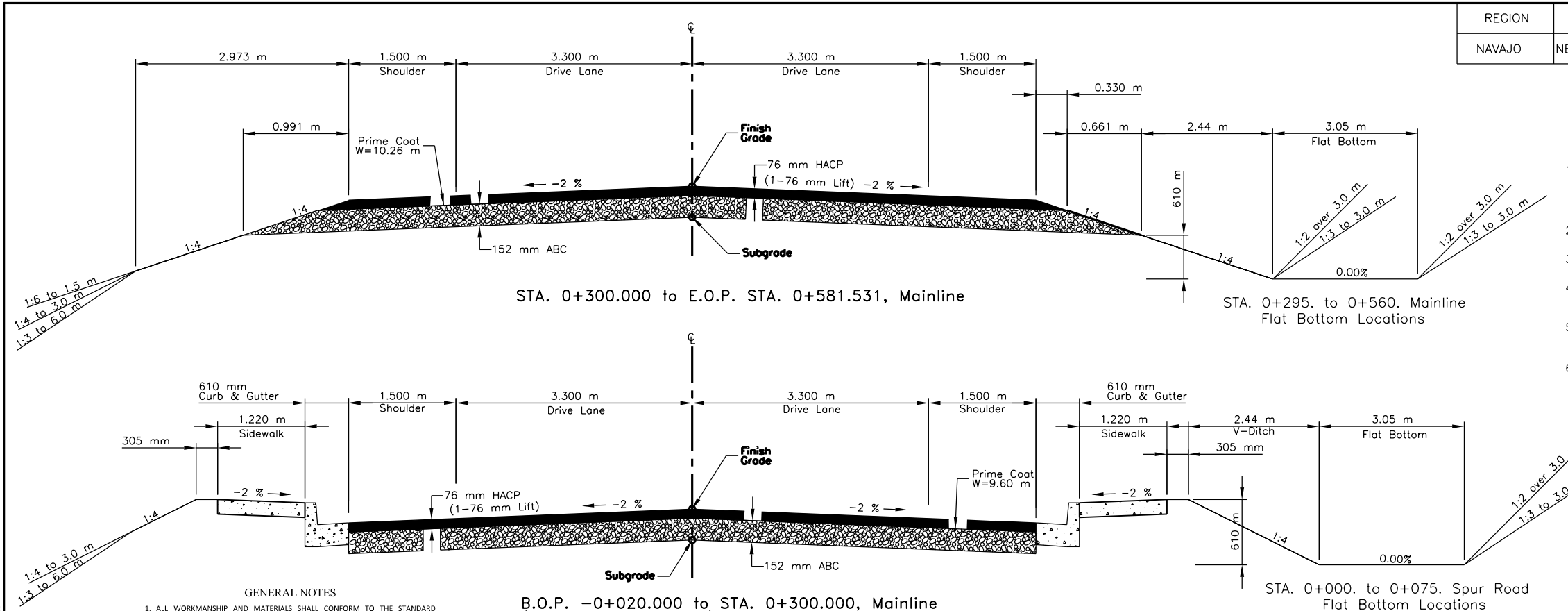


REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N101	N101(1)2&4	2	33

GENERAL NOTES (CONTINUED)

SEQUENCE OF PAVEMENT RECONSTRUCTION

- ON THE N3005 PROJECT, THE CONTRACTOR SHALL BE REQUIRED TO MILL THE ENTIRE EXISTING ASPHALTIC CONCRETE PAVEMENT STRUCTURE TO MINUS 76 mm SIEVE SIZE. THE CONTRACTOR HAS THE OPTION TO UTILIZE COLD MILLING MACHINE OR OTHER APPROVED CONSTRUCTION METHOD TO PULVERIZE THE EXISTING PAVEMENT STRUCTURE.
- THIS PULVERIZED MATERIAL SHALL BECOME AVAILABLE EMBANKMENT MATERIALS FOR USE ON THE PROJECT.
- THE CONTRACTOR SHALL HAUL AND PLACE 152mm OF NEW AGGREGATE BASE COURSE ON TOP OF FINISHED SUBGRADE.
- THE CONTRACTOR SHALL THEN PLACE 76 mm (ONE LIFT) OF HOT ASPHALTIC CONCRETE PAVEMENT AT ALL THE ABOVE PROJECT AND TURNOUTS.
- THE CONTRACTOR SHALL SAW CUT THE EXISTING PAVEMENT AT BEGINNING OF PROJECT (BOP), AND ENDING OF PROJECT (EOP), AND MATCH THE NEW PAVEMENT WITH THE EXISTING TO PROVIDE A SMOOTH TRANSITION.
- THE CONTRACTOR SHALL PROVIDE FOR A SAFE AND RELATIVELY DUST FREE DRIVING SURFACE THROUGHOUT THE RECONSTRUCTION PROCESS FOR ALL SCHOOL AND LOCAL TRAFFIC USE DAY AND NIGHT. THE CONTRACTOR'S TRAFFIC CONTROL AND CONSTRUCTION SEQUENCING PLAN SHALL INCLUDE THESE REQUIREMENTS AND SHALL BE SUBMITTED FOR REVIEW AND APPROVAL BEFORE ANY GROUND DISTURBING ACTIVITIES TAKING PLACE.



GENERAL NOTES

- ALL WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-14), AND THE SUPPLEMENTAL SPECIFICATIONS FOR THIS PROJECT.
- ALL PERMANENT AND TEMPORARY ROADSIDE SIGNS SHALL BE PLACED IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) FOR STREETS AND HIGHWAYS (LATEST EDITION) AND IN ACCORDANCE WITH THE DETAILS ON THESE PLANS.
- THE TEMPORARY TRAFFIC CONTROL DETAILS SHOWN REFLECTS GENERAL REQUIREMENTS FOR THIS PROJECT. THE CONTRACTOR IS RESPONSIBLE FOR PREPARING AND SUBMITTING A TRAFFIC CONTROL PLAN IN ACCORDANCE WITH THESE DETAILS, TAKING INTO ACCOUNT THE CONTRACTOR'S CONSTRUCTION SEQUENCING PLAN, MUTCD, AND THE SUPPLEMENTAL SPECIFICATIONS FOR SECTION 635-TEMPORARY TRAFFIC CONTROL. THE CONTRACTOR SHALL ALSO SUBMIT A COPY OF THEIR TRAFFIC CONTROL PLAN.
- THE DESIGN FEATURES INCLUDING HORIZONTAL AND VERTICAL ALIGNMENTS, TYPICAL SECTIONS, TURNOUTS, AND OTHER DESIGN DETAILS SHOWN ON THESE DESIGN PLANS SHALL NOT BE ALTERED OR MODIFIED IN ANYWAY DURING CONSTRUCTION WITHOUT THE EXPRESSED WRITTEN DIRECTION AND APPROVAL OF THE NAVAJO REGIONAL OFFICE-DIVISION OF ENGINEER OF RECORD THROUGH THE COR, UNLESS OTHERWISE NOTED IN THESE PLANS OR SPECIFICATIONS. DRAINAGE STRUCTURES AND TURNOUTS SHALL BE INSTALLED AS SHOWN ON THE PLANS WITH ONLY MINOR CORRECTIONS IN LOCATION, SKEW, AND/OR INVERT ELEVATIONS AS NEEDED TO FIT FIELD CONDITIONS. TURNOUTS MAY NOT BE SHIFTED MORE THAN 5.0 METER FROM THE LOCATIONS SHOWN ON THE PLANS WITHOUT THE APPROVAL OF THE NRO-DOT DIVISION MANAGER THROUGH THE CONTRACTING OFFICER.
- THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY AND EXPENSE FOR DISPOSAL OF TRASH AND/OR CONSTRUCTION DEBRIS IN ACCORDANCE WITH SECTIONS 107 AND 203 OF THE FP-14 AS WELL AS ANY AND ALL PERMIT REQUIREMENTS. THIS WORK SHALL BE INCIDENTAL OBLIGATIONS OF THE CONTRACTOR.
- THE BIDDER SHALL READ AND MAKE CAREFUL EXAMINATION OF THE PLANS, SPECIFICATIONS, QUANTITIES, MATERIAL, SURVEYING REQUIREMENTS, AND VISIT THE SITE OF THE PROPOSED CONSTRUCTION TO BECOME FAMILIAR WITH THE SITE CONDITIONS AND LIMITATIONS BEFORE MAKING A PROPOSAL. THE CONTRACTOR WILL BE RESPONSIBLE FOR ANY AND ALL ERRORS RESULTING FROM THE FAILURE TO MAKE SUCH AN EXAMINATION. ANY INFORMATION DERIVED FROM THE MAPS, PLANS, SPECIFICATIONS, PROFILES, DRAWINGS OR THE ENGINEER, SHALL NOT RELIEVE THE CONTRACTOR FROM ANY RISK OR FROM FULFILLING THE TERMS OF THE CONTRACT. THERE ARE SEVERAL AREAS WITH LIMITED WORKING ROOM WITHIN THE PROJECT RIGHT-OF-WAY, AND/OR WITH EXISTING FEATURES WITHIN OR NEAR THE PROJECT RIGHT-OF-WAY, THAT WILL REQUIRE 'SPECIAL' CONSTRUCTION METHODS.
- THE CONTRACTOR IS REQUIRED TO SUBMIT A REVISED PIPE LIST, BASED ON THE FIELD STAKING IN ACCORDANCE WITH SECTION 152 OF THE CONTRACT SUPPLEMENTAL SPECIFICATION. THE APPROVAL OF ANY AND ALL REVISED PIPE LISTS WITH ACCOMPANYING DRAWINGS IS RENDERED AS A SERVICE ONLY AND IS NOT CONSIDERED A GUARANTEE OF MEASUREMENTS, QUANTITIES, INSTALLATION PROCEDURES, AND/OR DIMENSIONS, NOR SHALL IT BE CONSIDERED AS RELIEVING THE CONTRACTOR FROM COMPLYING WITH THE CONTRACT SPECIFICATION AND DESIGN PLANS. THE CONTRACTOR IS HEREBY NOTIFIED THAT UNDER NO CIRCUMSTANCE SHALL ANY DRAINAGE STRUCTURE(S) BE INSTALLED BELOW THE NATURAL FLOW LINE OF THE WASH, CHANNEL, ARROYO, OR DITCH LINE.
- NO WORK SHALL BE PERFORMED OR GROUND DISTURBED OUTSIDE OF THE DESIGNATED CONSTRUCTION LIMITS IN ACCORDANCE WITH SECTION 107 OF THE FP-14 WITHOUT APPROVAL BY THE EASEMENT OWNER. IN NO CASE SHALL ANY WORK BE PERFORMED OUTSIDE THE DESIGNATED RIGHT-OF-WAY LIMITS WITHOUT WRITTEN APPROVAL FROM THE NRO-DOT DIVISION ENGINEER OF RECORD.

B.O.P. -0+020.000 to STA. 0+300.000, Mainline
(No Flat Bottom Ditch)
B.O.P. 0+000.000 to STA. 0+082.142, SPUR

- THE DETAILS SHOWN ON THE STORM WATER POLLUTION AND EROSION/SEDIMENT CONTROL DRAWINGS ARE GENERAL REQUIREMENTS TO BE USED BY THE CONTRACTOR IN PREPARING A STORM WATER POLLUTION PREVENTION PLAN ALONG WITH THE REQUIREMENTS IN SECTION 157. OF THE SUPPLEMENTAL SPECIFICATIONS AND SPECIAL CONTRACT REQUIREMENTS.
- THE QUANTITIES SHOWN ARE FOR ESTIMATING PURPOSES ONLY AND TO COMPARE AND CANVAS BIDS. ACTUAL PAY QUANTITIES WILL BE DETERMINED IN THE FIELD FOR AUTHORIZED CHANGES THAT AFFECT THE QUANTITIES.
- ALL TURNOUTS, AS CALLED FOR ON THESE PLANS, SHALL EITHER BE CONSTRUCTED, REBUILT, RESHAPED AND/OR REMOVED UP TO THE RIGHT-OF-WAY LIMITS. ALL TURNOUTS SHALL BE PAVED TO THE CATTLEGUARDS, THEN PLACE AGGREGATE BASE TO THE RIGHT-OF-WAY LIMITS. THIS WORK SHALL BE PAID FOR UNDER THE APPROPRIATE BID ITEMS IN THE BID SCHEDULE.
- THE CONTRACTOR SHALL BE REQUIRED TO OBLITERATE ALL EXISTING ABANDONED TURNOUTS AND ROADWAYS WITHIN THE RIGHT-OF-WAY LIMITS AS FOLLOWS: SCARIFY THE EXISTING ROAD TO A DEPTH OF 300mm AND LEAVING THE SURFACE ROUGH (100 MM TO 150 MM HIGH RIDGES PERPENDICULAR TO THE EXISTING ROAD CENTERLINE). ROADWAY OBLITERATION INCLUDES GRADING DRAINAGE CHANNELS ACROSS THE OLD ROADBED AND/OR DRAINAGE PIPE CONSTRUCTION CATCH POINTS AND THE RIGHT-OF-WAY LIMITS. OBLITERATION SHALL BE CONSIDERED AN INCIDENTAL OBLIGATION OF THE CONTRACTOR UNDER ITEMS 20201-0000, 30301-6000 AND 60701-1000. SEEDING AND STRAW MULCHING SHALL BE APPLIED TO ALL DISTURBED AREAS OUTSIDE OF THE PAVED AREA. RESEEDING TO BE PAID UNDER BIS ITEM 62510-1000.
- STRUCTURAL EXCAVATION AND BACKFILL OF DRAINAGE STRUCTURES SHALL BE CONSIDERED INCIDENTAL TO INSTALLATION OF STRUCTURES. EXCESS MATERIAL REMOVED MAY BE USED TO REBUILD TURNOUTS, DITCH BLOCKS, AND/OR PLACED ALONG THE OUTSIDE EDGES OF THE CONSTRUCTION LIMITS IN AREAS DESIGNATED BY THE COR.
- ALL DRAINAGE DITCHES SHALL BE STAKED AND GRADED TO DRAIN UP TO THE RIGHT-OF-WAY LIMITS. EARTHEN DITCH BLOCKS, DIKES AND DITCHES SHALL BE CONSTRUCTED AS SHOWN ON THESE PLANS AND/OR ADDED AT LOCATIONS DESIGNATED BY THE COR. ALL DITCH BLOCKS, DIKES AND FURROW DITCHES SHALL BE PAID FOR UNDER THE APPROPRIATE BID ITEMS SHOWN IN THE BID SCHEDULE. AT ALL DRAINAGE PIPE REPLACEMENTS, EXTENSIONS, AND IN-PLACE PIPE CLEANING LOCATIONS, THE CONTRACTOR SHALL CLEAN, RE-GRADE AND RE-SHAPE THE INLET AND OUTLET CHANNELS TO THE ROW LINE AS DIRECTED BY THE COR. THIS WORK SHALL BE CONSIDERED INCIDENTAL OBLIGATIONS BY THE CONTRACTOR AND NO ADDITIONAL PAYMENTS SHALL BE MADE.

- THE EARTHWORK TABLE SHOWN IS TO ASSIST THE CONTRACTOR IN ESTABLISHING A BID UNDER THE EARTHWORK ITEMS SHOWN IN THE BID SCHEDULE. ANY BORROW MATERIAL CALLED FOR IN THESE PLANS SHALL BE TAKEN FROM IDENTIFIED SOURCES OUTSIDE THE RIGHT-OF-WAY LIMITS. IT IS THE SOLE RESPONSIBILITY AND EXPENSE OF THE CONTRACTOR TO PROVIDE ANY NECESSARY BORROW MATERIAL FOR THIS PROJECT INCLUDING ALL NECESSARY PERMITS. ALL EXCAVATION, BORROW, WASTE AND EMBANKMENT MATERIAL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEMS 20401-0000 AND 20403-0000. ANY WASTE MATERIAL SHOWN ON THESE PLANS SHALL BE USED AS NECESSARY TO CONSTRUCT TURNOUTS AND DITCH BLOCKS AND/OR BE PLACED AS WASTE ALONG THE TOE OF THE SLOPES NEXT TO THE ROW LINES AS DESIGNATED BY THE COR IN ACCORDANCE WITH SECTION 204-14.
- THE LOCATION OF UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE AND ARE ONLY FOR THE CONTRACTOR TO USE IN COMPLETING THE WORK CALLED FOR. THE CONTRACTOR SHALL CONTACT THE NTUA OFFICE AT (800)-528-5011 PRIOR TO STARTING ANY CONSTRUCTION ACTIVITIES TO COORDINATE THE RELOCATION WORK NEEDED BY THE UTILITY OWNER. THE CONTRACTOR MUST VERIFY ALL UTILITY LOCATIONS WITH THE UTILITY OWNER PRIOR TO ANY EARTHWORK TAKING PLACE. ANY UTILITIES DAMAGED DUE TO NEGLIGENCE ON THE PART OF THE CONTRACTOR SHALL BE RESTORED TO CODE REQUIREMENTS ALL AT THE CONTRACTORS EXPENSE.
- THE CONTRACTOR SHALL REMOVE, CLEAN, AND STOCKPILE ALL SALVAGEABLE EXISTING CULVERTS, CATTLE GUARDS AND FENCING MATERIALS, ETC, AS CALLED FOR ON THESE PLANS AND SECTIONS 203 AND 607. ALL SALVAGEABLE MATERIALS AS DETERMINED BY THE COR SHALL BE TAKEN TO THE NIIP MAINTENANCE YARD LOCATED AT THE NW CORNER OF ROUTES SR371 & N3003. UNSALVAGED MATERIALS SHALL BE DISPOSED OF IN ACCORDANCE WITH SECTION 107 AND 203. THIS WORK SHALL BE PAID FOR UNDER THE BID ITEMS FOR WORK UNDER SECTION 607 AND 203 SUPPLEMENTAL SPECIFICATIONS.

- THE ROADWAY TYPICAL SECTION SHOWN IS THE BASIC TEMPLATE TO WHICH THE PROJECT IS TO BE STAKED AND BUILT. HOWEVER, THERE WILL BE LOCATIONS WHERE, DUE TO EXISTING GROUND CONDITIONS, TURNOUTS, CULVERTS OR OTHER STRUCTURES, ETC., THE SHOWN TYPICAL SECTION BACK AND FORE SLOPES CANNOT BE CONSTRUCTED. IN THIS CASE THE ENGINEER OF RECORD, THROUGH THE COR/COTR, SHALL BE CONSULTED FOR CHANGES IN THE TYPICAL SECTIONS AND/OR APPROVED PROFILES BEFORE PROCEEDING WITH THE WORK UNLESS NOTED OTHERWISE ON THE PLANS. THE FINAL CONSTRUCTED ROAD SECTION SHALL BE BASED ON THE GOVERNMENT FURNISHED COMPUTERIZED STAKING REPORT AS ADJUSTED TO FIT FIELD CONDITIONS. THE CONTRACTOR SHALL STAY WITHIN THE LIMITS OF CONSTRUCTION, UNLESS OTHERWISE APPROVED. IN NO CASE SHALL THE CUT AND FILL BACK SLOPES BE BUILT STEEPER THAN THE MAXIMUM ALLOWED IN THE ROADWAY TYPICAL SECTION SHOWN.
- ANY EXISTING OR NEW ROADSIDE FEATURES OR OTHER IMPROVEMENTS NEGLIGENTLY DAMAGED BY THE CONTRACTOR, DURING CONSTRUCTION, SHALL BE RESTORED/REPLACED IN EQUAL OR BETTER CONDITION AT THE CONTRACTOR'S EXPENSE.
- REMOVAL AND RE-ATTACHMENTS OF FENCING AT ALL MAJOR DRAINAGE STRUCTURE, CATTLE GUARDS, GATES, ETC, SHALL BE CONSIDERED INCIDENTAL OBLIGATIONS OF THE CONTRACTOR UNDER ITEM 619 FOR WORK REQUIRING REMOVAL, REPLACEMENT, AND/OR MODIFICATION OF EXISTING STRUCTURES, INSTALLATION OF NEW GATES AND/OR TIE-INS TO EXISTING FENCES. ALL FENCING REPAIRS, TEMPORARY FENCING AND/OR REPLACEMENT SHALL BE COMPLETED IMMEDIATELY IN THE SAME WORK DAY SO AS NOT TO ALLOW LIVESTOCK ONTO THE PROJECT.
- GRADE AND SHAPE THE NEW SHOULDER (AS REQUIRED) FROM THE NEW SUBGRADE HINGE POINTS TO AND INCLUDING THE EXISTING DITCH LINE AREAS FOR THE CONSTRUCTION OF RIPRAP DITCH LININGS, SLOPE PROTECTION, AND RUNDOWNS. THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE RIPRAP ITEMS SHOWN IN THE BID SCHEDULE.

- THE CONTRACTOR SHALL NOTIFY NNDOT ARCHAEOLOGIST TAFT BLACKHORSE AT (505- 371-8394, tblackhorse@navajodot.org) AS REQUIRED PRIOR TO STARTING CONSTRUCTION ACTIVITY NEAR KNOWN ARCHAEOLOGICAL SITES. SEE THE SPECIAL CONTRACT REQUIREMENT SECTION OF THE CONTRACT FOR ADDITIONAL INFORMATION, AND REQUIREMENTS. THE CONTRACTOR SHALL PLACE TEMPORARY FLEXIBLE SAFETY FENCE SYSTEMS AROUND THE ARCHAEOLOGY SITE(S) AS SHOWN ON THE PLANS. THE FENCING MATERIAL SHALL BE SQUARE LINK (ORANGE COLOR) PLASTIC TYPE MADE OF HI-DENSITY HDPE.
- THE GEO-TECHNICAL REPORT FOR THIS PROJECT SHALL BE PROVIDED UPON WRITTEN REQUEST TO THE COR.
- ROADWAY AND PIPE CROSS SECTION DRAWINGS WILL BE PROVIDED IN EITHER HARD COPY OR ELECTRONIC FORMAT UPON WRITTEN REQUEST TO THE COR.
- AT THE COMPLETION OF THE CONSTRUCTION, THE CONTRACTOR SHALL INSPECT THE INTERIOR OF ALL NEWLY INSTALLED CULVERTS, CATTLEGUARDS, AND/OR OTHER DRAINAGE STRUCTURES. THESE STRUCTURES SHALL BE MAINTAINED IN A CLEAN CONDITION, FREE OF SILT AND OTHER DEBRIS UNTIL FINAL ACCEPTANCE OF THE PROJECT. THIS WORK SHALL BE CONSIDERED AN INCIDENTAL OBLIGATIONS OF THE CONTRACTOR UNDER THE APPROPRIATE BID ITEMS, FOR SECTIONS 602, 603, AND 607.
- THE CONTRACTOR WILL INCLUDE THE COST OF WATER NEEDED IN ITEMS 20401, ROADWAY EXCAVATION, 20403 UNCLASSIFIED BORROW, 30101 AGGREGATE BASE, AND 62510 SEEDING IN HIS BID COST FOR THE INDIVIDUAL ITEMS. THE COST FOR WATER WHICH IS NEEDED DURING THE COURSE OF THE PROJECT FOR ALL OTHER PURPOSES, INCLUDING DUST CONTROL AND FOUNDATION COMPATION, WILL ALSO BE INCLUDED IN THE OVERALL BID COST FOR THE PRODUCT. THE CONTRACTOR WILL BE RESPONSIBLE FOR COMPUTING HIS OWN WATER QUANTITIES AND THEN BASING HIS BID ON HIS OWN COMPUTED QUANTITIES.

BASIS OF ESTIMATED QUANTITIES

ITEM No.	DESCRIPTION	GRADE	UNIT	APPLICATION
30101- 2000	UNTREATED AGGREGATE BASE COURSE	SPECIAL	2,244 kg/m ³	152 mm-Mainline, 152 mm-Turnouts
40201- 0500	HOT ASPHALTIC CONC. PVMT. CLASS "B"	"B"	2,404 kg/m ³	1-76 mm Lifts Mainline and Turnouts
40502- 0800	ASPHALT BINDER	PG 58-28	0.9806 L/kg	6 % by weight of total mixture
41101- 5000	PRIME COAT GRADE PENETRATING EMULSIFIED PRIME	PEP	1.056 L/kg	1.36 L/m ²

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

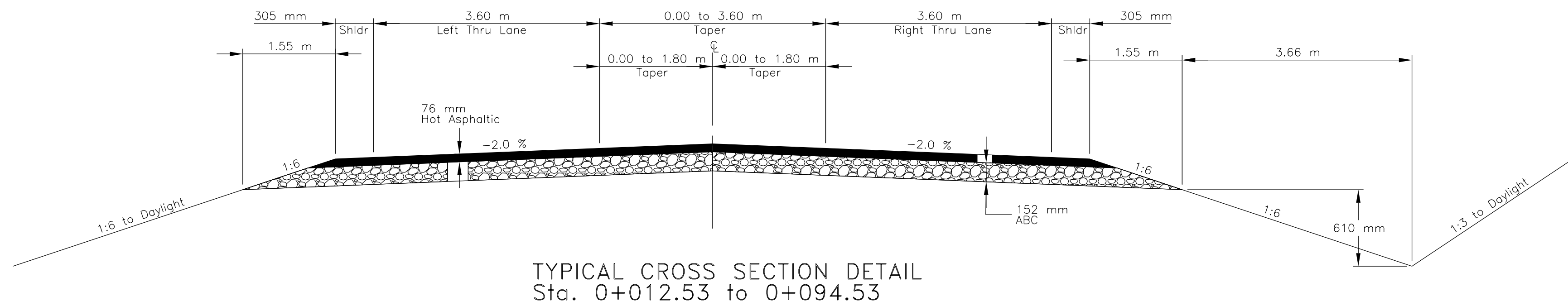
TYPICAL CROSS SECTION DETAIL
AND GENERAL NOTES

DRAWN BY: NRDOT DATE: 7/2/2007
DESIGNED BY: NRDOT DATE: 7/2/2007
REVISED: 7/24/2020 BY: Harold.Riley

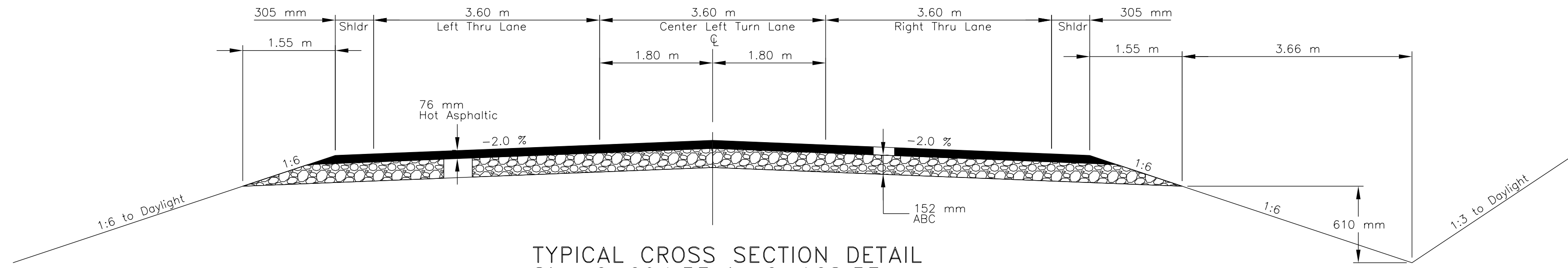
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REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N101	N101(1)2&4	3	33

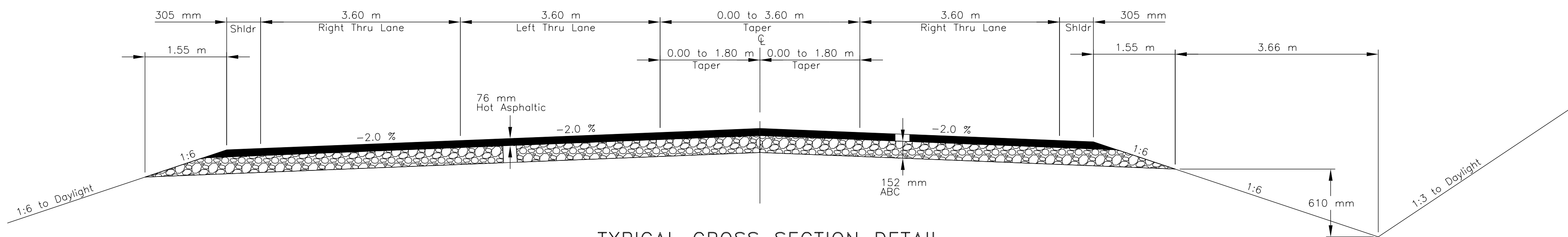


TYPICAL CROSS SECTION DETAIL
Sta. 0+012.53 to 0+094.53

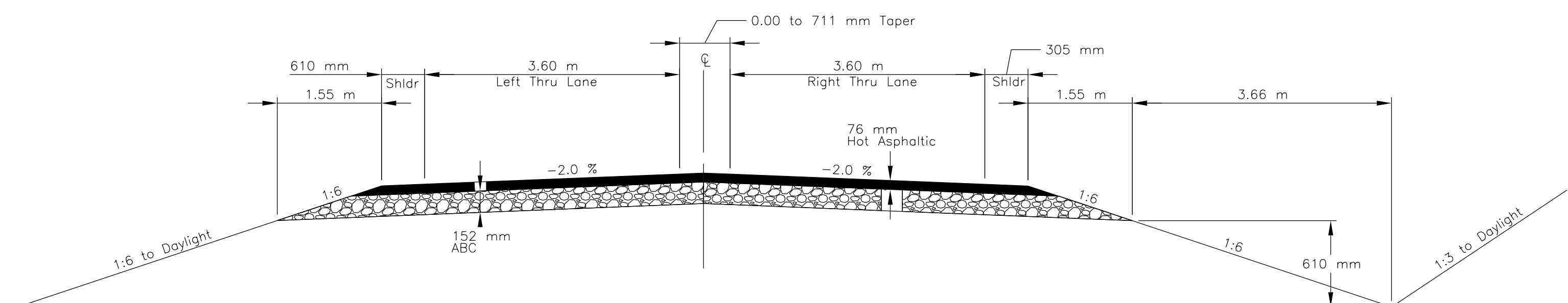


TYPICAL CROSS SECTION DETAIL
Sta. 0+094.53 to 0+168.53

Note: Sta. 0+168.53 to 0+184.28
16.0 m Gap for
N101 & N3005 Intersection

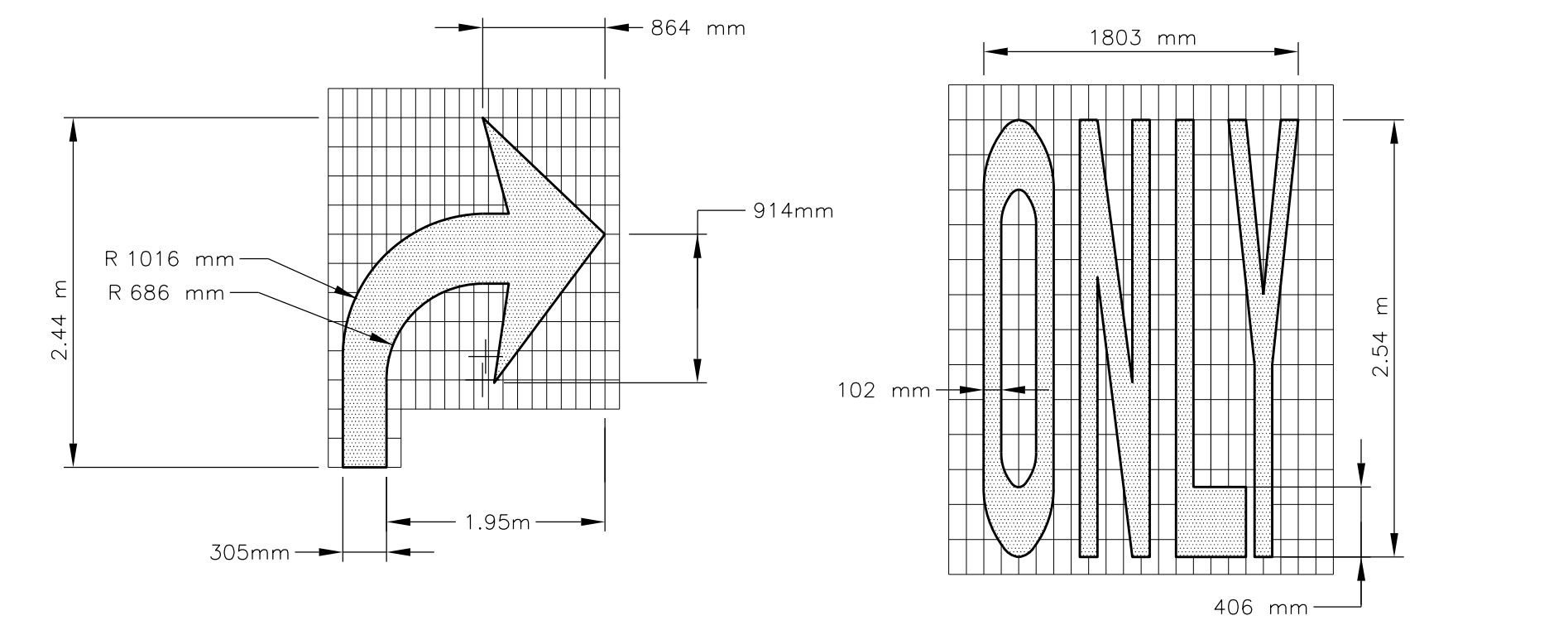


TYPICAL CROSS SECTION DETAIL
Sta. 0+184.28 to 0+231.13



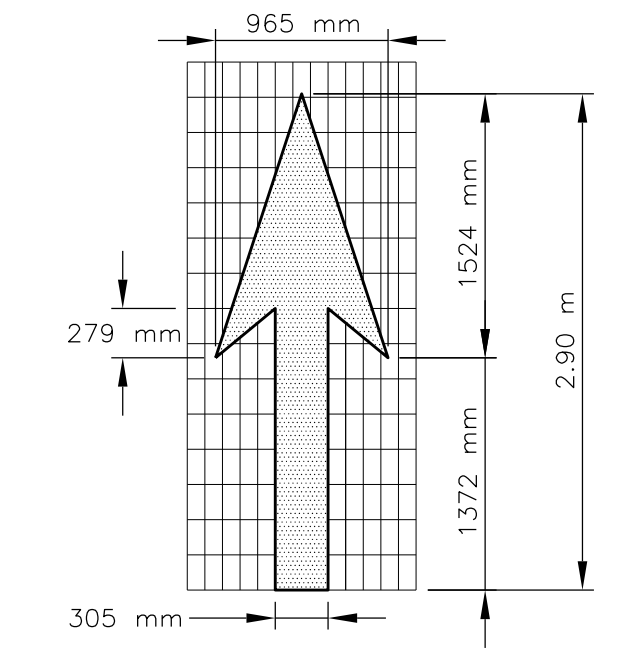
TYPICAL CROSS SECTION DETAIL
Sta. 0+258.13 to 0+275.13

Note: Sta. 0+231.13 to 0+258.13
27.0 m Transition

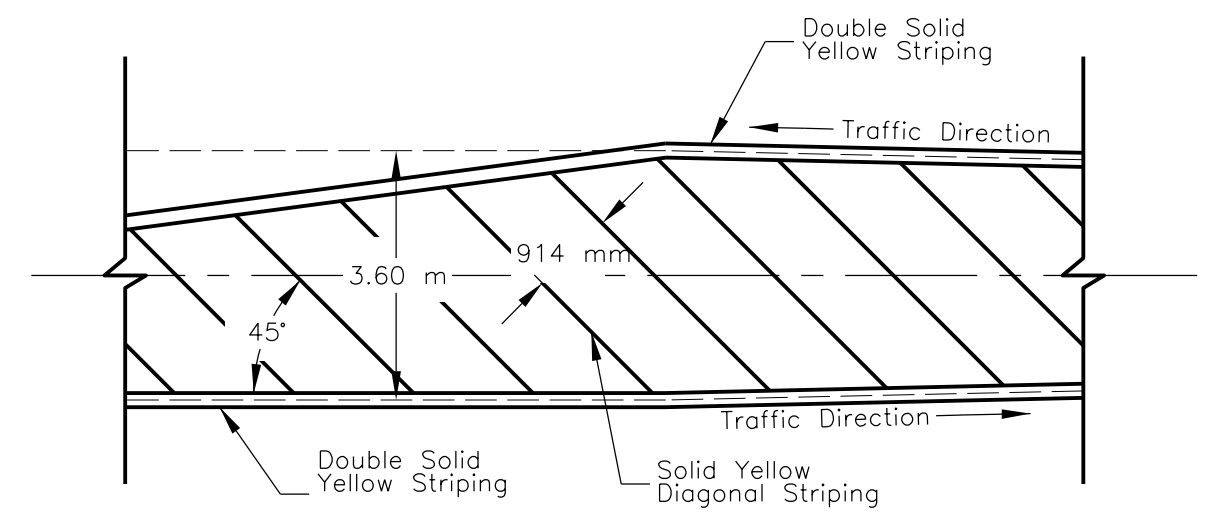


ITEM 63405-2900
Pavement Marking, Elongated
Turn Lane-Use Arrow,
Type "H", 4 Each
ROUTE N3005 SHT 9

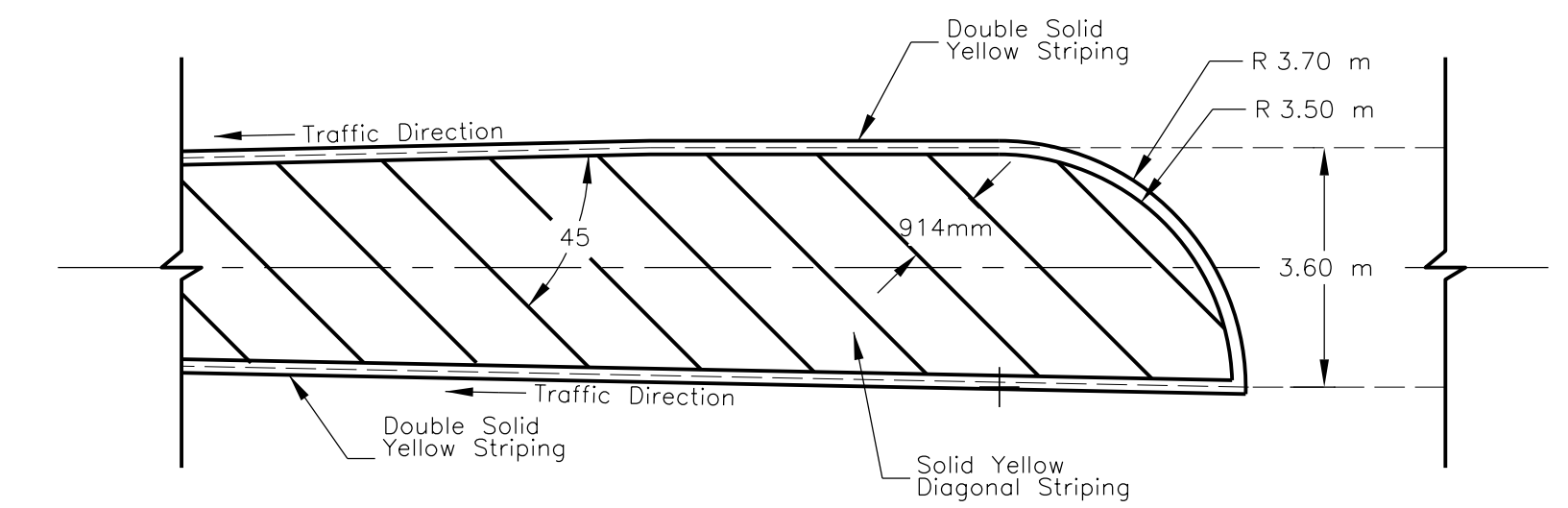
ITEM 63405-3050
Pavement Marking Word "ONLY",
Type "H" 4 Each
ROUTE N3005 SHT 9



ITEM 63405-2950
Pavement Marking, Elongated
Through Lane-Use Arrow,
Type "H" 6 Each
ROUTE N3005 SHT 9



DETAIL "A" ROUTE N3005 NOT USED
Under Item 63401-1510 Pavement Marking,
"Diagonal Striping", Type "H", 1 Each
Sta. 0+012.533 To 0+121.532



DETAIL "B" ROUTE N3005 SHT 9
Under ITEM 63401-1510 : Pavement Marking,
"Diagonal Striping", Type "H", 1 Each
Sta. 0+184.282 To 0+275.133

BASIS OF ESTIMATED QUANTITIES

ITEM No.	DESCRIPTION	GRADE	UNIT	APPLICATION
30101- 2000	UNTREATED AGGREGATE BASE COURSE	SPECIAL	2,244 kg/m ³	152 mm- on N3005.
40201- 0500	HOT ASPHALTIC CONC. PVMT. CLASS "B"	"B"	2,404 kg/m ³	1-76 mm Lifts on N3005
40502- 0800	ASPHALT BINDER	PG 58-28	0.9806 L/kg	6 % by weight of total mixture
41101- 5000	PRIME COAT GRADE PENETRATING EMULSIFIED PRIME	PEP	1.056 L/kg	1.36 L/m ²

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BUREAU OF INDIAN AFFAIRS
NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

N3005 TYPICAL CROSS SECTION
AND PAVEMENT MARKING DETAILS

DRAWN BY: NRDOT DATE: 11/25/2014
DESIGNED BY: NRDOT DATE: 11/25/2014
REVISED: 7/23/2020 BY: Design 2



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N101	N101(1)2&4	4A	33

ESTIMATED ROADWAY QUANTITIES			
ITEM	DESCRIPTION	QUANTITY	UNIT
10901-0000	Extra & Miscellaneous Work Authorized under Section 109.02(s)	All Req'd	Lump Sum
15101-0000	Mobilization	All Req'd	Lump Sum
15201-0000	Construction Survey and Staking	All Req'd	Lump Sum
15301-0020	Contractor Quality Control	All Req'd	Lump Sum
15708-0000	Temporary Soil Erosion Control	All Req'd	Lump Sum
15714-1000	Temporary Straw Mulching	0.50	ha
20102-0000	Clearing and Grubbing	All Req'd	Lump Sum
20304-1000	Removal of Structures and Obstructions	All Req'd	Lump Sum
20401-0000	Roadway Excavation	5,864.00	m ³
20403-0000	Unclassified Borrow	387.00	m ³
21101-2000	Roadway Obliteration, method 2	175.00	m ²
25101-2000	Placed Riprap, Class 1	79.1	m ³
30101-2000	Untreated Aggregate Base, Grade "Special"	3,642.73	t
40201-0500	Hot Asphaltic Concrete Pavement, Class "B", Grading "B" Type III Smoothness	1,817.00	t
40502-0800	Asphaltic Binder, Grade PG 58-28	109.00	t
41101-5000	Prime Coat, Grade Penetrating Emulsified Prime (PEP)	13.00	t
60201e-0910	610mm Aluminum Alloy Coated Cor. Steel Pipe Culvert, Type 2	12.19	m
60201-0910	762mm Aluminum Alloy Coated Cor. Steel Pipe Culvert, Type 2	91.11	m
60202-0510	711mm x 508mm Corrugate Steel Pipe Arch - Aluminized	41.00	m
60206-0910	End Section for 610mm Aluminum Alloy Coated CSPC,	2	Each
60210-0910	End Section for 762mm Aluminum Alloy Coated CSPC,	4	Each
60211-0910	End Section for 711mm 508 mm CSPA Aluminized	2	Each
60405-0000	Manhole Adjustment	4	Each
60701-1000	Remove, Clean and Stockpile Culvert	128.24	m
60902-1000	PCC Curb and Gutter, 305 mm Depth	750.42	m
61102-3200	200mm Waterline, Polyvinyl Chloride (PVC)	40.00	m
61103-1100	300mm Encasement Pipe, Galvanized Steel	64.0	m
61103-1450	400mm Encasement Pipe, Galvanized Steel	30.5	m
61108-1000	Adjust Water Valve	3	Each
61501-0100	Sidewalk, Concrete, 1.22m Wide	919.3	m ²
61505-1000	Handicap Ramp, Concrete	11	Each
61921-1000	Remove and Reset chain link Fencing and gates (within the school compound)	225.00	meter
61921-1010	Remove of Fence	41.00	meter
61903-1011	4- Unit Cattleguard Without Gate	1	Each
62101-0000	Right-of-Way Monument	23	Each
62102-0000	Reference Markers	23	Each
62510-1000	Seeding, Dry Method	0.50	ha
63302-2002	Sign Installation, 1 Post & Hardware: 44mm x 44mm, Square Steel Tube	12.66	m ²
63302-2006	Sign Installation, 2 Post & Hardware: 50mm x 50mm, Square Steel Tube	1.12	m ²
63302-2007	Sign Installation, 2 Post & Hardware: 57mm x 57mm, Square Steel Tube	2.74	m ²
63302-2013	Sign Installation, 4 Post & Hardware: 64mm x 64mm, Square Steel Tube	2.60	m ²
63308-2000	Object Marker, Type 2 -35mm x 35mm Steel Square Tube	4	Each
63309-0011	Delineators, Type "1a" -35mm x 35mm Steel Square Tube	5	Each
63309-0021	Delineators, Type "1b" -35mm x 35mm Steel Square Tube	4	Each
63401-1510	Pavement Markings, Type "H", Solid Yellow	2,643.00	m
63401-1520	Pavement Markings, Type "H", Solid White	2,218.90	m
63401-1620	Pavement Markings, Type "H", Broken White	54.00	m
63405-2900	Pavement Markings, Elongated Turn Lane Arrow Type "H"	4	Each
63405-2950	Pavement Markings, Elongated Through Lane Arrow Type "H"	6	Each
63405-3050	Pavement Markings, Word "Only" Type "H"	4	Each
63405-3260	Pavement Markings, Stop Bar Type "H"	2	Each
63405-3280	Pavement Markings, Type "H", Pedestrian Walkway Solid White	3	Each
63501-0000	Temporary Traffic Control	All Req'd	Lump Sum
63601-7000	Solar Powered School Zone Flashing Beacon	All Req'd	Lump Sum

PAVEMENT SURFACING

Description:	Location:	Offset:	30101-2000	40201-0500	40502-0800	41101-5000	Remark:
			Aggregate base course	HACP (t)	Asphalt Cement	Asphalt Prime coat (t)	
Mainline; Sta -0+020.00 to 0+300.00	centerline	centerline	982.53	526.00	32.00	3.70	with PCC curb/ gutter and sidewalk
Mainline; Sta 0+300.00 to 0+586.34	centerline	centerline	1,067.00	520.00	31.00	3.80	normal typical section.
driveway; old school access	0+218.00	left	34.19	15.65	0.94	0.13	4.50 m wide driveway
driveway; Church	0+320.00	left	34.20	15.70	0.94	0.13	4.50 m wide driveway
Spur; Sta 0+000.00 to 0+071.93	centerline	centerline	266.00	142.00	9.00	1.00	with PCC curb/ gutter and sidewalk
Spur; Sta 0+071.93 to 0+082.126	centerline	centerline	72.81	35.72	2.14	0.28	Intersection radius
N3005; Sta. 0+012.533 to 0+275.133	centerline	centerline	1,186.00	562.00	33.00	4.00	Complete reconstruction. Turning Lanes
Total:			3,642.73	1,817.07	109.02	13.04	

ITEM No. 61501-0100; SIDEWALK, CONCRETE, 1.22m WIDE

STATION TO STATION	LOCATION	LENGTH:(m)	WIDTH:	AREA (m ²)	REMARKS:
0+006.00 to 0+300.000	left	306.00	1.22	373.32	Main; match new sidewalk to existing
0+000.000 to 0+257.308	right	257.31	1.22	313.92	Main; begin radius
0+257.308 to 0+272.308	right	21.65	1.22	26.41	Main; radius length
0+281.908 to 0+296.908	right	21.65	1.22	26.41	Main; radius length
0+296.908 to 0+300.000	right	3.09	1.22	3.77	Main; taper sidewalk
0+000.000 to 0+071.926	left	71.93	1.22	87.75	Spur; match new sidewalk to existing
0+000.000 to 0+071.926	right	71.93	1.22	87.75	Spur; match new sidewalk to existing
TOTAL:				919.32	

ITEM No. 60902-1000: PCC CURB AND GUTTER, 305mm depth

STATION TO STATION	Location	CURB & GUTTER (m)	REMARKS:
0+000 To 0+300.000	left	300.000	Main; match new curb to existing
0+000 To 0+257.308	right	257.308	Main; begin of radius
0+257.308 To 0+272.308	right	23.083	Main; radius length
0+281.908 To 0+296.908	right	23.083	Main; radius length
0+296.908 To 0+300.000	right	3.092	Main; taper curb
0+000 To 0+071.926	left	71.926	Spur; match new curb to existing
0+000 To 0+071.926	right	71.926	Spur; match new curb to existing
TOTAL:		750.418	

ITEM No. 61903-1011 4- UNIT CATTLEGUARD WITHOUT GATE

STATION	LOCATION	QUANTITY	REMARKS
0+569.00	C/L	1	Remove existing ROW Fence under bid item 61921-1010 Tie existing fence to new cattleguard into wing braces

ITEM NO. 60701-1000 REMOVE CLEAN/STOCKPILE CULVERTS

STATION	LOCATION	SIZE
00+204.70	C/L	1- 1219mm x 34.25m - Under exist'g. main line road
00+270.00	26m Rt.	1- 610mm x 40.30m - exist'g. Pipe
N101(1) SPUR ROAD		
00+060.00	25m Lt.	1- 305mm x 13.00m - Under old exist'g. Turnout on Spur road
00+021.22	C/L	1- 914mm x 40.69m - Under exist'g. Spur Road
TOTAL 128.24m		

N101 MAINLINE - FLAT BOTTOM DITCH LOCATION

STATION TO STATION:	LENGTH	LOCATION	REMARKS
Mainline			
0+295.00 to 0+560.00	265.00 m	Right	3.025 m Ditch
TOTAL:		265.00 m	

N101 SPUR ROAD - FLAT BOTTOM DITCH LOCATION

STATION TO STATION:	LENGTH	LOCATION	REMARKS
SPUR			
0+000.00 to 0+075.00	65.00 m	Right	3.025 m Ditch
TOTAL:		65.00 m	

ITEM No. 20304-1000 REMOVAL OF STRUCTURE & OBSTRUCTIONS

STATION	LOCATION	REMARKS
0+115.00	Rt.	Remove 130.90m of Exist'g Chain Link Fence, Gates and Stockpile for Chapter Pick Up.
0+570.00	C/L	Remove 10m of Exist'g Fencing tie into new 4-Unit Cattleguard
0+180.00	Left	Remove Exist'g Solar Panel Powered Beacon and Dispose of
0+000.00	C/L	Remove Exist'g. 4-Unit Cattleguard on Spur Road and Dispose of

EARTHWORK QUANTITIES

STATION TO STATION	CUT (m ³)	*FILL (m ³)	BORROW (m ³)	WASTE (m ³) **
0+020 - 0+058.238 (N101 Main ROAD)	73.00	52.00	0.00	0.00
0+058.238 - 0+590.058 (N101 Main ROAD)	3,687.00	5,526.00	1,818.00	0.00
Subtotal	3,760.00	5,578.00	1,818.00	0.00
0+000.000 - 0+014.786 (Spur Rd.)	29.00	14.00	0.00	15.00
0+014.786 - 0+058.787 (Spur Rd.)	217.00	297.00	80.00	0.00
0+058.787 - 0+067.296 (Spur Rd.)	92.00	19.00	0.00	73.00
0+067.296 - 0+086.926 (Spur Rd.)	46.00	294.00	248.00	0.00
Subtotal	384.00	624.00	328.00	88.00
N3005 0+012.533 to 0+275.130 (Turning Lane)	1,720.00	49.00	0.00	1,671.00
Subtotal	1,720.00	49.00	0.00	1,671.00
GRAND TOTAL	5,864.00	6,251.00	2,146.00	1,759.00
Total Borrow needed>>>				387.00

*= 15% Shrinkage Factor Applied to Fill
 ** Wasted material to be use on N101 MAIN ROAD & SPUR

BASIS OF ESTIMATED QUANTITIES

ITEM NO:	DESCRIPTION	GRADE	UNITS	APPLICATION
30101-2000	UNTREATED AGGREGATE BASE COURSE	"D"	2244 kg/m ³	152 mm-Mainline, 102mm-Turnouts
40201-0500	HOT ASPHALT CONC. PVMT. CLASS "B"	"B"	2404 kg/m ³	76 mm Mainline, (51 mm Turnouts)
40502-0800	ASPHALT BINDER	PG-58-28	0.9806 L/kg	6% by weight of total mixture
41101-5000	ASPHALT PRIME COAT	MC-70	1.056 L/kg	1.36 L/m ²

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ESTIMATED QUANTITIES

DRAWN BY: NRDOT DATE: 11/23/2015
 DESIGNED BY: NRDOT DATE: 11/23/2015
 REVISED: 3/11/2021 BY: Design 2



M:\TRN\17-100-090-42\1-Project-Info\Correspondence\Date in BIA files\Microstation\final drawings\Sh-4A N101(1)2&4 est. 112315.dgn

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N101	N101(1)2&4	4B	33

EXISTING UTILITY CROSSINGS

LOCATION:	DESCRIPTION:	SKEW:	LOCATION	REMARKS*
N101 Mainline				
-0+010, 6m LT to 6.6m RT	Underground telephone line crossing	±90°	RT/LT	Work by others - Sacred Wind to lower and install casing prior to start of construction.
-0+009, 6m LT to 6.6m RT	Underground waterline crossing and meter	±84°	LT/RT	Protect in place
-0+002, 8.8m RT	Power pole	N/A	RT	Protect in place
-0+002, 2.6m RT	Sewer manhole	N/A	RT	Protect in place
0+000 to 0+195	Underground sewerline	N/A	RT	Protect in place
0+000 to 0+295	Underground waterline	N/A	LT/RT	Protect in place
0+008.5, 9.1m LT	Water meter	N/A	LT	Protect in place
0+008.5, 7.6m LT	Water valve	N/A	LT	Adjust valve to finish grade
0+103.4, 3.8m RT	Sewer manhole	N/A	RT	Remove and reset frame/cover to finish grade
0+114, 10.9m LT & 15.6m RT	Power poles (2 total) and overhead power crossing	±90°	LT/RT	Protect in place
0+195, 8.4m LT	Sewer manhole	N/A	LT	Protect in place
0+195, 5.4m, RT	Sewer manhole	N/A	RT	Remove and reset frame/cover to finish grade
0+196, 8.4m LT to 6.7m RT	Underground sewerline	±91°	LT/RT	Protect in place
0+196 to 0+252 LT	Underground sewerline	N/A	LT	Protect in place
0+196 RT/LT	Underground telephone line crossing	±90°	RT/LT	Work by others - Sacred Wind to provide new service connection and abandon existing line in place.
0+196 to 0+265 RT/LT	Underground telephone line	N/A	RT/LT	Protect in place
0+254.2, 3.6m, LT	Underground electric vault	N/A	LT	Work by others - power line and vault to be removed and replaced to new OHE crossing by NTUA.
0+252, LT/RT	Underground electrical cable crossing	±116°	LT/RT	
0+256.5, 6.7m, LT	Sewer manhole	N/A	LT	Remove and reset frame/cover to finish grade
0+258.5, 6.7m, LT	Sewer manhole	N/A	LT	Remove and reset frame/cover to finish grade
0+258, 17.8m LT to 6.7m RT	Underground waterline crossing	±97°	LT/RT	Protect in place
0+295.8, 13.5m RT	Water valve	N/A	RT	Adjust to finish grade
0+298 LT/RT	Underground waterline crossing	±92°	LT/RT	Protect in place
0+300, 14.6m RT	Water valve	N/A	RT	Adjust to finish grade
0+314.5 RT/LT	Power poles (3 total) and overhead power crossing	±85°	LT/RT	Work by others - pole(s) to be relocated and overhead power crossing(s) to be raised by NTUA
0+560 Centerline	Waterline crossing	±95°	LT/RT	Install new 200mm waterline and 400mm steel casing per NTUA details.
0+565.5 Centerline	Underground telephone cable crossing	±95°	LT/RT	Protect in place
0+568.2 Centerline	Overhead powerline crossing	±90°	LT/RT	Protect in place, Work by others - NTUA electric to install new pole and raise crossing
0+577.5 Centerline	Underground FO cable crossing	±90°	LT/RT	Work by others - Sacred Wind to lower and install casing prior to start of construction.
Spur Road				
-0+003, 7.2m LT	Sewer manhole	N/A	LT	Protect in place
0+000 to 0+070 RT	Underground waterline	N/A	RT	Protect in place
0+062	Overhead powerline crossing	±85°	LT/RT	Protect in place
0+076 LT/RT	Underground waterline crossing	±98°	LT/RT	Protect in place

*Remarks related to "Work by others" is work assumed to be required by the BIA. Actual work required/ performed by Utility owner may vary.

ITEM No. 61102-3200; 200mm WATERLINE, POLYVINYL CHLORIDE (PVC)

STATION	LOCATION:	DESCRIPTION	QUANTITY (m)	REMARKS:
0+560	18m LT to 22m RT	NTUA waterline crossing	40.0	Install 200mm (8") waterline per NTUA details.
TOTAL:			40.0	

ITEM No. 60405-0000; MANHOLE ADJUSTMENT

STATION	LOCATION:	DESCRIPTION	QUANTITY (EACH)	REMARKS:
0+103.4	3.8m RT	NTUA sewer manhole	1	Remove and reset frame and cover to finish grade using NTUA details.
0+195	5.4m RT	NTUA sewer manhole	1	Remove and reset frame and cover to finish grade using NTUA details. Coordinate work with proposed curb and gutter layout.
0+256.5	6.7m LT	NTUA sewer manhole	1	Remove and reset frame and cover to finish grade using NTUA details. Coordinate work with proposed sidewalk layout.
0+258.5	6.7m LT	NTUA sewer manhole	1	Remove and reset frame and cover to finish grade using NTUA details. Coordinate work with proposed sidewalk layout.
TOTAL:			4	

ITEM No. 61103-1100; 300mm ENCASEMENT PIPE, GALVANIZED STEEL

STATION	LOCATION:	DESCRIPTION	QUANTITY (m)	REMARKS:
0+004	8.6m LT to 9.7m RT	future NTUA waterline crossing	18.3	Install 300mm (12") waterline casing pipe per NTUA details.
0+295.8	9.15m LT to 9.15m RT	future NTUA waterline crossing	18.3	Install 300mm (12") waterline casing pipe per NTUA details.
0+070 (Spur)	12.6m LT to 14.8m RT	future NTUA waterline crossing	27.4	Install 300mm (12") waterline casing pipe per NTUA details.
TOTAL:			64.0	

ITEM No. 61103-1450; 400mm ENCASEMENT PIPE, GALVANIZED STEEL

STATION	LOCATION:	DESCRIPTION	QUANTITY (m)	REMARKS:
0+560	15.25m LT to 15.25m RT	NTUA waterline crossing	30.5	Install 400mm (16") waterline casing pipe per NTUA details.
TOTAL:			30.5	


ITEM No. 61108-1000; ADJUST WATER VALVE

STATION	LOCATION:	DESCRIPTION	QUANTITY (EACH)	REMARKS:
0+008.5	7.6m LT	NTUA water valve	1	Adjust valve to finish grade of sidewalk per NTUA direction using NTUA details.
0+295.8	13.5m RT	NTUA water valve	1	Adjust valve to finish grade of ditch per NTUA direction using NTUA details.
0+300	14.6m RT	NTUA water valve	1	Adjust valve to finish grade of ditch per NTUA direction using NTUA details.
TOTAL:			3	

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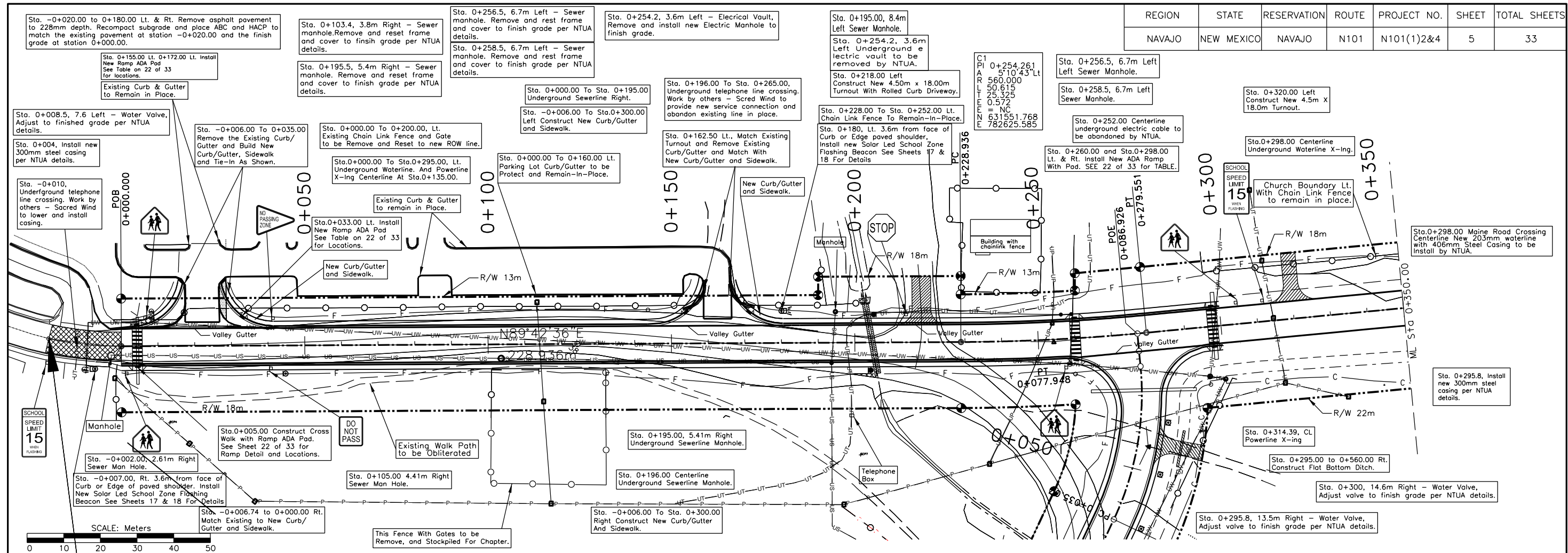
ESTIMATED UTILITY QUANTITIES

DRAWN BY: NRDOT DATE: 11/23/2015
DESIGNED BY: NRDOT DATE: 11/23/2015
REVISED: 3/11/2021 BY: Design 2



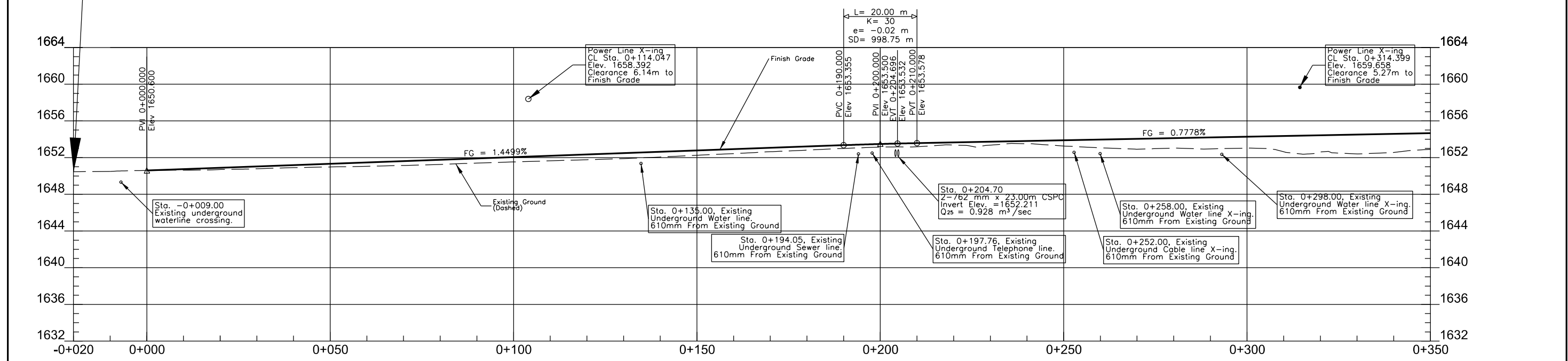
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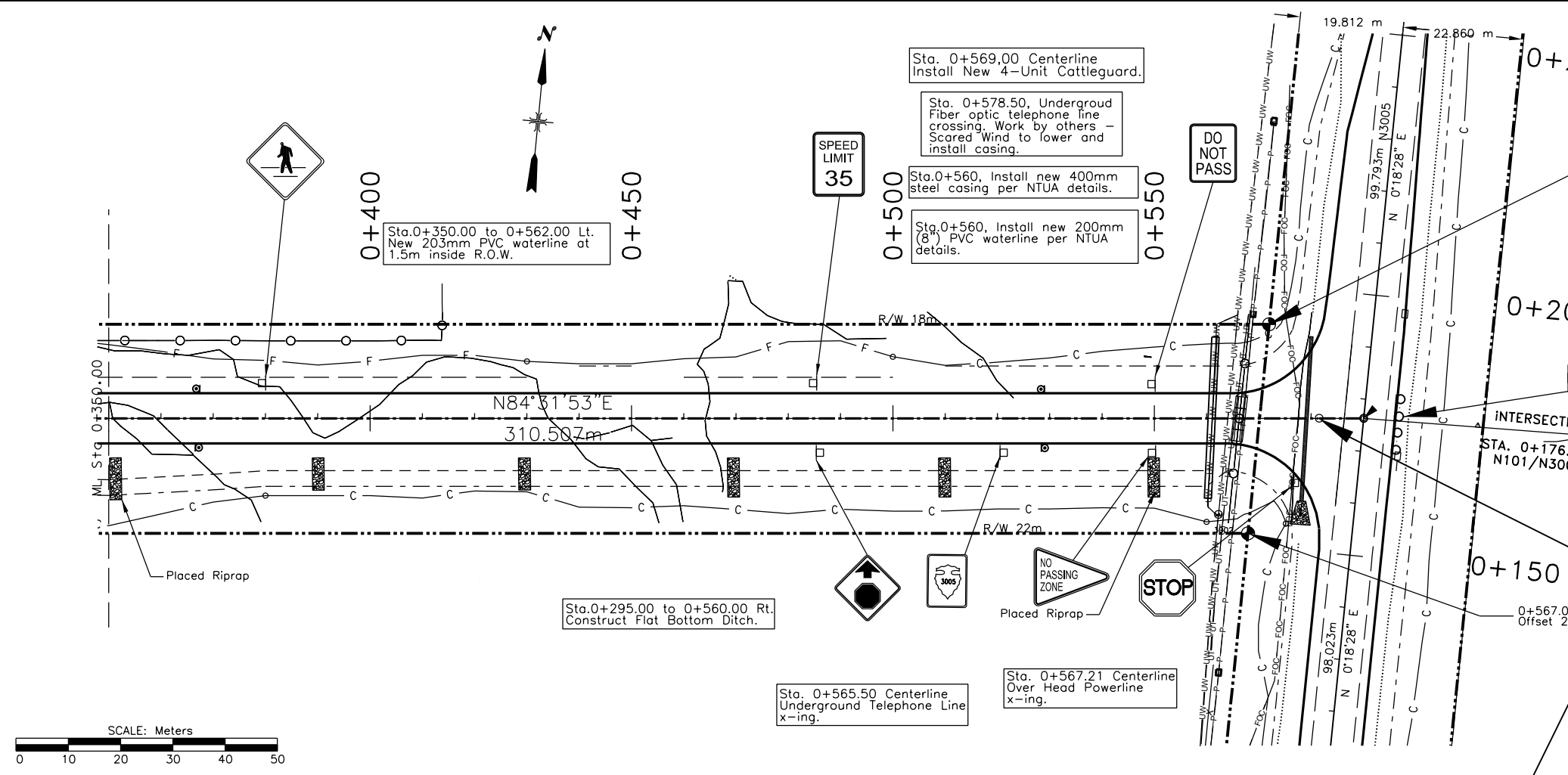
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N101	N101(1)2&4	5	33



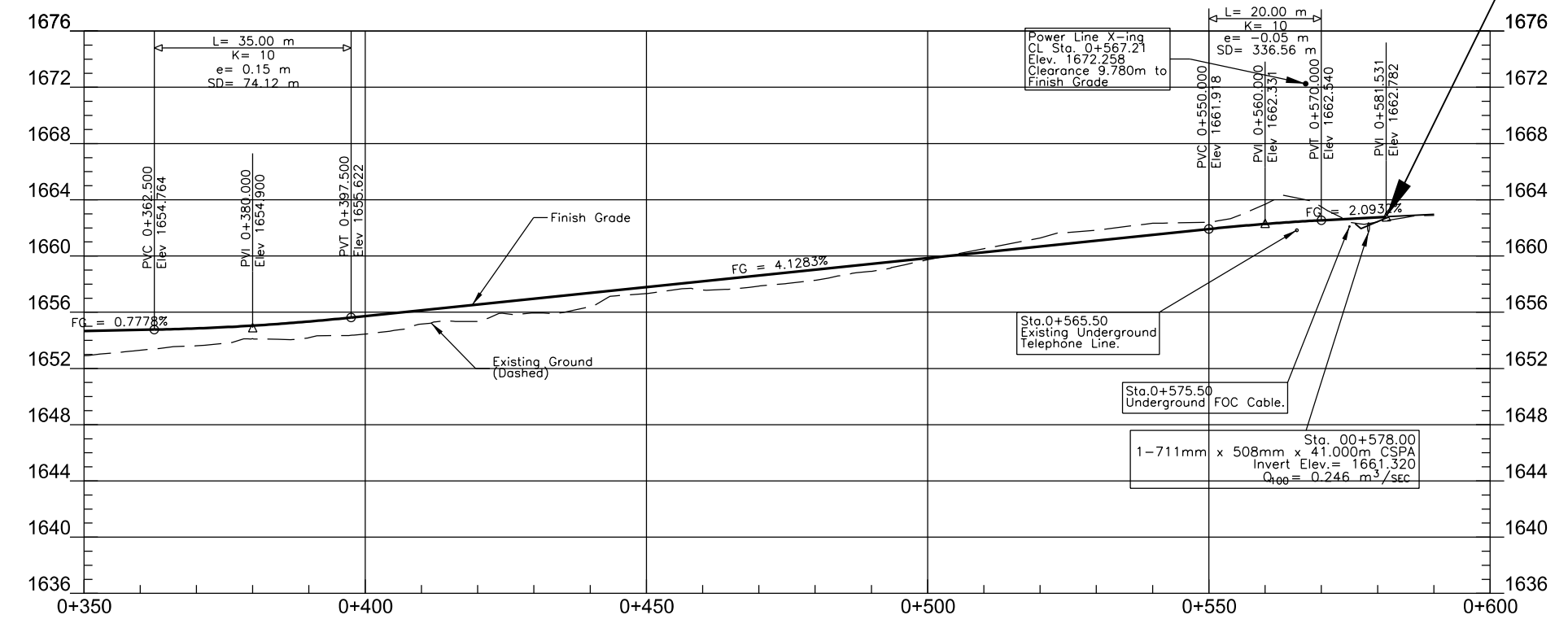
RIGHT-OF-WAY MARKER	TYPE 2 OBJECT MARKER	TYPE 1a	TYPE 1b	STATION	STRUCTURE	SKEW No.	D.A. (Ha.)	REMARKS
12	2	1	0	0+204.70	2-762mm x 23.00m CSPC	85.0	86	2-End Section Inlet/Outlet. Placed loose riprap at Outlet Side.

BOP Sta. -0+020.000
Elevation 1650.590





DELINEATORS			RIGHT-OF-WAY MARKER	DRAINAGE STRUCTURES				
TYPE "1a"	TYPE "1b"			Station	Structure	Skew No. D.A. (ha.)	Remarks	
4	0		2	0+578.00	1-711mm S x 508mm R x 41.000m CSPA	93'	0.104	2- End Section Inlet/Outlet. Placed loose riprap at outlet Side.



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N101	N101(1)2&4	8	33

N3005 AND N101(1)2&4 INTERSECTION

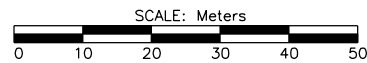
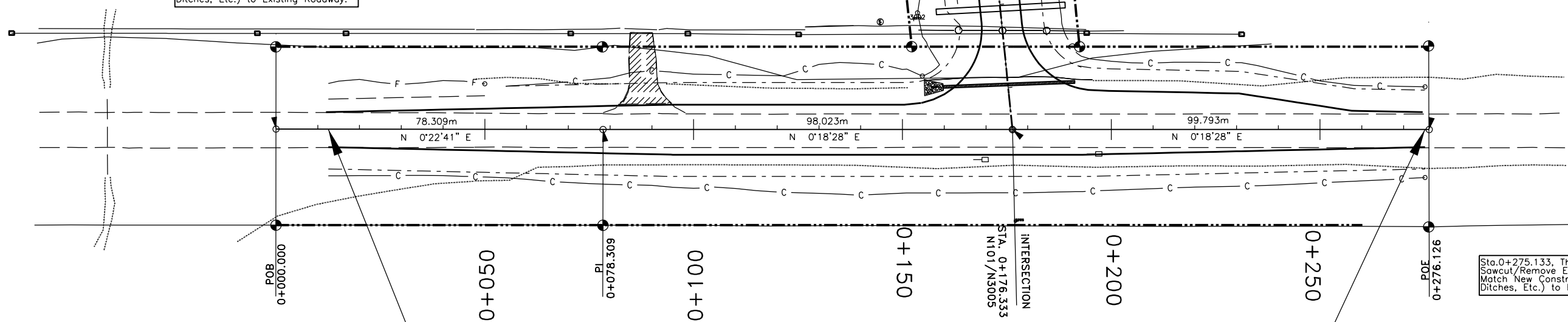
0+550



Sta. 0+012.533, The Contractor Shall Sawcut/Remove Existing Pavement, Match New Construction (Pavement, Ditches, Etc.) to Existing Roadway.

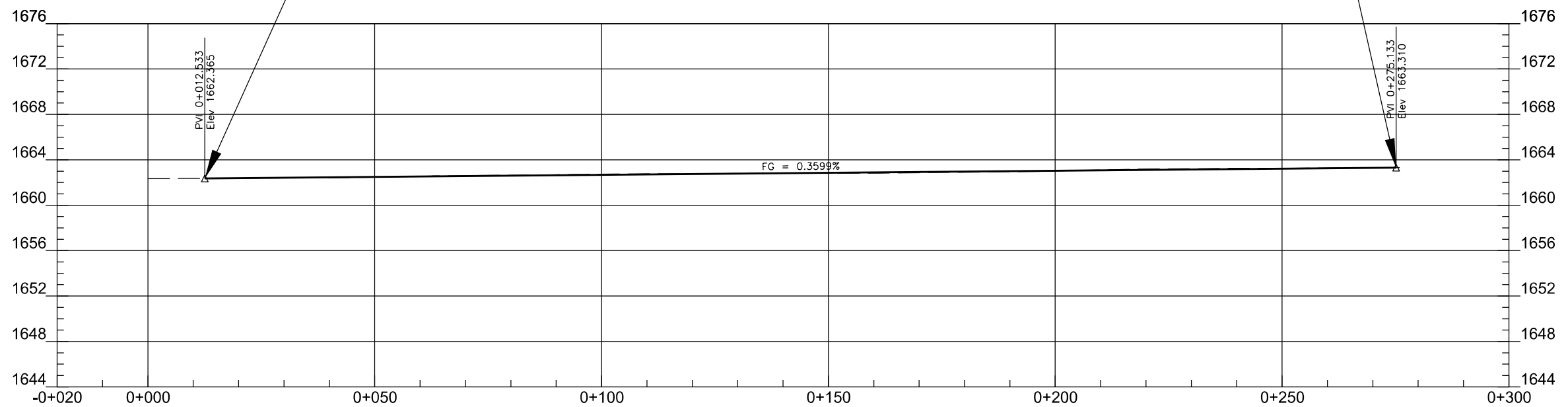
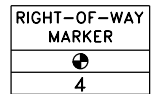
Sta. 0+090.00, Existing Turnout to be Reshaped and paved to ROW line Per details on sht 14

Sta. 0+275.133, The Contractor Shall Sawcut/Remove Existing Pavement, Match New Construction (Pavement, Ditches, Etc.) to Existing Roadway.

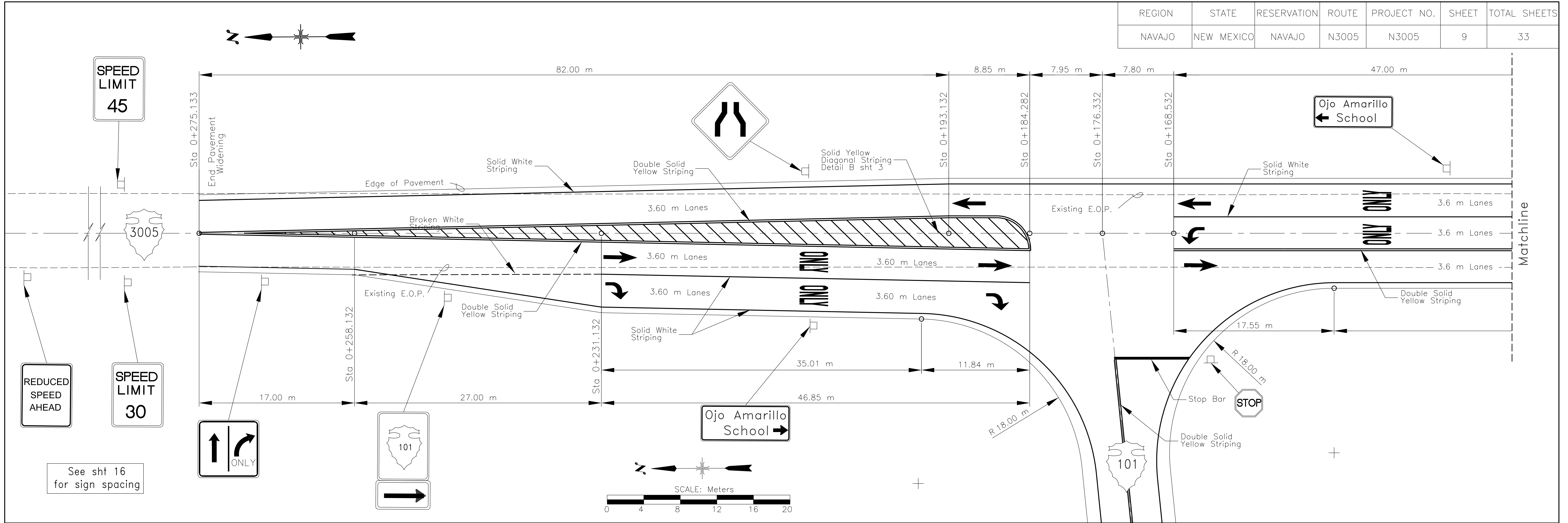


Begin Pavement Widening
Sta. 0+012.533
Elev 1662.365

End of Pavement Widening
Sta. 0+275.133
Elev 1663.310

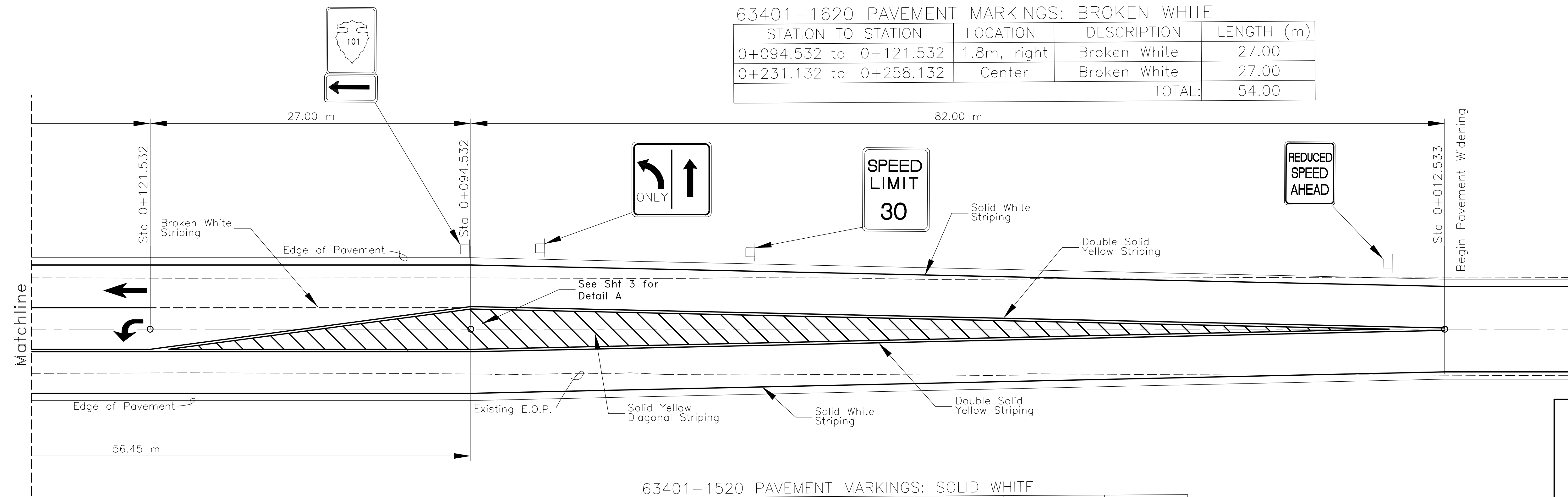


REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N3005	N3005	9	33



63401-1620 PAVEMENT MARKINGS: BROKEN WHITE

STATION TO STATION	LOCATION	DESCRIPTION	LENGTH (m)
0+094.532 to 0+121.532	1.8m, right	Broken White	27.00
0+231.132 to 0+258.132	Center	Broken White	27.00
TOTAL:			54.00



63401-1510 PAVEMENT MARKINGS: SOLID YELLOW

STATION TO STATION	LOCATION	DESCRIPTION	LENGTH (m)
0+021.5 to 0+121.532	Center	tapered & diagonal	647.06
0+121.5 to 0+168.983	1.8m, left	double Solid Yellow	94.00
0+184.2 to 0+275.133	Center	tapered & diagonal	553.34
TOTAL:			1,294.40

63401-1520 PAVEMENT MARKINGS: SOLID WHITE

STATION TO STATION	LOCATION	DESCRIPTION	LENGTH (m)
BOP: 0+012.533 to 0+150.983	Left	Solid White	138.45
0+150.983 to 0+168.983	Left, radius	radius length	28.27
0+178.12 to 0+196.12	Left, radius	radius length	28.27
0+196.12 to EOP: 0+275.133	Left	Solid White	79.01
BOP: 0+012.533 to EOP: 0+275.133	Right	Solid White	262.60
0+121.532 to 0+168.532	1.8m, right	Solid White	47.00
0+184.282 to 0+231.132	5.4m, Left	Solid White	46.85
TOTAL:			630.45

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N101 & N3005
INTERSECTION DETAILS

DRAWN BY: NRDOT DATE: 12/1/2017

DESIGNED BY: NRDOT DATE: 12/1/2017

REVISED: 7/24/2020 BY: Harold.Riley

FILES



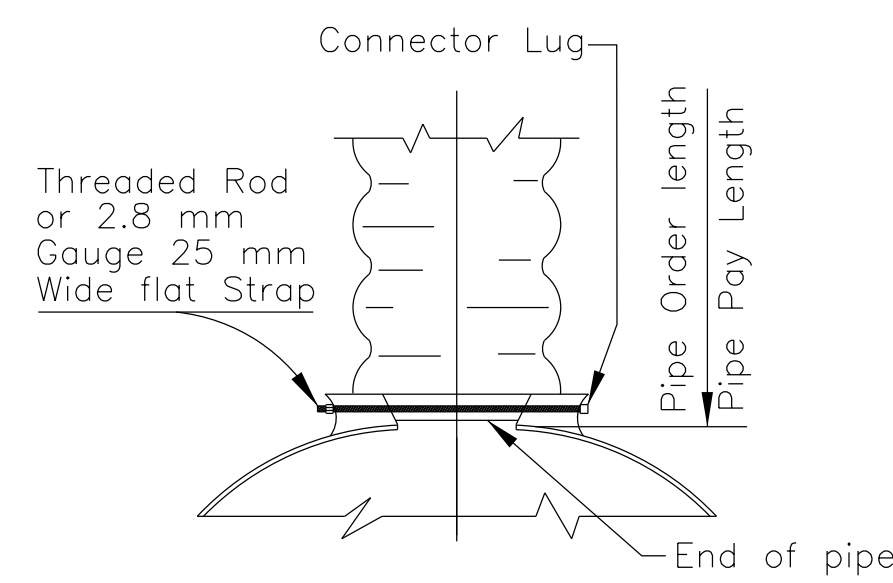
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N101	N101(1)2&4	10	33

ESTIMATED STRUCTURE QUANTITIES

ITEM NO.	60201e 0910	60201 0910	60202 0510	60206 0910	60210 0910	60211 0910				
	610mm Alumin. Coated CSPC-67.7 mm x 12.7 mm Corrugation	762mm Alumin. Coated CSPC-67.7 mm x 12.7 mm Corrugation	711mm S x 508mm R Alumin. Coated CSPC-2.77 mm thickness	End Section-610mm R Alumin. Alloy CSPA-1.63mm Thickness	End Section-610mm Alumin. Coated CSPC-2.77 mm	End Section-711mm Alumin. Coated CSPC				
							m	m	m	
								Ea.	Ea.	
									Ea.	
STATION	STRUCTURE									
Mainline:										
0+204.700	2-762mm X 23.000m CSPC							46.000		2
0+578.000	1-711mm S X 508mm R X 41.00m CSPA							41.000		2
Spur:										
0+021.220	2-762mm X 22.555m CSPC							45.110		2
0+058.000	1-610mm X 12.190m CSPC Under Turnout						12.190			
	TOTAL :						12.190	91.110	41.000	2 4 2

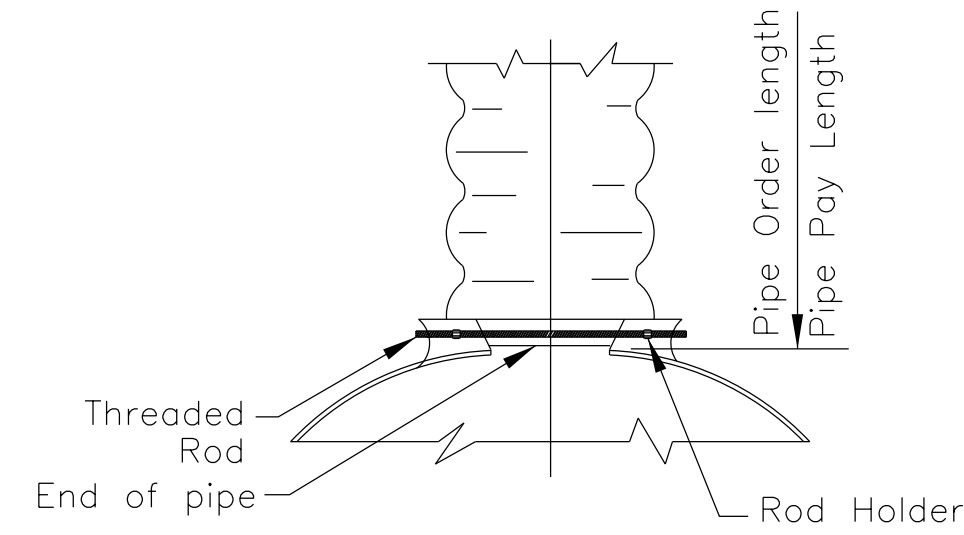
GENERAL NOTES

- 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 PERIPHERY. MULTIPLE PANEL BODIES TO HAVE LAP SEAMS WHICH ARE TO BE TIGHTLY JOINED BY 9.53 mm ϕ GALVANIZED RIVETS OR BOLTS.
- END SECTIONS FOR STEEL PIPE-ARCHES: FOR THE 1956 mm x 1321 mm AND 2108 mm x 1448 mm SIZES, REINFORCED EDGE TO BE SUPPLEMENTED BY 51 mm x 51 mm x 6.35 mm GALVANIZED ANGLES. THE ANGLES TO BE ATTACHED BY 9.53 mm dia. GALVANIZED NUTS AND BOLTS. ANGLE REINFORCEMENT WILL BE PLACED UNDER THE CENTER PANEL SEAMS.
- END SECTIONS FOR STEEL CIRCULAR PIPES: FOR 1524 mm ϕ THRU 2134 mm ϕ 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 ϕ THRU 1829 mm ϕ , AND 64 mm x 64 mm x 6.35 mm FOR 1981 mm ϕ AND 2134 mm ϕ . THE ANGLES TO BE ATTACHED BY 9.53 mm ϕ 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 ϕ PIPE ONLY.
- TYPE NO. 2 STEEL END SECTION. CONNECT END SECTION WITH THREADED ROD WITH ROD HOLDER, FOR 762 mm ϕ AND 914 mm ϕ 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 ϕ THRU 2134 mm ϕ . 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 ϕ 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 ϕ 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.
- AT MULTIPLE INSTALLATIONS (SUCH AS HEADWALLS) WHERE THE PLANS SPECIFIC A WIDTH BETWEEN THE PIPES THAT REQUIRE END SECTION TO BE TRIMMED TO FIT. THE END SECTIONS SHALL BE NEATLY CUT AND WELDED TO EACH OTHER, EQUAL AMOUNTS SHALL BE CUT FROM EACH ADJOINING END SECTION. AFTER WELDING THE CUT/WELDED AREAS TO BE FIELD GALVANIZED.



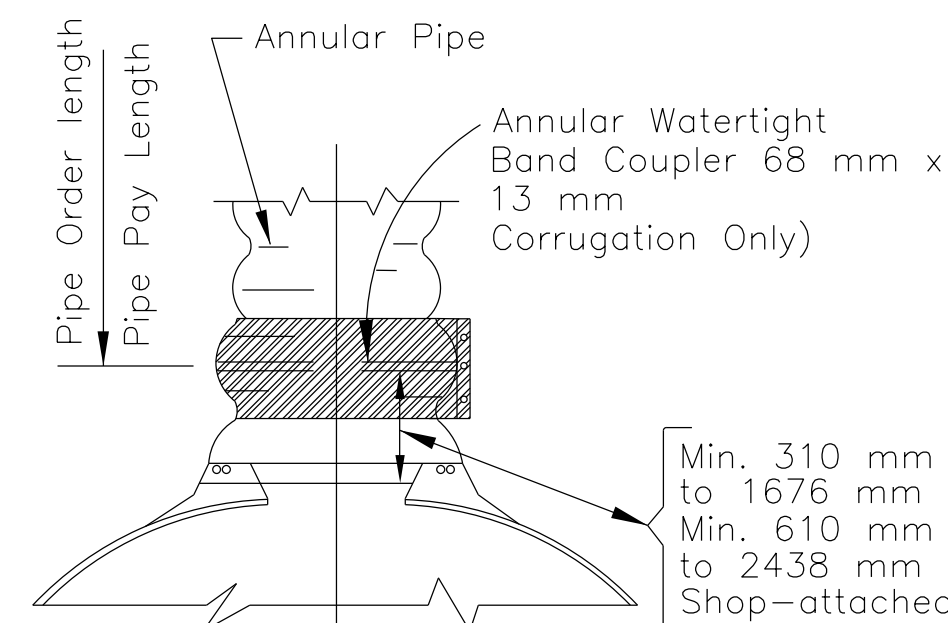
TYPE NO. 1

For 305 mm thru 610 mm C.S.P. & 711 mm x 508 mm C.S.P.A. (See Note No. 6)



TYPE NO. 2

For 762 mm & 914 mm, and for 432 mm x 330 mm thru 1448 mm x 965 mm only (See Note No. 7)

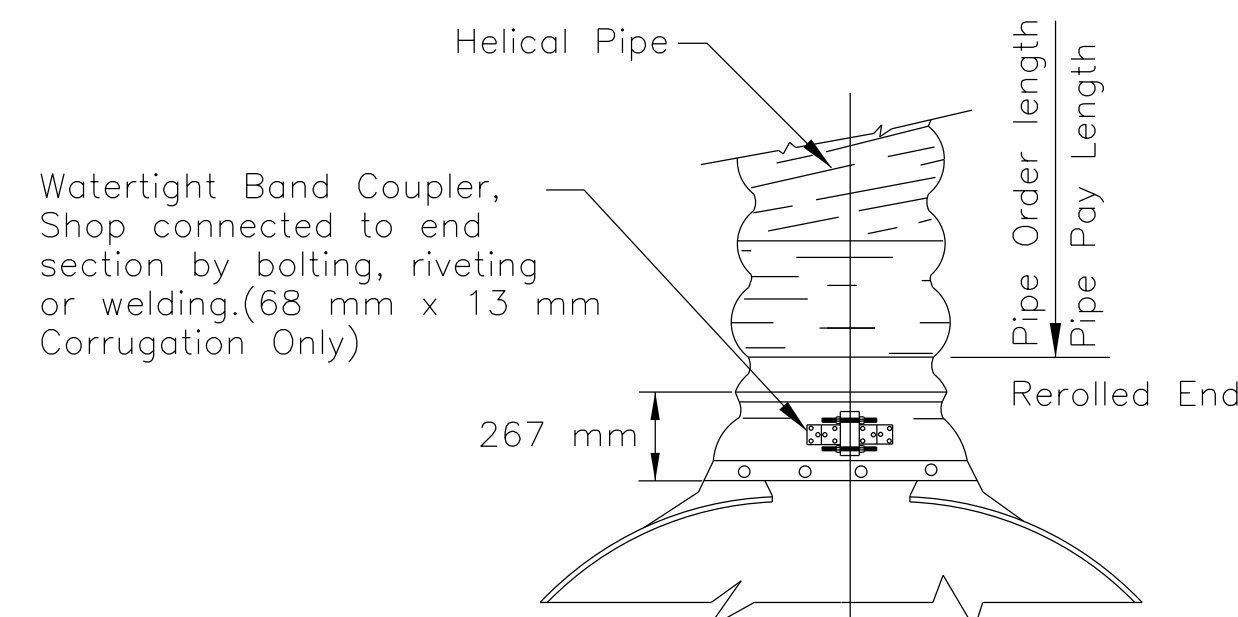
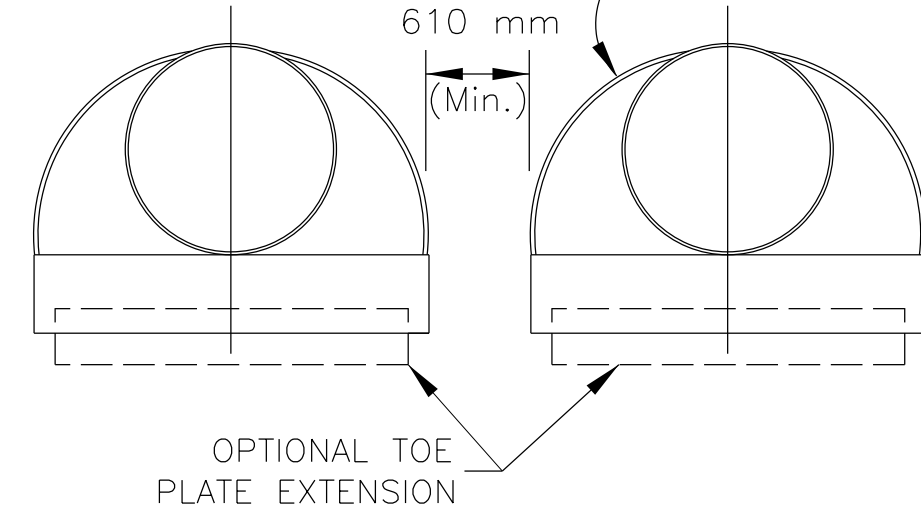


TYPE NO. 3

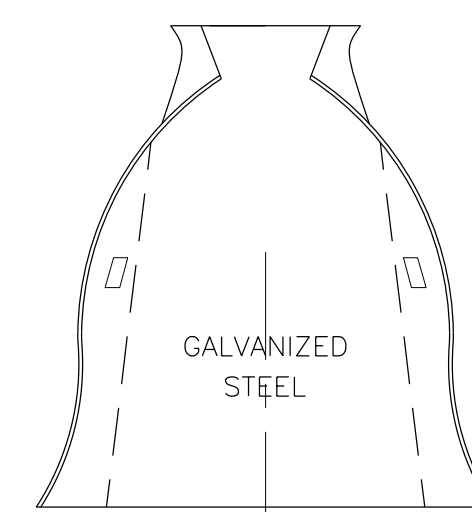
Min. 310 mm for 610 mm to to 1676 mm dia.
Min. 610 mm for 1829 mm to to 2438 mm dia.
Shop-attached to End Section by bolting, riveting or welding. (See Note No. 8)

MULTIPLE INSTALLATION SPACING

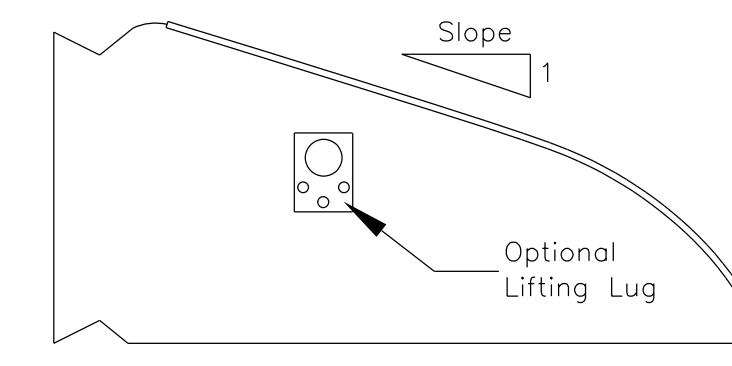
** End section on inlet side only except for turnouts. All Size Round, or Pipe-Arch.



TYPE NO. 5
(SEE NOTE No.9)



PLAN



ELEVATION

UNITED STATES
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NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

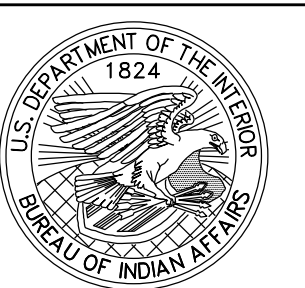
DRAINAGE STRUCTURE QUANTITIES DETAIL

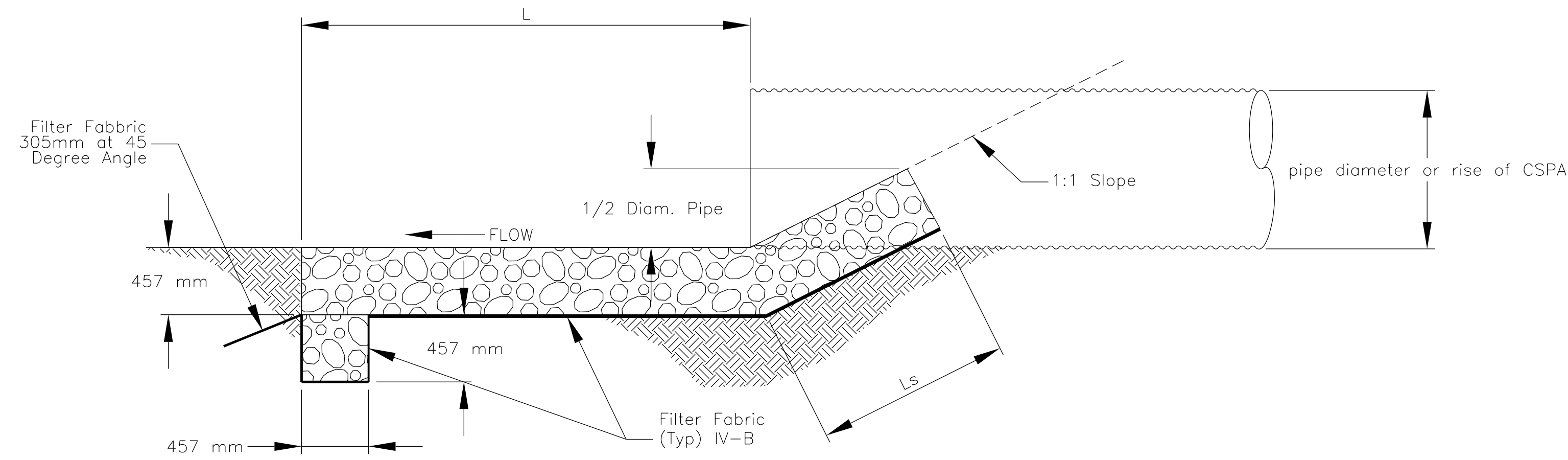
DRAWN BY: NRDOT DATE: 7/2/2007

DESIGNED BY: NRDOT DATE: 7/2/2007

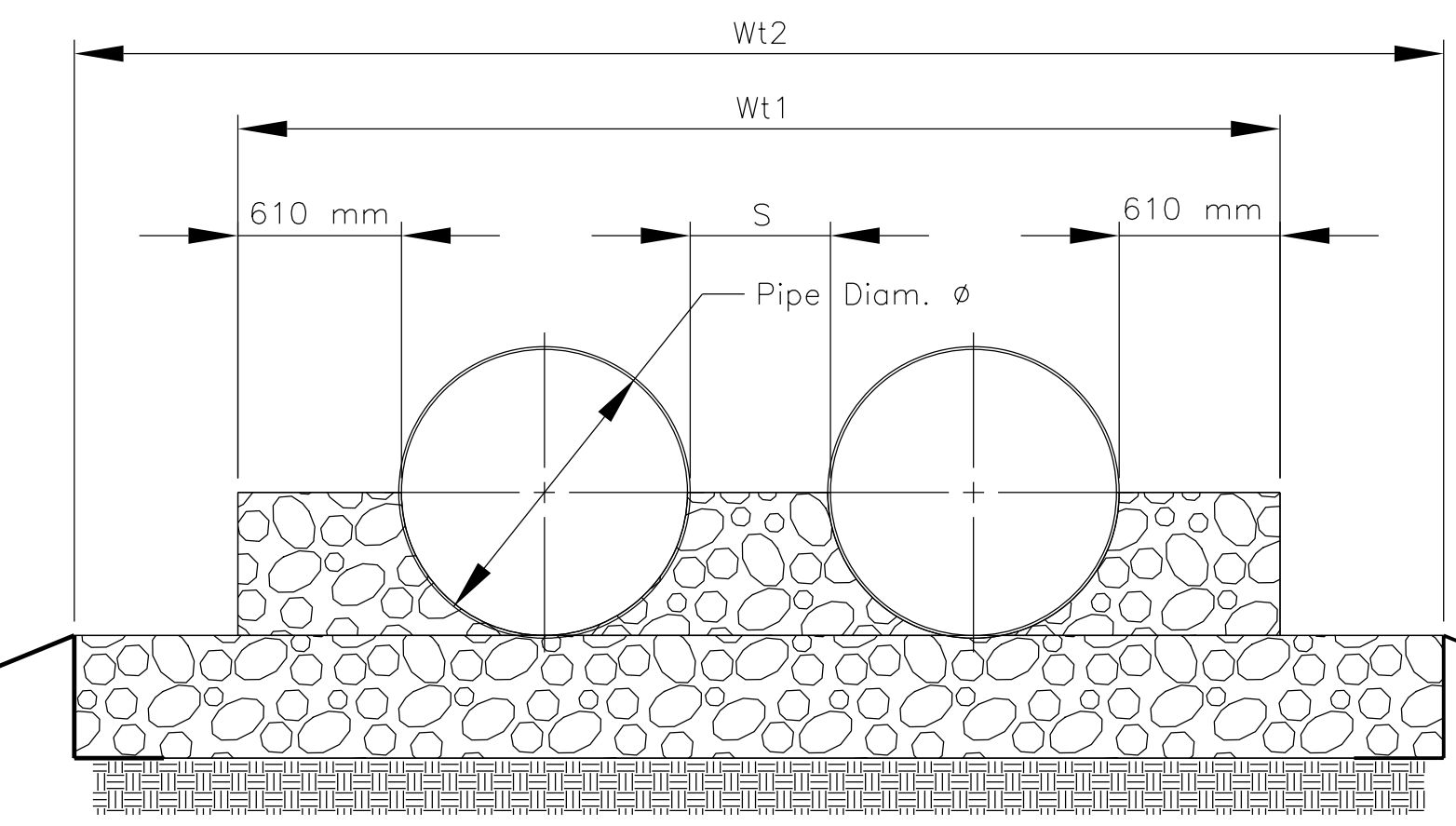
REVISED: 12/12/2014 BY: Peterson.Yazzie

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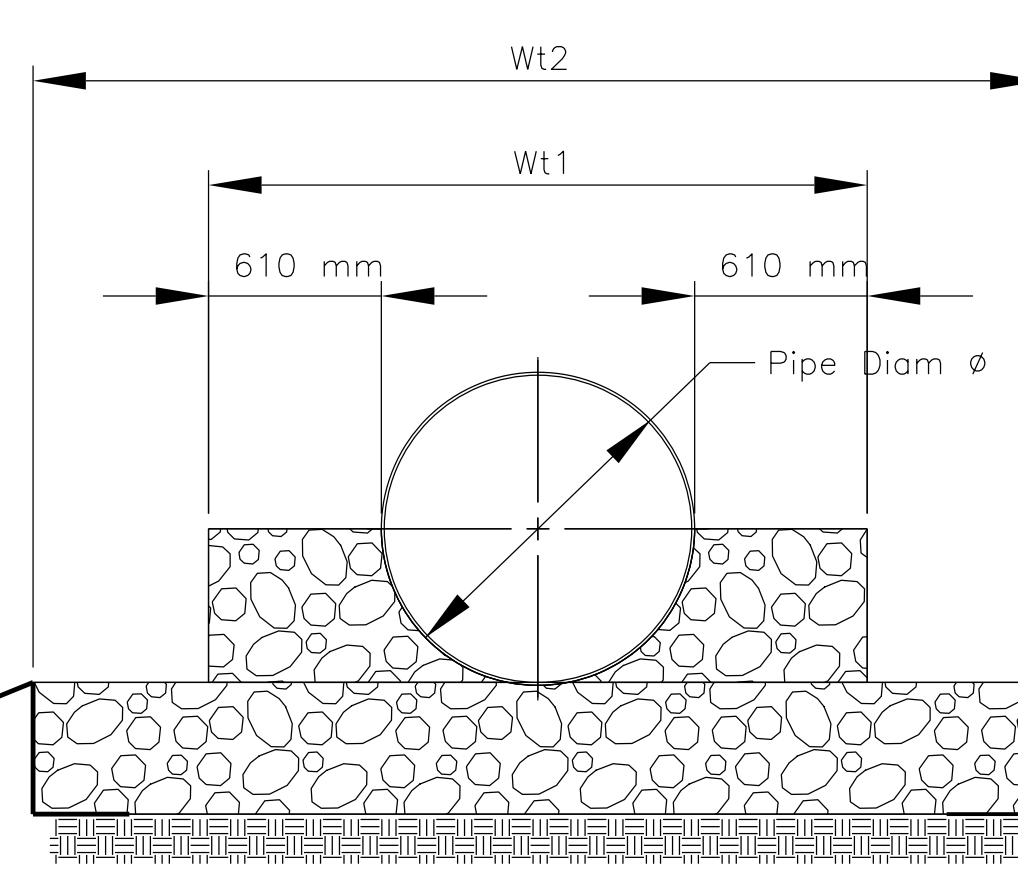




SECTION A-A



ELEVATION - MULTIPLE BARREL



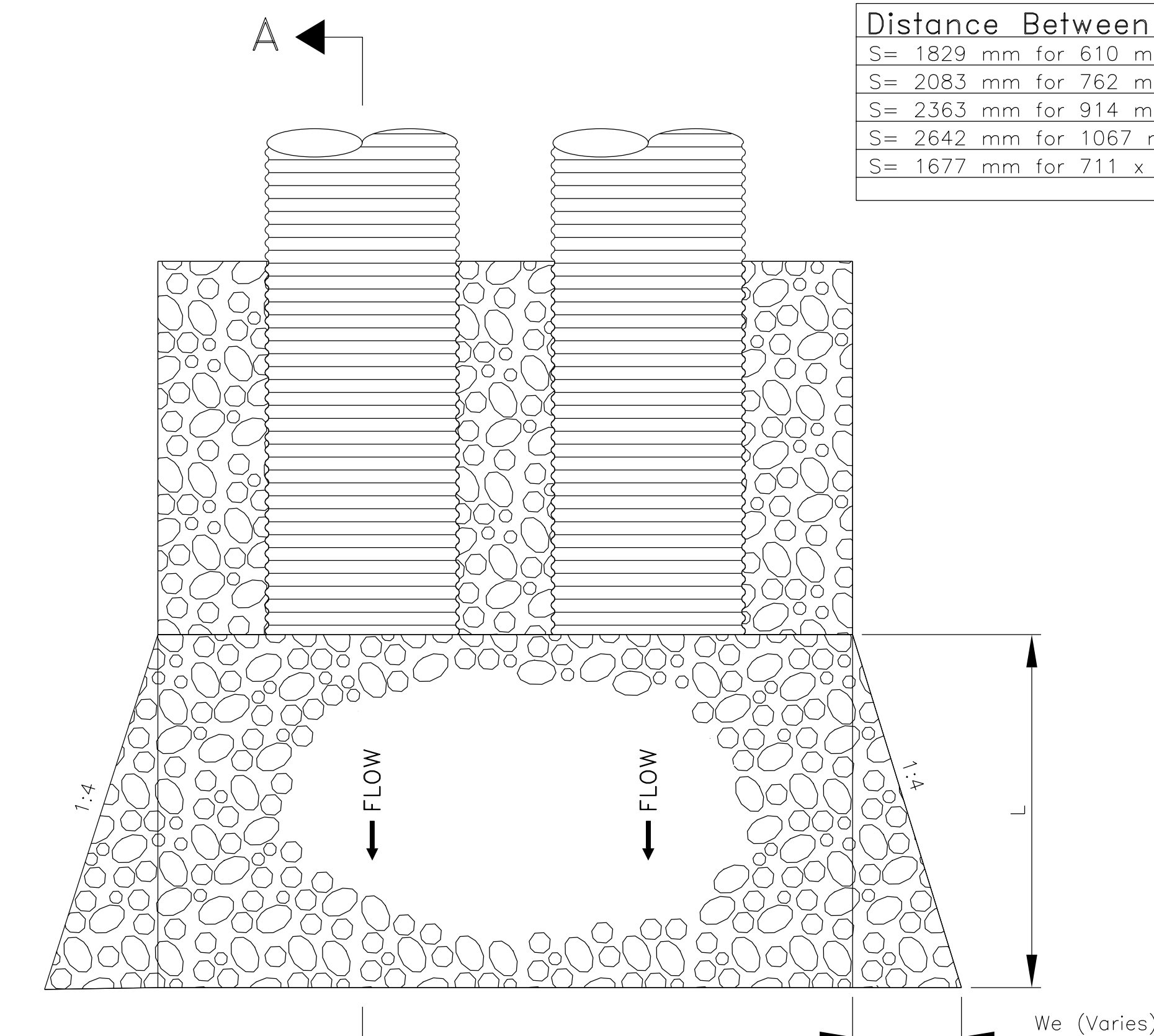
ELEVATION - SINGLE BARREL

305 mm, Fabric Anchor into ground at 45 Degree Angle Typ.

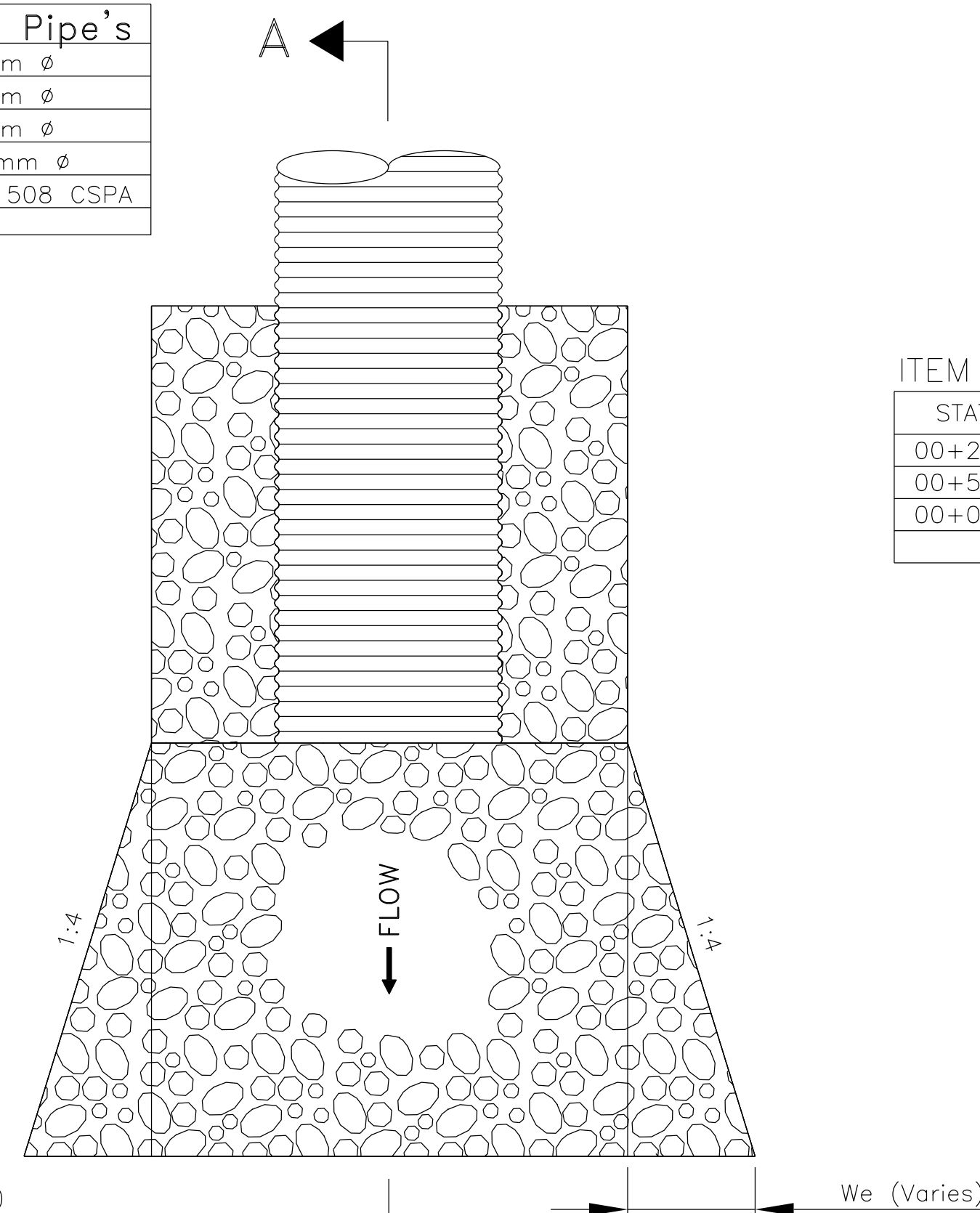
305 mm, Fabric Anchor into ground

305 mm, Fabric Anchor into ground

Distance Between Pipe's	
S=	1829 mm for 610 mm ϕ
S=	2083 mm for 762 mm ϕ
S=	2363 mm for 914 mm ϕ
S=	2642 mm for 1067 mm ϕ
S=	1677 mm for 711 x 508 CSPA



PLAN - MULTIPLE BARREL



PLAN - SINGLE BARREL

GENERAL NOTES

- ALL WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-14).
- THE CONTRACTOR SHALL CLEAR AND GRUB ALL DEBRIS, BRUSH AND TREES THAT WILL INTERFERE WITH THE PLACEMENT OF DOWNDRAIN, RIPRAP, AND STILLING BASIN. THIS WORK SHALL BE INCLUDED UNDER ITEM 25101-2000.
- THE CONTRACTOR SHALL BE REQUIRED TO MAKE ANY NECESSARY FIELD ADJUSTMENTS TO MATCH ACTUAL FIELD CONDITIONS. THESE FIELD ADJUSTMENTS ARE INCIDENTAL OBLIGATIONS OF THE CONTRACTOR.
- IF UNSUITABLE MATERIAL IS FOUND AT THE FOOTING LOCATION AND ELEVATIONS, THE MATERIAL SHALL BE REMOVED AND REPLACED WITH APPROVED STRUCTURAL BACKFILL AS DETERMINED BY THE COR. ALL STRUCTURAL BACKFILL SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY AS DETERMINED BY AASHTO T99 METHOD C, BEFORE AND AFTER FOOTINGS ARE PLACED. THE STRUCTURAL BACKFILL MATERIAL SHALL CONFORM TO SECTION 208 AND 209 OF THE FP-14. FURNISHING AND PLACEMENT OF STRUCTURAL BACKFILL SHALL BE CONSIDERED INCIDENTAL TO COMPLETION OF THE STRUCTURE.
- VEE DITCH AND CHANNEL RESHAPING, CLEANING, AND EXCAVATION SHALL BE DONE IN ACCORDANCE WITH THE PLANS AND AS DETERMINED BY THE COR. ANY WASTE MATERIAL SHALL BE USED AS BORROW WHERE NEEDED IN OTHER PROJECT LOCATION AS DESIGNATED AND APPROVAL BY THE COR. ALL DITCH AND CHANNEL EXCAVATION, CLEANING, AND RESHAPING SHALL BE CONSIDERED INCIDENTAL TO COMPLETION OF THE STRUCTURE.
- THE QUANTITIES SHOWN ARE ONLY AN ESTIMATE. ACTUAL QUANTITIES SHALL BE DETERMINED IN THE FIELD. THE COR/COTR, AND CONTRACTOR SHALL REVIEW ALL ROCK CUT AREAS AFTER THE CONSTRUCTION OF DITCHES, DOWNDRAINS, AND RIPRAP BASINS HAVE BEEN "ROUGH IN". IF IN THE OPINION OF THE COR/COTR, THAT THE ROCK CUT IS STABLE, THE COR/COTR MAY ELECT TO DELETE SECTIONS OF THE RIPRAP PROTECTION.
- WIRE ENCLOSED RIPRAP SHALL CONFORM TO SECTION 251 OF FP-14, AND THE SUPPLEMENTAL SPECIFICATIONS. WIRE MESH SHALL BE PLACED TO ENCLOSE THE STONE LAYER ON ALL SIDES AND FACES. THE WIRE MESH SHALL BE JOINED ON ALL FACES AND SHALL BE DRAWN TIGHTLY AGAINST THE STONE BY MEANS OF 3.8 mm WIRE TIES SPACED 610 mm LONGITUDINALLY AND TRANSVERSELY.
- WIRE FABRIC MESH 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.
- STONE SIZE SHALL CONFORM TO TABLE 705-1, SECTION 705, CLASS 2.
- RIPRAP SHALL BE ANCHORED AS SHOWN WITH L 102 mm x 102 mm x 9.5 mm STEEL ANGLES SPACED AT 2.44 m EACH WAY. STEEL ANGLE SHALL EXTEND 75 mm ABOVE THE TOP OF THE MESH. STEEL ANGLE SHALL CONFORM TO AASHTO M270M, GRADE 250. IN ROCKY AREAS, DRIVE ANGLE IRON ANCHORS TO REFUSAL (MIN. EMBEDDED 500 mm). THEN CUT AT 75 mm ABOVE RIPRAP. ANCHORS SHALL BE SAW CUT TO LEAVE A SMOOTH EDGE. DO NOT USE A CUTTING TORCH. FURNISHING AND PLACEMENT OF STEEL ANGLES SHALL BE CONSIDERED INCIDENTAL TO COMPLETION OF THE STRUCTURE.
- FILTER FABRIC SHALL BE INSTALLED UNDER ALL RIPRAP (EXCEPT GROUTED RIPRAP) AND SHALL CONFORM TO SECTION 714, TYPE IV-B, AND SHALL BE CONSIDERED INCIDENTAL TO RIPRAP BID ITEMS. ROUND ALL SHARP CONTOURS AS REQUIRED TO FIT THE SOIL EROSION MATERIAL FLUSH WITH THE EXISTING GROUND.
- WARP WIRE ENCLOSED RIPRAP AROUND ENDS OF CBC WINGWALLS. THESE FIELD ADJUSTMENTS ARE INCIDENTAL OBLIGATIONS OF THE CONTRACTOR.

ITEM No. 25101-2000 PLACED RIPRAP, CLASS 2,

STATION	Structure	Skew No.	Wd (m)	Wt1 (m)	Wt2 (m)	L (m)	Ls (mm)	t (mm)	Volume(m)	Remarks	
00+204.70	2-762 mm CPSC	85	0.762	2.95	5.086	4.27	3.46	457	18.31	At Outlet	
00+580.00	1-711 mm x 508 m	85	0.711	1.98	3.067	4.27	3.46	457	8.81	At Outlet	
00+021.22	2-762 mm CPSC	90	0.762	2.95	5.086	4.27	3.46	457	18.31	At Outlet Spur Road	
									TOTAL:	45.43	

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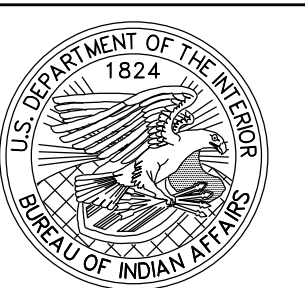
PLACED RIPRAP QUANTITIES & DETAIL

DRAWN BY: NRDOT DATE: 12/2/2014

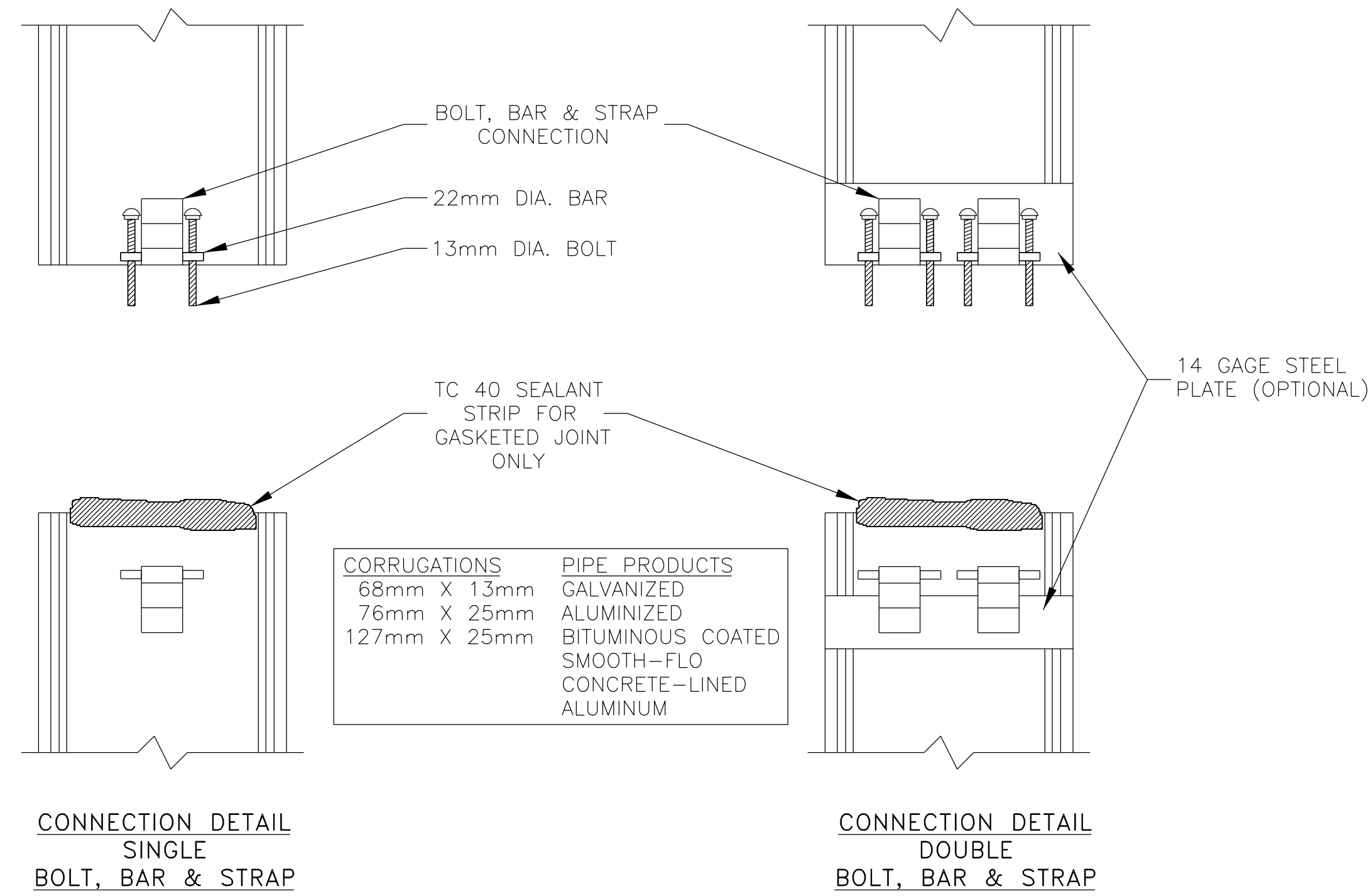
DESIGNED BY: NRDOT DATE: 12/2/2014

REVISED: 10/2/2017 BY: Design 2

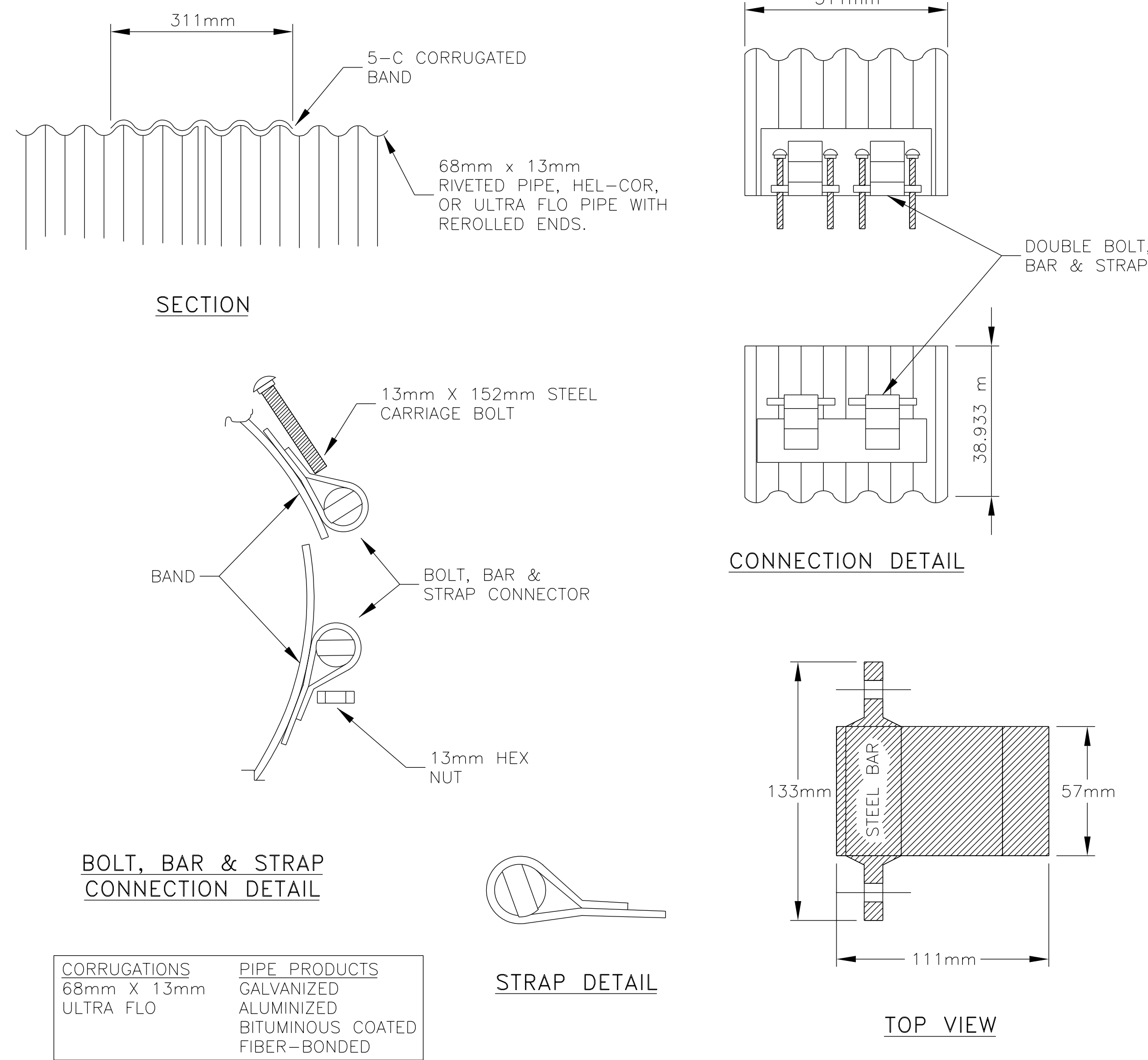
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REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N101	N101(1)2&4	12	33



H-10 HUGGER BAND



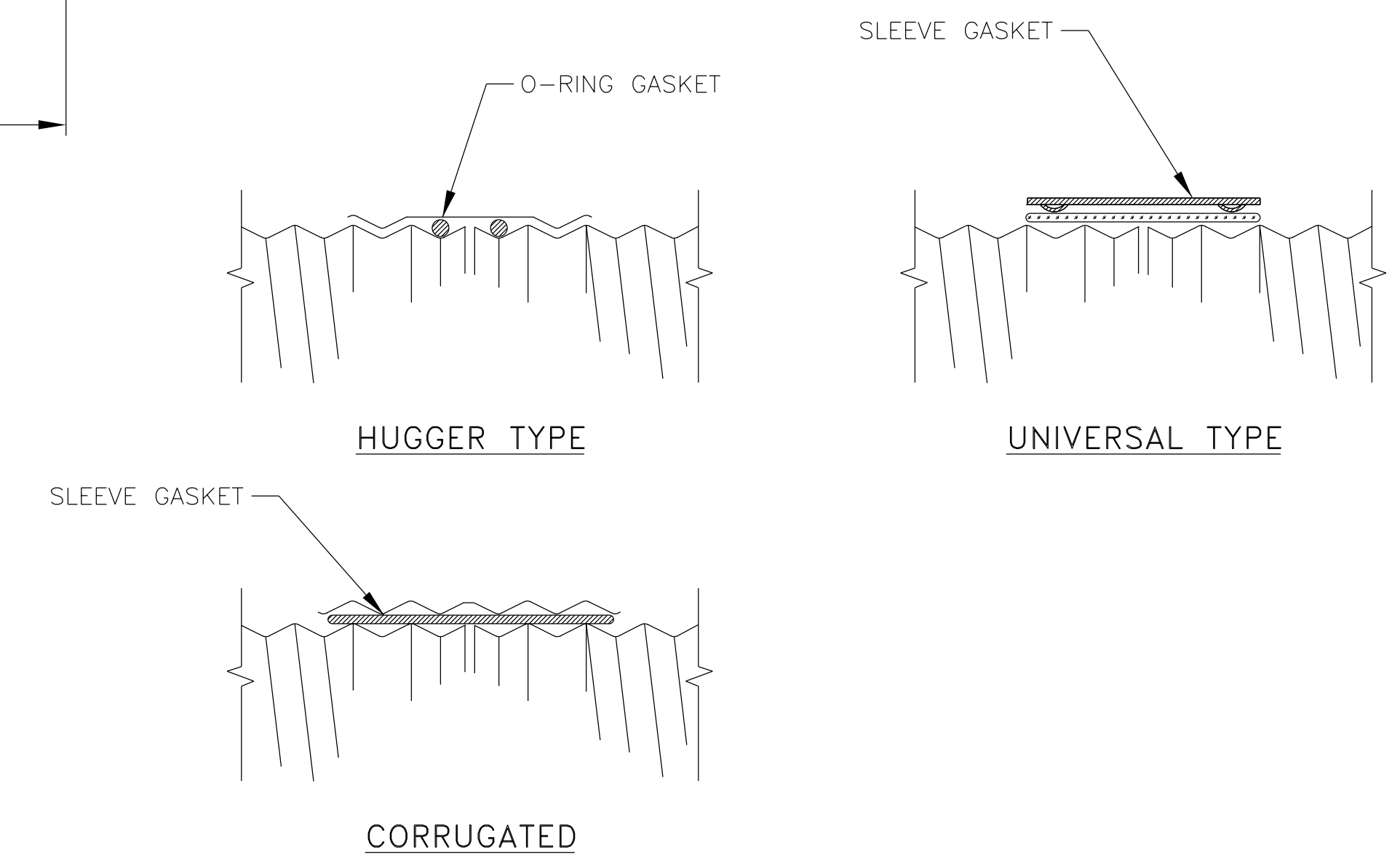
5-C CORRUGATED BAND

FLAT GASKET INSTALLATION GUIDELINES

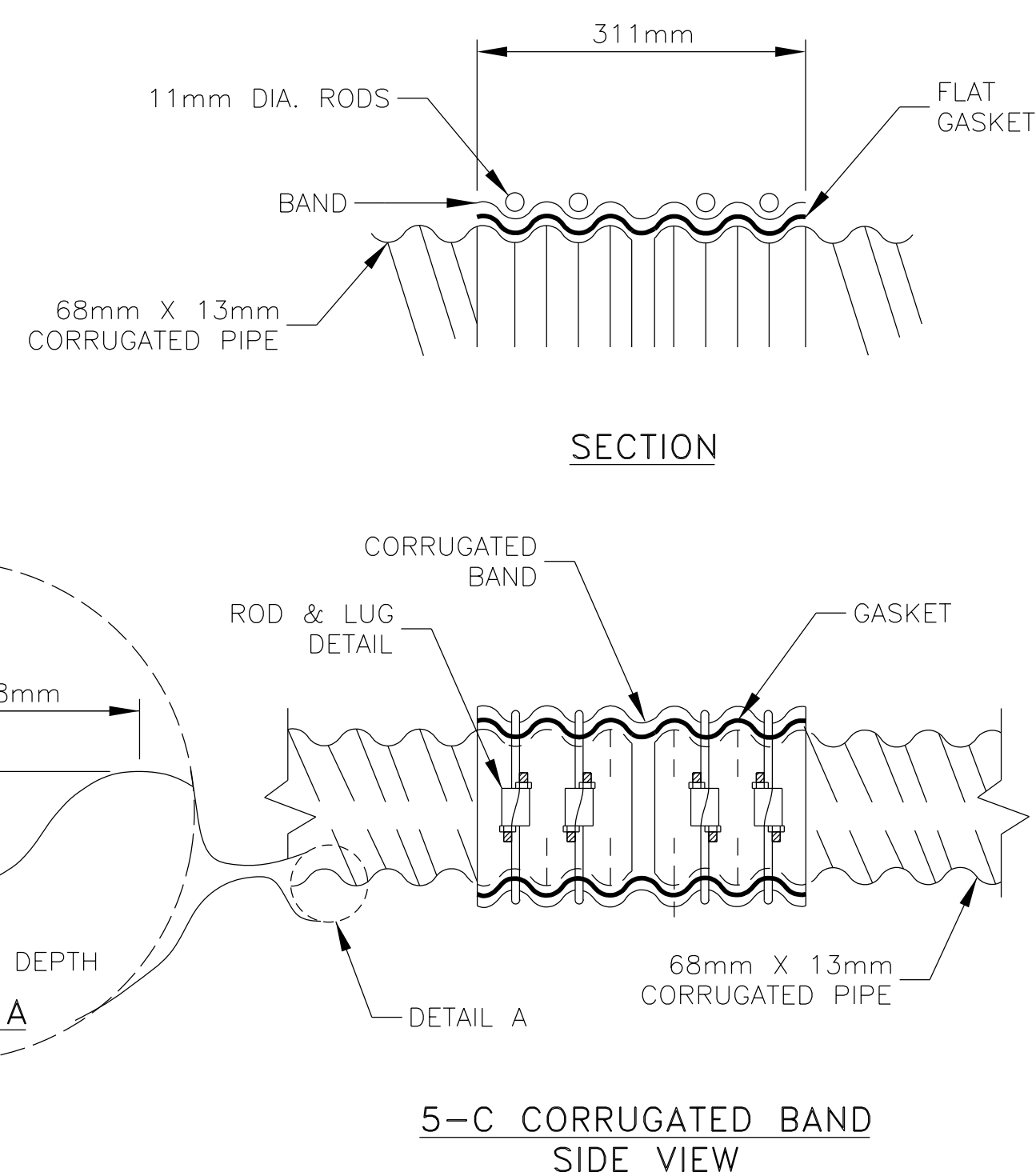
- CLEAN THE PIPE EDGES.
- APPLY A LIBERAL AMOUNT OF LUBRICANT TO THE FIRST TWO ANNULAR CORRUGATIONS ON THE OUTSIDE OF THE PIPE.
- SNAP THE FLAT GASKET INTO POSITION SUCH THAT THE GASKET COVERS THE FIRST ANNULAR CORRUGATION OR THE RECORRUGATED END. HALF OF THE GASKET WILL BE HANGING OVER THE END OF THE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

GENERAL NOTES:

- CARE SHALL BE TAKEN THAT NO FOREIGN MATERIAL IS ALLOWED TO ENTER BETWEEN THE OUTER PIPE SURFACE AND THE INSIDE OF THE BAND.
- TIGHTENING OF THE BOLTS MAY BE ACCOMPLISHED WITH THE USE OF SPANNER OR SOCKETHEAD DEEPWELL WRENCHES, EITHER MANUAL OR POWER. FASTENERS SHOULD BE TIGHTENED UNIFORMLY TO PREVENT UNEVEN COMPRESSION AGAINST THE PIPE WALL. FELTON BAND PULLER SHALL BE USED TO TIGHTEN BAND ON LARGER DIAMETER STRUCTURES, WHICH QUICKLY DRAWS THE BAND CONNECTORS TOGETHER TO FACILITATE BOLT AND NUT TIGHTENING. BOLTS SHOULD BE TIGHTENED TO THE RECOMMENDED TORQUE OF 25-30 FT/LBS.
- BANDS FOR PIPE-ARCH ARE THE SAME AS FOR EQUIVALENT DIAMETER ROUND PIPE.
- BANDS ARE NORMALLY FURNISHED AS FOLLOWS:
305mm THRU 1219mm; 1-PIECE
1372mm THRU 2438mm; 2-PIECE
2591mm THRU 3658mm; 3-PIECE
- BAND FASTENERS ARE ATTACHED WITH SPOT WELDS, RIVETS OR HAND WELDS. ALL ALUMINUM BANDS ARE FURNISHED WITH A 14-GAGE ALUMINUM BACK-UP PLATE WELDED TO THE BAND AND THE STRAP.
- THE GASKET AND BAND INSTALLATION SHALL BE ASSEMBLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. A REPRESENTATIVE OF THE MANUFACTURER MAY BE PRESENT AT THE SITE DURING INSTALLATION.
- THE COST OF SUPPLYING ALL MATERIALS AND INSTALLATION OF THE GASKET AND BAND ASSEMBLY SHALL BE INCLUDED IN THE BID ITEMS FOR SECTION 602.
- ANY RELATED PATENT RIGHTS WILL BE THE RESPONSIBILITY OF THE CONTRACTOR AS PER SECTION 107.01 OF THE FP-14.




TYPICAL GASKET/BAND COUPLERS



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**GASKET/HUGGER BAND
 DETAILS**

DRAWN BY: NRDOT	DATE: 8/7/2014
DESIGNED BY: NRDOT	DATE: 8/7/2014
REVISED: 12/12/2014	BY: Peterson.Yazzie
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REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N101	N101(1)2&4	13	33

GENERAL NOTE

1. PLACE LOOSE BEDDING ROUGHLY SHAPED TO BOTTOM OF PIPE, THEN COMPACTED UNDER HAUNCHES AFTER PIPE PLACEMENT.
2. SEE SECTIONS 204, 209, 602, AND 704 OF FP-14, INCLUDING THE SUPPLEMENTAL SPECIFICATION FOR ADDITIONAL NOTES.
3. ALL DRAINAGE STRUCTURE MATERIAL SHALL BE UNLOADED AND HANDLED WITH REASONABLE CARE, NO STRUCTURE SHALL BE DRAGGED OR ALLOWED TO STRIKE ANY HARD SURFACE DURING PLACEMENT. ANY DAMAGED STRUCTURE SHALL BE REPAIRED OR REPLACED, BY THE CONTRACTOR, AT NO ADDITIONAL COST TO THE GOVERNMENT.
4. ALL STRUCTURAL PLATE PIPE & BOX STRUCTURES SHALL BE ASSEMBLED AND INSTALLED IN ACCORDANCE WITH THE FABRICATOR'S RECOMMENDATIONS AND DETAILS ELSE WHERE ON THESE PLANS.
5. BACKFILL MATERIAL SHALL BE PLACED 305mm(min.) 1.0m(max) PIPE DIAMETER WIDTH ON THE SIDES AND 305mm OVER THE PIPE. BACKFILL MATERIAL BEYOND THESE LIMITS SHALL BE REGULAR EARTHWORK EMBANKMENT MATERIAL. THE BACKFILL MATERIAL SHALL BE APPROVED BY THE COR/COTR PRIOR TO IT'S USE AND SHALL BE PLACED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.
6. PONDING OR JETTING PIPE BACKFILL SHALL NOT BE PERMITTED.
7. ALL PIPE EXCAVATION, BACKFILLING, DE-WATERING, PUMPING OR COFFERDAMS REQUIRED TO PROPERLY INSTALL THE DRAINAGE PIPE SHALL BE CONSIDERED INCIDENTAL TO COMPLETION OF THE PROJECT AND NO ADDITIONAL PAYMENT SHALL BE MADE.
8. MULTIPLE PIPE INSTALLATIONS SHALL BE PLACED 610mm MINIMUM BETWEEN END SECTIONS UNLESS OTHERWISE DIRECTED BY THE COR/COTR OR AS SHOWN ON THE PLANS.
9. ALL PIPES SHALL BE PROTECTED BY A COVER OF NOT LESS THAN 914mm OF EMBANKMENT ABOVE PIPE BEFORE AND HEAVY EQUIPMENT IS ALLOWED TO PASS OVER THE STRUCTURE(S) DURING CONSTRUCTION.
10. ALL DRAINAGE STRUCTURES SHALL BE INSTALLED AT THE ORIGINAL GROUND LINE AND SLOPE TO ASSURE POSITIVE DRAINAGE UP TO THE R.O.W. LIMITS. IN NO CASE SHALL THE PIPE(S) BE PLACED BELOW THE ORIGINAL GROUND ELEVATIONS. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO COMPLETION OF PROJECT AND NO ADDITIONAL PAYMENT SHALL BE MADE.
11. AT DRAINAGE PIPE REPLACEMENTS, INSTALLATION, EXTENSIONS, AND IN-PLACE PIPE CLEANING LOCATIONS, THE CONTRACTOR SHALL RESHAPE, REGRADE AND CLEAN THE INLET AND OUTLET CHANNELS TO THE RIGHT-OF-WAY LINE AND/OR EXISTING DRAINAGE CHANNEL, TO PRODUCE SMOOTH FLOWS AT CULVERT INTAKES AND DISCHARGES AS DIRECTED BY THE COR/COTR. THIS WORK SHALL BE INCIDENTAL TO THE BID ITEMS UNDER SECTIONS 602, 603, AND 607.
12. ALL CULVERTS UNDER TURNOUTS AND DRIVEWAYS SHALL BE PLACED AT THE PROPOSED DITCH FLOWLINE. THE CONTRACTOR SHALL BE REQUIRED TO FIELD ADJUST THE PROFILE GRADES OVER PIPE AS DIRECTED BY THE COR/COTR TO PROVIDE FOR THE MINIMUM COVE.
13. TYPE "B" DIKE SHALL BE USED ON THIS PROJECT UNLESS OTHERWISE NOTED ON THE PLANS. EMBANKMENT MATERIAL NEEDED TO BUILD EARTHEN DIKES SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEMS FOR DITCH BLOCKS AS SHOWN IN THE BID SCHEDULE.
14. ADJUST THE DITCH BLOCKS WITH A CURVE TO FIT FIELD CONDITIONS AS DIRECTED BY THE COR/COTR. THESE ADJUSTMENTS SHALL BE CONSIDERED INCIDENTAL TO BID ITEMS FOR DITCH BLOCKS SHOWN IN THE BID SCHEDULE.
15. BACKFILL AND BEDDING MATERIAL INSTALLATION FOR PRECAST BOX STRUCTURES SHALL BE IN ACCORDANCE WITH THE FABRICATORS RECOMMENDATIONS AND APPROVED SHOP PLANS

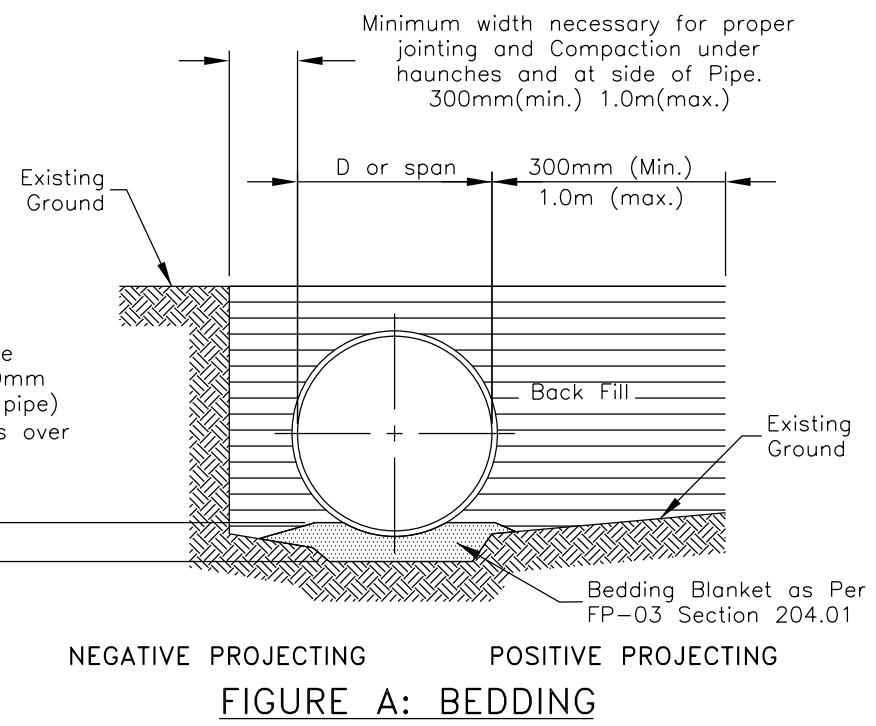


FIGURE A: BEDDING

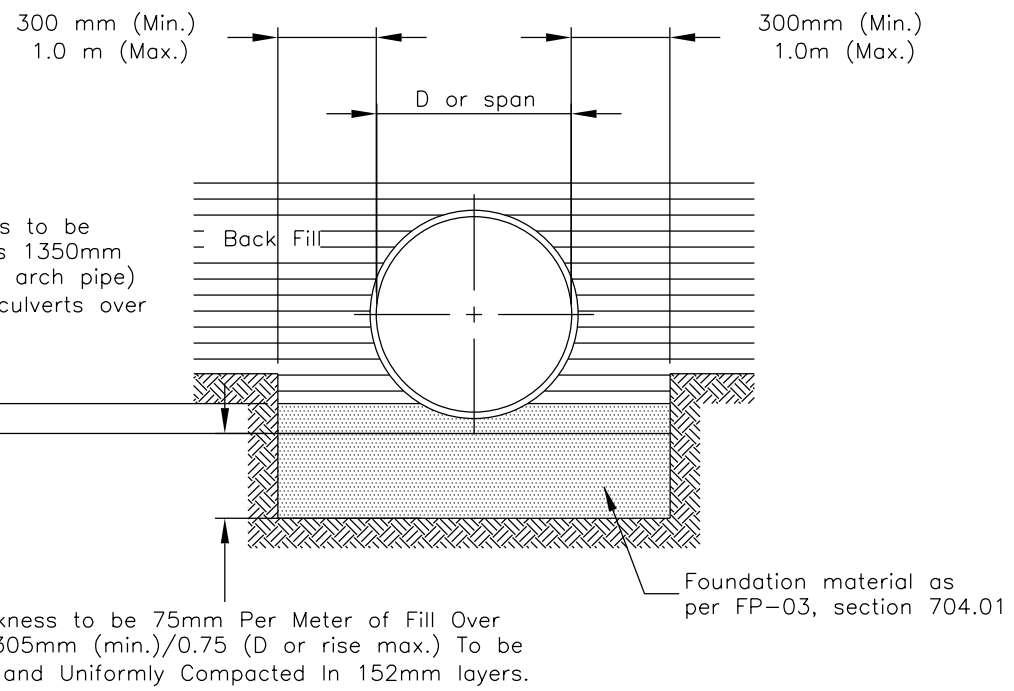


FIGURE B: ROCK BEDDING

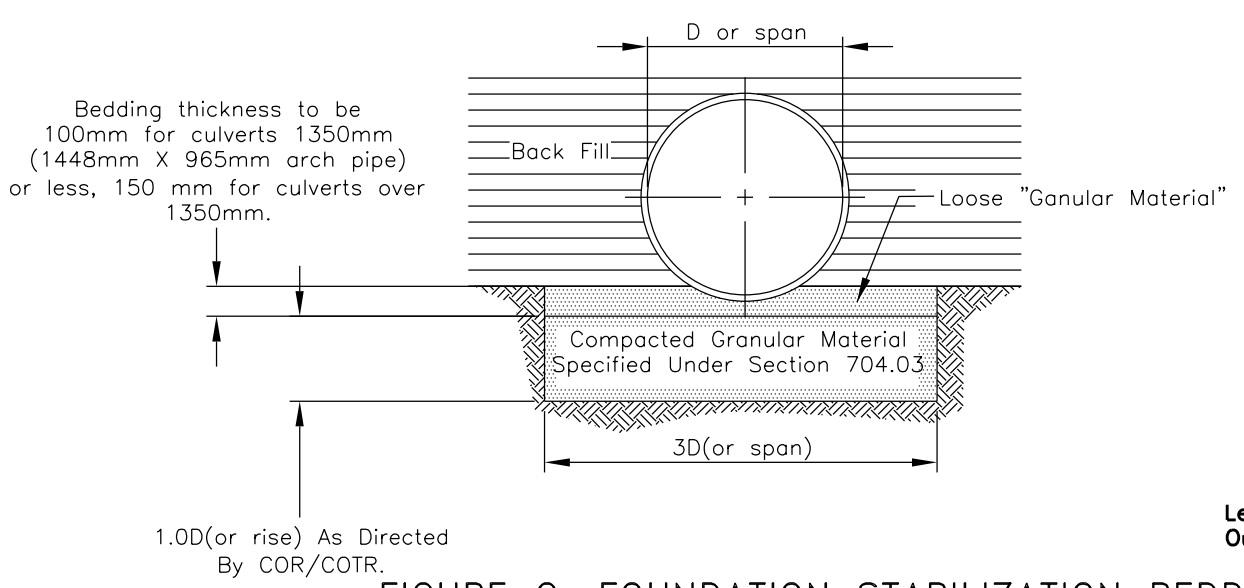
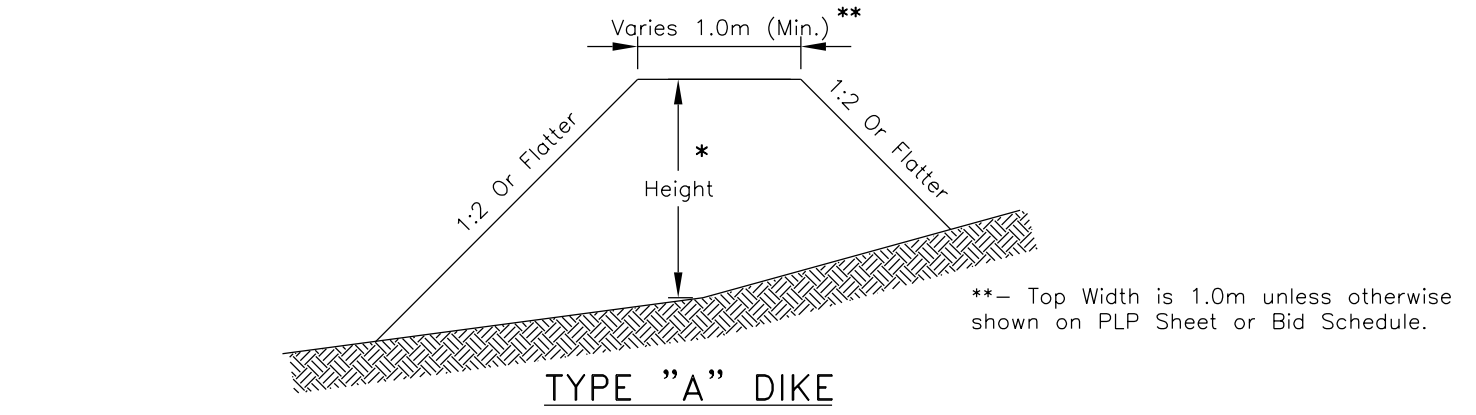
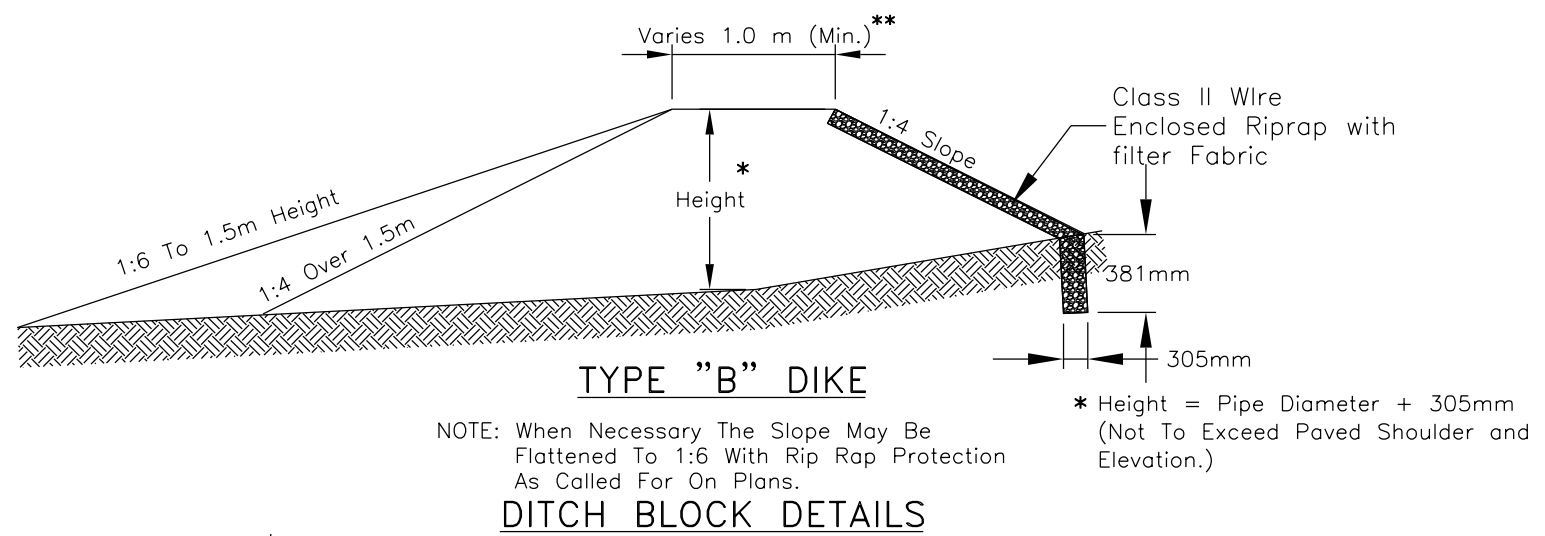


FIGURE C: FOUNDATION STABILIZATION BEDDING



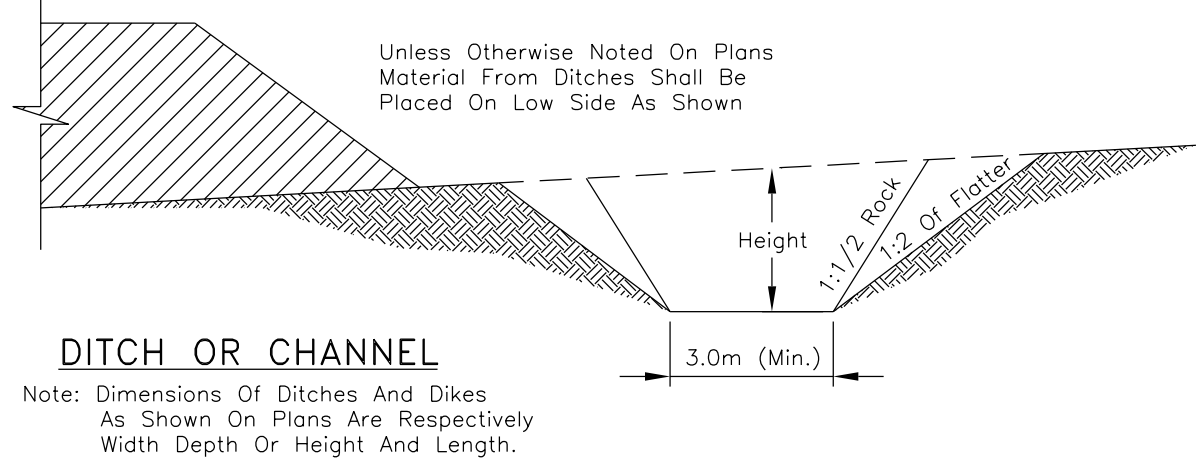
TYPE "A" DIKE



TYPE "B" DIKE

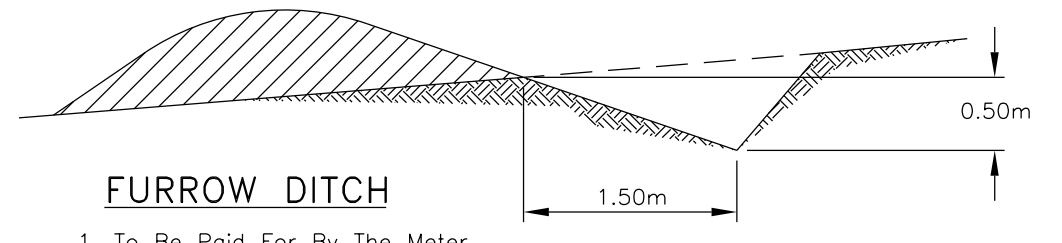
NOTE: When Necessary The Slope May Be Flattened To 1:6 With Rip Rap Protection As Called For On Plans.

DITCH BLOCK DETAILS



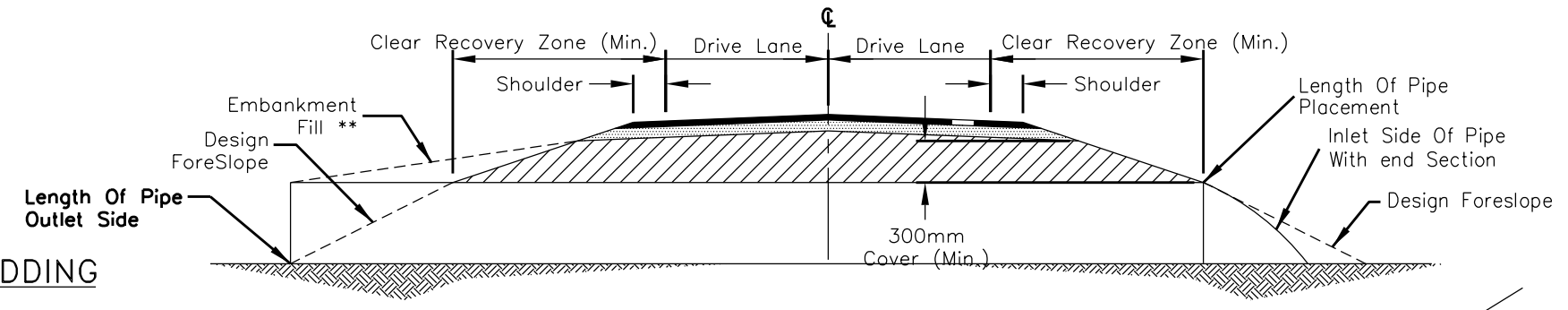
DITCH OR CHANNEL

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



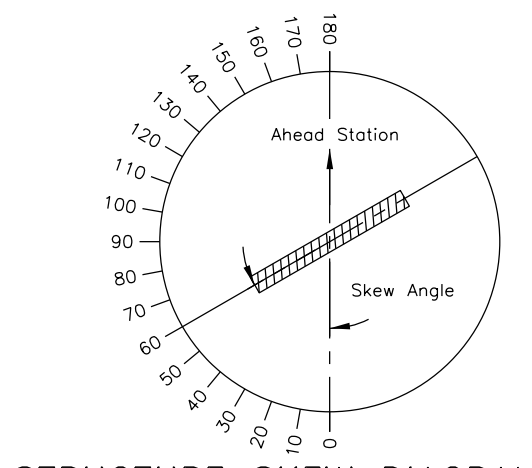
FURROW DITCH

1. To Be Paid For By The Meter.
2. Furrow Ditch Sections As Shown Above Or And Approved Equivalent Shall Be Built As Directed By The COR/COTR UNDER BID ITEM 20410-2000.

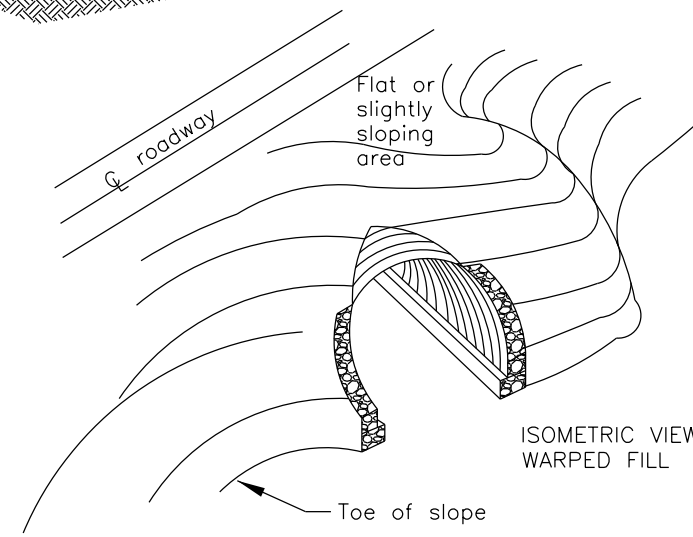


TYPICAL PIPE INSTALLATION- MAINLINE SHOWN
Turnout/Driveway, use 2-End Sections

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

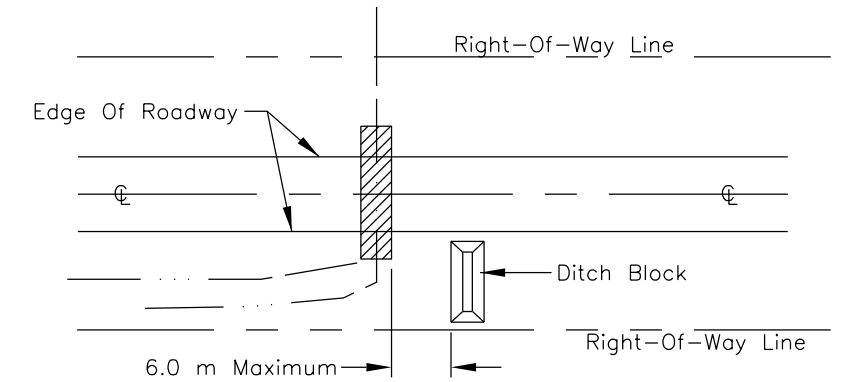


STRUCTURE SKEW DIAGRAM



PIPE SKEWS TO THE EMBANKMENT WARPING (TYP.)

1. The Contractor shall be required to built the warped embankment around the skewed drainage pipe(s). This work shall be incidental to the earthwork and installation of drainage pipe items shown.



DITCH BLOCK INSTALLATION AT STRUCTURE


1. Ditch Blocks At Structures Shall Be Placed Such That The Water is Diverted Into Structure. The Elevation At Top Of Ditch Block Shall Be 305mm Above Elevation Of Top Of Pipe Unless Otherwise Shown Or Directed by the COR/COTR. SEE NOTE 14 THIS SHEET.
2. Ditch Block Shall Be Located A Distance Equal To The Largest Dimension Of Box Culvert Or Pipe from the Face of the Drainage Structure. In No Case Shall The Distance Exceed 3.0m.

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**STANDARD PIPE INSTALLATION
AND DITCH DETAILS**

DRAWN BY: NRDOT	DATE: 05/04
DESIGNED BY: NRDOT	DATE: 05/04
REVISED: 10/26/2015	BY: Design 2

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REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N101	N101(1)2&4	14	33

HORIZONTAL ALIGNMENT TABLE

POINT	STATION	ELEMENT	DIRECTION	NORTHING (m)	EASTING (m)
Mainline					
BOP	0+00.000	Linear= 228.936 (m)	N 89°42'36" E	631,550.480	782,371.328
PC	0+228.936	CURVE DATA ,C1 Delta = 5°10'43" Lt. Deg. = 3°07'07" R = 560.000 (m) L = 50.615 (m) T = 25.325 (m) e = 0.572 (m)			
PI	0+254.261				
PT	0+279.551	Linear= 310.507 (m)	N 84°31'53" E	631,554.181	782,650.795
EOP	0+590.058			631,583.773	782,959.888
Spur					
BOP	0+000.000	Linear= 35.073 (m)	N 25°14'43" E	631,471.559	782,626.981
PC	0+035.073	CURVE DATA ,C2 Delta = 30°42'27" Lt. Deg. = 21°49'47" R = 80.000 (m) L = 42.876 (m) T = 21.966 (m) e = 2.961 (m)			
PI	0+057.039				
PT	0+077.948	Linear= 8.978 (m)	N 5°27'44" W	631,545.017	782,649.217
EOP	0+086.926			631,553.954	782,648.362
N3005					
BOP	0+000.00	Linear= 78.309m N 0° 22' 44" E		631,407.444	782,958.845
PI	0+078.309	N 0° 18' 28" E Linear= 197.816m		631,485.751	782,959.361
EOP	0+276.126			631,683.565	782,960.424

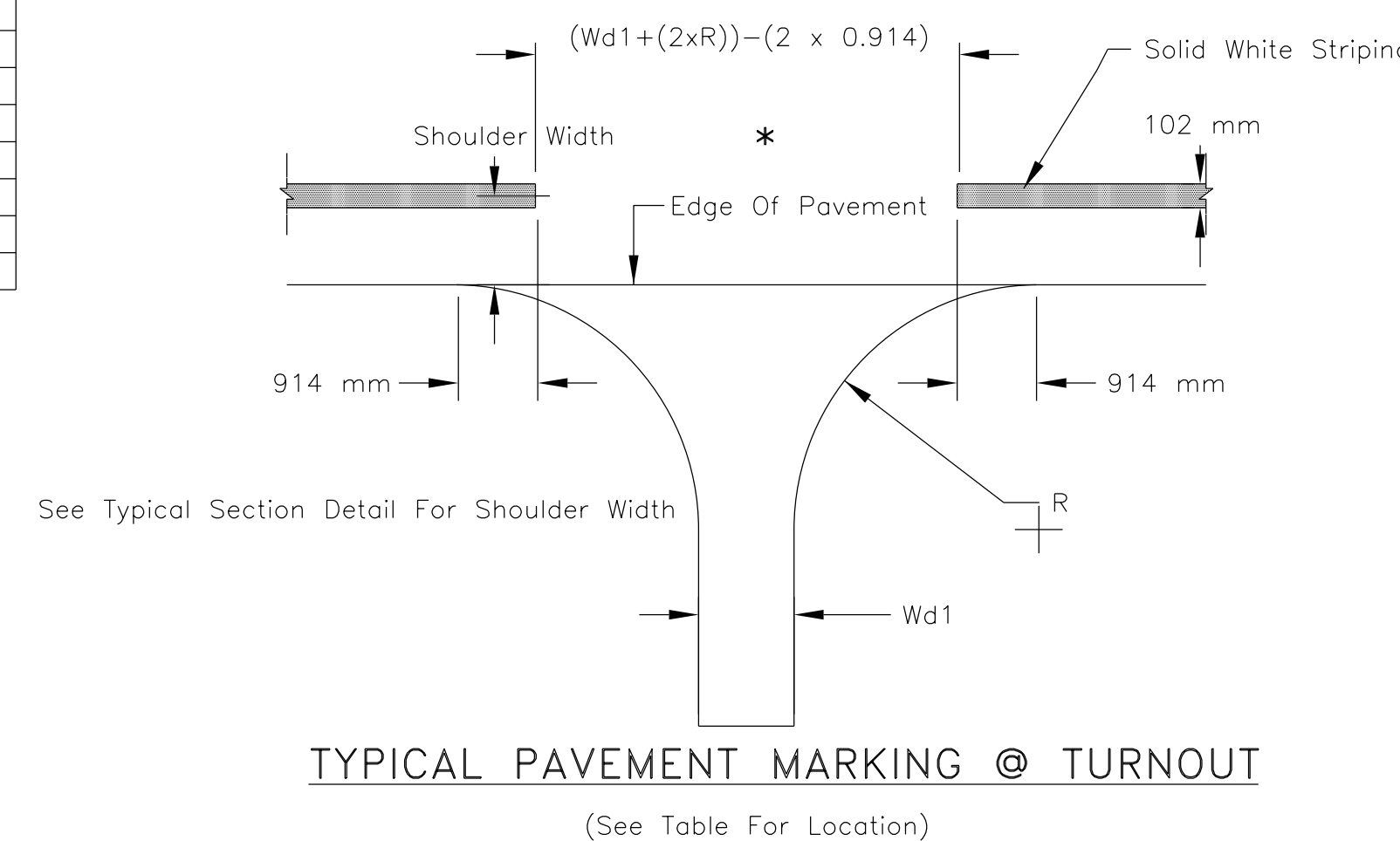
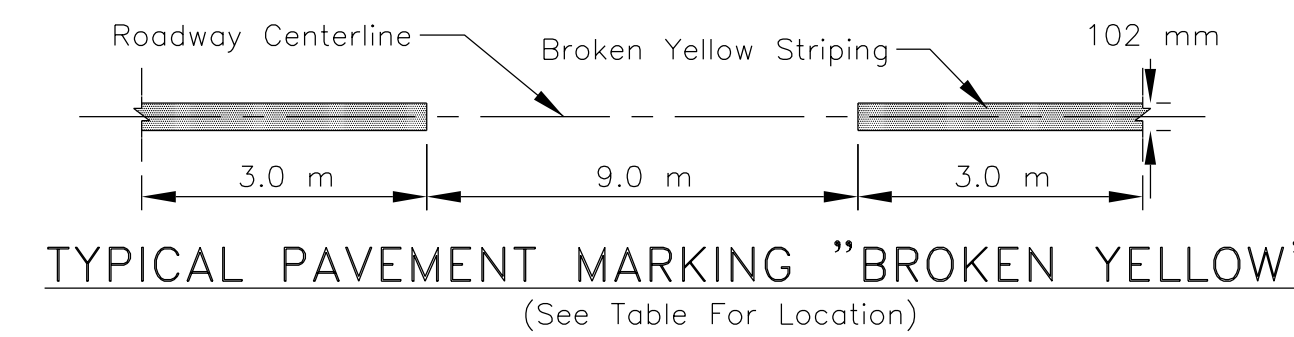
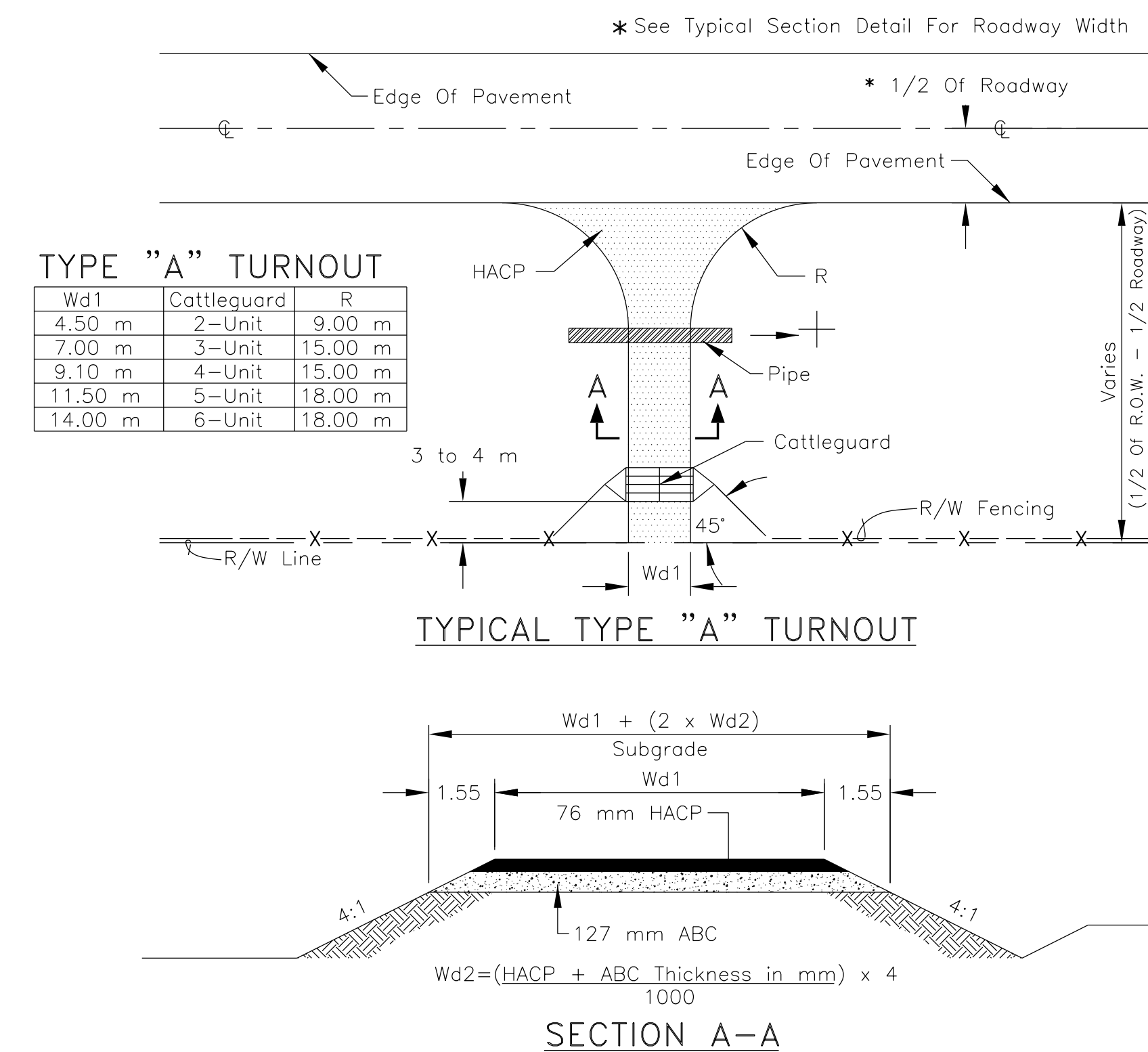
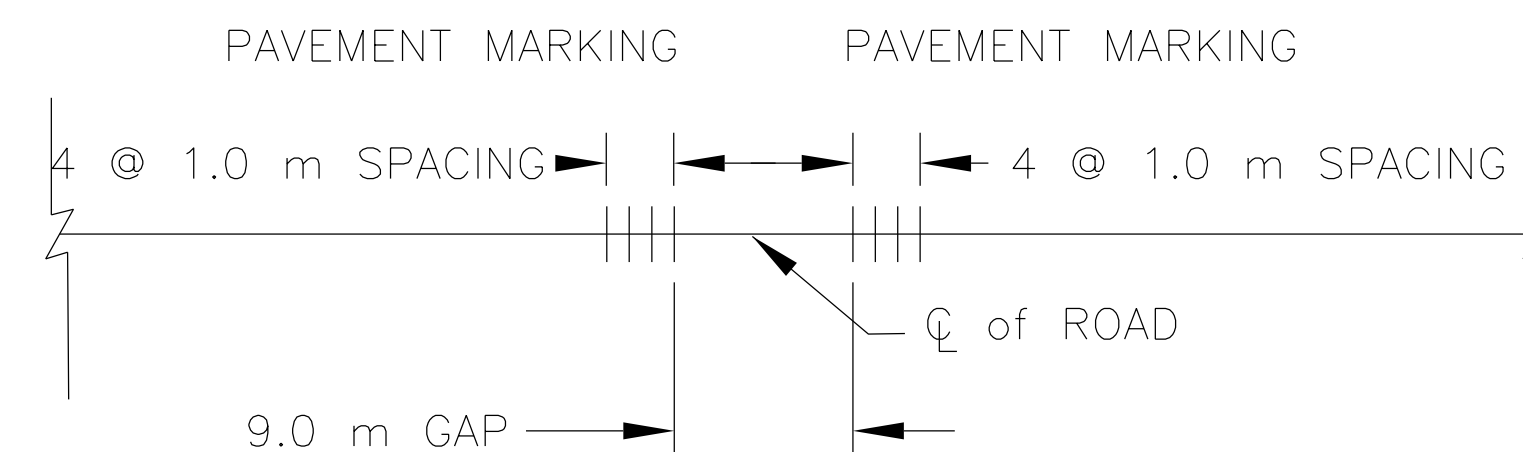
Coordinates are NAD83 New Mexico State Plane West (NM83-W) GRID

**ITEM NO. 62101-0000 R/W MONUMENTS
ITEM NO. 62102-0000 REFERENCE MARKERS**

STATION	LOCATION	MONUMENT (Each)	MARKER (Each)	REMARKS
N101(1) MAIN ROAD				
00+000.00	Left & Right	2	2	B.O.P.
00+190.00	Left & Right	3	3	R/W 13m to 18m
00+228.93	Left & Right	3	3	R/W 18m to 13m and @ PC Station
00+260.00	Left & Right	3	3	R/W 13m to 18m
00+279.55	Left	1	1	R/W 18m @ PT Station
00+294.236	Right	1	1	E.O.P.
N101(1) SPUR ROAD				
00+000.00	Left & Right	2	2	B.O.P.
00+035.07	Left & Right	2	2	R/W 18m @ PC Station
N3005 STATE ROAD				
00+000.00	Left & Right	2	2	B.O.P.
00+078.309	Left & Right	2	2	
00+276.126	Left & Right	2	2	E.O.P.
TOTAL		23	23	

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

63502-3000 TTC, Raised Pavement Markers @ 297 Ea.--N101(1)



TURNOUT LOCATIONS DATA				
ROUTE	STATION	LOCATION	SIZE	REMARKS
N101 MAIN	0+218.00	Left of CL	4.5m x 18.0m	with roll curb and driveway
N101 MAIN	0+320.00	Left of CL	4.5m x 18.0m	turnout to homesite
N101 SPUR	0+058.00	Right of CL	4.5m x 18.0m	with roll curb and Driveway
N3005	0+090.00	Left of CL	4.5m x 14.0m	turnout to homesite

SURVEY NOTES:

1. SURVEY CONSISTS OF MULTIPLE CONTROL POINTS NETWORKED TOGETHER AS EXTERIOR AND INTERIOR CONTROL. NETWORK WAS CONSTRUCTED BY GPS OBSERVATIONS UNDER THE DIRECTION OF WHPACIFIC
2. 1 TO 4 HOUR STATIC OBSERVATIONS WERE HELD FOR THE EXTERIOR CONTROL AND 15-30 MINUTE KINEMATIC FAST STATIC OBSERVATIONS FOR THE INTERIOR CONTROL.
3. THE BASIS OF HORIZONTAL CONTROL FOR THIS PROJECT WAS THE COAST AND GEODETIC MONUMENTS LOCATED NEAR THE PROJECT AND DESCRIBED BY NGS. THE MONUMENT WAS FOUND IN GOOD CONDITION AT THE TIME OF OUR SURVEY. PUBLISHED AND MODIFIED SPC83 COORDINATES ARE AS FOLLOWS:
4. THE BEARINGS SHOWN HEREON ARE SPC83 NM(C) GRID AS DETERMINED FROM STATIC GPS SESSIONS.
5. THE SCALE FACTOR OF 1.000339955. THE COMBINED SCALE FACTOR (GROUND TO GRID) USED FOR THIS PROJECT WAS 0.999660160.

63401-1520 PAVEMENT MARKINGS: SOLID WHITE

STATION TO STATION	LOCATION	DESCRIPTION	LENGTH(m)
Main: 0+000 To EOP: 0+586.337	Left	Solid White	590.06
Minus (1) 4.5m wide T.O. @ 4.5m			(4.50)
Main: 0+000 To 0+257.308	Right	Solid White	257.31
0+257.308 To 0+272.308	Right	radius length	25.92
0+281.908 To 0+296.908	Right	radius length	25.92
0+296.908 To EOP: 0+582.531	Right	Solid White	293.15
Spur: 0+000 To 0+071.926	left	Solid White	71.93
Spur: 0+000 To 0+071.926	Right	Solid White	333.63
Minus (1) 4.5m wide T.O. @ 4.5m			(4.50)
TOTAL:			1,588.91

63401-1510 PAVEMENT MARKINGS: SOLID YELLOW

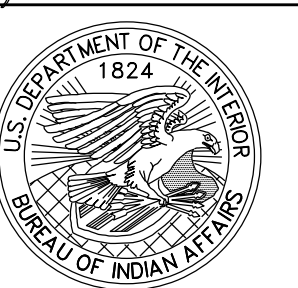
STATION TO STATION	LOCATION	DESCRIPTION	LENGTH (ft)
Main: 0+000 To 0+581.531	Center	double Solid Yellow	1,180.12
Spur: 0+000 To 0+082.142	Center	double Solid Yellow	164.25
TOTAL:			1,344.37

CONTROL POINT DATA					
STATION	CL-OFFSET (m)	ELEVATION	NORTHING	EASTING	DESCRIPTION
N/A	8.027 lt	1649.941	631579.127	782315.774	SCP9
0+561.425	20.871 lt	1664.866	631560.268	782933.375	PCP2
0+177.125	21.852 rt	1664.227	631584.45	782981.744	SPC1
0+013.091	20.942 lt	1651.625	631529.605	782384.524	PCP4
0+285.257	92.695 lt	1654.681	631462.452	782665.309	PCP3
0+201.427	30.627 lt	1652.884	631520.874	782572.907	SCP7
0+291.653	28.304 lt	1654.412	631527.159	782665.539	SCP5
0+232.939	59.551 lt	1653.353	631492.127	782604.991	SCP6

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**ALIGNMENT TABLE PLUS ESTIMATED
QUANTITIES FOR N101(1)2&4**

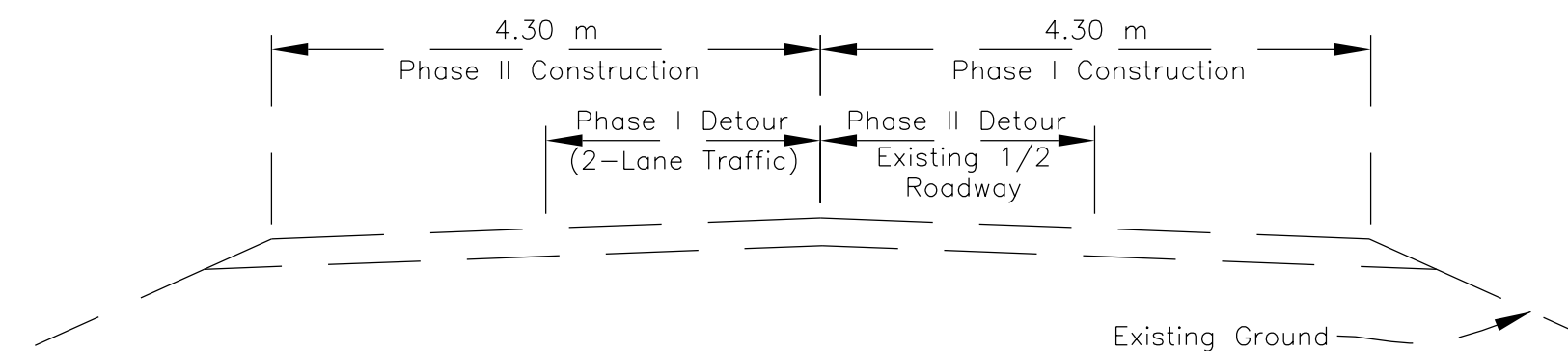
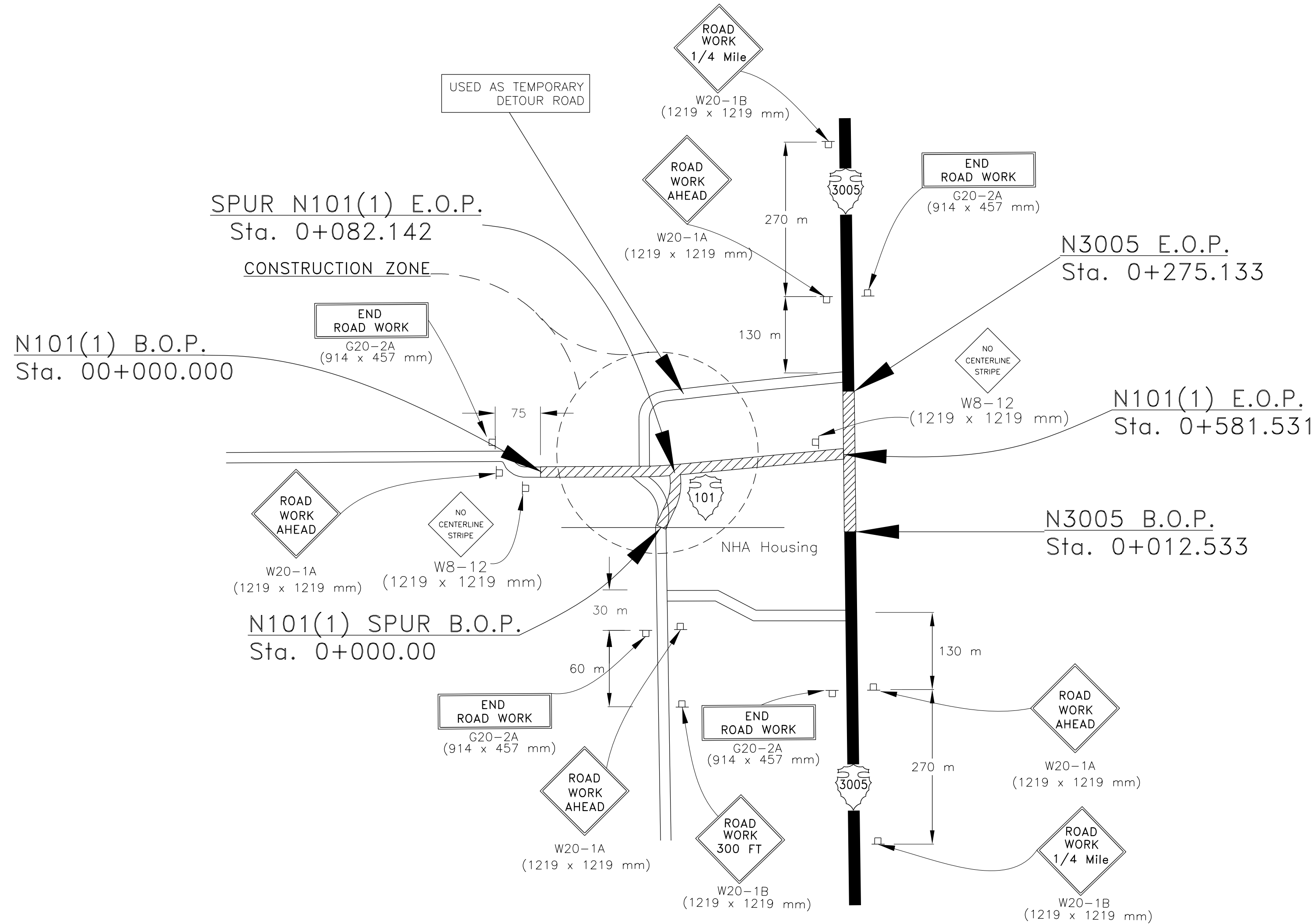
DRAWN BY: NRDOT	DATE: 6/30/2014
DESIGNED BY: NRDOT	DATE: 6/30/2014
REVISED: 12/12/2014	BY: Peterson.Yazzie
N101(1)2&4 SUP.	



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N101	N101(1)2&4	15	33

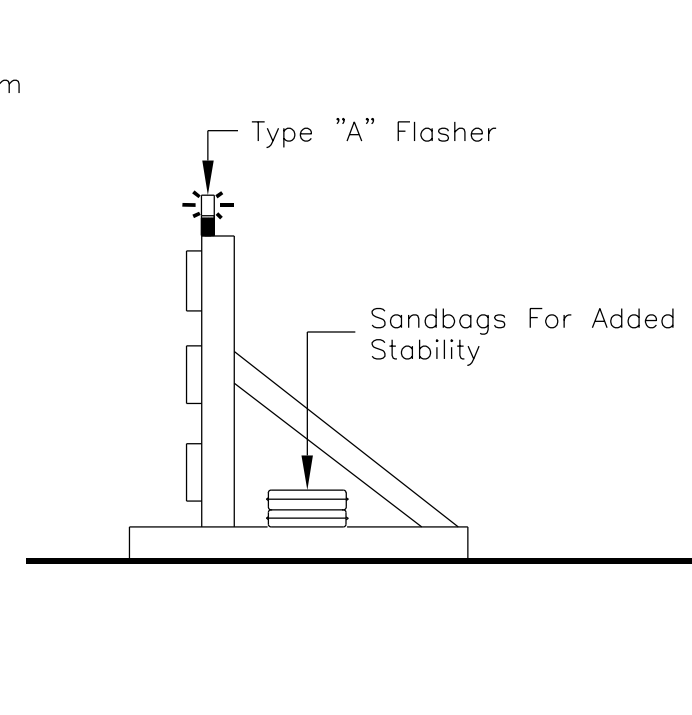
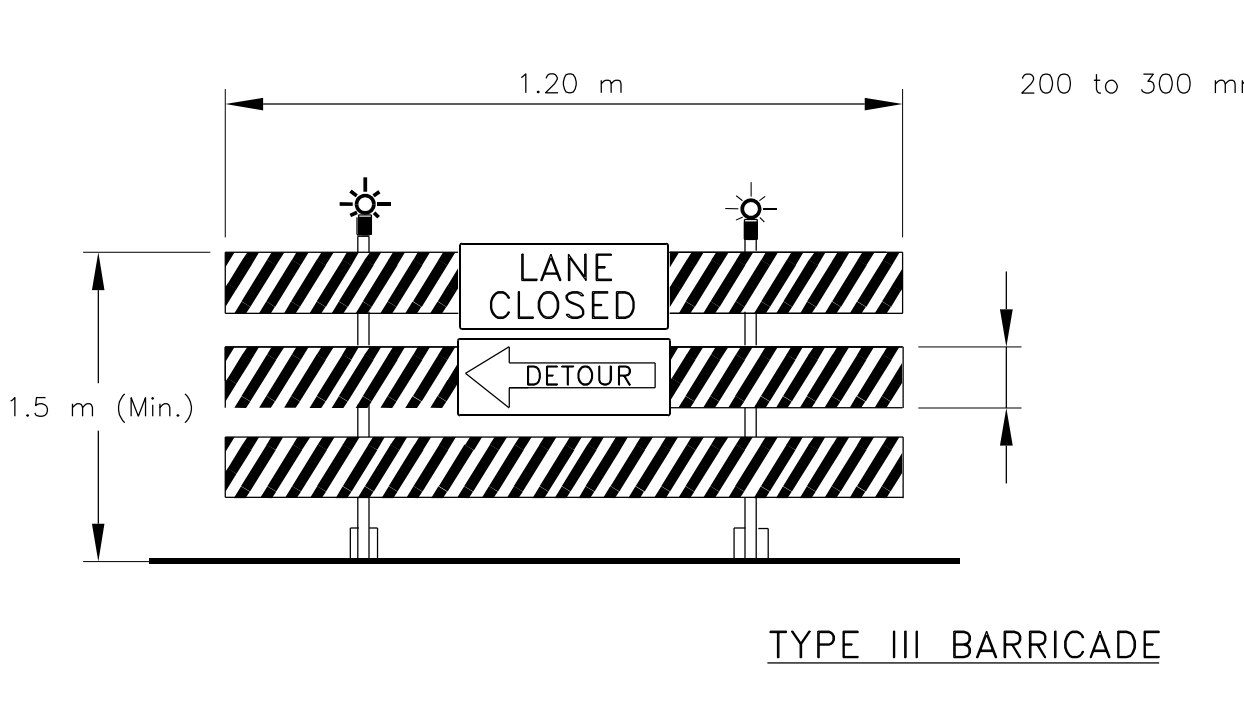
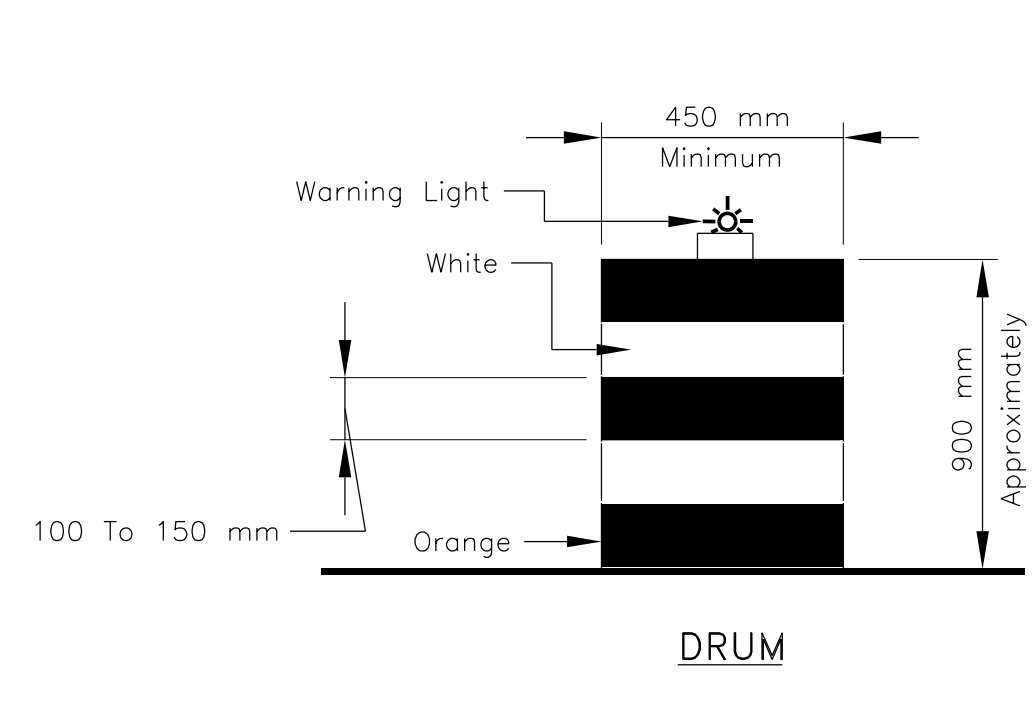
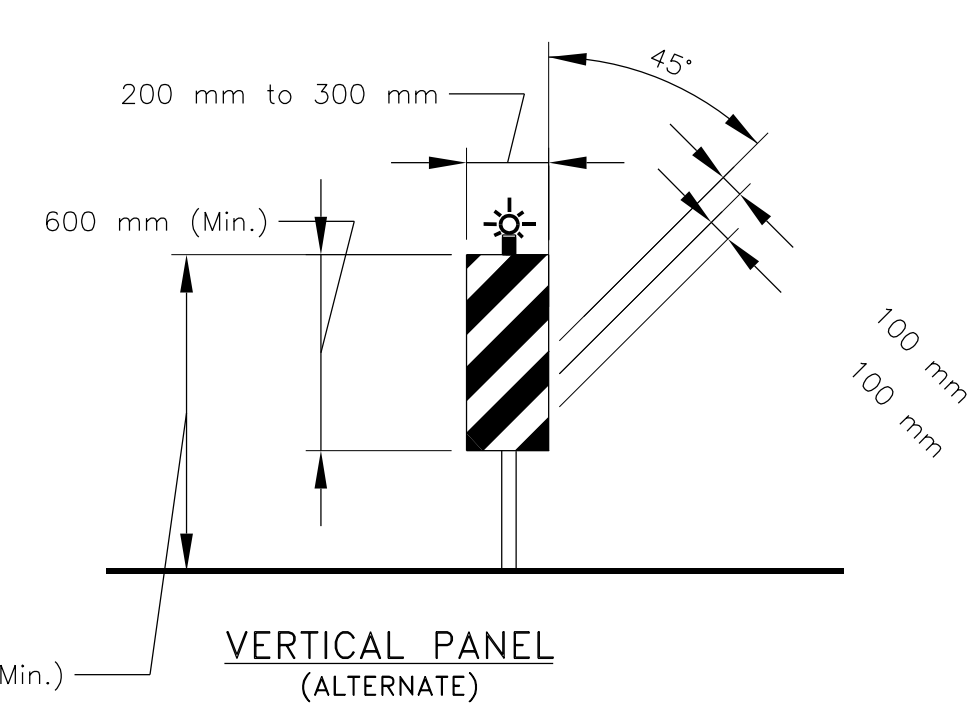
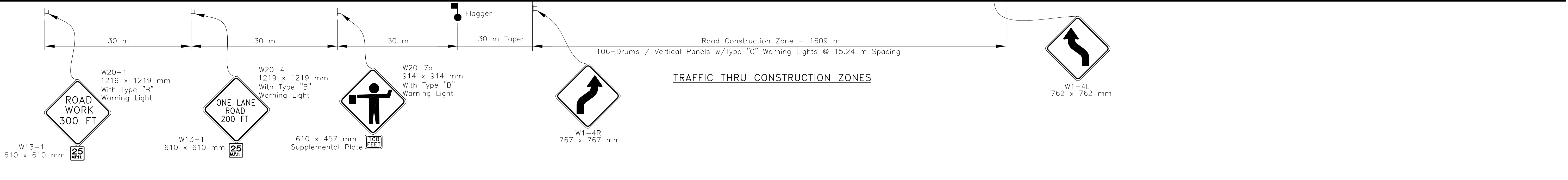
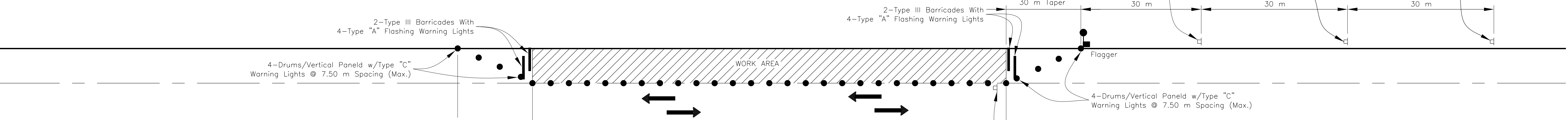
GENERAL NOTES

- ALL TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH THE MUTCD MANUAL (LATEST EDITION AND AMENDMENTS) AND THE SUPPLEMENTAL SPECIFICATIONS FOR THIS PROJECT.
- THE TRAFFIC CONTROL DETAILS SHOWN ARE ONLY A GUIDE AND REFLECTS GENERAL REQUIREMENTS. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR IMPLEMENTING HIS TCP IN ACCORDANCE WITH THIS PLAN AND THE MUTCD UNDER CONTRACT ITEM 63501-0000. ANY ADDITIONAL TRAFFIC CONTROL DEVICES CALLED FOR ON THE CONTRACTOR'S TCP WILL NOT BE MEASURED FOR PAYMENT BUT SHALL BE CONSIDERED INCIDENTAL TO CONTRACT ITEM 63501-0000. SEE SUPPLEMENTAL SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- SIGNS (G 20-1, W20-1A & B, AND G20-2A) SHALL BE PLACED AT THE PROJECT LIMITS AND REMAIN IN PLACE THROUGH THE DURATION OF THE PROJECT.
- FLAGGERS SHALL BE STATIONED LEFT & RIGHT AS SHOWN WHEN EQUIPMENT IS CROSSING OR WORKING WITHIN EXISTING ROADWAY PRISM OR AT DETOURS.
- AT THE END OF EACH WORKING DAY, IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE A DRIVING SURFACE FREE OF OBSTRUCTIONS AS SHOWN ON THE PHASED CONSTRUCTION DETAIL. ACCESS TO ALL ADJOINING PROPERTIES AND BIA/COUNTY SYSTEM ROUTES SHALL BE MAINTAINED AT ALL TIMES DAY AND NIGHT.
- ALL TRAFFIC CONTROL DEVICES (EXCEPT AT DETOUR ROAD LOCATIONS AND AS NOTED IN ABOVE NOTE #3) SUCH AS CONSTRUCTION SIGNS, DRUMS, BARRICADES, ETC., SHALL BE REMOVED TO A LOCATION AT LEAST NINE (9) METERS FROM EDGE OF THE SHOULDER WHEN CONSTRUCTION IS NOT IN PROGRESS.
- DURING CONSTRUCTION OPERATIONS, TRAFFIC SHALL BE MOVED THROUGH THE WORK ZONE USING PILOT CARS (AS REQUIRED), APPLICABLE SIGNS AND OTHER ITEMS (TWO-WAY RADIO CONTACT) RELATED TO THE USE OF THE PILOT CARS SHALL BE CONSIDERED INCIDENTAL TO CONSTRUCTION AND NO PAYMENT OR MEASUREMENT SHALL BE MADE.
- 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.
- THE CONTRACTOR HAS THE OPTION TO UTILIZE DETOUR ROADS IN ACCORDANCE WITH THE MUTCD MANUAL IN CONJUNCTION WITH OR IN LIEU OF THE PHASE CONSTRUCTION PLAN SHOWN AND IN ACCORDANCE WITH SECTION 107 AND 204. THE COST OF ANY DETOUR ROADS (INCLUDING ALL DETOUR RELATED EARTHWORK AND MAINTENANCE) SHALL BE CONSIDERED INCIDENTAL TO THE TEMPORARY TRAFFIC CONTROL BID ITEMS. THE CONTRACTOR IS RESPONSIBLE FOR ALL NECESSARY PERMITS AND CLEARANCES FOR ANY DETOUR ROADS.
- THE CONTRACTOR'S TCP SHALL ADDRESS ALL SIDE ROAD TRAFFIC AND ACCESS TO ADJACENT PROPERTIES AT ALL TIMES DURING CONSTRUCTION AND COORDINATION WITH THE SCHOOL FOR BUS TRAFFIC.



PHASED CONSTRUCTION

- THE CONTRACTOR MAY ELECT TO CONSTRUCT 1/2 THE NEW ROADWAY (UNDER PHASED CONSTRUCTION PLAN SHOWN) WHILE DETOURING TWO-WAY TRAFFIC ON THE OTHER (EXISTING) HALF. ONCE THE FIRST 1/2 OF ROADWAY IS BUILT UP TO THE NEW GRADES, THEN TRAFFIC SHALL BE DIRECTED TO THE NEW HALF OF ROADWAY WHILE THE OTHER (EXISTING) HALF IS CONSTRUCTED.
- THIS PHASED CONSTRUCTION SHALL BE CONSIDERED INCIDENTAL TO THE T.C.P. SHOWN AND NO ADDITIONAL PAYMENT SHALL BE MADE.
- THE CONTRACTOR'S CONSTRUCTION SCHEDULE, CONSTRUCTION SEQUENCING PLAN, AND STORM WATER POLLUTION PREVENTION PLAN SHALL REFLECT THIS PHASED CONSTRUCTION.



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TEMPORARY TRAFFIC CONTROL DETAIL

DRAWN BY: NRDOT	DATE: 4/12/2007
DESIGNED BY: NRDOT	DATE: 4/12/2007
REVISED: 12/12/2014	BY: Peterson.Yazzie
N101_Tcp	

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N3005 & N101 INTERSECTION - PERMANENT ROADSIDE SIGNS

STATION	LOC.	SIZE DETAIL NO.	DESCRIPTION	SIGN PANEL SIZE (mm)	AREA OF SIGN (Sq. m.)	NO. OF TUBE	SIGN TUBE SIZE	TOTAL SIGN PANELS
0+176.00	@ 7.0 m Rt.	W1-7 WL-RB WR-RB		910 x 1220 910 x 1524 910 x 1524	0.74 0.93 0.93	4	64 mm x 64 mm	1
0+280.00	Rt.	R2-1		610 x 762	0.46	1	44 mm x 44 mm	1
0+280.00 0+072.00	Lt. Rt.	R2-1		610 x 762	0.46	1	44 mm x 44 mm	2
0+213.00	Rt.	W3-11		762 x 762	0.58	1	44 mm x 44 mm	1
0+249.00	Lt.	M-2 W16-5PR		457 x 610 533 x 381	0.28 0.20	1	44 mm x 44 mm	1
0+094.00	Rt.	M-2 W16-5PL		457 x 610 533 x 381	0.28 0.20	1	44 mm x 44 mm	1
0+266.00	Lt.	R3-8L		762 x 762	0.58	1	44 mm x 44 mm	1
0+084.00	Rt.	R3-8R		762 x 762	0.58	1	44 mm x 44 mm	1
0+213.00	Lt.	D1-1RC		1823 x 750	1.37	2	57 mm x 57 mm	1
0+137.00	Rt.	D1-1LC		1823 x 750	1.37	2	57 mm x 57 mm	1
0+517.00	Rt.	M-1 W1-7		457 x 610 533 x 381	0.28 0.20	1	44 mm x 44 mm	1
0+020.00 0+332.00	Rt. Lt.	R2-5a		610 x 762	0.46	1	44 mm x 44 mm	2

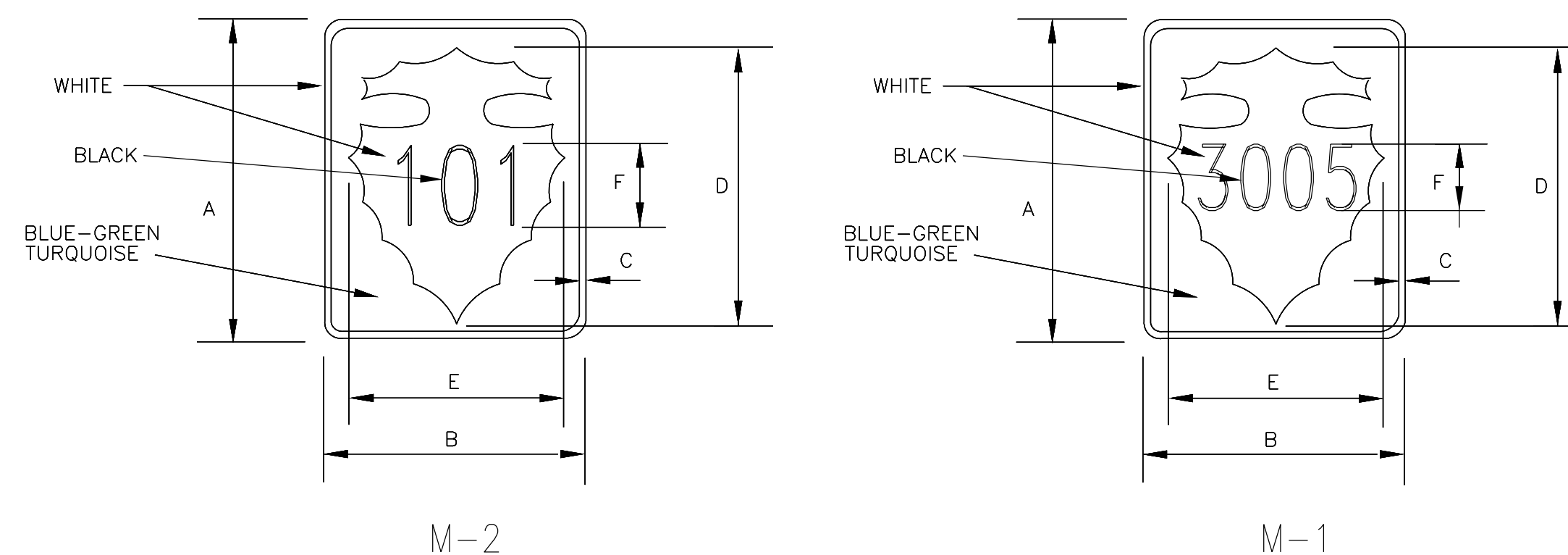
63302-2002 Sign Installation, 1 POST & Hardware: 44mm x 44mm, Square Steel Tube	12.66 m ²
63302-2006 Sign Installation, 2 POST & Hardware: 50mm x 50mm, Square Steel Tube	1.12 m ²
63302-2007 Sign Installation, 2 POST & Hardware: 57mm x 57mm, Square Steel Tube	2.74 m ²
63302-2013 Sign Installation, 4 POST & Hardware: 64mm x 64mm, Square Steel Tube	2.60 m ²

N101 MAINLINE & SPUR ROAD - PERMANENT ROADSIDE SIGNS (CONTINUATION)

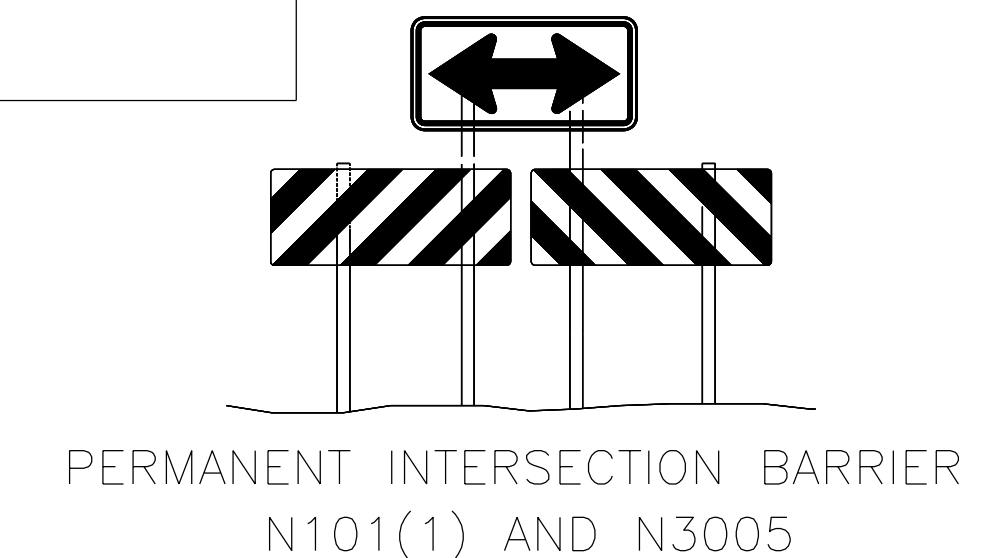
STATION	LOC.	SIZE DETAIL NO.	DESCRIPTION	SIGN PANEL SIZE (mm)	AREA OF SIGN (Sq. m.)	NO. OF TUBE	SIGN TUBE SIZE	TOTAL SIGN PANELS
0+077.00 0+214.15 0+575.75	Spur Rt. Lt. Rt.	R1-1		762 x 762	0.58	1	44 mm x 44 mm	3
0+310.00 0+485.00	Rt. Lt.	R2-1		610 x 762	0.46	1	44 mm x 44 mm	2
0+040.00 0+550.00	Lt. Rt.	W14-3		914 x 1219 x 1219	0.56	2	50 mm x 50 mm	2
0+040.00 0+550.00	Rt. Lt.	R4-1		610 x 762	0.46	1	44 mm x 44 mm	2
0+008.00 0+005.00 0+256.00 0+305.00	Lt. Rt. Rt. Lt.	S1-1 W16-7P		762 x 762 610 x 305	0.58 0.19	1	44 mm x 44 mm	4
0+485.00	Rt.	W3-1		762 x 762	0.58	1	44 mm x 44 mm	1
0+380.00	Lt.	W11-2a		762 x 762	0.58	1	44 mm x 44 mm	1
-0+020.00 0+312.00	Rt. Lt.	S5-1		610 x 1219	0.74	1	44 mm x 44 mm	2

TEMPORARY TRAFFIC CONTROL SIGNS (MIN.)

TYPE	DESCRIPTION	SIZE
W20-1		1219 mm x 1219 mm
W13-1		610 mm x 610 mm
W20-4		1219 mm x 1219 mm
W13-1		610 mm x 610 mm
W20-7a		1219 mm x 1219 mm
supplemental plate		610 mm x 457 mm
G20-2a		1219 mm x 610 mm
W20-1a		1219 mm x 1219 mm
W8-12		1219 mm x 1219 mm
W20-1b		1219 mm x 1219 mm
W1-4L		762 mm x 762 mm

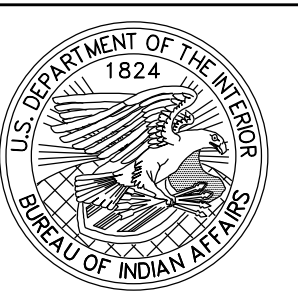


SIGN	DIMENSION Inches (mm)					F NUMERALS			
	A	B	C	D	E	DIGITS IN ROUTE SIZE & SERIES Inches (mm)			
MIN.	610	457	13	495	343	370	296	237	198



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PERMANENT & TEMPORARY ROADSIDE
SIGN DETAILS

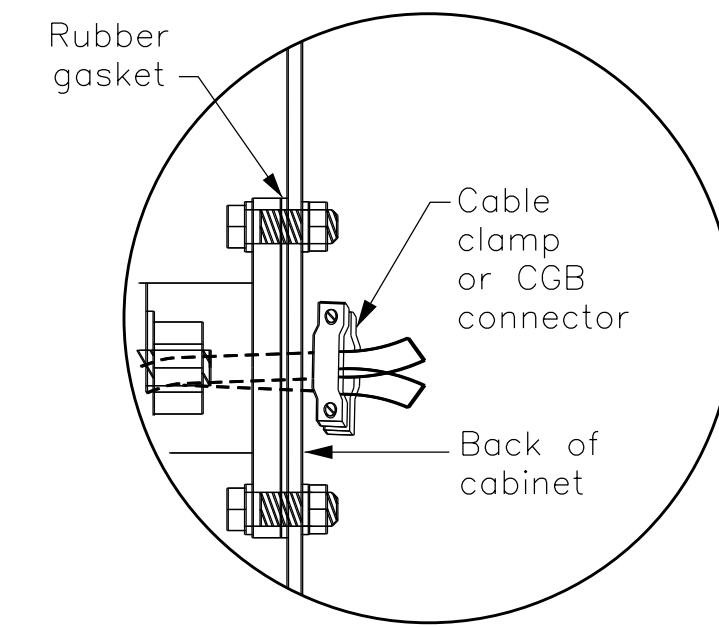
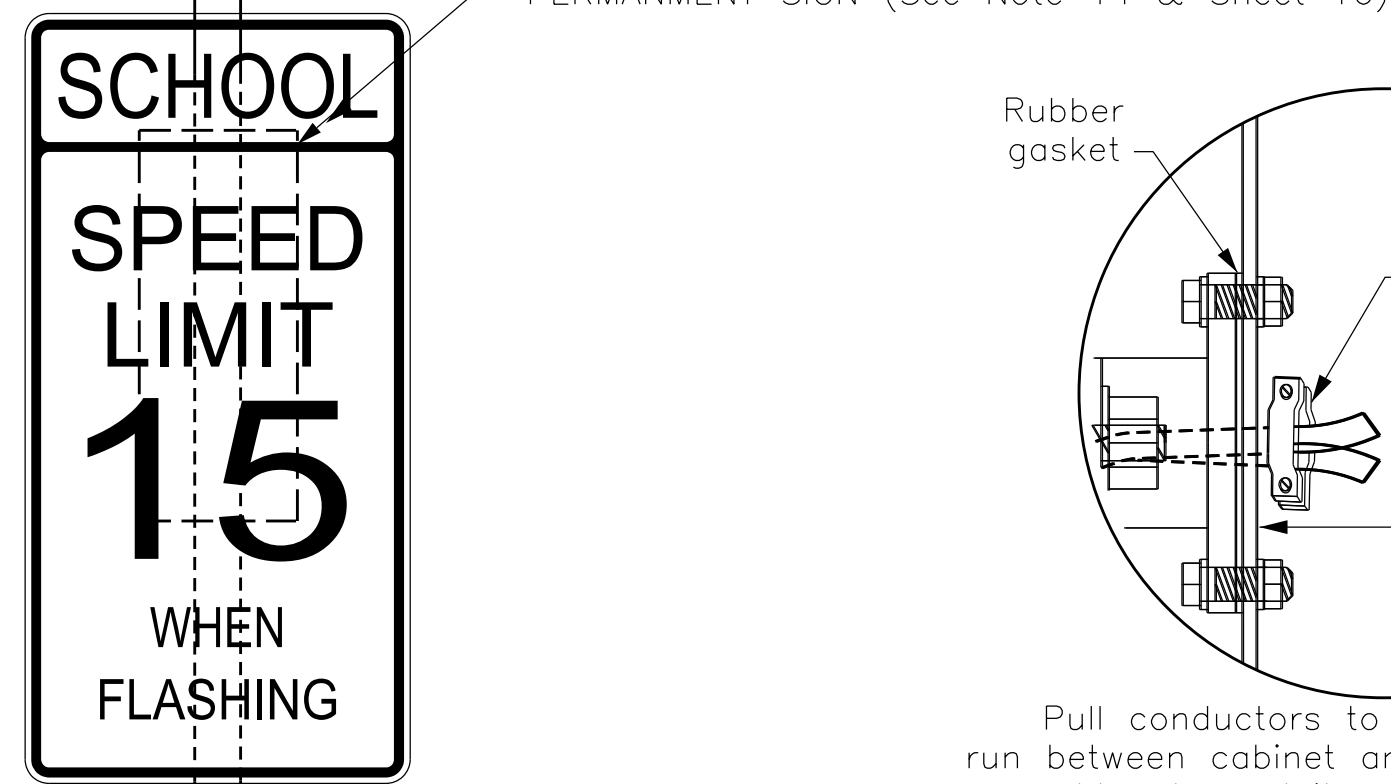
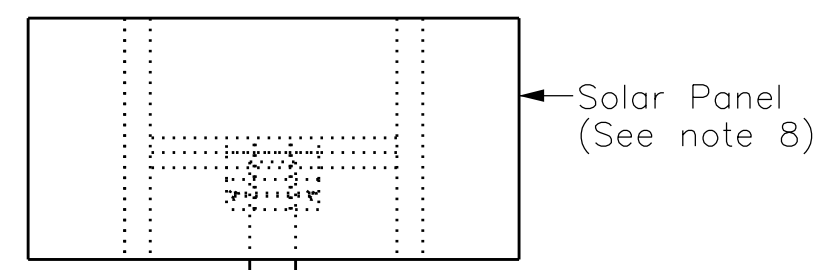
DRAWN BY: NRDOT DATE: 4/12/2007
DESIGNED BY: NRDOT DATE: 4/12/2007
REVISED: 10/3/2017 BY: Design 2
N101_Tfsn



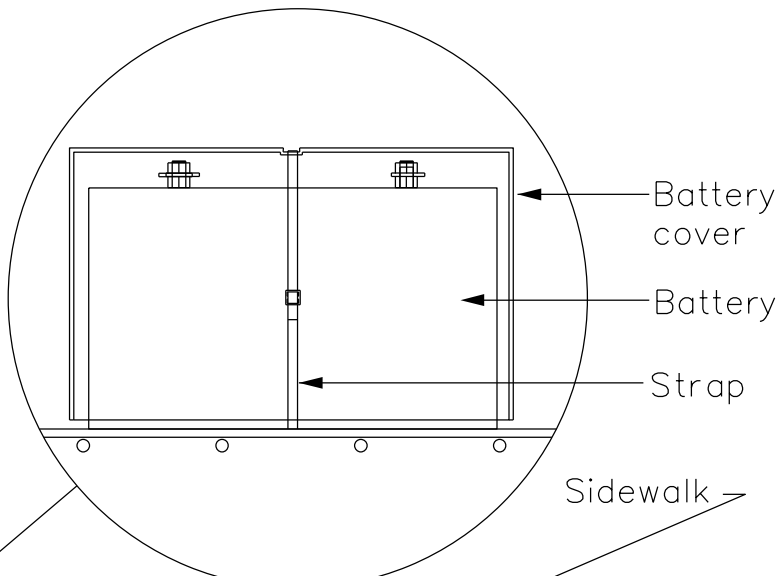
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N101	N101(1)2&4	17	33

GENERAL NOTES

- LOCATIONS OF CONDUITS, FOUNDATIONS, POLES, PULL BOXES AND SHOWN ON THE PLANS ARE SCHEMATIC AND SHALL BE ADJUSTED IN THE FIELD TO MAXIMIZE CLEAR SPACE AVAILABLE FOR PEDESTRIANS AND WHEELCHAIRS TO COMPLY WITH THE AMERICANS WITH DISABILITIES ACT. THE CONTRACTOR SHALL MEET WITH THE COR IN THE FIELD TO ALL LOCATIONS TO SPOT EQUIPMENT BEFORE BEGINNING THE WORK. SEE SECTION 636- "TRAFFIC SIGNAL, TRAFFIC COUNTER, LIGHTING, AND ELECTRICAL SYSTEMS" FOR FUTURE REQUIREMENTS.
- USE EITHER A SCREW-IN TYPE ANCHOR FOUNDATION OR A DRILLED SHAFT FOUNDATION AS PROVIDED BY MANUFACTURER PLANS. INSTALL FOUNDATION AS PER MANUFACTURER'S RECOMMENDATIONS. ON A SLOPE, INSTALL ONE EDGE AT GROUND LEVEL. INSTALLATION OF A GROUND ROD IS NOT REQUIRED FOR SOLAR POWDERED FLASHING BEACON ASSEMBLIES.
- PER MANUFACTURER'S RECOMMENDATIONS, ENGAGE ALL THREADS ON THE PEDESTAL POLE BASE AND PIPE UNLESS THE PIPE IS FULLY SEATED INTO BASE. IN HIGH WINDS, USE A POLE AND BASE COLLAR ASSEMBLY TO ADD STRENGTH AND PREVENT LOOSENING ON CONNECTION.
- PROVIDE SINGLE POLE NON-FUSED WATERTIGHT BREAKAWAY ELECTRICAL CONNECTORS FOR FRANGIBLE PEDESTAL POLE BASES. FOR UNGROUNDED (HOT) CONDUCTORS, INSTALL A BREAKAWAY CONNECTOR WITH A DUMMY FUSE (SLUG). FOR GROUNDED (NEUTRAL) CONDUCTORS, INSTALL A BREAKAWAY CONNECTOR WITH A WHITE COLORED MARKING AND A PERMANENTLY INSTALLED DUMMY FUSE (SLUG).
- INSTALL THE BATTERIES IN A LOCKABLE WITH KEY BATTERY BOX. PLACE THE BATTERIES ON A 4.8mm THICK PLASTIC SHEET AND CONNECT TOGETHER. PLACE A PLASTIC COVER (BATTERY BELL JAR) OVER THE TOP OF EACH BATTERY AND SECURE THE BATTERY BELL JAR TO THE BATTERY WITH A STRAP. THE BATTERIES, BELL JARS, STRAPS AND 4.8mm PLASTIC SHEET ARE SUBSIDIARY TO THE ITEM 63601-7000. WHEN REQUIRED, INSTALL BATTERIES IN THE FLASHER CABINET. WIRE BATTERIES ACCORDING TO MANUFACTURER'S RECOMMENDATIONS. PROVIDE THE NUMBER OF BATTERIES AS REQUIRED BY THE MANUFACTURER.
- PROVIDE CLEARANCE AS SHOWN ABOVE THE SIDEWALK OR PAVEMENT GRADE AT THE EDGE OF THE ROAD. WHEN A BOTTOM BEACON IS NOT USED, MOUNT THE BOTTOM OF THE SIGN AT LEAST 2.13 METER ABOVE THE SIDEWALK OR PAVEMENT GRADE AT THE EDGE OF THE ROAD. SIGNAL HEADS SHALL BE COVERED WHEN NECESSARY WITH BURLAP CLOTH COVERS OR APPROVED EQUAL.
- UNLESS OTHERWISE SHOWN ON THE PLANS, POLE SHAFT SHALL BE ONE PIECE, SCHEDULE 40 ALUMINUM PIPE, ASTM B429 OR B221 (ALLOY 6061-T6 ONLY). ALUMINUM CONDUIT WILL NOT DEVELOP NECESSARY STRENGTH AND WILL NOT BE ALLOWED.
- ORIENT SOLAR PANEL FOR OPTIMUM EXPOSURE TO SUNLIGHT (FACE TO THE SOUTH). PRIOR TO INSTALLATION, CHECK THE LOCATION TO ENSURE THERE IS NO OVERHEAD OBSTRUCTION THAT WOULD BLOCK THE SOLAR PANEL FROM RECEIVING FULL SUNLIGHT. UNLESS SPECIFIED ELSEWHERE, MOUNT A MINIMUM OF 4.27 METER ABOVE GRADE.
- THE CONTRACTOR IS HEREBY ADVISED THAT THE FLASHING SIGNALS SHALL NOT BE TURNED ON UNTIL THE SIGNAL IS COMPLETELY INSTALLED, INCLUDING FULLY ACTUATED OPERATION (ALL BEACONS AND BATTERIES WIRING SHALL BE OPERATIONAL).
- THE CONTRACTOR SHALL NOTIFY THE BIA-NIP ROAD ENGINEER TWO (2) WORKING DAYS IN ADVANCE OF ANY ANTICIPATED WORK ON SIGNALS AND POWER SERVICES. THE CONTRACTOR SHALL ALSO NOTIFY THE BIA ENGINEER EACH TIME A TRAFFIC SIGNAL CONTROL BOX IS OPENED.
- THE CONTRACTOR IS RESPONSIBLE FOR THE COST OF THE POWER AND MAINTENANCE UNTIL SUCH TIME AS THE SIGNAL IS ACCEPTED FOR MAINTENANCE BY THE BIA.
- ALL SOLAR POWERED FLASHING BEACON SIGNAL ITEMS INCLUDING PERMANENT SIGNS, AND GROUND BOXES/ BATTERY BOX SHALL BE INSTALLED AS SHOWN ON THESE PLANS AND SHALL BE INCLUDED IN THE PRICE BID FOR ITEM 63601-7000 OF FP-14.
- ENSURE HEIGHT OF CONDUIT IS BELOW TOP OF ANCHOR BOLTS.
- SIGN TO BE INCIDENTAL TO ITEM 63601-7000
- CONTRACTOR SHALL SUBMIT SHOP PLANS AND DESIGN DATA FOR THE FOUNDATIONS TO BE USED FOR REVIEW AND APPROVAL BEFORE ORDERING THE MATERIALS.



Pull conductors to remove slack in run between cabinet and ground box. Clamp cable at conduit end in ground box and in cabinet at entry as shown.



114 mm outer dia. cast Aluminum pipe (see note 7)

2.13 m (Min.)

Breakaway Electrical Connectors (See Note 4 and detail)

Breakaway Base Assembly

381 mm

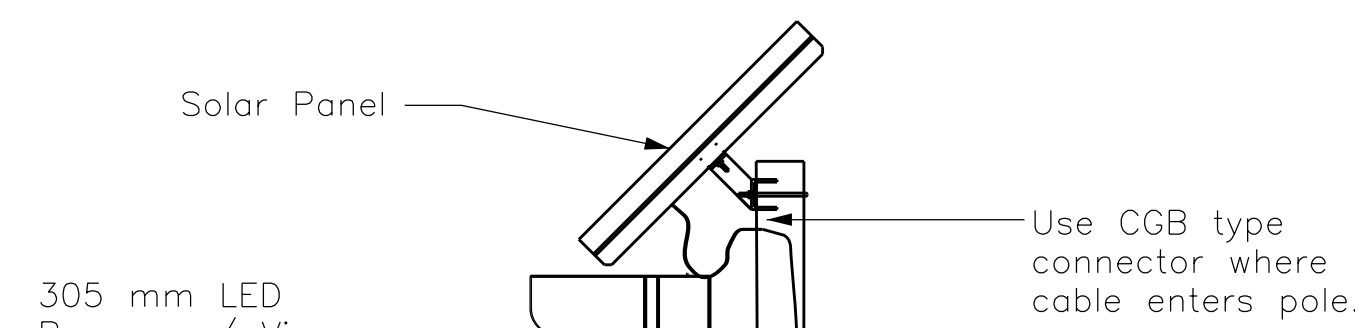
Flush (0,+13 mm)

Drilled Shaft Foundation or Screw-In Type Anchor Foundation (See Note 2 and 15)

457 mm (min.)

Min. 25 mm Schedule 40 PVC

FRONT



Drill pole for wire entry, remove any burrs or rough edges that may cause damage to conductors.

Use CGB type connector where cable enters pole.

Drill pole for wire entry, remove any burrs or rough edges that may cause damage to conductors.

305 mm

305 mm LED Beacon w/ Visor

Hardware to attach 4-Req'd Min. 25 mm X 102 mm Grade 5 Carriage Bolts

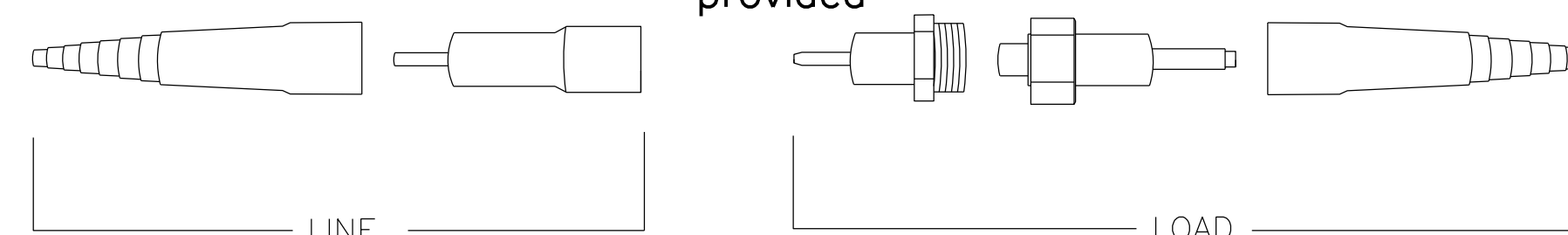
Conduit opening 67 mm Wide (both sides)

203 mm (Sch. 40) Pipe Shaft Dia.

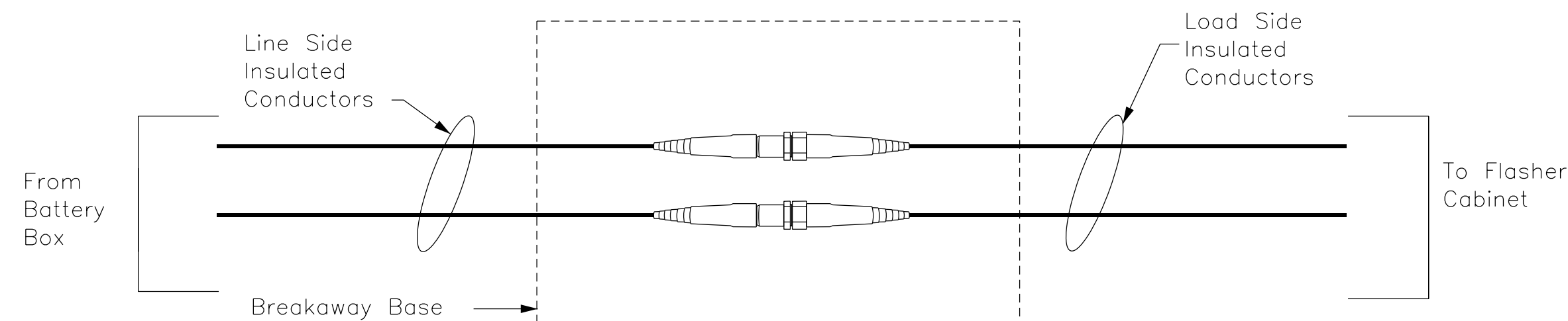
330 mm Dia. Helix (9.5 mm Plate)

SIDE

NOTE: All warranties shall be issued in the name of the BIA NRDOT with TWO complete Flashing Beacon systems provided



NON-FUSED BREAKAWAY ELECTRICAL CONNECTORS EXPLODED VIEW



NON-FUSED BREAKAWAY ELECTRICAL CONNECTORS

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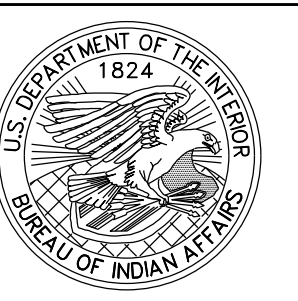
SOLAR LED SCHOOL
ZONE FLASHING BEACON DETAILS

DRAWN BY: NRDOT DATE: 11/19/2014

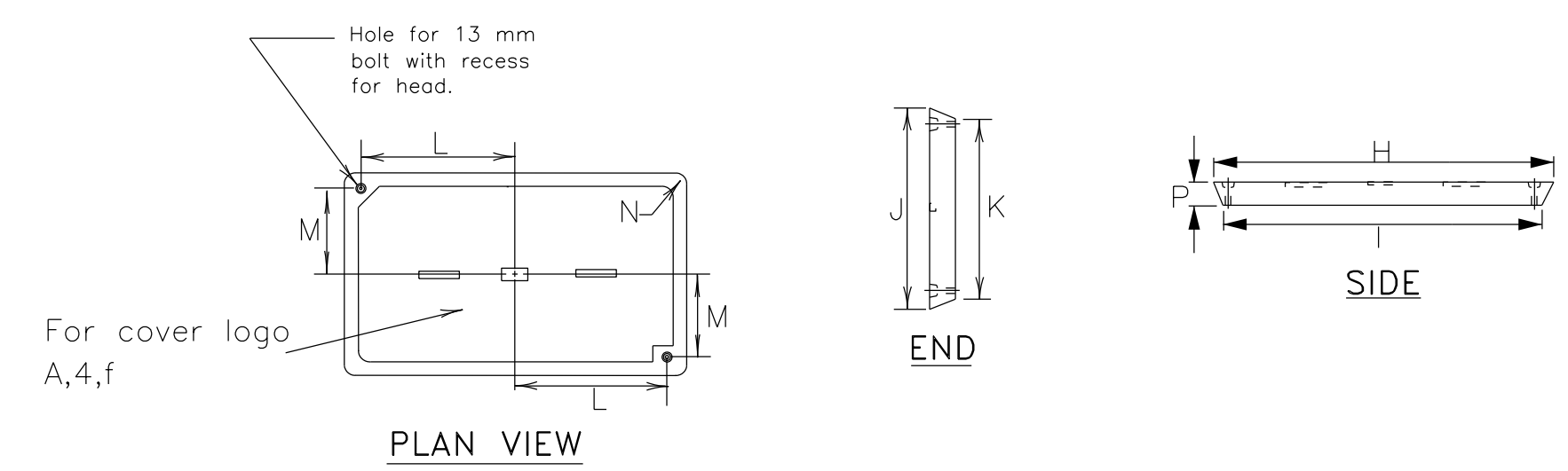
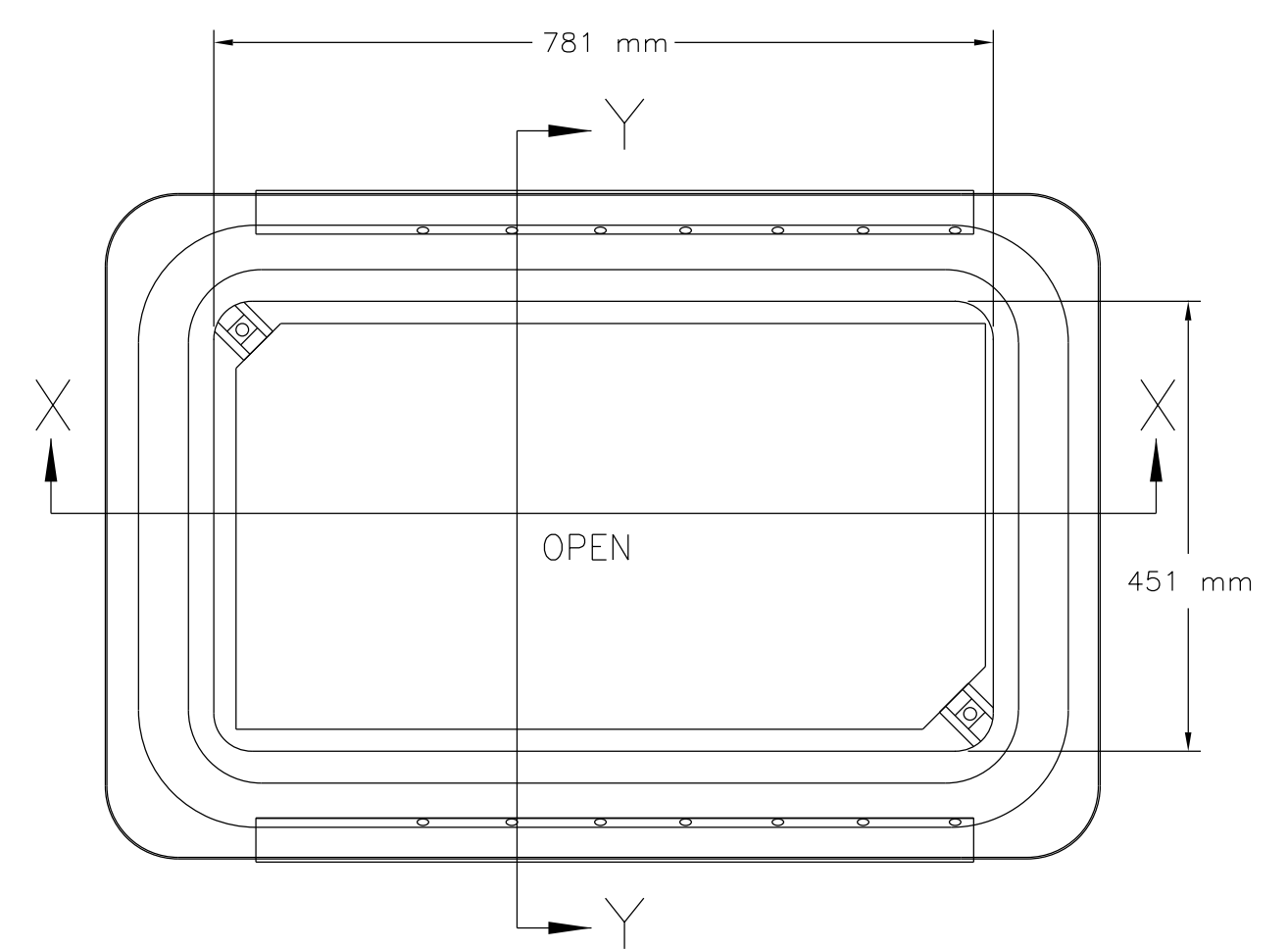
DESIGNED BY: NRDOT DATE: 11/19/2014

REVISED: 4/16/2020 BY: Harold Riley

FILES



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N101	N101(1)2&4	18	33



GROUND BOX COVER DIMENSIONS								
BOX SIZE	H	I	J	K	L	M	N	P
Battery box	775 mm	768 mm	444 mm	438 mm	336 mm	171 mm	35 mm	51 mm

GENERAL NOTES

MATERIALS

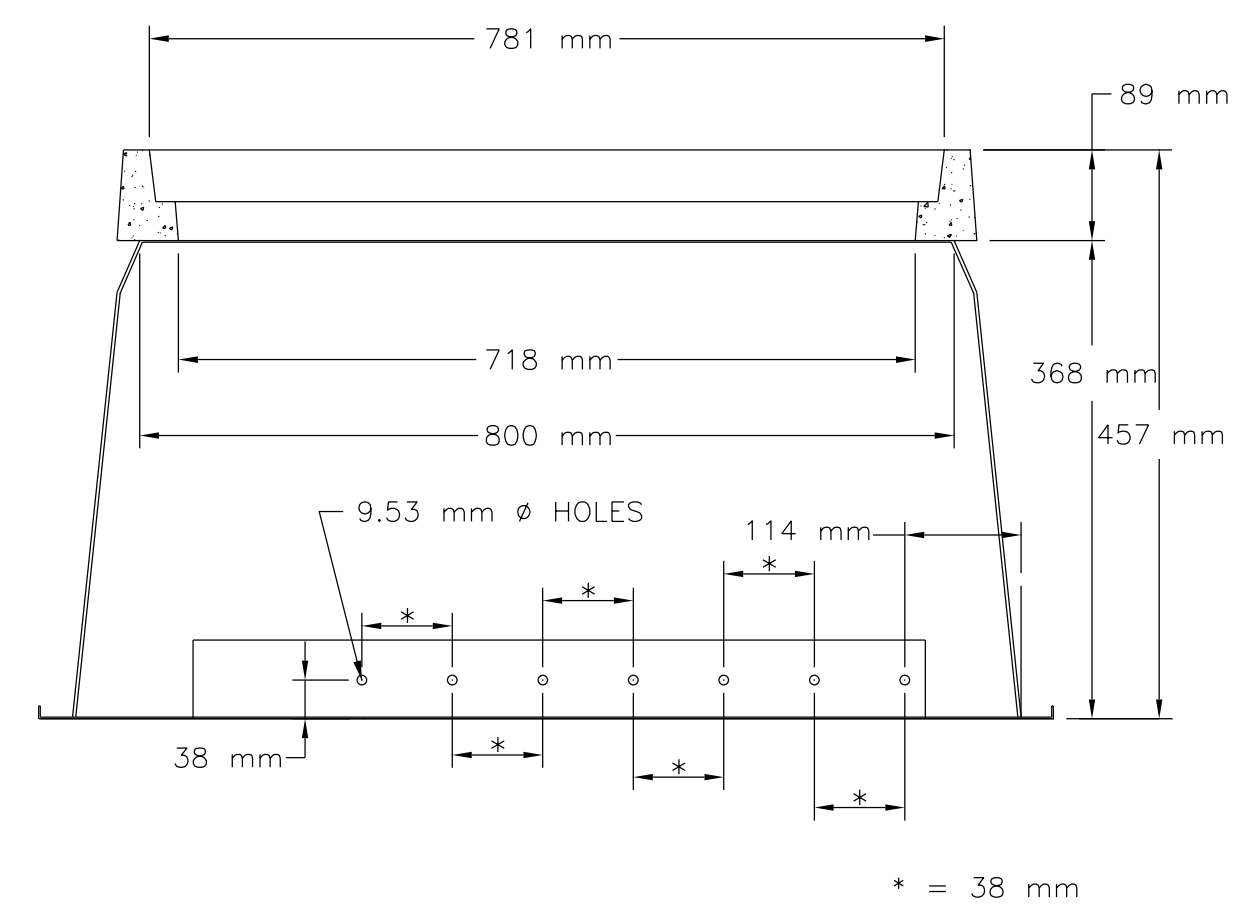
- BATTERY/CONTROLLER BOX SHALL BE CONSTRUCTED SUCH THAT IT WILL BE POSSIBLE TO INSTALL AND ACCOMMODATE UP TO 2- 12V or 24V BATTERIES AND CONTROLLER.
- BATTERY/CONTROLLER BOX AND COVER SHALL BE PERMANENTLY MARKED EITHER BY IMPRESS OR BY PERMANENT INK, WITH MANUFACTURER'S MODEL NUMBER AND MANUFACTURER'S NAME OR LOGO.
- ALL HARDWARE SHALL BE BRASS OR STAINLESS STEEL.
- LID COVER SHALL BE LOCKABLE WITH LOCK MECHANISM & KEYS.
- BATTERY /CONTROLLER SHALL MEET THE FOLLOWING REQUIREMENTS:

- THE CONTRACTOR CAN PROPOSE THE TYPE OF BOX WITH LID CLOSURE MECHANISM THAT MEETS EITHER OF THE ONES ABOVE OR BETTER FOR REVIEW AND APPROVAL.
- THE CONTRACTOR SHALL SUBMIT HIS PROPOSED DESIGN FOR REVIEW. DO NOT START FABRICATION UNTIL THE PROPOSED DESIGN IS APPROVED IN WRITING.
- THE BOX DIMENSIONS SHALL BE SUCH THAT TWO 12V-24V BATTERIES CAN FIT WITH 1-2 INCH SPACING ALL ROUND IN ONE COMPARTMENT AND THE CONTROLLER IN THE OTHER COMPARTMENT WITH THE SAME CLEARANCES.
- THE DETAILS PROVIDED ON THIS SHEET ARE ONLY A SAMPLE OF THE TYPE BATTERY/CONTROLLER BOX NEEDED AND FOR THE CONTRACTOR TO HAVE AN IDEA OF WHAT THE GOVERNMENT WANTS TO PROTECT THE SIGNAL LIGHTS ELECTRICAL SYSTEM. THE CONTRACTOR'S PROPOSED SYSTEM MAY VARY FROM WHAT IS PROVIDED SUBJECT TO THE REQUIREMENTS HEREIN.

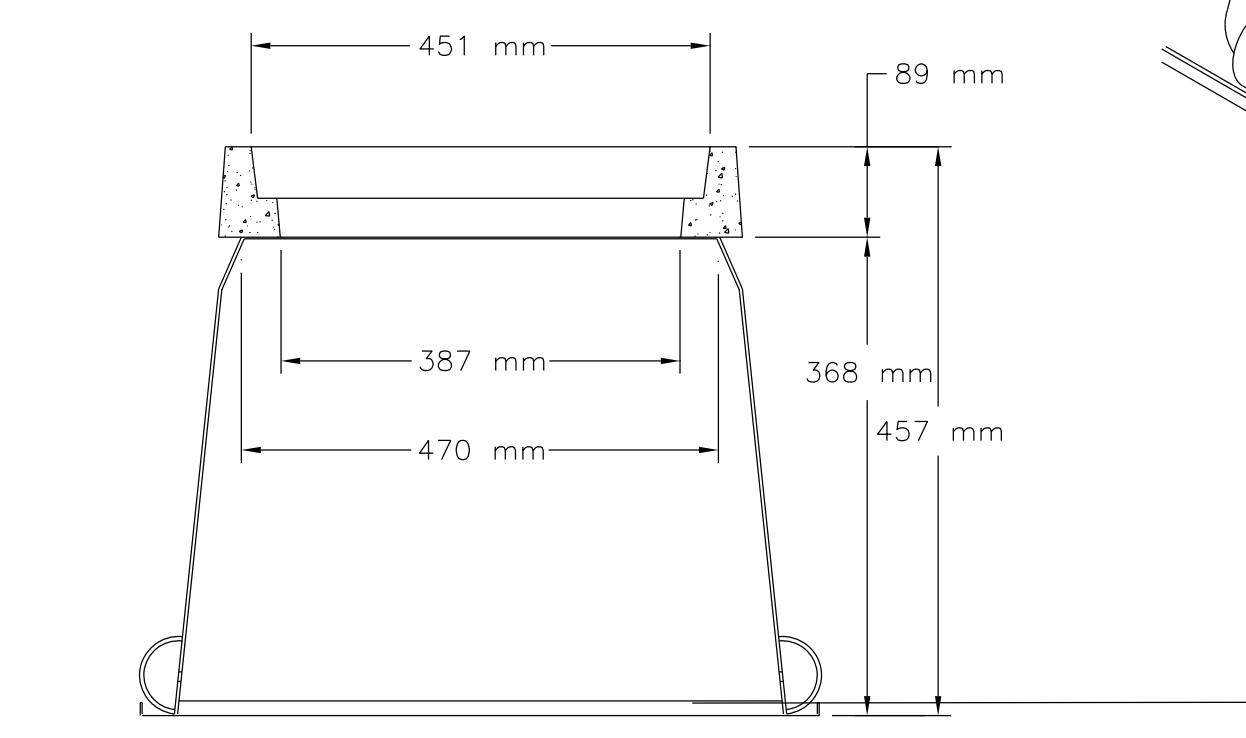
CONSTRUCTION METHODS:

- BATTERY/CONTROLLER BOX SHALL BE SET ON A 228 mm (MINIMUM) BED GRANULAR AGGREGATE PER 703.03(6). GRAVEL SHALL BE IN PLACE PRIOR TO SETTING BOX, AND CONDUITS SHALL BE CAPPED. ANY GRAVEL OR DIRT IN CONDUIT SHALL BE REMOVED.
 - MANUFACTURED FROM POLYMER CONCRETE REINFORCED WITH CONTINUOUS STRANDS OF WOVEN OR STITCHED BOROSILICATE FIBERGLASS CLOTH. THE POLYMER CONCRETE SHALL BE MADE FROM CATALYZED POLYESTER RESIN, SAND AND AGGREGATE, AND SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 75.84 MPa. POLYMER CONCRETE CONTAINING CHOPPED FIBERGLASS OR FIBERGLASS REINFORCED AND WILL FIT FLUSH WITH THE SIDEWALK; OR
 - MANUFACTURED FROM THICK HIGH IMPACT PLASTIC SUCH AS THOSE USED IN THE MARINE INDUSTRY THAT WILL FIT FLUSH WITH THE SIDEWALK, BE UV RESISTANT, WATER TIGHT, AND HAVING LOCK & KEYS.
 - ALUMINUM BOX THAT CAN CARRY THE LOADING, WITH LOCKABLE LID WITH KEYS FITTING FLUSH WITH THE SIDEWALK.

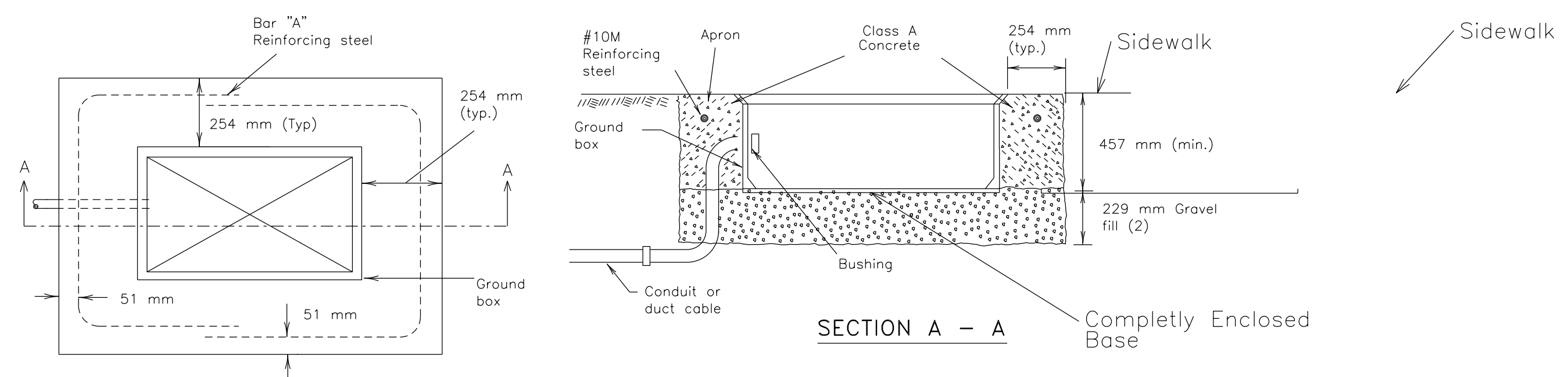
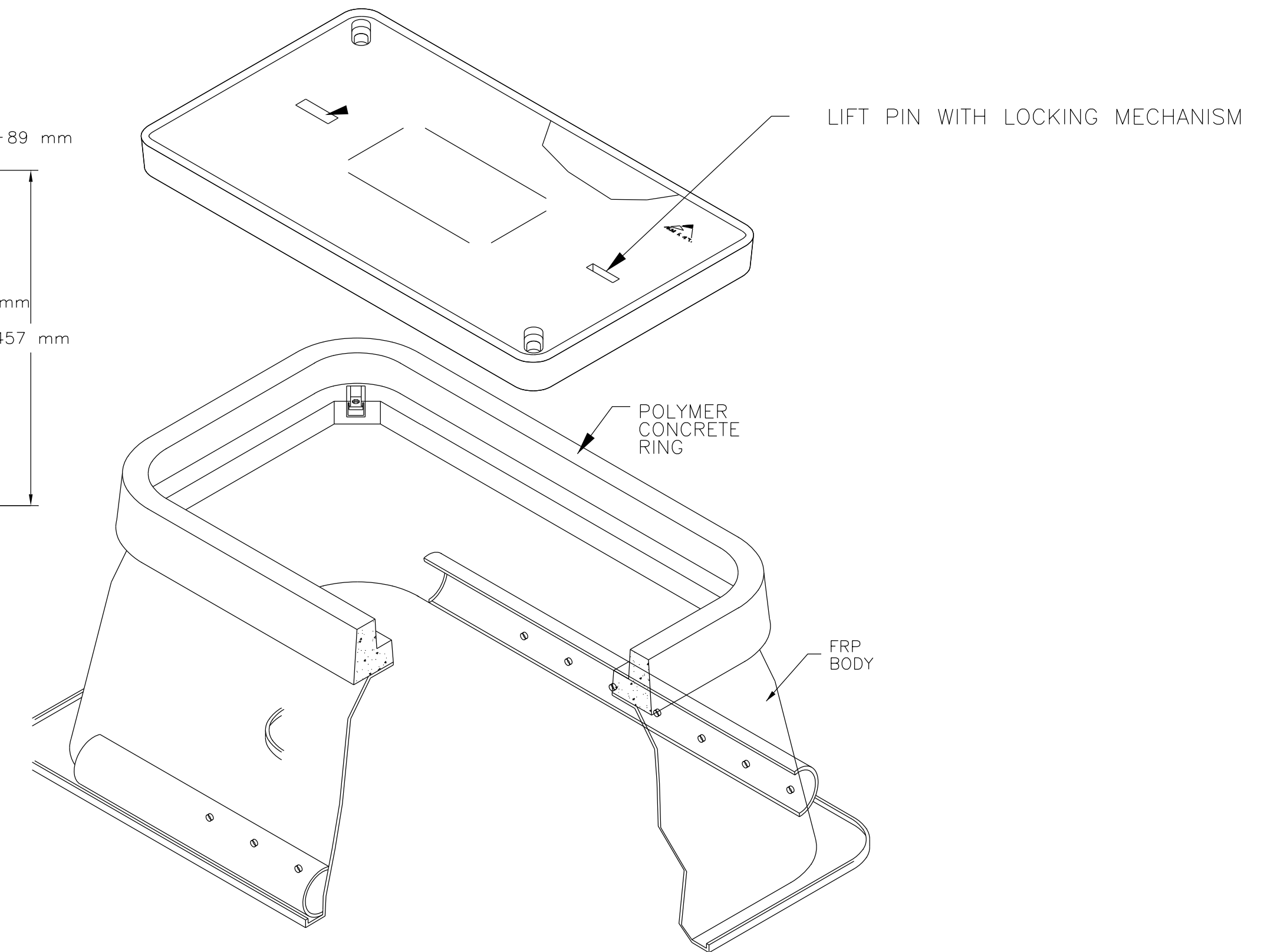
- BATTERY/CONTROLLER BOX INCLUDING ANY CONCRETE AND REINFORCING STEEL REQUIRED SHALL NOT BE PAID FOR DIRECTLY BUT SHALL BE INCIDENTAL TO THE COMPLETE PEDESTRAIN SIGNAL LIGHT SYSTEM UNDER BID ITEM 63601-7000.
- ANY HOLES TO BE CUT INTO THE SIDEWALL OF BATTERY/CONTROLLER BOX SHALL BE ACCOMPLISHED AT THE FABRICATION SHOP AND MUST BE DONE SUCH THAT THE BOX HOLES WITH CABLE BE WATER TIGHT DURING INSTALLATION.



SECTION X-X



SECTION Y-Y



PLAN VIEW APRON FOR GROUND BOXES

- Place gravel "under" the box, not "in" the box. Gravel should not encroach on the interior volume of the box.
- Install bushing on the upper end of all bells.
- All conduits shall be installed in a neat and workmanlike manner.

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**ELECTRICAL GROUND
 BOX DETAILS**

DRAWN BY: NRDOT	DATE: 1/1/0001
DESIGNED BY: NRDOT	DATE: 1/1/0001
REVISED: 07/23/20	BY: HRiley

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N101	N101(1)2&4	19	33

Square Tube Selection; Single post – 2.80 mm thickness

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

Square Tube Selection; Double post – 2.80 mm thickness

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

Square Tube Selection; Triple post – 2.80 mm thickness

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

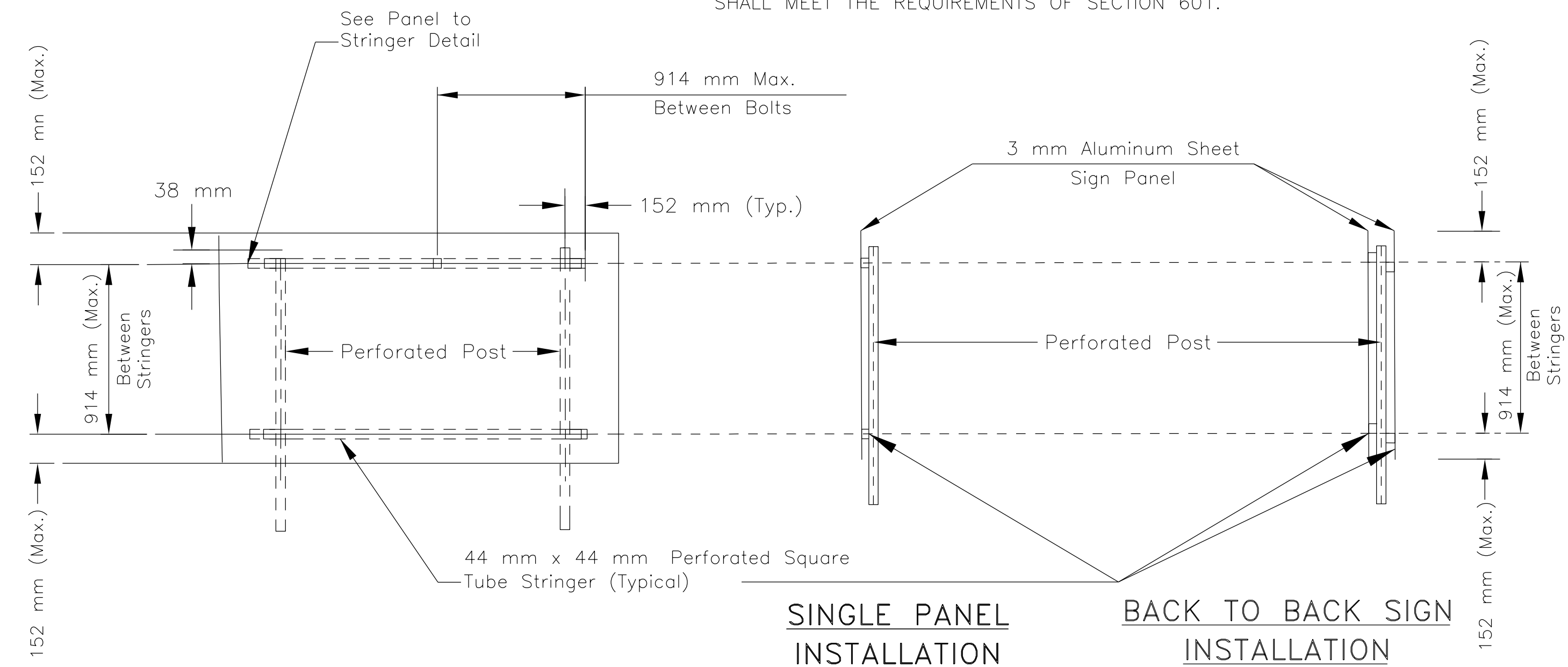
Guide Sign Post Dimensions

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

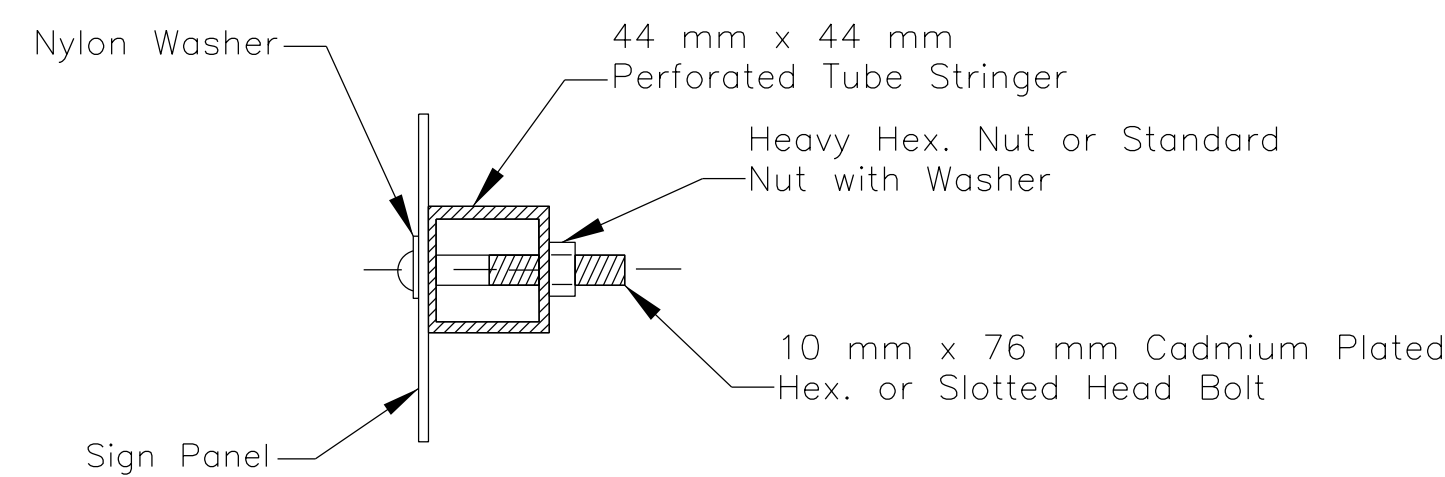
Panel Width	914 mm	1.22 m	1.52 m	1.83 m	2.13 m	2.44 m	2.74 m	3.05 m
two posts spacing (A)	559 mm	711 mm	914 mm	1.12 m	1.27 m	1.47 m	1.63 m	1.83 m
bolts to panel (per stringer)	-	-	3	3	3	3	4	4
length of each stringer	-	-	1.22 m	1.42 m	1.57 m	1.78 m	1.93 m	2.13 m
two posts spacing (B)	-	-	533 mm	635 mm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

GENERAL NOTES:

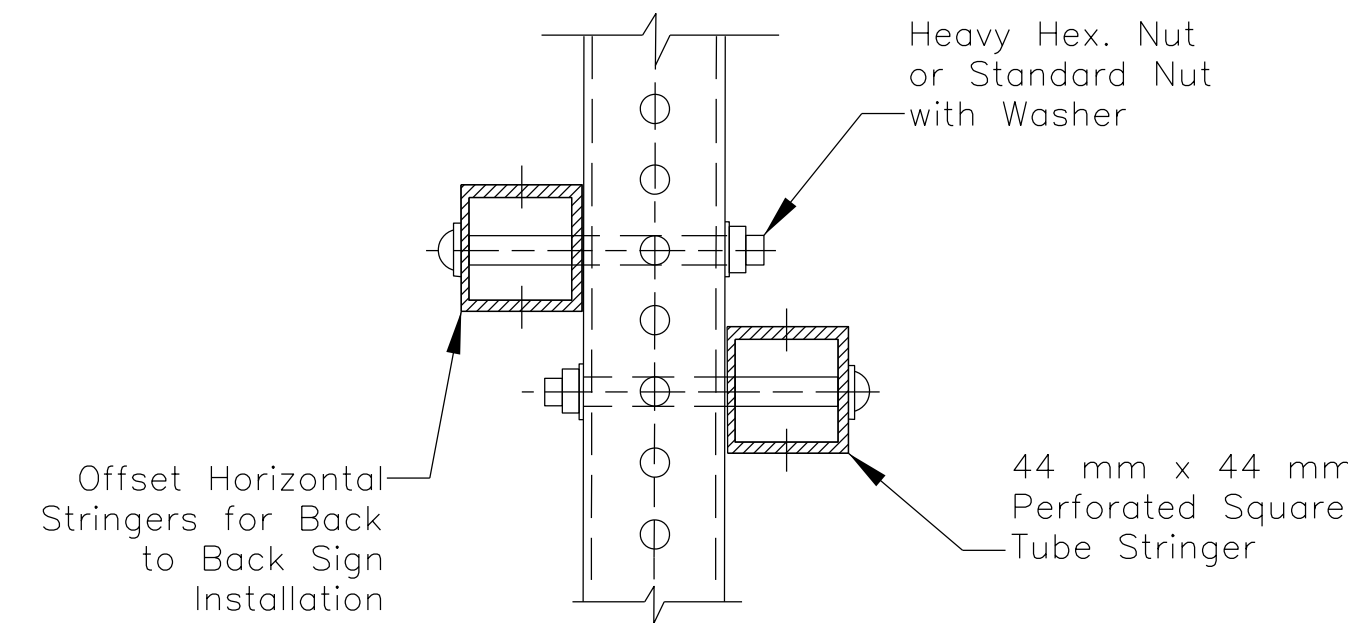
1. THE CONTRACTOR SHALL BE REQUIRED TO ADJUST THE LENGTH OF SIGN SUPPORT POSTS. THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE FOR THE APPROPRIATE BID ITEMS SHOWN IN THE BID SCHEDULE.
2. SIGNS GREATER THAN 762 mm IN WIDTH SHALL BE MOUNTED ON TWO OR MORE POSTS.
3. SIGN POST CONCRETE FOUNDATION SHALL BE USED IN LOOSE FINE GRAVITY SOILS THAT ARE HARD TO COMPACT AS DIRECTED BY THE COR. THE CONCRETE SHALL MEET THE REQUIREMENTS OF SECTION 601.



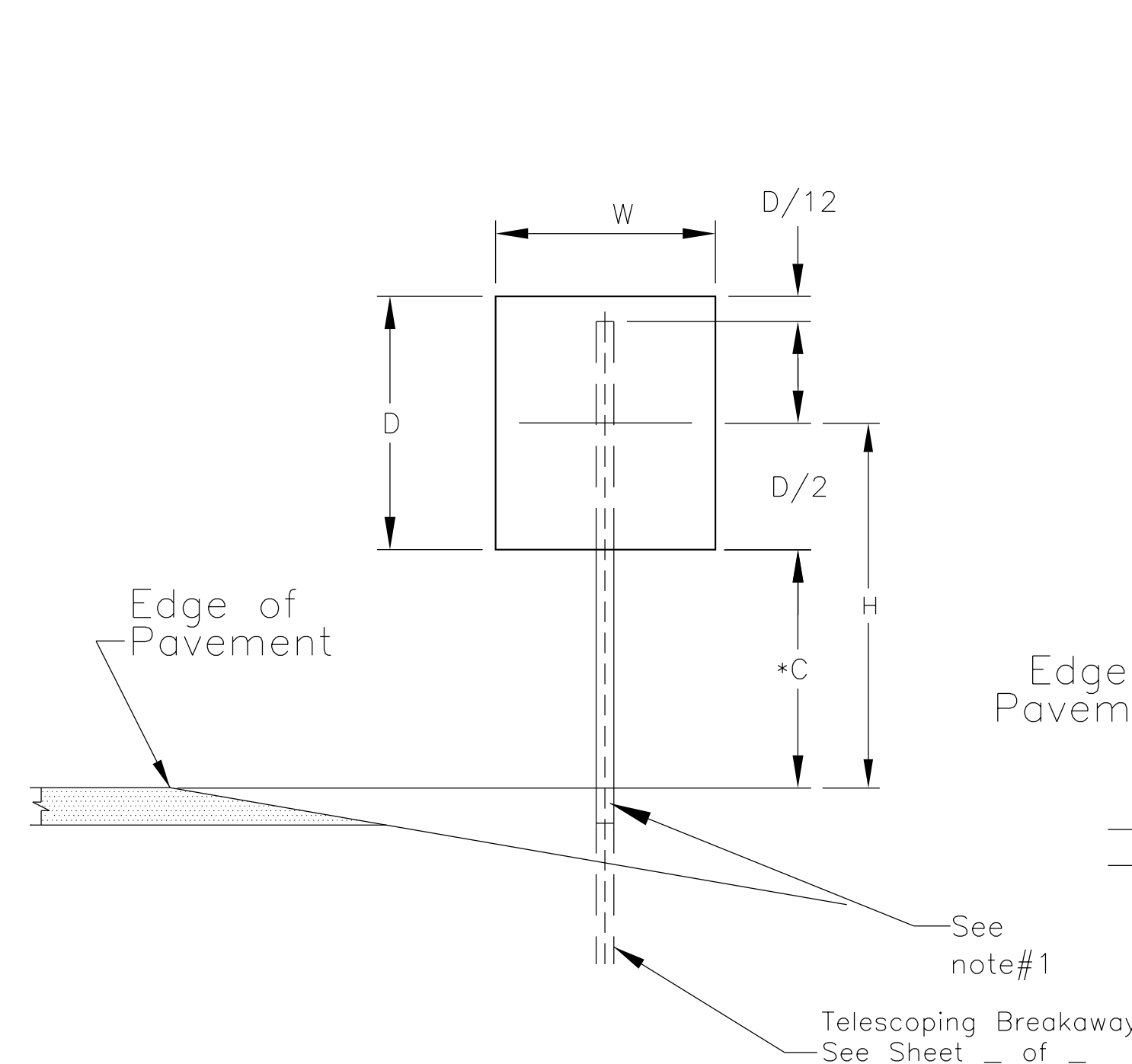
STRINGER DETAILS (FOR GUIDE SIGNS UP TO AND INCLUDING 3.05 m WIDE)



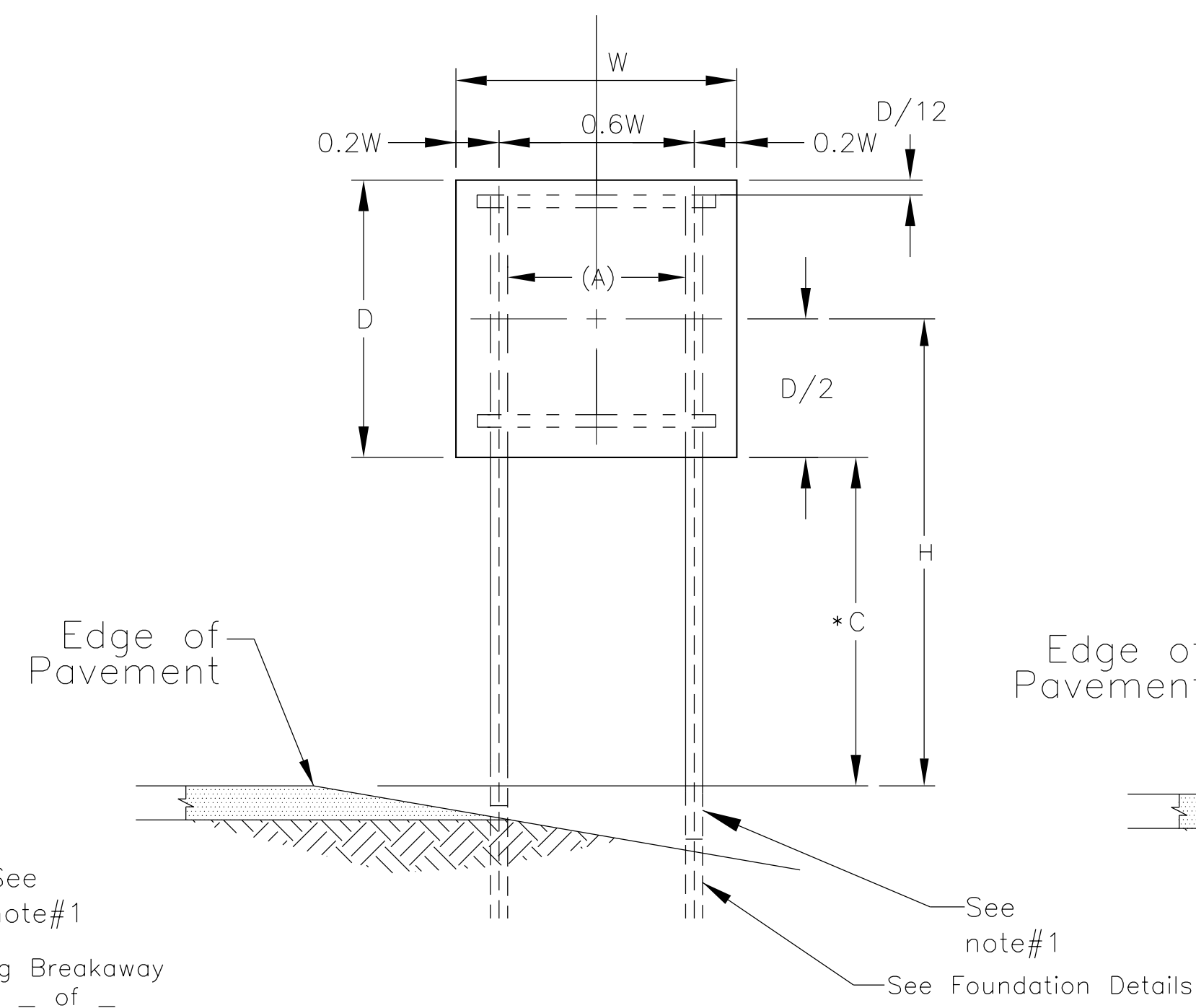
PANEL TO STRINGER OR POST



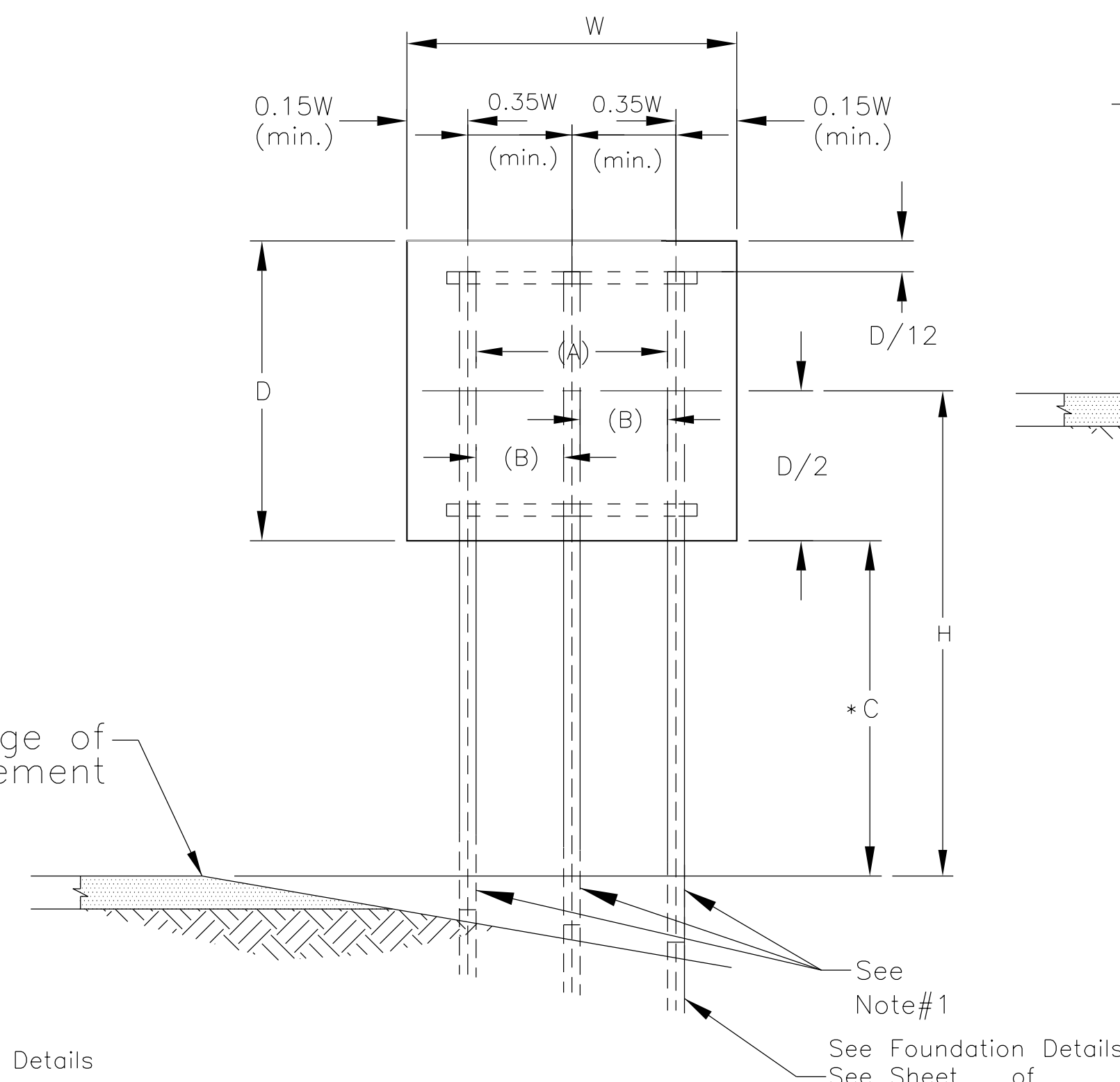
STRINGER TO POST



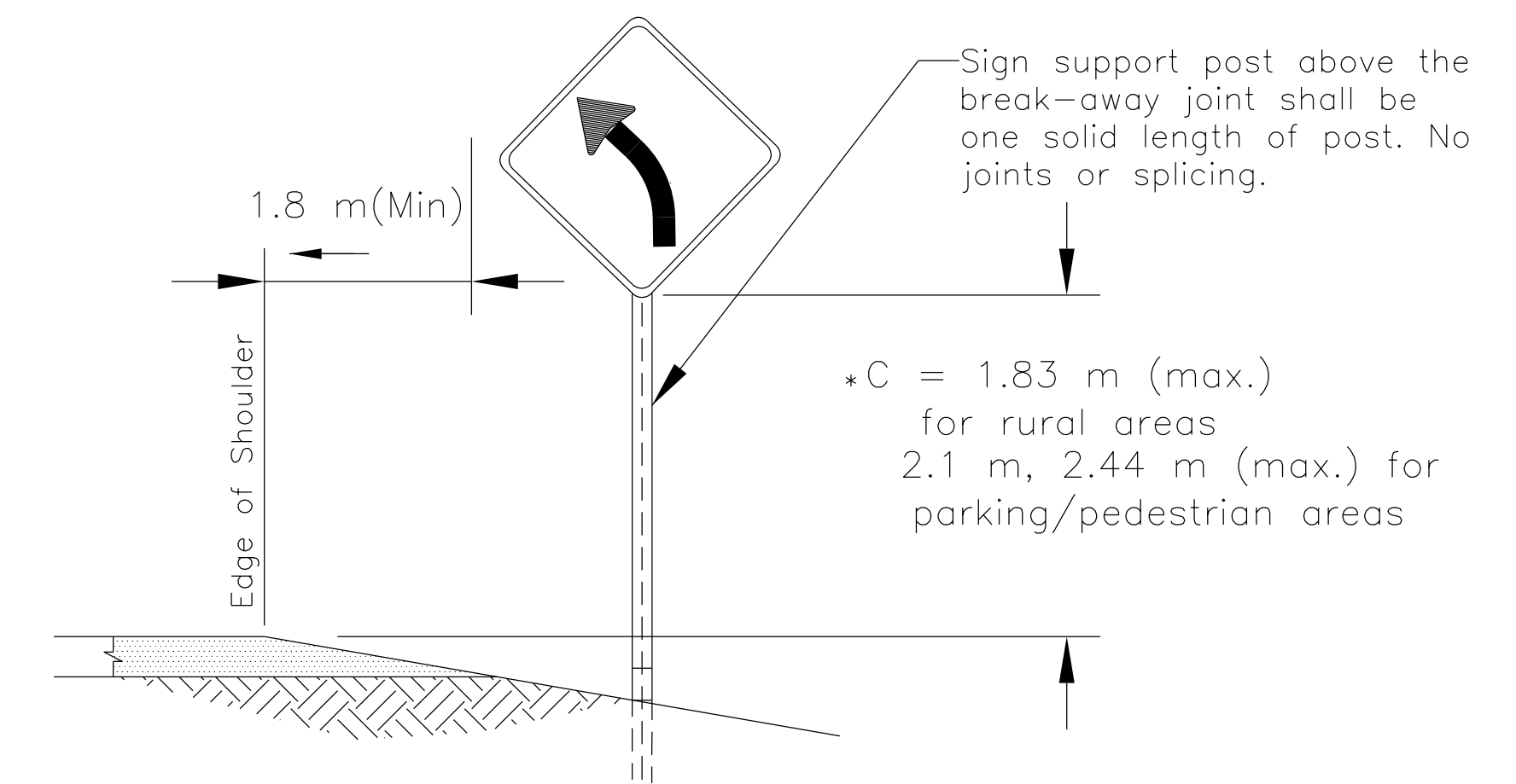
SINGLE POST SIZE (typ.)



DOUBLE POST SIZE (typ.)



THREE POST SIZE (typ.)



TYPICAL ROADSIDE SIGN LOCATION

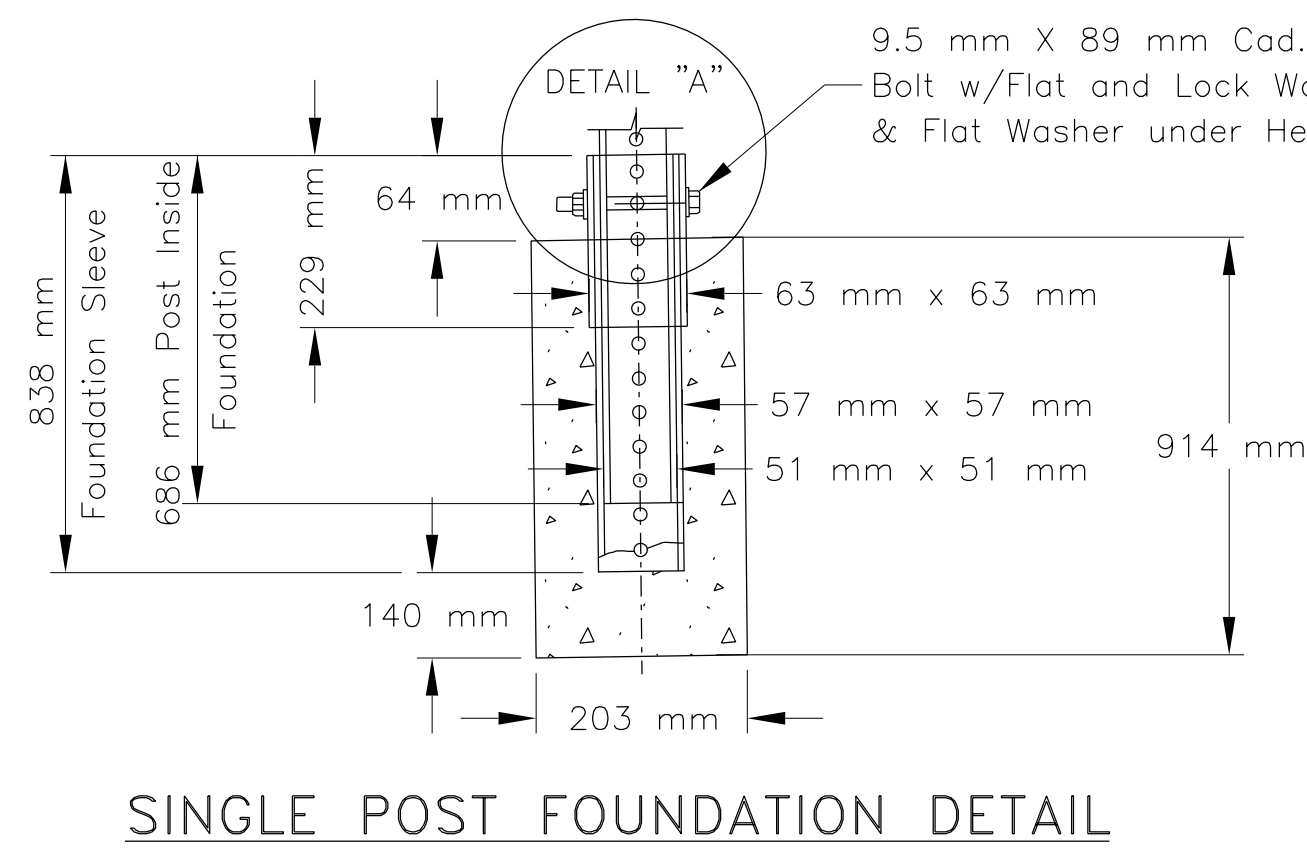
UNITED STATES
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SQUARE TUBE POST SELECTION AND SIGN MOUNTING DETAILS

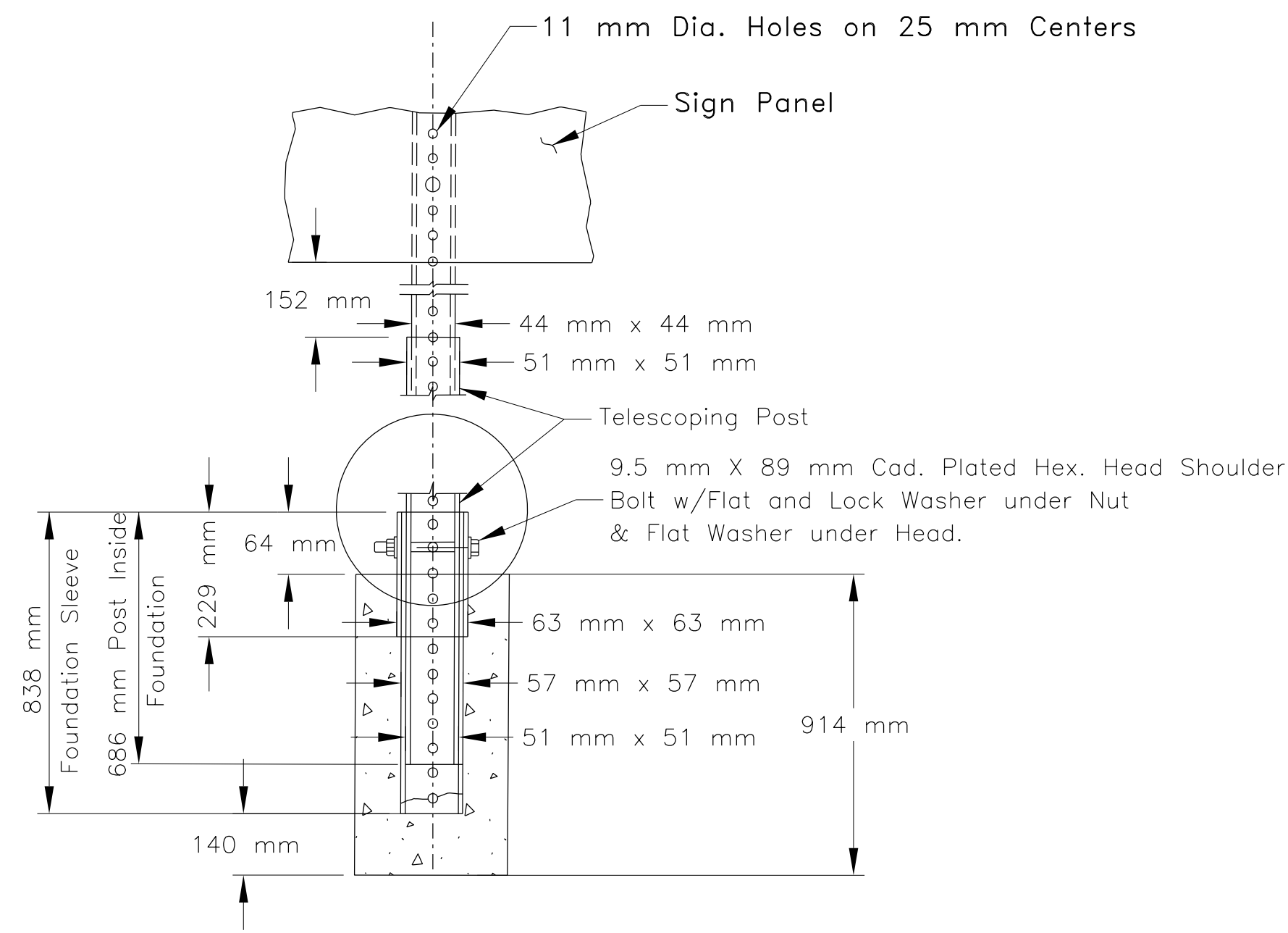
DRAWN BY: NRDOT	DATE: 7/29/2014
DESIGNED BY: NRDOT	DATE: 7/29/2014
REVISED: 12/12/2014	BY: Peterson.Yazzie
Square Tube Post Selection	



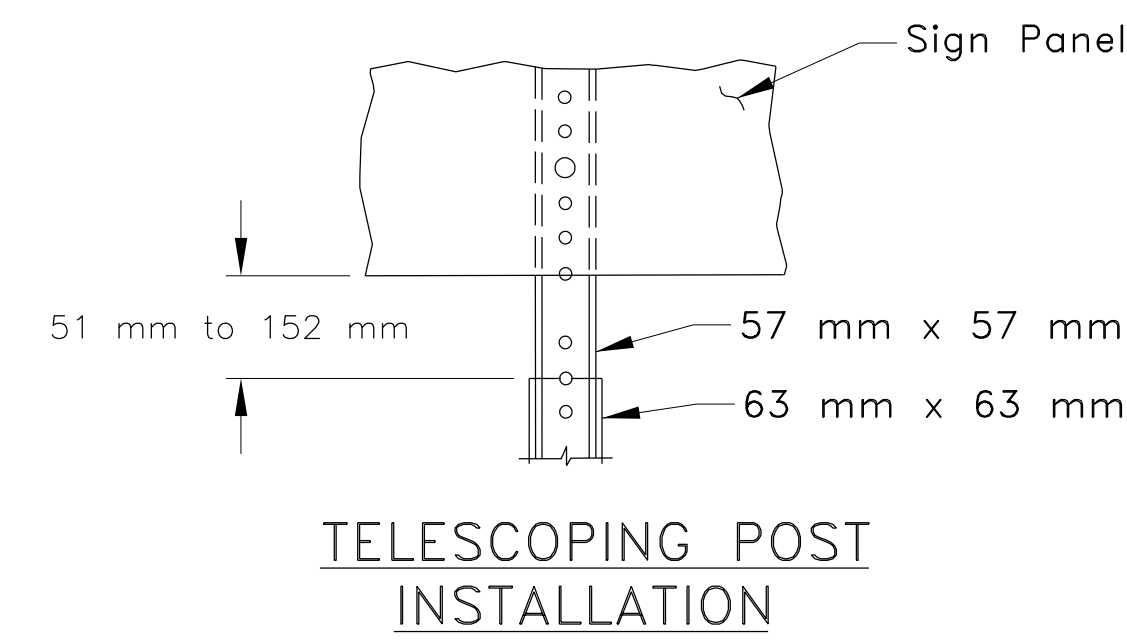
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N101	N101(1)2&4	20	33



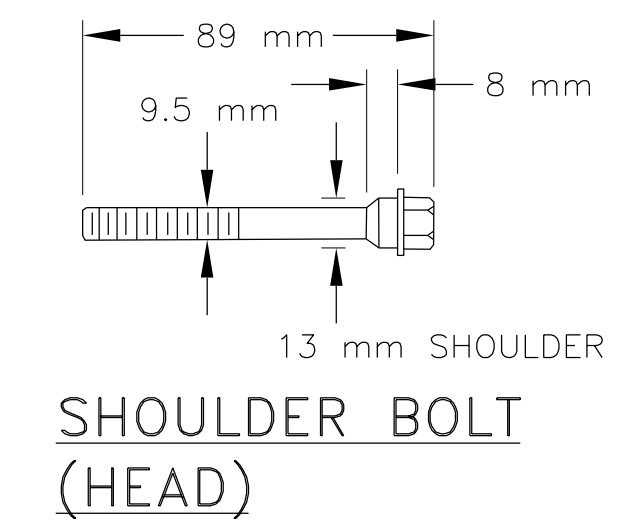
SINGLE POST FOUNDATION DETAIL



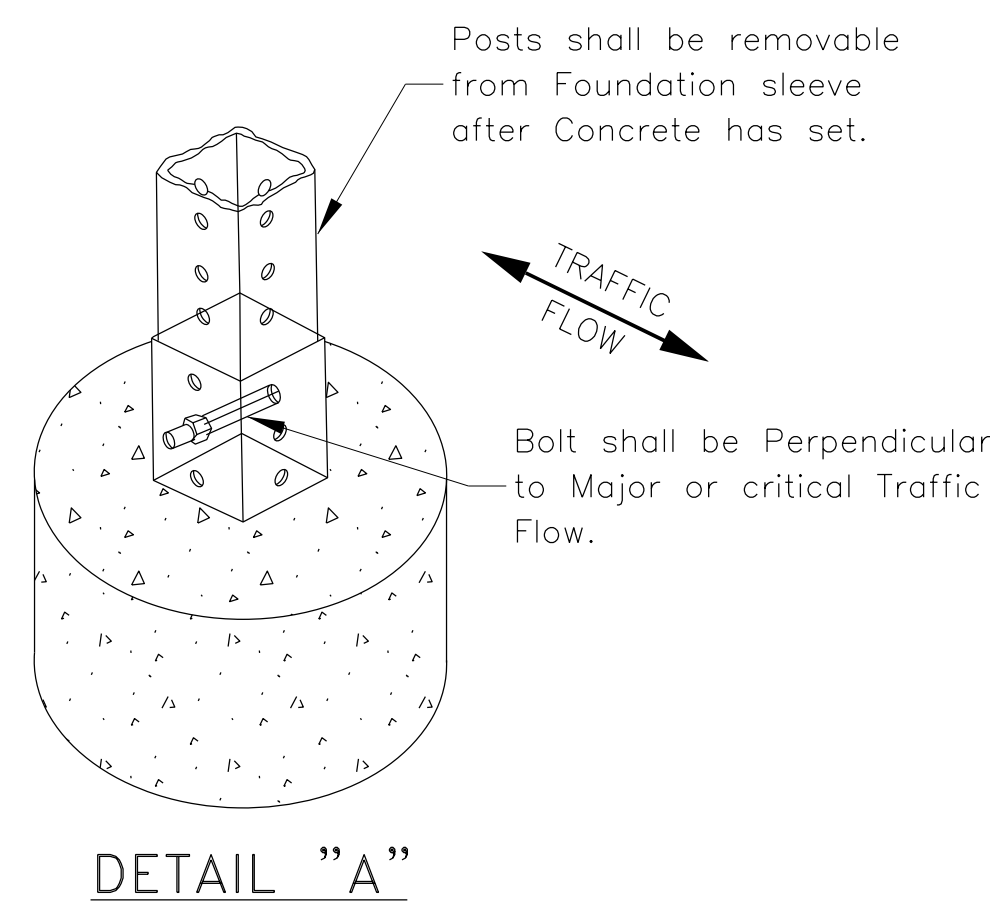
TELESCOPING POST DETAIL



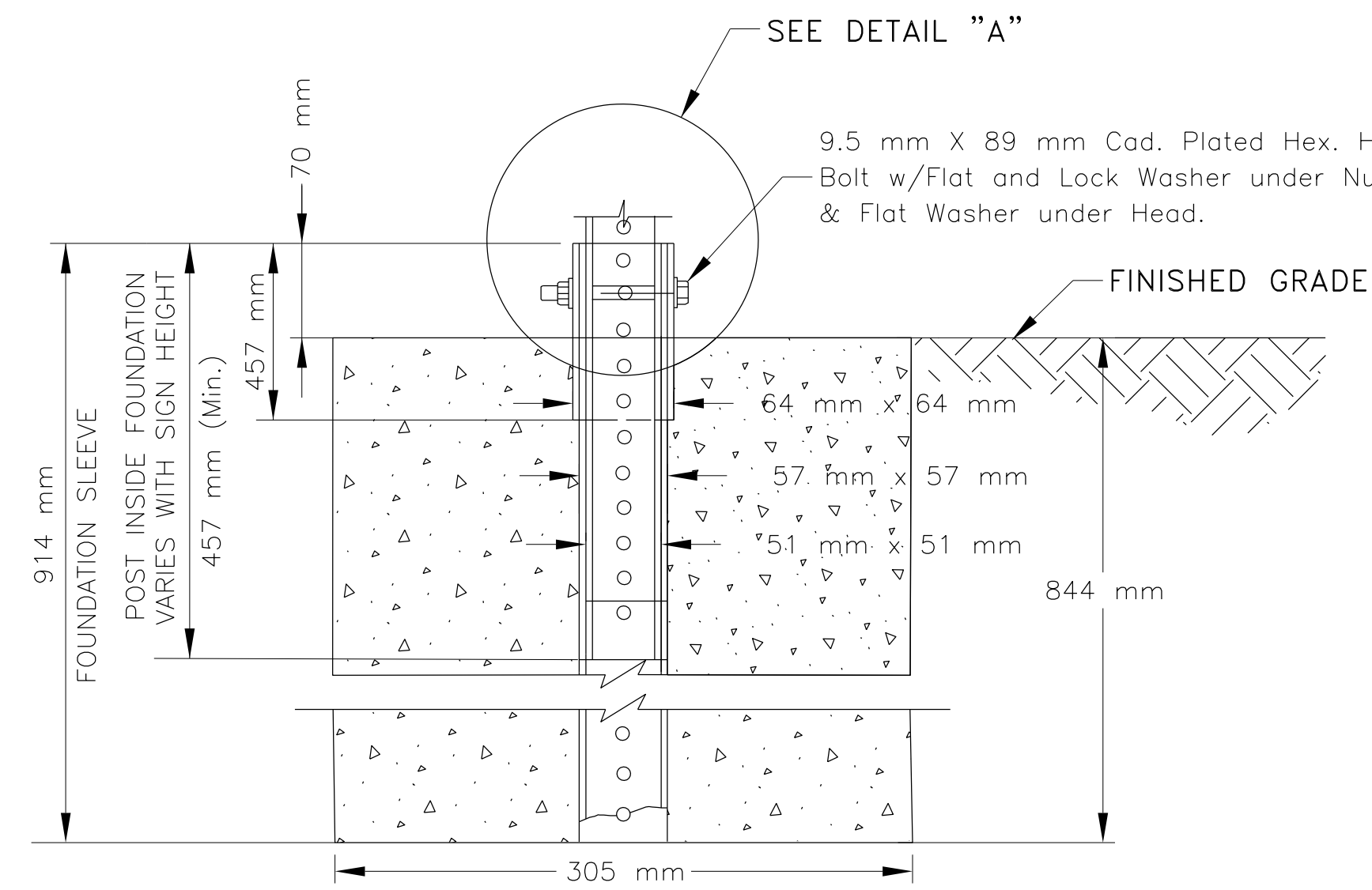
TELESCOPING POST INSTALLATION



SHOULDER BOLT (HEAD)

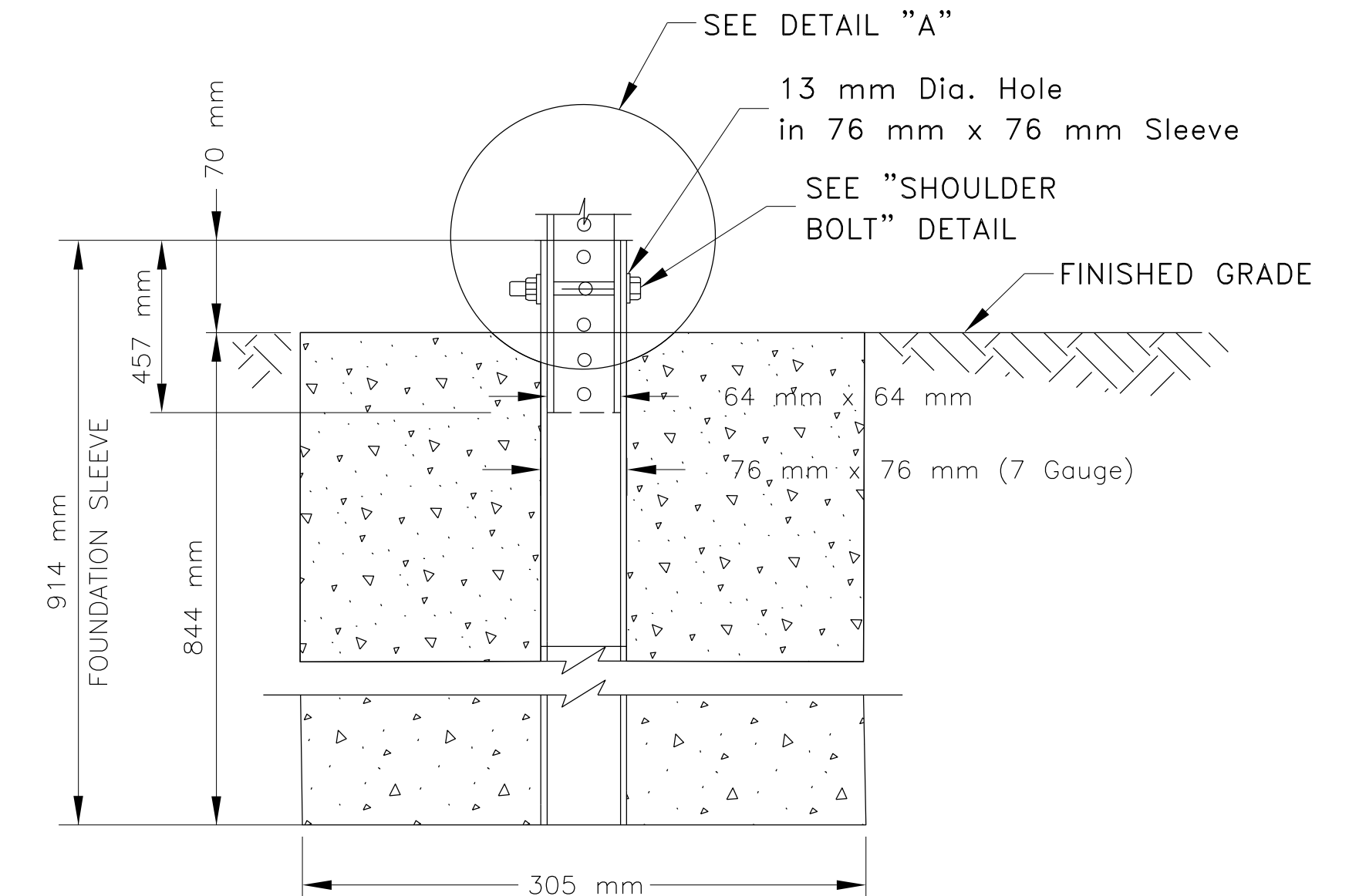


DETAIL "A"

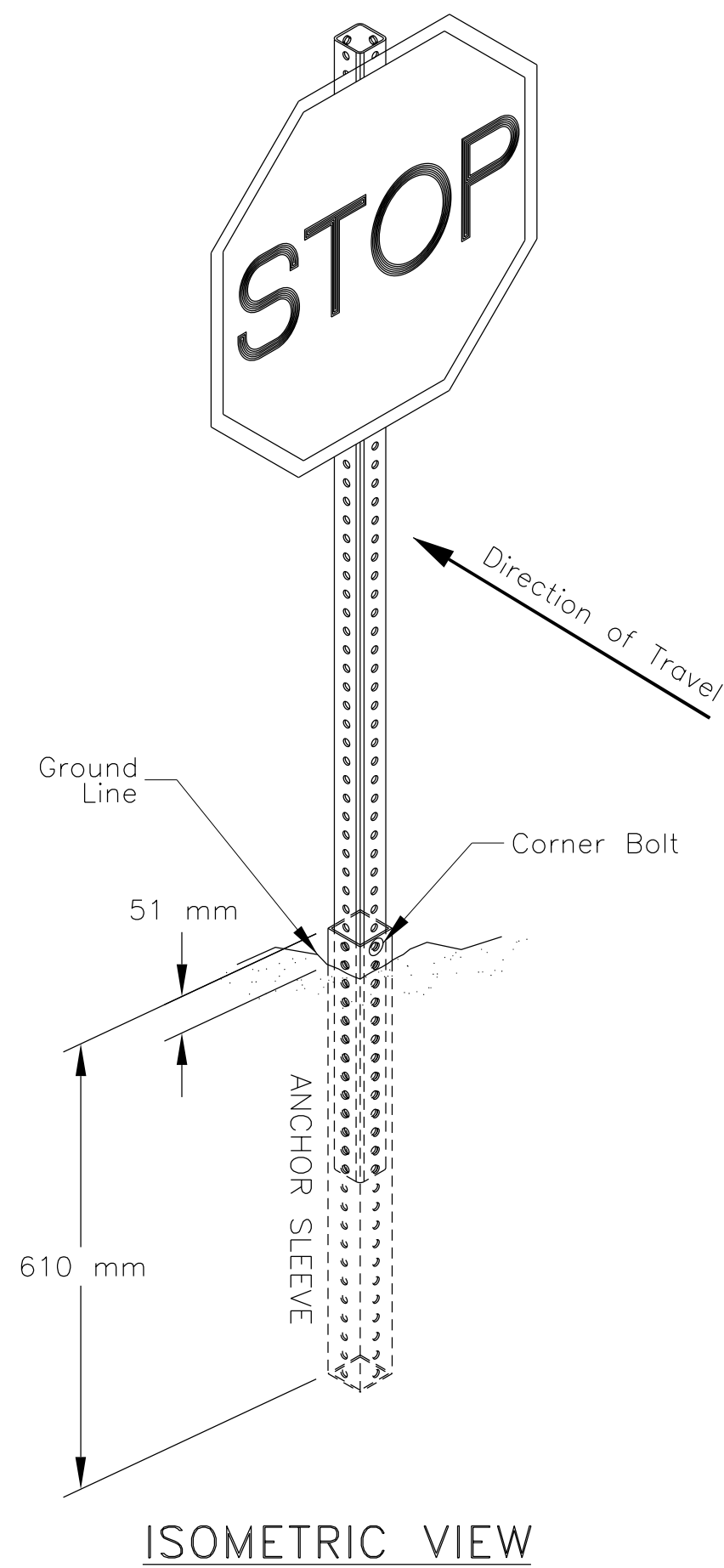


51 mm SINGLE POST CONCRETE FOUNDATION DETAIL (IN WEAK SOILS)

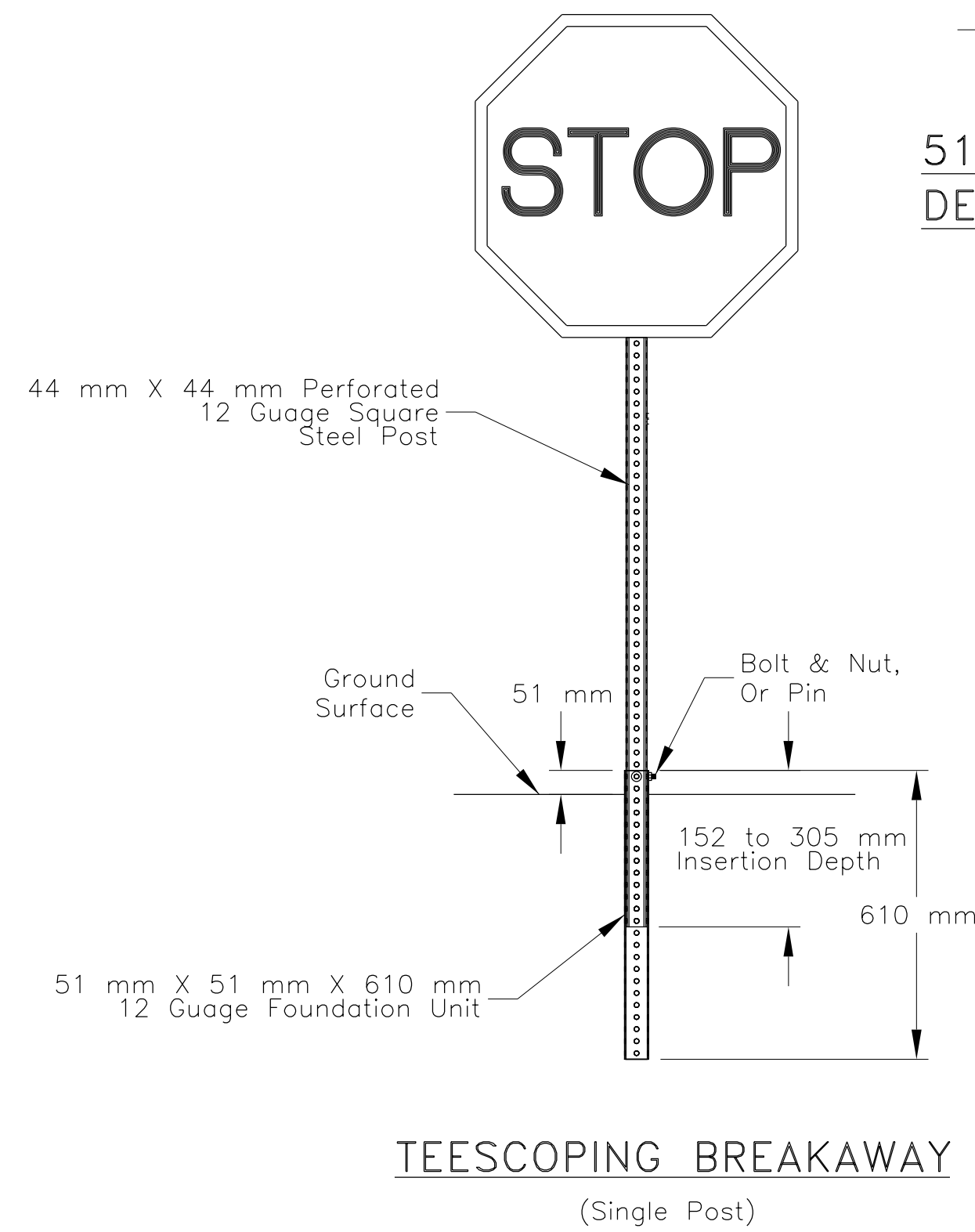
See Gen. Notes Sheet 19 of 33



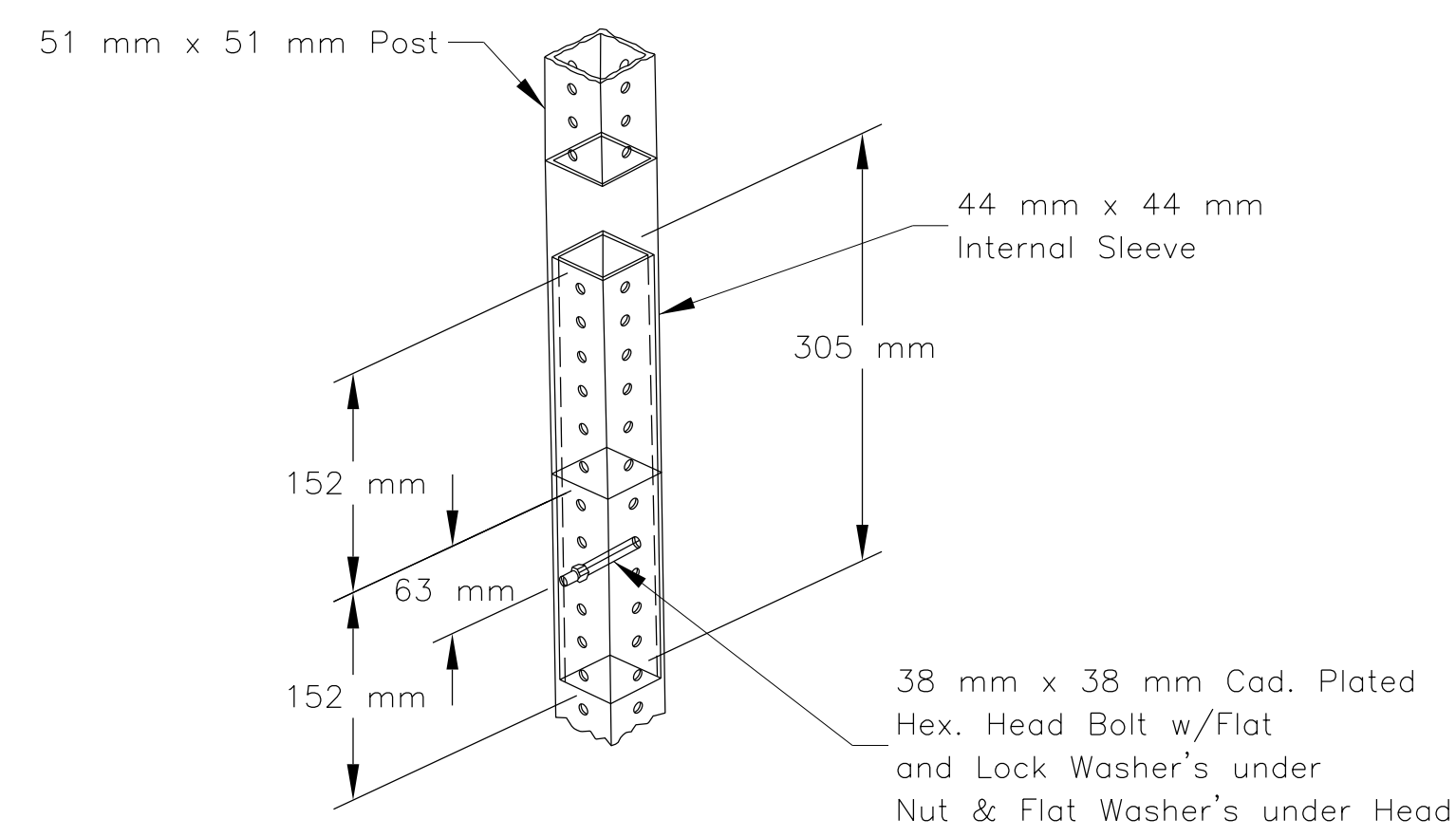
64 mm SINGLE POST CONCRETE FOUNDATION DETAIL (IN WEAK SOILS)



ISOMETRIC VIEW



TELESCOPING BREAKAWAY (Single Post)

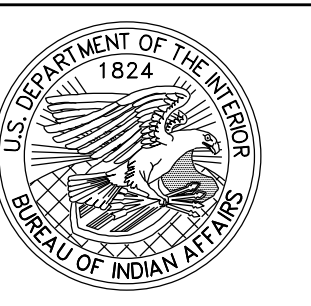


SINGLE POST PERMISSIBLE FIELD SPLICE (Not allowed on Telescoping Post)

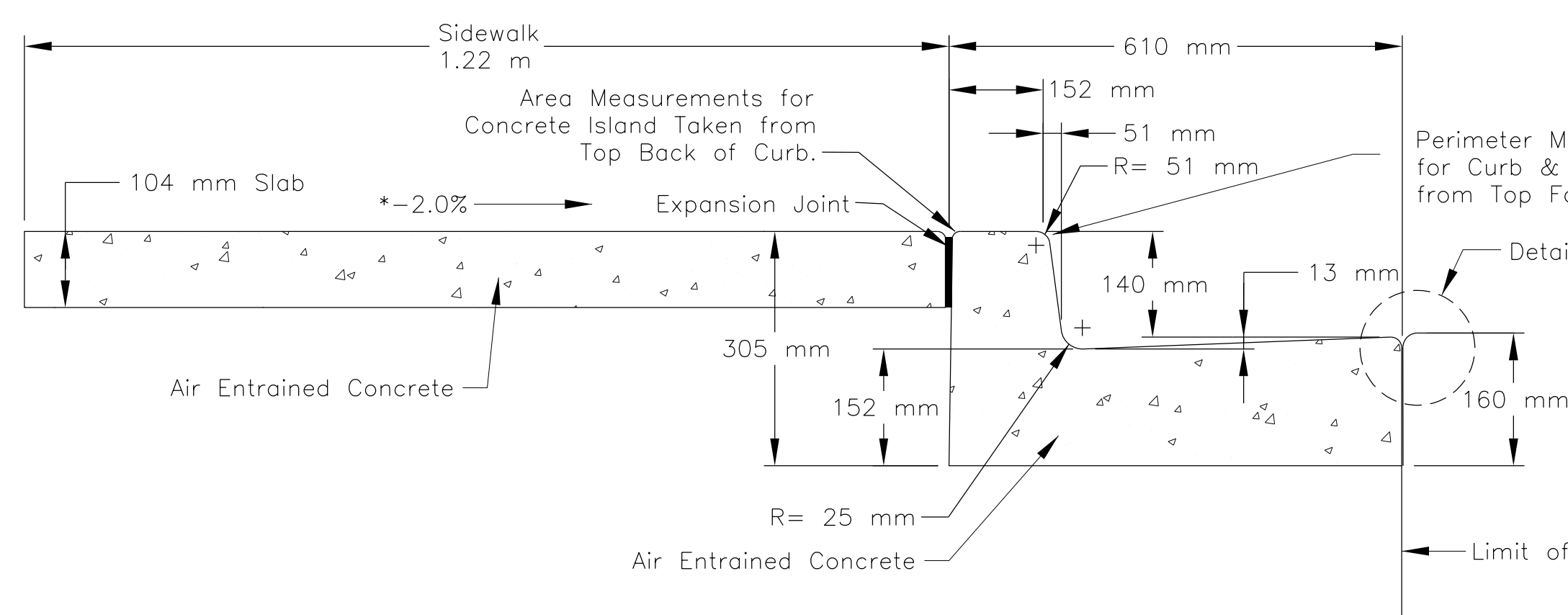
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POST SELECTION AND
SIGN MOUNTING DETAILS

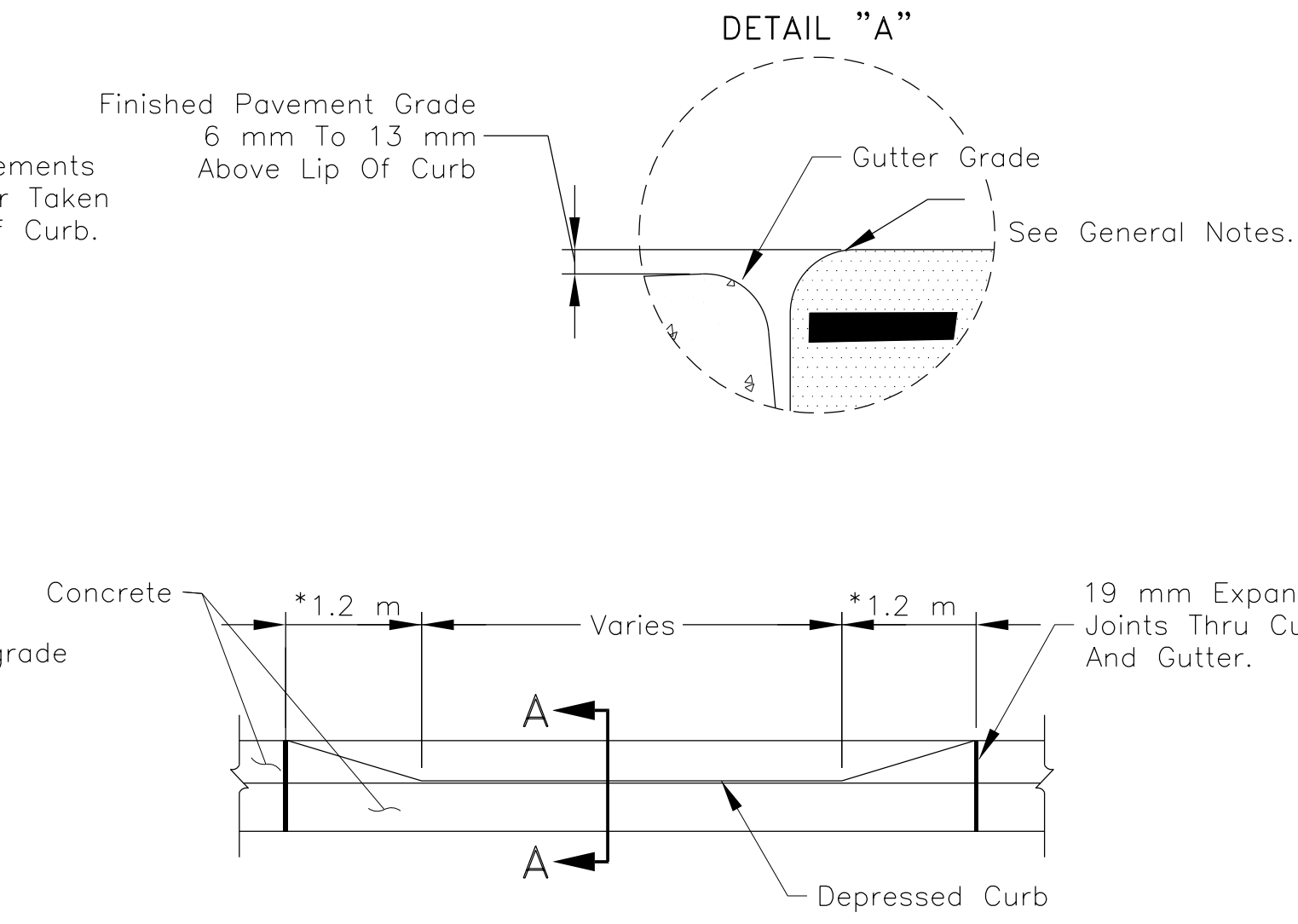
DRAWN BY: NRDOT DATE: 7/29/2014
DESIGNED BY: NRDOT DATE: 7/29/2014
REVISED: 4/16/2020 BY: HRiley
FILES\$



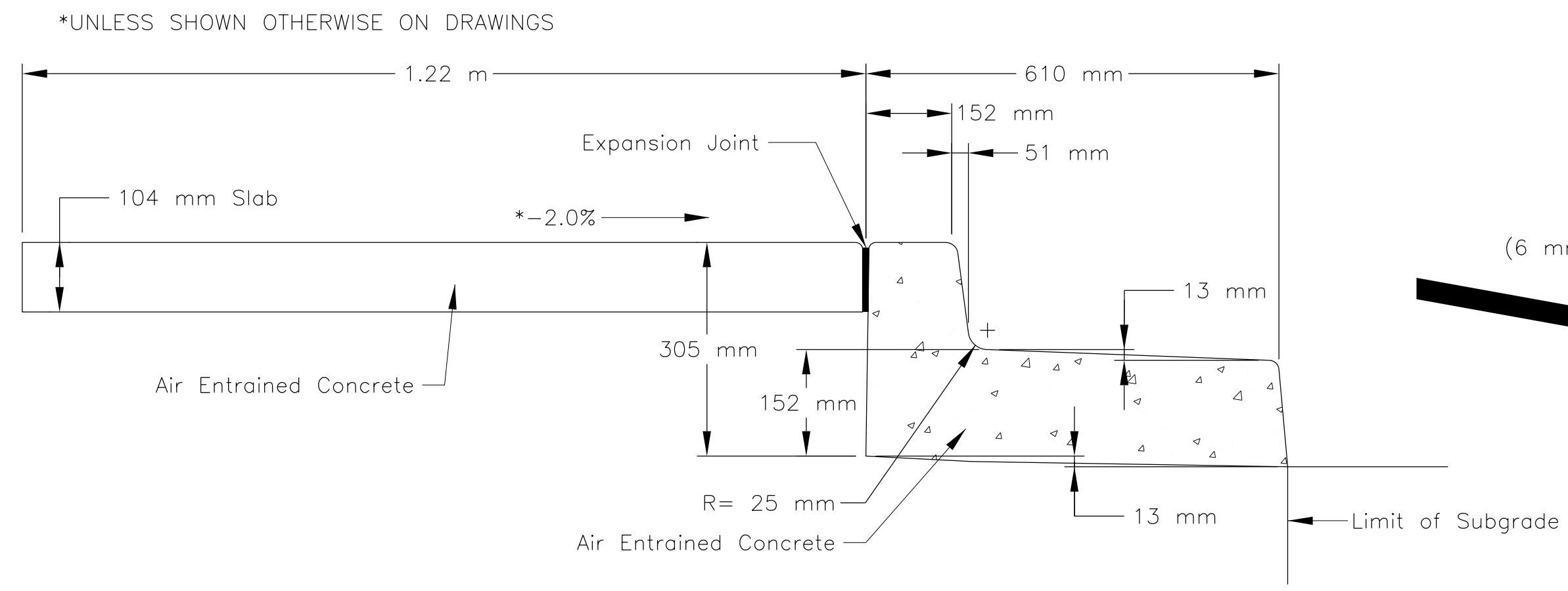
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N101	N101(1)2&4	21	33



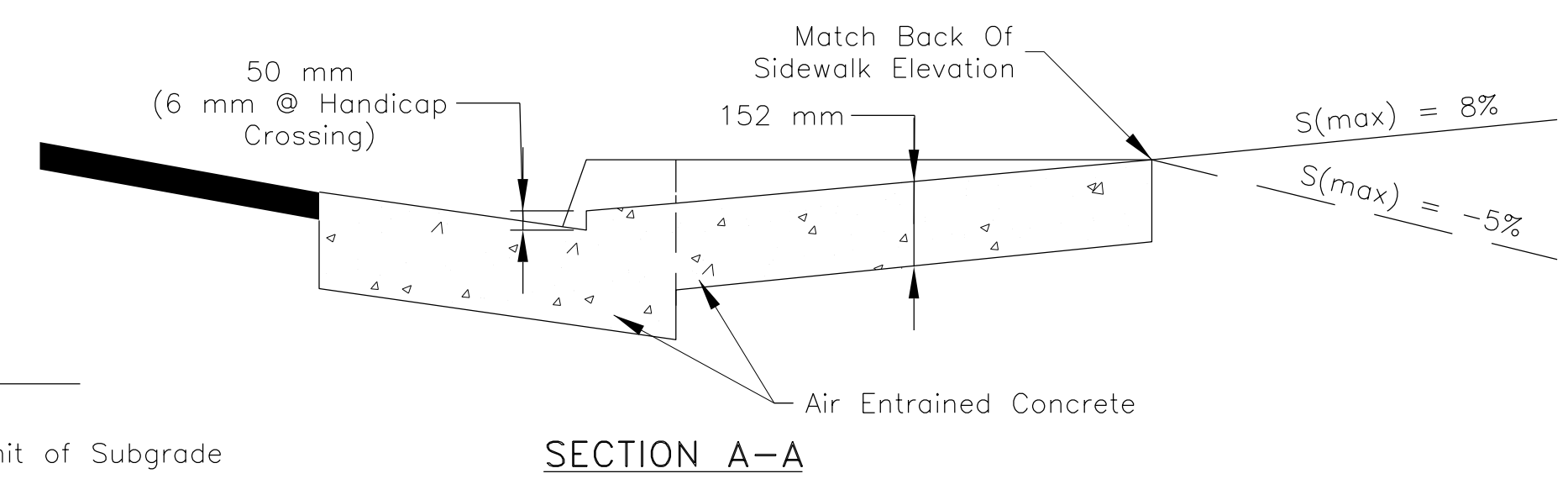
VERTICAL CURB & GUTTER & SIDEWALK



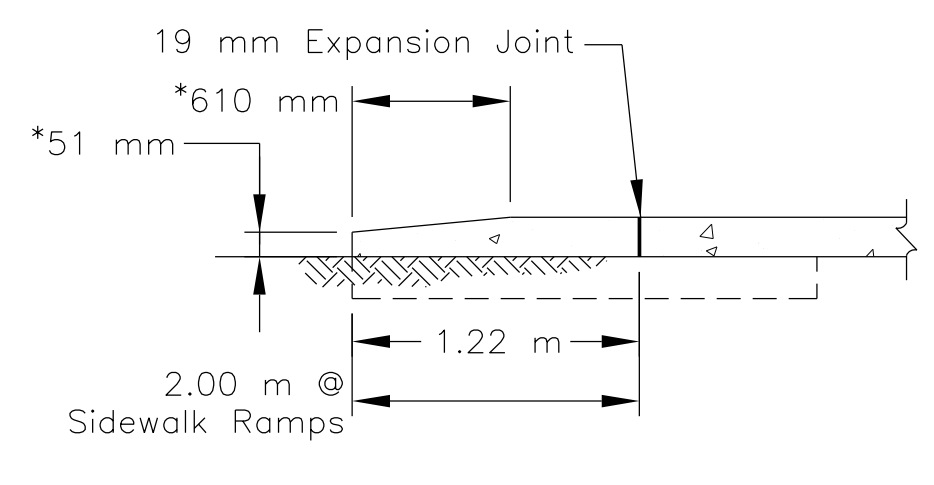
WING-TYPE DRIVEWAY



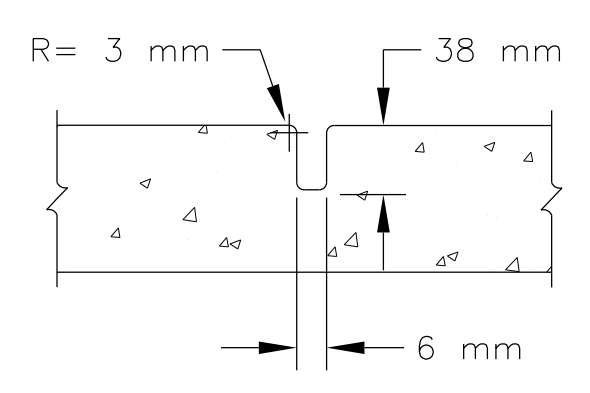
OUT SLOPE GUTTER



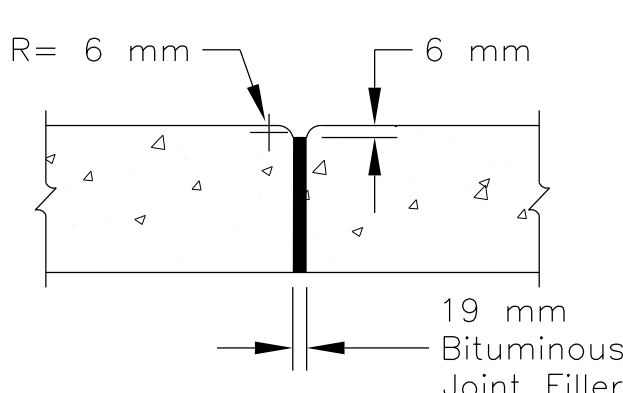
SECTION A-A



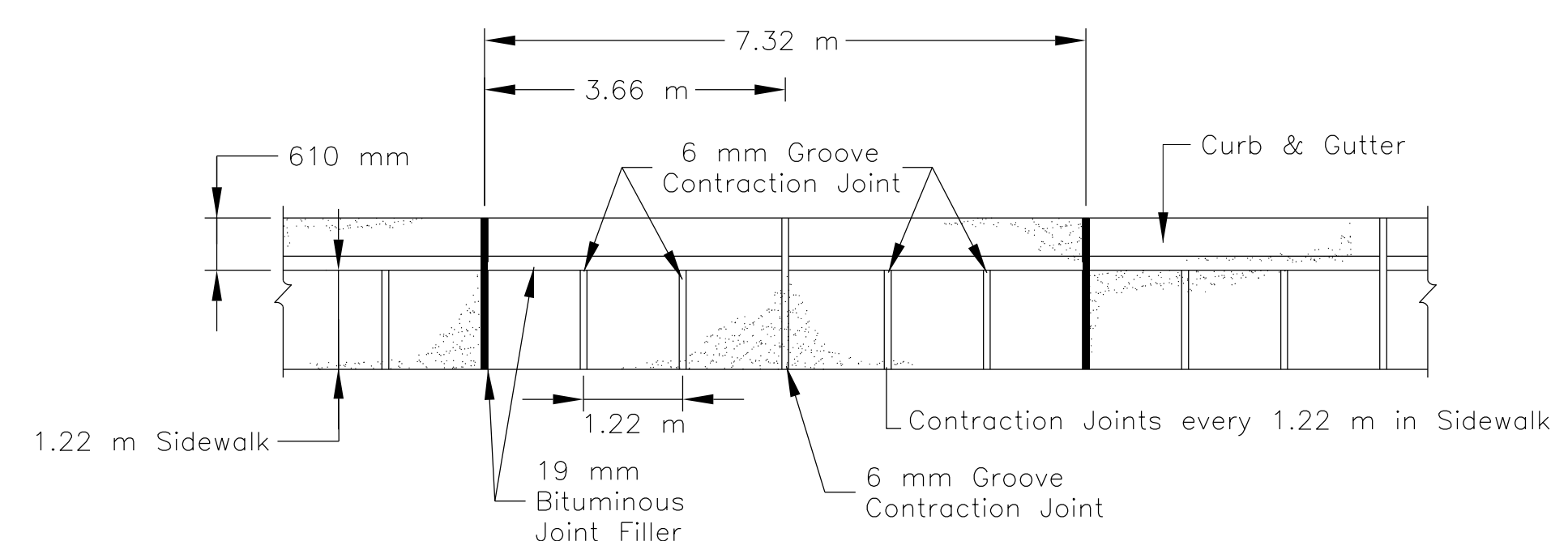
CURB TERMINAL SECTION
(Unless Noted Otherwise On Plans)



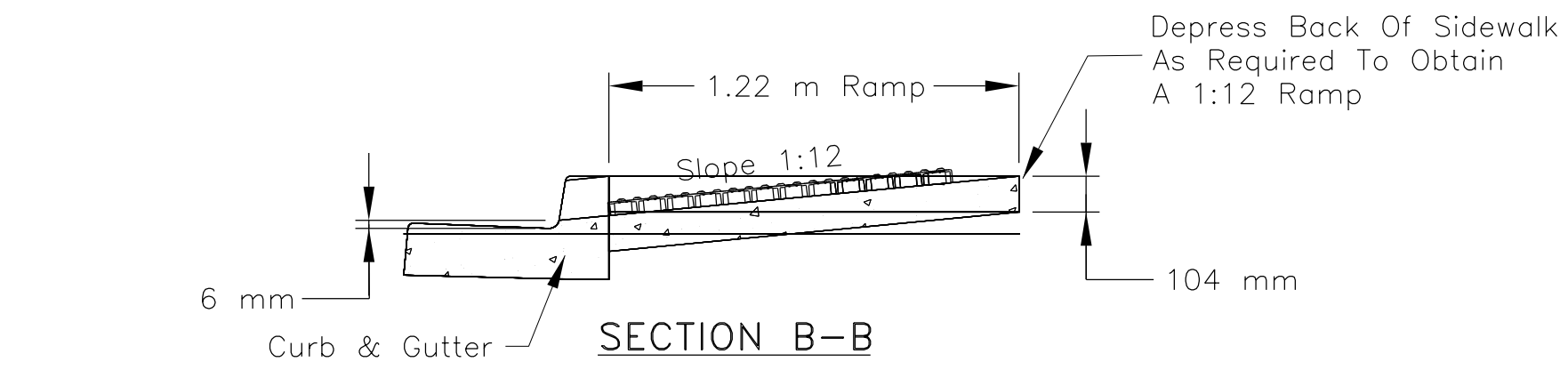
CONTRACTION JOINT



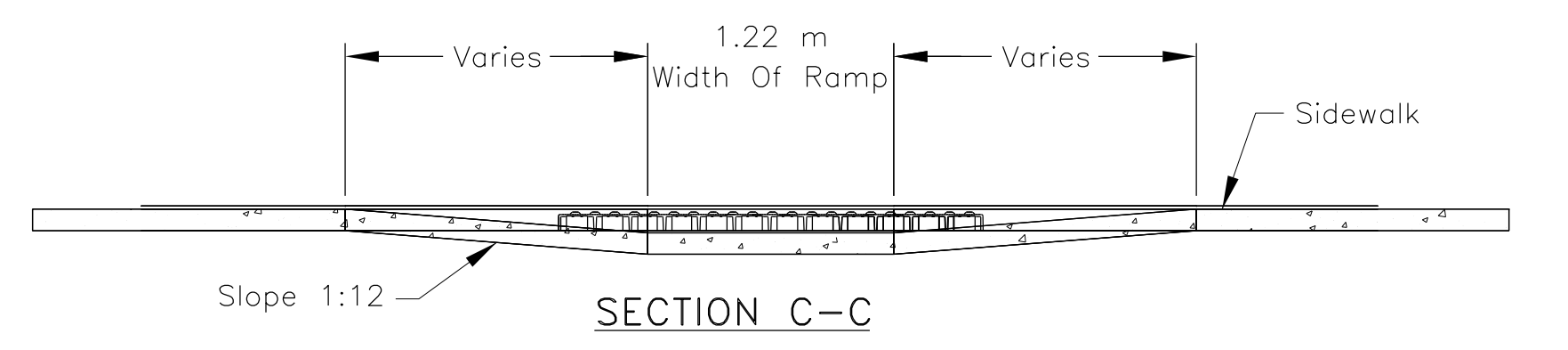
EXPANSION JOINT



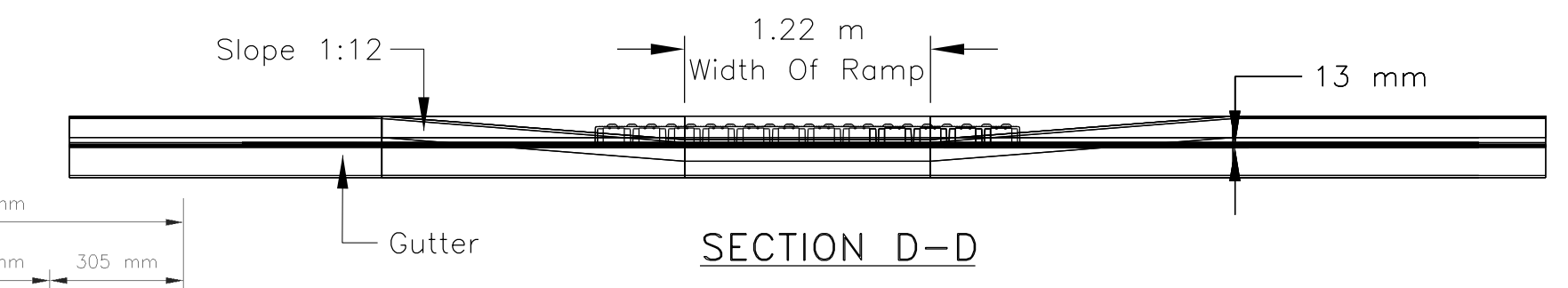
CURB GUTTER & SIDEWALK JOINT DETAIL



SECTION B-B

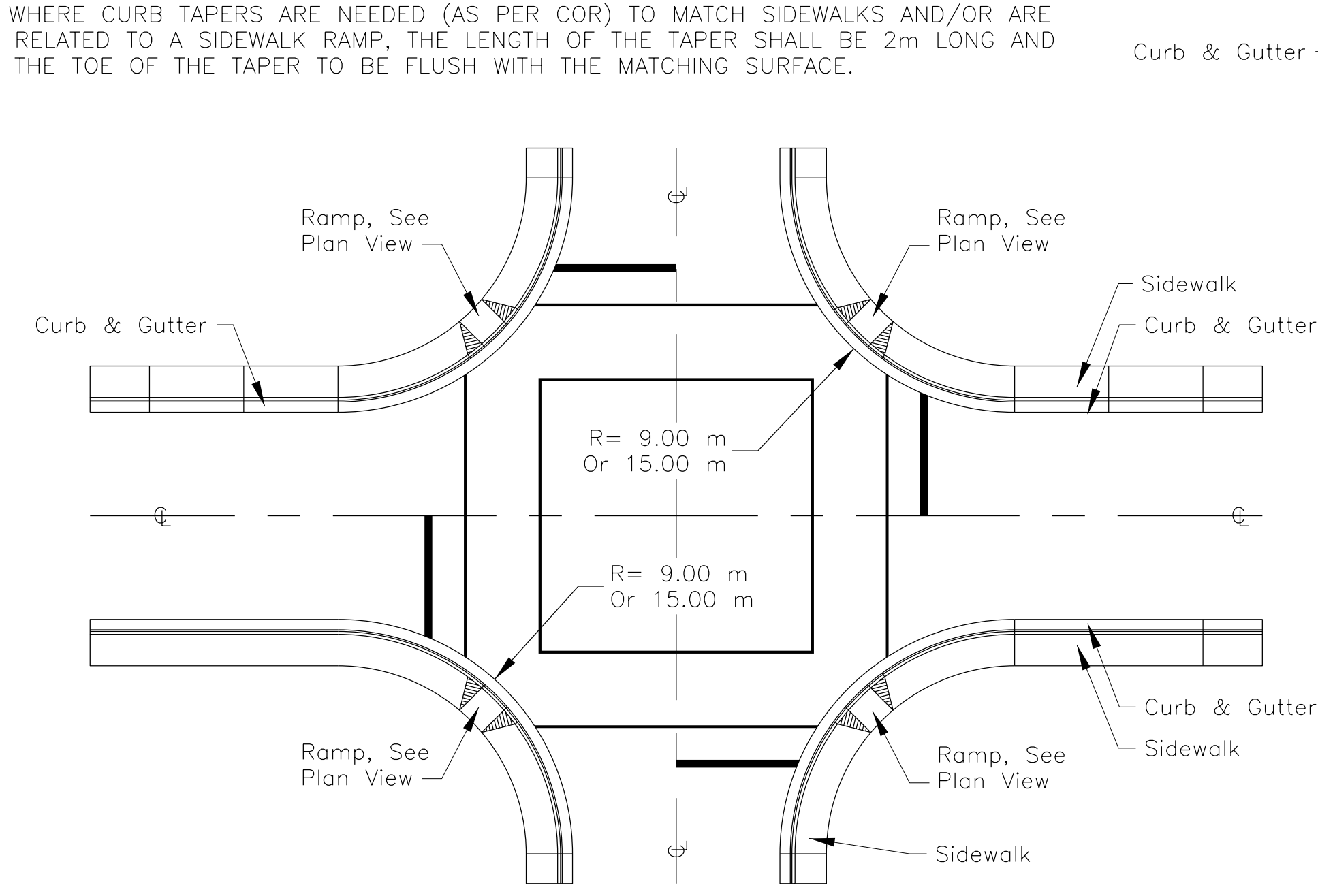


SECTION C-C

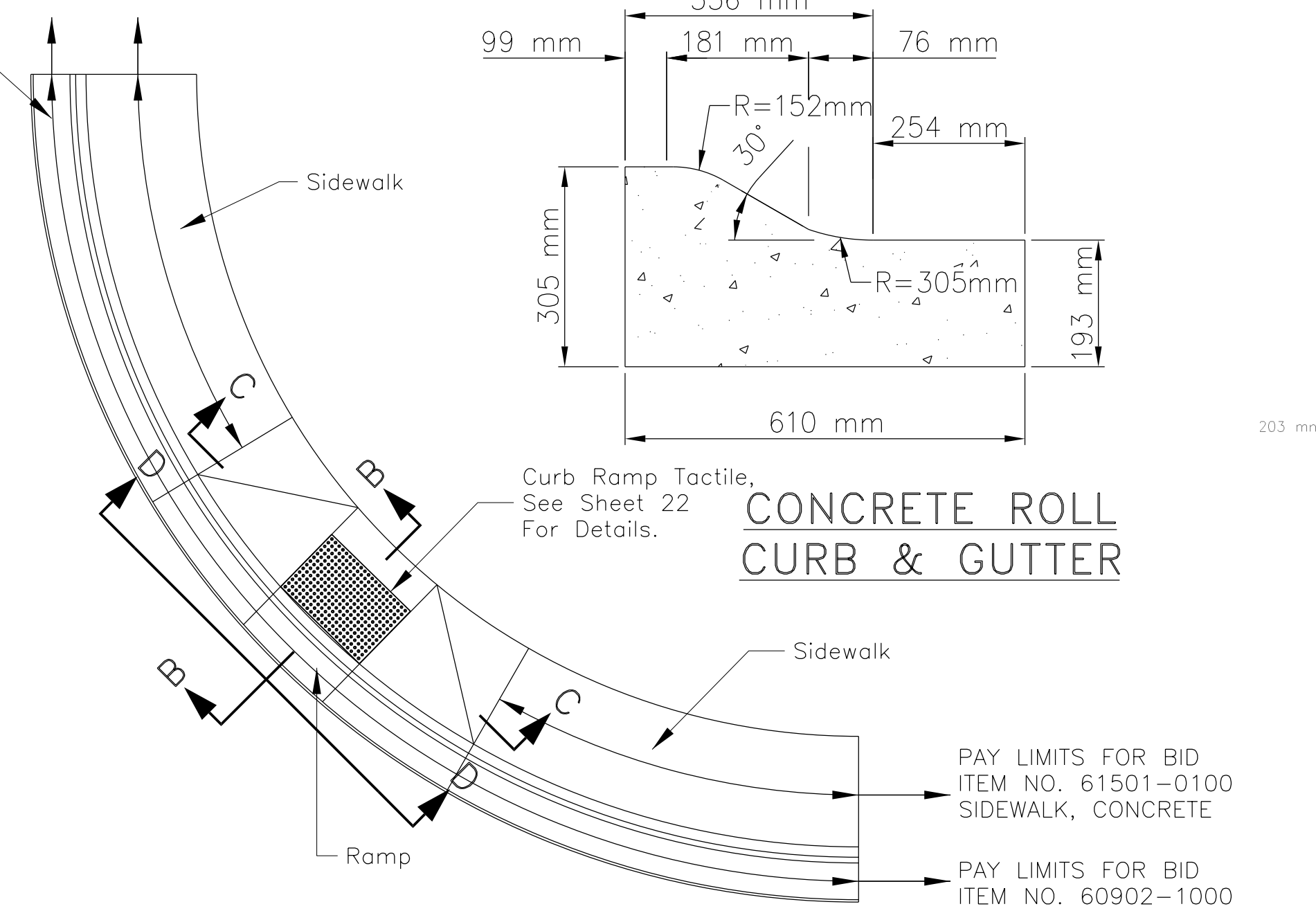


SECTION D-D

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

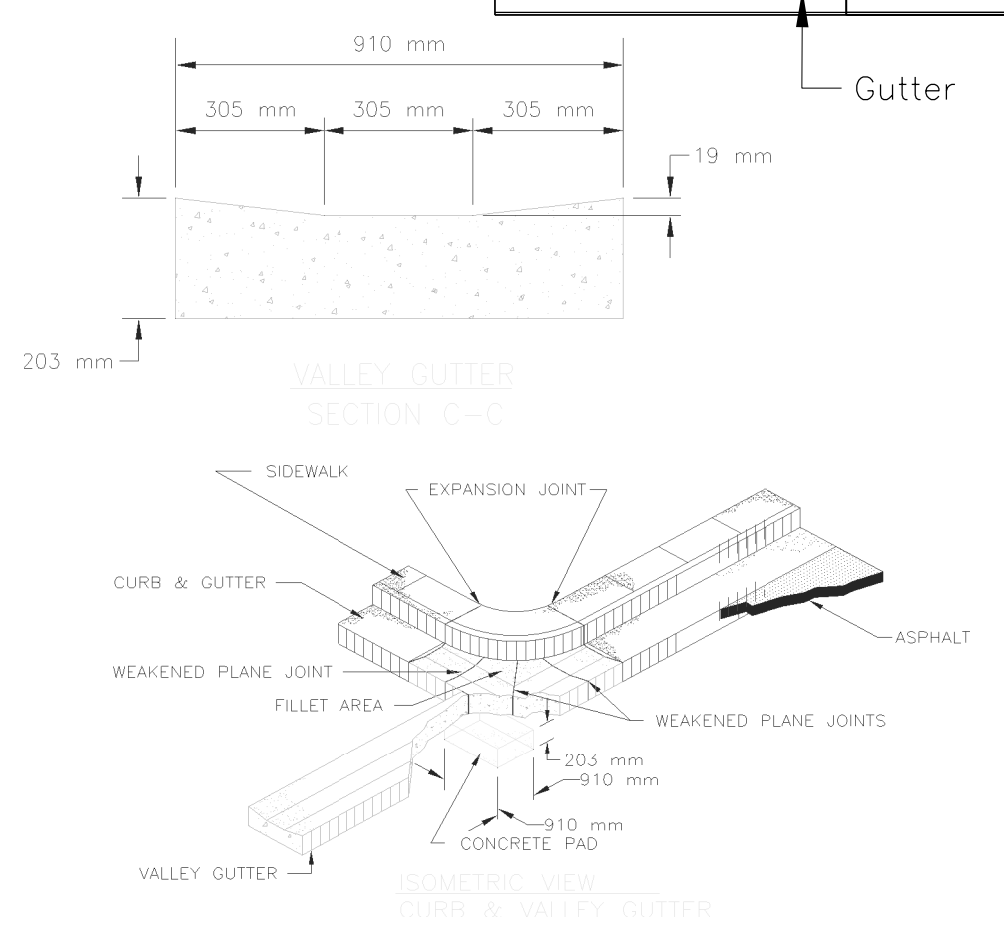


TYPICAL HANDICAP RAMP - TYPE I
(@ Street Intersection)



PLAN VIEW

PAY LIMITS FOR BID ITEM NO. 61501-0100 SIDEWALK, CONCRETE
PAY LIMITS FOR BID ITEM NO. 60902-1000 CURB & GUTTER, CONCRETE



VALLEY GUTTER SECTION C-C

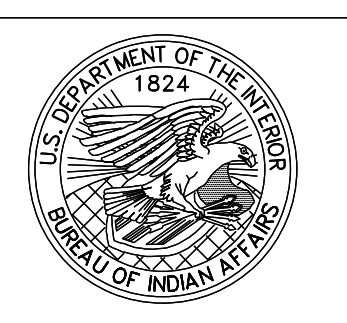
GENERAL NOTES

- WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE STANDARD SPECIFICATION FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS FP-14 ALONG WITH ALL SUPPLEMENTAL SPECIFICATIONS FOR THIS PROJECT.
- ALL CONCRETE TO BE AIR ENTRAINED WITH A MINIMUM COMPRESSIVE STRENGTH OF 20.7 MPa IN 28 DAYS. ALL CONCRETE SHALL CONFORM TO SECTION 601 "MINOR CONCRETE STRUCTURES" OF THE FP-14.
- IN NO CASE SHALL ANY BACK FILLING OR PAVING BE ALLOWED UNTIL THE CONCRETE HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 17.2 MPa.
- ALL SUBGRADE SOILS IN AREAS WHERE CONCRETE CURB, GUTTER, VALLEY GUTTER, AND SIDEWALK IS BEING PLACED SHALL BE COMPACTED TO AT LEAST 95% OF MAXIMUM DENSITY AS DETERMINED BY AASHTO T-99, METHOD (C). ANY UNSUITABLE SUBGRADE MATERIALS ENCOUNTERED SHALL BE REMOVED AND REPLACED WITH SELECT BACK FILL MATERIAL CONFORMING TO ASHTO (A-2-4) OR BETTER, TO A MIN THICKNESS OF 305MM AS DIRECTED BY THE COR UNDER BID ITEM 20403-0000.
- ALL PCC CONCRETE, DEPRESSED CURBS, AND GUTTER FILLET AREAS CONSTRUCTION SHALL BE CONSIDERED INCIDENTAL TO ITEMS 60902-1000 AND 61501-0100.
- ALL PRE FORM JOINT FILLER SHALL BE IN ACCORDANCE WITH SECTION 712.01(b), BITUMINOUS TYPE OF THE FP-14. THE CONTRACTOR SHALL SUBMIT A PROPOSAL ON THE TYPE OF FILLER AND METHOD OF INSTALLATION TO BE USED FOR REVIEW AND APPROVAL BY THE COR PRIOR TO INSTALLATION. THIS MATERIAL AND THE INSTALLATION THEREOF SHALL BE CONSIDERED INCIDENTAL TO ITEMS 60902-1000 AND 61501-0100.
- THE CONTRACTOR WILL BE REQUIRED TO MAKE ANY AND ALL NECESSARY FIELD ADJUSTMENTS IN LOCATION OR LENGTHS TO MATCH FIELD CONDITIONS AS DIRECTED BY THE COR. THIS WORK SHALL BE INCIDENTAL TO COMPLETION OF THE PROJECT AND NO ADDITIONAL PAYMENT WILL BE MADE.
- SURFACE TEXTURE OF WHEELCHAIR RAMP, SURFACES NOT COVERED BY TACTILE SHALL BE OBTAINED BY HEAVY BROOMING (TEXTURE DEPTH, 2 mm), TRANSVERSE TO THE SLOPES OF THE RAMP. THIS WORK SHALL BE INCIDENTAL TO ITEM 61505-1000.
- THE CONTRACTOR WILL BE REQUIRED TO MAKE ANY AND ALL NECESSARY FIELD ADJUSTMENTS TO MATCH FIELD CONDITIONS AS DIRECTED BY THE COR AFTER THE CURB AND VALLEY GUTTERS ARE FORMED AND PRIOR TO PLACING. THE CONTRACTOR SHALL NOTIFY THE COR AND ALLOW TIME FOR THE COR TO CHECK DRAINAGE. IF POSITIVE DRAINAGE IS NOT FOUND, ELEVATIONS SHALL BE ADJUSTED TO ENSURE DRAINAGE AROUND CURB RETURNS AND ALONG CURBS AND VALLEY GUTTERS. THIS WORK SHALL BE INCIDENTAL TO COMPLETION OF THE PROJECT AND NO ADDITIONAL PAYMENT WILL BE MADE.
- RADII MEASUREMENTS SHOWN TO FACE OF GUTTER AT SIDEWALK AND END ISLANDS.
- ALL CURB RAMPS SHALL MEET CURRENT AMERICANS WITH DISABILITIES ACT (ADA) REQUIREMENTS, INCLUDING PROVIDING A DETECTABLE WARNING SURFACE TACTILE CONFORMING WITH THE ADA ACCESSIBILITY GUIDELINES FOR BUILDINGS AND FACILITIES (ADAAG). THIS WORK SHALL BE INCIDENTAL TO ITEM 61505-1000 SEE SHEET 22 FOR DETAILS.

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CONCRETE CURB, GUTTER AND SIDEWALK DETAILS

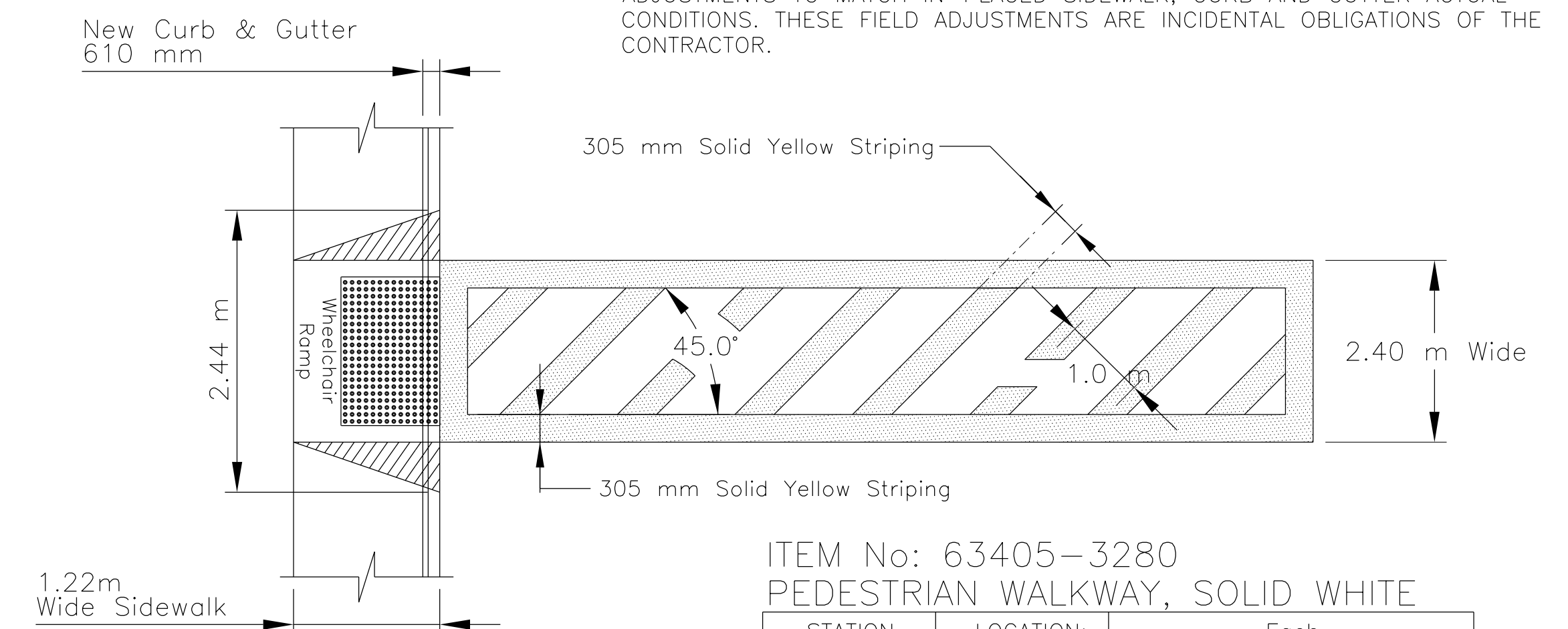
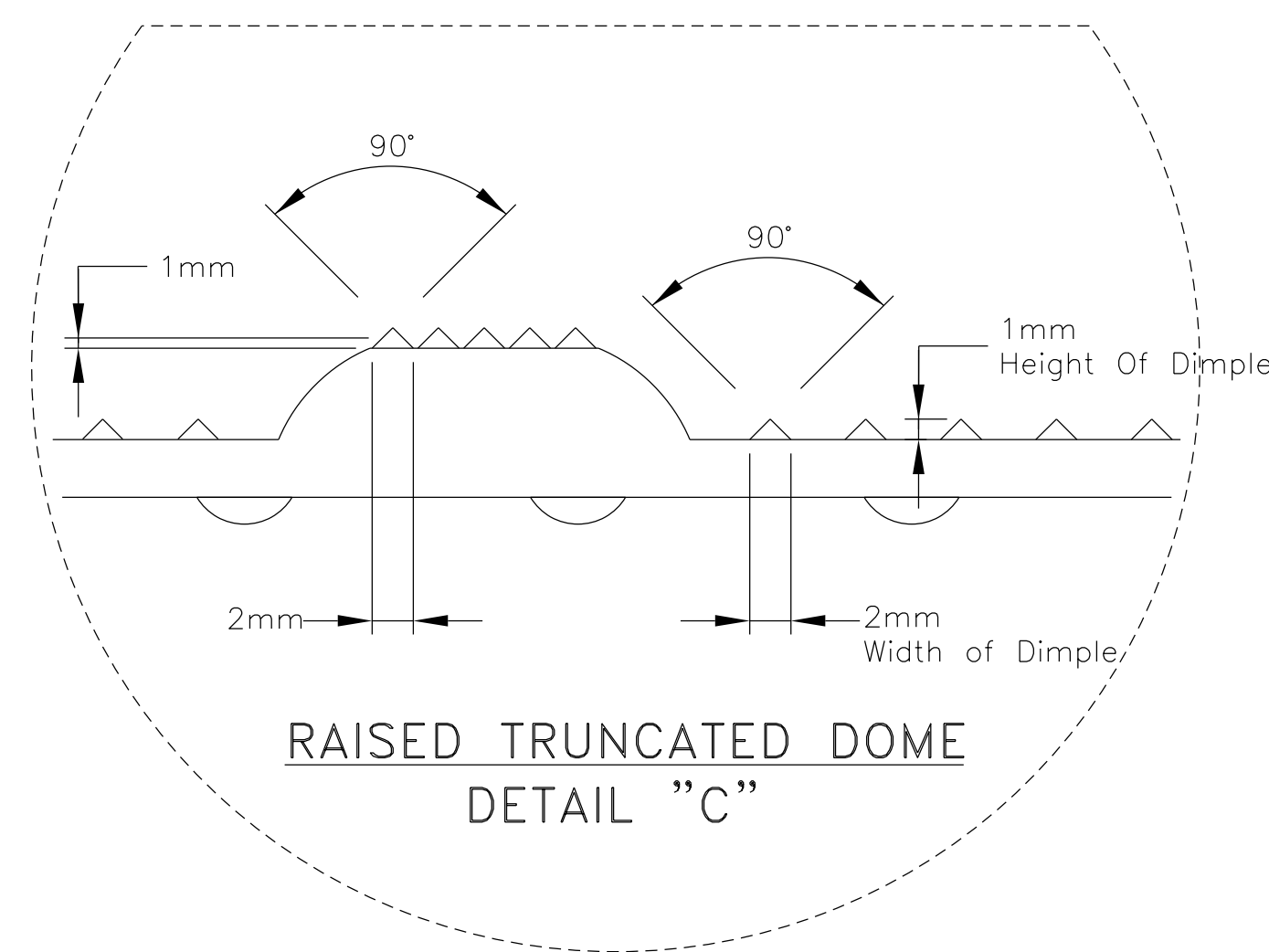
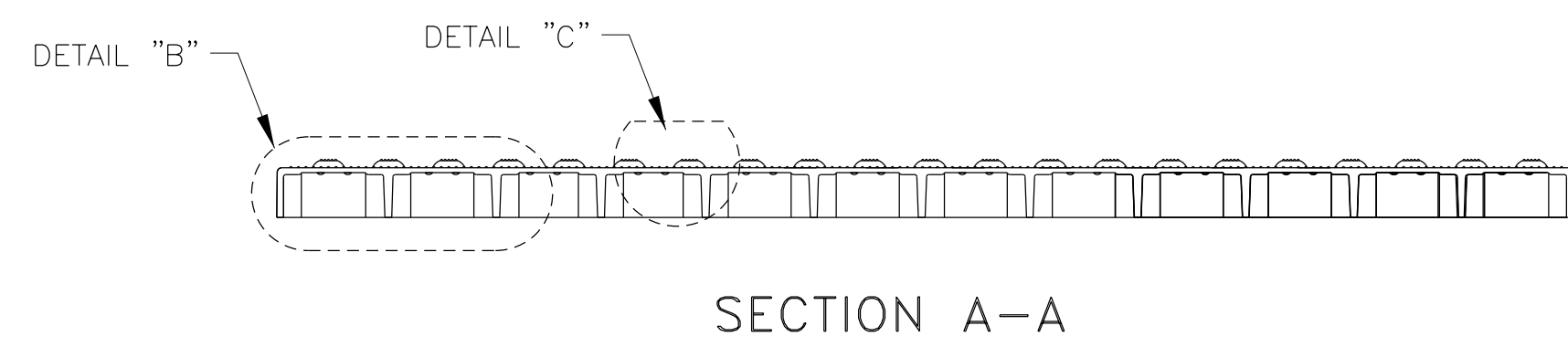
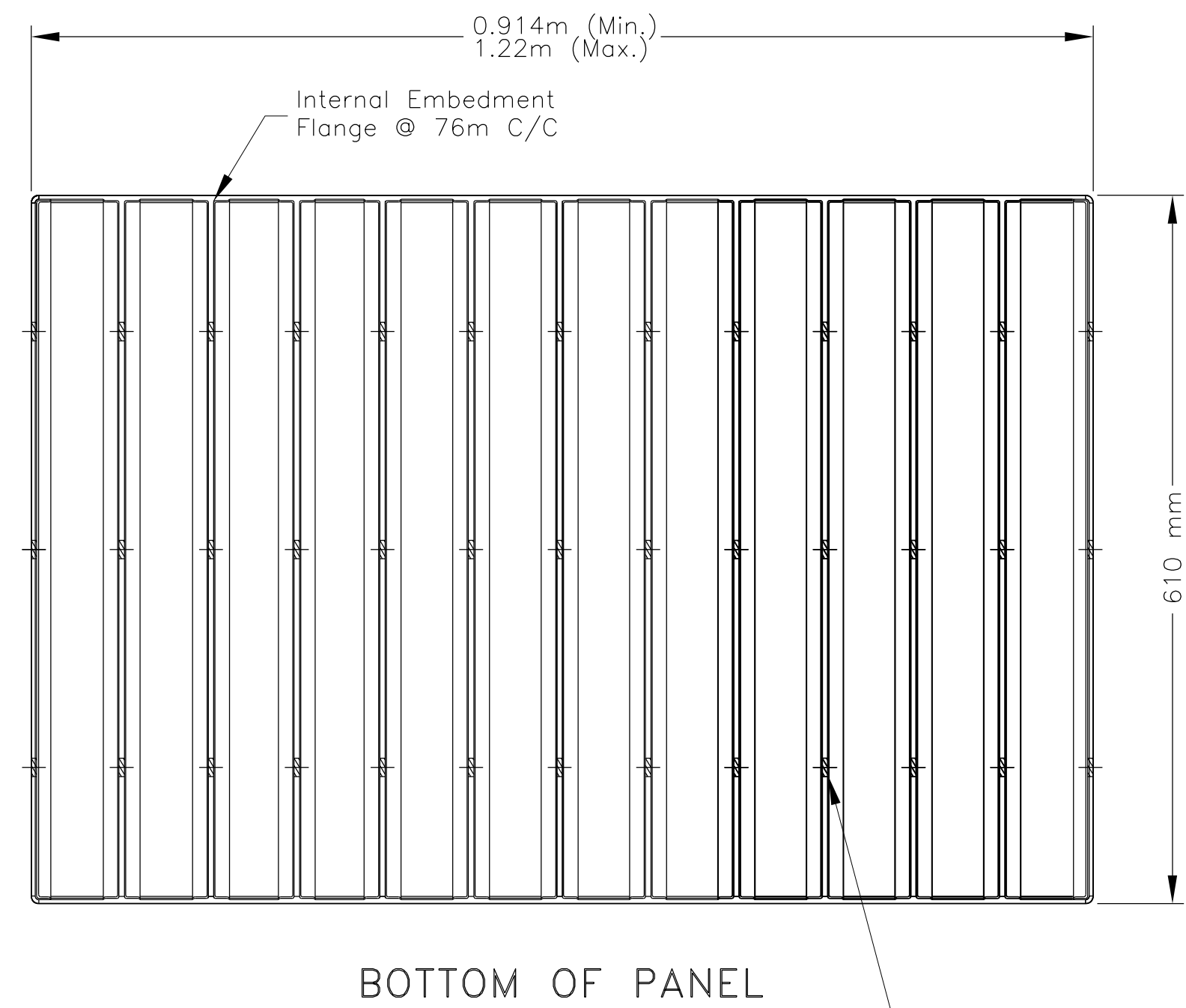
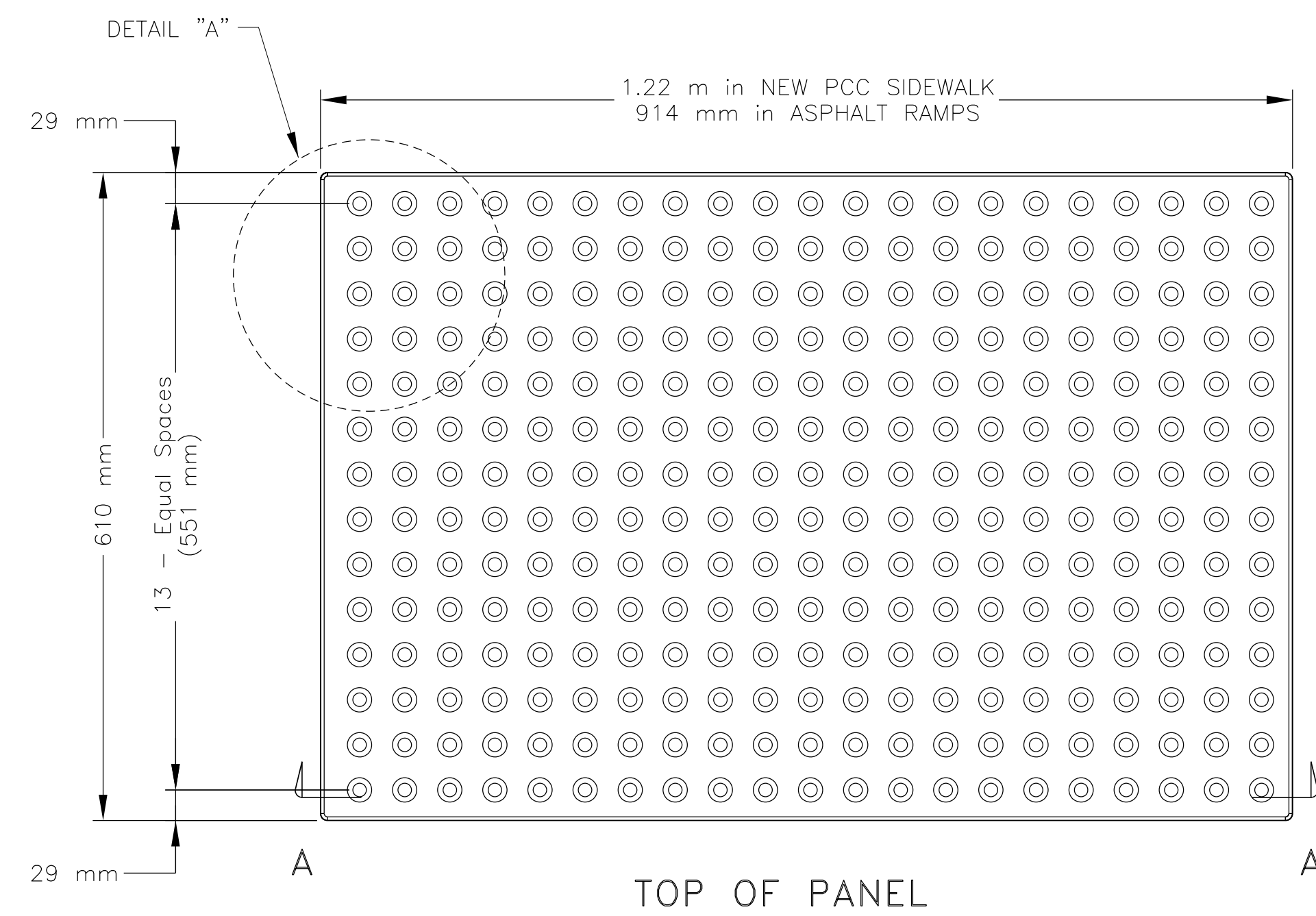
DRAWN BY: NRDOT DATE: 5/24/2004
DESIGNED BY: NRDOT DATE: 5/24/2004
REVISED: 08/20/2015 BY: Design 2
\$FILES\$



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N101	N101(1)2&4	22	33

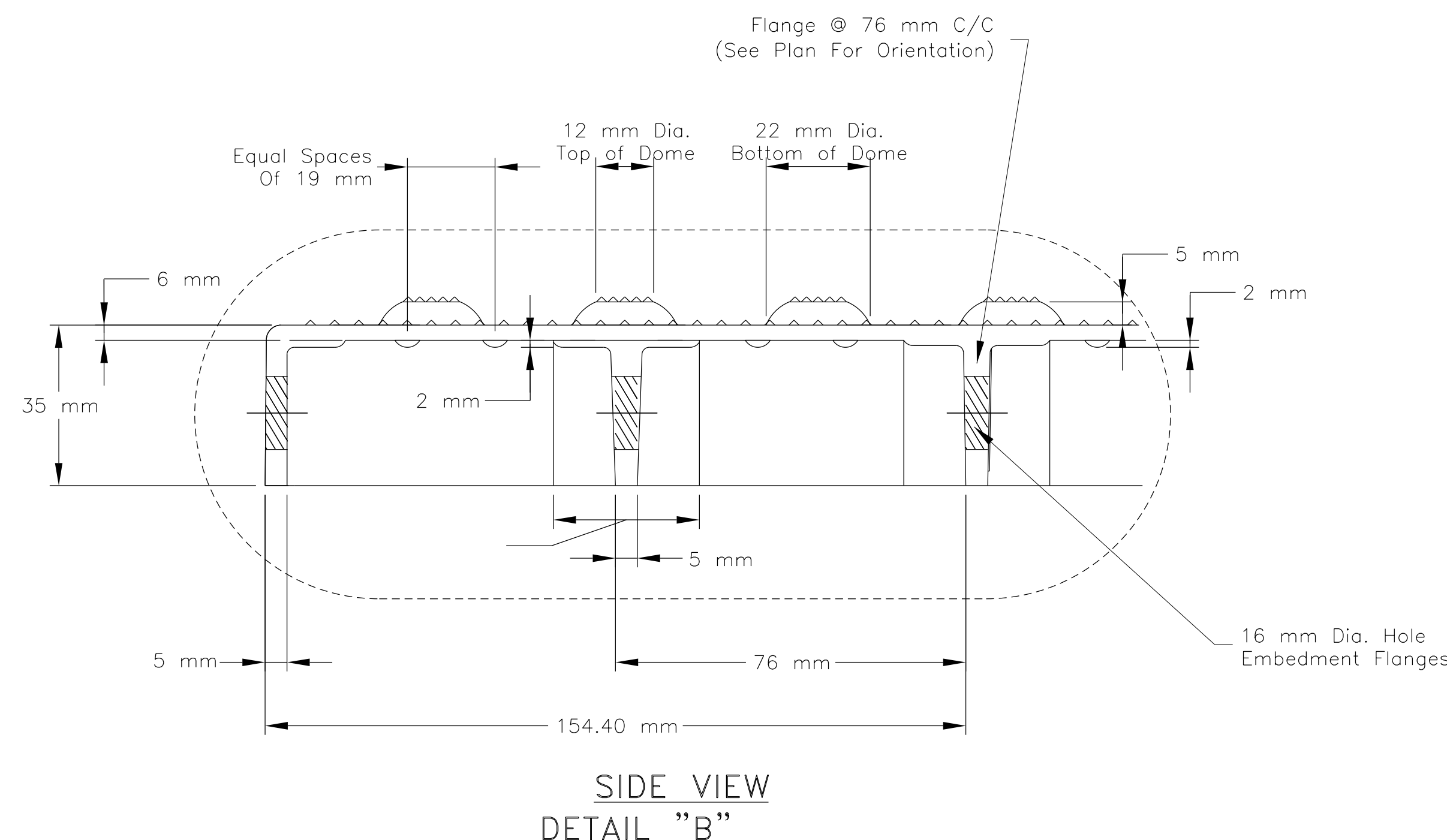
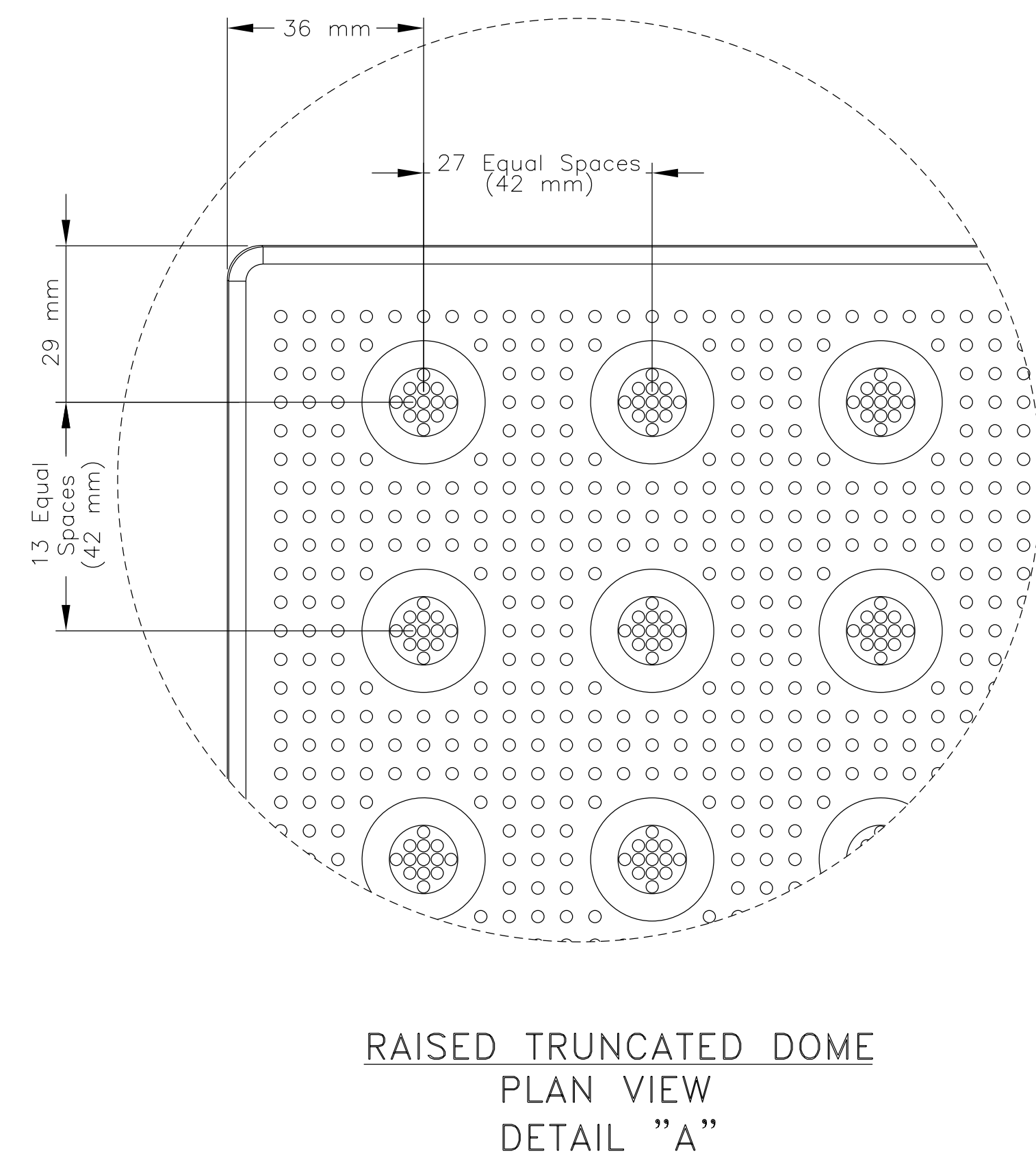
GENERAL NOTES

- ALL WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-14).
- THE CONTRACTOR SHALL INSTALL YELLOW COLORED CAST-IN-PLACE COMPOSITE TACTILE, AS FOLLOWS:
 - THE CONCRETE SHALL BE POURED AND FINISHED LEVEL, TRUE AND SMOOTH TO THE REQUIRED DIMENSIONS PRIOR TO THE PLACEMENT OF THE TACTILE UNIT.
 - PLACE THE TACTILE UNIT 152 - 203mm FROM THE CURB LINE. WORKING IN A GRID PATTERN, TAMP THE TACTILE UNIT INTO THE WET CONCRETE USING A RUBBER Mallet AND A CLEAN SCRAP PIECE OF WOOD. CONTINUE THIS PROCESS UNTIL ALL OF THE AIR HAS BEEN RELEASED, AND THE TACTILE UNIT SURFACE IS FLUSH WITH THE SURROUNDING AREA.
 - FOLLOWING THE PLACEMENT, THE TACTILE UNIT ELEVATION SHOULD BE CHECKED TO THE ADJACENT SURFACE WITH A STRAIGHT EDGE. ANY REQUIRED ADJUSTMENTS MUST BE MADE PRIOR TO THE TIME WHEN THE CONCRETE BEGINS TO SET.
 - DURING AND AFTER THE TACTILE UNIT INSTALLATION, AS WELL AS THE CONCRETE CURING STAGE, NO WALKING OR EXTERNAL FORCES BE PLACED ON THE TACTILE UNIT. THE AREA MUST BE PROTECTED FROM PEDESTRIAN TRAFFIC UNTIL CONCRETE IS CURED.
- THE COST OF SUPPLYING ALL MATERIALS AND INSTALLATION OF THE TACTILE UNIT SHALL BE INCLUDED IN THE UNIT PRICE BID UNDER ITEM 61505-1000.
- THE CONTRACTOR SHALL BE REQUIRED TO MAKE ANY NECESSARY FIELD ADJUSTMENTS TO MATCH IN-PLACED SIDEWALK, CURB AND GUTTER ACTUAL CONDITIONS. THESE FIELD ADJUSTMENTS ARE INCIDENTAL OBLIGATIONS OF THE CONTRACTOR.



ITEM No: 63405-3280
PEDESTRIAN WALKWAY, SOLID WHITE

STATION	LOCATION:	Each
0+005.000	Centerline	1
0+260.00	Centerline	1
0+291.00	Centerline	1
TOTAL:		3



ITEM No: 61505-1000
HANDICAP RAMPS CONCRETE


STATION	LOCATION:	EACH
0+005.000	Left & Right	2
0+016.20	18.20 m Lt.	1
0+028.20	18.20 m Lt.	1
0+033.00	8.10 m Lt.	1
0+153.95	8.16 m Lt.	1
0+171.18	8.16 m Lt.	1
0+260.000	Left & Right	2
0+298.000	Left & Right	2
TOTAL:		11

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

EMBEDMENT PANEL DETECTABLE WARNING
SURFACE SYSTEM AND
CURB RAMP TACTILE DETAILS

DRAWN BY: NRDOT	DATE: 5/07/14
DESIGNED BY: NRDOT	DATE: 5/07/14
REVISED: 07/23/20	BY: HRiley

FILES



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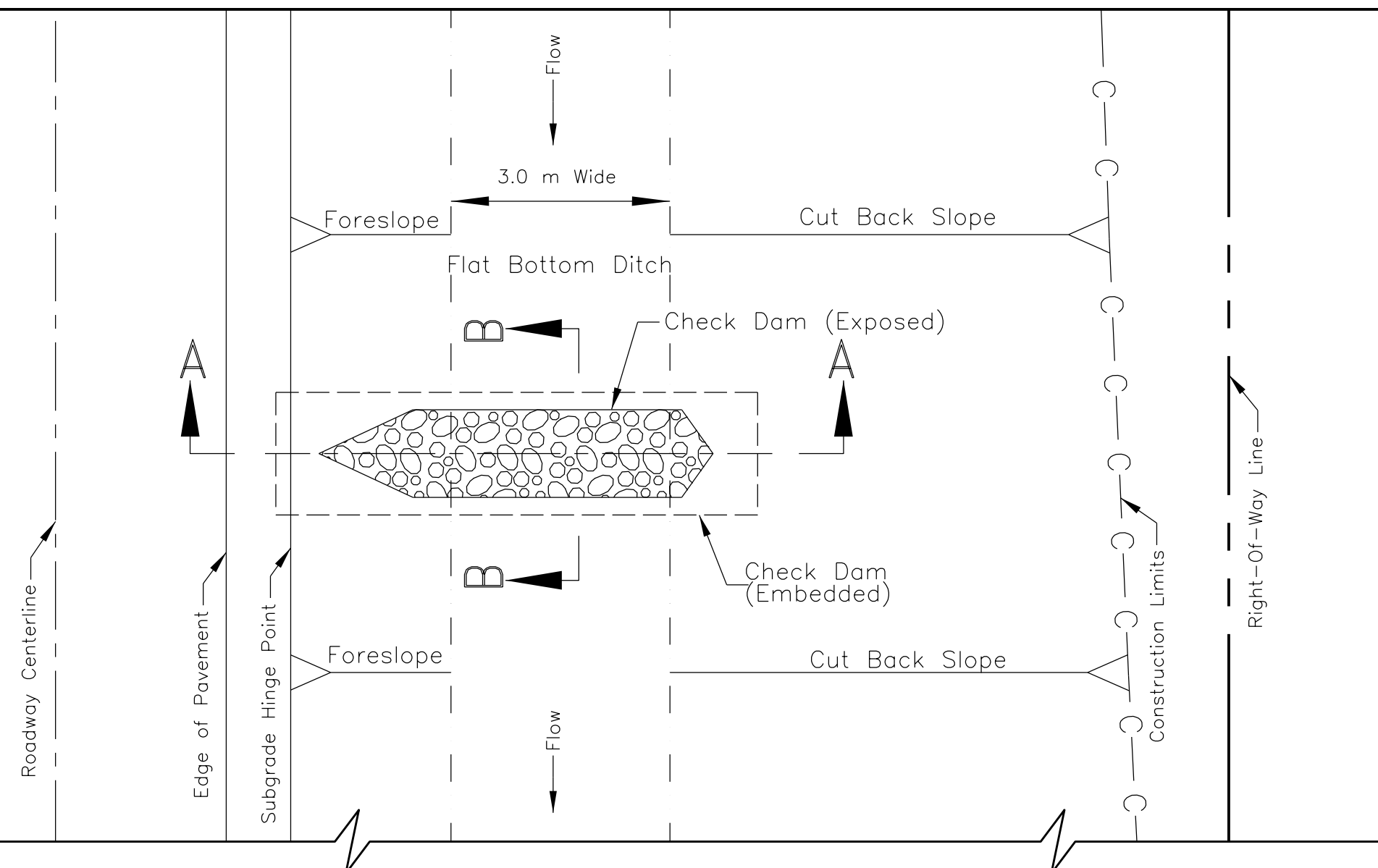
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N101	N101(1)2&4	23	33

GENERAL NOTES

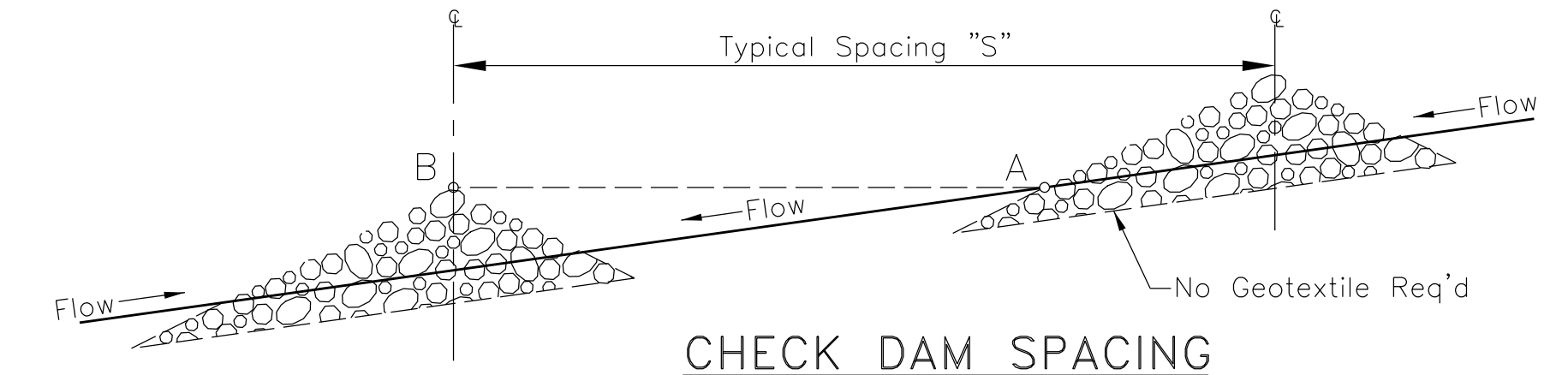
1. WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE STANDARD SPECIFICATION FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS [FP-14].
2. ROUND ALL SHARP CONTOURS AS REQUIRED TO FIT THE SOIL EROSION MATERIAL FLUSH WITH THE EXISTING GROUND.
3. THE CONTRACTOR SHALL BE REQUIRED TO MAKE FIELD ADJUSTMENTS TO MATCH ACTUAL FIELD CONDITIONS AS DIRECTED BY THE REGIONAL ROAD ENGINEER. 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. EXCAVATION OF RIPRAP TOE TRENCH TO PLACE RIPRAP BELOW FLOW LINE AND OTHER EXCAVATION AND EMBANKMENT NECESSARY TO PLACE RIPRAP AS SHOWN SHALL BE INCIDENTAL TO ITEM 25101-2000.
6. STONE SIZE SHALL CONFORM TO TABLE 705-1, SECTION 705, STONE FOR RIPRAP, CLASS 2 & 3.
7. ROCK CHECK DAM SHALL BE INCLUDED IN BID ITEM 25101-2000.

**ITEM NO. 25101-2000: PLACED RIPRAP, CLASS 2 (CHECK DAM)
CHECK DAM LOCATIONS AND ESTIMATED QUANTITIES**

STATION	LOCATIONS	L1	L2	L3	BACKSLOPE	VOLUME (m ³)	REMARKS
31+780	Left & Right	2.76	3.05	2.50	1:3	8.42	Flat Bottom Ditch
31+840	Left & Right	2.76	3.05	2.50	1:3	8.42	Flat Bottom Ditch
31+900	Left & Right	2.76	3.05	2.50	1:3	8.42	Flat Bottom Ditch
31+960	Left & Right	2.76	3.05	2.50	1:3	8.42	Flat Bottom Ditch
Total:						33.68	

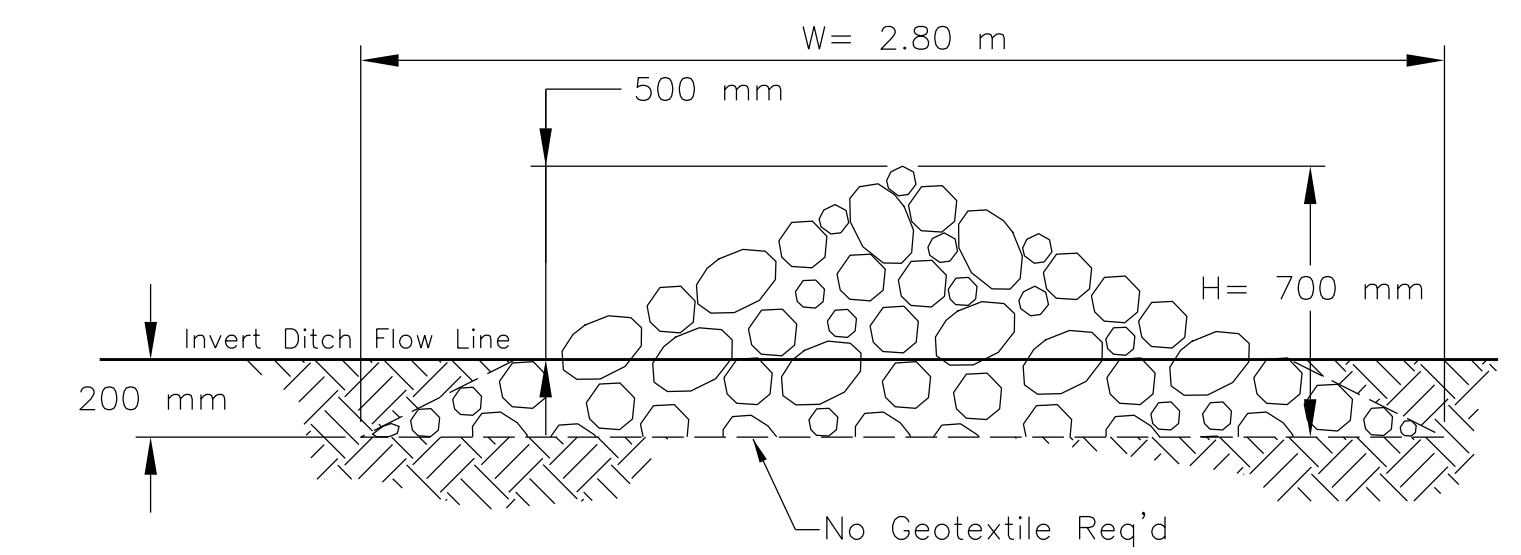


PLAN VIEW

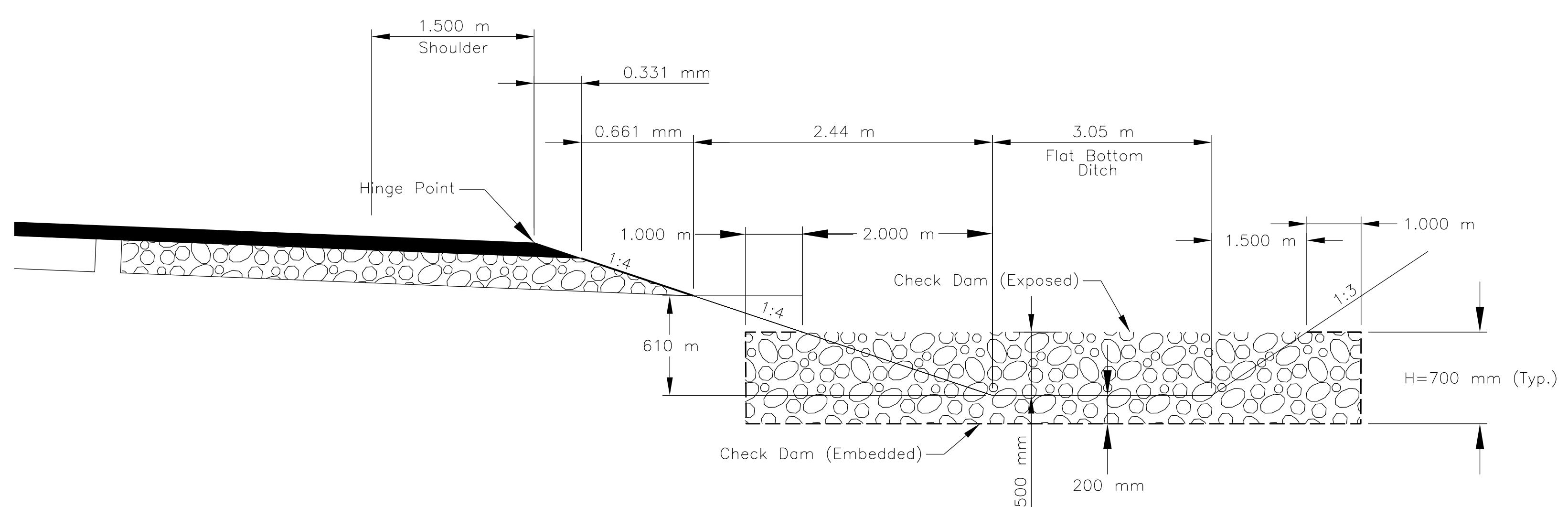


CHECK DAM SPACING
 $S = 60$ m For 2% & Less Grade,
 $S = 40$ m For Greater Than 2% Grade.

Note: Place Downstream Structure Such That Point "B" Is Approximately Level With The Lowest Ground Elevation (Point "A") Of The Upstream Structure.



SECTION B-B



SECTION A-A
 3.05 m WIDE FLAT BOTTOM DITCH
 WITH CLASS 2 RIPRAP CHECK DAM WITH 1:3 BACKSLOPE
 (See Table At Above for Location)

* Note: Depth May Be More Than 1.219 m In Borrow Ditch Areas. Contractor Shall Refer To Slope Staking Gradebook Provided To Identify All The Locations For Borrow Ditch Locations.

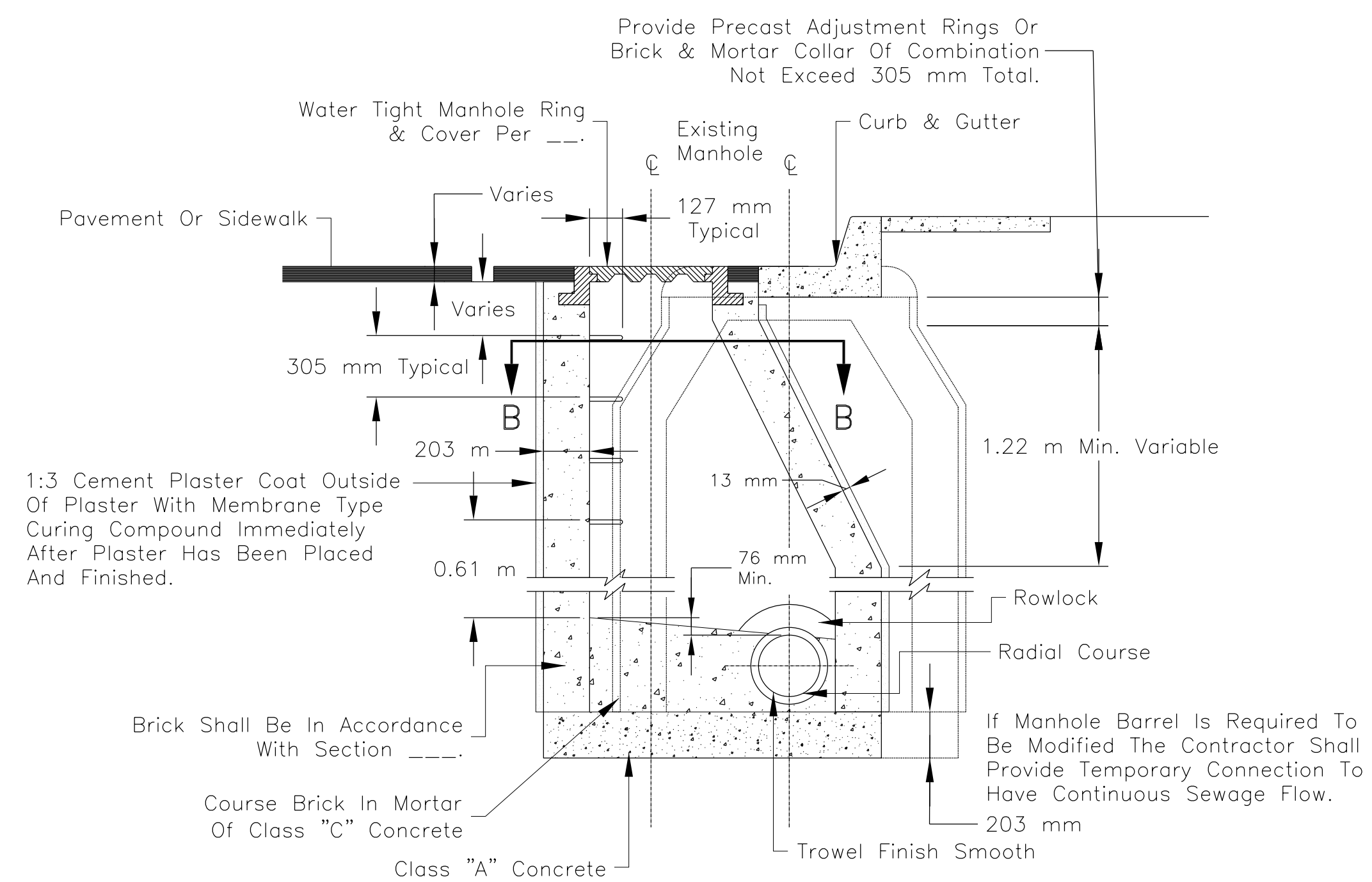
UNITED STATES
 DEPARTMENT OF THE INTERIOR
 BUREAU OF INDIAN AFFAIRS
 NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

**PLACED RIPRAP CHECK DAM
 IN FLAT BOTTOM DITCH**

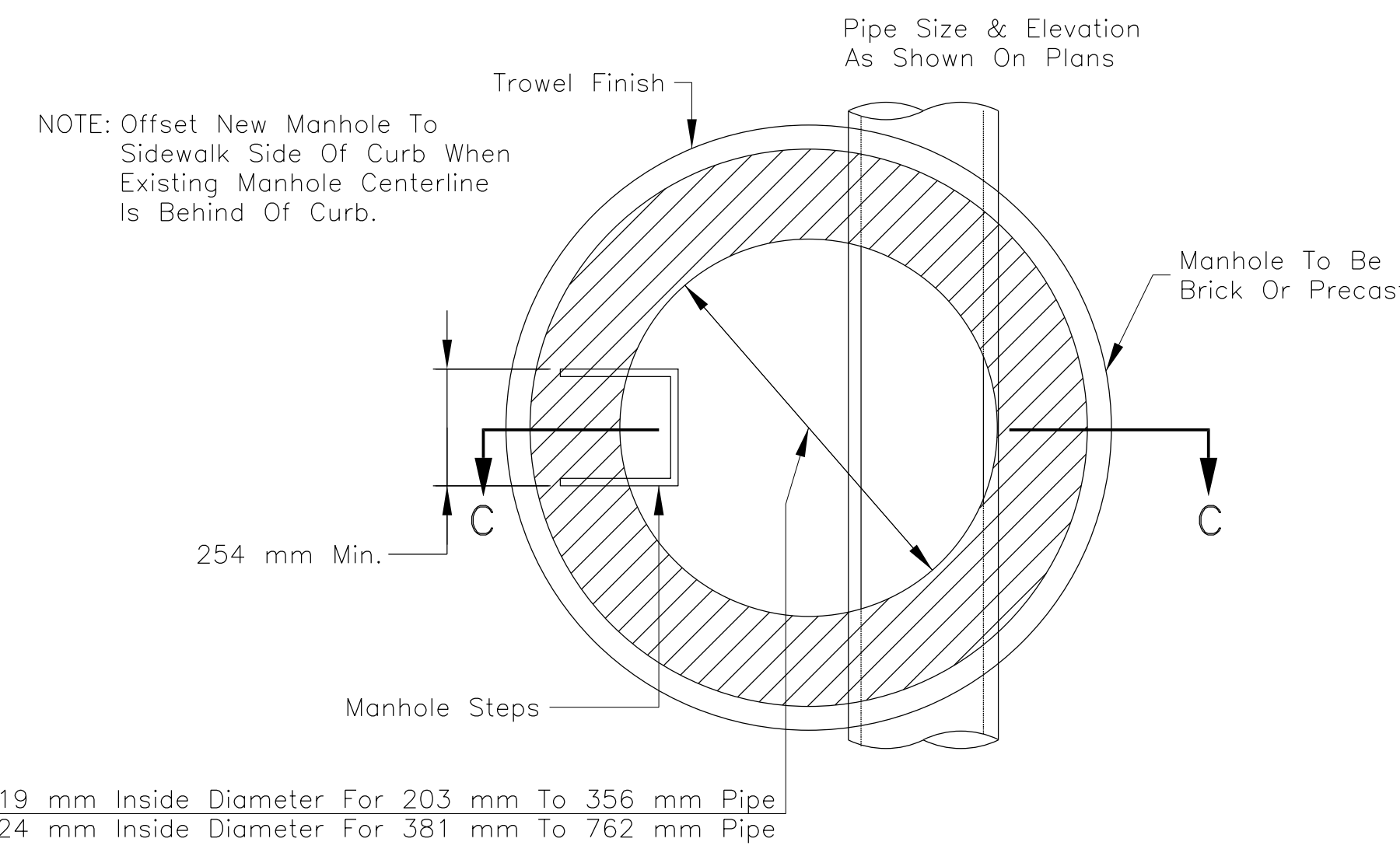
DRAWN BY: NRDOT	DATE: 6/25/2014
DESIGNED BY: NRDOT	DATE: 6/25/2014
REVISED: 11/5/2014	BY: Leroy Toledo
\$FILES\$	

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REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N101	N101(1)2&4	24	33



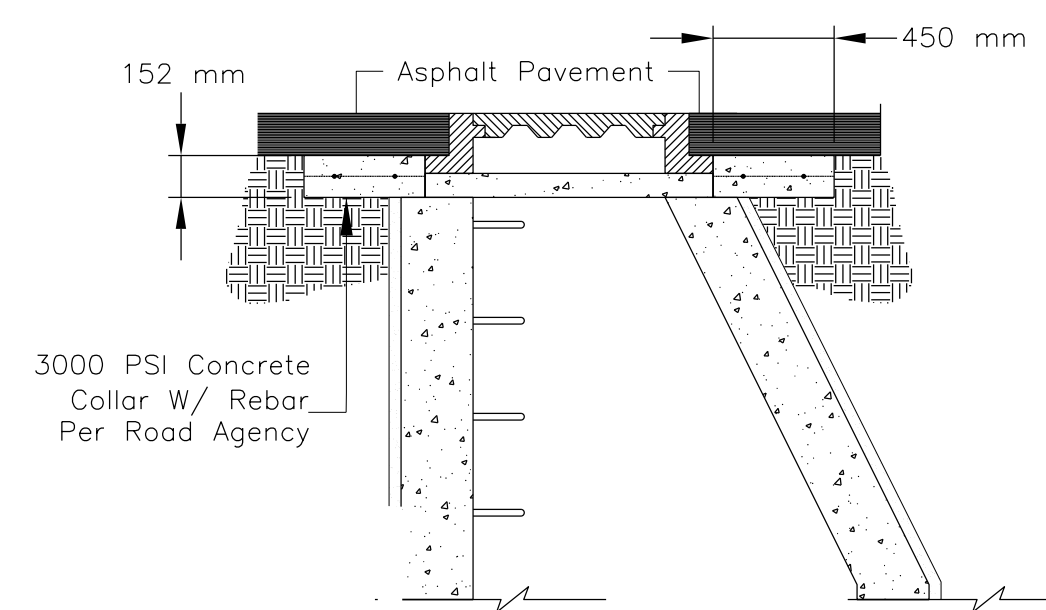
MANHOLE TOP BARREL AND CURB & GUTTER



SECTION B-B

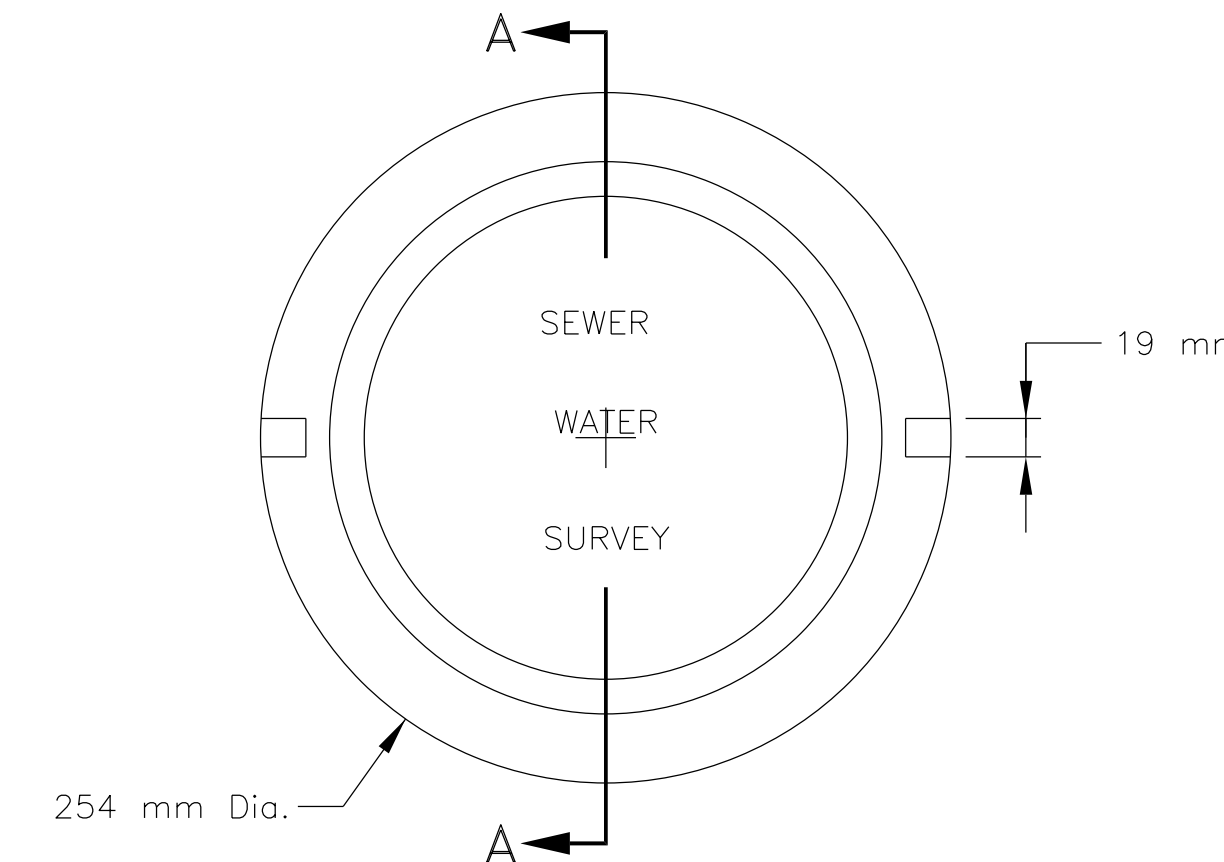
GENERAL NOTES

- USE FEDERAL PROJECT-14 FOR ALL SECTION SPECIFICATIONS REFERENCED INCLUDING NTUA STANDARDS.
- WHEN ADJUSTING MANHOLE HEIGHTS, THE USE OF ADJUSTING RINGS SHALL NOT EXCEED 762mm TOTAL FOR RINGS. ADDITIONAL HEIGHT IS REQUIRED, THE CONTRACTOR SHALL REMOVE THE TOP MANHOLE SECTION AND ADD A NEW MANHOLE SECTION OF APPROPRIATE HEIGHT. IF BRICK IS USED IT SHALL BE MADE IN ACCORDANCE WITH SPECIFICATION MEETING AASHTO M91-90 (ASTM C-32), GRADE SM.
- ANY MANHOLE ADJUSTMENTS SHALL MEET THE STRUCTURAL REQUIREMENTS OF ASTM C 478-90b.
- THIS WORK SHALL INCLUDE ALL HARDWARE, RINGS, CONCRETE, SEWER PIPE, MANHOLE SECTIONS, STEPS, TEMPORARY CONNECTIONS, EXCAVATION, BACKFILLING AND INCIDENTALS UNDER ITEMS 60405-0000.

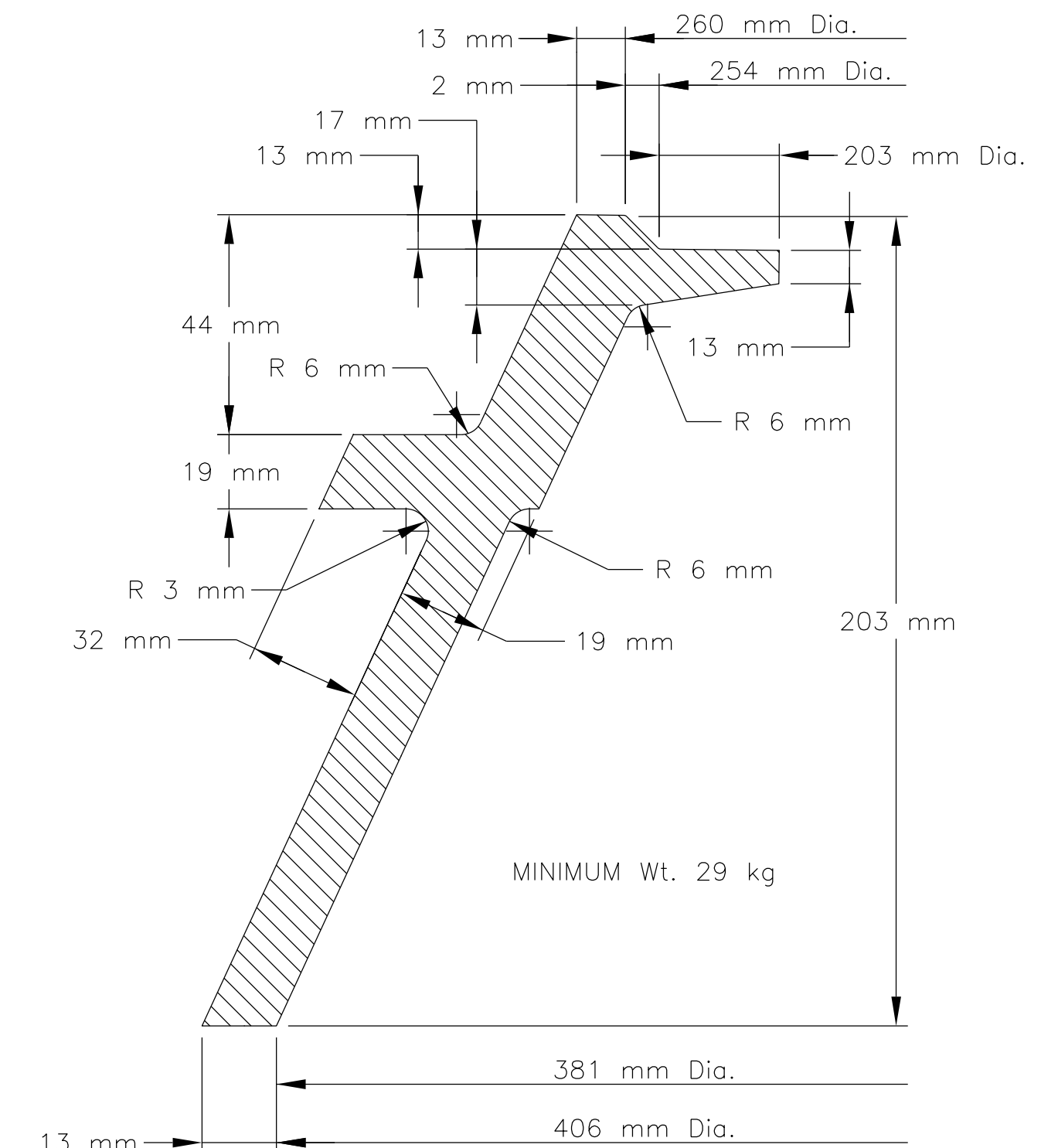


SECTION C-C

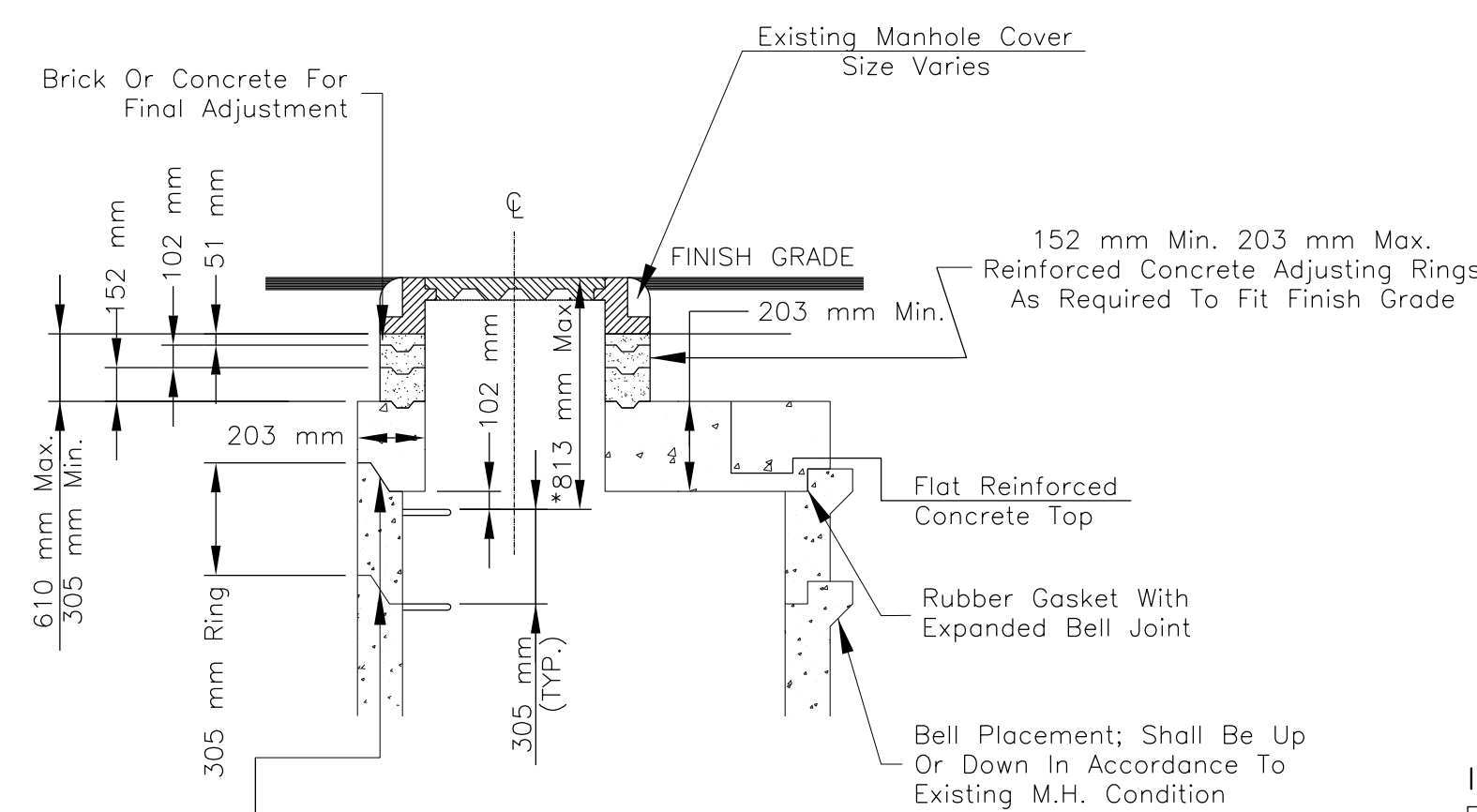
Letters On Cover To Be As Follows:
 "SEWER", "WATER", and "SURVEY"
 Total Width Of Word "SEWER & WATER": 95 mm
 Total Width Of Word "SURVEY": 114 mm
 Letter Size: 16 mm x 19 mm And Raised 2 mm
 Above Level Of Cover. Type Of Letters Shall Be Submitted For Approval To Contracting Officer.



203 mm FRAME & COVER



203 mm FRAME



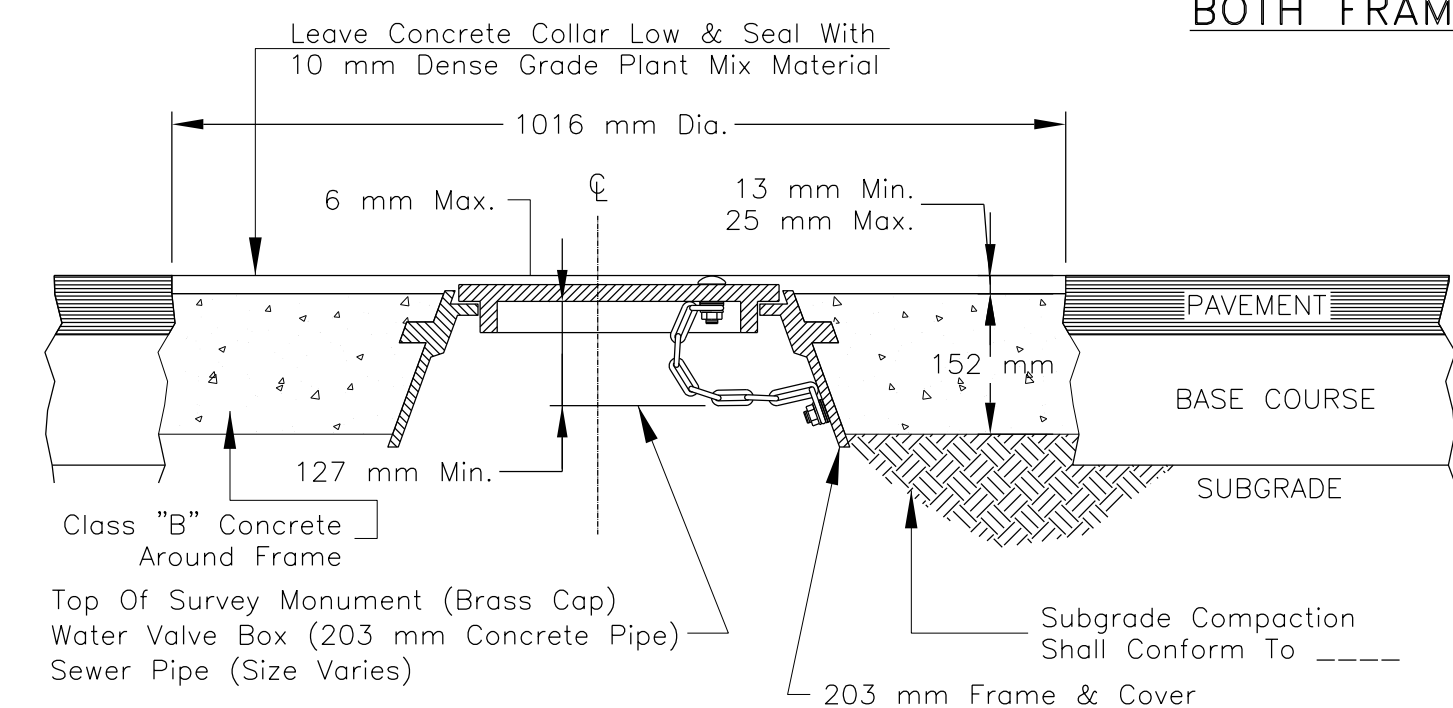
MANHOLE TOP ADJUSTMENT

* If Vertical Distance To First Step Exceeds 81.3 mm, The Contractor Shall Add One Or More Steps As Needed. The Step(s) To Meet N.T.U.A. Specifications.

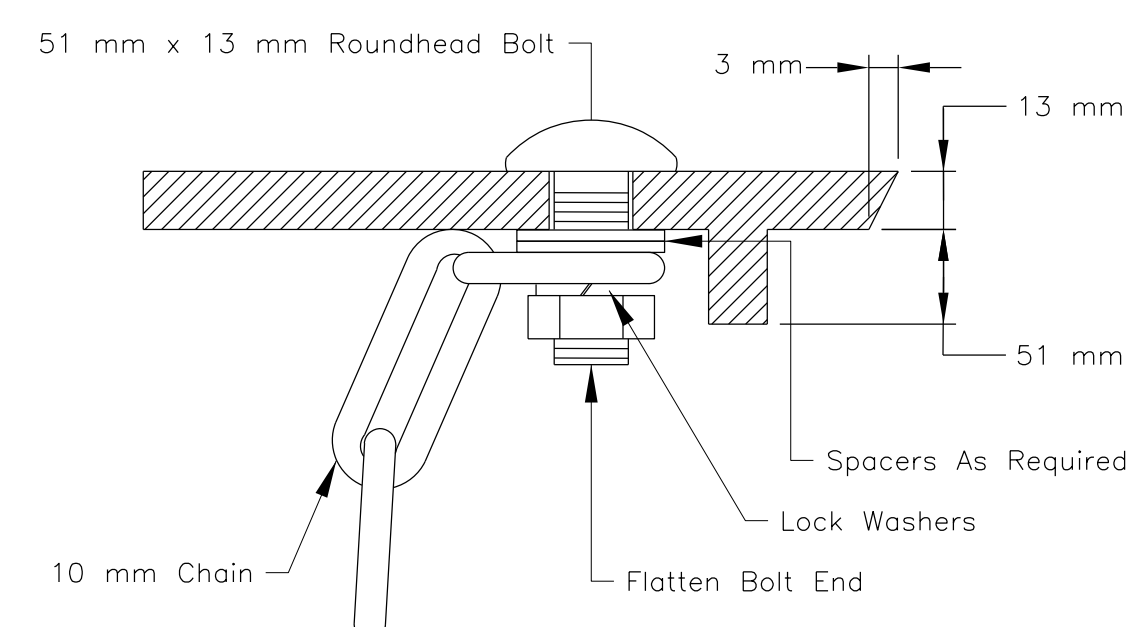
ITEM No. 60405-0000: MANHOLE ADJUSTMENT

STATION	LOCATION	QUANTITY	DESCRIPTION
-0+002.00	RIGHT 2.61m	1	EXISTING SEWER MANHOLE, ADJUST TO GRADE.
0+105.00	RIGHT 4.41m	1	EXISTING SEWER MANHOLE, ADJUST TO GRADE.
0+196.00	RIGHT 5.41m	1	EXISTING SEWER MANHOLE, ADJUST TO GRADE.
0+198.00	LEFT 6.70m	1	EXISTING SEWER MANHOLE, ADJUST TO GRADE.
0+258.00	LEFT 6.60m	2	EXISTING SEWER MANHOLE, ADJUST TO GRADE.
	TOTAL:	6	

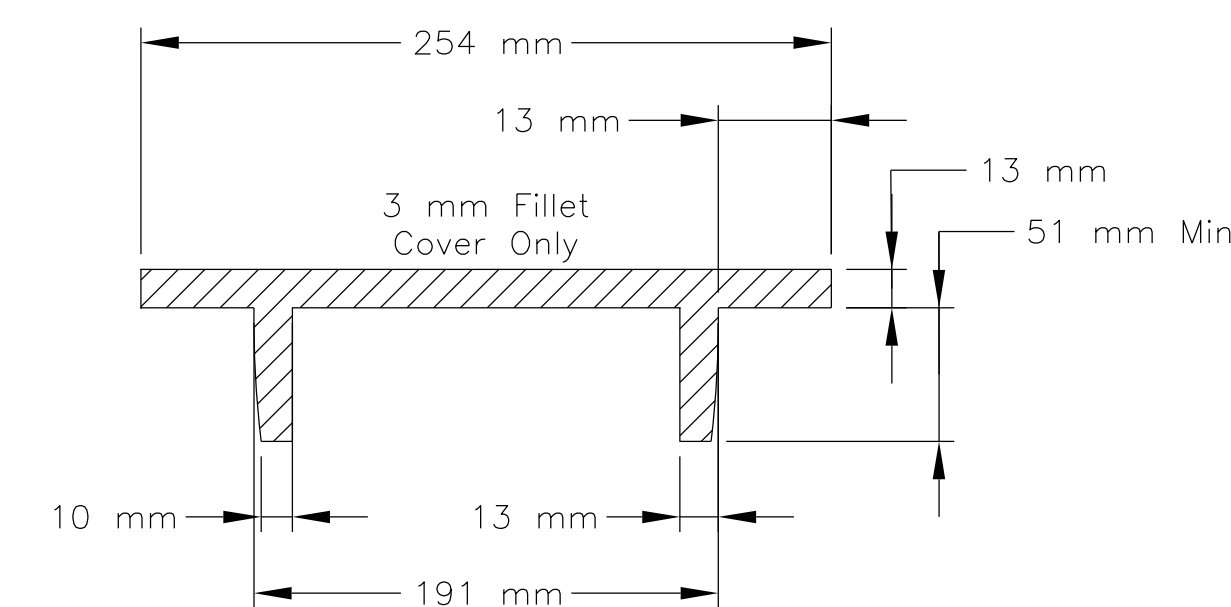
TYPICAL DETAIL FOR BOTH FRAME AND COVER



WATER VALVE, SURVEY MONUMENT, OR SEWER CLEAN OUT FRAME & GRADE ADJUSTMENT



CHAIN ATTACHMENT (As Required)




COVER SECTION A-A TYPICAL DETAIL FOR BOTH FRAME AND COVER

UNITED STATES
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 NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

MANHOLE ADJUSTMENT
 DETAILS

DRAWN BY: NRDOT DATE: 9/1989
 DESIGNED BY: NRDOT DATE: 9/1989
 REVISED: 10/2008 BY: Leroy Toledo

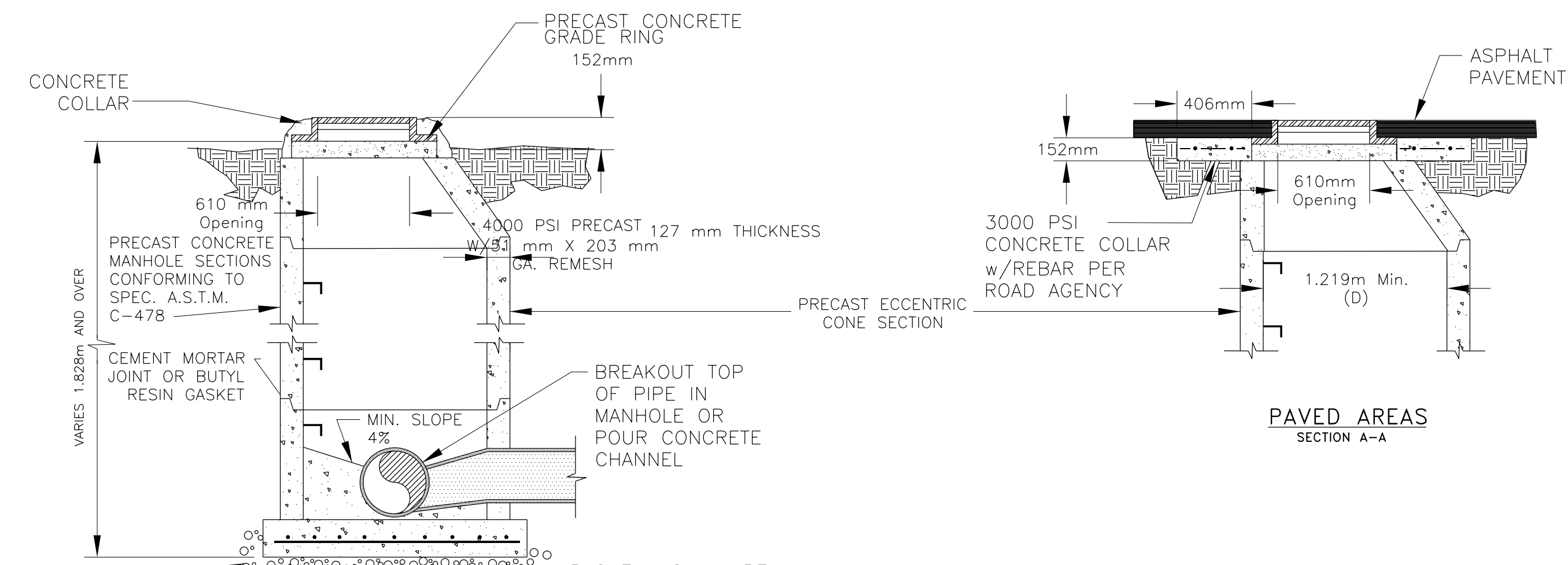
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REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N101	N101(1)2&4	25	33

GENERAL NOTES

1. THE CONTRACTOR SHALL CONTACT THE NAVAJO TRIBAL UTILITY AUTHORITY (NTUA)-WATER DEPARTMENT, FOR WATERLINE, GATE VALVES, AND CONCRETE MANHOLE AS-BUILT DRAWINGS.
2. CONCRETE FOR END TREATMENTS SHALL BE CLASS A(AE) WITH CLASS 1 FINISH. CONCRETE SHALL CONFORM TO SECTION 552 & 601 OF THE FP-14 CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF $F'_c = 27.6 \text{ MPa}$ IN 28 DAYS. END TREATMENTS SHALL BE PAID UNDER BID ITEM 60101-0000.
3. REINFORCING STEEL SHALL CONFORM TO AASHTO SPECIFICATION M-31 (ASTM A 615M), GRADE 40, AND SECTION 554 OF FP-14. ALL REINFORCING STEEL SHALL HAVE 76 mm CLEARANCE COVER UNLESS OTHERWISE AS NOTED IN THE DETAILS. ALL REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO ITEM 60101-0000.
4. IN NO CASE SHALL ANY BACKFILL BE PLACED UNTIL THE CONCRETE HAS ATTAINED A COMPRESSIVE STRENGTH OF 17.2 MPa.
5. THE CONTRACTOR SHALL BE REQUIRED TO MAKE FIELD ADJUSTMENTS AS DIRECTED BY THE COR TO MATCH FIELD CONDITIONS. THESE ADJUSTMENTS SHALL BE CONSIDERED INCIDENTAL TO ITEMS 20401-0000 AND 60101-0000.



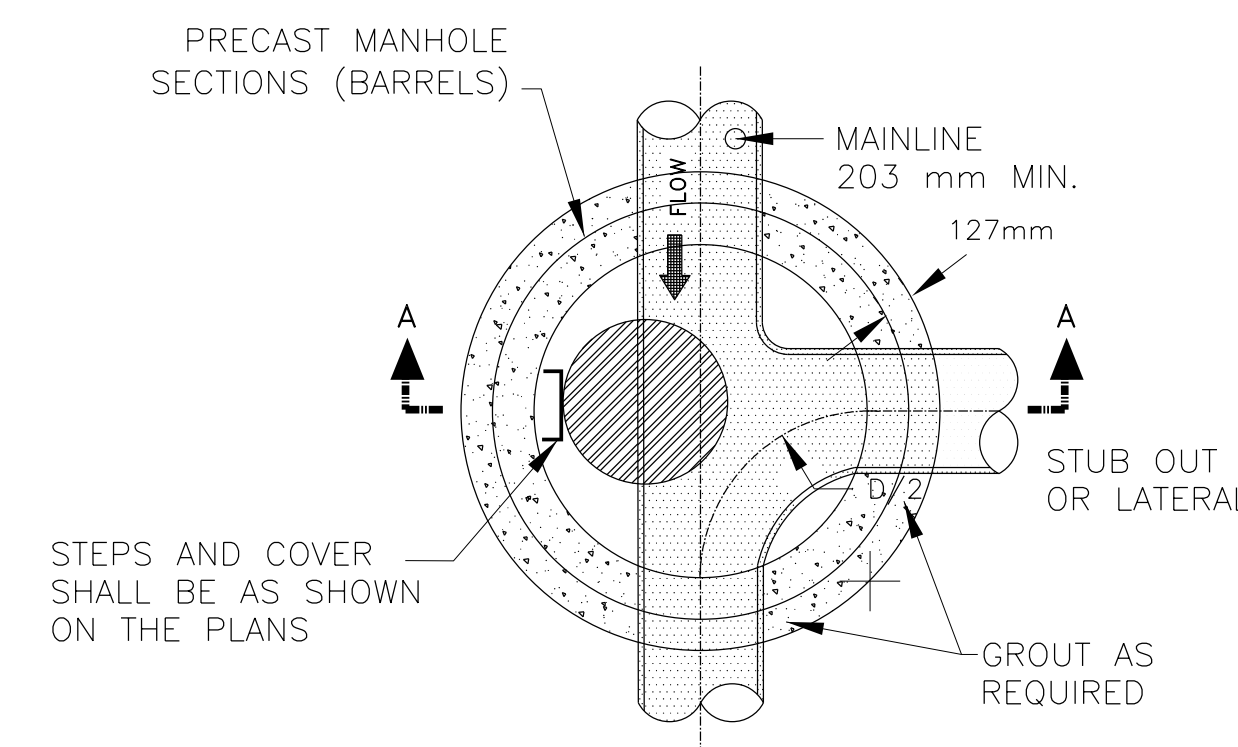
NOTE:	
MAINLINE SIZE	MANHOLE INSIDE DIMENSION
203 mm TO 610 mm	1,219 m
OVER 610 mm	1,828 m

MANHOLE BASE:
FOR MHS 1.829 m To 4.572 m
DEEP #4s 305mm O.C.E.W.
w/152 mm THICK BASE

RURAL UNPAVED AREAS SECTION A-A

BACKFILL SHALL BE
COMPACTED TO 90%
STANDARD PROCTOR.
152 mm MIN. COMPACTED
GRAVEL BASE

FOR MHS > 4.572 m DEEP
#4s 1,829 m O.C.E.W.,
w/203 mm THICK BASE



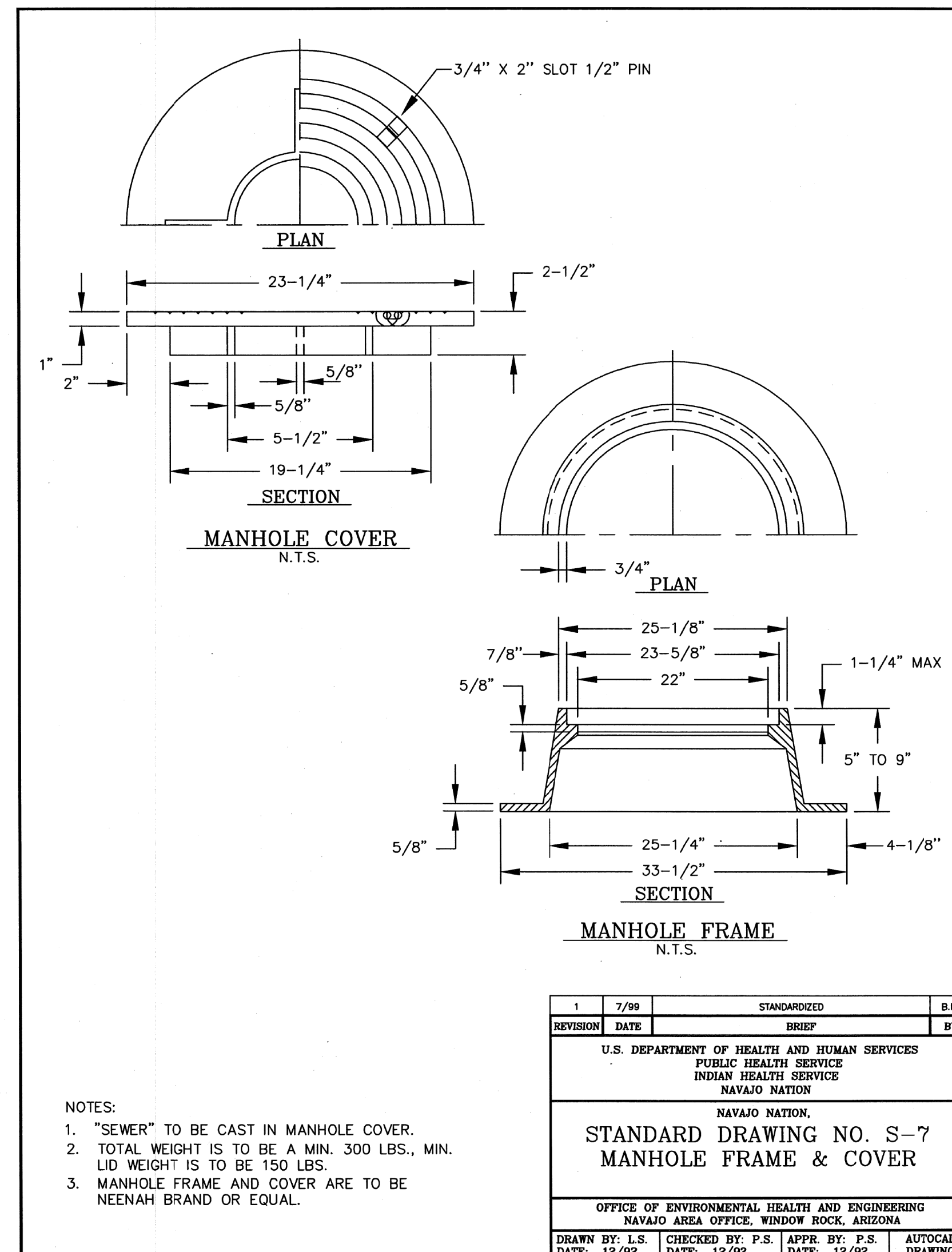
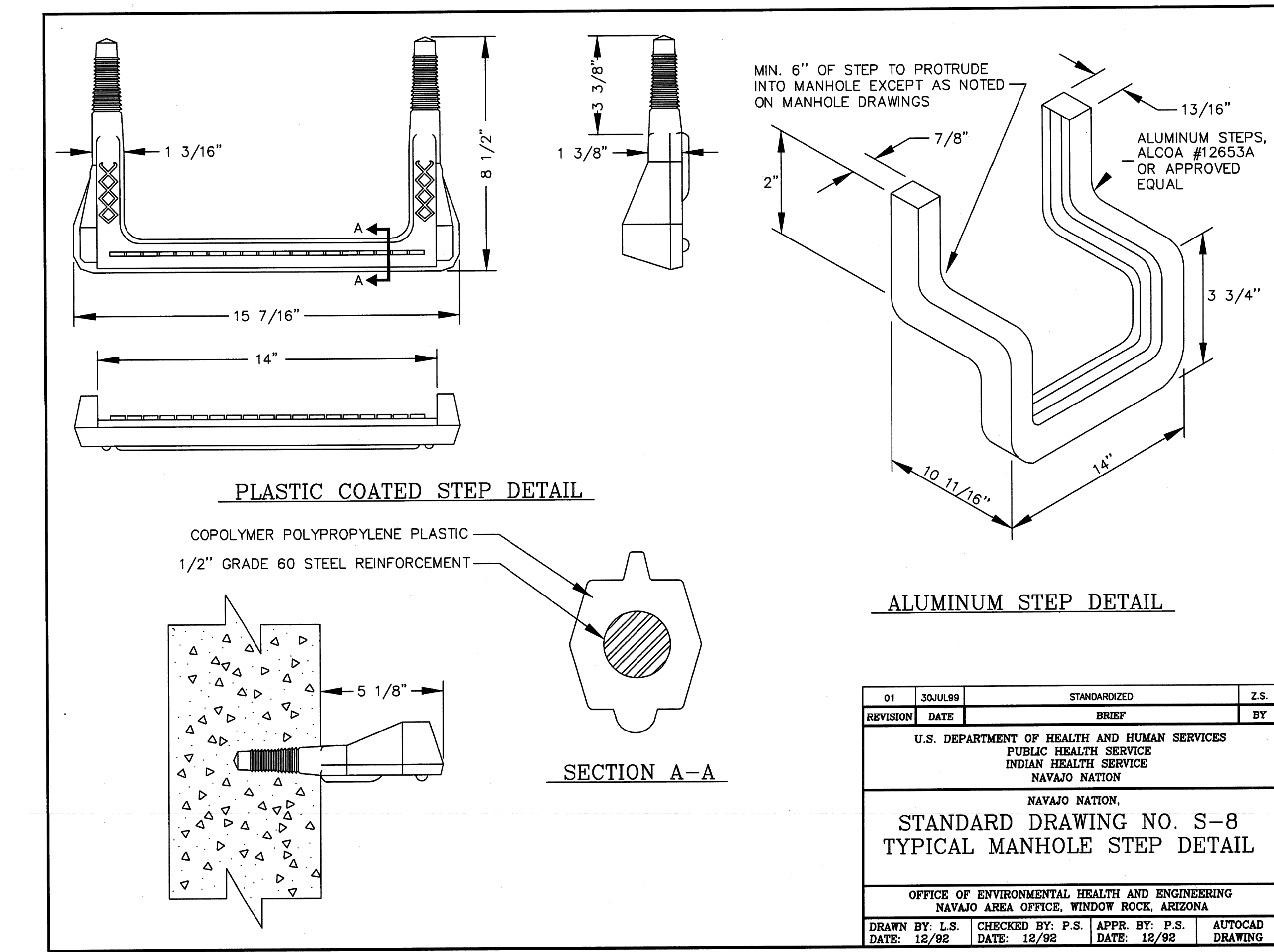
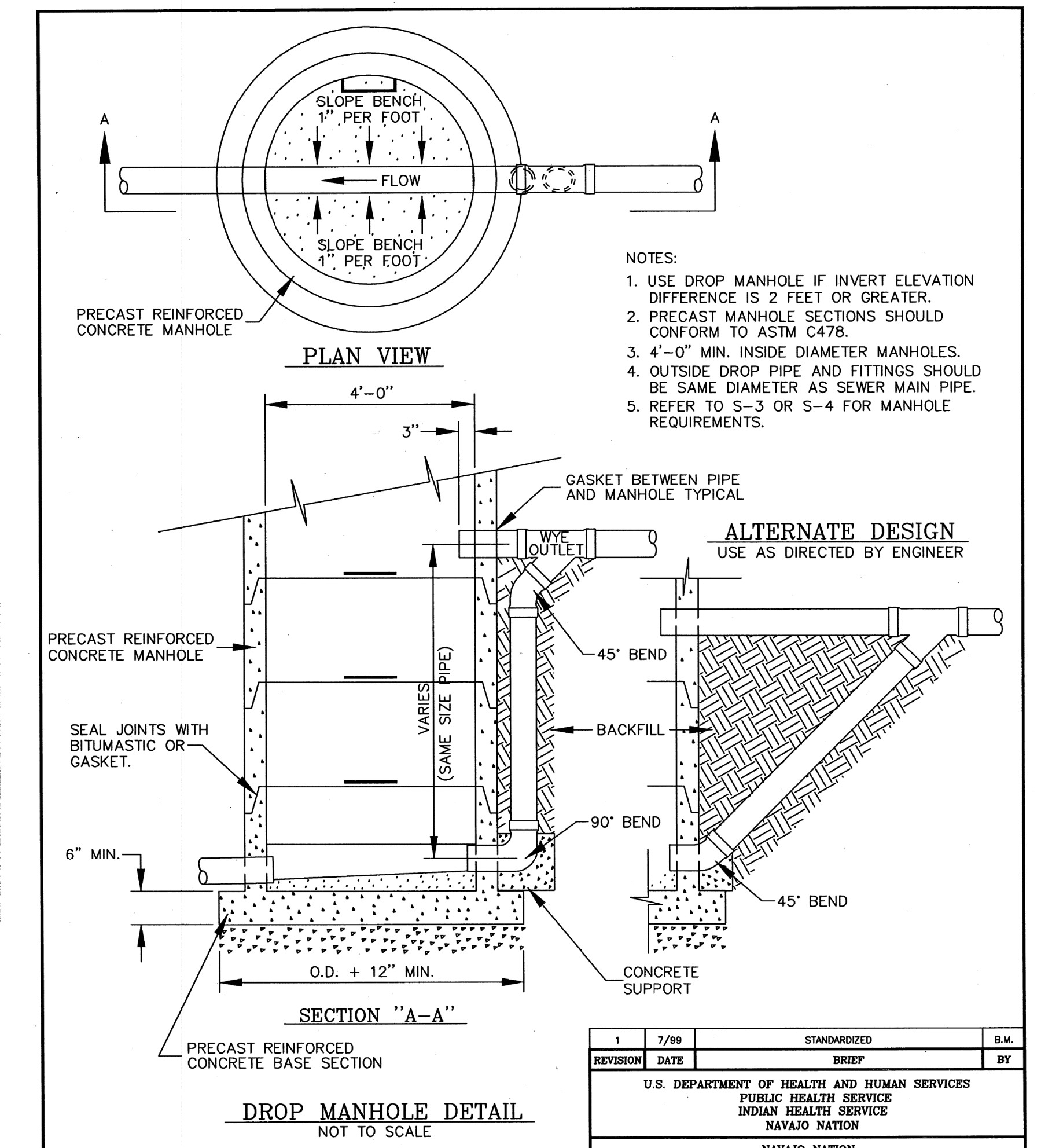
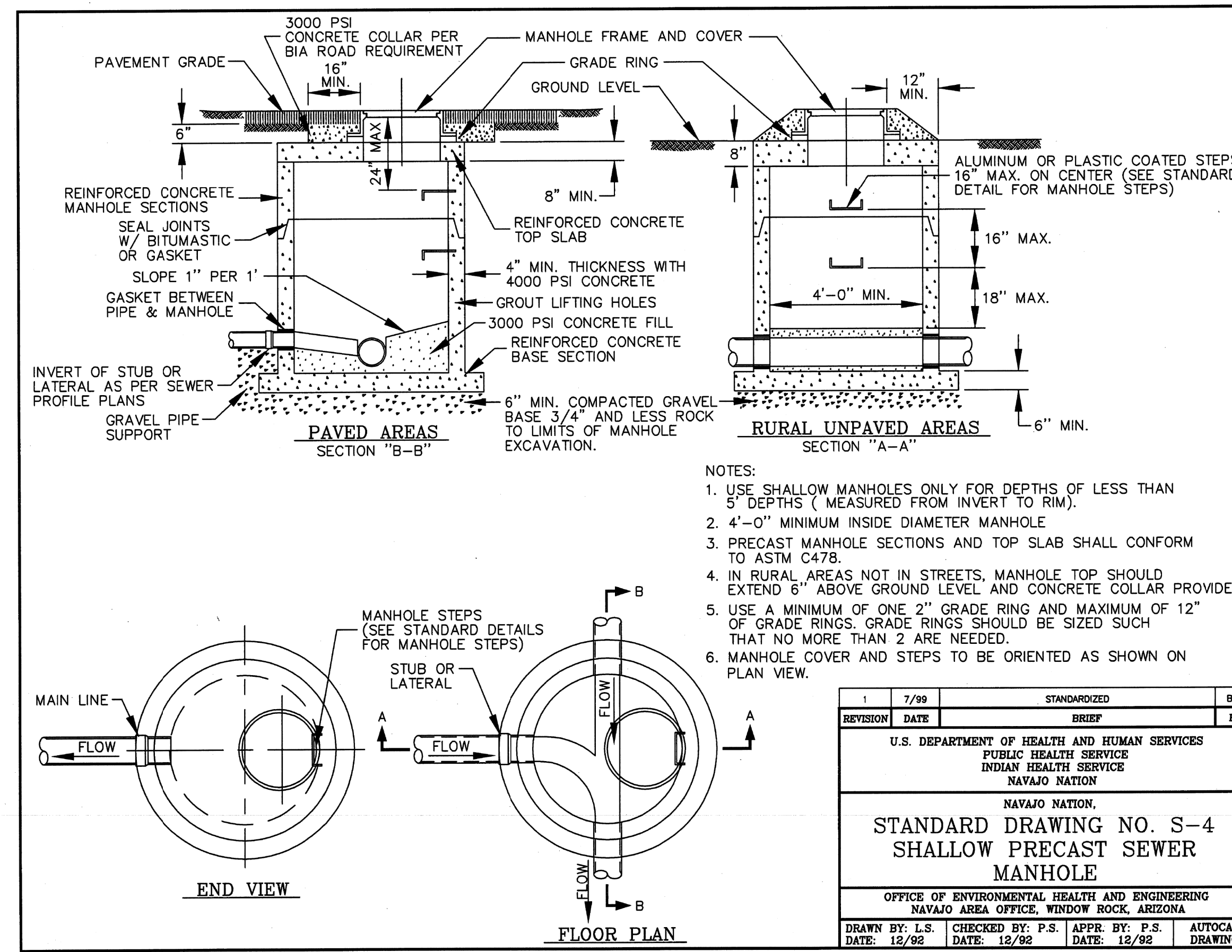
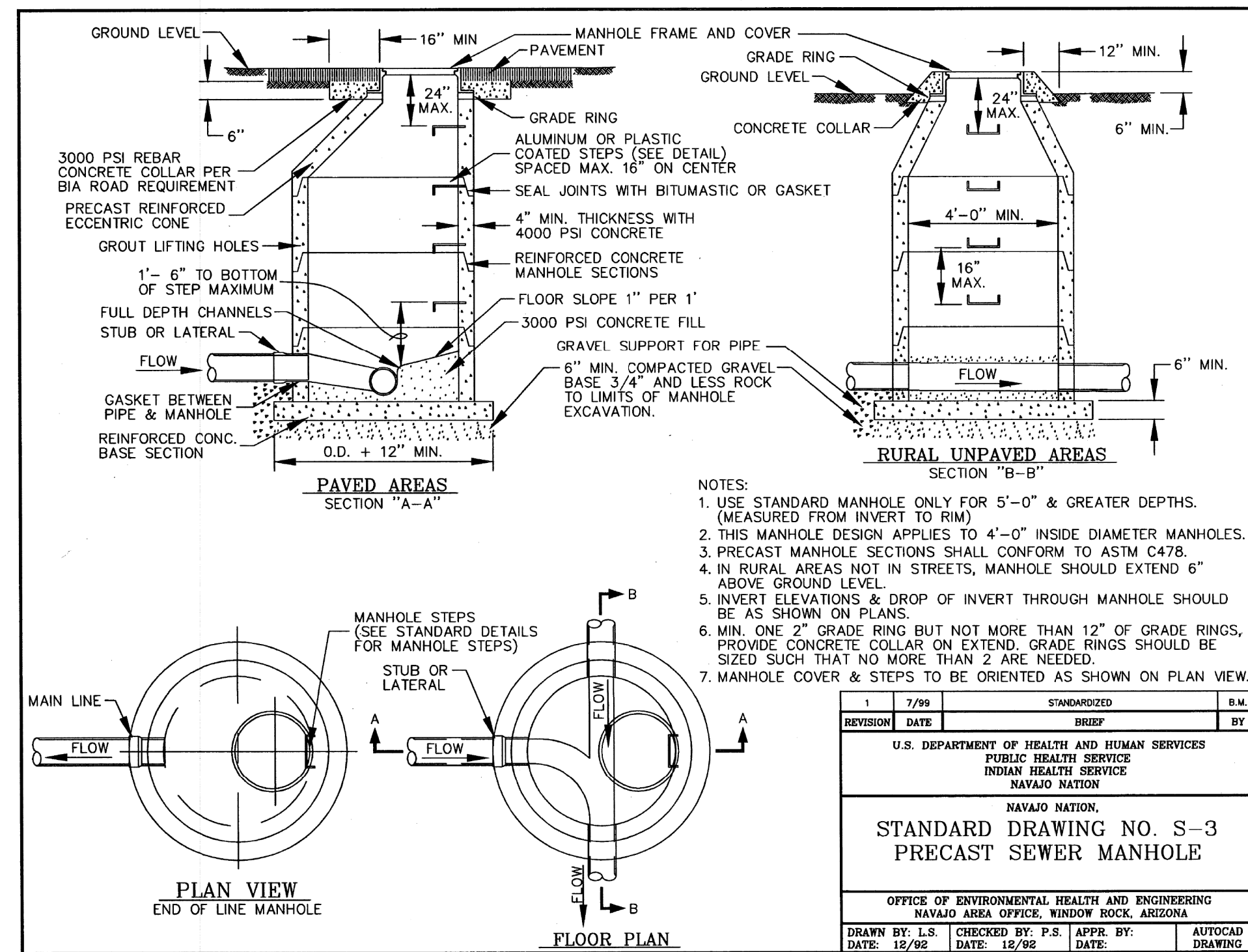
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

MANHOLE INSTALLATION AND END TREATMENT DETAILS

DRAWN BY: DATE: 00/0000
DESIGNED BY: D.O.T. DATE: 00/0000
REVISED: 03/2015 FILENAME: D.O.T.
BY: D.O.T. SCALE: NTS



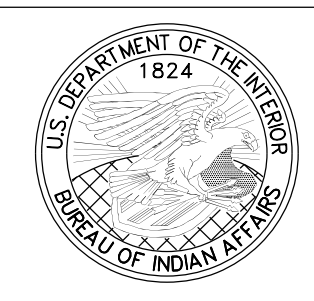
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N101	N101(1)2&4	26	33



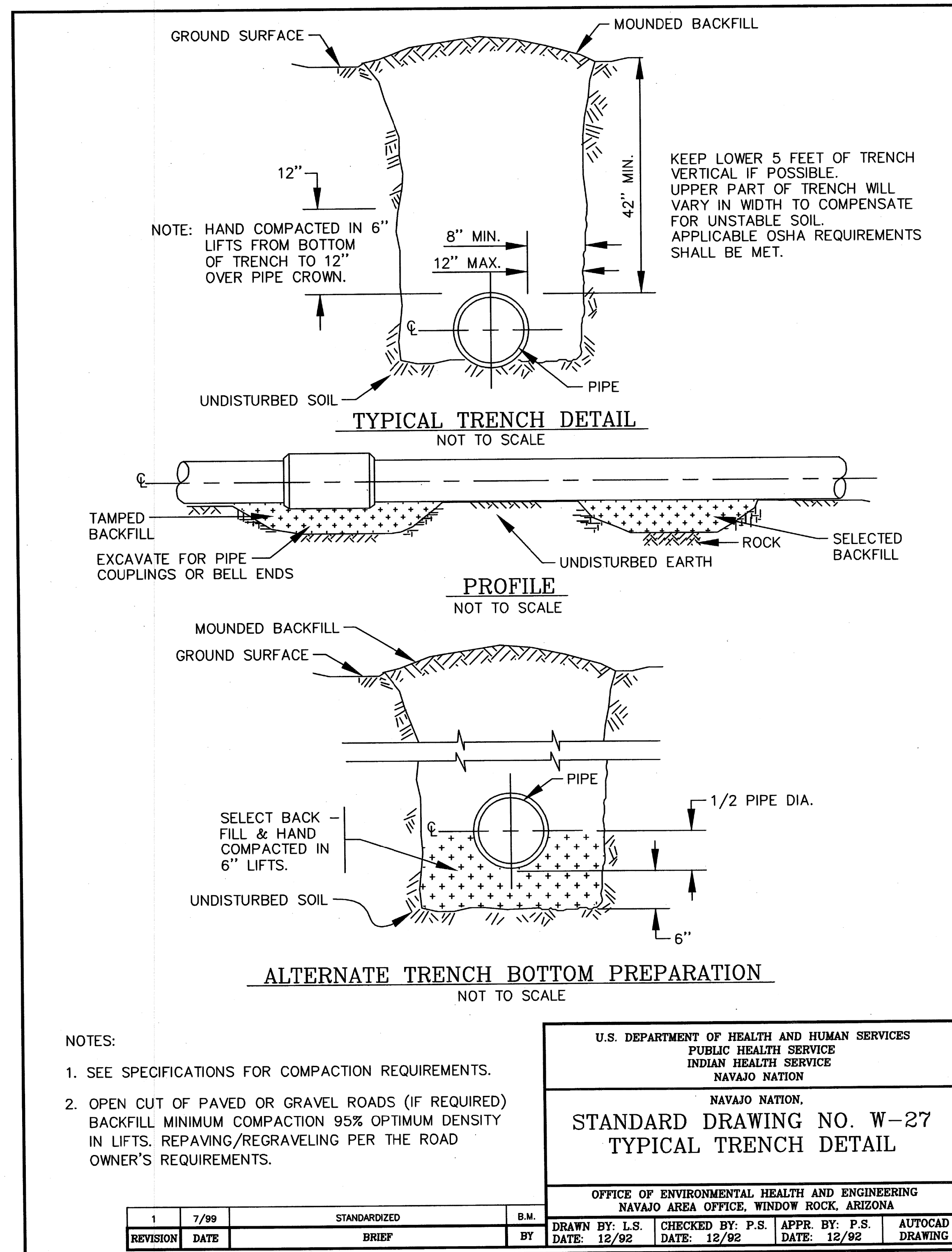
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 DEPARTMENT OF THE INTERIOR
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 NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

STANDARD SEWER DETAILS

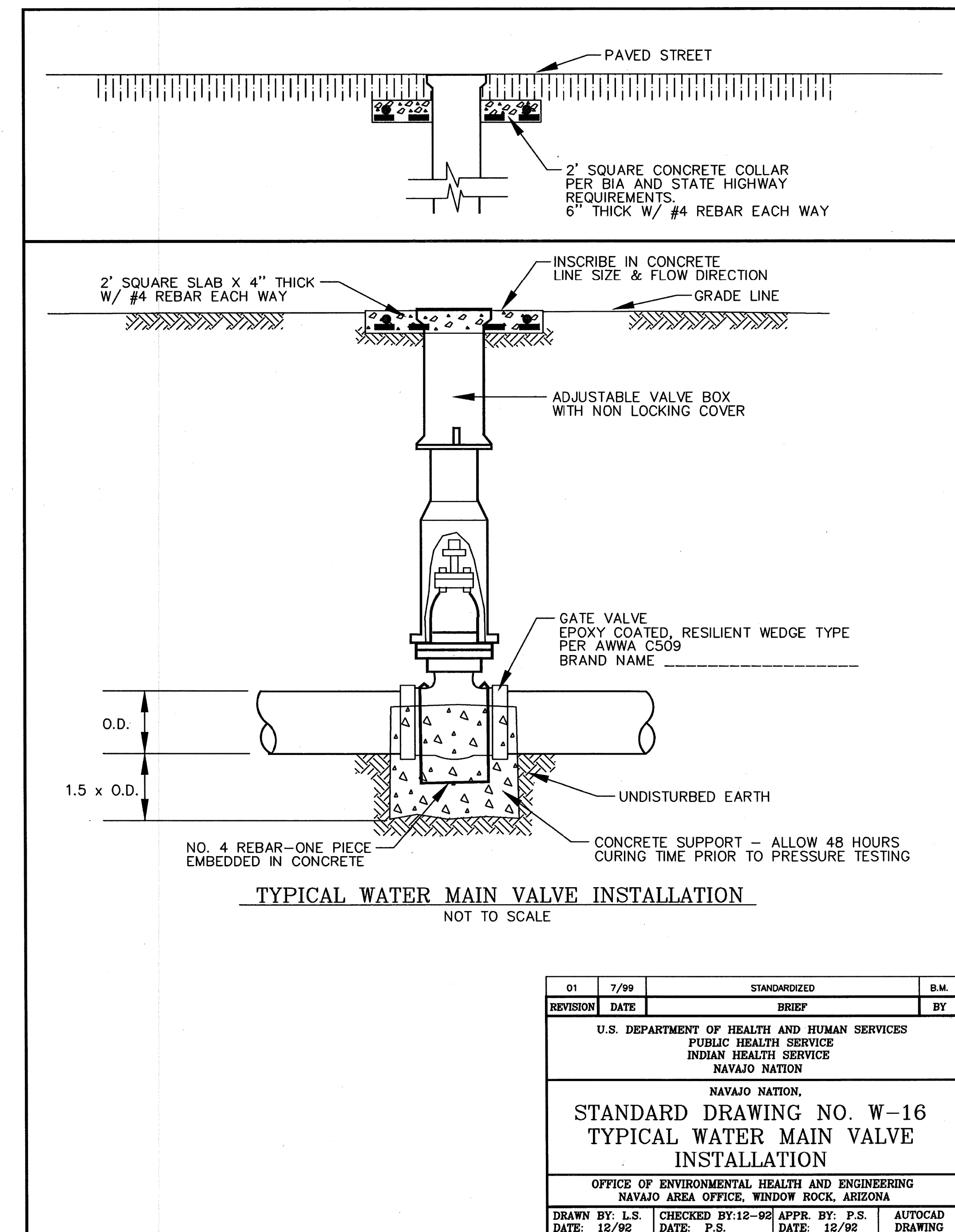
DRAWN BY: NRODOT	DATE: 06/13
DESIGNED BY: NRODOT	DATE: 06/13
REVISED: 12/14	BY: DESIGN 2
SCALE: NTS	
FILENAME: N101(1)2&4	
SHEET MODEL NAME: PLOT SHEET	



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N101	N101(1)2&4	27	33



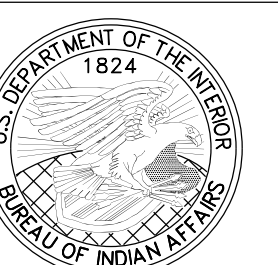
NOTE: THESE STANDARDS FOR WATERLINE ADJUSTMENTS ONLY APPLY WHEN UNKNOWN WATER VALVES ARE DISCOVERED REQUIRING ADJUSTMENT UNDER SECTION 109.02(s) OF THE FP-14.



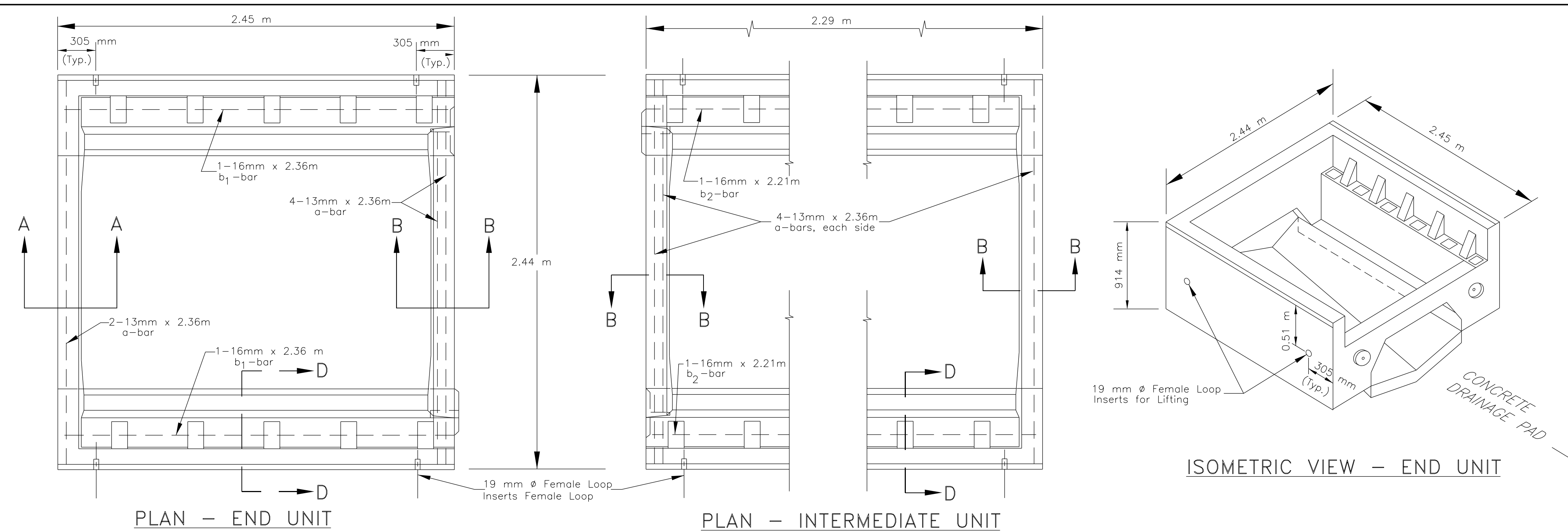
UNITED STATES
DEPARTMENT OF THE INTERIOR
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NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

WATER LINE /MANHOLE

DRAWN BY: NRODOT DATE: 06/13
DESIGNED BY: NRODOT DATE: 06/13
REVISED: 12/14 BY: DESIGN 2
SCALE: NTS
FILENAME: N101(1)2&4
SHEET MODEL NAME: PLOT SHEET

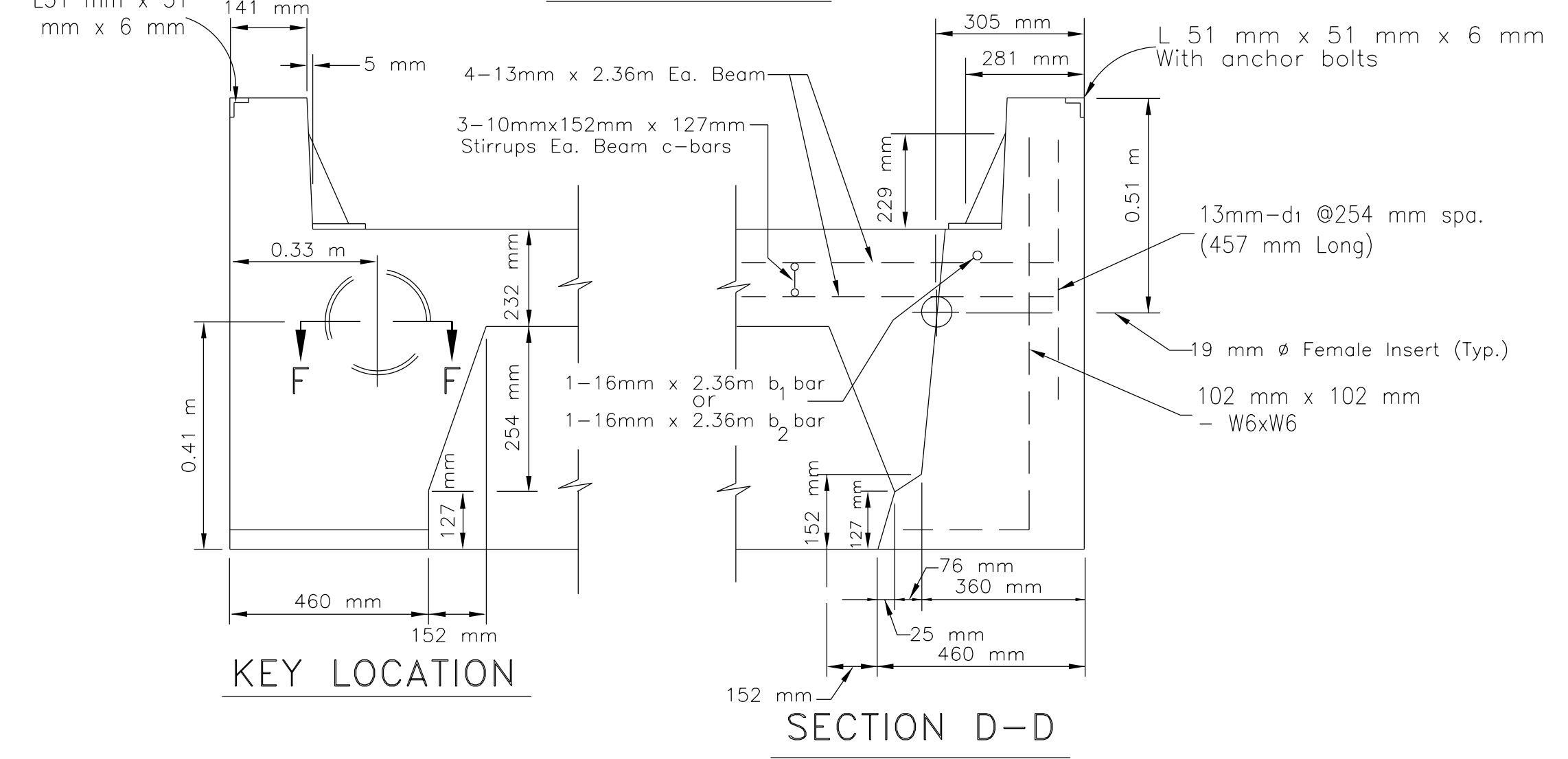
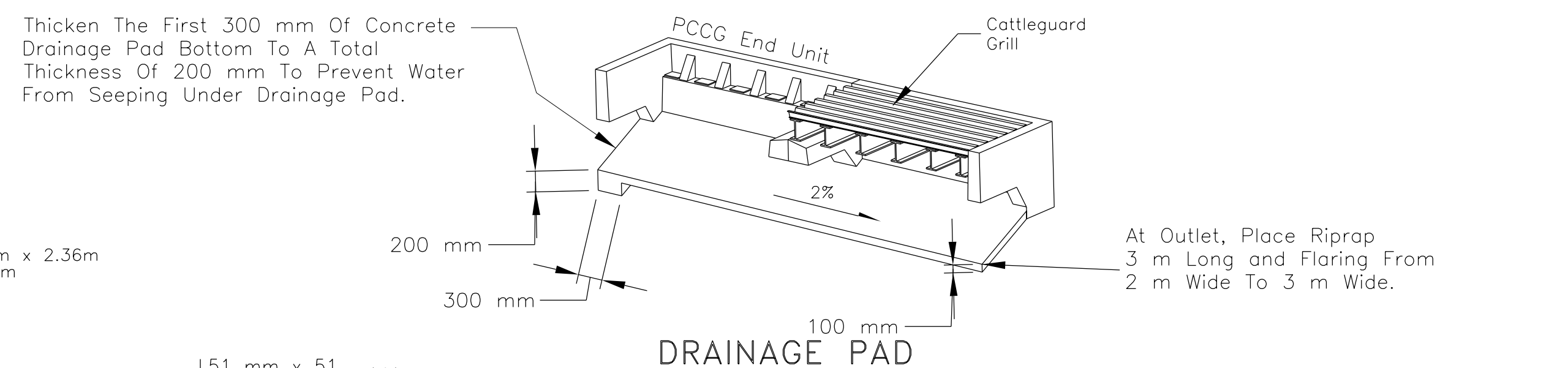
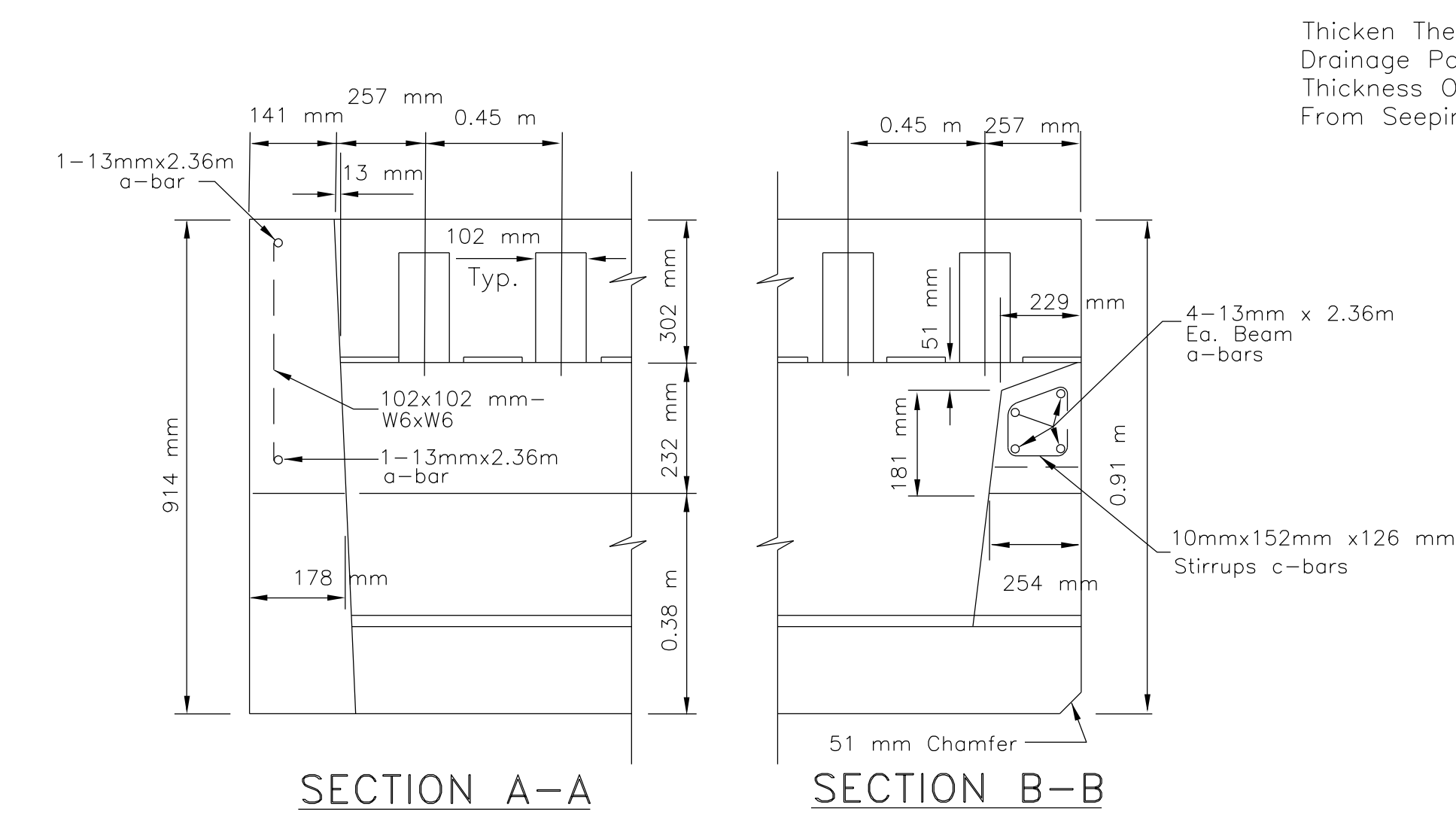


REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N101	N101(1)2&4	28	33

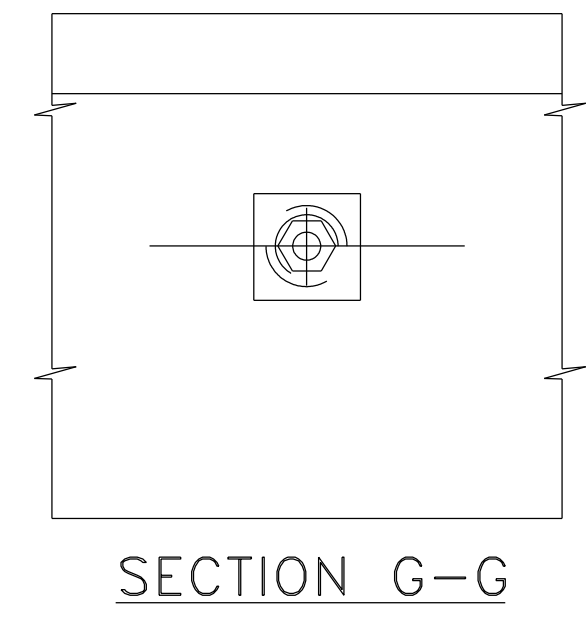
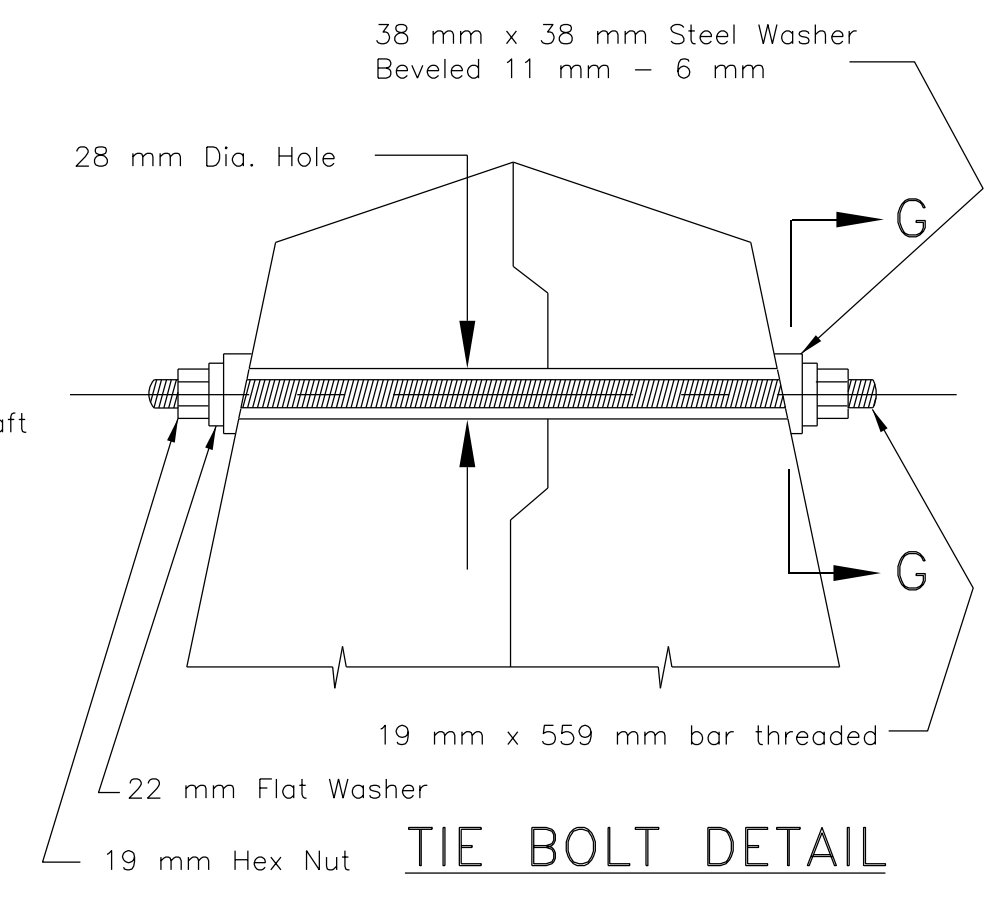
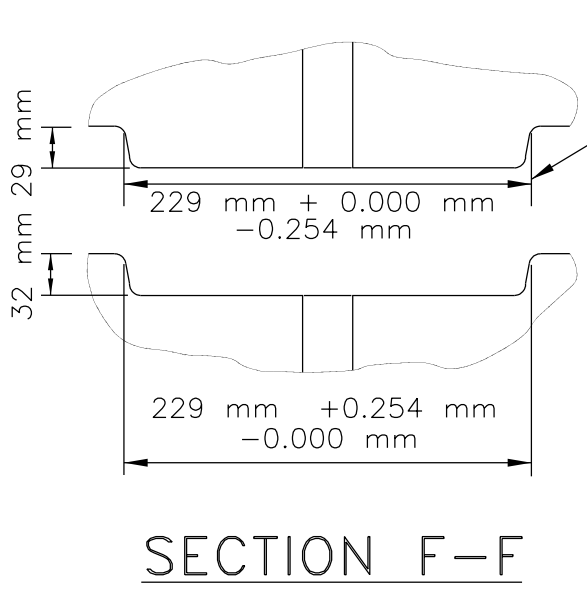
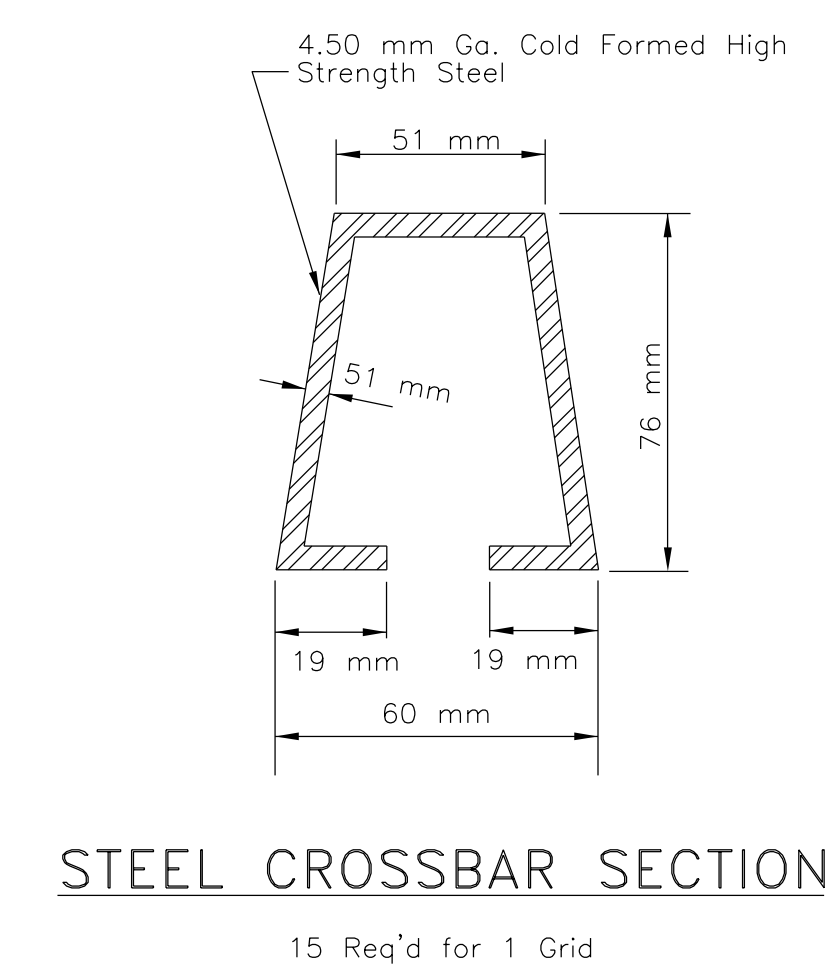
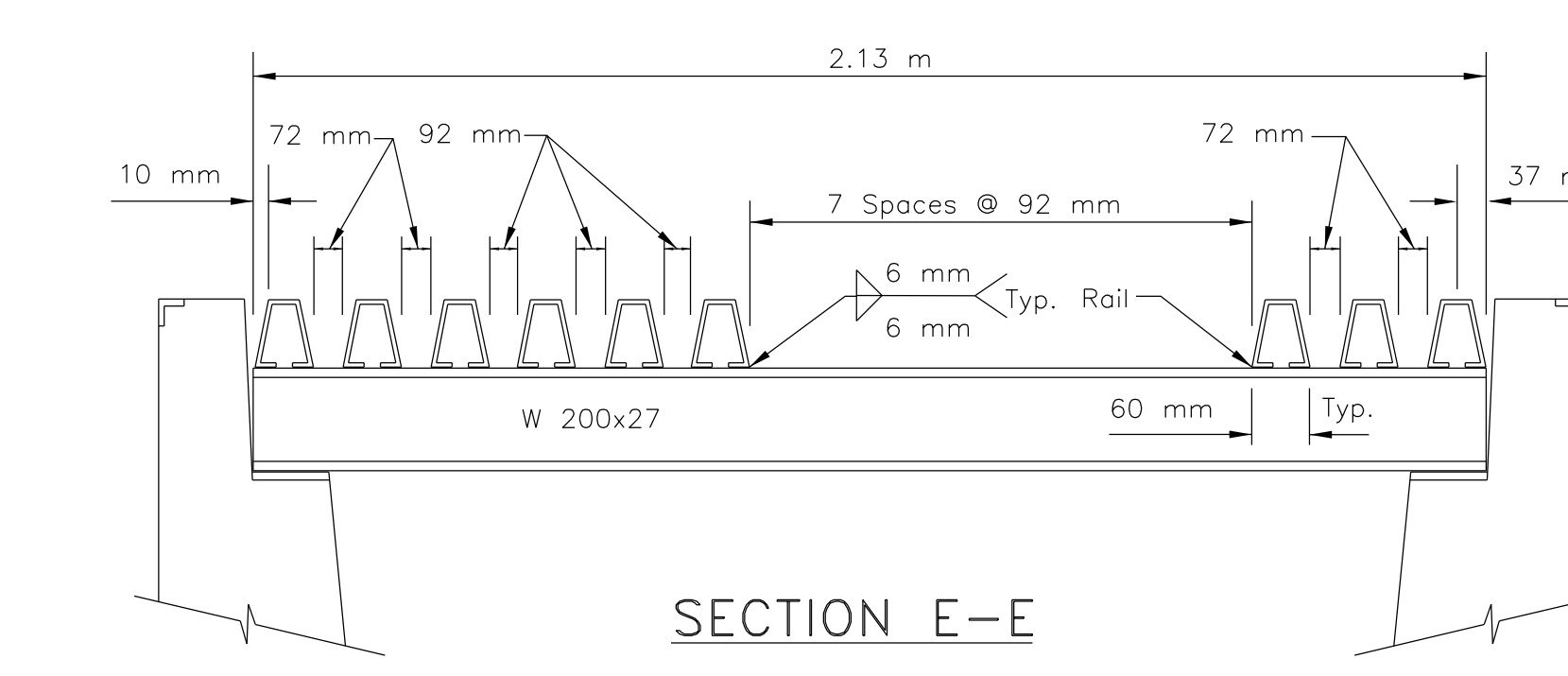
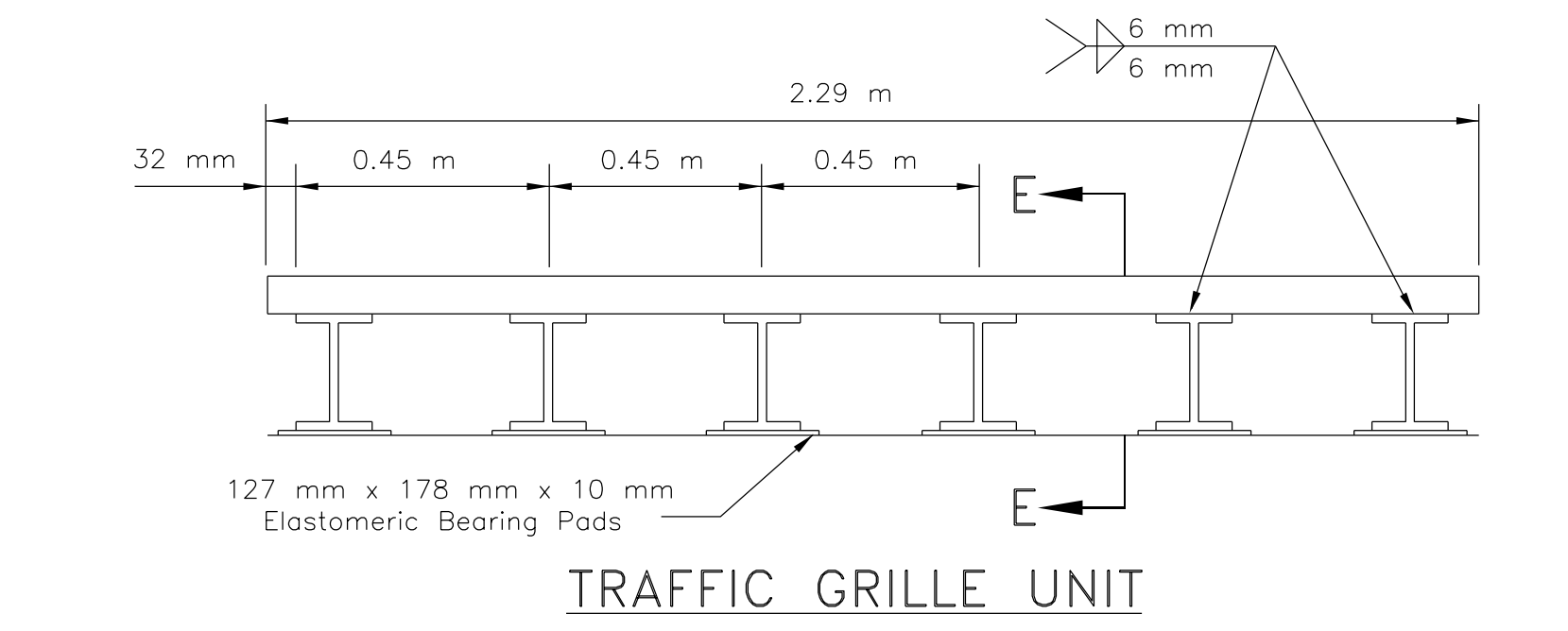


REINFORCING STEEL SCHEDULE

STRAIGHT BARS				BENT BARS				BENDING DIAGRAMS	
MARK	NO.	SIZE	LENGTH	MARK	NO.	SIZE	LENGTH	ALL DIMENSIONS ARE OUT TO OUT	
END UNIT									
a	6	13	2.36 m					b ₂ bar 2.21 m	
b ₁	2	16	2.36 m					a bar 2.36 m	
D ₁	20	13	0.46 m	c	3	10	0.61 m	b ₁ bar 2.36 m	
INTERMEDIATE UNIT									
a	8	13	2.36 m						
b ₂	2	16	2.21 m						
D ₁	18	13	0.46 m	c	6	10	0.61 m		



- ### GENERAL NOTES
1. PRECAST CONCRETE SHALL ATTAIN A MINIMUM 28-DAY 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-14.
 2. REINFORCING STEEL SHALL CONFORM TO ASTM SPECIFICATION A615, GRADE 300. ALL STRUCTURAL STEEL SHALL CONFORM TO AASHTO M270M, GRADE 250.
 3. EACH UNIT SHALL CONFORM TO THE AASHTO MS-18 HIGHWAY LOADING REQUIREMENTS.
 4. EACH UNIT SHALL BE FABRICATED TO CONFORM TO THE ROADWAY CROWN AS SHOWN ON THE PLANS, OR AS DESIGNATED BY THE COR.
 5. BOLTS, WASHER, AND NUTS, SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M-111.
 6. ALL TRAFFIC GRILL UNIT, INCLUDING STEEL ANGLES SHALL BE SHOP PAINTED WITH ONE (1) PRIMER COAT, ONE (1) INTERMEDIATE COAT, AND ONE (1) FINISH COAT IN ACCORDANCE WITH SECTION 563, PAINT SYSTEM 2 OF FP-14.
 7. WING BRACES SHALL BE CONSIDERED SUBSIDIARY ITEMS TO THE CATTLEGUARD UNIT.



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**PRECAST CONCRETE
CATTLEGUARD DETAILS**

DRAWN BY: NRDOT DATE: 7/2007
DESIGNED BY: NRDOT DATE: 4/2003
REVISED: 10/26/2015 BY: Design 2
\$FILE\$\$

C:\N101(1)\Microstation\final drawings\Shl_28 Precast Concrete Cattleguard Details 072415.dgn

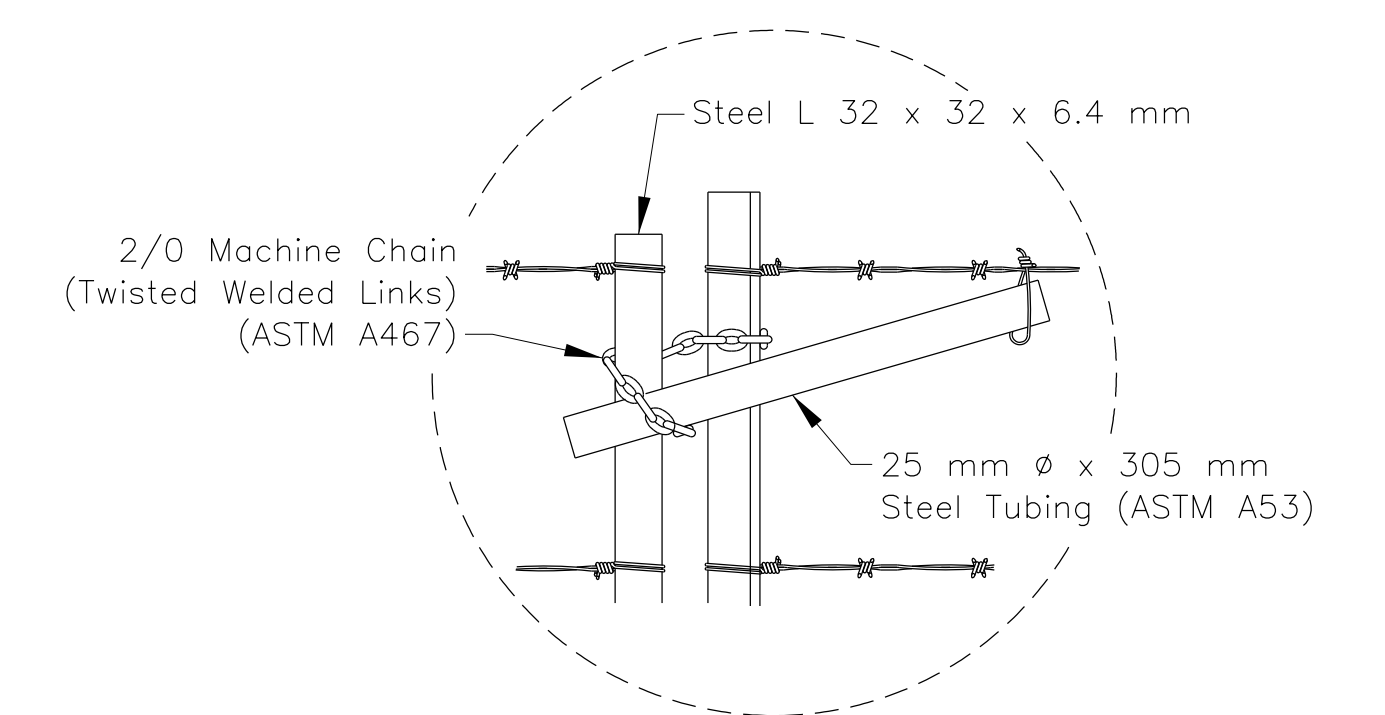
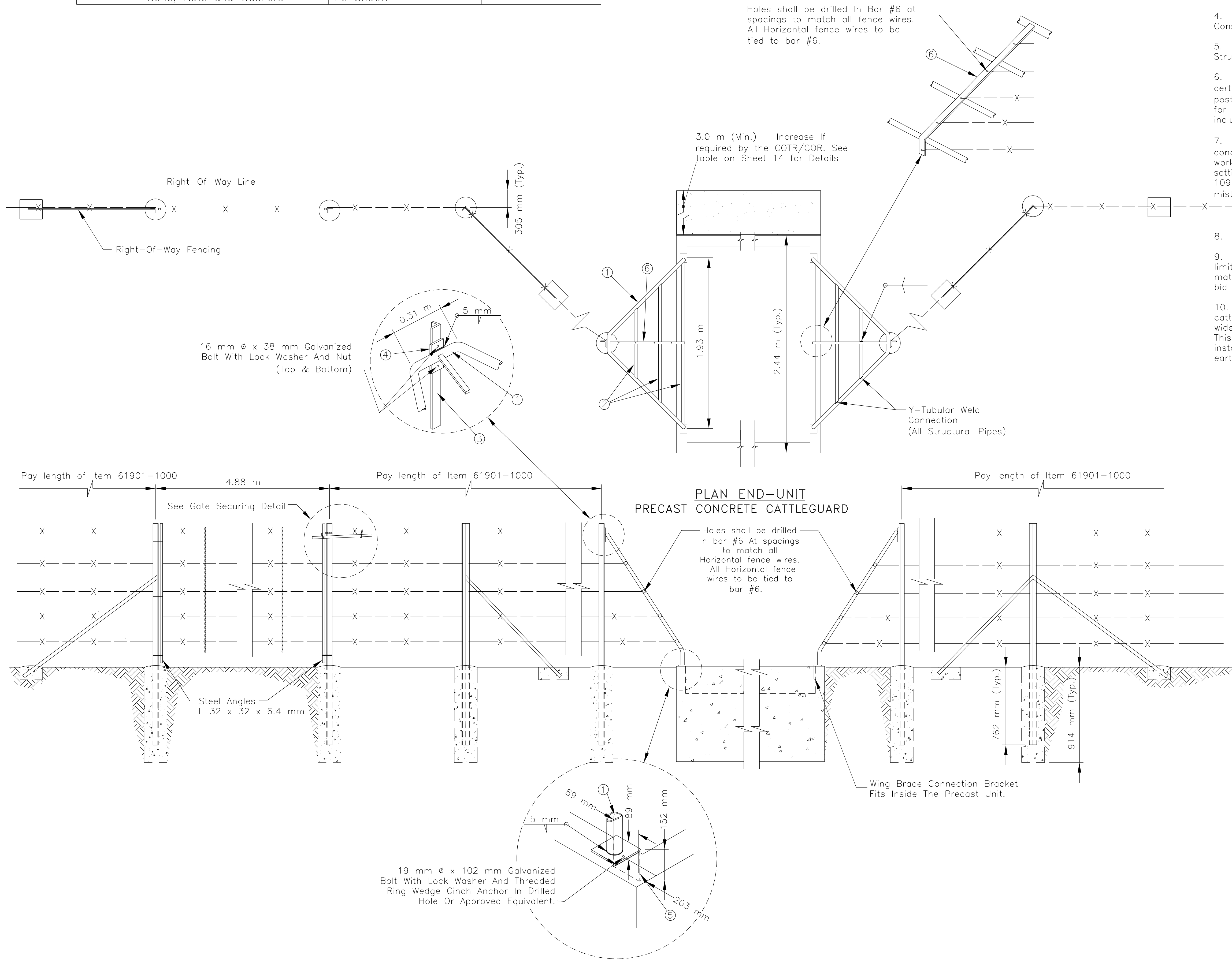
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N101	N101(1)2&4	29	33

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		

GENERAL NOTES

- Structural pipe shall conform to ASTM A53-93a, 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-14.
- 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 welding at Structural Steel 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 the bid items for cattleguard under section 619. Installation of Gates at cattleguard locations shall be included in the unit price bid for the cattleguard bid item(s) shown in the bid schedule.
- The COR may adjust the finished cattleguard elevation as needed to fit field/drainage conditions. The Contractor shall re-grade the adjoining turnout approaches as required. This work shall be considered incidental to item 61903-1000 of FP-14. Any mistakes made in the setting of the cattleguards resulting in extra re-work will be negotiated under section 109.02(s) as a modification if the Contractor can show that it was a result of government mistakes.
- At skewed turnout locations, the cattleguard shall be installed perpendicular to turnout.
- The length of the turnout between the back edge of the cattleguard and the right-of-way limit shall be surfaced with a 100 mm 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 cattleguard locations where the design typical width is wider on one side of the cattleguard than the other side, the narrower roadway width shall be flared out to match the wider roadway width using an 8:1 taper or to the length allow by the right-of-way width. This includes at narrow right-of-way width where the turnout radius cannot be completely install between the main road and the cattleguard. This work shall be paid under the earthwork, base course, and paving items included in the bid schedule.



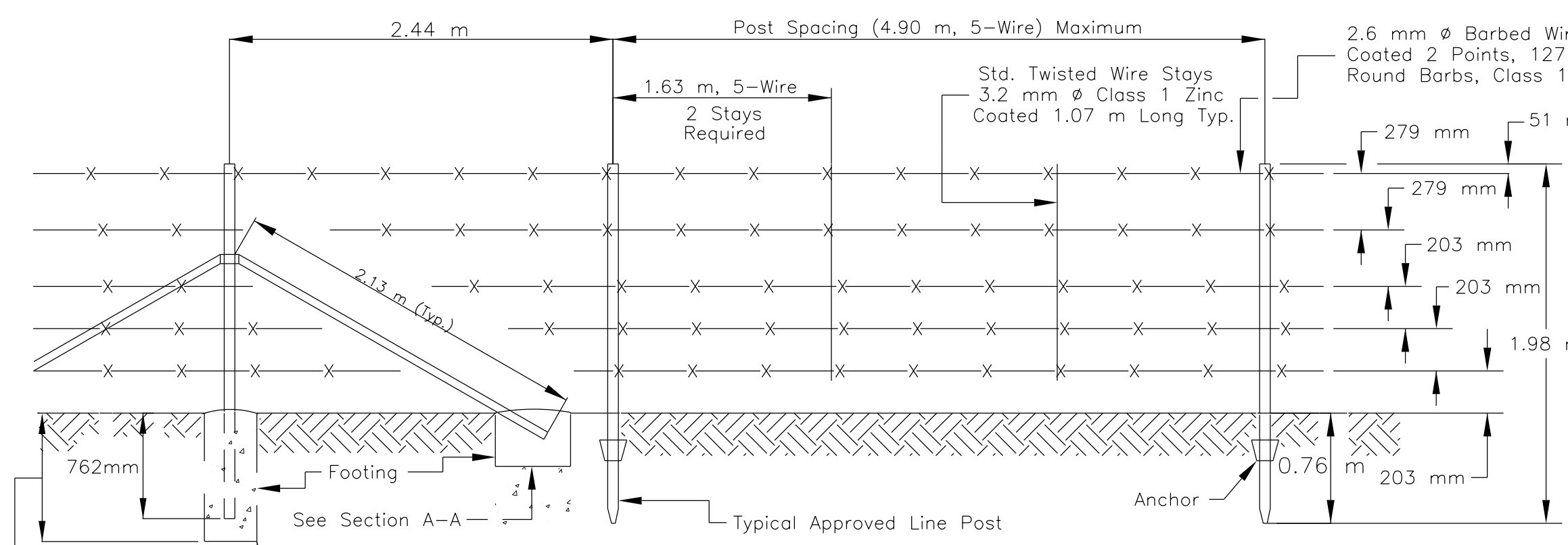
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
 NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

CATTELGUARD LOCATION
WING BRACE DETAILS

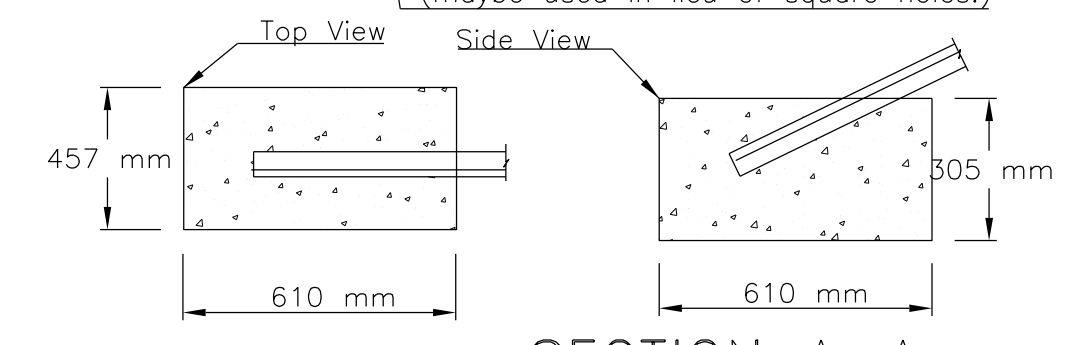
DRAWN BY: NRDOT	DATE: 1/24/2013
DESIGNED BY: NRDOT	DATE: 1/24/2013
REVISED: 10/3/17	BY: Design 2

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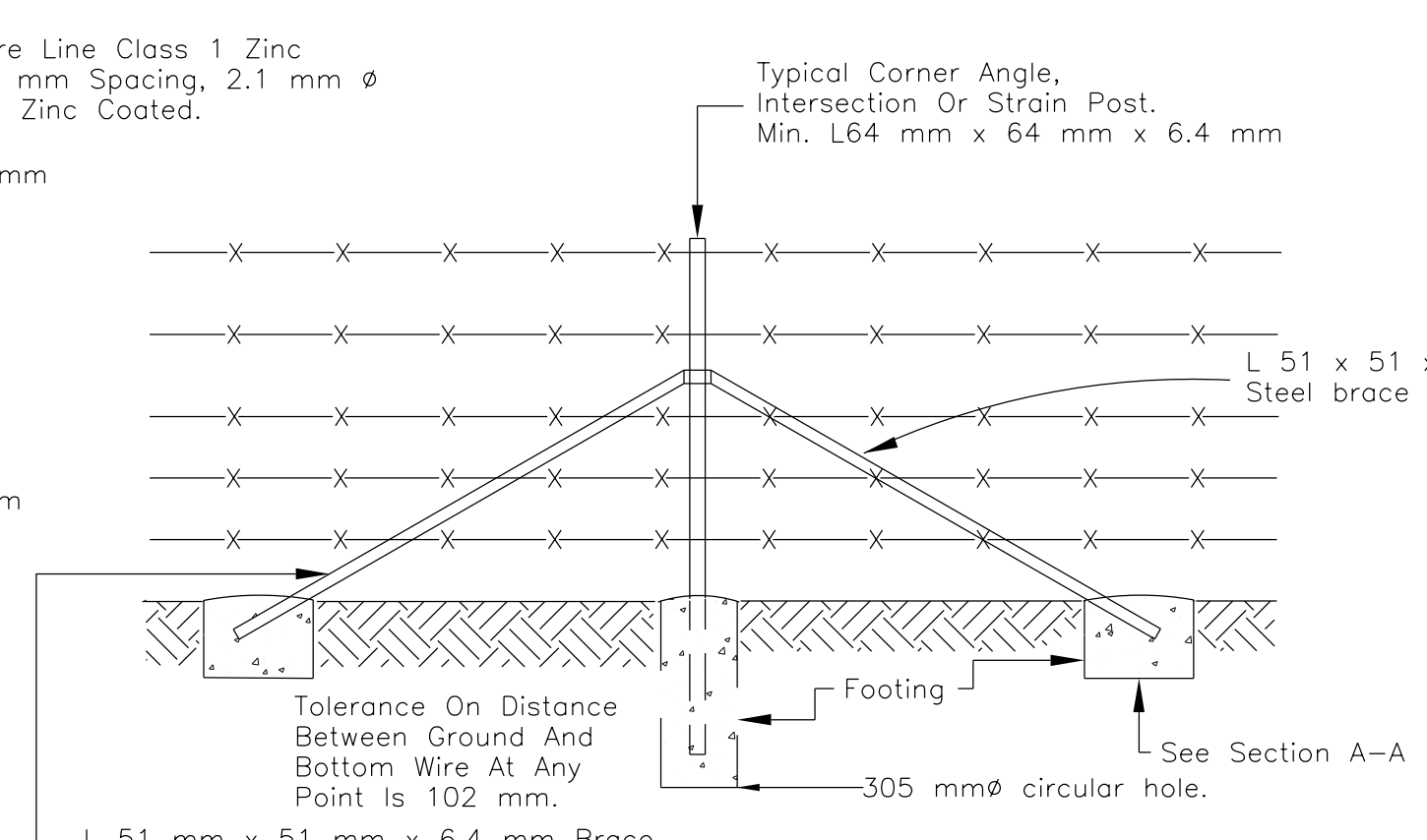
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N101	N101(1)2&4	30	33



STANDARD 5-STRAND GALVANIZED BARBED WIRE PANEL

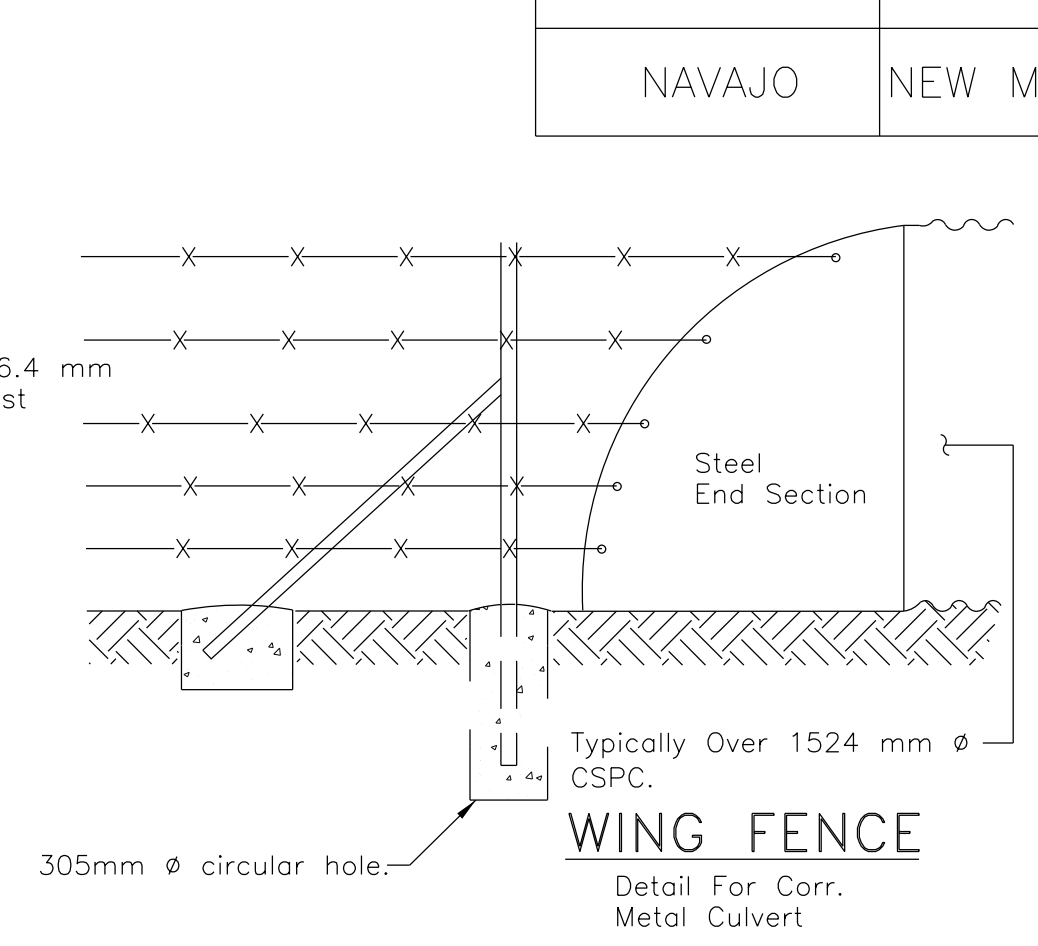


SECTION A-A



STANDARD STRAND POST

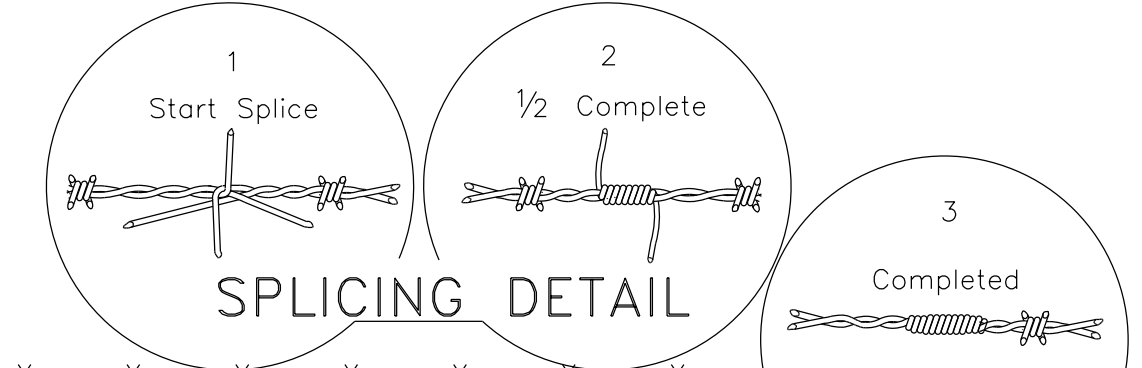
To Be Placed @ 198 m Max. Intervals. Strand Posts With Braces Shall Be Installed At All Corners (R/W Corners Etc.) And Angles Exceeding 15' And Fence Intersections. A Third Brace, In Line With Cross Fence, Required At Intersection.



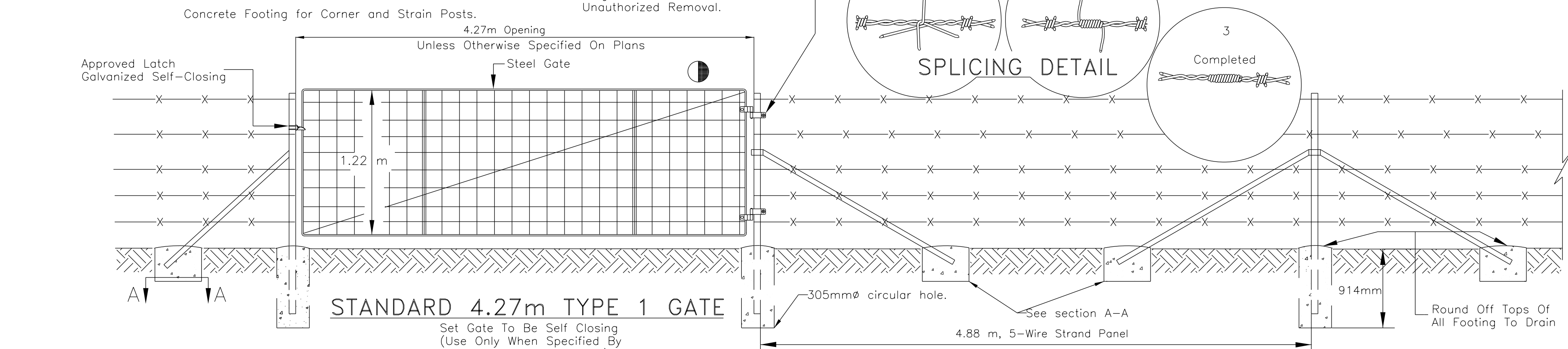
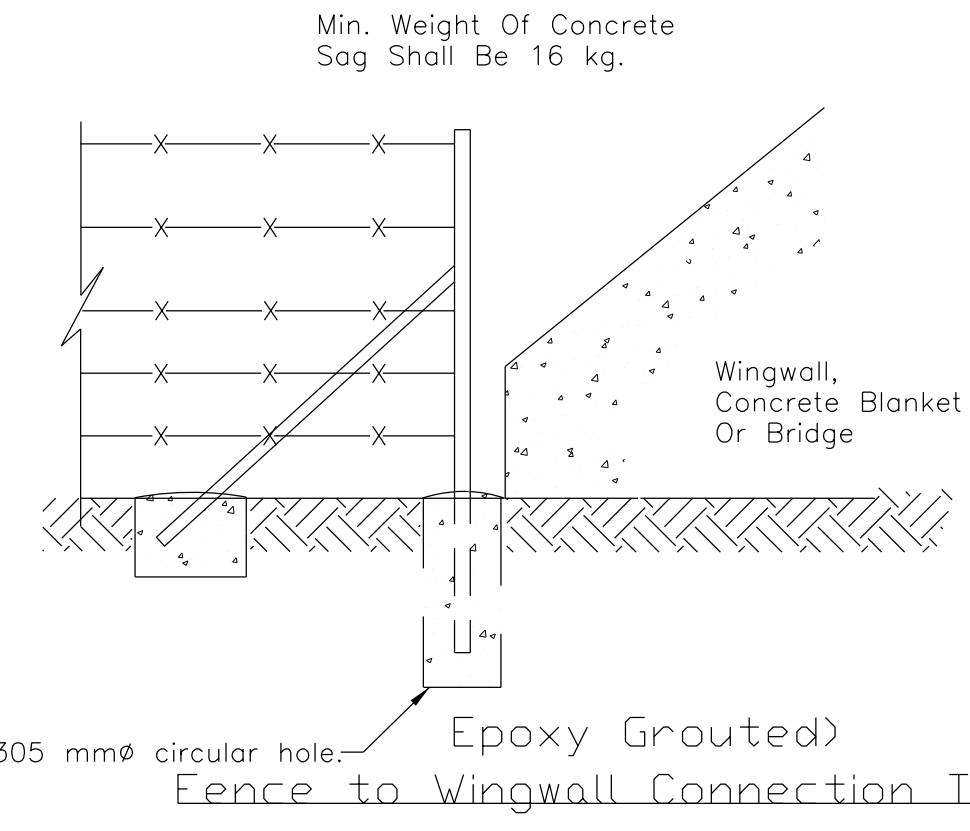
WING FENCE

GENERAL NOTES

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



CONCRETE SAG WEIGHT DETAIL



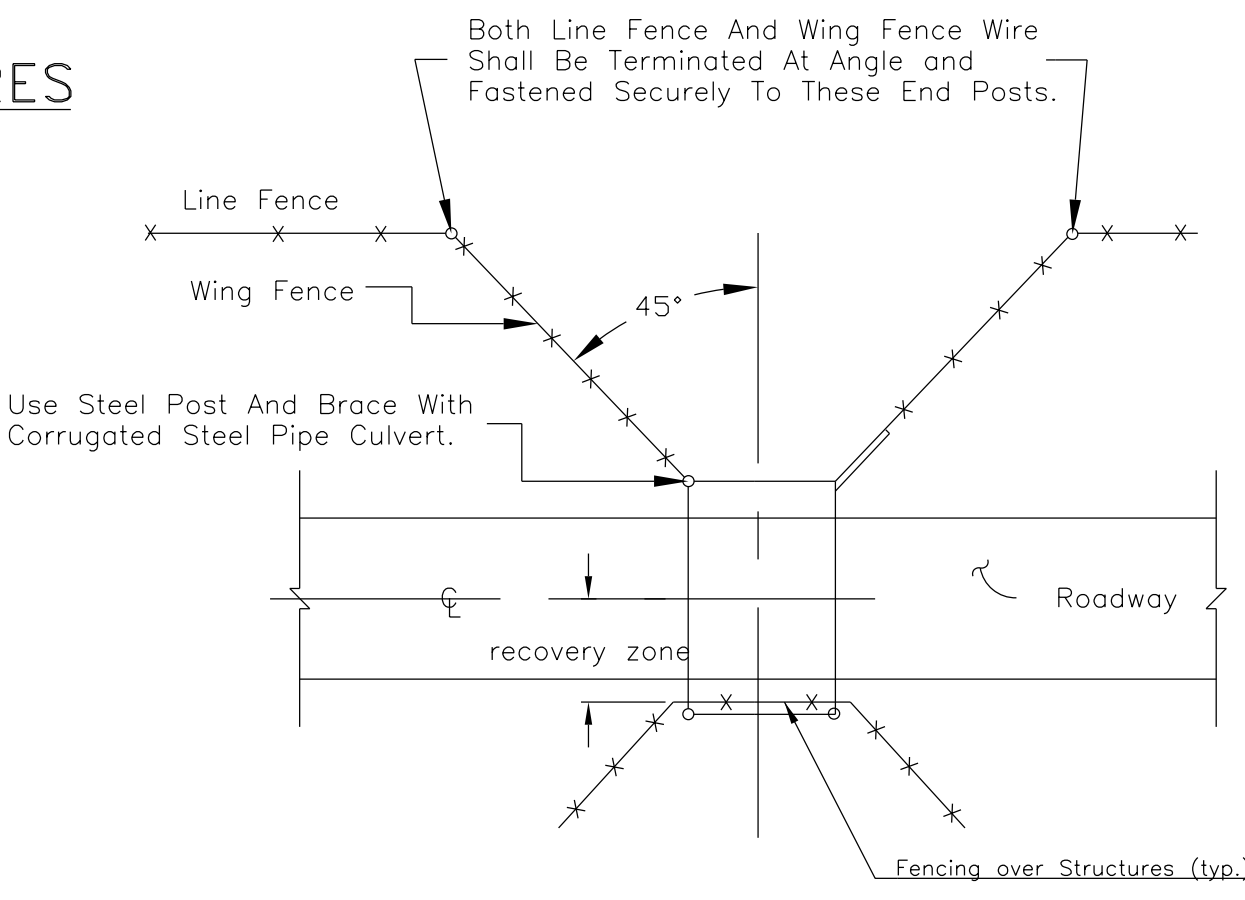
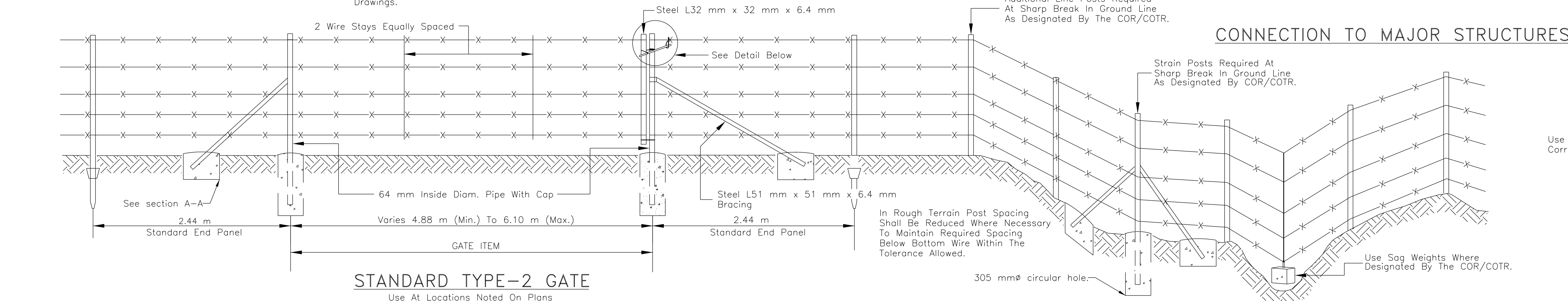
NOTE: When Tubular Post Hangers And/Or Latches Are Used, It Shall Be Drilled For A Single 2.38 mm ϕ Min. Drive Pin To Prevent Rotation Of The Hangers And/Or Latches.

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

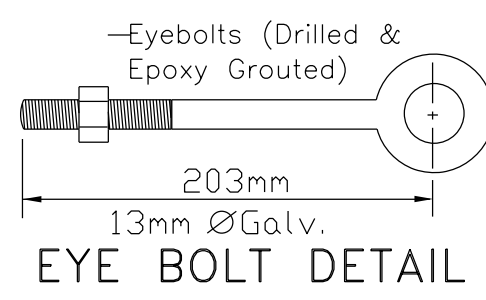
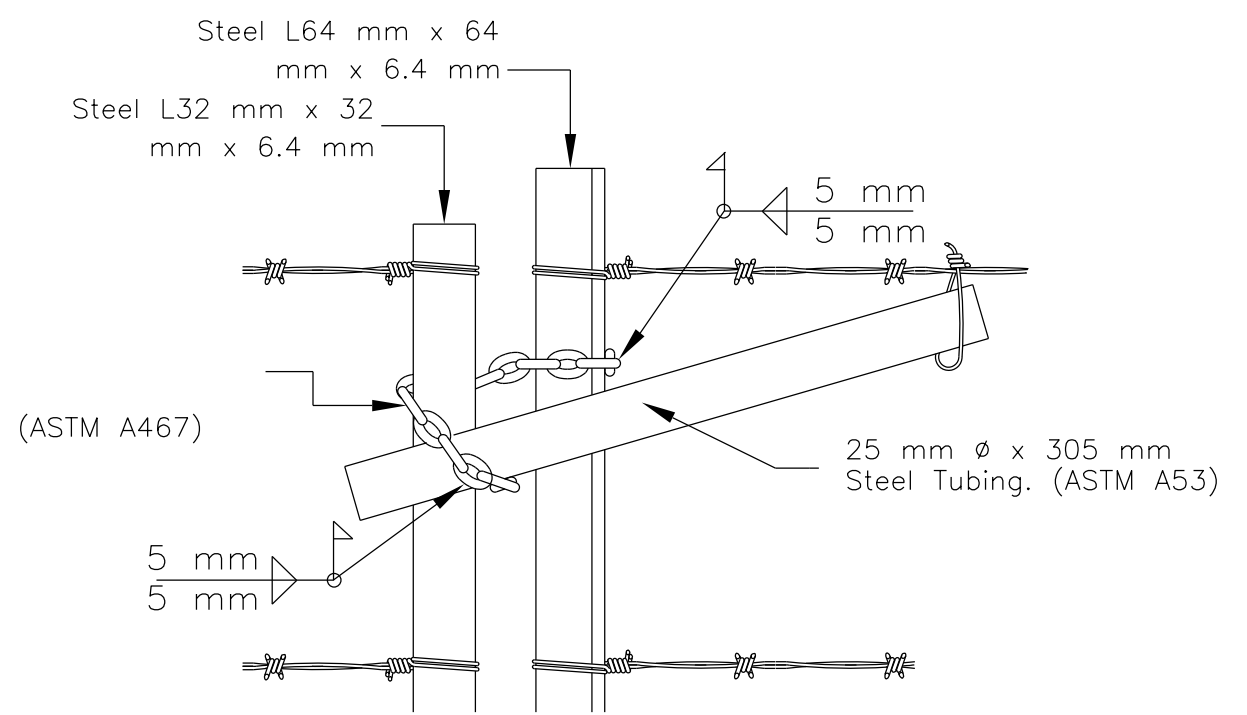
35 mm ϕ Tubing 2 Vert. Braces Mesh \square , \triangle , \diamond . 3.2 mm ϕ Line Wires 2.6 mm ϕ Crosswires. 1 Adjustable Diagonal Guy Fully Galvanized.

END POST

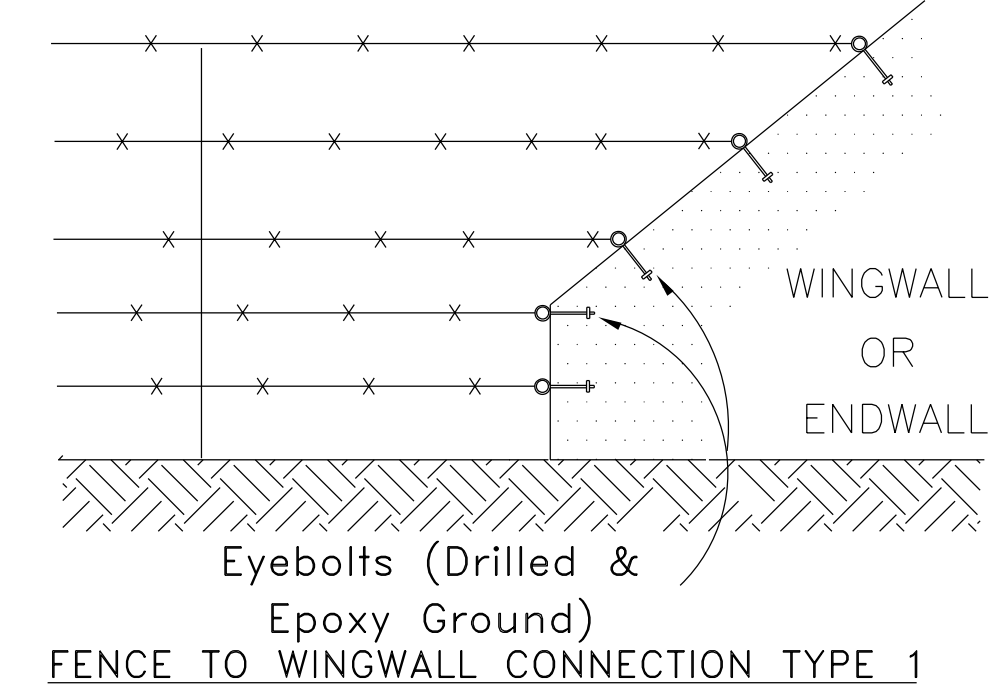
CONNECTION TO MAJOR STRUCTURES



FENCE PROFILE IN ROUGH TERRAIN



TYPICAL STEEL POST SECTION



UNITED STATES
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STANDARD FENCING DETAIL

DRAWN BY: NRDOT DATE: 10/10/2013
 DESIGNED BY: NRDOT DATE: 10/10/2013
 REVISED: 07/24/2015 BY: Design 2
 \$FLESS\$

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REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N101	N101(1)1&2	31	33

GENERAL NOTES

- ALL CONCRETE SHALL BE CLASS A(AE) AND SHALL CONFORM TO SECTION 601 OF THE FP-14. FURNISHING AND PLACING OF CONCRETE, WHEN REQUIRED, SHALL BE CONSIDERED INCIDENTAL TO ITEM 63309-0020.
- THE CONTRACTOR SHALL USE 44x44 mm STEEL SQUARE TUBE FOR ALL TYPE "1a", "1b" & 2 DELINEATORS.

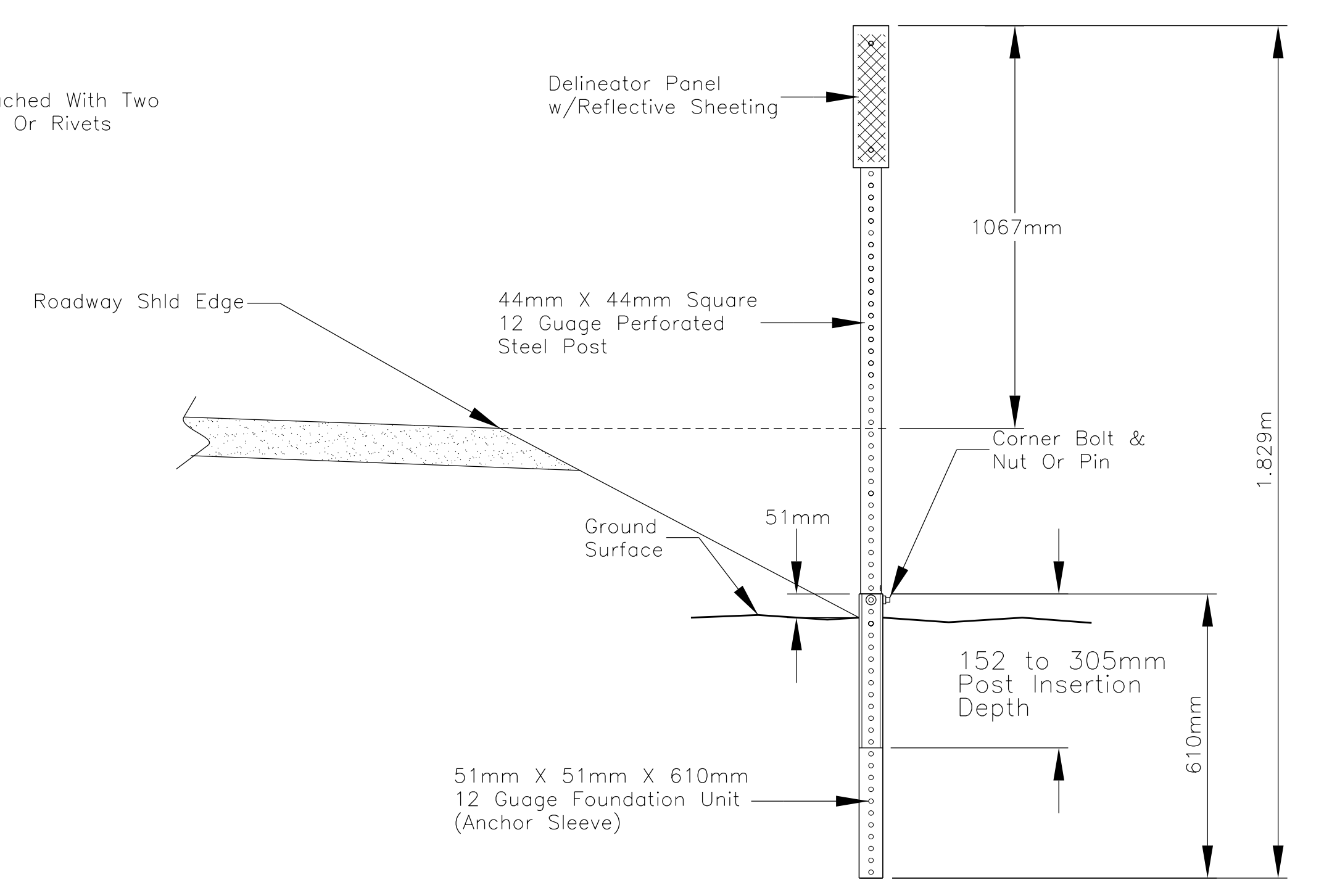
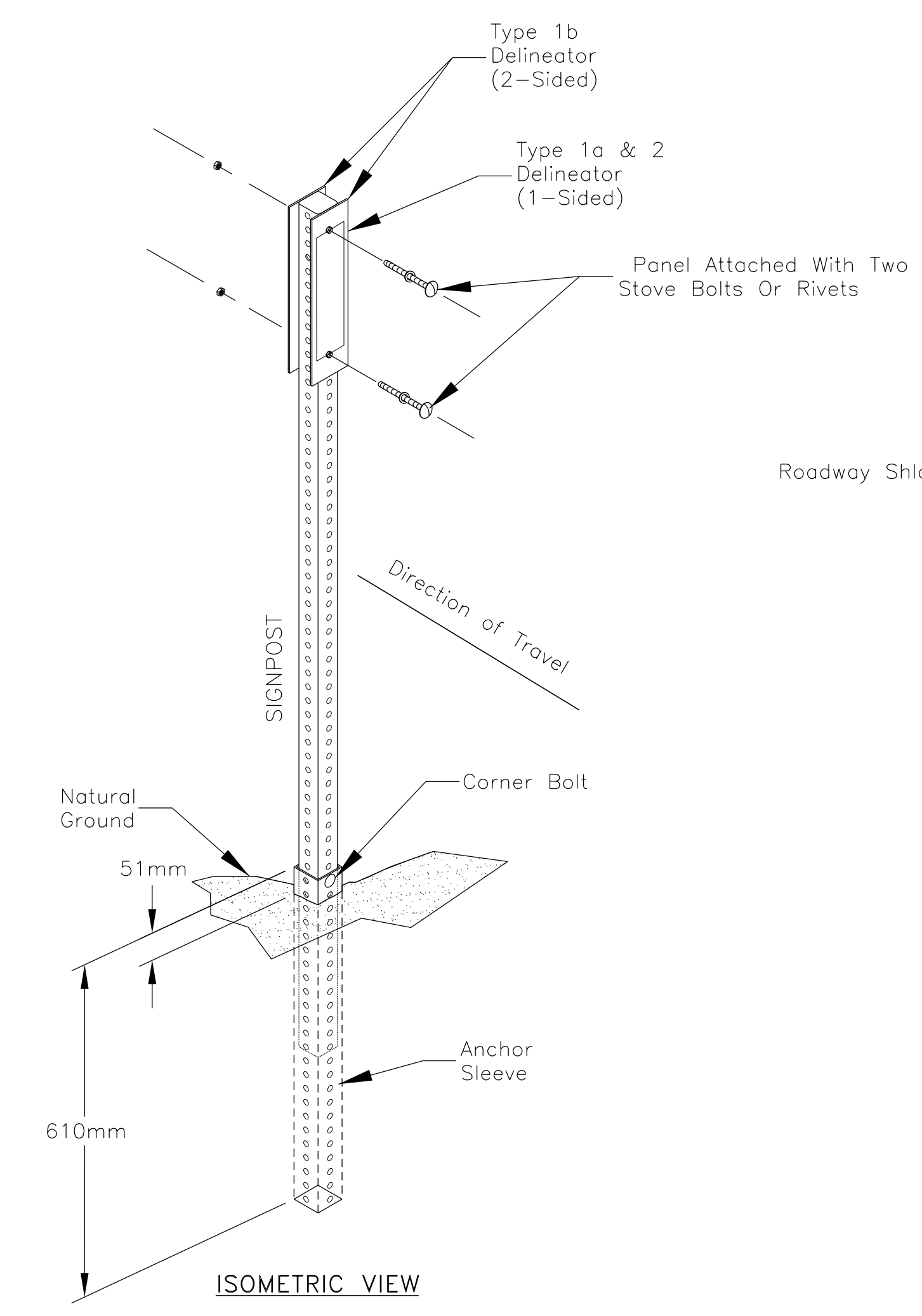
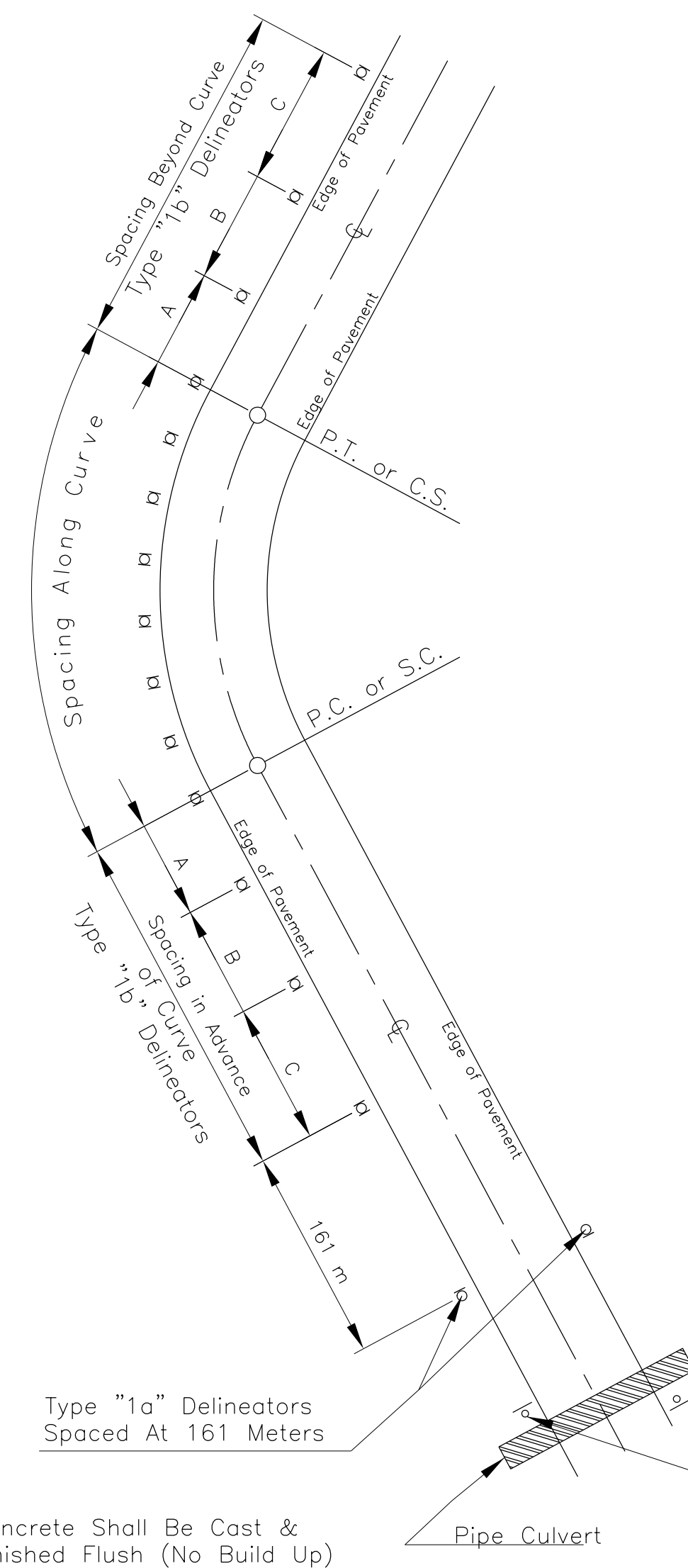
TYPE	POST COLOR	HIGH INTENSITY REFLECTIVE SHEETING
1a	White	White, One Side
1b	White	White, Both Sides
2	Yellow	Amber, One Side

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	29	58	87	174
400	33	67	100	200
500	37	75	112	225
600	41	82	123	247
700	44	89	133	267
800	48	95	143	286
900	51	101	152	303
1000	53	107	160	320
1500	66	131	197	393
2000	76	151	227	454
2500	85	169	254	508
3000	93	186	279	557
3500	100	201	301	602
4000	107	215	322	644
4500	114	228	342	683
5000	120	240	360	720
5500	126	252	378	755
6000	132	263	395	789

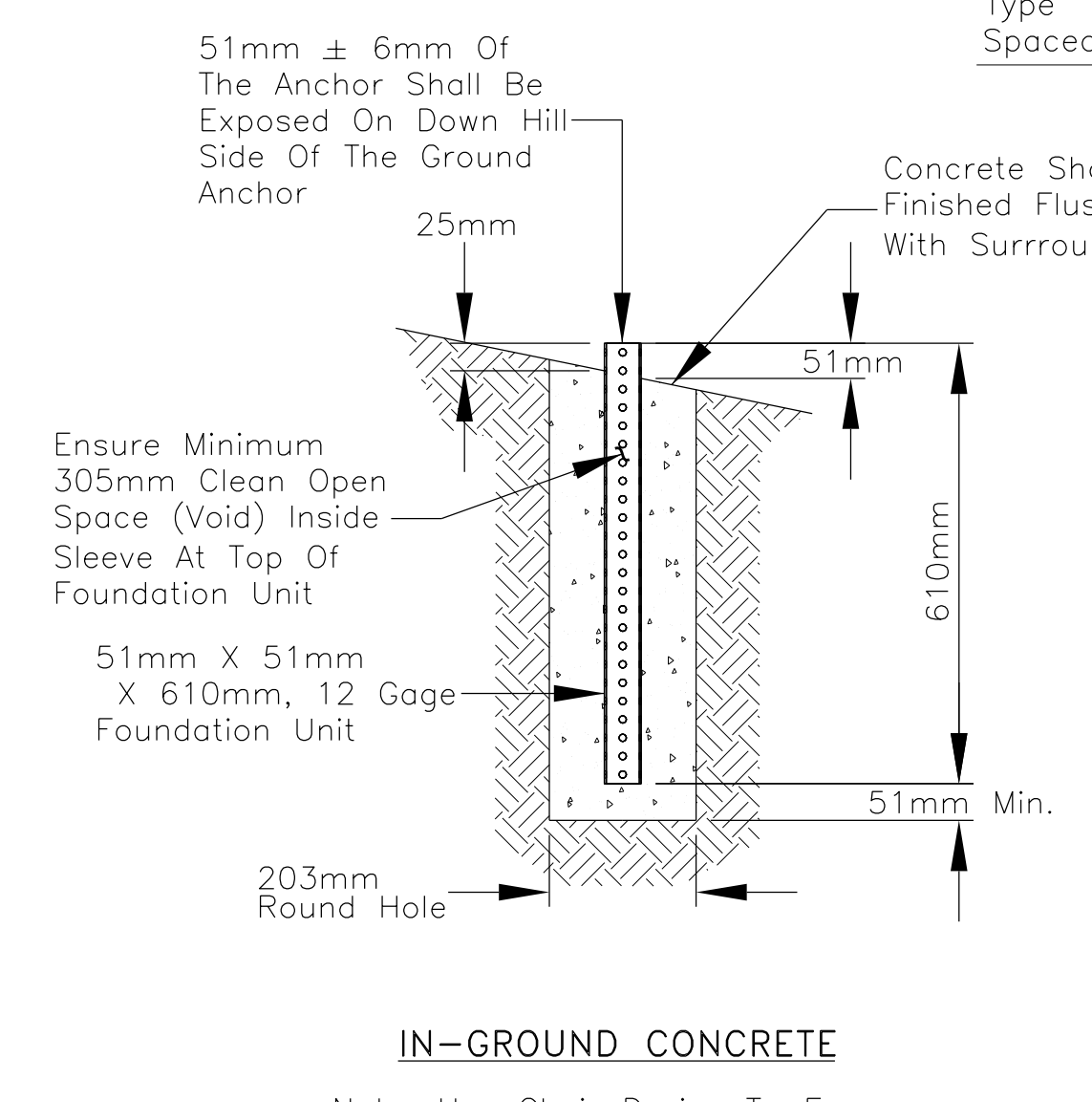
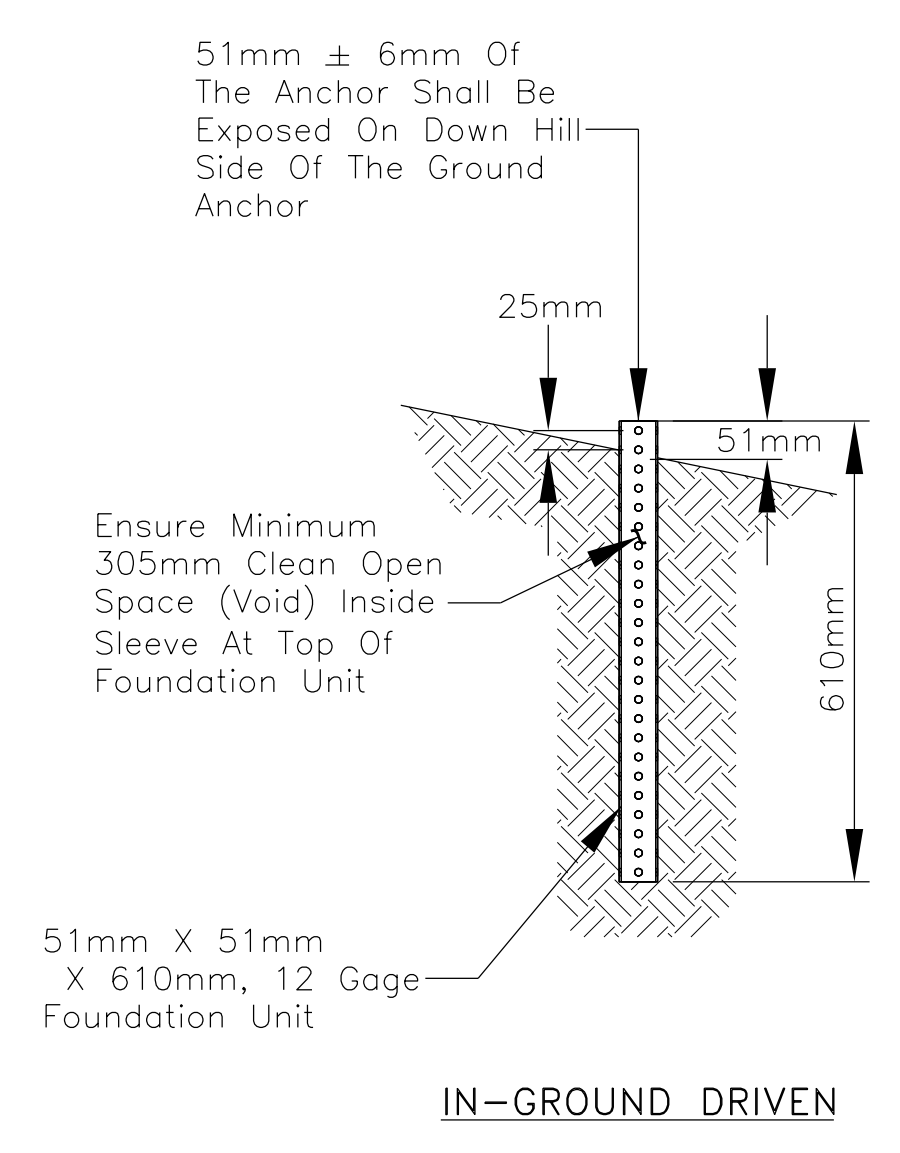
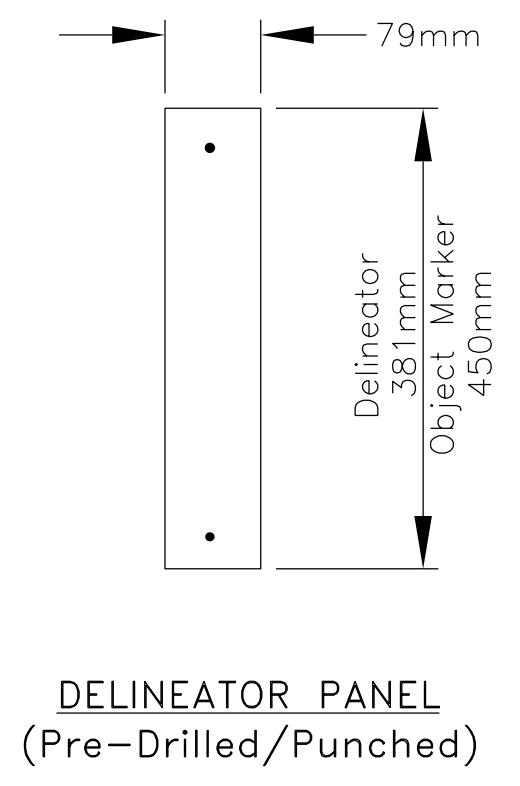
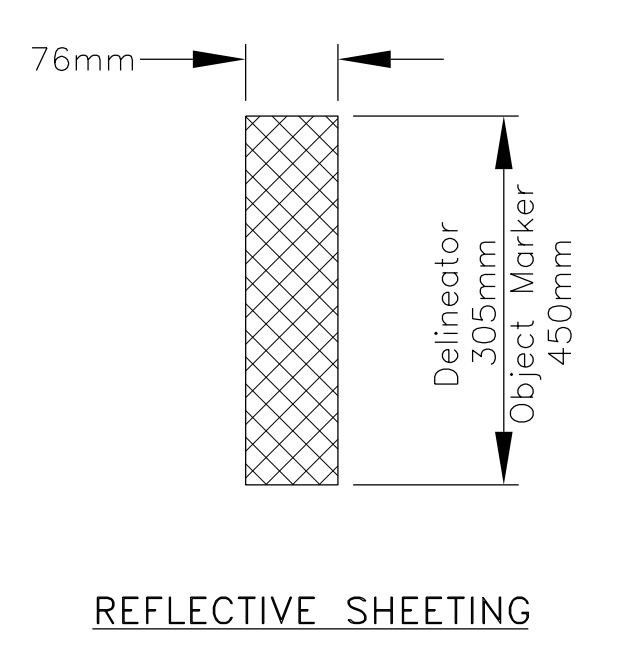
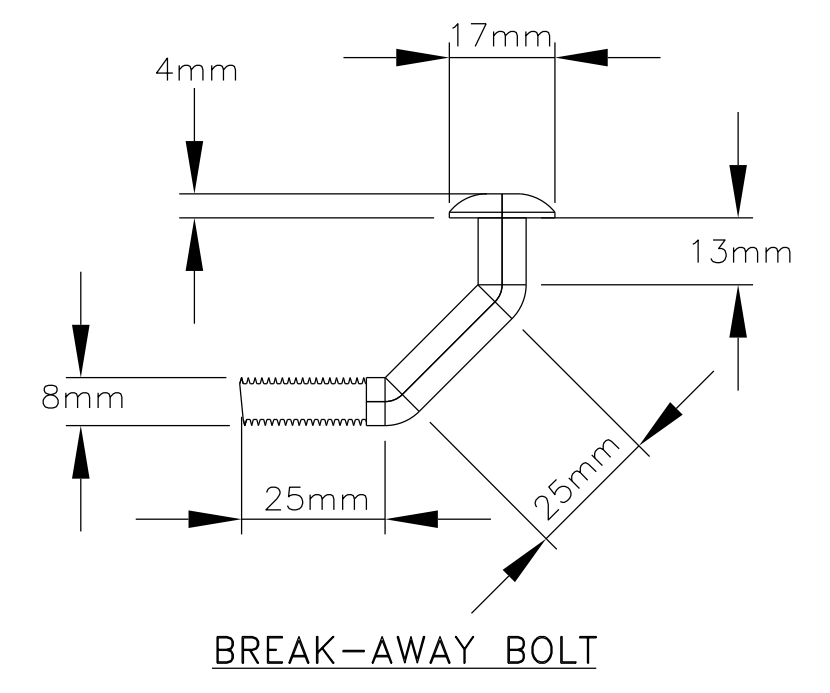
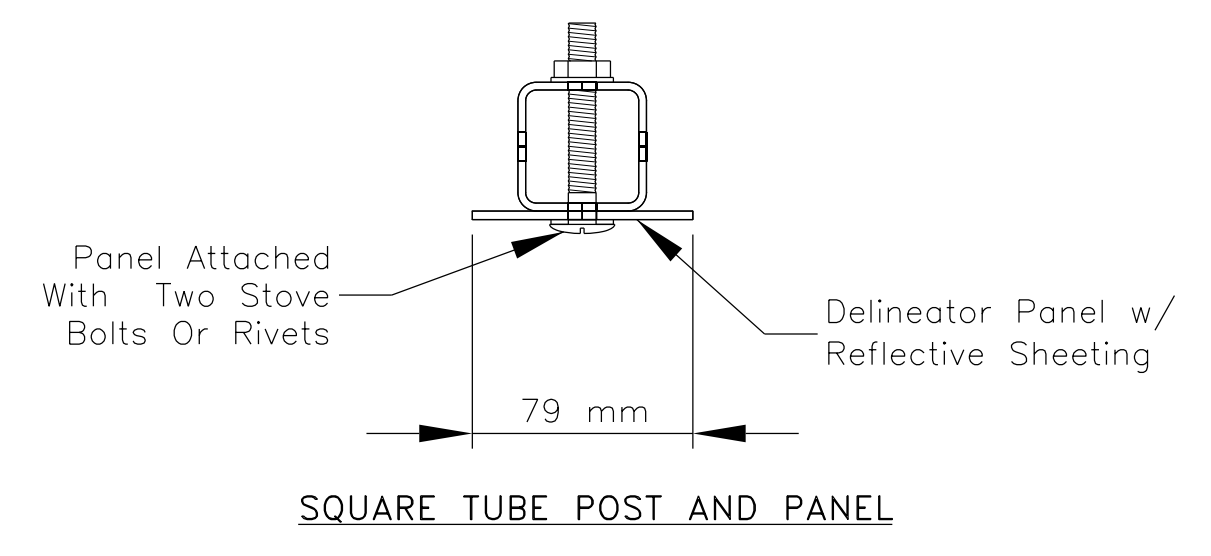
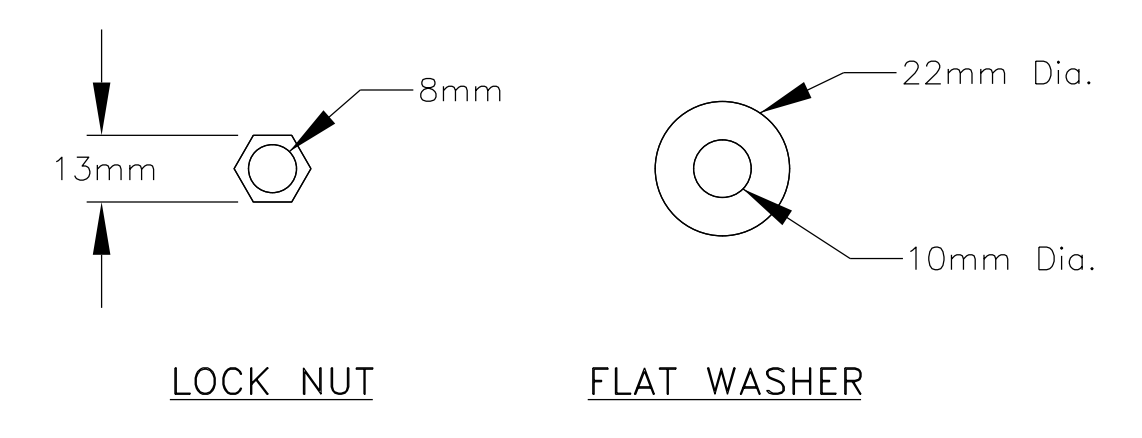
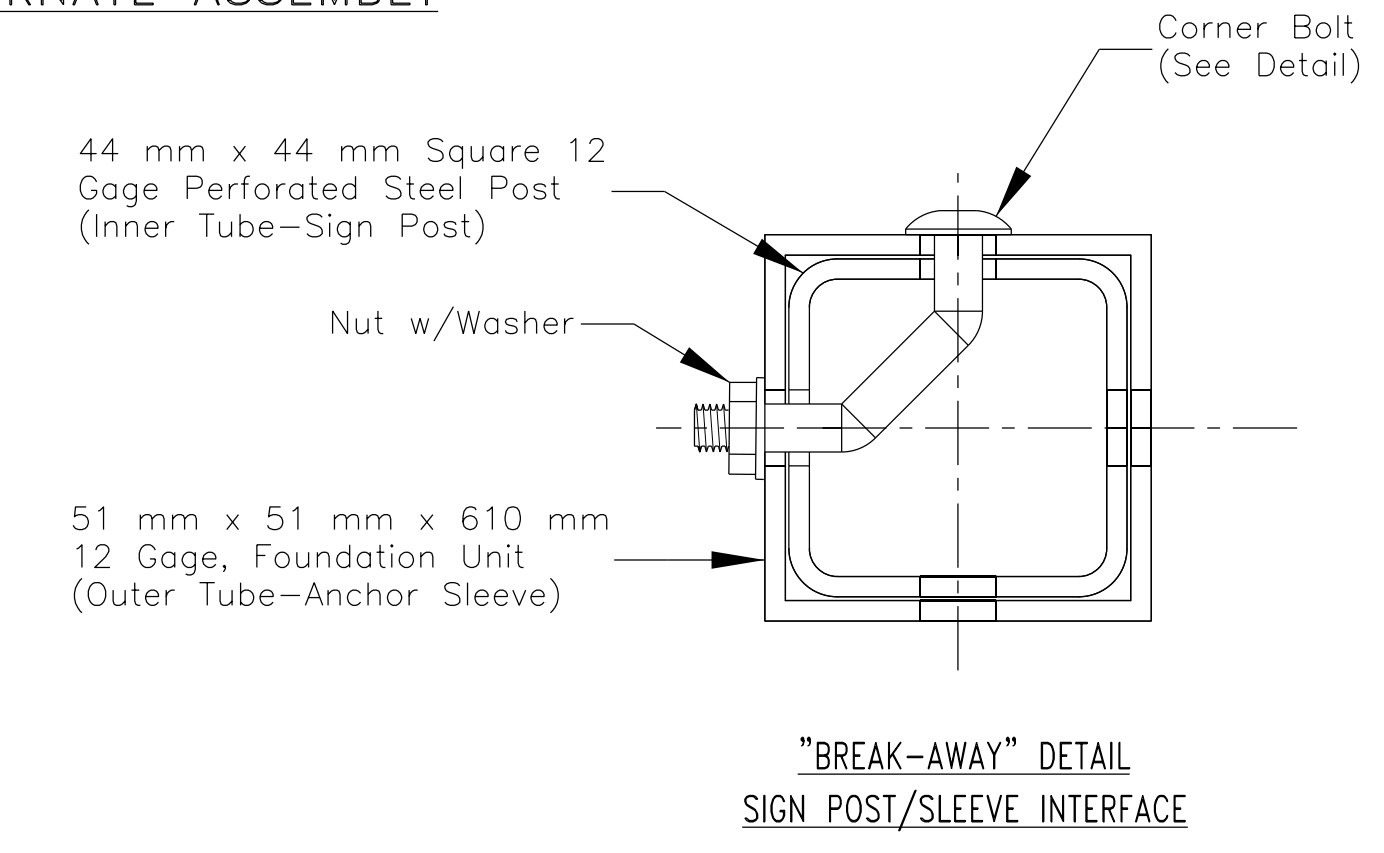
S = 1.7 * sq. rt.(R-15).
 Spacing for specific radii may be interpolated from table.
 The spacing on curves should not exceed 90 meters.
 Shaded areas denotes to use 90 meter spacings.
 Delineators should be spaced 60 to 160 meters apart on mainline tangent sections.

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.

DELINEATORS & OBJECT MARKERS LOCATIONS DATA					
ROUTE	STATION	Type (1a)	STATION	Type (1b)	Object Markers Type
N101 MAIN	0+44.70 rt	1			0+204.25rt 1
N101 MAIN	0+560.1t & rt	2			0+205.15lt 1
N101 MAIN	0+365.3 lt & rt	2			
N101 SPUR			0+005rt	1	0+019.00rt 1
N101 SPUR			0+036 rt	1	0+025.74lt 1
N101 SPUR			0+051.7rt	1	
N101 SPUR			0+066rt	1	
Totals:		5		4	4



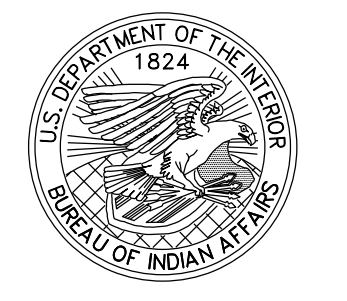
ALTERNATE ASSEMBLY



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

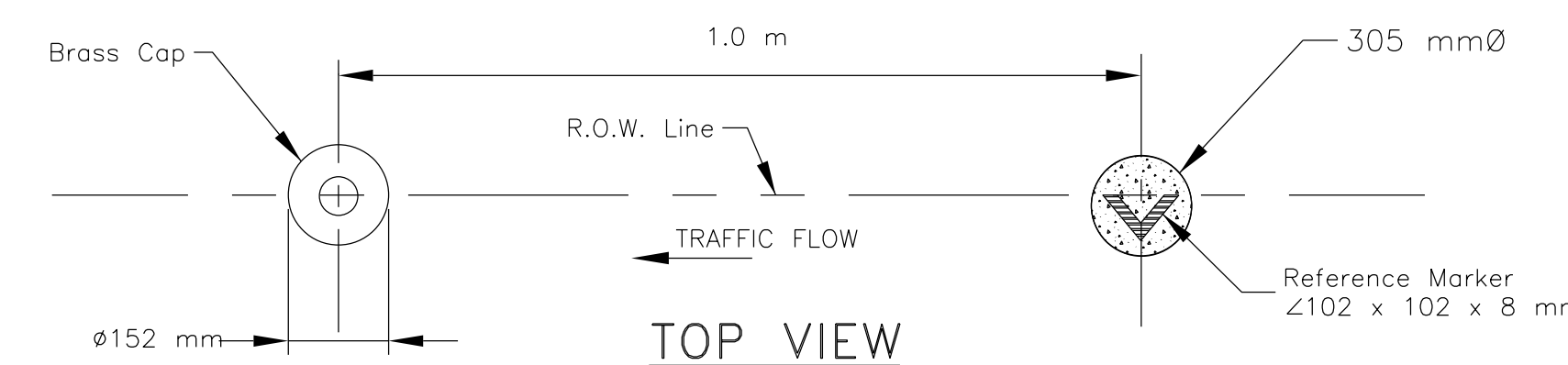
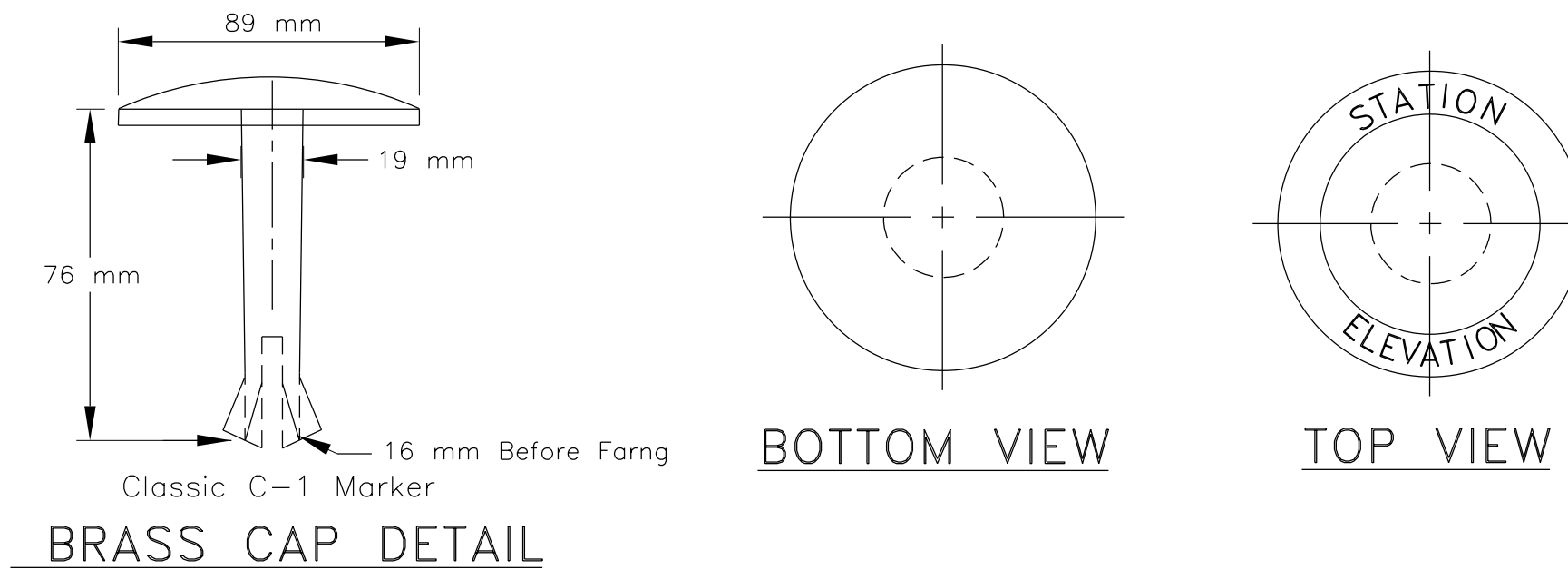
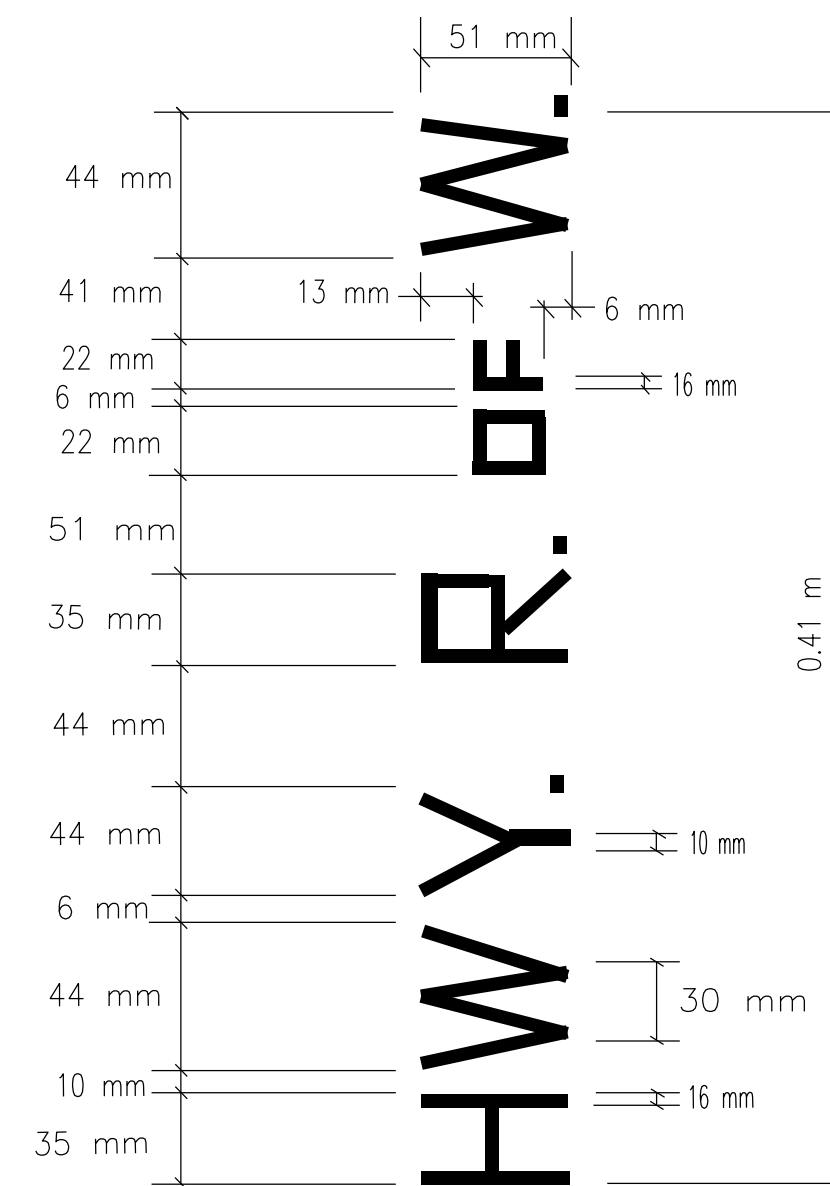
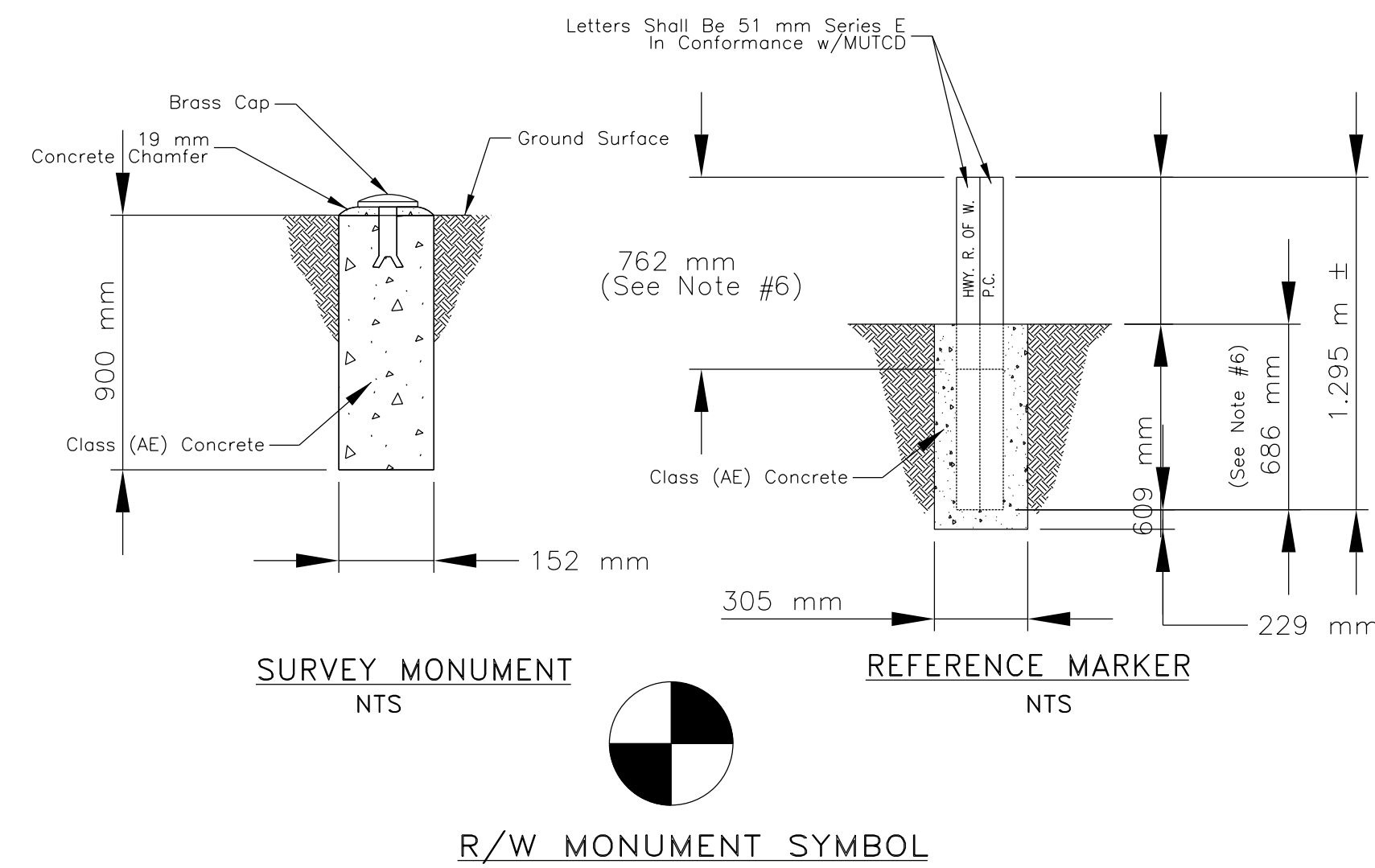
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
 NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION
SQUARE TUBE STEEL POST AND
DELINEATOR DETAILS

DRAWN BY: NRDOT	DATE: 1/24/2013
DESIGNED BY: NRDOT	DATE: 1/24/2013
REVISED: 07/23/2020	BY: HRiley
\$FILES\$	



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REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N101	N101(1)2&4	32	33



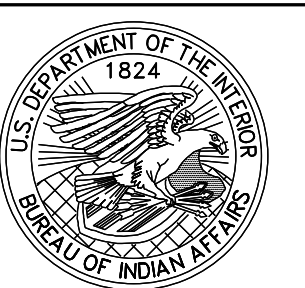
GENERAL NOTES:

- Survey monument and reference markers shall be placed as shown on the plans or as directed by COR. The cost of supplying all materials and installation of Right-of-Way Monument and Markers shall be included in the unit price bid under Item 62101-0000 & 62102-0000.
- If rock is encountered when installing the right-of-way monument and 305mmØ for reference marker hole in the rock to the depth required to install the monument and marker to full depth. All hole drilling into rock material, shall be considered incidental to the completion of the work and no additional payment shall be made thereof.
- Brass caps for the survey monument shall be supplied and installed by the Contractor conforming to the ASTM B-584 specification and shall be considered incidental to Item 62101-0000.
- All concrete shall be Class A(AE) and shall conform to Section 601 of the FP-14. Furnishing and placing of concrete shall be considered incidental to Items 62101-0000 & 62102-0000.
- Roadway stationing and elevations shall be stamped on all brass caps by the Contractor after installation, unless otherwise directed in writing by the COR.
- The Contractor shall be required to paint the reference markers per Section 719 and subsection 719.04b of FP-14:
 - Prime coat entire steel material and shall conform to subsection 719.04(d) of FP-14.
 - Coat white finish of paint on the top 762mm of exposed angle iron conforming to subsection 719.04(b), of FP-14.
 - All letters, numerals, symbols, etc. shall be painted on the reference markers using the dimensions shown using Black Lamp paint conforming to ASTM D 209. The required information to place on the reference markers shall be furnished to the Contractor by the COR.
- The Contractor has the option to use an approved State Highway point specifications in lieu of that stated in Note (6) above. The Contractor shall submit (in writing) the paint specifications and request for use on the project at least 14 days in advance of the paint use for review and approval. The Contractor shall not be allowed to use any paint until the proper approval has been given by the COR. Any painting performed by the Contractor without the proper approval shall cause the work to be rejected.
- Set Right-of-Way monument at station and offset to match the right-of-way plat. These locations may vary from the stations and offsets shown on the construction plan and profile sheets.

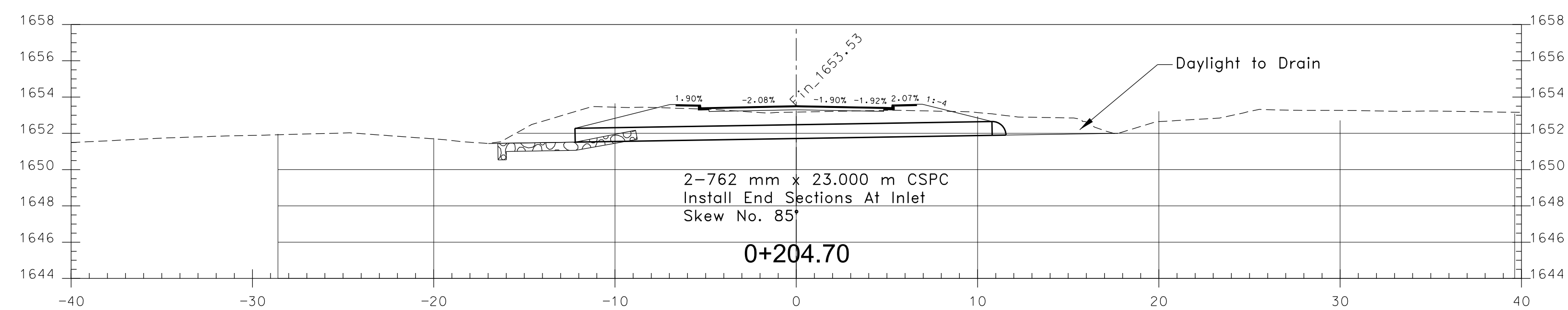
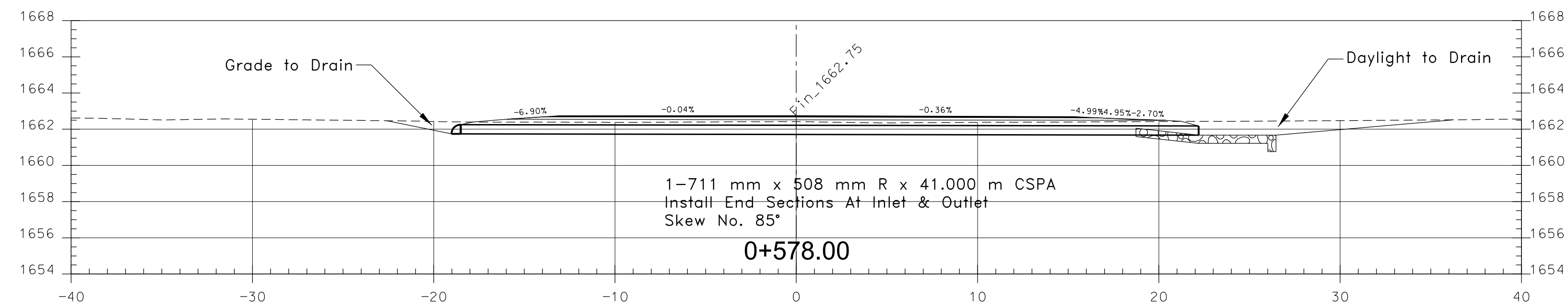
UNITED STATES
DEPARTMENT OF THE INTERIOR
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NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

MISCELLANEOUS DETAIL

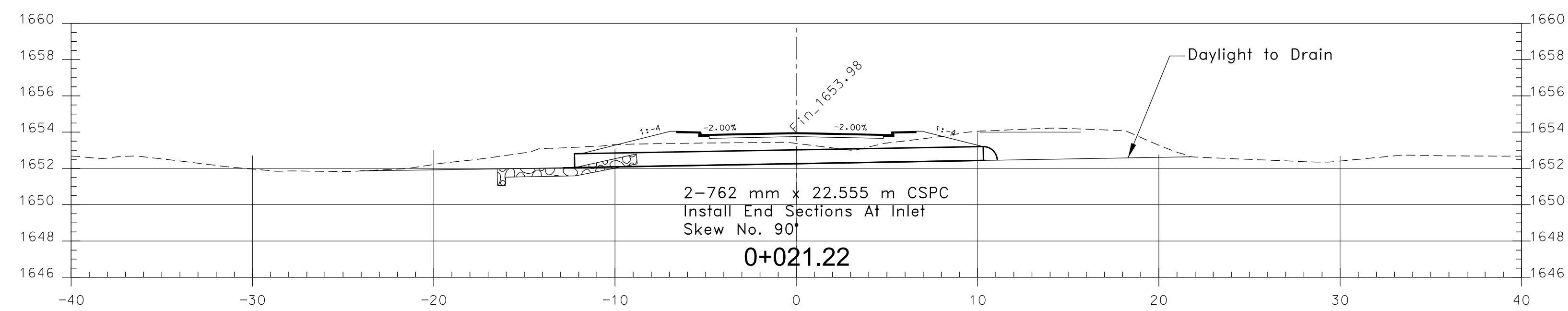
DRAWN BY: NRDOT DATE: 7/2/2007
DESIGNED BY: NRDOT DATE: 7/2/2007
REVISED: 07/23/2020 BY: HRiley



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N101	N101(1)2&4	33	33



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BUREAU OF INDIAN AFFAIRS
NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

CROSS SECTION

DRAWN BY: NRODOT DATE: 06/13
DESIGNED BY: NRODOT DATE: 06/13
REVISED: 07/23/20 BY: HRiley
SCALE: NTS
FILENAME: N101(1)2&4
SHEET MODEL NAME: PLOT SHEET

