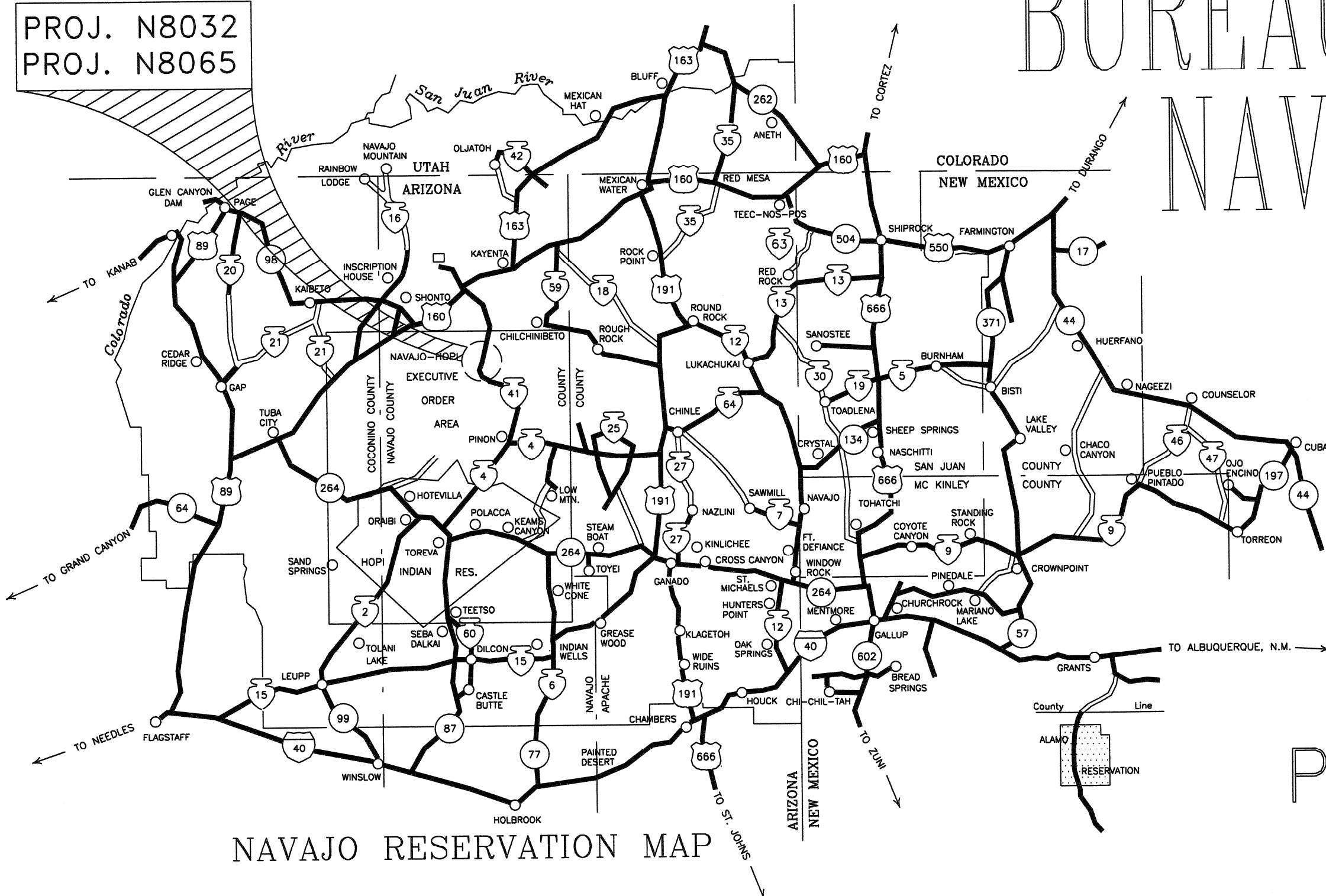
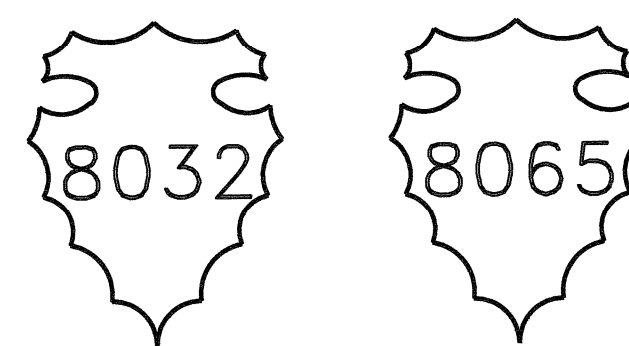


UNITED STATES DEPARTMENT OF THE INTERIOR  
BUREAU OF INDIAN AFFAIRS  
NAVAJO REGION D.O.T.  
ROUTE

PROJ. N8032  
PROJ. N8065



NTS

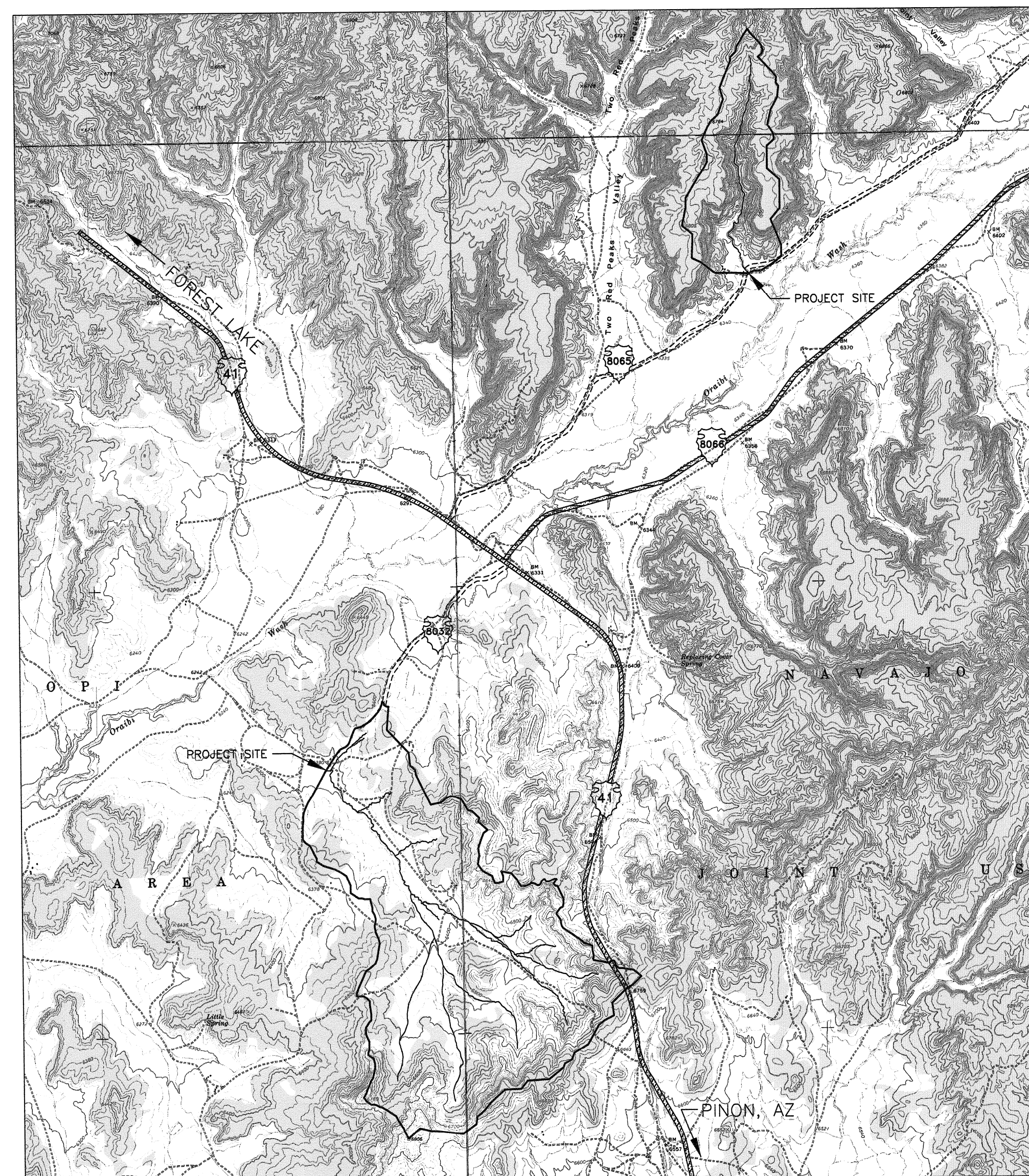


PROJECT N8032(1)2 & N8065(1)2  
ROAD MAINTENANCE REPAIRS

CONSTRUCTION PLANS INDEX	
SHEET No.	DESCRIPTION
1	TITLE SHEET
2	TYPICAL SECTION, ESTIMATED QTY'S. ALIGNMENT TABLES and GENERAL NOTES
3	N8032 SITE PLAN and CROSS SECTION DETAIL
4	N8032 CONCRETE SLOPE PAVING DETAIL
5	N8065 SITE PLAN and CROSS SECTION DETAIL
6	N8065 CONCRETE SLOPE PAVING DETAIL
7	TEMPORARY TRAFFIC CONTROL DETAILS
8	STANDARD PIPE INSTALLATION and DITCH DETAILS
9	STORM WATER POLLUTION & EROSION/SEDIMENT CONTROL
10	STORM WATER POLLUTION & EROSION/SEDIMENT CONTROL

PROJECT LENGTH		
STATION TO STATION	METER	KILOMETER
N8032:		
B.O.P. STA. 0+000.00	100.49	0.10
E.O.P. STA. 100.49		
N8065		
B.O.P. STA. 0+000.00	152.94	0.15
E.O.P. STA. 0+152.94		
TOTAL	253.43	0.25

DESIGN DATA—MAINLINE	
Design Speed	60 km/h
Maximum Radius of Curve	135 m
Maximum Gradient	0.00%
Minimum Stopping Sight Distance	85 m
Minimum Passing Sight Distance	410 m
Average Daily Traffic (2002)	100 vpd
Estimated ADT (2025)	140 vpd
Maximum Super Elev. (e max.)	NC
Design Hourly Volume (DHV)	10 vph
Right-of-Way Width Lt. & Rt.	Class 5



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	---
DELINEATORS	---
BARBED WIRE FENCE	---
WOVEN WIRE FENCE	---
CATTLE GUARD	---
CULVERTS	---
CONCRETE BOX CULVERTS	---
GROUND LINE	---
EARTH	---
GROUND LINE	---
ROCK	---
EXISTING ROAD	---
SIDE ROAD TURNOUT	---
TREES and SHRUBS	---
CHANNEL or DITCH	---
DIKE or DITCH BLOCK	---
RIP-RAP	---
RAILROAD TRACK	---
GAS LINE	---
IRRIGATION LINE	---
WELL	---
DWELLING	---
SCHOOL	---
CHURCH	---
WINDMILL	---
RIGHT-OF-WAY MONUMENT	---
INDIAN SERVICE	---
CONSTRUCTION	---
COUNTY	---
STATE	---
FEDERAL	---
UNIMPROVED	---

U.S. DEPARTMENT OF THE INTERIOR  
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NAVAJO REGIONAL OFFICE \* DIVISION OF TRANSPORTATION

APPROVAL

*[Signature]*  
PLANNING & DESIGN BRANCH CHIEF

8-16-12  
DATE

*[Signature]*  
D.O.T. MANAGER

8/16/12  
DATE

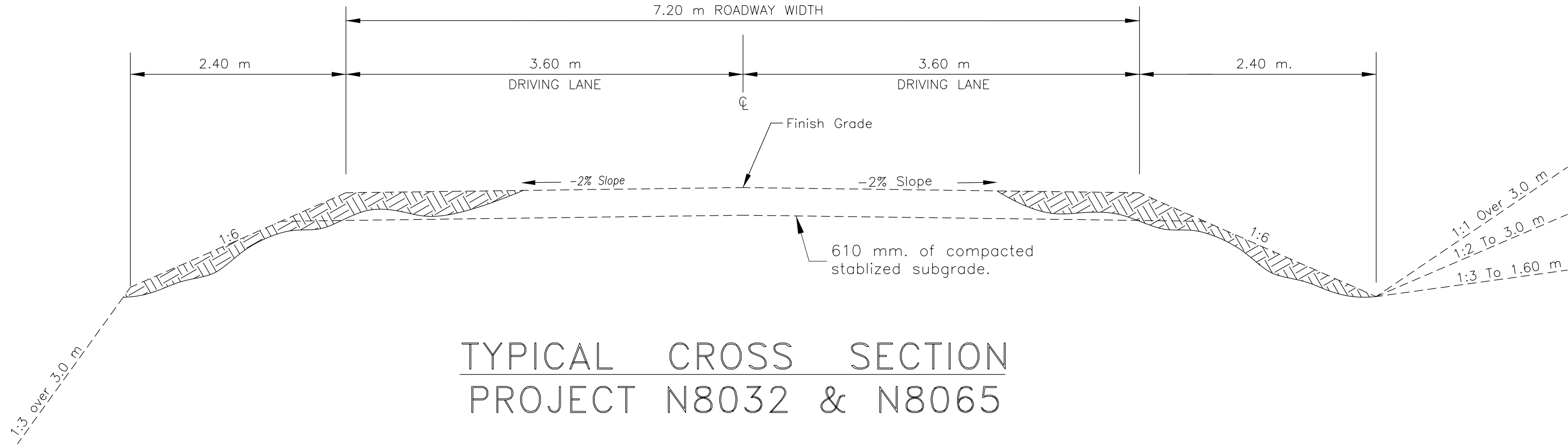




AREA	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N8032	N8032/ N8065	2	10

GENERAL NOTES

1. ALL WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-03), AND THE SUPPLEMENTAL SPECIFICATIONS FOR THIS PROJECT.
2. ALL PERMANENT AND TEMPORARY ROADSIDE SIGNS SHALL BE PLACED IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) FOR STREETS AND HIGHWAYS (LATEST EDITION) AND IN ACCORDANCE WITH THE DETAILS ON THESE PLANS. PLACEMENT PERMANENT TRAFFIC SIGNS SHALL BE FIELD ADJUSTED AS DIRECTED BY THE COR/AOTR, AT NO ADDITIONAL COST TO THE GOVERNMENT.
3. THE TEMPORARY TRAFFIC CONTROL DETAILS SHOWN REFLECTS GENERAL REQUIREMENTS FOR THIS PROJECT. THE CONTRACTOR IS RESPONSIBLE FOR PREPARING AND SUBMITTING A TRAFFIC CONTROL PLAN IN ACCORDANCE WITH THESE DETAILS, TAKING INTO ACCOUNT THE CONTRACTOR'S CONSTRUCTION SEQUENCING PLAN, MUTCD, AND THE SUPPLEMENTAL SPECIFICATIONS FOR SECTION 635.-TEMPORARY TRAFFIC CONTROL.
4. THE DESIGN FEATURES INCLUDING HORIZONTAL AND VERTICAL ALIGNMENTS, TYPICAL SECTIONS, AND OTHER DESIGN DETAILS SHOWN SHALL NOT BE ALTERED OR MODIFIED IN ANYWAY DURING CONSTRUCTION WITHOUT THE EXPRESSED WRITTEN DIRECTION AND WRITTEN APPROVAL OF THE NAVAJO REGION OFFICE-DIVISION OF TRANSPORTATION (NRDOT) DIVISION MANAGER. 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.
5. THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY AND EXPENSE FOR DISPOSAL OF TRASH AND/OR CONSTRUCTION DEBRIS IN ACCORDANCE WITH SECTIONS 107 AND 203 OF THE FP-03 AS WELL AS ANY AND ALL PERMIT REQUIREMENTS. THIS WORK SHALL BE INCIDENTAL OBLIGATIONS OF THE CONTRACTOR.
6. NO WORK SHALL BE PERFORMED OR GROUND DISTURBED OUTSIDE OF THE DESIGNATED CONSTRUCTION LIMITS IN ACCORDANCE WITH SECTION 107 OF THE FP-03 WITHOUT WRITTEN APPROVAL BY THE NRDOT MANAGER 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 "CONSTRUCTION ZONE", THE CONSTRUCTION LIMIT IS THE CATCH POINT EARTHWORK LIMIT PLUS 3.0 METERS, NOT TO EXCEED THE RIGHT-OF-WAY LIMITS.
7. THE DETAILS SHOWN ON THE STORM WATER POLLUTION AND EROSION/SEDIMENT CONTROL DETAILS ARE GENERAL REQUIREMENTS TO BE USED BY THE CONTRACTOR IN PREPARING A STORM WATER POLLUTION PREVENTION PLAN ALONG WITH THE REQUIREMENTS IN SECTION 157 OF THE SUPPLEMENTAL SPECIFICATION AND SPECIAL CONTRACT REQUIREMENTS. THE SWPPP IS ONLY REQUIRED AT THE DRAINAGE PIPE REPLACEMENT LOCATIONS.THE CONTRACTOR IS REQUIRED TO SUBMIT COURTESY COPY OF THE APPROVED SWPPP TO THE NAVAJO NATION WATER QUALITY EPA OFFICE.
8. THE QUANTITIES SHOWN ARE FOR ESTIMATING PURPOSES ONLY AND TO COMPARE AND CANVAS BIDS. ACTUAL PAY QUANTITIES WILL BE DETERMINED IN THE FIELD FOR AUTHORIZED CHANGES THAT AFFECT THE QUANTITIES. ANY OVER-RUN OR UNDER-RUN OF QUANTITIES SHALL BE SUBJECT TO FAR 52.211-18, VARIATION IN ESTIMATED QUANTITY.
9. 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-03, SECTIONS 209 AND 704. APPROVED EXCESS EXCAVATION MATERIAL MAY BE USED TO REBUILD EARTHEN DITCH BLOCKS, AND/OR PLACED ALONG ROADWAY SHOULDERS AS EMBANKMENT IN AREAS ADJACENT TO THE REMOVAL AND AS DIRECTED BY THE COR/AOTR.
10. THE EARTHWORK TABLE SHOWN IS TO ASSIST THE CONTRACTOR IN ESTABLISHING A BID UNDER THE EARTHWORK ITEMS SHOWN IN THE BID SCHEDULE. ANY BORROW MATERIAL CALLED FOR ON THE PLANS SHALL BE TAKEN FROM CONTRACTOR IDENTIFIED SOURCES OUTSIDE THE RIGHT-OF-WAY LIMITS. IT IS THE SOLE RESPONSIBILITY AND EXPENSE OF THE CONTRACTOR TO PROVIDE ANY NECESSARY BORROW MATERIAL FOR THIS PROJECT INCLUDING ALL NECESSARY PERMITS. ALL EXCAVATION, BORROW, WASTE AND EMBANKMENT MATERIAL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEMS 20401-0000 AND 20403-0000. IF MATERIAL IS APPROVED, THE WASTE MATERIAL SHOWN ON THESE PLANS SHALL BE USED AS NECESSARY TO CONSTRUCT TURNOUTS, DITCH BLOCKS, AND/OR BE PLACED AS EMBANKMENT ALONG THE SHOULDER IN AREAS AS DIRECTED BY THE COR/AOTR. WASTE MATERIAL NOT USED WITHIN THE PROJECT LIMITS, SHALL BE DISPOSED OF AS PER FP-03, SECTION 204.14.
11. THE CONTRACTOR SHALL REMOVE, CLEAN, AND STOCKPILE ALL SALVAGEABLE EXISTING CULVERTS, GUARDRAIL, CATTLE GUARDS, FENCING MATERIALS, ETC, AS CALLED FOR ON THESE PLANS AND/OR SECTIONS 203 AND 607. THE SALVAGEABLE EXISTING CULVERTS SHALL BE STOCKPILE AT CHINLE MAINTENANCE YARD. ANY PIPE MATERIALS DETERMINED TO BE UNUSEABLE BY THE COR/AOTR 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.
12. 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 NRDOT PLANNING & DESIGN BRANCH CHIEF, THROUGH THE COR/AOTR, SHALL BE CONSULTED FOR CHANGES IN THE TYPICAL SECTIONS, DESIGN SLOPES, AND/OR OTHER ADJUSTMENTS BEFORE PROCEEDING WITH THE WORK UNLESS NOTED OTHERWISE ON THE PLANS. THE FINAL CONSTRUCTED ROAD SECTION SHALL BE BASED ON THE GOVERNMENT FURNISHED COMPUTERIZED STAKING REPORT AS ADJUSTED TO FIT FIELD CONDITIONS. THE CONTRACTOR SHALL STAY WITHIN THE LIMITS OF CONSTRUCTION, UNLESS OTHERWISE APPROVED. IN NO CASE SHALL THE CUT AND FILL BACK SLOPES BE BUILT STEEPER THAN THE MAXIMUM ALLOWED IN THE ROADWAY TYPICAL SECTION SHOWN.
13. GRADE AND SHAPE THE SHOULDER AND DITCHES (AS DIRECTED BY COR/AOTR) 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.
14. THERE MAY BE A NUMBER OF ARCHAEOLOGICAL SITE MITIGATIONS THAT ARE NOTED ON THE PLANS. THE CONTRACTOR SHALL NOTIFY THE NAVAJO NATION DEPARTMENT OF TRANSPORTATION (NNDOT) ROAD CULTURAL RESOURCE MANAGEMENT (RCRM) AS REQUIRED PRIOR TO STARTING CONSTRUCTION ACTIVITIES IN THESE LOCATIONS. 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) PLASTIC TYPE MADE OF HI-DENSITY HDPE, AS PER SECTION 710.11 OF FP-03. TEMPORARY ARCHAEOLOGY FENCING SHALL BE CONSIDERED INCIDENTAL OBLIGATIONS OF THE CONTRACTOR IF A SPECIFIC BID ITEM IS NOT SHOWN IN THE BID SCHEDULE.
15. AT THE COMPLETION OF THE CONSTRUCTION, THE CONTRACTOR SHALL INSPECT THE INTERIOR OF ALL NEWLY INSTALLED OR EXTENDED/CLEANED 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.
16. ALL QUALITY CONTROL SHALL BE PERFORMED BY NRDOT'S MATERIAL TESTING LAB ASSIGNED TO THIS PROJECT.



TYPICAL CROSS SECTION  
PROJECT N8032 & N8065

ITEM	DESCRIPTION	N8032(1)	N8065(1)	UNIT	AS-BUILTS
15101-0000	Mobilization	All Req'd	All Req'd	Lump Sum	
15708-0000	Temporary Soil Erosion Control	All Req'd	All Req'd	Lump Sum	
15714-1000	Temporary Straw Mulching	0.10	0.12	ha	
20304-1000	Removal of Structures and Obstructions	All Req'd	All Req'd	Lump Sum	
20401-0000	Roadway Excavation	72	5	m <sup>3</sup>	
20403-0000	Unclassified Borrow	2195	1898	m <sup>3</sup>	
20601-0000	Development of Water Supply	0.08	0.08	M-gal	
25112-2000	Wire Enclosed Riprap, Class 2	33.12	19.60	m <sup>3</sup>	
60101-0000	Minor Concrete, Class A(AE) Type I I	25.40	25.60	m <sup>3</sup>	
60201-1710	1981 mm Corrugated Steel Pipe Culvert, Galvanized Coated	93.27	0	m	
60201-1810	2134 mm Corrugated Steel Pipe Culvert, Galvanized Coated	0	40.23	m	
60701-1000	Remove, Clean and Stockpile Culverts	10.00	15.91	m	
62510-1000	Seeding, Dry Method	0.10	0.12	ha	
62901-1100	Erosion Control Product, Type 4	525.00	588.00	m <sup>2</sup>	
63501-0000	Temporary Traffic Control	All Req'd	All Req'd	Lump Sum	
63509-1000	Flaggers	1,521.00	1,522.00	Man Hrs	

N8032(1)2 HORIZONTAL ALIGNMENT TABLE					
POINT	STATION (m)	ELEMENT	DIRECTION	NORTHING (m)	EASTING (m)
BOP	0+000.000			575,708.374	204,390.041
		100.494	N 31°18'65"E		
EOP	0+100.494			575,794.464	204,441.882
N8065(1)2 HORIZONTAL ALIGNMENT TABLE					
POINT	STATION (m)	ELEMENT	DIRECTION	NORTHING (m)	EASTING (m)
BOP	0+000.000			580,904.510	208,913.759
		Linear= 22.770 (m)	S 68°24'50W		
PC	0+022.770			580,896.133	208,892.586
PI	0+066.478	CURVE DATA		580,875.933	208,853.826
		Delta = 47°36'27.94"Lt.			
		R = 99.0802 (m)			
		L = 82.326 (m)			
		T = 43.707 (m)			
PT	0+105.097			580,833.688	208,842.613
		Linear= 47.842 (m)	S 13°09'10"W		
EOP	0+152.939			580,787.101	208,831.727

AZSP-EZ

EARTHWORK QUANTITIES

PROJECT	CUT (m <sup>3</sup> )	FILL (m <sup>3</sup> )	BORROW (m <sup>3</sup> )	WASTE (m <sup>3</sup> )
N8032(1)	71.81	2,266.12	2,194.31	0.00
N8065(1)	4.82	1,902.17	1,897.35	0.00
TOTAL:	76.63	4,168.29	4,091.66	0.00

20% Shrinkage Factor Applied to Fill

60701-1000 REMOVE CLEAN & STOCKPILE

PROJECT	STATION (m)	LOCATION	LENGTH (m)	REMARKS
N8032	0+050.15	CL	3.72	STOCKPILE AT CHINLE MAINT. YARD
N8065	0+079.03	CL	22.186	STOCKPILE AT CHINLE MAINT. YARD

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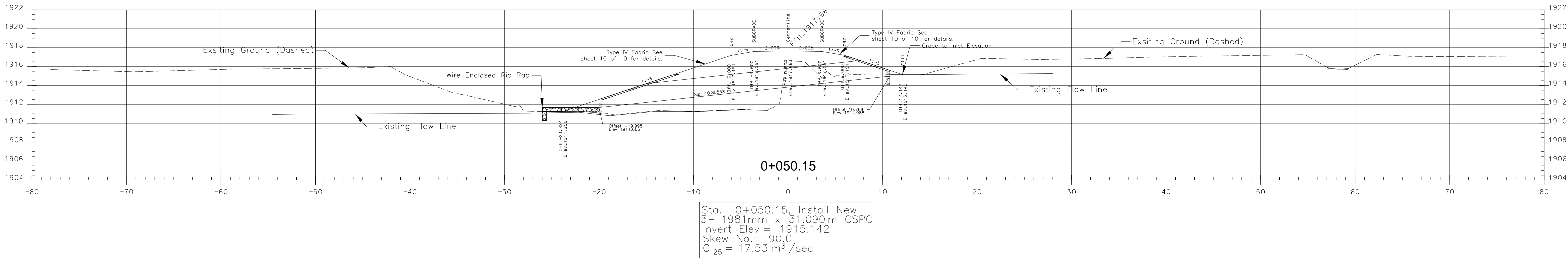
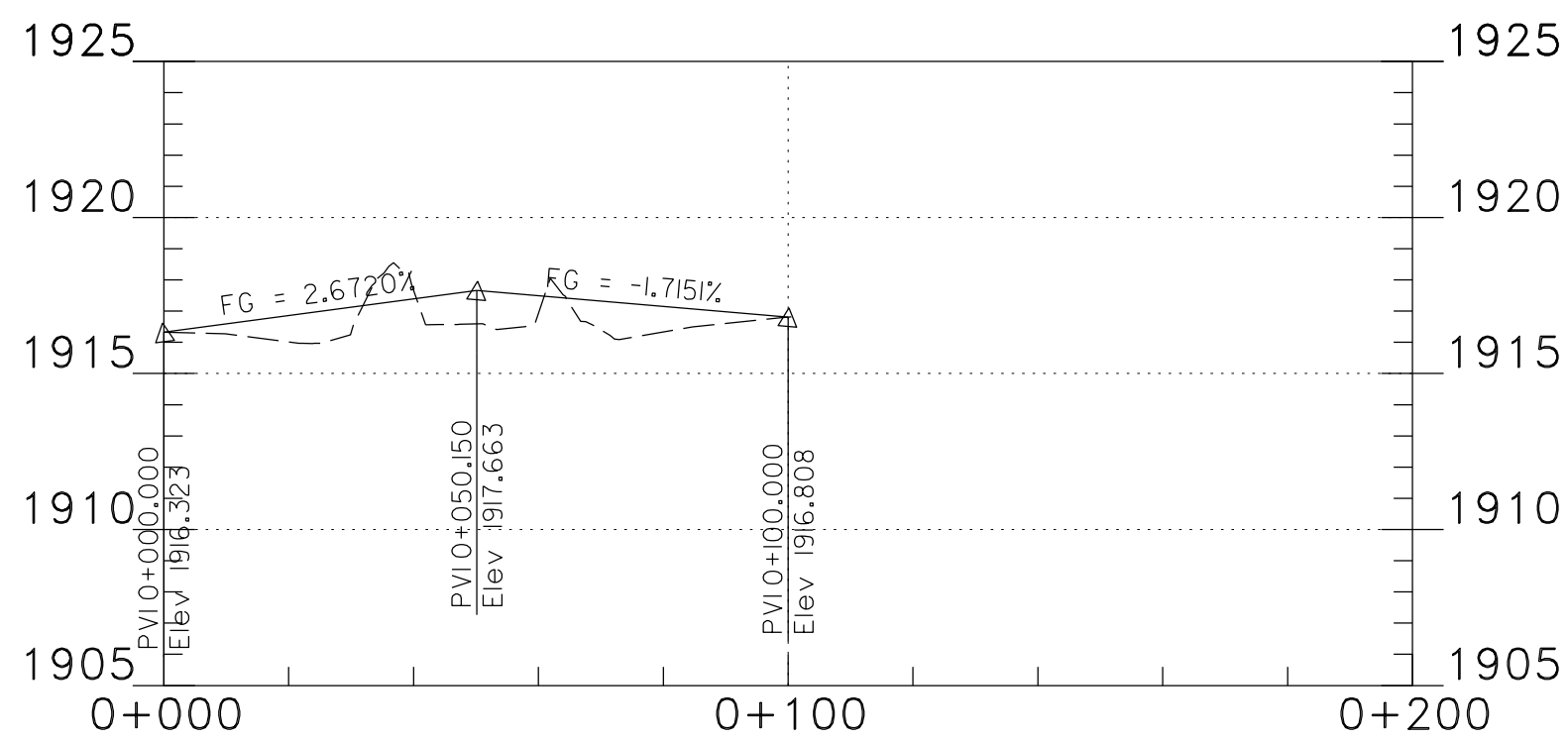
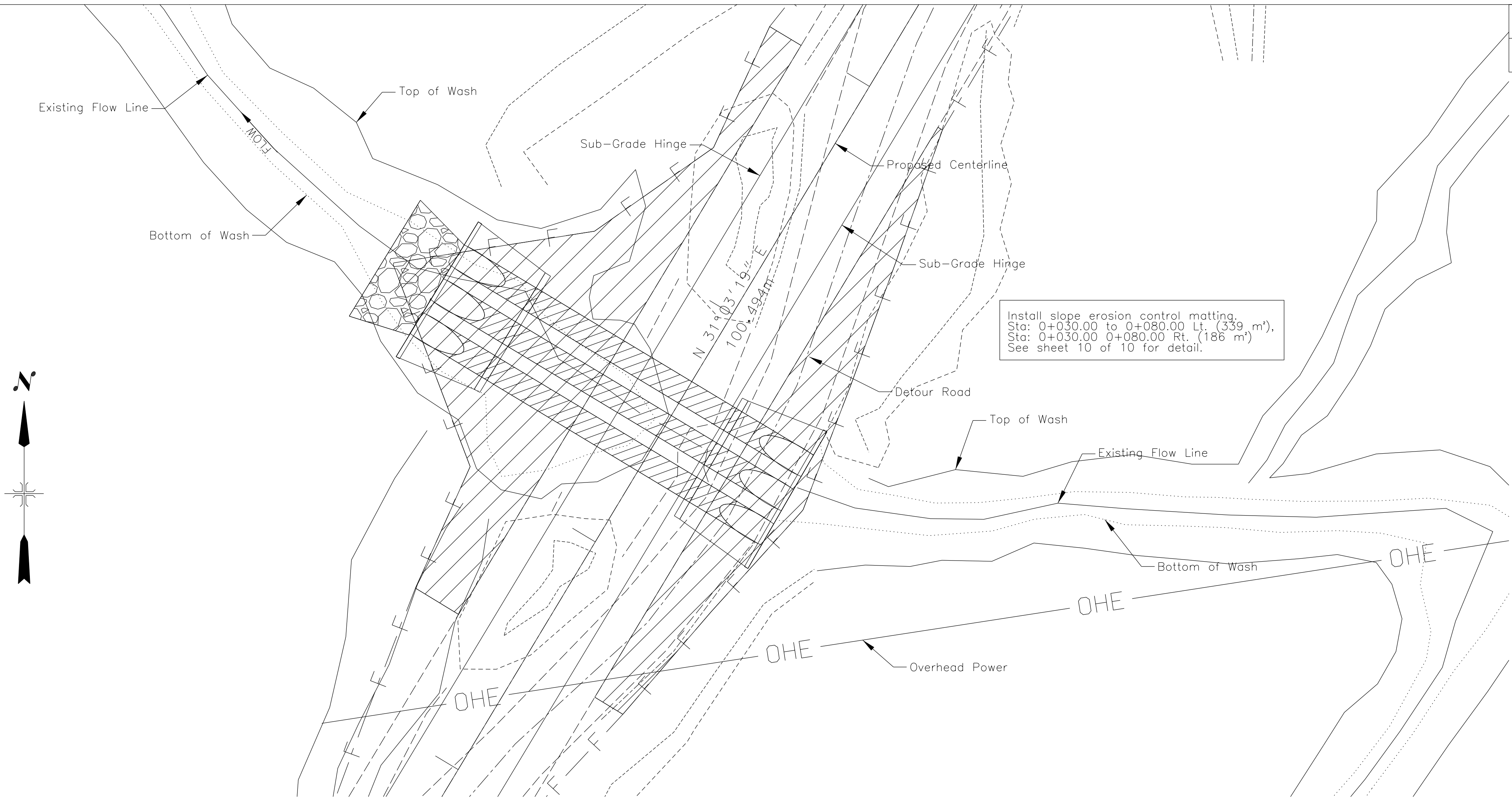
NAVAJO REGIONAL OFFICE \* DIVISION OF TRANSPORTATION

TYPICAL SECTION, ESTI. QUANTITIES  
ALIGN. TABLE, PROJECT VOLUME

DRAWN BY: B.O.R. DATE: 7/12  
DESIGNED BY: DESIGN 2 DATE: 7/12  
REVISED: 7/12 BY: DESIGN 2  
SCALE: NTS  
FILENAME: Typ. Section  
SHEET MODEL NAME: PLOT SHEET



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N8032	N8032	3	10

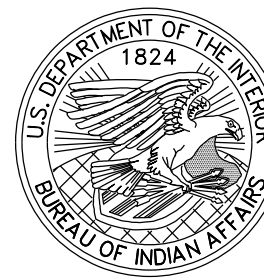


3-1981 mm. x 31.090 m. CSCP  
with Inlet & Outlet Concrete Slope Paved  
and Wire-Enclosed Rip Rap at outlet  
Skew @ 90°

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N8032 Plan&Cross Section

DRAWN BY: NRODOT DATE: 1/26/12  
DESIGNED BY: NRODOT DATE: 12/2012  
REVISED: 12/2007 BY: NRODOT  
SCALE: 1:1000  
FILENAME: N8032  
SHEET MODEL NAME: PLOT SHEET

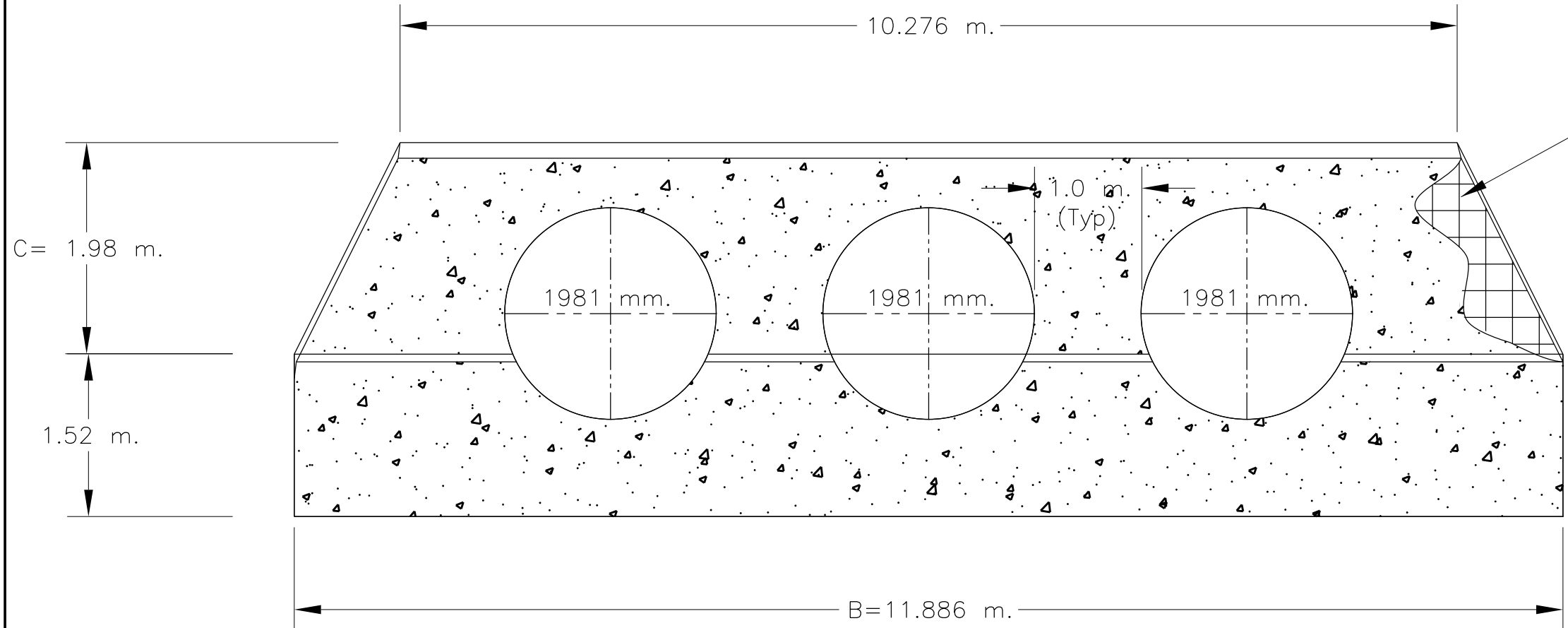


AREA	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N8032	N8032	4	10

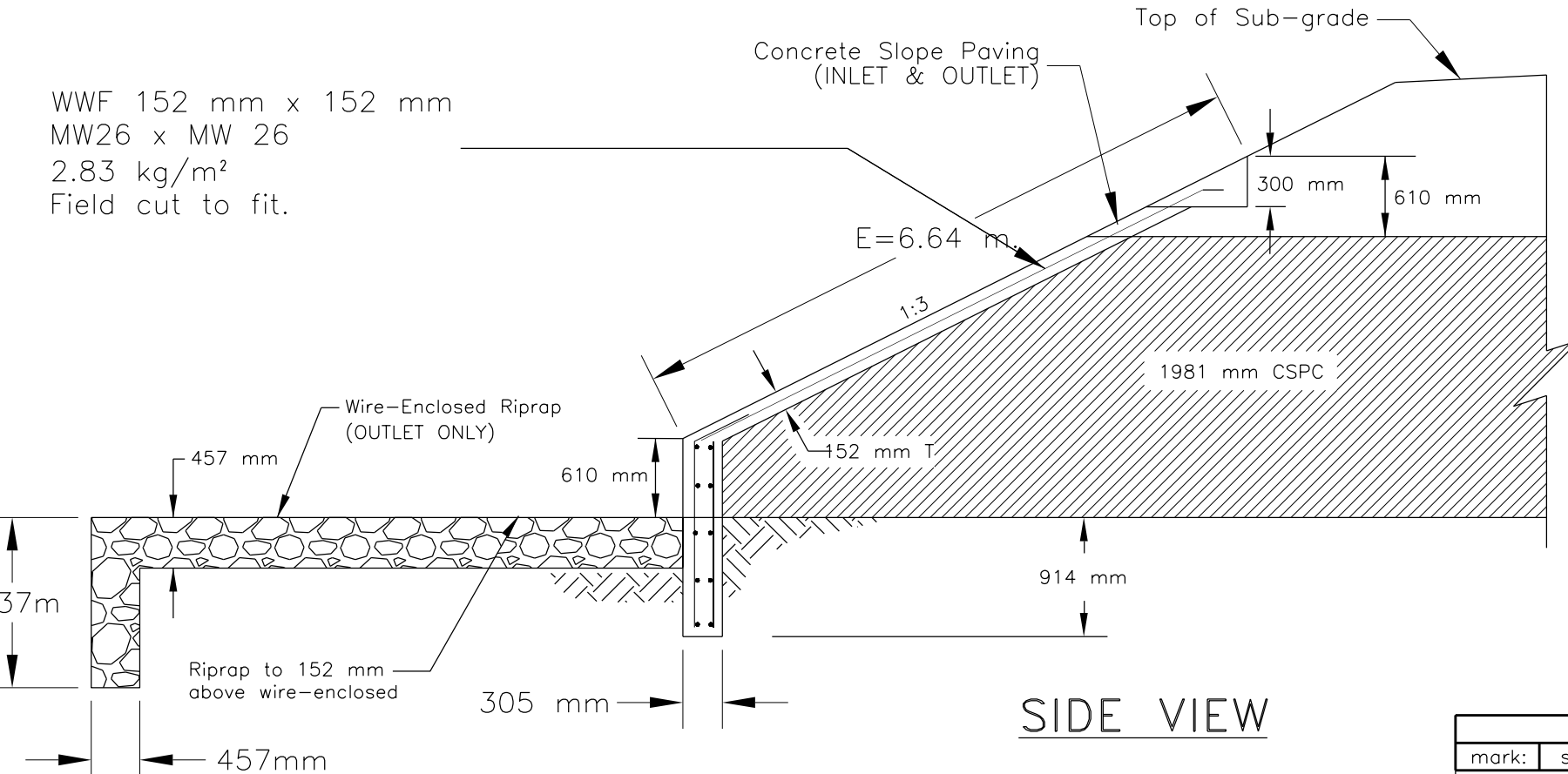
GENERAL NOTES

- ALL WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-03).
- ALL CONCRETE SHALL BE CLASS (A/C) WITH CLASS 1 FINISH. CHAMFER ALL EXPOSED EDGES 19 mm. THE CONCRETE SHALL CONFORM TO SECTION 552 "STRUCTURAL CONCRETE" OF FP-03.  $F_c = 20.68$  MPa.
- REINFORCING STEEL SHALL CONFORM TO ASHTO SPECIFICATION M-31 (ASTM A 615M), GRADE 420, AND SECTION 554 OF FP-03. 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/AOTR. 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 STRUCTURAL BACKFILL AS DETERMINED BY THE COR/AOTR. ALL STRUCTURAL BACKFILL SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY AS DETERMINED BY ASHTO T 99 METHOD. BEFORE AND AFTER FOOTINGS ARE PLACED, THE STRUCTURAL BACKFILL MATERIAL SHALL CONFORM TO SECTION 208 AND 209 OF FP-03. FURNISHING AND PLACEMENT OF STRUCTURAL BACKFILL SHALL BE ACCORDANCE WITH SECTION 109.02(m).
- ALL FOOTING EXCAVATIONS SHALL BE INSPECTED AND APPROVED BY THE COR/AOTR 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/AOTR. ANY WASTE MATERIAL SHALL BE USED AS BORROW WHERE NEEDED IN OTHER PROJECT LOCATION AS DESIGNATED AND APPROVAL BY THE COR/AOTR. 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.
- TABULATED CONCRETE, WELDED WIRE FABRIC, AND REINFORCING STEEL ESTIMATED QUANTITIES ARE FOR ONE (1) SIDED BLANKET AT A GIVEN STATION AND SIZE OF STRUCTURE(S). CONCRETE BLANKETS ARE REQUIRED AT INLET AND OUTLET SIDE OF THE DRAINAGE STRUCTURE(S).
- GROUTED RIPRAP ROCK SIZE SHALL CONFORM TO TABLE 705-1, CLASS 2. FILL ROCK VOIDS TO FULL DEPTH OF RIPRAP PER SECTION 251 AND 712.0. LEAVE ROCK ON SURFACE EXPOSED  $\frac{1}{4}$  TO  $\frac{1}{2}$  ROCK DEPTH.
- WHERE THE CONCRETE BLANKET CAN NOT BE INSTALLED DUE TO SHALLOW DEPTH OF COVER OVER THE PIPE(S), AND/OR THE PARAPET HEIGHT IS ABOVE THE AGGREGATE BASE HINGE POINT, THE CONTRACTOR SHALL BE REQUIRED TO ADJUST THE PARAPET WALL HEIGHT TO 305 mm, AND INSTALL MINIMUM TWO (2) #13M REBARS ON THE TOP WALL ACROSS THE ENTIRE LENGTH OF 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-03 FOR TYPE IV-B MATERIAL, AND SHALL BE INCIDENTAL TO THE UNIT PRICE FOR ITEMS 60101-1000 AND 62901-1100. MATS SHALL BE TUCKED OR EMBEDDED INTO EMBANKMENT ALONG ALL EDGES AS SHOWN. SEE SHEET 55 OF 79 FOR EROSION CONTROL MAT INSTALLATION DETAILS.



FRONT VIEW



SIDE VIEW

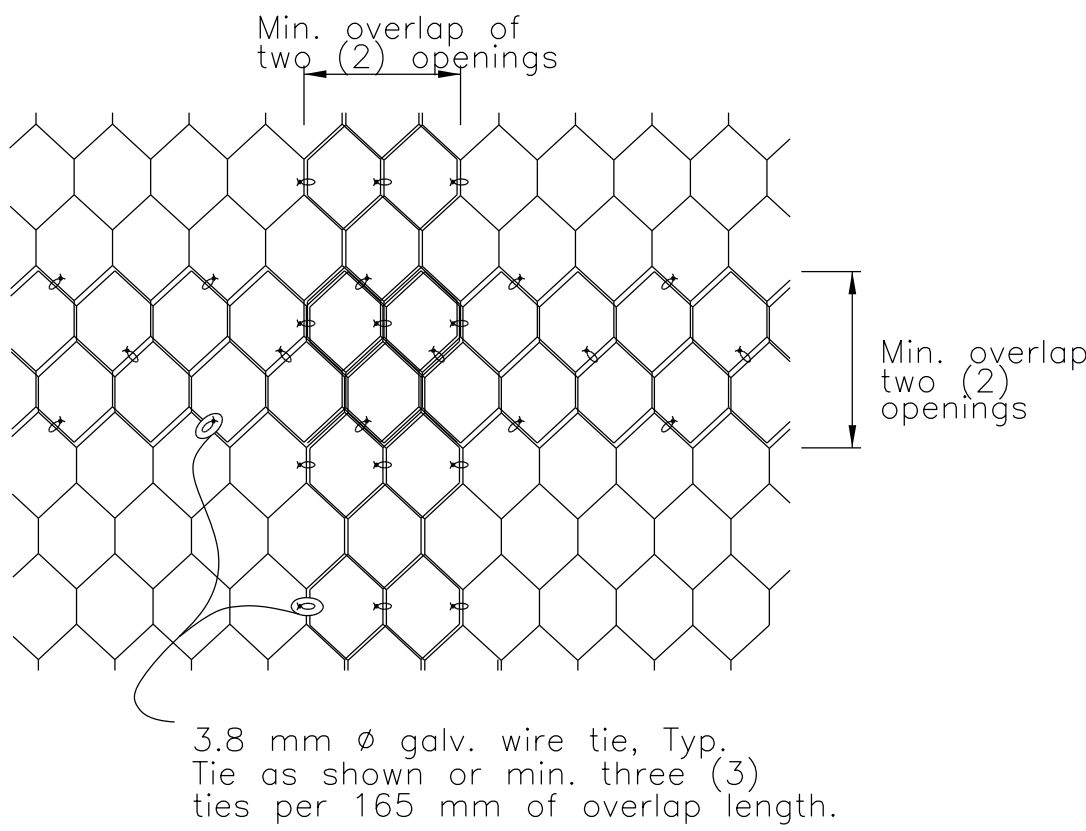
Straight reinforcing bars (Type 1)						Bent reinforcing bars								Remarks:	
mark:	size:	mass:	No. req'd	length (m)	weight (kg)	mark:	size:	mass:	type:	No. req'd	length (m)	weight (kg)	* (mm)* (mm)		
Headwall at 90°															Front face outside walls Front face between pipes. Back face outside walls Back face between pipes. Front & back face beneath pipes. Front & back face beneath pipes. Front & back face beneath pipes. Front & back face beneath pipes. Front & back outside walls. Front & back between pipes. Front & back outside walls. Front & back between pipes. Front & back cutoff wall face of blanket
V1	#13M	0.994	3	14	1.983	27.595	1330	553							
V2	#13M	0.994	14	1.372	19.093	V1	#13M	0.994	3	8	1.983	15.769	1330	553	
V2	#13M	0.994	8	1.372	10.910										
V3	#13M	0.994	4	1.175	4.672										
V4	#13M	0.994	4	1.002	3.984										
V5	#13M	0.994	8	0.905	7.197										
V6	#13M	0.994	18	0.784	14.027										
H1	#13M	0.994	4	2.008	7.984										
H2	#13M	0.994	4	1.223	4.863										
H3	#13M	0.994	4	2.330	9.264										
H4	#13M	0.994	4	1.866	7.419										
H5	#13M	0.994	6	11.734	69.982										
WWF					69.08										
				subtotal:	228.474					subtotal:	43.364				
				Total for one	271.838										
				Total for both-sides	543.676			kg							

ITEM 60101-0000 ---- MINOR CONCRETE FOR 1-SIDE

CONCRETE	QUANTITY (m³)
STA. 0+050.15----1 Slope Pave @ 3:1 Slope	12.70

ITEM 25112-2000 ---- WIRE ENCLOSED RIPRAP

STATION	LOCATION	DEPTH (mm)	TOTAL (m³)
0+050.15	Outlet	457	33.123



FABRIC SPLICING DETAIL

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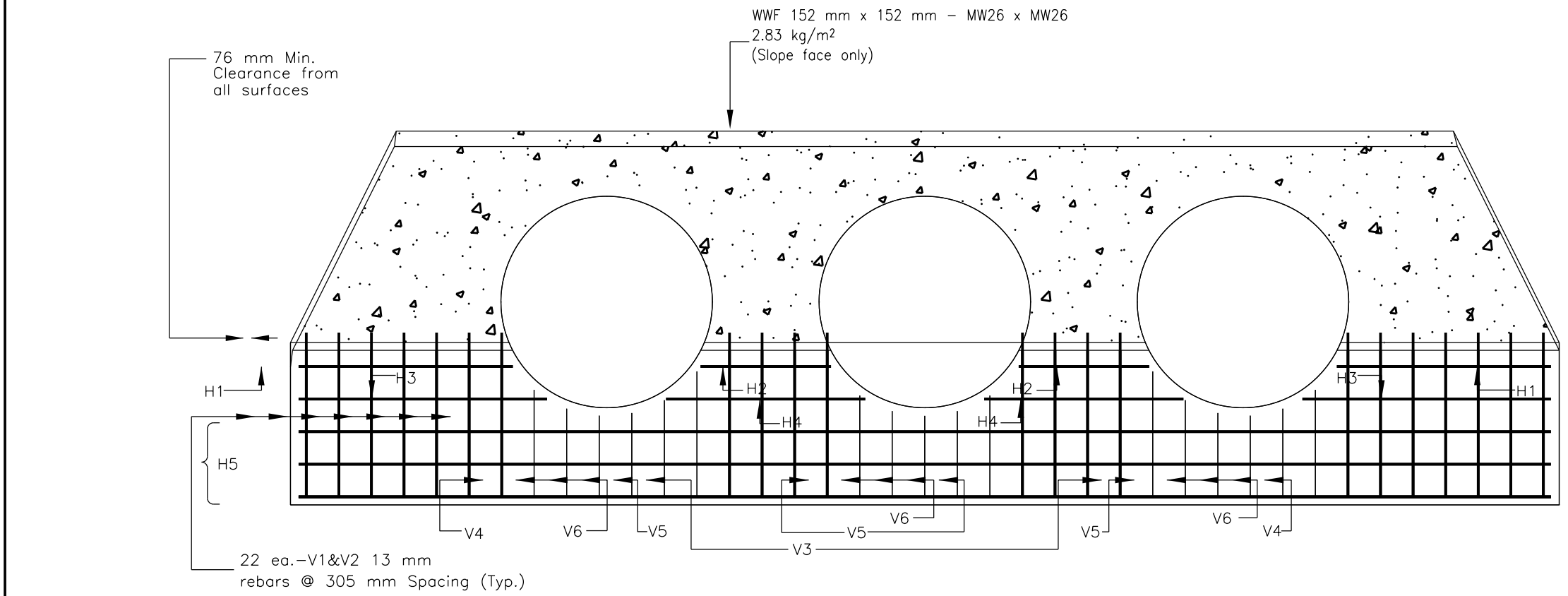
1981mm CSPC w/ CONC.  
BLANKET and RIPRAP DETAIL

DRAWN BY: DESIGN2 DATE: 8/9/07

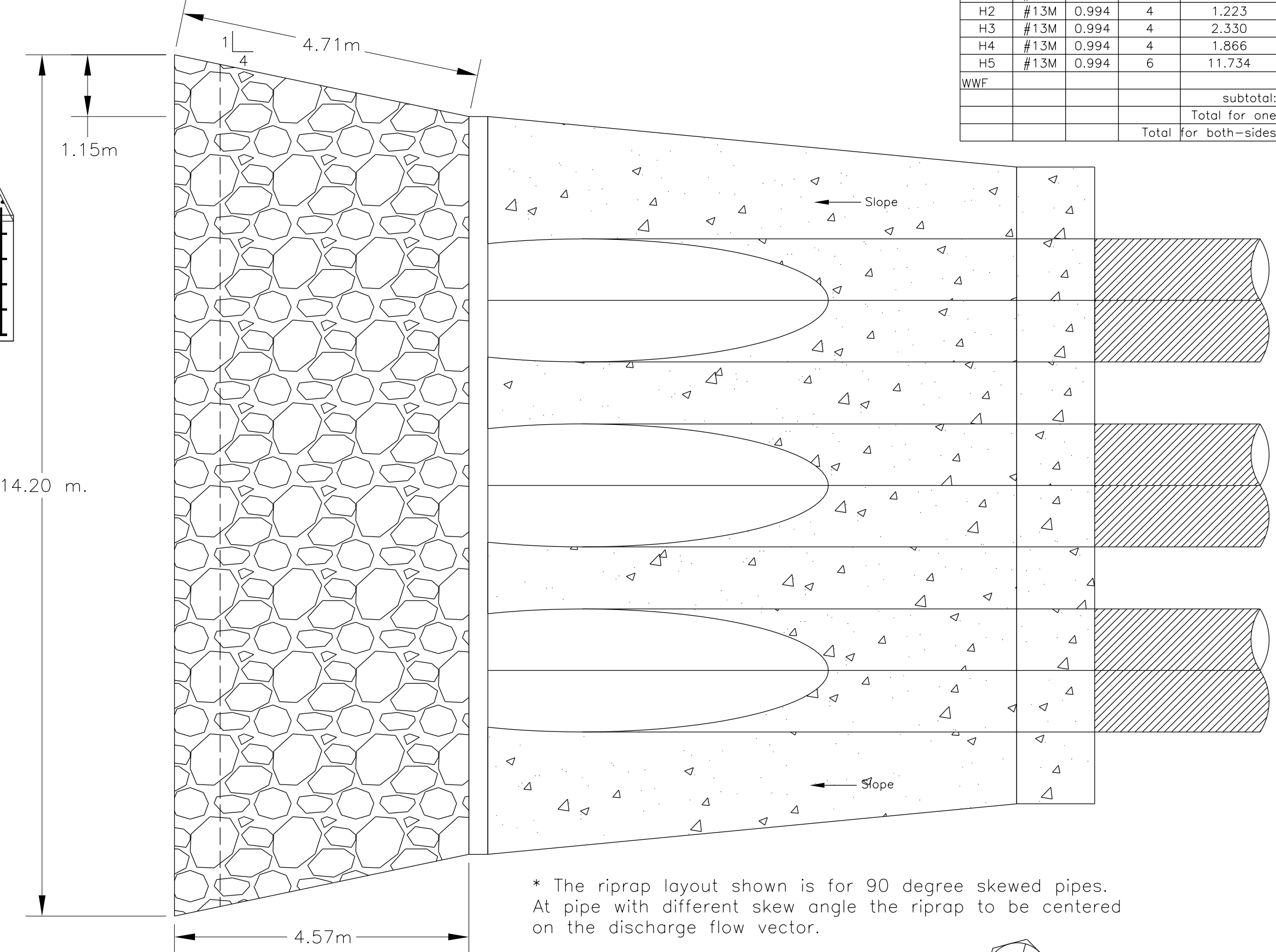
DESIGNED BY: DESIGN2 DATE: 8/9/07

REVISED: 09/17/09 FILENAME: N4C\_PASS1

BY: DESIGN 2 SCALE: SCALE

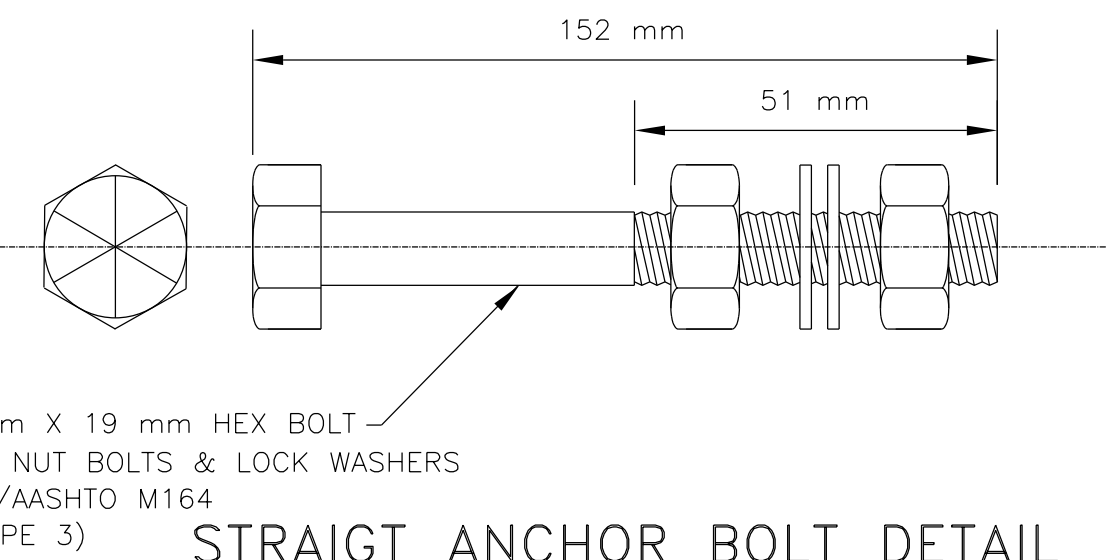


REINFORCING LAYOUT DETAIL

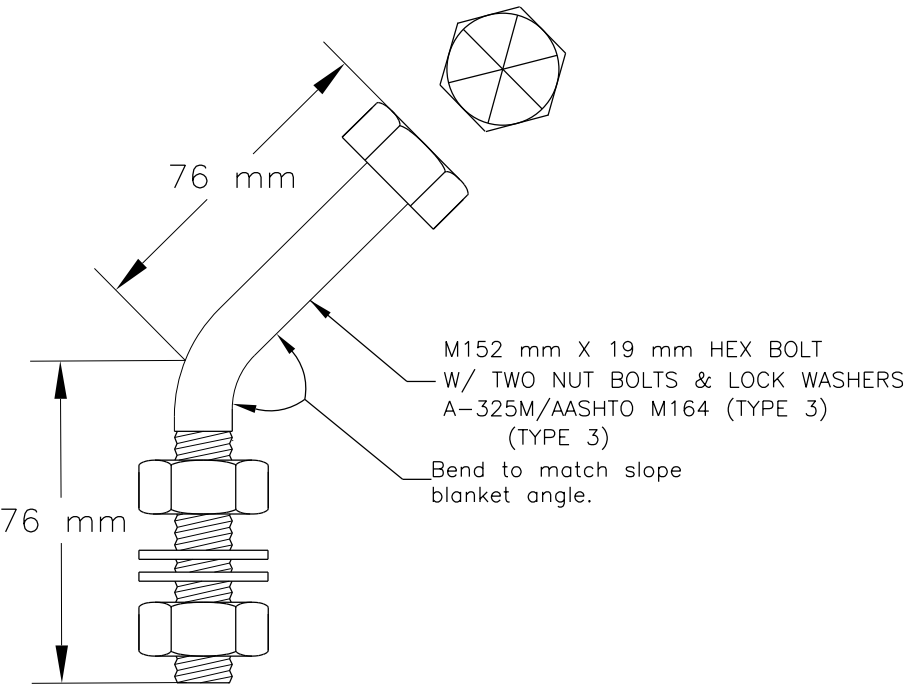


PLAN VIEW

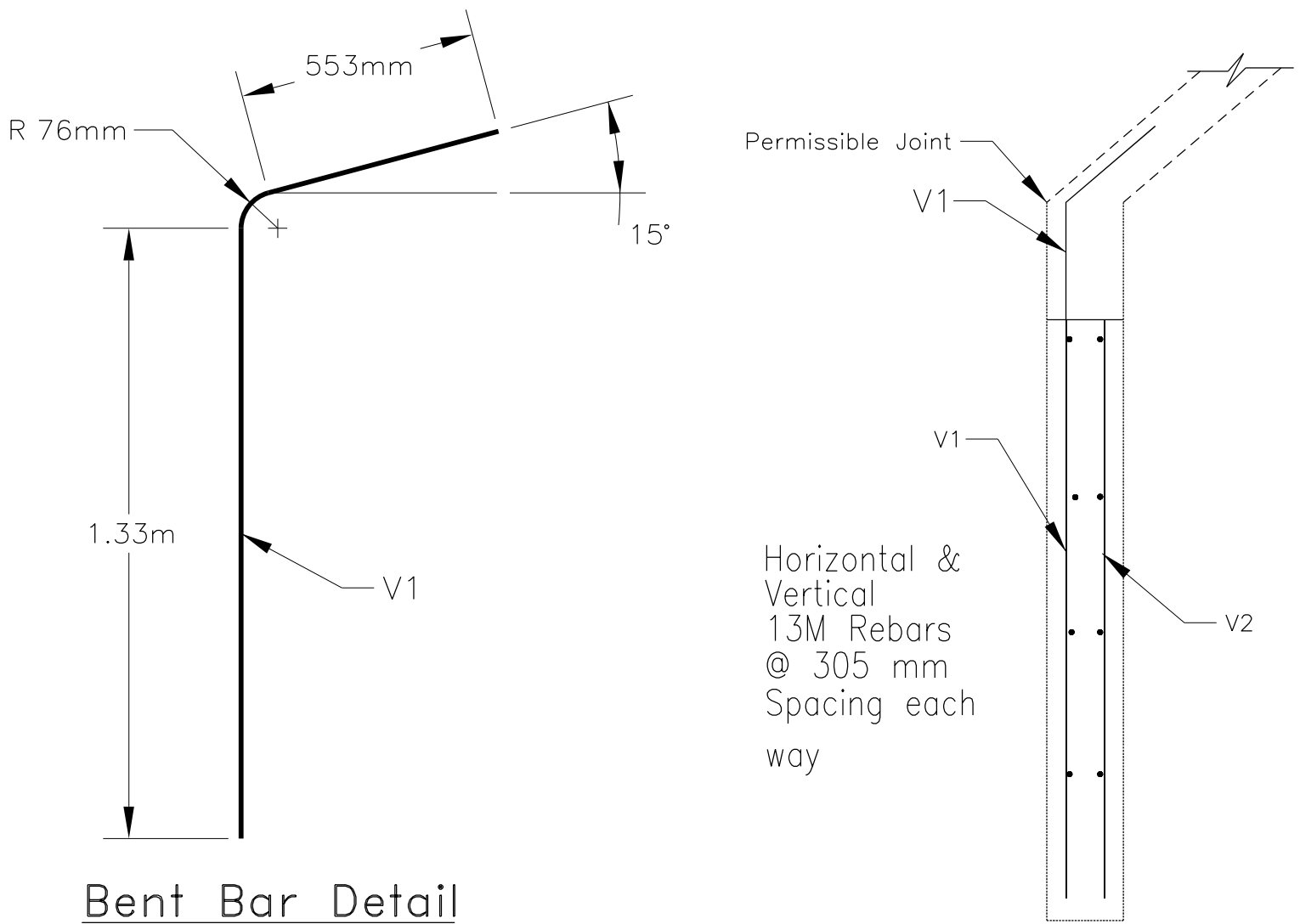
\* The riprap layout shown is for 90 degree skewed pipes.  
At pipe with different skew angle the riprap to be centered on the discharge flow vector.



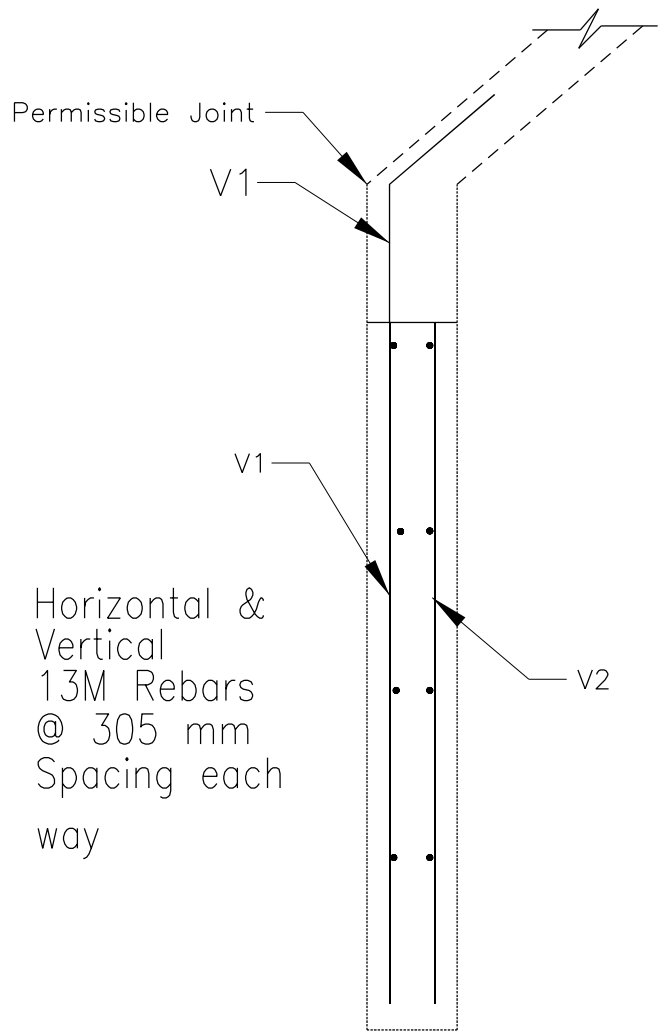
STRAIGHT ANCHOR BOLT DETAIL  
21 Req'd Per Pipe Lower End  
(457 mm Spacing)



BENT ANCHOR BOLT DETAIL  
78 Req'd Per Pipe Top End  
(457 mm Spacing)



Bent Bar Detail



FOOTING DETAIL

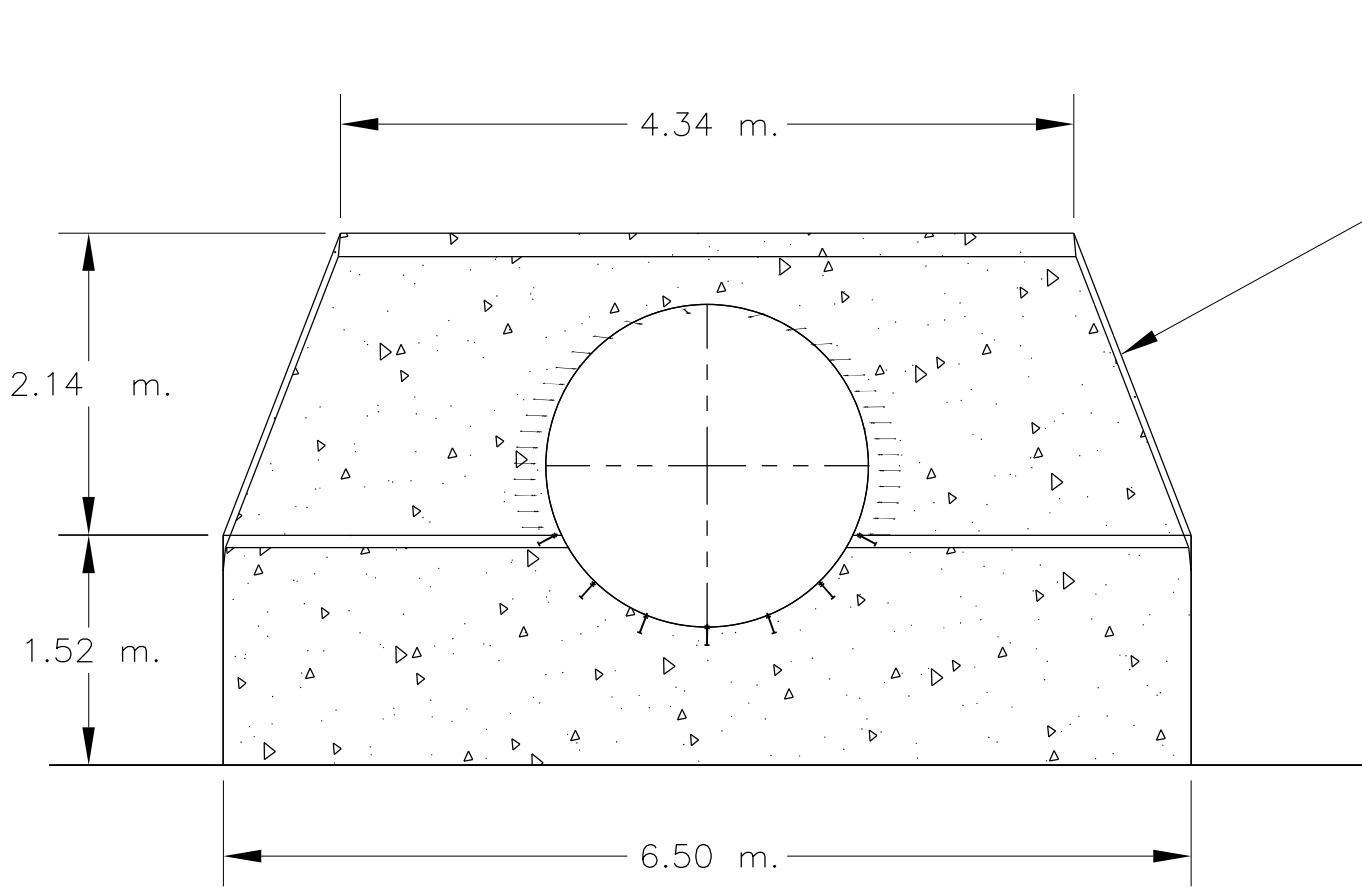




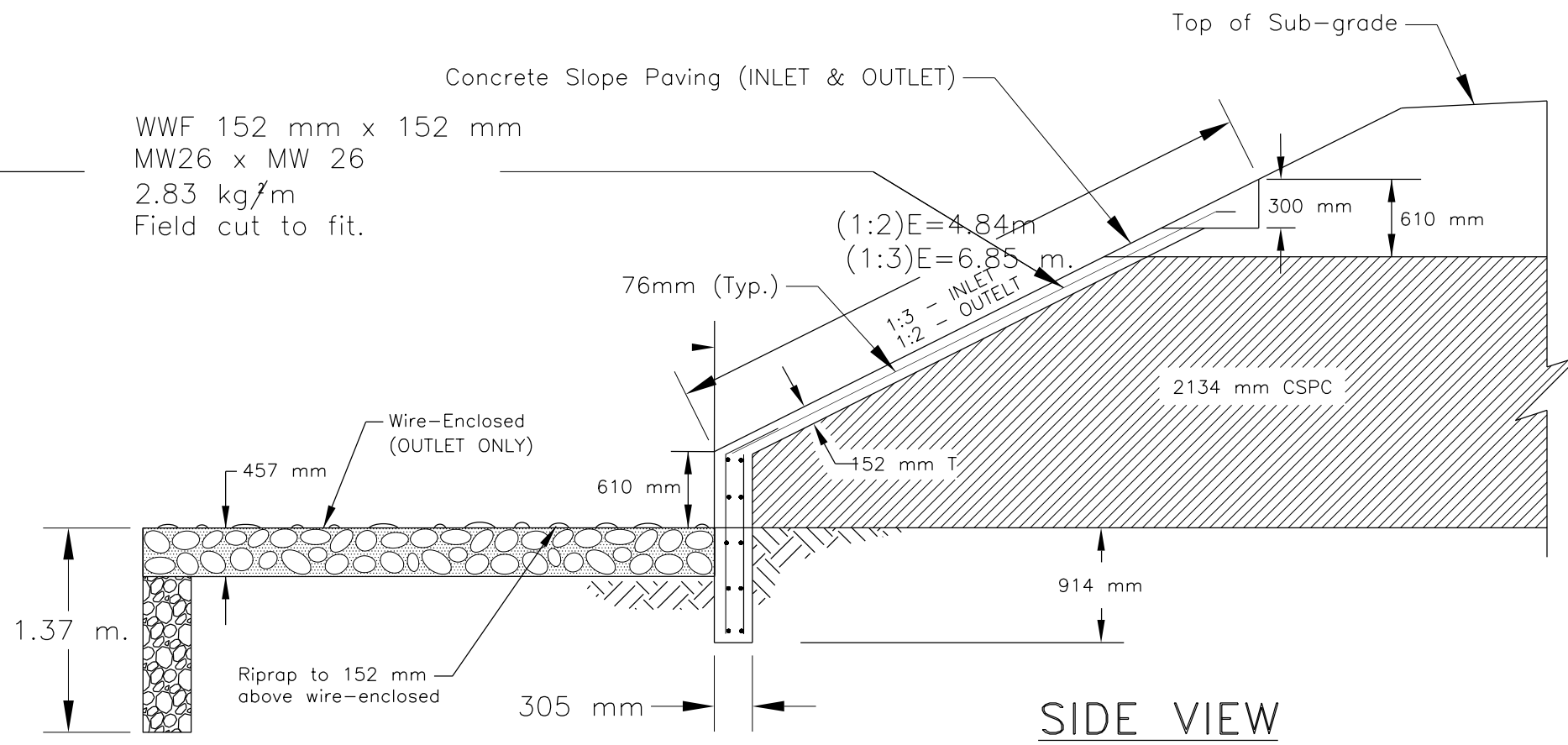
AREA	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N8065	N8065	6	10

GENERAL NOTES

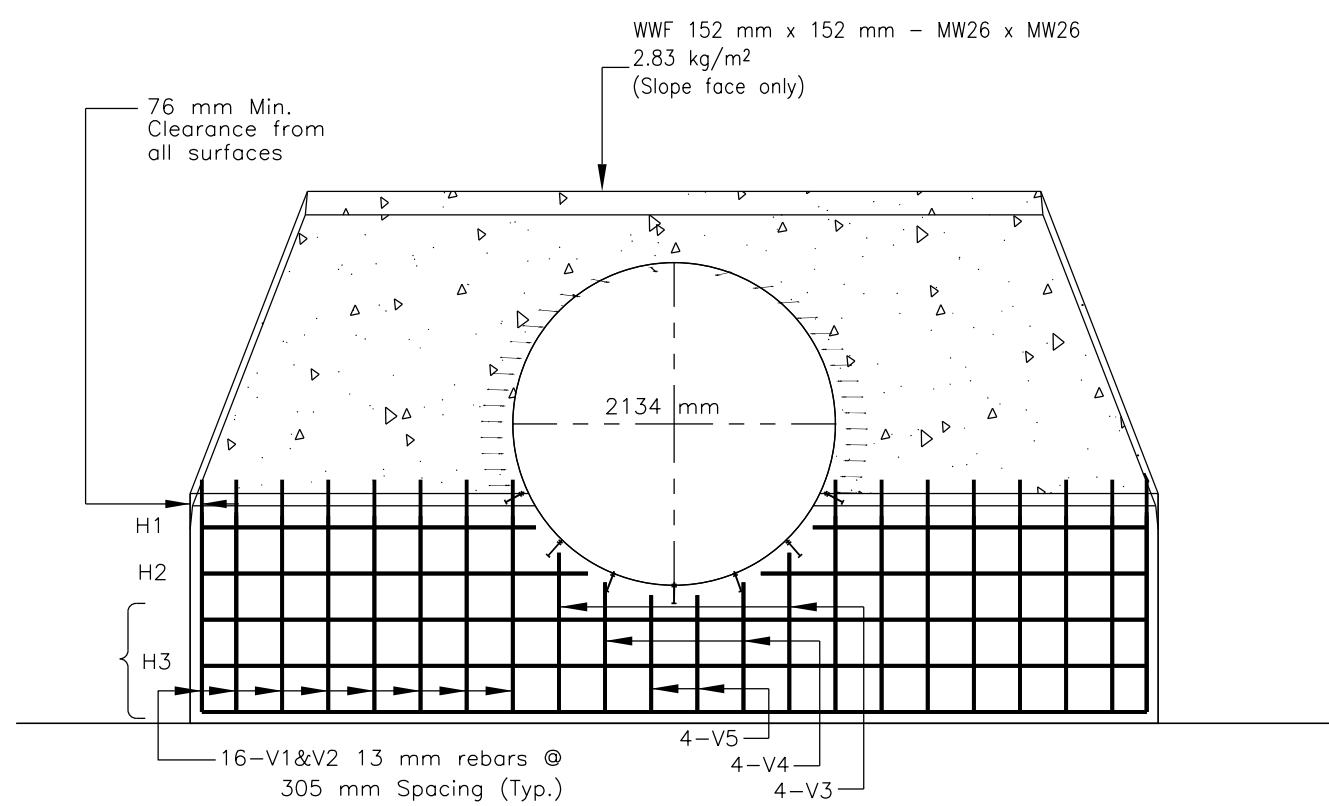
1. ALL WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-03).
2. ALL CONCRETE SHALL BE CLASS A(AE) WITH CLASS 1 FINISH. CHAMFER ALL EXPOSED EDGES 19 mm. THE CONCRETE SHALL CONFORM TO SECTION 552 STRUCTURAL CONCRETE OF FP-03.  $F_c = 20.68 \text{ MPa}$ .
3. REINFORCING STEEL SHALL CONFORM TO AASHTO SPECIFICATION M-31 (ASTM A 615M), GRADE 420, AND SECTION 554 OF FP-03. FURNISHING AND PLACEMENT OF REBARS, ANCHOR BOLT, AND WELDED WIRE FABRIC SHALL BE CONSIDERED INCIDENTAL TO CONTRACT BID ITEM 60101-0000.
4. ALL STRUCTURE EXCAVATION AND EMBANKMENT AROUND THE CONCRETE BLANKET SHALL BE DONE TO NEAT LINES AND WILL BE CONSIDERED INCIDENTAL TO COMPLETION OF THE STRUCTURE.
5. THE CONTRACTOR SHALL BE REQUIRED TO MAKE ANY NECESSARY FIELD ADJUSTMENTS TO FIT EXISTING FIELD CONDITIONS, AS DIRECTED BY THE COR/AOTR. NO ADDITIONAL PAYMENT SHALL BE MADE FOR SUCH ADJUSTMENTS.
6. IF UNSUITABLE MATERIAL IS FOUND AT THE FOOTING LOCATION AND ELEVATIONS, THE MATERIAL SHALL BE REMOVED AND REPLACED WITH APPROVED STRUCTURAL BACKFILL AS DETERMINED BY THE COR/AOTR. ALL STRUCTURAL BACKFILL SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY AS DETERMINED BY AASHTO T99 METHOD C. BEFORE AND AFTER FOOTINGS ARE PLACED, THE STRUCTURAL BACKFILL MATERIAL SHALL CONFORM TO SECTION 208 AND 209 OF FP-03. FURNISHING AND PLACEMENT OF STRUCTURAL BACKFILL SHALL BE ACCORDANCE WITH SECTION 109.02(m).
7. ALL FOOTING EXCAVATIONS SHALL BE INSPECTED AND APPROVED BY THE COR/AOTR PRIOR TO PLACEMENT OF FORMS, REINFORCING STEEL, AND SUBSEQUENT CONCRETE.
8. CHANNEL RESHAPING, CLEANING, AND EXCAVATION SHALL BE DONE IN ACCORDANCE WITH THE PLANS AND AS DETERMINED BY THE COR/AOTR. ANY WASTE MATERIAL SHALL BE USED AS BORROW WHERE NEEDED IN OTHER PROJECT LOCATION AS DESIGNATED AND APPROVAL BY THE COR/AOTR. ALL CHANNEL EXCAVATION, CLEANING, AND RESHAPING SHALL BE CONSIDERED INCIDENTAL TO COMPLETION OF THE STRUCTURE.
9. IN NO CASE SHALL ANY BACKFILL BE PLACED UNTIL THE CONCRETE HAS ATTAINED A COMPRESSIVE STRENGTH OF  $17.24 \text{ MPa}$ .
10. TABULATED CONCRETE, WELDED WIRE FABRIC, AND REINFORCING STEEL ESTIMATED QUANTITIES ARE FOR ONE (1) SIDED BLANKET AT A GIVEN STATION AND SIZE OF STRUCTURE(S). CONCRETE BLANKETS ARE REQUIRED AT INLET AND OUTLET SIDE OF THE DRAINAGE STRUCTURE(S).
12. GROUTED RIPRAP ROCK SIZE SHALL CONFORM TO TABLE 705-1, CLASS 2. FILL ROCK VOIDS TO FULL DEPTH OF RIPRAP WITH GROUT PER SECTION 251 AND 712.0. LEAVE ROCK ON SURFACE EXPOSED  $\frac{1}{4}$  TO  $\frac{1}{2}$  ROCK DEPTH.
11. WHERE THE CONCRETE BLANKET CAN NOT BE INSTALLED DUE TO SHALLOW DEPTH OF COVER OVER THE PIPE(S), AND/OR THE PARAPET HEIGHT IS ABOVE THE AGGREGATE BASE HINGE POINT, THE CONTRACTOR SHALL BE REQUIRED TO ADJUST THE PARAPET WALL HEIGHT TO 305 mm, AND INSTALL ADDITIONAL TWO (2) - #13M REBARS ON THE TOP WALL ACROSS THE ENTIRE LENGTH OF STRUCTURE AND WILL BE CONSIDERED INCIDENTAL TO COMPLETION OF THE STRUCTURE.
13. EROSION CONTROL MATTING SHALL CONFORM TO SECTION 629 AND 713.17(k) OF THE FP-03 FOR TYPE IV-B MATERIAL, AND SHALL BE INCIDENTAL TO THE UNIT PRICE FOR ITEMS 60101-1000 AND 62901-1100. MATS SHALL BE TUCKED OR EMBEDDED INTO EMBANKMENT ALONG ALL EDGES AS SHOWN. SEE SHEET 55 OF 79 FOR EROSION CONTROL MAT INSTALLATION DETAILS.



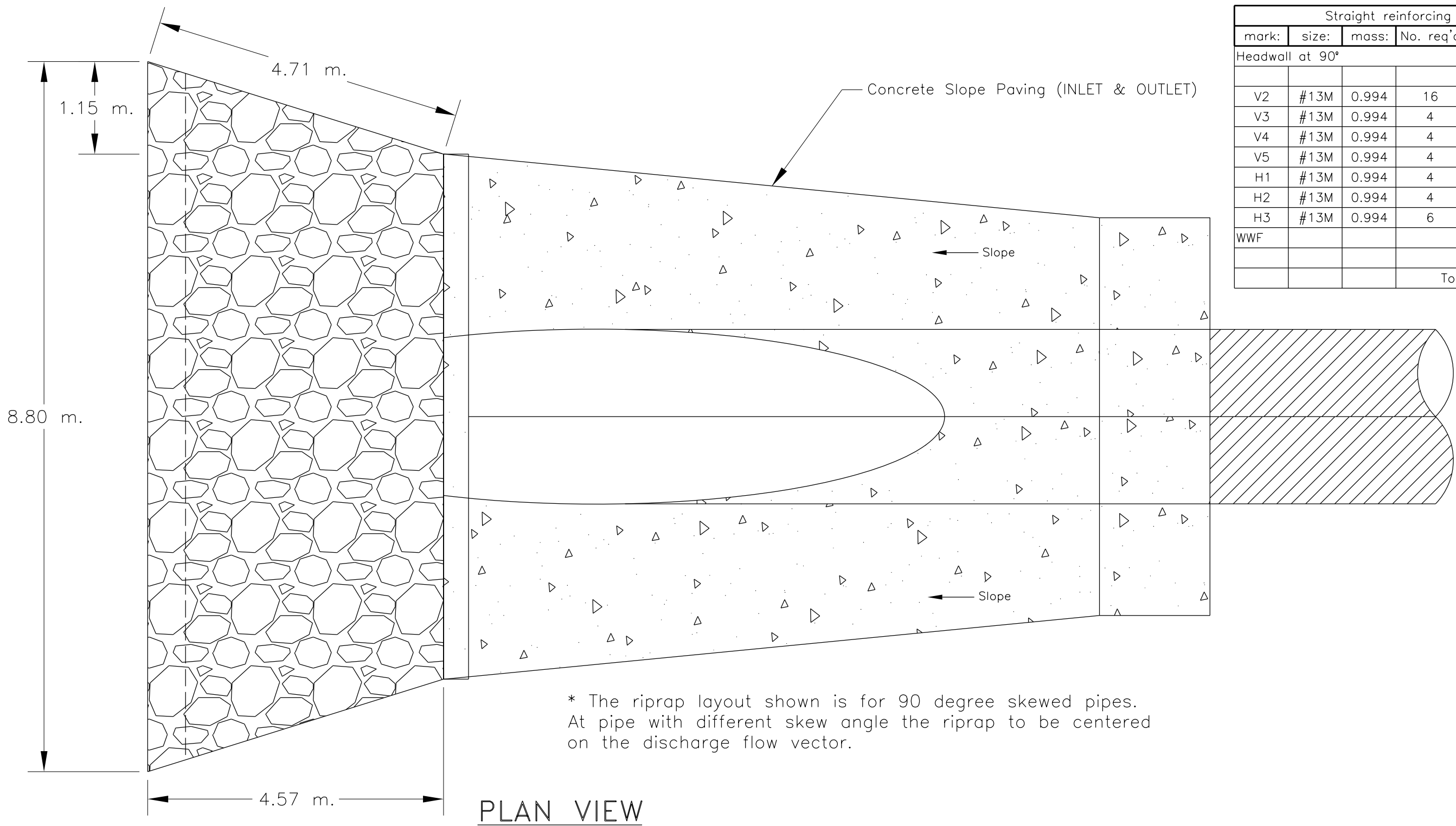
FRONT VIEW



SIDE VIEW

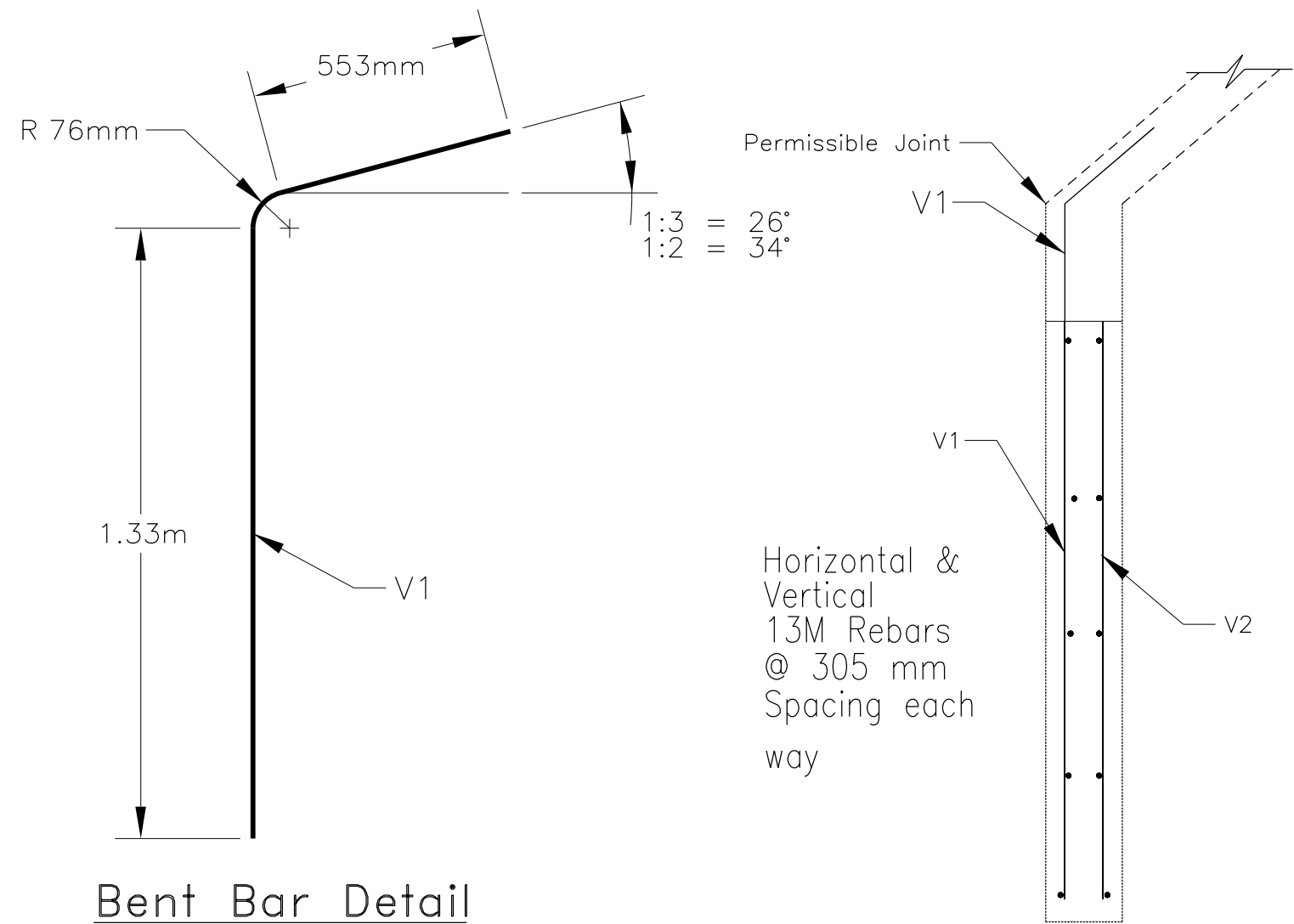


REINFORCING LAYOUT DETAIL



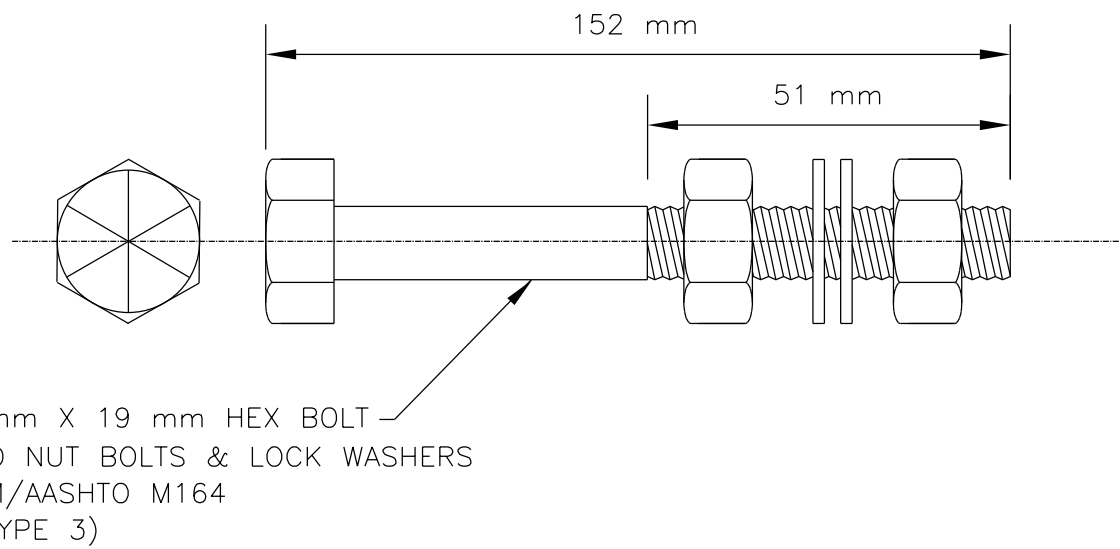
PLAN VIEW

\* The riprap layout shown is for 90 degree skewed pipes. At pipe with different skew angle the riprap to be centered on the discharge flow vector.

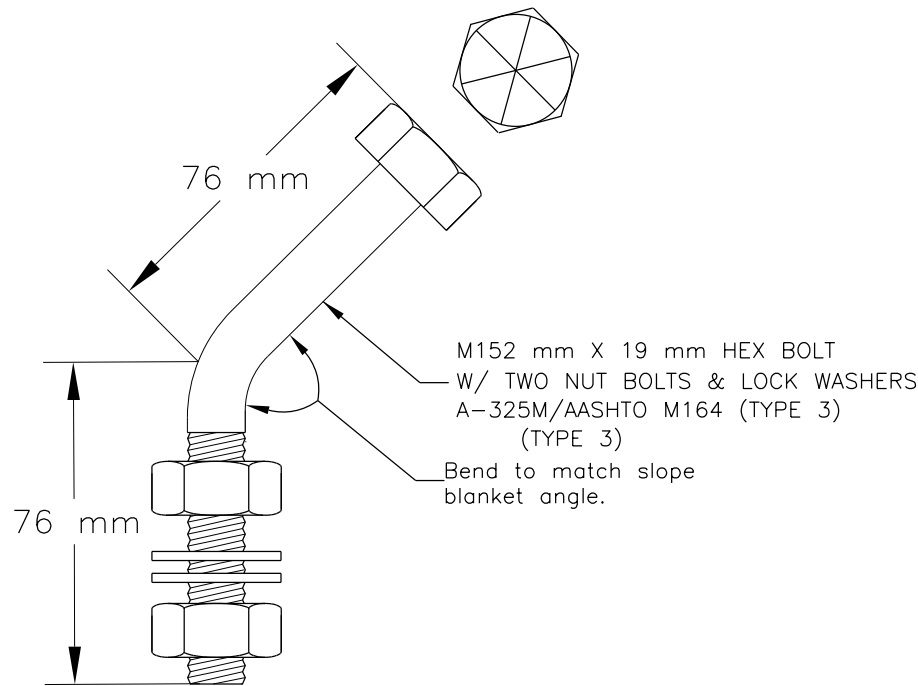


Bent Bar Detail

FOOTING DETAIL



STRAIGHT ANCHOR BOLT DETAIL  
(457 mm Spacing)

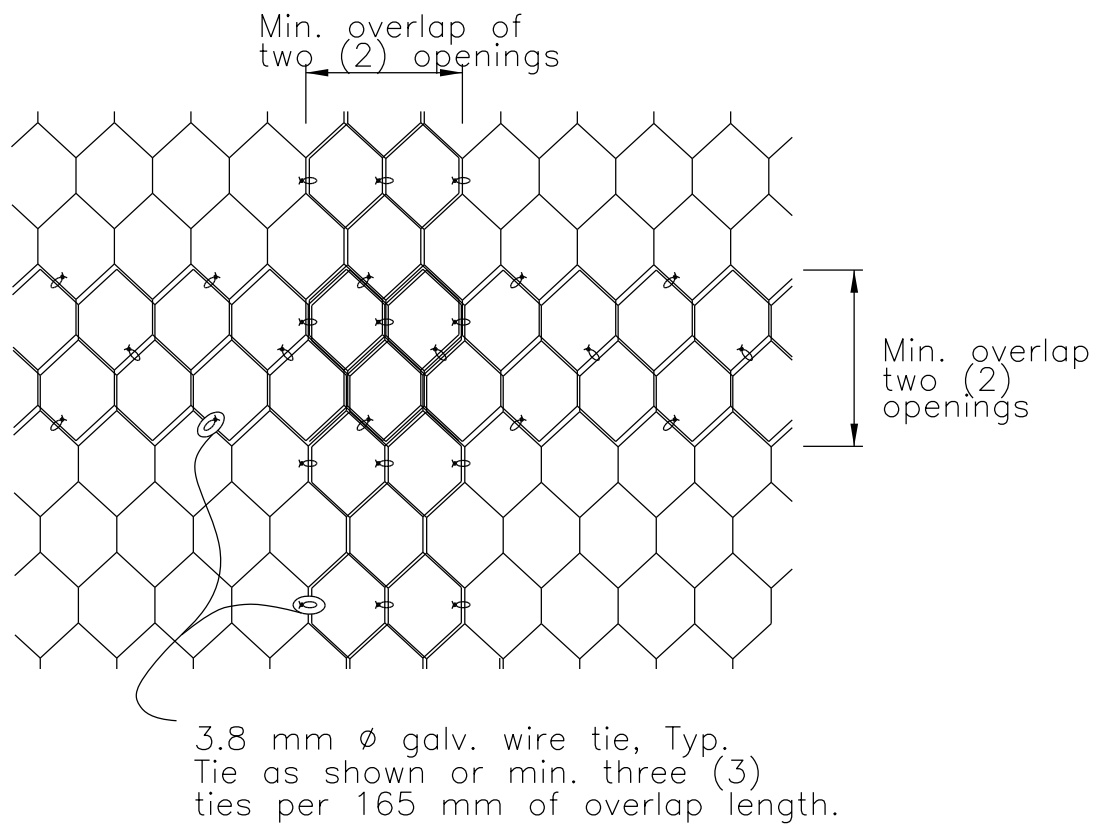


BENT ANCHOR BOLT DETAIL  
30 Req'd Per Pipe Top End  
(457 mm Spacing)

Straight reinforcing bars (Type 1)						Bent reinforcing bars										Remarks:	
mark:	size:	mass:	No. req'd	length (m):	weight (kg):	mark:	size:	mass:	type:	No. req'd	length (m):	a	weight (kg)	b	a* (mm)		
Headwall at 90°																	
						V1	#13M	0.994	3	16	1.983		31.538	1330	553	Front face outside walls	
V2	#13M	0.994	16	1.372	21.820											Back face outside walls	
V3	#13M	0.994	4	1.054	4.191											Front & back face beneath pipe	
V4	#13M	0.994	4	0.858	3.411											Front & back face beneath pipe	
V5	#13M	0.994	4	0.772	3.069											Front & back face beneath pipe	
H1	#13M	0.994	4	2.211	8.791											Front & back outside walls	
H2	#13M	0.994	4	2.554	10.155											Front & back outside walls	
H3	#13M	0.994	6	6.252	37.287											Front & back cutoff wall	
WWF					35.09											face of blanket	
				subtotal:	123.816								subtotal:	31.538			
				Total for 1 side:	155.354	kg											

ITEM 25112-2000 ---- WIRE ENCLOSED RIPRAP			
STATION	LOCATION	DEPTH (mm)	TOTAL (m?)
0+079.03	Outlet	457	19.600

ITEM 60101-0000 ---- MINOR CONCRETE FOR 1-SIDE	
CONCRETE	QUANTITY (m?)
STA. 0+079.03---Inlet Conc. Slope Pave @ 3:1	7.00
Outlet Conc. Slope Pave @ 2:1	5.8



FABRIC SPLICING DETAIL

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

2134mm CONCRETE BLANKET  
WITH RIPRAP DETAIL

DRAWN BY: DESIGN2 DATE: 1/26/12

DESIGNED BY: DESIGN2 DATE:

REVISED: FILENAME: N8065 CSP

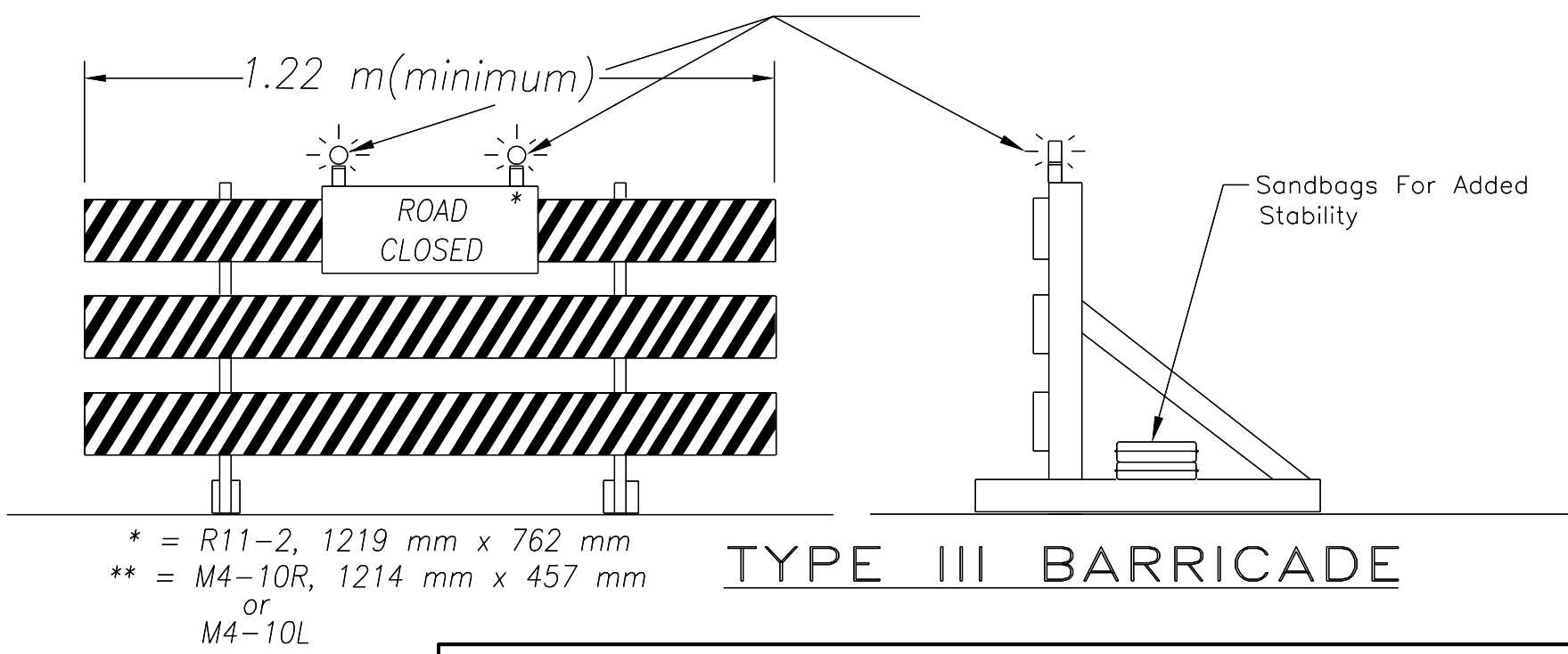
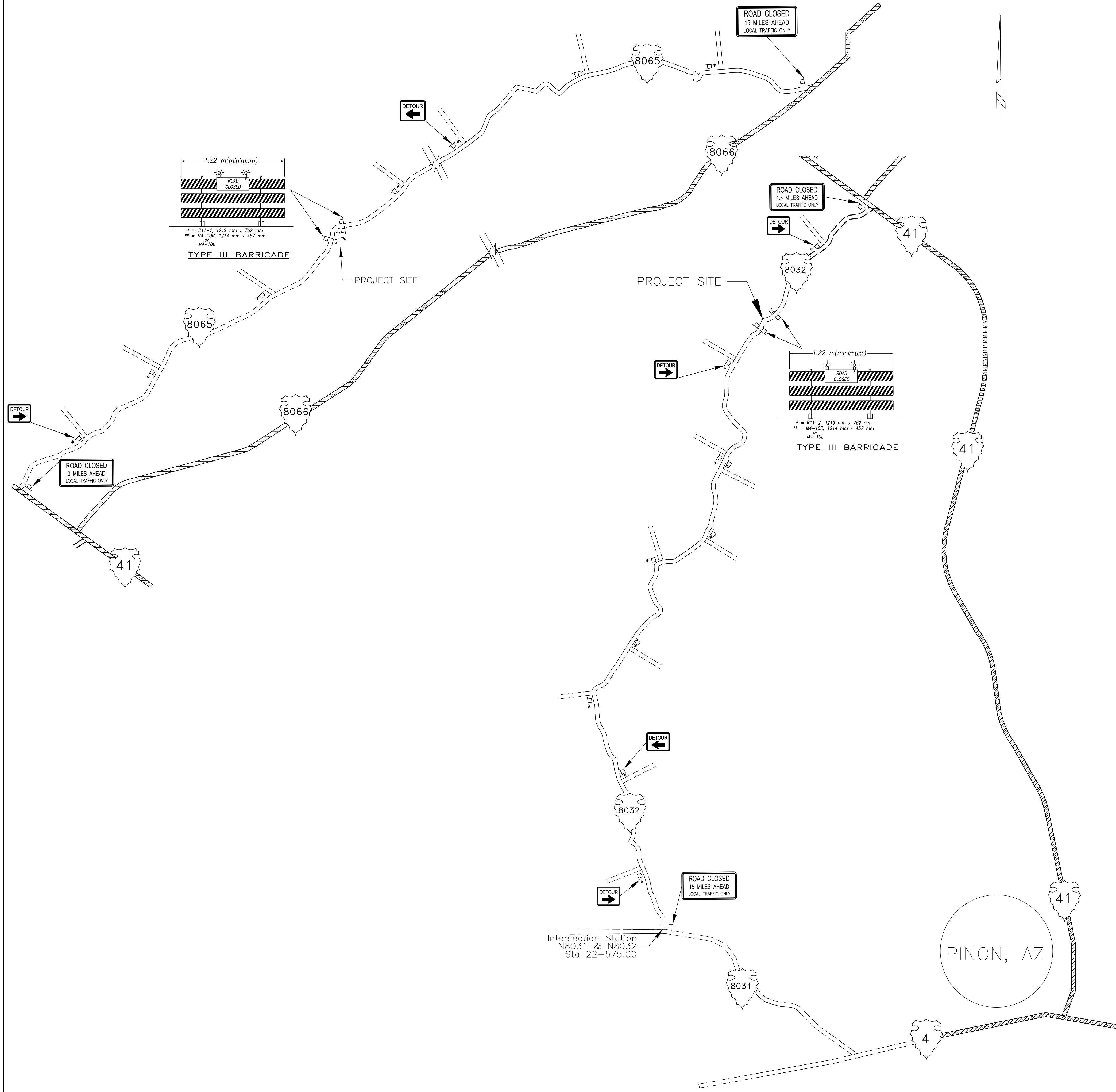
BY: DESIGN 2 SCALE: SCALE



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N8032	N8032/8065	7	10

GENERAL NOTES:

1. ALL TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH THE MUTCD MANUAL (LATEST EDITION AND AMENDMENTS) AND THE SUPPLEMENTAL SPECIFICATION FOR THIS PROJECT.
2. SIGNS (G20-1, W20-1A, G20-2A SHALL BE PLACED AT THE PROJECT LIMITS AND REMAIN IN PLACE THROUGH THE DURATION OF THE PROJECT.
3. FLAGGERS SHALL BE STATIONED LEFT AND RIGHT AS SHOWN WHEN EQUIPMENT IS CROSSING OR WORKING WITHIN EXISTING ROADWAY PRISM.
4. ALL TRAFFIC CONTROL DEVICES (EXCEPT AT DETOUR ROAD LOCATIONS) SUCH AS CONSTRUCTION SIGNS, DRUMS, BARRICADES, ETC., SHALL BE REMOVED TO A LOCATION AT LEAST NINE (9) METERS FROM EDGE OF THE SHOULDER WHEN CONSTRUCTION IS NOT IN PROGRESS.
5. AT LOCATIONS WHERE NEW ROAD CONSTRUCTION CROSSES EXISTING ROADWAY AND AT TIE-INS WITH EXISTING ROADS AT THE END OF THE NEW CONSTRUCTION, SPECIAL TRAFFIC CONTROL PROCEDURES SHALL BE INCLUDED IN THE CONTRACTOR'S TCP. THESE INCLUDE BUT ARE NOT NECESSARILY LIMITED TO THE FOLLOWING: TYPE III BARRICADES WITH "ROAD CLOSE"; DETOUR; SIGNS; FLAG MEN; DRUMS; AND/OR DETOUR.
6. THE CONTRACTOR SHALL COORDINATE CONSTRUCTION ACTIVITIES WITH THE LOCAL SCHOOL TO ENSURE THAT DAILY SCHEDULED BUS ARRIVAL AND DEPARTURE TIMES ARE MAINTAINED TO THE FULLEST EXTENT POSSIBLE. SCHOOL BUSES SHALL NOT BE DELAYED OVER 5 MINUTES. THE CONTRACTOR'S TCP SHALL REFLECT THIS COORDINATION.
7. PRIOR TO THE BEGINNING OF THE PROJECT THE CONTRACTOR SHALL NOTIFIED THE COMMUNITY MEMBERS RESIDING IN THE EFFECTIVE AREA OF THE ROAD CLOSURE DURING CONSTRUCTION AND ADVISED TO SEEK ALTERNATIVE ROUTES UNTIL THE PROJECT IS COMPLETE.



UNITED STATES  
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NAVAJO REGIONAL OFFICE \* DIVISION OF TRANSPORTATION

TEMPORARY TRAFFIC  
CONTROL PLAN

DRAWN BY: B.O.R.      DATE: 7/12  
DESIGNED BY: DESIGN 2      DATE: 7/12  
REVISED: 7/12      BY: DESIGN 2  
SCALE: NTS  
FILENAME: TTCP  
SHEET MODEL NAME: PLOT SHEET



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N8032	N8032/8065	8	10

GENERAL NOTES

1. PLACE LOOSE BEDDING ROUGHLY SHAPED TO BOTTOM OF PIPE, THEN COMPACTED UNDER HAUNCHES AFTER PIPE PLACEMENT.
2. SEE SECTIONS 204, 209, 602, AND 704 OF FP-03, INCLUDING THE SUPPLEMENTAL SPECIFICATION FOR ADDITIONAL NOTES.
3. ALL DRAINAGE STRUCTURE MATERIAL SHALL BE UNLOADED AND HANDLED WITH REASONABLE CARE. NO STRUCTURE SHALL BE DRAGGED OR ALLOWED TO STRIKE ANY HARD SURFACE DURING PLACEMENT. ANY DAMAGED STRUCTURE SHALL BE REPAIRED OR REPLACED, BY THE CONTRACTOR, AT NO ADDITIONAL COST TO THE GOVERNMENT.
4. ALL STRUCTURAL PLATE PIPE STRUCTURES SHALL BE ASSEMBLED AND INSTALLED IN ACCORDANCE WITH THE FABRICATOR'S RECOMMENDATION.
5. BACKFILL MATERIAL SHALL BE PLACED 300 mm(min.) 1.0 m(max) PIPE DIAMETER WIDTH ON THE SIDES AND 305 mm OVER THE PIPE. BACKFILL MATERIAL BEYOND THESE LIMITS SHALL BE REGULAR EARTHWORK EMBANKMENT MATERIAL. THE BACKFILL MATERIAL SHALL BE APPROVED BY THE COR/AOTR PRIOR TO IT'S USE AND SHALL BE PLACED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.
6. PONDING OR JETTING PIPE BACKFILL SHALL NOT BE PERMITTED.
7. ALL PIPE EXCAVATION, BACKFILLING, DE-WATERING, PUMPING OR COFFERDAMS REQUIRED TO PROPERLY INSTALL THE DRAINAGE PIPE SHALL BE CONSIDERED INCIDENTAL TO COMPLETION OF THE PROJECT AND NO ADDITIONAL PAYMENT SHALL BE MADE.
8. ALL PIPES SHALL BE PROTECTED BY A COVER OF NOT LESS THAN 0.91 m OF EMBANKMENT ABOVE PIPE BEFORE ANY HEAVY EQUIPMENT IS ALLOWED TO PASS OVER THE STRUCTURE(S) DURING CONSTRUCTION.
9. ALL CULVERTS UNDER TURNOUT AND DRIVEWAYS SHALL BE PLACED AT THE PROPOSED DITCH FLOWLINE. THE CONTRACTOR SHALL BE REQUIRED TO FIELD ADJUST THE PROFILE GRADES OVER THE PIPE AS DIRECTED BY THE COR/AOTR TO PROVIDE FOR THE MINIMUM COVER.
10. TYPE "B" DIKE SHALL BE USED ON THIS PROJECT UNLESS OTHERWISE NOTED ON THE PLANS. EMBANKMENT MATERIAL NEEDED TO BUILD EARTHEN DIKES SHALL BE CONSIDERED INCIDENTAL TO ITEM 20443-2000.
11. MULTIPLE PIPE INSTALLATION BE PLACED 610 mm BETWEEN END SECTIONS UNLESS OTHERWISE DIRECTED BY THE AOTR/COR OR AS SHOWN ON THE PLANS.
12. ALL DRAINAGE STRUCTURES SHALL BE INSTALLED AT THE ORIGINAL GROUND LINE AND SLOPE TO ASSURE POSITIVE DRAINAGE UP TO THE R.O.W. LIMITS. IN NO CASE SHALL THE PIPE(S) BE PLACED BELOW THE ORIGINAL GROUND ELEVATIONS. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO COMPLETION OF PROJECT AND NO ADDITIONAL PAYMENT SHALL BE MADE.
13. AT DRAINAGE PIPE REPLACEMENTS, INSTALLIONS, 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 AOTR/COR. THIS WORK SHALL BE INCIDENTAL TO BID ITEMS UNDER SECTION 602, 603, AND 607.
14. IF DIRECTED BY THE AOTR/COR TO BETTER FIT FIELD CONDITIONS, TO MORE SMOOTHLY DIRECT THE FLOW INTO THE PIPE AND/OR LESSEN THE WATER'S IMPACT ON THE FACE OF THE DITCH BLOCKS, THE DITCH BLOCK TO BE CURVED. THIS WORK TO BE INCIDENTAL TO BID ITEM 20443-2000.

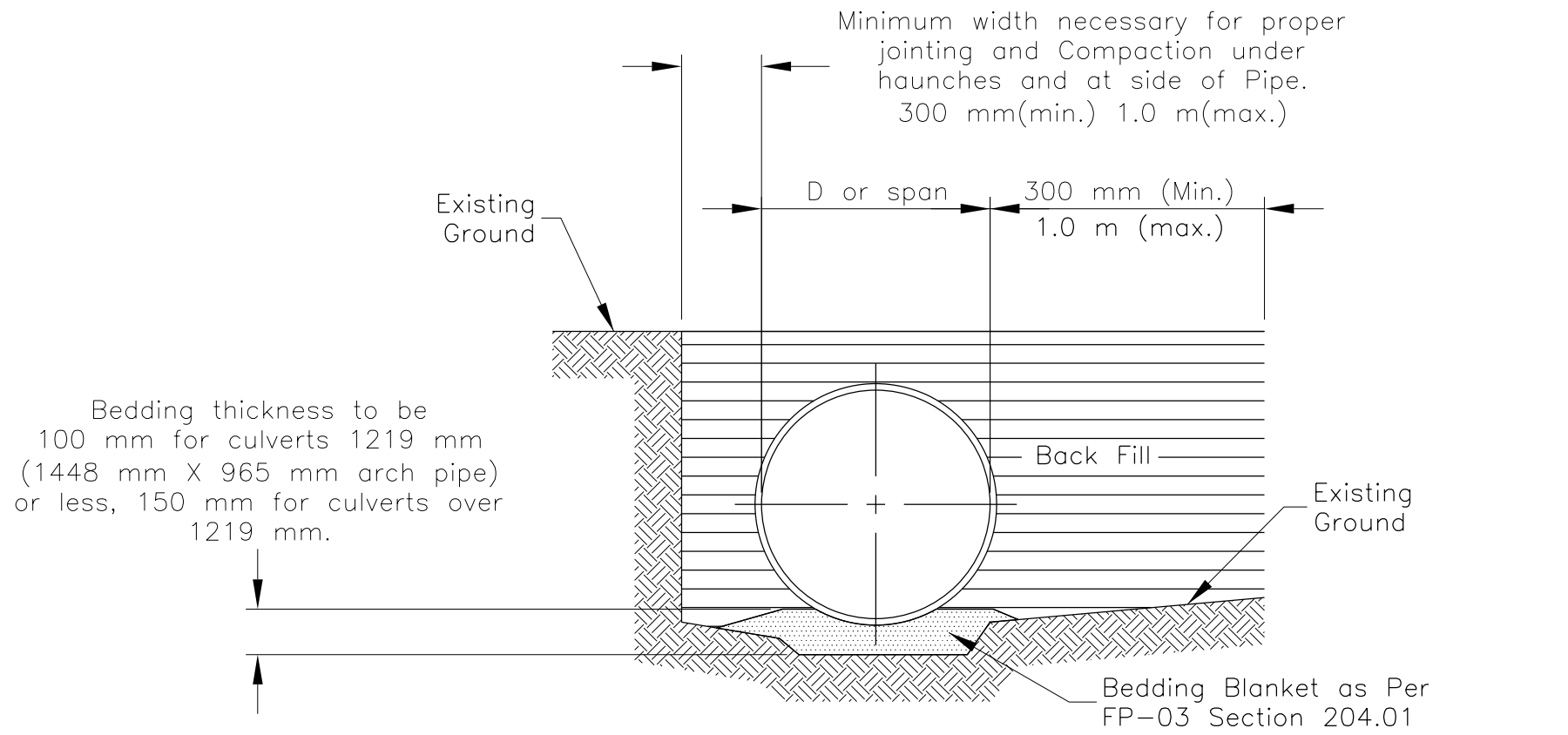


FIGURE A: BEDDING

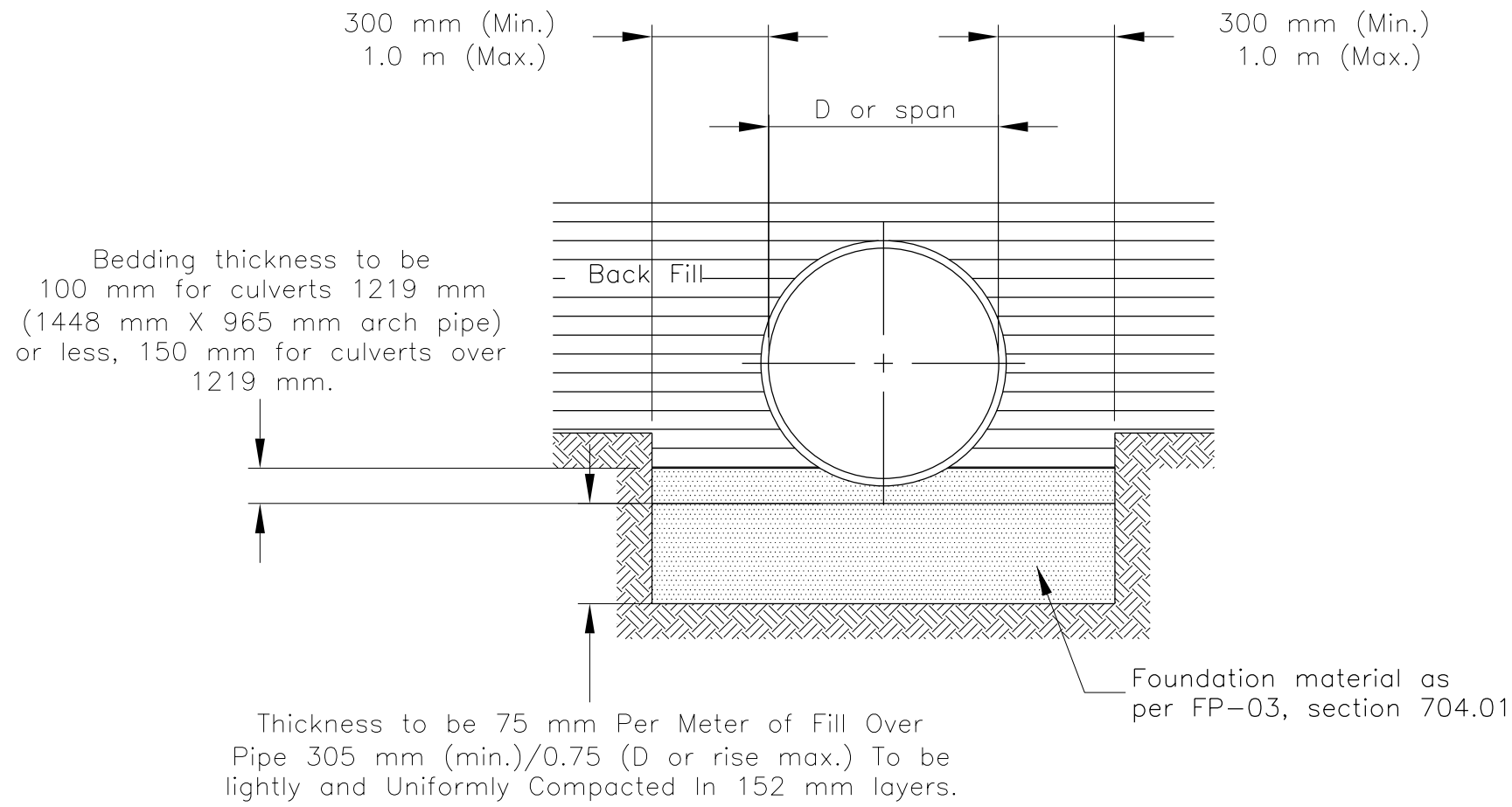


FIGURE B: ROCK BEDDING

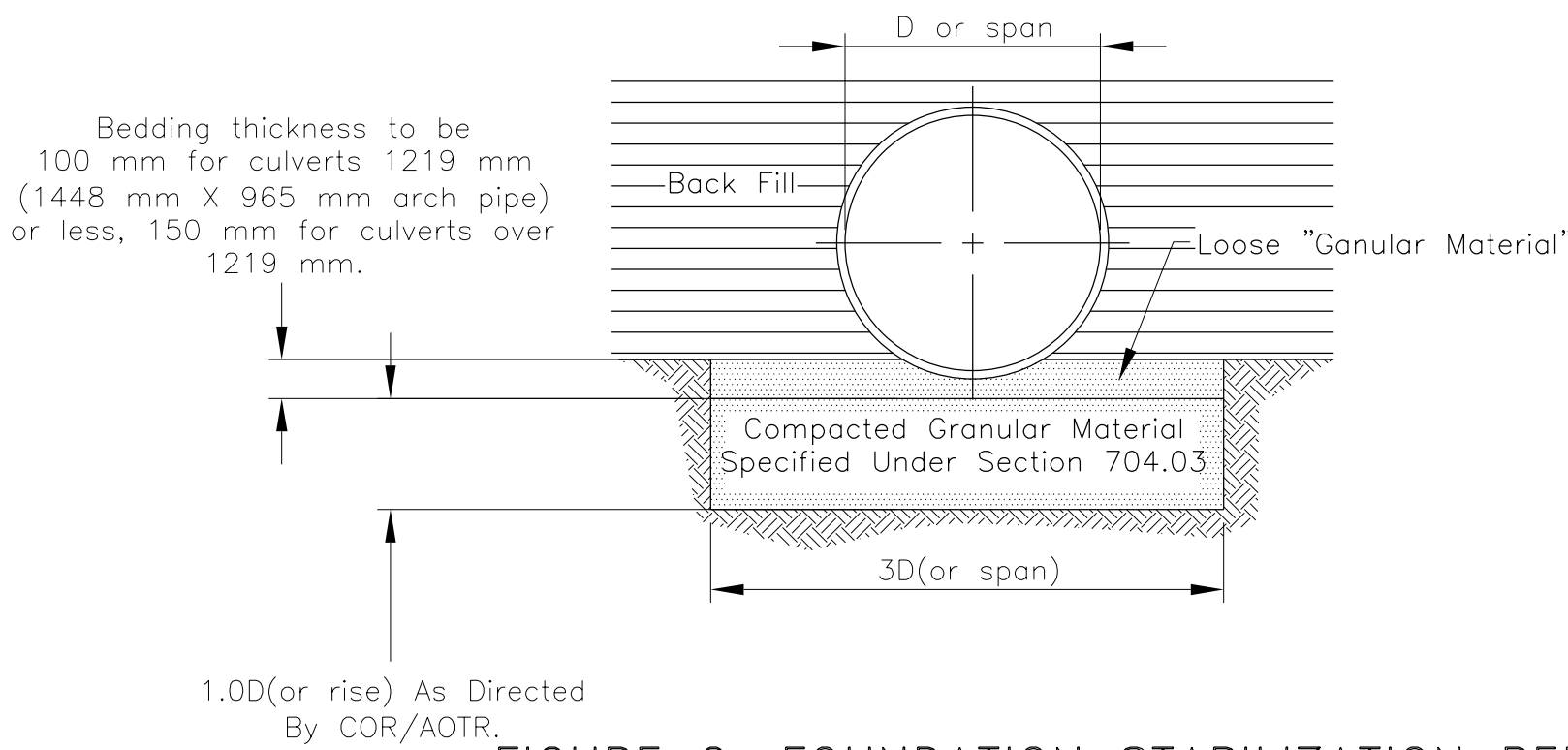
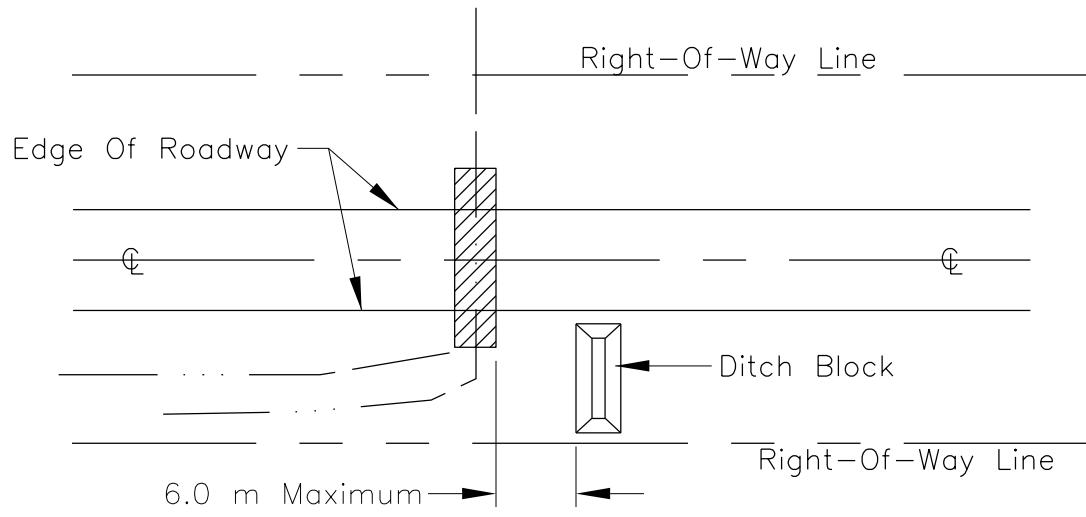
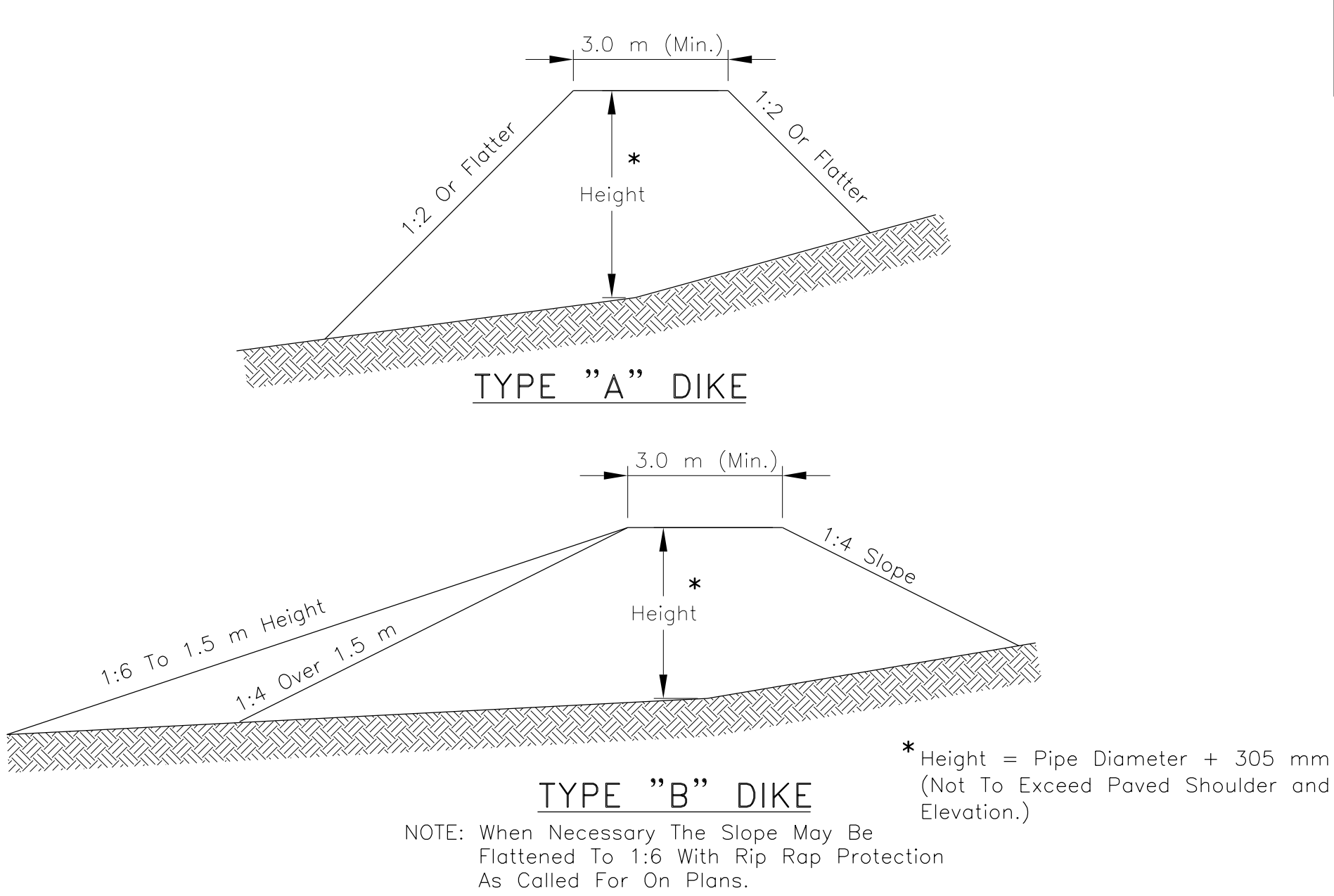


FIGURE C: FOUNDATION STABILIZATION BEDDING

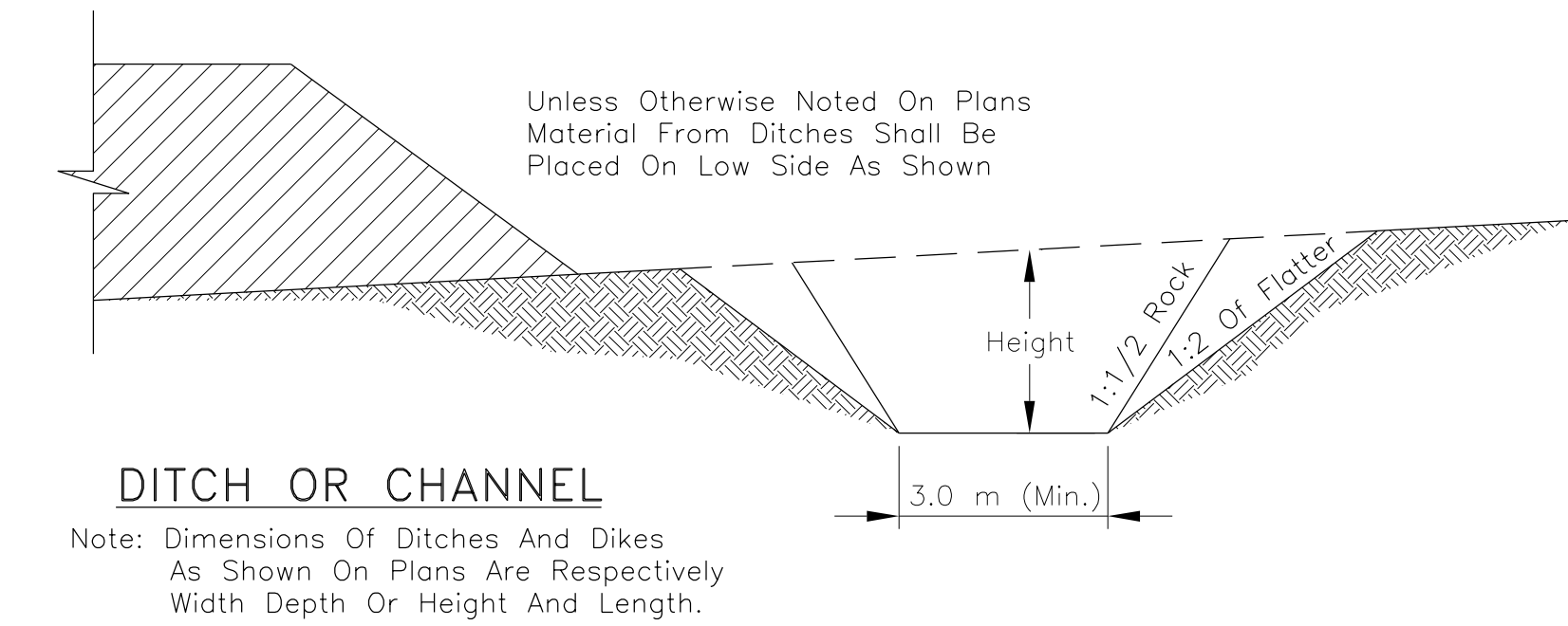


DITCH BLOCK INSTALLATION AT STRUCTURE

1. Ditch Block At Structures To Be So Placed That They Create A Water Cushion. Elevation Top Of Ditch Block Shall Be 305 mm Above Elevation Of Top Of Pipe Unless Otherwise Shown Or Directed by the C.O.R..
2. Ditch Block Shall Be Located A Distance Equal To The Largest Dimension Of Box Culvert Or Pipe from the Face of the Drainage Structure. In No Case Shall The Distance Exceed 6.0 m.

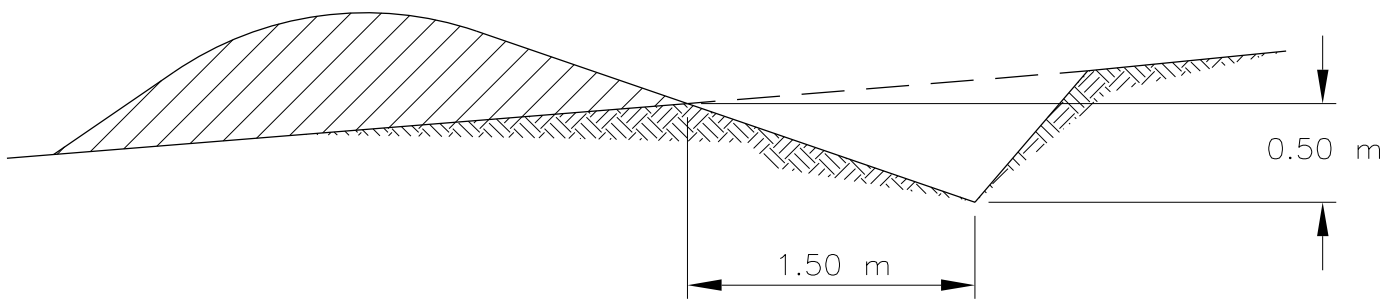


DITCH BLOCK DETAILS



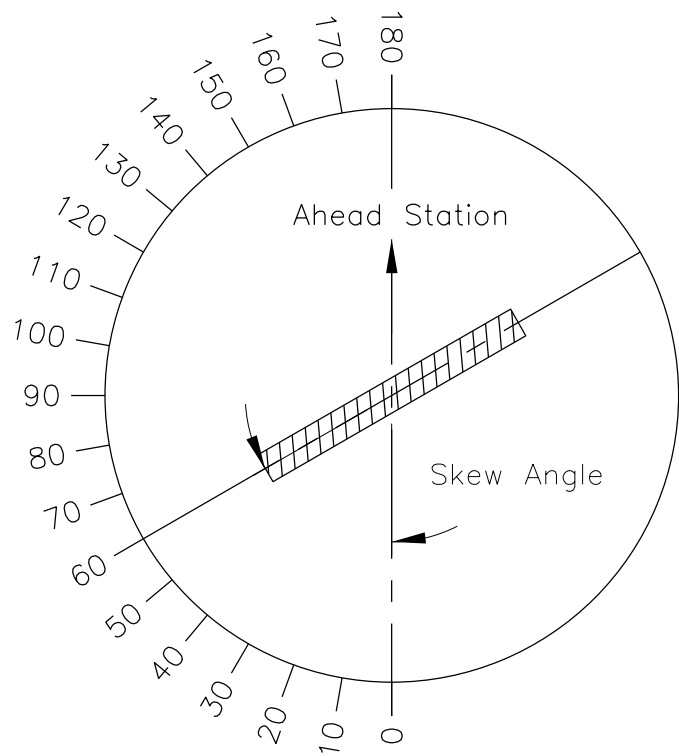
DITCH OR CHANNEL

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

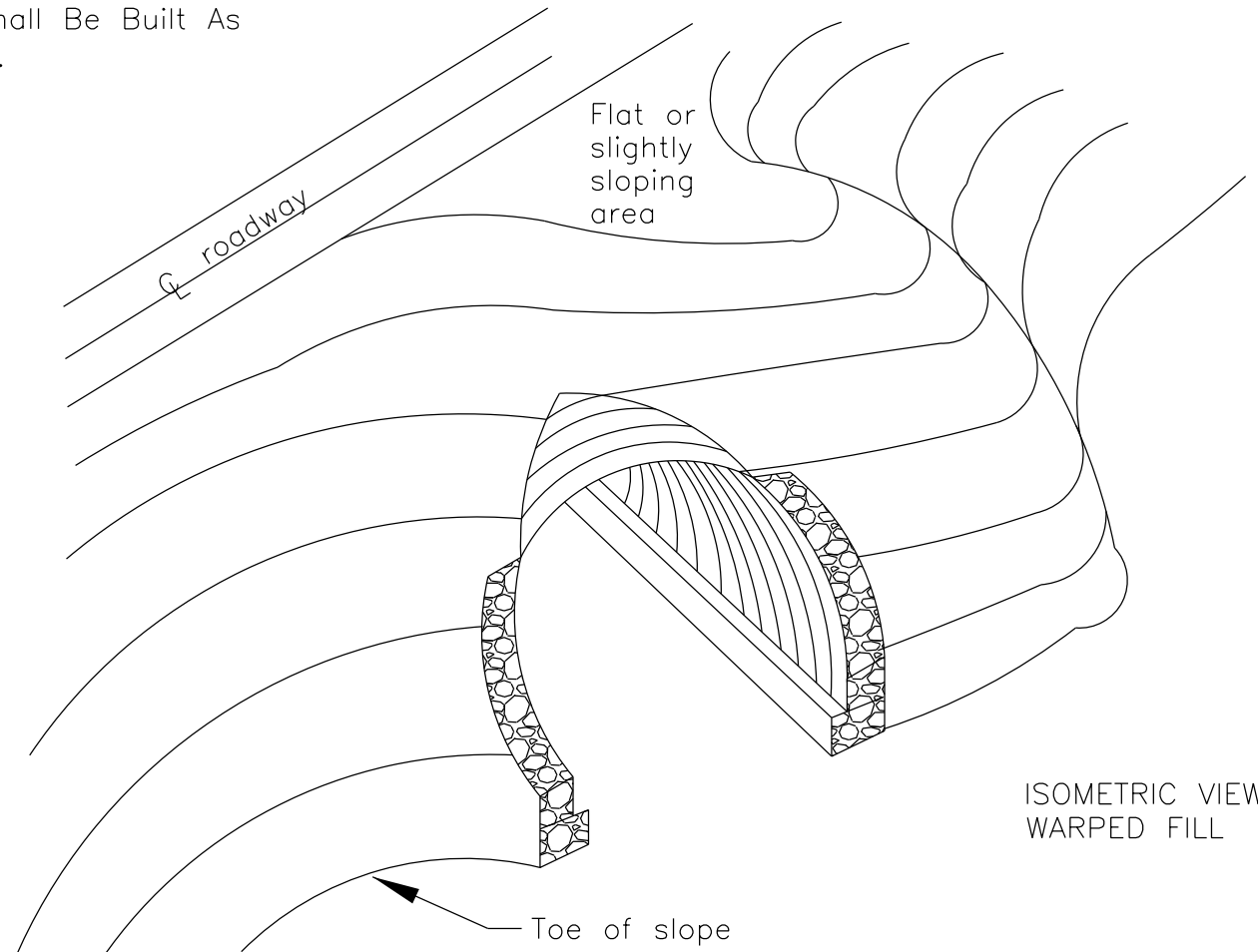


FURROW DITCH

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



STRUCTURE SKEW DIAGRAM



PIPE SKEWS TO THE EMBANKMENT (TYP.)

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

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

STANDARD PIPE INSTALLATION  
AND DITCH DETAILS

DRAWN BY: B.O.R. DATE: 7/12  
DESIGNED BY: B.O.R. DATE: 7/12  
REVISED: 7/12 BY: Design 2  
SCALE: NTS  
FILENAME: Standard Pipe Detail  
SHEET MODEL NAME: PLOT SHEET

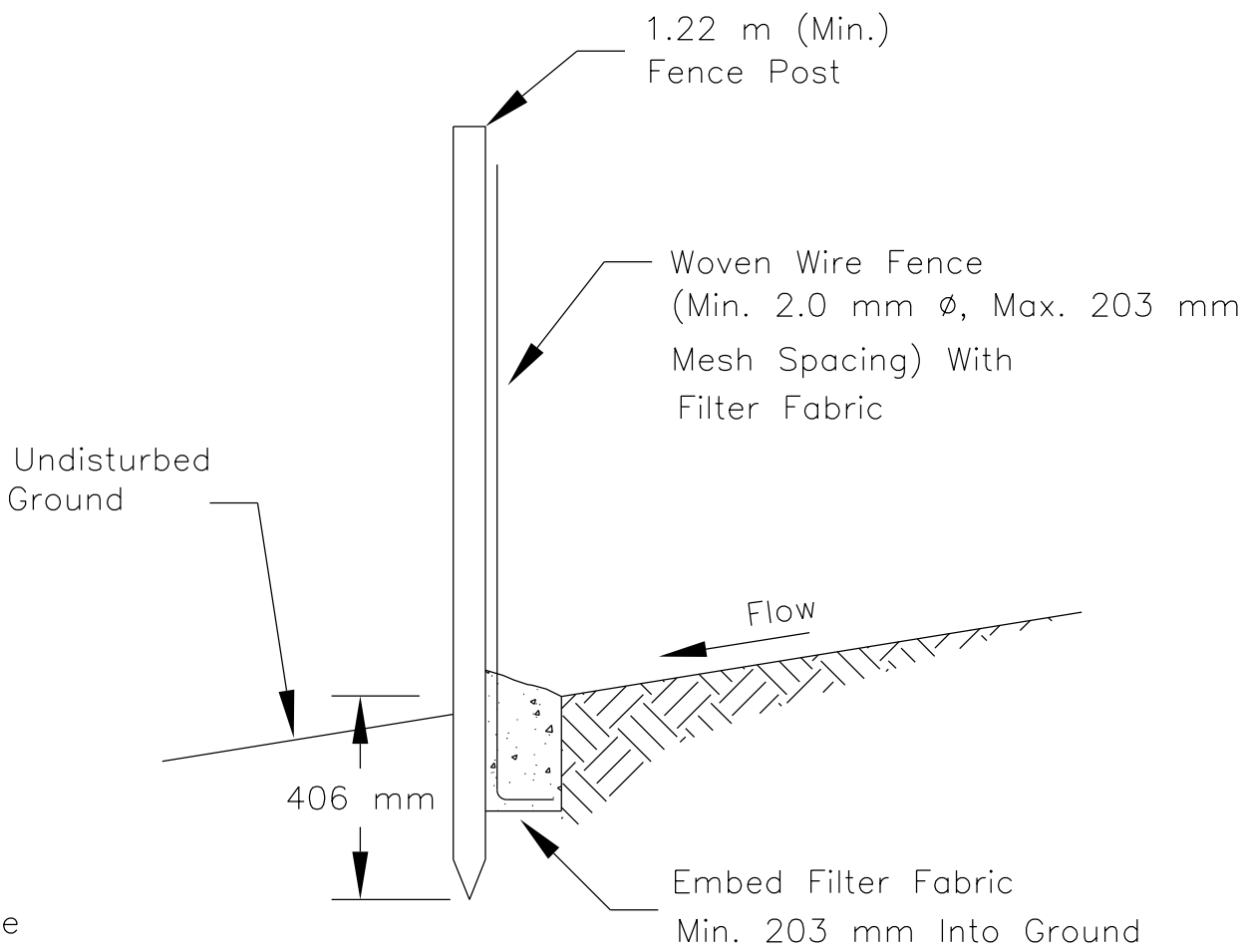




REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N8032	N8032/8065	9	10

GENERAL NOTES

1. THE CONTRACTOR SHALL PREPARE AND SUBMIT A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IN FULL DETAILS FOR ALL PHASES OF THE WORK FOR REVIEW AND APPROVAL AT LEAST 14 CALENDAR DAYS BEFORE IMPLEMENTATION. THE PLAN SHALL MEET THE REQUIREMENTS HEREIN AND SECTION 157 OF THE FP-03 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 3.00 m WITH 2 mm SIZE WELDED WIRE BACK-UP FENCE.
3. WOVEN WIRE FABRIC TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 610 mm AT THE TOP AND MID-SECTION. GEOTEXTILE MATERIAL FOR SILT FENCING SHALL BE TYPE-V UNDER SUB-SECTION 714.01 OF FP-03.
4. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY 152 mm AND FOLDED. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED TO PREVENT "BULGES" DEVELOPING IN THE SILT FENCE.
5. THE SILT FENCE SHALL BE INSTALLED ALONG THE ROADWAY DITCHES, ALONG THE BOTTOM OF ALL EMBANKMENT FILLS THAT ARE WITHIN 2.0 m OF EXISTING STREAMS, CREEKS, OR WASHES, AND IN AREAS WITH HIGHLY ERODIBLE SOILS. SILT FENCES TO BE PLACED 1-2 METERS TOWARD THE R/W LINES FROM THE BASE OF FILL SLOPES 1:3 OR STEEPER IN ACCORDANCE WITH SECTION 157 OF FP-03 AND THE SUPPLEMENTAL SPECIFICATION.
6. STRAW BALES MAY BE USED AT THE TOP OF CUT BACKSLOPES AND FOR DIKES PROVIDED THEY ARE PROPERLY ANCHORED WITH STEEL FENCE POSTS OR 51x51 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 15708-1000 AND/OR 15714-0000.
8. SEDIMENT/SILT FENCING SHALL BE PLACED AT ALL LOCATIONS WHERE EMBANKMENTS HAVE SLOPE DISTANCES OF 30.0 m OR GREATER. THE SEDIMENT FENCING WILL BE PLACED AT THE TOE OF SLOPES OFFSET 1-2 METERS.
9. THE CONTRACTOR SHALL INSPECT AND MAINTAIN ALL SWPPP MEASURES WEEKLY AND AFTER EACH SIGNIFICANT STORM EVENT (I.E. 25 mm OF MOISTURE IN 24 HOURS). RECORD AS PER CLEAN WATER 402 REQUIREMENT.



SECTION A-A

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

STORMWATER POLLUTION AND  
EROSION/SEDIMENT CONTROL DETAILS

DRAWN BY: B.O.R.	DATE: 7/12
DESIGNED BY: DESIGN 2	DATE: 7/12
REVISED: 7/12	BY: DESIGN 2
SCALE: NTS	
FILENAME: Erosion Detail 1	
SHEET MODEL NAME: PLOT SHEET	



"TRACKING" WITH MACHINERY ON SANDY SOIL PROVIDES ROUGHENING WITHOUT UNDUE COMPACTION.

SPREAD STRAW MULCH (TYPICAL)

Edge Of Shoulder

Tracking using a bulldozer or other equipment that runs on cleated tracks.

Stream Bank

Existing Creek Or Wash

Flow

See Installation Detail

EROSION & SEDIMENT CONTROL FENCE  
AT DRAINAGE STRUCTURE

Sediment Traps @ Outlet Ends  
See Plan Sheet 29 of 78 for details

Edge Of Shoulder

Edge Of Pavement

Varies

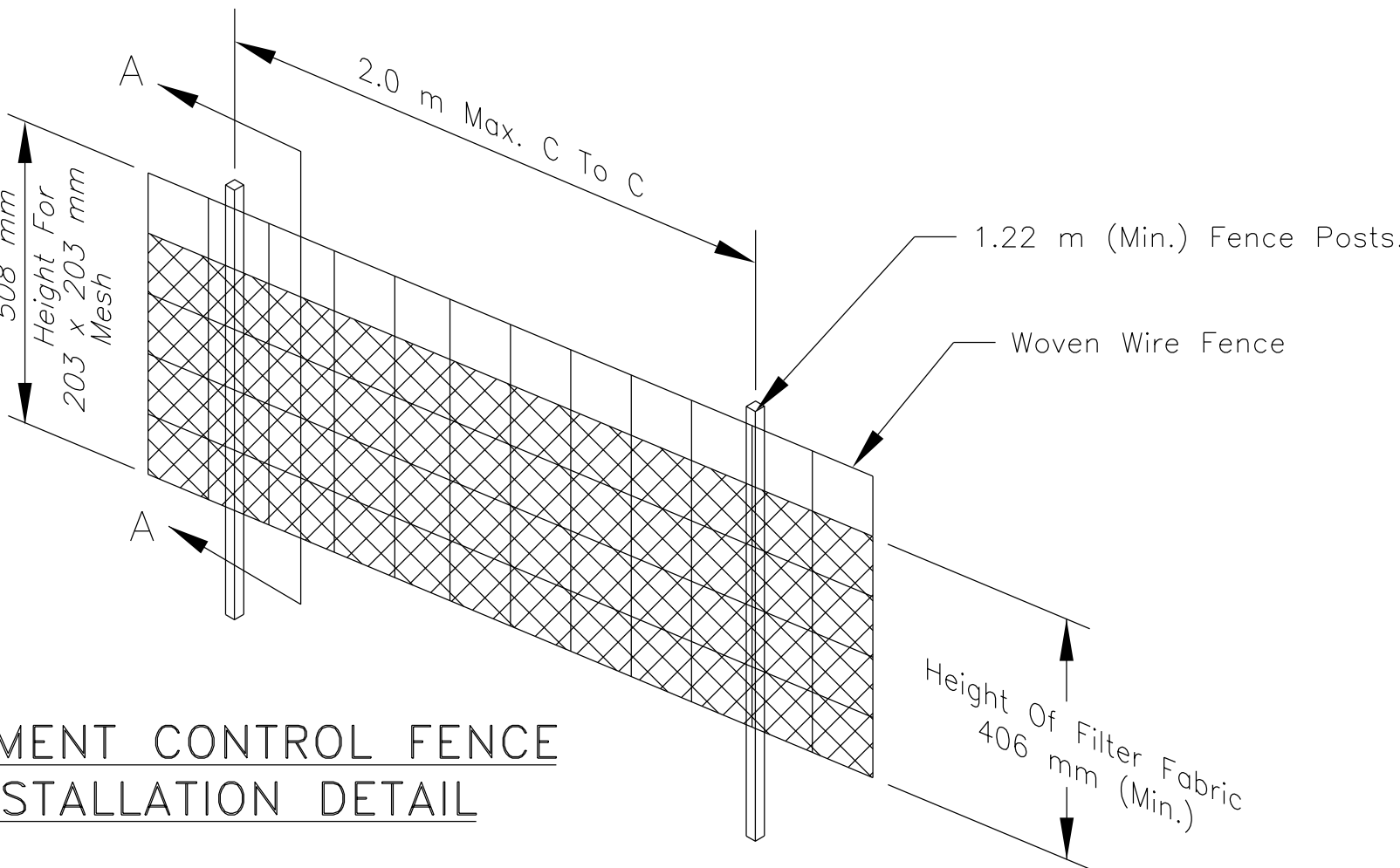
Tracking using a bulldozer or other equipment that runs on cleated tracks.

Cut Ditch

See Installation Detail

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

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



SEDIMENT CONTROL FENCE  
INSTALLATION DETAIL

Steel Fence Post Or 51 x 51 mm x 1.22 m Wood Stakes

At Bale To Bale Connections, Angle Stake Through The Bale Interface To Help Tie Bales Together

Binding Wire Or Twine

Staked and Embedded Straw Bale

offset 9.14 m

Natural Ground

102 To 152 mm Deep Trench

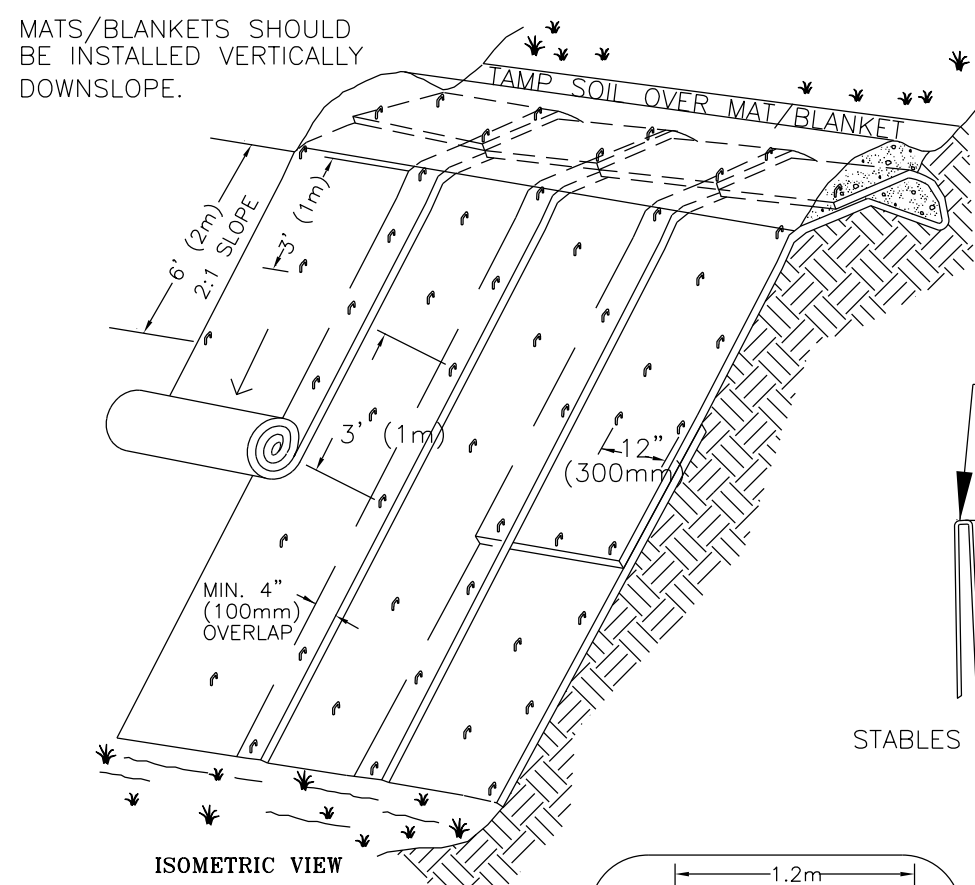
NOTE: THIS DETAIL DOES NOT REPRESENT THE CONFIGURATION, NUMBER, OR LENGTH OF BALES.

TYPICAL STRAW BALE STAKING  
AND TRENCHING DETAIL

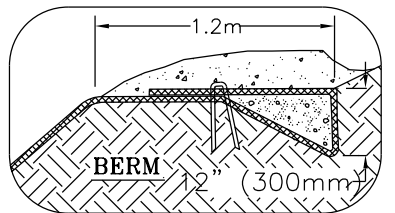
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N8032	N8032/8065	10	10

GENERAL NOTES

- SEE SHEET 28 OF 78 FOR ADDITIONAL NOTES AND DETAILS.
- THE CONTRACTOR SHALL INSTALL GEOTEXTILE FABRIC, TYPE IV, AROUND CONCRETE STRUCTURE, AS FOLLOWS:
  - CONSTRUCT FINISH GRADING AROUND STRUCTURE TO BE PLACED.
  - CUT TRENCHES FOR FOOTING OF SLAB.
  - INSTALL 1.22 m OF GEOTEXTILE FABRIC ANCHORED ON FLOOR AND TOP ALONG THE CUT FACE OF REACH AS SHOWN.
  - PLACE CONCRETE FORMS, REINFORCEMENTS, AND SEQUENT CONCRETE.
- CONSTRUCT SEDIMENT BASIN AND TRAPS, EROSION CHECKS, AND/OR FILTERS IN STRATEGIC LOCATIONS ON THE PROJECT TO FILTER STORM RUNOFF BEFORE IT LEAVES THE PROJECT CONSTRUCTION LIMITS OR ENTERS A STREAM AS SHOWN IN THE APPROVED SWPPP.
- CLEAN ALL SEDIMENT BASIN AND TRAPS OF ACCUMULATED SEDIMENT WHEN HALF FULL OF SEDIMENT.
- USE DRAIN PIPE, RIPRAP, GEOTAXIS FABRIC, OR GRASS-LINED WATERWAY FOR TEMPORARY SLOPE DRAINS TO CHANNEL RUNOFF DOWN SLOPES. CHANNEL WATER INTO SLOPE DRAINS WITH STRAW BALES, WATTLES, OR EARTH BERMS CONSTRUCTED AT THE TOP OF A CUT SLOPE. ANCHOR SLOPE DRAINS TO THE SLOPE.
- THE CONTRACTOR SHALL ADJUST THE DIMENSIONS AND/OR LOCATIONS OF TEMPORARY SEDIMENT AND EROSION CONTROL DEVICES TO FIT ACTUAL FIELD CONDITIONS.
- REMOVE AND DISPOSE OF EROSION CONTROL MEASURES WHEN THE PERMANENT EROSION CONTROL MEASURES ARE SATISFACTORILY ESTABLISHED. DRAINAGE DITCHES AND CHANNELS ARE LINED AND STABILIZED, IN ACCORDANCE WITH SECTION 157 OF FP-03.

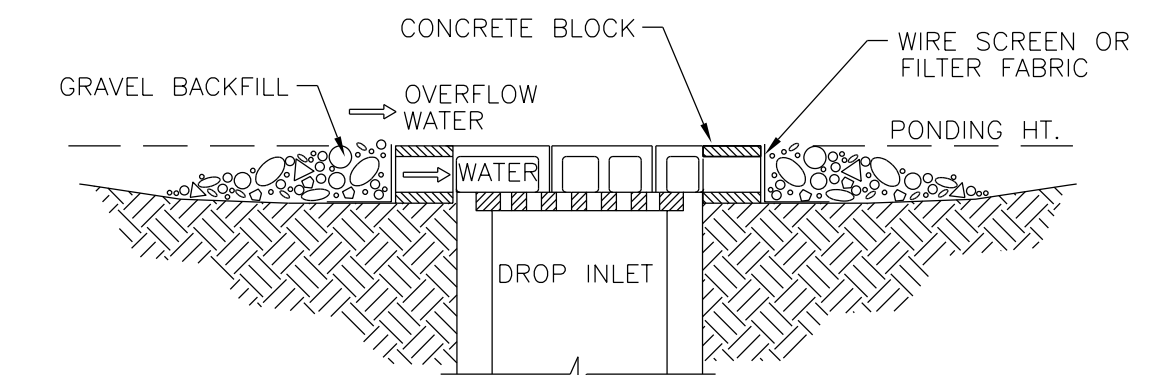
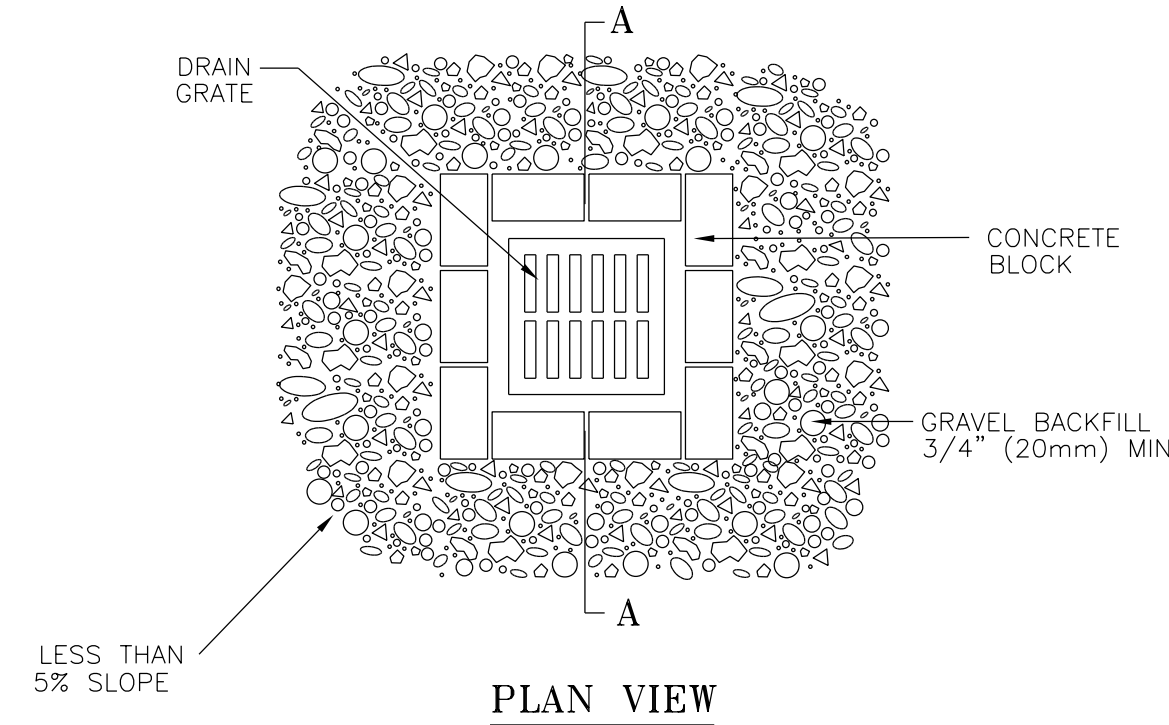


- NOTES:
- SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS. MATS/ BLANKETS SHALL HAVE GOOD SOIL CONTACT.
  - APPLY PERMANENT SEEDING BEFORE PLACING BLANKETS
  - LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.

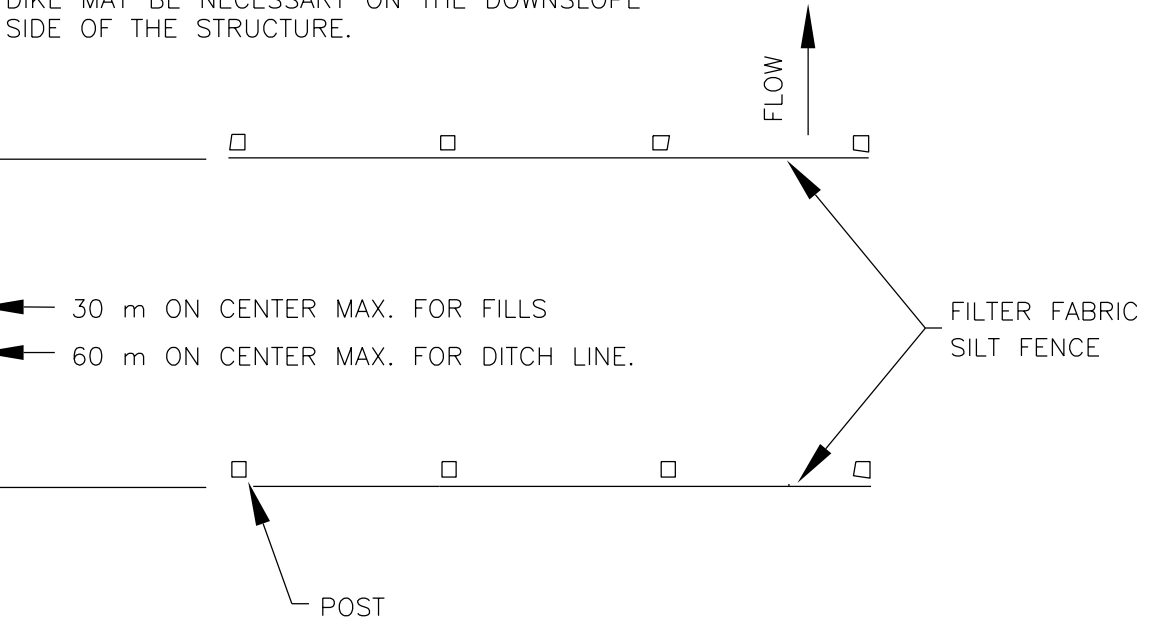


NOT TO SCALE

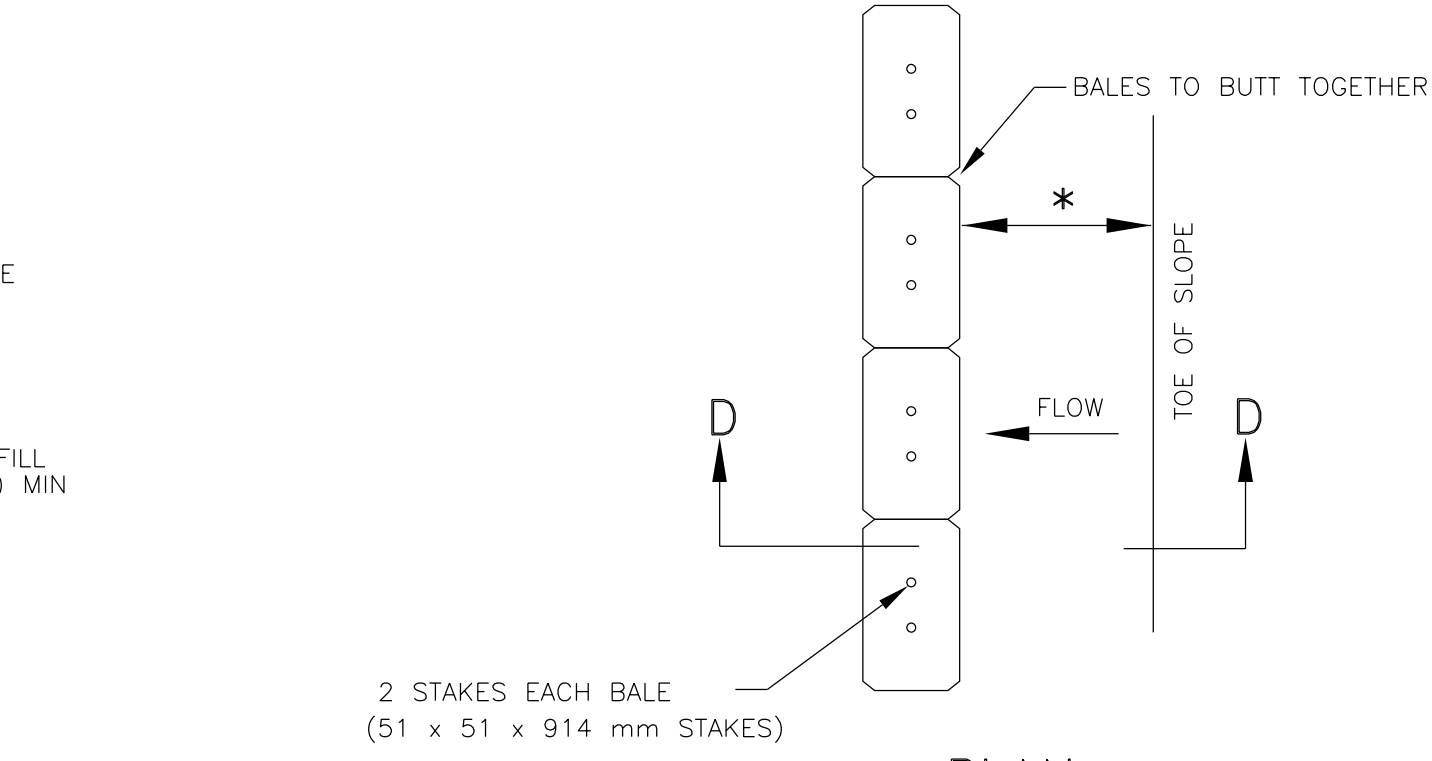
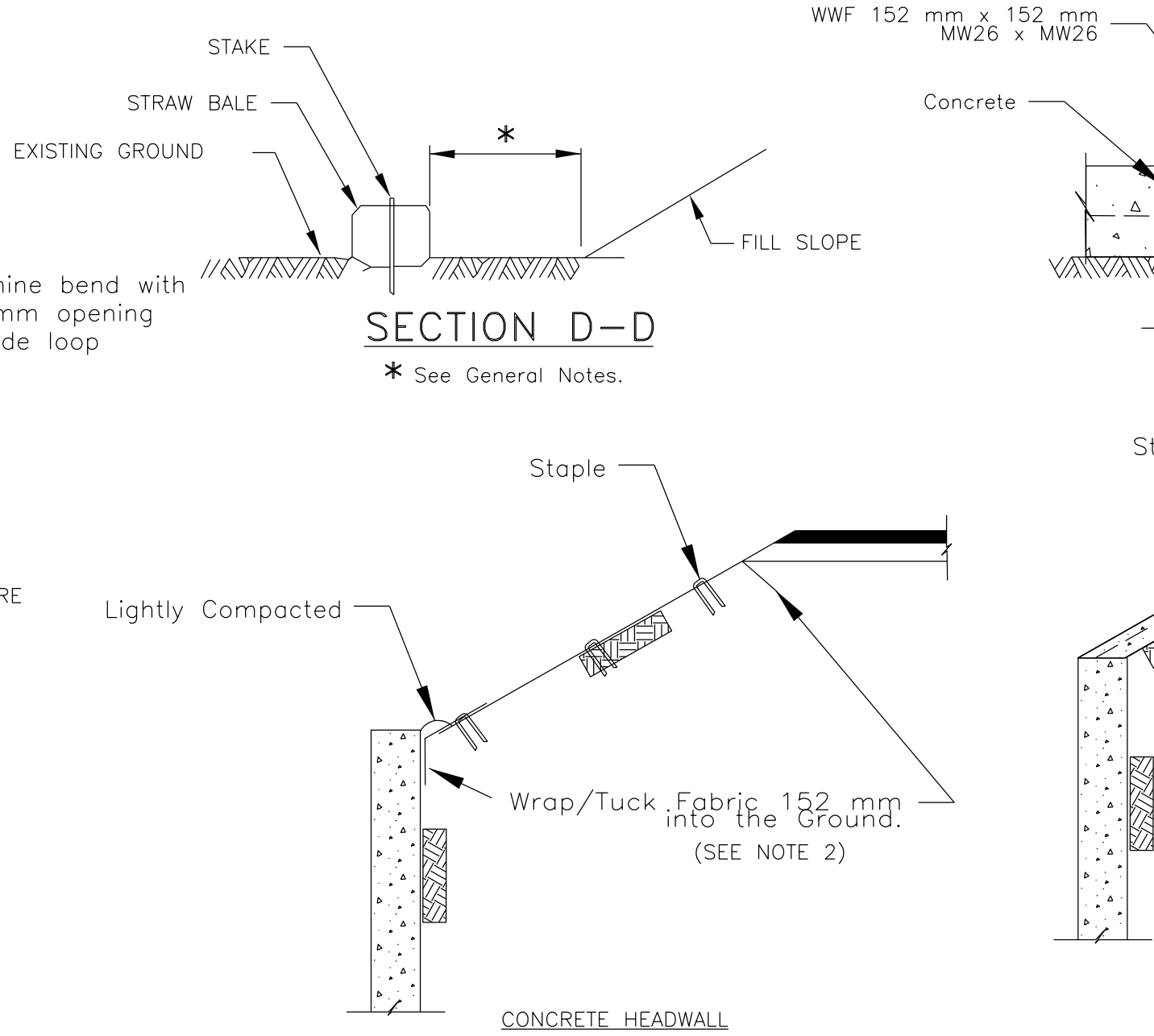
EROSION BLANKETS & TURF REINFORCEMENT MATS SLOPE INSTALLATION



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

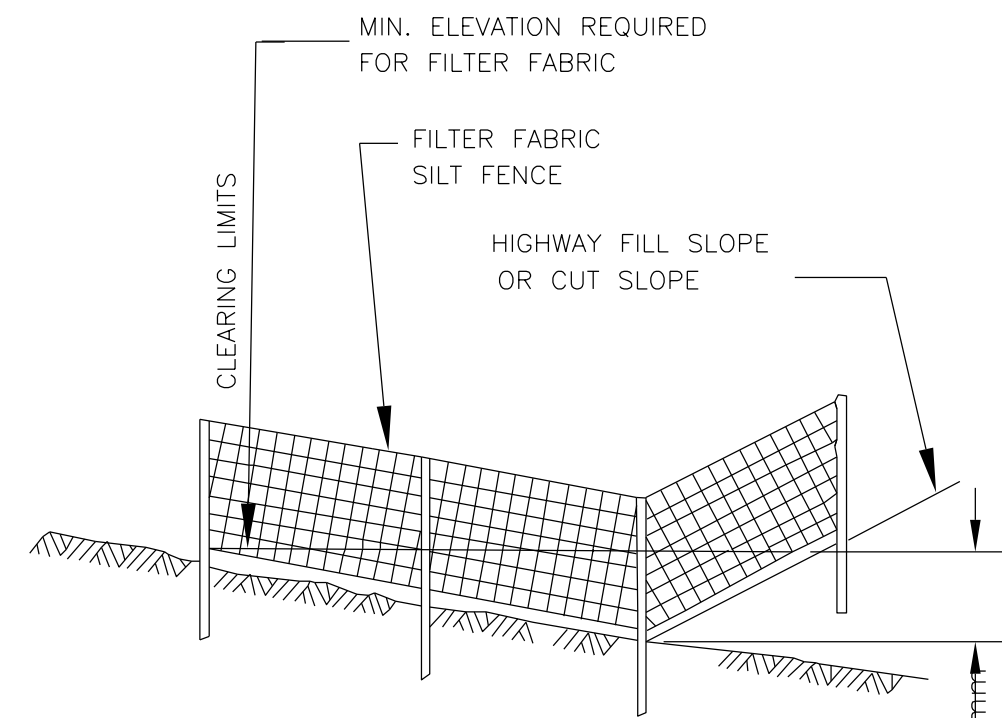
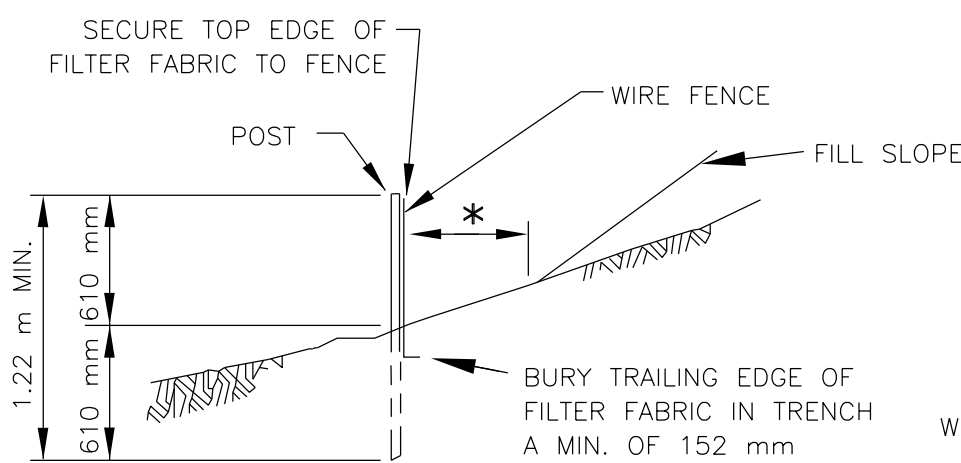


SILT FENCE EROSION CHECK

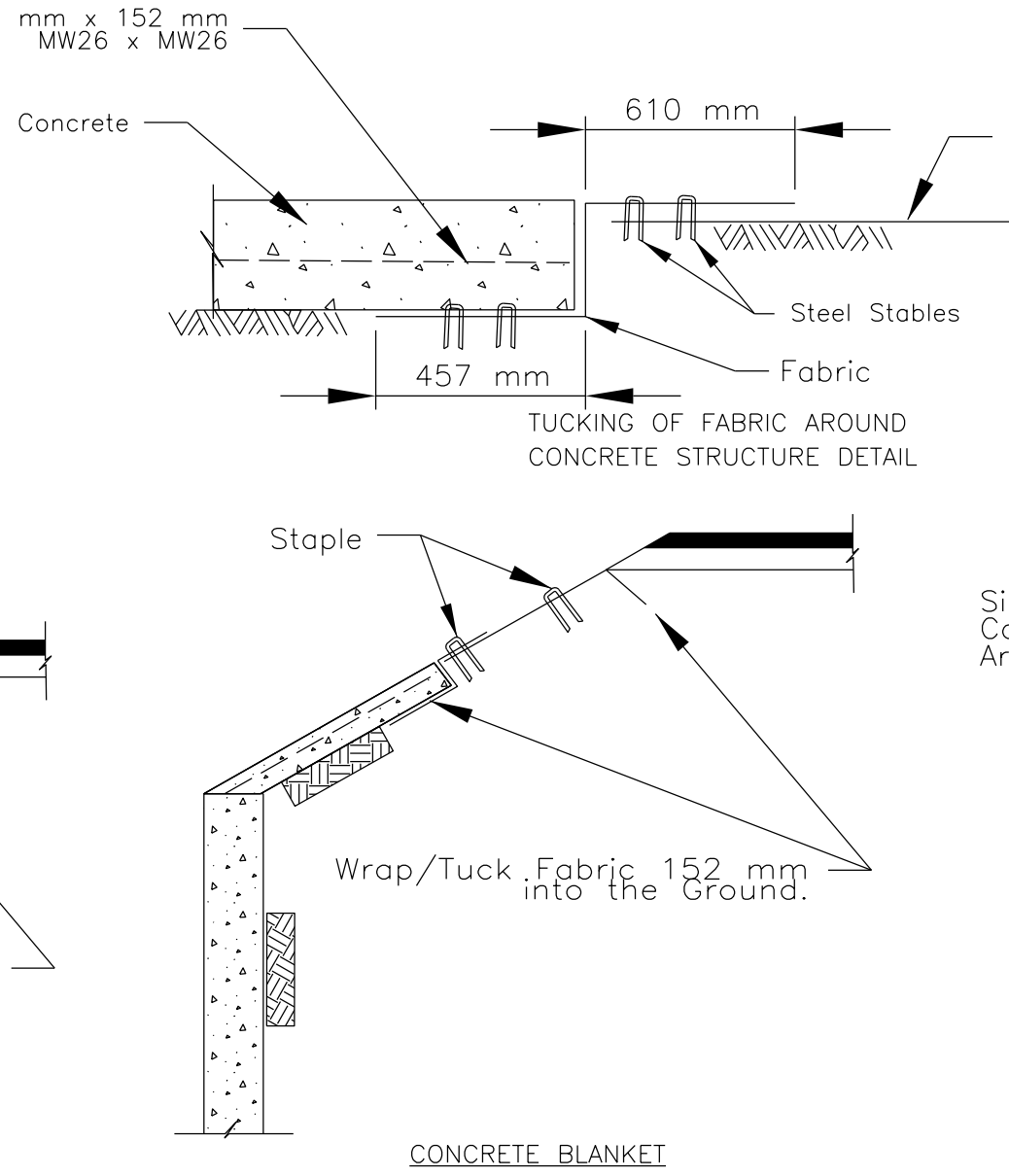


STRAW BALE SILT BARRIER

\* See general notes.

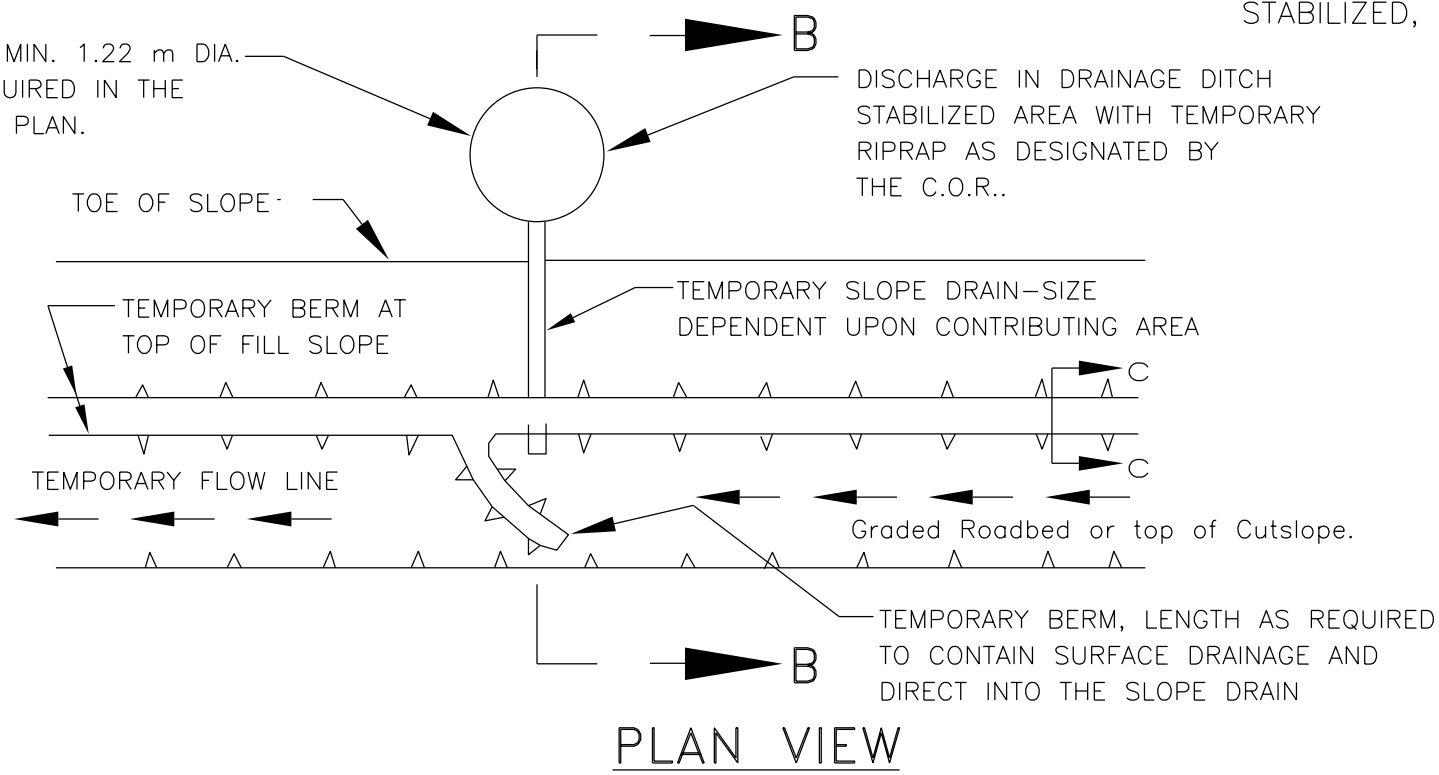


ELEVATION

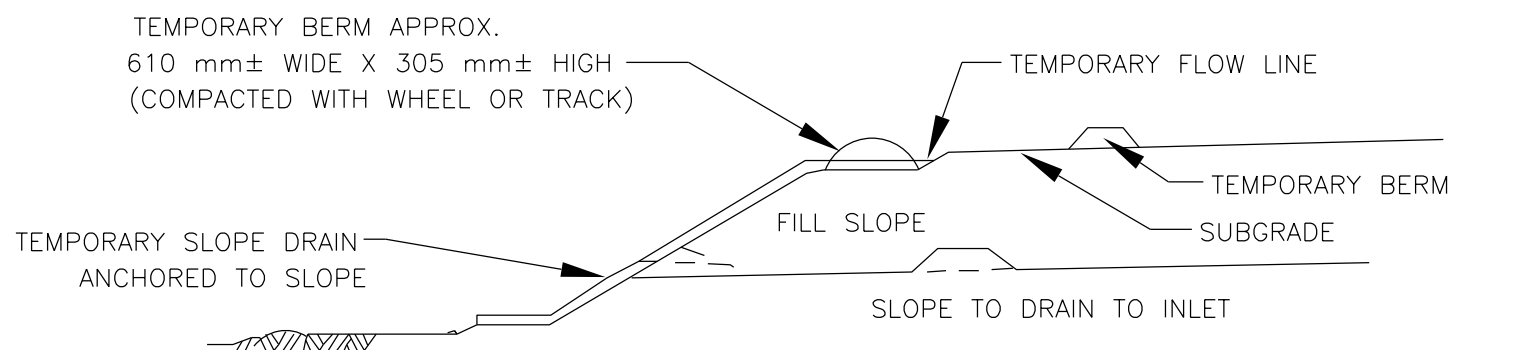


CONCRETE BLANKET

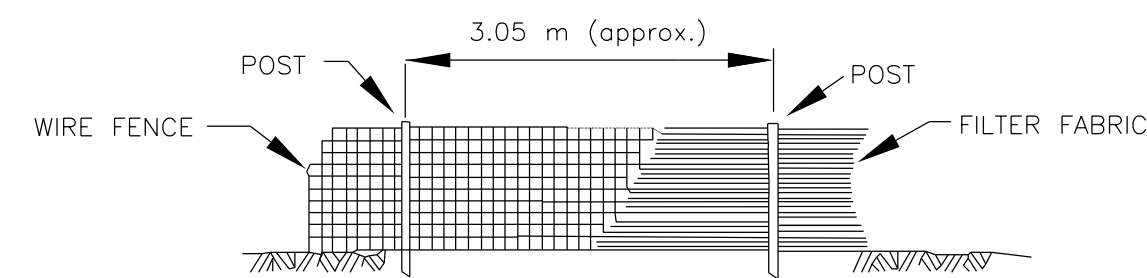
TEMPORARY CLASS I RIPRAP, MIN. 1.22 m DIA. AND 229 mm THICK, AS REQUIRED IN THE APPROVED EROSION CONTROL PLAN.



PLAN VIEW

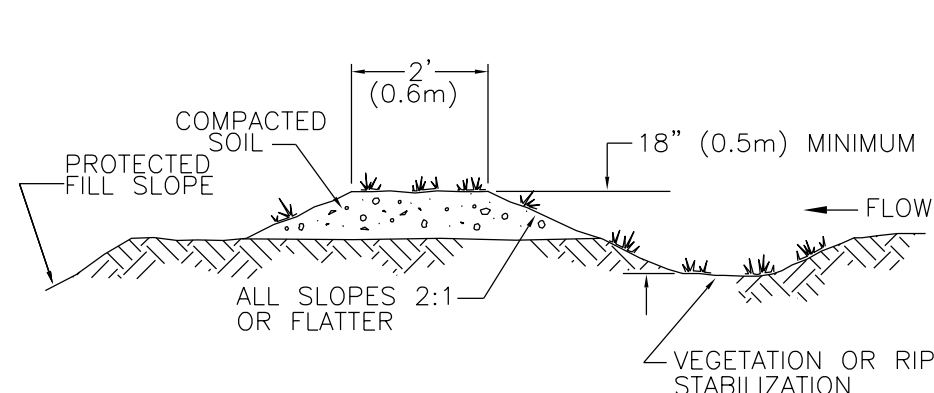


SECTION B-B



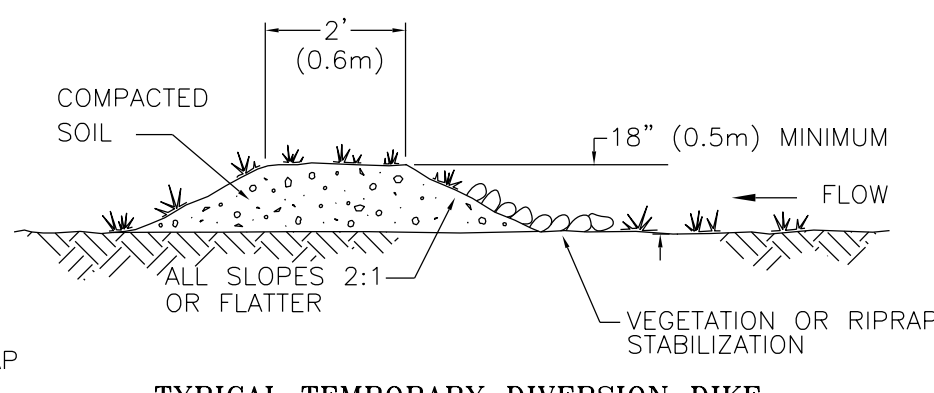
FILTER FABRIC SILT FENCE

\* See General Notes.



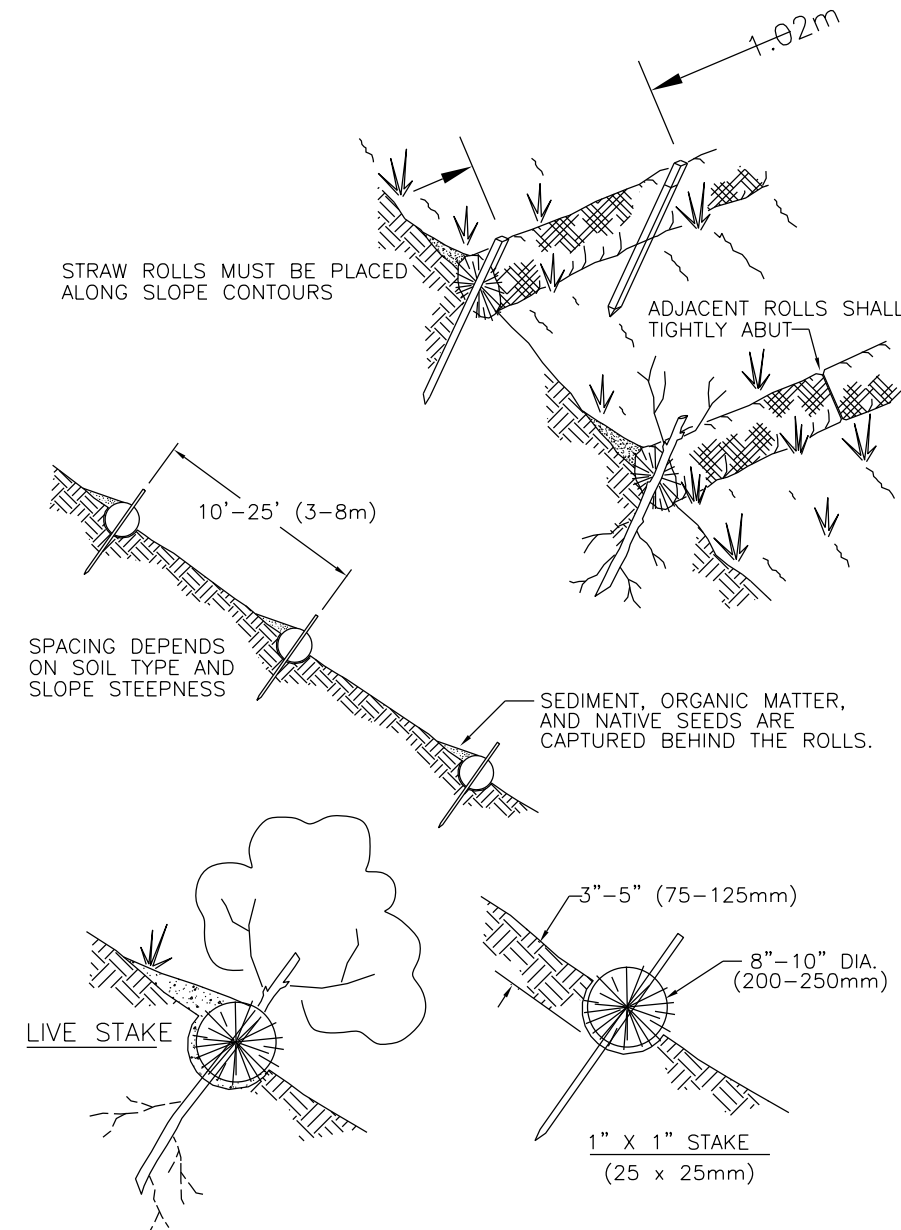
TYPICAL FILL DIVERSION

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



TYPICAL TEMPORARY DIVERSION DIKE (FOR TOP OF CUT BACK SLOPES.)

TEMPORARY DIVERSION DIKE



NOT TO SCALE

STRAW ROLLS

- NOTE:
- 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.

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

STORMWATER POLLUTION AND EROSION/SEDIMENT CONTROL DETAILS

DRAWN BY: NRODOT	DATE: 7/12
DESIGNED BY: NRODOT	DATE: 7/12
REVISED: 7/12	BY: DESIGN 2
SCALE: NTS	
FILENAME: Erosion Strd. Detail 2	
SHEET MODEL NAME: PLOT SHEET	

