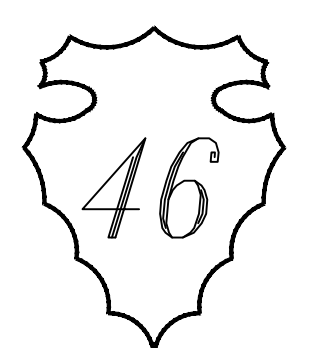


N46(1)1,2&4
N9(13),2&4

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF INDIAN AFFAIRS NAVAJO REGION D.O.T. ROUTE

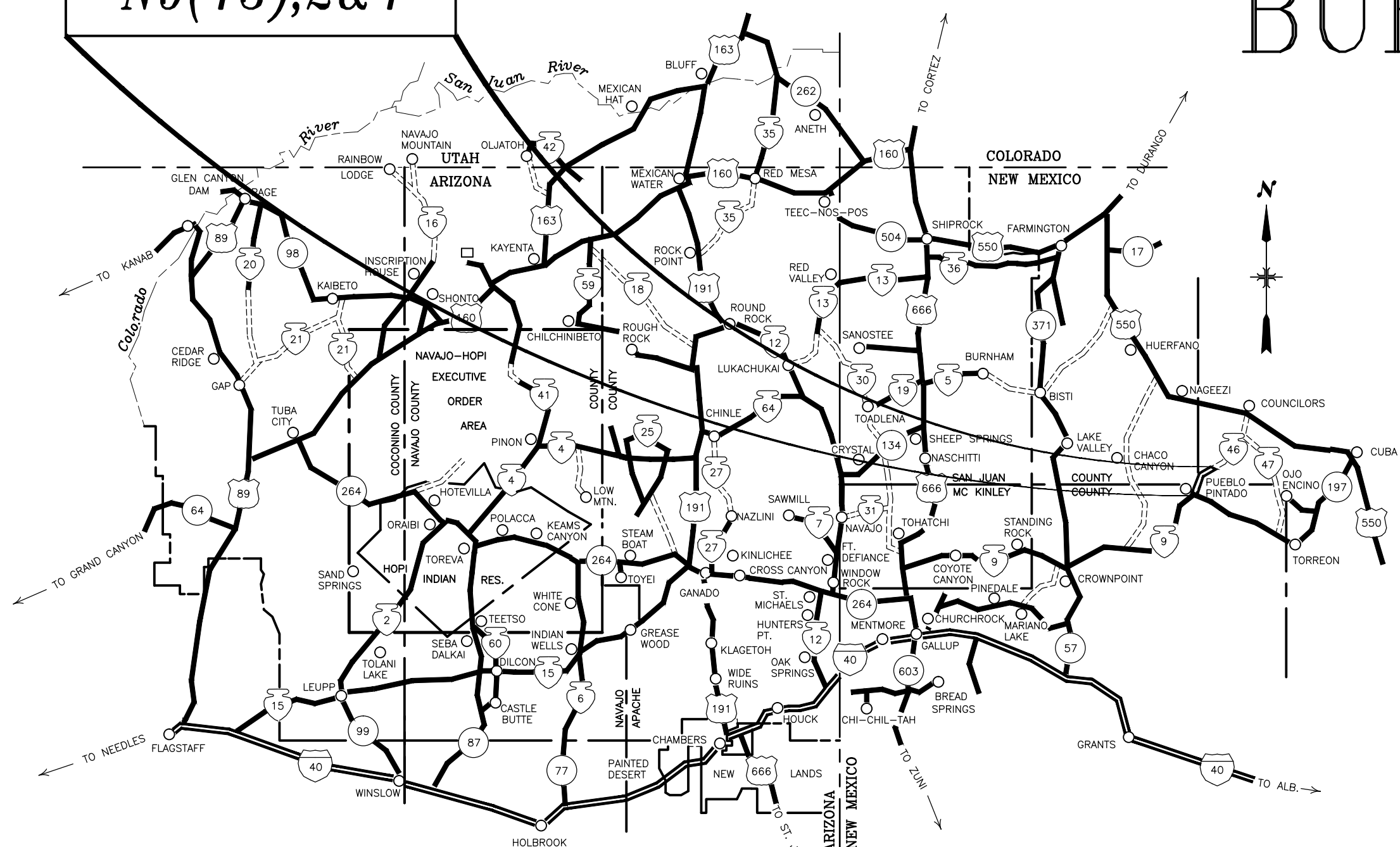


PROJECTS N46(1)1,2&4, N9(13)2&4 AND PUEBLO PINTADO BRIDGE I.D. NO. N3429200

APPROVED
CONSTRUCTION
DRAWINGS
January 7, 2009

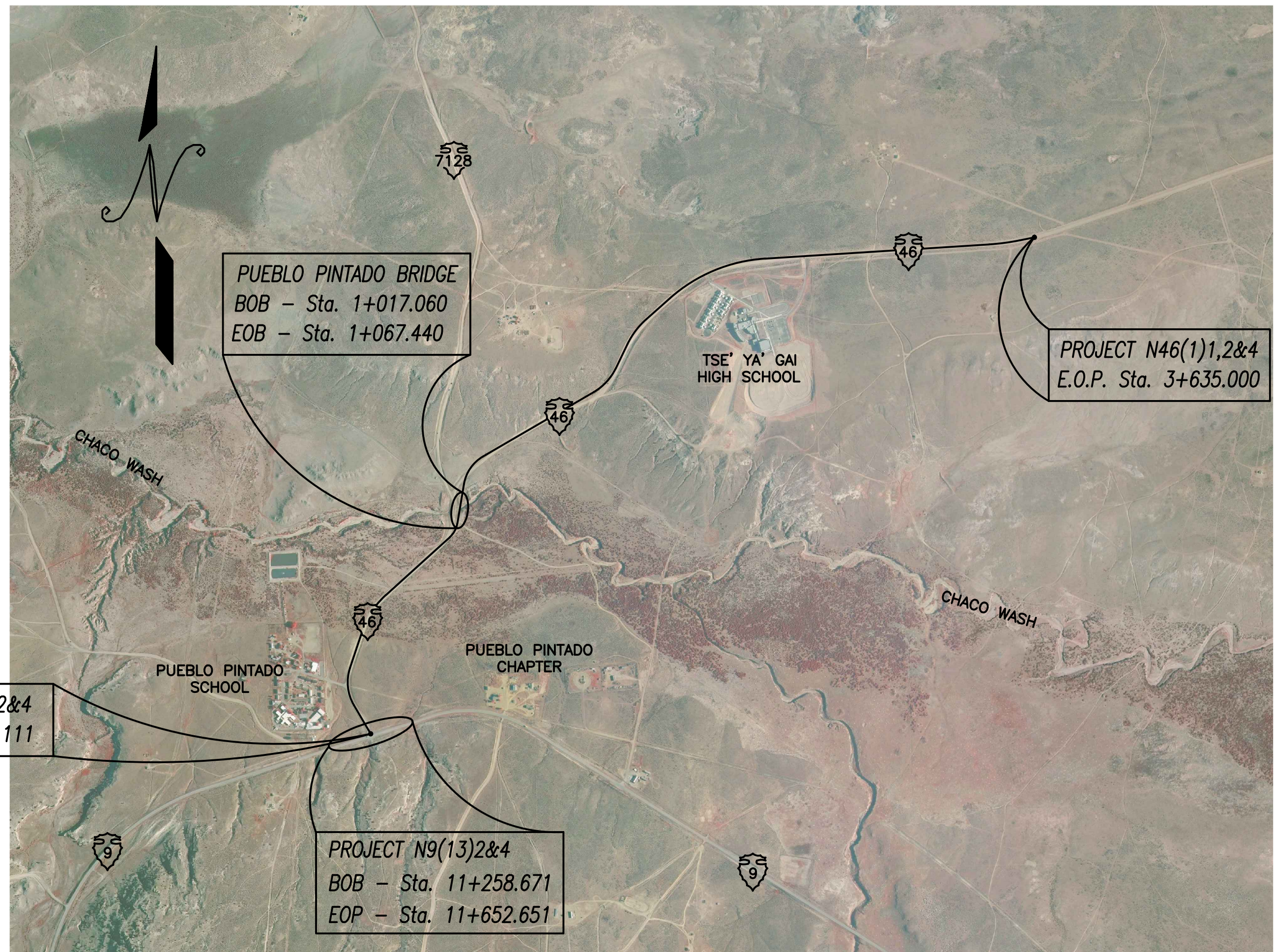
△ - Sheets Revised May 17, 2010
per Negotiation Meeting
conducted on May 13, 2010

△ - Sheets Revised June 23, 2010
due to errors detected and corrected
after Pre-Construction meeting.
conducted on June 17, 2010.



NAVAJO RESERVATION MAP
N.T.S.
LEGEND

- STATE LINE
 - RESERVATION LINE
 - COUNTY LINE
 - TOWNSHIP or RANGE LINE
 - SECTION LINE
 - NATIONAL FOREST LINE
 - HIGHWAY RIGHT-OF-WAY LINE
 - UNFENCED PROPERTY
 - SECTION CORNER and 1/4 CORNER
 - CUT LIMITS
 - FILL LIMITS
 - WATER LINE EASEMENT
 - OVERHEAD ELECTRIC LINE
 - TELEPHONE LINE
 - POLE GUY and ANCHOR
 - TRAFFIC SIGN
 - GUARDRAIL
 - DELINEATOR
 - BARBED WIRE FENCE
 - CHAIN LINK FENCE
 - CATTLE GUARD
 - CULVERTS
 - CONCRETE BOX CULVERTS
 - GROUND LINE - EARTH
 - GROUND LINE - ROCK
 - EXISTING ROAD
 - SIDE ROAD TURNOUT
 - TREES and SHRUBS
 - PROPOSED DITCH LINE
 - FURROW DITCH OR OFFSITE DRAINAGE
 - DIKE or DITCH BLOCK
 - RIPRAP
 - RAILROAD TRACK
 - WATER LINE
 - IRRIGATION LINE
 - WELL
 - DWELLING
 - SCHOOL
 - CHURCH
 - WINDMILL
 - RIGHT-OF-WAY MONUMENT
 - TEMPORARY BENCH MARK
 - CONTROL POINT
 - BORING LOCATION
 - OBJECT MARKERS
 - EROSION CONTROL MAT
- INDIAN SERVICE COUNTY STATE FEDERAL
- PAVED GRADED UNIMPROVED



LENGTH OF PROJECT			
STATION TO STATION		METERS	KM
N46(1)1,2&4:			
BOP	0+004.111 - BOB	1,012.949	1.013
BOB	1+017.060 - EOB	50.380	0.050
EOB	1+067.440 - EOP	2,567.560	2.568
N9(13)2&4:			
BOP	11+288.670 - EOP	333.980	0.334
TOTALS		3,964.869	3.965

RIGHT-OF-WAY TABLE			
ROW		STATION	
BEGIN	END	LEFT	RIGHT
0+023.314	0+205.000	30.00m	30.00m
0+205.000	0+235.000	55.00m	30.00m
0+235.000	0+976.449	30.00m	30.00m
0+976.449	1+105.000	50.00m	50.00m
1+105.000	1+128.360	90.00m	50.00m
1+128.360	1+140.000	90.00m	30.00m
1+140.000	2+211.969	30.00m	30.00m
2+211.969	2+940.000	30.00m	21.00m
2+940.000	2+985.000	30.00m	18.00m
2+985.000	3+010.000	30.00m	33.00m
3+010.000	3+300.000	30.00m	18.00m
3+300.000	3+600.000	30.00m	15.00m
3+600.000	3+635.000	30.00m	12.00m

DESIGN DATA	
Design Speed	50 km/h
Minimum Radius	90 m
Maximum Gradient	10 %
Min. Stopping Sight Distance	65 m
Min. Passing Sight Distance	345 m
2004 ADT	549 vpd
2024 Estimated ADT	815 vpd
Max. Superelevation	6%

U. S. DEPARTMENT OF THE INTERIOR BUREAU OF INDIAN AFFAIRS NAVAJO REGION OFFICE * DIVISION OF TRANSPORTATION			
RECOMMENDED APPROVAL		APPROVAL	
AGENCY ROAD ENGINEER	8/14/09	DATE	
DIVISION MANAGER	8/7/09	DATE	
PLANNING AND DESIGN BRANCH CHIEF	8/07/09	DATE	
REGIONAL DIRECTOR	8-7-09	DATE	

C:\CURRENT\PROJECTS\N46(1)_2010\Drawings\N46_01250CAD_01250Rev1.dwg, Bk: 01250CAD_01250Rev1.dwg, PLOT: 1, 1/21/2010, 10:00:00 AM

PROJECT ESTIMATED QUANTITIES		N46(1)	N9(13)		N46(1)	N9(13)
ITEM	DESCRIPTION	QUANTITY	QUANTITY	UNIT	AS-BUILT	AS-BUILT
10901-0000	Extra & Miscellaneous Work Authorized under Section 109.02(m)	All	Req'd	L.S.		
15101-0000	Mobilization	All	Req'd	L.S.		
15201-0000	Construction Survey and Staking	All	Req'd	L.S.		
15301-0020	Contractor Quality Control	7,000	1,275	Man Hr		
15701-0000	Soil Erosion Control	All	Req'd	L.S.		
15708-1000	Soil Erosion Control, Temporary Straw Mulching	6.5	0.18	ha		
20102-0000	Clearing and Grubbing	All	Req'd	L.S.		
20304-1000	Removal of Structures and Obstructions	All	Req'd	L.S.		
20401-0000	Roadway Excavation	53,984	1,514	m³		
20425-2000	Ditch, Excavation, Furrow Ditch	244		m		
20443-2000	Earthen Berm, Type B, Ditch Block	8		m		
20601-0000	Development of Water Supply	17	0.30	M-Liter		
21101-2000	Roadway Obliteration, Method 2	2,130		m²		
25101-2000	Placed Riprap, Class 2	460		m³		
25112-2000	Wire Enclosed Riprap, Class 2	1,173		m³		
30101-2000	Aggregate Base, Grading D	11,721	2,061	t		
40201-0500	Hot Asphalt Concrete Pavement, Marshall Test Class B, Grade B	7,415	965	t		
40502-1200	Asphalt Binder PG 64-22 	414	58	t		
41101-5000	Prime Coat, Grade MC-70	52	6	t		
41201-1000	Asphalt Tack Coat, Grade SS-1, Emulsified Cement		1	t		
55101-1800	HP 360 x 108 Steel Piles, In Place	307		m		
55115-1000	Preboring	194		m		
55120-0000	HP 360 x 108 Steel Test Piles, In Place	71		m		
55201-0200	Structural Concrete Class A(AE), 27.6 MPa	 331		m³		
55401-1000	Reinforcing Steel, Grade 420	10,212		Kg		
55401-2000	Epoxy Coated Reinforcing Steel, Grade 420	31,540		Kg		
55502-0000	Structural Steel, Bolts, Steel Diaphragm and Misc. Steel Plates Furnished, Fabricated, and Erected	81,625		Kg		
55601-0900	Steel Bridge Rail	118		m		
56302-2000	Painting HP 360 x 108 Steel Piles	 12		m²		
60201-0810	610 millimeter Pipe Culvert	46		m		
60201-0910	762 millimeter Pipe Culvert	24		m		
60202-0510	711 millimeter Span, 508 millimeter Rise Pipe Arch Culvert	123		m		
60202-0610	889 millimeter Span, 610 millimeter Rise Pipe Arch Culvert	40		m		
60202-0710	1067 millimeter Span, 737 millimeter Rise Pipe Arch Culvert	46		m		
60210-0810	End Section for 610 millimeter Pipe Culvert	3		Each		
60210-0910	End Section for 762 millimeter Pipe Culvert	1		Each		
60211-0910	End Section for 711 millimeter Span, 508 millimeter Rise Pipe Arch Culvert	12		Each		
60211-1010	End Section for 889 millimeter Span, 610 millimeter Rise Pipe Arch Culvert	1		Each		
60211-1110	End Section for 1067 millimeter Span, 737 millimeter Rise Pipe Arch Culvert	2		Each		
60701-1000	Removing, Cleaning, and Stockpiling Culvert	145		m		
61501-0100	Sidewalk, Concrete 100 mm Depth, 1.5 m Wide	184		m²		
61701-5000	Guardrail System SGR-04b, Type PDE 02 w/ET-PLUS End Treatment	99		m		
61901-1000	Fence, Barbed Wire, 5 Strand	6794		m		
61901-1300	Pedestrian Fencing, Chain Link	114		m		
61903-0310	Cattle guard, 4900 mm with Type II gate	5		Each		
61903-0710	Cattle guard, 7190 mm with Type II gate	2		Each		
61903-1210	Cattle guard, 11770 mm with Type II gate	1		Each		
62101-0000	ROW Monument	58		Each		
62102-0000	Reference Marker	57		Each		
62510-1000	Seeding, Dry Method	6.5	0.18	ha		
62901-1100	Rolled Erosion Control Product, Type 4	937		m²		
63302-0001	Sign Installation, 1 Post and hardware: 2.98 kg/m	0.56		m²		
63302-0003	Sign Installation, 1 Post and hardware: 4.10 kg/m	4.18	4.14	m²		
63302-0010	Sign Installation, 2 Posts and hardware: 2.98 kg/m	15.09	2.28	m²		
63302-0012	Sign Installation, 2 Posts and hardware: 4.10 kg/m	7.39		m²		
63308-2000	Object Markers, Flexible, Type 2	8	4	Each		
63308-3000	Object Markers, Type 3 with 1 Post and Hardware: 2.98 kg/m	4		Each		
63309-0020	Delineators, Glass Fiber, Type 1b	64		Each		
63401-1510	Pavement Markings, Type "H", Solid Yellow	3,770	1,462	m		
63401-1520	Pavement Markings, Type "H", Solid White	6,888	810	m		
63401-1610	Pavement Markings, Type "H", Broken Yellow	1,706		m		
63405-2900	Pavement Markings, Type "H", Turn Arrow		4	Each		
63405-2950	Pavement Markings, Type "H", Straight Arrow		4	Each		
63405-3050	Pavement Markings, Type "H", Word "ONLY"		4	Each		
63405-3260	Pavement Markings, "Stop Bar", Type "H", Solid White	5		Each		
63501-0000	Temporary Traffic Control	All	Req'd	L.S.		
63502-3000	Temporary Traffic Control, Raised Pavement Markers		288	Each		
63506-0500	Temporary Traffic Control, Flagger	11,500	1,466	Man Hr		
63801-0000	Herbicide Application, Type: Glyphosate (Roundup®)	All	Req'd	L.S.		

NOTE: SEE SHEET 11, 12, 13 AND 14 FOR N9(13)2&4 QUANTITIES AND WIDENING AND ACCEL/DECEL LANE DETAILS.

ITEM 20304-1000 REMOVAL OF STRUCTURES AND OBSTRUCTIONS

STATION	LOCATION	REMARKS
0+023.395	Lt.,  Rt.	Remove existing 4 unit cattle guard; ±52 m of existing fence and gate.
0+004.111 to 0+276.200		Remove existing road surfacing, may use as embankment if suitable.
0+648 to 0+684	Rt.	Remove existing airport runway fencing.
1+000±	Lt.	Remove existing crossing (abandoned and in-use culverts; embankment; barriers).

ITEM 20401-000 EARTHWORK QUANTITIES - N46(1) ONLY

	STATION TO STATION	CUT (m³)	FILL (m³)	WASTE (m³)	BORROW (m³)
	N46(1)1,2&4				
** MAINLINE	0+004.111 (BOP) to 0+717.247	8,392	8,392		
	0+717.247 to 1+017.060 (BOB)	0	16,958		
	1+067.440 (EOB) to 2+033.054	14,718	14,718		
	2+033.054 TO 2+476.636	6,321	6,321		
	2+476.636 TO 2+669.860	959	959		
** CHANNEL AND TURNOUTS	2+669.860 TO 3+635.000 (EOP)	19,093	2,109		
	Channel Earthwork @ Bridge	3,605	1,441		
	Turnout, Sta. 0+220.000, Lt.	27	414		
	Turnout, Sta. 0+604.000, Lt.	0	200		
	Turnout, Sta. 1+117.900, Lt.	3	1,722		
	Turnout, Sta. 1+413.500, Rt.	0	50		
	Turnout, Sta. 2+218.000, Lt	72	53		
	Turnout, Sta. 2+370.800, Rt	6	351		
	Turnout, Sta. 2+747.370, Rt.	235	111		
	Turnout, Sta. 2+999.200, Rt.	153	42		
	Turnout, Sta. 3+021.300, Lt	399	0		
	TOTAL EARTHWORK	53,983	53,841	142	0

A 25% Shrinkage Factor was applied to the Fill quantities.
N9(13)2&4 Earthwork table shown on Sheet 11.
** - Mainline earthwork quantities and balance points do not include channel and turnout earthwork quantities. Balance point stations indicated in Mainline earthwork table may differ when channel and turnout earthwork quantities are considered.

ITEM 25101-2000 PLACED RIPRAP CLASS 2
ITEM 25112-2000 WIRE ENCLOSED RIPRAP, CLASS 2

LOCATION		PLACED RIPRAP (m³)	WIRE ENCLOSED RIPRAP (m³)
0+980.000 to 1+013.470 Lt.	Downdrain		62
1+013.000 to 1+037.580 Rt.	Downdrain		37
1+047.095 to 1+101.230 Lt.	Downdrain		90
1+068.970 to 1+105.000 Rt.	Downdrain		60
Abutment #1	Slope Protection		555
Abutment #2	Slope Protection		290
0+041 to 0+400 Rt.	Check Dams	69	
1+452 Lt.	Backslope Protection		19
1+500 Lt.	Backslope Protection		20
1+512 Lt.	Backslope Protection		15
1+525 Lt.	Backslope Protection		25
1+755 to 1+950 Rt.	Riprap Lined Ditch	316	
2+380 Rt.	At Turnout	75	
TOTAL		460	1,173

ITEM 30101-2000 AGGREGATE BASE, GRADING D

LOCATION	VOLUME (m³)	WEIGHT (t)
0+004.111 to 1+012.469 (SS)	1,390.7	3,121
1+072.031 (SS) to 3+635.000	3,519.3	7,897
N7128	90.6	203
Turnouts	222.7	500
TOTAL	5,223.3	11,721

SS = Edge of Sleeper Slab towards roadway.

ITEM 40201-0500 HOT ASPHALT CONCRETE PAVEMENT, MARSHALL TEST CLASS B, GRADE B

LOCATION	VOLUME (m³)	WEIGHT (t)
0+004.111 to 1+012.469 (SS)	834.4	2,006
1+072.031 (SS) to 3+602.560	2,091.8	5,029
N7128	126.4	304
Turnouts	31.7	76
TOTAL	3,084.3	7,415

SS = Edge of Sleeper Slab towards roadway.

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N46	N46(1)1,2&4	3	58

ITEM 60701-5000 REMOVING, CLEANING & STOCKPILING CULVERT

LOCATION	SIZE (m)	REMOVE AND SALVAGE
0+498.200 	1-760 mm x 13.7 m	Existing CSPC
0+620.100 	1-914 mm x 12.1 m	Existing CSPC
1+013.890 Lt.	1-2134 mm x 18.3 m	Existing CSPC
1+020.720 Lt.	1-2134 mm x 18.4 m	Existing CSPC
1+027.850 Lt.	1-2134 mm x 18.5 m	Existing CSPC
1+269.825 	1-914 mm x 12.2 m	Existing CSPC
1+710.000 	1-760 mm x 12.2 m	Existing CSPC
2+370.800 Rt.	1-380 mm x 9.0 m	Existing ABS pipe; School TO
2+747.370 Rt.	1-380 mm x 30.6 m	Existing ABS pipe; School TO
TOTAL:	145.0 m	

ITEM 61701-5000 GUARDRAIL SYSTEM SGR-04b, TYPE PDE 02 w/ET-PLUS END TREATMENT

STATION	LOCATION	LENGTH (m)
0+985.140 to 1+015.620	RT	30.480
0+990.774 to 1+009.824	LT	19.050
1+068.880 to 1+099.360	LT	30.480
1+074.766 to 1+093.816	RT	19.050
TOTAL		99.060

ITEM 61901-1000 FENCE, BARBED WIRE, 5 STRAND

STATION TO STATION	LOCATION	LENGTH	REMARKS
0+023.395 to 1+017.060	30 m Lt.; 30 m Rt.	1987.330	BOP to Bridge Abutment 1
1+067.440 to 2+211.969	30 m Lt.; 30 m Rt.	2289.058	Bridge Abutment 2 to ROW width change
2+211.969 to 2+246.800	30 m Lt.; 21 m Rt.	69.662	ROW width change to west corner, school fence
2+246.800 to 2+773.400	30 m Lt. ONLY	526.600	West corner to east corner, school fence tie-in
2+773.400 to 2+940.000	30 m Lt.; 21 m Rt.	333.200	East corner, school fence tie-in to ROW width change
2+940.000 to 3+300.000	30 m Lt.; 18 m Rt.	720.000	ROW width change to ROW width change
3+300.000 to 3+603.779	30 m Lt.; 15 m Rt.	607.558	ROW width change to cattleguard at EOP
SUB-TOTAL =		6533.408	
deduct 4900 mm cattleguards w/ gate (5 ea.)		-41.750	(= 5 x 8.350 m per turnout)
deduct 7190 mm cattleguards w/ gate (2 ea.)		-21.280	(= 2 x 10.640 m per turnout)
SUB-TOTAL =		6470.378	
add 5% contingency factor		323.519	(terrain condition; lengths perpendicular to CL; wing fences
TOTAL =		6793.897	

ITEM 61903-0310 CATTLEGUARD 4900 mm (2-UNIT) W/TYPE II GATE

STATION	LOCATION	TURNOUT SIZE	REMARKS
0+604.000	Lt.	4.50 m x 25.2 m	Sewer lagoon access
1+413.500	Rt.	4.50 m x 19.7 m	Local access
2+218.000	Lt.	4.50 m x 27.0 m	Residences to west
2+999.200	Rt.	4.50 m x 25.7 m	Residences to south
3+021.300	Lt.	4.50 m x 25.2 m	Residences to north
TOTAL		5 each	

ITEM 61903-0710 CATTLEGUARD 7190 mm (3-UNIT) W/TYPE II GATE

STATION	LOCATION	TURNOUT SIZE	REMARKS
0+220.000	Lt.	7.00 m x 45.2 m	Pueblo Pintado School
1+117.900	Lt.	7.00 m x 83.4 m	BIA Route N7128
TOTAL		2 each	

ITEM 61903-1210 CATTLEGUARD 11770 mm (5-UNIT) W/TYPE II GATE

STATION	LOCATION	TURNOUT SIZE	REMARKS
3+603.779		n/a	Across mainline road
TOTAL		1 each	

NOTE: SEE SHEET 5 FOR INFORMATION ON ADDRESSING EXISTING UTILITIES.

 - Quantities revised per Facsimile correspondence dated March 25, 2010 from the AO to NECA.

ITEM 62101-0000 MONUMENT
ITEM 62102-0000 MARKER

STATION	DESCRIPTION	LOCATION	MONUMENT	MARKER
0+016.789	Begin ROW	30m Rt.	1	1
0+029.894	Begin ROW	30m Lt.	1	1
0+130.893	PC C1	30m Lt., 30m Rt.	2	2
0+205.000	POC	30m Lt., 55m Lt.	2	2
0+235.000	POC	30m Lt., 55m Lt.	2	2
0+275.996	PT C1	30m Lt., 30m Rt.	2	2
0+422.742	PC C2	30m Lt., 30m Rt.	2	2
0+590.022	PT C2	30m Lt., 30m Rt.	2	2
0+916.316	PC C3	30m Lt., 30m Rt.	2	2
0+976.449	PT C3	50m Lt., 30m Lt., 30m Rt., 50m Rt.	4	4
1+105.000	POT	90m Lt., 50m Lt.	2	2
1+128.360	PC C4	90m Lt., 30m Rt., 50m Rt.	3	3
1+140.000	POC	*90m Lt., 30m Lt.	2	*1
1+259.979	PT C4	30m Lt., 30m Rt.	2	2
1+746.047	PC C5	30m Lt., 30m Rt.	2	2
1+870.084	PT C5	30m Lt., 30m Rt.	2	2
1+972.104	PC C6	30m Lt., 30m Rt.	2	2
2+091.085	PT C6	30m Lt., 30m Rt.	2	2
2+211.969	PC C7	30m Lt., 21m Rt., 30m Rt.	3	3
2+609.032	PT C7	30m Lt., 21m Rt.	2	2
2+940.000	POC	18m Rt., 21m Rt.	2	2
2+985.000	POC	18m Rt., 33m Rt.	2	2

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ITEMS 63302-0001 SIGN INSTALLATION, 1 POST AND HARDWARE: 2.98 kg/m

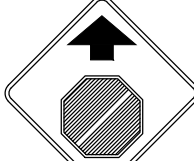
STATION	LOC.	SIGN DETAIL NO.	DESCRIPTION	SIGN PANEL SIZE (mm)	AREA OF SIGN (m ²)	NO. of POSTS	kg/m	TOTAL NO. SIGN PANELS
0+050.000	Rt.	Route 46	 	457 x 610	0.28	1	2.98	1
4+050.000 N7128	Rt.	Route 7128				1		1
63302-0001: Sign Installation, 1 POST AND HARDWARE; 2.98 kg/m TOTAL 0.56 m ²								

NOTE: SEE SHEET 5 FOR NAVAJO REGION ROUTE SIGN DIMENSIONS AND DETAILS.

ITEMS 63302-0003 SIGN INSTALLATION, 1 POST AND HARDWARE: 4.10 kg/m

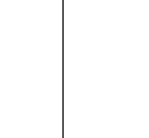
0+080.000	Rt.	R2-1		610 x 762	0.46	1	4.10	1
3+540.000	Lt.					1		1
0+300.000	Lt.	R4-1		610 x 762	0.46	1	4.10	1
0+860.000	Rt.					1		1
1+320.000	Lt.					1		1
1+700.000	Rt.					1		1
2+840.000	Lt.					1		1
2+367.000	Rt.	N/A		610 x 762	0.46	1	4.10	1
2+381.200	Rt.					1		1
63302-0003: Sign Installation, 1 POST AND HARDWARE; 4.10 kg/m TOTAL 4.18 m²								

ITEMS 63302-0010 SIGN INSTALLATION, 2 POSTS AND HARDWARE: 2.98 kg/m

0+015.400	Lt.	R1-1		914 x 914	0.84	2	2.98	1
0+206.100	Lt.			762 x 762	0.58	2		1
1+107.500	Lt.					2		1
2+378.200	Rt.					2		1
2+754.800	Rt.					2		1
0+100.000	Rt.	W1-10(R)		762 x 762	0.58	2	2.98	1
0+770.000	Rt.	W1-4(L)		762 x 762	0.58	2	2.98	1
1+400.000	Lt.					2		1
0+300.000	Rt.	W14-3		914 x 1219 x 1219	0.56	2	2.98	1
0+860.000	Lt.					2		1
1+320.000	Rt.					2		1
1+700.000	Lt.					2		1
2+840.000	Rt.					2		1
1+120.000	Rt.	D1-1		2610 x 457	1.19	2	2.98	2
Install 2 Sign Panels Back to Back on Posts. Sign panel shown is for northbound traffic. For southbound traffic place arrow on the opposite side of the text, pointing right.								
1+590.000	Rt.	W1-5(L)		762 x 762	0.58	2	2.98	1
2+640.000	Lt.	W1-5(R)				2		1
3+148.000	Rt.	W8-3 W16-2		762 x 762 610 x 305	0.58 0.19	2	2.98	1 1
3+455.000	Rt.	W8-3 W16-2		762 x 762 610 x 305	0.58 0.19	2	2.98	1 1
3+600.000	Rt.	W8-3		762 x 762	0.58	2	2.98	1
0+100.000	Lt.	W3-1		762 x 762	0.58	2	2.98	1
4+100.000 N7128						2		1
4+145.000 N7128	Lt.	W1-9L(15)		762 x 762	0.58	2	2.98	1
63302-0010: Sign Installation, 2 POSTS AND HARDWARE; 2.98 kg/m TOTAL 15.09 m²								

NOTE: SEE SHEET 11, 12, 13 AND 14 FOR N9(13)2&4 FOR SIGNING DETAILS AND WIDENING AND ACCEL/DECEL LANE WORK.

ITEMS 63302-0012 SIGN INSTALLATION, 2 POSTS AND HARDWARE: 4.10 kg/m

STATION	LOC.	SIGN DETAIL NO.	DESCRIPTION	SIGN PANEL SIZE (mm)	AREA OF SIGN (m ²)	NO. of POSTS	kg/m	TOTAL NO. SIGN PANELS
1+110.000 *	Rt.	D1-3 *	CHACO CULTURE NHP ← 33 MILES	1765 x 877	1.55	2	4.10	1
2+160.000	Rt.	S1-1	 AHEAD	914 x 914	0.84	2	4.10	2
2+900.000	Lt.	W16-9p		914 x 508	0.46	2		2
2+700.000	Rt.	D1-1	TSE' YI' GAI HIGH SCHOOL →	2120 x 762	1.62	2	4.10	1
2+780.000	Lt.	D1-1	← TSE' YI' GAI HIGH SCHOOL			2		1
63302-0012: Sign Installation, 2-POSTS AND HARDWARE, 4.10 kg/m								TOTAL 7.39 m ²

* - See details for Chaco Culture NHP sign on Sheet 5.

ITEMS 63308-3000 OBJECT MARKERS, TYPE 3 w/ 1 POST AND HARDWARE: 2.98 kg/m

STATION	LOC.	SIGN DETAIL NO.	DESCRIPTION	SIGN PANEL SIZE (mm)	AREA OF SIGN (m ²)	NO. OF POSTS	kg/m	TOTAL NO. SIGN PANELS
1+009.500	Lt.	OM-3L	Opposing Traffic  Oncoming Traffic  OM-3L OM-3R	305 x 914	0.28	1	2.98	1
1+015.300	Rt.	OM-3R				1		1
1+069.200	Lt.	OM-3L				1		1
1+075.000	Rt.	OM-3R				1		1
63302-3000: Object Markers, Type 3 with 1 POST AND HARDWARE, 2.98 kg/m TOTAL 4 each								

ITEM 20425-2000 DITCH, EXCAVATION, FURROW DITCH

STATION	LOCATION	LENGTH(m)
0+750	Lt.	37
0+850	Lt.	31
2+030	Lt.	25
2+933	Rt.	58
3+355	Lt.	51
3+540	Lt.	42
TOTAL:		244

ITEM 20443-2000 EARTHEN BERM, TYPE B, DITCH BLOCK

STATION	LOCATION	LENGTH(m)
Sta 1+780	Lt.	8
TOTAL:		8

ITEM 21101-2000 ROADWAY OBLITERATION, METHOD 2

STATION	AREA (m ²)
0+904 to 1+111 Lt.	1,900
1+122 to 1+156 Lt.	230
TOTAL	2,130

ITEM 62901-1100 ROLLED EROSION CONTROL PRODUCT, TYPE IV

STATION	LOCATION	AREA(m²)
2+940 to 2+990±	Rt.	405
3+260 to 3+340	Rt.	532
TOTAL:		937

ITEM 63401-1510 PAVEMENT MARKINGS, TYPE "H", SOLID YELLOW

STATION TO STATION	LOCATION	DESCRIPTION	LENGTH(m)
0+015.400 To 0+300.000	CL	Solid Double Yellow	569.4 *
0+860.000 To 1+320.000	CL	Solid Double Yellow	920.2 *
1+700.000 To 2+840.000	CL	Solid Double Yellow	2,280.2 *
TOTAL:			3,769.8 *

TURNOUT LOCATIONS

STATION	LOCATION	SIZE (m)	REMARKS
0+220.000	Lt.	7.0 x 48.7	Saw Cut @ 48.7 m Lt.; Remove Existing Asphalt Turnout; Surface to saw cut.
0+604.000	Lt.	4.5 x 25.2	Pave to new Cattle Guard
1+117.900	Lt.	7.0 x 90.2	Construct New intersection with N7128. See Sht 38 For Details.
1+413.500	Rt.	4.5 x 26.8	Pave to new Cattle Guard
2+218.000	Lt.	4.5 x 26.8	Pave to new Cattle Guard
2+370.800	Rt.	9.1 x 24.8	Pave to Existing Cattle Guard @ existing school turnout
2+747.370	Rt.	9.1 x 38.0	Pave to Existing Cattle Guard @ existing school turnout
2+999.200	Rt.	4.5 x 25.6	Pave to new Cattle Guard
3+021.300	Lt.	4.5 x 25.2	Pave to new Cattle Guard

ITEM 63401-1520 PAVEMENT MARKINGS, TYPE "H", SOLID WHITE

STATION TO STATION	LOCATION	DESCRIPTION	LENGTH(m)
0+004.111 to 3+602.560	Rt.	Solid White	3,598.5 *
Minus (2) 9.10 m T.O. @ 37.272 m each			-74.7 *
Minus (2) 4.50 m T.O. @ 32.672 m each			-65.5 *
SUB-TOTAL:			3,458.3 *
0+004.111 to 3+602.560	Lt.	Solid White	3,598.5 *
Minus (2) 7.00 m T.O. @ 35.172 m each			-70.4 *
Minus (3) 4.50 m T.O. @ 32.672 m each			-98.5 *
SUB-TOTAL:			3,429.6 *
GRAND-TOTAL:			6,887.9 *

ITEM 63401-1610 PAVEMENT MARKINGS, TYPE "H", BROKEN YELLOW

STATION TO STATION	LOCATION	DESCRIPTION	LENGTH(m)
0+300.000 To 0+860.000	CL	Broken Yellow	560.2 *
1+320.000 To 1+700.000	CL	Broken Yellow	380.1 *
2+840.000 To 3+605.000	CL	Broken Yellow	765.0 *
TOTAL:			1,705.3 *

* - Quantities determined as follows; actual length in meters converted to feet, feet rounded up to the nearest foot, feet converted back to meters, meters rounded to the nearest tenth of a meter.

ITEM 63405-3260 PAVEMENT MARKINGS, "STOP BAR", TYPE "H", SOLID WHITE

STATION	LOCATION	DESCRIPTION	EACH
0+015.400	CL	Stop Bar	1
0+220.000	LT.	Stop Bar	1
1+117.900	LT.	Stop Bar	1
2+370.800	RT.	Stop Bar	1
2+747.370	RT.	Stop Bar	1
TOTAL:			5

ITEM 63309-0020 DELINEATORS, GLASS FIBER, TYPE "1b"

STATION	DESCRIPTION	LOCATION	EACH
0+075.893	TYPE "1b"	Lt.	1
0+130.893	TYPE "1b"	Lt.	1
0+159.914	TYPE "1b"	Lt.	1
0+188.934	TYPE "1b"	Lt.	1
0+246.975	TYPE "1b"	Lt.	1
0+275.996	TYPE "1b"	Lt.	1
0+331.000	TYPE "1b"	Lt.	1
0+422.742	TYPE "1b"	Lt.	1
0+464.562	TYPE "1b"	Lt.	1
0+506.382	TYPE "1b"	Lt.	1
0+548.202	TYPE "1b"	Lt.	1
0+590.023	TYPE "1b"	Lt.	1
0+672.023	TYPE "1b"	Lt.	1
0+752.317	TYPE "1b"	Rt.	1
0+809.023	TYPE "1b"	Lt.	1
0+843.317	TYPE "1b"	Rt.	1
0+889.317	TYPE "1b"	Rt.	1
0+916.317	TYPE "1b"	Rt.	1
0+931.350	TYPE "1b"	Rt.	1
0+946.383	TYPE "1b"	Rt.	1
0+961.416	TYPE "1b"	Rt.	1
0+976.449	TYPE "1b"	Rt.	1
1+133.885	TYPE "1b"	Lt.	1
1+150.297	TYPE "1b"	Lt.	1
1+172.234	TYPE "1b"	Lt.	1
1+194.170	TYPE "1b"	Lt.	1
1+216.107	TYPE "1b"	Lt.	1
1+238.043	TYPE "1b"	Lt.	1
1+259.980	TYPE "1b"	Lt.	1
1+300.980	TYPE "1b"	Lt.	1
1+369.980	TYPE "1b"	Lt.	1
1+448.048	TYPE "1b"	Rt.	1
1+506.980	TYPE "1b"	Lt.	1
1+600.048	TYPE "1b"	Rt.	1
1+691.048	TYPE "1b"	Rt.	1
1+746.048	TYPE "1b"	Rt.	1
1+777.058	TYPE "1b"	Rt.	1
1+808.067	TYPE "1b"	Rt.	1
1+839.076	TYPE "1b"	Rt.	1
1+870.085	TYPE "1b"	Rt.	1
1+890.105	TYPE "1b"	Lt.	1
1+925.085	TYPE "1b"	Rt.	1
1+972.105	TYPE "1b"	Lt.	1
2+006.800	TYPE "1b"	Lt.	1
2+051.425	TYPE "1b"	Lt.	1
2+091.086	TYPE "1b"	Lt.	1
2+173.086	TYPE "1b"	Lt.	1
2+211.970	TYPE "1b"	Lt.	1
2+268.693	TYPE "1b"	Lt.	1
2+325.416	TYPE "1b"	Lt.	1
2+382.139	TYPE "1b"	Lt.	1
2+438.863	TYPE "1b"	Lt.	1
2+495.586	TYPE "1b"	Lt.	1
2+552.309	TYPE "1b"	Lt.	1
2+609.032	TYPE "1b"	Lt.	1
2+719.032	TYPE "1b"	Lt.	1
2+871.032	TYPE "1b"	Lt.	1
3+030.000	TYPE "1b"	Lt.	1
3+047.305	TYPE "1b"	Rt.	1
3+199.305	TYPE "1b"	Rt.	1
3+351.305	TYPE "1b"	Rt.	1
3+461.305	TYPE "1b"	Rt.	1
3+519.793	TYPE "1b"	Rt.	1
3+578.275	TYPE "1b"	Rt.	1
GRAND TOTAL:			64

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

QUANTITY TABLES

Designed by: RDL
Drawn by: RDL, rsh, cdh Date: 12/01/09
Revised by: Date:
File Name: N46_Quantity Tables.dwg



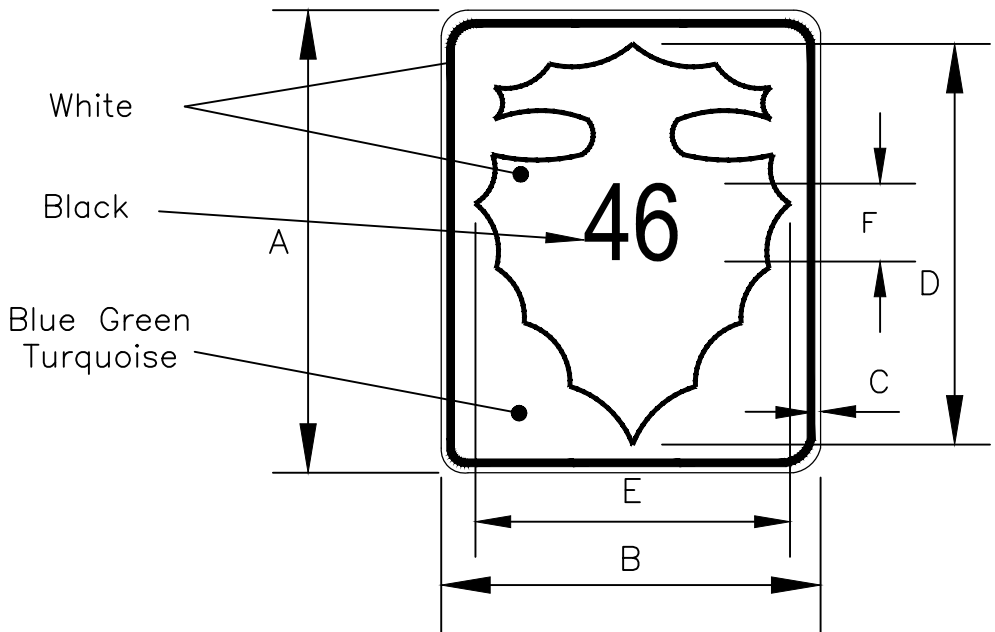
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N46	N46(1)1,2&4	5	58

SUPERELEVATION GRADE TABULATIONS				Alignment : N46 Design Speed : 50 km/h Normal Crown Slope : -2.00%			
C1 Degree : 10°15'34" Radius : 170.220m Tangent Runout Back : 11.000 Tangent Runout Ahead : 11.000 Runoff Length Back : 28.000 Runoff Length ahead : 28.000 Transition Length Back : 39.000 Transition Length ahead : 39.000 Full Super Rate : 5.060%				C5 Degree : 8°22'56" Radius : 208.340m Tangent Runout Back : 11.000 Tangent Runout Ahead : 11.000 Runoff Length Back : 25.500 Runoff Length ahead : 25.500 Transition Length Back : 36.500 Transition Length ahead : 36.500 Full Super Rate : 4.620%			
Transition Station	Station	%e Left	%e Right	Transition Station	Station	%e Left	%e Right
Normal Crown	0+101.133	-2.000%	-2.000%	Normal Crown	1+717.963	-2.000%	-2.000%
0% Super	0+112.133	0.000%	-2.000%	0% Super	1+728.963	-2.000%	0.000%
Reverse Crown	0+123.200	2.000%	-2.000%	Reverse Crown	1+740.002	-2.000%	2.000%
PC 1	0+130.893	3.390%	-3.390%	PC 5	1+746.048	-3.095%	3.095%
Full Super	0+140.133	5.060%	-5.060%	Full Super	1+754.463	-4.620%	4.620%
Full Super	0+266.756	5.060%	-5.060%	Full Super	1+861.670	-4.620%	4.620%
PT 1	0+275.996	3.390%	-3.390%	PT 5	1+870.085	-3.095%	3.095%
Reverse Crown	0+283.689	2.000%	-2.000%	Reverse Crown	1+876.130	-2.000%	2.000%
0% Super	0+294.756	0.000%	-2.000%	0% Super	1+887.170	-2.000%	0.000%
Normal Crown	0+305.756	-2.000%	-2.000%	Normal Crown	1+898.170	-2.000%	-2.000%
C2 Degree : 5°20'59" Radius : 326.440m Tangent Runout Back : 11.000 Tangent Runout Ahead : 11.000 Runoff Length Back : 21.000 Runoff Length ahead : 21.000 Transition Length Back : 32.000 Transition Length ahead : 32.000 Full Super Rate : 3.740%				C6 Degree : 5°49'17" Radius : 300.000m Tangent Runout Back : 11.000 Tangent Runout Ahead : 11.000 Runoff Length Back : 22.000 Runoff Length ahead : 22.000 Transition Length Back : 33.000 Transition Length ahead : 33.000 Full Super Rate : 3.900%			
Transition Station	Station	%e Left	%e Right	Transition Station	Station	%e Left	%e Right
Normal Crown	0+397.672	-2.000%	-2.000%	Normal Crown	1+946.365	-2.000%	-2.000%
0% Super	0+408.672	0.000%	-2.000%	0% Super	1+957.365	0.000%	-2.000%
Reverse Crown	0+419.902	2.000%	-2.000%	Reverse Crown	1+968.647	2.000%	-2.000%
PC 2	0+422.742	2.506%	-2.506%	PC 6	1+972.105	2.613%	-2.613%
Full Super	0+429.672	3.740%	-3.740%	Full Super	1+979.365	3.900%	-3.900%
Full Super	0+583.093	3.740%	-3.740%	Full Super	2+083.826	3.900%	-3.900%
PT 2	0+590.023	2.506%	-2.506%	PT 6	2+091.086	2.613%	-2.613%
Reverse Crown	0+592.863	2.000%	-2.000%	Reverse Crown	2+094.544	2.000%	-2.000%
0% Super	0+604.093	0.000%	-2.000%	0% Super	2+105.826	0.000%	-2.000%
Normal Crown	0+615.093	-2.000%	-2.000%	Normal Crown	2+116.826	-2.000%	-2.000%
C3 Degree : 19°24'15" Radius : 90.000m Tangent Runout Back : 11.000 Tangent Runout Ahead : 11.000 Runoff Length Back : 33.000 Runoff Length ahead : 33.000 Transition Length Back : 44.000 Transition Length ahead : 44.000 Full Super Rate : 6.000%				C7 Degree : 2°54'38" Radius : 600.000m Tangent Runout Back : 11.000 Tangent Runout Ahead : 11.000 Runoff Length Back : 13.000 Runoff Length ahead : 13.000 Transition Length Back : 24.000 Transition Length ahead : 24.000 Full Super Rate : 2.400%			
Transition Station	Station	%e Left	%e Right	Transition Station	Station	%e Left	%e Right
Normal Crown	0+883.207	-2.000%	-2.000%	Normal Crown	2+192.260	-2.000%	-2.000%
0% Super	0+894.207	-2.000%	0.000%	0% Super	2+203.260	0.000%	-2.000%
Reverse Crown	0+910.707	-2.000%	2.000%	PC 7	2+211.970	1.608%	-2.000%
PC 3	0+916.317	-4.680%	4.680%	Reverse Crown	2+214.093	2.000%	-2.000%
Full Super	0+927.207	-6.000%	6.000%	Full Super	2+216.260	2.400%	-2.400%
Full Super	0+965.559	-6.000%	6.000%	Full Super	2+604.742	2.400%	-2.400%
PT 3	0+976.449	-4.680%	4.680%	Reverse Crown	2+606.909	2.000%	-2.000%
Reverse Crown	0+982.059	-2.000%	2.000%	PT 7	2+609.032	1.608%	-2.000%
0% Super	0+998.559	-2.000%	0.000%	0% Super	2+617.742	0.000%	-2.000%
Normal Crown	1+009.559	-2.000%	-2.000%	Normal Crown	2+628.742	-2.000%	-2.000%
C4 Degree : 11°38'33" Radius : 150.000m Tangent Runout Back : 11.000 Tangent Runout Ahead : 11.000 Runoff Length Back : 29.000 Runoff Length ahead : 29.000 Transition Length Back : 40.000 Transition Length ahead : 40.000 Full Super Rate : 5.300%				C8 Degree : 2°03'16" Radius : 850.000m Tangent Runout Back : 11.000 Tangent Runout Ahead : 11.000 Runoff Length Back : 11.000 Runoff Length ahead : 11.000 Transition Length Back : 22.000 Transition Length ahead : 22.000 Full Super Rate : RC			
Transition Station	Station	%e Left	%e Right	Transition Station	Station	%e Left	%e Right
Normal Crown	1+097.931	-2.000%	-2.000%	Normal Crown	3+442.935	-2.000%	-2.000%
0% Super	1+108.931	0.000%	-2.000%	0% Super	3+453.935	-2.000%	0.000%
Reverse Crown	1+119.874	2.000%	-2.000%	PC 8	3+461.305	-2.000%	1.340%
PC 4	1+128.361	3.551%	-3.551%	Reverse Crown/Full Super	3+464.935	-2.000%	2.000%
Full Super	1+137.931	5.300%	-5.300%	Reverse Crown /Full Super	3+574.645	-2.000%	2.000%
Full Super	1+250.410	5.300%	-5.300%	PT 8	3+578.275	-2.000%	1.340%
PT 4	1+259.980	3.551%	-3.551%	0% Super	3+585.645	-2.000%	0.000%
Reverse Crown	1+268.467	2.000%	-2.000%	Normal Crown	3+596.645	-2.000%	-2.000%
0% Super	1+279.410	0.000%	-2.000%				
Normal Crown	1+290.410	-2.000%	-2.000%				

EXISTING UTILITIES

LOCATION	DESCRIPTION	SKEW	* REMARKS
0+023±	Frontier Communications Buried Cable	±98°	To be relocated by owner ***
0+026±	Navajo Nation 50 mm underground waterline	unknown	To be encased in steel **
0+060.191	Frontier Communications Telephone Line	98°	To be raised and pole to be relocated by owner.
0+075.000	BIA 75 mm underground waterline.	unknown	Abandoned line. Protect in place.
0+271.137	Jemez Mountain Electric overhead powerline.	96°	Protect in place. Elev. = 1987.203
2+231.219	NTUA 203 mm underground waterline.	86°	Protect in place.
2+375.384	Jemez Mountain Electric overhead powerline.	89°	Protect in place. Elev. = 2004.684
2+233, 22.8m Rt. to 3+615, 16.7m Rt.	NTUA underground waterline parallel to roadway.	n/a	Parallel waterline at school location to remain in place.

- * - Information in REMARKS column is assumed. Utility owners may modify requirements based on their specifications.
** - Contractor to verify/coordinate encasement with owner. Work to be incidental to Roadway Items with no additional payment.
*** - The Contractor shall contact the owner a minimum of three (3) working days prior to excavation near this cable. The owner will relocate, lower, or encase the cable a needed to clear roadway work. The Contractor shall coordinate and assist the utility owner with this work.



SIGN	DIMENSION (mm)					F NUMERALS				
	A	B	C	D	E	DIGITS IN ROUTE SIZE (mm)	1	2	3	4
MIN.	610	457	13	495	343		254E	245D	203C	152B

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF INDIAN AFFAIRS NAVAJO REGION OFFICE * DIVISION OF TRANSPORTATION	
SUPERELEVATION GRADE TABULATIONS & UTILITY INFO	
Designed by: RDL	
Drawn by: RDL, cdh Date: 12/14/09	
Revised by: cdh Date: 06/23/10	
File Name: N46_Superelevation	

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N9	N46(I-I),2&4	II	58

SEQUENCE OF PAVEMENT RECONSTRUCTION:

1. Prior to any pavement milling work, the Contractor shall survey the project roadway to re-establish a best fit centerline horizontal alignment and vertical profile. The survey data points shall not exceed a point spacing of 20 meters (10m on vertical profile) and shall include centerline points, edge of pavement points (left & right), PC's, PT's, PI's, and oil subgrade catch points to the ditch line limits. All the survey data shall be submitted in the inRoads 8.8 format with hard copy printouts of the best fit horizontal alignment and vertical profiles to the NRDOT Planning & Design Branch Chief, for review and approval. As-Built plans will be provided upon written request through the AO. This work shall be in accordance with section 152 and paid for under bid item 15201-0000.

2. The Contractor shall saw cut (full depth) the existing pavement at the edge of pavement line at all existing turnouts, and match the new pavement with the existing to provide a smooth joint transition.

3. The Contractor shall mill and pulverize the top 76mm of existing asphalt concrete pavement structure, which includes maintenance patches, to a gradation suitable for embankment construction use. The Contractor has the option to utilize a self-propelled pulverizing machine or other construction equipment/methods capable of maintaining a uniform grade and cross section.

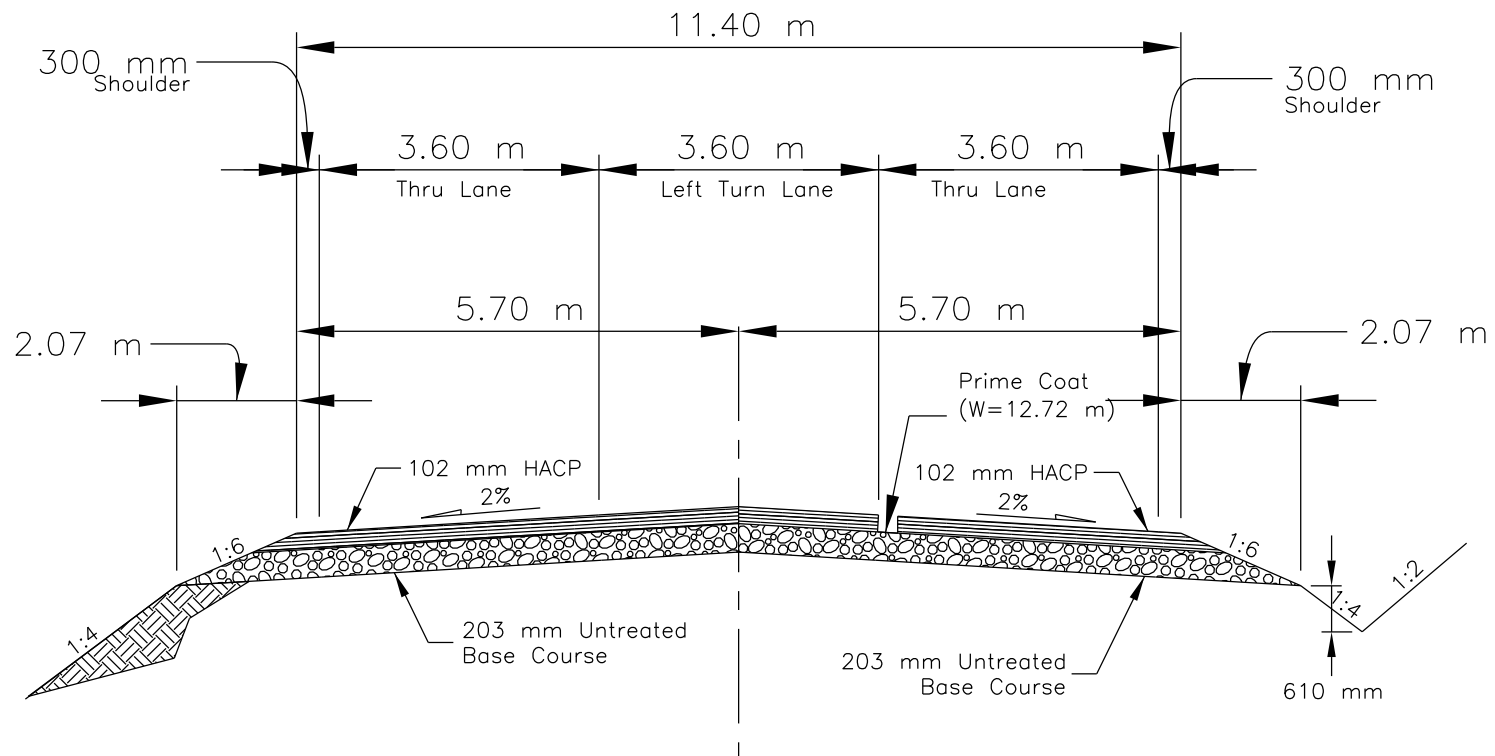
4. After pulverizing, the Contractor shall build up the existing subgrade and shoulders as needed with the milled material.

5. The Contractor shall furnish and place 203 mm thickness of new Aggregate Base Course material on the finished and approved subgrade.

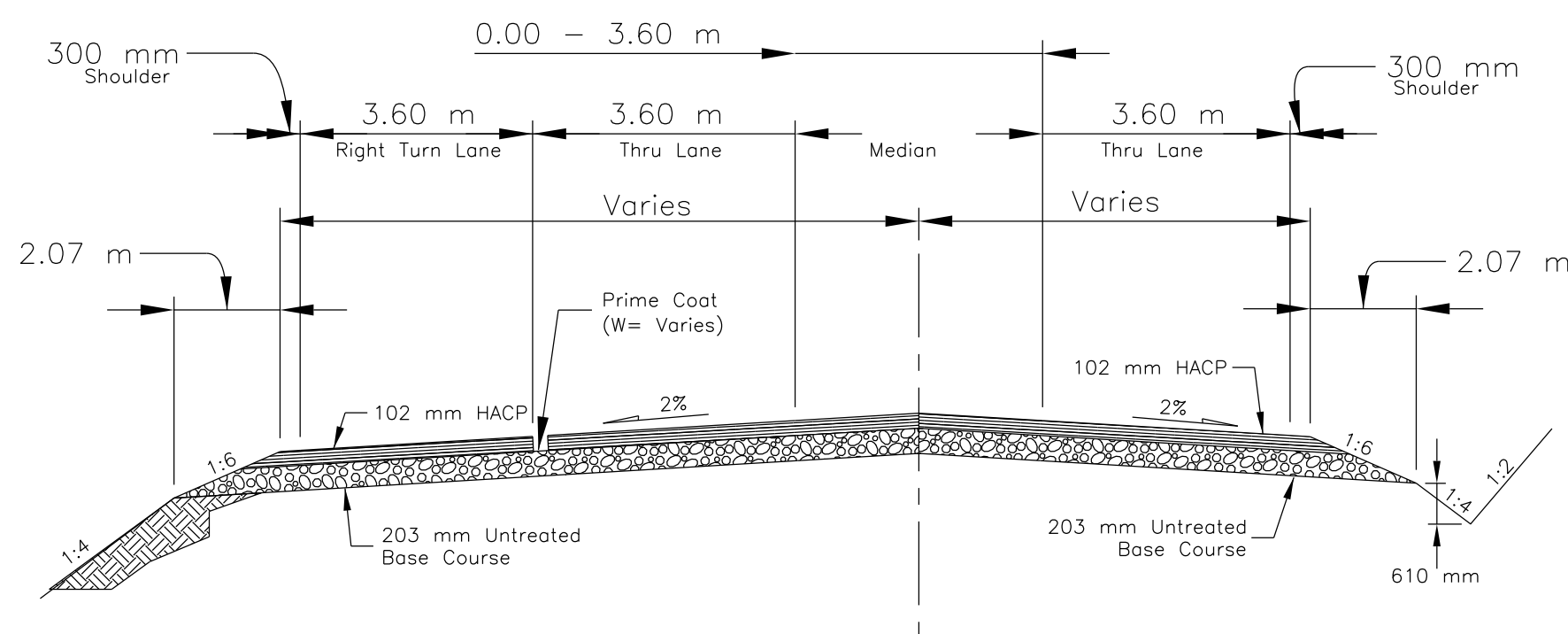
6. Place new 102 mm (1-51 mm lift) of hot asphalt concrete pavement.

7. The Contractor shall provide for a safe and relatively dust free driving surface throughout the reconstruction process for all school, general traveling public, and local traffic use day and night. The Contractor's traffic control and construction sequencing plan shall include these requirements and be submitted for review and approval prior to any ground disturbing activities taking place.

See Sheet 14 of 58 for Vertical Alignment
(every 10 m) & Horizontal Alignment Data.



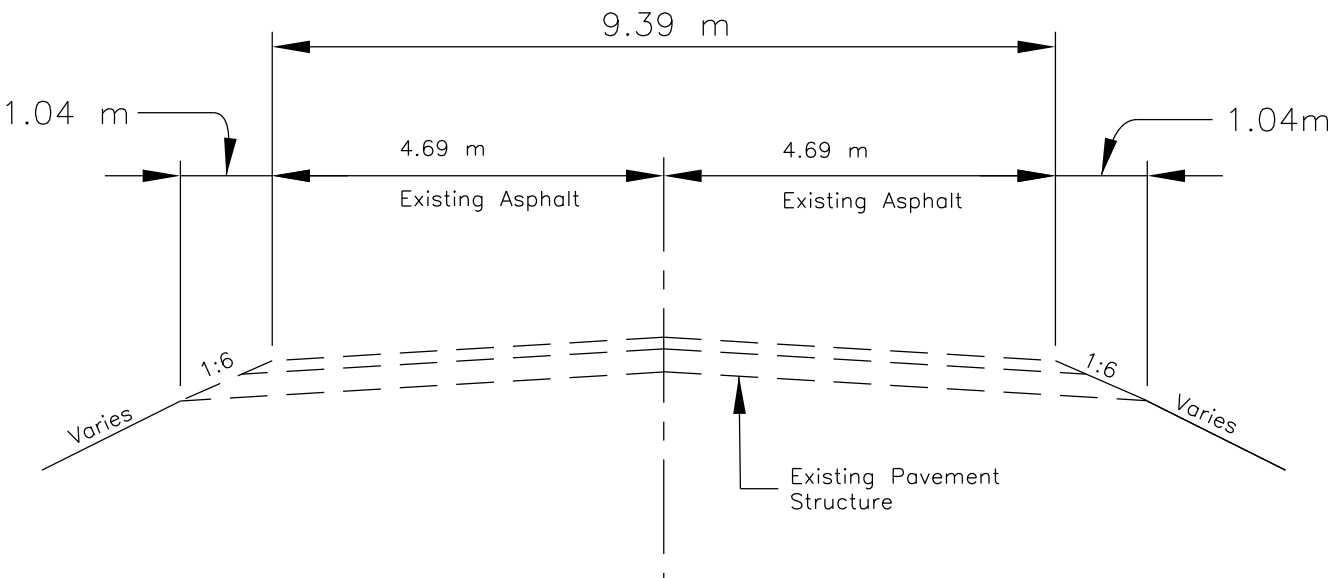
PROPOSED N9 ACCEL/DECEL LANES
SECTION A-A



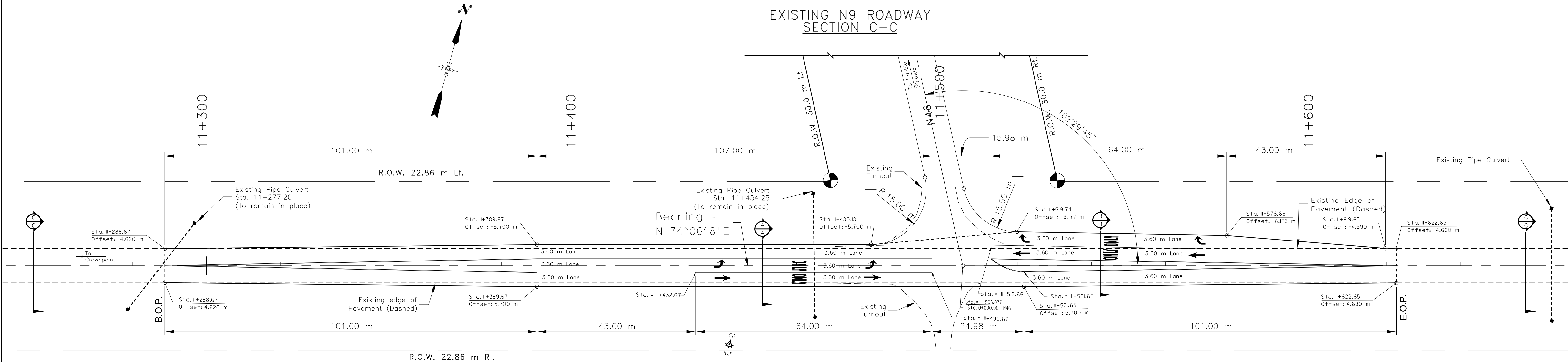
PROPOSED N9 ACCEL/DECEL LANES
SECTION B-B

GENERAL NOTES

- SEE SHEET 2 OF 58 FOR PROJECT RELATED NOTES.
- STA. 11+489, RT., EXISTING TURNOUT TO BE OBLITERATED, TURNOUT EMBANKMENT TO BE USED AS FILL ON N9 ROADWAY WIDENING OR WASTED AS NECESSARY.
- EXISTING PIPE CULVERTS WITHIN PROJECT LIMITS ARE TO BE PROTECTED IN PLACE.



EXISTING N9 ROADWAY
SECTION C-C



PROPOSED N9 ACCEL/DECEL LAYOUT
STA. 11+288.67 (BOP) TO STA. 11+622.65 (EOP)
PROJECT LENGTH = 333.98 m



N9 EARTHWORK VOLUME

STATION TO STATION	CUT (m³)	FILL (m³)	WASTE (m³)	BORROW (m³)
11+288.671 to 11+338.268	218.00	218.00	0.00	0.00
11+338.268 to 11+622.650	1296.00	156.00	1140.00	0.00
TOTAL:	1514.00	374.00	1140.00	0

25% Shrinkage factor applied

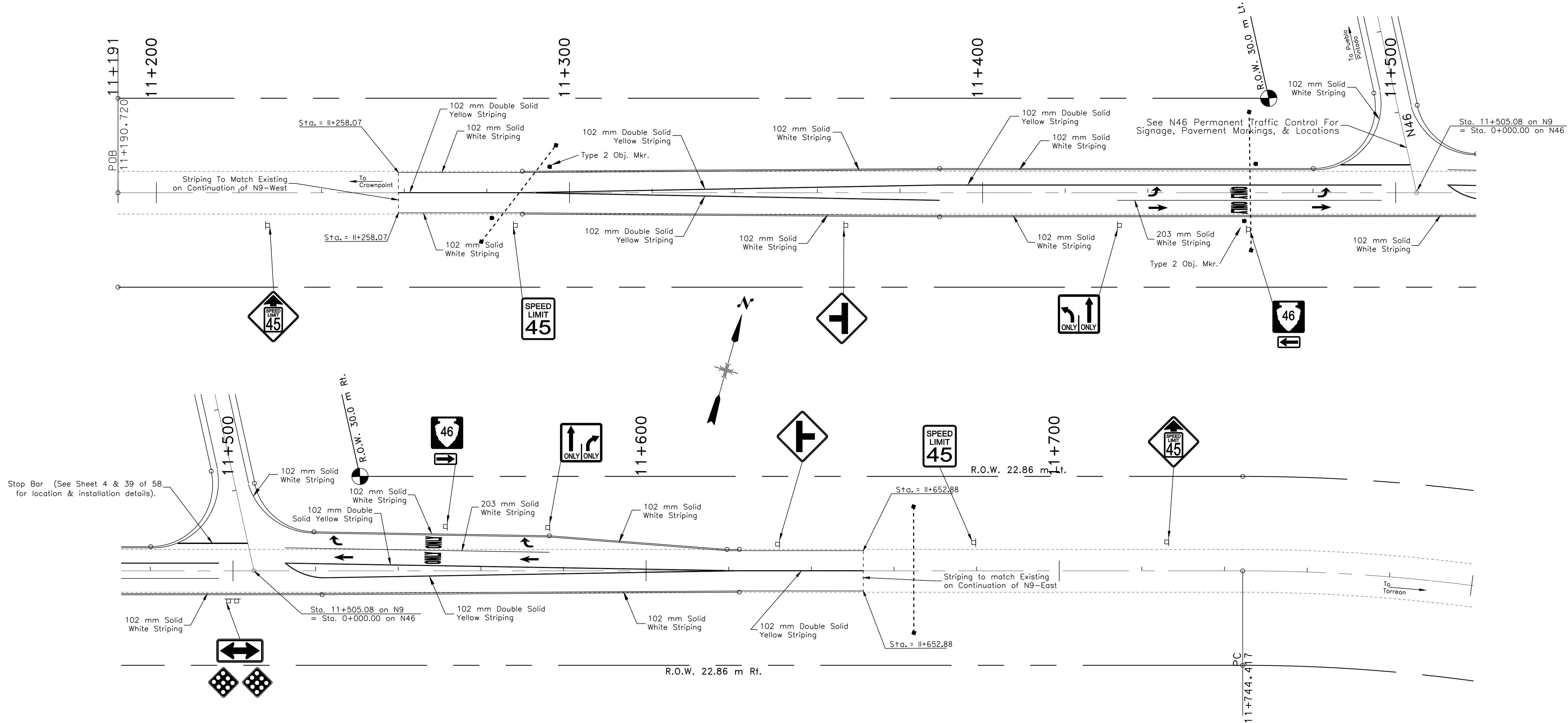
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

N9 ACCEL/DECEL
LAYOUT, TYPICAL SECTIONS,
PAVEMENT MARKINGS AND QUANTITIES

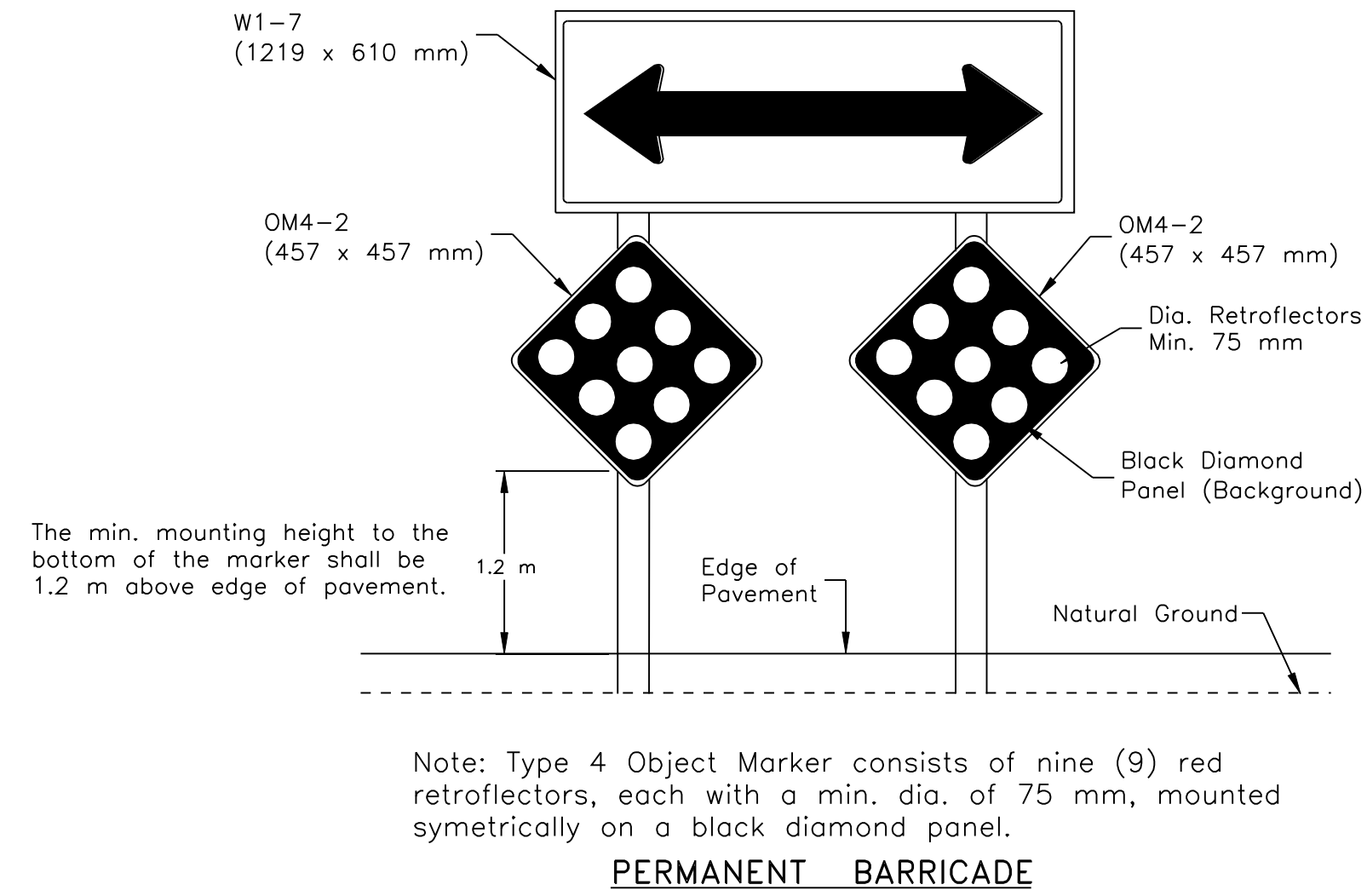
DRAWN BY:NRDOT DATE:07/02/08
DESIGNED BY:NRDOT DATE:07/02/08
REVISED:05/17/10 BY:cdh
SCALE: 1:500 and 1:100
FILENAME:Accel-Decel.dgn
SHEET MODEL NAME:N46-N9 Intersection



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N46	N46(III),2&4	12	58



PROPOSED N9 ACCEL/DECEL DESIGN



PERMANENT BARRICADE



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS

NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

N9 ACCEL/DECEL
PERMANENT TRAFFIC CONTROL AND
PAVEMENT MARKINGS DETAILS

DRAWN BY: Albert Lee

DESIGNED BY: NRDOT

REVISOR:

SCALE: 1:500 and 1:100

FILENAME: Accel-Decel.2

SHEET MODEL NAME: N46-N9 Intersection

DATE: 4/10/08

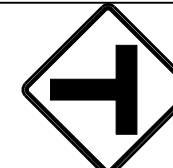
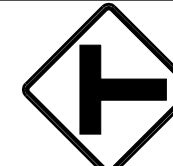
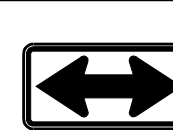
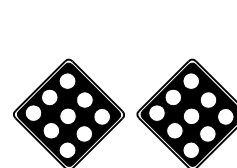
DATE: 3/30/08

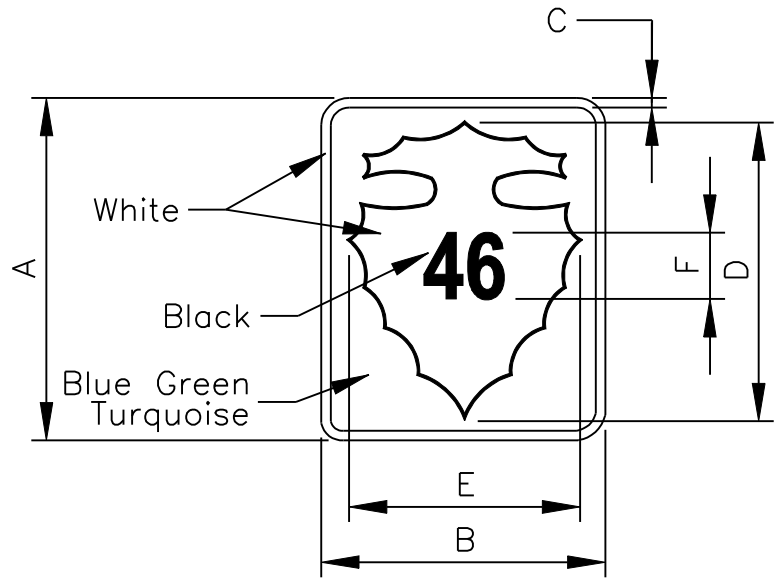
BY:

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N9	N46(III),2&4	13	58

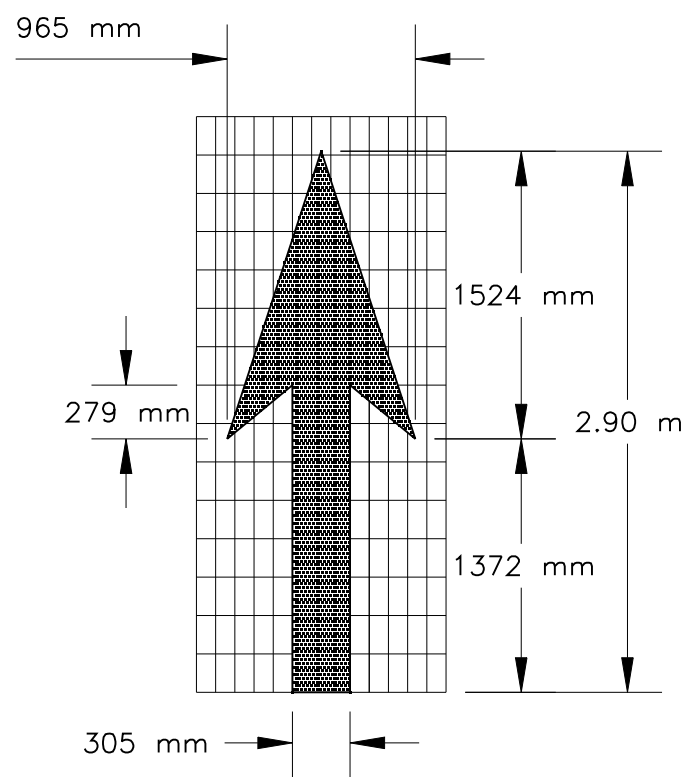
N9 PERMANENT TRAFFIC CONTROL

Permanent Roadside Sign, Post and Hardware

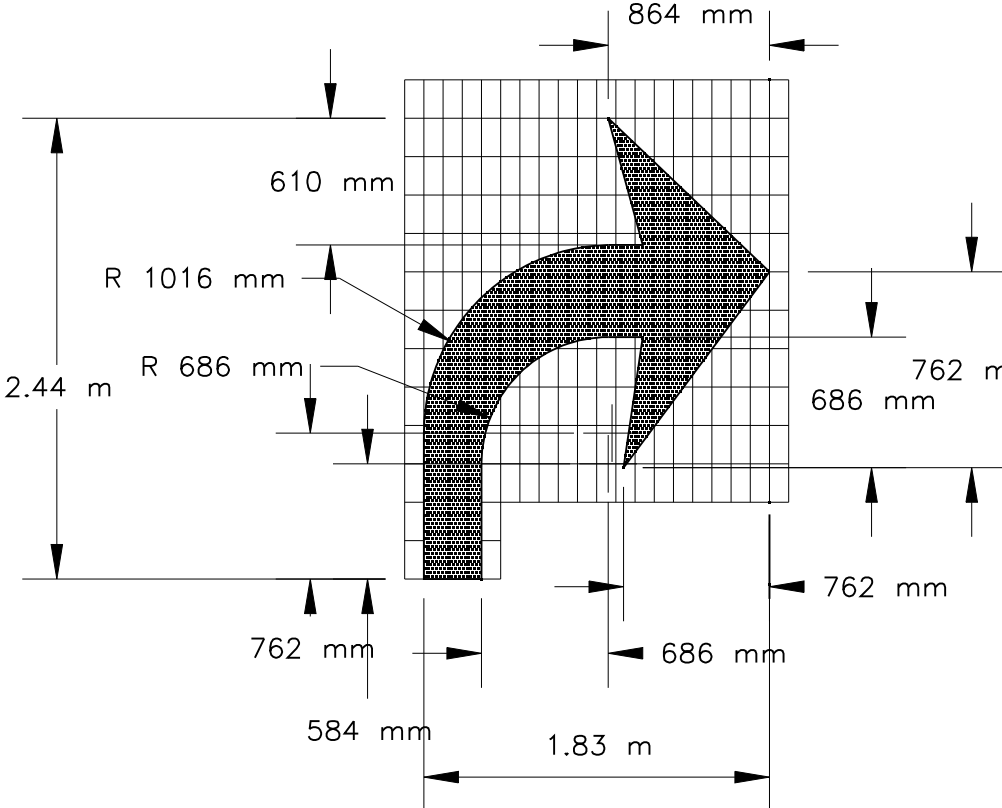
Station	Location	Detail No.	Description	Sign Panel Size (mm)	Area of Sign (sq. m.)	No. of Post	Post Wt. (kg/m)	No. of Panel	Total Area of Panel (sq.m.)
11+464.00	Rt.	See Detail M6-1		610 x 457 357 x 510	0.27 0.18	1	4.10	1 1	0.27 0.18
11+552.00	Lt.	See Detail M6-1		610 x 457 357 x 510	0.27 0.18	1	4.10	1 1	0.27 0.18
11+286.00 11+680.00	Rt. Lt.	R2-1		762 x 762	0.58	1	4.10	2	1.16
11+226.00 11+727.00	Rt. Lt.	W3-5		762 x 762	0.58	1	4.10	2	1.16
11+367.00	Rt.	W2-2L		762 x 762	0.58	2	2.98	1	0.58
11+630.00	Lt.	W2-2R		762 x 762	0.58	2	2.98	1	0.58
11+433.00	Rt.	R3-8a		762 x 610	0.46	1	4.10	1	0.46
11+577.00	Lt.	R3-8a		762 x 610	0.46	1	4.10	1	0.46
11+500.00	Rt.	W1-7		1219 x 610	0.72	2	2.98	1	0.72
		OM4-2		450 x 450	0.20			2	0.40
63302-0003 - Sign Installation, 1 post & hardware: 4.10 kg/m								Total (Sq. m.)	4.14
63302-0010 - Sign Installation, 2 post & hardware: 2.98 kg/m								Total (Sq. m.)	2.28



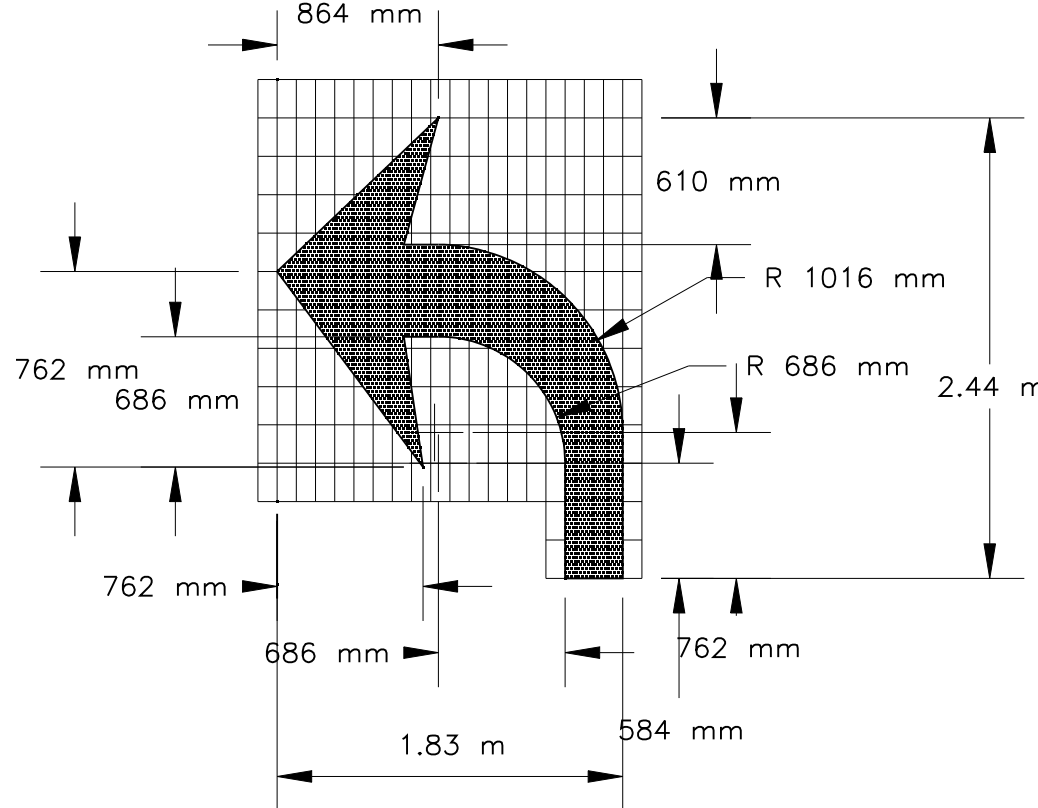
SIGN	DIMENSION					F NUMERALS				
	A	B	C	D	E	DIGITS IN ROUTE	1	2	2	4
Min.	610	457	13	495	343	SIZE & SERIES (mm)	254E	245D	203C	152B



ITEM 63405-2950
Pavement Marking, Elongated
Through Lane-Use Arrow, Type "H"
4 Each @ N9 Main Line



ITEM 63405-2900
Pavement Marking, Elongated
Turn Lane-Use Arrow,
Type "H" 2 Each @
N9 Main Line



ITEM 63405-2900
Pavement Marking, Elongated
Turn Lane-Use Arrow,
Type "H" 2 Each @
N9 Main Line

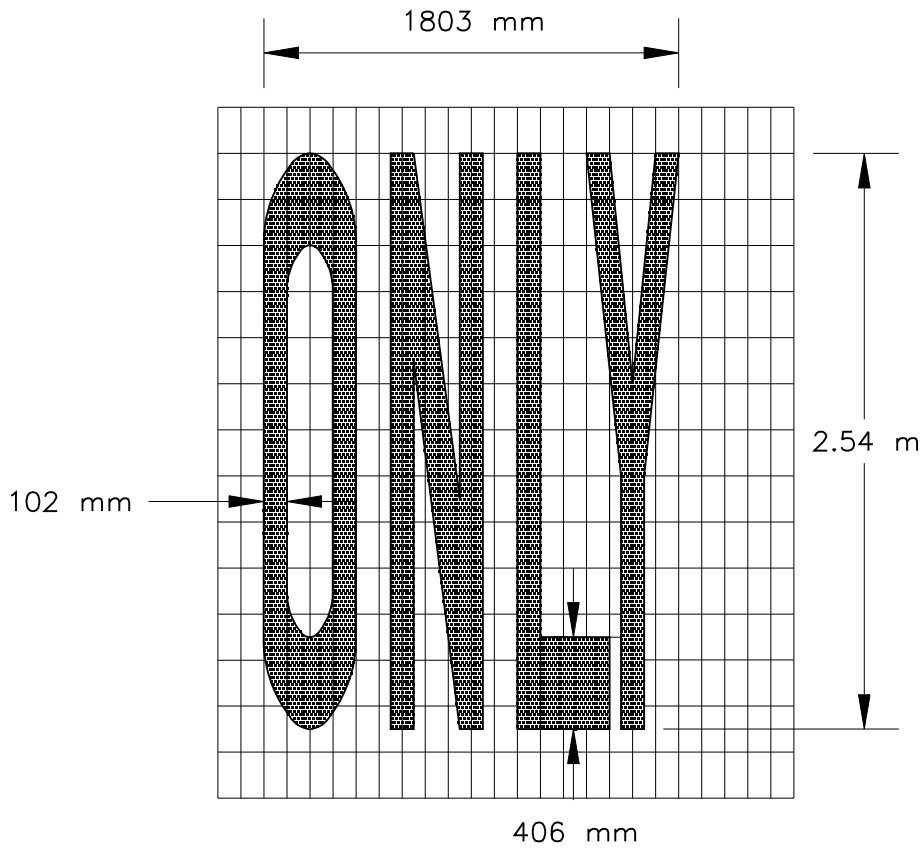
ESTIMATED QUANTITIES

ITEM	DESCRIPTION	QUANTITY	UNIT
10901-0000	Extra & Misc. Work Under Sect. 109.02 (m)	All Req'd	Lump Sum
15101-0000	Mobilization	All Req'd	Lump Sum
15201-0000	Construction Staking & Survey	All Req'd	Lump Sum
15301-0020	Contractor Quality Control	1275	Man Hrs.
15701-0000	Soil Erosion Control	All Req'd	Lump Sum
15708-1000	Temp. Straw Mulching	0.18	ha
20401-0000	Roadway Excavation	1514	c.m.
20601-0000	Development of Water Supply	0.30	M-Liter
30101-2000	Aggregate Base, Grading "D"	2061	t
40201-0500	Hot Asphaltic Concrete Pavement, Marshall Test, Class B, Grade B	965	t
40502-1200	Asphalt Binder, PG 64-28	58	t
41101-5000	Prime Coat, Grade MC-70	6	t
41201-1000	Asphalt Tack Coat, Grade SS-1, Emulsified Cement	1	t
62510-0000	Seeding, Dry Method	0.18	ha
63302-0003	Sign Installation, 1 Post & Hardware: 4.10 kg/m	4.14	m'
63302-0010	Sign Installation, 2 Post & Hardware: 2.98 kg/m	2.28	m'
63308-2000	Object Marker Flexible, Type 2	4	Each
63401-1510	Pavement Markings, Type "H", Solid Yellow	1,462	m
63401-1520	Pavement Markings, Type "H", Solid White	810	m
63405-2900	Pavement Markings, Type "H", Turn "ARROW"	4	Each
63405-2950	Pavement Markings, Type "H", Straight "ARROW"	4	Each
63405-3050	Pavement Markings, Type "H", Word "ONLY"	4	Each
63501-0000	Temporary Traffic Control	All Req'd	Lump Sum
63502-3000	Temporary Traffic Control, Raised Pavement Markers	288	Each
63506-0500	Flagger	1,466	Man Hrs.

QUANTITIES SHOWN ARE FOR N9 ACCEL/DECEL ONLY - included in schedule on sheet 3 of 58.

OBJECT MARKERS-TYPE 2

STATION	LOC.	EACH
11+277.20	Lt/Rt	2
11+454.25	Lt/Rt	2
	Total	4



ITEM 63405-3050
Pavement Marking Word "ONLY", Type "H"
4 Each @ N9 Main Line

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

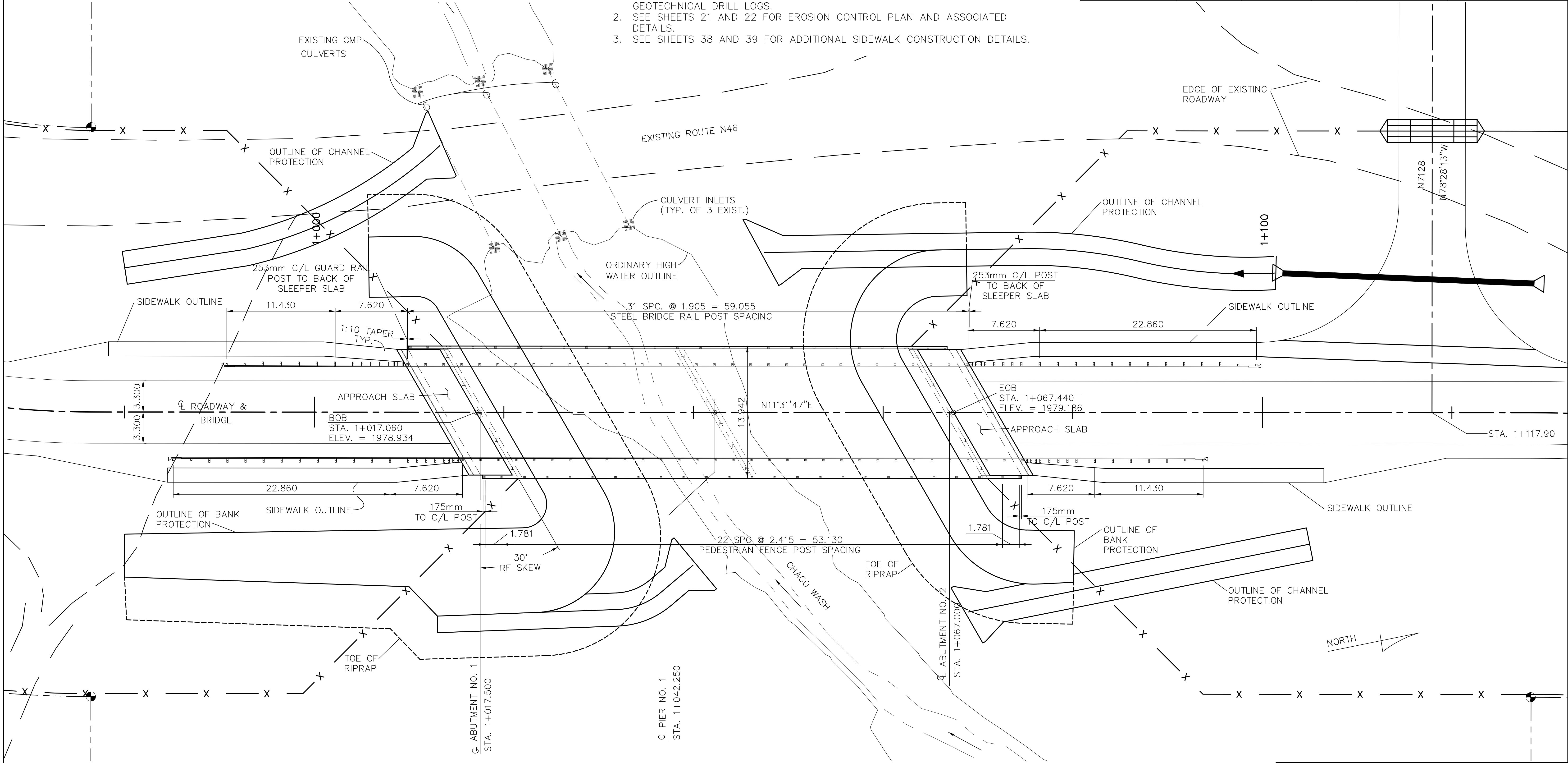
N9 ACCEL/DECEL
PERMANENT TRAFFIC CONTROL
AND QUANTITIES

DRAWN BY: NRODOT DATE: 02/96
DESIGNED BY: NRODOT DATE: 02/96
REVISED: 1/2 BY: D3
SCALE: NTS
FILENAME: N46Traffsgn
SHEET MODEL NAME: N9_N46_Accel_Decel



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N46	N46(1)1,2&4	15	58

- NOTES:
1. SEE SHEETS 17 THROUGH 20 FOR BORE HOLE LOCATIONS AND GEOTECHNICAL DRILL LOGS.
 2. SEE SHEETS 21 AND 22 FOR EROSION CONTROL PLAN AND ASSOCIATED DETAILS.
 3. SEE SHEETS 38 AND 39 FOR ADDITIONAL SIDEWALK CONSTRUCTION DETAILS.

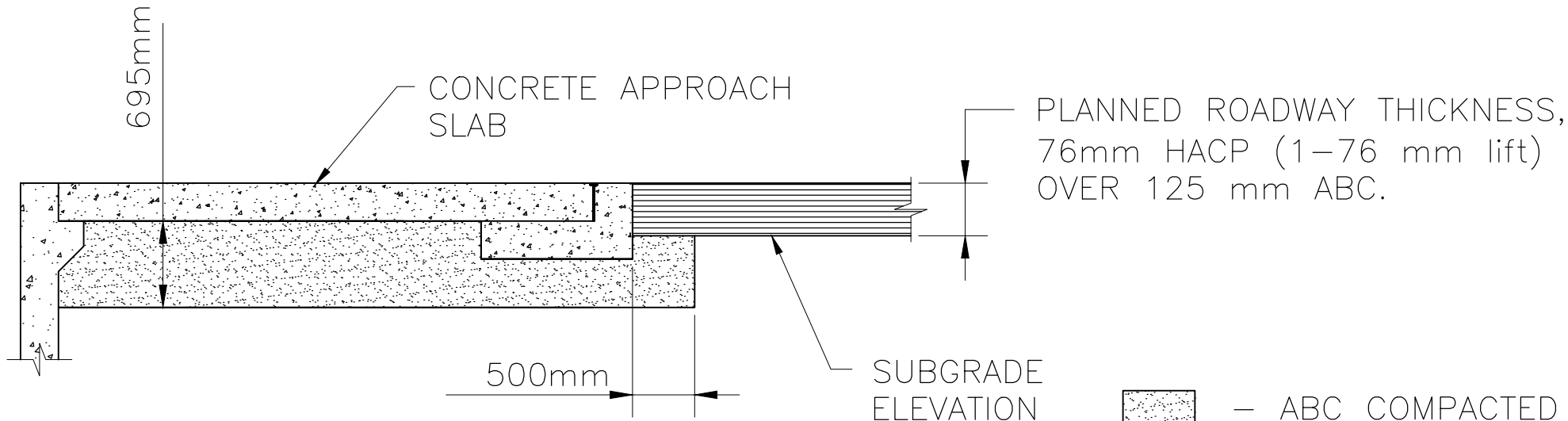


BRIDGE LOCATION PLAN

SCALE 1:200

LEGEND

- NEW CONSTRUCTION
- EXISTING FEATURES
- GUARDRAIL
- NEW ROW
- NEW ROW MARKER



BACKFILL COMPACTION

SCALE = N.T.S.

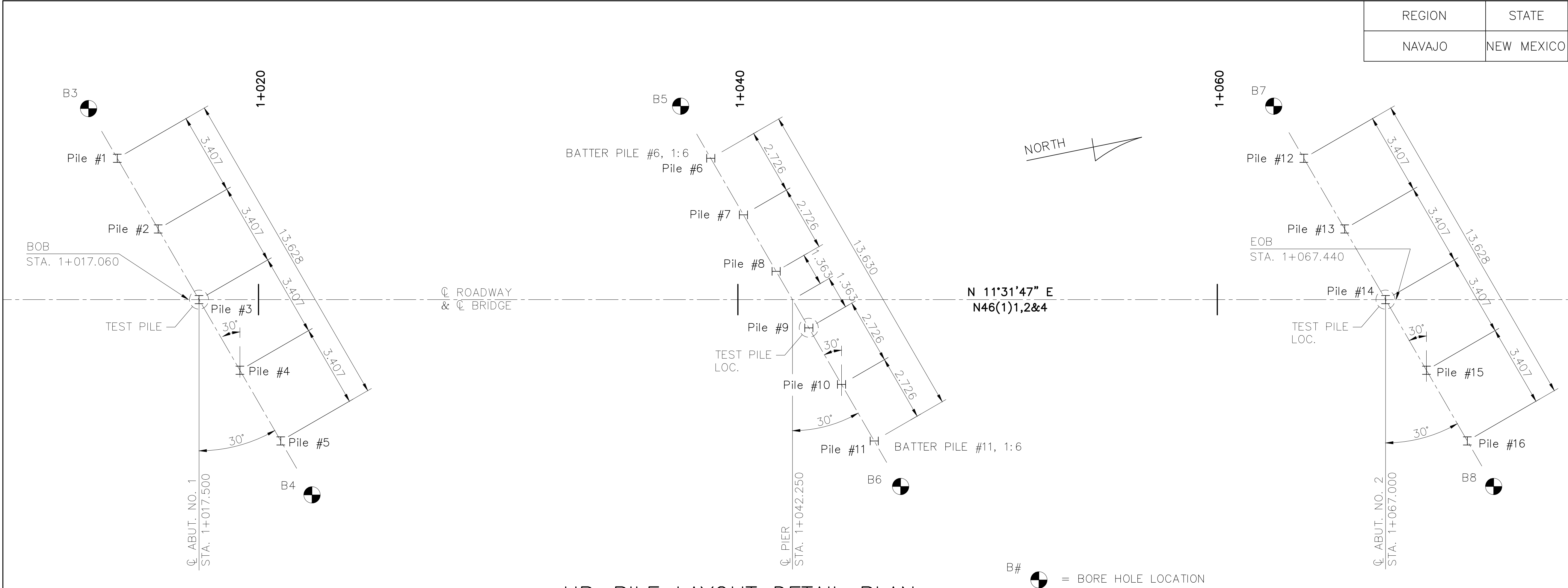
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NAVAJO REGION OFFICE * DIVISION OF TRANSPORTATION

BRIDGE LOCATION
PLAN

Designed by:
Drawn by: RLC, cdh Date: 11/30/09
Revised by: Date:
File Name: N46_Bridge-loc.dwg



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N46	N46(1)1,2&4	17	58



BORE HOLE LOCATION				
BORE HOLE	ROADWAY ALIGNMENT		NORTHING	EASTING
B3	STA. 1+013	7m Lt.	551473.279	846997.980
B4	STA. 1+021	7m Rt.	551478.319	847013.296
B5	STA. 1+038	7m Lt.	551497.759	847003.048
B6	STA. 1+046	7m Rt.	551502.749	847018.295
B7	STA. 1+063	7m Lt.	551522.270	847007.973
B8	STA. 1+071	7m Rt.	551527.310	847023.290

HP-PILE LAYOUT DETAIL PLAN

SCALE = 1:100

B#  = BORE HOLE LOCATION

LOG OF BORING NO. B-03									
CLIENT			ASCG, INC						
SITE			BIA N46 PUEBLO PINTADO, NM						
PROJECT			PUEBLO PINTADO N46						
GRAPHIC LOG	DESCRIPTION	DEPTH, m.	USCS SYMBOL	SAMPLES				TESTS	
				NUMBER	TYPE	RECOVERY, m.	SPT - N BLOWS / 0.3m.	WATER CONTENT, %	DRY UNIT WT kN/m ³
	Approx. Surface Elev.: 1974.5 m SANDY LEAN CLAY: grey, hard to stiff, fine to medium grained, moist, medium plasticity.	1	CL	1	SS	0.46	29	18.4	
			CL	2	R	0.3	14	12.8	
	2.7 SILTY SAND; brown, medium dense, fine to medium grained, moist, nonplastic.	2							
	5 POORLY GRADED SAND WITH SILT AND CLAY; brown, very loose, fine to medium grained, moist, nonplastic.	3	SM	3	SS	0.46	16	6.2	
	7.3 POORLY GRADED SAND WITH SILT AND CLAY; brown, very loose, fine to medium grained, moist, nonplastic.	4							
	9 POORLY GRADED SAND WITH SILT AND CLAY; brown, very loose, fine to medium grained, moist, nonplastic.	5	SM	4	SS	0.46	13	10.0	
	11 POORLY GRADED SAND WITH SILT AND CLAY; brown, very loose, fine to medium grained, moist, nonplastic.	6	SM	5	SS	0.46	22	6.8	
	13 POORLY GRADED SAND WITH SILT AND CLAY; brown, very loose, fine to medium grained, moist, nonplastic.	7							
	15 POORLY GRADED SAND WITH SILT AND CLAY; brown, very loose, fine to medium grained, moist, nonplastic.	8	SM	6	R	0.3	1	10.0	
	17 POORLY GRADED SAND WITH SILT AND CLAY; brown, very loose, fine to medium grained, moist, nonplastic.	9	SP	7	SS	0.46	WOH	27.7	
			SM						
	19 POORLY GRADED SAND WITH SILT AND CLAY; brown, very loose, fine to medium grained, moist, nonplastic.	10							
Continued Next Page									
The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.									
WATER LEVEL OBSERVATIONS, m				BORING STARTED 3-30-05					
WL ☒ 9.1 WD ☐				BORING COMPLETED 3-30-05					
WL ☐ WD ☐				RIG CME-75 FOREMAN EDS					
WL ☐ WD ☐				APPROVED KJS JOB # 660450493					

LOG OF BORING NO. B-03										Page 2 of 3	
CLIENT			ASCG, INC								
SITE			BIA N46 PUEBLO PINTADO, NM			PROJECT					
			PUEBLO PINTADO N46								
GRAPHIC LOG		DESCRIPTION	DEPTH, m.	SAMPLES				TESTS			
				USCS SYMBOL	NUMBER	TYPE	RECOVERY, m.	SPT - N BLOWS / 0.3m.	WATER CONTENT, %	DRY UNIT WT kN/m ³	UNCONSOLIDATED STRENGTH, kPa
	10.1	POORLY GRADED SAND WITH SILT; brown, medium dense, fine to medium grained, moist, medium plasticity.	1964.4								
				SP	8	SS	0.46	14	24.7		
		Loose.									
				SP	9	SS	0.46	10	22.0		
	14.9	POORLY GRADED SAND WITH CLAY; brown, loose, fine to medium grained, moist, medium plasticity.	1959.6								
				SP	11	SS	0.46	4	22.1	16.4	
	16.5	CLAYEY SAND; brown, very loose, fine to medium grained, moist, nonplastic.	1958								
				SC	12	SS	0.3	2	28.0		
		Medium Dense.									
				SC	13	SS	0.46	24	24.4		
	19.8		1954.7								
Continued Next Page											
The stratification lines represent the approximate boundary lines between soil and rock types. In-situ, the transition may be gradual.											
WATER LEVEL OBSERVATIONS, m				BORING STARTED				3-30-05			
WL ☒ 9.1 WD ☐				BORING COMPLETED				3-30-05			
WL ☐				RIG				CME-75		FOREMAN	
WL ☐				APPROVED				KJS		JOB # 660450493	
Terracon				EDS							

DRIVEN PILE REQUIREMENTS									
LOCATION	PILE TYPE	TEST PILE QUANTITY	PRODUCTION PILE QUANTITY	ESTIMATED LENGTH*	MINIMUM PENETRATION ELEVATION (m)	ESTIMATED PENETRATION ELEVATION (m)	PILE DESIGN LOAD(kN)	ULTIMATE CAPACITY (kN)	PREBORE ELEVATION (m)
ABUTMENT No. 1	HP360X108	1	4	27.1	1950.0	N/A	650	1950	N/A
PIER NO. 1	HP360X108	1	5	24.1	1953.0	N/A	1006	3018	1954.0
ABUTMENT No. 2	HP360X108	1	4	19.3	1958.0	N/A	650	1950	1960.0

* THE 'AVERAGE ESTIMATED LENGTH' INDICATED IN THE DRIVEN PILE REQUIREMENTS TABLE IS FOR ESTIMATING PURPOSES ONLY. THE ACTUAL PILE LENGTHS MAY BE DIFFERENT THAN THOSE INDICATED.

FOUNDATION NOTES

- PILING SHALL BE AASHTO M 270, GRADE 345. THE SIZE OF PILING SHALL BE HP 360 x 108 H-PILES, AND SHALL BE EQUIPPED WITH A REINFORCED PILE TIP CONFORMING TO ASTM A 148, GRADE 60-90 OR ASTM A 27, GRADE 65-35. THE PILE TIP SHALL BE FREE FROM ANY OBVIOUS DEFECTS AND SHALL BE ACCOMPANIED BY A MILL TEST REPORT STATING THE CHEMICAL AND PHYSICAL PROPERTIES (TENSILE AND YIELD STRENGTHS) OF THE STEEL.
- PILE TIPS FOR HP PILING SHALL BE REINFORCED.
- THIS BRIDGE PROJECT INCLUDES TEST PILES. SEE SUPPLEMENTAL SPECIFICATIONS SECTION 551 FOR IMPORTANT DETAILS, INCLUDING DETERMINATION OF PILE LENGTHS REQUIRED FOR THIS PROJECT.
- APPROVED TEST PILES SHALL BECOME PERMANENT PILES. TEST PILES AND ASSOCIATED WORK WILL BE PAID UNDER BID ITEM 55120-0000.
- FOR ADDITIONAL NOTES REGARDING PILING, SEE BRIDGE NOTES ON SHEET 14.
- BASED ON GEOTECHNICAL INVESTIGATIONS AND BORING LOGS PRESENTED IN THESE PLANS, PREBORING WILL BE NECESSARY TO ATTAIN THE MINIMUM PENETRATION ELEVATIONS SHOWN. PREBORING AND ALL ASSOCIATED WORK SHALL BE IN ACCORDANCE WITH SECTION 551 OF THE FP-03 AND SUPPLEMENTAL SPECIFICATIONS. PREBORING IS NOT SPECIFIED FOR ABUTMENT NUMBER 1, HOWEVER, IF THE TEST PILE DOES NOT ATTAIN THE MINIMUM PENETRATION ELEVATION FOR ABUTMENT NUMBER 1, THEN PREBORING MAY BE NECESSARY, AND DETAILS INCLUDING QUANTITIES SHALL BE DETERMINED AFTER THE TEST PILE OPERATIONS FOR ABUTMENT NUMBER 1.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF INDIAN AFFAIRS NAVAJO REGION OFFICE * DIVISION OF TRANSPORTATION	
PILE LAYOUT AND BORING LOGS	
Designed by: Terracon	
Drawn by: BC, cdh	Date: 12/11/09
Revised by:	Date:
File Name: N46_Bore_Logs.dwg	



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N46	N46(1)1,2&4	18	58

CLIENT		LOG OF BORING NO. B-03		Page 3 of 3						
SITE		PROJECT		PUEBLO PINTADO N46						
PUEBLO PINTADO, NM		PUEBLO PINTADO, NM		PUEBLO PINTADO N46						
GRAPHIC LOG	DESCRIPTION	DEPTH, m.	LOGS SYMBOL	SAMPLES		TESTS				
				NUMBER	TYPE	RECOVER, m.	% BLOWS / 0.3m.	WATER CONTENT, %	DRY UNIT WT kN/m ³	UNSATURATED STRENGTH, kPa
22.6	SILTY SAND WITH SHALE AND GRAVEL; grey, very dense, coarse to fine grained, moist, nonplastic.	1951.9	SM	14	SS	0.3	56	15.3		
27.6	Auger Refusal At 22.6 Meters. SHALE; moderately soft to moderately hard brown fairly continuous shale with interbedded siltstone.	1945.8	SM	15	SS	0.25	50 / 07	22.1		
28.7	Coring Terminated At 28.7 Meters.	1945.8		16	NX	C	82%	ROD 55%		
28.7	Coring Terminated At 28.7 Meters.	1945.8		17	NX	C	100%	ROD 50%		
28.7	Coring Terminated At 28.7 Meters.	1945.8		18	NX	C	97%	ROD 73%		
28.7	Coring Terminated At 28.7 Meters.	1945.8		19	NX	C	90%	ROD 60%		
								</		

CLIENT		LOG OF BORING NO. B-04		Page 1 of 4	
SITE		PROJECT		PUEBLO PINTADO N46	
GRAPHIC LOG		DESCRIPTION		TESTS	
Approx. Surface Elev.: 1972.4 m		DEPTH, m.		USCS SYMBOL	
Very Stiff.		NUMBER		RECOVER, m.	
SANDY SILT WITH CLAY; brown, stiff, fine to medium grained, moist, low plasticity.		TYPE		OPT - Y BLOWS / 0.3m.	
Silty Sand; brown, medium dense, fine to medium grained, moist, nonplastic.		WATER CONTENT, %		DRY UNIT WT kN/m ³	
Poorly Graded Sand with Silt; brown, medium dense, fine to medium grained, moist, nonplastic.		UNCOMPACTIONED STRENGTH, kPa			
Sandy Lean Clay; brown, stiff, fine to medium grained, moist, medium plasticity.					
4.6	1967.8	1	ML	1	SS
6.1	1966.3	2	ML	2	SS
8.5	1963.8	3	ML	3	SS
10.0	1962.3	4	ML	4	SS
11.5	1960.8	5	ML	5	SS
13.0	1959.3	6	SP	6	SM
14.5	1957.8	7	SP	7	SM
16.0	1956.3	8	CL	8	SS
17.5	1954.8	9	CL	9	SS
19.0	1953.3	10	CL	10	SS

Continued Next Page

WATER LEVEL OBSERVATIONS, m

WL ☐ 8.2	WD ☐
WL ☐	WD ☐
WL ☐	WD ☐

BORING STARTED 3-29-05

BORING COMPLETED 3-29-05

RIG CME-75 FOREMAN JSM

APPROVED KJS JOB # 660450496

CLIENT		LOG OF BORING NO. B-04		Page 2 of 4					
SITE ASCOC, INC. BIA N46 PUEBLO PINTADO, NM		PROJECT PUEBLO PINTADO N46							
GRAPHIC LOG		TESTS							
DESCRIPTION		SAMPLES							
		DEPTH, m.	USCS SYMBOL NUMBER	TYPE	RECOVER, m.	DIST. - BLDG'S / 0.3m	WATER CONTENT, %	DPT UNIT WT kN/m³	UNSATURATED STRENGTH, kPa
SANDY LEAN CLAY: brown, stiff, fine to medium grained, moist, medium plasticity. Hard.		11	CL	8	SS	0.46	28	20.3	
POORLY GRADED SAND WITH SILT AND CLAY: brown, loose, fine to medium grained, moist, low plasticity.		12	SP	9	R	0.3	8	21.2	16.4
FAT CLAY: brown, very stiff, fine to medium grained, moist, high plasticity.		14	CH	10	SS	0.38	17	25.0	
SILTY SAND WITH CLAY: brown, loose, fine to medium grained, moist, low plasticity.		15	SM	11	R	0.3	7	28.1	
SANDY LEAN CLAY: brown, loose, fine to medium grained, moist, low plasticity.		17	CL	12	SS	0.46	6	35.1	
POORLY GRADED SAND WITH SILT: brown, medium dense, fine to medium grained, moist, nonplastic.		19	SP	13	SS	0.46	19	22.5	

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: If-silt, the transition may be gradual.

WATER LEVEL OBSERVATIONS, m

WL ① 8.2	WD ②
WL ③	WD ④
WL	

BORING STARTED 3-29-05

BORING COMPLETED 3-29-05

RIG CME-75 FOREMAN JSM

APPROVED KJS JOB # 66045049C

CLIENT		LOG OF BORING NO. B-04		Page 3 of 4	
SITE		PROJECT		PUEBLO PINTADO N46	
GRAPHIC LOG		DESCRIPTION		TESTS	
DEPTH, m.		USCS SYMBOL		SAMPLER	
NUMBER		TYPE		RECOVER, m.	
SP		SS		OPT. - V BLDG'S / 0.3m.	
SM		SS		WATER CONTENT, %	
SM		SS		DRY UNIT WT kN/m ³	
SM		SS		UNCONFINED STRENGTH, kPa	
22.9		1949.5			
21		22			
23		24			
25		26			
27		28			
29		30			

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, m		BORING STARTED		3-29-05	
WL	8.2	WD		BORING COMPLETED	
WL				3-29-05	
WL				RIG CME-75 FOREMAN JSM	
WL				APPROVED KJS JOB # 660450439	

[illegible]

CLIENT		LOG OF BORING NO. B-05									
SITE		PROJECT									
PUEBLO PINTADO, NM		PUEBLO PINTADO N46									
GRAPHIC LOG	DEPTH, m.	USCS SYMBOL	SAMPLES				TESTS				
			NUMBER	TYPE	RECOVER, m.	SPT BLOWS / 0.3m	WATER CONTENT, %	DRY UNIT WT kN/m ³	UNCONFINED STRENGTH, kPa		
DESCRIPTION											
Approx. Surface Elev.: 1971.4 m											
SILTY SAND; brown, loose, fine to medium grained, moist, nonplastic.											
2.7	1968.7	SM	1	SS	0.38	8					
LEAN CLAY WITH SAND; brown, medium dense, fine to medium grained, moist, low to medium plasticity.		SM	2	SS	0.46	8					
		CL	3	SS	0.46	26					
LEAN CLAY WITH SAND; brown, medium dense, fine to medium grained, moist, low to medium plasticity.		CL	4	SS	0.46	38					
		SC SM	5	SS	0	50/0.05					
SILTY SAND WITH SHALE; brown, very dense, medium to fine grained, moist, nonplastic to medium plasticity.		SC SM	6	SS	0	50/0					
		SC SM	7	SS	0	50/0					
SILTY SAND WITH SHALE; brown, very dense, medium to fine grained, moist, nonplastic to medium plasticity.		SC SM	8	SS	0	50/0					
		SC SM	9	SS	0	50/0					
SILTY SAND WITH SHALE; brown, very dense, medium to fine grained, moist, nonplastic to medium plasticity.		SC SM	10	SS	0	50/0					
		SC SM	11	SS	0	50/0					

[illegible]

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF INDIAN AFFAIRS NAVAJO REGION OFFICE * DIVISION OF TRANSPORTATION	
BORING LOG 2	
Designed by: Terracon	
Drawn by: BC Date: 05-05	
Revised by: Date:	
File Name: N46_Bore_Logs.dwg	

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N46	N46(1)1,2&4	19	58

CLIENT		PROJECT					
ASCOC, INC.		PUEBLO PINTADO N46					
SITE		PROJECT					
BIA N46		PUEBLO PINTADO, NM					
GRAPHIC LOG	DESCRIPTION	DEPTH, m.	LOGS SYMBOL	SAMPLES		TESTS	
				NUMBER	TYPE	RECOVERY, m.	% BLOWS / 0.3m.
21	Boring Terminated At 18.6 Meters. SHALE, moderately soft to moderately hard brown fairly continuous shale with interbedded siltstone.	21	15 NX	C	88%	ROD 47%	
22		22	16 NX	C	97%	ROD 57%	
23		23	17 NX	C	97%	ROD 57%	
24		24					
24.7	Coring Terminated At 24.7 Meters.	1946.8					

CLIENT ASCG, INC		LOG OF BORING NO. B-06									
SITE BIA N46 PUEBLO PINTADO, NM		PROJECT PUEBLO PINTADO N46									
FRAMING LOG	DEPTH, m.	USCS SYMBOL	SAMPLES				TESTS				
			NUMBER	TYPE	RECOVERY, m.	SPT = N / 0.3m. BLows / 0.3m.	WATER CONTENT, %	SHRINKAGE, WT LOSS / 42	UNSATURATED SWELLING, d _p		
	Approx. Surface Elev.: 1972.4 m										
	POORLY GRADED SAND WITH SILT; brown, loose, fine to medium grained, moist, nonplastic.										
	1.5 1970.8										
	SANDY LEAN CLAY; brown, stiff, fine to medium grained, moist, low to medium plasticity.										
	3 1969.3										
	SANDSTONE; brown, fine to medium grained, moist/dry nonplastic.										
	4.6 1967.8										
	CLAYEY SAND; brown, very dense, fine to medium grained, moist, nonplastic.										
	Dense.										
	Very Dense.										
	Continued Next Page										

The stratification lines represent the approximate boundary lines between soil and rock types: (m-slu), the transition may be gradual.

WATER LEVEL OBSERVATIONS, m	
WL $\frac{1}{2}$ " NONE	Y
WL $\frac{1}{4}$ "	Y
WL	

BORING STARTED	4-13-05
BORING COMPLETED	4-13-05
APPROVED CME-75 RIG	FOREMAN JSM
JOB #	66045049

[illegible]

LOG OF BORING NO. B-06						Page 3 of 3		
CLIENT ASCOC, INC.			PROJECT PUEBLO PINTADO N46					
SITE BIA N46 PUEBLO PINTADO, NM								
GRAPHIC LOG	DESCRIPTION	DEPTH, m.	USCS SYMBOL	SAMPLES			TESTS	
				NUMBER	TYPE	RECOVERY, m. TOP / BOTTOM / 0.3m.	WATER CONTENT, %	DRY UNIT WT kN/m ³
	Auger Refusal At 16.2 Meters. SHALE; moderately soft to moderately hard brown fairly continuous shale with interbedded siltstone.	21		NX	C	83%	ROD 72%	
	Coring Terminated At 22.3 Meters.	22						

The stratification lines represent the approximate boundary lines between soil and rock types: In-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, m	
WL ☒	NONE ☒
WL ☒	☒

BORING STARTED 4-13-05	
BORING COMPLETED 4-13-05	
RIG CME-75	FOREMAN JSM
APPROVED KJS	JOB # 660450496

PROJECT: B-06 (450450496)
 TERRACON JOB #: 672105

CLIENT		LOG OF BORING NO. B-07										Page 1 of 3
SITE		PROJECT										
PUEBLO PINTADO, NM		PUEBLO PINTADO N46										
FRAMING LOG	DEPTH, m.	USCS SYMBOL	SAMPLES				TESTS					
			NUMBER	TYPE	RECOVERY, m.	SPT = N BLOWS / 0.3m.	WATER CONTENT, %	SHRINKAGE, %	UNSATURATED WATER WT WV / 100	UNCONSOLIDATED STRENGTH, kPa		
	Approx. Surface Elev.: 1975.4 m											
	SILTY SAND; brown, very loose, fine to medium grained, moist, nonplastic.											
1.5	1973.9											
	POORLY GRADED SAND WITH SILT; brown, loose, fine to medium grained, moist, nonplastic.											
	Dense.											
	Very Dense.											
9.1	1966.3											
	SANDY LEAN CLAY WITH GRAVEL; brown, very dense, coarse to fine grained, moist, low plasticity.											
Continued Next Page												

The stratification lines represent the approximate boundary lines between soil and rock types. In-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, m		BORING STARTED 3-31-05			
WL ☒	NONE ☒	BORING COMPLETED 3-31-05			
WL ☒	☒	RIG CME-75		FOREMAN	
WL ☒	☒	APPROVED KJS		JOB # 660450490	

CLIENT ASCG, INC		LOG OF BORING NO. B-07		Page 2 of 3		
SITE BIA N46 PUEBLO PINTADO, NM		PROJECT PUEBLO PINTADO N46				
GRAPHIC LOG	DESCRIPTION	DEPTH, m.	LOGS SYMBOL	SAMPLES	TESTS	
			NUMBER	TYPE	RECOVERY, m. SPT = N / 0.3m	
					WATER CONTENT % SHRINKAGE WT MW/MSD	
					UNSATURATED Cohesion, kPa	
12.2	SANDY LEAN CLAY WITH GRAVEL: brown, very dense, coarse to fine grained, moist, low plasticity.	1963.2	CL	SS	0.46 50/.18	9.3
16.5	CLAYSTONE; grey, very dense, fine to medium dense, moist, nonplastic.	1958.9	CH	SS	0.3 50/.13	9.4
	Auger Refusal At 16.5 Meters. SHALE; Moderately soft to moderately hard brown fairly continuous shale with interbedded siltstone.			NX	C 100% RQD 58%	
				NX	C 97% RQD 82%	
				NX	C 100% RQD 94%	

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: In-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, m		Terracon	BORING STARTED		3-31-05
WL ☒ NONE ☐	BORING COMPLETED		3-31-05		
WL ☐	CME-75 FOREMAN		EDS		
WL ☐	APPROVED KJS JOB #		660450490		

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF INDIAN AFFAIRS NAVAJO REGION OFFICE * DIVISION OF TRANSPORTATION	
BORING LOG 3	
Designed by: Terracon	
Drawn by: BC Date: 05-05	
Revised by: Date:	
File Name: N46_Bore_Logs.dwg	

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N46	N46(1)1,2&4	20	58

LOG OF BORING NO. B-07		Page 3 of 3							
CLIENT ASCG, INC.									
SITE BIA N46 PUEBLO PINTADO, NM		PROJECT PUEBLO PINTADO N46							
GRAPHIC LOG	DESCRIPTION	DEPTH, m.	LOGS SYMBOL	SAMPLES				TESTS	
				NUMBER	TYPE	RECOVERY, m.	SPT - N BLOWS / 0.3m.	WATER CONTENT, %	DRY UNIT WT kN/m ³
	Auger Refusal At 16.5 Meters. SHALE; Moderately soft to moderately hard brown fairly continuous shale with interbedded siltstone.	16.5							
	Coring Terminated At 22.6 Meters.	22.6							

The stratification lines represent the approximate boundary lines between soil and rock types: H=silt, the transition may be gradual.

WATER LEVEL OBSERVATIONS, m	
WL	NONE
WL	X
WL	

Terracon

BORING STARTED	3-31-05
BORING COMPLETED	3-31-05
RIG CME-75	FOREMAN EDS
APPROVED KJS	JOB # 66045049G

CLIENT		LOG OF BORING NO. B-08		Page 1 of 2	
SITE		PROJECT		PUEBLO PINTADO N46	
GRAPHIC LOG		DESCRIPTION		TESTS	
APPROX. SURFACE ELEV.: 1975.4 m		DEPTH, m.		USCS SYMBOL	
2.1		1973.3		NUMBER	
CLAYSTONE; brown, hard, fine to medium grained, moist, medium to hard plasticity.		TYPE		RECOVERY, m.	
		EXP. %		BLOWS / 0.3m.	
		WATER CONTENT, %		WATER	
		SPT UNIT WT kN/m ³		UNCONFINED STRENGTH, kPa	
CL ML		1		SS 0.46 6 20.6	
CL ML		2		SS 0.46 9 23.0	
CH		3		SS 0.46 42 20.4	
CH		4		SS 0.46 50/15 14.8	
CH		5		SS 0.46 51 18.0	
CH		6		SS 0.43 41 15.2	
CH		7		SS 0.15 50/13 14.5	

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: In-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, m	
WL $\frac{12}{12}$ NONE	Y
WL $\frac{12}{12}$	Y
WL	

Terracon

BORING STARTED		4-13-05
BORING COMPLETED		4-13-05
RIG	CME-75	FOREMAN
APPROVED	KJS	JOB # 660450496

CLIENT		LOG OF BORING NO. B-08										Page 2 of 2
SITE		PROJECT										
PUEBLO PINTADO, NM		PUEBLO PINTADO N46										
GRAPHIC LOG	DESCRIPTION	DEPTH, m.	USCS SYMBOL	SAMPLES					TESTS			
				NUMBER	TYPE	RECOVERY, m.	SPT BLOWS / 0.3m.	WATER CONTENT, %	DRY UNIT WT kN/m ³	UNCONFINED STRENGTH, kPa		
	CLAYSTONE; brown, hard, fine to medium grained, moist, medium to hard plasticity.											
		11	CH	8	SS	0.13	50/15	9.7				
		12										
			CH	9	SS	0.05	50/13	9.5				
		13										
13.1	Auger Refusal At 13.1 Meters. SHALE; moderately soft to moderately hard brown fairly continuous shale with interbedded siltstone.	1962.3		NX	C	64%	ROD 21%					
		14										
		15		NX	C	93%	ROD 52%					
		16										
		17		NX	C	89%	ROD 80%					
		18										
		19		NX	C	87%	ROD 42%					
		19.2										
	Coring Terminated At 19.2 Meters.	1956.2										

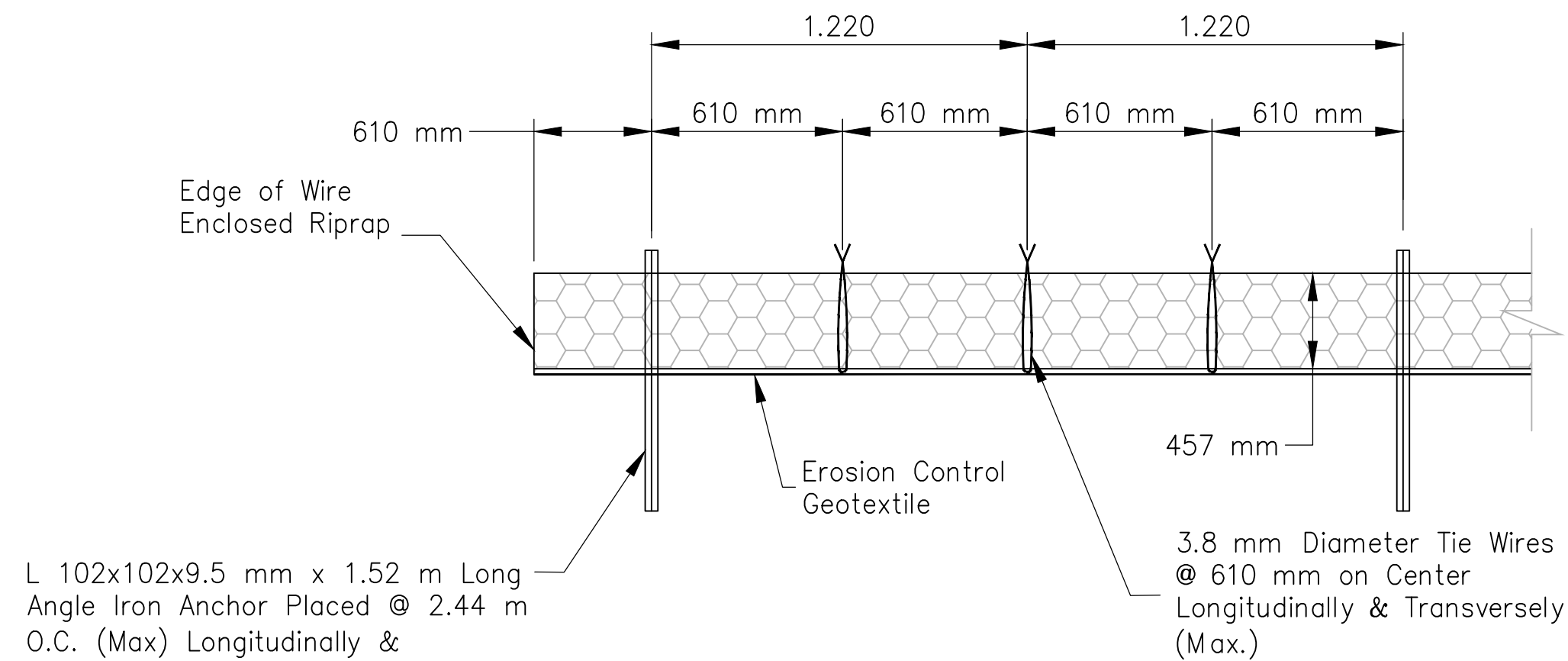
The stratification lines represent the approximate boundary lines between soil and rock types: 0=soft, the transition may be gradual.

WATER LEVEL OBSERVATIONS, m	
WL	☒ NONE ☒
WL	☐ ☒
WL	☐

BORING STARTED		4-13-05
BORING COMPLETED		4-13-05
RIG	CME-75	FOREMAN JSM
APPROVED	KJS	JOB # 66045049G

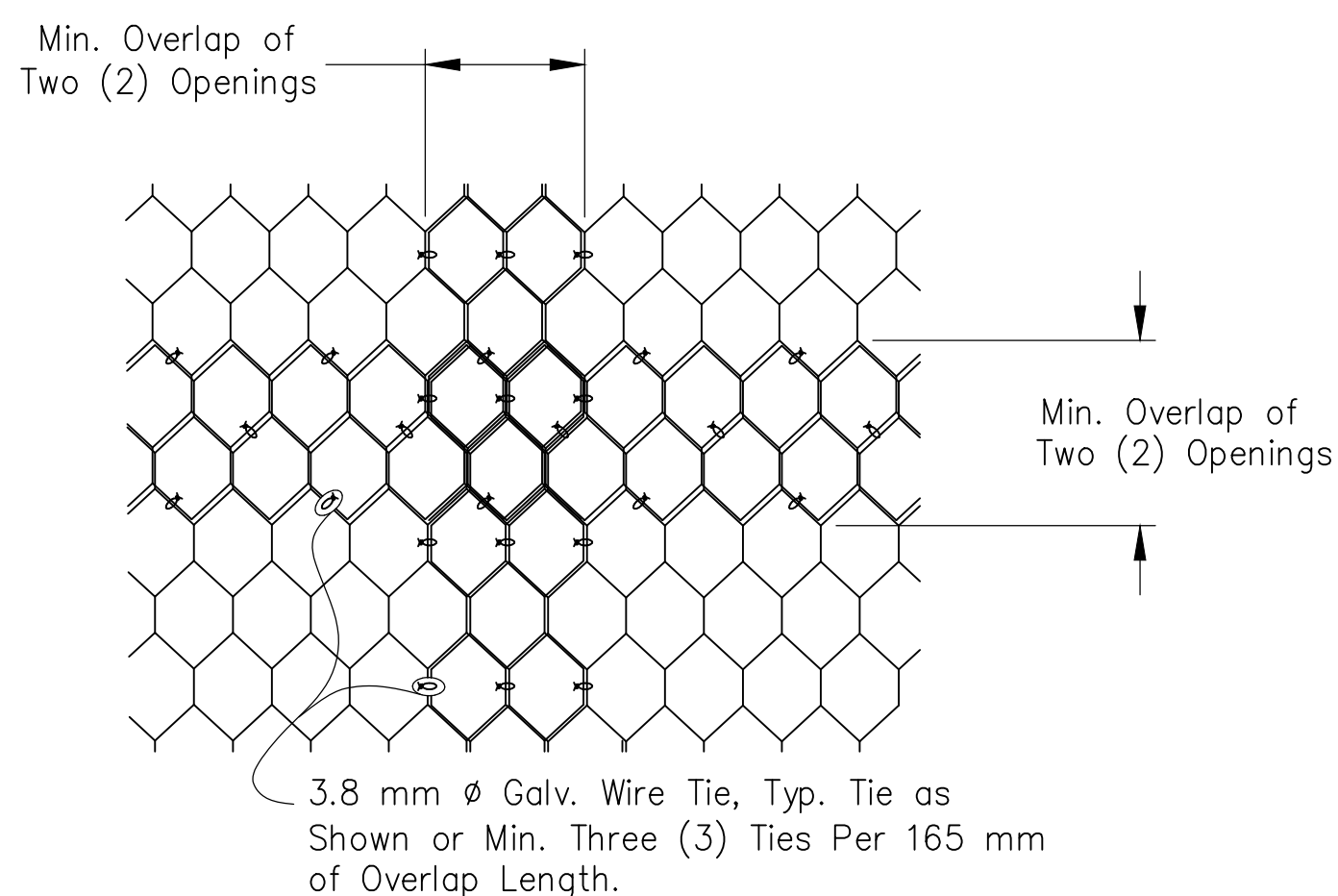
UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF INDIAN AFFAIRS NAVAJO REGION OFFICE * DIVISION OF TRANSPORTATION		
BORING LOG 4		
Designed by: Terracon		
Drawn by: BC		Date: 05-05
Revised by:		Date:
File Name: N46-Bore_Logs.dwg		

PLAN VIEW



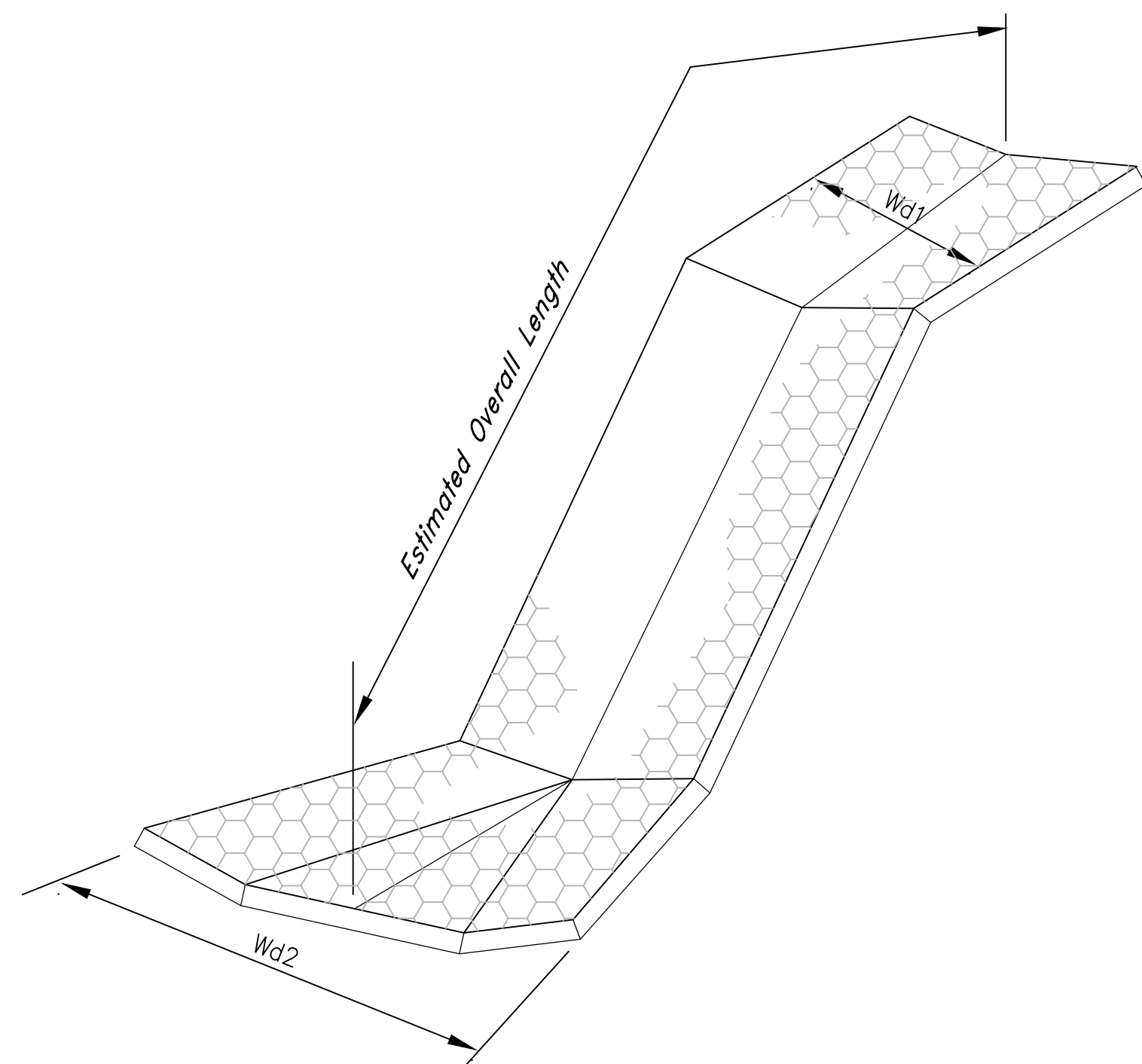
TYPICAL WIRE ENCLOSED RIPRAP SECTION

N.T.S.



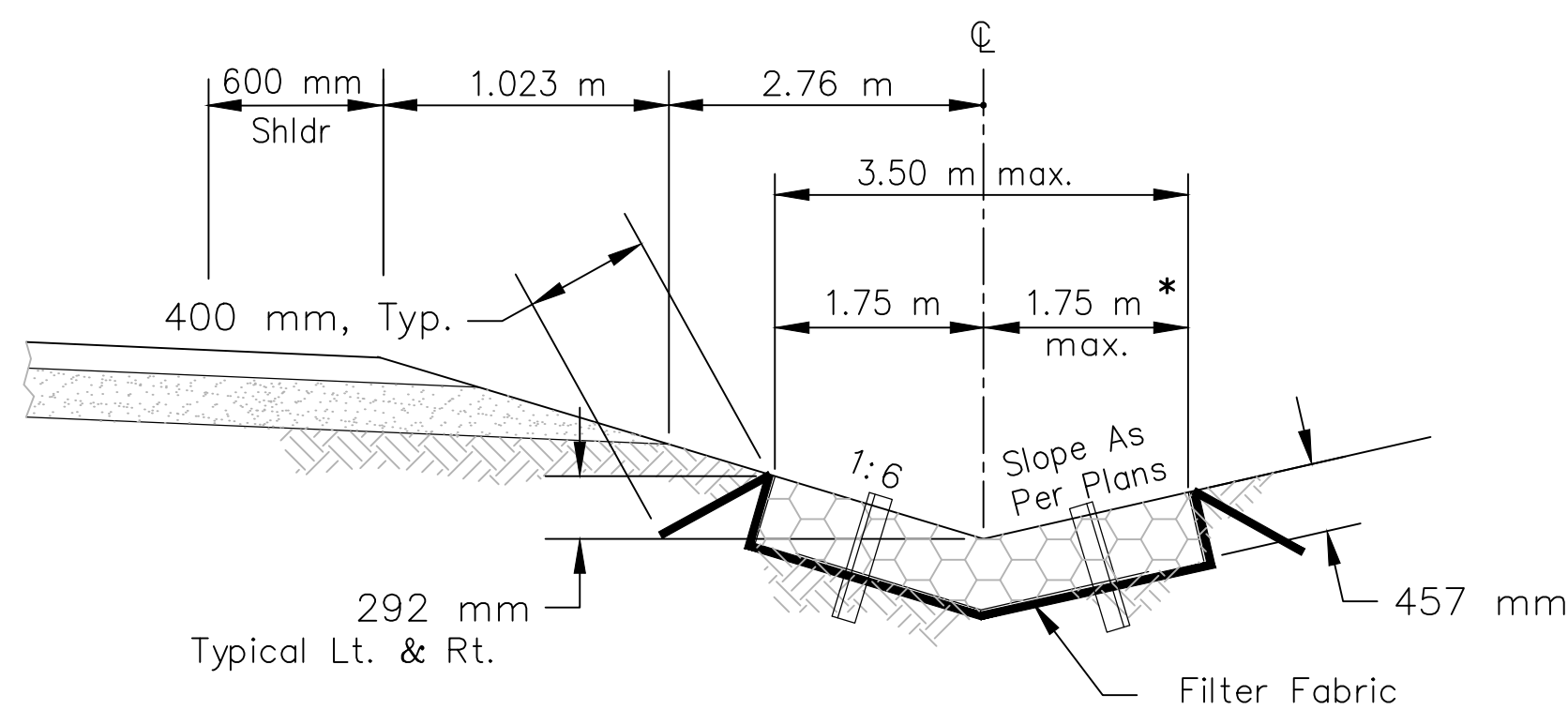
FABRIC SPLICING DETAIL

N.T.S.



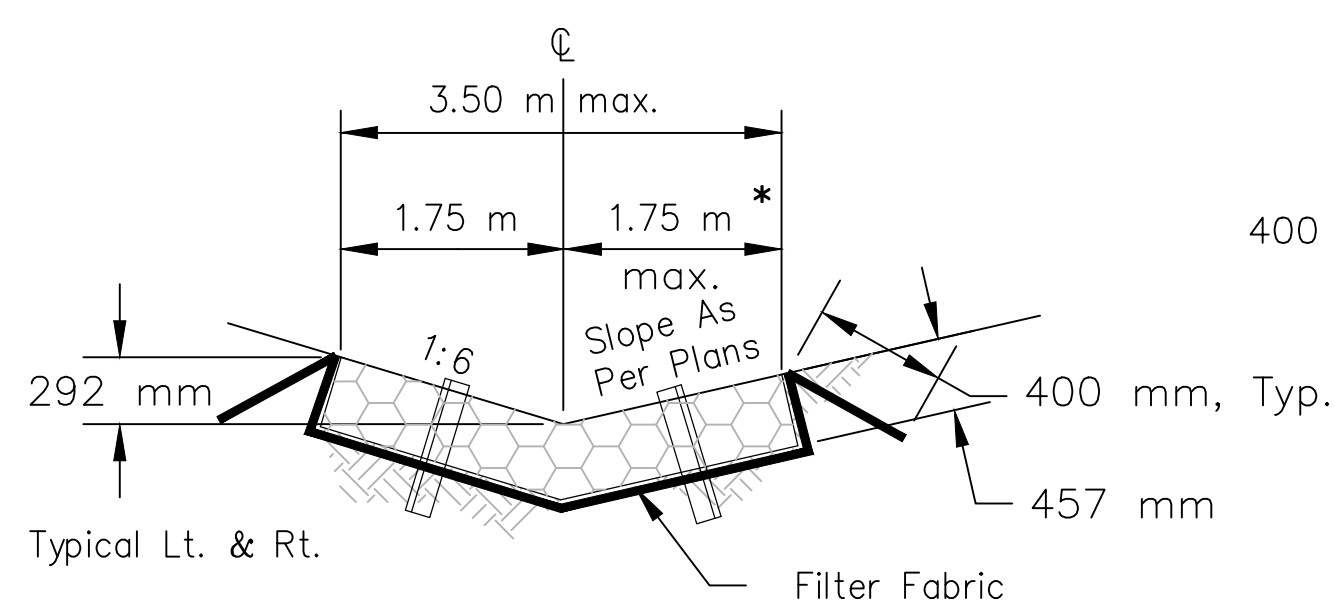
PERSPECTIVE VIEW

PLACED RIPRAP DOWNDRAIN AT WASH



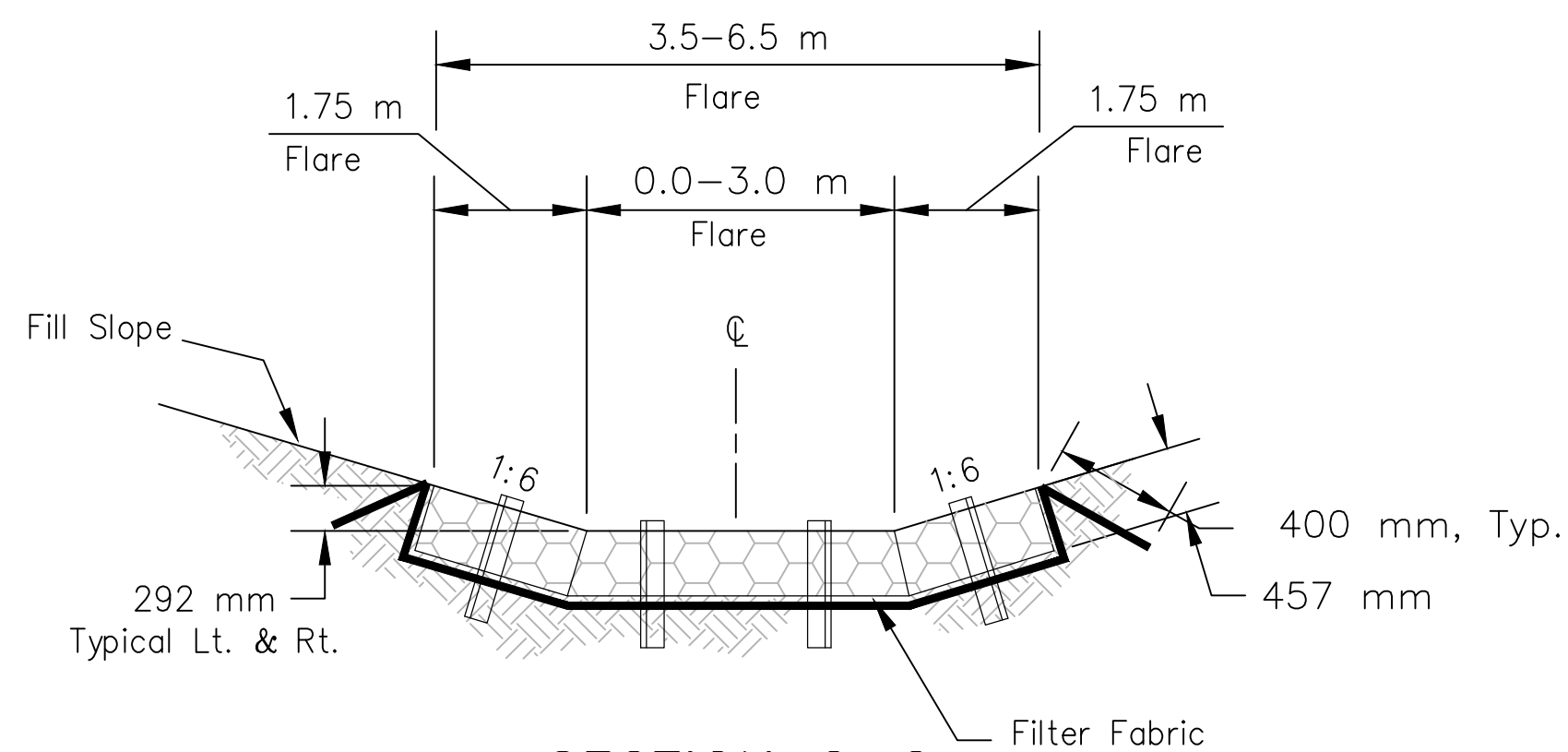
SECTION A-A

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

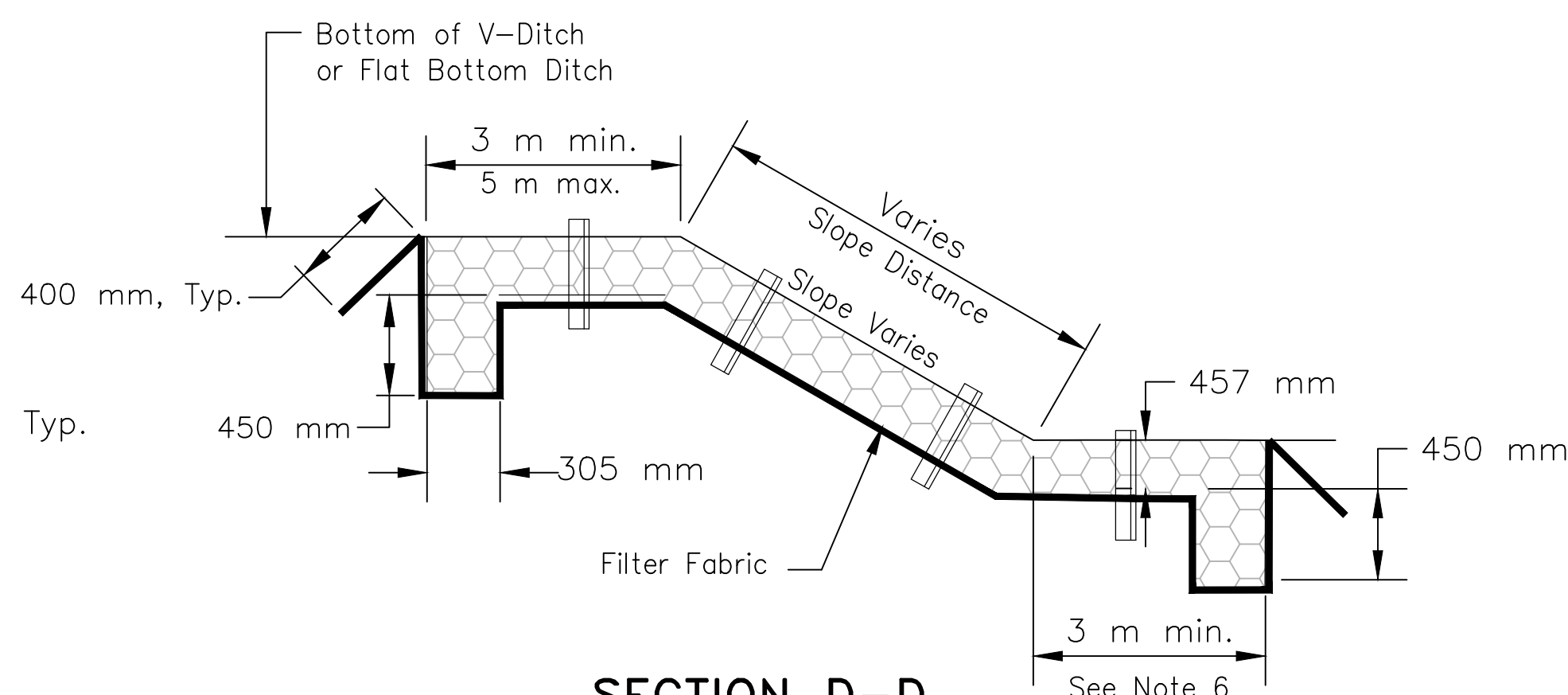


SECTION B-B

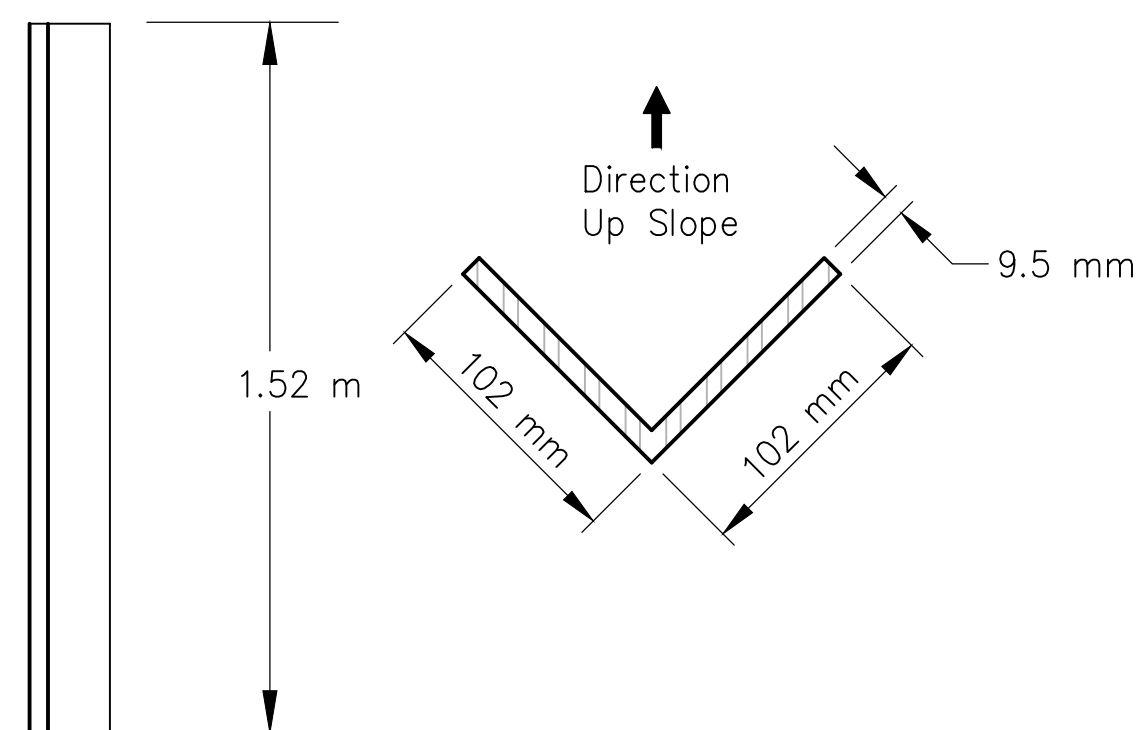
*Width=Depth Divided By Backslope(As Per Plans)



SECTION C-C



SECTION D-D



ANGLE IRON ANCHOR DETAIL

N.T.S.

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

EROSION CONTROL AND RIPRAP DOWNDRAIN DETAILS

Designed by: RDL

Drawn by: cdh, RDL Date: 08/07/09

Revised by:

Date:

File Name: N46_Erosion Control Plan



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N46	N46(1)1,2&4	22	58

WIRE ENCLOSED RIPRAP NOTES

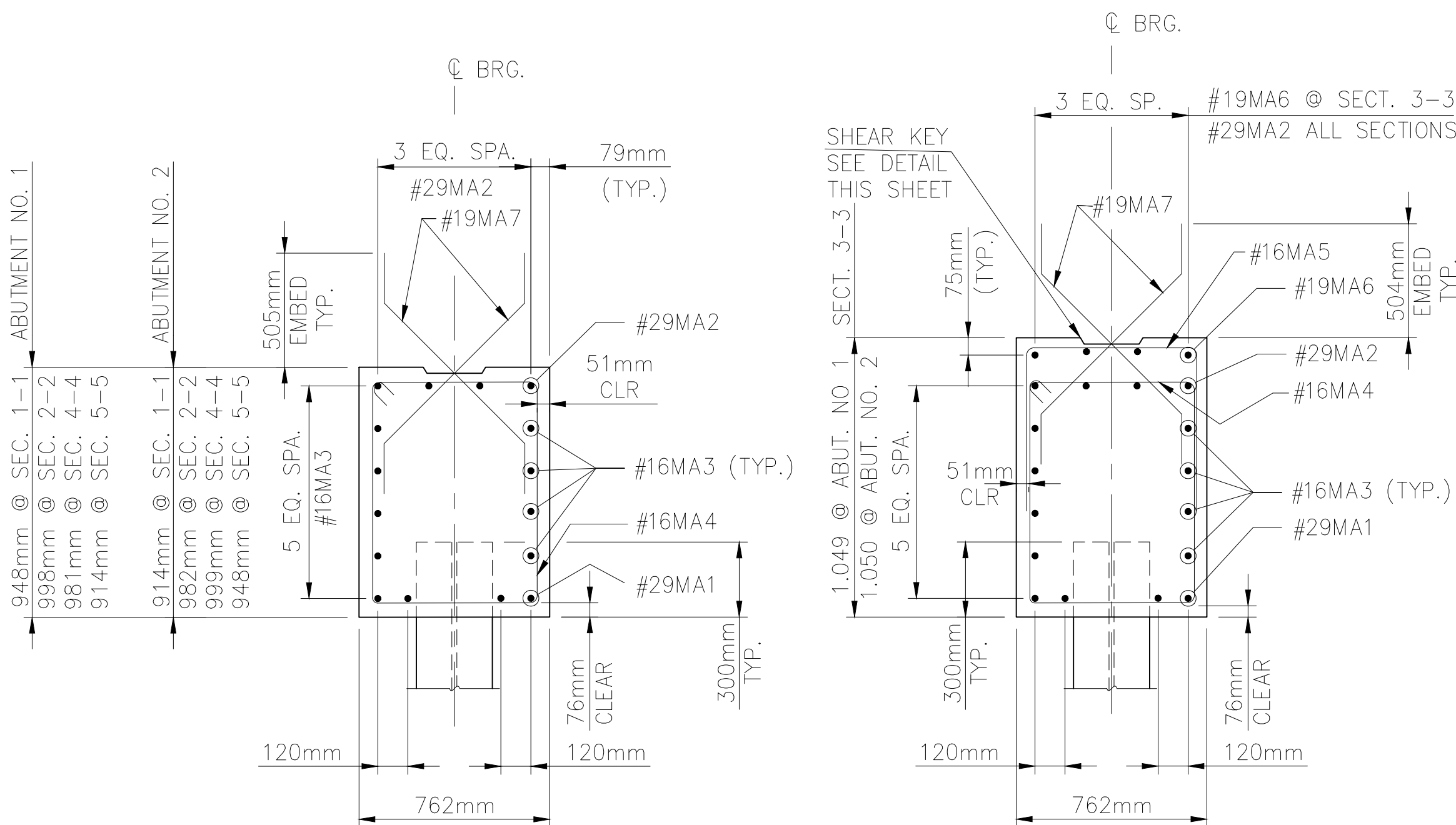
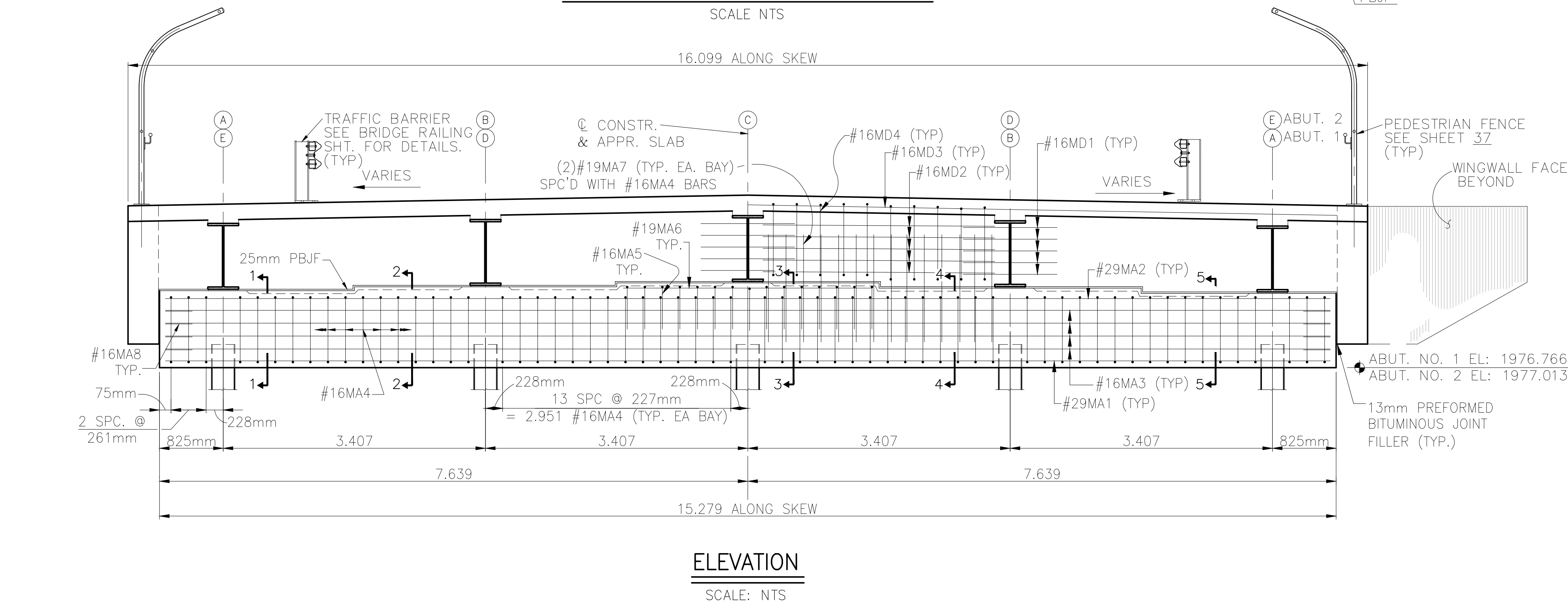
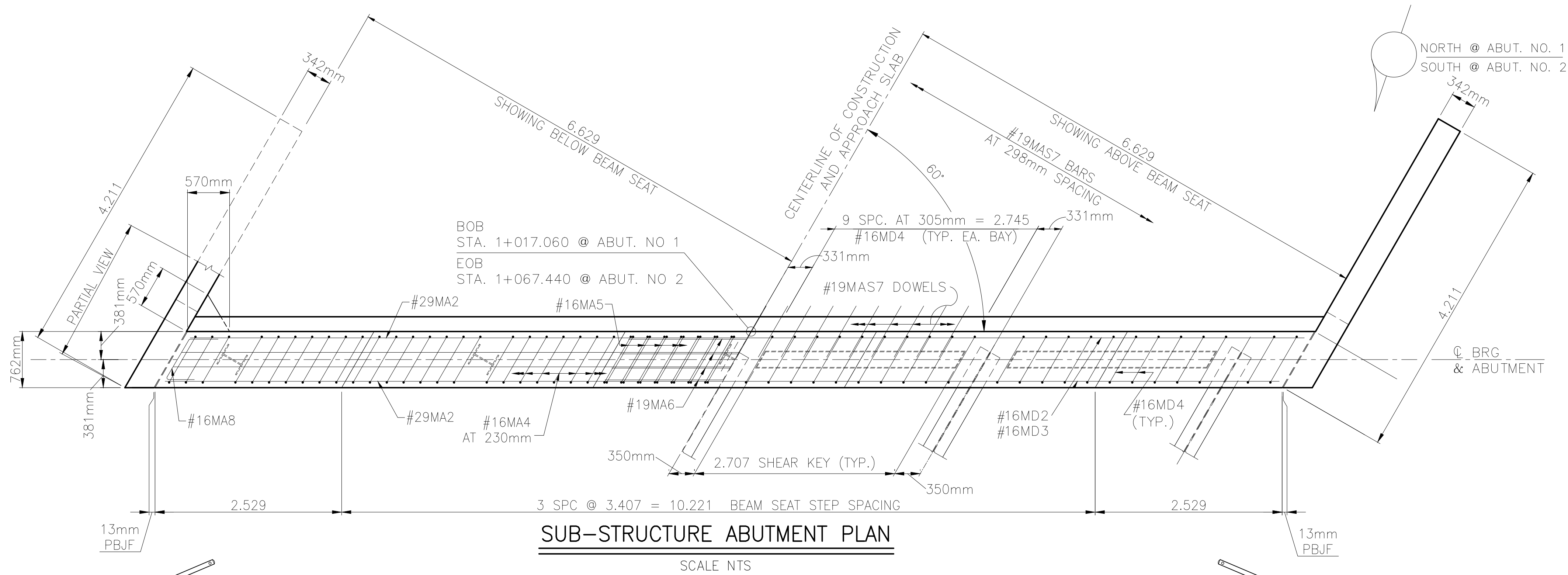
1. Wire Enclosed Riprap Shall Conform to Section 251 of FP-03, the Supplemental Specifications, and the Details Shown in These Construction Plans. Wire Mesh Shall Be Placed To Enclose The Stone Layer On All Sides And Faces. The Wire Mesh Shall Be Joined On All Faces And Shall Be Drawn Tightly Against The Stone By Means Of 3.8 mm Wire Ties Spaced 0.61 Meter Longitudinally And Transversally.
2. Wire Fabric Shall Be Galvanized and Be of the Configuration Shown on This Sheet. An Alternate Wire Fabric May Be Submitted For Review and Approval. Any Wire Fabric Used Shall Have a Class 3 Zinc Coating (Galvanizing), Have a Maximum Opening Dimension of 100 mm, and Shall Not Allow a 75 mm ϕ Sphere to Pass Through a Wire Fabric Opening.
3. Wire Enclosed Riprap Shall Be Anchored As Shown, By L 102 x 102 x 9.5 mm Steel Angles. Steel Angles Shall Extend 75 mm Above the Top Surface of the Wire Enclosed Riprap When Placed. Steel Angles Will Conform to AASHTO M270M, Grade 250.
4. Embankment Below Riprap Shall Conform to Section 204 of FP-03. Excavation For Riprap Foundations Shall Conform to Section 209 of FP-03. All Embankment For Wire Enclosed Riprap Above Natural Ground Is Included in the Quantity For Item 20401-0000, Roadway Excavation, and Shall Be Paid For Under That Item. All Excavation For Riprap Construction Shall Be Considered Incidental to Item 25112-2000, Wire Enclosed Riprap.
5. Rock Size Shall Conform to FP-03, Section 705, Table 705-1, Class 2.
6. Erosion Control Geotextile Shall Be Installed Under All Wire Enclosed Riprap As Shown and Shall Be Incidental to Item 25112-2000, Wire Enclosed Riprap. Erosion Control Geotextile Shall Conform to Section 714.01(a)(4) Type IV-B of FP-03. Geotextile To Be Embedded 400 mm Into Ground Along All Riprap Edges at an angle of 45° from the ground surface.
7. In Rock Areas, Drive Angle Iron Anchors To Refusal (Min. embedment 500 mm) Then Cut At 75 mm Above Riprap. Anchors Shall Be Saw Cut To Leave A Smooth Edge, Or Torch Cut and Ground Smooth to the Satisfaction of the COR/AOTR.
8. The Contractor Shall Be Required To Make Field Adjustments To Match Actual Field Conditions As Directed By The AOTR/COR. No Additional Payment Shall Be Made For Such Adjustments. The Quantities Shown Are Only An Estimate. Actual Quantities Shall Be Determined In The Field.

ITEM 25112-2000: WIRE ENCLOSED RIPRAP, CLASS 2

STATION	LOCATION	Wd1(m)	Wd2(m)	THICKNESS (mm)	ESTIMATED LENGTH (m)	VOLUME (m ³)
0+980.000 to 1+013.470 Lt.	Rt.	3.50	6.50	457	36.40	62
1+013.000 to 1+037.580 Rt.	Lt.	3.50	6.50	457	28.50	37
1+047.095 to 1+101.230 Lt.	Rt.	3.50	6.50	457	54.20	90
1+068.970 to 1+105.000 Rt.	Rt.	3.50	6.50	457	36.70	60
TOTAL						249

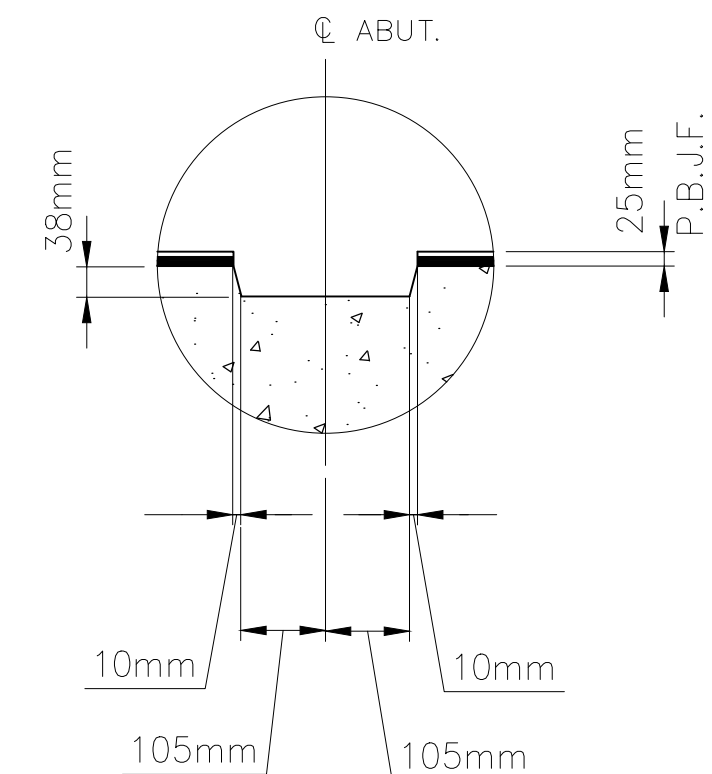
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N46	N46(1)1,2&4	23	58

- NOTES:
- REFER TO BEAM SHEET AND BEARING PAD DETAILS SHEET FOR ADDITIONAL INFORMATION.
 - SEE ABUTMENT DIAPHRAGM DETAILS SHEET FOR ADDITIONAL INFORMATION ON ABUTMENT DIAPHRAGMS AND APPROACH SLAB SEAT.
 - PBJF – PREFORMED BITUMINOUS JOINT FILLER
 - SEE SHEET 33 FOR TOP OF SLAB ELEVATIONS

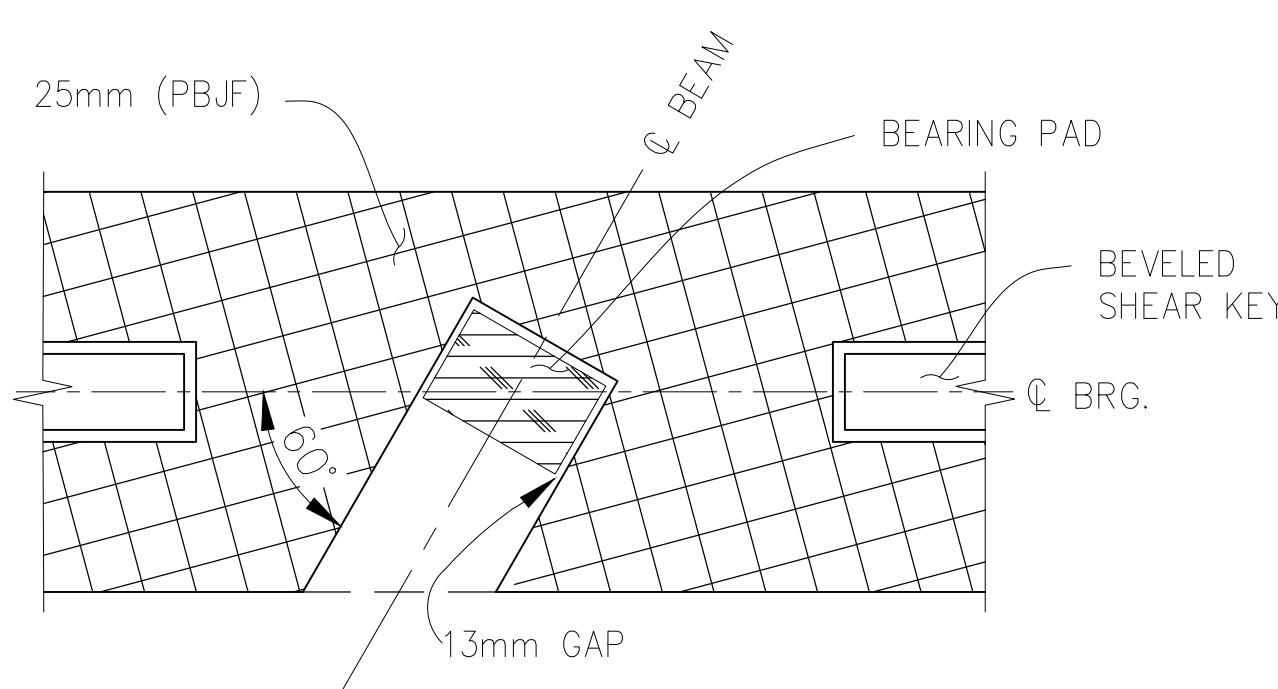


SECTIONS 1-1, 2-2, 4-4 & 5-5
SCALE: NTS

SECTION 3-3
SCALE: NTS



SHEAR KEY DETAIL
SCALE: NTS



PLAN AT BEARING (INTERIOR)
SCALE: NTS

BRIDGE SEAT ELEVATIONS					
	BEAM A	BEAM B	BEAM C	BEAM D	BEAM E
ABUT. 1	1977.680	1977.747	1977.815	1977.764	1977.714
ABUT. 2	1977.927	1977.995	1978.063	1978.012	1977.961

NOTE: FOR TOP OF DECK ELEVATIONS SEE SHEET 33.

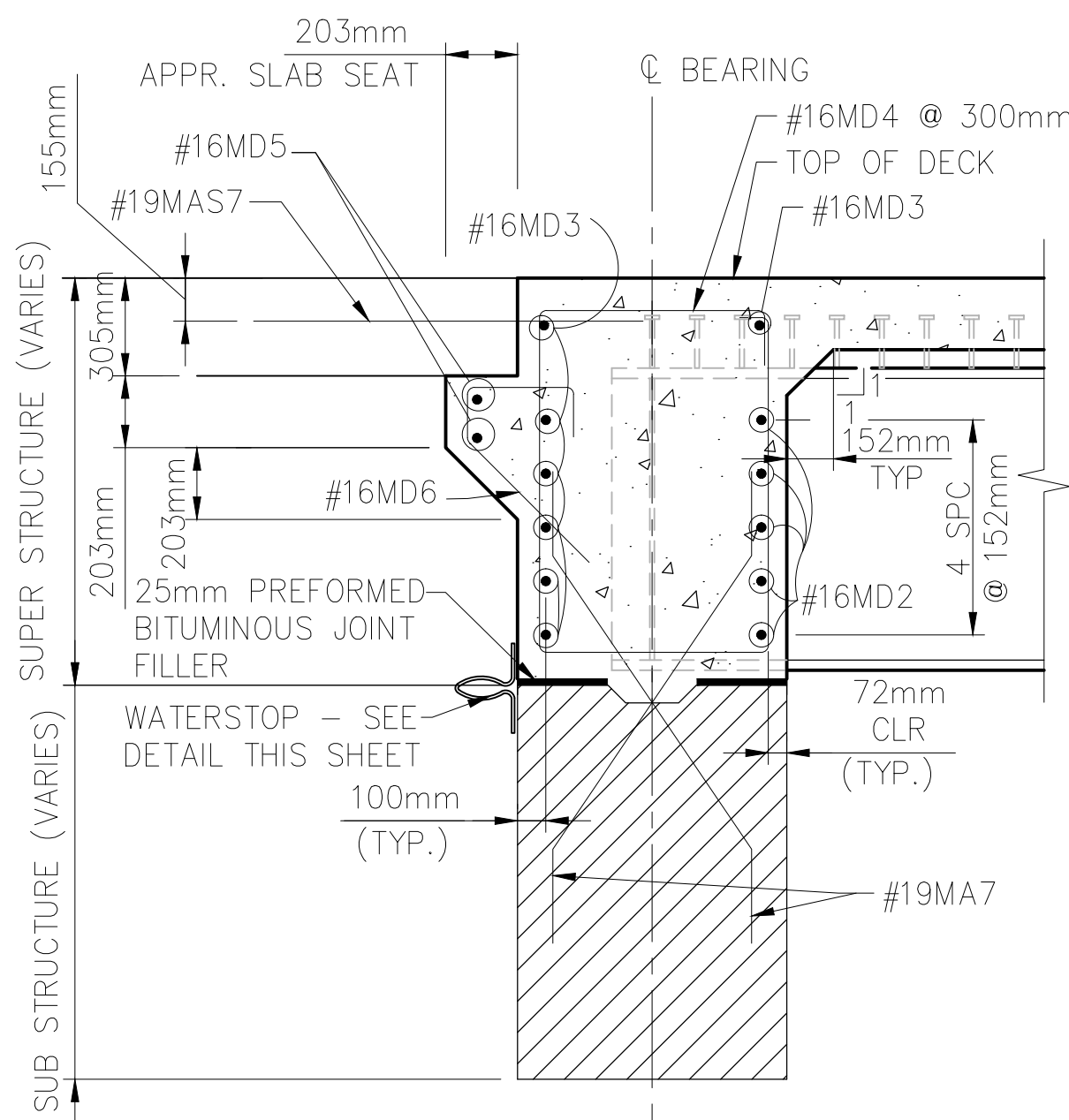
UNITED STATES
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NAVAJO REGION OFFICE * DIVISION OF TRANSPORTATION

ABUTMENT
DETAILS

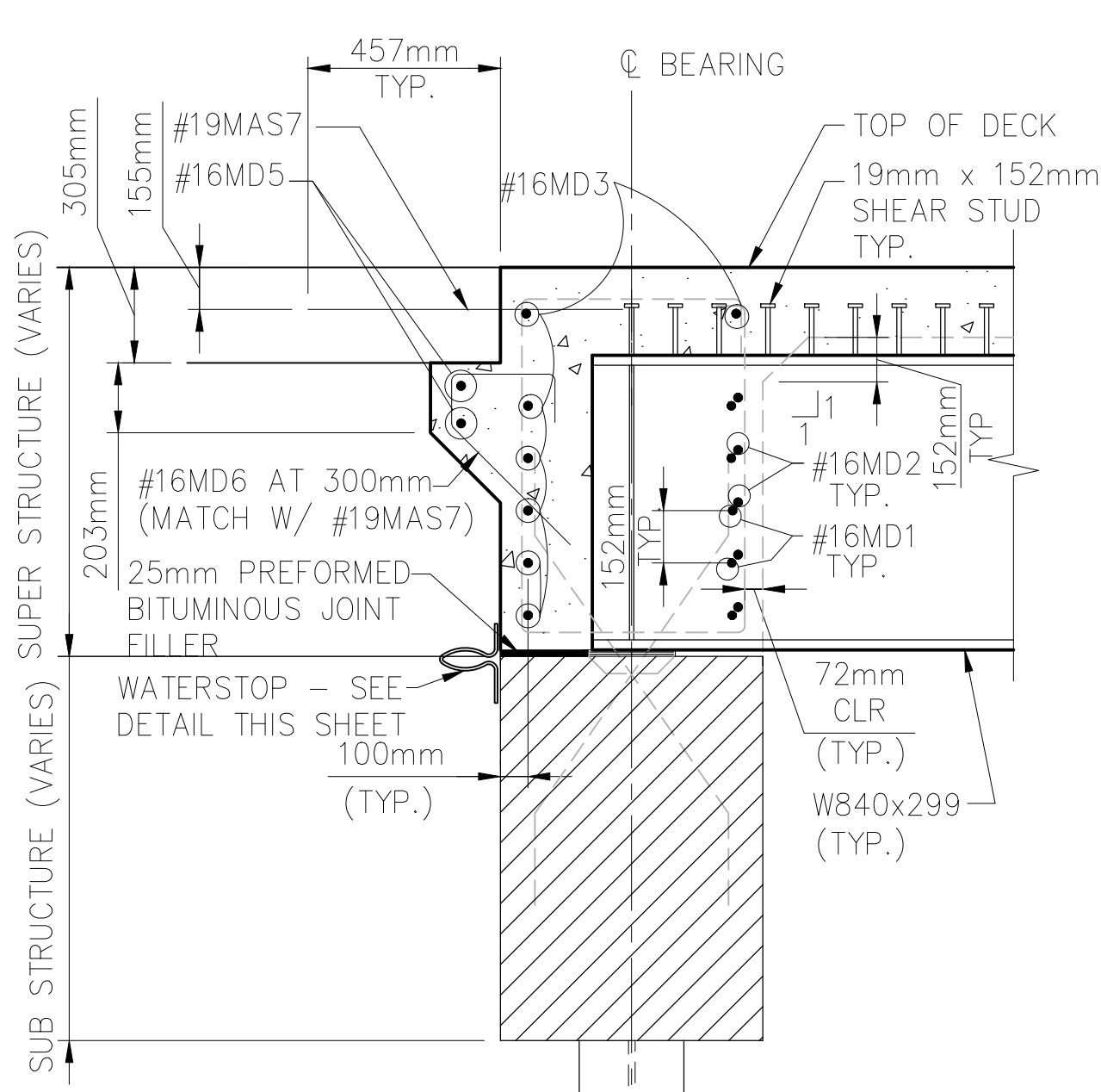
Designed by:
Drawn by: RLC, rsh, cdh Date: 08/07/09
Revised by: Date:
File Name: N46_Abutment1.dwg



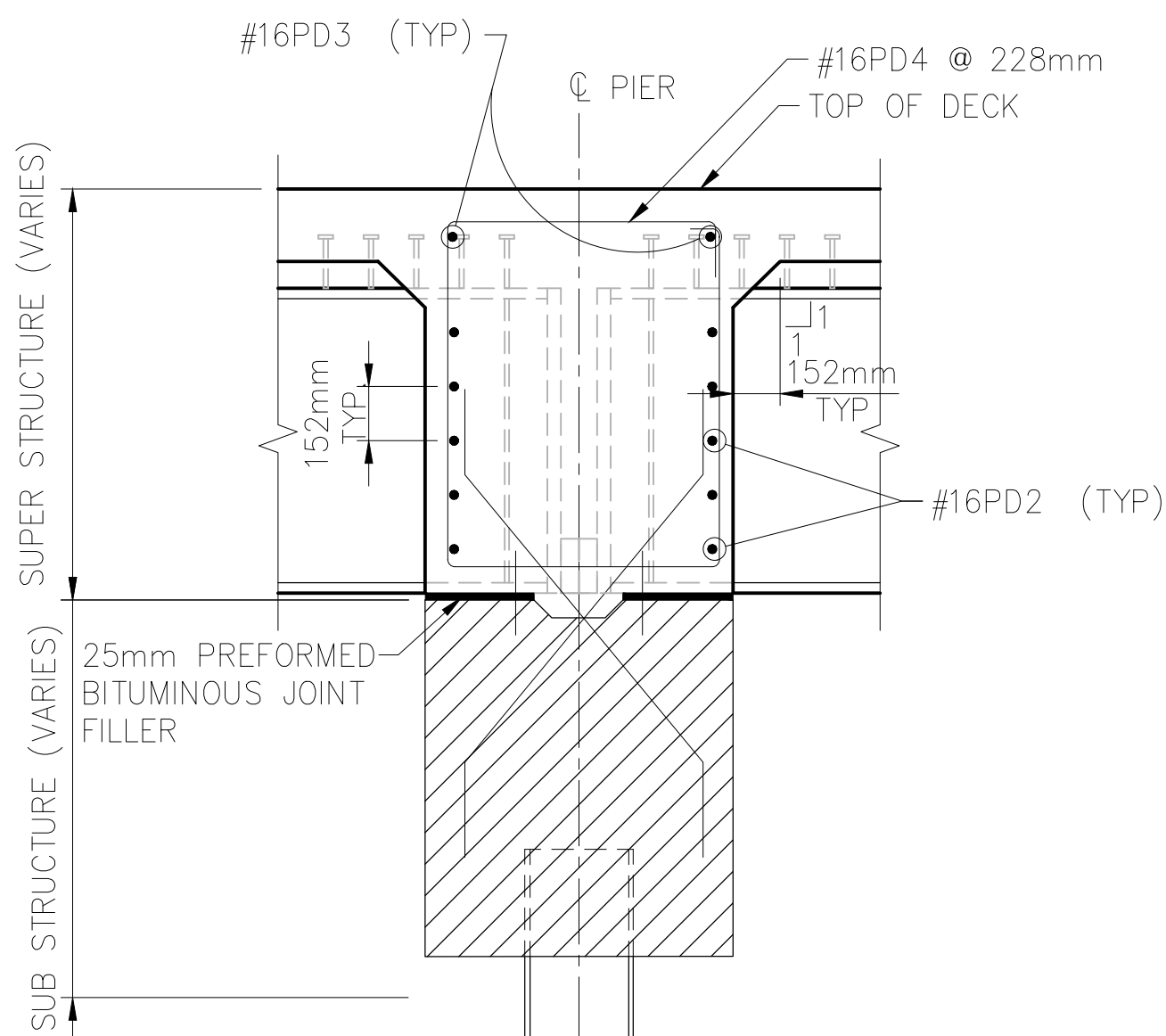
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N46	N46(1)1,2&4	25	58



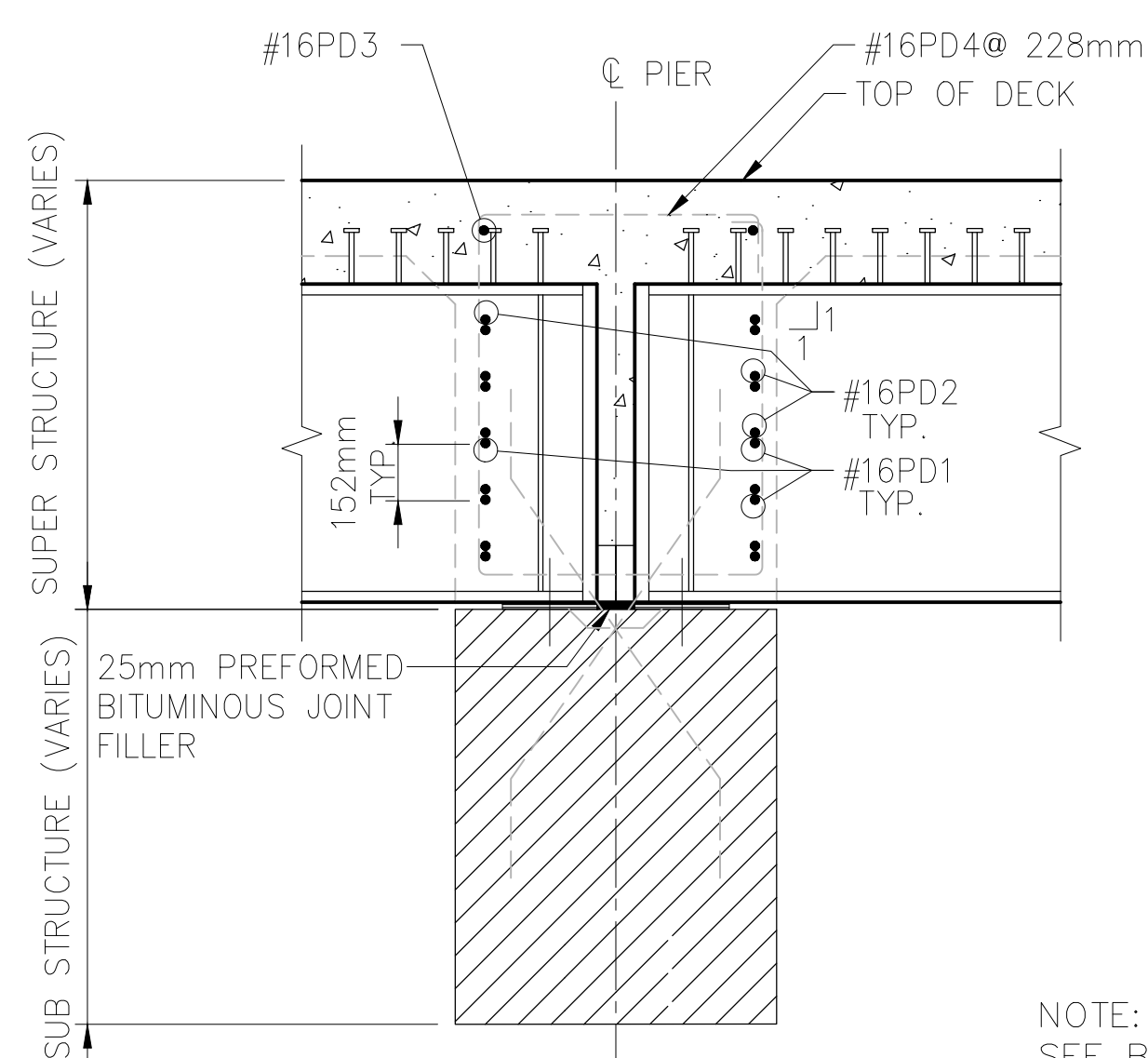
**FIXED ABUTMENT DIAPHRAGM
SECTION BETWEEN BEAMS**
SCALE: NTS



**FIXED ABUTMENT DIAPHRAGM
SECTION @ BEAM**
SCALE: NTS

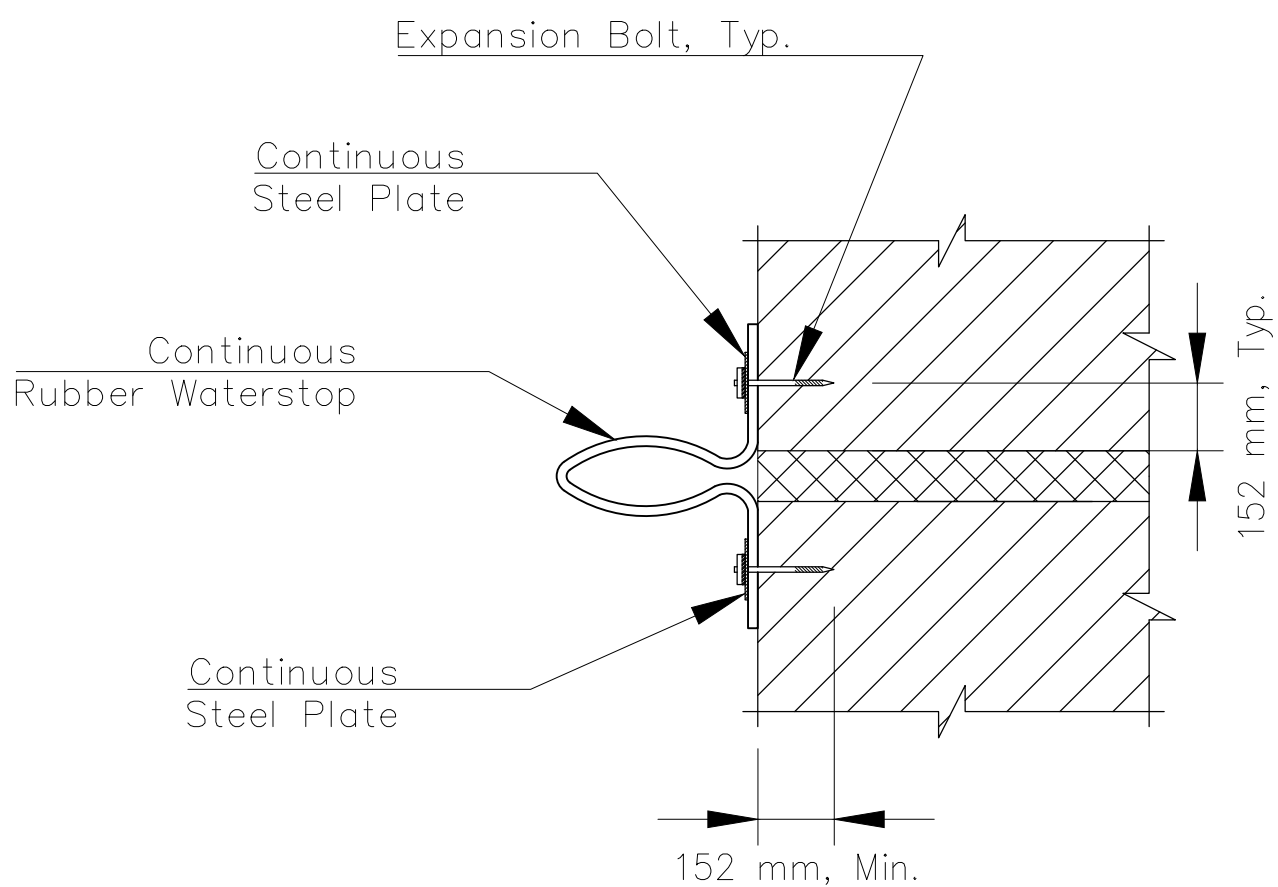


**FIXED PIER DIAPHRAGM
SECTION BETWEEN BEAMS**
SCALE: NTS



**FIXED PIER DIAPHRAGM
SECTION @ BEAMS**
SCALE: NTS

NOTE:
SEE BEAM DETAILS ON
SHEET 31.



CONTINUOUS RUBBER WATERSTOP SHALL BE 457mm x 10mm THICK AND LONG ENOUGH TO PROVIDE A CONTINUOUS SEAL ACROSS THE ABUTMENT, AND SHALL CONFORM TO THE SUPPLEMENTAL SPECIFICATION 712.06.

THE WATERSTOP SHALL BE BOLTED WITH CONTINUOUS STEEL PLATES 102mm WIDE x 10mm THICK CONFORMING TO AASHTO M270M, GRADE 250 AT TOP AND BOTTOM (2 ea).

STEEL PLATES COVERING RUBBER WATERSTOP SHALL BE BOLTED TO THE CONCRETE WITH 13mm DIA., ASTM A307, GRADE A EXPANSION BOLTS AT 395mm c/c. EMBED THE BOLTS INTO PREDRILLED HOLES A MINIMUM DEPTH OF 152mm. PROVIDE STANDARD GALVANIZED WASHERS FOR ALL BOLTS.

GALVANIZE THE STEEL PLATES AND BOLTS ACCORDING TO AASHTO M298, CLASS 50 OR AASHTO M232.

FURNISHING AND INSTALLATION OF THE WORK SHALL BE INCLUDED IN THE BID PRICE FOR ITEM 55201-0200, STRUCTURAL CONCRETE.

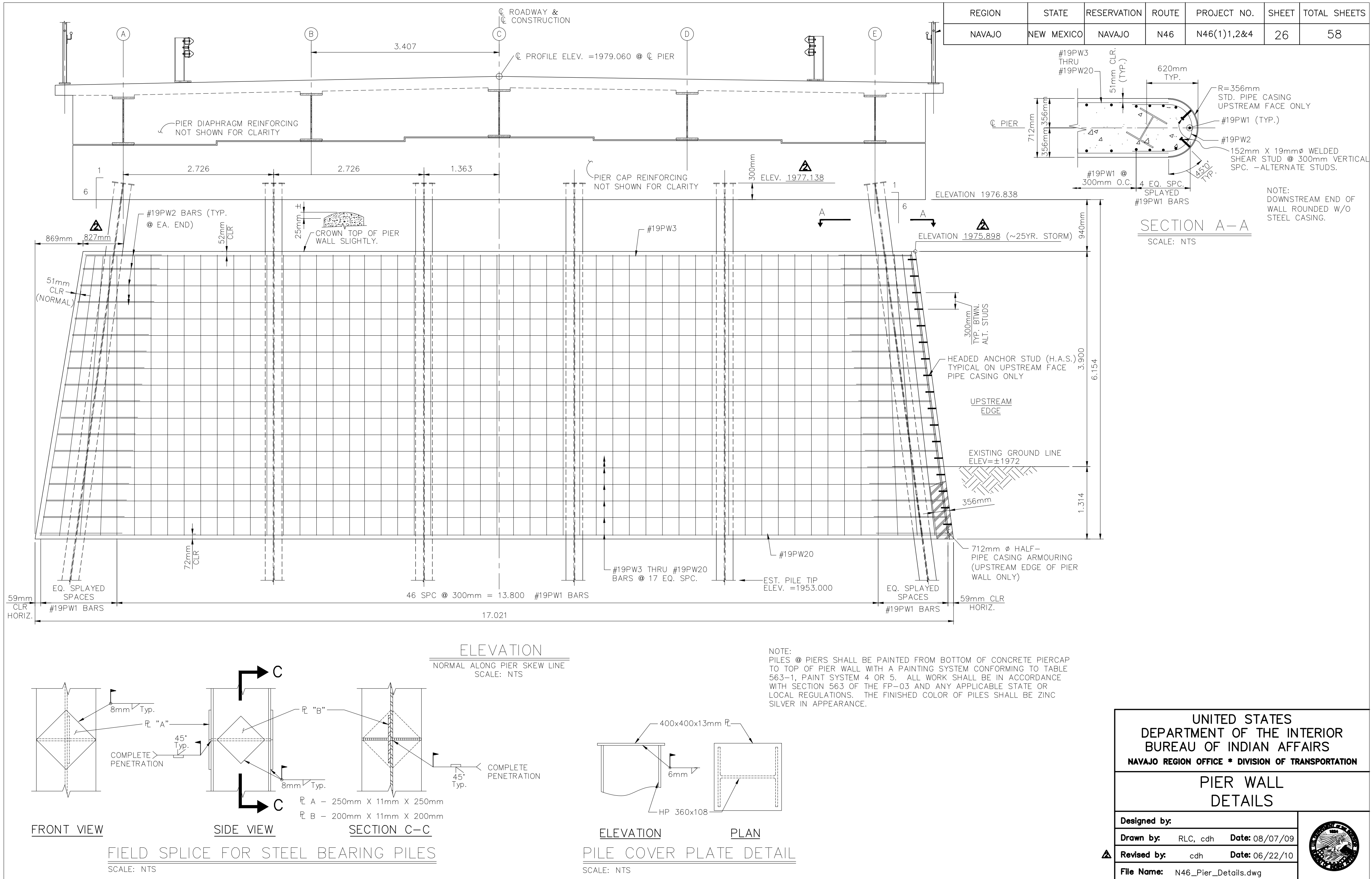
WATERSTOP DETAIL
SCALE: NTS

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

ABUTMENT AND PIER
DIAPHRAGM DETAILS

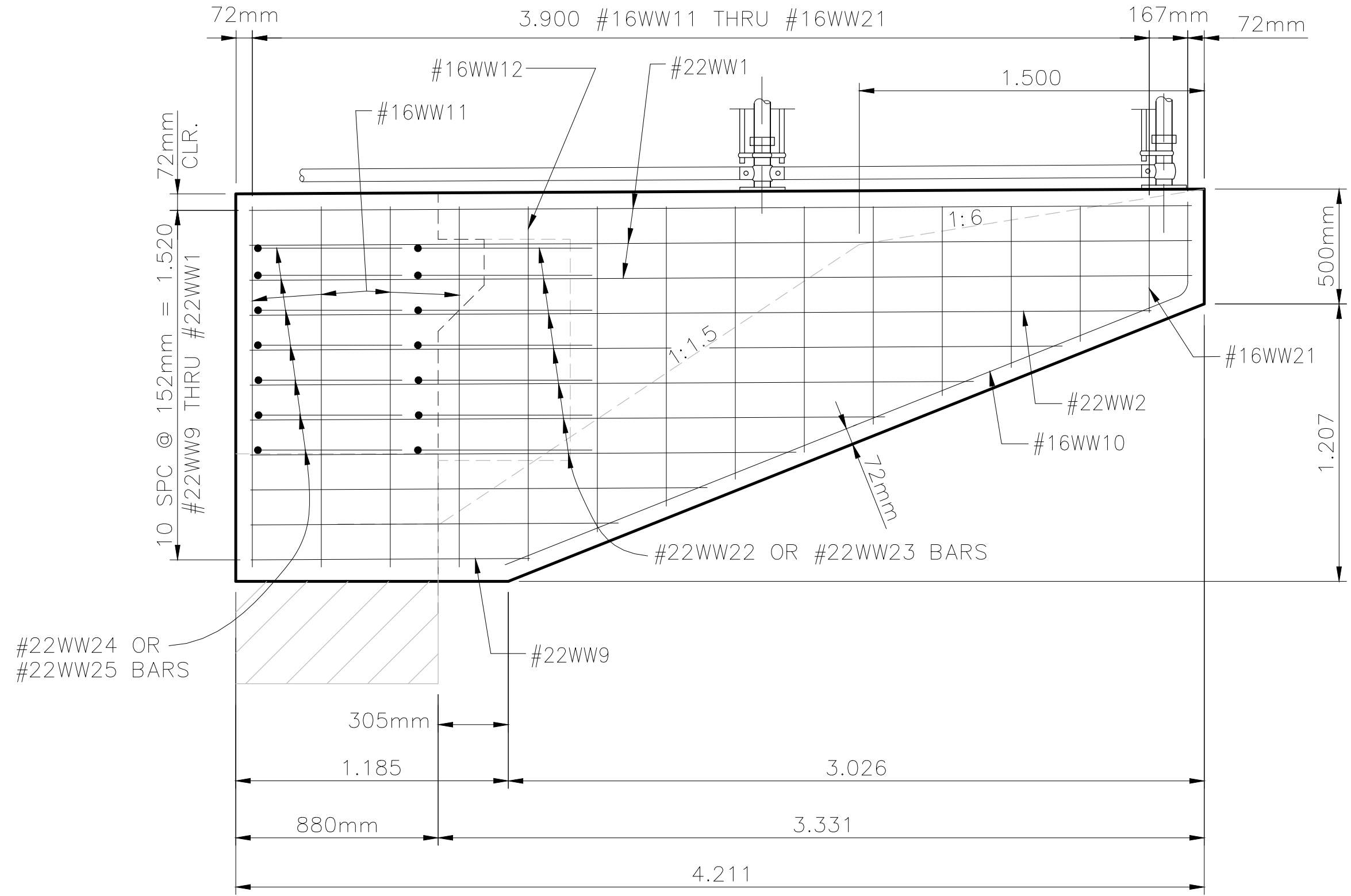
Designed by:
Drawn by: RLC, cdh Date: 08/07/09
Revised by: Date:
File Name: N46_DiaDetail.dwg

G:\CURRENT PROJECTS\NAVAJO\N46(1)_081009\Drawings_BA_012006\CAD_061309\Plan Drawings_BA_012006\Detail_062210.dwg, 02/22/2010 10:11:21 AM



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N46	N46(1)1,2&4	27	58

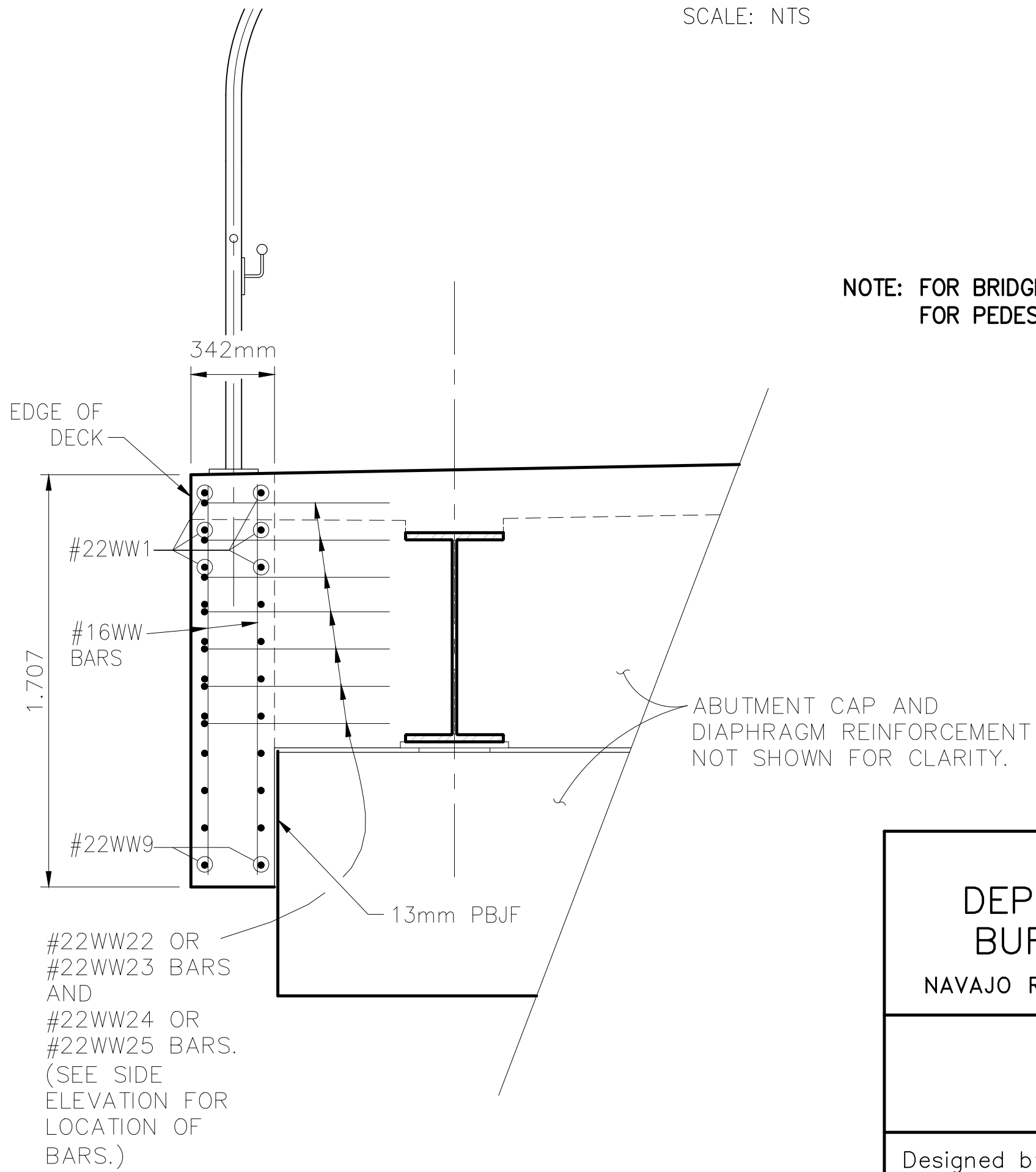
-0.5% @ ABUT. NO. 1
+0.5% @ ABUT. NO. 2



SUB-STRUCTURE WINGWALL ELEVATION B-B

SCALE: NTS

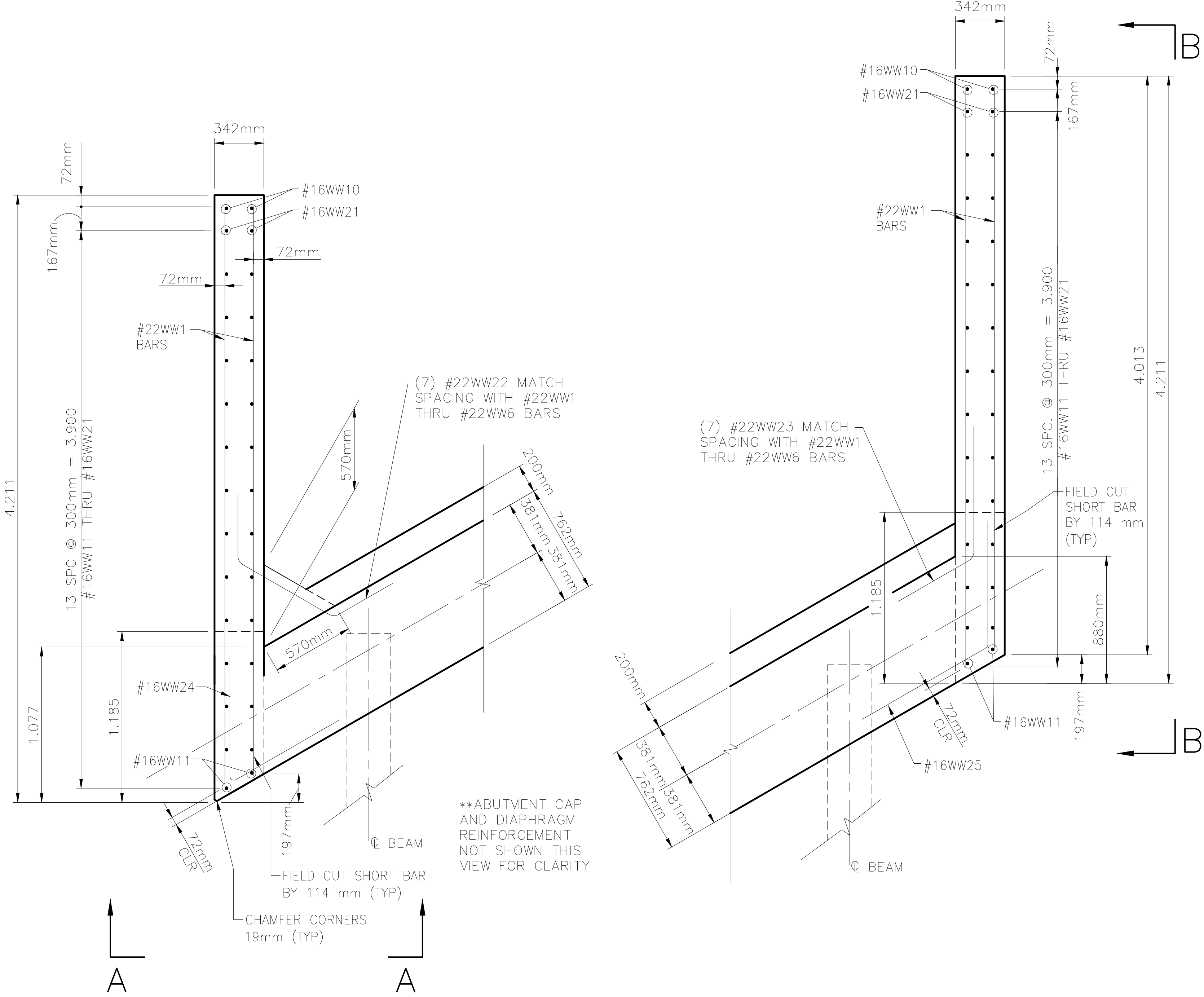
NOTE: FOR BRIDGE RAILING DETAILS SEE SHEET 36.
FOR PEDESTRIAN FENCE DETAILS SEE SHEET 37.



SUB-STRUCTURE WINGWALL SECTION A-A

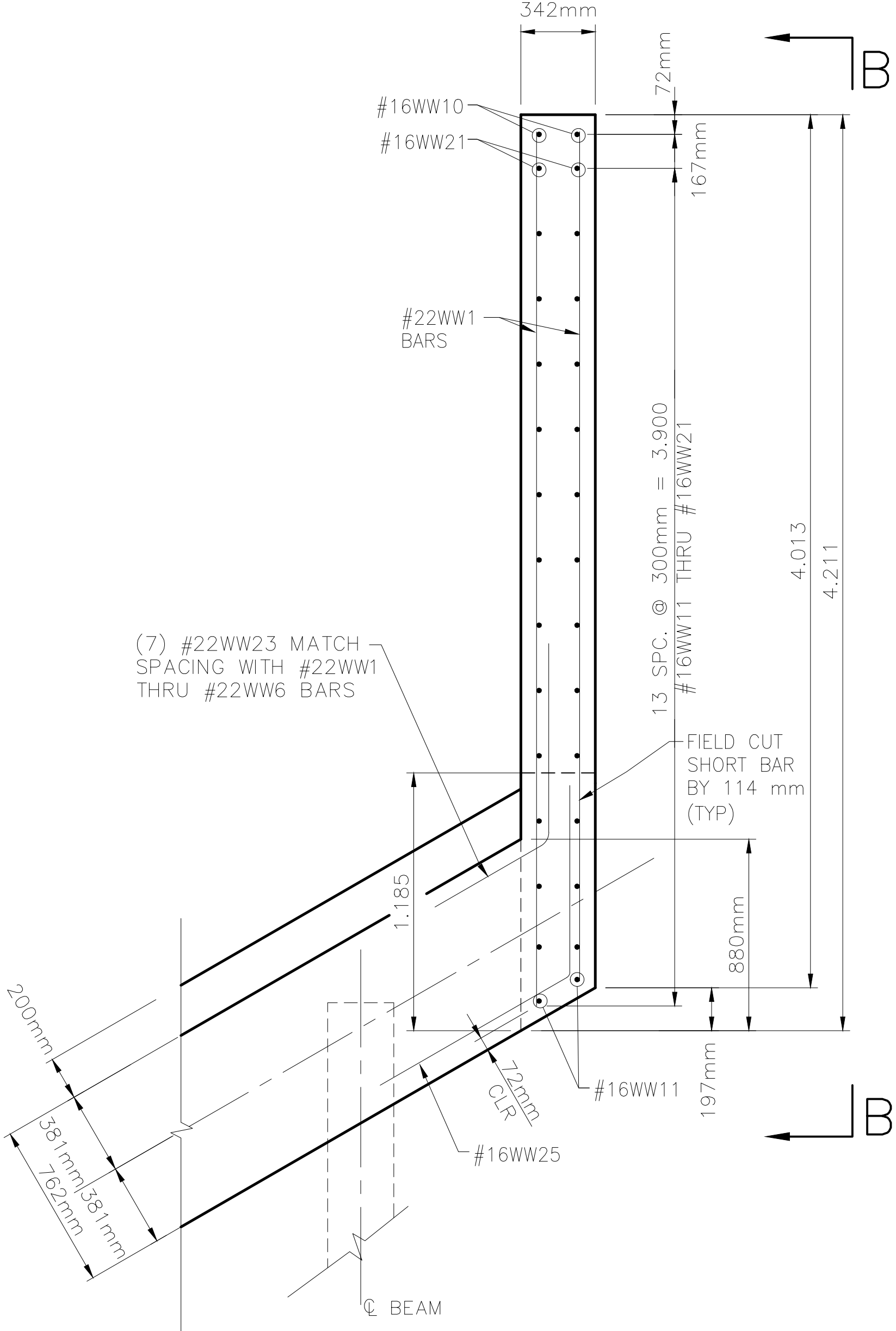
SCALE: NTS

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF INDIAN AFFAIRS NAVAJO REGION OFFICE * DIVISION OF TRANSPORTATION	
WINGWALL DETAILS	
Designed by:	
Drawn by: RLC, cdh	Date: 08/07/09
Revised by:	Date:
File Name:	N46_wingwalls.dwg



SUB-STRUCTURE WINGWALL PLAN

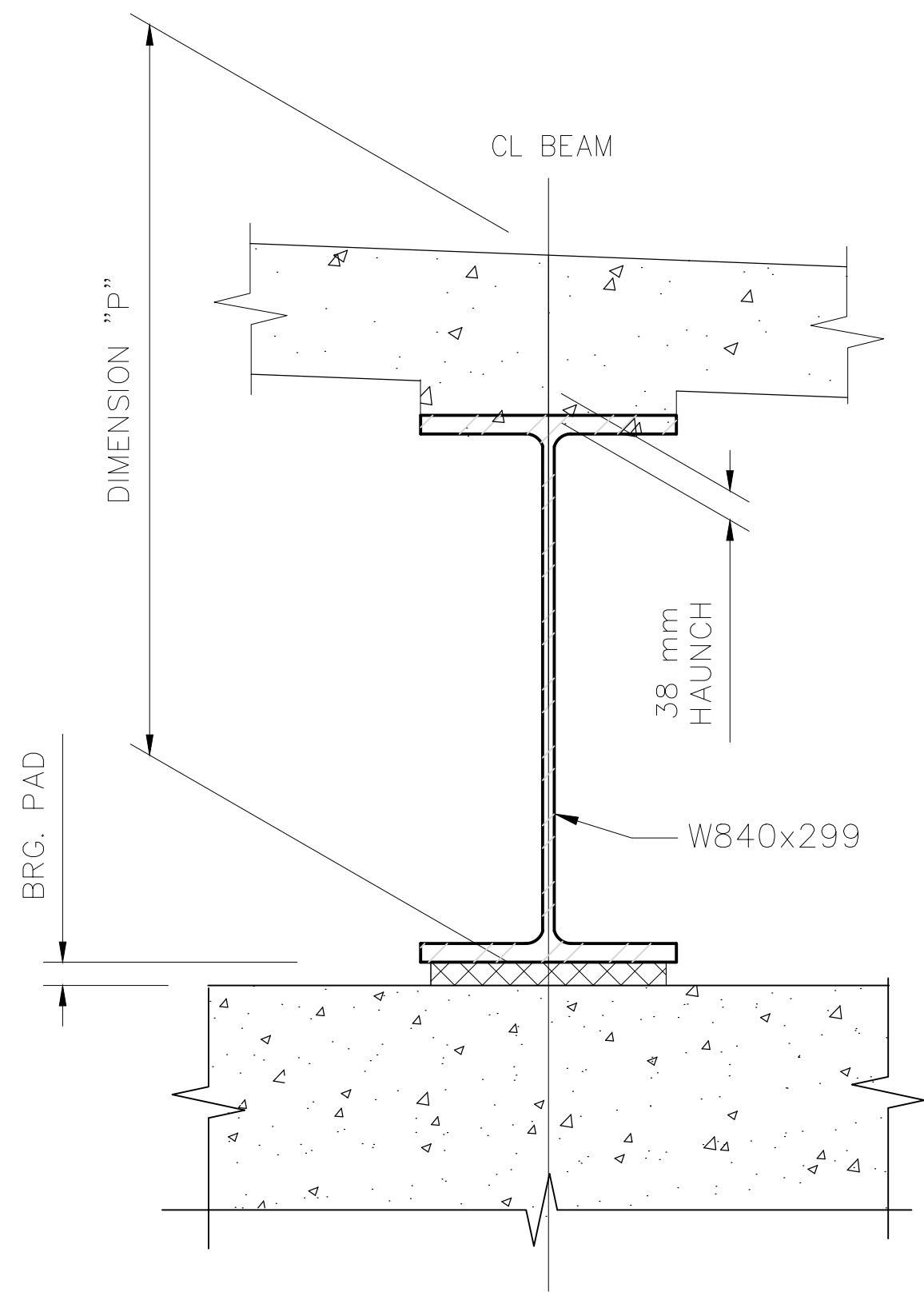
SCALE: NTS



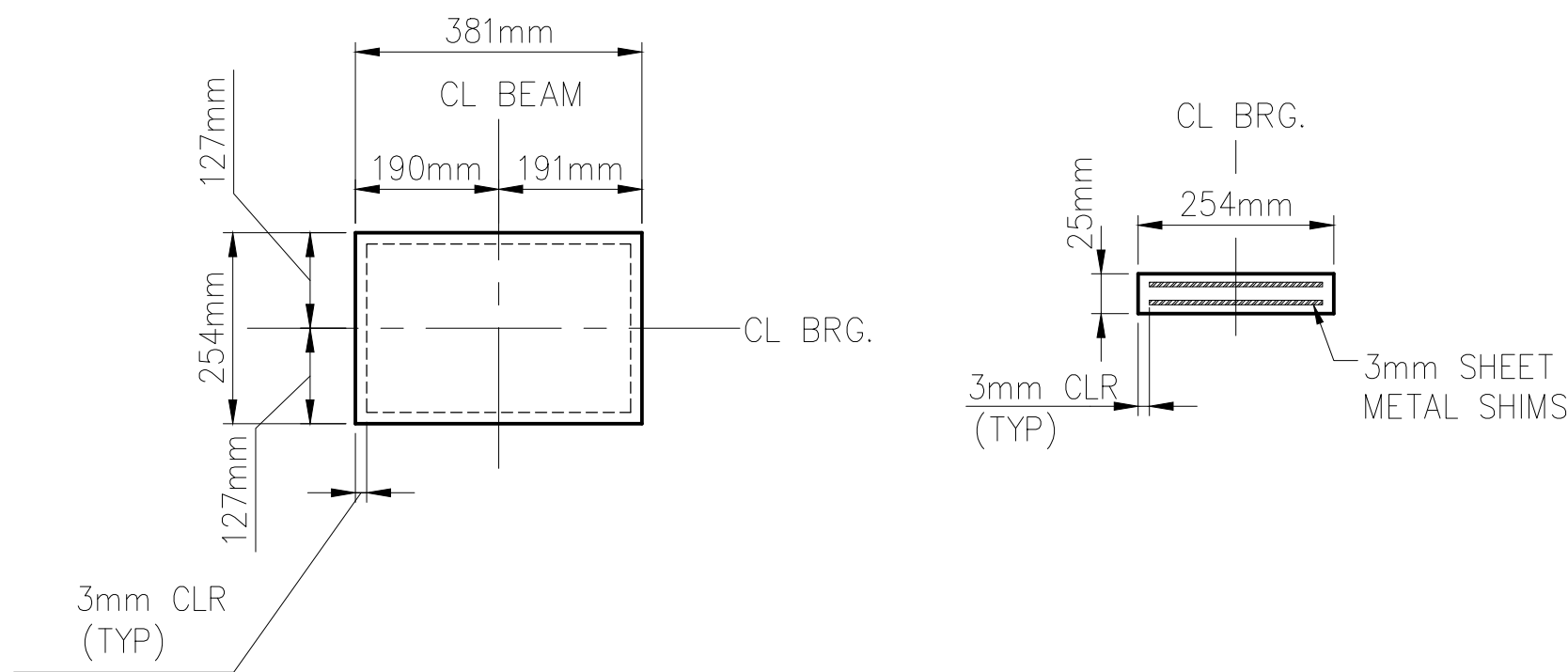
SUB-STRUCTURE WINGWALL PLAN

SCALE: NTS

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N46	N46(1)1,2&4	29	58



TYPICAL DIAPHRAGM SECTION
SCALE: NTS

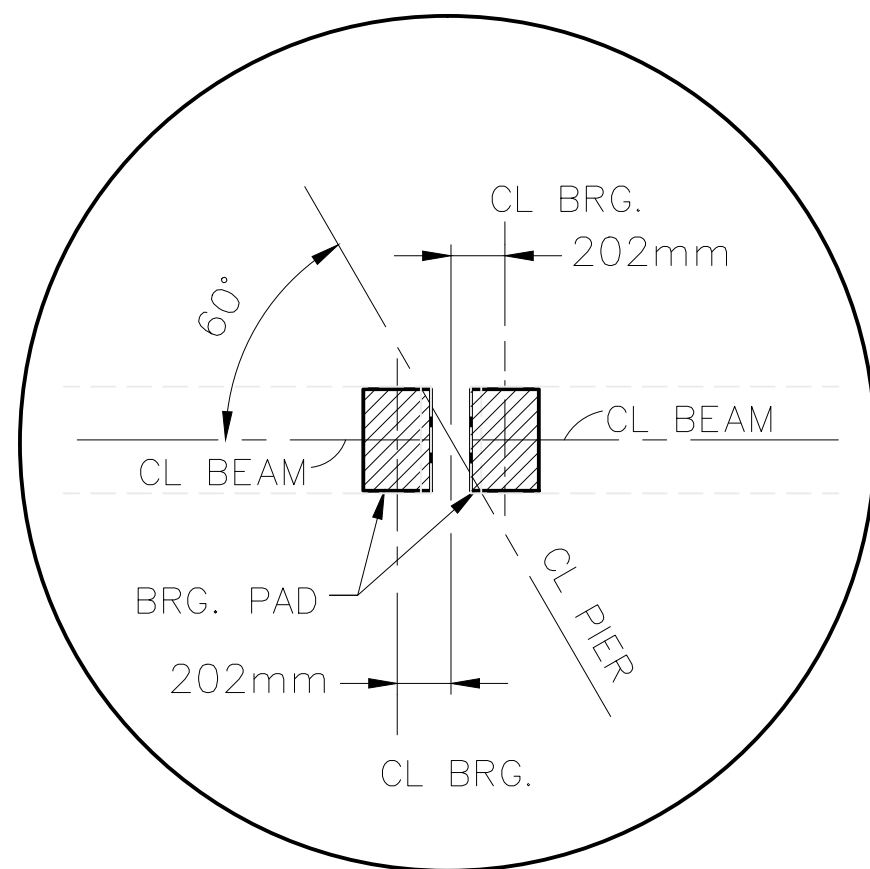


ELASTOMERIC BEARING PAD DETAIL
SCALE: NTS

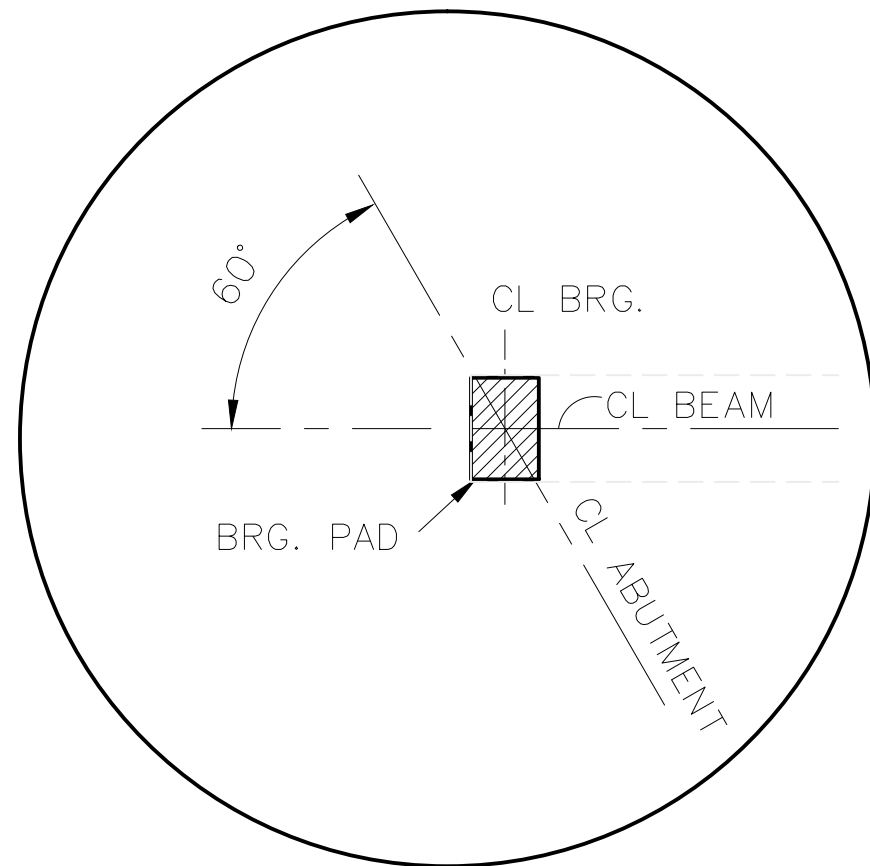
ELASTOMERIC BEARING PAD SCHEDULE										
LOCATION	DIMENSIONS			NUMBER OF SHIMS	60 DUROMETER		INNER LAMINATION		OUTER LAMINATION	
	W	L	T		NUMBER	TKN	NUMBER	TKN	DESIGN LOAD	NUMBER REQUIRED
ABUT NO. 1 & 2	381mm	254mm	25mm	2	1	13mm	2	3mm	DL = 244.7 kN LL = 0 kN	10
PIER NO. 1	381mm	254mm	25mm	2	1	13mm	2	3mm	DL = 255.5 kN LL = 0KN	10

TABLE OF DIMENSION "P"
@ ALL BEAM BEARINGS

	BEAM BEARING
SLAB	203mm
HAUNCH	38mm
BEAM	855mm
BEARING PAD	25mm
DIMENSION "P"	1.121



PIER BEARING LAYOUT
SCALE: NTS

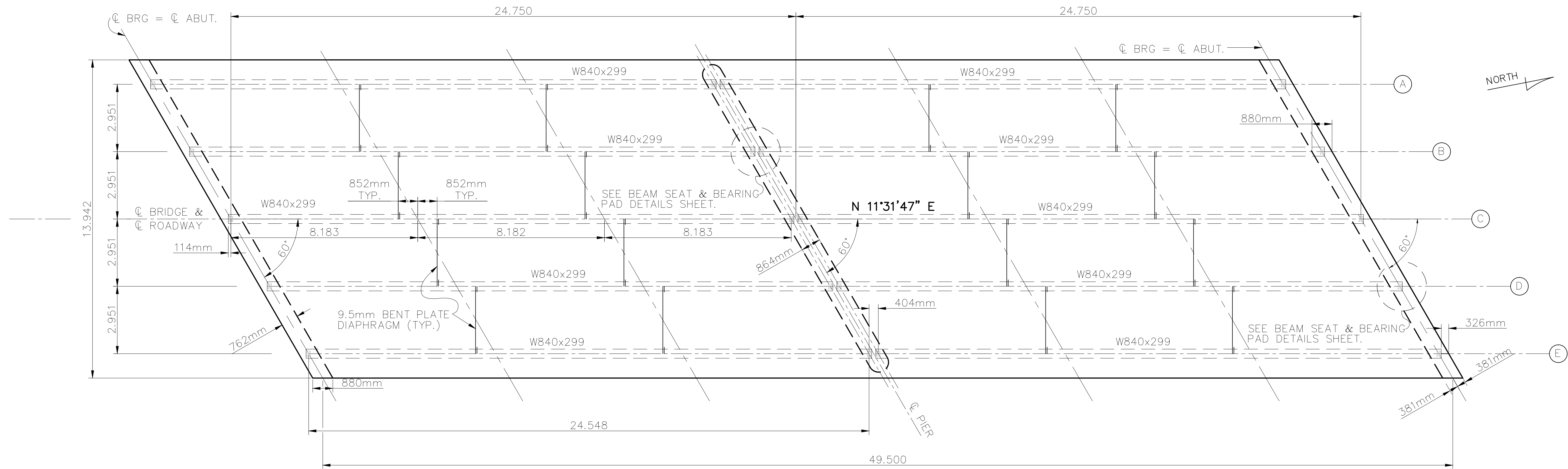


ABUTMENT BEARING LAYOUT
SCALE: NTS

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF INDIAN AFFAIRS NAVAJO REGION OFFICE * DIVISION OF TRANSPORTATION	
BEAM SEAT AND BEARING PAD DETAILS	
Designed by:	
Drawn by: RLC, cdh	Date: 08/07/09
Revised by:	Date:
File Name:	N46_bearing_details.dwg



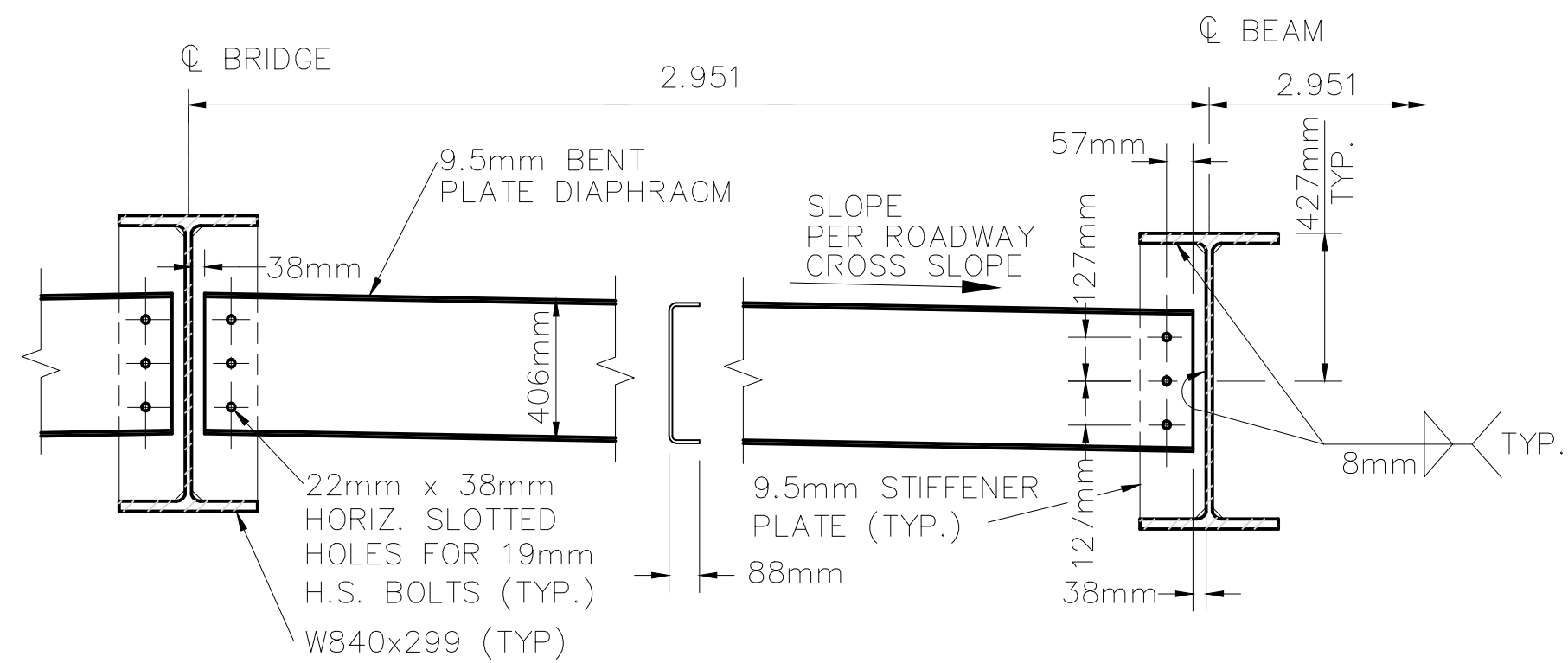
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N46	N46(1)1,2&4	30	58



TYPICAL FRAMING LAYOUT

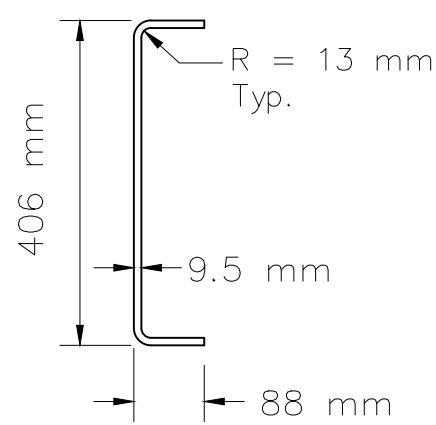
SCALE: NTS

NOTE: DIAPHRAGM SPACINGS IN SPAN 2
ARE THE SAME AS IN SPAN 1.



TYPICAL DIAPHRAGM SECTION

SCALE: NTS



BENT PLATE DIAPHRAGM DETAIL

SCALE: NTS

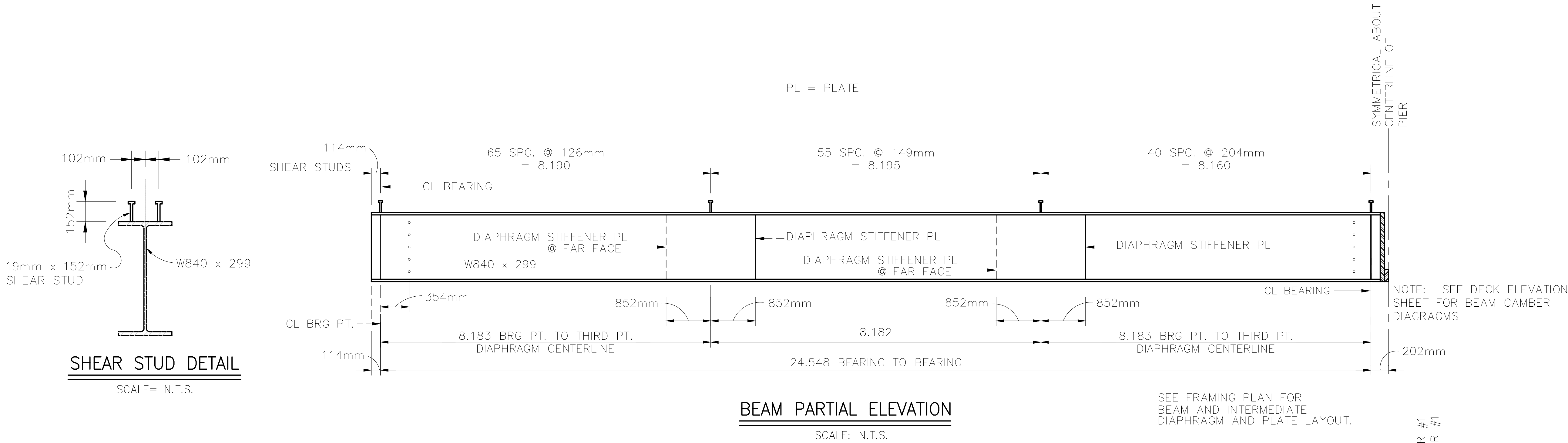
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NAVAJO REGION OFFICE * DIVISION OF TRANSPORTATION

FRAMING
PLAN

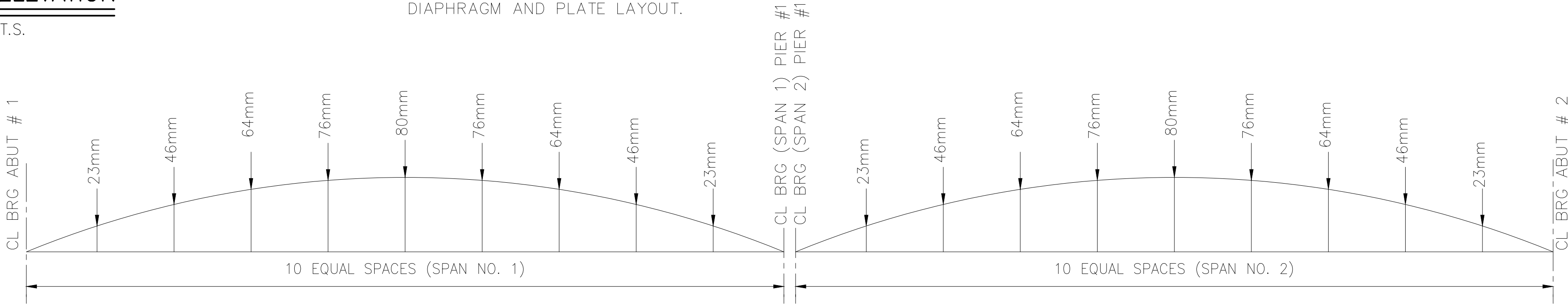
Designed by:
Drawn by: RLC, cdh Date: 08/07/09
Revised by: Date:
File Name: N46_FramingPlan.dwg



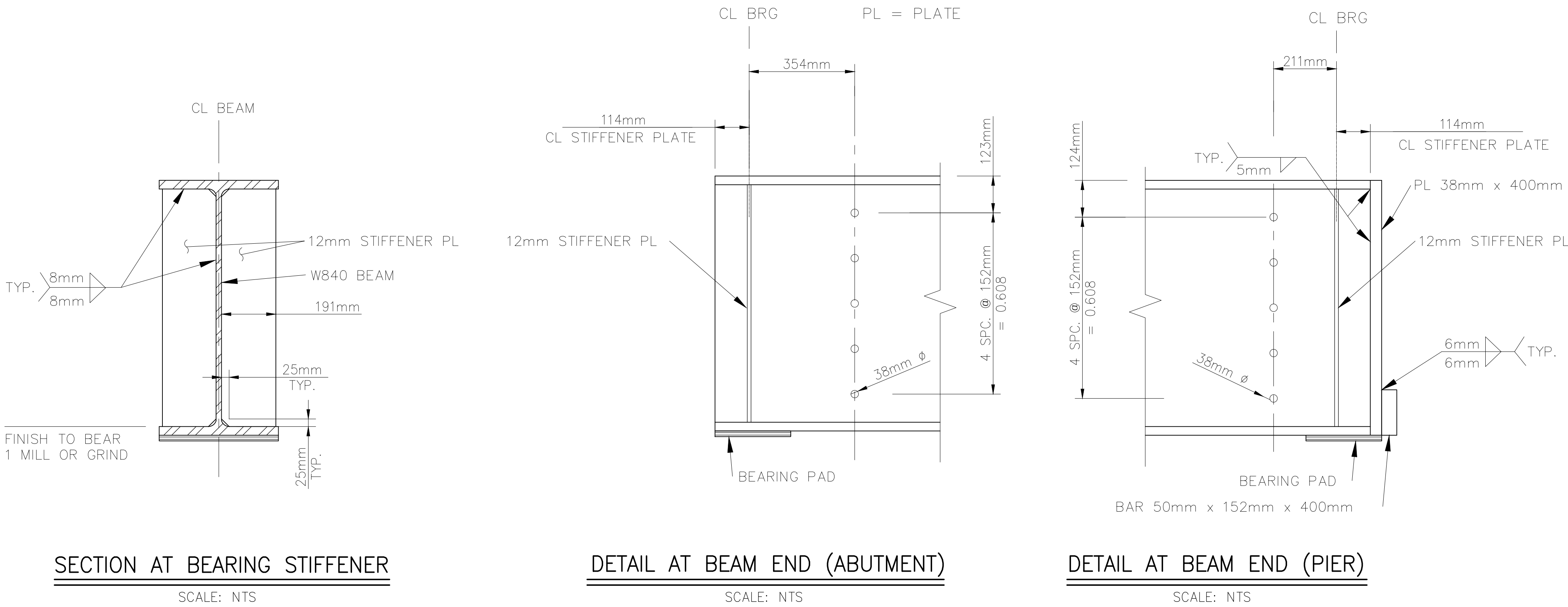
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N46	N46(1)1,2&4	31	58



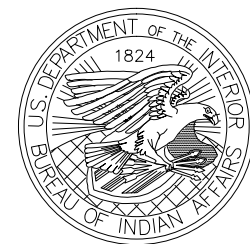
- NOTES
- ALL WELDS SHALL UTILIZE WELDING PROCESSES AND ELECTRODES AS REQUIRED THAT WILL PROVIDE CORROSION RESISTANCE AND WEATHERING CHARACTERISTICS FOR WELDS COMPARABLE TO THE BASE METAL, IN ACCORDANCE WITH AASHTO AWS D1.5, 2002.
 - ALL FASTENERS, SUCH AS BOLTS, NUTS AND WASHERS THAT BOLT DIRECTLY TO THE WEATHERING GRADE STEEL SHALL BE HIGH STRENGTH FASTENERS WITH ATMOSPHERIC CORROSION RESISTANCE AND WEATHERING CHARACTERISTICS COMPARABLE WITH THE A709M WEATHERING STEEL
 - SHEAR CONNECTOR STUDS SHALL BE ATTACHED TO THE BEAMS IN THE FABRICATION SHOP.
 - PAYMENT FOR SHEAR STUDS, BEARING PADS AND MISC. STEEL PLATES (END PLATES, BLOCKS AND STIFFENERS) IS TO BE CONSIDERED INCIDENTAL TO 55502-0000, STRUCTURAL STEEL.
 - SEE BRIDGE NOTES, ON SHEET 14, FOR ADDITIONAL STEEL NOTES.



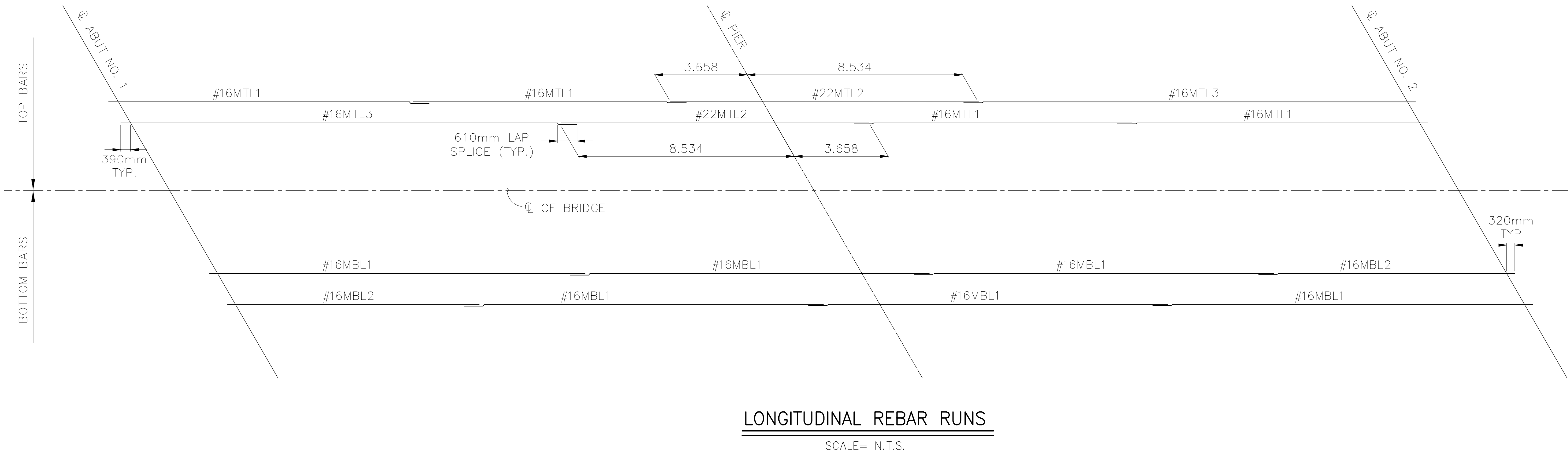
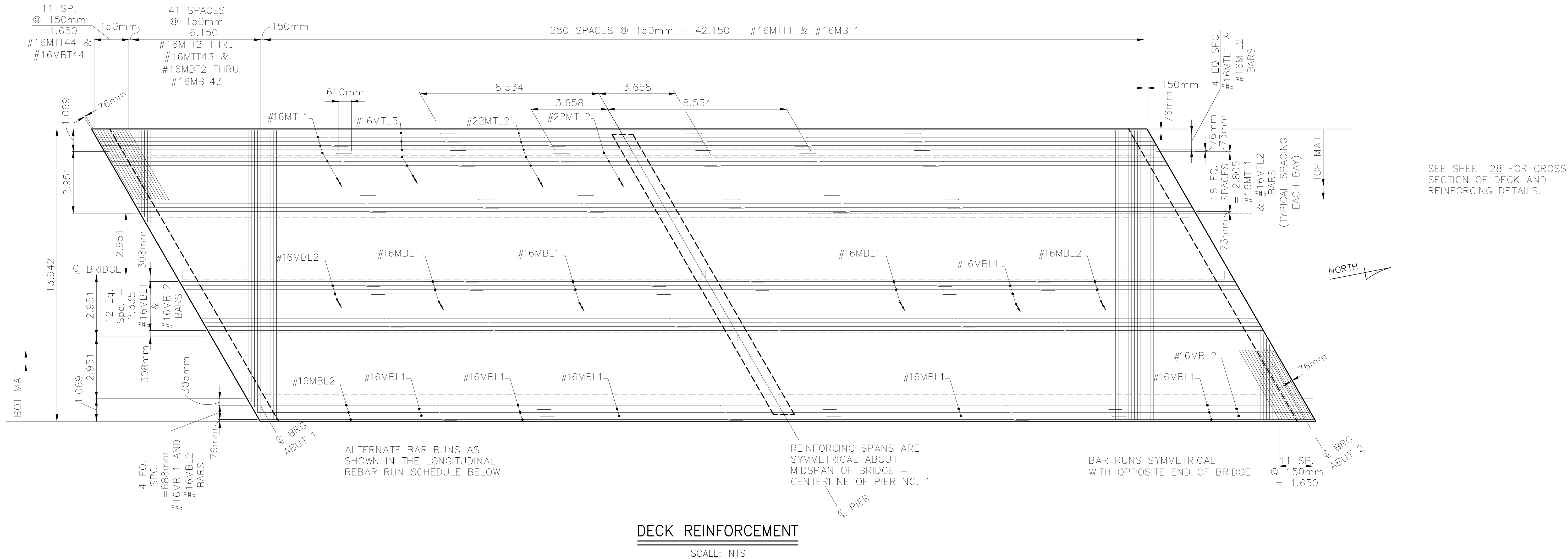
DEAD LOAD DEFLECTION AND BEAM CAMBER DIAGRAM
SCALE N.T.S.



NOTE:
TO COMPENSATE FOR DEAD LOAD DEFLECTIONS DUE TO WEIGHT OF SLAB AND SUPERIMPOSED DEAD LOADS, SET SCREEDS ABOVE FINISH GRADES BY DIMENSIONS (mm) SHOWN ABOVE.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF INDIAN AFFAIRS NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION	
BEAM DETAILS	
Designed by:	
Drawn by: RLC, cdh Date: 08/07/09	
Revised by: Date:	
File Name: N46_BeamDetails.dwg	

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N46	N46(1)1,2&4	32	58

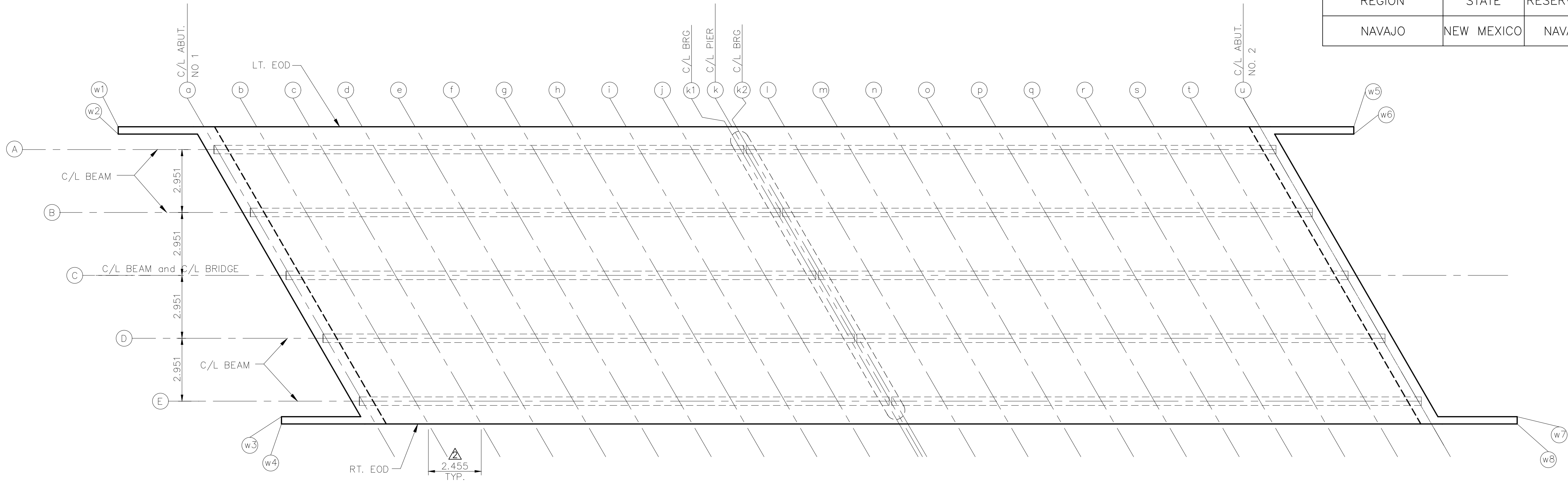


UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF INDIAN AFFAIRS NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION	
DECK REINFORCEMENT	
Designed by:	
Drawn by: RLC, rsh, cdh	Date: 08/07/09
Revised by:	Date:
File Name:	N46_Deck_Reinf.dwg



C:\CURRENT\PROJECTS\N46(1)_2010\Drawings\N46_012500CAD_012500Plan.dwg, 5/17/2010 3:53:08 PM, 5/17/2010 3:53:08 PM, 5/17/2010 3:53:08 PM

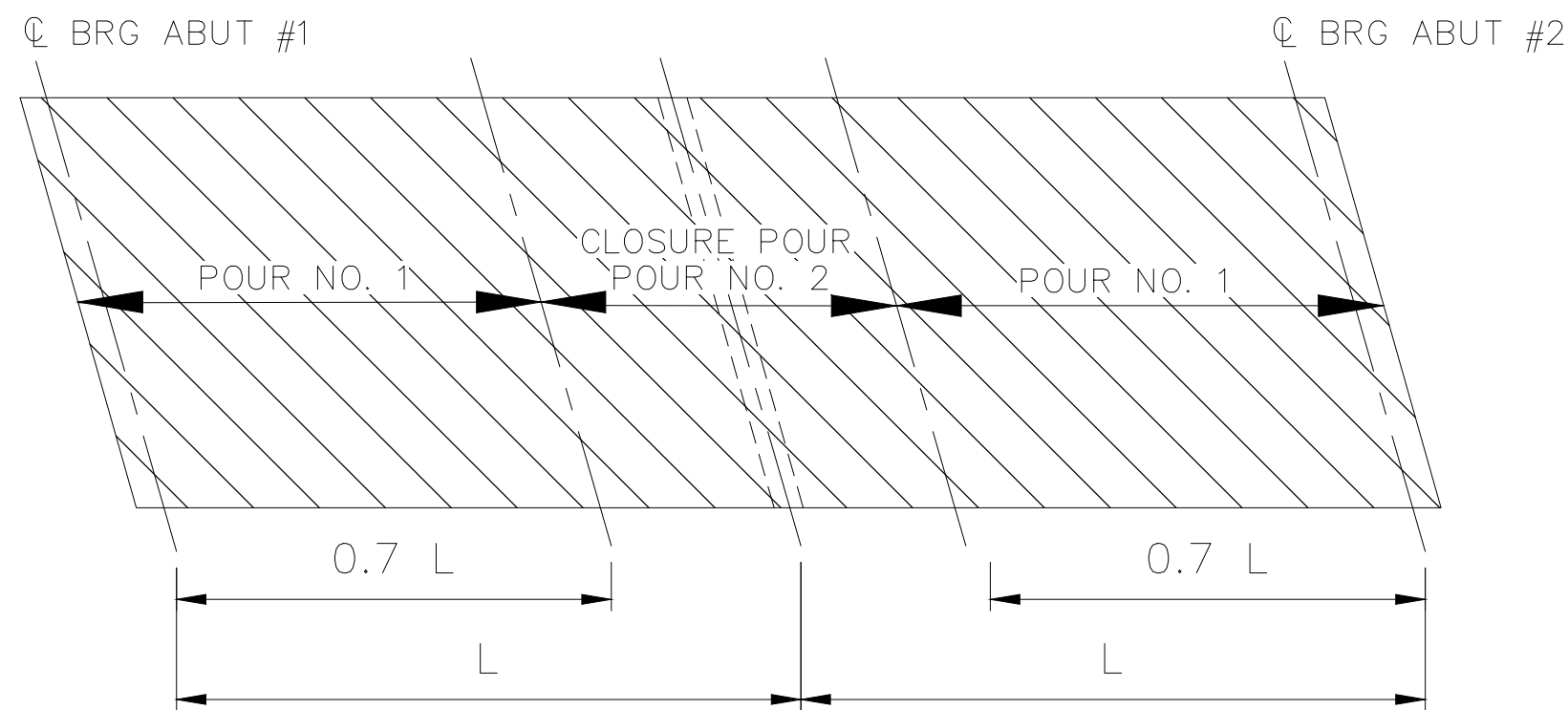
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N46	N46(1)1,2&4	33	58



REFERENCE DIAGRAM FOR ELEVATIONS AT 10TH POINTS

SCALE: N.T.S.

NOTE:
CONCRETE SHALL BE PLACED THE FULL WIDTH OF THE DECK SLAB AT A FORWARD RATE OF PROGRESS OF NOT LESS THAN 10 METERS PER HOUR. SET RETARDANT SHALL NOT BE USED IF THE ATMOSPHERIC TEMPERATURE AT THE TIME OF PLACEMENT IS LESS THAN 16° C (61° F).



CONCRETE DECK PLACEMENT DETAIL

TOP OF SLAB ELEVATIONS @ 10th POINTS

	a	b	c	d	e	f	g	h	i	j	k1	k	k2	l	m	n	o	p	q	r	s	t	u
LT. EOD	1978.776	1978.789	1978.801	1978.813	1978.826	1978.838	1978.850	1978.862	1978.875	1978.887	1978.899	1978.900	1978.901	1978.913	1978.925	1978.937	1978.950	1978.962	1978.974	1978.987	1978.999	1979.012	1979.024
A	1978.801	1978.813	1978.825	1978.838	1978.850	1978.862	1978.875	1978.887	1978.899	1978.911	1978.924	1978.925	1978.926	1978.937	1978.949	1978.962	1978.974	1978.987	1978.999	1979.011	1979.024	1979.036	1979.048
B	1978.868	1978.881	1978.893	1978.905	1978.918	1978.930	1978.942	1978.954	1978.967	1978.979	1978.991	1978.992	1978.993	1979.005	1979.017	1979.029	1979.042	1979.054	1979.066	1979.079	1979.091	1979.104	1979.116
C	1978.936	1978.948	1978.961	1978.973	1978.985	1978.997	1979.010	1979.022	1979.034	1979.046	1979.059	1979.060	1979.061	1979.072	1979.085	1979.097	1979.109	1979.122	1979.134	1979.146	1979.159	1979.171	1979.184
D	1978.885	1978.898	1978.910	1978.922	1978.935	1978.947	1978.959	1978.971	1978.984	1978.996	1979.008	1979.009	1979.010	1979.022	1979.034	1979.046	1979.059	1979.071	1979.083	1979.096	1979.108	1979.121	1979.133
E	1978.835	1978.847	1978.860	1978.872	1978.884	1978.896	1978.909	1978.921	1978.933	1978.945	1978.958	1978.959	1978.960	1978.971	1978.983	1978.996	1979.008	1979.021	1979.033	1979.045	1979.058	1979.070	1979.082
RT. EOD	1978.817	1978.829	1978.841	1978.854	1978.866	1978.878	1978.890	1978.903	1978.915	1978.927	1978.939	1978.940	1978.941	1978.953	1978.965	1978.978	1978.990	1979.002	1979.015	1979.027	1979.039	1979.052	1979.064

EOD = EDGE OF DECK

DECK ELEVATIONS AT 10TH POINTS

SCALE= N.T.S.

TOP OF WING WALL ELEVATION			
	STA	OFFSET	ELEVATION
w1	1+008.770	7.312 LT	1978.750
w2	1+008.770	6.970 LT	1978.753
w3	1+016.810	6.970 LT	1978.793
w4	1+016.810	7.312 RT	1978.790
w5	1+067.690	7.312 LT	1979.045
w6	1+067.690	6.970 LT	1979.048
w7	1+075.740	6.970 RT	1979.088
w8	1+075.740	7.312 RT	1979.085

UNITED STATES
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**DECK and WINGWALL
ELEVATIONS**

Designed by:

Drawn by: RLC, cdh Date: 80/07/09

Revised by: cdh Date: 06/22/10

File Name: N46_Deck_Elevations.dwg



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N46	N46(1)1,2&4	34	58

TYPICAL BRIDGE JOINT NOTES:

THE COST OF FURNISHING AND INSTALLING THESE JOINTS AND ALL MATERIALS SHALL BE CONSIDERED INCIDENTAL TO THE COST OF STRUCTURAL CONCRETE CLASS A(AE), ITEM NO. 55201-0200 AND NO DIRECT PAYMENT WILL BE MADE THEREFORE.

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-400 STRIP SEAL.
- b) E-POXY INDUSTRIES, INC. JOINT WITH A TYPE A STEEL EXTRUSION AND AEVA-SEAL BS 500 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 SETTING OF 50mm. ACTUAL OPENING DISTANCE WILL BE DETERMINED BY TEMPERATURE TABLE.

$\Delta L (\text{CONCRETE}) = L(M) * 0.0000108(M/M) * \text{CHANGE IN TEMPERATURE } (^{\circ}\text{C}), \text{ WHERE } L=28.0.$

3. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR THE JOINTS SHOWING ALL FABRICATION DETAILS AND MATERIAL SPECIFICATIONS ACCORDING TO SPECIFICATION REQUIREMENTS. (SEE NOTE NO. 5)

4. THE JOINTS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. A REPRESENTATIVE OF THE MANUFACTURER SHALL BE PRESENT AT THE SITE DURING INSTALLATION.

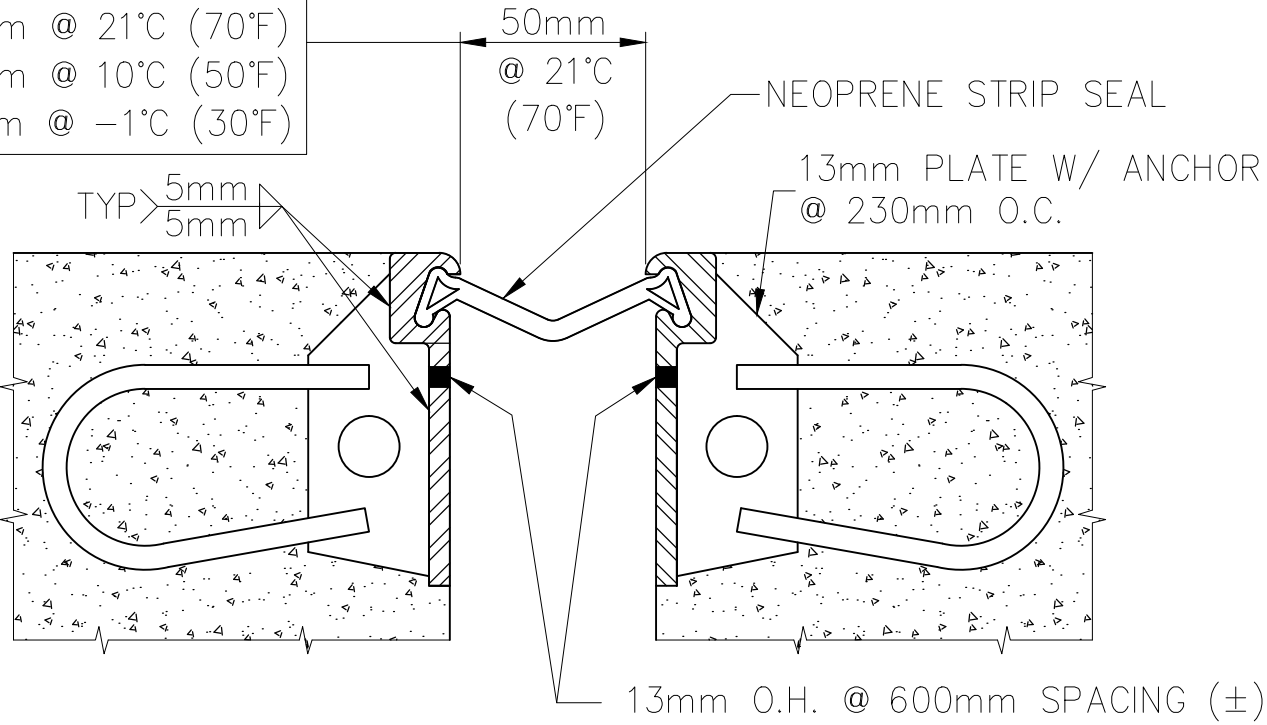
5. STEEL EXTRUSIONS RAILS, ANGLES AND COVER PLATE SHALL CONFORM TO AASHTO M 270M, GRADE 250, AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M298, CLASS 50 OR M232 AFTER FABRICATION. NEOPRENE STRIP SEAL SHALL CONFORM TO THE PHYSICAL PROPERTIES PRESCRIBED IN TABLE 1 AASHTO M220.

6. STEEL EXTRUSION RAILS AND ANGLES SHALL BE FABRICATED TO CONFORM TO THE LONGITUDINAL GRADE AND ROADWAY CROWN AT APPROACH SLABS ON SLEEPER FOOTINGS.

FIXED JOINT SEAL

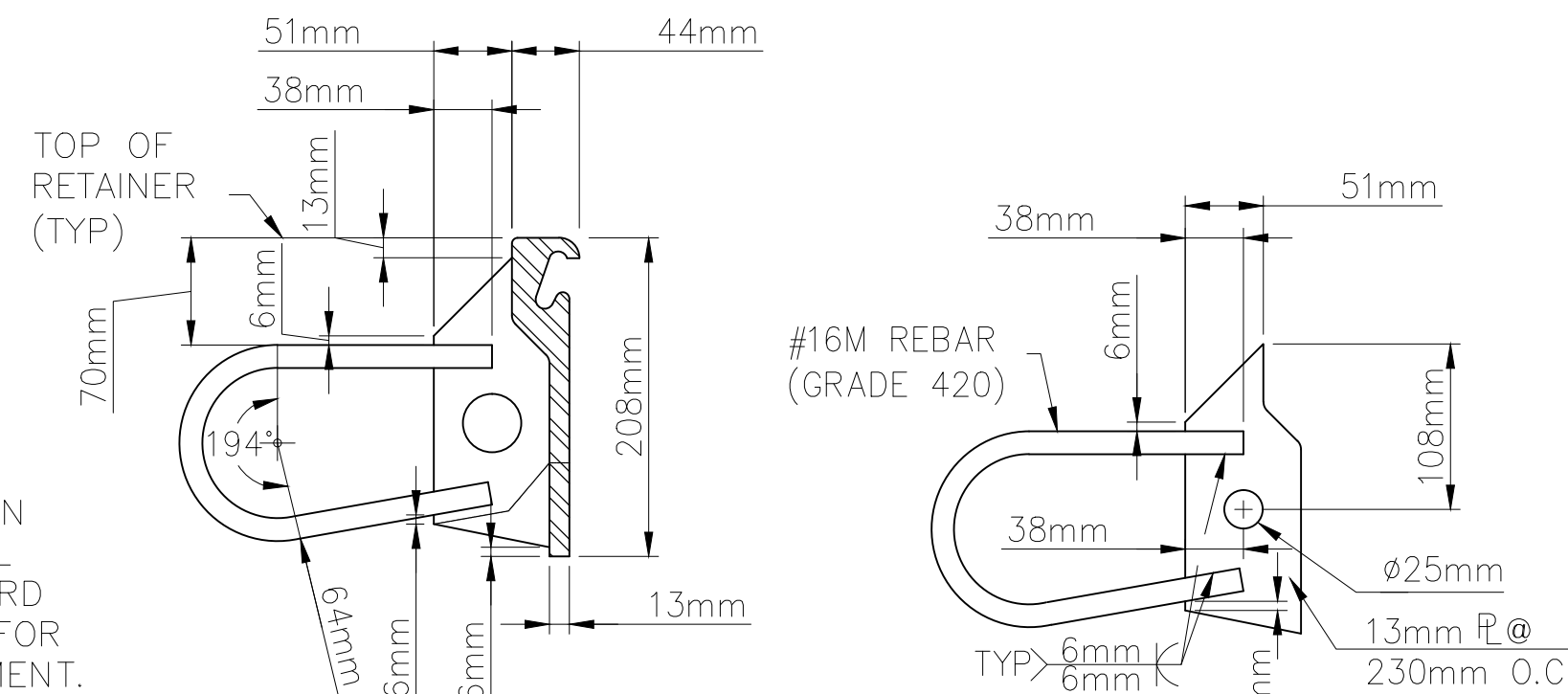
7. MATERIAL AND CONSTRUCTION OF JOINT SEALANT SHALL CONFORM TO THE REQUIREMENTS OF SECTION 712 OF FP-03. THE CONCRETE JOINT-SEALER SHALL MEET ALL REQUIREMENTS OF AASHTO M173 AND THE BACKER ROD SHALL MEET THE REQUIREMENTS OF ASTM D 5249, TYPE 1.

TEMPERATURE TABLE
46 mm @ 32°C (90°F)
50 mm @ 21°C (70°F)
54 mm @ 10°C (50°F)
58 mm @ -1°C (30°F)



EXPANSION JOINT TYPICAL SECTION

SCALE: NTS

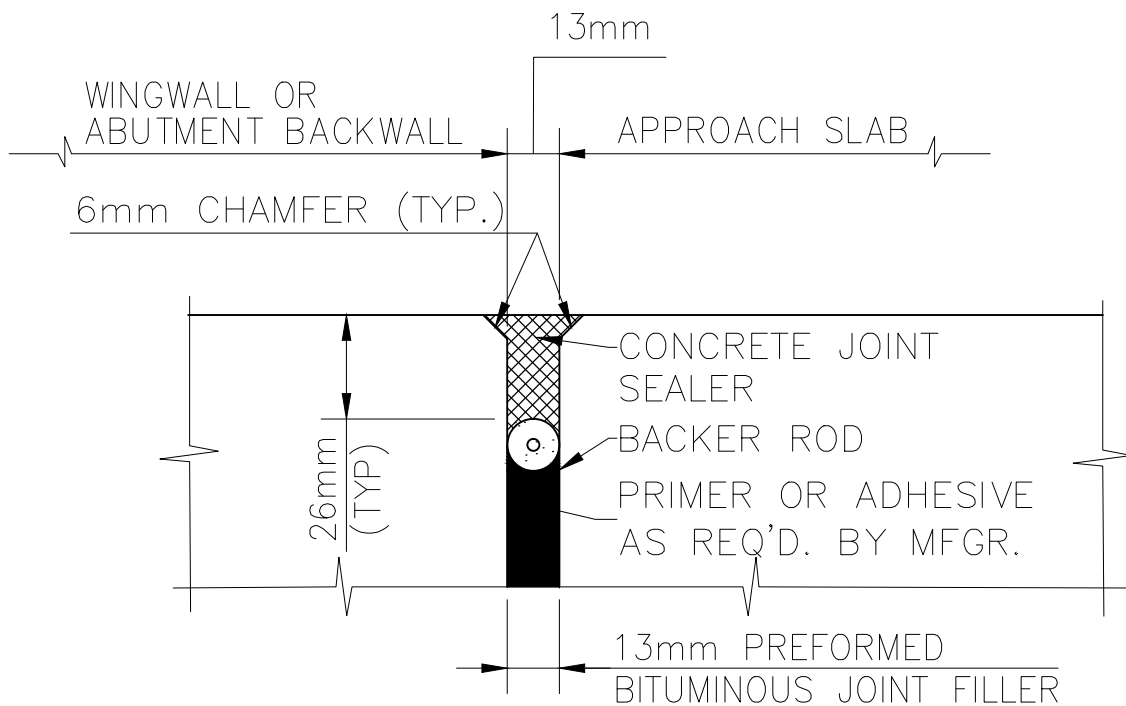


WATSON-BOWMAN & ACME

SCALE: NTS

ANCHOR DETAIL

SCALE: NTS



DETAIL 1

SCALE: NTS

NOSING ANGLE LENGTH = APPROACH SLAB WIDTH MINUS 50mm (25mm CLEAR ON EACH END)

8 mm ϕ HOLES @ 1.220 m o.c. IN VERTICAL LEG ONLY

L 76 x 76 x 9.5 mm

13mm ϕ x 203mm LONG ANCHOR @ 610mm o.c. (STAGGER W/ 152 mm ANCHORS)

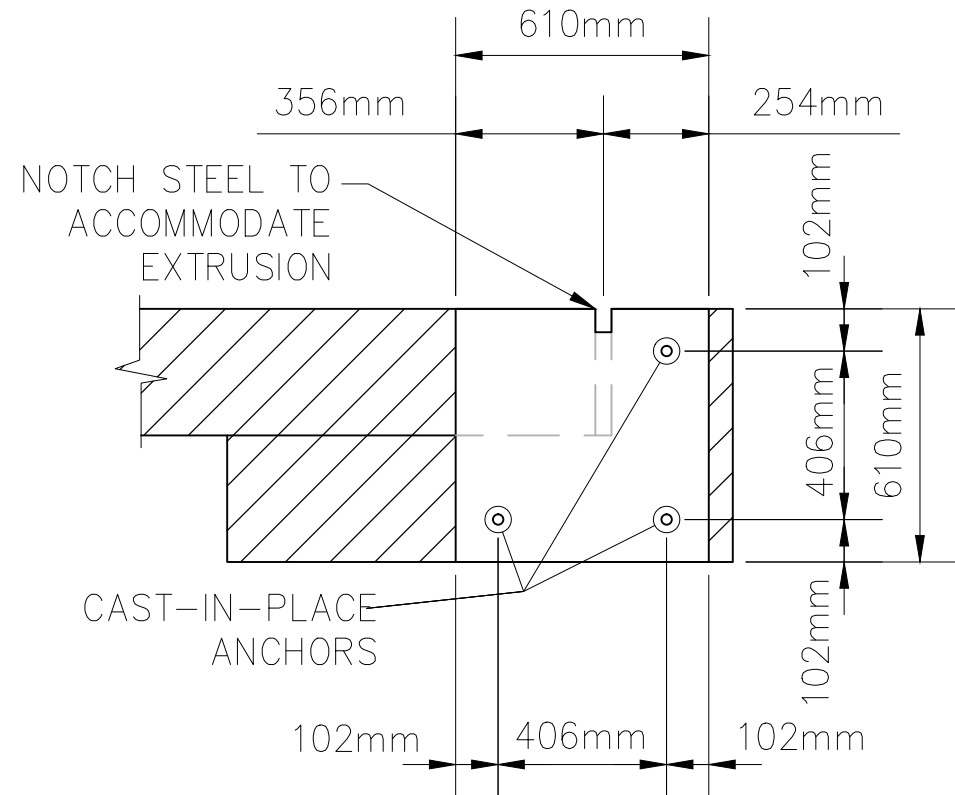
13mm ϕ x 152mm long ANCHOR @ 610 mm o.c. (STAGGER W/ 203mm ANCHORS)

NOTE: NOSING ANGLE TO MATCH ROADWAY CROWN. (PROVIDE AT FABRICATION)

NOTE: ANCHORS ATTACHED TO ANGLE WITH FULL PENETRATION WELD.

NOSING ANGLE DETAIL

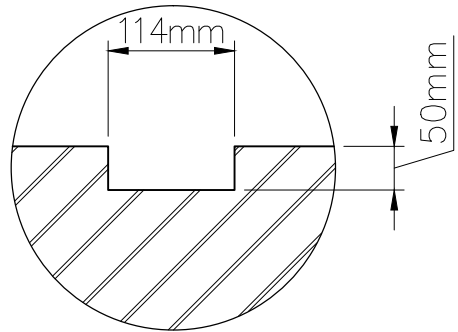
N.T.S.



COVER PLATE DETAIL

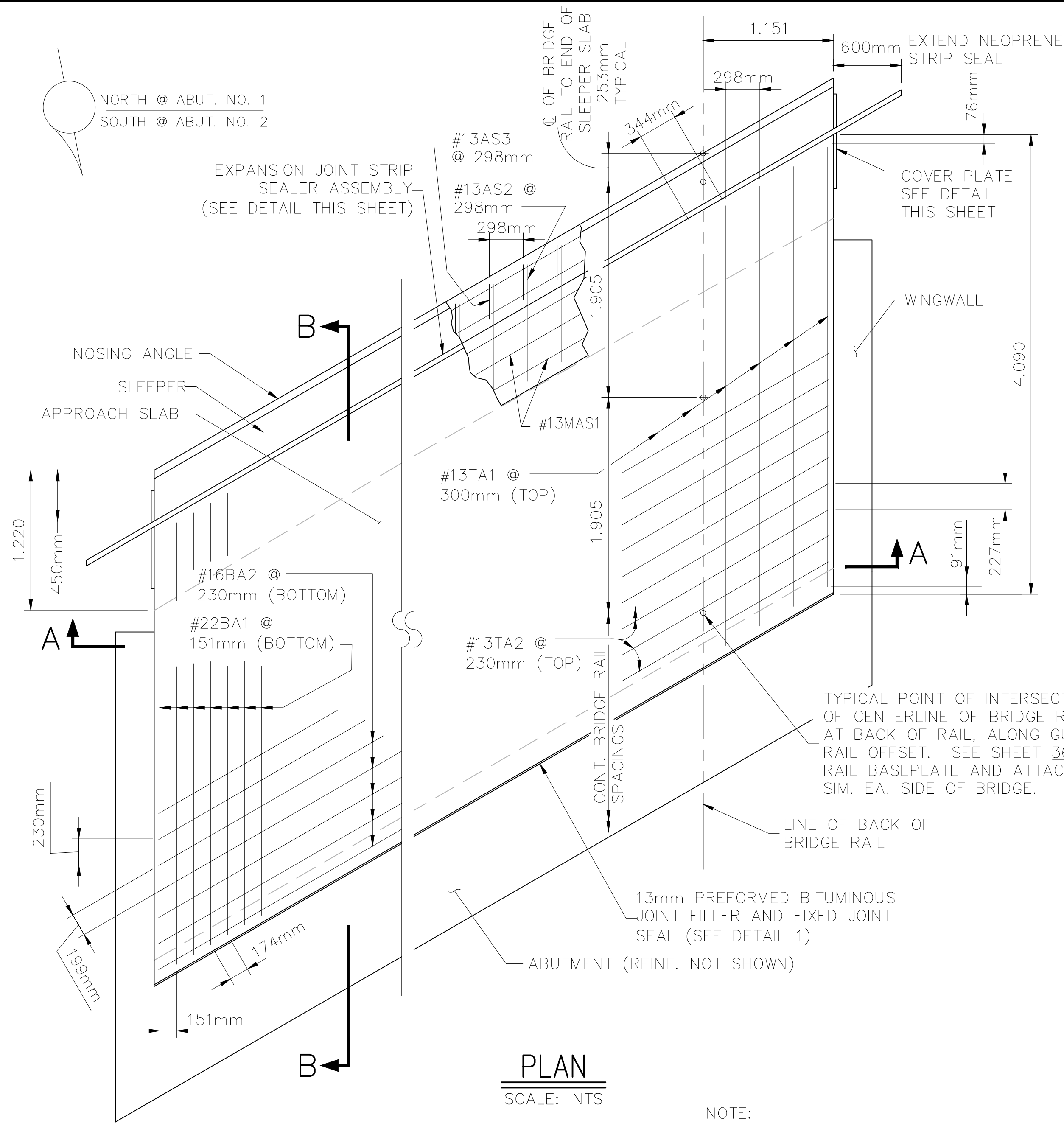
13mm PLATE THICKNESS

SCALE: N.T.S.



COVER PLATE NOTCH DETAIL

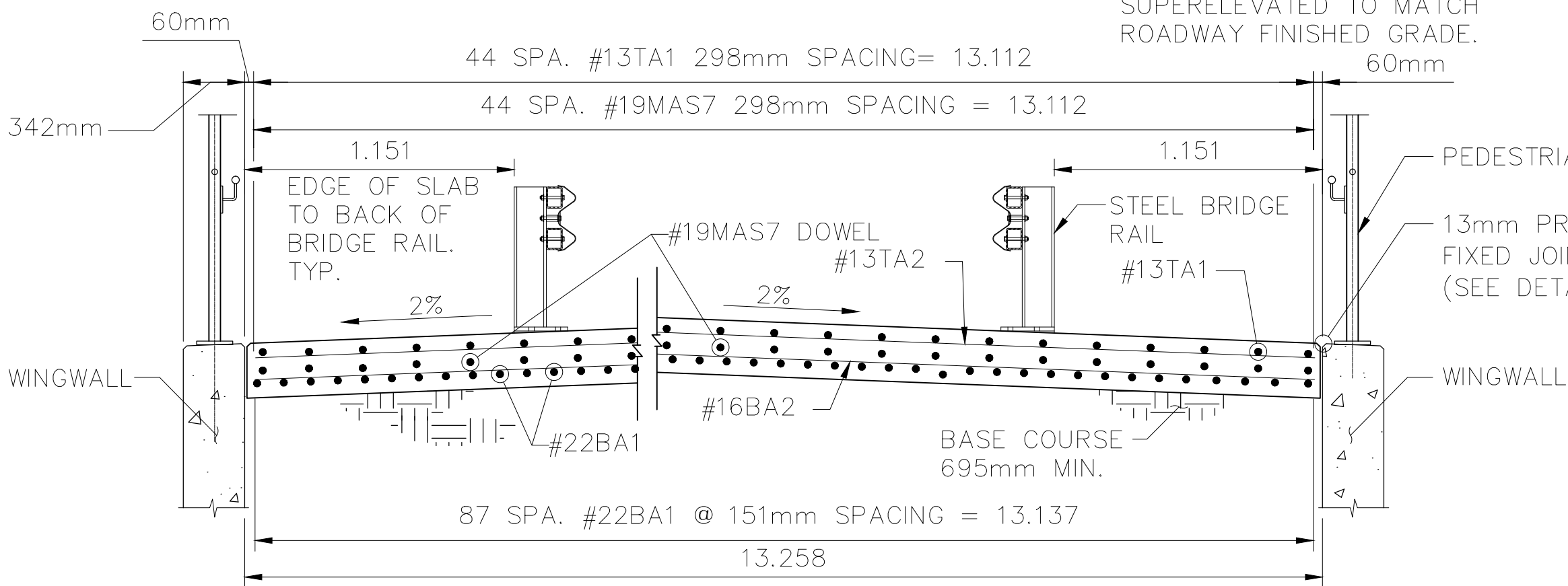
SCALE: N.T.S.



PLAN

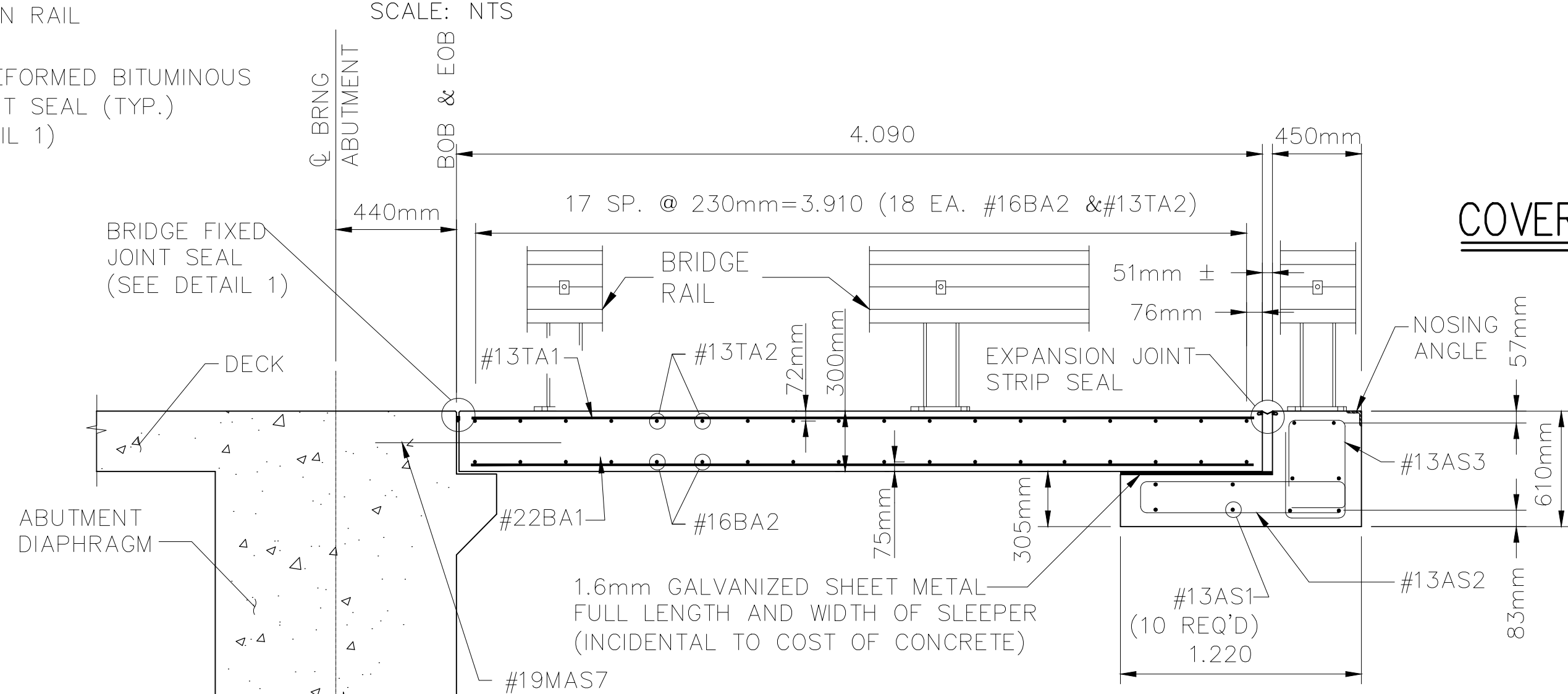
SCALE: NTS

NOTE: TOP SURFACE OF THE APPROACH SLAB SHALL BE CROWNED OR SUPERELEVATED TO MATCH ROADWAY FINISHED GRADE.



SECTION A-A (NORMAL TO ϕ RDWY.)

SCALE: NTS



SECTION B-B (PERPENDICULAR TO ϕ RDWY)

SCALE: NTS

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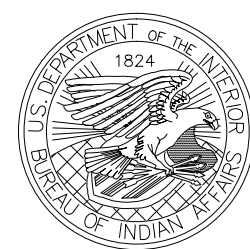
APPROACH
SLAB

Designed by:

Drawn by: RLC, cdh Date: 08/07/09

Revised by: Date:

File Name: N46_Approach_Slab.dwg



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N46	N46(1)1,2&4	35	58

REINFORCING BAR SCHEDULE

REINFORCING BAR SCHEDULE

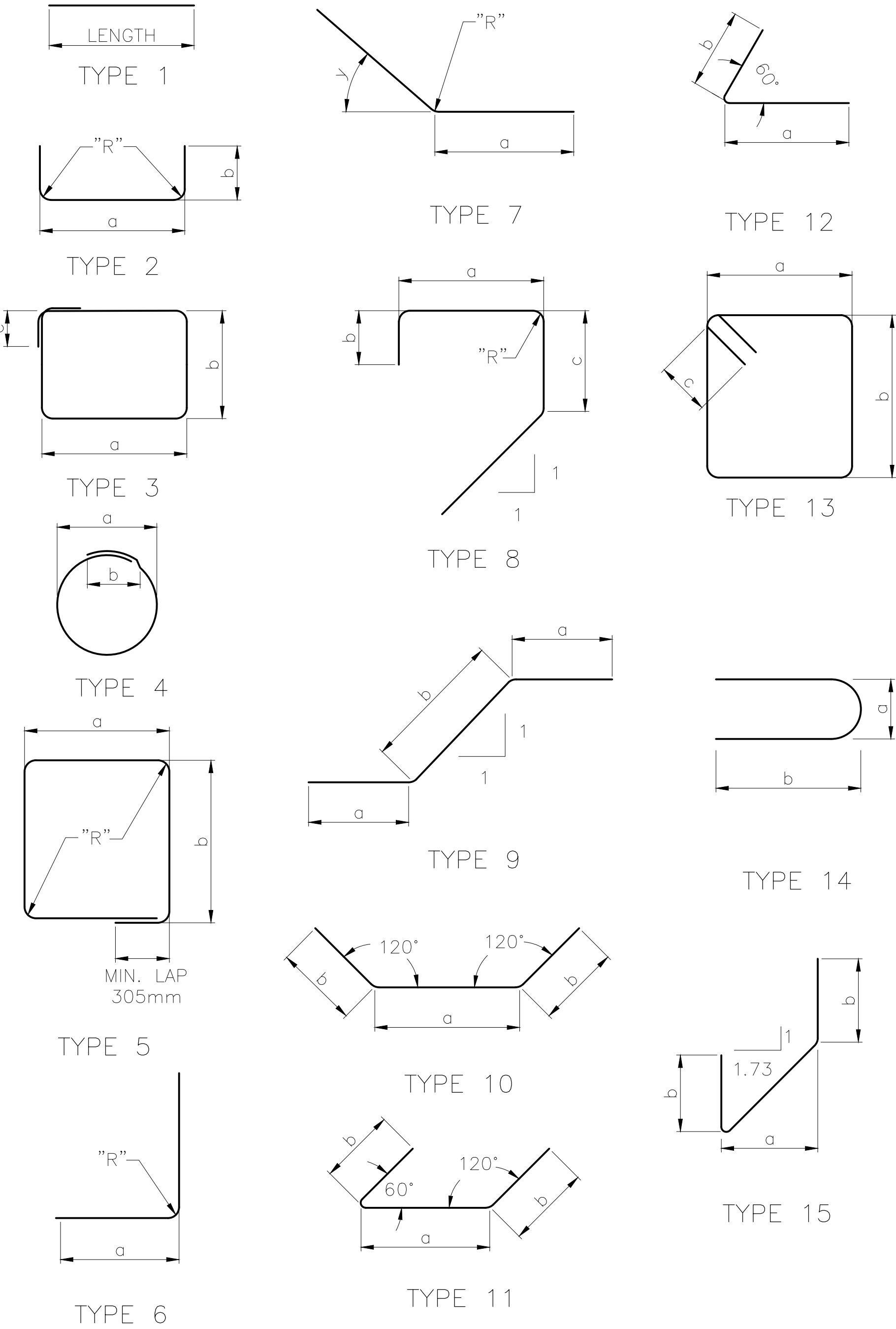
SUPERSTRUCTURE

	MARK	SIZE	TYPE	No. Reqd	LENGTH	a	b	c	d	REMARK
DECK (1 SET REQUIRED)										
	#16MTL1	16	1	172	11.670					*
	#22MTL2	22	1	86	12.210					*
	#16MTL3	16	1	86	16.560					*
	#16MBL1	16	1	186	14.200					*
	#16MBL2	16	1	62	9.370					*
	#16MTT1	16	1	281	13.790					*
	#16MBT1	16	1	281	13.790					*
	#16MTT2	16	1	2	13.662					*DECREASE BY
	THRU									EQUAL INCREMENTS
	#16MTT43	16	1	2	3.000					OF 260mm
	#16MBT2	16	1	2	13.662					*DECREASE BY
	THRU									EQUAL INCREMENTS
	#16MBT43	16	1	2	3.000					OF 260mm
	*#16MTT44	16	1	24	3.840					*
	*#16MBT44	16	1	24	3.840					*
ABUT. NO. 1 DIAPH										
	#16MD1	16	1	25	1.300					
	#16MD2	16	1	20	2.750					
	#16MD3	16	1	7	15.981					*
	#16MD4	16	3	44	3.704	762mm	940mm	150mm		*
	#16MD5	16	1	2	15.175					
	#16MD6	16	8	51	830mm	280mm	100mm	130mm		
ABUT. NO. 2 DIAPH										
	#16MD1	16	1	25	1.300					
	#16MD2	16	1	20	2.750					
	#16MD3	16	1	7	15.981					*
	#16MD4	16	3	44	3.704	762mm	940mm	150mm		*
	#16MD5	16	1	2	15.175					
	#16MD6	16	8	51	830mm	280mm	100mm	130mm		
PIER DIAPHRAGM										
	#16PD1	16	1	50	1.219					
	#16PD2	16	1	40	3.000					
	#16PD3	16	1	2	15.128					
	#16PD4	16	3	52	4.000	880mm	970mm	150mm		*
APPROACH SLAB @ ABUT. 1										
	#13TA1	13	1	45	3.910					*
	#13TA2	13	1	18	15.191					*
	#22BA1	22	1	88	3.903					*
	#16BA2	16	1	18	15.191					*
	#19MAS7	19	1	45	914mm					*
	#13AS1	13	1	10	15.191					*
	#13AS2	13	5	45	2.881	1.116	172mm			*
	#13AS3	13	5	45	1.945	470mm	350mm			*
APPROACH SLAB @ ABUT. 2										
	#13TA1	13	1	45	3.910					*
	#13TA2	13	1	18	15.191					*
	#22BA1	22	1	88	3.903					*
	#16BA2	16	1	18	15.191					*
	#19MAS7	19	1	45	914mm					*
	#13AS1	13	1	10	15.191					*
	#13AS2	13	5	45	2.881	1.116	172mm			*
	#13AS3	13	5	45	1.945	470mm	350mm			*

NOTE: DIMENSIONS ARE IN METERS UNLESS OTHERWISE NOTED.
BAR DIMENSIONS TO CENTERLINE OF BAR U.N.O.
* DENOTES EPOXY COATED REBAR

SUBSTRUCTURE

	MARK	SIZE	TYPE	No. Reqd	LENGTH	a	b	c	d	REMARKS
ABUT NO. 1 CAP										
	#29MA1	29	1	4	15.175					
	#29MA2	29	1	4	15.175					
	#16MA3	16	1	8	15.175					
	#16MA4	16	13	62	3.316	762mm	746mm	150mm		
	#16MA5	16	2	15	1.644	744mm	450mm			
	#19MA6	19	1	4	3.305					
	#19MA7	19	9	124	1.261	200mm	861mm			
	#16MA8	16	11	8	1.728	706mm	500mm			
ABUT NO. 2 CAP										
	#29MA1	29	1	4	15.175					
	#29MA2	29	1	4	15.175					
	#16MA3	16	1	8	15.175					
	#16MA4	16	13	62	3.316	762mm	746mm	150mm		
	#16MA5	16	2	15	1.644	744mm	450mm			
	#19MA6	19	1	4	3.305					
	#19MA7	19	9	124	1.261	200mm	861mm			
	#16MA8	16	11	8	1.728	706mm	500mm			
PIER CAP										
	#29PA1	29	1	4	15.308					
	#29PA2	29	1	4	15.308					
	#16PA3	16	1	8	15.308					
	#16PA4	16	13	63	3.718	896mm	848mm	150mm		
	#16PA5	16	2	17	1.761	861mm	450mm			
	#19PA6	19	1	4	3.253					
	#19PA7	19	9	64	1.400	200mm	1.000			
	#16PA8	16	11	8	2.080	880mm	600mm			
PIER WALL										
	#19PW1	19	1	112	5.088					
	#19PW2	19	14	36	1.757	591mm	710mm			
	#19PW3	19	1	2	14.575					17
	THRU									EQUAL INCREMENTS
	#19PW20	19	1	2	16.275					OF 100mm
WING WALL BARS @ ABUT. 1										
	#22WW1	22	1	12	4.067					FIELD CUT SHORT LEG
	#22WW2	22	1	4	3.874					DECREASE BY
	THRU									EQUAL INCREMENTS
	#22WW9	22	1	4	1.207					OF 381mm
	#16WW10	16	7	4	3.550	3.257	350mm			y = SEE SHEET 27
	#16WW11	16	1	16	1.563					
	#16WW12	16	1	4	1.520					
	THRU									DECREASE BY
	#16WW21	16	1	4	462mm					EQUAL INCREMENTS
	#22WW22	22	10	7	2.500	900mm	800mm			OF 127mm
	#22WW23	22	7	7	2.000	1.000	1.000			y = 60°
	#22WW24	22	12	7	1.660	830mm	830mm			
	#22WW25	22	7	7	1.660	830mm	830mm			y = 60°
WING WALL BARS @ ABUT 2										
	#22WW1	22	1	12	4.067					FIELD CUT SHORT LEG
	#22WW2	22	1	4	3.874					DECREASE BY
	THRU									EQUAL INCREMENTS
	#22WW9	22	1	4	1.207					OF 381mm
	#16WW10	16	7	4	3.550	3.257	350mm			y = SEE SHEET 27
	#16WW11	16	1	16	1.563					
	#16WW12	16	1	4	1.520					
	THRU									DECREASE BY
	#16WW21	16	1	4	462mm					EQUAL INCREMENTS
	#22WW22	22	10	7	2.500	900mm	800mm			OF 127mm
	#22WW23	22	7	7	2.000	1.000	1.000			y = 60°
	#22WW24	22	12	7	1.660	830mm	830mm			
	#22WW25	22	7	7	1.660	830mm	830mm			y = 60°



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

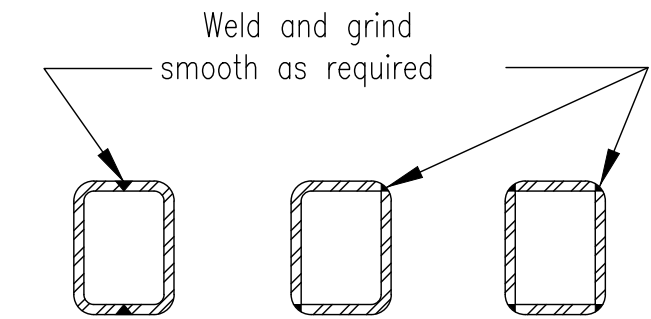
REINFORCING
SCHEDULE

Designed by:
Drawn by: RLC, rsh Date: 9-05
Revised by: Date:
File Name: N46_Rnfschd.dwg

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N46	N46(1)1,2&4	36	58

GENERAL NOTES

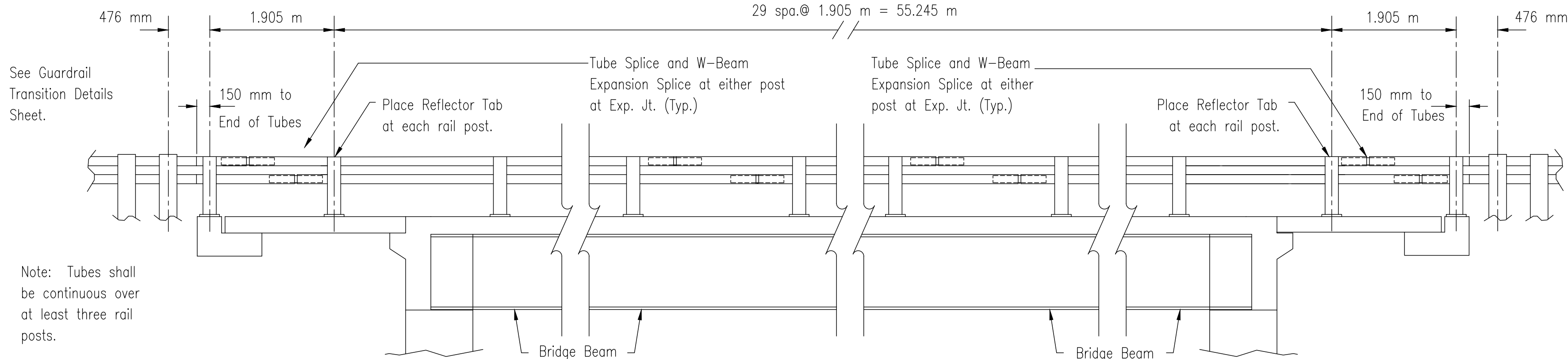
- Panel lengths of tube members shall be attached continuously to a minimum of three posts (except at abutments with expansion joints). Tube splice assemblies shall be provided at a 15 m maximum spacing throughout the bridge railing.
- Rail posts shall be placed as shown and perpendicular to the adjacent 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.
- All nuts, bolts, washers, anchorage plates, bottom plates and necessary hardware are considered as part of the rail for payment.
- All steel components except reinforcing steel and bolt anchorage plates shall be galvanized unless otherwise shown in plans.
- Anchor bolts shall be M20x2.5 AASHTO M 164M, Type 1, galvanized bolts. Each bolt shall have a hardened steel washer and a 51 mm plain steel washer, M293M, galvanized. Nuts shall conform to AASHTO M291M Class 10S, Class 2A or 2B fit tolerances and be heavy hex, galvanized nuts.
- All tubes and tube sleeve dimensions shall be as shown in the Tube Sleeve Table. All posts, plates and shims shall conform to AASHTO M270M, Grade 250.
- All W-Beam and W-Beam connection hardware shall conform to the requirements of AASHTO M180M, Class A, Type 1, galvanized.
- Shop drawings shall be submitted for approval at least 14 days prior to the fabrication of the bridge rail components.
- Selected dimensions shown in dual dimensions.
- Furnishing and placement of Yellow Reflective Sheeting and Reflective tabs, ASTM A1011M, Class CS, galvanized, shall be considered incidental to Item 61701-500 and no direct payment shall be made therefore.



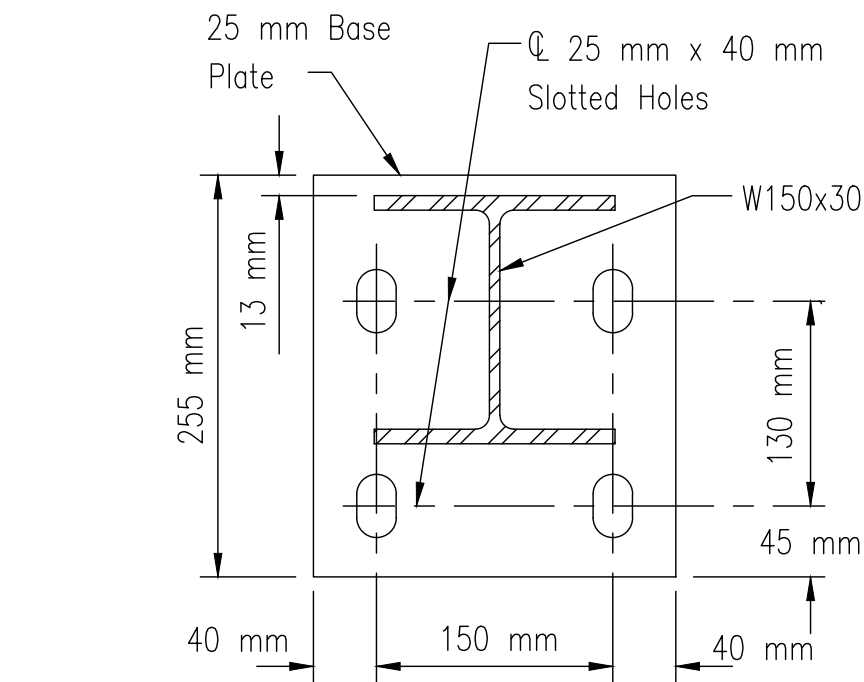
SLEEVE FABRICATION OPTIONS

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

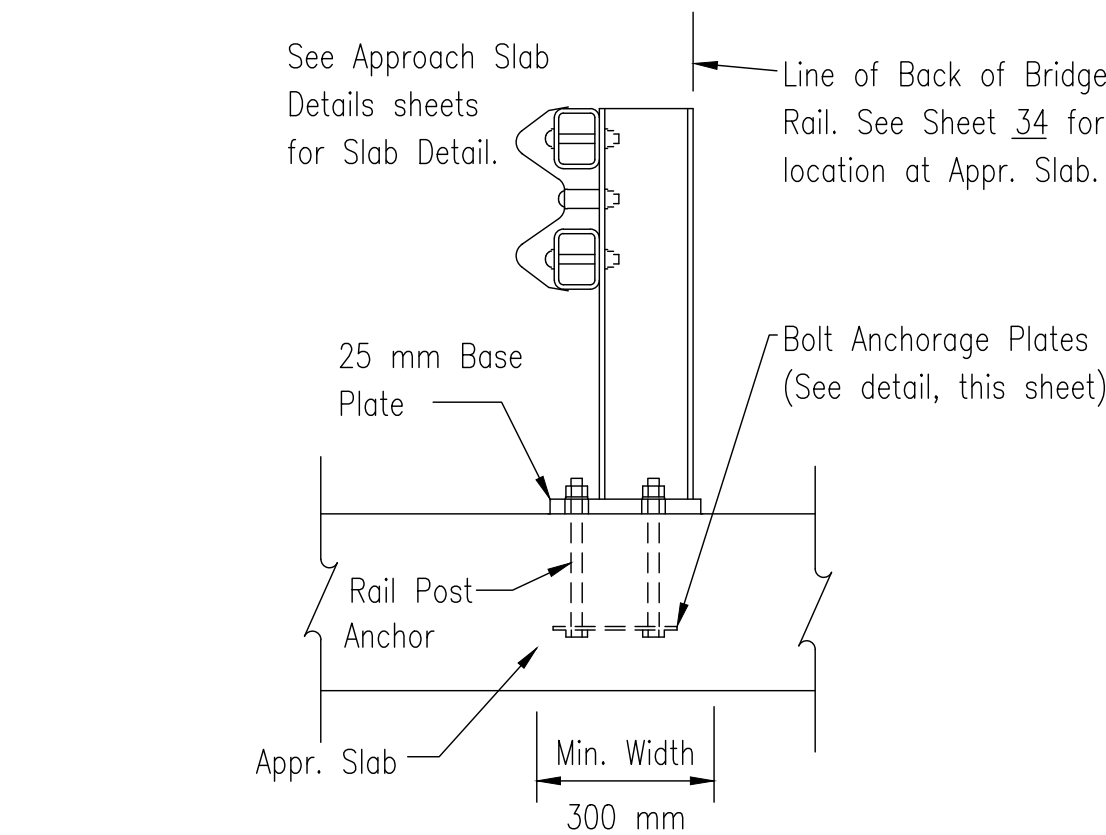
Note: Other sections of equal or greater strength are acceptable for sleeves.



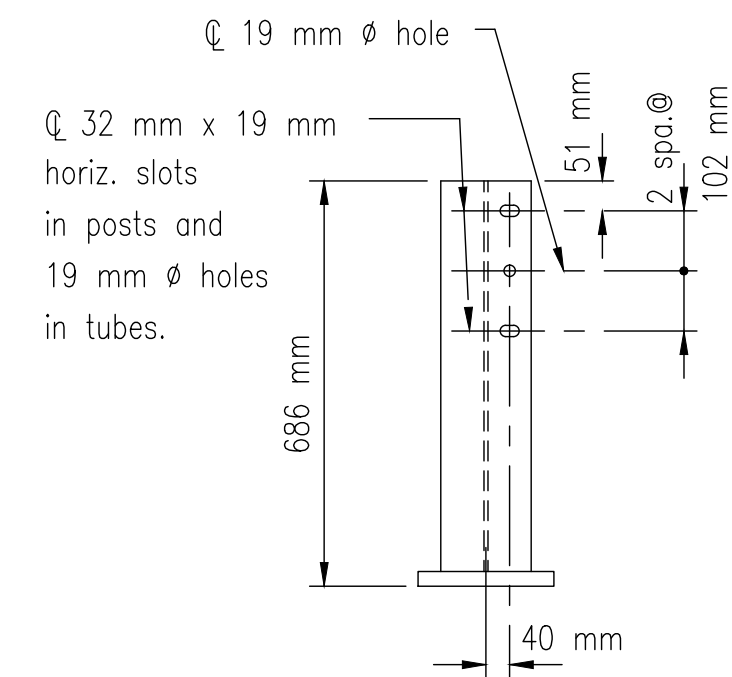
BRIDGE RAIL ELEVATION
N.T.S.



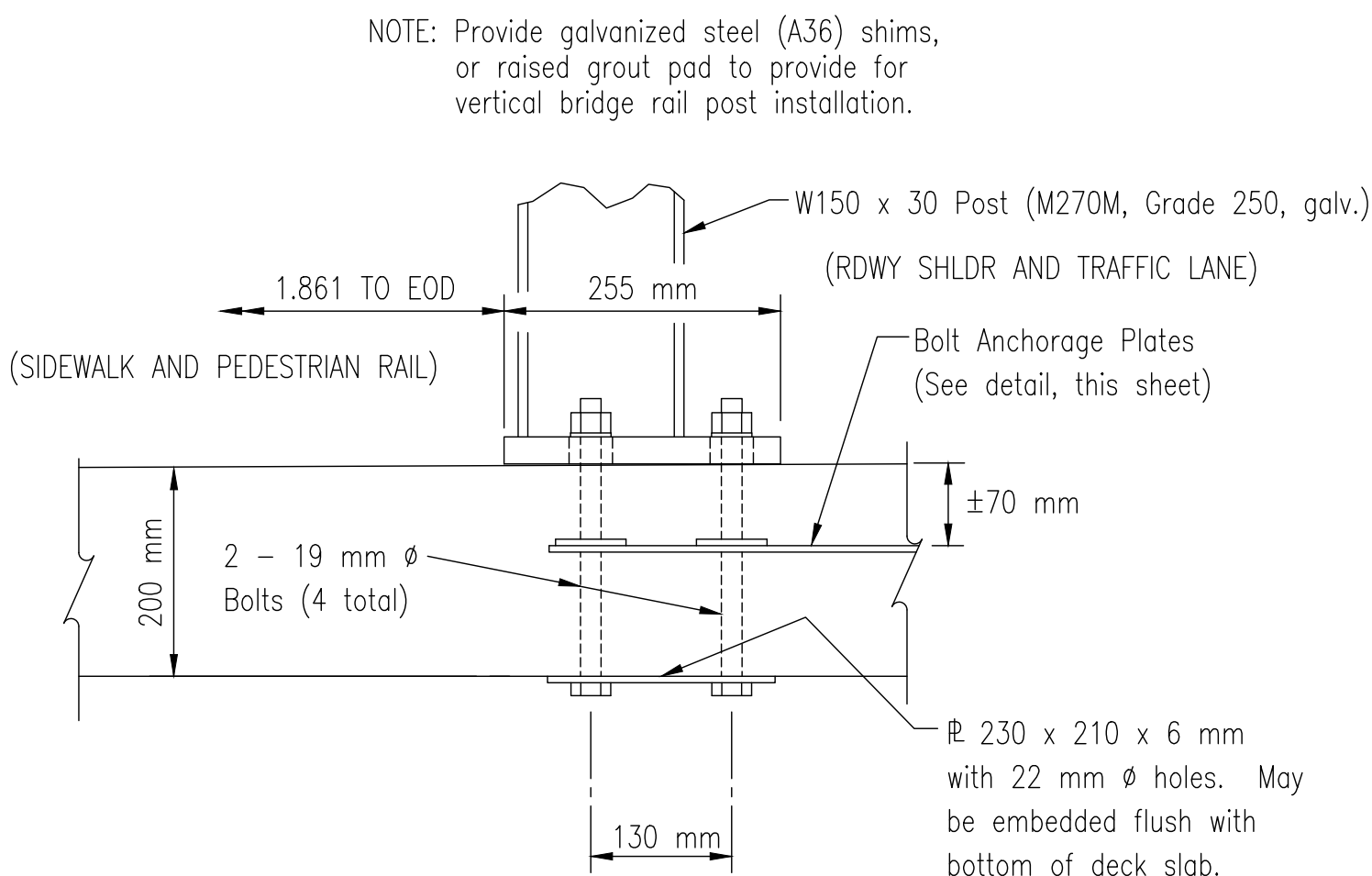
BASEPLATE DETAIL
(AASHTO M270M, Grade 250, galv.)



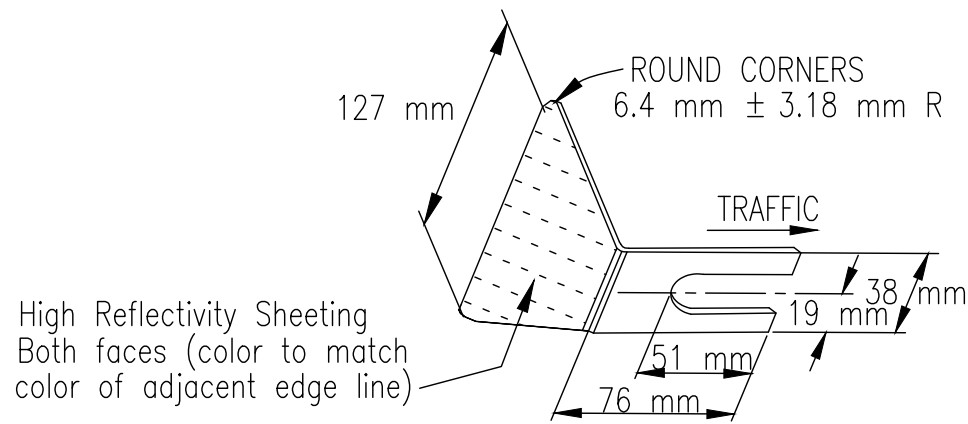
APPROACH SLAB
INSTALLATION



BRIDGE RAIL POST FOR
CONCRETE DECK
AND WINGWALL



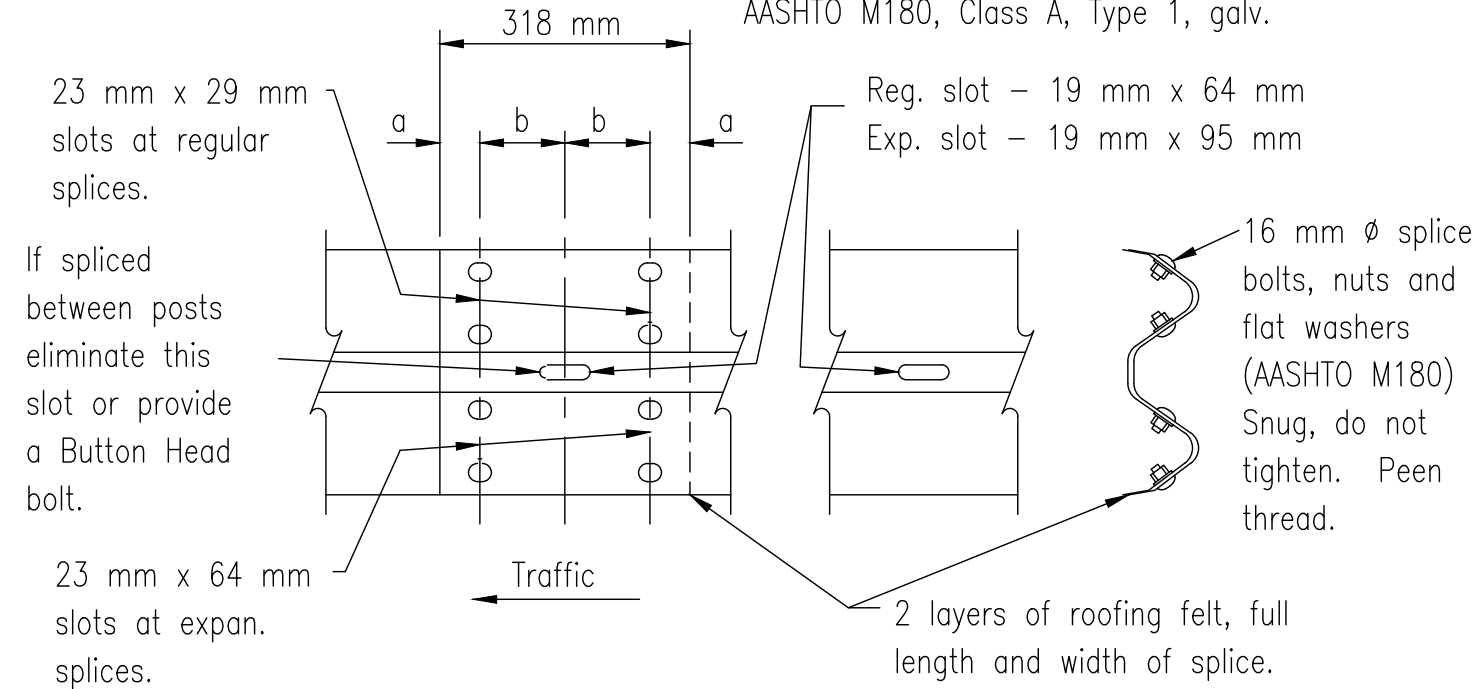
CONCRETE DECK INSTALLATION DETAILS



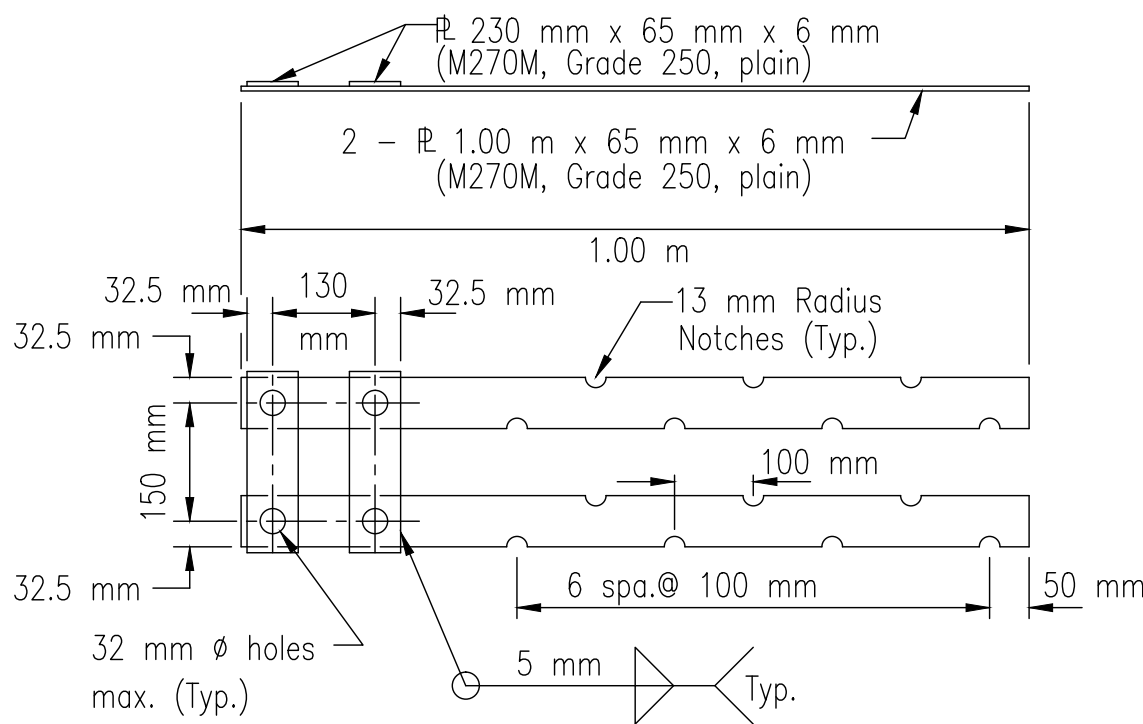
REFLECTOR TAB DETAIL
SHEETING ON BOTH SIDES

SPLICE	a	b
Regular	51 mm	108 mm
Expansion	70 mm	89 mm

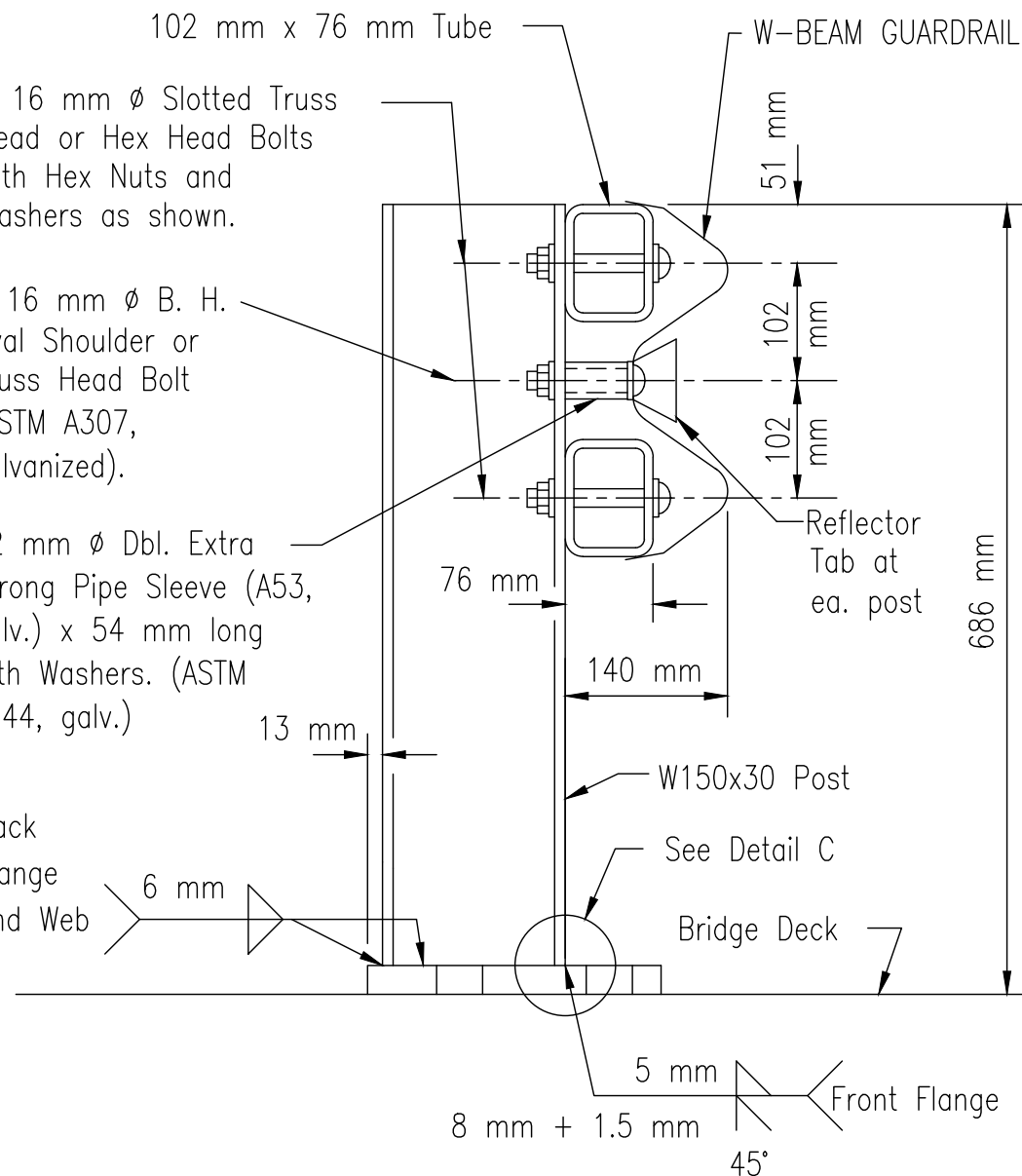
Note: W-Beam shall conform to AASHTO M180, Class A, Type 1, galv.



W-BEAM RAIL DETAILS

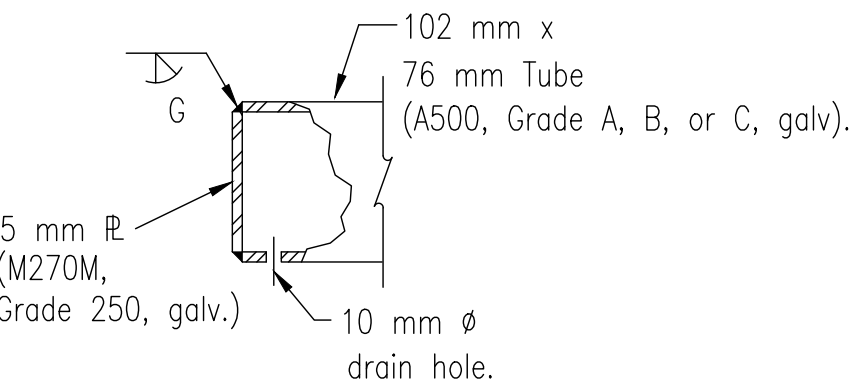


BOLT ANCHORAGE PLATES

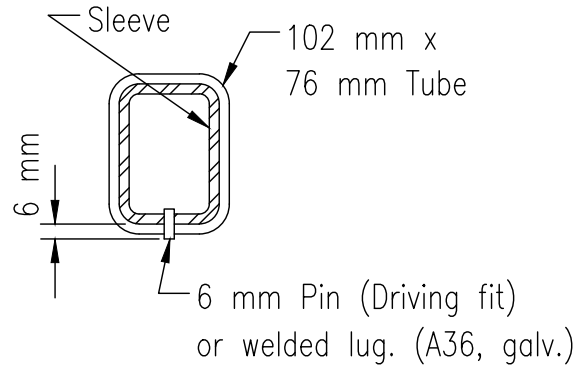


ELEVATION OF RAIL POST

Note: In lieu of Front Flange Weld shown, a 9.5 mm fillet weld all around including edges of flange may be used.

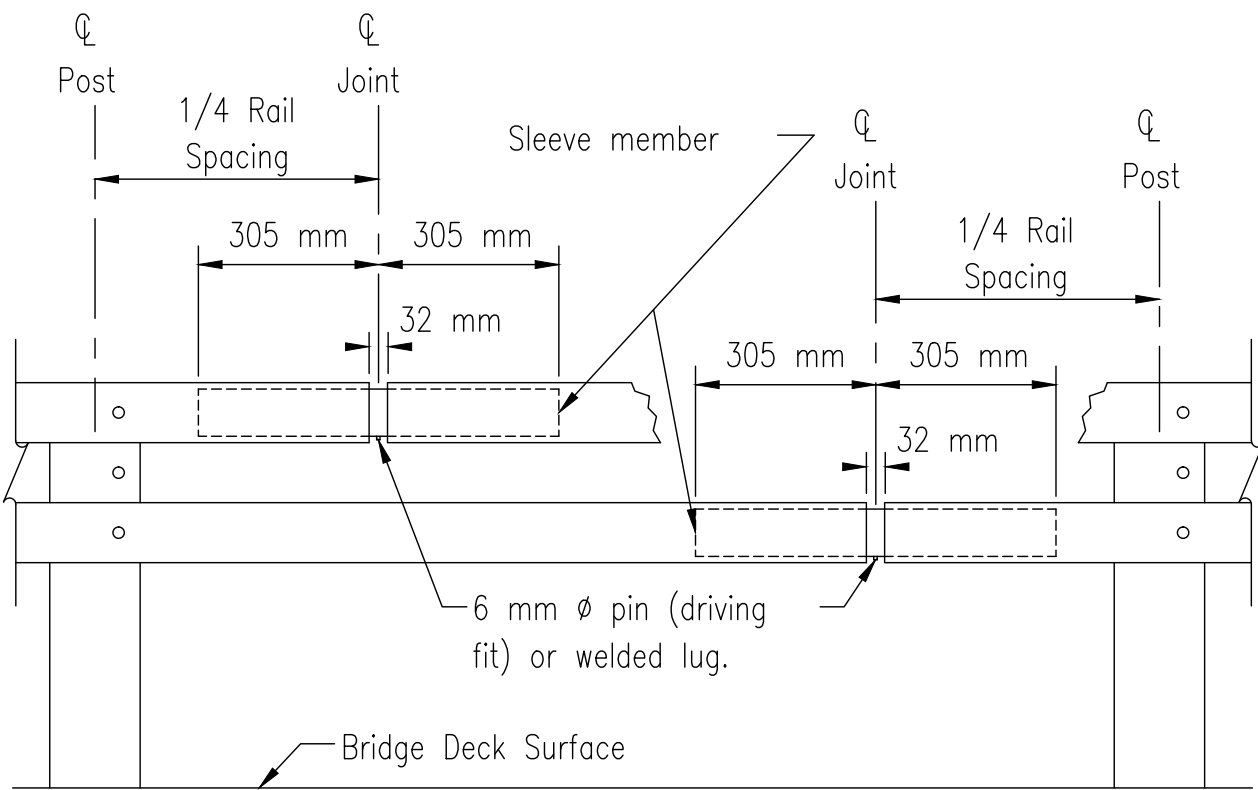


TUBE END CAP



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



TUBE SPLICE DETAILS

Note: W-Beam Rail not shown.

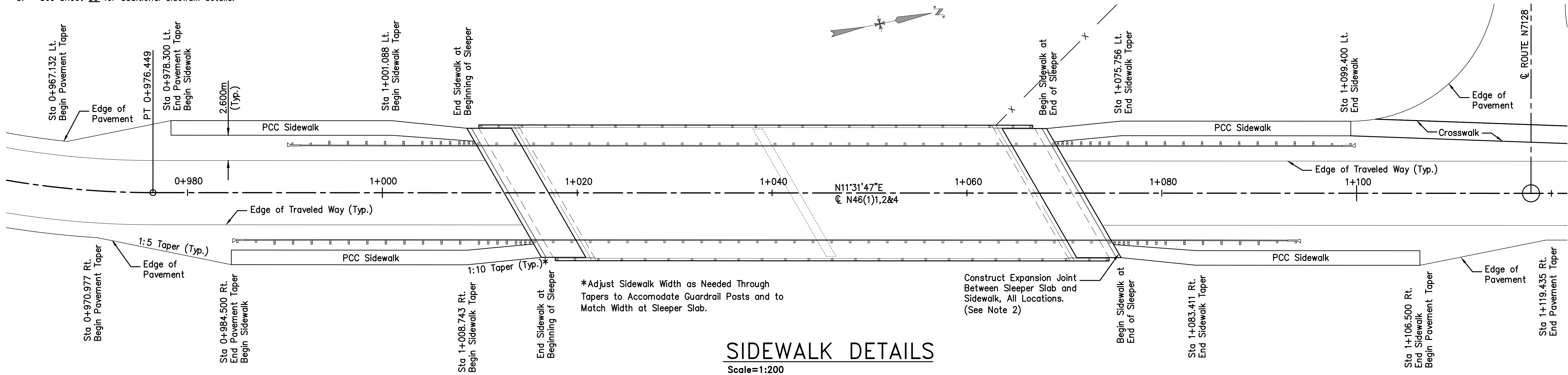
UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF INDIAN AFFAIRS NAVAJO REGION OFFICE * DIVISION OF TRANSPORTATION	
STEEL BRIDGE RAIL	
Designed by: NRO-DOT	
Drawn by: RSH	Date: 08/07/09
Revised by:	Date:
File Name: STD-Steel_brdg_rail.dwg	



NOTES

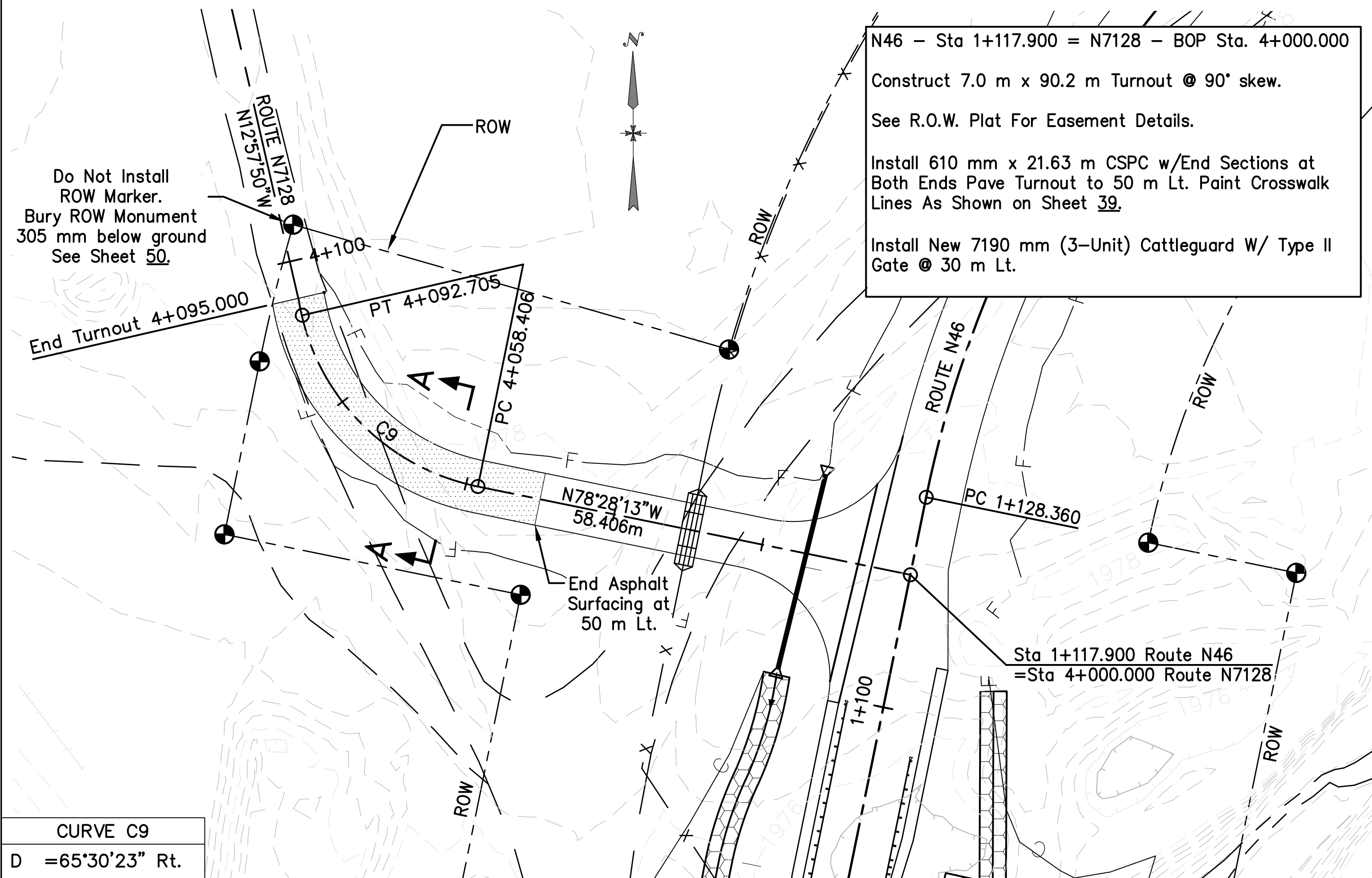
- Construct Sidewalk Joints In Accordance With Subsection 615.04(a) of FP-03, Except the Maximum Spacing of Expansion Joints Shall Be 6 Meter, and Contraction Joints Shall Be Spaced at 1.5 m Intervals.
- Joints Between Sidewalks and Sleeper Slabs Shall Be In Accordance With Subsection 615.04(a)(1), Expansion Joints, of FP-03.
- See Sheet 39 for additional sidewalk details.

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N46	N46(1)1,2&4	38	58



SIDEWALK DETAILS

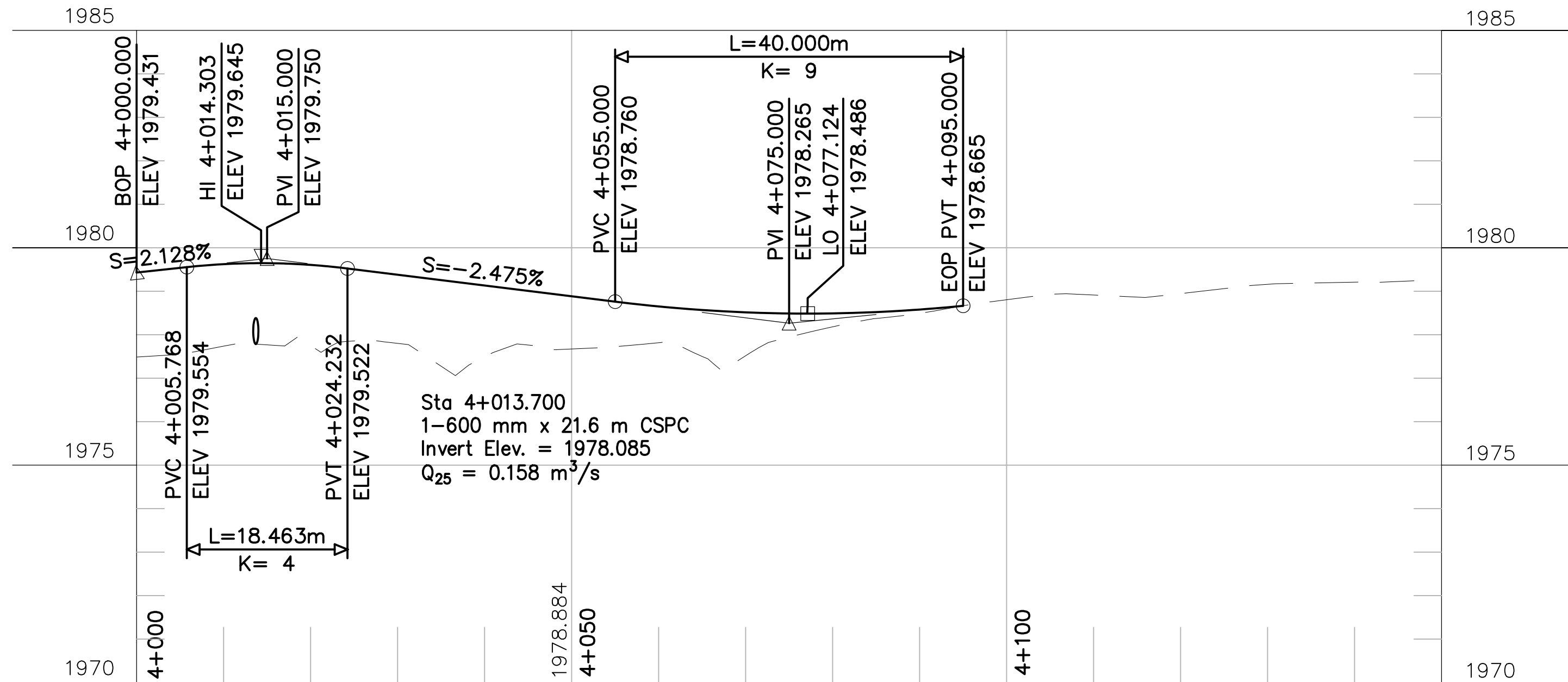
Scale=1:200



CURVE C9				
D = 65°30'23" Rt.				
Dc = 190°59'09"				
R = 30.000m				
T = 19.299m				
L = 34.299m				
e = NC				
PI				
STA = 4+077.705				
N = 551590.185				
E = 846949.712				
N7128 ALIGNMENT				
ALIGN POINT	STATION	BEARING	NORTHING	EASTING
BOP Turnout	4+000.000	N78°28'13"W	551574.654	847025.849
PC C9	4+058.406	N78°28'13"W	551586.328	846968.621
PI C9	4+077.705	N12°57'50"W	551590.185	846949.712
PT C9	4+092.705	N12°57'50"W	551608.992	846945.382
EOP Turnout	4+095.000	N12°57'50"W	551611.229	846944.867

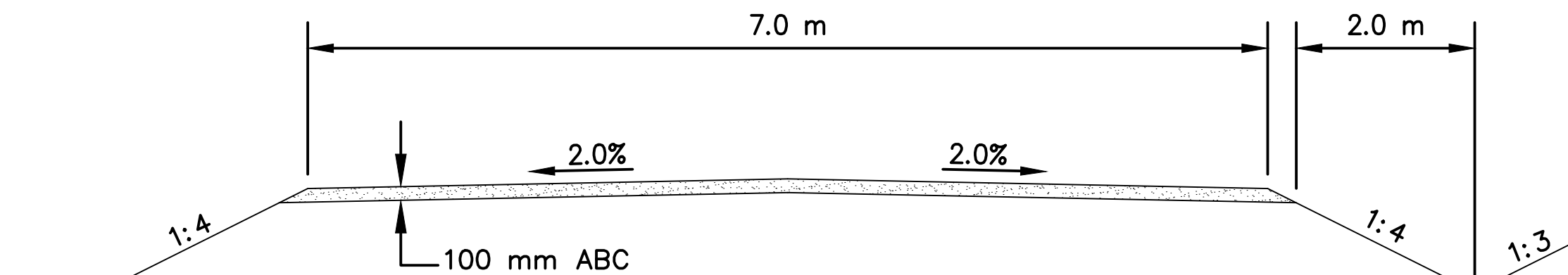
N7128 PLAN

Scale=1:500



N7128 PROFILE

Scale=1:500 H
Scale=1:100 V



SECTION A-A

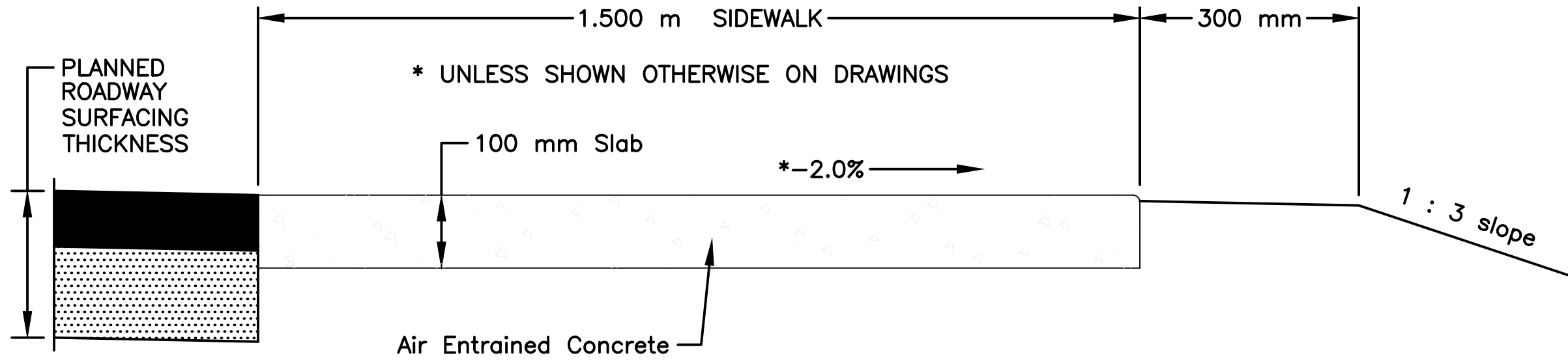
Sta 4+050.000 to Sta 4+095.000
Use Typical Type "A" Turnout Details, Sheet 39,
From Sta 4+004.800 to 4+050.000

From Sta 4+085.000 to Sta 4+095.000
Taper ABC & Ditch Lines To Match
Existing Road/Ditch Section.

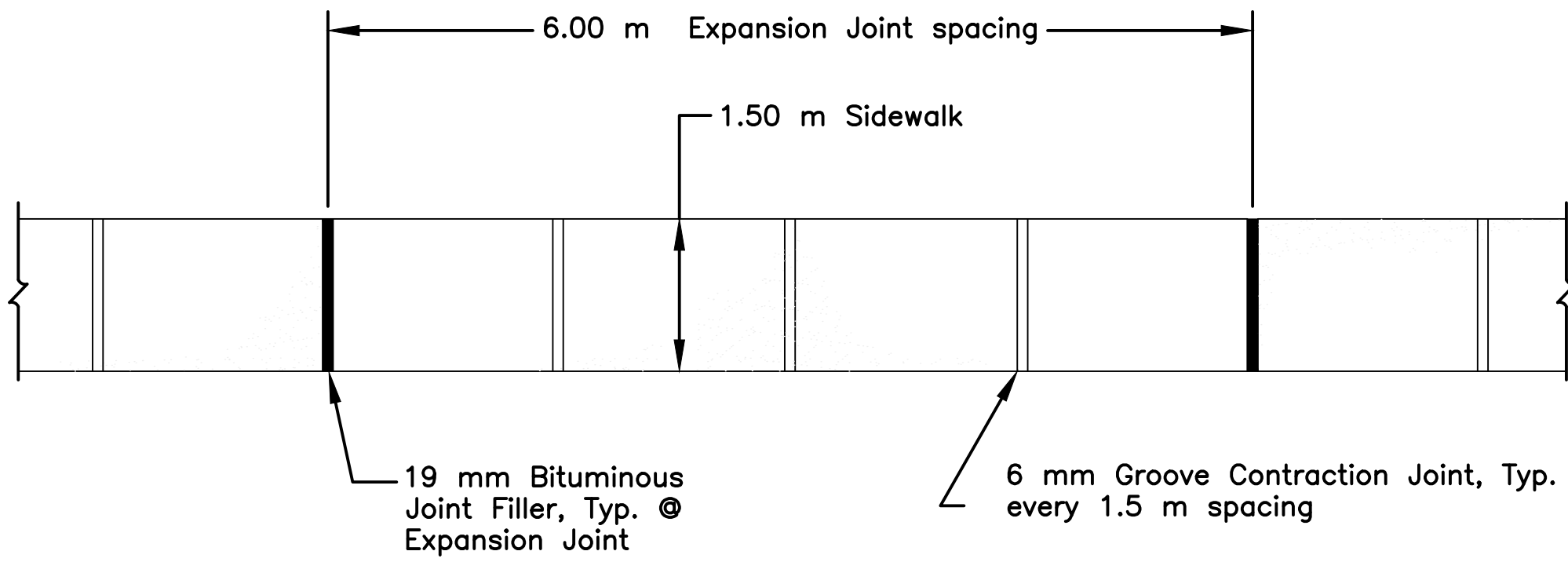
UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF INDIAN AFFAIRS NAVAJO REGION OFFICE * DIVISION OF TRANSPORTATION	
CONSTRUCTION & SIDEWALK DETAILS	
Designed by: RDL	
Drawn by: RDL, cdh Date: 08/25/09	
Revised by: Date:	
File Name: N46_Construction Details	

GENERAL NOTES

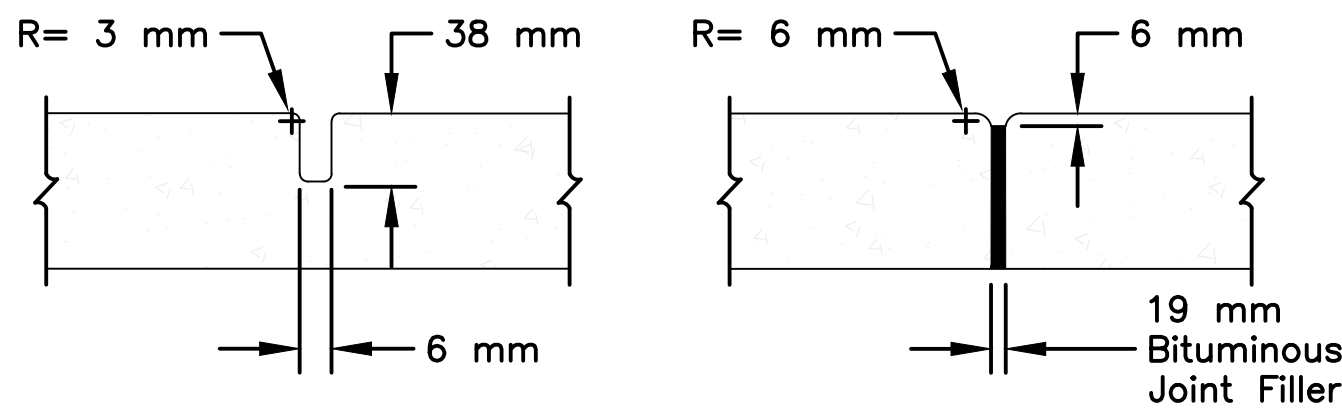
1. WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE STANDARD SPECIFICATION FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS FP-03 ALONG WITH ALL SUPPLEMENTAL SPECIFICATIONS FOR THIS PROJECT.
2. ALL CONCRETE TO BE AIR ENTRAINED WITH A MINIMUM COMPRESSIVE STRENGTH OF 25 MPa IN 28 DAYS. ALL CONCRETE SHALL CONFORM TO SECTION 601 "MINOR CONCRETE STRUCTURES" OF THE FP-03.
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 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 COTR/AOTR AND AT NO ADDITIONAL COST TO THE GOVERNMENT.
5. ALL PREFORMED JOINT FILLER SHALL BE IN ACCORDANCE WITH SECTION 712.01(b), BITUMINOUS TYPE OF THE FP-03. THE CONTRACTOR SHALL SUBMIT A PROPOSAL ON THE TYPE OF FILLER AND METHOD OF INSTALLATION TO BE USED FOR REVIEW AND APPROVAL BY THE COTR/AOTR PRIOR TO INSTALLATION. THIS MATERIAL AND THE INSTALLATION THEREOF SHALL BE CONSIDERED INCIDENTAL TO ITEM 61501-0100.
6. THE CONTRACTOR WILL BE REQUIRED TO MAKE ANY AND ALL NECESSARY FIELD ADJUSTMENTS TO MATCH FIELD CONDITIONS AS DIRECTED BY THE COTR/AOTR THIS WORK SHALL BE INCIDENTAL TO COMPLETION OF THE PROJECT AND NO ADDITIONAL PAYMENT WILL BE MADE.
7. TACK COAT MATERIAL SHALL MEET FP-03 SECTION 412, SHALL BE APPLIED TO ALL VERTICAL PCC EDGES ABUTTED BY NEW ASPHALT SURFACING. TACK COAT SHALL BE APPLIED USING BRUSHES OR SPRAY EQUIPMENT TO THE SATISFACTION OF THE COTR/AOTR 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 COTR/AOTR TACK COAT WILL BE INCIDENTAL TO BID ITEM 61501-0100.



TYPICAL SECTION @ SIDEWALK

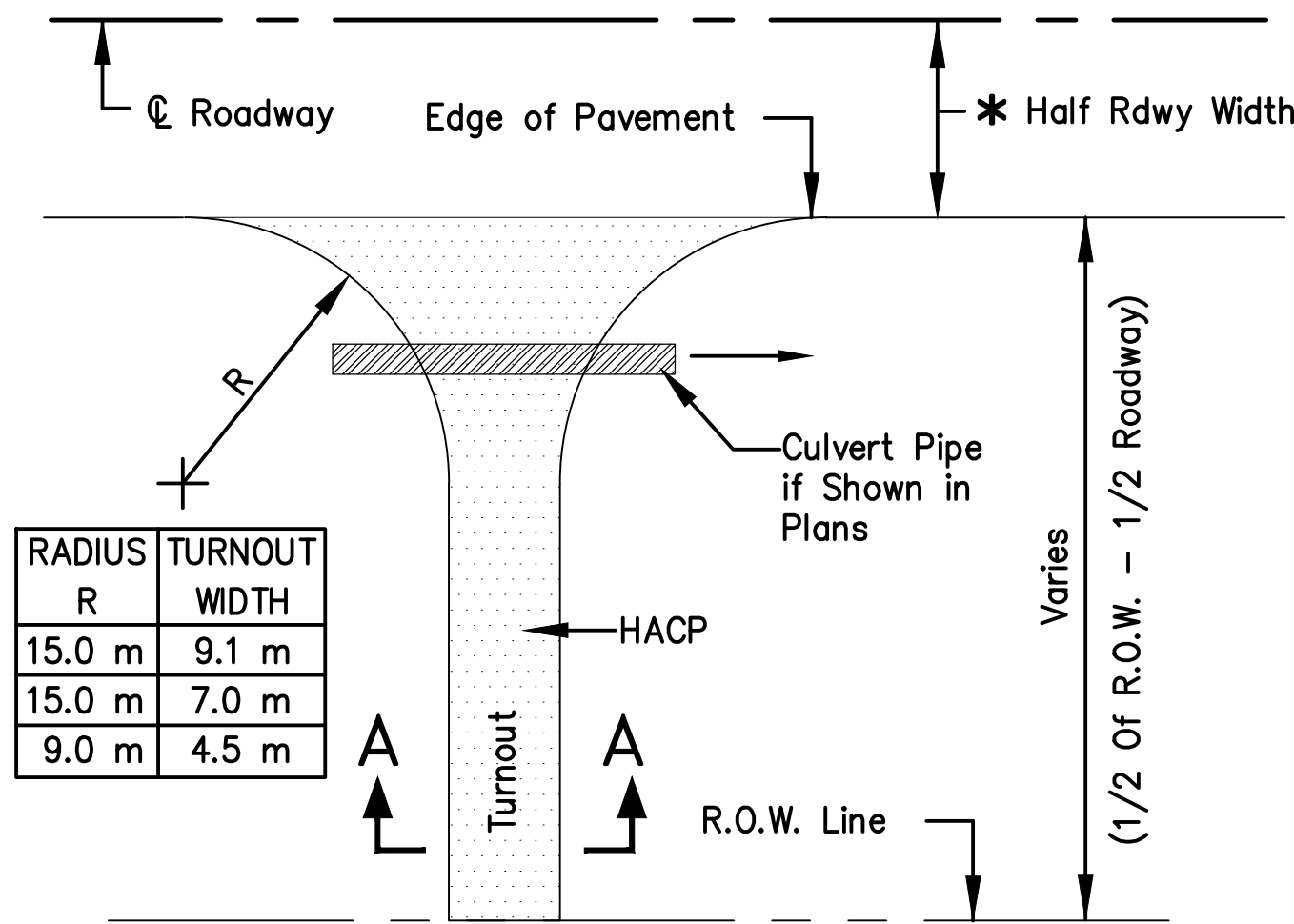


SIDEWALK JOINT DETAIL - PLAN VIEW

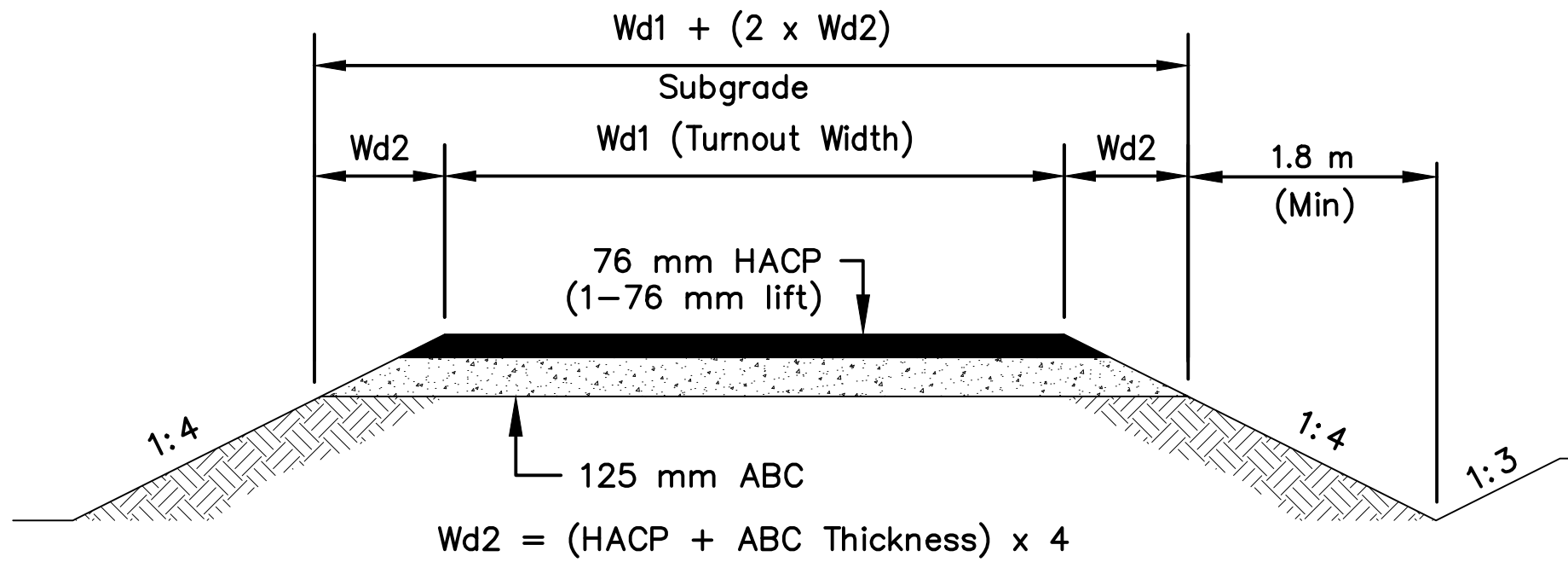


CONTRACTION JOINT

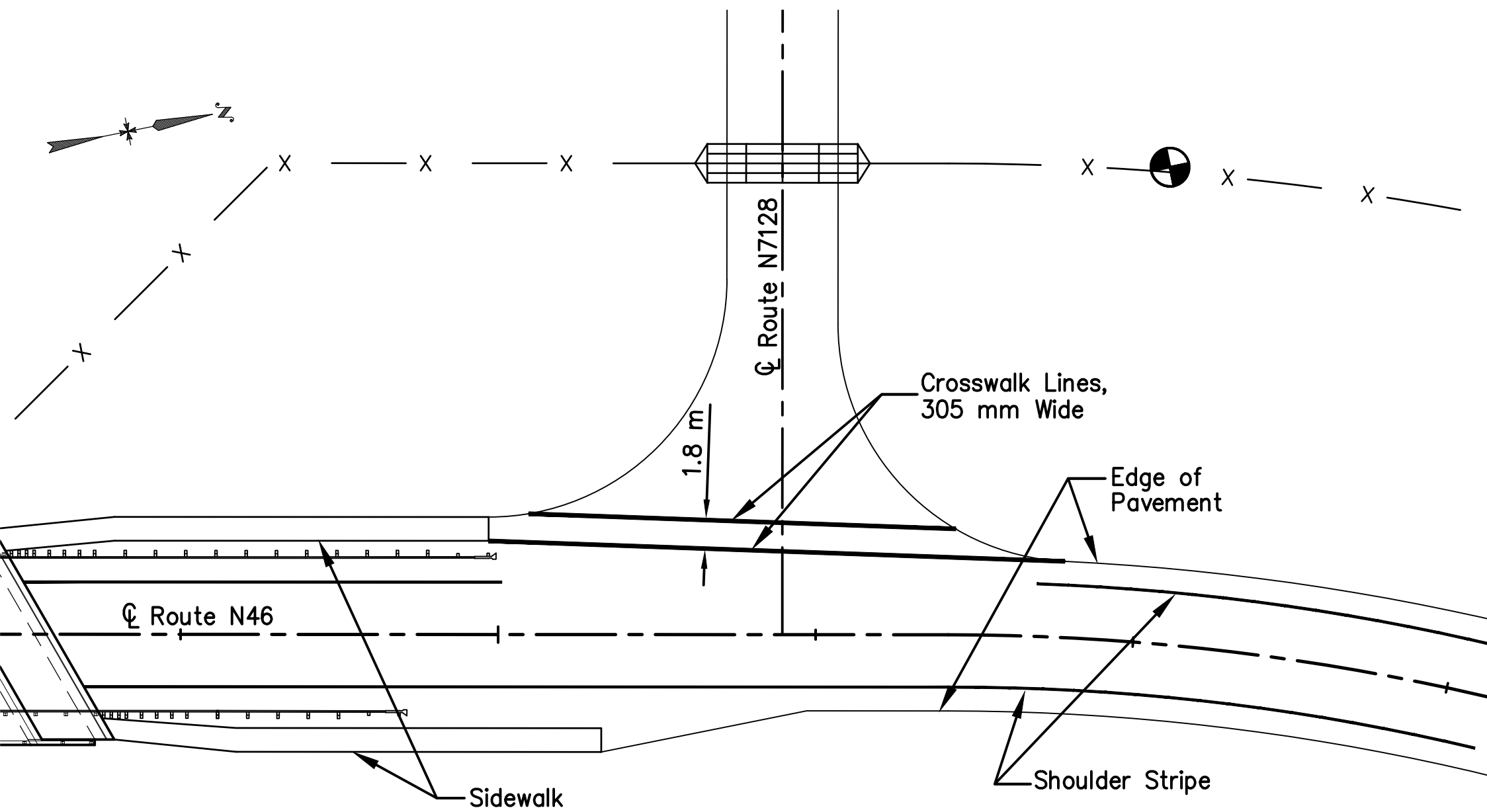
EXPANSION JOINT



TYPICAL TYPE "A" TURNOUT



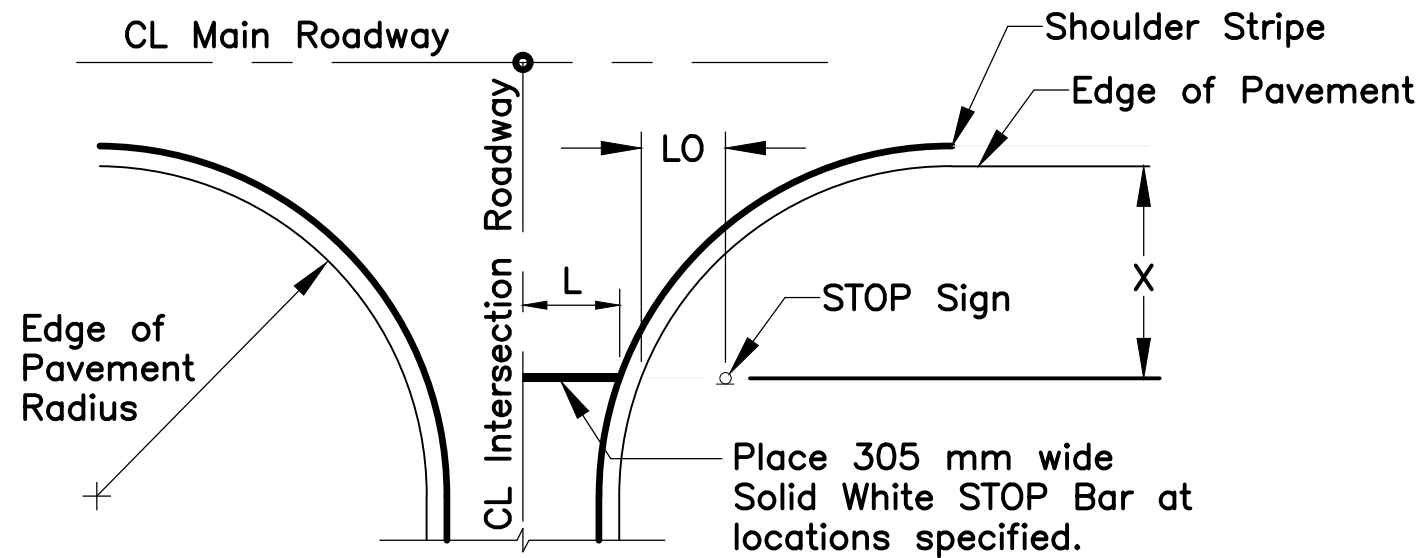
SECTION A-A



CROSSWALK DETAILS

STOP SIGN AND STOP BAR LOCATION TABLE			
EDGE OF PVMT. RADIUS (m)	X (m)	LO (m)	
3.00	1.80	1.80	
6.00	3.00	1.80	
9.00	4.50	1.80	
12.00	6.00	1.80	
15.00	7.50	1.80	

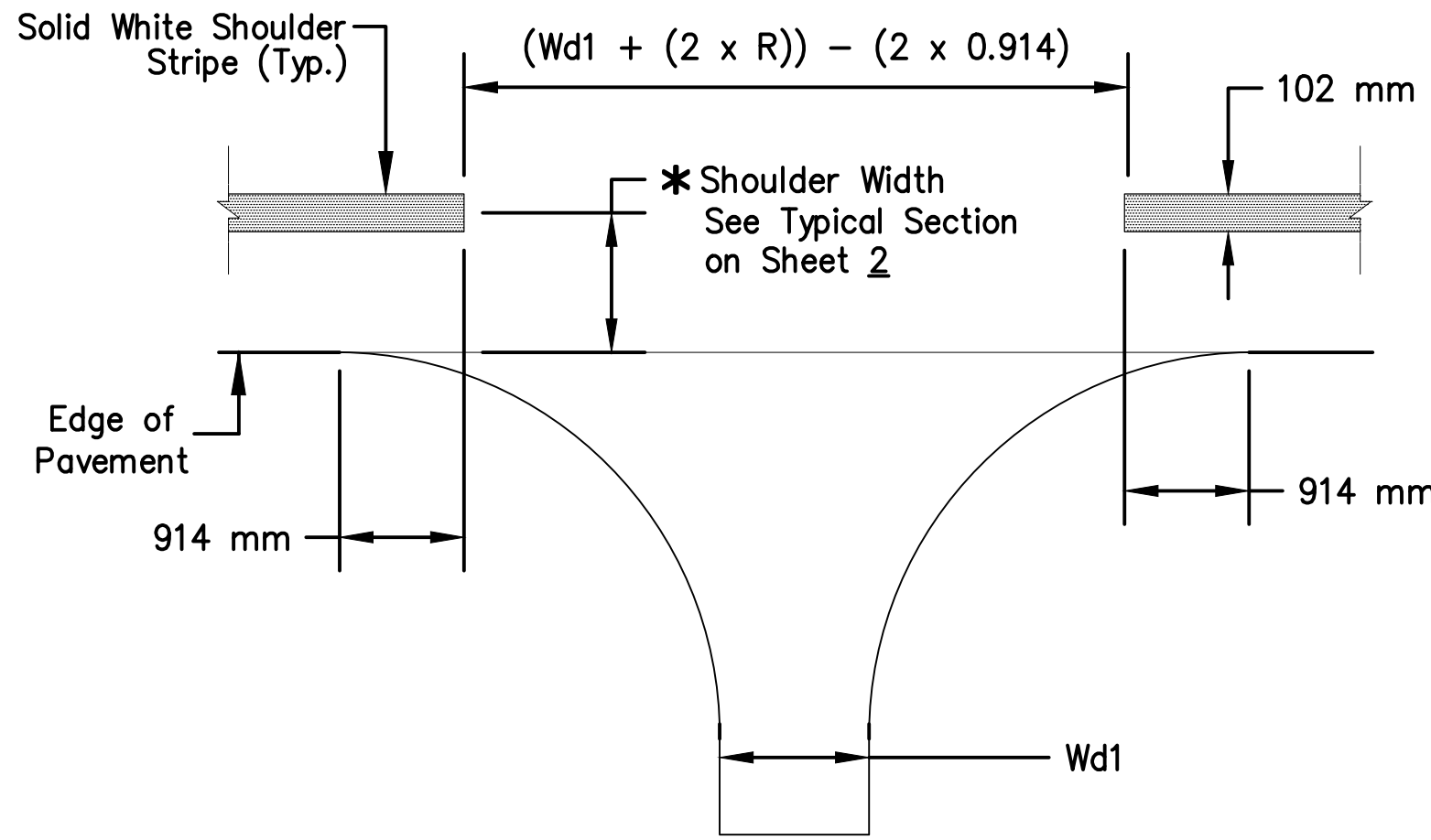
LO = Lateral Offset; radius edge of pavement to STOP sign location at distance X from edge of pavement of main roadway.



L = STOP Bar Length; CL of Intersection Roadway to Radius Shoulder Stripe, or to Radius Edge of Pavement if no Shoulder Stripe is specified.

STOP SIGN AND STOP BAR DETAILS @ INTERSECTIONS

SEE SHEET 4 OF 58 FOR STOP BAR LOCATIONS.



TYPICAL PAVEMENT MARKINGS @ TURNOUT

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

TURNOUT DETAILS

Designed by: RDL
Drawn by: RDL, cdh Date: 08/25/09
Revised by: Date:
File Name: N46_Turnout Details



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N46	N46(1)1,2&4	40	58

GENERAL NOTES

1. Standard Barrier Hardware Has Been Used to Develop This Guardrail Transition. Designations Provided in Brackets Relate to Standard Elements Detailed In "A Guide To Standard Highway Barrier Rail Hardware", AASHTO-AGC-ARTBA Joint Cooperative Committee and Modified Standard Elements As Detailed on This Sheet.

2. All W-Beams Shall Be Galvanized in Accordance With AASHTO M111. Furnishing, Fabricating and Installing These Items Shall Be Included in Item 61701-5000.

3. All High Strength Hex Bolts and Carriage Bolts Shall Be Galvanized in Accordance With AASHTO M232. Furnishing, Fabricating and Installing These Items Shall Be Considered Incidental to Item 61701-5000.

4. W-Beam Shall Conform to AASHTO M180, Class A, Type I, Galvanized.

5. 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.

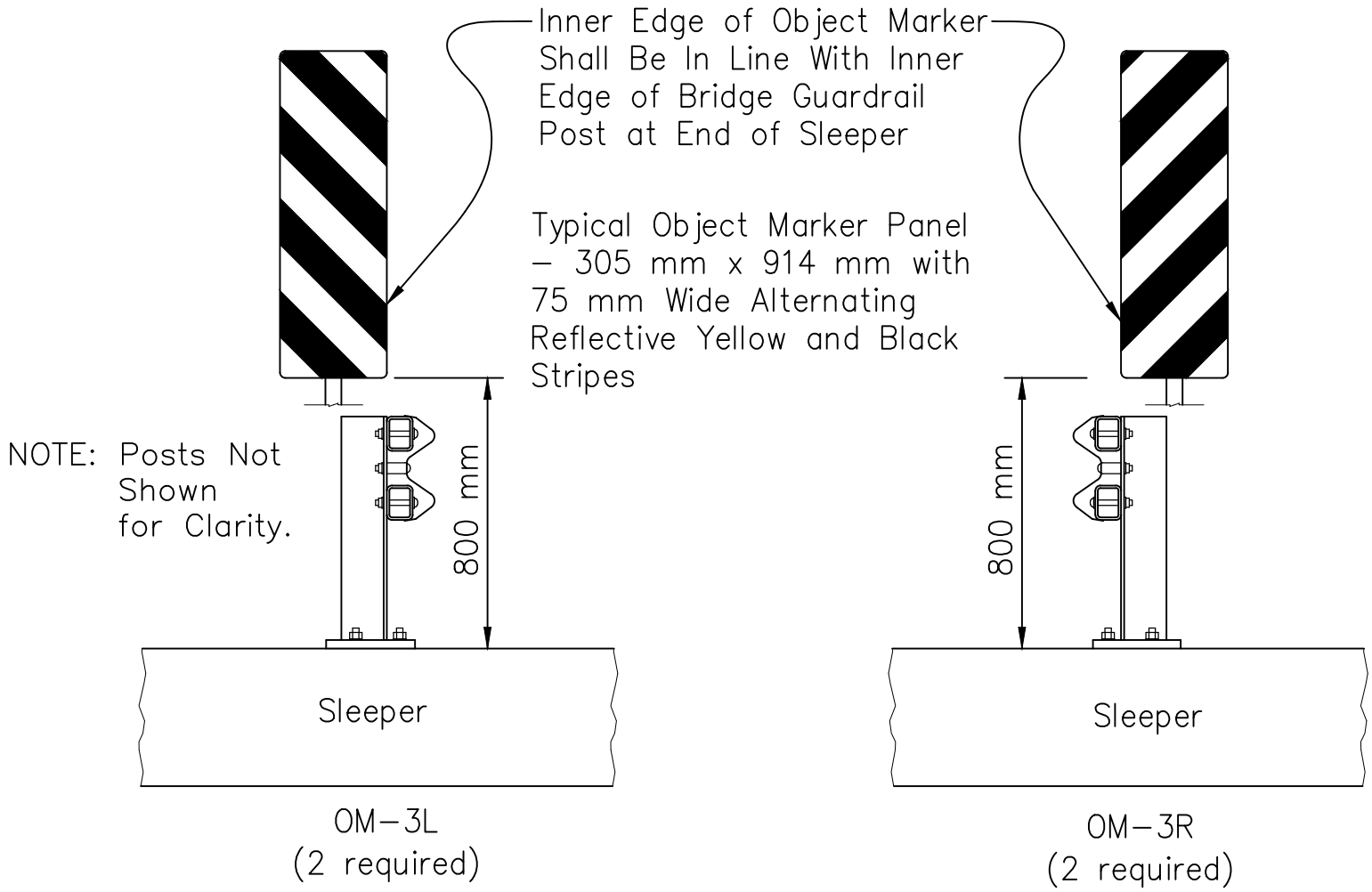
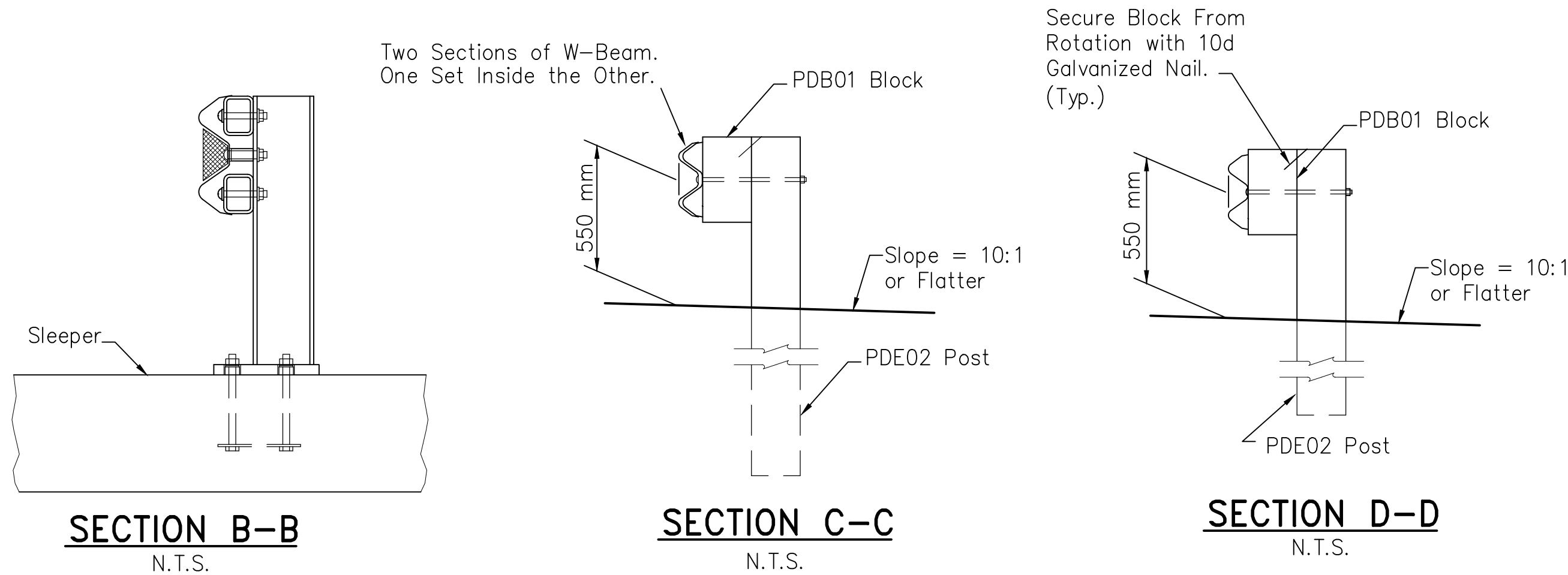
6. W-Beam Is Not Bolted to Posts and Blocks at Posts #1, #2, #3, #5, #7 and #8. Blocks Bolted Directly to Posts.

7. All Embankment and Aggregate Base Course Materials Shall Be Compacted to 95% of Maximum Density. Embankment and Aggregate Base Course Materials, and the Placing Thereof, Shall Be Paid under the Appropriate Bid Items shown shown in the Bid Schedule.

8. Asphaltic Concrete Used for Guardrail Widening Shall Be Included in Item 40201-0500. The Contractor Shall Be Required to Backfill and Compact Hot Asphalt Concrete Around the Guardrail Posts to the Satisfaction of the AOTR/COR per Section 617.03 of the FP-03.

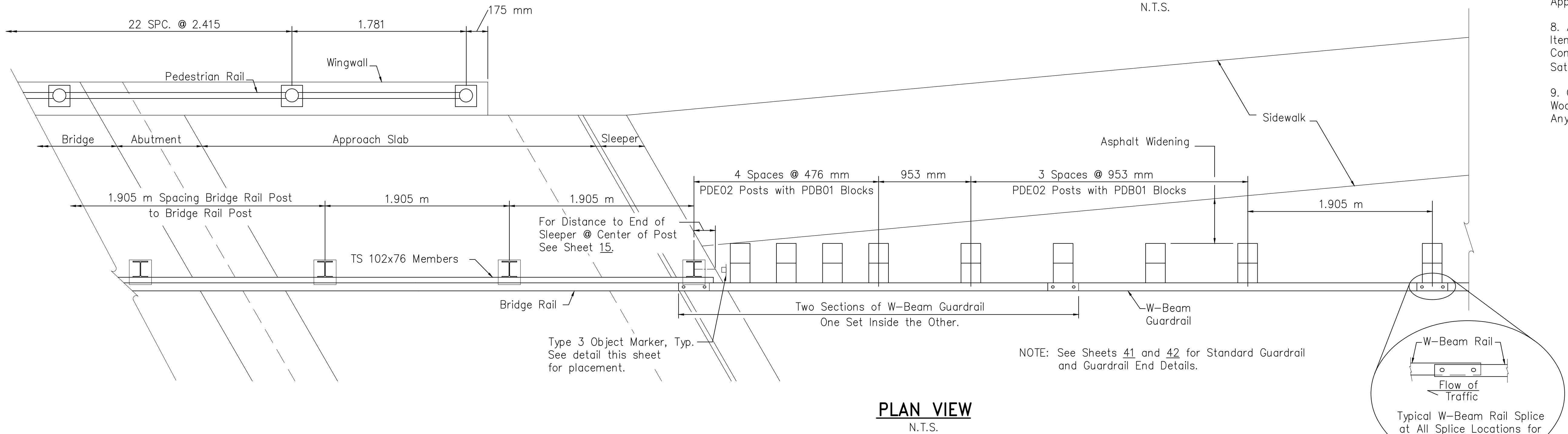
9. Certificates of Compliance Shall Be Required for All Guardrail and Wood Post Materials and Associated Hardware Prior to Installation of Any Material Under Item 61701-5000.

NOTE: If Placement Between Sleeper Slab And First Timber Post Is Not Possible, Place Between First And Second Timber Post.



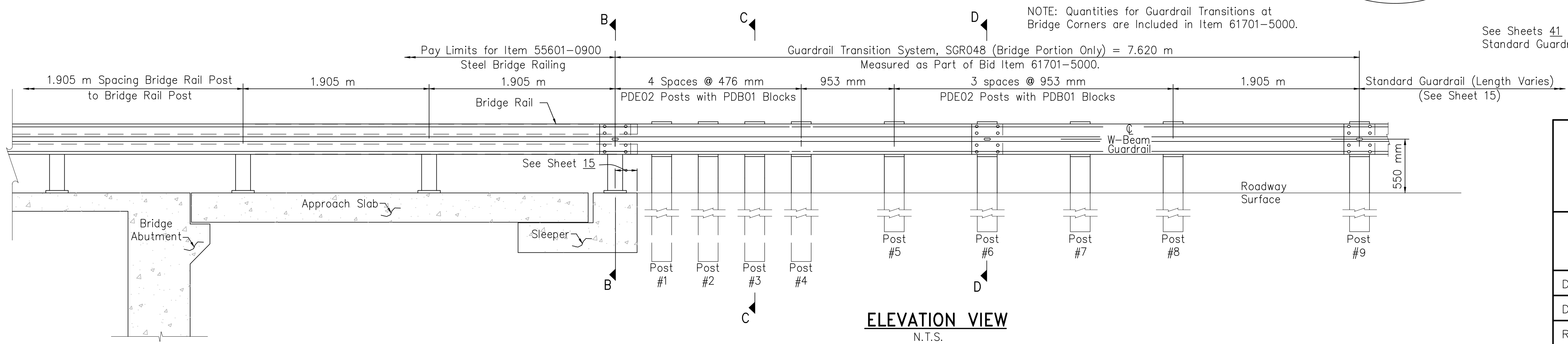
TYPE 3 OBJECT MARKER STEEL BRIDGE RAIL INSTALLATION

N.T.S.



PLAN VIEW

N.T.S.



ELEVATION VIEW

N.T.S.

NOTE: Quantities for Guardrail Transitions at Bridge Corners are Included in Item 61701-5000.

See Sheets 41 and 42 for additional Standard Guardrail Details.

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

BRIDGE RAIL/ GUARDRAIL TRANSITION

Designed by: NRDOT

Drawn by:

Date: 11-24-08

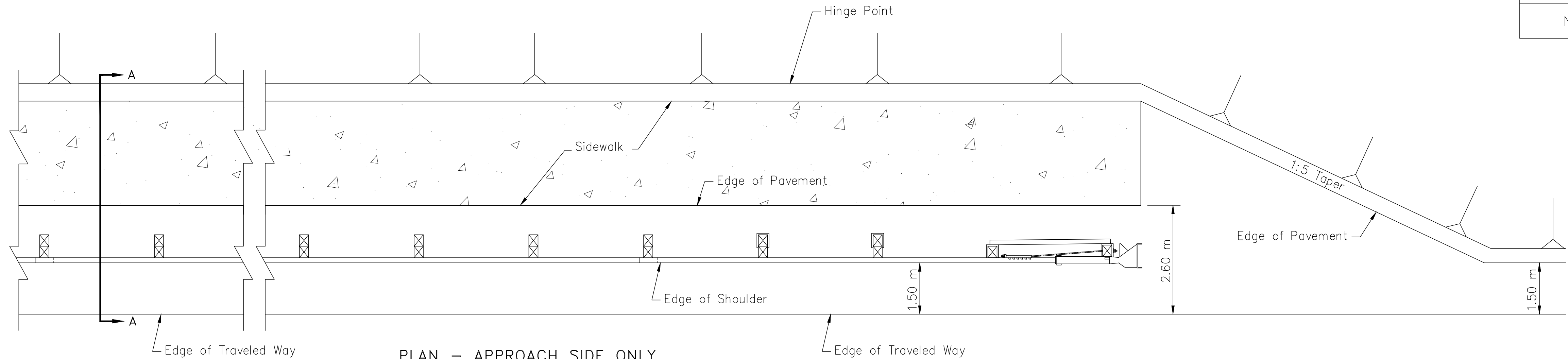
Revised by:

Date:

File Name: STD-Grail Transition



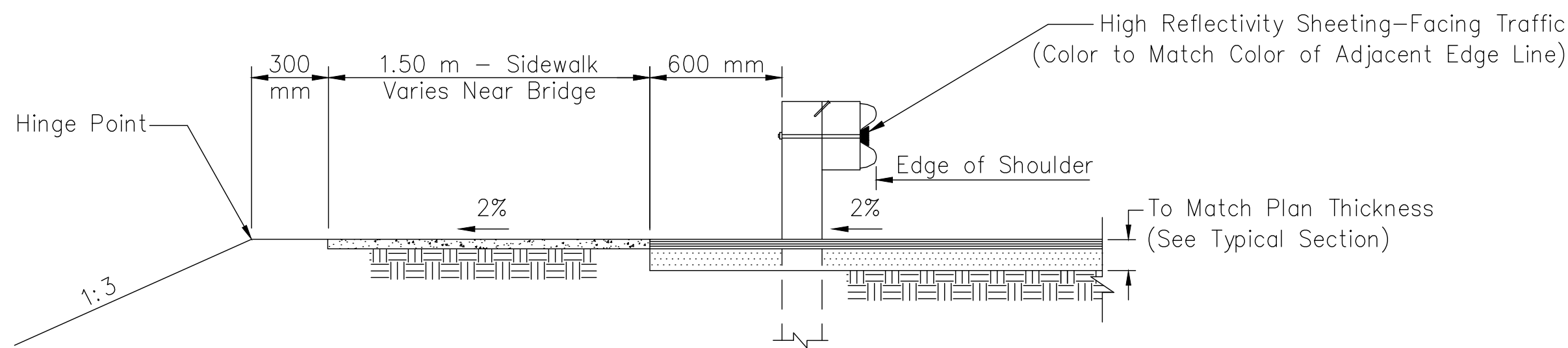
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N46	N46(1)1,2&4	42	58



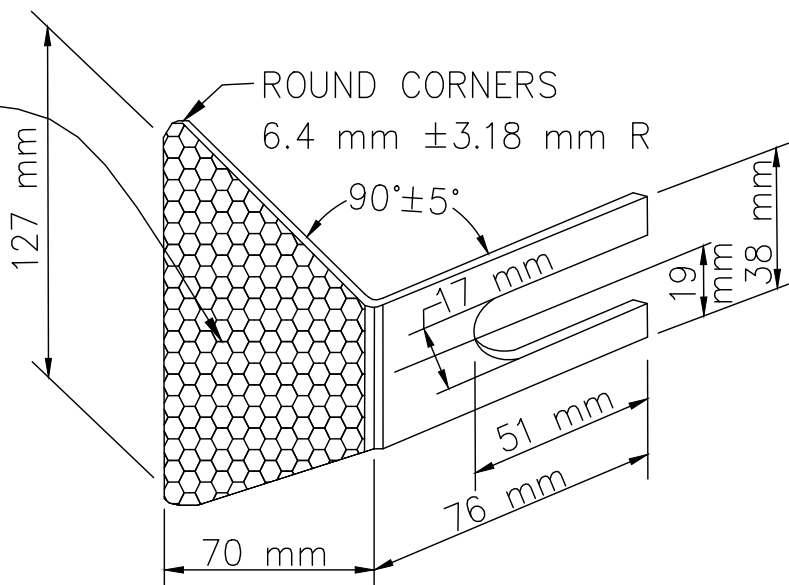
PLAN - APPROACH SIDE ONLY

GENERAL NOTES

- All Guardrail W-Beams, End Treatment, and Terminal Connectors Shall Be Galvanized in Accordance with AASHTO M-180, Class A, Type 1 Specification. All Hardware Shall Conform to ASTM A-325 and be Galvanized in Accordance with ASTM A-153.
- All Structural Steel Items Shown Shall Conform to AASHTO M270M, Grade 250 and Be Galvanized in Accordance with AASHTO M-111 Specification.
- Wire Rope, Fittings and Hardware Shall Conform to AASHTO M-30 Specification Type II with a 19 mm Diameter and a Class B Zinc Coating.
- 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 M168 (21st Edition). All Posts Shall Be Treated in Accordance with AASHTO M-133 Specification.
- All Embankment and Aggregate Base Course Materials Shall Be Compacted To 95% of Maximum Dry Density.
- The Embankment Materials and the Placing Thereof are to be included in Items 20401-0000 and 61701-5000.
- The Contractor Shall Be Required to Compact the Backfill and the Asphalt All Around Each Guardrail Post With Hand Tampers to Insure Integrity of the Pavement and Guardrail and to Prevent Seepage of Water Into the Pavement From the Guardrail Post Holes. This Work Shall Be Incidental Obligations of the Work Described Herein.
- The Cost of the ET Plus Assembly and the Placing Thereof Shall Be Considered Incidental to Item 61701-5000, Which Includes Breakaway Posts, Steel Tube Assemblies and Hardware.
- Placement of Hot Asphalt and ABC Material For Guardrail Widening Shall Be Included with Items 30101-2000 and 40201-0500.
- Furnishing & Placement of 371 mm x 701 mm Reflective Sheeting, Reflective Tabs, and Guardrail Delineators Shall Be Considered Incidental to Item 61701-5000 and No Direct Payment Shall Be Made.
- Any Related Patent Rights Will Be the Responsibility of the Contractor as Per Section 107.01 of FP-03.

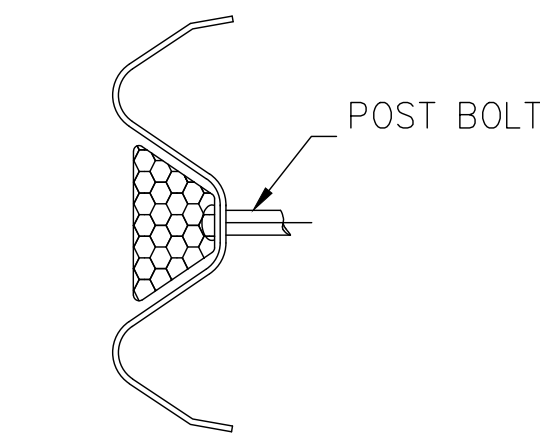


SECTION A-A



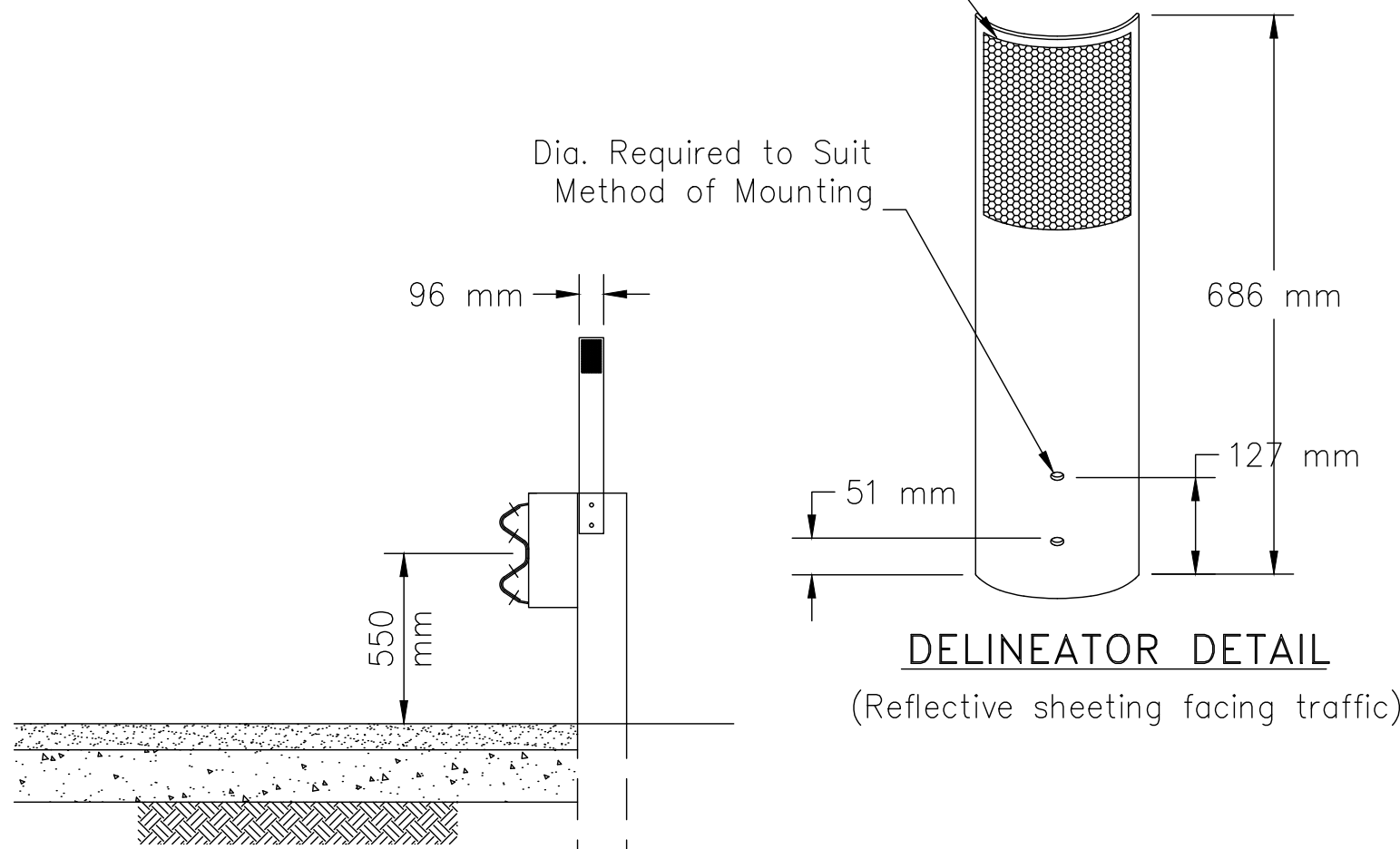
REFLECTOR TAB DETAIL

(Install on Every Fourth Post, Starting on Post #2)



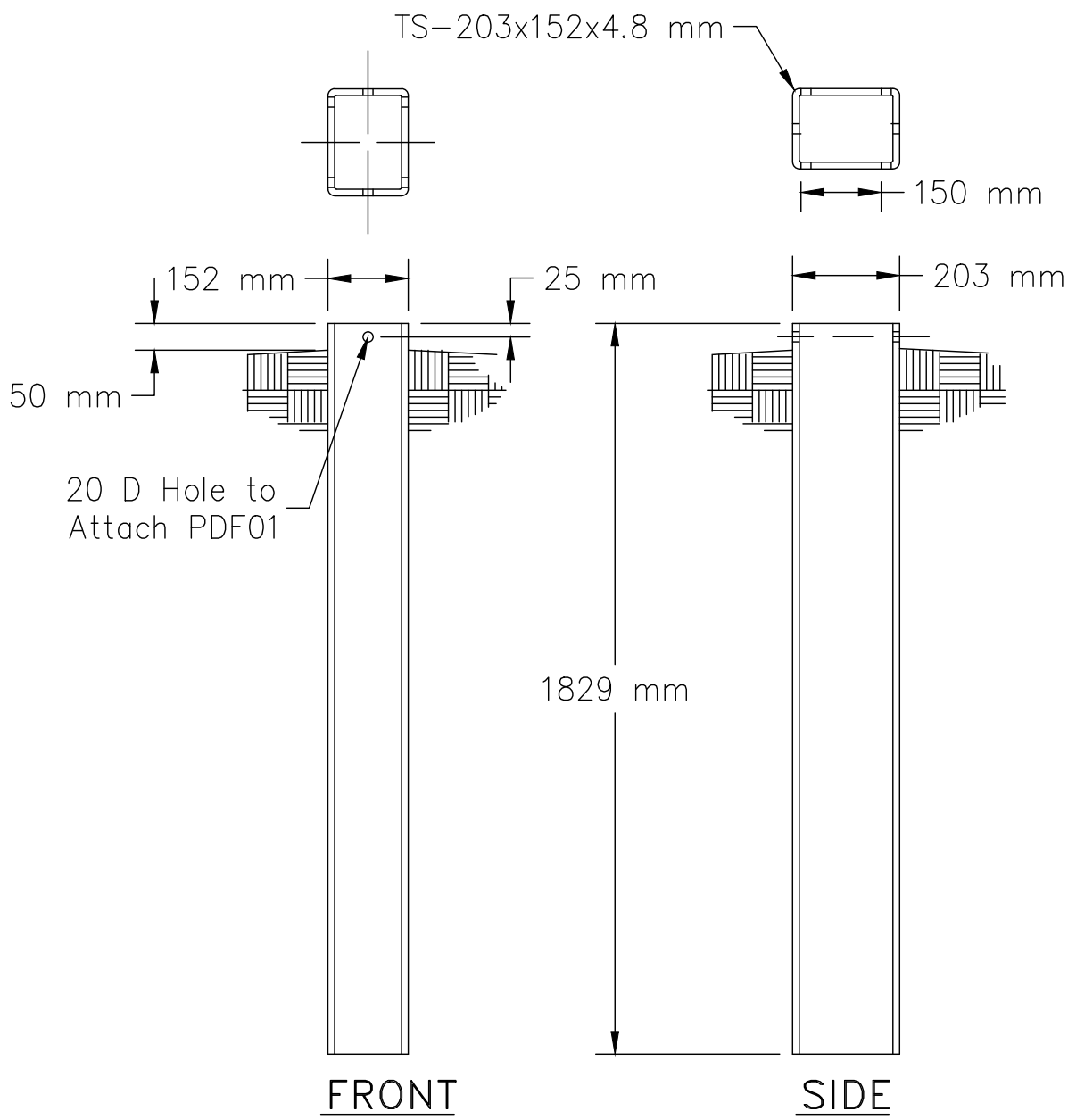
MOUNTING POSTION ON GUARD RAIL TYPE 3

76 x 305 mm Reflective Sheeting
(The Color of the Sheeting Shall Conform to the Color of the Adjacent Line Edge)



GUARDRAIL MOUNTED DELINEATOR (TYPICAL)

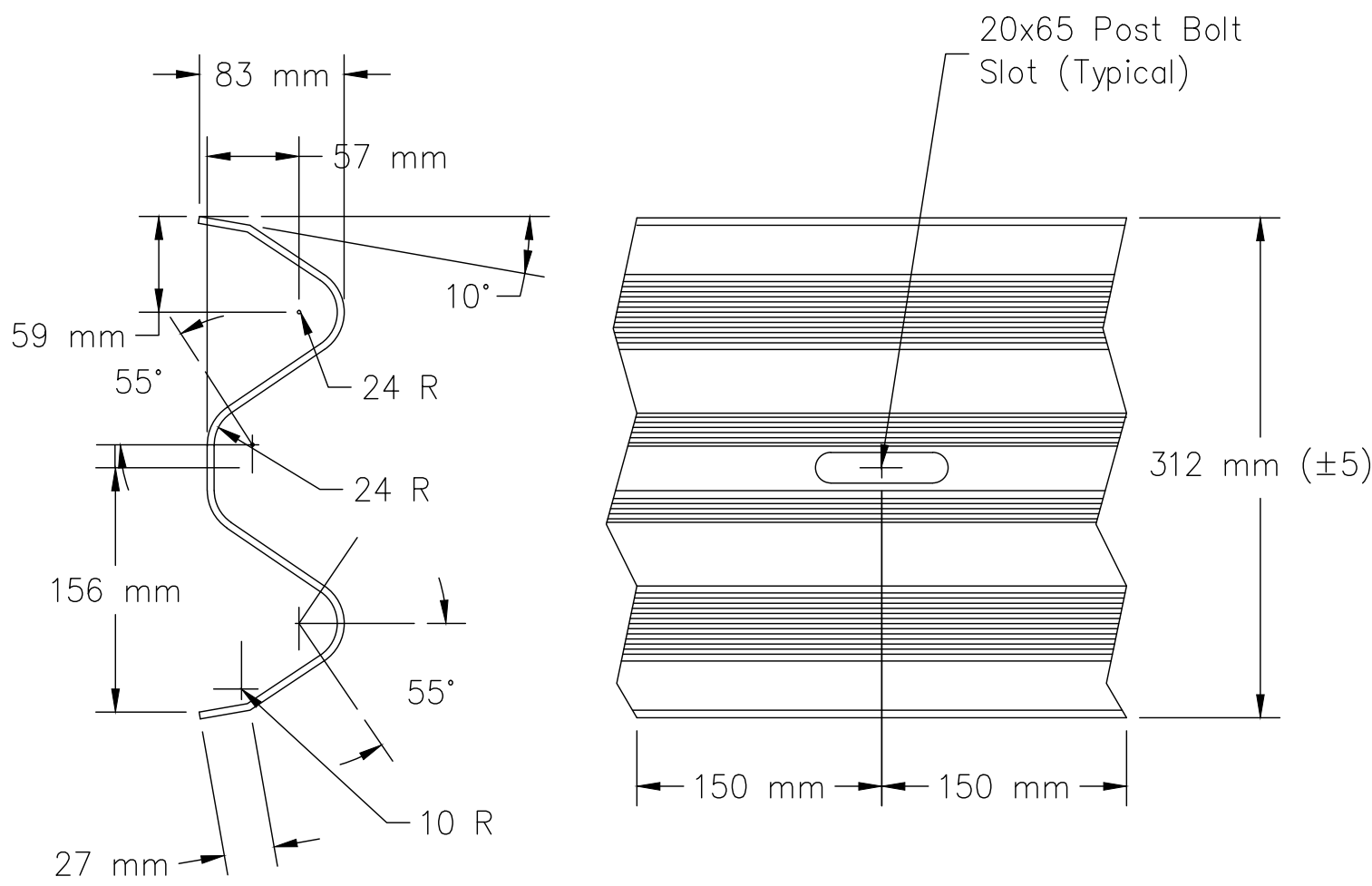
(The delineator shall be placed at 5.72 meter spacing, around the outside of horizontal curve, or where the guardrail conflicts with Type "1a" delineator located on tangent segment of roadway.



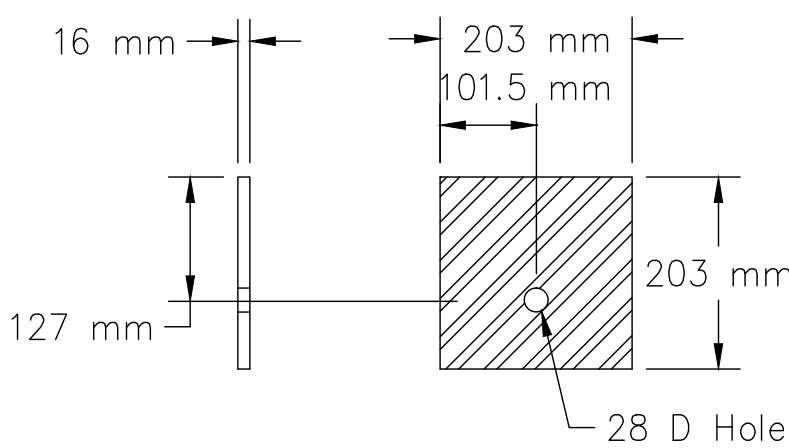
FRONT

SIDE

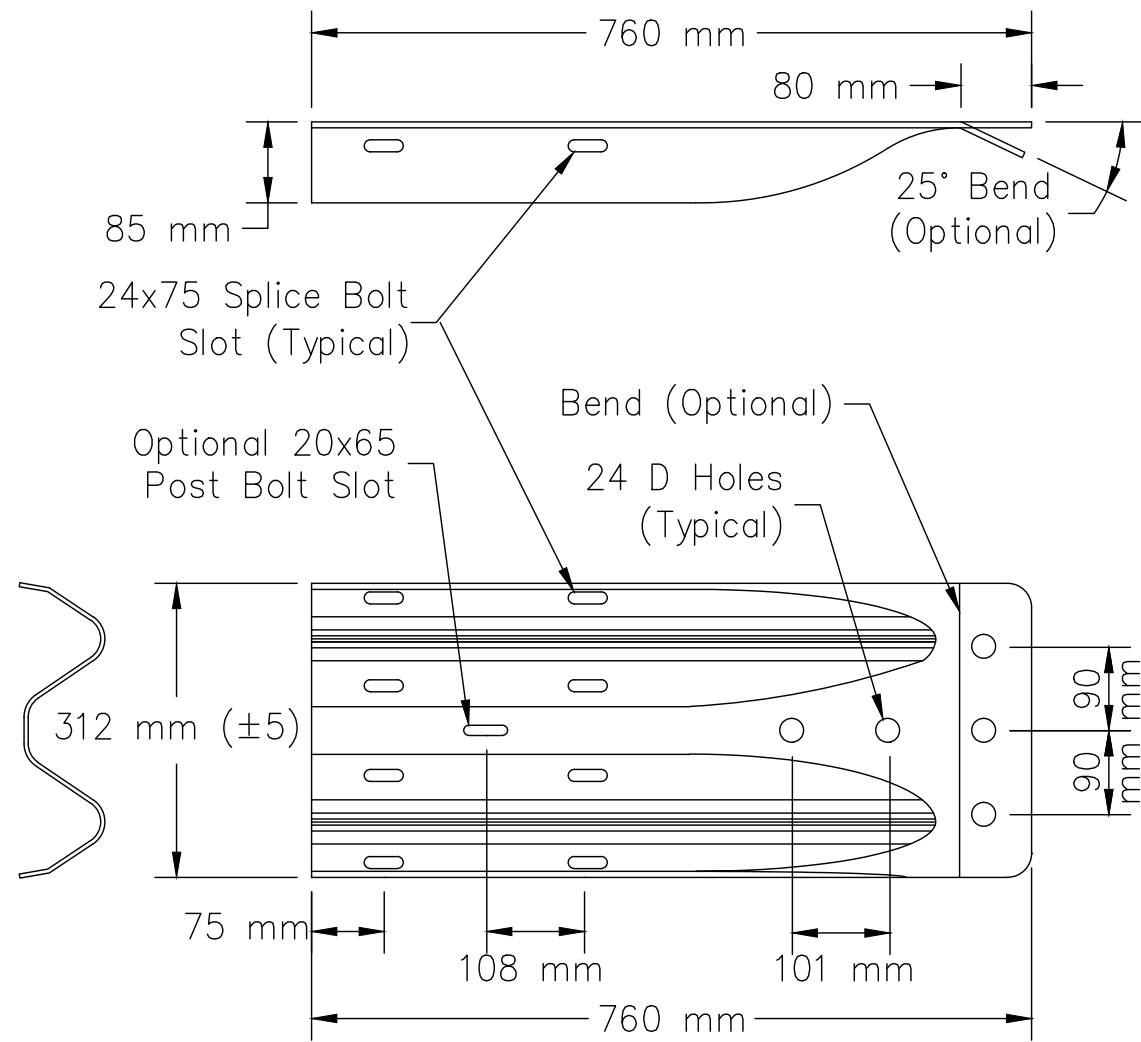
FOUNDATION TUBE



SECTION THRU GUARDRAIL ELEMENT



BEARING PLATE



TERMINAL CONNECTOR

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

STANDARD GUARDRAIL BARRIER END
TREATMENT, ET-PLUS
DESIGN SPEED < 100 kph

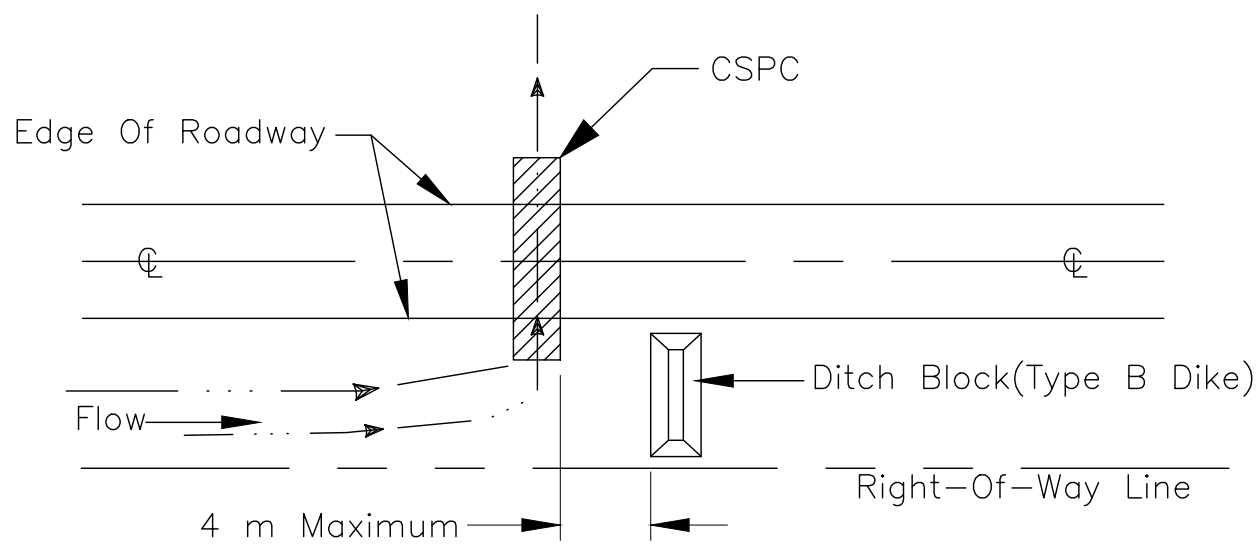
Designed by: NRO-DOT	
Drawn by: NRO-DOT	Date: 01/07/10
Revised by:	Date:
File Name: STD-ETPLUS3_081209.dwg	



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N46	N46(1)1,2&4	43	58

GENERAL NOTES

- Place loose bedding roughly shaped to fit bottom of pipe, then compact under haunches after pipe placement.
- See sections 204, 209, 602, and 704 of FP-03, including the supplemental specification for additional notes.
- All drainage structure material shall be unloaded and handled with reasonable care. No structure shall be dragged or allowed to strike any hard surface during placement. Any damaged structure shall be repaired or replaced by the contractor, at no additional cost to the government.
- All structural plate pipe structures shall be assembled and installed in accordance with the fabricator's recommendation.
- Backfill material shall be placed 300 mm(min.) 1.0 m(max.) pipe diameter width on the sides and 0.30 m over the pipe. Backfill material beyond the limits shall be regular earthwork embankment material. The backfill material shall be approved by the AOTR/COR prior to it's use and shall be placed in accordance with the plans and specifications.
- Ponding or jetting pipe backfill shall not be permitted.
- All pipe excavation, backfilling, de-watering, pumping or cofferdams required to properly install the drainage pipe shall bee considered incidental to completion of the project and no additional payment shall be made.
- Multiple pipe installation shall be placed 610 mm between end sections unless otherwise directed by the AOTR/COR or as shown on the plans.
- All pipes shall be protected by a cover of not less than 910 mm of embankment above pipe before any heavy equipment is allowed to pass over the structure(s) during construction.
- 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 Regional Road Manager. This work shall be considered incidental to completion of the project and no additional payment shall be made.
- All culverts under turnouts and driveways shall be placed at the proposed ditch flowline. The contractor shall be required to field adjust the profile grades over the pipes as directed by AOTR/COR.
- Type "B" dike shall be used on this project unless otherwise noted on the plans. Dike construction shall meet the requirements of FP-03 section 204, for embankment. Embankment material needed to build earthen dikes shall be considered incidental to Item 20443-2000
- Ditch blocks at structures to be placed to create a water cushion. Elevation at top of ditch block shall be 152 mm above elevation of top of pipe unless otherwise shown or directed by the AOTR/COR.
- Ditch Blocks shall be located a distance equal to the largest dimension of the box culvert or pipe from the Face of the drainage structure. In no case shall the distance exceed 4.0 m.



EARTHEN DIKE/BERM INSTALLATION AT STRUCTURE

- Earthen Dike/Berm At Structures To Be So Placed That They Create A Water Cushion. Elevation Top Of Earthen Dike/Berm Shall Be 305 mm Above Elevation Of Top Of Pipe Unless Otherwise Shown Or Directed by the C.O.R..
- Earthen Dike/Berm 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.

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

STANDARD PIPE INSTALLATION AND DITCH DETAILS

Designed by: NRO-DOT

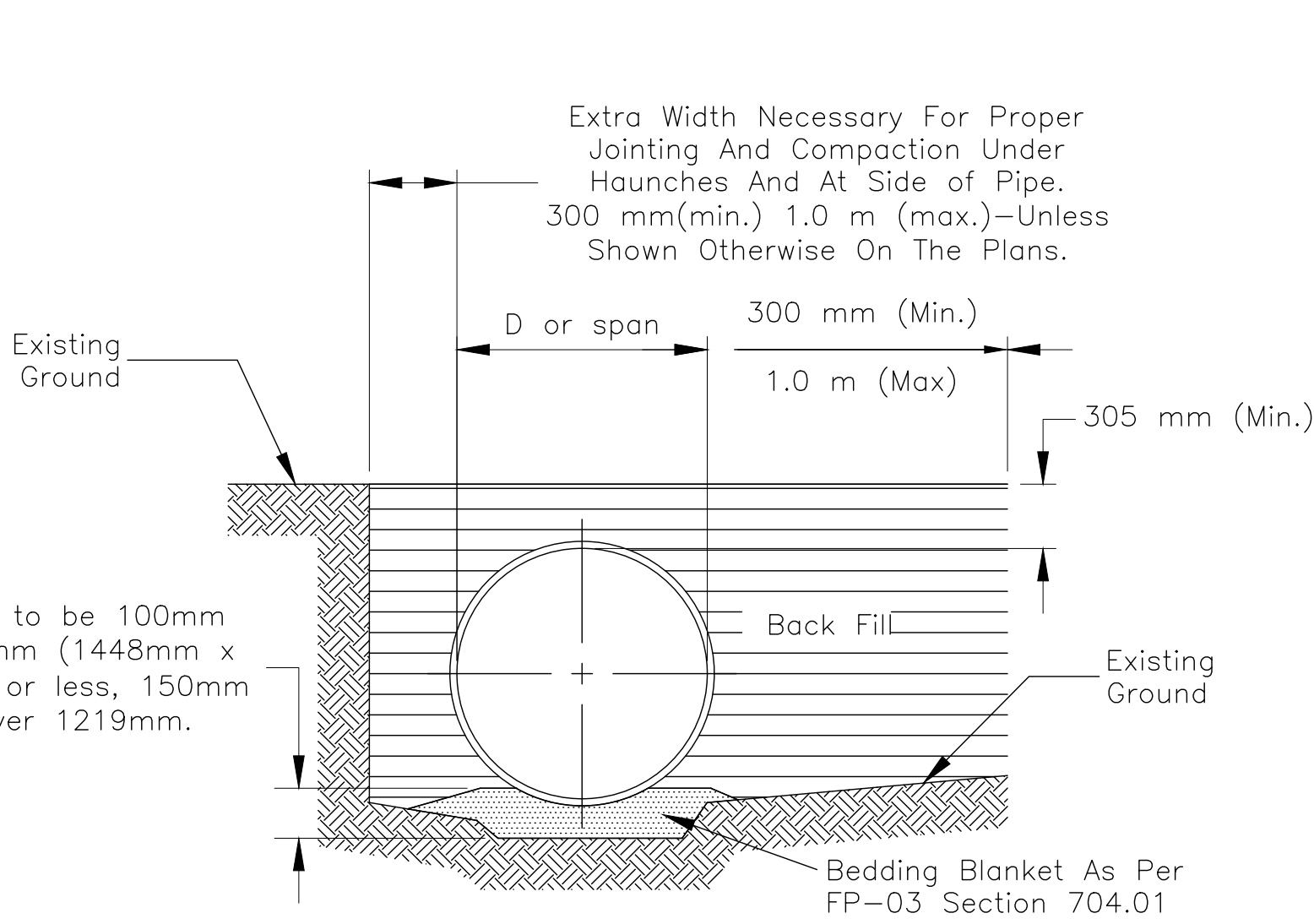
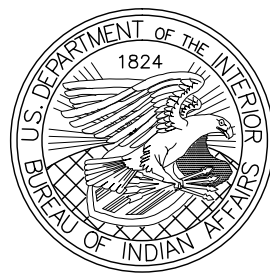
Drawn by: NRO-DOT

Date: 08/12/09

Revised by:

Date:

File Name: STD-Pipe Install_Ditch Details



NEGATIVE PROJECTING POSITIVE PROJECTING

FIGURE A: BEDDING

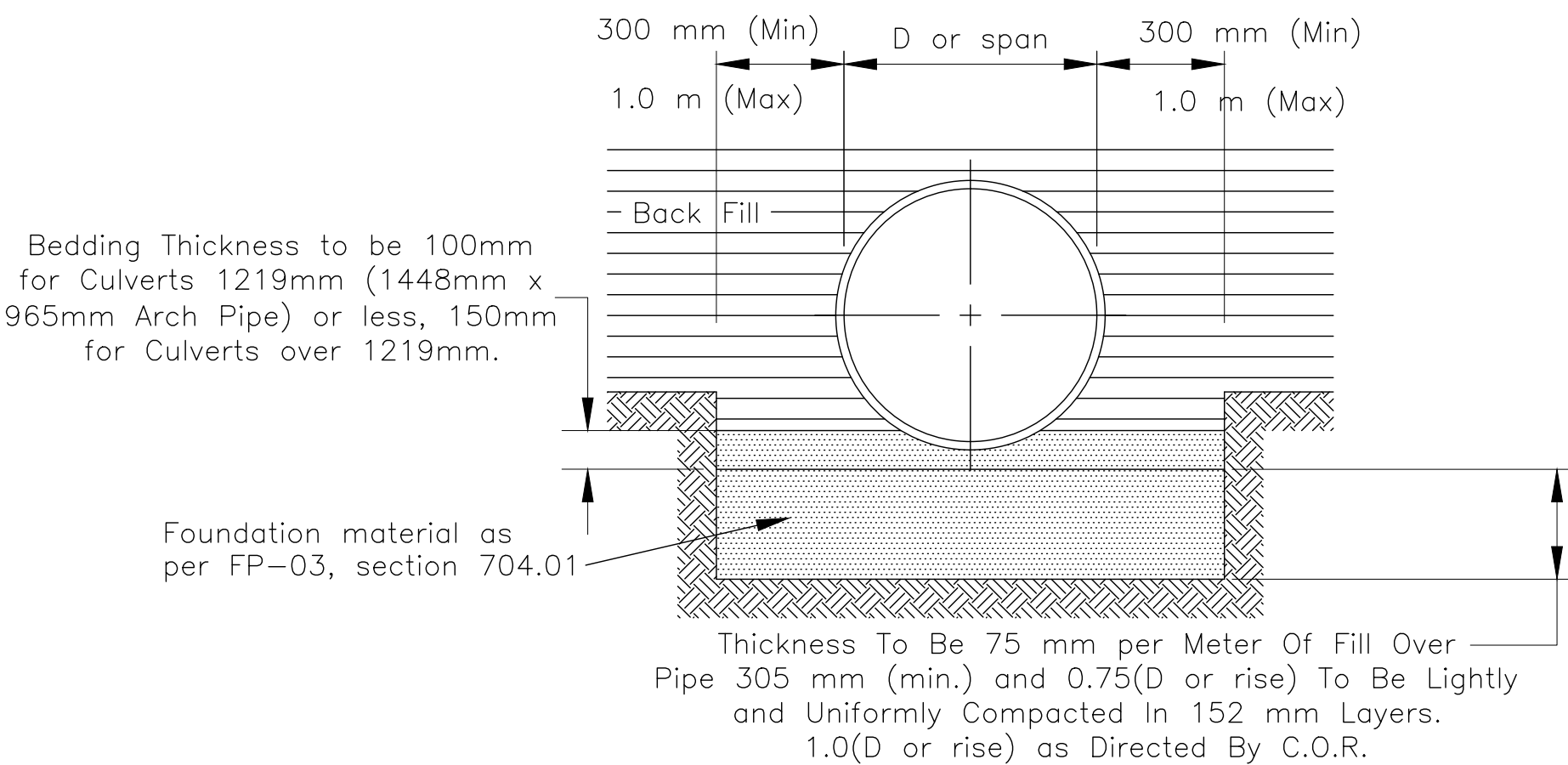


FIGURE B: ROCK BEDDING

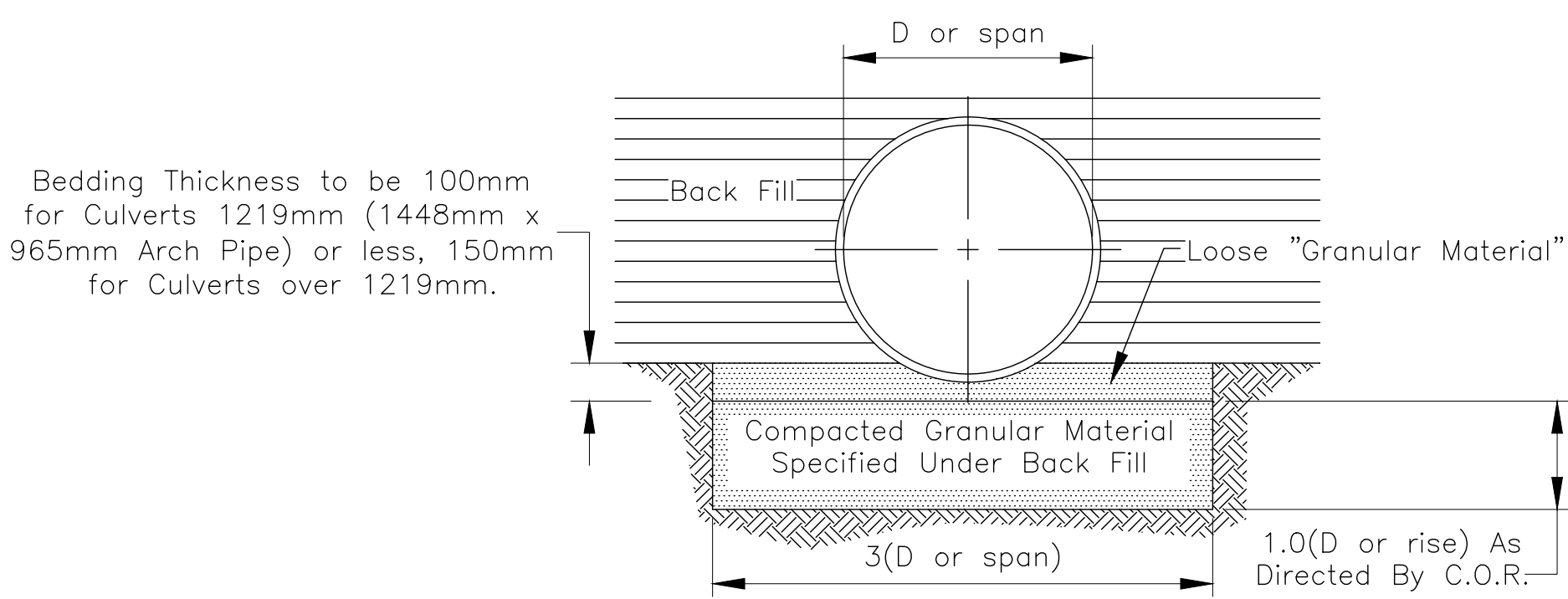
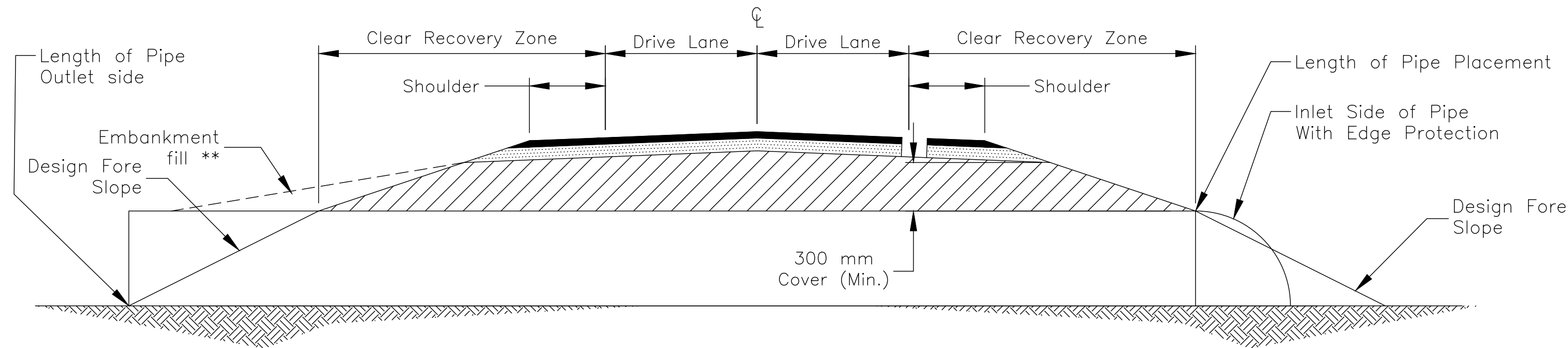


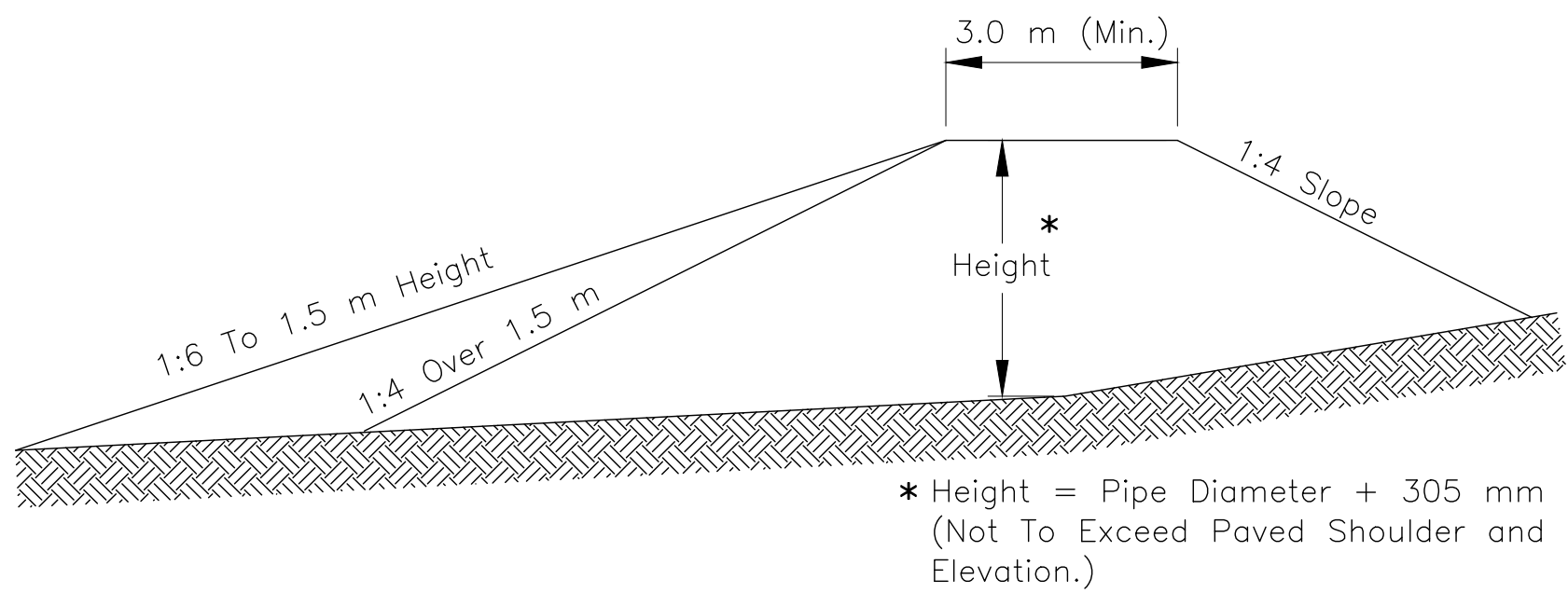
FIGURE C: FOUNDATION STABILIZATION BEDDING



** Adjust Slopes to Catch at Top of Pipe at Each Opening

TYPICAL PIPE INSTALLATION- MAINLINE SHOWN

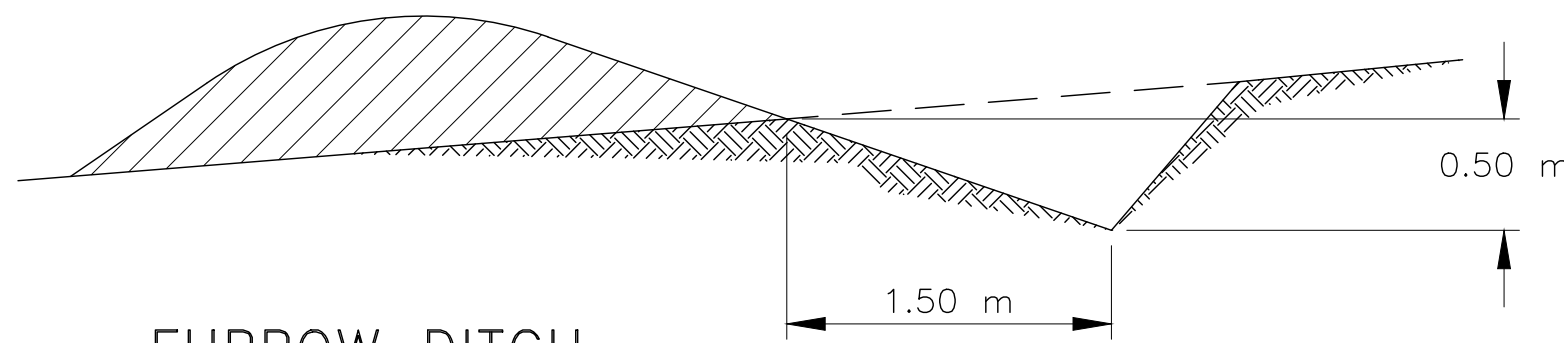
Turnout/Driveway, Use 2-End Sections



TYPE "B" DIKE

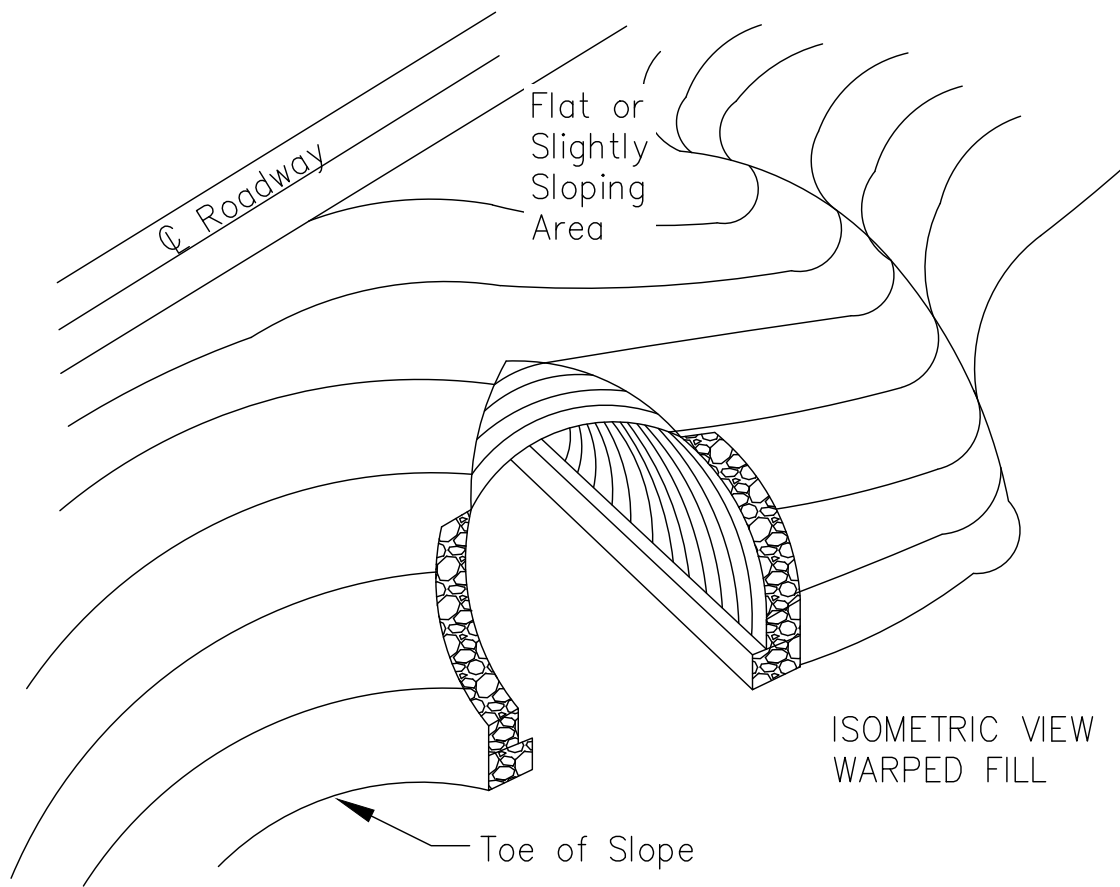
NOTE: When Necessary The Slope May Be Flattened To 1:6 With Rip Rap Protection As Called For On Plans.

EARTHEN DIKE/BERM DETAILS



FURROW DITCH

- To Be Paid For By The Meter.
- Furrow Ditch Sections As Shown Above Or And Approved Equivalent Shall Be Built As Directed By The AOTR/COR.



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.

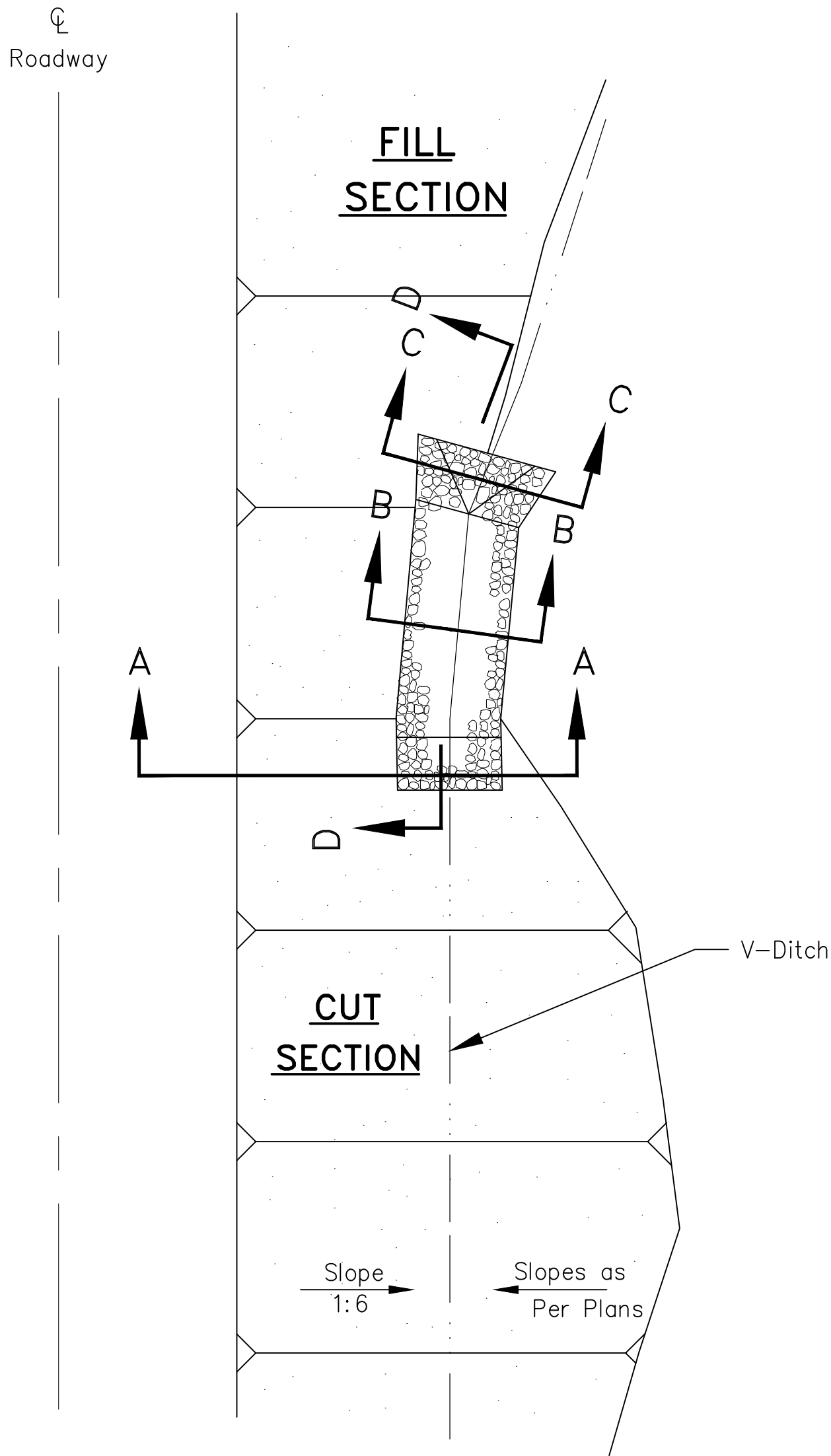
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N46	N46(1)1,2&4	44	58

GENERAL NOTES

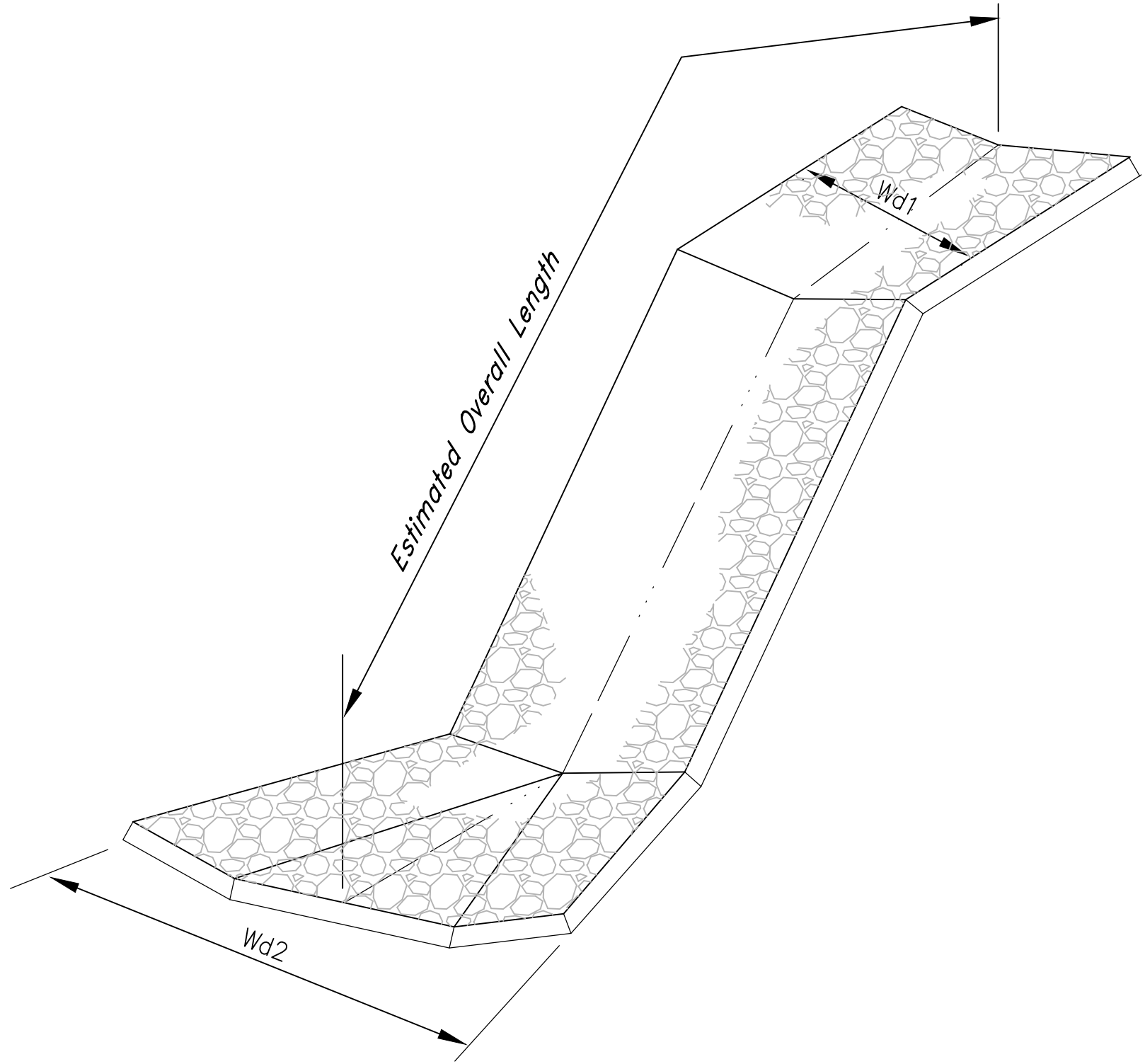
1. Workmanship and Materials Shall Conform to the Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects (FP-03), Along with All Supplemental Specifications for This Project.
2. The Quantities Shown are Only an Estimate. Actual Quantities Shall Be Determined in the Field. The Project Manager, AOTR/COR, and Contractor Shall Review All Rock Cut Areas After the Construction of Vee and/or Flat Bottom Ditches Have Been "Roughed In". If in the Opinion of the AOTR/COR the Rock Cut Is Stable, the AOTR/COR May Elect to Delete Sections of the Placed Riprap. The Contractor Will Be Required to Make Adjustments to the Placed Riprap as Necessary to Fit Actual Field Conditions. These Field Adjustments Will Be Incidental Obligations of the Contractor.
3. Ditch and Back Slope Reshaping, Cleaning, and Excavation Shall Be Done in Accordance with the Plans and as Determined By the AOTR/COR. All Ditch Excavation, Cleaning, and Reshaping Shall Be Considered Incidental to Completion of the Structure.
4. The Size of All Stone For Placed Riprap Is to Be Class 2, Meeting the Grading Requirements of Table 705-1, and Section 251 of FP-03.
5. Erosion Control Geotextile Shall Be Installed Under All Placed Riprap and Shall Conform to Section 714, Type IV-B, of FP-03, and Shall Be Considered Incidental to Item 25101-2000. Erosion Control Geotextile Shall Be Tucked or Embedded 400 mm Into the Ground Along All Edges As Shown.
6. Riprap Downdrains Shall Be Carried Down Slope to the Intersection of the Fill Slope and Extended Until a 2% or Lower Slope Is Achieved Before Termination.
7. 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.

ITEM 25101-2000: PLACED RIPRAP, CLASS 2

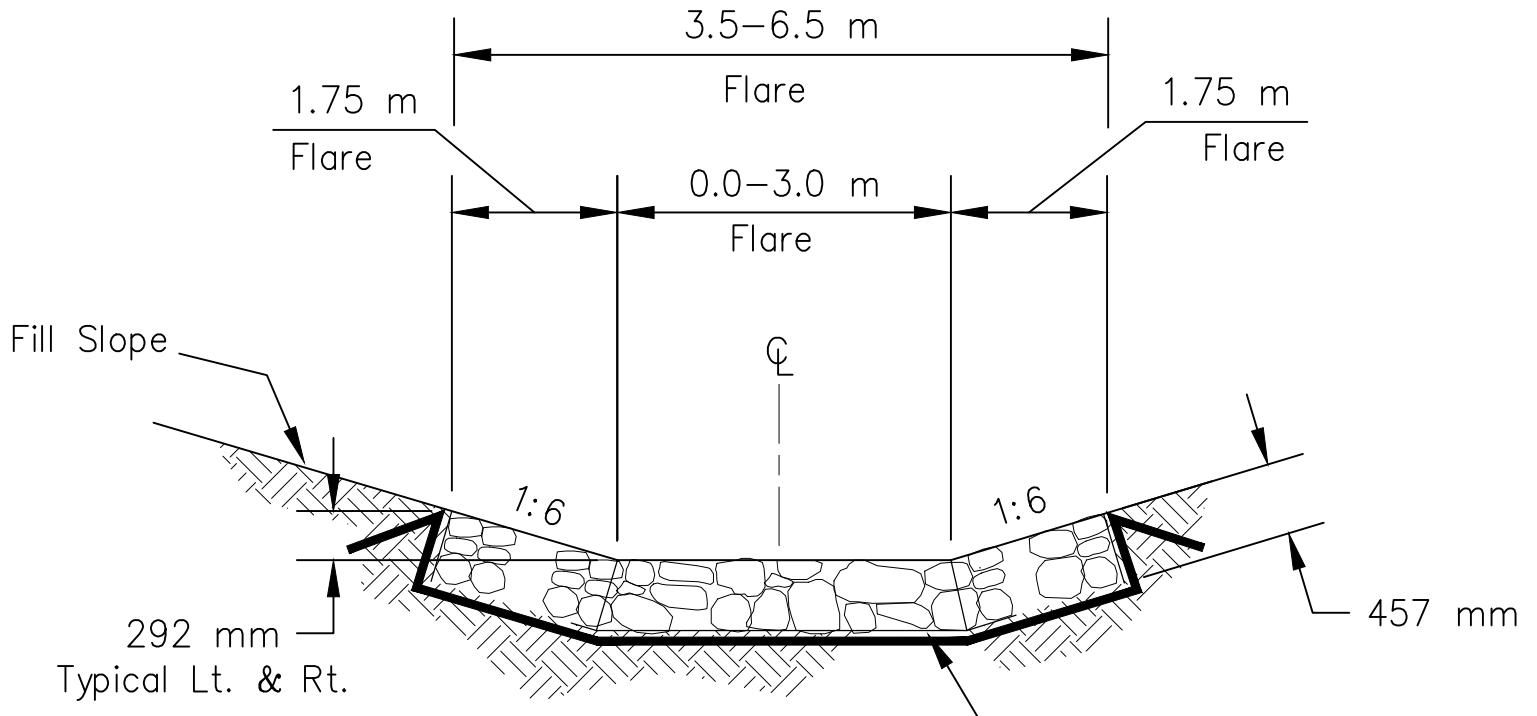
STATION	LOCATION	Wd1(m)	Wd2(m)	THICKNESS (mm)	ESTIMATED LENGTH (m)	VOLUME (m³)
1+755 to 1+950	Rt.	3.50	6.50	457	195	316
TOTAL						316



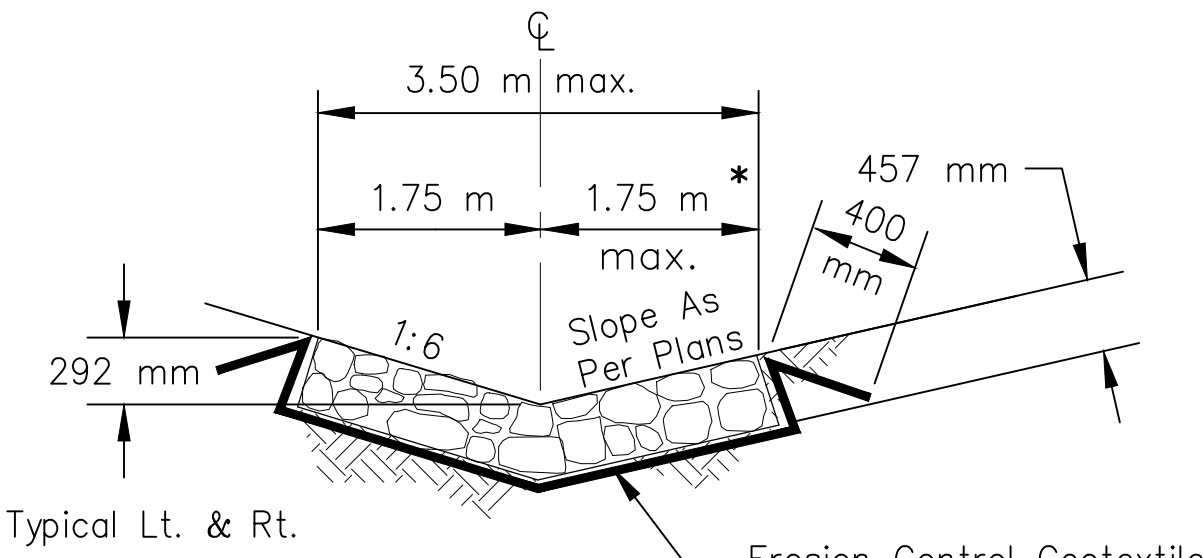
PLAN VIEW
CUT TO FILL TRANSITION
AT V-DITCH



PERSPECTIVE VIEW
PLACED RIPRAP DOWNDRAIN AT V-DITCH

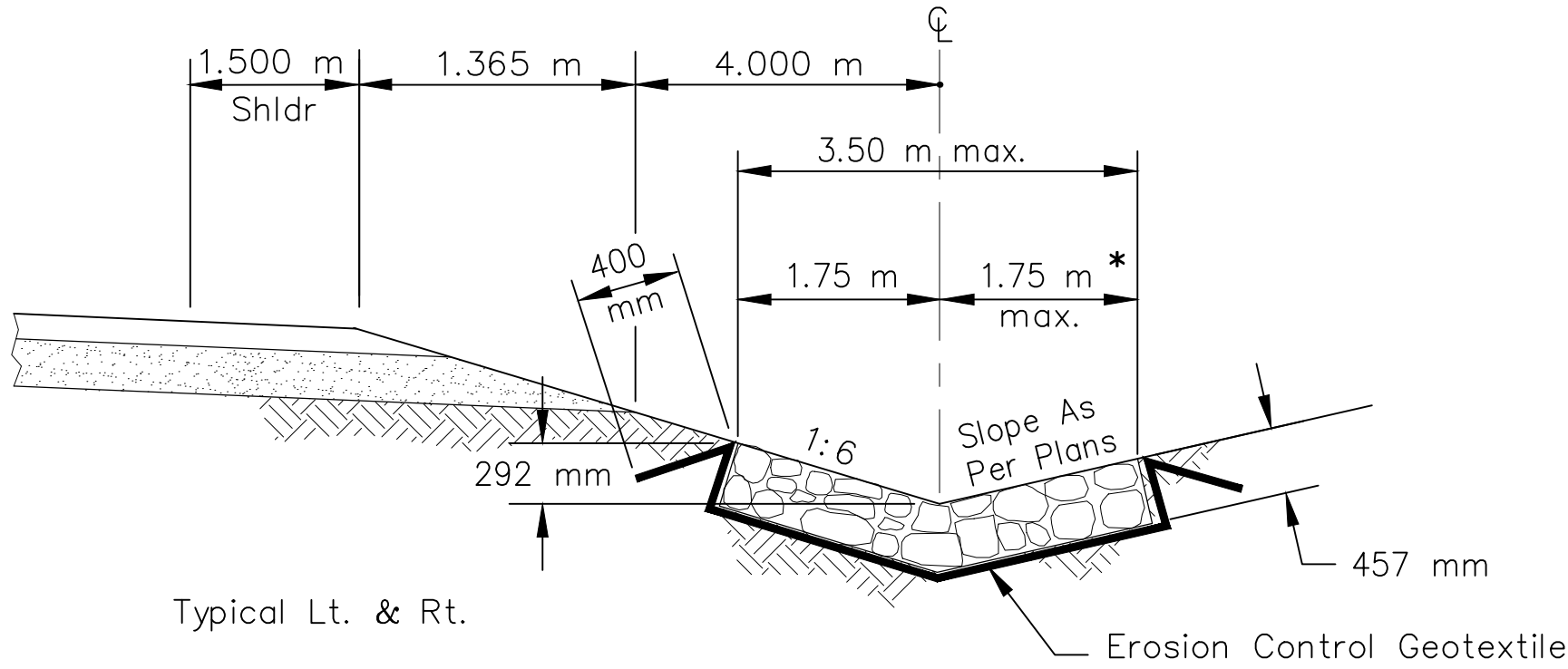


SECTION C-C



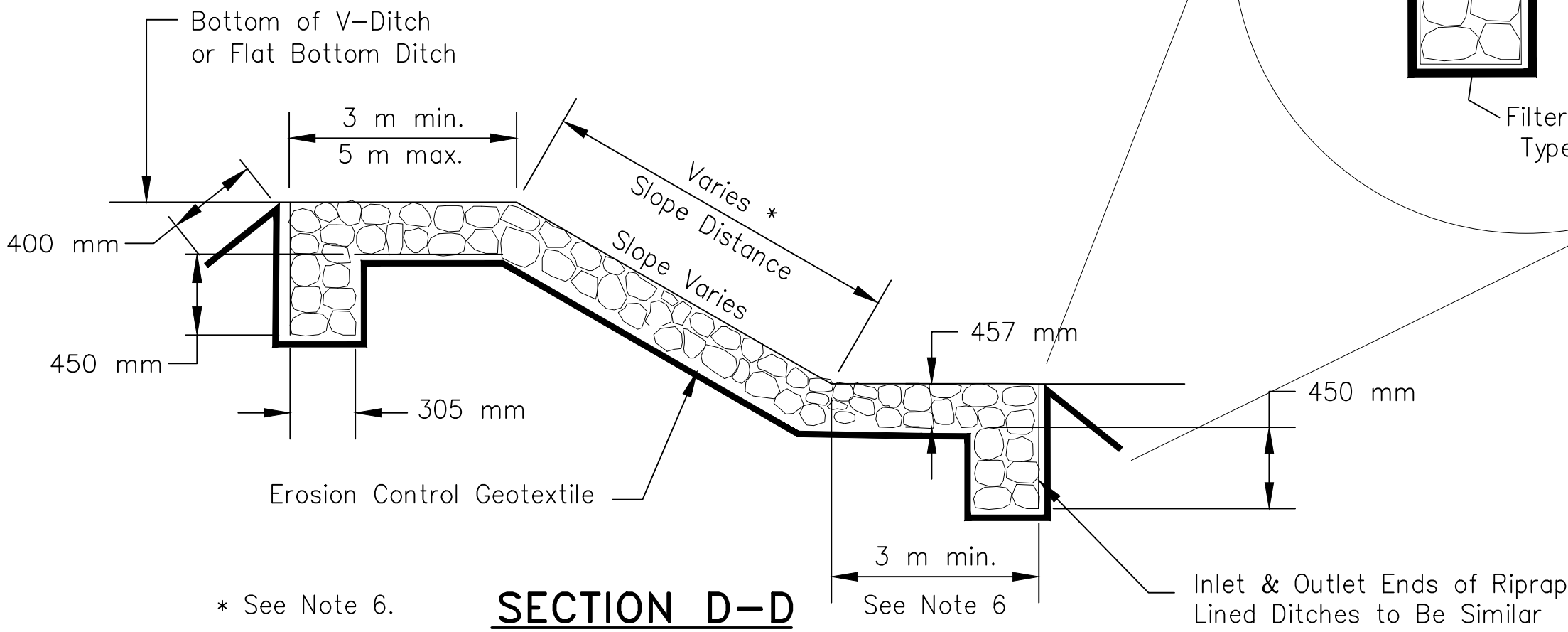
SECTION B-B

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



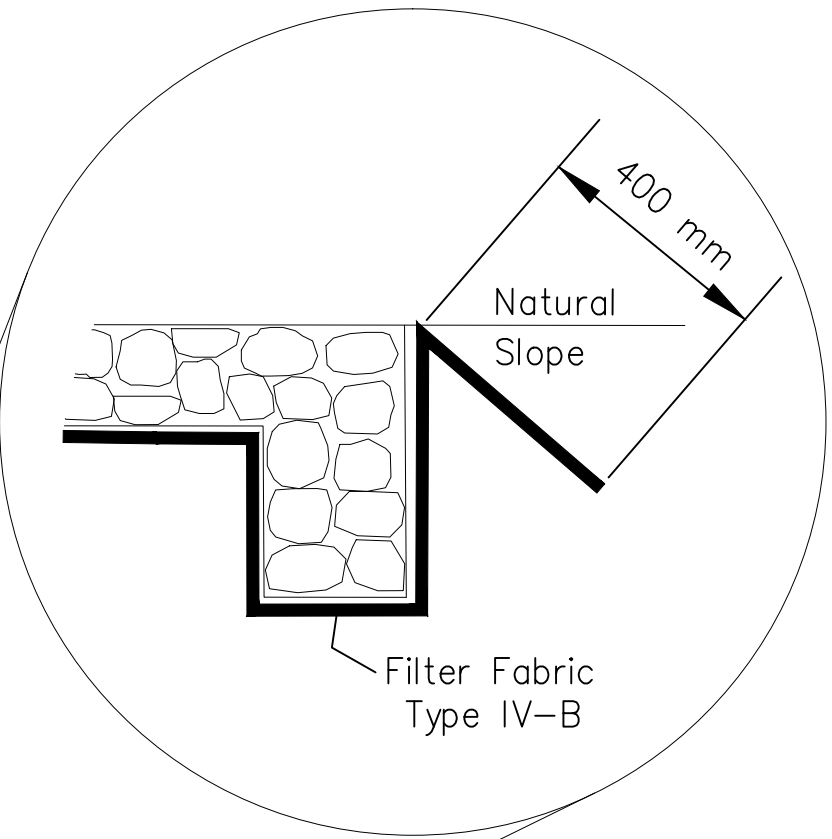
SECTION A-A & RIPRAP LINED DITCH DETAIL

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



SECTION D-D

* See Note 6.



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

RIPRAP LINED DITCH & CUT
TO FILL TRANSITION DETAILS

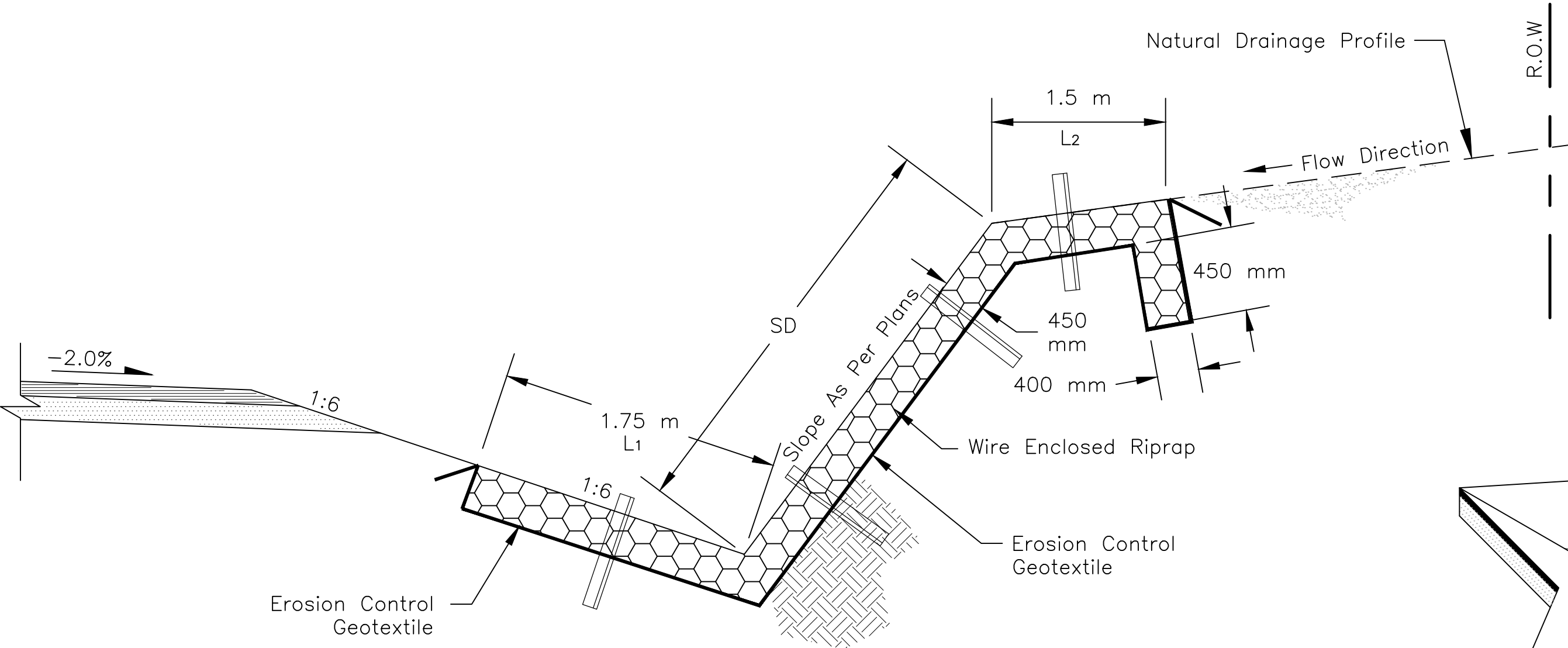
Designed by:NRDOT	
Drawn by: RDL,cdh	Date: 08/12/09
Revised by:	Date:
File Name: STD-Riprap Downdrain	



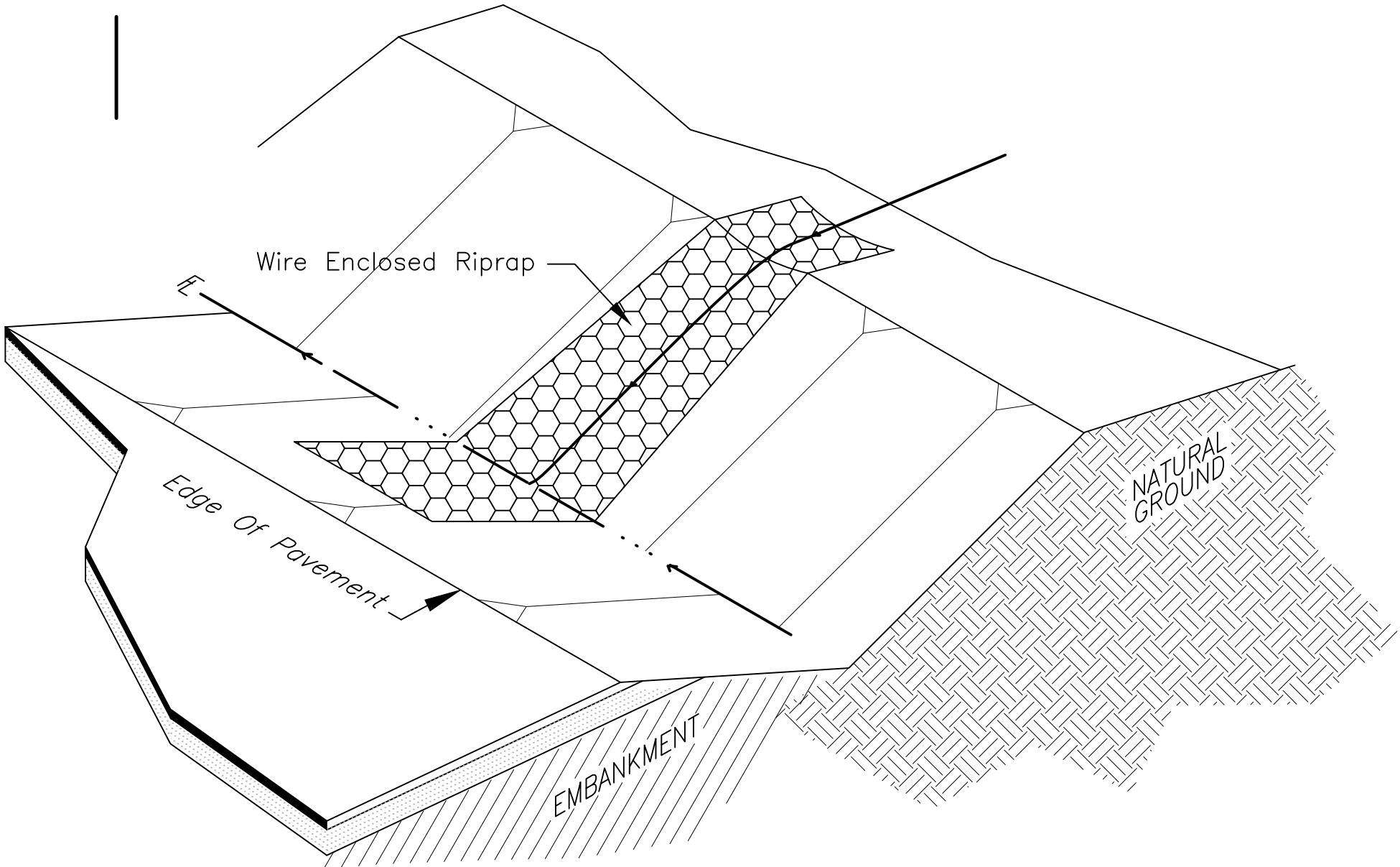
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N46	N46(1)1,2&4	45	58

GENERAL NOTES

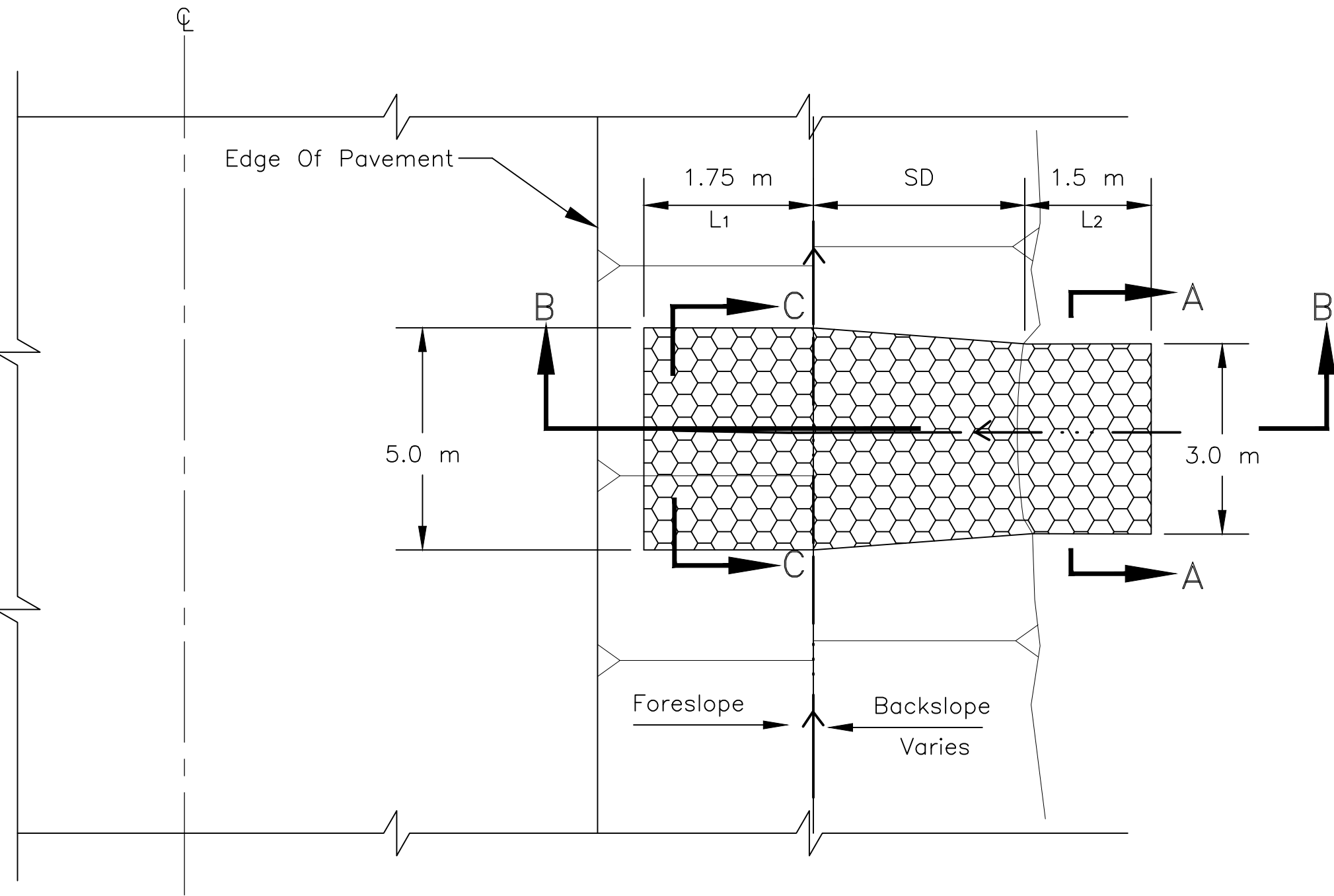
1. See Sheet 22 for Wire Enclosed Riprap Notes.



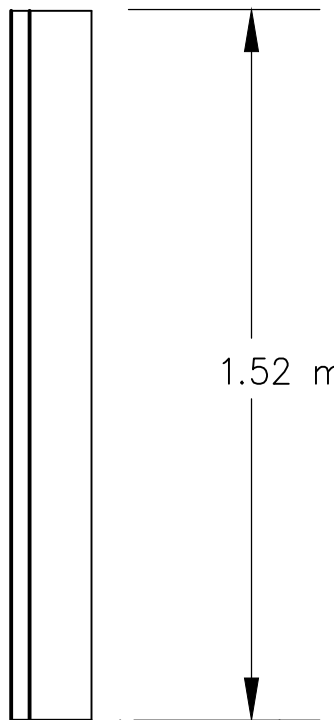
SECTION B-B



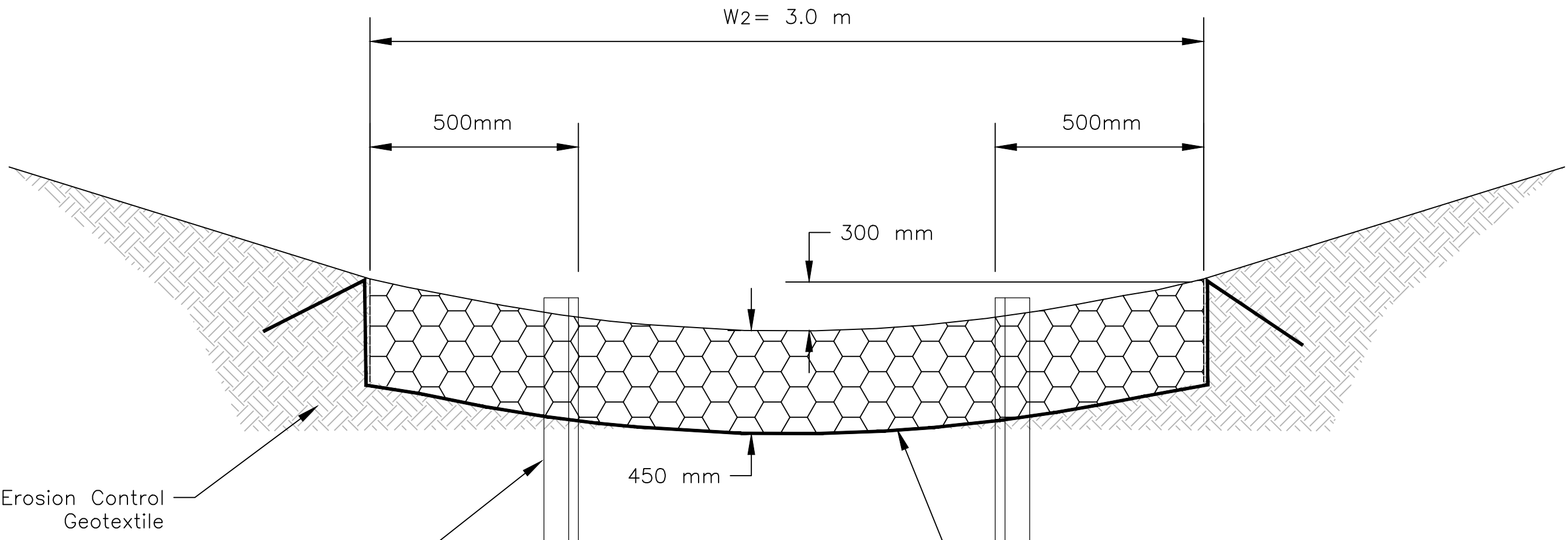
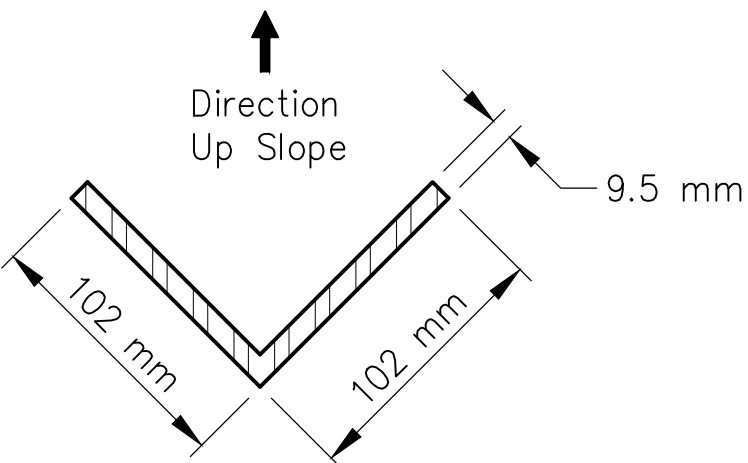
ISOMETRIC VIEW



PLAN VIEW

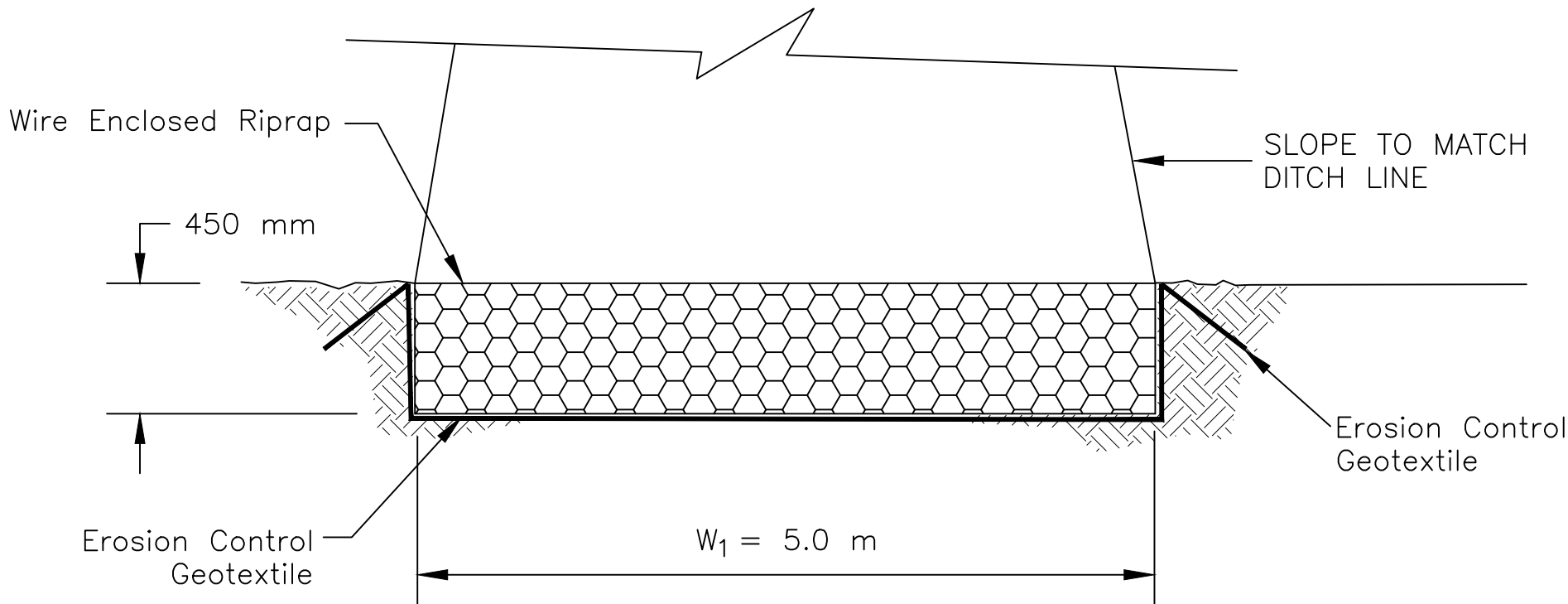


ANGLE IRON ANCHOR DETAIL
N.T.S.



SECTION A-A

L 102 x 102 x 9.5 mm x 1.52 mm
Long Angle Iron Anchor Placed @ 2.44 m
O.C. (Max) Longitudinally & Transversely
(Typical.). Steel angles shall conform to
AASHTO M270M, GRADE 250.



SECTION C-C

ITEM 25112-2000: WIRE ENCLOSED RIPRAP, CLASS 2
BACKSLOPE DOWNDRAIN LOCATIONS

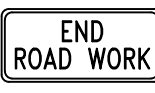
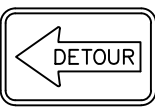
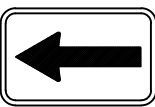
Station	Loc.	SD (m)	L1 (m)	Width: W1 (m)	L2 (m)	Width: W2 (m)	Thickness (mm)	Estimated Riprap Quantity (m³)
1+452	Lt.	7.2	1.75	5.0	1.5	3.0	450	19
1+500	Lt.	8.0	1.75	5.0	1.5	3.0	450	20
1+512	Lt.	5.2	1.75	5.0	1.5	3.0	450	15
1+525	Lt.	10.4	1.75	5.0	1.5	3.0	450	25
TOTAL								79

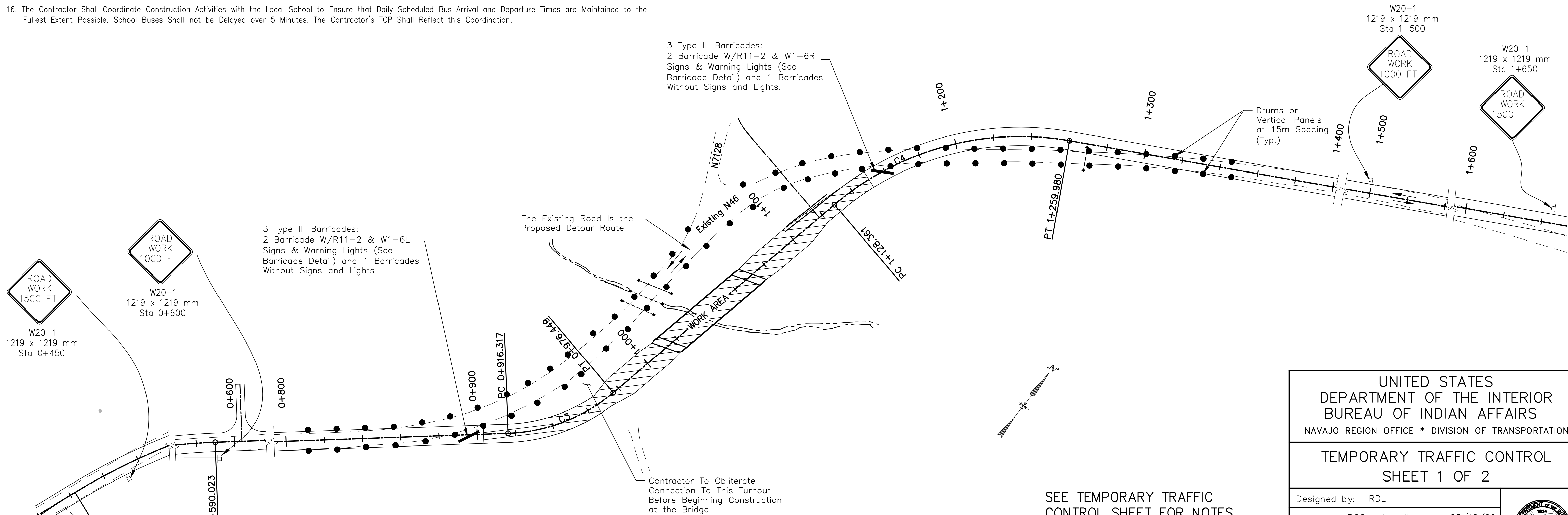
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NAVAJO REGION OFFICE * DIVISION OF TRANSPORTATION

WIRE ENCLOSED RIPRAP DETAIL
FOR BACKSLOPE PROTECTION

Designed by: NRDOT
Drawn by: RDL, cdh Date: 08/12/09
Revised by: Date: 
File Name: STD-backslope protection

1. All Traffic Control Devices Shall Be in Accordance With the MUTCD (Latest Edition and Amendments) and the Supplemental Specifications for This Project.
2. The Traffic Control Details Shown Are Only a Guide. The Contractor Is Solely Responsible For Implementing a Traffic Control Plan (TCP) in Accordance With These Details, Section 635 of IP-03 and the MUTCD, Under Contract Item 63501-0000. The Contractor Shall Coordinate Construction Traffic Control with the Officials of Both Schools Located Within the Project Area to Help Minimize Disruption of the School's Bus Schedules. This Coordination Will Include But Not Be Limited to the Following: Scheduling N46(1) Work Activities and Areas to Avoid As Much As Possible, School Driveway Entrances During Bus Arrival/Departure Times, Scheduling Activities With Longer Traffic Delays Around Bus Schedules, and Instructing Flaggers to Favor Bus Traffic When Possible. Any Additional Traffic Control Devices Called For on the Contractor's TCP Will Not Be Measured For Payment But Shall Be Considered Incidental to the Bid Items For Traffic Control Shown in the Bid Schedule. See the Supplemental Specifications For Additional Requirements.
3. The Contractor's Traffic Control Plan Shall Include Road Construction Ahead Warning Signs on Route N9, and G20-1 and G20-2a Signs on N46, Placed at the Project Limits. These Signs Shall Remain in Place For the Entire Duration of the Project.
4. Flaggers Shall Be Stationed Left & Right As Shown When Equipment Is Crossing or Working Within the Existing Roadway Prism.
5. In Areas of Existing Roadway Widening, the Contractor Shall Ensure That No Pavement Drop-Offs Are Left Exposed During Non-Working Hours. The Contractor Shall Initiate Corrective Means to Achieve a Minimum 1:3 Slope As Shown in the Fillet Detail.
6. At the End of Each Working Day, It Will Be the Contractor's Responsibility to Provide a Driving Surface Free of Obstructions. Access to All Adjoining Properties and BIA/County System Routes Shall Be Maintained at All Times (Day and Night).
7. 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 the Edge of the Shoulder When Construction Is Not in Progress.
8. 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 Obligations of the Contractor.
9. 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.
10. The Contractor Has the Option to Utilize Detour Roads in Accordance With the MUTCD in Conjunction With or in Lieu of Using the "Traffic Thru Construction Zones" Details Shown on this Plan 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.
11. During Construction of the New Bridge, Roadway Traffic Will Utilize the Existing Wash Crossing. See Detour Plan, Sheet 47, For Details.
12. It is the Responsibility of the Contractor to Maintain the Existing Roadway in Driveable Condition During Construction. This Work is Considered Incidental to Item 63501-0000.
13. For Additional Details See Detour Plan, Sheet 47.
14. At Locations Where New Road Construction Crosses Existing Roadway and at Tie-Ins with Existing Roads at the End of the New Construction, Special Traffic Control Procedures Shall be Included in the Contractor's TCP. These Included But are Not Necessarily Limited to the Following: Type III Barricades with "ROAD CLOSED"; DETOUR; SIGNS; FLAG MEN; and/or Drums.
15. The Traffic Control on this Project shall be Coordinated with the Project Construction Schedule. The Contractor's TCP Shall Reflect this Coordination. Maintain 24 hrs Access to Adjoining Properties where Appropriate.
16. The Contractor Shall Coordinate Construction Activities with the Local School to Ensure that Daily Scheduled Bus Arrival and Departure Times are Maintained to the Fullest Extent Possible. School Buses Shall not be Delayed over 5 Minutes. The Contractor's TCP Shall Reflect this Coordination.

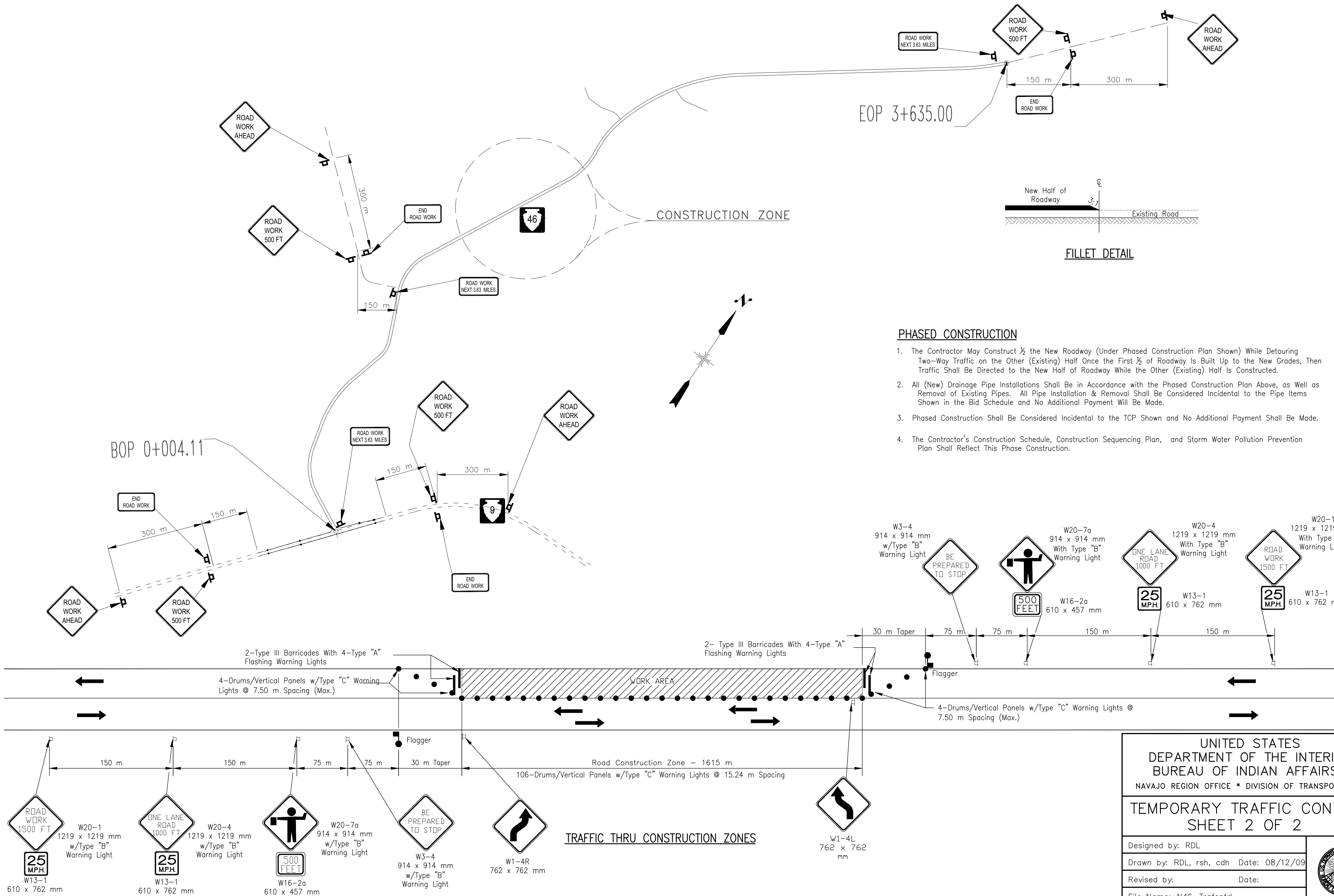
TEMPORARY TRAFFIC CONTROL DEVICES					
DESIGNATION	DETAIL	MINIMUM SIZE (mm)	DESIGNATION	DETAIL	MINIMUM SIZE (mm)
W20-1		1219 x 1219	W1-4R W1-4L		762 x 762 762 x 762
W20-1		1219 x 1219	W16-2a		610 x 457
W20-4		1219 x 1219	G20-2a		914 x 457
W20-7a		914 x 914	Type III Barricade		As Shown
W3-4		914 x 914	R11-2		1219 x 762
W13-1		610 x 762	M4-10(L) M4-10(R)		1219 x 457
G20-1		914 x 457	W1-6(L) W1-6(R)		1219 x 610
Type A Warning Lights		N/A	Drums or Vertical Panels		As Shown
Type C Warning Lights		N/A			



DETOUR FOR CONSTRUCTION OF NEW BRIDGE

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF INDIAN AFFAIRS NAVAJO REGION OFFICE * DIVISION OF TRANSPORTATION	
TEMPORARY TRAFFIC CONTROL SHEET 1 OF 2	
Designed by: RDL	
Drawn by: BGC, rsh, cdh Date: 08/12/09	
Revised by: Date:	
File Name: N46_Trafcentrol_Detour_Plan	

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N46/N9	N46(1)1,2&4 N9(13)2&4	47	58



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

TEMPORARY TRAFFIC CONTROL
SHEET 2 OF 2

Designed by: RDL

Drawn by: RDL, rsh, cdh Date: 08/12/09

Revised by: Date:

File Name: N46_Trafcntrl

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N46	N46(1)1,2&4	48	58

CHART TO DETERMINE SINGLE POST SIZE

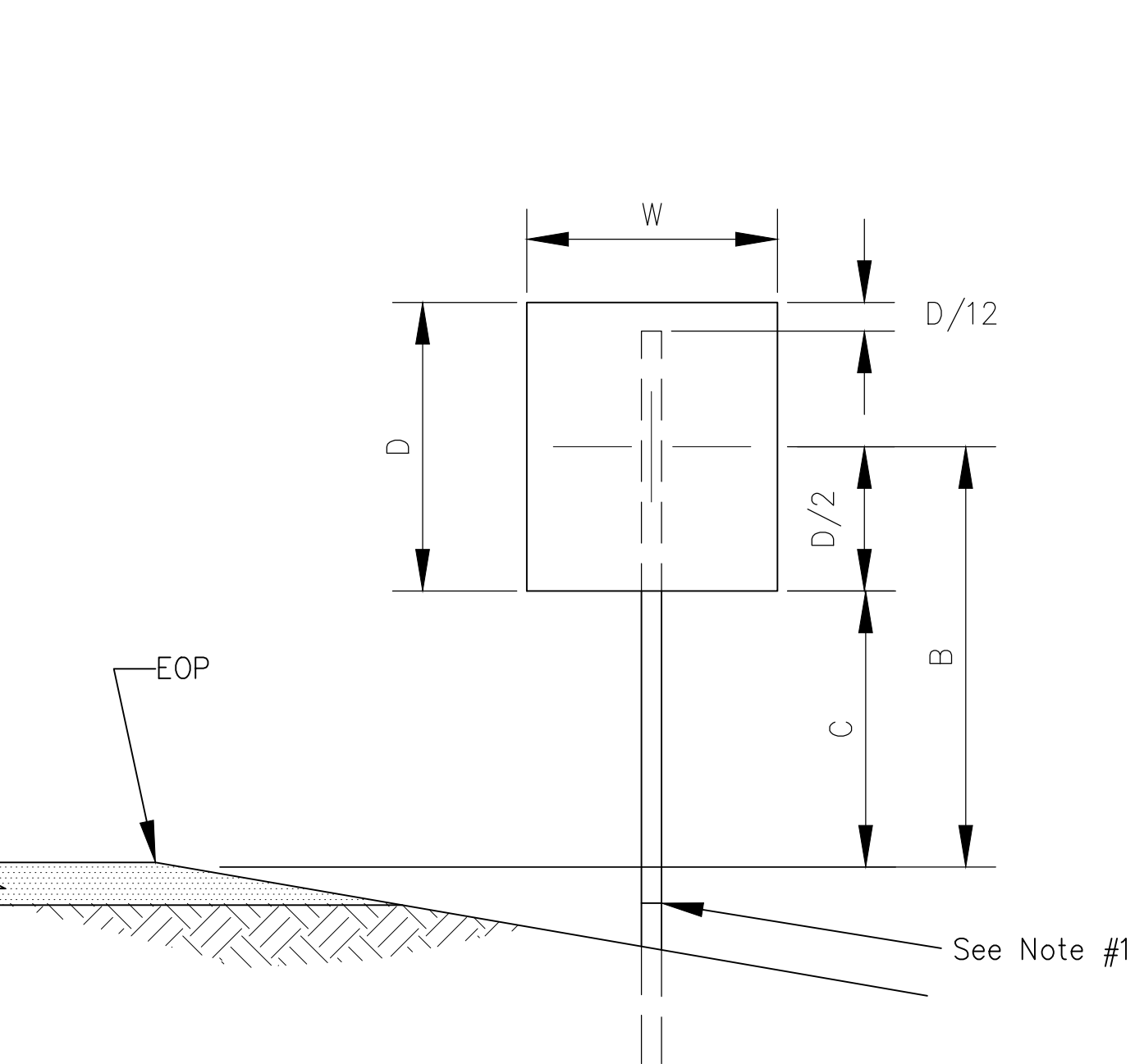
POST WEIGHT	K FACTOR (B x A)	B DIMENSION (Meter)												A(m ²) SIGN AREA
		1.52	1.83	2.13	2.44	2.74	3.05	3.35	3.66	3.96	4.27	4.57	4.87	
2.976 kg/m	DOES NOT APPLY	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.34	0.32	0.30	0.27	0.26	
3.348 kg/m		0.47	0.47	0.47	0.47	0.47	0.47	0.43	0.39	0.36	0.33	0.32	0.30	
4.092 kg/m		0.62	0.62	0.62	0.62	0.62	0.62	0.56	0.51	0.47	0.44	0.41	0.38	
4.464 kg/m		0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.62	0.58	0.52	0.47	0.46	
5.952 kg/m		0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.80	0.74	0.70	0.65	

CHART TO DETERMINE DOUBLE POST SIZE

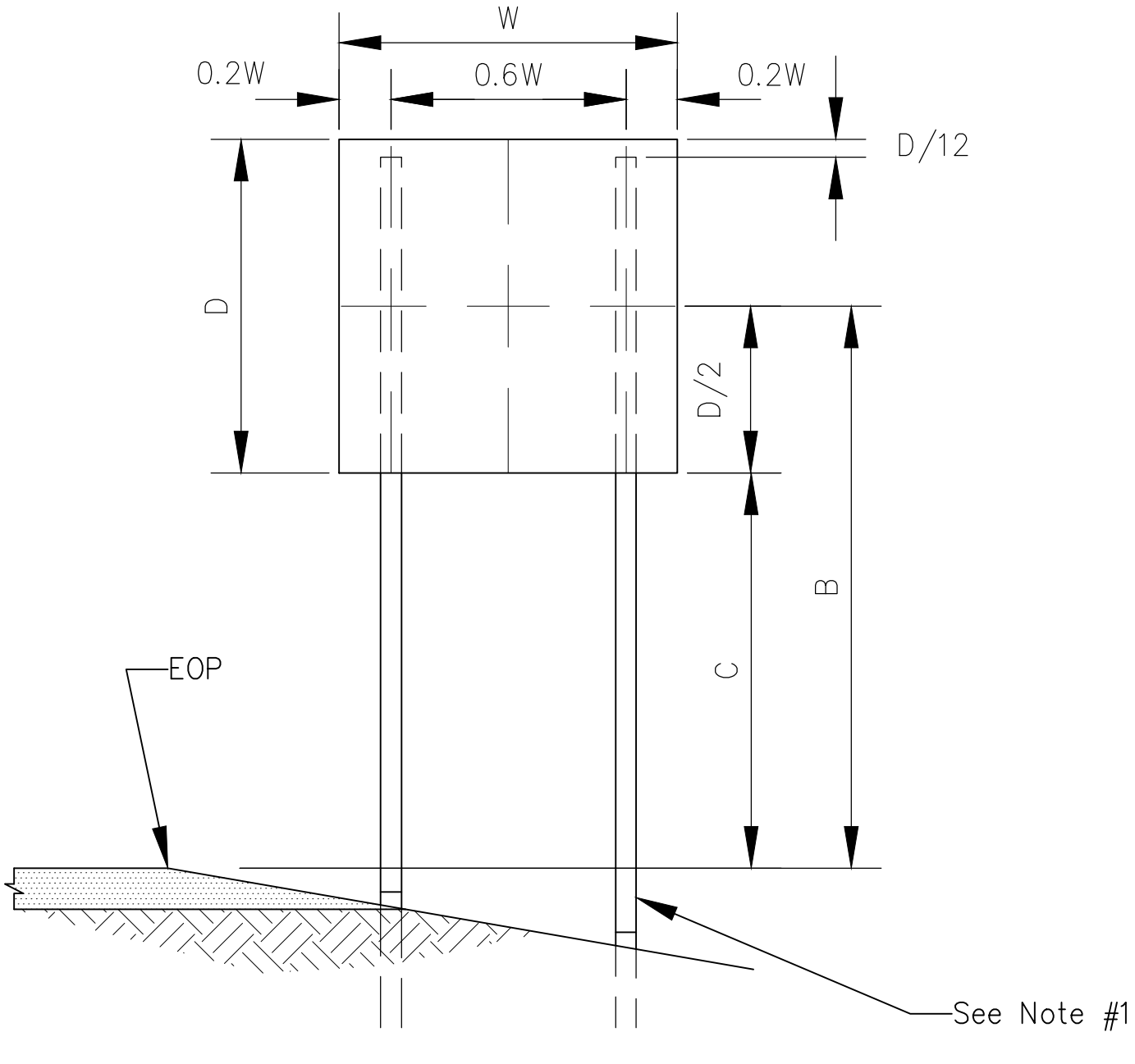
POST WEIGHT	K FACTOR (B x A)	B DIMENSION (Meter)												A(m ²) SIGN AREA
		1.52	1.83	2.13	2.44	2.74	3.05	3.35	3.66	3.96	4.27	4.57	4.87	
2.976 kg/m	2.74	1.80	1.50	1.28	1.12	1.00	0.90	0.82	0.75	0.70	0.64	0.60	0.57	
3.348 kg/m	3.08	2.03	1.69	1.45	1.27	1.13	1.01	0.92	0.85	0.78	0.72	0.68	0.63	
4.092 kg/m	4.03	2.64	2.20	1.89	1.65	1.47	1.32	1.20	1.10	1.01	0.94	0.88	0.83	
4.464 kg/m	4.91	3.23	2.69	2.31	2.03	1.79	1.62	1.47	1.35	1.24	1.15	1.08	1.01	
5.952 kg/m	6.83	4.48	3.73	3.20	2.80	2.49	2.24	2.03	1.87	1.72	1.60	1.50	1.40	

CHART TO DETERMINE THREE POST SIZE

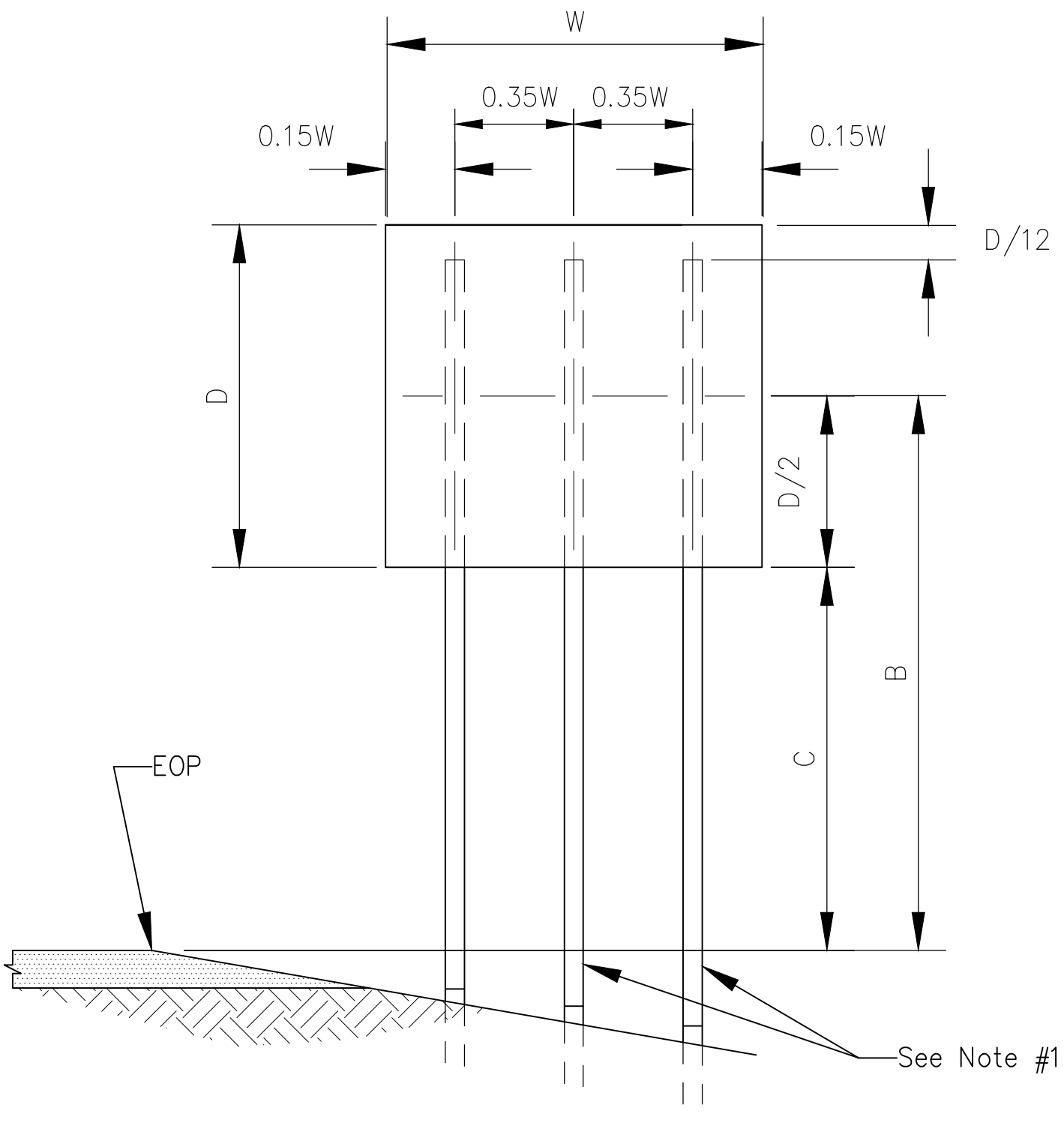
POST WEIGHT	K FACTOR (B x A)	B DIMENSION (Meter)												A(m ²) SIGN AREA
		1.52	1.83	2.13	2.44	2.74	3.05	3.35	3.66	3.96	4.27	4.57	4.87	
2.976 kg/m	4.12	2.69	2.25	1.92	1.68	1.50	1.35	1.23	1.12	1.04	0.97	0.90	0.85	
3.348 kg/m	4.65	3.05	2.54	2.17	1.90	1.69	1.52	1.38	1.27	1.17	1.09	1.01	0.96	
4.092 kg/m	6.02	3.96	3.30	2.82	2.47	2.19	1.98	1.79	1.64	1.52	1.41	1.32	1.24	
4.464 kg/m	7.40	4.85	4.04	3.47	3.03	2.69	2.42	2.20	2.02	1.86	1.73	1.62	1.51	
5.952 kg/m	10.20	6.71	5.58	4.78	4.19	3.73	3.35	3.05	2.79	2.57	2.40	2.23	2.09	



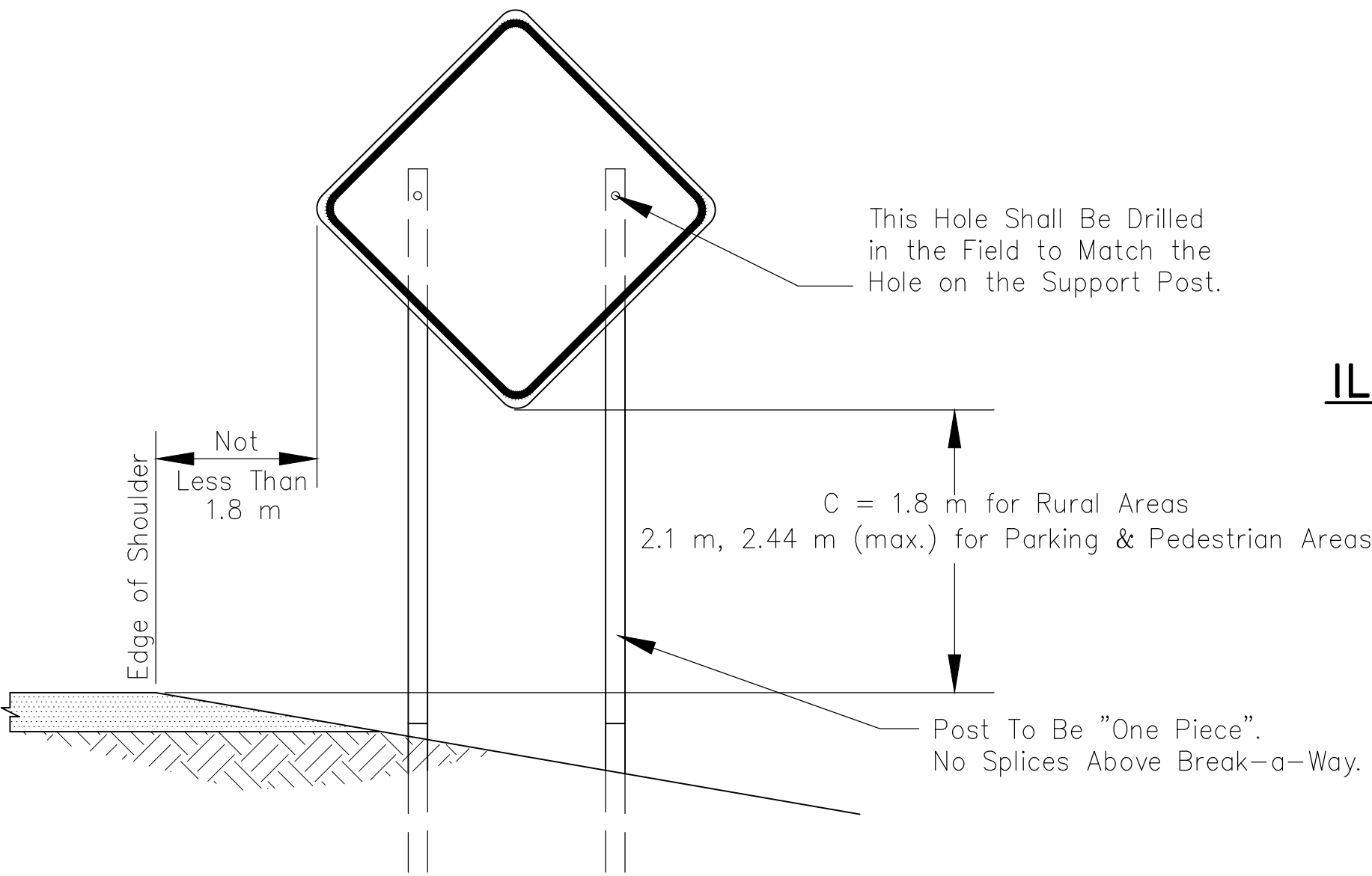
SINGLE POST SIZE (Typ.)



DOUBLE POST SIZE (Typ.)



THREE POST SIZE (Typ.)



TYPICAL 2-POST ROADSIDE SIGN LOCATION

GENERAL NOTES:

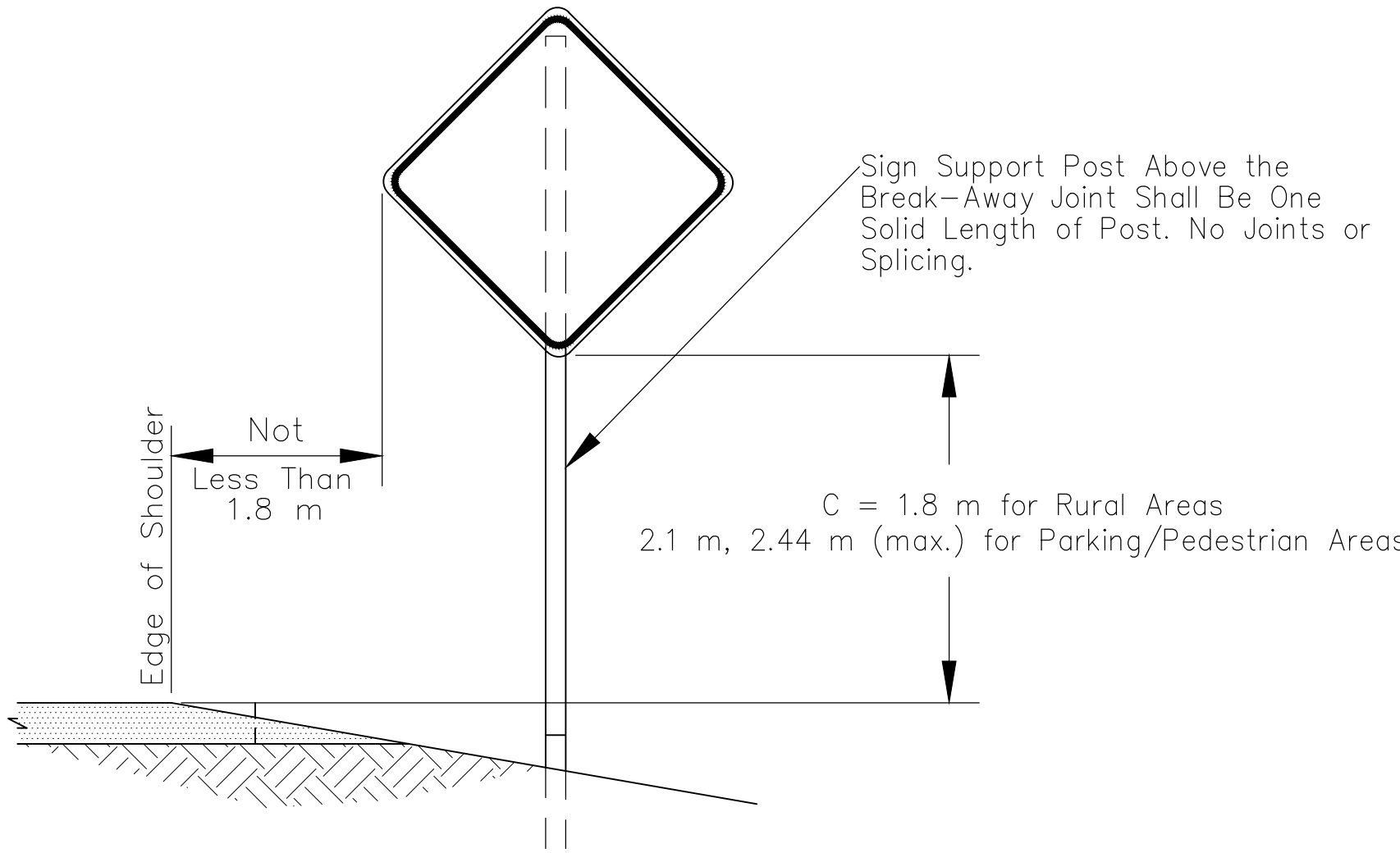
- The Contractor Shall Be Required to Adjust the Length of Sign Support Posts. This Work Shall Be Included in the Unit Price For the Appropriate Bid Items Shown in the Bid Schedule.
- Sign Dimensions Equal to or in Excess of 762 mm X 762 mm Size Shall Be Installed With a Minimum of Two (2) Steel Posts.

ILLUSTRATION OF POSTS/WEIGHT DETERMINATION:

- REQUIRED: Determine Post Requirements For 1.52 m wide x 1.22 m High Sign. Located On a Rural Highway.
- GIVEN: W=1.52 m
D=1.22 m
C=1.5 m for Rural Areas
- SOLUTION: 1. $D/2 = 0.61$ m; K factor = 3.90
2. $B=C+D/2=1.5 + 0.61$; B=2.11 m
3. $A=W \times D=1.52 \times 1.22 = 1.85$ sq. m.
4. Begin with Single Post Chart for Column of B=2.13 m, and Continue Down Until Area of Sign Equals or Exceeds 1.85 sq. m. The Area Exceeds the Single Post Chart, So Go to the Double Post Table.

Select Two (2) Posts of 4.09 kg/m
Yields a Factor of 4.03
Which Is Optimum.

POST	B=2.13
4.09 kg/m	1.89
4.46 kg/m	2.31
5.95 kg/m	3.20



TYPICAL 1-POST ROADSIDE SIGN LOCATION

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

PERMANENT SIGNING DETAILS

Designed by: NRO-DOT	
Drawn by: NRO-DOT Date: 08/12/09	
Revised by: Date:	
File Name: STD-Sign1	

WEIGHT *kg/m	DIMENSIONS (mm)				AREA mm ²	X-X AXIS		Y-Y AXIS	
	A	B	C	D		I(mm ⁴)	S(mm ³)	I(mm ⁴)	S(mm ³)
2.97	38.30	76.91	33.12	16.10	54.83	81.99	42.27	195.62	50.96
3.71	38.68	79.35	33.15	18.33	51.28	103.22	51.29	249.73	62.92
4.08	39.47	78.77	32.72	16.94	55.74	112.38	54.89	278.04	70.62
4.45	48.34	85.85	33.73	18.42	62.45	188.65	73.24	374.60	87.34
5.94	50.27	85.78	34.04	19.10	80.77	260.14	97.99	476.58	111.10

The diagram shows a cross-section of a beam with a trapezoidal hole. The total width of the beam is labeled B. The hole has a top width labeled C and a bottom width labeled D. The height of the hole is labeled A. The slanted sides of the hole are labeled X. A horizontal dashed line labeled Y-Y passes through the center of the hole. Arrows indicate the width dimensions B, C, and D, and the height dimension A. The slanted sides X are indicated by lines pointing to the sloped surfaces of the hole.

* Cadmium Plated Flanged Lock Nut

64 mm (Aluminum)

8 mm Cadmium Plated Hex Head Flanged Bolt (Aluminum Sign)

LAP SPLICE – TOP VIEW

LAP SPLICE - TOP VIEW

LAP SPLICE CONNECTION DETAIL

Top Post

Base Post

Lap Splice Spacer Bar

Flat Washers

8 mm x 38 mm Hex Head Grade 9 Plated Splice Bolts

100 mm

965 mm

NOTE: After Final Installation and Tightening, ALL Posts and Sign Bolt Threads Shall Be "Burred" To Help Prevent Loosening. Burrs Shall Not Be So Severe As to Prevent Removal.

RIB-BAK U-CHANNEL

12 Gage Aluminum Sheet

Carriage or Hex Head Flange Bolt and Lock Nut
(Paint to Match Face of Sign)

Sign Post

Direction Of Travel
See Note 8

19 mm

Technical drawing of a PCB showing dimensions and plating specifications.

Dimensions:

- Width: 19 mm
- Length: 127 mm

Plating Specifications:

- 3 mm (Gold)
- 0 mm (Silver)

Drill and Tap For 8mm - 18 UNC

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N46	N46(1)1,2&4	49	58

1. Base Post and Sign Post Shall Be Rib-Bak U-Channel Fabricated From Hot Rolled Carbon Steel Bars Conforming to the Requirements of ASTM A499. Yield Point of the Steel Shall Be 550 MPa (Minimumum). Tensile Shall Be 689.47 MPa (Minimumum).
2. Posts Shall Be a Uniform, Modified, Flanged Channel Section of the Rib-Bak Design. Weight of the Posts Shall Be as Specified By the User, $\pm 5\%$ Before Punching. The Posts Shall Be Punched With Continuous 9 mm Holes on 25 mm Centers For the Entire Length of the Post.
3. The Posts Shall Be Machine Straightened to Have a Smooth, Uniform Finish Free From Defects Affecting Their Strength, Durability, or Appearance. All Holes and Rough Edges Shall Be Free From Burrs. The Permissible Tolerance for Straightness Shall Be Within 6.35 mm in 1.52 Meter.
4. Posts Shall Be Galvanized After Fabrication in Accordance With the Requirements of ASTM A123. Bolts, Nuts, Washers and Spacer Shall Be Cadmium Plated in Accordance With the Requirements of ASTM A165 or Zinc Plated in Accordance With the Requirements of ASTM B633.
5. Splice Hardware Shall Consist of Two Fully Threaded, 8 mm X 38 mm Grade 9 Plated, Hex Head Bolts, With Flat Washers, and Self Locking Hex Nuts Per Post. In Addition, One Shall Be Galvanized After Fabrication in Accordance With the Requirements of ASTM A123. Bolts, Nuts, Washers and Spacers Shall Be Cadmium Plated in Accordance With ASTM B766. One 19 mm X 127 mm Plated Spacer Bar Shall Be Used, Per Post, To Stiffen the Splice Connection. Each Spacer Bar Shall Be Drilled and Tapped With 8 mm-18 UNC Threads. The Spacer Shall Be Fabricated From Hot Rolled Carbon Steel Bars Conforming to ASTM A36 or M1020. Bolts Shall Be Red in Color With the Head Marking "M180".
6. Bolts and Lock Nut Hardware For Sign Attachment Shall Be Hex Head Flange Type. Size Shall Be 8 mm-18 UNC. Bolts and Nuts Shall Be Cadmium Plated to ASTM B766 Specification.
7. An Alternate Breakaway and Support Post Assembly May Be Submitted to the NRDOT Division Manager for Review and Approval.
8. Supplemental Signs on the Opposite Side of Road Shall Have the Post Reversed So That Rib-Bak Is Facing Away From the Opposing Traffic.
9. The Post Shall Be Coated With a Baked on Green Alkyd Resin, Paint, Painted With a Polyester Powder or Galvanized Per Note 4 Above.

- STEP 1:
Drive Base Post to Within Approximately 300 mm Above Ground Level. Place One Bolt and Cut Washer in Fifth Hole From the Top and Securely Tighten Threaded Spacer Onto Bolt.
- STEP 2:
Drive Base Post to 100 mm Above Ground Level. Place Remaining Bolt and Cut Washer in First Hole From the End and Securely Tighten Threaded Spacer Onto Bolt.
- STEP 3:
Dig Out Approximately 50 mm From Around Back of Ground Post to Allow Room For Top Post to Be Attached.
- STEP 4:
Nest Top Post Onto Protruding Base Post Bolts, Through the First and Fifth Holes of the Top Post.
- STEP 5:
Place a Self-Locking Flange Nut on Each Bolt. Tighten Nuts and Tamp Earth Around Post Firmly.

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NAVAJO REGION OFFICE * DIVISION OF TRANSPORTATION

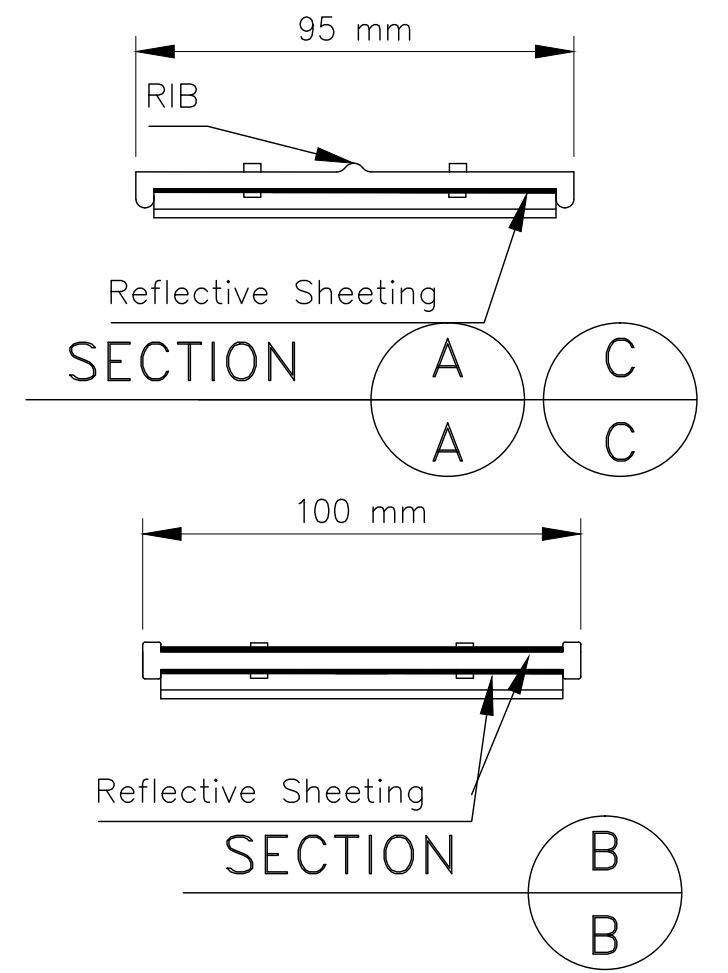
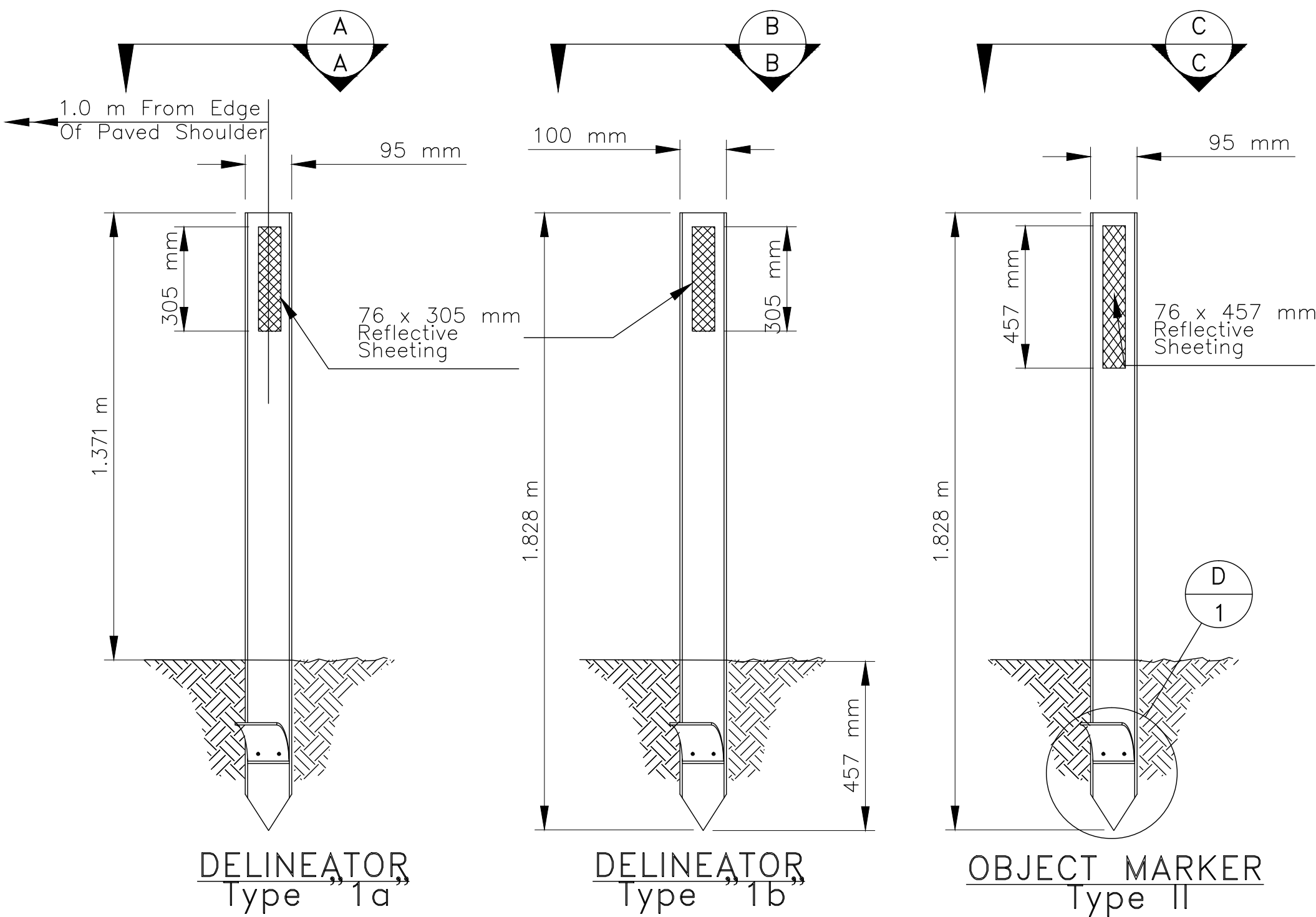
SIGN POST AND HARDWARE DETAILS

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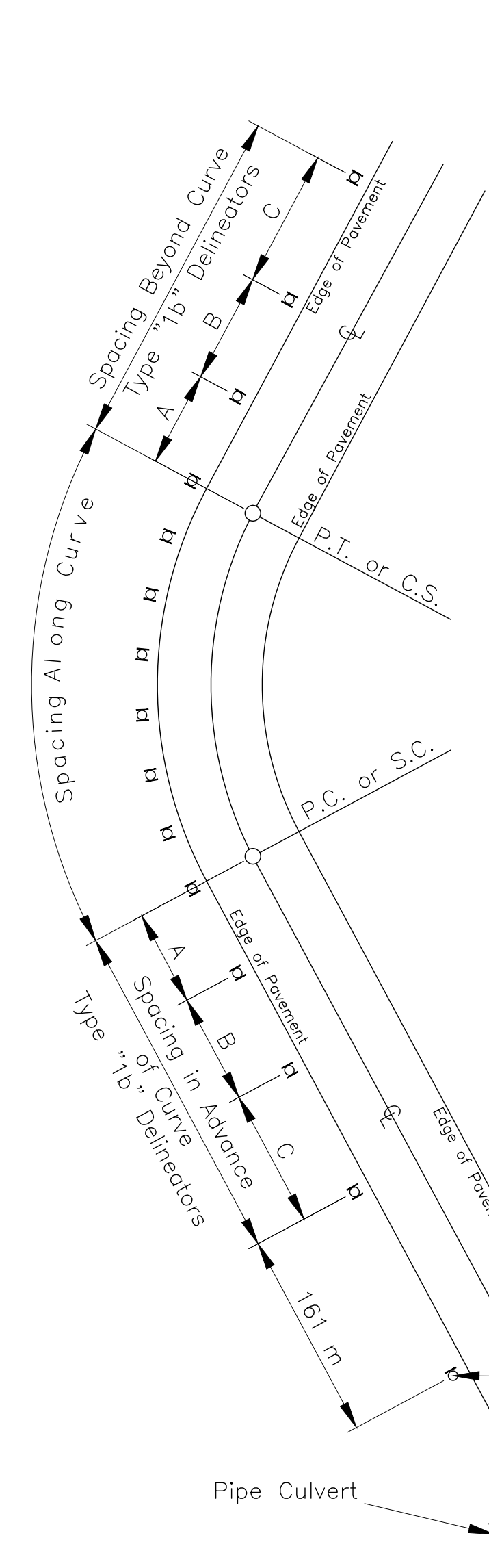
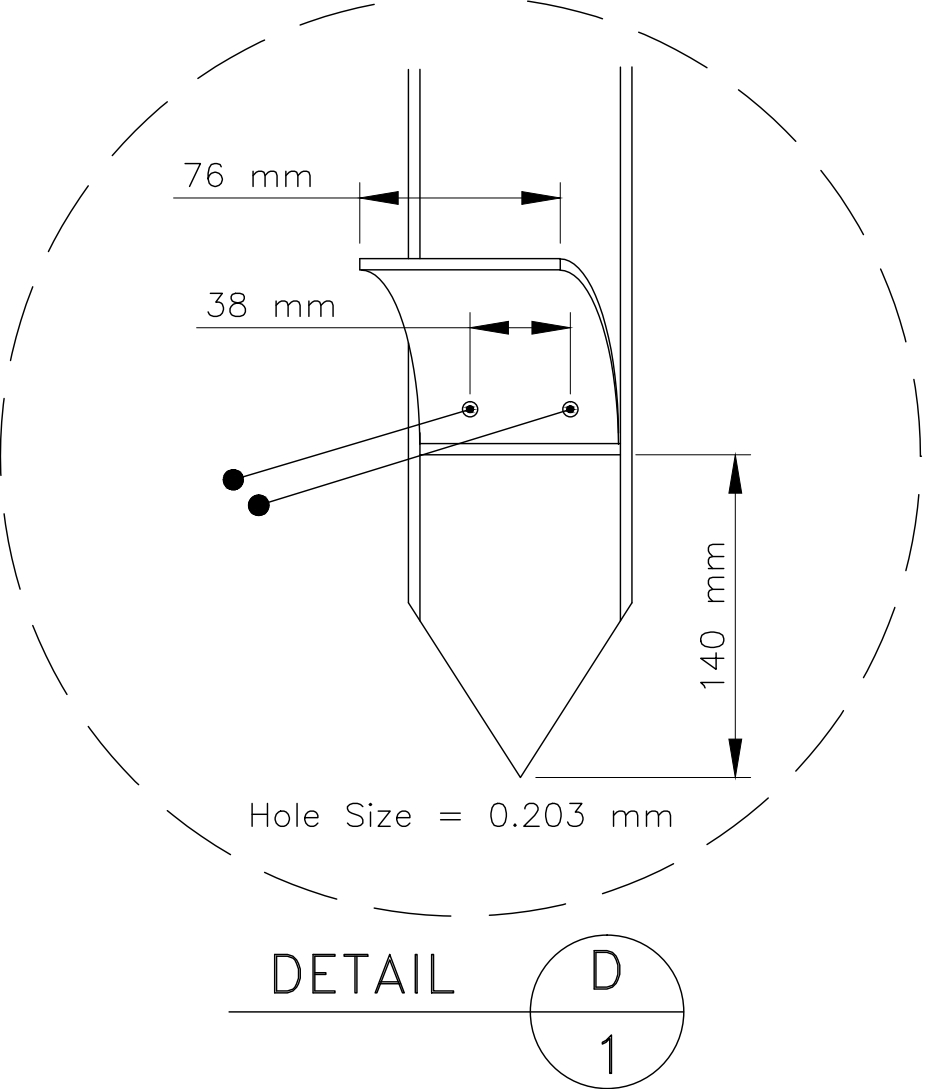


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GLASS FIBER TYPE DELINEATOR AND OBJECT MARKER



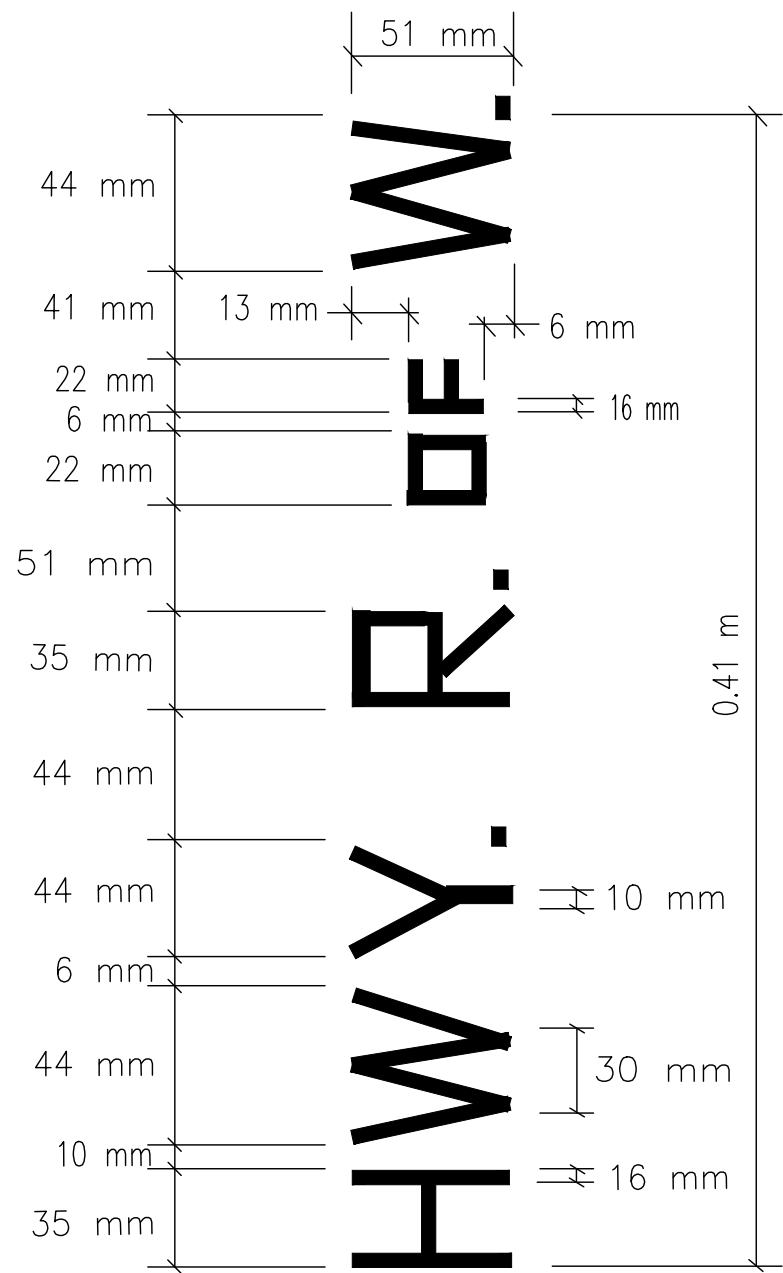
TYPE	POST COLOR	HIGH INTENSITY REFLECTIVE SHEETING
1a	WHITE	WHITE, ONE SIDE
1b	WHITE	WHITE, BOTH SIDES
2	YELLOW	AMBER, ONE SIDE



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	30	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.

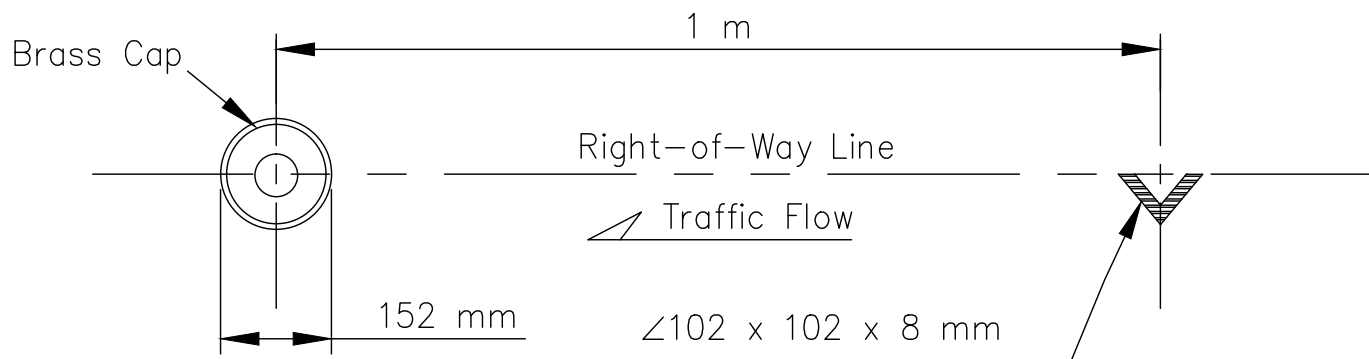
NOTE: When uniform spacing is interrupted by such features as culverts, signs, driveways, intersections, delineators which would ordinarily be located within the features may be relocated in either direction for a distance not exceeding one quarter of the uniform spacing. Delineators still falling within such features may be eliminated.



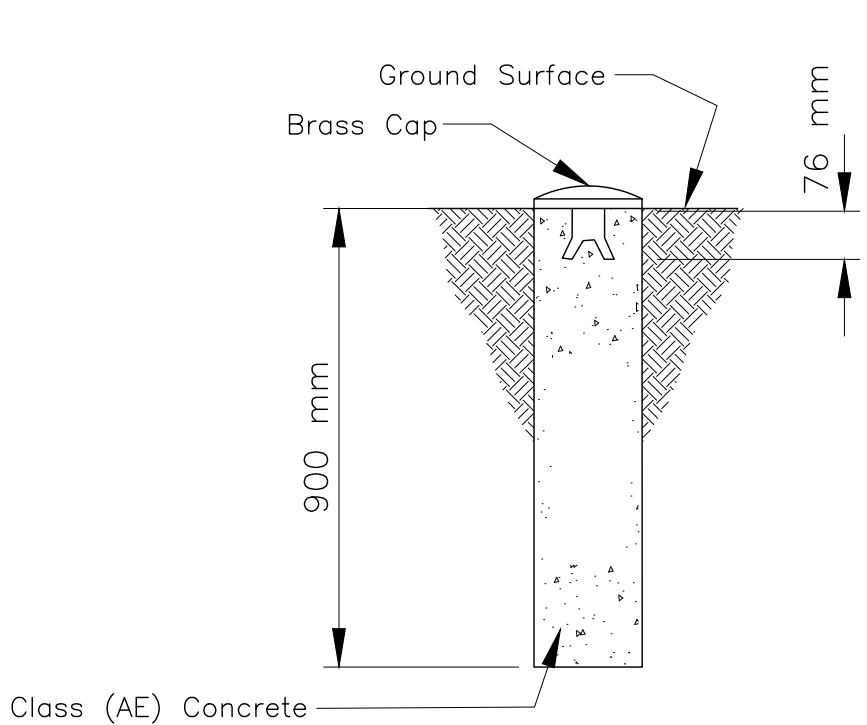
TYPICAL LETTERING DETAIL

Sta. 1+140.000 - 90 m Lt.(only)
BURIED R.O.W. MONUMENT

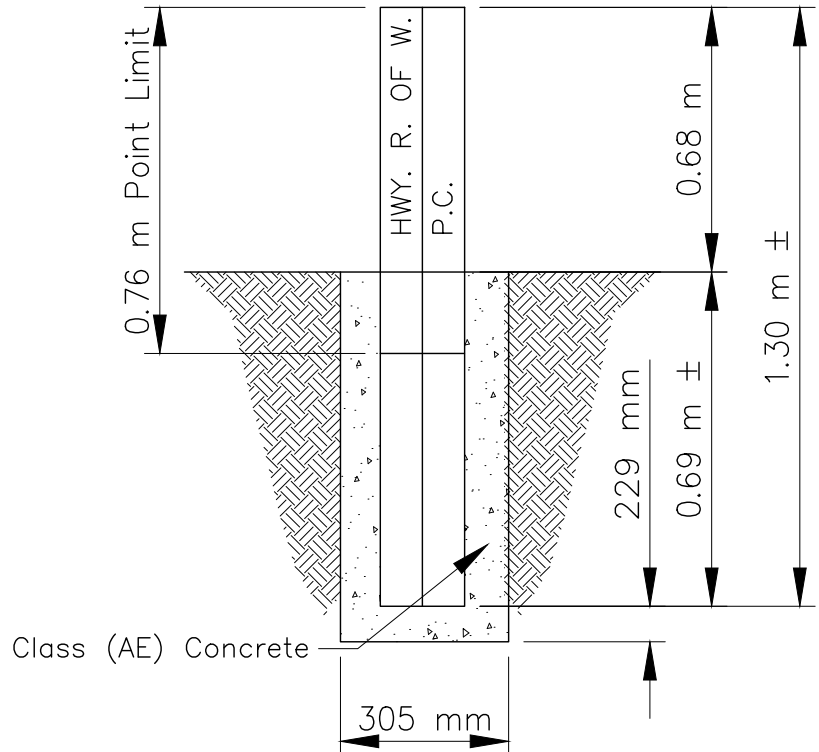
RIGHT-OF-WAY MONUMENT SYMBOL



PLAN VIEW



R.O.W. MONUMENT

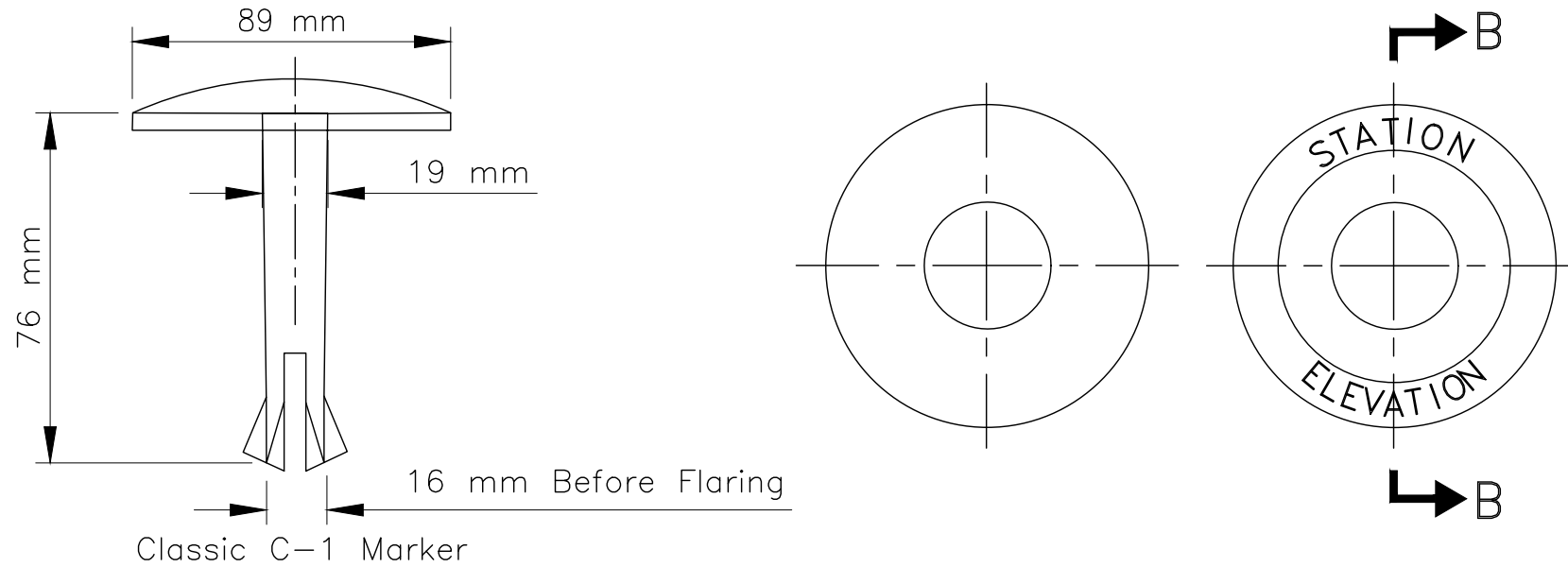


REFERENCE MARKER

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N46	N46(1)1,2&4	50	58

GENERAL NOTES

- Survey Monument and Reference Markers Shall Be Placed As Shown on the Plans or As Directed By the AOTR/COR. The Cost of Supplying All Materials and Installation of Right-of-Way Monuments & Markers Shall Be Included in the Unit Prices Bid Under Items 62101-0000 & 62102-0000.
- Brass Caps For the Survey Monuments Shall Be Supplied By the Contractor Conforming to ASTM B584 and Shall Be Considered Incidental to Item 62101-0000.
- All Concrete Shall Be Class A(AE) and Shall Conform to Section 601 of FP-03. Furnishing and Placing of Concrete and Rebar Shall Be Considered Incidental to Items 62101-0000 & 62102-0000.
- Roadway Stationing & Elevations Shall Be Stamped on All Brass Caps By the Contractor After Installation.
- The Contractor Shall Be Required to Paint the Reference Markers Per Section 708 and Subsection 708.04 of FP-03:
 - The Primer Coat Shall Conform to Subsection 708.04(A) or (B) of FP-03.
 - The White Finish Coat of Paint Shall Conform to Subsections 708.04 (C),(D), or (E) of FP-03.
 - All Letters, Numerals, Symbols, Etc. Shall Be Painted on the Reference Markers Using the Dimensions Shown Using Lamp Black Paint Conforming to ASTM D 209. The Required Information to Be Placed on the Reference Markers Shall Be Furnished to the Contractor By the AOTR/COR.
- The Contractor Has the Option to Use An Approved State Point Specification in Lieu of That Stated in Note 5 Above. The Contractor Shall Submit the Paint Specifications (in Writing) 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 Contracting Officer. Any Painting Performed by the Contractor Without the Proper Approval Shall Be Cause For the Work to Be Rejected.
- The Contractor Shall Use Glass Fiber Highway Delineators only. The Cost of Supplying Materials and Installation of U-Channel Shall Be Included in the Unit Price Bid Under Items 63308-2000, 63308-3000 & 63309-0020.
- Set R.O.W. Monuments at Stations and Offsets to Match the Right-Of-Way Plat. These Locations May Vary From the Stations and Offsets Shown on the Construction Plan and Profile Sheets.
- If rock is encountered when installing the right-of-way monument and reference maker, drill a 152mm for R/W 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 therefor. (Bid Item 62101 & 62102).



SECTION B-B BOTTOM VIEW TOP VIEW

STANDARD BRASS CAP DETAIL

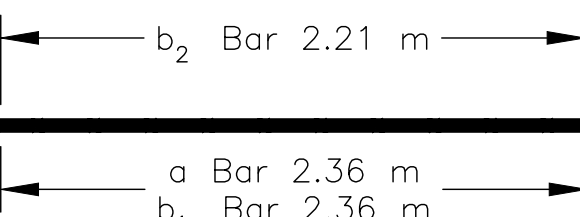
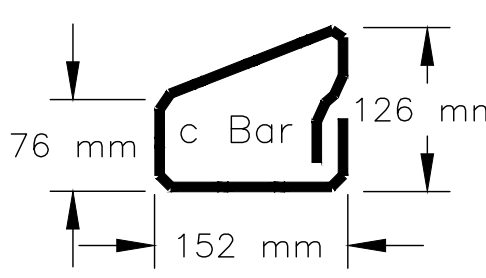
(OR APPROVED EQUAL)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF INDIAN AFFAIRS NAVAJO REGION OFFICE * DIVISION OF TRANSPORTATION	
DELINEATOR AND R.O.W. MARKER DETAILS	
Designed by: NRO-DOT	
Drawn by: NRO-DOT	Date: 08/12/09
Revised by:	Date:
File Name: STD-delinrowdet	



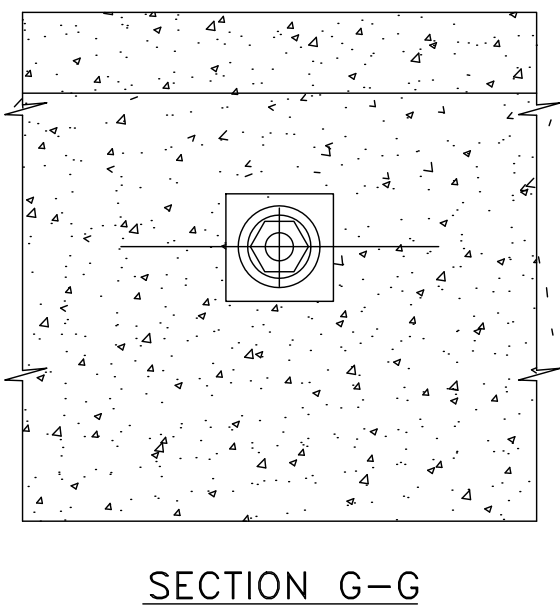
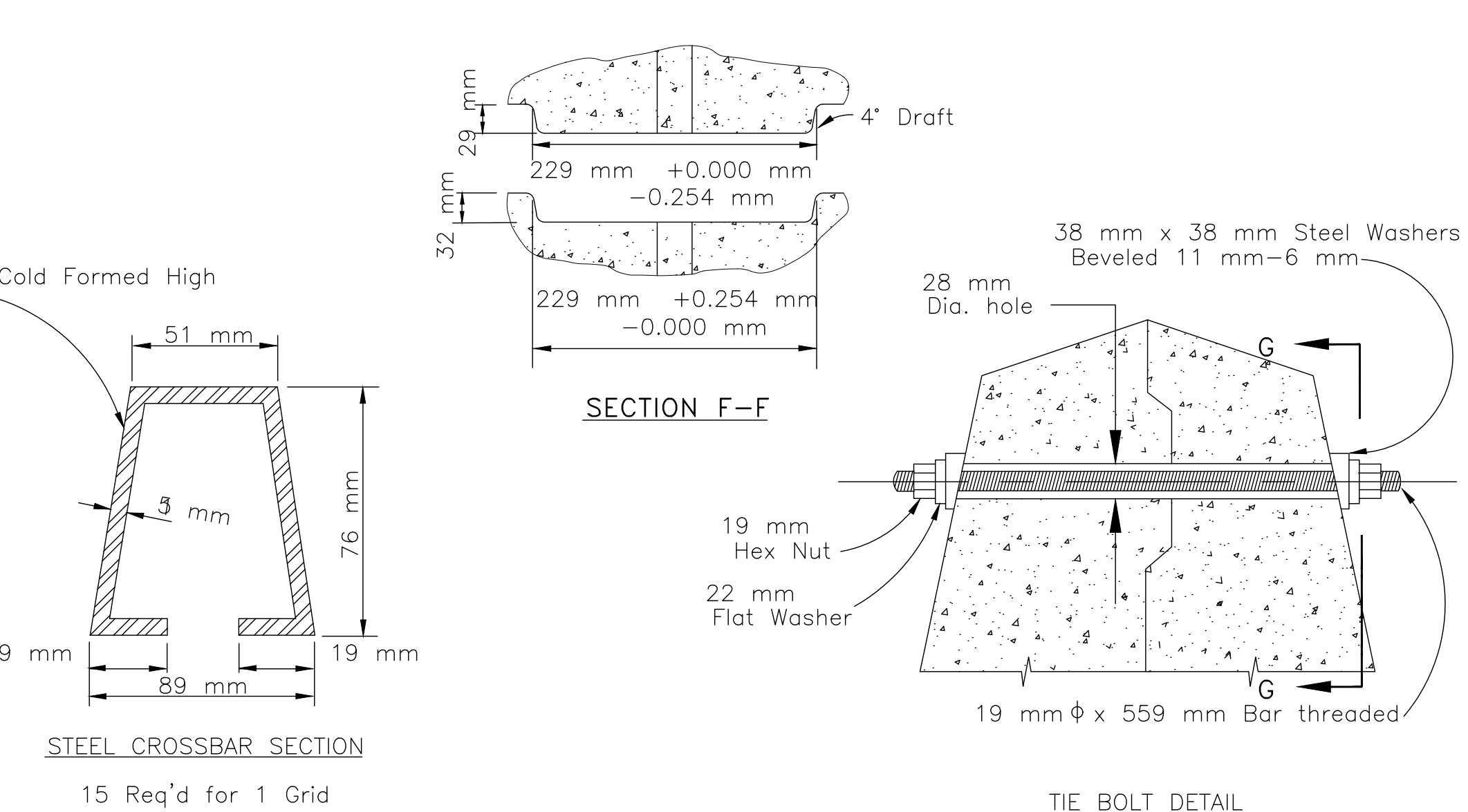
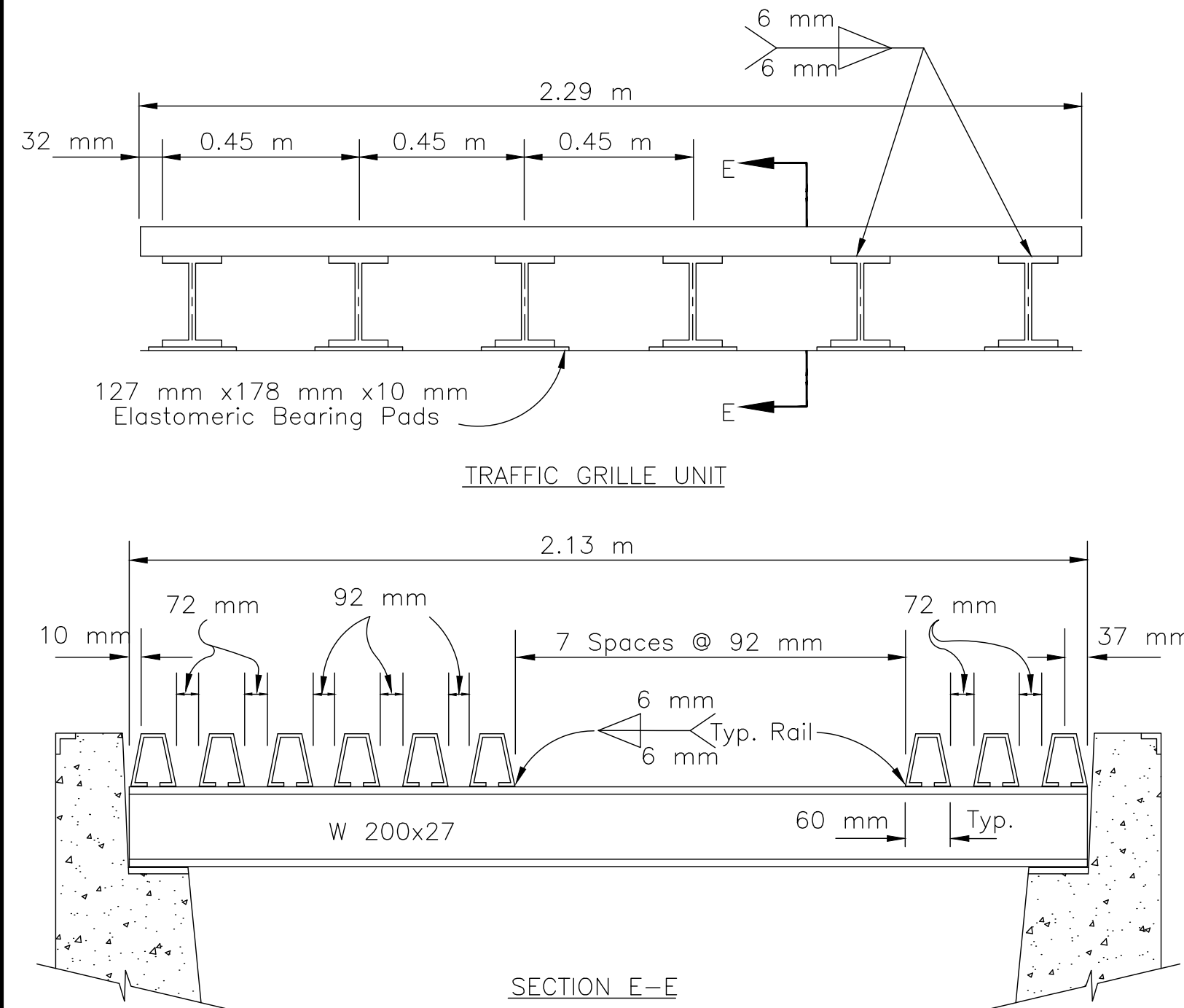
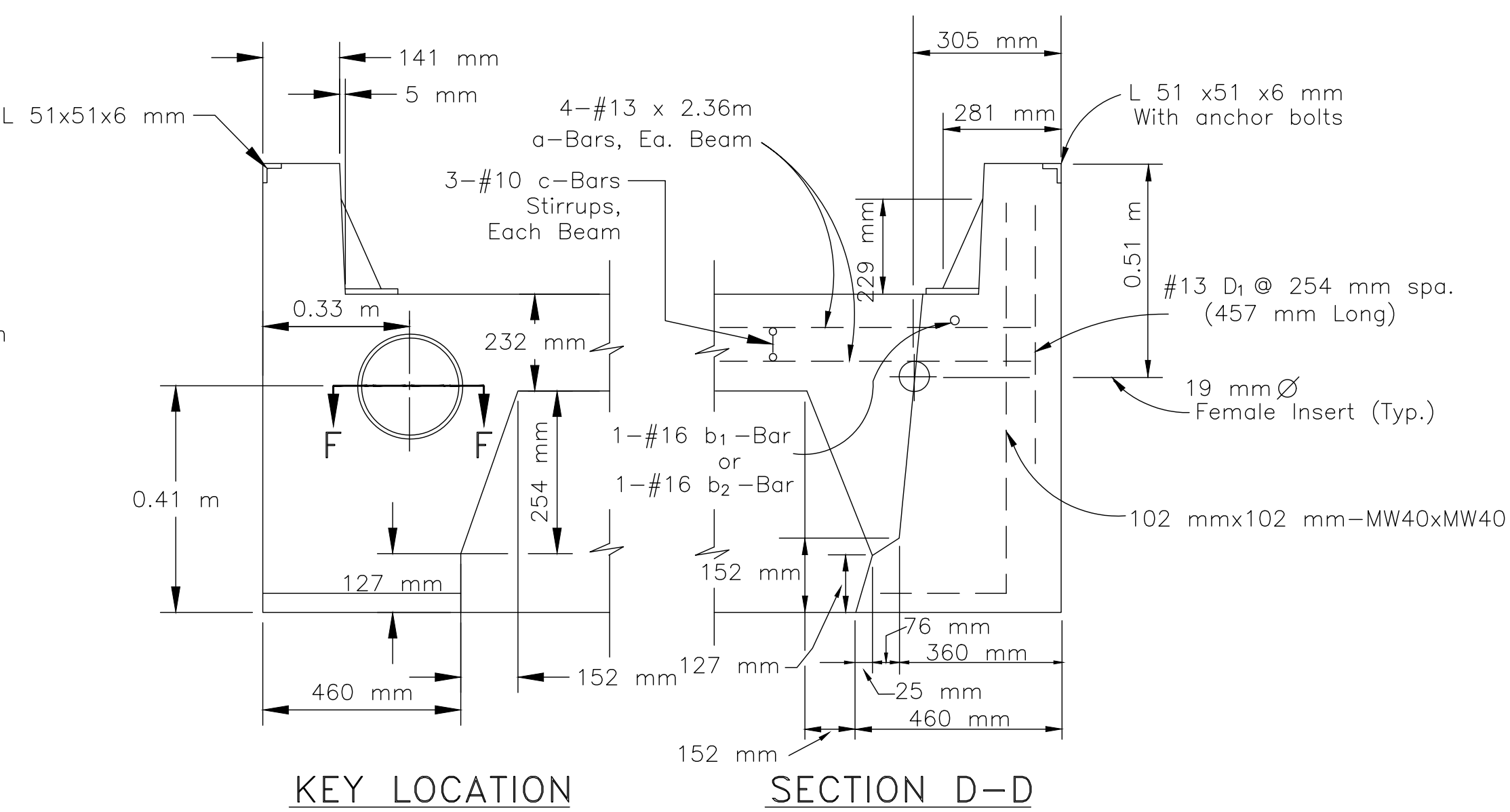
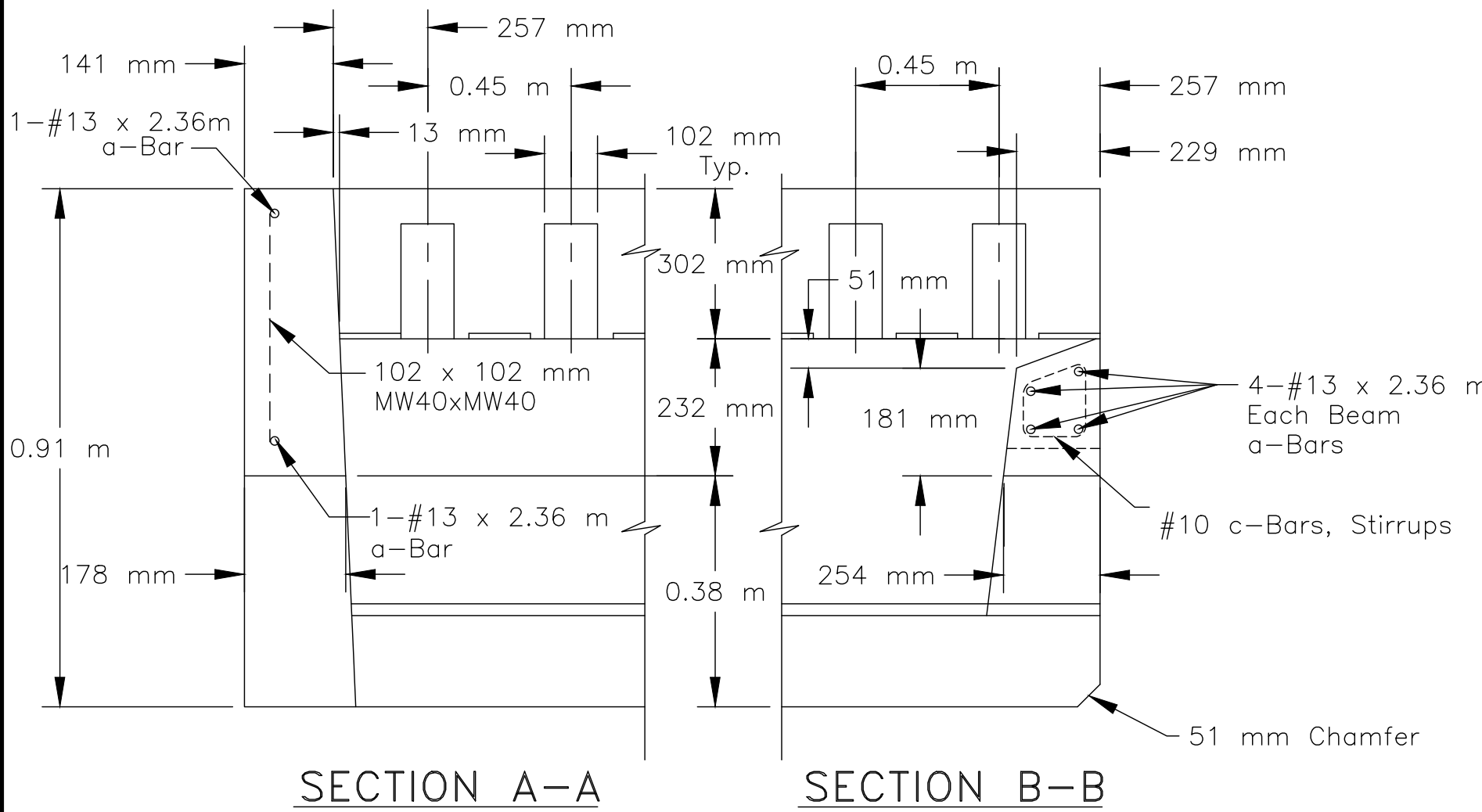
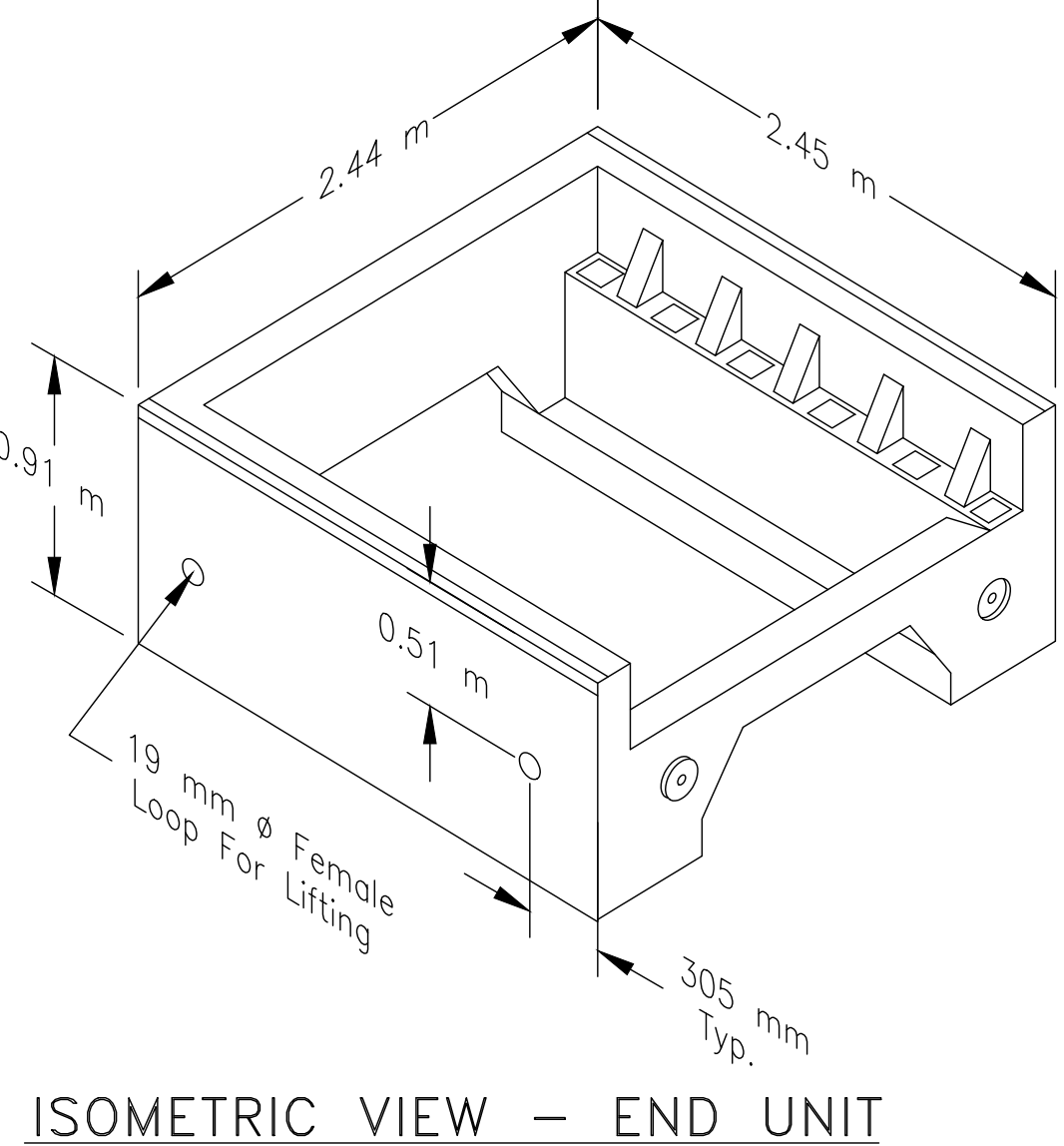
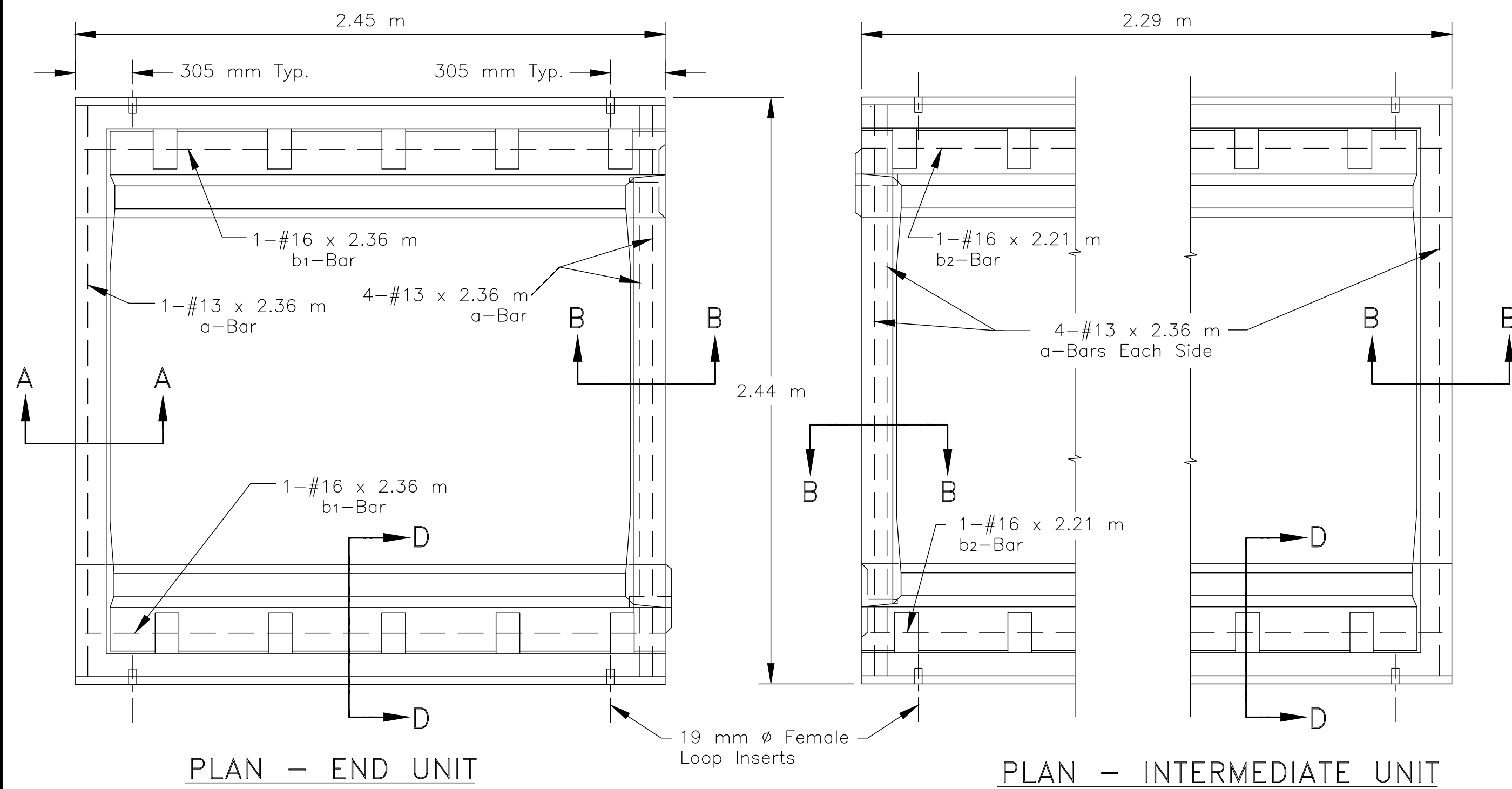
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW_MEXICO	NAVAJO	N46	N46(1)1,2&4	51	58

REINFORCING STEEL SCHEDULE

STRAIGHT BARS				BENT BARS				BENDING DIAGRAMS ALL DIMENSIONS ARE OUT TO OUT
MARK	NO.	SIZE	LENGTH	MARK	NO.	SIZE	LENGTH	
END UNIT								
a	6	13	2.36 m					
b1	2	16	2.36 m					
c					3	10	0.61 m	
D1	20	13	0.46 m					
INTERMEDIATE UNIT								
a	8	13	2.36 m					
b2	2	16	2.21 m					
c					6	10	0.61 m	
D1	18	13	0.46 m					

GENERAL NOTES

- PRECAST CONCRETE SHALL ATTAIN A MINIMUM 28 DAYS COMPRESSIVE STRENGTH OF 27.6 MPa IN ACCORDANCE WITH AASHTO T22 (ASTM C-39). THE CONCRETE SHALL BE CLASS A(AE) CONFORMING TO SECTION 552 OF THE FP-03.
- REINFORCING STEEL SHALL CONFORM TO ASTM A615 GRADE 420. ALL STRUCTURAL STEEL SHALL CONFORM TO AASHTO M270M, Grade 250.
- EACH UNIT SHALL CONFORM TO THE AASHTO MS-18 HIGHWAY LOADING REQUIREMENTS.
- EACH UNIT SHALL BE FABRICATED TO CONFORM TO THE ROADWAY CROWN AS SHOWN ON THE PLANS OR AS DESIGNATED BY THE AOTR/COR.
- BOLTS, WASHERS, NUTS, & ANGLES SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M-111.
- ALL TRAFFIC GRILL UNITS, INCLUDING STEEL ANGLES SHALL BE SHOP PAINTED WITH ONE (1) PRIMER COAT, ONE (1) INTERMEDIATE COAT, ONE (1) FINISH COAT IN ACCORDANCE WITH SECTION 563, PAINT SYSTEM 2 OF THE FP-03.
- ALL WING BRACES SHALL BE CONSIDERED SUBSIDIARY ITEMS TO THE CATTLEGUARD UNIT.
- THE CONTRACTOR HAS THE OPTION TO USE STEEL FRAME CATTLEGUARDS PROVIDED IT CAN BE SHOWN TO BE COST EFFECTIVE WITH A COST BENEFIT ANALYSIS SHOWING COST SAVINGS SUBMITTED FOR REVIEW AND APPROVAL. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND INSTALLATION DETAILS TO THE AOTR/COR FOR APPROVAL. THE CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR PATENT PROTECTION RIGHTS.
- ELASTOMERIC BEARING PADS SHALL BE SEAL WITH EPOXY ADHESIVE PRIOR TO THE TRAFFIC GRILL UNITS.
- SEE NOTE 5 OF SHEET 52 OF 58.



UNITED STATES
DEPARTMENT OF THE INTERIOR
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PRE-CAST CONCRETE CATTLEGUARD DETAILS

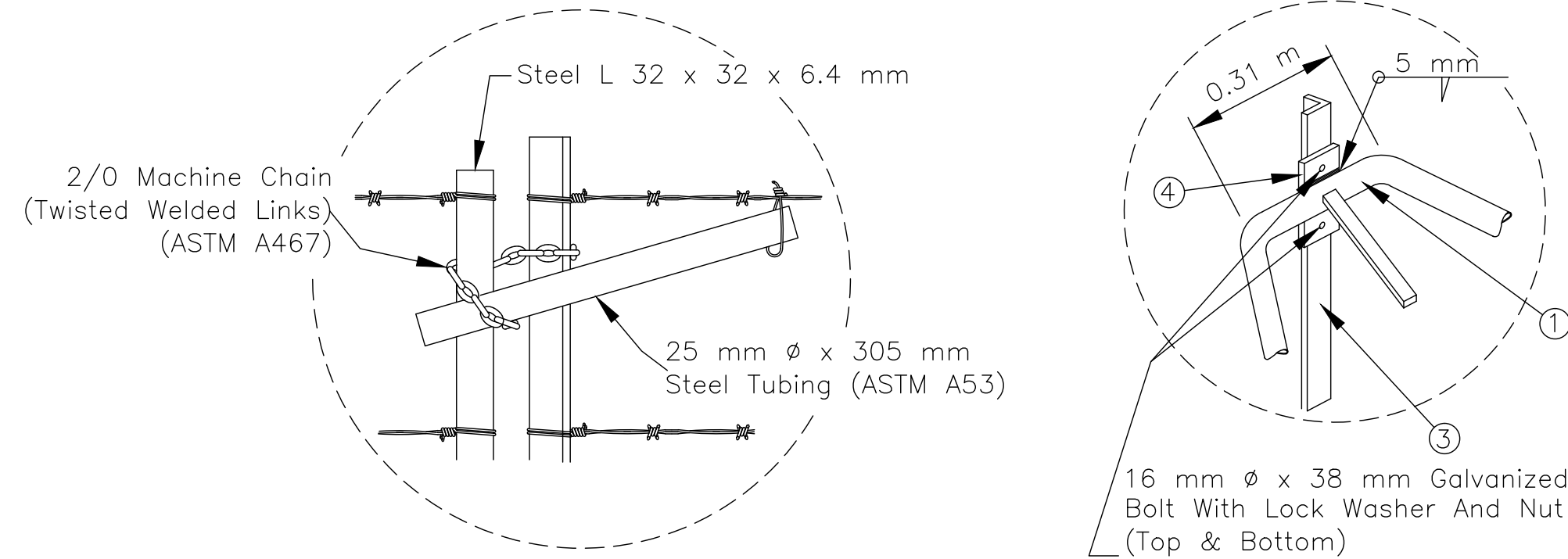
DRAWN BY: D.O.T. DATE: 01/91
DESIGNED BY: D.O.T. DATE: 01/91
REVISED: 08/13/09 FILE: STD-Cattle_Guard
BY: STRUCT SCALE: NTS



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N46	N46(1)1,2&4	52	58

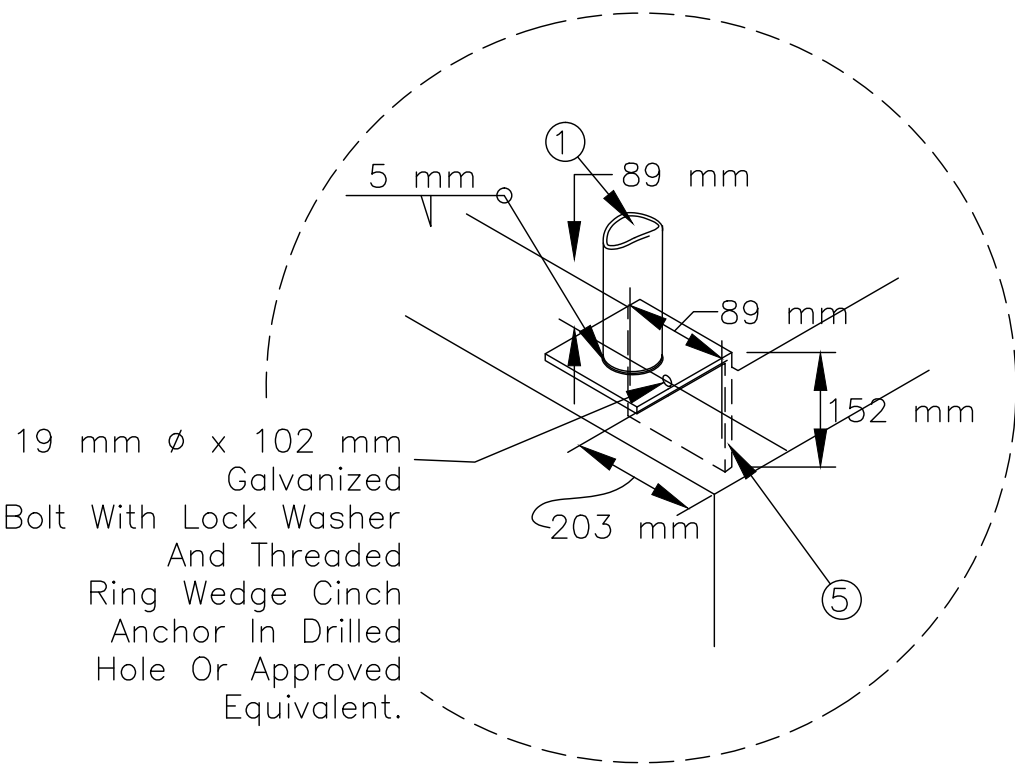
GENERAL NOTES

- Structural pipe shall conform to ASTM A53, Grade B. All other structural steel shall conform to ASTM A36.
- Bolts, nuts, and washers shall be galvanized in accordance with AASHTO M111 (ASTM A123).
- All wing brace structural steel and pipe shall receive one (1) primer coat, one (1) intermediate coat, and one (1) finish coat in accordance with Section 563, Paint System 2 of FP-03.
- All structural pipe joints shall be fabricated in accordance with AISC Manual of Steel Construction, Latest Edition.
- Welding design details shall conform to the AASHTO Standard Specifications for Highway Bridges, Latest Edition.
- The supporting wing brace posts length (part 3) shall be 2.3 meter (minimum). Under certain conditions (such as drain through cattleguard, high embankment, etc) the length of the post may vary to fully support the wing braces. This work shall be incidental to Item 61903-0310, 61903-0710 or 61903-1210. Gate shall be subsidiary item to the cattleguard pay item(s).
- The AOTR/COR may adjust the finished cattleguard elevation as needed to fit field/drainage condition. The Contractor shall regrade the adjoining turnout approaches as required. This work shall be considered incidental to Item 61903-0310, 61903-0710 or 61903-1210. If surrounding topography allows/requires and if directed by the AOTR/COR, the contractor shall construct a furrow ditch and/or placed riprap to drain the cattleguard. This work shall be paid under Bid Items 20425-2000 and/or 25101-2000.
- At skewed turnout locations, the cattleguard shall be installed perpendicular to turnout.
- At 4.5 m wide turnout the section of the turnout between the back edge of the cattleguard and the right-of-way limit shall be surfaced with a 100mm thickness of aggregate base course. The surfacing material and work shall be included in the unit price bid for the aggregate item shown in the bid schedule. At 7.0 m wide and larger turnouts, place asphalt/ABC surfacing to match turnouts structural section from cattleguard to right-of-way line or tie-in to existing asphalt roadway.
- At cattleguard locations where the design roadway width is wider on one side of the cattleguard than the other side, the narrower roadway width shall flared out to match the wider roadway width using an 8:1 taper or to the length allow by the right-of-way width. This includes at narrow right-of-way with where the turnout radius cannot be completely install between the main road and the cattleguard. This work shall be paid under the earthwork, base course, and paving items included in the bid schedule.

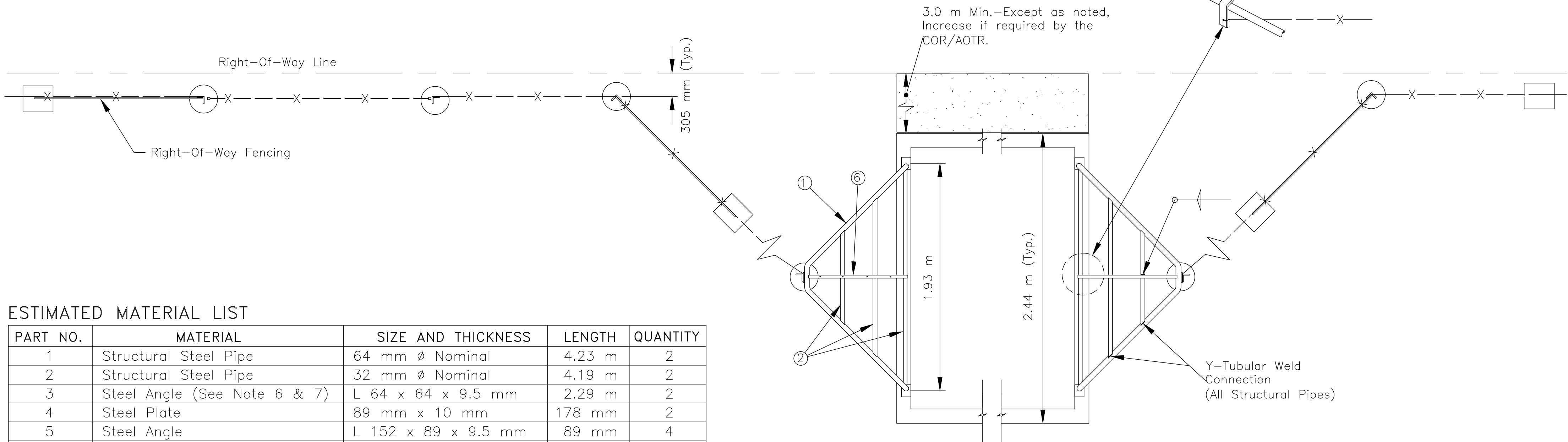


DETAIL 1 – GATE SECURING DETAIL

DETAIL 2



DETAIL 3

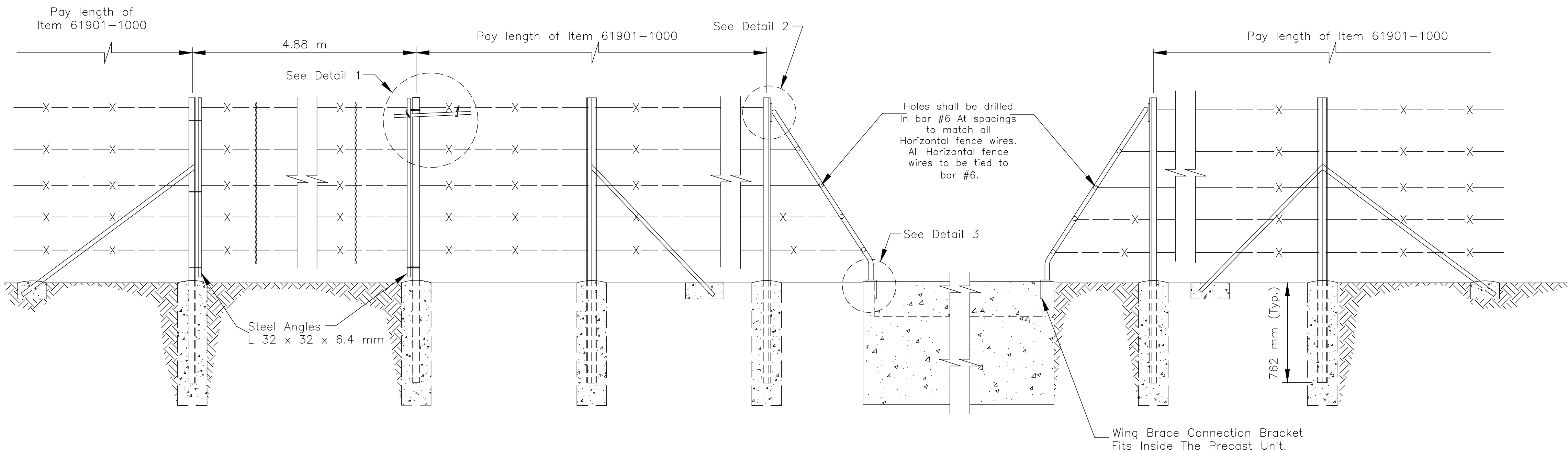


PLAN VIEW

PRECAST CONCRETE CATTLEGUARD LAYOUT

ESTIMATED MATERIAL LIST

PART NO.	MATERIAL	SIZE AND THICKNESS	LENGTH	QUANTITY
1	Structural Steel Pipe	64 mm ϕ Nominal	4.23 m	2
2	Structural Steel Pipe	32 mm ϕ 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		



ELEVATION VIEW

PRECAST CONCRETE CATTLEGUARD LAYOUT

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

CATTLEGUARD
INSTALLATION DETAILS

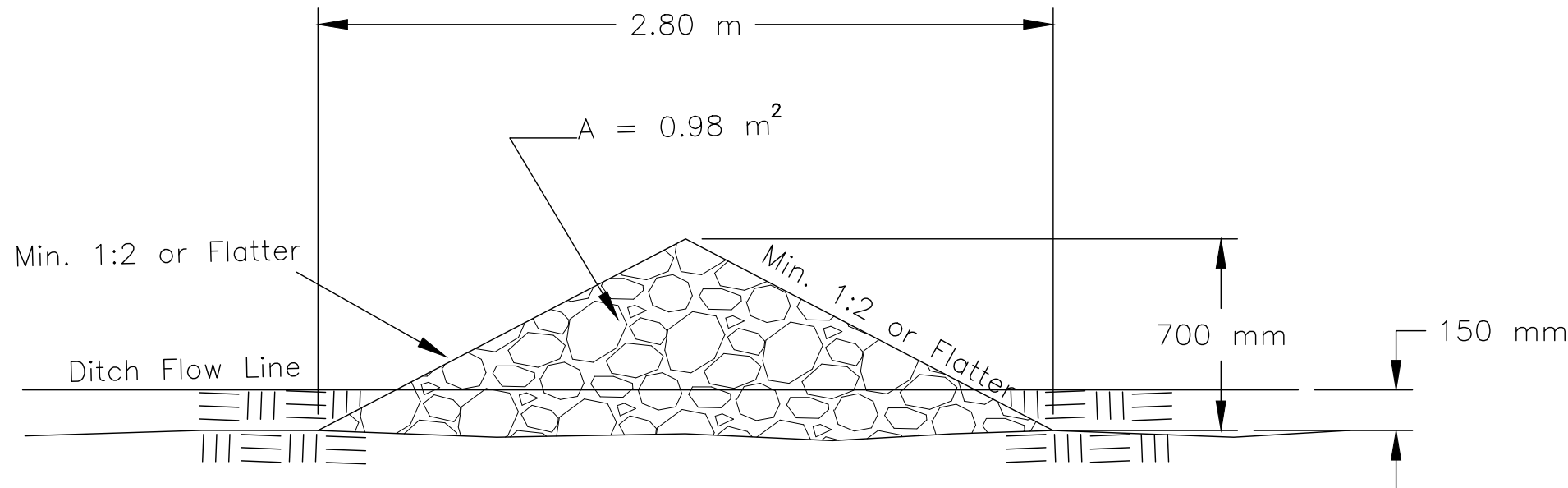
Designed by: NRO-DOT	
Drawn by: NRO-DOT	Date: 11-28-08
Revised by: cdh	Date: 08/13/09
File Name: STD-CGuard Wing Brace	



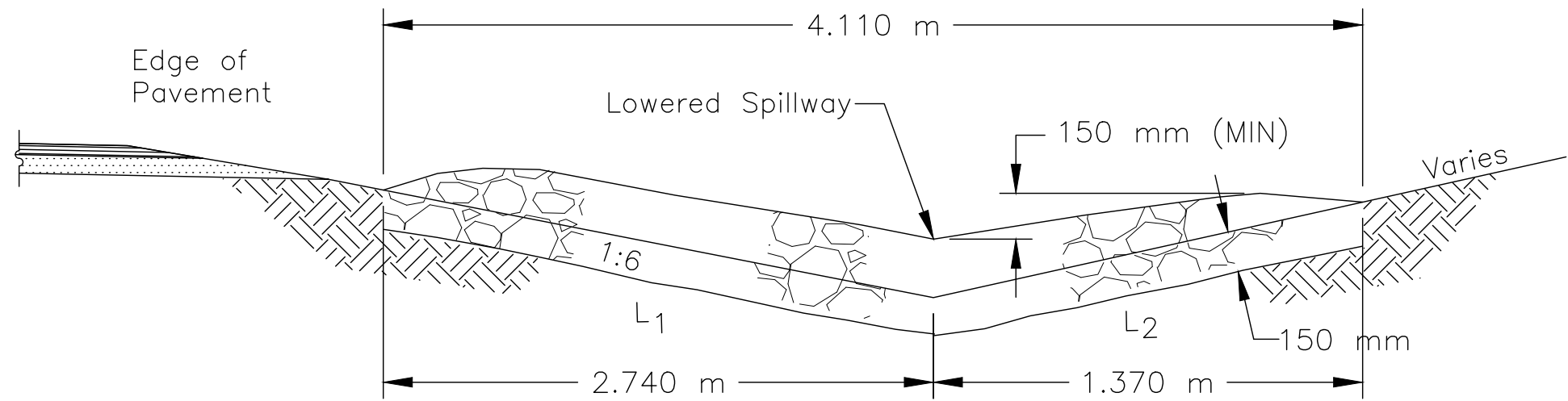
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N46	N46(1)1,2&4	54	58

CHECK DAM NOTES

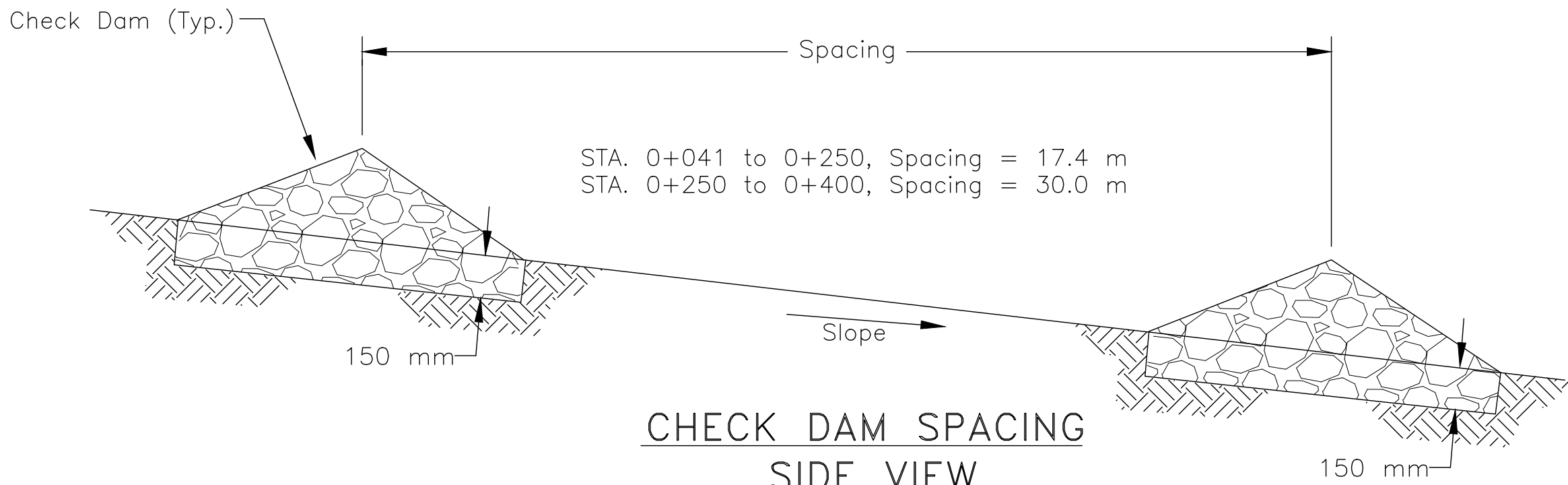
1. Workmanship and Materials Shall Conform to The Standard Specifications For Construction Of Roads And Bridges On Federal Highway Projects (FP-03).
2. Round All Sharp Contours As Required To Fit The Soil Erosion Material Flush With The Existing Ground.
3. The Contractor Shall Be Required To Make Field Adjustments To Match Actual Field Conditions As Directed By The COR/AOTR. 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-03.
5. Stone Size Shall Conform To Table 705-1, Section 705, Stone For Riprap, Class 2.
6. Rock Check Dam Shall Be Included In Bid Item 25101-2000.



RIPRAP CHECK DAM
(No Filter Fabric Required Under Check Dams)



RIPRAP CHECK DAM IN V-DITCH
FRONT VIEW



CHECK DAM SPACING
SIDE VIEW

ITEM 25101-2000: PLACED RIPRAP, CLASS 2 (CHECK DAM)

STATION	LOC.	WIDTH (m)		NUMBER OF CHECK DAMS	VOLUME PER CHECK DAM (m³)	TOTAL VOLUME (m³)
		L1	L2			
0+041 to 0+400	Rt.	2.74	1.37	17	4.03	68.51
TOTAL:						68.51 m³

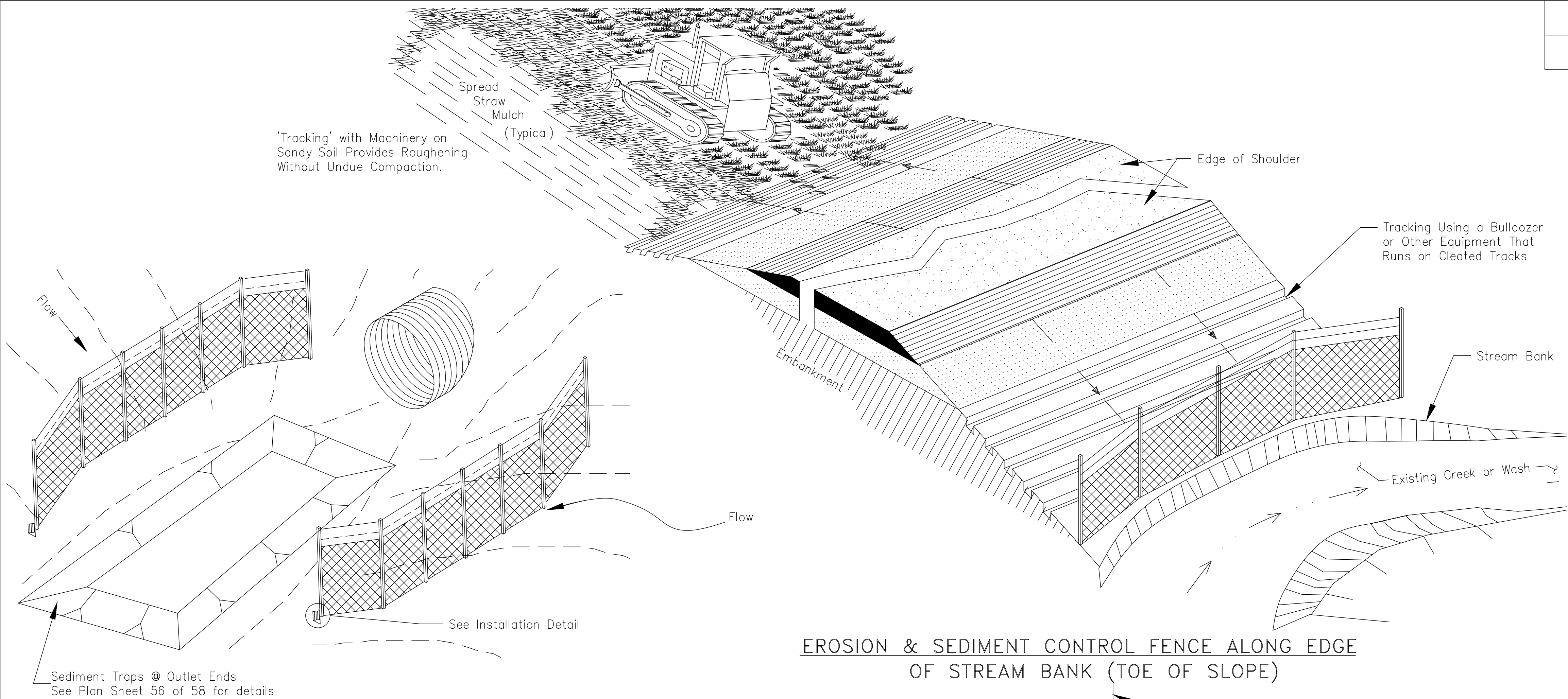
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NAVAJO REGION OFFICE * DIVISION OF TRANSPORTATION

CHECK DAM DETAILS

Designed by: NRO-DOT
Drawn by: JLB, cdh Date: 01/07/10
Revised by: Date:
File Name: Std-Check Dam

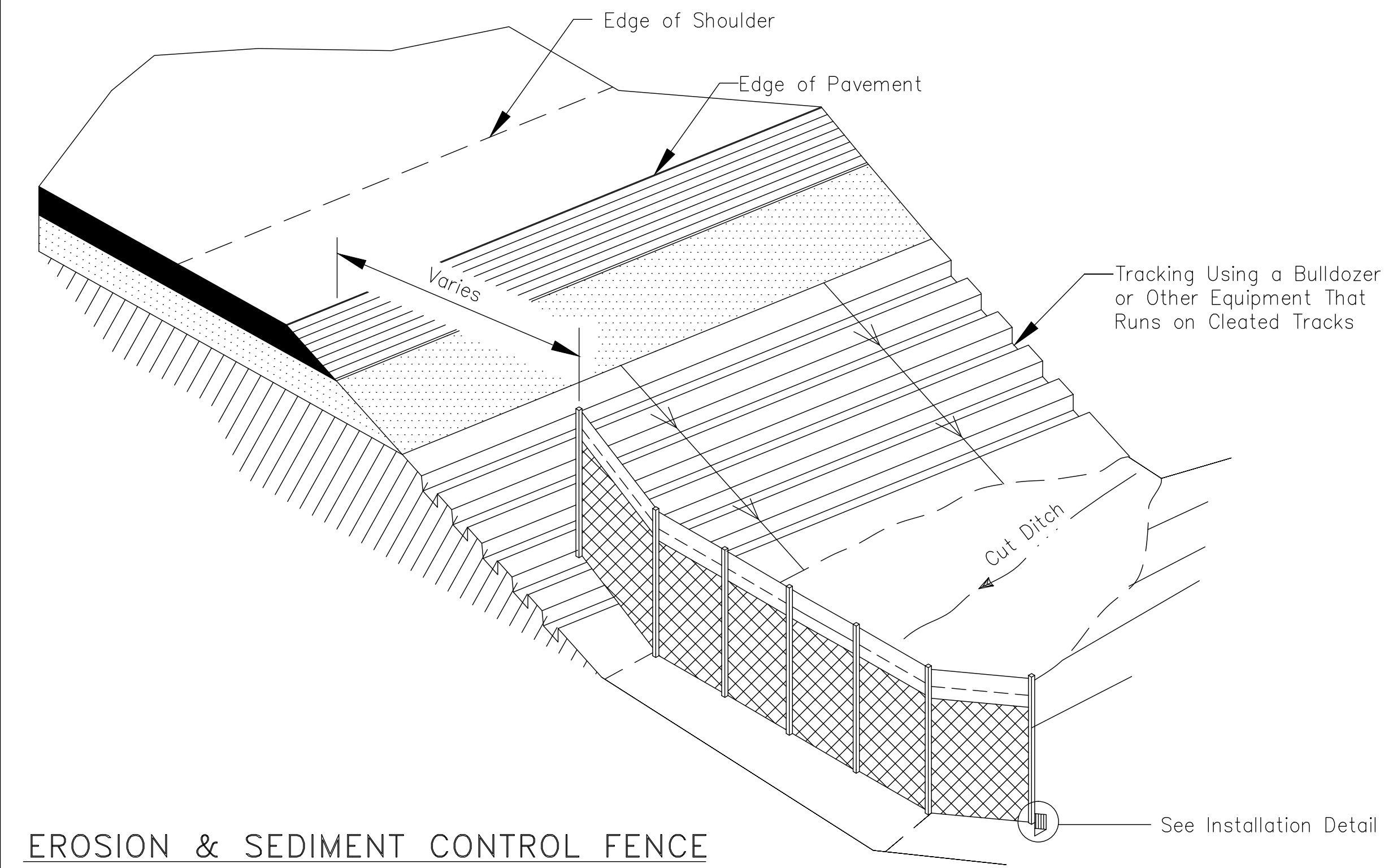


REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N46	N46(1)1,2&4	55	58



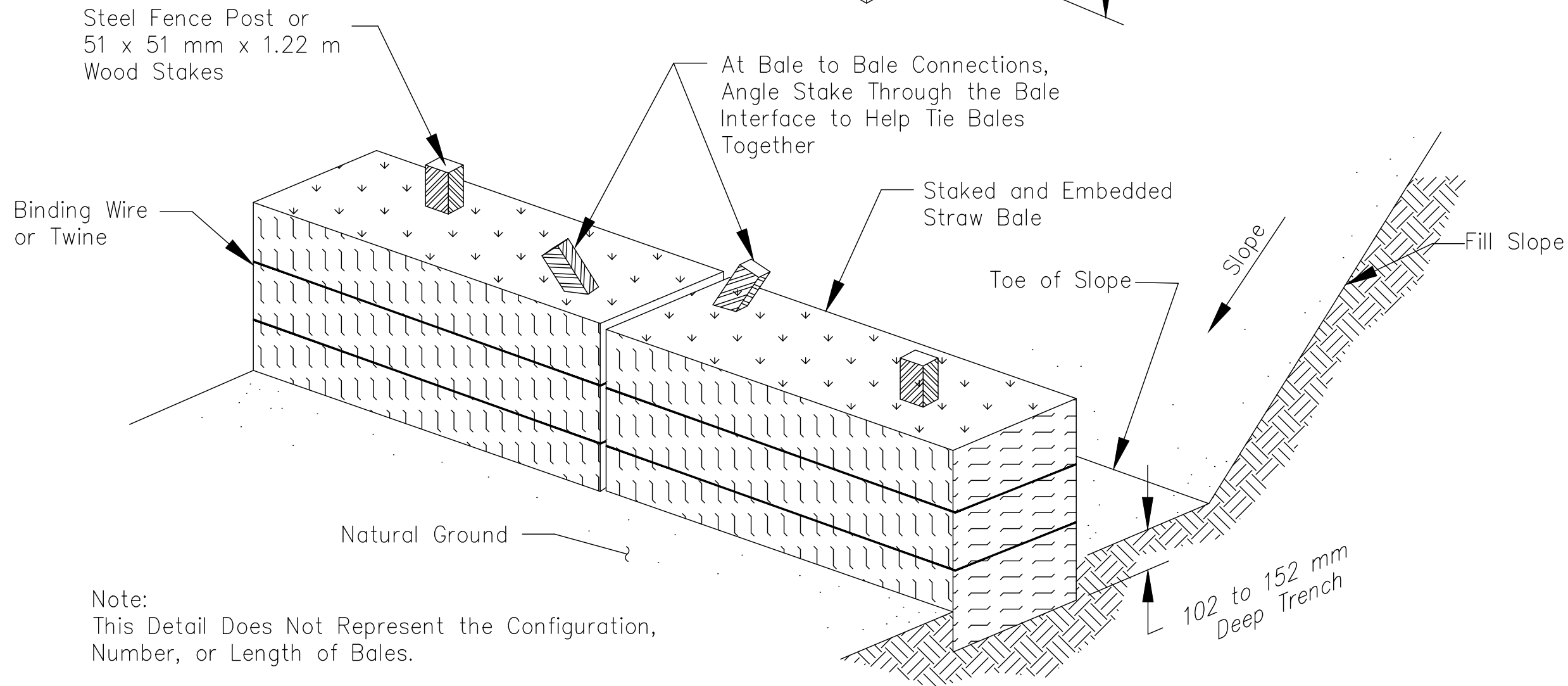
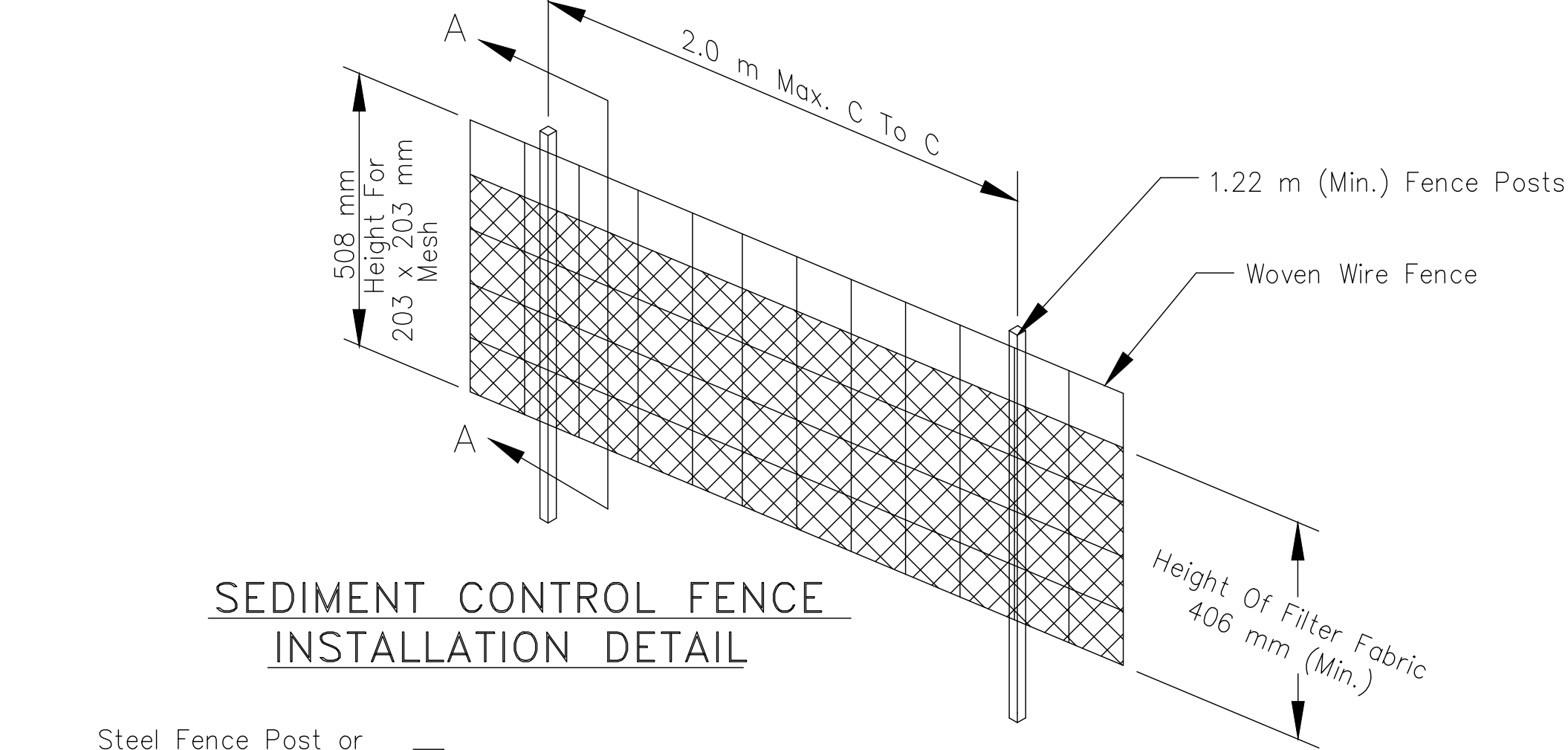
EROSION & SEDIMENT CONTROL FENCE ALONG EDGE OF STREAM BANK (TOE OF SLOPE)

EROSION & SEDIMENT CONTROL FENCE AT DRAINAGE STRUCTURE



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

SEDIMENT CONTROL FENCE INSTALLATION DETAIL

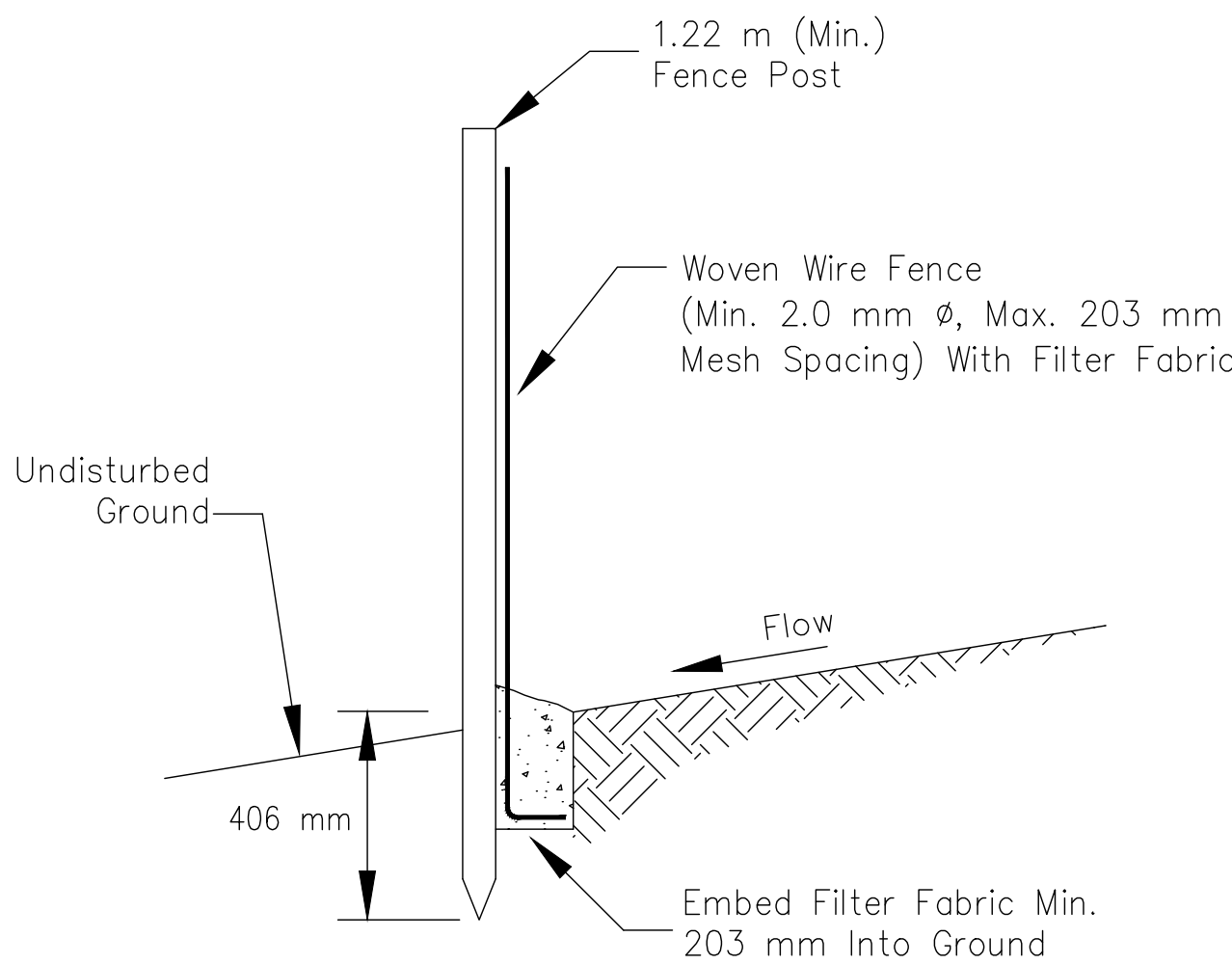


Note:
This Detail Does Not Represent the Configuration, Number, or Length of Bales.

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 Details For All Phases of the Work For Review and Approval at Least 14 Calendar Days Before Implementation. The Plan Shall Meet the Requirements Herein and in Section 157 of FP-03 As Modified in the Supplemental Specifications. 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 2.0 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 Stables. 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-03.
4. When Two Sections of Filter Cloth Adjoin Each Other They Shall Be Overlapped By 152 mm and Folded. Maintenance Shall Be Performed as Needed and Material Removed to Prevent "Bulges" Developing in the Silt Fence.
5. The Silt Fence Shall Be Installed Along the Roadway Ditches, Along the Bottom of All Embankment Fills That Are Within 2.0 m of Existing Streams, Creeks, or Washes, and in Areas With Highly Erosive Soils. Silt Fence to Be Placed 1-2 Meters Toward the R.O.W. Lines From the Base of Fill Slopes 1:3 or Steeper in Accordance With Section 157 of FP-03 and the Supplemental Specifications.
6. Straw Bales May Be Used at the Top of Cut Backslopes and For Dikes Provided They Are Properly Anchored With Steel Fence Posts or 51x51 mm X 1.22 m Wood Stakes (Two Per Bale) Chored 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 Nor in 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.
8. Sediment/Silt Fencing Shall Be Placed at All Locations Where Embankments Have Slope Distances of 30.0 m or Greater. The Sediment Fencing Will Be Placed at the Toe of Slopes Offset 1-2 Meters.
9. The Contractor Shall Inspect and Maintain All SWPPP Measures Weekly and After Each Significant Storm Event (i.e. 25 mm of Moisture in 24 Hours).
10. Prior To Acceptance, All Project Areas (as Determined By the Division Manager) Showing Erosion Damage Caused by the Contractor's Failure to Properly Maintain His Erosion Control Structures Shall Be Repaired. Any Specified Erosion Control Materials, Structures, or Devices Damaged or Lost Due to Improper Installation, the Contractor's Negligence or Improper Maintenance, Shall Also Be Repaired and/or Replaced Prior to Final Acceptance at the Contractor's Entire Expense.



SECTION A-A

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

STORMWATER POLLUTION
EROSION/SEDIMENT CONTROL DETAILS

Designed by: NRDOT

Drawn by: Date:

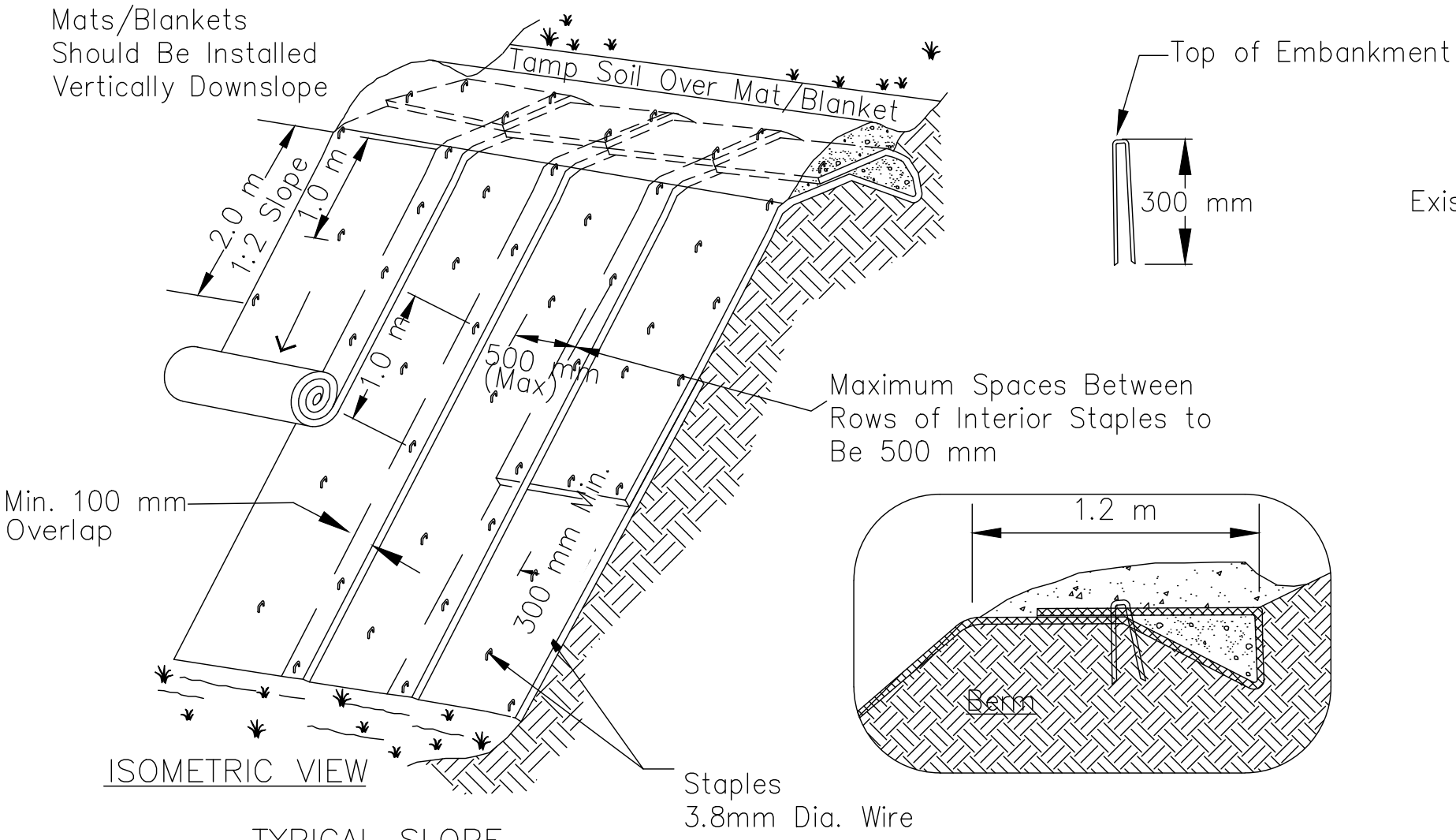
Revised by: Date:

File Name: STD_ER0_1

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N46	N46(1)1,2&4	56	58

GENERAL NOTES

- SEE SHEET 55 FOR ADDITIONAL NOTES AND DETAILS.
- CONSTRUCT SEDIMENT BASIN AND TRAPS, EROSION CHECKS AND/OR FILTERS IN STRATEGIC LOCATIONS ON THE PROJECT TO FILTER STORM RUNOFF BEFORE IT LEAVES THE PROJECT CONSTRUCTION LIMITS OR ENTERS A STREAM AS SHOWN IN THE APPROVED SWPPP.
- CLEAN ALL SEDIMENT BASINS AND TRAPS OF ACCUMULATED SEDIMENT WHEN HALF FULL OF SEDIMENT.
- USE DRAIN PIPE, RIPRAP, GEOTEXTILE FABRIC, OR GRASS LINED WATERWAY FOR TEMPORARY SLOPE DRAINS TO CHANNEL RUNOFF DOWN SLOPES. CHANNEL WATER INTO SLOPE DRAINS WITH STRAW BALES, WATTLES OR EARTH BERMS CONSTRUCTED AT THE TOP OF A CUT SLOPE. ANCHOR SLOPE DRAINS TO THE SLOPE.
- THE CONTRACTOR SHALL ADJUST THE DIMENSIONS AND/OR LOCATIONS OF TEMPORARY SEDIMENT AND EROSION CONTROL DEVICES TO FIT ACTUAL FIELD CONDITIONS.
- REMOVE AND DISPOSE OF EROSION CONTROL MEASURES WHEN THE PERMANENT EROSION CONTROL MEASURES ARE SATISFACTORILY ESTABLISHED AND DRAINAGE DITCHES AND CHANNELS ARE LINED AND STABILIZED, IN ACCORDANCE WITH SECTION 157 OF FP-03.

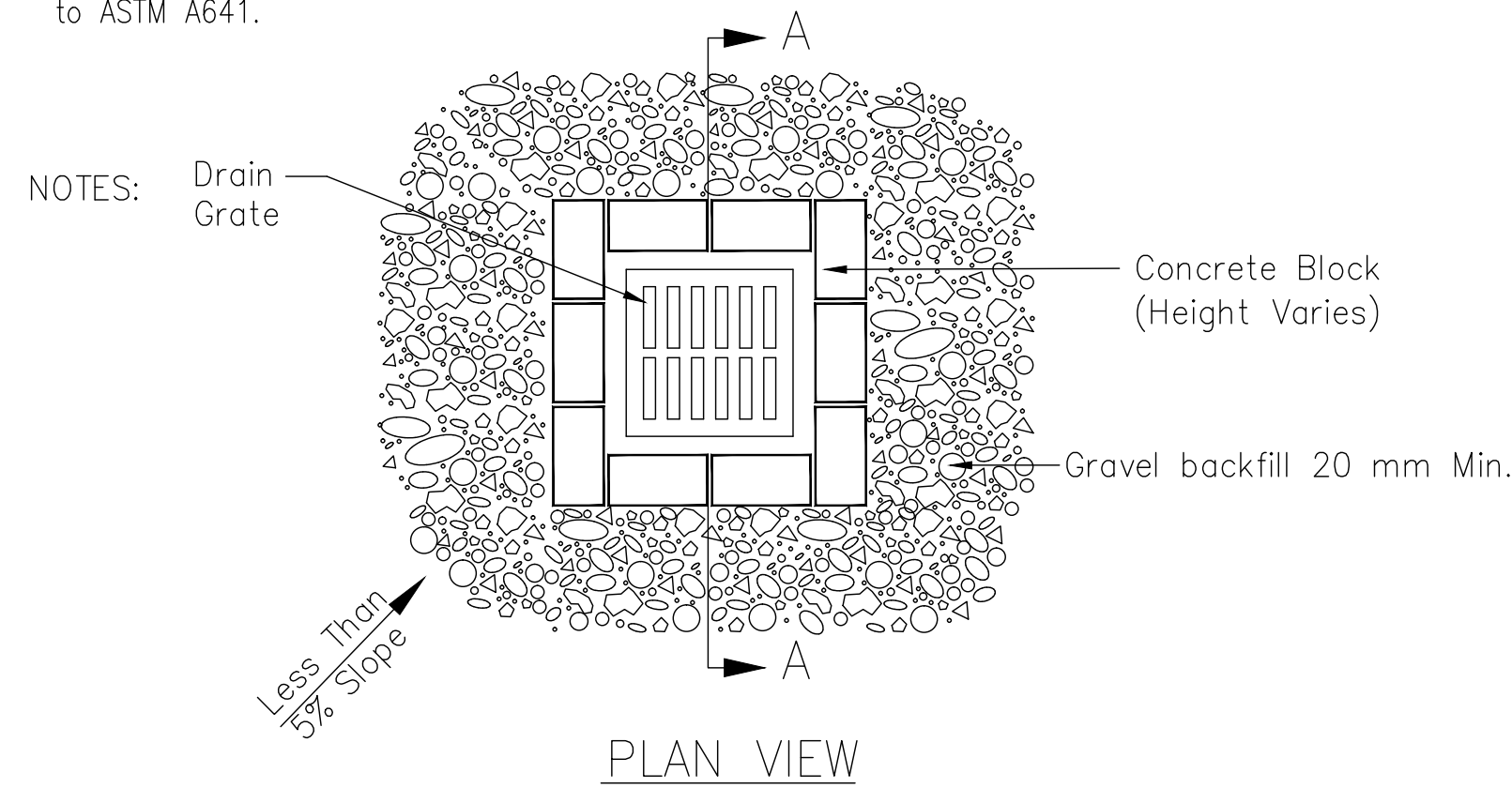


TYPICAL SLOPE SOIL STABILIZATION

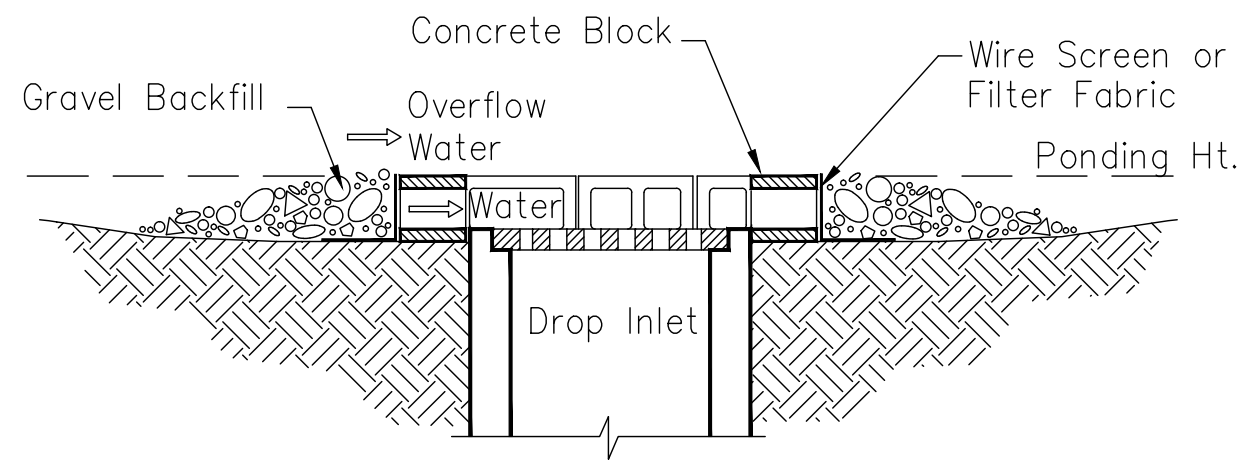
- Slope surface shall be free of rocks, clods, sticks and grass. Mats/blankets shall have good soil contact.
- Apply permanent seeding before placing blankets.
- Lay blankets loosely and stake or staple to maintain direct contact with the soil. Do not stretch.
- Fabricate Staples From 3.8 mm Diameter Wire Conforming to ASTM A641.

EROSION BLANKETS & TURF REINFORCEMENT MATS SLOPE INSTALLATION

Not to Scale

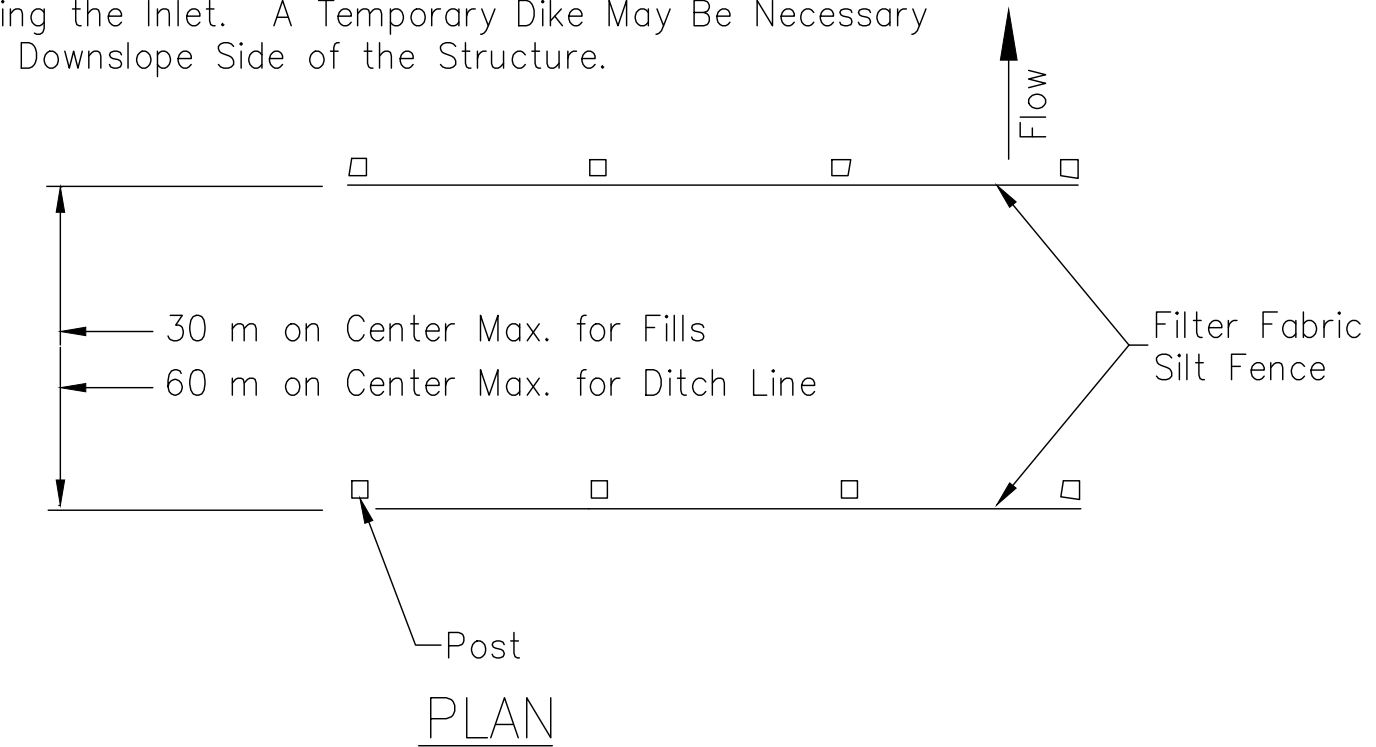


PLAN VIEW

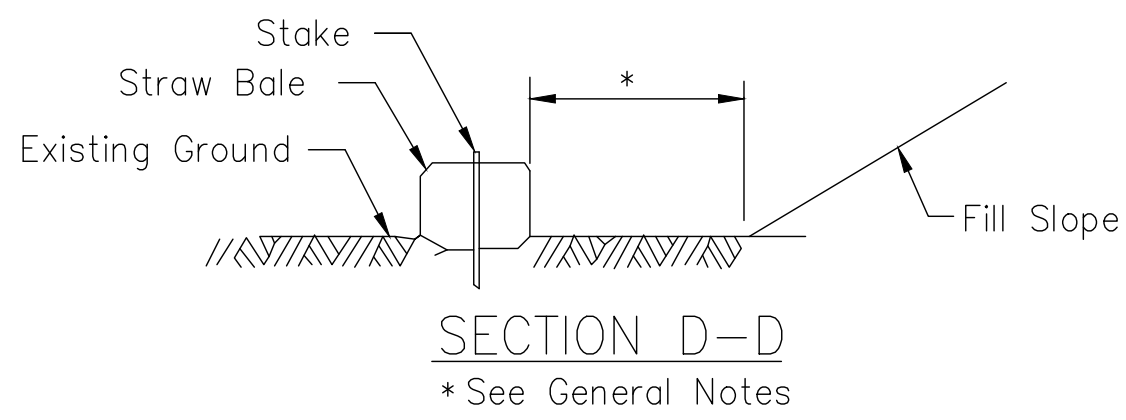


SECTION A - A

- NOTES:
- Drop Inlet Sediment Barriers Are to Be Used For Small, Nearly Level Drainage Areas. (Less Than 5%)
 - Excavate a Basin of Sufficient Size Adjacent to the Drop Inlet.
 - The Top of the Structure (Ponding Height) Must Be Well Below the Ground Elevation Downslope to Prevent Runoff From Bypassing the Inlet. A Temporary Dike May Be Necessary on the Downslope Side of the Structure.

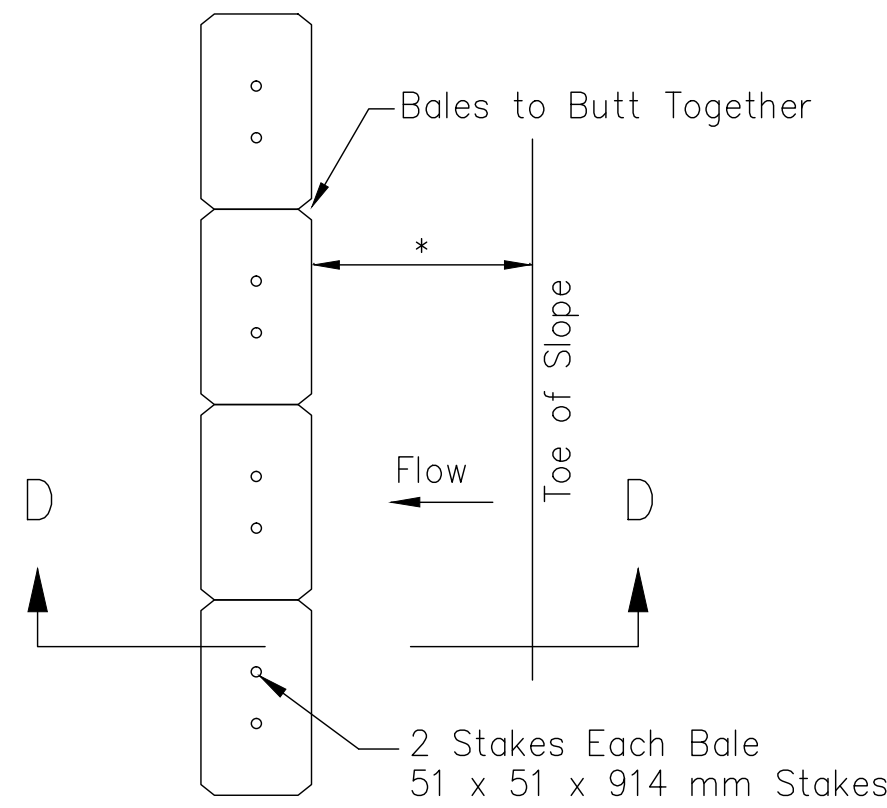


SILT FENCE EROSION CHECK



SECTION D-D

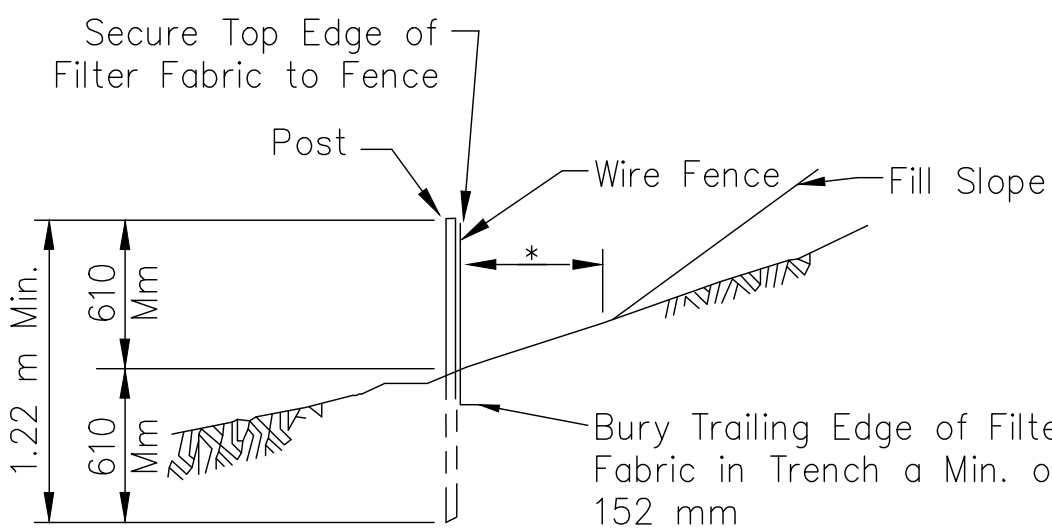
*See General Notes



PLAN

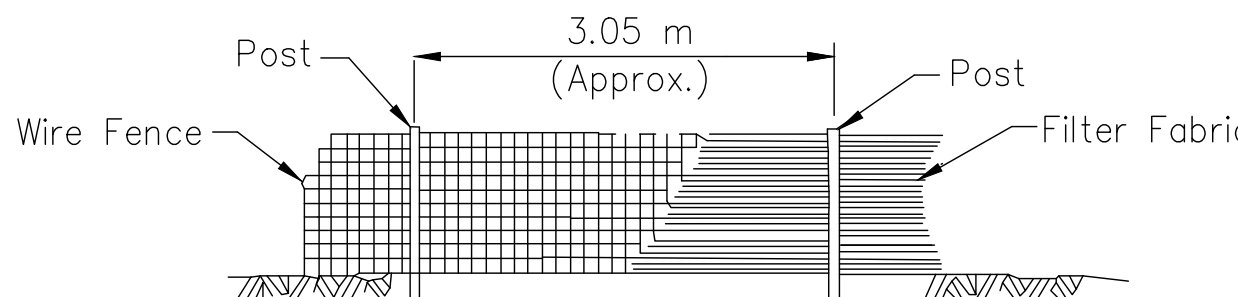
STRAW BALE SILT BARRIER

* See General Notes



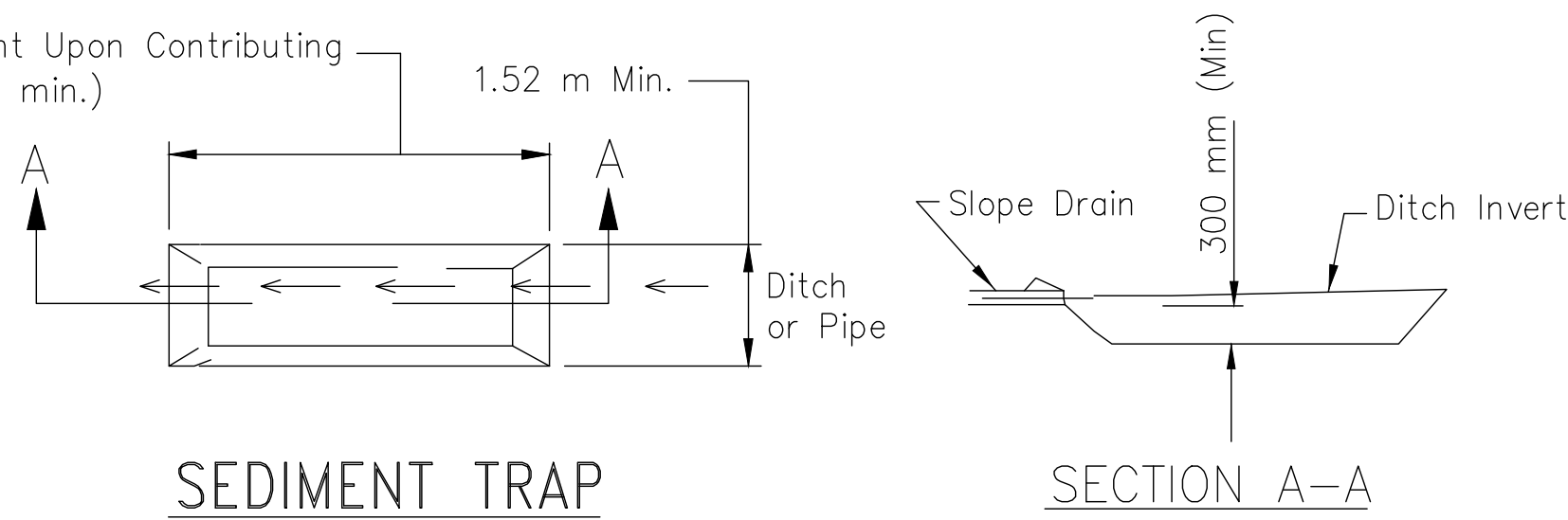
FILTER FABRIC SILT FENCE

*See General Notes



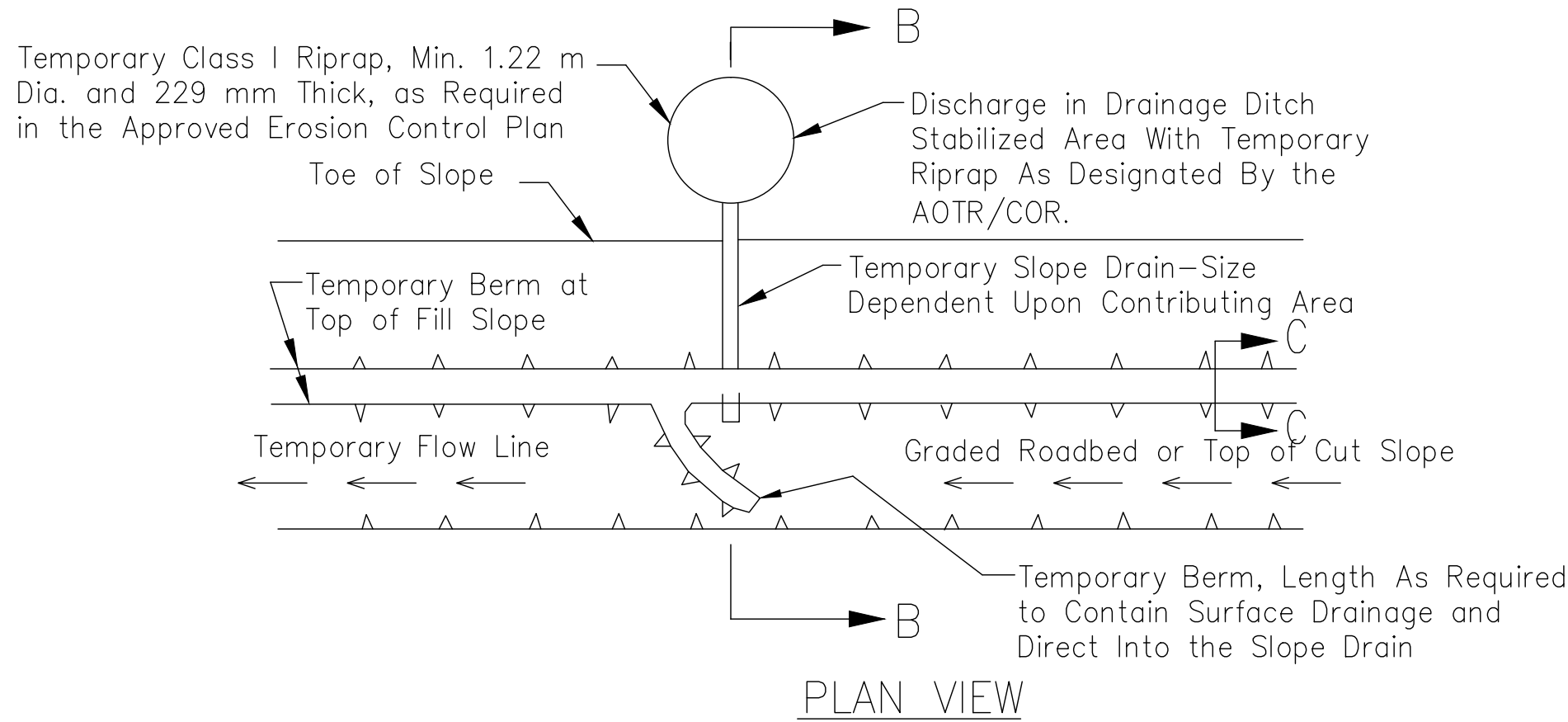
FILTER FABRIC SILT FENCE

*See General Notes

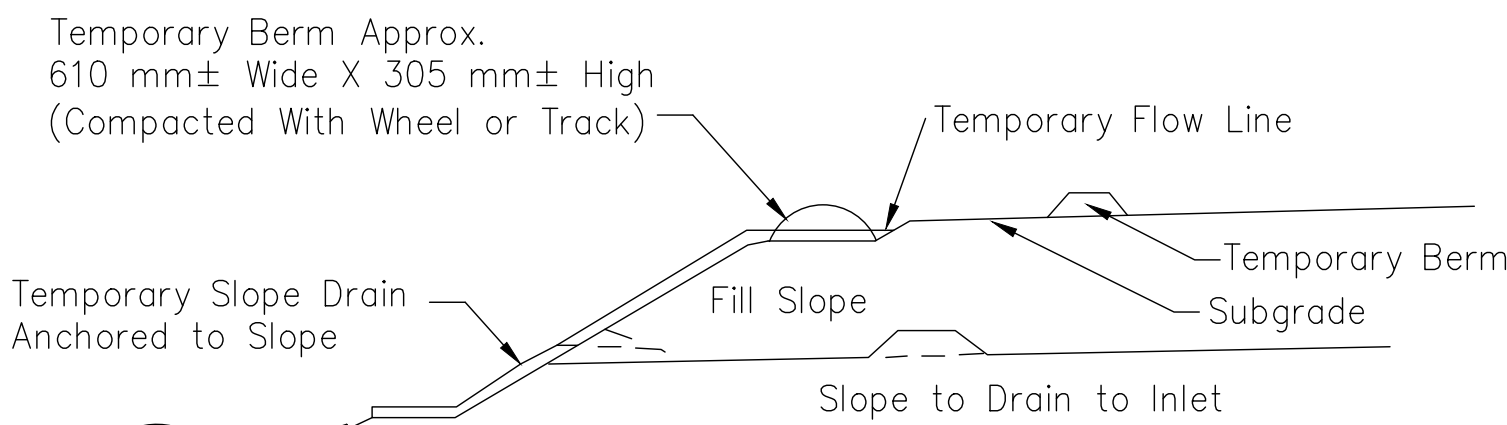


SEDIMENT TRAP

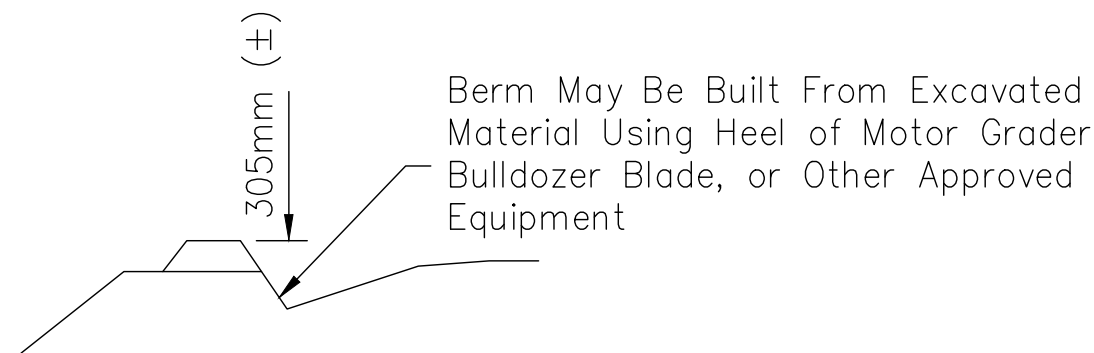
(Traps Shall Not Fill to Beyond One-Half Capacity Prior to Cleaning)



PLAN VIEW

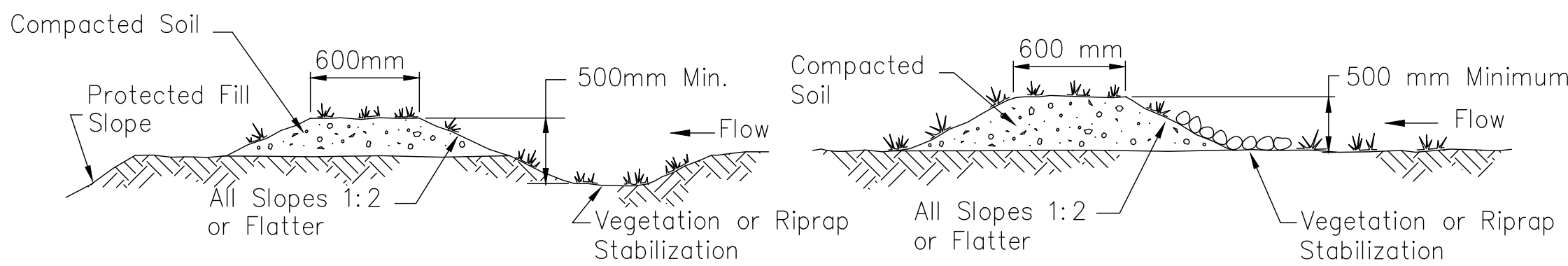


SECTION B-B



SECTION C-C

Temporary Slope Drain, Berm. (For Fill and Cut Slopes)
NOTE:
Temporary Berms May Also Be Constructed of Straw Bales
Set 104-152mm Into Ground.



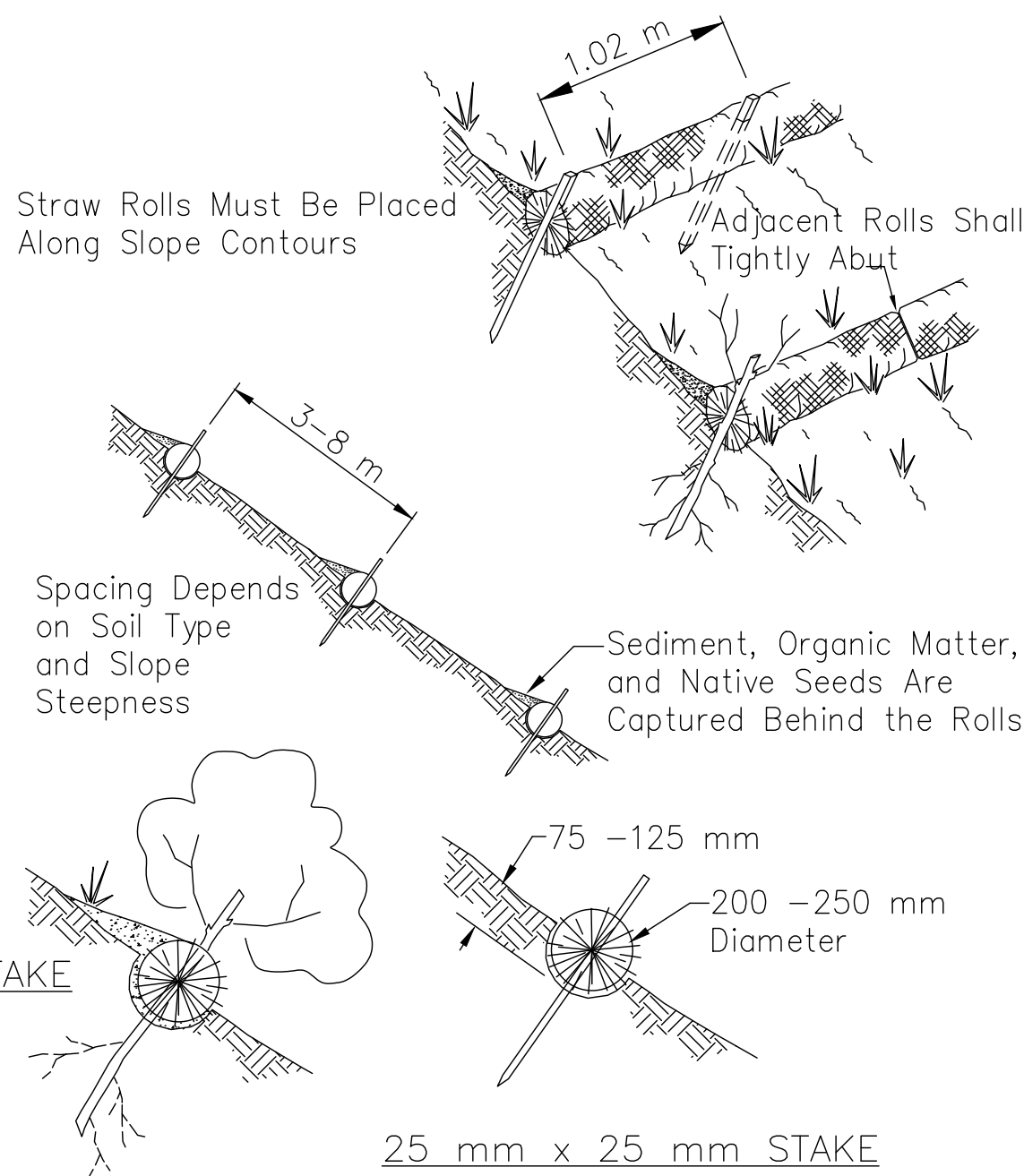
TYPICAL FILL DIVERSION

TYPICAL TEMPORARY DIVERSION DIKE

(For Top of Cut Back Slopes)

TEMPORARY DIVERSION DIKE

- Notes:
- The Channel Behind the Dike Shall Have Positive Grade to a Stabilized Outlet.
 - The Dike Shall Be Adequately Compacted to Prevent Failure.
 - The Dike Shall Be Stabilized With Temporary or Permanent Seeding or Riprap.



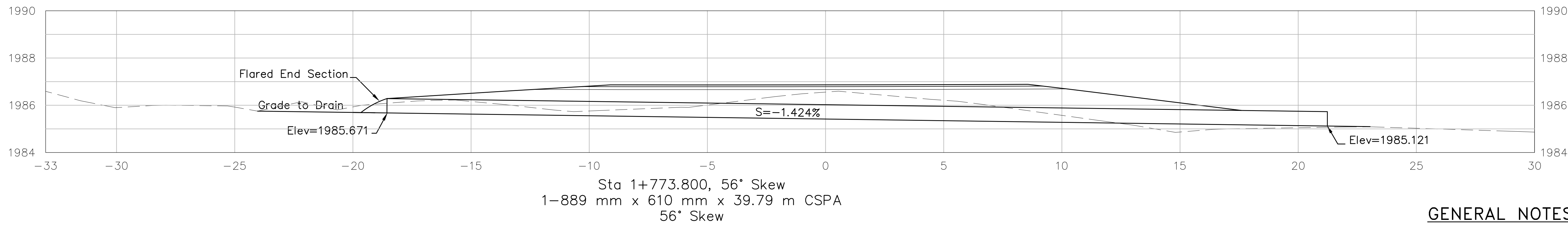
STRAW ROLLS

Not To Scale

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF INDIAN AFFAIRS NAVAJO REGION OFFICE * DIVISION OF TRANSPORTATION	
STORMWATER POLLUTION EROSION/SEDIMENT CONTROL DETAILS	
Designed by: NRDOT	
Drawn by:	Date:
Revised by:	Date:
File Name: STD_ER0_2	

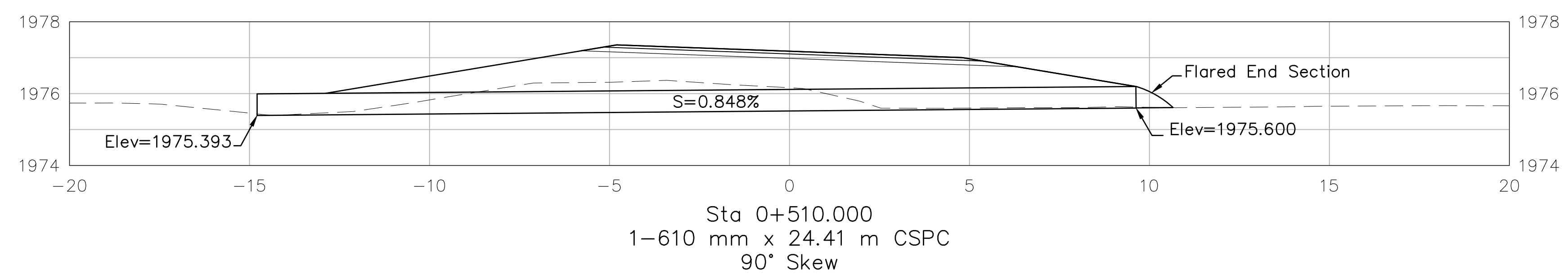
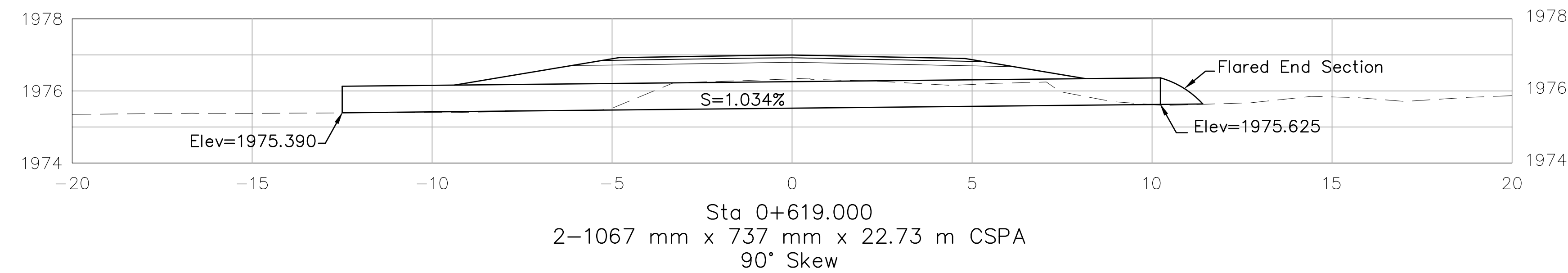
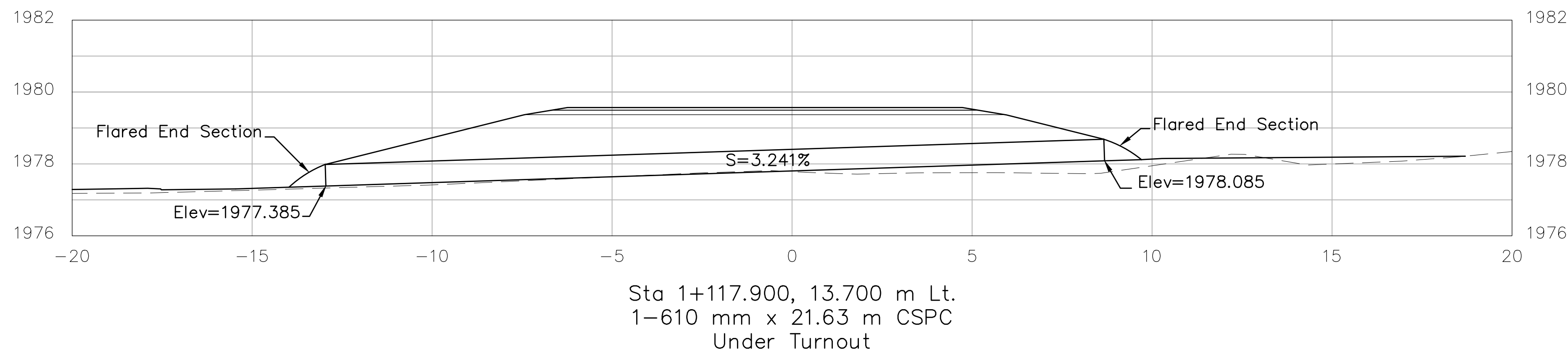
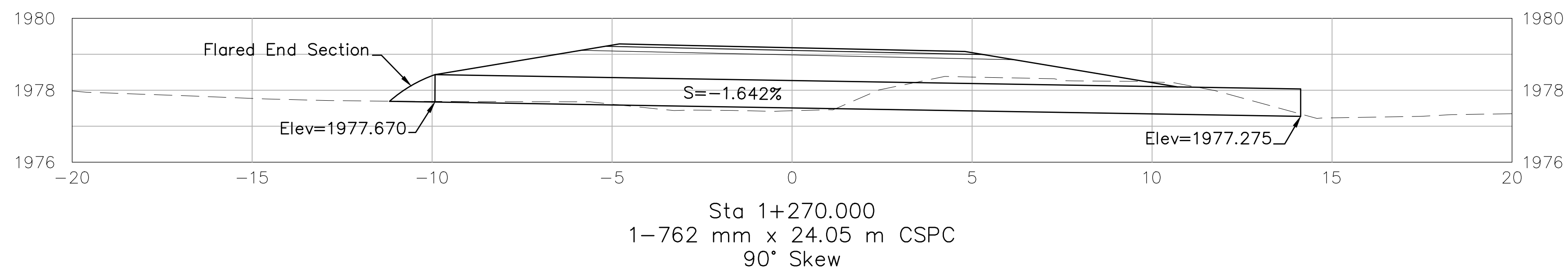


REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N46	N46(1)1,2&4	57	58



GENERAL NOTES

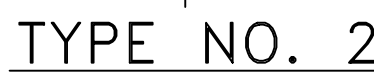
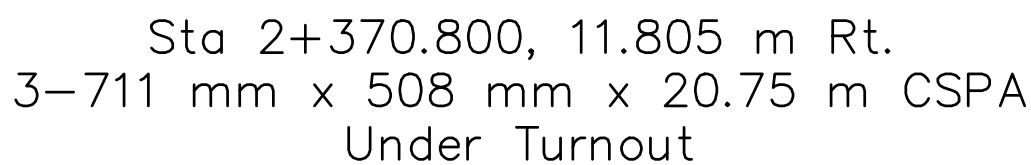
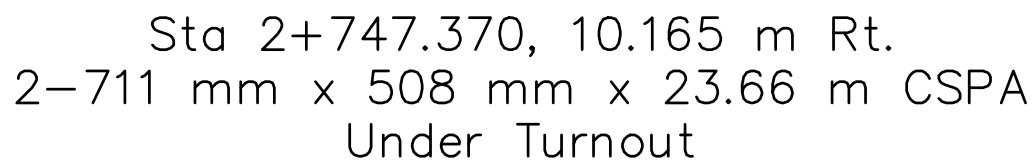
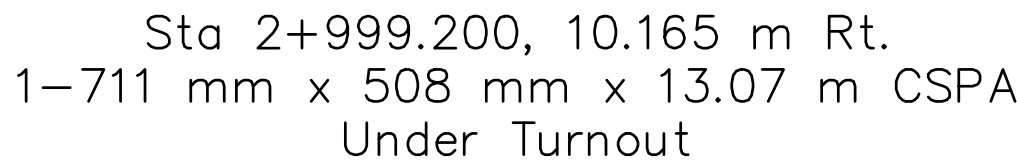
- DRAINAGE PIPE(S) INVERT ELEVATION(S) AND LENGTHS ARE APPROXIMATE. FINAL ELEVATIONS AND LENGTHS TO BE FIELD DETERMINED BY THE CONTRACTOR AS PART OF THE REVISED PIPE LIST SUBMITTAL PACKAGE. GUIDANCE ON DEVELOPING A REVISED PIPE LIST WILL BE PROVIDED UPON REQUEST OF THE CONTRACTOR.
- THE REVISED PIPE LIST SURVEY DATA SHALL BE VERIFIED BY THE AOTR/COR AND CONTRACTOR'S QCM PRIOR TO SUBMITTAL TO THE NAVAJO REGIONAL DIVISION OF TRANSPORTATION.
- FOR MULTIPLE 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.
- ALL THREE (3) PIECE BODIES TO HAVE 2.77 MM THICKNESS SIDES AND 3.5 MM THICKNESS CENTER PANELS. WIDTH OF CENTER PANELS TO BE GREATER THAN 20% OF THE PIPE PERIPNERY. MULTIPLE PANEL BODIES TO HAVE LAP SEAMS WHICH ARE TO BE TIGHTLY JOINED BY 9.53 MM Ø GALVANIZED RIVETS OR BOLTS.
- END SECTIONS FOR STEEL PIPE-ARCHES: FOR THE 1956MM X 1321MM & 2108MM 1448MM 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.
- 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 MM Ø THRU 1829 MM Ø, AND 64 MM X 64 MM X 6.35 MM FOR 1981 MM Ø AND 2134 MM Ø. THE ANGLES TO BE ATTACHED BY 9.53 MM Ø GALVANIZED NUTS AND BOLTS.
- WELDING SHALL NOT BE PERMITTED IN CONNECTING END SECTIONS TO CONNECTOR SECTIONS OR CONNECTOR SECTIONS TO PIPE.
- TYPE NO. 1 STEEL END SECTION. CONNECT END SECTION WITH THREADED ROD WITH CONNECTOR LUG, FOR 610 MM Ø PIPE ONLY.
- TYPE NO. 2 STEEL END SECTION. CONNECT END SECTION WITH THREADED ROD WITH ROD HOLDER, FOR 762 MM Ø AND 914 MM Ø ROUND PIPE; AND 432 MM X 330 MM THRU 1448 MM X 965 MM CSPA.
- TYPE NO. 3 STEEL END SECTION. THE CONNECTION INCLUDES 305 MM 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 MM Ø THRU 2134 MM Ø. GAGES OF CONNECTOR SECTION SHALL BE THE SAME AS THE END SECTIONS AS MENTION ABOVE. THE CONNECTOR SECTION WILL BE ATTACHED TO THE END SECTION BY 9.5 MM Ø GALVANIZED RIVETS OR BOLTS APPROXIMATELY 152 MM CENTERS.
- HELICALLY CORRUGATED PIPE. FOR TYPE NO. 5 AND TYPE NO. 3 THE DIMBLE BAND OR CORRUGATED PIPE CONNECTOR SECTION SHALL BE ATTACHED TO THE END SECTION BY 9.5 MM Ø GALVANIZED STEEL RIVETS OR BOLTS SPACED AT APPROXIMATELY 152 MM CENTERS.
- TYPE NO. 1, TYPE NO. 2, AND TYPE NO. 3 CONNECTIONS MAY BE USED WITH WELDED SEAMS HELICALLY CORRUGATED PIPE WITH RE-ROLLED ENDS. RE-ROLLED ENDS SHALL INCLUDE A MINIMUM OF TWO (2) ANNULAR CORRUGATIONS OF THE SAME SIZE AS THE PIPE CORRUGATIONS.



UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF INDIAN AFFAIRS NAVAJO REGION OFFICE * DIVISION OF TRANSPORTATION	
CULVERT DETAILS	
Designed by: RDL	
Drawn by: RDL, cdh Date: 08/13/09	
Revised by: Date:	
File Name: N46_Culverts	

ITEM NO.		60201- 0810	60201- 0910	60202- 0510	60202- 0610	60202- 0710	60210- 0810	60210- 0910	60211- 0910	60211- 1010	60211- 1110
		10 mm CSPC - 1.63mm Thickness 67.7 mm x 12.7 mm Corrugation	762 mm CSPC - 1.63mm Thickness 67.7 mm x 12.7 mm Corrugation	711 mm x 508 mm CSPC-1.63mm Thick. 67.7 mm x 12.7 mm Corrugation	889 mm x 610 mm CSPA-1.63mm Thick. 67.7 mm x 12.7 mm Corrugation	End Section For 610 mm CSPC * 1.63 mm Thickness	End Section For 762 mm CSPC * 1.63 mm Thickness	End Section For 711 mm x 508 mm * CSPC - 1.63 mm Thickness	End Section For 889 mm x 610 mm * CSPC - 1.63 mm Thickness	End Section For 1067 mm x 737 mm * CSPA - 1.63 mm Thickness	Threaded Or 12 G 25 mm Flat Stra

* = Install End Section on Inlet Side Only, Except @ Turnout Locations



ARCH PIPE											
END SECTION											
SPAN*	RISE	Thick ness	DIMENSIONS						Approx.	BODY	
*68 mm x	*76 mm x		A	B	H	F	L	W	Slope		
13 mm	25 mm	(mm)	(25 mm±)	(Max.)	(25 mm±)	(mm)	(38 mm±)	(51 mm±)			
711	x 508	1.6	203	406	152	711	813	1219	2 1/2	1 Pc	
889	x 610	2.0	254	406	152	863	991	1524	2 1/2	1 Pc	
1067	x 737	2.0	305	305	191	1016	168	1905	2 1/2	2 Pc	
1245	x 838	2.8	343	508	229	1168	1346	2134	2 1/2	2 Pc	
1448	x 965	2.8	470	660	305	1473	1575	2286	2 1/4	3 Pc	
1626	x 1092	2.8	457	737	305	1854	1753	2591	2 1/4	3 Pc	
1803	x 1194	2.8 / 3.5	470	914	305	2540	1956	2896	2 1/4	3 Pc	
1854	x 1397	2.8	457	914	305	3149	1956	3200	2.0	3 Pc	
2057	x 1499	2.8	457	991	305	3454	1956	3505	2.0	3 Pc	
2210	x 1600	2.8	457	991	305	3454	1956	3505	2.00	3 Pc	



CULVERT DETAILS

Designed by: RDL	
Drawn by: RDL, cdh	Date: 08/13/09
Revised by:	Date:
File Name: N46_Culverts	

