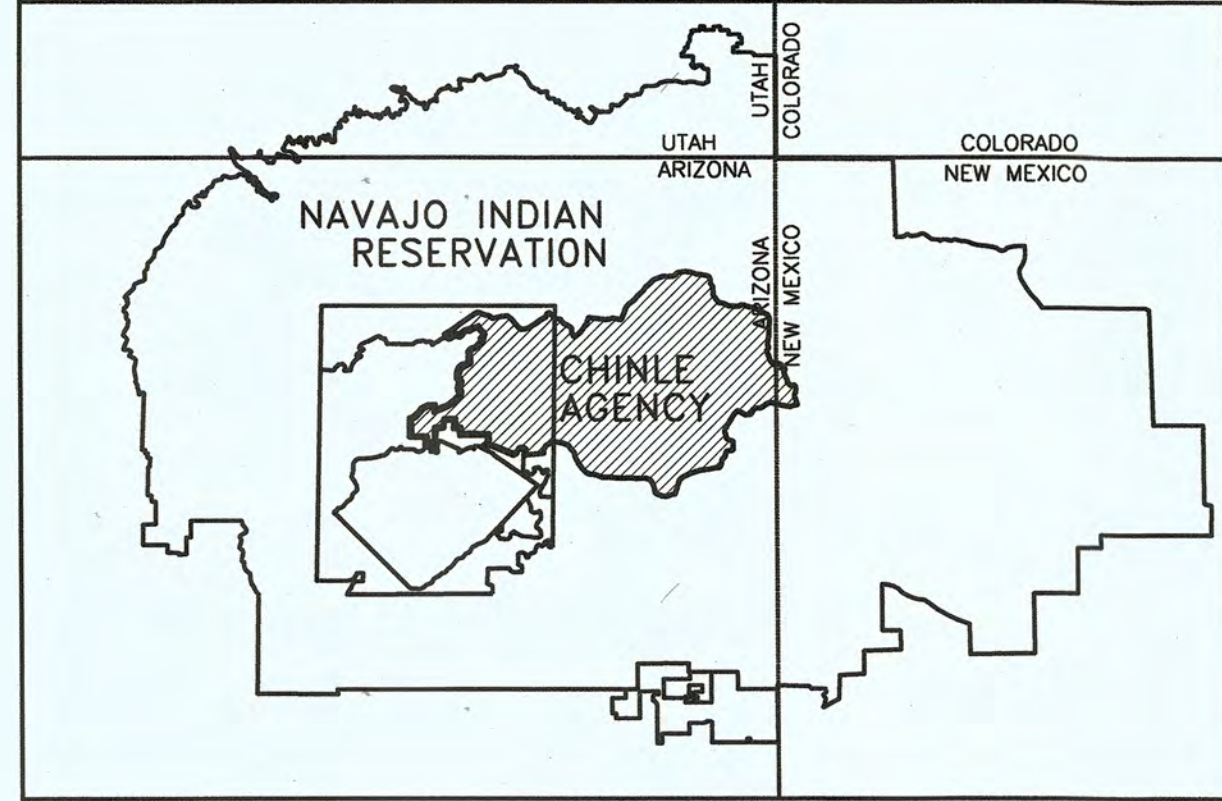
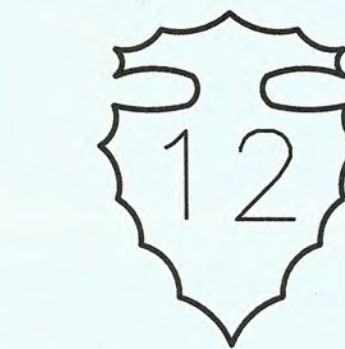


INDEX MAP

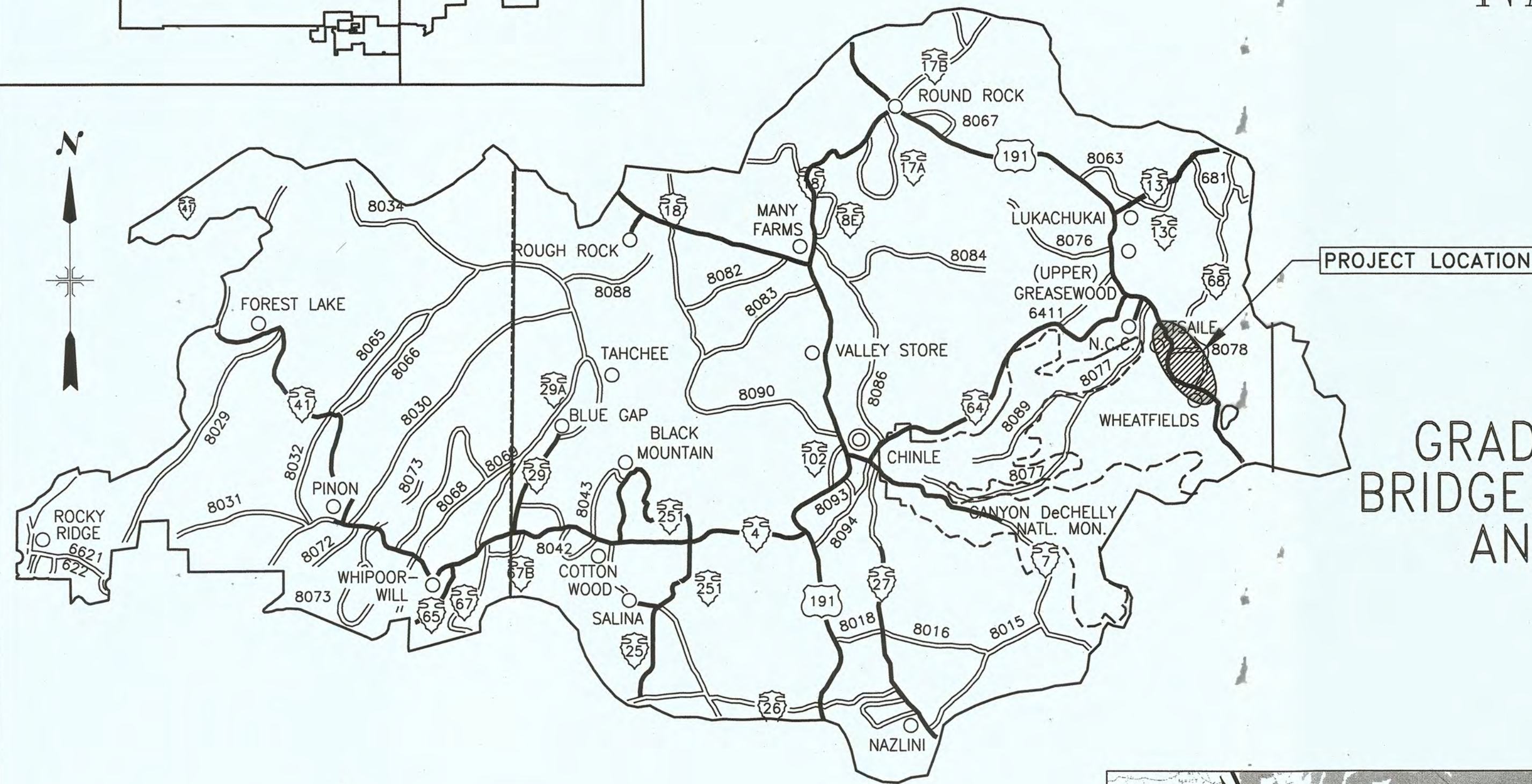


UNITED STATES DEPARTMENT OF THE INTERIOR
 BUREAU OF INDIAN AFFAIRS
 NAVAJO REGION D.O.T.
 ROUTE



APPROVED
 By Harold J Riley-PE at 11:15 am, Dec 04, 2018

PROJECT N12(19-4)1,2&4
 GRADE, DRAIN & AGGREGATE BASE COURSE,
 BRIDGE, HOT ASPHALTIC CONCRETE PAVEMENT
 AND MISCELLANEOUS CONSTRUCTION
 17.20 km ID. NO. 35276



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4	GENERAL NOTES
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6-7	ESTIMATED QUANTITIES
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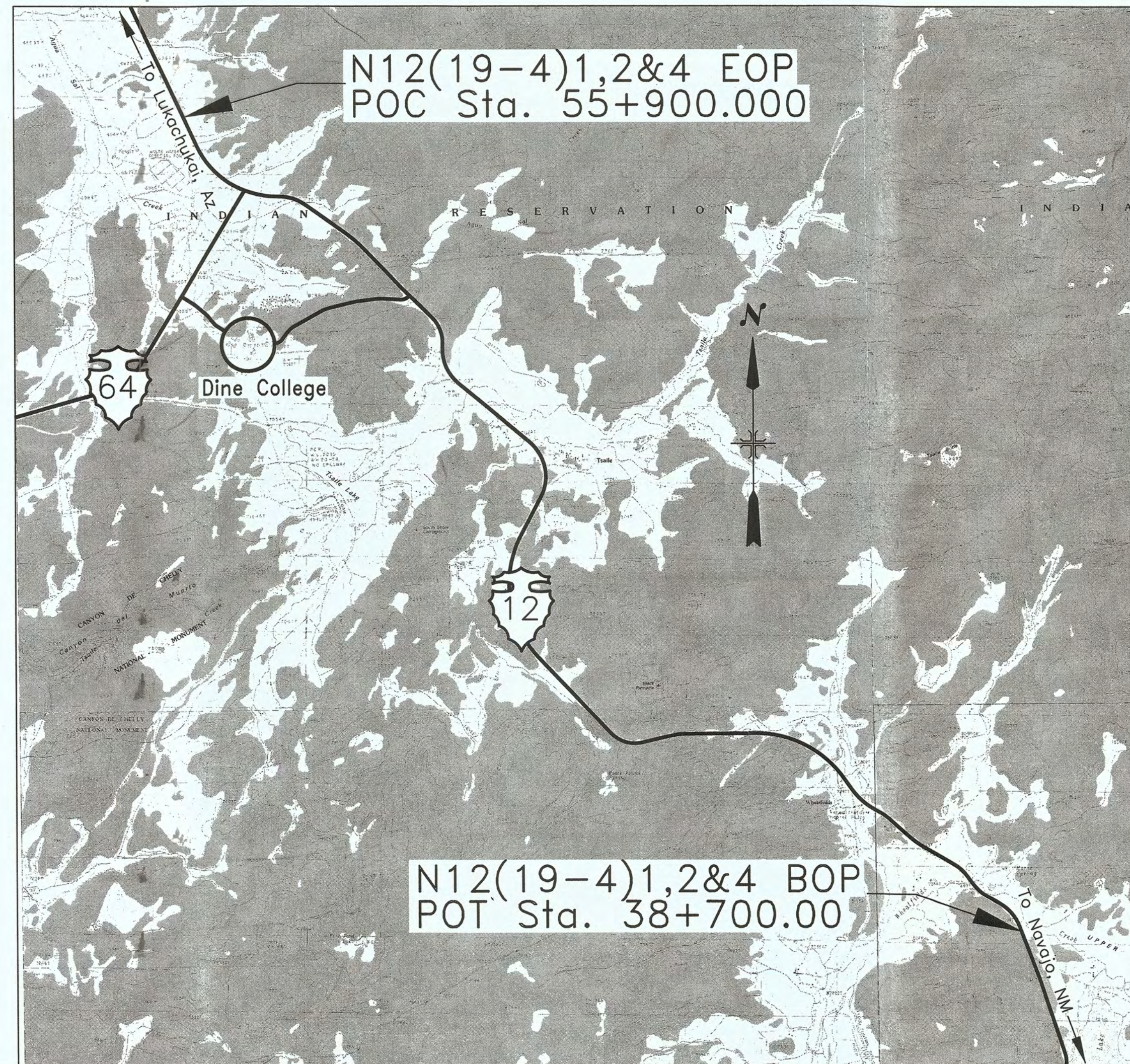
LEGEND

STATE LINE
RESERVATION LINE
COUNTY LINE
TOWNSHIP or RANGE LINE
SECTION LINE
NATIONAL FOREST LINE	.....
HIGHWAY RIGHT-OF-WAY LINE	.....
UNFENCED PROPERTY	.....
SECTION CORNER AND 1/4 CORNER	.....
POWER LINE AND POLES	.....
TELEPHONE LINE AND POLES	.....
POLE GUY AND ANCHOR	.....
TRAFFIC SIGN	.....
GUARD RAIL	.....
DELINATORS	.....
CHEVRON SIGN	.....
BARBED WIRE FENCE	.....
WOVEN WIRE FENCE	.....
CATTLE GUARD	.....
CULVERTS	.....
CONCRETE BOX CULVERTS	.....
GROUND LINE - EARTH	.....
GROUND LINE - ROCK	.....
EXISTING ROAD	.....
SIDE ROAD TURNOUT	.....
TREES and SHRUBS	.....
CHANNEL or DITCH	.....
EARTHEN DIKE and BERM	.....
RIPRAP	.....
DWELLING	.....
RIGHT-OF-WAY MONUMENT	.....
TELEPHONE PEDESTAL	.....
IRRIGATION DITCH	.....
FURROW DITCH	.....
EROSION CONTROL TYPE IV FABRIC	.....
OBLITERATION OF EXISTING ROAD	.....

ALIGNMENT TABLE			
PROJECT: N12(19-4)1,2&4			
LOCATION	STATION	LENGTH (m)	LENGTH (km)
BOP	38+700.000	17,200.000	17.200
EOP	55+900.000		
GRAND TOTAL:		17,200.000	17.200

DESIGN DATA - N12(19-4)1,2&4	
DESIGN SPEED	100 km/h
MINIMUM RADIUS	394
MAXIMUM GRADIENT	3.12%
MINIMUM STOPPING SIGHT DISTANCE	185 m
MINIMUM PASSING SIGHT DISTANCE	670 m
AVERAGE DAILY TRAFFIC-ADT (2002)	1614 vpd
AVERAGE DAILY TRAFFIC-ADT (2033)	2648 vpd
DESIGN HOURLY VOLUME-DVH (2002)	242 vph
DESIGN HOURLY VOLUME-DVH (2033)	400 vph
MAXIMUM SUPERELEVATION (e max)	8.0%

RIGHT-OF-WAY TABLE				
N12(19-4)1,2&4				
STATION TO STATION		LEFT OFFSET (m)	RIGHT OFFSET (m)	
38+700.00	To 39+621+32	22.86	22.86	
39+621.32	To 39+725.88	30.48	30.48	
39+725.88	To 49+600.00	22.86	22.86	
49+600.00	To 49+700.00	30.48	30.48	
49+700.00	To 55+900.00	22.86	22.86	

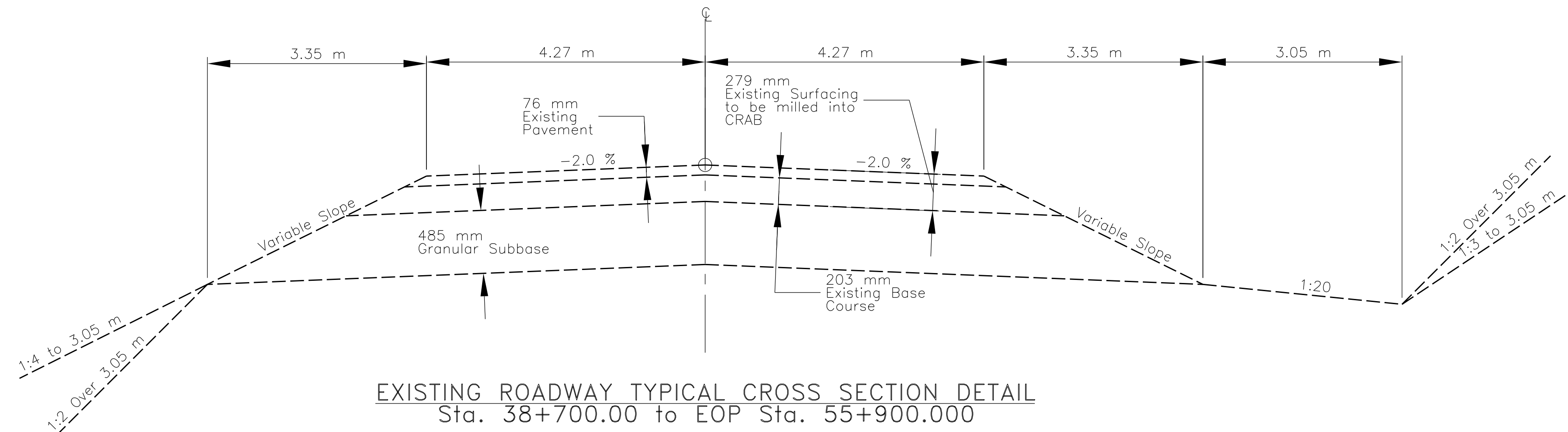


INDIAN SERVICE	COUNTY	STATE	FEDERAL
PROPOSED	PAVED	GRADED	UNIMPROVED

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF INDIAN AFFAIRS NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION			
RECOMMENDED APPROVAL		APPROVAL	
AGENCY/ROAD ENGINEER	DATE		REGIONAL DIRECTOR DATE
[Signature] DIVISION MANAGER	3/21/18		
[Signature] PLANNING & DESIGN BRANCH CHIEF	DATE	[Signature] REGIONAL DIRECTOR	DATE
	3/21/18		3/21/18

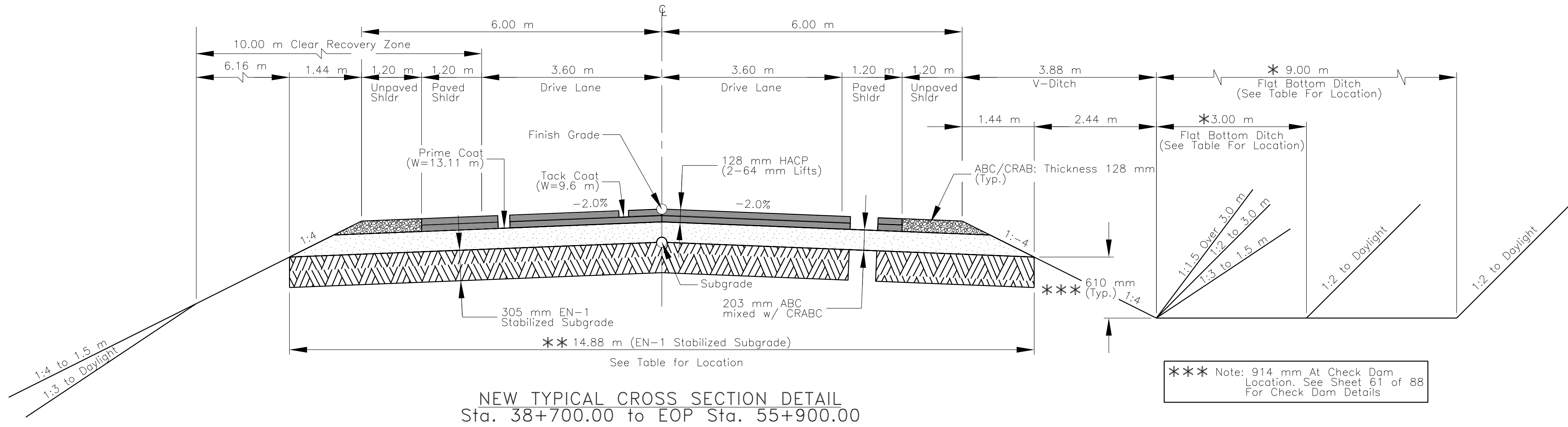
PROJECT: N12(19-4) 2&4

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	2	88



- ### SEQUENCE OF PAVEMENT RECONSTRUCTION:
1. THE CONTRACTOR SHALL TRANSVERSE SAW CUT (FULL DEPTH) THE EXISTING PAVEMENT AT THE EDGE OF PAVEMENT LINE AT BEGINNING AND ENDING OF PROJECT, AND MATCH THE NEW PAVEMENT WITH THE EXISTING TO PROVIDE A SMOOTH JOINT TRANSITION.
 2. THE CONTRACTOR SHALL MILL AND PULVERIZE THE TOP 279mm OF EXISTING ASPHALT CONCRETE PAVEMENT AND BASE COURSE STRUCTURE, WHICH INCLUDES ALL MAINTENANCE PATCHES, TO MINUS 37.5mm SIEVE SIZE IN ACCORDANCE WITH SECTION 408. THE CONTRACTOR HAS THE OPTION TO UTILIZE A SELF-PROPELLING PULVERIZING MACHINE OR OTHER CONSTRUCTION EQUIPMENT/METHODS CAPABLE OF MAINTAINING A UNIFORM GRADE AND CROSS SECTION.
 3. AFTER PULVERIZING, THE CONTRACTOR SHALL STOCKPILE THE CRAB MATERIALS FOR USE ON THE NEW BASE COURSE, THEN BUILD UP THE EXISTING SUBGRADE AND SHOULDERS AS NEEDED WITH CUT MATERIALS WITHIN THE ROW AND BORROW PER NOTE 4 BELOW.
 4. THE CONTRACTOR SHALL BUILD THE TEMPORARY DETOUR ROADS AROUND THE WHEATFIELDS AND TSAILE WASH BRIDGES ONCE THE CRAB WORK IS COMPLETED. INSTALL TEMPORARY DRAINAGE PIPES, BUILT UP GRADING, PLACE GRAVEL AND HOT MIX FOR DETOURS, REMOVE BOTH EXISTING STEEL BRIDGES. INSTALL NEW PRECAST CONCRETE ARCH BRIDGES WITH SUBGRADE BEFORE PROCEEDING WITH THE REMAINING EARTHWORK.
 5. THE CONTRACTOR SHALL FURNISH AND PLACE 203mm (MAINLINE) and 128mm (SHOULDERS) THICKNESS OF NEW AND CRAB AGGREGATE BASE COURSE MATERIAL EITHER MIXED OR SEPERATE ON THE FINISHED AND APPROVED SUBGRADE. IF THE CONTRACTOR CHOOSES TO MIX PART OF THE ABC AND CRAB BEFORE PLACING IT WILL BE A 50/50 RATIO MIX USING THE BID QUANTITY OF ABC WITH CRAB.
 6. PLACE NEW 128 mm (2-64 mm lift) OF HOT ASPHALT CONCRETE PAVEMENT.
 7. THE CONTRACTOR SHALL BREAKUP AND REMOVE (HOT MIX, GRAVEL, DIRT AND PIPES) FROM BOTH TEMPORARY DETOUR ROADS. HAUL THE PIPE MATERIALS TO THE CHINLE AGENCY MAINTENANCE YARD. USE THE GRAVEL AND EMBANKMENT MATERIAL ON THE MAIN ROADWAY CONSTRUCTION. UPON COMPLETION, THE CONTRACTOR SHALL SCARIFY THE DETOUR ROADBEDS, RE-ESTABLISH NATURAL DRAINAGE CHANNELS AND RE-SEED. THE OBLITERATION WORK SHALL BE PAID UNDER THE APPROPRIATE BID ITEMS.
 8. THE CONTRACTOR SHALL PROVIDE FOR A SAFE AND RELATIVELY DUST FREE DRIVING SURFACE THROUGHOUT THE RE-CONSTRUCTION PROCESS FOR ALL SCHOOL, LOCAL BUSINESS, AND GENERAL TRAVELING PUBLIC TRAFFIC USE, DAY AND NIGHT. THE CONTRACTOR'S TRAFFIC CONTROL AND CONSTRUCTION SEQUENCING PLAN SHALL INCLUDE THESE REQUIREMENTS AND BE SUBMITTED FOR REVIEW AND APPROVAL PRIOR TO ANY GROUND DISTURBING ACTIVITIES TAKING PLACE.

REVISED
11:06 am, Dec 04, 2018



* FLAT BOTTOM DITCH LOCATION

Station to Station	Location	Width (m)	Remarks
BOP 38+700.00 to 39+640.00	Left Side Only	3.00	Normal V-ditch on Right
55+100.00 to 54+500.00	Right Side Only	3.00	Normal V-ditch on Left
54+500.00 to 55+120.00	Right Side Only	9.00	Normal V-ditch on Left
55+120.00 to 55+900.00	Right Side Only	3.00	Normal V-ditch on Left

** EN-1 SUBGRADE STABILIZATION BOTTOM DITCH LOCATION

Station to Station	Width (m)	Area (sq/m)	Remarks
40+440.00 to 41+280.00	14.88	12,499.20	EN-1 Stabilized Subgrade to 305 mm Depth
44+540.00 to 45+000.00	14.88	6,844.80	EN-1 Stabilized Subgrade to 305 mm Depth
45+260.00 to 46+080.00	14.88	12,201.60	EN-1 Stabilized Subgrade to 305 mm Depth
Total		31,545.60	

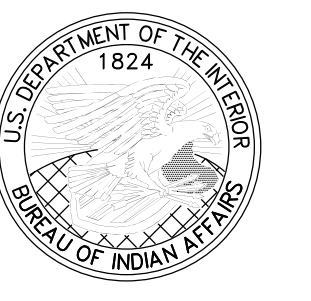
BASIS OF ESTIMATED QUANTITIES

ITEM No.	DESCRIPTION	GRADE	UNIT WT.	APPLICATION
21301-4000	Road Bond EN-1			Mix Ratio: 1:200, EN-1:Water
30103-2000	Untreated Aggregate Base Course	"Special"	2164 kg/m ³	Main Roadway: 128 mm or As Needed, Turnouts: 152 mm
40201-0500	Hot Asphaltic Concrete Pavement, Class "B"	"B"	2324 kg/m ³	Main Roadway and Turnouts: 128 mm (2-64 mm Lifts), Turnouts 51 mm
40502-0800	Asphalt Cement	PG 64-22		6.0% By Weight of Total Weight of Mixture
41101-5000	Prime Coat - Penetrating Emulsified Prime, Grade PEP	PEP	1056 L/t	Unit Weight: 1.36 L/sq m Apply on top of CRABC
41201-1000	Asphalt Emulsion Tack Coat	SS-1	1.001 L/kg	0.23 L/m ² Application Rate

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NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

TYPICAL CROSS SECTION DETAILS

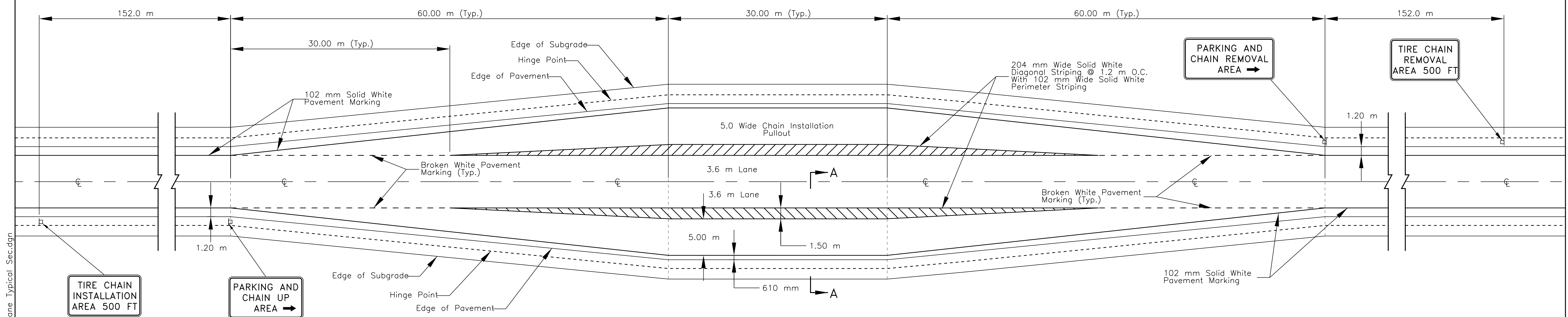
DRAWN BY: NRDOT DATE: 3/4/2015
DESIGNED BY: NRDOT DATE: 3/4/2015
REVISED: 12/3/2018 BY: Leroy.Toledo



FILED

PROJECT: N12(19-4)1,2&4

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	3	88



TYPICAL CHAIN INSTALLATION PULLOUT PLAN

CHAIN INSTALLATION PULLOUT LOCATION

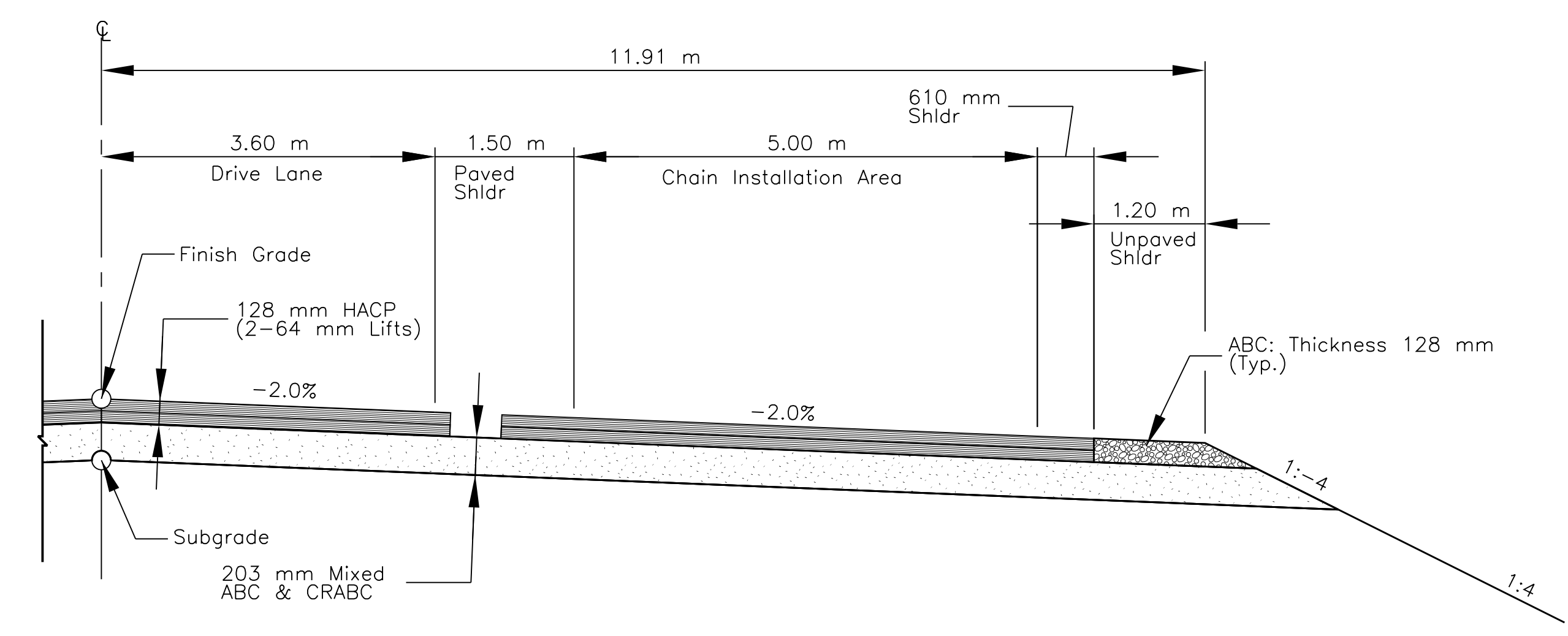
Station to Station	Location	Remarks
42+720.000 to 42+870.000	Right Side	For North Bound Traffic-Chain Installation
42+530.000 to 42+680.000	Left Side	For South Bound Traffic-Chain Removal
45+940.000 to 46+090.000	Right Side	For North Bound Traffic-Chain Removal
45+940.000 to 46+090.000	Left Side	For South Bound Traffic-Chain Installation

ITEM 63401-1620: PAVEMENT MARKING, TYPE "H", BROKEN WHITE

Station to Station	Location	Length (m)	Remarks
42+360.000 to 42+390.000	Right Side	30.00	For North Bound Traffic-Chain Installation
42+480.000 to 42+510.000	Right Side	30.00	For North Bound Traffic-Chain Installation
42+530.000 to 42+560.000	Left Side	30.00	For South Bound Traffic-Chain Removal
42+650.000 to 42+680.000	Right Side	30.00	For South Bound Traffic-Chain Removal
45+940.000 to 45+970.000	Right Side	30.00	For North Bound Traffic-Chain Installation
46+060.000 to 45+090.000	Right Side	30.00	For North Bound Traffic-Chain Installation
45+940.000 to 45+970.000	Left Side	30.00	For South Bound Traffic-Chain Removal
46+060.000 to 45+090.000	Left Side	30.00	For South Bound Traffic-Chain Removal
Total			240.00

ITEM 63401-3290a: PAVEMENT MARKING, TYPE "H", DIAGONAL STRIPING

Station to Station	Location	EACH	Remarks
42+390.000 to 42+480.000	Right Side	1	For North Bound Traffic-Chain Installation, Solid White, 203mm Width
42+560.000 to 42+650.000	Left Side	1	For South Bound Traffic-Chain Removal, Solid White, 203mm Width
45+970.000 to 46+060.000	Right Side	1	For North Bound Traffic-Chain Installation, Solid White, 203mm Width
45+970.000 to 46+060.000	Left Side	1	For South Bound Traffic-Chain Installation, Solid White, 203mm Width
Total			4

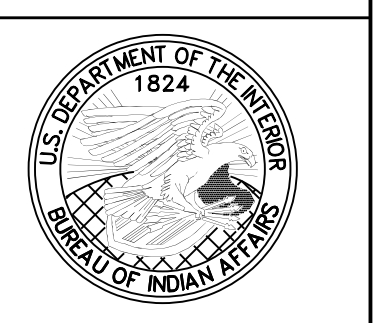


SECTION A-A
CHAIN INSTALLATION PULLOUT SECTION

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

TIRE CHAIN INSTALLATION PULLOUT LAYOUT DETAIL

DRAWN BY: NRDOT DATE: 4/19/2016
DESIGNED BY: NRDOT DATE: 4/19/2016
REVISED: 3/9/2018 BY: Leroy.Toledo
Sht 03 N12 Pullout Lane Typical Sec.dgn



I:\DESIGN\Users\DESIGN3\CURRENT PROJECTS\N35_China\N12(19-4)\DESIGN DATA_020315\CADD Files\Sht_03 N12 Pullout Lane Typical Sec.dgn

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	4	88

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 IN FULL METRIC UNITS.
- ALL PERMANENT AND TEMPORARY ROADSIDE SIGNS, AND PAVEMENT MARKINGS SHALL BE PLACED IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) FOR STREETS AND HIGHWAYS (LATEST EDITION) AND IN ACCORDANCE WITH THE DETAILS ON THESE PLANS. PLACEMENT OF "STOP" BAR PERMANENT TRAFFIC SIGNS AND PAVEMENT MARKINGS SHALL BE FIELD ADJUSTED AS DIRECTED BY THE COR/COTR, AT NO ADDITIONAL COST TO THE GOVERNMENT.
- 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 DESIGN FEATURES INCLUDING HORIZONTAL AND VERTICAL ALIGNMENTS, TYPICAL SECTIONS, AND OTHER DESIGN DETAILS SHOWN SHALL NOT BE ALTERED OR MODIFIED IN ANYWAY DURING CONSTRUCTION WITHOUT THE EXPRESSED WRITTEN DIRECTION AND WRITTEN APPROVAL OF THE NAVAJO REGION DIVISION OF TRANSPORTATION (NRDOT) DIVISION MANAGER THROUGH THE CONTRACTING OFFICER (CO), UNLESS OTHERWISE NOTED IN THESE PLANS OR SPECIFICATIONS. DRAINAGE STRUCTURES AND TURNOUTS SHALL BE INSTALLED AS SHOWN WITH ONLY MINOR CORRECTIONS IN LOCATION, SKEW, AND/OR INVERT ELEVATIONS AS NEEDED TO FIT FIELD CONDITIONS. TURNOUTS MAY NOT BE SHIFTED MORE THAN 5.0 METERS FROM THE LOCATIONS SHOWN ON THE PLANS WITHOUT THE WRITTEN APPROVAL OF THE NRDOT DIVISION MANAGER THROUGH THE CONTRACTING OFFICER (CO).
- 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 ALL RISK OR FROM FULFILLING THE TERMS OF THE CONTRACT. THERE ARE SEVERAL AREAS WITH LIMITED WORKING ROOM WITHIN THE PROJECT RIGHT-OF-WAY, AND/OR WITH EXISTING FEATURES WITHIN OR NEAR THE PROJECT RIGHT-OF-WAY, THAT WILL REQUIRE 'SPECIAL' CONSTRUCTION PROCEDURES.
- THE CONTRACTOR IS REQUIRED TO SUBMIT A REVISED PIPE LIST TO THE COR/COTR, BASED ON THE FIELD STAKING IN ACCORDANCE WITH SECTION 152 OF THE CONTRACT SUPPLEMENTAL SPECIFICATION, THE APPROVAL OF ANY AND ALL REVISED PIPE LISTS WITH ACCOMPANYING DRAWINGS IS RENDERED AS A SERVICE ONLY AND IS NOT CONSIDERED A GUARANTEE OF MEASUREMENTS, QUANTITIES, INSTALLATION PROCEDURES, AND/OR DIMENSIONS, NOR SHALL IT BE CONSIDERED AS RELIEVING THE CONTRACTOR FROM COMPLYING WITH THE CONTRACT SPECIFICATIONS AND DESIGN PLANS. THE CONTRACTOR IS HEREBY NOTIFIED THAT UNDER NO CIRCUMSTANCE SHALL ANY DRAINAGE STRUCTURE(S) BE INSTALLED BELOW THE NATURAL FLOW LINE OF THE WASH, CHANNEL, ARROYO, OR DITCH LINE.
- NO WORK SHALL BE PERFORMED OR GROUND DISTURBED OUTSIDE OF THE DESIGNATED CONSTRUCTION LIMITS IN ACCORDANCE WITH SECTION 107 OF THE FP-14 WITHOUT WRITTEN APPROVAL BY THE COR/COTR UNLESS OTHERWISE SHOWN AND LABELED ON THESE PLANS AS "CONSTRUCTION ZONE". IN NO CASE SHALL ANY WORK BE PERFORMED OUTSIDE THE DESIGNATED RIGHTS-OF-WAY LIMITS WITHOUT WRITTEN APPROVAL FROM THE NRDOT DIVISION MANAGER, UNLESS OTHERWISE SHOWN AND CALLED OUT ON THESE PLANS AS "WORK AREAS". THE CONSTRUCTION LIMIT IS THE CATCH POINT EARTHWORK LIMIT PLUS 3.0 METERS, NOT TO EXCEED THE RIGHT-OF-WAY LIMITS.
- THE DETAILS SHOWN ON THE STORM WATER POLLUTION AND EROSION/SEDIMENT CONTROL DETAILS ARE GENERAL REQUIREMENTS TO BE USED BY THE CONTRACTOR IN PREPARING A STORM WATER POLLUTION PREVENTION PLAN ALONG WITH THE REQUIREMENTS IN SECTION 157 OF THE SUPPLEMENTAL SPECIFICATION AND SPECIAL CONTRACT REQUIREMENTS. THE SWPPP IS ONLY REQUIRED AT THE DRAINAGE PIPE REPLACEMENT LOCATIONS. THE CONTRACTOR IS REQUIRED TO SUBMIT A COURTESY COPY OF THE APPROVED SWPPP TO THE NAVAJO NATION WATER QUALITY EPA OFFICE.
- THE QUANTITIES SHOWN ARE FOR ESTIMATING PURPOSES ONLY AND TO COMPARE AND CANVAS BIDS. ACTUAL PAY QUANTITIES WILL BE DETERMINED IN THE FIELD FOR AUTHORIZED CHANGES THAT AFFECT THE QUANTITIES. ANY OVER-RUN OR UNDER-RUN OF QUANTITIES SHALL BE SUBJECT TO THE SPECIAL CONTRACT REQUIREMENTS.
- ALL TURNOUT/DRIVEWAYS, AS CALLED FOR ON THESE PLANS, SHALL EITHER BE CONSTRUCTED, REBUILT, RESHAPED AND/OR REMOVED UP TO THE RIGHT-OF-WAY LIMITS. ALL TURNOUTS SHALL BE PAVED TO THE CATTLEGUARD, THEN FROM THE BACK OF CATTLEGUARD TO THE R/W LINE. PLACE AGGREGATE BASE FOR ALL 4.5 METERS WIDE TURNOUTS; PLACE AGGREGATE AND HOT ASPHALTIC CONCRETE FOR TURNOUTS WIDER THAN 4.5 METERS TO MATCH THE ADJOINING STRUCTURAL SECTION. REQUIRED GRADING, SHAPING, AND EARTH COMPACTION OUTSIDE OF THE RIGHT-OF-WAY, TO CONNECT NEW TURNOUTS TO THE EXISTING ROADWAY/DRIVEWAY (AS SHOWN ON THE PLANS OR AS DIRECTED BY THE COR/COTR SHALL BE INCIDENTAL TO BID ITEM 20401-0000. ANY REQUIRED AGGREGATE BASE AND/OR ASPHALT MATERIAL SHALL BE PAID FOR UNDER THE APPROPRIATE BID ITEMS FOR THIS WORK AS SHOWN IN THE BID SCHEDULE.
- THE CONTRACTOR SHALL BE REQUIRED TO OBLITERATE ALL EXISTING ABANDONED TURNOUTS AND ROADWAY WITHIN THE RIGHT-OF-WAY LIMITS, AND ANY EXISTING TURNOUTS/ROADWAY OUTSIDE OF THE RIGHT-OF-WAY THAT ARE DESIGNATED ON THE PLANS FOR OBLITERATION. OBLITERATION SHALL BE AS PER FP-14, SECTION 211.01(b) METHOD 2. SCARIFICATION SHALL BE TO A DEPTH OF 300 MILLIMETERS. THE SCARIFIED SURFACE SHALL BE LEFT ROUGH, WITH 100 MILLIMETERS TO 300 MILLIMETERS HIGH RIDGES PERPENDICULAR TO THE EXISTING ROAD CENTERLINE. ROADWAY OBLITERATION INCLUDES GRADING DRAINAGE CHANNELS ACROSS THE OLD ROADBED, TO RE-ESTABLISH NATURAL DRAINAGE CHANNELS AND/OR TO OPEN CHANNELS FOR THE NEWLY INSTALLED (IN NEW ROADWAY) DRAINAGE STRUCTURES. THIS WORK TO BE INCLUDED IN THE BID ITEM 21102-2000. PERMANENT SEEDING AND STRAW MULCHING SHALL BE APPLIED TO ALL OBLITERATION AREAS WITHIN THE CONSTRUCTION LIMITS. SEEDING AND MULCHING TO BE PAID UNDER ITEM 62510-1000.
- STRUCTURAL EXCAVATION AND BEDDING/BACKFILL OF ALL DRAINAGE STRUCTURES (CULVERTS AND CONCRETE HEAD/WING WALLS) SHALL BE CONSIDERED INCIDENTAL TO THE INSTALLATION OF STRUCTURES. BEDDING AND BACKFILL MATERIAL SHALL MEET ALL REQUIREMENTS OF FP-14, SECTIONS 209 AND 704. APPROVED EXCESS EXCAVATION MATERIAL MAY BE USED TO REBUILD TURNOUTS, EARTHEN DITCH BLOCKS, AND/OR PLACED ALONG ROADWAY SHOULDERS AS EMBANKMENT IN AREAS ADJACENT TO THE REMOVAL AND AS DIRECTED BY THE COR/COTR.
- ALL FURROW AND DRAINAGE DITCHES SHALL BE STAKED AND GRADED TO DRAIN UP TO THE RIGHT-OF-WAY LIMITS. EARTHEN DITCH BLOCKS, DIKES AND DITCHES SHALL BE CONSTRUCTED AS SHOWN ON THESE PLANS AND/OR ADDED AT LOCATIONS DESIGNATED BY THE COR/COTR. ALL DITCH BLOCKS, DIKES AND FURROW DITCHES SHALL BE PAID FOR UNDER THE APPROPRIATE BID ITEMS FOR THIS WORK AS SHOWN IN THE BID SCHEDULE. AT ALL DRAINAGE PIPE REPLACEMENTS, INSTALLATIONS, EXTENSIONS, AND IN-PLACE PIPE CLEANING LOCATIONS, THE CONTRACTOR SHALL CLEAN, REGRADE, AND RESHAPE THE INLET AND OUTLET CHANNELS TO THE RIGHT-OF-WAY LINE AS DIRECTED BY THE COR/COTR. THIS WORK SHALL BE INCIDENTAL TO BID ITEMS FOR SECTIONS 602, 603, AND/OR 607.

GENERAL NOTES

- IMMEDIATELY PRIOR TO PLACING AGGREGATE BASE AND/OR RECYCLED MATERIAL, THE TOP 152 MILLIMETERS OF THE FINISHED SUBGRADE (INCLUDING TURNOUTS) SHALL BE CHECKED FOR COMPACTION AND GRADE. IF COMPACTION DOES NOT MEET THE MINIMUM SPECIFIED COMPACTION AND TOLERANCE REQUIREMENTS, THE ORIGINAL GROUND AND/OR SUBGRADE SHALL BE RE-WATERED AND/OR SCARIFIED AS NEEDED AND RE-COMPACTED TO THE REQUIRED DENSITY AND TOLERANCE, AT THE CONTRACTOR'S EXPENSE. IN NO CASE SHALL ANY EMBANKMENT OR SURFACING MATERIAL BE PLACED ON FROZEN, MUDDY OR UNSTABLE NATURAL GROUND OR SUBGRADE. THIS WORK SHALL BE CONSIDERED AN INCIDENTAL OBLIGATION OF THE CONTRACTOR AND SHALL MEET THE REQUIREMENTS OF SECTION 704.03 OF THE FP-14 AS MODIFIED IN THE SPECIFICATIONS.
- THE EARTHWORK TABLE SHOWN IS TO ASSIST THE CONTRACTOR IN ESTABLISHING A BID UNDER THE EARTHWORK ITEMS SHOWN IN THE BID SCHEDULE. ANY BORROW MATERIAL CALLED FOR ON THE PLANS SHALL BE TAKEN FROM CONTRACTOR IDENTIFIED SOURCES OUTSIDE THE RIGHT-OF-WAY LIMITS. IT IS THE SOLE RESPONSIBILITY AND EXPENSE OF THE CONTRACTOR TO PROVIDE ANY NECESSARY BORROW MATERIAL FOR THIS PROJECT INCLUDING ALL NECESSARY PERMITS. ALL EXCAVATION, BORROW, WASTE AND EMBANKMENT MATERIAL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEMS 20401-0000 AND 20403-0000. WASTE MATERIALS SHALL BE STOCKPILED LOCATIONS DESIGNATED BY THE COR BETWEEN STA 41+00 TO 55+900 LEFT & RIGHT OUTSIDE OF THE CONSTRUCTION STAKED LIMITS AND INSIDE THE ROW LINES WHERE THE MATERIAL WILL NOT BLOCK OFF DRAINAGE PATTERNS OR ACCESS TO HOME SITES. SEED AND MULCH THE STOCKPILES UNDER BID ITEM 62510-1000.
- AT ALL TOP EDGES OF CUT SLOPES 3.0 METER OR HIGHER THAN THE DITCH FLOWLINE, THE CONTRACTOR SHALL REMOVE ALL LOOSE AND UNSTABLE ROCK OR ROCK THAT AS DETERMINED BY THE COR/COTR, MAY BECOME LOOSE WITHIN 5.0 METER OF THE TOP CUT SLOPE. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO BID ITEM 20401-0000, AND NO ADDITIONAL PAYMENT WILL BE MADE.
- THE LOCATION OF UTILITIES AS SHOWN IN THESE PLANS ARE APPROXIMATE AND ARE ONLY TO ASSIST THE CONTRACTOR IN COMPLETING THE WORK. THE CONTRACTOR SHALL CONTACT ALL UTILITY OWNERS PRIOR TO STARTING ANY CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL CONTACT THE NAVAJO TRIBAL UTILITY AUTHORITY (NTUA) AT (928)-729-5721 AND FRONTIER COMMUNICATION COMPANY AT (928)-871-3748, PRIOR TO STARTING ANY CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITIES AND THEIR LOCATIONS WITH THE UTILITY OWNERS PRIOR TO CONSTRUCTION. ANY UTILITIES DAMAGED DUE TO NEGLIGENCE OF THE CONTRACTOR SHALL BE RESTORED TO CODE REQUIREMENTS AT THE CONTRACTOR'S EXPENSE.
- THE CONTRACTOR SHALL REMOVE, CLEAN, AND STOCKPILE ALL SALVAGEABLE EXISTING CULVERTS, CATTLE GUARDS, FENCING MATERIALS, ETC. AS CALLED FOR ON THESE PLANS IN ACCORDANCE TO SECTIONS 203 AND 607 IN A DESIGNATED LOCATION ADJACENT TO THE REMOVAL LOCATION BUT OUTSIDE OF THE CONSTRUCTION STAKED LIMITS. THE COR/COTR SHALL OFFER THIS SALVAGED MATERIALS TO THE COMMUNITY MEMBERS AND/OR PROPERTY OWNERS. IF THEY ACCEPT, THE MATERIALS MUST BE PICKED UP THAT SAME DAY. ANY PIPE MATERIAL DETERMINED TO BE UNUSABLE BY THE COR/COTR OR UNACCEPTABLE BY THE LAND OWNER/COMMUNITY MEMBERS SHALL BE DISPOSED OF BY THE CONTRACTOR IN ACCORDANCE WITH SECTIONS 107 AND 203. THE SALVAGE WORK SHALL BE INCLUDED IN THE APPROPRIATE UNIT PRICE BID ITEMS FOR SECTIONS 203 AND/OR 607.
- THE ROADWAY TYPICAL SECTION SHOWN IS THE BASIC TEMPLATE TO WHICH THE PROJECT IS TO BE STAKED AND BUILT. HOWEVER, THERE WILL BE LOCATIONS WHERE, DUE TO EXISTING GROUND CONDITIONS, TURNOUTS, CULVERTS OR OTHER STRUCTURES, ETC., THE SHOWN TYPICAL SLOPES CANNOT BE CONSTRUCTED. IN THIS CASE, THE COR/COTR SHALL BE CONSULTED WITH THE OWNER FOR CHANGES IN THE TYPICAL SECTIONS, DESIGN SLOPES, AND/OR OTHER ADJUSTMENTS BEFORE PROCEEDING WITH THE WORK UNLESS NOTED OTHERWISE ON THE PLANS. THE FINAL CONSTRUCTED ROAD SECTION SHALL BE BASED ON THE GOVERNMENT/OWNER 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.
- THE CONTRACTOR SHALL SAW CUT (FULL DEPTH) THE EXISTING ASPHALT PAVEMENT WHERE NEW ASPHALT IS TO TIE INTO THE OLD ASPHALT PAVEMENT AT THE LOCATIONS NOTED ON THE PLANS. THE CONTRACTOR SHALL MATCH THE NEW ASPHALTIC CONCRETE PAVEMENT SURFACE TO EXISTING PAVEMENT SECTION AT TIE-IN POINTS AND TO PROVIDE FOR A SMOOTH TRANSITION AS DIRECTED BY THE COR/COTR. ALL SAWED PAVEMENT EDGES TO RECEIVE ASPHALT TACK COAT. THIS WORK SHALL BE INCIDENTAL TO BID ITEM 40201-0500 AS SHOWN IN THE BID SCHEDULE.
- 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-ATTACHMENT OF FENCING REQUIRED TO COMPLETE SPECIFIED WORK AT DRAINAGE STRUCTURES, CATTLE GUARDS, GATES, TURNOUTS, RIPRAP, ETC. SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEMS RELATED TO THE WORK REQUIRING SAID FENCE REMOVAL/RE-ATTACHMENT, FENCING REPAIRS, TEMPORARY FENCING AND/OR REMOVAL AND RE-ATTACHMENT OF FENCING, SHALL BE COMPLETED IN THE SAME WORK DAY SO AS NOT TO ALLOW LIVESTOCK ONTO THE PROJECT. IF WIRE TENSION IS LOST IN THE EXISTING FENCE, THE CONTRACTOR SHALL RE-TIGHTEN THE FENCE AS DIRECTED BY THE COR/COTR.
- THE CONTRACTOR SHALL REMOVE BIA ROUTE N12 EXISTING ROADSIDE SIGNS THAT INTERFERE WITH ROAD CONSTRUCTION AND/OR CONTRADICT THE CONTRACTOR'S TEMPORARY TRAFFIC CONTROL PLAN, AT THE START OF THE CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE COR/COTR AT LEAST THREE (3) WORKING DAYS IN ADVANCE OF SUCH SIGN REMOVAL. THESE ROADSIDE SIGNS SHALL BE SALVAGED AND TAKEN TO THE CHINLE AGENCY MAINTENANCE YARD. SIGNS NEEDED FOR SAFETY/INFORMATION SHALL BE TEMPORARILY RESET AS DIRECTED BY THE COR/COTR ALL REMAINING SIGNS ALONG THE EXISTING N12 ROADWAY, NOT SPECIFICALLY DESIGNATED ON THE PLANS TO REMAIN, SHALL BE REMOVED. THIS WORK SHALL BE CONSIDERED AN INCIDENTAL OBLIGATION OF THE CONTRACTOR.
- GRADE AND SHAPE THE SHOULDER AND DITCHES (AS DIRECTED BY COR/COTR) FROM THE SUBGRADE HINGE POINTS TO AND INCLUDING THE EXISTING DITCH LINE AREAS FOR THE CONSTRUCTION OF RIPRAP DITCH LININGS, SLOPE PROTECTION, AND RUNDOWNS. THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE RIPRAP ITEMS SHOWN IN THE BID SCHEDULE.
- AT MAJOR DRAINAGE STRUCTURES AND LIVESTOCK PASS LOCATIONS, THE CONTRACTOR SHALL EITHER TIE THE WING FENCES TO STRUCTURES IN ACCORDANCE WITH THE DETAILS ON SHEET 44 OF 56 OR INSTALL FENCE OVER THE STRUCTURE AT THE CLEAR RECOVERY ZONE AS NOTED ON THE PLANS. IF NO CORNER FENCE POST/BRAVE/STRAIN EXISTS AT TIE-IN TO RIGHT-OF-WAY FENCE, THE CONTRACTOR SHALL INSTALL A STRAIN POST ASSEMBLY AS PER PLAN SHEET 44 OF 56. ANY EXISTING CATTLE PASS CLOSURES ARE TO BE REMOVED. THIS WORK TO BE INCIDENTAL TO BID ITEM 61901-1000 AND NO ADDITIONAL PAYMENT SHALL BE MADE.
- ALL RIGHT-OF-WAY REFERENCE MARKERS SHALL BE LABELED IN THE METRIC UNITS OF MEASURE. ALL EXISTING AND NEW BRASS CAPS SHALL BE STAMPED WITH BOTH ALIGNMENT STATIONING AND ELEVATIONS IN METRIC, UNLESS OTHERWISE NOTED UNDER SECTION 152 OF THE SUPPLEMENTAL SPECIFICATIONS. ANY EXISTING R/W MONUMENTS AND BRASS CAPS MISSING SHALL BE RE-SURVEYED IN TO THEIR ORIGINAL POSITION AND LABELED AND STAMPED ACCORDINGLY. ALL EXISTING REFERENCE MARKERS SHALL BE SAND BLASTED CLEAN, AND REPAINTED WITH ENGLISH STATIONS ON ONE SIDE AND METRIC STATIONS ON THE OTHER. ANY MISSING OR DAMAGED MARKERS SHALL BE RE-SURVEYED AND REPLACED. THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEMS 62101-0000 AND 62102-0000.
- THERE MAY BE A NUMBER OF ARCHAEOLOGICAL SITE MITIGATIONS THAT ARE NOTED OR SHOWN ON THE PLANS. THE CONTRACTOR SHALL NOTIFY THE NAVAJO NATION DIVISION OF TRANSPORTATION (NNDOT) PROJECTS OFFICE (TAFT BLACKHOSES) 505-371-8394 AS REQUIRED PRIOR TO STARTING CONSTRUCTION ACTIVITIES IN THESE LOCATIONS IF SHOWN ON THE PLANS. SEE THE SPECIAL CONTRACT REQUIREMENT SECTION OF THE CONTRACT FOR ADDITIONAL INFORMATION, AND REQUIREMENTS. THE CONTRACTOR SHALL PLACE TEMPORARY FLEXIBLE SAFETY FENCE AROUND THE ARCHAEOLOGY SITE(S) AS NOTED ON THE PLANS. THE FENCING MATERIAL SHALL BE SQUARE LINK (ORANGE COLOR) HIGH DENSITY PIPE MADE OF HDPE PER SECTION 716.11 OF THE FP-14. TEMPORARY ARCHAEOLOGY FENCING SHALL BE CONSIDERED INCIDENTAL OBLIGATIONS OF THE CONTRACTOR IF A SPECIFIC BID ITEM IS NOT SHOWN IN THE BID SCHEDULE.

GENERAL NOTES

- AS-BUILTS PLAN AND PROFILE SHEETS [OF PROJECT N12(2-1)] SHALL BE PROVIDED UPON WRITTEN REQUEST TO THE COR/COTR ONLY FOR LOCATING EXISTING STRUCTURES AND APPURTENANCES TO BE REMOVED. HOWEVER, THE CONTRACTOR SHALL BE RESPONSIBLE FOR SURVEYING AND CHECKING THE NEW ROADWAY (HORIZONTAL AND VERTICAL) CENTERLINE ALIGNMENT TO INSURE THE PREVIOUS PROJECT ALIGNMENT MATCHES THE NEW ROADWAY ALIGNMENT AT THE BOP & EOP. REGRADE AND RESHAPE THE EXISTING ROADSIDE DITCHES AS NEEDED TO MATCH THE NEW DITCH LINES. THE CONTRACTOR IS ADVISED THAT MUCH OF THE INFORMATION FOUND ON THE AS-BUILT PLANS HAS BEEN REVISED/ UPDATED/CORRECTED FOR THE CURRENT PROJECT. THE AS-BUILT PLANS ARE PROVIDED FOR BACKGROUND INFORMATION ONLY. THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEMS 15201-0000, 20401-000, 30302-6000 AND 40201-0500.
- THE GEO-TECHNICAL REPORT FOR THIS PROJECT SHALL BE PROVIDED UPON WRITTEN REQUEST FROM THE CONTRACTOR THRU COR/COTR.
- ROADWAY END AREA AND PIPE CROSS SECTION DRAWINGS WILL BE PROVIDED IN EITHER HARD COPY OR ELECTRONIC FORMAT UPON WRITTEN REQUEST FROM THE CONTRACTOR THRU THE CONTRACTING OFFICER AT THE PRE-CONSTRUCTION MEETING.
- ANY EXISTING MAIL BOXES, ADVERTISING BILLBOARDS, OR HOUSE ADDRESS SIGNS CALLED OUT ON THESE PLANS OR FOUND TO BE LOCATED ALONG THE ROADWAY PRISM SHALL BE REMOVED AND RE-INSTALLED OUTSIDE OF THE RIGHT-OF-WAY LIMIT OR AS DIRECTED BY THE COR/COTR. THE CONTRACTOR SHALL NOTIFY THE CHAPTER OFFICIALS AND ATTEMPT TO CONTACT ALL AFFECTED RESIDENTS TEN (10) WORKING DAYS PRIOR TO RESETTING MAIL BOXES. THIS WORK SHALL BE INCIDENTAL TO BID ITEM 20304-1000.
- AT THE COMPLETION OF THE CONSTRUCTION, THE CONTRACTOR SHALL INSPECT THE INTERIOR OF ALL NEWLY INSTALLED CULVERTS, CATTLEGUARDS, AND/OR OTHER EXISTING DRAINAGE STRUCTURES. THESE STRUCTURES SHALL BE MAINTAINED IN A CLEAN CONDITION, FREE OF SILT AND OTHER DEBRIS UNTIL FINAL ACCEPTANCE OF THE PROJECT. THIS WORK SHALL BE CONSIDERED AN INCIDENTAL OBLIGATIONS OF THE CONTRACTOR UNDER THE APPROPRIATE BID ITEMS, FOR SECTIONS 602, 603, 607, AND 619.
- THERE ARE NUMBER OF LOCATIONS WHERE RIPRAP, CHANNEL FLOWLINE GRADING, TURNOUTS, ETC., WILL REQUIRE WORK AND IMPROVEMENTS PLACED THROUGH AND BEYOND THE RIGHT-OF-WAY FENCING LOCATIONS. IN THESE LOCATIONS, THE RIGHT-OF-WAY FENCING SHALL BE ADJUSTED (POST SPACING, VERTICAL ALIGNMENT, POST INSTALLATIONS THROUGH RIPRAP, RIGHT-OF-WAY MONUMENT/MARKER ADJUSTMENT, ETC.) AS DIRECTED BY THE COR/COTR. THIS WORK TO BE INCIDENTAL TO BID ITEMS 61901-1000, 62101-0000, AND 62102-0000, AND NO ADDITIONAL PAYMENT WILL BE MADE.
- IT IS EXPECTED A REVISED/ FINAL RIGHTS-OF-WAY GRANT OF EASEMENT BE DEVELOPED DURING THE CONSTRUCTION OF THE N12(19-4) PROJECT. THE CONTRACTOR SHALL NOT SURVEY FOR OR INSTALL R.O.W. MONUMENTS AND MARKERS OR FENCINGS UNTIL EXPRESSLY APPROVED BY THE OWNER THROUGH THE COR/COTR. FENCING CAN BE PLACED AT ALL ARCHAEOLOGICAL SITES IF SPECIFIED ON THE PLANS.
- THE FINISHED SUBGRADE SOIL CLASSIFICATION AND PI'S WILL BE DETERMINED PRIOR TO SUBGRADE TREATMENT WITH ROADBOND EN-1. THE FINAL LOCATIONS (BY STATION) FOR SUBGRADE TREATMENT WILL BE DETERMINED BY THE GOVERNMENT/OWNER AND PROVIDED TO THE CONTRACTOR BEFORE THE WORK CAN PROCEED.
- UNDER THE CLEARING AND GRUBING BID ITEM 20102-000, THE CONTRACTOR IS REQUIRED TO COMPLY WITH THE REQUIREMENTS STATED IN THE SUPPLEMENTAL SPECIFICATIONS AND PERMITS (IF REQUIRED) FOR THIS SECTION OF WORK CONCERNING TIMBER & BRUSH CUTTING & REMOVAL.

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

GENERAL NOTES

DRAWN BY: NRDOT DATE: 12/19/2013

DESIGNED BY: NRDOT DATE: 12/19/2013

REVISED: 10/5/2017 BY: Allen.Nakaidinae

Sht 04_N12 GenNotes.dgn



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	5	88

N12(19-4)1,2&4 HORIZONTAL ALIGNMENT TABLE

POINT	STATION (m)	ELEMENT	DIRECTION	NORTHING (m)	EASTING (m)
BOP	38+500.000			579,597.420	308,913.190
		Line= 270.609 (m)	N 20°54'49" W		
PC	38+770.609			579,850.202	308,816.594
PI	38+985.651	CURVE 1		580,051.077	308,739.833
		Delta = 40°21'58" Lt.			
		Deg. = 2°59'07"			
		R = 585.000 (m)			
		L = 412.146 (m)			
		T = 215.042 (m)			
		e = 38.272 (m)			
PT	39+182.754			580,154.412	308,551.247
		Line= 179.688 (m)	N 61°16'47" W		
PC	39+362.443			580,240.759	308,393.664
PI	39+494.062	CURVE 2		580,304.006	308,278.238
		Delta = 25°29'10" Rt.			
		Deg. = 3°00'02"			
		R = 582.000 (m)			
		L = 258.883 (m)			
		T = 131.619 (m)			
		e = 14.697 (m)			
PT	39+621.326			580,410.766	308,201.258
		Line= 104.563 (m)	N 35°47'37" W		
PC	39+725.889			580,495.580	308,140.103
PI	39+851.672	CURVE 3		580,597.607	308,066.536
		Delta = 24°21'01" Lt.			
		Deg. = 2°59'44"			
		R = 583.000 (m)			
		L = 247.770 (m)			
		T = 125.784 (m)			
		e = 13.415 (m)			
PT	39+973.658			580,660.225	307,957.447
		Line= 442.567 (m)	N 60°08'37" W		
PC	40+416.225			580,880.546	307,573.619
PI	40+538.173	CURVE 4		580,941.255	307,467.856
		Delta = 11°53'29" Rt.			
		Deg. = 1°29'27"			
		R = 1171.000 (m)			
		L = 243.020 (m)			
		T = 121.948 (m)			
		e = 6.333 (m)			
PT	40+659.245			581,022.453	307,376.871
		Line= 349.942 (m)	N 48°15'11" W		
PC	41+009.187			581,255.459	307,115.782
PI	41+088.924	CURVE 5		581,308.551	307,056.291
		Delta = 15°29'50" Lt.			
		Deg. = 2°58'49"			
		R = 586.000 (m)			
		L = 158.500 (m)			
		T = 79.737 (m)			
		e = 5.400 (m)			
PT	41+167.687			581,343.817	306,984.777
		Line= 41.141 (m)	N 63°45'01" W		
PC	41+208.829			581,362.014	306,947.879
PI	41+432.981	CURVE 6		581,461.153	306,746.841
		Delta = 28°46'08" Rt.			
		Deg. = 1°59'53"			
		R = 874.000 (m)			
		L = 438.847 (m)			
		T = 224.153 (m)			
		e = 28.286 (m)			
PT	41+647.676			581,644.810	306,618.332
		Line= 162.631 (m)	N 34°58'53" W		
PC	41+810.307			581,778.060	306,525.094
PI	42+544.951	CURVE 7		582,379.982	306,103.916
		Delta = 55°30'40" Lt.			
		Deg. = 1°15'04"			
		R = 1396.000 (m)			
		L = 1352.517 (m)			
		T = 734.644 (m)			
		e = 181.504 (m)			
PT	43+162.824			582,373.669	305,369.299
		Line= 921.851 (m)	S 89°30'27" W		
PC	44+084.674			582,365.746	304,447.483
PI	44+182.648	CURVE 8		582,364.904	304,349.512
		Delta = 12°49'16" Lt.			
		Deg. = 2°00'10"			
		R = 872.000 (m)			
		L = 195.130 (m)			
		T = 97.974 (m)			
		e = 5.487 (m)			
PT	44+279.804			582,342.342	304,254.171
		Line= 387.695 (m)	S 76°41'11" W		
PC	44+667.499			582,253.063	303,876.896
PI	44+918.770	CURVE 9		582,195.200	303,632.379
		Delta = 59°47'49" Rt.			
		Deg. = 3°59'47"			
		R = 437.000 (m)			
		L = 456.077 (m)			
		T = 251.271 (m)			
		e = 67.089 (m)			
PT	45+123.576			582,377.415	303,459.362
		Line= 1371.379 (m)	N 43°31'00" W		
PC	46+494.955			583,371.903	302,515.077
PI	47+492.512	CURVE 10		584,095.305	301,828.193
		Delta = 71°08'12" Rt.			
		Deg. = 1°15'07"			
		R = 1395.000 (m)			
		L = 1731.990 (m)			
		T = 997.557 (m)			
		e = 319.977 (m)			
PT	48+226.945			584,979.182	302,290.667

N12(19-4)1,2&4 HORIZONTAL ALIGNMENT TABLE

Station	Left Rate	Right Rate	Remarks
PC 48+794.666			585,482.206 302,553.865
PI 49+266.024	CURVE 11		585,899.850 302,772.390
	Delta = 78°00'28" Lt.		
	Deg. = 3°00'02"		
	R = 582.000 (m)		
	L = 792.387 (m)		
	T = 471.359 (m)		
	e = 166.935 (m)		
PT 49+587.053			586,200.384 302,409.266
	Line= 1212.060 (m)	N 50°23'15" W	
PC 50+799.113			586,973.181 301,475.525
PI 51+082.339	CURVE 12		587,153.763 301,257.335
	Delta = 51°53'56" Rt.		
	Deg. = 3°00'02"		
	R = 582.000 (m)		
	L = 527.181 (m)		
	T = 283.226 (m)		
	e = 65.256 (m)		
PT 51+326.293			587,436.891 301,264.805
	Line= 70.276 (m)	N 1°30'41" E	
PC 51+396.570			587,507.142 301,266.659
PI 51+587.967	CURVE 13		587,698.473 301,271.707
	Delta = 47°24'05" Lt.		
	Deg. = 4°00'20"		
	R = 436.000 (m)		
	L = 360.707 (m)		
	T = 191.397 (m)		
	e = 40.160 (m)		
PT 51+757.277			587,831.692 301,134.284
	Line= 493.549 (m)	N 45°53'24" W	
PC 52+250.826			588,175.221 300,779.913
PI 52+282.820	CURVE 14		588,197.491 300,756.941
	Delta = 2°05'50" Rt.		
	Deg. = 0°59'57"		
	R = 1748.000 (m)		
	L = 63.981 (m)		
	T = 31.994 (m)		
	e = 0.293 (m)		
PT 52+314.807			588,220.585 300,734.800
	Line= 688.687 (m)	N 43°47'34" W	
PC 53+003.494			588,717.712 300,258.192
PI 53+172.332	CURVE 15		588,839.588 300,141.347
	Delta = 11°03'11" Lt.		
	Deg. = 1°00'03"		
	R = 1745.000 (m)		
	L = 336.629 (m)		
	T = 168.838 (m)		
	e = 8.149 (m)		
PT 53+340.123			588,936.802 300,003.304
	Line= 654.433 (m)	N 54°50'45" W	
PC 53+994.556			589,313.611 299,468.237
PI 54+176.891	CURVE 16		589,418.596 299,319.159
	Delta = 34°47'26" Lt.		
	Deg. = 3°00'02"		
	R = 582.000 (m)		
	L = 353.395 (m)		
	T = 182.335 (m)		
	e = 27.893 (m)		
PT 54+347.951			589,419.753 299,136.828
	Line= 45.879 (m)	N 89°38'10" W	
PC 54+393.830			589,420.045 299,090.950
PI 55+126.733	CURVE 17		589,424.698 298,358.062
	Delta = 64°23'33" Rt.		
	Deg. = 1°30'01"		
	R = 1164.000 (m)		
	L = 1308.172 (m)		
	T = 732.902 (m)		
	e = 211.515 (m)		
PT 55+702.003			590,087.609 298,045.501
	Line= 197.997 (m)	N 25°14'38" W	
EOP 55+900.000			590,266.697 297,961.061

SUPERELEVATION TABLE

Station	Left Rate	Right Rate	Remarks
38+720.518	-2.00%	-2.00%	Normal Crown
38+737.213	-2.00%	0.00%	Runoff
38+753.909	-2.00%	2.00%	Reverse Crown
38+797.317	-7.20%	7.20%	Full Super
39+159.911	-7.20%	7.20%	Full Super
39+202.522	-2.00%	2.00%	Reverse Crown
39+218.911	-2.00%	0.00%	Runoff
39+235.299	-2.00%	-2.00%	Normal Crown
39+312.957	-2.00%	-2.00%	Normal Crown
39+329.346	0.00%	-2.00%	Runoff
39+345.735	2.00%	-2.00%	Reverse Crown
39+388.346	7.20%	-7.20%	Full Super
39+599.953	7.20%	-7.20%	Full Super
39+641.684	2.00%	-2.00%	Reverse Crown
39+657.734	0.00%	-2.00%	Runoff
39+673.785	2.00%	-2.00%	Normal Crown
39+674.139	-2.00%	-2.00%	Normal Crown
39+690.866	-2.00%	0.00%	Runoff
39+707.594	-2.00%	2.00%	Reverse Crown
39+751.085	-7.20%	7.20%	Full Super
39+951.577	-7.20%	7.20%	Full Super
39+993.307	-2.00%	2.00%	Reverse Crown
40+009.357	-2.00%	0.00%	Runoff
40+025.408	-2.00%	-2.00%	Normal Crown
40+378.252	-2.00%	-2.00%	Normal Crown
40+395.103	0.00%	-2.00%	Runoff
40+411.953	2.00%	-2.00%	Reverse Crown
40+432.173	4.40%	-4.40%	Full Super
40+646.412	4.40%	-4.40%	Full Super
40+665.465	2.00%	-2.00%	Reverse Crown
40+681.341	0.00%	-2.00%	Runoff
40+697.218	-2.00%	-2.00%	Normal Crown
40+957.425	-2.00%	-2.00%	Normal Crown
40+974.153	-2.00%	0.00%	Runoff
40+990.880	-2.00%	2.00%	Reverse Crown
41+034.372	-7.20%	7.20%	Full Super

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	6	88

ESTIMATED QUANTITIES

ITEM	DESCRIPTION	QUANTITY	Units
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	13,750	Mon Hrs.
15701-0000	Temporary Erosion Control	All Req'd	Lump Sum
15708-1000	Temporary Straw Mulching	20.6	ha
20102-0000	Clearing & Grubbing	All Req'd	Lump Sum
20304-1000	Removal of Structures & Obstructions with Bridge N504 & N505	All Req'd	Lump Sum
20401-0000	Roadway Excavation	126,350	m³
20403-0000	Unclassified Borrow	34,559	m³
20801-0000	Structure Excavation	1,383	m³
20803-0000	Structure Backfill	603	m³
20443-1000	Earthen Dike & Berm, Type A	171.0	m
20601-0000	Development of Water Supply	25.00	M-Liter
21301-4000	Subgrade Stabilization with Road Bond EN-1, 305 mm	31,546	m²
25101-2000	Placed Riprap, Class-2	323.4	m³
25110-2000	Grouted Riprap Class-2	195.8	m³
25112-2000	Wire Enclosed Riprap, Class 2	1,694.5	m³
30103-2000	Untreated Aggregate Base, Grading Special	17,872.00	t
40201-0500	Hot Asphalt Concrete Pavement Class B, Grade B, Type III Smoothness	53,924.00	t
40502-0800	Asphalt Cement, Grade PG-58-28	3,235.00	t
40802-0700	Cold Recycled Asphalt Base Course, existing mill depth 279mm	232,138	m²
41101-5000	Prime Coat - Penetrating Emulsified Prime, Grade PEP	231.00	t
41201-1000	Asphalt Emulsion Tack Coat, Grade SS-1	38.00	t
55201-0200	Structural Concrete Class A(AE)	332.00	m³
55401-1000	Reinforcing Steel, Grade 420 Epoxy Coated	22,887	kg
55101-2000	660mm dia Steel Pipe Filled with Concrete, in place Bridge N504	355.00	m
55115-1000	Preboring of Piles	251.00	m
60101-1000	Minor Concrete, Class A(AE)	80.00	m³
60201-0810	610 mm Corrugated Steel Pipe	1,132.6	m
60201-0910	762 mm Corrugated Steel Pipe	393.9	m
60201-1010	914 mm Corrugated Steel Pipe	82.9	m
60201-1110	1067 mm Corrugated Steel Pipe	52.4	m
60201-1210	1219 mm Corrugated Steel Pipe	200.0	m
60201-1410	1524 mm Corrugated Steel Pipe	109.7	m
60201-1810	2134 mm Corrugated Steel Pipe	42.1	m
60202-0610	889 mm Span x 610 mm Rise Corrugated Steel Pipe-Arch	96.3	m
60202-0710	1067 mm Span x 737 mm Rise Corrugated Steel Pipe-Arch	354.2	m
60202-0810	1245 mm Span x 838 mm Rise Corrugated Steel Pipe-Arch	331.0	m
60202-0910	1448 mm Span x 965 mm Rise Corrugated Steel Pipe-Arch	107.3	m
60202-1110	1803 mm Span x 1194 mm Rise Corrugated Steel Pipe-Arch	418.5	m
60210-0810	End Section 610 mm CSPC	101	Each
60210-0910	End Section 762 mm CSPC	14	Each
60210-1010	End Section 914 mm CSPC	6	Each
60210-1110	End Section 1067 mm CSPC	2	Each
60210-1210	End Section 1219 mm CSPC	6	Each
60211-1010	End Section 889 mm Span x 610 mm Rise CSPA	4	Each
60211-1110	End Section 1067 mm Span x 737 mm Rise CSPA	15	Each
60211-1210	End Section 1245 mm Span x 838 mm Rise CSPA	7	Each
60211-1310	End Section 1448 mm Span x 965 mm Rise CSPA	4	Each
60211-1510	End Section 1803 mm Span x 1194 mm Rise CSPA	6	Each
60301-0710	2448 mm Structural Plate Pipe Culvert, SPPC	87.8	m
60302-0910	2616 mm Span x 1803 mm Rise Structural Plate Pipe-Arch, SPPA	189.0	m
60304-0100	17,374 m Span x 3,249 m Rise Pre-Cast Arch Culvert Units & PC Wingwalls with Foundations- Bridge N504	23	Each
60304-0200	17,374 m Span x 3,249 m Rise Pre-Cast Arch Culvert & PC Wingwalls with Foundations- Bridge N505	21	Each
60701-1000	Remove, Clean and Stockpiling Pipe	1,369.6	m
61701-5000	Guardrail System, SGR04b, Type PDE02 with End Treatment SKT-350 & Thrie Beam, Type "A" Installation	944.9	m
61801-0000	Concrete Jersey Barrier, with transition barrier, Bridge N505	36.6	m
61901-3500	Wildlife Crossing Fence	35,104.00	m
61902-2310	Type 2 Gate only for 4.5 m wide Turnout	4	Each
61903-0310	Cattleguard (2-Unit) 4900 mm Width with Type 2 Gate	38	Each
61903-0710	Cattleguard (3-Unit) 7190 mm Width with Type 2 Gate	14	Each
61903-1010	Cattleguard (4-Unit) 9480 mm Width with Type 2 Gate	9	Each
61903-1110	Cattleguard (5-Unit) 11900 mm Width with Type 2 Gate	2	Each
61920-3000	Remove And Reset Cattleguard (At N12 & N64 Intersection)	1	Each
62101-0000	Right-of-Way Monument	80	Each
62102-0000	Reference Marker	80	Each
62510-1000	Seeding, Dry Method	20.6	ha
62901-1100	Erosion Control Matting, Type IV	26,942	m²
63302-2001	Sign Installation, 1-Post = 38 mm x 38 mm, Square Steel Post	39.8	m²
63302-2002	Sign Installation, 1-Post = 44 mm x 44 mm, Square Steel Post	72.3	m²
63302-2006	Sign Installation, 2-Post = 50 mm x 50 mm, Square Steel Post	22.7	m²
63302-2007	Sign Installation, 2-Post = 57 mm x 57 mm, Square Steel Post	19.6	m²
63302-2012	Sign Installation, 4-Post = 57 mm x 57 mm, Square Steel Post	1.9	m²
63308-2000	Object Marker, Type 2, Square Steel Tube, 1- 38 mm x 38 mm	110	Each
63308-3010	Object Marker, Type 3, Square Steel Tube, 1- 38 mm x 38 mm	10	Each
63309-0040	Delineator, 1-38 mm x 38 mm Square Steel Tube, Type "1b"	115	Each
63318-1020	Milepost, 1- 38 mm x 38 mm square steel tube	26	Each
63401-1510	Pavement Markings, Type "H" Solid Yellow	11,620.5	m
63401-1520	Pavement Markings, Type "H" Solid White	34,313.9	m
63401-1610	Pavement Markings, Type "H" Broken Yellow	12,305.8	m
63401-1620	Pavement Markings, Type "H" Broken White	240.0	m
63405-2900	Pavement Marking, Type "H", Turn Arrow	21	Each
63405-2950	Pavement Marking, Type "H", Straight Arrow	19	Each
63405-3000	Pavement Marking, Type "H", Straight/ Turn Arrow Combination	11	Each
63405-3050	Pavement Marking, Type "H", word " ONLY "	12	Each
63405-3260	Pavement Markings, Type "H" STOP bar	24	Each
63405-3290	Pavement Markings, Type "H", diagonal stripping, solid yellow	9	Each
63501-0000	Temporary Traffic Control Main Road Only	All Req'd	Lump Sum
63502-3000	Temporary Traffic Control, Raised Pavement Marker	7,64	Each
63509-1000	Flagger	12,655	Mon Hrs.

TURNOUT LOCATION, CATTLEGUARD & GATE QUANTITY TABLE

STATION	LOCATION	DESCRIPTION	REMARKS	61903-0310	61903-0710	61903-1010	61903-1110	61902-2310	61920-3000	
				2-Unit CG Each	3-Unit CG Each	4-Unit CG Each	5-Unit CG Each	Type 2 Gate Each	Remove & Reset Cattleguard	
38+700.00	CL	1-5-Unit Cattleguard	Connect New Fencing to New Cattleguard on Both Left & Right							
38+898.00	Right	7.0 m TO w/ 3-Unit Cattleguard & Type 2 Gate	BIA Route N8080		1					
39+470.00	Left	4.5 m TO w/ 2-Unit Cattleguard & Type 2 Gate								
39+765.57	Right	7.0 m TO w/ 3-Unit Cattleguard & Type 2 Gate	With 1-610 mm x 20.12 m CSPC & End Sections		1					
40+280.00	Right	7.0 m TO w/ 3-Unit Cattleguard & Type 2 Gate	With 1-610 mm x 18.90 m CSPC & End Sections			1				
40+370.00	Left	4.5 m TO w/ 2-Unit Cattleguard & Type 2 Gate	With 1-610 mm x 13.41 m CSPC & End Sections		1					
40+410.00	Right	7.0 m TO w/ 3-Unit Cattleguard & Type 2 Gate	With 1-610 mm x 21.95 m CSPC & End Sections			1				
40+460.00	Left	7.0 m TO w/ 3-Unit Cattleguard & Type 2 Gate	BIA Bus route							
40+745.00	Left	4.5 m TO w/ 2-Unit Cattleguard & Type 2 Gate	With 1-610 mm x 10.97 m CSPC & End Sections		1					
41+075.00	Right	4.5 m TO w/ 2-Unit Cattleguard & Type 2 Gate	With 1-610 mm x 10.97 m CSPC & End Sections		1					
41+240.00	Right	7.0 m TO w/ 3-Unit Cattleguard & Type 2 Gate	C444			1				
41+535.00	Left	9.10 m TO w/ 4-Unit Cattleguard & Type 2 Gate	BIA Route N8079							
41+700.00	Right	9.10 m TO w/ 4-Unit Cattleguard & Type 2 Gate	With 1-610 mm x 17.07 m CSPC & End Sections			1				
42+578.00	Right	4.5 m TO w/ 2-Unit Cattleguard & Type 2 Gate			1					
42+770.00	Left	7.0 m TO w/ 3-Unit Cattleguard & Type 2 Gate	With 1-610 mm x 21.34 m CSPC & End Sections			1				
43+020.00	Left	4.5 m TO w/ 2-Unit Cattleguard & Type 2 Gate	With 1-610 mm x 11.58 m CSPC & End Sections		1					
43+570.00	Right	4.5 m TO w/ 2-Unit Cattleguard & Type 2 Gate	With 1-610 mm x 12.19 m CSPC & End Sections		1					
43+575.00	Right	4.5 m TO w/ 2-Unit Cattleguard & Type 2 Gate			1					
44+370.00	Right	4.5 m TO w/ Type 2 Gate Only						1		
44+715.00	Left	4.5 m TO w/ 2-Unit Cattleguard & Type 2 Gate	To Forestry lookout tower		1					
45+505.00	Left	4.5 m TO w/ 2-Unit Cattleguard & Type 2 Gate			1					
45+930.00	Right	4.5 m TO w/ 2-Unit Cattleguard & Type 2 Gate			1					
46+160.00	Right	4.5 m TO w/ 2-Unit Cattleguard & Type 2 Gate	With 1-610 mm x 12.19 m CSPC & End Sections		1					
46+846.00	Left	4.5 m TO w/ 2-Unit Cattleguard & Type 2 Gate			1					
47+235.00	Left	4.5 m TO w/ 2-Unit Cattleguard & Type 2 Gate			1					
47+470.00	Left	4.5 m TO w/ 2-Unit Cattleguard & Type 2 Gate			1					
48+240.00	Left	4.5 m TO w/ 2-Unit Cattleguard & Type 2 Gate			1					
48+643.00	Right	4.5 m TO w/ Type 2 Gate Only	To Abandoned gravel pit area					1		
48+655.00	Left	4.5 m TO w/ 2-Unit Cattleguard & Type 2 Gate			1					
49+211.00	Right	7.0 m TO w/ 3-Unit Cattleguard & Type 2 Gate	With 1-610 mm x 19.51 m CSPC & End Sections			1				
49+330.00	Left	7.0 m TO w/ 3-Unit Cattleguard & Type 2 Gate	With 1-610 mm x 20.12 m CSPC & End Sections			1				
49+440.00	Right	4.5 m TO w/ 2-Unit Cattleguard & Type 2 Gate	With 1-610 mm x 10.97 m CSPC & End Sections		1					
49+900.00	Right	4.5 m TO w/ 2-Unit Cattleguard & Type 2 Gate	With 1-610 mm x 10.97 m CSPC & End Sections		1					
49+970.00	Left	7.0 m TO w/ 3-Unit Cattleguard & Type 2 Gate	With 1-610 mm x 19.51 m CSPC & End Sections			1				
50+000.00	Right	4.5 m TO w/ 2-Unit Cattleguard & Type 2 Gate	1-610 mm x 8.53 m CSPC & End Sections		1					
50+580.00	Right	4.5 m TO w/ Type 2 Gate Only	To Field Area					1		
51+040.00	Left	7.0 m TO w/ 3-Unit Cattleguard & Type 2 Gate	With 1-610 mm x 16.46 m CSPC & End Sections			1				
51+265.00	Left	4.5 m TO w/ 2-Unit Cattleguard & Type 2 Gate	With 1-610 mm x 12.19 m CSPC & End Sections		1					
51+473.00	Right	4.5 m TO w/ Type 2 Gate Only						1		
51+666.00	Left	4.5 m TO w/ 2-Unit Cattleguard & Type 2 Gate			1					
51+698.00	Right	4.5 m TO w/ 2-Unit Cattleguard & Type 2 Gate			1					
52+180.00	Left	9.10 m TO w/ 4-Unit Cattleguard & Type 2 Gate	With 1-610 mm x 21.34 m CSPC & End Sections			1				
52+663.00	Left	4.5 m TO w/ 2-Unit Cattleguard & Type 2 Gate	With 1-610 mm x 12.19 m CSPC & End Sections		1					
52+663.00	Right	7.0 m TO w/ 3-Unit Cattleguard & Type 2 Gate	With 1-610 mm x 20.12 m CSPC & End Sections			1				
52+813.00	Left	4.5 m TO w/ 2-Unit Cattleguard & Type 2 Gate	With 1-610 mm x 20.73 m CSPC & End Sections			1				
52+825.00	Right	4.5 m TO w/ 2-Unit Cattleguard & Type 2 Gate			1					
53+015.00	Right	4.5 m TO w/ 2-Unit Cattleguard & Type 2 Gate	With 1-610 mm x 9.75 m CSPC & End Sections			1				
53+118.00	Left	4.5 m TO w/ 2-Unit Cattleguard & Type 2 Gate	With 1-610 mm x 9.14 m CSPC & End Sections			1				
53+256.00	Right	4.5 m TO w/ 2-Unit Cattleguard & Type 2 Gate	With 1-610 mm x 9.75 m CSPC & End Sections			1				
53+355.00	Left	4.5 m TO w/ 2-Unit Cattleguard & Type 2 Gate	With 1-610 mm x 10.97 m CSPC & End Sections			1				
53+470.00	Right	4.5 m TO w/ 2-Unit Cattleguard & Type 2 Gate	With 1-610 mm x 12.19 m CSPC & End Sections			1				
54+040.00	Right	4.5 m TO w/ 2-Unit Cattleguard & Type 2 Gate	With 2-1803 mm S x 1193 mm R x 11.58 m CSPC & End Sections			1				
54+110.00	Left	4.5 m TO w/ 2-Unit Cattleguard & Type 2 Gate	With 1-610 mm x 17.07 m CSPC & End Sections			1				
54+224.00	Right	4.5 m TO w/ 2-Unit Cattleguard & Type 2 Gate			1					
54+308.00	Right	4.5 m TO w/ 2-Unit Cattleguard & Type 2 Gate			1					
54+400.00	Right	4.5 m TO w/ 2-Unit Cattleguard & Type 2 Gate			1					
54+595.00	Left	9.10 m TO w/ 4-Unit Cattleguard & Type 2 Gate	With 1-610 mm x 21.34 m CSPC & End Sections				1			
54+615.00	Right	7.0 m TO w/ 4-Unit Cattleguard & Type 2 Gate	With 4-1803 mm S x 1194 mm R x 17.68 m CSPC w/ Conc. Headwall & Wingwalls				1			
54+720.00	Right	7.0 m TO w/ 4-Unit Cattleguard & Type 2 Gate	With 4-1803 mm S x 1194 mm R x 15.85 m CSPC w/ Conc. Headwall & Wingwalls				1			
54+813.00	Right	7.0 m TO w/ 4-Unit Cattleguard & Type 2 Gate	With 4-1803 mm S x 1194 mm R x 15.85 m CSPC w/ Conc. Headwall & Wingwalls				1			
54+822.86	Left	Remove and Reset Existing 8-Unit Cattleguard	N12 and N64 Intersection						1	
54+890.00	Left	7.0 m TO w/ 4-Unit Cattleguard & Type 2 Gate					1			
54+952.00	Right	7.0 m TO w/ 4-Unit Cattleguard & Type 2 Gate	With 4-1803 mm S x 1194 mm R x 15.24 m CSPC w/ Conc. Headwall & Wingwalls				1			
55+327.00	Right	7.0 m TO w/ 3-Unit Cattleguard & Type 2 Gate	With 1-610 mm x 18.29 m CSPC & End Sections				1			
55+786.00	Right	7.0 m TO w/ 3-Unit Cattleguard & Type 2 Gate	With 1-610 mm x 18.29 m CSPC & End Sections				1			
55+860.00	Right	4.5 m TO w/ 2-Unit Cattleguard & Type 2 Gate	With 1-610 mm x 11.58 m CSPC & End Sections				1			
55+860.00	Right	4.5 m TO w/ 2-Unit Cattleguard & Type 2 Gate	With 1-610 mm x 10.36 m CSPC & End Sections				1			
55+900.00	CL	1-5-Unit Cattleguard	Connect New Fencing to New Cattleguard on Both Left & Right						1	
				Total	38	14	9	2	4	1

ITEM: 61701-5000: Guardrail System SGR04b, TYPE PDE02 w/SKT-350 End Treatment & Thrie Beam

Station to Station	Location	7.62m Standard Guardrail Section (Each)	5.24m End Section (Each)	5.715m Thrie-Beam Section (Each)	Total Length (m)	Remarks
39+575.51 - 39+735.85	Right	17	2		160.020	Bridge N504

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	7	88

ITEM 20304-1000: REMOVAL OF STRUCTURES AND OBSTRUCTIONS

Station	Location	Description	REMARKS
39+652.28 to 39+674.38	CL	Existing Bridge Structure	
39+755.00 to 40+269.00	Rt.	Existing Barb Wire Fence Along R/W	Portions of Fencing is Outside the Right-Of-Way
39+743.00 to 40+416.00	Lt.	Existing Barb Wire Fence Along R/W	Portion of Existing is Outside the Right-Of-Way
49+900.00 to 51+110.00	Rt.	Existing Barb Wire Fence Along R/W	Portion of Existing is Outside the Right-Of-Way
49+654.95 to 49+677.13	CL	Existing Bridge Structure	
50+620.00 to 50+724.00	Lt.	Existing Barb Wire Fence Along R/W	Portions of Fencing is Outside the Right-Of-Way
52+640.00 to 52+820.00	Lt.	Existing Barb Wire Fence Along R/W	Portions of Fencing is Outside the Right-Of-Way
54+796.00 to 55+160.00	Lt.	Existing Barb Wire Fence Along R/W	Portions of Fencing is Outside the Right-Of-Way
55+283.00 to 55+323.00	Rt.	Existing Barb Wire Fence Along R/W	Portions of Fencing is Outside the Right-Of-Way
55+333.50 to 55+520.00	Rt.	Existing Barb Wire Fence Along R/W	Portions of Fencing is Outside the Right-Of-Way
55+800.00 to 55+848.50	Rt.	Existing Barb Wire Fence Along R/W	Portions of Fencing is Outside the Right-Of-Way

TEMPORARY STRAW MULCHING AND SEEDING, DRY METHOD

Station	Location	ITEM 15708-1000 MULCHING (ha)	ITEM 6510-1000 SEEDING (ha)	Remarks
38+700.00 to 55+900.00	Lt.	9.422	9.422	Subgrade Hinge Point to Catchpoints
38+700.00 to 55+900.00	Rt.	9.493	9.493	Subgrade Hinge Point to Catchpoints
38+922.00 to 39+034.00	Rt.	0.039	0.039	Existing Dirt Road Inside R/W
39+768.00 to 40+274.00	Rt.	0.163	0.163	Existing Dirt Road Inside R/W
39+884.00 to 40+366.00	Lt.	0.157	0.157	Existing Dirt Road Inside R/W
40+372.00 to 40+455.00	Lt.	0.069	0.069	Existing Dirt Road Inside R/W
40+419.00 to 40+573.00	Rt.	0.064	0.064	Existing Dirt Road Inside R/W
40+747.00 to 40+885.00	Lt.	0.033	0.033	Existing Dirt Road Inside R/W
43+617.00 to 43+656.00	Lt.	0.017	0.017	Existing Dirt Road Inside R/W
43+638.00 to 43+969.00	Lt.	0.080	0.080	Existing Dirt Road Inside R/W
48+088.00 to 48+139.00	Lt.	0.019	0.019	Existing Dirt Road Inside R/W
48+162.00 to 48+233.00	Lt.	0.017	0.017	Existing Dirt Road Inside R/W
48+203.00 to 48+297.00	Rt.	0.036	0.036	Existing Dirt Road Inside R/W
48+247.00 to 48+352.00	Lt.	0.036	0.036	Existing Dirt Road Inside R/W
48+996.00 to 49+264.00	Lt.	0.064	0.064	Existing Dirt Road Inside R/W
49+876.00 to 49+927.00	Rt.	0.022	0.022	Existing Dirt Road Inside R/W
49+929.00 to 49+963.00	Lt.	0.011	0.011	Existing Dirt Road Inside R/W
50+014.00 to 50+121.00	Lt.	0.024	0.024	Existing Dirt Road Inside R/W
50+130.00 to 50+146.00	Lt.	0.004	0.004	Existing Dirt Road Inside R/W
50+142.00 to 50+639.00	Lt.	0.131	0.131	Existing Dirt Road Inside R/W
50+583.00 to 51+108.00	Rt.	0.171	0.171	Existing Dirt Road Inside R/W
50+694.00 to 50+810.00	Lt.	0.033	0.033	Existing Dirt Road Inside R/W
51+578.00 to 51+662.00	Lt.	0.016	0.016	Existing Dirt Road Inside R/W
51+671.00 to 52+165.00	Lt.	0.123	0.123	Existing Dirt Road Inside R/W
52+171.00 to 52+228.00	Rt.	0.016	0.016	Existing Dirt Road Inside R/W
52+412.00 to 52+752.00	Lt.	0.050	0.050	Existing Dirt Road Inside R/W
52+432.00 to 52+512.00	Rt.	0.014	0.014	Existing Dirt Road Inside R/W
52+637.00 to 52+651.00	Rt.	0.005	0.005	Existing Dirt Road Inside R/W
52+817.00 to 52+894.00	Lt.	0.009	0.009	Existing Dirt Road Inside R/W
53+195.00 to 53+243.00	Rt.	0.026	0.026	Existing Dirt Road Inside R/W
53+219.00 to 53+579.00	Lt.	0.061	0.061	Existing Dirt Road Inside R/W
54+162.00 to 54+212.00	Rt.	0.013	0.013	Existing Dirt Road Inside R/W
55+125.00 to 55+615.00	Rt.	0.124	0.124	Existing Dirt Road Inside R/W
55+264.00 to 55+386.00	Lt.	0.028	0.028	Existing Dirt Road Inside R/W
55+592.00 to 55+653.00	Lt.	0.015	0.015	Existing Dirt Road Inside R/W
Total		20.609	20.609	

ITEM 60701-1000: REMOVE, CLEAN & SALVAGE EXISTING PIPE

Station	Offset	Description	Length (m)
38+802.306	CL	Existing 762 mm CMP	22.60
38+898.791	CL	Existing 762 mm CMP	28.05
39+026.525	CL	Existing 1067 mm CMP	16.30
39+308.431	CL	Existing 762 mm CMP	16.61
39+438.157	CL	Existing 762 mm CMP	17.12
39+693.990	55.116 m Rt.	Existing 1524 mm CMP Under TO Rt	8.81
40+275.277	9.229 m Lt.	Existing 457 mm CMP Under TO Lt	11.71
40+473.937	CL	Existing 610 mm CMP	24.96
40+576.145	CL	Existing 610 mm CMP	28.88
40+718.411	CL	Existing 610 mm CMP	23.49
41+213.402	CL	Existing 914 mm CMP	34.62
41+601.738	CL	Existing 610 mm CMP	22.96
41+692.610	14.355 m Rt.	Existing 610 mm CMP Under TO Rt	17.99
41+838.804	CL	Existing 1676 mm CMP	24.93
42+141.516	9.028 m Lt.	Existing 610 mm CMP Under TO Lt	11.95
42+518.876	CL	Existing 610 mm CMP	20.19
42+681.778	CL	Existing 610 mm CMP	18.97
42+926.570	CL	Existing 1219 mm CMP	19.27
43+019.798	8.756 m Lt.	Existing 610 mm CMP Under TO Lt	11.38
43+248.492	CL	Existing 610 mm CMP	26.09
43+458.876	CL	Existing 610 mm CMP	16.81
43+816.820	CL	Existing 610 mm CMP	16.95
44+176.118	CL	Existing 610 mm CMP	19.36
44+381.967	CL	Existing 610 mm CMP	19.13
45+137.747	CL	Existing 610 mm CMP	24.49
45+264.603	CL	Existing 610 mm CMP	24.34
45+530.057	CL	Existing 610 mm CMP	27.23
45+671.172	CL	Existing 610 mm CMP	22.48
45+756.745	CL	Existing 610 mm CMP	16.98
46+081.485	CL	Existing 1676 mm CMP	16.72
46+280.465	CL	Existing 762 mm CMP	20.03
46+416.656	CL	Existing 610 mm CMP	16.56
46+583.976	CL	Existing 610 mm CMP	18.00
46+657.076	CL	Existing 610 mm CMP	18.31
46+804.970	CL	Existing 610 mm CMP	18.31
46+897.930	CL	Existing 610 mm CMP	18.28
47+203.930	CL	Existing 610 mm CMP	18.31
47+413.797	CL	Existing 610 mm CMP	18.15
47+549.792	CL	Existing 610 mm CMP	17.48
47+909.648	CL	Existing 1219 mm CMP	20.08
48+494.564	CL	Existing 1067 mm CMP	18.15
48+627.390	CL	Existing 610 mm CMP	16.05
48+654.921	21.527 m Lt.	Existing 610 mm CMP Under TO Lt	8.56
48+698.673	CL	Existing 1676 mm CMP	18.26
48+982.238	CL	Existing 1676 mm CMP	29.92
49+272.989	CL	Existing 610 mm CMP	18.16
49+904.358	6.821 m Lt.	Existing 254 mm CMP Under TO Lt	8.34
50+324.037	CL	Existing 610 mm CMP	17.56
50+566.514	CL	Existing 610 mm CMP	19.91
50+644.117	CL	Existing 1829 mm CMP	17.22
50+987.012	CL	Existing 610 mm CMP	27.08
51+039.906	16.323 m Lt.	Existing 762 mm CMP Under TO Lt	18.37
51+672.015	CL	Existing 610 mm CMP	19.51
52+476.017	CL	Existing 610 mm CMP	16.83
52+784.253	CL	Existing 1524 mm CMP	34.04
53+014.454	10.444 m Rt.	Existing 762 mm CMP Under TO Rt	9.00
53+118.244	14.499 m Lt.	Existing 610 mm CMP Under TO Lt	7.86
53+175.601	CL	Existing 610 mm CMP	16.59
53+257.167	13.729 m Rt.	Existing 457 mm CMP Under TO Rt	10.40
53+354.502	8.794 m Lt.	Existing 457 mm CMP Under TO Lt	11.58
53+478.822	16.040 m Rt.	Existing 457 mm CMP Under TO Rt	12.12
54+105.681	CL	Existing 914 mm CMP	29.84
54+159.982	11.023 m Rt.	Existing 610 mm CMP Under TO Rt	7.49
54+261.890	CL	Existing 1219 mm CMP	20.05
54+387.299	CL	Existing 610 mm CMP	17.67
54+739.838	15.117 m Rt.	Existing 457 mm CMP Under TO Rt	20.76
54+817.943	15.256 m Rt.	Existing 610 mm CMP Under TO Rt	20.03
54+953.242	10.140 m Rt.	Existing 610 mm CMP Under TO Rt	24.93
55+115.299	CL	Existing 610 mm CMP	17.63
55+221.693	CL	Existing 1219 mm CMP	18.60
55+350.242	CL	Existing 610 mm CMP	17.89
55+737.138	CL	Existing 1676 mm CMP	24.31
TOTAL			1,369.56

EXISTING UTILITY LINES

STATION	LOCATION	DESCRIPTION	REMARKS
39+511.96	CL	Existing Powerline X-ing	Protect-in-Place
39+512.13	CL	Existing Powerline X-ing	Protect-in-Place
39+512.23	CL	Existing Powerline X-ing	Protect-in-Place
39+514.40	CL	Existing Powerline X-ing	Protect-in-Place
39+514.40	CL	Existing Telephone Line X-ing	Notify Owner
40+298.26	CL	Existing Powerline X-ing	Protect-in-Place
40+298.38	CL	Existing Powerline X-ing	Protect-in-Place
40+299.14	CL	Existing Telephone Line X-ing	Notify Owner
41+361.58	CL	Exist Waterline Line X-ing, Depth 1.4 m	Notify Owner
41+361.78	CL	Existing Powerline X-ing	Protect-in-Place
41+447.51	CL	Existing Powerline X-ing	Protect-in-Place
41+447.74	CL	Existing Powerline X-ing	Protect-in-Place
42+996.74	CL	Existing Powerline X-ing	Protect-in-Place
42+996.99	CL	Existing Powerline X-ing	Protect-in-Place
43+004.43	CL	Existing Powerline X-ing	Protect-in-Place
43+004.43	CL	Existing Telephone Line X-ing	Notify Owner
48+811.82	CL	Existing Powerline X-ing	Protect-in-Place
48+811.96	CL	Existing Powerline X-ing	Protect-in-Place
48+812.26	CL	Existing Powerline X-ing	Protect-in-Place
49+255.23	CL	Existing Powerline X-ing	Protect-in-Place
49+255.28	CL	Existing Powerline X-ing	Protect-in-Place
49+308.56	CL	Existing Waterline X-ing	Protect-in-Place
49+394.03	CL	Existing Powerline X-ing	Protect-in-Place
49+394.16	CL	Existing Powerline X-ing	Protect-in-Place
49+870.69	CL	Existing Powerline X-ing	Protect-in-Place
49+870.69	CL	Existing Powerline X-ing	Protect-in-Place
49+870.71	CL	Existing Powerline X-ing	Protect-in-Place
50+015.52	CL	Existing Waterline X-ing	Protect-in-Place
50+083.49	CL	Existing Powerline X-ing	Protect-in-Place
50+084.72	CL	Existing Powerline X-ing	Protect-in-Place
51+528.33	CL	Existing Waterline X-ing	Protect-in-Place
52+224.12	CL	Existing Waterline X-ing	Protect-in-Place
52+398.27	CL	Existing Powerline X-ing	Protect-in-Place
52+399.27	CL	Existing Powerline X-ing	Protect-in-Place
52+650.00	CL	Existing Waterline X-ing, Depth 2.96 m	Protect-in-Place
52+833.55	CL	Existing Powerline X-ing	Protect-in-Place
52+833.61	CL	Existing Powerline X-ing	Protect-in-Place
53+084.89	CL	Existing Powerline X-ing	Protect-in-Place
53+086.55	CL	Existing Powerline X-ing	Protect-in-Place
53+268.13	CL	Existing Powerline X-ing	Protect-in-Place
53+269.80	CL	Existing Powerline X-ing	Protect-in-Place
53+540.00	CL	Existing Waterline X-ing, Depth 1.99 m	Protect-in-Place
53+996.89	CL	Existing Powerline X-ing	Protect-in-Place
53+998.14	CL	Existing Powerline X-ing	Protect-in-Place
54+377.38	CL	Existing Powerline X-ing	Protect-in-Place
54+856.77	CL	Existing Powerline X-ing	Protect-in-Place
55+561.93	CL	Existing Powerline X-ing	Protect-in-Place
55+773.38	CL	Existing Powerline X-ing	Protect-in-Place

NOTE: Protection/Relocate REMARKS are assumed and based on the Best The Actual Work Required/Performed By The Utility Owner May Vary.

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**ESTIMATED QUANTITY
TABLES-SHEET 2**

DRAWN BY: NRDOT	DATE: 3/15/2017
DESIGNED BY: NRDOT	DATE: 3/15/2017
REVISED: 11/7/2017	BY: Leroy.Toledo
Sht 07 N12 QtyTbls_2.dgn	

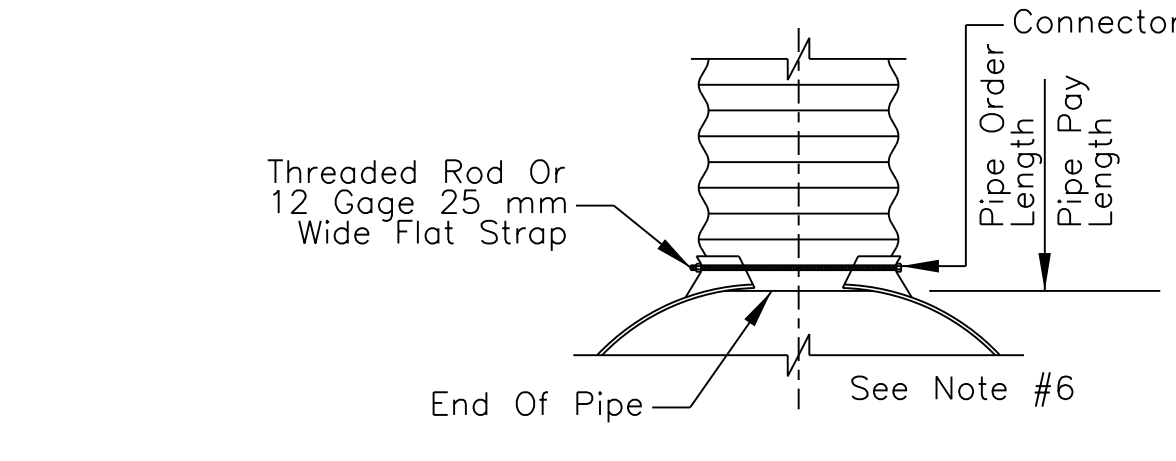


ESTIMATED DRAINAGE STRUCTURE QUANTITIES (Continued From Sheet 8)	CIRCULAR						PIPE ARCH						CIRCULAR-END SECTION						PIPE ARCH-END SECTION						SPP	SPPA	PC-CBC	PC-CBC
	60201-0810	60201-0910	60201-1010	60201-1110	60201-1210	60201-1410	60201-1810	60202-0610	60202-0710	60202-0810	60202-0910	60202-1110	60210-0810	60210-0910	60210-1010	60210-1110	60210-1210	60210-1310	60210-1510	60211-1010	60211-1110	60211-1210	60211-1310	60211-1510	60302-0710	60302-0910	60304-100	60304-200

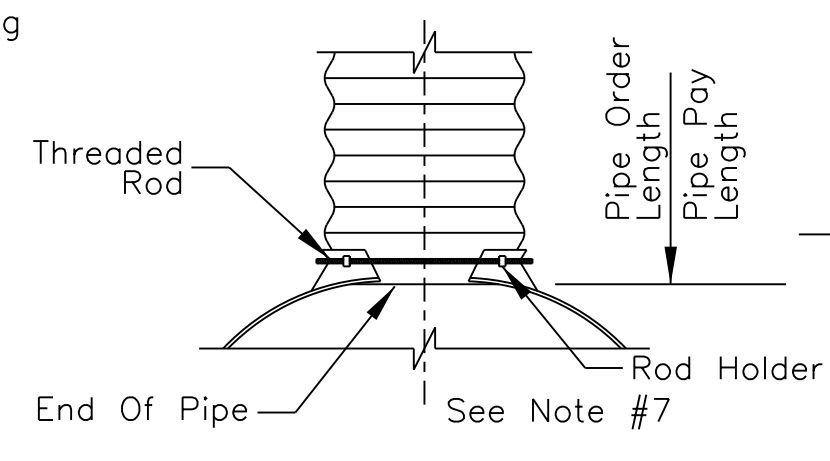
Station	Recommended Structure	Skew No.	m	m	m	m	m	m	m	m	m	m	m	Each	Each	Each	Each	Each	Each	Each	Each	Each	Each	Each	m	m	m	m			
51+672.000	1-610 mm x 26.822 m CSCP	90.0	26.82											1																	
52+476.000	2-1067 mm S x 737 mm R x 20.117 m CSPA	90.0											40.23																		
52+663.000	1-610 mm x 12.19 m CSCP & End Sections, Under T.O. Lt.	90.0	12.19											2																	
52+663.000	1-610 mm x 20.72 m CSCP & End Sections Under T.O. Rt., Bus Rt. N8078	90.0	20.72											2																	
52+780.000	2-2438 mm x 43.891 m SPP	90.0																							87.782						
53+015.000	1-610 mm x 12.19 m CSCP & End Sections Under T.O. Rt.	90.0	12.19											2																	
53+118.000	1-610 mm x 12.19 m CSCP & End Sections, Under T.O. Lt.	90.0	12.19											2																	
53+175.600	1-610 mm x 21.946 m CSCP	90.0	21.95											1																	
53+256.000	1-610 mm x 12.19 m CSCP & End Sections Under T.O. Rt.	90.0	12.19											2																	
53+355.000	1-610 mm x 12.19 m CSCP & End Sections, Under T.O. Lt.	90.0	12.19											2																	
53+470.000	1-610 mm x 12.19 m CSCP & End Sections Under T.O. Rt.	90.0	12.19											2																	
54+010.000	3-1245 mm S x 838 mm R x 39.624 CSPA	135.0																													
54+040.000	2-1802 mm S x 1194 mm R x 11.58 m CSPA & End Sections, Under T.O. Rt.	90.0																													
54+110.000	1-610 mm x 17.07 m CSCP & End Sections, Under T.O. Lt.	90.0	17.07																												
54+105.680	4-1245 mm S x 838 mm R x 53.035 m CSPA	140.0																													
54+262.000	1-610 mm x 34.138 m CSCP	140.0	34.14																												
54+308.000	1-610 mm x 12.19 m CSCP & End Sections Under T.O. Rt.	90.0	12.19											1																	
54+387.300	1-610 mm x 19.507 m CSCP	90.0	19.51											2																	
54+400.000	1-610 mm x 12.19 m CSCP & End Sections Under T.O. Rt.	90.0	12.19											2																	
54+595.000	1-610 mm x 22.56 m CSCP & End Sections, Under T.O. Lt., School Access	90.0	22.56																												
54+615.000	4-1803 mm S x 1193 mm R x 17.680 m CSPA, T.O. Rt. w/ Conc. Headwall at Inlet	90.0																													
54+720.000	4-1803mm S x 1194 mm R x 15.850 m CSPA, T.O. Rt. w/ Conc. Headwall at Inlet	90.0																													
54+817.32	4-1803mm S x 1194 mm R x 15.850 m CSPA, T.O. Rt. w/ Conc. Headwall at Inlet	90.0																													
54+890.000	1-610 mm x 12.19 m CSCP & End Sections, Under T.O. Lt.	90.0	12.19											2																	
54+952.000	4-1803mm S x 1194 mm R x 15.850 m CSPA, T.O. Rt. w/ Conc. Headwall at Inlet	90.0																													
54+952.000	1-610 mm x 12.19 m CSCP & End Sections, Under T.O. Lt.	90.0	12.19											2																	
55+115.000	4-1803 mm S x 1194 mm R x 33.528 m CSPA	135.0																													
55+221.690	1-762 mm x 26.822 m CSCP	90.0	26.82																												
55+327.000	1-610 mm x 20.73 m CSCP & End Sections Under T.O. Rt. To NHA Housing	90.0	20.73											2																	
55+350.240	1-610 mm x 21.945 m CSCP	90.0	21.95											1																	
55+737.140	4-1067 mm S x 737 mm R x 26.822 m CSPA	90.0																													
55+786.000	1-610 mm x 20.73 m CSCP & End Sections Under T.O. Rt. To Church	90.0	20.73																												
55+860.000	1-610 mm x 12.19 m CSCP & End Sections Under T.O. Rt.	90.0	12.19											2																	
	Sub-Total	360.26	26.82	0.00	0.00	0.00	0.00	0.00	0.00	147.52	331.01	0.00	418.19	37	1	0	0	0	0	0	6	7	0	6	87.78	0.00	0.00	0.00			
	Sub-Total from Sheet 8	772.32	367.04	82.91	52.43	199.95	109.73	42.06	96.32	206.65	0.00	107.29	0.00	64	13	3	2	6	4	9	0	4	0	0.00	188.98	28.04	26.82				
	Grand Total	1,132.58	393.86	82.91	52.43	199.95	109.73	42.06	96.32	354.18	331.01	107.29	418.19	101	14	3	2	6	4	15	7	4	6	87.78	188.98	28.04	26.82				

GENERAL NOTES

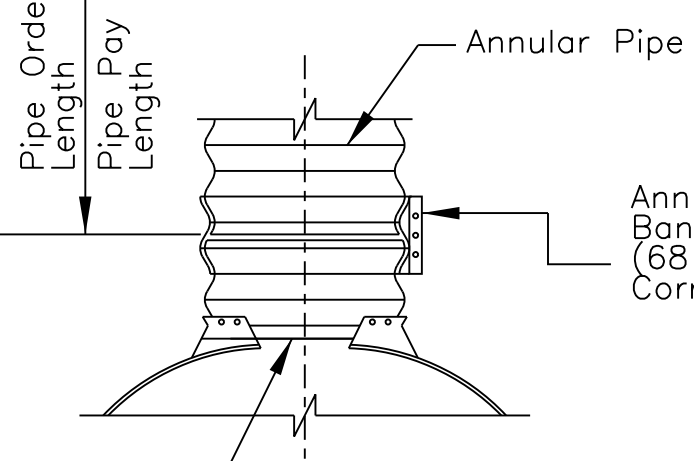
- FOR MULTIPLE INSTALLATION OF ALL TYPES, A MINIMUM OF A 610 mm SPACING MEASURED ALONG THE HORIZONTAL BETWEEN FLARED END SECTIONS AT THEIR WIDEST CROSS SECTION SHALL BE USED.
- ALL THREE (3) PIECE BODIES TO HAVE 2.77 mm THICKNESS SIDES AND 3.5 mm THICKNESS CENTER PANELS. WIDTH OF CENTER PANELS TO BE GREATER THAN 20% OF THE PIPE PERIPHERY. MULTIPLE PANEL BODIES TO HAVE LAP SEAMS WHICH ARE TO BE TIGHTLY JOINED BY 9.53 mmØ 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 mmØ GALVANIZED NUTS AND BOLTS. ANGLE REINFORCEMENT WILL BE PLACED UNDER THE CENTER PANEL SEAMS.
- END SECTIONS FOR STEEL CIRCULAR PIPES: FOR 1524 mmØ THRU 2134 mmØ SIZES, REINFORCED EDGE TO BE SUPPLEMENTED WITH GALVANIZED STIFFENER ANGLES. THE ANGLES WILL BE 51 mm x 51 mm x 6.35 mm FOR 1524 mmØ THRU 1829 mmØ, AND 64 mm x 64 mm x 6.35 mm FOR 1981 mmØ AND 2134 mmØ. THE ANGLES TO BE ATTACHED BY 9.53 mmØ GALVANIZED NUTS AND BOLTS.
- 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 mmØ ROUND PIPE & 711 mm x 308 mm CSPA.
- TYPE NO. 2 STEEL END SECTION. CONNECT END SECTION WITH THREADED ROD WITH ROD HOLDER, FOR 762 mmØ AND 914 mmØ 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 mmØ THRU 2134 mmØ. GAGES OF CONNECTOR SECTION SHALL BE THE SAME AS THE END SECTIONS AS MENTIONED ABOVE. THE CONNECTOR SECTION WILL BE ATTACHED TO THE END SECTION BY 9.5 mmØ GALVANIZED RIVETS OR BOLTS APPROXIMATELY 152mm CENTERS.
- HELICALLY-CORRUGATED PIPE FOR TYPE NO 5 AND TYPE NO.3 THE DIMPLE BAND OR CORRUGATED PIPE CONNECTOR SECTION SHALL BE ATTACHED TO THE END SECTION BY 9.5 mmØ GALVANIZED STEEL RIVETS OR BOLTS SPACED AT APPROXIMATELY 152mm 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



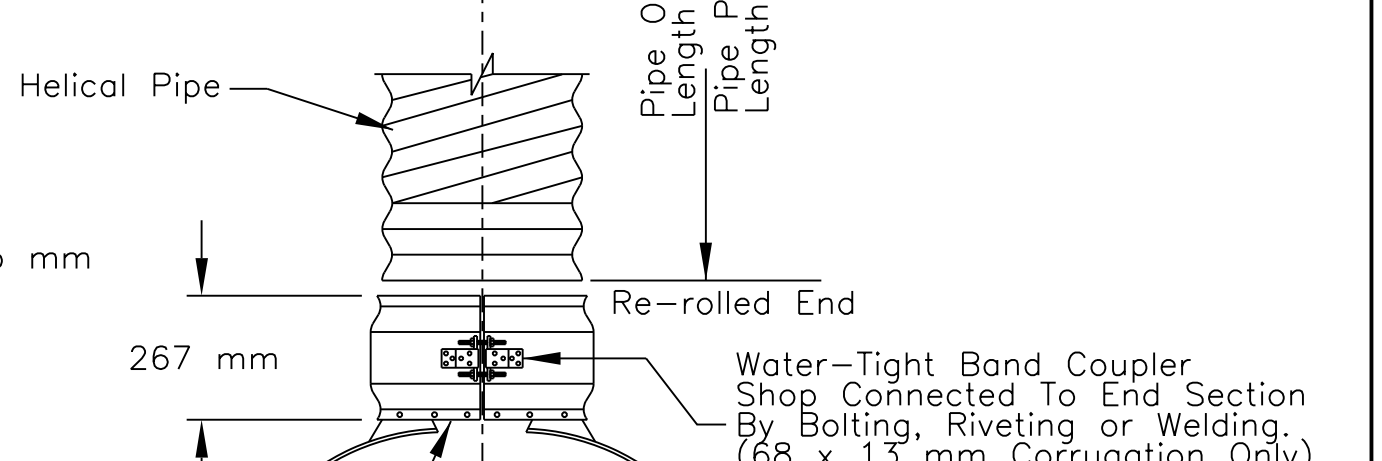
TYPE NO. 1



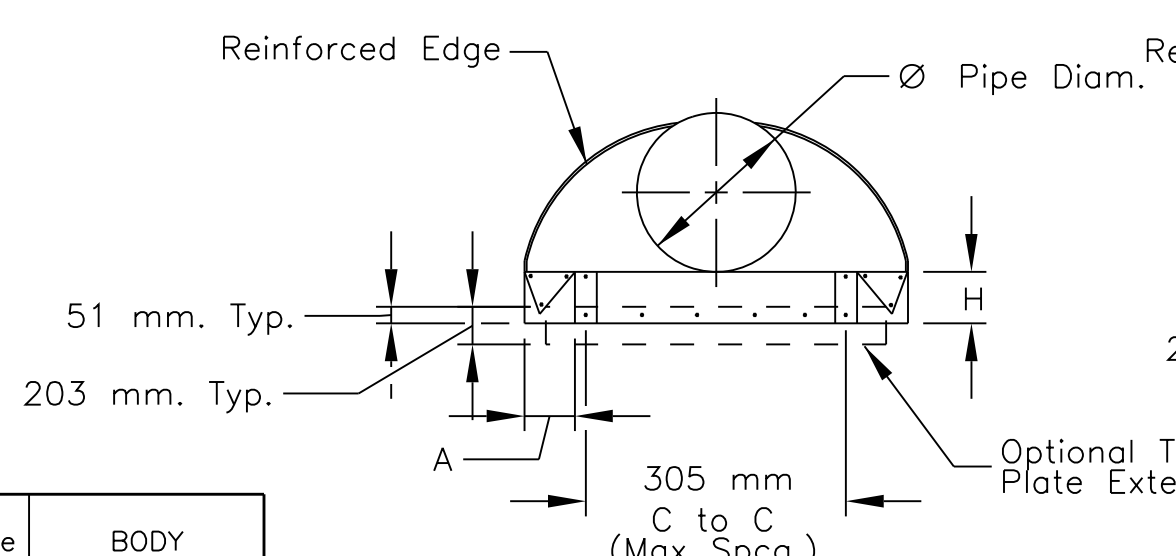
TYPE NO. 2



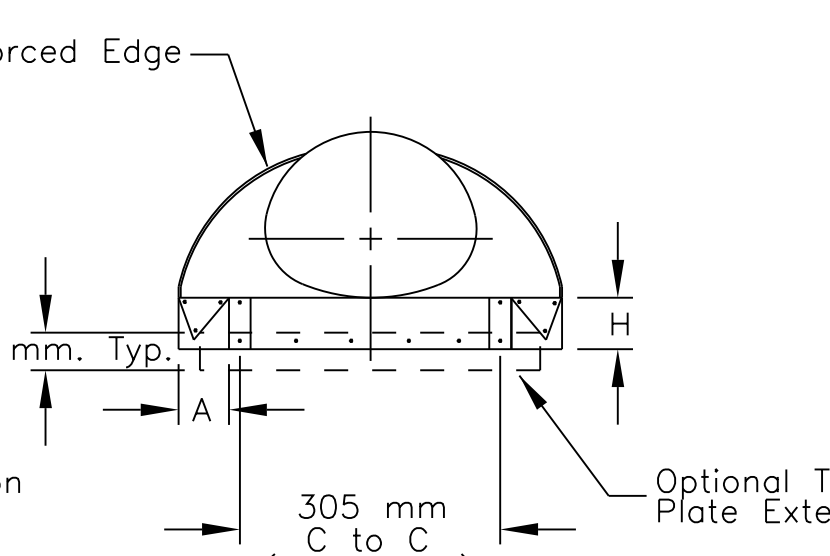
TYPE NO. 3



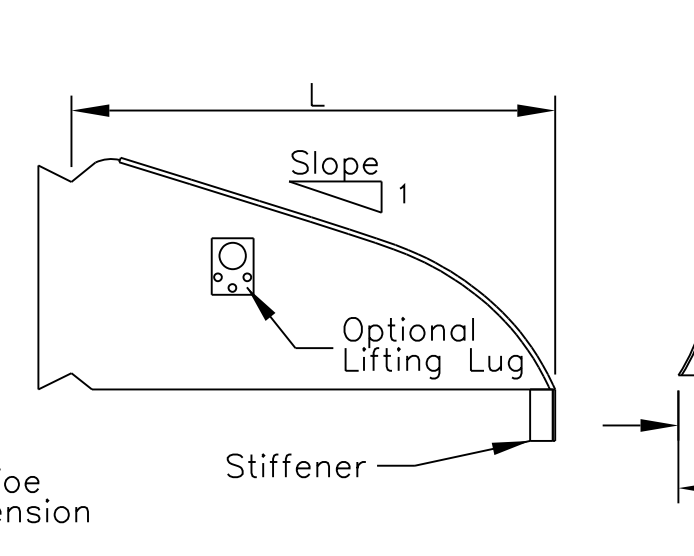
TYPE NO. 5



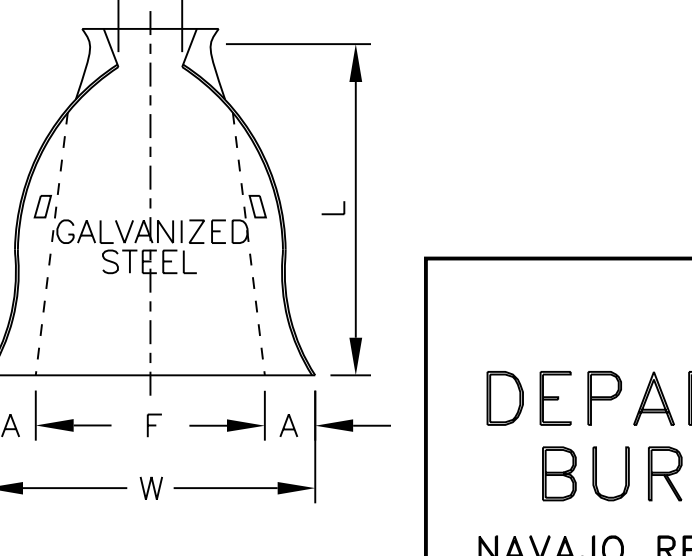
ELEVATION



ELEVATION



SIDE VIEW



PLAN

ROUND PIPE END SECTION - ALUMINUM COATED, TYPE 2

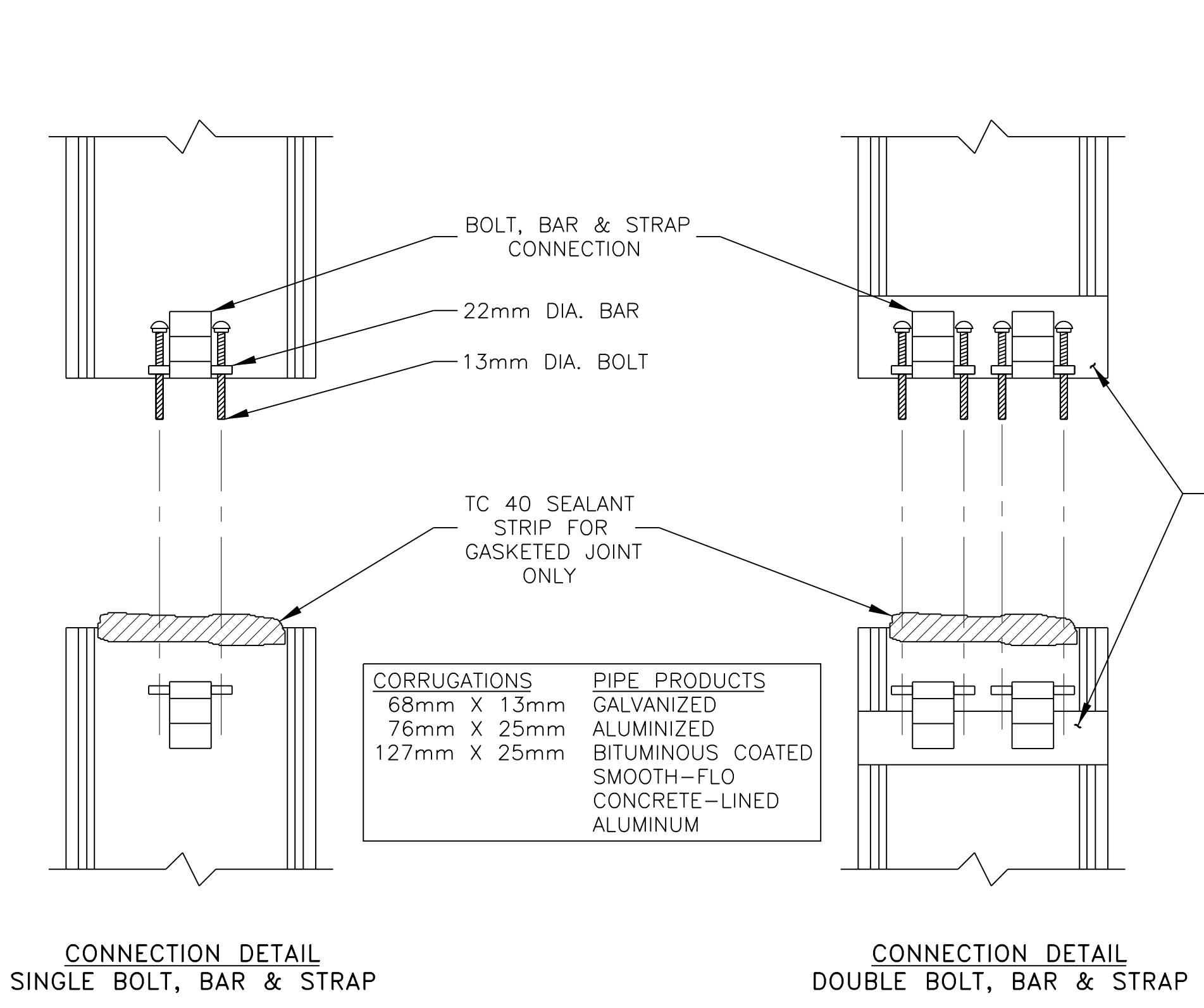
Pipe Diam (mm)	Thick ness (mm)	DIMENSIONS					Approx. Slope	BODY	
		A (25 mm±)	B (Max.)	H (25 mm±)	F (mm)	L (38 mm±)			
610	1.6	229	330	152	1168	1041	1829	2 1/2	1 Pc
762	2	279	406	203	1397	1295	2235	2 1/2	2 Pc
914	2	330	482	229	1778	1524	2665	2 1/2	2 Pc
1067	2.8	361	635	254	2083	1753	3098	2 1/2	2 Pc
1219	2.8	432	736	305	2235	1981	3327	2 1/4	3 Pc

ARCH PIPE END SECTION - ALUMINUM COATED, TYPE 2

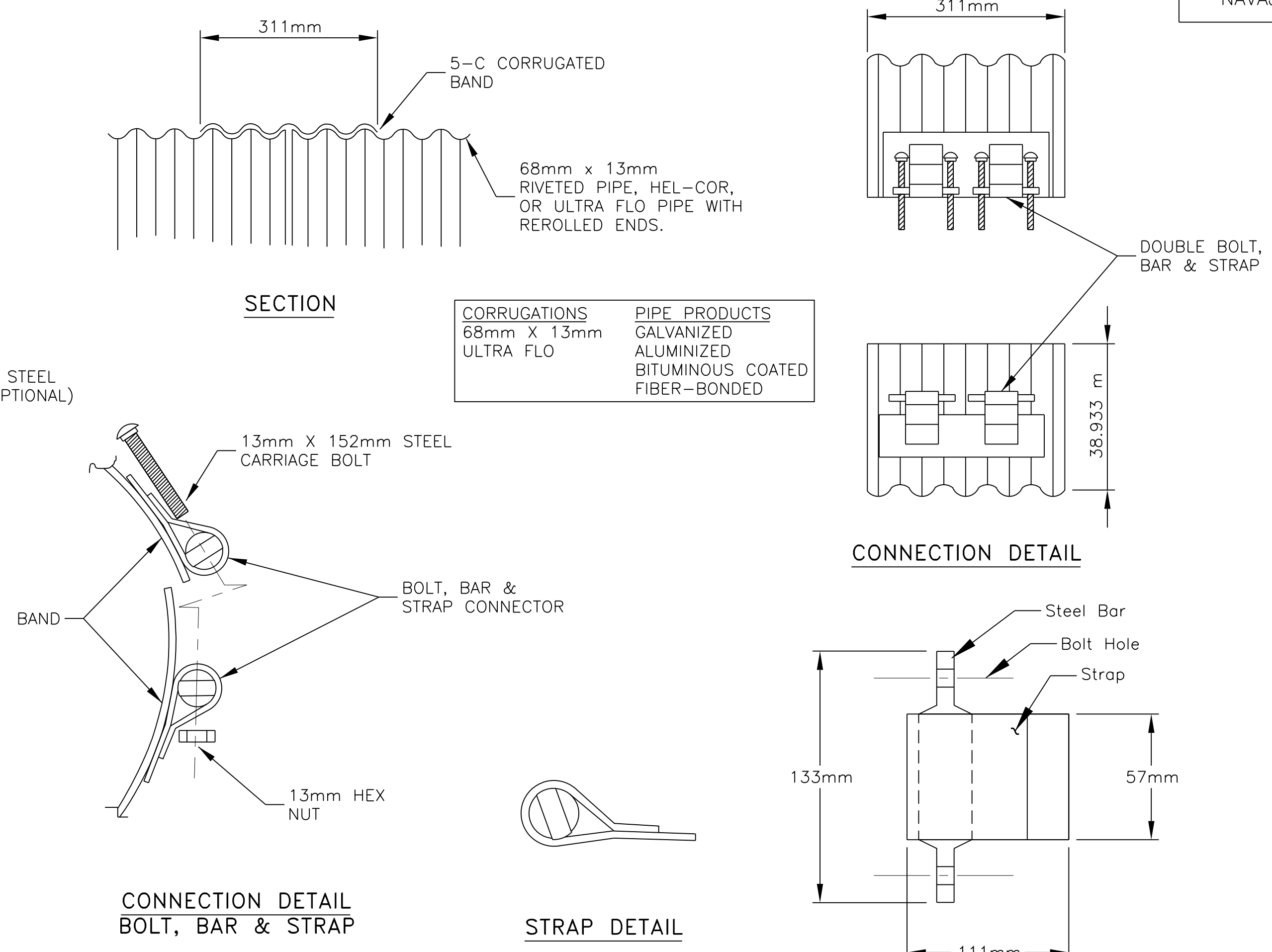
SPAN*	RISE	Thick ness	DIMENSIONS					Approx. Slope	BODY
			A (25 mm±)	B (Max.)	H (25 mm±)	F (mm)	L (38 mm±)		
*68 mm	*76 mm	(mm)							
13 mm	25 mm	(mm)							
711 x 508	2.0	1.77	406	152	1168	813	1778	2 1/2	1 Pc
890 x 610	2.0	2.29	406	152	1473	991	2159	2 1/2	1 Pc
1067 x 737	2.0	2.79	457	178	1854	1168	2642	2 1/2	2 Pc

* CORRUGATION DIMENSION

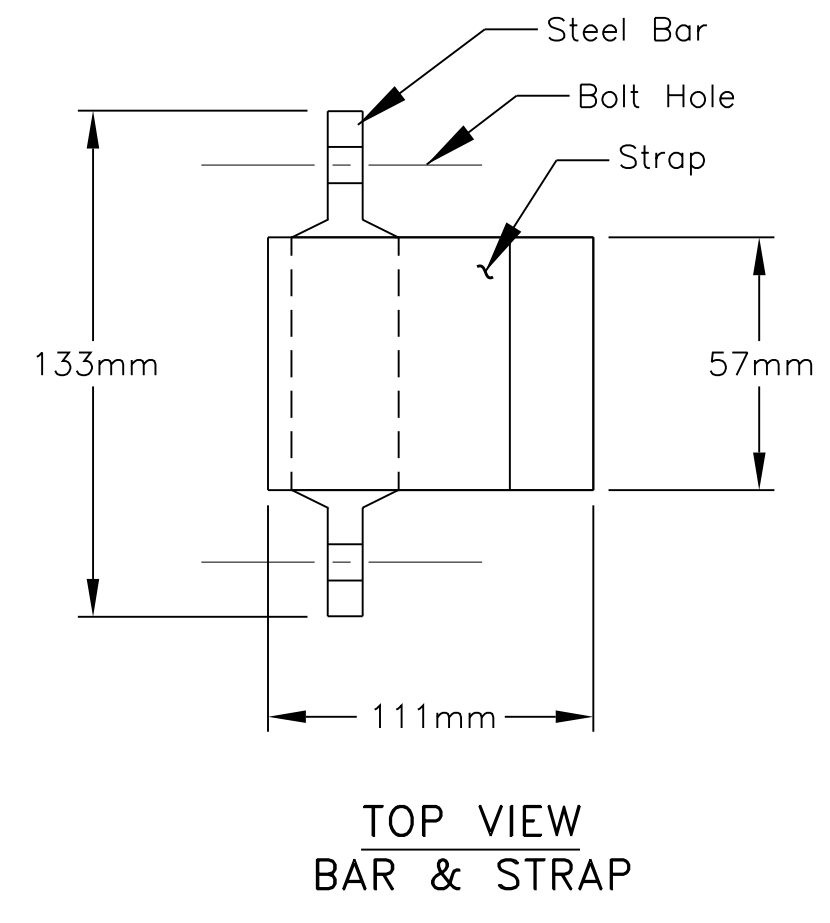
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	10	88



H-10 HUGGER BAND



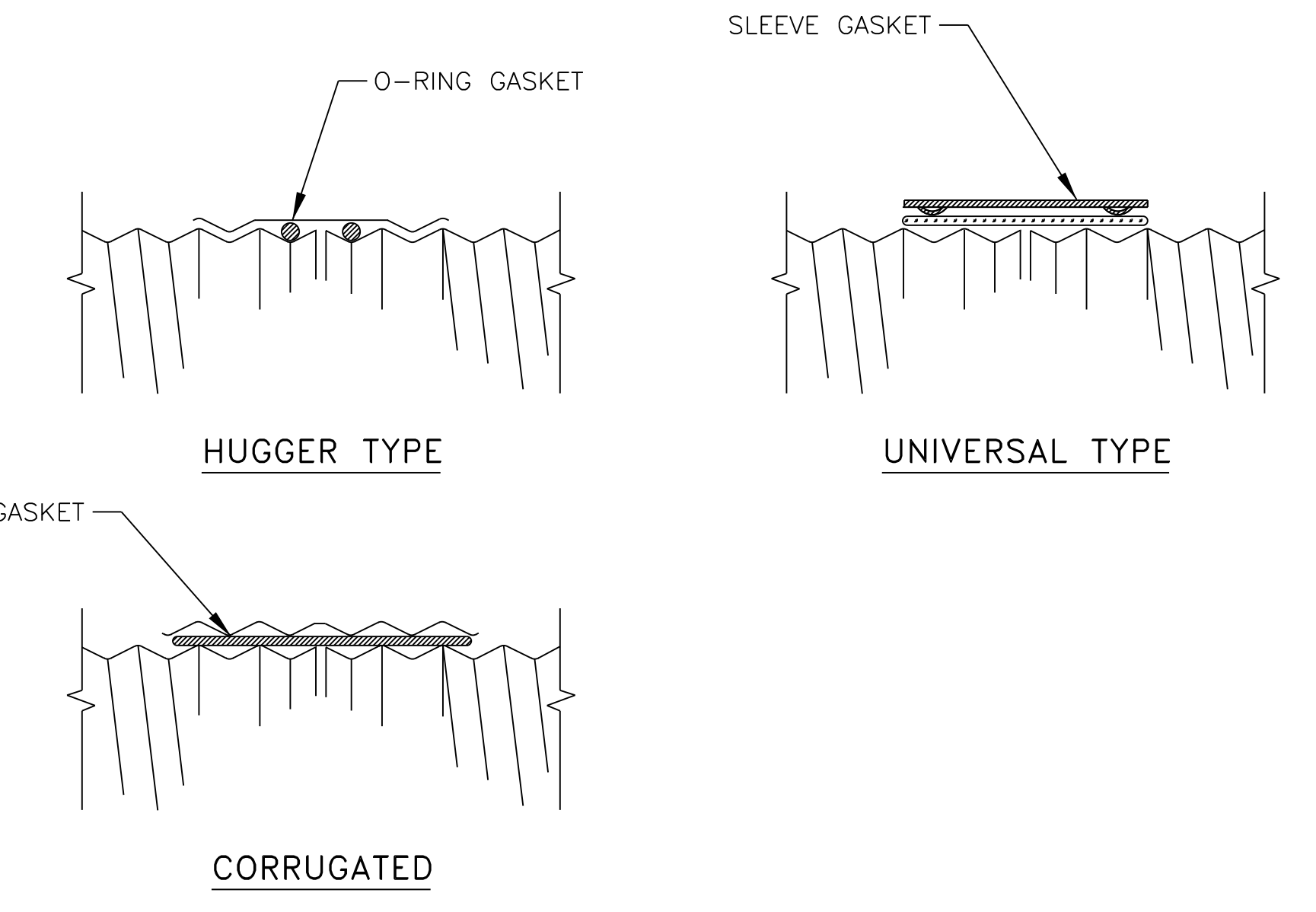
5-C CORRUGATED BAND



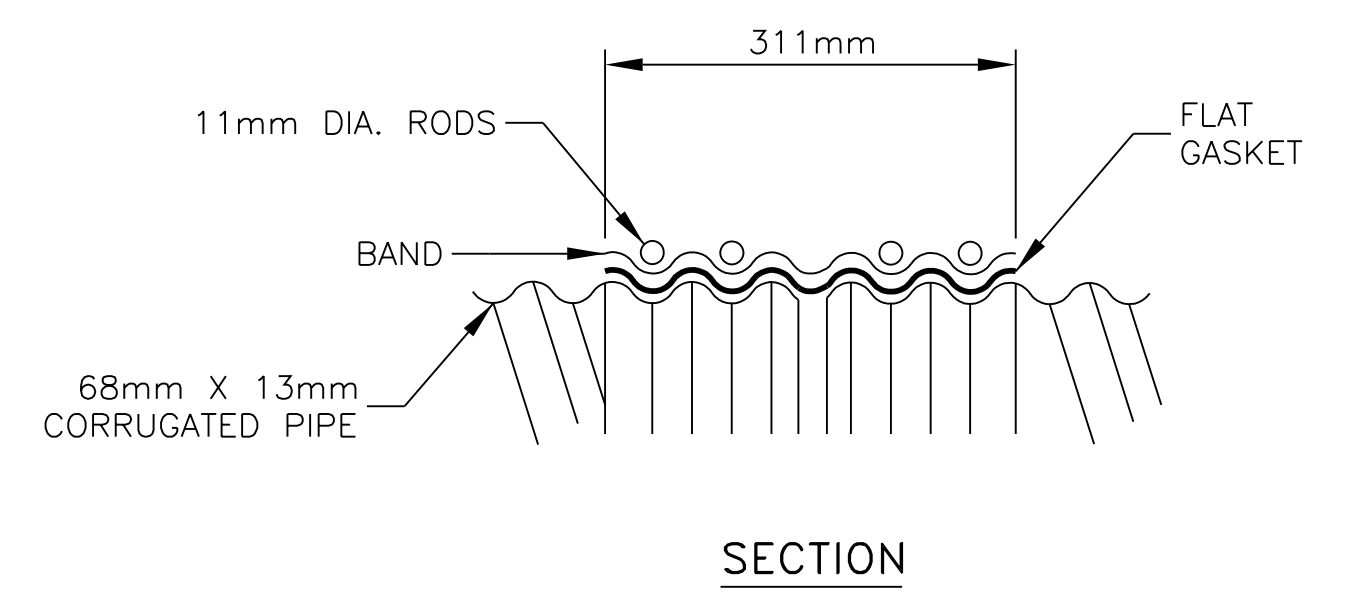
TOP VIEW BAR & STRAP

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 602, 603, AND 607.
- ANY RELATED PATENT RIGHTS WILL BE THE RESPONSIBILITY OF THE CONTRACTOR AS PER SECTION 107.01 OF THE FP-14.

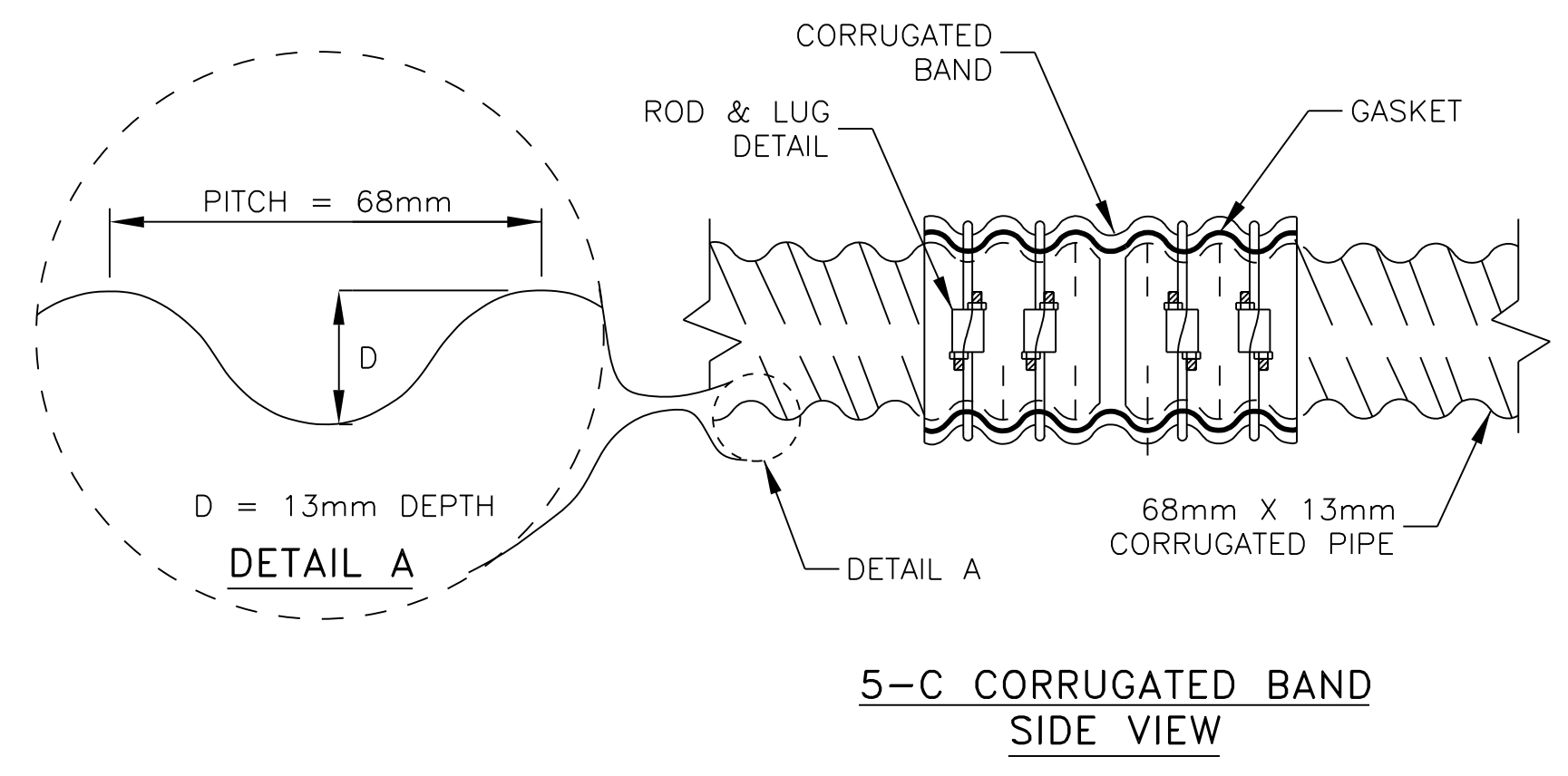


TYPICAL GASKET/BAND COUPLERS



FLAT GASKET INSTALLATION GUIDELINES

- CLEAN THE PIPE EDGES.
- APPLY 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.



5-C CORRUGATED BAND SIDE VIEW

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 BUREAU OF INDIAN AFFAIRS
 NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

**GASKET/HUGGER BAND
 DETAILS**

DRAWN BY: NRDOT	DATE: 3/12/2014
DESIGNED BY: NRDOT	DATE: 3/12/2014
REVISED: 7/16/2015	BY: Leroy.Toledo

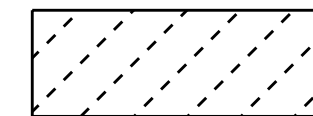
Sht 10 N12 Gasket HBand Details_070815.dgn

I:\DESIGN\Users\DESIGN3\CURRENT PROJECTS\N35_China\N12(19-4)\DESIGN DATA_020315\CADD Files\Sht 10 N12 Gasket HBand Details_070815.dgn

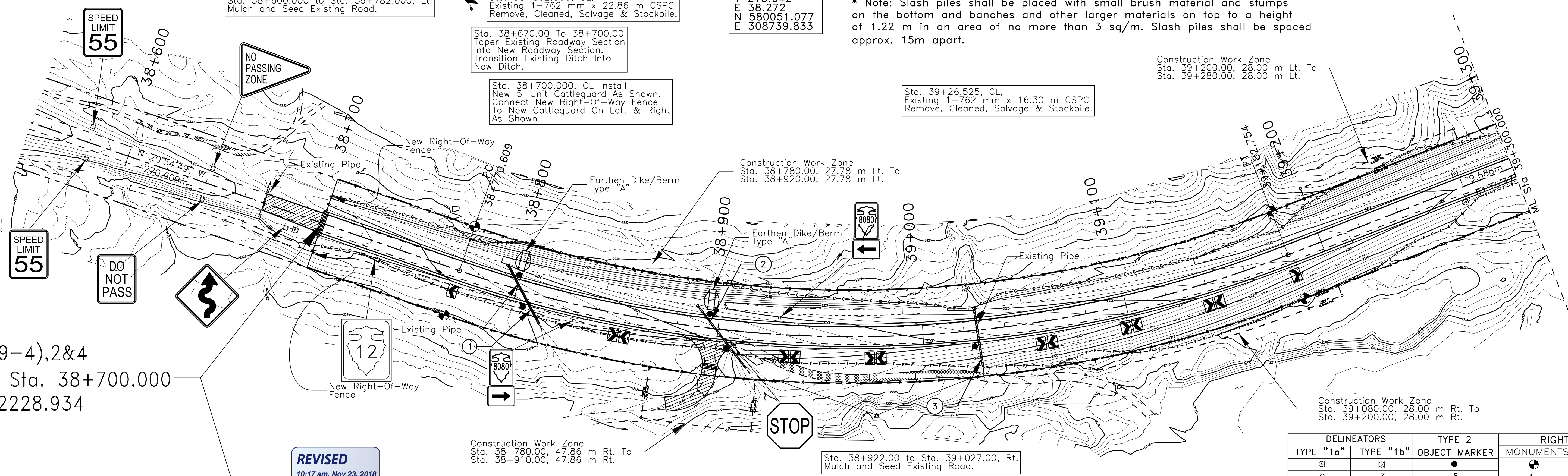
Sta. 38+431.00, Lt. Turnout, Go West 0.125 Mile Right Side Of Dirt Road, Merchantable Timber Stockpile For Community Firewood. Contractor Shall Stay Within The Orange Flag Limits.

Sta. 38+898.791, CL. Existing 1-762 mm x 28.05 CSPC Remove, Cleaned, Salvage & Stockpile.

C1
PI 38+985.651
A 40°21'58" Lt
585.000
L 412.146
T 215.042
E 38.272
E 580051.077
E 308739.833

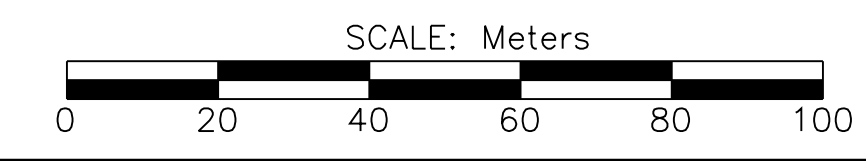
Legend *
 — Slash and/or Timber Stockpiling Locations
 * Note: Slash piles shall be placed with small brush material and stumps on the bottom and banches and other larger materials on top to a height of 1.22 m in an area of no more than 3 sq/m. Slash piles shall be spaced approx. 15m apart.

Construction Work Zone
Sta. 39+200.00, 28.00 m Lt. To
Sta. 39+280.00, 28.00 m Lt.



N12(19-4),2&4
B.O.P. Sta. 38+700.000
Elev: 2228.934

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10:17 am, Nov 23, 2018



Construction Work Zone
Sta. 38+780.00, 47.86 m Rt. To
Sta. 38+910.00, 47.86 m Rt.

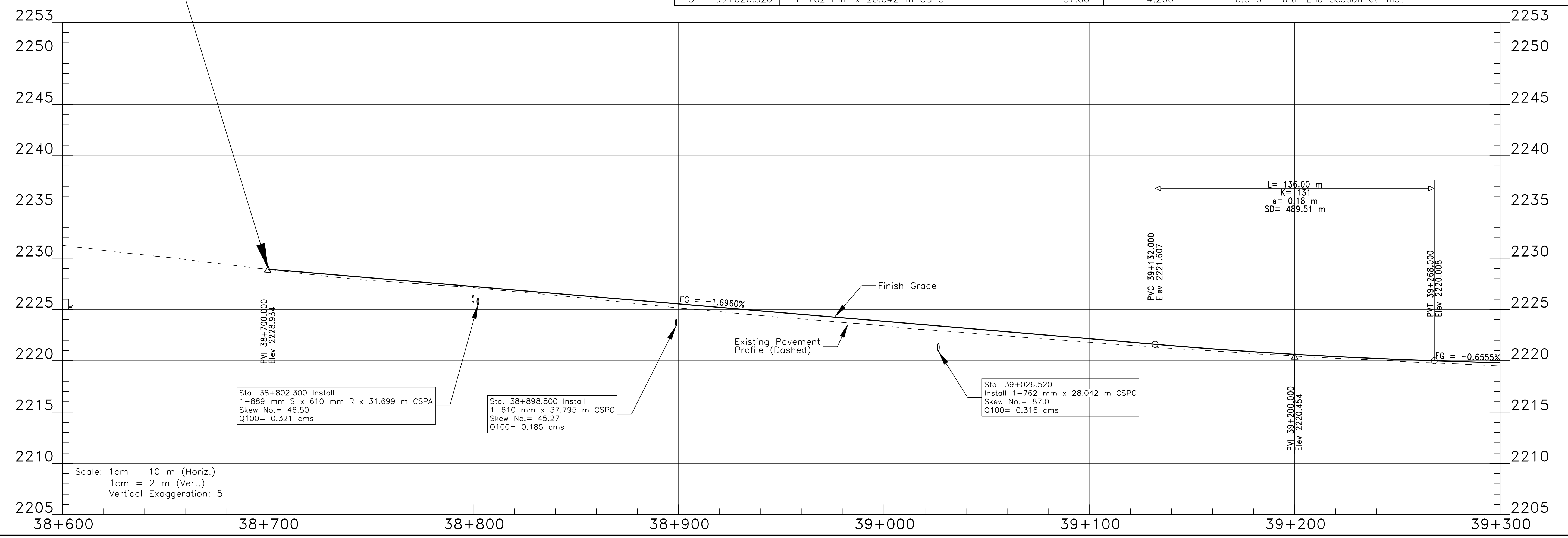
Sta. 38+922.00 to Sta. 39+027.00, Rt. Mulch and Seed Existing Road.

Construction Work Zone
Sta. 39+080.00, 28.00 m Rt. To
Sta. 39+200.00, 28.00 m Rt.

Sta. 38+898.000, Rt. Construct Turnout 7.0 m Wide 3 Unit Cattle Guard With Type 2 Gate.

DELINEATORS		TYPE 2	RIGHT-OF-WAY	
TYPE "1a"	TYPE "1b"	OBJECT MARKER	MONUMENTS	MARKERS
0	3	6	4	--NO SYMBOL--

Mark	Station	Structure	Skew No.	Drainage Area (ha)	Q100 (cms)	Remarks
1	38+802.300	1-889 mm S x 610 mm R x 31.699 m CSPA	46.50	2.928	0.321	With End Section at Inlet & Type "A" Earthen Dike/Berm at Inlet
2	38+898.800	1-610 mm x 37.795 m CSPC	45.27	2.500	0.185	With End Section at Inlet & Type "A" Earthen Dike/Berm at Inlet
3	39+026.520	1-762 mm x 28.042 m CSPC	87.00	4.266	0.316	With End Section at Inlet



Sta. 38+802.300 Install
1-889 mm S x 610 mm R x 31.699 m CSPA
Skew No.= 46.50
Q100= 0.321 cms

Sta. 38+898.800 Install
1-610 mm x 37.795 m CSPC
Skew No.= 45.27
Q100= 0.185 cms

Sta. 39+026.520
Install 1-762 mm x 28.042 m CSPC
Skew No.= 87.0
Q100= 0.316 cms

Scale: 1cm = 10 m (Horiz.)
1cm = 2 m (Vert.)
Vertical Exaggeration: 5

Sta. 39+308.431, CL, Existing 1-762 mm x 16.60 m CSPC Removed, Cleaned, Salvage & Stockpiled.

Sta. 39+438.157, CL, Existing 1-762 mm x 17.12 m CSPC Removed, Cleaned, Salvage & Stockpiled.

Sta. 39+470.00, Lt. Construct Turnout, 4.5 m Wide 2 Unit Cattle Guard With Type 2 Gate.

Sta. 39+512.226 m Existing Powerline X-ing. Clearance: 10.627 m To Grade The Contractor Shall Protect In-Place.

Sta. 39+665.54, CL, Construct 1-17.37 m S x 3.25 m R x 28.04 m Precast Concrete Arch Pipe, Skew No. 99 See Sheet 75 to 88 For Arch Pipe Construction Details. Existing Bridge To Be Demolished. See Sheet 39 of 88 For Detour Plan.

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	12	88

Sta. 39+514.00 m Existing Telephone X-ing. Clearance: 13.92 m To Grade

Sta. 39+514.400, Existing Powerline X-ing. Clearance: 14.53 m To Grade The Contractor Shall Protect In-Place.

Sta. 39+512.127, Existing Powerline X-ing. Clearance: 11.744 m To Grade The Contractor Shall Protect In-Place.

Sta. 39+511.965 m Existing Powerline X-ing. Clearance: 5.407 m To Grade The Contractor Shall Protect In-Place.

Sta. 39+599.95 to 39+652.24, Lt. Install Wire Enclosed Riprap In Cut-Fill Transition As Shown. See Sheet 60 of 88 For Details.

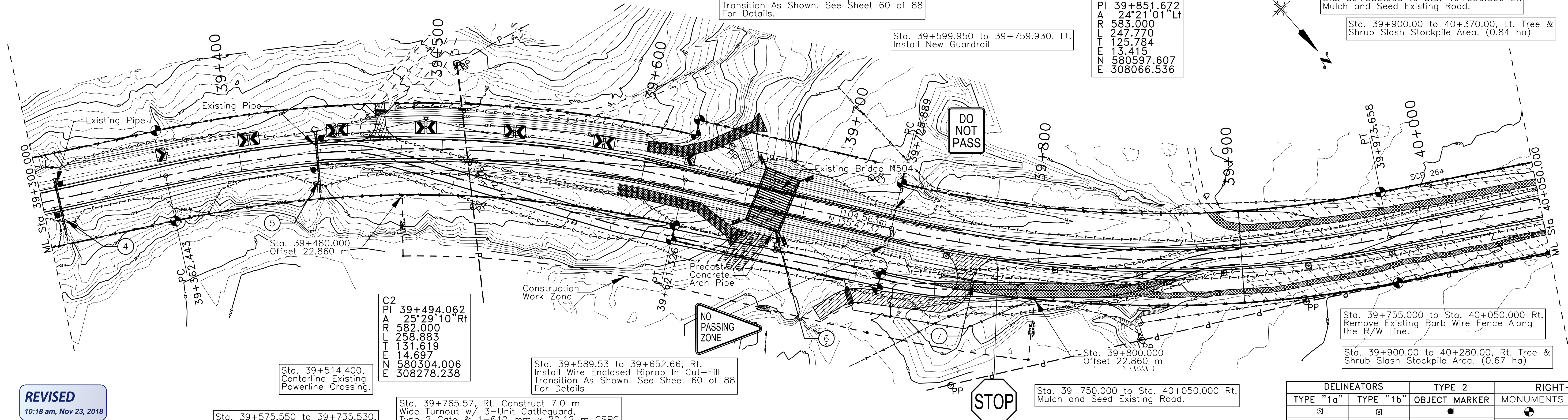
Sta. 39+599.950 to 39+759.930, Lt. Install New Guardrail

C3
PI 39+851.672
A 24°21'01" Lt
R 583.000
L 247.770
T 125.784
E 13.415
N 580597.607
E 308066.536

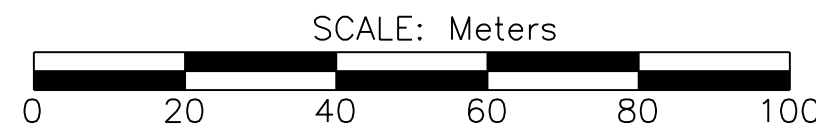
Sta. 39+743.000 to Sta. 40+050.000 Lt. Remove Existing Barb Wire Fence Along the R/W Line.

Sta. 39+880.000 to Sta. 40+050.000 Lt. Mulch and Seed Existing Road.

Sta. 39+900.00 to 40+370.00, Lt. Tree & Shrub Slash Stockpile Area. (0.84 ha)



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10:18 am, Nov 23, 2018



Sta. 39+514.400, Centerline Existing Powerline Crossing.

C2
PI 39+494.062
A 25°29'10" Rt
R 582.000
L 258.883
T 131.619
E 14.697
N 580304.006
E 308278.238

Sta. 39+589.53 to 39+652.66, Rt. Install Wire Enclosed Riprap In Cut-Fill Transition As Shown. See Sheet 60 of 88 For Details.

Sta. 39+575.550 to 39+735.530, Rt. Install New Guardrail

Sta. 39+765.57, Rt. Construct 7.0 m Wide Turnout w/ 3-Unit Cattleguard, Type 2 Gate & 1-610 mm x 20.12 m CSPC & End Sections.

Sta. 39+440.00 to 39+500.00, Rt. Contractor Shall Construct Temporary Detour Road With Temporary Drainage Structures As Shown Prior To Existing Bridge Demolition And Installation Of New Pre-Cast Pipe Arch. See Sheet 39 of 88 For Details.

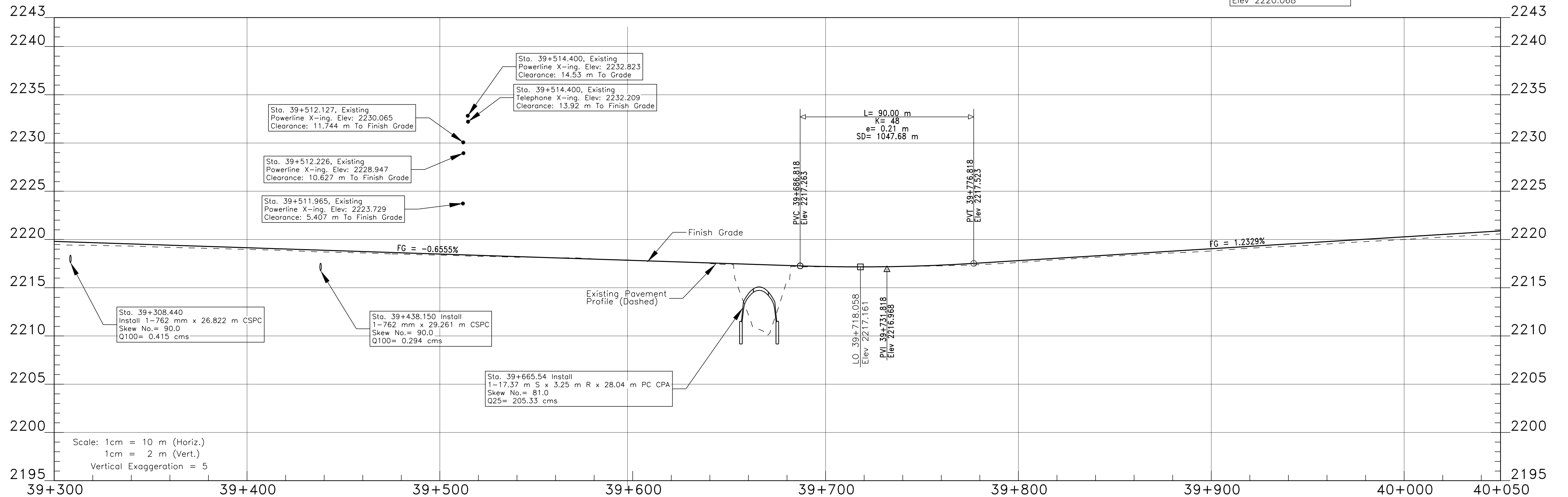
Sta. 39+750.000 to Sta. 40+050.000 Rt. Mulch and Seed Existing Road.

DELINEATORS		TYPE 2	RIGHT-OF-WAY	
TYPE "1a"	TYPE "1b"	OBJECT MARKER	MONUMENTS	MARKERS
⊙	⊙	●	⊙	--NO SYMBOL--
0	6	4	10	10

DRAINAGE STRUCTURE TABLE

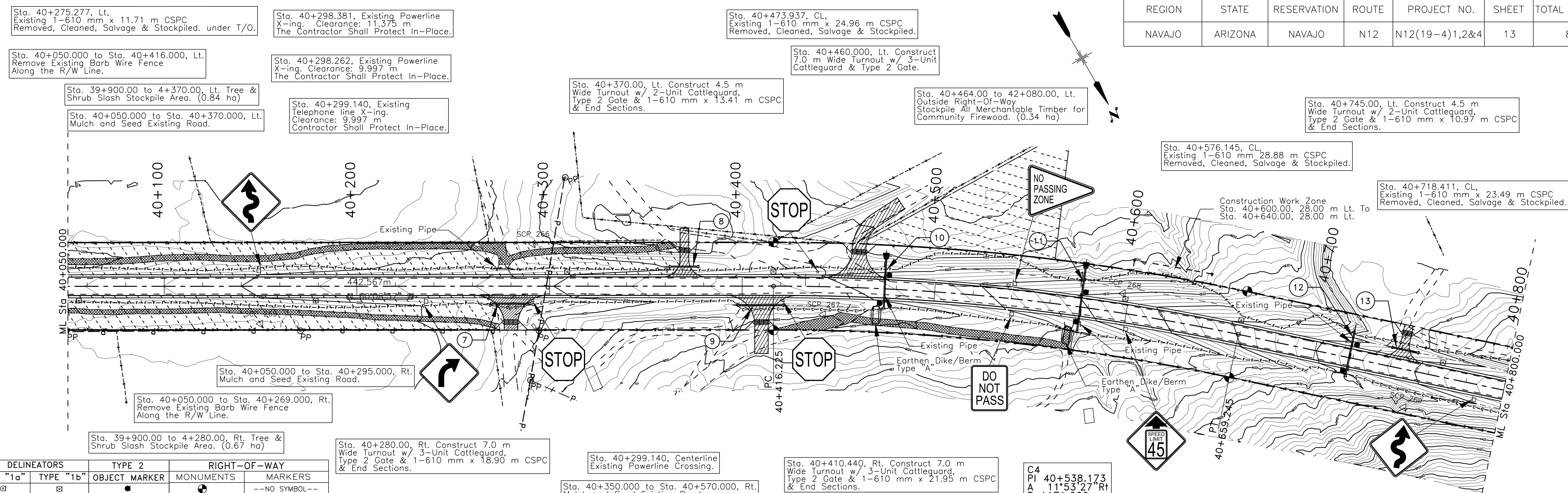
Mark	Station	Structure	Skew No.	Drainage Area (ha)	Q25 (cms)	Q100 (cms)	Remarks
4	39+308.440	1-762 mm x 26.822 m CSPC	90.0	5.590		0.415	With End Section At Inlet
5	39+438.150	1-762 mm x 29.261 m CSPC	90.0	3.452		0.294	With End Section At Inlet
6	39+665.54	1-17.37 m S x 3.25 m R x 28.04 m PC CPA	99.0	13,136.000	205.326		With Pre-Cast Wingwall & Footing @ Inlet & Outlet CSPC Under T/O w/2-End Sections
7	39+765.570	1-610 mm x 20.120 m CSPC	90.0	0.967		0.067	

Sta. 39+998.00 SCP 264
Offset 21.749 m Lt.
Elev 2220.068



Scale: 1cm = 10 m (Horiz.)
1cm = 2 m (Vert.)
Vertical Exaggeration = 5

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	13	88



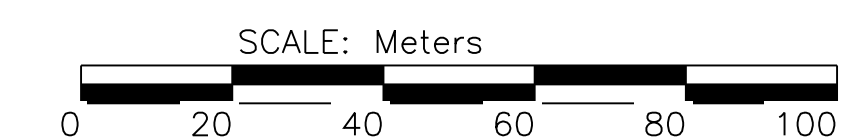
DELINEATORS		TYPE 2	RIGHT-OF-WAY	
TYPE "1a"	TYPE "1b"	OBJECT MARKER	MONUMENTS	MARKERS
0	7	6	4	--NO SYMBOL--

DRAINAGE STRUCTURE TABLE

Mark	Station	Structure	Skew No.	Drainage Area (ha)	Q100 (cms)	Remarks
7	40+280.000	1-610 mm x 18.90 m CSPC	90.0	0.967	0.067	CSPC Under T/O w/2 End Section
8	40+370.000	1-610 mm x 13.41 m CSPC	90.0	0.132	0.008	CSPC Under T/O w/2 End Section
9	40+410.440	1-610 mm x 21.95 m CSPC	90.0	0.967	0.067	CSPC Under T/O w/2 End Section
10	40+474.000	1-610 mm x 27.432 m CSPC	90.0	2.211	0.234	With End Section At Inlet, Type "A" Earthen Dike/Berm at Inlet & Place Riprap Stilling Basing at Outlet
11	40+576.000	1-610 mm x 33.528 m CSPC	87.0	2.741	0.263	With End Section At Inlet, Type "A" Earthen Dike/Berm at Inlet & Place Riprap Stilling Basing at Outlet
12	40+718.000	1-610 mm x 23.165 m CSPC	90.0	1.014	0.100	With End Section At Inlet
13	40+745.000	1-610 mm x 10.97 m CSPC	90.0	0.338	0.021	CSPC Under T/O w/2 End Section

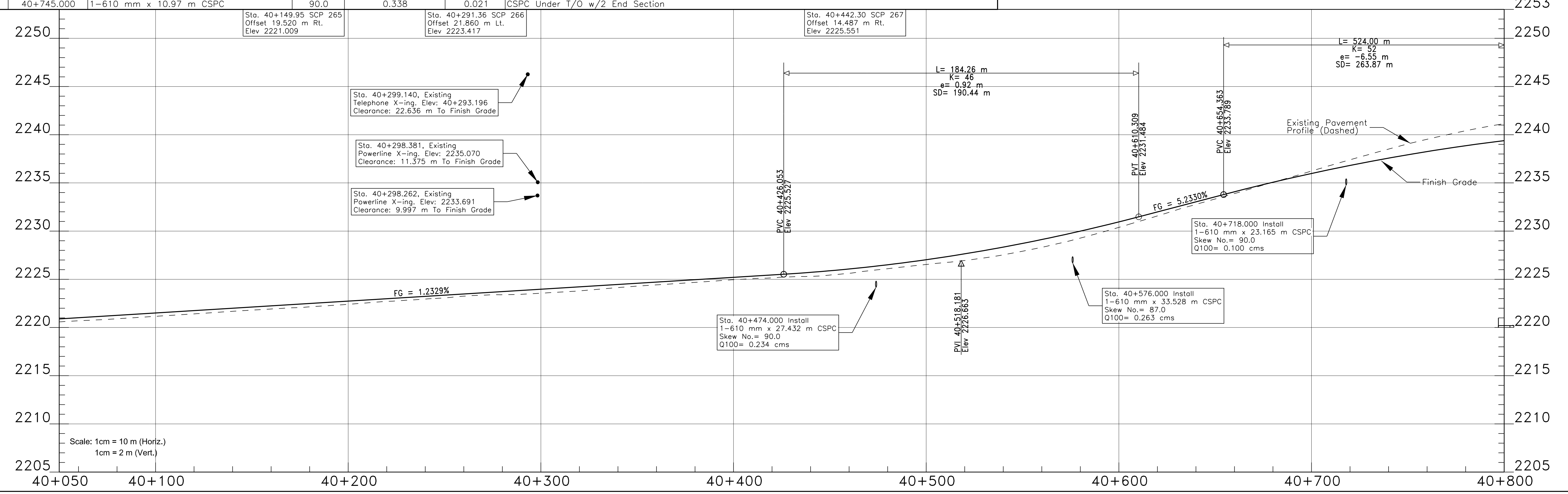
C4
 PI 40+538.173
 A 11°53'27" Rt
 R 1171.000
 L 243.020
 T 121.948
 E 6.333
 N 580941.255
 E 307467.856

REVISED
 10:18 am, Nov 23, 2018



Sta. 40+596.78 SCP 268
 Offset 10.097 m Lt.
 Elev. 2229.543

Sta. 40+751.04 SCP 269
 Offset 19.508 m Rt.
 Elev. 2239.970



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REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	14	88

Sta. 41+043.000 to Sta.41+085.000 Lt. Mulch and Seed Existing Road.

Sta. 41+213.402, CL, Existing 1-914 mm x 36.62 m CSPC Removed, Cleaned, Salvage & Stockpiled.

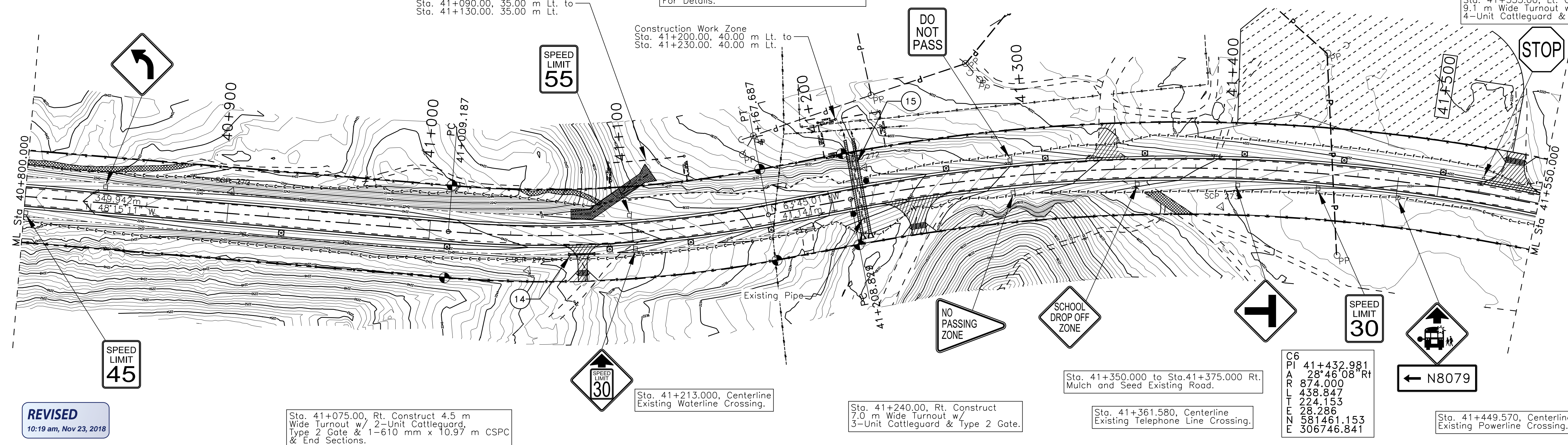
Sta. 41+070.00 to 41+111.75, Lt. Install Wire Enclosed Riprap In Cut-Fill Transition As Shown. See Sheet 60 of 88 For Details.

Sta. 41+447.506 m, Existing Powerline X-ing. Clearance: 7.345 m The Contractor Shall Protect In-Place.

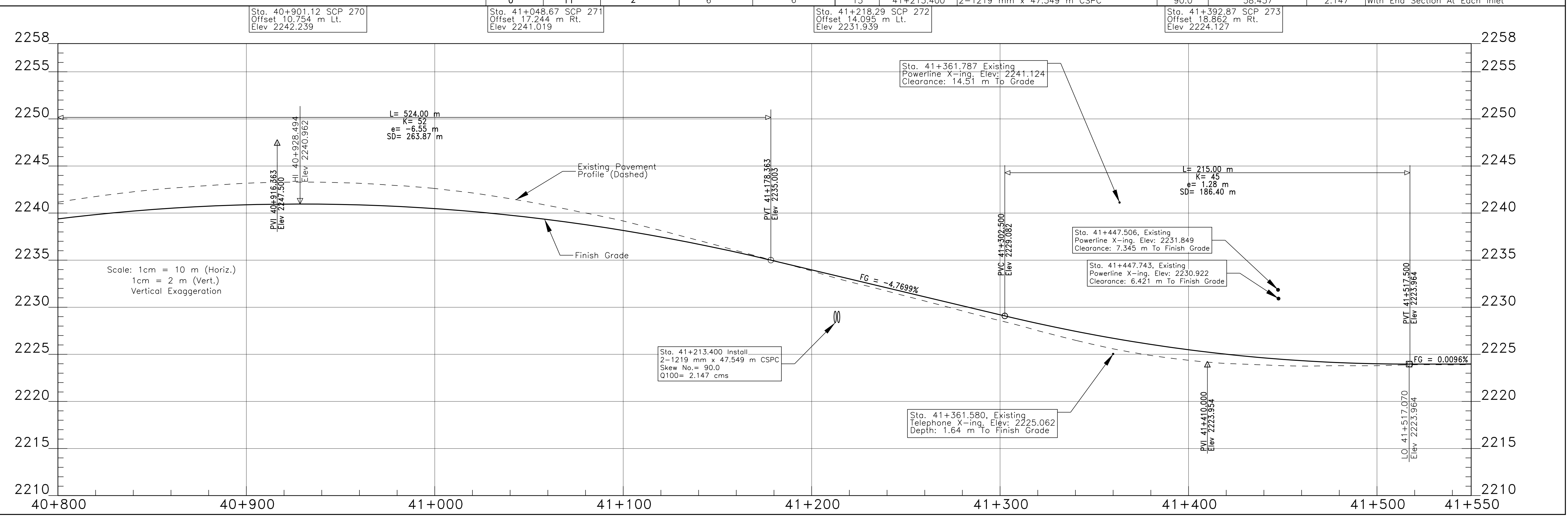
Sta. 41+447.743 m, Existing Powerline X-ing. Clearance: 6.421 m The Contractor Shall Protect In-Place.

Sta. 41+400.00 to 41+530.00, Lt. Outside the Right-Of-Way Within the Chapter Boundary Stockpile All Merchantable Timber for Community Firewood. (1.0 ha)

Sta. 41+535.00, Lt. Construct 9.1 m Wide Turnout w/ 4-Unit Cattleguard & Type 2 Gate.



DELINEATORS					TYPE 2		RIGHT-OF-WAY		DRAINAGE STRUCTURE TABLE				
TYPE "1a"	TYPE "1b"	OBJECT MARKER	MONUMENTS	MARKERS	Mark	Station	Structure	Skew No.	Drainage Area (ha)	Q100 (cms)	Remarks		
0	11	2	6	6	14	41+075.000	1-610 mm x 10.970 m CSPC	90.0	0.431	0.027	CSPC Under T/O w/ 2-End Section		
					15	41+213.400	2-1219 mm x 47.549 m CSPC	90.0	58.457	2.147	With End Section At Each Inlet		



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Sta. 41+601.738, CL.
Existing 610 mm x 22.96 m CSPC
Removed, Cleaned, Salvage & Stockpiled.

Sta. 41+615.330 to Sta.41+660.000, Lt.
Mulch and Seed Existing Road.

Sta. 41+716.000 to Sta.41+740.000, Lt.
Mulch and Seed Existing Road.

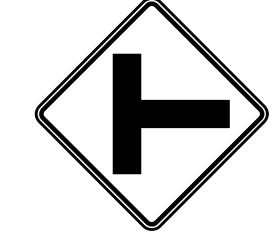
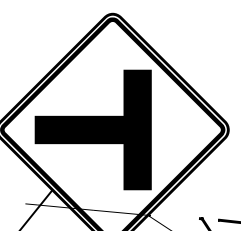
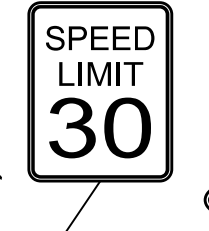
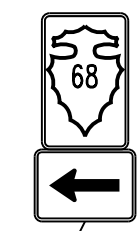
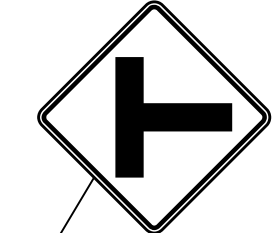
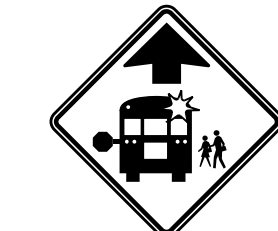
Sta. 41+838.804, CL.
Existing 1678 mm x 24.93 CSPC
Removed, Cleaned, Salvage & Stockpiled.

Sta. 41+948.00 to 42+080.00, Lt.
Outside the Right-Of-Way
Stockpile All Merchantable Timber for
Community Firewood. (0.42 ha)

Sta. 42+142.120 to 42+146.000 Lt.
Mulch and Seed Existing Road. Remove
Existing Turnout.

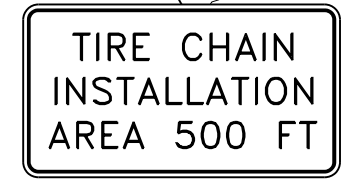
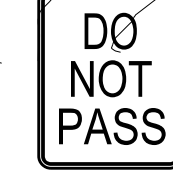
Sta. 42+141.52, 9.02 m Lt.
Existing 1678 mm x 12 m CSPC
Removed, Cleaned, Salvage & Stockpiled.

Sta. 42+123.77 to 42+160.00, Lt.
Install Wire Enclose Riprap in Cut-Fill
Transition As Shown.
See Sheet 60 of 88 For Details.



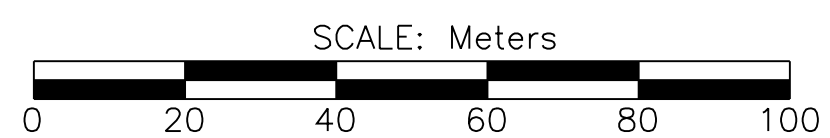
Sta. 41+740.300 to Sta.41+790.000, Rt.
Mulch and Seed Existing Road.

Sta. 42+110.310 to 42+114.00 Rt.
Mulch and Seed Existing Road.



DELINEATORS		TYPE 2	RIGHT-OF-WAY	
TYPE "1a"	TYPE "1b"	OBJECT MARKER	MONUMENTS	MARKERS
0	9	4	4	--NO SYMBOL-- 4

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10:19 am, Nov 23, 2018



Sta. 41+692.610, 14.36 m Rt.
Existing 610 mm x 17.99 m CSPC
Removed, Cleaned, Salvage & Stockpiled.

Sta. 41+700.00, Rt Construct 9.10 m
Wide Turnout w/ 4-Unit Cattleguard,
Type 2 Gate & 1-610 mm x 17.07 m CSPC
& End Sections.

DRAINAGE STRUCTURE TABLE

Mark	Station	Structure	Skew No.	Drainage Area (ha)	Q100 (cms)	Remarks
16	41+601.740	New 2-1067 mm S x 737 mm R x 25.603 m CSPA	90.0	20.660	1.226	With End Section at Each Inlet
17	41+700.000	New 1-610 mm x 17.070 m CSPC	90.0	n/a	n/a	CSPC Under T/O w/2-End Section For Relief Pipe Only
18	41+838.800	New 5-2616 mm S x 1803 mm R x 37.795 m SPPA	60.0	1,438.550	37.594	With Concrete Slope Paving Inlet w/ Grouted Riprap at Outlet

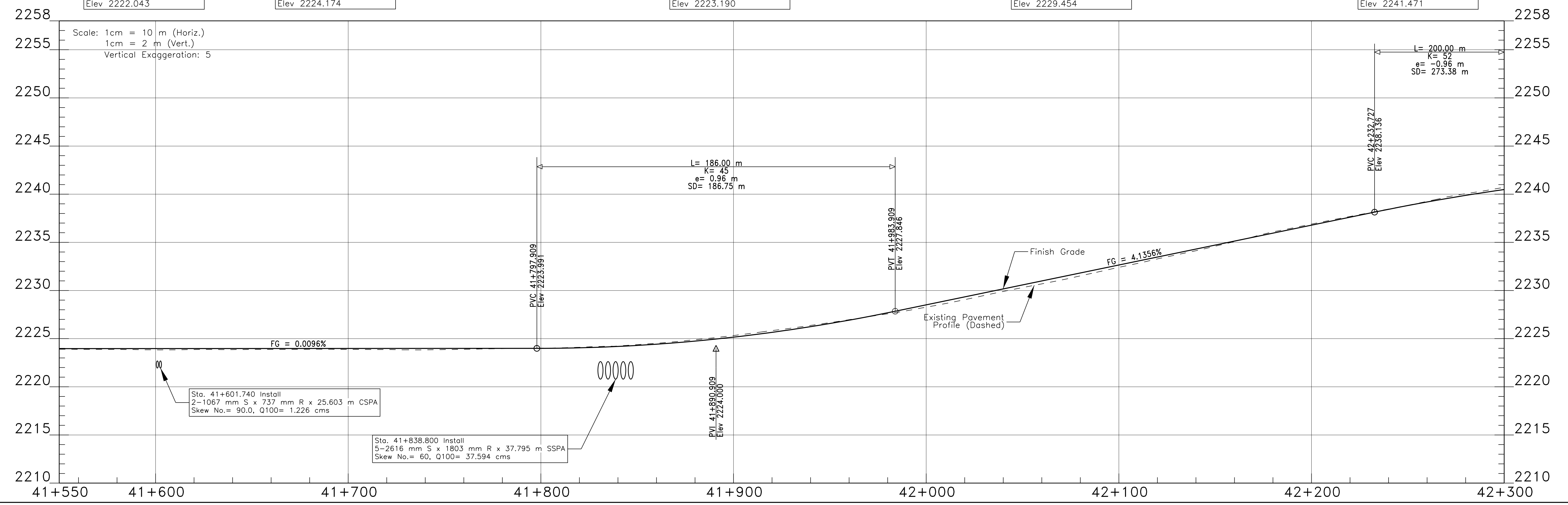
Sta. 41+551.79 SCP 274
Offset 23.014 m Lt.
Elev 2222.043

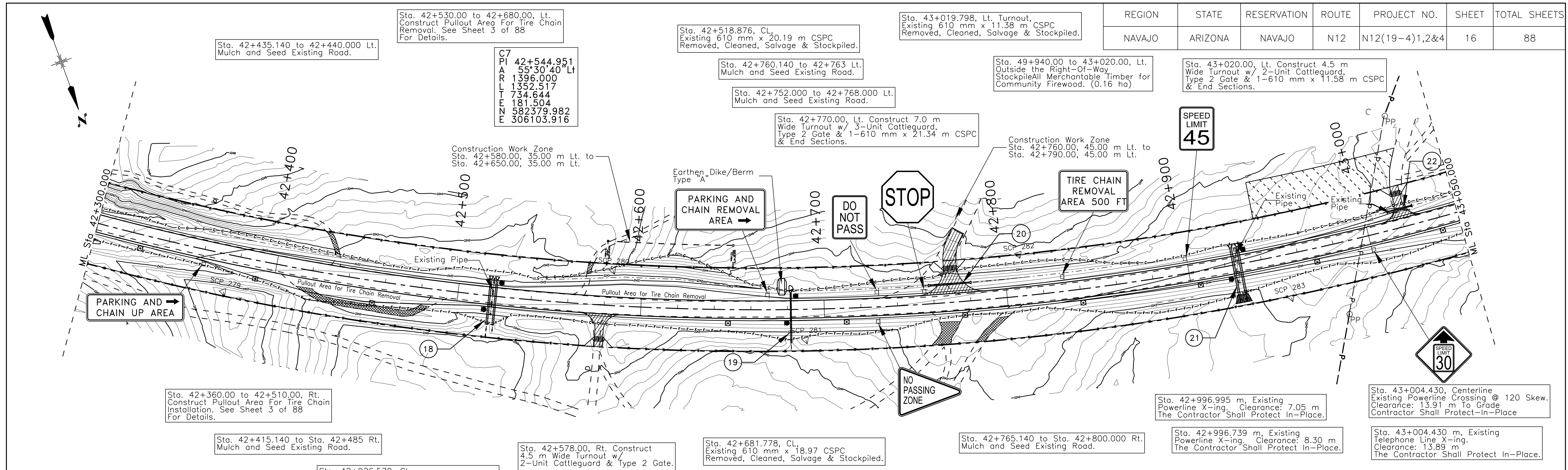
Sta. 41+726.24 SCP 275
Offset 25.676 m Rt.
Elev 2224.174

Sta. 41+891.27 SCP 276
Offset 23.051 m Lt.
Elev 2223.190

Sta. 42+053.57 SCP 277
Offset 15.894 m Rt.
Elev 2229.454

Sta. 42+231.19 SCP 278
Offset 23.823 m Lt.
Elev 2241.471





Sta. 42+530.00 to 42+680.00, Lt. Construct Pullout Area For Tire Chain Removal. See Sheet 3 of 88 For Details.

Sta. 42+435.140 to 42+440.000 Lt. Mulch and Seed Existing Road.

C7
PI 42+544.951
A 55+30.40 Lt
R 1396.000
L 1352.517
T 734.644
E 181.504
N 582379.982
E 306103.916

Sta. 42+518.876, CL, Existing 610 mm x 20.19 m CSCP Removed, Cleaned, Salvage & Stockpiled.

Sta. 42+760.140 to 42+763 Lt. Mulch and Seed Existing Road.

Sta. 42+752.000 to 42+768.000 Lt. Mulch and Seed Existing Road.

Sta. 42+770.00, Lt. Construct 7.0 m Wide Turnout w/ 3-Unit Cattleguard, Type 2 Gate & 1-610 mm x 21.34 m CSCP & End Sections.

Sta. 43+019.798, Lt. Turnout, Existing 610 mm x 11.38 m CSCP Removed, Cleaned, Salvage & Stockpiled.

Sta. 49+940.00 to 43+020.00, Lt. Outside the Right-Of-Way Stockpile All Merchantable Timber for Community Firewood. (0.16 ha)

Sta. 43+020.00, Lt. Construct 4.5 m Wide Turnout w/ 2-Unit Cattleguard, Type 2 Gate & 1-610 mm x 11.58 m CSCP & End Sections.

Sta. 42+360.00 to 42+510.00, Rt. Construct Pullout Area For Tire Chain Installation. See Sheet 3 of 88 For Details.

Sta. 42+415.140 to Sta. 42+485 Rt. Mulch and Seed Existing Road.

Sta. 42+578.00, Rt. Construct 4.5 m Wide Turnout w/ 2-Unit Cattleguard & Type 2 Gate.

Sta. 42+681.778, CL, Existing 610 mm x 18.97 CSCP Removed, Cleaned, Salvage & Stockpiled.

Sta. 42+765.140 to Sta. 42+800.000 Rt. Mulch and Seed Existing Road.

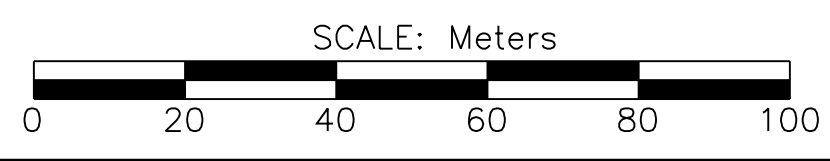
Sta. 42+996.995 m, Existing Powerline X-ing, Clearance: 7.05 m The Contractor Shall Protect In-Place.

Sta. 42+996.739 m, Existing Powerline X-ing, Clearance: 8.30 m The Contractor Shall Protect In-Place.

Sta. 43+004.430, Centerline Existing Powerline Crossing @ 120 Skew. Clearance: 13.91 m To Grade Contractor Shall Protect In-Place

Sta. 43+004.430 m, Existing Telephone Line X-ing. Clearance: 13.89 m The Contractor Shall Protect In-Place.

REVISED
10:19 am, Nov 23, 2018



DRAINAGE STRUCTURE TABLE

Mark	Station	Structure	Skew No.	Drainage Area (ha)	Q100 (cms)	Remarks
18	42+518.880	1-914 mm x 25.603 m CSCP	90.0	18.670	0.765	With End Section At Inlet
19	42+681.780	1-610 mm x 27.432 m CSCP	90.0	2.535	0.118	With End Section At Inlet & Type "A" Earthen Dike/Berm at Inlet
20	42+770.000	1-610 mm x 21.340 m CSCP	90.0	0.202	0.013	CSCP Under T/O w/ 2-End Section
21	42+926.570	2-1067 mm x 26.213 m CSCP	90.0	115.541	1.958	With End Section At Each Inlet & Placed Riprap Apron at Outlet
22	43+020.000	1-610 mm x 11.580 CSCP	90.0	0.832	0.051	CSCP Under T/O w/ 2-End Section

DELINEATORS		TYPE 2	RIGHT-OF-WAY	
TYPE "1a"	TYPE "1b"	OBJECT MARKER	MONUMENTS	MARKERS
0	10	6	0	--NO SYMBOL--

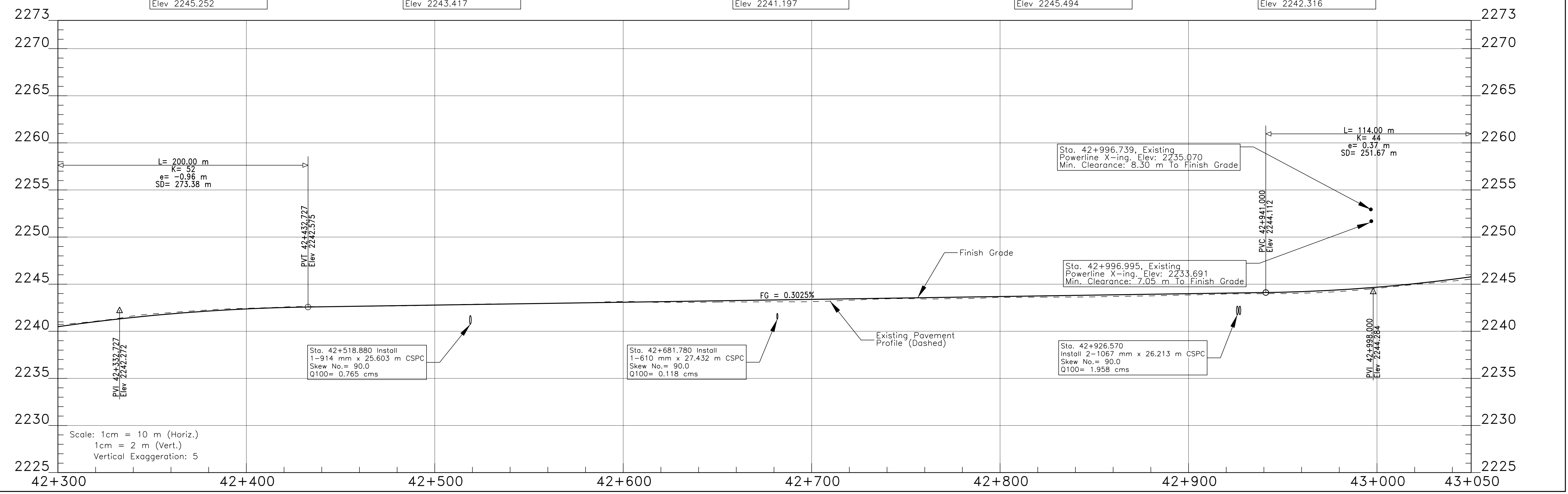
Sta. 42+374.44 SCP 279
Offset 20.475 m Rt.
Elev 2245.252

Sta. 42+583.68 SCP 280
Offset 19.200 m Lt.
Elev 2243.417

Sta. 42+689.60 SCP 281
Offset 16.729 m Rt.
Elev 2241.197

Sta. 42+808.51 SCP 282
Offset 22.762 m Lt.
Elev 2245.494

Sta. 42+951.91 SCP 283
Offset 23.660 m Rt.
Elev 2242.316



Scale: 1cm = 10 m (Horiz.)
1cm = 2 m (Vert.)
Vertical Exaggeration: 5

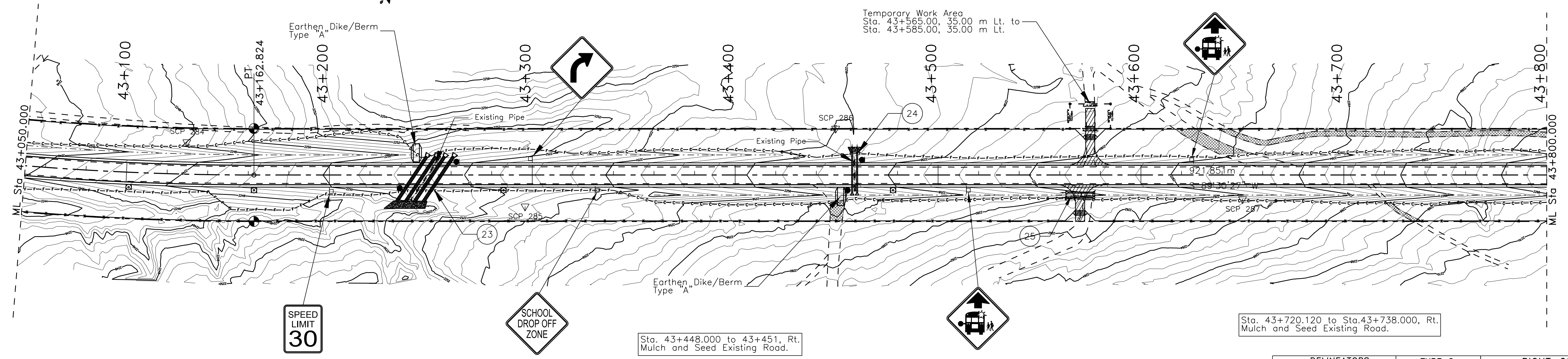
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	17	88

Sta. 43+248.492, CL.
Existing 610 mm x 26.09 m CSPC
Removed, Cleaned, Salvage & Stockpiled.

Sta. 43+458.876, CL.
Existing 610 mm x 16.81 m CSPC
Removed, Cleaned, Salvage & Stockpiled.

Sta. 43+575.00, Lt. Construct
4.5 m Wide Turnout w/
2-Unit Cattleguard & Type 2 Gate.

Sta. 43+620.120 to Sta.43+800.000, Lt.
Mulch and Seed Existing Road.



SPEED
LIMIT
30

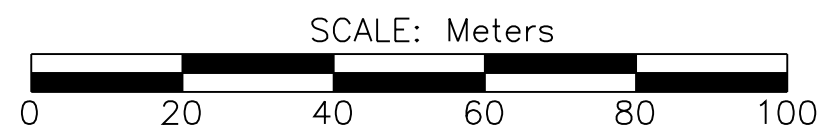
SCHOOL
DROP OFF
ZONE

Sta. 43+448.000 to 43+451, Rt.
Mulch and Seed Existing Road.

Sta. 43+570.00, Rt. Construct 4.5 m
Wide Turnout w/ 2-Unit Cattleguard,
Type 2 Gate & 1-610 mm x 12.19 m CSPC
& End Sections.

Sta. 43+720.120 to Sta.43+738.000, Rt.
Mulch and Seed Existing Road.

REVISED
10:19 am, Nov 23, 2018



DELINEATORS		TYPE 2	RIGHT-OF-WAY	
TYPE "1a"	TYPE "1b"	OBJECT MARKER	MONUMENTS	MARKERS
0	4	10	2	--NO SYMBOL-- 2

DRAINAGE STRUCTURE TABLE

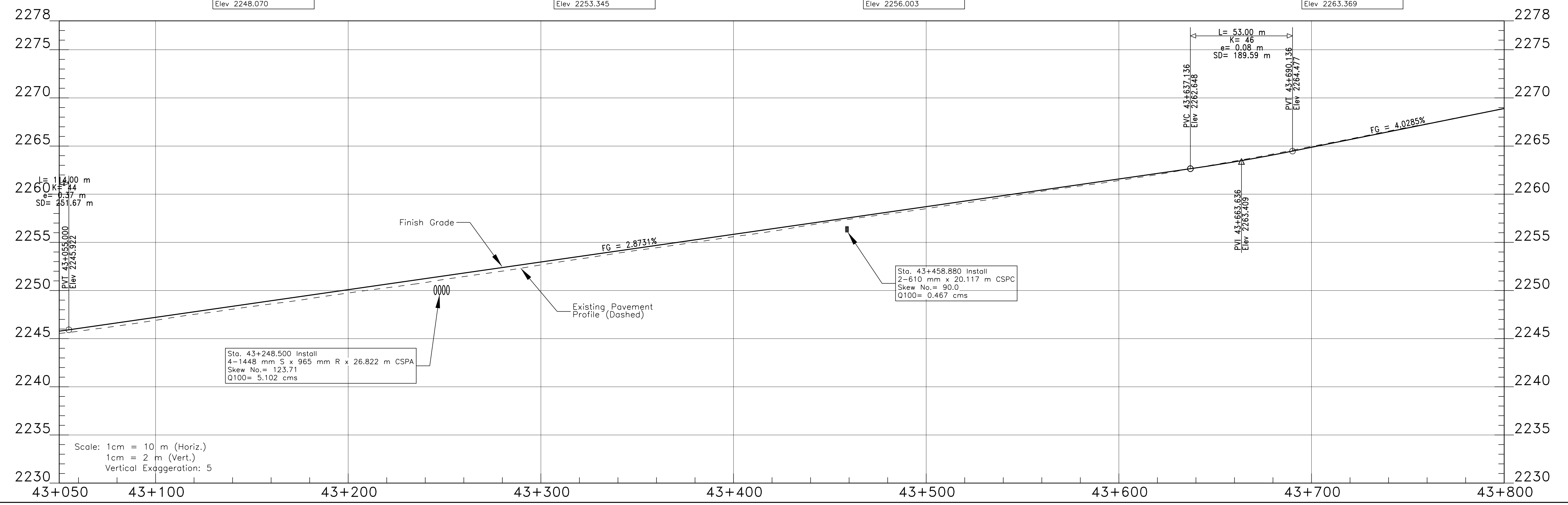
Mark	Station	Structure	Skew No.	Drainage Area (ha)	Q100 (cms)	Remarks
23	43+248.500	4-1448 mm S x 965 x mm R x 26.822 m CSPA	123.7	206.407	5.102	With End Sections At Inlet, Type "A" Earthen Dike/Berm at Inlet & Placed Riprap Apron at Outlet
24	43+458.880	2-610 mm x 20.117 m CSPC	90.0			With End Sections At Inlet, Type "A" Earthen Dike/Berm at Inlet & Placed Riprap Apron at Outlet
25	43+570.000	2-610 mm x 12.190 m CSPC	90.0	10.018	0.467	CSPC Under T/O w/ 2-End Sections

Sta. 43+129.32 SCP 284
Offset 15.806 m Lt.
Elev 2248.070

Sta. 43+296.45 SCP 285
Offset 15.428 m Rt.
Elev 2253.345

Sta. 43+449.52 SCP 286
Offset 22.898 m Lt.
Elev 2256.003

Sta. 43+650.06 SCP 287
Offset 11.807 m Rt.
Elev 2263.369



Sta. 43+248.500 Install
4-1448 mm S x 965 mm R x 26.822 m CSPA
Skew No.= 123.71
Q100= 5.102 cms

Sta. 43+458.880 Install
2-610 mm x 20.117 m CSPC
Skew No.= 90.0
Q100= 0.467 cms

Scale: 1cm = 10 m (Horiz.)
1cm = 2 m (Vert.)
Vertical Exaggeration: 5

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	18	88

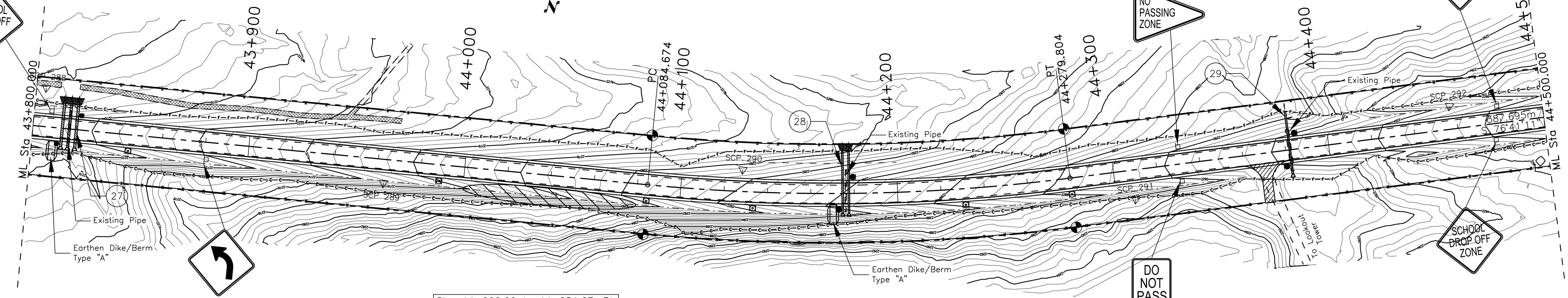
Sta. 43+818.820, CL.
Existing 610 mm x 16.95 m CSPC
Removed, Cleaned, Salvage & Stockpiled.

Sta. 43+800.000 to Sta. 43+970.000, Lt.
Mulch and Seed Existing Road.

Sta. 44+176.118, CL.
Existing 610 mm x 19.36 m CSPC
Removed, Cleaned, Salvage & Stockpiled.

C8
PI 44+182.648
A 12°49'16" Lt
R 872.000
L 195.130
T 97.974
E 5.487
N 582364.904
E 304349.512

Sta. 44+381.967, CL.
Existing 610 mm x 19.30 m CSPC
Removed, Cleaned, Salvage & Stockpiled.



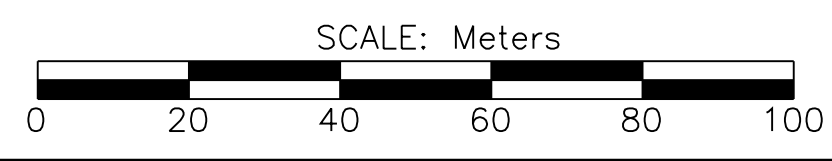
Sta. 43+806.00 To 43+867.00 Rt.
Contractor Shall Install Temporary
Fence Along The Right-Of-Way Line
To Protect Arch-Site During
Construction

Sta. 44+000.00 to 44+084.67, Rt.
TCP Herb Gathering Area.
(See Note 28 of Sheet 4)

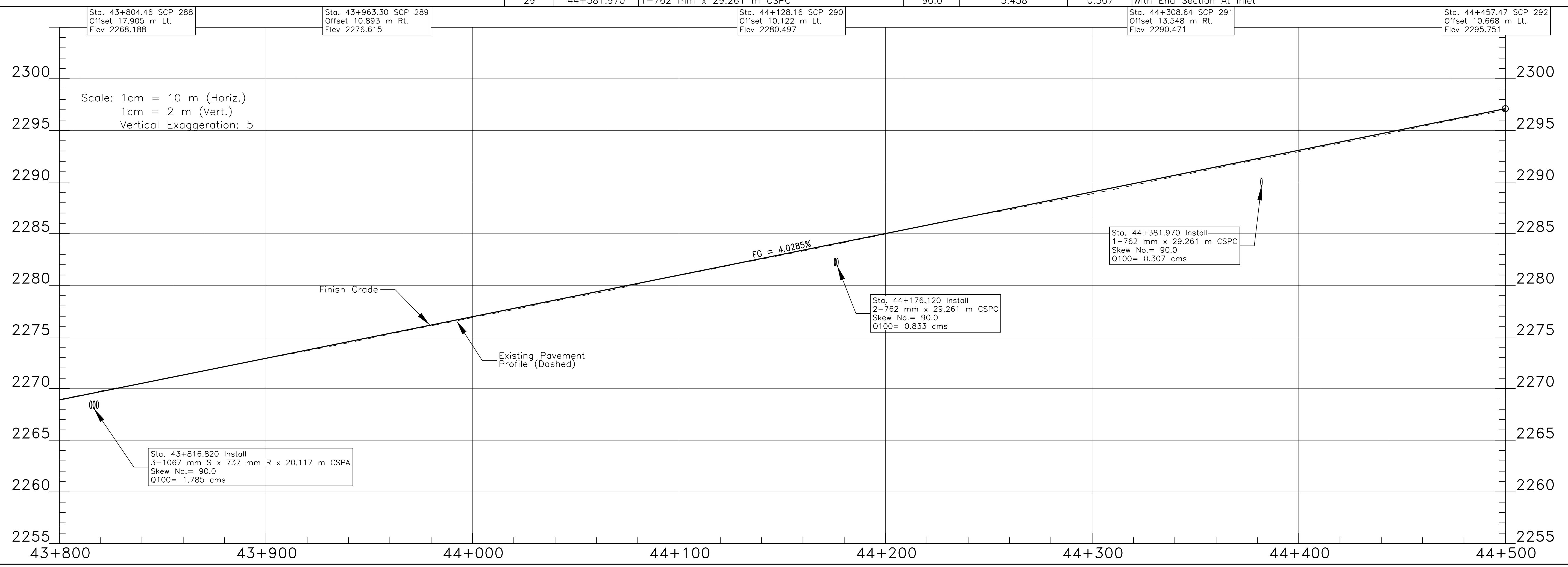
Sta. 44+370.000, Rt. Construct
4.5 m Wide Turnout w/ Type 2 Gate Only.

DELINEATORS		TYPE 2	RIGHT-OF-WAY	
TYPE "1a"	TYPE "1b"	OBJECT MARKER	MONUMENTS	MARKERS
0	6	6	4	--NO SYMBOL-- 4

REVISED
10:20 am, Nov 23, 2018

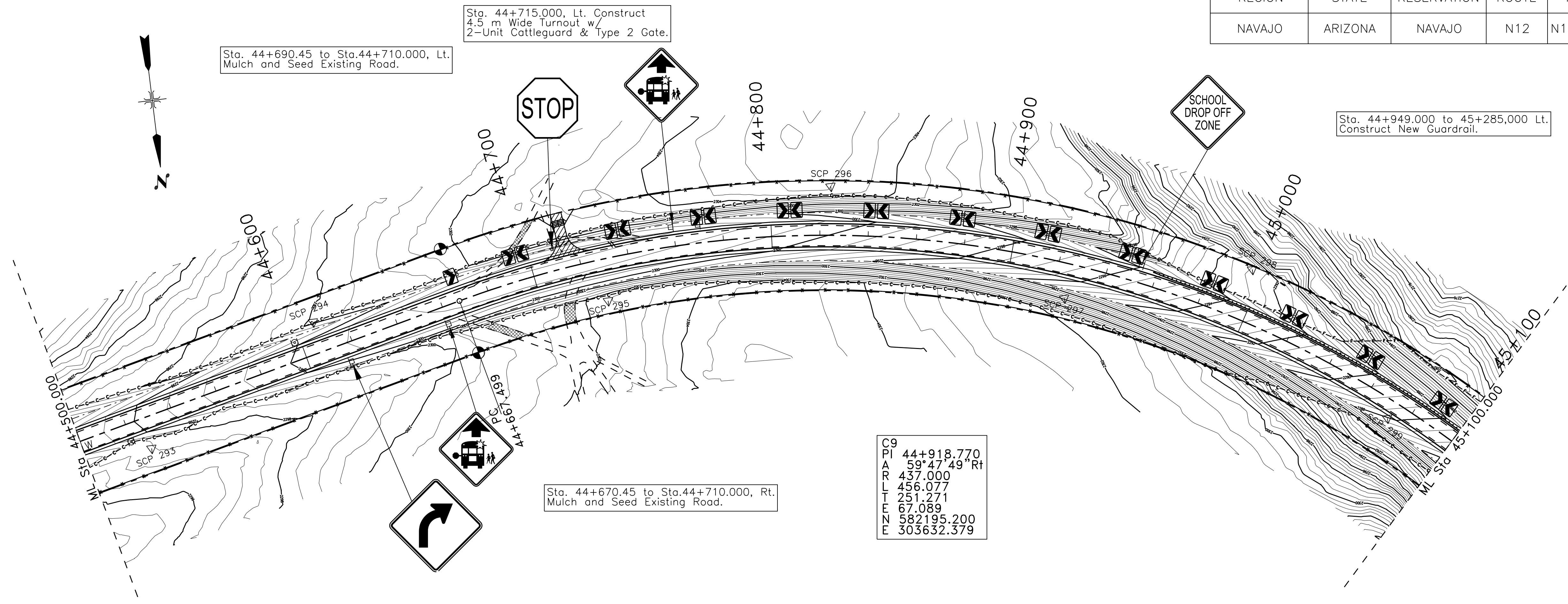


Mark	Station	Structure	Skew No.	Drainage Area (ha)	Q100 (cms)	Remarks
27	43+816.820	3-1067 mm S x 737 mm R x 20.117 m CSPA	90.0	39.482	1.785	With End Section At Inlet, Type "A" Earthen Dike/Berm at Inlet & Placed Riprap Apron at Outlet
28	44+176.120	2-762 mm x 29.261 m CSPC	90.0	18.434	0.833	With End Section At Inlet, Type "A" Earthen Dike/Berm at Inlet & Placed Riprap Stilling Basin at Outlet
29	44+381.970	1-762 mm x 29.261 m CSPC	90.0	5.438	0.307	With End Section At Inlet

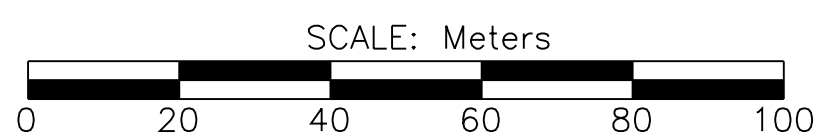


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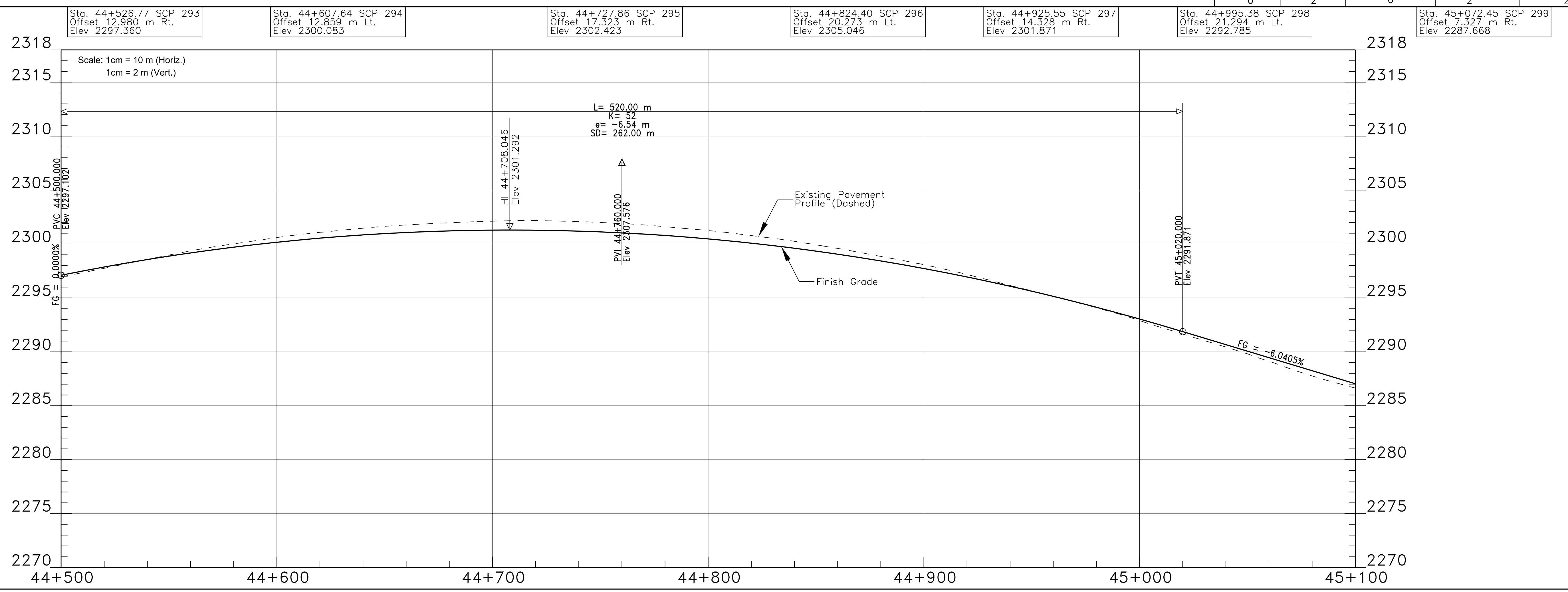
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	19	88



REVISED
10:20 am, Nov 23, 2018



DELINEATORS		TYPE 2	RIGHT-OF-WAY	
TYPE "1a"	TYPE "1b"	OBJECT MARKER	MONUMENTS	MARKERS
⊖	⊗	●	⊗	--NO SYMBOL--
0	2	0	2	2



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Sta. 45+137.747, CL.,
Existing 610 mm x 24.89 m CSPC
Removed, Cleaned, Salvage & Stockpiled.

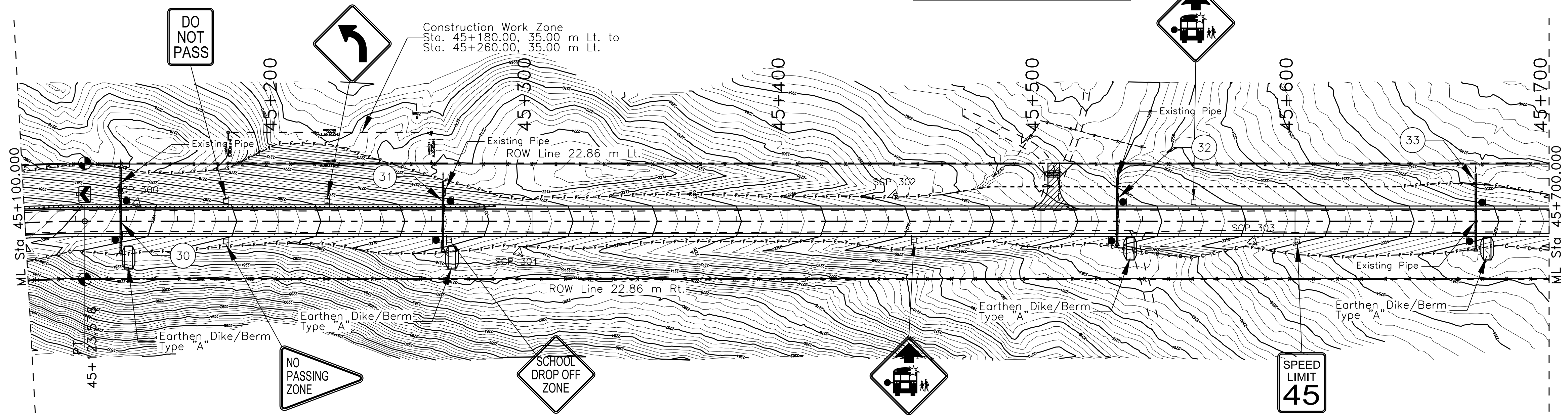
Sta. 45+264.603, CL.,
Existing 610 mm x 24.34 m CSPC
Removed, Cleaned, Salvage & Stockpiled.

Sta. 45+530.057, CL.,
Existing 610 mm x 27.23 m CSPC
Removed, Cleaned, Salvage & Stockpiled.

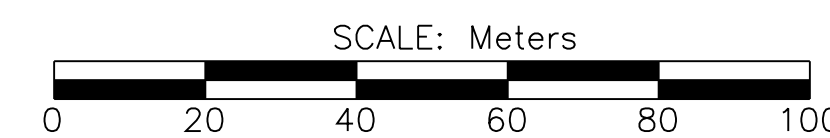
Sta. 45+671.172, CL.,
Existing 610 mm x 22.48 m CSPC
Removed, Cleaned, Salvage & Stockpiled.

Sta. 44+949.000 to 45+285.000 Lt.
Construct New Guardrail.

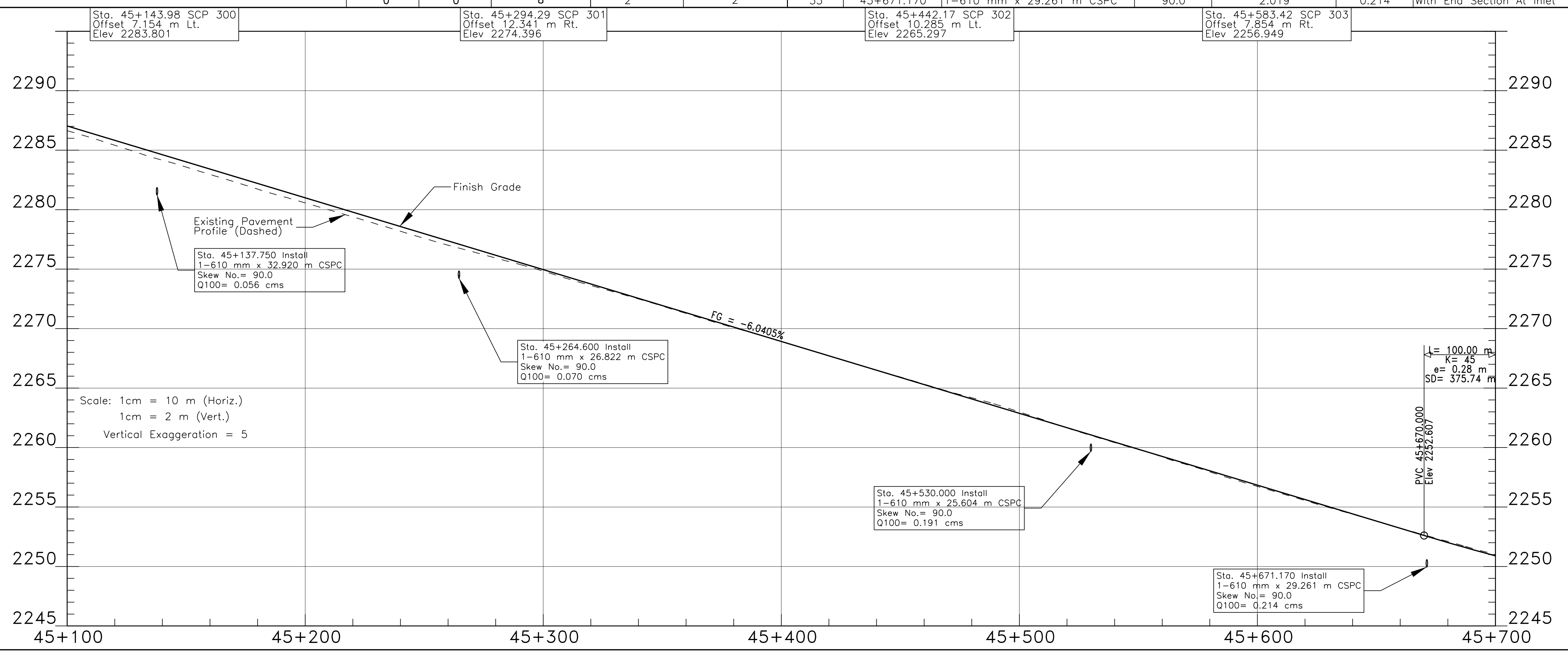
Sta. 45+505.00, Rt. Construct
4.5 m Wide Turnout w/
2-Unit Cattleguard & Type 2 Gate.



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10:20 am, Nov 23, 2018



DELINEATORS					TYPE 2		RIGHT-OF-WAY		DRAINAGE STRUCTURE TABLE			
TYPE "1a"	TYPE "1b"	OBJECT MARKER	MONUMENTS	MARKERS	Mark	Station	Structure	Skew No.	Drainage Area (ha)	Q100 (cms)	Remarks	
0	0	8	2	--NO SYMBOL--	30	45+137.750	1-610 mm x 32.92 m CSPC	90.0	0.707	0.056	With End Section At Inlet w/ Type "A" Earthen Dike/Berm at Inlet	
					31	45+264.600	1-610 mm x 26.822 m CSPC	90.0	0.622	0.070	With End Section At Inlet w/ Type "A" Earthen Dike/Berm at Inlet	
					32	45+530.000	1-610 mm x 25.604 m CSPC	90.0	2.007	0.191	With End Section At Inlet w/ Type "A" Earthen Dike/Berm at Inlet	
					33	45+671.170	1-610 mm x 29.261 m CSPC	90.0	2.019	0.214	With End Section At Inlet	



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REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	21	88

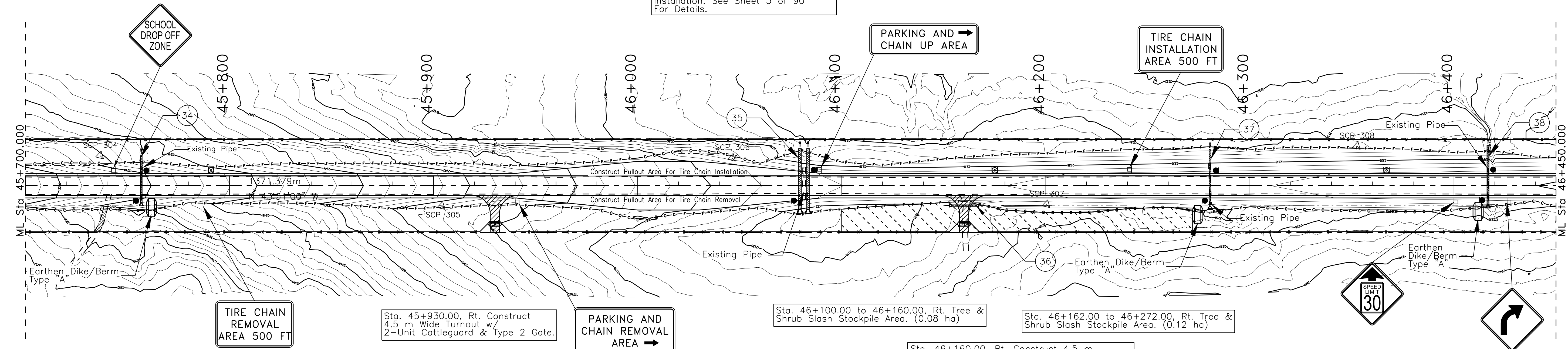
Sta. 45+756.795, CL.,
Existing 610 mm x 16.98 m CSCP
Removed, Cleaned, Salvage & Stockpiled.

Sta. 46+081.485, CL.,
Existing 610 mm x 16.72 m CSCP
Removed, Cleaned, Salvage & Stockpiled.

Sta. 46+282.465, CL.,
Existing 610 mm x 20.03 m CSCP
Removed, Cleaned, Salvage & Stockpiled.

Sta. 46+416.656, CL.,
Existing 610 mm x 16.56 m CSCP
Removed, Cleaned, Salvage & Stockpiled.

Sta. 45+940.00 to 46+090.00, Lt.
Construct Pullout Area For Tire Chain
Installation. See Sheet 3 of 90
For Details.



Sta. 45+738.42 to 45+741.00, Rt.
Mulch and Seed Existing Road.

Sta. 45+930.00, Rt. Construct
4.5 m Wide Turnout w/
2-Unit Cattleguard & Type 2 Gate.

PARKING AND
CHAIN REMOVAL
AREA →

Sta. 45+940.00 to 46+090.00, Rt.
Construct Pullout Area For Tire Chain
Removal. See Sheet 3 of 90
For Details.

Sta. 46+100.00 to 46+160.00, Rt. Tree &
Shrub Slash Stockpile Area. (0.08 ha)

Sta. 46+162.00 to 46+272.00, Rt. Tree &
Shrub Slash Stockpile Area. (0.12 ha)

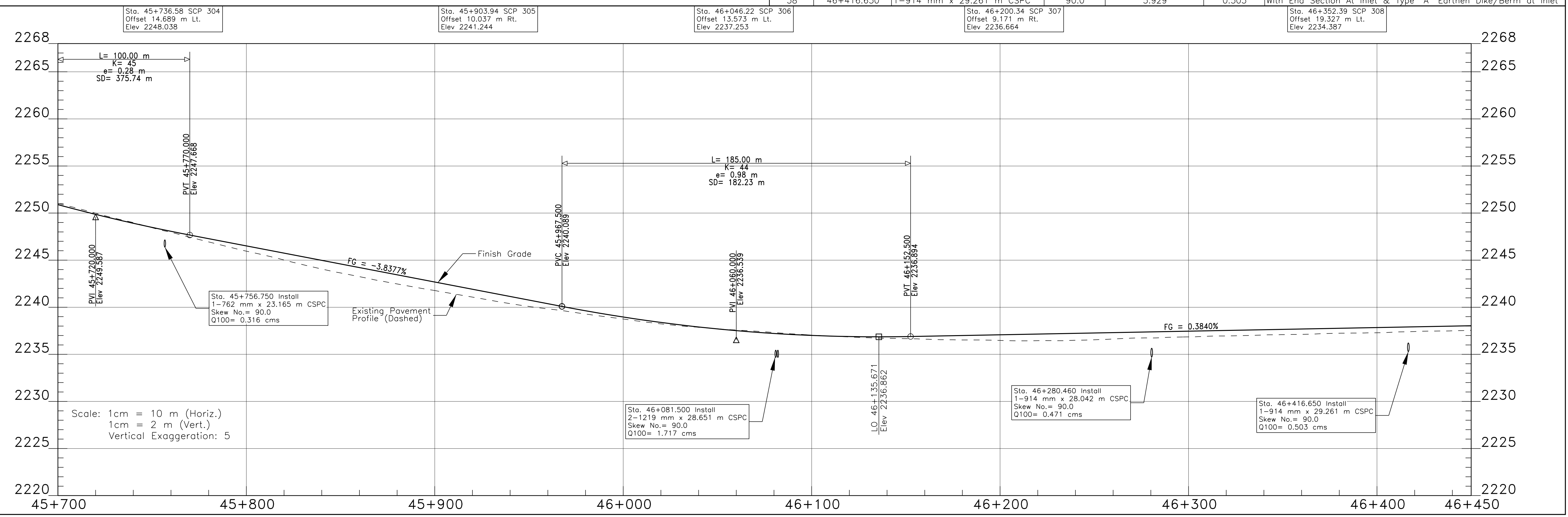
Sta. 46+160.00, Rt. Construct 4.5 m
Wide Turnout w/ 2-Unit Cattleguard,
Type 2 Gate & 1-610 mm x 12.19 m CSCP
& End Sections.

DELINEATORS		TYPE 2	RIGHT-OF-WAY	
TYPE "1a"	TYPE "1b"	OBJECT MARKER	MONUMENTS	MARKERS
0	3	8	0	0
				--NO SYMBOL--

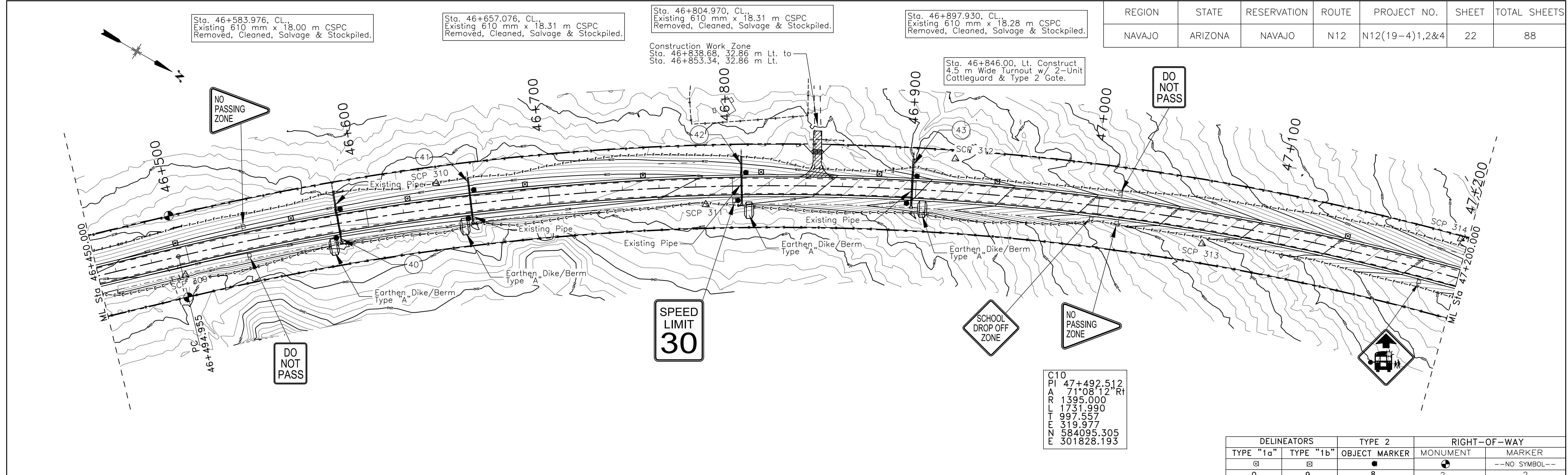
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Mark	Station	Structure	Skew No.	Drainage Area (ha)	Q100 (cms)	Remarks
34	45+756.750	1-762 mm x 23.165 m CSCP	90.0	3.584	0.316	With End Section At Inlet & Type "A" Earthen Dike/Berm at Inlet
35	46+081.500	2-1219 mm x 28.651 m CSCP	90.0	28.938	1.717	With End Section At Inlet
36	46+160.000	1-610 mm x 12.190 m CSCP	90.0	n/a	n/a	CSCP Under T/O w/ 2-End Sections For Relief Pipe Only
37	46+280.460	1-914 mm x 28.042 m CSCP	90.0	5.957	0.471	With End Section At Inlet & Type "A" Earthen Dike/Berm at Inlet
38	46+416.650	1-914 mm x 29.261 m CSCP	90.0	5.929	0.503	With End Section At Inlet & Type "A" Earthen Dike/Berm at Inlet



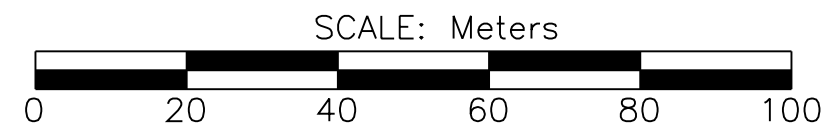
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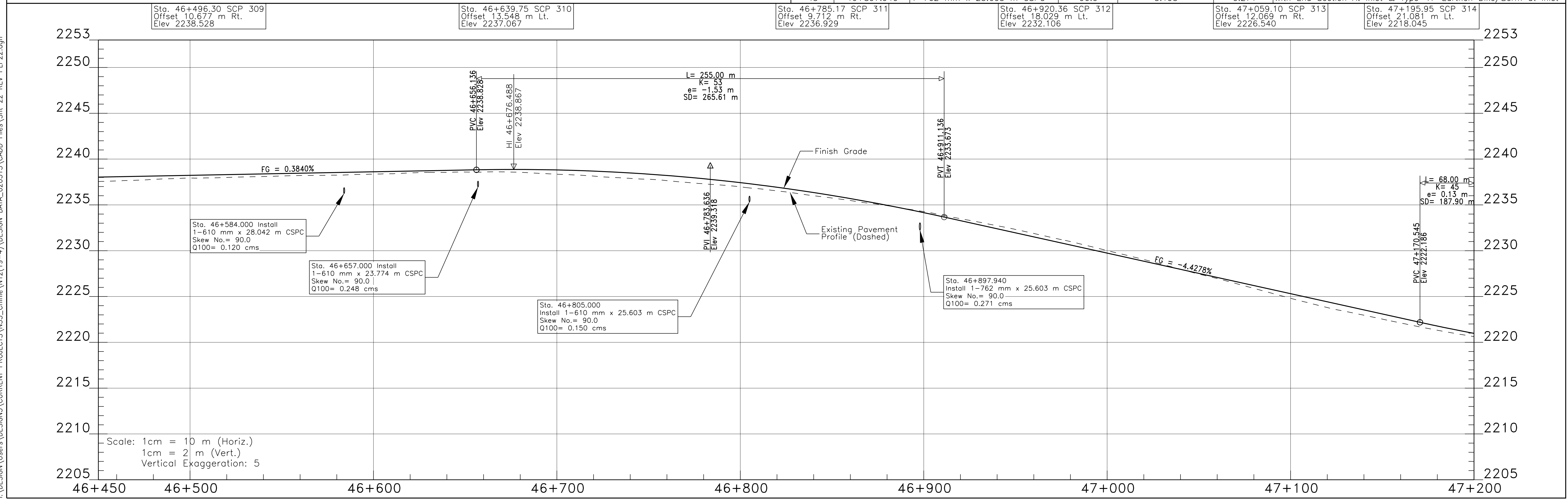
C10
 PI 47+492.512
 A 71°08'12" Rt
 R 1395.000
 L 1731.990
 T 997.557
 E 319.977
 N 584095.305
 E 301828.193

DELINEATORS		TYPE 2	RIGHT-OF-WAY	
TYPE "1a"	TYPE "1b"	OBJECT MARKER	MONUMENT	MARKER
0	0	8	2	--NO SYMBOL--
0	9	8	2	2

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 10:21 am, Nov 23, 2018



Mark	Station	Structure	Skew No.	Drainage Area (ha)	Q100 (cms)	Remarks
40	46+584.000	1-610 mm x 28.042 m CSCP	90.0	1.185	0.120	With End Section At Inlet & Type "A" Earthen Dike/Berm at Inlet
41	46+657.000	1-610 mm x 23.774 m CSCP	90.0	2.420	0.248	With End Section At Inlet & Type "A" Earthen Dike/Berm at Inlet
42	46+805.000	1-610 mm x 25.603 m CSCP	90.0	1.570	0.150	With End Section At Inlet & Type "A" Earthen Dike/Berm at Inlet
43	46+897.940	1-762 mm x 25.603 m CSCP	90.0	3.193	0.271	With End Section At Inlet & Type "A" Earthen Dike/Berm at Inlet



Scale: 1cm = 10 m (Horiz.)
 1cm = 2 m (Vert.)
 Vertical Exaggeration: 5

Sta. 47+203.930, CL., Existing 610 mm x 18.31 m CSPC Removed, Cleaned, Salvage & Stockpiled.

Sta. 47+413.797, CL., Existing 610 mm x 18.15 m CSPC Removed, Cleaned, Salvage & Stockpiled.

Sta. 47+470.00, Lt. Construct 4.5 m Wide Turnout w/ 2-Unit Cattleguard & Type 2 Gate.

Sta. 47+549.792, CL., Existing 610 mm x 17.48 m CSPC Removed, Cleaned, Salvage & Stockpiled.

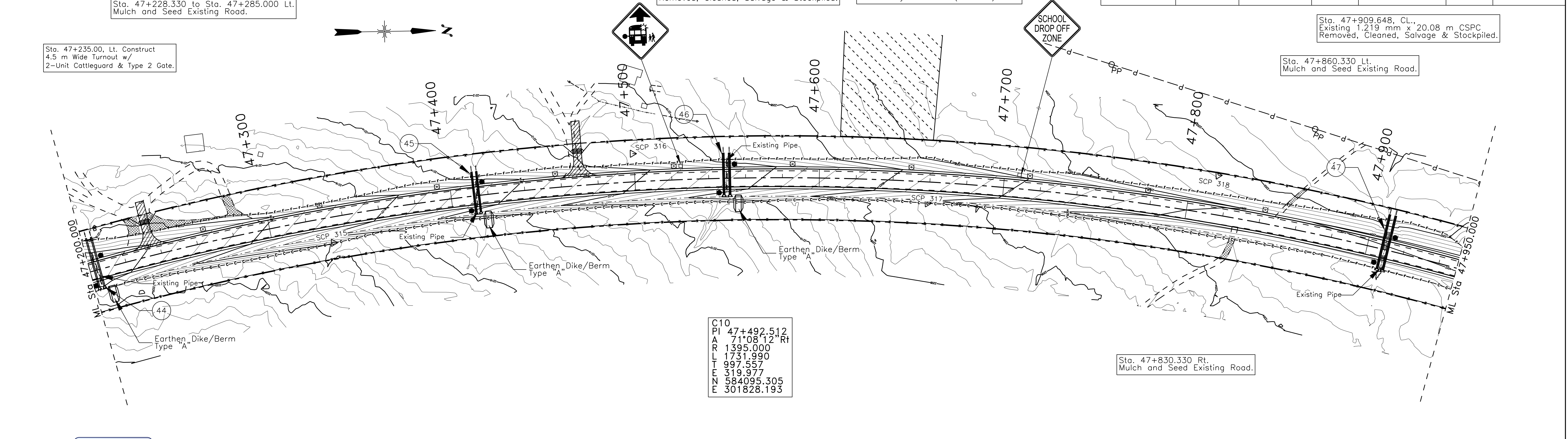
Sta. 47+610.00 to 47+660.00, Lt. Outside the Right-Of-Way Stockpile All Merchantable Timber for Community Firewood. (0.41 ha)

Sta. 47+909.648, CL., Existing 1.219 mm x 20.08 m CSPC Removed, Cleaned, Salvage & Stockpiled.

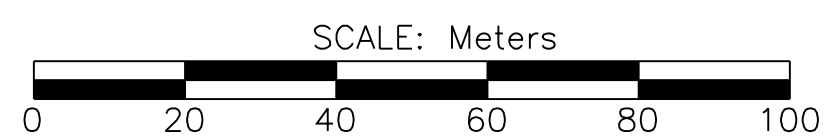
Sta. 47+228.330 to Sta. 47+285.000 Lt. Mulch and Seed Existing Road.

Sta. 47+860.330 Lt. Mulch and Seed Existing Road.

Sta. 47+235.00, Lt. Construct 4.5 m Wide Turnout w/ 2-Unit Cattleguard & Type 2 Gate.



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10:21 am, Nov 23, 2018



DRAINAGE STRUCTURE TABLE

Mark	Station	Structure	Skew No.	Drainage Area (ha)	Q100 (cms)	Remarks
44	47+203.950	2-762 mm x 27.432 m CSPC	90.0	7.795	0.743	With End Section At Inlet & Type "A" Earthen Dike/Berm at Inlet
45	47+413.760	2-889 mm S x 610 mm R x 21.946 m CSPA	90.0	5.547	0.588	With End Section At Inlet & Type "A" Earthen Dike/Berm at Inlet
46	47+549.770	2-1067 mm S x 737 mm R x 22.555 m CSPA	90.0	9.171	0.972	With End Section At Inlet & Type "A" Earthen Dike/Berm at Inlet
47	47+909.650	2-1067 mm S x 737 mm R x 29.870 m CSPA	90.0	16.488	0.908	With End Section At Inlet & Type "A" Earthen Dike/Berm at Inlet

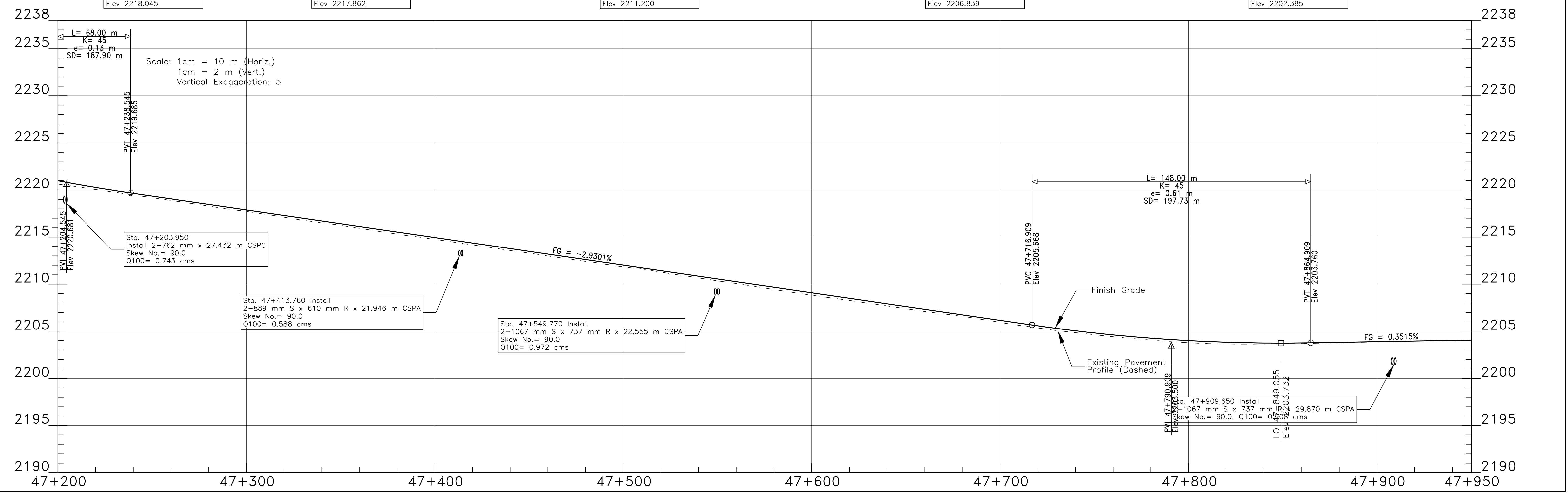
Sta. 47+195.95 SCP 314
Offset 21.081 m Lt.
Elev 2218.045

Sta. 47+332.82 SCP 315
Offset 13.893 m Rt.
Elev 2217.862

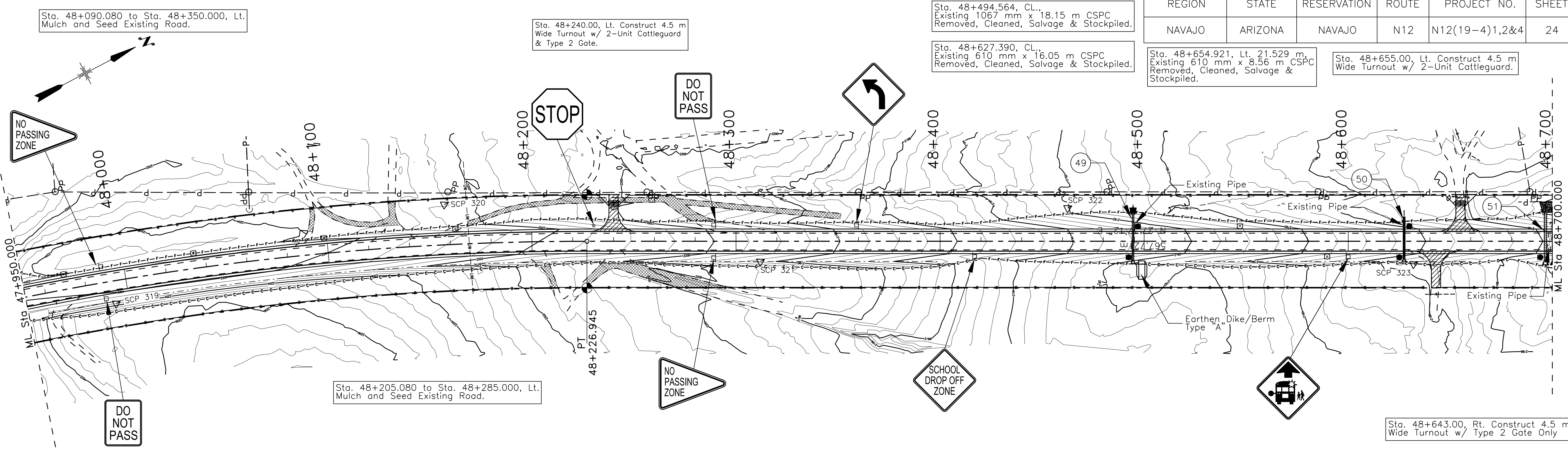
Sta. 47+499.44 SCP 316
Offset 15.315 m Lt.
Elev 2211.200

Sta. 47+659.31 SCP 317
Offset 11.570 m Rt.
Elev 2206.839

Sta. 47+813.84 SCP 318
Offset 21.273 m Lt.
Elev 2202.385

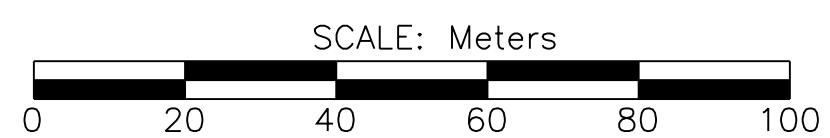


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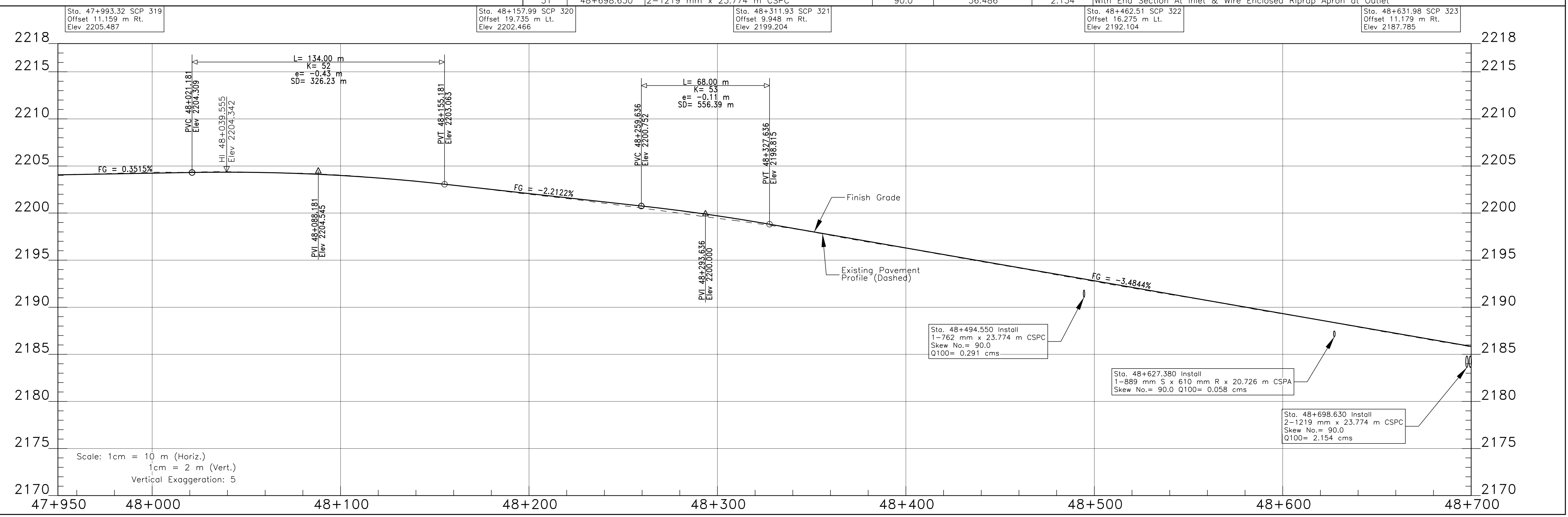


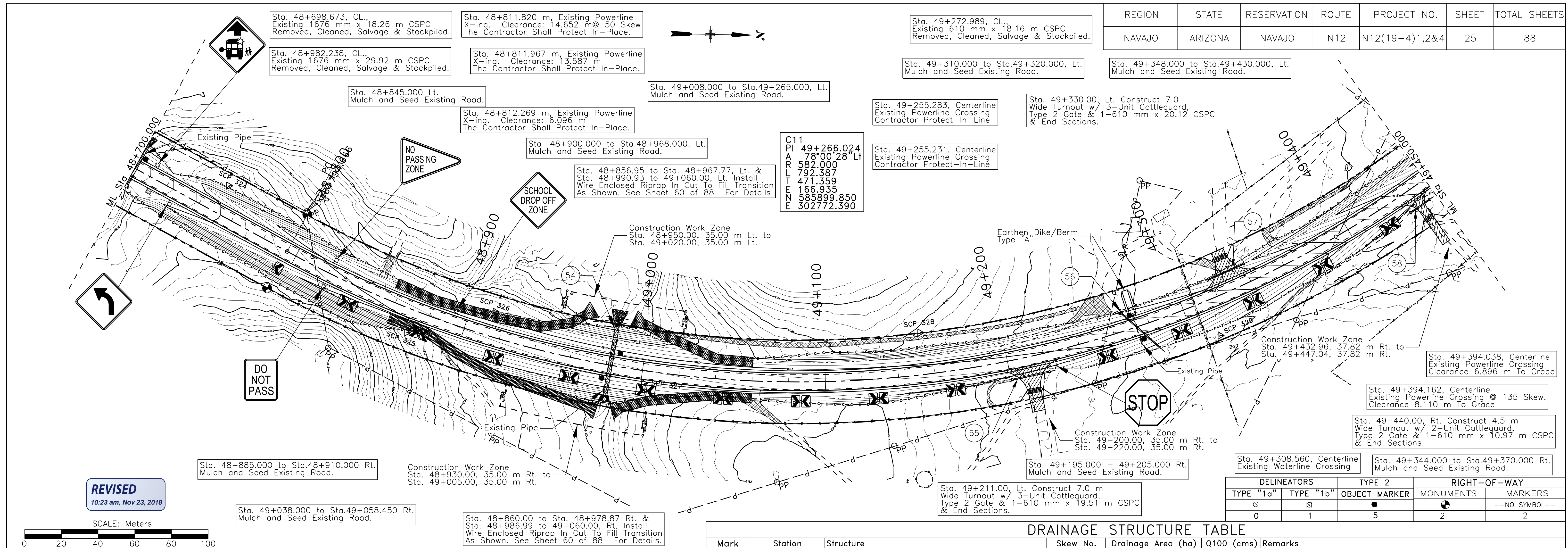
DELINEATORS		TYPE 2	RIGHT-OF-WAY	
TYPE "1a"	TYPE "1b"	OBJECT MARKER	MONUMENTS	MARKERS
0	6	4	2	--NO SYMBOL--
				2

REVISED
10:21 am, Nov 23, 2018

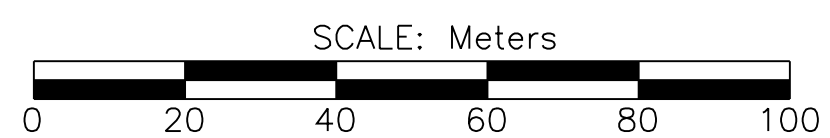


Mark	Station	Structure	Skew No.	Drainage Area (ha)	Q100 (cms)	Remarks
49	48+494.550	1-762 mm x 23.774 m CSPC	90.0	5.565	0.291	With End Section At Inlet, Type "A" Earthen Dike/Berm at Inlet & Placed Riprap Stilling Basin at Outlet
50	48+627.380	1-889 mm R x 610 mm x 20.726 m CSPA	90.0	0.551	0.058	With End Section At Inlet, Irrigation Pipe
51	48+698.630	2-1219 mm x 23.774 m CSPC	90.0	56.486	2.154	With End Section At Inlet & Wire Enclosed Riprap Apron at Outlet



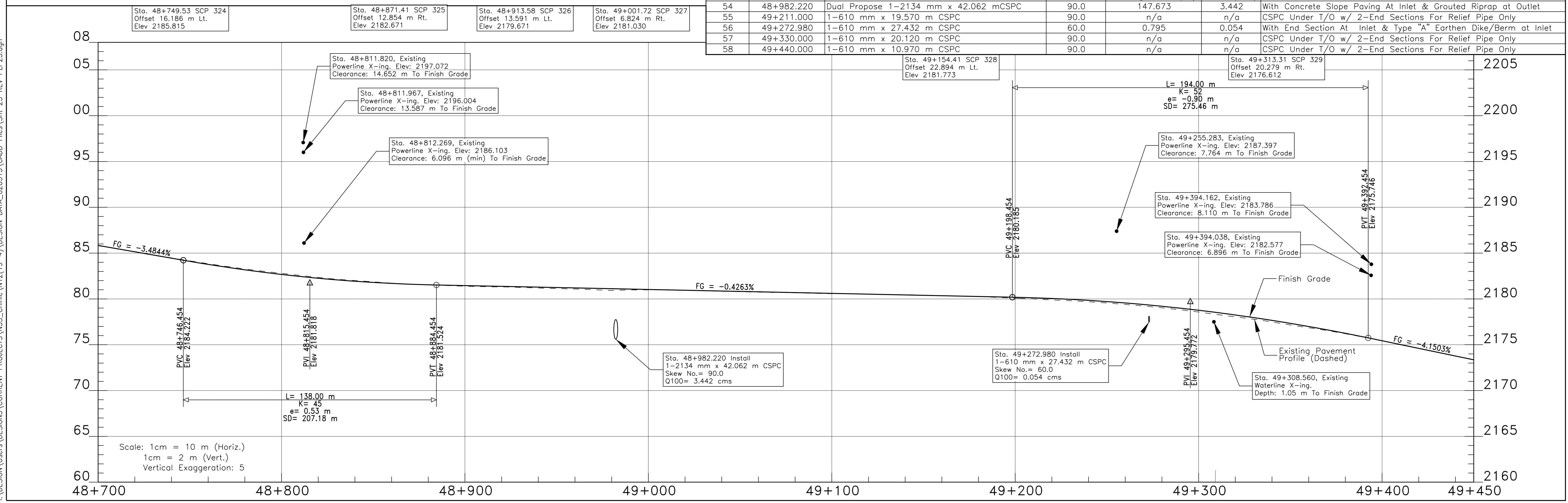


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10:23 am, Nov 23, 2018



DELINEATORS		TYPE 2	RIGHT-OF-WAY	
TYPE "1a"	TYPE "1b"	OBJECT MARKER	MONUMENTS	MARKERS
⊖	⊖	●	⊙	--NO SYMBOL--
0	1	5	2	2

Mark	Station	Structure	Skew No.	Drainage Area (ha)	Q100 (cms)	Remarks
54	48+982.220	Dual Propose 1-2134 mm x 42.062 m CSCP	90.0	147.673	3.442	With Concrete Slope Paving At Inlet & Grouted Riprap at Outlet
55	49+211.000	1-610 mm x 19.570 m CSCP	90.0	n/a	n/a	CSCP Under T/O w/ 2-End Sections For Relief Pipe Only
56	49+272.980	1-610 mm x 27.432 m CSCP	60.0	0.795	0.054	With End Section At Inlet & Type "A" Earthen Dike/Berm at Inlet
57	49+330.000	1-610 mm x 20.120 m CSCP	90.0	n/a	n/a	CSCP Under T/O w/ 2-End Sections For Relief Pipe Only
58	49+440.000	1-610 mm x 10.970 m CSCP	90.0	n/a	n/a	CSCP Under T/O w/ 2-End Sections For Relief Pipe Only



Scale: 1cm = 10 m (Horiz.)
1cm = 2 m (Vert.)
Vertical Exaggeration: 5

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REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	26	88

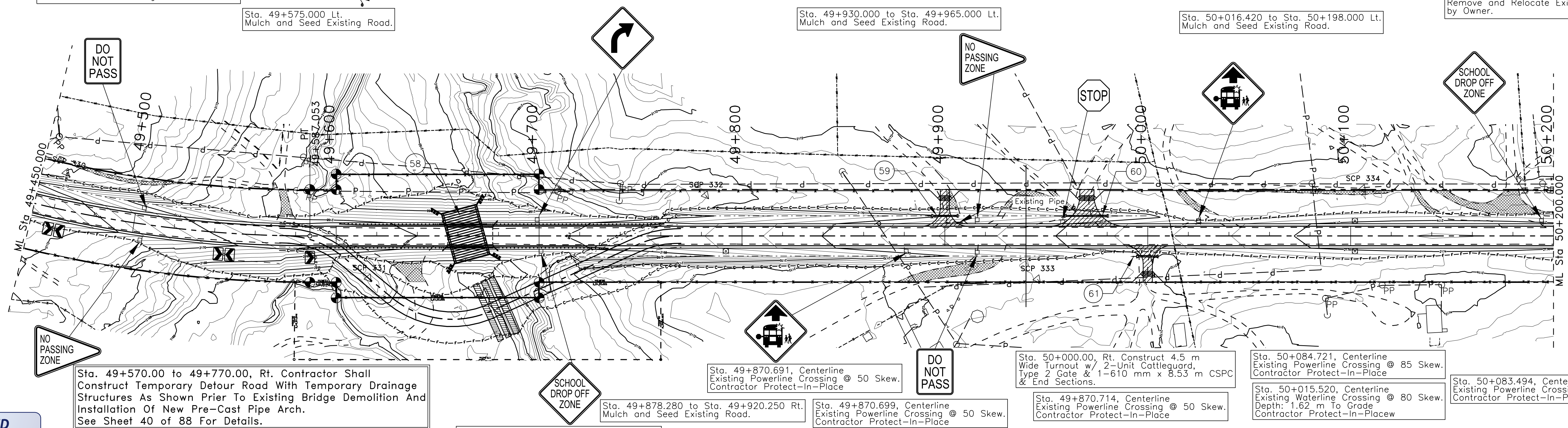
Sta. 49+494.00 To 49+534.00, Contractor Shall Install Temporary Fence At 17 m Left of Centerline To Protect Arch Site During Construction.

Sta. 49+644.04, CL Construct 1-17.37 m S x 3.25 m R x 26.82 m Precast Concrete Arch Pipe. Skew No. 75 See Sheet 75 to 88 For Arch Pipe Construction Details. Existing Bridge To Be Demolished. See Sheet 40 of 88 For Detour Plan.

Sta. 49+904.35, 6.82 m Lt. Existing 254 mm x 8.34 m CSPC Removed, Cleaned, Salvage & Stockpiled.

Sta. 49+970.00, Lt. Construct 7.0 m Wide Turnout w/ 3-Unit Cattleguard, Type 2 Gate & 1-610 mm x 19.51 m CSPC & End Sections.

Sta. 50+185.240 to Sta. 50+200.00, Lt. Remove and Relocate Existing Waterline by Owner.



Sta. 49+570.00 to 49+770.00, Rt. Contractor Shall Construct Temporary Detour Road With Temporary Drainage Structures As Shown Prior To Existing Bridge Demolition And Installation Of New Pre-Cast Pipe Arch. See Sheet 40 of 88 For Details.

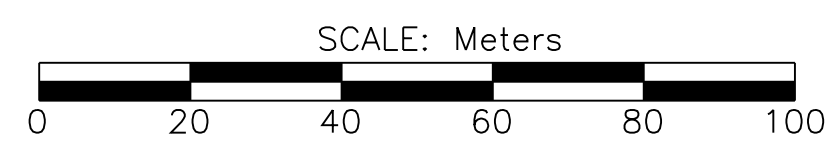
Sta. 49+870.691, Centerline Existing Powerline Crossing @ 50 Skew. Contractor Protect-In-Place

Sta. 50+000.00, Rt. Construct 4.5 m Wide Turnout w/ 2-Unit Cattleguard, Type 2 Gate & 1-610 mm x 8.53 m CSPC & End Sections.

Sta. 50+084.721, Centerline Existing Powerline Crossing @ 85 Skew. Contractor Protect-In-Place

Sta. 50+083.494, Centerline Existing Powerline Crossing @ 85 Skew. Contractor Protect-In-Place

REVISED
10:23 am, Nov 23, 2018



DELINEATORS		TYPE 2	RIGHT-OF-WAY	
TYPE "1a"	TYPE "1b"	OBJECT MARKER	MONUMENTS	MARKERS
0	3	0	10	10

Mark	Station	Structure	Skew No.	Drainage Area (ha)	Q25 (cms)	Q100 (cms)	Remarks
58	49+667.660	1-17.37 m S x 3.25 m R x 26.82 m PC CPA	75.0	12,846.341	191.564		With Pre-Cast Wing Walls & Footing @ Inlet & Outlet
59	49+900.000	1-610 mm x 10.97 m CSPC	90.0	0.736		0.082	CSPC Under T/O w/ 2-End Sections
60	49+970.000	1-610 mm x 19.51 m CSPC	90.0				CSPC Under T/O w/ 2-End Sections
61	50+000.000	1-610 mm x 8.53 m CSPC	90.0	0.418		0.026	CSPC Under T/O w/ 2-End Sections

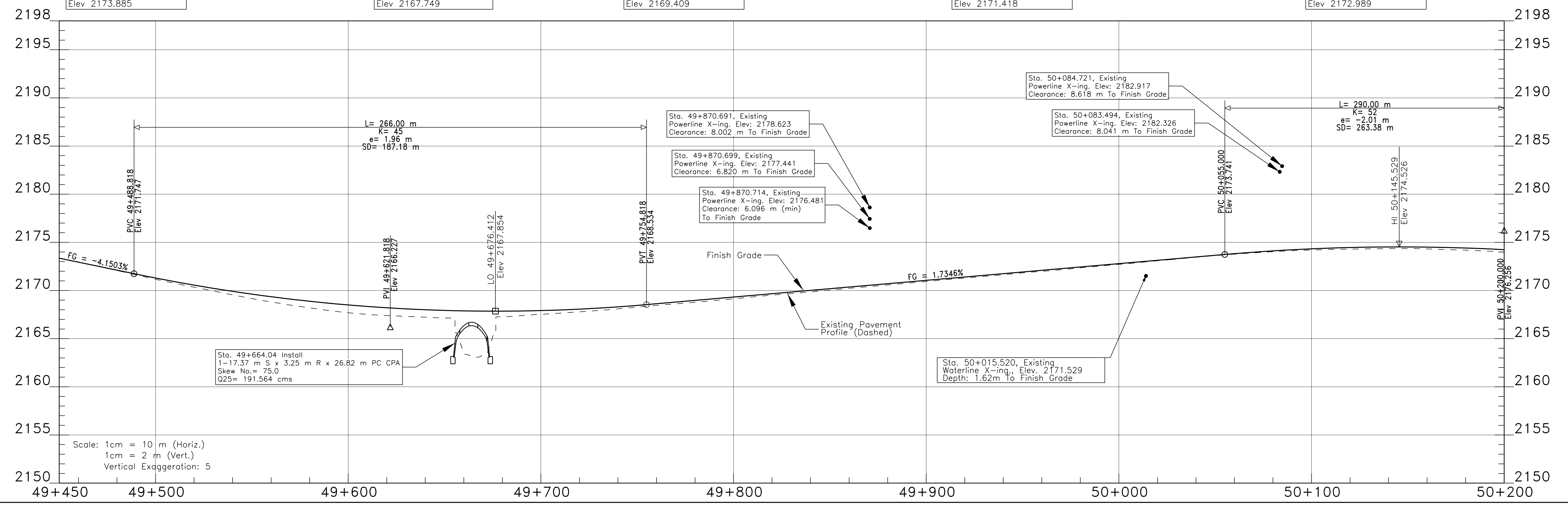
Sta. 49+462.14 SCP 330
Offset 18.261 m Lt.
Elev 2173.885

Sta. 49+615.92 SCP 331
Offset 20.857 m Rt.
Elev 2167.749

Sta. 49+782.13 SCP 332
Offset 20.027 m Lt.
Elev 2169.409

Sta. 49+945.57 SCP 333
Offset 21.246 m Rt.
Elev 2171.418

Sta. 50+105.94 SCP 334
Offset 23.144 m Lt.
Elev 2172.989



Scale: 1cm = 10 m (Horiz.)
1cm = 2 m (Vert.)
Vertical Exaggeration: 5

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Sta. 50+200.000 to Sta. 50+315,000 Lt. Mulch and Seed Existing Road.

Sta. 50+324.037, CL. Existing 610 mm x 17.56 m CSPC Removed, Cleaned, Salvage & Stockpiled.

Sta. 50+477.100 to Sta. 50+485,220 Lt. Mulch and Seed Existing Road.

Sta. 50+566.514, CL. Existing 610 mm x 19.91 m CSPC Removed, Cleaned, Salvage & Stockpiled.

Sta. 50+200.100 to Sta. 50+742,220 Lt. Remove and relocate Existing Waterline by owner.

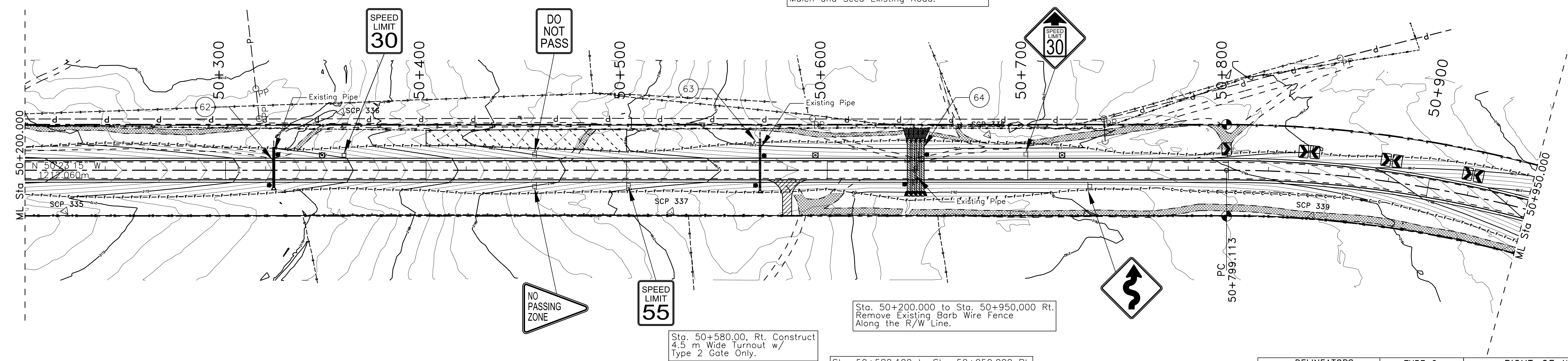
Sta. 50+644.117, CL. Existing 1829 mm x 17.22 m CSPC Removed, Cleaned, Salvage & Stockpiled.

Sta. 50+200.000 to Sta. 50+950,000 Rt. Remove Existing Barb Wire Fence Along the R/W Line.

Sta. 50+400.00 to Sta. 50+500.00 Lt. Tree & Shrub Slash Stockpile Area. (0.10 ha)

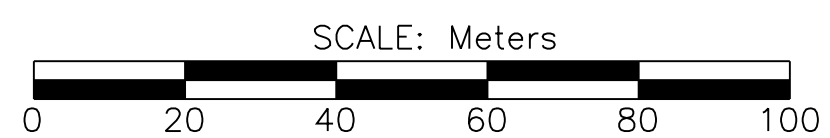
Sta. 50+562.100 to Sta. 50+810,220 Lt. Mulch and Seed Existing Road.

Sta. 50+620.000 to Sta. 50+724,000 Lt. Remove Existing Barb Wire Fence Along the R/W Line.

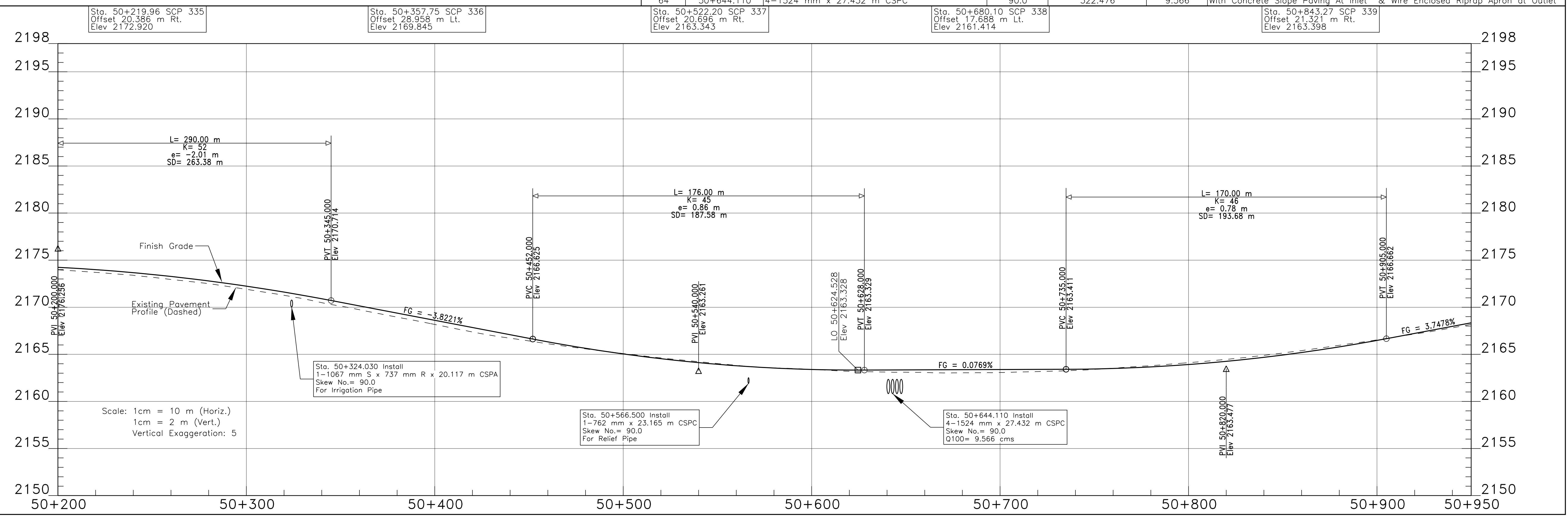


DELINEATORS		TYPE 2	RIGHT-OF-WAY	
TYPE "1a"	TYPE "1b"	OBJECT MARKER	MONUMENTS	MARKERS
0	3	6	2	--NO SYMBOL--
				2

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Mark	Station	Structure	Skew No.	Drainage Area (ha)	Q100 (cms)	Remarks
62	50+324.030	1-1067 mm S x 737 mm R x 20.117 m CSPA	90.0	n/a	n/a	With End Section At Inlet, Daylight with Irrigation Canal
63	50+566.500	1-762 mm x 23.165 m CSPC	90.0	n/a	n/a	With End Section At Inlet, For Relief Pipe Only
64	50+644.110	4-1524 mm x 27.432 m CSPC	90.0	322.476	9.566	With Concrete Slope Paving At Inlet & Wire Enclosed Riprap Apron at Outlet



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Sta. 50+967.12, CL., Existing 610 mm x 27.08 m CSPC Removed, Cleaned, Salvage & Stockpiled.

Sta. 51+040.00, Lt. Construct 7.0 m Wide Turnout w/ 3-Unit Cattleguard, Type 2 Gate & 1-610 mm x 16.46 m CSPC & End Sections.

Sta. 51+265.00, Lt. Construct 4.5 m Wide Turnout w/ 2-Unit Cattleguard, Type 2 Gate & 1-610 mm x 12.19 m CSPC & End Sections.

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	28	88

Sta. 50+985.35 to 51+030.81, Lt. Install Wire Enclosed Riprap in Cut-Fill Transition As Shown. See Sheet 60 of 88 For Details.

Sta. 51+039.906, Lt. 16.323 m, Existing 762 mm x 18.37 m CSPC Removed, Cleaned, Salvage & Stockpiled.

Sta. 51+060.00 to 51+650.00, Lt. Install Check Dam As Shown in V-Ditch. See Sheet 61 of 88 For Details, Location & Quantity Table

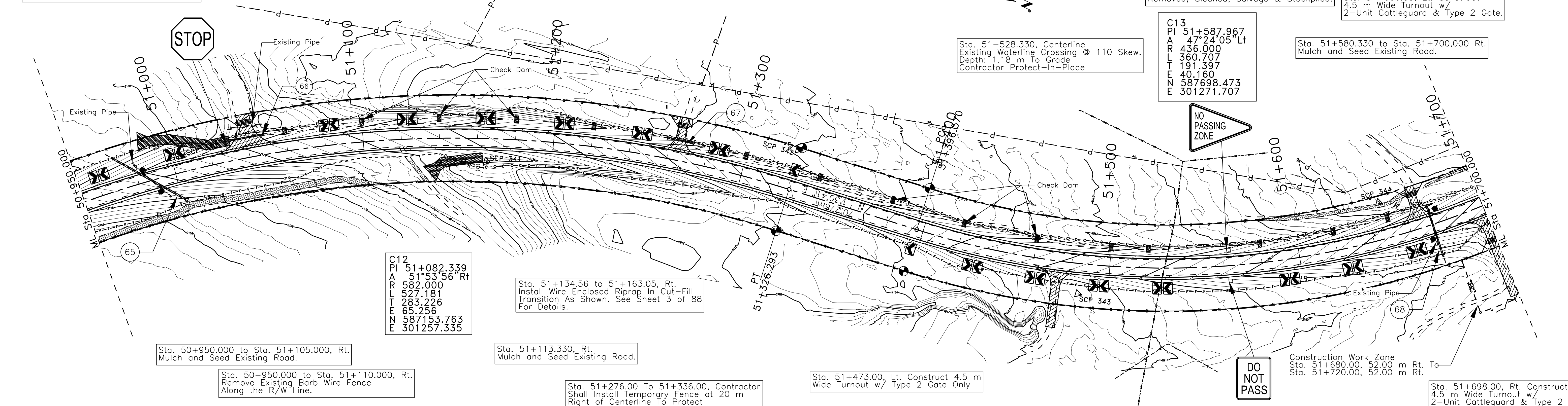
Sta. 51+672.015, CL., Existing 610 mm x 19.51 m CSPC Removed, Cleaned, Salvage & Stockpiled.

Sta. 51+666.00, Lt. Construct 4.5 m Wide Turnout w/ 2-Unit Cattleguard & Type 2 Gate.

C13
PI 51+587.967
A 47°24'05" Lt
R 436.000
L 360.707
T 191.397
E 40.160
N 587698.473
E 301271.707

Sta. 51+528.330, Centerline Existing Waterline Crossing @ 110 Skew. Depth: 1.18 m To Grade Contractor Protect-In-Place

Sta. 51+580.330 to Sta. 51+700.000 Rt. Mulch and Seed Existing Road.



C12
PI 51+082.339
A 51°53'56" Rt
R 582.000
L 527.181
T 283.226
E 65.256
N 587153.763
E 301257.335

Sta. 51+134.56 to 51+163.05, Rt. Install Wire Enclosed Riprap in Cut-Fill Transition As Shown. See Sheet 3 of 88 For Details.

Sta. 50+950.000 to Sta. 51+105.000, Rt. Mulch and Seed Existing Road.

Sta. 51+113.330, Rt. Mulch and Seed Existing Road.

Sta. 50+950.000 to Sta. 51+110.000, Rt. Remove Existing Barb Wire Fence Along the R/W Line.

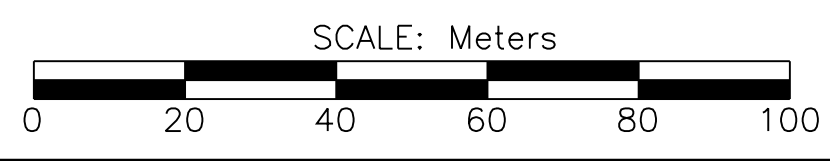
Sta. 51+276.00 To 51+336.00, Contractor Shall Install Temporary Fence at 20 m Right of Centerline To Protect Arch Site During Construction

Sta. 51+473.00, Lt. Construct 4.5 m Wide Turnout w/ Type 2 Gate Only

Construction Work Zone Sta. 51+680.00, 52.00 m Rt. To Sta. 51+720.00, 52.00 m Rt.

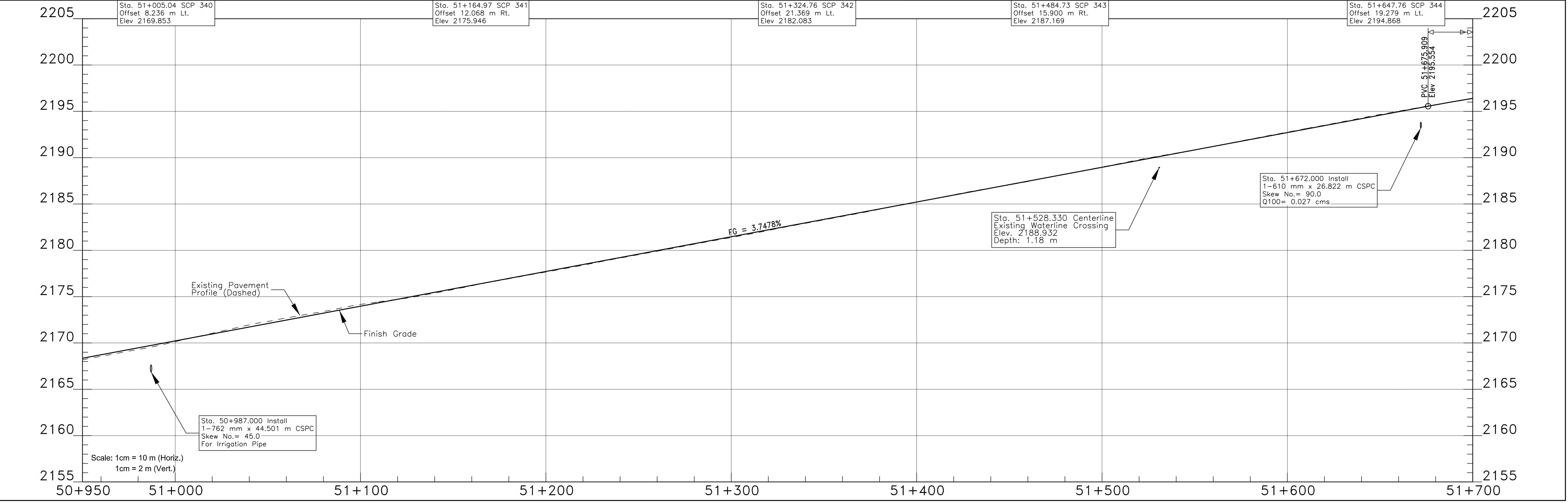
Sta. 51+698.00, Rt. Construct 4.5 m Wide Turnout w/ 2-Unit Cattleguard & Type 2 Gate.

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DRAINAGE STRUCTURE TABLE

DELINEATORS		TYPE 2	RIGHT-OF-WAY		Mark	Station	Structure	Skew No.	Drainage Area (ha)	Q100 (cms)	Remarks
TYPE "1a"	TYPE "1b"	OBJECT MARKER	MONUMENTS	MARKERS							
0	0	4	4	--NO SYMBOL--	65	50+987.000	1-762 mm x 44.501 m CSPC	45.0	n/a	n/a	With End Section at Inlet, Irrigation pipe
					66	51+040.000	1-610 mm x 16.460 m CSPC	90.0	1.014	0.063	CSPC Under T/O w/ 2-End Sections
					67	51+265.000	1-610 mm x 12.190 m CSPC	90.0	0.683	0.042	CSPC Under T/O w/ 2-End Sections
					68	51+672.000	1-610 mm x 28.822 m CSPC	90.0	1.164	0.027	With End Section at Inlet



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REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	29	88

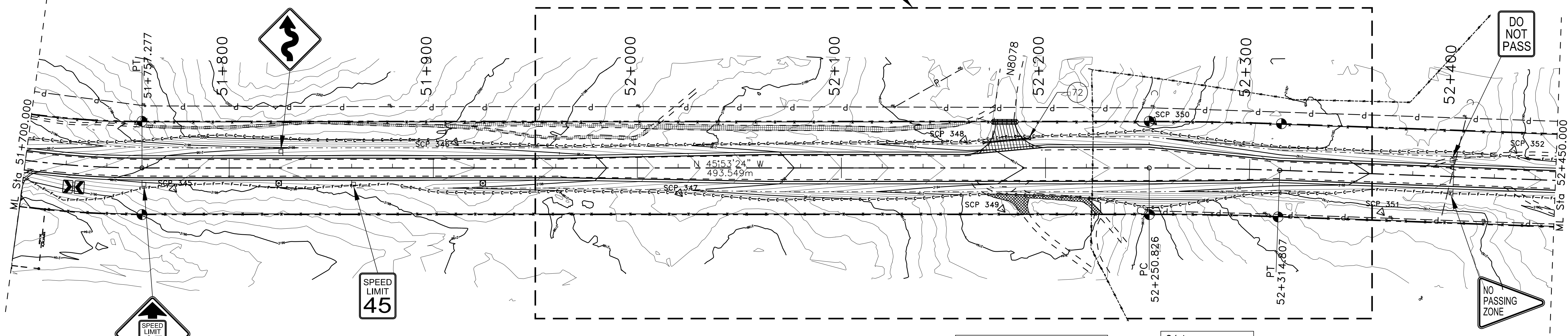
See Sheet 42 Of 88 For Permanent Traffic Control Sign Layout, Pavement Widening, Markings And Turning Lane Detail From Sta. 51+950.00 To 52+360.00

Sta. 52+180.00, Lt. (N8078-Dine College) Construct Turnout 9.10 m Wide w/4-Unit Cattleguard, w/ 1-610 mm x 21.34 m CSPC & End Sections.

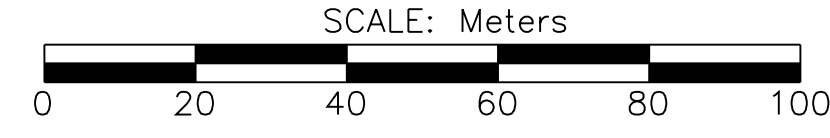
Sta. 52+398.274, Centerline Existing Powerline Crossing @ 109 Skew. Contractor Protect-In-Place

Sta. 52+399.780, Centerline Existing Powerline Crossing @ 109 Skew. Contractor Protect-In-Place

Sta. 51+700.000 to Sta. 52+165.000, Lt. Mulch and Seed Existing Road.



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Sta. 52+160.00 to 52+190.00 Rt. Obiterate Old Roadway.

Sta. 52+224.124 Centerline Existing Waterline Crossing. Depth: 1.12 m To Grace Contractor Protect-In-Place

C14
PI 52+282.820
RA 2°05'50" Rt
LR 1748.000
L 63.981
E 31.994
T 0.293
E 588197.491
E 300756.941

DELINEATORS		TYPE 2	RIGHT-OF-WAY	
TYPE "1a"	TYPE "1b"	OBJECT MARKER	MONUMENTS	MARKERS
0	2	0	6	--NO SYMBOL-- 6

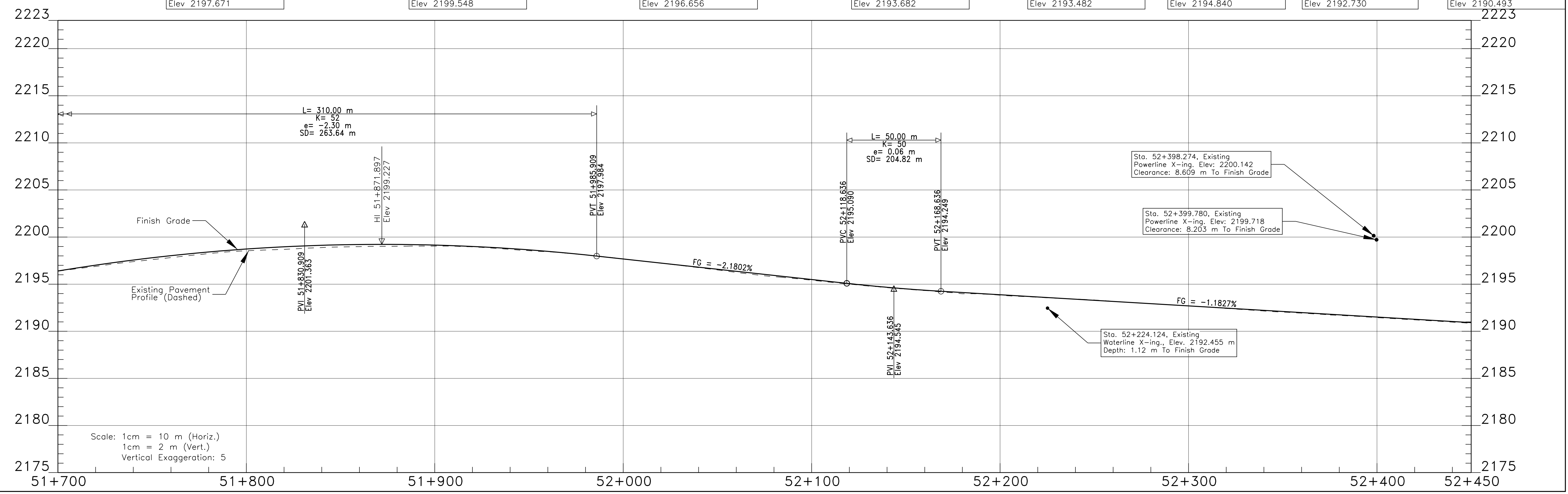
DRAINAGE STRUCTURE TABLE

Mark	Station	Structure	Skew No.	Drainage Area (ha)	Q100 (cms)	Remarks
72	52+180.000	1-610 mm x 21.34 m CSPC	90.0	0.519	0.032	CSPC Under T/O w/2-End Sections at Inlet & Outlet
	52+160.20	SCP 348				Sta. 52+160.20 SCP 348 Offset 13.759 m Lt. Elev 2193.682
	52+178.65	SCP 349				Sta. 52+178.65 SCP 349 Offset 20.127 m Rt. Elev 2193.482
	52+252.83	SCP 350				Sta. 52+252.83 SCP 350 Offset 22.850 m Lt. Elev 2194.840
	52+365.23	SCP 351				Sta. 52+365.23 SCP 351 Offset 18.655 m Rt. Elev 2192.730
	52+429.01	SCP 352				Sta. 52+429.01 SCP 352 Offset 14.102 m Lt. Elev 2190.493

Sta. 51+772.67 SCP 345
Offset 10.277 m Rt.
Elev 2197.671

Sta. 51+910.70 SCP 346
Offset 12.535 m Lt.
Elev 2199.548

Sta. 52+020.55 SCP 347
Offset 12.382 m Rt.
Elev 2196.656



Scale: 1cm = 10 m (Horiz.)
1cm = 2 m (Vert.)
Vertical Exaggeration: 5

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REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	30	88

C15
 PI 53+172.332
 A 11°03'11" Lt
 R 1745.000
 L 336.629
 T 168.838
 E 8.149
 F 588839.588
 Z 300141.347

Sta. 53+118.00, Lt. Construct
 4.5 m Wide Turnout w/
 2-Unit Cattleguard, Type 2 Gate
 & 1-610 mm x 9.14 m CSCP
 w/ End Sections.

Sta. 53+118.244, Lt. 14.50 m
 Existing 610 mm x 7.86 m CSCP
 Removed, Cleaned, Salvage & Stockpiled.
 Sta. 53+175.601, CL.
 Existing 610 mm x 16.59 m CSCP
 Removed, Cleaned, Salvage & Stockpiled.

Sta. 52+450.000 to Sta. 52+758.000 Lt.
 Mulch and Seed Existing Road.

Sta. 52+784.253, CL.
 Existing 1524 mm x 34.04 m CSCP
 Removed, Cleaned, Salvage & Stockpiled.

Sta. 52+813.000, Lt. Construct
 4.5 m Wide Turnout w/
 2-Unit Cattleguard & Type 2 Gate.

Sta. 53+084.897, Centerline
 Existing Powerline Crossing
 Clearance 7.148 m To Finish Grade
 Contractor Protect-In-Place

Sta. 50+640.000 to Sta. 52+820.000, Lt.
 Remove Existing Barb Wire Fence
 Along the R/W Line.

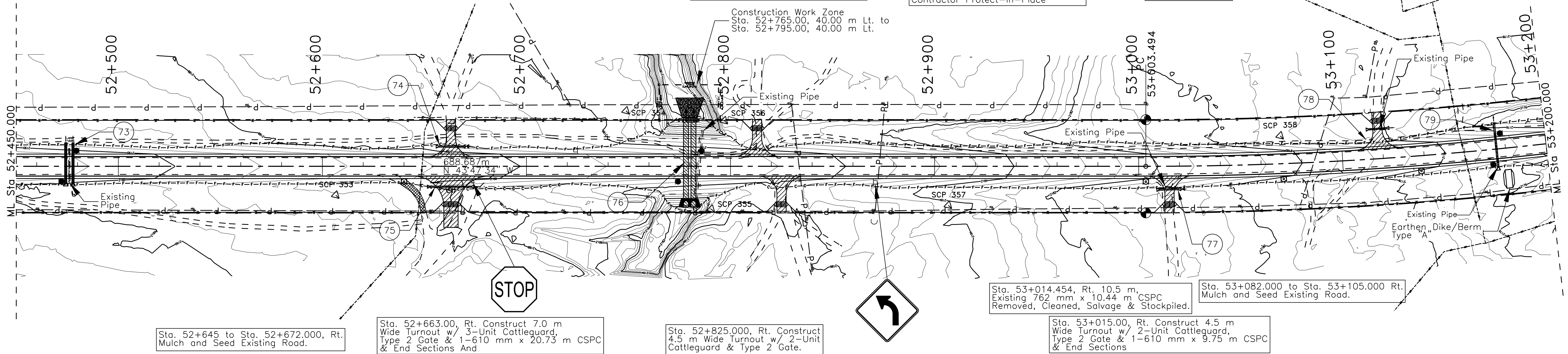
Sta. 52+833.611, Centerline
 Existing Powerline Crossing
 Clearance 8.518 m To Finish Grade
 Contractor Protect-In-Place

Sta. 52+828.000 to Sta. 52+873.000 Lt.
 Mulch and Seed Existing Road.
 Sta. 53+086.558, Centerline
 Existing Powerline Crossing
 Clearance 6.495 m To Finish Grade
 Contractor Protect-In-Place

Sta. 52+476.017 CL.
 Existing 610 mm x 16.83 m CSCP
 Removed, Cleaned, Salvage & Stockpiled.

Sta. 52+663.00, Lt. Construct
 4.5 m Wide Turnout w/ 2-Unit Cattleguard,
 Type 2 Gate & 1-610 mm x 12.19 m CSCP
 w/ End Sections.

Sta. 52+833.553, Centerline
 Existing Powerline Crossing
 Clearance 7.172 m To Finish Grade
 Contractor Protect-In-Place



Sta. 52+645 to Sta. 52+672.000, Rt.
 Mulch and Seed Existing Road.

Sta. 52+663.00, Rt. Construct 7.0 m
 Wide Turnout w/ 3-Unit Cattleguard,
 Type 2 Gate & 1-610 mm x 20.73 m CSCP
 & End Sections And

Sta. 52+825.000, Rt. Construct
 4.5 m Wide Turnout w/ 2-Unit
 Cattleguard & Type 2 Gate.

Sta. 53+014.454, Rt. 10.5 m,
 Existing 762 mm x 10.44 m CSCP
 Removed, Cleaned, Salvage & Stockpiled.

Sta. 53+082.000 to Sta. 53+105.000 Rt.
 Mulch and Seed Existing Road.

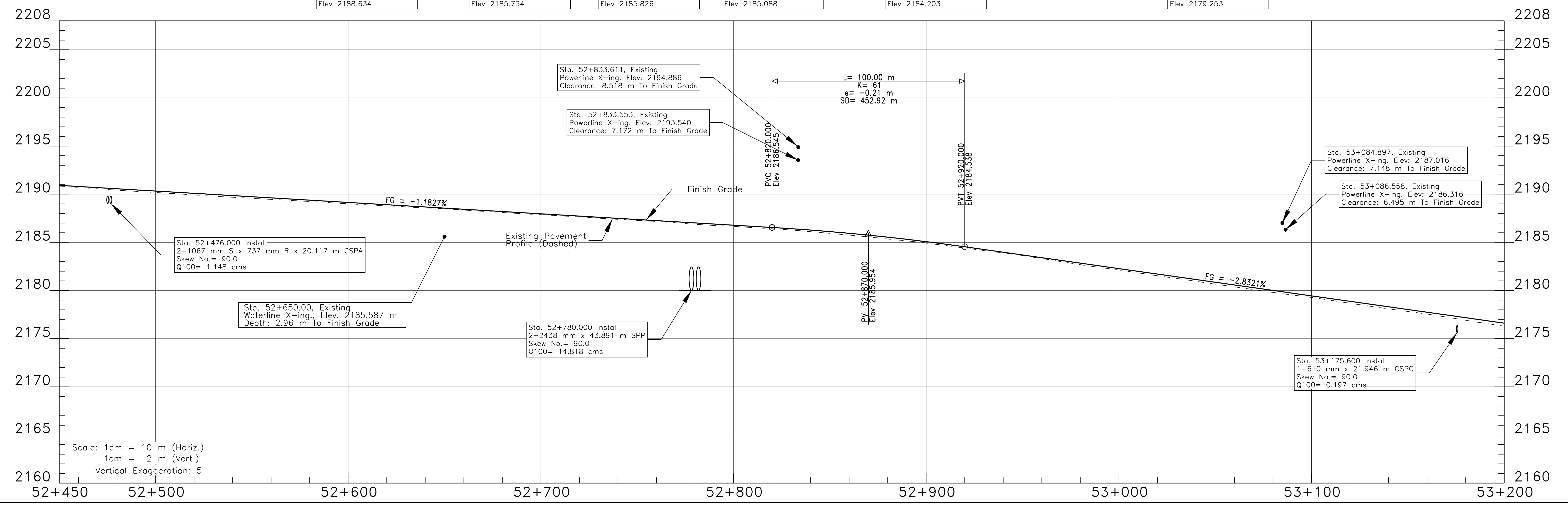
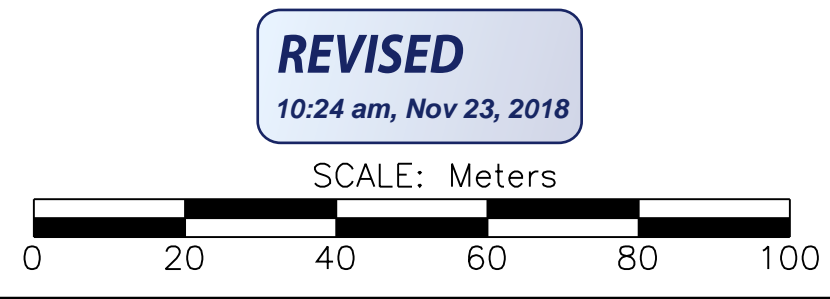
Sta. 53+015.00, Rt. Construct 4.5 m
 Wide Turnout w/ 2-Unit Cattleguard,
 Type 2 Gate & 1-610 mm x 9.75 m CSCP
 & End Sections

DRAINAGE STRUCTURE TABLE

Mark	Station	Structure	Skew No.	Drainage Area (ha)	Q100 (cms)	Remarks
73	52+476.000	2-1067 mm S x 737 mm R x 20.117 m CSPA	90.0	23.221	1.148	With End Section At Inlet
74	52+663.000	1-610 mm x 12.190 m CSCP	90.0	n/a	n/a	CSCP Under T/O w/ 2-End Section, For Relief Pipe Only
75	52+663.000	1-610 mm x 20.730 m CSCP	90.0	0.389	0.024	CSCP Under T/O w/ 2-End Section
76	52+780.000	2-2438 mm x 43.891 m Dual Propose SPP	90.0	953.687	14.818	With Concrete Slope Paving At Inlet Only & Grouted Riprap at Outlet
77	53+015.000	1-610 mm x 9.750 m CSCP	90.0	0.740	0.046	CSCP Under T/O w/ 2-End Section
78	53+118.000	1-610 mm x 9.140 m CSCP	90.0	0.648	0.040	CSCP Under T/O w/ 2-End Section
79	53+175.601	1-610 mm x 21.946 m CSCP	90.0	3.166	0.197	With End Section At Inlet & Type "A" Earthen Dike/Berm at Inlet

DELINEATORS		TYPE 2	RIGHT-OF-WAY	
TYPE "1a"	TYPE "1b"	OBJECT MARKER	MONUMENTS	MARKERS
0	4	6	2	2

Sta. 52+606.55 SCP 353 Offset 14.166 m Rt. Elev 2188.634	Sta. 52+748.78 SCP 354 Offset 27.197 m Lt. Elev 2185.734	Sta. 52+796.98 SCP 356 Offset 22.358 m Lt. Elev 2185.826	Sta. 52+790.60 SCP 355 Offset 21.027 m Rt. Elev 2185.088	Sta. 52+906.73 SCP 357 Offset 19.166 m Rt. Elev 2184.203	Sta. 53+069.86 SCP 358 Offset 13.686 m Lt. Elev 2179.253
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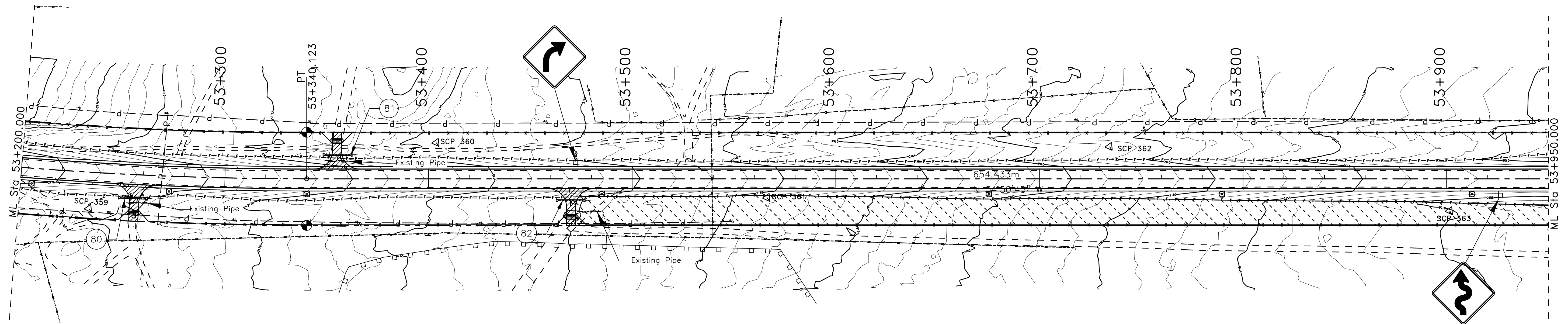
Sta. 53+268.130, Centerline
Existing Powerline Crossing
Clearance 6.074 m To Grade
Contractor Protect-In-Place

Sta. 53+354.502, Lt. 8.794 m
Existing 457 mm x 11.58 m CSCP
Removed, Cleaned, Salvage & Stockpiled.

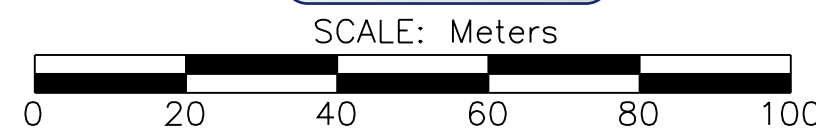
Sta. 53+269.803, Centerline
Existing Powerline Crossing
Clearance 6.096 m To Grade
Contractor Protect-In-Place

Sta. 53+355.00, Lt. Construct 4.5 m Wide
Turnout w/2-Unit Cattleguard, Type 2 Gate,
1-610 mm x 10.97 m CSCP & End Sections.

Sta. 53+280.000 to Sta. 53+580.000 Lt.
Mulch and Seed Existing Road.



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Sta. 53+257.167, 13.73 m Rt.
Existing 457 mm x 10.40 m CSCP
Removed, Cleaned, Salvage & Stockpiled.

Sta. 53+470.00, Rt. Construct 4.5 m Wide
Turnout w/ 2-Unit Cattleguard, Type 2 Gate,
1-610 mm x 12.19 m CSCP & End Sections.

Sta. 53+478.822, Rt. 16.040 m
Existing 457 mm x 12.12 m CSCP
Removed, Cleaned, Salvage & Stockpiled.

Sta. 53+540.00, Centerline
Existing Waterline Crossing
Depth: 1.99 m To Finish Grade
Contractor Protect-In-Place

Sta. 53+472.00 to 54+000.00, Rt. Tree &
Shrub Slash Stockpile Area. (0.66 ha)

DELINEATORS		TYPE 2		RIGHT-OF-WAY	
TYPE "1a"	TYPE "1b"	OBJECT MARKER	MONUMENTS	MARKERS	
0	7	0	2	--NO SYMBOL--	2

DRAINAGE STRUCTURE TABLE

Mark	Station	Structure	Skew No.	Drainage Area (ha)	Q100 (cms)	Remarks
80	53+256.000	1-610 mm x 9.750 m CSCP	90.0	1.018	0.063	CSCP Under T/O w/ 2-End Sections
81	53+355.000	1-610 mm x 10.970 m CSCP	90.0	2.864	0.178	CSCP Under T/O w/ 2-End Sections
82	53+470.000	1-610 mm x 12.190 m CSCP	90.0	1.018	0.063	CSCP Under T/O w/ 2-End Sections

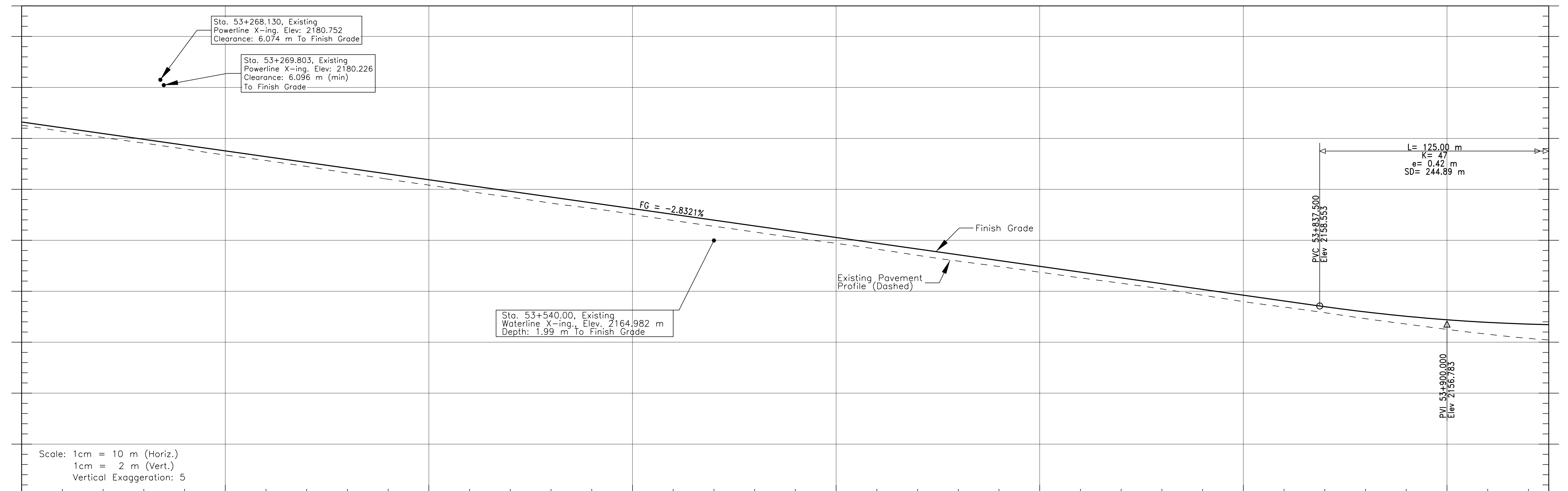
Sta. 53+234.16 SCP 359
Offset 17.840 m Rt.
Elev 2174.307

Sta. 53+403.80 SCP 360
Offset 17.736 m Lt.
Elev 2169.944

Sta. 53+566.30 SCP 361
Offset 9.270 m Rt.
Elev 2165.605

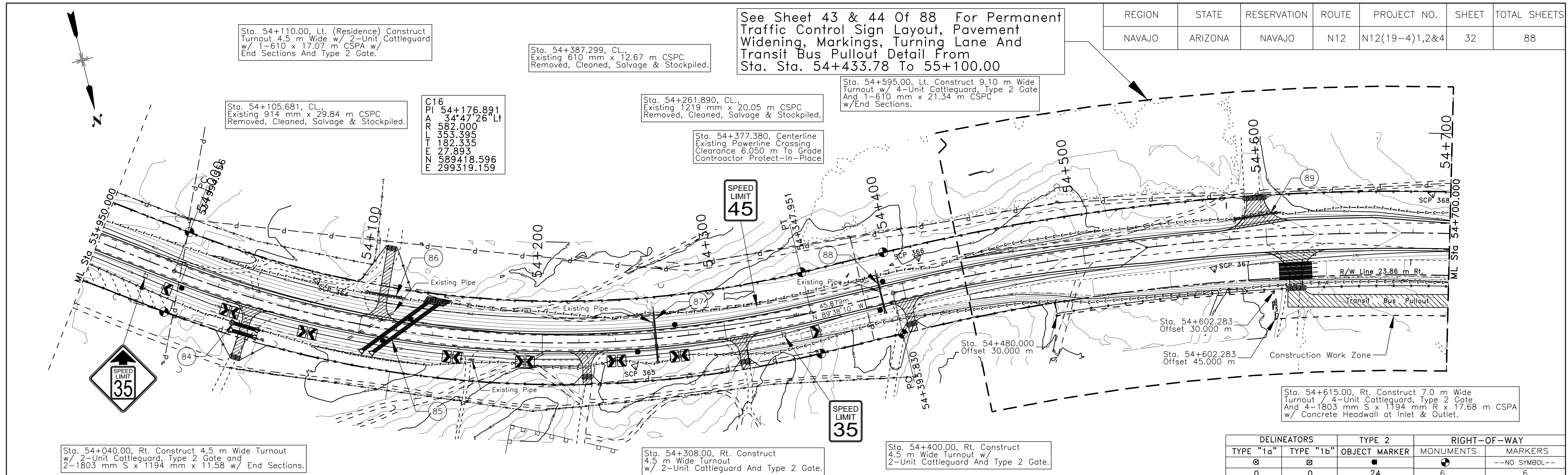
Sta. 53+734.43 SCP 362
Offset 15.797 m Lt.
Elev 2160.902

Sta. 53+901.51 SCP 363
Offset 15.772 m Rt.
Elev 2156.109



Scale: 1cm = 10 m (Horiz.)
1cm = 2 m (Vert.)
Vertical Exaggeration: 5

See Sheet 43 & 44 Of 88 For Permanent Traffic Control Sign Layout, Pavement Widening, Markings, Turning Lane And Transit Bus Pullout Detail From Sta. Sta. 54+433.78 To 55+100.00



DELINEATORS		TYPE 2	RIGHT-OF-WAY	
TYPE "1a"	TYPE "1b"	OBJECT MARKER	MONUMENTS	MARKERS
0	0	24	6	--NO SYMBOL--

Mark	Station	Structure	Skew No.	Drainage Area (ha)	Q100 (cms)	Remarks
84	54+040.000	2-1803 mm S x 1193 mm R x 11.580 m CSPA	90.0	278.850	6.302	CSPA Under T/O w/ 2-End Sections
85	54+120.000	2-1803 mm S x 1193 mm R x 43.981 m CSPA	135.0	2.822	0.199	With End Section at Each Inlet & Place Riprap Apron at Outlet
86	54+110.000	1-610 mm x 17.070 m CSPC	90.0	0.919	0.091	CSPC Under T/O w/ 2-End Sections
87	54+262.000	1-610 mm x 26.213 m CSPC	140.0	1.019	0.101	With End Section at Inlet
88	54+387.300	1-610 mm x 19.507 m CSPC	90.0	0.258	0.016	With End Section at Inlet
89	54+595.000	1-610 mm x 24.340 m CSPC	90.0	443.570	10.965	CSPA Under T/O w/ 2-End Sections
90	54+615.000	4-1803 mm S x 1193 mm R x 17.680 m CSPA	90.0			CSPA Under T/O w/ Concrete Headwalls

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10:25 am, Nov 23, 2018

Sta. 53+996.892, Centerline Existing Powerline Crossing Clearance 7.793 m To Grade Contractor Protect-In-Place

Sta. 54+159.982 Rt. 11.023 m Existing 610 mm x 7.44 m CSPC Removed, Cleaned, Salvage & Stockpiled.

Sta. 53+998.148, Centerline Existing Powerline Crossing Clearance 7.249 m To Grade Contractor Protect-In-Place

Sta. 54+224.00, Rt. Construct Turnout 4.5 m Wide Turnout w/ 2-Unit Cattle Guard With Type 2 Gate.

Sta. 54+040.00, Rt. Construct 4.5 m Wide Turnout w/ 2-Unit Cattle Guard, Type 2 Gate and 2-1803 mm S x 1194 mm x 11.58 w/ End Sections.

Sta. 54+308.00, Rt. Construct 4.5 m Wide Turnout w/ 2-Unit Cattle Guard And Type 2 Gate.

Sta. 54+400.00, Rt. Construct 4.5 m Wide Turnout w/ 2-Unit Cattle Guard And Type 2 Gate.

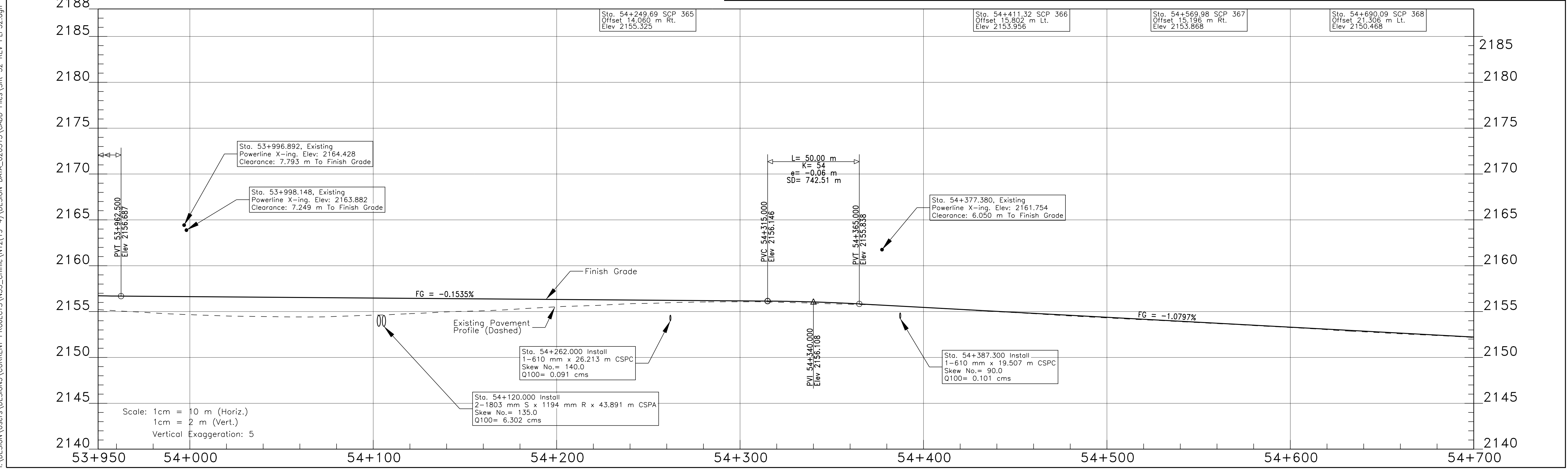
Sta. 54+071.81 SCP 364 Offset 18.204 m Lt. Elev 2153.533

Sta. 54+249.69 SCP 365 Offset 14.060 m Rt. Elev 2155.325

Sta. 54+411.32 SCP 366 Offset 15.802 m Lt. Elev 2153.956

Sta. 54+569.98 SCP 367 Offset 15.196 m Rt. Elev 2153.868

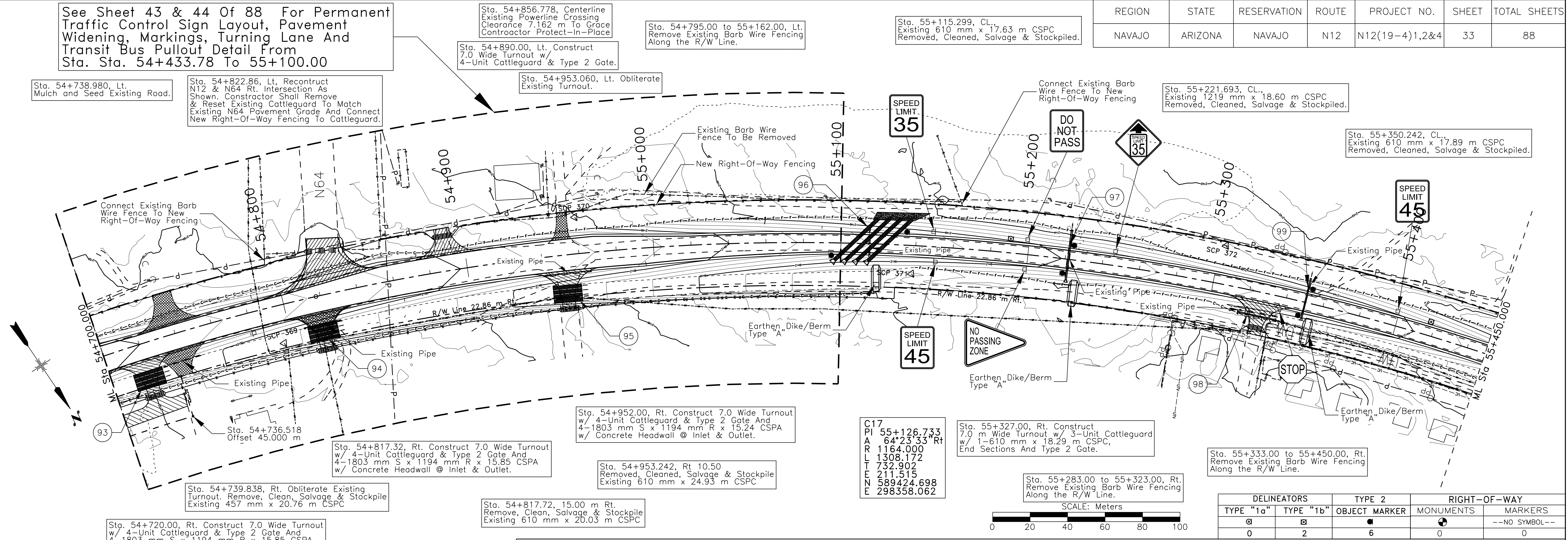
Sta. 54+690.09 SCP 368 Offset 21.506 m Lt. Elev 2150.468



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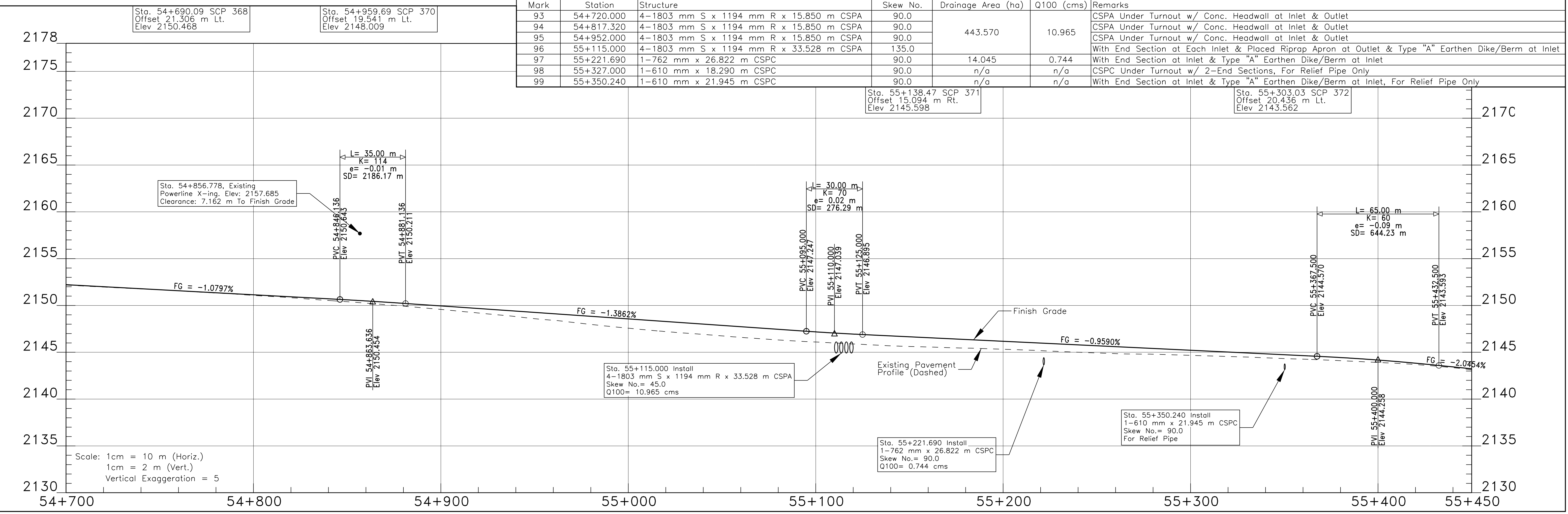
See Sheet 43 & 44 Of 88 For Permanent Traffic Control Sign Layout, Pavement Widening, Markings, Turning Lane And Transit Bus Pullout Detail From Sta. Sta. 54+433.78 To 55+100.00

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	33	88

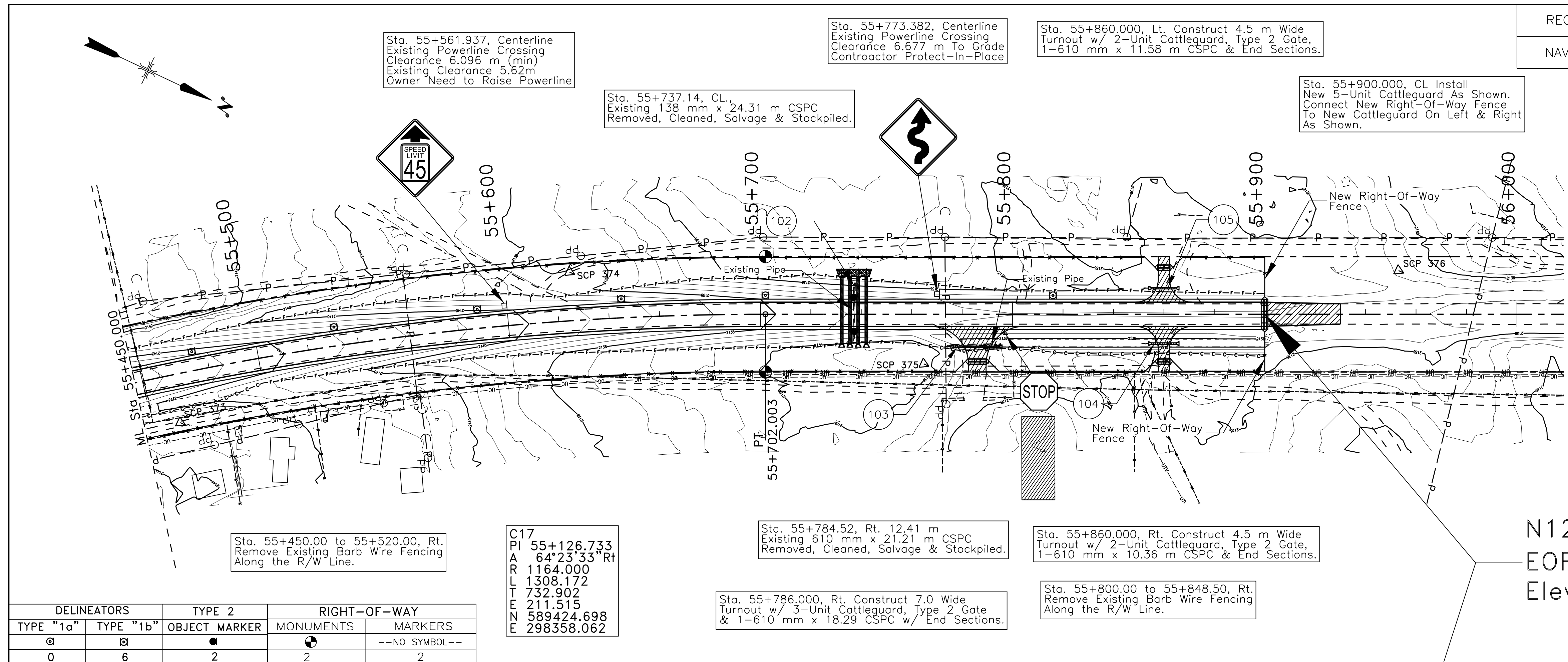


DRAINAGE STRUCTURE TABLE

Mark	Station	Structure	Skew No.	Drainage Area (ha)	Q100 (cms)	Remarks
93	54+720.00	4-1803 mm S x 1194 mm R x 15.850 m CSPA	90.0	443.570	10.965	CSPA Under Turnout w/ Conc. Headwall at Inlet & Outlet
94	54+817.320	4-1803 mm S x 1194 mm R x 15.850 m CSPA	90.0			CSPA Under Turnout w/ Conc. Headwall at Inlet & Outlet
95	54+952.000	4-1803 mm S x 1194 mm R x 15.850 m CSPA	90.0			CSPA Under Turnout w/ Conc. Headwall at Inlet & Outlet
96	55+115.000	4-1803 mm S x 1194 mm R x 33.528 m CSPA	135.0			With End Section at Each Inlet & Placed Riprap Apron at Outlet & Type "A" Earthen Dike/Berm at Inlet
97	55+221.690	1-762 mm x 26.822 m CSPC	90.0	14.045	0.744	With End Section at Inlet & Type "A" Earthen Dike/Berm at Inlet
98	55+327.000	1-610 mm x 18.290 m CSPC	90.0	n/a	n/a	CSPC Under Turnout w/ 2-End Sections, For Relief Pipe Only
99	55+350.240	1-610 mm x 21.945 m CSPA	90.0	n/a	n/a	With End Section at Inlet & Type "A" Earthen Dike/Berm at Inlet, For Relief Pipe Only



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Sta. 55+900.00, to Sta. 55+930.00
Taper Existing Roadway Section into
New Roadway Section. Transition Existing
Ditch into New Ditches.

Sta. 55+450.00 to 55+520.00, Rt.
Remove Existing Barb Wire Fencing
Along the R/W Line.

C17
PI 55+126.733
A 64°23'33" Rt
R 1164.000
L 1308.172
T 732.902
E 211.515
N 589424.698
E 298358.062

Sta. 55+784.52, Rt. 12.41 m
Existing 610 mm x 21.21 m CSPC
Removed, Cleaned, Salvage & Stockpiled.

Sta. 55+860.000, Rt. Construct 4.5 m Wide
Turnout w/ 2-Unit Cattleguard, Type 2 Gate,
1-610 mm x 10.36 m CSPC & End Sections.

Sta. 55+786.000, Rt. Construct 7.0 Wide
Turnout w/ 3-Unit Cattleguard, Type 2 Gate
& 1-610 mm x 18.29 CSPC w/ End Sections.

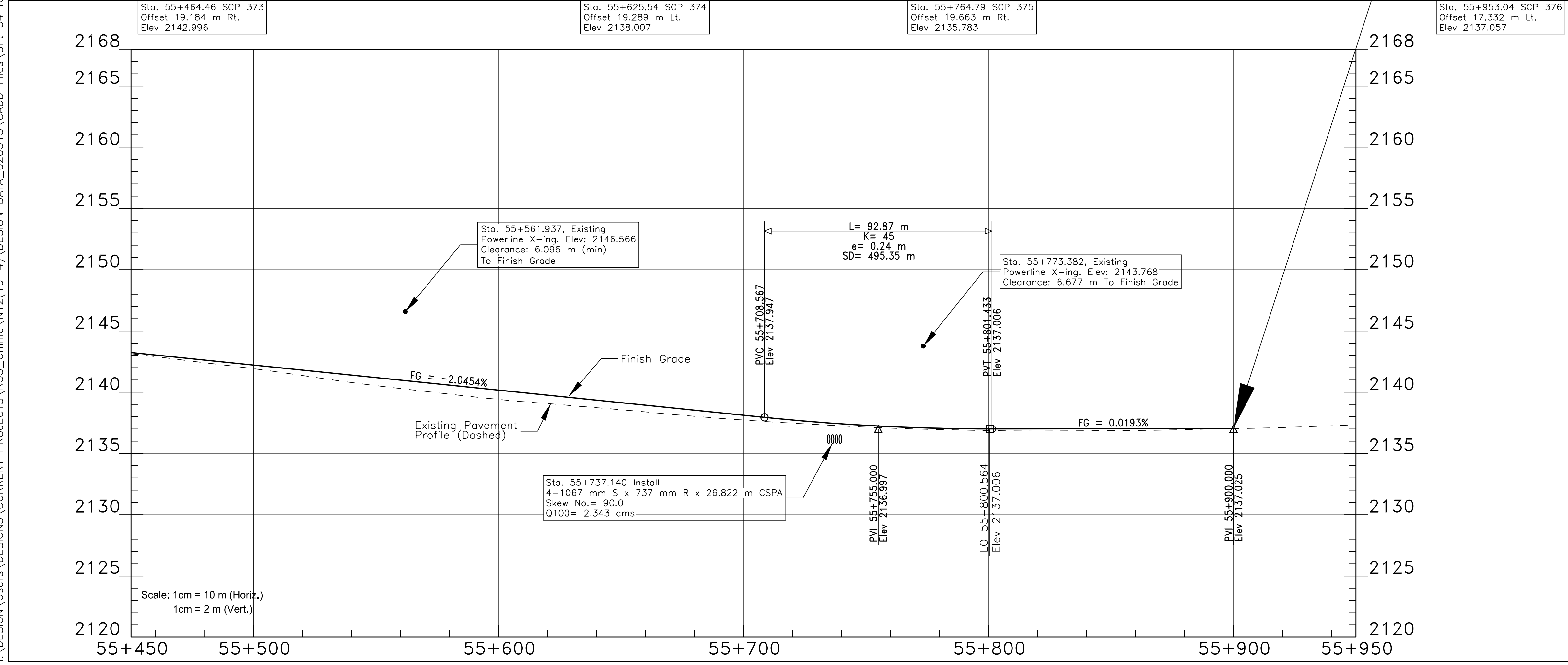
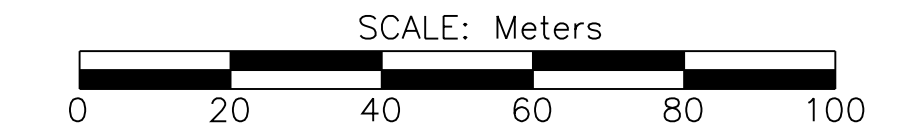
Sta. 55+800.00 to 55+848.50, Rt.
Remove Existing Barb Wire Fencing
Along the R/W Line.

N12(19-4)2&4
EOP Sta. 55+900.000
Elev: 2137.025

DELINEATORS		TYPE 2	RIGHT-OF-WAY	
TYPE "1a"	TYPE "1b"	OBJECT MARKER	MONUMENTS	MARKERS
0	6	2	2	--NO SYMBOL--

DRAINAGE STRUCTURE TABLE

Mark	Station	Structure	Skew No.	Drainage Area (ha)	Q100 (cms)	Remarks
102	55+737.140	4-1067 mm S x 737 mm R x 26.822 m CSPA	90.0	89.673	2.343	With End Section at Each Inlet & Placed Riprap Apron at Outlet
103	55+786.000	1-610 mm x 18.290 m CSPC	n/a	n/a	n/a	CSPC Under T/O w/ 2-End Sections, For Relief Pipe Only
104	55+860.000	1-610 mm x 11.580 m CSPC	90.0	n/a	n/a	CSPC Under T/O w/ 2-End Sections, For Relief Pipe Only
105	55+860.000	1-610 mm x 10.360 m CSPC	90.0	n/a	n/a	CSPC Under T/O w/ 2-End Sections, For Relief Pipe Only

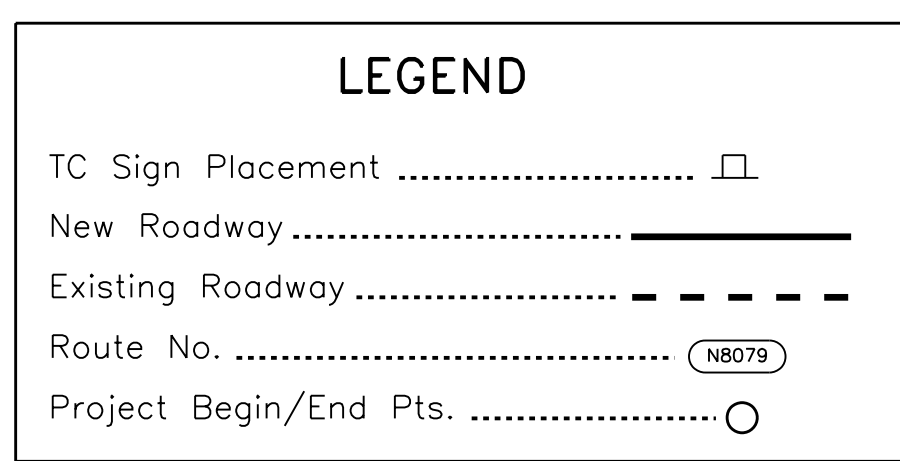
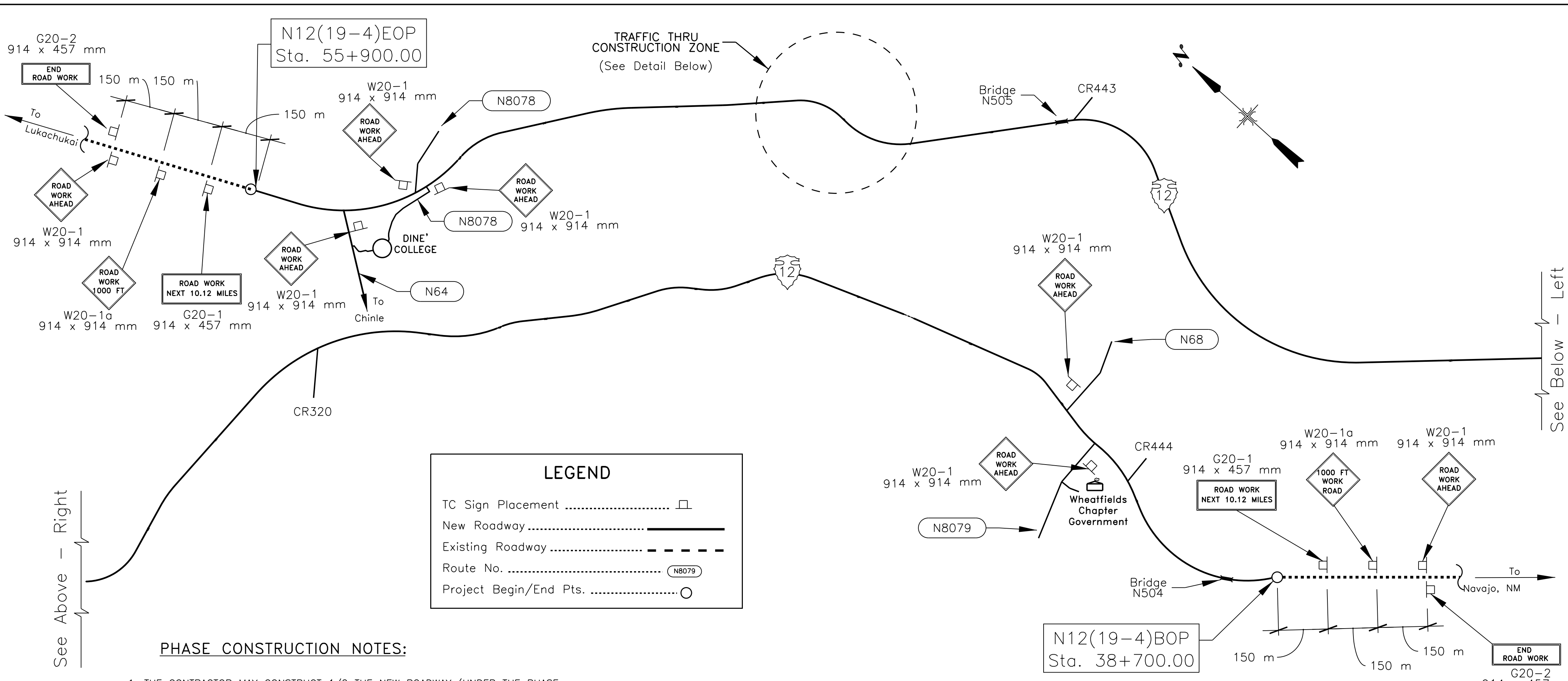


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REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	35	88

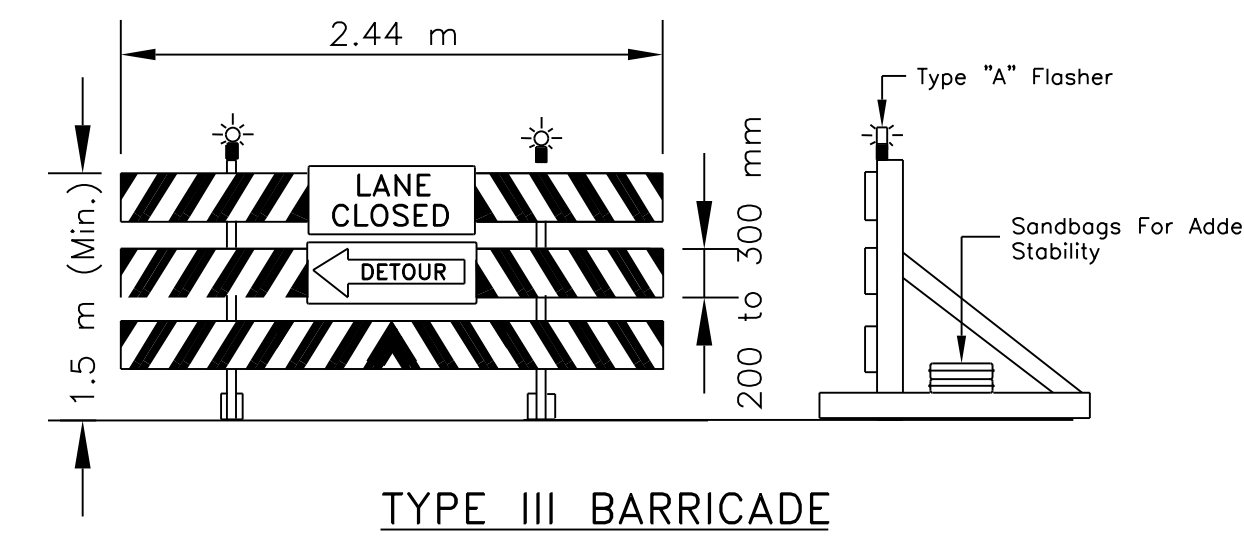
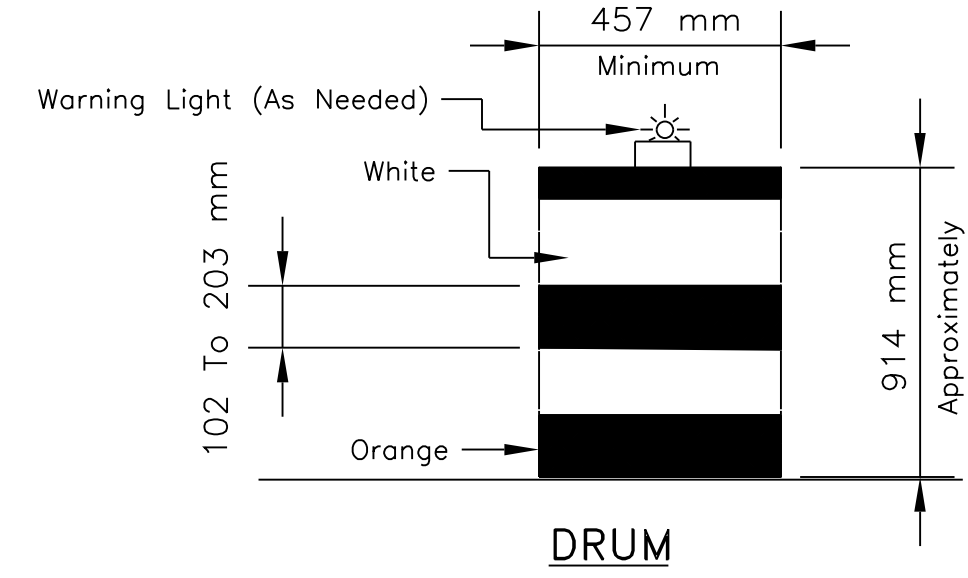
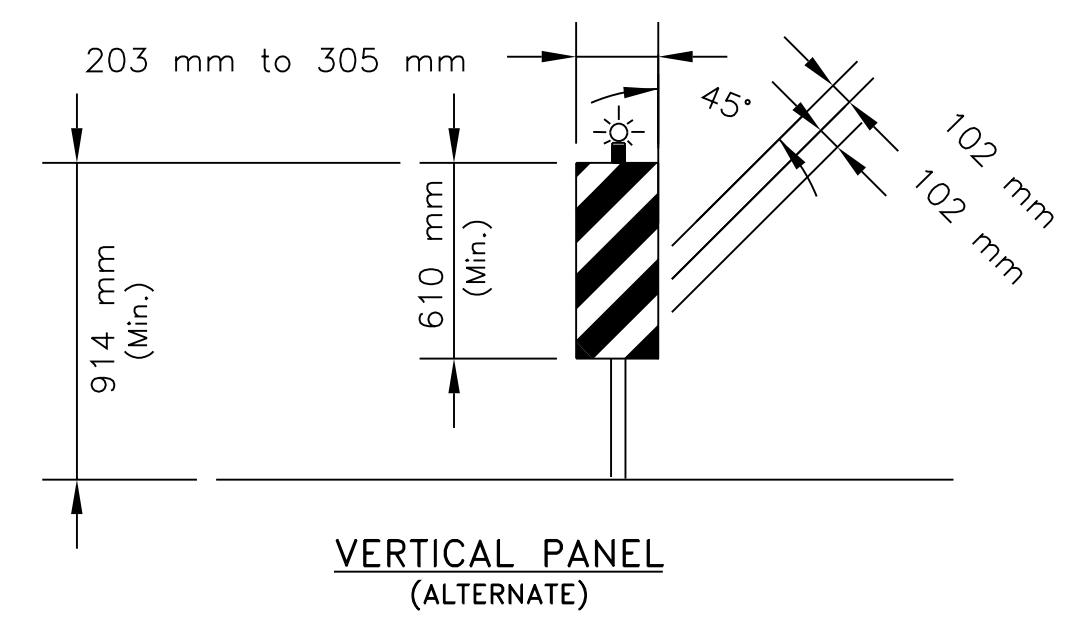
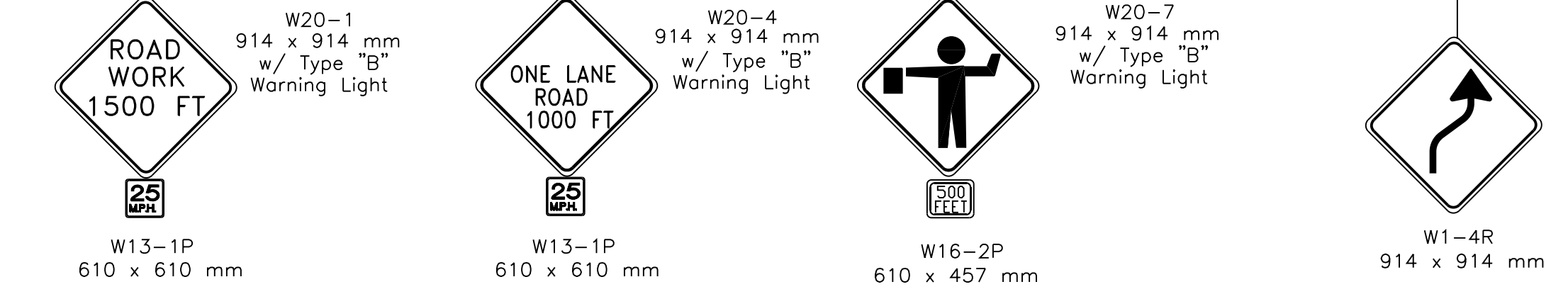
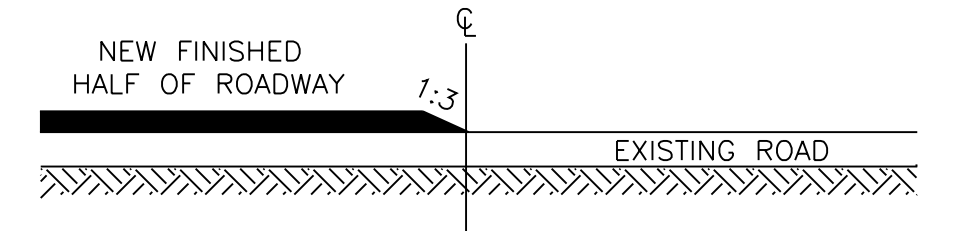
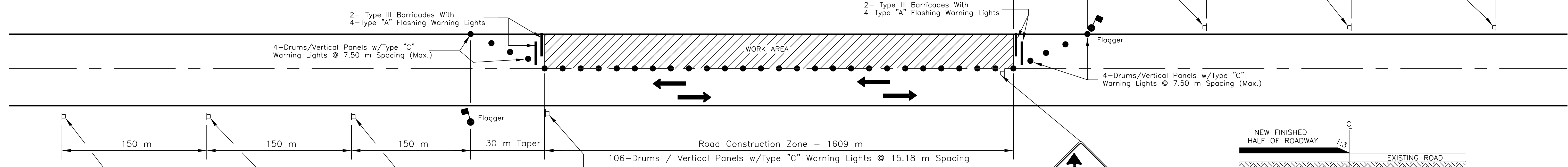
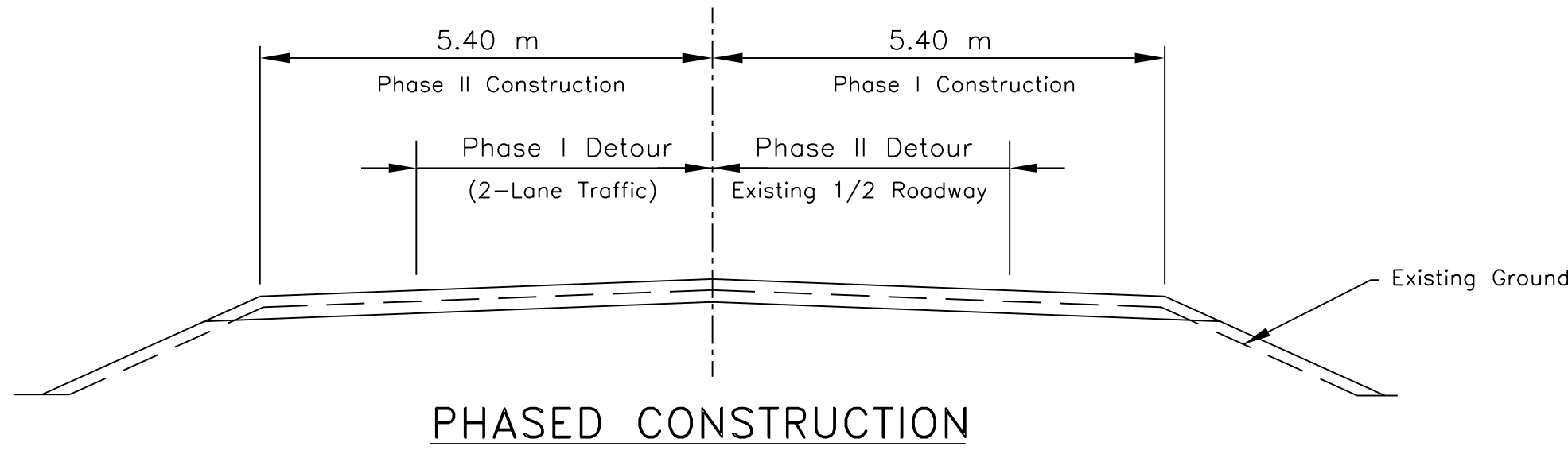
GENERAL NOTES

- ALL TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH THE MUTCD MANUAL (LATEST EDITION AND AMENDMENTS) AND THE SUPPLEMENTAL SPECIFICATION FOR THIS PROJECT.
- THE TRAFFIC CONTROL DETAILS SHOWN ARE ONLY A GUIDE. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PREPARING AND IMPLEMENTING A TRAFFIC CONTROL PLAN (TCP) IN ACCORDANCE WITH THESE DETAILS, SECTION 635, AND THE MUTCD UNDER CONTRACT ITEM 63501. ANY ADDITIONAL TRAFFIC CONTROL DEVICES CALLED FOR ON THE CONTRACTOR'S TCP WILL NOT BE MEASURED FOR PAYMENT BUT SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEMS FOR TRAFFIC CONTROL SHOWN IN THE BID SCHEDULE SEE SUPPLEMENTAL SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- SIGNS (G20-1, W20-1, W20-1a, AND G20-2) 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.
- IN AREAS OF EXISTING ROADWAY WIDENING, THE CONTRACTOR SHALL ENSURE THAT NO PAVEMENT DROP-OFFS ARE LEFT EXPOSED DURING NON-WORKING HOURS. THE CONTRACTOR SHALL INITIATE CORRECTIVE MEANS TO ACHIEVE A MINIMUM 1:3 SLOPE AS SHOWN OF FILLET DETAIL.
- AT THE END OF EACH WORKING DAY, IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE A DRIVING SURFACE FREE OF OBSTRUCTIONS AS SHOWN ON THE PHASED AND FILLET CONSTRUCTION DETAILS AS APPLICABLE. ACCESS TO ALL ADJOINING PROPERTIES AND BIA SYSTEM ROUTES SHALL BE MAINTAINED AT ALL TIMES (DAY AND NIGHT).
- ALL TRAFFIC CONTROL DEVICES (EXCEPT AT DETOUR ROAD LOCATIONS AND AS NOTED IN ABOVE NOTE #3) SUCH AS CONSTRUCTION SIGNS, DRUMS, BARRICADES, ETC. SHALL BE REMOVED TO A LOCATION AT LEAST NINE (9) METERS FROM THE EDGE OF THE SHOULDER WHEN CONSTRUCTION IS NOT IN PROGRESS.
- 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 AND SHALL BE CONSIDERED INCIDENTAL OBLIGATIONS OF THE CONTRACTOR.
- THE CONTRACTOR HAS THE OPTION TO EITHER USE DRUMS OR VERTICAL PANELS; BUT SHALL NOT USE A COMBINATION OF BOTH. NO TRAFFIC CONES SHALL BE 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 DETAILS 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 ITEM. THE CONTRACTOR IS RESPONSIBLE FOR ALL NECESSARY PERMITS AND CLEARANCES FOR ANY DETOUR ROADS.
- AT LOCATIONS WHERE NEW ROAD CONSTRUCTION CROSSES EXISTING ROADWAY, AT TIE-INS WITH EXISTING ROADS, AND AT THE END OF THE NEW CONSTRUCTION DETAILS 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 TRAFFIC CONTROL ON THIS PROJECT SHALL BE COORDINATED WITH THE PROJECT CONSTRUCTION SCHEDULE.



PHASE CONSTRUCTION NOTES:

- THE CONTRACTOR MAY CONSTRUCT 1/2 THE NEW ROADWAY (UNDER THE PHASE 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.
- ALL (NEW) DRAINAGE PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH THE PHASED CONSTRUCTION PLAN ABOVE AS WELL AS REMOVAL OF EXISTING PIPES. ALL THIS PIPE INSTALLATION & REMOVAL SHALL BE CONSIDERED INCIDENTAL TO PIPE ITEMS SHOWN AND NO ADDITIONAL PAYMENT SHALL BE MADE.
- THIS PHASED CONSTRUCTION SHALL BE CONSIDERED INCIDENTAL TO THE TCP 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.



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

TEMPORARY TRAFFIC CONTROL PLAN

DRAWN BY: NRDOT	DATE: 3/19/2014
DESIGNED BY: NRDOT	DATE: 3/19/2014
REVISED: 3/19/2014	BY: Leroy.Toledo
Sht 35 N12 TCP.dgn	

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PERMANENT TRAFFIC CONTROL – SIGN, POST, & HARDWARE

Station	Location	Detail No.	Description	Sign Panel Size (mm)	Area of Sign (m ²)	Number of Square	Post Size (mm x mm)	No. of Panel	Total Area of Panel
38+730.00	Rt.	M1-23		457 x 762	0.35	1	38mm x 38mm	1	0.35
38+830.00 38+930.00	Rt. Lt.	M1-23 M6-1bR, M6-1bL Supplement Plate		457 x 762 553 x 381	0.35 0.21	1	44mm x 44mm	2 2	1.12
41+665.00 41+760.00	Rt. Lt.	M1-23 M6-1bR, M6-1bL Supplement Plate		457 x 762 553 x 381	0.35 0.21	1	44mm x 44mm	2 2	1.12
52+125.00 52+240.00	Rt. Lt.	M1-23 M6-1bR, M6-1bL Supplement Plate		457 x 762 553 x 381	0.35 0.21	1	44mm x 44mm	2 2	1.12
54+700.00 54+920.00	Rt. Lt.	M1-23 M6-1bR, M6-1bL Supplement Plate		457 x 762 553 x 381	0.35 0.21	1	44mm x 44mm	2 2	1.12
38+640.00 39+725.89 40+540.00 41+290.00 42+116.00 42+730.00 44+330.00 45+180.00 46+532.00 47+012.00 47+988.00 48+290.00 48+820.00 49+505.00 49+915.00 50+455.00 51+562.00 52+400.00 54+433.78 55+200.00	Rt. Lt. Rt. Lt. Rt. Lt. Rt. Lt. Rt. Lt. Rt. Lt. Rt. Lt. Rt. Lt. Rt. Lt. Rt. Lt. Rt. Lt.	R4-1		610 x 762	0.46	1	44mm x 44mm	20	9.20
38+640.00 39+725.89 40+540.00 41+290.00 42+116.00 42+730.00 44+330.00 45+180.00 46+532.00 47+012.00 47+988.00 48+290.00 48+820.00 49+505.00 49+915.00 50+455.00 51+562.00 52+400.00 54+433.78 55+200.00	Lt. Rt. Lt. Rt. Lt. Rt. Lt. Rt. Lt. Rt. Lt. Rt. Lt. Rt. Lt. Rt. Lt. Rt. Lt. Rt. Lt.	W14-3		914 x 1219 1219	0.52	2	50mm x 50mm	20	10.40
38+909.00 39+779.90 40+291.24 40+421.25 40+439.04 41+521.24 41+713.86 42+755.00 44+710.00 48+230.30 49+225.26 49+958.06 51+029.27 52+167.95 52+673.74 54+583.24 54+625.79 54+730.74 54+812.40 54+835.33 54+879.87 54+962.79 55+337.92 55+797.24	Rt. Lt. Rt. Lt.	R1-1		762 x 762	0.58	1	44mm x 44mm	24	13.92

PERMANENT TRAFFIC CONTROL – SIGN, POST, & HARDWARE

40+800.00 42+200.00 42+900.00 45+600.00 51+860.00 54+320.00 55+150.00 55+400.00	Rt. Lt. Rt. Lt. Rt. Lt. Rt. Lt.	R2-1		610 x 762	0.46	1	44mm x 44mm	8	3.68
38+580.00 38+580.00 41+100.00 50+500.00	Lt. Rt. Lt. Rt.	R2-1		610 x 762	0.46	1	44mm x 44mm	4	1.84
54+330.00 55+150.00	Rt. Lt.	R2-1		610 x 762	0.46	1	44mm x 44mm	2	0.92
41+440.00 41+600.00 43+200.00 46+800.00 50+360.00	Rt. Lt. Rt. Lt. Rt. Lt.	R2-1		610 x 762	0.46	1	44mm x 44mm	5	2.30
40+840.00 43+880.00 45+220.00 48+360.00 48+725.00 52+870.00	Lt. Rt. Lt. Rt. Lt. Rt.	W1-2L		762 x 762	0.58	1	44mm x 44mm	7	4.06
40+235.00 43+300.00 44+480.00 44+616.00 46+426.00 49+700.00 53+473.00	Rt. Lt. Rt. Lt. Rt. Lt. Rt. Lt.	W1-2R		762 x 762	0.58	1	44mm x 44mm	7	4.06
40+150.00 50+730.00 51+826.30 53+925.50	Lt. Rt. Lt. Rt.	W1-5L		762 x 762	0.58	1	44mm x 44mm	4	2.32
38+683.00 40+785.00 55+771.00	Rt. Lt. Rt. Lt.	W1-5R		762 x 762	0.58	1	44mm x 44mm	4	2.32
42+208.00 46+242.00	Rt. Lt.	D5-15		1658x1050	1.74	2	57mm x 57mm	2	3.48
42+360.00 46+090.00	Rt. Lt.	D5-17		1928x1050	2.02	2	57mm x 57mm	2	4.04
See Sheet 66 of 74 for Location & Quantity Table		W1-8L		457 x 610	0.28	1	38mm x 38mm	7	1.96
		W1-8L & W1-8R		457 x 610 457 x 610	0.28	1	38mm x 38mm	128	35.84
		W1-8R		457 x 610	0.28	1	38mm x 38mm	6	1.68

(CONTINUED ON NEXT SHEET)

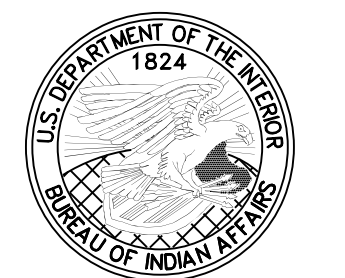
REVISED
10:28 am, Nov 23, 2018

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

PERMANENT & TEMPORARY
TRAFFIC CONTROL DETAILS

DRAWN BY: NRDOT DATE: 12/31/2013
DESIGNED BY: NRDOT DATE: 12/31/2013
REVISED: 3/19/2014 BY: Leroy.Toledo

Sht 36 N12 Permanent Temp TCP.dgn



(CONTINUED FROM PREVIOUS SHEET)
PERMANENT TRAFFIC CONTROL – SIGN, POST, & HARDWARE

42+670.00 45+940.00	Lt. Rt.	D5-17		1928x1050	2.02	2	57mm x 57mm	2	4.04
42+832.00 45+787.00	Lt. Rt.	D5-18		1658x1050	1.74	2	57mm x 57mm	2	3.48
40+600.00 51+757.28 55+600.00	Rt. Rt. Lt.	W3-5		762 x 762	0.58	1	44mm x 44mm	3	1.74
53+980.00 55+246.99	Rt. Lt.	W3-5		762 x 762	0.58	1	44mm x 44mm	2	1.16
41+100.00 42+100.00 43+000.00 46+400.00 50+700.00	Rt. Lt. Rt. Rt. Lt.	W3-5		762 x 762	0.58	1	44mm x 44mm	5	2.90
41+400.00 41+820.00	Rt. Lt.	W2-2L		762 x 762	0.58	1	44mm x 44mm	2	1.16
41+620.00 41+620.00	Lt. Rt.	W2-2R		762 x 762	0.58	1	44mm x 44mm	2	1.16
41+350.00 41+720.00 43+331.00 43+809.00 44+476.00 44+954.00 45+266.00 45+744.00 46+996.00 47+709.00 48+416.00 48+894.00 49+700.00 50+195.00	Rt. Lt. Rt. Lt. Rt. Lt. Rt. Lt. Rt. Lt. Rt. Lt. Rt. Lt.	S3-2a		762 x 762	0.58	1	44mm x 44mm	14	8.12
43+514.00 43+626.00 44+659.00 44+760.00 45+449.00 45+561.00 47+179.00 47+526.00 48+599.00 48+711.00 49+880.00 50+026.00	Rt. Lt. Rt. Lt. Rt. Lt. Rt. Lt. Rt. Lt. Rt. Lt.	S3-1a		762 x 762	0.58	1	44mm x 44mm	12	6.96
41+480.00	Rt.	S3-1a		762 x 762	0.58	2	50mm x 50mm	1	1.18
		D1-1L		1328 x 450	0.60	1			
41+590.00	Lt.	S3-1a		762 x 762	0.58	2	50mm x 50mm	1	1.18
		D1-1R		1328 x 450	0.60	1			
54+780.00 54+870.00	Rt. Lt.	D1-1L D1-1R		1229 x 450	0.55	2	50mm x 50mm	2	1.10
54+780.00	Lt.	D2-2		1851 x 750	1.39	2	50mm x 50mm	1	1.39
54+870.00	Rt.	D2-2		1995 x 750	1.50	2	50mm x 50mm	1	1.50

PERMANENT TRAFFIC CONTROL – SIGN, POST, & HARDWARE

54+900.00	Rt.	D1-1R		1373 x 750	1.03	2	50mm x 50mm	2	2.06
55+020.00	Lt.	D1-1L							
51+950.00	Rt.	D1-1L		1166 x 750	0.87	2	50mm x 50mm	2	1.74
52+360.00	Lt.	D1-1R							
54+530.00 54+650.00	Rt. Lt.	D1-1L D1-1R		1819 x 750	1.36	2	57mm x 57mm	2	2.72
52+064.68	Rt.	R3-8LA		914 x 762	0.70	2	50mm x 50mm	1	0.70
52+280.00	Lt.	R3-8RA		914 x 762	0.70	2	50mm x 50mm	1	0.70
54+543.71	Rt.	R3-8LR		914 x 762	0.70	2	50mm x 50mm	1	0.70
54+681.47 54+970.00	Lt. Lt.	R3-8c		1219 x 762	0.93	2	57mm x 57mm	2	1.86
52+180.00	Rt.	W1-7 WL-LB-WL-RB		914 x 457 1219 x 610	0.42 0.74	4	57mm x 57mm	1 2	1.90
								Total	39.83m ²
63302-2001 - Sign Installation, 1 Post - 38 x 38 mm								Total	72.30m ²
63302-2002 - Sign Installation, 1 Post - 44 x 44 mm								Total	22.65m ²
63302-2006 - Sign Installation, 2 Post - 50 x 50 mm								Total	19.62m ²
63302-2007 - Sign Installation, 2 Post - 57 x 57 mm								Total	1.90m ²
63302-2012 - Sign Installation, 4 Post - 57 x 57 mm								Total	

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	37	88

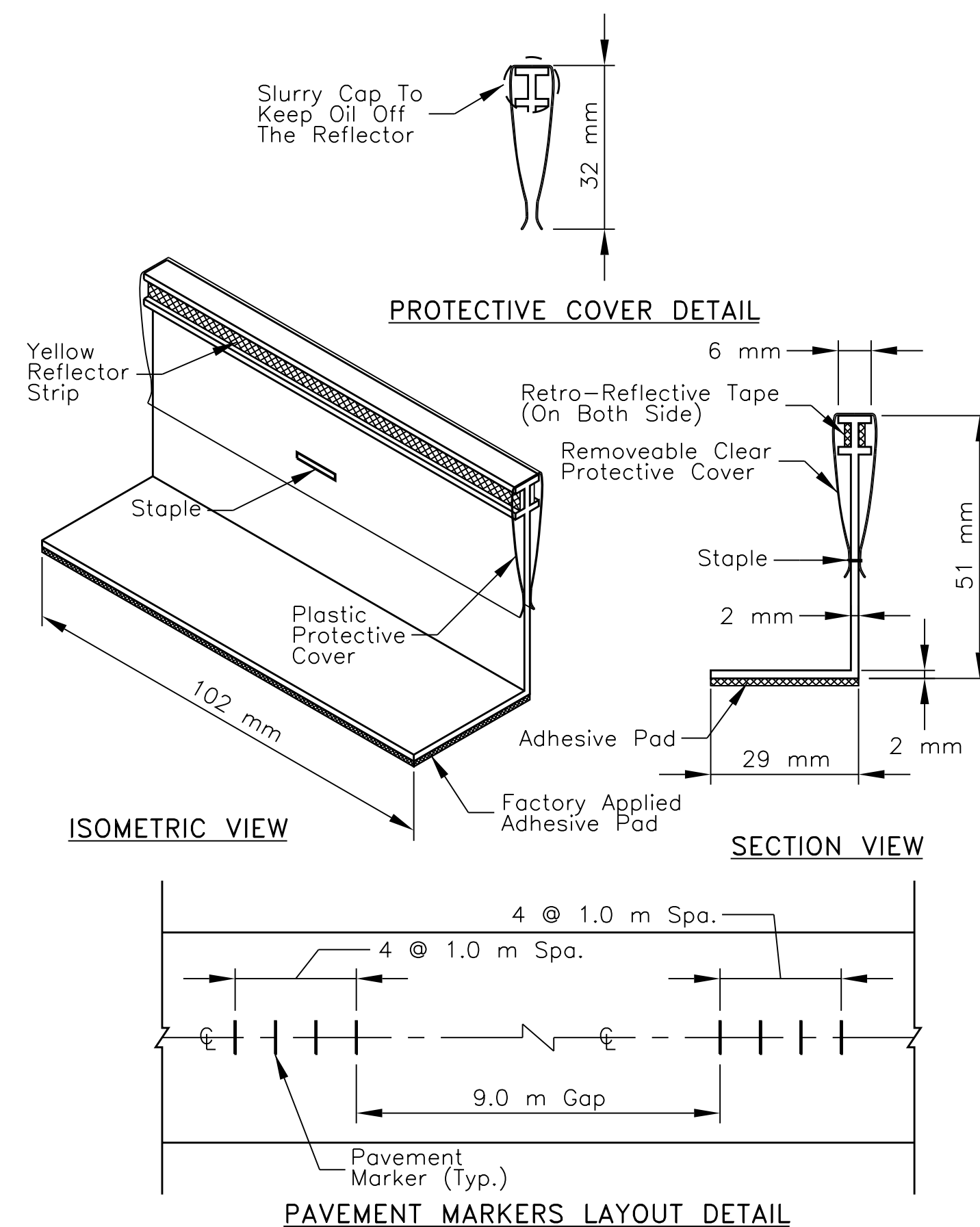
GENERAL NOTES

- SEE SHEETS 38 & 45-46 FOR SIGN DETAILS, DIMENSION PLACEMENT/LOCATION, MARKINGS, TURNOUT TYPICALS, STOP BARS, ETC.

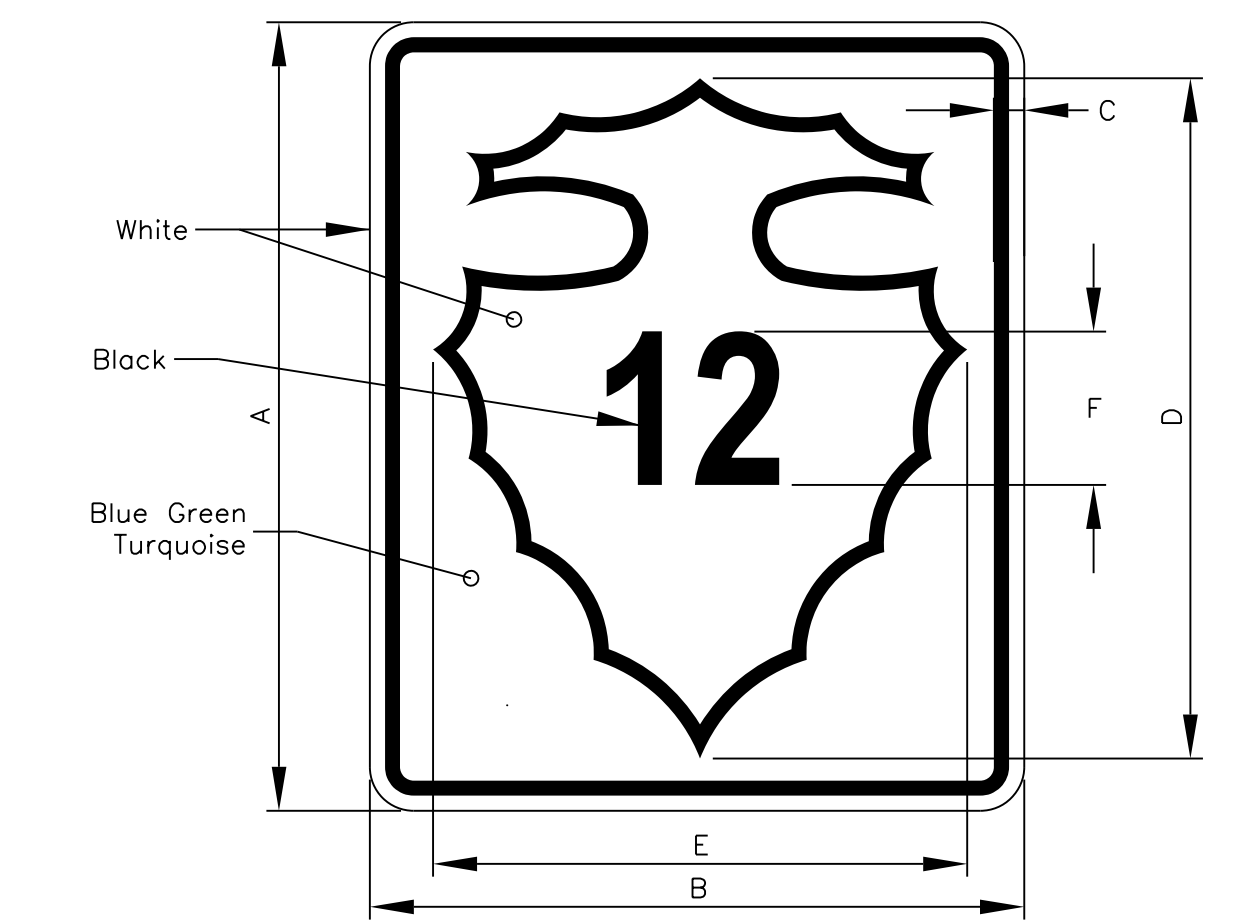
TEMPORARY TRAFFIC CONTROL SIGNS

TYPE	DESCRIPTION	SIZE (mm)
W20-1a		1219 x 1219
W20-4		1219 x 1219
W13-1P		610 x 610
W20-7		914 x 914
W16-2P		457 x 610
G20-2		914 x 457
W1-4L		914 x 914
W20-1		914 x 914
G20-1		914 x 457
W8-12		914 x 914

REVISED
10:28 am, Nov 23, 2018



ITEM 63502-3000 TEMP. TRAFFIC CONTROL
RAISED PAVEMENT MARKER, YELLOW TYPE Y-2



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

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

PERMANENT & TEMPORARY
TRAFFIC CONTROL DETAILS

DRAWN BY: NRDOT DATE: 12/31/2013
DESIGNED BY: NRDOT DATE: 12/31/2013
REVISED: 3/19/2014 BY: Leroy.Toledo

Sht 37 N12 Permanent Temp. TCP.dgn

ITEM No. 63401-1510: PAVEMENT MARKING, TYPE "H", SOLID YELLOW

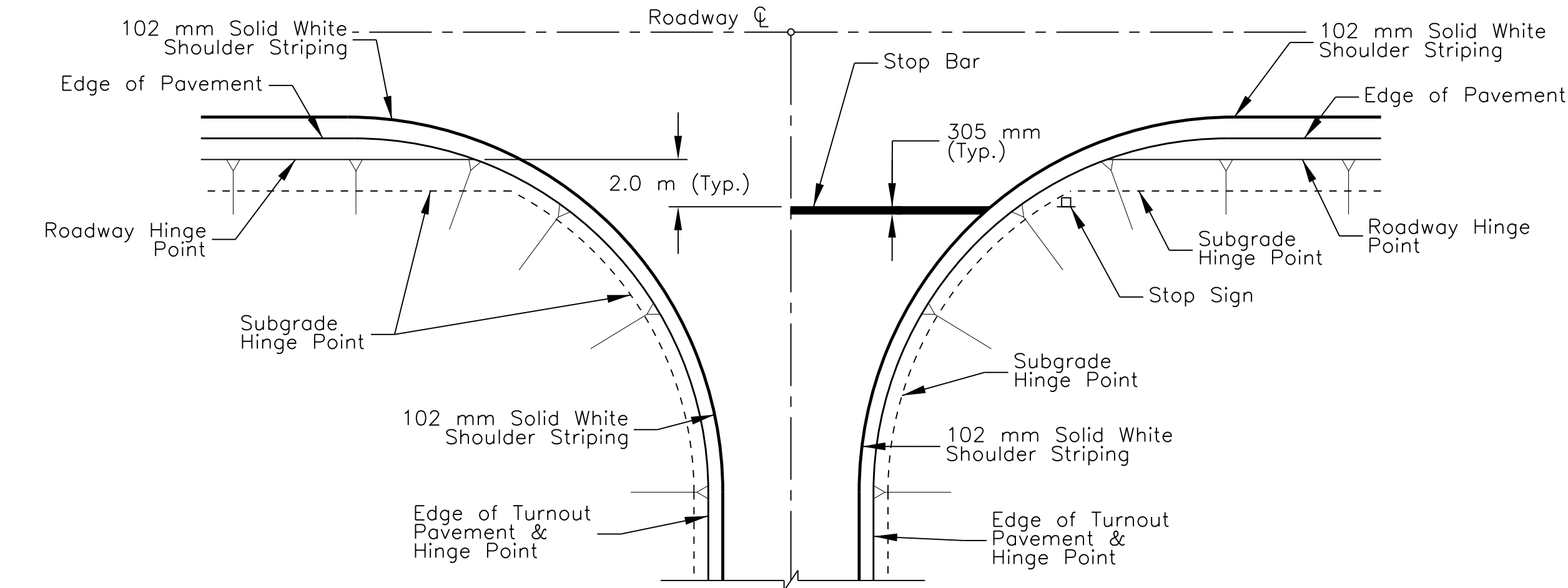
STATION TO STATION	LOCATION	DESCRIPTION	LENGTH (m)
38+640.00 To 39+725.00	CL	Double Solid Yellow	2,170.00
40+540.00 To 40+722.00	CL, Rt.	Solid Yellow	182.00
40+722.00 To 41+290.00	CL	Double Solid Yellow	1,136.00
41+290.00 To 41+320.00	CL, Rt.	Solid Yellow	30.00
42+116.00 To 42+280.00	CL, Rt.	Solid Yellow	164.00
42+280.00 To 42+730.00	CL	Double Solid Yellow	900.00
44+330.00 To 44+535.00	CL, Rt.	Solid Yellow	205.00
44+535.00 To 44+965.00	CL	Double Solid Yellow	860.00
44+965.00 To 45+180.00	CL, Lt.	Solid Yellow	215.00
46+532.00 To 46+677.00	CL, Rt.	Solid Yellow	145.00
46+677.00 To 46+862.00	CL	Double Solid Yellow	428.00
46+862.00 To 47+012.00	CL, Lt.	Solid Yellow	150.00
47+988.00 To 48+039.00	CL, Rt.	Solid Yellow	51.00
48+039.00 To 48+125.00	CL, Lt.	Double Solid Yellow	172.00
48+125.00 To 48+289.00	CL, Lt.	Solid Yellow	164.00
48+289.00 To 49+340.00	CL	Double Solid Yellow	1,040.00
49+340.00 To 49+505.00	CL, Lt.	Solid Yellow	165.00
49+505.00 To 50+079.00	CL, Rt.	Solid Yellow	163.00
50+079.00 To 50+293.00	CL	Double Solid Yellow	428.00
50+293.00 To 50+455.00	CL, Lt.	Solid Yellow	162.00
51+562.00 To 51+720.00	CL, Rt.	Solid Yellow	158.00
51+720.00 To 51,964.02	CL	Double Solid Yellow	488.04
51+964.02 To 52+107.66	CL, Rt.	Solid Yellow - Around Diagonal Striping Island	144.11
51+964.02 To 52+107.66	CL, Lt.	Solid Yellow - Around Diagonal Striping Island	143.96
52+107.66 To 52+163.70	1.80 m Lt.	Double Solid Yellow	114.47
52+163.70 To 52+314.81	CL	Solid Yellow - Around Diagonal Striping Island	257.73
52+314.81 To 54+433.78	CL	Double Solid Yellow	170.39
54+433.78 To 54+548.71	Rt.	Solid Yellow - Around Diagonal Striping Island	115.26
54+548.71 To 54+548.71	CL, Lt.	Solid Yellow	114.93
54+548.71 To 54+578.71	CL	Double Solid Yellow	60.00
54+578.71 To 54+660.00	3.6 m Rt.	Double Solid Yellow	60.00
54+660.00 To 54+707.34	Rt.	Solid Yellow - Around Diagonal Striping Island	96.30
54+707.34 To 54+765.00	3.6m Rt.	Double Solid Yellow	60.00
54+765.00 To 54+780.00	Taper 3.6m Rt. To CL	Solid Yellow - Around Diagonal Striping Island	30.91
54+780.00 To 54+810.00	CL	Double Solid Yellow	60.00
54+810.00 To 54+822.81	Lt.	Double Solid Yellow	16.16
54+822.81 To 54+836.63	Rt.	Solid Yellow - Around Diagonal Striping Island	95.33
54+836.63 To 54+845.00	Rt.	Solid Yellow - Around Diagonal Striping Island	92.61
54+845.00 To 54+995.00	3.6m Rt.	Double Solid Yellow	60.00
54+995.00 To 55,095.00	Taper 3.6m Rt. To CL	Solid Yellow - Around Diagonal Striping Island	99.91
55+095.00 To 55+010.00	Taper 3.6m Rt. To CL	Solid Yellow - Around Diagonal Striping Island	15.42
55+010.00 To 55+095.00	CL, Lt.	Solid Yellow - Around Diagonal Striping Island	85.00
55+095.00 To 55+200.00	CL	Double Solid Yellow	210.00
TOTAL			11,620.53

ITEM No. 63401-1610: PAVEMENT MARKING, TYPE "H", BROKEN YELLOW

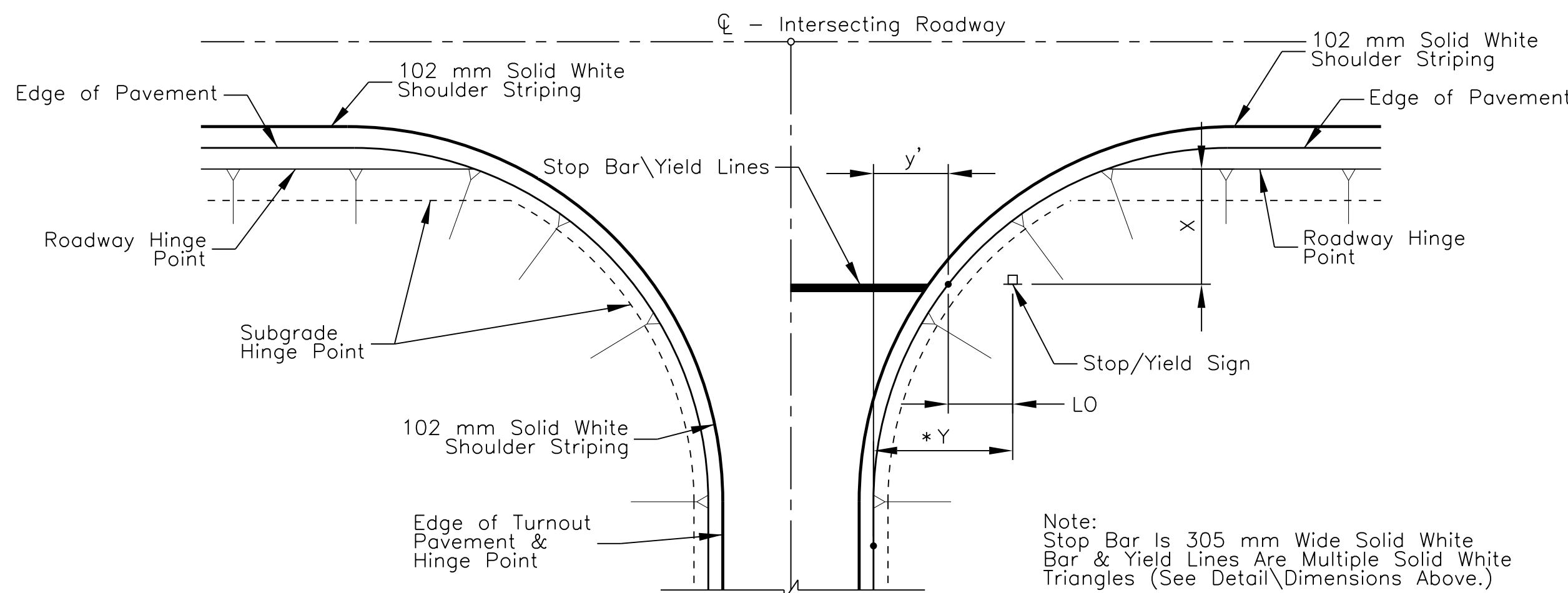
STATION TO STATION	LOCATION	DESCRIPTION	LENGTH (m)
39+725.00 To 40+540.00	CL	Broken Yellow	815.00
40+540.00 To 40+722.00	CL, Lt.	Broken Yellow	182.00
41+290.00 To 42+116.00	CL	Broken Yellow	826.00
42+116.00 To 42+280.00	CL, Lt.	Broken Yellow	164.00
42+280.00 To 44+330.00	CL	Broken Yellow	1,600.00
44+330.00 To 44+535.00	CL, Lt.	Broken Yellow	205.00
44+535.00 To 45+180.00	CL, Rt.	Broken Yellow	245.00
45+180.00 To 46+532.00	CL, Lt.	Broken Yellow	1,352.00
46+532.00 To 46+677.00	CL, Lt.	Broken Yellow	145.00
46+677.00 To 47+012.00	CL, Rt.	Broken Yellow	150.00
47+012.00 To 47+988.00	CL	Broken Yellow	976.00
47+988.00 To 48+039.00	CL, Lt.	Broken Yellow	51.00
48+039.00 To 48+289.00	CL, Rt.	Broken Yellow	164.00
48+289.00 To 48+820.00	CL	Broken Yellow	531.00
49+340.00 To 49+505.00	CL, Rt.	Broken Yellow	165.00
49+505.00 To 49+916.00	CL	Broken Yellow	411.00
49+916.00 To 50+079.00	CL, Lt.	Broken Yellow	163.00
50+079.00 To 50+293.00	CL, Rt.	Broken Yellow	162.00
50+293.00 To 50+455.00	CL	Broken Yellow	1,107.00
51+562.00 To 51+720.00	CL, Lt.	Broken Yellow	158.00
52+400.00 To 54+433.78	CL	Broken Yellow	2,033.78
55+200.00 To 55+900.00	CL	Broken Yellow	700.00
TOTAL			12,305.78

ITEM No. 63401-1520: PAVEMENT MARKING, TYPE "H", SOLID WHITE

STATION TO STATION	LOCATION	DESCRIPTION	LENGTH (m)
38+700.00 To 51+964.02	Rt. Shoulder	Solid White	13,264.02
38+700.00 To 51+964.02	Lt. Shoulder	Solid White	13,264.02
52+314.81 To 54+433.78	Rt. Shoulder	Solid White	2,118.97
52+314.81 To 54+433.78	Lt. Shoulder	Solid White	2,118.97
55+095.00 To 55+900.00	Rt. Shoulder	Solid White	805.00
55+095.00 To 55+900.00	Lt. Shoulder	Solid White	805.00
Minus (21) 4.50m Turnout at Left: (-21 x 20.67) = -434.07			
Minus (21) 4.50m Turnout at Right: (-21 x 20.67) = -434.07			
Plus (5) 7.0m Turnout at Left: (-5 x 37.0) + (5 x (28.17 x 2)) = 96.70			
Plus (9) 7.0m Turnout at Left: (-9 x 37.0) + (9 x (28.17 x 2)) = 174.06			
Sta. 51+964.02 to Sta. 52+314.82 Pavement Widening Area			
51+964.02 To 52+177.60	Lt Shoulder	Solid White	222.58
52+186.51 To 52+250.83	5.4m Lt.	Solid White	64.31
52+185.35 To 52+314.81	Lt Shoulder	Solid White	135.73
51+964.02 To 52+314.82	Rt Shoulder	Solid White	350.66
52+107.97 To 52+163.70	1.8m Rt.	Solid White	55.74
Sta. 54+433.78 to Sta. 55+095.00 Pavement Widening Area			
54+433.78 To 54+591.13	3.6m Lt.	Solid White	168.06
54+599.03 To 54+818.98	Lt Shoulder	Solid White	239.74
54+837.21 To 54+883.50	3.6m Lt.	Solid White	46.43
54+835.41 To 54+887.16	Lt Shoulder	Solid White	68.82
54+892.84 To 55+095.00	Lt Shoulder	Solid White	212.14
54+900.00 To 54+968.27	3.6m Lt.	Solid White	68.48
54+548.71 To 54+590.00	3.6m Rt.	Solid White	41.16
54+612.80 To 54+660.00	CL	Solid White	47.20
54+780.00 To 54+810.00	3.6m Rt.	Solid White	30.00
54+960.00 To 54+995.00	CL	Solid White	35.00
54+433.78 To 54+612.00	Rt Shoulder	Solid White	190.92
54+617.95 To 54+716.93	Rt Shoulder	Solid White	125.52
54+722.88 To 54+814.65	Rt Shoulder	Solid White	113.62
54+820.60 To 54+948.99	Rt Shoulder	Solid White	150.00
54+954.94 To 55+095.00	Rt Shoulder	Solid White	153.07
N64 Turnout, West Bound Turn Lane	3.6m Rt.	Solid White	8.08
N64 Turnout, East Bound Turn Lane	3.6m Lt.	Solid White	8.08
TOTAL			34,313.94



TYPICAL PAVEMENT MARKING LAYOUT & STOP BAR PLACEMENT TURNOUTS 7.0 m OR GREATER

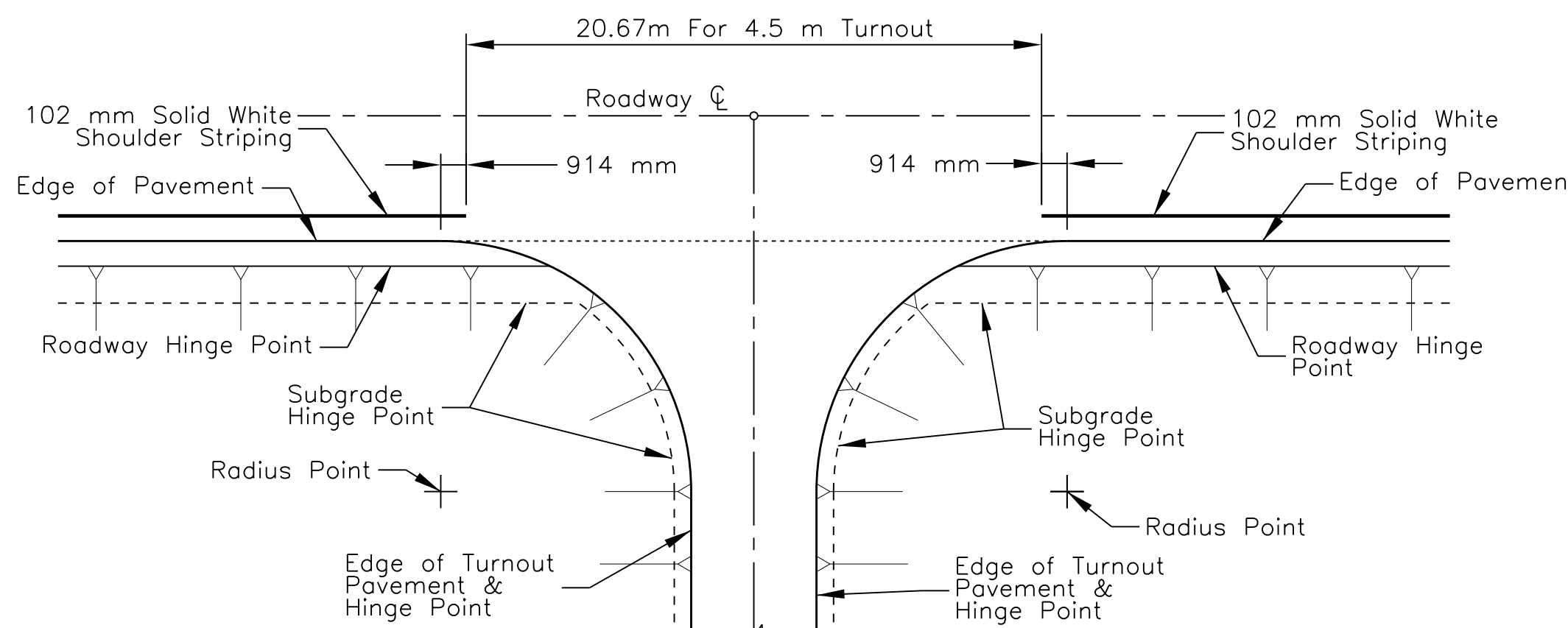


TYPICAL PAVEMENT MARKING LAYOUT AND STOP/YIELD SIGN PLACEMENT AT MAJOR INTERSECTION

STOP/YIELD SIGN LOCATION TABLE

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

Y' = Distance is the lateral projection from Roadway EOP (tangential) To Curvature\ EOP.
Lateral Offset (LO) is the lateral projection from Curvature\ EOP to sign location = 1.80 m.
*Y = y' + LO

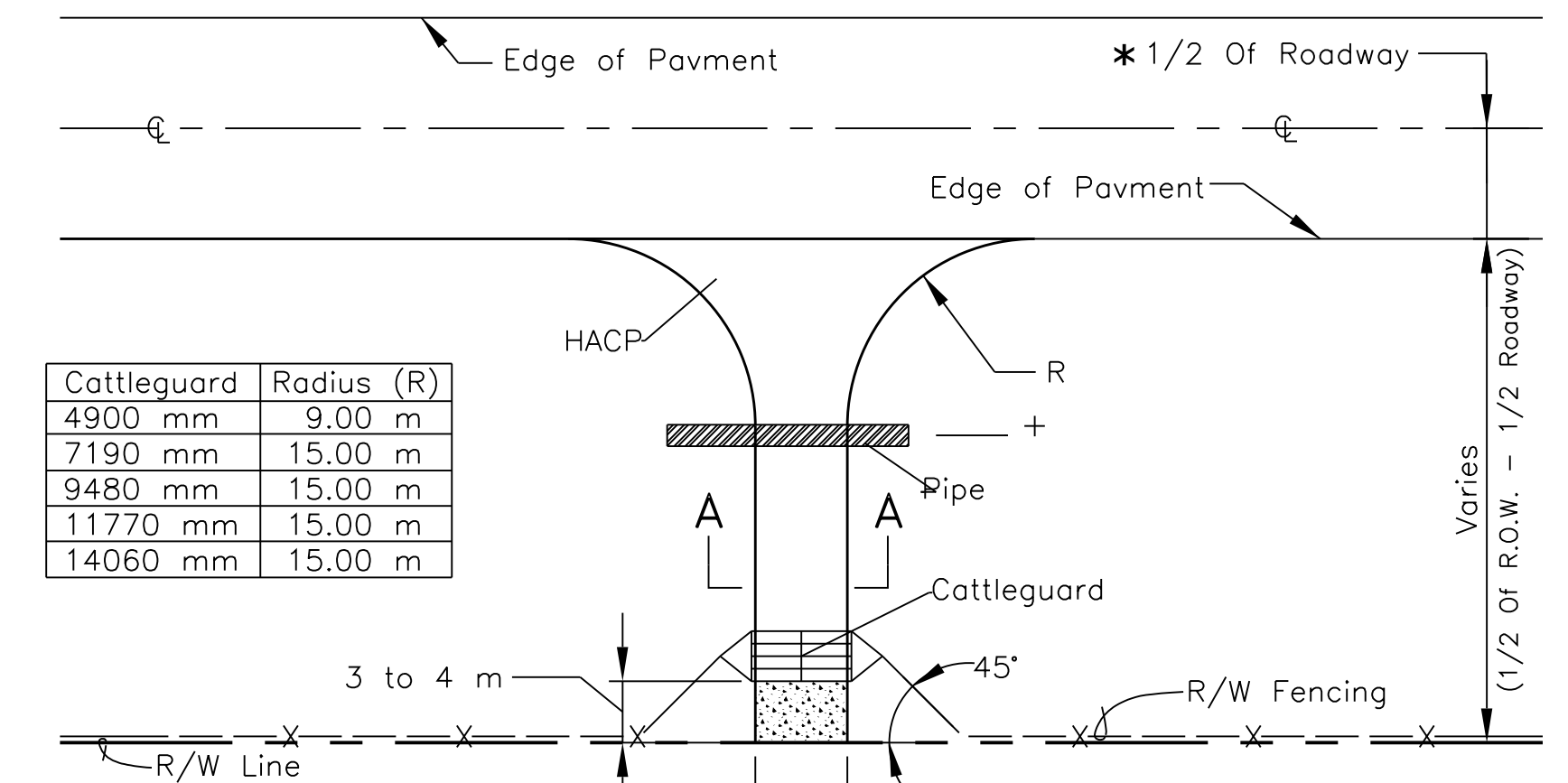


TYPICAL PAVEMENT MARKING LAYOUT AT 4.5 m TURNOUTS

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	38	88

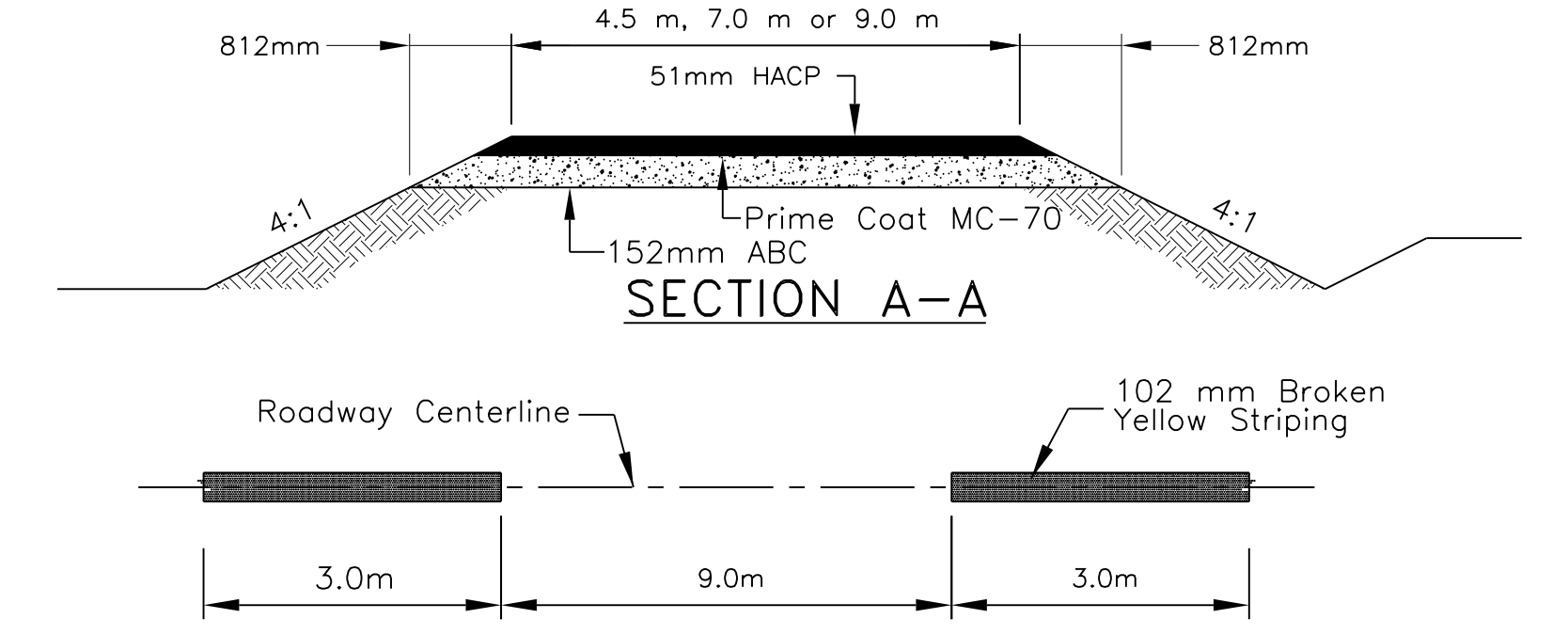
GENERAL NOTES

1. SEE SHEETS FOR SIGN DETAILS, DIMENSION, PLACEMENT/LOCATION, MARKINGS, TURNOUT TYPICALS, STOP BARS, ETC.



TYPICAL TYPE "A" TURNOUT LAYOUT DETAIL

* See Typical Section Detail For Roadway Width



TYPICAL PAVEMENT MARKING "BROKEN YELLOW"

ITEM No. 63405-3260: STOP BAR

STATION	LOCATION	EACH	REMARKS
38+898.00	Right	1	BIA Route N8080
39+765.57	Right	1	BIA Bus route
40+280.00	Right	1	BIA Bus route
40+410.00	Right	1	BIA Bus route
40+460.00	Left	1	BIA Bus route
41+240.00	Right	1	C444
41+535.00	Left	1	BIA Route N8079
41+700.00	Right	1	BIA Forest Road 7500/N68
42+770.00	Left	1	BIA Bus route
49+211.00	Right	1	C443
49+330.00	Left	1	Multiple Residence
49+970.00	Left	1	Multiple Residence
51+040.00	Left	1	BIA Bus route
52+180.00	Left	1	Dine' College East Entrance
52+663.00	Right	1	BIA Route N68
54+595.00	Left	1	Tsaile Middel School
54+615.00	Right	1	Transit Bus Pullout
54+720.00	Right	1	Transit Bus Pullout
54+817.32	Right	1	Store & Gas Station
54+822.86	Left	1	N12 & N64 Intersection
54+890.00	Left	1	
54+952.00	Right	1	Senior Center
55+327.00	Right	1	NHA Hpusing
55+786.00	Right	1	LDS Church
TOTAL			24

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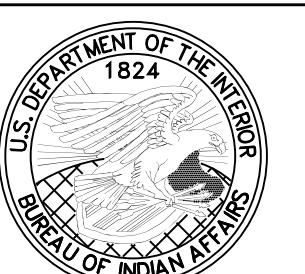
PAVEMENT STRIPING, MARKING & TURNOUT LAYOUT DETAIL

DRAWN BY: NRDOT DATE: 4/29/2015

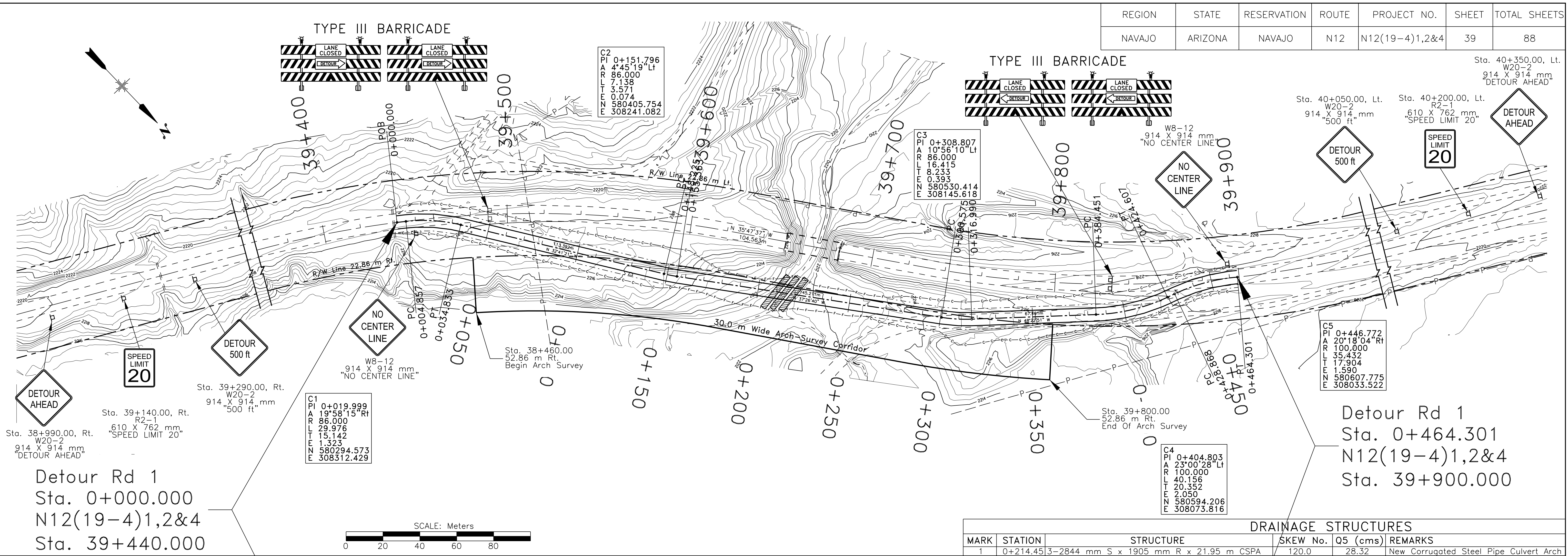
DESIGNED BY: NRDOT DATE: 4/29/2015

REVISED: 8/26/2015 BY: Leroy Toledo

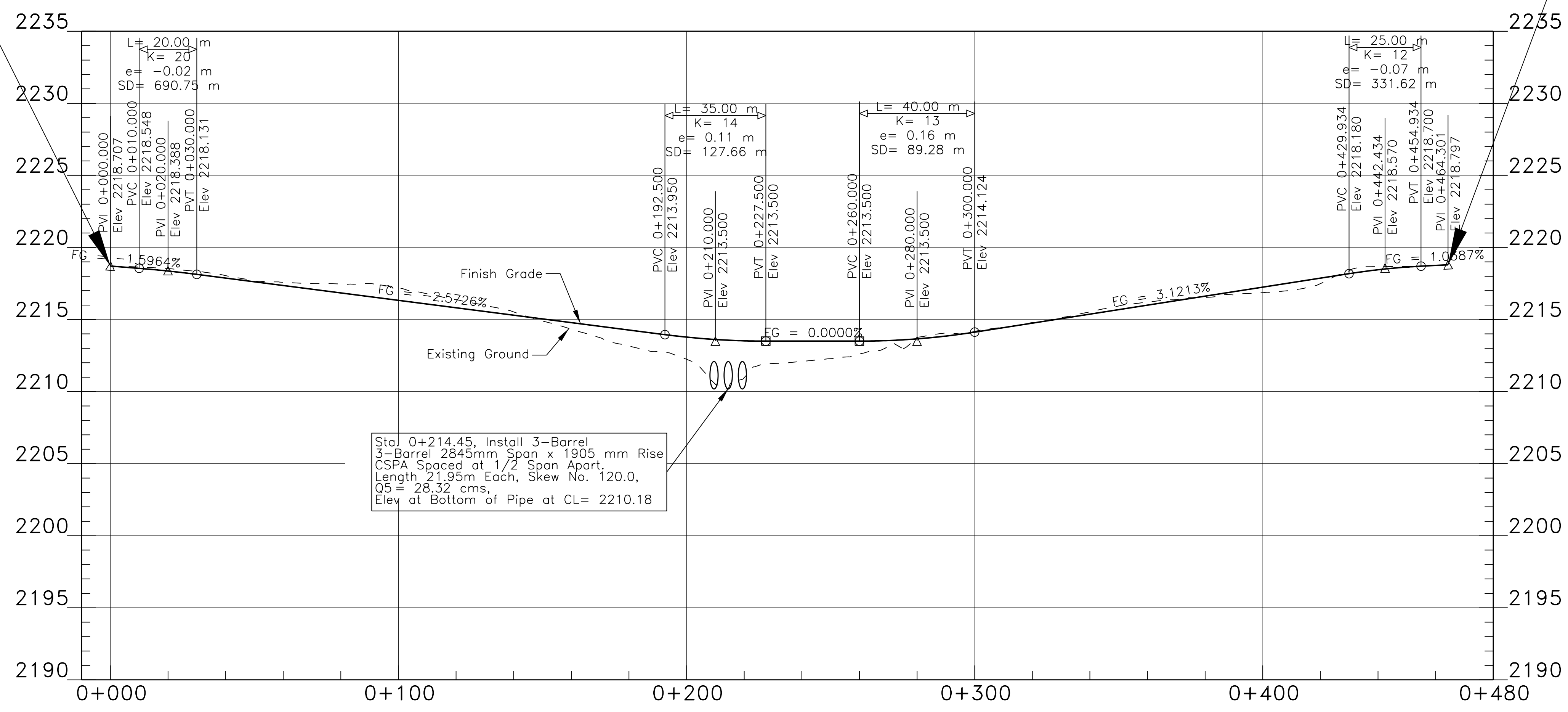
Sht 38 N12 Pvmr Mrkg TO Detail.dgn



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	39	88

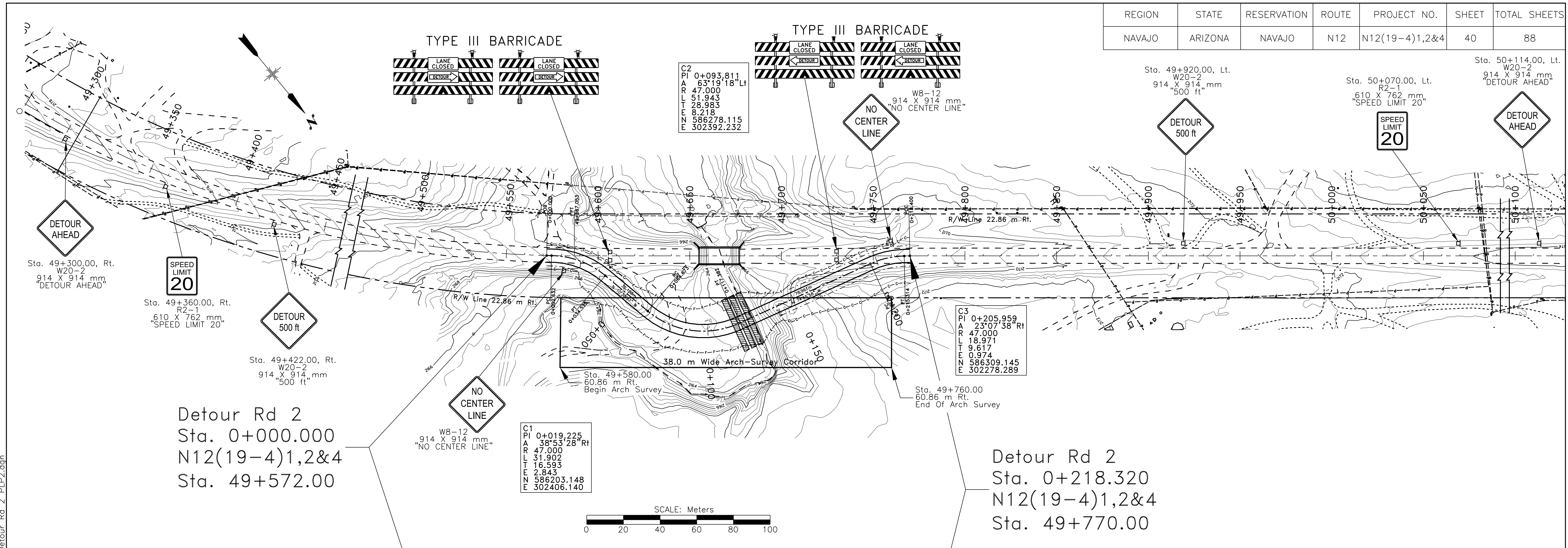


DRAINAGE STRUCTURES					
MARK	STATION	STRUCTURE	SKEW No.	Q5 (cms)	REMARKS
1	0+214.45	3-2844 mm S x 1905 mm R x 21.95 m CSPA	120.0	28.32	New Corrugated Steel Pipe Culvert Arch



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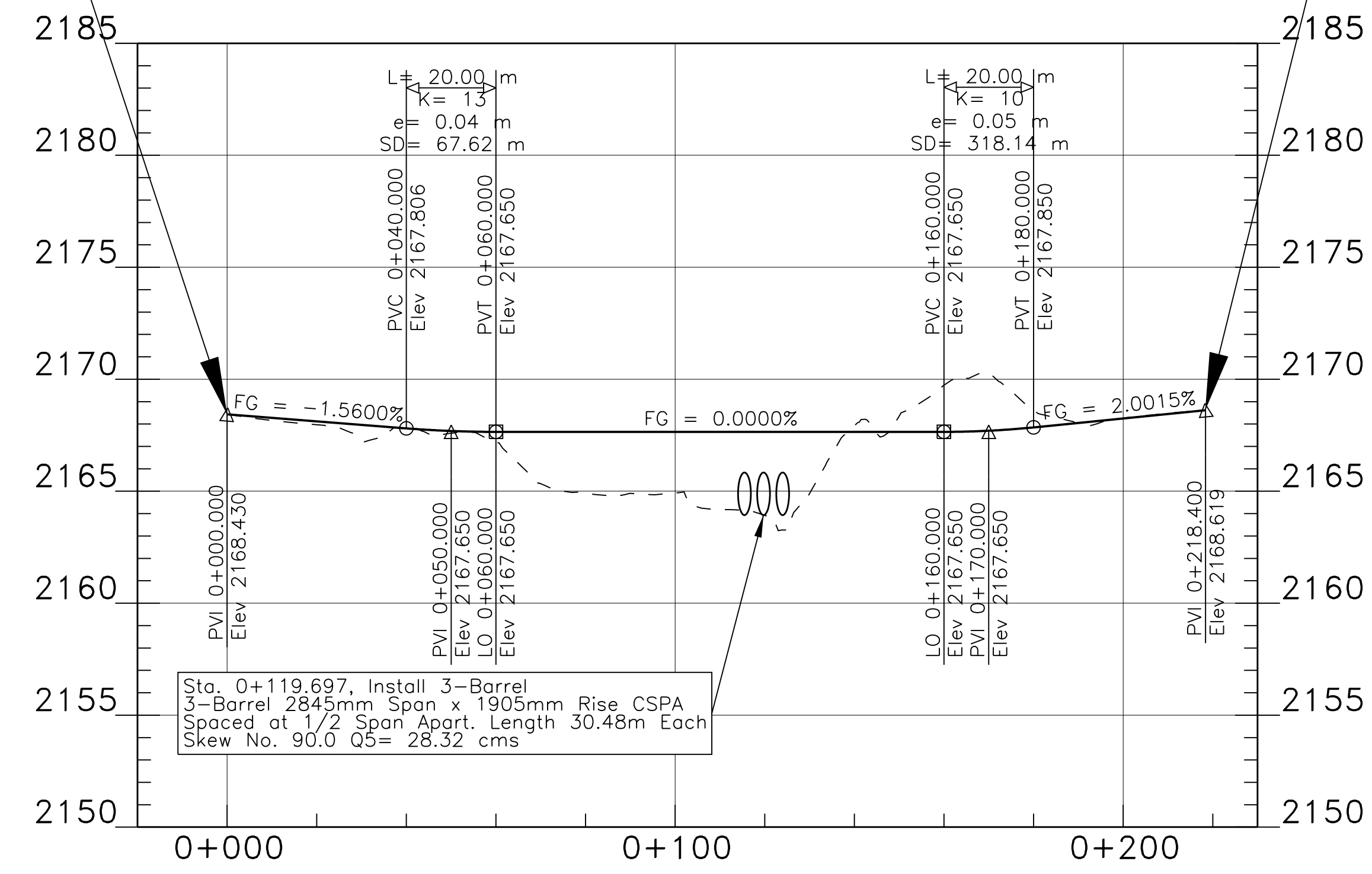
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	40	88



Detour Rd 2
 Sta. 0+000.000
 N12(19-4)1,2&4
 Sta. 49+572.00

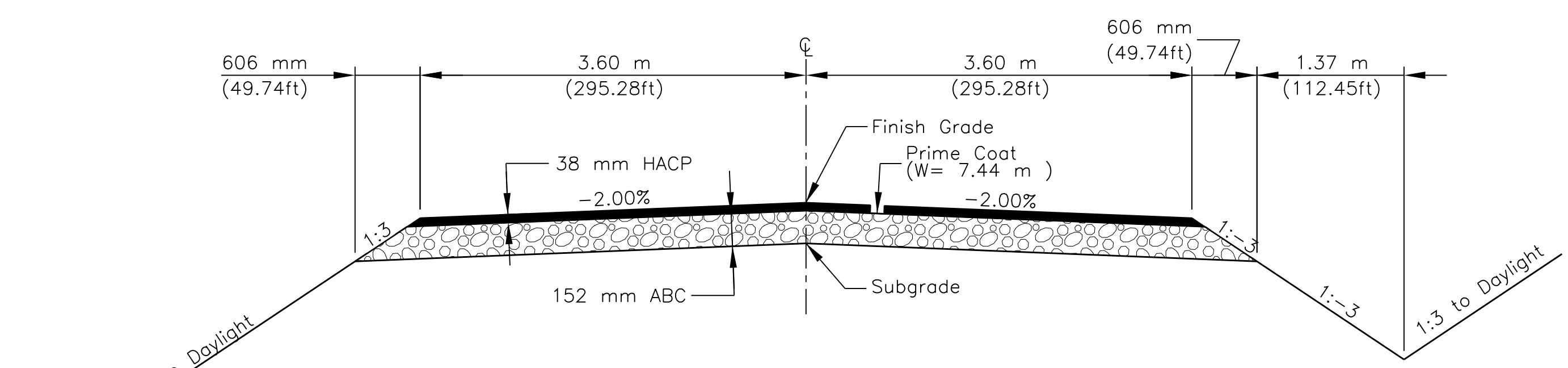
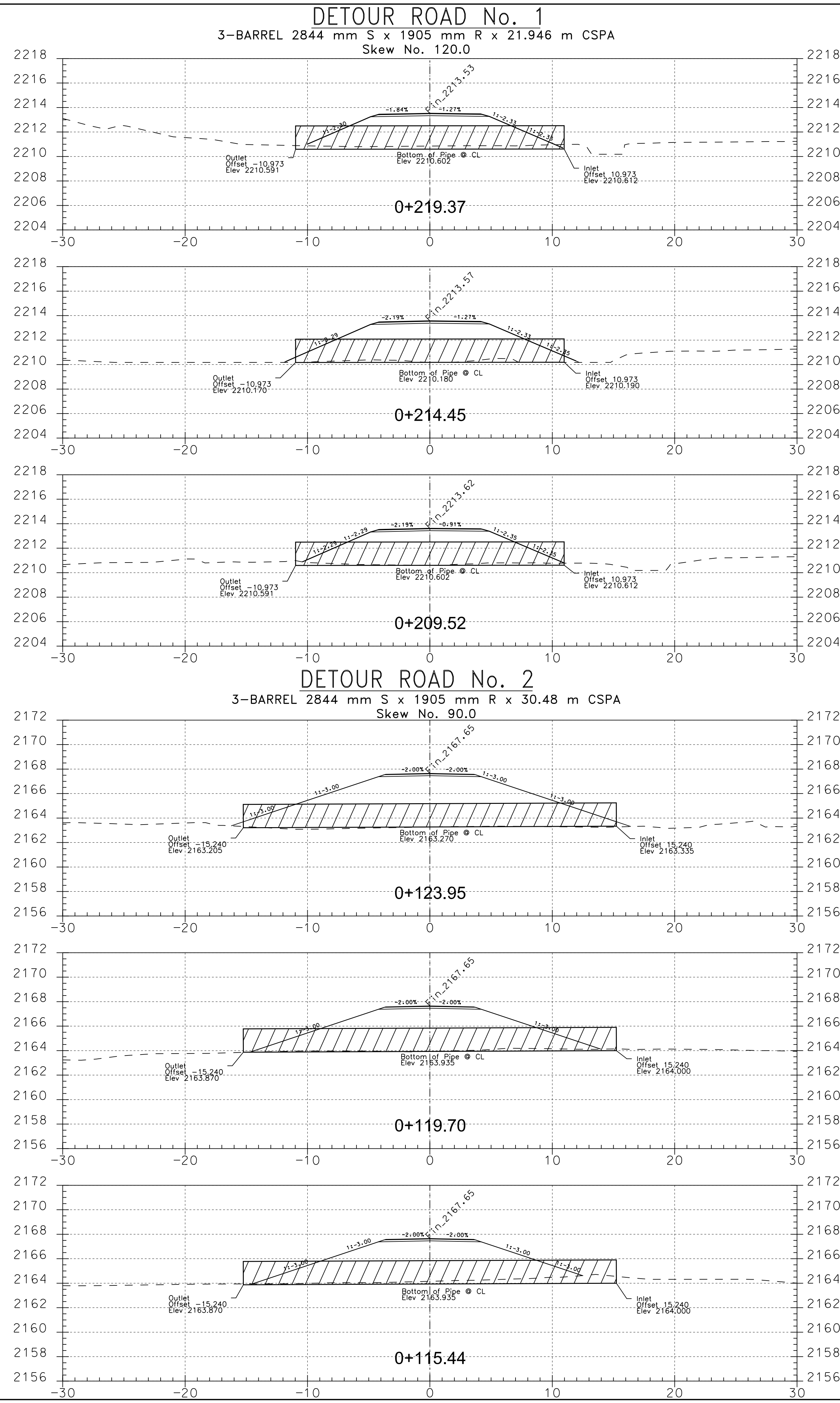
Detour Rd 2
 Sta. 0+218.320
 N12(19-4)1,2&4
 Sta. 49+770.00

DRAINAGE STRUCTURES					
MARK	STATION	STRUCTURE	SKEW No.	Q5 (cms)	REMARKS
1	0+119.697	3-2844 mm S x 1905 mm R x 30.48 m CSPA	90.0	28.32	New Corrugated Steel Pipe Culvert Arch



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REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	41	88



TYPICAL CROSS SECTION DETAIL FOR TEMPORARY DETOUR ROADS

REVISED
10:45 am, Nov 23, 2018

EARTHWORK VOLUME-DETOUR ROAD 1

STATION	TO	STATION	CUT (m ³)	FILL (m ³)	WASTE (m ³)	BORROW (m ³)
0+000.000	to	0+115.269	253.00	253.00	0.00	0.00
0+115.269	to	0+151.754	120.00	120.00	0.00	0.00
0+151.754	to	0+464.347	888.00	3,503.00	0.00	2,615.00
TOTAL			1,261.00	3,876.00	0.00	2,615.00

15% Shrinkage Factor Applied to Fill

EARTHWORK VOLUME-DETOUR ROAD 2

STATION	TO	STATION	CUT (m ³)	FILL (m ³)	WASTE (m ³)	BORROW (m ³)
0+000.000	to	0+030.034	58.00	58.00	58.00	0.00
0+030.034	to	0+218.320	1,870.00	3,938.00	0.00	2,068.00
TOTAL			1,928.00	3,996.00	0.00	2,068.00

15% Shrinkage Factor Applied to Fill

ESTIMATED QUANTITIES

ITEM No.	DESCRIPTION	Detour Rd 1 (t)	Detour Rd 2 (t)	Total (t)
30103-2000	Untreated Aggregate Base Course, Special	1,210.84	539.31	1,750.15
40201-0500	Hot Asphaltic Concrete Pavement, Class "B". Grade "B"	300.24	141.16	441.40
40502-0800	Asphalt Cement, PG 64-22	18.01	8.47	26.48
41101-5000	Prime Coat, PEP	0.79	0.05	0.84

TEMPORARY DRAINAGE STRUCTURE

LOCATION	STATION	STRUCTURE	TOTAL LENGTH (m)	REMARKS
DETOUR ROAD 1	0+214.45	3-2844 mm S x 1905 mm R x 21.95 m CSPA	65.85	New Corrugated Steel Pipe Culvert Arch
DETOUR ROAD 2	0+119.69	3-2844 mm S x 1905 mm R x 30.48 m CSPA	91.44	New Corrugated Steel Pipe Culvert Arch
TOTAL			157.29	

NOTES:

- The construction of the detour roads for Bridges N504 & N504 shall be in accordance with the applicable sections of the FP-14, supplemental specifications, and the details provided in these design plans and contract documents.
- The Contractor is responsible for maintaining the detour roads throughout the contract time period or until the main road can be opened back up to traffic.
- Once the main N12 road is open to traffic, the Contractor shall remove the detour roads and restore the area back to its original condition to the fullest extent possible and re-seed and mulch all disturbed areas under bid item 62510-1000. The embankment, ABC, and asphalt materials shall be reused on the main roadway as embankment in the lower layers of the subgrade.
- All temporary drainage structures shall be removed with care and stockpiled at a location for the government maintenance personnel to pick up. The Contractor shall coordinate the removal and stockpiling location with the COR.
- The construction of the detour roads for bridges N504 & N505 shall be paid for under bid item 63510-1000.

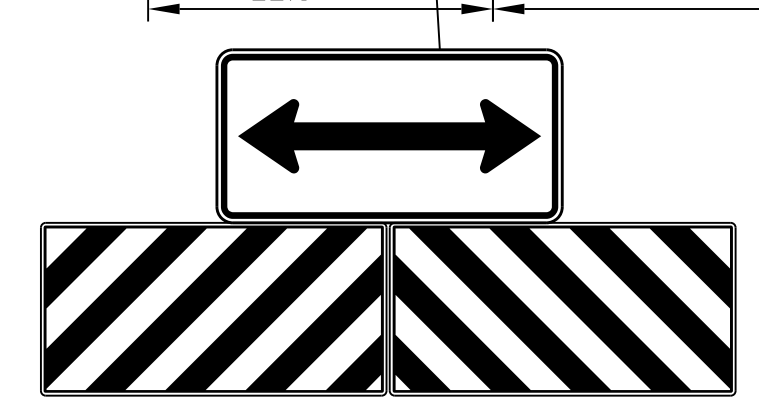
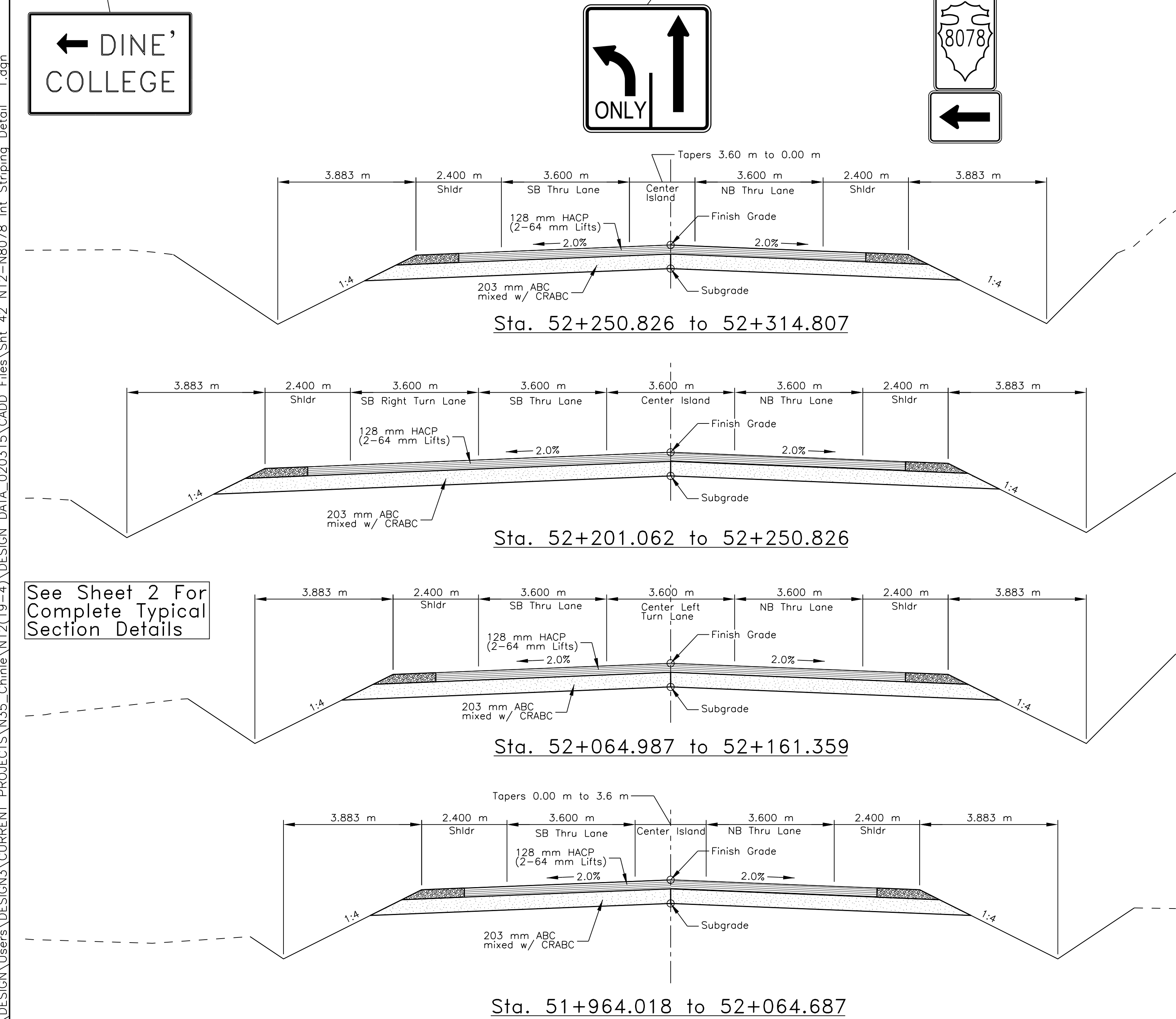
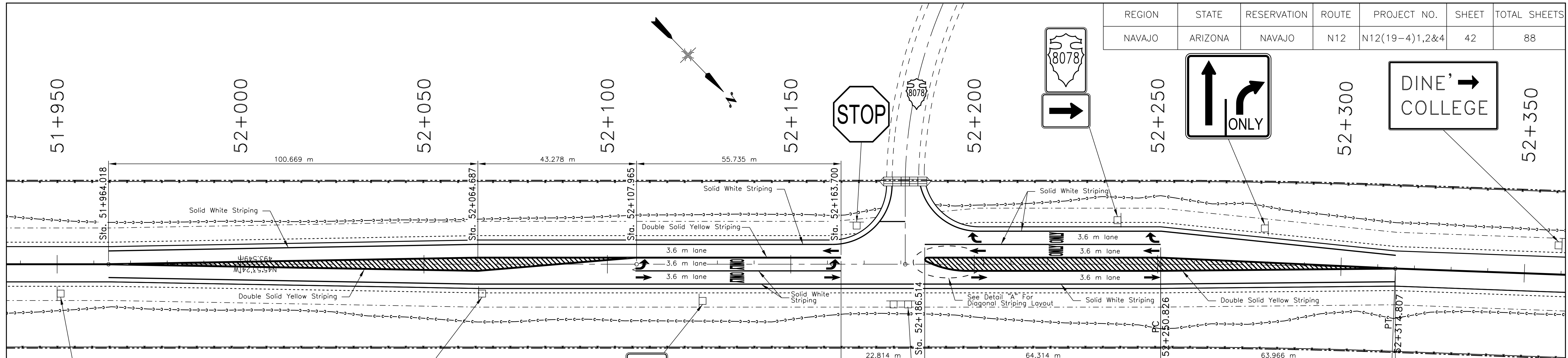
UNITED STATES
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NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

DETOUR ROAD TYPICAL
CROSS SECTION DETAIL AND
PIPE CROSS SECTION DETAIL

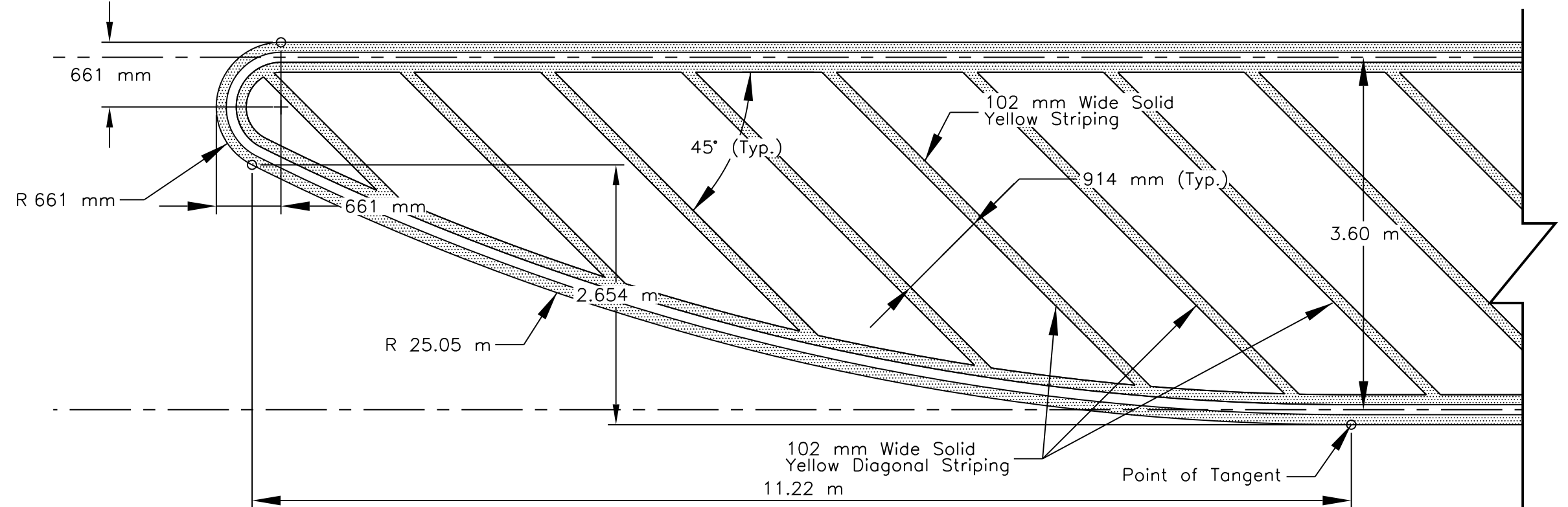
DRAWN BY: NRDOT	DATE: 2/23/2016
DESIGNED BY: NRDOT	DATE: 2/23/2016
REVISED: 3/21/2018	BY: Harold.Riley
Sht 41 N12 Bridge Detour XS.dgn	

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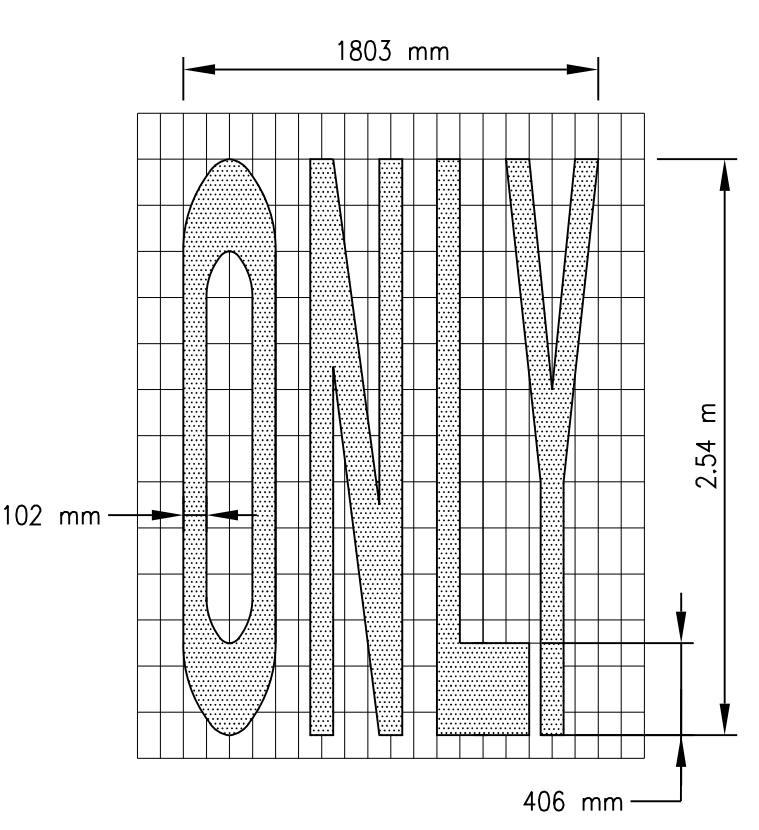
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	42	88



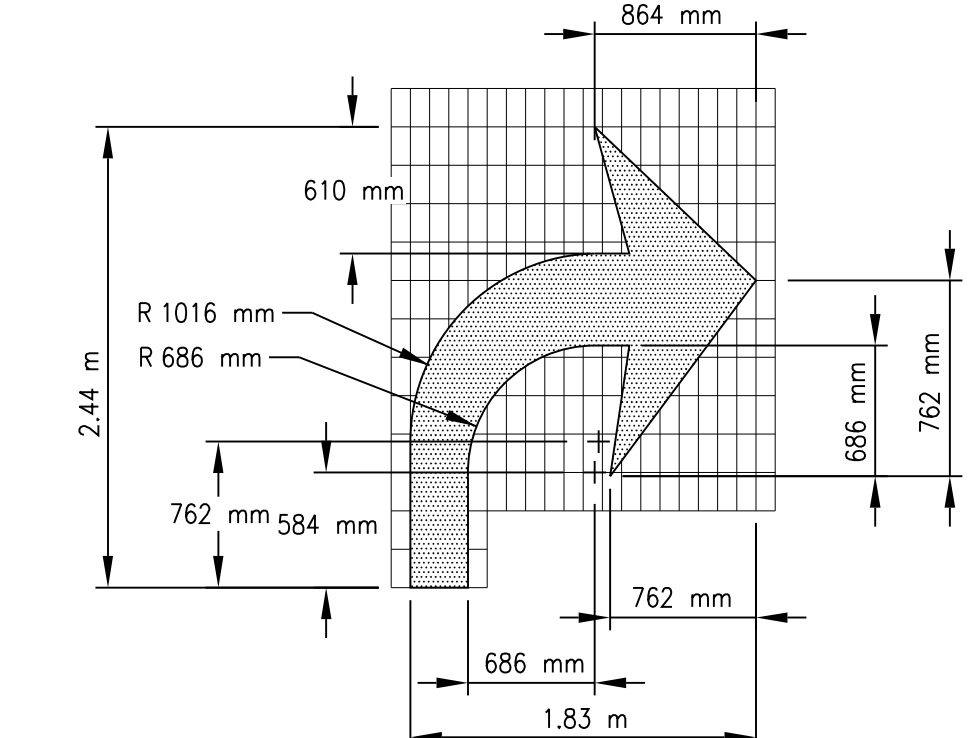
ITEM 63405-2950
Pavement Marking, Elongated
Through Lane-Use Arrow,
Type "H", Req'd 7 Each



DETAIL "A"



ITEM 63405-3050
Pavement Marking Word
"ONLY", Type "H"
Req'd 4 Each



ITEM 63405-2900
Pavement Marking, Elongated
Turn Lane-Use Arrow,
Type "H", Req'd 4 Each

I:\DESIGN\Users\DESIGN3\CURRENT_PROJECTS\N35_Chinle\N12(19-4)\DESIGN_DATA_020315\CADD_Files\Sht_42_N12-N8078_Int_Striping_Detail_1.dgn

See Sheet 2 For
Complete Typical
Section Details

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

**PAVEMENT WIDENING AND
TURNING LANE DETAIL 1**

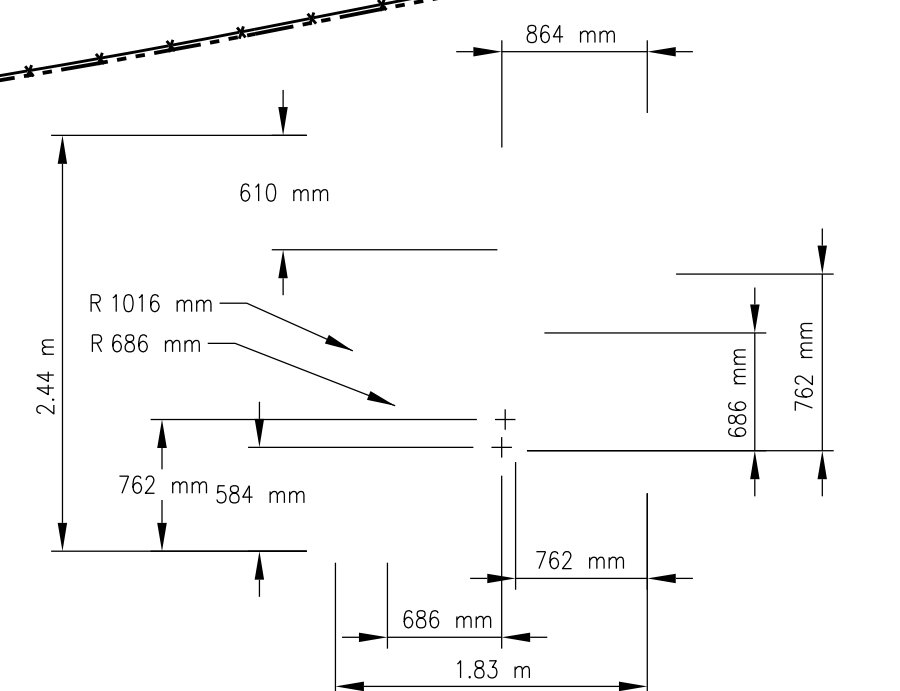
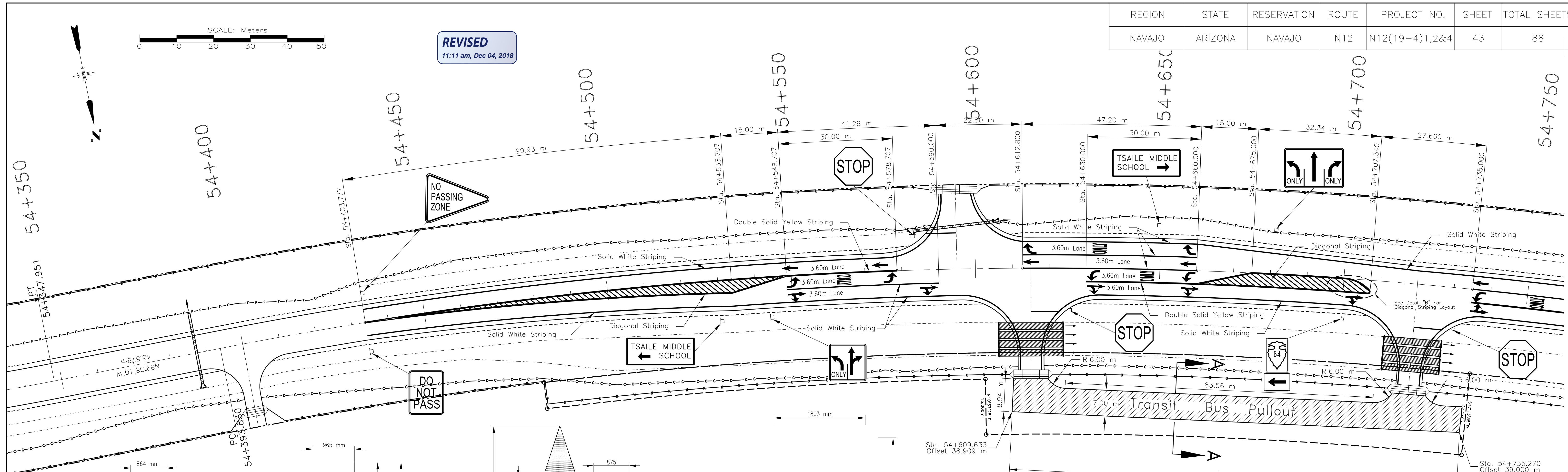
DRAWN BY: NRDOT	DATE: 9/3/2015
DESIGNED BY: NRDOT	DATE: 9/3/2015
REVISED: 11/23/2018	BY: Leroy.Toledo

Sht 42 N12-N8078 Int Striping Detail 1.dgn

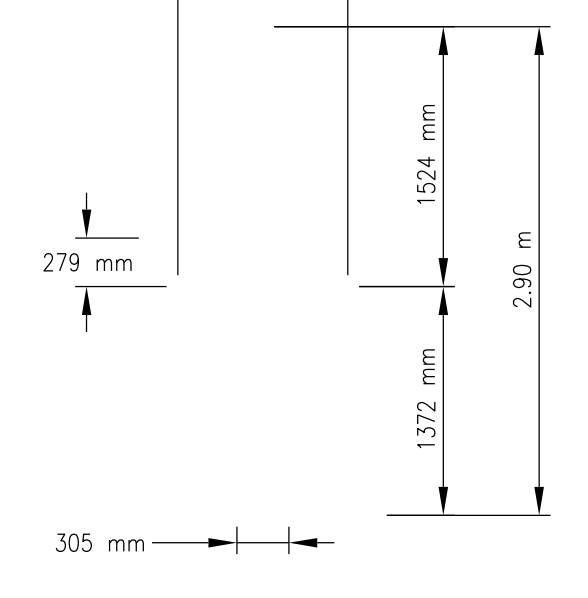
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	43	88



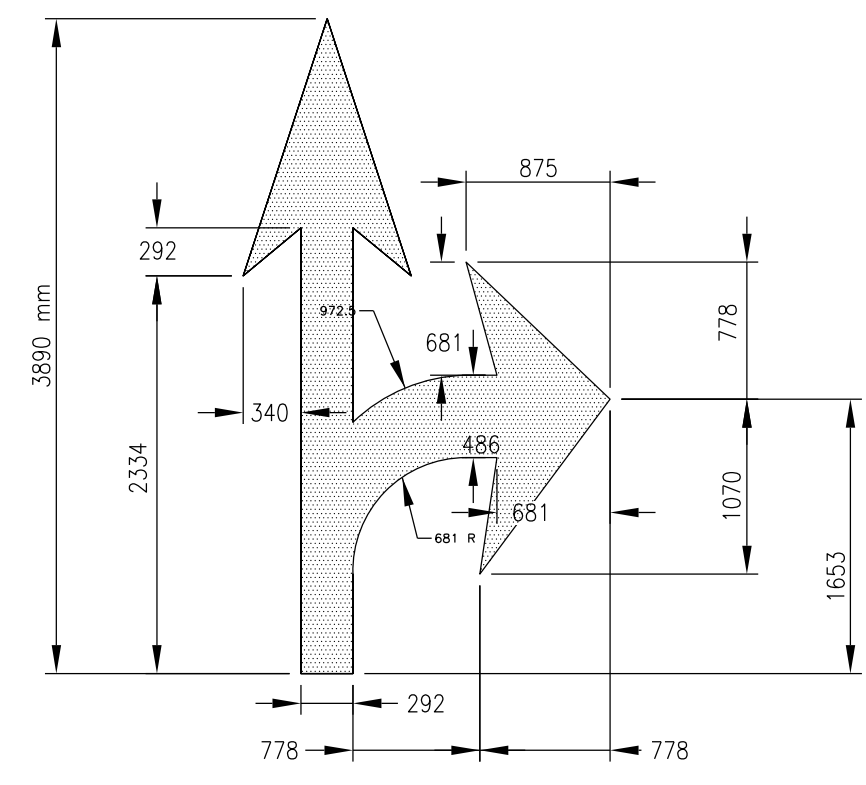
REVISED
11:11 am, Dec 04, 2018



ITEM 63405-2900
Pavement Marking, Elongated
Turn Lane-Use Arrow,
Type "H", Req'd 7 Each



ITEM 63405-2950
Pavement Marking, Elongated
Through Lane-Use Arrow,
Type "H", Req'd 5 Each

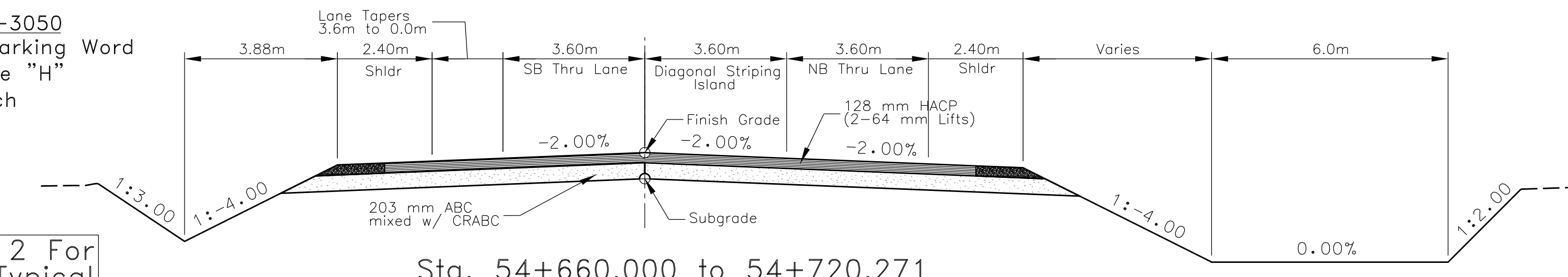


ITEM 63405-3000
Pavement Marking Turn & Through
Lane-Use Arrow Type "H"
Req'd 6 Each

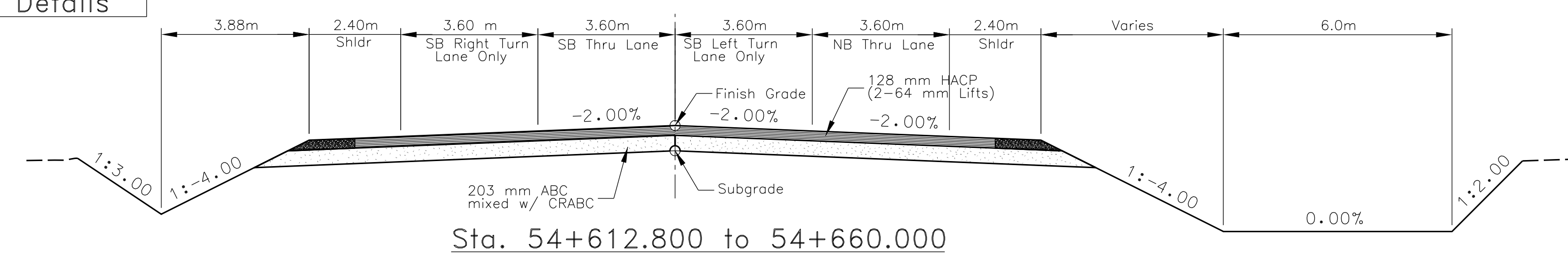
ITEM 63405-3050
Pavement Marking Word
"ONLY", Type "H"
Req'd 4 Each

See Sheet 2 For
Complete Typical
Section Details

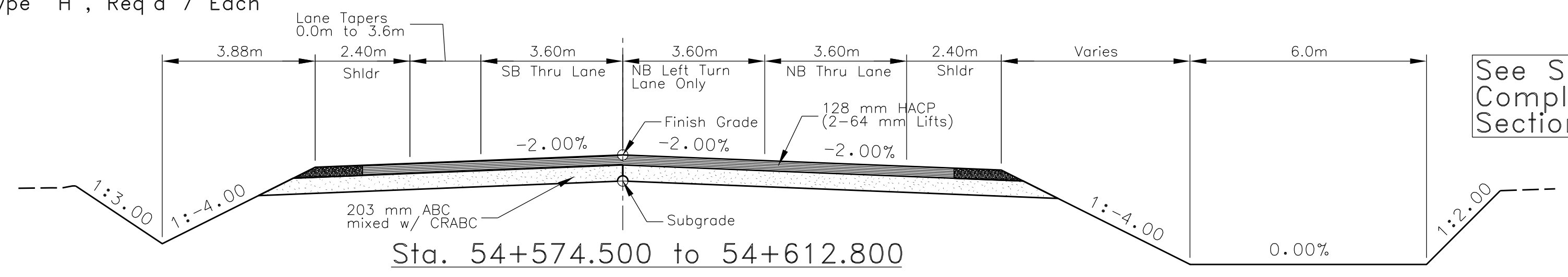
SECTION A-A
TRANSIT BUS PULLOUT



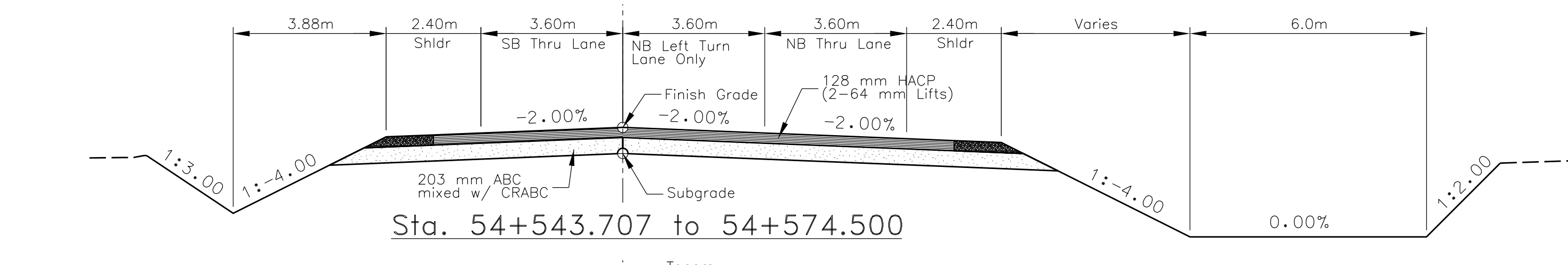
Sta. 54+660.000 to 54+720.271



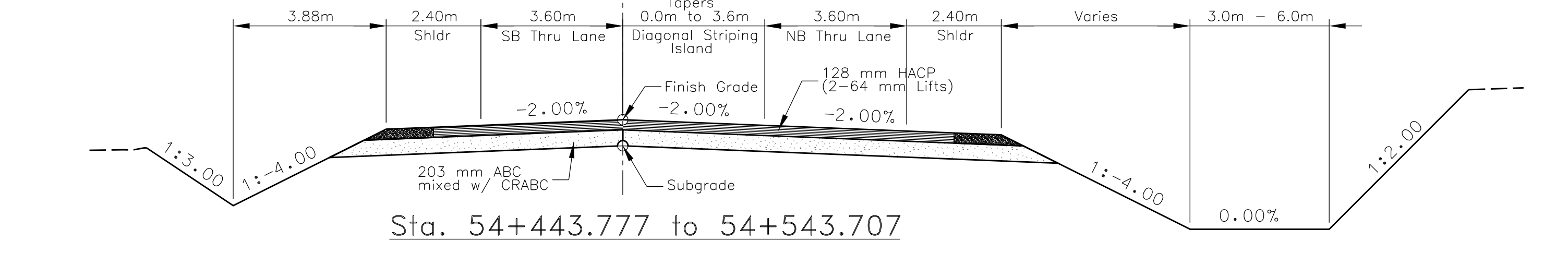
Sta. 54+612.800 to 54+660.000



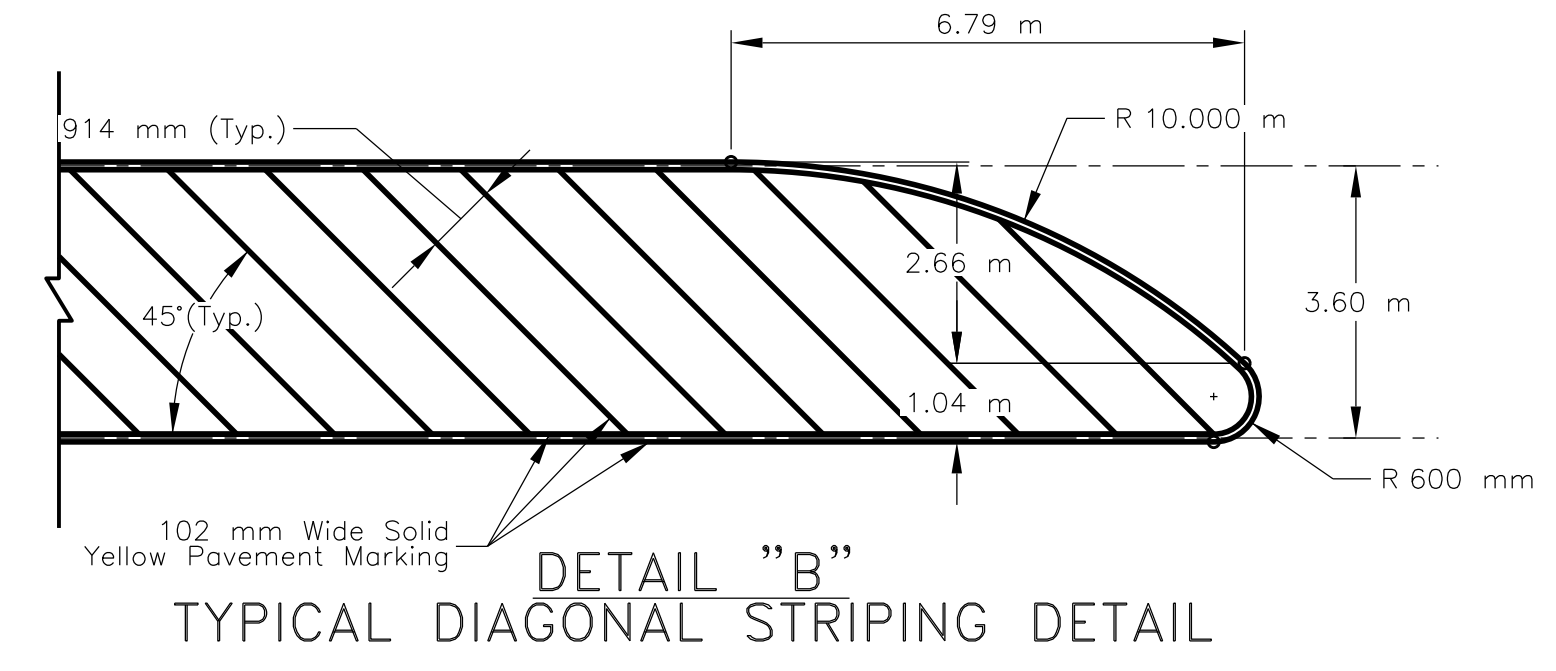
Sta. 54+574.500 to 54+612.800



Sta. 54+543.707 to 54+574.500



Sta. 54+443.777 to 54+543.707

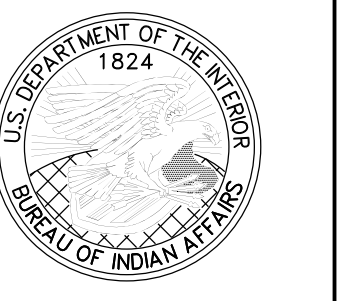


DETAIL "B"
TYPICAL DIAGONAL STRIPING DETAIL

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

PAVEMENT WIDENING AND
TURNING LANE DETAIL 2

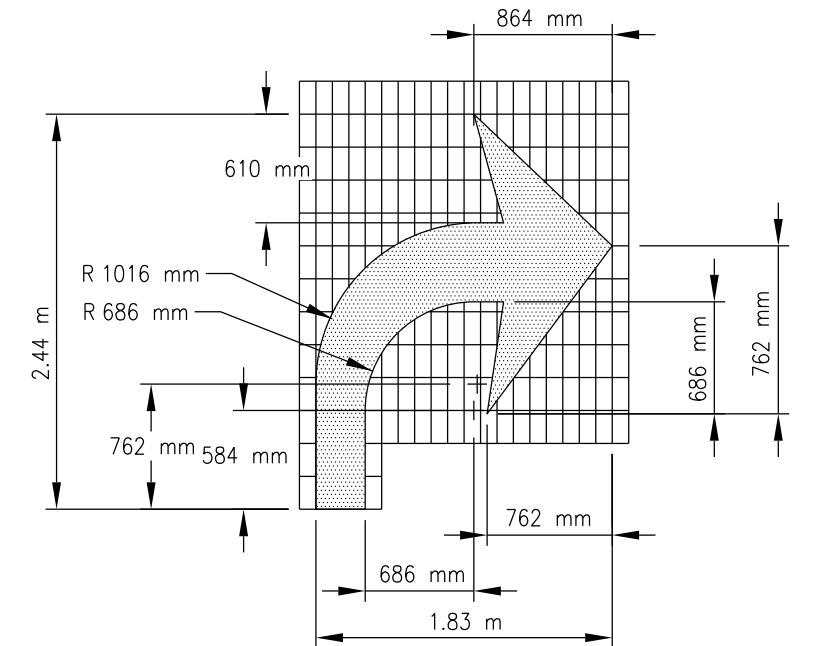
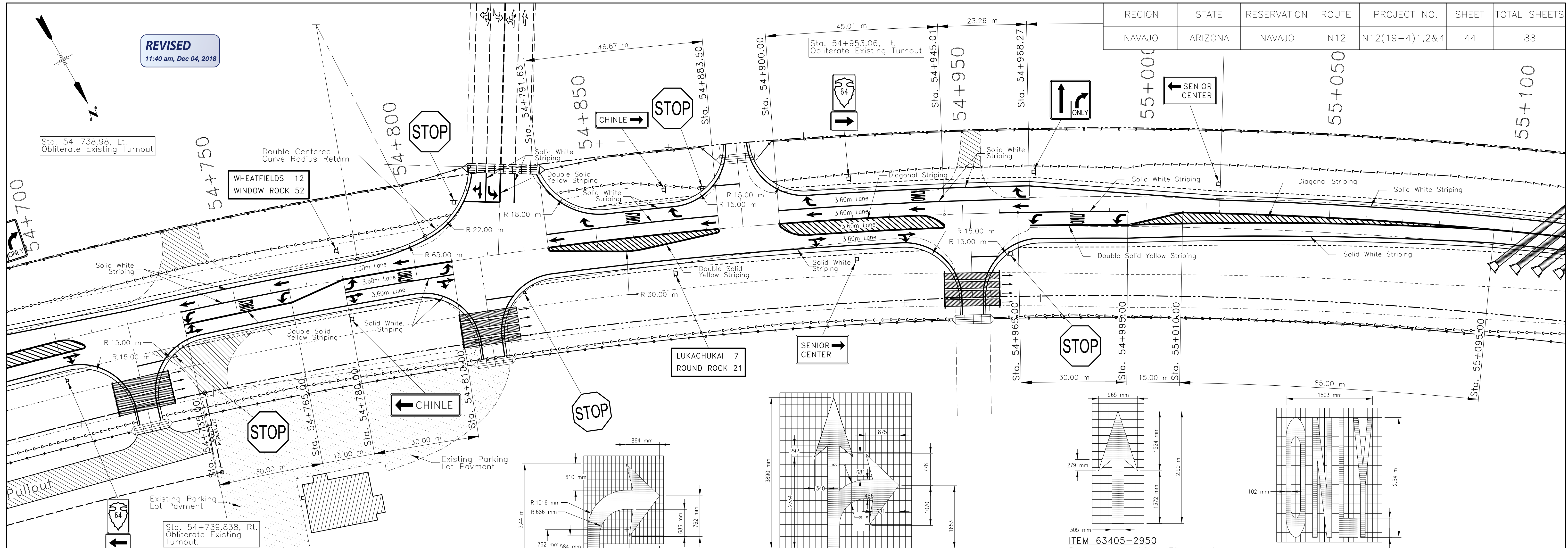
DRAWN BY: NRDOT	DATE: 10/11/2017
DESIGNED BY: NRDOT	DATE: 10/11/2017
REVISED: 12/3/2018	BY: Leroy.Toledo



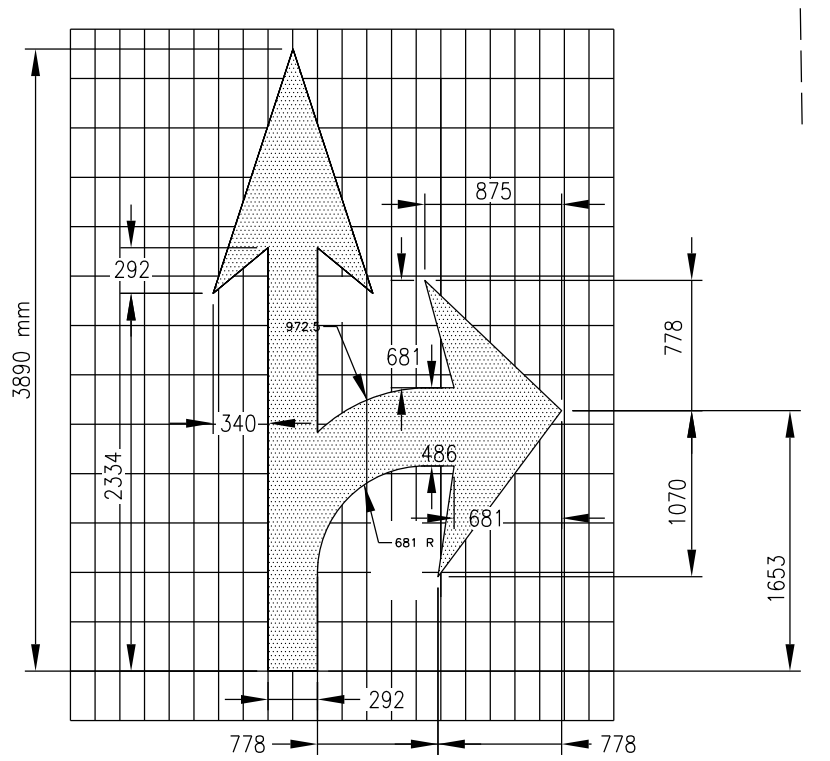
FILED

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	44	88

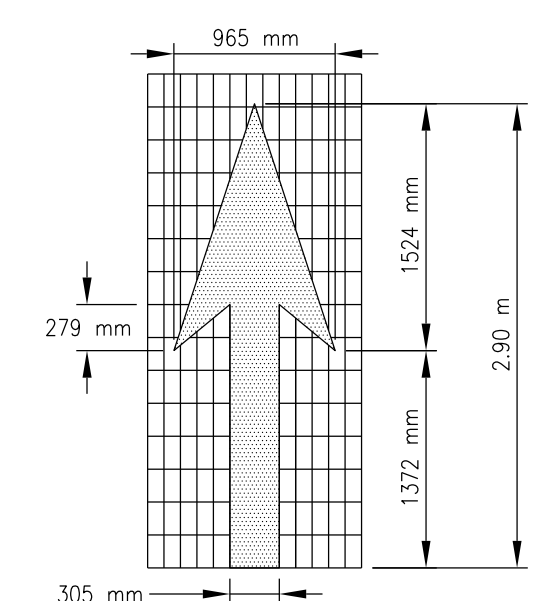
REVISED
11:40 am, Dec 04, 2018



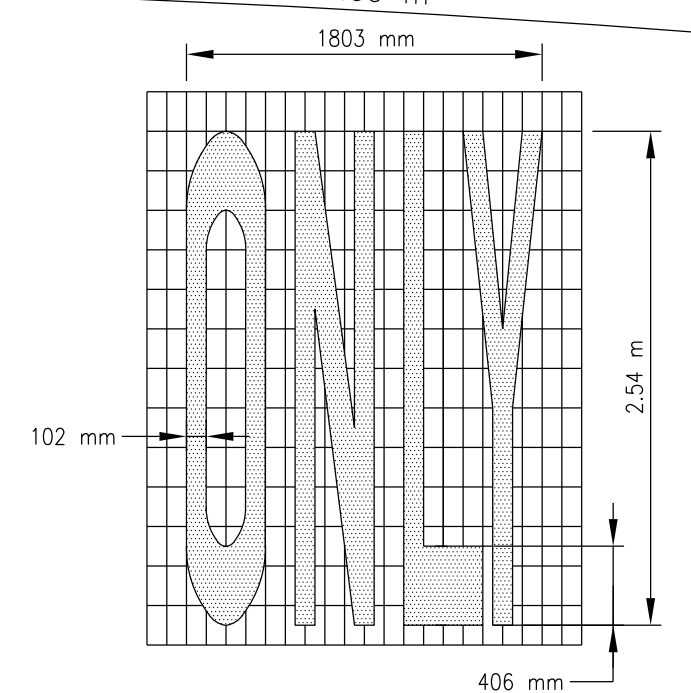
ITEM 63405-2900
Pavement Marking, Elongated
Turn Lane-Use Arrow,
Type "H", Req'd 10 Each



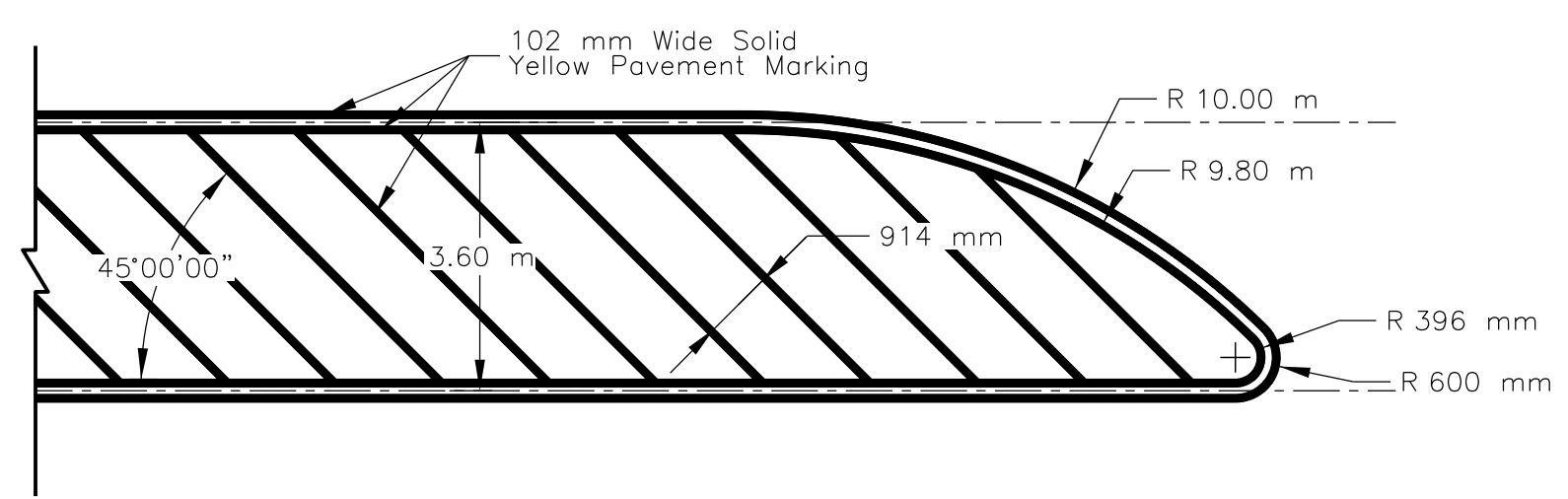
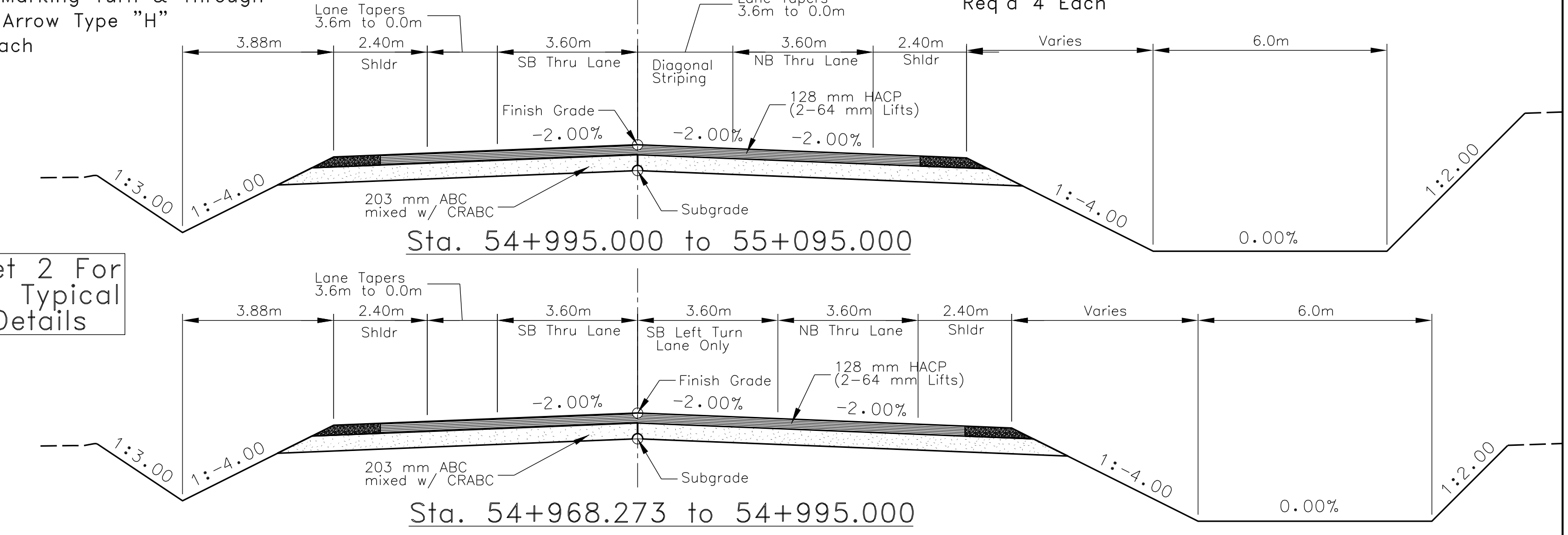
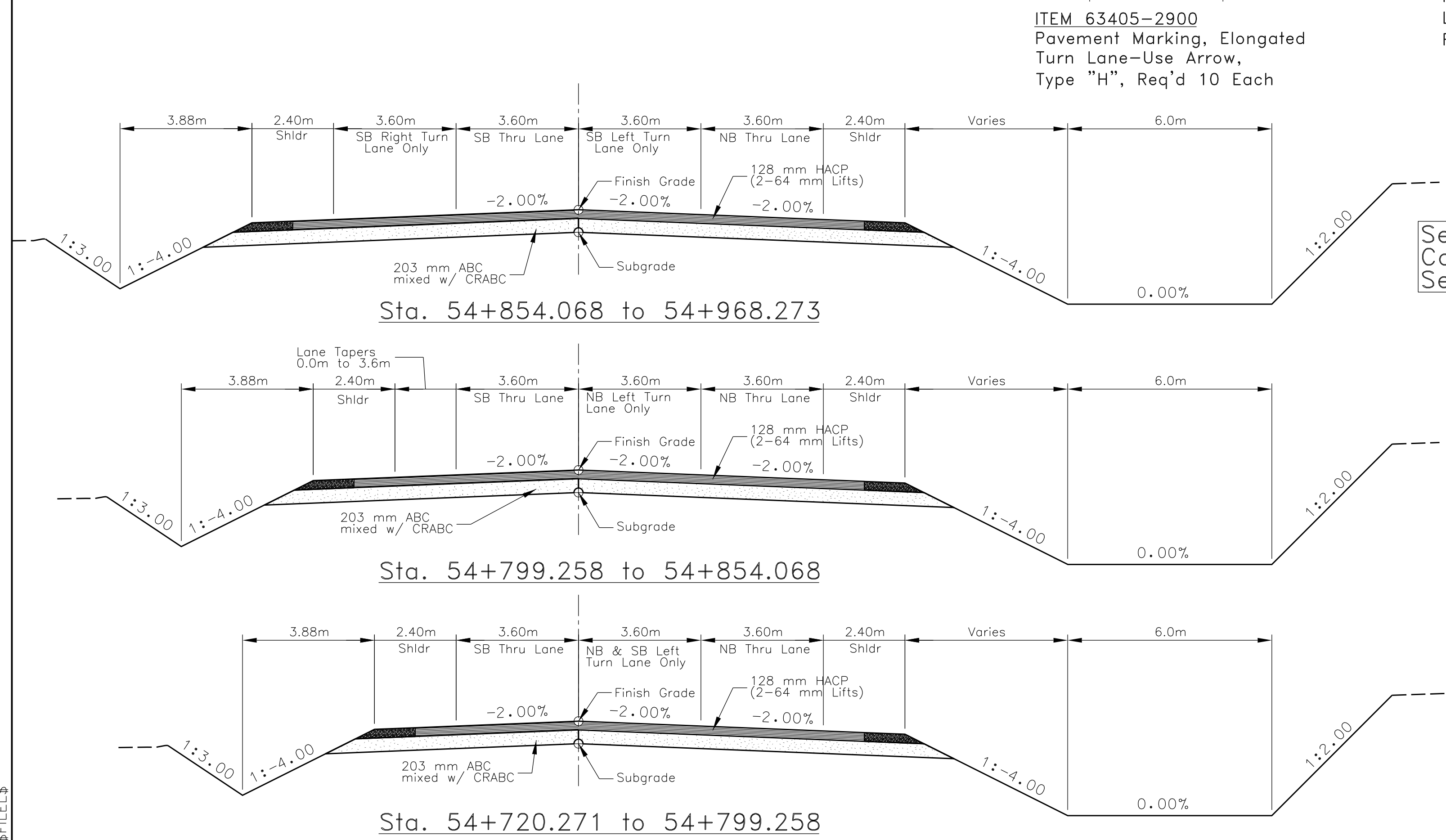
ITEM 63405-3000
Pavement Marking Turn & Through
Lane-Use Arrow Type "H"
Req'd 5 Each



ITEM 63405-2950
Pavement Marking, Elongated
Through Lane-Use Arrow,
Type "H", Req'd 7 Each



ITEM 63405-3050
Pavement Marking Word
"ONLY", Type "H"
Req'd 4 Each




TYPICAL DIAGONAL STRIPING DETAIL

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

**PAVEMENT WIDENING AND
TURNING LANE DETAIL 4**

DRAWN BY: NRDOT	DATE: 12/2/2016
DESIGNED BY: NRDOT	DATE: 12/2/2016
REVISED: 12/4/2018	BY: Harold.Riley

FILES\$



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	45	88

Square Tube Selection: Single Post – 2.80 mm thickness

Post Size	H = Panel Height To Bottom Of sign	1.83	2.13	2.44	2.74	<--- H
38 mm x 38 mm	0.51	0.43	0.37	0.31	n/a	Maximum Sign Area (m ²)
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	1.83	2.13	2.44	2.74	<--- H
50 mm x 50 mm	n/a	n/a	1.49	0.84	0.58	Maximum Sign Area (m ²)
57 mm x 57 mm	n/a	n/a	2.15	1.97	1.81	
64 mm x 64 mm			2.68	2.46	2.26	

Square Tube Selection: Triple Post – 2.80 mm thickness

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

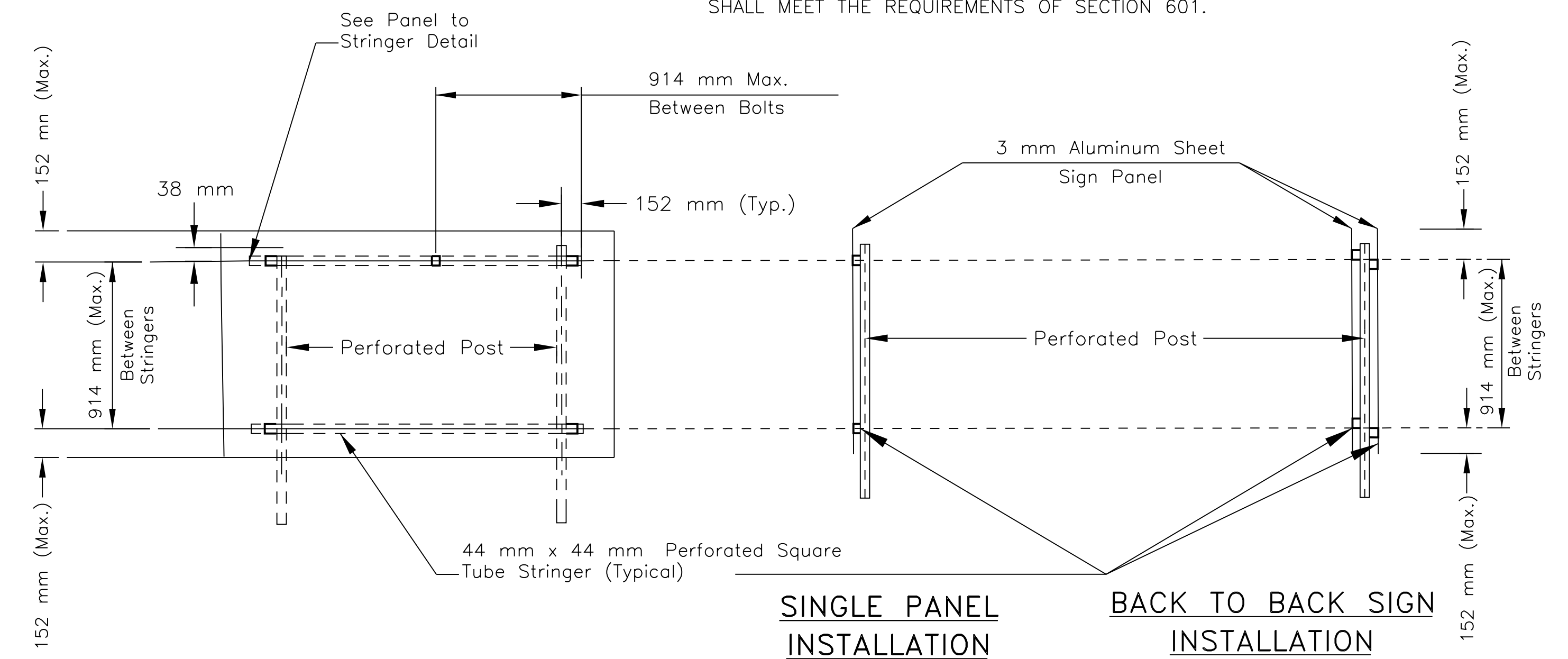
Guide Sign Post Dimensions

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

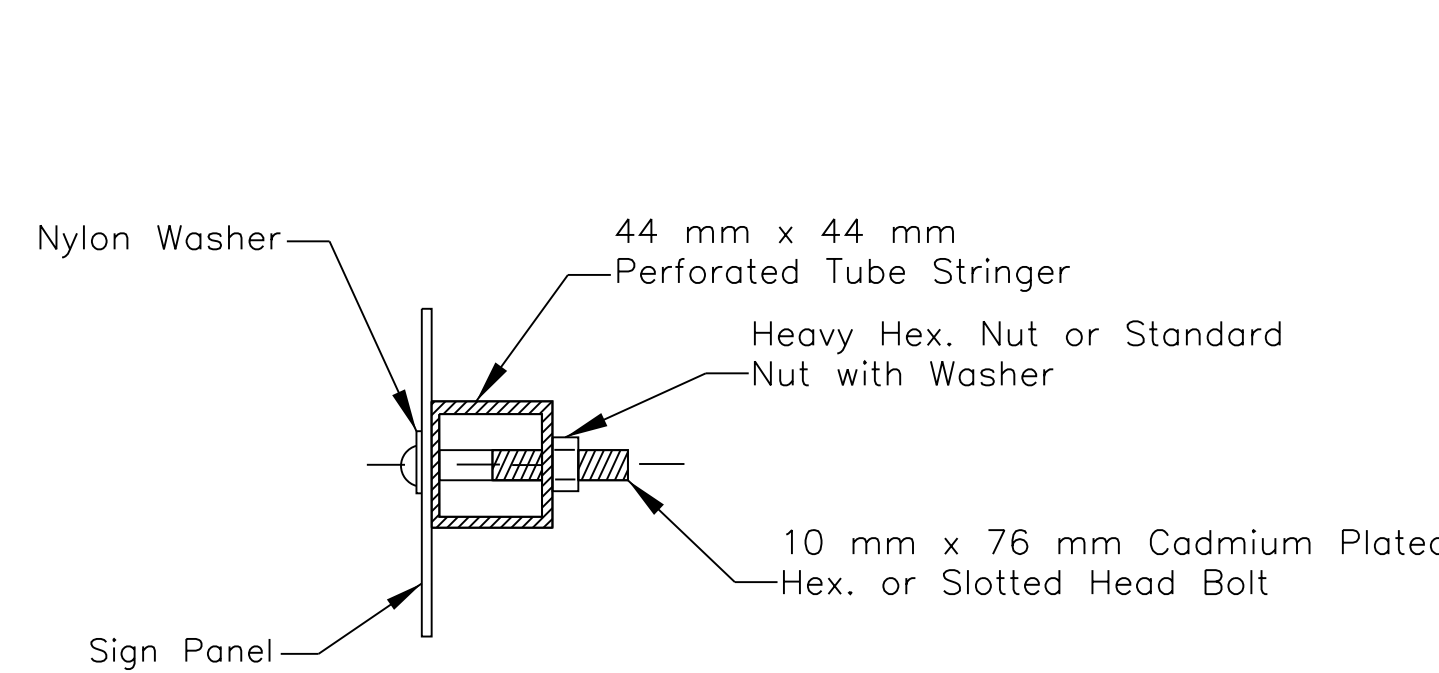
Panel Width	914 mm	1.22 m	1.52 m	1.83 m	2.13 m	2.44 m	2.74 m	3.05 m
two posts spacing (A)	559 mm	711 mm	914 mm	1.12 m	1.27 m	1.47 m	1.63 m	1.83 m
bolts to panel (per stringer)			3	3	3	3	4	4
length of each stringer			1.22 m	1.42 m	1.57 m	1.78 m	1.93 m	2.13 m
two posts spacing (B)			533 mm	635 mm	737 mm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

GENERAL NOTES:

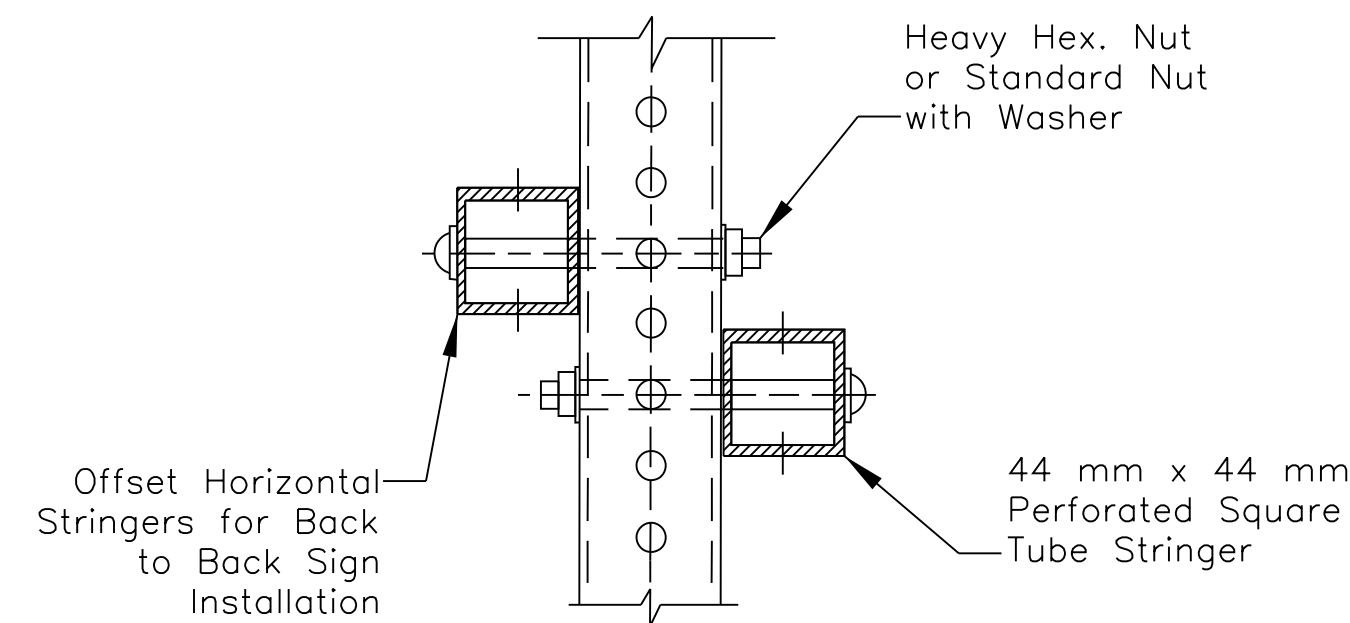
1. THE CONTRACTOR SHALL BE REQUIRED TO ADJUST THE LENGTH OF SIGN SUPPORT POSTS. THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE FOR THE APPROPRIATE BID ITEMS SHOWN IN THE BID SCHEDULE.
2. SIGNS GREATER THAN 762 mm IN WIDTH SHALL BE MOUNTED ON TWO OR MORE POSTS.
3. SIGN POST CONCRETE FOUNDATION SHALL BE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



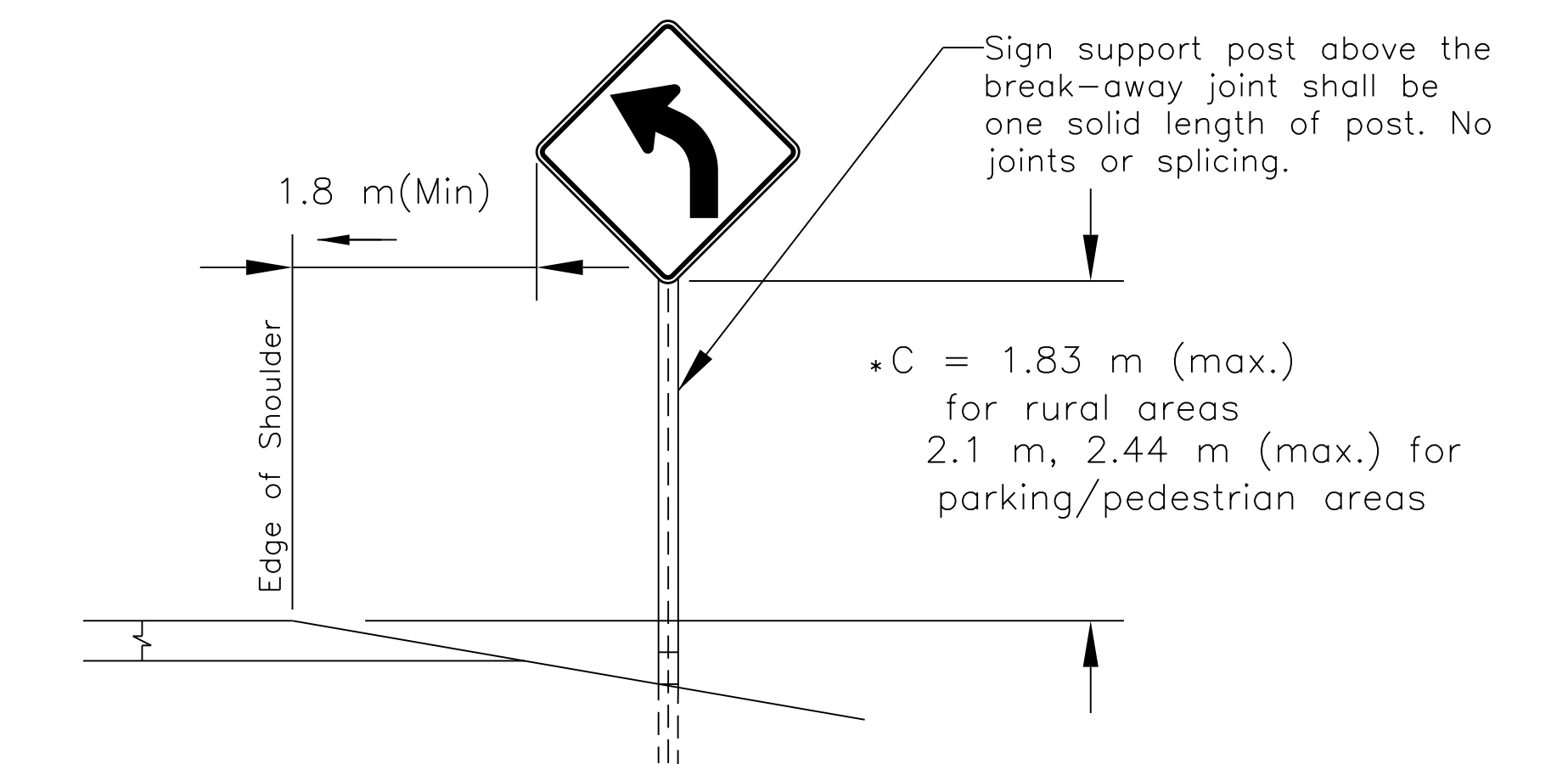
STRINGER DETAILS (FOR GUIDE SIGNS UP TO AND INCLUDING 3.05 m WIDE)



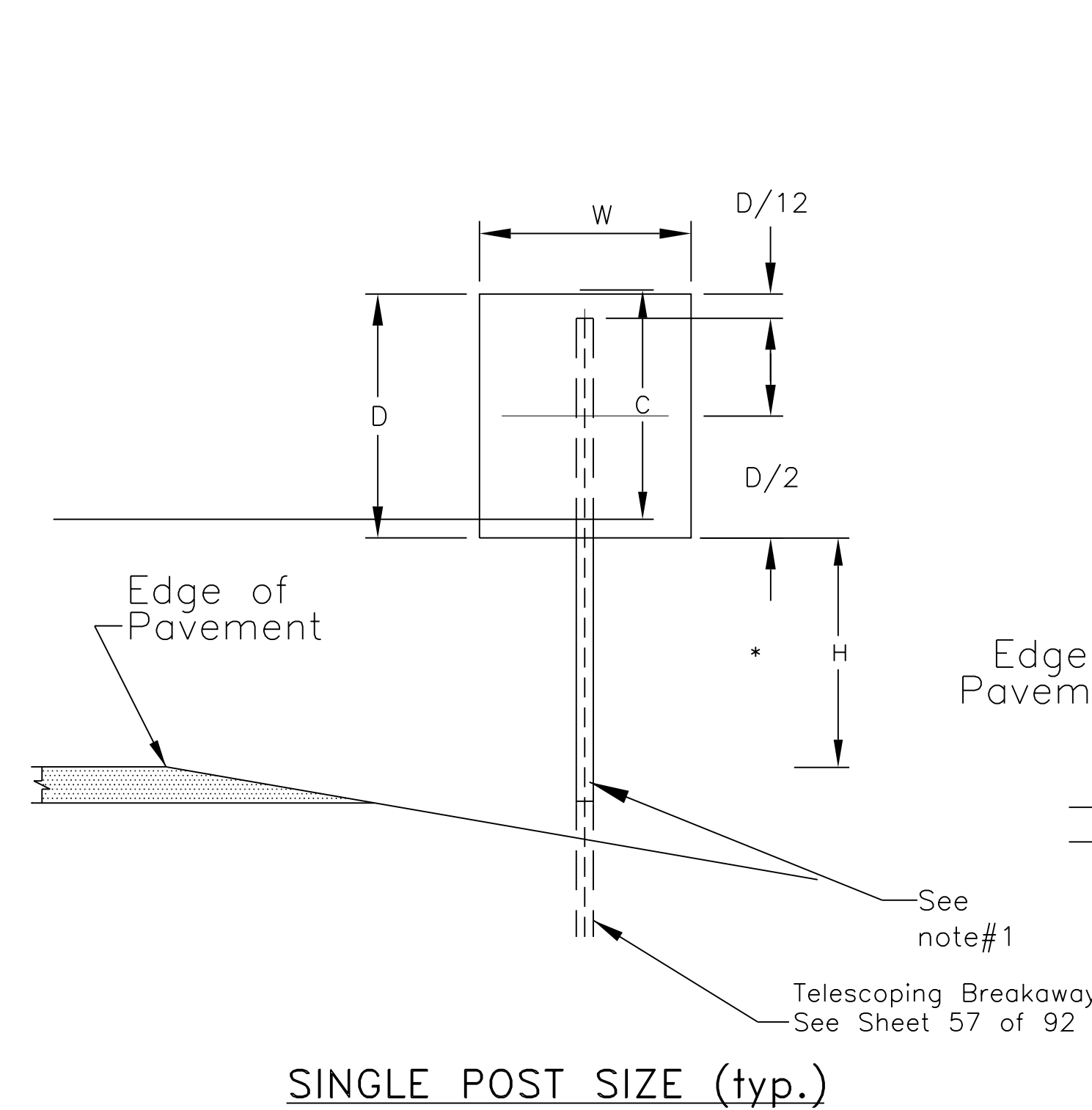
PANEL TO STRINGER OR POST



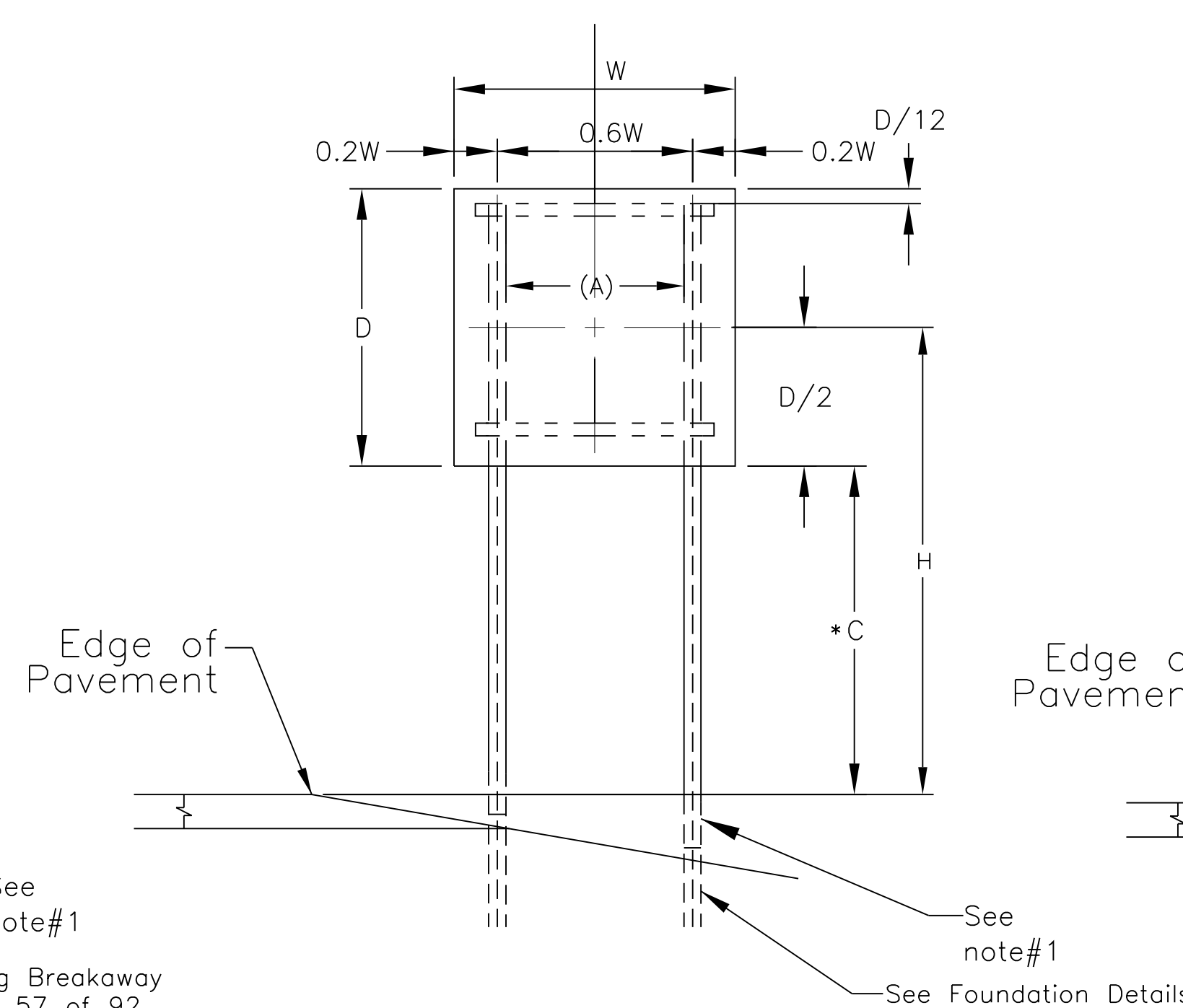
STRINGER TO POST



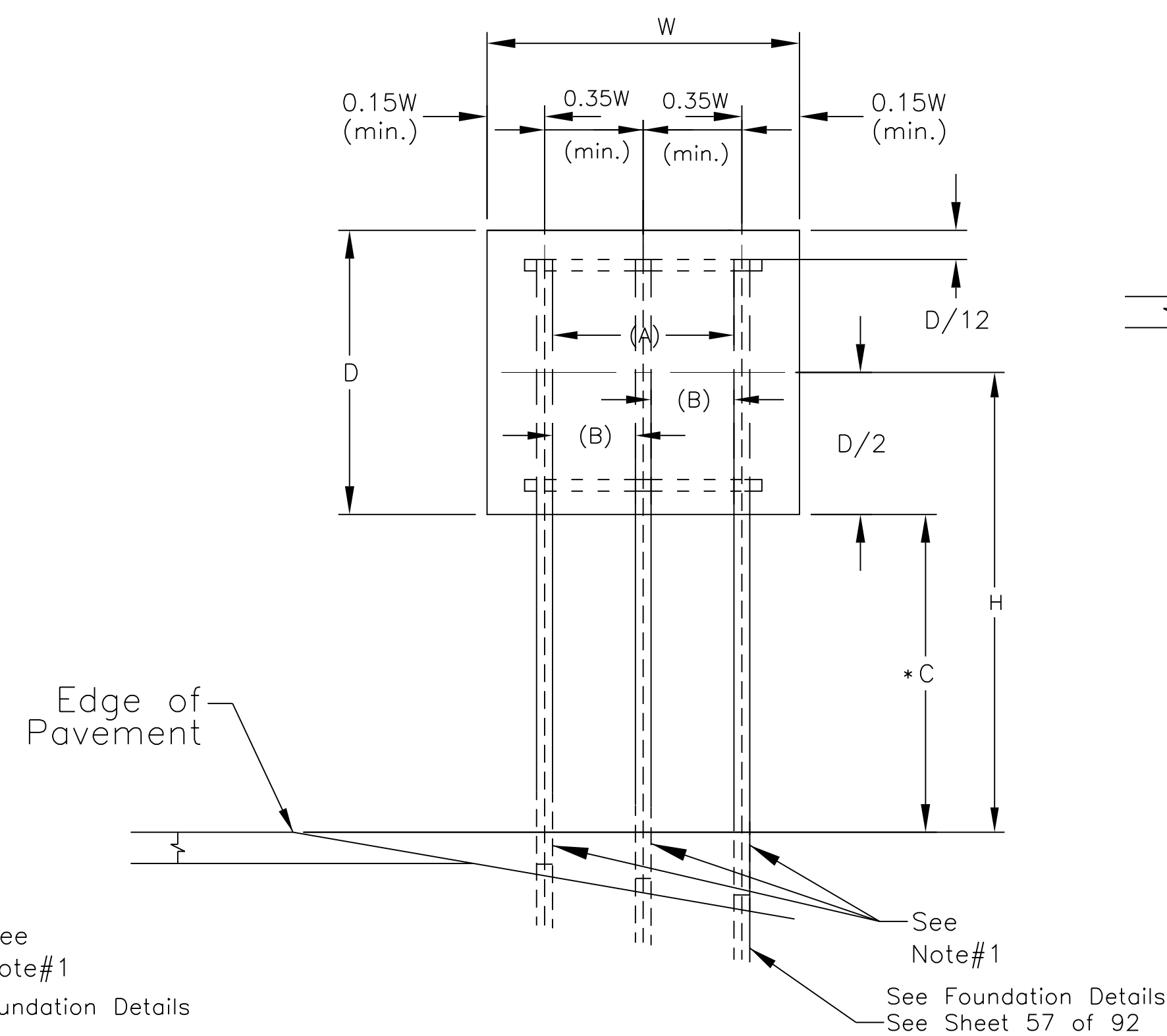
TYPICAL ROADSIDE SIGN LOCATION



SINGLE POST SIZE (typ.)



DOUBLE POST SIZE (typ.)



THREE POST SIZE (typ.)

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

POST SELECTION AND SIGN MOUNTING DETAILS

DRAWN BY: NRDOT DATE: 7/29/2014

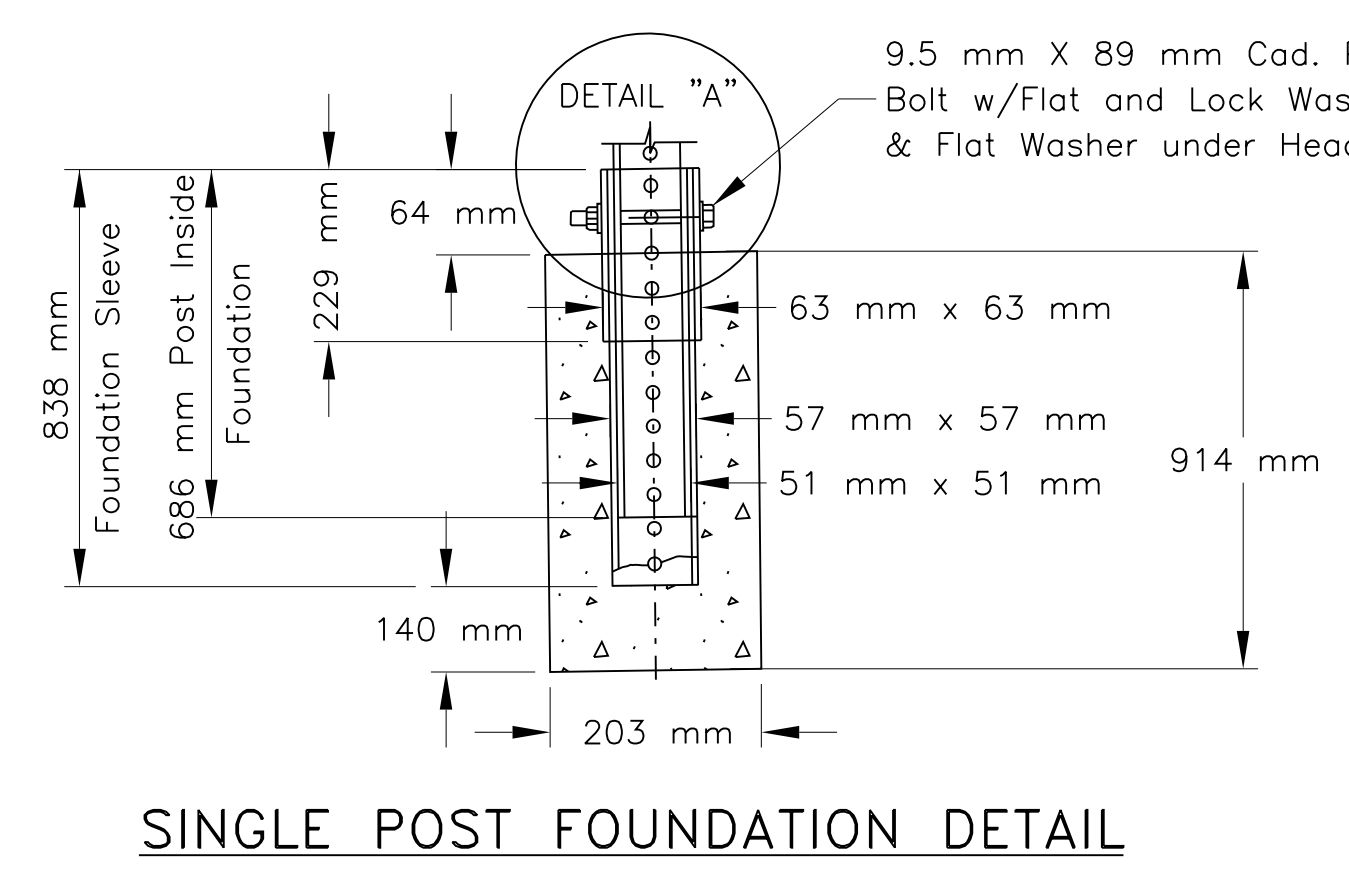
DESIGNED BY: NRDOT DATE: 7/29/2014

REVISED: 1/26/2015 BY: Gerald.Hood

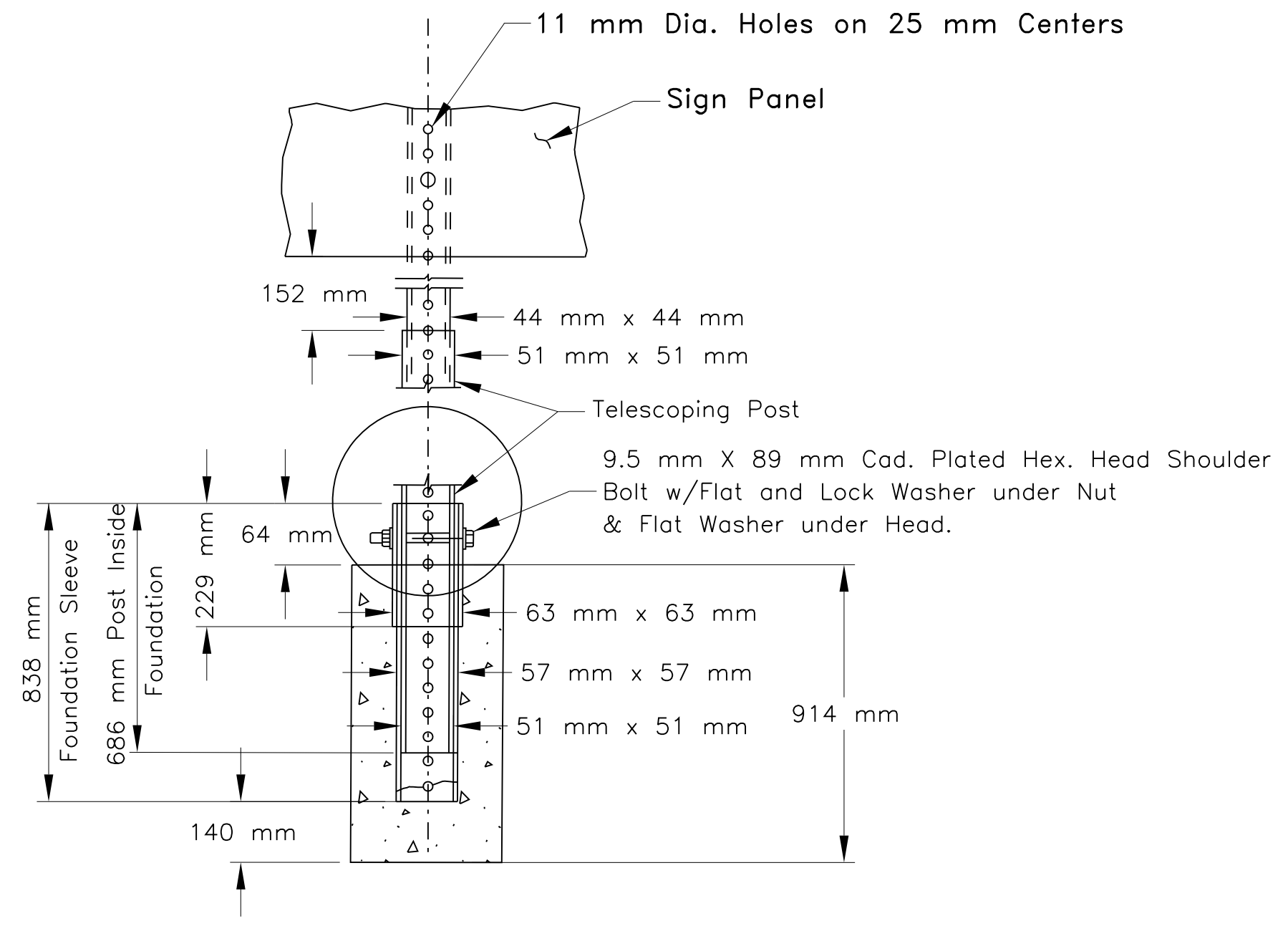
Sht 45 N12 Permanent Sign Detail.dgn



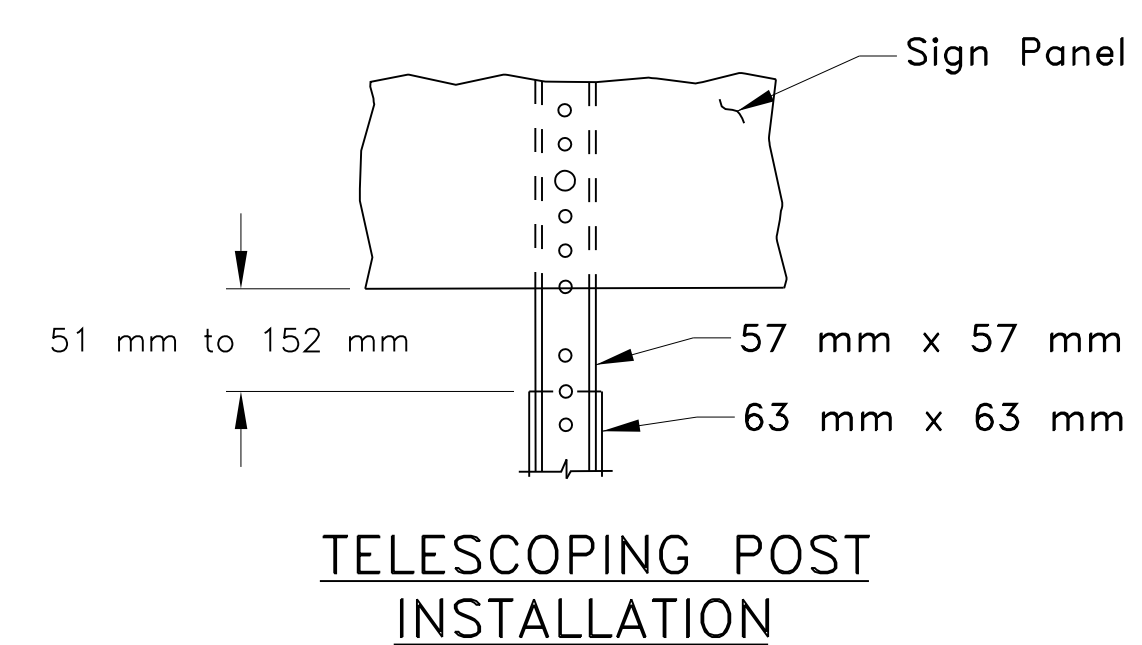
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	46	88



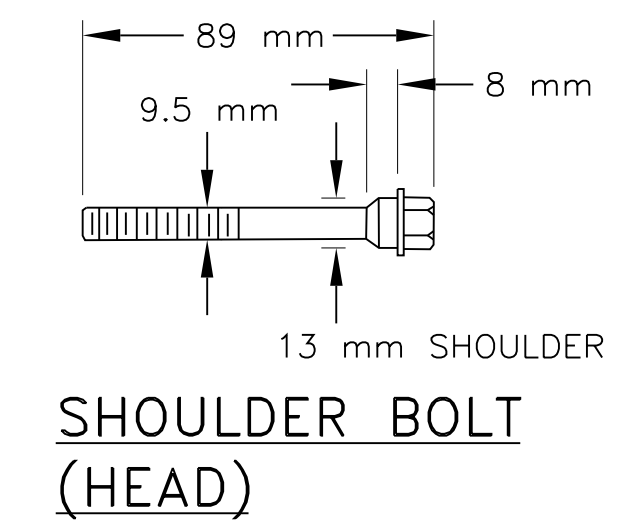
SINGLE POST FOUNDATION DETAIL



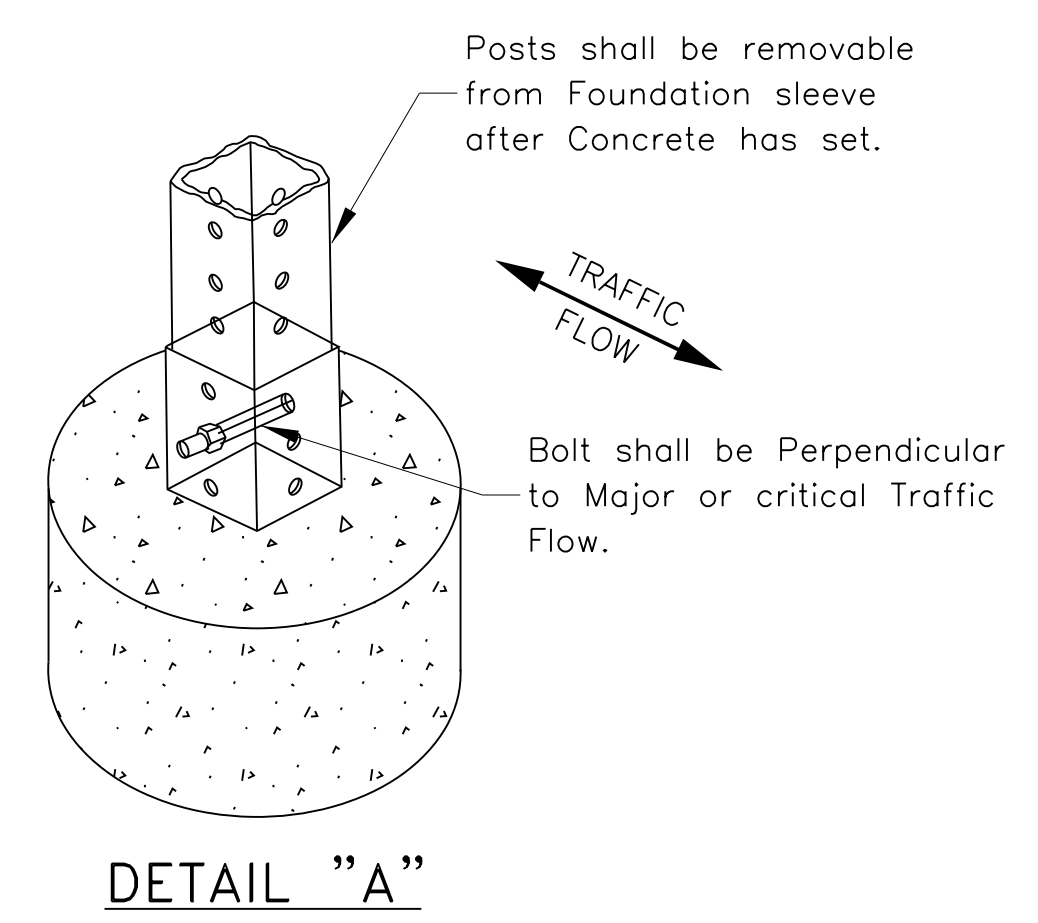
TELESCOPING POST DETAIL



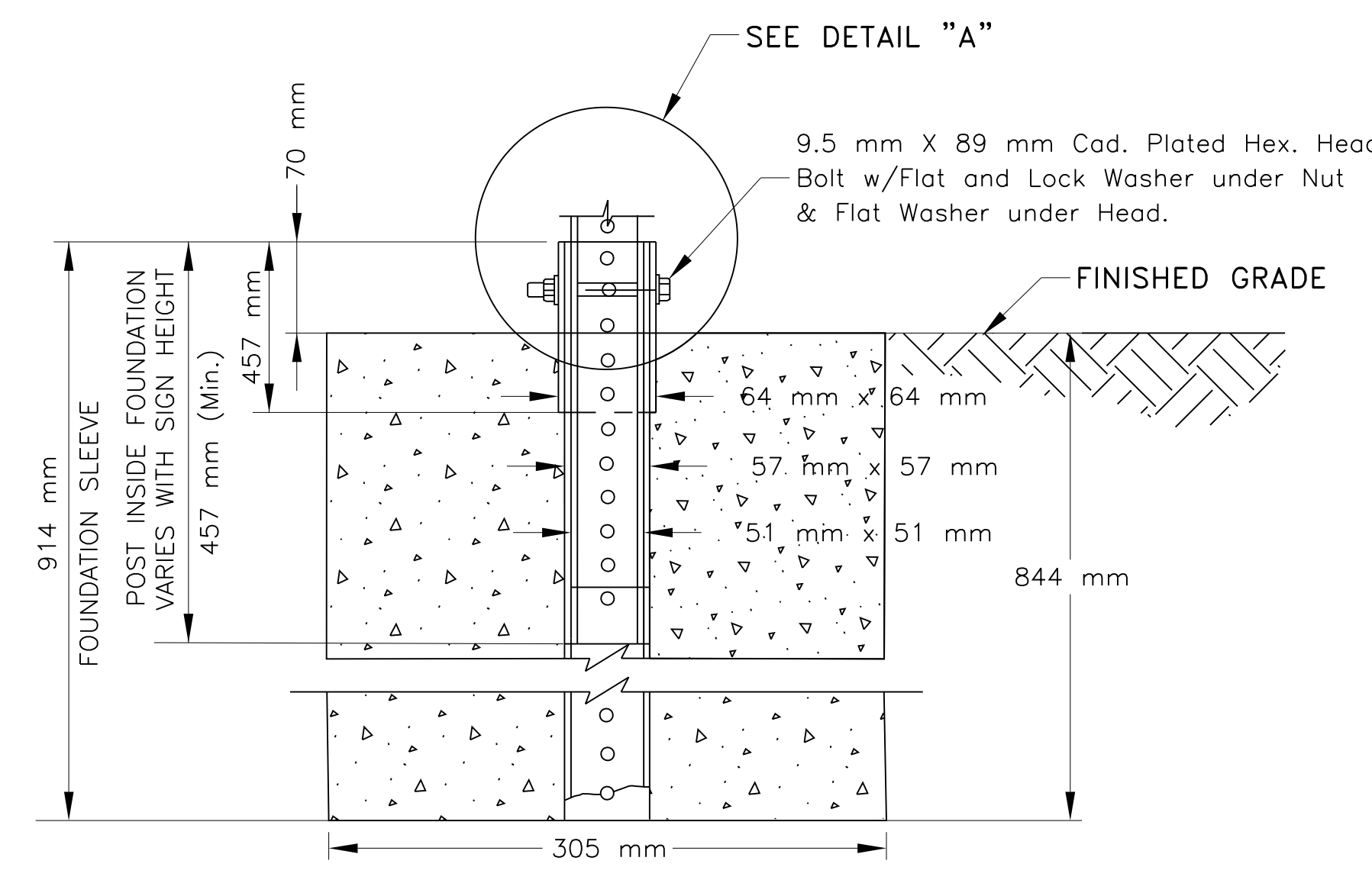
TELESCOPING POST INSTALLATION



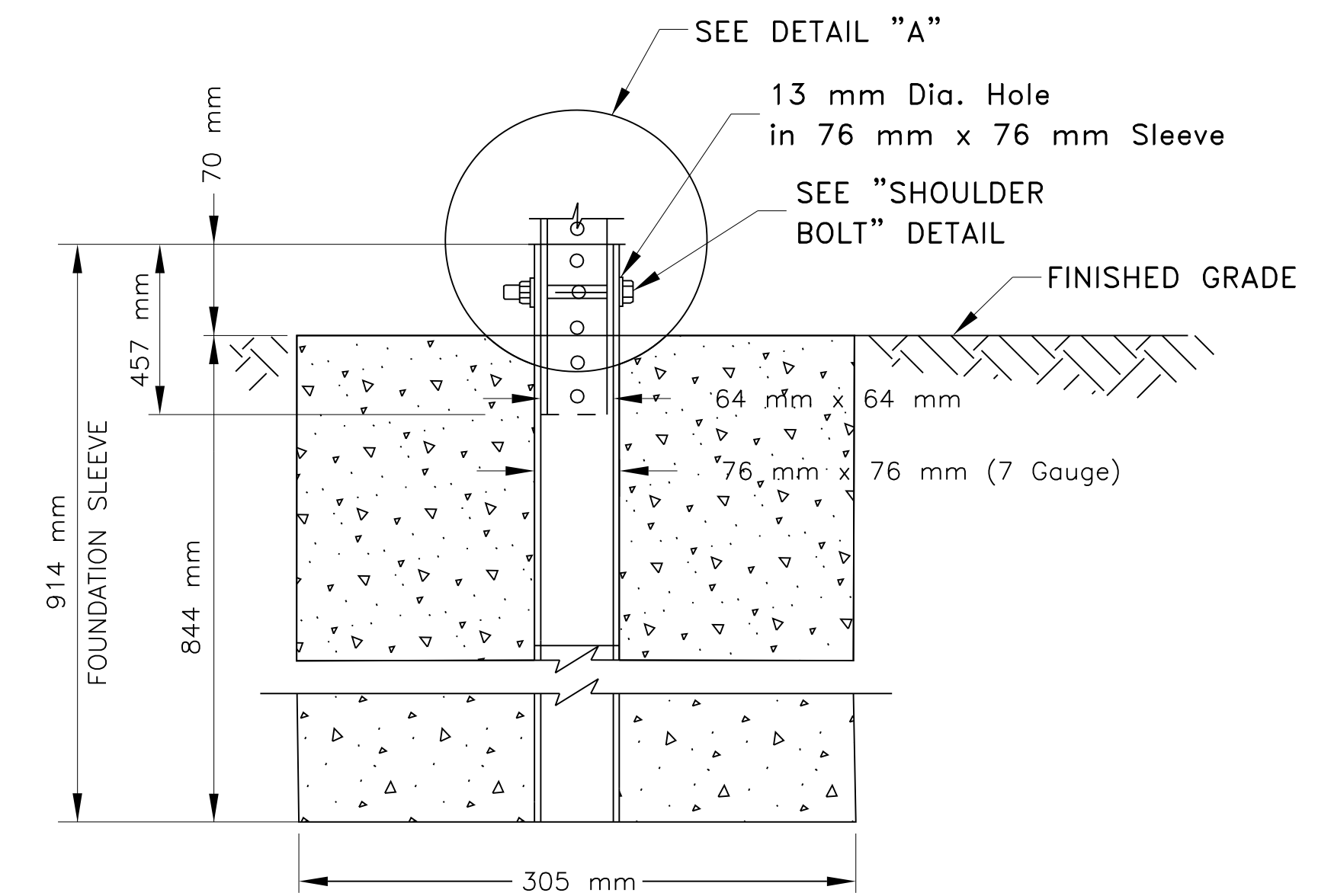
SHOULDER BOLT (HEAD)



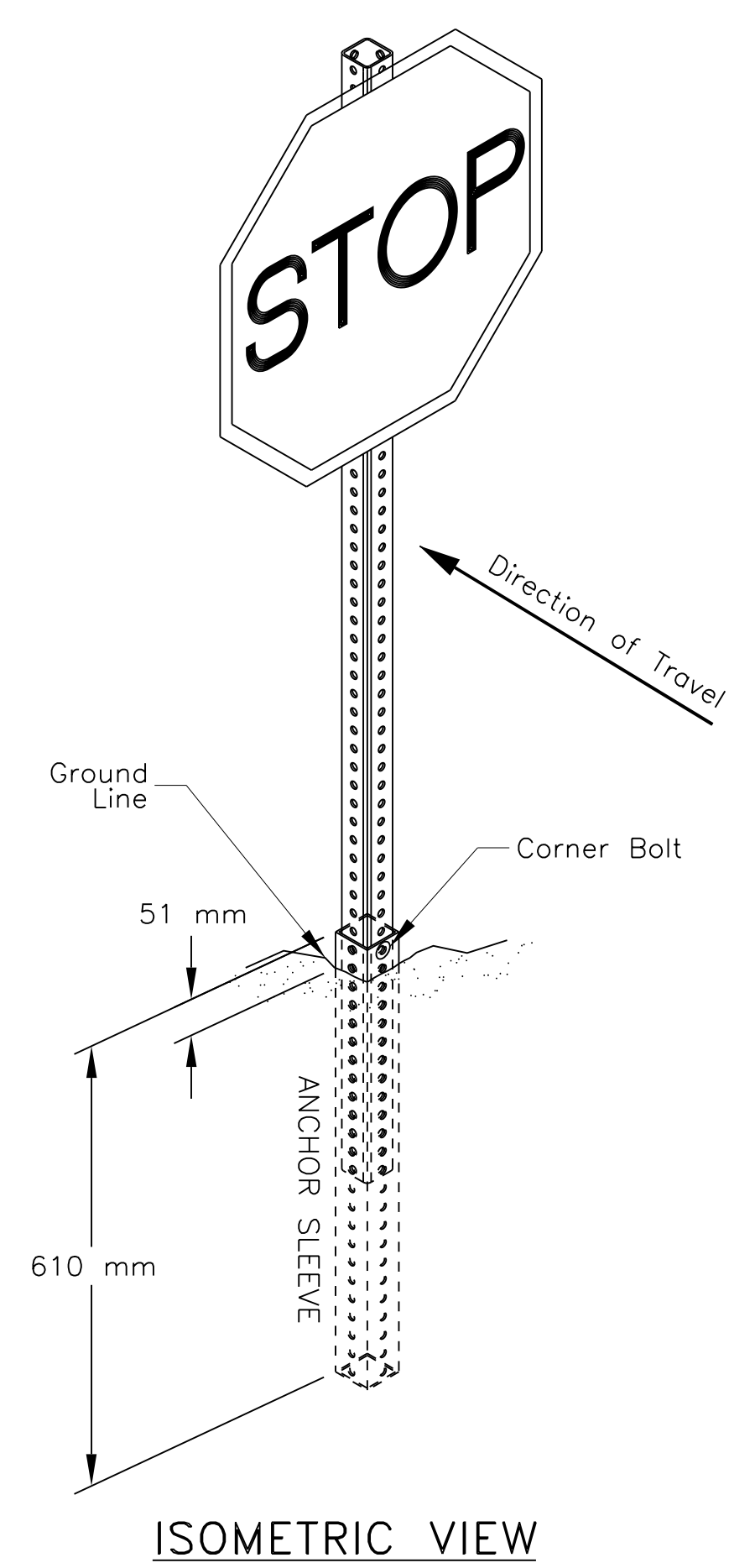
DETAIL "A"



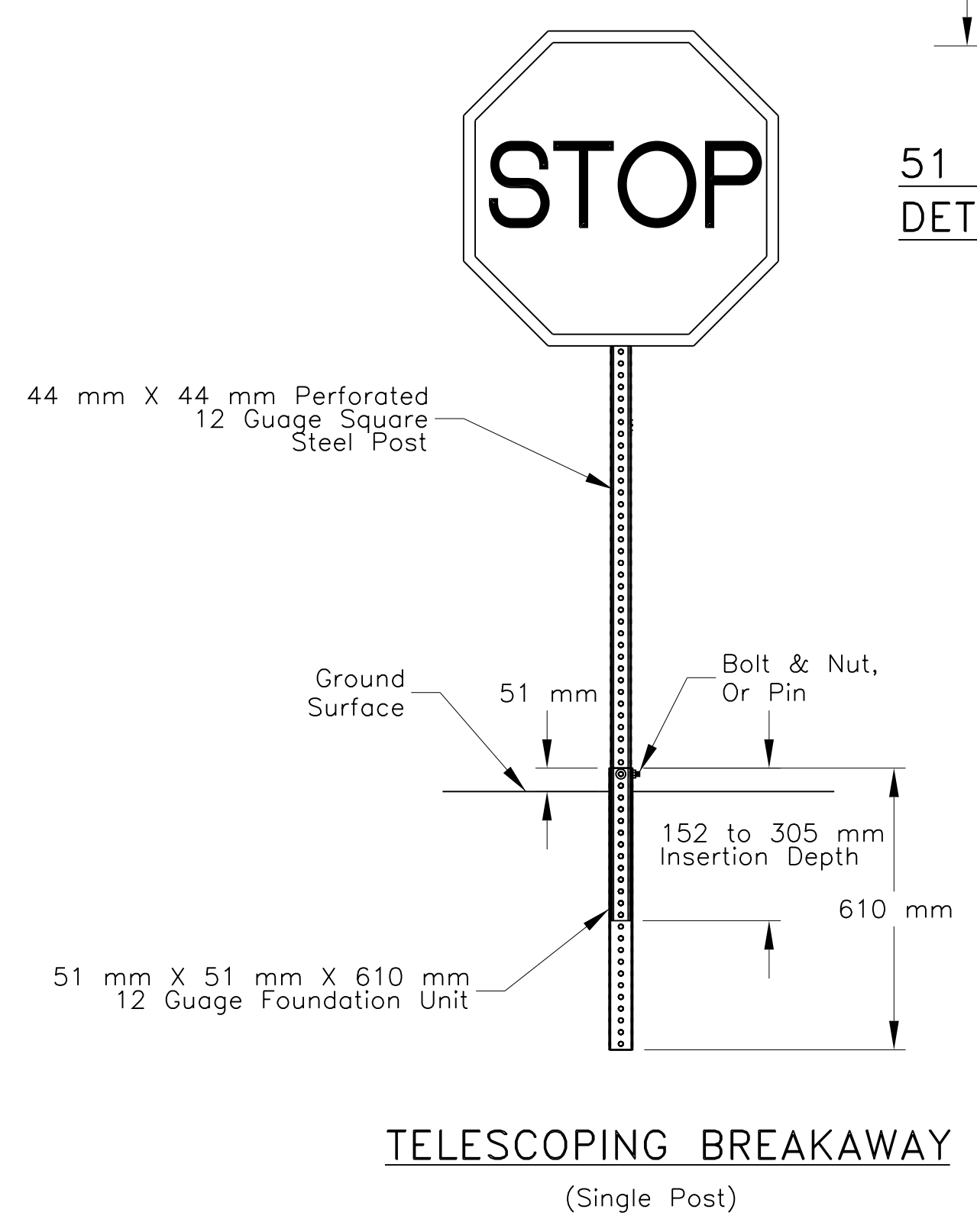
51 mm SINGLE POST CONCRETE FOUNDATION DETAIL (IN WEAK SOILS)



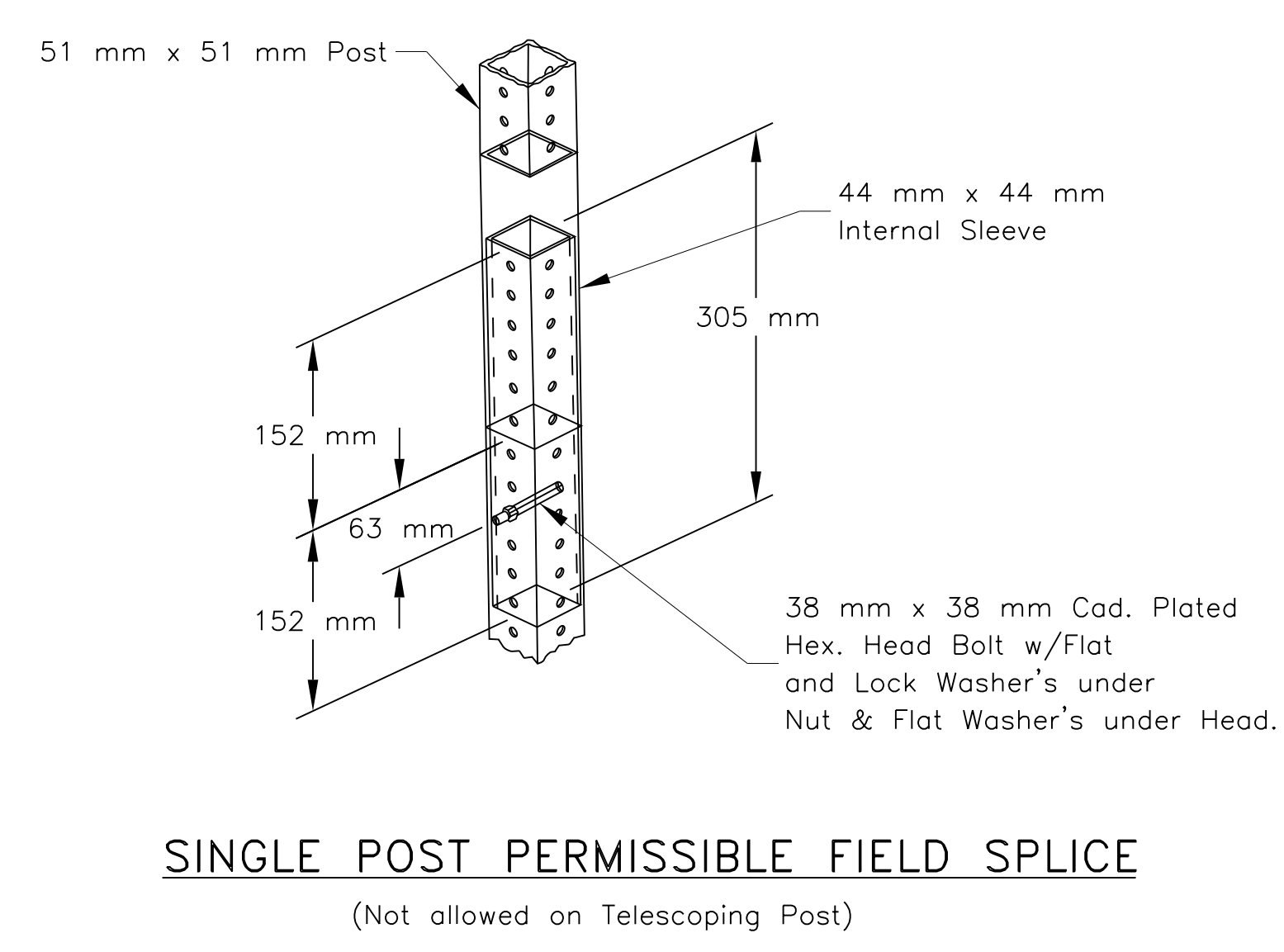
64 mm SINGLE POST CONCRETE FOUNDATION DETAIL (IN WEAK SOILS)



ISOMETRIC VIEW



TELESCOPING BREAKAWAY (Single Post)




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

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

**SQUARE POST AND
 SIGN MOUNTING DETAILS**

DRAWN BY: NRDOT	DATE: 7/29/2014
DESIGNED BY: NRDOT	DATE: 7/29/2014
REVISED: 1/26/2015	BY: Gerald.Hood

Sht 46 N12 Post Select & Mounting Dtl.dgn



I:\DESIGN\Users\DESIGN3\CURRENT PROJECTS\N35_Chinle\N12(19-4)\DESIGN DATA_020315\CADD Files\Sht 46 N12 Post Select & Mounting Dtl.dgn

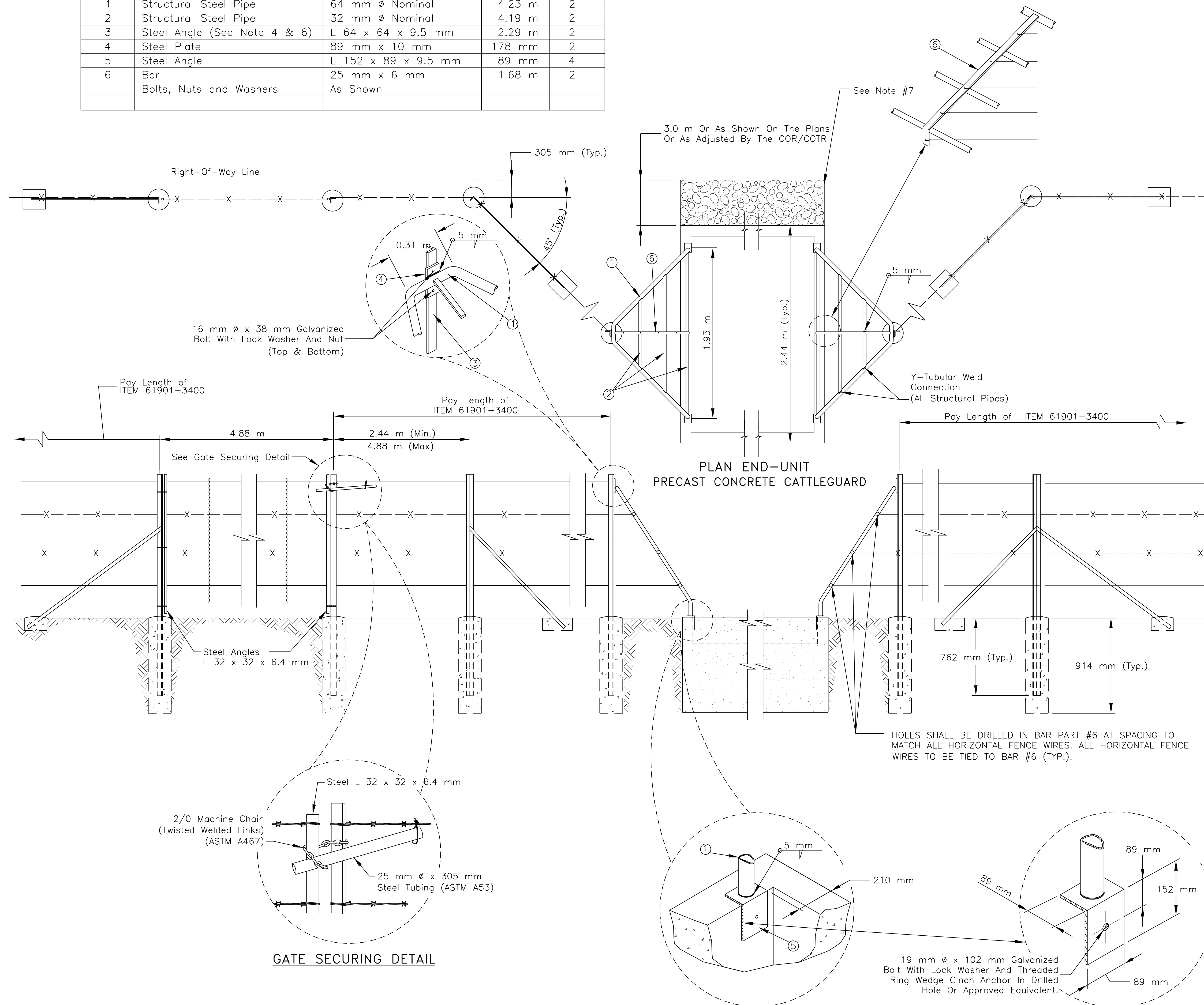
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	47	88

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 4 & 6)	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.
- ALL STRUCTURAL PIPE JOINTS SHALL BE FABRICATED IN ACCORDANCE WITH AISC MANUAL OF STEEL CONSTRUCTION, LATEST EDITION.
- WELDING SHALL MEET THE REQUIREMENTS OF AASHTO STANDARD SPECIFICATIONS FOR WELDING AT STRUCTURAL STEEL HIGHWAY BRIDGES, LATEST EDITION.
- THE SUPPORTING WING BRACE POSTS LENGTH (PART 3) SHALL PROVIDE A MINIMUM OF 610mm OF SOIL PENETRATION. UNDER CERTAIN CONDITIONS (SUCH AS DRAIN THROUGH CATTLEGUARD, HIGH EMBANKMENT, ETC) THE LENGTH OF THE POST MAY VARY TO FULLY SUPPORT THE WING BRACES. THIS WORK SHALL BE INCIDENTAL TO CONTRACT ITEM 61903. INSTALLATION OF GATE SHALL BE SUBSIDIARY ITEM TO THE CATTLEGUARD ITEM(S).
- THE COR/AOTR MAY ADJUST THE FINISHED CATTLEGUARD ELEVATION AS NEEDED TO FIT FIELD/DRAINAGE CONDITIONS. THE CONTRACTOR SHALL RE-GRADE THE ADJOINING TURNOUT APPROACHES AS REQUIRED. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO CONTRACT ITEM 61903 OF FP-14. ANY MISTAKES MADE BY COR/AOTR IN DIRECTING ADJUSTMENTS TO THE FINISHED GRADE FOR THE CATTLE GUARDS AND APPROACH ROADWAY WILL BE CORRECTED UNDER SUBSECTION 109.02(M).
- 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 100mm THICKNESS OF AGGREGATE BASE COURSE AT ALL 4.5m WIDE TURNOUTS. FOR TURNOUTS WIDER THAN 4.5m, PLACE AGGREGATE BASE COURSE AND ASPHALT SURFACING TO MATCH THE TURNOUT STRUCTURAL SECTION, BETWEEN THE BACK OF THE CATTLEGUARD AND THE RIGHT-OF-WAY LINE. THE SURFACING MATERIAL AND WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE PAVING ITEMS 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 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, AGGREGATE BASE, AND PAVING ITEMS INCLUDED IN THE BID SCHEDULE.



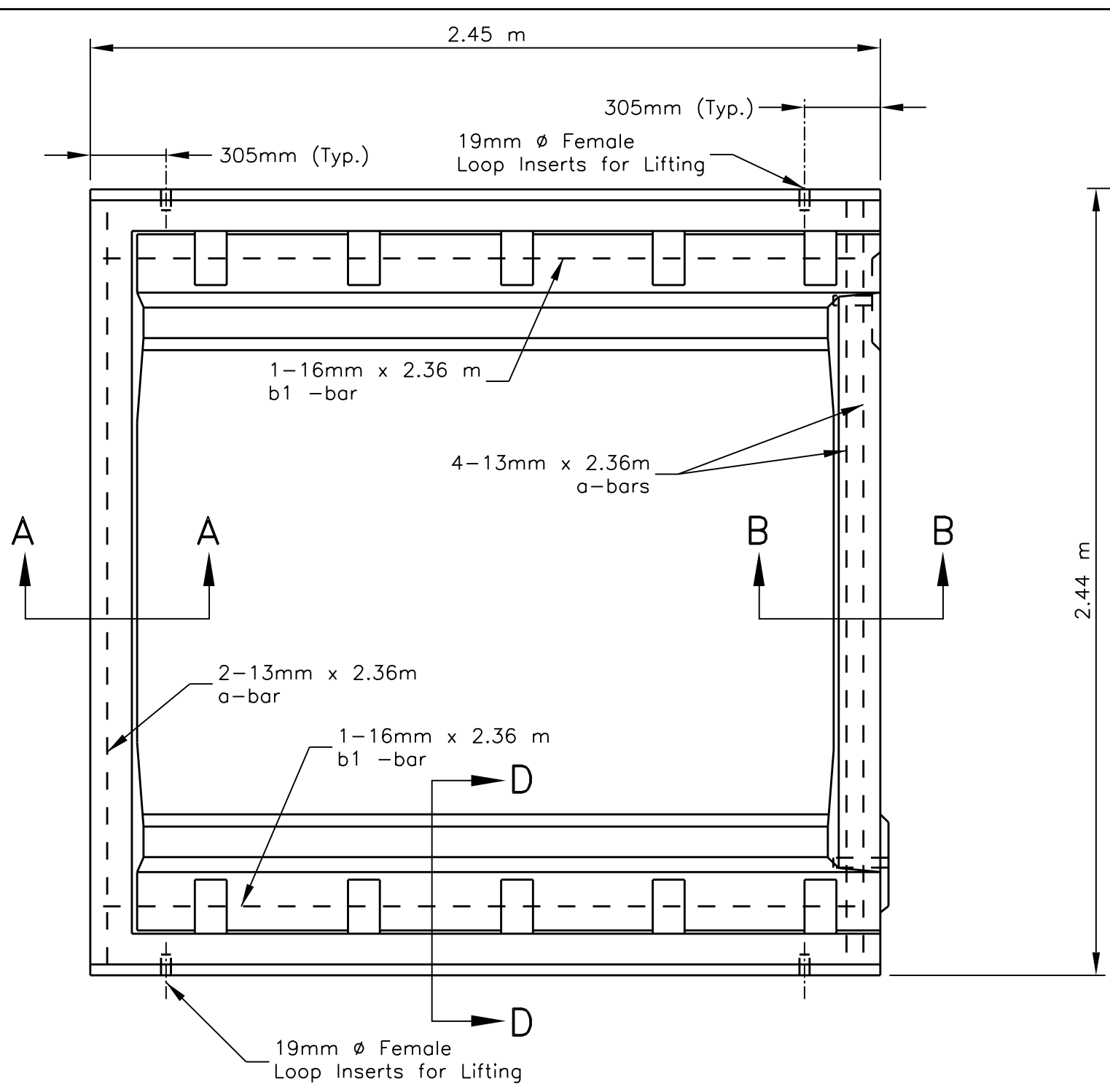
UNITED STATES
 DEPARTMENT OF THE INTERIOR
 BUREAU OF INDIAN AFFAIRS
 NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

**CATTLEGUARD AND
 WING BRACE DETAILS**

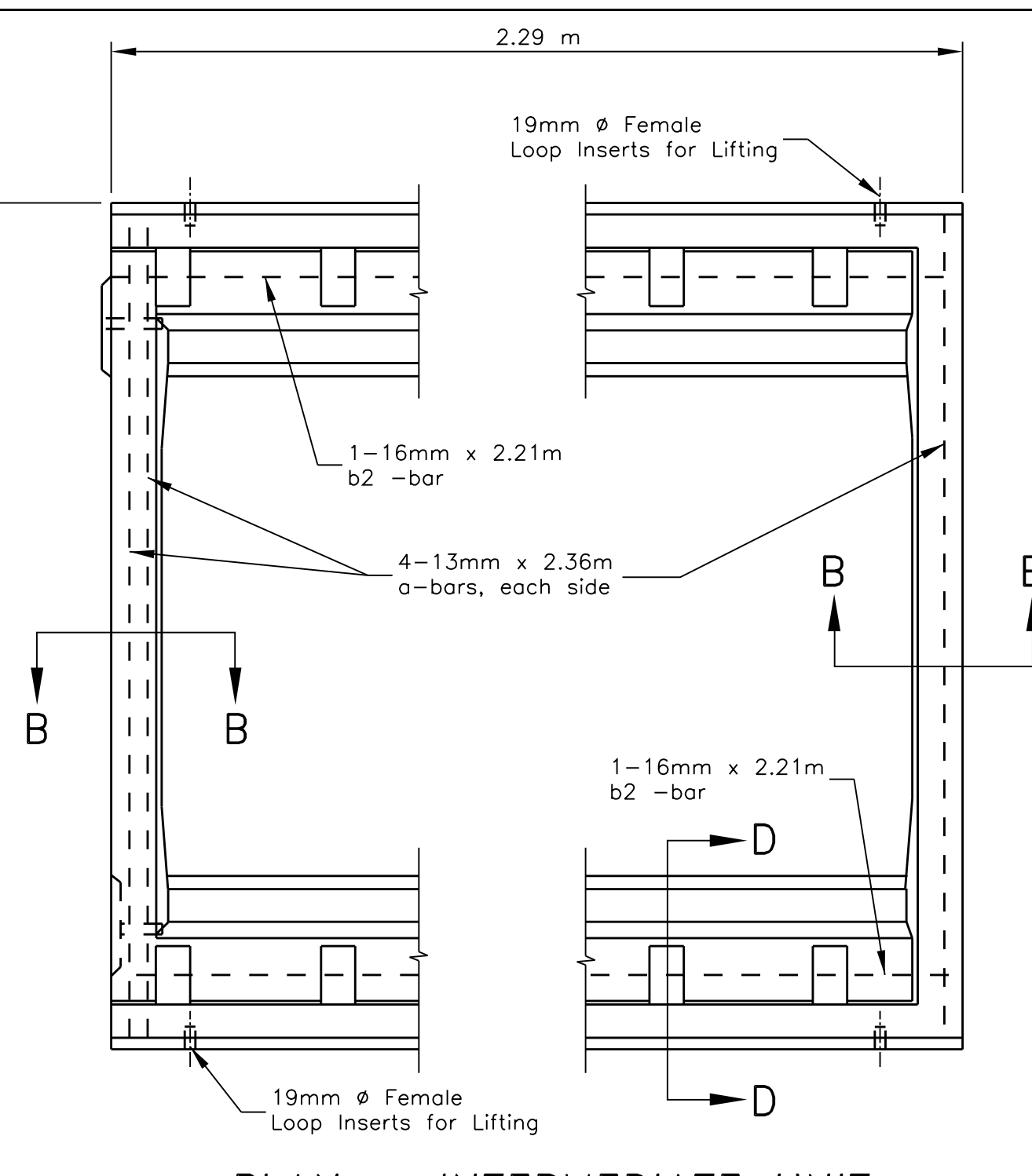
DRAWN BY: NRDOT	DATE: 2/12/2014
DESIGNED BY: NRDOT	DATE: 2/12/2014
REVISED: 6/1/2015	BY: Leroy Toledo

Sht 47 N12 CG WBRC.dgn

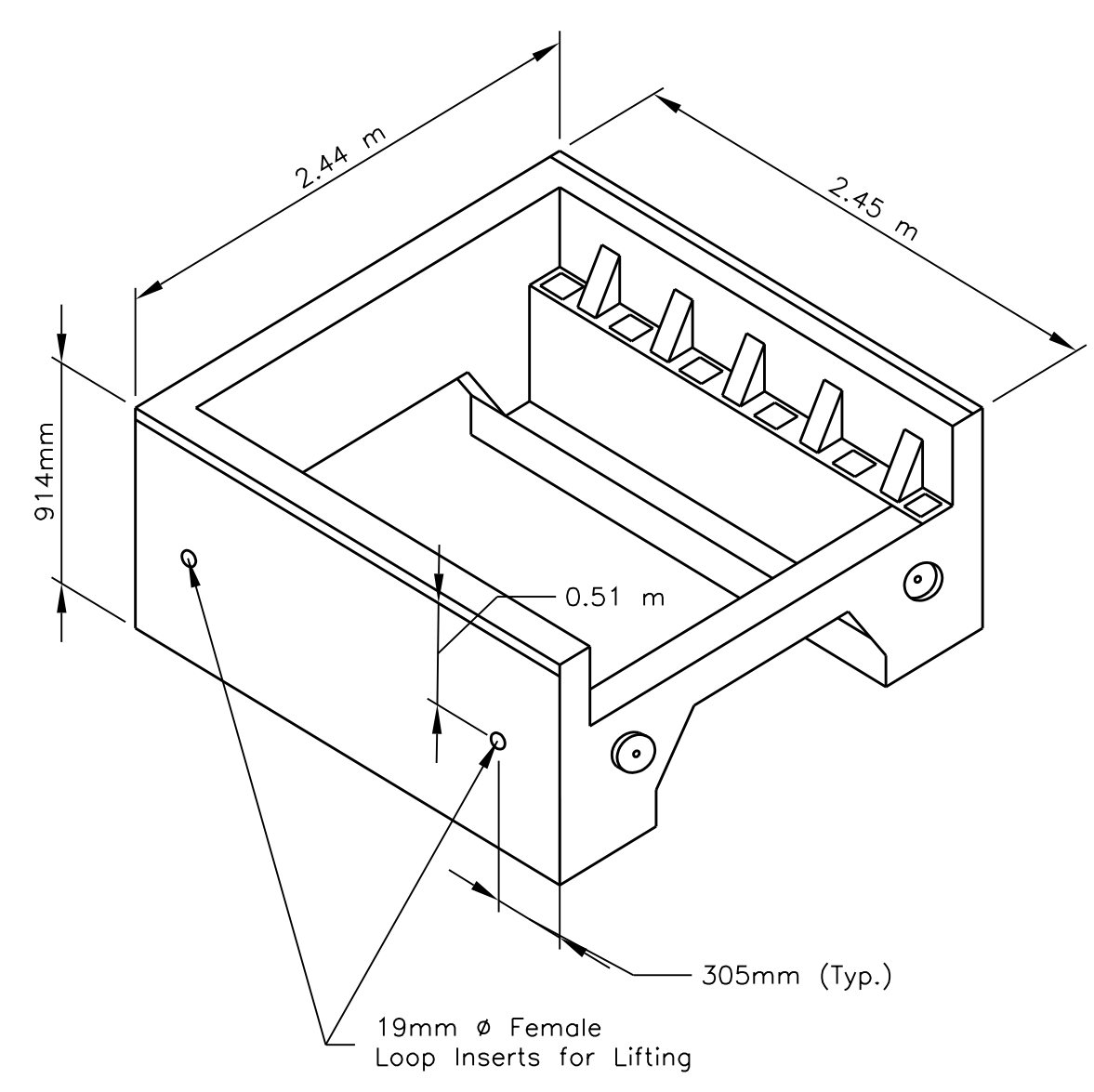
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	48	88



PLAN - END UNIT



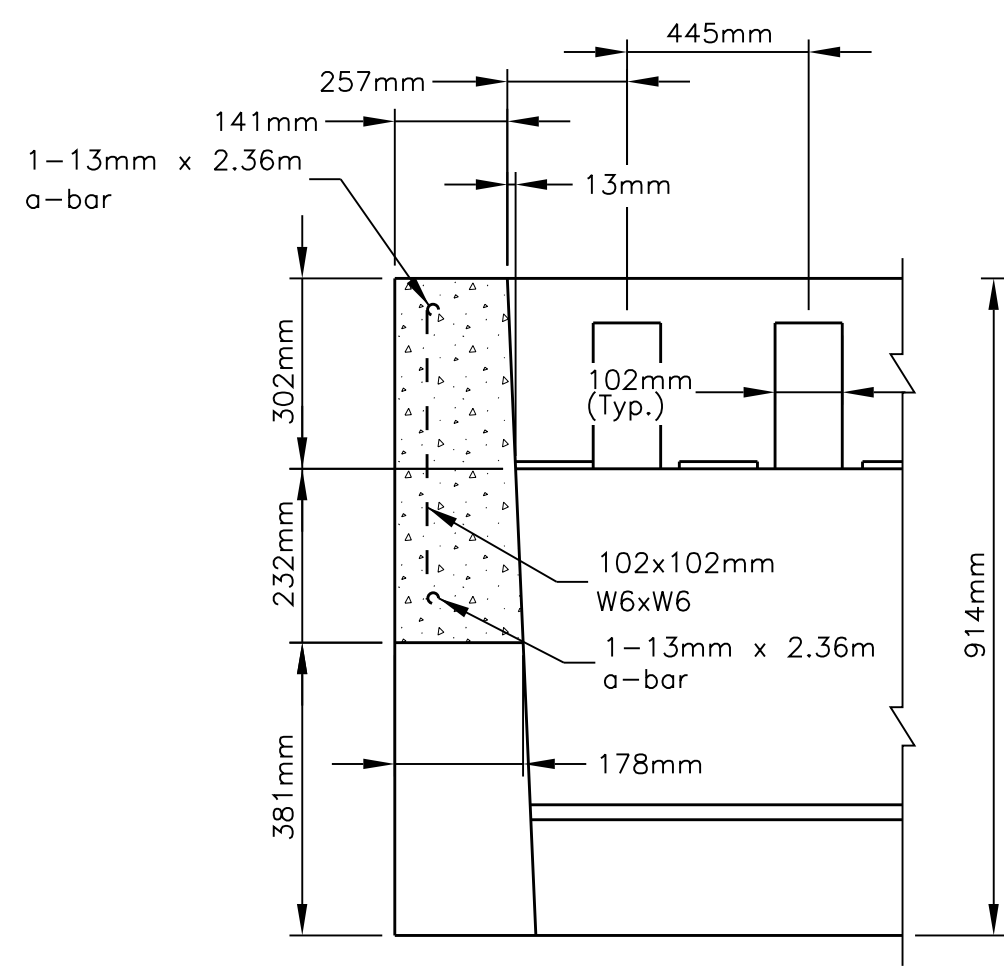
PLAN - INTERMEDIATE UNIT



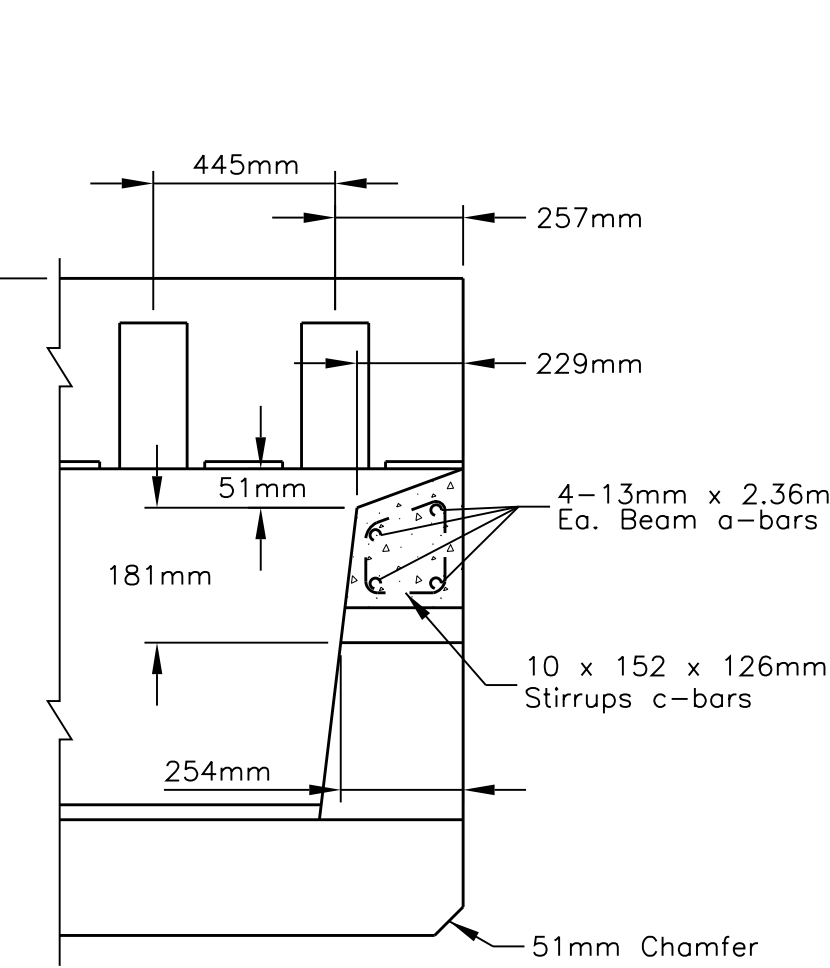
ISOMETRIC VIEW - END UNIT

GENERAL NOTES

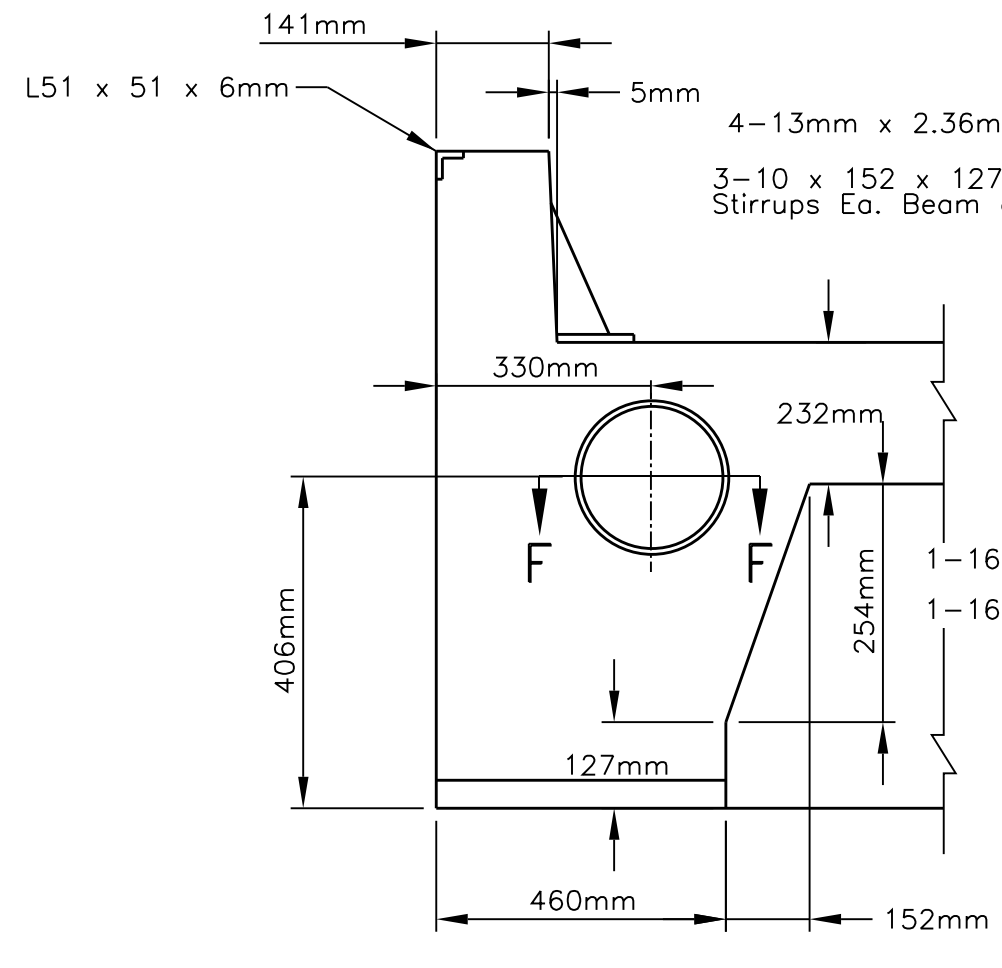
1. PRECAST CONCRETE SHALL ATTAIN 28-DAY COMPRESSIVE STRENGTH OF 27.62 MPA (MINIMUM) IN ACCORDANCE WITH AASHTO T22 (ASTM C-39). THE CONCRETE SHALL BE CLASS A(AE) CONFORMING TO SECTION 552 OF FP-14.
2. REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 420. ALL STRUCTURAL STEEL SHALL CONFORM TO AASHTO M-183.
3. THE CONTRACTOR SHALL SLOPE THE BASES OF THE CATTLE GUARDS AS REQUIRED TO PROVIDE ROADWAY CROWNS OR SUPERELEVATION AS SHOWN ON THE PLANS.
4. BOLTS, WASHERS, AND NUTS SHALL BE GALVANIZED TO MEET THE REQUIREMENTS OF AASHTO M111 OR AASHTO M298.
5. ALL TRAFFIC GRILL UNIT, AND WING BRACE STRUCTURAL STEEL AND PIPE, INCLUDING THE STEEL ANGLES SHALL RECEIVE ONE (1) PRIMER COAT, ONE (1) INTERMEDIATE COAT, AND ONE (1) FINISH COAT IN ACCORDANCE WITH SECTION 563, PAINT SYSTEM 2, OF FP-14.
6. WING BRACES SHALL BE CONSIDERED SUBSIDIARY ITEMS TO THE CATTLEGUARD UNIT.
7. THE CONTRACTOR HAS THE OPTION TO USE ALL STEEL FRAME CATTLEGUARD. IF THE CONTRACTOR ELECTS TO SUBSTITUTE FOR THE STEEL FRAME CATTLEGUARD, CONTRACTOR SHALL SHOW THEY ARE MORE COST EFFECTIVE WITH SUPPORTING DATA. THE CONTRACTOR IS RESPONSIBLE FOR ALL PATENT PROTECTION RIGHTS, SHOP DRAWINGS, MATERIAL CERTIFICATIONS, AND MILL TEST REPORTS. HOWEVER, NO STEEL FRAME CATTLEGUARD SHALL BE USED FOR CONCRETE DRAINAGE PAD CATTLEGUARD LOCATIONS.
8. ELASTOMERIC BEARING PADS SHALL BE SEAL WITH EPOXY ADHESIVE PRIOR TO THE INSTALLATION OF TRAFFIC GRILL UNIT.
9. DESIGN DATA: DESIGN ACCORDING TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, THIRD EDITION. DESIGN LOADS: HS20 AND DESIGN TANDEM WITH 33% IMPACT.



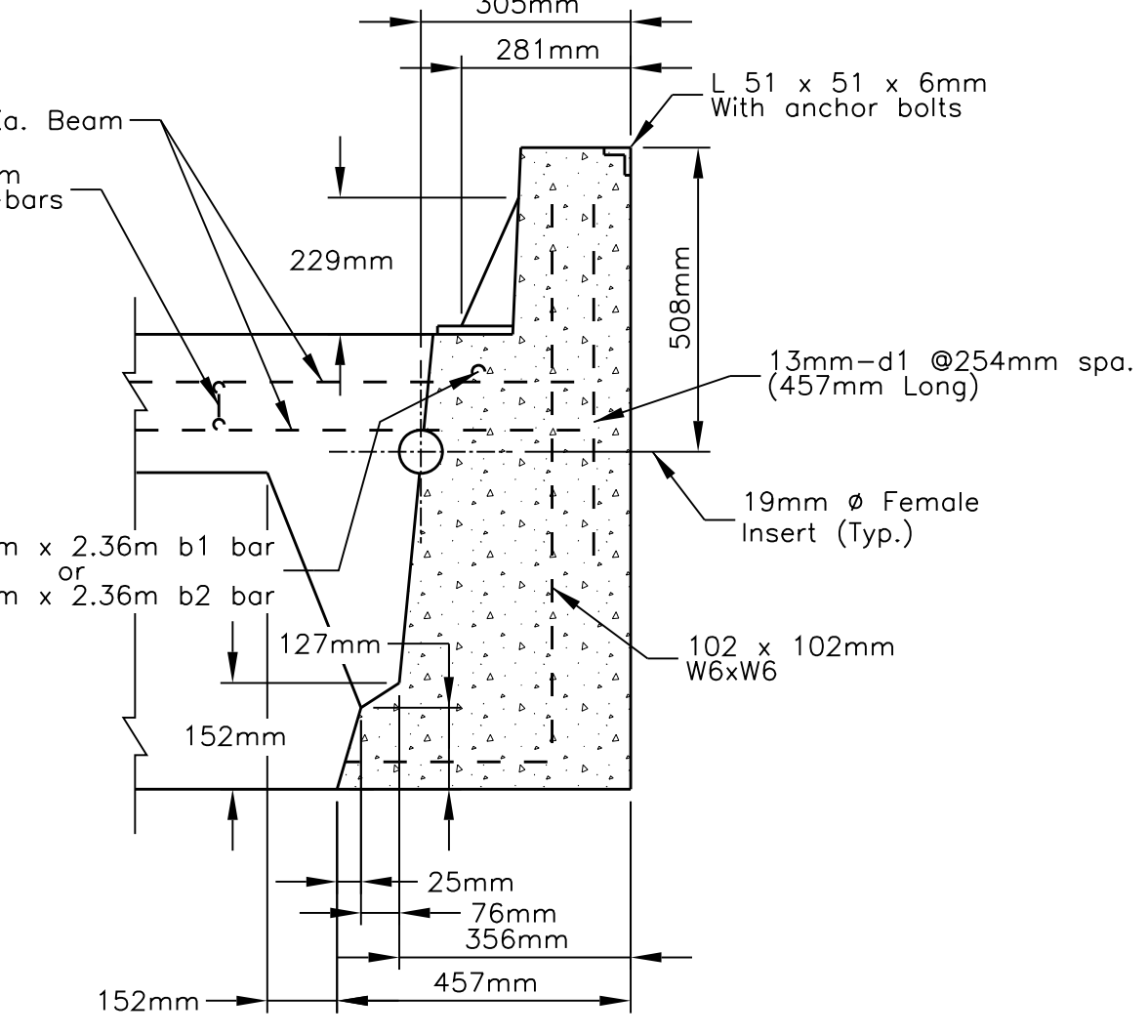
SECTION A-A



SECTION B-B



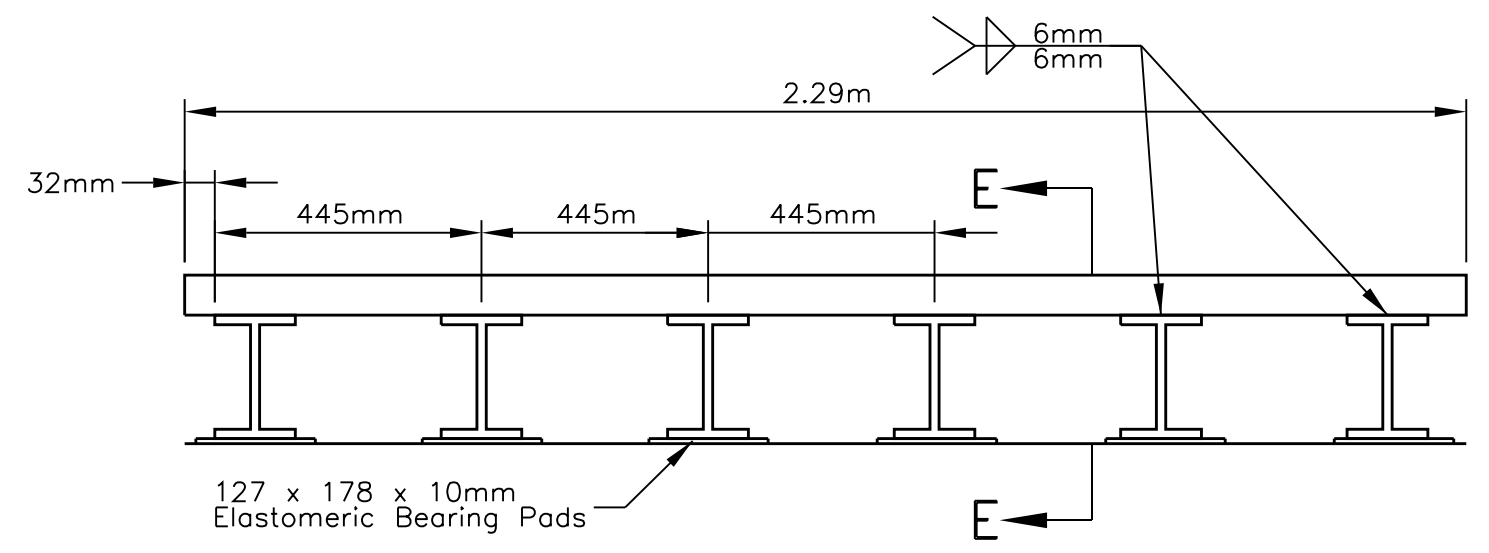
KEY LOCATION



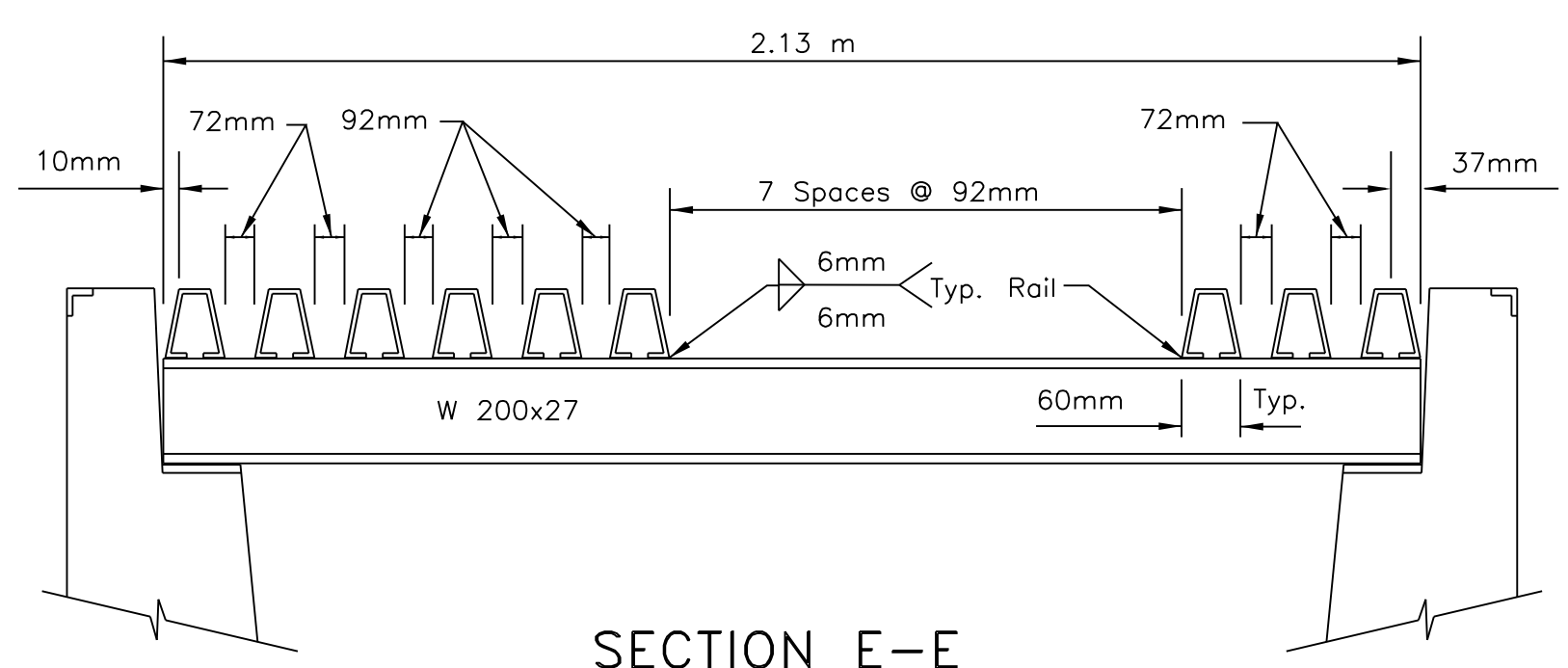
SECTION D-D

REINFORCING STEEL SCHEDULE

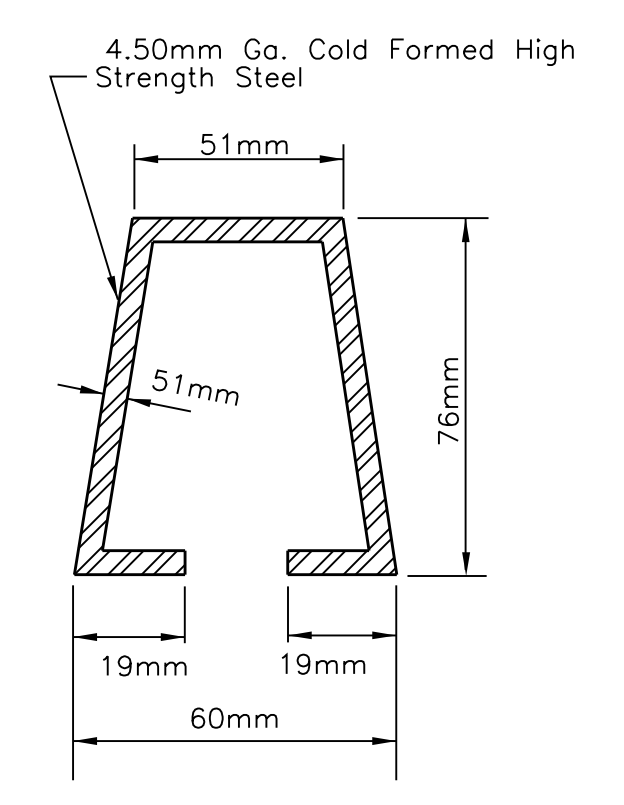
STRAIGHT BARS				BENT BARS				BENDING DIAGRAMS	
MARK	NO.	SIZE	LENGTH	MARK	NO.	SIZE	LENGTH	ALL DIMENSIONS ARE OUT TO OUT	
END UNIT									
a	6	13	2.36 m					b ₂ bar 2.21 m	
b ₁	2	16	2.36 m					a bar 2.36 m	
D ₁	20	13	0.46 m	c	3	10	0.61 m	b ₁ bar 2.36 m	
INTERMEDIATE UNIT									
a	8	13	2.36 m					c bar 76mm	
b ₂	2	16	2.21 m					126mm	
				c	6	10	0.61 m	152mm	
D ₁	18	13	0.46 m						



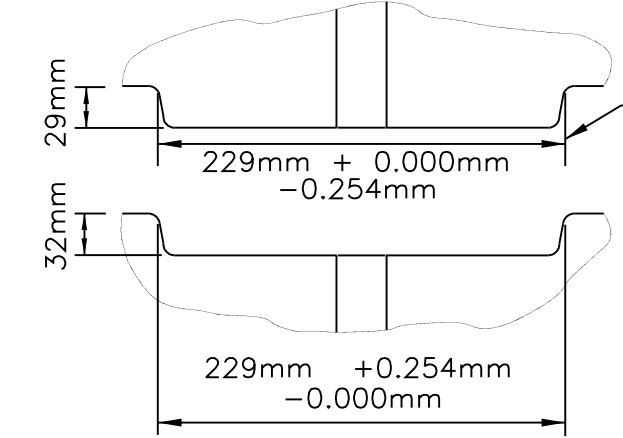
TRAFFIC GRILLE UNIT



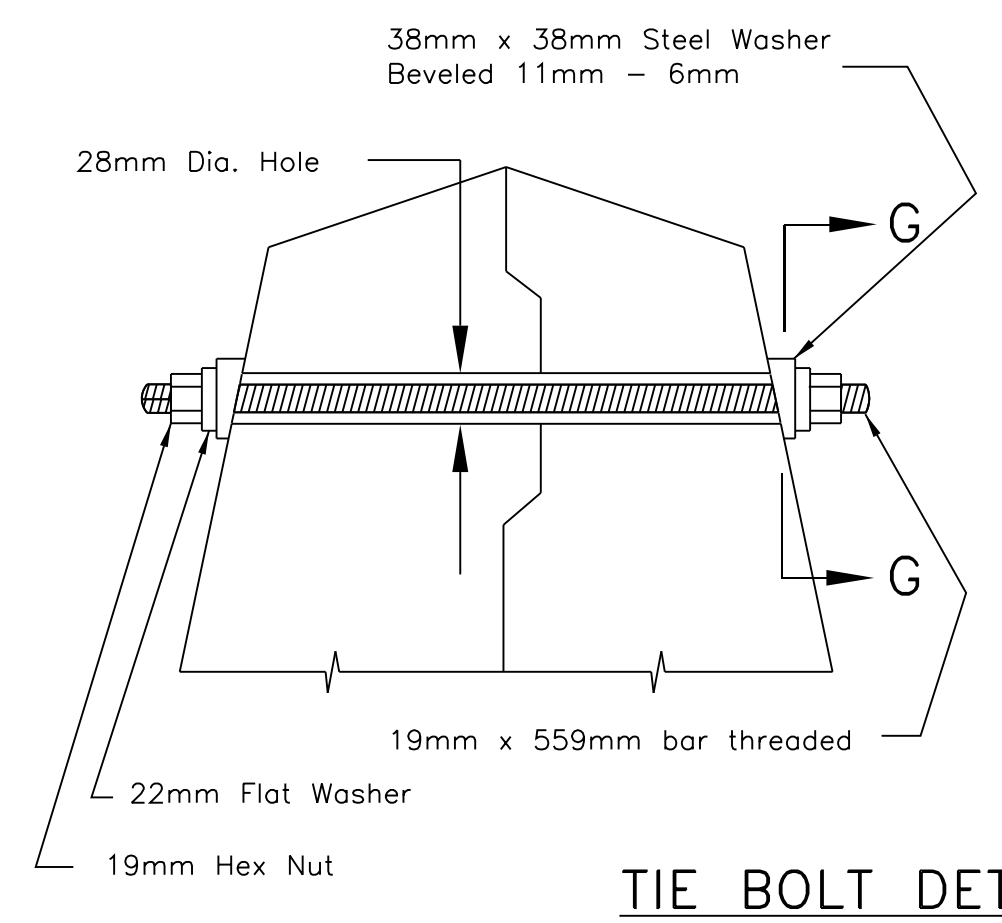
SECTION E-E



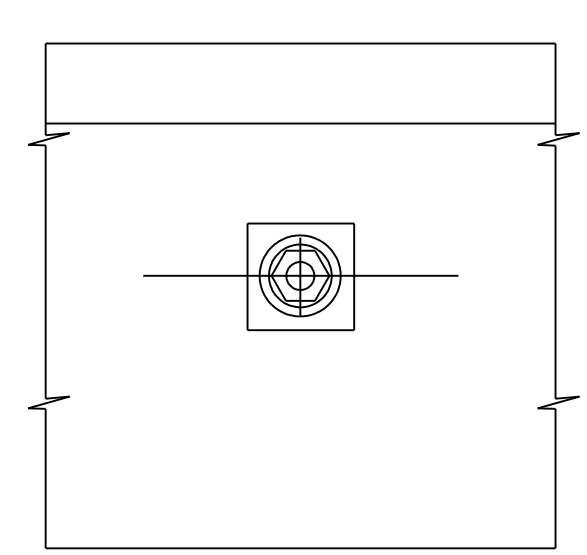
STEEL CROSSBAR SECTION



SECTION F-F



TIE BOLT DETAIL



SECTION G-G

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

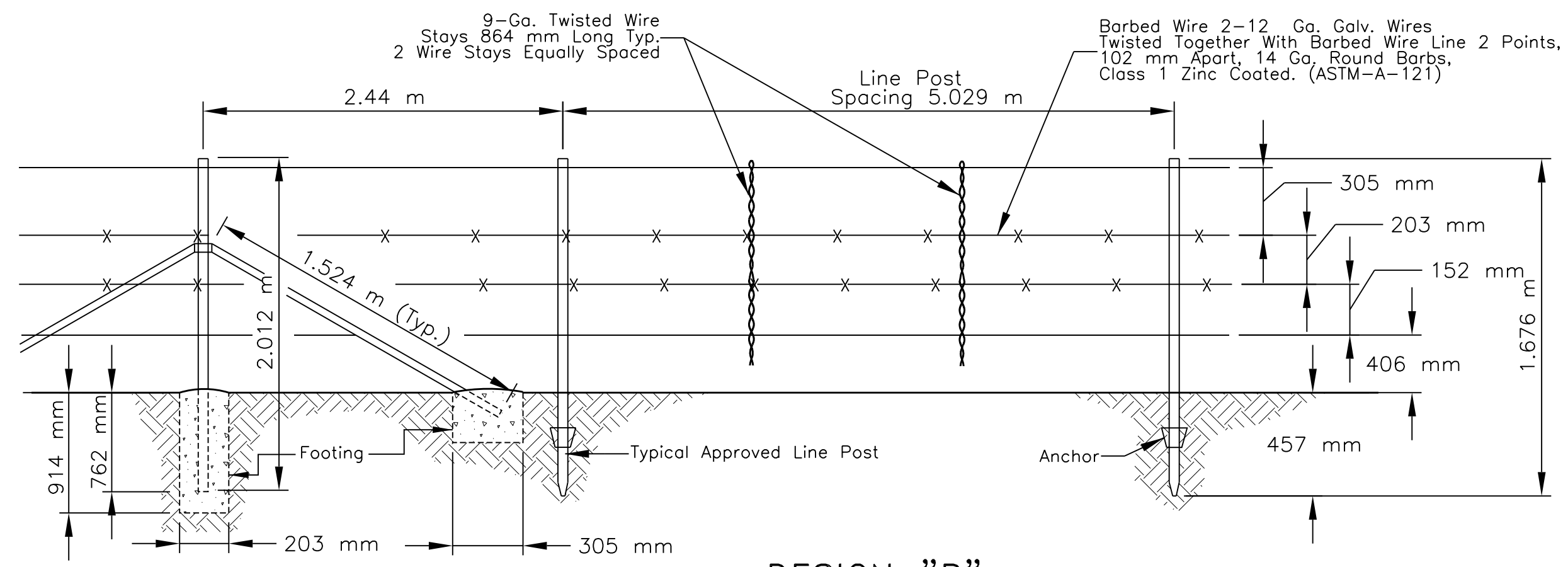
**PRECAST CONCRETE
 CATTLEGUARD DETAILS**

DRAWN BY: NRDOT	DATE: 2/12/2014
DESIGNED BY: NRDOT	DATE: 2/12/2014
REVISED: 6/1/2015	BY: Leroy.Toledo

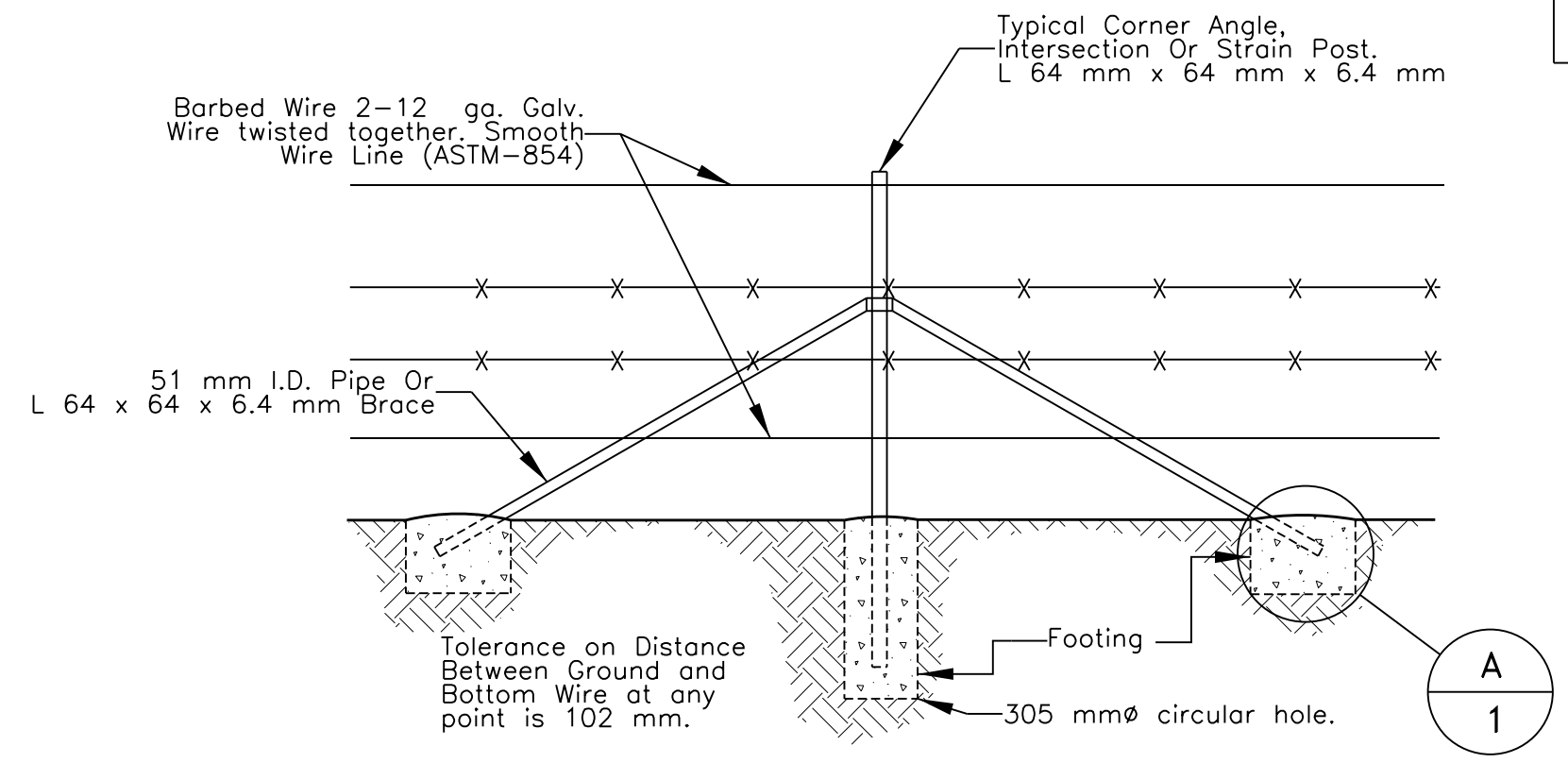
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REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	49	88



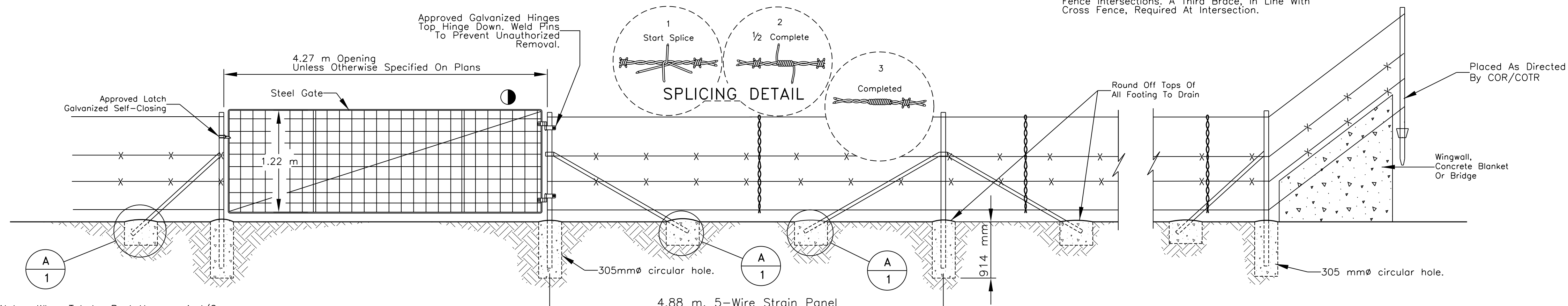
DESIGN "B"



STANDARD STRAIN POST

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

- 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 REQUIREMENTS OF SECTION 701. ALTERNATELY THE POSTS CAN BE PAINTED PER SECTION 710.04(c)(1).
 - LINE POSTS SHALL BE FABRICATED IN ACCORDANCE WITH AASHTO M 281-96. AND SHALL BE 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 61901-3400.
 - 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 61901-3400.
 - 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 TP-14. FURNISHING AND PLACEMENT OF CONCRETE SHALL BE INCLUDED WITH ITEM 61901-3400.
 - TWO SPLICES ON THE SAME LINE BETWEEN THE STRAIN POST ASSEMBLIES SHALL NOT BE PERMITTED. NO SPLICES SHALL BE PLACED CLOSER THAN 30 METER OF ANY POST ASSEMBLIES.
 - UNLESS NOTED ON THE PLANS AS INSTALLING THE ROW FENCING OVER THE DRAINAGE STRUCTURE, CONNECT ALL R.O.W. FENCING TO CATTLE GUARDS, CULVERTS (GREATER THAN 1524 mm DIA.), AND CONCRETE STRUCTURES AS SHOWN ON THESE PLANS, AND/OR AS DIRECTED BY THE COR/COTR.
 - ANY CONFLICT IN PLACEMENT OF THE R/W FENCING AT DRAINAGE PIPE LOCATION, DUE TO NARROW R/W WIDTH OR OTHER CONSTRAINTS, THE FENCE MAY BE PLACED OVER THE DRAINAGE STRUCTURE WITH FENCE POST SPACING BEING REDUCED WHERE NECESSARY, SO THAT POSTS ARE DRIVEN BETWEEN PIPES. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO ITEM 61901-3400.
 - 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.
 - GATE CLOSURE DEVICE SHALL BE STEEL PIPE, NPS 3/4 (26.7 mm) 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.
 - THE CONTRACTOR SHALL SUBMIT COMPLETE DETAILED SHOP DRAWINGS FOR PEDESTRIAN GATE, HINGES AND LATCH TO COR/COTR, FOR REVIEW AND APPROVAL. GATE POSTS AND BRACES, HINGES AND LATCH TO MATCH STANDARD TYPE 1 GATES. MINIMUM GATE FRAME TO BE CONSTRUCTED WITH 30 mm DIAMETER PIPE. GATE SHALL BE SELF CLOSING.

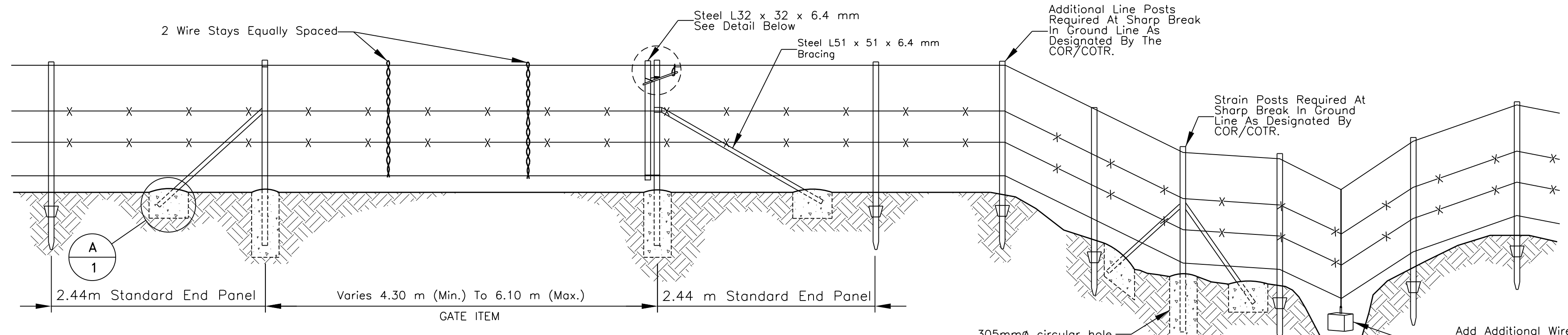


STANDARD 4.27m TYPE 1 GATE
ITEM: 61902-1300

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

Set Gate To Be Self Closing (Use Only When Specified By Special Note In The Plans) For Gate Details At Cattle Guard Location See Standard Cattle Guard Drawings.

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

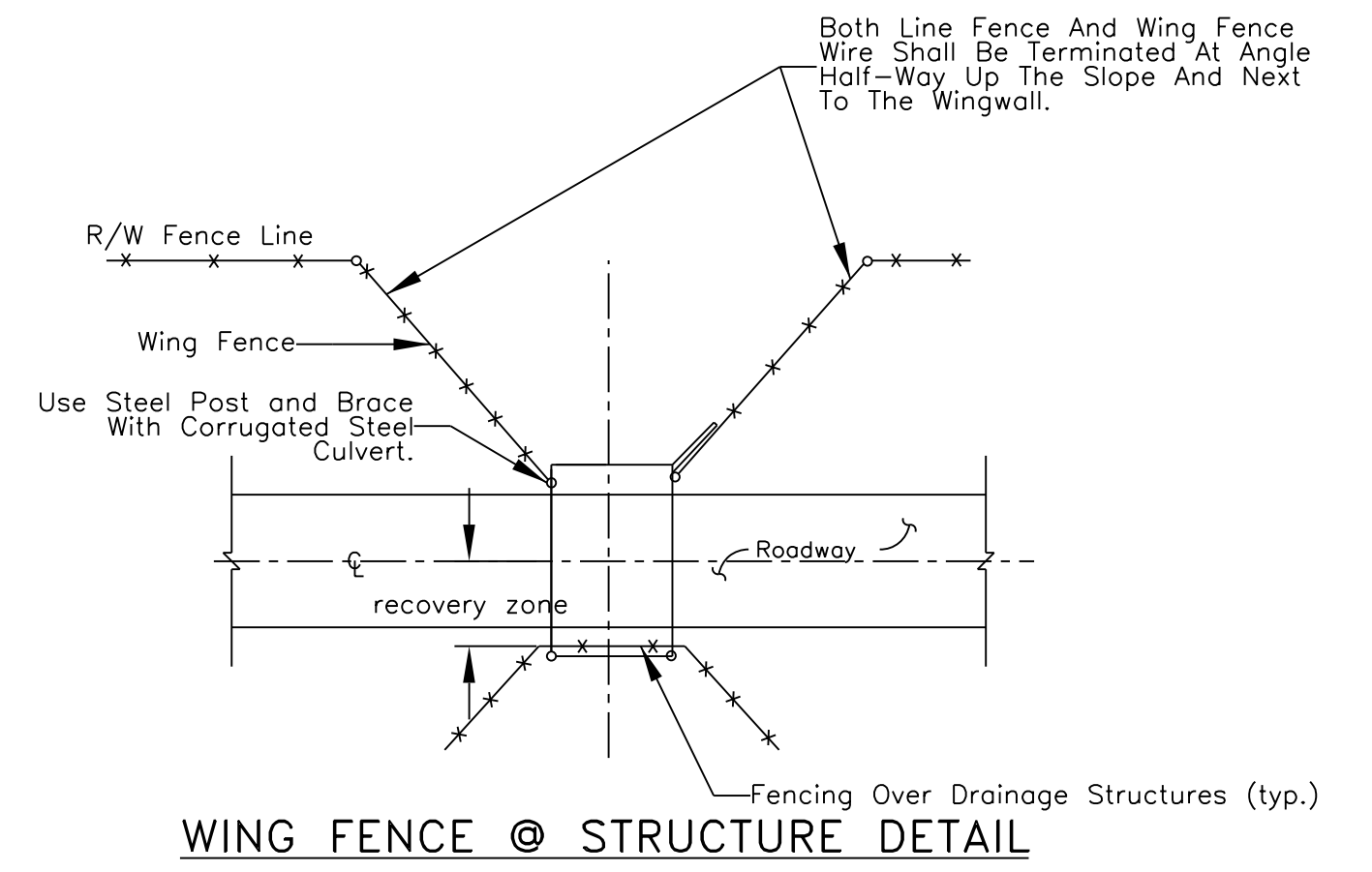


STANDARD TYPE-2 GATE
ITEM: 61902-2600

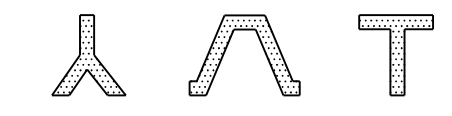
Use At Locations Noted On Plans

FENCE PROFILE IN ROUGH TERRAIN

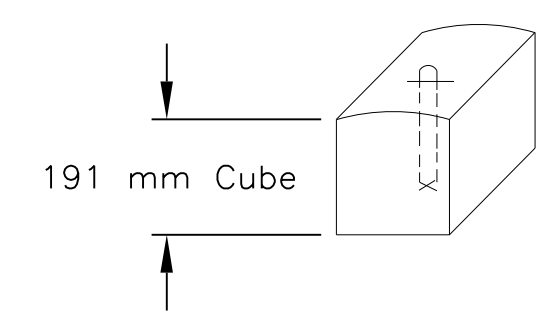
In Rough Terrain Post Spacing Shall Be Reduced Where Necessary To Maintain Required Spacing Below Bottom Wire Within The Tolerance Allowed.



WING FENCE @ STRUCTURE DETAIL

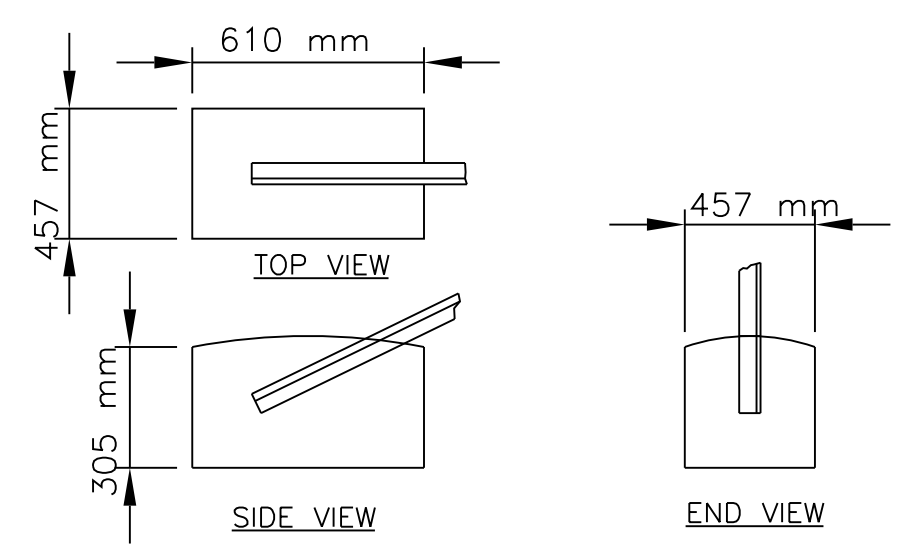


TYPICAL STEEL POST SECTION

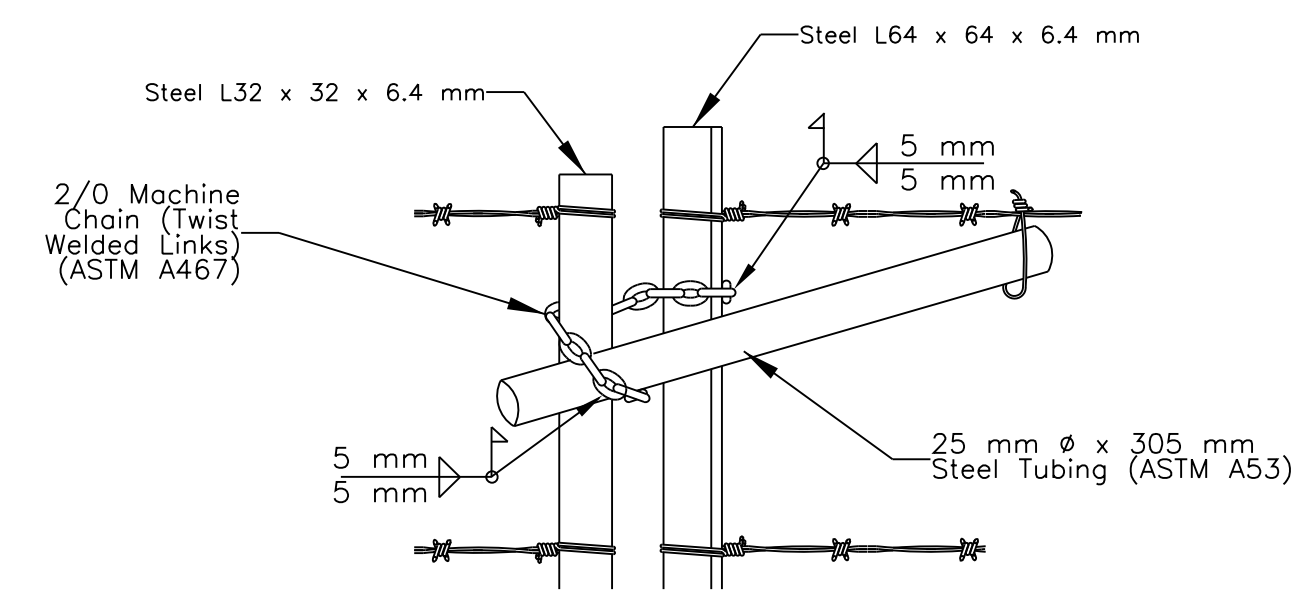


CONCRETE SAG WEIGHT DETAIL

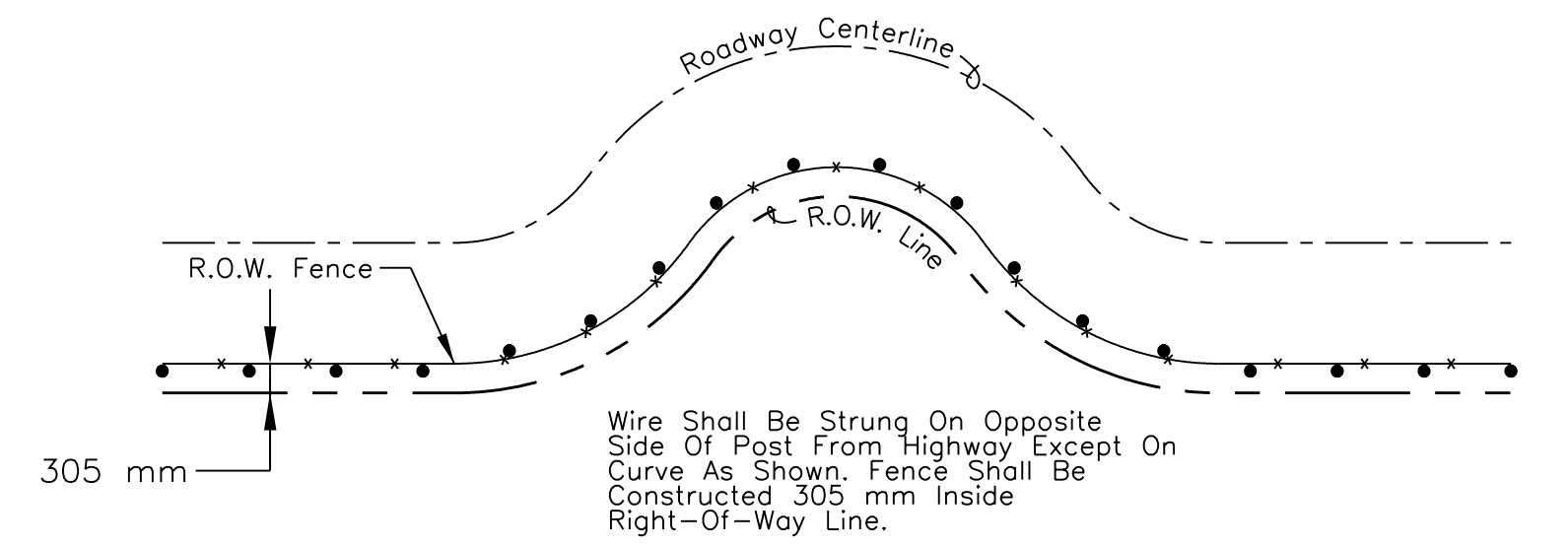
38 mm X 127 mm Doubled And Twisted 3.8 mm (Dia.) Wire Loop Centered In Block. 25.4 mm Projection Twisted Ends Down.
Min. Weight Of Concrete Sag Shall Be 16 kg.



CONCRETE FOOTING FOR CORNER & STRAIN POST



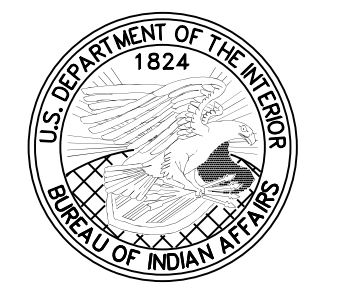
GATE SECURING DETAIL



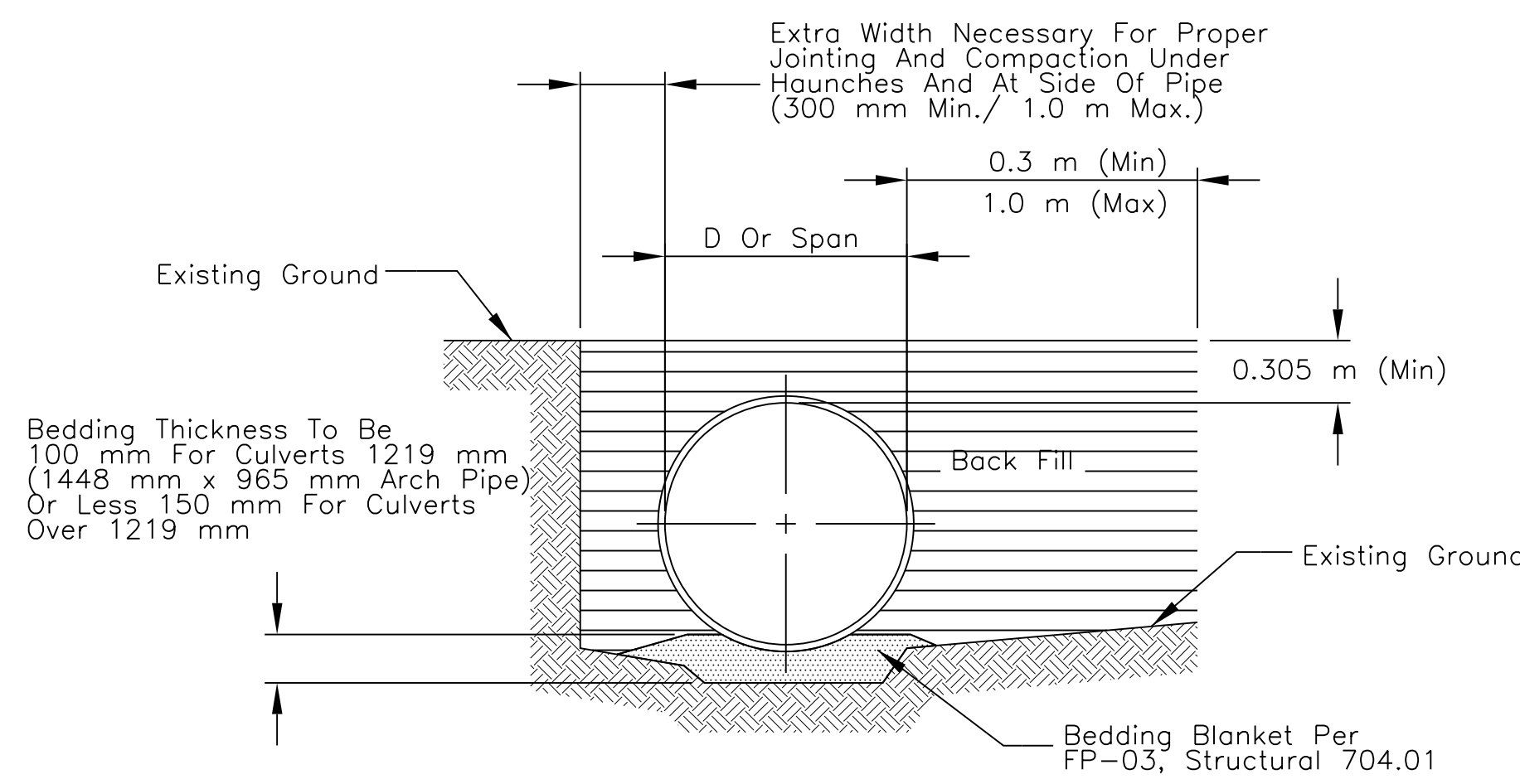
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STANDARD WILDLIFE FENCING DETAIL

DRAWN BY: NRDOT DATE: 1/14/2011
DESIGNED BY: NRDOT DATE: 1/14/2011
REVISED: 2/4/2013 BY: Leroy Toledo
SHEET SIZE: Full Size (24x36) Plot Sheet



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	50	88



NEGATIVE PROJECTING POSITIVE PROJECTING
FIGURE A: BEDDING

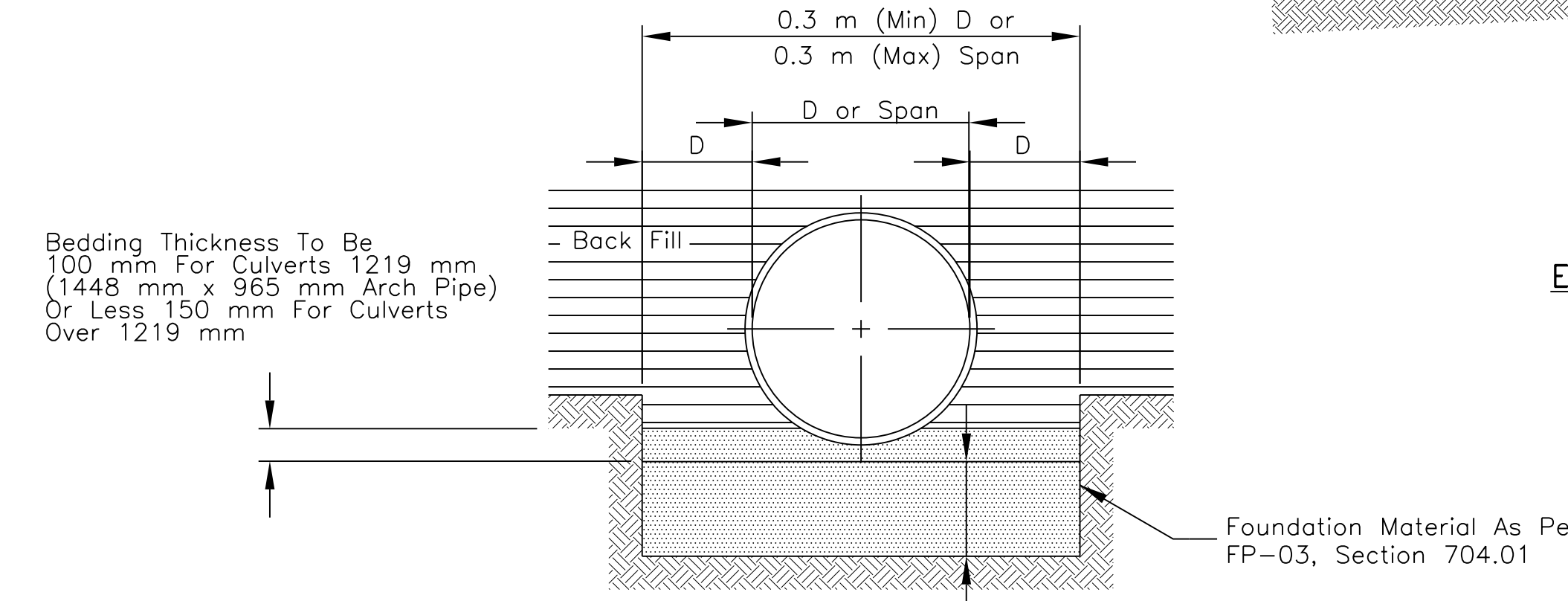


FIGURE B: ROCK BEDDING

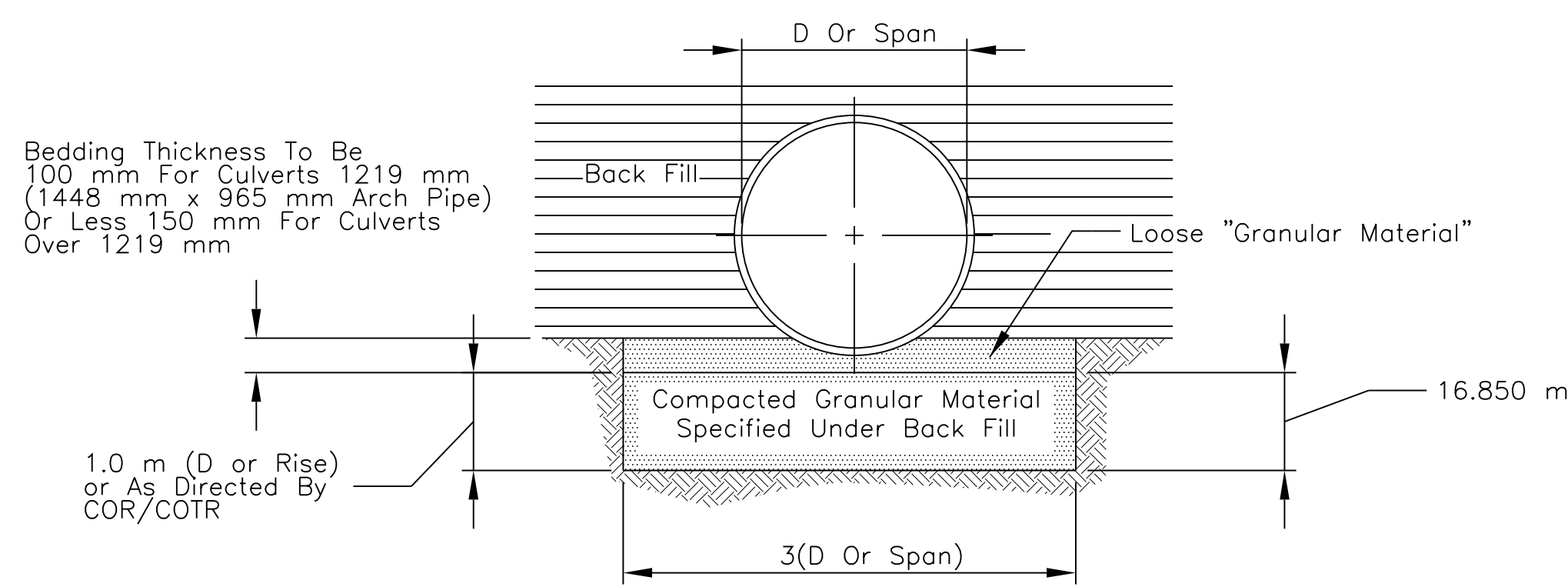
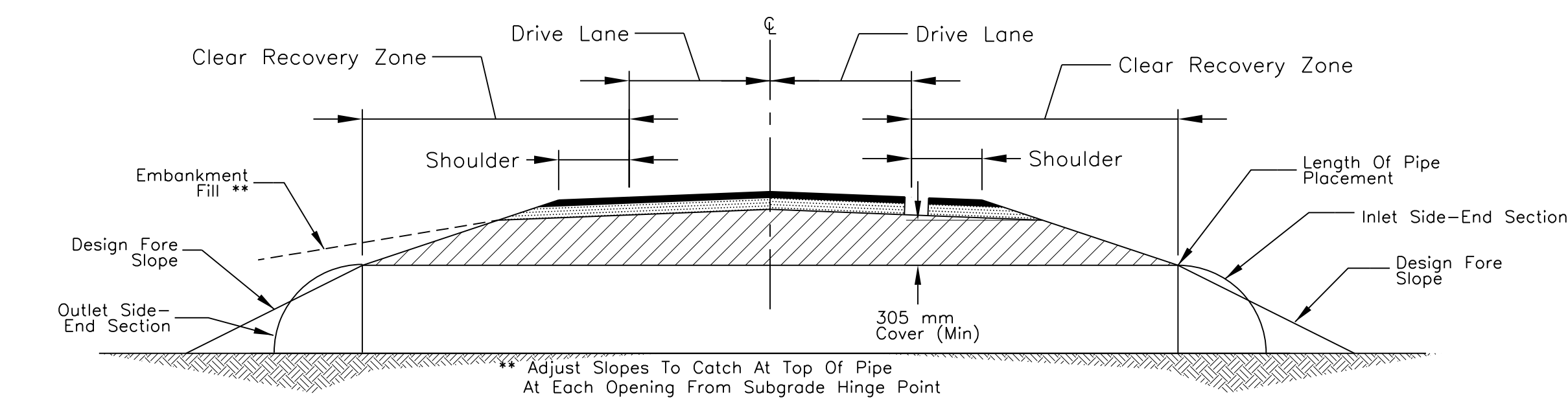
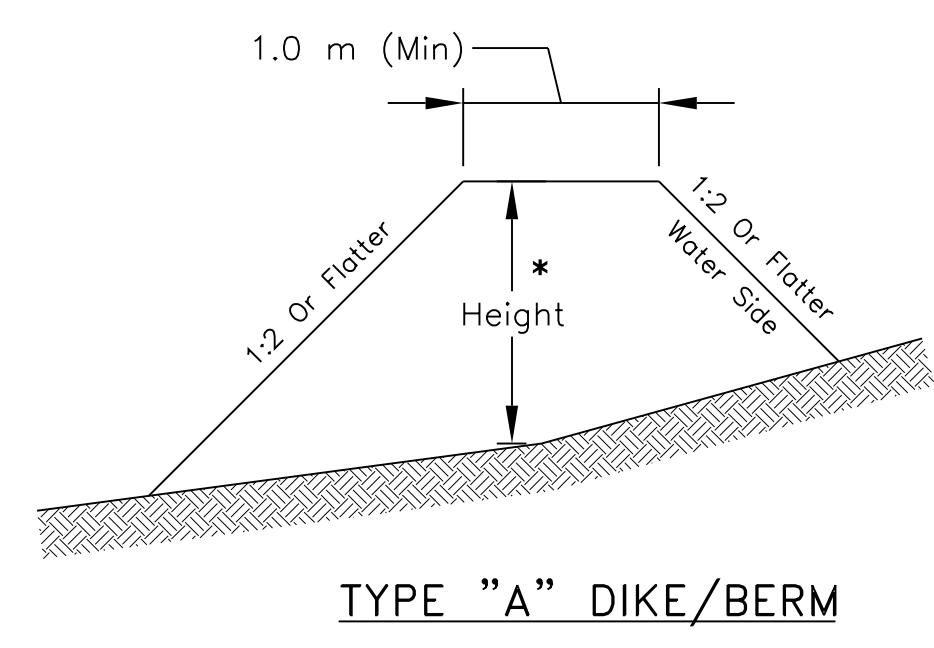


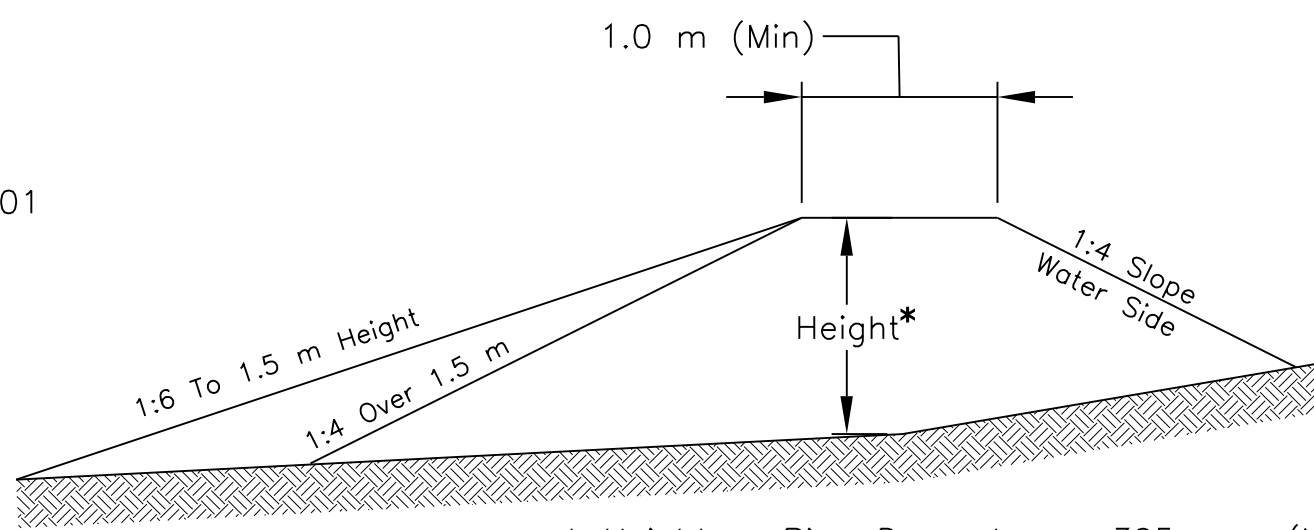
FIGURE C: FOUNDATION STABILIZATION BEDDING



TYPICAL PIPE INSTALLATION-(TURNOUT/DRIVEWAY AND MAIN ROADWAY.)

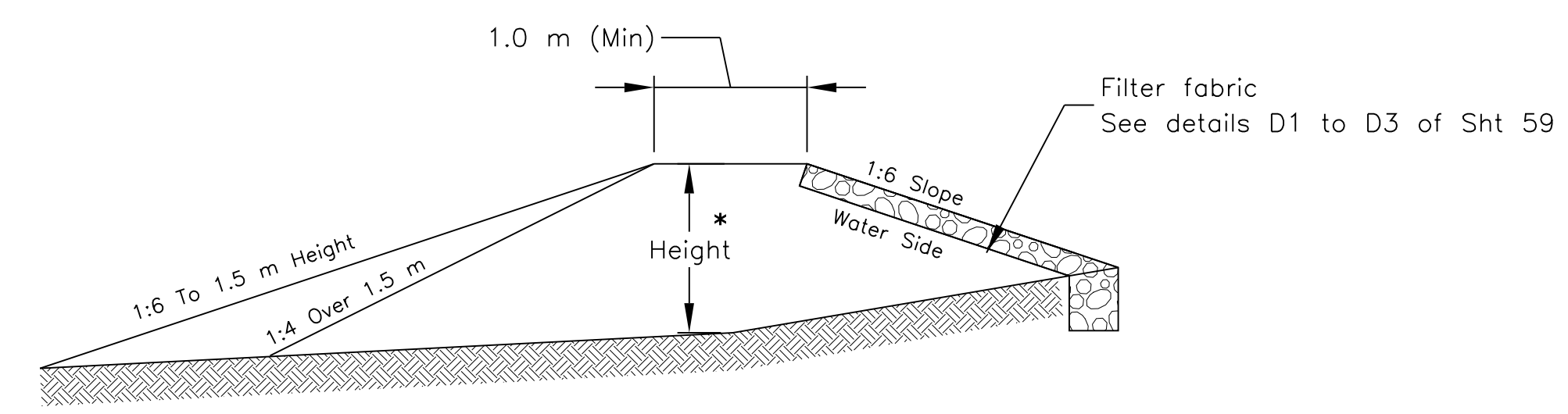


TYPE "A" DIKE/BERM



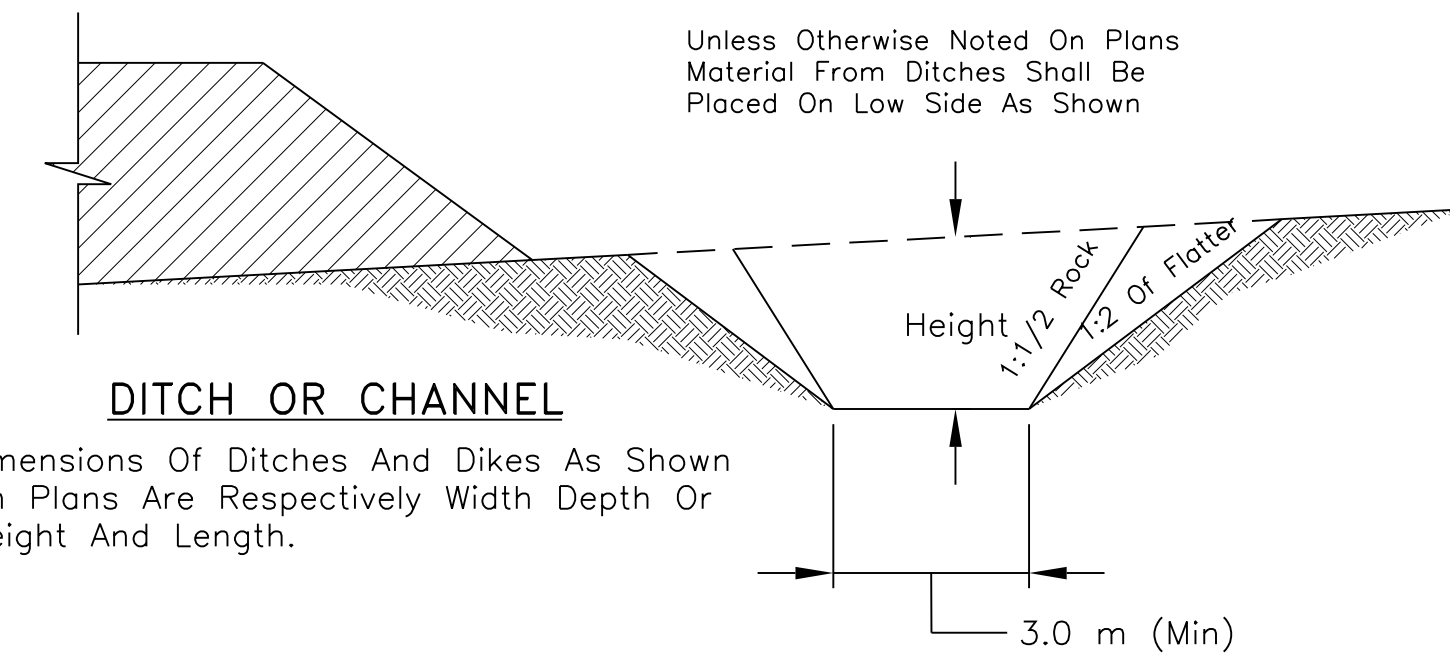
TYPE "B" DIKE/BERM
EARTHEN DIKE/BERM DETAILS

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



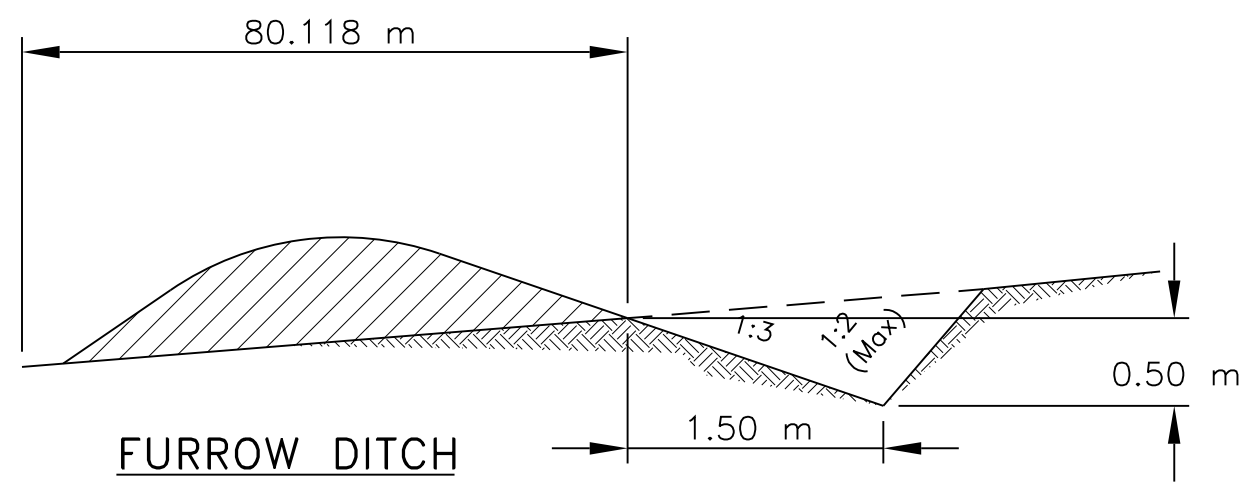
TYPE "B" DIKE/BERM

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



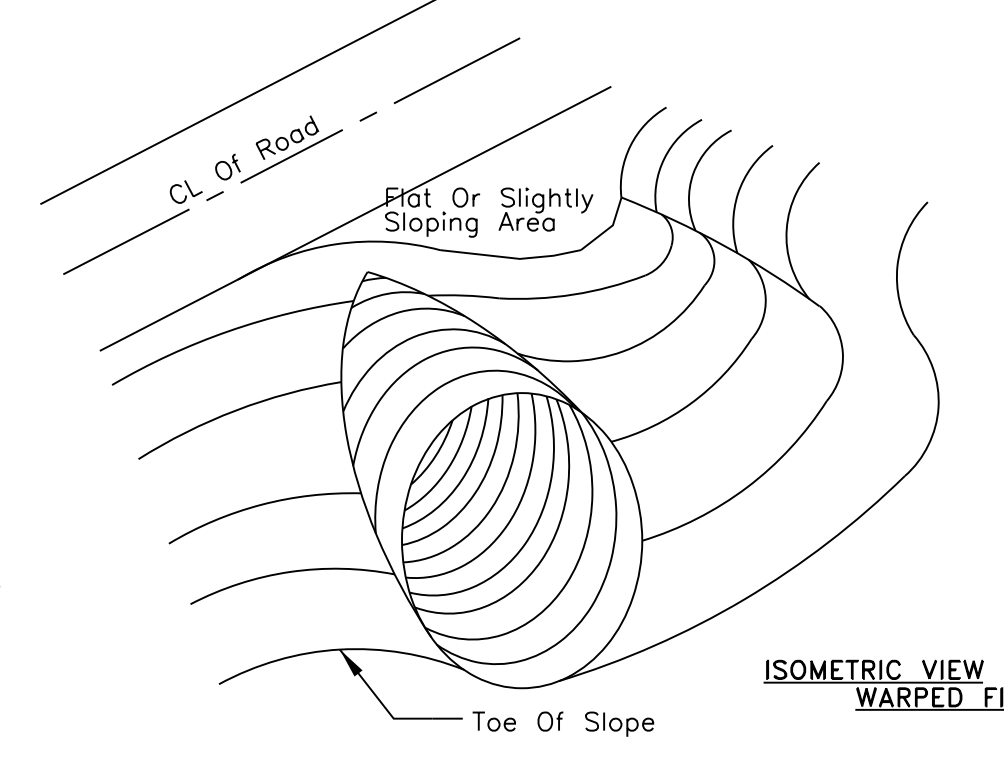
DITCH OR CHANNEL

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



FURROW DITCH

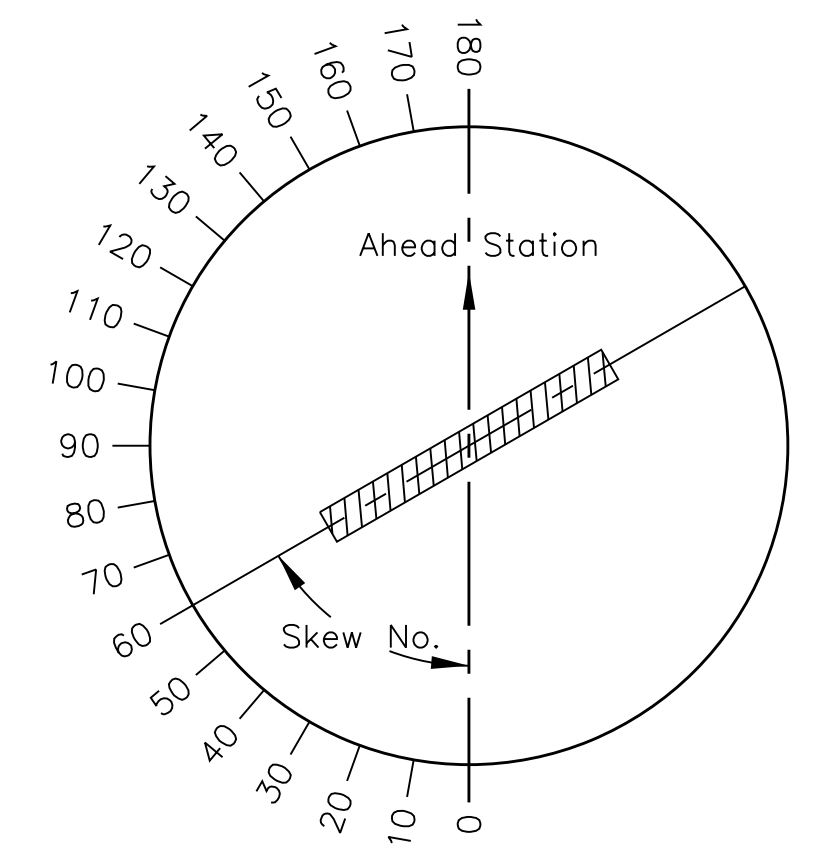
- To Be Paid For By The Meter.
- Furrow Ditch Sections As Shown Above And/Or Approved Equivalent Shall Be Built As Directed By The COR/COTR.



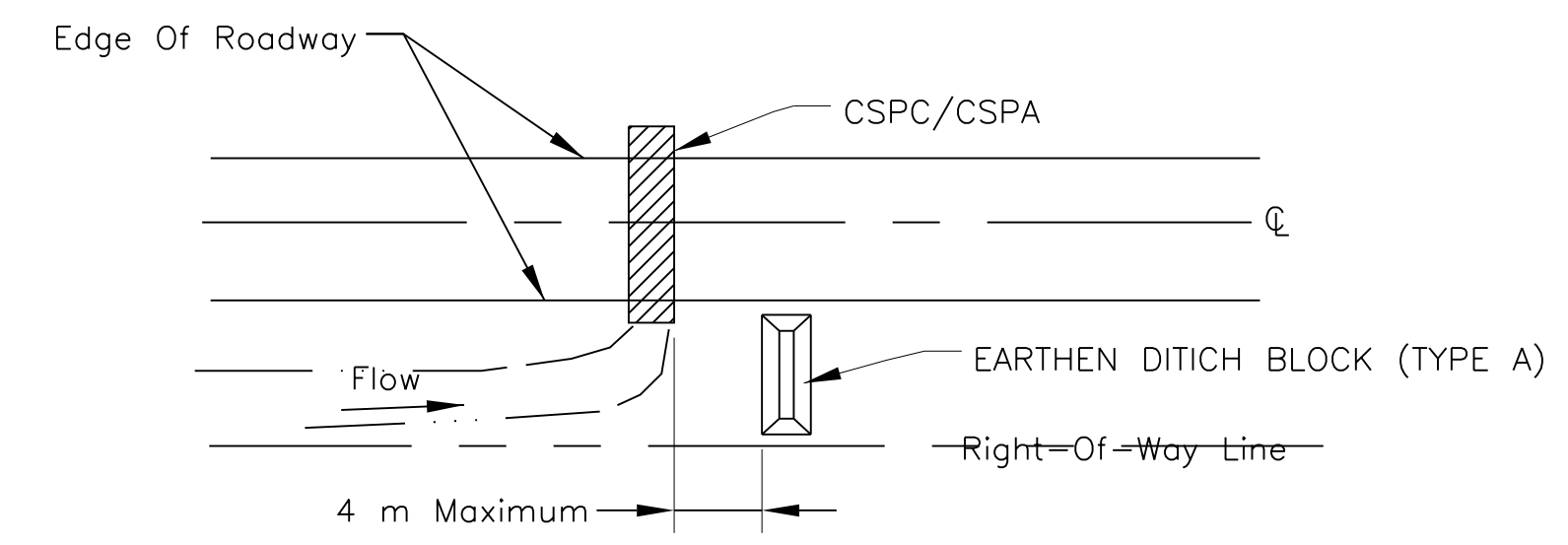
PIPE SKEWS TO THE EMBANKMENT (TYP.)

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

- GENERAL NOTES**
- PLACE LOOSE BEDDING ROUGHLY SHAPED TO BOTTOM OF PIPE, THEN COMPACT UNDER HAUNCHES AFTER PIPE PLACEMENT.
 - SEE SECTION 204, 209, 602, AND 704 OF FP-14, INCLUDING THE SUPPLEMENTAL SPECIFICATION FOR ADDITIONAL NOTES.
 - ALL DRAINAGE STRUCTURE MATERIAL SHALL BE UNLOADED AND HANDLED WITH REASONABLE CARE. NO STRUCTURE SHALL BE DRAGGED OR ALLOWED TO STRIKE ANY HARD SURFACE DURING PLACEMENT. ANY DAMAGED STRUCTURE SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR, AT NO ADDITIONAL COST TO THE GOVERNMENT.
 - ALL STRUCTURAL PLATE PIPE AND PRECAST BOX STRUCTURES SHALL BE ASSEMBLED AND INSTALLED IN ACCORDANCE WITH THE FABRICATORS RECOMMENDATIONS.
 - BACKFILL MATERIAL SHALL BE PLACED AT PIPE DIAMETER WIDE ON THE SIDES AND 300 mm (MIN)/ 1.0 m (MAX) OVER THE PIPE. BACKFILL MATERIAL BEYOND THE LIMITS SHALL BE REGULAR EARTHWORK EMBANKMENT MATERIAL. THE BACKFILL MATERIAL SHALL BE APPROVED BY THE COR/COTR. PRIOR TO ITS USE AND SHALL BE PLACED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.
 - PONDING OR JETTING PIPE BACKFILL SHALL NOT BE PERMITTED.
 - ALL PIPE EXCAVATION, BACKFILLING, DE-WATERING PUMPING OR COFFERDAMS REQUIRED TO PROPERLY INSTALL THE DRAINAGE PIPE SHALL BE CONSIDERED INCIDENTAL TO COMPLETION OF THE PROJECT AND NO ADDITIONAL PAYMENT SHALL BE MADE.
 - MULTIPLE PIPE INSTALLATIONS SHALL BE PLACED 610 mm BETWEEN END SECTIONS UNLESS OTHERWISE DIRECTED BY THE COR/COTR.
 - ALL PIPE SHALL BE PROTECTED BY A COVER OR NOT LESS THAN 0.91 m OF EMBANKMENT ABOVE PIPE BEFORE ANY HEAVY EQUIPMENT IS ALLOWED TO PASS OVER THE STRUCTURE(S) DURING CONSTRUCTION.
 - ALL CULVERTS SHALL BE INSTALLED AT THE ORIGINAL FLOW LINE AND SLOPED TO ASSURE POSITIVE DRAINAGE UP TO THE R.O.W. LIMITS. IN NO CASE SHALL THE PIPE BE PLACED BELOW THE ORIGINAL FLOW ELEVATIONS, UNLESS OTHERWISE DIRECTED BY THE COR/COTR. THIS SHALL BE CONSIDERED INCIDENTAL TO COMPLETION OF THE PROJECT AND NO ADDITIONAL PAYMENT SHALL BE MADE.
 - AT DRAINAGE PIPE REPLACEMENTS, INSTALLATIONS, EXTENSIONS AND IN-PLACE PIPE CLEANING LOCATIONS, THE CONTRACTOR SHALL RESHAPE, REGRADE AND CLEAN THE INLET AND OUTLET CHANNELS TO THE RIGHT-OF-WAY LINE AND/OR EXISTING DRAINAGE CHANNEL, TO PRODUCE SMOOTH FLOWS AT CULVERT INTAKES AND DISCHARGES AS DIRECTED BY THE COR/COTR. THIS WORK SHALL BE INCIDENTAL TO THE BID ITEMS UNDER SECTIONS 602, 603 AND 607.
 - ALL CULVERTS UNDER TURNOUTS AND DRIVEWAYS SHALL BE PLACED AT THE PROPOSED DITCH FLOWLINE. THE CONTRACTOR SHALL BE REQUIRED TO FIELD ADJUST THE PROFILE GRADES OVER THE PIPE AS DIRECTED BY COR/COTR, TO PROVIDE FOR MINIMUM COVER.
 - TYPE "A" DIKE /BERM SHALL BE USED ON THE PROJECT UNLESS OTHERWISE NOTED ON THE PLANS. EMBANKMENT MATERIAL NEEDED TO BUILD EARTHEN DIKE/BERM SHALL BE CONSIDERED INCIDENTAL TO ITEM 20443-1000.
 - IF DIRECTED BY THE COR/COTR, TO BETTER FIT DRAINAGE FIELD CONDITIONS TO MORE SMOOTHLY DIRECT FLOW INTO THE PIPE AND/OR TO LESSEN THE WATERS IMPACT ON THE FACE OF THE EARTHEN DIKE/BERM, THIS WORK TO BE INCIDENTAL TO BID ITEM 20443-1000.



STRUCTURE SKEW DIAGRAM



EARTHEN DIKE/BERM INSTALLATION AT STRUCTURE

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

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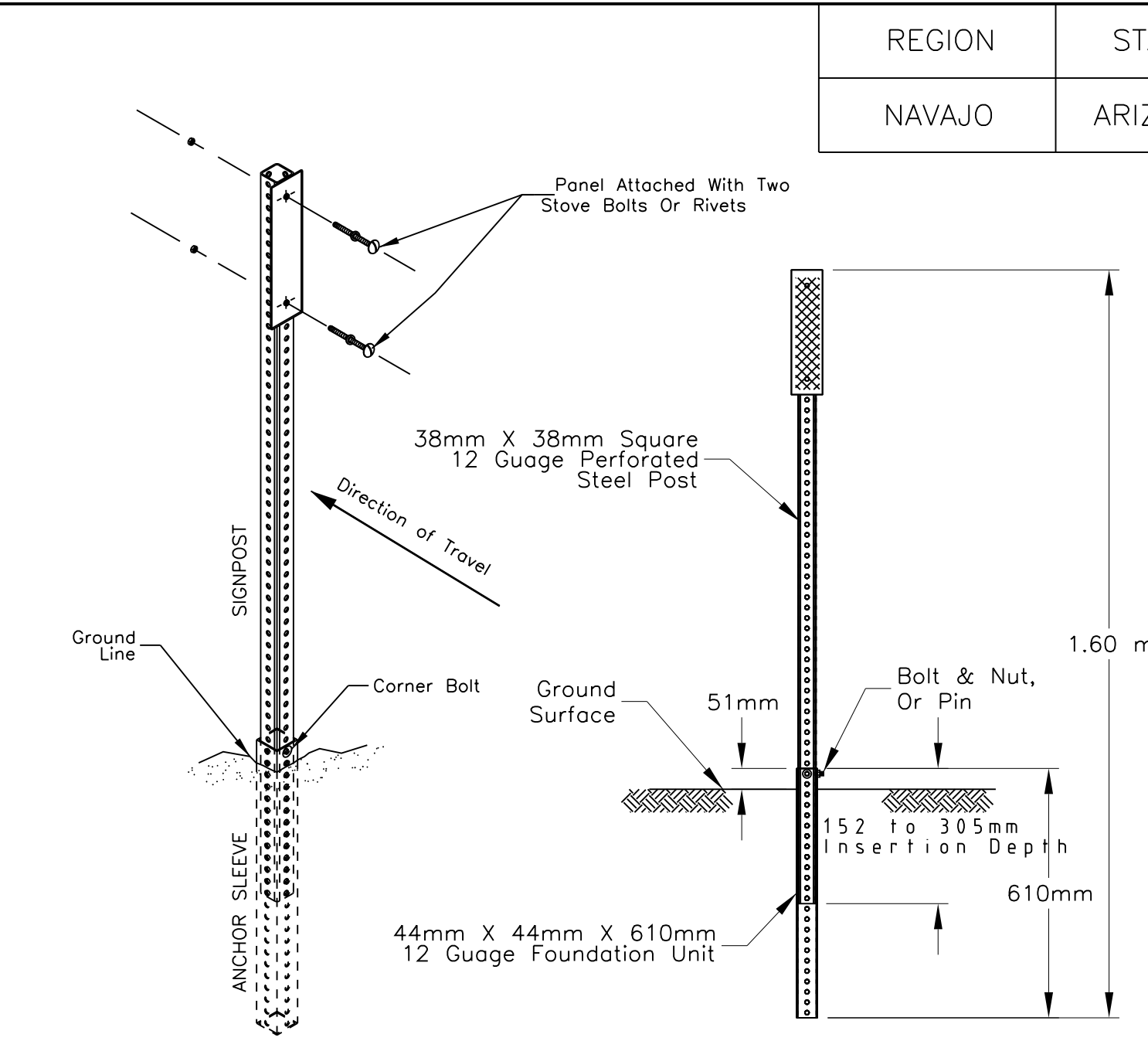
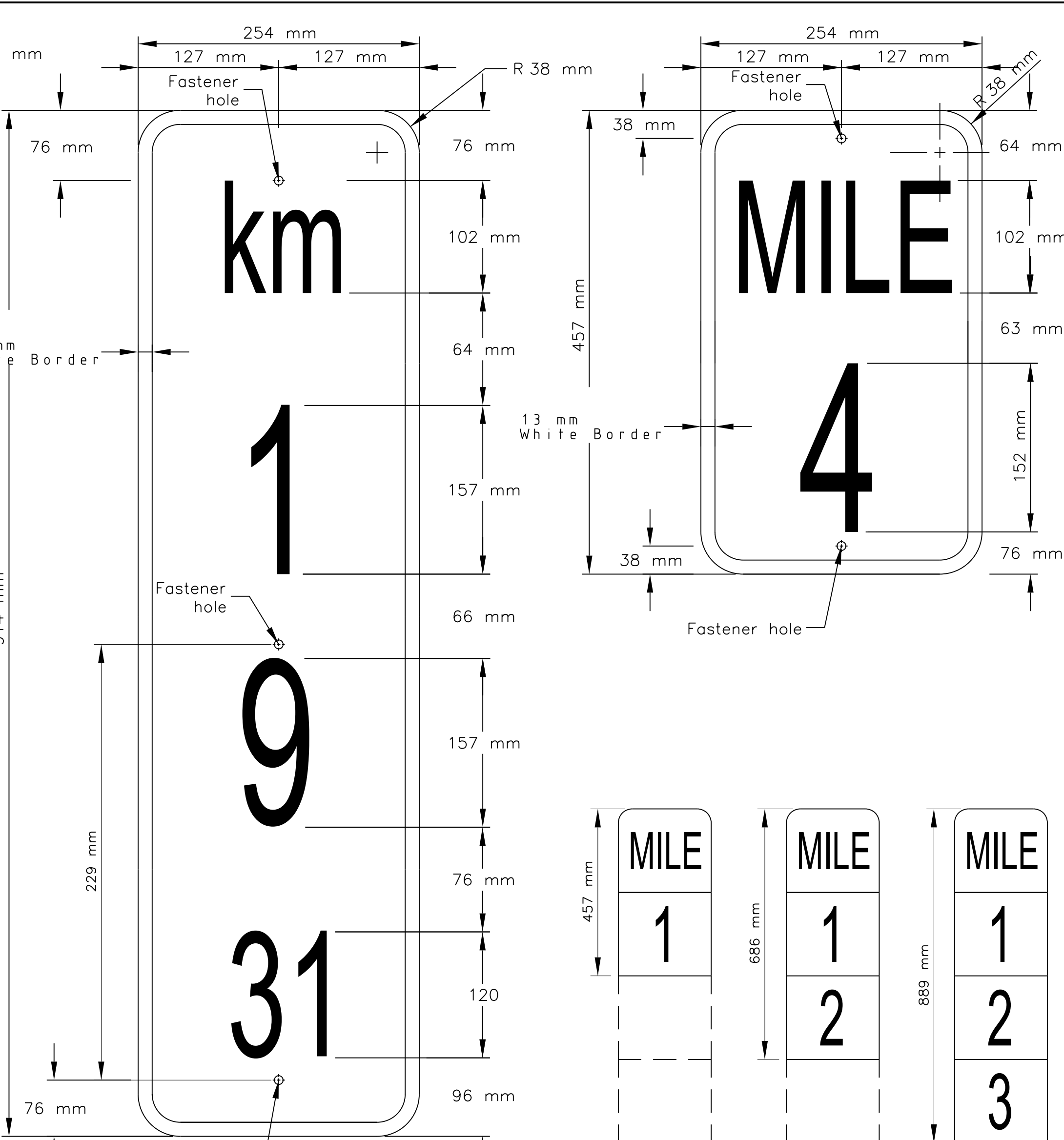
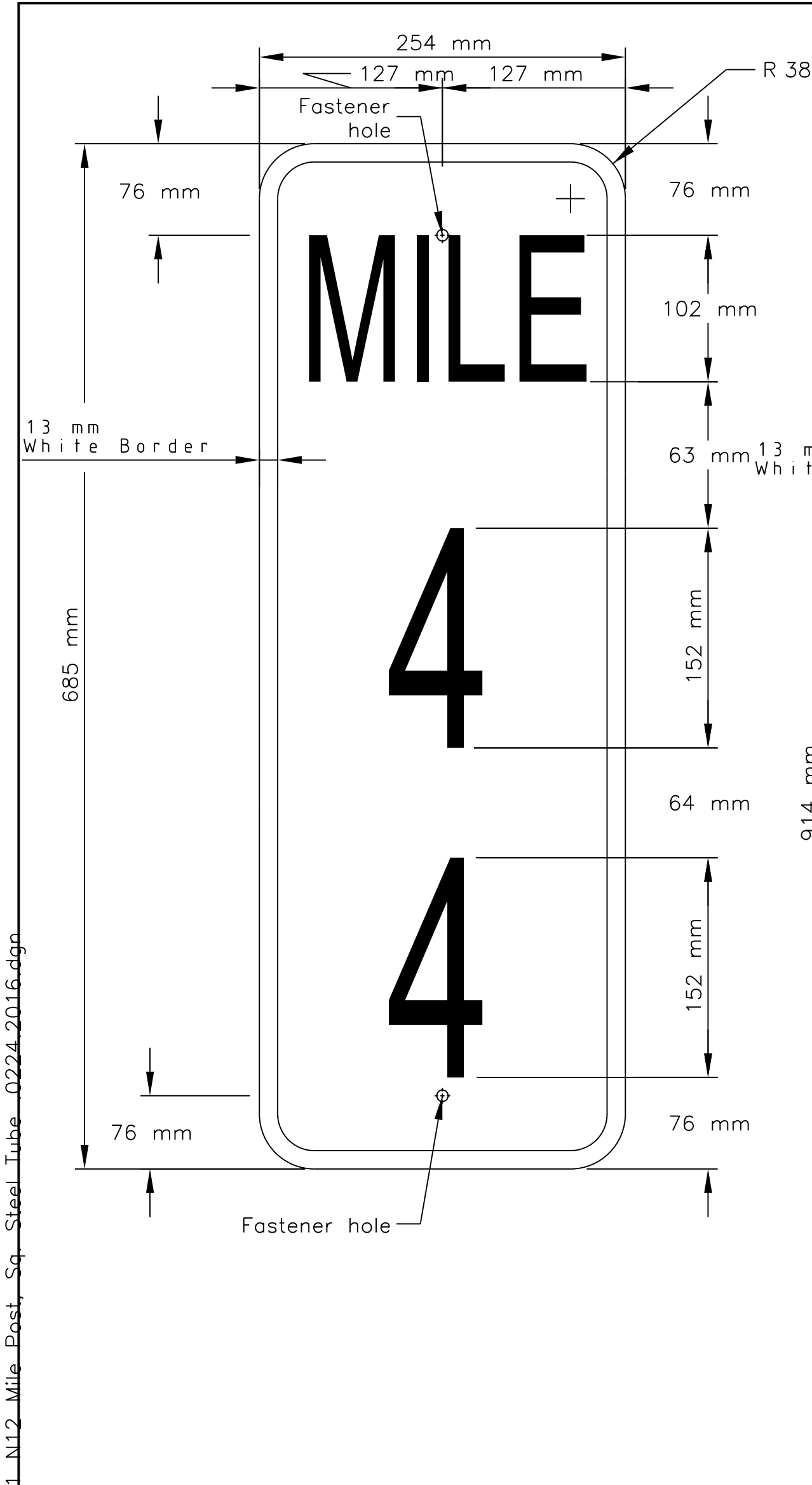
STANDARD PIPE INSTALLATION AND DITCH DETAILS

DRAWN BY: NRDOT DATE: 2/4/2014
DESIGNED BY: NRDOT DATE: 2/4/2014
REVISED: 3/19/2014 BY: Leroy.Toledo

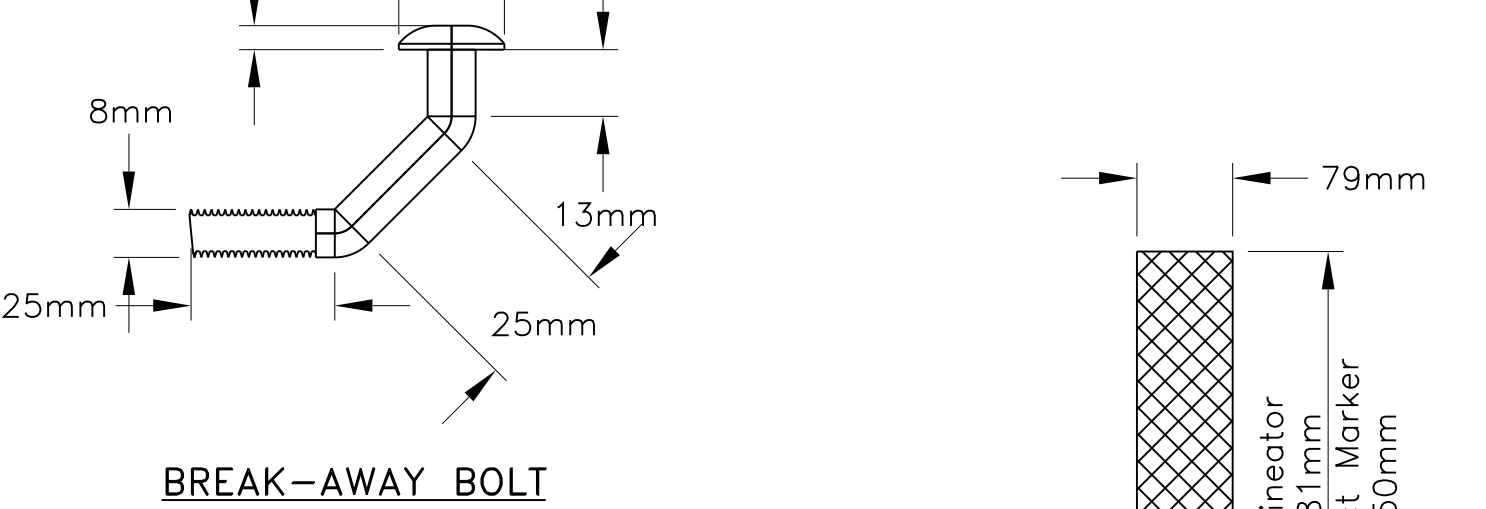
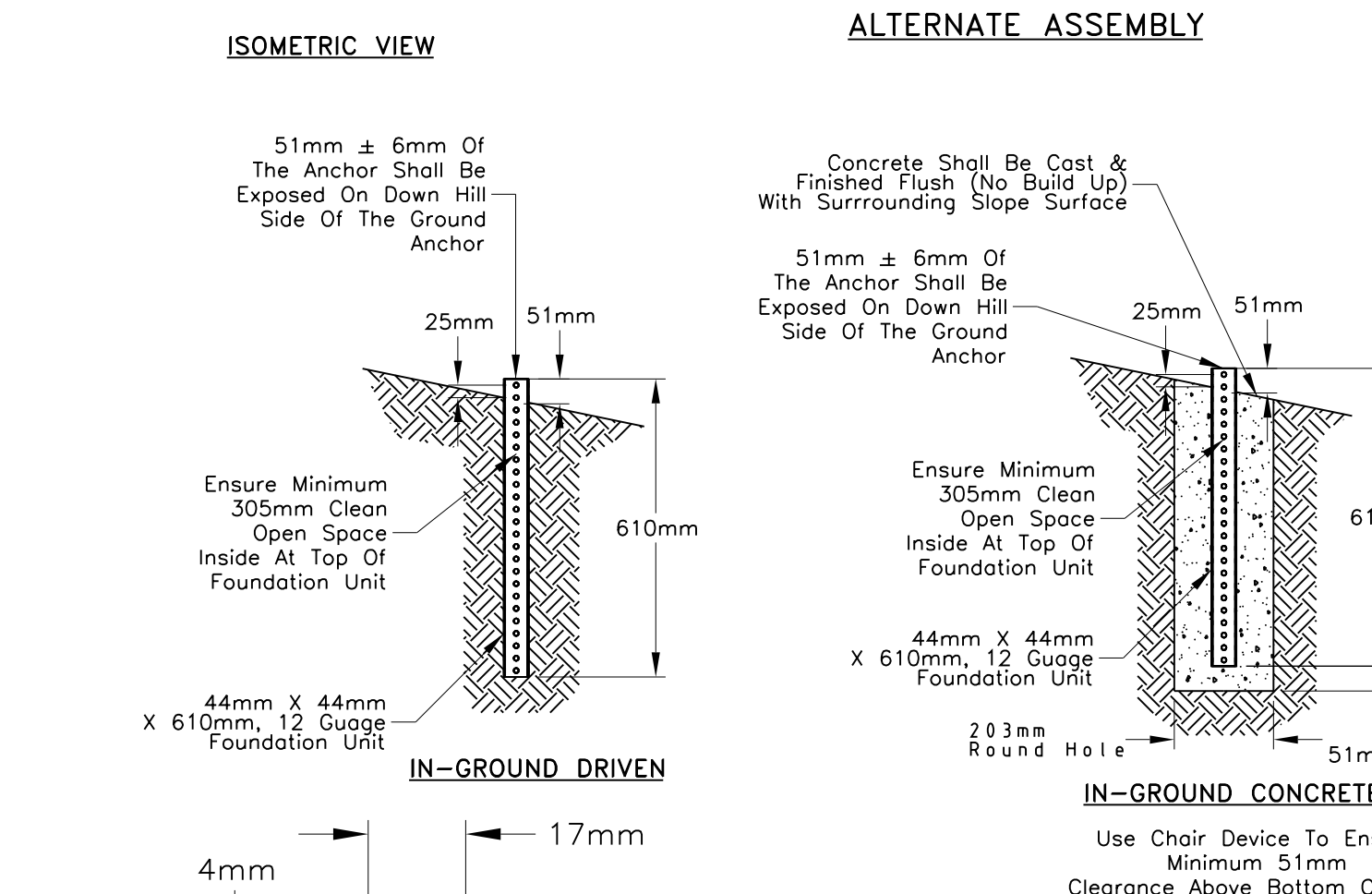
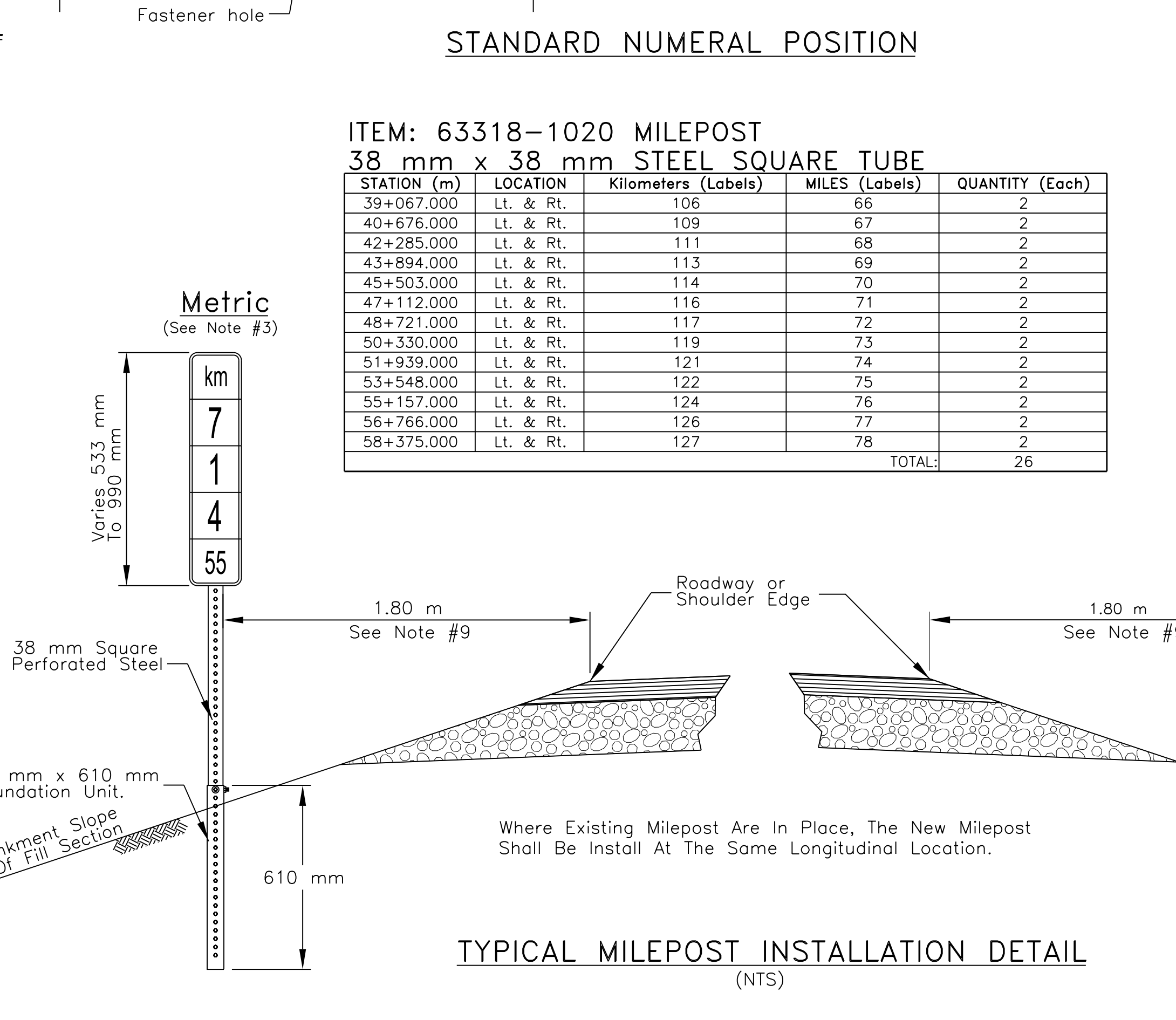
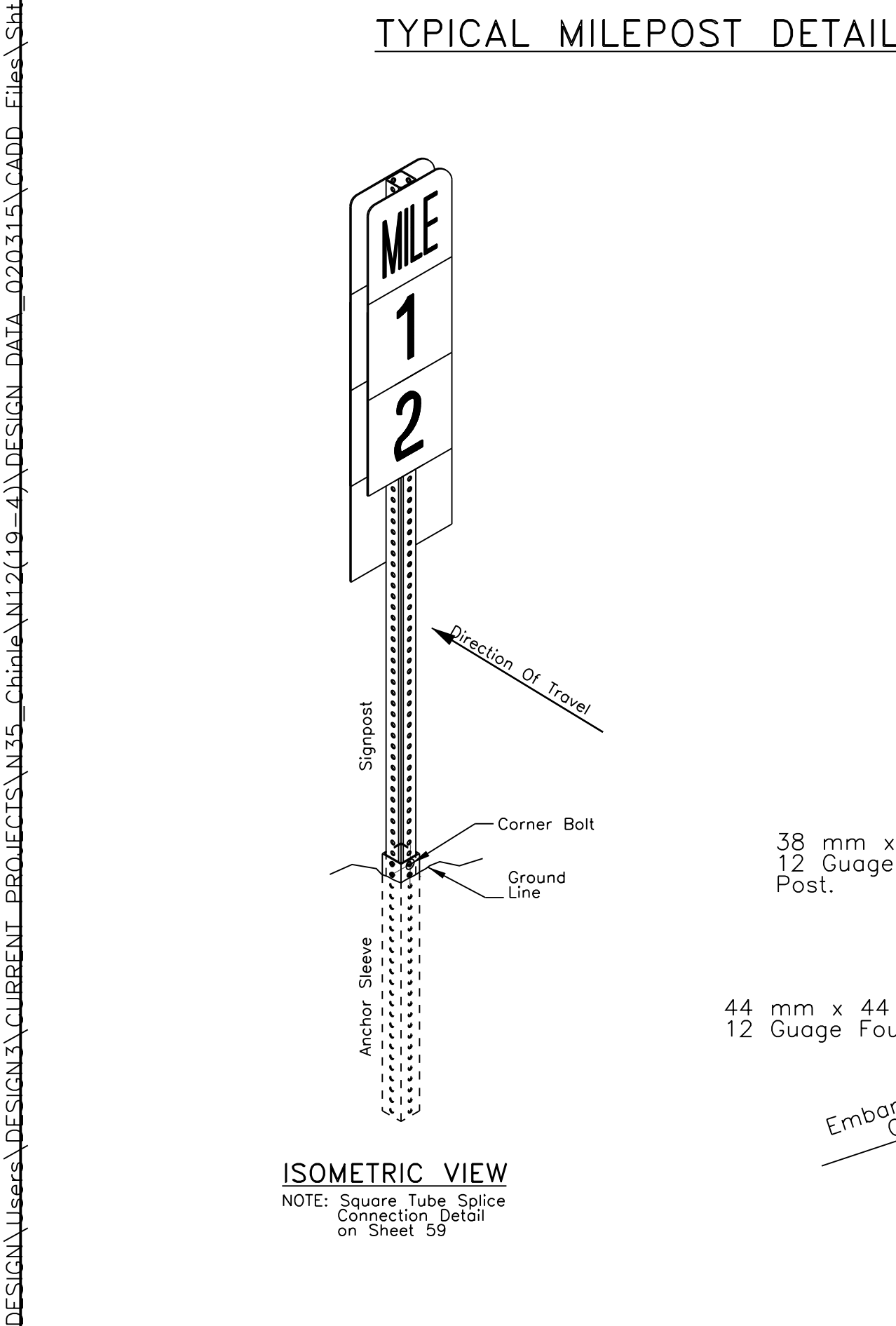
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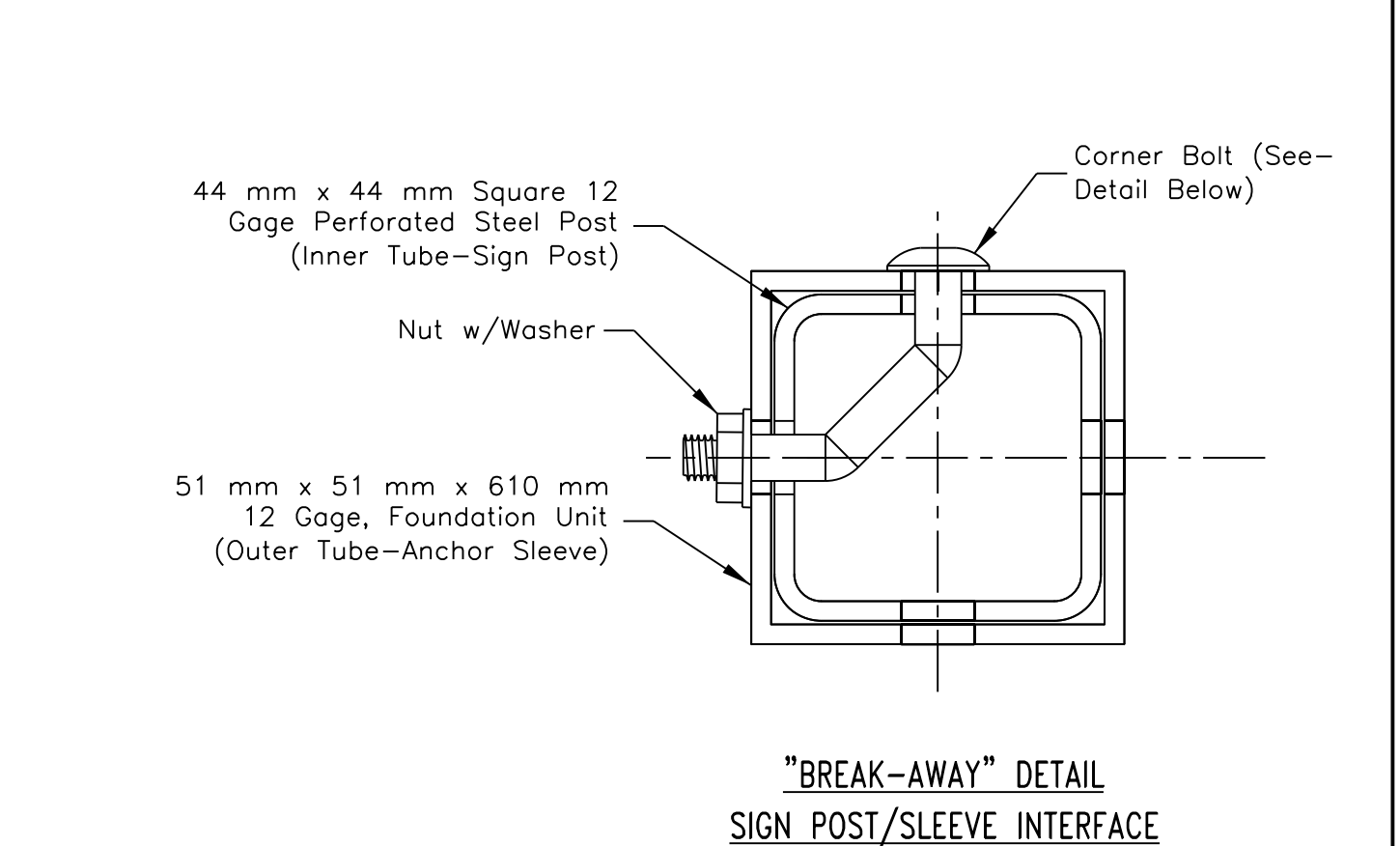
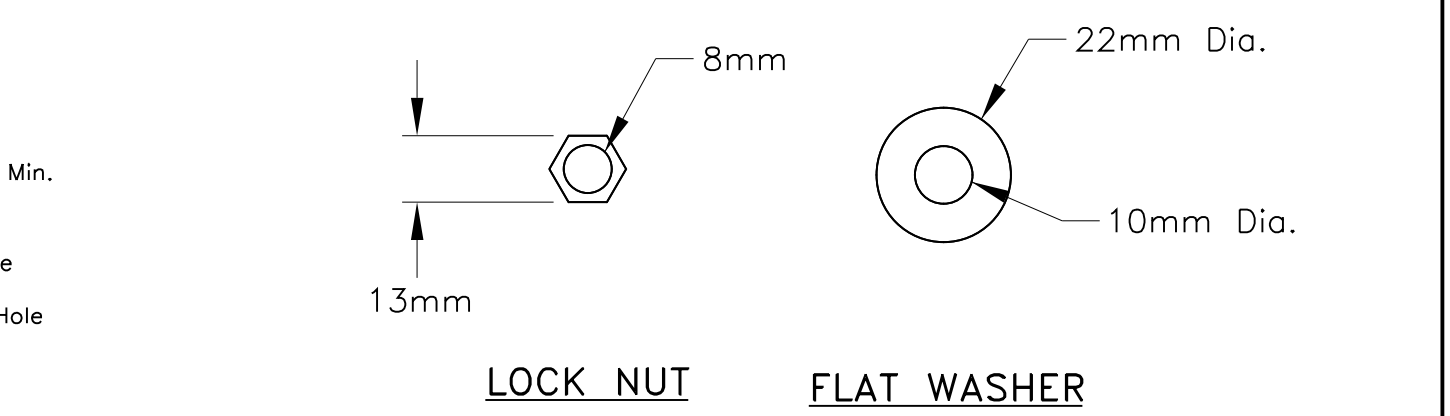
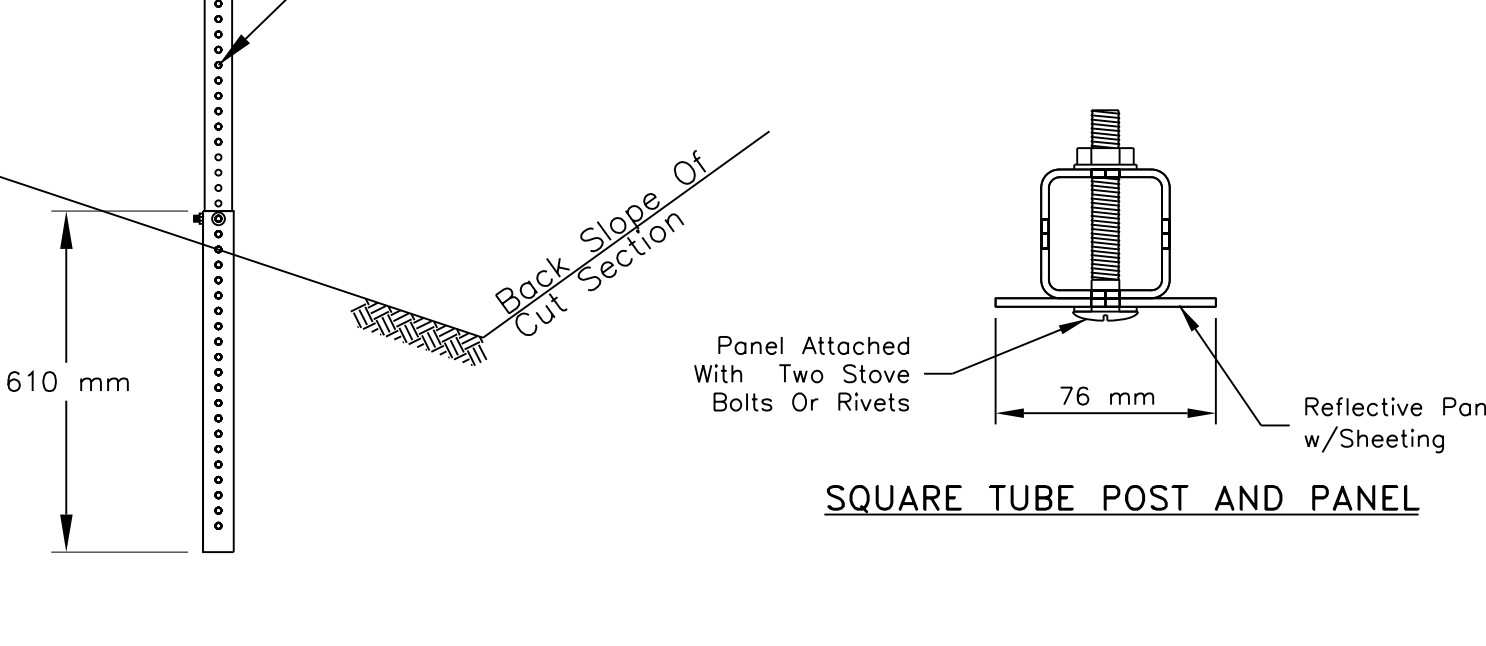
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	51	88



- ### 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 51mm X 51mm ALL STEEL SQUARE TUBE DELINEATORS. SEE SHEET 67 FOR POST SPACING.
 - THE MILE POSTS SHALL BE PLACED ON BOTH SIDE OF THE ROADWAY WITH ENGLISH UNITS PANEL ON APPROACHING TRAFFIC AND METRIC UNITS PANEL ON OPPOSING TRAFFIC.
 - MILE POST PLATES SHALL BE FABRICATED FROM 16 GAGE MINIMUM THICKNESS 5052-H38 OR 6061-T6 ALUMINUM ALLOY.
 - ALL SURFACE TO BE COVERED WITH REFLECTIVE SHEETING, AND SHALL BE PREPARED IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION SECTION 718.11, TABLE 718-3.
 - THE BORDER AND LEGEND SHALL BE STANDARD REFLECTIVITY SILVER-WHITE. THE BACKGROUND SHALL BE STANDARD REFLECTIVITY GREEN AND MAY BE REVERSE SILK-SCREENED.
 - THE BACK SIDE OF THE ALUMINUM SHEETS SHALL BE ETCHED BY APPROVED METHODS TO REDUCE GLARE FROM REFLECTED SUNLIGHT.
 - STEEL POSTS SHALL CONFORM TO ASTM A499- YIELD POINT AND TENSILE STRENGTH OF STEEL SHALL BE 550 & 889 MPa (MINIMUM) RESPECTFULLY AND SHALL NOT WEIGHT LESS THAN 2.98 kg/m. AN APPROVED ALTERNATE BREAKAWAY ASSEMBLY MAY BE SUBMITTED TO THE COR/AOTR FOR REVIEW AND APPROVAL PRIOR TO IT'S USE. THE POSTS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A-123.
 - INSTALL MILE POST MARKER 1.80 METER (MAXIMUM) FROM ROADWAY SHOULDER. AT GUARDRAIL LOCATIONS, THE MILE POST MARKER SHALL LINE UP WITH THE GUARDRAIL POSTS.
 - THE POSTS LENGTH SHALL BE DETERMINED IN THE FIELD BASED ON FINISH GROUND ELEVATION WITH RESPECT TO EDGE OF PAVEMENT ELEVATION.
 - THE UNIT PRICE BID FOR FURNISHING AND INSTALLING MILE POSTS SHALL INCLUDE ALL MATERIALS INCLUDING TWO SIGNS PER POST.

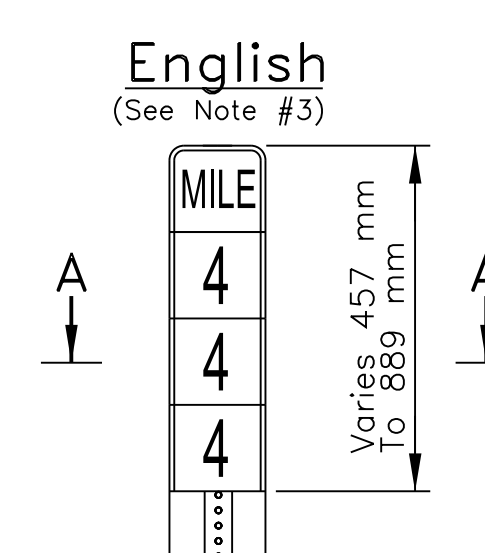
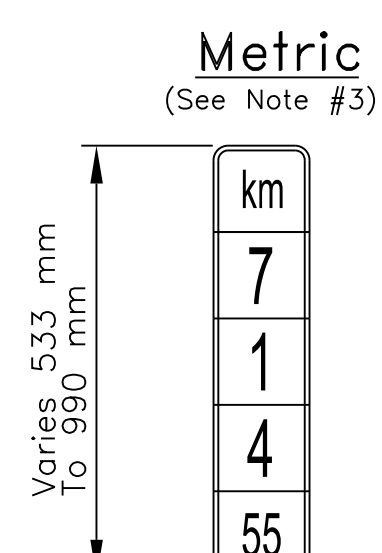


TYPE	POST COLOR	HIGH INTENSITY REFLECTIVE SHEETING
1a	WHITE	WHITE, ONE SIDE
1b	WHITE	WHITE, BOTH SIDES
2	YELLOW	AMBER, ONE SIDE



ITEM: 63318-1020 MILEPOST
38 mm x 38 mm STEEL SQUARE TUBE

STATION (m)	LOCATION	Kilometers (Labels)	MILES (Labels)	QUANTITY (Each)
39+067.000	Lt. & Rt.	106	66	2
40+676.000	Lt. & Rt.	109	67	2
42+285.000	Lt. & Rt.	111	68	2
43+894.000	Lt. & Rt.	113	69	2
45+503.000	Lt. & Rt.	114	70	2
47+112.000	Lt. & Rt.	116	71	2
48+721.000	Lt. & Rt.	117	72	2
50+330.000	Lt. & Rt.	119	73	2
51+939.000	Lt. & Rt.	121	74	2
53+548.000	Lt. & Rt.	122	75	2
55+157.000	Lt. & Rt.	124	76	2
56+766.000	Lt. & Rt.	126	77	2
58+375.000	Lt. & Rt.	127	78	2
TOTAL:				26

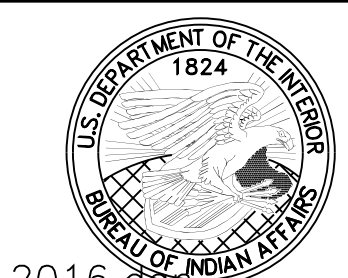


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STANDARD MILEPOST WITH U-CHANNEL
STEEL POST AND PERFORATED SQUARE
STEEL TUBE POST DETAILS

DRAWN BY: NRDOT	DATE: 2/12/2014
DESIGNED BY: NRDOT	DATE: 2/12/2014
REVISED: 6/1/2015	BY: Leroy Toledo

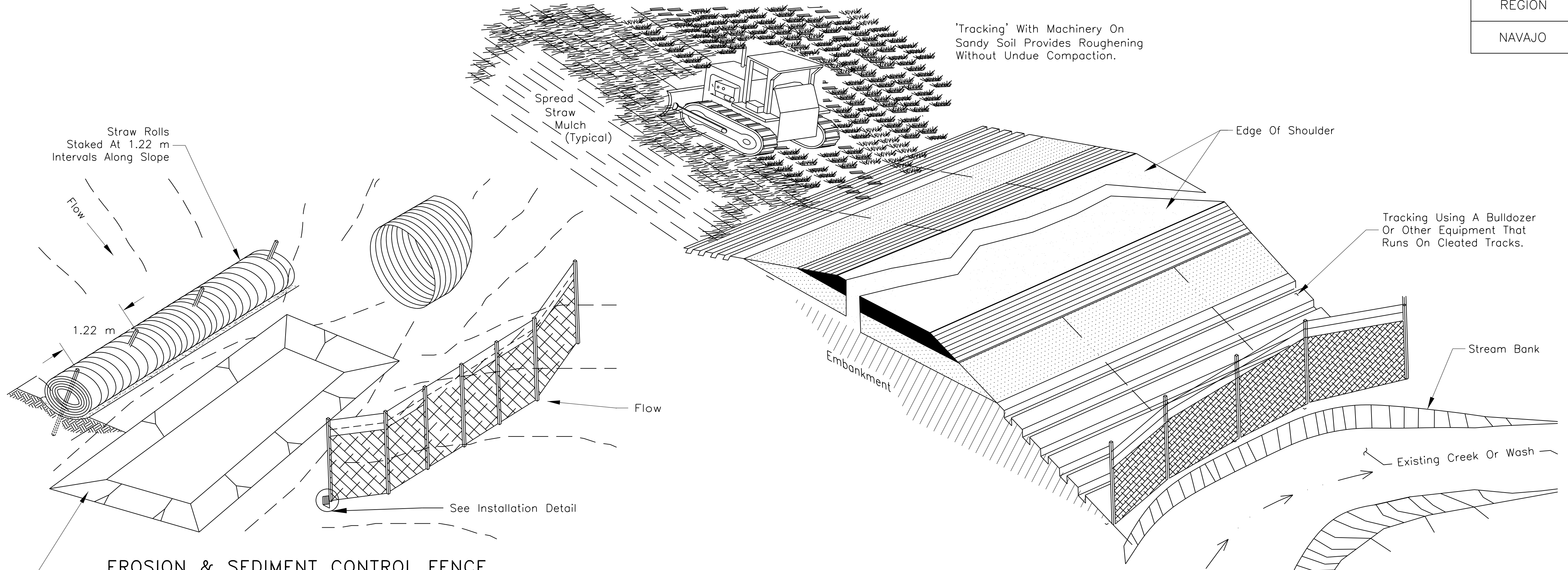
Sht 51 N12 Mile Post, Sq. Steel Tube .0224.2016.dgn



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	52	88

GENERAL NOTES

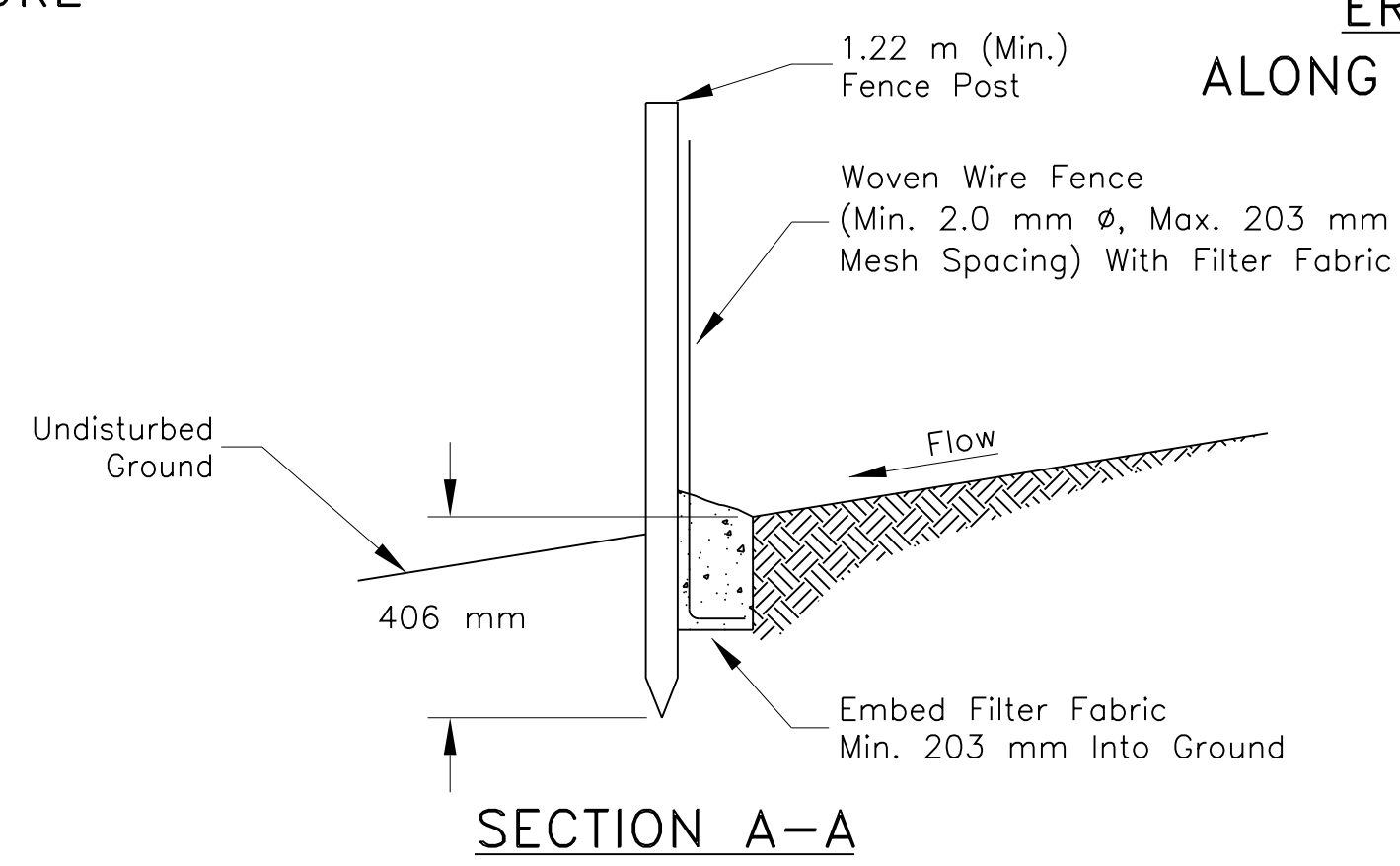
1. THE CONTRACTOR SHALL PREPARE AND SUBMIT A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IN FULL DETAIL FOR ALL PHASES OF THE WORK FOR REVIEW AND APPROVAL AT LEAST 14 CALANDER DAYS BEFORE IMPLEMENTATION. THE PLAN SHALL MEET THE REQUIREMENTS HEREIN AND SECTION 157 OF THE FP-14 AS MODIFIED IN THE SUPPLEMENTAL SPECIFICATION. SEE SPECIAL CONTRACT REQUIREMENTS FOR NPDES PERMIT REQUIREMENTS.
2. THE SILT FENCING CONSISTS OF 914 mm SEDIMENT CONTROL FABRIC CLOTH WITH BURIED-TOE, AND STEEL POSTS (TEE OR U-TYPE) SPACED AT 2.0 m WITH 2 mm SIZE WELDED WIRE BACK-UP FENCE.
3. WOVEN WIRE FABRIC TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 610 mm AT THE TIP AND MID-SECTION. GEOTEXTILE MATERIAL FOR SILT FENCING SHALL BE TYPE-V UNDER SUB-SECTION 714.01 OF FP-14.
4. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY 152 mm AND FOLDED. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED BEFORE "BULGES" DEVELOP IN THE SILT FENCE.
5. SILT FENCE SHALL BE INSTALLED PARALLEL TO THE TOE OF ALL ROADWAY EMBANKMENT FILLS IN LOCATIONS WHERE THE TOE OF THE FILLS ARE WITHIN 2.0 m OF EXISTING STREAMS, CREEKS OR WASHES; IN AREAS WITH HIGHLY EROSION SOILS AND/OR WHERE EMBANKMENTS ARE AT A 1:3 OR STEEPER SLOPE. THE SILT FENCE SHALL BE PLACED 1 m TO 2 m DOWNHILL FROM THE TOE OF FILL AND IN ACCORDANCE WITH SECTION 157 OF THE FP-14 AND THE SUPPLEMENTAL SPECIFICATIONS.
6. STRAW BALES MAY BE USED AT THE TOP OF CUT BACKSLOPES AND FOR DIKES PROVIDED THEY ARE PROPERLY ANCHORED WITH STEEL FENCE POSTS OR 51 mm X 51 mm X 1.22 m WOOD STAKES (TWO PER BALE) ANCHORED 508 mm INTO THE NATURAL GROUND. STRAW BALES SHALL BE CERTIFIED 0.5% WEED FREE. DO NOT USE STRAW BALES IN AREAS OF CONCENTRATED FLOW AND CUT DITCHES..
7. FURNISHING AND PLACEMENT OF SILT FENCE MATERIAL AND OTHER EROSION CONTROL MEASURES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 15701-0000, AND/OR 15708-1000.
8. SEDIMENT/SILT FENCING SHALL BE PLACED AT ALL LOCATIONS WHERE EMBANKMENTS HAVE SLOPE DISTANCES OF 30.0 m OR GREATER. THE SEDIMENT FENCING WILL BE PLACED AT THE TOE OF SLOPES OFFSET 1-2 METERS.
9. THE CONTRACTOR SHALL INSPECT AND MAINTAIN ALL SWPPP MEASURES WEEKLY AND AFTER EACH SIGNIFICANT STORM EVENT (I.E. 25 mm OF MOISTURE IN 24 HOURS).
10. PRIOR TO ACCEPTANCE, ALL PROJECT AREAS (AS DETERMINED BY THE CORT) SHOWING EROSION DAMAGE CAUSED BY THE CONTRACTOR'S FAILURE TO PROPERLY MAINTAIN THIS EROSION CONTROL STRUCTURES SHALL BE REPAIRED TO REMOVE DAMAGE, ANY SPECIFIED EROSION CONTROL MATERIALS, STRUCTURES, OR DEVICES DAMAGE OR LOST DUE TO IMPROPER INSTALLATION. THE CONTRACTOR'S NEGLIGENCE OR IMPROPER MAINTENANCE, SHALL ALSO BE REPAIRED AND/OR REPLACE PRIOR TO FINAL ACCEPTANCE AT THE CONTRACTOR'S ENTIRE EXPENSE.



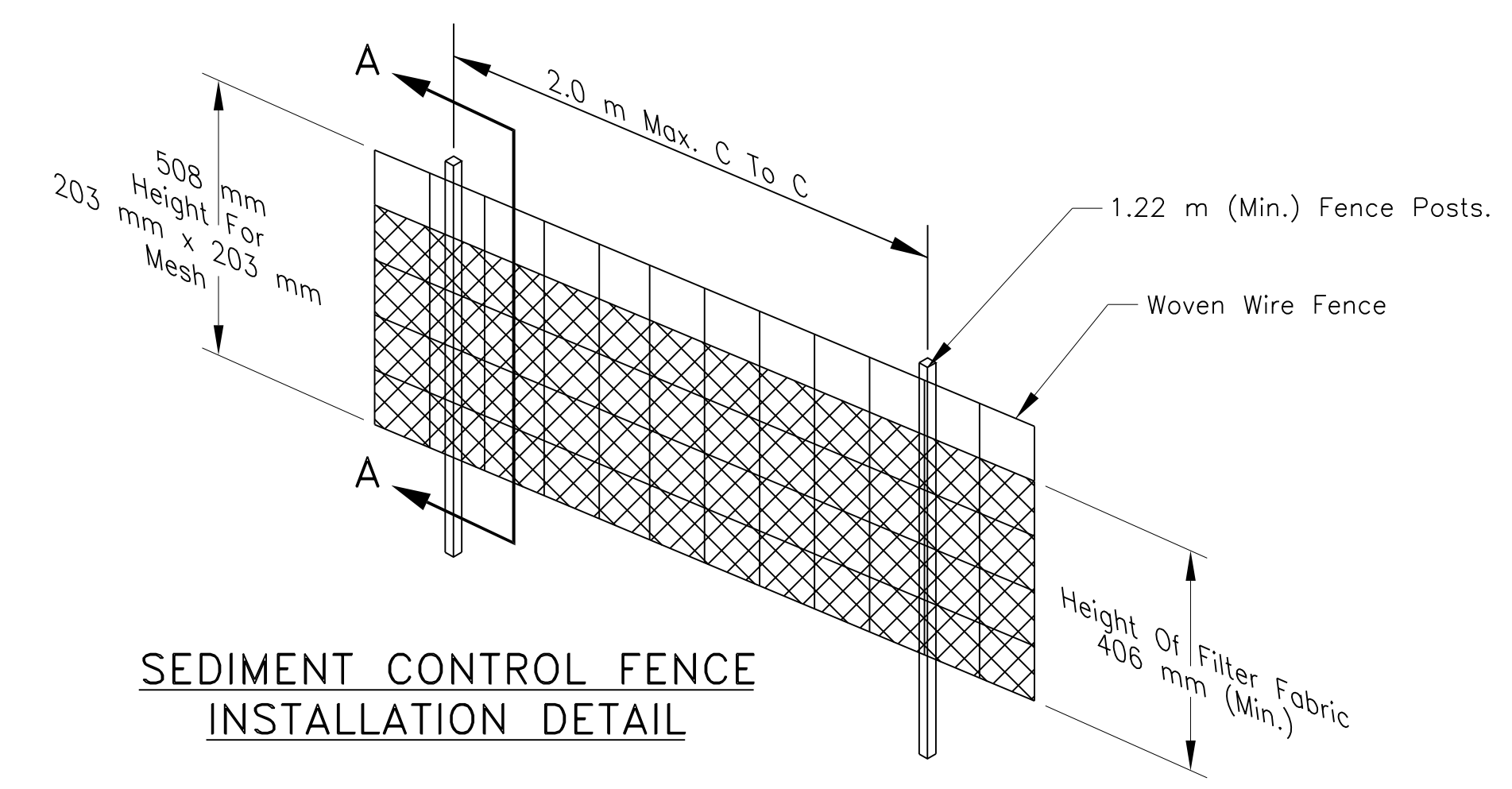
EROSION & SEDIMENT CONTROL FENCE AT DRAINAGE STRUCTURE

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

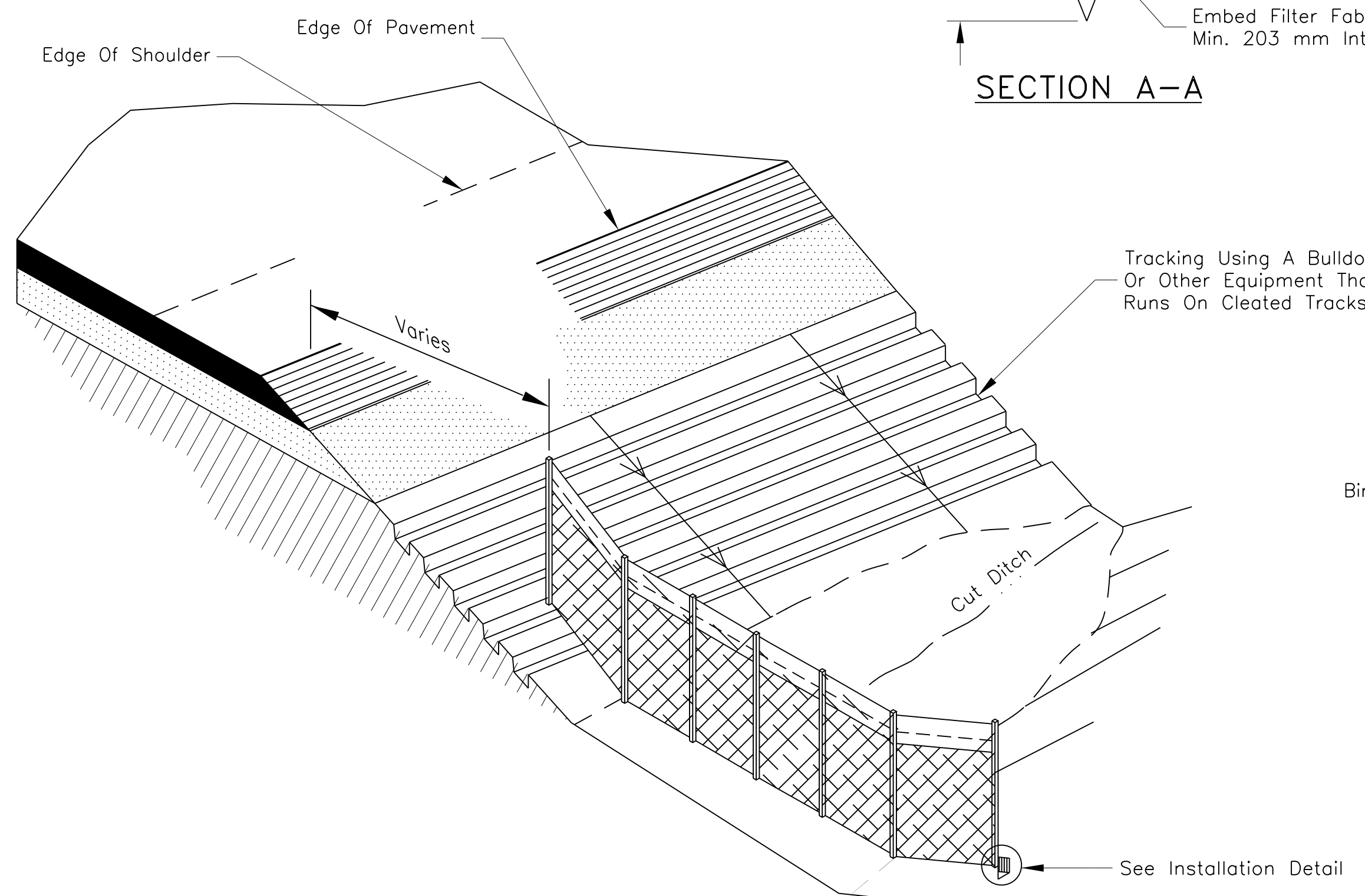
Sediment Traps @ Outlet Ends
See Section A-A, See Following Sheet For Details.



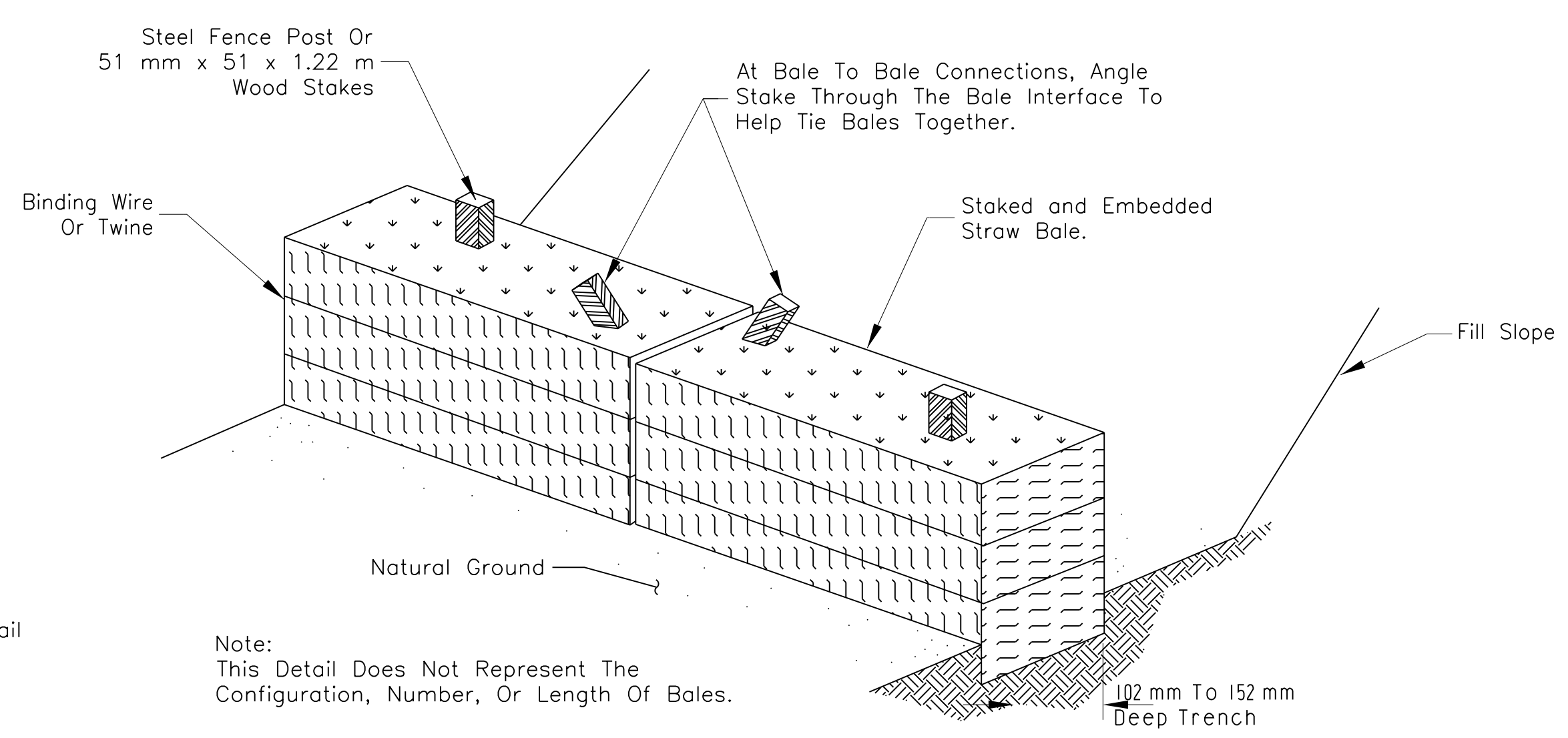
SECTION A-A



SEDIMENT CONTROL FENCE INSTALLATION DETAIL



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



Note:
This Detail Does Not Represent The Configuration, Number, Or Length Of Bales.

TYPICAL STRAW BALE STAKING AND TRENCHING DETAIL

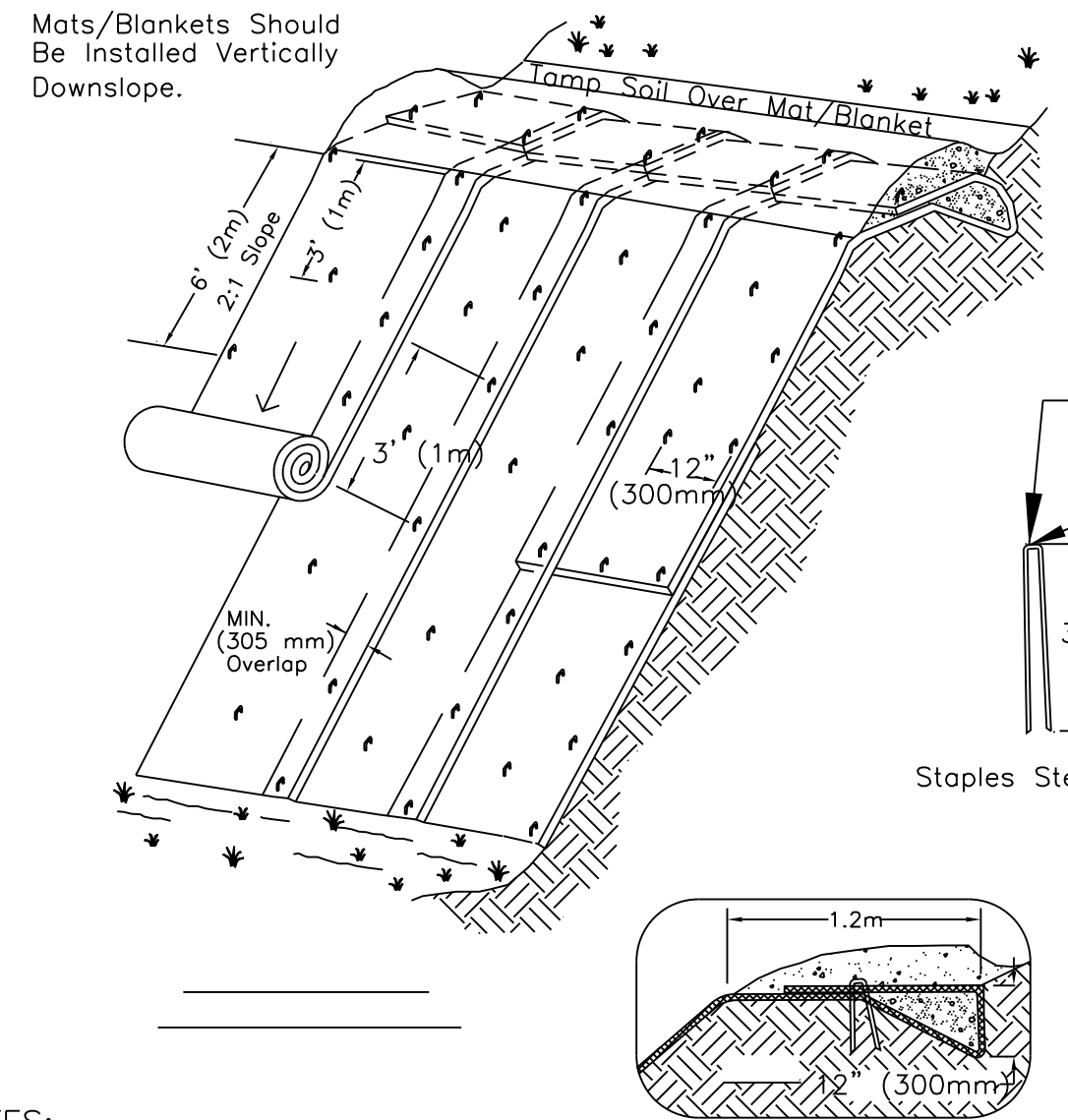
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**STORMWATER POLLUTION AND
 EROSION/SEDIMENT
 CONTROL DETAILS**

DRAWN BY: NRDOT	DATE: 2/4/2014
DESIGNED BY: NRDOT	DATE: 2/4/2014
REVISED: 3/15/2014	BY: Paul.Manuelito
Sht 52 N12 ERO1 SWPPP.dgn	

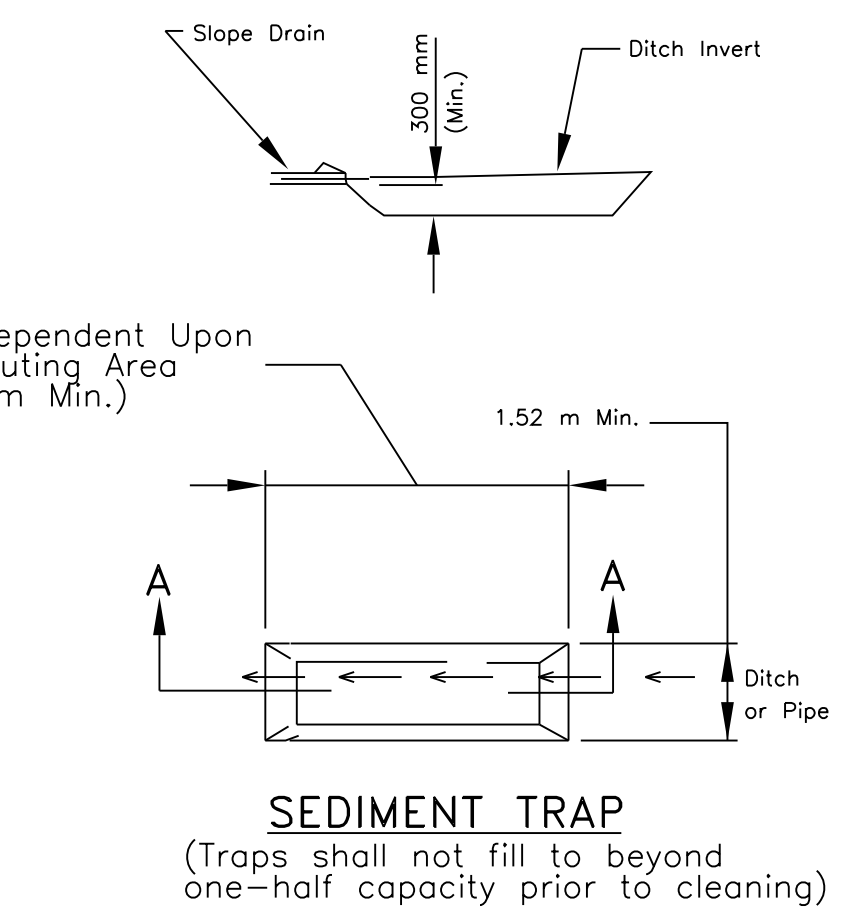
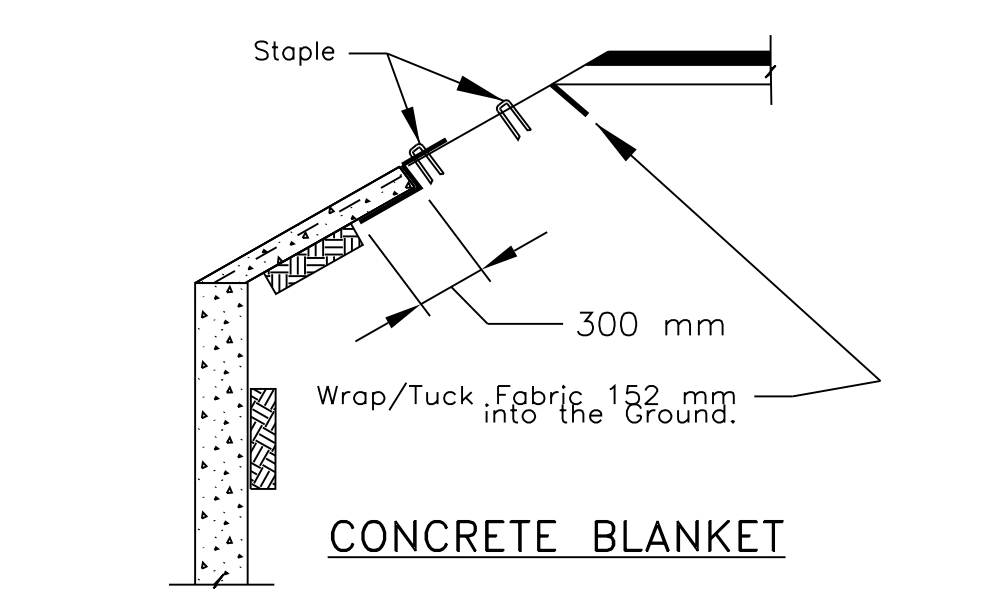
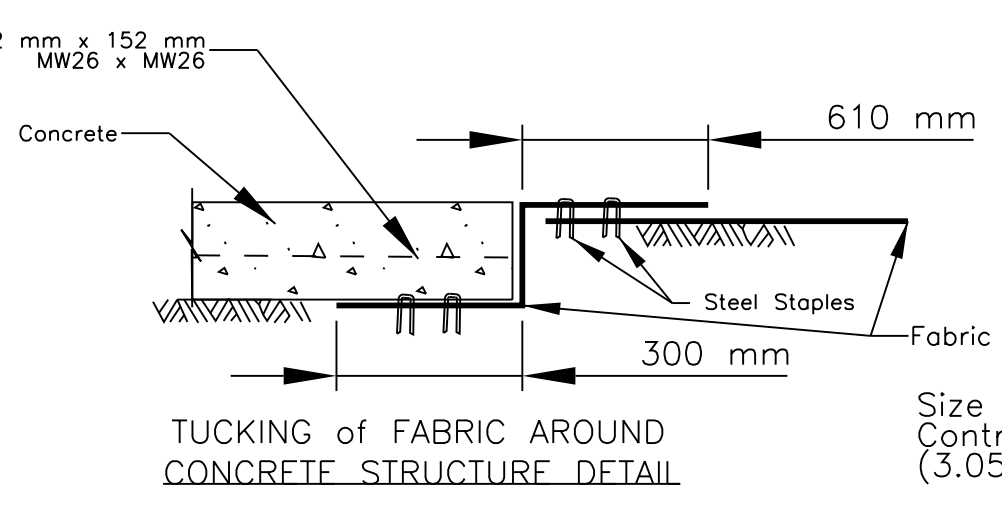
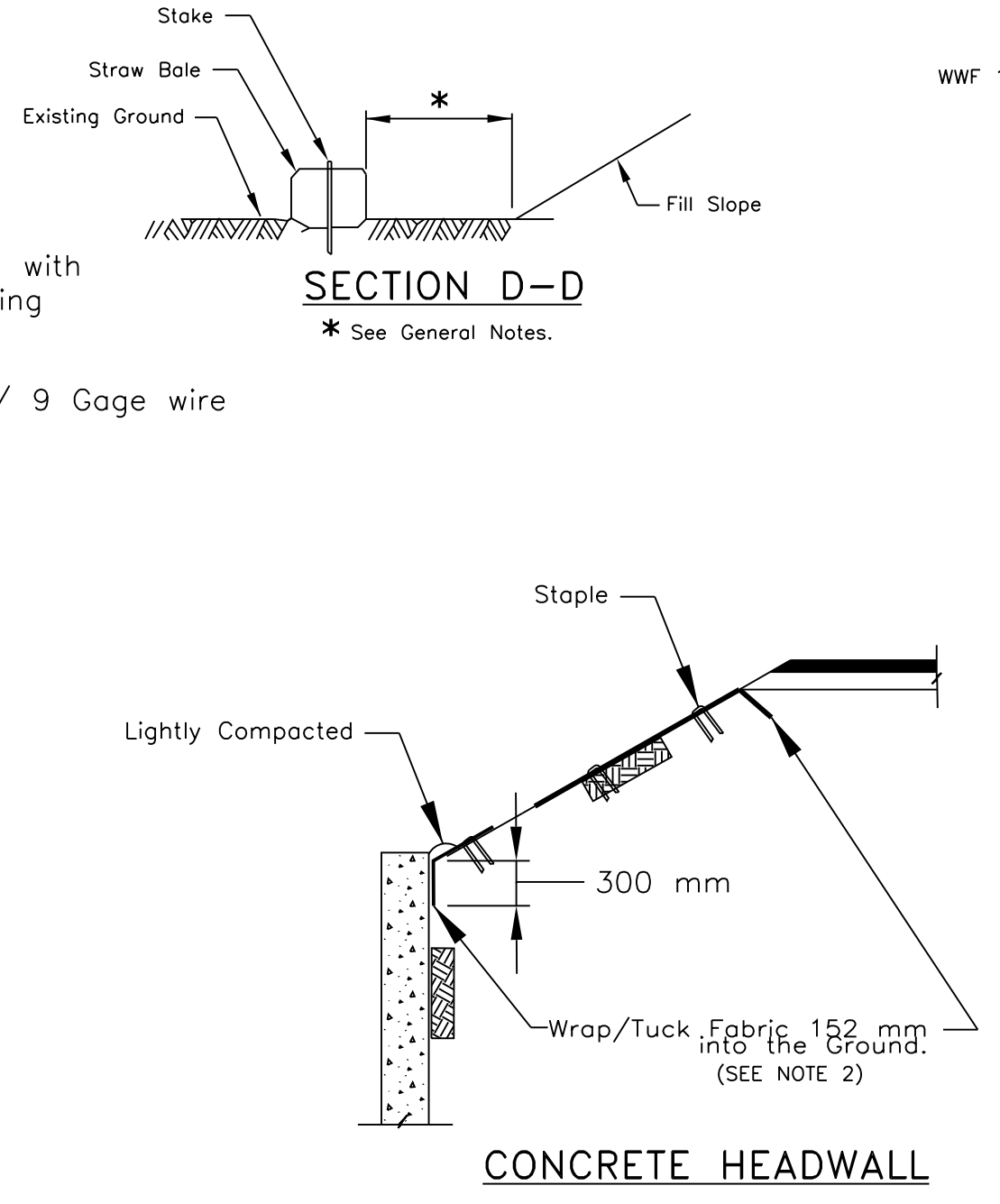
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REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	53	88

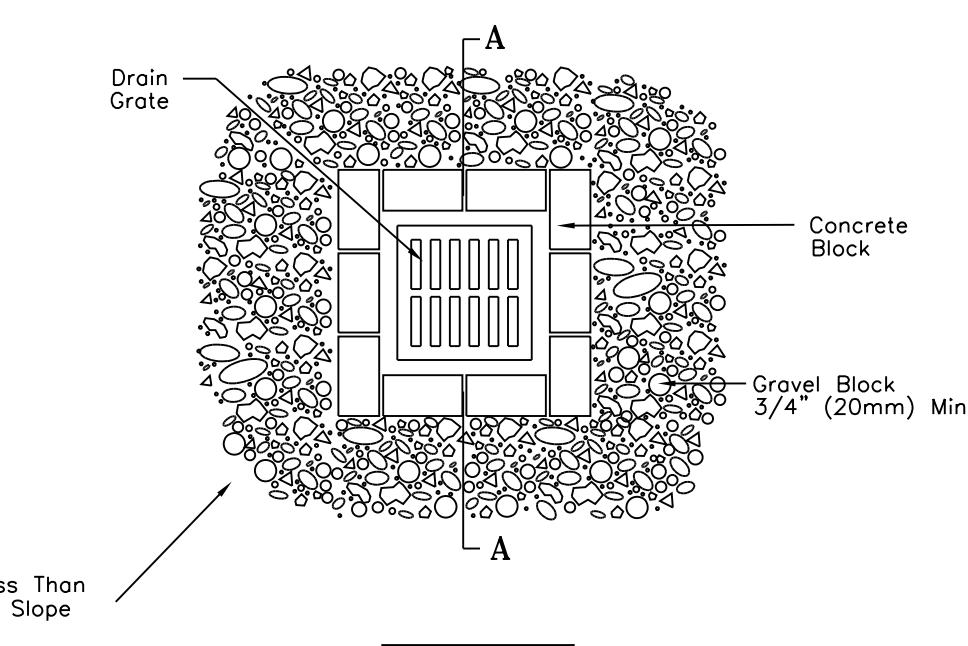


- NOTES:
1. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS. MATS/BLANKETS SHALL HAVE GOOD SOIL CONTACT.
 2. APPLY PERMANENT SEEDING BEFORE PLACING BLANKETS.
 3. LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.

EROSION BLANKETS & TURF REINFORCEMENT MATS SLOPE INSTALLATION

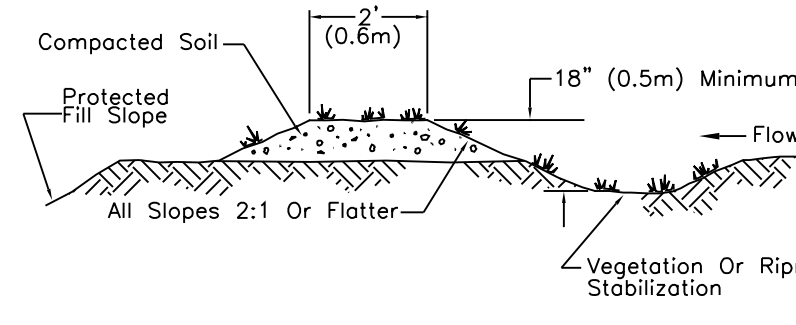
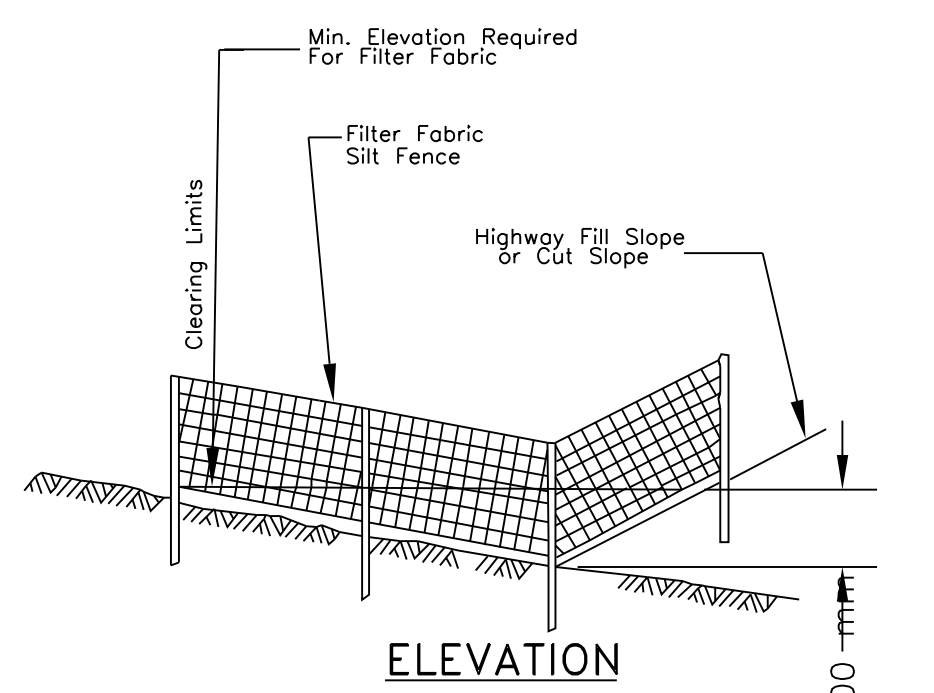
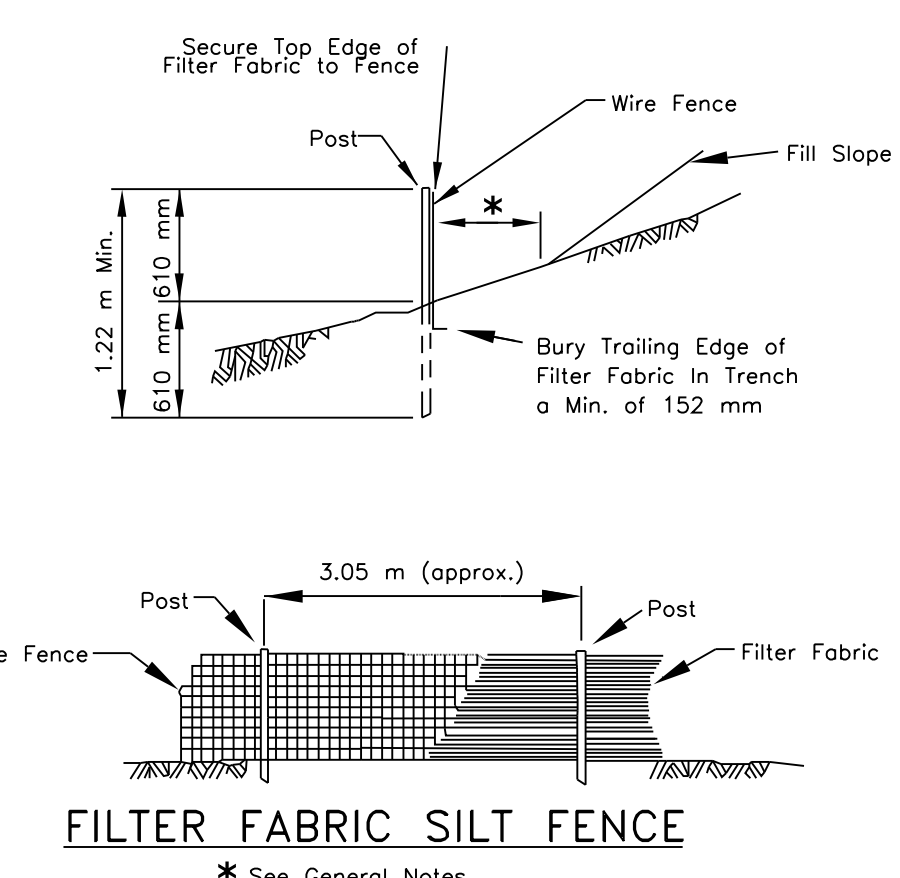
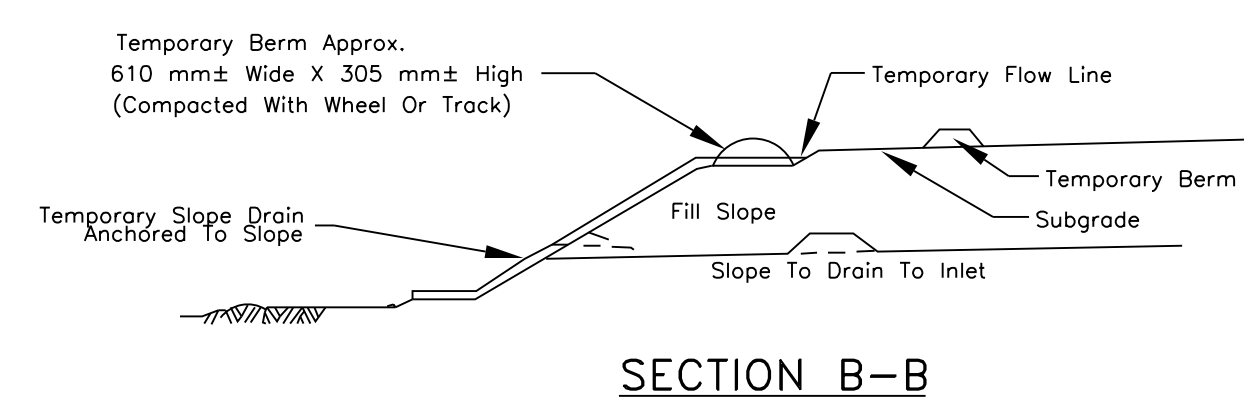
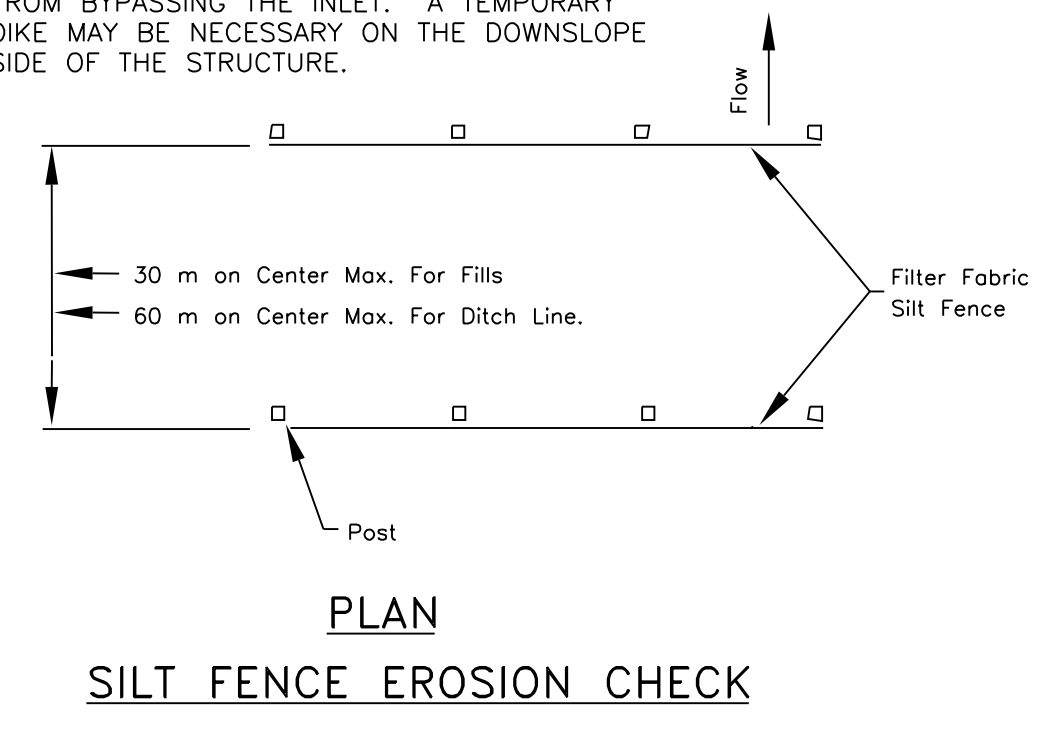


- GENERAL NOTES**
1. SEE SHEET 52 OF 88 FOR ADDITIONAL NOTES AND DETAILS.
 2. THE CONTRACTOR SHALL INSTALL EROSION CONTROL BLANKETS, TYPE 4, PER SECTION 713.17(K) WITH 305 mm (min) OVERLAP.
 - A. CONSTRUCT FINISH GRADING AROUND STRUCTURE TO BE PLACED.
 - B. CUT TRENCHES FOR FOOTING OF SLAB.
 - C. INSTALL 2.0 m OF EROSION CONTROL BLANKETS ANCHORED ON FLOOR AND TOP ALONG THE CUT FACE OF TRENCH AS SHOWN WITH COMPACTION CONTROL PER SECTION 204.11.
 - D. PLACE CONCRETE FORMS, REINFORCEMENTS AND SUBSEQUENT CONCRETE.
 3. CONSTRUCT SEDIMENT BASIN AND TRAPS, EROSION CHECKS AND/OR FILTERS IN STRATEGIC LOCATIONS ON THE PROJECT TO FILTER STORM RUNOFF BEFORE IT EXISTS THE PROJECT CONSTRUCTION LIMITS OR ENTERS A STREAM AS SHOWN IN THE APPROVED SWPPP.
 4. CLEAN ALL SEDIMENTS BASIN AND TRAPS OF ACCUMULATED SEDIMENT WHEN HALF FULL OF SEDIMENT.
 5. USE DRAIN PIPE, RIPRAP, GEOTEXTILE FABRIC, OR GRASS-LINED WATERWAY FOR TEMPORARY SLOPE DRAINS TO CHANNEL RUNOFF DOWN SLOPES. CHANNEL WATER INTO SLOPE DRAINS WITH STRAW BALES, WATTLES, OR EARTH BERMS CONSTRUCTED AT THE TOP OF A CUT SLOPE. ANCHOR SLOPE DRAINS TO THE SLOPE.
 6. THE CONTRACTOR SHALL ADJUST THE DIMENSIONS AND/OR LOCATIONS OF TEMPORARY SEDIMENT AND EROSION CONTROL DEVICES TO FIT ACTUAL FIELD CONDITIONS.
 7. REMOVE AND DISPOSE OF EROSION CONTROL MEASURES ARE SATISFACTORILY ESTABLISHED. DRAINAGE DITCHES AND CHANNELS ARE LINED AND STABILIZED, IN ACCORDANCE WITH SECTION 157 OF FP-14.
 8. AT CUT SLOPES SPECIFIED IN THESE PLANS TO BE COVERED WITH EROSION MATTING PROTECTION, THE COR/COTR SHALL INSPECT THE SLOPES FOR EXISTING AND STABLE ROCK MATERIAL. IF IN THE OPINION OF THE COR, THE CUT SLOPES ARE SUFFICIENTLY STABLE DUE TO THE NATURAL ROCK, THE COR MAY DELETE THE MATTING IN THOSE AREAS.

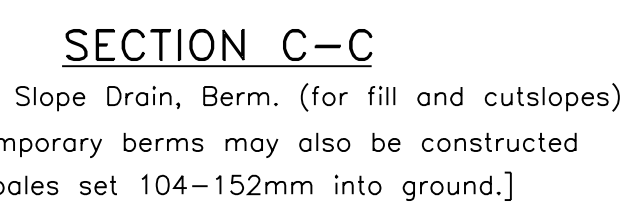
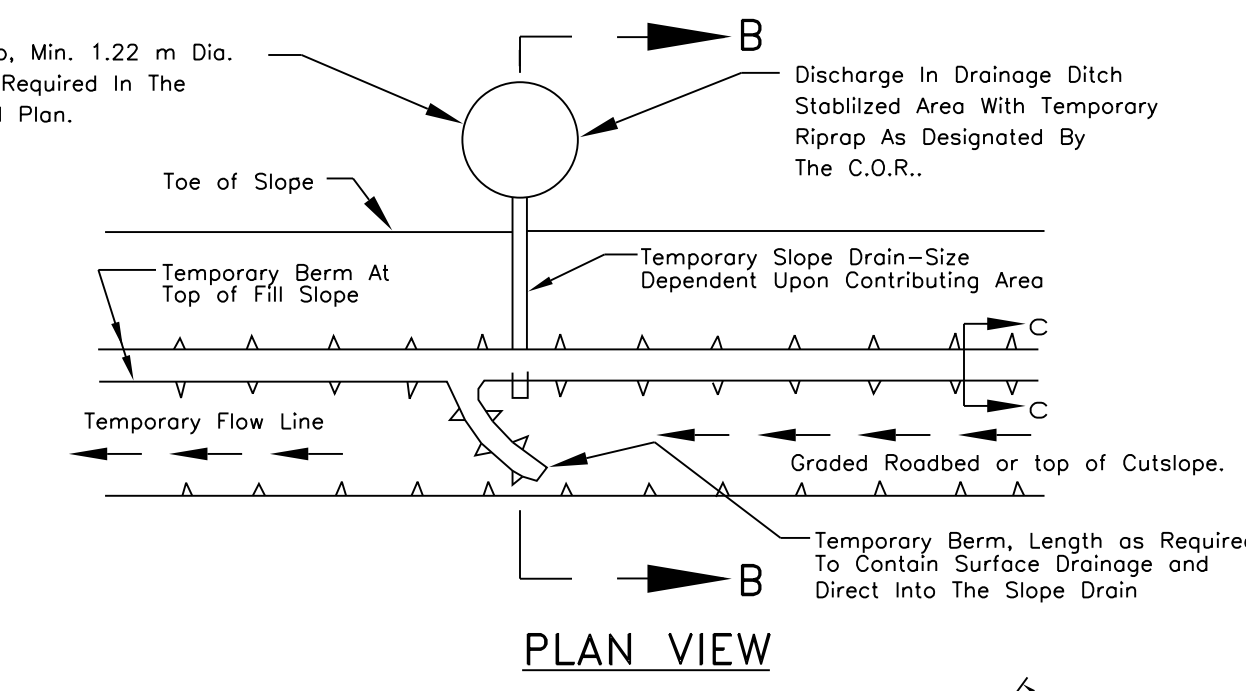


BLOCK AND GRAVEL DROP INLET SEDIMENT BARRIER

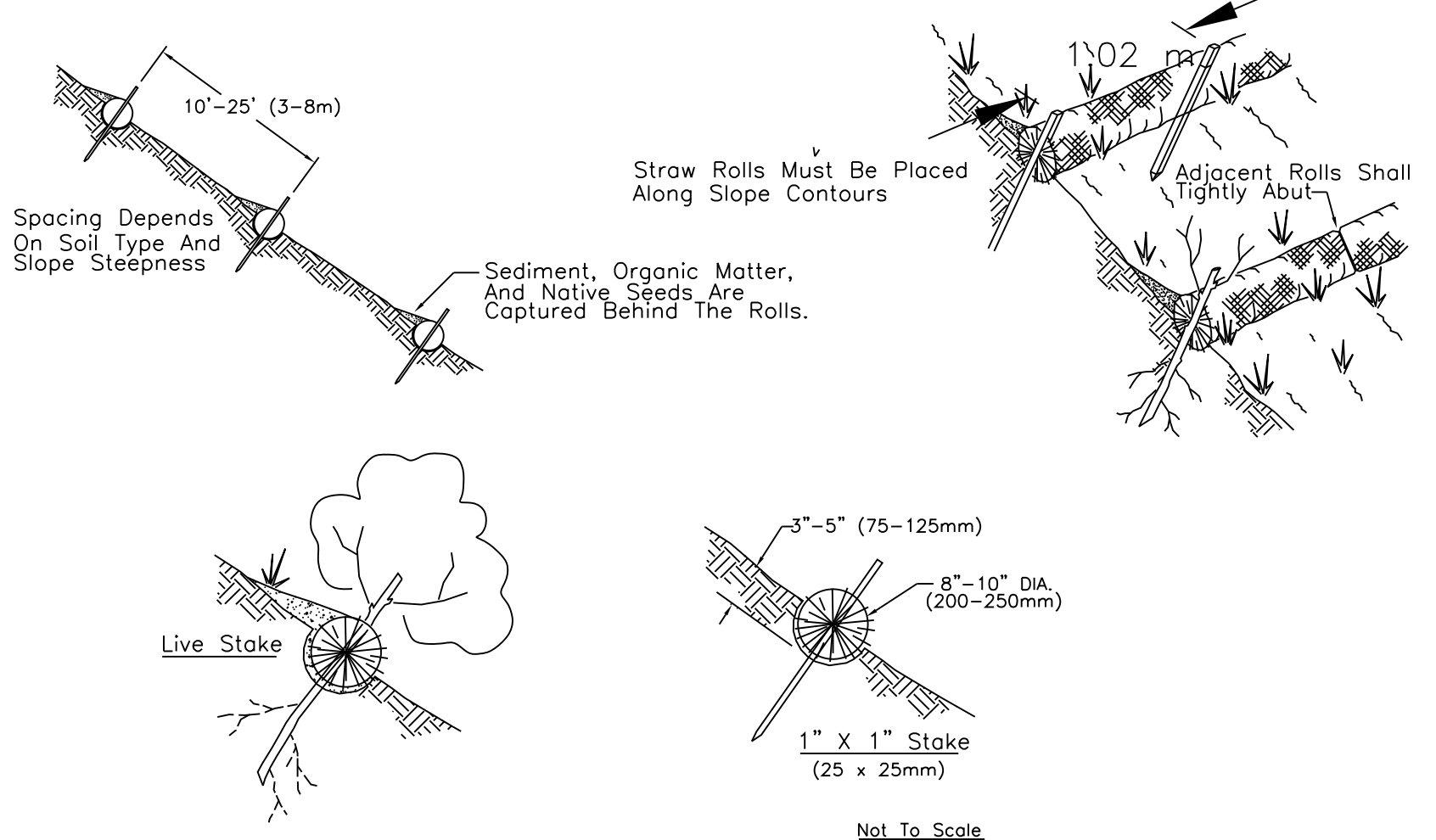
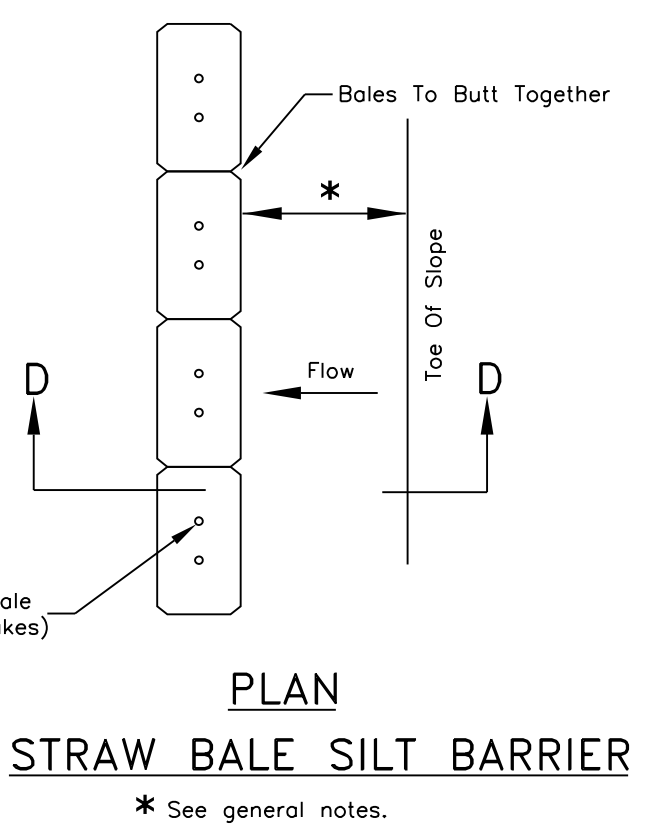
- NOTES:
1. DROP INLET SEDIMENT BARRIERS ARE TO BE USED FOR SMALL, NEARLY LEVEL DRAINAGE AREAS. (LESS THAN 5%)
 2. EXCAVATE A BASIN OF SUFFICIENT SIZE ADJACENT TO THE DROP INLET.
 3. THE TOP OF THE STRUCTURE (PONDING HEIGHT) MUST BE WELL BELOW THE GROUND ELEVATION DOWNSLOPE TO PREVENT RUNOFF FROM BYPASSING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



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



- Temporary Slope Drain, Berm. (for fill and cutslopes)
- [NOTE: Temporary berms may also be constructed of straw bales set 104-152mm into ground.]



- NOTE:
1. STRAW ROLL INSTALLATION REQUIRES THE PLACEMENT AND SECURE STAKING OF THE ROLL IN A TRENCH, 3'-5' (75-125mm) DEEP, DUG ON CONTOUR. RUNOFF MUST NOT BE ALLOWED TO RUN UNDER OR AROUND ROLL.

STRAW ROLLS

UNITED STATES
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STORMWATER POLLUTION AND
EROSION/SEDIMENT CONTROL DETAILS

DRAWN BY: NRDOT DATE: 3/19/2014

DESIGNED BY: NRDOT DATE: 3/19/2014

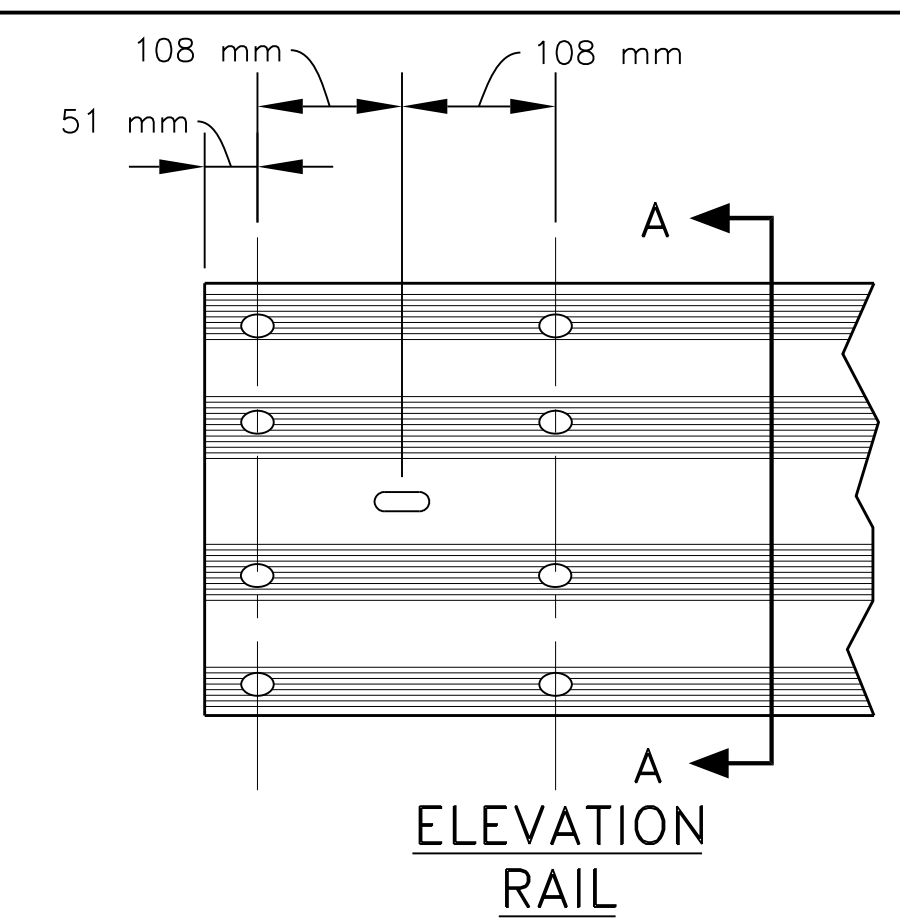
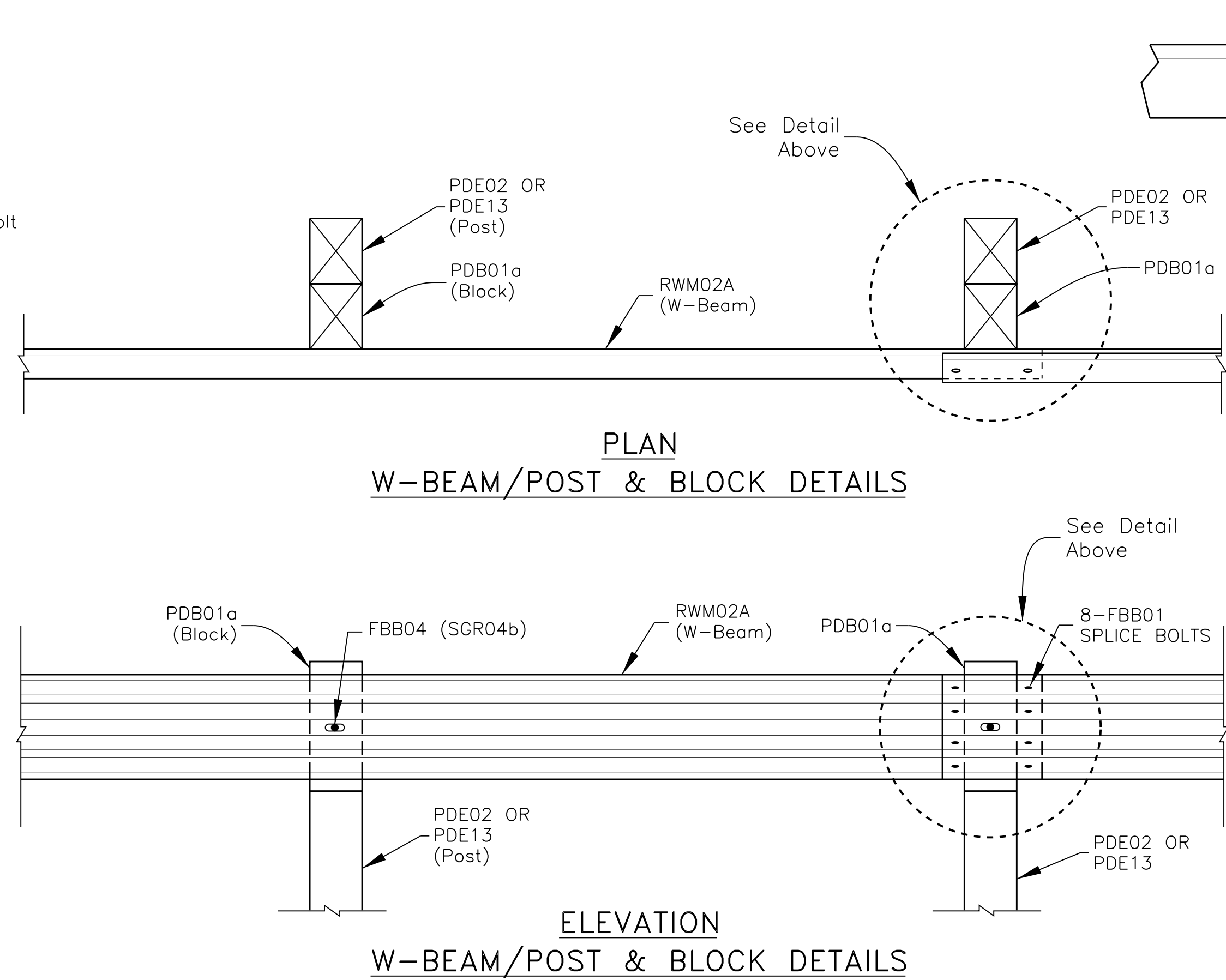
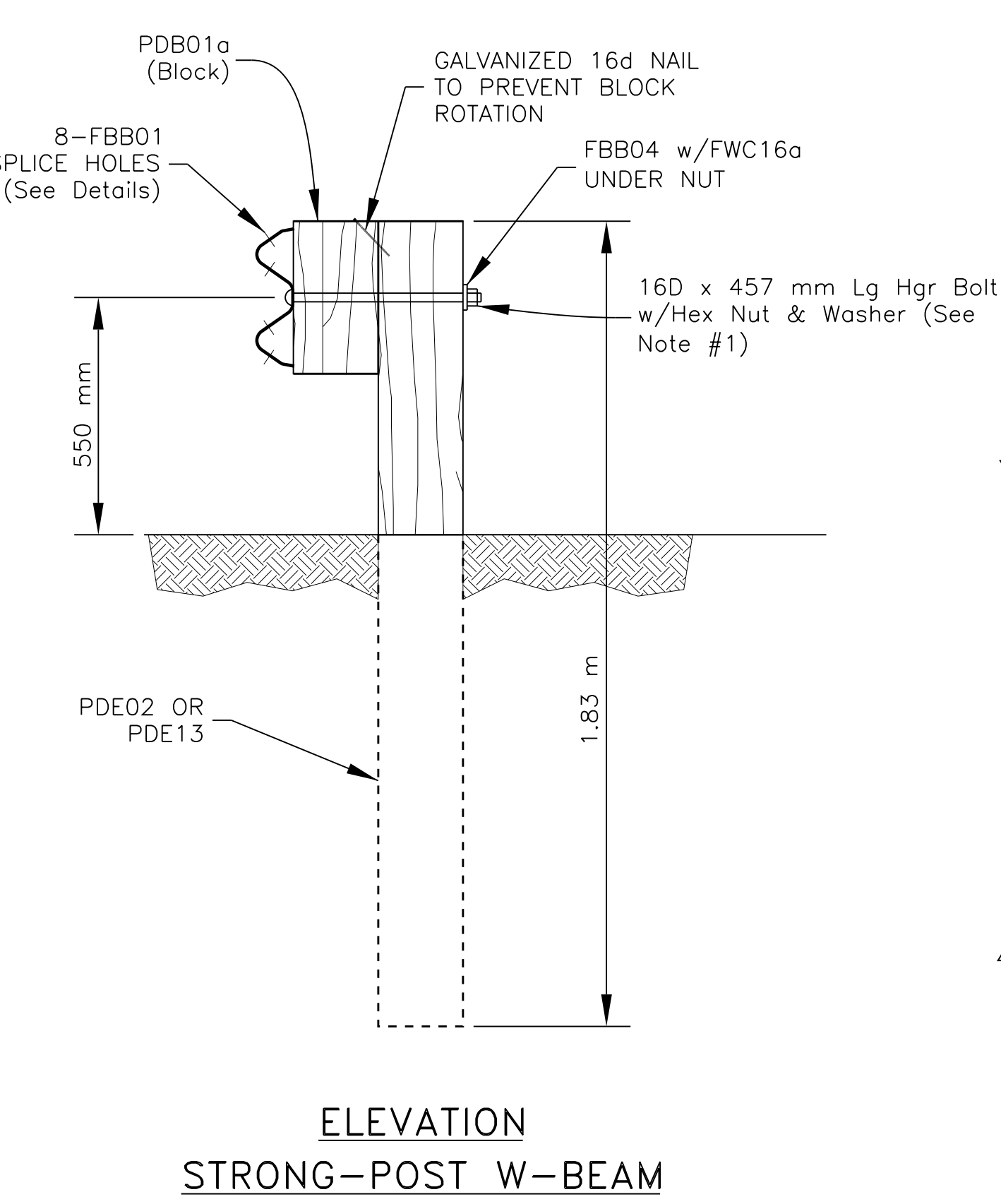
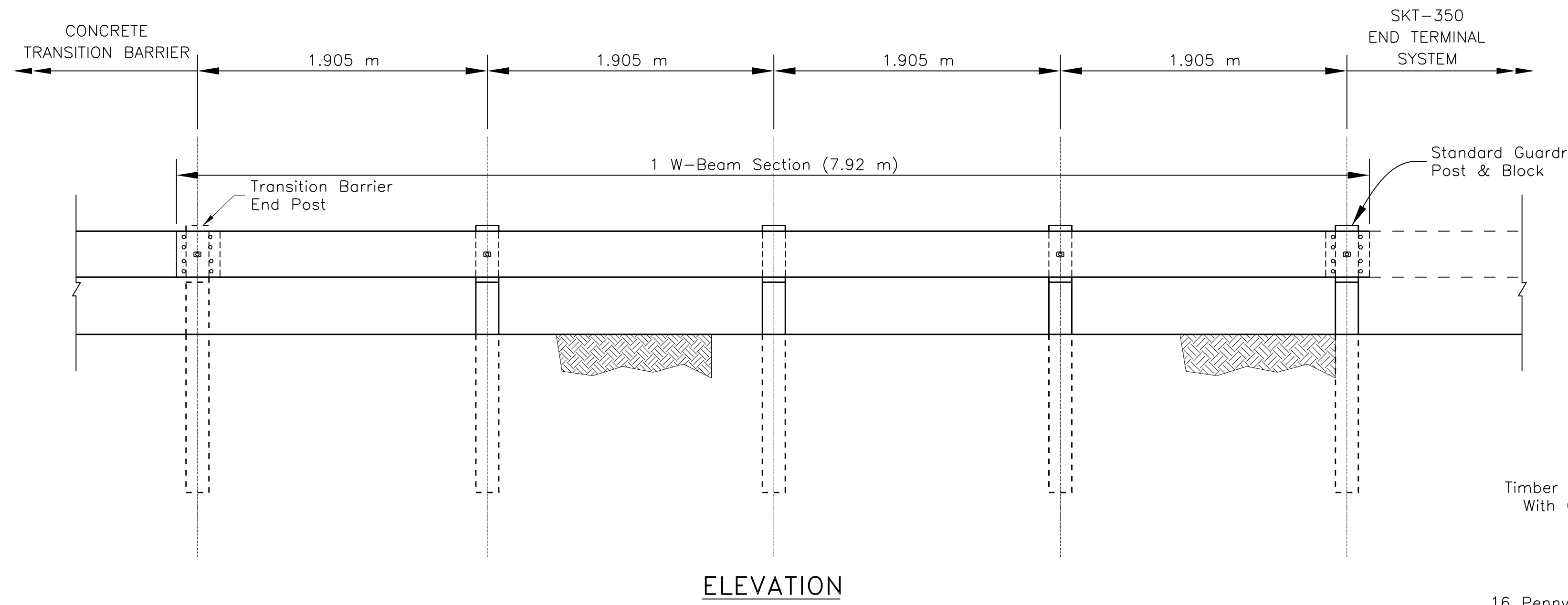
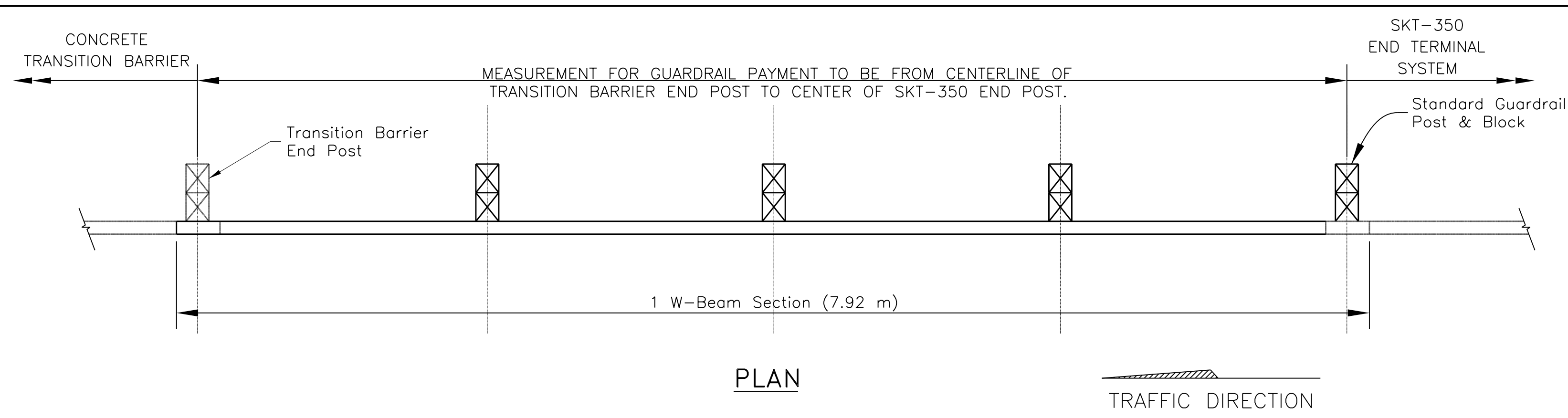
REVISED: 10/11/2017 BY: Leroy Toledo

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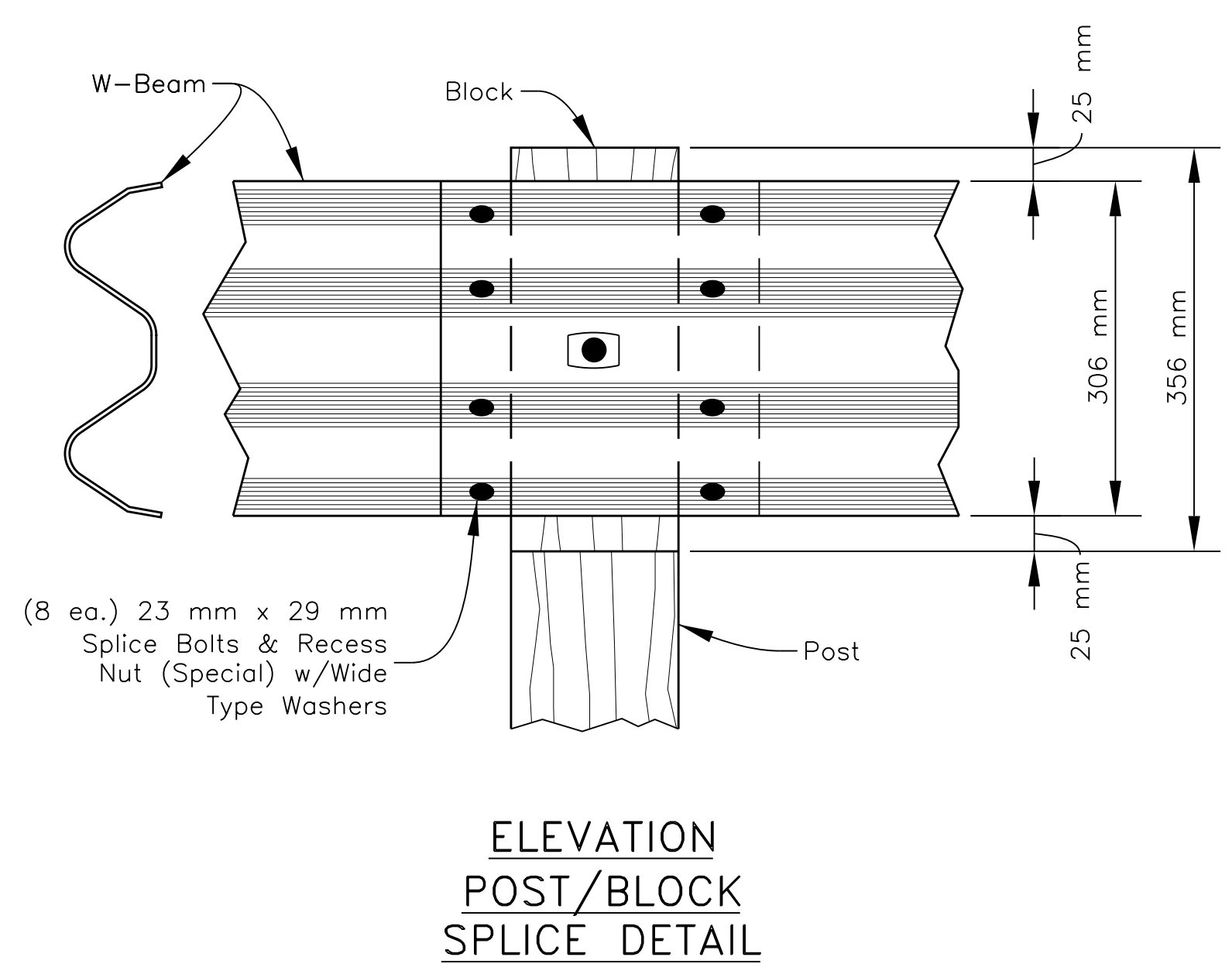
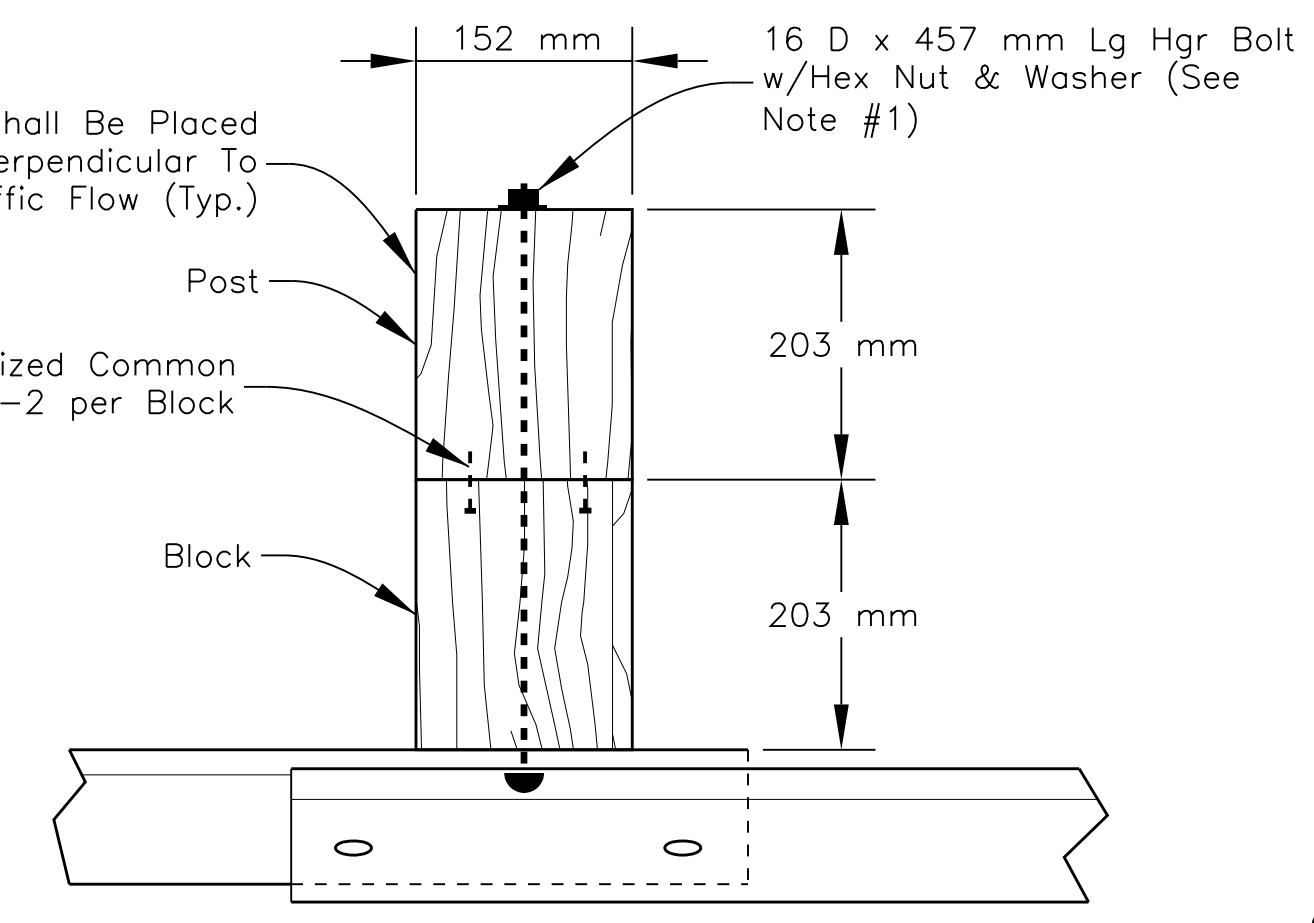
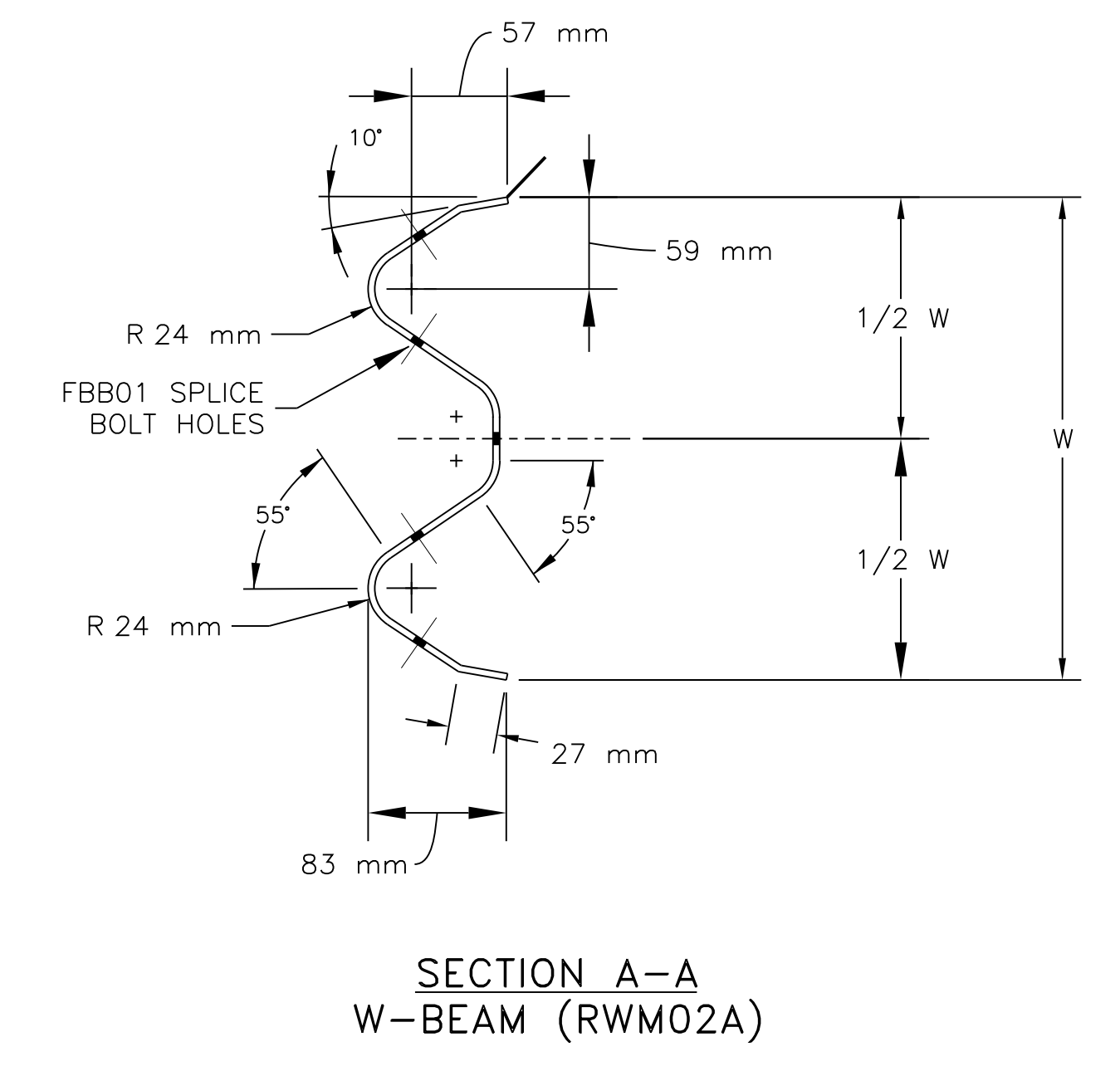
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REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	54	88



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



GENERAL NOTES

1. THE 16 D FLAT WASHER IS USED UNDER THE NUT, BEHIND THE POST ONLY. NO WASHER IS USED AT THE RAIL.
2. SEE SHEET 55 OF 88 FOR ADDITIONAL NOTES.
3. THE CONTRACTOR HAS THE OPTION TO USE ALL-STEEL POSTS W/WOODEN BLOCK ON STANDARD LINE POSTS, UNLESS OTHERWISE NOTED ON THE DESIGN PLANS.
4. IF STEEL POSTS ARE APPROVED THEN RUBBER BLOCKS WILL BE REQUIRED.
5. BEGIN/END ASPHALT CURB AT POST #2.
6. BEGIN REFLECTIVE TABS ON THE W-BEAM AT EVERY FOURTH POST. THE COLOR OF THE TABS SHALL CONFORM TO THE COLOR OF THE ADJACENT EDGE LINE.
7. ANGLE STRUT MUST BE ATTACHED USING 19D HIGH STRENGTH BOLTS.

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**STANDARD GUARDRAIL
DETAIL 1**

DRAWN BY: NRDOT	DATE: 8/23/2017
DESIGNED BY: NRDOT	DATE: 8/23/2017
REVISED: 3/9/2018	BY: Leroy.Toledo

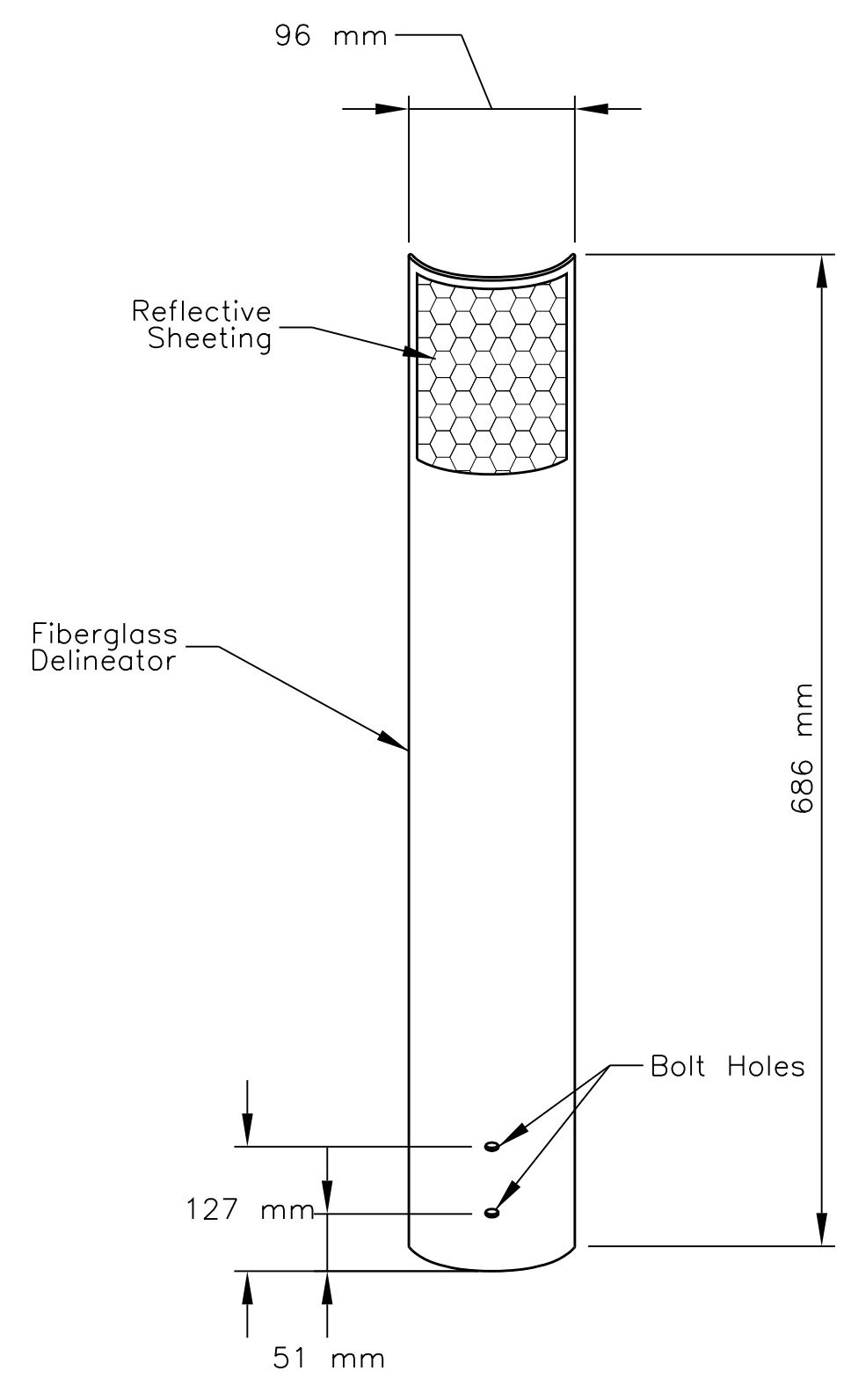
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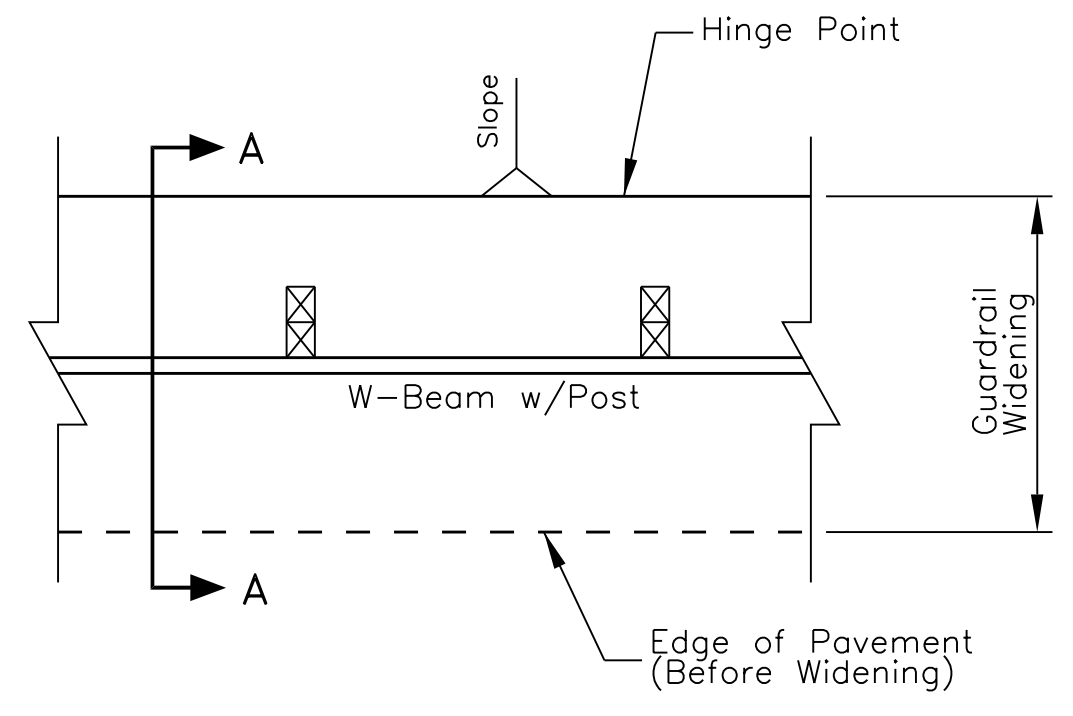
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	55	88

GENERAL NOTES

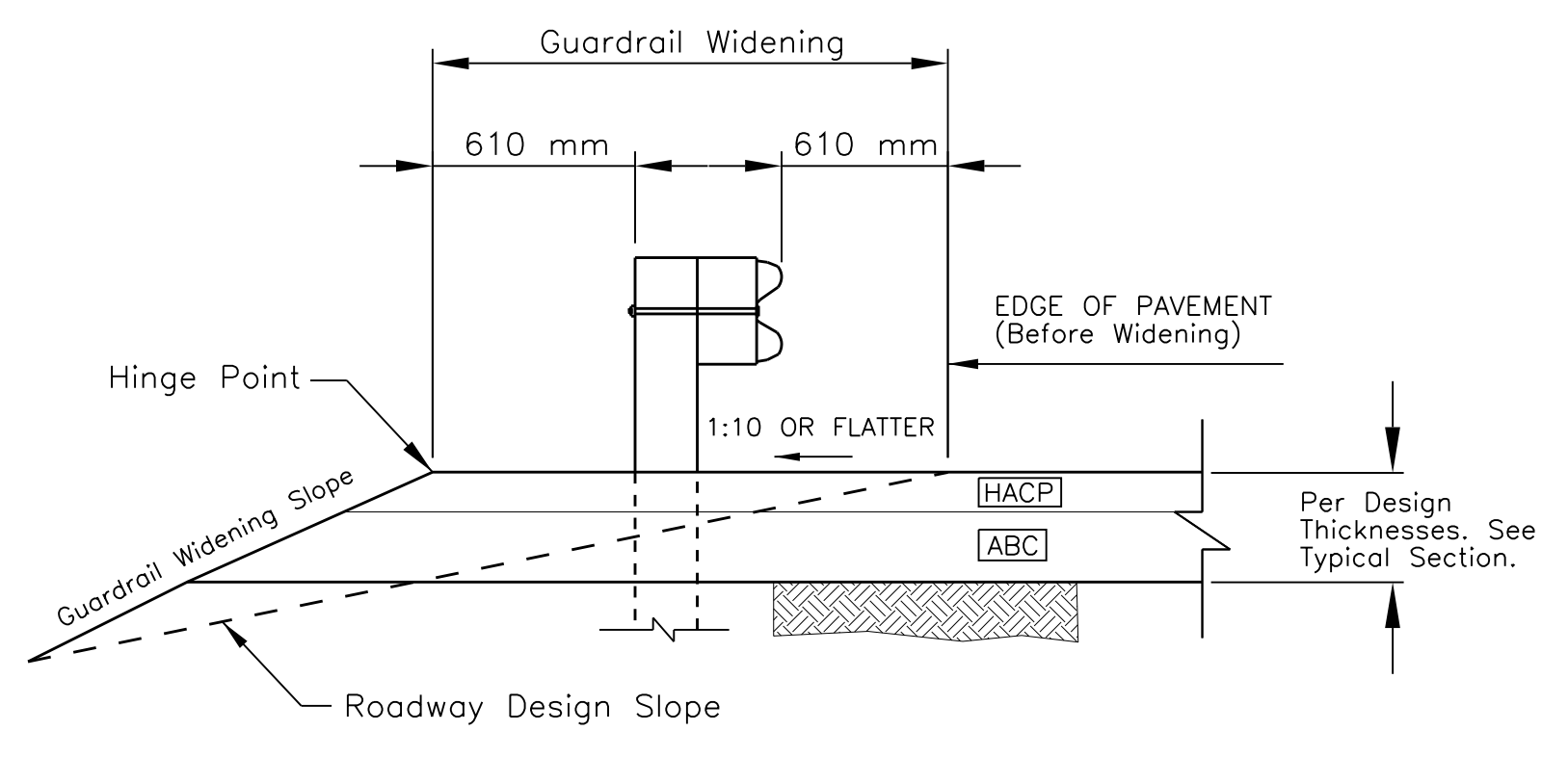
- ALL GUARDRAIL "W" BEAMS, SHALL BE GALVANIZED IN ACCORDANCE WITH (AASHTO M-180, CLASS A, TYPE 1) SPECIFICATION. ALL HARDWARE SHALL CONFORM TO (ASTM A-325) AND GALVANIZED IN ACCORDANCE WITH (ASTM A-153).
- ALL STRUCTURAL STEEL ITEMS SHOWN SHALL CONFORM TO (AASHTO N183/ASTM A36) AND BE GALVANIZED IN ACCORDANCE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



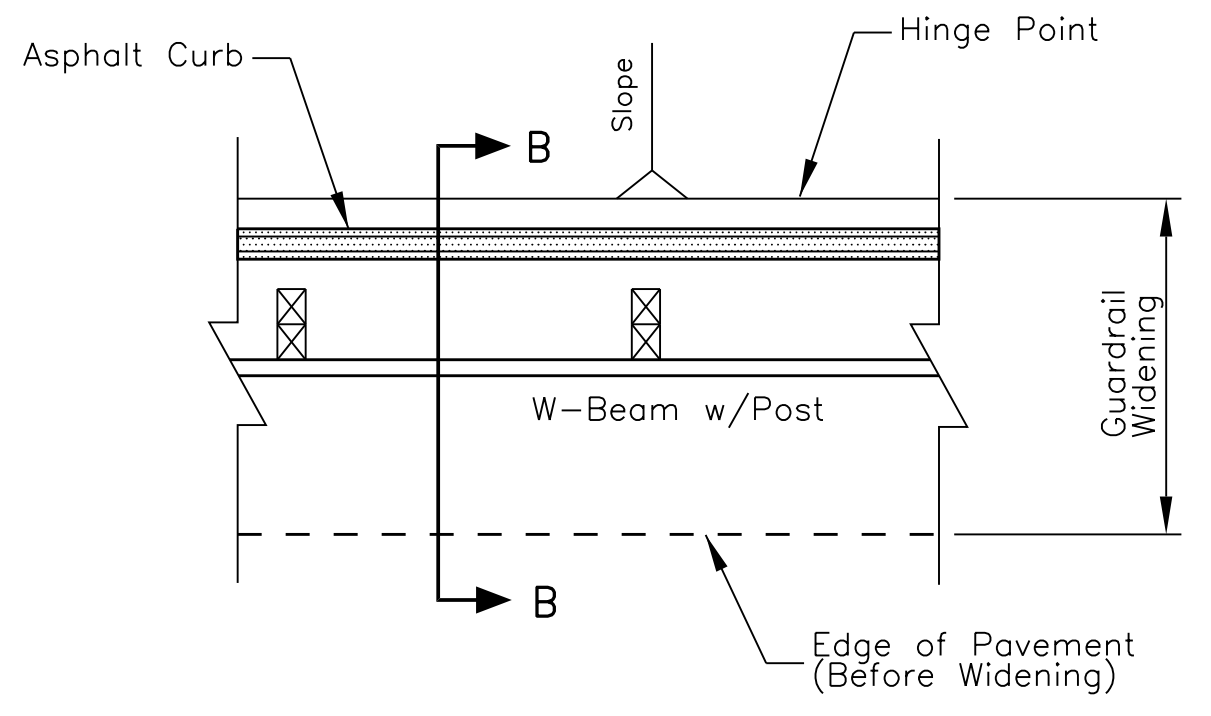
DELINEATOR DETAIL
(Reflective Sheeting Shall Face Traffic)



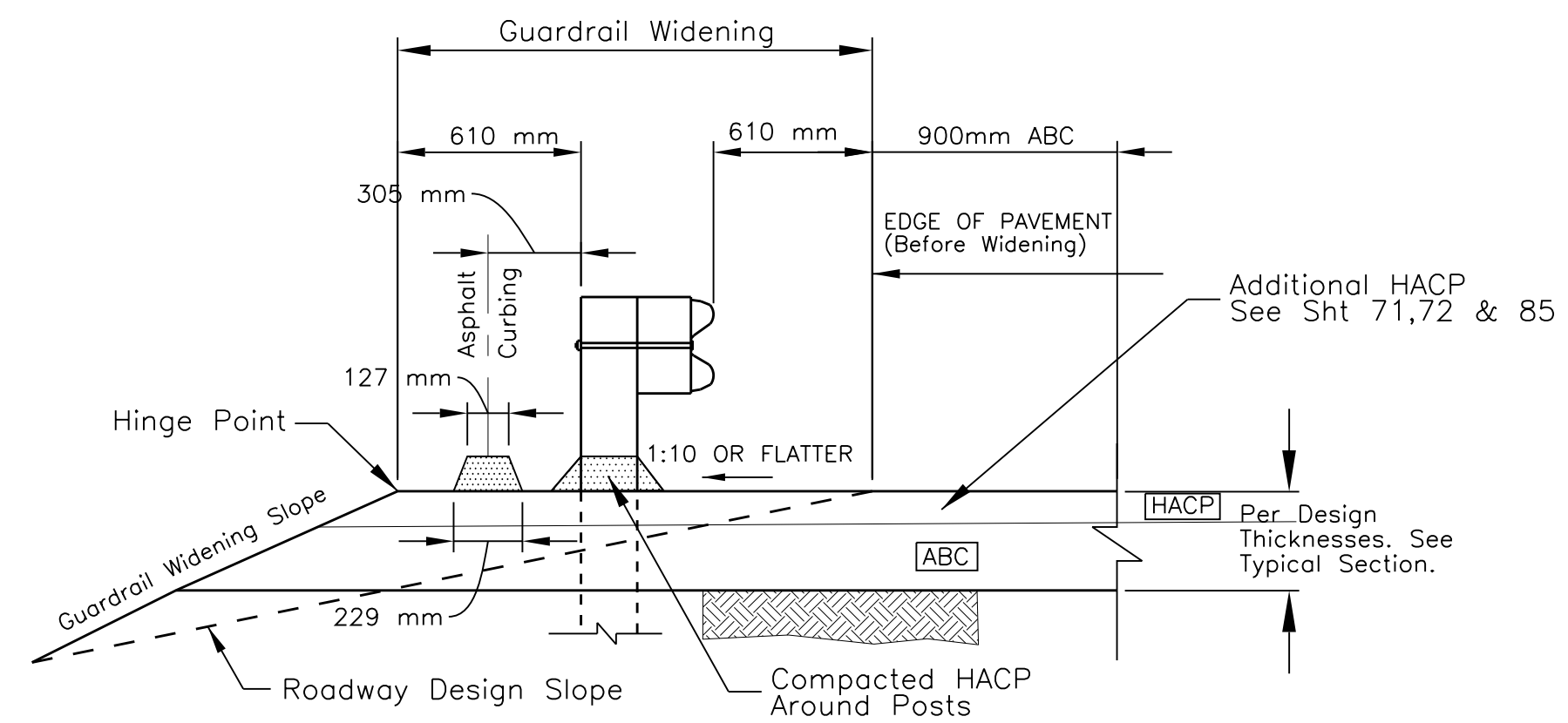
PLAN VIEW w/NO CURBING



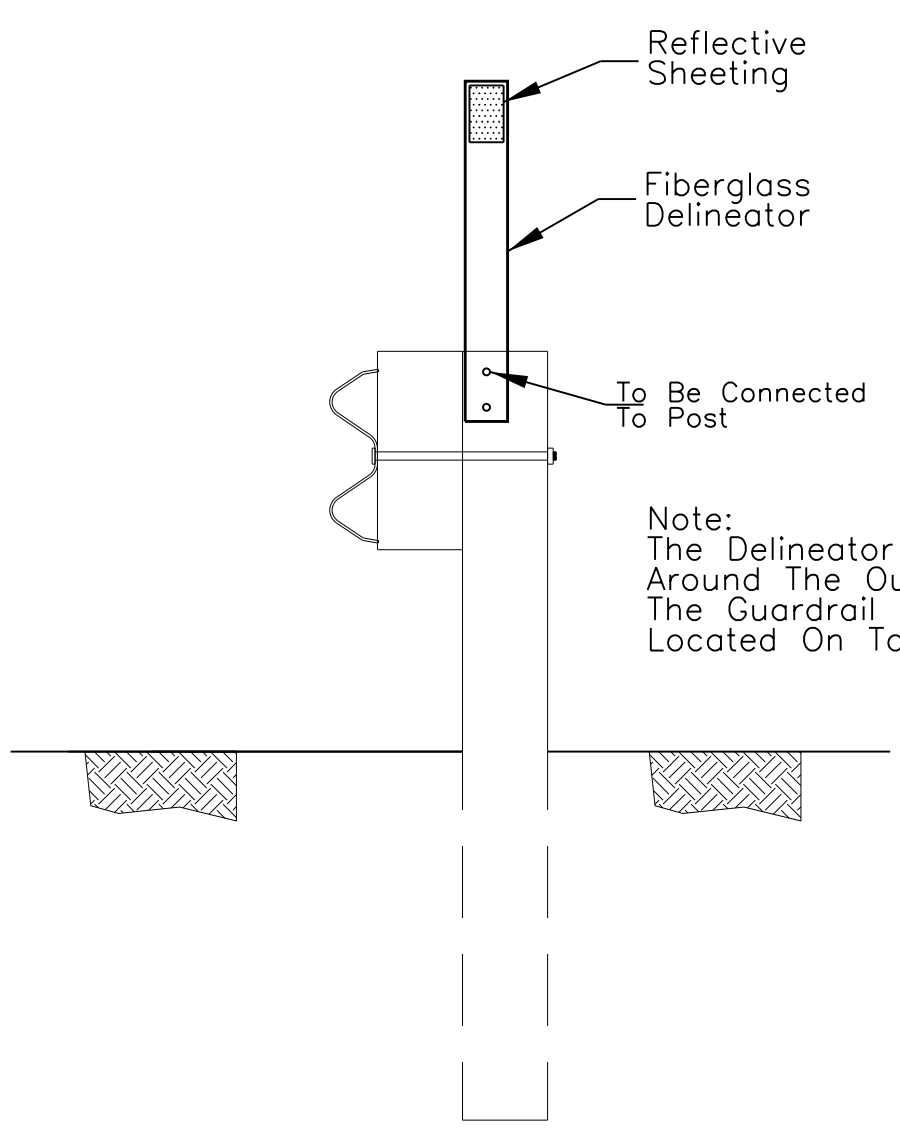
SECTION A-A w/No Curbing



PLAN VIEW w/CURBING

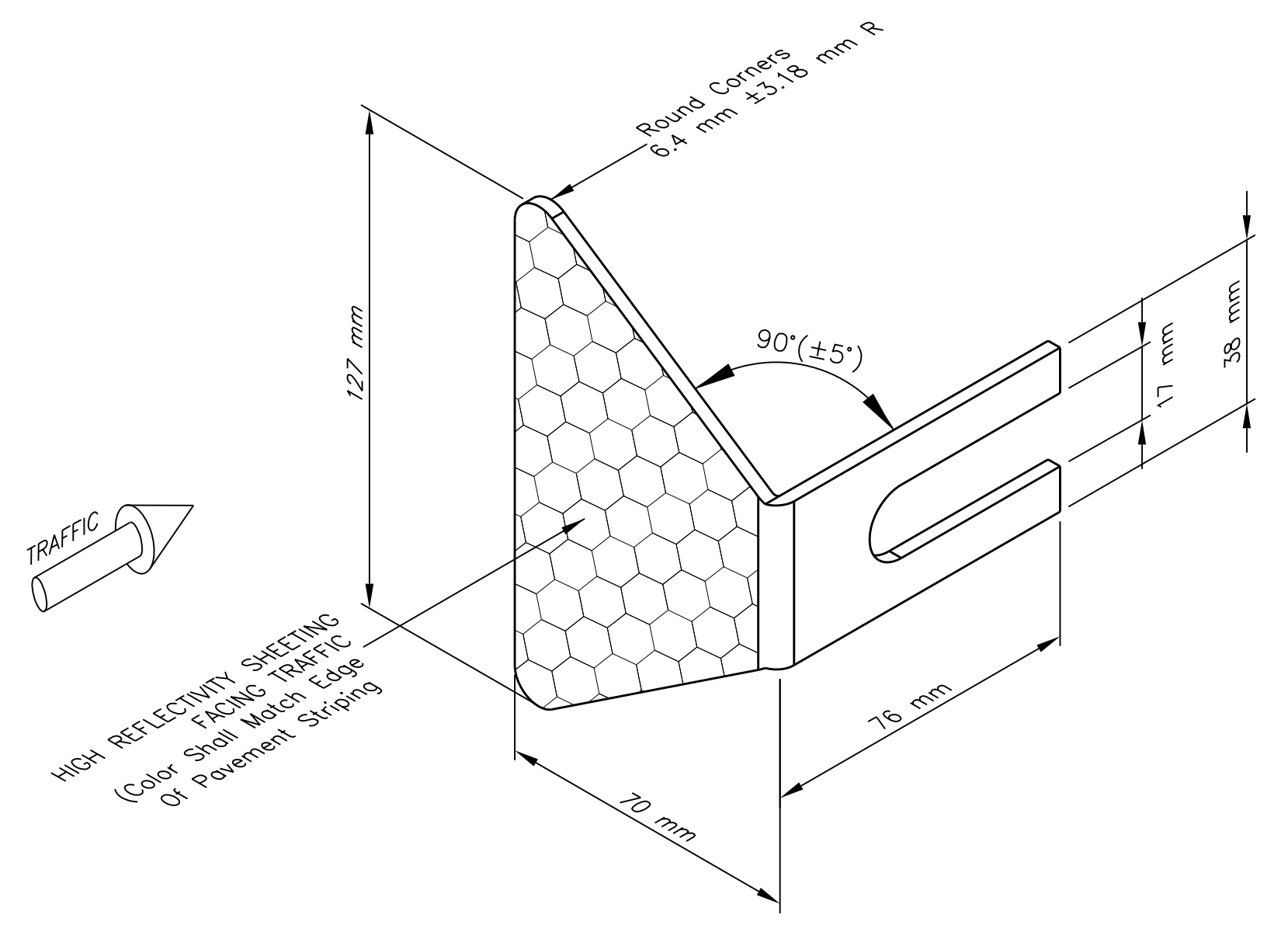


SECTION B-B w/CURBING
Asphalt Curb Depth=102 mm

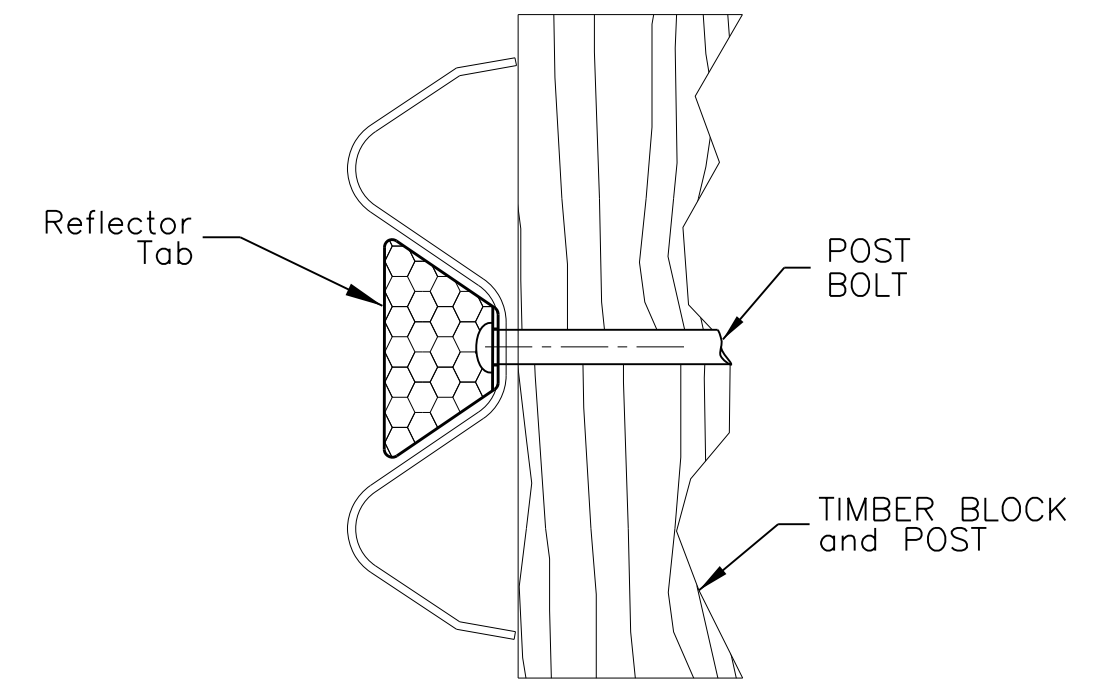


ELEVATION GUARDRAIL/POST MOUNTED DELINEATOR (TYP.)

Note:
The Delineator Shall Be Placed At 5.72 m Spacing Around The Outside Of Horizontal Curve Or Where The Guardrail Conflicts With Type "1a" Delineator Located On Tangent Segment Of Roadway



ISOMETRIC VIEW REFLECTOR TAB DETAIL



SECTION REFLECTOR TAB MOUNTING DETAIL
Install Tab on Every Second Post

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**STANDARD GUARDRAIL
DETAIL 2**

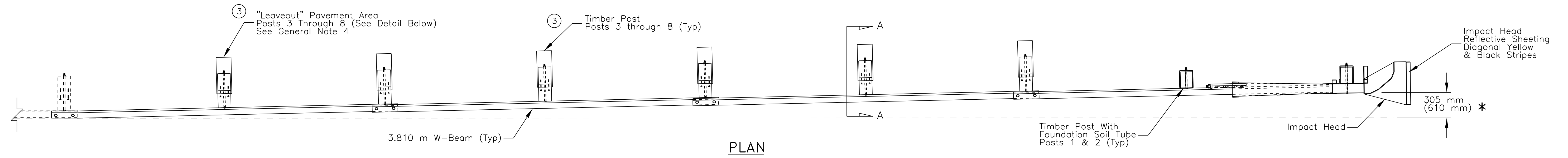
DRAWN BY: NRDOT	DATE: 8/23/2017
DESIGNED BY: NRDOT	DATE: 8/23/2017
REVISED: 3/9/2018	BY: Leroy.Toledo



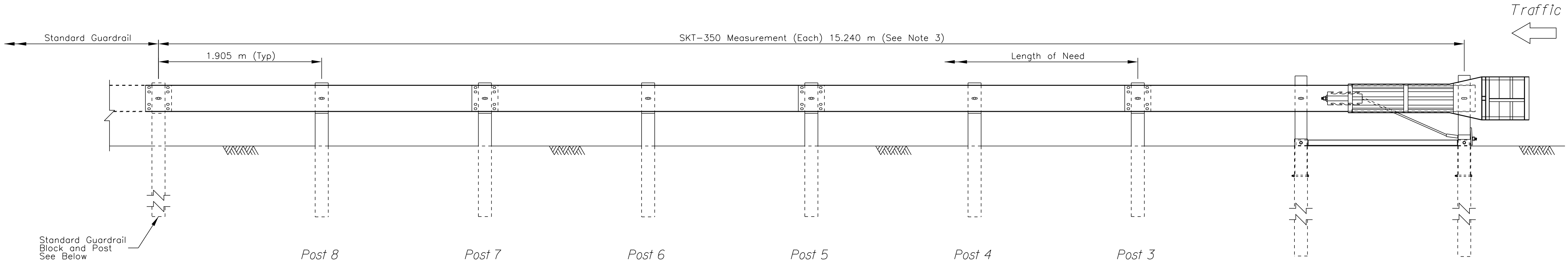
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REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	56	88

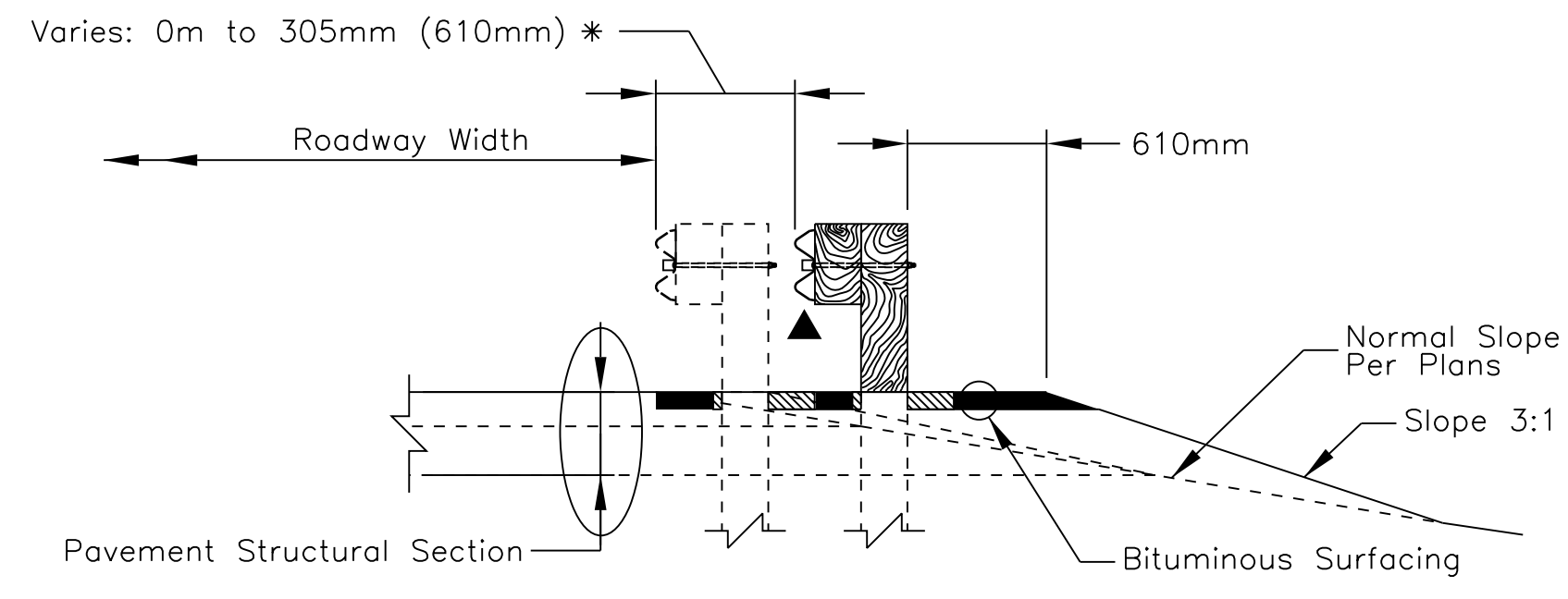
* FOR ELEVATIONS ABOVE (1,220 m) USE THE VALUES IN PARENTHESES



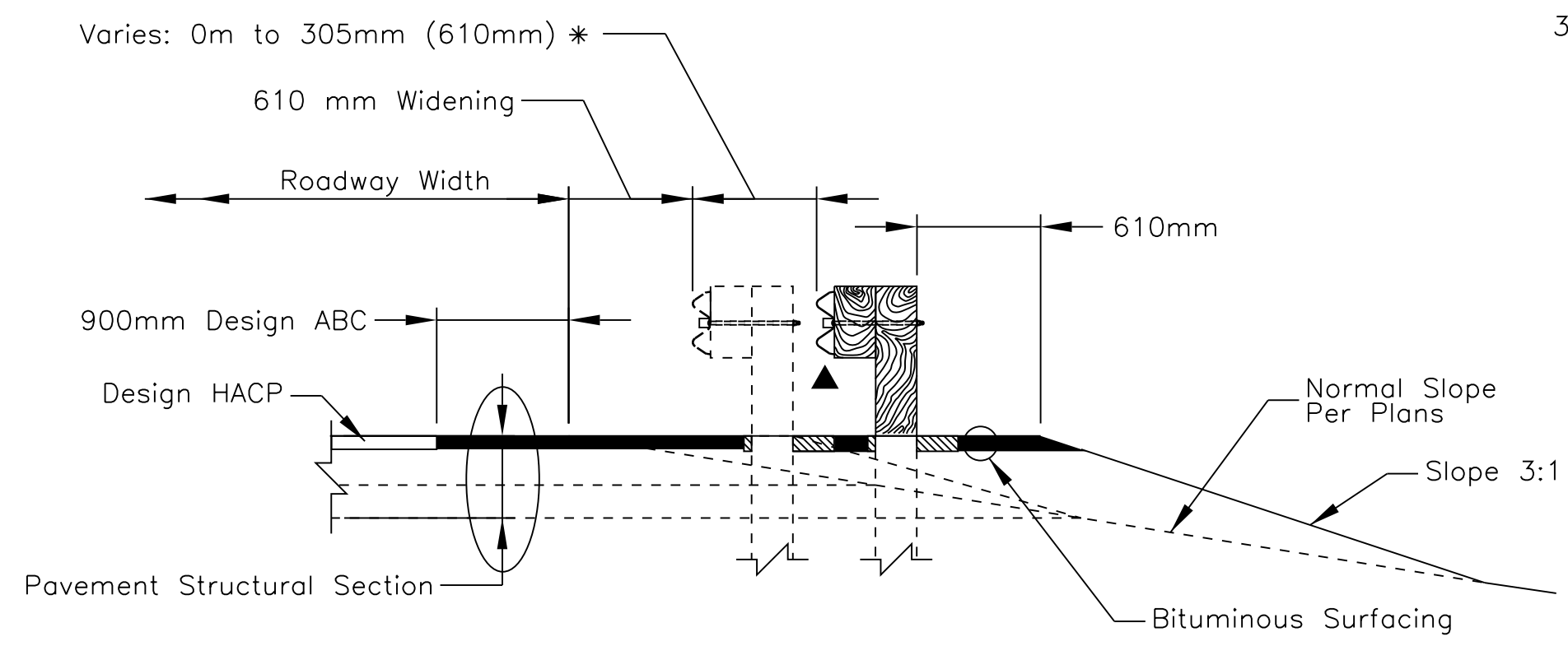
PLAN



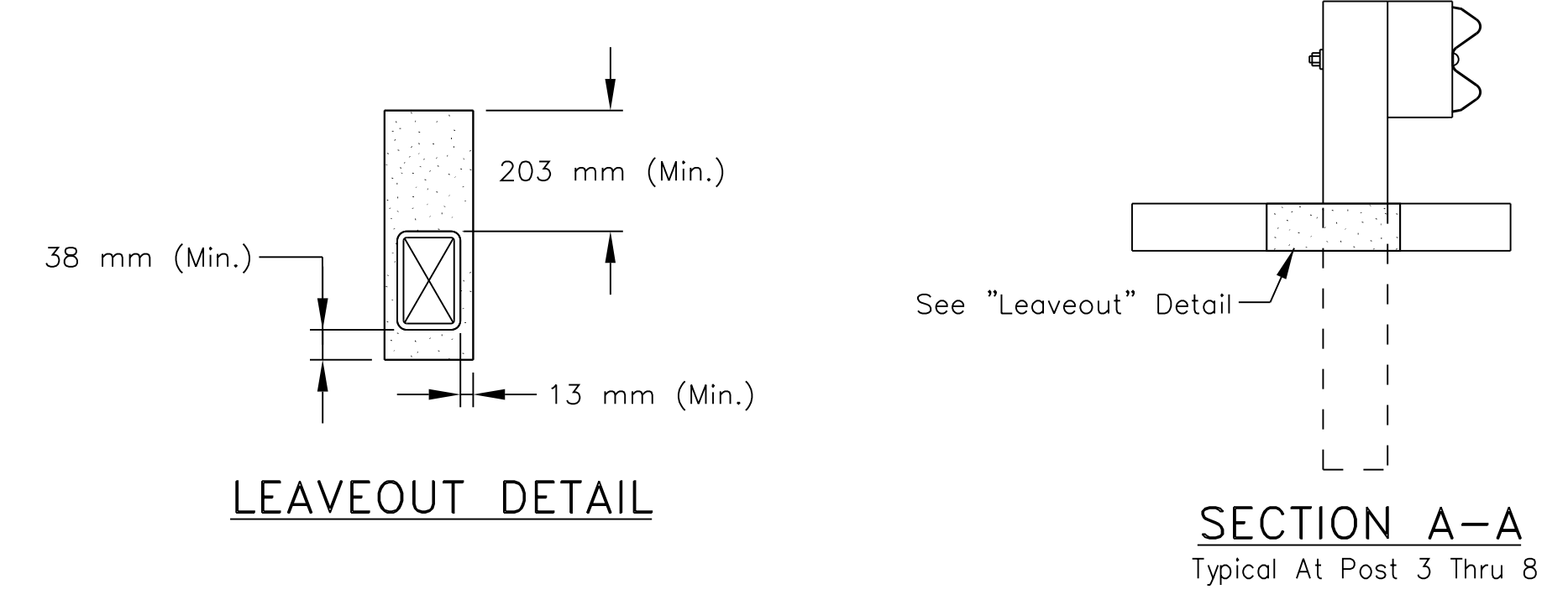
ELEVATION



TYPE A SECTION



TYPE B SECTION



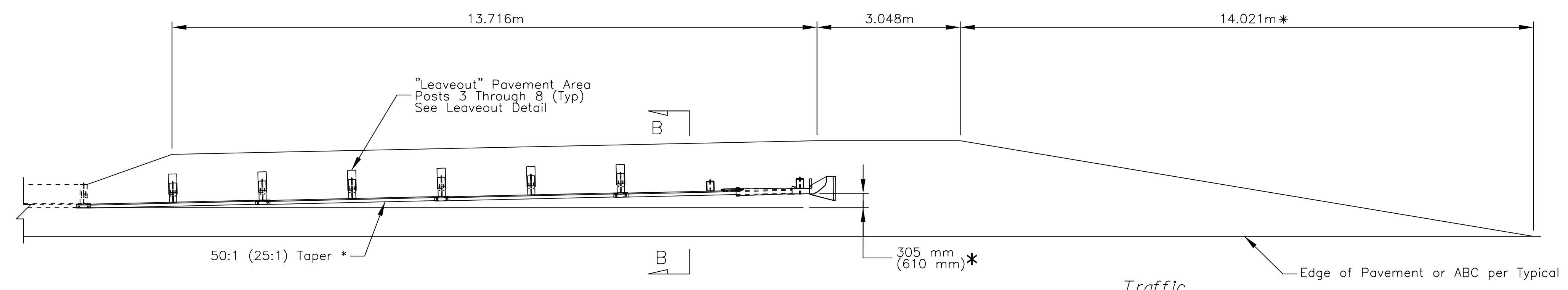
LEAVEOUT DETAIL

SECTION A-A
Typical At Post 3 Thru 8

GENERAL NOTES

1. THIS DETAIL IS FOR ROADWAY LAYOUT ONLY.
2. THE SKT-350 SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND CURRENT APPROVED DRAWINGS INCLUDING ALL DETAILS, HARDWARE, HARDWARE QUANTITIES AND OTHER INFORMATION AS SHOWN IN THESE PLANS.
3. THE 15,240 m W-BEAM LENGTH SHALL CONSIST OF FOUR 4.0 m SECTIONS, THE END SECTION BEING A PROPRIETARY SPLIT RAIL.
4. "LEAVEOUT" IN ASPHALTIC CONCRETE SHALL BE PROVIDED IN THE AC PAVEMENT AROUND THE GUARDRAIL POSTS AT THE LOCATIONS AND DIMENSIONS SPECIFIED ON THE ROAD SYSTEMS INC. APPROVED DRAWING SHOWN IN THESE PLANS. "LEAVEOUT" MATERIAL SHALL CONSIST OF A 1-SACK GROUT MIX OR OTHER NON-COHESIVE MATERIAL AS APPROVED BY THE NRDOT MATERIALS UNIT.

See Sheet 8Z For General Notes.



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

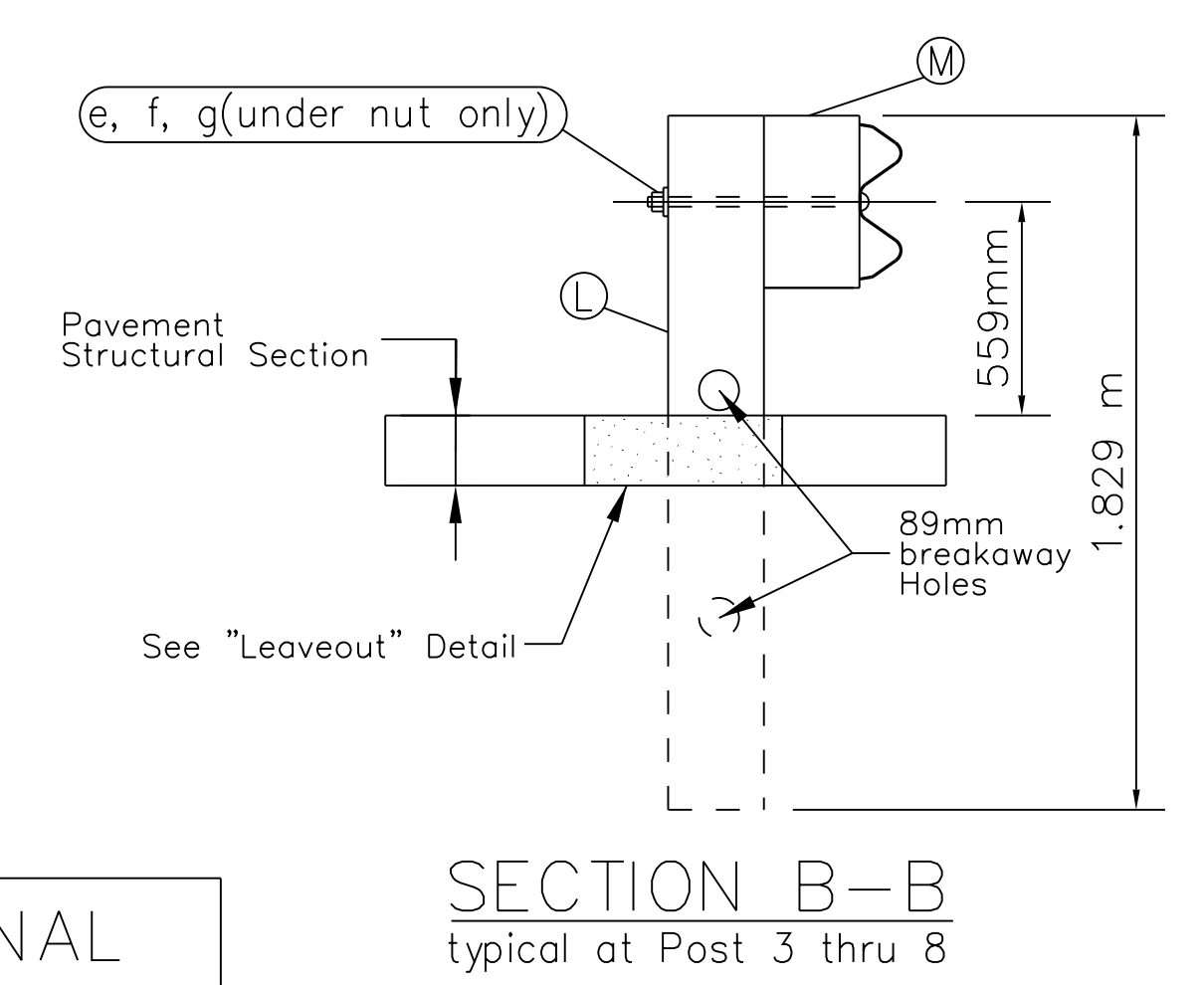
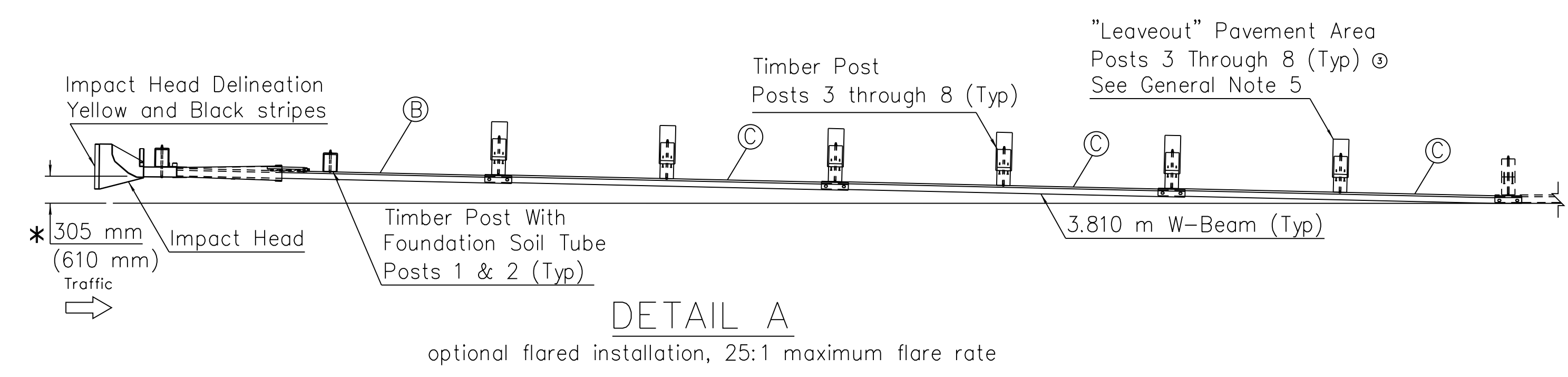
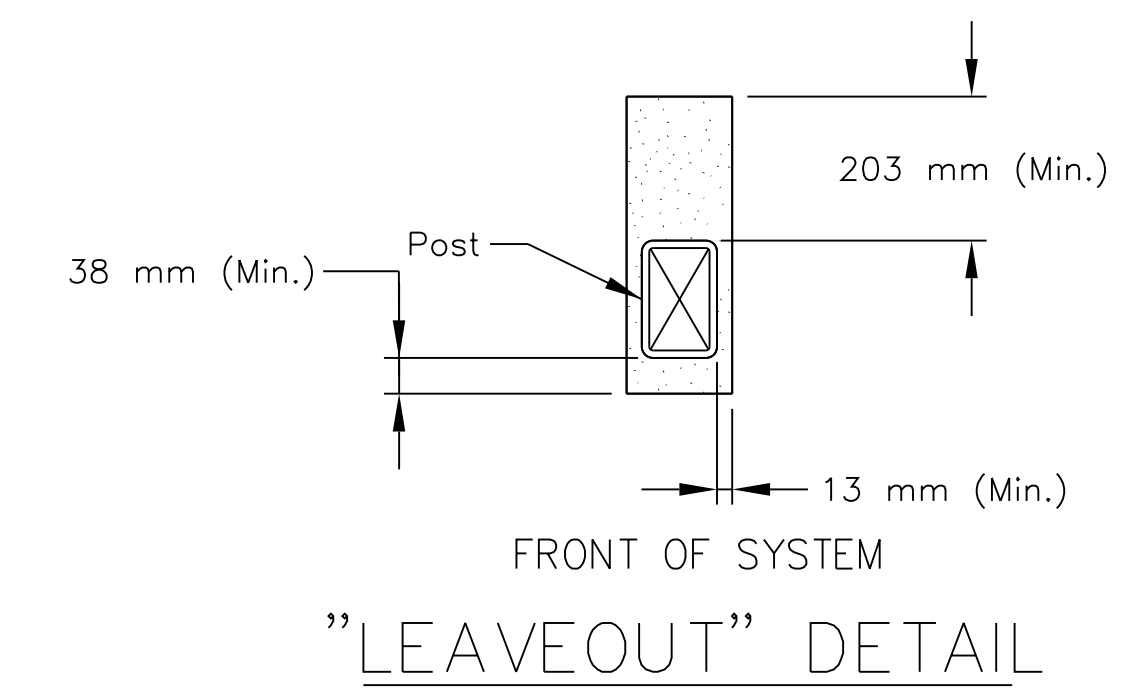
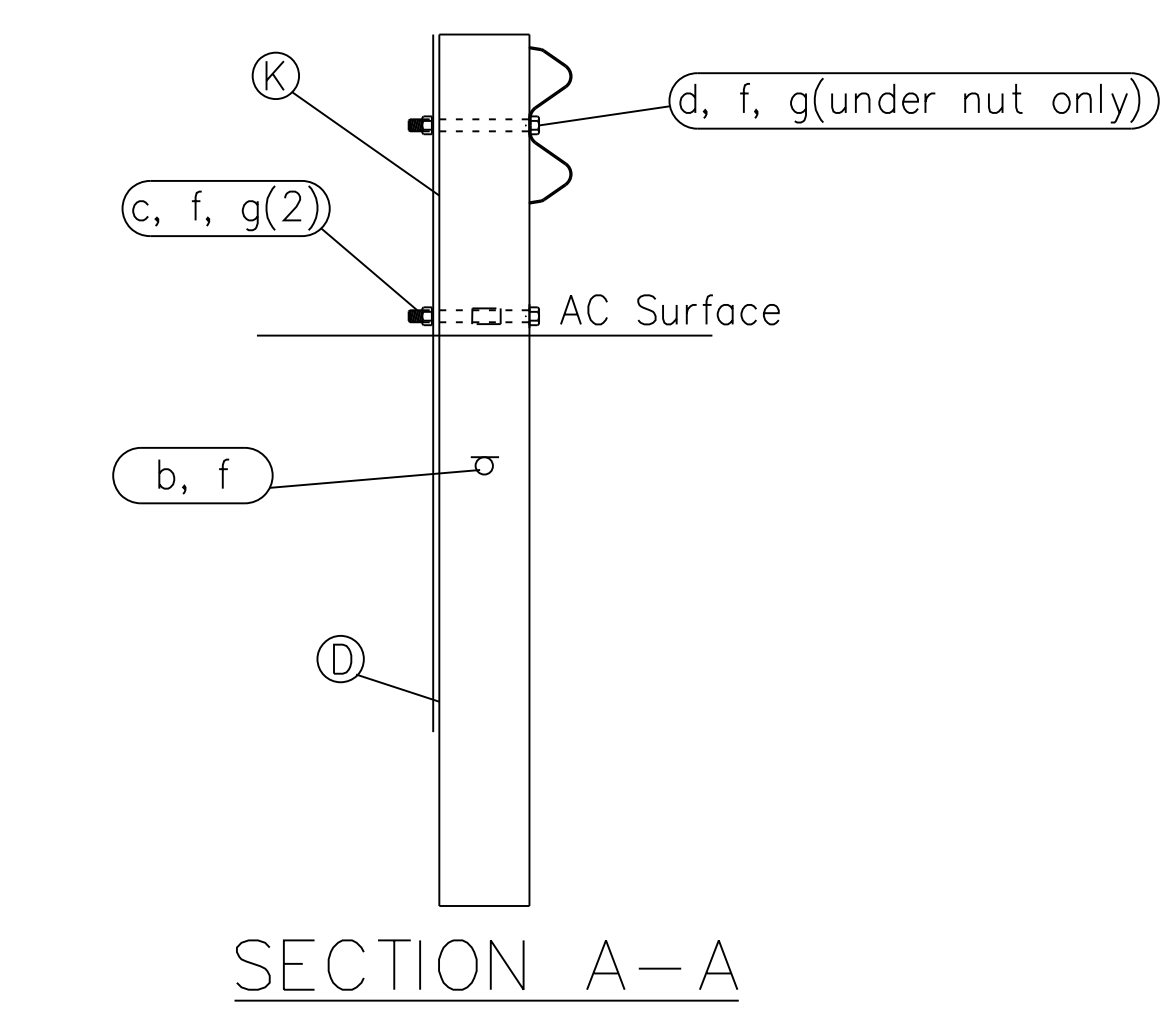
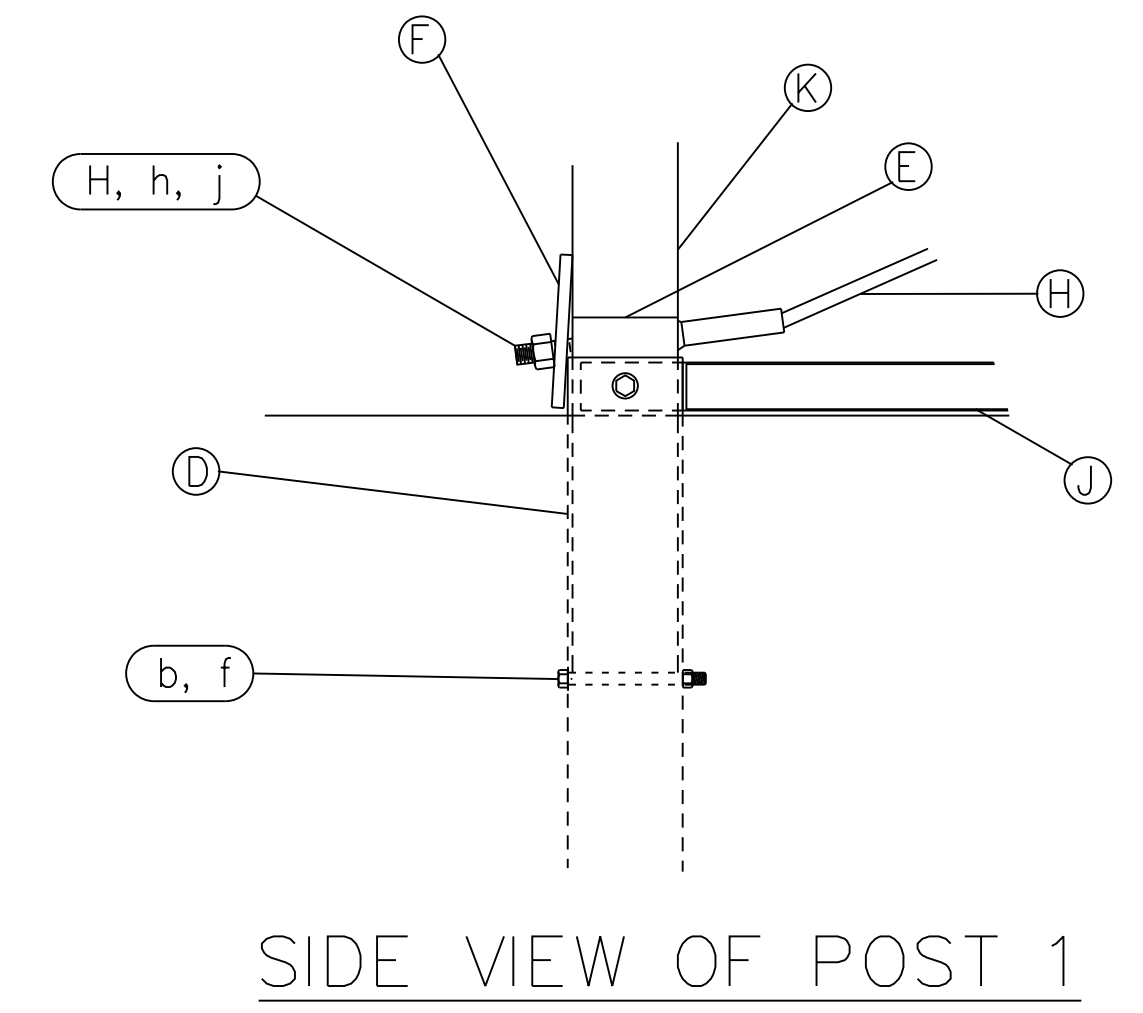
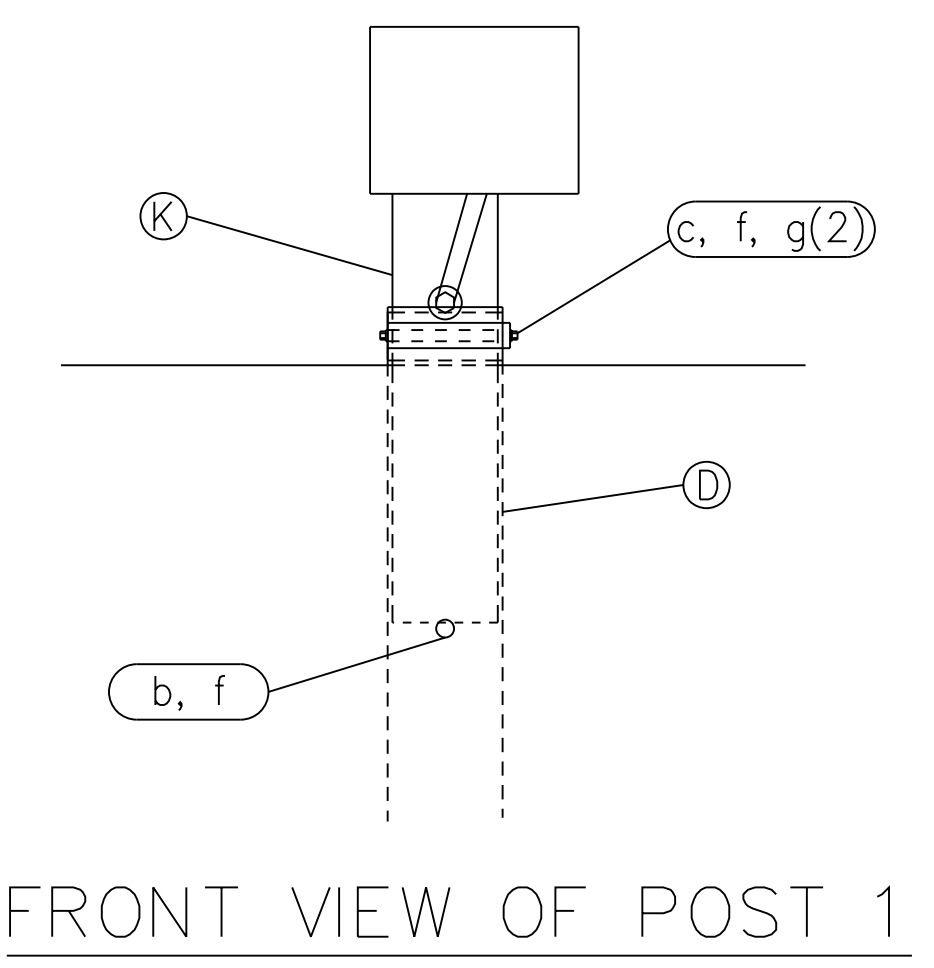
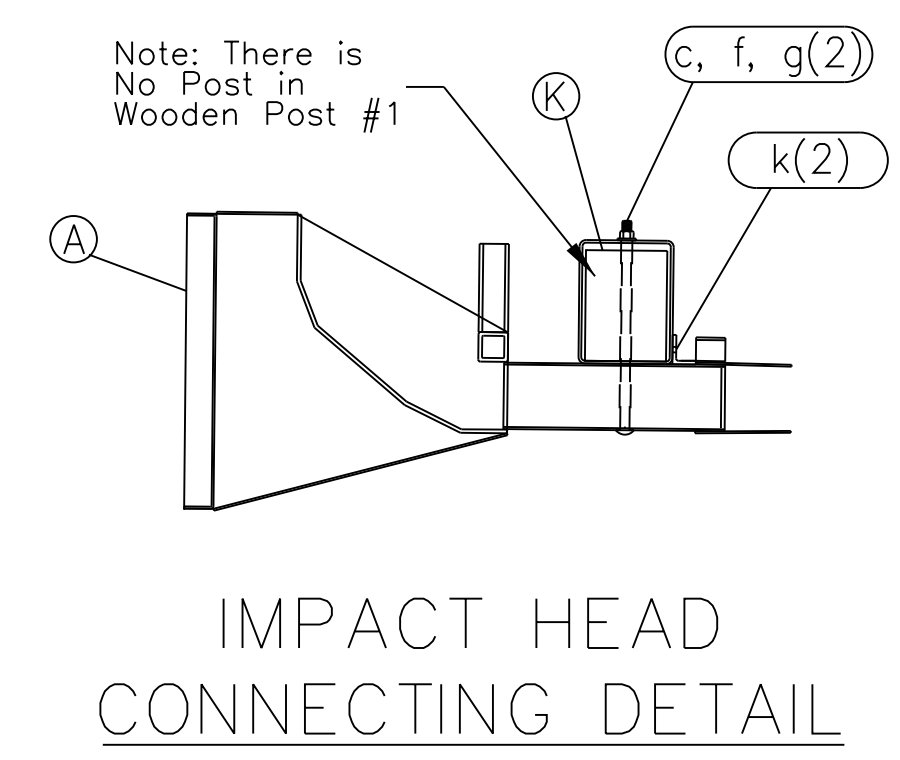
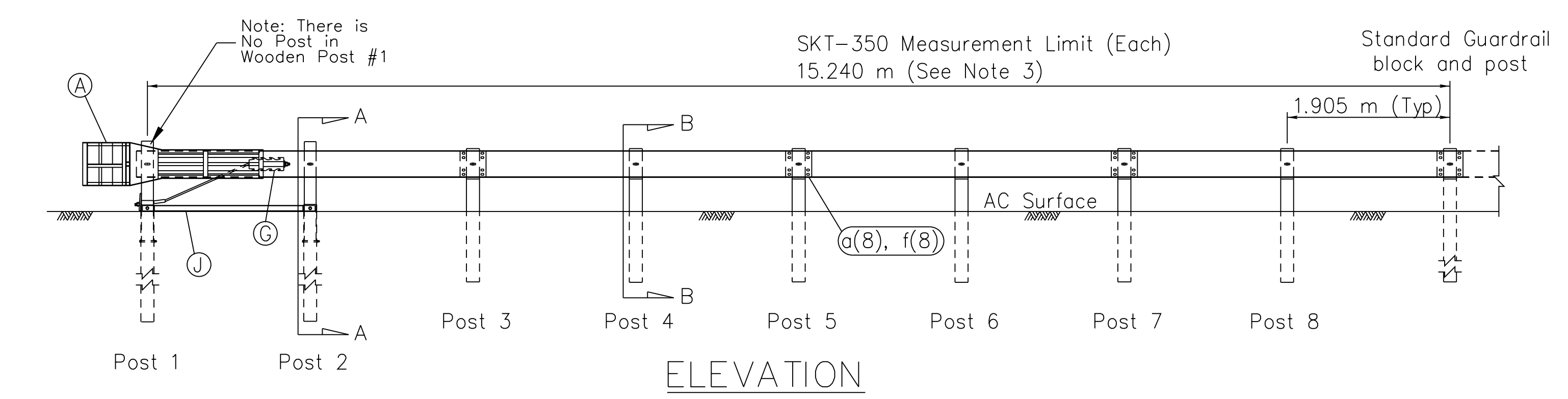
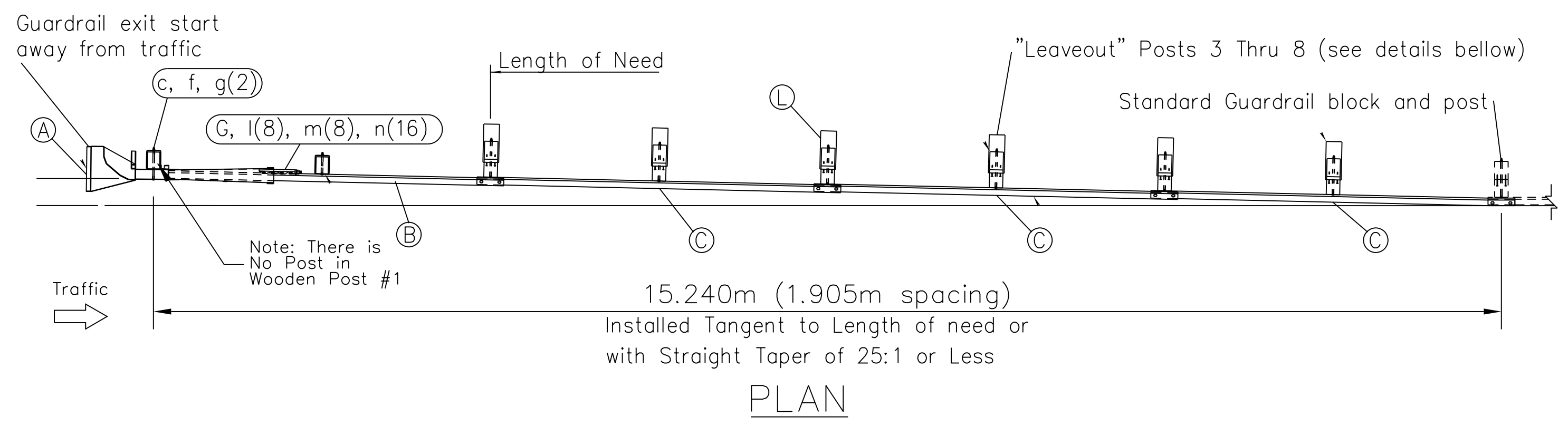
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 DEPARTMENT OF THE INTERIOR
 BUREAU OF INDIAN AFFAIRS
 NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

GUARDRAIL END TREATMENT
SKT-350 LAYOUT; SHEET 1 of 2

DRAWN BY: NRDOT	DATE: 9/19/2017
DESIGNED BY: NRDOT	DATE: 9/19/2017
REVISED: 3/9/2018	BY: Leroy Toledo
Sht 56 N12 SKT-350_1of3_rev 091917.dgn	

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REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	57	88



- ### GENERAL NOTES
- BREAKAWAY POSTS ARE REQUIRED WITH THE SEQUENTIAL KINKING TERMINAL.
 - ALL BOLTS, NUTS, CABLE ASSEMBLIES, CABLE ANCHORS AND BEARING PLATES SHALL BE GALVANIZED.
 - THE SKT-350 CAN BE FLARED AT A RATE OF 25:1 TO PREVENT THE IMPACT HEAD FROM ENCRoACHING ON THE SHOULDER. THE FLARE IS NOT REQUIRED AND MAY BE DECREASED OR ELIMINATED FOR SPECIFIC INSTALLATIONS.
 - THE SOIL TUBES SHALL NOT PROTRUDE MORE THAN 102 mm ABOVE GROUND (MEASURED ALONG A 1.5 m CHORD). SITE GRADING MAY BE NECESSARY TO MEET THIS REQUIREMENT.
 - THE SOIL TUBES MAY BE DRIVEN WITH AN APPROVED DRIVING HEAD. SOIL TUBES SHOULD NOT BE DRIVEN WITH THE POST IN THE TUBE. IF THE TUBES ARE PLACED IN DRILLED HOLES, THE BACKFILL MATERIAL MUST BE SATISFACTORILY COMPACTED TO PREVENT SETTLEMENT.
 - WHEN ROCK IS ENCOUNTERED DURING EXCAVATION, A 305 mm DIA. POST HOLE, 508 mm INTO ROCK MAY BE USED IF APPROVED BY THE ENGINEER. GRANULAR MATERIAL WILL BE PLACED IN THE BOTTOM OF THE HOLE APPROX. 64 mm DEEP TO PROVIDE DRAINAGE. THE SOIL TUBES WILL BE FIELD CUT TO LENGTH, PLACED IN THE HOLE AND BACKFILLED WITH ADEQUATELY COMPACTED MATERIAL EXCAVATED FROM THE HOLE.
 - THE BREAKAWAY CABLE ASSEMBLY MUST BE TAUT. A LOCKING DEVICE, (VICE-GRIPS OR CHANNEL-LOCK PLIERS) SHOULD BE USED TO PREVENT THE CABLE FROM TWISTING WHEN TIGHTENING NUTS.
 - A SPECIAL SITE EVALUATION SHOULD BE CONSIDERED PRIOR TO USING THE SKT-350 WHERE THERE IS LESS THAN 7,620 m BETWEEN THE OUTLET SIDE OF THE SKT-350 AND ANY ADJACENT DRIVING LANE.
 - THE WOOD BLOCKOUTS SHOULD BE "TOE-NAILED" TO THE WOOD POSTS TO PREVENT THEM FROM TURNING WHEN THE WOOD SHRINKS.
 - GUARDRAIL SPLICE SHALL BE OVERLAPPED IN THE DIRECTION OF ADJACENT TRAFFIC.
 - BILL OF MATERIALS AND SOME OF THE DETAILS HEREIN WERE PROVIDED BY ROAD SYSTEMS INC.

LEAVEOUT REQUIREMENTS

FOR POSTS 3 THROUGH 8, "LEAVEOUTS" IN THE ASPHALTIC CONCRETE PAVEMENT, AS SHOWN IN SECTION B-B AND BLOCKOUT DETAIL, AROUND GUARDRAIL POSTS SHALL BE PROVIDED WHERE ASPHALT THICKNESS EXCEEDS 39 mm NOMINAL (51 mm max) AND WHERE THE ASPHALT EXTENDS MORE THAN 457 mm BEHIND THE POSTS. THE "LEAVEOUT" SHALL BE USED AT THE POST LOCATIONS INDICATED AND THE "LEAVEOUT" MATERIAL TO BE PLACED IN THE VOID SHALL CONSIST OF A 1-SACK GROUT MIX OR OTHER NON-COHESIVE MATERIAL AS APPROVED BY THE NRDOT MATERIALS UNIT.

Code	QTY.	BILL OF MATERIALS	ITEM#
A	1	IMPACT HEAD	S3000
B	1	W-BEAM GUARDRAIL END SECTION, 12 GA., 3.810m	FS1303
C	3	W-BEAM GUARDRAIL, 12 GA., 3.810m RAIL ELEMENTS	G1203
D	2	FOUNDATION SOIL TUBE, 152mm x 203mm x 1.829m	E731
E	1	PIPE SLEEVE	E740
F	1	BEARING PLATE, 203mm x 203mm x 16mm	E750
G	1	CABLE ANCHOR BOX	S760
H	1	BCT CABLE ANCHOR ASSEMBLY	E770
J	1	GROUND STRUT	E780
K	2	140mm x 191mm x 1.143m WOOD POSTS	P650
L	6	152mm x 203mm x 1.829m WOOD CRT POST	P671
M	6	152mm x 203mm x 356mm TIMBER BLOCKOUT	P675
HARDWARE			
a	32	16mm Dia. x 32mm SPLICE BOLT	B580122
b	2	16mm Dia. x 191mm HEX BOLT	B580754
c	2	16mm Dia. x 254mm HEX BOLT	B581004
d	1	16mm Dia. x 191mm H.G.R. BOLT (post 2 only)	B581002
e	6	16mm Dia. x 457mm H.G.R. BOLT (posts 3-8)	B581802
f	43	16mm Dia. H.G.R. NUT	N050
g	11	H.G.R. WASHER	W050
h	2	25mm ANCHOR CABLE HEX NUT	N100
j	2	25mm ANCHOR CABLE WASHER	W100
k	2	9.5mm X 76mm LAG SCREW	E350
l	8	CABLE ANCHOR BOX SHOULDER BOLTS	SB58A
m	8	12.7mm A325 STRUCTURAL NUTS	N055A
n	16	27mm OD x 14mm ID A325 STR. WASHER	W050A

APPROVED AS NCHRP 350 T3 TERMINAL

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DEPARTMENT OF THE INTERIOR
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NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

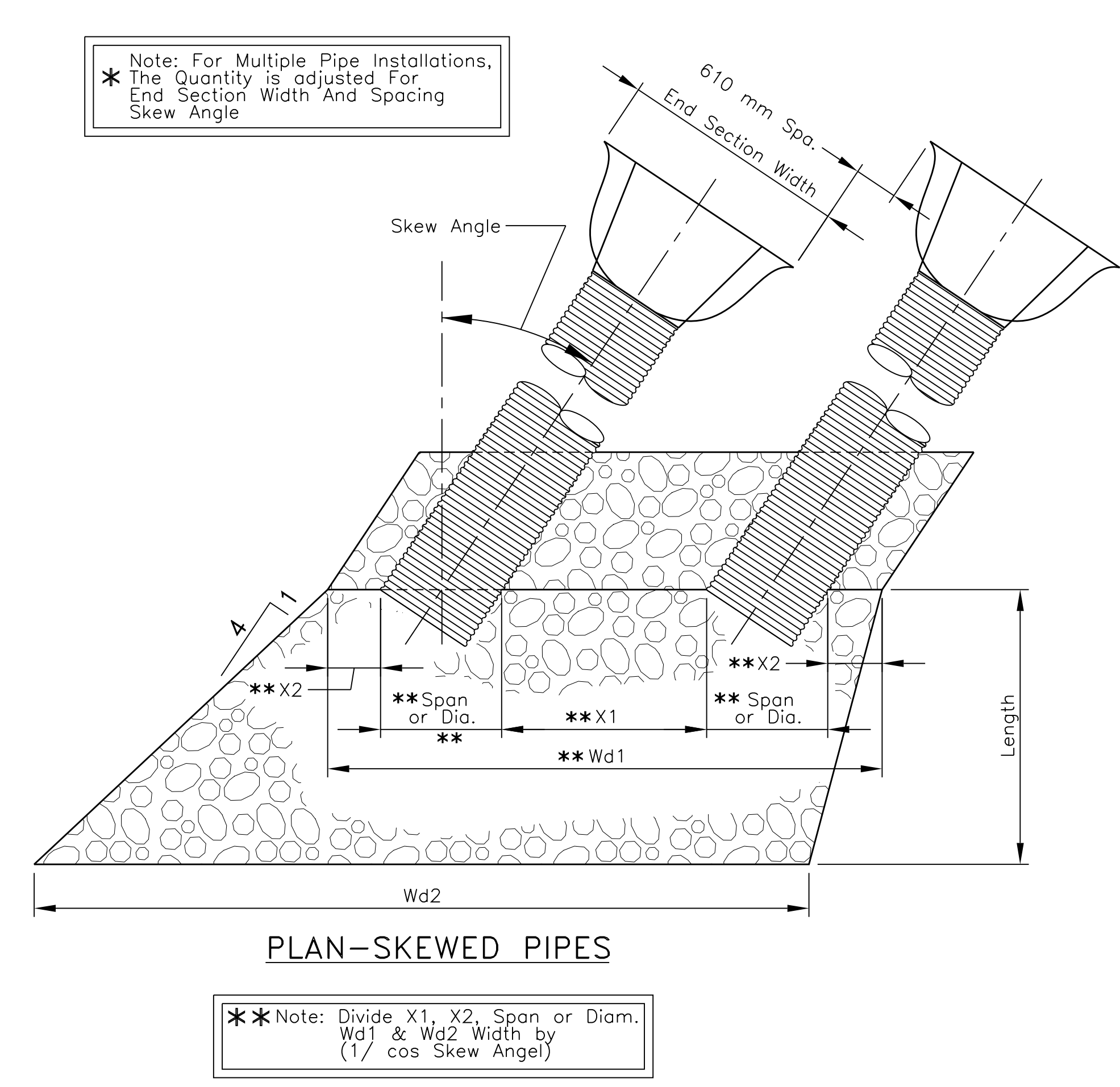
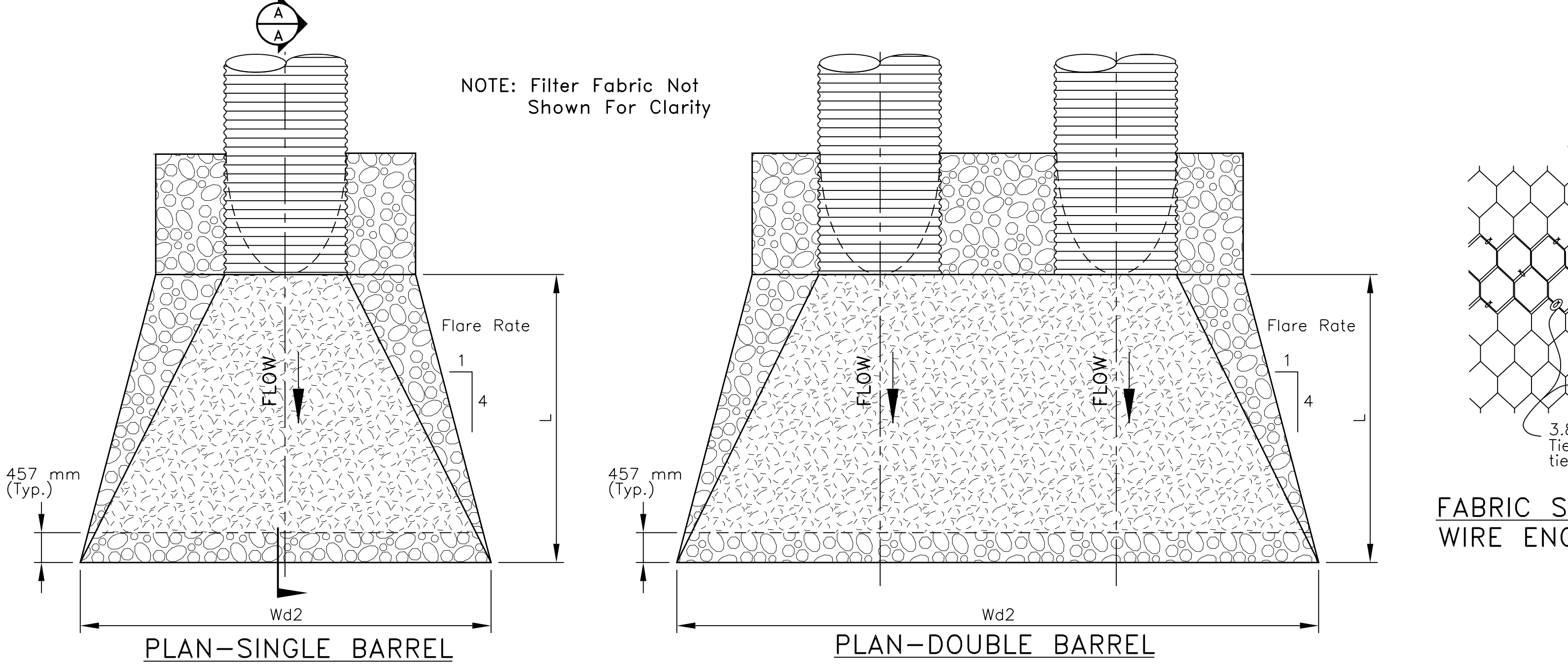
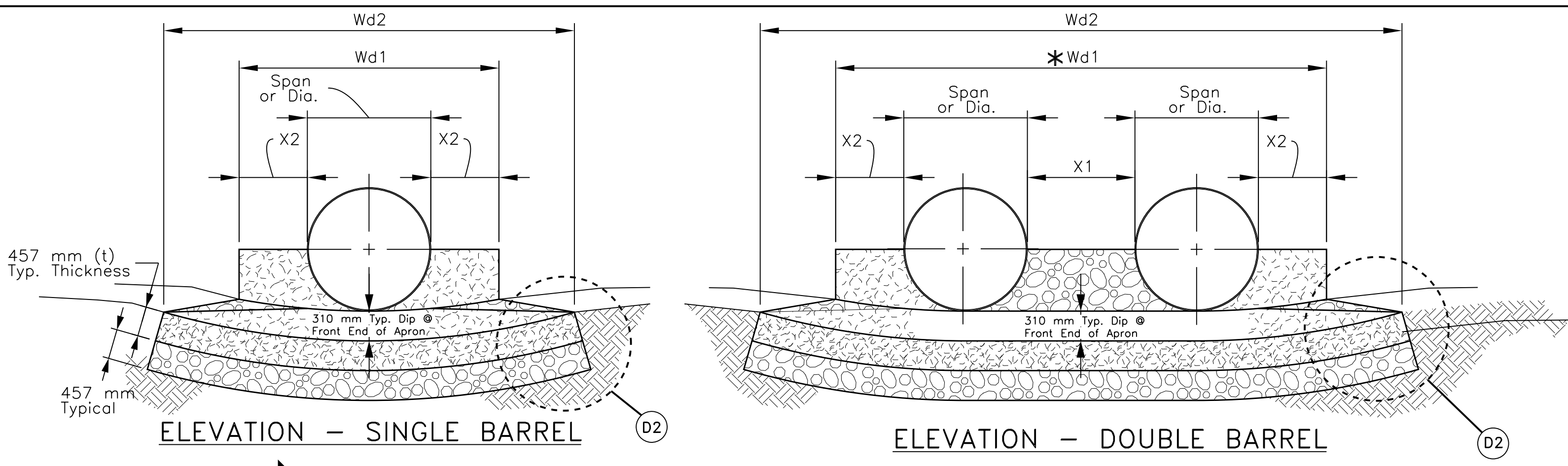
**GUARDRAIL END TREATMENT
SKT-350 LAYOUT; SHEET 2 of 2**

DRAWN BY: NRDOT	DATE: 9/19/2017
DESIGNED BY: NRDOT	DATE: 9/19/2017
REVISED: 3/15/2018	BY: Leroy Toledo

Sht 57 N12 SKT-350_2of2_rev 091917.dgn

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REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	58	88



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

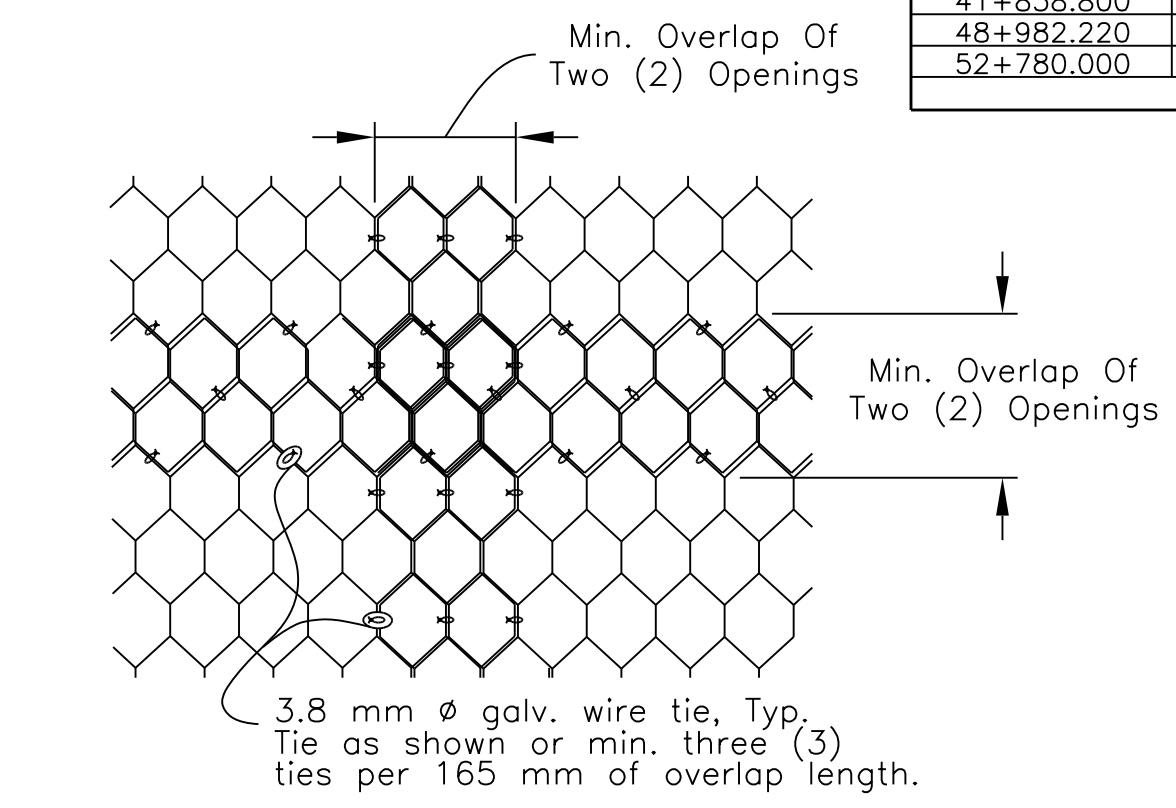
Station:	Structure:	Location	X ₁ (m)	X ₂ (m)	W _{a1} (m)*	W _{a2} (m)*	L (m)*	L _s (m)*	t (mm)	Estimated Qty (m)
42+926.570	2-1067 mm CSCP	Outlet	2.387	0.610	5.741	7.875	4.268	2.257	457	20.85
43+248.500	4-1448 mm S x 965 mm R CSPA	Outlet	2.840	0.733	16.947	19.816	3.860	2.046	457	52.41
43+458.880	2-610 mm CSCP	Outlet	1.625	0.610	4.065	5.285	2.440	1.314	457	8.76
43+816.820	3-1067 mm S x 737 mm R CSPA	Outlet	1.956	0.610	8.333	9.807	2.948	1.576	457	20.27
54+120.000	2-1803 mm S x 1194 mm R CSPA	Outlet	3.701	0.863	10.526	15.620	4.776	2.518	457	43.91
55+115.000	4-1803 mm S x 1194 mm CSPA	Outlet	3.701	0.863	23.028	28.122	4.776	2.518	457	88.19
55+734.140	4-1067 mm S x 737 mm R CSPA	Outlet	1.956	0.610	11.356	12.830	2.948	1.576	457	27.15
TOTAL										261.53

ITEM No. 25112-2000: WIRE ENCLOSED RIPRAP APRON, CLASS 2

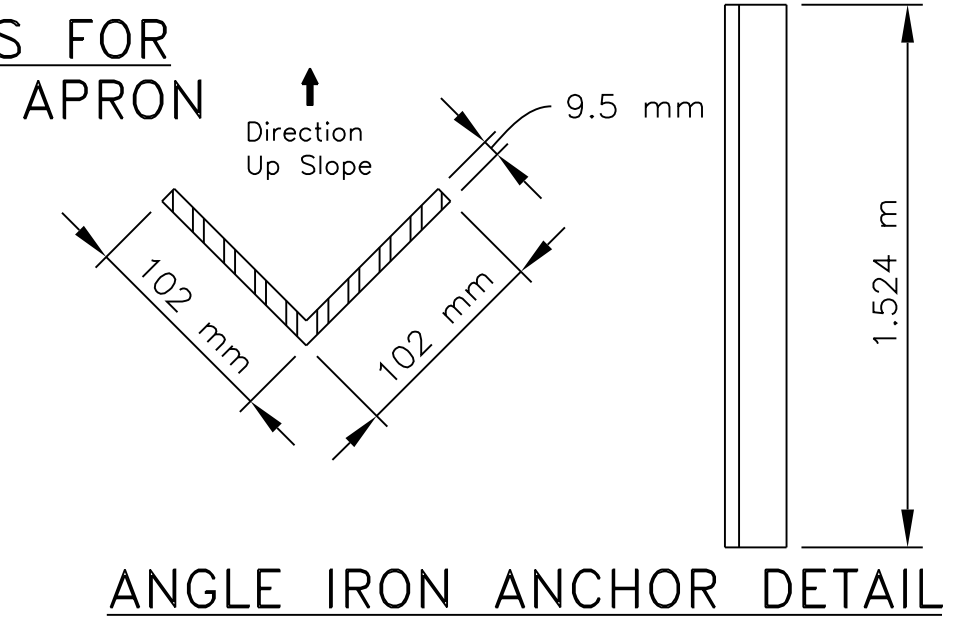
Station:	Structure:	Location	X ₁ (m)	X ₂ (m)	W _{a1} (m)*	W _{a2} (m)*	L (m)*	L _s (m)*	t (mm)	Estimated Qty (m)
48+698.630	2-1219 mm CSCP	Outlet	2.490	0.610	6.148	8.586	4.876	2.569	457	25.43
50+644.110	4-1524 mm CSCP	Outlet	0.762	0.610	9.602	12.650	6.096	1.858	457	41.79
TOTAL										67.22

ITEM No. 25110-2000: GROUTED RIPRAP APRON, CLASS 2

Station:	Structure:	Location	X ₁ (m)	X ₂ (m)	W _{a1} (m)*	W _{a2} (m)*	L (m)*	L _s (m)*	t (mm)	Estimated Qty (m)
41+838.800	5-2616 mm S x 1803 mm R SPPA	Outlet	1.511	0.704	21.148	27.469	7.212	2.925	457	114.12
48+982.220	1-2134 mm CSCP	Outlet	---	0.610	3.354	7.622	8.536	2.494	457	26.82
52+780.000	2-2438 mm CSCP	Outlet	1.219	0.610	7.135	12.191	9.752	2.834	457	54.85
TOTAL										195.80



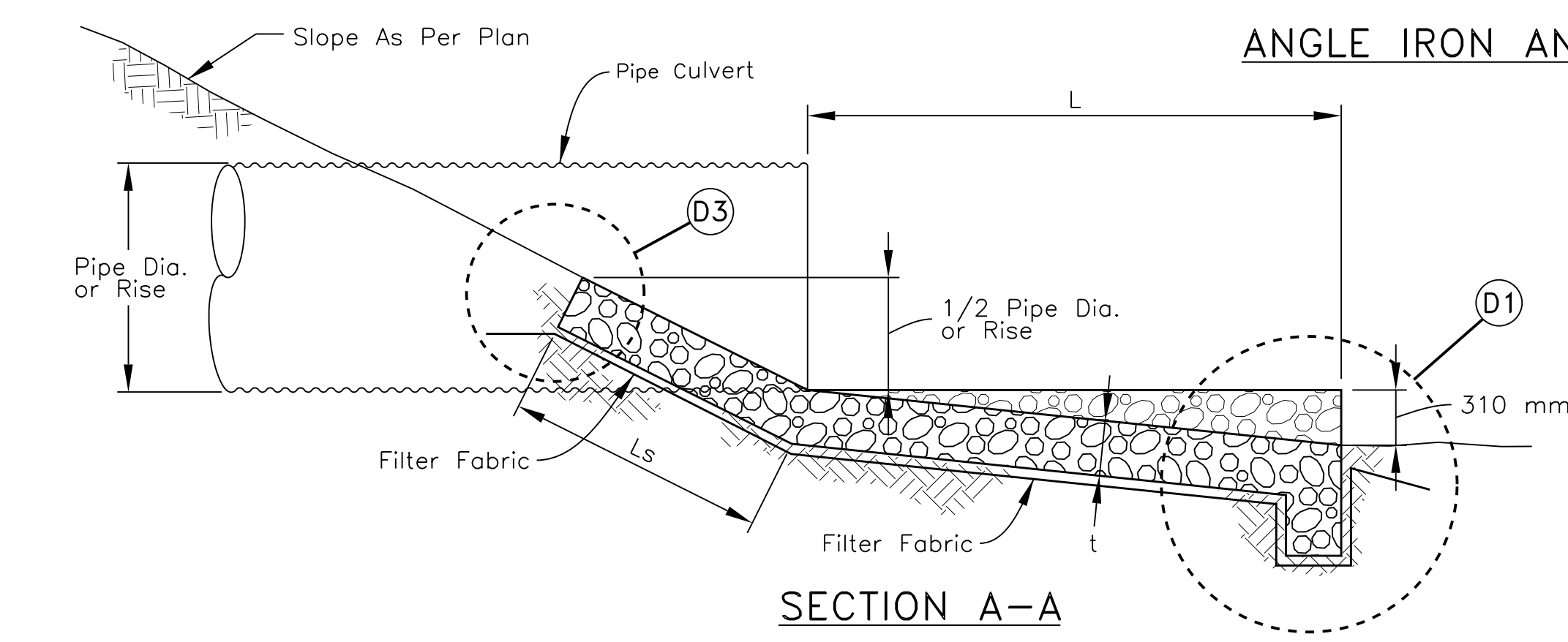
FABRIC SPLICING DETAILS FOR WIRE ENCLOSED RIPRAP APRON



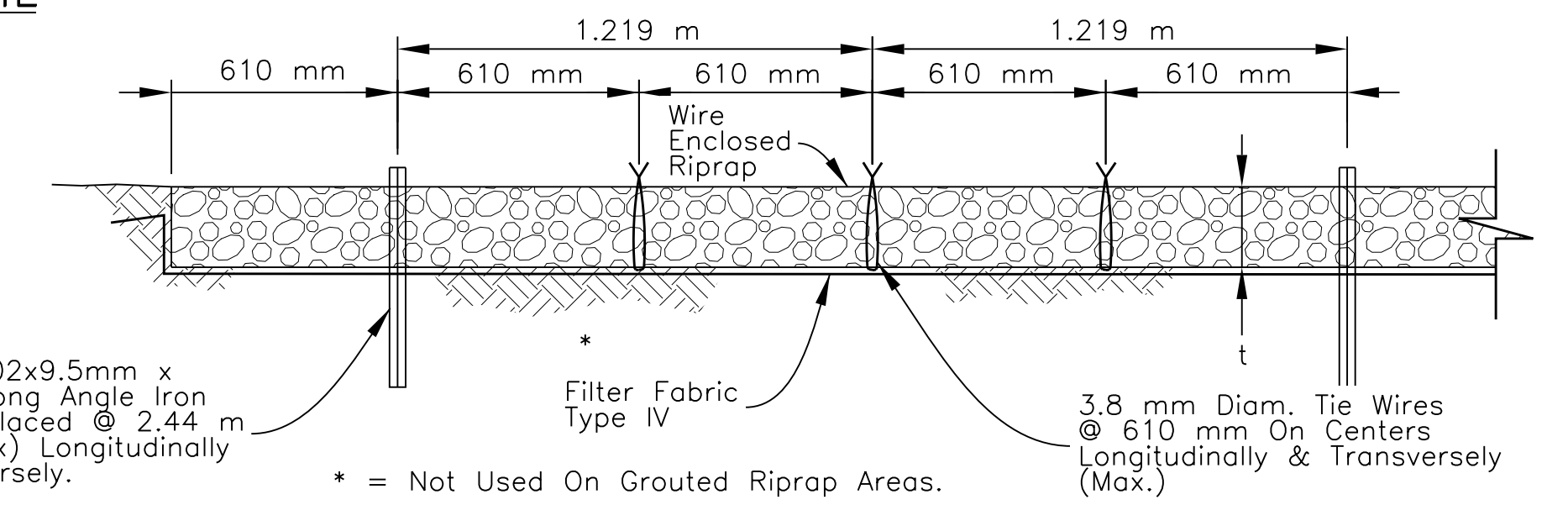
ANGLE IRON ANCHOR DETAIL

GENERAL NOTES

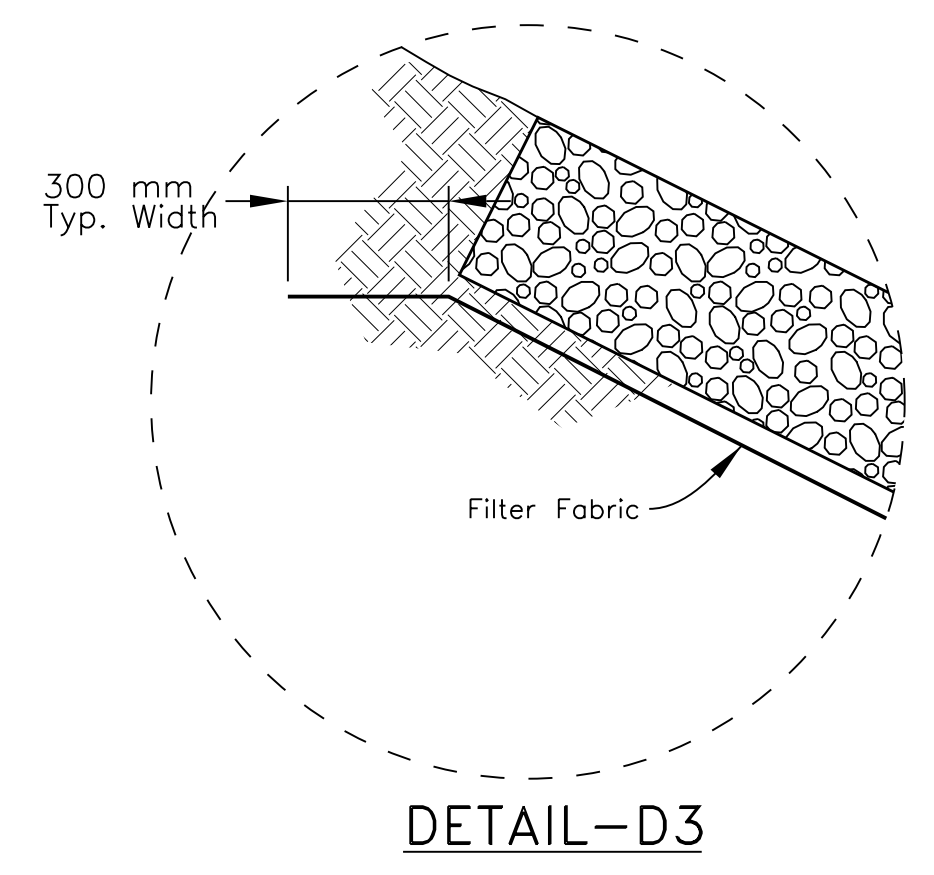
1. ALL STONE FOR RIPRAP SHALL BE CLASS 2 MEETING THE GRADING REQUIREMENTS OF TABLE 705-10F OF THE FP-14.
2. ALL EXCAVATIONS AND BACKFILL OPERATIONS SHALL BE DONE TO NEAT LINES IN ACCORDANCE WITH SECTION 209 OF THE FP-14 AND SHALL BE INCIDENTAL TO THE INSTALLATION OF RIPRAP. SEE SUPPLEMENTAL SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
3. ANY BORROW MATERIAL NEEDED TO BRING EXISTING CHANNELS UP TO GRADE SHALL BE INCIDENTAL TO RIPRAP PAY ITEMS.
4. THE CONTRACTOR HAS THE OPTION TO USE ARTICULATED CONCRETE BLOCK RETEMENT.
5. THE WIRE FABRIC SHALL BE GALVANIZED AND BE OF THE CONFIGURATION SHOWN IN THIS SHEET. AN ALTERNATE WIRE FABRIC MAY BE SUBMITTED FOR REVIEW AND APPROVAL. ANY WIRE FABRIC USED SHALL HAVE A MINIMUM WIRE DIAMETER OF 3.0mm. A CLASS 3, ZINC COATING (GALVANIZED) SHALL HAVE A MAXIMUM OPENING DIMENSION OF 100 mm AND SHALL NOT ALLOW A 75 mm Ø SPHERE TO PASS THROUGH THE WIRE FABRIC OPENING.
6. WIRE ENCLOSED RIPRAP SHALL BE ANCHORED AS SHOWN WITH L 102 mm x 9.5 mm STEEL ANGLES SPACED AT 2.44 m EACH WAY. STEEL ANGLES SHALL EXTEND 75 mm ABOVE THE TOP OF THE MESH. 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 TORCE. FURNISHING AND PLACEMENT OF ANGLE STEEL SHALL BE CONSIDERED INCIDENTAL TO COMPLETION OF THE STRUCTURE.
7. FOR ALL RIPRAP DOWNDRAIN AND CULVERT OUTLETS, PROVIDE CENTER OF RIPRAP 305 mm (MIN.) DIP BELOW OUTER EDGES AT OUTLET END. PLACE RIPRAP TO FIT CHANNEL BANKS WHERE POSSIBLE. ALL EXCAVATION AND APRON WARP RESHAPING SHALL BE CONSIDERED INCIDENTAL TO COMPLETION OF THE STRUCTURE.



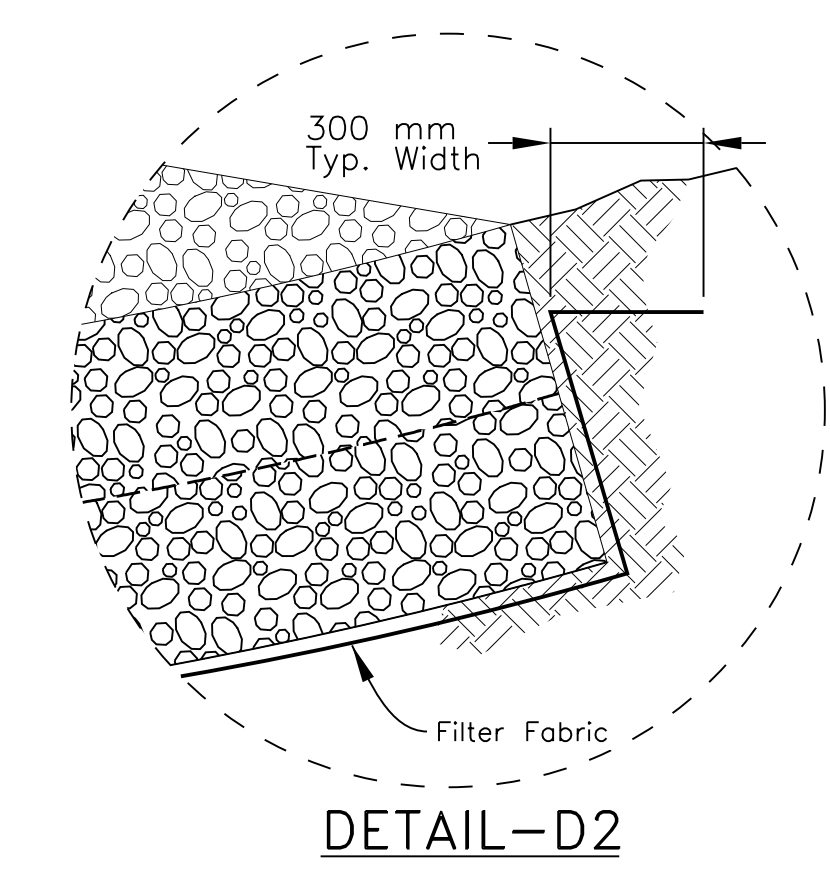
SECTION A-A



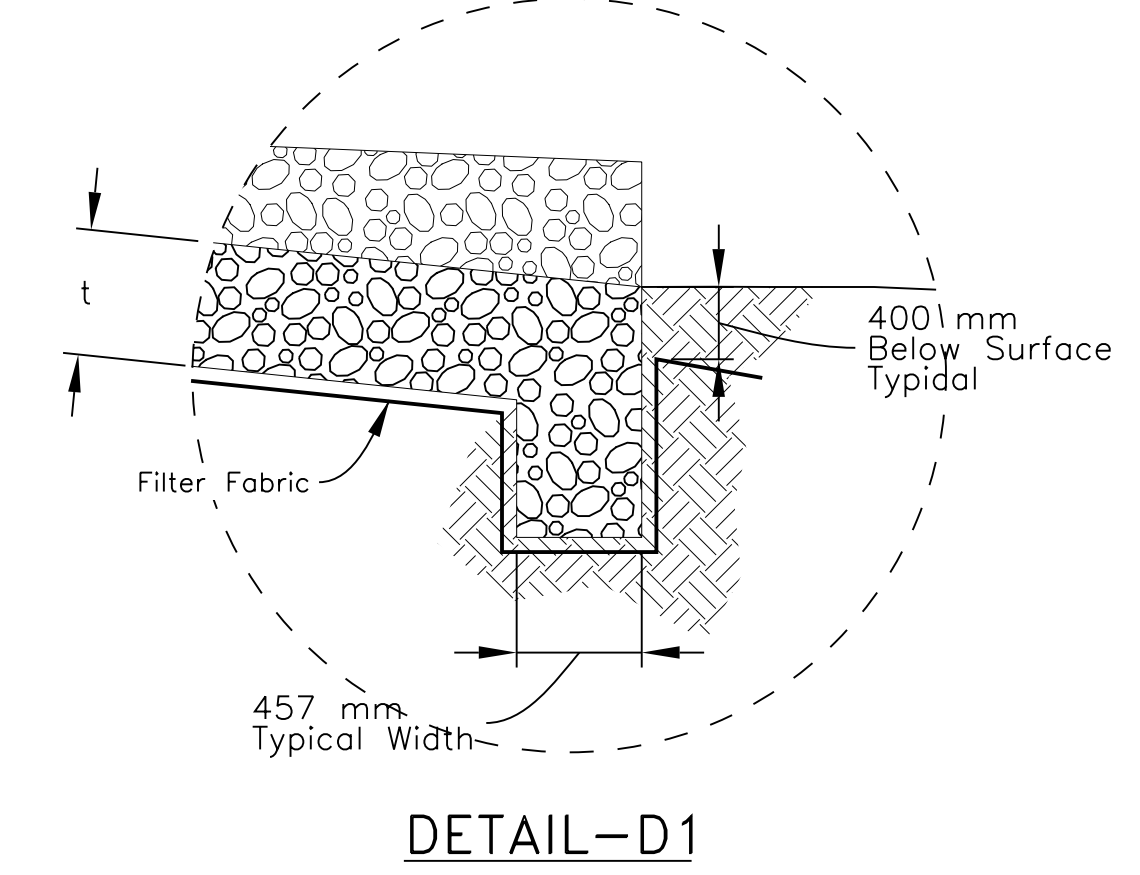
ANGLE IRON ANCHOR DETAILS WIRE ENCLOSED RIPRAP APRON



DETAIL-D3



DETAIL-D2



DETAIL-D1

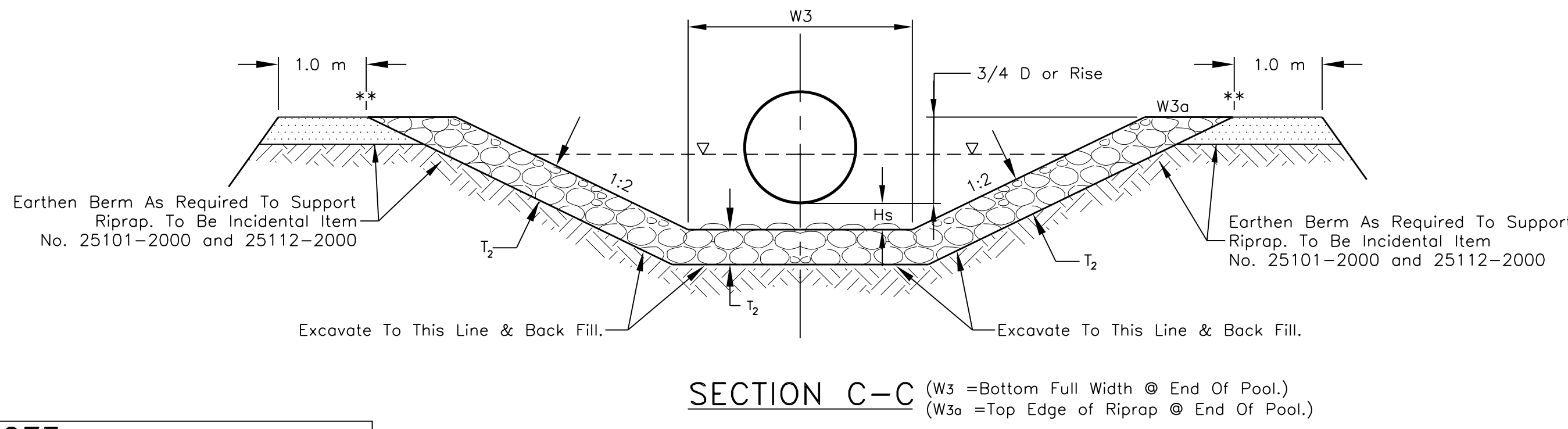
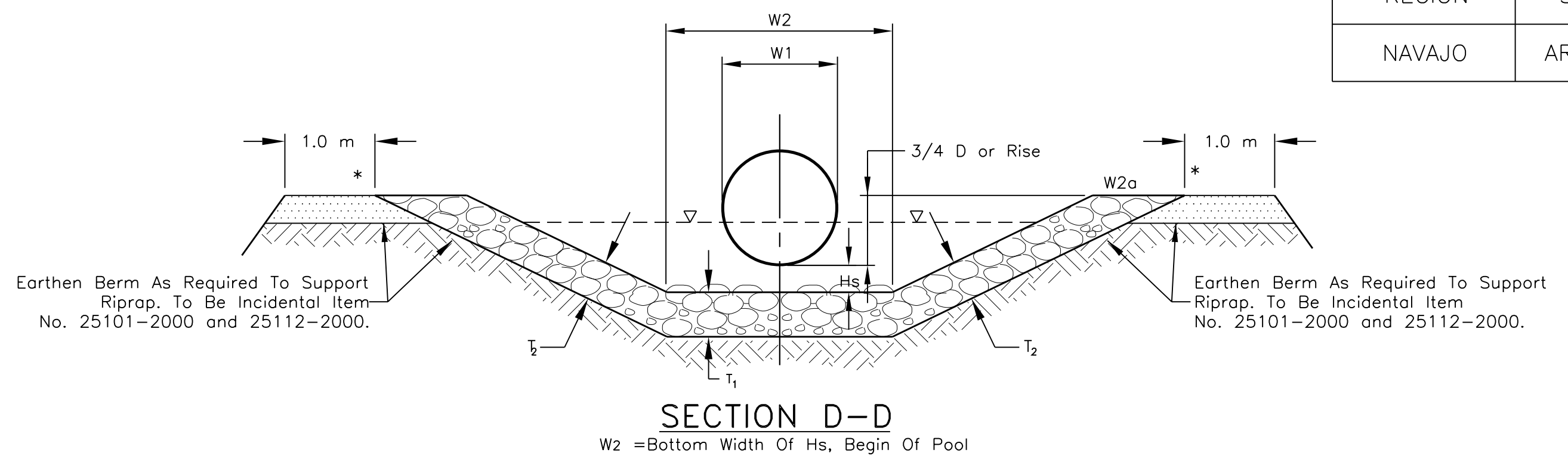
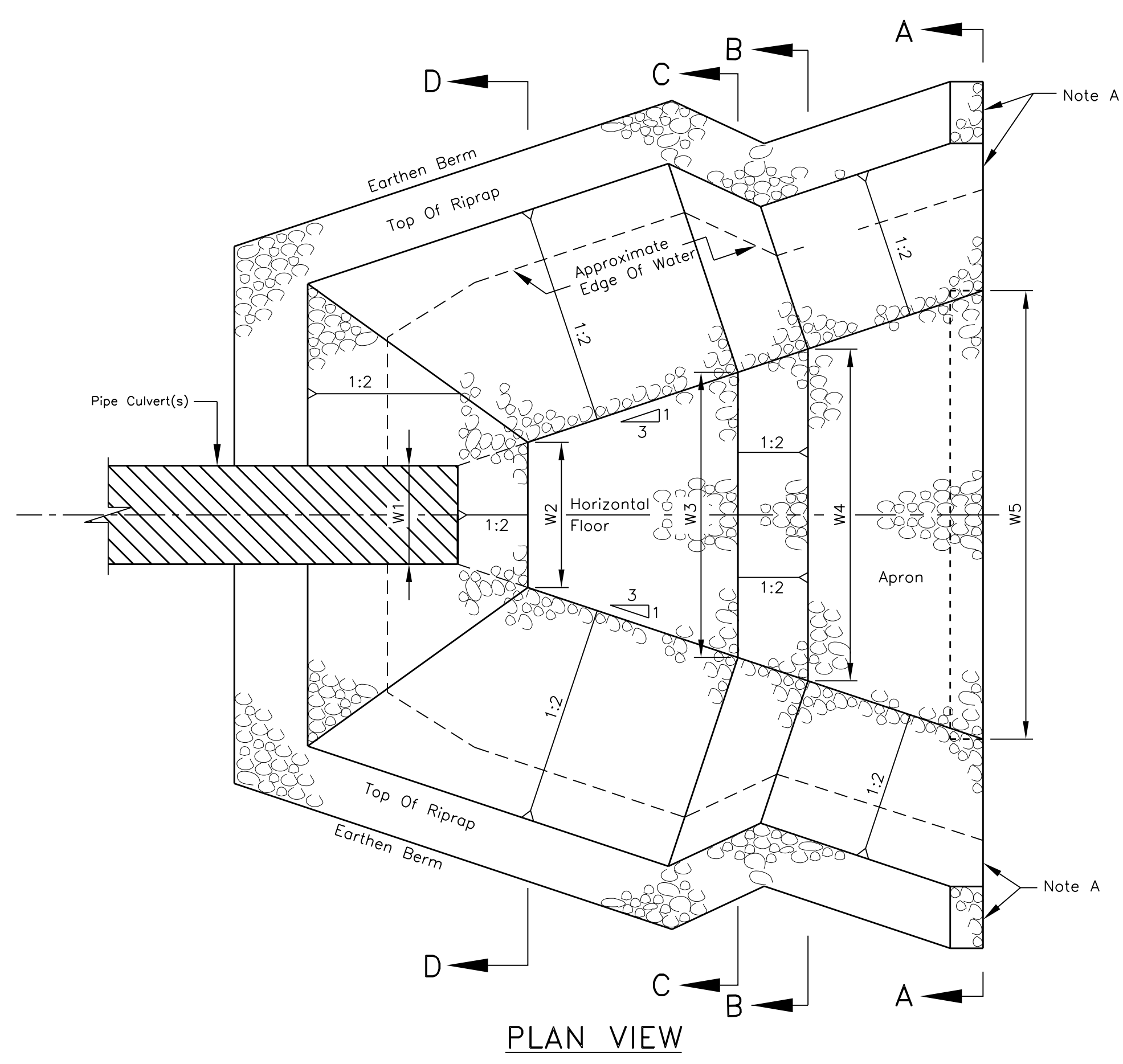
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DEPARTMENT OF THE INTERIOR
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NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

**PLACED AND WIRE ENCLOSED
RIPRAP APRON DETAIL**

DRAWN BY: NRDOT	DATE: 1/28/2016
DESIGNED BY: NRDOT	DATE: 1/28/2016
REVISED: 3/15/2018	BY: Leroy.Toledo

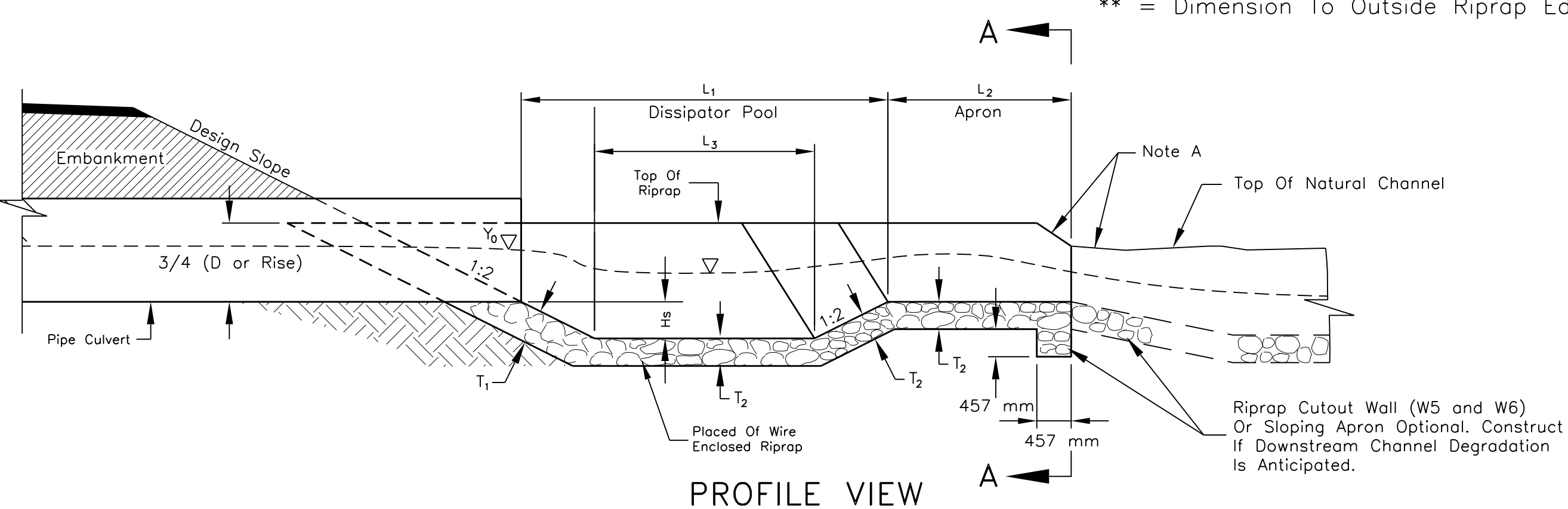
Sht 58 N12 Riprap Apron Details.dgn

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	59	88

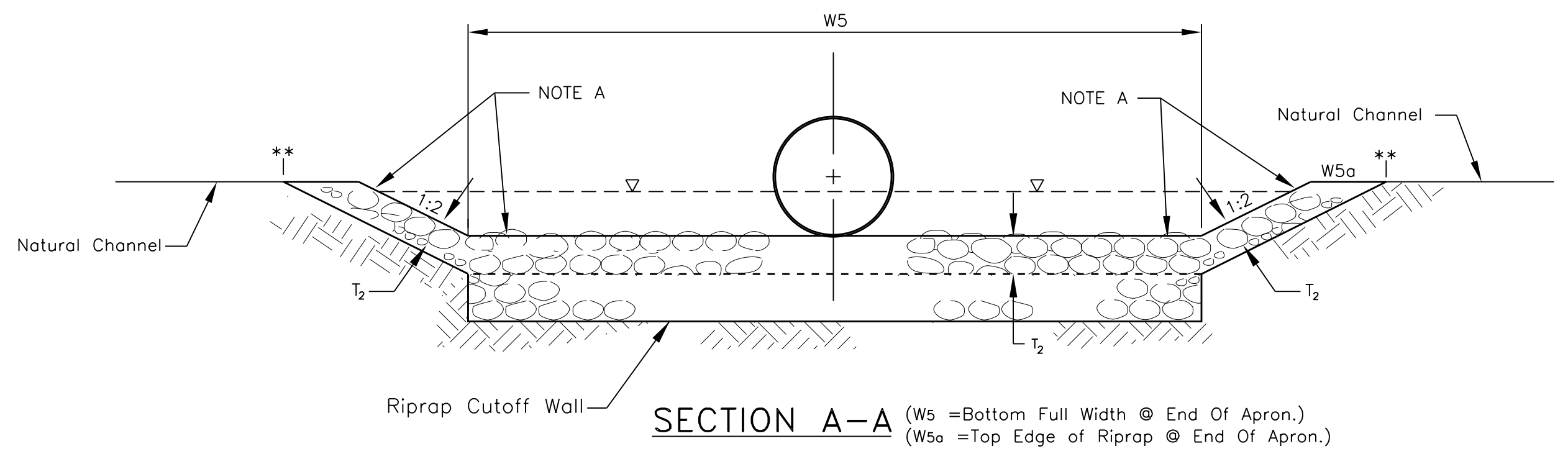
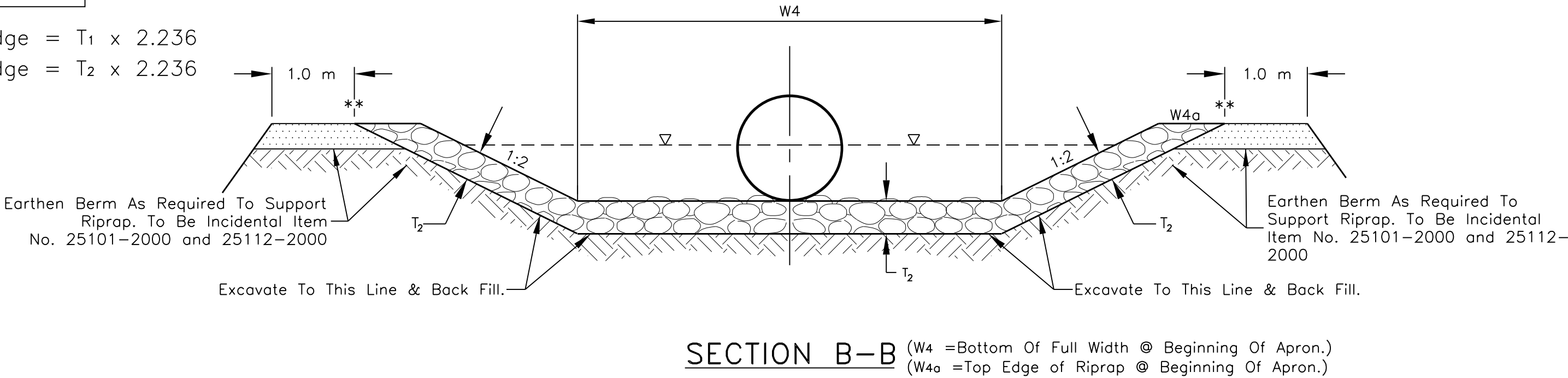


NOTE:
 W_o = Diameter For Pipe Culvert(s) And Span Of Pipe-Arch Culvert(s) With Spacing(s) Between Barrel.
 ∇ = Water Surface Profile
 $\gamma_o \nabla$ = Estimated Brink Depth

* = Dimension To Outside Riprap Edge = $T_1 \times 2.236$
 ** = Dimension To Outside Riprap Edge = $T_2 \times 2.236$



NOTE A: Warp Basin To Conform To Natural Stream Channel. Top Of Apron Riprap Should Be At The Same Elevation Or Lower Than Natural Channel Bottom At Section A-A.



ITEM No. 25101-2000: PLACED RIPRAP STILLING BASIN, CLASS 2

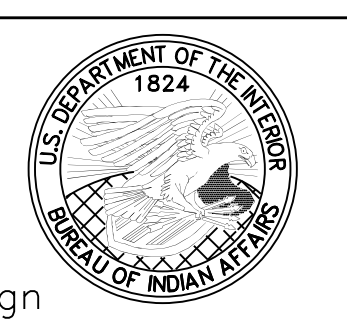
Station:	Structure:	L ₁ (m)	L ₂ (m)	L ₃ (m)	h _s (mm)	h ₁ (mm)	h ₂ (mm)	W ₁ (m)	W ₂ (m)	W _{3a} (m)	W ₃ (m)	W _{3a} (m)	W ₄ (m)	W _{4a} (m)	W ₅ (m)	W _{5a} (m)	Estimated Qty (m ³)
40+576.00	1-610 CSPC	2.628	1.314	1.392	263	610	457	0.610	0.683	3.720	1.733	4.349	2.084	4.013	2.960	4.890	15,400
44+176.00	2-762 CSPC	2.677	1.339	1.605	268	610	457	3.240	3.762	7.301	4.832	7.521	5.189	7.599	6.082	8.491	27,850
48+494.00	1-762 CSPC	2.286	0.910	1.711	182	610	457	0.762	0.934	3.886	2.114	4.524	2.286	4.696	2.893	5.302	18,610
TOTAL:																	
61,860																	

- GENERAL NOTES**
- WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-14), ALONG WITH ALL SUPPLEMENTAL SPECIFICATIONS FOR THIS PROJECT.
 - THE QUANTITIES SHOWN ARE ONLY AN ESTIMATE. ACTUAL QUANTITIES SHALL BE DETERMINED IN THE FIELD. THE PROJECT MANAGER, COR/COTR, AND CONTRACTOR SHALL REVIEW ALL ROCK CUT AREAS AFTER THE CONSTRUCTION OF VEE AND/OR FLAT BOTTOM DITCHES HAVE BEEN "ROUGHED-IN". IF IN THE OPINION OF THE COR/COTR THE ROCK CUT IS STABLE, THE COR/COTR MAY ELECT TO DELETE SECTIONS OF THE PLACED RIPRAP. THE CONTRACTOR WILL BE REQUIRED TO MAKE ADJUSTMENTS TO THE PLACED RIPRAP AS NECESSARY TO FIT ACTUAL FIELD CONDITIONS. THESE FIELD ADJUSTMENTS WILL BE INCIDENTAL OBLIGATIONS OF THE CONTRACTOR.
 - DITCH AND BACK SLOPE RESHAPING, CLEANING, AND EXCAVATION SHALL BE DONE IN ACCORDANCE WITH THE PLANS AND AS DETERMINED BY THE COR/COTR AND DITCH EXCAVATION, CLEANING, AND RESHAPING SHALL BE CONSIDERED INCIDENTAL TO COMPLETION OF THE STRUCTURE.
 - THE SIZE OF ALL STONE FOR RIPRAP IS TO BE CLASS 2, MEETING THE GRADING REQUIREMENTS OF TABLE 705-1, AND SECTION 251 OF FP-14.
 - FILTER FABRIC SHALL BE INSTALLED UNDER ALL PLACED OR WIRE ENCLOSED RIPRAP AND SHALL CONFORM TO SECTION 714, TYPE IV-C, OF FP-96, AND SHALL BE CONSIDERED INCIDENTAL TO ITEM 25101. FILTER FABRIC SHALL BE TUCKED OR EMBEDDED 400mm INTO THE GROUND ALONG ALL EDGES AS SHOWN.
 - RIPRAP DOWNDRAINS SHALL BE CARRIED DOWN SLOPE TO THE INTERSECTION OF THE FILL SLOPE AND EXTENDED UNTIL A 2% OR LOWER SLOPE IS ACHIEVED BEFORE TERMINATION.
 - RIPRAP SHALL BE PLACED, OR WIRE ENCLOSED, AS SHOWN ON THE PLANS.
 - AT ALL LOCATIONS WHERE RIPRAP DITCH LINING CONNECTS TO CULVERTS OR CULVERT RIPRAP INLET/OUTLET STRUCTURES, THE CONTRACTOR SHALL SHAPE THE DITCH LINING TO CONNECT TO THE DRAINAGE STRUCTURE(S) AS DIRECTED BY THE COR/COTR. THIS WORK SHALL BE CONSIDERED INCIDENTAL OBLIGATIONS OF THE CONTRACTOR.
 - WIRE ENCLOSED CUT TO FILL TRANSITIONS AND DITCH LININGS SHALL BE CONSTRUCTED TO THE SAME GENERAL SHAPE AS THE PLACED RIPRAP OR WIRE ENCLOSED STRUCTURES SHOWN ON THIS SHEET.

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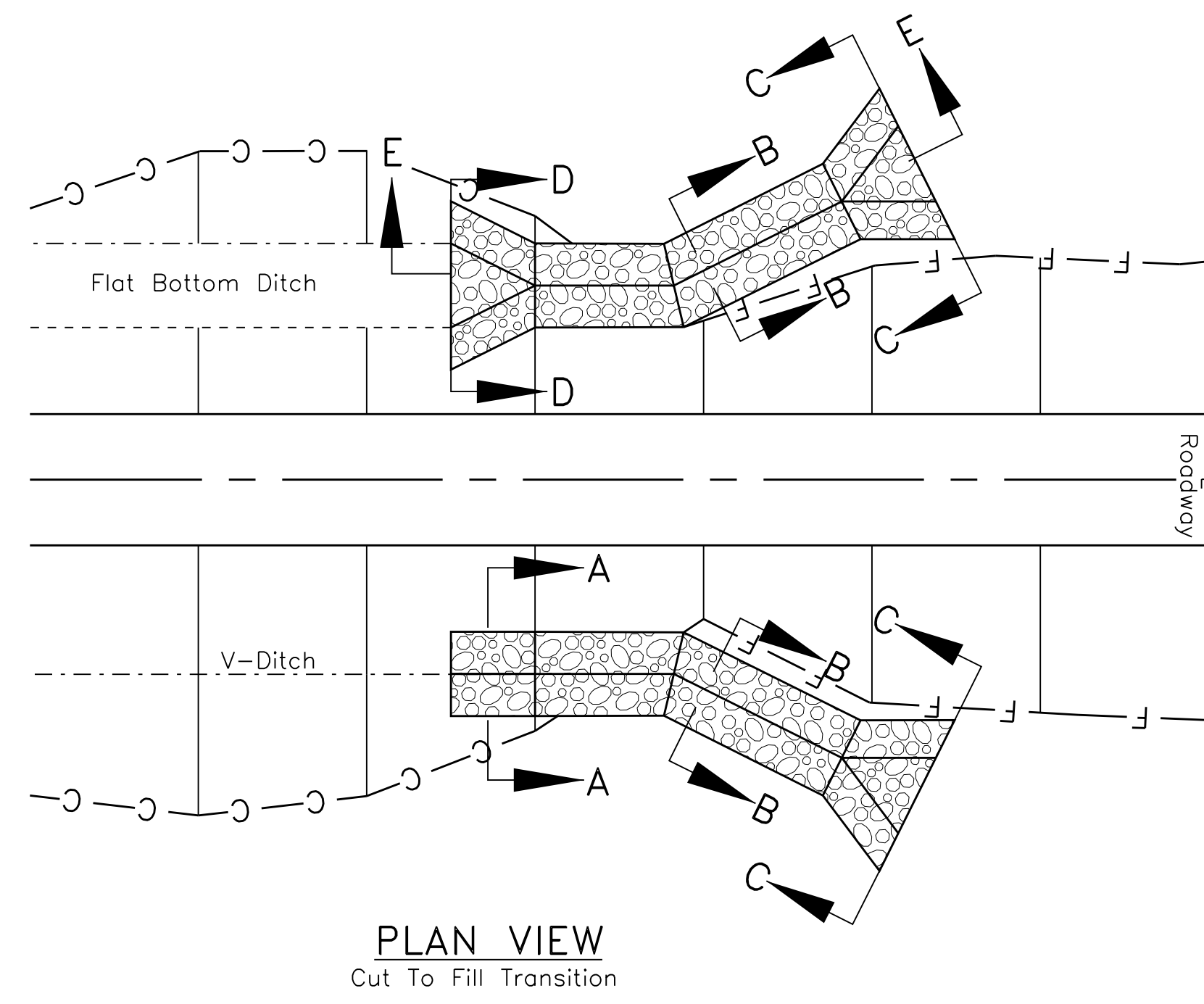
RIPRAP STILLING BASIN DETAIL

DRAWN BY: NRDOT DATE: 8/19/2015
 DESIGNED BY: NRDOT DATE: 8/19/2015
 REVISED: 3/9/2018 BY: NRDOT

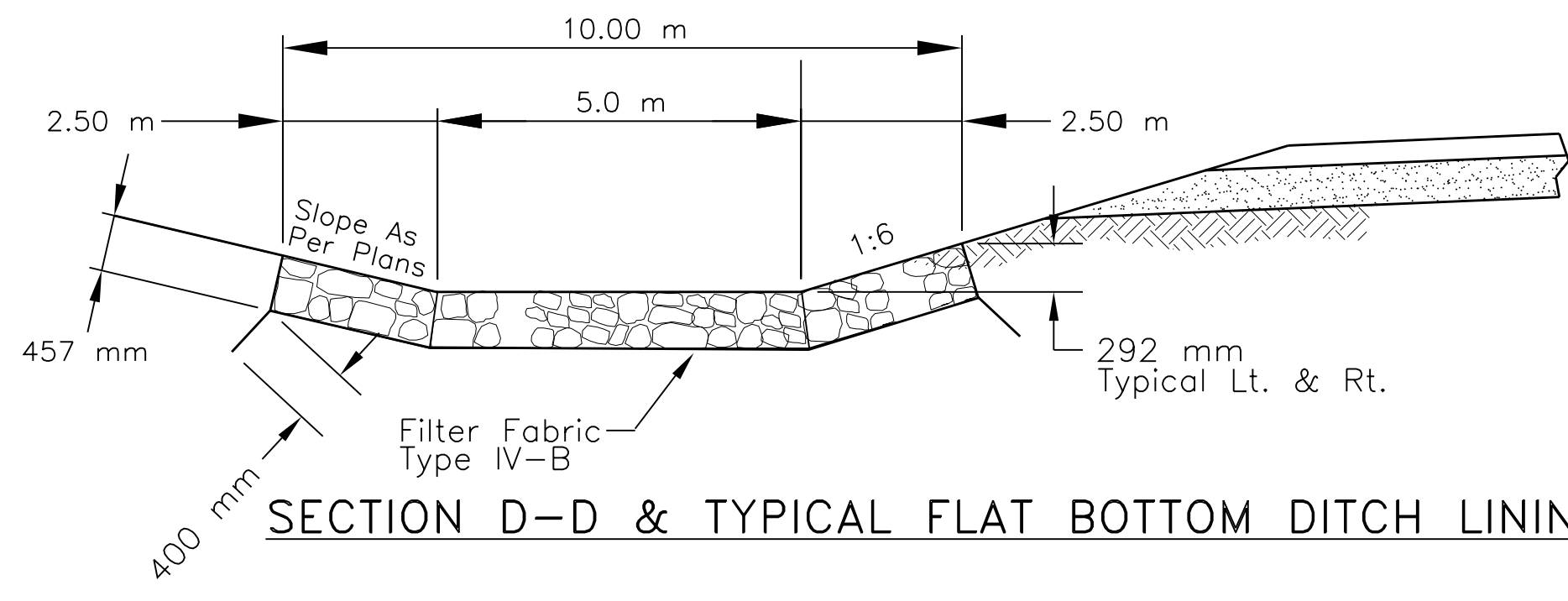


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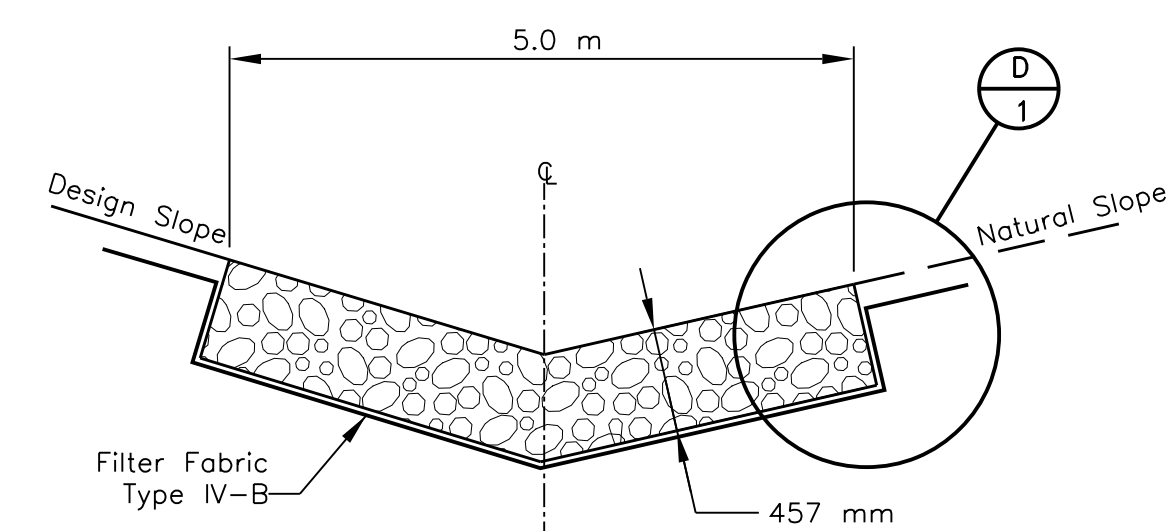
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-2)1,2&4	60	88



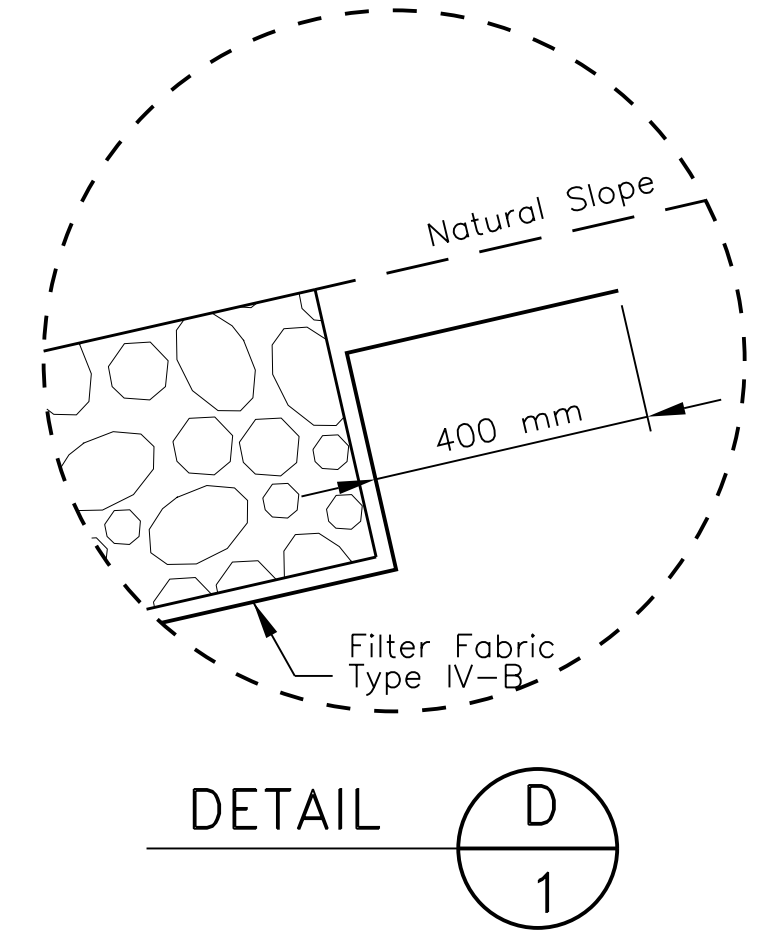
PLAN VIEW
Cut To Fill Transition



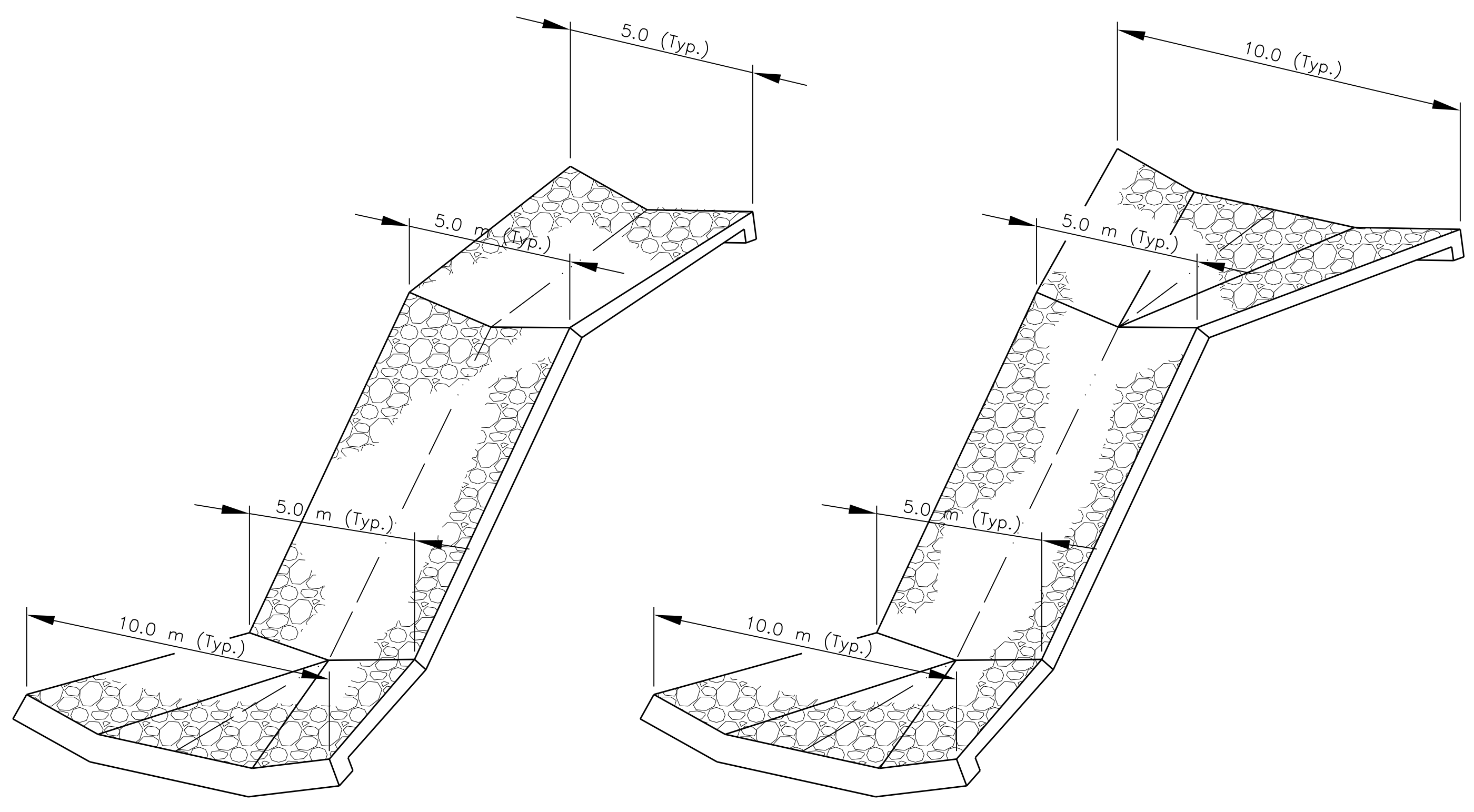
SECTION D-D & TYPICAL FLAT BOTTOM DITCH LINING DETAIL



SECTION A-A
&
SECTION B-B

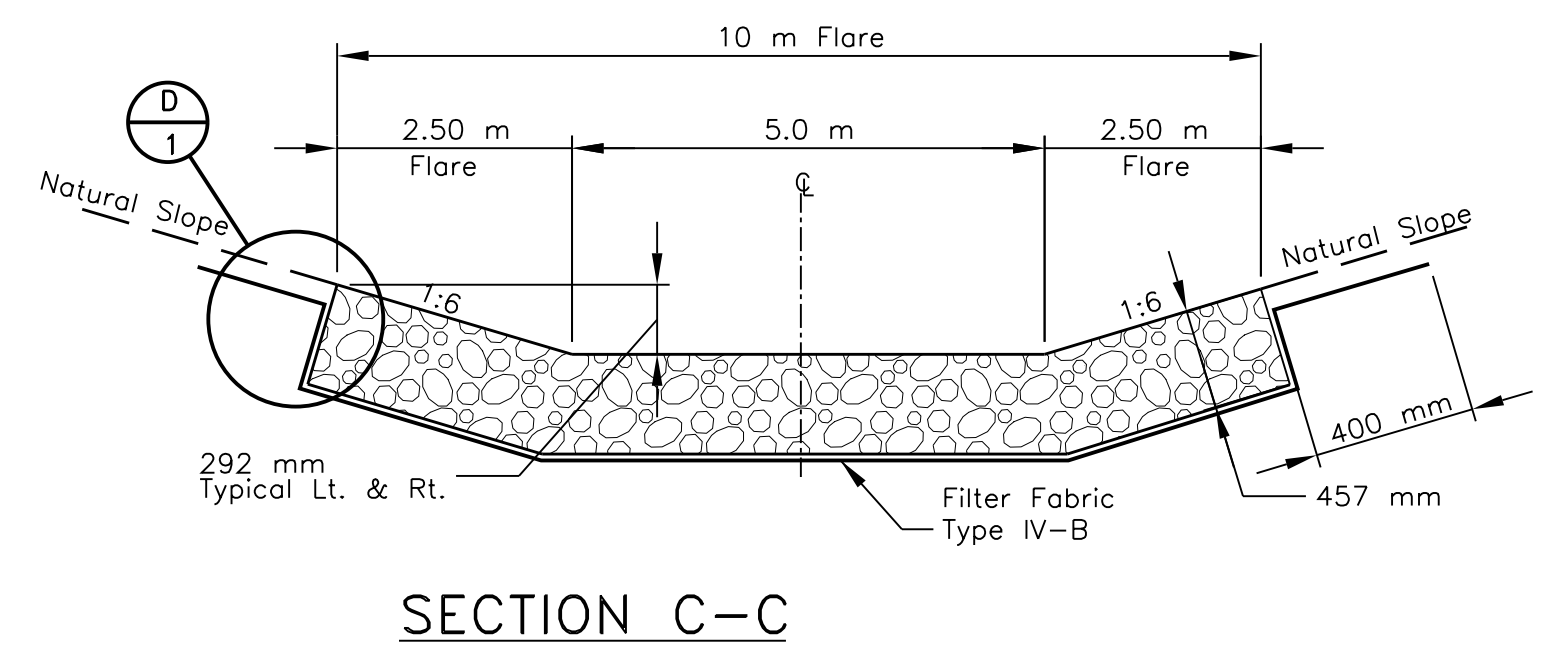


DETAIL D
1

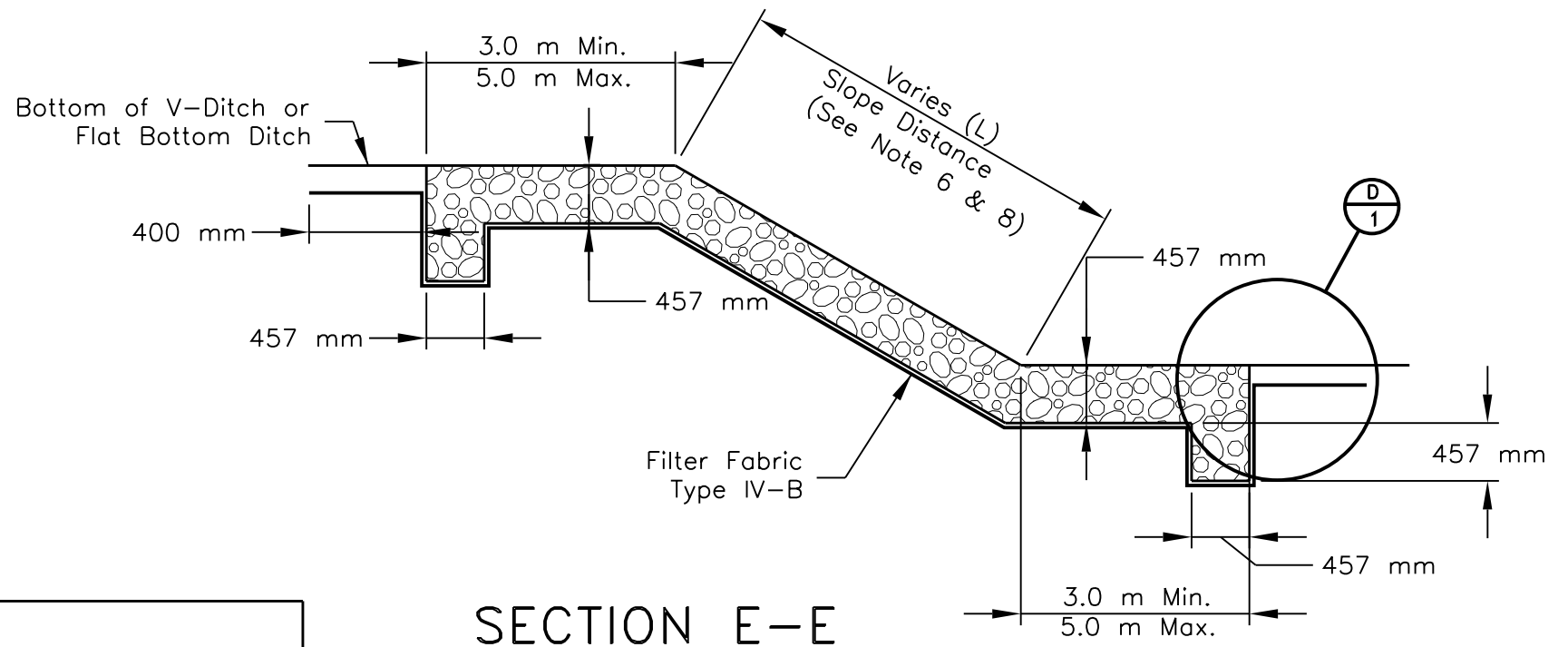


ISOMETRIC VIEW
Cut To Fill Transition & Down Drains
At V-Ditch

ISOMETRIC VIEW
Cut To Fill Transition & Down Drains
At Flat Bottom Ditch



SECTION C-C



SECTION E-E

- 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, EMBANKMENT PROTECTION. THIS WORK SHALL BE INCIDENTAL OBLIGATIONS OF THE CONTRACTOR 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 BACKFILL MATERIAL FROM ON-SITE AS DETERMINED BY THE COR/COTR. ALL BACKFILL MATERIAL SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY AS DETERMINED BY AASHTO T99 METHOD C. THE BACKFILL MATERIAL SHALL CONFORM TO SECTION 208 AND 209 OF THE FP-14. IF SUITABLE ON-SITE MATERIALS CANNOT BE FOUND, IMPORTED MATERIAL WILL BE NEGOTIATED IN ACCORDANCE WITH SECTION 109.02(m).
 - V-DITCH AND CHANNEL RESHAPING, CLEANING, AND EXCAVATION SHALL BE DONE IN ACCORDANCE WITH THE DETAILS SHOWN AND AS ADJUSTED BY THE COR/COTR. ANY WASTE MATERIAL SHALL BE USED AS BORROW WHERE NEEDED IN OTHER PROJECT LOCATION AS DETERMINED BY THE COR/COTR. 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, THE ROCK CUT IS STABLE, THE COR/COTR MAY ELECT TO DELETE SECTIONS OF THE RIPRAP PROTECTION.
 - STONE SIZE SHALL CONFORM TO TABLE 705-1, SECTION 705, STONE FOR RIPRAP, CLASS 2.
 - 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 WITH THE EXISTING GROUND. EXTEND RIPRAP DOWN THE SHOULDER DITCH UNTIL A 2% SLOPE IS ACHIEVED, OR AS DIRECTED BY THE COR/COTR BEFORE PLACEMENT OF THE FLARE SECTION.
 - WIRE ENCLOSED RIPRAP SHALL CONFORM TO SECTION 251 OF THE FP-14 AND THE SUPPLEMENTAL SPECIFICATIONS. WIRE MESH SHALL BE PLACED TO ENCLOSE THE STONE LAYER ON ALL SIDES AND FACES. THE WIRE MESH SHALL BE SPLICED ON ALL EDGES AND SHALL BE DRAWN TIGHTLY AGAINST THE STONE BY MEANS OF 3.8 mm WIRE TIES SPACED 0.61 m LONGITUDINALLY AND TRANSVERSELY.
 - THE WIRE FABRIC SHALL BE GALVANIZED AND BE OF THE CONFIGURATION SHOWN ON THIS SHEET. AN ALTERNATE WIRE FABRIC MAY BE SUBMITTED FOR REVIEW AND APPROVAL. ANY WIRE FABRIC USED SHALL HAVE A MINIMUM WIRE DIAMETER OF 2.8 mm, A CLASS 3 ZINC COATING (GALVANIZED), SHALL HAVE A MINIMUM OPENING DIMENSION OR 100 mm, AND SHALL NOT ALLOW A 75 mm Ø SPHERE TO PASS THROUGH WIRE FABRIC OPENING. SEE SHEET 58 OF 88 FOR WIRE ENCLOSED RIPRAP DETAILS.
 - RIPRAP SHALL BE ANCHORED AS SHOWN WITH L 102mm x 102mm x 9.5mm STEEL ANGLES SPACED AT 2.44 m EACH WAY. STEEL ANGLE SHALL EXTEND 75mm ABOVE THE TOP OF THE MESH. IN ROCKY AREAS, DRIVE ANGLE IRON ANCHORS TO REFUSAL (MIN. EMBEDDED 500mm). THEN CUT AT 75mm ABOVE RIPRAP. ANCHORS SHALL BE SAW CUT TO LEAVE A SMOOTH EDGE. DO NOT USE A CUTTING TORCH. FURNISHING AND PLACEMENT OF STEEL ANGLES SHALL BE CONSIDERED INCIDENTAL TO COMPLETION OF THE STRUCTURE.

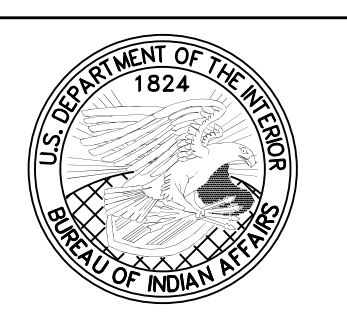
ITEM No. 25112-2000: WIRE ENCLOSED, CLASS 2

STATION TO STATION	LOCATION	LENGTH (m)	VOLUME (m ³)	REMARKS
39+599.95 to 39+652.24	Lt.	59.87	145.65	Cut to Fill Transition & Downdrain
39+589.53 to 39+652.66	Rt.	65.00	157.37	Cut to Fill Transition & Downdrain
41+070.00 to 41+111.75	Lt.	45.67	113.20	Cut to Fill Transition & Downdrain
42+123.77 to 42+160.00	Lt.	39.76	99.70	Cut to Fill Transition & Downdrain
48+856.95 to 48+967.77	Lt.	113.32	267.78	Cut to Fill Transition & Downdrain
48+860.00 to 48+978.87	Rt.	124.00	292.19	Cut to Fill Transition & Downdrain
48+990.94 to 49+060.00	Lt.	69.79	168.32	Cut to Fill Transition & Downdrain
48+986.99 to 49+060.00	Rt.	77.05	184.90	Cut to Fill Transition & Downdrain
50+985.35 to 51+030.81	Lt.	48.89	120.56	Cut to Fill Transition & Downdrain
51+134.56 to 51+165.05	Rt.	30.11	77.65	Cut to Fill Transition & Downdrain
		TOTAL	1,627.31	

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**WIRE ENCLOSED RIPRAP
AT CUT-TO-FILL TRANSITIONS
AND DOWNDRAINS**

DRAWN BY: NRDOT DATE: 10/3/2017
DESIGNED BY: NRDOT DATE: 10/3/2017
REVISED: 10/4/2017 BY: Leroy.Toledo
Sht 60 N12 Cut to Fill RR 100317.dgn

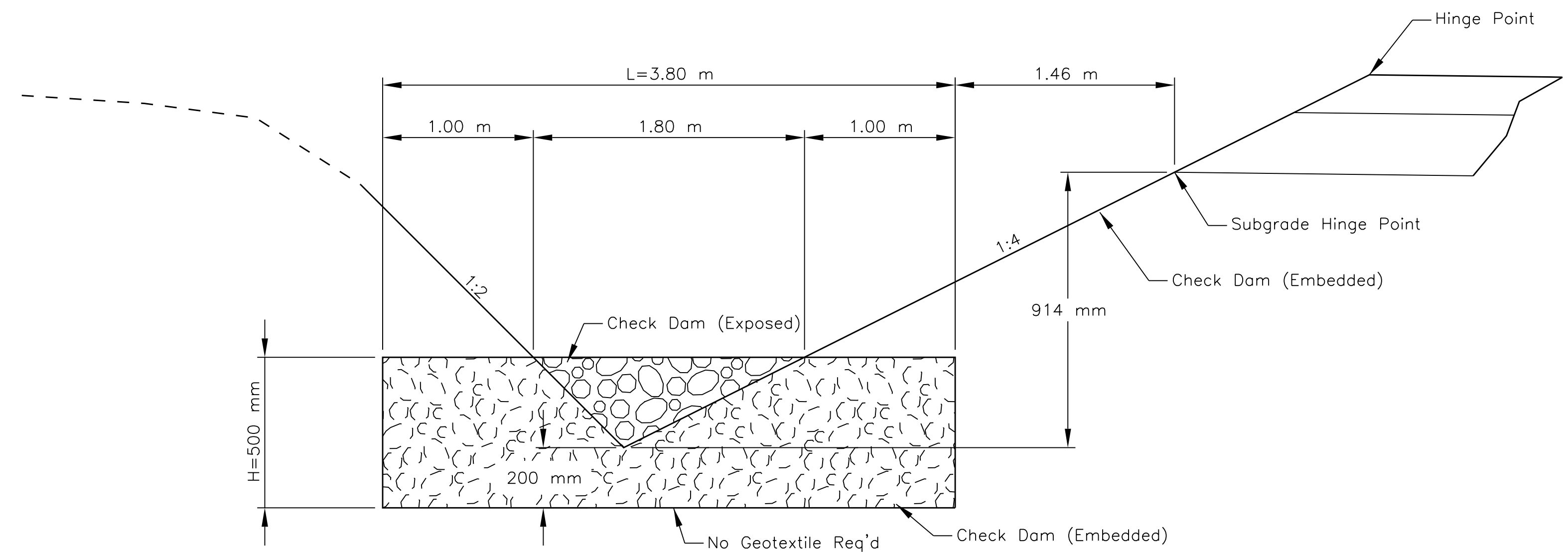
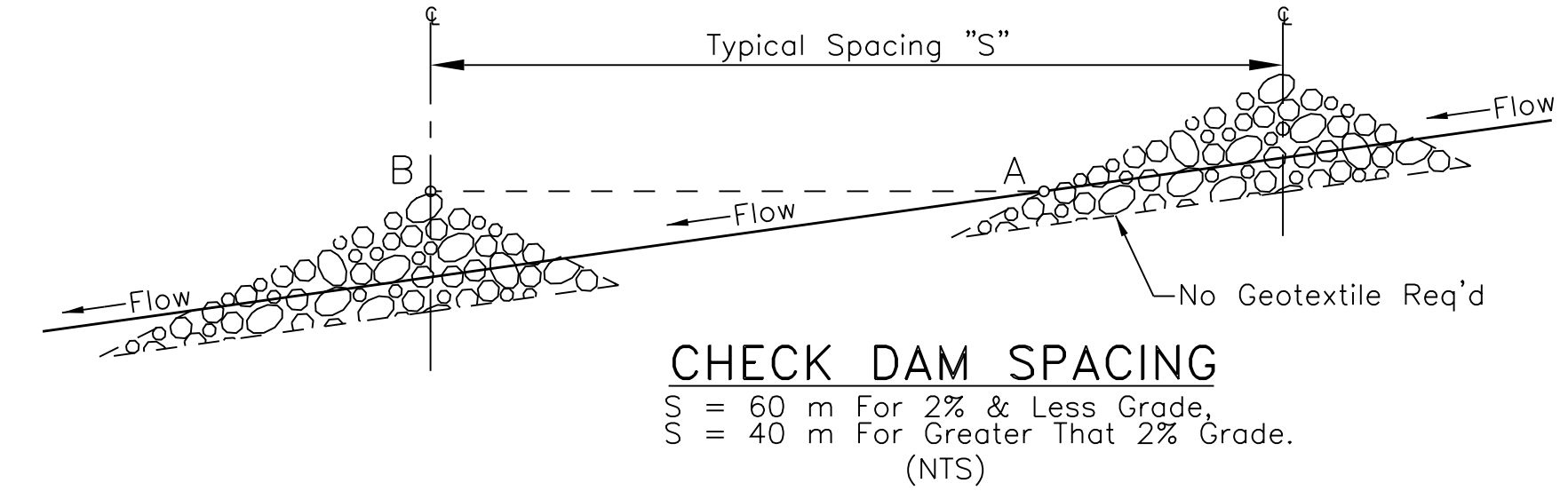
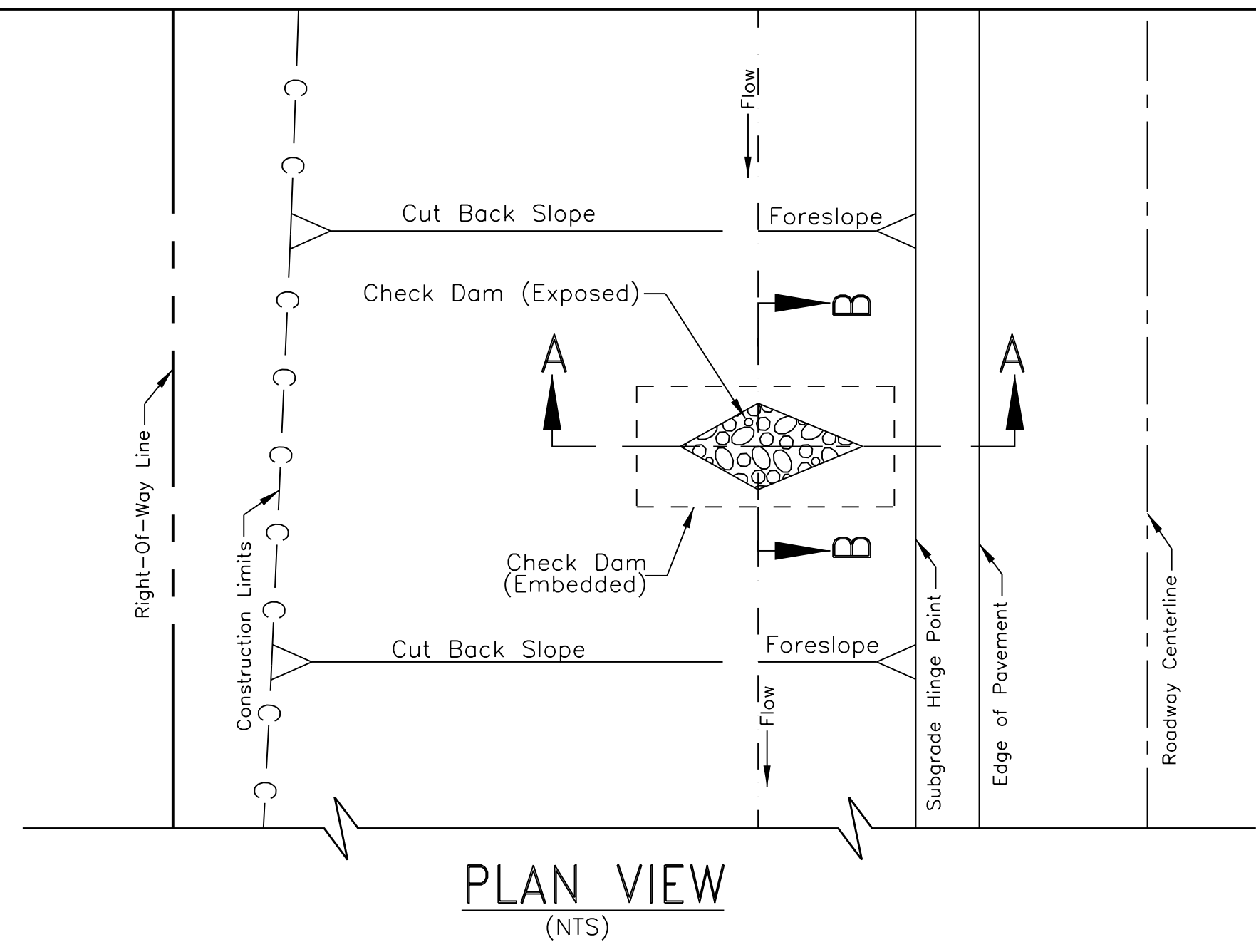


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REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	61	88

GENERAL NOTES

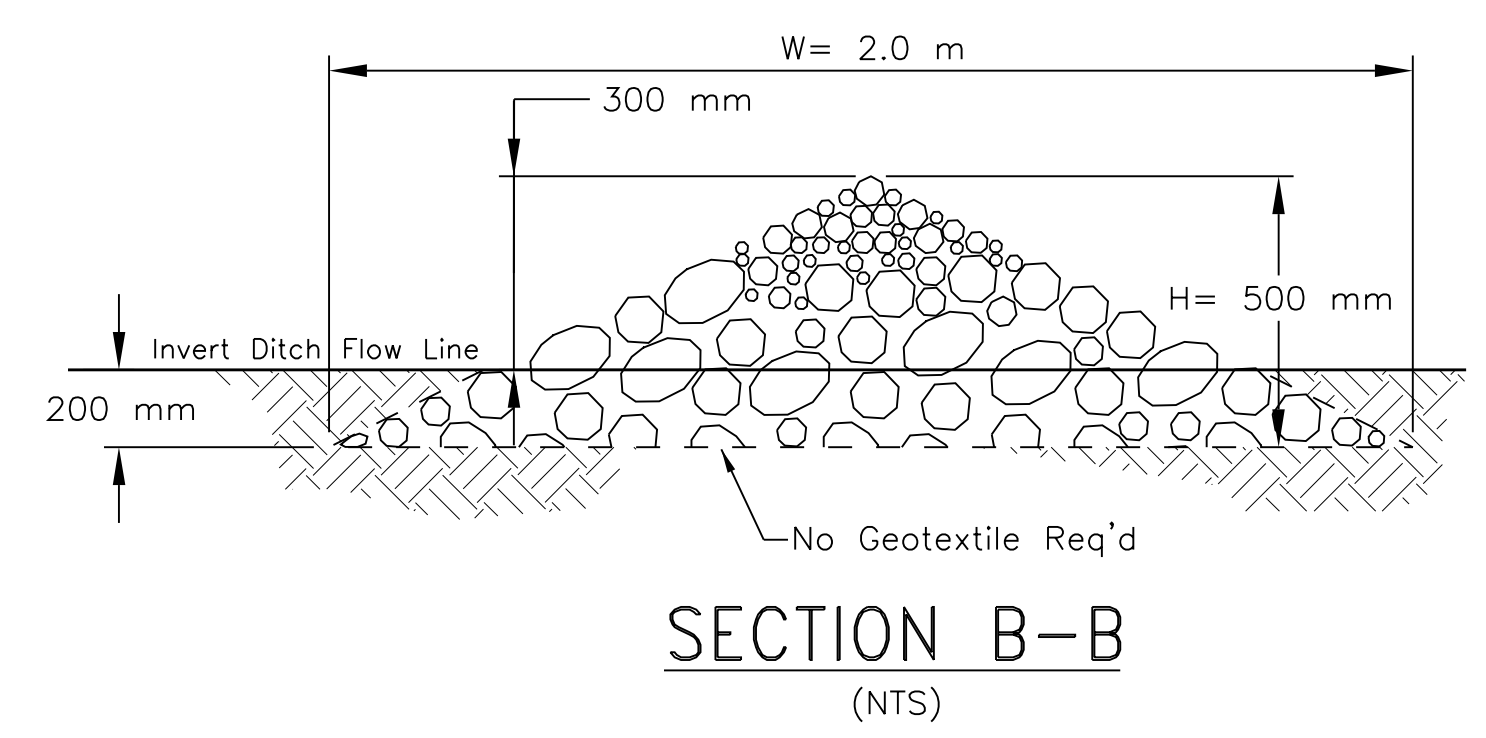
1. WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE STANDARD SPECIFICATION FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS [FP-14].
2. ROUND ALL SHARP CONTOURS AS REQUIRED TO FIT THE SOIL EROSION MATERIAL FLUSH WITH THE EXISTING GROUND.
3. THE CONTRACTOR SHALL BE REQUIRED TO MAKE FIELD 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-14.
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.



SECTION A-A
V-DITCH WITH CLASS 2
RIPRAP CHECK DAM & 1:2 BACKSLOPE
 Sta. 51+060.00 to 51+650.00 Left Only
 (See Table Left)
 (NTS)

ITEM No. 25101-2000: PLACED RIPRAP, CLASS 2
CHECK DAM LOCATION AND ESTIMATED QUANTITIES

STATION	LOCATION	L (m)	W (m)	H (mm)	CUT BACKSLOPE	VOLUME (m ³)
51+060	Lt.	3.80	2.00	500	1:2	1.90
51+100	Lt.	3.80	2.00	500	1:2	1.90
51+140	Lt.	3.80	2.00	500	1:2	1.90
51+180	Lt.	3.80	2.00	500	1:2	1.90
51+220	Lt.	3.80	2.00	500	1:2	1.90
51+300	Lt.	3.80	2.00	500	1:2	1.90
51+340	Lt.	3.80	2.00	500	1:2	1.90
51+380	Lt.	3.80	2.00	500	1:2	1.90
51+420	Lt.	3.80	2.00	500	1:2	1.90
51+460	Lt.	3.80	2.00	500	1:2	1.90
51+500	Lt.	3.80	2.00	500	1:2	1.90
51+520	Lt.	3.80	2.00	500	1:2	1.90
51+580	Lt.	3.80	2.00	500	1:2	1.90
51+620	Lt.	3.80	2.00	500	1:2	1.90
51+650	Lt.	3.80	2.00	500	1:2	1.90
TOTAL						28.50



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
 (NTS)

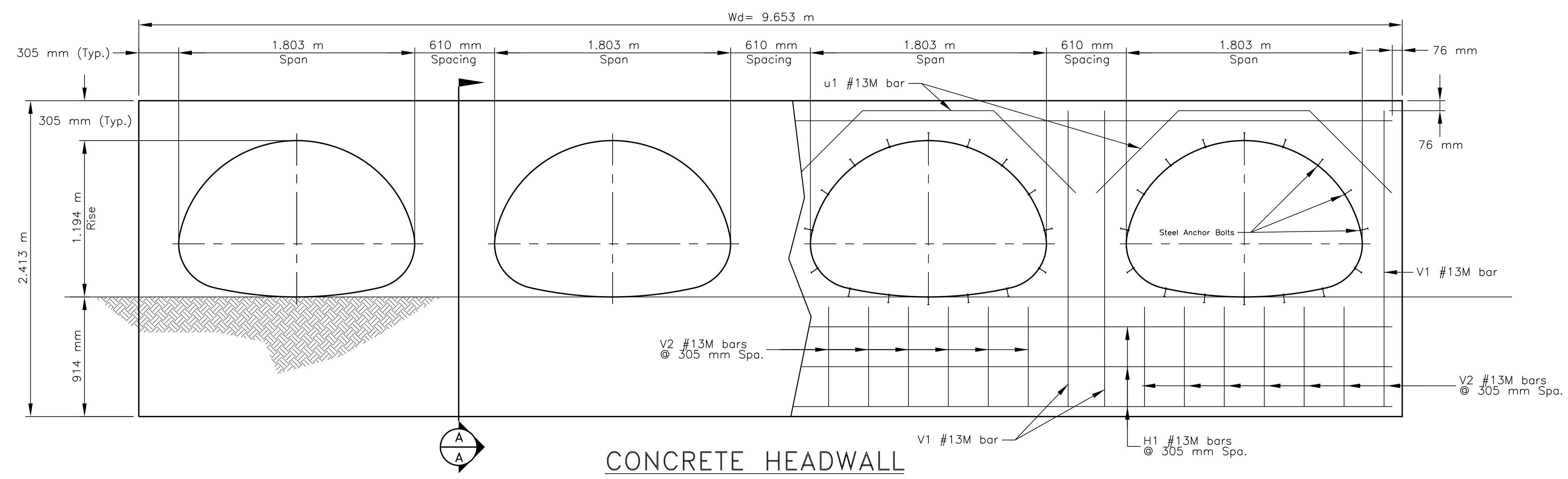
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PLACED RIPRAP CHECK DAM
IN FLAT BOTTOM DITCH

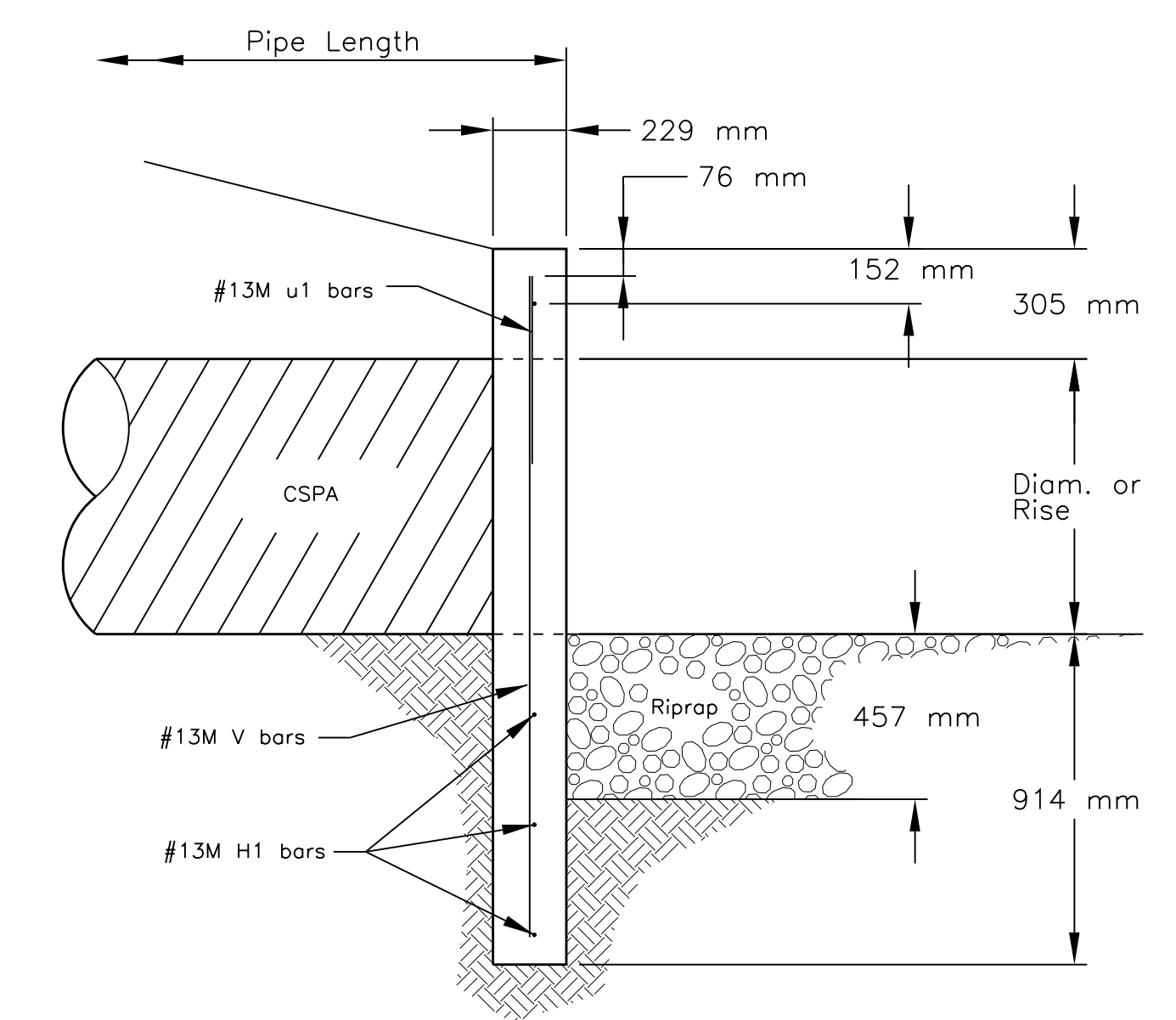
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DESIGNED BY: NRDOT	DATE: 2/2/2012
REVISED: 3/4/2015	BY: Leroy Toledo
SHEET SIZE: Full Size (24x36) Plot Sheet	

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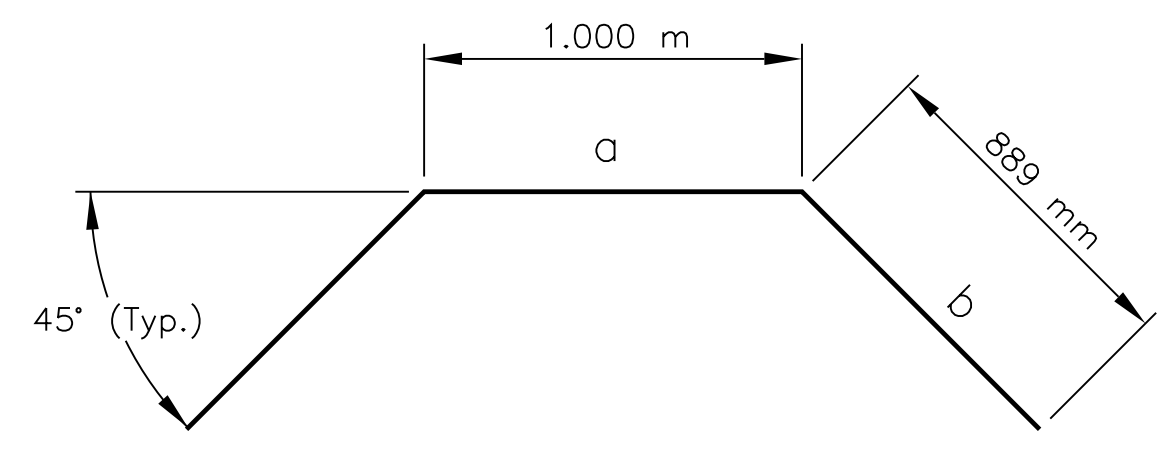
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	62	88



**CONCRETE HEADWALL
ELEVATION VIEW**
4-BARREL 1803 mm Span x 1194 m Rise CSPA



SECTION A-A



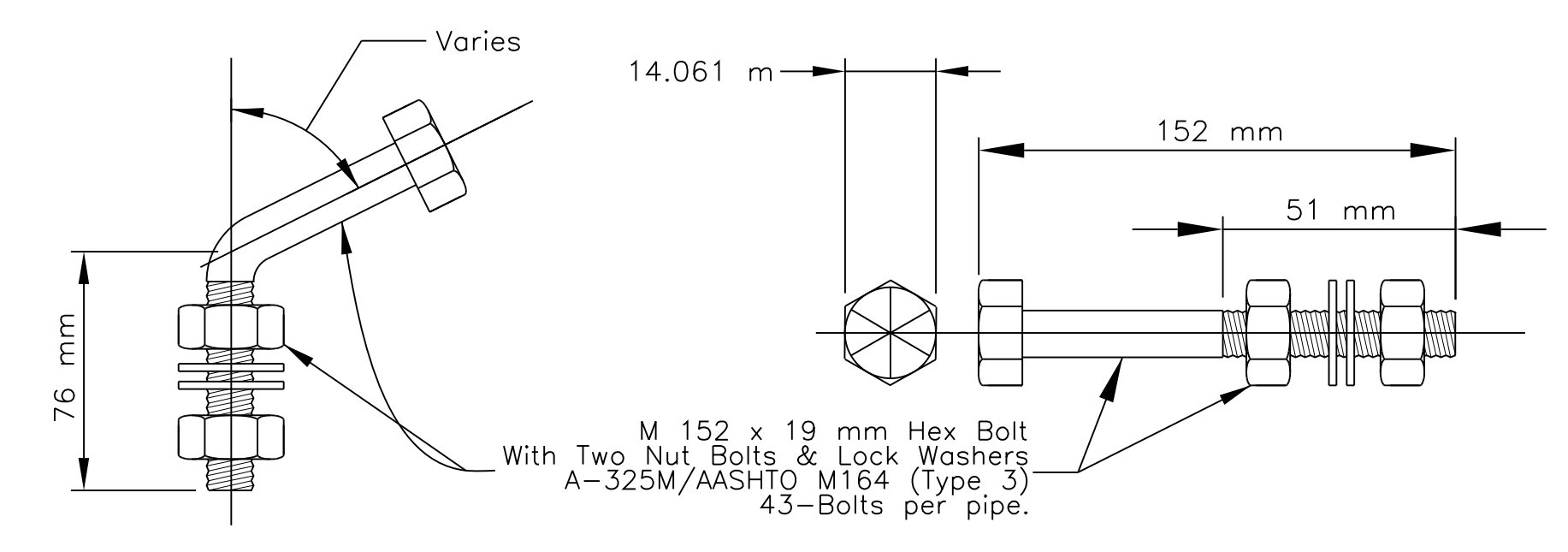
BAR BENDING DIAGRAM (u1 bars)

Project N12(19-4)1,2&4
ITEM No. 60101-0000: MINOR CONCRETE, CLASS A(AE), TYPE II

STATION	LOCATION	INLET (m ³)	VOLUME	OUTLET (m ³)	TOTAL VOLUME (m ³)	REMARKS
54+615.00	Under TO Rt.	3.794		3.794	7.588	4-1803 mm S x 1194 mm R CSPA
54+720.00	Under TO Rt.	3.794		3.794	7.588	4-1803 mm S x 1194 mm R CSPA
54+720.00	Under TO Rt.	3.794		3.794	7.588	4-1803 mm S x 1194 mm R CSPA
54+952.00	Under TO Rt.	3.794		3.794	7.588	4-1803 mm S x 1194 mm R CSPA
TOTAL					30.352	

REINFORCING BAR SCHEDULE

Station	Location	mark:	size:	No. req'd	length (m)	kg/m ²	Total wt (kg)	a*(mm)	b*(mm)	Remarks:	
54+615.00	Under Turnout at Right	Straight reinforcing bars (Type 1)									Headwall With 4-barrel 1803 mm S x 1194 mm R CSPA
		V1	#13M	8	2.261	0.994	17.979				
		V2	#13M	24	0.762	0.994	18.178				
		H1	#13M	4	9.501	0.994	37.776				
		Bent reinforcing bars									
		u1	#13M	4	2.778	0.994	11.045	1000	889		
		54+720.00	Under Turnout at Right	Straight reinforcing bars (Type 1)									Headwall With 4-barrel 1803 mm S x 1194 mm R CSPA
V1	#13M			8	2.261	0.994	17.979				
V2	#13M			24	0.762	0.994	18.178				
H1	#13M			4	9.501	0.994	37.776				
Bent reinforcing bars											
u1	#13M			4	2.778	0.994	11.045	1000	889		
54+720.00	Under Turnout at Right			Straight reinforcing bars (Type 1)										Headwall With 4-barrel 1803 mm S x 1194 mm R CSPA
		V1	#13M	8	2.261	0.994	17.979				
		V2	#13M	24	0.762	0.994	18.178				
		H1	#13M	4	9.501	0.994	37.776				
		Bent reinforcing bars									
		u1	#13M	4	2.778	0.994	11.045	1000	889		
		54+952.00	Under Turnout at Right	Straight reinforcing bars (Type 1)									Headwall With 4-barrel 1803 mm S x 1194 mm R CSPA
V1	#13M			8	2.261	0.994	17.979				
V2	#13M			24	0.762	0.994	18.178				
H1	#13M			4	9.501	0.994	37.776				
Bent reinforcing bars											
u1	#13M			4	2.778	0.994	11.045	1000	889		
					Sub-Total	339.916		Per 1-Wall			
					Grand-Total	679.832		Both Walls @ Inlet & Outlet			



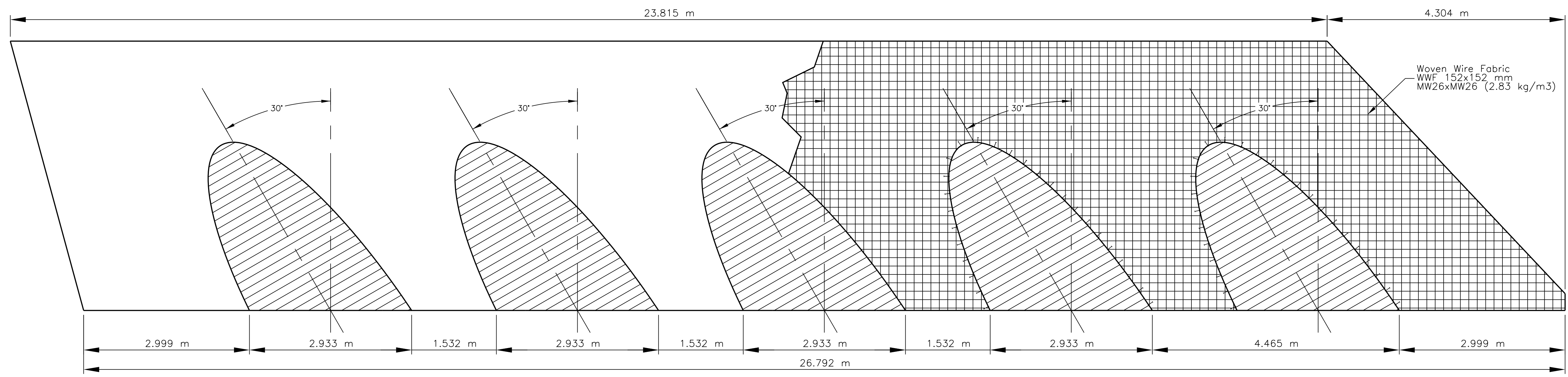
BENT AND STRAIGHT ANCHOR BOLT DETAIL
(nts)

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 NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

**CONCRETE HEADWALL
LAYOUT DETAIL FOR CSPA**

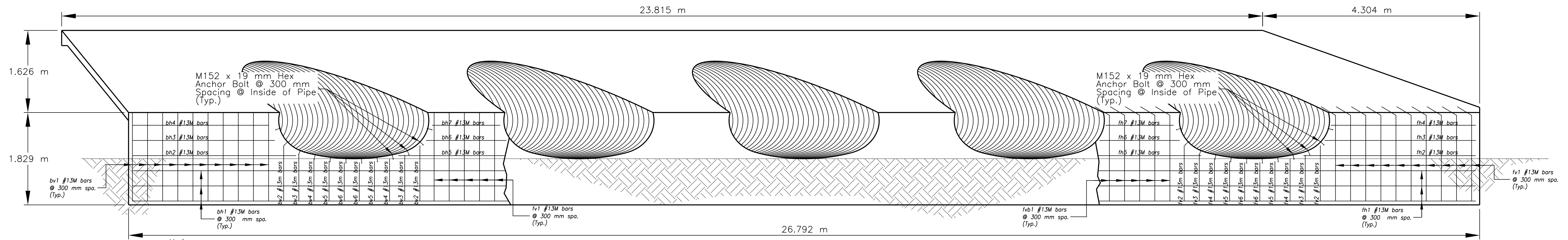
DRAWN BY: NRDOT	DATE: 3/17/2017
DESIGNED BY: NRDOT	DATE: 3/17/2017
REVISED: 10/12/2017	BY: Leroy.Toledo
Sht 62 N12 TO HdWlls DtlS.dgn	

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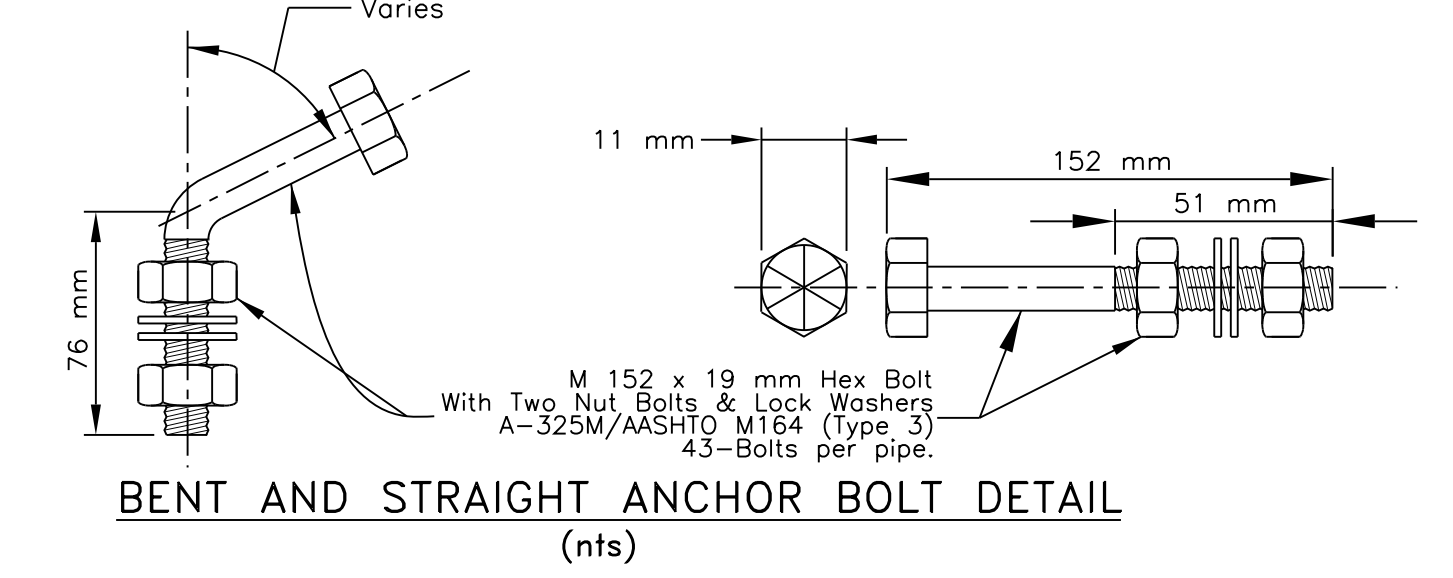


See Sheet 64 For General Notes

PLAN VIEW
Sta. 41+838.80 CSPC Inlet Only



ELEVATION
Sta. 41+836.70 CSPC Inlet Only



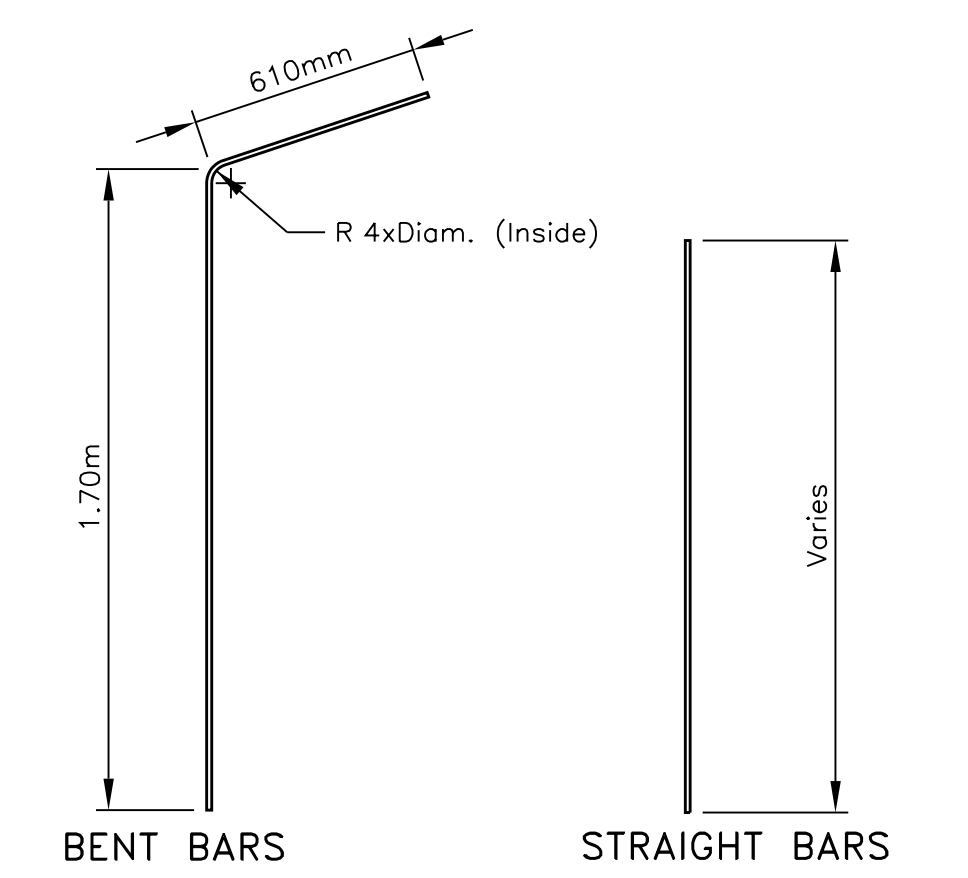
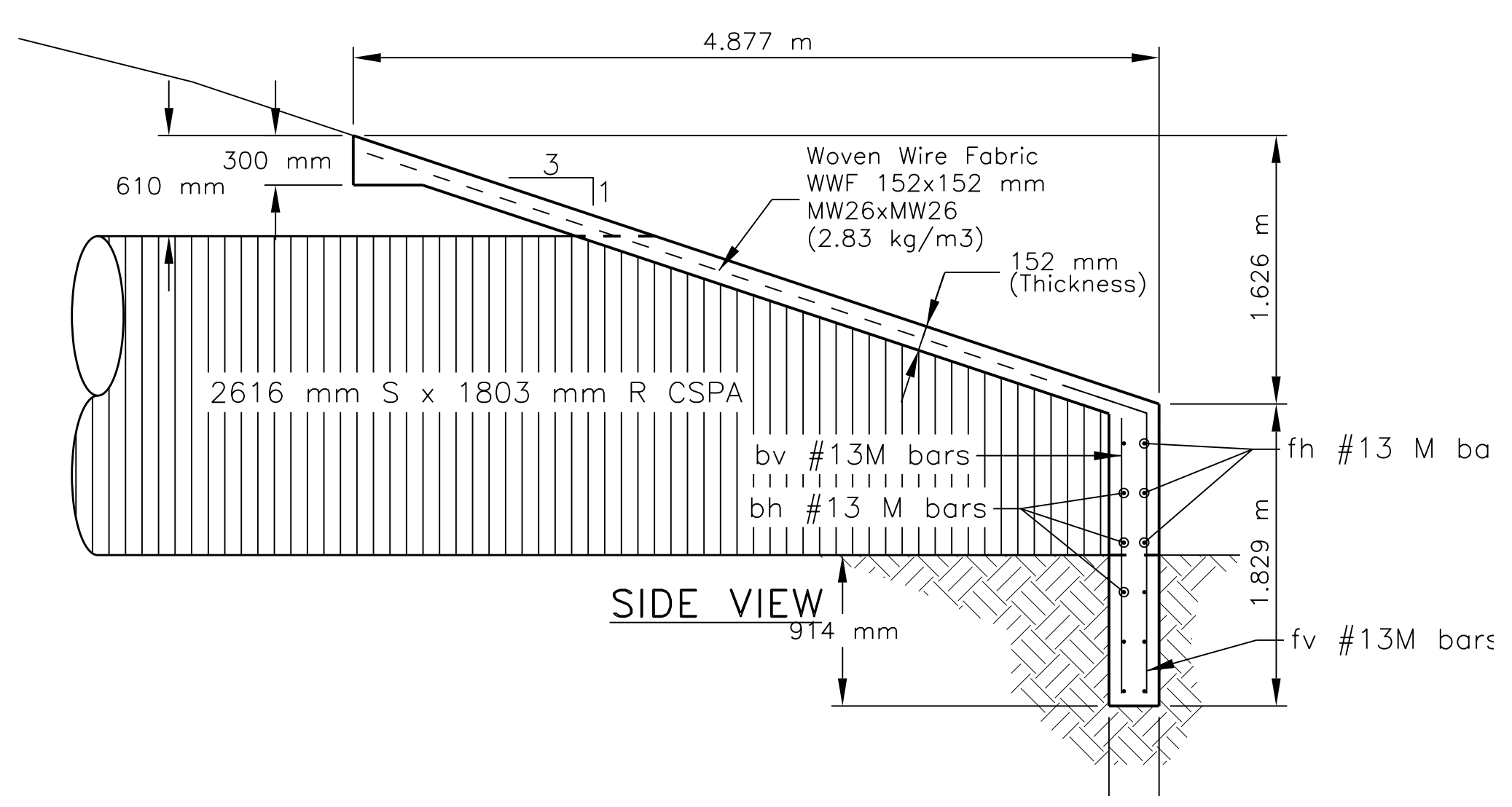
ITEM 60101-1000: MINOR CONCRETE (AE)

STATION	STRUCTURE	Vol. (m ³)	Area (m ²)	WWF (kg) **	Remarks
41+838.80	5-2616 mm S x 1803 mm R CSPA	25.62	95.65	270.69	
TOTAL		25.62	95.65	270.69	

** WWF Unit Wt. 2.83 kg/m²

REINFORCING BAR SCHEDULE

Mark	No. of Bars	Length (m)	Size	kg/m	Total Wt. (kg)	Remarks
Sta. 41+838.80 5-Barrel 2616 mm S x 1803 mm R CSPA Inlet						
fh1	3	26.400	#13M	0.994	78.725	Front Horizontal Straight Bars, Bottom of Pipes
fh2	2	3.420	#13M	0.994	6.799	Front Horizontal Straight Bars, Outside of Pipes
fh3	2	2.998	#13M	0.994	5.960	Front Horizontal Straight Bars, Outside of Pipes
fh4	2	2.876	#13M	0.994	5.717	Front Horizontal Straight Bars, Outside of Pipes
fh5	4	2.438	#13M	0.994	9.693	Front Horizontal Straight Bars, Between Pipes
fh6	4	1.595	#13M	0.994	6.342	Front Horizontal Straight Bars, Between Pipes
fh7	4	1.350	#13M	0.994	5.368	Front Horizontal Straight Bars, Between Pipes
fv1	40	2.308	#13M	0.994	91.766	Front Vertical Bent Bars, Left, Right & Between Pipes a= 610 mm b= 1700 mm
fv2	10	1.101	#13M	0.994	10.944	Front Vertical Straight Bars, Under Pipes
fv3	10	0.913	#13M	0.994	9.075	Front Vertical Straight Bars, Under Pipes
fv4	10	0.836	#13M	0.994	8.310	Front Vertical Straight Bars, Under Pipes
fv5	10	0.789	#13M	0.994	7.843	Front Vertical Straight Bars, Under Pipes
fv6	10	0.765	#13M	0.994	7.604	Front Vertical Straight Bars, Under Pipes
bh1	3	26.400	#13M	0.994	78.725	Back Horizontal Straight Bars, Bottom of Pipes
bh2	2	3.420	#13M	0.994	6.799	Back Horizontal Straight Bars, Bottom of Pipes
bh3	2	2.998	#13M	0.994	5.960	Back Horizontal Straight Bars, Bottom of Pipes
bh4	2	2.876	#13M	0.994	5.717	Back Horizontal Straight Bars, Bottom of Pipes
bh5	4	2.438	#13M	0.994	9.693	Back Horizontal Straight Bars, Between of Pipes
bh6	4	1.595	#13M	0.994	6.342	Back Horizontal Straight Bars, Between of Pipes
bh7	4	1.350	#13M	0.994	5.368	Back Horizontal Straight Bars, Between of Pipes
bv1	40	1.669	#13M	0.994	66.359	Back Vertical Straight Bars, Left, Right & Between Pipes
bv2	10	1.101	#13M	0.994	10.944	Back Vertical Straight Bars, Under Pipes
bv3	10	0.913	#13M	0.994	9.075	Back Vertical Straight Bars, Under Pipes
bv4	10	0.836	#13M	0.994	8.310	Back Vertical Straight Bars, Under Pipes
bv5	10	0.789	#13M	0.994	7.843	Back Vertical Straight Bars, Under Pipes
bv6	10	0.765	#13M	0.994	7.604	Back Vertical Straight Bars, Under Pipes
Total?					482.885	



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STA 41+838.80 CONCRETE
SLOPE PAVING DETAIL

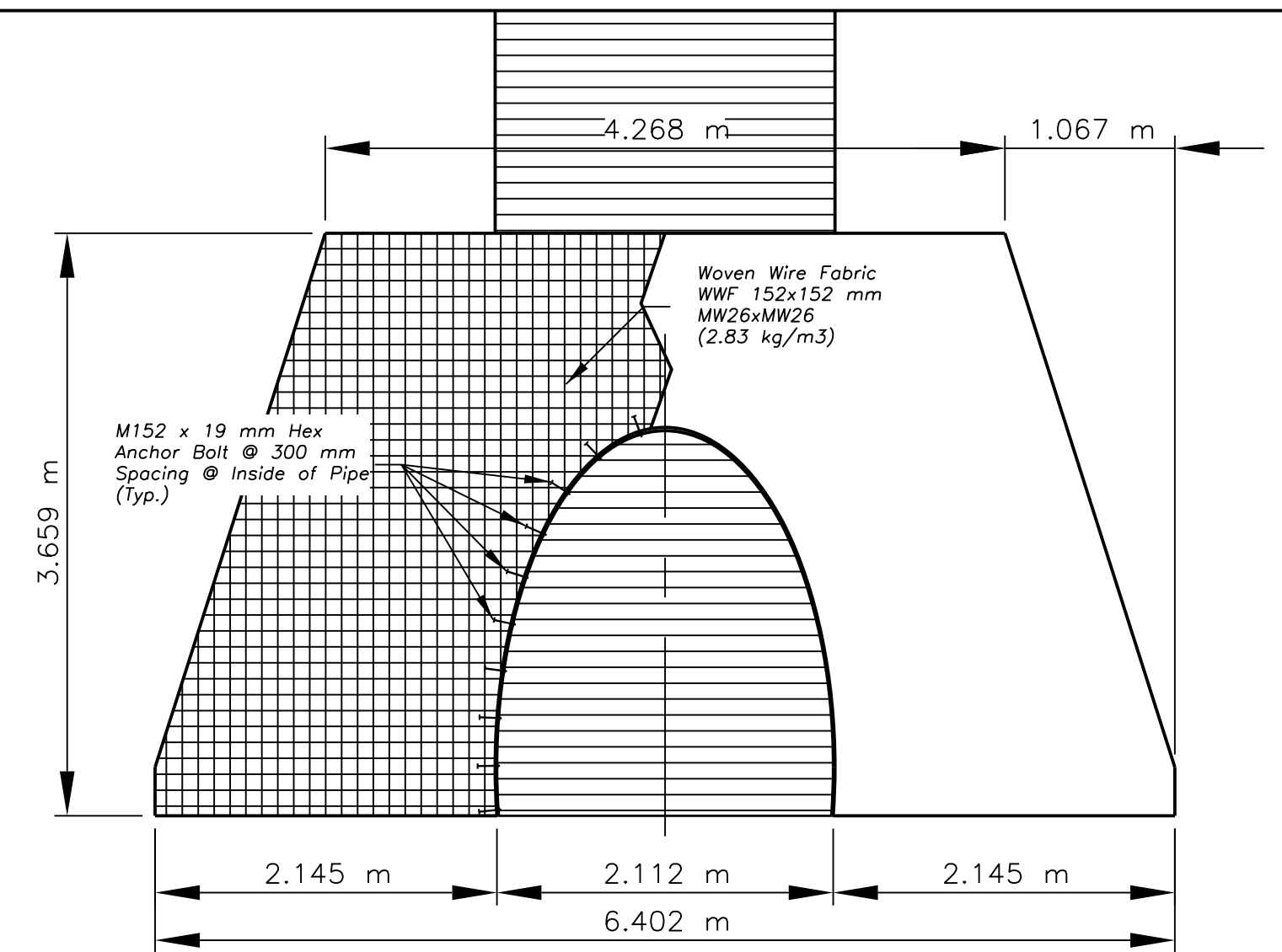
DRAWN BY: NRDOT DATE: 4/9/2014
DESIGNED BY: NRDOT DATE: 4/9/2014
REVISED: 3/9/2018 BY: Leroy.Toledo

Sht 63 REV Slope Paving 1.dgn

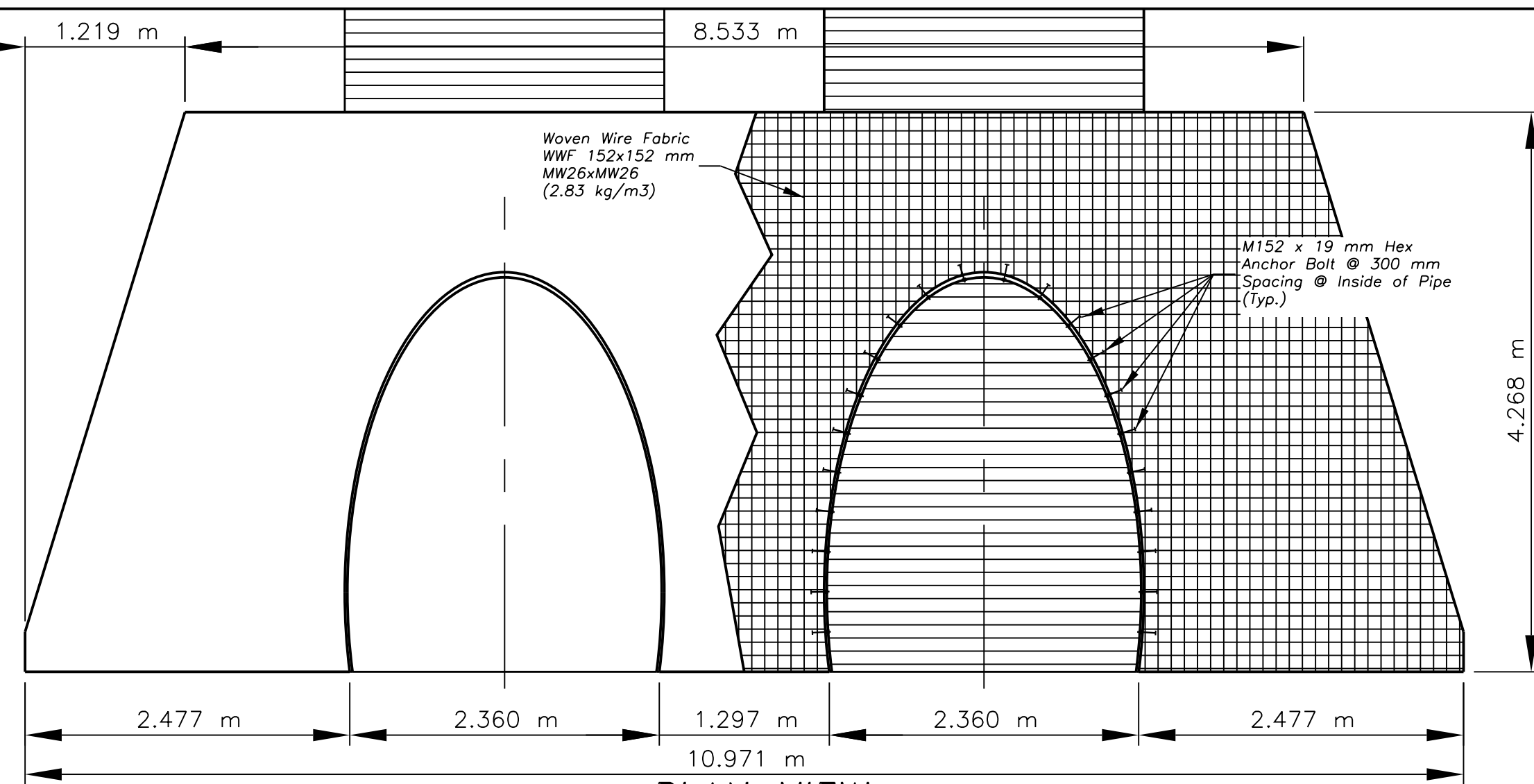
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	64	88

GENERAL NOTES

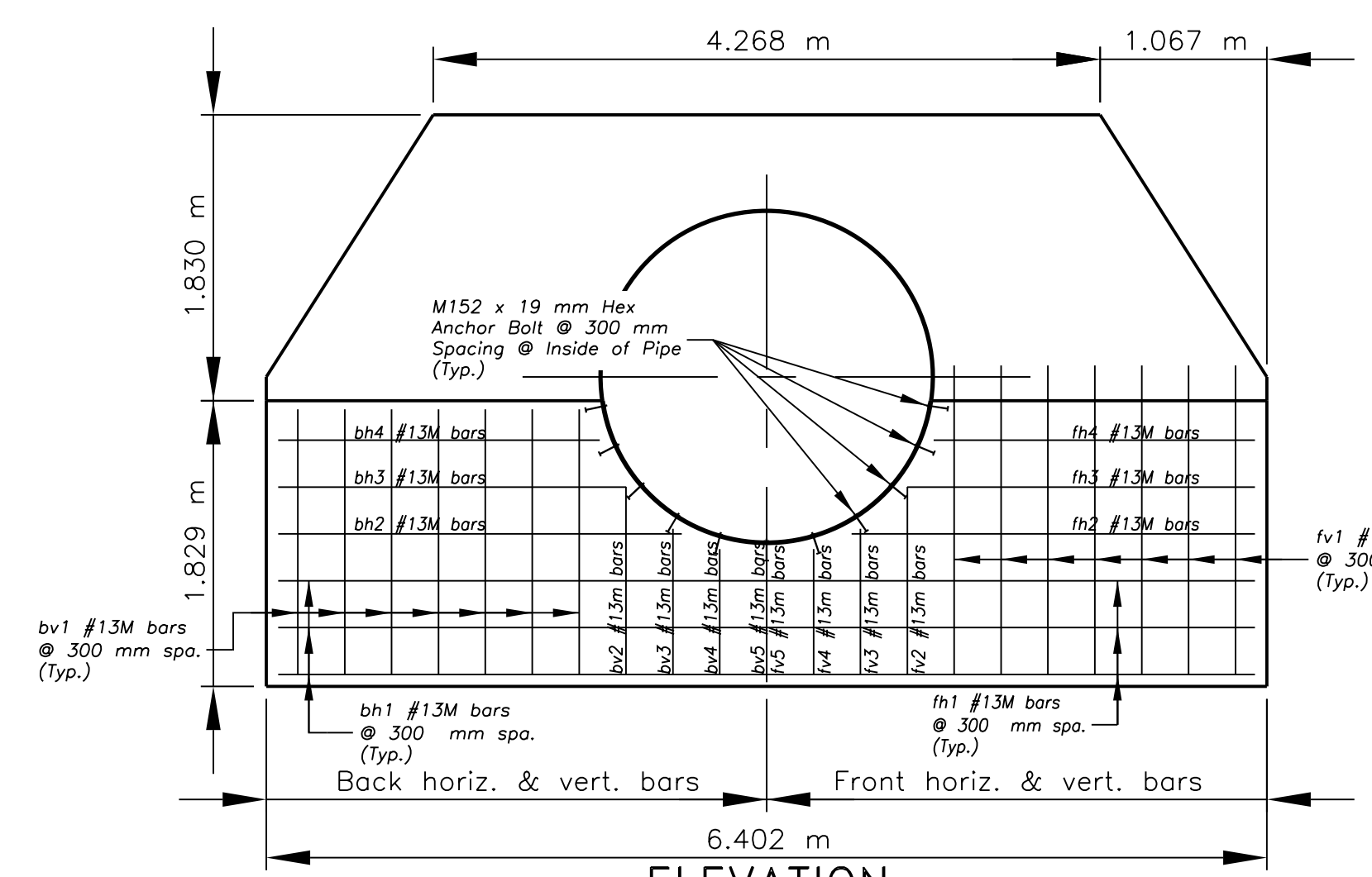
- ALL WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-14).
- ALL CONCRETE SHALL BE CLASS A(AE) WITH CLASS 1 FINISH. CHAMFER ALL EXPOSED EDGES 19 mm. THE CONCRETE SHALL CONFORM TO SECTION 601 "MINOR CONCRETE" OF FP-14. $F'_c = 20.68 \text{ MPa}$.
- REINFORCING STEEL SHALL CONFORM TO AASHTO SPECIFICATION M-31 (ASTM A 615M), GRADE 420, AND SECTION 554 OF FP-14. FURNISHING AND PLACEMENT OF REBARS, ANCHOR BOLT, AND WELDED WIRE FABRIC SHALL BE CONSIDERED INCIDENTAL TO CONTRACT BID ITEM 60101-0000.
- ALL STRUCTURE EXCAVATION AND EMBANKMENT AROUND THE CONCRETE BLANKET SHALL BE DONE TO NEAT LINES AND WILL BE CONSIDERED INCIDENTAL TO COMPLETION OF THE STRUCTURE.
- THE CONTRACTOR SHALL BE REQUIRED TO MAKE ANY NECESSARY FIELD ADJUSTMENTS TO FIT EXISTING FIELD CONDITIONS, AS DIRECTED BY THE COR/COTR. NO ADDITIONAL PAYMENT SHALL BE MADE FOR SUCH ADJUSTMENTS.
- IF UNSUITABLE MATERIAL IS FOUND AT THE FOOTING LOCATION AND ELEVATIONS, THE MATERIAL SHALL BE REMOVED AND REPLACED WITH APPROVED UNCLASSIFIED BACKFILL AS DETERMINED BY THE COR/COTR. ALL UNCLASSIFIED BACKFILL SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY AS DETERMINED BY AASHTO T99 METHOD C, BEFORE AND AFTER FOOTINGS ARE PLACED. THE UNCLASSIFIED BACKFILL MATERIAL SHALL CONFORM TO SECTION 208 AND 209 OF FP-14. FURNISHING AND PLACEMENT OF UNCLASSIFIED BACKFILL SHALL BE ACCORDANCE WITH SECTION 109.02(m), 204 & 209.
- ALL FOOTING EXCAVATIONS SHALL BE INSPECTED AND APPROVED BY THE COR/COTR PRIOR TO PLACEMENT OF FORMS, REINFORCING STEEL, AND SUBSEQUENT CONCRETE.
- CHANNEL RESHAPING, CLEANING, AND EXCAVATION SHALL BE DONE IN ACCORDANCE WITH THE PLANS AND AS DETERMINED BY THE COR/COTR. ANY WASTE MATERIAL SHALL BE USED AS BORROW WHERE NEEDED IN OTHER PROJECT LOCATION AS DESIGNATED AND APPROVAL BY THE COR/COTR. ALL CHANNEL EXCAVATION, CLEANING, AND RESHAPING SHALL BE CONSIDERED INCIDENTAL TO COMPLETION OF THE STRUCTURE.
- IN NO CASE SHALL ANY BACKFILL BE PLACED UNTIL THE CONCRETE HAS ATTAINED A COMPRESSIVE STRENGTH OF 17.24 MPa.
- ESTIMATED QUANTITIES OF TABULATED CONCRETE, WELDED WIRE FABRIC, AND REINFORCING STEEL AND NOTED SIZE OF STRUCTURE(S) ARE FOR ONE (1) SLOPE BLANKET AT A GIVEN STATION. CONCRETE BLANKETS ARE REQUIRED AT INLET SIDE OF THE DRAINAGE STRUCTURE(S) ONLY, UNLESS OTHERWISE NOTED.
- AT LOCATIONS WHERE THE TOP EDGE OF THE CONCRETE BLANKET EXTENDS BEYOND/NEAR THE HINGE POINT OR CANNOT BE INSTALLED DUE TO INSUFFICIENT COVER OVER THE PIPES, THE CONTRACTOR SHALL BE REQUIRED TO ADJUST THE VERTICAL HEIGHT ABOVE THE PIPE(S) TO 305 mm AND INSTALL TWO (2) ADDITIONAL #13M REBARS SET VERTICALLY $\pm 152 \text{ mm}$ APART W/76 mm MINIMUM COVER ALL AROUND ACROSS THE ENTIRE WIDTH OF THE STRUCTURE AND WILL BE CONSIDERED INCIDENTAL TO COMPLETION OF THE STRUCTURE.
- EROSION CONTROL MATTING SHALL CONFORM TO SECTION 629 AND 713.17(k) OF THE FP-14 FOR TYPE IV-B MATERIAL, AND SHALL BE INCIDENTAL TO THE UNIT PRICE FOR ITEM 60101-0000. MATTINGS SHALL BE TUCKED OR EMBEDDED INTO EMBANKMENT ALONG ALL EDGES AS SHOWN. SEE SHEET 53 OF 88 FOR EROSION CONTROL MATTING INSTALLATION DETAILS.



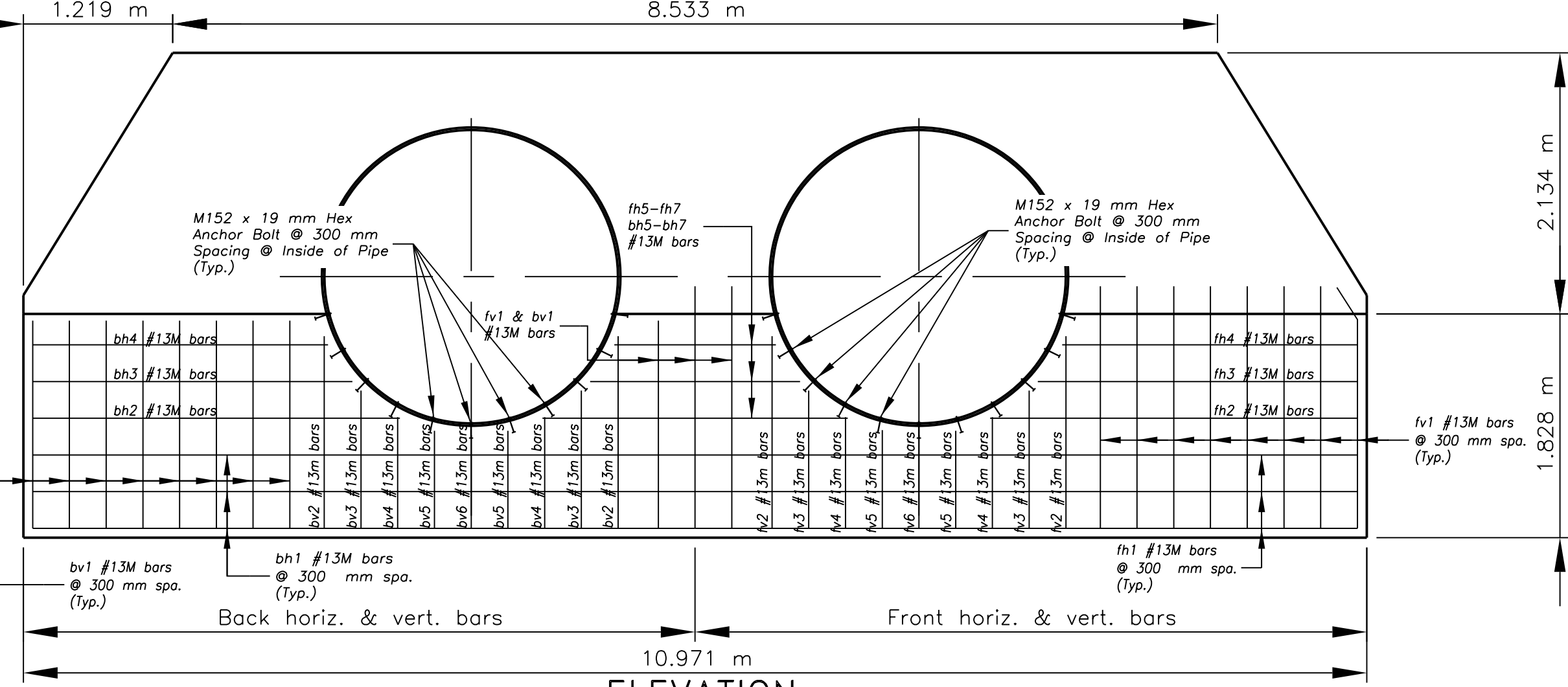
PLAN VIEW
Sta. 48+982.22 CSCP Inlet Only



PLAN VIEW
Sta. 52+780.00 CSCP Inlet Only



ELEVATION
Sta. 48+982.22 CSCP Inlet Only



ELEVATION
Sta. 52+780.00 CSCP Inlet Only

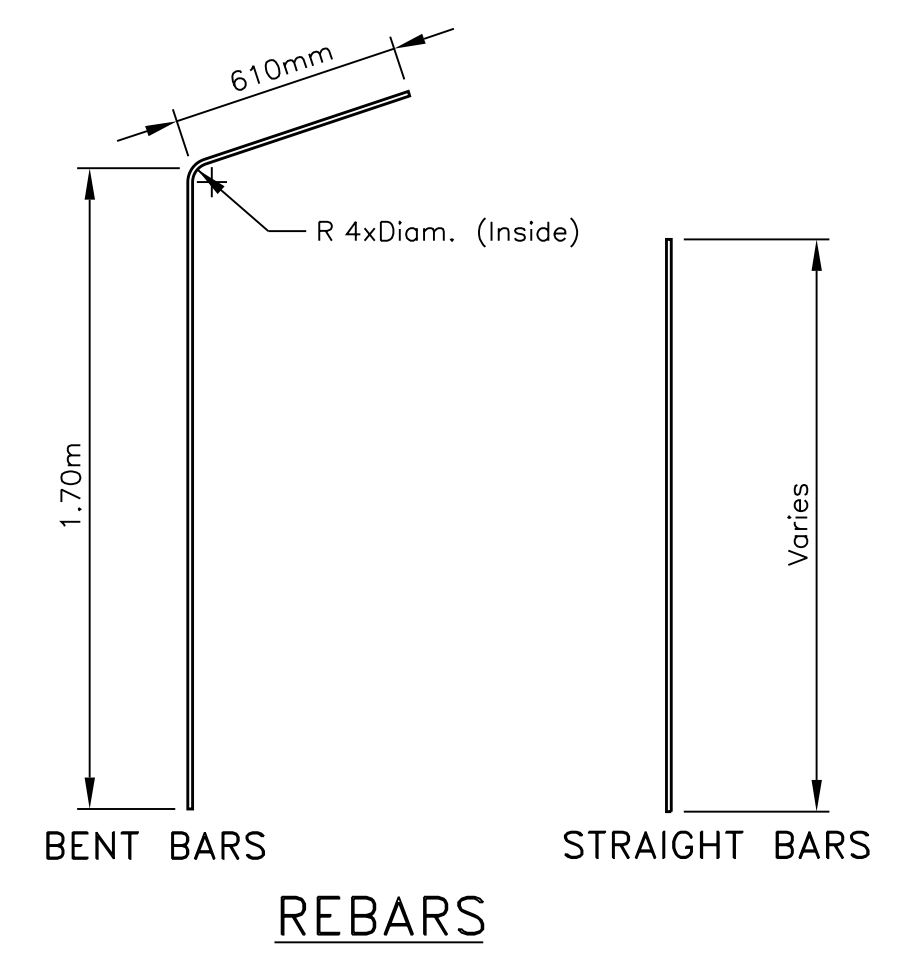
REINFORCING BAR SCHEDULE

Mark	No. of Bars	Length (m)	Size	kg/m	Total Wt. (kg)	Remarks
Sta. 48+982.22 1-2134 mm @ CSCP @ Inlet Only						
fh1	3	6.250	#13M	0.994	18.638	Front Horizontal Straight Bars, Bottom of Pipes
fh2	2	2.580	#13M	0.994	5.129	Front Horizontal Straight Bars, Outside of Pipes
fh3	2	2.230	#13M	0.994	4.433	Front Horizontal Straight Bars, Outside of Pipes
fh4	2	2.060	#13M	0.994	4.095	Front Horizontal Straight Bars, Outside of Pipes
fv1	14	2.320	#13M	0.994	32.285	Front Vertical Bent Bars, Left, Right & Between Pipes a= 610 mm b= 1700 mm
fv2	2	1.201	#13M	0.994	2.388	Front Vertical Straight Bars, Under Pipes
fv3	2	0.933	#13M	0.994	1.855	Front Vertical Straight Bars, Under Pipes
fv4	2	0.802	#13M	0.994	1.594	Front Vertical Straight Bars, Under Pipes
fv5	1	0.762	#13M	0.994	0.757	Front Vertical Straight Bars, Under Pipes
bh1	3	6.250	#13M	0.994	18.638	Back Horizontal Straight Bars, Bottom of Pipes
bh2	2	2.580	#13M	0.994	5.129	Back Horizontal Straight Bars, Bottom of Pipes
bh3	2	2.230	#13M	0.994	4.433	Back Horizontal Straight Bars, Bottom of Pipes
bh4	2	2.060	#13M	0.994	4.095	Back Horizontal Straight Bars, Bottom of Pipes
bv1	14	1.700	#13M	0.994	23.657	Back Vertical Straight Bars, Left, Right & Between Pipes
bv2	2	1.201	#13M	0.994	2.388	Back Vertical Straight Bars, Under Pipes
bv3	2	0.933	#13M	0.994	1.855	Back Vertical Straight Bars, Under Pipes
bv4	2	0.802	#13M	0.994	1.594	Back Vertical Straight Bars, Under Pipes
bv5	1	0.762	#13M	0.994	0.757	Back Vertical Straight Bars, Under Pipes
					133.721	Total?
Sta. 52+780.00 2-2438 mm @ SPP @ Inlet Only						
vh1	3	10.819	#13M	0.994	32.262	Front Horizontal Straight Bars, Bottom of Pipes
vh2	2	2.999	#13M	0.994	5.962	Front Horizontal Straight Bars, Outside of Pipes
vh3	2	2.610	#13M	0.994	5.189	Front Horizontal Straight Bars, Outside of Pipes
vh4	2	2.412	#13M	0.994	4.795	Front Horizontal Straight Bars, Outside of Pipes
vh5	1	2.494	#13M	0.994	2.479	Front Horizontal Straight Bars, Between Pipes
vh6	1	1.715	#13M	0.994	1.705	Front Horizontal Straight Bars, Between Pipes
vh7	1	1.319	#13M	0.994	1.311	Front Horizontal Straight Bars, Between Pipes
fv1	19	2.320	#13M	0.994	43.816	Front Horizontal Bent Bars, Left, Right & Between Pipes a= 610 mm b= 1700 mm
fv2	4	1.570	#13M	0.994	6.242	Front Vertical Straight Bars, Under Pipes
fv3	4	1.126	#13M	0.994	4.477	Front Vertical Straight Bars, Under Pipes
fv4	4	0.909	#13M	0.994	3.614	Front Vertical Straight Bars, Under Pipes
fv5	4	0.800	#13M	0.994	3.181	Front Vertical Straight Bars, Under Pipes
fv6	2	0.762	#13M	0.994	1.515	Front Vertical Straight Bars, Under Pipes
bh1	3	10.819	#13M	0.994	32.262	Back Horizontal Straight Bars, Bottom of Pipes
bh2	2	2.999	#13M	0.994	5.962	Back Horizontal Straight Bars, Bottom of Pipes
bh3	2	2.610	#13M	0.994	5.189	Back Horizontal Straight Bars, Bottom of Pipes
bh4	2	2.412	#13M	0.994	4.795	Back Horizontal Straight Bars, Bottom of Pipes
bh5	1	2.494	#13M	0.994	2.479	Back Horizontal Straight Bars, Between Pipes
bh6	1	1.715	#13M	0.994	1.705	Back Horizontal Straight Bars, Between Pipes
bh7	1	1.319	#13M	0.994	1.311	Back Horizontal Straight Bars, Between Pipes
bv1	19	1.700	#13M	0.994	32.106	Back Vertical Straight Bars, Left, Right & Between Pipes
bv2	4	1.570	#13M	0.994	6.242	Back Vertical Straight Bars, Under Pipes
bv3	4	1.126	#13M	0.994	4.477	Back Vertical Straight Bars, Under Pipes
bv4	4	0.909	#13M	0.994	3.614	Back Vertical Straight Bars, Under Pipes
bv5	4	0.800	#13M	0.994	3.181	Back Vertical Straight Bars, Under Pipes
bv6	2	0.762	#13M	0.994	1.515	Back Vertical Straight Bars, Under Pipes
					219.871	Total?

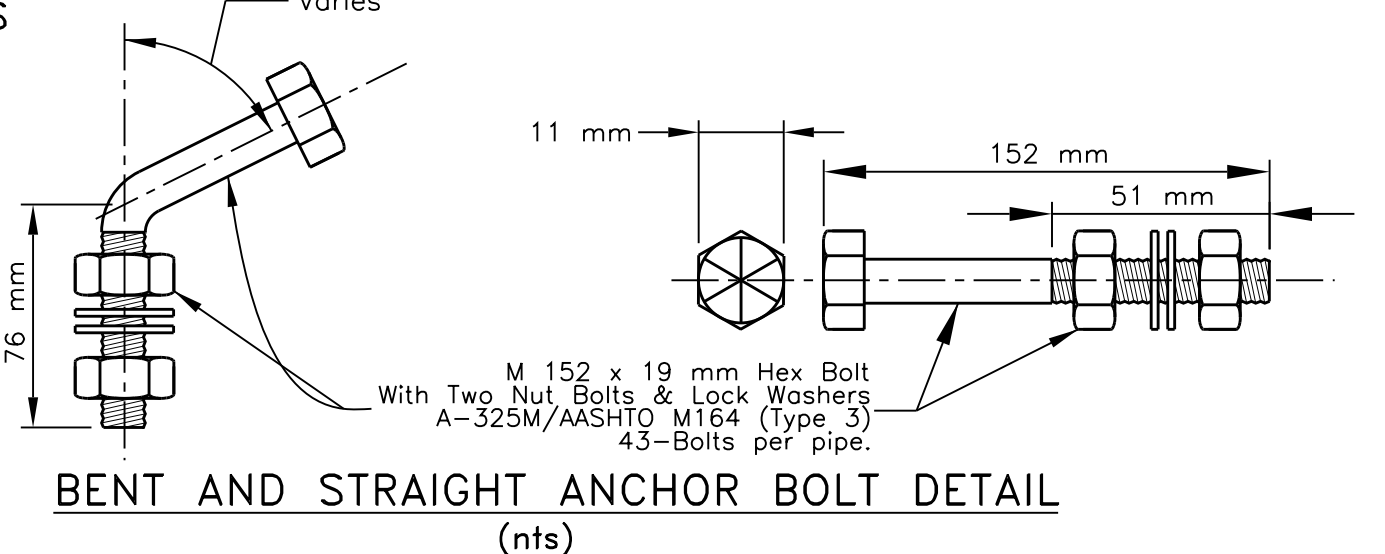
ITEM 60101-1000: MINOR CONCRETE (AE)

STATION	STRUCTURE	Vol. (m³)	Area (m²)	WWF (kg)	Remarks
48+982.22	1-2134 mm @ CSCP	5.67	17.47	49.43	
52+780.00	2-2438 mm @ SPP	10.02	33.22	94.02	
	TOTAL	15.69	50.69	143.44	

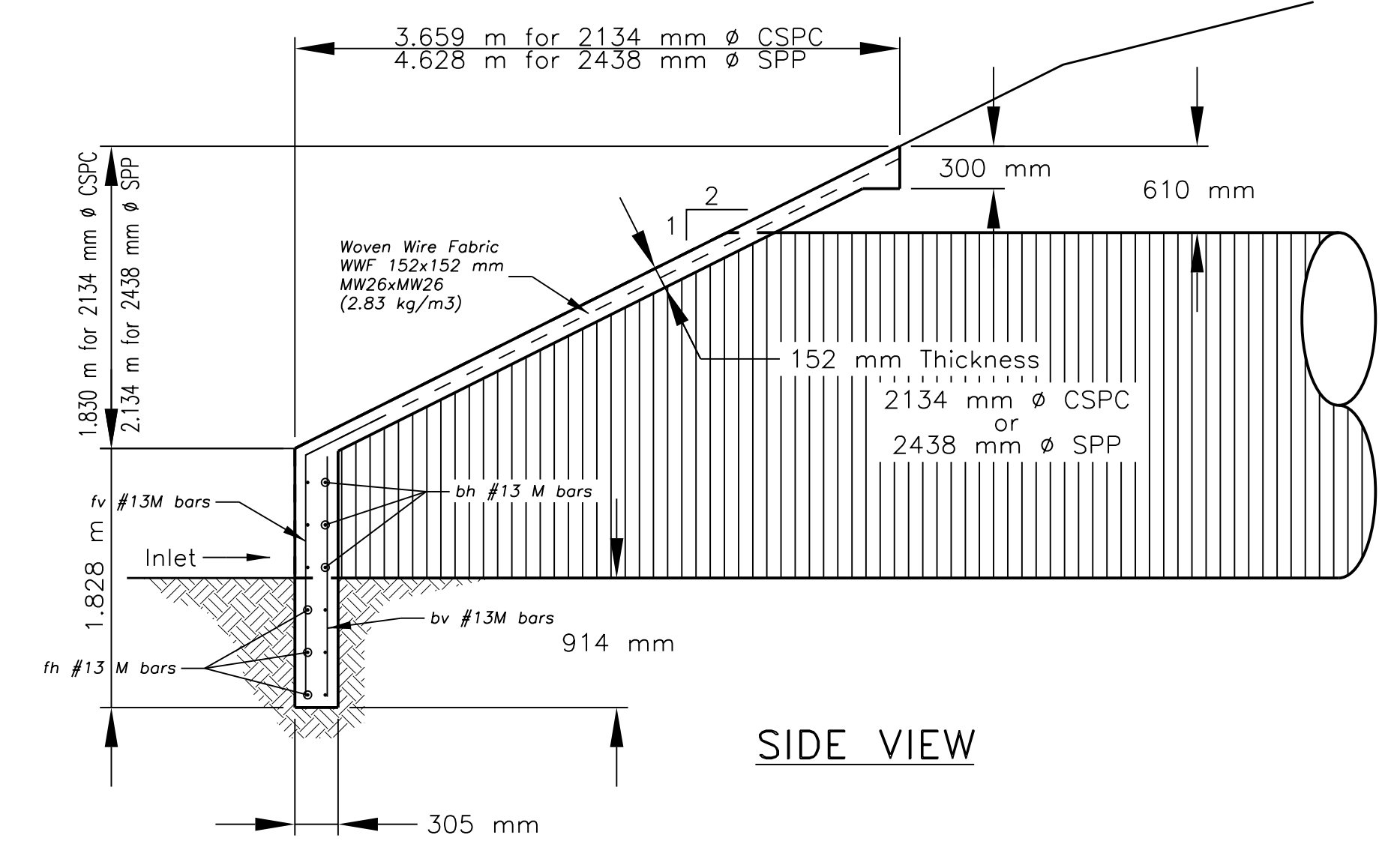
**** WWF Unit Wt. 2.83 kg/m²**



REBARS



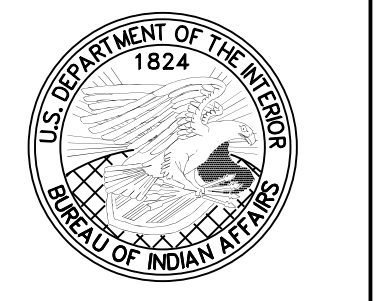
BENT AND STRAIGHT ANCHOR BOLT DETAIL
(nts)



SIDE VIEW

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION
CONCRETE SLOPE PAVING DETAIL
Sta. 48+982.22 &
Sta. 52+780.00

DRAWN BY: NRDOT DATE: 5/3/2016
DESIGNED BY: NRDOT DATE: 5/3/2016
REVISED: 3/15/2018 BY: Leroy.Toledo
Sht 64 REV Slope Paving 2.dgn

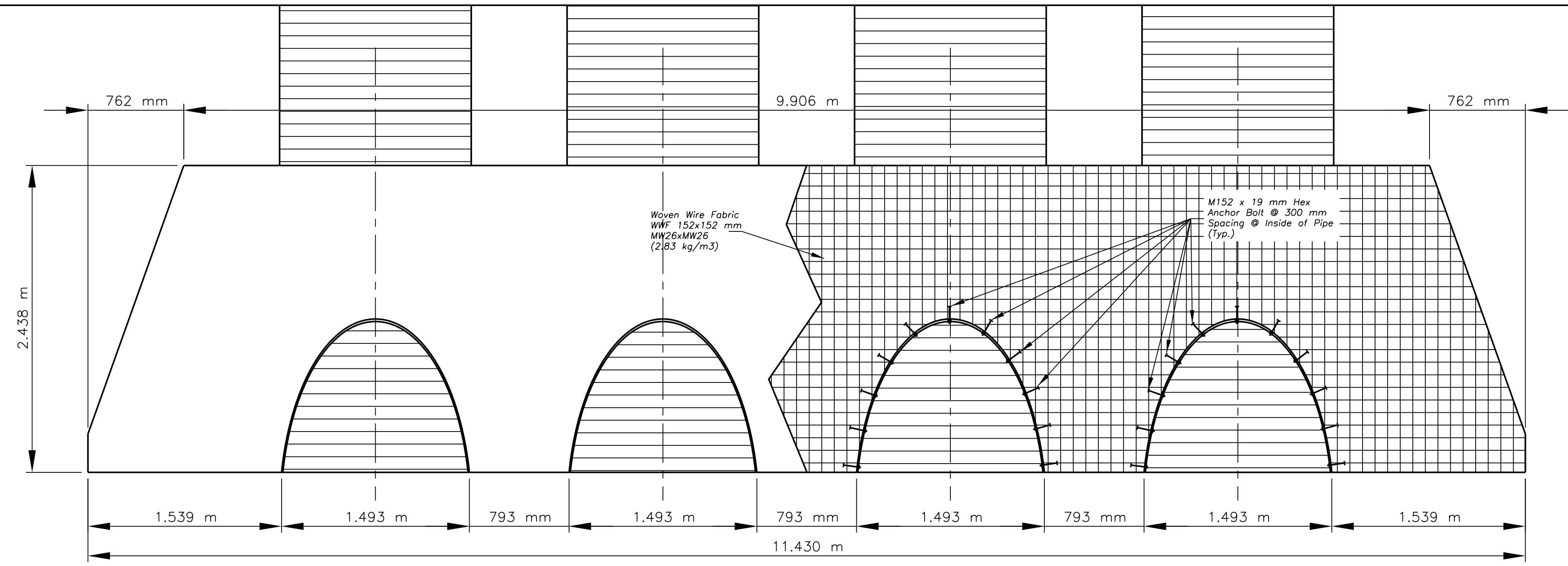


I:\DESIGN\Users\DESIGN3\CURRENT PROJECTS\N35_Chinie\N12(19-4)\DESIGN DATA_020315\CADD Files\Sht 64 REV Slope Paving 2.dgn

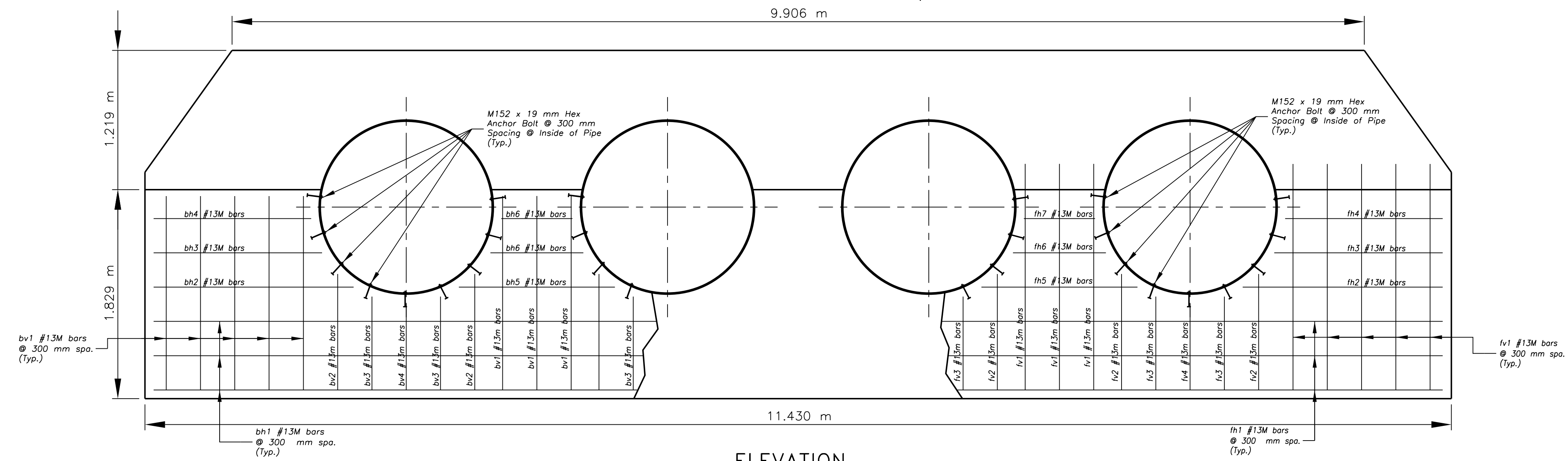
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	65	88

GENERAL NOTES

- ALL WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-14).
- ALL CONCRETE SHALL BE CLASS A(AE) WITH CLASS 1 FINISH. CHAMFER ALL EXPOSED EDGES 19 mm. THE CONCRETE SHALL CONFORM TO SECTION 601 "MINOR CONCRETE" OF FP-14. $F'_c = 20.68 \text{ MPa}$.
- REINFORCING STEEL SHALL CONFORM TO AASHTO SPECIFICATION M-31 (ASTM A 615M), GRADE 420, AND SECTION 554 OF FP-14. FURNISHING AND PLACEMENT OF REBARS, ANCHOR BOLT, AND WELDED WIRE FABRIC SHALL BE CONSIDERED INCIDENTAL TO CONTRACT BID ITEM 60101-0000.
- ALL STRUCTURE EXCAVATION AND EMBANKMENT AROUND THE CONCRETE BLANKET SHALL BE DONE TO NEAT LINES AND WILL BE CONSIDERED INCIDENTAL TO COMPLETION OF THE STRUCTURE.
- THE CONTRACTOR SHALL BE REQUIRED TO MAKE ANY NECESSARY FIELD ADJUSTMENTS TO FIT EXISTING FIELD CONDITIONS, AS DIRECTED BY THE COR/COTR. NO ADDITIONAL PAYMENT SHALL BE MADE FOR SUCH ADJUSTMENTS.
- IF UNSUITABLE MATERIAL IS FOUND AT THE FOOTING LOCATION AND ELEVATIONS, THE MATERIAL SHALL BE REMOVED AND REPLACED WITH APPROVED UNCLASSIFIED BACKFILL AS DETERMINED BY THE COR/COTR. ALL UNCLASSIFIED BACKFILL SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY AS DETERMINED BY AASHTO T99 METHOD C, BEFORE AND AFTER FOOTINGS ARE PLACED. THE UNCLASSIFIED BACKFILL MATERIAL SHALL CONFORM TO SECTION 208 AND 209 OF FP-14. FURNISHING AND PLACEMENT OF UNCLASSIFIED BACKFILL SHALL BE ACCORDANCE WITH SECTION 109.02(m), 204 & 209.
- ALL FOOTING EXCAVATIONS SHALL BE INSPECTED AND APPROVED BY THE COR/COTR PRIOR TO PLACEMENT OF FORMS, REINFORCING STEEL, AND SUBSEQUENT CONCRETE.
- CHANNEL RESHAPING, CLEANING, AND EXCAVATION SHALL BE DONE IN ACCORDANCE WITH THE PLANS AND AS DETERMINED BY THE COR/COTR. ANY WASTE MATERIAL SHALL BE USED AS BORROW WHERE NEEDED IN OTHER PROJECT LOCATION AS DESIGNATED AND APPROVAL BY THE COR/COTR. ALL CHANNEL EXCAVATION, CLEANING, AND RESHAPING SHALL BE CONSIDERED INCIDENTAL TO COMPLETION OF THE STRUCTURE.
- IN NO CASE SHALL ANY BACKFILL BE PLACED UNTIL THE CONCRETE HAS ATTAINED A COMPRESSIVE STRENGTH OF 17.24 MPa.
- ESTIMATED QUANTITIES OF TABULATED CONCRETE, WELDED WIRE FABRIC, AND REINFORCING STEEL AND NOTED SIZE OF STRUCTURE(S) ARE FOR ONE (1) SLOPE BLANKET AT A GIVEN STATION. CONCRETE BLANKETS ARE REQUIRED AT INLET SIDE OF THE DRAINAGE STRUCTURE(S) ONLY, UNLESS OTHERWISE NOTED.
- AT LOCATIONS WHERE THE TOP EDGE OF THE CONCRETE BLANKET EXTENDS BEYOND/NEAR THE HINGE POINT OR CANNOT BE INSTALLED DUE TO INSUFFICIENT COVER OVER THE PIPES, THE CONTRACTOR SHALL BE REQUIRED TO ADJUST THE VERTICAL HEIGHT ABOVE THE PIPE(S) TO 305 mm AND INSTALL TWO (2) ADDITIONAL #13M REBARS SET VERTICALLY $\pm 152 \text{ mm}$ APART W/76 mm MINIMUM COVER ALL AROUND ACROSS THE ENTIRE WIDTH OF THE STRUCTURE AND WILL BE CONSIDERED INCIDENTAL TO COMPLETION OF THE STRUCTURE.
- EROSION CONTROL MATTING SHALL CONFORM TO SECTION 629 AND 713.17(k) OF THE FP-14 FOR TYPE IV-B MATERIAL, AND SHALL BE INCIDENTAL TO THE UNIT PRICE FOR ITEM 60101-0000. MATTINGS SHALL BE TUCKED OR EMBEDDED INTO EMBANKMENT ALONG ALL EDGES AS SHOWN. SEE SHEET 52 & 53 FOR EROSION CONTROL MATTING INSTALLATION DETAILS.



PLAN VIEW
Sta. 56+644.11 CSPC Inlet Only



ELEVATION
Sta. 56+644.11 CSPC Inlet Only

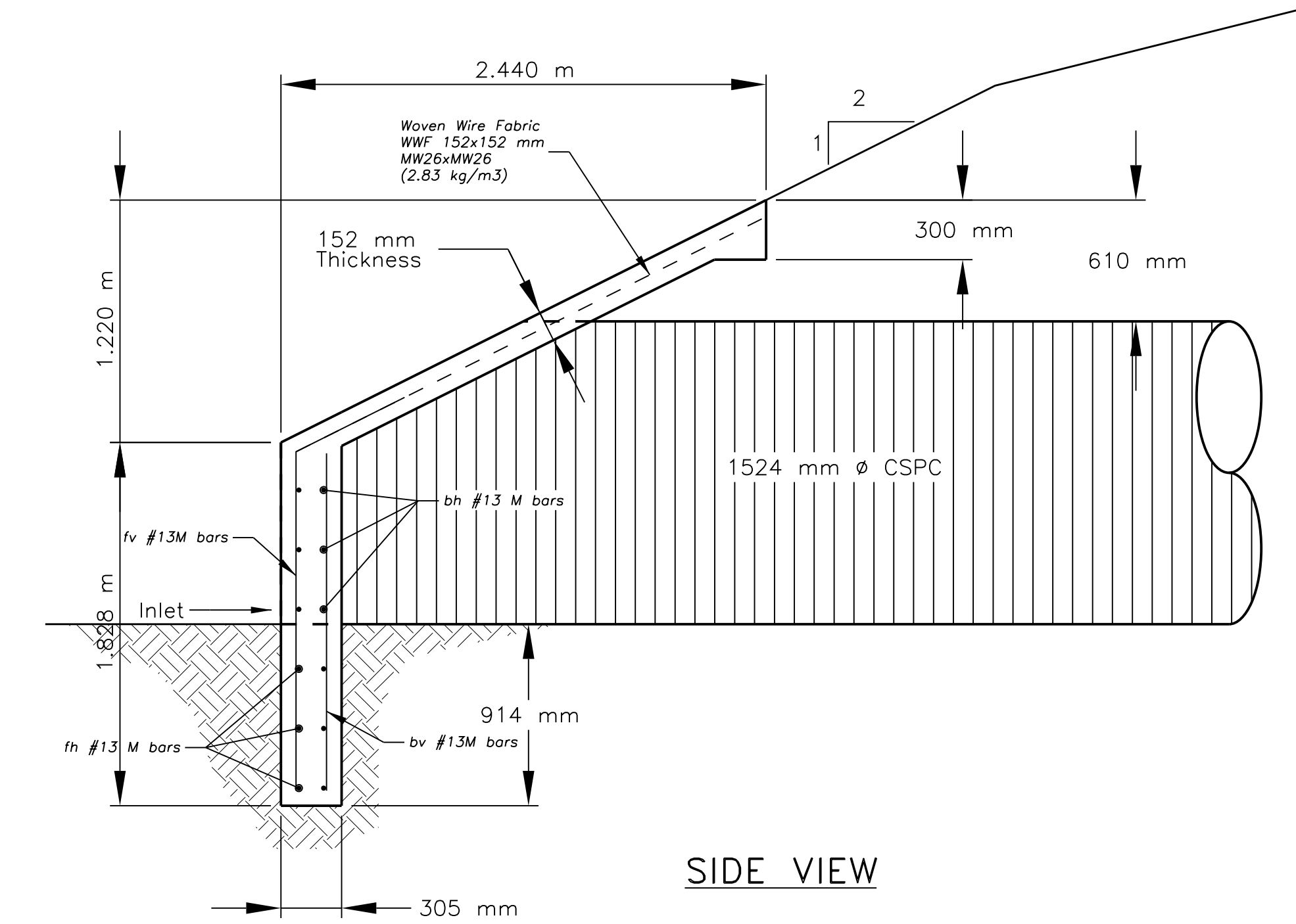
ITEM 60101-1000: MINOR CONCRETE (AE)

STATION	STRUCTURE	Vol. (m³)	Area (m²)	WWF (kg)	**	Remarks
50+644.11	4-1524 mm Ø CSPC	8.36	23.25	65.81		
TOTAL		8.36	23.25	65.81		

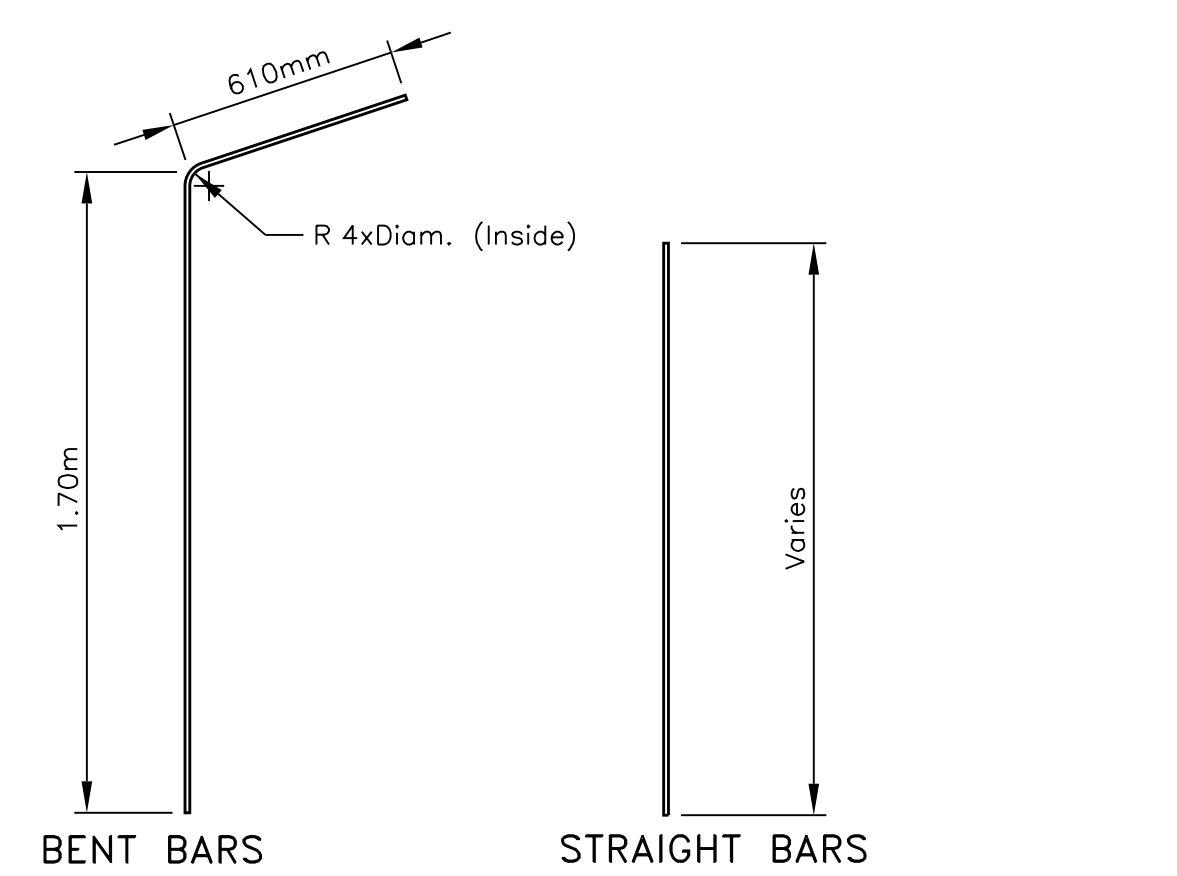
** WWF Unit Wt. 2.83 kg/m²

REINFORCING BAR SCHEDULE

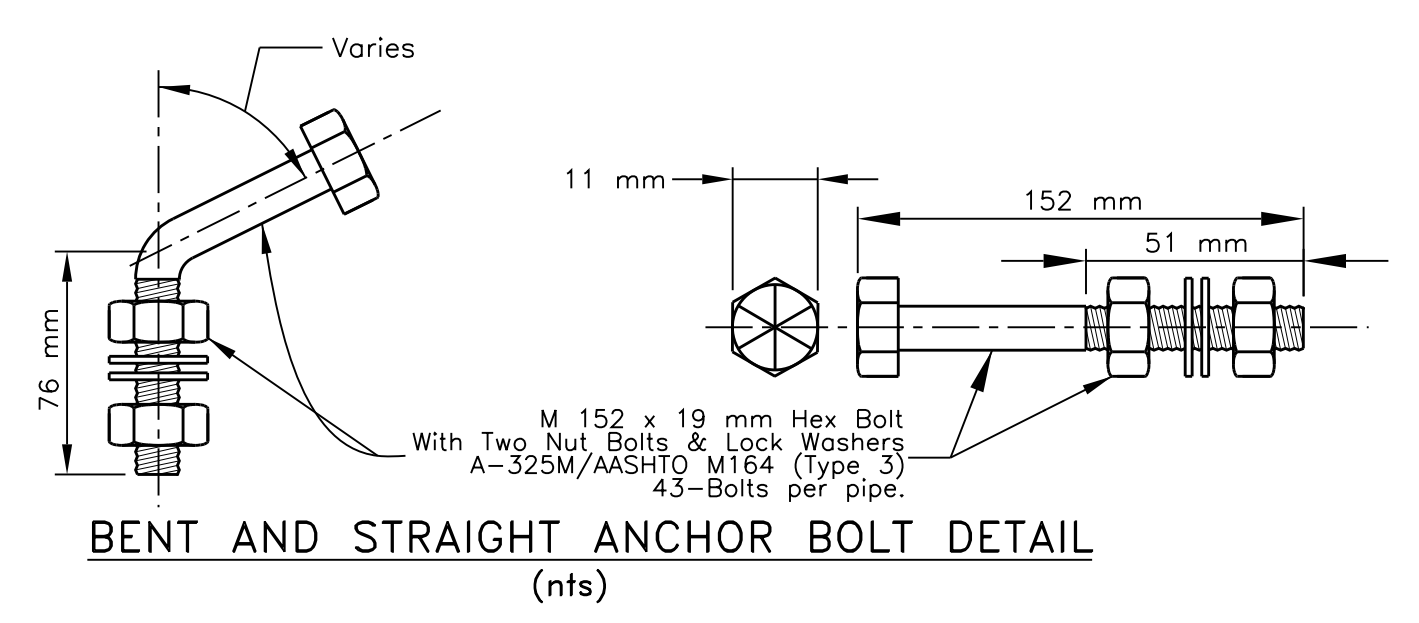
Mark	No. of Bars	Length (m)	Size	kg/m	Total Wt. (kg)	Remarks
Sta. 50+644.11 4-1524 mm Ø CSPC @ Inlet Only						
fh1	3	11.278	#13M	0.994	33.631	Front Horizontal Straight Bars, Bottom of Pipes
fh2	2	1.749	#13M	0.994	3.477	Front Horizontal Straight Bars, Outside of Pipes
fh3	2	1.474	#13M	0.994	2.930	Front Horizontal Straight Bars, Outside of Pipes
fh4	2	1.378	#13M	0.994	2.739	Front Horizontal Straight Bars, Outside of Pipes
fh5	3	1.365	#13M	0.994	4.070	Front Horizontal Straight Bars, Between Pipes
fh6	3	0.813	#13M	0.994	2.424	Front Horizontal Straight Bars, Between Pipes
fh7	3	0.622	#13M	0.994	1.855	Front Horizontal Straight Bars, Between Pipes
fv1	19	2.320	#13M	0.994	43.816	Front Vertical Bent Bars, Left, Right & Between Pipes a= 610 mm b= 1700 mm
fv2	8	1.015	#13M	0.994	8.071	Front Vertical Straight Bars, Under Pipes
fv3	8	0.818	#13M	0.994	6.505	Front Vertical Straight Bars, Under Pipes
fv4	4	0.762	#13M	0.994	3.030	Front Vertical Straight Bars, Under Pipes
bh1	3	11.278	#13M	0.994	33.631	Back Horizontal Straight Bars, Bottom of Pipes
bh2	2	1.749	#13M	0.994	3.477	Back Horizontal Straight Bars, Bottom of Pipes
bh3	2	1.474	#13M	0.994	2.930	Back Horizontal Straight Bars, Bottom of Pipes
bh4	2	1.378	#13M	0.994	2.739	Back Horizontal Straight Bars, Bottom of Pipes
bh5	3	1.365	#13M	0.994	4.070	Back Horizontal Straight Bars, Between Pipes
bh6	3	0.813	#13M	0.994	2.424	Back Horizontal Straight Bars, Between Pipes
bh7	3	0.622	#13M	0.994	1.855	Back Horizontal Straight Bars, Between Pipes
bv1	19	1.700	#13M	0.994	32.106	Back Vertical Straight Bars, Left, Right & Between Pipes
bv2	8	1.015	#13M	0.994	8.071	Back Vertical Straight Bars, Under Pipes
bv3	8	0.818	#13M	0.994	6.505	Back Vertical Straight Bars, Under Pipes
bv4	4	0.762	#13M	0.994	3.030	Back Vertical Straight Bars, Under Pipes
Total					213.388	



SIDE VIEW



REBARS



BENT AND STRAIGHT ANCHOR BOLT DETAIL
(nts)

**UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS**

NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

**CONCRETE SLOPE
PAVING DETAIL
At Sta. 50+644.11**

DRAWN BY: NRDOT	DATE: 5/5/2016
DESIGNED BY: NRDOT	DATE: 5/5/2016
REVISED: 3/9/2018	BY: Leroy.Toledo

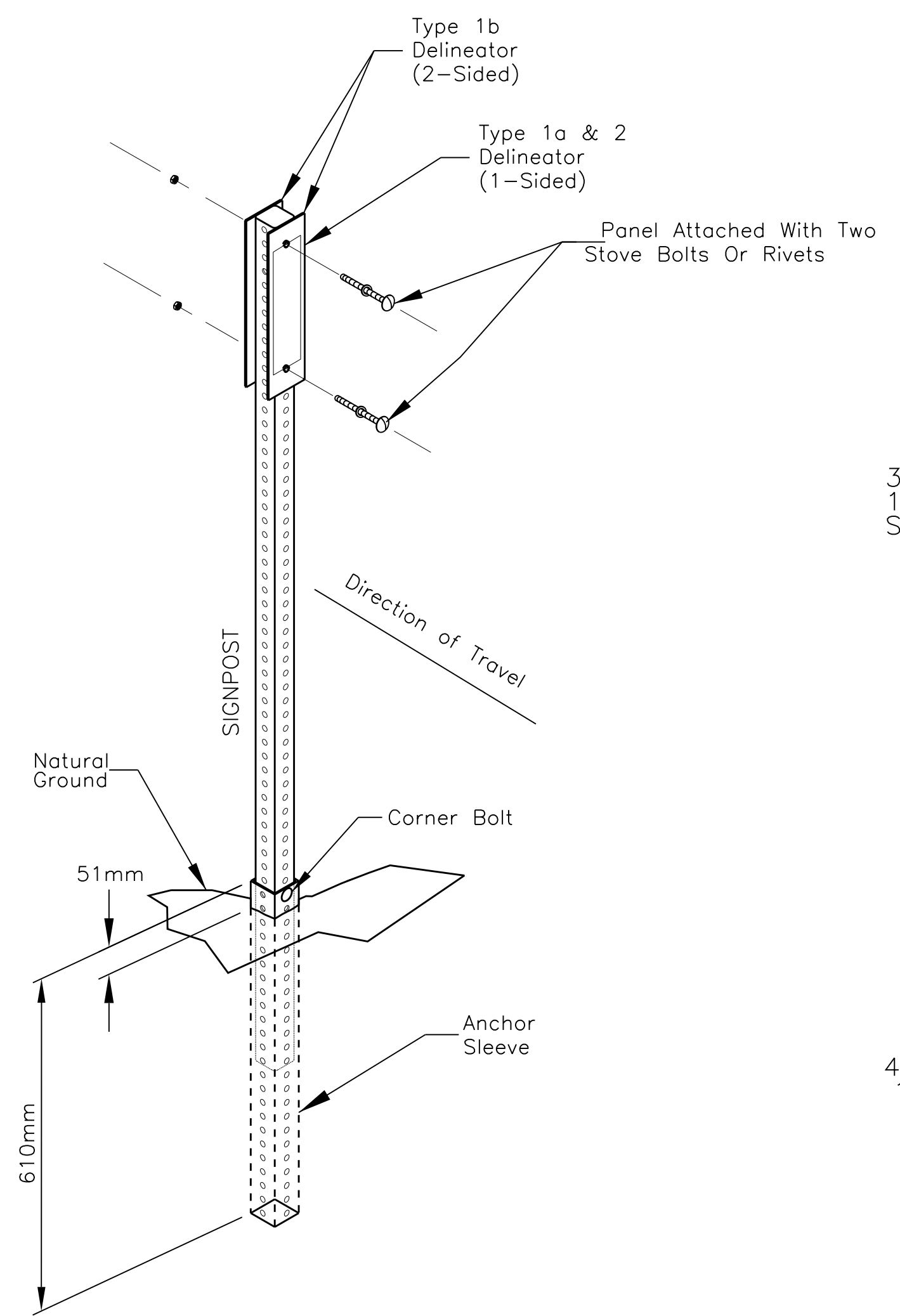
Sht 65 REV Slope Paving 3.dgn

I:\DESIGN\Users\DESIGN3\CURRENT PROJECTS\N35_Chinle\N12(19-4)\DESIGN DATA_020315\CADD Files\Sht 65 REV Slope Paving 3.dgn

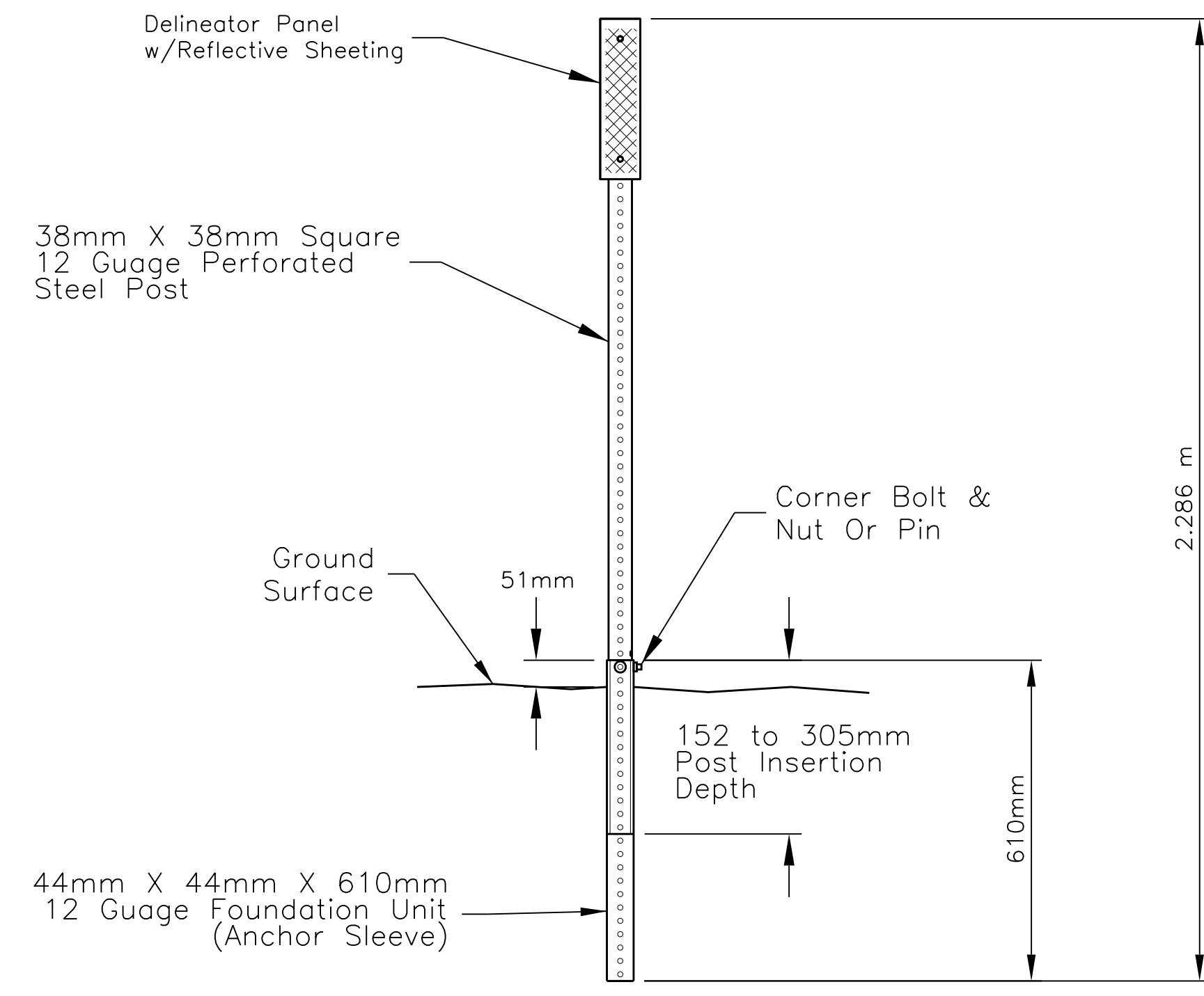
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	67	88

GENERAL NOTES

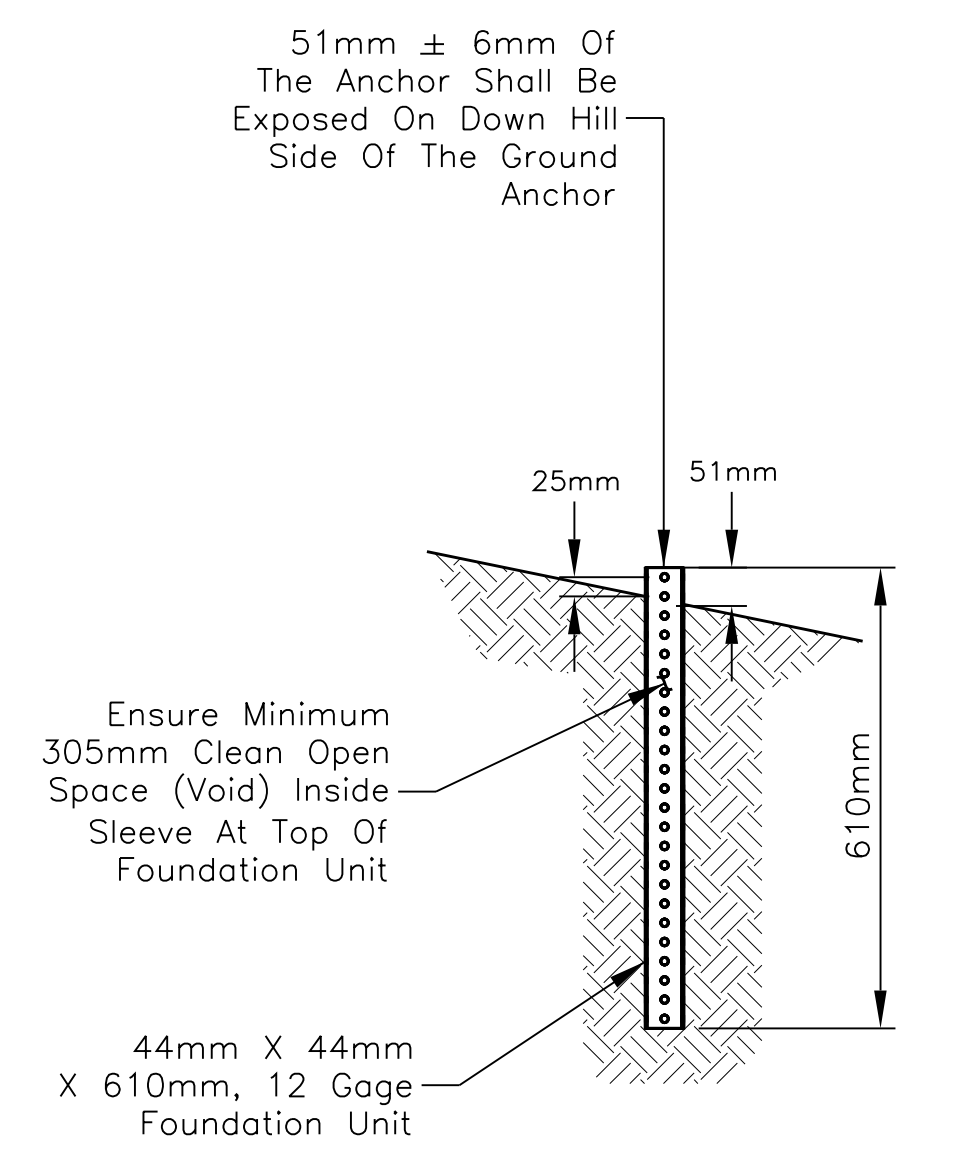
1. ALL CONCRETE SHALL BE CLASS A(AE) AND SHALL CONFORM TO SECTION 601 OF THE FP-14. FURNISHING AND PLACING OF CONCRETE, WHEN REQUIRED, SHALL BE CONSIDERED INCIDENTAL TO ITEMS 63308-2000, 63309-0010, AND 63309-0020.
2. THE CONTRACTOR SHALL USE SQUARE STEEL TUBE HIGHWAY DELINEATORS. THE COST OF SUPPLYING MATERIALS AND INSTALLATION SHALL BE INCLUDED IN THE UNIT PRICE BID UNDER ITEMS 63308-2000, 63309-0010, AND 63309-0020. SEE SHEET 63 FOR POST SPACING.



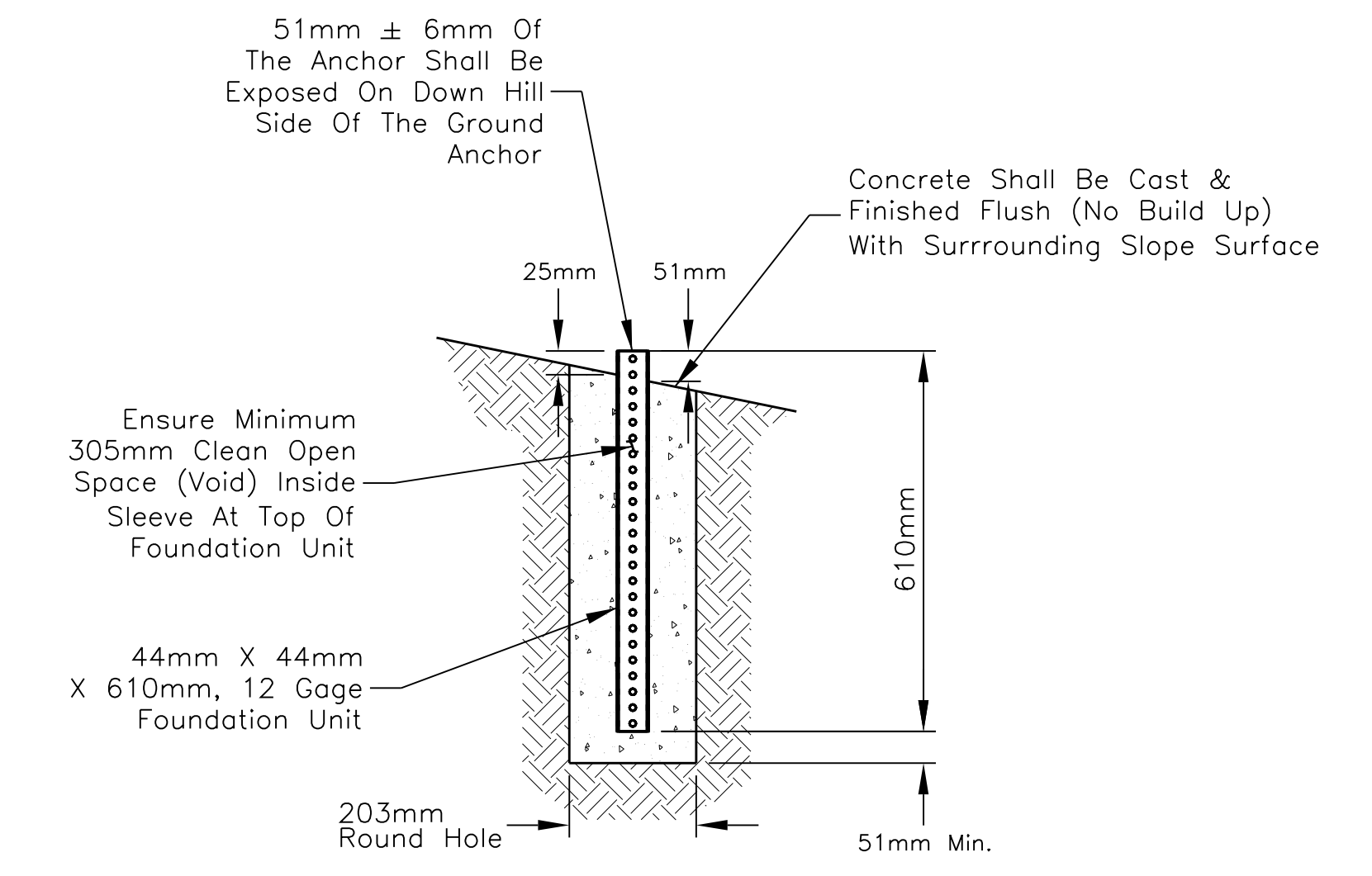
ISOMETRIC VIEW



ALTERNATE ASSEMBLY

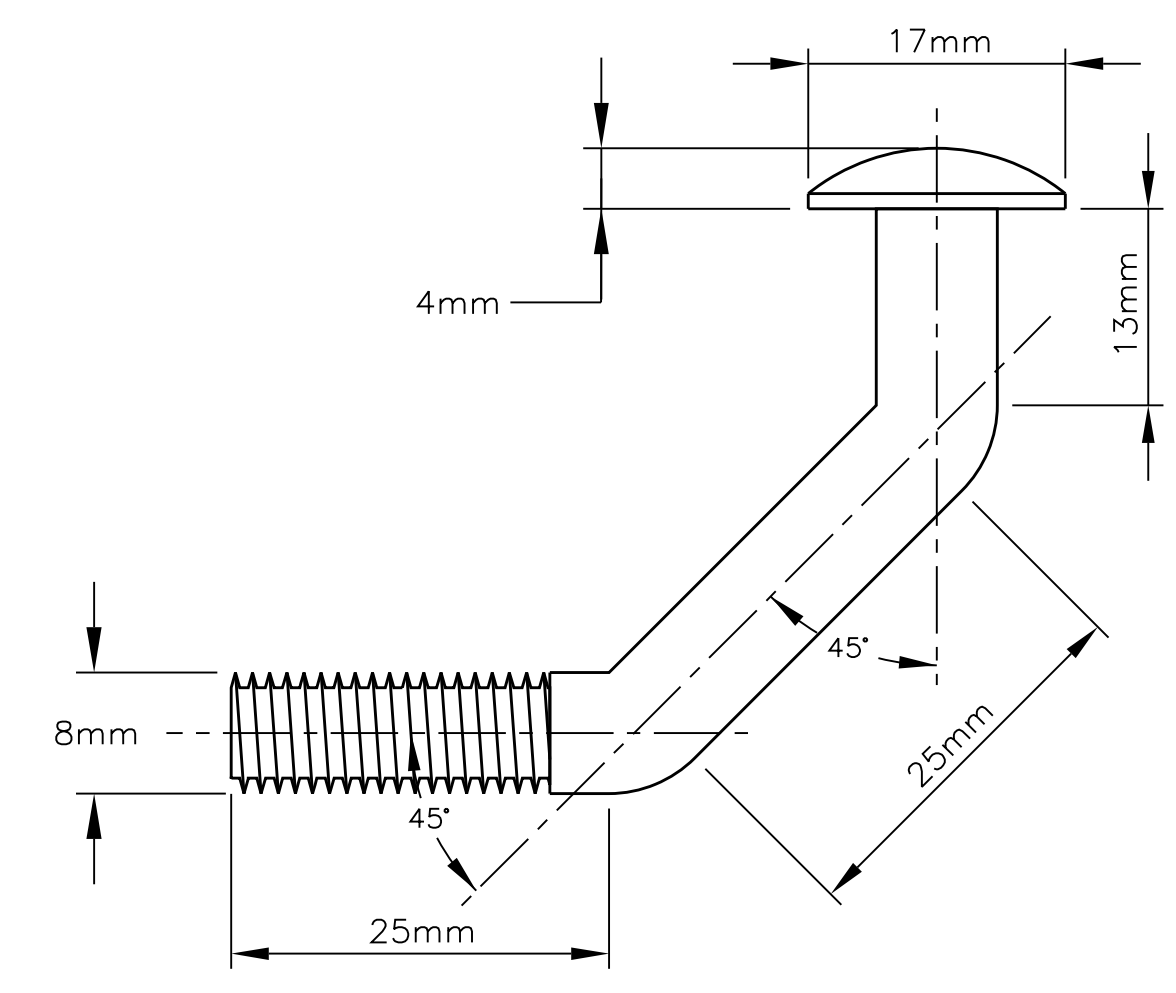
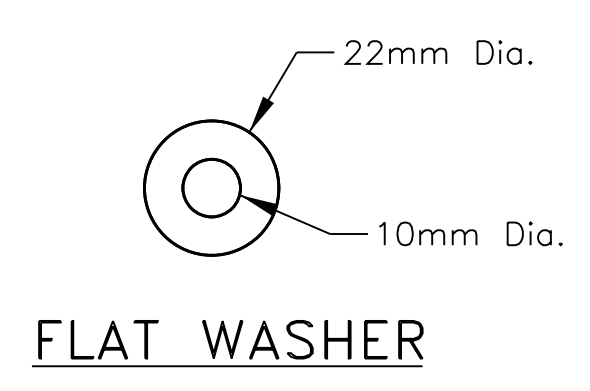
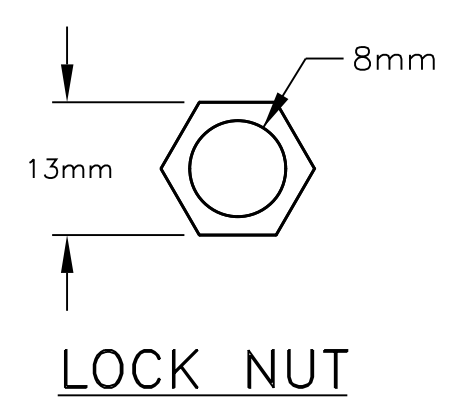


IN-GROUND DRIVEN

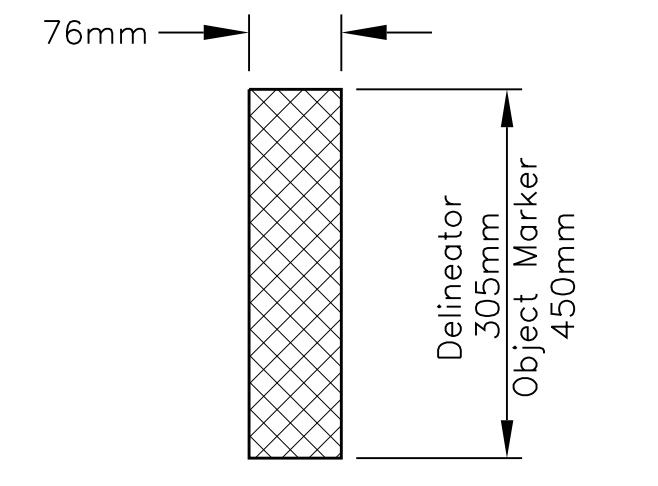


IN-GROUND CONCRETE

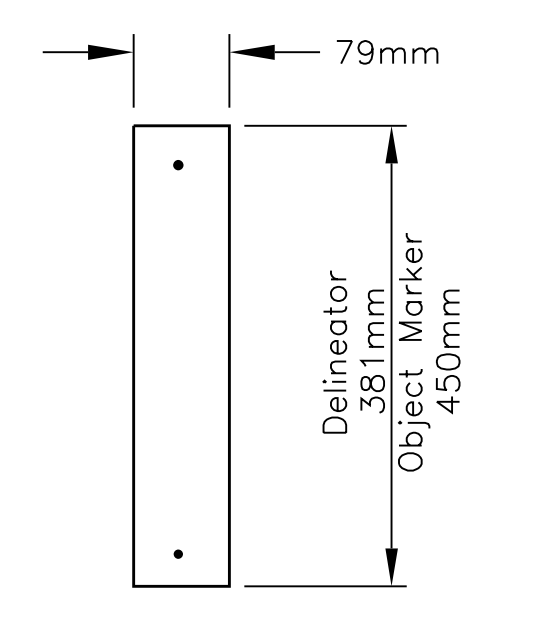
Note: Use Chair Device To Ensure Minimum 51mm Clearance Above Bottom Of Hole



BREAK-AWAY BOLT

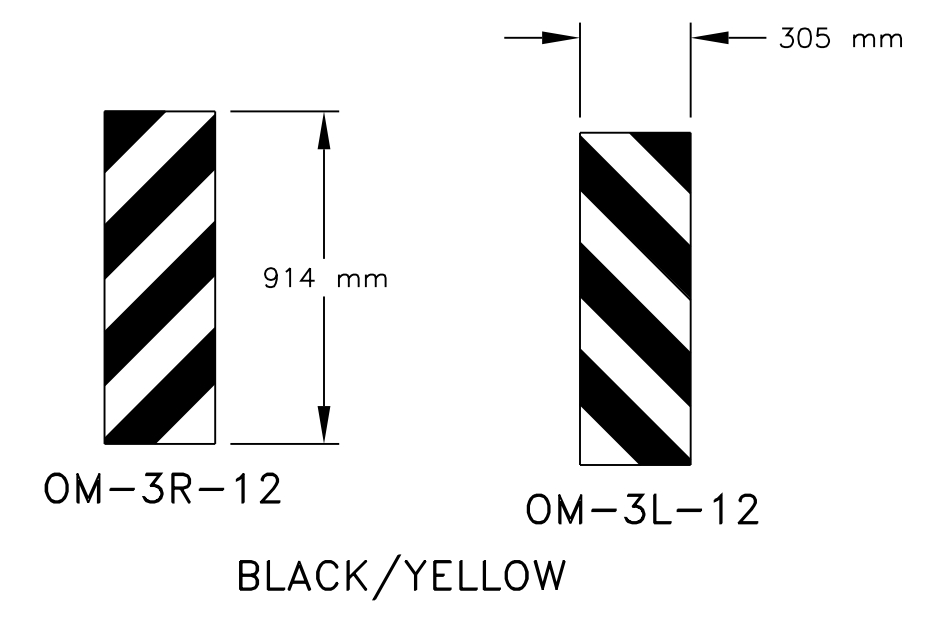


REFLECTIVE SHEETING

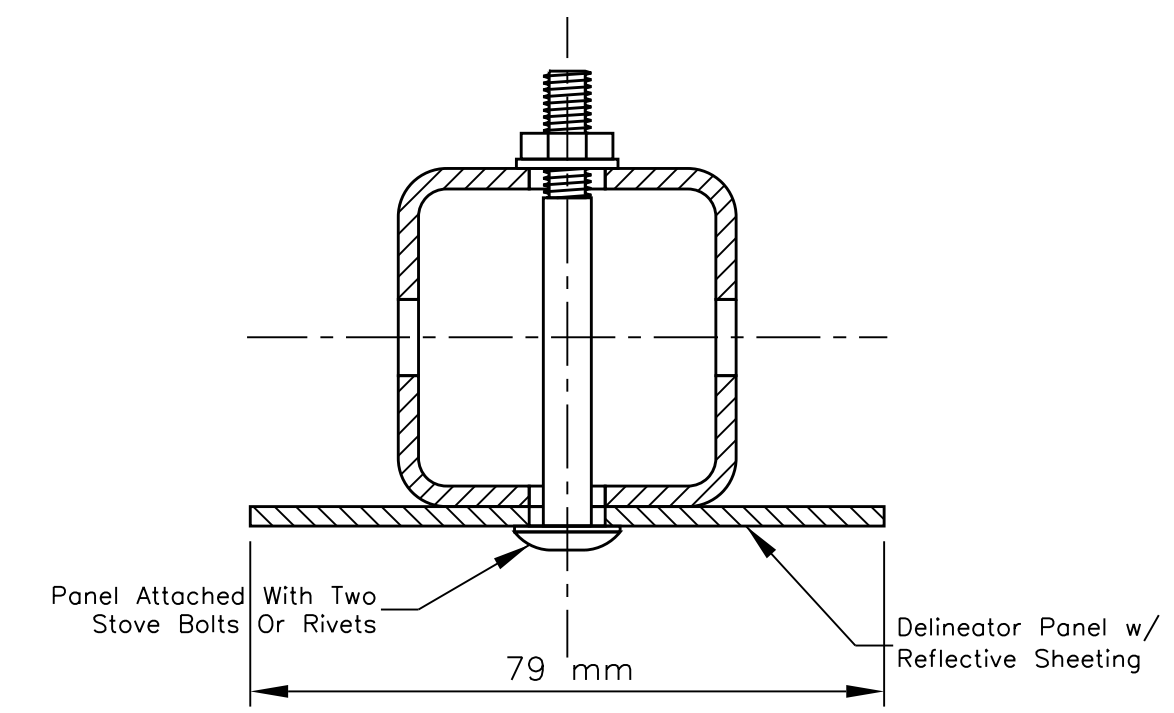


DELINEATOR PANEL (Pre-Drilled/Punched)

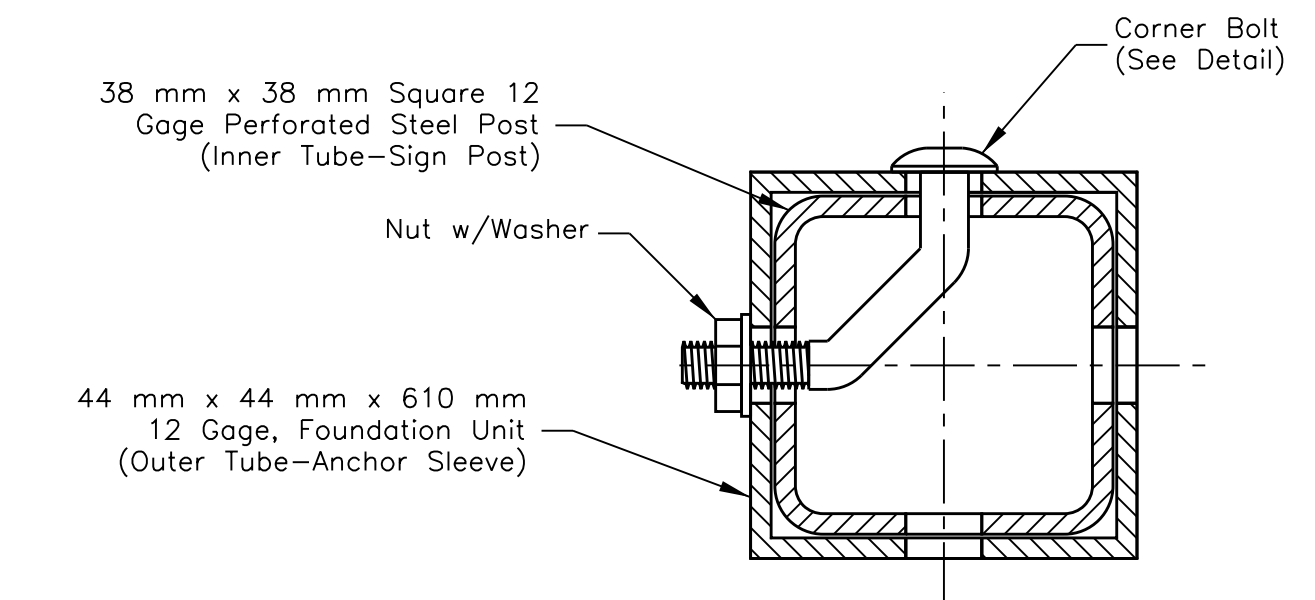
TYPE	POST	HIGH INTENSITY REFLECTIVE SHEETING
1a	SQ. TUBE	WHITE, ONE SIDE
1b	SQ. TUBE	WHITE, BOTH SIDES
2	SQ. TUBE	AMBER, ONE SIDE



TYPE-3 OBJECT MARKER



SQUARE TUBE POST AND PANEL

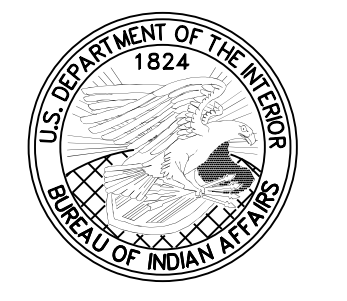


"BREAK-AWAY" DETAIL SIGN POST/SLEEVE INTERFACE

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

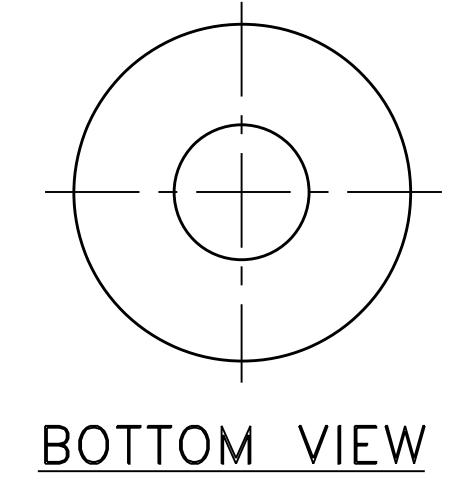
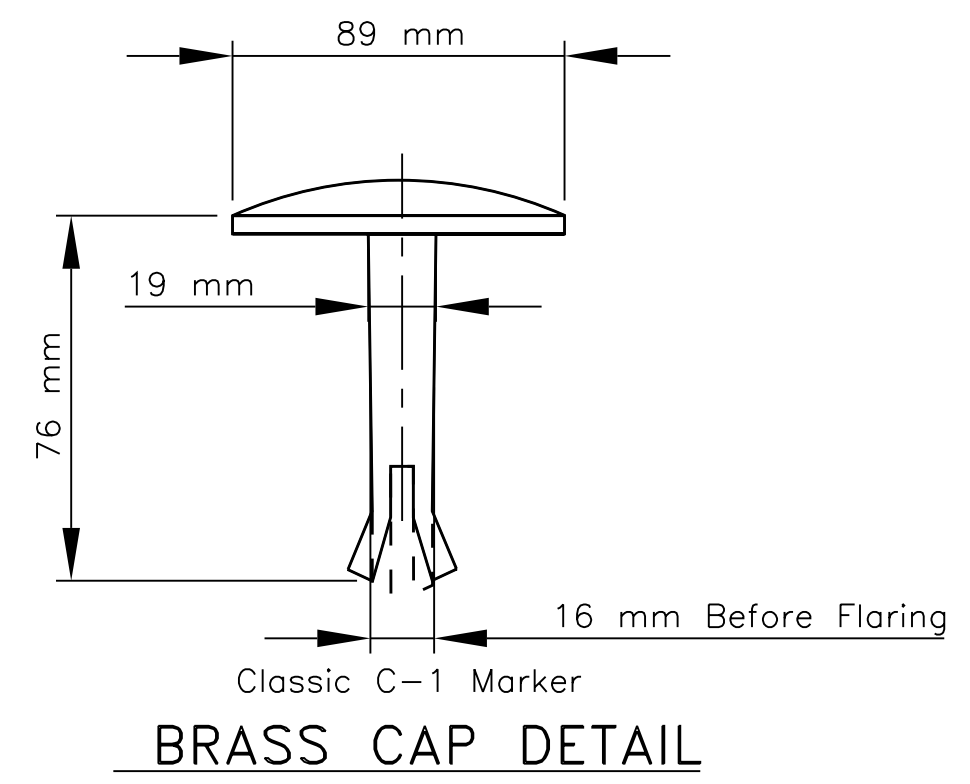
SQUARE TUBE STEEL POST
REFLECTIVE PANEL
DELINEATOR DETAILS

DRAWN BY: NRDOT DATE: 1/31/2013
DESIGNED BY: NRDOT DATE: 1/31/2013
REVISED: 5/28/2013 BY: Leroy.Toledo
Sht 67 N12 DelinObjMkr detail.dgn

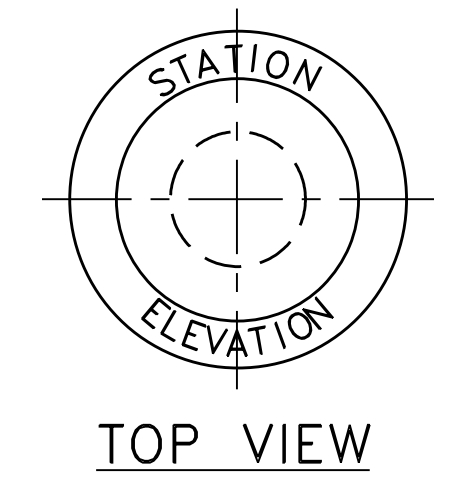


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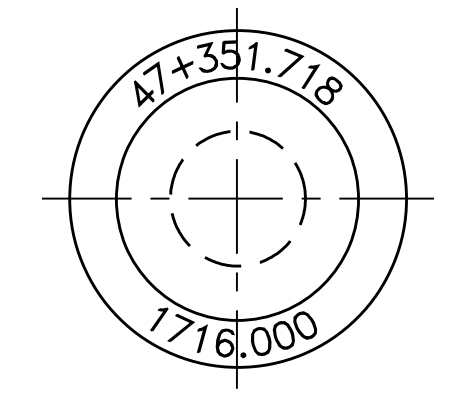
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	68	88



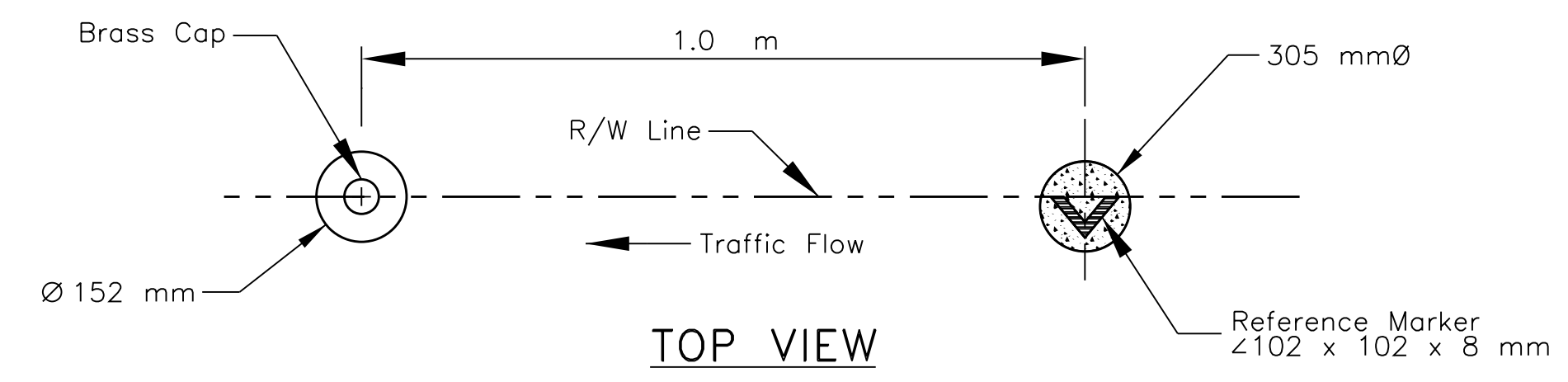
BOTTOM VIEW



TOP VIEW



EXAMPLE



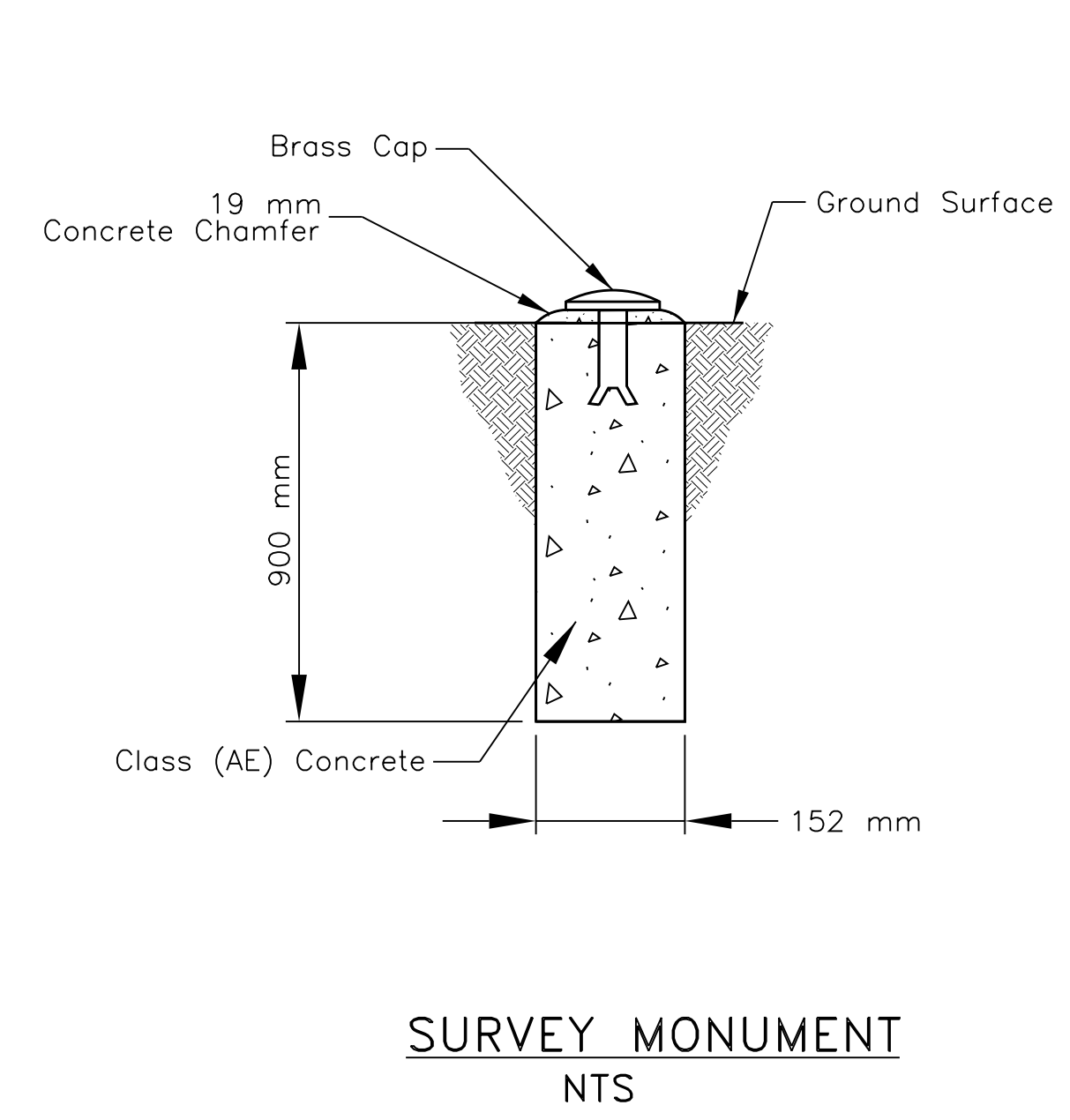
TOP VIEW

ITEM 62101-0000; RIGHT-OF-WAY MONUMENT
ITEM 62102-0000; REFERENCE MARKER

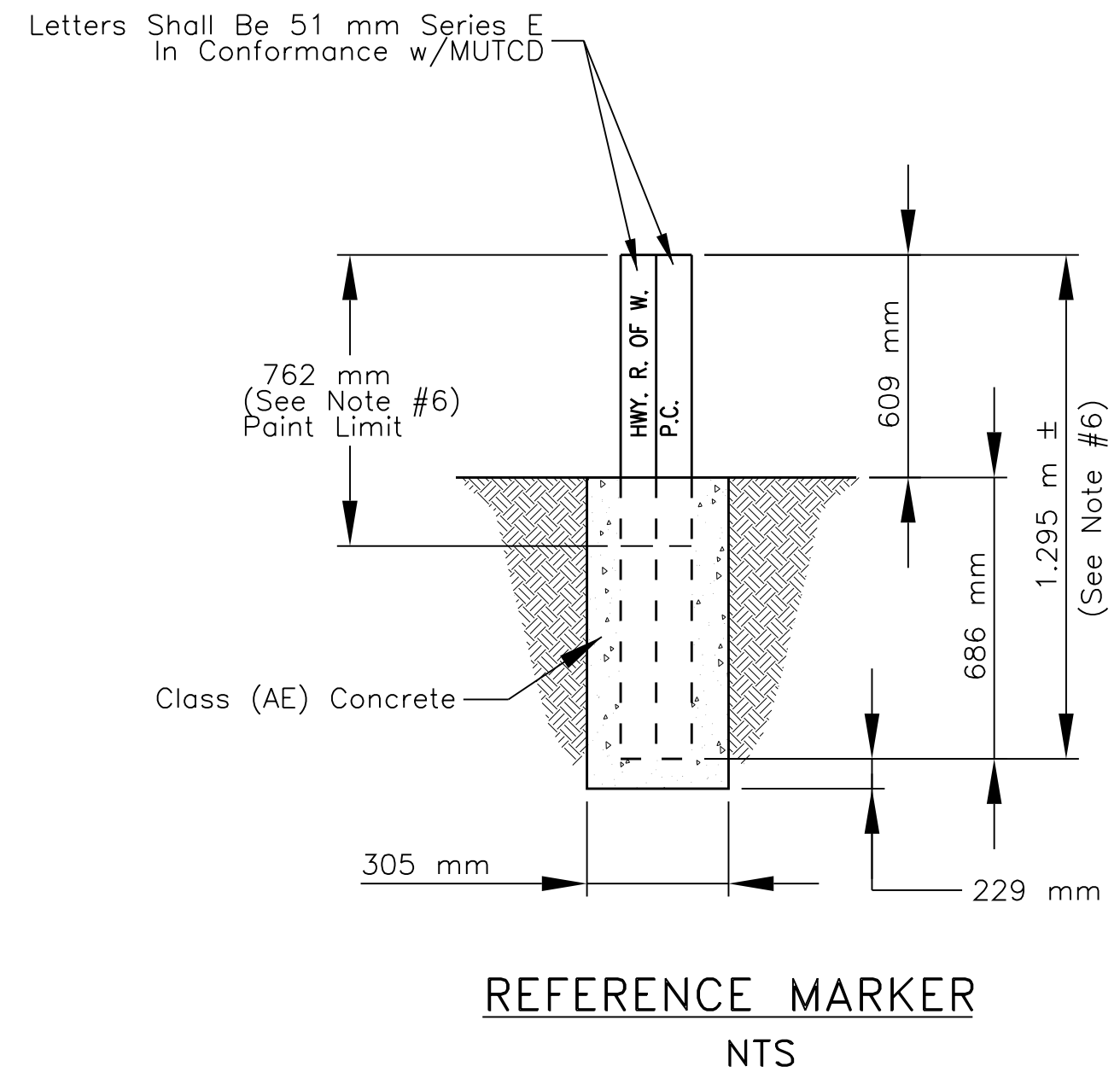
Station	Description	Location		ROW Monument	Reference Marker
		Right	Left		
38+770.609	PC 1	22.86 m	22.86 m	2	2
39+182.754	PT 1	22.86 m	22.86 m	2	2
39+362.443	PC 2	22.86 m	22.86 m	2	2
39+621.326	PT 2	22.86 m	22.86 m	2	2
39+621.326	PT 2	30.48 m	30.48 m	2	2
39+725.889	PC 3	30.48 m	30.48 m	2	2
39+725.889	PC 3	22.86 m	22.86 m	2	2
39+973.658	PT 3	22.86 m	22.86 m	2	2
40+416.225	PC 4	22.86 m	22.86 m	2	2
40+659.245	PT 4	22.86 m	22.86 m	2	2
41+009.187	PC 5	22.86 m	22.86 m	2	2
41+167.687	PT 5	22.86 m	22.86 m	2	2
41+208.829	PC 6	22.86 m	22.86 m	2	2
41+647.676	PT 6	22.86 m	22.86 m	2	2
41+810.307	PC 7	22.86 m	22.86 m	2	2
43+162.824	PT 7	22.86 m	22.86 m	2	2
44+084.674	PC 8	22.86 m	22.86 m	2	2
44+279.804	PT 8	22.86 m	22.86 m	2	2
44+667.499	PC 9	22.86 m	22.86 m	2	2
45+123.576	PT 9	22.86 m	22.86 m	2	2
46+494.955	PC 10	22.86 m	22.86 m	2	2
48+226.945	PT 10	22.86 m	22.86 m	2	2
48+794.666	PC 11	22.86 m	22.86 m	2	2
49+587.000	PT 11	22.86 m	22.86 m	2	2
49+600.000	POT	22.86 m	22.86 m	2	2
49+600.000	POT	30.48 m	30.48 m	2	2
49+700.000	POT	30.48 m	30.48 m	2	2
49+700.000	POT	22.86 m	22.86 m	2	2
50+799.113	PC 12	22.86 m	22.86 m	2	2
51+326.293	PT 12	22.86 m	22.86 m	2	2
51+396.570	PC 13	22.86 m	22.86 m	2	2
51+757.277	PT 13	22.86 m	22.86 m	2	2
52+250.826	PC 14	22.86 m	22.86 m	2	2
52+314.807	PT 14	22.86 m	22.86 m	2	2
53+003.494	PC 15	22.86 m	22.86 m	2	2
53+340.123	PT 15	22.86 m	22.86 m	2	2
53+994.556	PC 16	22.86 m	22.86 m	2	2
54+347.951	PT 16	22.86 m	22.86 m	2	2
54+393.830	PC 17	22.86 m	22.86 m	2	2
55+702.003	PT 17	22.86 m	22.86 m	2	2
Total?				80	80

GENERAL NOTES

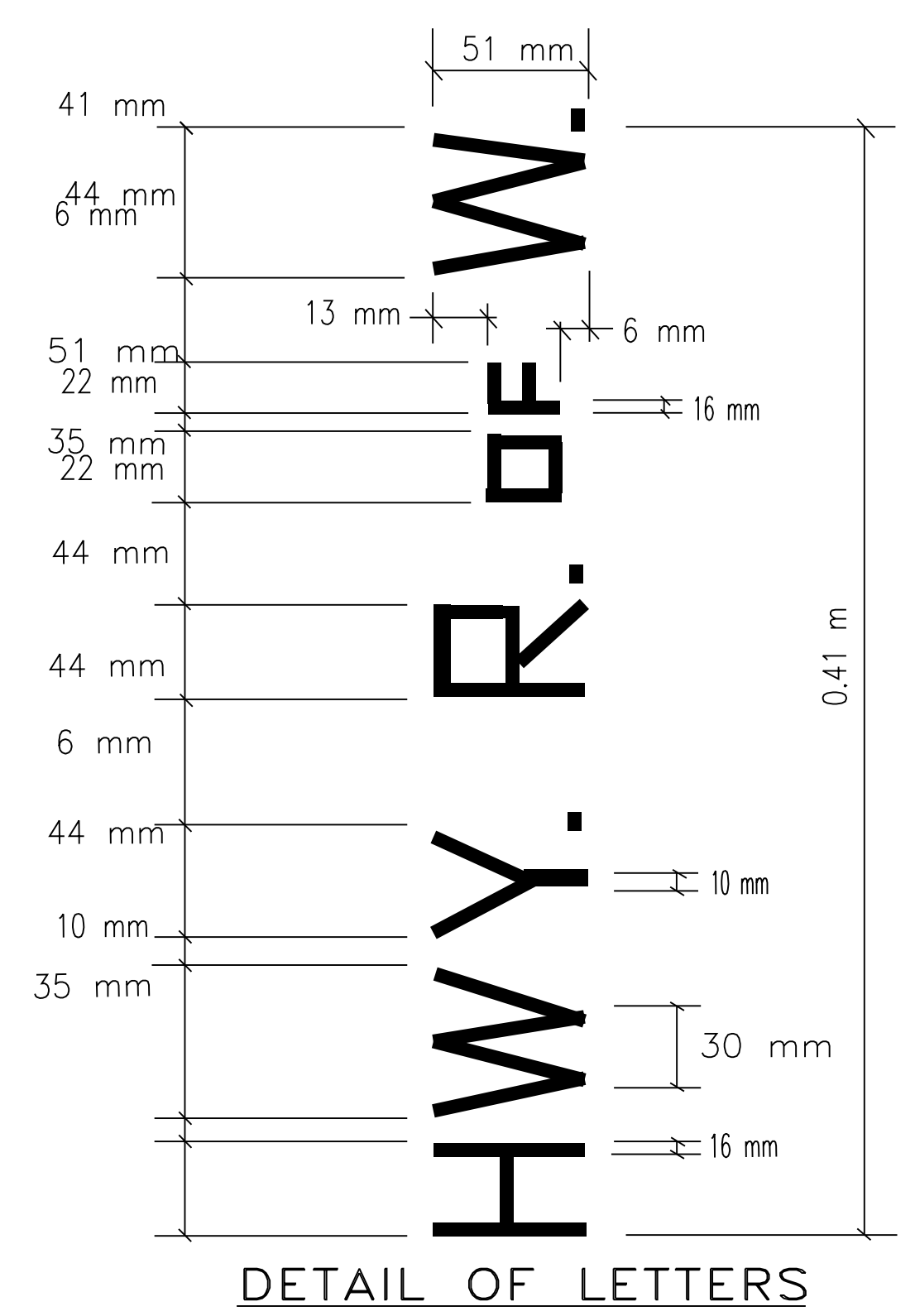
- Survey monuments and reference markers shall be placed as shown on the plans or as directed by COR/COTR. The cost of supplying all materials and installation of Right-Of-Way Monument and Markers shall be included in the unit price bid under item 62101-0000 & 62102-0000.
- If rock is encountered when installing the Right-Of-Way Monument and reference Marker, drill a 152 mm ϕ for survey monument and 305 mm ϕ for reference marker hole in the rock to the depth required to install the monument and marker to full depth. All holes drilled 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. Furnishings and placement 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/COTR.
- The Contractor shall be required to paint the reference markers per Section 708 and subsection 708.04 of FP-14:
 - Prime coat entire steel material and shall conform to subsection 708.04(a) or (b) of FP-14.
 - Coat white finish of paint the tip 762 mm and shall conform to subsection 708.04(c), (d), or (e) of FP-14.
 - All letters, numerals, symbols, etc. shall be painted on the reference markers using the dimensions shown using black Lamp point conforming to ASTM D 209. The required information to place on the reference markers shall be furnished to the Contractor by the COR/COTR.
- The Contractor has the option to use an approved State Highway paint specifications in lieu of that stated in Note (6) above. The Contractor shall submit (in writing) the paint specifications and request for use on the project at least 14 days in advance of the paint use for review and approval. The contractor shall not be allowed to use any paint until the proper approval has been given by the COR/COTR. Any painting performed by the contractor without the proper approval shall cause the work to be rejected.
- The Contractor shall use glass fiber type highway delineators. The cost of supplying materials and installation of steel U-channel shall be included in the unit price bid under Items 63308-2000, 63309-0010, and 63309-0020.
- 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



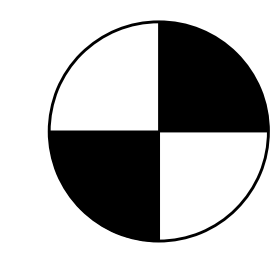
SURVEY MONUMENT NTS



REFERENCE MARKER NTS



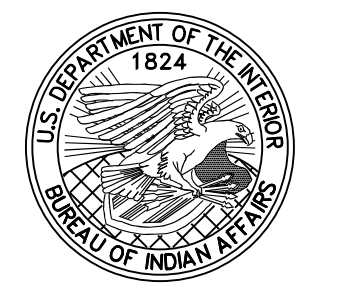
DETAIL OF LETTERS



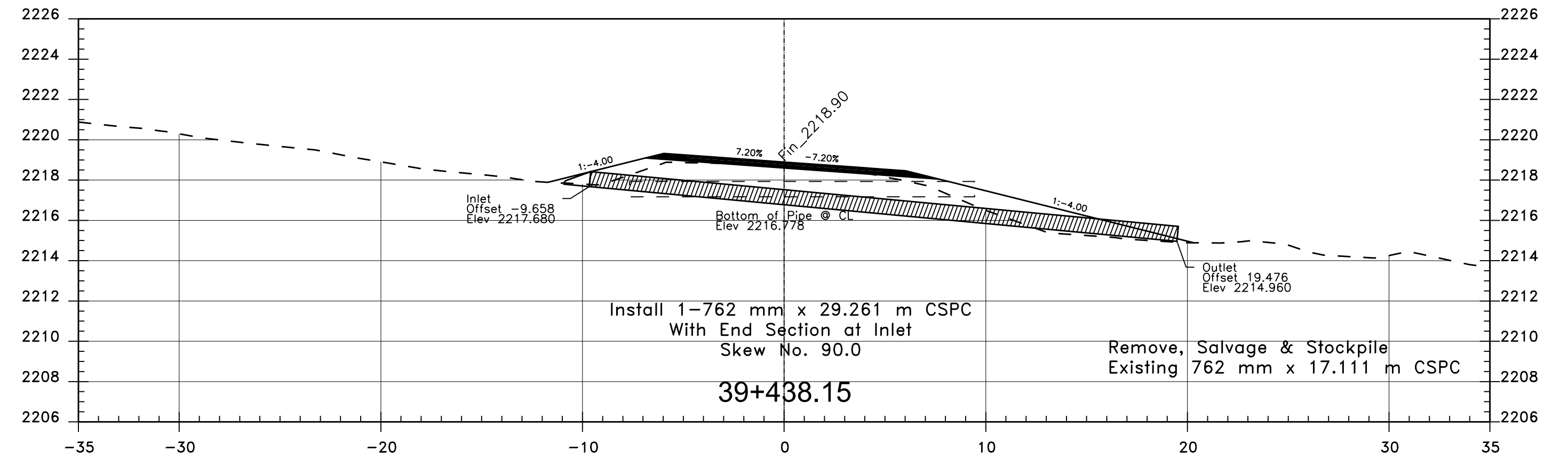
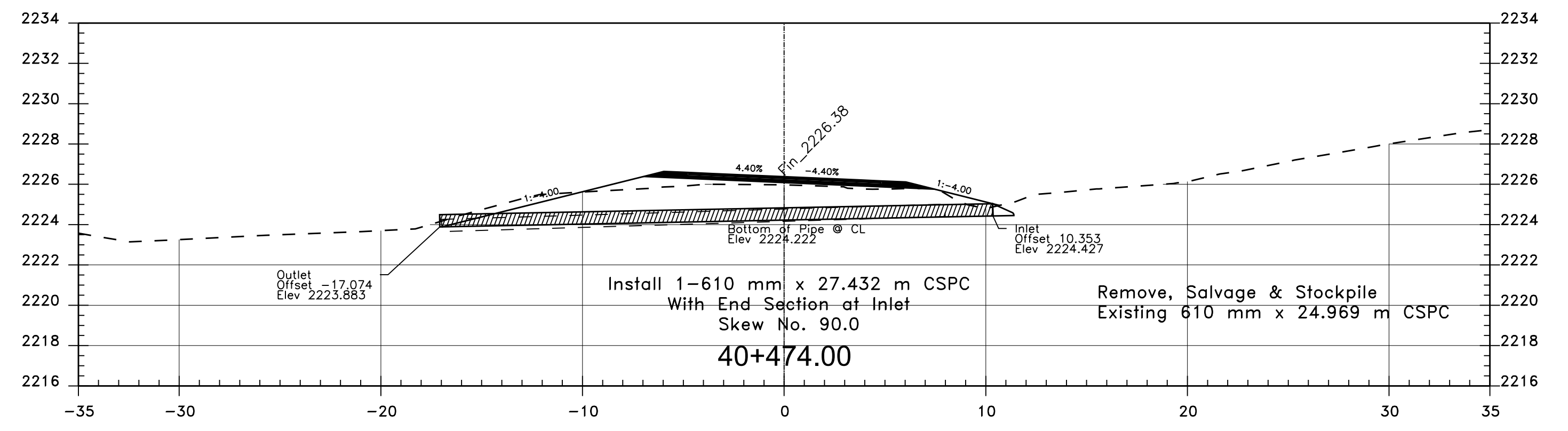
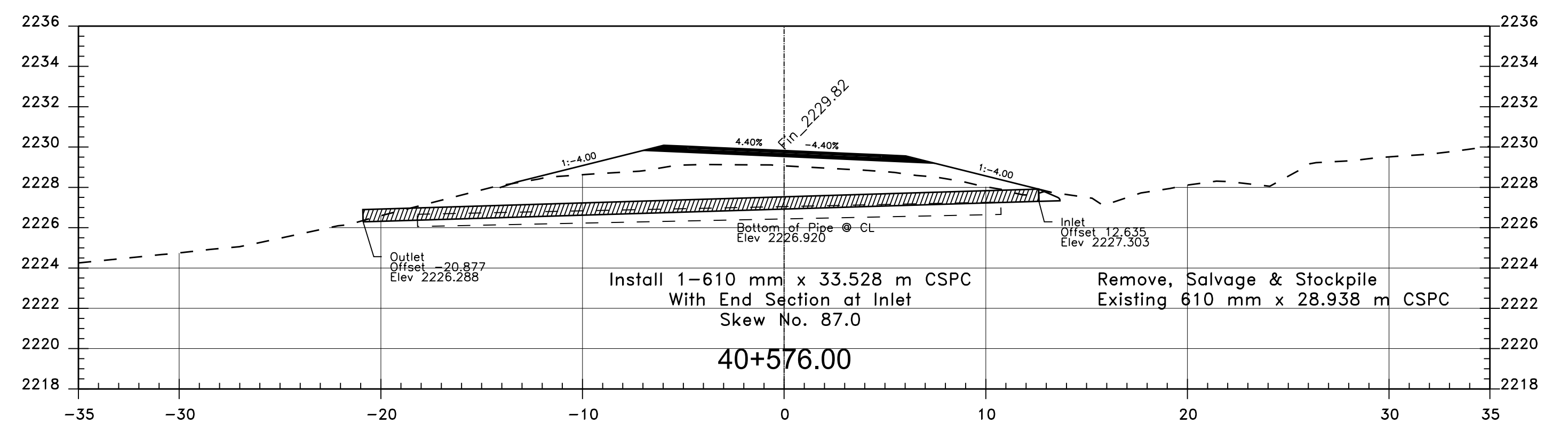
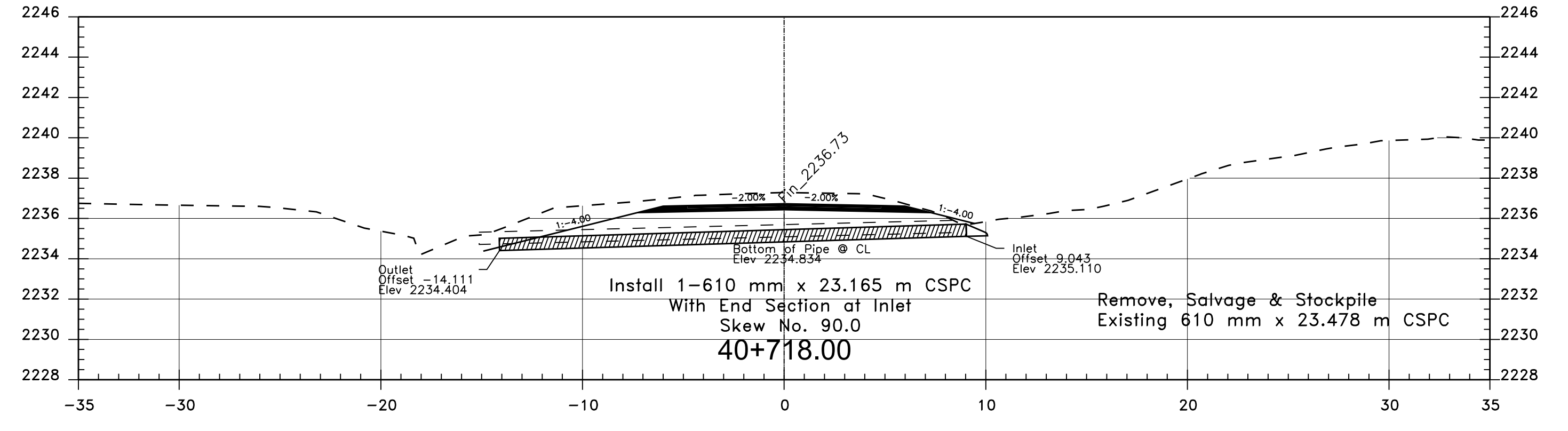
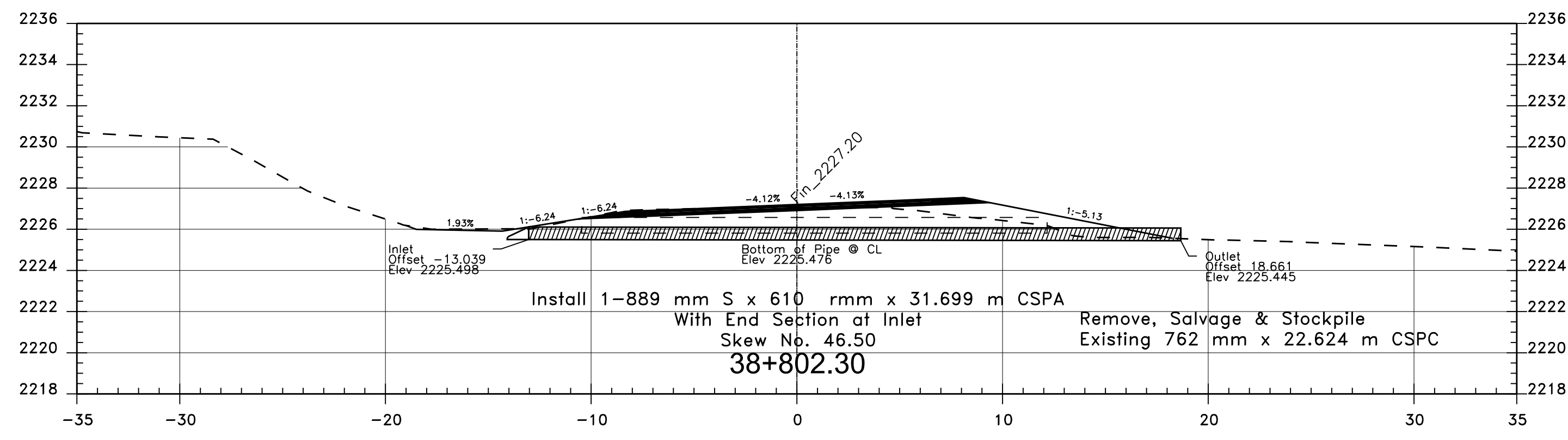
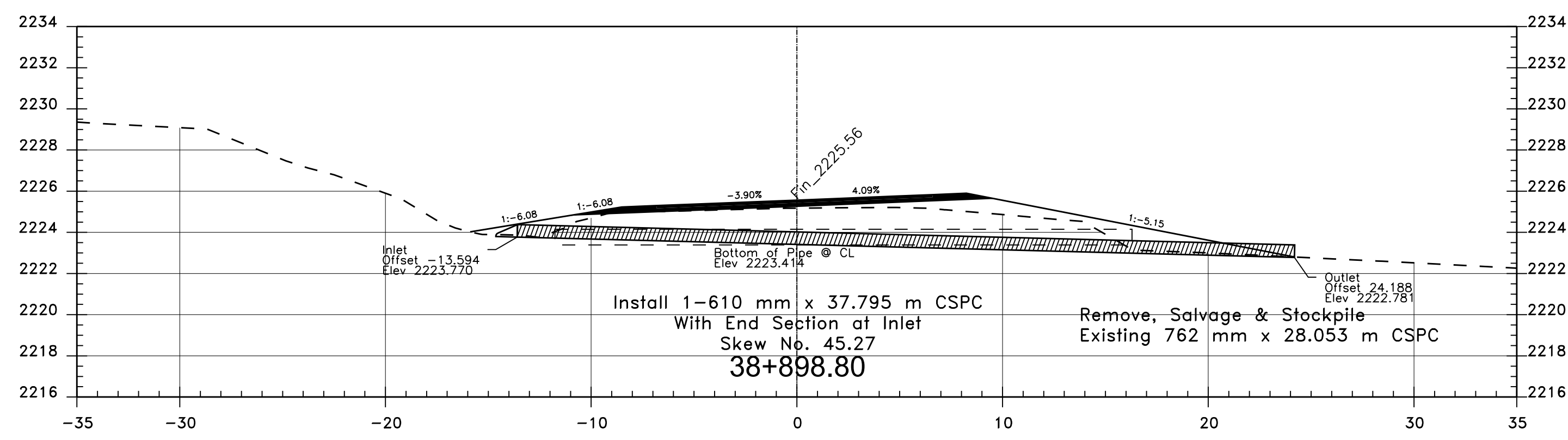
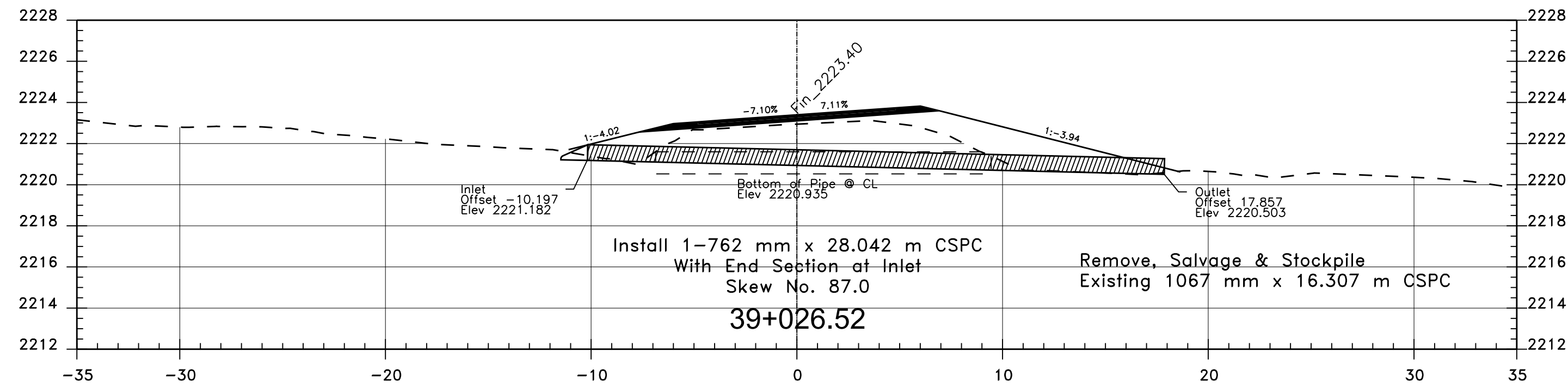
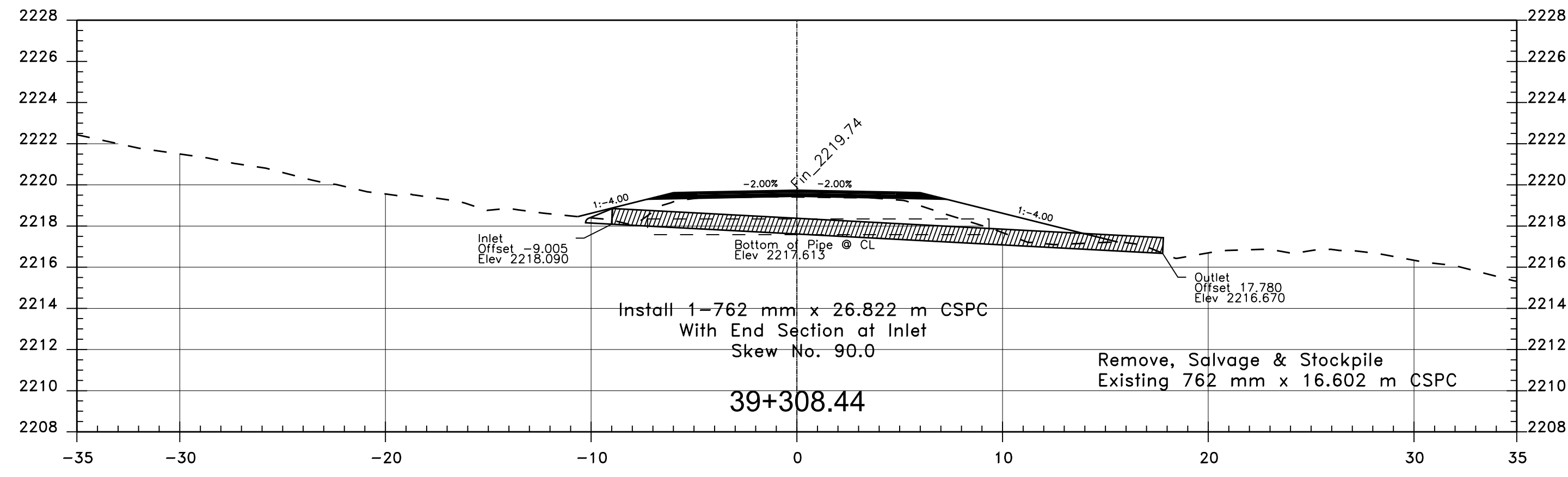
R/W MONUMENT SYMBOL

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION
RIGHT-OF-WAY & REFERENCE
MARKERS DETAIL

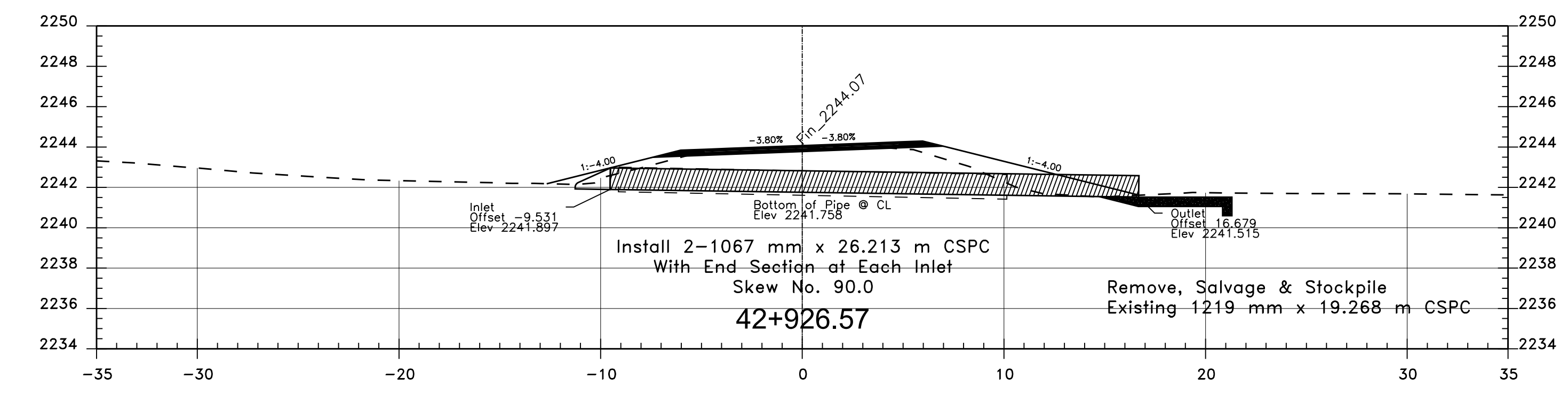
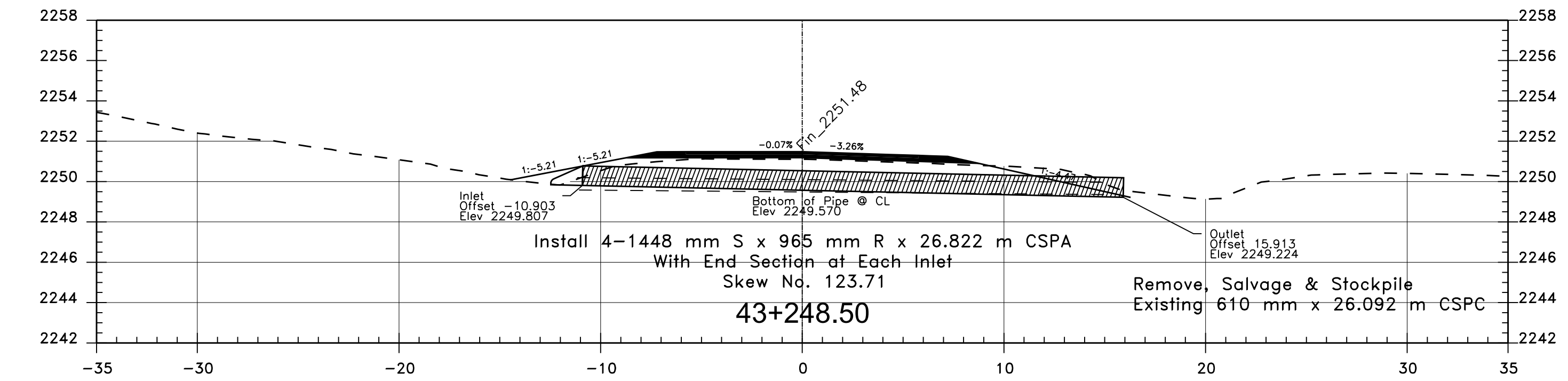
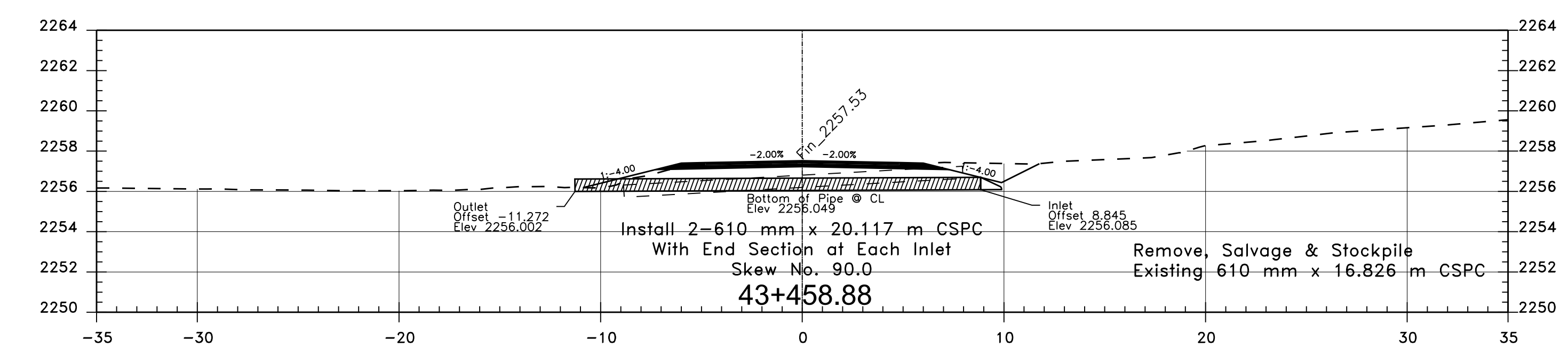
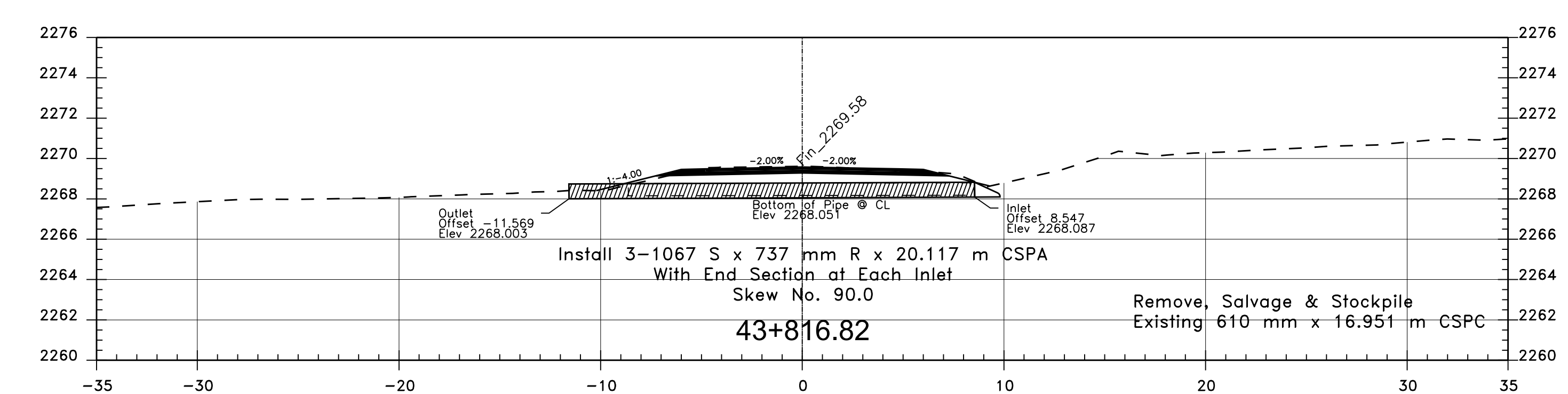
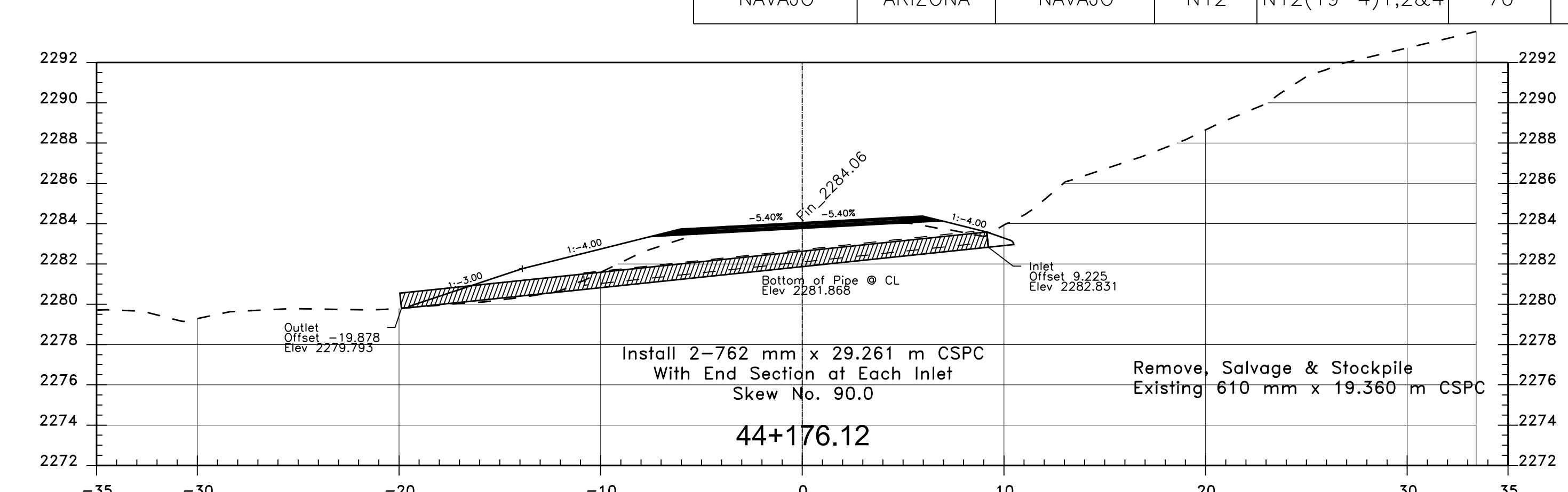
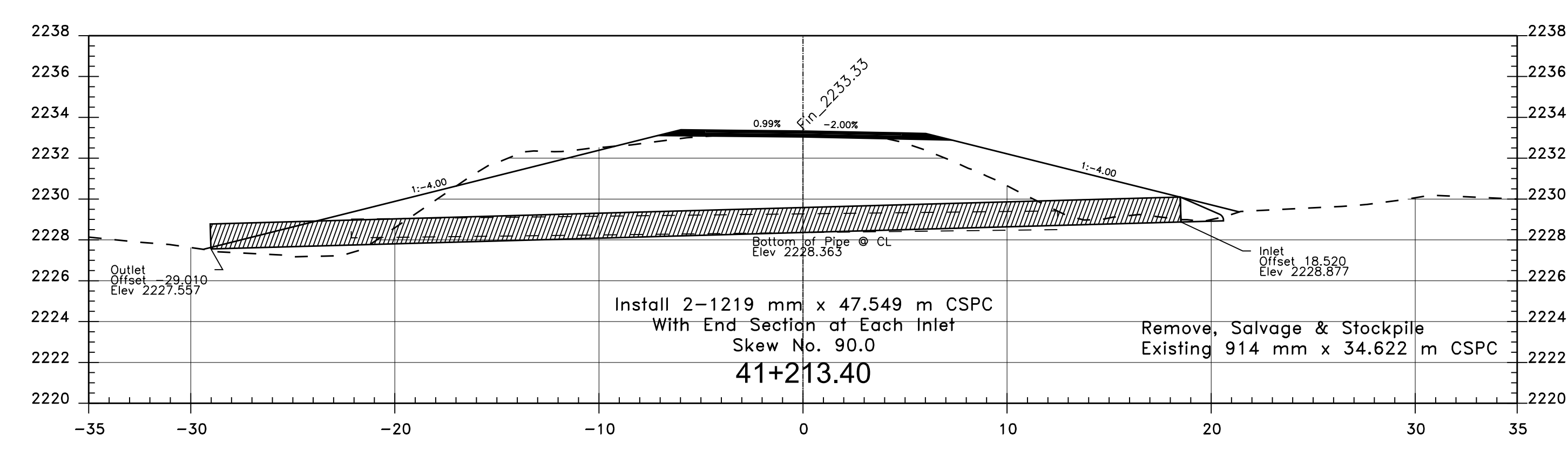
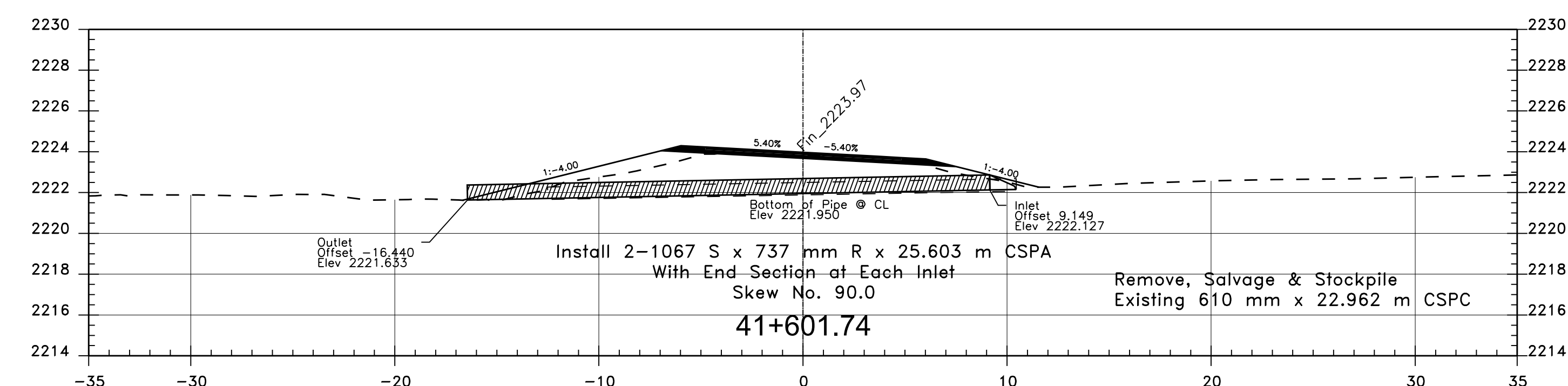
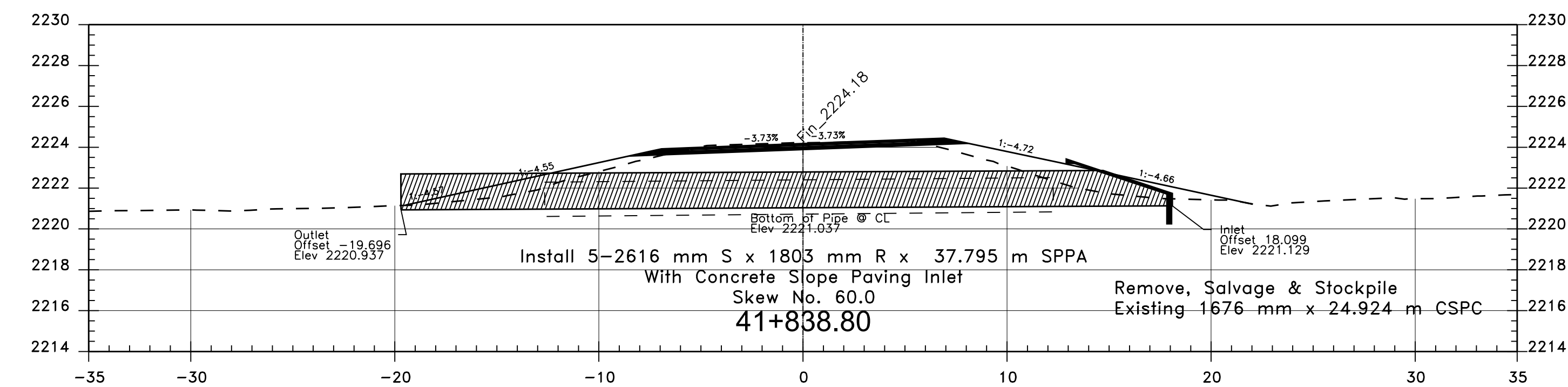
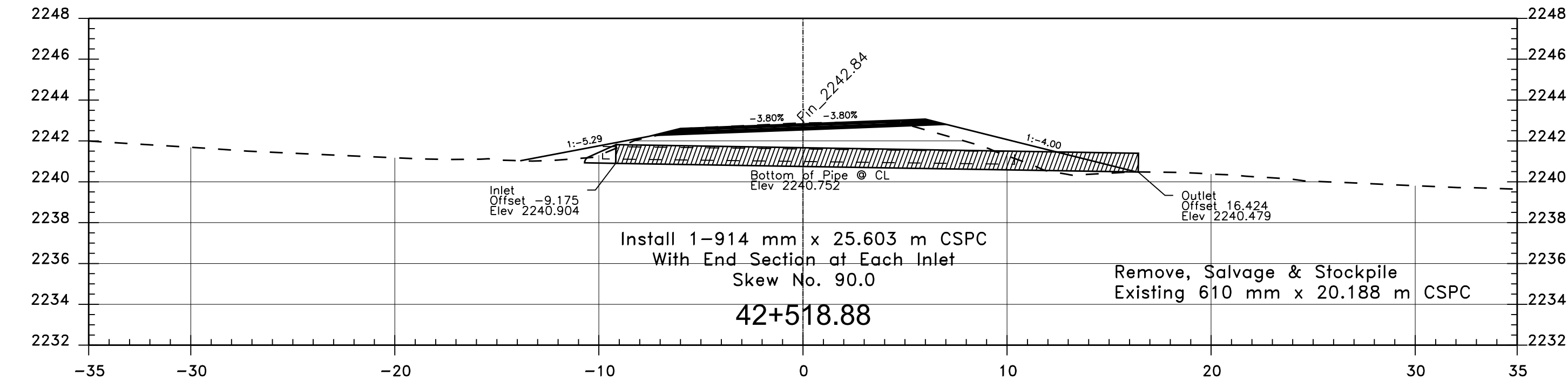
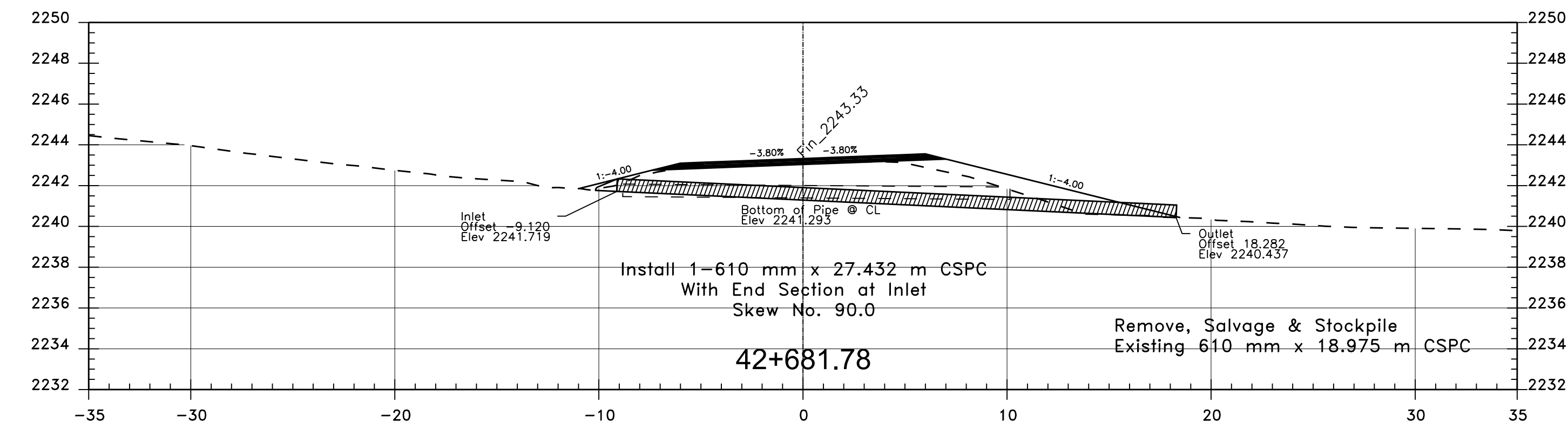
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DESIGNED BY: NRDOT DATE: 2/3/2014
REVISED: 6/1/2015 BY: Leroy.Toledo
Sht 68 N12 ROW Mkr.dgn



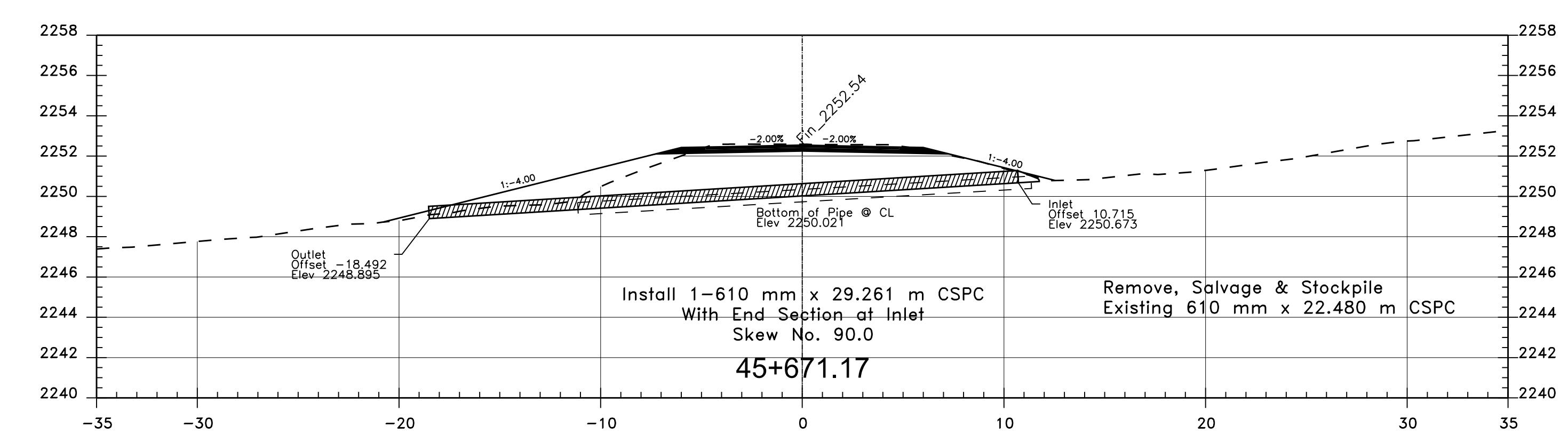
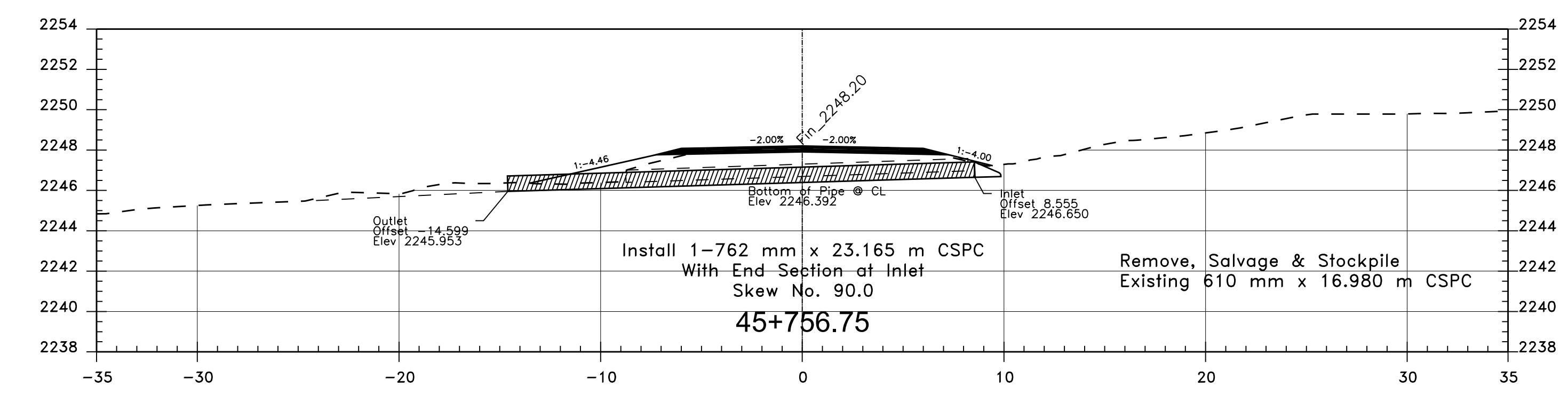
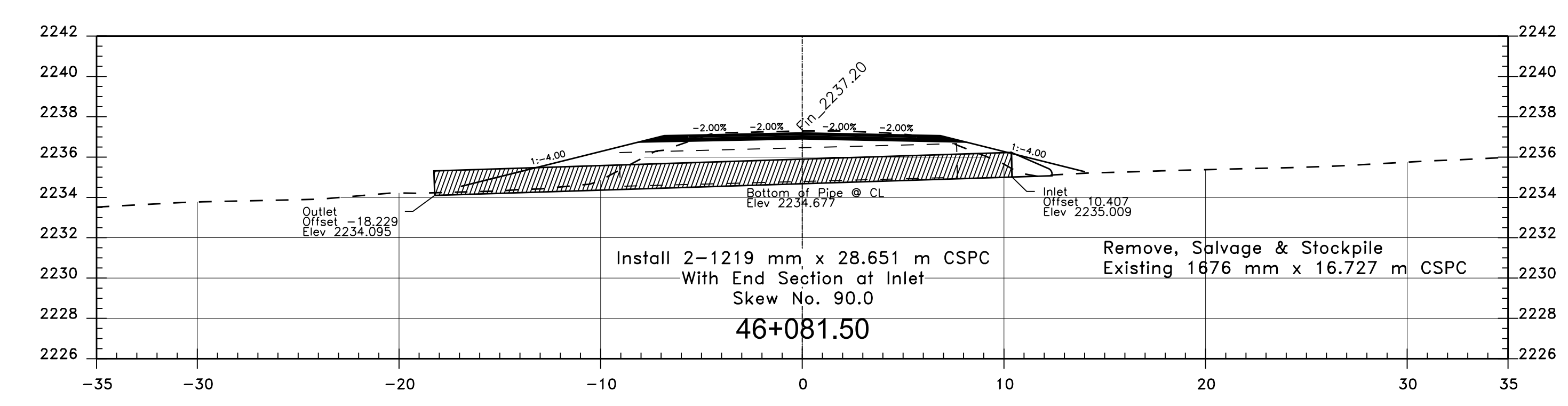
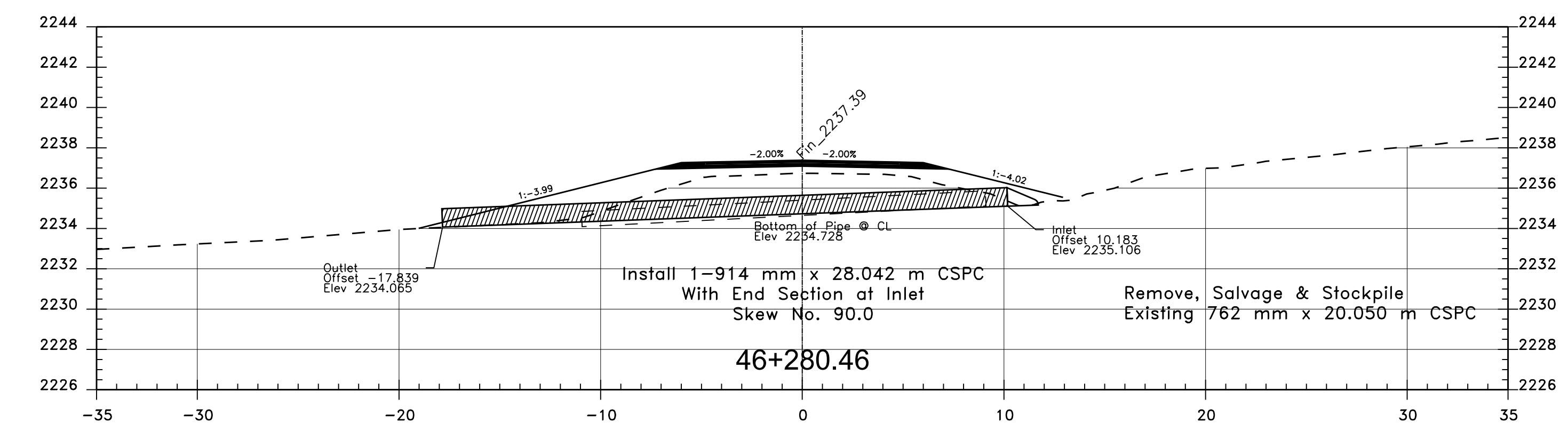
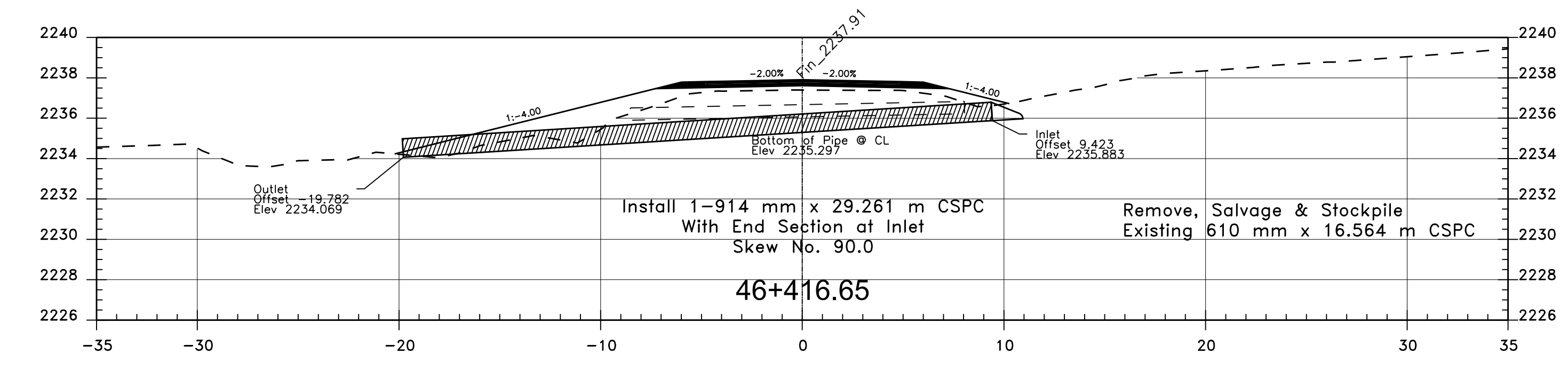
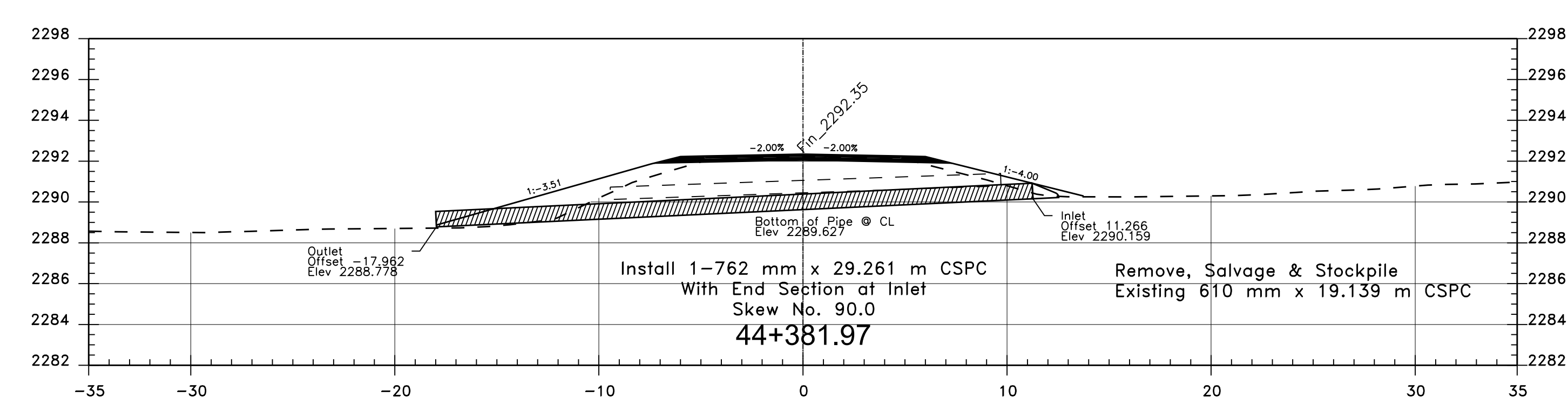
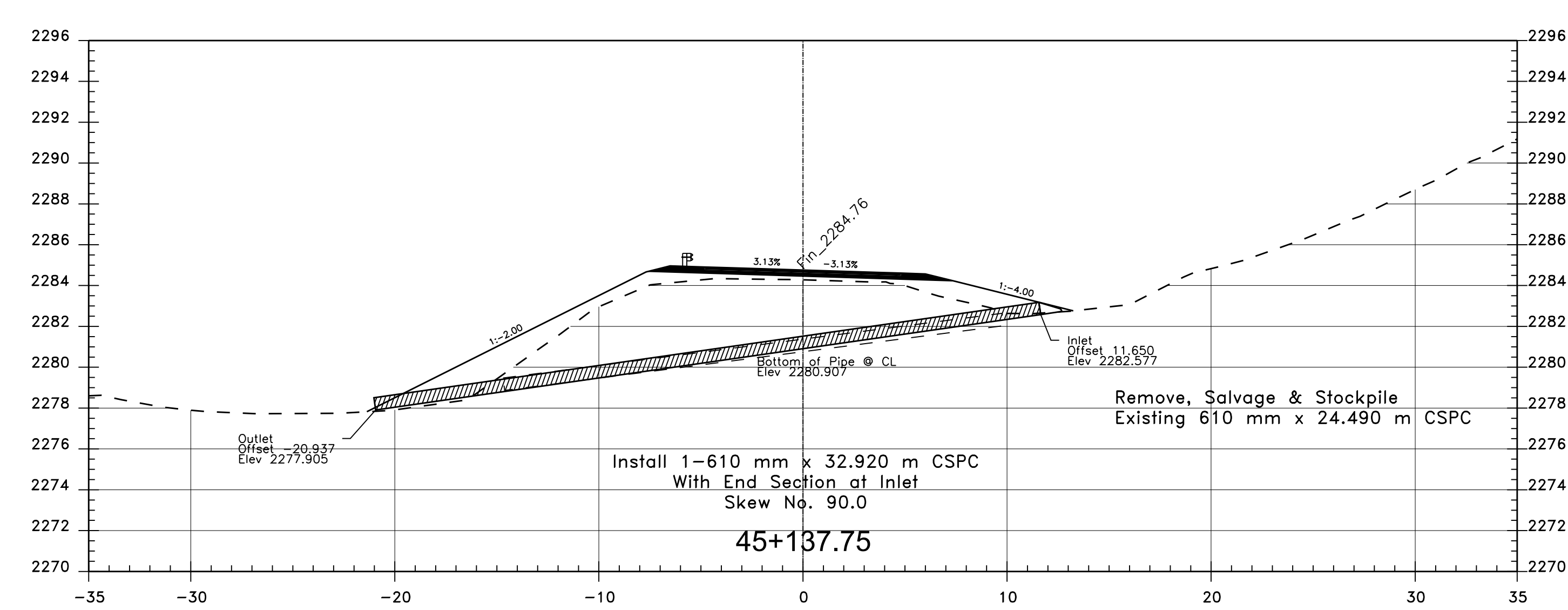
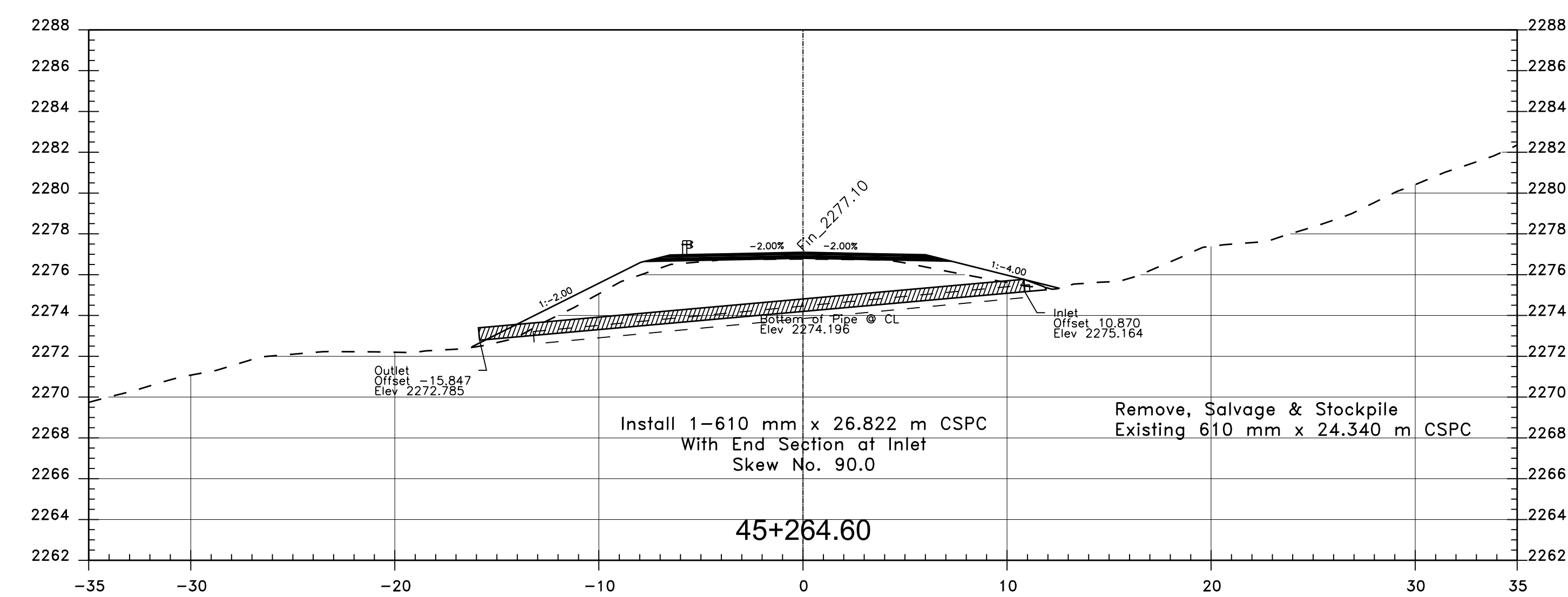
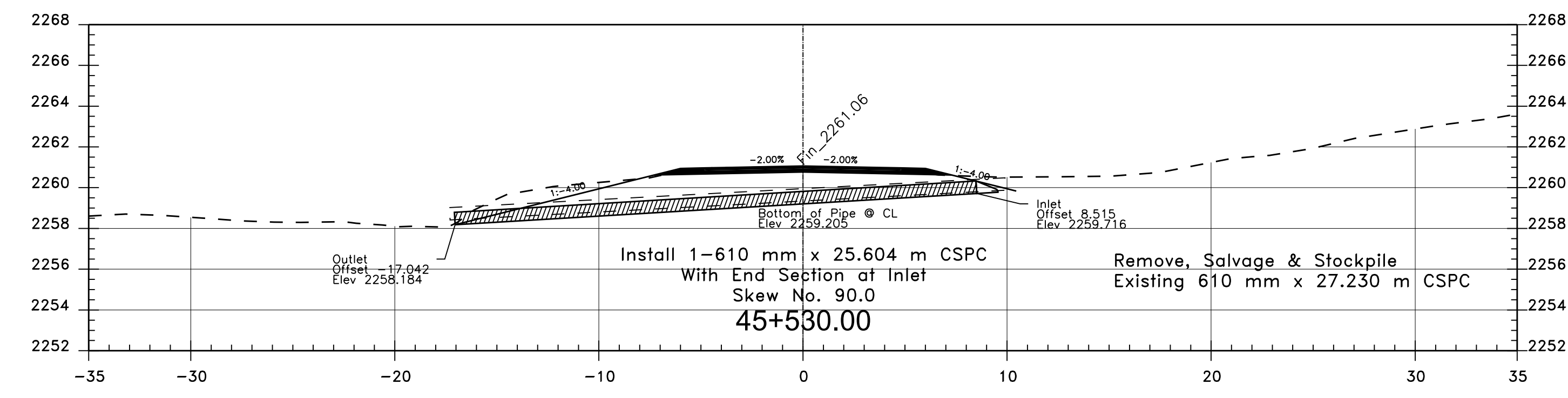
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	69	88



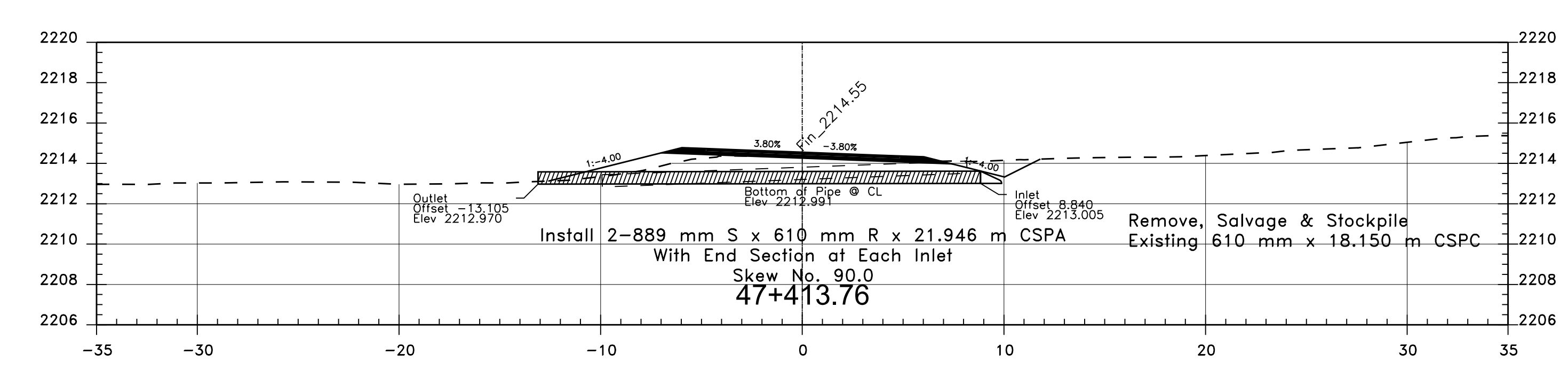
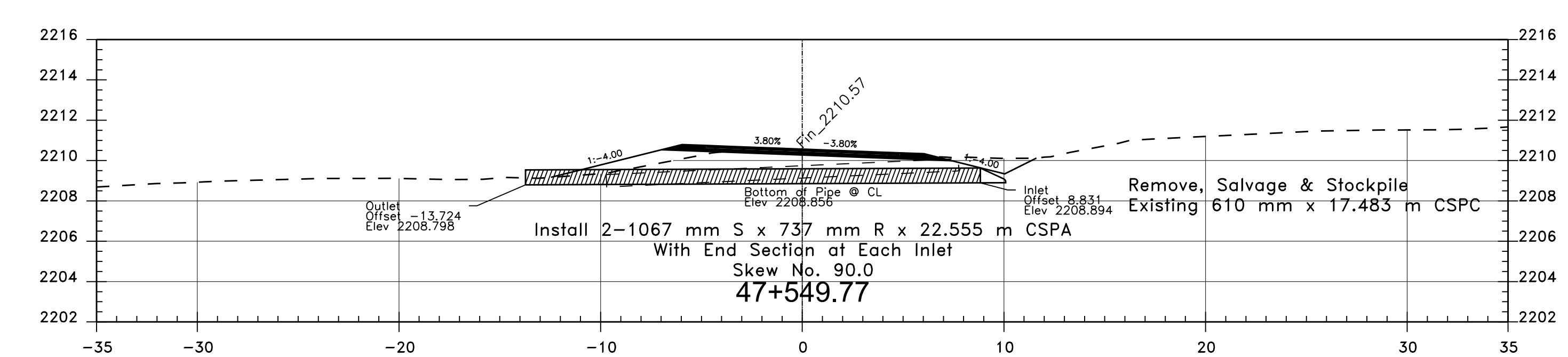
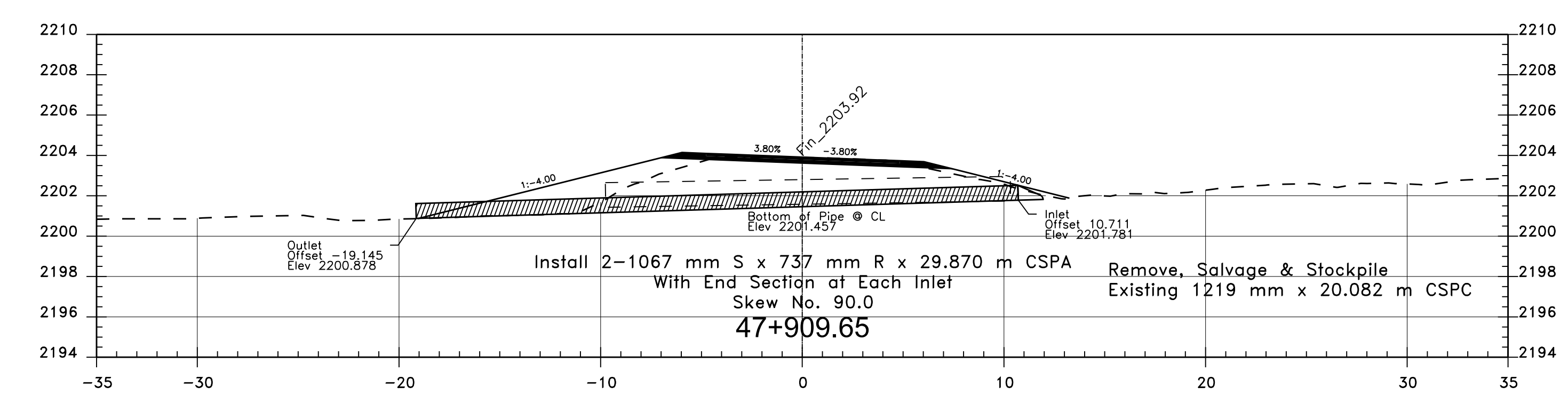
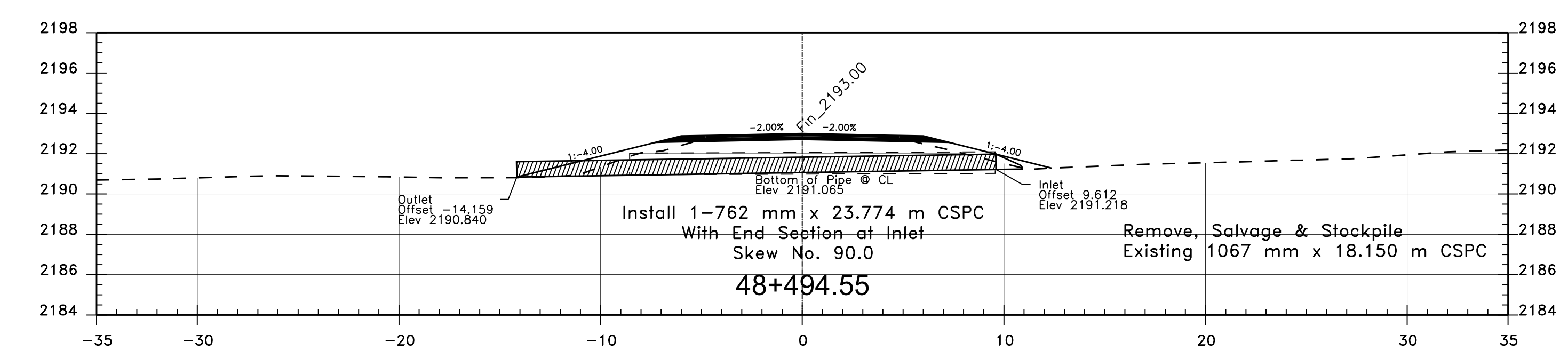
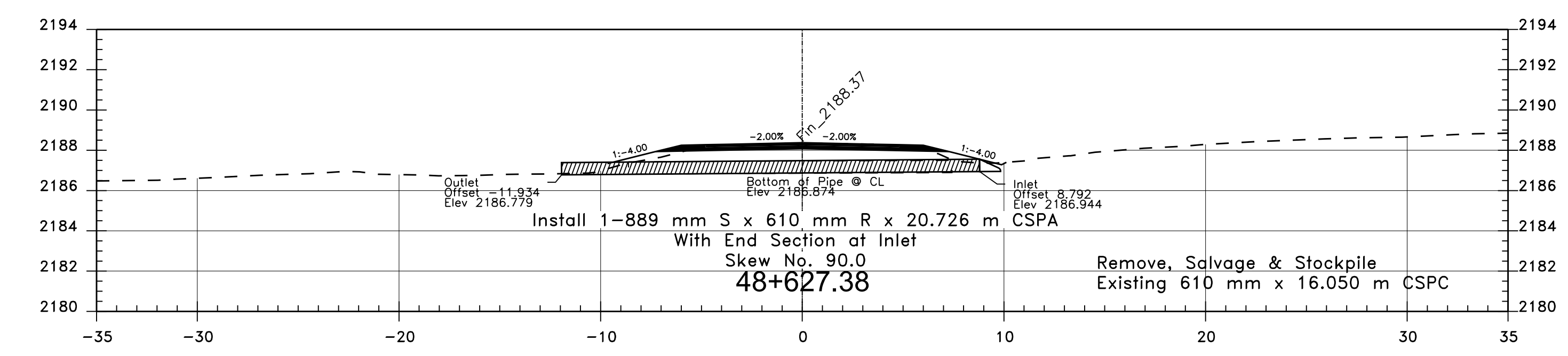
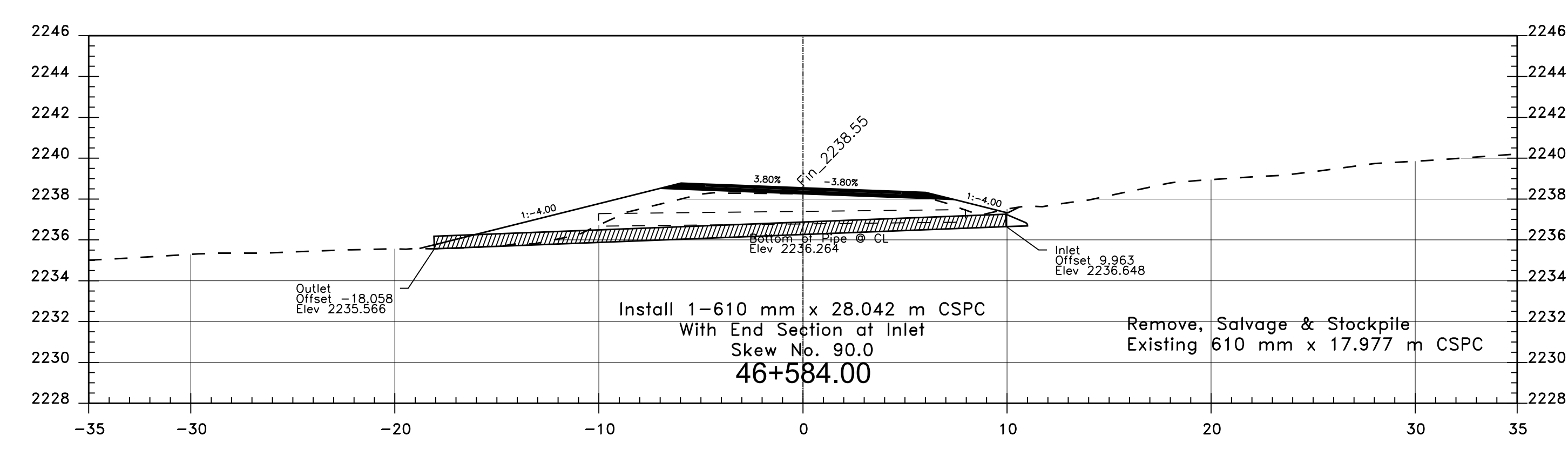
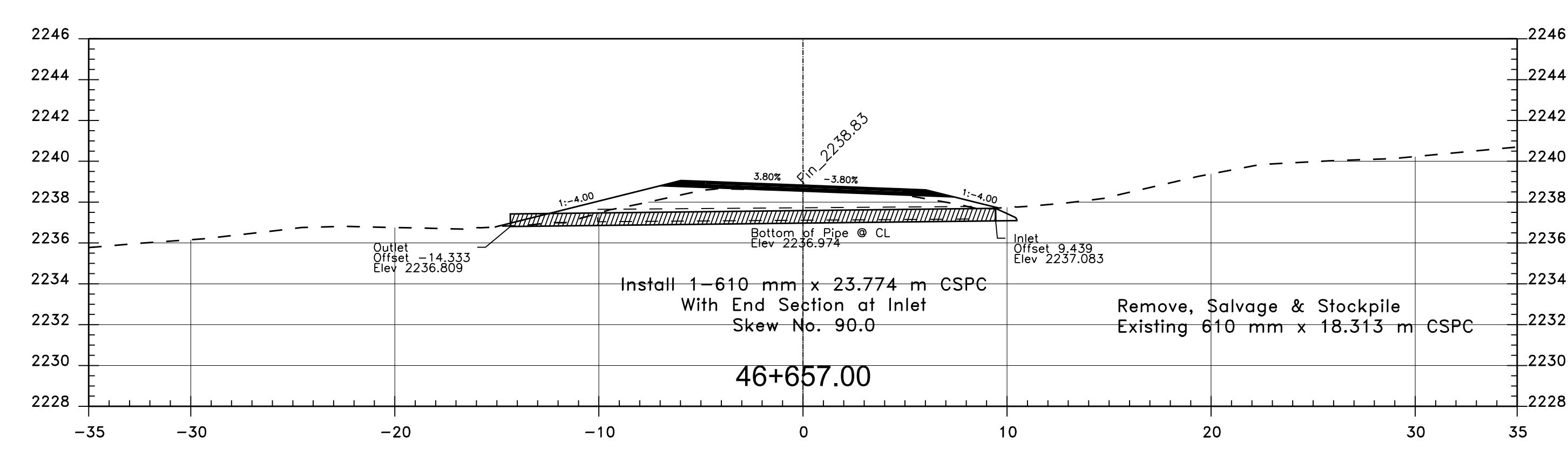
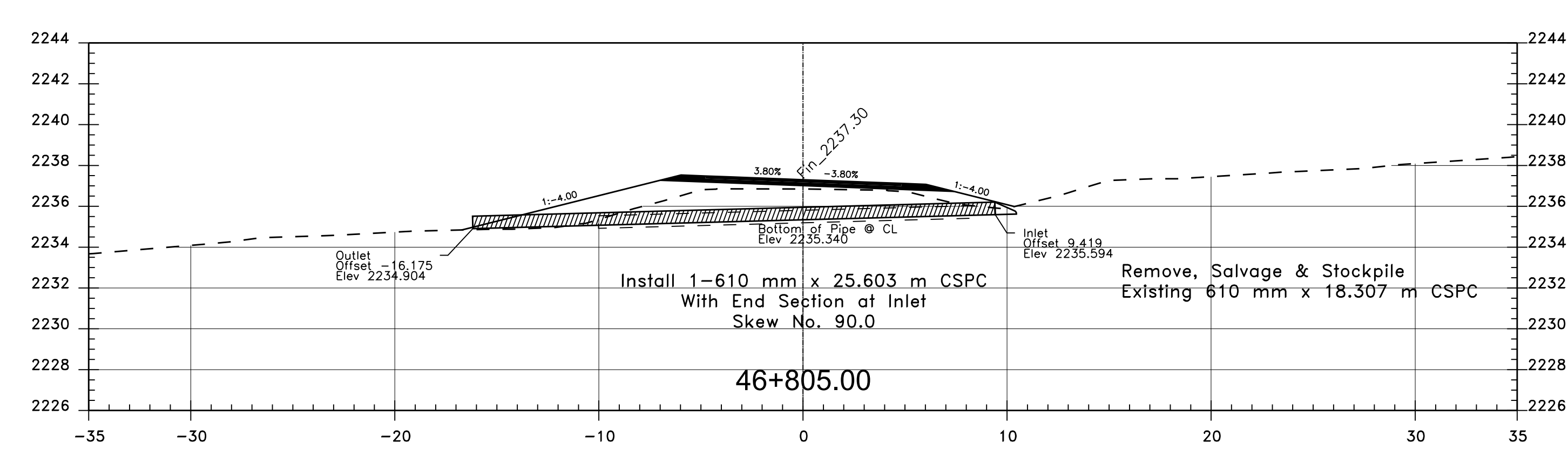
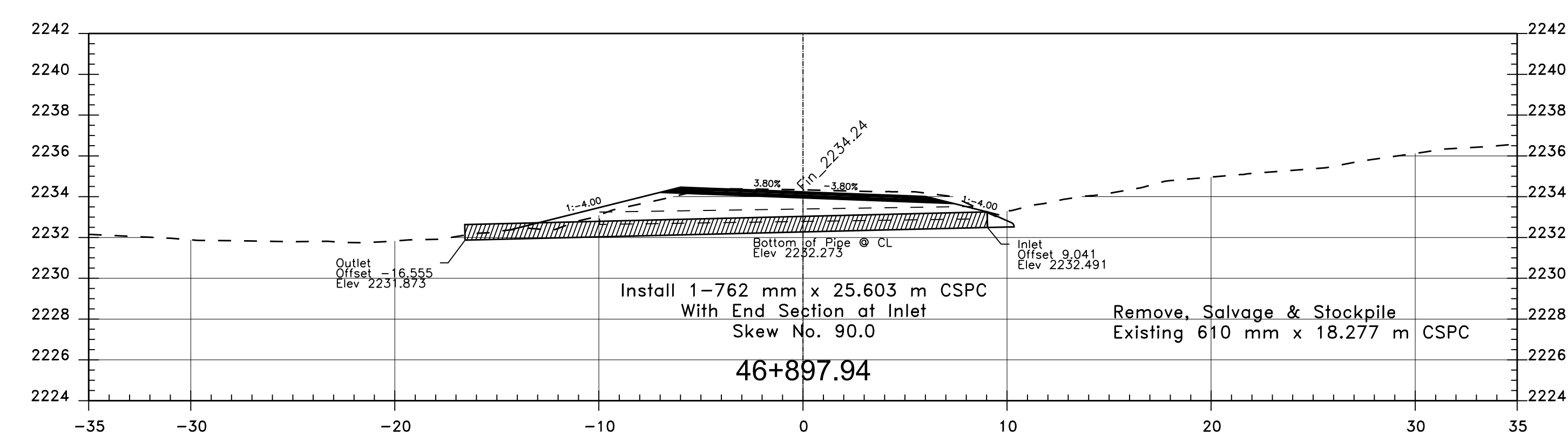
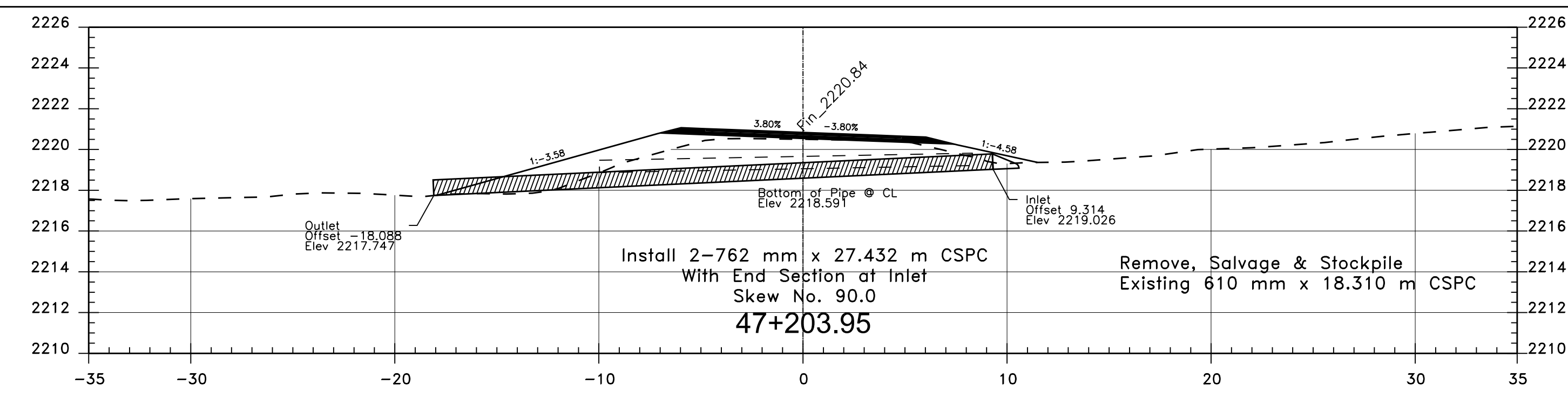
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	70	88



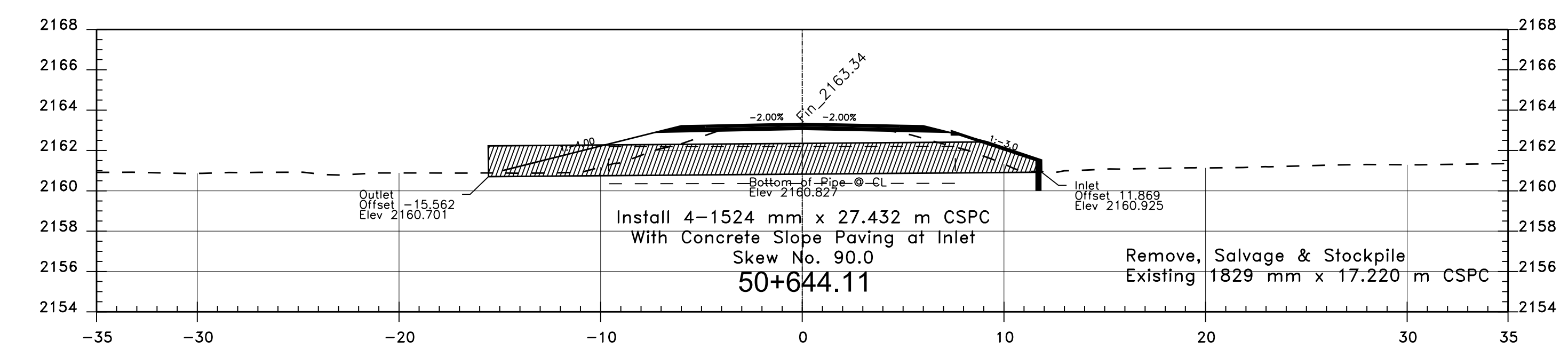
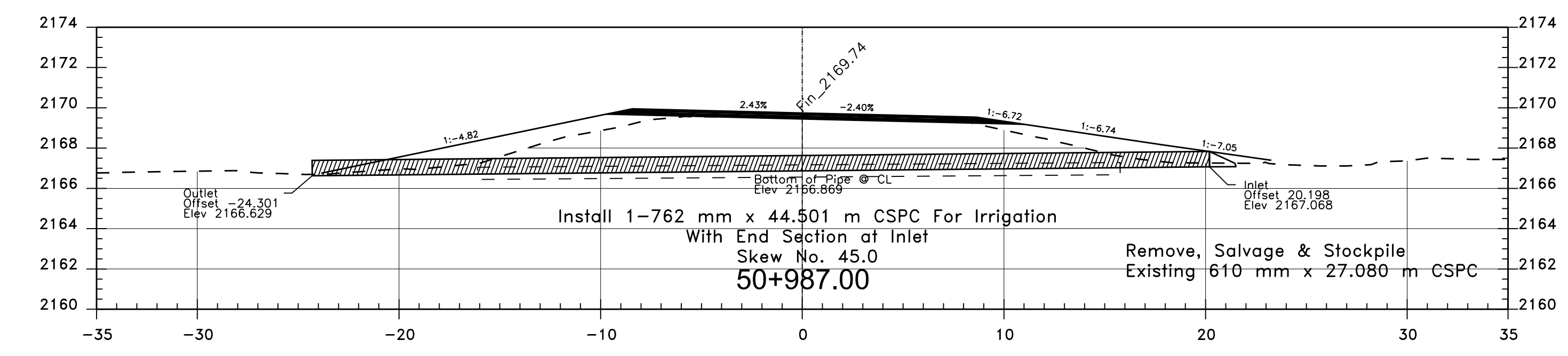
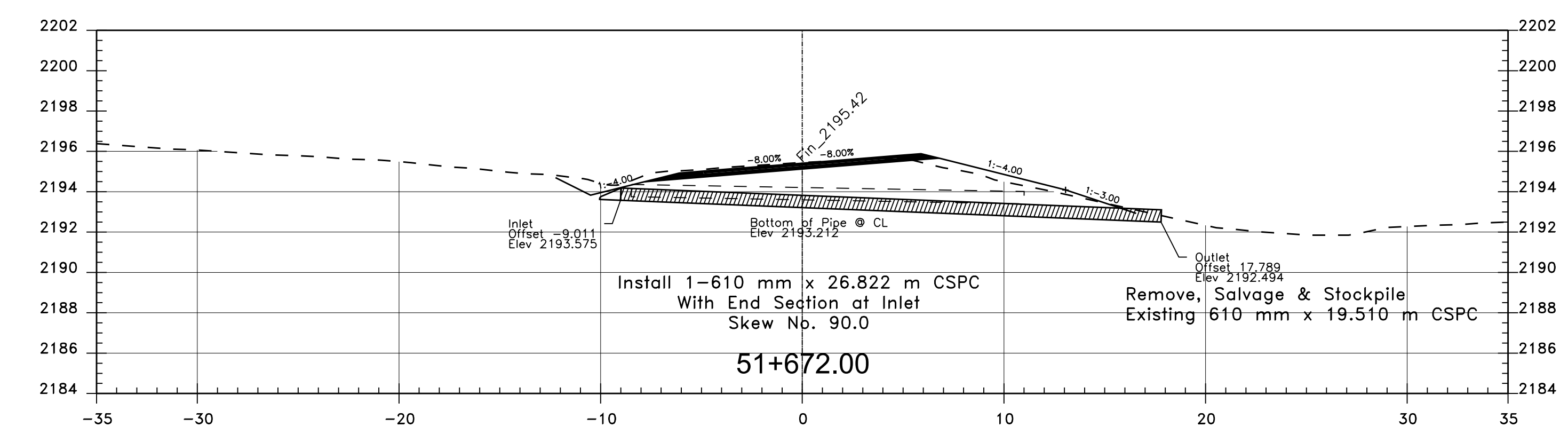
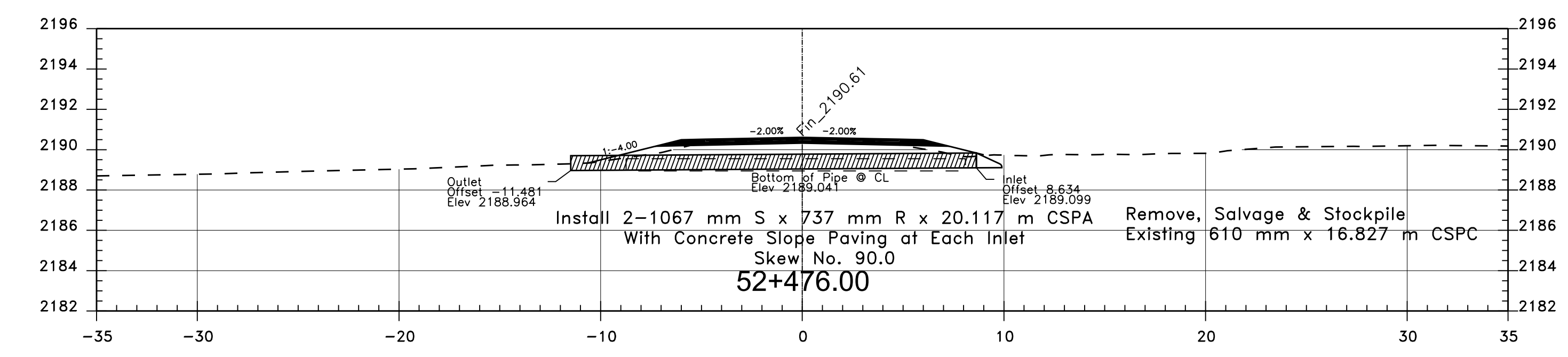
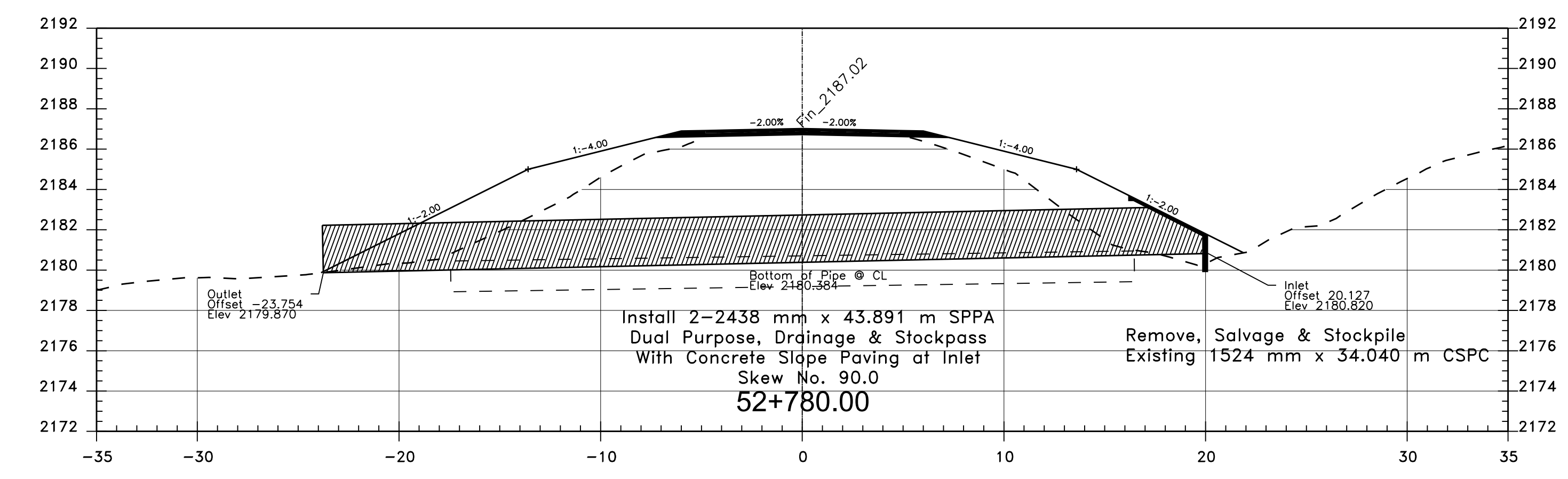
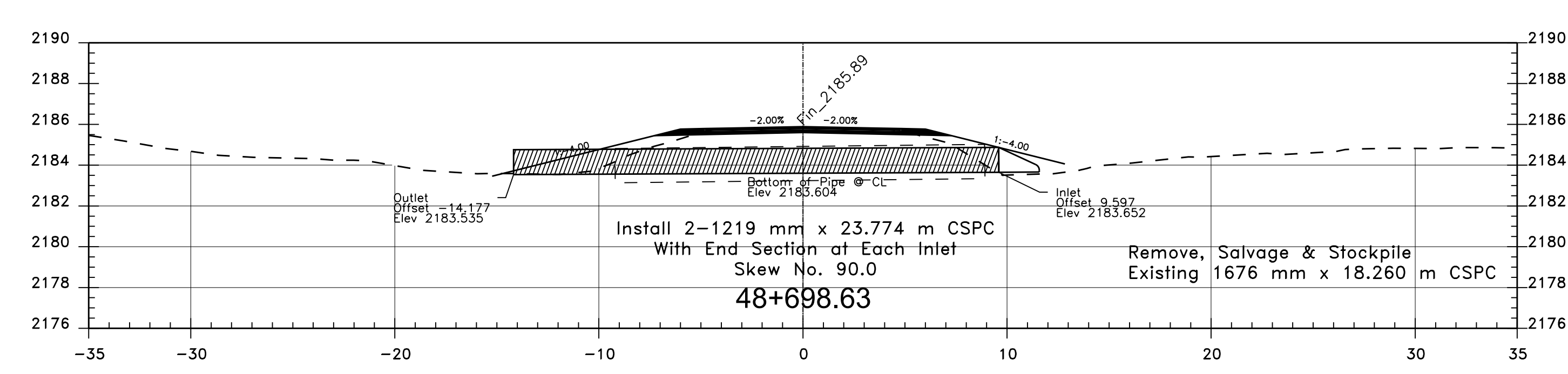
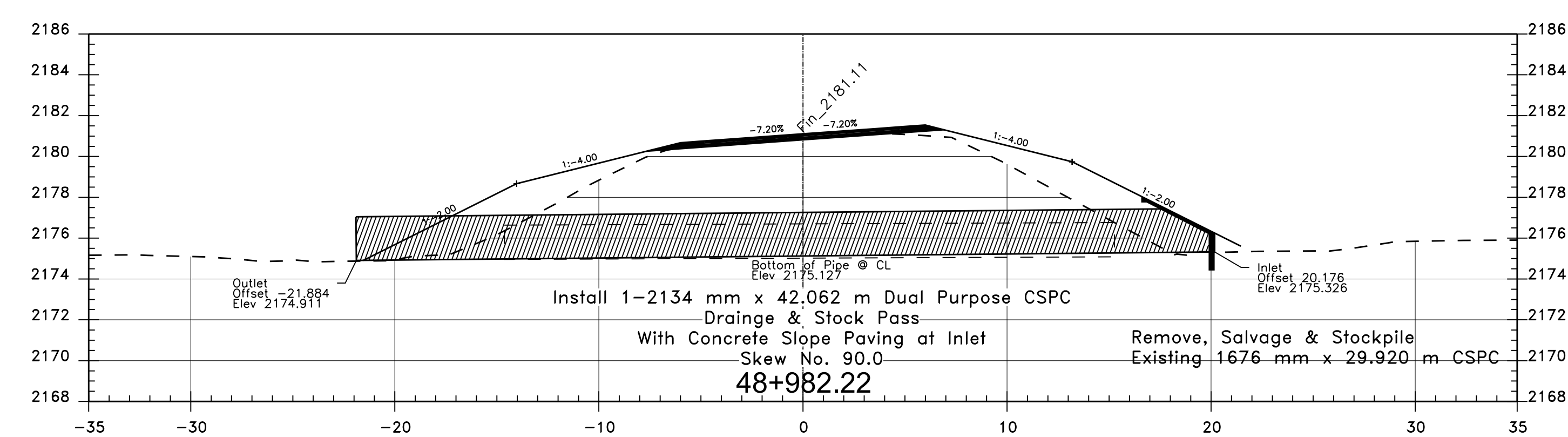
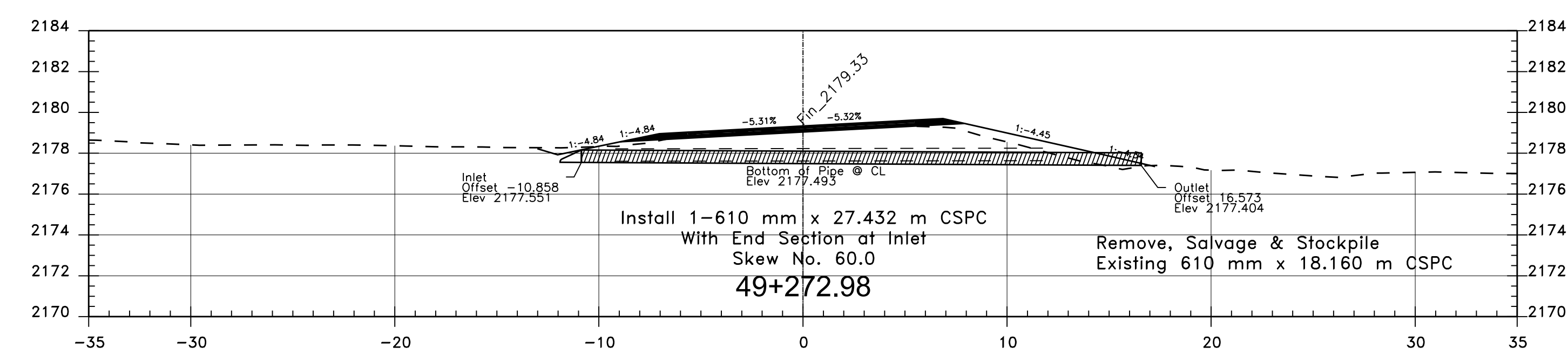
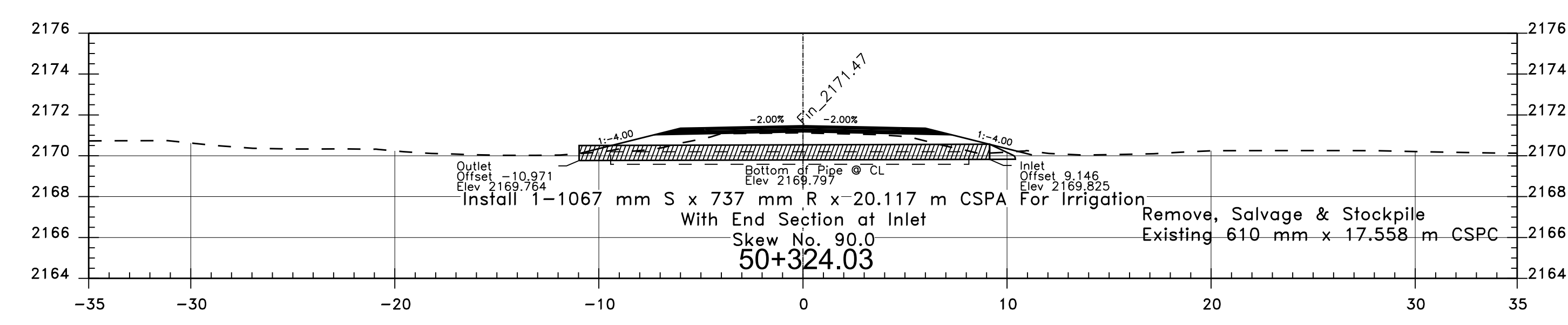
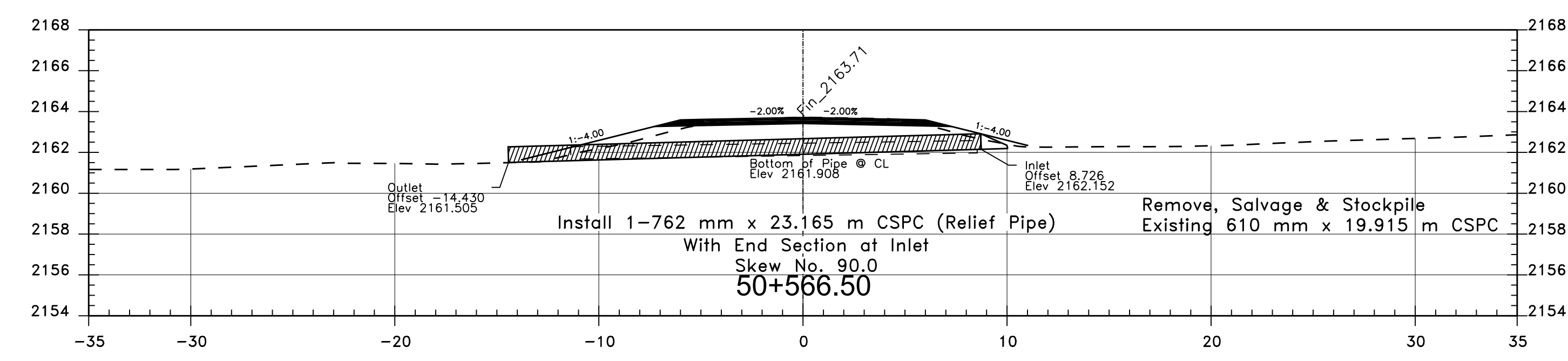
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	71	88



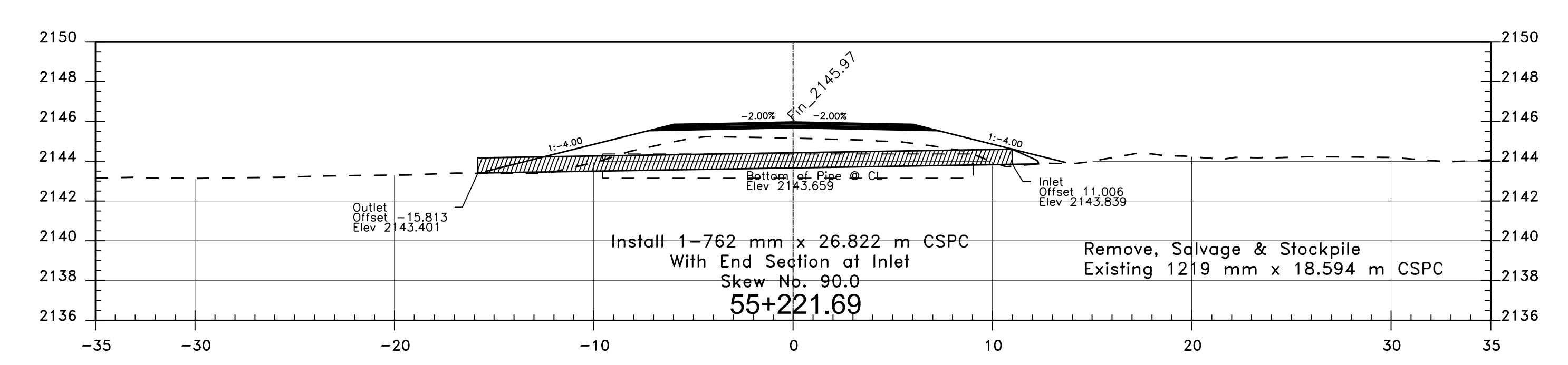
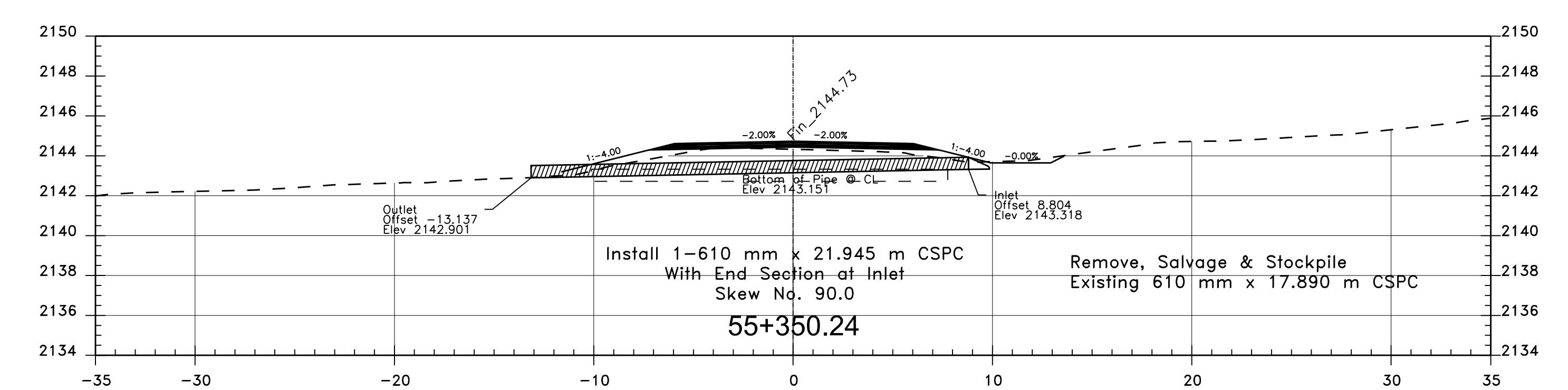
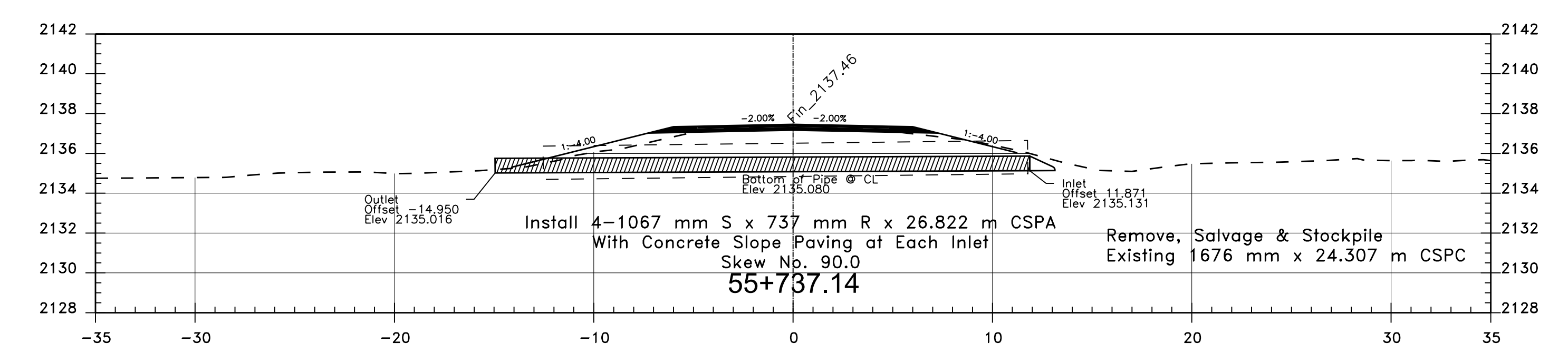
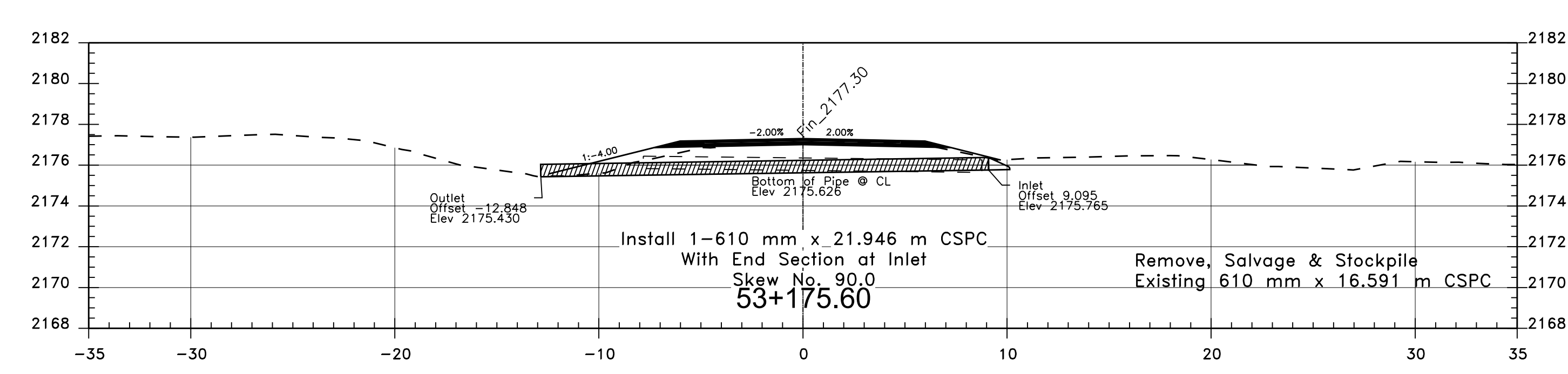
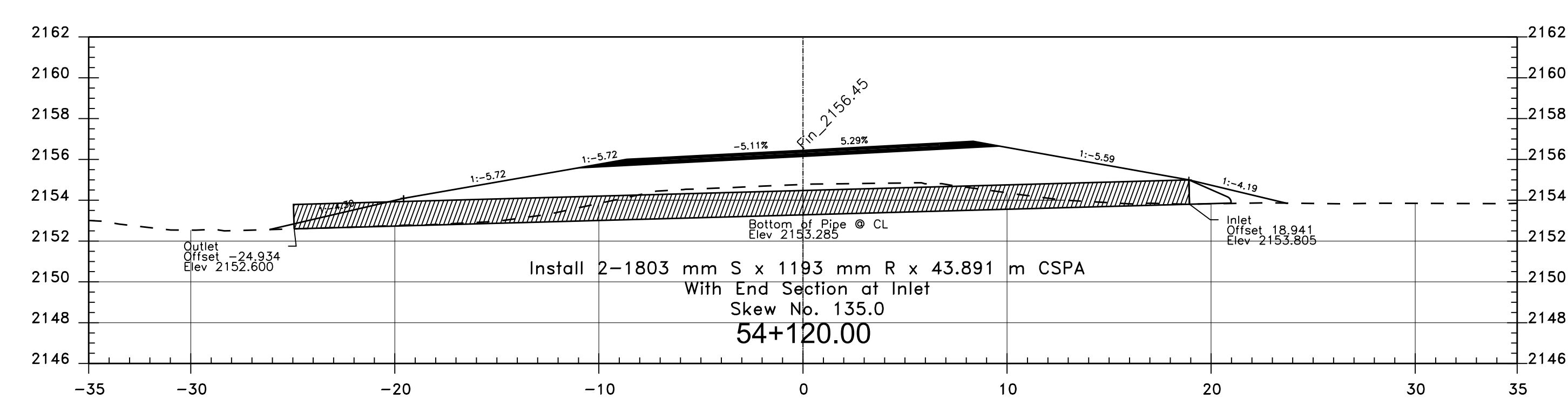
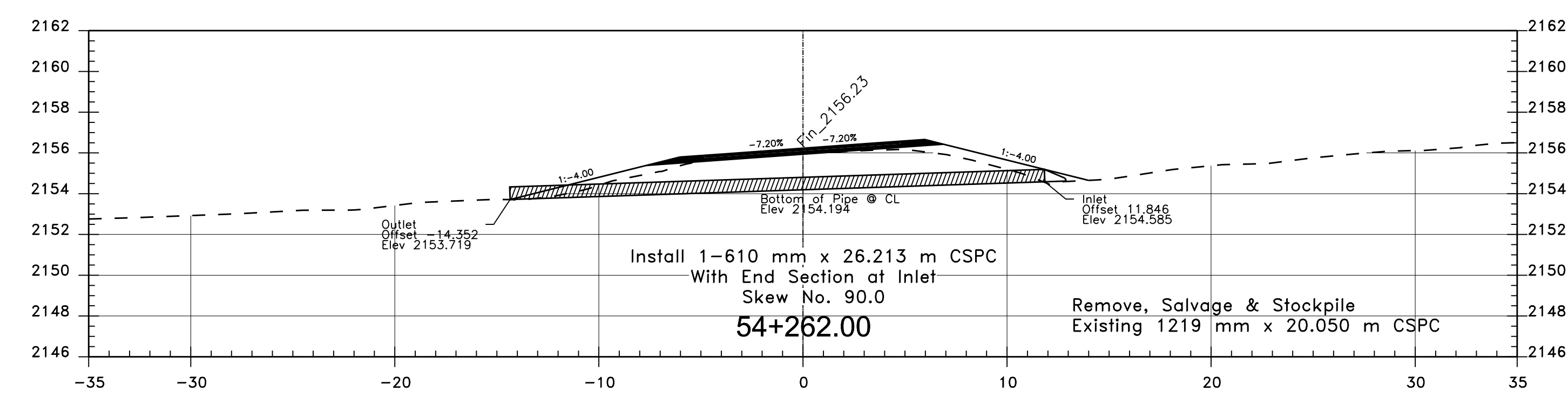
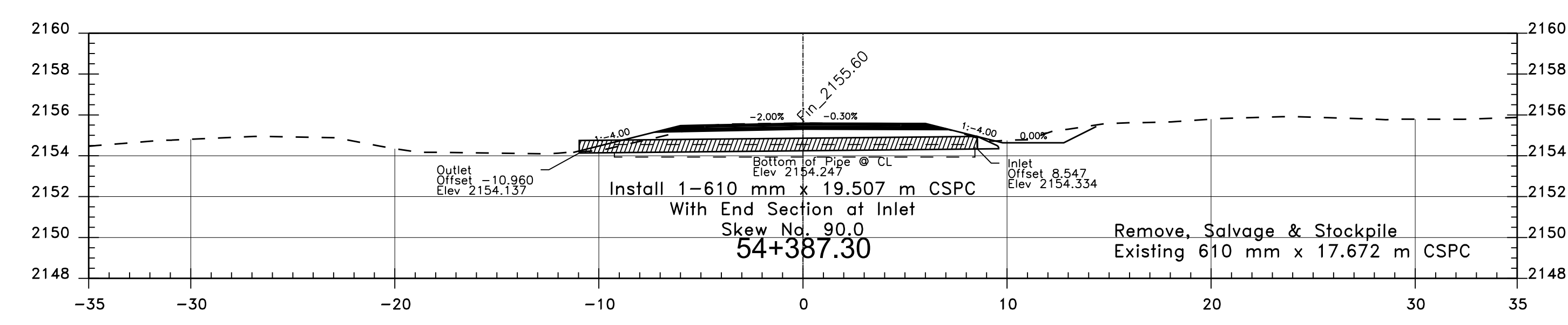
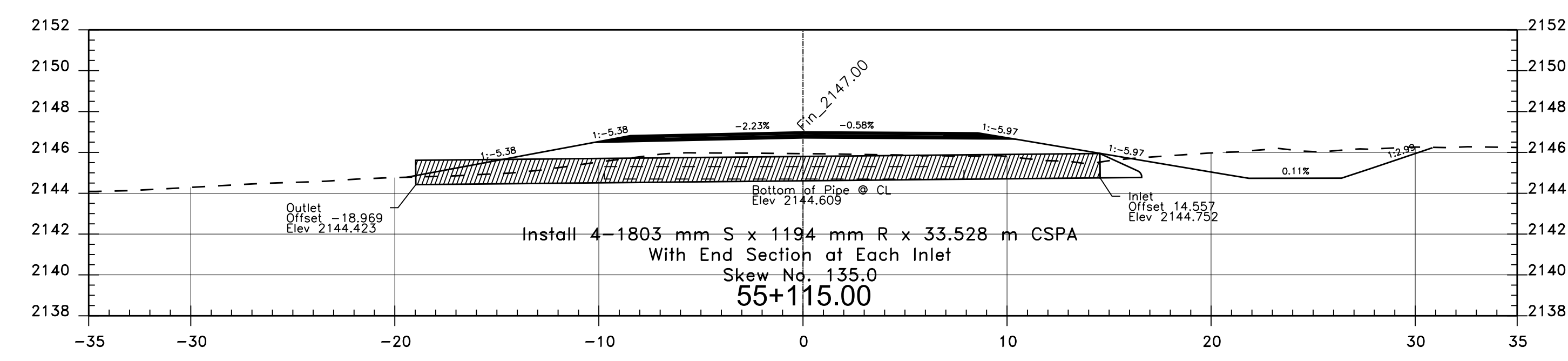
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	72	88



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	73	88



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	74	88



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	B-01	88

**BRIDGE N504 REPLACEMENT
BRIDGE AND ROADWAY ESTIMATED QUANTITIES**

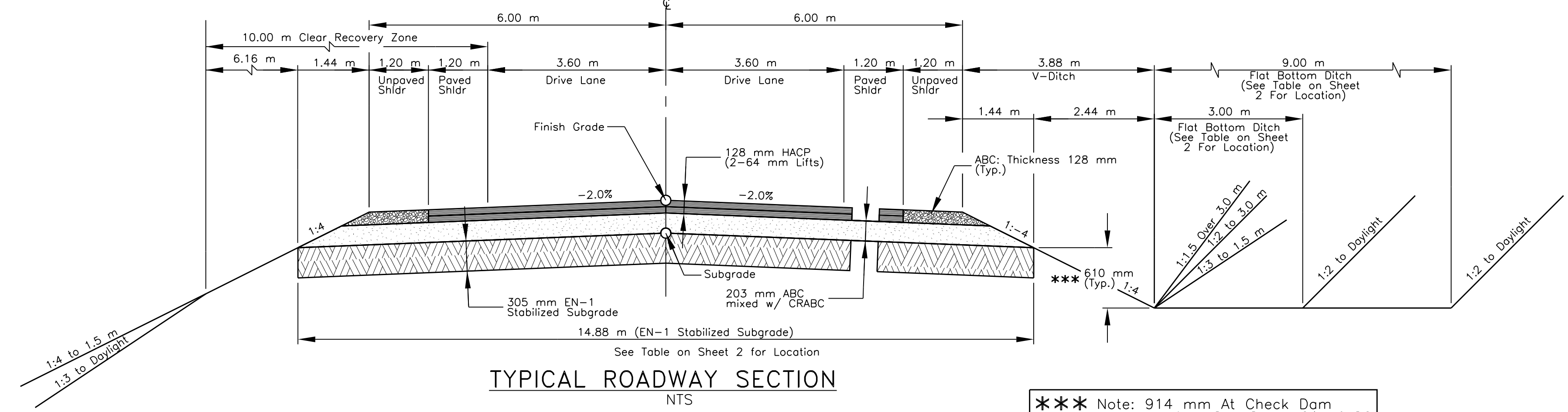
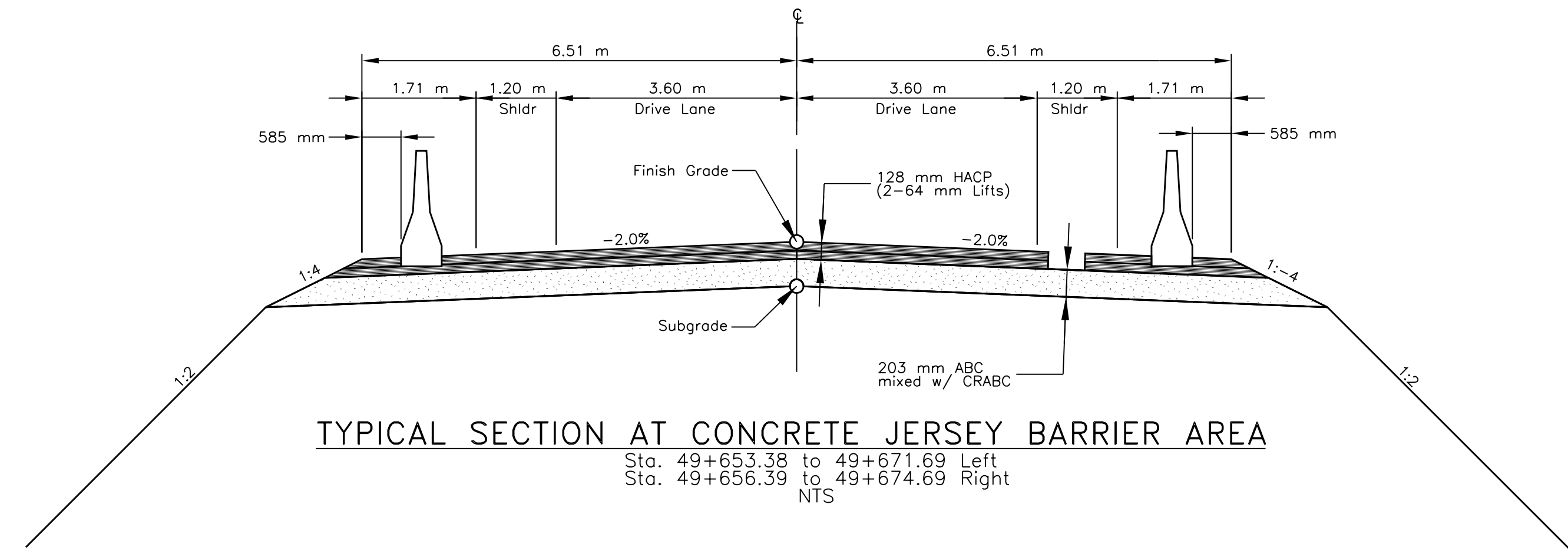
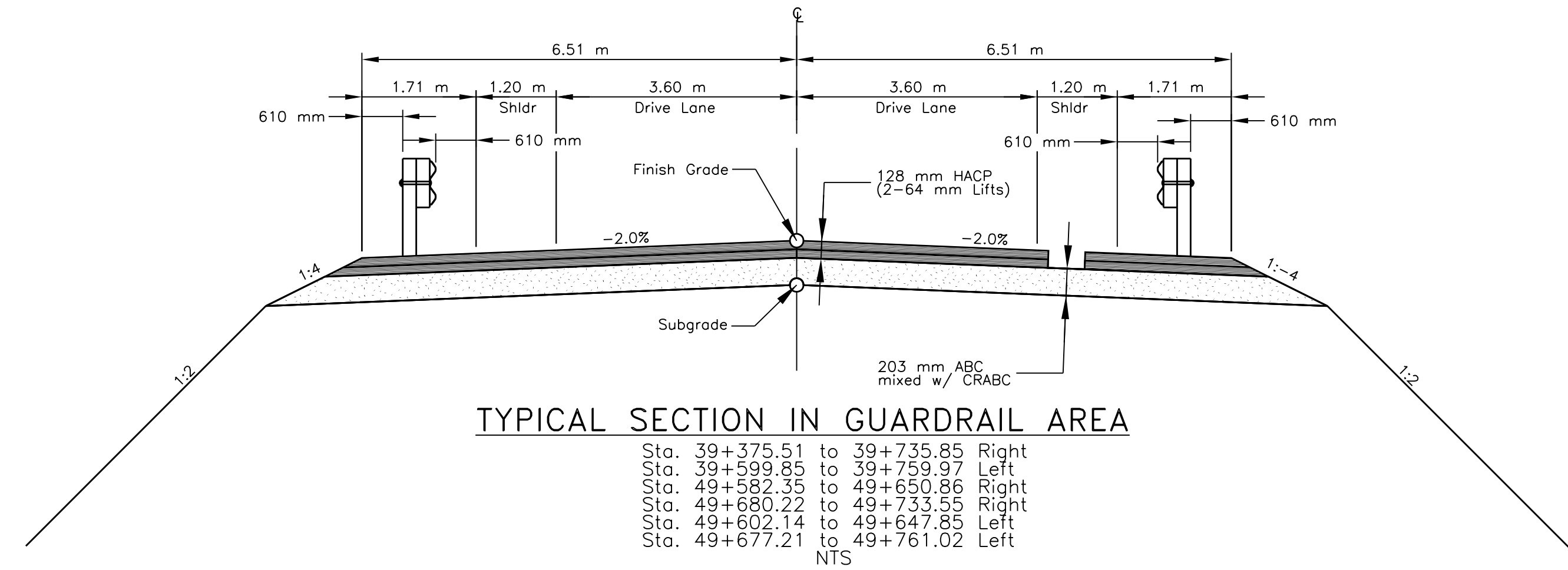
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20801-0000	Structure Excavation	832.00	cu/m
20803-0000	Structure Backfill	386.00	cu/m
55101-2200	660mm Ø Steel Pipe Pile, in place Bridge N504	355.00	m
55115-1000	Preboring of Piles	251.00	m
55201-0200	Structural Concrete, Class A(AE)	231.00	cu/m
55401-1000	Reinforcing Steel Epoxy Coated, Grade 420	10,530.00	kg
60225-1000	17.374 m Span, 3.249 m Rise, 28.042 m Long Precast Conc. Arch & Wingwalls	23	each
63308-3000	Object Marker, Type 3, Square Steel Tube, 1- 38 mm x 38 mm	4	ea.

**BRIDGE N505 REPLACEMENT
BRIDGE AND ROADWAY ESTIMATED QUANTITIES**

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
20304-1000	Removal of Structures and Obstructions	All Req'd	L.S.
20801-0000	Structure Excavation	551.00	cu/m
20803-0000	Structure Backfill	217.00	cu/m
55201-0200	Structural Concrete, Class A(AE)	101.00	cu/m
55401-1000	Reinforcing Steel Epoxy Coated, Grade 420	12,357.00	kg
60225-1000	17.374 m Span, 3.249 m Rise, 25.603 m Long Precast Conc. Arch & Wingwalls	21	each
61801-0000	Concrete Jersey Barrier, with transition barrier, Bridge N505	36.58	m
63308-3000	Object Marker, Type 3, Square Steel Tube, 1- 38 mm x 38 mm	4	ea.

GENERAL NOTES

- SPECIFICATIONS:** Design: AASHTO LRFD Bridge Design Specifications, 5th Ed., 2010 Construction: Standard Specifications For Construction Of Roads and Bridges on Federal Highway Projects, FP-14 and Supplemental Specifications.
- UNITS:** This project has been designed and drawn using the SI (metric) system of units. Unless otherwise noted, all values are given in their respective metric units.
- DESIGN LOADS:** Dead Loads: Concrete = 23.56 kN/m³, Backfill Earth Pressure = 9.42 kN/m³. Live Loads: HS 20-44 plus impact. Impact = 15/(L+38) where L=Span length in meters. Maximum Impact factor = 0.30.
- DESIGN & CONSTRUCTION:** Material strengths are F'c=27.6 MPa for reinforced concrete, Fy=413.7 MPa for reinforcing steel.
- REINFORCING STEEL:** All reinforcing steel shall conform to AASHTO M31M, Grade 420, epoxy coated. The minimum cover of any reinforcing steel shall be 50mm unless otherwise specified; exposed concrete edges shall have a 20 mm chamfer.
- SIGNING:** All permanent, temporary signs and coding shall be placed in accordance with the Manual on Uniform Traffic Control Devices (MUTCD) for Streets and Highways 1988 Edition and amendments, and in accordance with these plans where applicable.
- TEMPORARY TRAFFIC CONTROL:** The Contractor will be required to submit a Temporary Traffic Control Plan (TCP) to the CDR for review and approval prior to performance of the Contract. This plan shall be in accordance with the Supplemental Specifications and details shown on these plans and the MUTCD with amendments. The quantities shown for the TCP may vary depending upon the plan submitted by the Contractor, at his own option, and in accordance with Supplemental Specifications for Section 635, Temporary Traffic Control. The TCP shown on these plans is considered as a guide only.
- TRASH/CONST. DEBRIS:** The Contractor shall assume full responsibility and expense for all disposal and/or construction debris in accordance with Section 107 of the FP-14.
- SITE FAMILIARIZATION:** The contractor shall read and make careful examination of the plans, specifications, quantities, materials, and visit the site proposed construction to become familiar with the site conditions and limitations before making a proposal. The bidder will be responsible for any and all errors resulting from the failure to make such an examination. Any information derived from the maps, plans, specifications, profiles, drawings, or the engineer, will not relieve the Contractor from any risk or from fulfilling the terms of the Contract.
- ESTIMATED QUANTITIES:** The quantities shown are for estimating purposes only and to compare and canvas bids. Actual quantities will be determined in the field during construction.
- UTILITIES:** The Contractor shall take all necessary precautions during construction to prevent damage to any utilities whether shown on the plans or not. The Contractor shall be required to contact the utility owners to establish the exact locations of any utilities in relation to the project prior to beginning of construction.
- REMOVAL OF EXISTING:** The Contractor shall stock pile salvageable material within the project limits for removal by the Agency Road Engineer. All other material shall be removed from the project site in accordance with project specifications. Remove existing piling to 1.00 m below flowline elevation.
- DRAINAGE CHANNELS: BRIDGE:** All drainage channels, including shoulder ditch lines, shall be graded to drain as directed by the CDR. This work shall be considered a subsidiary obligation of the Contractor, and no additional payment will be made.
- MAINTAINING ACCESS:** The Contractor shall be required to maintain access to adjoining property at all times day or night, where access is already present.
- EXCAVATION AND PREPARATION:** Excavation and preparation for foundation bed shall be paid for under item 20801, Structure Excavation. Backfilling of structure shall be considered incidental to item 20801. Foundation bed shall be on bedrock (sandstone) per Section 208.09 of the FP-14. If unsuitable bedrock or soil exists at the elevations of the bottom of footing, remove unsuitable material at the direction of the CDR and place seal concrete in conformance with Section 552 of the FP-14 to the required elevation of the bottom of footing.
- SEAL CONCRETE:** Seal concrete, if necessary shall be paid for under item 55204, Seal Concrete. If suitable bed rock is encountered for ALL foundation bedding, seal concrete will not be required.
- FOUNDATION CONSTRUCTION:** Foundation construction to the tops of the raised seat, including concrete, reinforcing steel, forming and other work as specified in Section 552 of the FP-14 shall be paid for under item 55201-0200, Structural Concrete. Concrete for foundations, including raised seat, shall be air entrained with 28 day compressive strength of 27.6 MPa.
- EXISTING GROUND CONTOURS:** Existing ground contours upstream, downstream and within precast reinforcing concrete arch (PRCA) culvert shall be maintained throughout construction to the maximum extent possible. Excavation plan-area limits shall be kept to the smallest area possible while maintaining applicable excavation work area requirements for the safety of workers. Any disturbance of existing ground contours upstream, downstream and within PRCA culvert shall be re-graded to preconstruction conditions and seeded prior to project completion.



*** Note: 914 mm At Check Dam Location. See Sheet 61 of 86 For Check Dam Details

REVISED
1:39 pm, Nov 23, 2018

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NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

**GENERAL NOTES
ESTIMATED QUANTITIES**

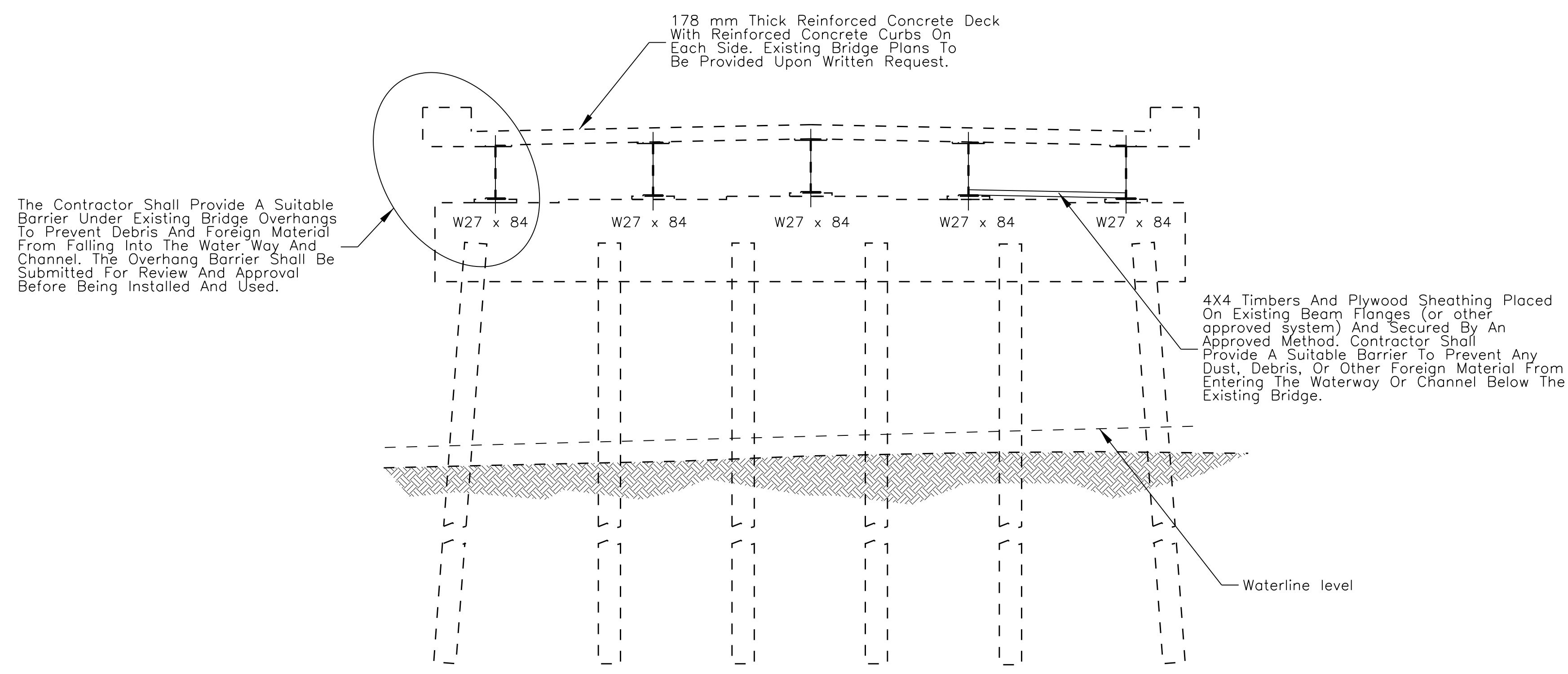
DRAWN BY: NRDOT	DATE: 2/23/2018
DESIGNED BY: NRDOT	DATE: 2/23/2018
REVISED: 11/23/2018	BY: Leroy Toledo

Sht 75_B-01 N504 n N505 GENOTES n QTY S 2018 02 15.dgn

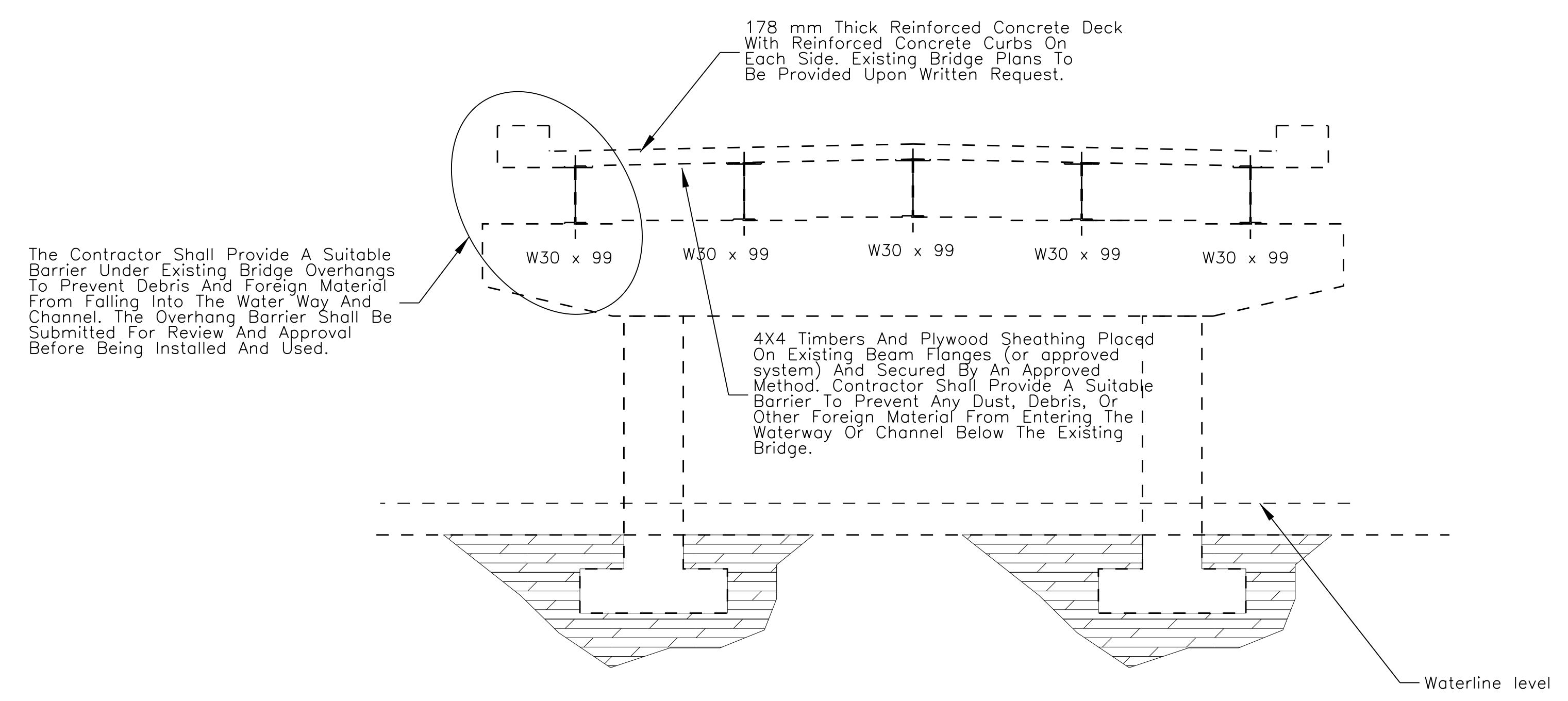
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	B-02	88

GENERAL NOTES

- EXISTING BRIDGE CONCRETE DECK TO BE REMOVED FROM THE TOP OF THE BRIDGE IN SECTIONS. THE CONTRACTOR SHALL CONSTRUCT A DUST AND PARTIAL BARRIER BELOW THE EXISTING CONCRETE DECK TO PREVENT ANY MATERIAL FROM ENTERING THE STREAM AREA. 4X4 TIMBERS AND PLYWOOD DECKING IS SHOWN FOR EXAMPLE. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING, DESIGNING AND CONSTRUCTING AN ACCEPTABLE TEMPORARY BARRIER FOR REMOVAL OF THE CONCRETE BRIDGE DECK.
- NO EXISTING BRIDGE MATERIALS TO BE ALLOWED TO FALL ON OR INTO STREAM OR CHANNEL BED BELOW THE BRIDGE. ALL WORK SHALL BE PERFORMED FROM ABOVE THE CHANNEL BED AND ALSO REMOVED FROM THE PROJECT AREA FROM THE TOP OF THE BRIDGE SUPERSTRUCTURE OR FROM THE APPROACH ROADWAYS ADJACENT TO THE BRIDGE. THE CONTRACTOR'S SWPPP SHALL PROVIDE SPECIFIC DETAILS AND MITIGATION MEASURE TO PROTECT THE CREEK AT BOTH THE N504 & N505 BRIDGES.
- THE CONTRACTOR WILL CUT THE H-PILES DOWN TO A 50mm ABOVE THE EXISTING WATERLINE ELEVATION FOR BRIDGE N504 AND THE PIER COLUMNS FOR THE N505 BRIDGE. ANY DEBRIS THAT SHOULD FALL INTO EITHER CREEK MUST IMMEDIATELY BE REMOVED TO AVOID FINES BY THE REGULATORY OFFICES.



EXISTING BRIDGE N504 - STA. 39+667.00



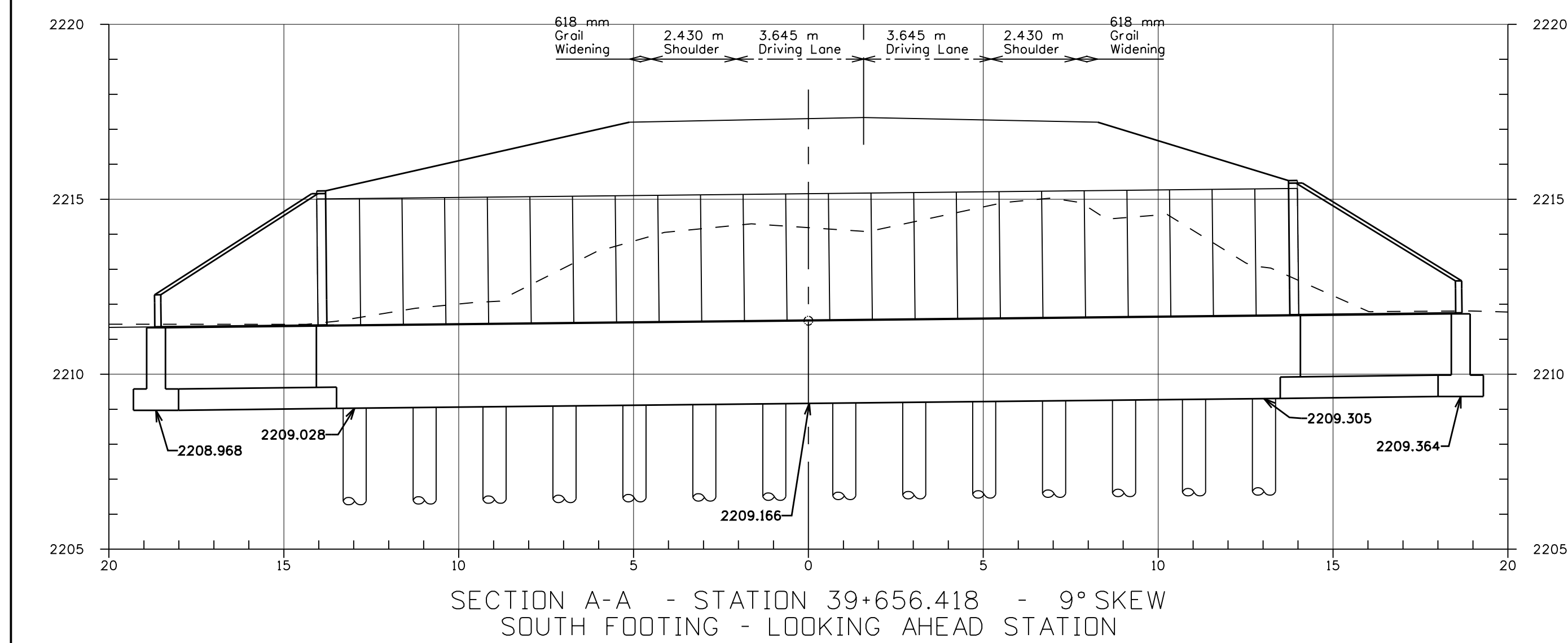
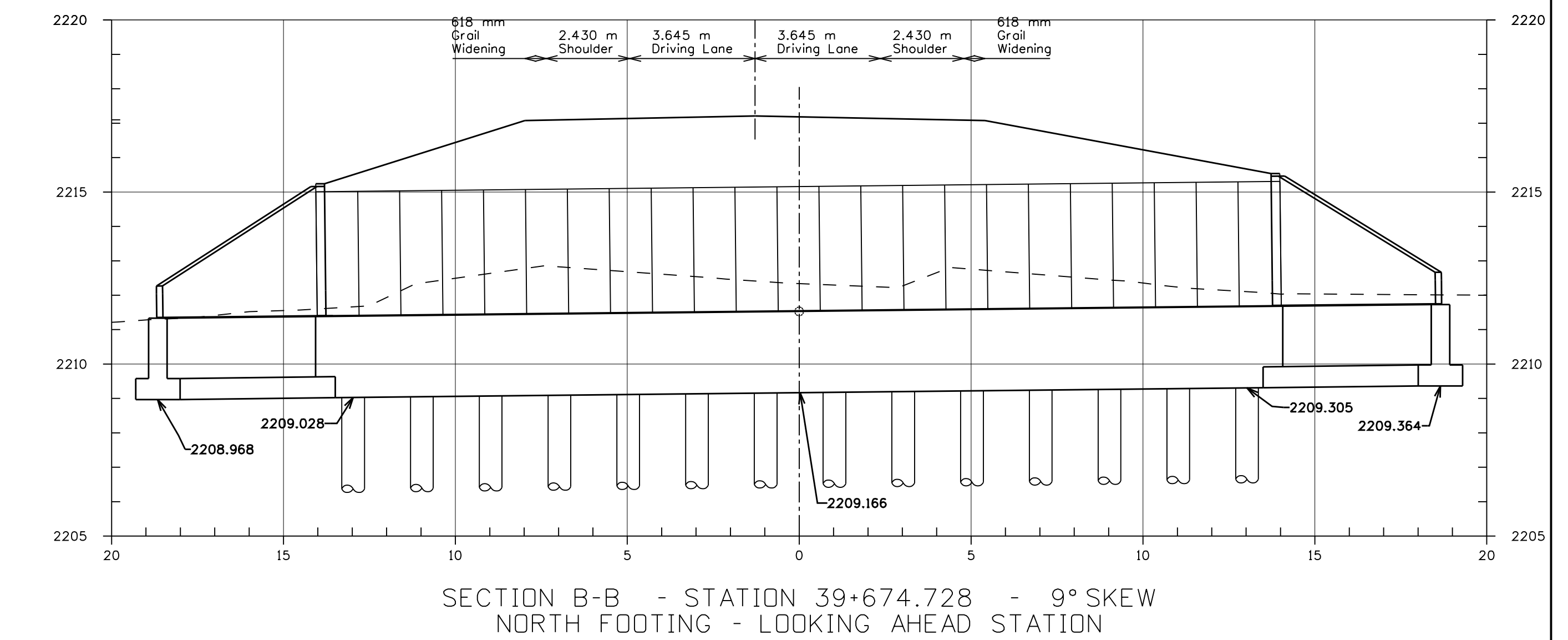
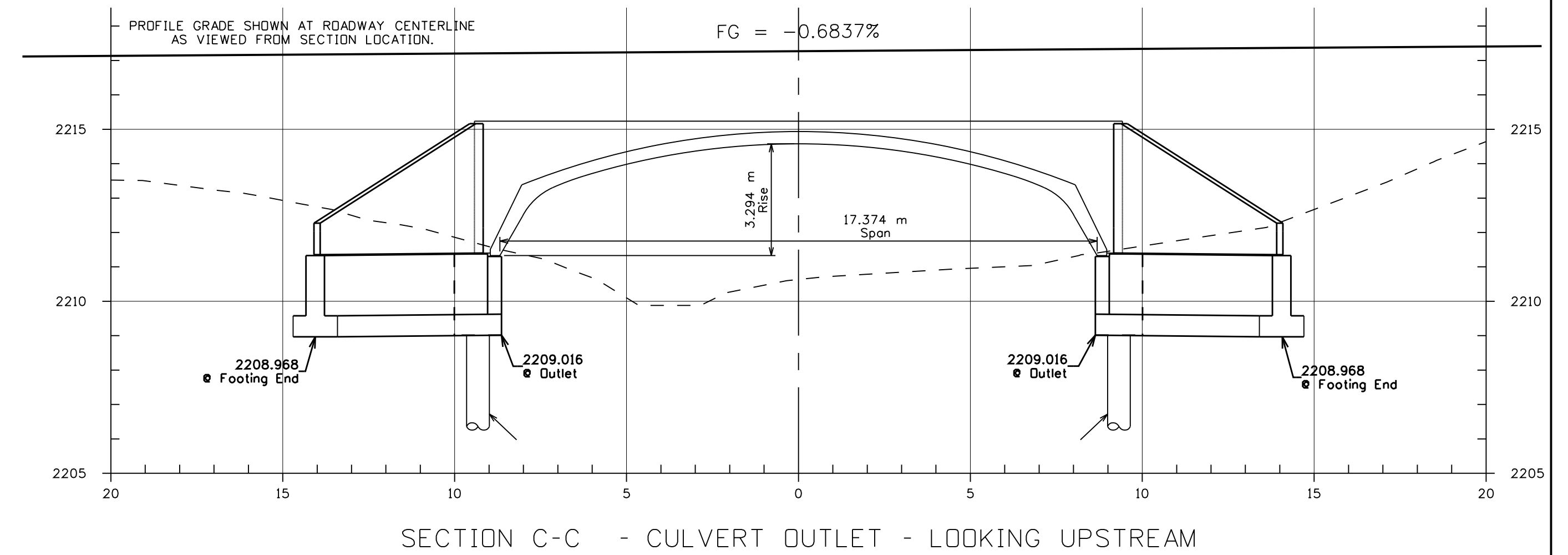
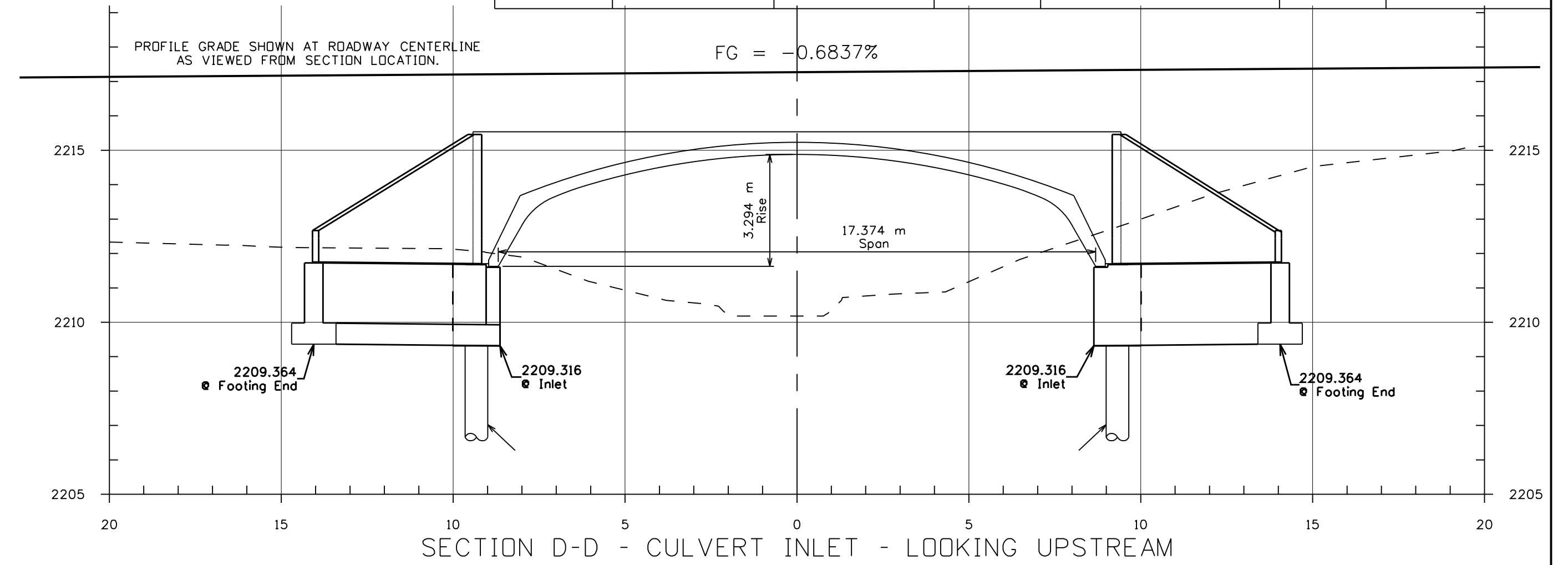
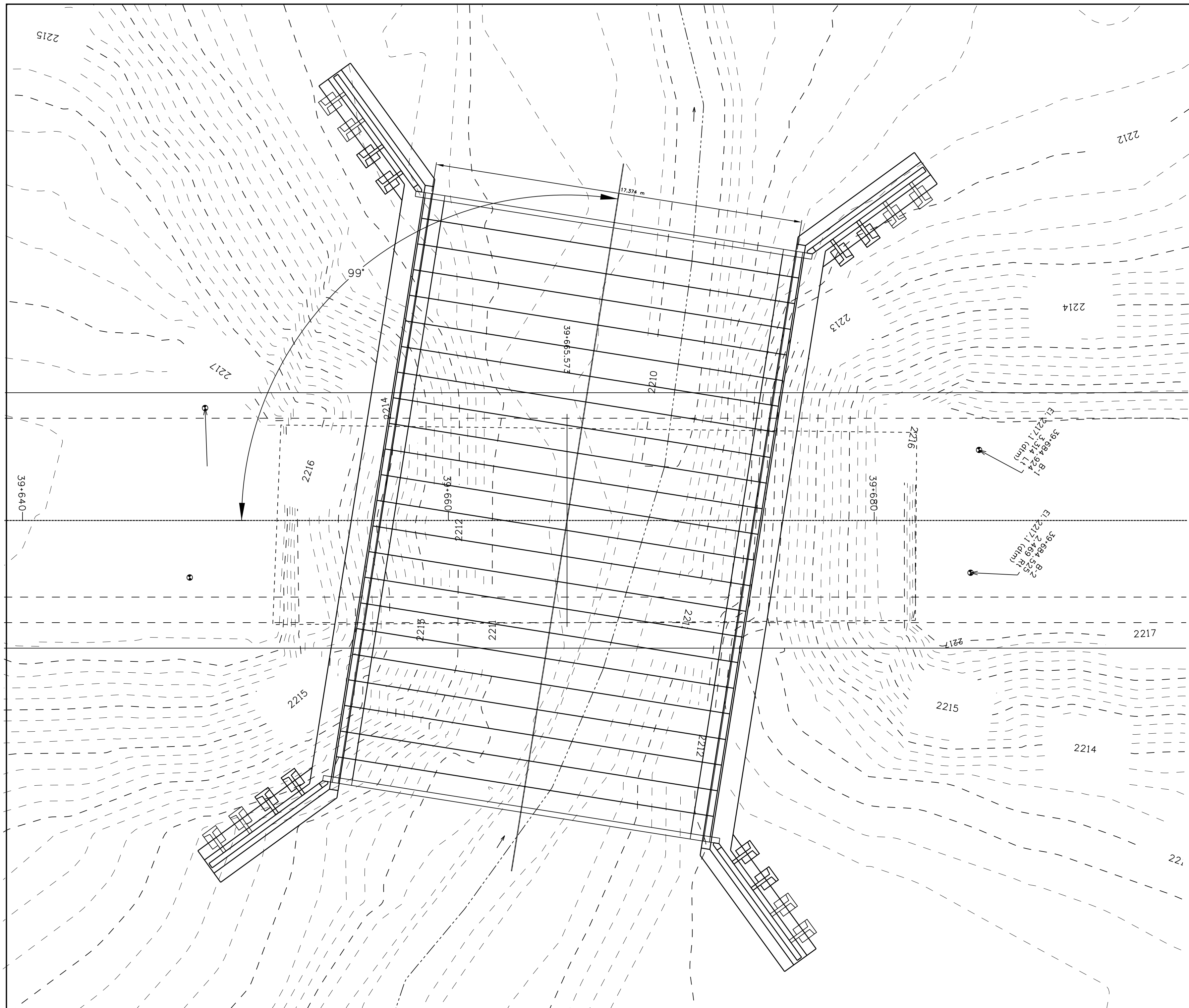
EXISTING BRIDGE N505 - STA. 49+665.69

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**N504 & 505 EXISTING
 BRIDGE REMOVAL DETAILS**

DRAWN BY: NRDOT	DATE: 2/23/2018
DESIGNED BY: NRDOT	DATE: 2/23/2018
REVISED: 3/21/2018	BY: Leroy.Toledo
Sht 76_B-02 Exist Bridge Removal Details 2018.dgn	

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	B-03	88



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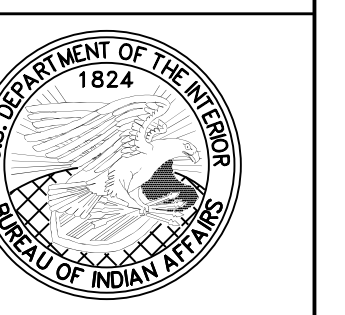
BRIDGE N504 - STRUCTURE LAYOUT
AND ELEVATION VIEWS

DRAWN BY: NRDOT DATE: 2/15/2018

DESIGNED BY: NRDOT DATE: 2/15/2018

REVISED: 3/15/2018 BY: Leroy.Toledo

Filename: N504 Struct Layout and Elev Views



REVISED
8:22 am, Nov 28, 2018

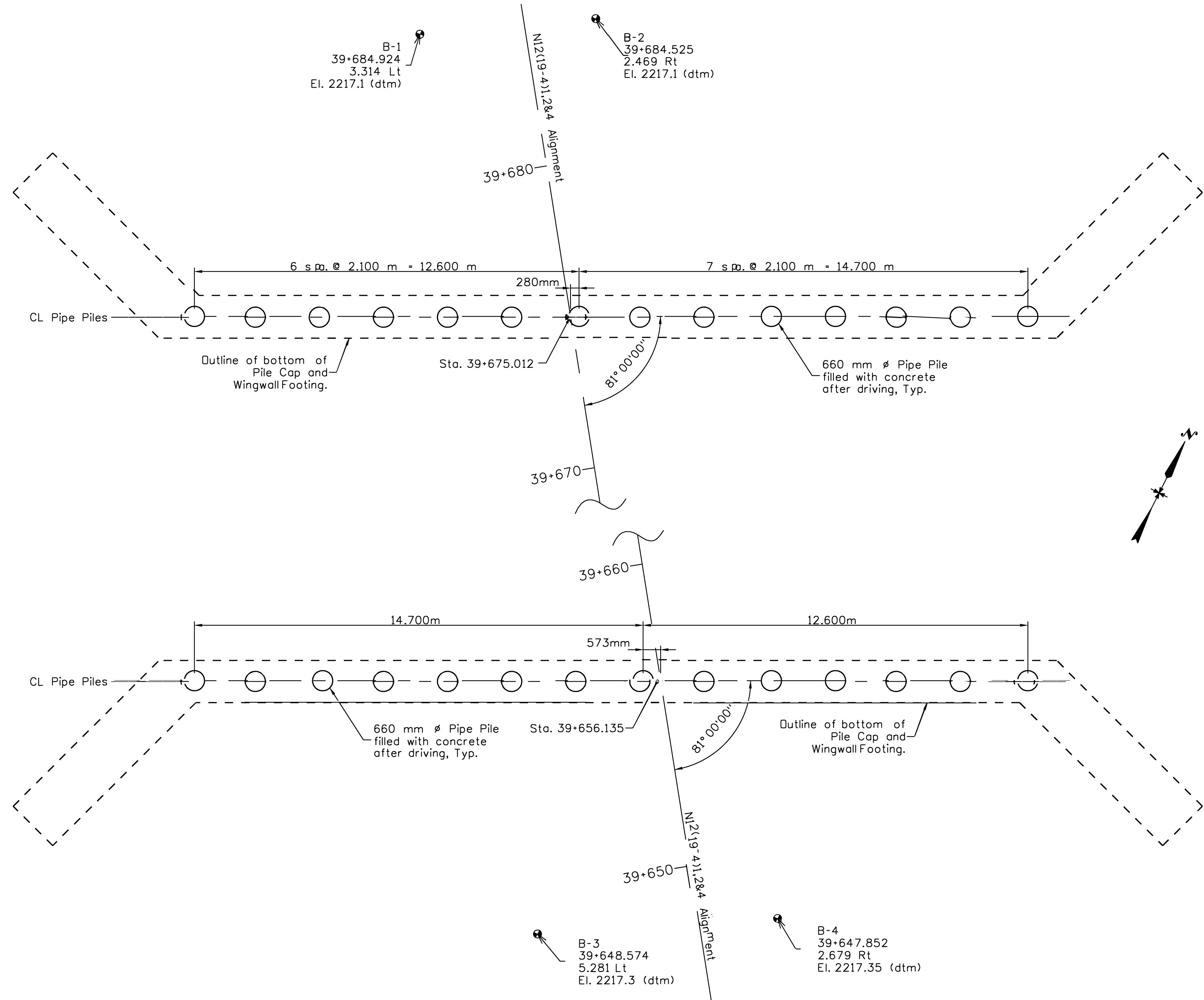
LEGEND

● BORE HOLE LOCATION

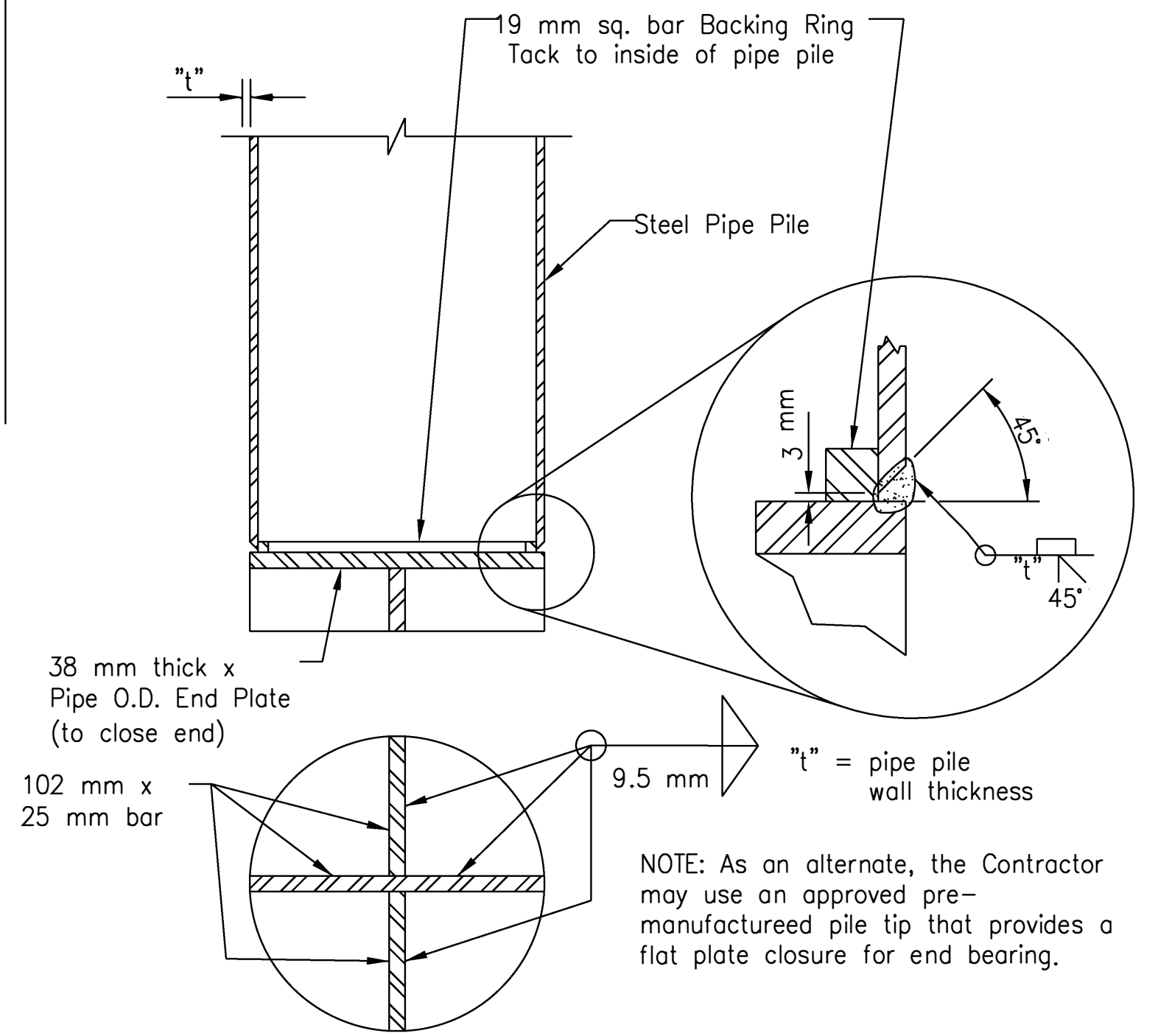
PILE LAYOUT NOTES

- FOR ADDITIONAL FOUNDATION NOTES: SEE BRIDGE GENERAL NOTE SHEET.
- PILE TIPS FOR PIPE PILING SHALL BE AS SHOWN ON THESE PLANS.
- THIS BRIDGE PROJECT INCLUDES TEST PILES. SEE SUPPLEMENTAL SPECIFICATIONS SECTION 551 FOR ADDITIONAL INFORMATION, INCLUDING DETERMINATION OF PILE QUANTITIES REQUIRED FOR PROJECT.
- APPROVED TEST PILES SHALL BECOME PERMANENT PILES. TEST PILES WILL BE PAID UNDER BID ITEM 55120-0000.
- PREBORING SHALL BE PERFORMED TO THE SPECIFIED PREBORE ELEVATION. PILES SHALL BE PLACED INTO PREBORE HOLES AND DRIVEN TO THE ULTIMATE LOAD SPECIFIED. PILES SHALL BE SUPPORTED LATERALLY TO ASSURE A VERTICAL POSITION.
- ANY VOID OR ANNULAR SPACE SURROUNDING THE PILE RESULTING FROM THE PREBORED HOLE SHALL BE FILLED WITH A LEAN CONCRETE FLOWABLE FILL AFTER DRIVING. LEAN CONCRETE FLOWABLE FILL SHALL BE CONSIDERED INCIDENTAL TO THE ITEMS 55101-0200 AND ITEM 55120-0000
- PAYMENT FOR PLACEMENT OF STEEL PILES UNDER BID ITEM 55101-2200 INCLUDE MATERIALS, INSTALLATION, PILE TESTING, AND FILLING THE PILES WITH SECTION 601 MINOR CONCRETE (F_c = 25 MPa).

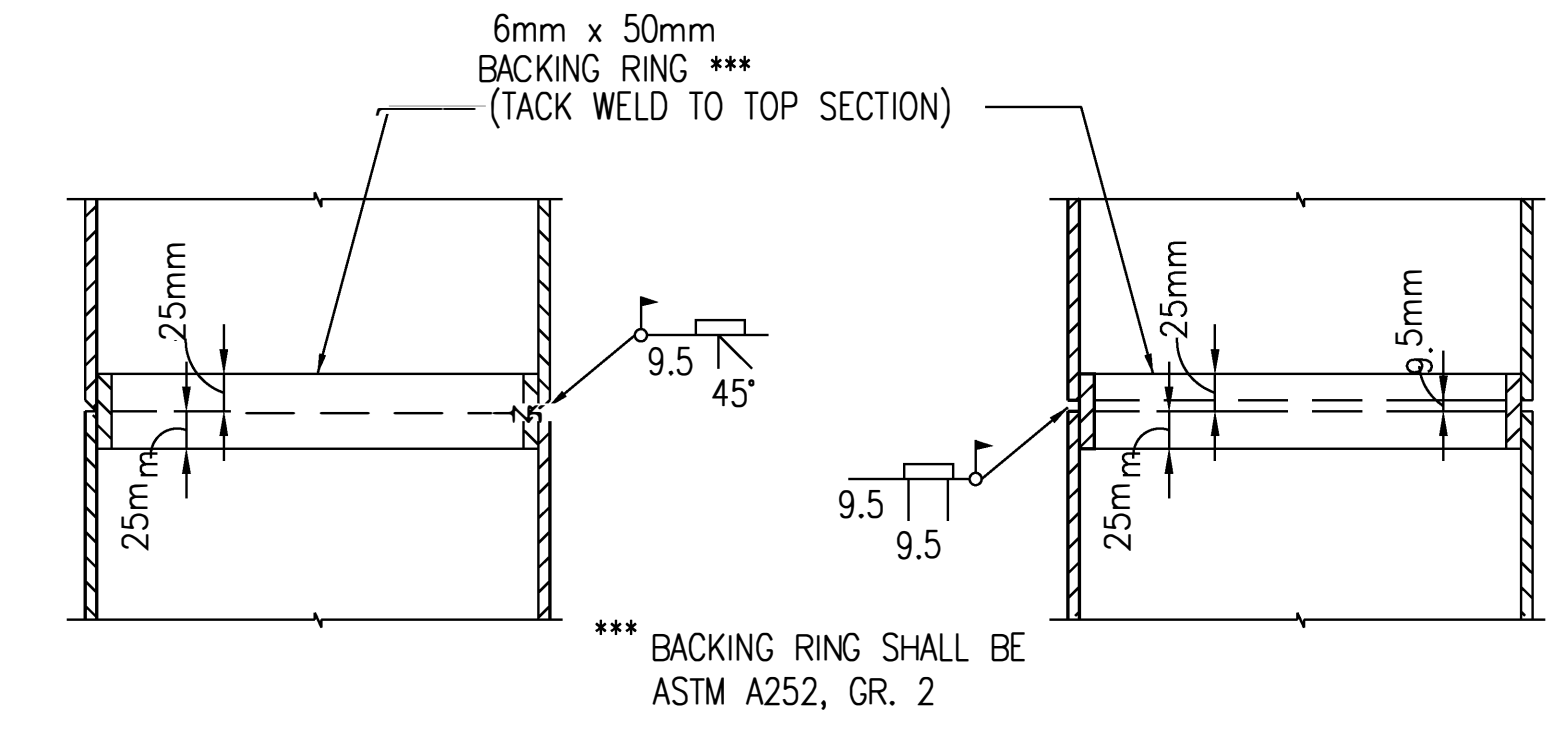
PIPE PILE COORDINATES		
PILE	NORTHING	EASTING
ABUTMENT NO. 1		
1	580432.115	308167.266
2	580433.062	308169.141
3	580434.008	308171.015
4	580434.955	308172.890
5	580435.902	308174.764
6	580436.848	308176.639
7	580437.795	308178.513
8	580438.742	308180.388
9	580439.688	308182.262
10	580440.635	308184.137
11	580441.582	308186.011
12	580442.528	308187.886
13	580443.475	308189.760
14	580444.421	308191.635
ABUTMENT NO. 2		
15	580448.758	308158.861
16	580449.705	308160.736
17	580450.652	308162.610
18	580451.598	308164.485
19	580452.545	308166.359
20	580453.491	308168.234
21	580454.438	308170.109
22	580455.385	308171.983
23	580456.331	308173.858
24	580457.278	308175.732
25	580458.225	308177.607
26	580459.171	308179.481
27	580460.118	308181.356
28	580461.064	308183.230



PILE LAYOUT PLAN VIEW



FLAT PLATE PILE TIP



STEEL PIPE PILE SPLICE DETAIL (TYP)

PILE REQUIREMENTS											
LOCATION	PILE TYPE	NO. OF TEST PILES	NO. OF PRODUCTION PILES	ESTIMATED LENGTH PER PILE *	TOTAL ESTIMATED LENGTH	ESTIMATED CONCRETE VOLUME INSIDE EACH PIPE	TOTAL CONCRETE VOLUME INSIDE PIPES	ESTIMATED PREBORE LENGTH PER PILE *	ESTIMATED PILE TIP ELEVATION	APPLIED STRUCT. LOAD (PILE DESIGN) (kN)	ULTIMATE CAPACITY (kN)
ABUTMENT NO. 1 CL PILES STA. 39+656.135	STEEL PIPE PILE 660mmØ x 16mm FILLED WITH CONCRETE	1	13	10.8	151.2	3.69	51.73	9.3	2199.5	1428	3570
ABUTMENT NO. 2 CL PILES STA. 39+675.012	STEEL PIPE PILE 660mmØ x 16mm FILLED WITH CONCRETE	1	13	11.5	161.0	3.93	55.08	10.0	2198.8	1428	3570
TOTAL					312.2	TOTAL	106.80				

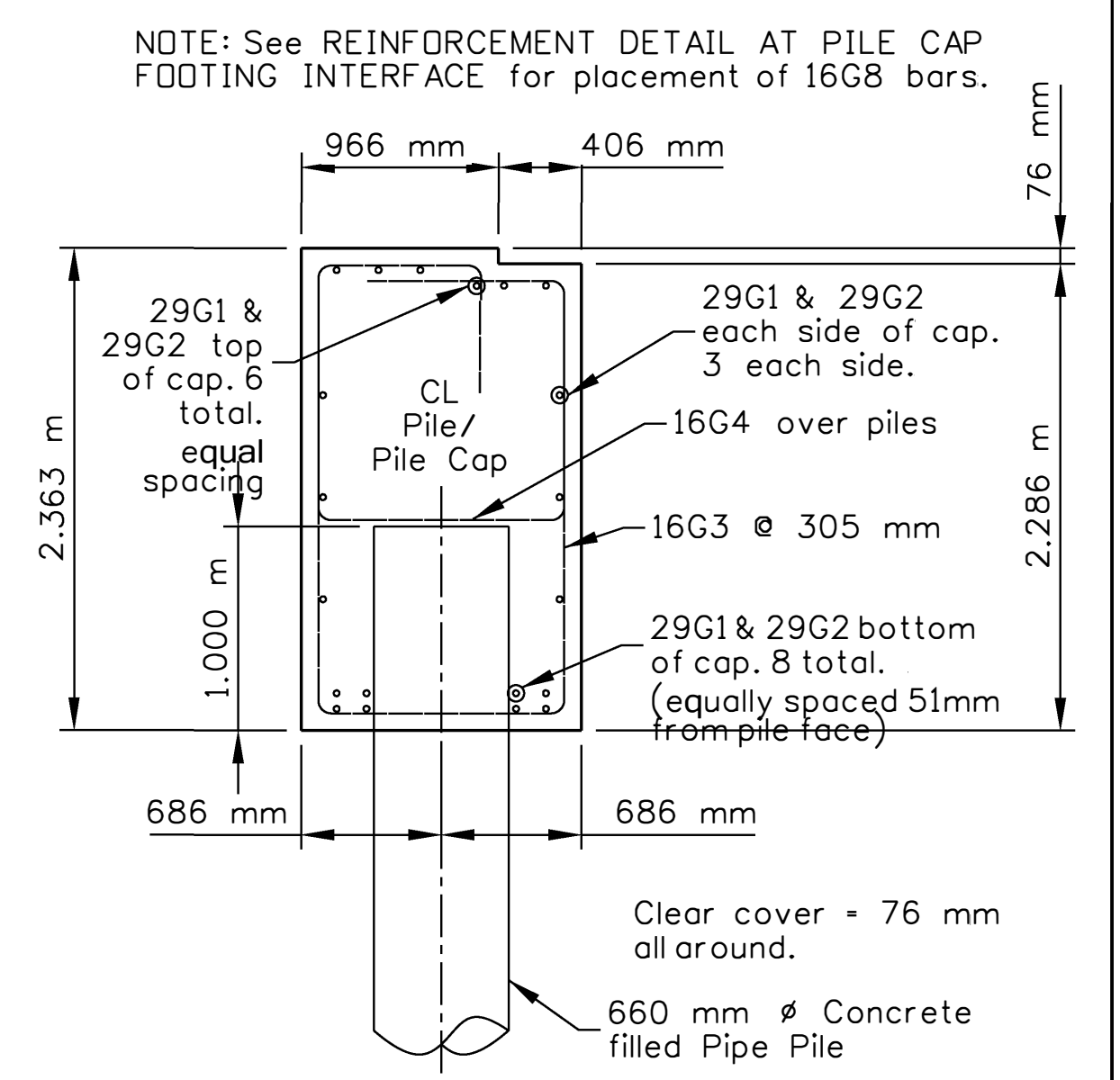
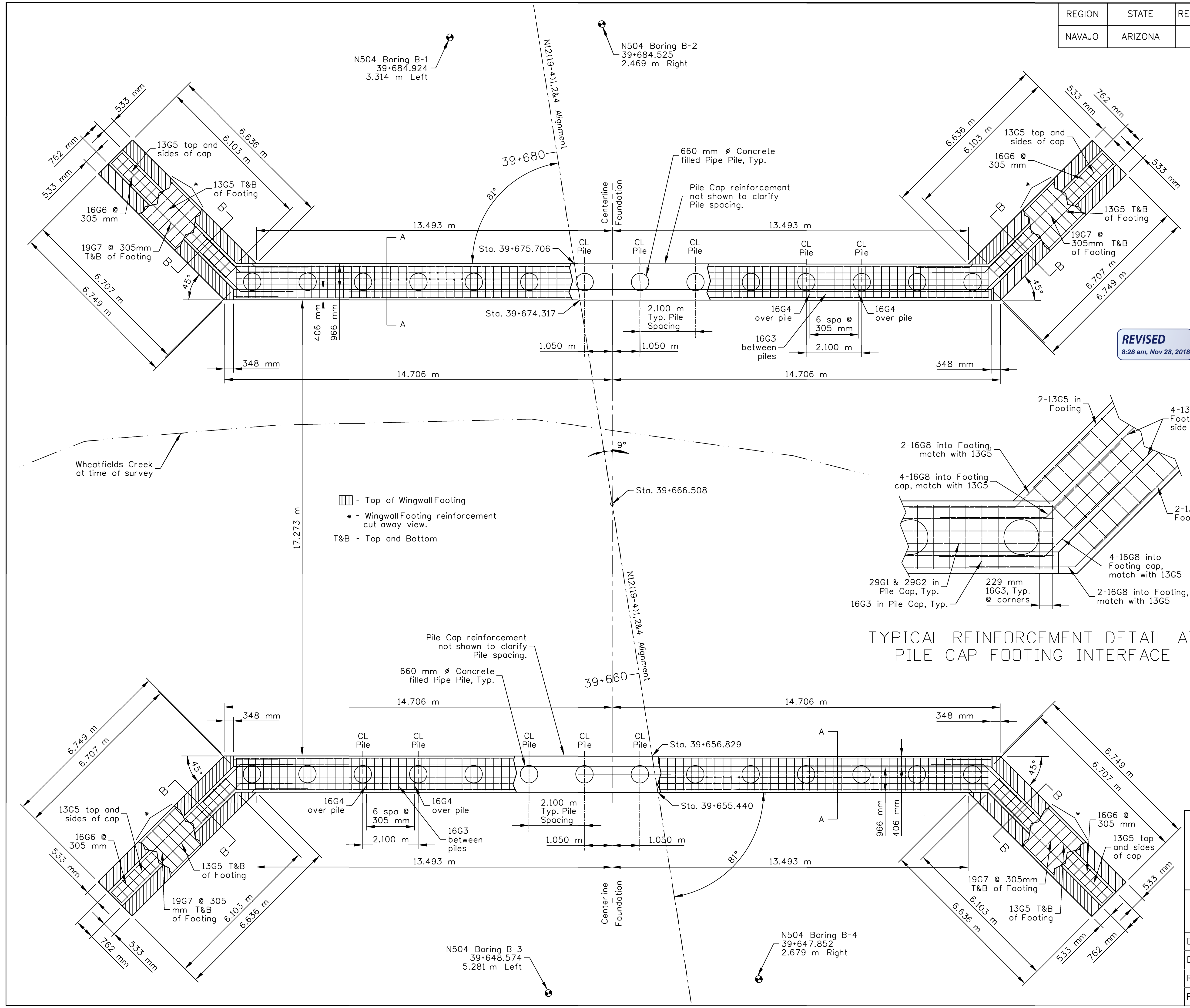
* - ESTIMATED PILE LENGTH and ESTIMATED PREBORE LENGTH base on longest pile in foundation. Information is provided for estimating purposes only. ACTUAL PILE LENGTH AND PREBORE LENGTH SHALL BE DETERMINED IN THE FIELD BASED ON TEST PILE INSTALLATION AND ADJUSTMENTS FOR DRIVING TO GAIN REQUIRED PILE CAPACITY AS DETERMINED BY CONSTRUCTION INSPECTION OF DRIVING OPERATIONS. The Contractor may use 762mm diameter PILES if the 660mm size is not AVAILABLE and must indicate this in their bid.

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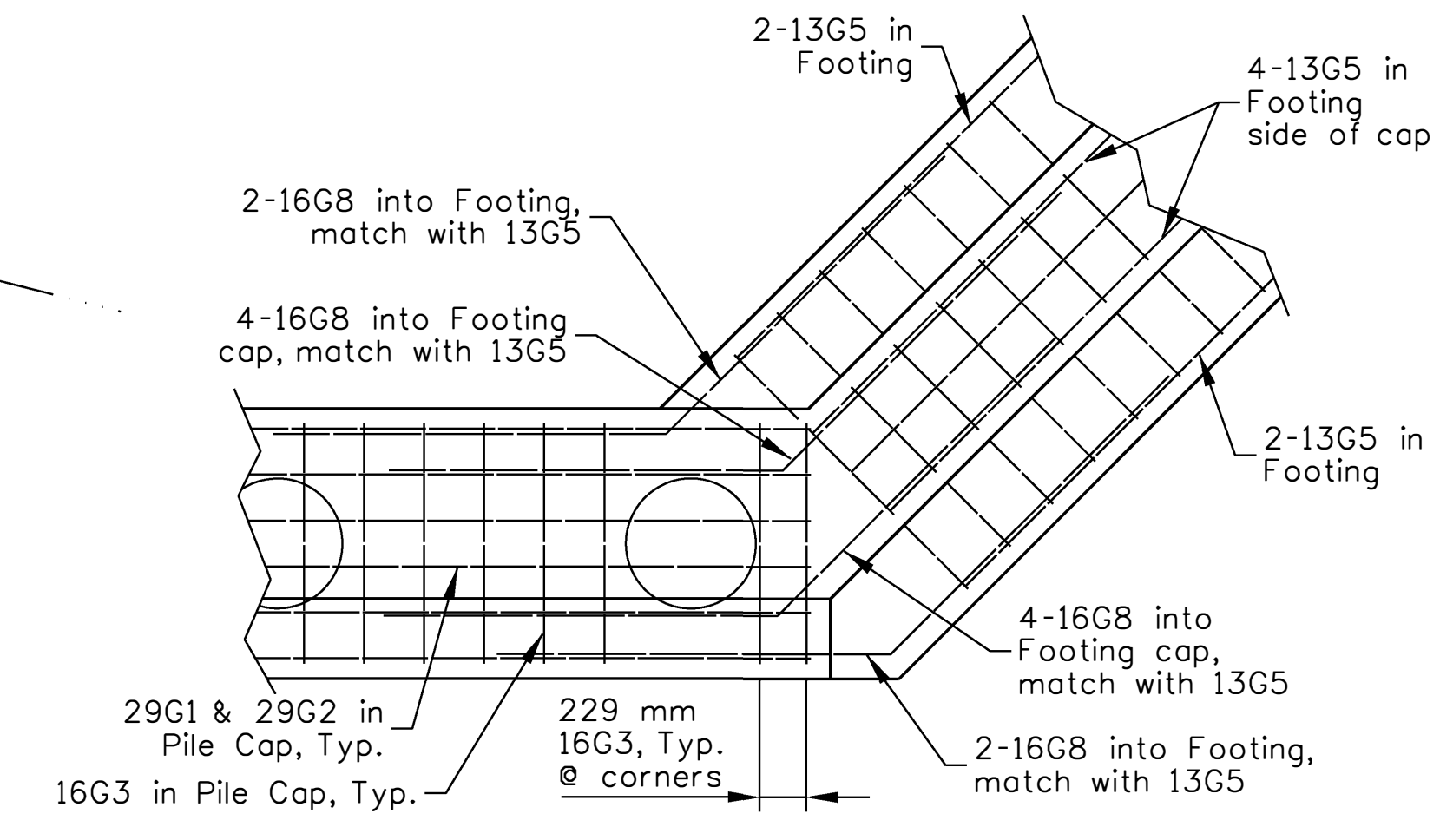
**BRIDGE N504 PIPE
LAYOUT AND NOTES**

DRAWN BY: NRDOT	DATE: 2/23/2018
DESIGNED BY: NRDOT	DATE: 2/23/2018
REVISED: 11/23/2018	BY: Leroy Toledo
Sht 78_B-04 N504 Pipe Pile Details 2018-02-12.09	

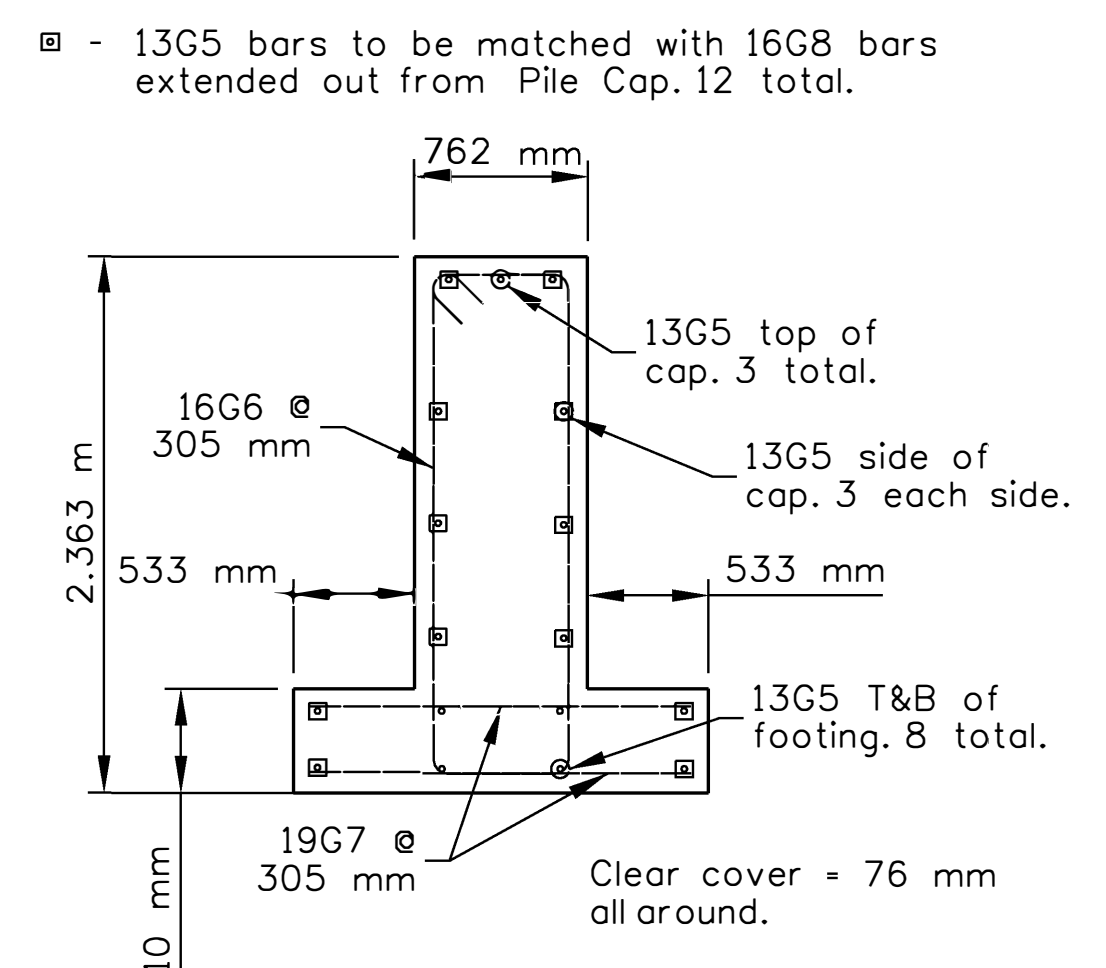
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	B-05	88



SECTION A-A
(THROUGH PILE CAP)



TYPICAL REINFORCEMENT DETAIL AT
PILE CAP FOOTING INTERFACE



SECTION B-B
(THROUGH WINGWALL FOOTING)

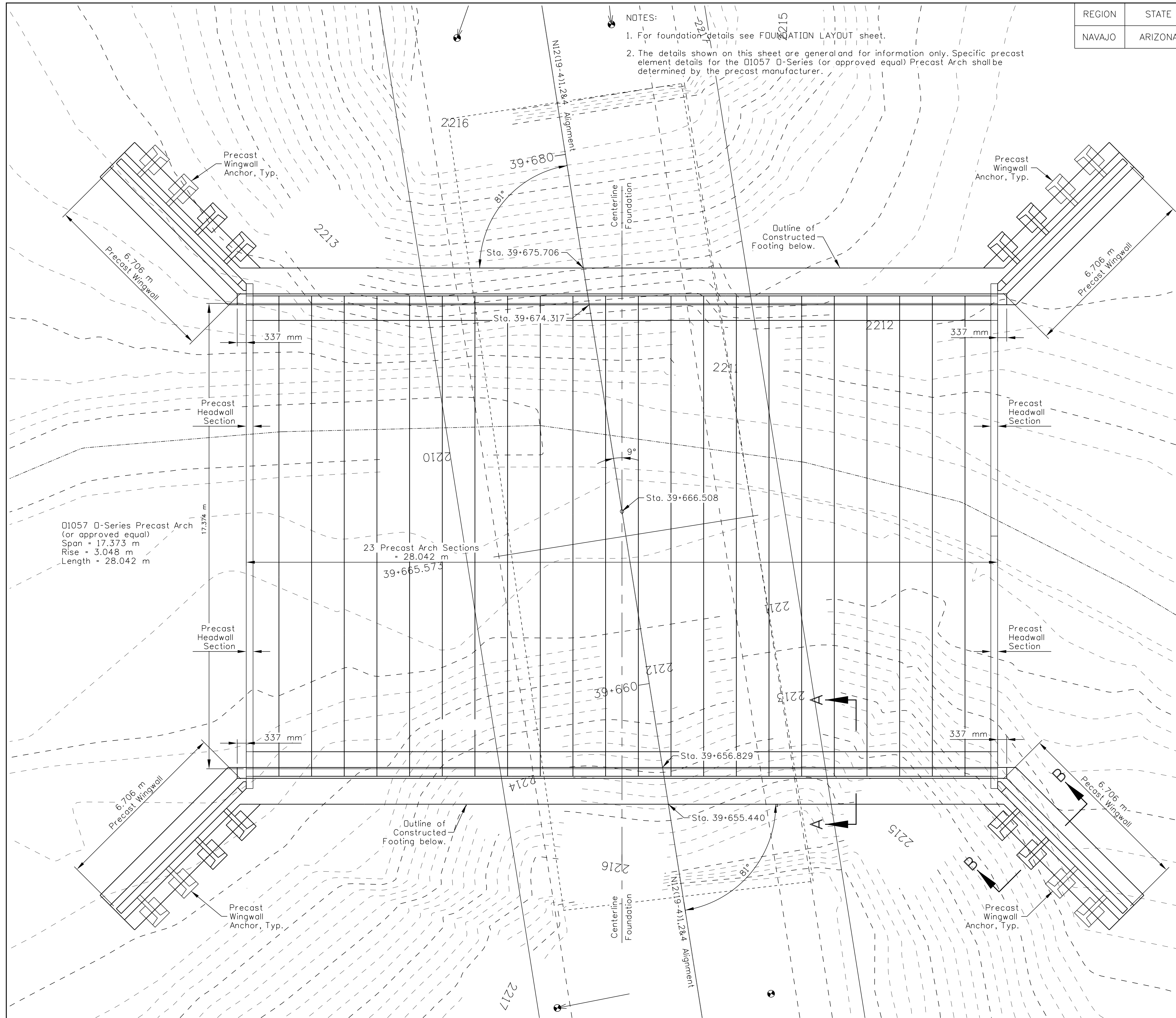
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NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

**BRIDGE N504 REPLACEMENT
FOUNDATION LAYOUT**

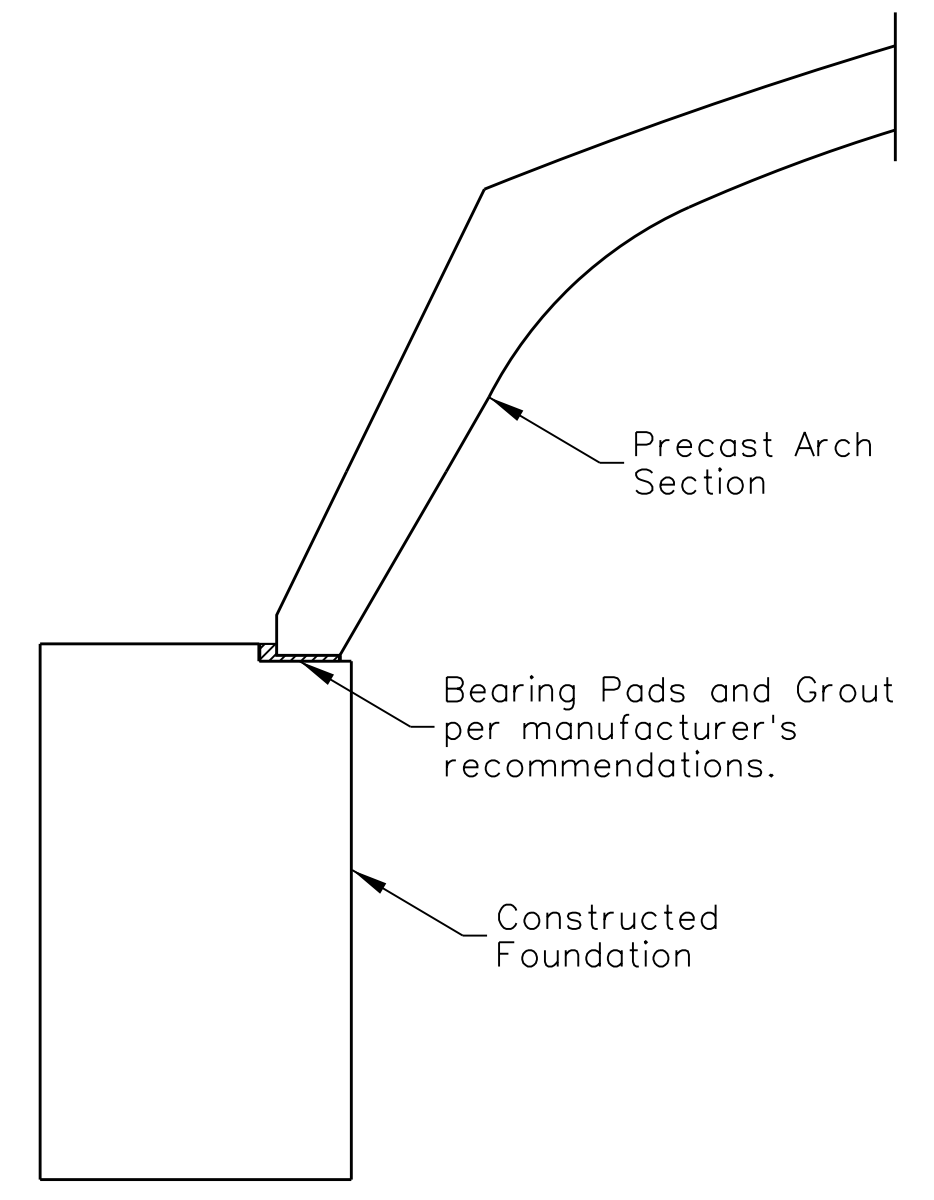
DRAWN BY: cdh DATE: 2018/02/12
DESIGNED BY: Struct Unit DATE: 2018/02/12
REVISED: -/-/- BY: - -
Filename: N504 Foundation Layout

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	B-06	88

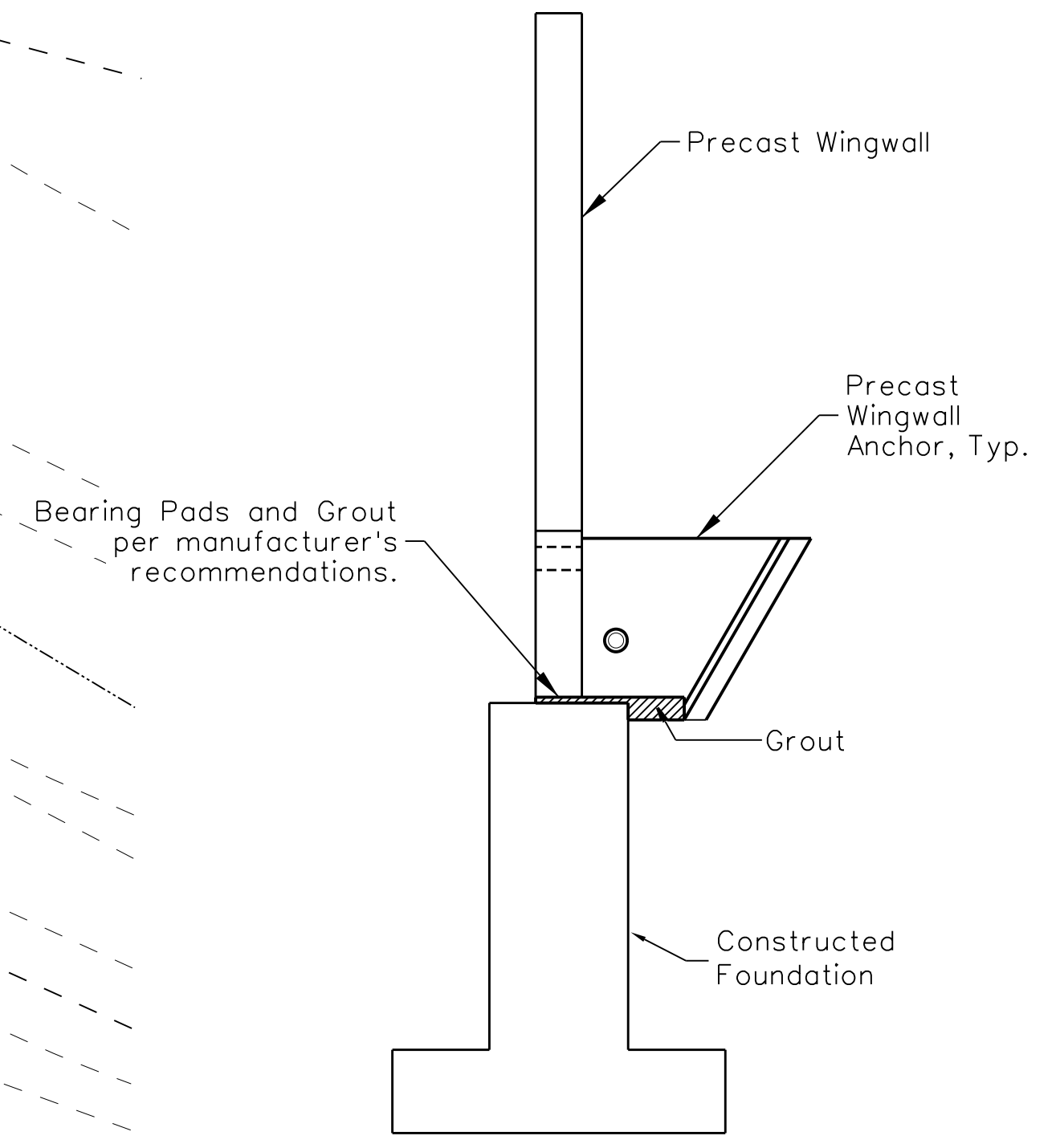
NOTES:
 1. For foundation details see FOUNDATION LAYOUT sheet.
 2. The details shown on this sheet are general and for information only. Specific precast element details for the D1057 D-Series (or approved equal) Precast Arch shall be determined by the precast manufacturer.



D1057 D-Series Precast Arch
 (or approved equal)
 Span = 17.373 m
 Rise = 3.048 m
 Length = 28.042 m



SECTION A-A

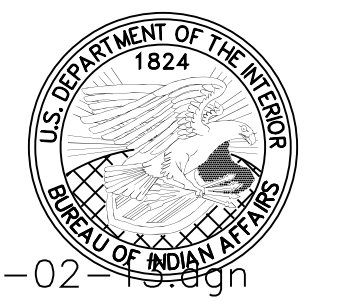


SECTION B-B

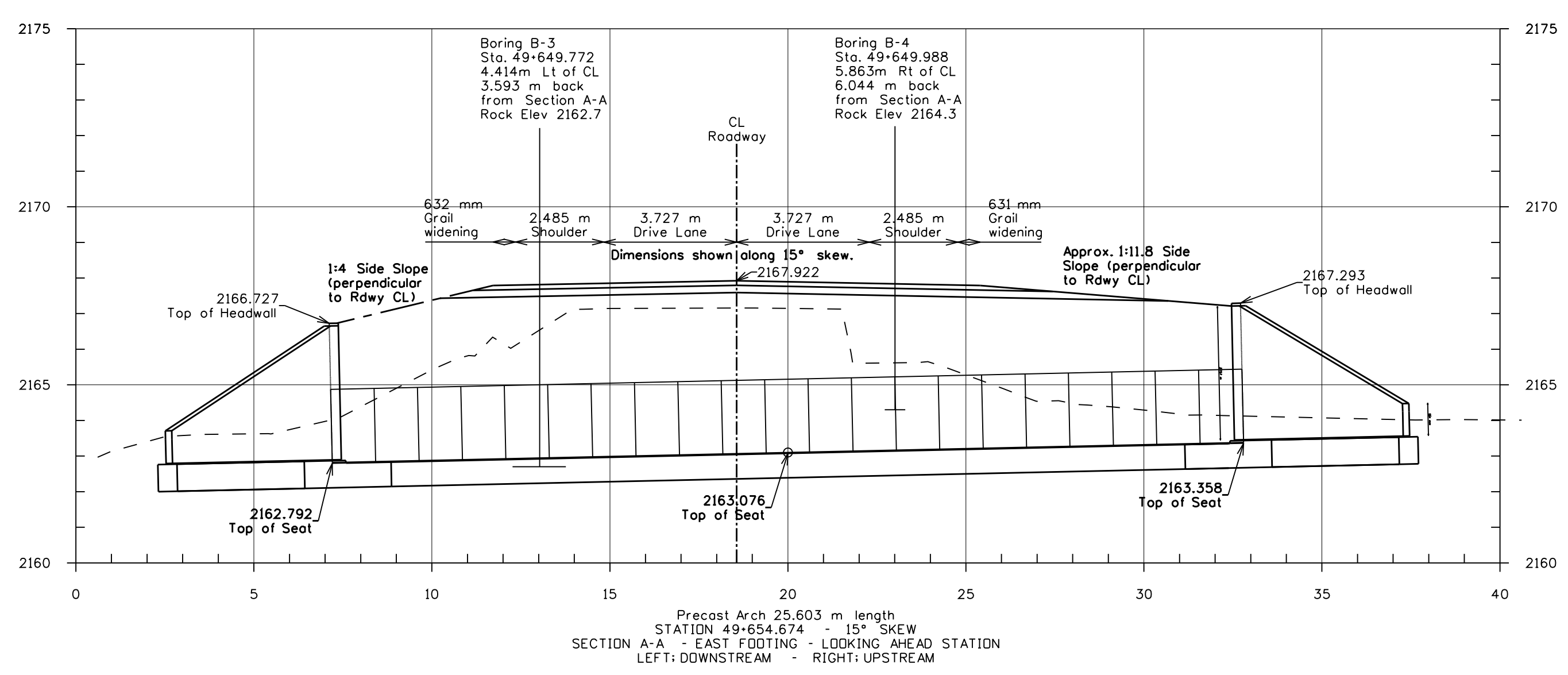
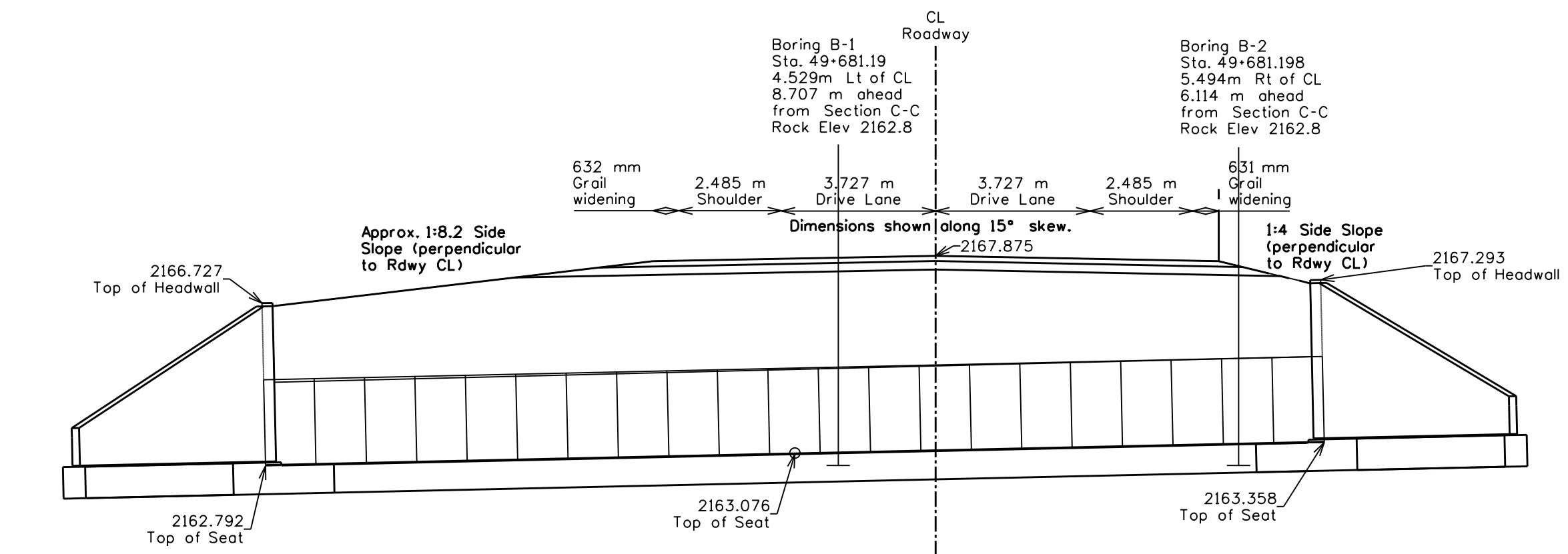
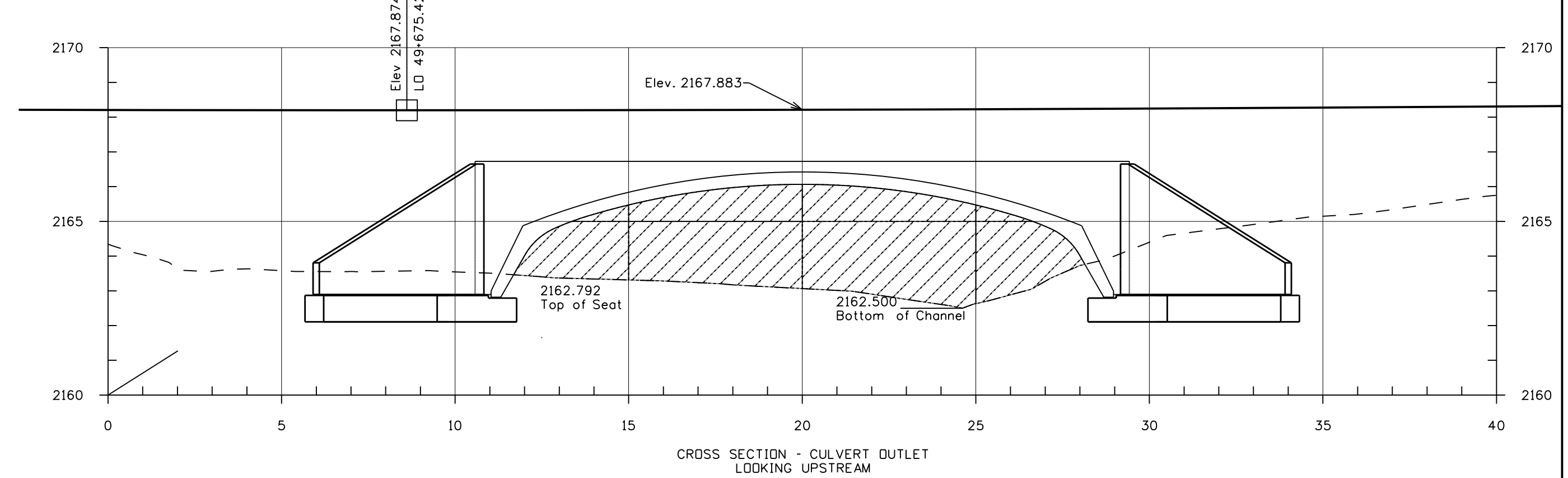
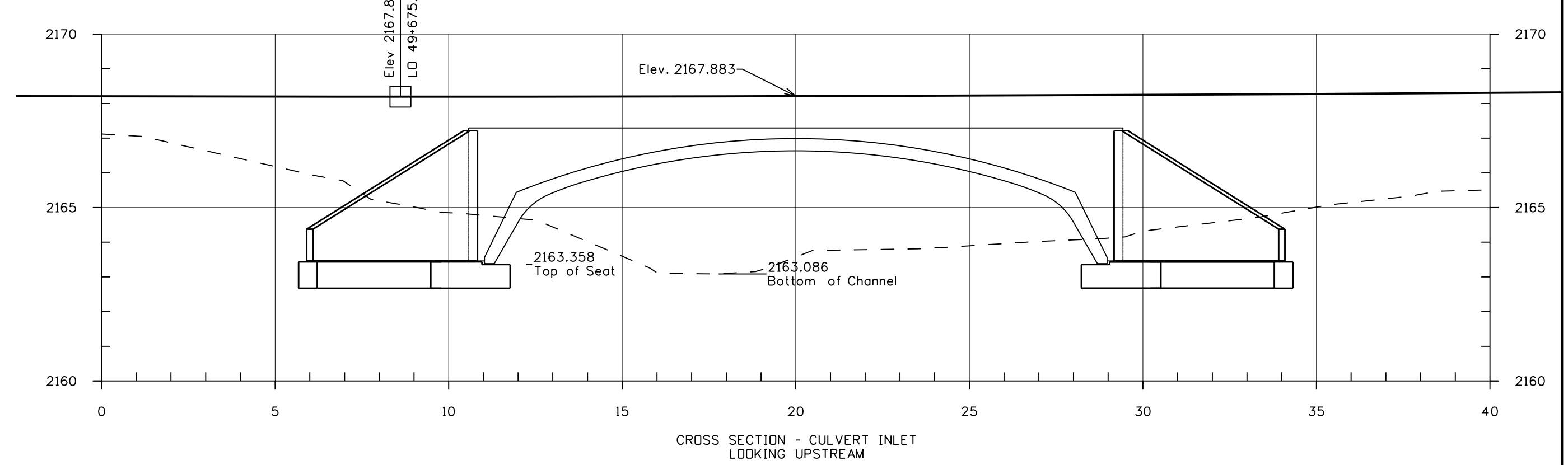
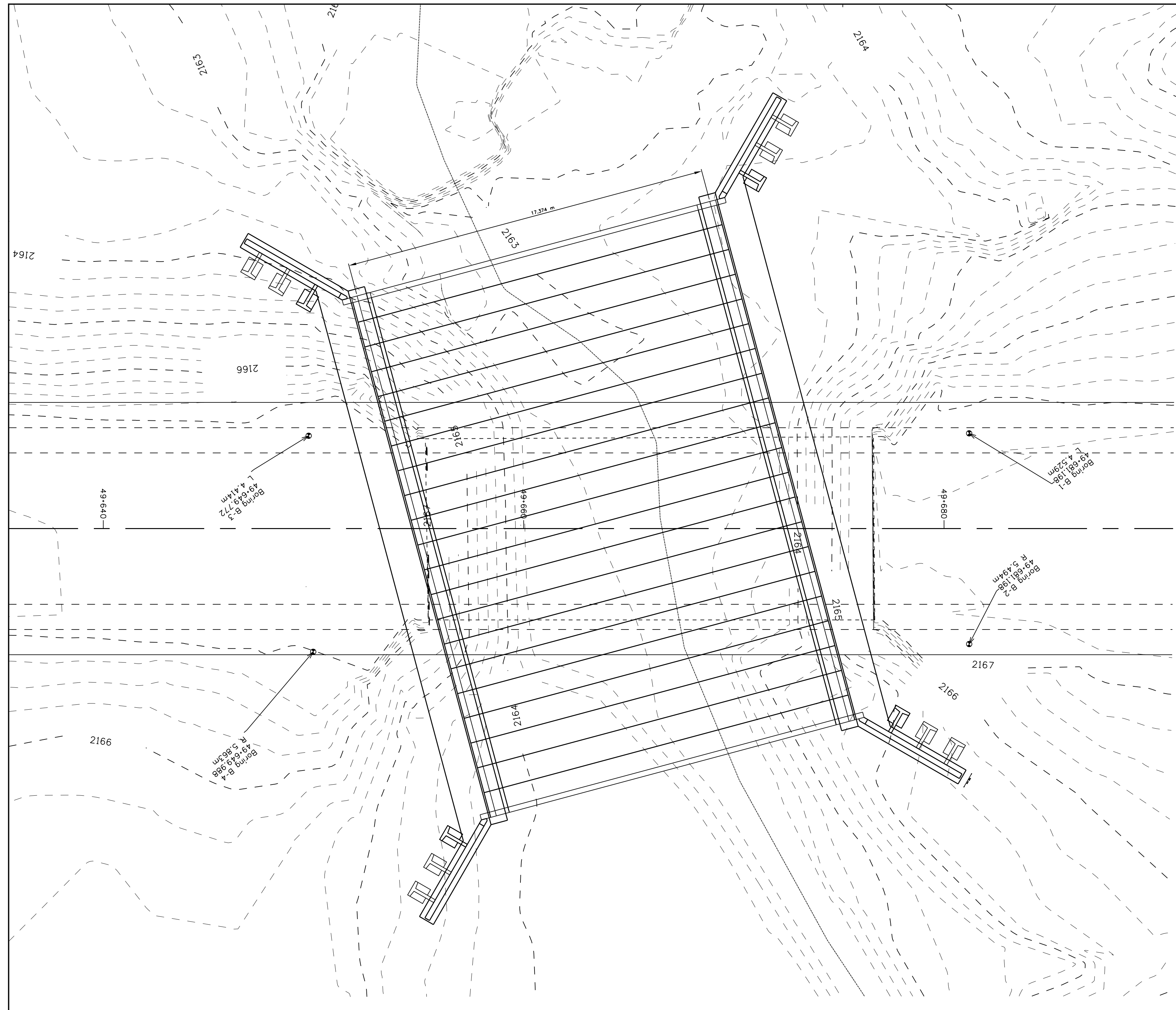
UNITED STATES
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 NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

BRIDGE N504 REPLACEMENT
 PRECAST ARCH LAYOUT

DRAWN BY: NRDOT DATE: 2/13/2018
 DESIGNED BY: NRDOT DATE: 2/13/2018
 REVISED: 3/16/2018 BY: Leroy Toledo
 Sht 80_B-06 N504 Precast Arch Layout 2018-02



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	B-07	88



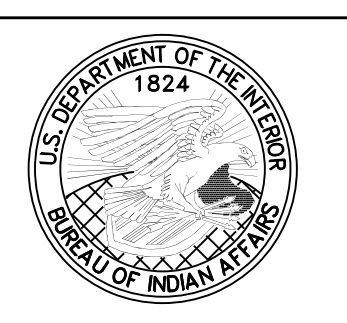
- NOTES:
- REFER TO SHEET 76 FOR PROTECTIVE MEASURES DURING REMOVAL OF THE EXISTING BRIDGE SUPERSTRUCTURE AND FOUNDATIONS FOR BOTH BRIDGES.
 - THE CONTRACTOR SHALL INCLUDE MITIGATION MEASURES IN THE SWPPP TO PROTECT THE CREEK AT BOTH BRIDGES FROM CONTAMINATION DURING THE INSTALLATION OF THE FOUNDATIONS, WINDWALLS, AND ARCH UNITS.
 - CUT AND REMOVE THE OLD STEEL PILES TO BE WITHIN 75MM FROM THE TOP OF THE EXISTING WATER FLOW OR ELEVATION?? THE PILES SHALL BECOME THE PROPERTY OF THE CONTRACTOR AS SALVAGE MATERIAL.
 - REMOVE THE CONCRETE COLUMNS TO WITH 305MM OF THE TOP OF THE SPREAD FOOTING OR ELEVATION?? . REMOVE ALL CONCRETE AND OTHER DEBRIS IMMEDIATELY FROM THE CREEK AND DISPOSE OF OFFSITE IN APPROVED LANDFILL PER SECTION 203.

Precast Arch 25.603 m length
 STATION 49-673.397 - 15° SKEW
 SECTION C-C - WEST FOOTING OF CULVERT - LOOKING AHEAD STATION
 LEFT: DOWNSTREAM - RIGHT: UPSTREAM

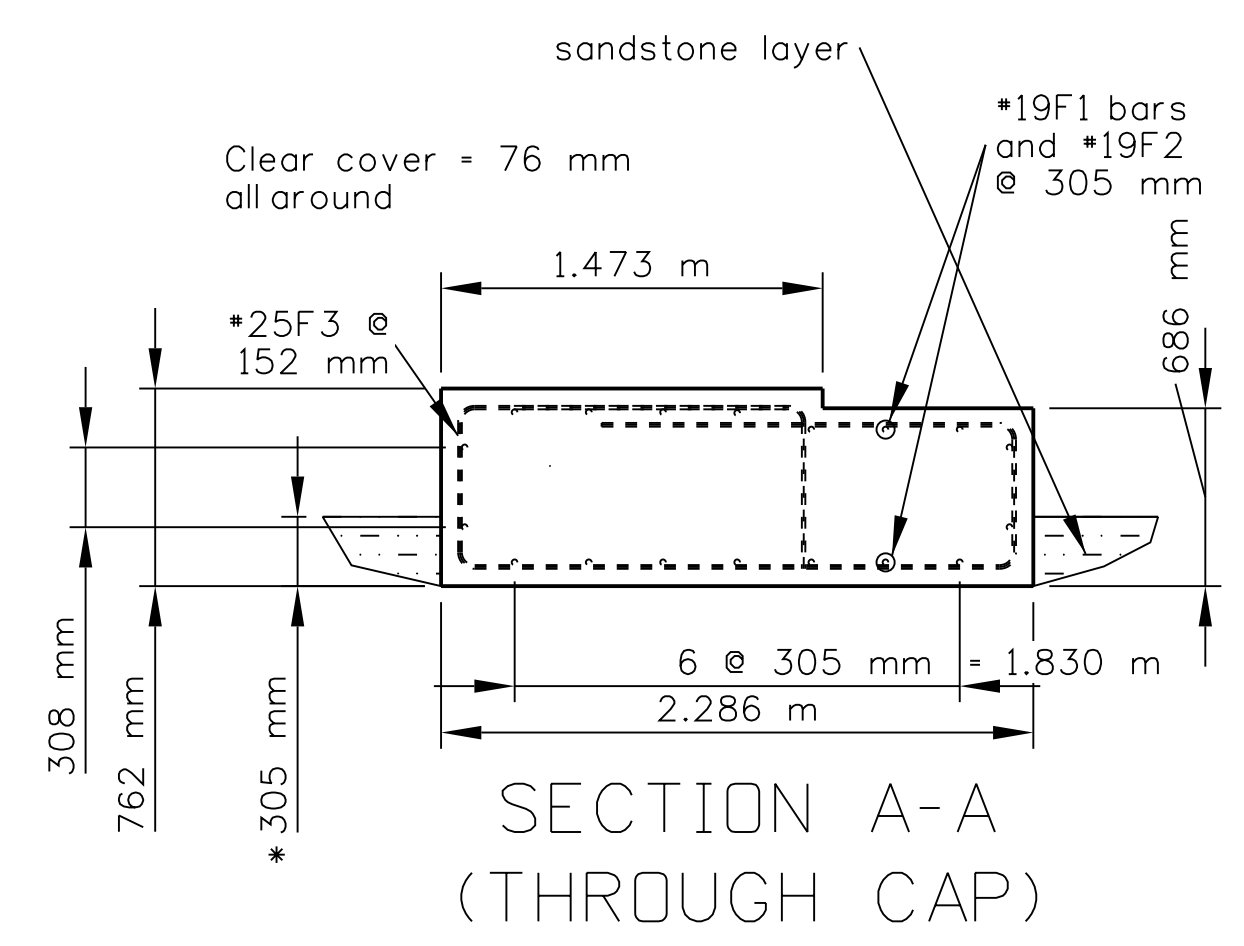
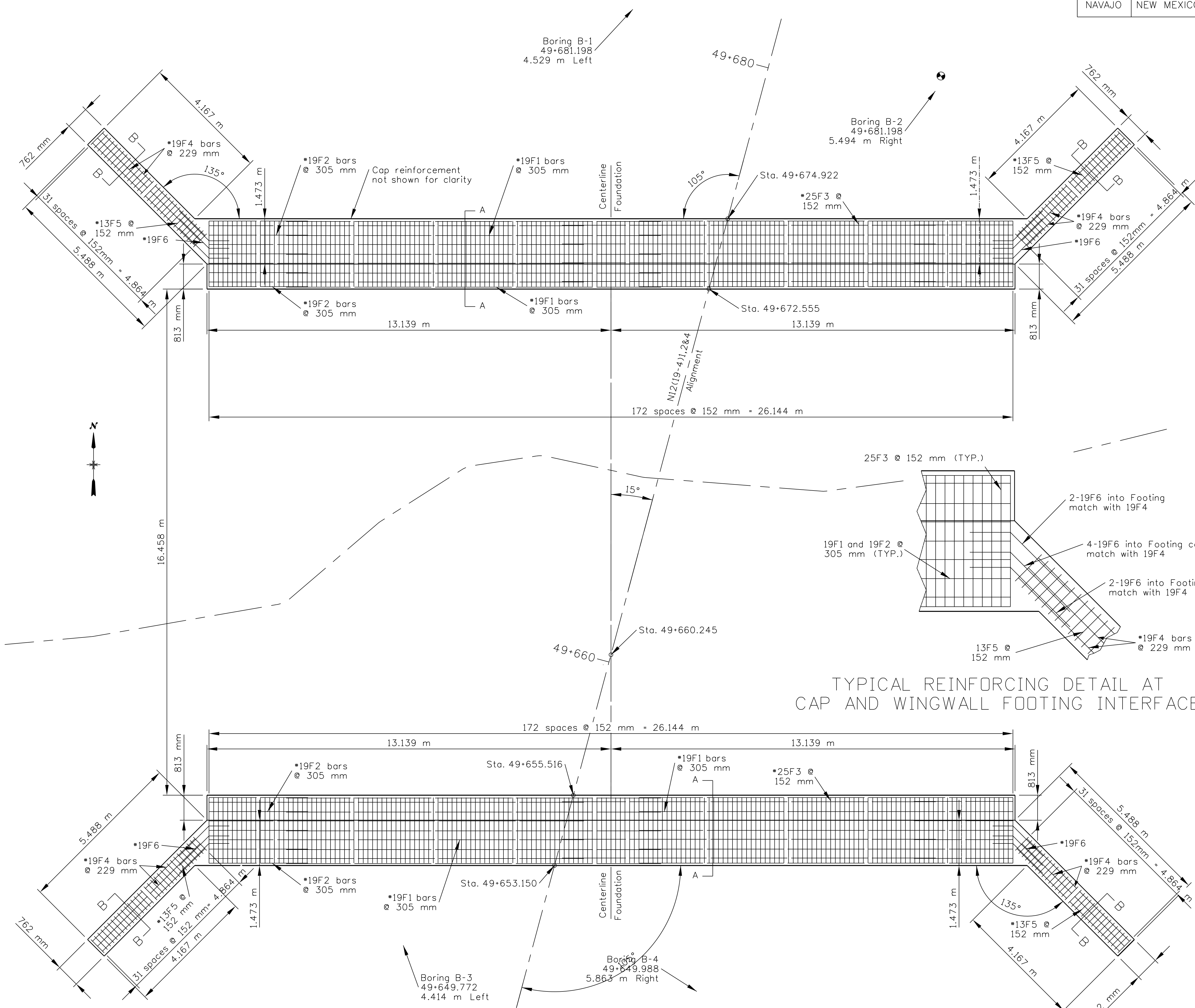
UNITED STATES
 DEPARTMENT OF THE INTERIOR
 BUREAU OF INDIAN AFFAIRS
 NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

BRIDGE N505 STRUCTURE LAYOUT
 AND ELEVATION VIEWS

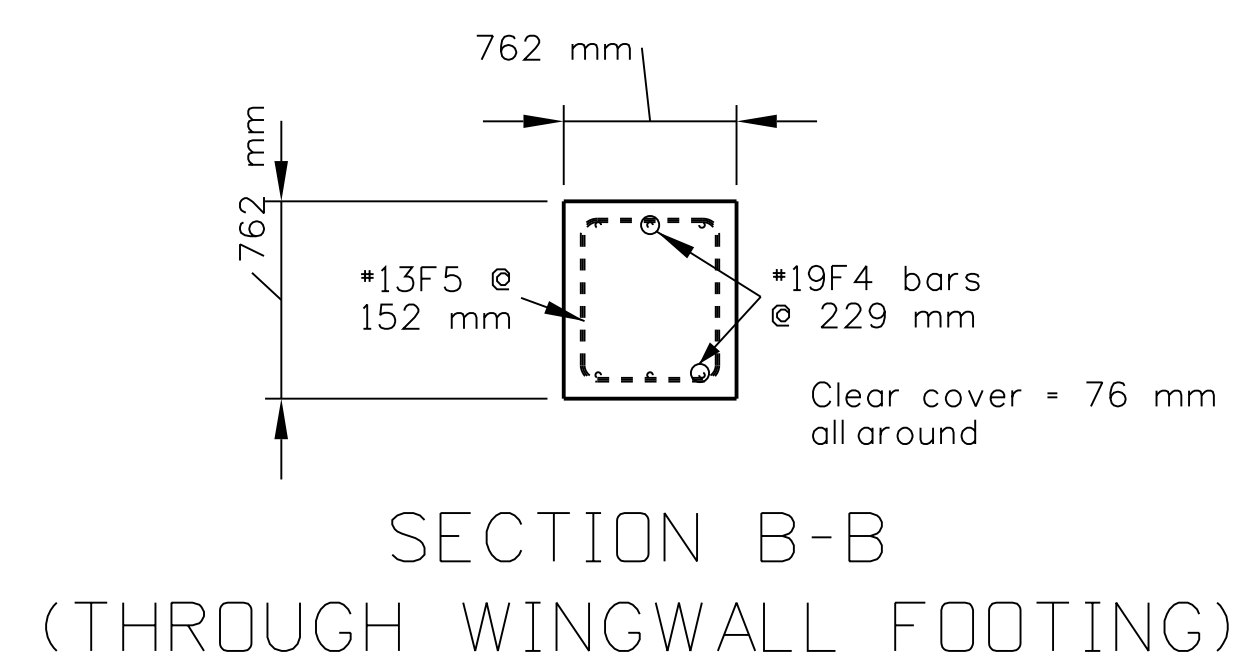
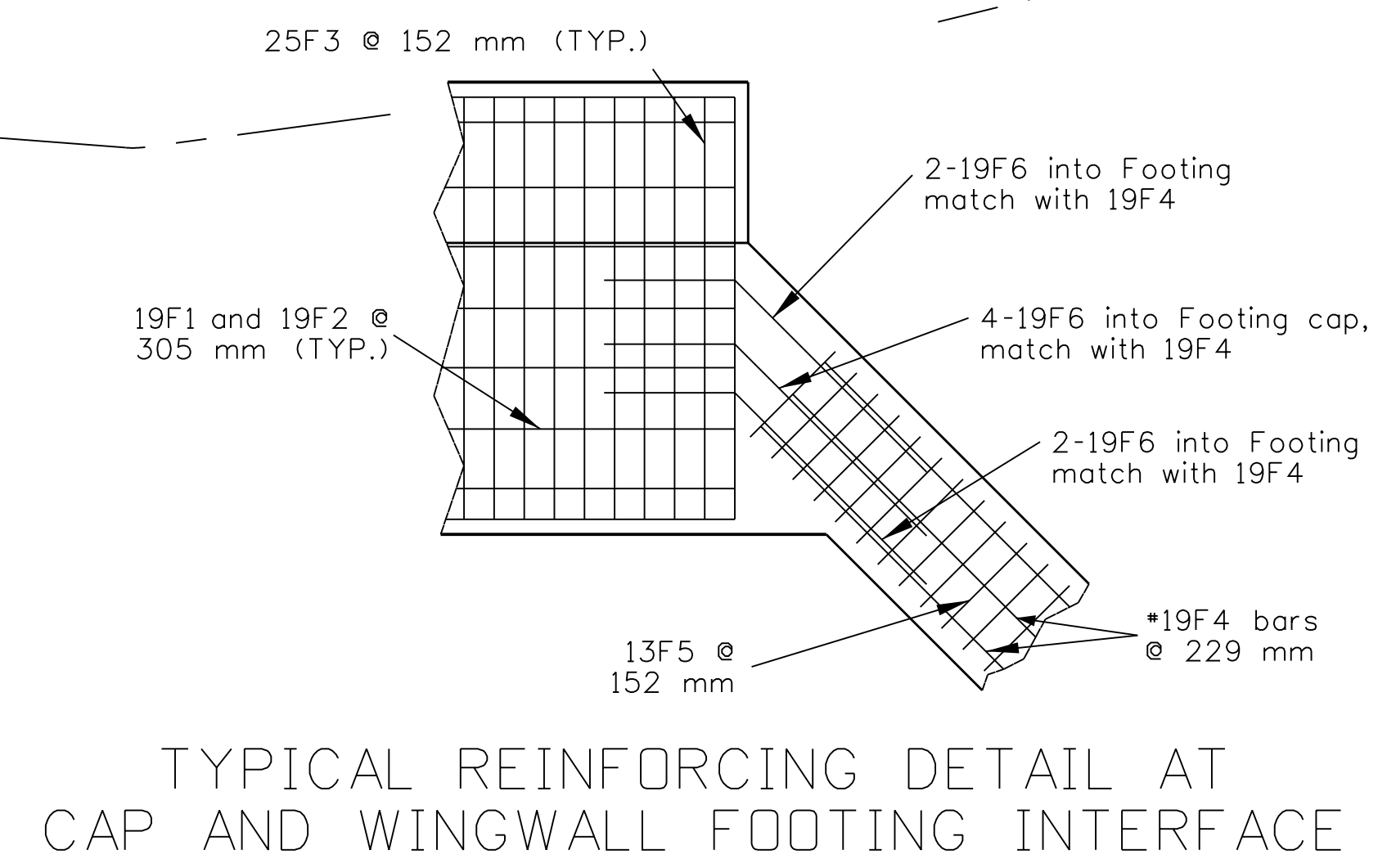
DRAWN BY: NRDOT DATE: 2/12/2018
 DESIGNED BY: NRDOT DATE: 2/12/2018
 REVISED: 3/16/2018 BY: Leroy.Toledo
 Filename: N504 Struct Layout and Elev Views



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	NEW MEXICO	NAVAJO	N12	N12(19-4)1,2&4	B-08	88




- NOTES:
1. Minimum embedment of precast arch foundation into sandstone is 305 mm, except for wingwall foundations.
 2. The Contractor shall neatly carve out the required socket for each foundation to the lines and grades shown.
 3. The CDR/CDTR shall inspect the excavation before laying the reinforcement and formwork.
 4. If unstable sandstone is found, immediately notify the CDR.
 5. Should it be necessary to install reinforcement into the sandstone, this work will be considered under section 109.02(s) of the FP-14



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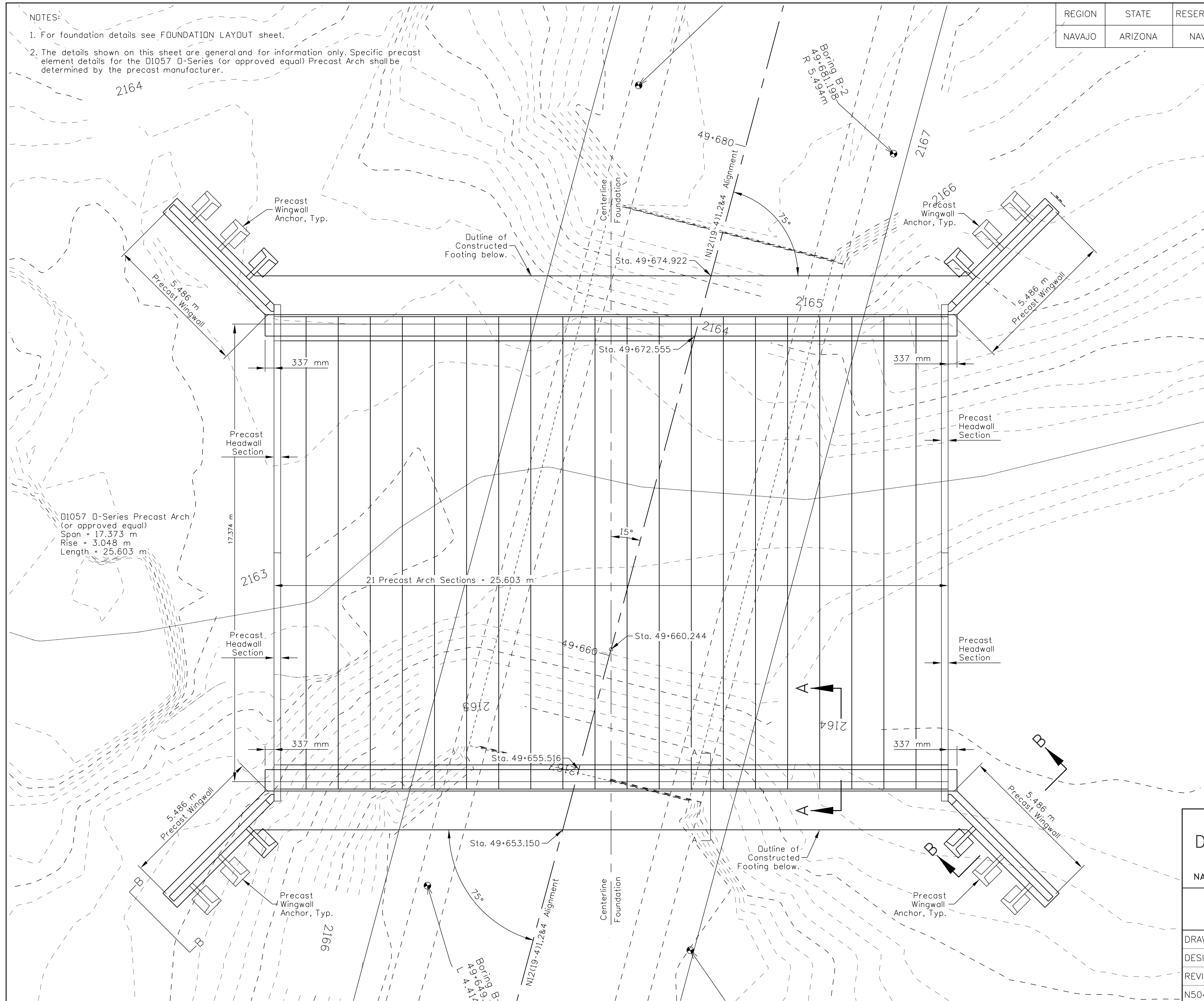
BRIDGE N505 FOUNDATION
LAYOUT DETAIL

DRAWN BY: NRDOT DATE: 2/13/2018
DESIGNED BY: NRDOT DATE: 2/13/2018
REVISED: 2/13/2018 BY: rsh
Filename: 08_N505 Foundation Layout

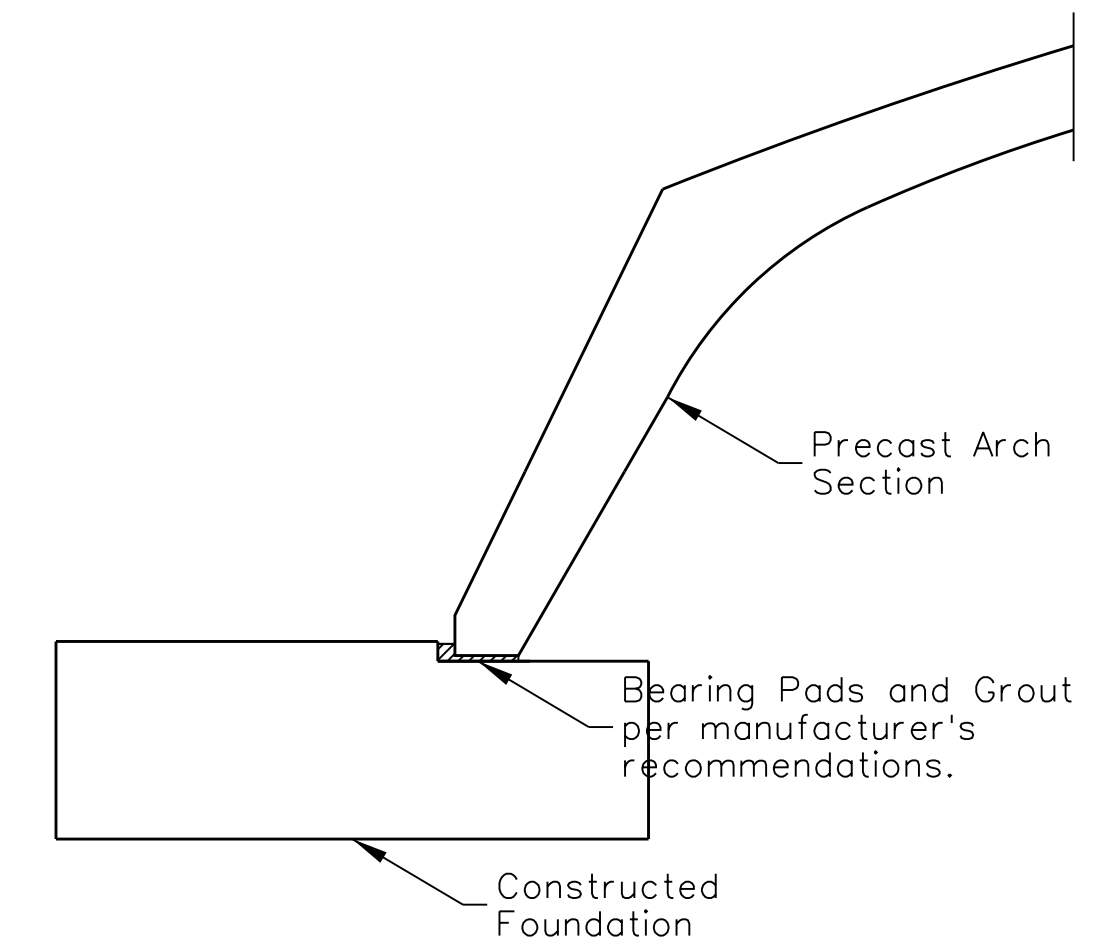


- NOTES:
1. For foundation details see FOUNDATION LAYOUT sheet.
 2. The details shown on this sheet are general and for information only. Specific precast element details for the 01057 D-Series (or approved equal) Precast Arch shall be determined by the precast manufacturer.

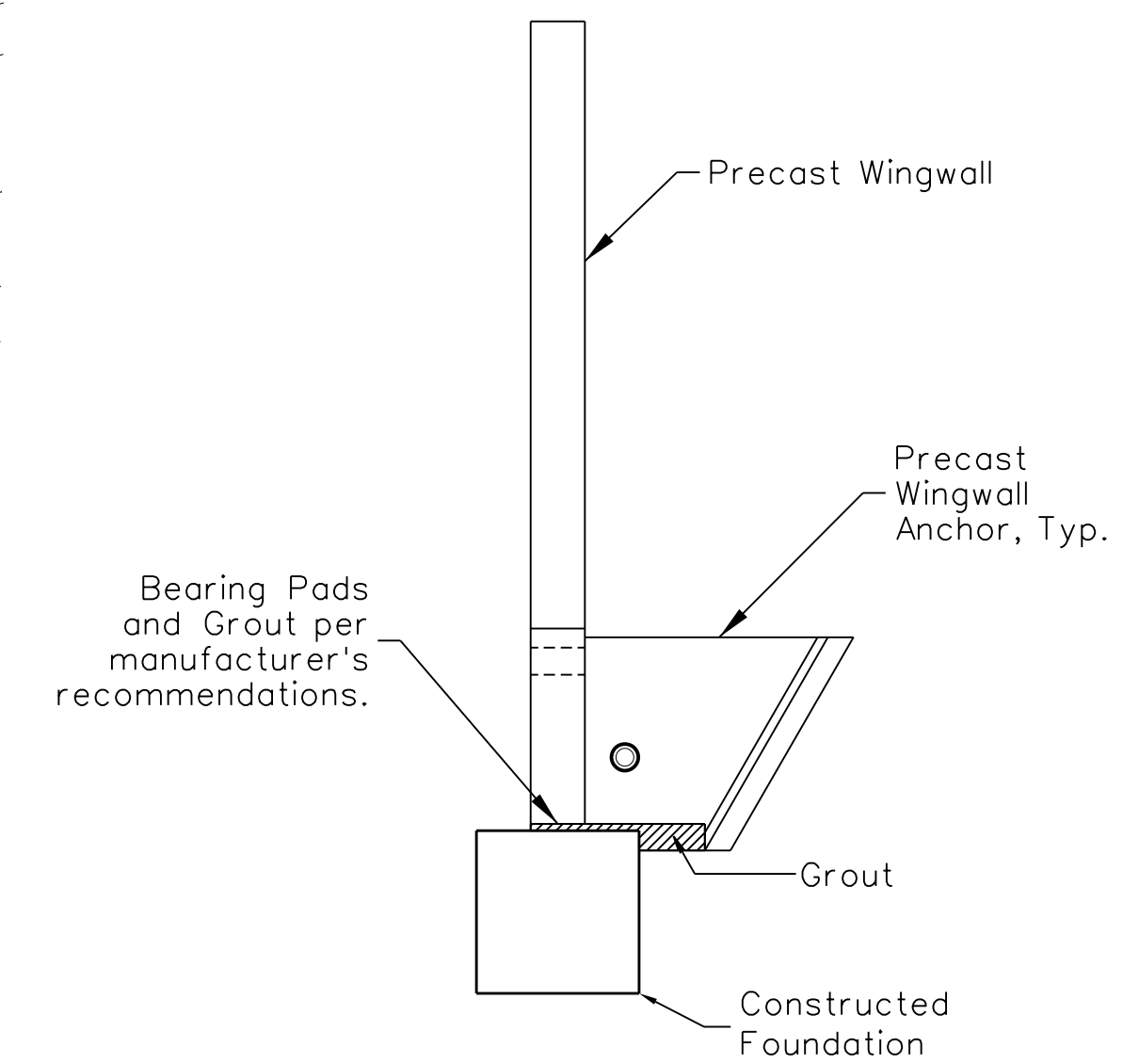
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	B-09	88



01057 D-Series Precast Arch
(or approved equal)
Span = 17.373 m
Rise = 3.048 m
Length = 25.603 m



SECTION A-A




SECTION B-B

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NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

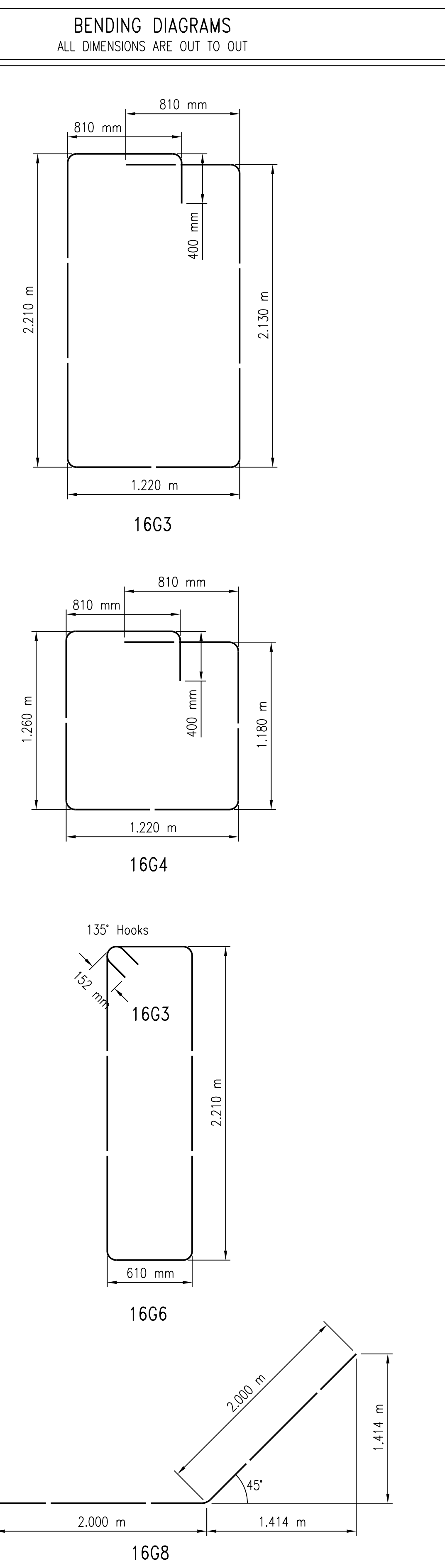
**BRIDGE N505 REPLACEMENT
PRECAST ARCH LAYOUT**

DRAWN BY: cdh DATE: 2018/02/13
DESIGNED BY: Struct Unit DATE: 2018/02/13
REVISED: -/-/- BY: - - -
N504 Precast Arch Layout

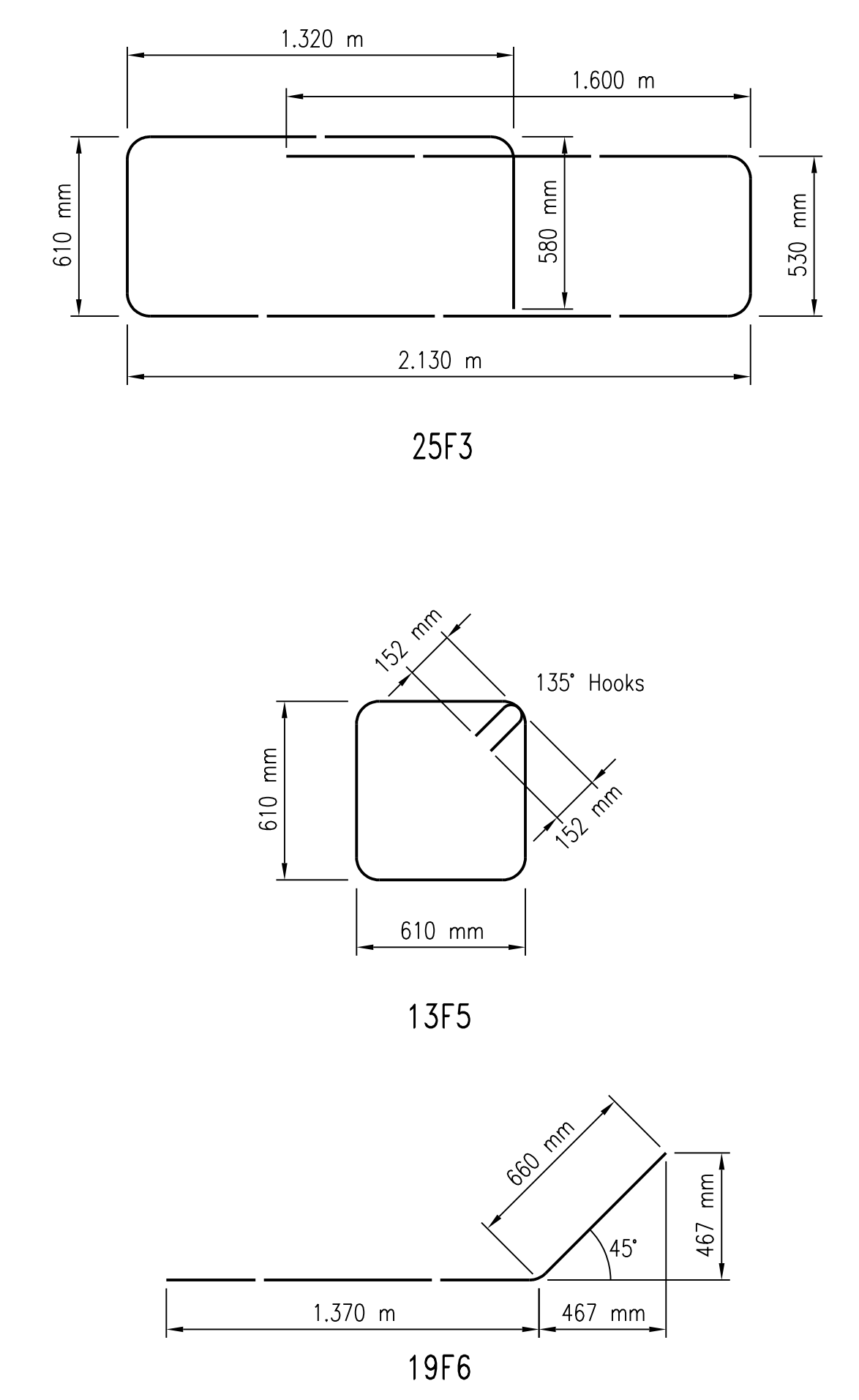


REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	B-10	88

LOCATION	STRAIGHT BARS				BENT BARS				SPACING
	MARK	QTY.	SIZE	LENGTH	MARK	QTY.	SIZE	LENGTH	
NOTES: TB = Top and Bottom. TBS = Top, Bottom and Sides. Stations shown are at backside of foundation.									
ARCH FOOTING; Abutment 1, Sta. 39+655.440									
Longitudinal, TBS	29G1	40	29	12.190 m	#29 splice length = 1.420 m				As Shown
Longitudinal, TBS	29G2	20	29	6.980 m					As Shown
Stirrups					16G3	69	16	7.580 m	305 mm
					16G4	27	16	5.680 m	As Shown
WINGWALL FOOTINGS (2 EACH); Abutment 1, Sta. 39+655.440									
Longitudinal, TBS	13G5	34	34	6.100 m					As Shown
Stirrups					16G6	42	16	5.950 m	305 mm
	19G7	80	19	1.670 m					305 mm
					16G8	24	16	4.000 m	As Shown
ARCH FOOTING; Abutment 2, Sta. 39+675.706									
Longitudinal, TBS	29G1	40	29	12.190 m	#29 splice length = 1.420 m				As Shown
Longitudinal, TBS	29G2	20	29	6.980 m					As Shown
Stirrups					16G3	69	16	7.580 m	305 mm
					16G4	27	16	5.680 m	As Shown
WINGWALL FOOTINGS (2 EACH); Abutment 2, Sta. 39+675.706									
Longitudinal, TBS	13G5	34	34	6.100 m					As Shown
Stirrups					16G6	42	16	5.950 m	305 mm
	19G7	80	19	1.670 m					305 mm
					16G8	24	16	4.000 m	As Shown



LOCATION	STRAIGHT BARS				BENT BARS				SPACING
	MARK	QTY.	SIZE	LENGTH	MARK	QTY.	SIZE	LENGTH	
ARCH FOOTING; Abutment 1, Sta. 49+653.150									
Longitudinal, TBS	19F1	36	19	12.190 m	#19 splice length = 710 mm				As Shown
Longitudinal, TBS	19F2	18	19	3.190 m					As Shown
Stirrups					25F3	173	25	6.770 m	152 mm
WINGWALL FOOTINGS (2 EACH); Abutment 1, Sta. 49+653.150									
Longitudinal, TBS	19F4	16	19	4.710 m					As Shown
Stirrups					13F5	64	13	2.750 m	152 mm
					19F6	16	19	2.030 m	As Shown
ARCH FOOTING; Abutment 2, Sta. 49+674.922 #19 bar splice length = 710 mm									
Longitudinal, TBS	19F1	36	19	12.190 m					As Shown
Longitudinal, TBS	19F2	18	19	3.190 m					As Shown
Stirrups					25F3	173	25	6.770 m	152 mm
WINGWALL FOOTINGS (2 EACH); Abutment 2, Sta. 49+674.922									
Longitudinal, TBS	19F4	16	19	4.710 m					As Shown
Stirrups					13F5	64	13	2.750 m	152 mm
					19F6	16	19	2.030 m	As Shown



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BUREAU OF INDIAN AFFAIRS
NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

**BRIDGES N504 & N505 REPLACEMENT
REINFORCING STEEL SCHEDULE**

DRAWN BY: NRDOT	DATE: 2/23/2018
DESIGNED BY: NRDOT	DATE: 2/23/2018
REVISED: 3/9/2018	BY: Leroy.Toledo

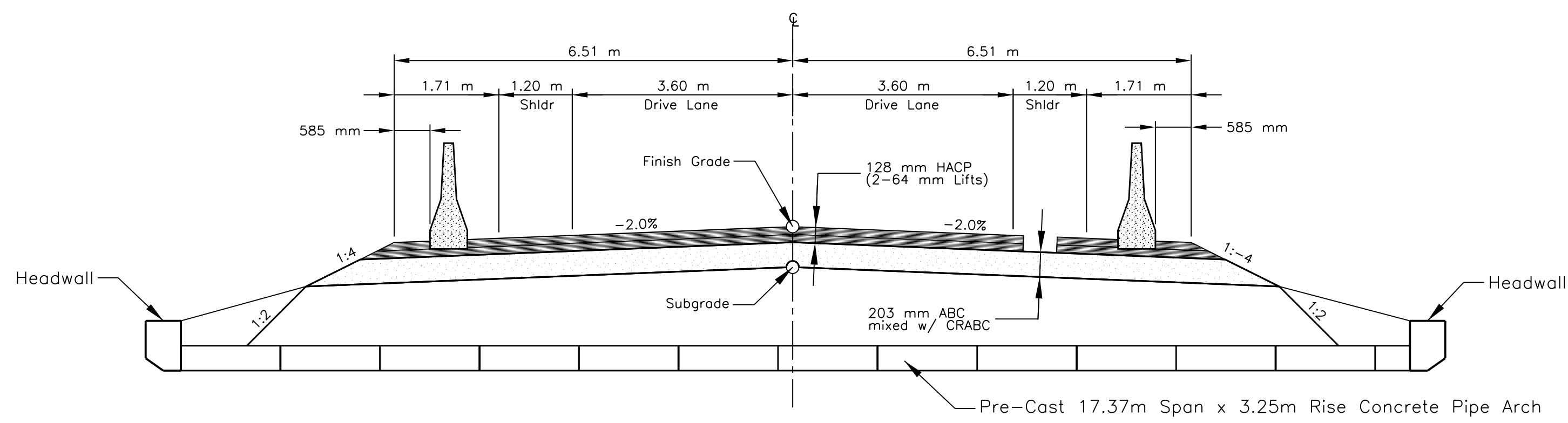
Sht 84_B-10 N504 n 505 Reinforcing Steel Sheet 2 of 3.dgn

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	B-12	88

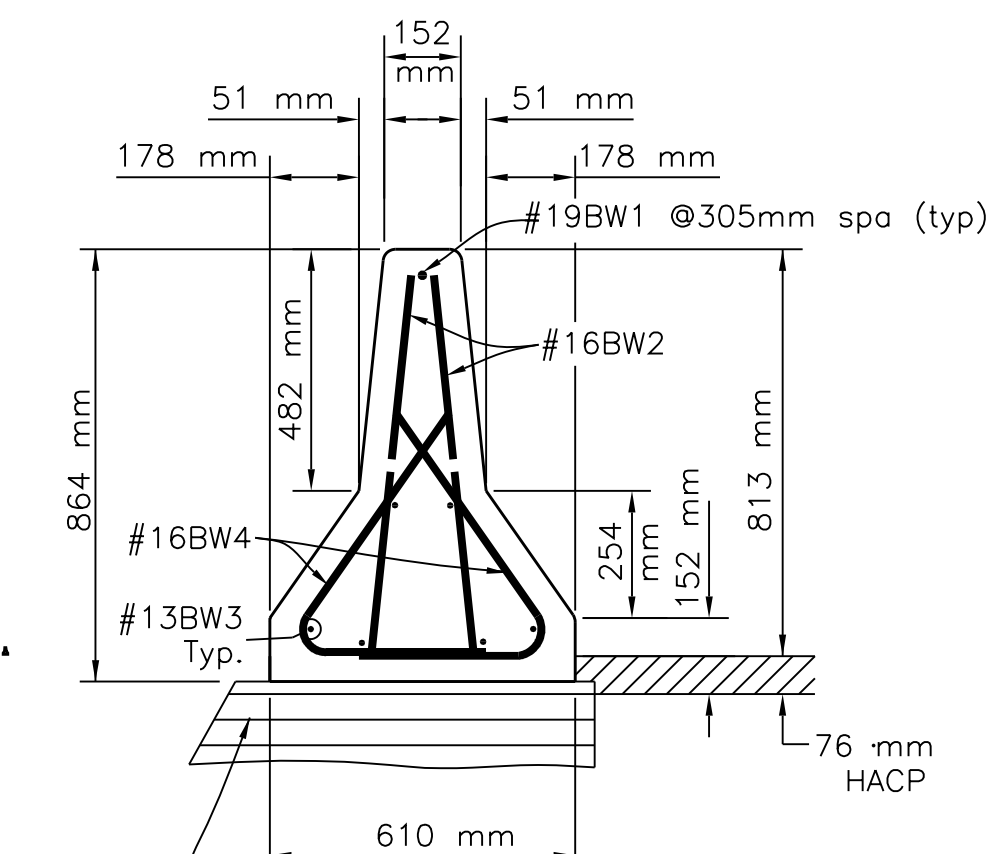
SEE SHEET 6 FOR ESTIMATED QUANTITY TABLE

GENERAL NOTES

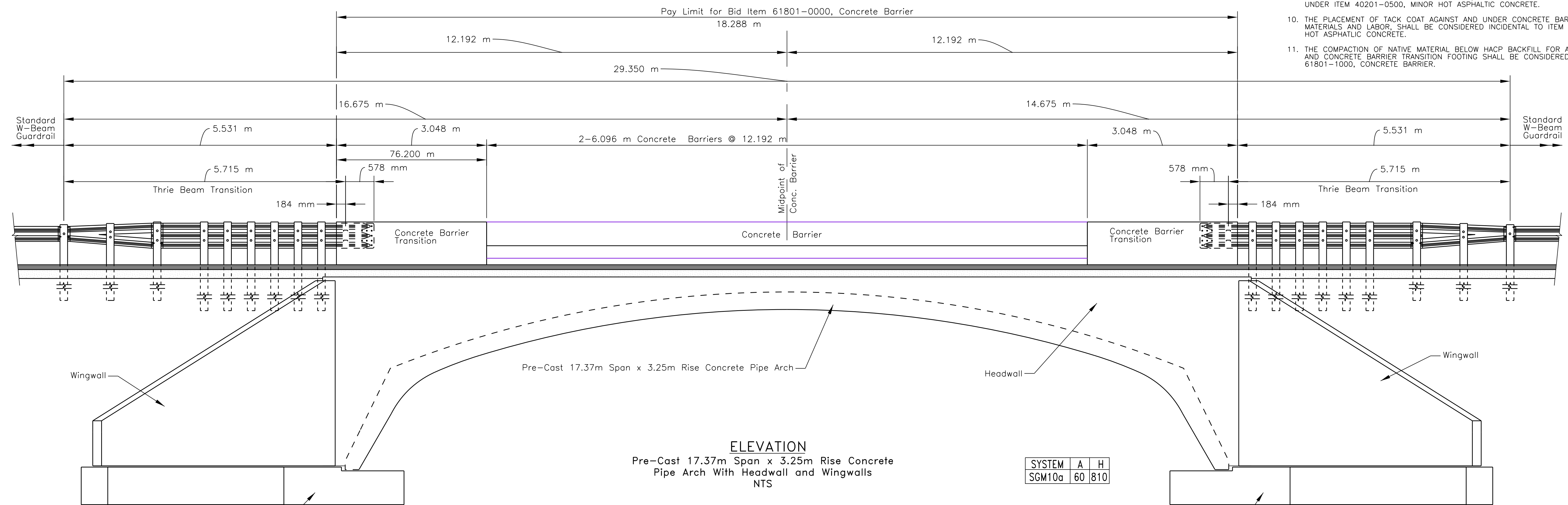
- AT NO TIME DURING THE PLACEMENT OF THE PC ARCH GUARDRAILS SHALL THE ROADWAY EDGE AT ACTIVE TRAFFIC LANES BE LEFT WITHOUT CONTROL BARRIERS OR FLAGMEN.
- PLACEMENT OF PRECAST CONCRETE BARRIER SECTIONS SHALL BE BASED ON THE MIDPOINT OF CBC. MIDPOINT OF CBC SHALL BE DETERMINED IN THE FIELD BY MEASUREMENT OF INLET AND OUTLET OF EACH CBC, AND SHALL BE CONCURRED BY THE COR/COTR.
- AT THE CONTRACTOR'S OPTION, THE CONCRETE BARRIER MAY BE CAST IN LIEU OF PROVIDING PRECAST SECTIONS.
- THE EXISTING ASPHALT AT THE NEW W-BEAM GUARDRAIL (INCLUDING THE 6 METER SHOULDER WIDENING TAPER AT GUARDRAIL ENDS) AND CONCRETE BARRIER TRANSITION (NOT THE PRECAST BARRIER SECTIONS) LOCATIONS, SHALL BE FULL DEPTH SAW CUT AT THE SHOULDER LINE AND ALL ASPHALT BEYOND SAW CUT SHALL BE REMOVED. THE EXISTING ASPHALT AT THE PRECAST BARRIER SECTIONS SHALL BE SAW CUT AND REMOVED TO THE LIMITS SHOWN ON THIS SHEET. THE WORK SHALL BE CONSIDERED INCIDENTAL TO ITEM 20304-1000, REMOVAL OF STRUCTURES AND OBSTRUCTIONS.
- THE PRECAST CONCRETE BARRIER SECTIONS AND THE CONCRETE BARRIER TRANSITIONS WITH FOOTING SHALL BE SET AS PER FP-14, SECTION 618 AND AS DETAILED ON SHEETS B-13 AND B-14.
- GUARDRAIL WIDENING AND THE AREA IN FRONT OF THE TRANSITION FOOTING SHALL BE SURFACED WITH 152 mm OF ABC AND 76 mm OF ASPHALT SURFACING AND SHALL BE PLACED TO THE DIMENSIONS SHOWN ON SHEET 18 OF 95. AGGREGATE BASE COURSE AND HOT ASPHALTIC CONCRETE FOR GUARDRAIL WIDENING SHALL BE PAID UNDER ITEM 30301-2000, UNTREATED AGGREGATE BASE COURSE, GRADING D, AND ITEM 40401-0000, MINOR HOT ASPHALTIC CONCRETE, RESPECTIVELY. THE FINISH ELEVATION OF THE GUARDRAIL WIDENING ASPHALT SHALL MATCH THE FINISHED RECYCLED ASPHALT COURSE ELEVATION.
- THE NEW GUARDRAIL AND THRIE BEAM TRANSITION STRUCTURES SHALL BE INSTALLED AS PER FP-14, SECTION 617 AND AS DETAILED ON SHEETS B-13 AND B-14.
- ALL WORK, MATERIALS AND LABOR REQUIRED FOR THE EXISTING MATERIAL REMOVAL ABOVE THE EXISTING GUARDRAIL ATTACHMENT BLOCKS, AS SHOWN ON THIS SHEET, SHALL BE CONSIDERED INCIDENTAL ITEM 20304-1000, REMOVAL STRUCTURES AN OBSTRUCTIONS.
- ALL WORK, MATERIALS AND LABOR REQUIRED FOR THE CONSTRUCTION OF THE HACP BACKFILL BENEATH THE CONCRETE BARRIER, AS SHOWN ON THIS SHEET, SHALL BE PAID UNDER ITEM 40201-0500, MINOR HOT ASPHALTIC CONCRETE.
- THE PLACEMENT OF TACK COAT AGAINST AND UNDER CONCRETE BARRIER, INCLUDING ALL MATERIALS AND LABOR, SHALL BE CONSIDERED INCIDENTAL TO ITEM 40201-0500, MINOR HOT ASPHALTIC CONCRETE.
- THE COMPACTION OF NATIVE MATERIAL BELOW HACP BACKFILL FOR AREAS BETWEEN ARCH AND CONCRETE BARRIER TRANSITION FOOTING SHALL BE CONSIDERED INCIDENTAL TO ITEM 61801-1000, CONCRETE BARRIER.



TYPICAL SECTION AT CONCRETE JERSEY BARRIER AREA
Sta. 49+653.38 to 49+671.69 Left
Sta. 49+656.39 to 49+674.69 Right
NTS



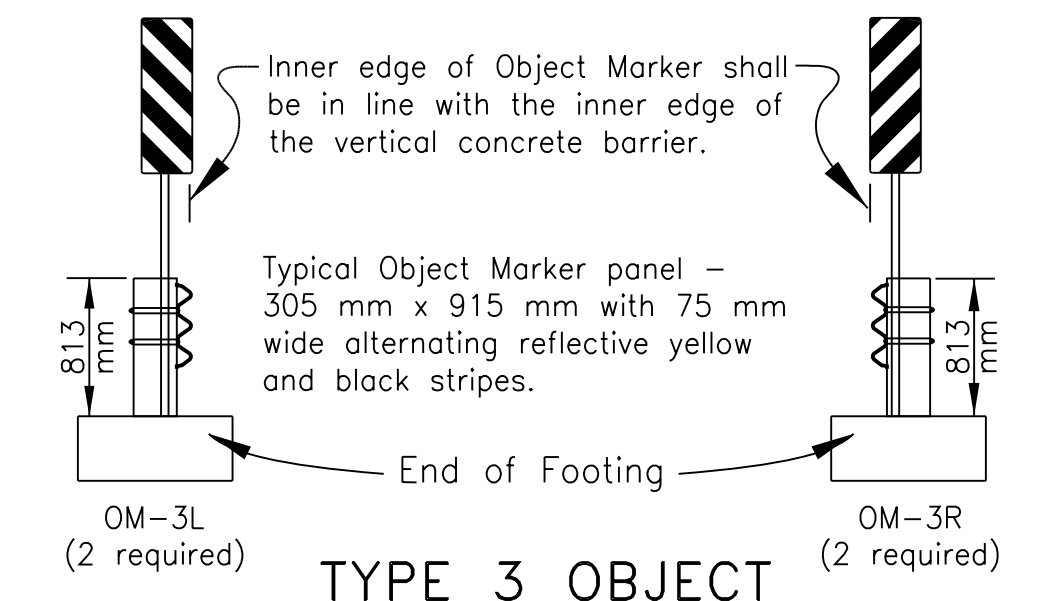
HACP Backfill for Barrier Foundation.
(See Sheet 72 of 105 for additional details and notes.)



ELEVATION
Pre-Cast 17.37m Span x 3.25m Rise Concrete Pipe Arch With Headwall and Wingwalls
NTS

SYSTEM	A	H
SGM10a	60	810

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



TYPE 3 OBJECT MARKER INSTALLATION

NOTE:

- Concrete Barrier Transition sections shall be cast in place.
- At Skewed Box Locations, guardrail are off center relative to the Centerline.

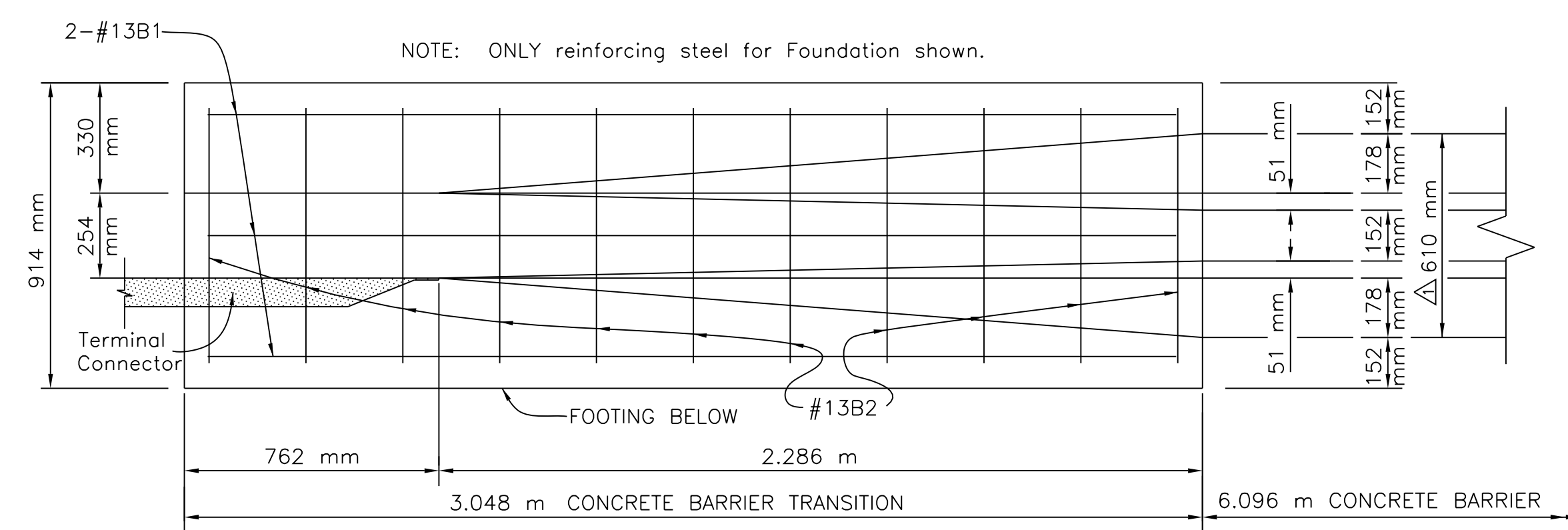
**UNITED STATES
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NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

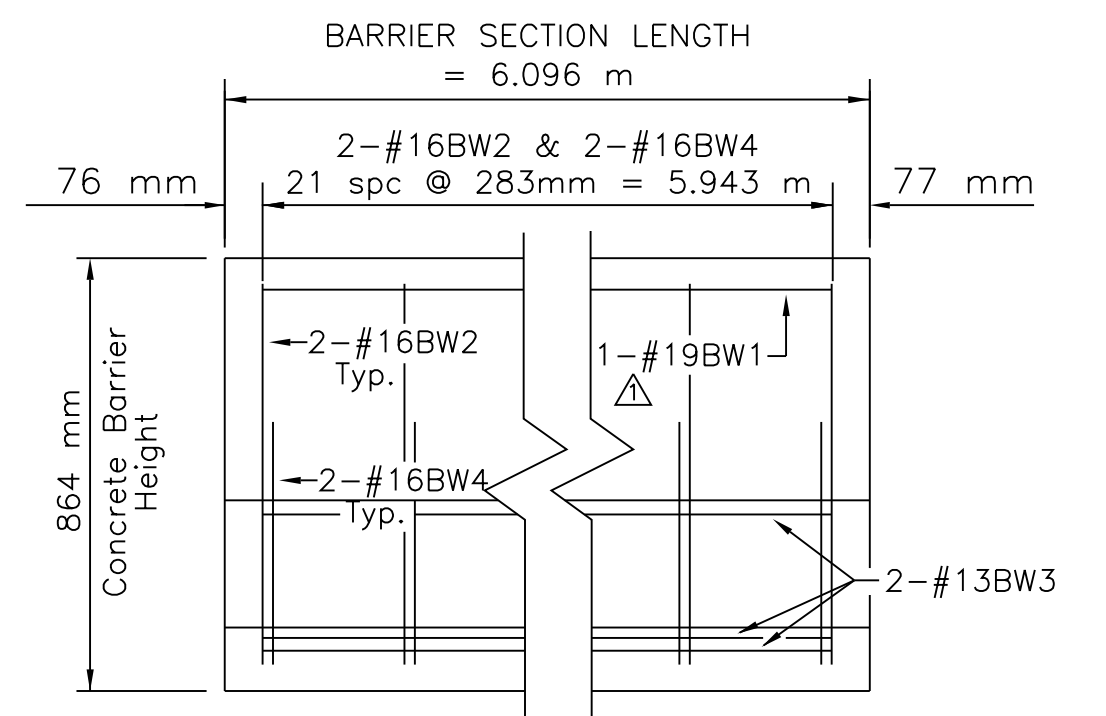
**CONCRETE JERSEY BARRIER
DETAILS AT N505 BRIDGE LOCATION**

DRAWN BY: NRDOT	DATE: 8/23/2017
DESIGNED BY: NRDOT	DATE: 8/23/2017
REVISED: 5/21/2018	BY: Leroy.Toledo
Sht 86 B-12 Conc Barrier 1 rev 2018.dgn	

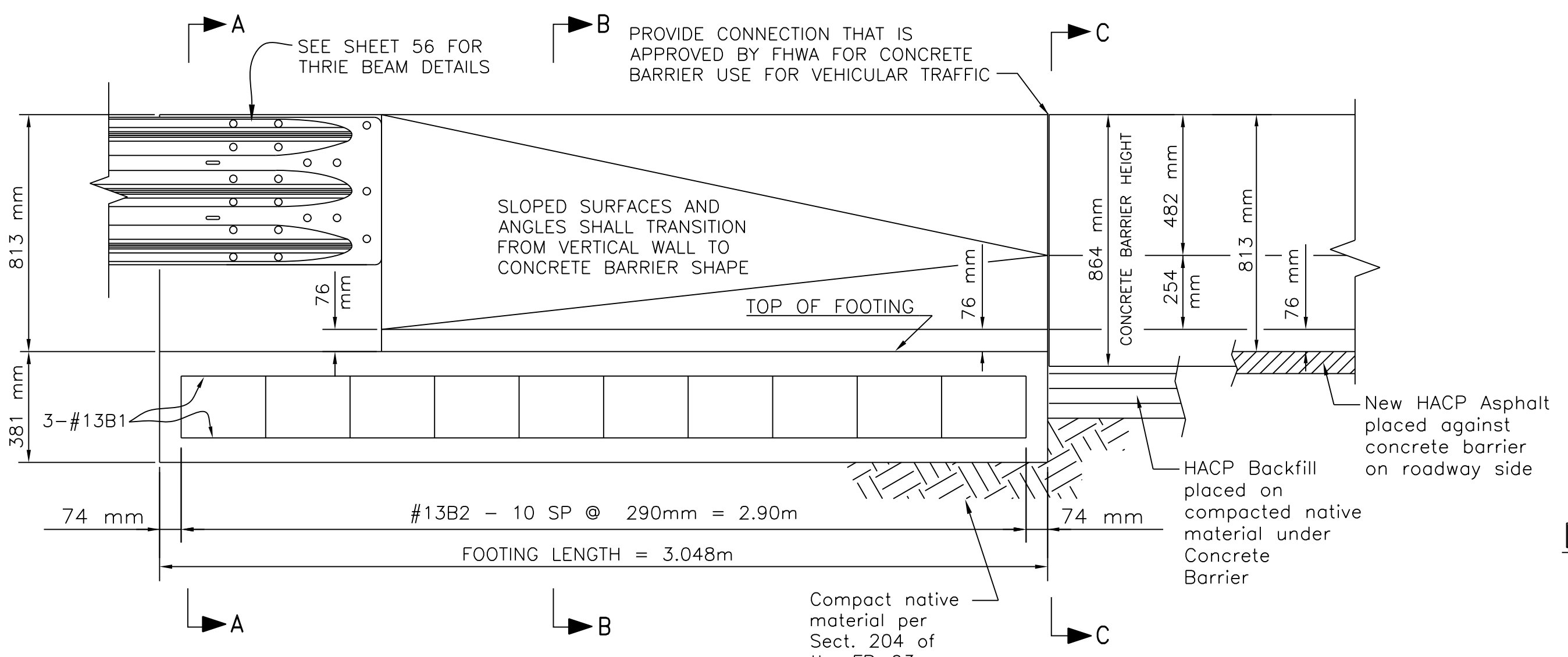
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	B-13	88



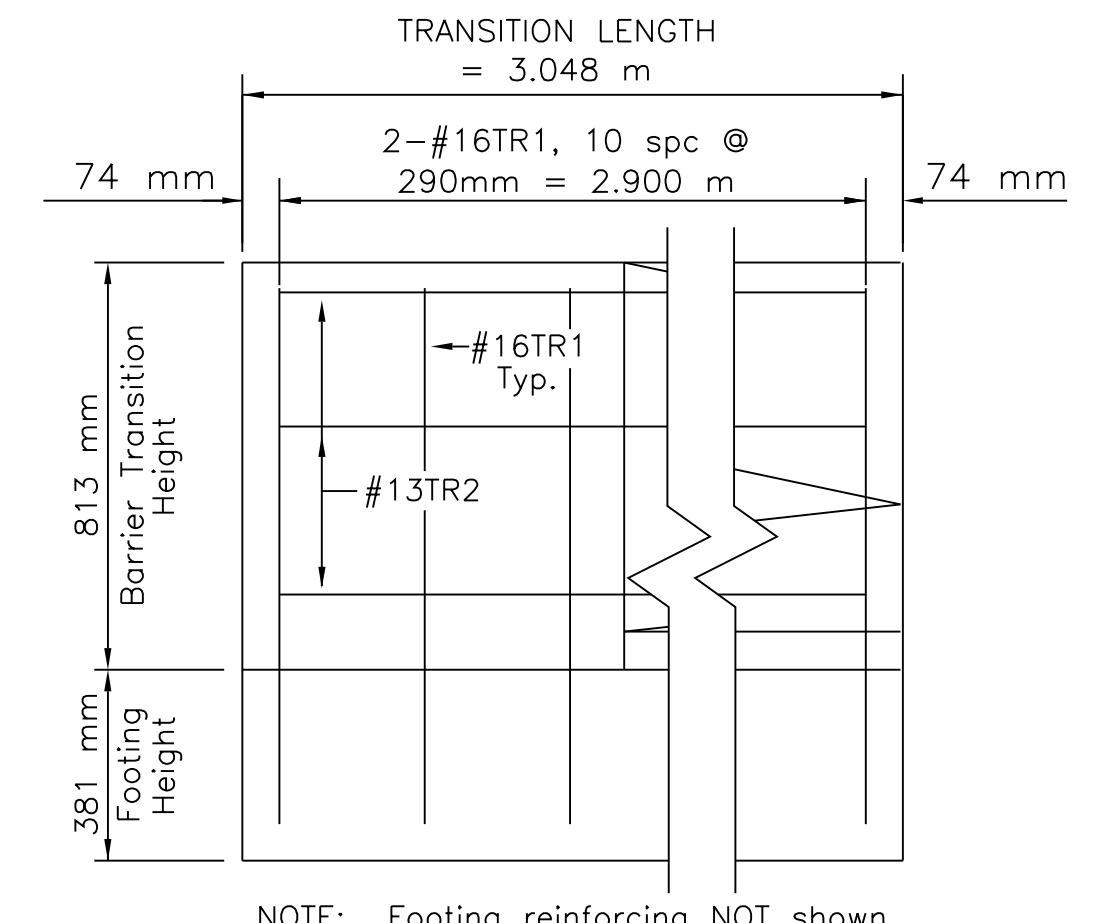
PLAN



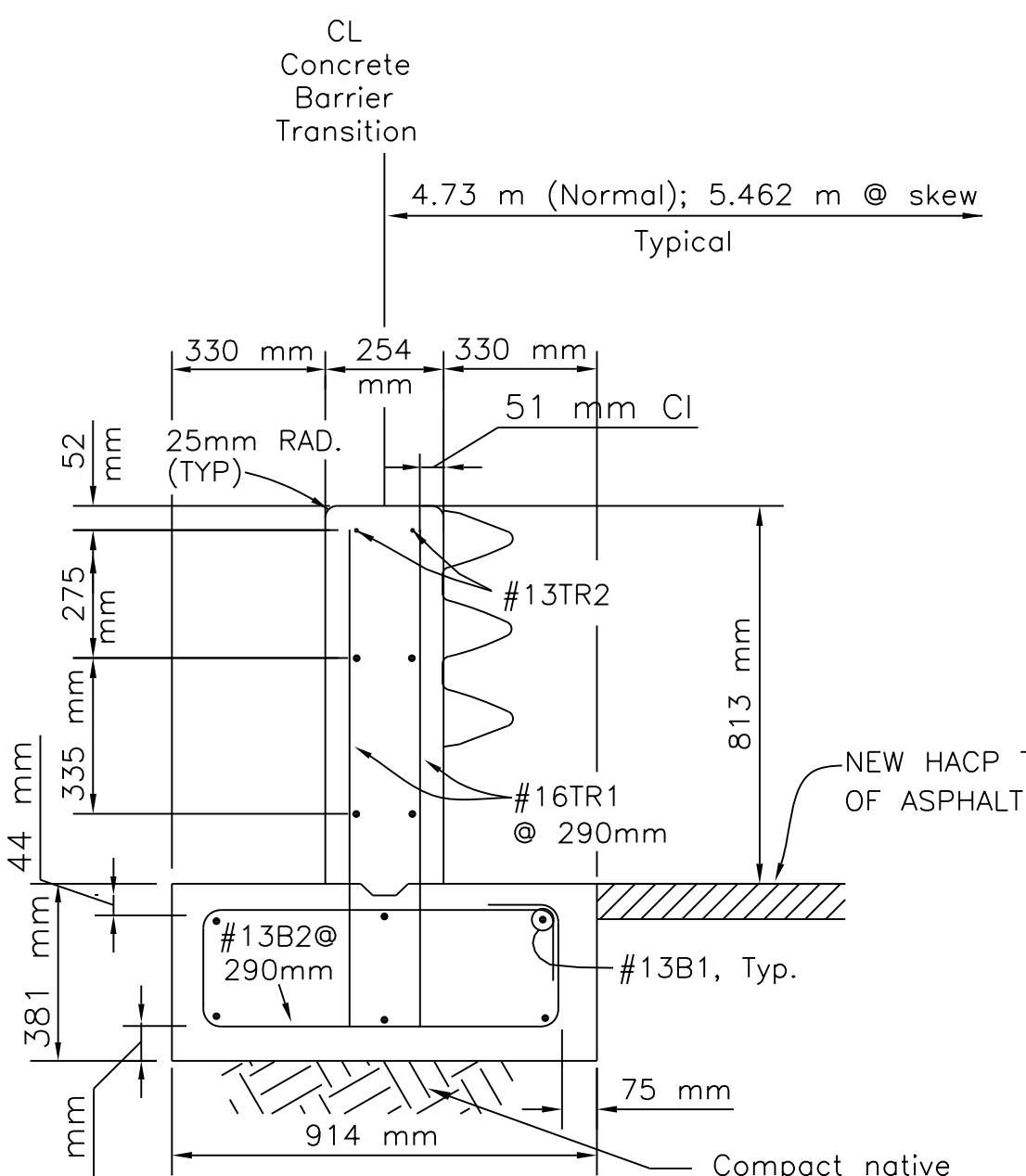
CONCRETE BARRIER REINFORCING DETAILS - ELEVATION



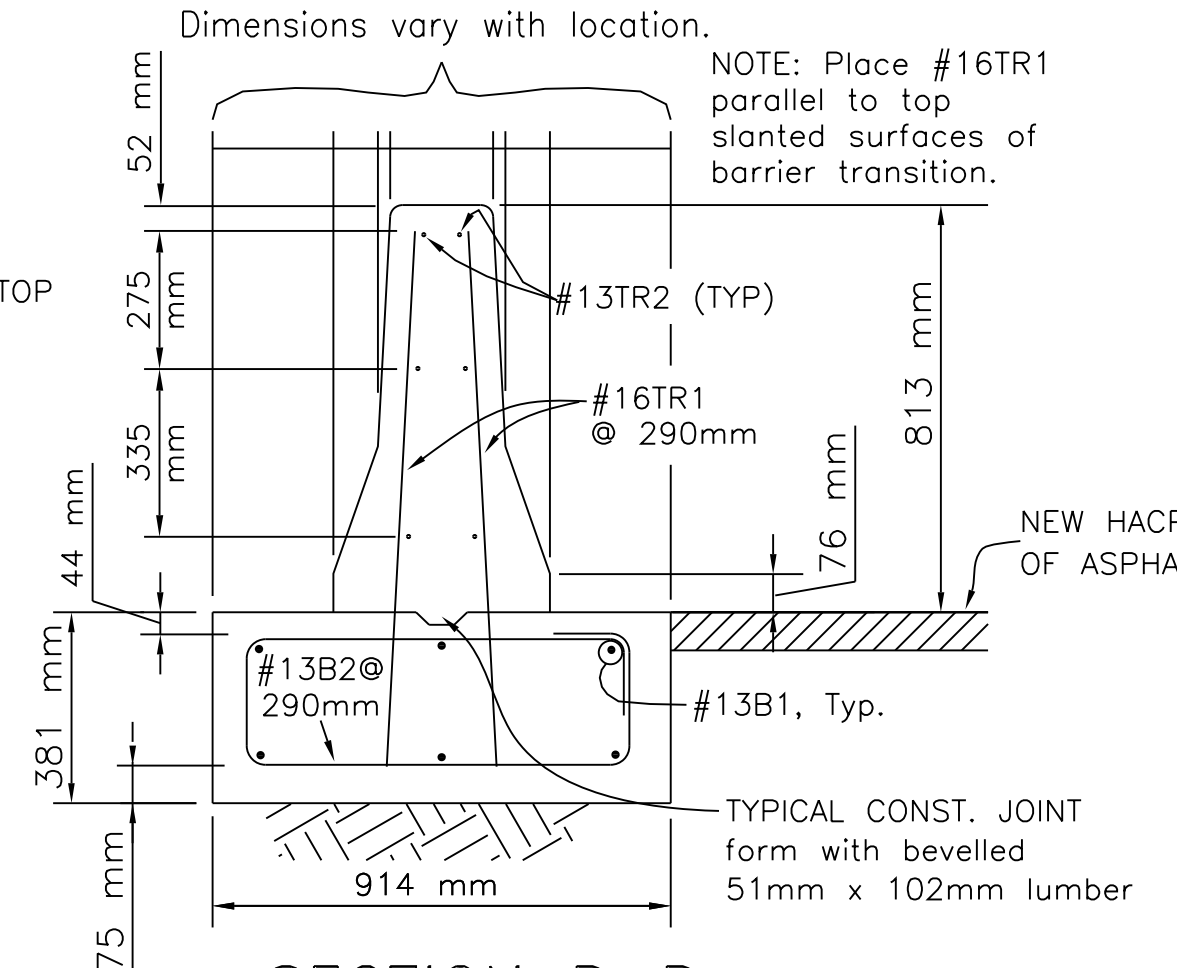
ELEVATION



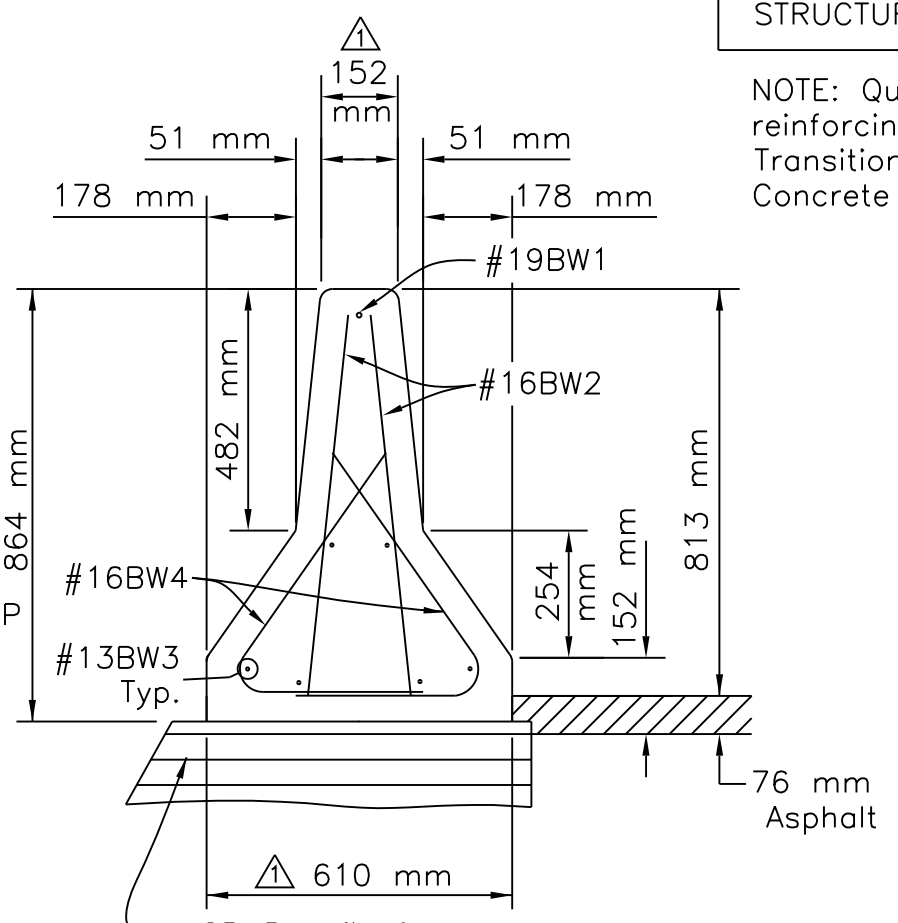
CONCRETE BARRIER TRANSITION REINFORCING DETAILS - ELEVATION



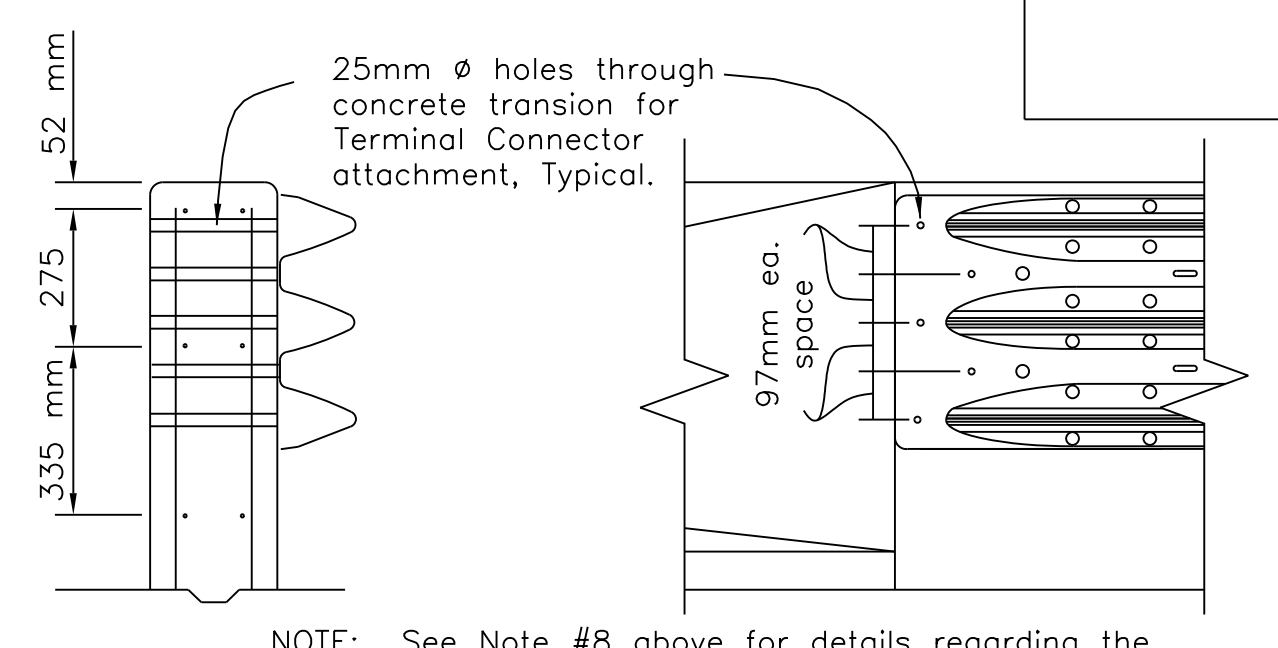
SECTION A-A



SECTION B-B



SECTION C-C



TERMINAL CONNECTOR ATTACHMENT DETAIL

ESTIMATED QUANTITIES		
ONE 3.048 m TRANSITION W/ FOOTING		
REINFORCING BAR GRADE 420	96	kg
STRUCTURAL CONCRETE CLASS "AE"	1.81	m ³
ONE 6.096m CONCRETE BARRIER		
REINFORCING BAR GRADE 420	161	kg
STRUCTURAL CONCRETE CLASS "AE"	1.74	m ³

NOTE: Quantities shown for information only. Concrete and reinforcing steel for Concrete Barrier and Concrete Barrier Transition is considered incidental to Item 61801-0000, Concrete Barrier.

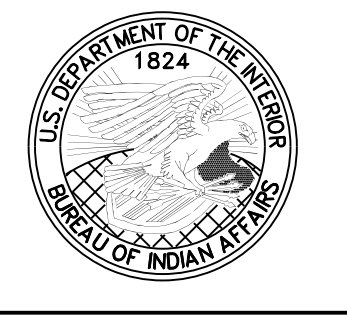
REINFORCING BAR SCHEDULE					BENDING DIAGRAMS	
LOCATION	MARK	QTY.	SIZE	LENGTH	SPACING	
Footing, Longitudinal	13B1	6	13	2,900 m		
Footing, Stirrup (bent)	13B2	11	13	2,360 m	290 mm	
Transition, Vertical	16TR1	22	16	1,070 m	290 mm	
Transition, Horizontal	13TR2	6	13	2,900 m		
Barrier, Top Horizontal	19BW1	1	19	5,900 m		
Barrier, Vertical	16BW2	44	16	760 mm	283 mm	
Barrier, Lower Horizontal	13BW3	6	13	5,900 m		
Barrier, Stirrup (bent)	16BW4	44	16	880 mm	283 mm	

NOTE: Quantities shown above are for ONE 3.048 m long Concrete Barrier Transition with Footing, and for ONE 6.096 m long Concrete Barrier Section.

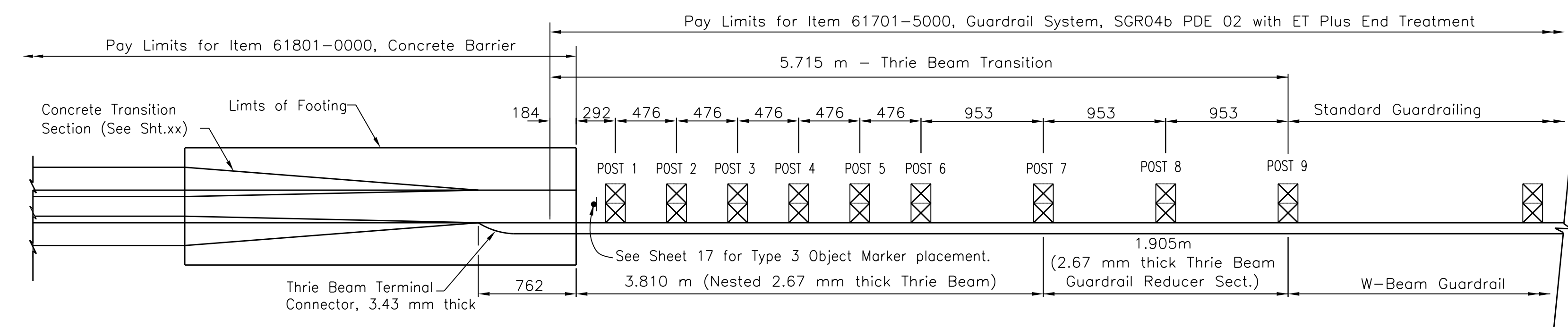
UNITED STATES
DEPARTMENT OF THE INTERIOR
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CONCRETE BARRIER
TRANSITION TO THRIE BEAM DETAILS

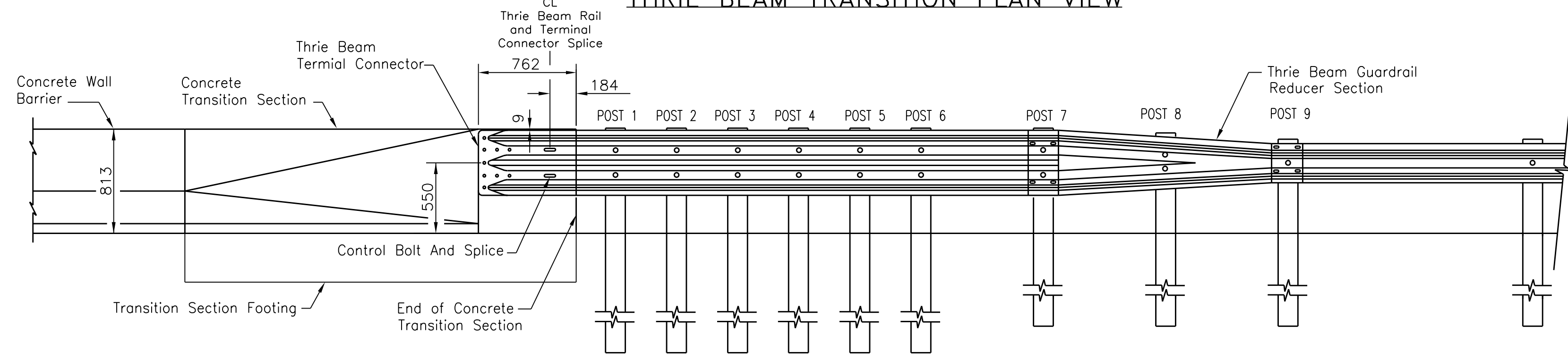
DRAWN BY: NRDOT	DATE: 9/19/2017
DESIGNED BY: NRDOT	DATE: 9/19/2017
REVISED: 9/19/2017	BY: Leroy Toledo
Sht 87 B-13 Conc Barrier 2 rev 2018.dgn	



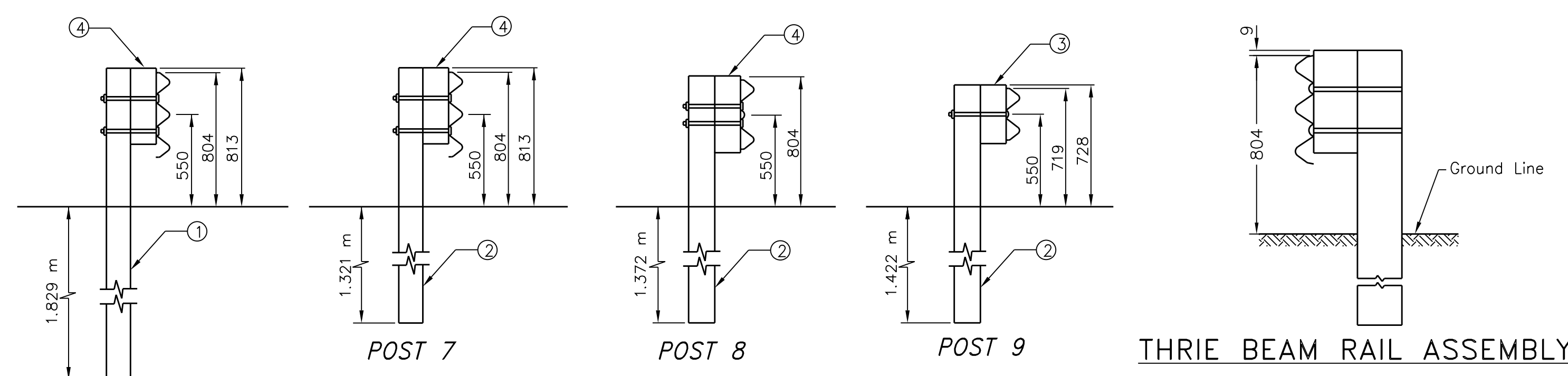
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N12	N12(19-4)1,2&4	B-14	88



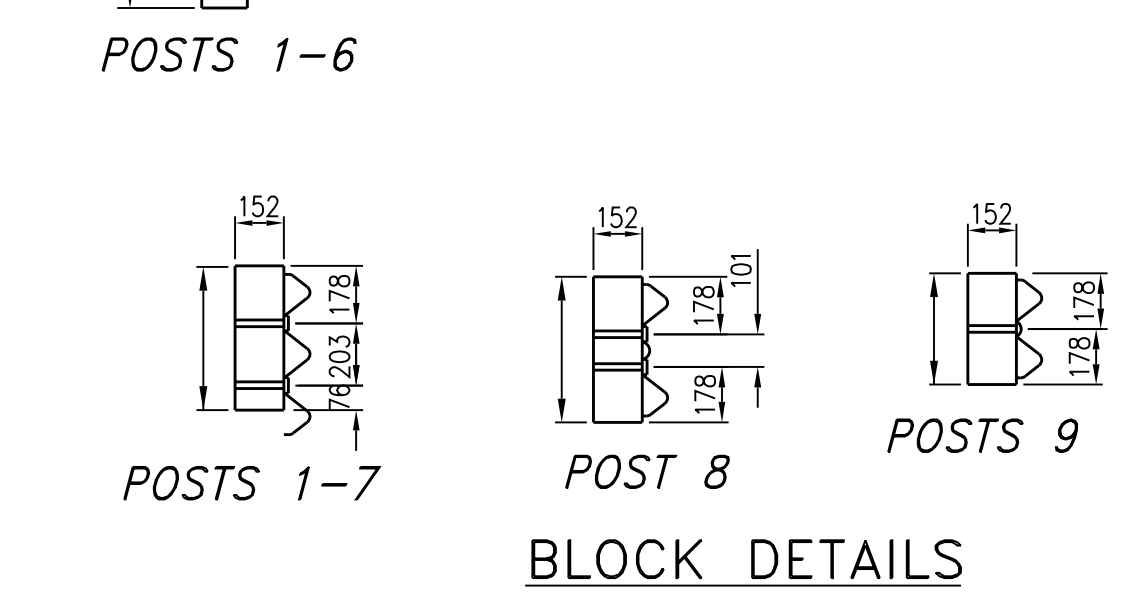
THRIE BEAM TRANSITION PLAN VIEW



THRIE BEAM TRANSITION ELEVATION VIEW

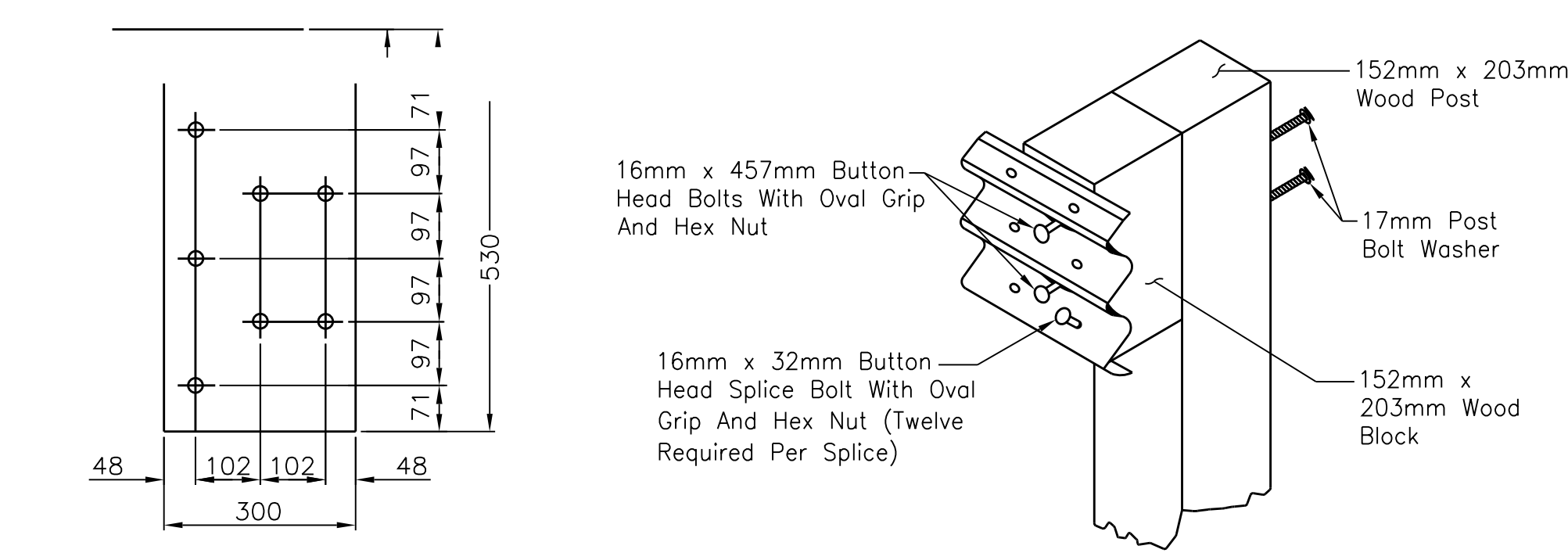


THRIE BEAM RAIL ASSEMBLY



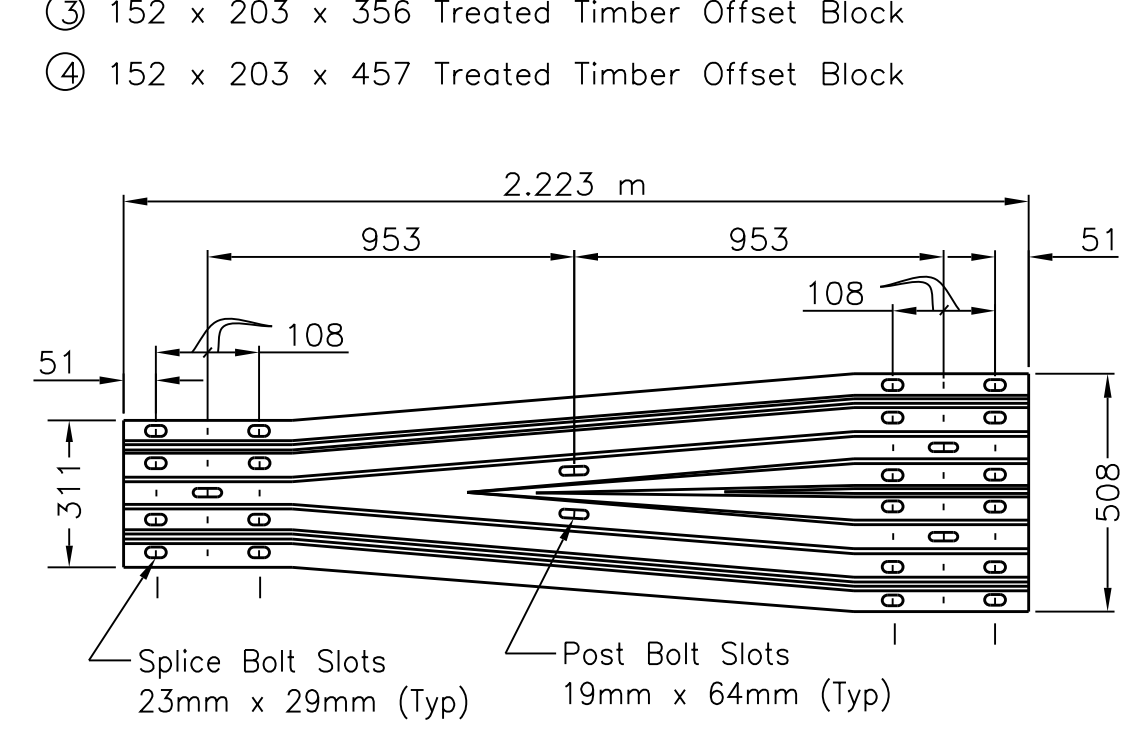
BLOCK DETAILS

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

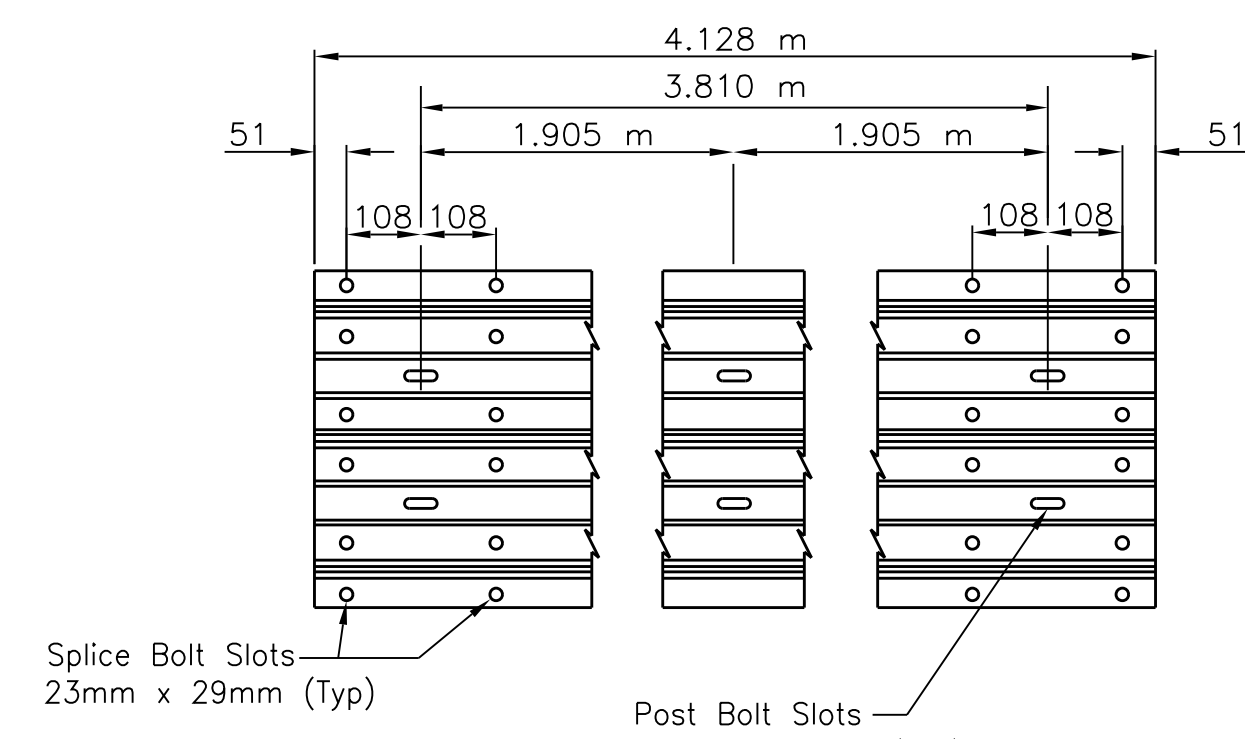


THRIE BEAM POST ASSEMBLY

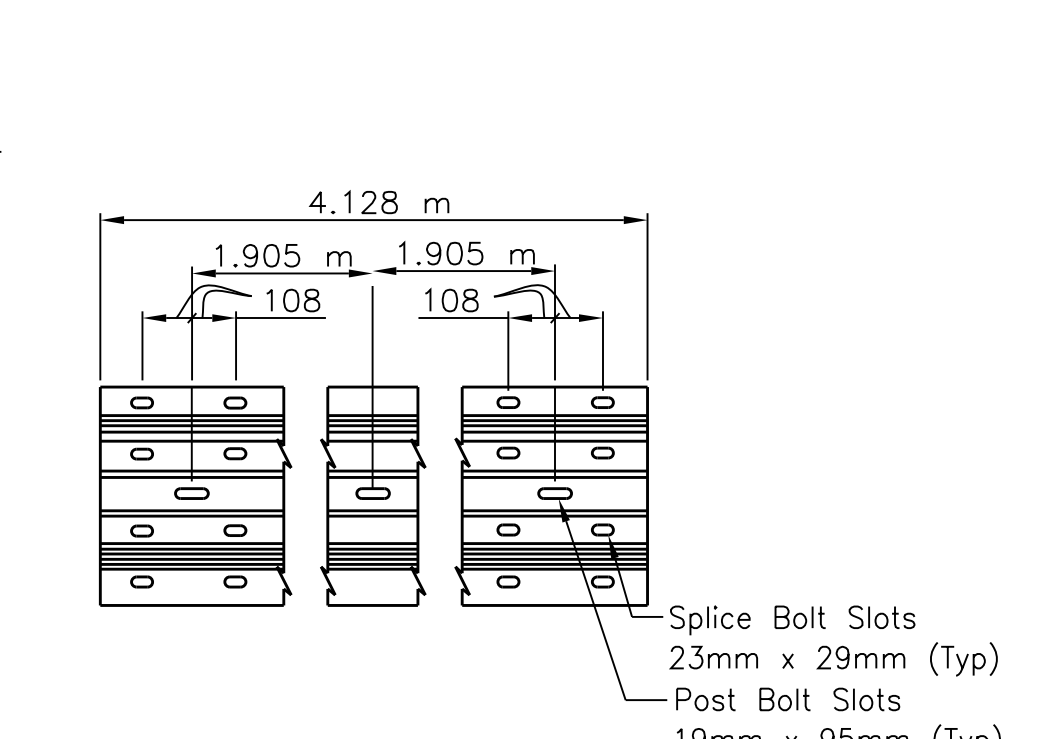
16 mm BEARING PLATE



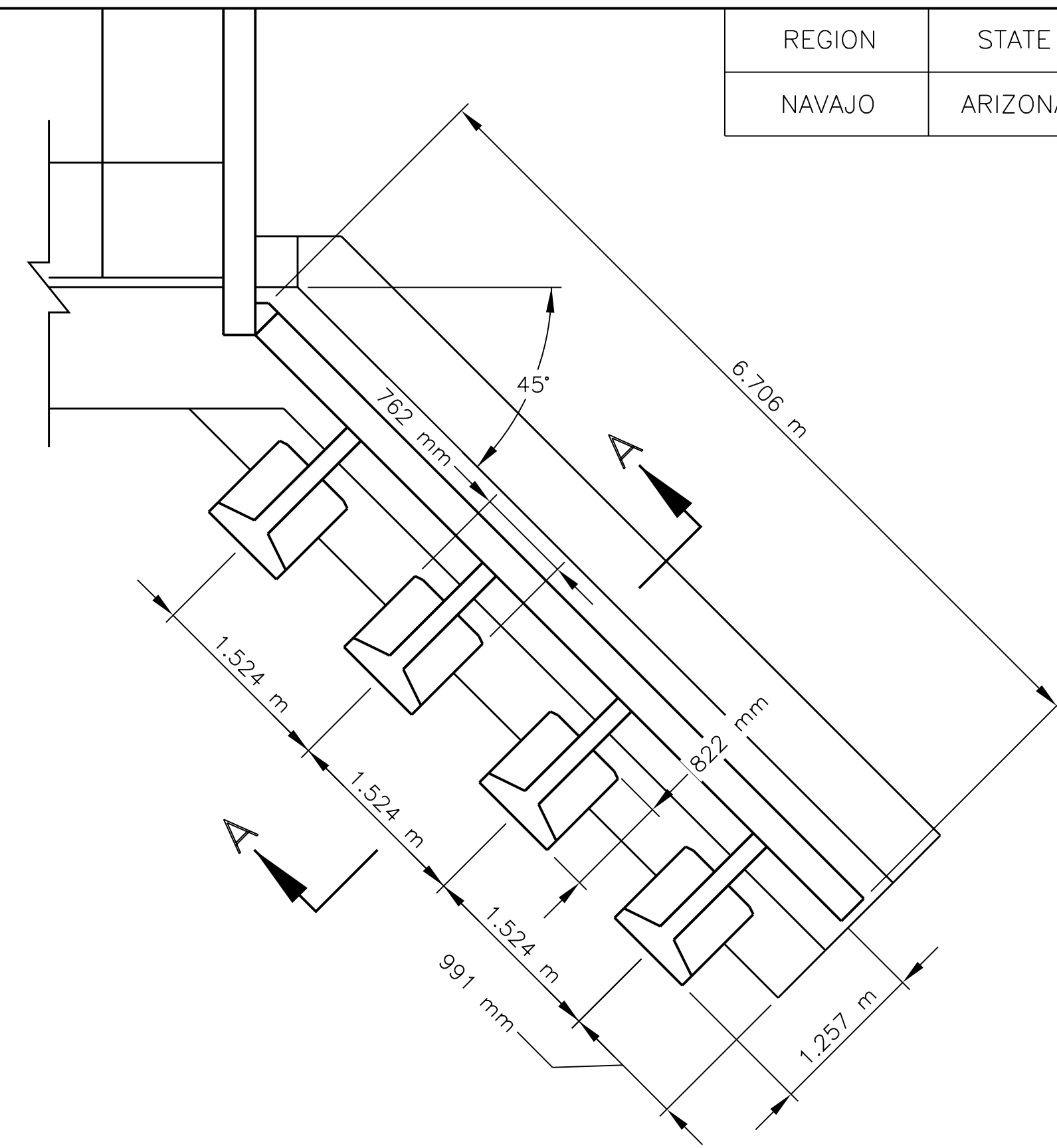
THRIE BEAM GUARDRAIL REDUCER SECTION



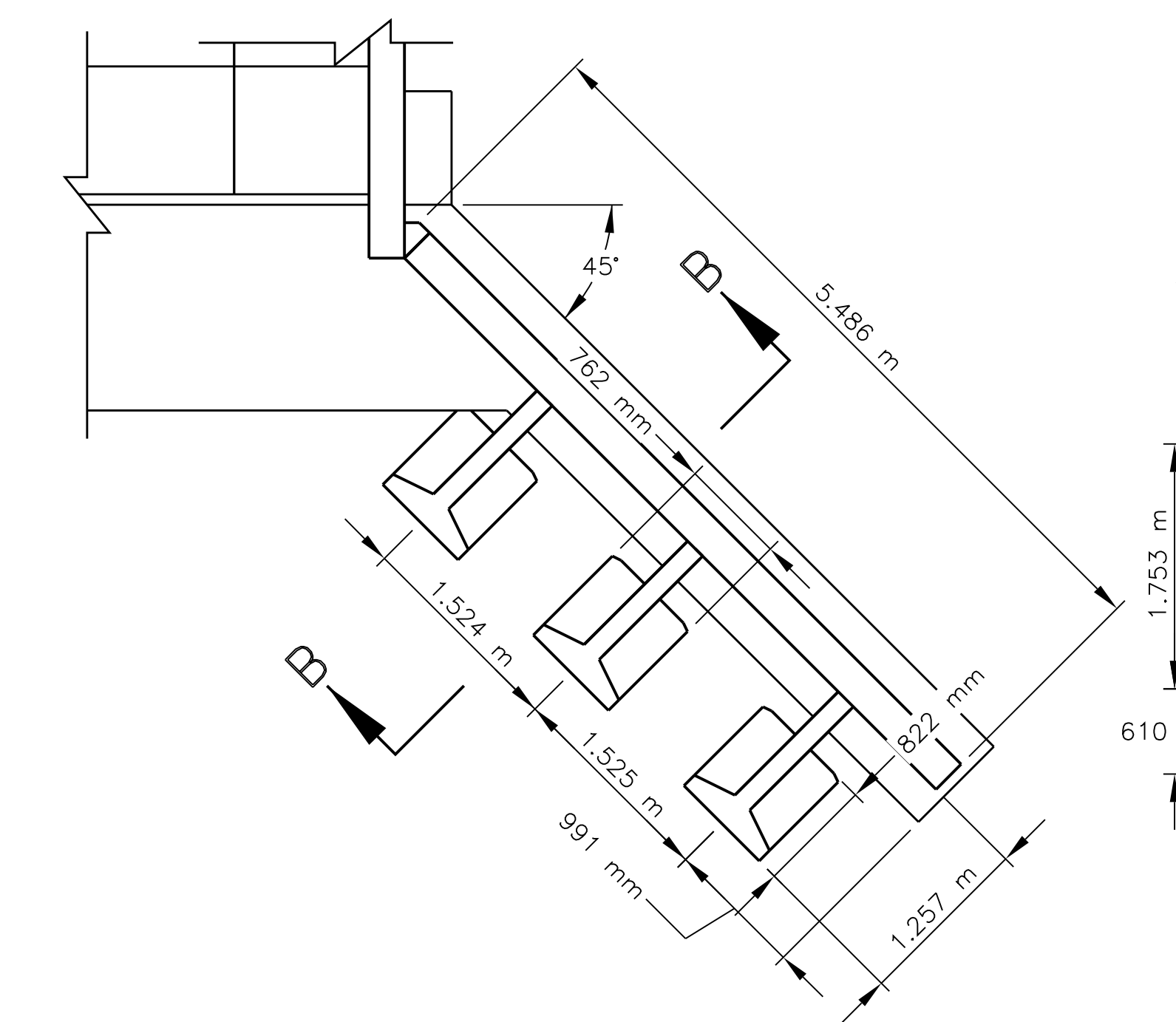
THRIE BEAM RAIL ELEMENT



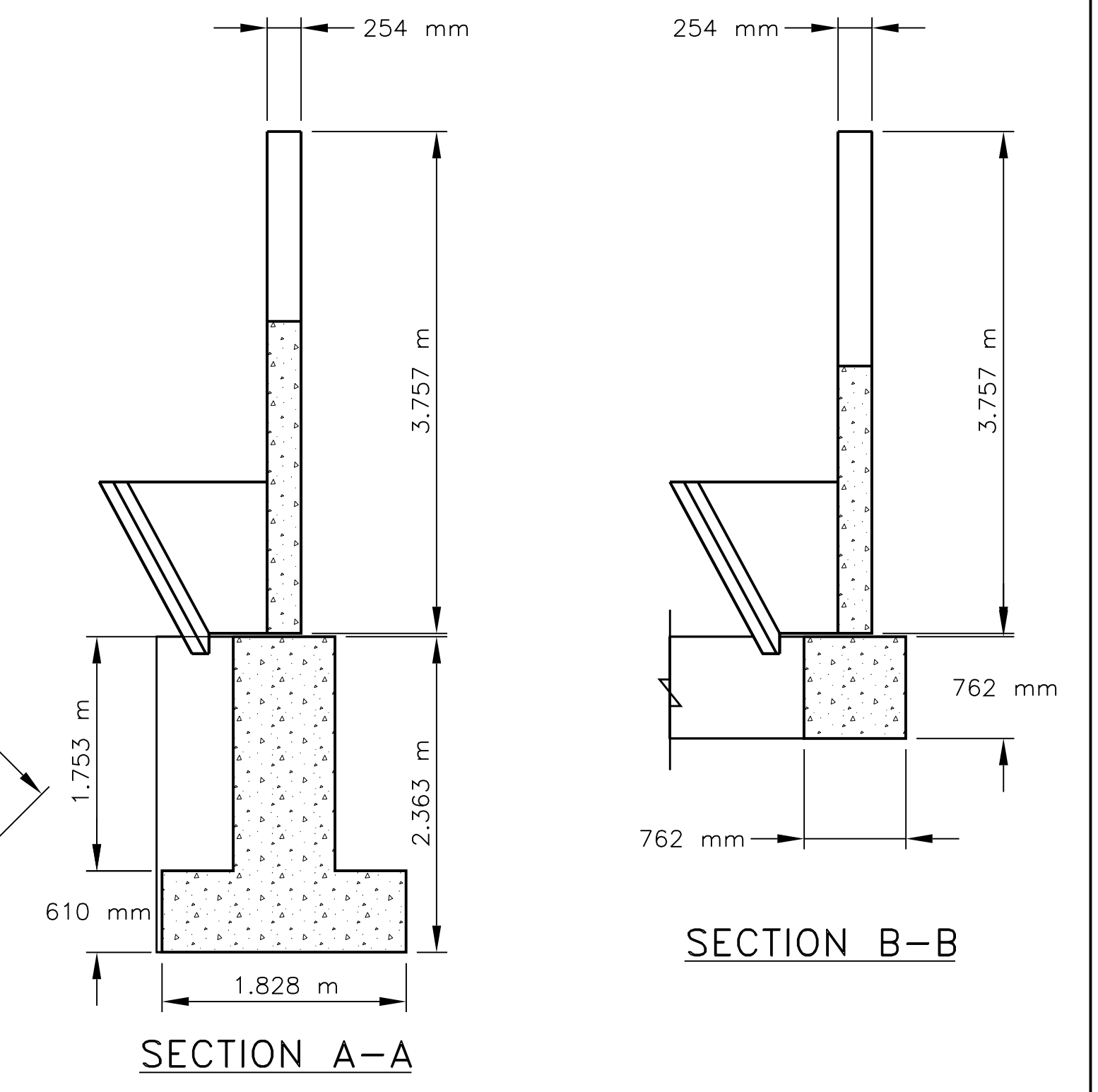
W-BEAM RAIL ELEMENT



PLAN VIEW-N504 BRIDGE WINGWALL

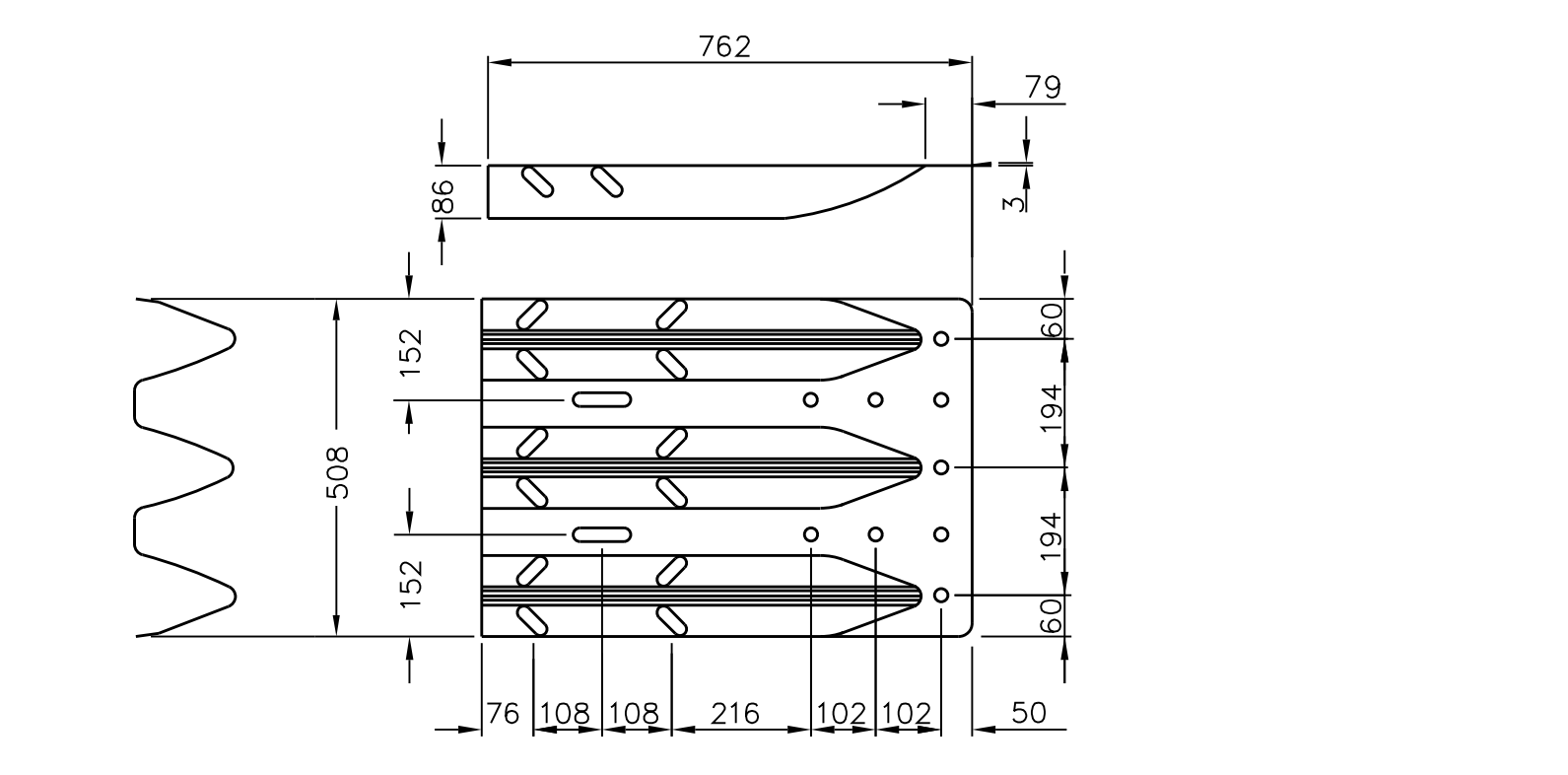


PLAN VIEW-N505 BRIDGE WINGWALL



SECTION A-A

SECTION B-B



STANDARD THRIE BEAM TERMINAL CONNECTOR

- GENERAL NOTES**
1. ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE SHOWN.
 2. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO FP-14.
 3. ALL HARDWARE SHALL MEET FHWA CRASH WORTHINESS REQUIREMENTS AS PER NCHRP 350 GUIDELINES.
 4. FIVE 22 mm DIAMETER GALVANIZED AASHTO M164 BOLTS ARE REQUIRED FOR THE ATTACHMENT OF THE THRIE BEAM TERMINAL CONNECTOR.
 5. TO THE CONCRETE BARRIER, LENGTH TO BE DETERMINED IN THE FIELD BY THE COR/COTR. HOLES FOR BOLTS SHALL BE 25 mm DIA. AND SHALL BE EITHER FORMED OR CORE DRILLED.
 6. FURNISHING AND PLACING OF BOLTS, WASHERS, AND BEARING PLATE SHALL BE CONSIDERED INCIDENTAL TO THE COST OF METAL BARRIER AND NO DIRECT PAYMENT WILL BE MADE THEREFOR.
 7. INSTALL THRIE BEAM TERMINAL CONNECTOR BETWEEN NESTED GUARDRAIL ELEMENTS ON THE APPROACH SECTION.
 8. INSTALL THRIE BEAM TERMINAL CONNECTOR OUTSIDE OF THE NESTED GUARDRAIL ELEMENTS ON THE DEPARTURE SECTION.
 9. BOLTS ARE TO BE INSTALLED AS SHOWN SO THAT THE THREADED END OF THE BOLTS AND NUTS ARE PLACED AWAY FROM TRAFFIC SIDE OF THE BARRIER.
 10. DO NOT PLACE ANY WASHERS UNDER THE BOLTS ON THE TRAFFIC SIDE OF THE BARRIER.
 11. PLACE REFLECTOR TABS ON POSTS 1, 6 AND 9.
 12. THE COLOR OF THE REFLECTIVE SHEETING ON THE REFLECTOR TABS SHALL BE THE SAME AS THE COLOR OF THE EDGELINE PAVEMENT MARKING IN FRONT OF THE BARRIER.
 13. REFLECTOR TABS SHALL HAVE A MINIMUM OF 76 x 127 mm REFLECTIVE SHEETING ON BOTH SIDES AND SHALL ATTACH SECURELY TO THE BLOCKOUT.
 14. SPLICES SHALL BE LAPPED SO THE FREE END DOES NOT FACE TRAFFIC FLOW.
 15. CONSTRUCTION TOLERANCE FOR HEIGHT OF GUARDRAIL IS 13 mm.
 16. TERMINAL CONNECTOR, THRIE BEAM BEARING PLATE AND ASSOCIATED HARDWARE SHALL BE INCLUDED IN THE UNIT PRICE FOR BID ITEM 61701-5000.

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GUARDRAIL TRANSITION
THRIE BEAM AND
WING WALL DETAILS

DRAWN BY: NRDOT	DATE: 8/23/2017
DESIGNED BY: NRDOT	DATE: 8/23/2017
REVISED: 3/20/2018	BY: Harold.Riley

Sht 88 B-14 ThrieBeamTransition_rev 2018.dgn