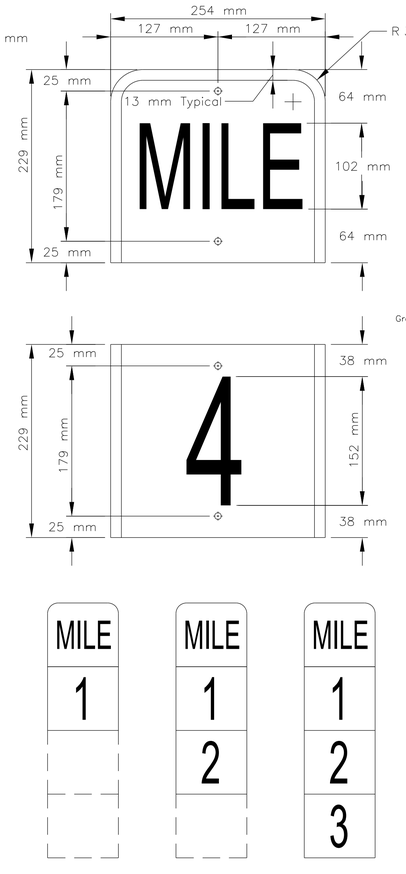
DRAWN BY: NRDOT	DATE: 02/2015
DESIGNED BY: NRDOT	DATE: 02/2015
REVISED: --/----	BY: DESIGN 1
$FILES$	

10/15/2023 $TIME$
$FILES$

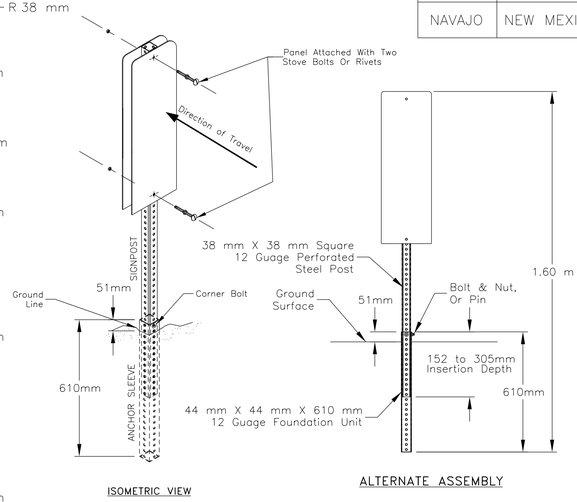
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	41	106



TYPICAL MILEPOST DETAIL



STANDARD NUMERAL POSITION



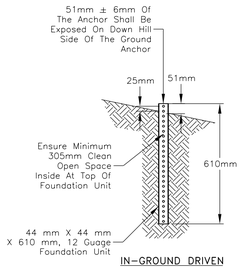
ISOMETRIC VIEW

ALTERNATE ASSEMBLY

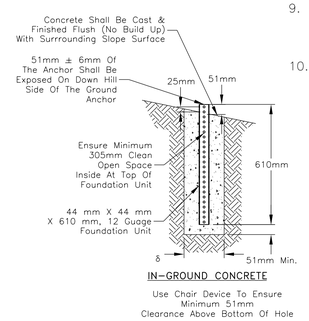
ITEM 63318-1000: MILEPOST, 38 mm X 38 mm SQUARE STEEL POST					
		DESCRIPTION		QUANTITY (EACH)	
STATION	LOCATION	ENGLISH	METRIC	ENGLISH	METRIC
UNIT I					
0+039.778	LEFT & RIGHT	MILE 0	0 km	2	2
1+649.122	LEFT & RIGHT	MILE 1	1.609 km	2	2
UNIT II					
8+086.498	LEFT & RIGHT	MILE 5	8.047 km	2	2
WORK REMOVED FROM PROJECT SCOPE (FOR INFORMATION ONLY)					
3+258.466	LEFT & RIGHT	MILE 2	3.219 km	2	2
4+867.810	LEFT & RIGHT	MILE 3	4.828 km	2	2
6+477.154	LEFT & RIGHT	MILE 4	6.437 km	2	2
9+695.842	LEFT & RIGHT	MILE 6	9.656 km	2	2
			UNIT I TOTAL	4	4
			UNIT II TOTAL	2	2

GENERAL NOTES

1. ALL CONCRETE SHALL BE CLASS A(AE) AND SHALL CONFORM TO SECTION 601 OF THE FP-14. FURNISHING AND PLACING OF CONCRETE, WHEN REQUIRED, SHALL BE CONSIDERED INCIDENTAL TO ITEM 63309-0020.
2. THE CONTRACTOR SHALL USE 44 mm X 44 mm ALL STEEL SQUARE TUBE DELINEATORS. SEE SHEET 58 FOR DELINEATOR SPACING.
3. THE MILE POSTS SHALL BE PLACED ON BOTH SIDE OF THE ROADWAY WITH ENGLISH UNITS PANEL ON APPROACHING TRAFFIC AND METRIC UNITS PANEL ON OPPOSING TRAFFIC.
4. MILE POST PLATES SHALL BE FABRICATED FROM 16 GAGE MINIMUM THICKNESS 5052-H38 OR 6061-T6 ALUMINUM ALLOY.
5. ALL SURFACE TO BE COVERED WITH REFLECTIVE SHEETING, AND SHALL BE PREPARED IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION SECTION 718.11, TABLE 718-3.
6. THE BORDER AND LEGEND SHALL BE STANDARD REFLECTIVITY SILVER-WHITE. THE BACKGROUND SHALL BE STANDARD REFLECTIVITY GREEN AND MAY BE REVERSE SILK-SCREENED.
7. THE BACK SIDE OF THE ALUMINUM SHEETS SHALL BE ETCHED BY APPROVED METHODS TO REDUCE GLARE FROM REFLECTED SUNLIGHT.
8. STEEL POSTS SHALL CONFORM TO ASTM A499- YIELD POINT AND TENSILE STRENGTH OF STEEL SHALL BE 550 & 689 MPa (MINIMUM) RESPECTFULLY AND SHALL NOT WEIGHT LESS THAN 2.98 kg/m. AN APPROVED ALTERNATE BREAKAWAY ASSEMBLY MAY BE SUBMITTED TO THE CO/COTR FOR REVIEW AND APPROVAL PRIOR TO IT'S USE. THE POSTS SHALL BE GALVANIZED AFTER FABICATION IN ACCORDANCE WITH ASTM A-123, OR PAINTED WITH A BAKED-ON ALKYD RESIN, OR WITH A POLYESTER POWDER COATING PER SECTION 718.08 OF FP-14 SUPPLEMENTAL SPECIFICATION.
9. INSTALL MILE POST MARKER 1.80 METER (MAXIMUM) FROM ROADWAY SHOULDER. AT GUARDRAIL LOCATIONS, THE MILE POST MARKER SHALL LINE UP WITH THE GUARDRAIL POSTS.
10. THE POSTS LENGTH SHALL BE DETERMINED IN THE FIELD BASED ON FINISH GROUND ELEVATION WITH RESPECT TO EDGE OF PAVEMENT ELEVATION.

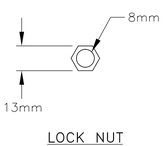


IN-GROUND DRIVEN

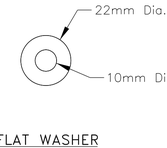


IN-GROUND CONCRETE

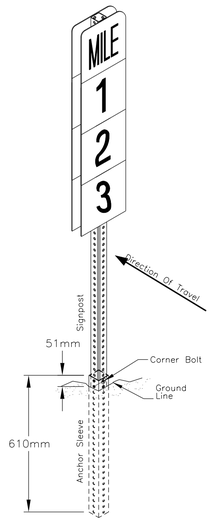
Use Chair Device To Ensure Minimum 51mm Clearance Above Bottom Of Hole



LOCK NUT

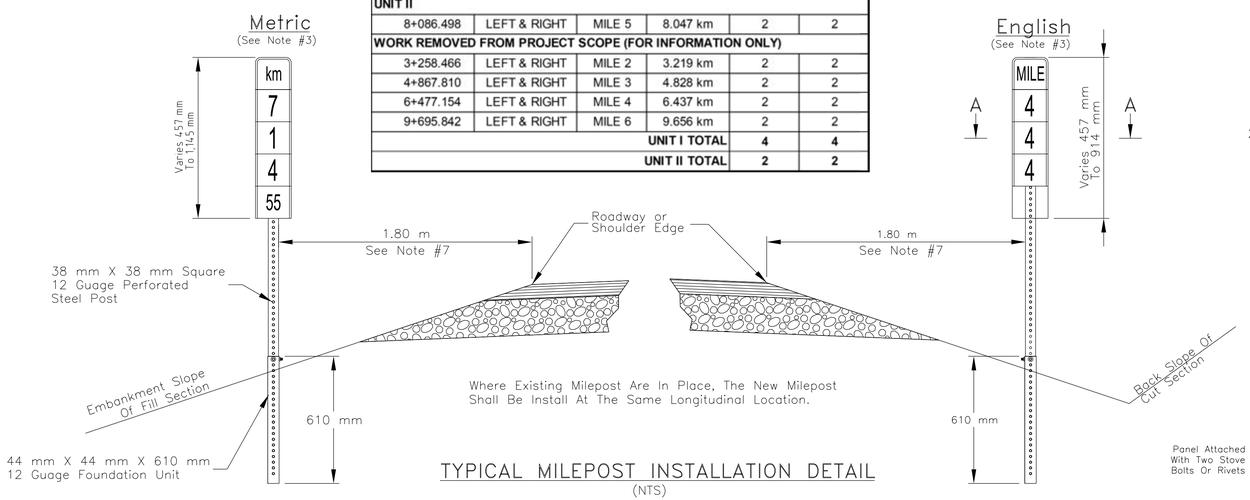


FLAT WASHER

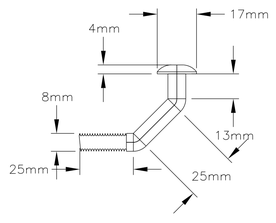


ISOMETRIC VIEW

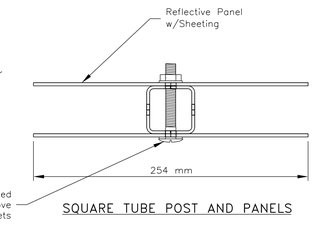
NOTE: Square Tube Field Splice Connection Detail on Sheet 42



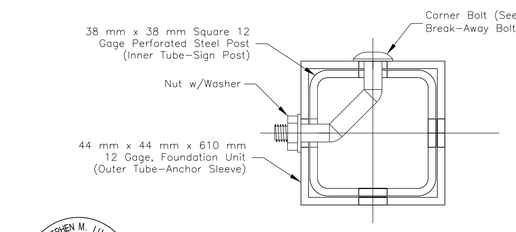
TYPICAL MILEPOST INSTALLATION DETAIL
(NTS)



BREAK-AWAY BOLT



SQUARE TUBE POST AND PANELS



"BREAK-AWAY" DETAIL
SIGN POST/SLEEVE INTERFACE

STEPHEN M. LUJAN
26338
10/27/23
PROFESSIONAL ENGINEER

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

STANDARD MILEPOST DETAILS

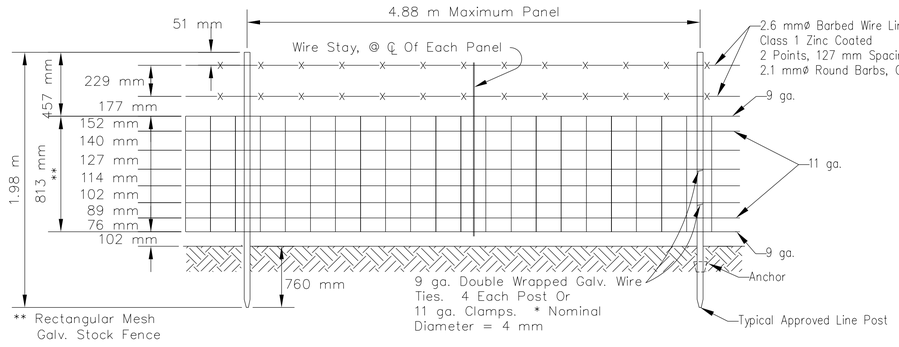
DRAWN BY: NRDOT	DATE: 02/2015
DESIGNED BY: NRDOT	DATE: 02/2015
REVISED: --/----	BY: DESIGN 1
$FILES$	

$FILES$ - pw.bentley.com:wils-pw\Documents\Projects\2023100-TRNSPRTN\DOT\17-100-090-14_NavDOT N5001(1) Toadlena Two Grey Hills\2_Disciplines_Sheets\3_Roadway\sht 41 N5001_MI_POST

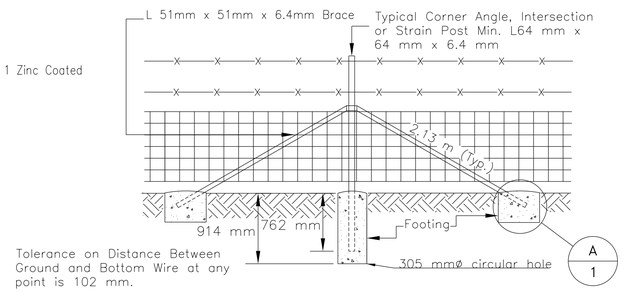
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	42	106

GENERAL NOTES

1. STRUCTURAL PIPE SHALL CONFORM TO ASTM A53-93A, GRADE B. ALL OTHER STRUCTURAL STEEL SHALL CONFORM TO ASTM-A36.
2. STRUCTURAL STEEL/PIPE FOR WING BRACES SHALL RECEIVE ONE(1) PRIMER COAT, ONE(1) INTERMEDIATE COAT, AND ONE(1) FINISH COAT IN ACCORDANCE WITH SECTION 563, PAINT SYSTEM 2 OF FP-14.
3. ALL STRUCTURAL PIPE JOINTS SHALL BE FABRICATED IN ACCORDANCE WITH THE AISC MANUAL OF STEEL CONSTRUCTION, NINTH EDITION.
4. WELDING DESIGN DETAILS SHALL CONFORM TO THE AASHTO STANDARD SPECIFICATIONS FOR WELDING AT STRUCTURAL STEEL HIGHWAY BRIDGES, LATEST EDITION.
5. SEE SHEET 46 FOR ADDITIONAL NOTES.

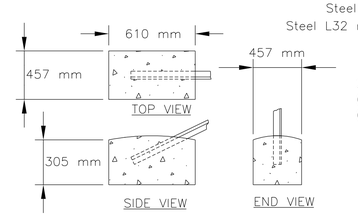


STANDARD WOVEN WIRE PANEL

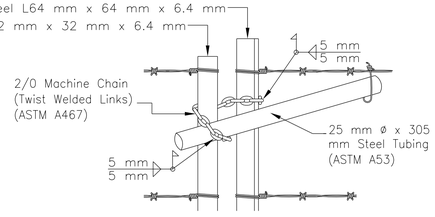


STANDARD STRAIN POST

To Be Placed @ 198 m Max. Intervals. Strain Posts With Braces Shall Be Installed At All Corners (R/W Corners Etc.) And Angles Exceeding 15° And Fence Intersections. A Third Brace, In Line With Cross Fence, Required At Intersection.



CONCRETE FOOTING FOR CORNER & STRAIN POST (A/1)



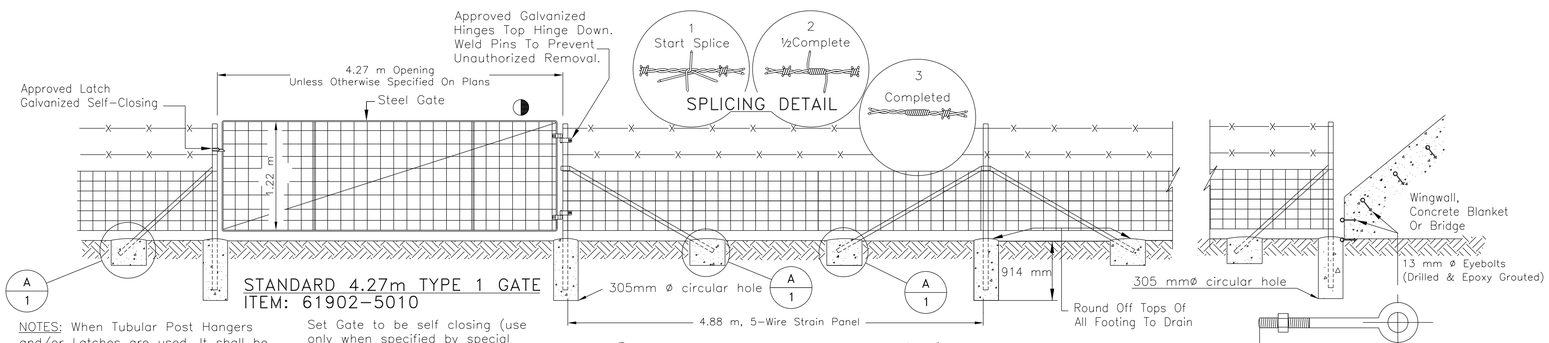
GATE SECURING DETAIL

38 mm x 127 mm Doubled and Twisted 3.8 mm(dia.) Wire Loop Centered in Block. 25.4 mm Projection Twisted Ends Down.

CONCRETE SAG WEIGHT DETAIL

Min. Weight Of Concrete Sag Shall Be 16 kg

TYPICAL STEEL POST SECTION



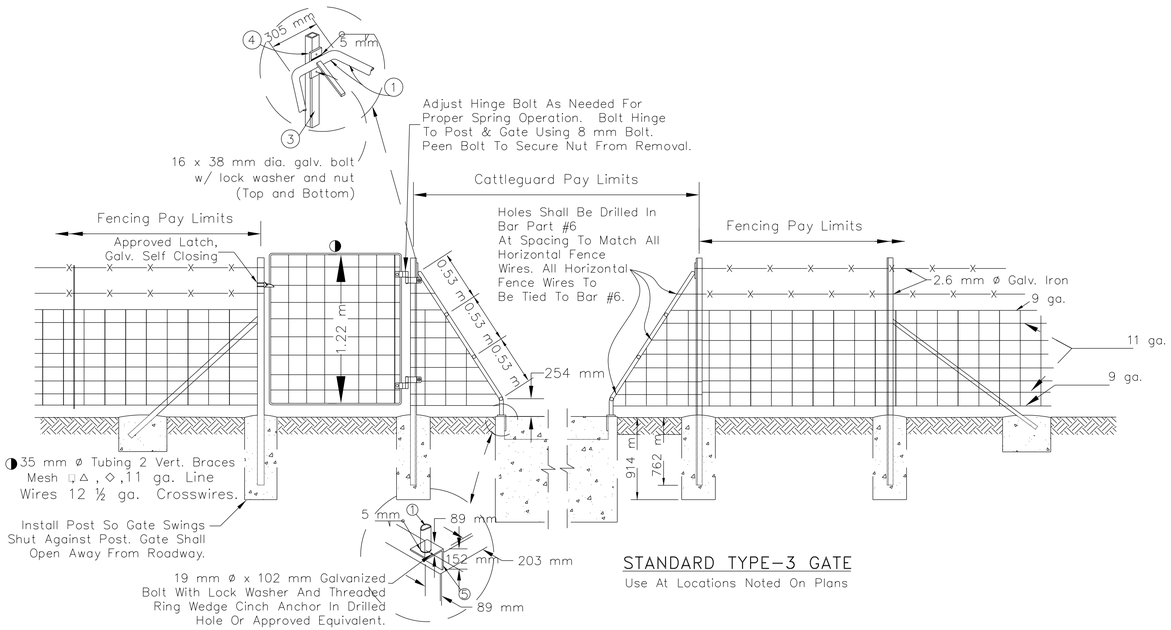
STANDARD 4.27m TYPE 1 GATE
ITEM: 61902-5010

NOTES: When Tubular Post Hangers and/or Latches are used, It shall be drilled for a single 2.38 mm ø Min. drive pin to prevent rotation of the hangers and/or latches.

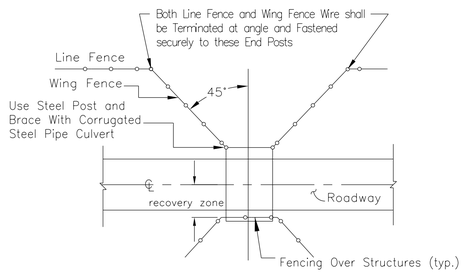
Set Gate to be self closing (use only when specified by special note in the plans)
For Gate Details at Cattle Guard location see standard cattle guard drawings.

END POST

EYE BOLT DETAIL
CONNECTION TO MAJOR STRUCTURES



STANDARD TYPE-3 GATE
Use At Locations Noted On Plans



WING FENCE DETAIL

Wire Shall Be Strung On Opposite Side Of Post From Highway Except On Curve As Shown. Fence Shall Be Constructed 305 mm Inside Right-Of-Way Line.

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WOVEN WIRE FENCE DETAILS

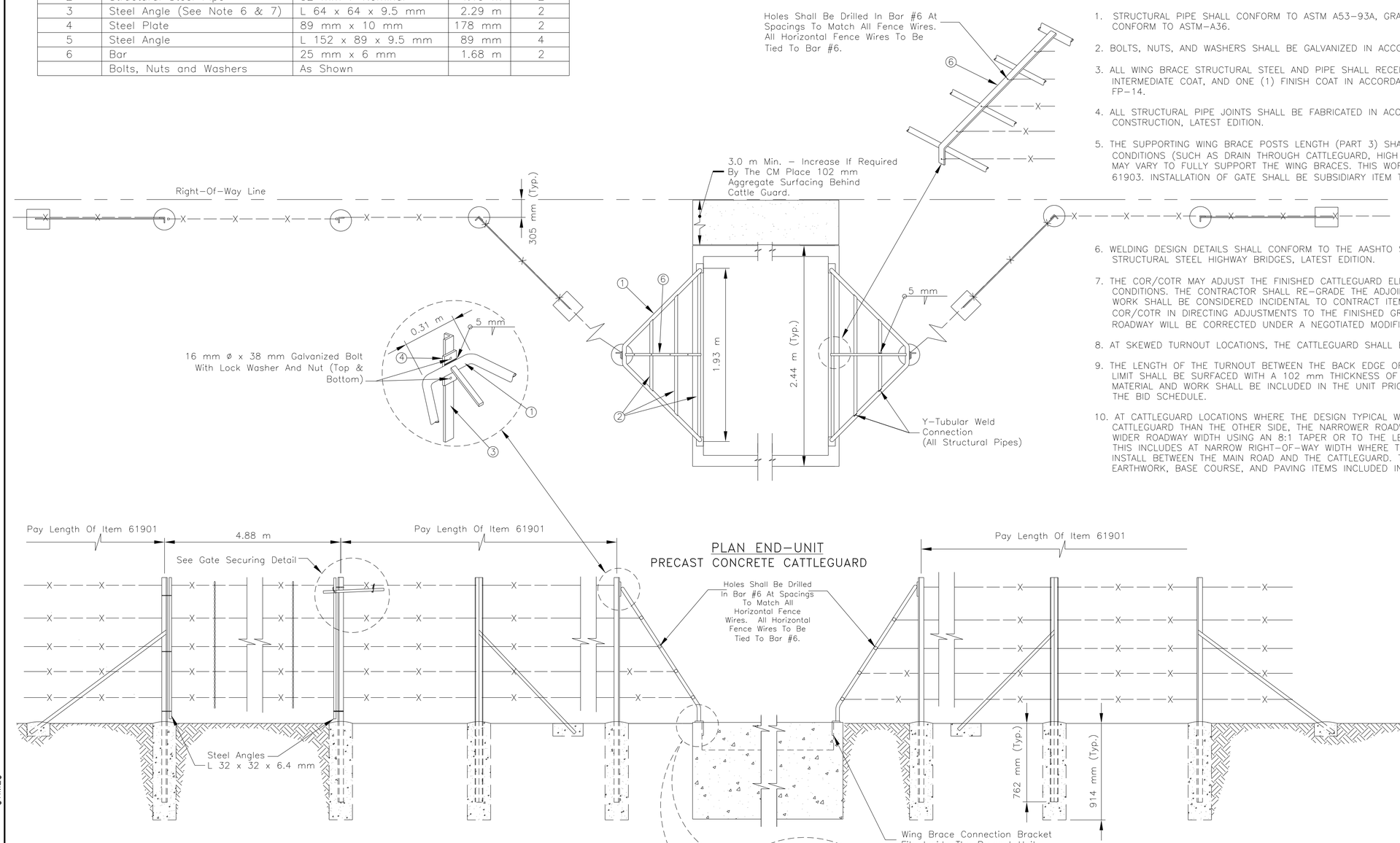
DRAWN BY: NRDOT	DATE: 07/2015
DESIGNED BY: NRDOT	DATE: 2/9/2015
REVISED: --/----	BY: DESIGN 1
$FILES$	

$TIME$
10/15/2023
$FILES$

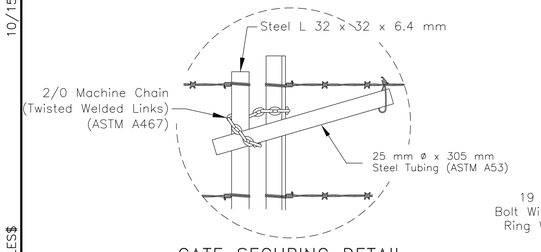
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	43	106

ESTIMATED MATERIAL LIST

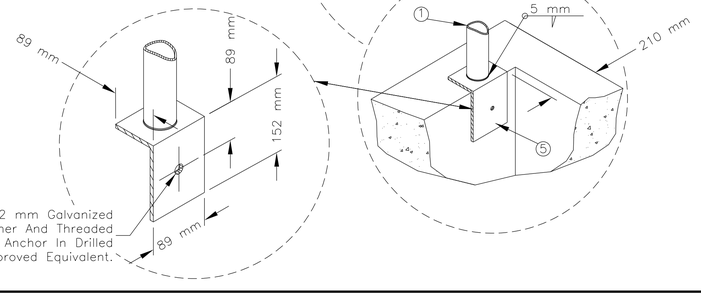
PART NO.	MATERIAL	SIZE AND THICKNESS	LENGTH	QUANTITY
1	Structural Steel Pipe	64 mm ø Nominal	4.23 m	2
2	Structural Steel Pipe	32 mm ø Nominal	4.19 m	2
3	Steel Angle (See Note 6 & 7)	L 64 x 64 x 9.5 mm	2.29 m	2
4	Steel Plate	89 mm x 10 mm	178 mm	2
5	Steel Angle	L 152 x 89 x 9.5 mm	89 mm	4
6	Bar	25 mm x 6 mm	1.68 m	2
	Bolts, Nuts and Washers	As Shown		



PLAN END–UNIT
PRECAST CONCRETE CATTLEGUARD



GATE SECURING DETAIL



GENERAL NOTES

1. STRUCTURAL PIPE SHALL CONFORM TO ASTM A53–93A, GRADE B. ALL OTHER STRUCTURAL STEEL SHALL CONFORM TO ASTM–A36.
2. BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111 (ASTM A123).
3. ALL WING BRACE STRUCTURAL STEEL AND PIPE SHALL RECEIVE ONE (1) PRIMER COAT, ONE (1) INTERMEDIATE COAT, AND ONE (1) FINISH COAT IN ACCORDANCE WITH SECTION 563, PAINT SYSTEM 2, OF FP–14.
4. ALL STRUCTURAL PIPE JOINTS SHALL BE FABRICATED IN ACCORDANCE WITH AISC MANUAL OF STEEL CONSTRUCTION, LATEST EDITION.
5. THE SUPPORTING WING BRACE POSTS LENGTH (PART 3) SHALL BE 2.3 m (MINIMUM). UNDER CERTAIN CONDITIONS (SUCH AS DRAIN THROUGH CATTLEGUARD, HIGH EMBANKMENT, ETC) THE LENGTH OF THE POST MAY VARY TO FULLY SUPPORT THE WING BRACES. THIS WORK SHALL BE INCIDENTAL TO CONTRACT ITEM 61903. INSTALLATION OF GATE SHALL BE SUBSIDIARY ITEM TO THE CATTLEGUARD ITEM(S).
6. WELDING DESIGN DETAILS SHALL CONFORM TO THE AASHTO STANDARD SPECIFICATIONS FOR WELDING AT STRUCTURAL STEEL HIGHWAY BRIDGES, LATEST EDITION.
7. THE COR/COTR MAY ADJUST THE FINISHED CATTLEGUARD ELEVATION AS NEEDED TO FIT FIELD/DRAINAGE CONDITIONS. THE CONTRACTOR SHALL RE–GRADE THE ADJOINING TURNOUT APPROACHES AS REQUIRED. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO CONTRACT ITEM 61903 OF FP–14. ANY MISTAKES MADE BY COR/COTR IN DIRECTING ADJUSTMENTS TO THE FINISHED GRADE FOR THE CATTLE GUARDS AND APPROACH ROADWAY WILL BE CORRECTED UNDER A NEGOTIATED MODIFICATION UNDER SUBSECTION 109.02(M).
8. AT SKEWED TURNOUT LOCATIONS, THE CATTLEGUARD SHALL BE INSTALLED PERPENDICULAR TO TURNOUT.
9. THE LENGTH OF THE TURNOUT BETWEEN THE BACK EDGE OF THE CATTLEGUARD AND THE RIGHT–OF–WAY LIMIT SHALL BE SURFACED WITH A 102 mm THICKNESS OF AGGREGATE SURFACING. THE SURFACING MATERIAL AND WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE AGGREGATE ITEM SHOWN IN THE BID SCHEDULE.
10. AT CATTLEGUARD LOCATIONS WHERE THE DESIGN TYPICAL WIDTH IS WIDER ON ONE SIDE OF THE CATTLEGUARD THAN THE OTHER SIDE, THE NARROWER ROADWAY WIDTH SHALL FLARED OUT TO MATCH THE WIDER ROADWAY WIDTH USING AN 8:1 TAPER OR TO THE LENGTH ALLOW BY THE RIGHT–OF–WAY WIDTH. THIS INCLUDES AT NARROW RIGHT–OF–WAY WIDTH WHERE THE TURNOUT RADIUS CANNOT BE COMPLETELY INSTALL BETWEEN THE MAIN ROAD AND THE CATTLEGUARD. THIS WORK SHALL BE PAID UNDER THE EARTHWORK, BASE COURSE, AND PAVING ITEMS INCLUDED IN THE BID SCHEDULE.

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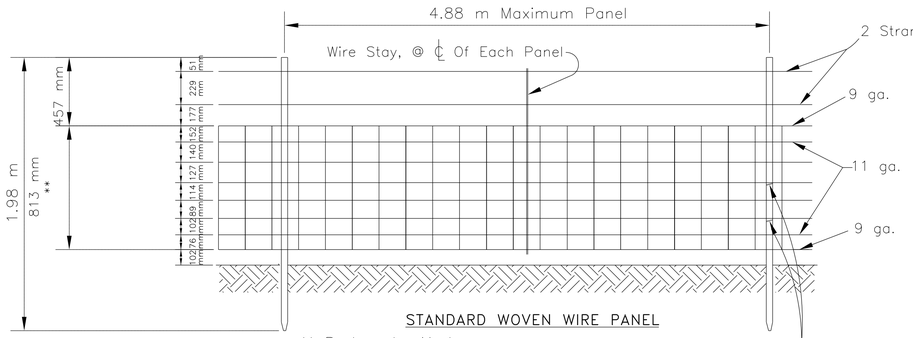
CATTLEGUARD WINGBRACE DETAILS

DRAWN BY: NRDOT	DATE:02/2015
DESIGNED BY: NRDOT	DATE:02/2015
REVISED: --/----	BY: DESIGN 1
$FILES$	

$FILES$ 10/15/2023 $TIME$

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	44	106

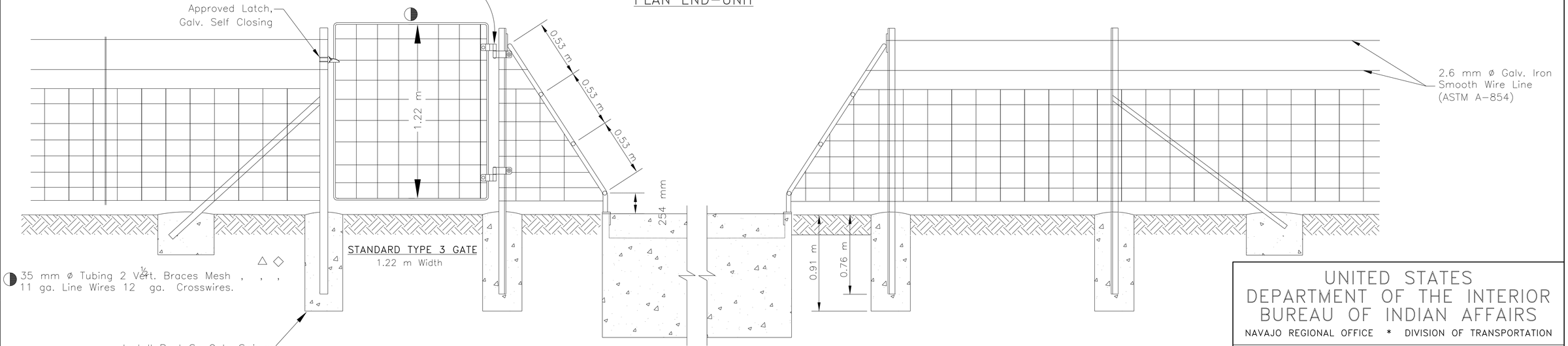


STANDARD WOVEN WIRE PANEL

GENERAL NOTES

1. SEE SHEETS 43 & 45 FOR GENERAL NOTES.
2. INSTALL 305 mm TORSION SPRING CLOSURE DEVICE WITH ADJUSTABLE TENSION. THIS DEVICE SHOULD BE INSTALLED BETWEEN THE HINGES.

PLAN END–UNIT



STANDARD TYPE 3 GATE
1.22 m Width

UNITED STATES
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NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

CATTLEGUARD WING BRACE & WOVEN WIRE FENCE DETAILS

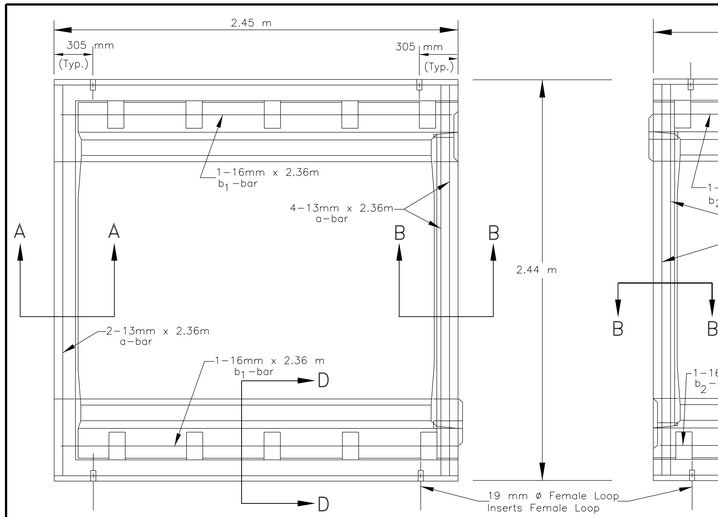
DRAWN BY: NRDOT	DATE: 07/2015
DESIGNED BY: NRDOT	DATE: 07/2015
REVISED: --/----	BY: DESIGN 1
$FILES$	

$TIME$
10/15/2023
$FILES$

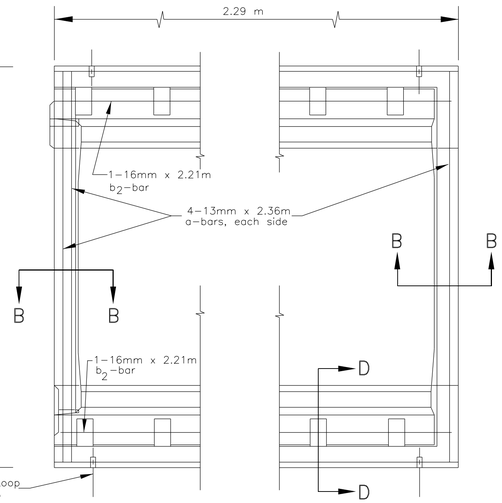
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	45	106

GENERAL NOTES

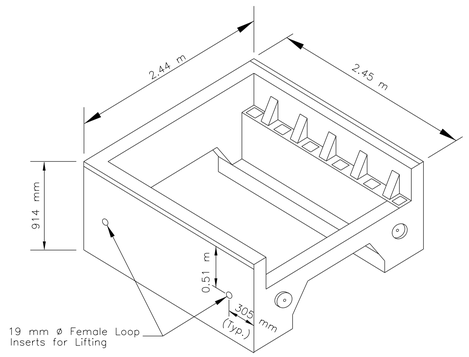
1. PRECAST CONCRETE SHALL ATTAIN 28–DAY COMPRESSIVE STRENGTH OF 27.62 MPA (MINIMUM) IN ACCORDANCE WITH AASHTO T22 (ASTM C–39). THE CONCRETE SHALL BE CLASS A(AE) CONFORMING TO SECTION 552 OF FP–14.
2. REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 420. ALL STRUCTURAL STEEL SHALL CONFORM TO AASHTO M–183.
3. EACH UNIT SHALL CONFORM TO AASHTO MS–18 HIGHWAY LOADING REQUIREMENTS.
4. EACH UNIT SHALL BE FABRICATED TO CONFORM TO THE ROADWAY CROWN AS SHOWN ON THE PLANS OR AS DESIGNATED BY CO/COTR.
5. BOLTS, WASHERS, AND NUTS SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M–111.
6. ALL TRAFFIC GRILL UNIT, INCLUDING THE STEEL ANGLES SHALL RECEIVE ONE (1) PRIMER COAT, ONE (1) INTERMEDIATE COAT, AND ONE (1) FINISH COAT IN ACCORDANCE WITH SECTION 563, PAINT SYSTEM 2, OF FP–14.
7. WING BRACES SHALL BE CONSIDERED SUBSIDIARY ITEMS TO THE CATTLEGUARD UNIT.
8. THE CONTRACTOR HAS THE OPTION TO USE ALL STEEL FRAME CATTLEGUARD. IF THE CONTRACTOR ELECTS TO SUBSTITUTE FOR THE STEEL FRAME CATTLEGUARD, HE/HER SHALL PROVE THEY ARE MORE COST EFFECTIVE WITH SUPPORTING DATA SUBMITTED FOR APPROVAL PRIOR TO USE. THE CONTRACTOR IS RESPONSIBLE FOR ALL PATENT PROTECTION RIGHTS, SHOP DRAWINGS, AND MATERIAL CERTIFICATIONS. HOWEVER, NO STEEL FRAME CATTLEGUARD SHALL BE USED FOR CONCRETE DRAINAGE PAD CATTLEGUARD LOCATIONS.
9. ELASTOMERIC BEARING PADS SHALL BE SET WITH EPOXY ADHESIVE PRIOR TO THE INSTALLATION OF TRAFFIC GRILL UNIT.



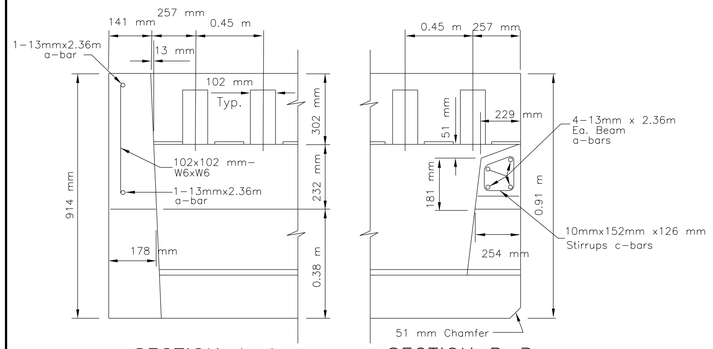
PLAN – END UNIT



PLAN – INTERMEDIATE UNIT

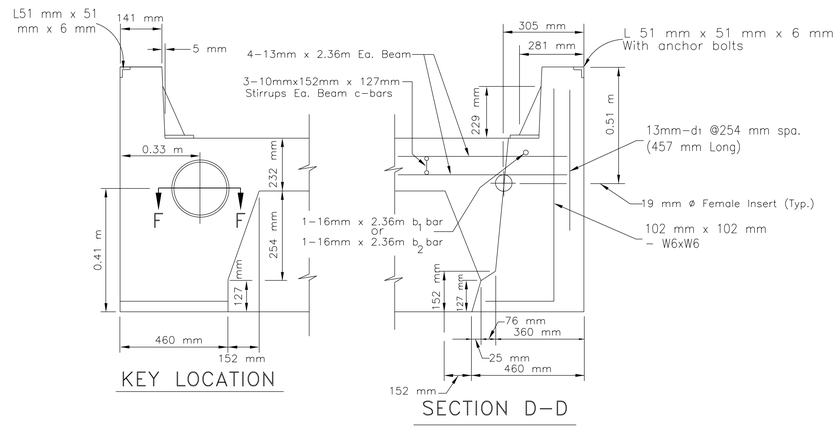


ISOMETRIC VIEW – END UNIT



SECTION A–A

SECTION B–B



KEY LOCATION

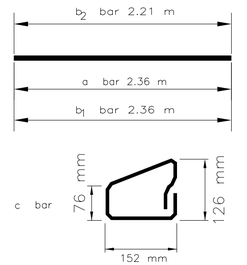
SECTION D–D

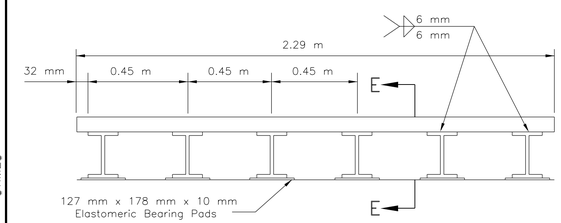
REINFORCING STEEL SCHEDULE

STRAIGHT BARS				BENT BARS			
MARK	NO.	SIZE	LENGTH	MARK	NO.	SIZE	LENGTH
END UNIT							
a	6	13	2.36 m				
b_1	2	16	2.36 m				
				c	3	10	0.61 m
D_1	20	13	0.46 m				
INTERMEDIATE UNIT							
a	8	13	2.36 m				
b_2	2	16	2.21 m				
				c	6	10	0.61 m
D_1	18	13	0.46 m				

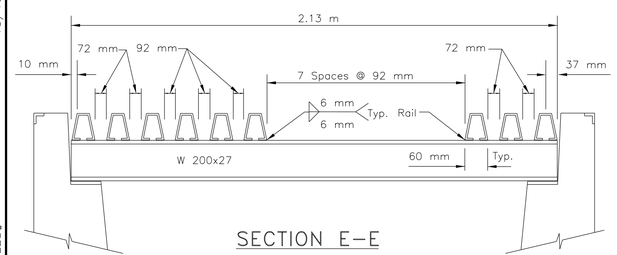
BENDING DIAGRAMS

ALL DIMENSIONS ARE OUT TO OUT

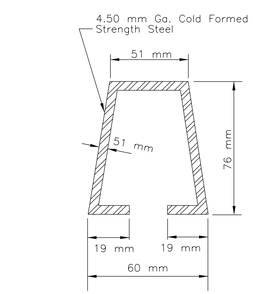




TRAFFIC GRILLE UNIT

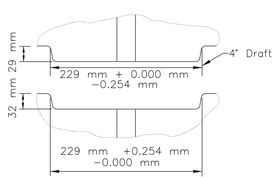


SECTION E–E

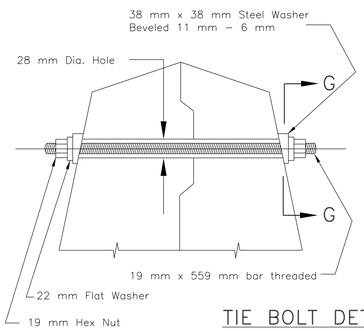


STEEL CROSSBAR SECTION

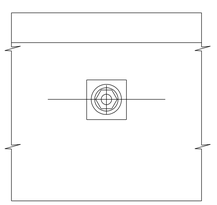
15 Req'd for 1 Grid



SECTION F–F



TIE BOLT DETAIL



SECTION G–G

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS

NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

PRECAST CONCRETE CATTLEGUARD DETAILS

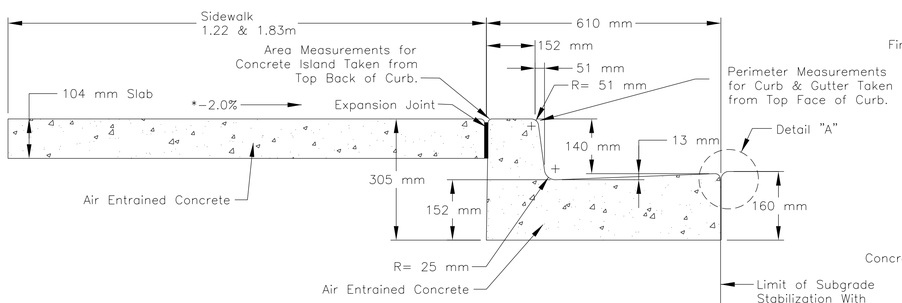
DRAWN BY: NRDOT	DATE:02/2015
DESIGNED BY: NRDOT	DATE:02/2015
REVISED: --/----	BY: DESIGN 1
$FILES$	

$TIME$

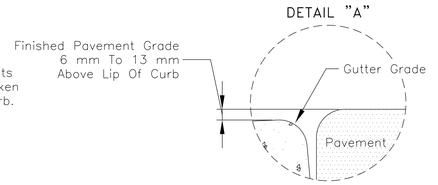
10/15/2023

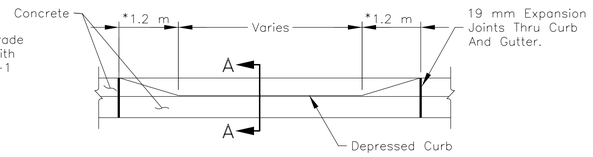
$FILES$

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	46	106



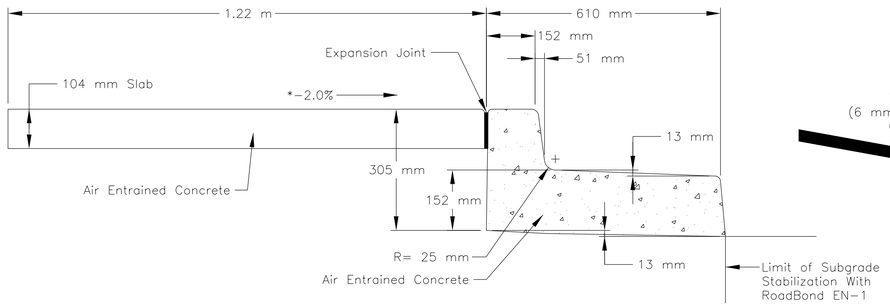
VERTICAL CURB & GUTTER & SIDEWALK



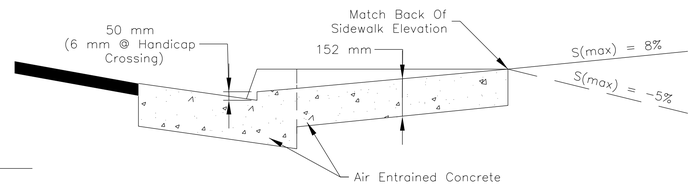


WING-TYPE DRIVEWAY
*2.0 METER @ HANDICAP ACCESS AREAS

*UNLESS SHOWN OTHERWISE ON DRAWINGS



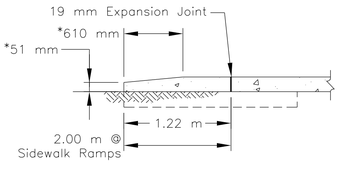
OUT SLOPE GUTTER



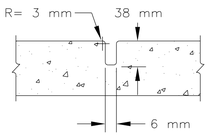
SECTION A-A

GENERAL NOTES

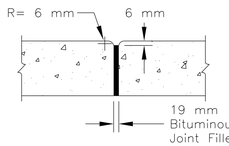
1. WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE STANDARD SPECIFICATION FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS FP-14 ALONG WITH ALL SUPPLEMENTAL SPECIFICATIONS FOR THIS PROJECT.
2. ALL CONCRETE TO BE AIR ENTRAINED WITH A MINIMUM COMPRESSIVE STRENGTH OF 20.7 MPa IN 28 DAYS. ALL CONCRETE SHALL CONFORM TO SECTION 601 "MINOR CONCRETE STRUCTURES" OF THE FP-14.
3. IN NO CASE SHALL ANY BACK FILLING 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 BACK FILL MATERIAL CONFORMING TO AASHTO (A-2-4) OR BETTER, AS DIRECTED BY THE CO/COTR AND AT NO ADDITIONAL COST TO THE GOVERNMENT.
5. ALL PCC CONCRETE, DEPRESSED CURBS, WHEELCHAIR RAMPS, GUTTER FILLET AREAS, AND WING TYPE DRIVEWAYS SHALL BE CONSIDERED INCIDENTAL TO INSTALLATION OF THE SIDEWALK AND CURBING.
6. ALL PRE FORM JOINT FILLER SHALL BE IN ACCORDANCE WITH SECTION 712.01(b), BITUMINOUS TYPE OF THE FP-14. THE CONTRACTOR SHALL SUBMIT A PROPOSAL ON THE TYPE OF FILLER AND METHOD OF INSTALLATION TO BE USED FOR REVIEW AND APPROVAL BY THE CO/COTR PRIOR TO INSTALLATION. THIS MATERIAL AND THE INSTALLATION THEREOF SHALL BE CONSIDERED INCIDENTAL TO ITEMS 60902-1000 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 CO/COTR THIS WORK SHALL BE INCIDENTAL TO COMPLETION OF THE PROJECT AND NO ADDITIONAL PAYMENT WILL BE MADE.
8. SURFACE TEXTURE OF WHEELCHAIR RAMP, SURFACES NOT COVERED BY TACTILE SHALL BE OBTAINED BY HEAVY BROOMING (TEXTURE DEPTH, 2 mm), TRANSVERSE TO THE SLOPES OF THE RAMP. THIS WORK SHALL BE INCIDENTAL TO ITEM 61504-3000.
9. THE CONTRACTOR WILL BE REQUIRED TO MAKE ANY AND ALL NECESSARY FIELD ADJUSTMENTS TO MATCH FIELD CONDITIONS AS DIRECTED BY THE CO/COTR AFTER THE CURB AND VALLEY GUTTERS ARE FORMED AND PRIOR TO PLACING, THE CONTRACTOR SHALL NOTIFY THE CO/COTR AND ALLOW TIME FOR THE CO/COTR 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.
10. RADII MEASUREMENTS SHOWN TO FACE OF GUTTER AT SIDEWALK AND END ISLANDS.
11. 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/COTR 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/COTR TACK COAT WILL BE INCIDENTAL TO BID ITEM 41201-1000.
12. 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 61505-1000 SEE SHEET 52 FOR DETAILS.



CURB TERMINAL SECTION
(Unless Noted Otherwise On Plans)

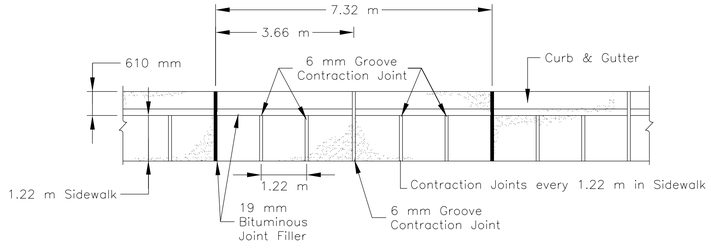


CONTRACTION JOINT

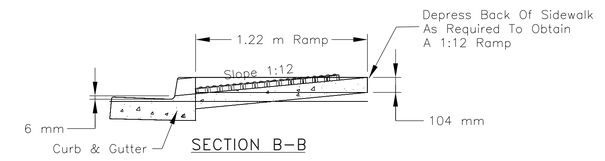


EXPANSION JOINT

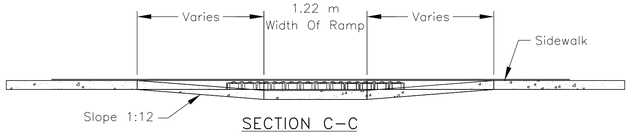
* WHERE CURB TAPERS ARE NEEDED (AS PER COR) TO MATCH SIDEWALKS AND/OR ARE RELATED TO A SIDEWALK RAMP, THE LENGTH OF THE TAPER SHALL BE 2m LONG AND THE TOE OF THE TAPER TO BE FLUSH WITH THE MATCHING SURFACE.



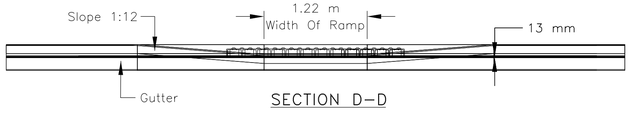
CURB GUTTER & SIDEWALK JOINT DETAIL



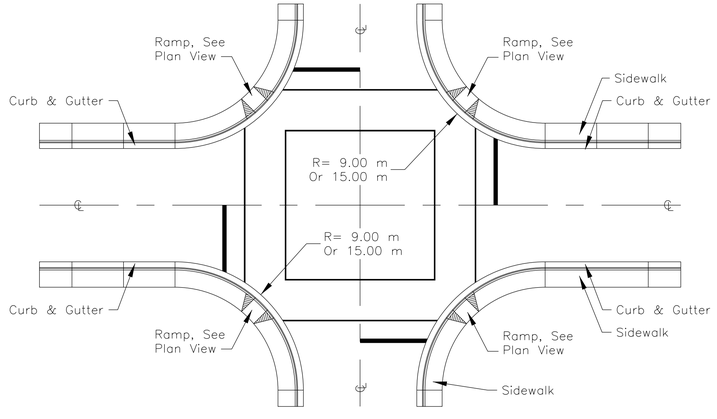
SECTION B-B



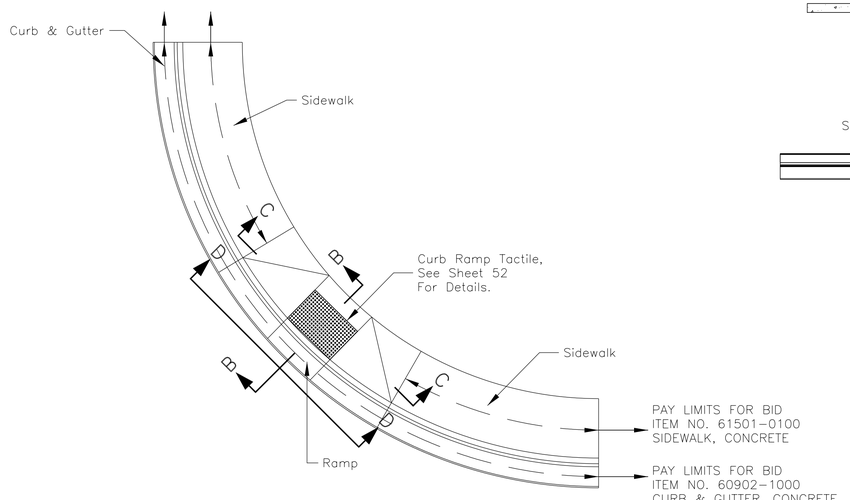
SECTION C-C



SECTION D-D



TYPICAL HANDICAP RAMP - TYPE I
(@ Street Intersection)



PLAN VIEW

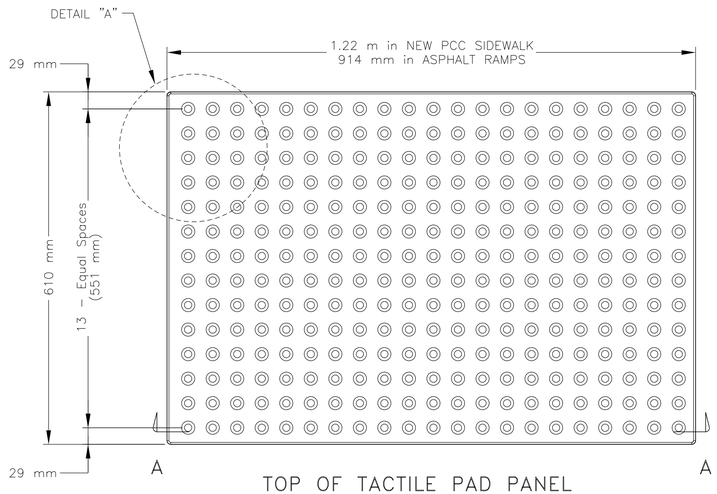
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

CONCRETE CURB, GUTTER AND SIDWALK DETAIL

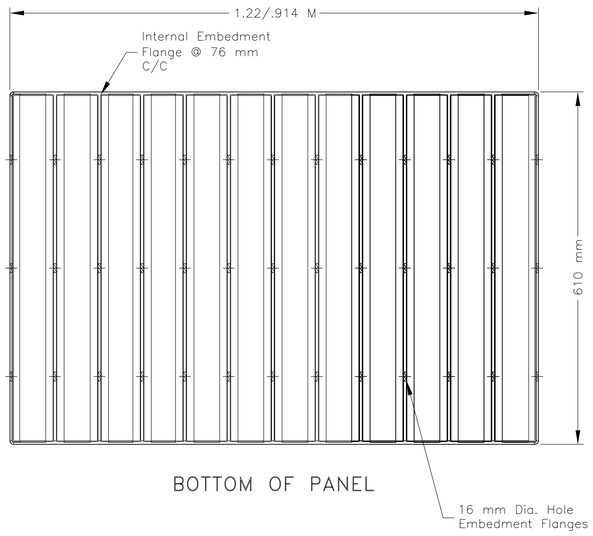
DRAWN BY: NRDOT	DATE: 05/2014
DESIGNED BY: NRDOT	DATE: 05/2014
REVISED: 01/2015	BY: DESIGN 1
$FILES$	

$TIME$
10/15/2023
$FILES$

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	47	106



TOP OF TACTILE PAD PANEL

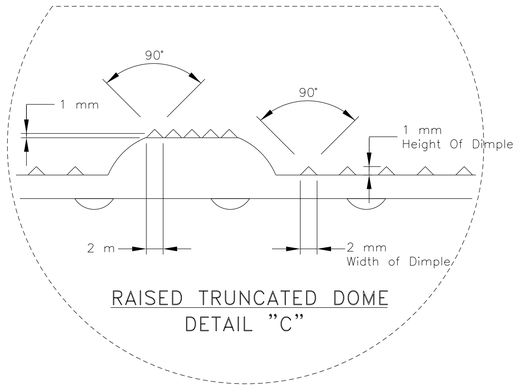


BOTTOM OF PANEL

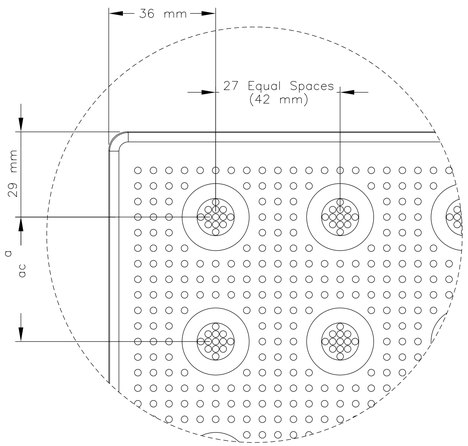
GENERAL NOTES

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.

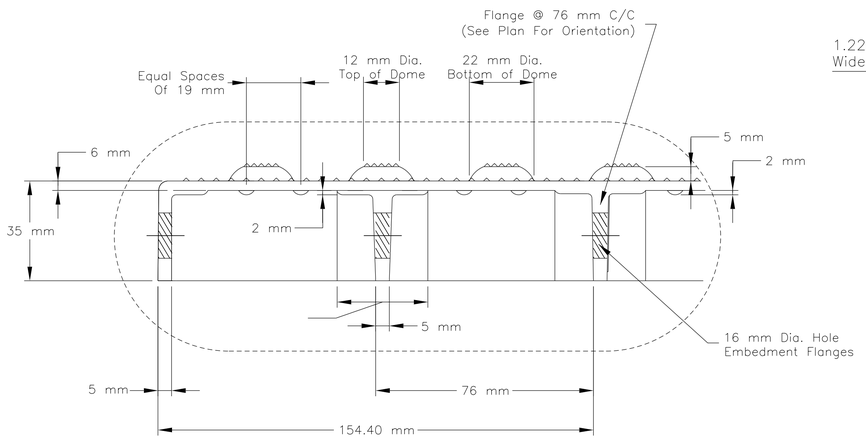
SECTION A-A



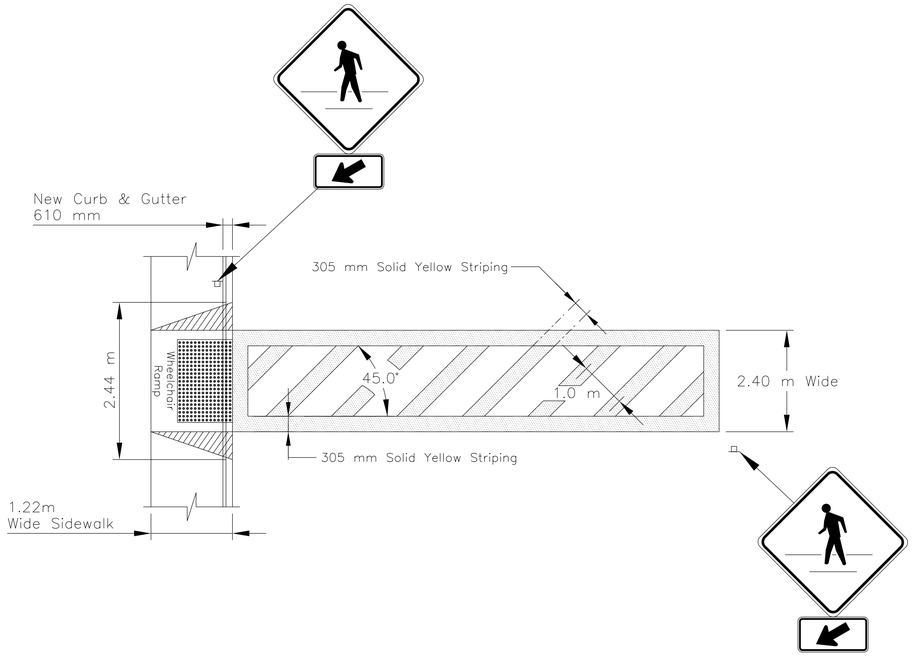
RAISED TRUNCATED DOME
DETAIL "C"



RAISED TRUNCATED DOME
PLAN VIEW
DETAIL "A"



SIDE VIEW
DETAIL "B"



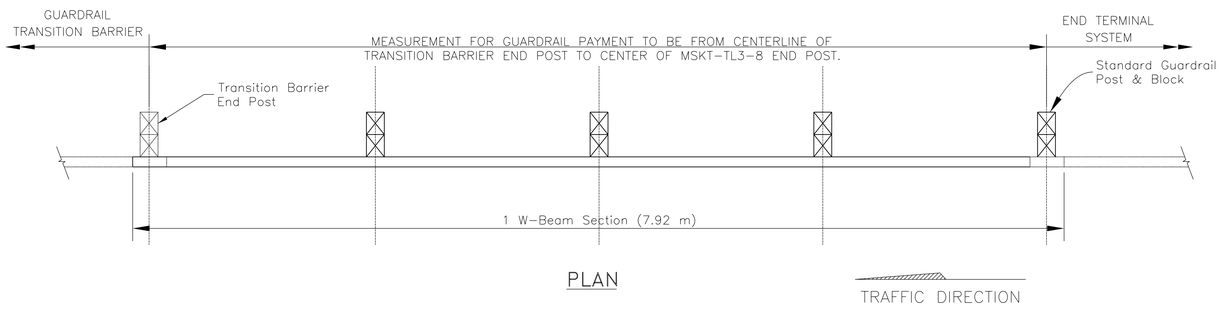
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

EMBEDMENT PANEL
CURB RAMP TACTILE PAD DETAILS

DRAWN BY: NRDOT	DATE: 05/2014
DESIGNED BY: NRDOT	DATE: 05/2014
REVISED: 02/2015	BY: DESIGN 1
$FILES$	

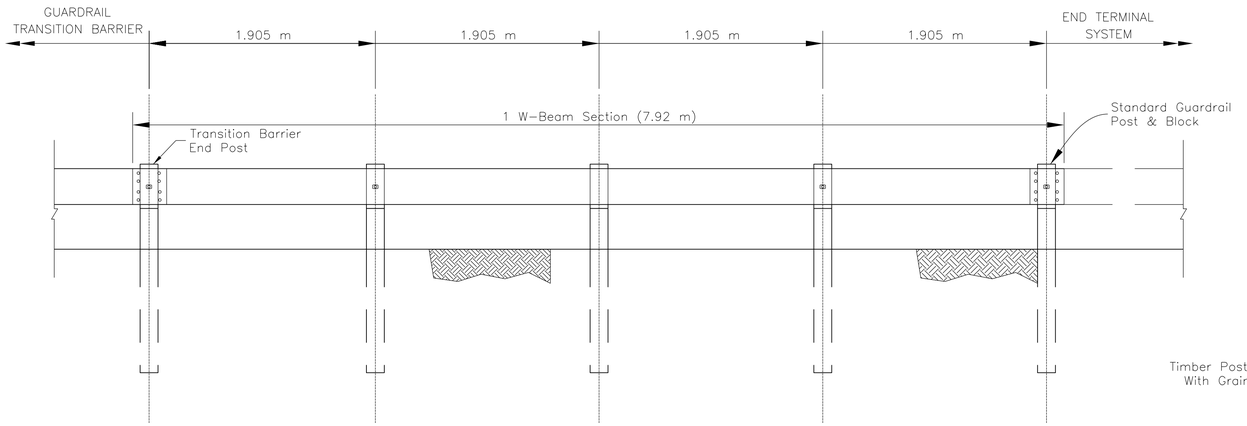
$TIME$
10/15/2023
$FILES$

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	48	106

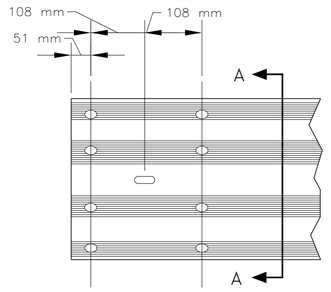


PLAN

TRAFFIC DIRECTION

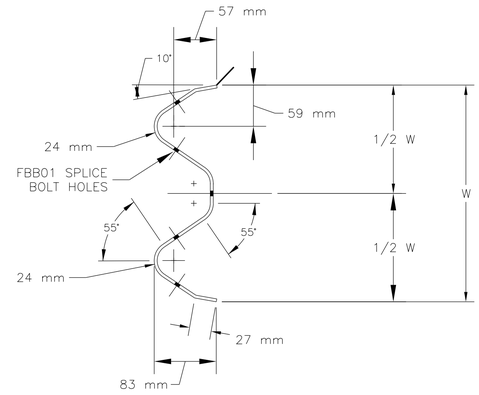


ELEVATION

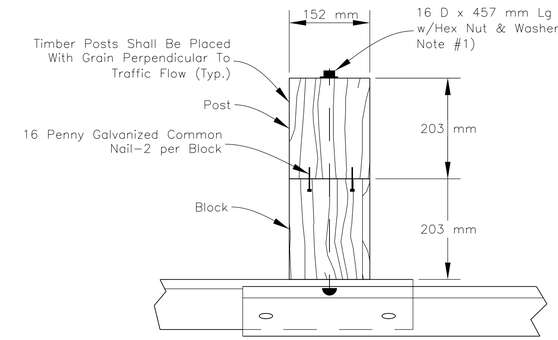


ELEVATION
RAIL

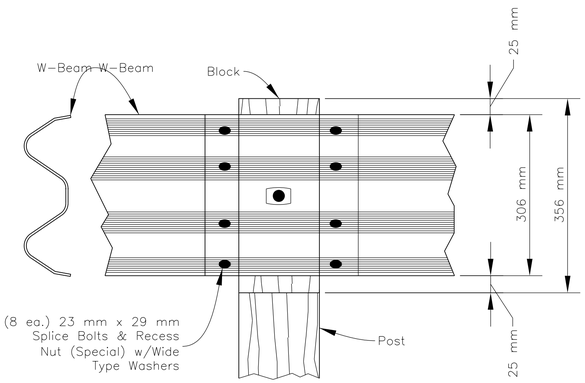
DESIGNATOR	COMPONENT	NUMBER
FBB01	Splice Bolt and Nut	2
FBB02	Guardrail-Post Bolt and Nut	2
FBB03	Guardrail-Post Bolt and Nut	2
FBB04	Guardrail-Post Bolt and Nut	2
FBX16a	Post Blockout Bolt (40 mm)	4
FWC16a	Round Washer	2
PDB01a	Timber Post Blockout	2
PDB01b	Timber Post Blockout	2
PDE02	Timber Post	2
PDE13	Timber Post	2
PWB01	Steel Post Blockout	2
PWE01	Steel Post	2
PWE02	Steel Post	2
RWB01a	W-Beam Backup Plate	1
RWM02a	W-Beam Rail	1



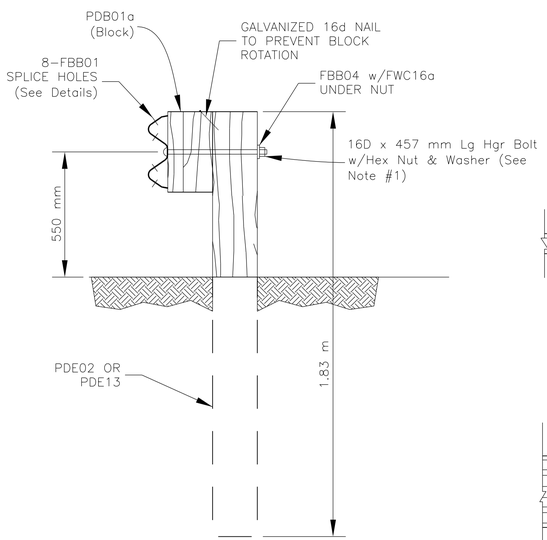
SECTION A-A
W-BEAM (RWM02A)



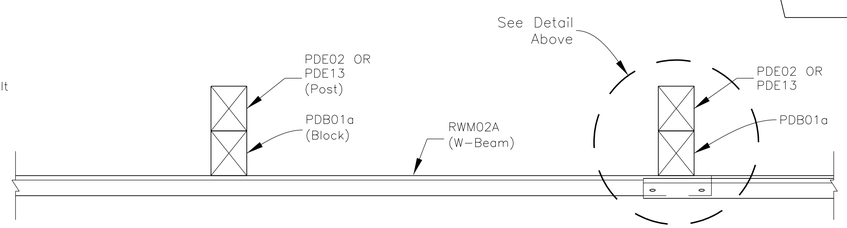
PLAN
POST/BLOCK &
SPLICE DETAIL



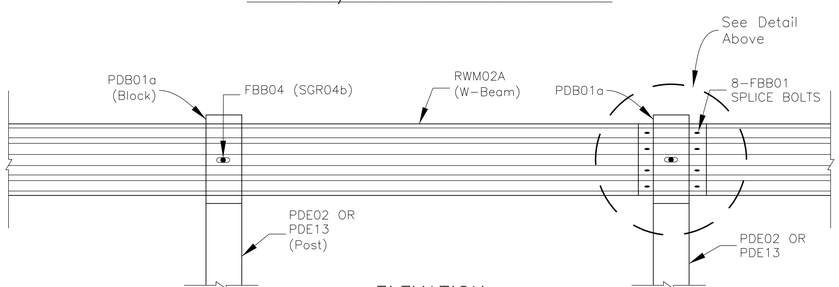
ELEVATION
POST/BLOCK
SPLICE DETAIL



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 49 OF 106 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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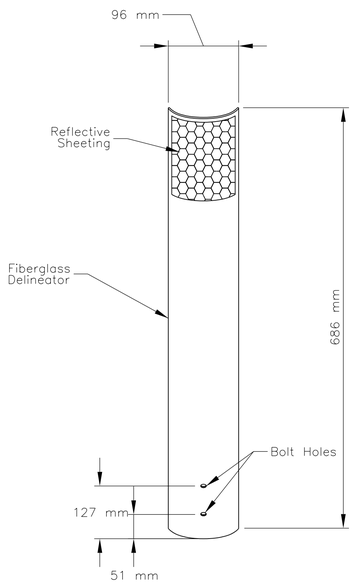
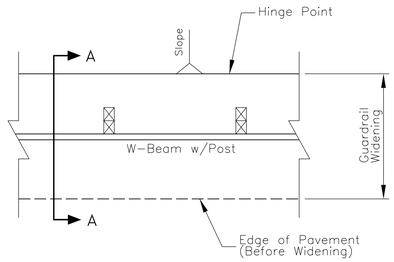
STANDARD GUARDRAIL DETAIL 1

DRAWN BY: NRDOT	DATE: 8/23/2017
DESIGNED BY: NRDOT	DATE: 8/23/2017
REVISED: 7/22/2020	BY: Smlujan
$FILES$	

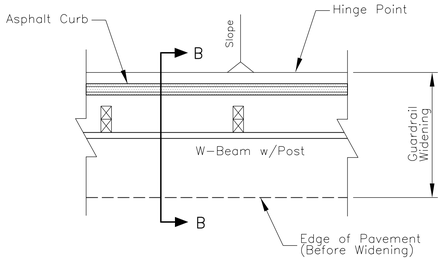
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	49	106



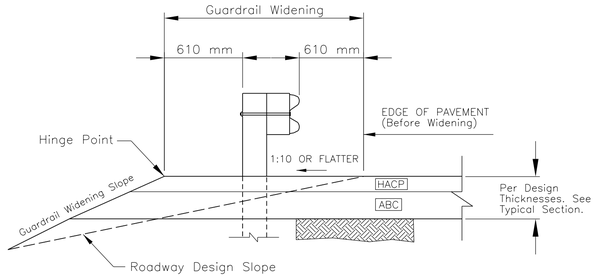
DELINEATOR DETAIL
(Reflective Sheeting Shall Face Traffic)



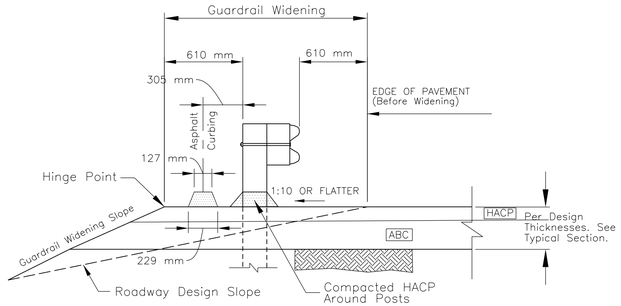
PLAN VIEW
w/NO CURBING



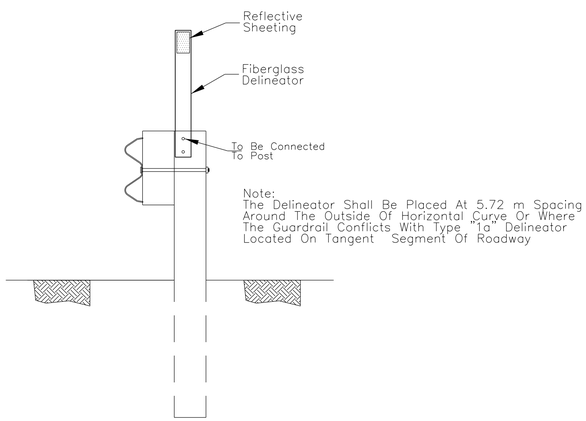
PLAN VIEW
w/CURBING



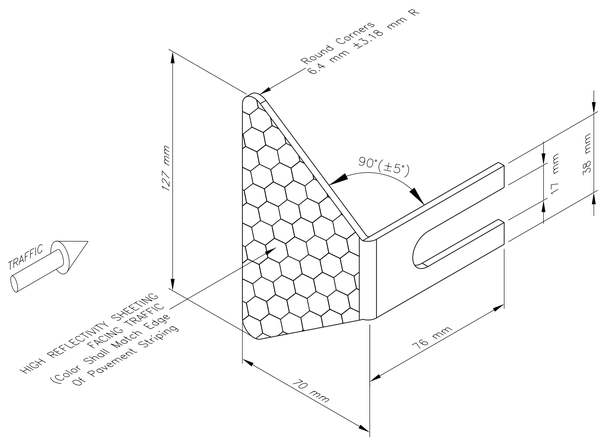
SECTION A–A
w/No Curbing



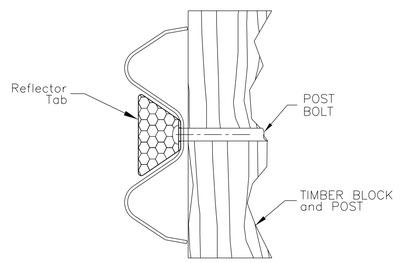
SECTION B–B
w/CURBING
Asphalt Curb Depth=102 mm



ELEVATION
GUARDRAIL/POST MOUNTED
DELINEATOR (TYP.)



ISOMETRIC VIEW
REFLECTOR TAB DETAIL



SECTION
REFLECTOR TAB
MOUNTING DETAIL
Install Tab on Every Fourth Post

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

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NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

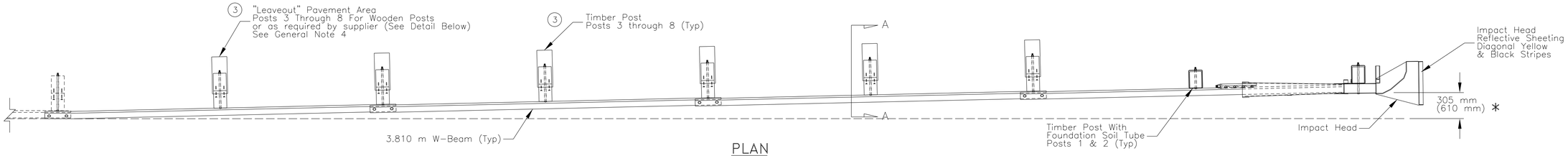
STANDARD GUARDRAIL
DETAIL 2

DRAWN BY: NRDOT	DATE: 8/23/2017
DESIGNED BY: NRDOT	DATE: 8/23/2017
REVISED: 8/19/2020	BY: Smlujan
$FILES$	

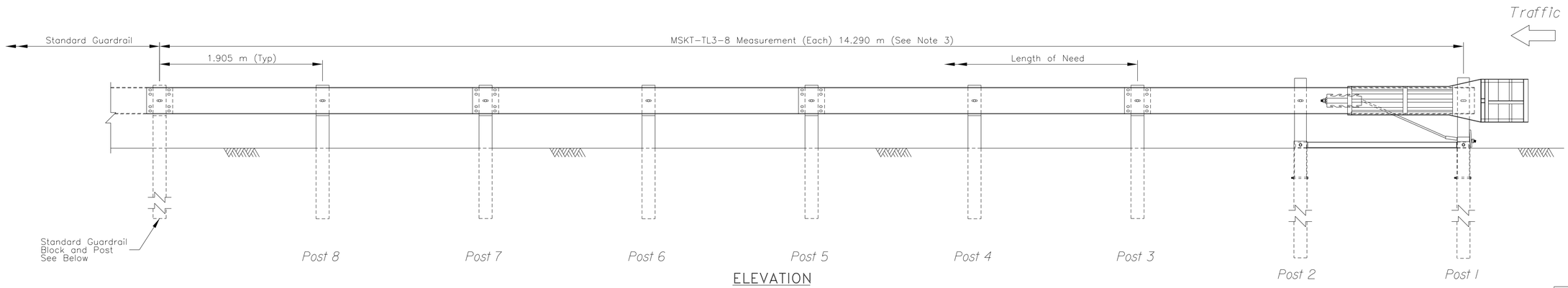
p:\\wls-pw.bentley.com:wls-pw\Documents\8100-TRN\Navajo DOT\17-100-090-14_NavDOT N5001(1) Toadleana Two Grey Hills\2_Disciplines_Sheets\3_Roadway\sht 49 SGR04 Std Gdrail Redesign2_rev 082317

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	50	106

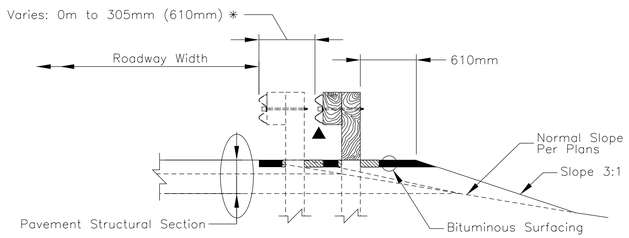
*FOR ELEVATIONS ABOVE (1,220 m) USE THE VALUES IN PARENTHESES



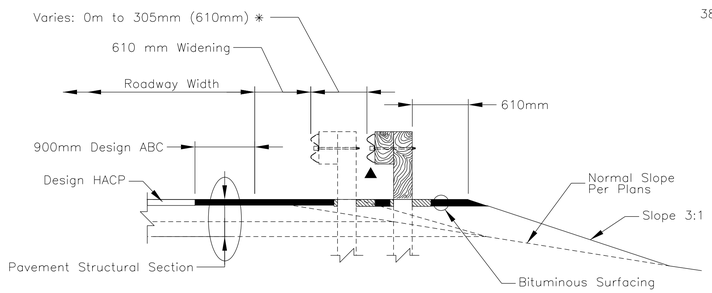
PLAN



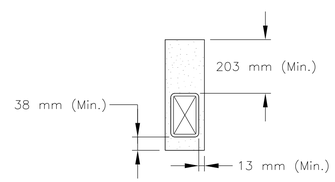
ELEVATION



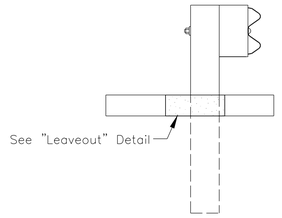
TYPE A SECTION



TYPE B SECTION



LEAVEOUT DETAIL

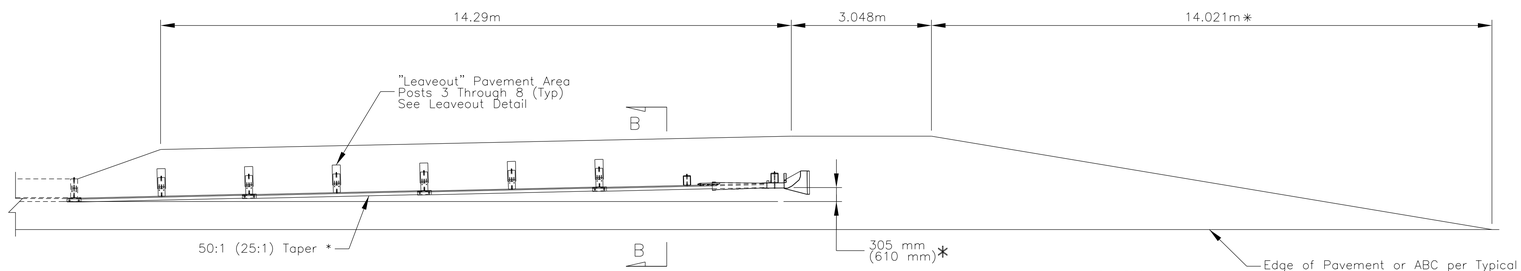


SECTION A-A
Typical At Post 3 Thru 8

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.

See Sheet 52B For General Notes.



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

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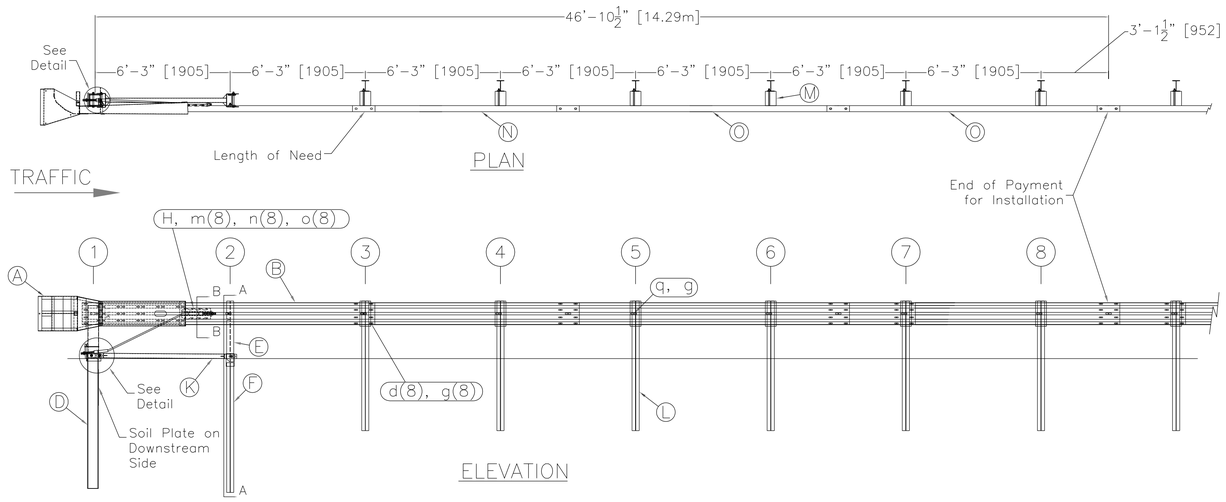
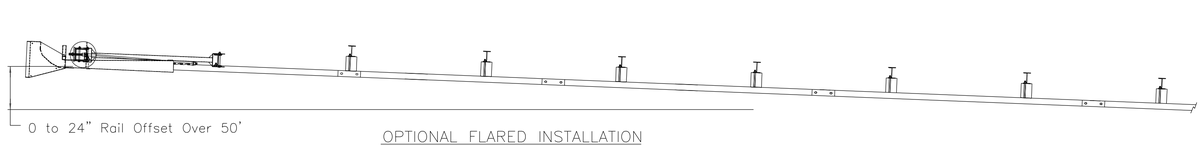
GUARDRAIL END TREATMENT
MSKT-TL3-8 ; SHEET 1 of 2

DRAWN BY: NRDOT	DATE: 9/19/2017
DESIGNED BY: NRDOT	DATE: 9/19/2017
REVISED: 7/22/2020	BY: Smlujan
$FILES$	

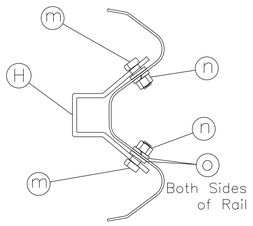
p:\\wils-pw.bentley.com:wils-pw\Documents\8100-TRN\Navajo DOT\17-100-090-14_NavDOT N5001(1) Toadleana Two Grey Hills\2_Disciplines_Sheets\3_Roadway\sht 50 SKT-350_1of3_rev 091917

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	51	106

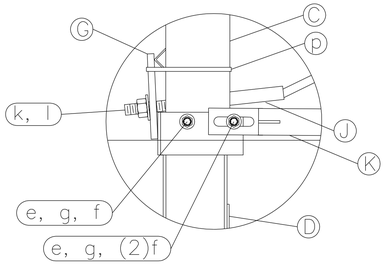




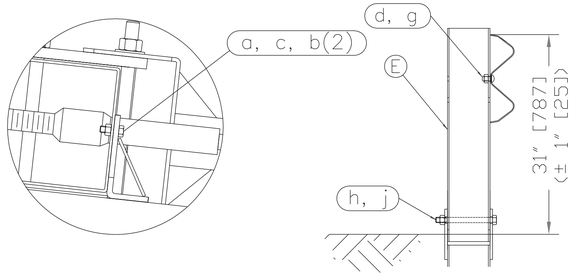
OPTIONAL FLARED INSTALLATION
25:1 maximum flare rate



SECTION B–B
Anchor Bracket



Post #1 Connection Detail



Impact Head Connection Detail

SECTION A–A
Post #2

NOTES:

1. BREAKAWAY POSTS ARE REQUIRED WITH THE SEQUENTIAL KINKING TERMINAL.
2. ALL BOLTS, NUTS, CABLE ASSEMBLIES, CABLE ANCHORS AND BEARING PLATES SHALL BE GALVANIZED.
3. THE MSKT–TL3–8 CAN BE FLARED AT A RATE OF 25:1 TO PREVENT THE IMPACT HEAD FROM ENCROACHING ON THE SHOULDER. THE FLARE IS NOT REQUIRED AND MAY BE DECREASED OR ELIMINATED FOR SPECIFIC INSTALLATIONS.
4. 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 TUBES 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 THE HOLE.
7. THE BREAKAWAY CABLE ASSEMBLY MUST BE TAUT. A LOCKING DEVICE, (VICE–GRIPS OR CHANNEL–LOCK PLIERS) SHOULD BE USED TO PREVENT THE 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 OF THE SKT–350 AND ANY ADJACENT DRIVING LANE.
9. THE WOOD BLOCKOUTS SHOULD BE "TOE–NAILED" TO THE WOOD POSTS TO PREVENT THEM FROM TURNING WHEN THE WOOD SHRINKS.
10. GUARDRAIL SPLICE SHALL BE OVERLAPPED IN THE DIRECTION OF 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 [100mm] ABOVE THE GROUND (MEASURED ALONG A 5' [1.5M] CORD LONGITUDINAL TO THE SYSTEM). SITE GRADING MAY BE NECESSARY TO 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 MASH SKT IMPACT HEAD WITH 350 SKT TERMINALS OR EQUAL FROM ANY APPROVED VENDER.
17. DIMENSION IN BRAKETS [ ] ARE METRIC.
18. SEE THE CONTRACT SUPPLEMENTAL SPECIFICATION FOR SECTION 617 FOR ADDITIONAL REQUIREMENTS.

ITEM	QTY	BILL OF MATERIALS	ITEM NO.
A	1	IMPACT HEAD	MS3000
B	1	W–BEAM GUARDRAIL END SECTION, 12 Ga.	SF1303
C	1	FIRST POST TOP (6X6X⅛" 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	B5160104A
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. H.G.R 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" H.G.R. BOLT	B581002

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GUARDRAIL END TREATMENT
MKST–TLE–8 LAYOUT; SHEET 2 of 2

DRAWN BY: NRDOT	DATE: 9/19/2017
DESIGNED BY: NRDOT	DATE: 9/19/2017
REVISED: 7/22/2020	BY: Smlujan
$FILES$	

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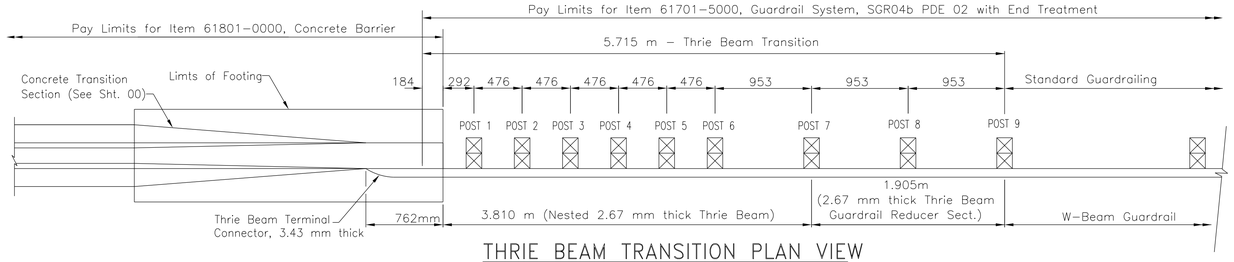
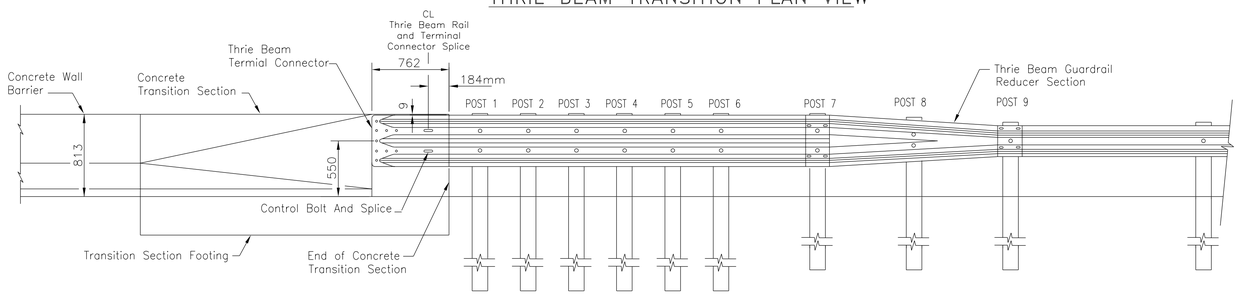
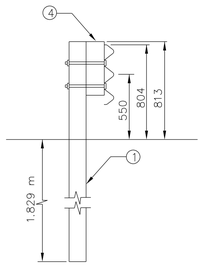
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	52	106



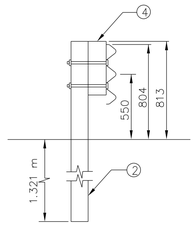
THRIE BEAM TRANSITION PLAN VIEW



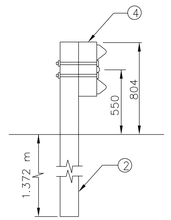
THRIE BEAM TRANSITION ELEVATION VIEW



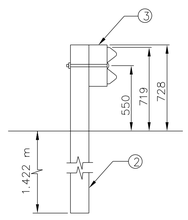
POSTS 1-6



POST 7



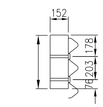
POST 8



POST 9

LEGEND

① 152 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

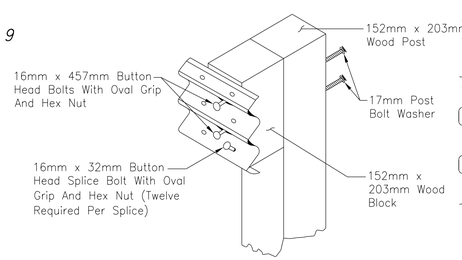


POSTS 1-7

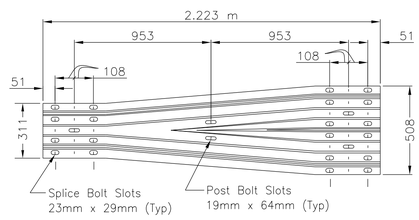
POST 8

POSTS 9

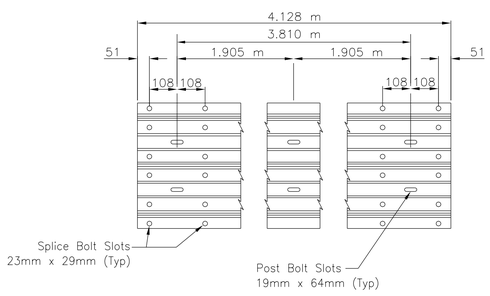
BLOCK DETAILS



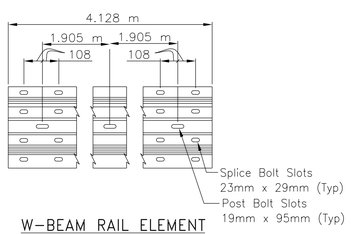
THRIE BEAM POST ASSEMBLY



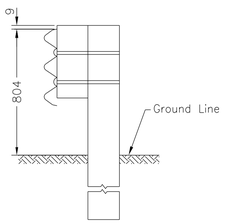
THRIE BEAM GUARDRAIL REDUCER SECTION



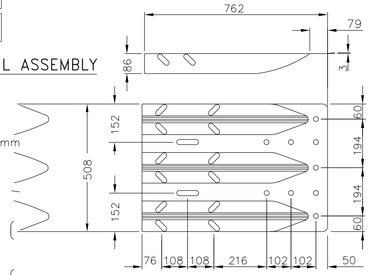
THRIE BEAM RAIL ELEMENT



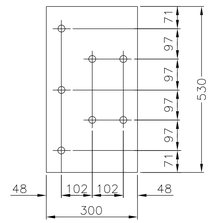
W-BEAM RAIL ELEMENT



THRIE BEAM RAIL ASSEMBLY



STANDARD THRIE BEAM TERMINAL CONNECTOR



16 mm BEARING PLATE

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 Diameter Galvanized AASHTO M164 Bolts Are Required For The Attachment Of The Thrie Beam Terminal Connector to the Concrete Barrier. The Length To Be Determined in the Field By The COR/COTR. Holes For Bolts Shall be 25mm 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 Thereof.

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. Place Reflector Tabs on posts 1, 6 and 9..
11. The Color Of The Reflective Sheeting On The Reflector Tabs Shall Be The Same As The Color Of The Edge line Pavement Marking In Front and Yellow on Back Side.

12. Reflector Tabs Shall Have 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. Terminal Connector, Bearing plate and Associated Hardware Shall Be Considered Incidental to Bid Item 61701-5000 & 61802-0100. Thrie Beam Transition Shall Be Measured and Paid For under Bid Item 61701-5000 & 61802-0100.

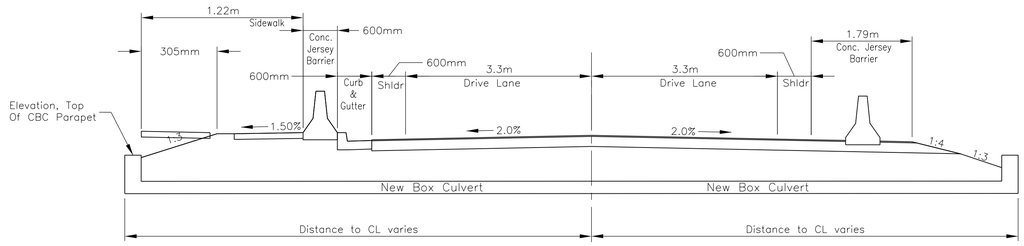
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

THRIE-BEAM APPROACH GUARDRAIL TRANSITION DETAIL

DRAWN BY: NRDOT	DATE: 06/15
DESIGNED BY: NRDOT	DATE: 06/15
REVISED: --/--	BY: DESIGN 1
$FILES$	

p:\:\\wils--pw.bentley.com:wils--pw\Documents\8100-TRN\Navajo DOT\17-100-090-14_NavDOT N5001(1) Toadlena Two Grey Hills\2_Disciplines_Sheets\3_Roadway\Sht 52 GR transition Thrie Beam Details.dgn

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	53	106



TYPICAL CBC SECTION

ITEM NO. 63308-3000 OBJECT MARKER TYPE 3		
		LOCATION
DESCRIPTION	QTY.	TYPE 3
N41 TOHAALI WASH CBC		
0+638.350	4	LT. & RT.
UNIT I TOTAL:	4	
UNIT I USE:	4	

ITEM NO. 61801-0000 CONCRETE BARRIER				
ID	STATION*	LT/RT	LENGTH (m)	REMARKS
N5001				
N241 TOHAALI WASH	0+638.35	RT	9.951	INCLUDES BARRIER TRANSITION
N241 TOHAALI WASH	0+638.35	LT	9.951	INCLUDES BARRIER TRANSITION
UNIT I SUBTOTAL:			19.90	
UNIT I PROJECT USE:			20.00	

*NOTE: STATION CALLED OUT IS ROADWAY CENTERLINE AT CBC. BARRIER TO BE LAID OUT ABOUT MIDPOINT OF CBC AS DETAILED BELOW.

GENERAL NOTES:

1. AT NO TIME DURING THE PLACEMENT OF THE CBC GUARDRAILS SHALL THE ROADWAY EDGE AT ACTIVE TRAFFIC LANES BE LEFT WITHOUT CONTROL BARRIERS OR FLAGMEN.

2. PLACMENT OF PRECAST CONCRETE BARRIER SECTIONS SHALL BE BASED ON THE MIDPOINT OF CBC. MIDPOINT OF CBC SHALL BE DETEMINED IN THE FIELD BY MEASURMENT OF INLET AND OUTLET OF EACH CBC, AND SHALL BE CONCURRED BY THE COR/COTR.

3. AT THE CONTRACTOR'S OPTION, THE CONCRETE BARRIER MAY BE CAST IN PLACE IN LIEU OF PROVIDING PRECAST SECTIONS.

4. THE EXISTING ASPHALT AT THE NEW W-BEAM GUARDRAIL (INCLUDING THE 6 METER SHOULDER WIDENING TAPER AT GUARDRAIL ENDS) AND CONCRETE BARRIER TRANSITION (NOT THE PRECAST BARRIER SECTIONS) LOCATIONS, SHALL BE FULL DEPTH SAW CUT AT THE SHOULDER LINE AND ALL ASPHALT BEYOND SAW CUT SHALL BE REMOVED. THE EXISTING ASPHALT AT THE PRECAST BARRIER SECTIONS SHALL BE SAW CUT AND REMOVED TO THE LIMITS SHOWN ON THIS SHEET. THE WORK SHALL BE CONSIDERED INCIDENTAL TO ITEM 20304-1000, REMOVAL OF STRUCTURES AND OBSTRUCTIONS.

5. THE PRECAST CONCRETE BARRIER SECTIONS AND THE CONCRETE BARRIER TRANSITIONS WITH FOOTING SHALL BE SET AS PER FP-14, SECTION 618

6. GUARDRAIL WIDENING AND THE AREA IN FRONT OF THE TRANSITION FOOTING SHALL BE SURFACED WITH 152 mm OF ABC AND 76 mm OF ASPHALT SURFACING AND SHALL BE PLACED TO THE DIMENSIONS SHOWN ON SHEET xx OF xx. AGGREGATE BASE COURSE AND HOT ASPHALTIC CONCRETE FOR GUARDRAIL WIDENING SHALL BE PAID UNDER ITEM 30101-2000, UNTREATED AGGREGATE BASE COURSE, GRADING D, AND ITEM 40702-1100, MINOR HOT ASPHALTIC CONCRETE, RESPECTIVELY. THE FINISH ELEVATION OF THE GUARDRAIL WIDENING ASPHALT SHALL MATCH THE FINISHED RECYCLED ASPHALT COURSE ELEVATION.

7. THE NEW GUARDRAIL AND THRIE BEAM TRANSITION STRUCTURES SHALL BE INSTALLED AS PER FP-14, SECTION 617 AND AS DETAILED ON SHEETS 48 THRU 52.

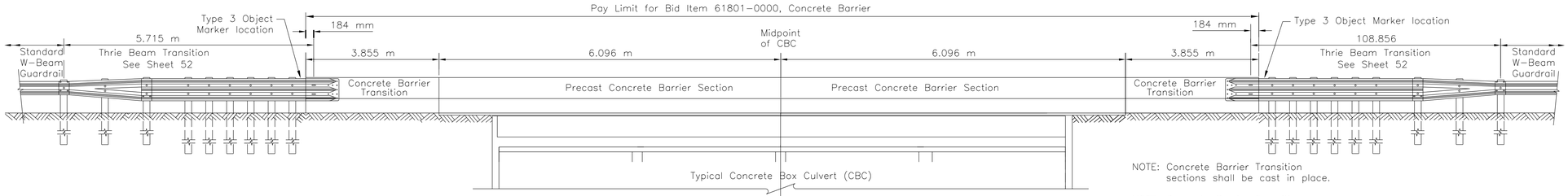
8. THRIE-BEAM TRANSITIONS, INCLUDING ALL HARDWARE FOR CONNECTION TO THE CONCRETE BARRIER TRANSITION SHALL BE PAID UNDER ITEM 61801-1000 CONCRETE BARRIER.

9. ALL WORK, MATERIALS AND LABOR REQUIRED FOR THE EXISTING MATERIAL REMOVAL ABOVE THE EXISTING GUARDRAIL ATTACHMENT BLOCKS, AS SHOWN ON THIS SHEET, SHALL BE CONSIDERED INCIDENTAL ITEM 20304-1000, REMOVAL STRUCTURES AN OBSTRUCTIONS.

10. ALL WORK, MATERIALS AND LABOR REQUIRED FOR THE CONSTRUCTION OF THE HACP BACKFILL BENEATH THE CONCRETE BARRIER, AS SHOWN ON THIS SHEET, SHALL BE PAID UNDER ITEM 40702-1100, MINOR HOT ASPHALTIC CONCRETE.

11. THE PLACEMENT OF TACK COAT AGAINST AND UNDER CONCRETE BARRIER, INCLUDING ALL MATERIALS AND LABOR, SHALL BE CONSIDERED INCIDENTAL TO ITEM 40702-1100, MINOR HOT ASPHATLIC CONCRETE.

12. THE COMPACTION OF NATIVE MATERIAL BELOW HACP BACKFILL FOR AREAS BETWEEN CBC AND CONCRETE BARRIER TRANSITION FOOTING SHALL BE CONSIDERED INCIDENTAL TO ITEM 61801-1000, CONCRETE BARRIER.

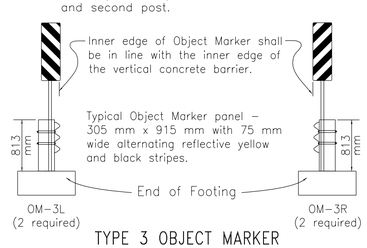


ELEVATION

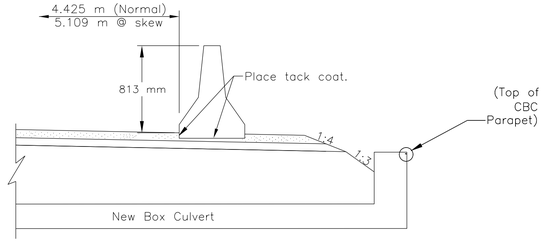
NOTE: Concrete Barrier Transition sections shall be cast in place.

NOTE: Concrete Barrier Transition Shall Be Paid For Under Item 61801-0000 Concrete Barrier

NOTE: Place Type 3 Object Markers between Concrete Barrier Transition and first Thrie-beam Transition post. If this is not possible, place between first and second post.



TYPE 3 OBJECT MARKER INSTALLATION



BARRIER PLACEMENT

SYSTEM	A	H
SGM10a	60	810

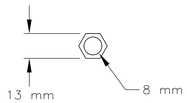
STEPHEN M. LUJAN NEW MEXICO 26338 PROFESSIONAL ENGINEER 10/27/23

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

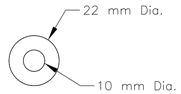
CONCRETE BARRIER DETAILS OVER 2-BARREL CBC

DRAWN BY: NRDOT	DATE: 4/20/2018
DESIGNED BY: NRDOT	DATE: 4/20/2018
REVISED: 10/19/2023	BY: Smlujan
$FILES$	

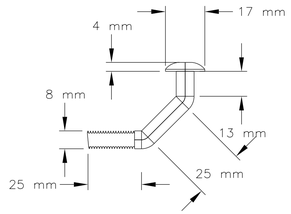
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	54	106



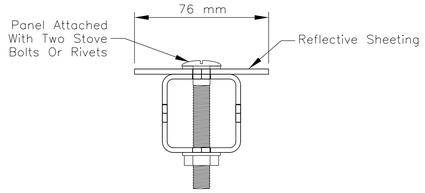
LOCK NUT



FLAT WASHER



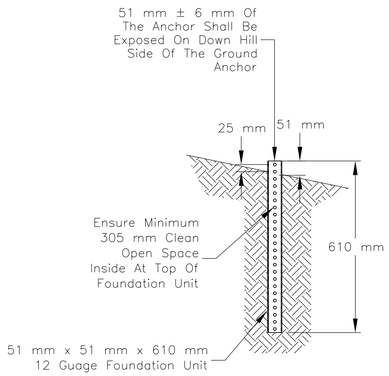
STOVE BOLT



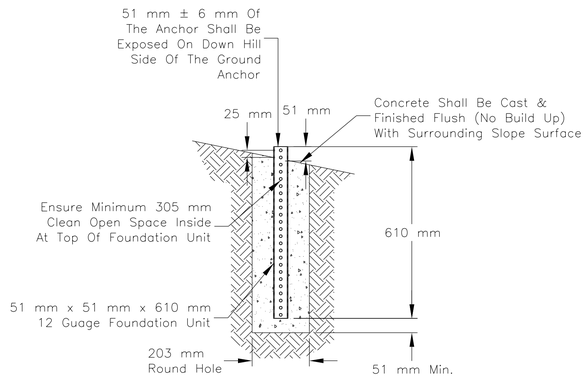
ALTERNATE 51mm X 51mm
Steel Square Tube

GENERAL NOTES

1. ALL CONCRETE SHALL BE CLASS A(AE) AND SHALL CONFORM TO SECTION 601 OF THE FP-14. FURNISHING AND PLACING OF CONCRETE, WHEN REQUIRED, SHALL BE CONSIDERED INCIDENTAL TO ITEM 63309-0020.
2. THE CONTRACTOR HAS THE OPTION TO USE 51MM X 51MM ALL STEEL SQUARE TUBE DELINEATORS. IF THE CONTRACTOR ELECTS TO USE THE SQUARE TUBE HARDWARE, THE CONTRACTOR SHALL SUBMIT A BID PRICE FOR ITEM 63309-0010/63309-0020 ON THE BID SCHEDULE.

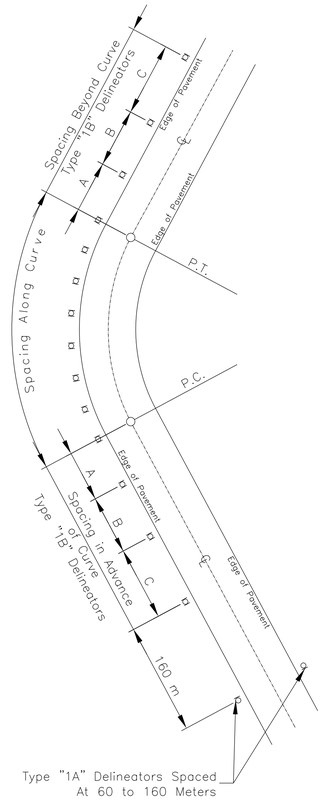


IN-GROUND DRIVEN



IN-GROUND CONCRETE

Use Chair Device To Ensure
Minimum 51 mm
Clearance Above Bottom Of Hole

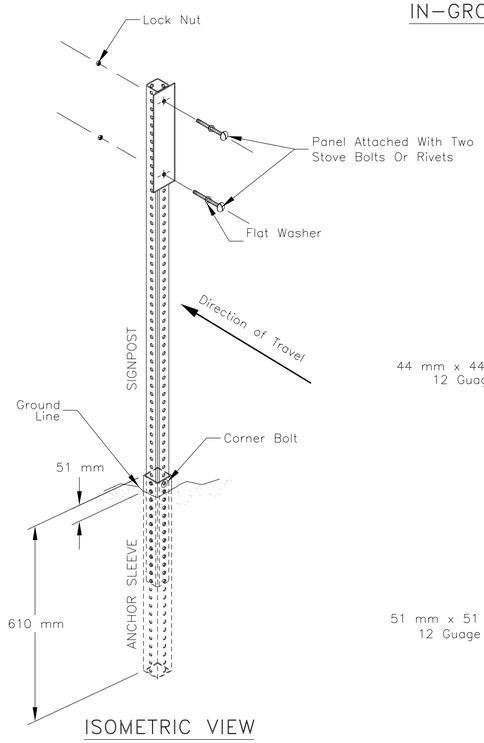


RADIUS OF CURVE (m)	APPROXIMATE SPACING (S) ON CURVE (m)	SPACING ON ADVANCE OF OR BEYOND A CURVE (m)		
		A (2S)	B (3S)	C (6S)
15	6	12	18	36
35	8	16	24	48
55	11	22	33	66
75	13	26	39	78
95	15	30	45	90
125	18	36	54	108
155	20	40	60	120
185	22	44	66	132
215	24	48	72	144
245	26	52	78	156
275	27	54	81	162
305	29	58	87	174
400	33	67	100	200
500	37	75	112	225
600	41	82	123	247
700	44	89	133	267
800	48	95	143	286
900	51	101	152	303
1000	53	107	160	320
1500	66	131	197	393
2000	76	151	227	454
2500	85	169	254	508
3000	93	186	279	557
3500	100	201	301	602
4000	107	215	322	644
4500	114	228	342	683
5000	120	240	360	720
5500	126	252	378	755
6000	132	263	395	789

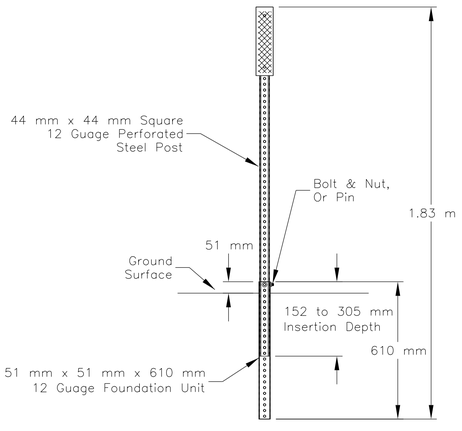
$S = 1.7 \times \sqrt{(R-15)}$

Spacing For Specific Radii May Be Interpolated From Table. The Spacing On Curves Should Not Exceed 90 Meters. Shaded Areas Denotes To Use 90 Meter Spacings. Delineators Should Be Spaced 60 To 160 Meters Apart On Mainline Tangent Sections.

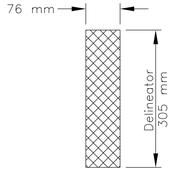
NOTE: When Uniform Spacing Is Interrupted By Such Features As Culverts, Signs, Driveways, Intersections, Delineators Which Would Ordinarily Be Located Within The Features May Be Relocated In Either Direction For A Distance Not Exceeding One Quarter Of The Uniform Spacing. Delineators Still Falling Within Such Features
May Be Eliminated.



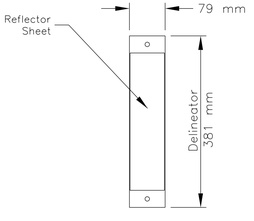
ISOMETRIC VIEW



ALTERNATE ASSEMBLY



REFLECTOR
SHEET



REFLECTIVE PANEL
(Pre-Drilled/Punched)

TYPE	POST COLOR	HIGH INTENSITY REFLECTIVE SHEETING
1A	WHITE	WHITE, ONE SIDE
1B	WHITE	WHITE, BOTH SIDES

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS

NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

SQUARE STEEL TUBE POST DELINEATOR DETAILS

DRAWN BY: NRDOT	DATE: 02/2015
DESIGNED BY: NRDOT	DATE: 02/2015
REVISED: --/----	BY: DESIGN 1
$FILES$	

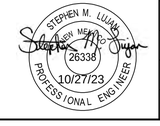
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	55	106

ITEM No. 63309-0010 : DELINEATOR, TYPE "1A"				
ITEM No. 63309-0020 : DELINEATOR, TYPE "1B"				
POINT	STATION	LOC.	TYPE "1A"	TYPE "1B"
N5001 UNIT I				
	0+035.200	RT. & LT.	2	1
	0+080.200	LT.		1
PC	0+110.200	LT.		1
	0+126.094	LT.		1
	0+141.987	LT.		1
	0+157.881	LT.		1
	0+173.775	LT.		1
	0+189.668	LT.		1
PT	0+205.562	LT.		1
	0+239.163	LT.		1
PC	0+249.155	RT.		1
	0+303.598	RT.		1
	0+358.041	RT.		1
	0+412.484	RT.		1
	0+466.926	RT.		1
	0+521.369	RT.		1
PT	0+575.812	RT.		1
PC	0+587.785	RT.		1
	0+601.891	RT.		1
	0+615.996	RT.		1
PT	0+630.102	RT.		1
PC	0+869.606	RT.		1
	0+879.898	RT.		1
	0+890.190	RT.		1
	0+900.482	RT.		1
	0+910.774	RT.		1
PT	0+921.066	RT.		1
	0+937.066	RT.		1
	0+961.066	RT.		1
	1+142.830	RT.		1
PC	1+224.830	RT.		1
	1+258.126	RT.		1
	1+291.423	RT.		1
PT	1+324.719	RT.		1
	1+406.719	RT.		1
	1+165.241	RT.		1
PC	1+232.241	RT.		1
	1+265.538	RT.		1
	1+298.834	RT.		1
	1+332.131	RT.		1
	1+365.427	RT.		1
PT	1+398.724	RT.		1
	1+465.724	RT.		1
	1+555.724	RT.		1
	1+542.487	RT.		1
PC	1+564.487	LT.		1
	1+583.384	LT.		1
	1+602.281	LT.		1
	1+621.179	LT.		1
	1+640.076	LT.		1
	1+658.973	LT.		1
PT	1+677.870	LT.		1
	1+699.870	LT.		1
	1+732.870	LT.		1
	1+798.870	LT.		1
	1+750.015	RT.		1
	1+840.015	RT.		1
	1+885.015	RT.		1
PC	1+915.015	RT.		1
	1+936.136	RT.		1
	1+957.256	RT.		1
	1+978.377	RT.		1
	1+999.498	RT.		1
	2+020.619	RT.		1
	2+041.739	RT.		1
PT	2+062.860	RT.		1
	2+083.981	RT.		1
PC	2+129.906	LT.		1
	2+156.603	LT.		1
	2+183.299	LT.		1
	2+209.996	LT.		1
	2+236.693	LT.		1
	2+263.389	LT.		1
PT	2+290.086	LT.		1
	<160m	LT.		1
	2+487.502	LT.		1
PC	2+487.502	LT.		1
	2+513.205	LT.		1
	2+538.908	LT.		1
	2+564.611	LT.		1
PT	2+590.314	LT.		1
	2+644.314	LT.		1
	2+725.314	RT. & LT.	2	1
		UNIT I USE:	4	83

N5001 UNIT II				
	6+704.997	LT.	2	1
PC	6+731.997	LT.		1
	6+761.687	LT.		1
	6+791.377	LT.		1
PT	6+821.067	LT.		1
	6+848.067	LT.		1
	6+931.636	LT.		1
PC	6+958.636	RT.		1
	6+987.755	RT.		1
	7+016.874	RT.		1
	7+045.994	RT.		1
	7+075.113	RT.		1
	7+104.232	RT.		1
PT	7+133.351	RT.		1
	7+190.351	RT.		1
	7+244.351	RT.		1
	7+325.351	RT.		1
	7+485.351	RT. & LT.	2	
	7+503.401	LT.		1
	7+584.401	LT.		1
	7+638.401	LT.		1
PC	7+665.401	LT.		1
	7+697.006	LT.		1
	7+728.611	LT.		1
PT	7+760.216	LT.		1
	7+787.216	LT.		1
	7+841.216	LT.		1
	7+960.711	RT		1
	8+014.711	RT.		1
PC	8+041.711	RT.		1
	8+066.969	RT.		1
	8+092.227	RT.		1
	8+119.227	RT.		1
	8+173.227	RT.		1
	8+254.227	RT. & LT.	2	1
		UNIT II USE:	6	34

WORK REMOVED FROM PROJECT SCOPE (FOR INFORMATION ONLY)				
	2+815.314	LT.		1
	2+975.314	RT. & LT.	2	
	3+088.950	RT.		1
	3+178.950	RT.		1
	3+268.950	RT.		1
PC	3+358.950	RT.		1
	3+447.945	RT.		1
PT	3+536.939	RT.		1
	3+626.939	RT.		1
	3+716.939	RT.		1
	3+806.939	RT.		1
	3+966.939	RT. & LT.	2	
	4+126.939	RT. & LT.	2	
	4+286.939	RT. & LT.	2	
	4+446.939	RT. & LT.	2	
	4+606.939	RT. & LT.	2	
	4+677.670	RT.		1
	4+767.670	RT.		1
	4+857.670	RT.		1
PC	4+946.670	RT.		1
	4+993.653	RT.		1
	5+040.636	RT.		1
	5+087.619	RT.		1
	5+134.602	RT.		1
PT	5+181.585	RT.		1
	5+270.585	RT.		1
	5+360.585	RT.		1
	5+450.585	RT.		1
	5+590.088	RT.		1
	5+680.088	RT.		1
	5+770.088	RT.		1
PC	5+845.088	RT.		1
	5+878.202	RT.		1
	5+911.316	RT.		1
	5+944.429	RT.		1
PT	5+977.543	RT.		1
	6+052.543	RT.		1
	6+142.543	RT.		1
	6+231.938	LT.		1
	6+264.938	LT.		1
PC	6+286.938	LT.		1
	6+314.241	LT.		1
	6+341.544	LT.		1
	6+368.846	LT.		1
PT	6+396.149	LT.		1
	6+425.149	LT.		1
	6+483.149	LT.		1
	6+650.997	LT.		1

WORK REMOVED FROM PROJECT SCOPE (FOR INFORMATION ONLY)				
	8+406.238	RT.		1
	8+460.238	RT.		1
PC	8+487.238	RT.		1
	8+514.165	RT.		1
	8+541.093	RT.		1
PT	8+568.020	RT.		1
	8+595.020	RT.		1
	8+649.020	RT.		1
	8+730.020	RT.		1
	8+831.628	LT.		1
	8+885.628	LT.		1
PC	8+912.628	LT.		1
	8+938.042	LT.		1
	8+963.455	LT.		1
	8+988.869	LT.		1
	9+014.283	LT.		1
	9+039.696	LT.		1
PT	9+065.110	LT.		1
PC	9+170.486	LT.		1
	9+198.016	LT.		1
	9+225.547	LT.		1
	9+253.077	LT.		1
	9+280.608	LT.		1
	9+308.138	LT.		1
	9+335.669	LT.		1
PT	9+363.199	LT.		1
	9+390.199	LT.		1
	9+498.595	RT.		1
PC	9+525.595	RT.		1
	9+554.245	RT.		1
	9+582.894	RT.		1
	9+611.544	RT.		1
	9+640.194	RT.		1
	9+668.844	RT.		1
	9+697.493	RT.		1
	9+726.143	RT.		1
	9+754.793	RT.		1
	9+783.442	RT.		1
PT	9+812.092	RT.		1
	9+839.092	RT.		1
	9+893.092	RT.		1
	9+974.092	RT.		1
	10+062.604	LT.		1
	10+116.604	LT.		1
PC	10+143.604	LT.		1
	10+173.316	LT.		1
	10+203.029	LT.		1
	10+232.741	LT.		1
	10+262.453	LT.		1
	10+292.166	LT.		1
	10+321.878	LT.		1
	10+348.878	LT.		1
	10+402.878	LT.		1
	10+483.878	LT.		1



NAVAJO DIVISION
OF TRANSPORTATION

DELINEATOR
QUANTITIES

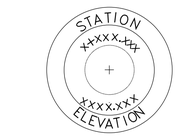
DRAWN BY: WCI	DATE: 10/23
DESIGNED BY: SML	DATE: 10/23
REVISED: --/--	BY: DESIGN 1
$FILES$	

NAVAJO D.O.T

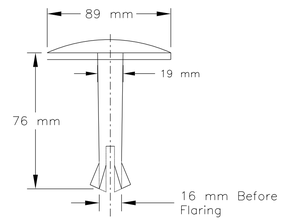
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	56	106

ITEM No. 62101-0000: RIGHT-OF-WAY MONUMENT				
ITEM No. 62102-0000: REFERENCE MARKER				
POINT	STATION	LOCATION	MONUMENT	MARKER
UNIT I				
BOP	0+039.778	RT. & LT.	2.00	2.00
PC	0+110.200	RT. & LT.	2.00	2.00
	1+090.000	RT.	2.00	2.00
PT	0+205.620	RT. & LT.	2.00	2.00
	0+240.000	RT.	2.00	2.00
PC	0+249.155	RT. & LT.	2.00	2.00
	0+501.100	RT.	2.00	2.00
	0+560.000	LT.	2.00	2.00
PT	0+575.812	RT. & LT.	2.00	2.00
PC	0+587.785	RT. & LT.	2.00	2.00
	0+606.000	RT.	2.00	2.00
	0+629.490	LT.	2.00	2.00
PT	0+714.376	RT. & LT.	3.00	3.00
PC	0+869.606	RT. & LT.	2.00	2.00
PT	0+993.110	RT. & LT.	2.00	2.00
PC	1+224.830	RT. & LT.	3.00	3.00
PT	1+391.312	RT. & LT.	2.00	2.00
PC	1+564.487	RT. & LT.	3.00	3.00
PT	1+734.562	RT. & LT.	2.00	2.00
PC	1+915.015	RT. & LT.	2.00	2.00
PT	2+126.222	RT. & LT.	3.00	3.00
PC	2+129.906	RT. & LT.	2.00	2.00
WORK REMOVED FROM PROJECT SCOPE (FOR INFORMATION ONLY)				
PT	0+290.086	RT. & LT.	2.00	2.00
PC	2+487.502	RT. & LT.	2.00	2.00
PT	2+590.314	RT. & LT.	2.00	2.00
PC	3+333.750	RT. & LT.	2.00	2.00
PT	3+511.739	RT. & LT.	2.00	2.00
	4+150.000	LT.	2.00	2.00
	4+400.000	LT.	2.00	2.00
PC	4+921.471	RT. & LT.	2.00	2.00
PT	5+156.386	RT. & LT.	3.00	3.00
	5+614.800	LT.	2.00	2.00
	5+624.800	RT	2.00	2.00
	5+684.800	LT.	2.00	2.00
PC	5+819.889	RT. & LT.	2.00	2.00
	5+860.000	RT	2.00	2.00
PT	5+952.343	RT. & LT.	2.00	2.00
PC	6+261.739	RT. & LT.	2.00	2.00
	6+340.000	LT.	2.00	2.00
	6+350.000	LT.	2.00	2.00
PT	6+370.949	RT. & LT.	2.00	2.00
	6+570.000	LT.	2.00	2.00
	6+580.000	LT.	2.00	2.00
	6+620.000	RT	2.00	2.00

ITEM No. 62101-0000: RIGHT-OF-WAY MONUMENT				
ITEM No. 62102-0000: REFERENCE MARKER				
UNIT II				
PC	6+706.798	RT. & LT.	2.00	2.00
PT	6+795.867	RT. & LT.	2.00	2.00
PC	6+954.602	RT. & LT.	2.00	2.00
	7+113.000	RT. & LT.	4.00	4.00
PT	7+135.503	RT. & LT.	2.00	2.00
	7+200.000	RT. & LT.	4.00	4.00
	7+305.000	RT.	2.00	2.00
	7+315.000	RT.	2.00	2.00
PC	7+641.136	RT. & LT.	2.00	2.00
PT	7+742.136	RT. & LT.	4.00	4.00
	7+818.731	RT.	2.00	2.00
	7+928.930	LT.	2.00	2.00
	7+978.730	RT.	2.00	2.00
PC	8+020.442	RT. & LT.	2.00	2.00
PT	8+070.957	RT. & LT.	2.00	2.00
WORK REMOVED FROM PROJECT SCOPE (FOR INFORMATION ONLY)				
PC	8+465.969	RT. & LT.	2.00	2.00
PT	8+546.751	RT. & LT.	2.00	2.00
PC	8+891.359	RT. & LT.	2.00	2.00
	9+010.000	RT. & LT.	4.00	4.00
PT	9+043.841	RT. & LT.	2.00	2.00
	9+050.000	RT. & LT.	4.00	4.00
PC	9+149.217	RT. & LT.	2.00	2.00
PT	9+341.930	RT. & LT.	2.00	2.00
	9+375.000	RT. & LT.	4.00	4.00
	9+445.000	RT. & LT.	4.00	4.00
PC	9+504.326	RT. & LT.	2.00	2.00
	9+570.000	RT. & LT.	4.00	4.00
	9+600.000	RT. & LT.	4.00	4.00
PT	9+790.822	RT. & LT.	2.00	2.00
	9+900.000	RT.	2.00	2.00
PC	10+122.335	RT. & LT.	2.00	2.00
	10+260.000	RT.	2.00	2.00
PT	10+300.609	RT. & LT.	2.00	2.00
	10+407.000	LT.	2.00	2.00
	10+417.000	LT.	2.00	2.00
EOP	10+578.730	RT. & LT.	2.00	2.00
		UNIT I TOTAL	48.00	48.00
		UNIT II TOTAL	36.00	36.00

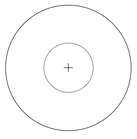


TOP VIEW

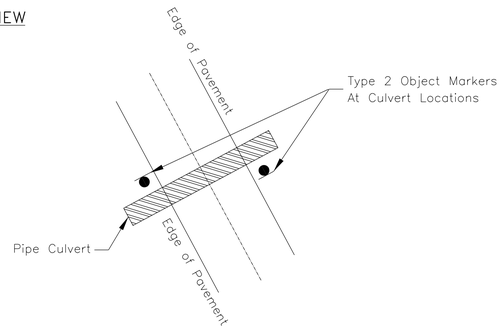


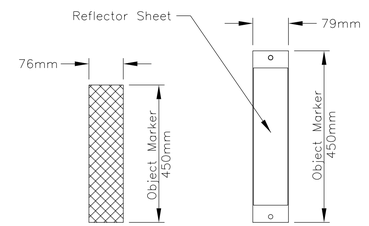
BRASS CAP DETAIL

Similar To Berntsen Model C1



BOTTOM VIEW

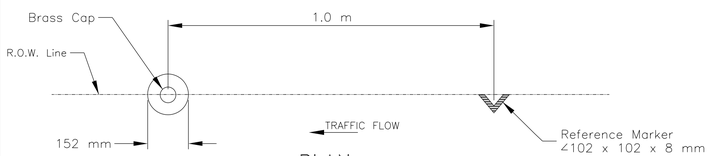




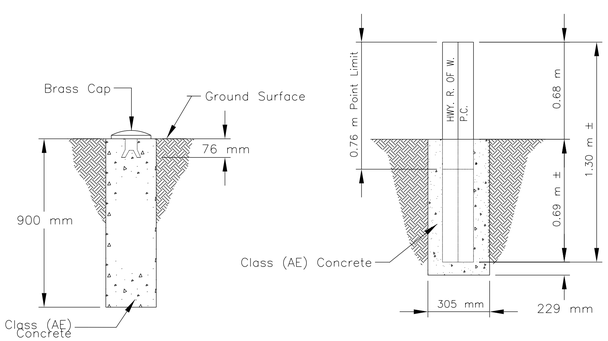
REFLECTOR SHEET

REFLECTIVE PANEL
(Pre-Drilled/Punched)

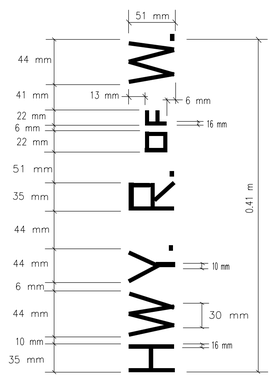
TYPE	POST COLOR	HIGH INTENSITY REFLECTIVE SHEETING
1a	WHITE	WHITE, ONE SIDE
1b	WHITE	WHITE, BOTH SIDES
2	YELLOW	AMBER, ONE SIDE



PLAN



ELEVATION



DETAIL OF LETTERS

R/W MONUMENT SYMBOL

ITEM NO. 63308-2000		
OBJECT MARKER TYPE 2		
		LOCATION
STATION	QTY.	TYPE 2
N5001 UNIT I		
0+168.630	2	LT. & RT.
0+306.130	2	LT. & RT.
0+395.980	2	LT. & RT.
0+638.270	2	LT. & RT.
1+143.290	2	LT. & RT.
1+323.930	2	LT. & RT.
1+963.050	2	LT. & RT.
2+374.050	2	LT. & RT.
2+355.090	2	LT. & RT.
UNIT I USE:	18	
N5001 UNIT II		
7+322.240	2	LT. & RT.
UNIT II USE:	2	
WORK REMOVED FROM PROJECT SCOPE (FOR INFORMATION ONLY)		
4+028.000	2	LT. & RT.
4+743.580	2	LT. & RT.
5+217.660	2	LT. & RT.
5+410.860	2	LT. & RT.
5+658.730	2	LT. & RT.
6+360.330	2	LT. & RT.
6+593.980	2	LT. & RT.
8+414.550	2	LT. & RT.
9+052.480	2	LT. & RT.
9+605.900	2	LT. & RT.
10+429.880	2	LT. & RT.

GENERAL NOTES

1. SURVEY MONUMENT AND REFERENCE MARKERS SHALL BE PLACED AS SHOWN ON THE PLANS OR AS DIRECTED BY CO/COTR. THE COST OF SUPPLYING ALL MATERIALS AND INSTALLATION OF RIGHT-OF-WAY MONUMENT AND MARKERS SHALL BE INCLUDED IN THE UNIT PRICE BID UNDER ITEM 62101-0000 & 62102-0000.

2. IF ROCK IS ENCOUNTERED WHEN INSTALLING THE RIGHT-OF-WAY MONUMENT AND REFERENCE MAKER, DRILL A 152mmø FOR SURVEY MONUMENT AND 305mmø FOR REFERENCE MARKER HOLE IN THE ROCK TO THE DEPTH REQUIRED TO INSTALL THE MONUMENT AND MARKER TO FULL DEPTH. ALL HOLE DRILLING INTO ROCK MATERIAL, SHALL BE CONSIDERED INCIDENTAL TO THE COMPLETION OF THE WORK AND NO ADDITIONAL PAYMENT SHALL BE MADE THEREOF.

3. BRASS CAPS FOR THE SURVEY MONUMENT SHALL BE SUPPLIED AND INSTALLED BY THE CONTRACTOR CONFORMING TO THE ASTM B-584 SPECIFICATION AND SHALL BE CONSIDERED INCIDENTAL TO ITEM 62101-0000.

4. ALL CONCRETE SHALL BE CLASS A(AE) AND SHALL CONFORM TO SECTION 601 OF THE FP-14. FURNISHING AND PLACING OF CONCRETE, WHEN REQUIRED, SHALL BE CONSIDERED INCIDENTAL TO ITEMS 62101-0000, 62102-0000, 63308-2000, 63309-0010, AND 63309-0020.

5. ROADWAY STATIONING AND ELEVATIONS SHALL BE STAMPED ON ALL BRASS CAPS BY THE CONTRACTOR AFTER INSTALLATION, UNLESS OTHERWISE DIRECTED IN WRITING BY THE CO/COTR.

6. THE CONTRACTOR SHALL BE REQUIRED TO PAINT THE REFERENCE MARKERS PER SECTION 708 AND SUBSECTION 708.04 OF FP-14:

   a) PRIME COAT ENTIRE STEEL MATERIAL AND SHALL CONFORM TO SUBSECTION 708.04(a) OR (b) OF FP-14.

   b) COAT WHITE FINISH OF PAINT THE TOP 762MM AND SHALL CONFORM TO SUBSECTION 708.04(C), (D), OR (E) OF FP-14.

   c) ALL LETTERS, NUMERALS, SYMBOLS, ETC. SHALL BE PAINTED ON THE REFERENCE MARKERS USING THE DIMENSIONS SHOWN USING BLACK LAMP PAINT CONFORMING TO ASTM D 209. THE REQUIRED INFORMATION TO PLACE ON THE REFERENCE MARKERS SHALL BE FURNISHED TO THE CONTRACTOR BY THE CO/COTR.

7. THE CONTRACTOR HAS THE OPTION TO USE AN APPROVED STATE HIGHWAY PAINT SPECIFICATIONS IN LIEU OF THAT STATED IN NOTE (6) ABOVE. THE CONTRACTOR SHALL SUBMIT (IN WRITING) THE PAINT SPECIFICATIONS AND REQUEST FOR USE ON THE PROJECT AT LEAST 14 DAYS IN ADVANCE OF THE PAINT USE FOR REVIEW AND APPROVAL. THE CONTRACTOR SHALL NOT BE ALLOWED TO USE ANY PAINT UNTIL THE PROPER APPROVAL HAS BEEN GIVEN BY THE CO/COTR. ANY PAINTING PERFORMED BY THE CONTRACTOR WITHOUT THE PROPER APPROVAL SHALL CAUSE THE WORK TO BE REJECTED.

8. THE CONTRACTOR SHALL USE 51mm X 51mm ALL STEEL SQUARE TUBE HIGHWAY DELINEATORS. DELINEATORS TYPE 1A AND TYPE 1B SHALL BE INSTALLED 610mm (MIN) OR 1219mm (NORMAL), OR IN-LINE WITH GUARDRAIL POSTS, MEASURED FROM ROADWAY OR SHOULDER EDGE. DELINEATOR TYPE 1C (I.E. DRAINAGE STRUCTURE) AND OBJECT MARKER SHALL BE USED TO MARK OBSTRUCTIONS THAT ARE LOCATED WITHIN 610mm (MIN) OR 1219mm (NORMAL) OF THE PAVEMENT EDGE AND SHALL BE MOUNTED ON OR IMMEDIATELY IN FRONT OF THE OBSTRUCTION.

9. SET RIGHT-OF-WAY MONUMENT AT STATION AND OFFSET TO MATCH THE RIGHT-OF-WAY PLAT. THESE LOCATIONS MAY VARY FROM THE STATIONS AND OFFSETS SHOWN ON THE CONSTRUCTION PLAN AND PROFILE SHEETS.

10. SEE SHEET 38 FOR GALVANIZED SQUARE STEEL TUBE OBJECT MARKER DETAILS.

STEPHEN M. LUJAN
NEW MEXICO
26338
10/27/23
PROFESSIONAL ENGINEER

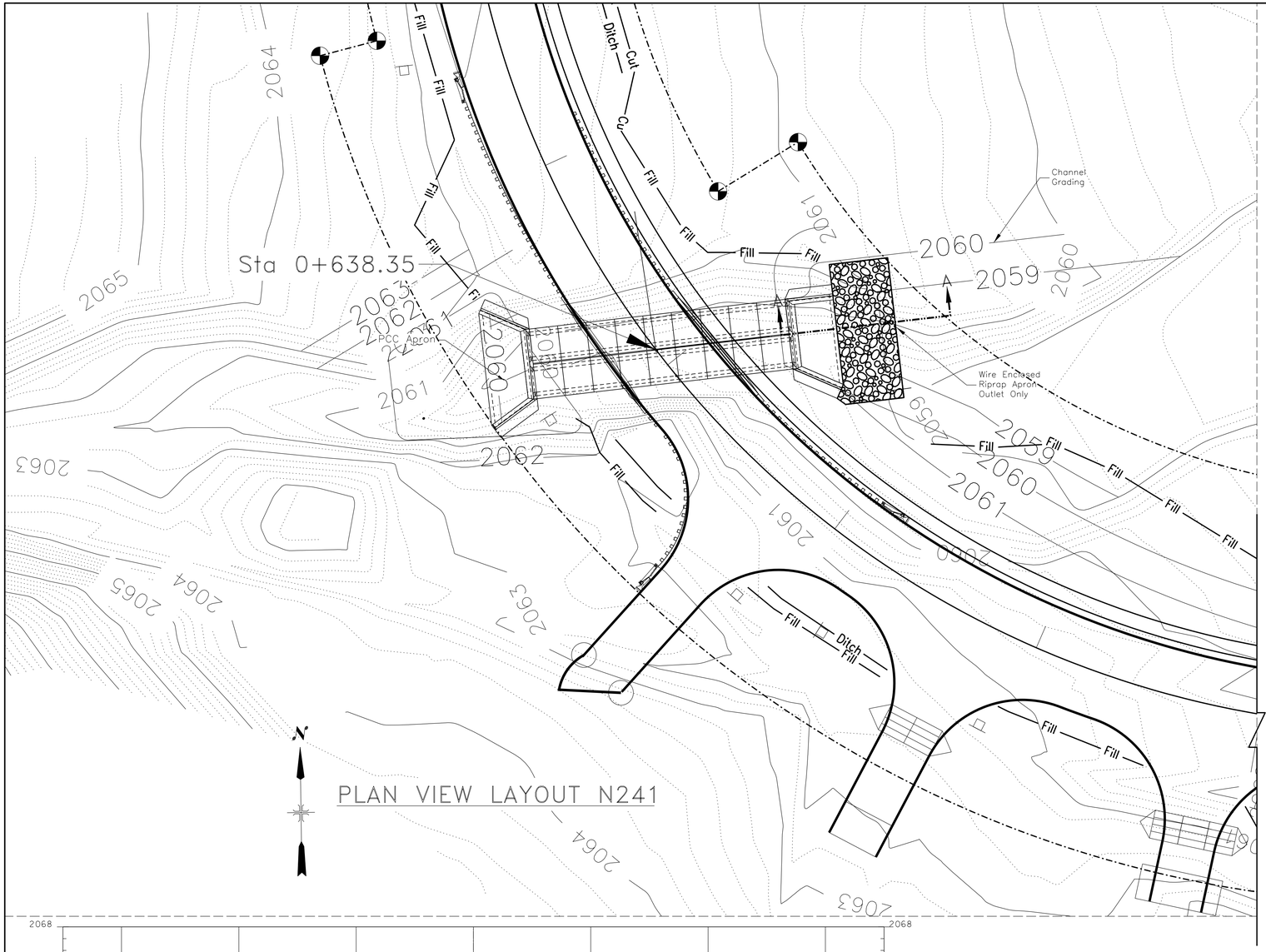
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

RIGHT-OF-WAY MONUMENT, TABLE, REFERENCE MARKER & OBJECT MARKER DETAILS

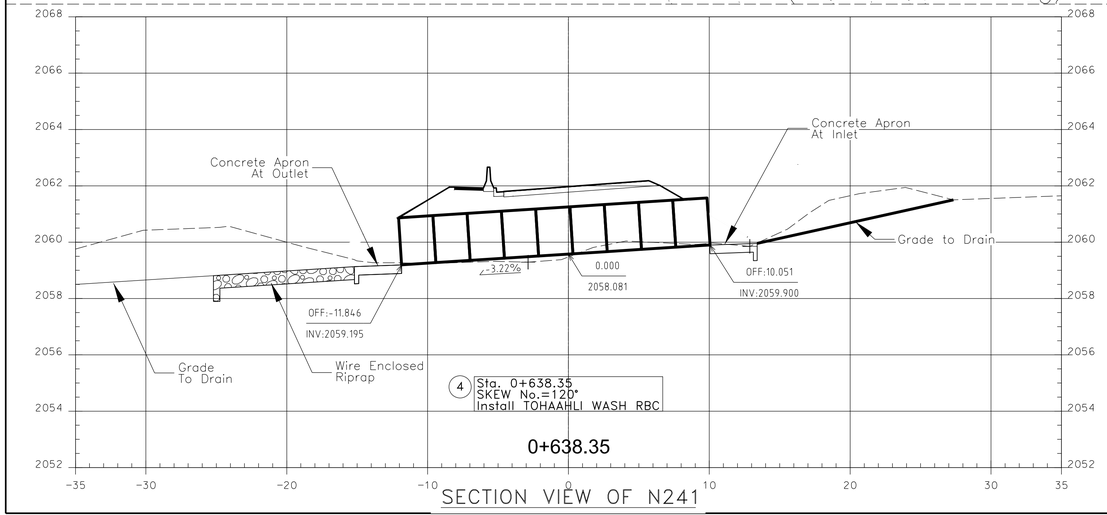
DRAWN BY: NRDOT	DATE: 8/25/2010
DESIGNED BY: NRDOT	DATE: 8/25/2010
REVISED: 10/16/2023	BY: Smlujan
$FILES$	

U.S. DEPARTMENT OF THE INTERIOR 1824 BUREAU OF INDIAN AFFAIRS

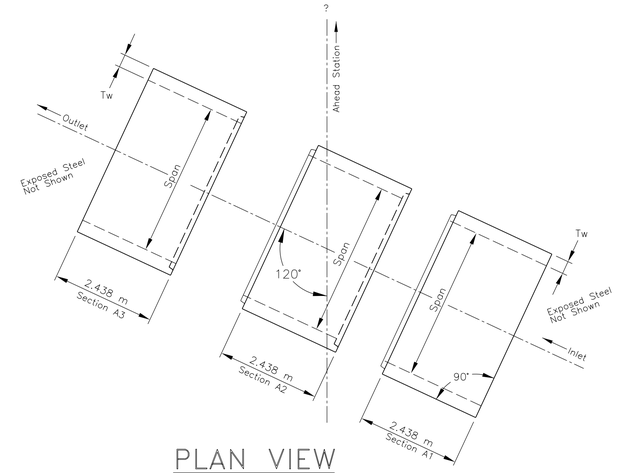
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	57	106



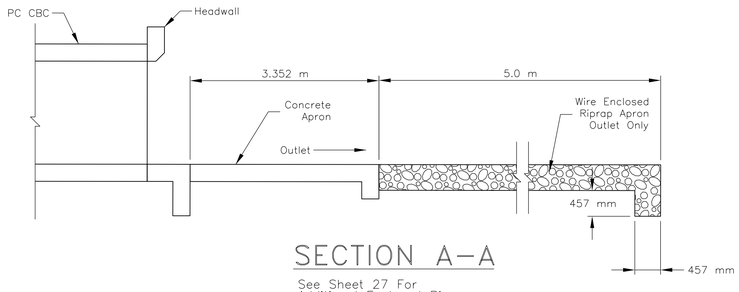
PLAN VIEW LAYOUT N241



SECTION VIEW OF N241



PLAN VIEW
PRE-CAST BOX CULVERT
LAYOUT DETAIL



SECTION A-A

See Sheet 27 For Additional Enclosed Riprap Details.

NAVAJO DIVISION
OF TRANSPORTATION

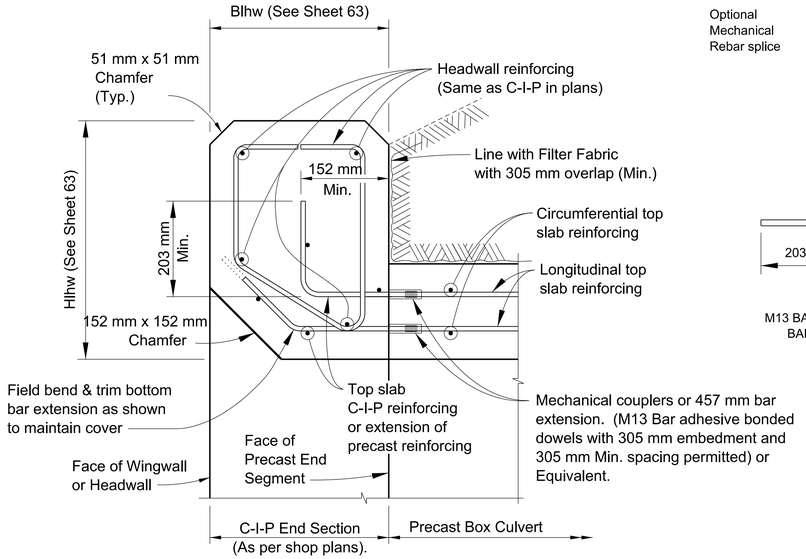
2-BARREL PCCBC LAYOUT
DETAIL AT Sta 0+638.35

DRAWN BY: WCI	DATE: 10/23
DESIGNED BY: SML	DATE: 10/23
REVISED: --/--	BY: DESIGN 1
Sht 57 layout 2 Barrel 8x6 PC CBC 3D REV	

STEPHEN M. LUJAN
NEW MEXICO
26338
10/27/23
PROFESSIONAL ENGINEER

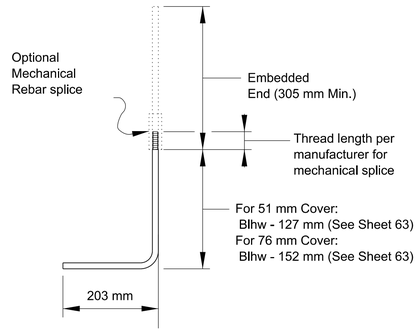
NAVAJO D.O.T

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	58	106

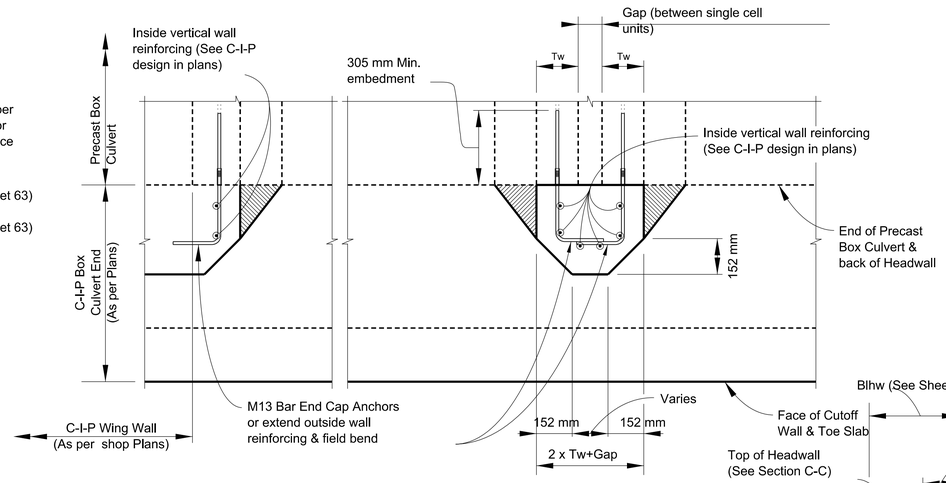


SECTION C-C

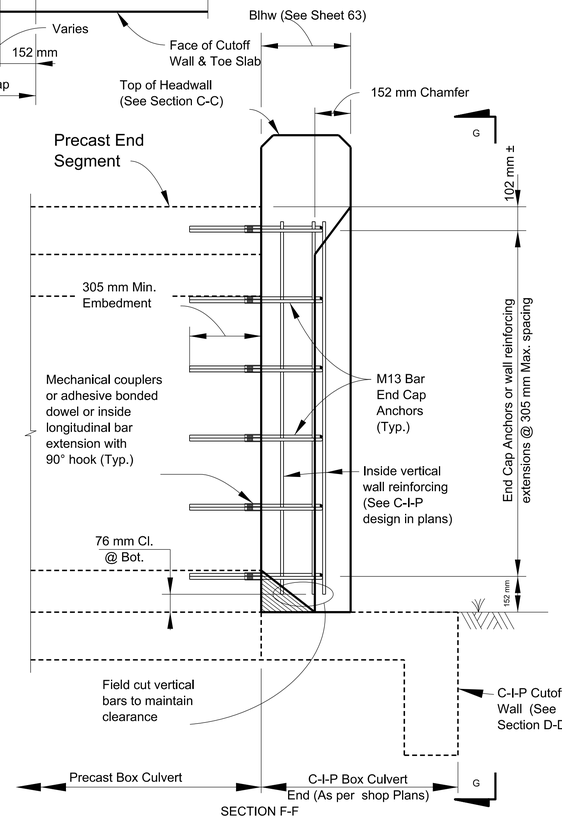
C-I-P HEADWALL DETAILS AND CONNECTION TO PRECAST BOX



M13 BAR END CAP ANCHOR BAR BEND DIAGRAM

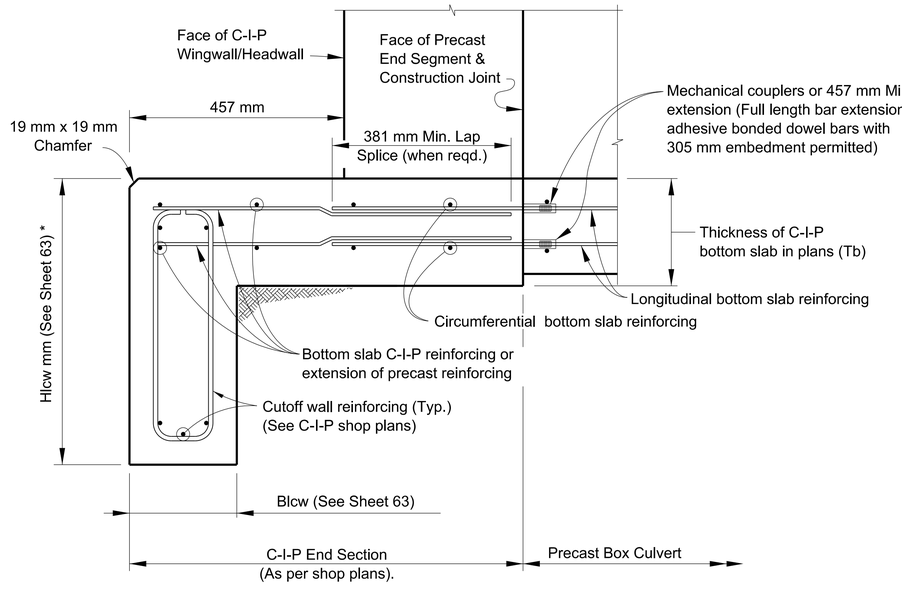


SECTION H-H



SECTION F-F

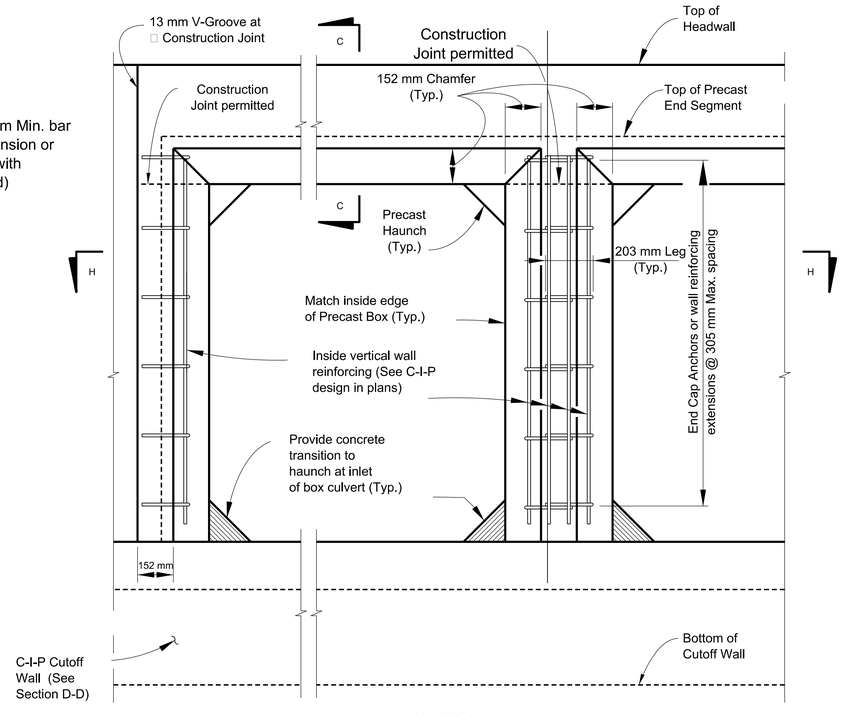
C-I-P END CAP DETAILS AND CONNECTION TO PRECAST BOX



SECTION D-D

C-I-P TOE SLAB & CUTOFF WALL DETAILS AND CONNECTION TO PRECAST BOX

* Provide additional 152 mm depth of cutoff wall at no additional cost.



VIEW G-G

(Headwall, Toe Slab and Cutoff Wall Reinforcing not shown for clarity)

ELEVATION VIEW

BOX BLOCKOUT DETAILS

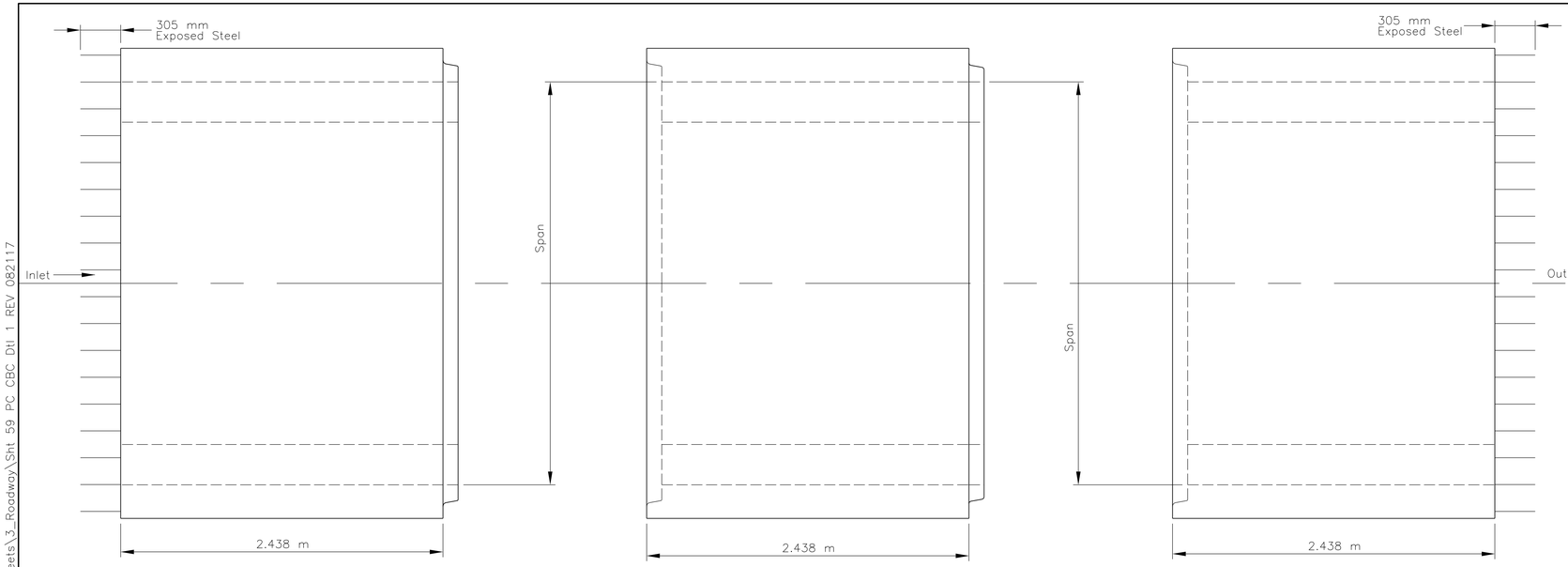
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

BOX HEADWALL, CAP & CUTOFF WALL DETAILS

DRAWN BY: NRDOT	DATE: 3/17/2014
DESIGNED BY: NRDOT	DATE: 3/17/2014
REVISED: 5/30/2023	BY: Rcferrell
$FILES$	

pw:\\wls-pw.bentley.com:wls-pw\Documents\8100-TRN\Navajo DOT\17-100-090-14_NavDOT N5001(1) Toadleana Two Grey Hills\2_Disciplines_Sheets\3_Roadway\Sht 58 Box headwall cutoff wall end cap details 082317

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	59	106



PLAN VIEW–BOX CULVERT
SECTION A 1

PLAN VIEW–BOX CULVERT
SECTION A 2

PLAN VIEW–BOX CULVERT
SECTION A 3

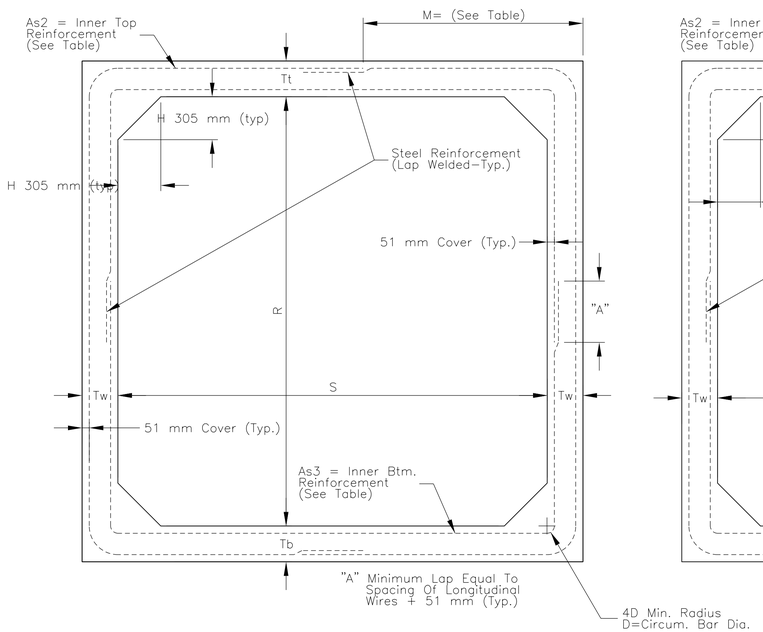
Note: Protect Exposed Steel From Damage Or Bending In Fabrication Yard And During Transport To Project Site.

GENERAL NOTES

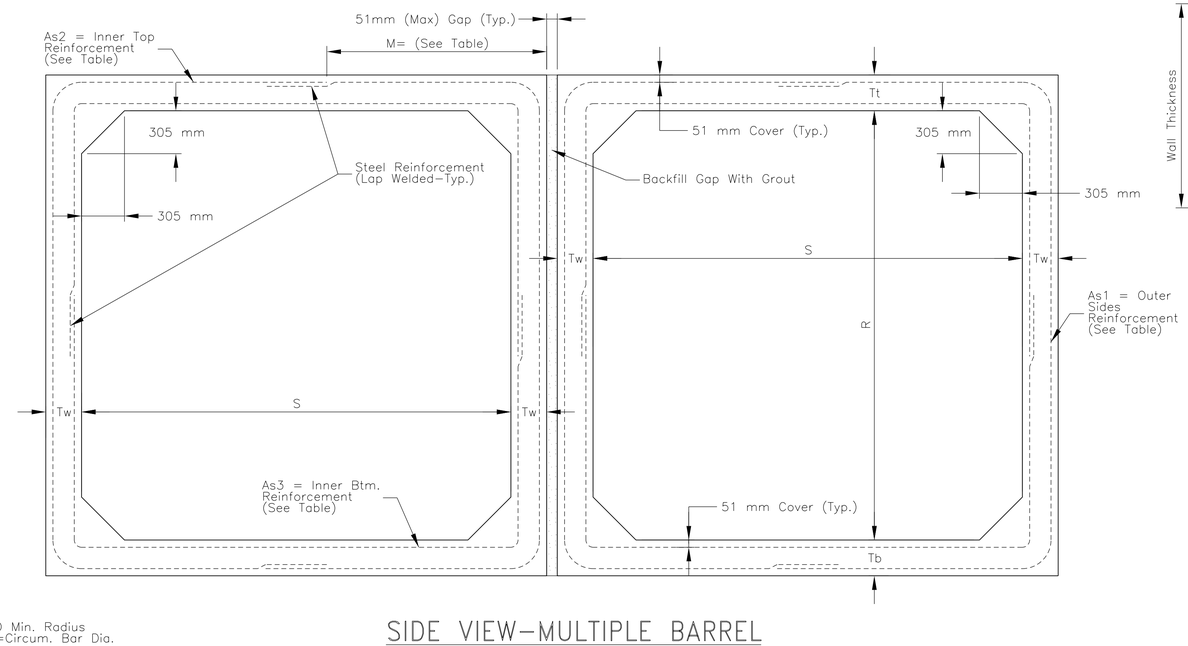
1. ONLY ONE DESIGN OF PRECAST BOX CULVERT IS TO BE USED FOR ANY INSTALLATION.
2. REINFORCING STEEL MUST CONSIST OF SMOOTH OR DEFORMED WELDED WIRE REINFORCEMENT (WWR) MEETING THE REQUIREMENTS OF SPECIFICATION SECTION 931. LONGITUDINAL REINFORCEMENT MAY CONSIST OF REINFORCING BARS MEETING THE REQUIREMENTS OF SPECIFICATION SECTION 931. MINIMUM COVER MUST BE 51 mm FOR SLIGHTLY AGGRESSIVE ENVIRONMENTS OR 76 mm FOR MODERATELY TO EXTREMELY AGGRESSIVE ENVIRONMENTS, UNLESS OTHERWISE SHOWN. THE SPACING OF CIRCUMFERENTIAL WIRES MUST NOT BE LESS THAN 51 mm NOR MORE THAN 102 mm. THE SPACING OF LONGITUDINAL WIRES OR BARS MUST NOT BE MORE THAN 203 mm.
3. AS9 LONGITUDINAL WIRES MUST HAVE A MINIMUM CROSS–SECTIONAL AREA OF 40% OF THE CIRCUMFERENTIAL WIRES, BUT NOT LESS THAN A W2.5 OR D2.5 FOR WWR, OR #3 BARS FOR DEFORMED BARS.
4. WELDING OF REINFORCEMENT MUST BE LIMITED TO THE LOCATIONS SHOWN IN ASTM C1577 AND IN ACCORDANCE WITH ANSI/AWS D1.4 "STRUCTURAL WELDING CODE – REINFORCING STEEL".
5. FOR ALTERNATE REINFORCING CONFIGURATION OPTIONS 2 AND 3 SHOWN IN DETAIL "A" AND "B" (SHEET 1), AS1 MAY BE EXTENDED TO THE MIDDLE OF EITHER SLAB AND LAP SPLICED WITH AS7 AND AS8. AS4 MAY BE LAP SPLICED AT ANY LOCATION OR CONNECTED TO AS2 OR AS3 AT CORNERS BY WELDING.
6. HAUNCH DIMENSIONS MAY VARY BETWEEN THE MINIMUM AND MAXIMUM DIMENSIONS SHOWN IN THE DESIGN TABLES BUT ONLY ONE HAUNCH DIMENSION MUST BE USED WITHIN THE FULL LENGTH OF THE BOX CULVERT INSTALLATION.
7. SUBMITTAL OF REDESIGN CALCULATIONS ARE NOT REQUIRED FOR ANY INCREASE TO THE SLAB AND/OR WALL THICKNESS WHEN THE MINIMUM REINFORCEMENT AREAS SHOWN IN THE DESIGN TABLES ARE PROVIDED.
8. FOR DESIGN EARTH COVER GREATER THAN 3 m, THE CONTRACTOR MAY INTERPOLATE THE REQUIRED AREAS OF REINFORCEMENT AND SLAB OR WALL THICKNESS. INTERPOLATED AREAS OF REINFORCEMENT SLAB OR WALL THICKNESS MUST BE APPROVED BY THE ENGINEER.
9. MINIMUM LENGTH OF PRECAST BOX SEGMENTS IS 1.22 m AND MAXIMUM LENGTH IS 4.88 m.
10. SEE SHEET 61 FOR CONNECTIONS TO WING WALLS, HEADWALLS AND OTHER GENERAL DETAIL

STANDARD PRECAST BOX CULVERT DESIGNS (51 mm COVER) – 2.438 m Spans

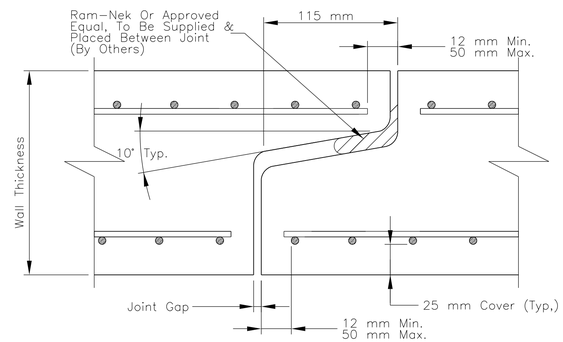
STATION	SPAN x RISE (S) x (R) (m)	SLAB/WALL THICKNESS TOP (Tt) (mm)	BOT, (Tb) (mm)	SIDE (Tw) (mm)	HAUNCH (H) (mm)	DESIGIN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq cm/per meter) As1	As2	As3	As4	As5	As6	As7	As8	As9	As1 EXT. LENGTH (M) (mm)
0+638.35	2.438 x 1.82	203	203	203	102 to 305	914 mm to < 1.524 m	7.832	11.430	11.853	2.117	–	–	–	–	See General Note 5	1270
											–	–	–	–		



SIDE VIEW–SINGE BARREL



SIDE VIEW–MULTIPLE BARREL
2 OF MORE BARRELS



BOX CULVERT
JOINT DETAIL

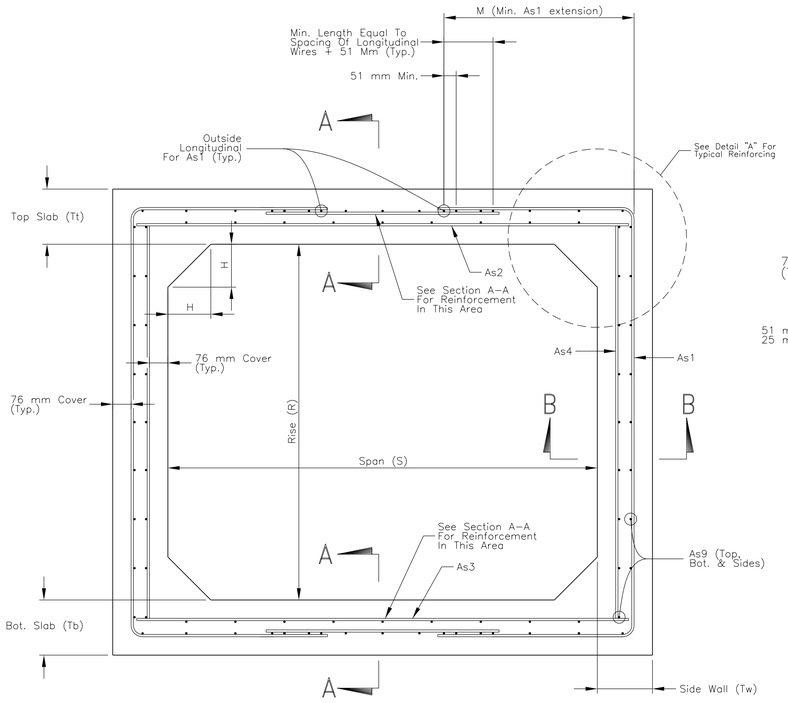
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

PRE–CAST CONCRETE
BOX CULVERT DETAIL

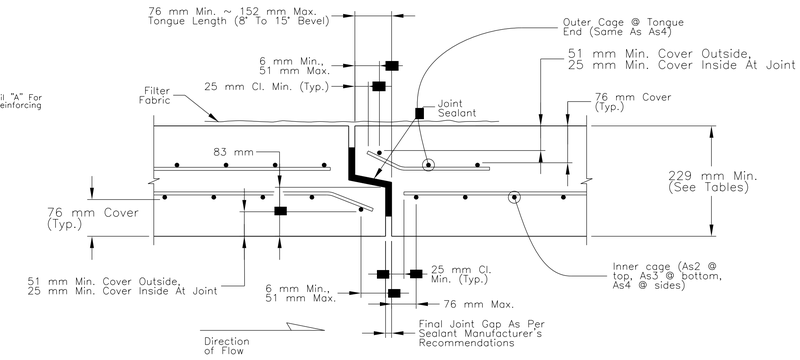
DRAWN BY: NRDOT	DATE: 8/21/2017
DESIGNED BY: NRDOT	DATE: 8/21/2017
REVISED: 8/20/2020	BY: Smlujan
$FILES$	

p:\\wls–pw.bentley.com:wls–pw\Documents\8100–TRN\Navajo DOT\17–100–090–14_NavDOT N5001(1) Toadleana Two Grey Hills\2_Disciplines_Sheets\3_Roadway\Sht 59 PC CBC Dtl 1 REV 082117

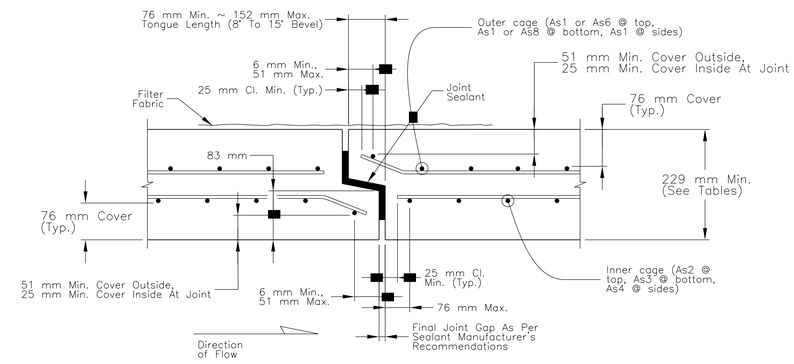
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	60	106



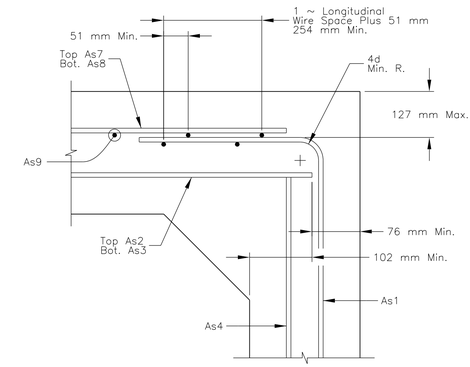
TYPICAL BOX SECTION (TYPE 2)
DESIGN EARTH COVER 51 mm OR GREATER
(Option 1 Reinforcing Configuration Shown)



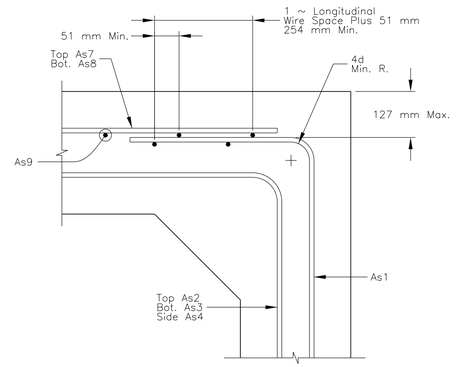
SECTION A-A



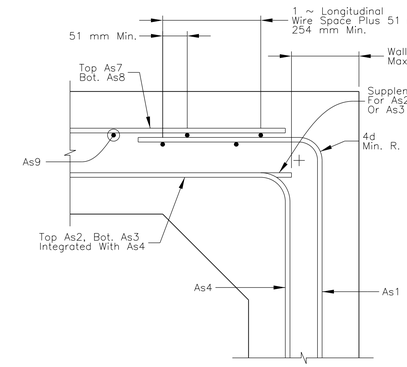
SECTION B-B
TYPICAL SECTION THRU JOINT



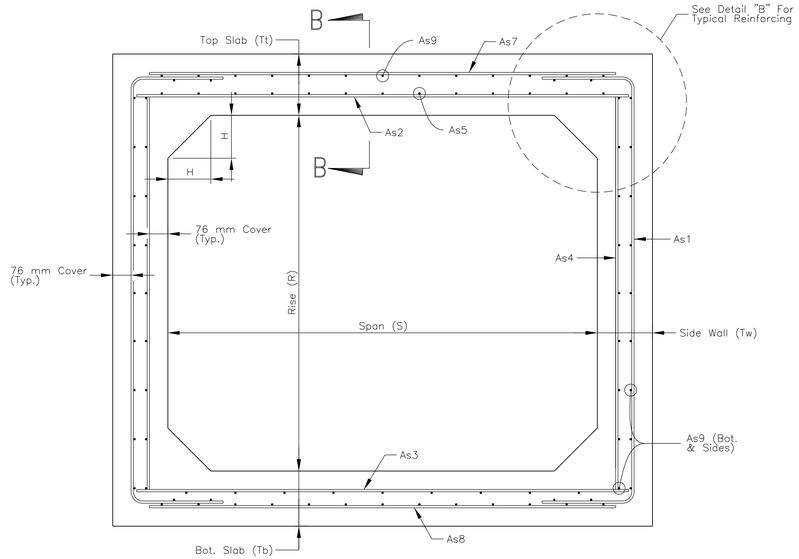
DETAIL "B"
(OPTION 1)



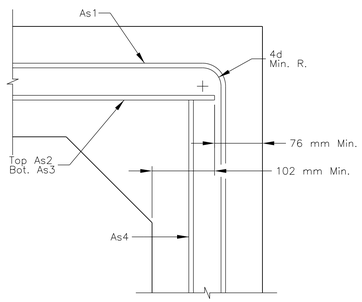
DETAIL "B"
(OPTION 2)



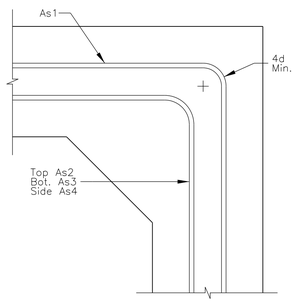
DETAIL "B"
(OPTION 3)



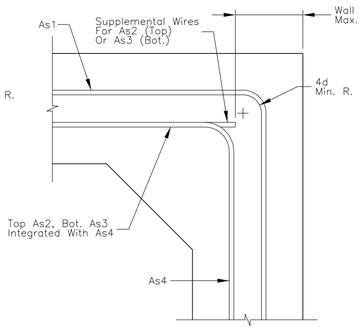
TYPICAL BOX SECTION (TYPE 1)
DESIGN EARTH COVER LESS THAN 51 mm
(Option 1 Reinforcing Configuration Shown)



DETAIL "A"
(OPTION 1)



DETAIL "A"
(OPTION 2)



DETAIL "A"
(OPTION 3)

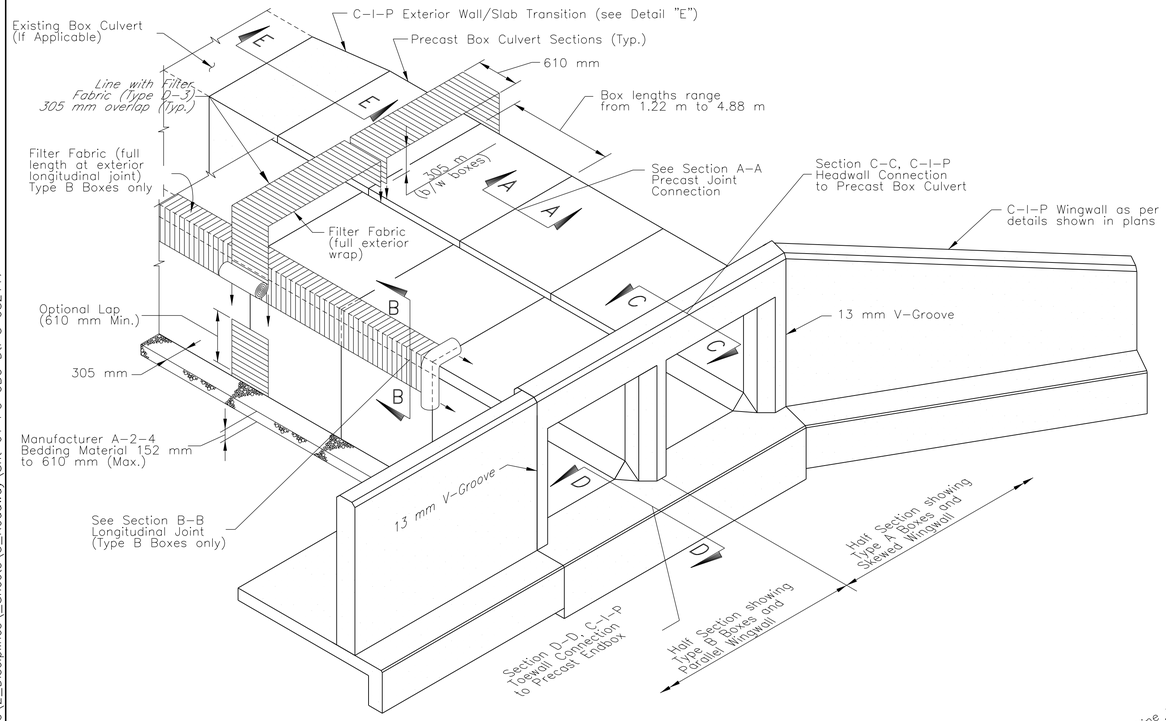
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

STANDARD PRECAST BOX CULVERT REBAR LAYOUT
WITH 76 mm CONCRETE COVER

DRAWN BY: NRDOT	DATE: 8/21/2017
DESIGNED BY: NRDOT	DATE: 8/21/2017
REVISED: 8/20/2020	BY: Smlujan
$FILES$	

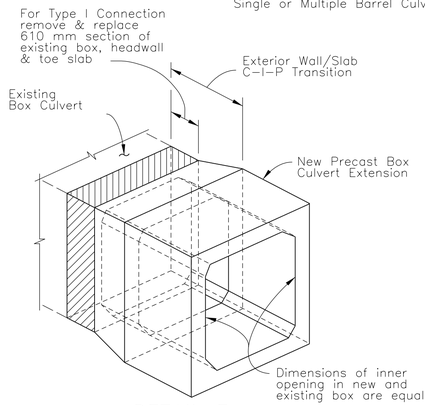
pw:\\wils-pw.bentley.com:wils-pw\Documents\8100-TRN\Navajo DOT\17-100-090-14_NavDOT N5001(1) Toadleana Two Grey Hills\2_Disciplines_Sheets\3_Roadway\Sht 60 PC CBC Dtl 2 REV 082117

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	61	106



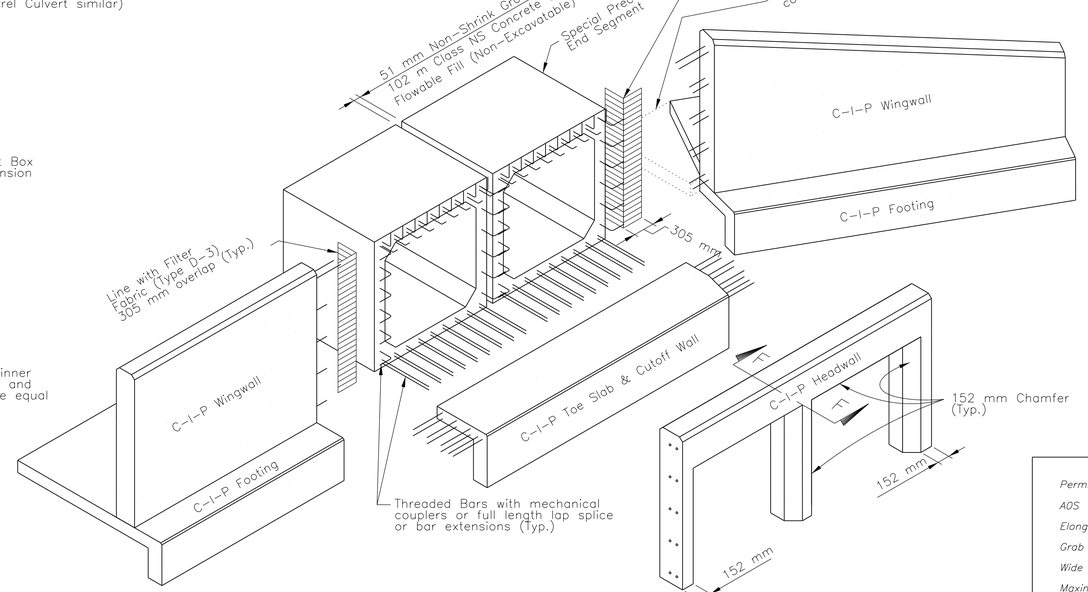
ISOMETRIC VIEW OF PRECAST CONCRETE BOX CULVERT

ISOMETRIC VIEW OF PRECAST CONCRETE BOX CULVERT
(Double Barrel Culvert shown, Single or Multiple Barrel Culvert similar)



DETAIL E

PICTORIAL VIEW OF EXTERIOR WALL/SLAB TRANSITION



EXPLODED VIEW OF CONNECTIONS AT END OF CULVERT

(Double Barrel Culvert shown, Single or Multiple Barrel Culvert similar)

GENERAL NOTES

1. WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-03) ALONG WITH ALL SUPPLEMENTAL SPECIFICATIONS FOR THIS PROJECT.
2. THE CONTRACTOR SHALL DESIGN, MANUFACTURER, AND CONSTRUCT A FOUR BARREL PRE-CAST CONCRETE BOX CULVERT STRUCTURES WITH WINGWALLS IN ACCORDANCE WITH ASTM C-1501-04 AND DESIGN CRITERIA BELOW. THE DESIGN SHALL INCLUDE DETAILS OF THE CULVERT BARREL, HEADWALLS, APRONS, WINGWALLS AND FOUNDATIONS INCLUDING DRAINAGE AND BACKFILL REQUIREMENTS. THE NORMAL OPENING WIDTH AND HEIGHT OF THE CBC SHALL BE 3.048m BY 3.048m. THE REQUIRED MINIMUM LENGTH OF STRUCTURE AND ORIENTATION OF WINGWALLS IS SHOWN ON THE DRAWINGS. JOINTS IN THE BOX SHALL BE SEALED TO PREVENT WATER LEAKAGE USING AN APPROVED JOINT COMPOUND CONFORMING TO ASTM C 990 AS REFLECTED IN THE SHOP DRAWINGS.
3. PRE-CASTER QUALIFICATIONS:
   A. SUPPLIERS MUST HAVE A MINIMUM OF 5-YEARS EXPERIENCE DESIGNING AND MANUFACTURING PRECAST CONCRETE BOX STRUCTURES.
   B. PRECASTER SHALL BE CERTIFIED BY THE PRECAST/PRESTRESSED CONCRETE INSTITUTE PLANT CERTIFICATION PROGRAM OR THE NATIONAL PRECAST CONCRETE ASSOCIATION'S PLANT CERTIFICATION PROGRAM PRIOR TO AND DURING PRODUCTION OF THE PRODUCTS COVERED UNDER THISCONTRACT.
   C. PRECAST BOX CULVERT SUPPLIER MUST BE PRESENT AT PRE-CONSTRUCTION MEETING, IF ONE IS HELD.
4. SUBMITTAL REQUIREMENTS: SUBMIT PRECASTER QUALIFICATIONS. SUBMIT A COMPLETE SET OF STRUCTURAL CALCULATIONS, SHOP DRAWINGS, PERTINENT STANDARD DETAILS AND PRODUCT DATA OF ALL MATERIALS TO BE USED IN THE MANUFACTURER OF PRECAST UNITS AND COMPONENTS. IF CALCULATIONS ARE BASED ON COMPUTER PROGRAMS, COMPLETE INPUT FILES OF GEOMETRY, MATERIALS PROPERTIES, MEMBER SIZES AND DESIGN ANALYSIS AND CALCULATION OF REINFORCING STEEL SHALL BE SUBMITTED. CALCULATIONS AND ALL DRAWINGS SHALL BE SIGNED AND SEALED BY A LICENSED PROFESSIONAL ENGINEER LICENSED IN THE STATE WHERE THE PROJECT RESIDES AND WHO IS RESPONSIBLE FOR THEIR PREPARATION. THE DIMENSIONS SHOWN ON THE SHOP DRAWINGS SHALL BE PREPARED IN METRIC UNITS.
5. SUBSTITUTION: PRECAST MANUFACTURER MAY SUBMIT A DIFFERENT TYPE OF BOX CULVERT THAN THE ONE DEPICTED ON THE DRAWINGS, PROVIDED THAT THE MINIMUM OPENING AREA OF BOX UNITS IS PROVIDED AND OTHER MINIMUM AND MAXIMUM DIMENSIONS ARE MAINTAINED. THE NET OPENING AREA SHALL NOT BE LESS THAN THAT SHOWN IN THESE DESIGN PLANS. ANY PROPOSED CHANGES IN LENGTH OR HEIGHT OF STRUCTURE OR IN GRADING SHALL BE INCLUDED IN THE DESIGN CALCULATIONS AND DETAILS.
6. DESIGN CRITERIA:
   A. DESIGN CODE: LATEST EDITION OF THE AASHTO LRFD DESIGN SPECIFICATIONS.
   B. LIVE LOAD: HL-93 FOR BOX UNITS ONLY.
7. MATERIAL PROPERTIES:
   A. PRECAST CONCRETE COMPRESSIVE STRENGTH: 34.5 MPa (5,000 psi) AT 28-DAYS.
   B. CAST-IN-PLACE CONCRETE: FP-03, f'c = 20.7 MPa (3,000 psi) MIN AT 28-DAYS.
   C. ALL CONCRETE SHALL BE AIR ENTRAINED.
   D. REINFORCING STEEL: ASTM A615, fy=413.7 MPa (60,000 psi) EPOXY COATED
   E. STEEL HARDWARE: ASTM A36, GALVANIZED IN ACCORDANCE WITH ASTM-123.
   F. ALLOWABLE BEARING PRESURE: 143kPa/sm (1.33t/SF).
   G. HEIGHT OF FILL OVER BOX: 0.972m or 2045kg/cm.
   H. ANGLE OF INTERNAL FRICTION Ö: 34 degrees
8. A GEOTECHNICAL DATA IS AVAILABLE FOR BIDDER'S INSPECTION UPON WRITTEN REQUEST TO THE CONTRACTING OFFICER (CO). THE CONTRACTOR MAY CONDUCT HIS OWN GEOTECHNICAL INVESTIGATIONS AND PROPOSE A DIFFERENT FOUNDATION CONCEPT SUBJECT TO REVIEW AND APPROVAL BY THE BIA-NRDOT. THE FOLLOWING IS A PARTIAL LIST OF DESIGN INFORMATION TO BE USED:
   A. CANTILEVERED WINGWALLS:
      1. LEVEL BACKFILL: SOIL PRESSURE EQUIVALENT TO FLUID WITH UNIT WEIGHT OF 560 kg PER CUBIC METER (115 pcf). HORIZONTAL PRESSURE DUE TO A SURCHARGE LOAD: 342kg/sm UNIFORM PRESSURE EQUAL TO 0.33 TIMES THE SURCHARGE LOAD.
      2. SLOPING BACKFILL: SOIL PRESSURE EQUIVALENT TO FLUID WITH UNIT WEIGHT OF 342kg PER CUBIC METER (115 pcf). HORIZONTAL PRESSURE DUE TO A SURCHARGE LOAD: UNIFORM PRESSURE EQUAL TO 0.40 TIMES THE SURCHARGE LOAD.
   B. BELOW GRADE REINFORCED CONCRETE BOX: NON-YIELDING BELOW GRADE WALLS WHICH CANNOT DEFLECT TO MOBILIZE THE ACTIVE SOIL PRESSURE SHOULD BE DESIGN FOR THE AT-REST LATERAL EARTH PRESSURE STATE EQUAL TO AN EQUIVALENT FLUID LATERAL EARTH PRESSURE OF 8.5 kN PER CUBIC METER (178 pcf).
   C. FACTOR OF SAFETY AGAINST SLIDING: 1.5 MINIMUM. FACTOR OF SAFETY AGAINST OVERTURNING: 1.5 MINIMUM FOR FOOTINGS ON ROCK AND 2.0 FOR ALL OTHER SOILS.
   D. ALLOWABLE BEARING PRESSURE: 143 kPa (1.33 Ton per ft^2), TO SUPPORT ON SPREAD FOOTINGS PLACED ON THE UNDISTURBED SANDY-SILT SOILS.
   E. COEFFICENT OF BASE FRICTION = 0.37 FOR FOUNDATIONS FOUNDED ON SANDY-SILT SOILS.
9. THE TOP LAYER OF UNSUITABLE SOIL UNDER BOX UNITS AND WINGWALLS SHALL BE REMOVED TO A MAX DEPTH OF 610mm AND MANUFACTURER RECOMMENDED(A-2-4) BACKFILL PLACED PRIOR TO CONSTRUCTING CONCRETE FOUNDATION FOR PRECAST UNITS AND ANY WINGWALLS.
10. ALL DIMENSIONS ARE IN METRIC UNITS.
11. MANUFACTURER: MANUFACTURING OF PRECAST UNITS SHALL NOT BE STARTED UNTIL THE DESIGN CALCULATIONS AND SHOP DRAWINGS HAVE BEEN APPROVED BY THE BIA-NRDOT. MANUFACTURE PRECAST UNITS AT THE PRECASTER'S PLANT ONLY.
12. CONSTRUCTION: CONTRACTOR SHALL COORDINATE INSTALLATION OF THE PRECAST STRUCTURE TO PREVENT DAMAGE. PROVIDE CRANES WITH SUFFICIENT CAPACITY TO ALLOW SAFE INSTALLATION OF THE STRUCTURE. IF ANY PRECAST UNIT IS CRACKED OR DAMAGED, THE PRECAST UNITS SHALL BE REPLACED AT NO ADDITIONAL COST TO THE GOVERNMENT. THE CONTRACTOR SHALL SUBMIT A PROCEDURE FOR REPAIR OF MINOR SPALLS FOR THE CO'S APPROVAL.
13. EACH PRECAST UNIT SHALL BE JOINED TOGETHER BY A METHOD RECOMMENDED BY THE MANUFACTURER THAT DOES NOT CAUSE ANY DAMAGE TO THE SECTIONS. DO NOT DRIVE OR RAM SECTIONS TOGETHER WITH MACHINERY OR HAND TOOLS.
14. BASIS OF PAYMENT: PAYMENT FOR DESIGN, MANUFACTURER, AND ERECTION OF THE COMPLETE STRUCTURE, INCLUDING THE BOX BARREL(S), CONCRETE APRONS, WINGWALLS, HEADWALLS, CAST-IN-PLACE FOUNDATIONS, ROCK REMOVAL FOR WINGWALL FOOTINGS, AND DRAINAGE SYSTEM SHALL BE PAID FOR BY LUMP SUM OR LINEAR METER AS REFLECTED IN THE BID SCHEDULE.
15. ANY RELATED PATENT RIGHTS WILL BE THE RESPONSIBILITY OF THE CONTRACTOR AS PER SECTION 107.01 OF THE FP-03.

PERMITTED PRECAST ALTERNATE BOX SECTIONS

TYPE	DESCRIPTION	SINGLE BARREL	MULTIPLE BARRELS	DESIGN NOTES
A	Single Cell Monolithic (Four Sided)			Contractor Design
B	Single Cell Two-Piece (Four Sided)	Three sided bottom section; Top slab section		Contractor Design
C	Multicell Monolithic	Not Applicable		Contractor Design

STANDARD CRITERA

CLASS	TYPE (1)	APPLOCATION DESCRIPTION	INDEX No.	PERMITTIVITY SEC	AOS SIEVE #	Min. GRAB TENSILE STRENGTH kg	Min. SEWN STRENGTH kg/cm	Min. PUNCTURE kg	Min. TRAPEZODIAL TEAR kg	UV RESISTANCE (Min. Allowed) %	UV RESISTANCE (Min. Allowed) Time (Hrs.)	REMARKS
DRAINAGE (D)	D-3	Underdrain ***	286	% SOIL PASSING	% SOIL PASSING	Elongation	Elongation	Elongation	Elongation	50	500	No woven slit film fabrics allowed.50 sieve. * For cohesive soils with plasticity index >7, maximum average role value AOS is number ** Required Trapezoidal tear for woven monofilament is 250. *** See Index
		French Drain	285	No. 200 SIEVE	No. 200 SIEVE							
		Sheet Piling Filter		<15% 0.5	<15% 40		<50%	<50%	<50% 90	<50% 90**		
		Filter Fabric Jacket (Culvert	280	15% to 50% 0.2	15% to 50% 60	<50% 248 ≥50% 128	5.7 ≥50% 3.6	≥50% 57	≥50% 57			
		Concrete Pavement Subdrainag	287	>50% 0.1	>50% 70*							

TABLE 1

Test	Unit	Test Method
Permittivity	sec^{-1}	ASTM-D-4491
AOS	US Sieve No.	ASTM-D-4751
Elongation	%	ASTM-D-4632
Grab Tensile Strength	kg	ASTM-D-4595
Wide With Tensile Strength	kg/cm	See Note Below
Maximum Design Velocity	m/sec	ASTM-D-4884
Sewn Strength	kg/cm	ASTM-D-4833
Puncture	kg	ASTM-D-4533
Tranapezoidial Tear	kg	ASTM-D-4355
Ultraviolet Resistance	% Retained In Strength	
Filtration Efficiency	%	ASTM-D-5141
Flow Rate	L^3/ min.	ASTM-D-5141

*Note: Shear stress limits for plastic erosion mats determined by 30 minutes susutained flow in unvegatated state as determined by tests performed by Utah State University, Texas Transportation Institute or

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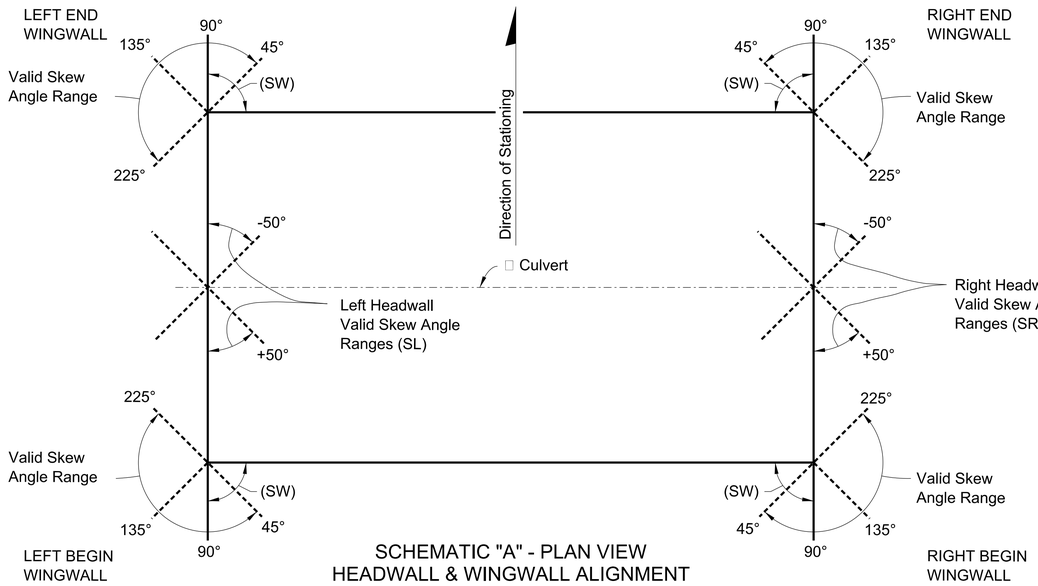
PRECAST CONCRETE BOX CULVERTS WITH WINGWALLS DETAILS

DRAWN BY: NRDOT	DATE: 8/21/2017
DESIGNED BY: NRDOT	DATE: 8/21/2017
REVISED: 7/23/2020	BY: Smlujan
$FILES$	

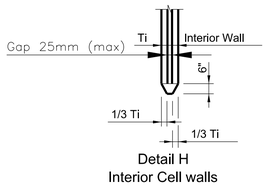
pw:\\wls-pw.bentley.com:wls-pw\Documents\8100-TRN\Navajo DOT\17-100-090-14_NavDOT N5001(1) Toadlelana Two Grey Hills\2_Disciplines_Sheets\3_Roadway\Sht 61 PC CBC Dtl 3 082117

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	62	106

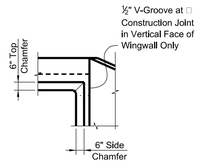


SCHEMATIC "A" - PLAN VIEW
HEADWALL & WINGWALL ALIGNMENT

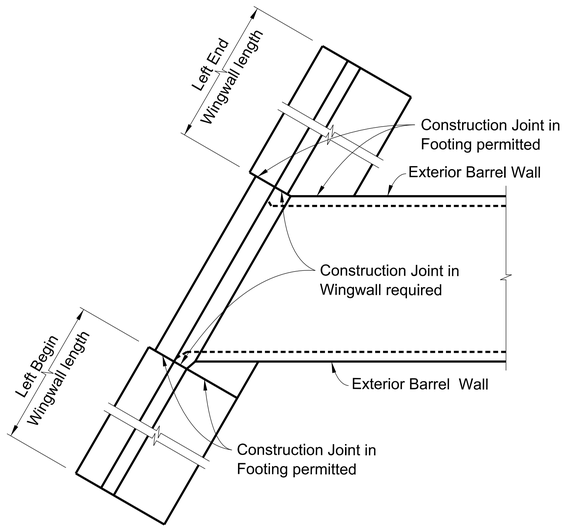
NOTE: All headwall and culvert skew angles are measured in degrees from a line perpendicular to the centerline of culvert (counter-clockwise positive), see Schematic "B".



Detail H
Interior Cell walls

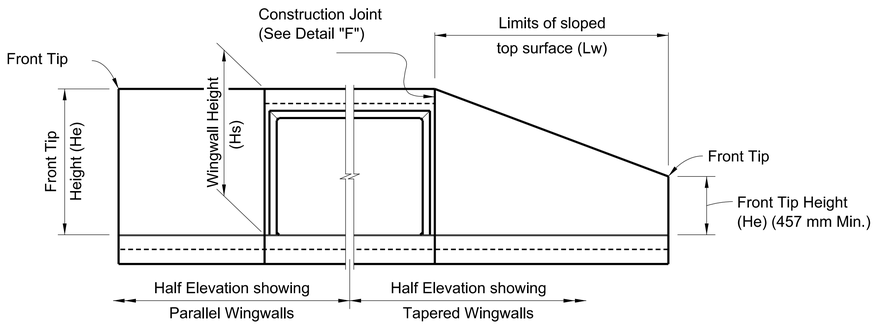


DETAIL "F"



PART PLAN SHOWING PARALLEL WINGWALLS
AND LOCATION OF CONSTRUCTION JOINTS

NOTE:
Construction Joints in wingwalls and footings are located as follows: For non-skewed wingwalls they are located adjacent to the exterior face of the exterior barrel wall; when the CL of wingwall and CL of exterior barrel wall results in an acute angle see Left End Wingwall above, and when the angle is obtuse see Left Begin Wingwall above and Detail C.



END ELEVATION
OF CULVERT

GENERAL NOTES:

LIVE LOAD: HL-93.

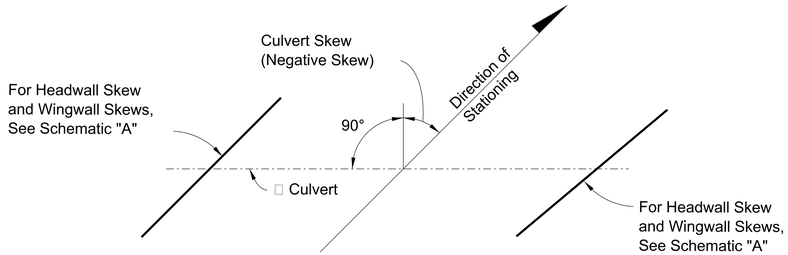
CONSTRUCTION LOADING: It is the construction Contractor's responsibility to provide for supporting construction loads that exceed AASHTO HL-93, and any construction load applied prior to 610 mm of compacted fill placed above the top slab.

SURFACE FINISH: All concrete surfaces shall receive a Class I finish per Section 552.16(a)

SKEWED CONSTRUCTION JOINTS: Construction joints in barrels of culverts with skewed wingwalls may be placed parallel to the headwalls and the reinforcing steel, and the slabs may be cut provided that the cut reinforcing steel extends beyond the construction joint enough for splices to be made in accordance with Table 1 on this sheet. The cost of construction joints and additional reinforcing shall be at the expense of the Contractor.

REINFORCING STEEL: See Sheet 67 for type, size, number, and reinforcing per meter requirements for wingwall .

For small angles, the Contractor may elect to fill the area between the box and the wingwall footing with unreinforced concrete. For wingwall skew angles less then 90 degrees, field bend wingwall reinforcement as necessary while maintaining cover. No additional payment will be made for this work.



SCHEMATIC "B" - PLAN VIEW
CULVERT ALIGNMENT

NOTE: For Culvert Skew see Contract Plans.

TABLE 1 - MINIMUM BAR SPLICE LENGTHS FOR LONGITUDINAL REINFORCING

BAR SIZE	SPLICE (CLASS A/AE) CLASS A(AE) (2344 mPa)	SPLICE (CLASS A/AE) CLASS A(AE) (3792 mPa)	BAR SIZE	SPLICE (CLASS B) CLASS A(AE) (2344 mPa)	SPLICE (CLASS B) CLASS A(AE) (3792 mPa)
#10M	305 mm	305 mm	#25M	1.067 m	838 mm
#13M	406 mm	406 mm	#29M	1.346 m	1.067 m
#16M	508 mm	508 mm	#32M	2.006 m	1.346 m
#19M	584 mm	584 mm	#36M	2.388 m	1.956 m
#22M	813 mm	686 mm			

TABLE 1 NOTE: Splice lengths are based on an AASHTO Class B tension lap splice for the Specification Section 552 concrete class shown.

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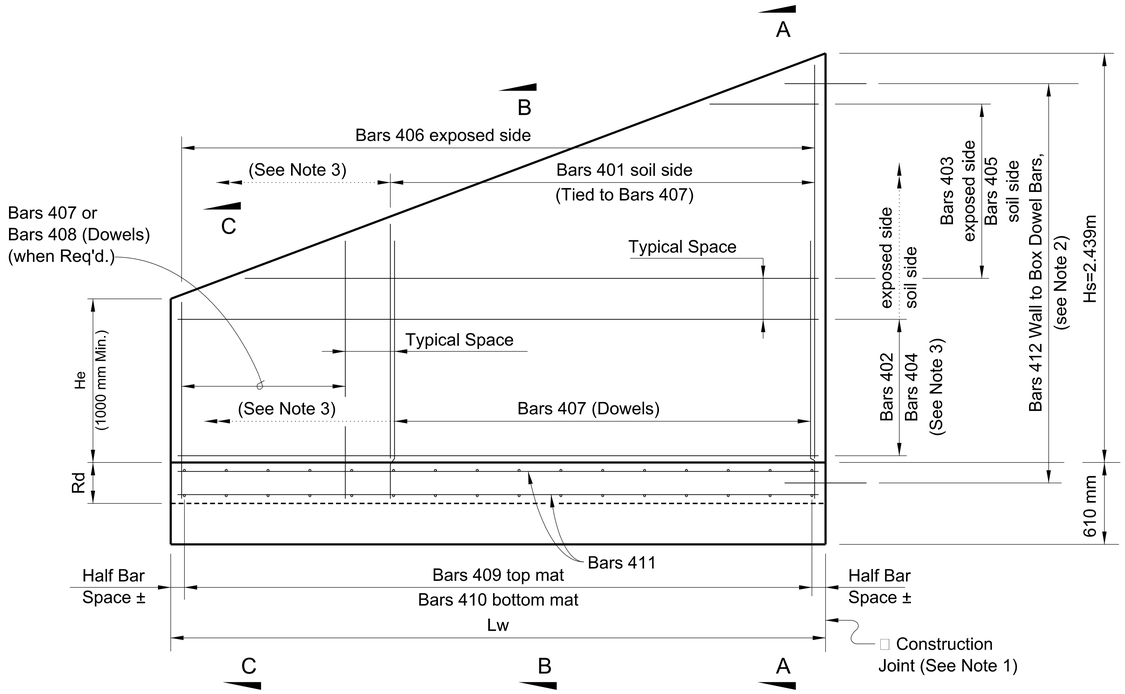
CONCRETE BOX
CULVERT DETAIL

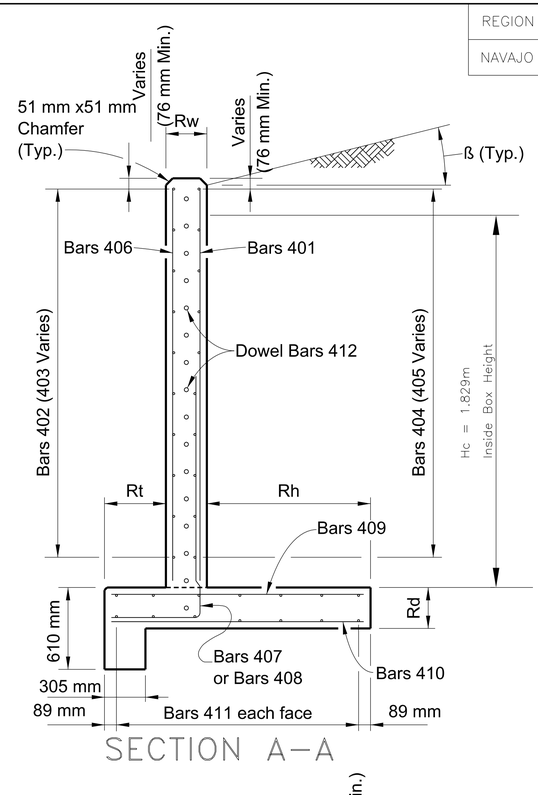
DRAWN BY: NRDOT	DATE: 8/21/2017
DESIGNED BY: NRDOT	DATE: 8/21/2017
REVISED: 4/10/2019	BY: Smlujan
$FILES$	

pw:\\wils-pw.bentley.com:wils-pw\Documents\8100-TRN Navajo DOT\17-100-090-14_NavDOT N5001(1) Toadlena Two Grey Hills\2_Disciplines_Sheets\3_Roadway\Sht 62 PC CBC Dtl 4 rev 082117

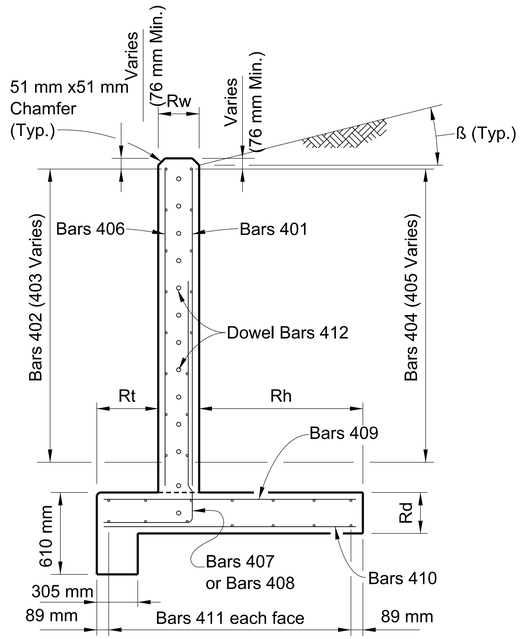
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	63	106



WINGWALL ELEVATION - Variable Height
(Left End shown - other corners similar)



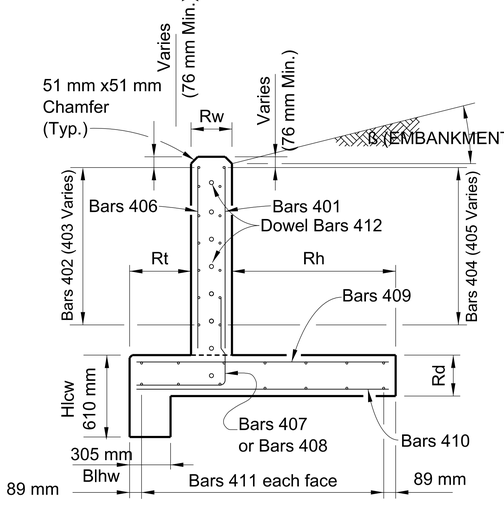
SECTION A–A



SECTION B–B

WINGWALL NOTES:

1. Align construction joint perpendicular to wingwall.
2. In the vicinity of the construction joint, field bend reinforcement as necessary to maintain minimum reinforcement cover.
3. For constant height wingwalls, variable length Bars 403, 405 & 408 are not required, and as such the limits of Bars 401 & 407 extend the full length of the wingwall, and the limits of Bars 402 & 404 extend to the full height of the wingwall.
4. Contractor is resonsible for determiming all bar lengths dimensions for the barrel, wingwall and concrete apron reinforcement in accordance with table on drawing, using the bar designations shown and provide shop plans for review.



SECTION C–C

BAR DESIGNATIONS SHOWN ARE FOR INFORMATIONAL PURPOSES ONLY. THE CONTRACTOR SHALL PROVIDE THEIR OWN DETAIL BAR SCHEDULE AND DRAWINGS USING THEIR OWN BAR DESIGNATIONS.

BOX, HEADWALL AND CUTOFF WALL DATA TABLE (mm unless shown otherwise) — Table date: 5/24/18

LOCATION:	STRUCTURE / BRIDGE NUMBER	BOX										HEADWALL AND CUTOFF WALL						
		#Cells	Wc(m)	Hc(m)	Tt(mm)	Tw(mm)	Tb(mm)	Ti(mm)	Lc(m)	Cover	Blhw(mm)	Hlhw(mm)	Brhw(mm)	Hrhw(mm)	Blcw(mm)	Hlcw(mm)	Brcw(mm)	Hrcw(mm)
0+638.35	N241	18	2.439	1.830	203	251	216	229	17.020	51mm	305mm	610	305	610	356	610	305	610

WINGWALL REINFORCEMENT AREA (mm2 per linear meter) Inlet & Outlet — Table date: 5/24/18

Wall Height (m)	Location	Stem Wall (back face)	Stem Wall T&S (back face)	Stem Wall (front face)	Stem Wall T&S (front face)	Footing (top mat)	Footing T&S (top mat)	Footing (bottom mat)	Footing T&S (bottom mat)
4.267	Lt & Rt	1968	423	423	423	1968	423	423	423
3.048	Lt & Rt	1312	423	423	423	1312	423	423	423
2.134	Lt & Rt	847	423	423	423	847	423	423	423
1.219	Lt & Rt	423	423	423	423	423	423	423	423
0.610	Lt & Rt	423	423	423	423	423	423	423	423

Wingwall Note: Bar designations in "( )" are only required for variable height wingwalls.

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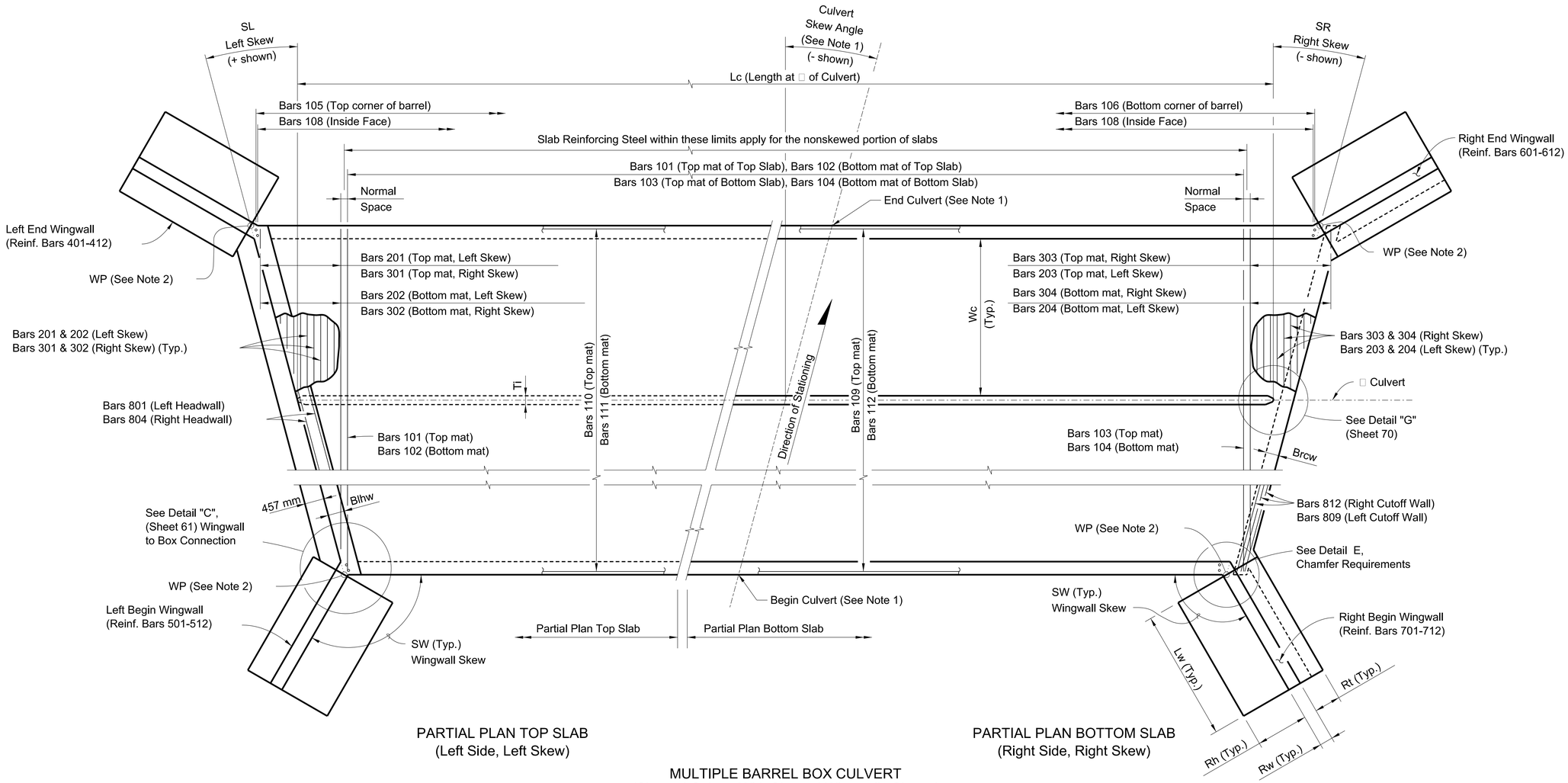
CONCRETE BOX CULVERT AND WINGWALL DETAIL

DRAWN BY: NRDOT	DATE: 8/23/2017
DESIGNED BY: NRDOT	DATE: 8/23/2017
REVISED: 7/23/2020	BY: Smlujan
$FILES$	

p:\\wls-pw.bentley.com:wls-pw\Documents\8100-TRN\Navajo DOT\17-100-090-14_NavDOT N5001(1) Toadleana Two Grey Hills\2_Disciplines_Sheets\3_Roadway\Sht 63 PC CBC Dtl 5 rev 082317

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	64	106



PARTIAL PLAN TOP SLAB
(Left Side, Left Skew)

PARTIAL PLAN BOTTOM SLAB
(Right Side, Right Skew)

MULTIPLE BARREL BOX CULVERT
(Skewed Culvert With Skewed Wingwalls Shown)

NOTES:
1. See Contract Plans Sht 61 & 62 for Culvert Location, Culvert Skew Angle and Roadway Cross Section.
2. WP = Working Point, used for wingwall layout and location of construction joint. See Detail C (Sheet 61).

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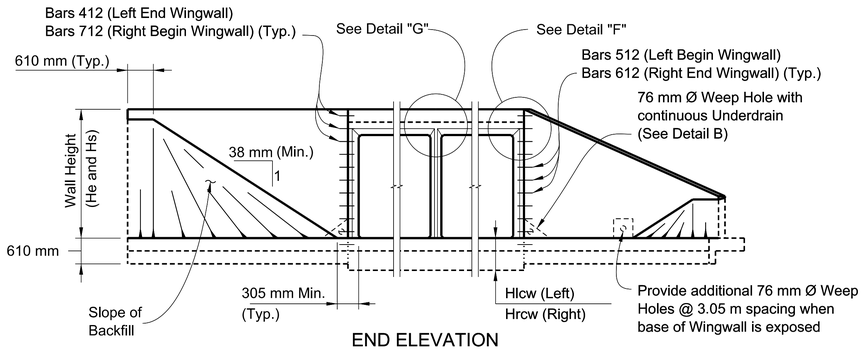
MULTIPLE BARREL BOX CULVERT DETAIL

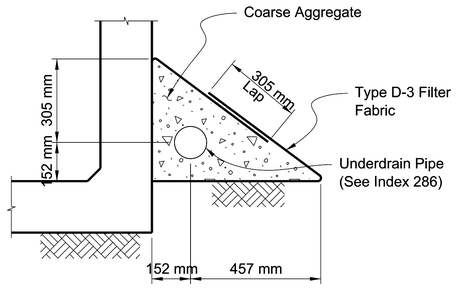
DRAWN BY: NRDOT	DATE: 8/23/2017
DESIGNED BY: NRDOT	DATE: 8/23/2017
REVISED: 4/10/2019	BY: Smlujan
$FILES$	

p:\\wls-pw.bentley.com:wls-pw\Documents\8100-TRN\Navajo DOT\17-100-090-14_NavDOT N5001(1) Toadlena Two Grey Hills\2_Disciplines_Sheets\3_Roadway\Sht 64 PC CBC Dtl 7 rev 082317

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	65	106

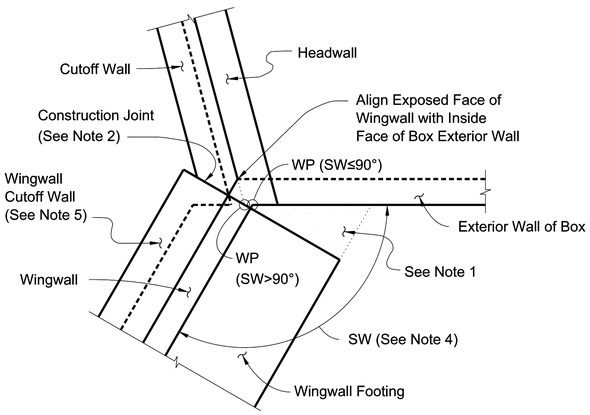


END ELEVATION
(Showing Constant Height And Variable Height Wingwalls)

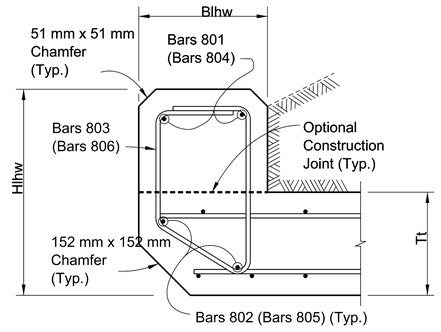


DETAIL "B"
UNDERDRAIN DETAIL
(Similar to Type II)

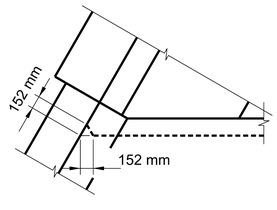
NOTES:
1. For small angles, the Contractor may elect to fill the area between the box and the wingwall footing with unreinforced concrete. For wingwall skew angles less then 90 degrees, field bend wingwall reinforcement as necessary while maintaining cover. No additional payment will be made for this work.
2. Location of Construction Joint determined by WP at theoretical intersection of:
   - Soil side face of Headwall and outside face of Box Exterior Wall, for SW≤90°;
   - Outside face of Wingwall and outside face of Box Exterior Wall, for SW>90°.
3. Provide 152 mm chamfer when angle 'A' is greater than 45°. Maintain minimum wall thickness. Field adjust reinforcing to maintain cover.
4. Wingwall Skew Angles (SW) are measured from the adjacent box exterior wall to the wingwall.
5. Turn or extend Wingwall Cutoff Wall as necessary to meet Box Cutoff Wall.
6. Provide additional reinforcement in the top of the top slab below traffic railings to ensure a minimum area of 0.80 sq. in./ft. transverse reinforcing.
7. See sheet 67 of 105 for referenced dimensions.



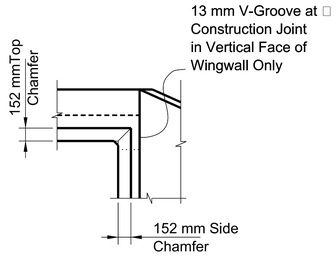
DETAIL "C" - PLAN VIEW
WINGWALL TO BOX CONNECTION
(Left Begin Corner Shown, Other Corners Similar)



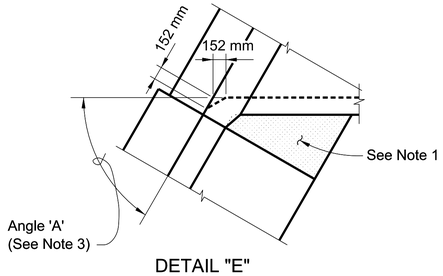
DETAIL "J"
LEFT HEADWALL SECTION
(Right Headwall similar)



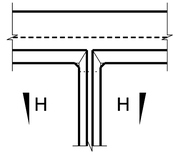
DETAIL "D"



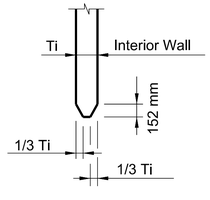
DETAIL "F"



DETAIL "E"



DETAIL "G"



SECTION H-H
Ti = 229 mm

CROSS REFERENCE:
See Sheet 59 for locations of Details "D", "E", "J" & "K".
See Sheet 60 for locations of Detail "C".

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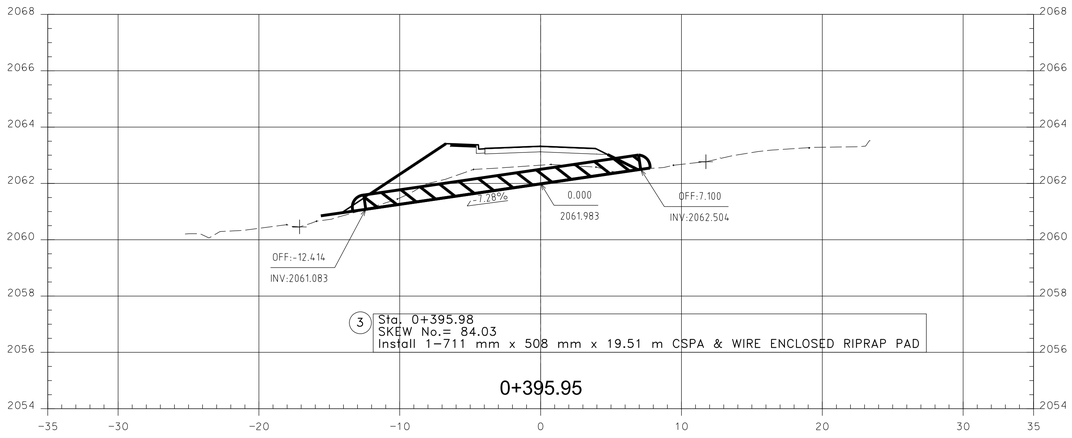
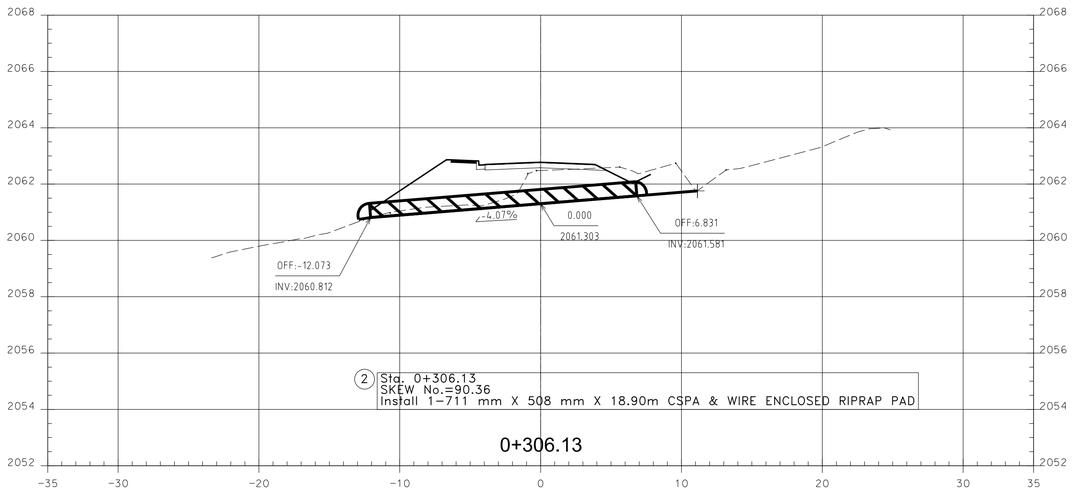
CUT OFF SECTION
CONCRETE BOX CULVERT DETAIL

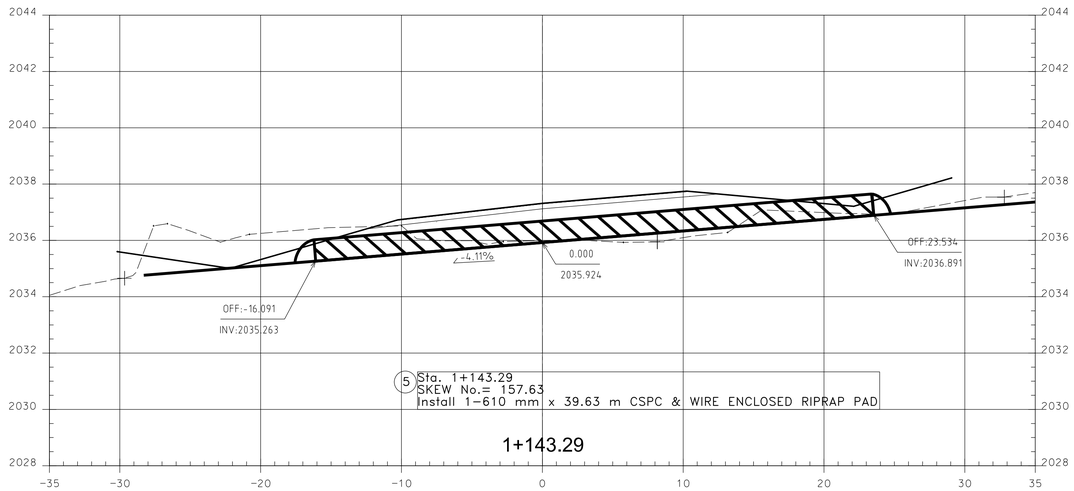
DRAWN BY: NRDOT	DATE: 8/23/2017
DESIGNED BY: NRDOT	DATE: 8/23/2017
REVISED: 4/10/2019	BY: Smlujan
$FILES$	

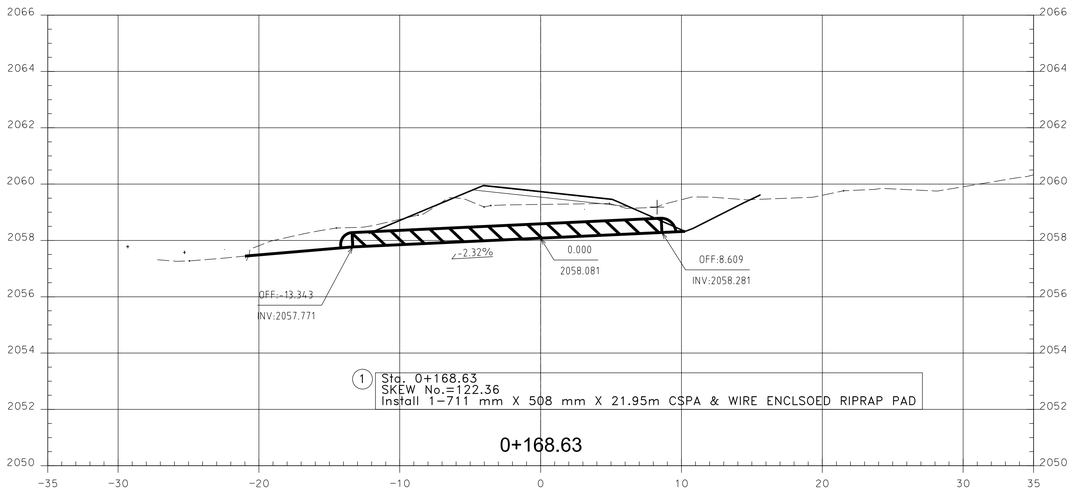
p:\\wls-pw.bentley.com:wls-pw\Documents\8100-TRN\Navajo DOT\17-100-090-14_NavDOT N5001(1) Toadlena Two Grey Hills\2_Disciplines_Sheets\3_Roadway\Sht 65 PC CBC Dtl 8 rev 082317

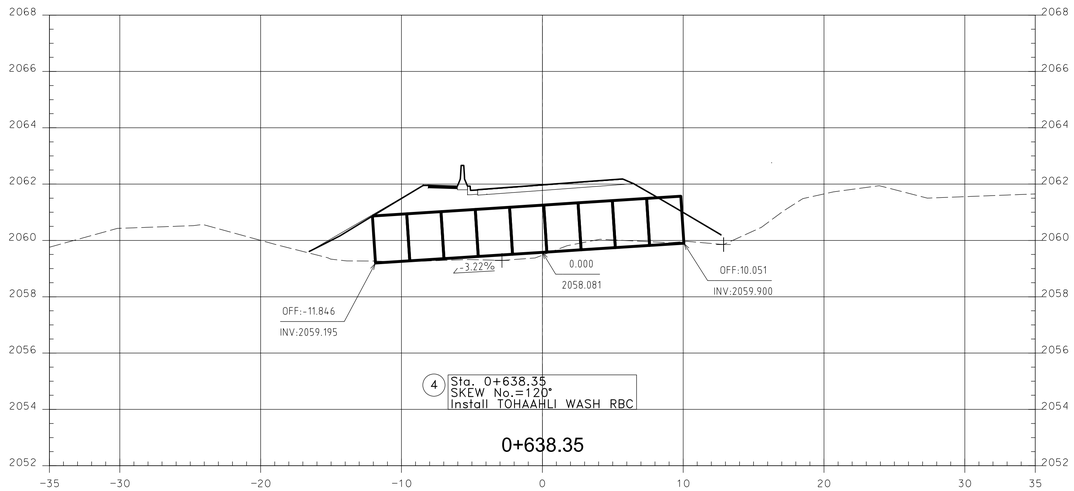
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	66	106











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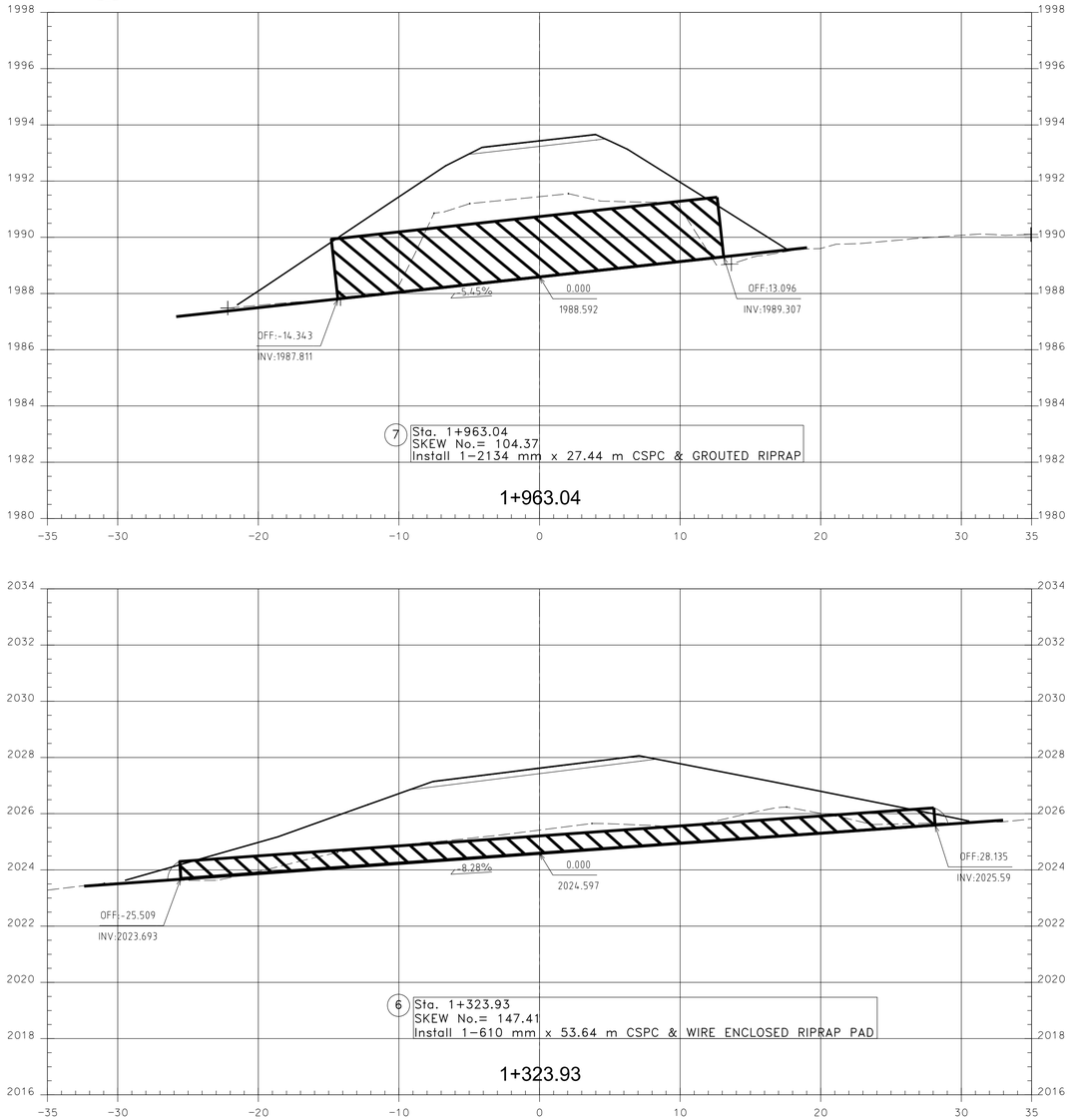
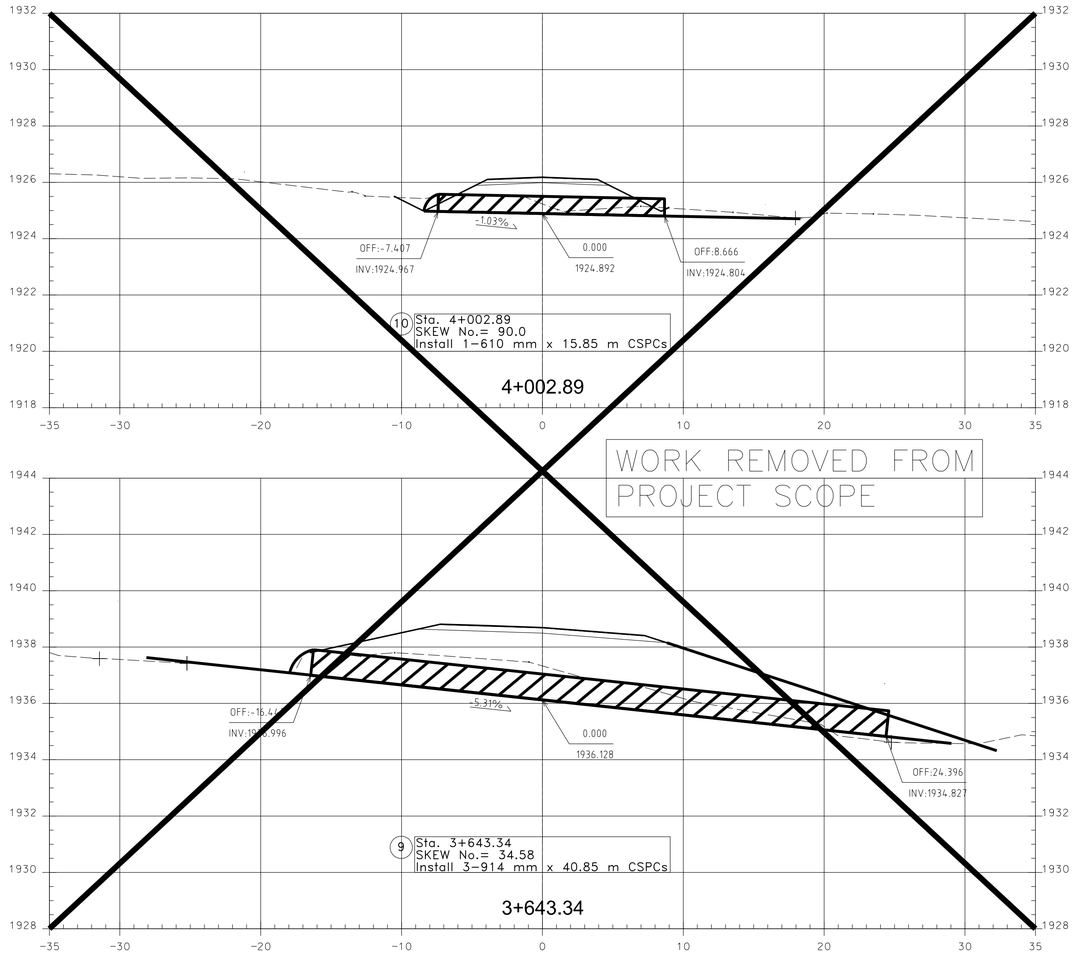
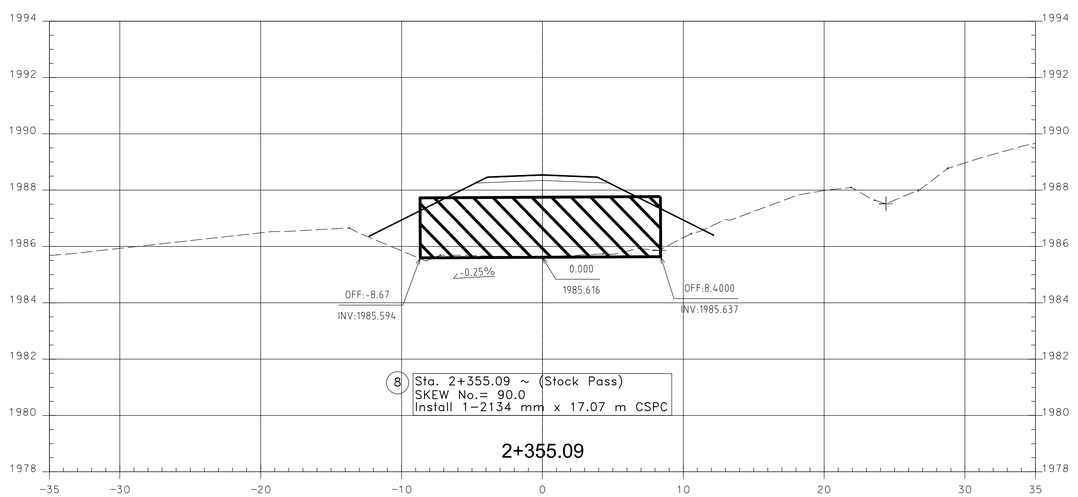
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	67	106

STEPHEN M. LUJAN
NEW MEXICO
26338
10/27/23
PROFESSIONAL ENGINEER





WORK REMOVED FROM PROJECT SCOPE



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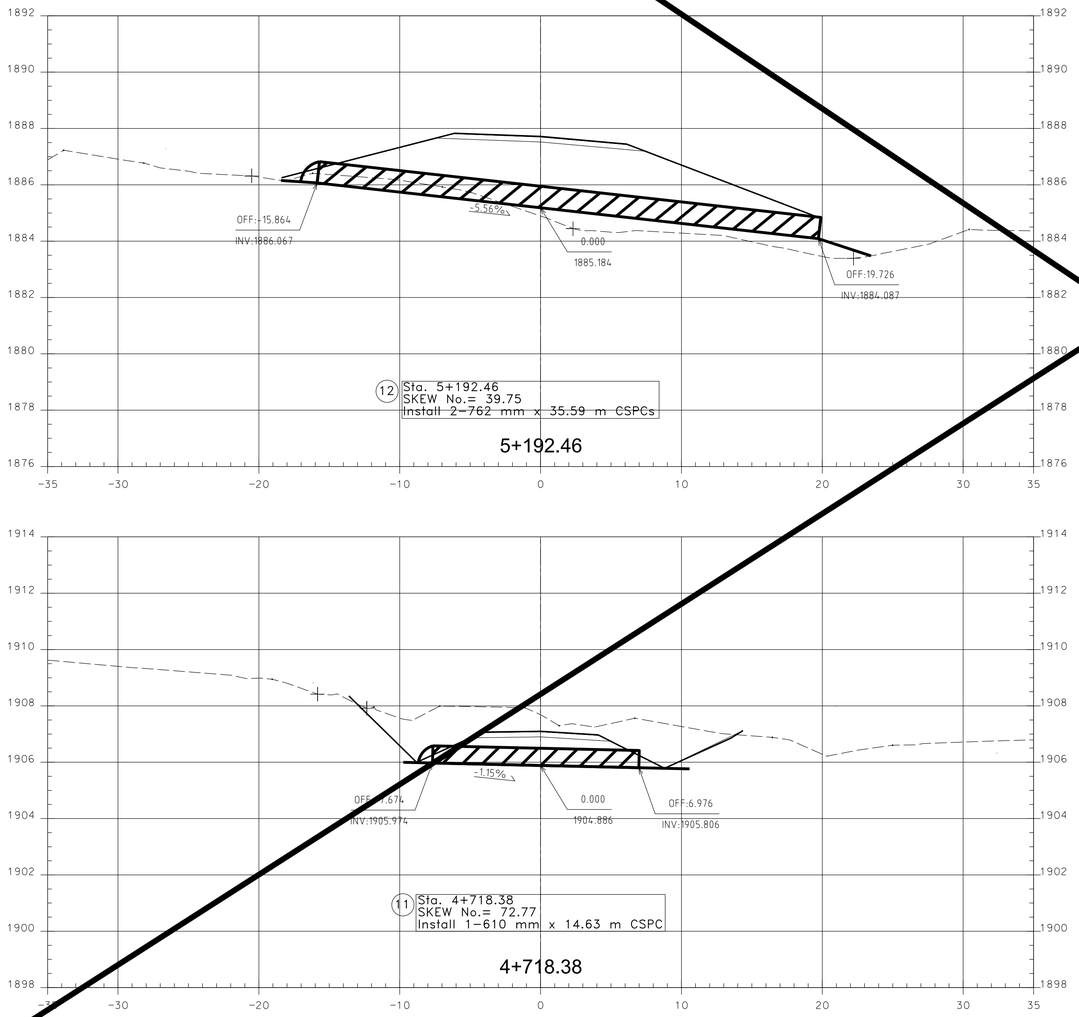
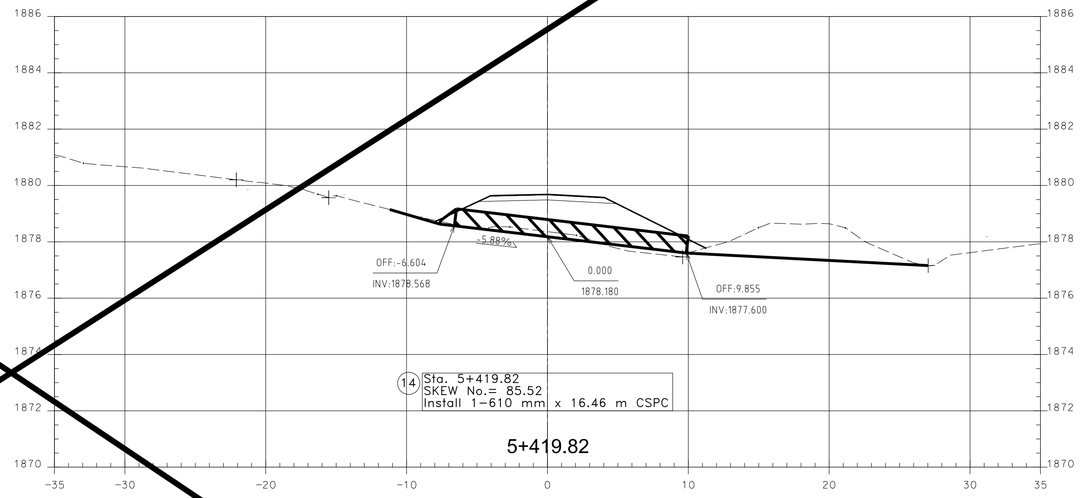
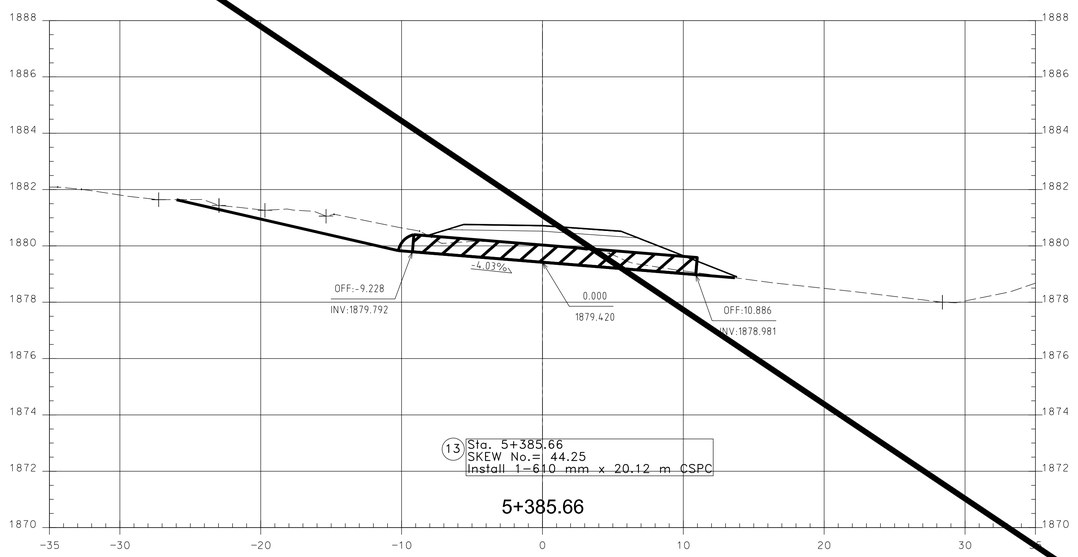
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	68	106

WORK REMOVED FROM PROJECT SCOPE







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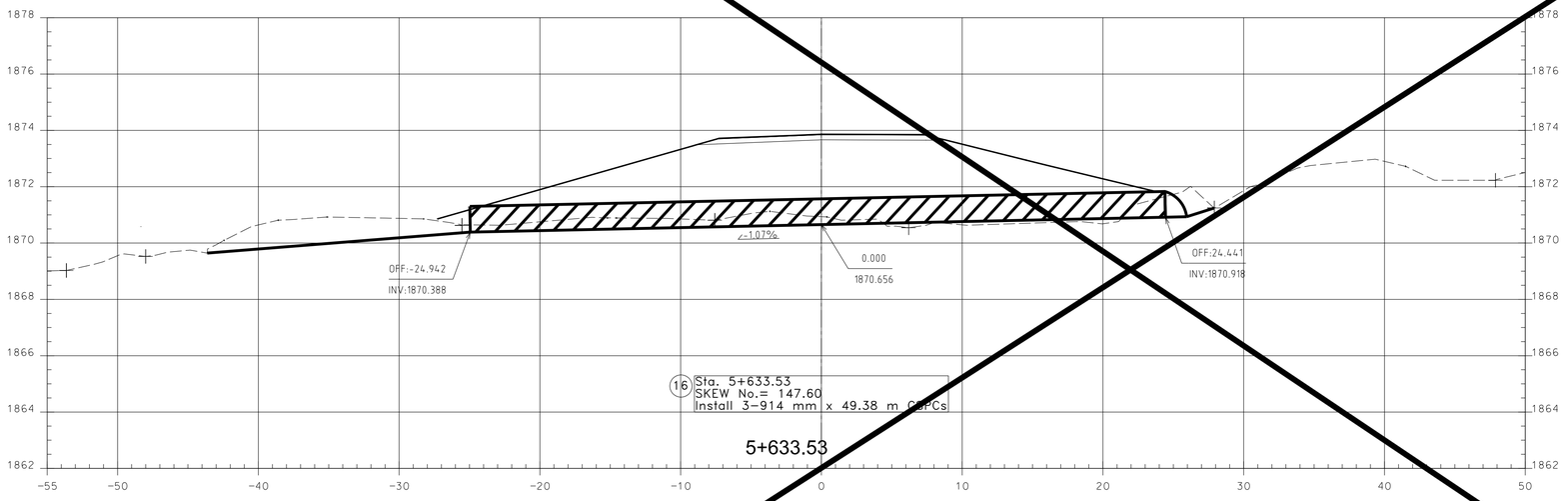
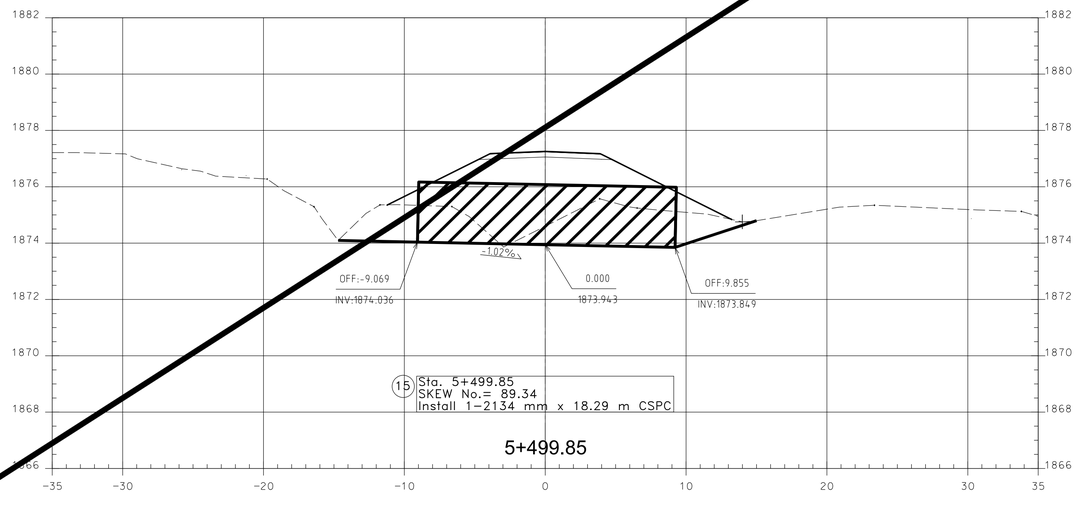
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	69	106

WORK REMOVED FROM PROJECT SCOPE





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REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	70	106

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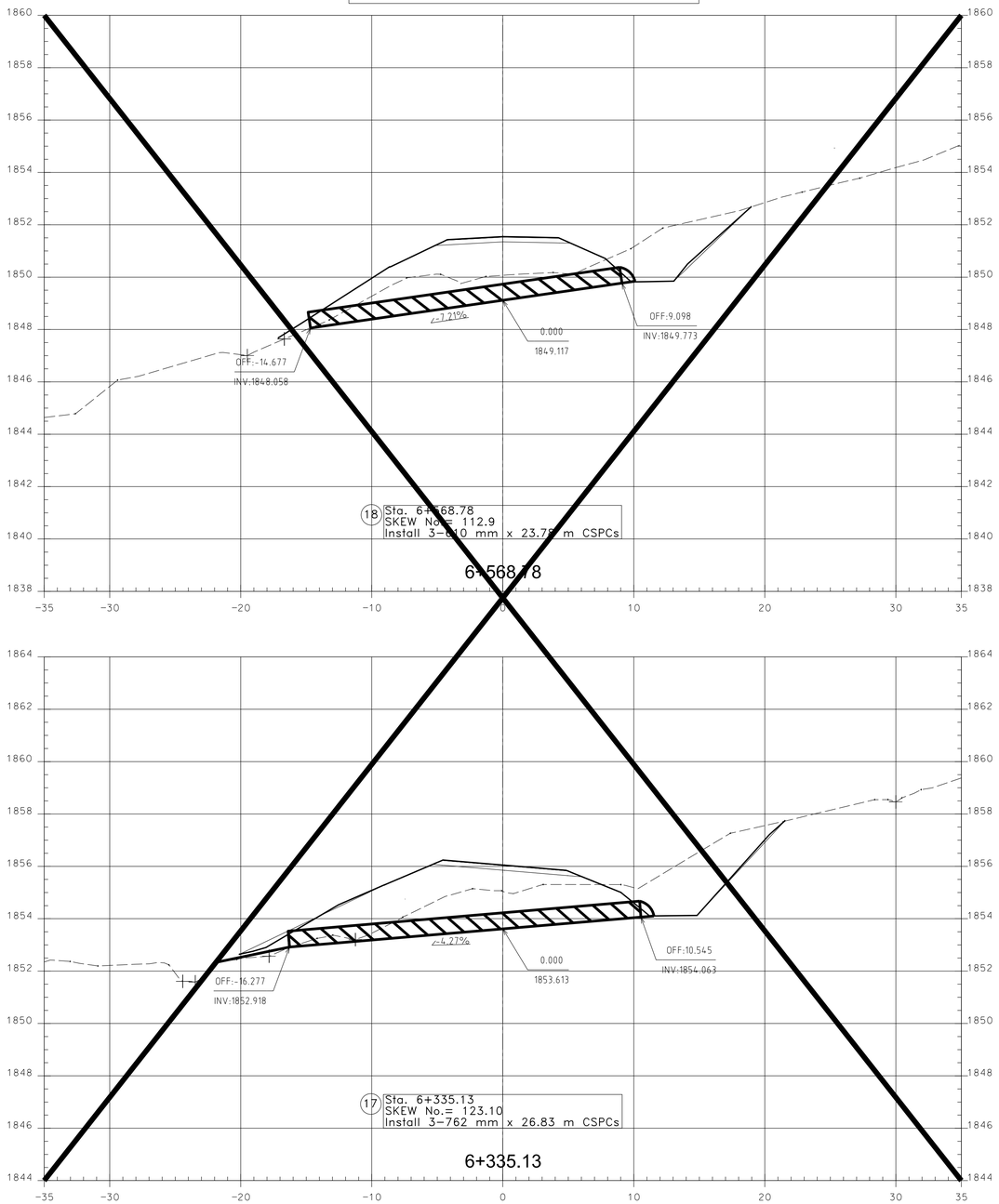

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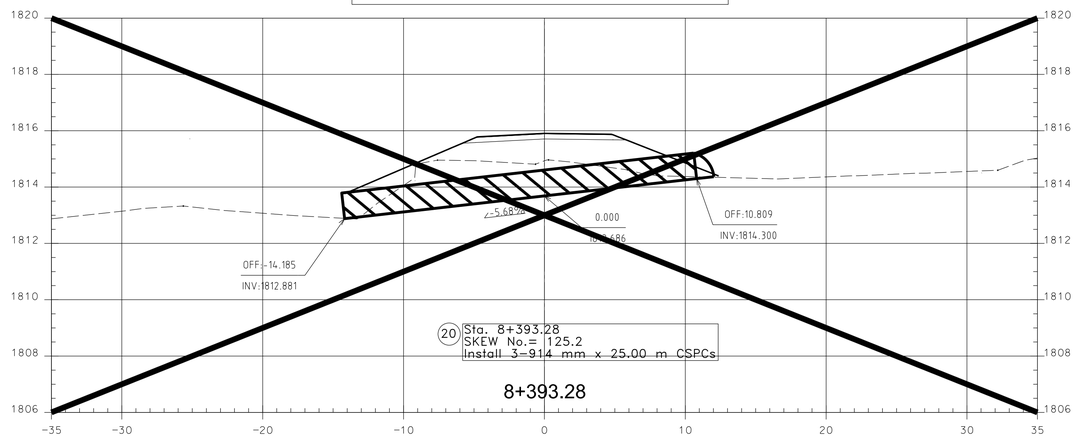

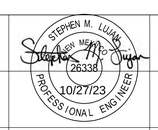

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REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	71	106

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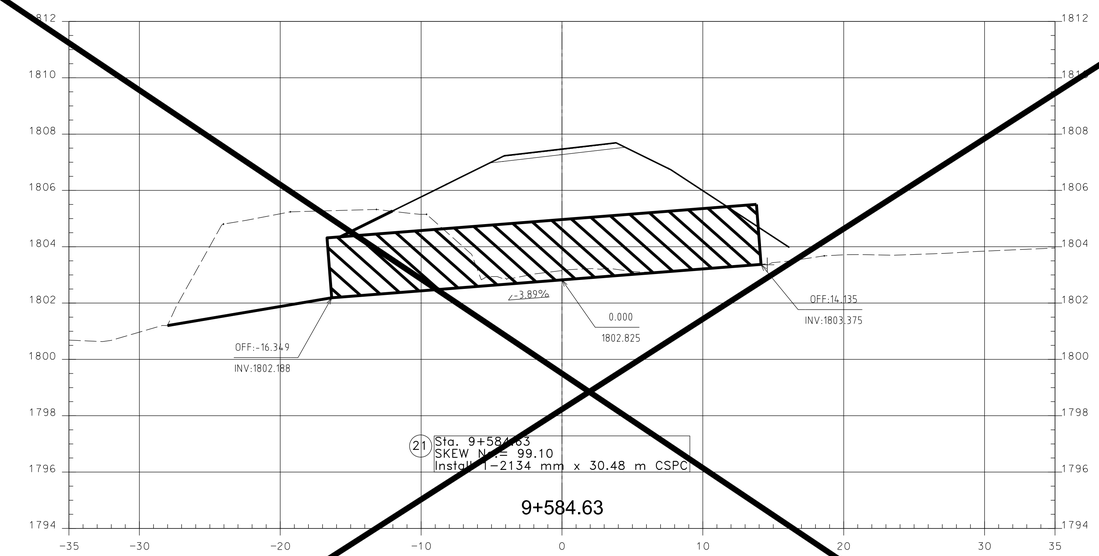

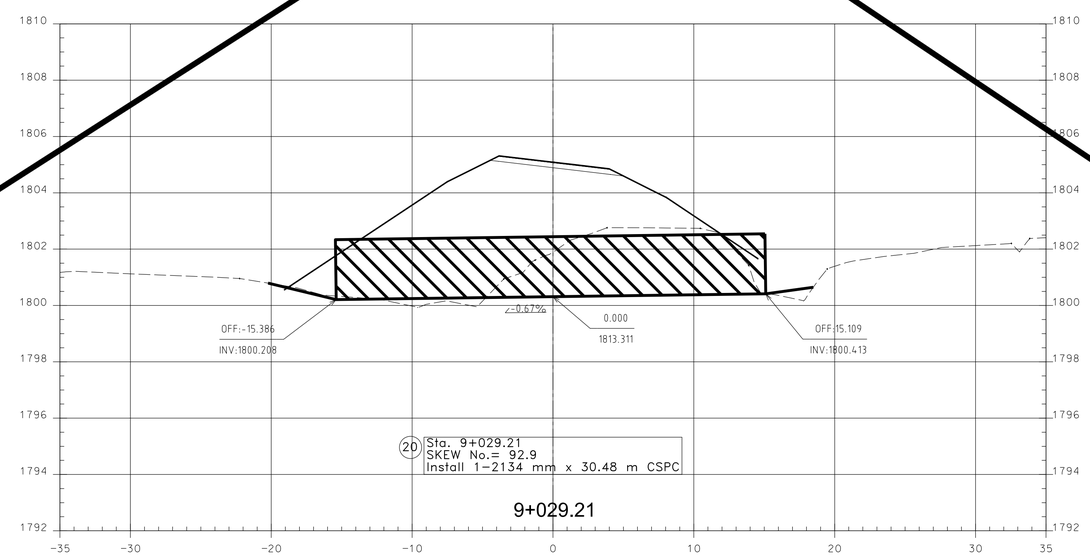

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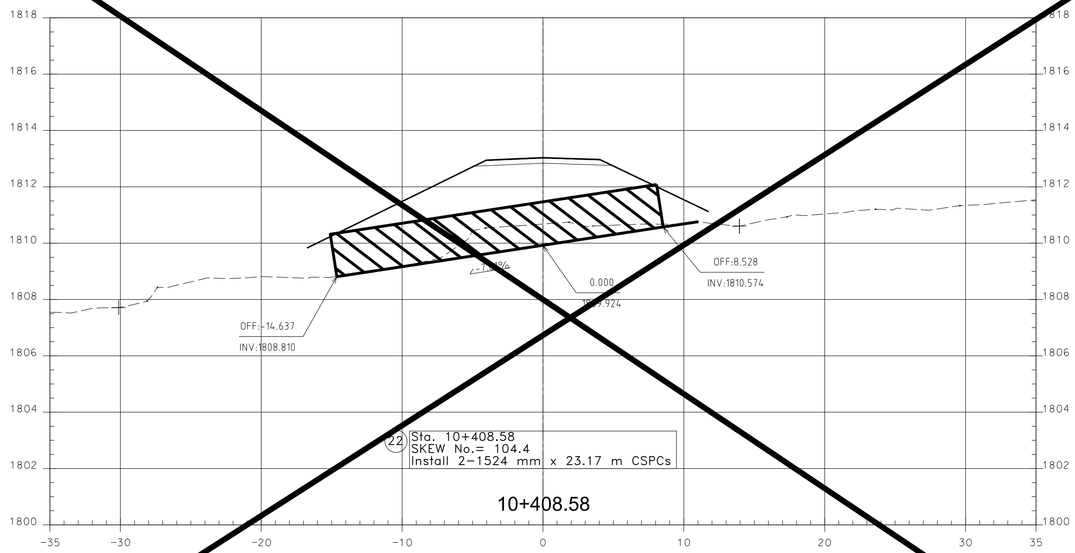
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	72	106

WORK REMOVED FROM
PROJECT SCOPE



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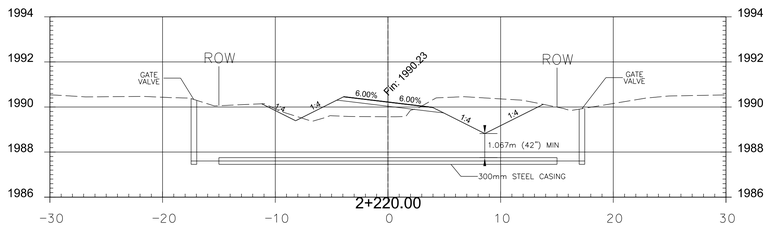
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	73	106

GENERAL NOTES

1. CONTRACTOR TO FIELD VERIFY AND LOCATE ALL UTILITIES.
2. CONTRACTOR TO DETERMINE IF ALL EXISITNG WATERLINE CROSSINGS UNDER N5001 ARE ENCASED IN STEEL CASINGS.
3. CONTRACTOR TO RELOCATE ALL EXISTING WATERLINE CROSSINGS AND ENCASE WITH STEEL CASINGS PER THE NUTA STANDARD DETAIL SHOWN ON THIS SHEET.
4. ALL PROPOSED WATERLINE, CASING, VALVE AND FITTING MATERIALS FOR THE CROSSINGS SHALL BE REVIEWED AND APPROVED BY THE NTUA BEFORE ORDERING.

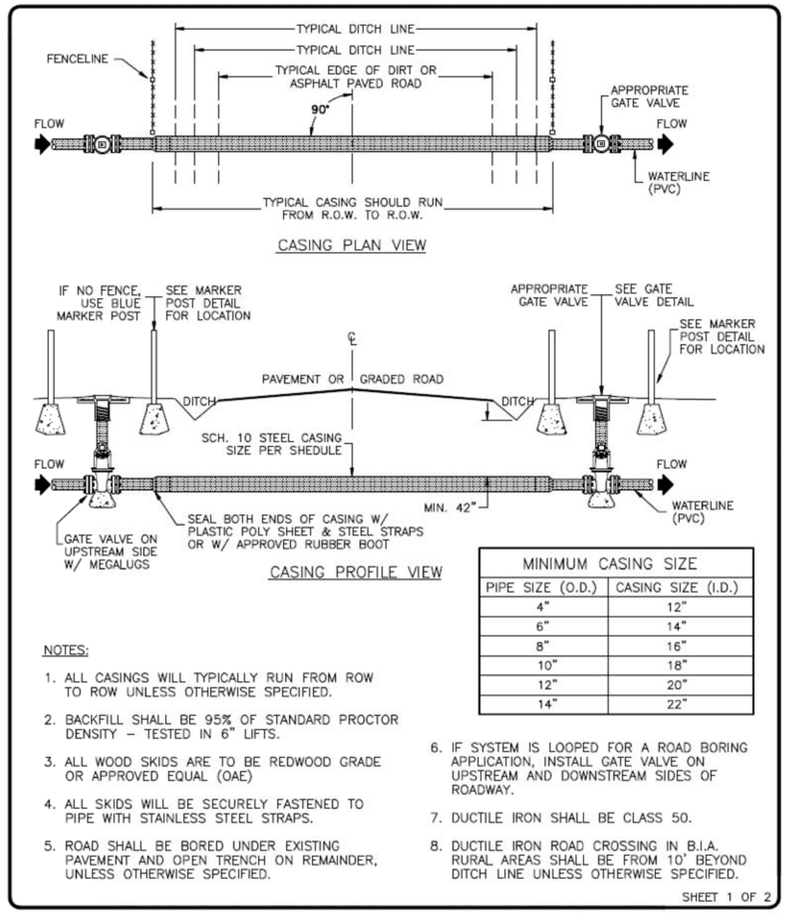
		*REMOVAL OF WATERLINE	ITEM No. 61102-1700 50mm WATERLINE, POLYVINYL CHLORIDE (PVC)**	ITEM No. 61102-2700 100mm WATERLINE, POLYVINYL CHLORIDE (PVC)**	ITEM No. 61103-1100 300mm ENCASEMENT PIPE, STEEL***	ITEM No. 61104-0600 VALVE, GATE, 50mm	ITEM No. 61104-0700 VALVE, GATE, 100mm	
EXISTING CROSSING STA AT CL	LOC	LENGTH (M)	LENGTH (M)	LENGTH (M)	LENGTH (M)	EACH	EACH	DESCRIPTION
N5001 UNIT I								
0+933.320	RT/LT	40.00	48.31		28.58	2.00		RELOCATE WATERLINE WITH CASING IF EXISTIING IS NOT CURRENLTY ENCASED. (RELOCATE SO NEW CROSSING IS PERPENDICULAR TO ROADWAY AT STA 0+940.00 IF RELOCATION IS NEEDED). INSTALL 50mm WATERLINE AS NEEDED TO MEET NTUA DETAILS FOR COVER. FINAL LOCATION/LIMITS TO BE VERIFIED IN THE FIELD.
1+797.357	RT/LT	90.00		127.23	40.00		2.00	RELOCATE WATERLINE WITH CASING IF EXISTING IS NOT CURRENLTY ENCASED. (RELOCATE SO CROSSING IS PERPENDICULAR TO ROADWAY AT STA 1+780.00 IF RELOCATION IS NEEDED). INSTALL 100mm WATERLINE AS NEEDED TO MEET NTUA DETAILS FOR COVER. FINAL LOCATION/LIMITS TO BE VERIFIED IN THE FIELD.
2+216.670	RT/LT	40.00	44.47		30.00	2.00		RELOCATE WITH STEEL CASING. RELOCATE SO THAT CROSSING IS PERPENDICULAR TO ROADWAY AT STA 2+220.00. INSTALL 50mm WATERLINE AS NEEDED TO MEET NTUA DETAILS FOR COVER. FINAL LOCATION/LIMITS TO BE VERIFIED IN THE FIELD.
UNIT I SUBTOTAL		170.00	92.78	127.23	98.58	4.00	2.00	
UNIT I USE		**170.00**	**100.00**	**130.00**	**100.00**	**4.00**	**2.00**	

*NOTE: FOR INFORMATION ONLY. REMOVAL OF EXISTING WATERLINE MATERIAL SHALL BE PAID FOR IN 20304-1000 REMOVAL OF STRUCTURES AND OBSTRUCTIONS. LENGTHS TO BE VERIFIED IN THE FIELD.
**NOTE: CONTRACTOR SHALL INSTALL 2 GATE VALVES AS CALLED FOR ON NTUA DETAILS THIS SHEET. ALL NECESSARY PIPE BENDS, RESTRAINTS, CONCRETE THRUST BLOCKS AND ALL ITEMS FOR A COMPLETE RELOCATION SHALL BE CONSIDERED INCIDENTAL TO THE WATERLINE BID ITEM.



NOTE:

THIS DETAIL IS IN CUSTOMARY UNITS.



MINIMUM CASING SIZE	
PIPE SIZE (O.D.)	CASING SIZE (I.D.)
4"	12"
6"	14"
8"	16"
10"	18"
12"	20"
14"	22"

NOTES:

1. ALL CASINGS WILL TYPICALLY RUN FROM ROW TO ROW UNLESS OTHERWISE SPECIFIED.
2. BACKFILL SHALL BE 95% OF STANDARD PROCTOR DENSITY – TESTED IN 6" LIFTS.
3. ALL WOOD SKIDS ARE TO BE REDWOOD GRADE OR APPROVED EQUAL (OAE)
4. ALL SKIDS WILL BE SECURELY FASTENED TO PIPE WITH STAINLESS STEEL STRAPS.
5. ROAD SHALL BE BORED UNDER EXISTING PAVEMENT AND OPEN TRENCH ON REMAINDER, UNLESS OTHERWISE SPECIFIED.
6. IF SYSTEM IS LOOPED FOR A ROAD BORING APPLICATION, INSTALL GATE VALVE ON UPSTREAM AND DOWNSTREAM SIDES OF ROADWAY.
7. DUCTILE IRON SHALL BE CLASS 50.
8. DUCTILE IRON ROAD CROSSING IN B.I.A. RURAL AREAS SHALL BE FROM 10' BEYOND DITCH LINE UNLESS OTHERWISE SPECIFIED.

SHEET 1 OF 2

DESIGNED BY:	NTUA
SURVEYED BY:	
DRAWN BY:	NTUA
APPROVED BY:	NTUA
DATE:	04/08
PROJECT NO.	
SCALE:	NTS
ACAD FILENAME:	Water Standard
DWG. NO.	WS-17a.DWG

NAVAJO TRIBAL UTILITY AUTHORITY
P.O. BOX, FORT DEFIANCE, AZ

TYPICAL ROAD CROSSING FOR NTUA WATERLINES

RE-ENGINEERING — FT. DEFIANCE, AZ

REVISIONS			
No.	Date	Brief	By
01	04/08	Revised	L.H.
02			
03			
04			
05			
06			

NAVAJO DIVISION OF TRANSPORTATION

NTUA WATERLINE
RELOCATION & CASING DETIALS

DRAWN BY: WCI	DATE: 10/23
DESIGNED BY: SML	DATE: 10/23
REVISED: --/--	BY: DESIGN 1
sht 73 WATERLINE DETAIL	

STEPHEN M. LUJAN — NEW MEXICO — 26338 — 09/04/24 — PROFESSIONAL ENGINEER

NAVAJO D.O.T

sht 73 WATERLINE DETAIL 7/2/2024 3:29:50 PM

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	74	106

INDEX OF SHEETS:

BRIDGE AND ROADWAY ESTIMATED QUANTITIES

ITEM	DESCRIPTION	QUANTITY	UNIT	AS BUILT
20801-0000	Structure Excavation	24	m^3	
20803-0000	Structure Backfill	70	m^3	
25112-2000	Wire Enclosed Riprap Class 1	355	m^3	
55101-1800	Steel H-Pile, 360x108, In Place	110	m	
55115-1000	Preboring	85	m	
55120-0000	Test Piles	25	m	
55201-0200	Structural Concrete Class A(AE)	157	m^3	
55301-0100	Precast Prestressed Concrete Structural Members, Type III, (17.525 m)	8	ea.	
55401-1000	Reinforcing Steel	4061	kg.	
55401-2000	Reinforcing Steel, epoxy coated	12816	kg.	
55601-0900	Bridge Railing, Steel	79	m	
56302-2000	Painting HP 360 x 108 Steel Piles	38	m^2	
63308-3000	Object Markers, Type 3 w/ 1 Post and Hardware: 2.98 kg/m	4	ea.	

ITEM 63308-3000 TYPE 3 OBJECT MARKER

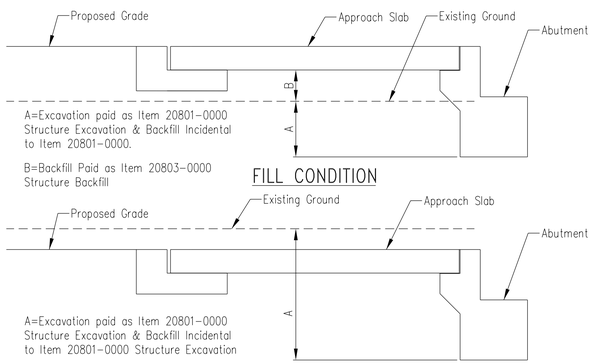
STATION	LOCATION	QTY.
7+911.0	Rt.	1
7+911.0	Lt.	1
7+951.5	Rt.	1
7+951.5	Lt.	1
	TOTAL	4

ITEM 55120-0000 TEST PILES

LOCATION	QTY.
ABUT. 1	7 m
PIER	9 m
ABUT. 2	9 m
TOTAL	25 m

ITEM 20801-0000-STRUCTURE EXCAVATION
ITEM 20803-0000-STRUCTURE BACKFILL

LOCATION	EXCAVATION	BACK FILL
ABUT. 1	0 m^3	35 m^3
ABUT. 2	24 m^3	35 m^3
TOTAL	24 m^3	70 m^3



STRUCTURE EXCAVATION & BACKFILL DETAIL

Item 20801-0000 – Structure Excavation
Item 20803-0000 – Structure Backfill
Not to Scale

BRIDGE GENERAL NOTES

1. SPECIFICATIONS: Design; AASHTO LRFD Bridge Design Specifications, 9th Ed. 2020 and all supplemental specifications. Construction: Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-14 and all Supplemental Specifications.

2. UNITS: This project has been designed and shown 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; MS 18 plus impact. Impact = 15/L+38 where L = span length in meters. Maximum Impact factor = 0.30.

4. RATINGS: Inventory Rating = MS 36.0 Operating Rating = MS 58.9

5. DESIGN & CONSTRUCTION: Superstructure designed using AASHTO Load Factor Design (LFD) and substructure (including Bearings) using Service Design. Material strengths are F'c = 27.6 MPa for reinforced concrete, Fy = 413.7 MPa for reinforcing steel and Fy = 248.2 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. The beams are "fixed" to the abutments, but the abutment piles are free to flex, in order to take any temperature movement

6. CONCRETE: Concrete in precast, prestressed concrete AASHTO Type III beams 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. All concrete cast on, or below grade shall contain Type II cement. The contractor may also use concrete with Type II cement elsewhere at no extra cost to the BIA. Chamfer exposed corners of all concrete 19 mm unless otherwise shown. The discharge time limits specified in the FP-14, Table 552-4 shall apply. If concrete cannot 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 alternate methods shall be based on review of historical data for identical strength concrete placed at similarly remote locations. Historical data shall indicate conformance to 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 300 mm below the ground line, edges and bottom of bridge deck overhang and exterior faces of exterior beams shall be given a Class 2 rubbed finish as specified in Section 552.16 of the FP-14, (b). All other surfaces of concrete including interior beams and interior faces of exterior beams shall be given a Class 1 ordinary finish.

7. REINFORCING STEEL: All plain reinforcing steel shall conform to AASHTO M31M, Grade 420, and epoxy coated reinforcing shall conform to AASHTO M284M & M31M Grade 420. All reinforcement in the approach slabs, 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 AO. 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 15.2 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 fabrication of the prestressed beams shall be considered incidental to Item 55301-0100, Precast, Prestressed Concrete Structural Members, AASHTO Type III. Elastomeric bearing pads shall conform to AASHTO M251M and shall be 60 Durometer hardness. Exterior faces of exterior beams shall be given a Class 2 rubbed finish. All other surfaces of beams (interior and exterior) shall be given a Class 1 ordinary finish.

10. STRUCTURAL STEEL: Structural steel for expansion joint rails and guard angles shall conform to AASHTO M270M, Grade 250. 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 HP 360x108 with reinforced heavy duty pile tips. Pile shall conform to AASHTO M270M, Grade 250. Piles shall be driven utilizing the dynamic formula given in Section 551.08 (b) of the FP-14. The ultimate pile capacity (Ru) shall be the Applied Structural Load multiplied by a factor of safety of 3. Piles shall be driven to the minimum tip elevation indicated for lateral load stability and to penetrate unsuitable strata or below, to gain the required ultimate capacity (Ru). 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 for 3.000m from underside of the abutment cap with an oversized hole with a diameter of 533mm. Backfill top 3.000m with Select Granular Backfill. (FP-14 Section 704.08). Backfill shall NOT contain cement for top 3.000 m at abutments only. Any additional preboring below 3.000m at the abutments or any preboring at any elevation for the pier shall be in accordance with Section 551.09 of the FP-14. All preboring and backfilling shall be paid for under item 55115-1000, Preboring. This bridge project includes test piles. See Supplemental Specifications, Sect. 551 for IMPORTANT details, 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 filling the Structure Excavation back up to natural ground is considered incidental to Item 20801-0000, Structure Excavation as per the Special Specifications for this project, Section 208.13. Structure Backfill placed above this 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 and stockpile all existing salvageable material, as indicated by the A.O.T.R. and as called for on these plans under Item 20304-1000 and Item 60701-1000, where applicable. Salvageable material shall be transported by the contractor to the Shiprock Agency maintenance yard and stockplied. Any existing materials determined to be unsalvageable by the A.O.T.R. shall be disposed of by the contractor in accordance with Sections 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 accomodate new construction. All work involving salvageable material shall be included in the appropriate unit price for Item 20304-1000 and Item 60701-1000, as applicable.

CAPACITY RATING

LFR RATINGS	
INVENTORY RATING	MS 36.0
OPERATING RATING	MS 58.9

LRFR RATING FACTORS	
INVENTORY – LEVEL	2.028
OPERATING – LEVEL	2.629

These Ratings were computed by the Load Factor Rating (LRF) and Load and Resistance Factor Rating (LRFR) Methods using the AASHTOWARE Bridge Rating Program Version 7.2.0.3001

TOM W. MELTON NEW MEXICO 20554 10/27/2022 PROFESSIONAL ENGINEER

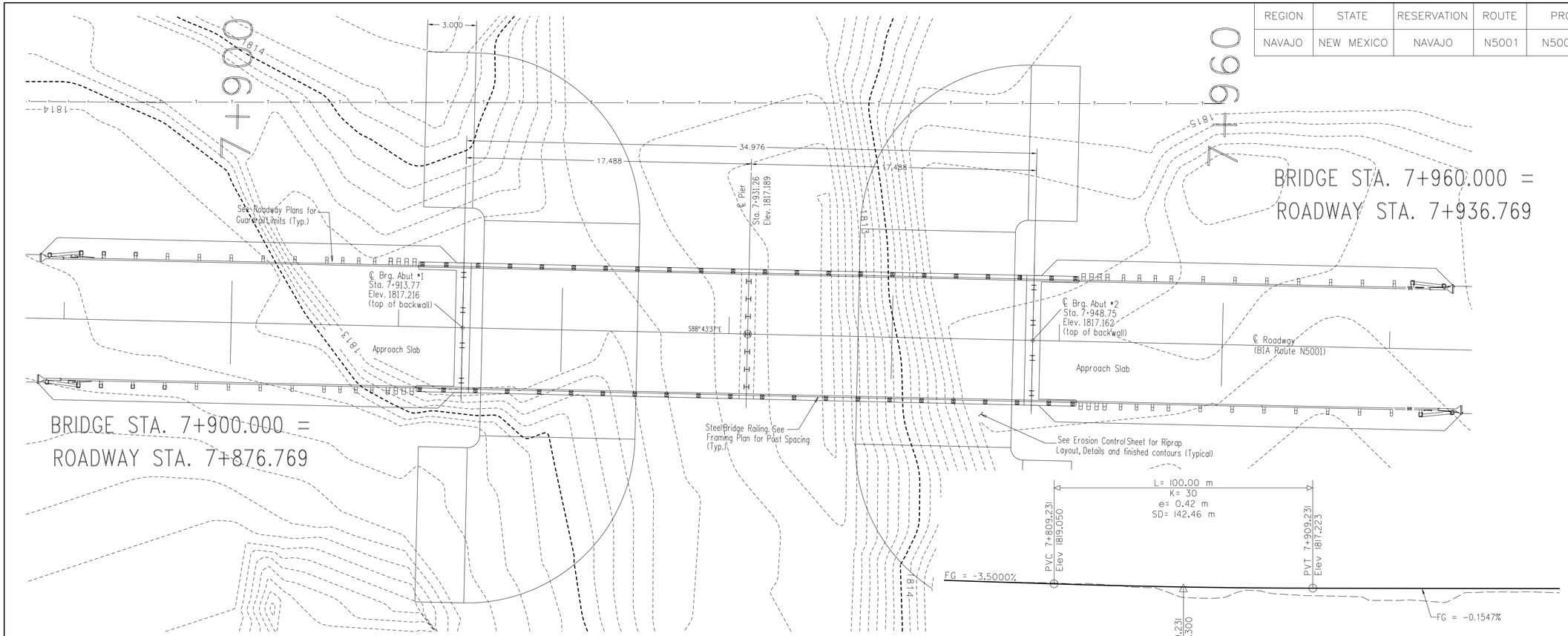
NAVAJO DIVISION OF TRANSPORTATION

GENERAL NOTES, QUANTITIES AND TABLES

DRAWN BY: NRDOT DATE: 6/14/2016
DESIGNED BY: NRDOT DATE: 6/14/2016
REVISED: 10/31/2024 BY: KRH
sht 74 N214_Gennotes_&_Qtity.dgn

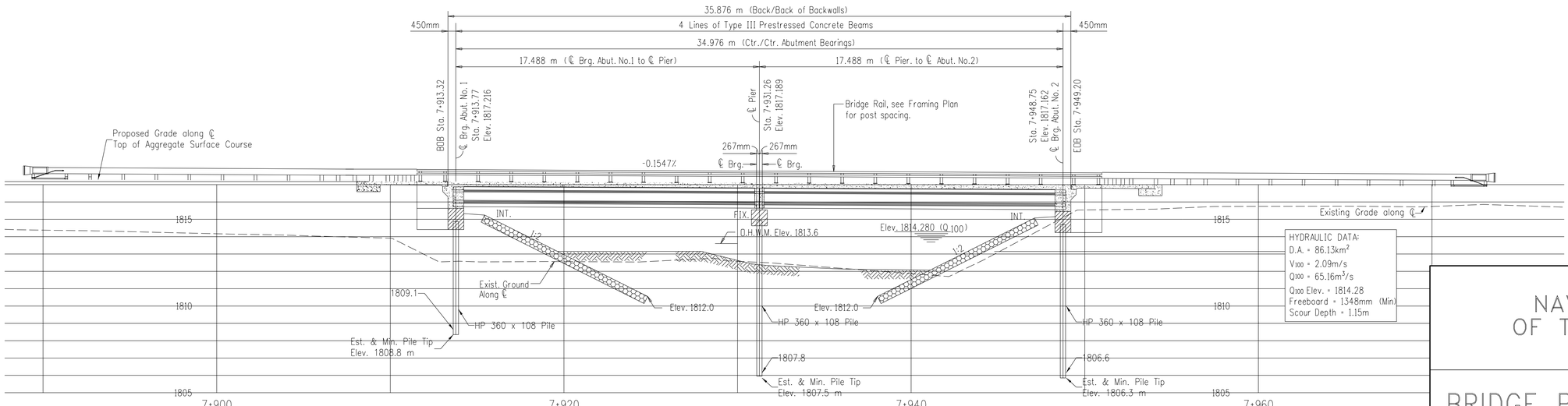
NAVAJO D.O.T

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	75	106



STRUCTURE LOCATION PLAN

PROFILE GRADE



STRUCTURE SECTION ALONG ℄ ROADWAY

TOM W. MELTON
NEW MEXICO
20554
10/27/2023
PROFESSIONAL ENGINEER

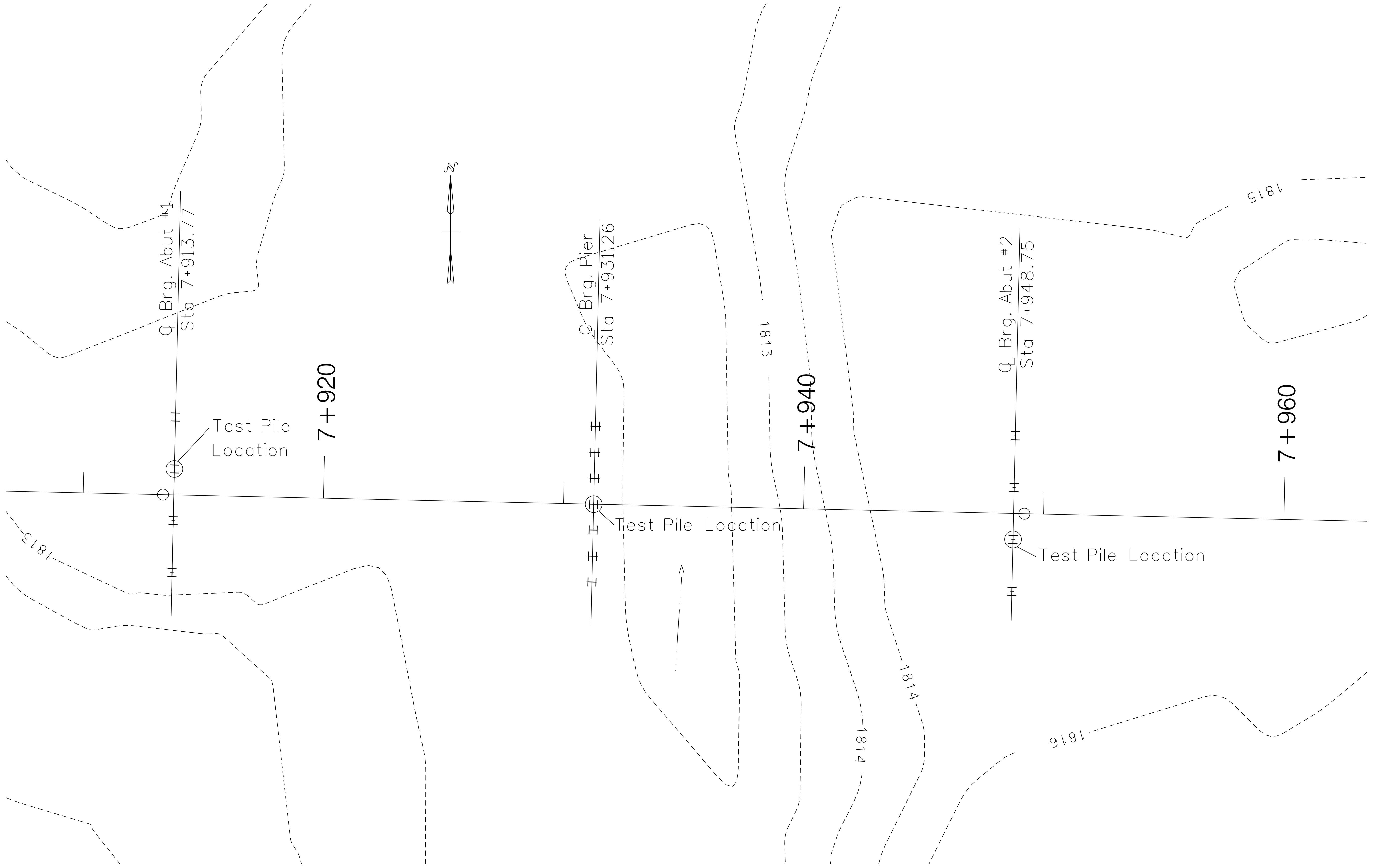
NAVAJO DIVISION OF TRANSPORTATION

BRIDGE PLAN AND PROFILE

DRAWN BY: NRDOT	DATE: 6/13/2016
DESIGNED BY: NRDOT	DATE: 6/13/2016
REVISED: 7/12/2023	BY: KRH
sht 75 N214_Struloc.dgn	

NAVAJO D.O.T

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	76	106



FOUNDATION INFORMATION			
	ABUTMENT NO. 1	PIER	ABUTMENT NO. 2
PILE TYPE:	HP360 x 108	HP360 x 108	HP360 x 108
NUMBER OF PILES:	4	7	4
APPLIED STRUCTURAL LOAD/PILE:	899 kN	600 kN	899 kN
RU/PILE:	1189 kN	1189 kN	1189 kN
MINIMUM PILE TIP ELEVATION:	1808.8 m	1807.5 m	1806.3 m
ESTIMATED PILE TIP ELEVATION:	1808.8 m	1807.5 m	1806.3 m
ESTIMATED PREBORE ELEVATION:	1809.1 m	1807.8 m	1806.6 m

BORING LOCATION PLAN

Not to Scale

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 (50r 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 50f 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 (50r 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 diatomacecous 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: Borings and Soundings Shown Were Amec Foster Wheeler Project No. 17-2017-4057. Geotechnal Report combleted by Western Technologies, Inc. Job No. 312JC100.

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
S = Shelby Tube
B = Bulk Sample
C = Core Run
SPT - Standard Penetration Test
Driving Weight: 140 lbs. (63.5 kg)

SAMPLE TYPE: G = Grab Sample
R = Ring Sample (2.40 in. I.D.)
N = Split Spoon Sampler

TOM W. MELTON NEW MEXICO 20554 10/27/2023 PROFESSIONAL ENGINEER

NAVAJO DIVISION OF TRANSPORTATION

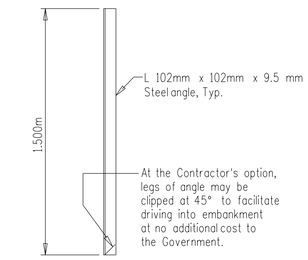
FOUNDATION PLAN & BORE HOLE LOCATION PLAN

Designed by: Western Tech, Inc.
Drawn by: TAY, NDA, rsh DATE: 11/23/15
Check by: KRH DATE: 4/2/2019
File Name: 3_B2_N214_Boring_Plan

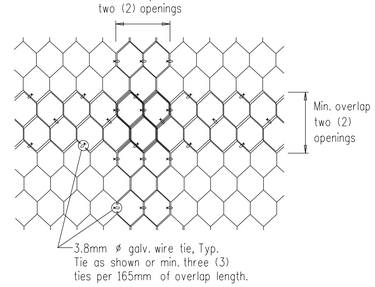
NAVAJO D.O.T

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	77	106

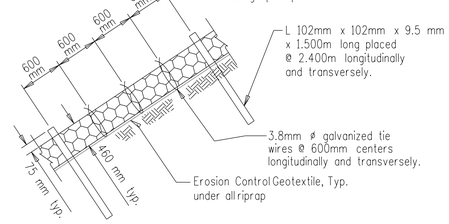
RIPRAP LAYOUT PLAN



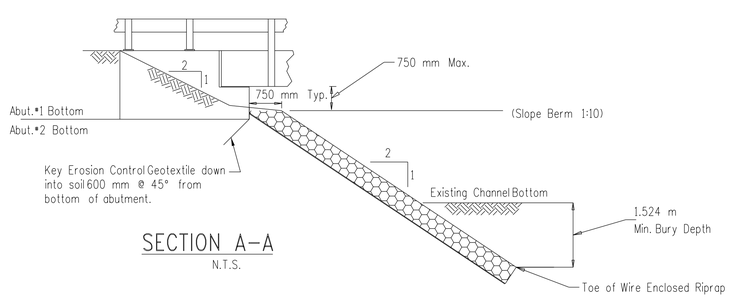
STEEL ANCHOR DETAIL
N.T.S.



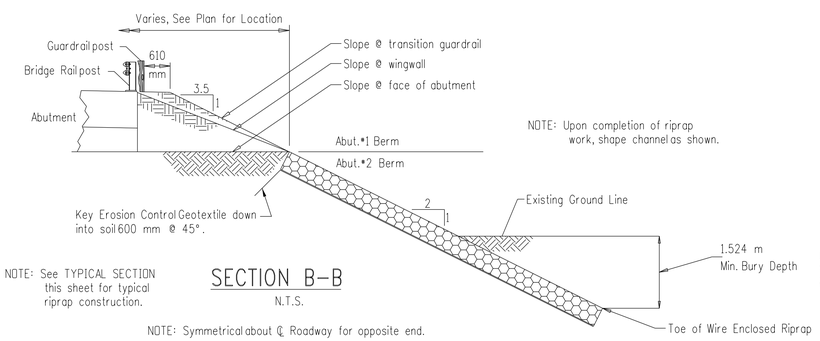
FABRIC SPLICING DETAIL
N.T.S.



TYPICAL SECTION
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.

ITEM 25112-2000 – WIRE ENCLOSED RIPRAP, CLASS 1

ITEM	AREA (m^2)	DEPTH (m)	VOLUME (m^3)
ABUTMENT #1	385.228	0.460	177.205
ABUTMENT #2	385.228	0.460	177.205
TOTALS			354.41

STEPHEN M. LUJAN
NEW MEXICO
26338
10/27/23
PROFESSIONAL ENGINEER

NAVAJO DIVISION OF TRANSPORTATION

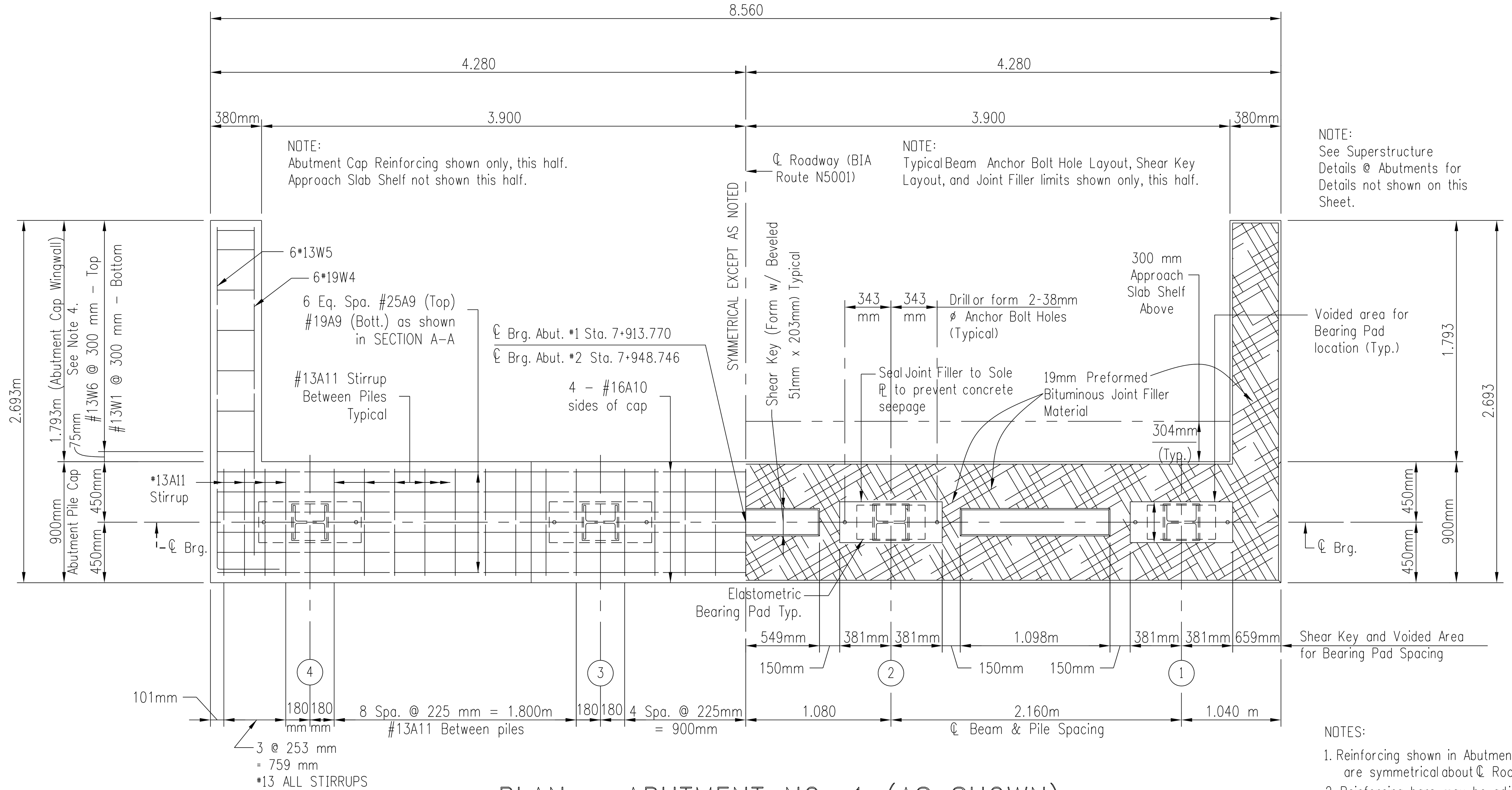
EROSION CONTROL PLAN

Designed by: HRC
Drawn by: TAY, rsh Date: 06/13/16
Checked by: KRH Date: 4/2/2019
File Name: 4_B2_N214-EROSION

NAVAJO D.O.T

c:\users\vmujer\appdata\local\bentley\projectwise\ws\...projects\d0354817\pm 77 N214_Erosion_2016-06-14.dgn

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	78	106

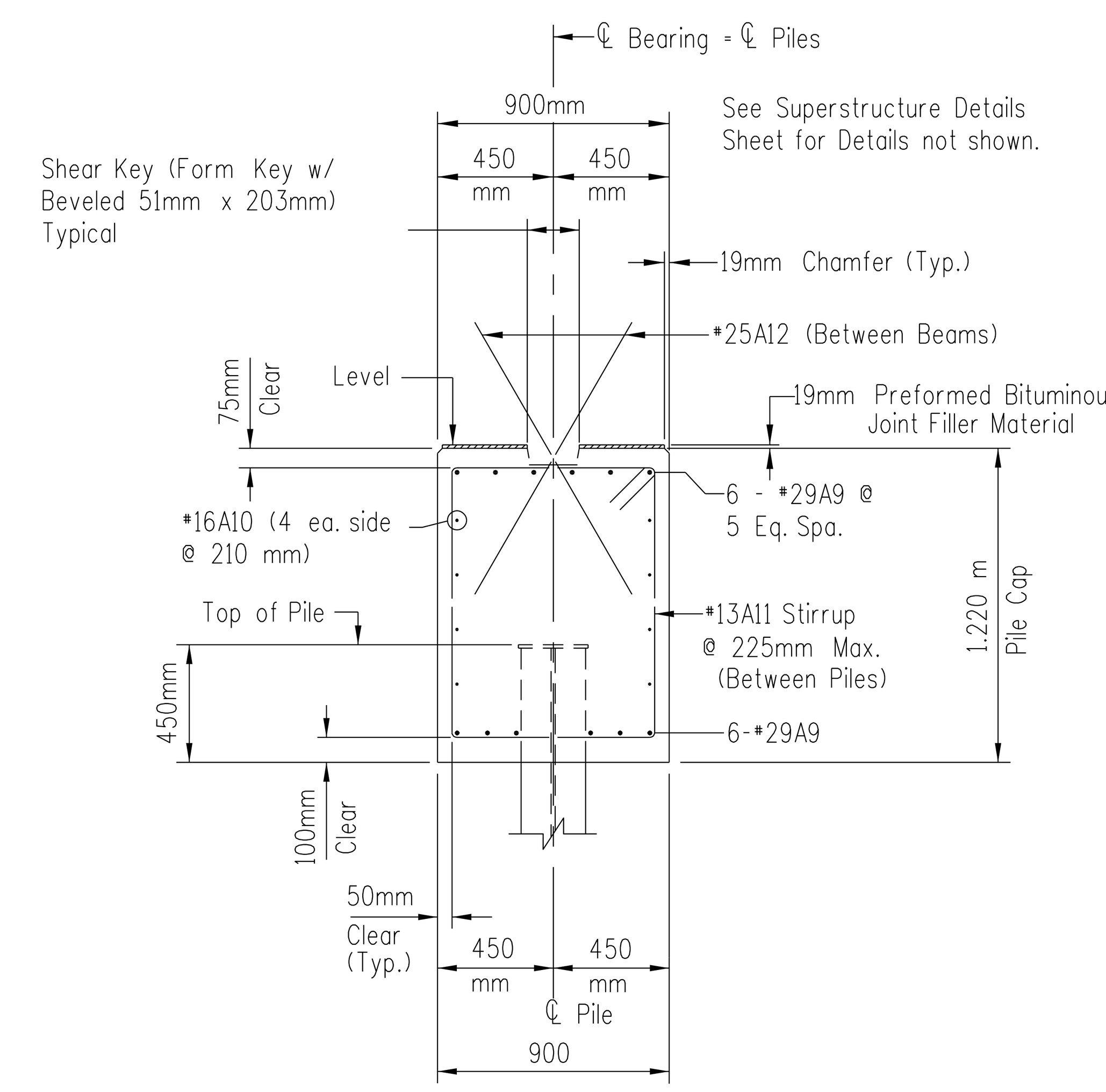


PLAN - ABUTMENT NO. 1 (AS SHOWN)
PLAN - ABUTMENT NO. 2 (OPP. HAND)

Scale: NTS

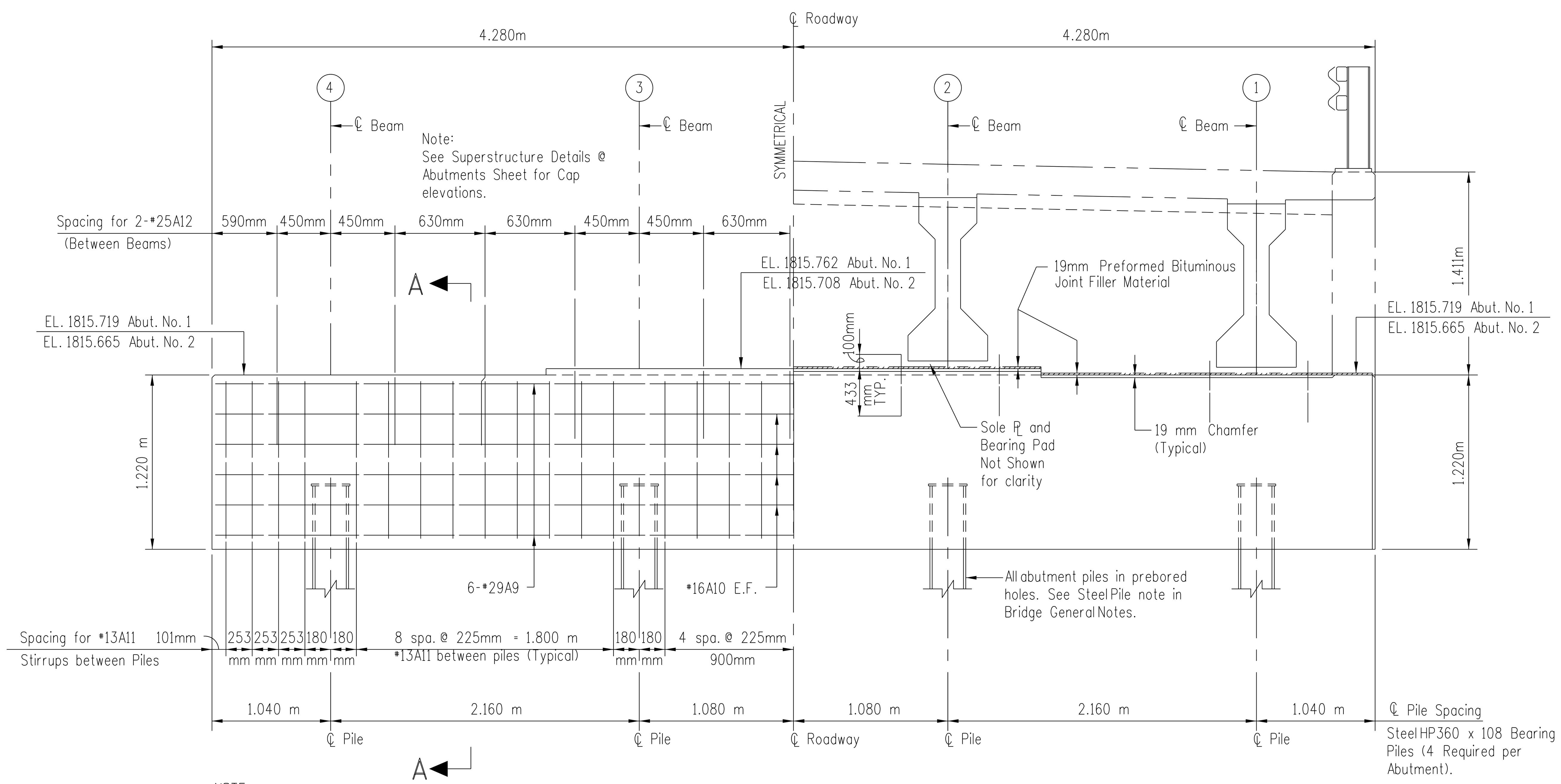
NOTES:

1. Reinforcing shown in Abutment Plan and Abutment Elevation details are symmetrical about ℄ Roadway.
2. Reinforcing bars may be adjusted no more than 25mm to miss Anchor Bolt Holes.
3. See Pier Details for Pile Details.
4. See Superstructure Details at Abutments for Wingwall Details.



SECTION A-A

Scale: NTS



NOTE:
Abutment Cap reinforcing shown only, this half. See Sht 11 for details above beam seat

ABUTMENT ELEVATION

Scale: NTS

NAVAJO DIVISION OF TRANSPORTATION

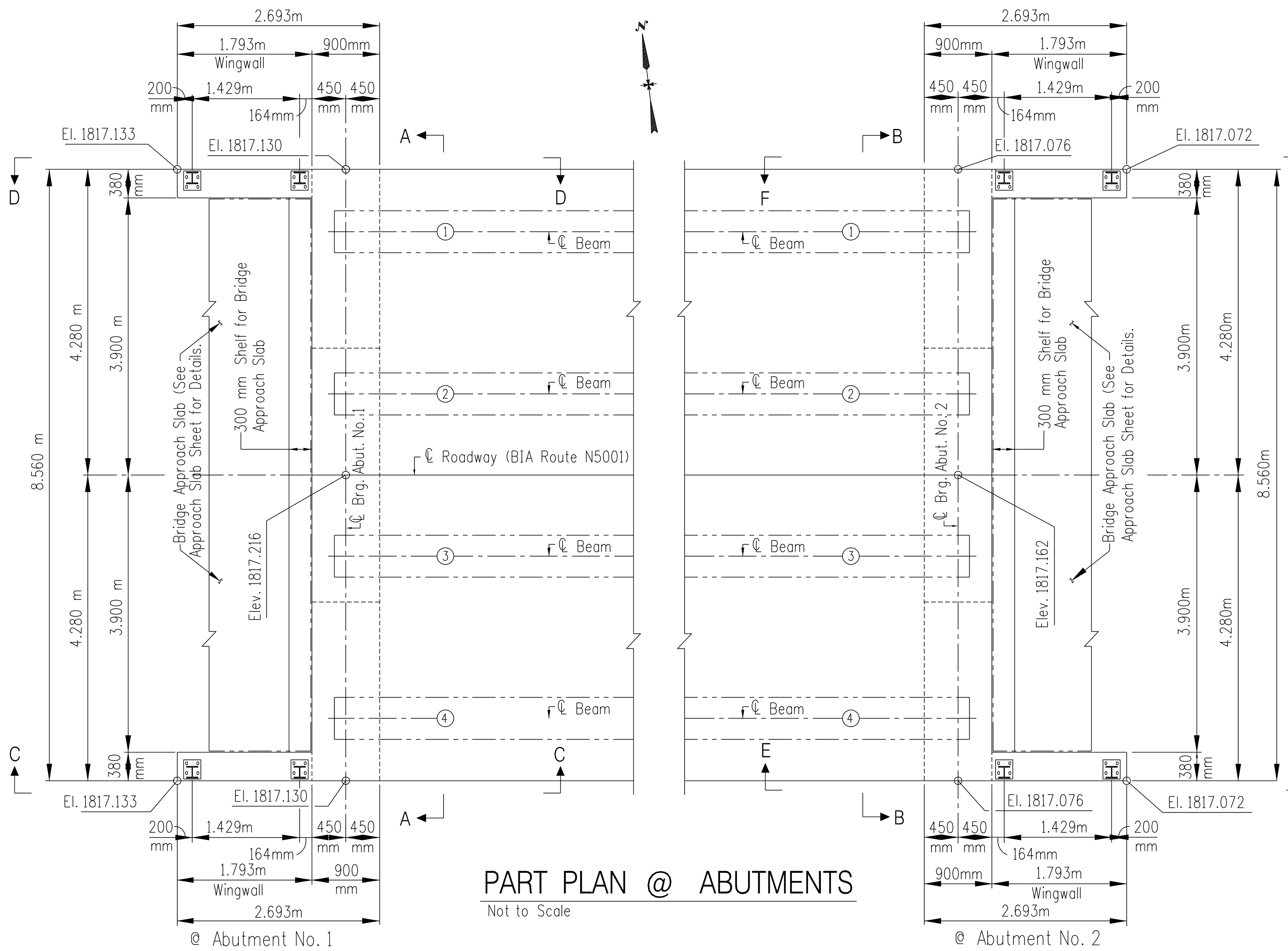
ABUTMENT DETAILS

TOM W. MELTON
NEW MEXICO
20554
10/27/2022
PROFESSIONAL ENGINEER

DRAWN BY: NRDOT	DATE: 6/13/2016
DESIGNED BY: NRDOT	DATE: 6/13/2016
REVISED: --/--	BY: KRH
sht 78 N214_Abutdet_2016-06-13	

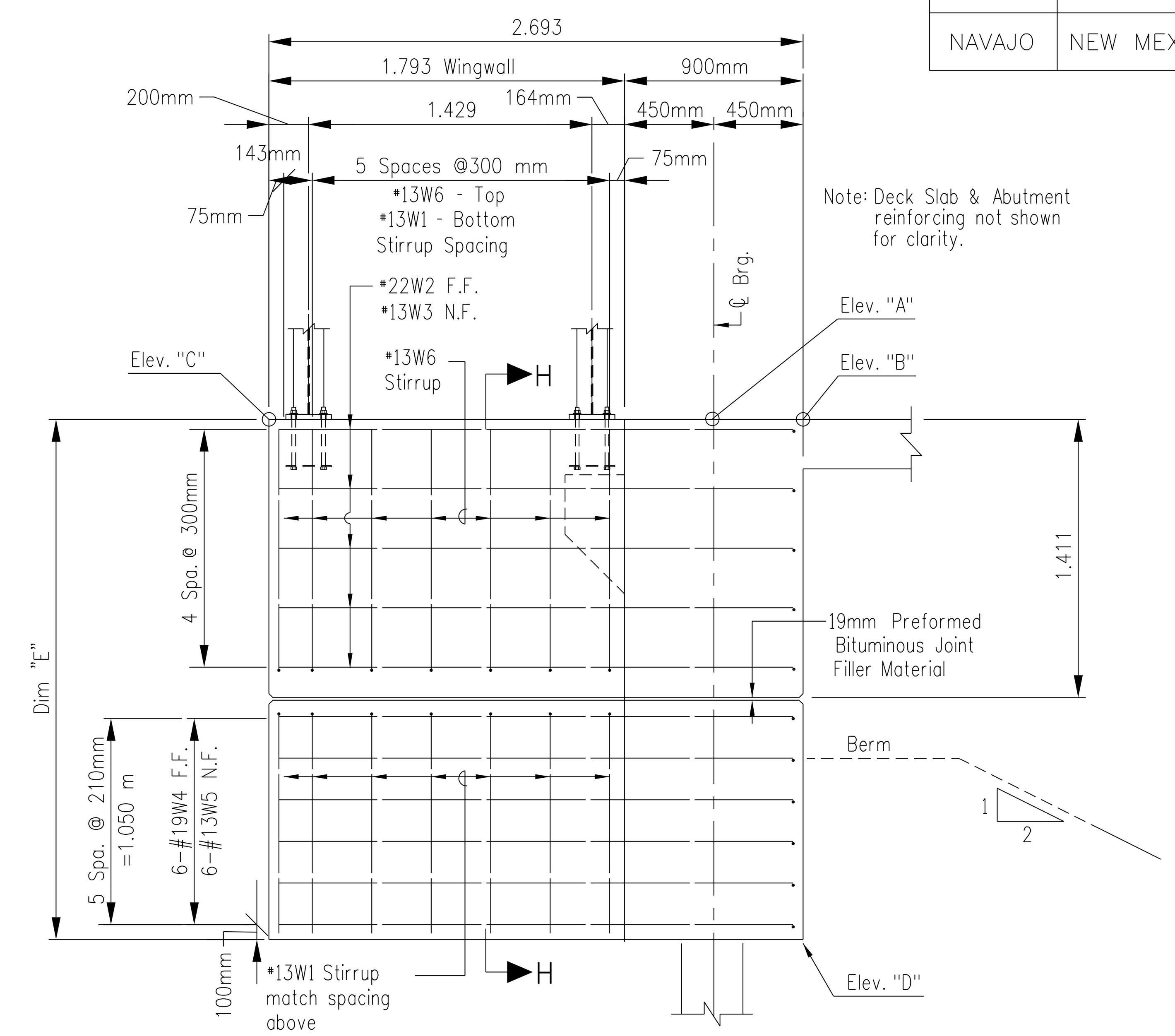
NAVAJO D.O.T

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	79	106



PART PLAN @ ABUTMENTS

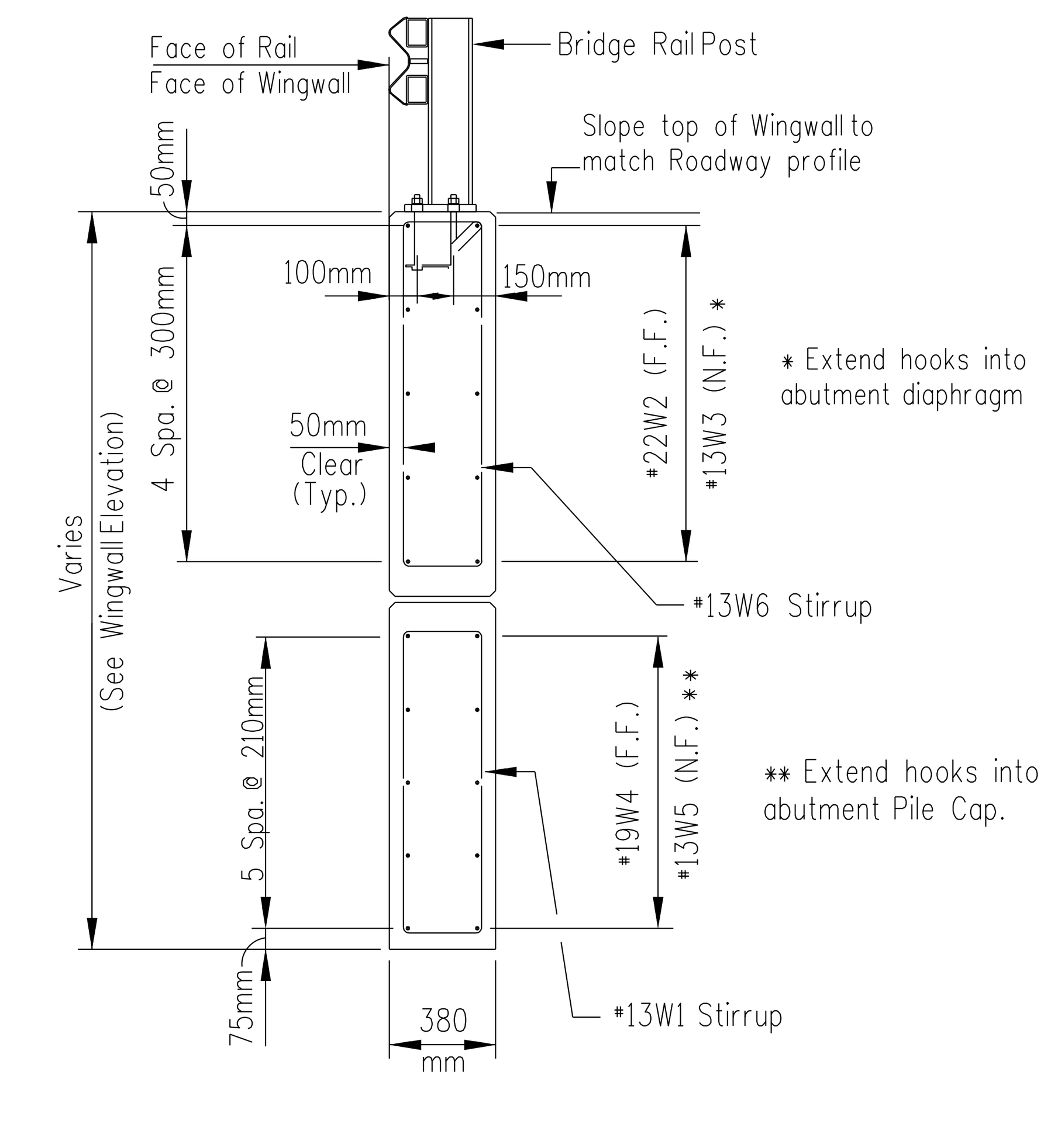
Not to Scale



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



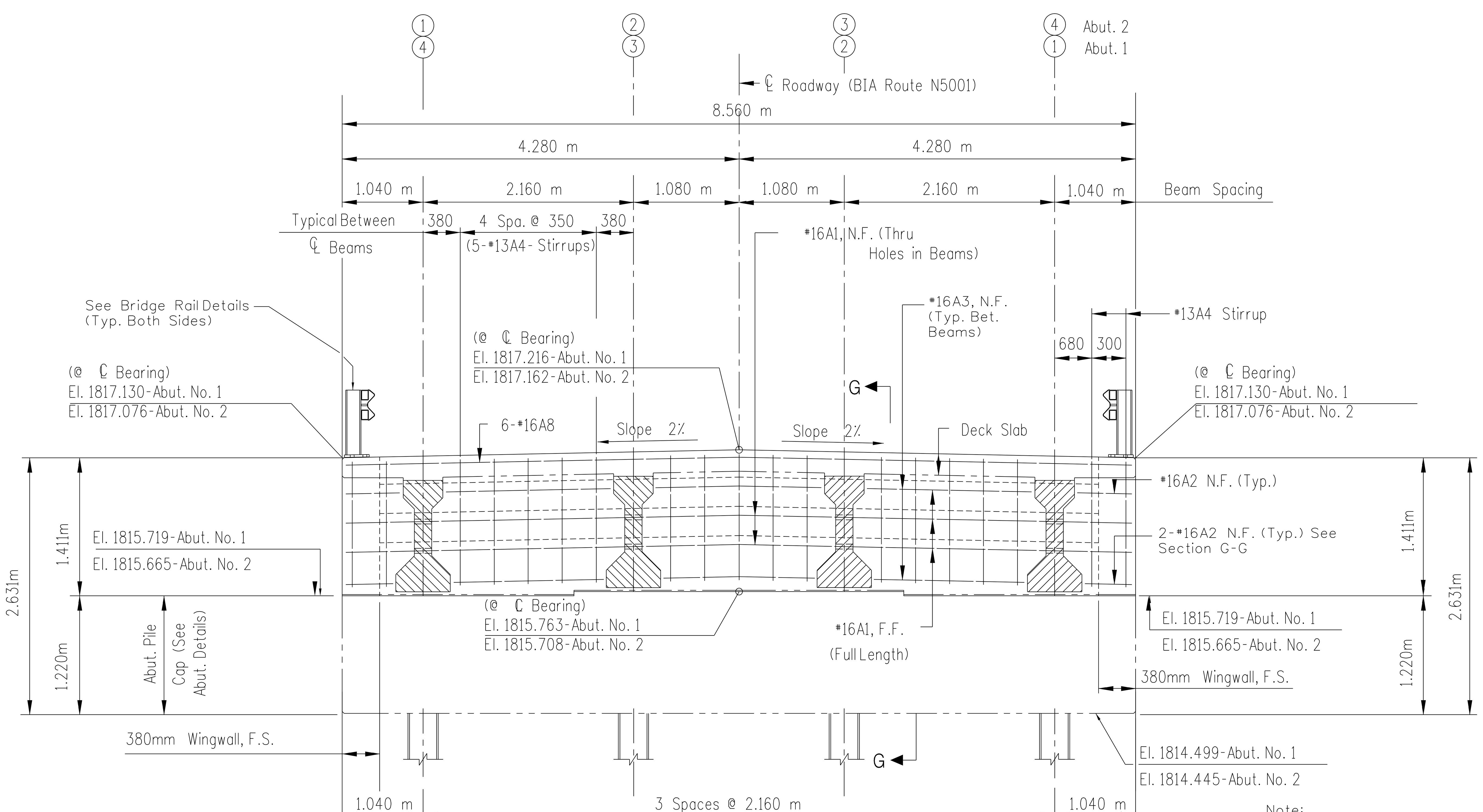
TYPICAL WINGWALL SECTION H–H

Not to Scale

TABLE OF ABUTMENT WINGWALL ELEVATIONS & DIMENSIONS

Elev. "A"		Elev. "B"		Elev. "C"		Elev. "D"		Dim. "E"	
Abut No. 1	Abut No. 2	Abut No. 1	Abut No. 2	Abut No. 1	Abut No. 2	Abut No. 1	Abut No. 2	Abut No. 1	Abut No. 2
1817.130	1817.076	1817.129	1817.077	1817.133	1817.072	1814.499	1814.445	2.634m	2.627m

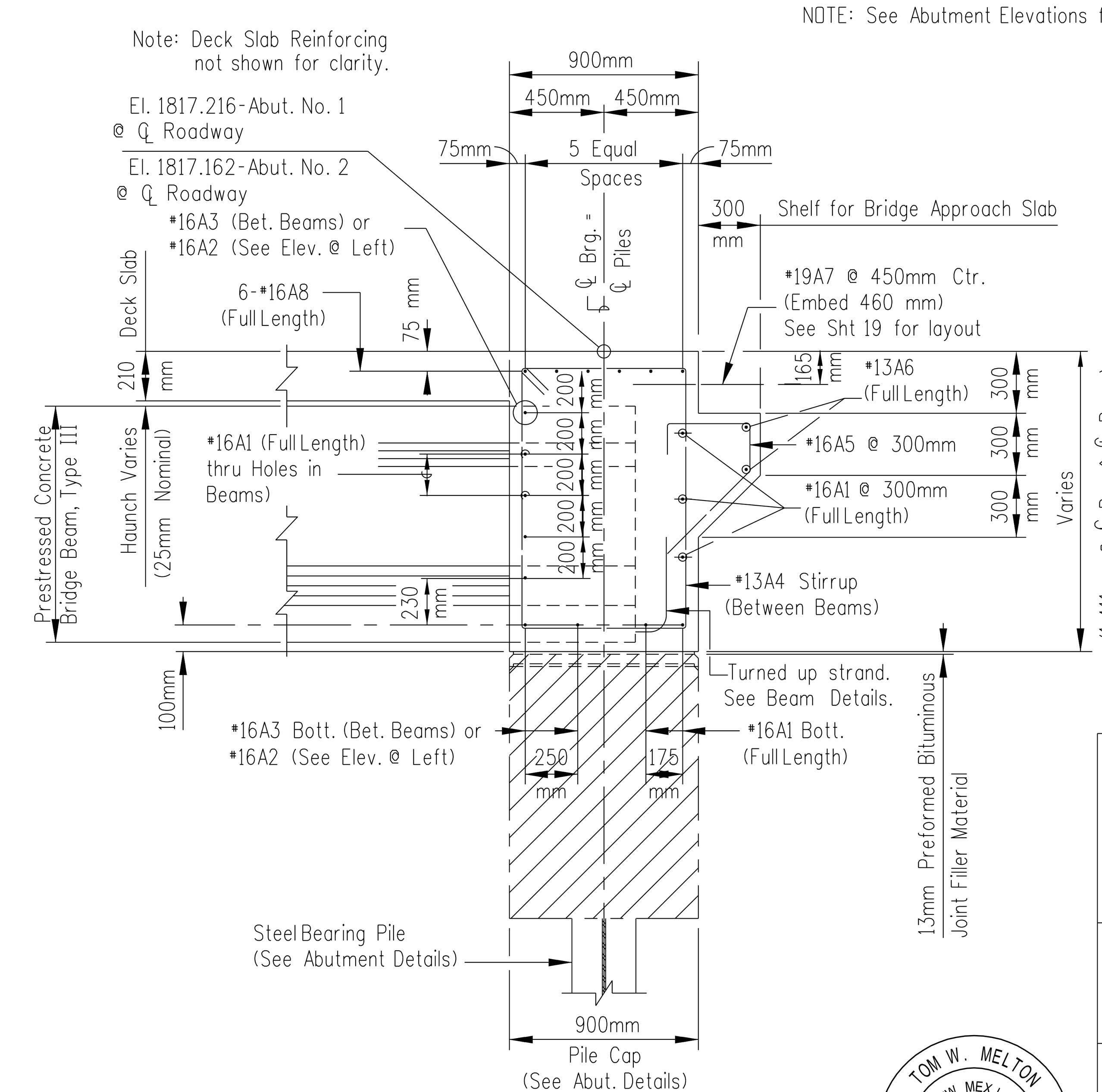
NOTE: See Abutment Elevations for Abutment Beam Seat Elevations.



ELEVATION A–A (@ ABUTMENT NO. 1) & ELEVATION B–B (@ ABUTMENT NO. 2)

Not to Scale

Note: Elevations and dimensions shown are along CL Brg. Abut.



SECTION G–G

Not to Scale

TOM W. MELTON NEW MEXICO 20554 10/27/2022 PROFESSIONAL ENGINEER

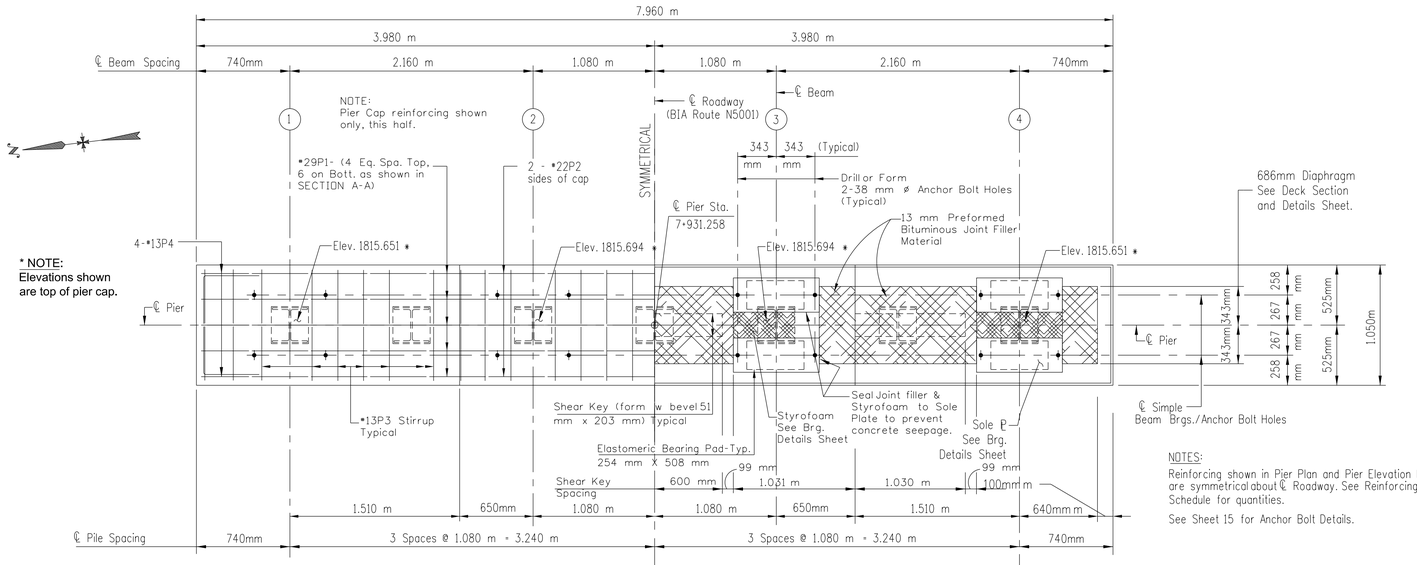
NAVAJO DIVISION OF TRANSPORTATION

SUPERSTRUCTURE DETAILS @ ABUTMENTS

Designed by: NDA
Drawn by: TAY, rsh Date: 6/13/16
Checked by: KRH Date: 4/2/2019
File Name: 6_B2_N214_Supdet

NAVAJO D.O.T

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	80	106



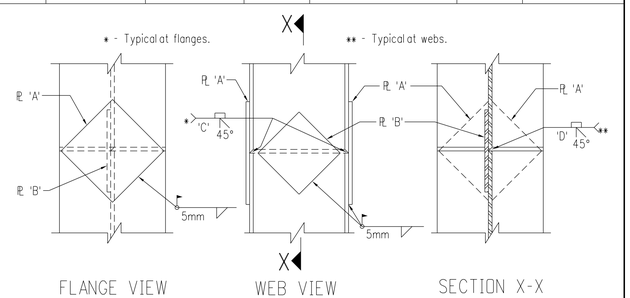
NOTES:
Reinforcing shown in Pier Plan and Pier Elevation Details are symmetrical about ℄ Roadway. See Reinforcing Steel Schedule for quantities.

See Sheet 15 for Anchor Bolt Details.

PLAN ~ PIER CAP

Scale: NTS

℄ Roadway = ℄ Beam Group & ℄ Pile Group (Pier Symmetrical About ℄)

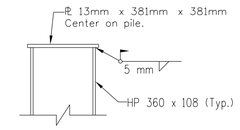


PILE SPLICE DETAIL (TYP.)

N.T.S.

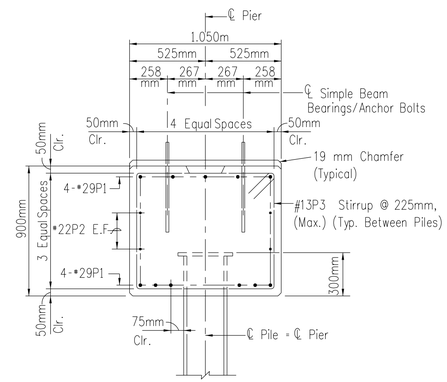
TABLE OF SPLICE PLATE DIMENSIONS AND WELD SIZES				
mm x kg/m	PL 'A' (mm)	PL 'B' (mm)	Weld Size 'C'	Weld Size 'D'
HP 360 x 108	260 x 260 x 13	197 x 197 x 13	13 mm	13 mm

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



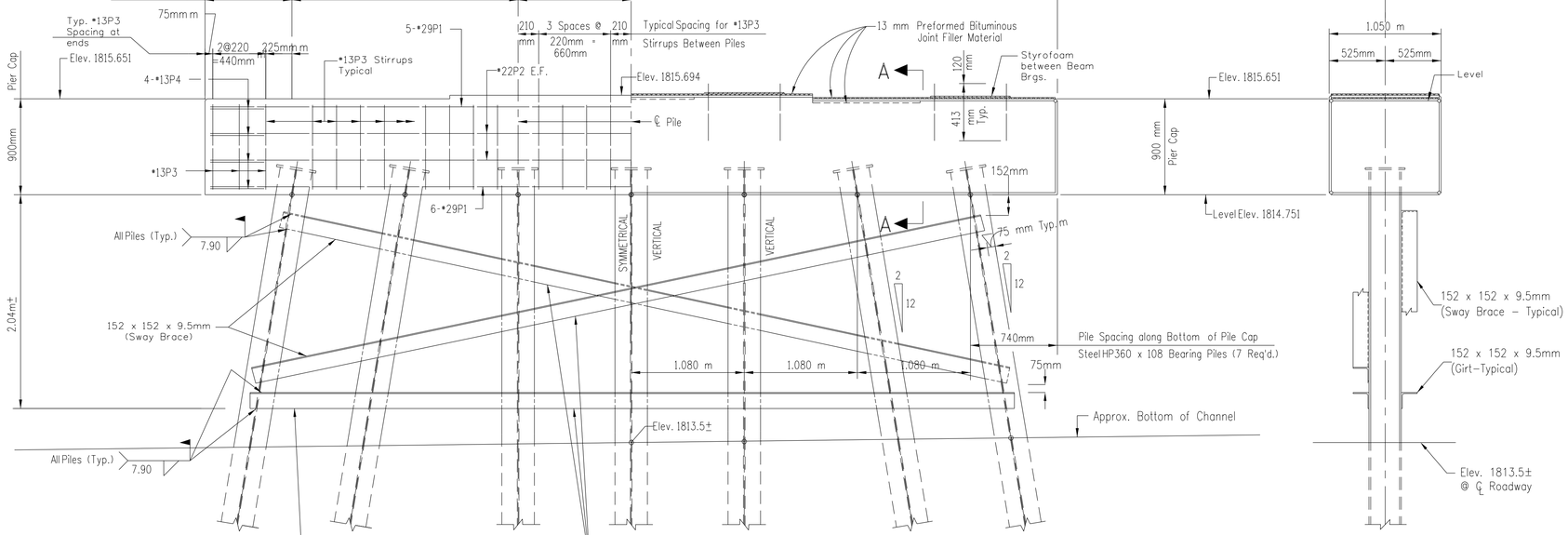
H-PILE CAP PLATE DETAIL (TYP.)

N.T.S.



SECTION A-A

Not to Scale:



Furnishing, installing and painting bracing shall be incidental to Item 55101-1800 Steel Piles in Place and 56302-2000 Painting Steel Piles.

NOTE: Piles @ piers shall be painted from bottom of concrete piercaps to 1.5 m below flow line with a painting system conforming to Table 563-1, Paint System 3. All work shall be in accordance with Section 563 of the FP-14 and any applicable state or local regulations. The finished color of piles shall be zinc silver in appearance.

ELEVATION

Scale: NTS

END ELEVATION

Scale: NTS

TOM W. MELTON
NEW MEXICO
20554
10/27/2023
PROFESSIONAL ENGINEER

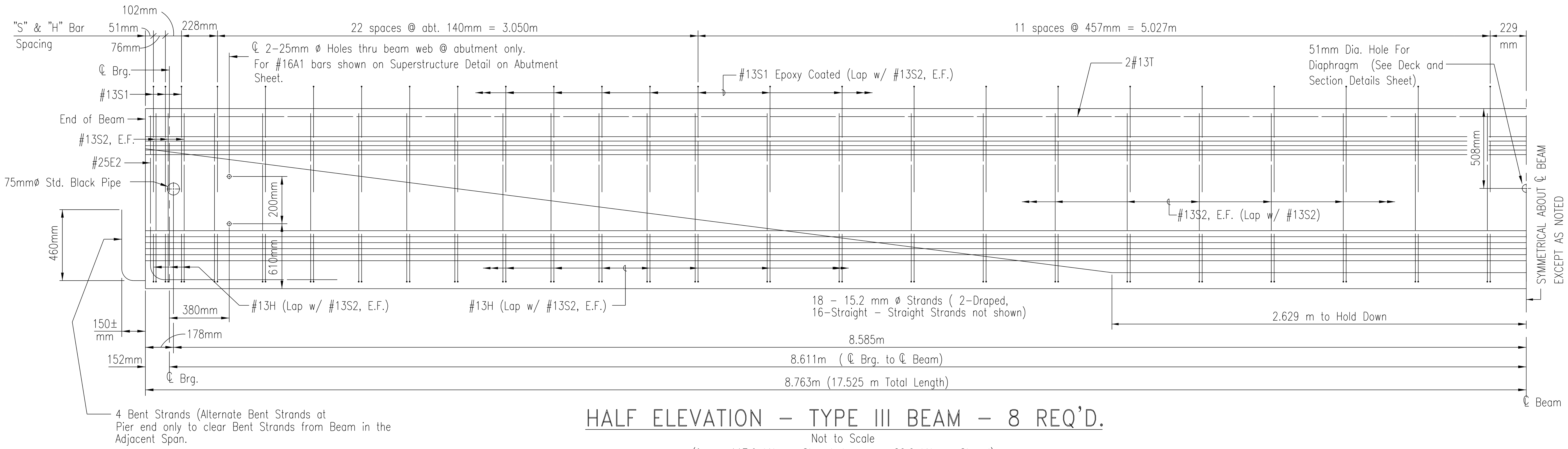
NAVAJO DIVISION OF TRANSPORTATION

PIER DETAILS

Designed by: NDA	
Drawn by: TAY,rsh	Date: 06/13/16
Checked by: KRH	Date: 4/2/2019
File Name: 7_B2_N214_Pierdet	

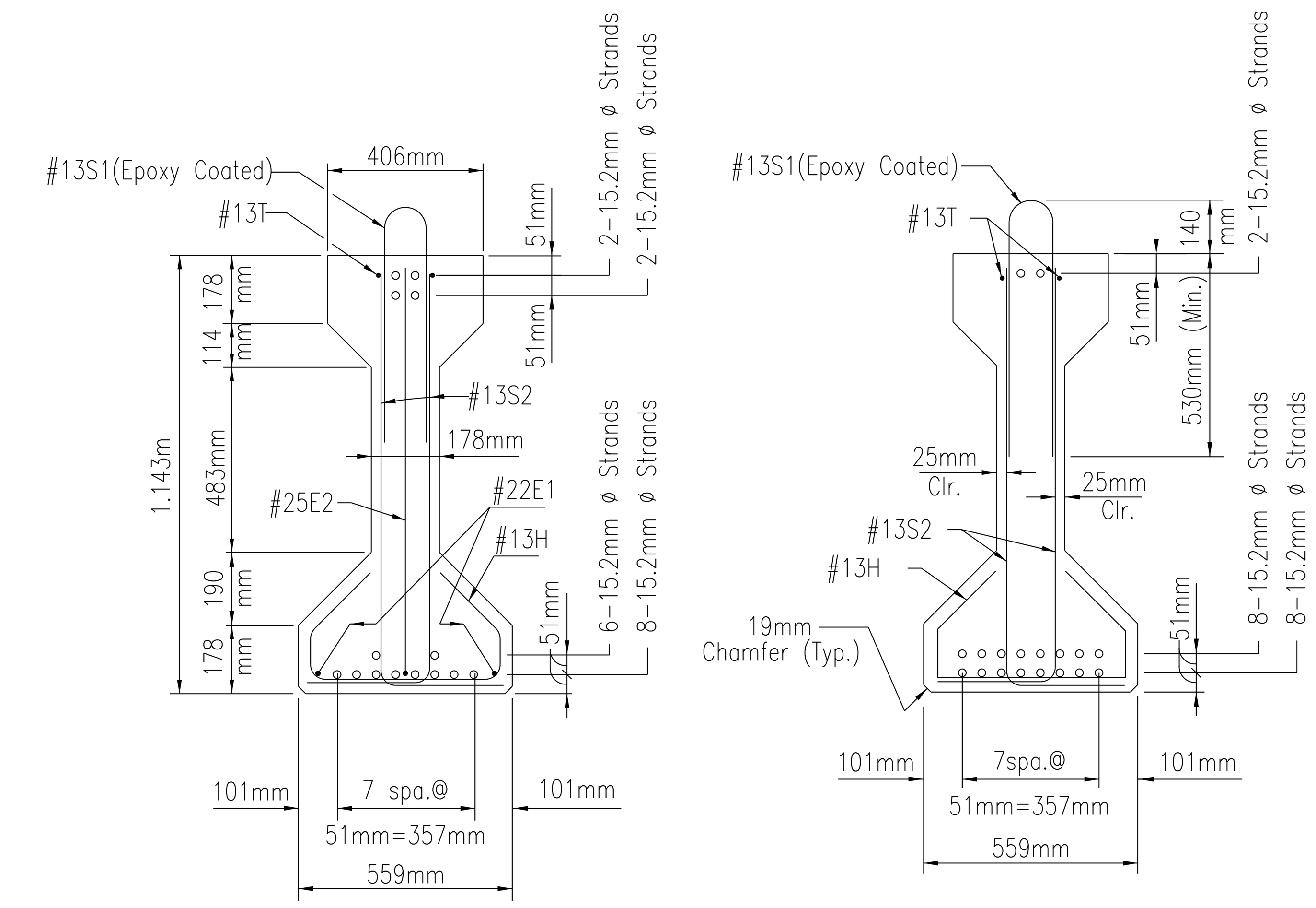
NAVAJO D.O.T

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	81	106



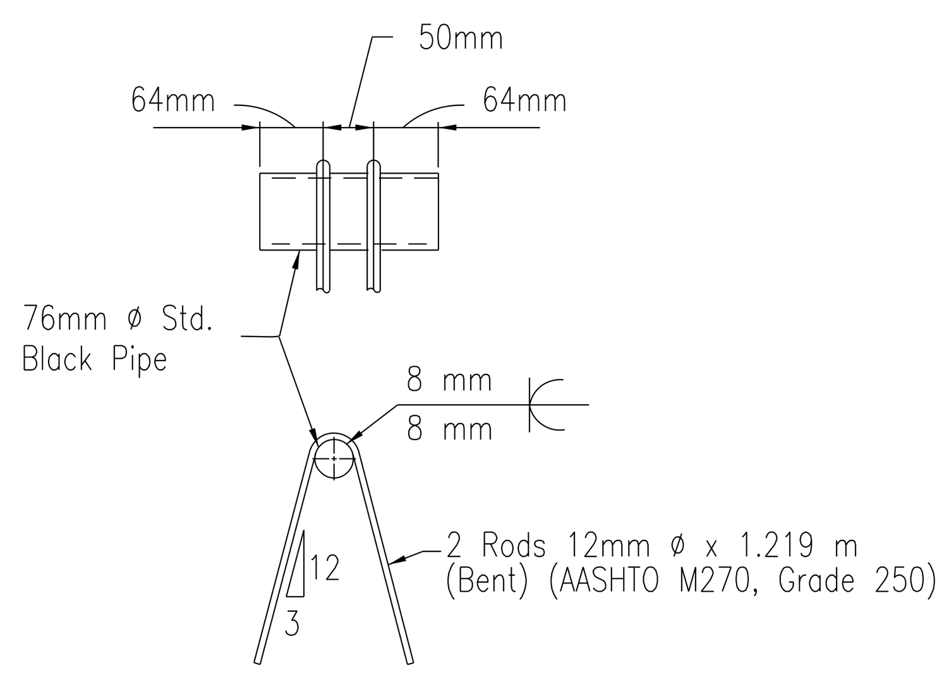
HALF ELEVATION – TYPE III BEAM – 8 REQ'D.

Not to Scale
(fse = 117.9 kN per Strand; Losses = 20.0 kN per Strand)



END VIEW
Scale: NTS

SECTION NEAR ℄ OF BEAM
Scale: NTS

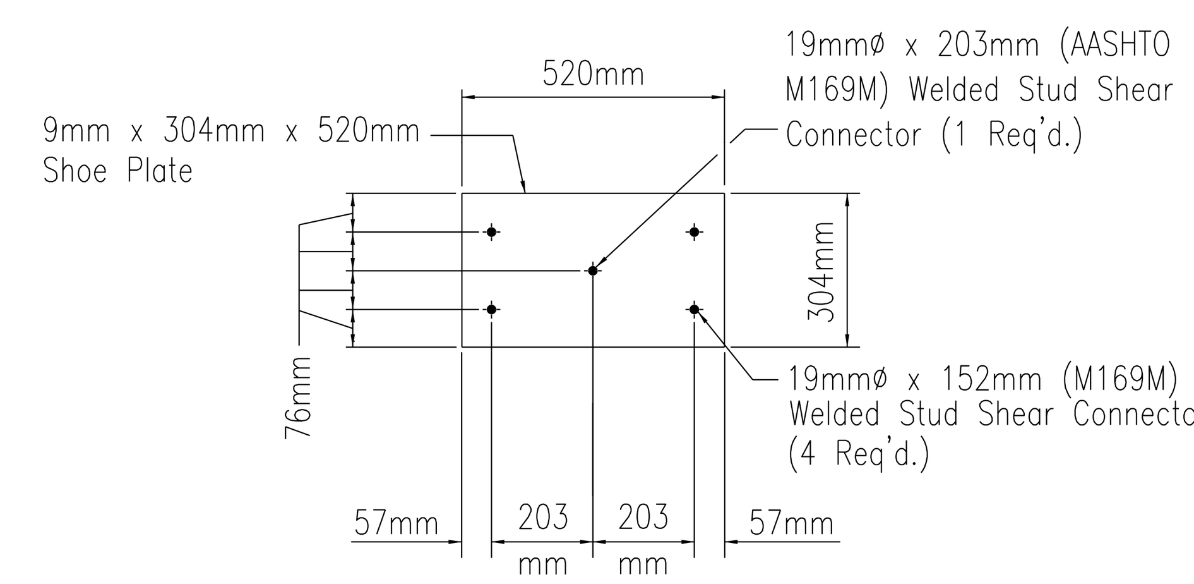


76mmØ STANDARD BLACK PIPE DETAIL

Scale None

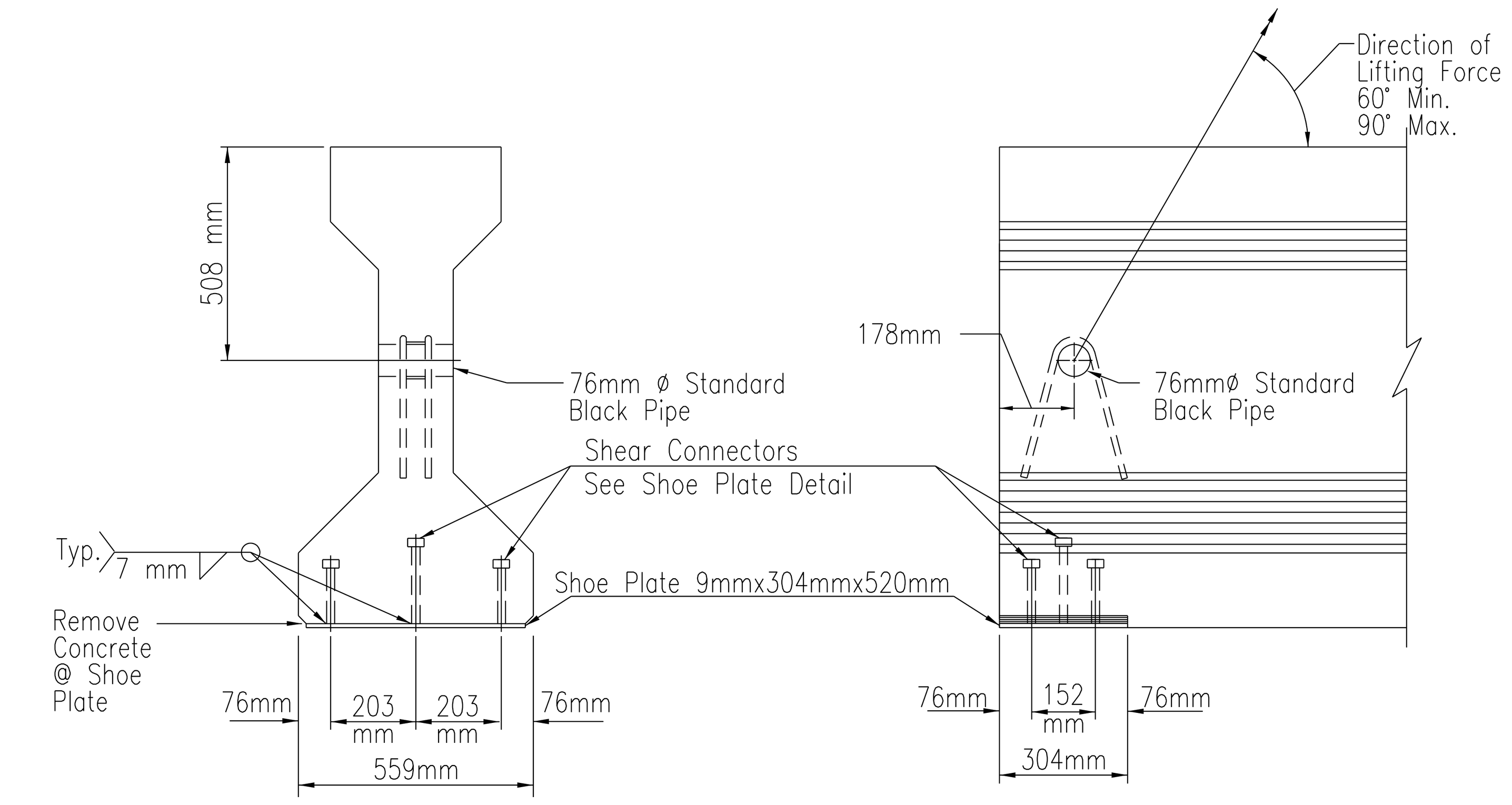
BEAM DATA

WEIGHT	CAMBER @ RELEASE	CAMBER @ ERECTION	DEAD LOAD DEFLECTION
14,969 kg	25.2mm	45.4mm	43.5mm



SHOE ℙ DETAIL

Scale: NTS



END VIEW

ELEVATION

GENERAL NOTES

1. Cost of Reinforcing Bars and Structural Steel embedded in Bridge Beams is to be included in Item 55301-0100 Prestressed Concrete Bridge Member Type III.
2. Beams to be lifted by means of Devices satisfactory to the A.O. Devices shall be inserted thru 76 mm Dia. Pipe at the ends. Beams to be cast, stored, and hauled in upright position. Alternate Lifting Devices must be Approved by the A.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 = 6 mm 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 25 mm 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 12.7 mm Diameter Low-Relaxation Strands meeting the requirements of A.A.S.H.T.O. M-203M (Grade 1860). Initial Prestressing Force shall be 137.8 kN per strand. Slight overstressing up to 146.8 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 shall be A.A.S.H.T.O M270M, Grade 250.
9. Reinforcing Bars projecting from the top of the Beam shall be Epoxy Coated.
10. Adjust vertical reinforcement to miss holes or inserts.
11. Clearly mark abutment end with an "A" and pier end with a "P" on fabricator's shop drawings.

DESIGN DATA

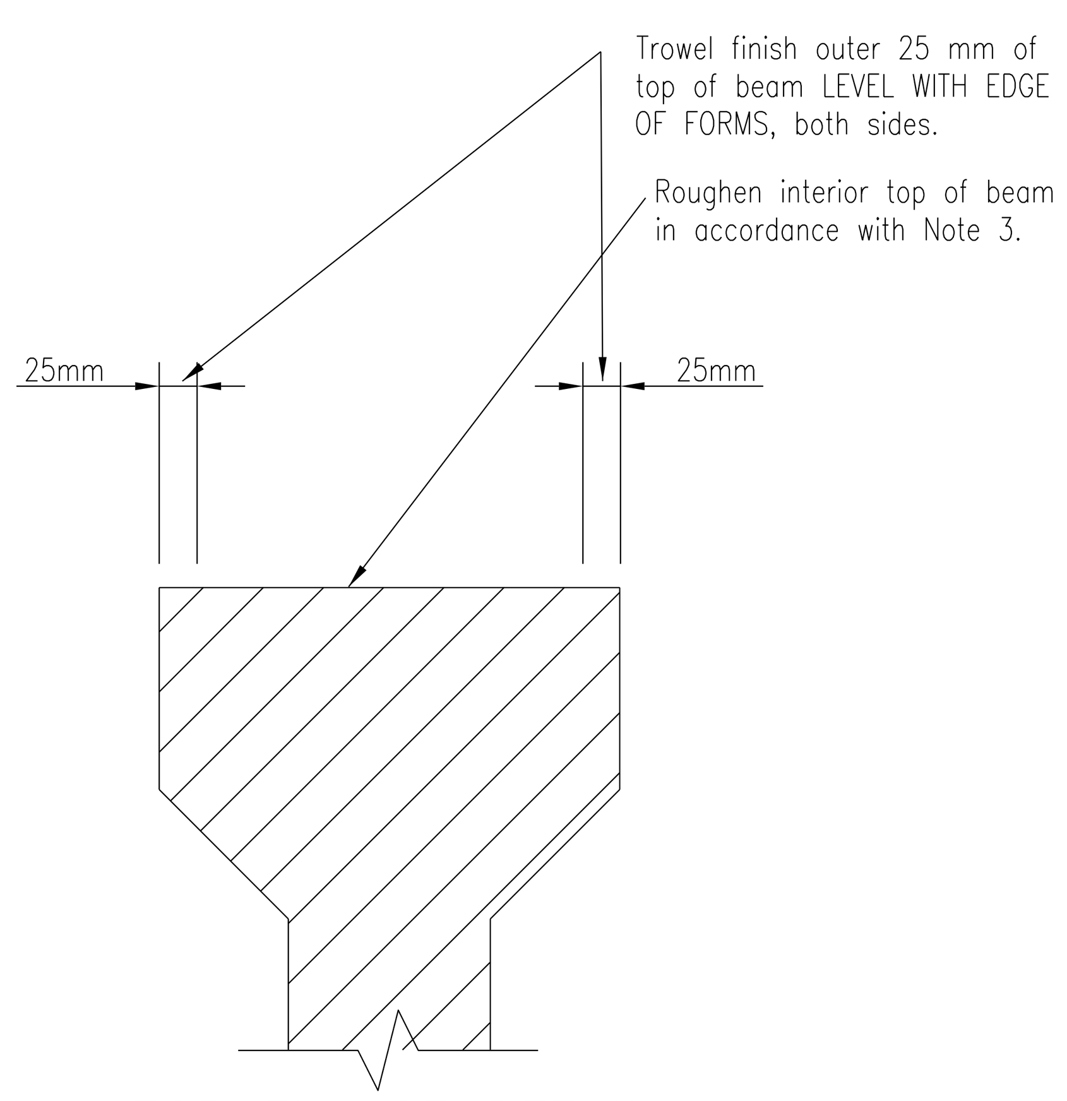
Design According To A.A.S.H.T.O. LRFD Bridge Design Specifications, 9TH Edition 2020 w/ interim specifications to date.

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:
15.2 mm Diameter Seven Wire Low Relaxation Strands.
f's = 183.8 kN Per Strand;
f*y = 165.4 kN Per Strand.

CONVENTIONAL REINFORCING BARS:
fsy = 413.7 MPa

COMPOSITE SLAB:
f'c = 27.6 MPa
Allowance for Future Wearing Surface = 1.20 kPa
Live Load = MS 18.



TOP FLANGE DETAIL

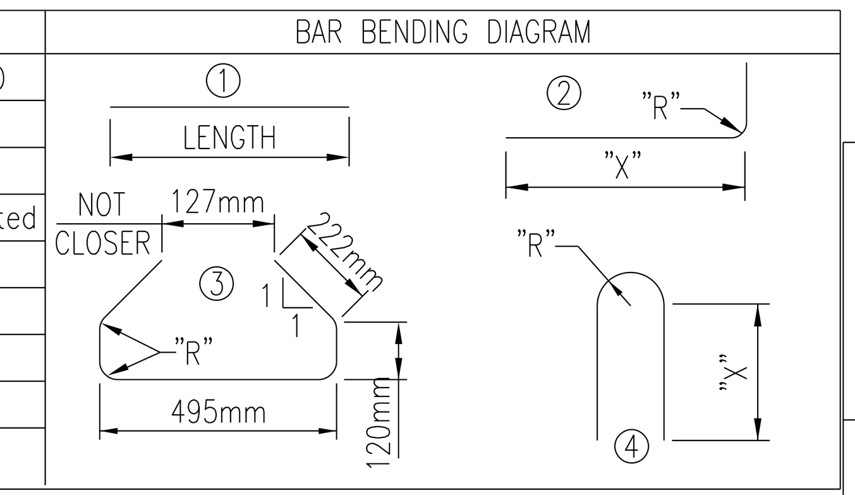
ESTIMATED QUANTITIES PER BEAM

CONCRETE	6.3 m^3
PLAIN REINFORCEMENT	350.7 kg
EPOXY COATED REINFORCEMENT	103.2 kg

REINFORCING BARS REQ'D FOR ONE BEAM

BAR	TYPE	BEAM				
		SIZE	"R"	"X"	LENGTH	NO. REQ'D
E1	②	#22	79mm	1.524 m	1.730 m	4
E2	②	#25	89mm	1.041 m	2.083 m	2
S1	④	#13	57mm	612mm	1.403 m	74 Epoxy Coated
S2	②	#13	44mm	1.066 m	1.320 m	148
H	③	#13	44mm	---	1.143 m	74
T	①	#13	---	---	17.486 m	2

BAR BENDING DIAGRAM



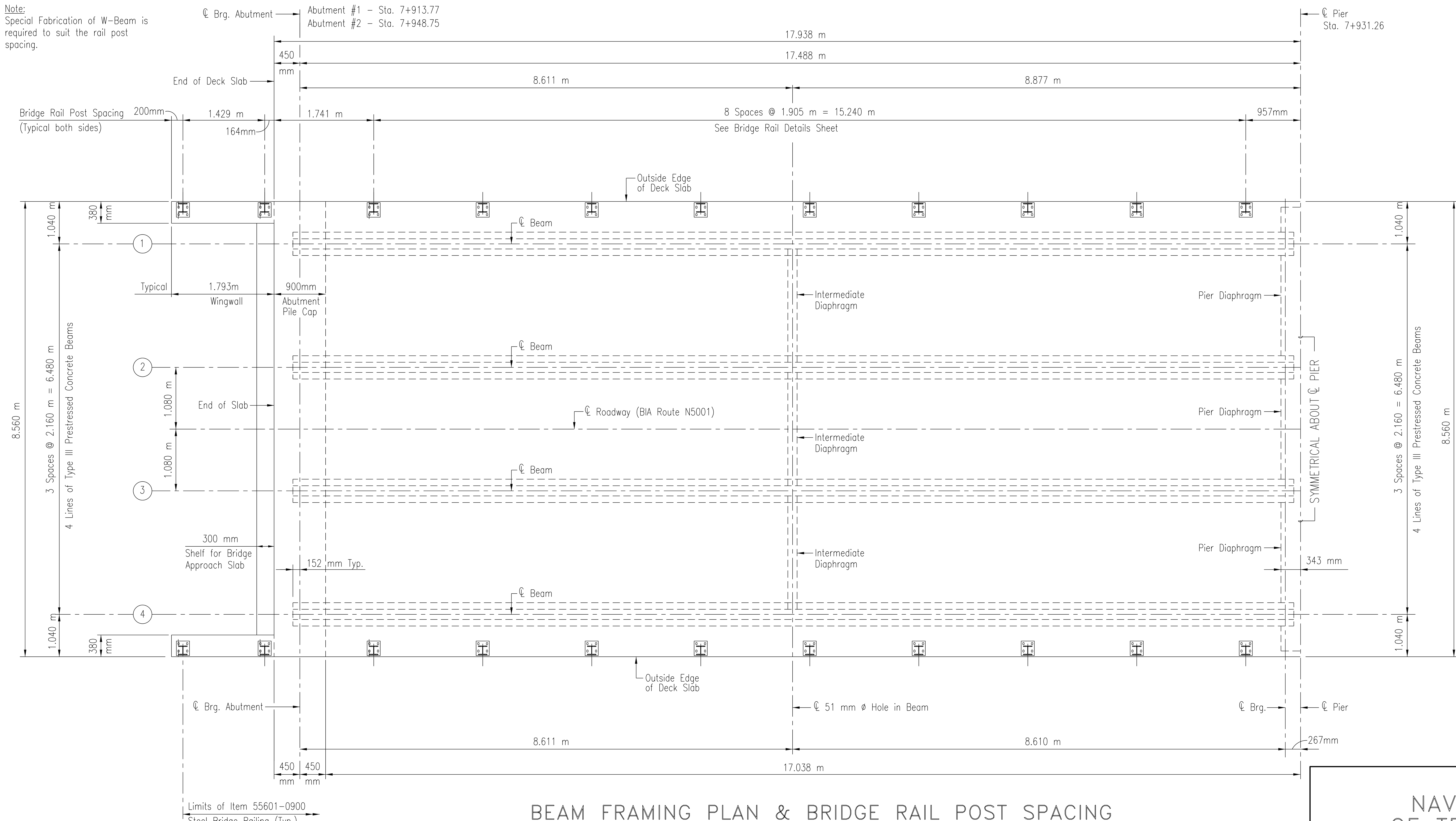
NAVAJO DIVISION OF TRANSPORTATION

PRESTRESSED CONCRETE BEAM DETAILS – TYPE III

Designed by: NDA
Drawn by: TAY, rsh Date: 6/13/16
Checked by: Date:
File Name: 8_B2_N214_Beamdet

NAVAJO D.O.T

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	82	106



BEAM FRAMING PLAN & BRIDGE RAIL POST SPACING

Scale: NTS

NAVAJO DIVISION OF TRANSPORTATION

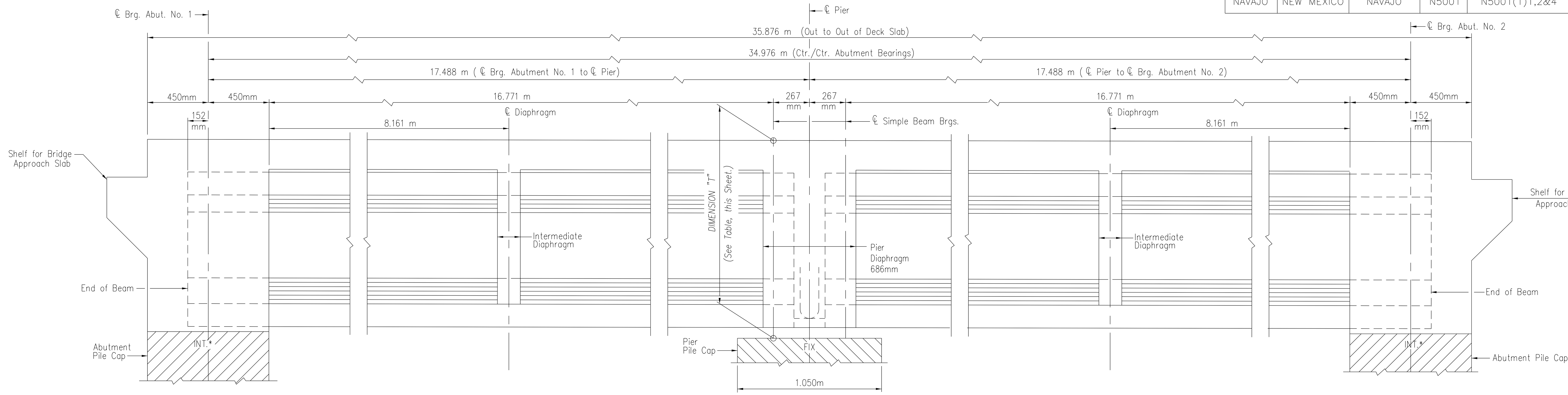
BEAM FRAMING PLAN

TOM W. MELTON
NEW MEXICO
20554
10/27/2023
PROFESSIONAL ENGINEER

Designed by: NDA	
Drawn by: TAY, rsh	Date: 6/13/16
Checked by: KRH	Date: 4/2/2019
File Name: 9_B2_N214_Frampln	

NAVAJO D.O.T

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	83	106



* See Design and Construction Notes in the Bridge General Notes concerning the use of integral abutments for expansion.

LONGITUDINAL SECTION THRU DECK SLAB

Not to Scale

NOTES:

1. Top & Bottom Surfaces of Sole Plates shall be Flat within .75 mm 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 Shoe Plate before placing reinforcing steel in the abutment and pier diaphragms.

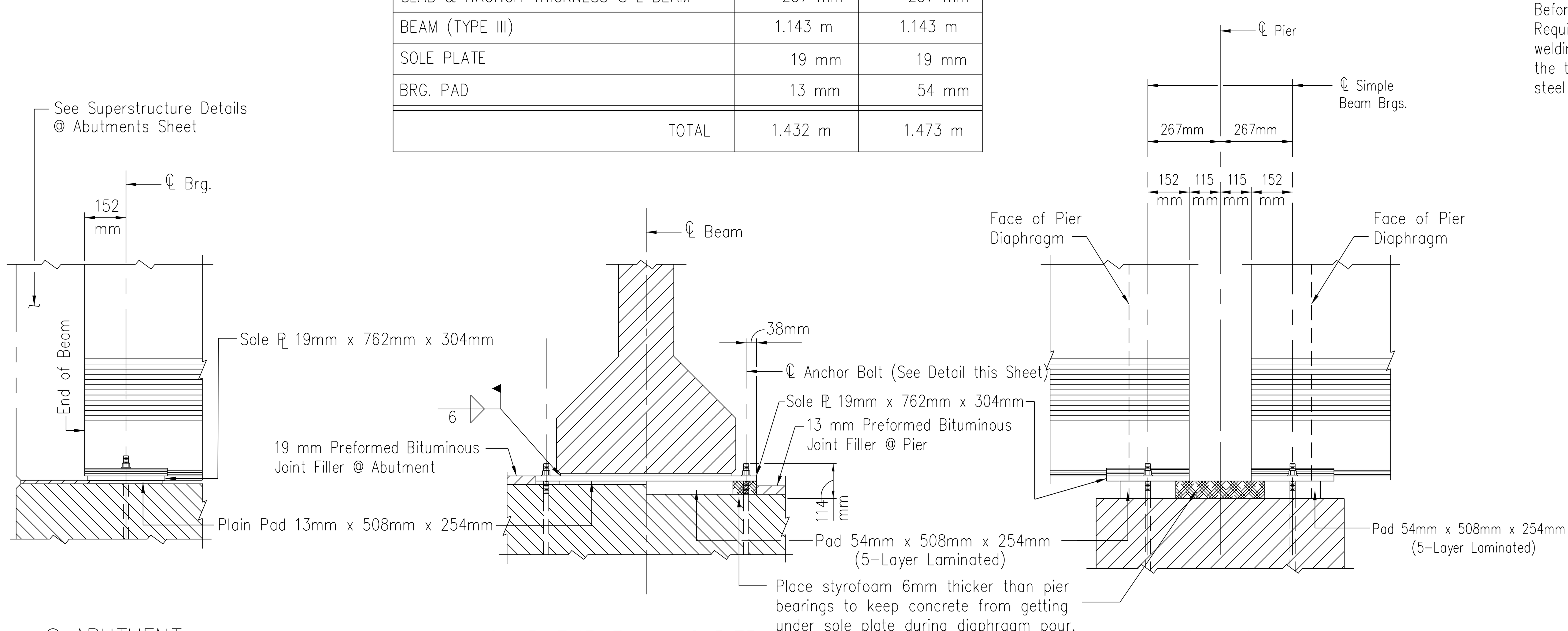
ELASTOMERIC BEARING PADS

@ Abutments......... 13mm x 508mm x 254mm, Plain Pad 60 Durometer Hardness.

@ Pier.................... 54mm x 508mm x 254mm, 5 - Layer Laminated 60 Durometer Hardness.

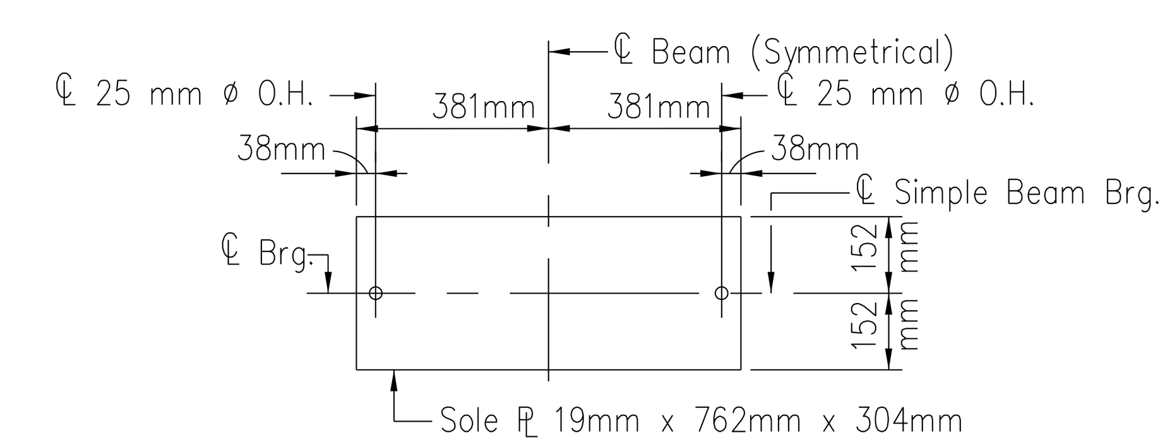
TABLE OF DIMENSION "T" @ ℄ BEARING

ITEM	@ ABUTMENTS	@ PIER
SLAB & HAUNCH THICKNESS @ ℄ BEAM	257 mm	257 mm
BEAM (TYPE III)	1.143 m	1.143 m
SOLE PLATE	19 mm	19 mm
BRG. PAD	13 mm	54 mm
TOTAL	1.432 m	1.473 m



BEARING DETAILS

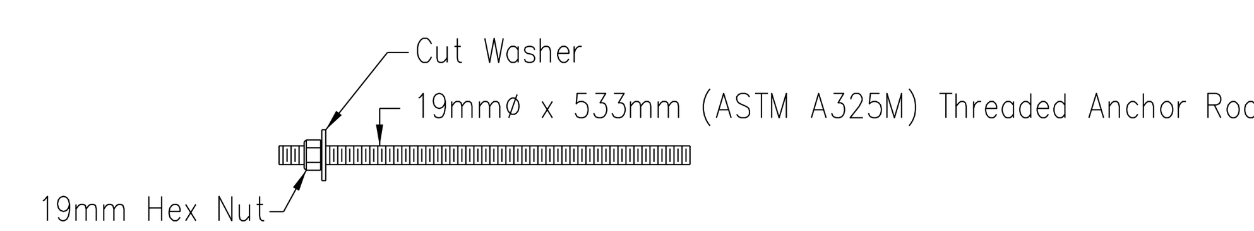
Not to Scale



SOLE ℞ DETAILS

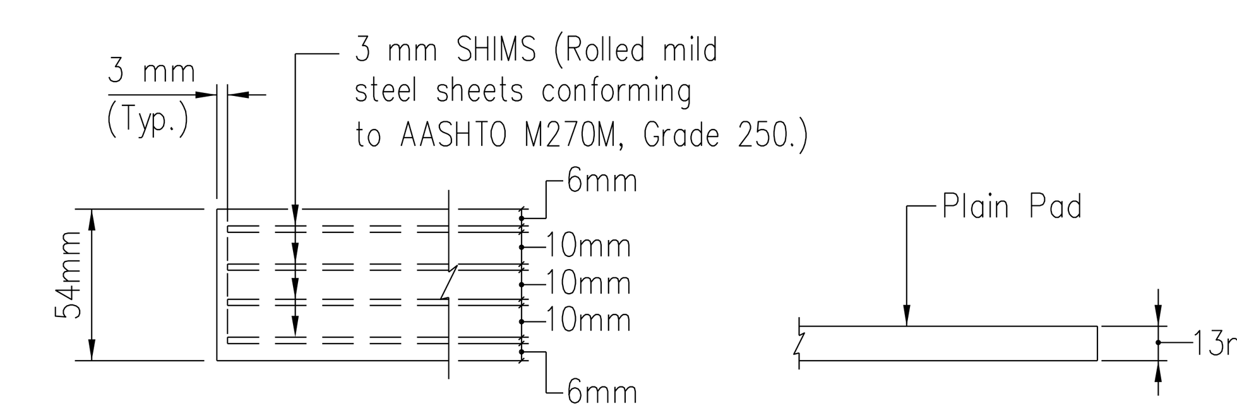
DESIGN LOAD FOR ELASTOMERIC PADS

DESCRIPTION	@ ABUTMENTS	@ PIER
DEAD LOAD	483 kN	483 kN
LIVE LOAD	354 kN	354 kN
TOTAL	837 kN	837 kN



ANCHOR BOLT DETAIL

16 REQ'D.



DETAIL OF LAMINATED BEARING PADS

(Mold into Integral Unit)

NAVAJO DIVISION OF TRANSPORTATION

LONGITUDINAL DECK SECTION AND BEARING DETAILS

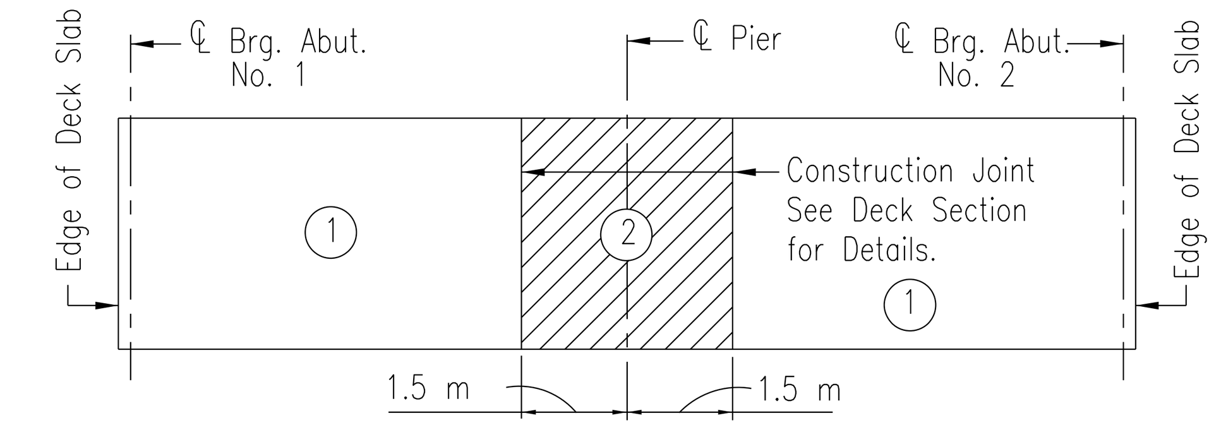
TOM W. MELTON NEW MEXICO 20554 10/27/2023 PROFESSIONAL ENGINEER

Designed by: NDA
Drawn by: TAY, rsh Date: 6/13/16
Checked by: KRH Date: 4/2/2019
File Name: 10_B2_N214_Longsec

NAVAJO D.O.T

c:\users\gmgentle\appdata\local\bentley\projectwise\wc_projects\d0354817\sht 83 N214_Longsec_2016-06-13.dgn

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	84	106

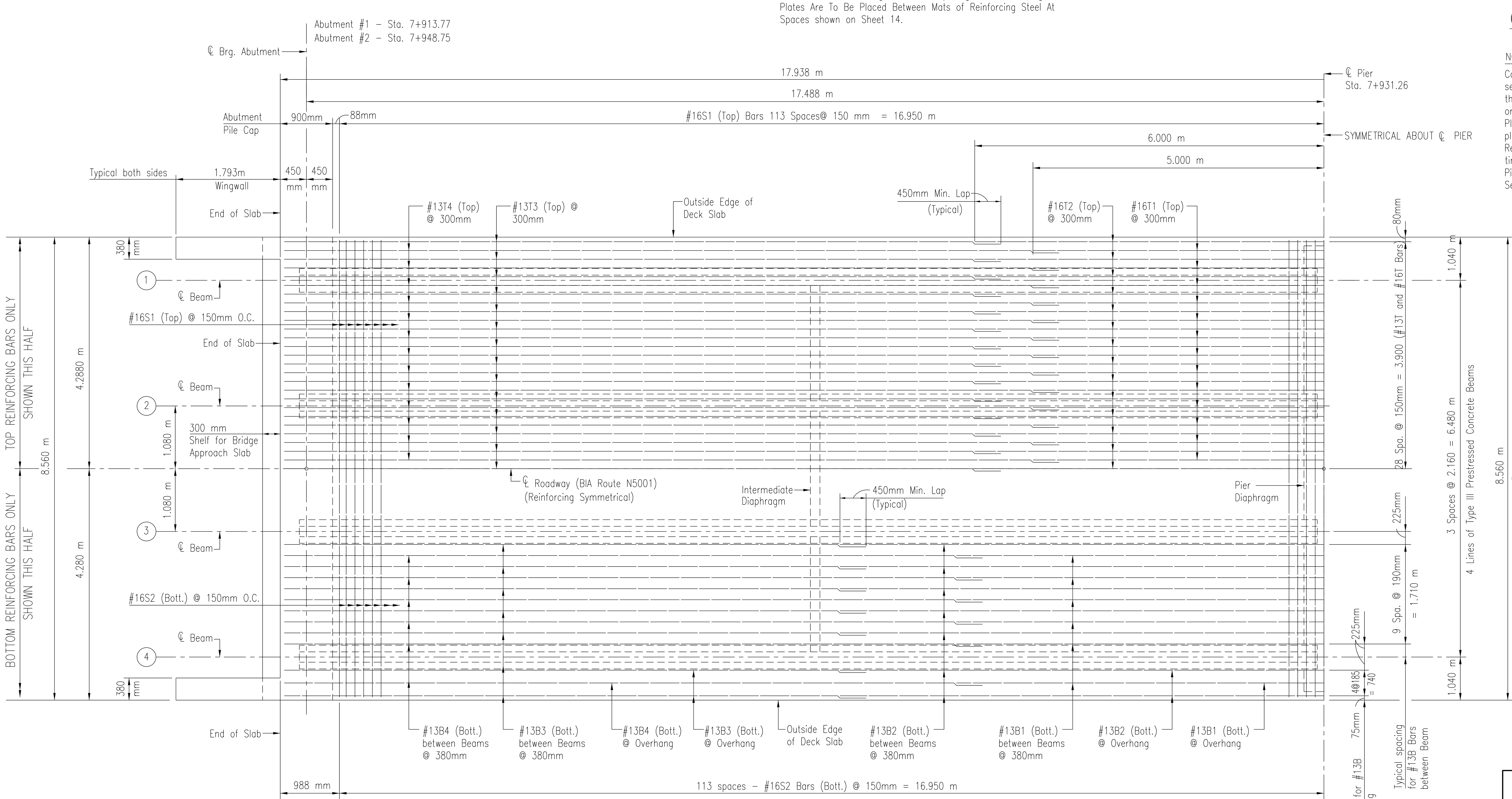


CONCRETE DECK PLACEMENT DETAIL

Not to Scale

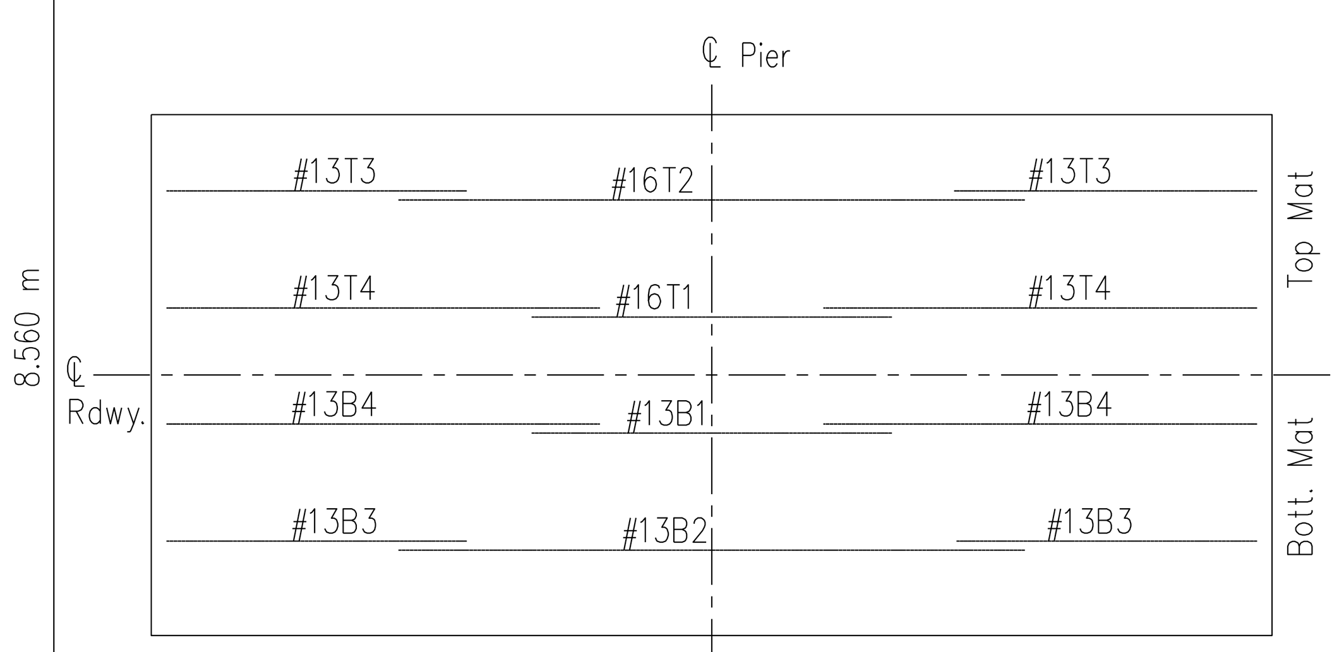
NOTE:
Concrete shall be placed the full width of the Deck Slab in the sequence shown at top at a forward rate of progress of not less than 9.14 m per hour. Placements ① may be made on the same, or on separate days.
Placement ② shall not be made until concrete in adjacent placement ① areas has been in place at least 48 hours. Set Retardant shall not be used if the Atmospheric Temperature at the time of placement is less than 16° C.
Pier Diaphragm shall be placed monolithically with placement ②
See Framing Plan for Diaphragm location.

Note:
See Sheet 14 for Bridge Rail Post Spacing. Bolt Anchorage Plates Are To Be Placed Between Mats of Reinforcing Steel At Spaces shown on Sheet 14.



DECK SLAB PLAN

Scale: NTS



LONGITUDINAL REINFORCING LAYOUT

TOM W. MELTON
NEW MEXICO
20554
10/27/2022
PROFESSIONAL ENGINEER

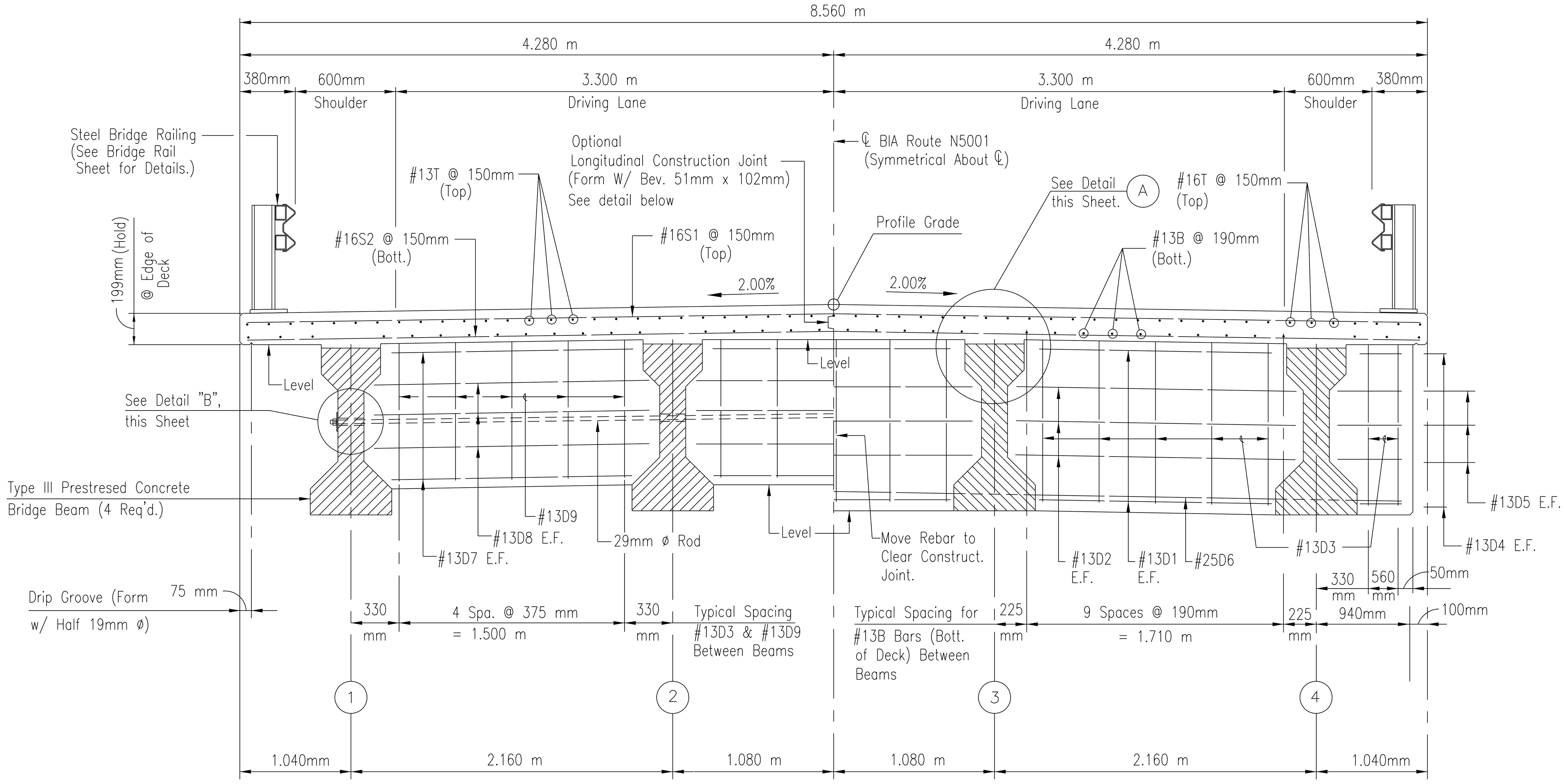
NAVAJO DIVISION OF TRANSPORTATION

DECK SLAB PLAN

Designed by: NDA
Drawn by: TAY, rsh Date: 6/13/16
Checked by: KRH Date: 4/2/2019
File Name: 11_B2_N214_Deckslab

NAVAJO D.O.T

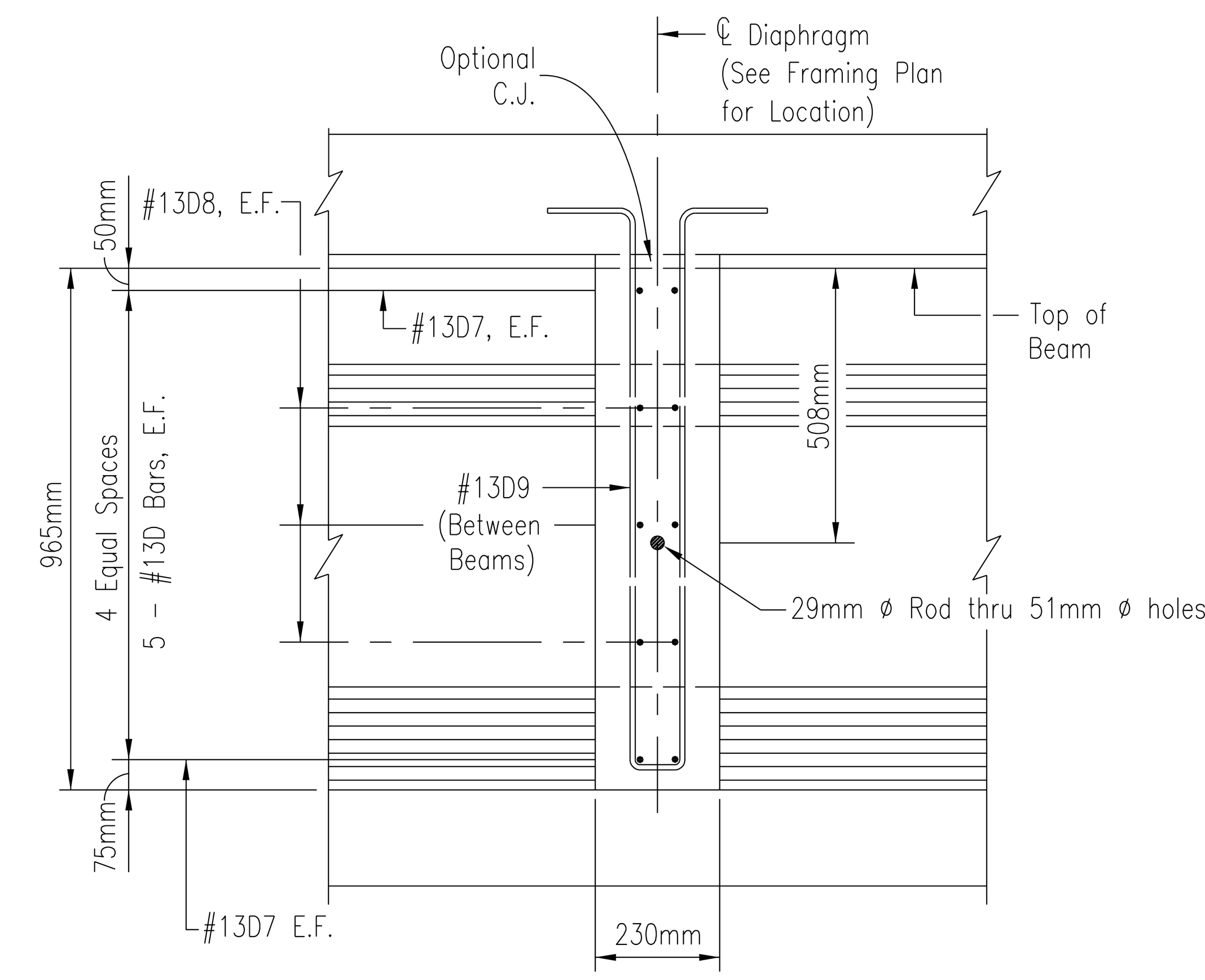
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	85	106



INTERMEDIATE DIAPHRAGMS — PIER DIAPHRAGMS

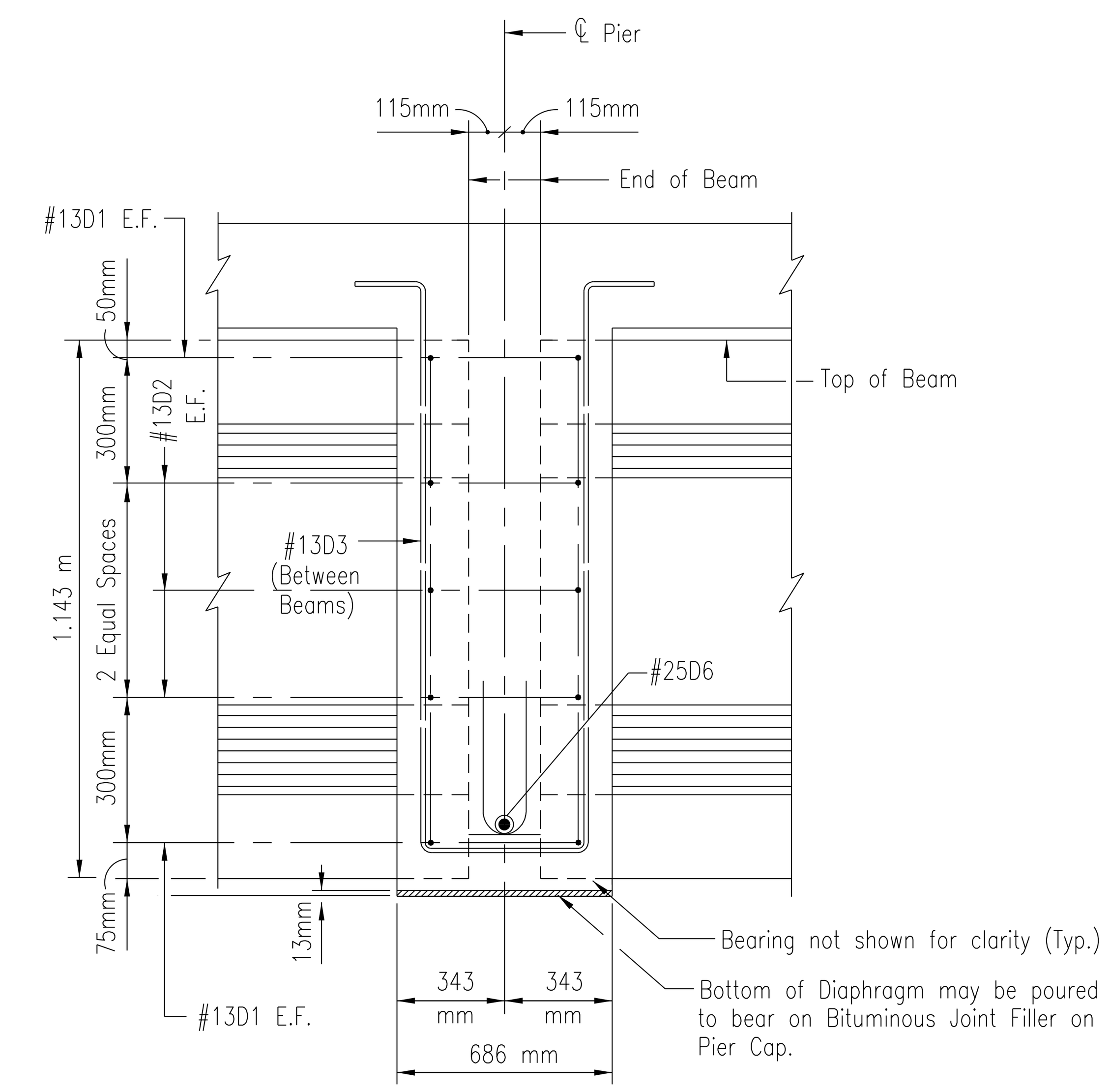
TRANSVERSE DECK SECTION

SCALE: NTS



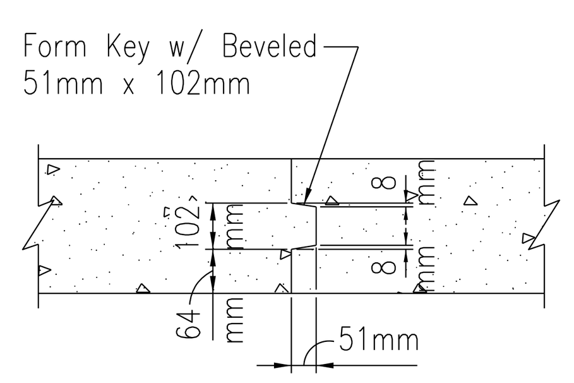
INTERMEDIATE DIAPHRAGM DETAIL

Not to Scale



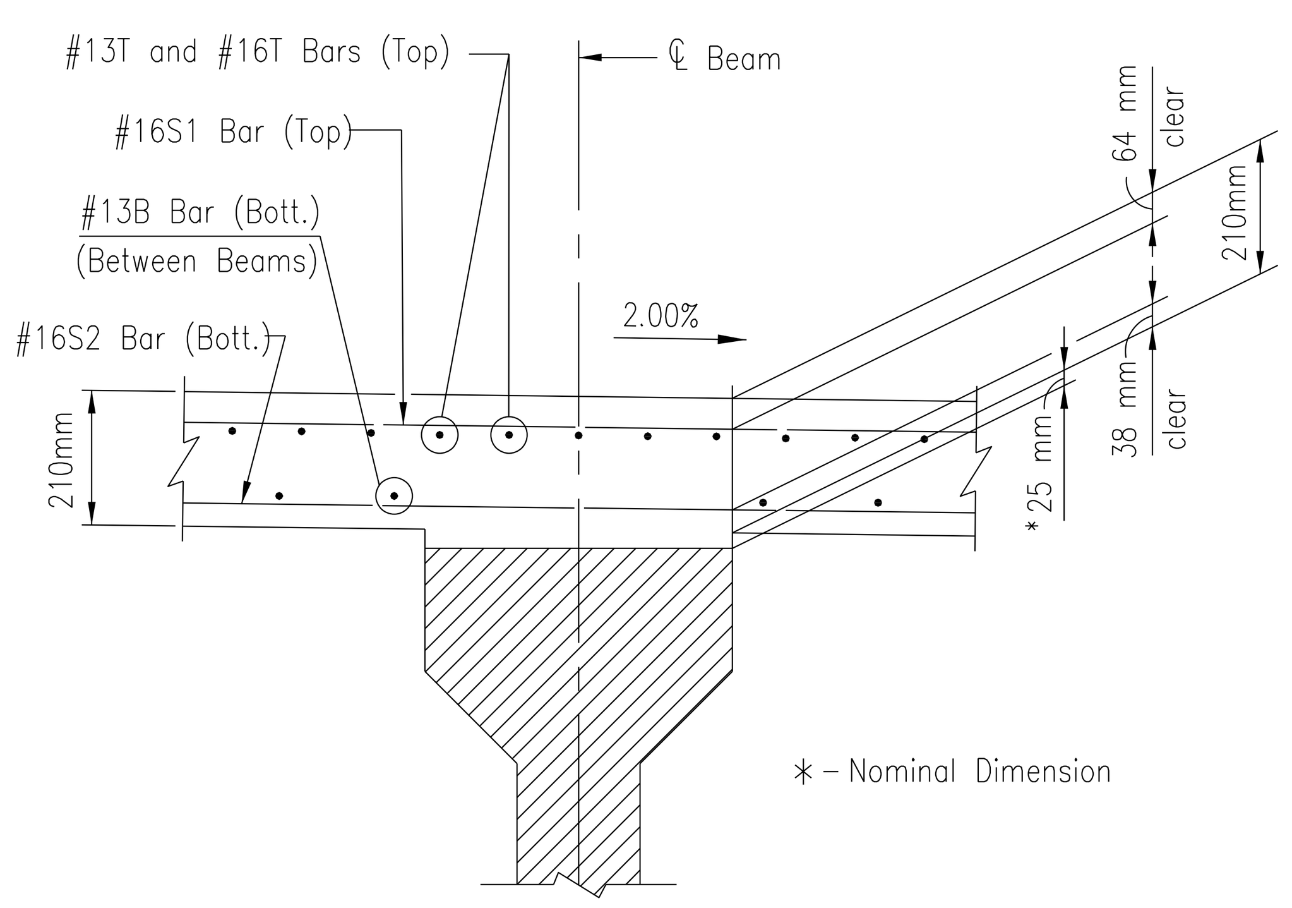
DIAPHRAGM DETAIL @ PIER

Not to Scale



CONSTRUCTION JOINT DETAIL

Not to Scale

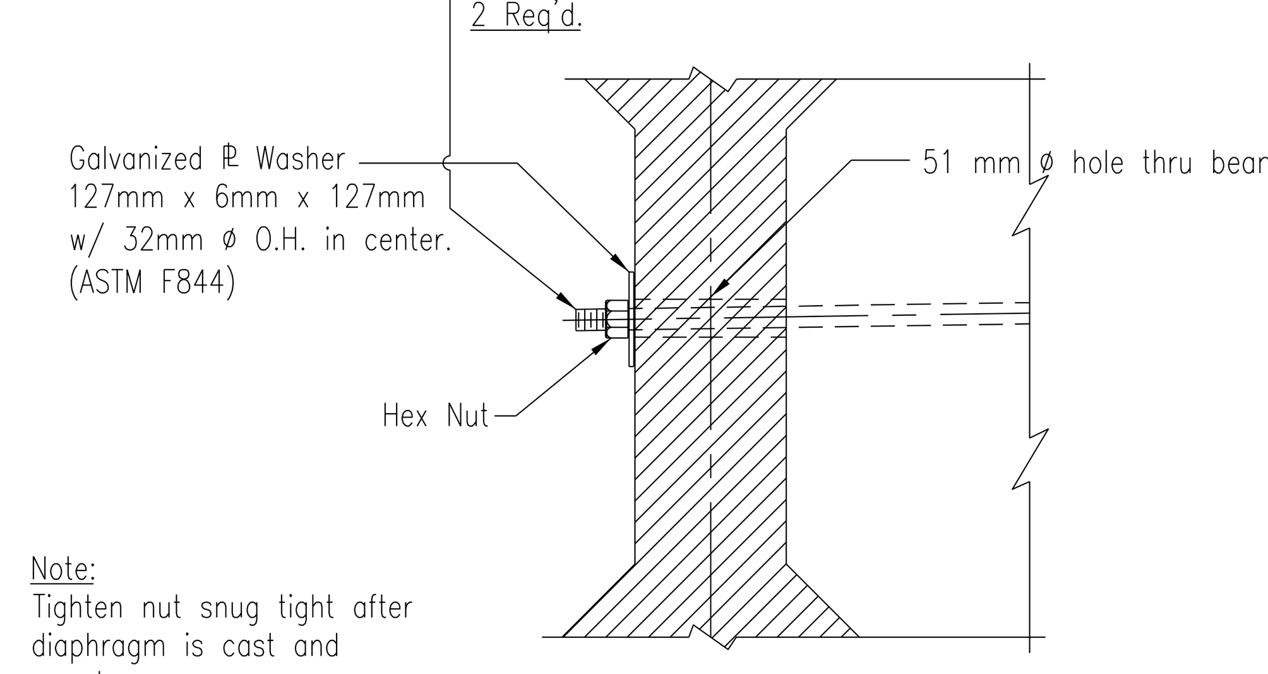


DETAIL (A)

Not to Scale

FOR INTERMEDIATE DIAPHRAGM

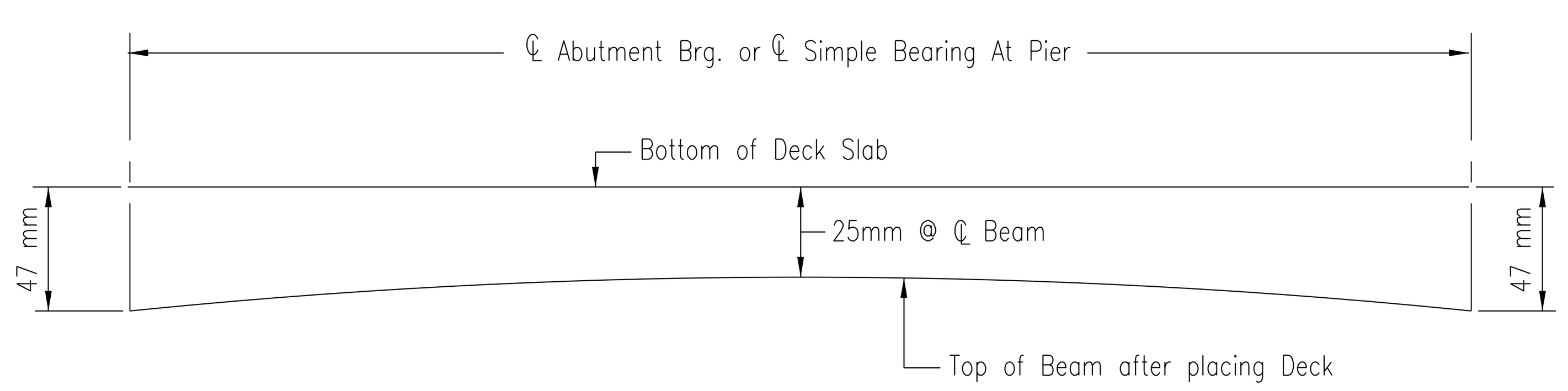
29mm ø ROD w/ 76 mm thread @ each end.
(ASTM A325M)
6.810 m Lg.
2 Req'd.



Note:
Tighten nut snug tight after diaphragm is cast and cured.

DETAIL (B)

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 25 mm Nominal Dimension shown on the "SLAB DETAIL". This information is for quantity purposes, only, and is not to be used for Construction.

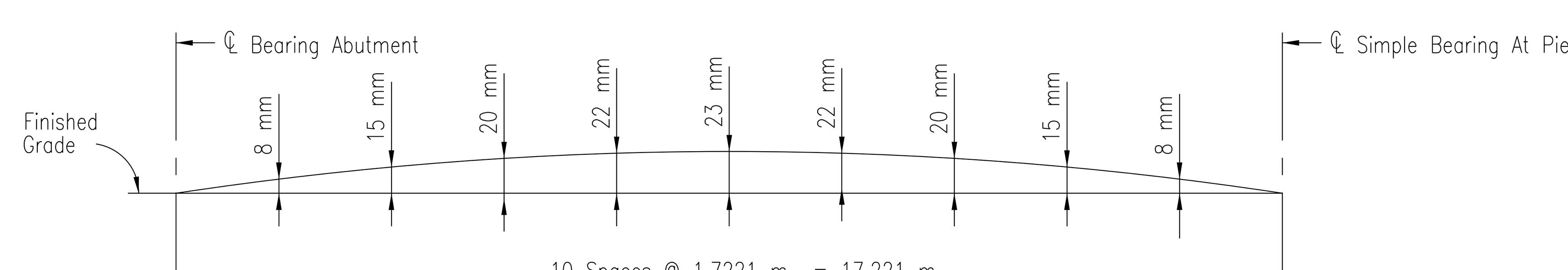


DIAGRAM FOR PLACING CONCRETE DECK

Not to Scale

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

TOM W. MELTON
NEW MEXICO
20554
10/27/2023
PROFESSIONAL ENGINEER

NAVAJO DIVISION OF TRANSPORTATION

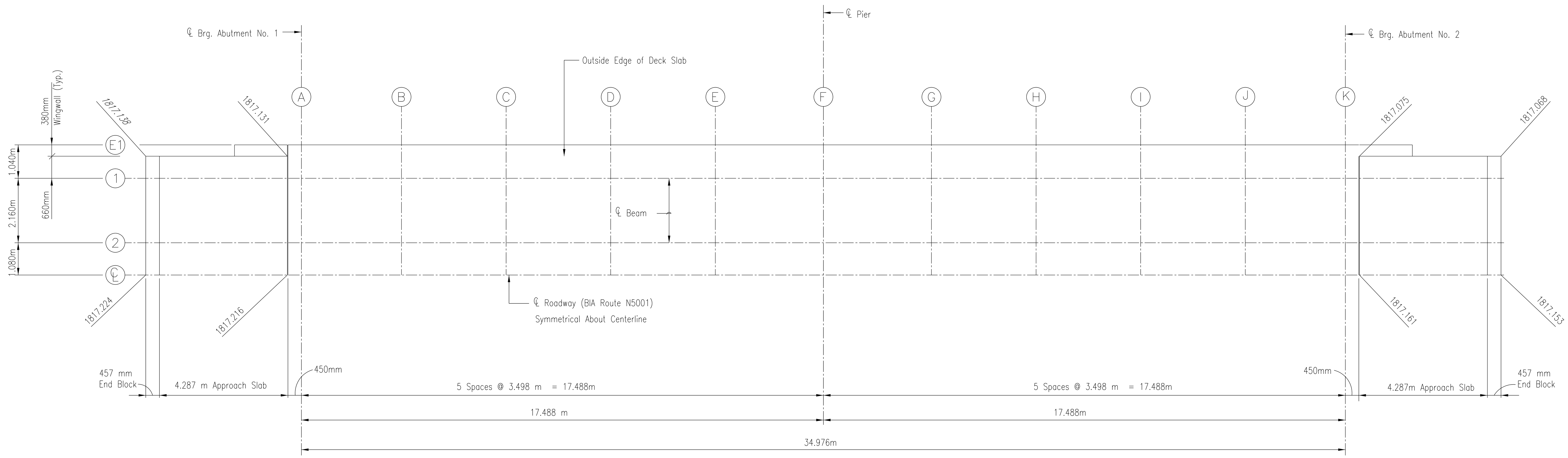
DECK SECTION & DETAILS

Designed by: NDA	
Drawn by: TAY	Date: 6/13/16
Checked by: KRH	Date: 4/2/2019
File Name: 12_B2_N214_Trvsec	

NAVAJO D.O.T

c:\users\...\12_B2_N214_Trvsec_2016-06-13.dgn

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	86	106



LOCATION DIAGRAM

Scale: NTS

NOTE:

Contractor shall verify elevations prior to Deck Slab Placement

	℄ Brg. Abut. No. 1					℄ Pier					℄ Brg. Abut. No. 2
LOCATION	A	B	C	D	E	F	G	H	I	J	K
E1	1817.030	1817.125	1817.119	1817.114	1817.108	1817.103	1817.098	1817.092	1817.087	1817.081	1817.076
1	1817.151	1817.145	1817.140	1817.135	1817.129	1817.124	1817.118	1817.113	1817.108	1817.102	1817.097
2	1817.194	1817.189	1817.183	1817.178	1817.172	1817.167	1817.162	1817.156	1817.151	1817.145	1817.140
℄	1817.216	1817.210	1817.205	1817.199	1817.194	1817.189	1817.183	1817.178	1817.172	1817.167	1817.162

FINISHED TOP OF DECK ELEVATIONS

TOM W. MELTON NEW MEXICO 20554 10/27/2023 PROFESSIONAL ENGINEER

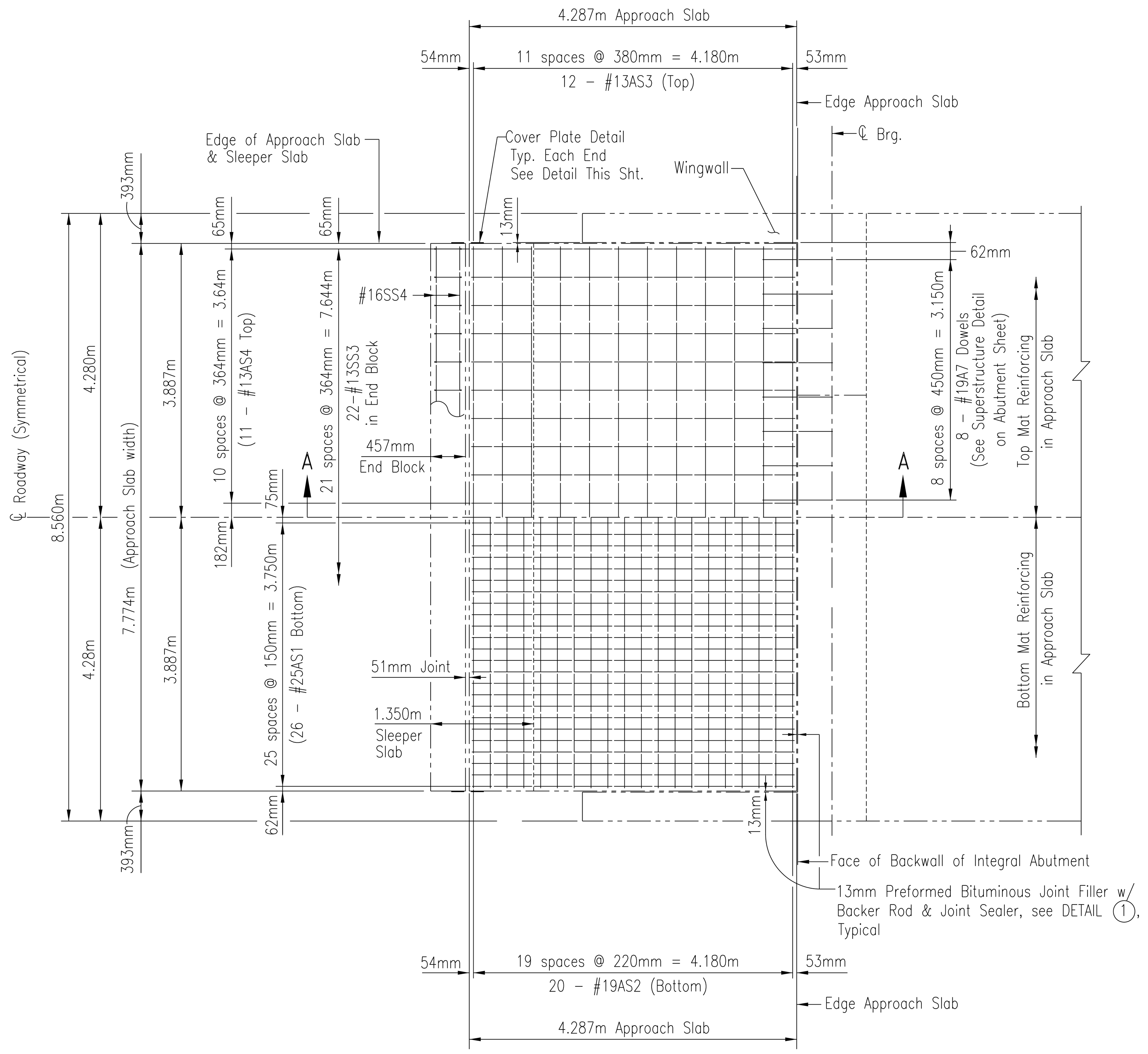
NAVAJO DIVISION OF TRANSPORTATION

TOP OF SLAB ELEVATIONS

Designed by: NDA
Drawn by: TAY, rsh Date: 6/13/16
Checked by: Date:
File Name: 13_B2_N214_Slabelev

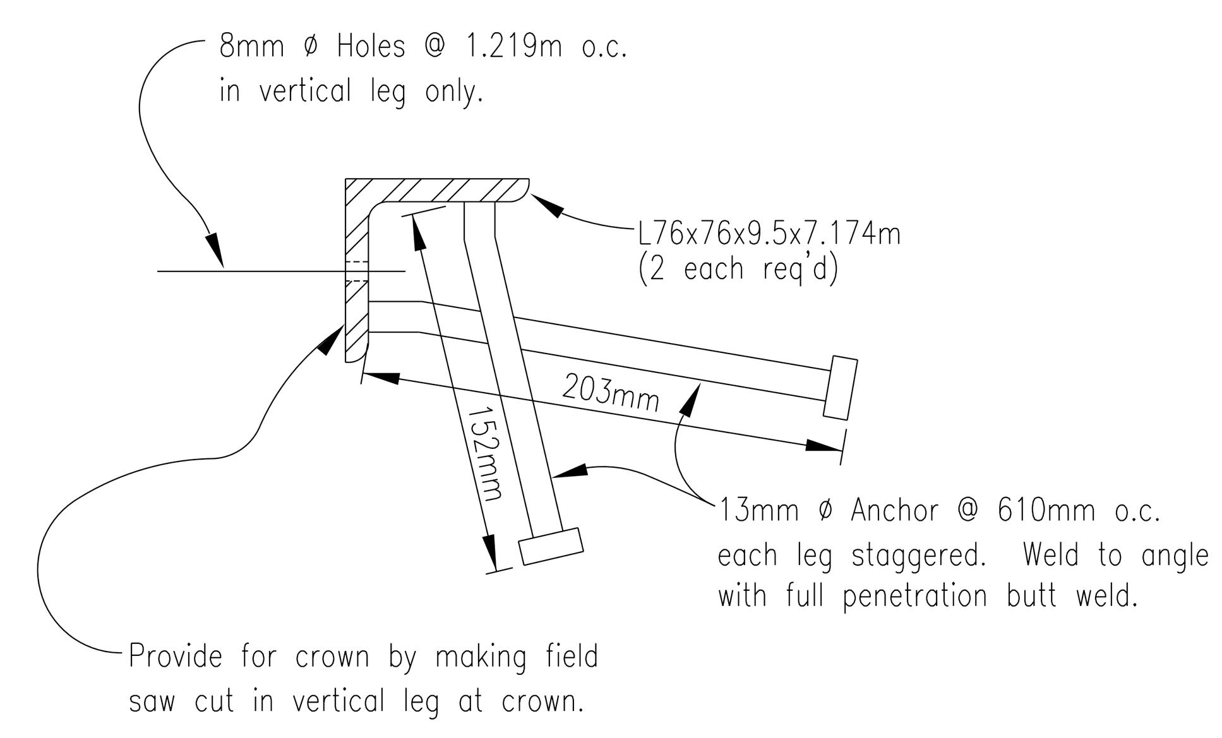
NAVAJO D.O.T

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	87	106



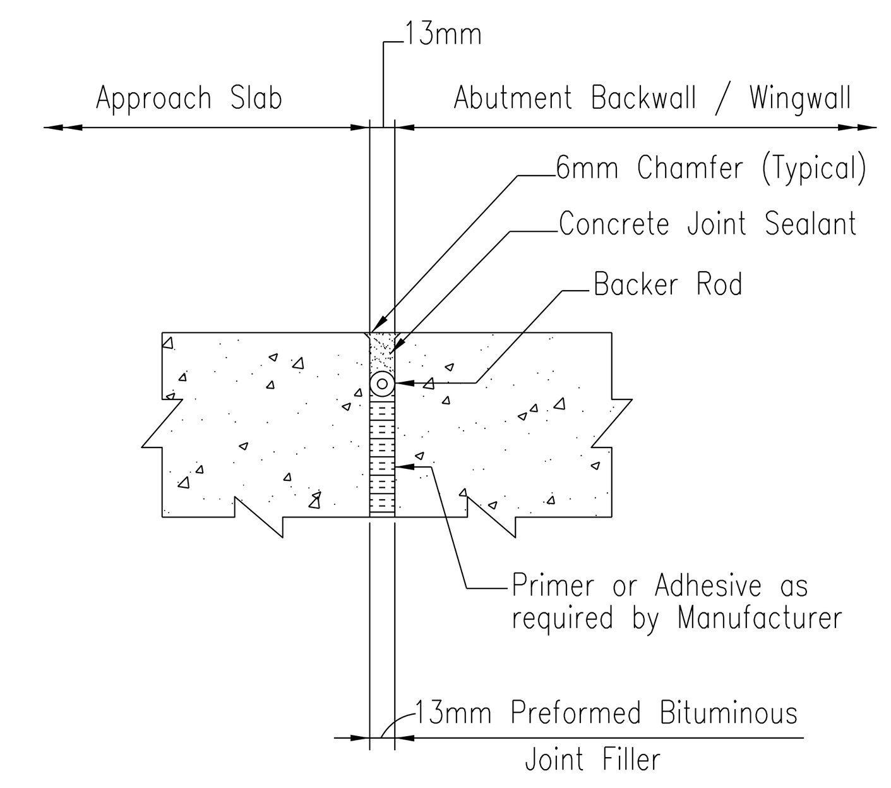
APPROACH SLAB PLAN

Scale: NTS



GUARD ANGLE DETAIL

Not to Scale



DETAIL (1)

Not to Scale

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 55201-0200 and, therefore no direct payment will be made.

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 extrusion and a SE-500 strip seal.
(b) Structural Accessories Inc. joint with Onflex 40 SEQ 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 of 13 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 x L x $\Delta T°$
   Where:

   Change in "A" is in meters
   L = movement length = 17.488 m
   $\Delta T°$ = change in temperature from to in degrees C.

   Contractor shall submit shop drawings for the joints showing all fabrication details and material specifications according to specification requirements. (see Note No. 5)

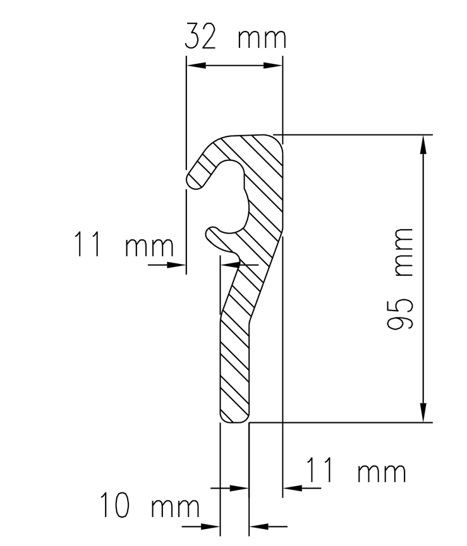
3. The joints shall be installed in accordance with the manufacturer's instruction. A representative of the manufacturer shall be present at the site during installation.

4. Steel rails shall conform to AASHTO M270M, Grade 250 or 345, galvanized after fabrication. Neoprene strip seal shall conform to ASTM D5973..

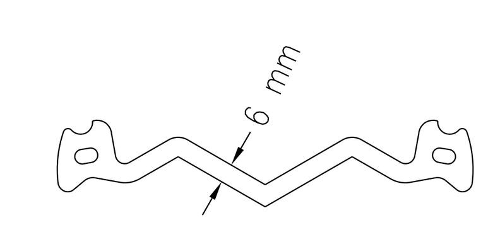
5. Steel rail shall be fabricated to conform to the longitudinal grade and roadway crown at approach slabs.

FIXED JOINT SEAL

6. Material and construction of joint sealant shall conform to the requirements of Section 712 of FP-14. The concrete joint-sealer shall meet all requirements of AASHTO M173 and the backer rod shall meet the requirements of AASHTO M282.



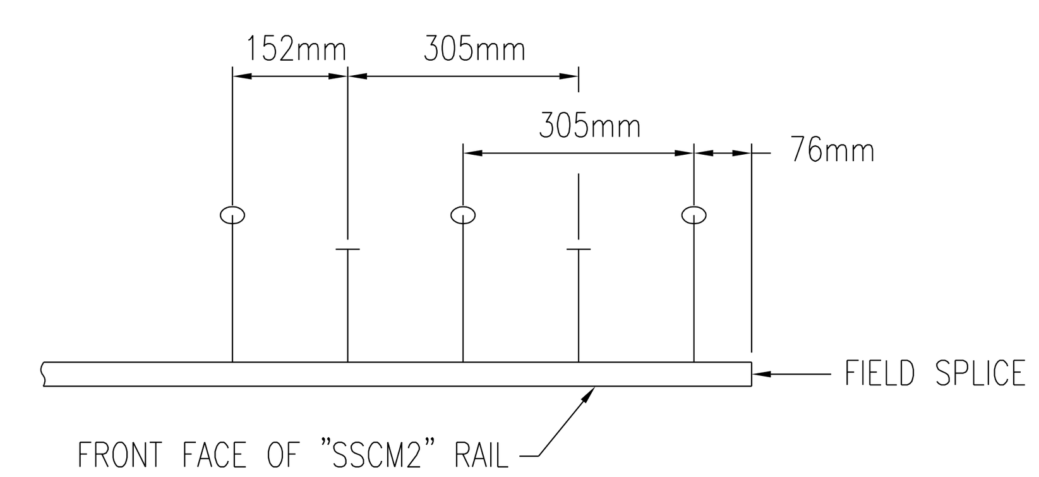
"SSCM2" FRAME RAIL



"A2R" SERIES STRIP SEAL

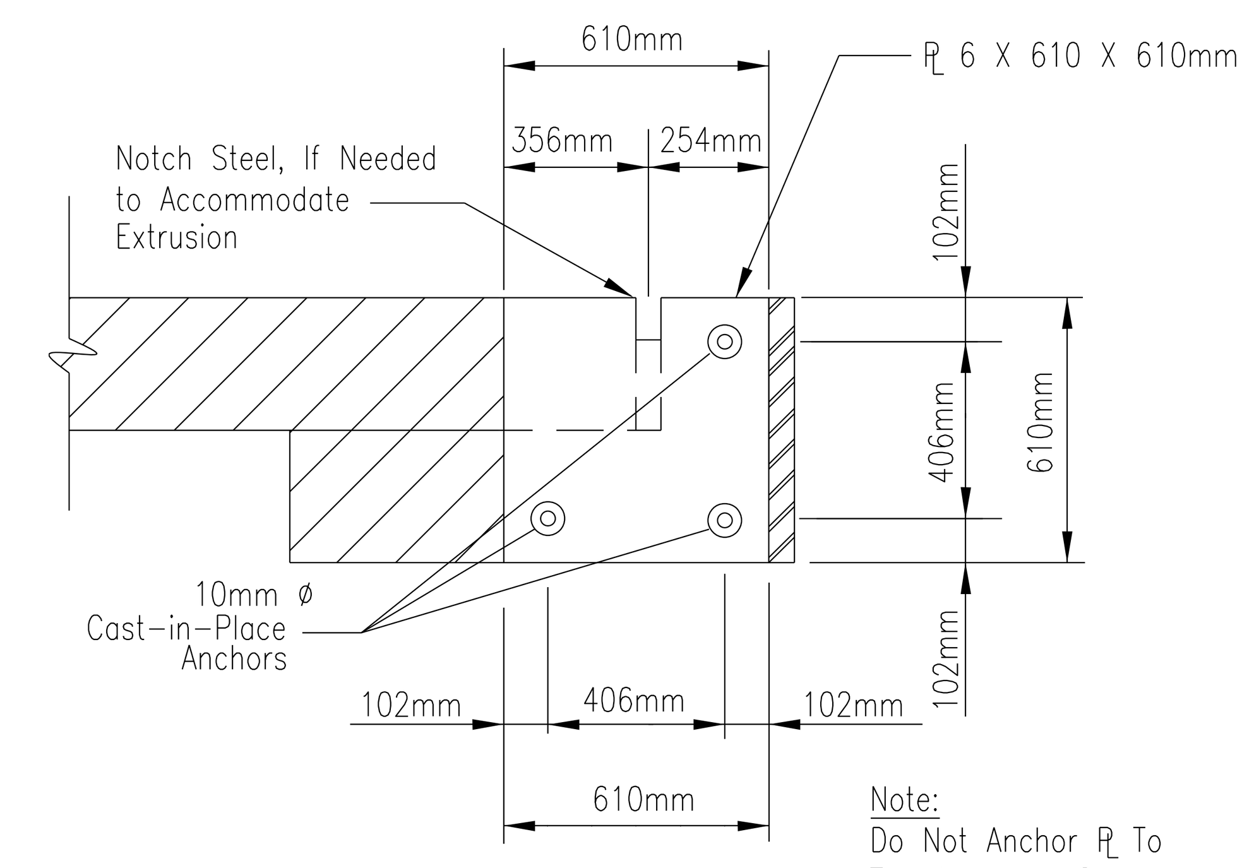
MINIMUM JOINT OPENING FOR EASE OF INSTALLATION = 38 mm

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



TYP. 16 mm ø STUD LAYOUT FROM SPLICE

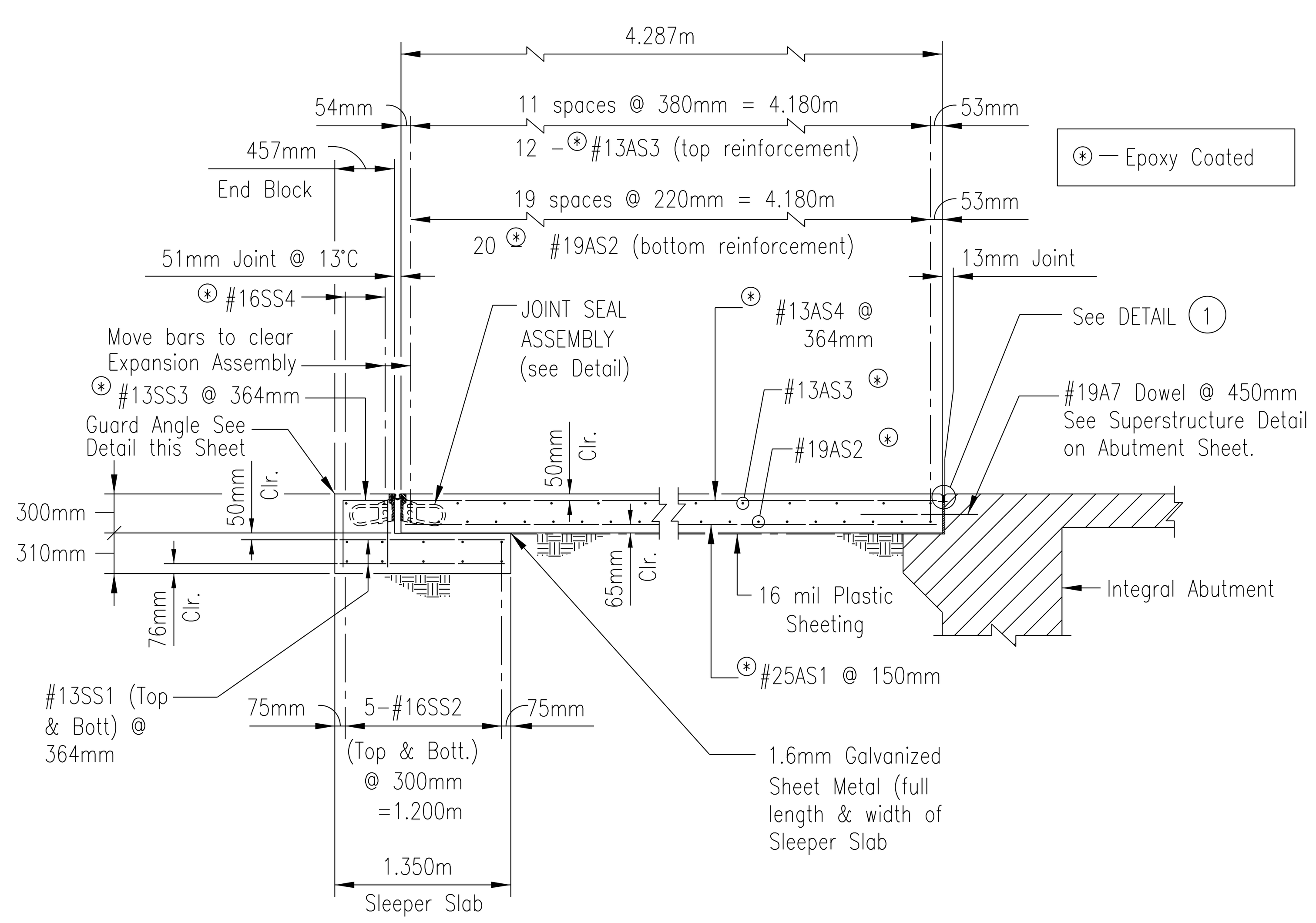
FABRICATION NOTES
AFTER RAILS HAVE BEEN CUT.
1) PLACE STUDS ON RAIL ACCORDING TO THE LAYOUT DETAIL.
2) IF STUD ANCHOR PLACEMENT EXCEEDS 150mm FROM A SPLICE, PLACE A STUD @ 75mm FROM SPLICE.



Note:
Do Not Anchor ℞ To The Approach Slab.

Cover Detail

N.T.S.



SECTION A-A

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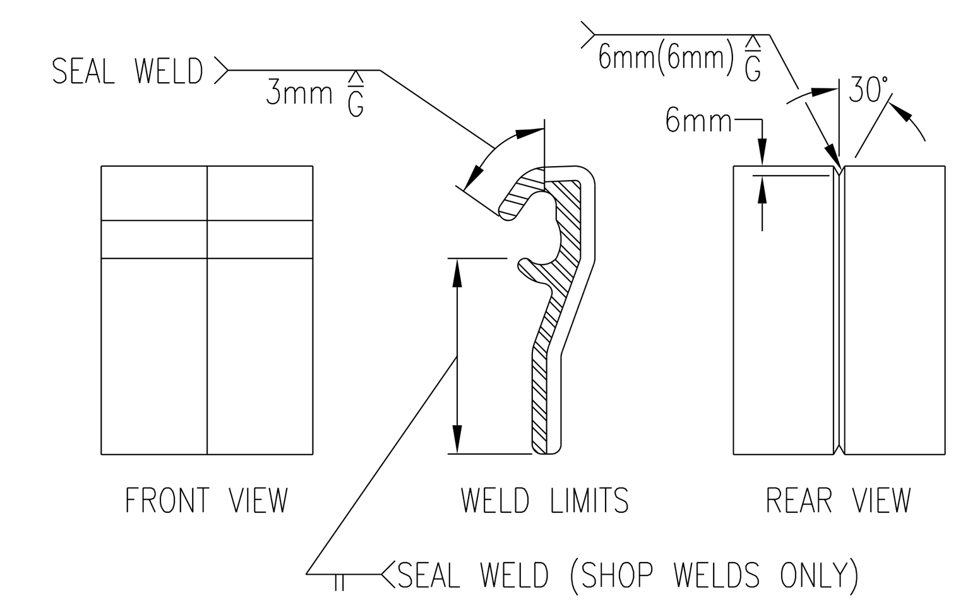
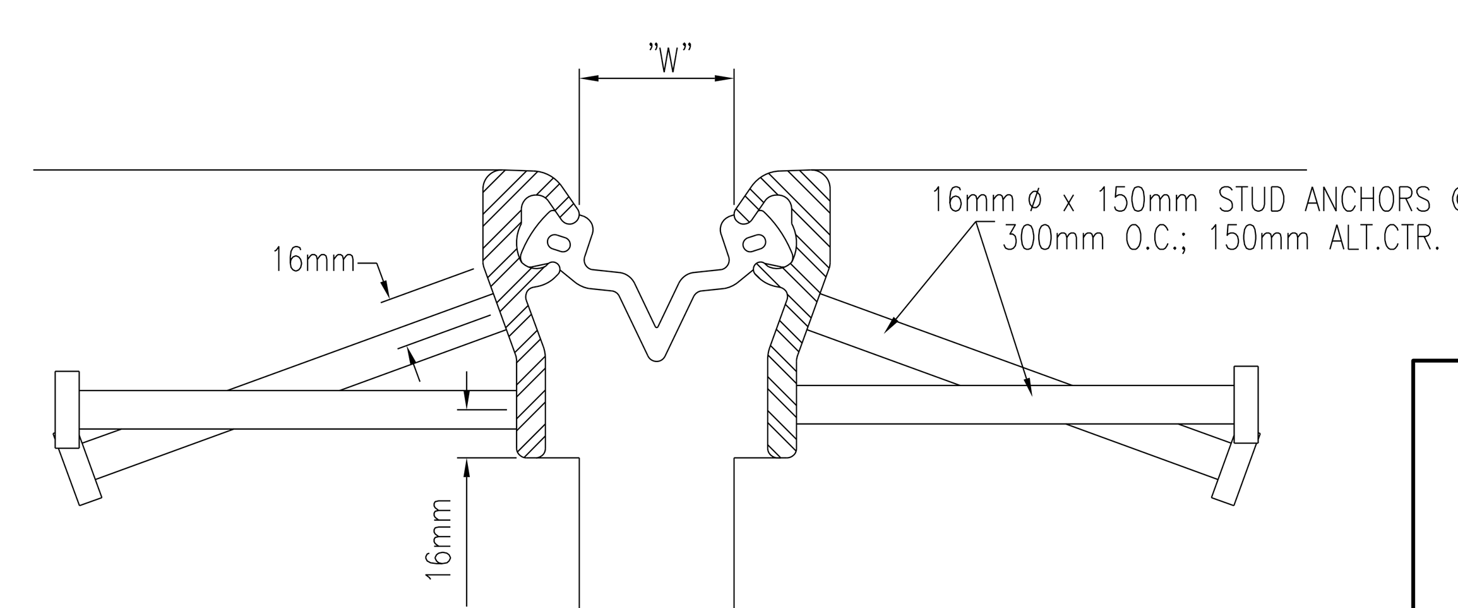


"SSCM2" SHOP & FIELD SPLICE DETAIL



SECTION THRU EXPANSION JOINT

NAVAJO DIVISION OF TRANSPORTATION

APPROACH SLAB DETAILS

TOM W. MELTON NEW MEXICO 20554 10/27/2022 PROFESSIONAL ENGINEER

Designed by: MAZ
Drawn by: TAY, NDA, rsh Date: 6/13/16
Checked by: KRH Date: 4/2/2019
File Name: 14_B2_N214_Appslab

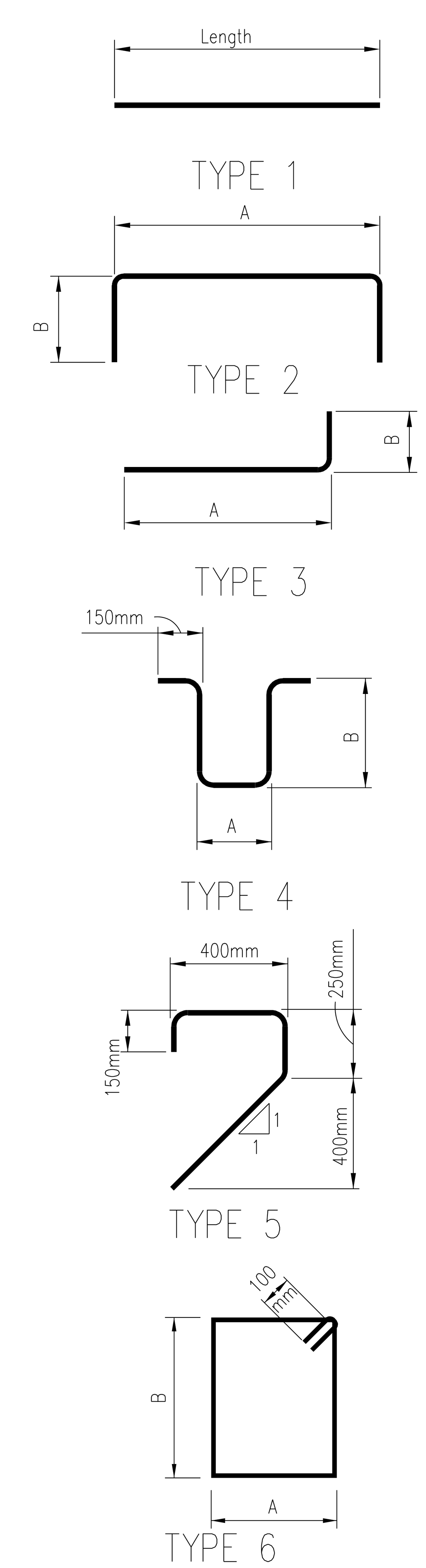
NAVAJO D.O.T

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	88	106

	LOCATION	STRAIGHT BARS					BENT BARS							SPACING
		MARK	TYPE	QTY.	SIZE	LENGTH	MARK	TYPE	QTY.	SIZE	A	B	Length	
	--ABUTMENT--													
	Integral Abutment	#16A1	1	14	#16	8.41 m								As Shown
	Integral Abutment	#16A2	1	12	#16	300 mm								As Shown
	Integral Abutment	#16A3	1	18	#16	1.500 m								As Shown
	Integral Abutment						#13A4	6	38	#13	800 mm	1.300 m	4.400 m	As Shown
	Shelf						#16A5	5	54	#16			1.365 m	300 mm
	Shelf	#13A6	1	4	#13	7.8 mm								As Shown
*	Dowel	#19A7	1	32	#19	920 mm								450 mm
*	Integral Abutment	#16A8	1	12	#16	8.41 m								As Shown
	Pile Cap	#29A9	1	24	#29	8.41 m								As Shown
	Pile Cap	#16A10	1	16	#16	8.41 m								210mm
	Pile Cap						#13A11	6	66	#13	800 mm	1.045m	3.890 m	225mm
	Pile Cap	#25A12	1	44	#25	1.320 m								As Shown
	--WINGWALL--													
	Stirrups-Upper						#13W6	6	28	#13	280 mm	1.250m	3.26 m	300 mm
	Stirrups-Lower						#13W1	6	28	#13	280 mm	1.10 m	2.96 m	300 mm
	Inside Face	#22W2	1	20	#22	2.56 m								300 mm
	Outside Face						#13W3	3	20	#13	2.560 m	300 mm	2.860 m	300 mm
	Inside Face	#19W4	1	24	#19	2.560 m								210 mm
	Outside Face						#13W5	3	24	#13	2.560 m	300 mm	2.860 m	210 mm
	--PIER--													
	Top & Bottom	#29P1	1	11	#29	7.860 m								As Shown
	Sides	#22P2	1	4	#22	7.860 m								265 mm
	Stirrups						#13P3	6	30	#13	950 mm	800 mm	3.700 m	220 mm
	Ends						#13P4	2	8	#13	920 mm	450 mm	1.820 m	265 mm
	--DECK SLAB--													
*	Top-Long.	#16T1	1	26	#16	10.000 m								300 mm
*	Top-Long.	#16T2	1	27	#16	12.000 m								300 mm
*	Top-Long.	#13T3	1	54	#13	12.400 m								300 mm
*	Top-Long.	#13T4	1	52	#13	13.400 m								300 mm
*	Bott. Long	#13B1	1	17	#13	12.700 m								380 mm
*	Bott. Long	#13B2	1	19	#13	16.700 m								380 mm
*	Bott. Long	#13B3	1	38	#13	10.000 m								380 mm
*	Bott. Long	#13B4	1	34	#13	12.000 m								380 mm
*	Top-Transv.	#16S1	1	227	#16	8.460 m								150 mm
*	Bott.-Transv.	#16S2	1	227	#16	8.460 m								150 mm
	--DIAPHRAGM--													
	Pier Diaphragm	#13D1	1	12	#13	1.550 m								As Shown
	Pier Diaphragm	#13D2	1	18	#13	1.880 m								As Shown
*	Pier Diaphragm						#13D3	4	19	#13	585 mm	1.290 m	3.465 m	375,260 mm
	Pier Diaphragm	#13D4	1	8	#13	560 mm								As Shown
	Pier Diaphragm	#13D5	1	12	#13	750 mm								As Shown
	Pier Diaphragm	#25D6	1	1	#25	8.260 m								As Shown
	Intermediate Diaph.	#13D7	1	24	#13	1.560 m								As Shown
	Intermediate Diaph.	#13D8	1	36	#13	1.880 m								As Shown
*	Intermediate Diaph.						#13D9	4	30	#13	130 mm	1.015 m	2.460 m	375 mm
	--APPROACH SLAB--													
*	Bottom Mat	#25AS1	1	104	#25	4.190 m								150 mm
*	Bottom Mat	#19AS2	1	40	#19	7.624 m								220 mm
*	Top Mat	#13AS3	1	24	#13	7.624 m								380 mm
*	Top Mat	#13AS4	1	44	#13	4.190 m								370 mm
	--SLEEPER SLAB--													
		#13SS1	1	88	#13	1.200 m								370 mm
		#16SS2	1	20	#16	7.624 m								300 mm
	--END BLOCK--													
*							#13SS3	2	44	#13	355 mm	510 mm	1.375 m	370 mm
*		#16SS4	1	4	#16	7.624 m								As Shown

BENDING DIAGRAMS

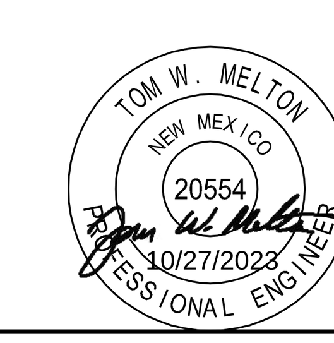
ALL DIMENSIONS ARE OUT TO OUT



* Epoxy Coated reinforcing bars

NAVAJO DIVISION OF TRANSPORTATION

REINFORCING BAR SCHEDULE

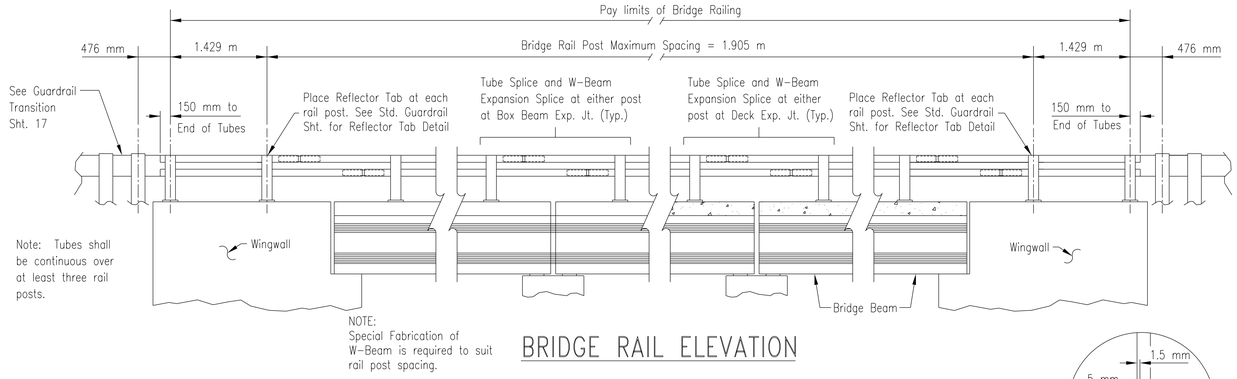


Designed by: NDA
Drawn by: TAY Date: 6/13/16
Checked by: KRH Date: 4/2/2019
File Name: 15_B2_N214_Rnfschd

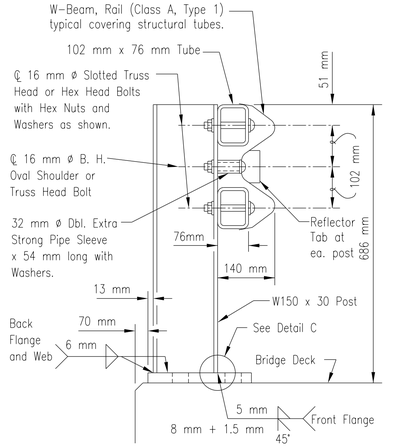
NAVAJO D.O.T

c:\users\gmgentle\appdata\local\bentley\projectwise\wci_projects\d0354817\sht 88 N214_Rnfschd_2016-06-13.dgn

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	89	106

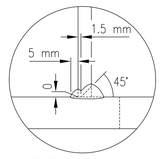


BRIDGE RAIL ELEVATION



Note: In lieu of Front Flange Weld shown, a 9.5 mm fillet weld all around including edges of flange may be used.

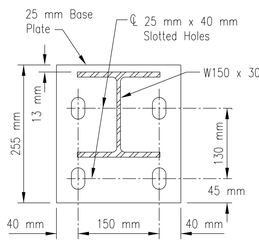
BRIDGE RAIL TYPICAL SECTION



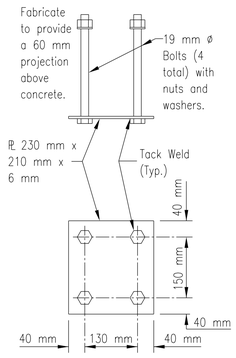
DETAIL C

GENERAL NOTES

1. Panel lengths of tube members shall be attached continuously to a minimum of three posts (except at abutments with expansion joints). Tube splice assemblies shall be provided at a 15 m maximum spacing throughout the bridge railing.
2. Dimensions and specified hardware are given in SI (metric) units. For hardware specified in SI (metric) units, English unit hardware may be substituted provided that they are equal or greater in strength.
3. Rail posts shall be placed as shown and perpendicular to the adjacent roadway grade. They may be vertical to normal roadway cross slopes, and shall be perpendicular to super elevated roadway cross slopes. The face of railing shall have a smooth transition between normal and super elevated positions. Metal shims shall be used where necessary.
4. All nuts, bolts, washers, anchorage plates, bottom plates and necessary hardware are considered as parts of the rail for payment.
5. All steel components except reinforcing steel and bolt anchorage plates shall be galvanized unless otherwise shown in plans.
6. Anchor bolts shall be M20x2.5 ASTM A 325,, Type 1, galvanized. Each bolt shall have a hardened steel washer (AASHTO M293m, galv. and a 50 mm plain steel washer(ASTM F844). Nuts shall conform to ASTM A 563, Grade DH.
7. All tubes and tube sleeve dimensions shall be as shown in the Tube Sleeve Table. All posts, plates and shims shall conform to ASTM A500, Gr. A, B. or C, galv. or AASHTO M270M, Gr. 250, galvanized.
8. All W-Beam and W-Beam connection hardware shall conform to the requirements of AASHTO M180M.
9. Shop drawings shall be submitted and approved at least 14 days prior to the fabrication of the bridge rail components.
10. Dimensions noted by asterisk (*) shall be increased by 50 mm when a 50 mm HACP overlay is specified for the bridge deck.

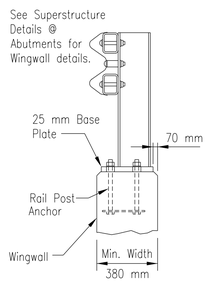


BASEPLATE DETAIL



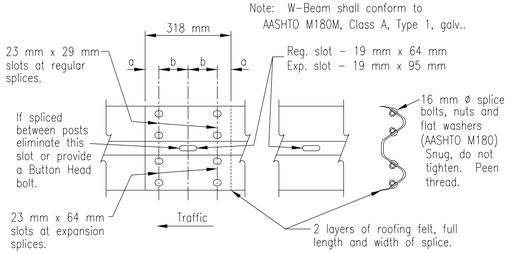
RAIL POST ANCHOR

(For Concrete Deck and/or Wingwalls)

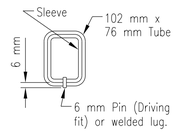


WINGWALL INSTALLATION

SPLICE	a	b
Regular	51 mm	108 mm
Expansion	70 mm	89 mm

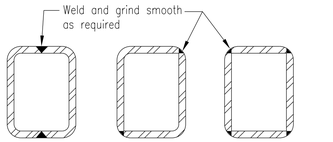


W-BEAM RAIL DETAILS



Note: The difference between the outside dimensions of the sleeve and the inside dimensions of the rail shall not exceed 3 mm along either axis.

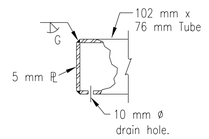
TUBE SPLICE SECTION



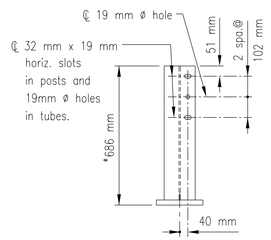
SLEEVE FABRICATION OPTIONS

TUBE & SLEEVE MEMBERS		
Rail Member		Sleeve Thickness
Material	Thickness	Material: A36
A500 Gr.C	4.8 mm	4.7 mm
A500 Gr.B	6.4 mm	6.4 mm
A500 Gr.A	7.9 mm	6.4 mm

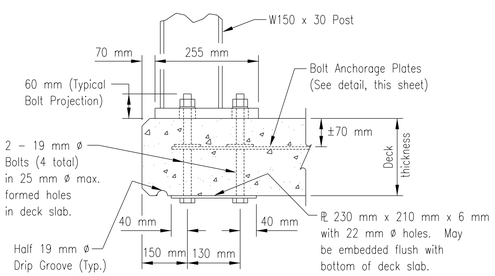
Note: Other sections of equal or greater strength are acceptable for sleeves.



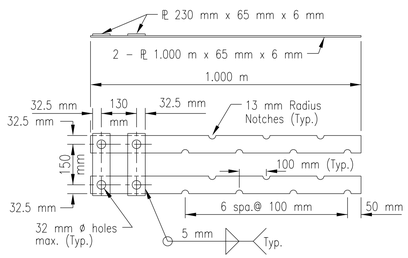
TUBE END CAP



BRIDGE RAIL POST FOR CONCRETE DECK AND WINGWALL

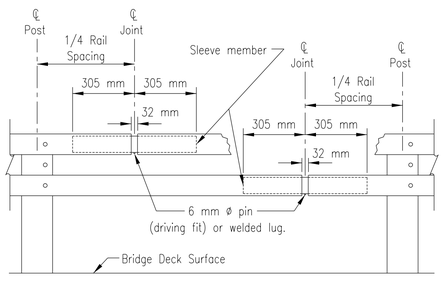


CONCRETE DECK INSTALLATION



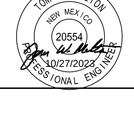
Note: Install one (1) assembly in deck slab at each bridge rail post. Field cut or bend as required to fit special conditions. Do not galvanize or oil.

BOLT ANCHORAGE PLATES



Note: W-Beam Rail not shown.

TUBE SPLICE DETAILS



NAVAJO DIVISION OF TRANSPORTATION

BRIDGE RAIL DETAILS

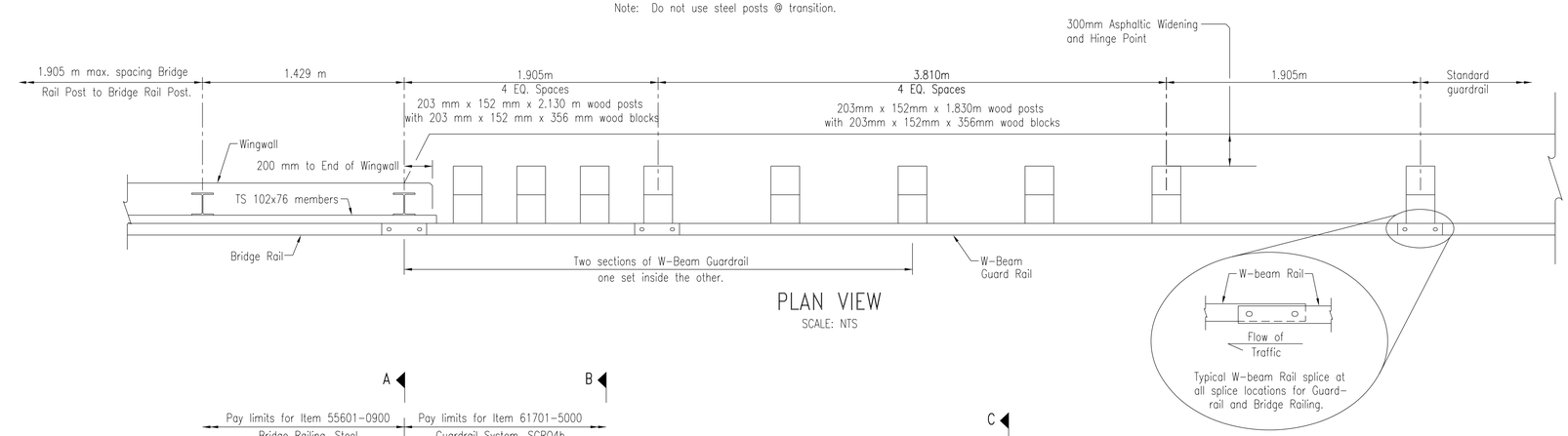
Designed by: BOR - Structural Unit	
Drawn by: TAY	Date: 6/13/16
Checked by: KRH	Date: 4/2/2019
File Name: 16_B2_N214_Brdgrail	

NAVAJO D.O.T

c:\Users\tymgemin\appdata\local\bentley\projectwise\w(c...projects\d0354817\pln 89 N214_Brdgrail_2016-06-13.dgn

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	90	106

Note: Do not use steel posts @ transition.



PLAN VIEW

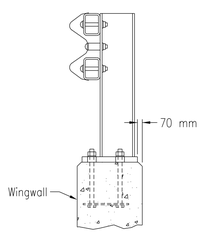
SCALE: NTS

ELEVATION VIEW

SCALE: NTS

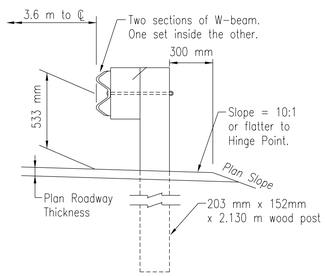
GENERAL NOTES

1. Standard barrier hardware as detailed in "A Guide to Standardized Highway Barrier Rail Hardware", latest edition, AASHTO-AGC-ARTBA Joint Committee has been used to develop this guardrail transition.
2. Dimensions and specified hardware are given in SI (metric) units. For handware specified in SI (metric) unit hardware English unit hardware may be substituted provided they are of equal or greater strength.
3. All W-beams shall be galvanized in accordance with AASHTO M111M/M111-04 and furnishing, fabricating and installing these W-Beams shall be considered incidental to Item 61701-5000.
4. All high strength hex bolts and carriage bolts shall be galvanized in accordance with AASHTO M 232M/M232-06 and furnishing, fabricating and installing all high strength hex bolts and carriage bolts shall be considered incidental to Item 61701-5000.
5. W-beam shall conform to AASHTO M180, Class A, Type 1, galvanized.
6. Wood blocks and posts shall be rough sawn lumber or surfaced on four sides (S4S) having a minimum bending strength of 8.27 MPa. All posts and blocks shall be treated in accordance with AASHTO M133.
7. W-beam is not bolted to posts and blocks at Posts #1, #2, #3, #5, #6, #7 and #9. Blocks are bolted directly to posts.
8. All embankment and aggregate surface course materials necessary for the transition guardrail widening shall be compacted to in accordance with Sections 204 and 301 of the FP-14. The furnishing of embankment and aggregate surface course materail, and the placing thereof, shall be paid for under the appropriate Bid Item 20401-0000.
9. Certificates of Compliance shall be required for all guardrail and wood post and block materials and associated hardware prior to installation of any material under Item 61701-5000.
10. Asphaltic concrete widening and curbing shall be considered incidental to Item 61701-5000. The Contractor shall be required to backfill and compact hot asphaltic concrete mixture around the guardrail posts to the satisfaction of the AOTR.
11. All guardrail transitions, as detailed on this sheet shall be installed parallel to the roadway centerline, beginning at the attachment to the steel bridge railing. Installation at a taper or angle shall not be performed unless approved in writing by the AO.



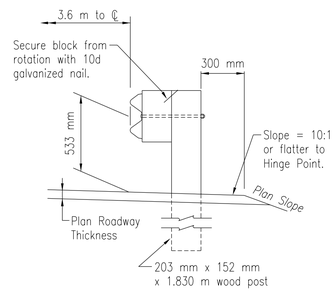
SECTION A-A

N.T.S.



SECTION B-B

N.T.S.



SECTION C-C

N.T.S.

TOM W. MELTON NEW MEXICO 20554 PROFESSIONAL ENGINEER 10/27/2023

NAVAJO DIVISION OF TRANSPORTATION

BRIDGE RAIL/GUARDRAIL TRANSITION

Designed by: BOR – Structural Unit	
Drawn by: TAY	Date: 6/13/16
Checked by: KRH	Date: 4/2/2019
File Name: 17_B2_N214_Tranrail	

NAVAJO D.O.T

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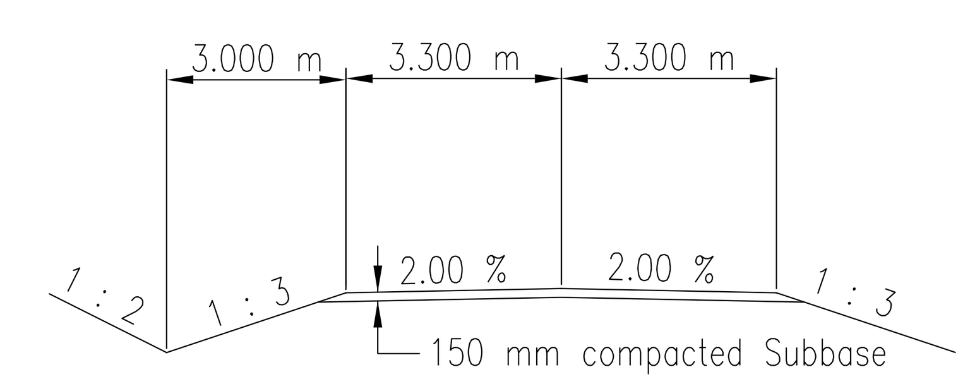
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	91	106

TEMPORARY TRAFFIC CONTROL SIGNS

QUANTITY	DESIGNATION	DETAIL	MINIMUM SIZE (mm)
2	W20-2	DETOUR 1500 FT	1220 X 1220
9	M4-8	DETOUR	610 x 305
5	BIA Route Sign	5001	460 x 610
2	M5-1 right		535 x 380
2	M5-1 right		535 x 380
2	M6-1 left		535 x 380
2	M6-1 right		535 x 380
2	M4-8a	END DETOUR	610 x 460
6	Type III Barricade		As Shown
6	R11-2	BRIDGE CLOSED	1220 x 760
1	M4-10R	DETOUR	1220 x 460
1	M4-10L	DETOUR	1220 x 460
8	W13-1	25 M.P.H.	460 x 460
32	DRUMS or VERTICAL PANELS		As Shown

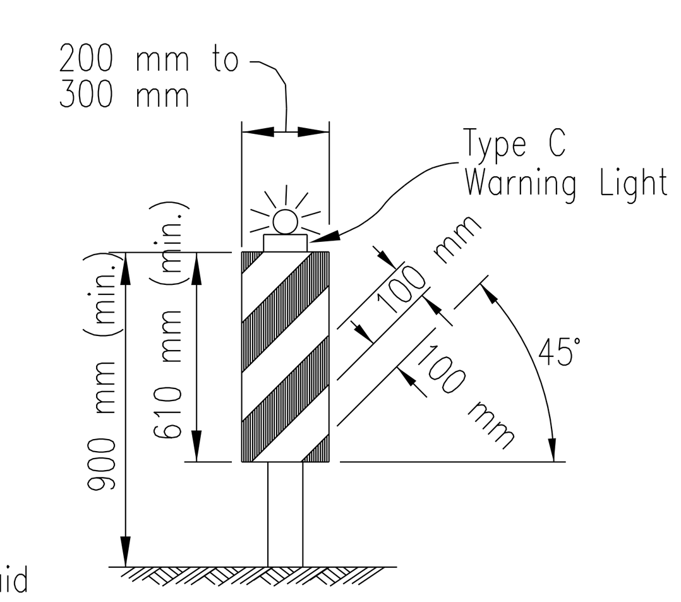
GENERAL NOTES

1. The Temporary Traffic Control Details shown is a minimum guide only.
2. The Contractor shall be responsible for establishing a profile grade and horizontal alignment for the Detour Road in conformance with the AASHTO "Green Book". The Profile and Horizontal Alignment shall be approved by the CM prior to construction of detour.
3. The detour road shall be maintained in a driveable 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.
4. Selecting and placing drainage structures shall be the responsibility of the Contractor in accordance with the Supplemental Specifications.
5. All traffic control devices not associated with the detour road shall be removed to a location at least 10 meters from the edge of the roadway shoulder when not in use.
6. The Contractor has the option of using either drums or vertical panels as shown on this sheet, but shall not use a combination of both.

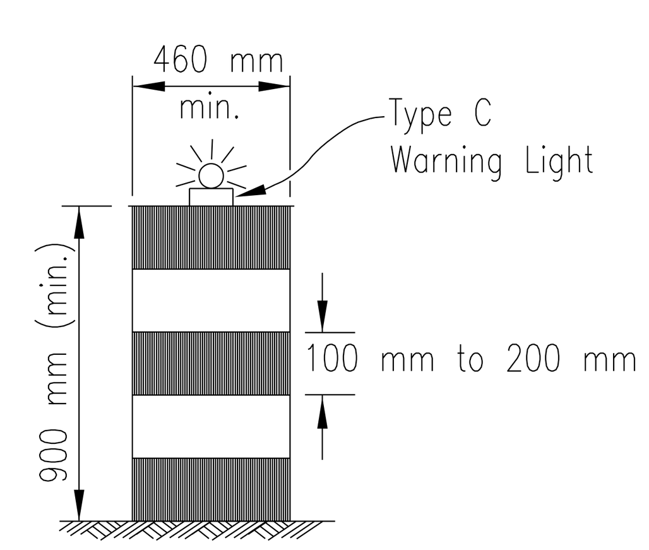


DETOUR ROAD TYPICAL SECTION
N.T.S.

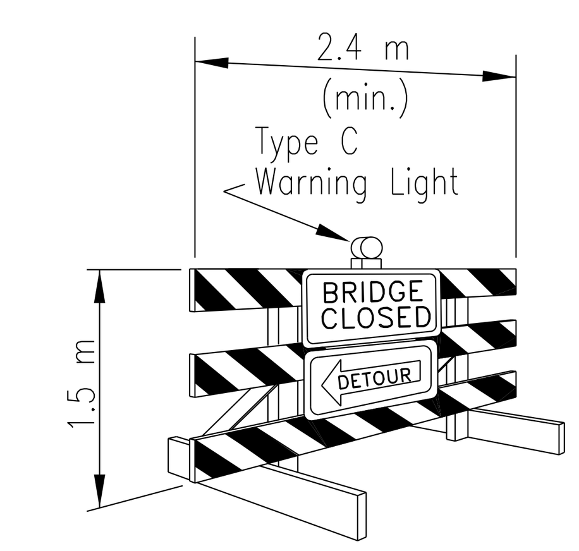
Traffic shall be routed around construction area on a two-lane 6.6 m wide detour road which shall be maintained at all times in a smooth dust-free condition. Profile grades for detour road will be approved in the field by the CM The detour road, including all traffic control, drainage structures, maintenance, earthwork and obliteration shall be paid for under Item 63501-0000, Temporary Traffic Control. Slope designations shown are in accordance with Section 101.03 (e) of the FP-14.



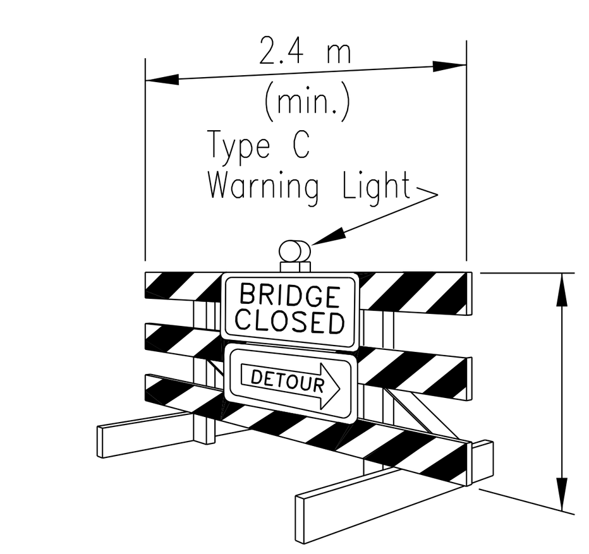
VERTICAL PANEL (Typ.) w/ Type C Warning Light



DRUM (Typ.) w/ Type C Warning Light



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



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

NAVAJO DIVISION OF TRANSPORTATION

TRAFFIC CONTROL DETAILS

TOM W. MELTON NEW MEXICO 20554 10/27/2022 PROFESSIONAL ENGINEER

Designed by: HRC
Drawn by: TAY, HRC Date: 6/14/16
Checked by: KRH Date: 4/2/2019
File Name: 18_B2_N214-TRAFCTRL

NAVAJO D.O.T

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	93	106

INDEX OF SHEETS:

BRIDGE GENERAL NOTES

1. SPECIFICATIONS: Design; AASHTO LRFD Bridge Design Specifications 9th Ed. 2020 and Current Interims Construction: Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-14 and all Supplemental Specifications.

2. UNITS: This project has been designed and shown 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, Back fill Earth Pressure = 4.7 kPa/m, LIVE LOADS; MS 18 plus impact. Impact = 15/L+38 where L = span length in meters. Maximum Impact factor = 0.30. Inventory Rating = MS 25.2 Operating Rating = MS 42.1

4. DESIGN & CONSTRUCTION: Material strengths are F'c = 27.6 MPa for reinforced concrete, Fy = 413.7 MPa for reinforcing steel.

5. CONCRETE: 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. All concrete cast on, or below grade shall contain Type II cement. The contractor may also use concrete with Type II cement elsewhere at no extra cost to the BIA. Chamfer exposed corners of all concrete 19 mm unless otherwise shown. The discharge time limits specified in the FP-14, Table 552-4 shall apply. If concrete cannot 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 alternate methods shall be based on review of historical data for identical strength concrete placed at similarly remote locations. Historical data shall indicate conformance to 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 300 mm below the ground line, edges and bottom of bridge deck overhang and exterior faces of exterior beams shall be given a Class 2 rubbed finish as specified in Section 552.16 of the FP-14, (b). All other surfaces of concrete including interior beams and interior faces of exterior beams shall be given a Class 1 ordinary finish.

6. REINFORCING STEEL: All plain reinforcing steel shall conform to AASHTO M31M, Grade 420, and epoxy coated reinforcing shall conform to AASHTO M284M & M31M Grade 420. All reinforcement in the approach slabs, 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.

7. STRUCTURAL STEEL: Structural steel for expansion joint rails and guard angles shall conform to AASHTO M270M, Grade 250. 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.

8. REMOVAL OF EXISTING BRIDGE: The contractor shall remove, clean and stockpile all existing salvageable material, as indicated by the CM and as called for on these plans under Item 20304-1000 and Item 60701-1000, where applicable. Salvageable material shall be transported by the contractor to the Shiprock Agency maintenance yard and stockplied. Any existing materials determined to be unsalvageable by the CM shall be disposed of by the contractor in accordance with Sections 107 and 203 of the FP-14 and Supplemental Specifications. Any existing piling shall be removed to one meter below finish grade, or lower, to accommodate new construction. All work involving salvageable material shall be included in the appropriate unit price for Item 20304-1000 and Item 60701-1000, as applicable.

9. DEMOLITION PLAN: The Contractor shall submit a Demolition Plan and Schedule to the CM for review 14 days prior to Demolition Work. This work shall be included in the Unit Bid Price for Item No. 601000 – Removal Of Structures and Obstructions.

10. VERIFICATION OF BRIDGE DECK PROFILE: Before Approach Slabs, Transition Slabs or Approach Roadways are constructed, The Contractor shall Survey and Plot Bridge Deck Profiles to record Finished Bridge Deck Elevations. Survey shall be performed in accordance with Standard Specifications, Section 801. If the actual elevations vary by more than described in Section 512.3.10.2 -Acceptance Criteria. The Contractor shell Develop a Plan of Corrective Action for approval by the Project Manager. The Plan of Corrective Action shall contain Detailed Drawings, Procedures, Equipment, and Materials to be used to Correct Grade. The Corrective work shall be completed prior to beginning construction of the Approach Slabs, Section 5112.3.10.2 – Acceptance Criteria shall be strictly enforced and no Separate Measurement or Payment will be made for the Plan and the Corrective Work.

11. GRS-IBS ABUTMENT: GRS-IBS abutment designed per FHWA-HRT-17-080 Design and Construction Guidlines for Geosynthetic Reinforced Soil Abutments and Integrated Bridge Systems, June 2018 Ed. Construction of abutment to be performed per guidlines presented in said publication.

12. VERIFICATION OF ABUTMENT PLACEMENT: contractor is to verify elevations of abutment leveling pads and adjust accordingly per field conditions. All changes to abutment bearing depth are incidental to the project.

CAPACITY RATING

LFR RATINGS	
INVENTORY RATING	MS 25.2
OPERATING RATING	MS 42.1

LRFR RATING FACTORS	
INVENTORY – LEVEL	1.215
OPERATING – LEVEL	1.575

These Ratings were computed by the Load Factor Rating (LRF) and Load and Resistance Factor Rating (LRFR) Methods using the AASHTOWARE Bridge Rating Program Version 7.2.0.3001

TOM W. MELTON NEW MEXICO 20554 PROFESSIONAL ENGINEER 10/27/2023

NAVAJO DIVISION OF TRANSPORTATION

GENERAL NOTES

DRAWN BY: WCI	DATE: 04/19
DESIGNED BY: KRH	DATE: 04/19
REVISED: 05/20	BY: GMG
N213_Gennotes	

NAVAJO D.O.T

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N213_Gennotes

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	94	106

BRIDGE AND ROADWAY ESTIMATED QUANTITIES

ITEM	DESCRIPTION	QUANTITY	UNIT	AS BUILT
20304-2000	Removal of bridge structure	1	L.S.	
20801-0000	Structural excavation	106	m^3	
20803-0000	Structural backfill	482	m^3	
25112-2000	Wire enclosed riprap class 1	32	m^3	
55201-0200	Structural concrete, class A (AE)	117	m^3	
55401-2000	Reinforcing steel, epoxy coated	7180	kg	
55601-0900	Bridge railing, steel	28	m	
56601-0000	Shotcrete	123	m^2	
57401-0000	GRS-IBS, geosynthetic reinforcement	3661	m^2	
57402-1000	GRS-IBS, open-graded backfill	538	m^3	
57403-0000	GRS-IBS, concrete masonry unit	312	m^2	
63308-3000	Object markers, type 3 w/1 post and hardware: 2.98 kg/m	4	EACH	

ITEM 20801-0000-STRUCTURE EXCAVATION
ITEM 20803-0000-STRUCTURE BACKFILL

LOCATION	EXCAVATION	BACK FILL
ABUT. 1	31 m^3	241 m^3
ABUT. 2	75 m^3	241 m^3
TOTAL	106 m^3	482 m^3

ITEM 20304-1000
REMOVAL OF BRIDGE STRUCTURE

STATION	LOCATION	DESCRIPTION	REMARKS
7+165.34 to 7+175.12	CL	Existing Bridge	Remove and Salvage

ITEM 25112-2000-WIRE ENCLOSED RIPRAP CLASS 2

STATION	LOCATION	QUANTITY (m^3)	REMARKS
7+162.06 to 7+170.05	LT.	15.97	
7+168.18 to 7+176.82	RT.	15.97	
7+179.38 to 7+188.02	LT.	15.97	
7+185.49 to 7+194.13	RT.	15.97	
	TOTAL	63.89	

ITEM 56601-0000-SHOTCRETE

STATION	LOCATION	LENGTH (m^2)	REMARKS
7+169.55 to 7+186.64		277.53	
	TOTAL	277.53	

TOM W. MELTON
NEW MEXICO
20554
10/27/2023
PROFESSIONAL ENGINEER

NAVAJO DIVISION OF TRANSPORTATION

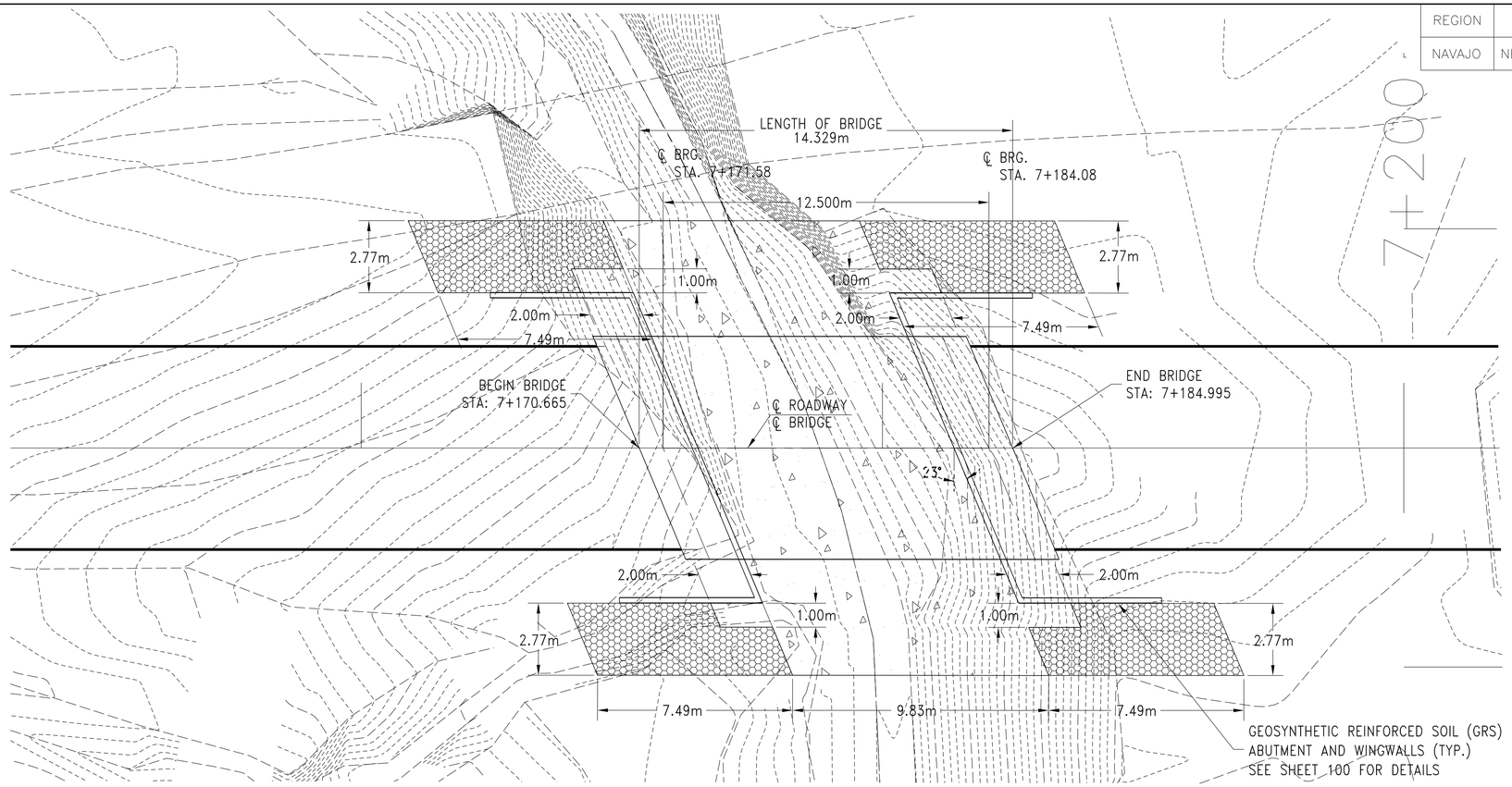
ESTIMATED QUANTITIES

DRAWN BY: WCI	DATE: 04/19
DESIGNED BY: KRH	DATE: 04/19
REVISED: 05/20	BY: GMG
N213_ESTIMATED QUANTITIES	

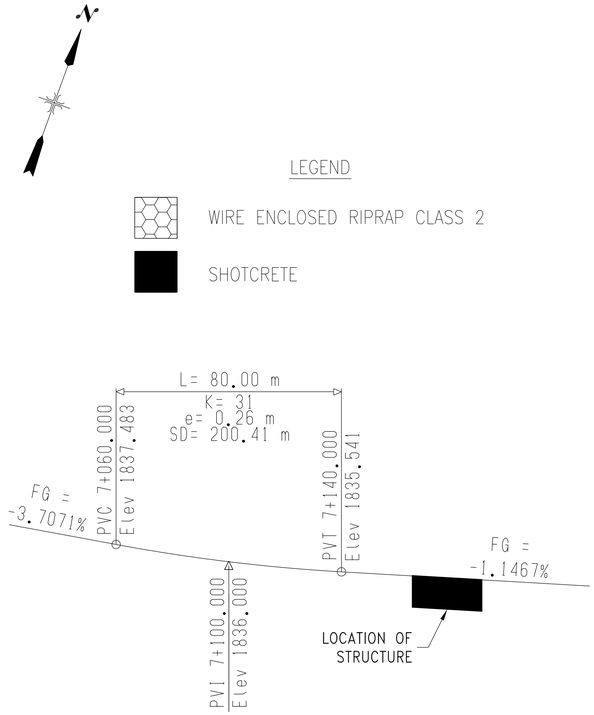
NAVAJO D.O.T

N213_ESTIMATED QUANTITIES 10/27/2023 9:28:34 AM

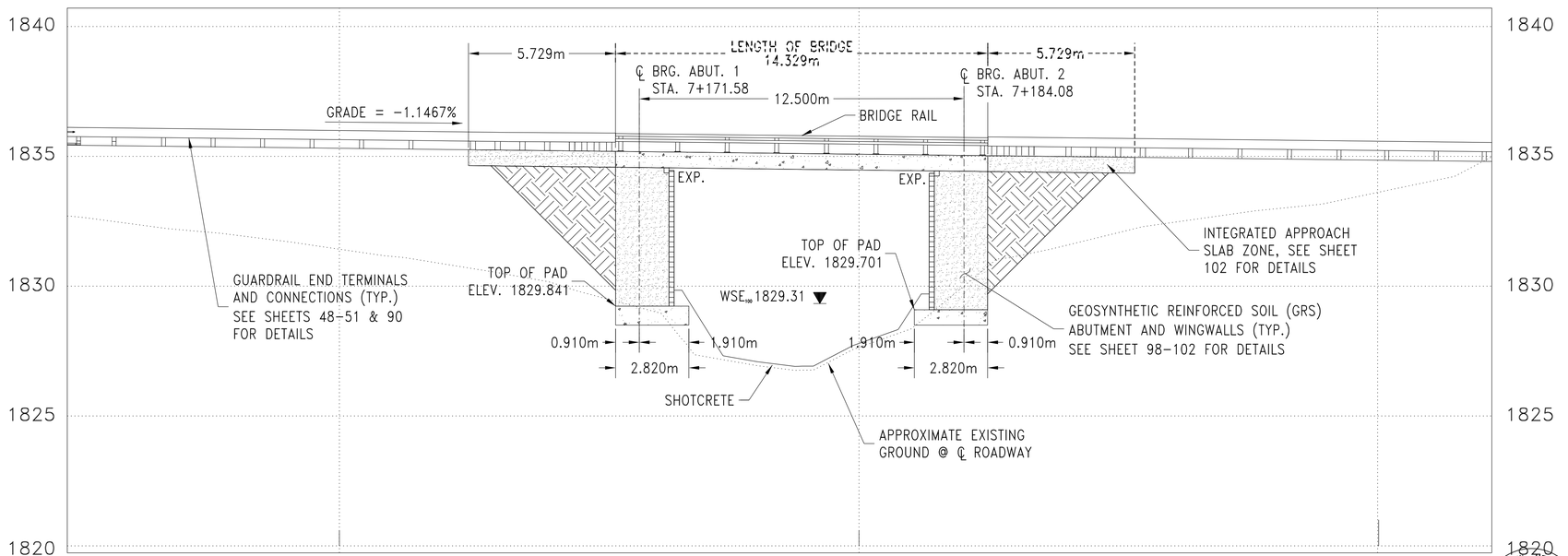
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	95	106



N213 PLAN VIEW



N213 PROFILE GRADE



N213 ELEVATION VIEW

HYDRAULIC DATA:
D.A. = 2.23km²
V100 = 4.67m/s
Q100 = 19.792m³/s
Q100 Elev. = 1828.310
Freeboard = 4.99m (Min)
Scour Depth = 2.01m

TOM W. MELTON
NEW MEXICO
20554
10/27/2023
PROFESSIONAL ENGINEER

NAVAJO DIVISION
OF TRANSPORTATION

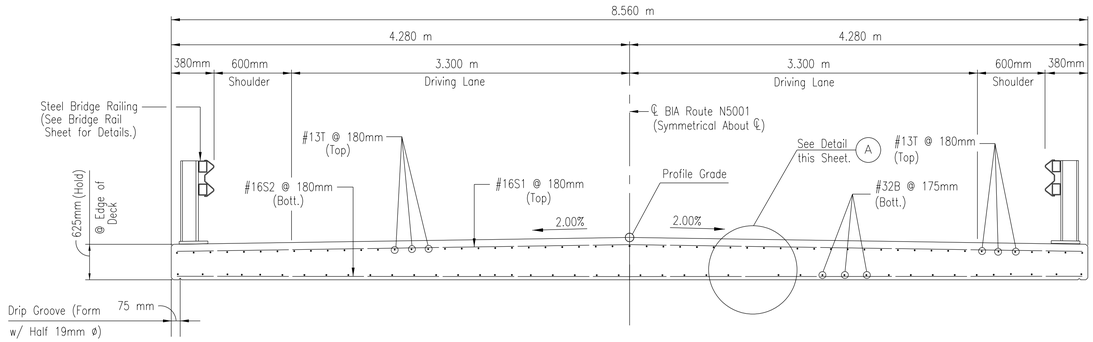
STRUCTURE LOCATION
PLAN & ELEVATION

DRAWN BY: WCI	DATE: 04/19
DESIGNED BY: KRH	DATE: 04/19
REVISED: 05/20	BY: GMG
sht 93 N213_Struloc_PnP	

NAVAJO D.O.T

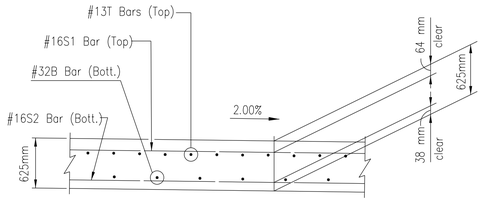
sht 93 N213_Struloc_PnP 10/16/2023 3:45:16 PM

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	96	106



TRANSVERSE DECK SECTION

SCALE: NTS



DETAIL A

Not to Scale

N213 TRANSVERSE SECTION AND DETAILS.dgn 10/27/2023 3:47:01 PM

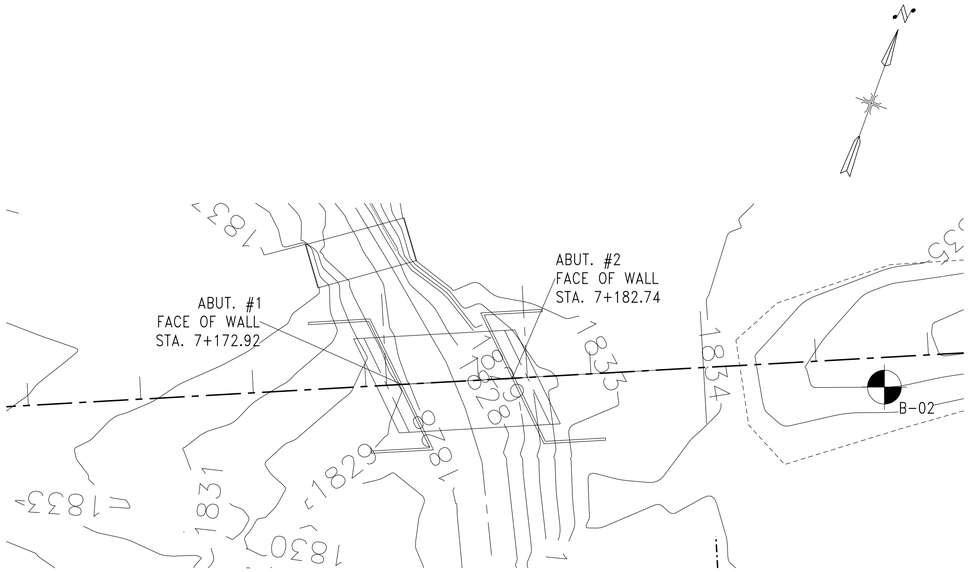
NAVAJO DIVISION
OF TRANSPORTATION

TRANSVERSE SECTION
AND DETAILS

DRAWN BY: WCI	DATE: 04/19
DESIGNED BY: KRH	DATE: 04/19
REVISED: 05/20	BY: GMG
N213 TRANSVERSE SECTION AND DETAILS	NAVAJO D.O.T

TOM W. MELTON NEW MEXICO 20554 10/27/2022 PROFESSIONAL ENGINEER

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	97	106



BORING LOCATION PLAN

Not to Scale

PROJECT Toadlena to Two Grey Hills
Newcomb, New Mexico
DATE 2/27/19
WOOD E & IS PROJECT NO. 19-517-00006

wood.

Page 1 of 1 **BORING NO.** B-02

LOCATION See Site Plan
DRILLING CO.
RIG TYPE CME-45
BORING TYPE Split Spoon/Open Flight Auger
SURFACE ELEV.

Depth in Feet	Relative Drilling Resistance	Graphical Log	Sample	Sample Type	Blows/ft. Wt. 140 lb. 30" drop hammer free-fall	Dry Density lbs per cubic foot	Moisture Content Percent of Dry Weight	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0								SC-GC		**CLAYEY SAND** trace cobbles up to 6", yellowish with trace lenses of brown clay, low to medium plasticity, slightly moist
				S	50/6"					
5				S	18			SM		**SAND** trace white streaks, light brown to yellow, moist to damp
10				S	50/4"					Cobbles caused refusal @ 10.5'
15										
20										
25										

GROUNDWATER

	DEPTH	HOUR	DATE
▽	none		
▼			

SAMPLE TYPE
A-Auger Cuttings; NR-No Recovery
BS-Bulk Sample
S-2" O.D., 1.38" I.D. tube sample
U-3" O.D. 2.42" I.D. tube sample
T-3" O.D. thin walled Shelby tube

Wood Environment & Infrastructure Solutions, Inc.
8519 Jefferson Street NE
Albuquerque, NM 87113
(505) 821-1801
FAX (505) 821-7371

FOUNDATION INFORMATION		
	ABUTMENT NO. 1	ABUTMENT NO. 2
TYPE:	GRS-IBS	GRS-IBS
APPLIED STRUCTURAL LOAD/m:	277.95 kN/m	277.95 kN/m
RU/m:	8460 kN/m	8460 kN/m
ESTIMATED WALL BASE ELEVATION:	1829.231 m	1829.091 m

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 (Liquid limit and 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 (Liquid limit and 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: Borings and Soundings performed by Western Technologies, Inc. Job No. 3121JC100

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
S = Shelby Tube
B = Bulk Sample
C = Core Run
SPT = Standard Penetration Test
Driving Weight: 140 lbs. (63.5 kg)

SAMPLE TYPE: G = Grab Sample
R = Ring Sample (2.40 in. I.D.)
N = Split Spoon Sampler

TOM W. MELTON NEW MEXICO 20554 10/27/2023 PROFESSIONAL ENGINEER

NAVAJO DIVISION OF TRANSPORTATION

FOUNDATION PLAN

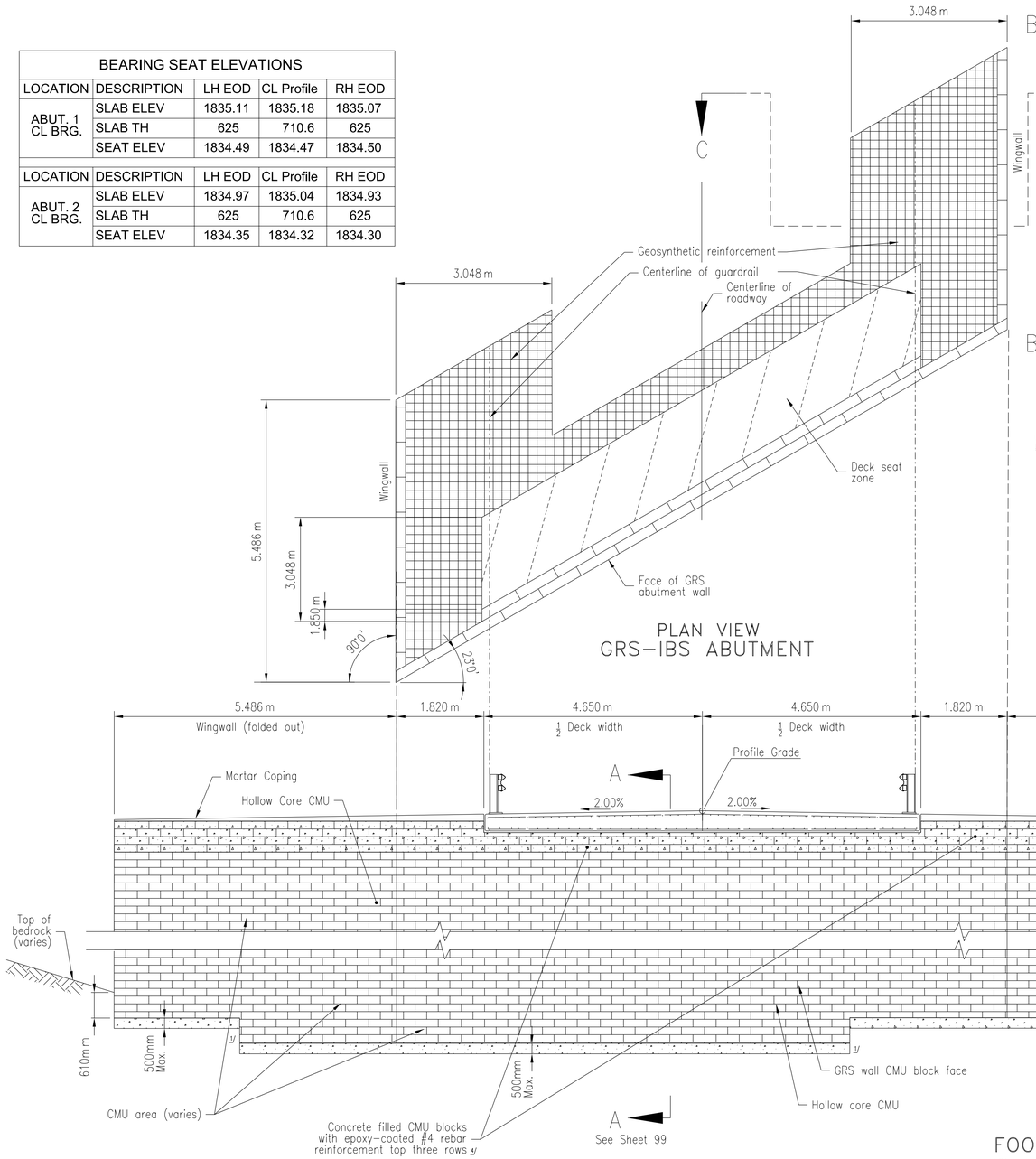
DRAWN BY: WCI	DATE: 04/19
DESIGNED BY: KRH	DATE: 04/19
REVISED: 05/20	BY: GMG
N213_FOUNDATIO & BORE HOLE LOC. PLAN	

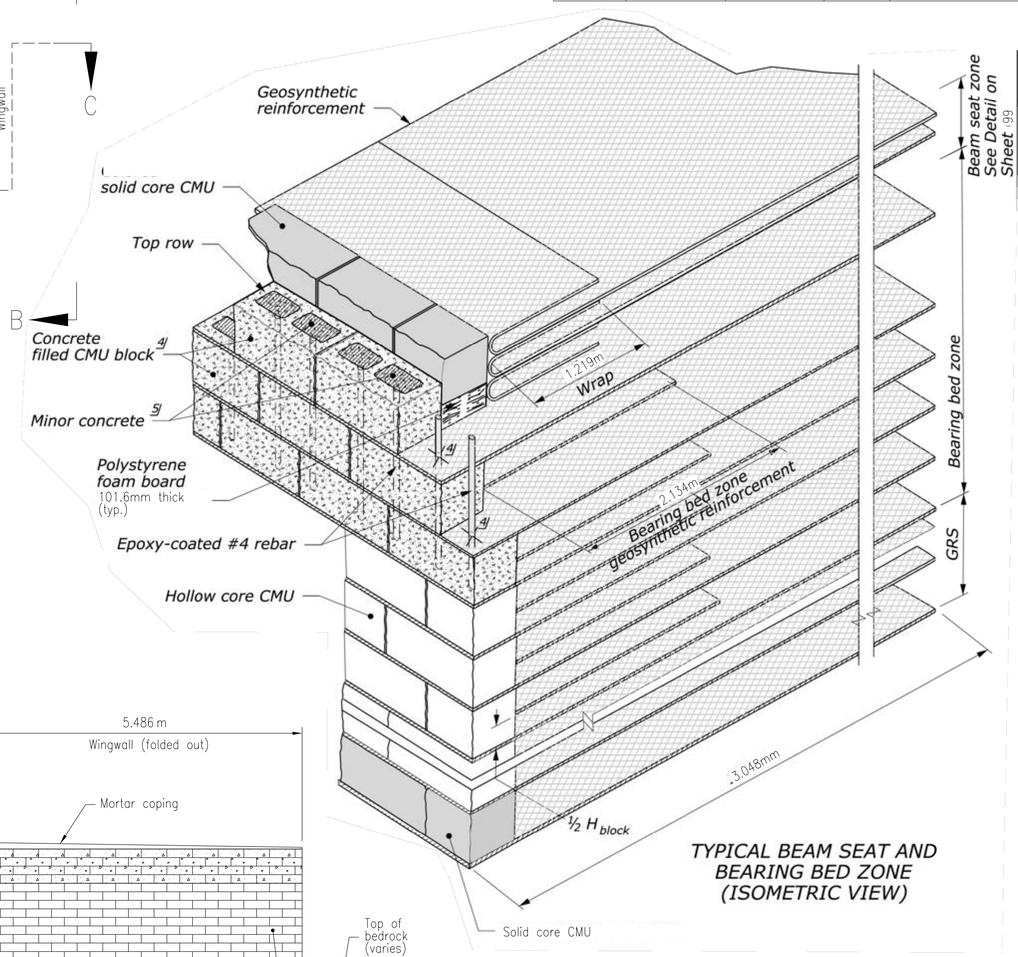
NAVAJO D.O.T

N213_FOUNDATIO & BORE HOLE LOC.PLAN 10/27/2023 3:48:56 PM

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	98	106

BEARING SEAT ELEVATIONS				
LOCATION	DESCRIPTION	LH EOD	CL Profile	RH EOD
ABUT. 1 CL BRG.	SLAB ELEV	1835.11	1835.18	1835.07
	SLAB TH	625	710.6	625
	SEAT ELEV	1834.49	1834.47	1834.50
LOCATION	DESCRIPTION	LH EOD	CL Profile	RH EOD
ABUT. 2 CL BRG.	SLAB ELEV	1834.97	1835.04	1834.93
	SLAB TH	625	710.6	625
	SEAT ELEV	1834.35	1834.32	1834.30





NOTES:

1. Insert epoxy–coated #4 rebars into the top 3 rows of CMU's and corner CMU's and fill with concrete.
2. Stagger CMU blocks at 1/2 block width, including corners.
3. On top row of CMU's create a mortar coping 25.4mm to 19.1mm sloped to face to drain.
4. No colorant allowed in the hollow core concrete masonry units.

Minor concrete

Hollow core concrete masonry unit (CMU)

Concrete filled hollow core concrete masonry unit (CMU)

Solid core concrete masonry unit (CMU)

ELEVATION VIEW 2/
GRS–IBS SOUTH ABUTMENT 6/
FACING BLOCK SCHEDULE

FOOTNOTES:

1/ Step as necessary to follow bedrock profile.

2/ Wingwalls folded out for elevation view.

3/ Colored solid core CMU's used behind riprap armor, to top of bedrock at wall face, and at the beam seat zone. (Riprap armor not shown.)

4/ Cut "X" into bottom geosynthetic reinforcement of upper 2 courses of CMU blocks to accept rebar and concrete.

5/ Wet cast mortar coping not shown.

6/ GRS–IBS North Abutment Integrated Approach illustrated in Section A–A' and C–C' on Sheet 102.

TOM W. MELTON NEW MEXICO 20554 10/27/2023 PROFESSIONAL ENGINEER

NAVAJO DIVISION OF TRANSPORTATION

GRS–IBS PLAN AND ELEVATION

DRAWN BY: WCI	DATE: 04/19
DESIGNED BY: KRH	DATE: 04/19
REVISED: 05/20	BY: GMG
IBS Plan and Elevation	

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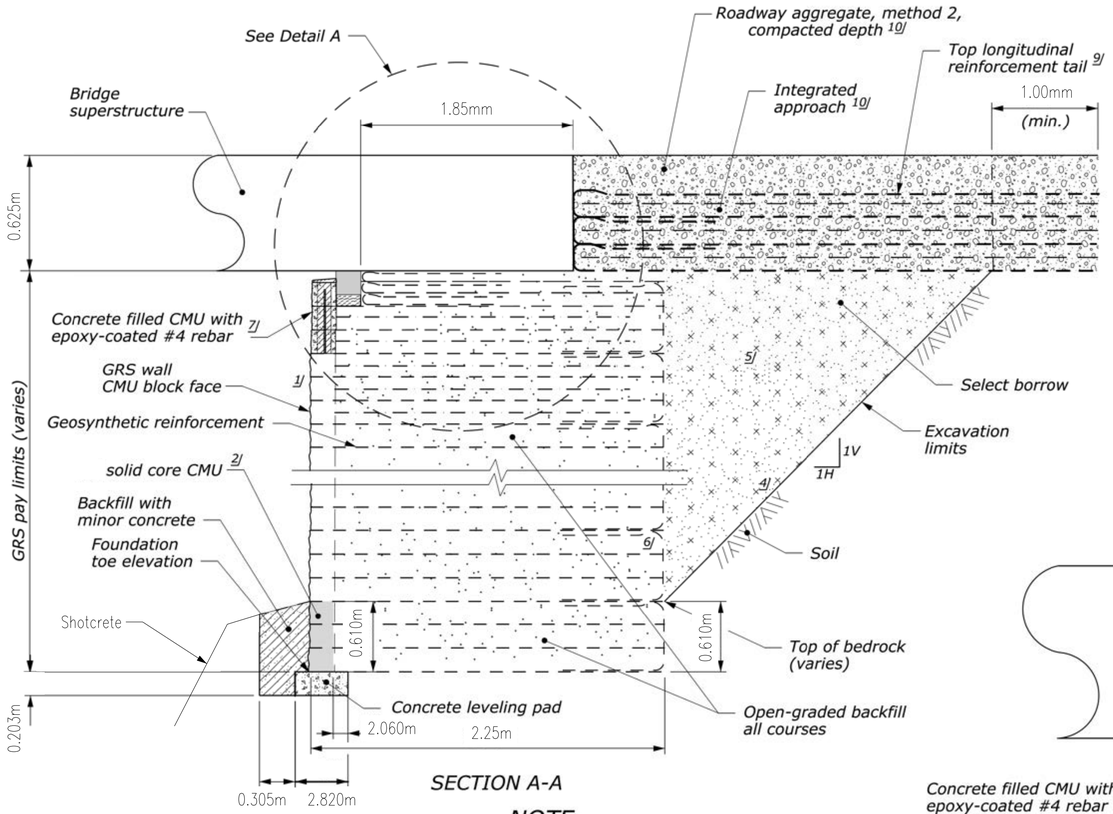
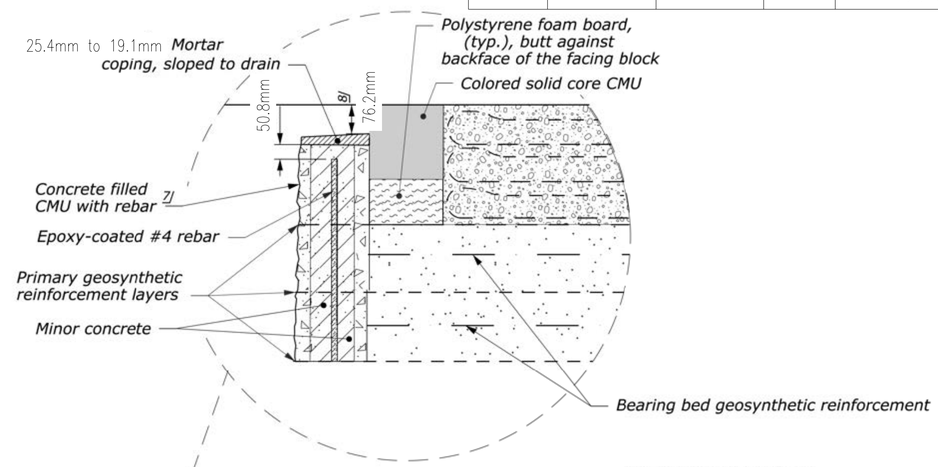
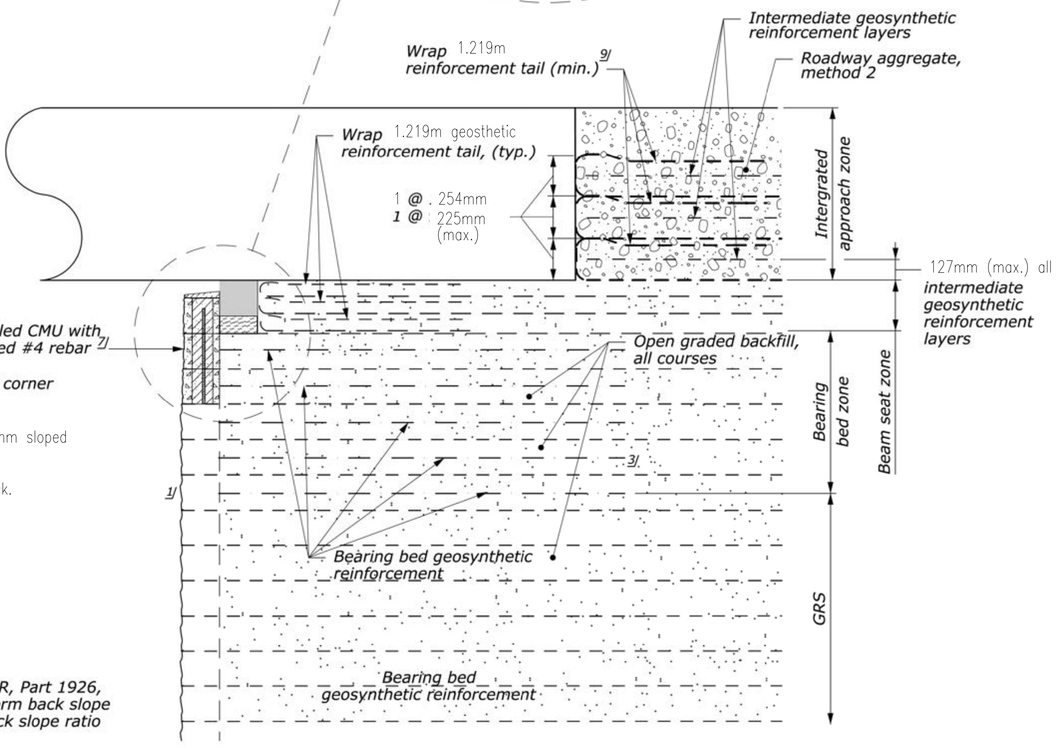
IBS Plan and Elevation 10/16/2023 3:53:42 PM

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	99	106



SECTION A-A





DETAIL A
(GRS, beam seat, bearing bed zone, and integrated approach detail)
NO SCALE

NOTE:

1. Insert epoxy-coated #4 rebars into the top 3 rows of CMU's and corner CMU's and fill with concrete.
2. On the top row of CMU's create a mortar coping 25.4mm to 19.1mm sloped toward face to drain.
3. Strike CMU concrete fill flush with top of CMU's under bridge deck.
4. No colorant allowed in the hollow core concrete masonry units.

LEGEND:

- Open-graded backfill
- Roadway aggregate
- Minor concrete
- Select borrow

- Minor concrete
- Hollow core concrete masonry unit (CMU)
- Concrete filled hollow core concrete masonry unit (CMU)
- Solid core concrete masonry unit (CMU)

FOOTNOTE:

1/ Vertical wall face batter = 0°.

2/ Colored solid core CMU's to top of bedrock at wall face.

3/ Minimum of 5 layers of bearing bed reinforcement.

4/ Short term back slope ratio per OSHA Safety Regulations (29CFR, Part 1926, Subpart P, excavation). Shoring may be required if the short term back slope will be open more than 30 days or if the required short term back slope ratio specified cannot be obtained.

5/ Backfill and compact simultaneous to GRS-IBS construction.

6/ Wrap ends of geosynthetic reinforcement minimum of 1.000m every third layer (max.).

7/ Cut "X" into bottom geosynthetic reinforcement of upper 2 courses of CMU blocks to accept rebar and concrete.

8/ Clear space between bottom of bridge superstructure and top of mortar coping varies with superelevation, min. 76.2mm.

9/ Extend top layer wrapped tail longitudinally for the full length of the integrated approach.

10/ GRS-IBS North Abutment Integrated Approach illustrated in Section A'-A' and C'-C' on Sheet 102 .

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10/27/2023
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NAVAJO DIVISION OF TRANSPORTATION

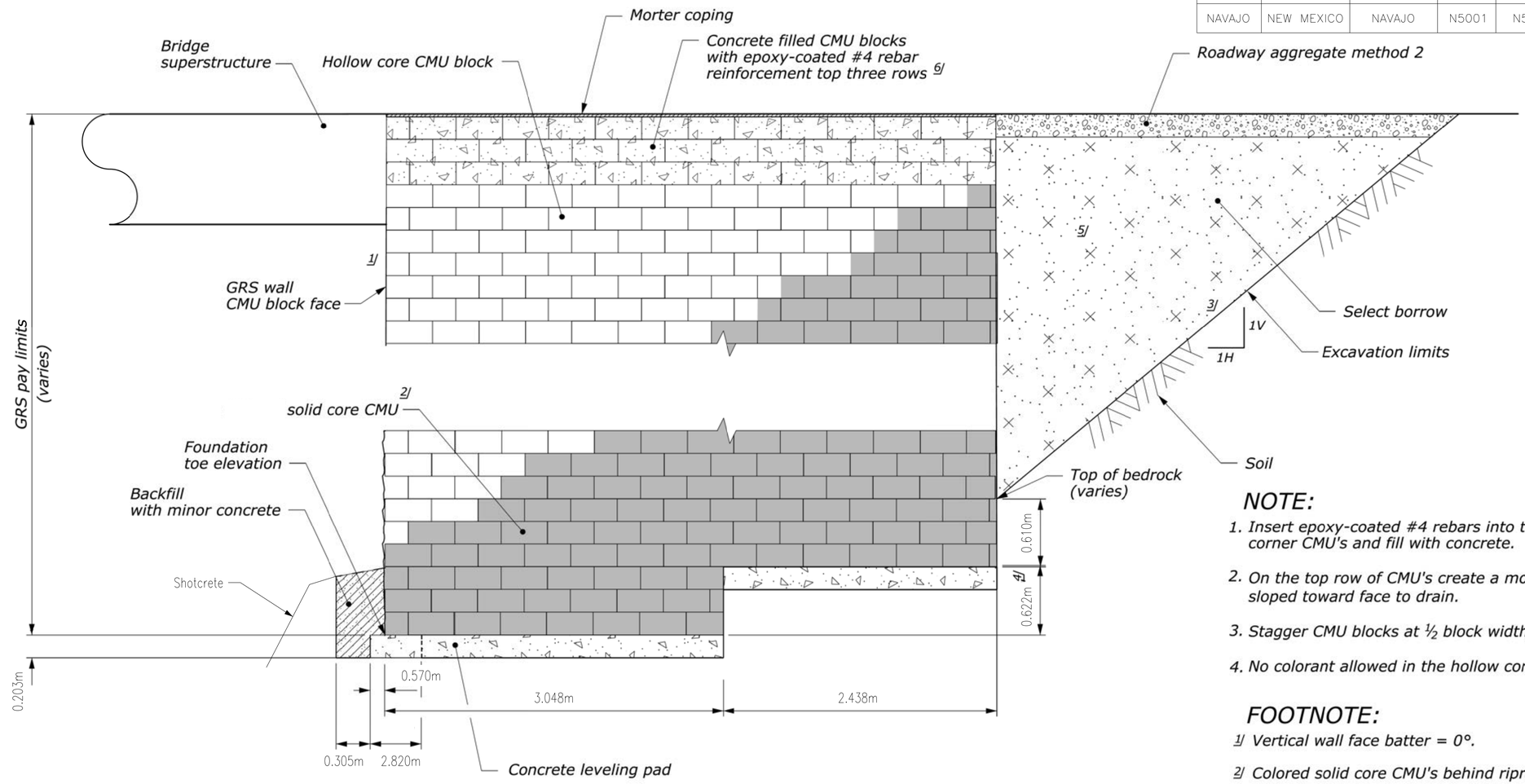
GRS-IBS-DETAIL
SHEET 1 OF 4

DRAWN BY: WCI	DATE: 04/19
DESIGNED BY: KRH	DATE: 04/19
REVISED: 05/20	BY: GMG
N213_GRS_IBS_DTL_1	

NAVAJO D.O.T

N213_GRS_IBS_DTL_1 10/16/2023 3:55:41 PM

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	100	106



WINGWALL ELEVATION
VIEW B-B

NOTE:

1. Insert epoxy-coated #4 rebars into the top 3 rows of CMU's and corner CMU's and fill with concrete.
2. On the top row of CMU's create a mortar coping 25.4mm to 19.1mm sloped toward face to drain.
3. Stagger CMU blocks at ½ block width, including corners.
4. No colorant allowed in the hollow core concrete masonry units.

FOOTNOTE:

1/ Vertical wall face batter = 0°.

2/ Colored solid core CMU's behind riprap. (Riprap not shown.)

3/ Short term back slope ratio per OSHA Safety Regulations (29CFR, Part 1926, Subpart P, excavation). Shoring may be required if the short term back slope will be open more than 30 days or if the required short term back slope ratio specified cannot be obtained.

4/ Step GRS-IBS to follow bedrock profile when encountered.

5/ Backfill and compact simultaneous to GRS-IBS construction.

6/ Cut "X" into bottom geosynthetic reinforcement of upper 2 courses of CMU blocks to accept rebar and concrete.

LEGEND:

- Select borrow
- Roadway aggregate
- Minor concrete

- Minor concrete
- Hollow core concrete masonry unit (CMU)
- Concrete filled hollow core concrete masonry unit (CMU)
- Solid core concrete masonry unit (CMU)

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NAVAJO DIVISION OF TRANSPORTATION

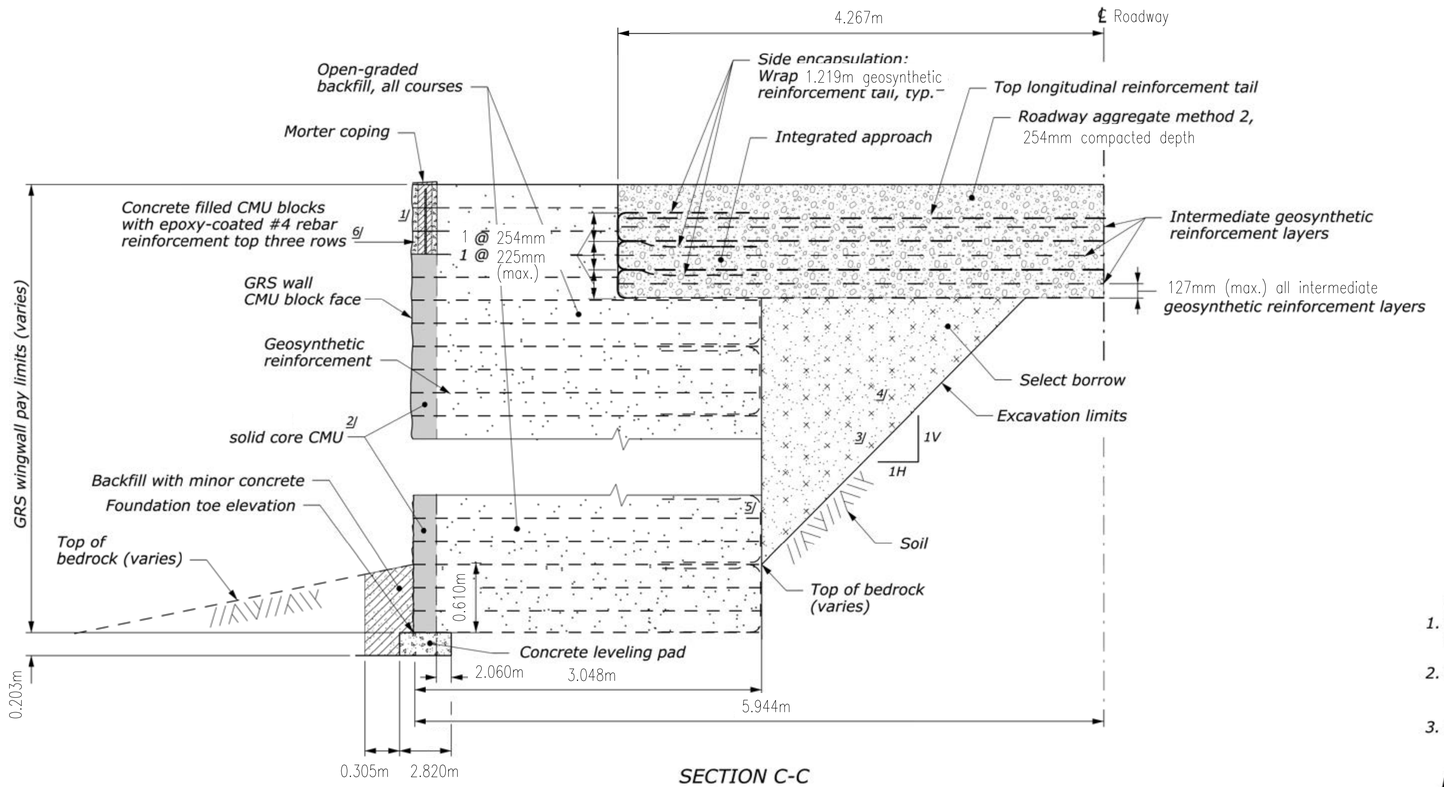
GRS-IBS-DETAILS
SHEET 2 OF 4

DRAWN BY: WCI	DATE: 04/19
DESIGNED BY: KRH	DATE: 04/19
REVISED: 05/20	BY: GMG
N213_GRS_IBS_DTL_2	

NAVAJO D.O.T

N213_GRS_IBS_DTL_2 10/16/2023 3:58:32 PM

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	101	106



SECTION C-C

NOTE:

1. *Insert epoxy-coated #4 rebars into the top 3 rows of CMU's and corner CMU's and fill with concrete.*
2. *On the top row of CMU's create a mortar coping* 25.4mm to 19.1mm *sloped toward face to drain.*
3. *No colorant allowed in the hollow core concrete masonry units.*

FOOTNOTE:

1/ *Vertical wall face batter = 0°.*

2/ *Colored solid CMU's behind riprap armor.*

3/ *Short term back slope ratio per OSHA Safety Regulations (29CFR, Part 1926, Subpart P, excavation). Shoring may be required if the short term back slope will be open more than 30 days or if the required short term back slope ratio specified cannot be obtained.*

4/ *Backfill and compact simultaneous to GRS-IBS construction.*

5/ *Wrap ends of reinforcement to embed min. of* 1.000mm *every third layer (max.).*

6/ *Cut "X" into bottom geosynthetic reinforcement of upper 2 courses of CMU blocks to accept rebar and concrete.*

7/ *Wrap top layer tail of side encapsulation so that it is above top longitudinal reinforcement tail.*

LEGEND:

- *Select borrow*
- *Open-graded backfill*
- *Roadway aggregate*
- *Minor concrete*

- Minor concrete
- Hollow core concrete masonry unit (CMU)
- Concrete filled hollow core concrete masonry unit (CMU)
- Solid core concrete masonry unit (CMU)

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NAVAJO DIVISION OF TRANSPORTATION

GRS-IBS-DETAILS
SHEET 3 OF 4

DRAWN BY: WCI	DATE: 04/19
DESIGNED BY: KRH	DATE: 04/19
REVISED: 05/20	BY: GMG
N213_GRS_IBS_DTL_3	

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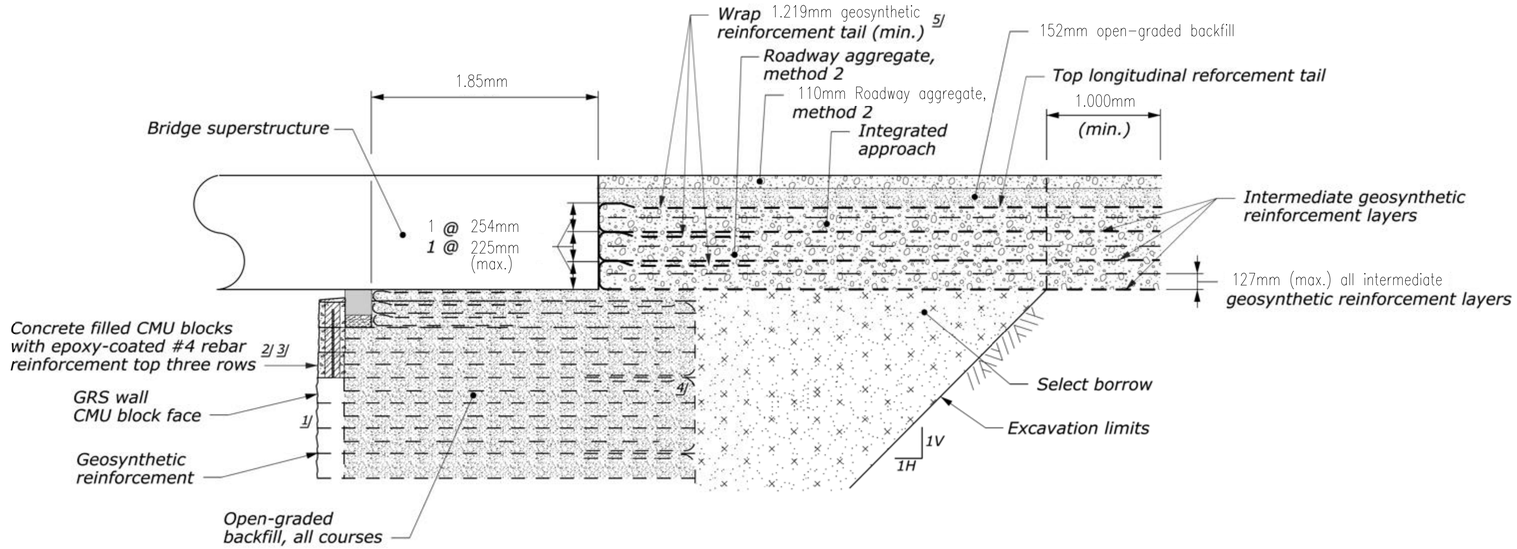
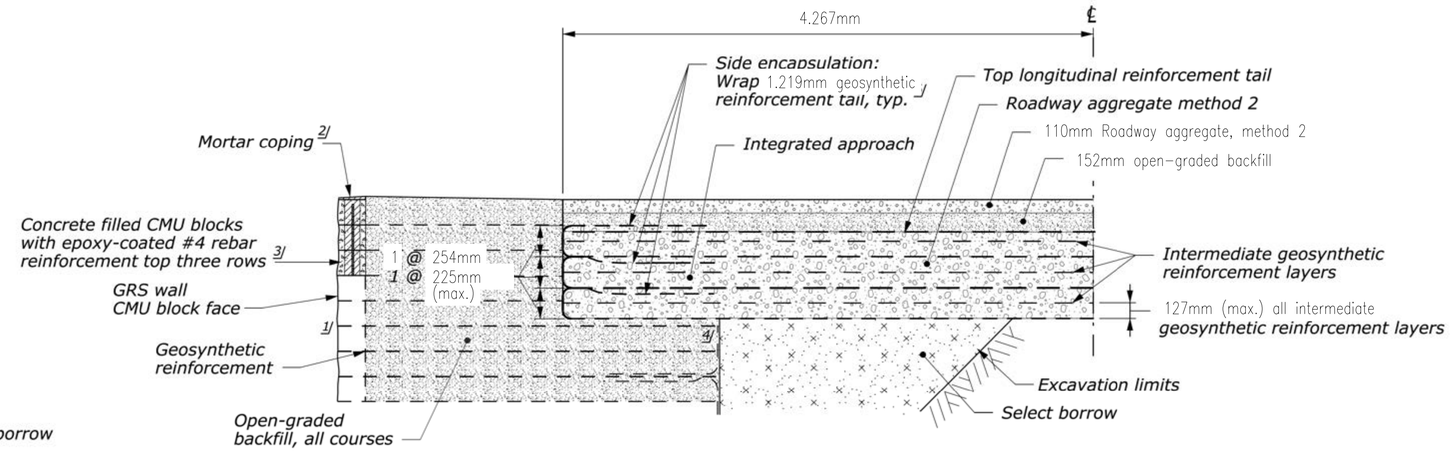
N213_GRS_IBS_DTL_3 10/16/2023 4:02:38 PM

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	102	106



SECTION A'-A'
GRS-IBS NORTH ABUTMENT
INTEGRATED APPROACH
NO SCALE



SECTION C'-C'
GRS-IBS NORTH ABUTMENT
INTEGRATED APPROACH
NO SCALE

FOOTNOTE:

1/ Vertical wall face batter = 0°.

2/ On top row of CMU's create a mortar coping 25.4mm to 19.1mm sloped toward face to drain.

3/ Cut "X" into bottom geosynthetic reinforcement of upper 2 courses of CMU blocks to accept rebar and concrete.

4/ Wrap ends of geosynthetic reinforcement minimum of 1.000mm every third layer (max.).

5/ Extend top layer wrapped tail longitudinally for the full length of the integrated approach.

6/ Wrap top layer tail of side encapsulation so that it is above top longitudinal reinforcement tail.

LEGEND:

- *Select borrow*
- *Open-graded backfill*
- *Roadway aggregate*
- *Minor concrete*

- Minor concrete
- Hollow core concrete masonry unit (CMU)
- Concrete filled hollow core concrete masonry unit (CMU)

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NAVAJO DIVISION OF TRANSPORTATION

GRS-IBS-DETAILS
SHEET 4 OF 4

DRAWN BY: WCI	DATE: 04/19
DESIGNED BY: KRH	DATE: 04/19
REVISED: 05/20	BY: GMG
N213_GRS_IBS_DTL_4	

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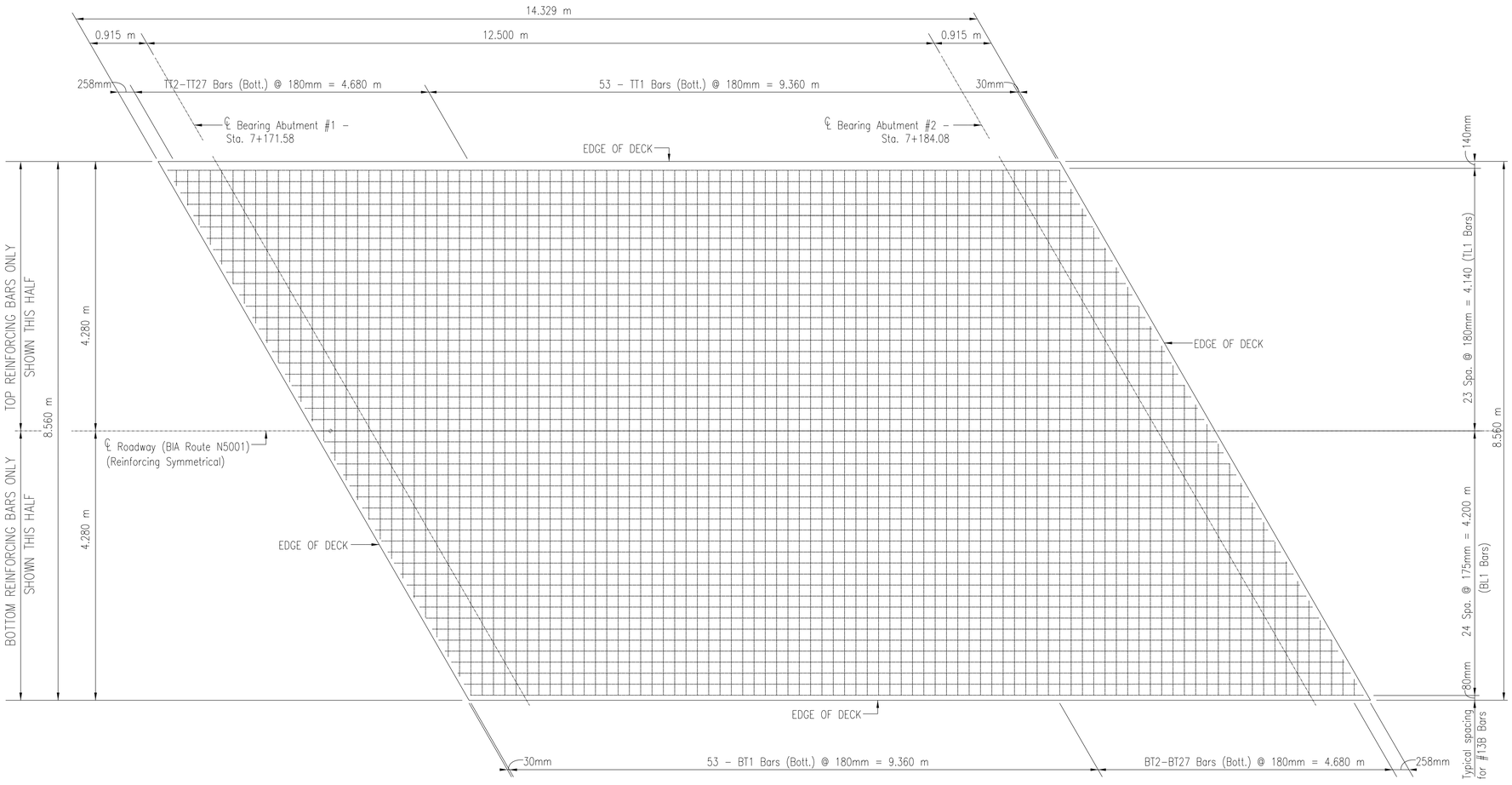
10/16/2023 4:05:26 PM
N213_GRS_IBS_DTL_4

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	103	106

Note:
See Sheet 105 for Bridge Rail Post Spacing. Bolt Anchorage Plates Are To Be Placed Between Mats of Reinforcing Steel At Spaces shown on Sheet 105.



DECK SLAB REINFORCING

Scale: NTS

NOTE:
Concrete shall be placed the full width of the Deck Slab at a forward rate of progress of not less than 9.14 m per hour.

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NAVAJO DIVISION OF TRANSPORTATION

DECK SLAB REINFORCING

DRAWN BY: WCI	DATE:04/19
DESIGNED BY: KRH	DATE:04/19
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N213_DECK SLAB REINFORCING	

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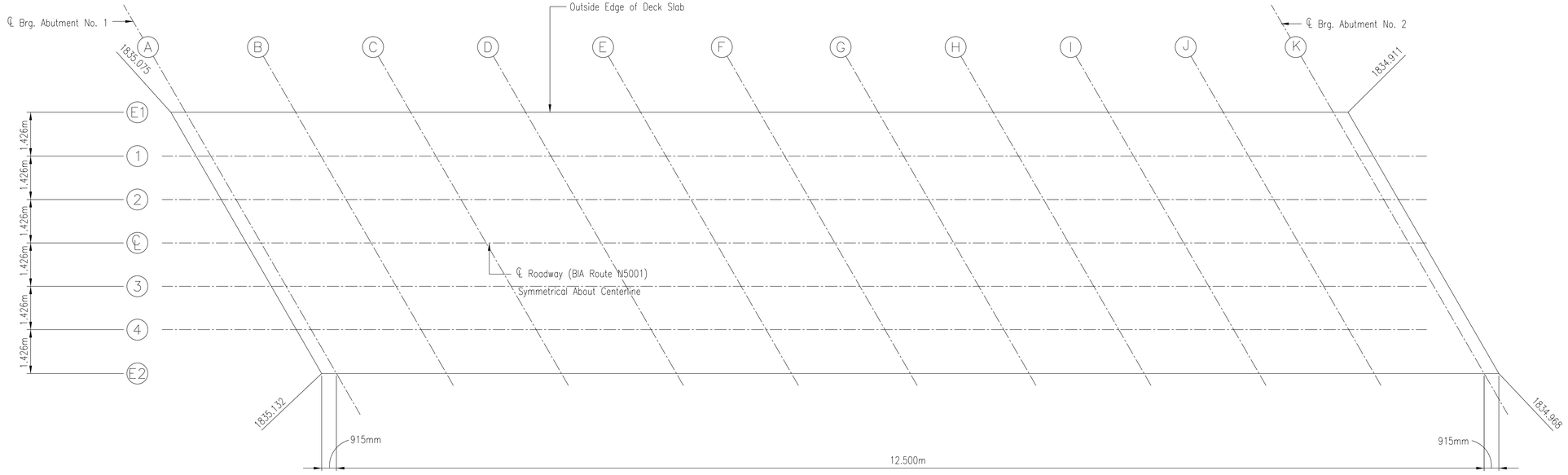
N213_DECK SLAB REINFORCING 10/16/2023 4:08:33 PM

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	104	106



L O C A T I O N D I A G R A M

Scale: NTS

NOTE:

Contractor shall verify elevations prior to Deck Slab Placement

LOCATION	(A)	℄ Brg. Abut. No. 1 (B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	℄ Brg. Abut. No. 2 (L)	(M)
E1	1835.125	1835.114	1920.714	1835.085	1835.071	1835.057	1835.042	1835.028	1835.014	1834.999	1834.985	1834.971	1834.960
1	1835.146	1835.136	1835.121	1835.107	1835.093	1835.078	1835.064	1835.050	1835.035	1835.021	1835.007	1834.992	1834.982
2	1835.168	1835.157	1835.143	1835.129	1835.114	1835.100	1835.086	1835.071	1835.057	1835.043	1835.028	1835.014	1835.003
℄	1835.189	1835.179	1835.165	1835.150	1835.136	1835.122	1835.107	1835.093	1835.079	1835.064	1835.050	1835.036	1835.025
3	1835.154	1835.143	1835.129	1835.115	1835.100	1835.086	1835.072	1835.057	1835.043	1835.029	1835.014	1835.000	1834.990
4	1835.118	1835.108	1920.708	1835.079	1835.065	1835.051	1835.036	1835.022	1835.008	1834.993	1834.979	1834.965	1834.954
E2	1835.083	1835.072	1835.058	1835.044	1835.029	1835.015	1835.001	1834.986	1834.972	1834.958	1834.943	1834.929	1834.919

TOM W. MELTON
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20554
10/27/2023
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NAVAJO DIVISION OF TRANSPORTATION

TOP OF DECK ELEVATIONS

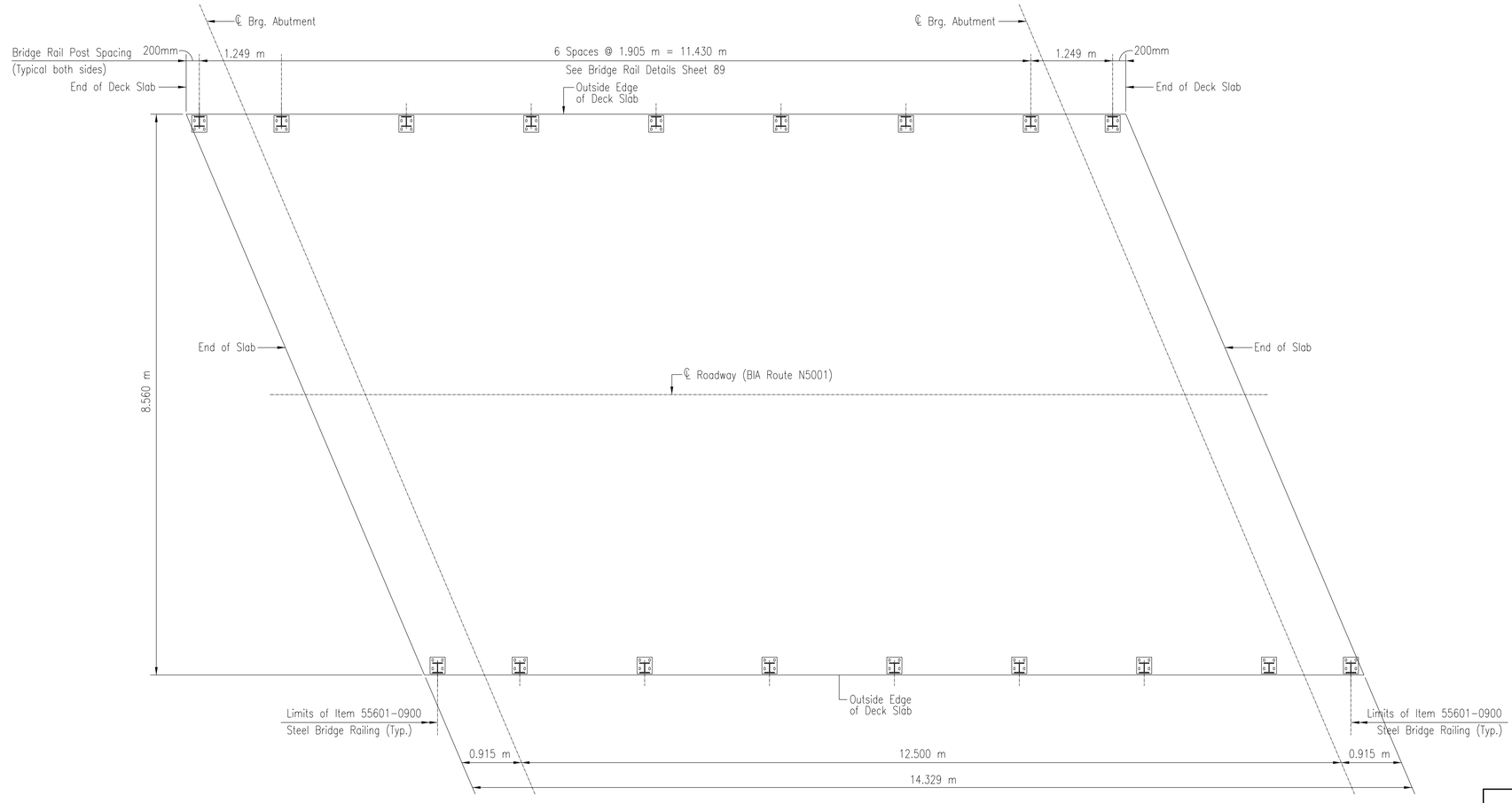
DRAWN BY: WCI	DATE:04/19
DESIGNED BY: KRH	DATE:04/19
REVISED: 05/20	BY: GMG
N213 TOP OF SLAB ELEVATIONS	

NAVAJO D.O.T

N213 TOP OF SLAB ELEVATIONS 10/16/2023 4:15:05 PM

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	105	106

Note:
Special Fabrication of W-Beam is required to suit the rail post spacing.



TOM W. MELTON
NEW MEXICO
20554
10/27/2023
PROFESSIONAL ENGINEER

NAVAJO DIVISION OF TRANSPORTATION

BRIDGE RAIL POST SPACING

DRAWN BY: WCI	DATE:04/19
DESIGNED BY: KRH	DATE:04/19
REVISED: 05/20	BY: GMG
N213_BRIDGE_RAIL_SPACING	

NAVAJO D.O.T

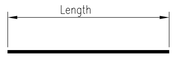
N213_BRIDGE_RAIL_SPACING 10/16/2023 4:28:42 PM

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N5001	N5001(1)1,2&4	106	106

	LOCATION	STRAIGHT BARS					BENT BARS							SPACING
		MARK	TYPE	QTY.	SIZE	LENGTH	MARK	TYPE	QTY.	SIZE	A	B	Length	
	--DECK SLAB--													
*	Top-Long.	#13TL1	1	47	#13	14.200 m								180 mm
*	Top-Transv.	#16TT1	1	53	#16	8.340 m								180 mm
*	Top-Transv.	#16TT2	1	2	#16	8.040 m								180 mm
*	Top-Transv.	#16TT3	1	2	#16	7.730 m								180 mm
*	Top-Transv.	#16TT4	1	2	#16	7.420 m								180 mm
*	Top-Transv.	#16TT5	1	2	#16	7.110 m								180 mm
*	Top-Transv.	#16TT6	1	2	#16	6.800 m								180 mm
*	Top-Transv.	#16TT7	1	2	#16	6.490 m								180 mm
*	Top-Transv.	#16TT8	1	2	#16	6.170 m								180 mm
*	Top-Transv.	#16TT9	1	2	#16	5.860 m								180 mm
*	Top-Transv.	#16TT10	1	2	#16	5.550 m								180 mm
*	Top-Transv.	#16TT11	1	2	#16	5.240 m								180 mm
*	Top-Transv.	#16TT12	1	2	#16	4.930 m								180 mm
*	Top-Transv.	#16TT13	1	2	#16	4.620 m								180 mm
*	Top-Transv.	#16TT14	1	2	#16	4.310 m								180 mm
*	Top-Transv.	#16TT15	1	2	#16	3.990 m								180 mm
*	Top-Transv.	#16TT16	1	2	#16	3.680 m								180 mm
*	Top-Transv.	#16TT17	1	2	#16	3.370 m								180 mm
*	Top-Transv.	#16TT18	1	2	#16	3.060 m								180 mm
*	Top-Transv.	#16TT19	1	2	#16	2.750 m								180 mm
*	Top-Transv.	#16TT20	1	2	#16	2.440 m								180 mm
*	Top-Transv.	#16TT21	1	2	#16	2.120 m								180 mm
*	Top-Transv.	#16TT22	1	2	#16	1.810 m								180 mm
*	Top-Transv.	#16TT23	1	2	#16	1.500 m								180 mm
*	Top-Transv.	#16TT24	1	2	#16	1.190 m								180 mm
*	Top-Transv.	#16TT25	1	2	#16	0.880 m								180 mm
*	Top-Transv.	#16TT26	1	2	#16	0.570 m								180 mm
*	Top-Transv.	#16TT27	1	2	#16	0.260 m								180 mm
*	Bott. Long	#32BL1	1	49	#32	14.200 m								175 mm
*	Bott.-Transv.	#16BT1	1	53	#16	8.340 m								180 mm
*	Bott.-Transv.	#16BT2	1	2	#16	8.040 m								180 mm
*	Bott.-Transv.	#16BT3	1	2	#16	7.730 m								180 mm
*	Bott.-Transv.	#16BT4	1	2	#16	7.420 m								180 mm
*	Bott.-Transv.	#16BT5	1	2	#16	7.110 m								180 mm
*	Bott.-Transv.	#16BT6	1	2	#16	6.800 m								180 mm
*	Bott.-Transv.	#16BT7	1	2	#16	6.490 m								180 mm
*	Bott.-Transv.	#16BT8	1	2	#16	6.170 m								180 mm
*	Bott.-Transv.	#16BT9	1	2	#16	5.860 m								180 mm
*	Bott.-Transv.	#16BT10	1	2	#16	5.550 m								180 mm
*	Bott.-Transv.	#16BT11	1	2	#16	5.240 m								180 mm
*	Bott.-Transv.	#16BT12	1	2	#16	4.930 m								180 mm
*	Bott.-Transv.	#16BT13	1	2	#16	4.620 m								180 mm
*	Bott.-Transv.	#16BT14	1	2	#16	4.310 m								180 mm
*	Bott.-Transv.	#16BT15	1	2	#16	3.990 m								180 mm
*	Bott.-Transv.	#16BT16	1	2	#16	3.680 m								180 mm
*	Bott.-Transv.	#16BT17	1	2	#16	3.370 m								180 mm
*	Bott.-Transv.	#16BT18	1	2	#16	3.060 m								180 mm
*	Bott.-Transv.	#16BT19	1	2	#16	2.750 m								180 mm
*	Bott.-Transv.	#16BT20	1	2	#16	2.440 m								180 mm
*	Bott.-Transv.	#16BT21	1	2	#16	2.120 m								180 mm
*	Bott.-Transv.	#16BT22	1	2	#16	1.810 m								180 mm
*	Bott.-Transv.	#16BT23	1	2	#16	1.500 m								180 mm
*	Bott.-Transv.	#16BT24	1	2	#16	1.190 m								180 mm
*	Bott.-Transv.	#16BT25	1	2	#16	0.880 m								180 mm
*	Bott.-Transv.	#16BT26	1	2	#16	0.570 m								180 mm
*	Bott.-Transv.	#16BT27	1	2	#16	0.260 m								180 mm

BENDING DIAGRAMS

ALL DIMENSIONS ARE OUT TO OUT



TYPE 1

* Epoxy Coated reinforcing bars

NAVAJO DIVISION
OF TRANSPORTATION

REINFORCING BAR SCHEDULE

DRAWN BY: WCI	DATE:04/19
DESIGNED BY: KRH	DATE:04/19
REVISED: 05/20	BY: GMG
N213 REINFORCING BAR SCHEDULE	NAVAJO D.O.T

N213 REINFORCING BAR SCHEDULE 10/19/2023 4:23:48 PM