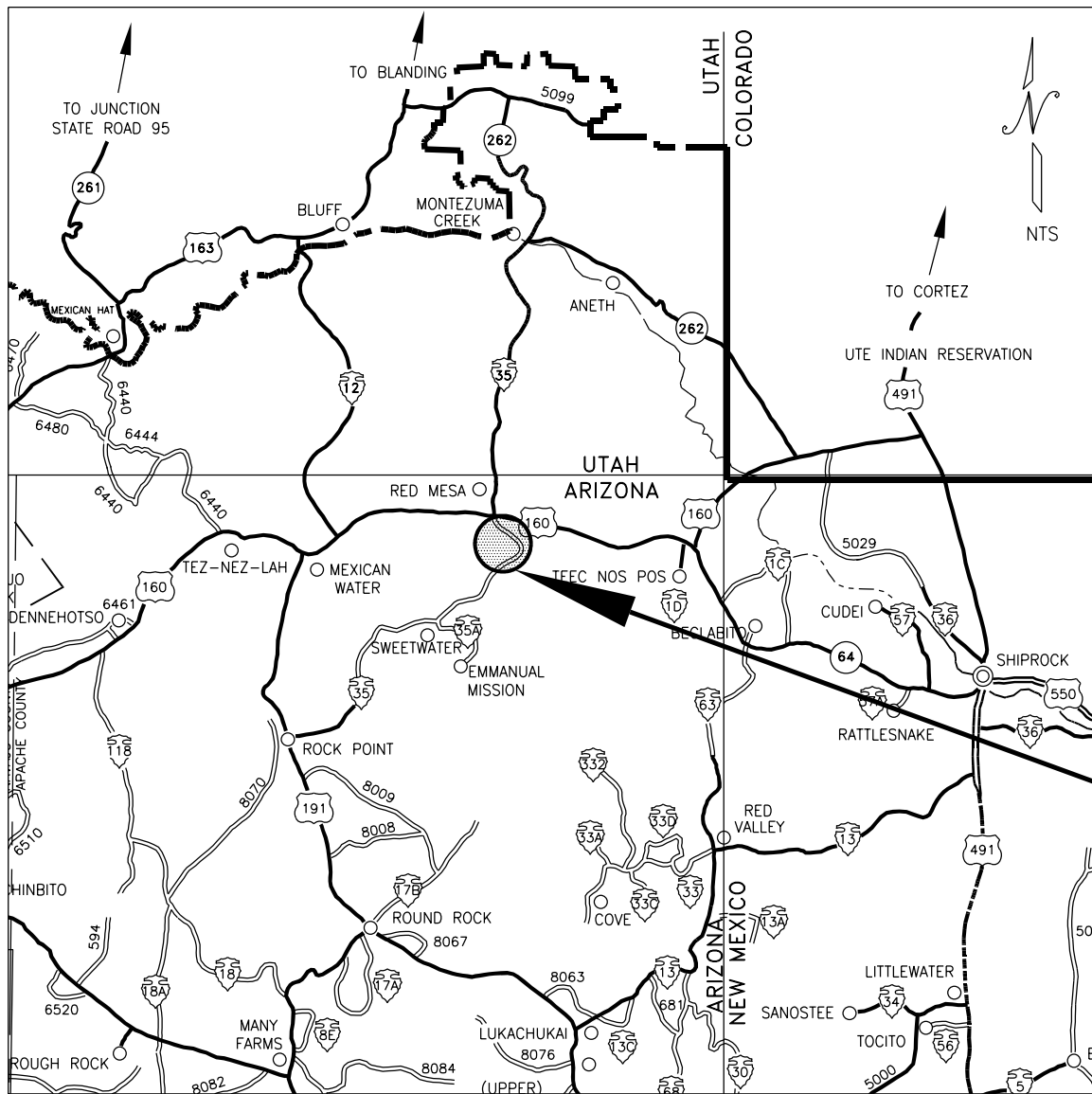


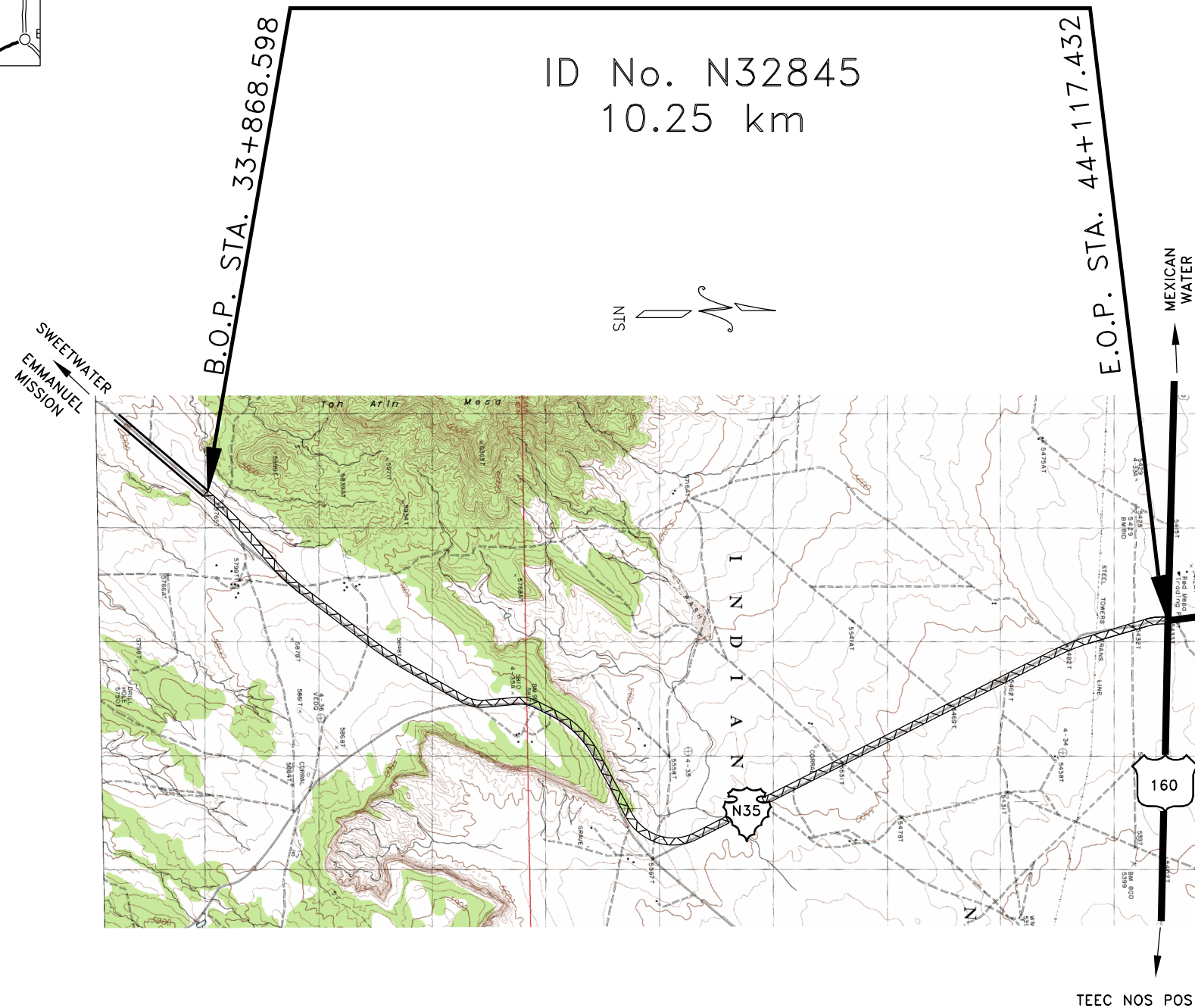
UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NAVAJO REGIONAL
ROUTE



PROJECT LOCATION
N35(9-1)4

PROJECT: N35(9-1)4 PLACEMENT OF
AGGREGATE BASE & HOT ASPHALTIC
CONCRETE PAVEMENT AND MISCELLANEOUS
CONSTRUCTION

ID No. N32845
10.25 km



LENGTH OF PROJECT		
STATION TO STATION	Meters	Km
B.O.P. STA. 33+868.598	10 248.834	10.249
E.O.P. STA. 44+117.432		
TOTAL:	10 248.834	10.249

DESIGN DATA	
DESIGN SPEED.....	100 km/h
MINIMUM RADIUS.....	395 m
MAXIMUM GRADIENT.....	7.22%
MINIMUM STOPPING SIGHT DISTANCE.....	185 m
MINIMUM PASSING SIGHT DISTANCE.....	670 m
AVERAGE DAILY TRAFFIC (2000).....	234 vpd
AVERAGE DAILY TRAFFIC (2020).....	285 vpd
MAXIMUM SUPERELEVATION (e max.).....	8.0%
DESIGN HOURLY VOLUME (DVH).....	35 vph
RIGHT-OF-WAY WIDTH, LT. & RT.....	30 m

INDEX TO SHEETS	
Sheet No.	DESCRIPTION
1	TITLE SHEET
2	TYPICAL CROSS SECTION AND GENERAL NOTES
3	ESTIMATED QUANTITIES AND HORIZONTAL ALIGNMENT TABLE
4	SUPERELEVATION AND VERTICAL ALIGNMENT TABLES
5	TEMPORARY TRAFFIC CONTROL DETAIL
6	PERMANENT PAVEMENT MARKING DETAILS
7	PERMANENT TRAFFIC CONTROL DEVICES
8	PERMANENT TRAFFIC SIGNING INSTALLATION DETAILS
9	LAP SPILCE U-CHANNEL BREAKAWAY SYSTEM DETAILS
10	STANDARD FENCING DETAILS
11	PRE-CAST CONCRETE CATTLEGUARD DETAILS
12	CATTLEGUARD WING BRACE DETAILS
13	RIGHT OF WAY MONUMENTS & MARKERS DETAILS
14	GLASS FIBER AND SQUARE STEEL TUBE POST DELINEATOR DETAILS

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.....	
PIPELINE.....	
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.....	
RIPRAP.....	
RAILROAD TRACK.....	
GAS LINE.....	
IRRIGATION LINE.....	
WELL.....	
DWELLING.....	
SCHOOL.....	
CHURCH.....	
WINDMILL.....	
RIGHT-OF-WAY MONUMENT.....	
WATER LINE MARKER.....	
CUTS AND FILLS.....	

INDIAN SERVICE	COUNTY	STATE	FEDERAL
CONSTRUCTION	PAVED	GRADED	UNIMPROVED

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NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

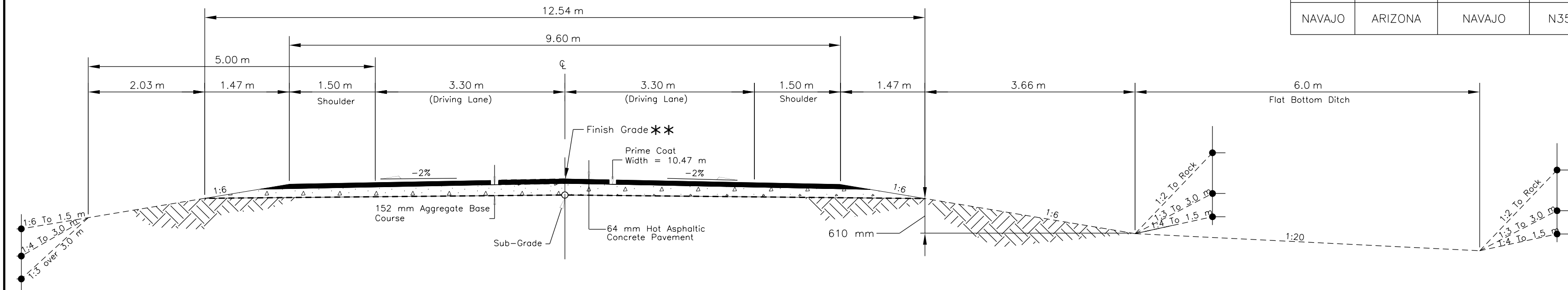
RECOMMENDED APPROVAL

AGENCY ROAD ENGINEER DATE
DIVISION MANAGER DATE
PLANNING & DESIGN BRANCH CHIEF DATE

APPROVAL

REGIONAL DIRECTOR DATE

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N35	N35(9-1)4	2	14



NEW TYPICAL CROSS SECTION
B.O.P. STA. 33+868.598 - E.O.P. STA. 44+117.432
** Finish Grade As Given On The N35(9)2 Plan & Profile Sheets.
Subgrade = Finish Grade - (64 mm HACP + 152 mm ABC)
(See Sheet 4 of 14 for details)

NOTE:
THE 40 METER LONG TRANSITION FROM THE EXISTING N35 ROADWAY TO THE BOP STA 33+868.598 (CONSTRUCTED UNDER THE N35(9)2 PROJECT), SHALL BE REGRADED AS DIRECTED BY THE COR AND SURFACED WITH 102mm OF AGGREGATE SURFACING. THIS WORK SHALL BE PAID UNDER THE AGGREGATE BID ITEM INLCUED IN THE BID SCHEDULE.

GENERAL NOTES

- 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.
- 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 AOTR, 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 AND BIA FORCE ACCOUNT EXISTING TRAFFIC CONTROL. THE CONTRACTOR SHALL ALSO SUBMIT A COPY OF HIS TRAFFIC CONTROL PLAN, RELATED TO US160 TO THE ARIZONA DEPARTMENT OF TRANSPORTATION TWO (2)-WEEKS PRIOR TO START OF CONSTRUCTION.
- 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 APPROVAL OF THE NAVAJO REGION DIVISION OF TRANSPORTATION (NRDOT) DIVISION MANAGER THROUGH THE AWARDDING OFFICIAL (AO), UNLESS OTHERWISE NOTED IN THESE PLANS OR SPECIFICATIONS.
- 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.
- THE BIDDER SHALL READ AND MAKE CAREFUL EXAMINATION OF THE PLANS, SPECIFICATIONS, QUANTITIES, MATERIAL, SURVEYING REQUIREMENTS, AND VISIT THE SITE OF THE PROPOSED CONSTRUCTION TO BECOME FAMILIAR WITH THE SITE CONDITIONS AND LIMITATIONS BEFORE MAKING A PROPOSAL. THE CONTRACTOR WILL BE RESPONSIBLE FOR ANY AND ALL ERRORS RESULTING FROM THE FAILURE TO MAKE SUCH AN EXAMINATION. ANY INFORMATION DERIVED FROM THE MAPS, PLANS, SPECIFICATIONS, PROFILES, DRAWINGS OR THE ENGINEER, SHALL NOT RELIEVE THE CONTRACTOR FROM ANY RISK OR FROM FULFILLING THE TERMS OF THE CONTRACT. THERE ARE SEVERAL AREAS WITH LIMITED WORKING ROOM WITHIN THE PROJECT RIGHT-OF-WAY, AND/OR WITH EXISTING FEATURES WITHIN OR NEAR THE PROJECT RIGHT-OF-WAY, THAT WILL REQUIRE 'SPECIAL' CONSTRUCTION PROCEDURES.
- NO WORK SHALL BE PERFORMED OR GROUND DISTURBED OUTSIDE OF THE DESIGNATED CONSTRUCTION LIMITS IN ACCORDANCE WITH SECTION 107 OF THE FP-03 WITHOUT APPROVAL BY THE NRDOT MANAGER UNLESS OTHERWISE SHOWN ON THESE PLANS. EXCEPT AT AREAS DESIGNATED ON THE N35(9)2 PLANS AS CONSTRUCTION WORK ZONES, NO WORK TO BE PERFORMED OUTSIDE THE DESIGNATED RIGHT-OF-WAY LIMITS WITHOUT WRITTEN APPROVAL FROM THE NRDOT DIVISION MANAGER.
- 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.
- IMMEDIATELY PRIOR TO PLACING AGGREGATE BASE COURSE, THE TOP 152 mm OF FINISHED SUBGRADE (INCLUDING TURNOUTS) SHALL BE CHECKED FOR COMPACTION AND GRADE. IF COMPACTION DOES NOT MEET THE MINIMUM SPECIFIED COMPACTION AND TOLERANCE REQUIREMENTS, THE SUBGRADE SHALL BE WATERED AND/OR SCARIFIED AS NEEDED AND RE-COMPACTED TO THE REQUIRED DENSITY AND PROFILE GRADE TOLERANCE. IN NO CASE SHALL ANY EMBANKMENT OR SURFACING MATERIAL BE PLACED ON FROZEN, MUDDY OR UNSTABLE NATURAL GROUND OR SUBGRADE. THIS WORK SHALL BE PAID UNDER BID ITEM 30301-6000.
- THE CONTRACTOR SHALL SAW CUT (FULL DEPTH) THE EXISTING ASPHALT PAVEMENT WHERE NEW ASPHALT IS TO TIE INTO THE EXISTING ASPHALT PAVEMENT AT THE NHA TURNOUTS. 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/AOTR. ALL SAWED PAVEMENT EDGES TO RECEIVE ASPHALT TACK COAT. THIS WORK SHALL BE INCIDENTAL TO BID ITEM 30101-2000 & 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. THIS INCLUDES CLEANING CULVERTS PLUGGED OR PARTIALLY PLUGGED DUE TO THE CONTRACTOR'S OPERATIONS.
- THE CONTRACTOR SHALL REMOVE BIA ROUTE N35 EXISTING ROADSIDE AND GOVERNMENT TEMPORARY TRAFFIC CONTROL 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/AOTR AT LEAST THREE (3) WORKING DAYS IN ADVANCE OF SUCH SIGN REMOVAL. THESE ROADSIDE SIGNS SHALL BE SALVAGED AND TAKEN TO THE FORCE ACCOUNT SECTION MAINTENANCE YARD. SIGNS NEEDED FOR SAFETY/INFORMATION SHALL BE TEMPORARILY RESET AS DIRECTED BY THE COR/AOTR. THIS WORK SHALL BE CONSIDERED AN INCIDENTAL OBLIGATION OF THE CONTRACTOR.
- AS-BUILT GRADE AND DRAINAGE CONSTRUCTION PLANS [OF PROJECT N35(9)2] MAY BE PROVIDED UPON WRITTEN REQUEST FROM THE CONTRACTOR THRU COR/AOTR.
- THE GEO-TECHNICAL REPORT FOR THIS PROJECT SHALL BE PROVIDED UPON WRITTEN REQUEST FROM THE CONTRACTOR THRU COR/AOTR.
- THE CONTRACTOR SHALL CONTINUE TO MAINTAIN THE SWPPP FEATURES INSTALLED BY THE BIA FORCE ACCOUNT SECTION UNTIL ALL WORK FOR THIS PROJECT IS COMPLETE. REMOVE ALL SWPPP FEATURES WHEN ALL SEEDING AND MULCHING IS COMPLETED. THIS WORK SHALL BE INCLUDED IN BID ITEM 30301-6000.

BASIS OF ESTIMATED QUANTITIES				
ITEM No.	DESCRIPTION	GRADE	EST. UNIT WEIGHT	APPLICATION
30101-2000	UNTREATED AGGREGATE BASE COURSE		2 244 kg/m³	152 mm Mainline & 102 mm Turnouts
40201-0500	HOT ASPHALTIC CONCRETE PAVEMENT, CLASS"B"	"B"	2 404 kg/m³	1-64 mm Lift: Mainline & Turnouts
40502-0800	ASPHALT CEMENT	PG 64-22		5.5% By Weight Of Total Mixture
41101-5000	ASPHALT PRIME COAT	MC-70	0.947 Kg/L	1.360 L/m² Estimated Application Rate

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

TYPICAL CROSS SECTION
AND GENERAL NOTES

DRAWN BY: D.O.T. DATE: 7/2009

DESIGNED BY: D.O.T. DATE: 8/2008

REVISED: 06/2012 FILENAME: N35TYP

BY: HJR SCALE: NTS

ESTIMATED QUANTITIES

ITEM No.	DESCRIPTION	QUANTITIES	UNITS	AS-BUILT
10901-0000	EXTRA & MISCELLANEOUS WORK AUTHORIZED UNDER SECTION 109.02(m)	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	6 621	Man Hr.	
30101-2000	UNTREATED AGGREGATE BASE COURSE	45 568	t	
30301-6000	ROADWAY RECONDITIONING	10.249	km	
40201-0500	HOT ASPHALTIC CONCRETE PAVEMENT, CLASS B, GRADING B	21 384	t	
40502-0800	ASPHALT BINDER, GRADE PG64-22	1 283	t	
41101-5000	ASPHALT PRIME COAT, GRADE MC-70	147	t	
60405-0000	MANHOLE ADJUSTMENT	1	EACH	
61901-1000	FENCE, BARBED-WIRE, 5 STRAND	20 858	m	
61902-0000	GATE, TYPE 1	13	EACH	
61903-0310	CATTLEGUARD, 4500 mm WITH TYPE II GATE	7	EACH	
61903-0710	CATTLEGUARD, 7000 mm WITH TYPE II GATE	6	EACH	
61903-1000	CATTLEGUARD, 9000 mm WITHOUT GATE	3	EACH	
62101-0000	RIGHT-OF-WAY MONUMENT	38	EACH	
62102-0000	RIGHT-OF-WAY MARKERS	38	EACH	
62510-1000	SEEDING, DRY METHOD	30.46	ha	
63302-0002	SIGN INSTALLATION, 1 POST & HARDWARE: 3.35 kg/m	12.42	m ²	
63302-0003	SIGN INSTALLATION, 1 POST & HARDWARE: 4.10 kg/m	3.84	m ²	
63302-0010	SIGN INSTALLATION, 2 POSTS & HARDWARE: 2.98 kg/m	30.86	m ²	
63302-0011	SIGN INSTALLATION, 2 POSTS & HARDWARE: 3.35 kg/m	2.57	m ²	
63302-0012	SIGN INSTALLATION, 2 POSTS & HARDWARE: 4.10 kg/m	2.04	m ²	
63309-0010	DELINEATOR, TYPE GLASS FIBER, TYPE "1a"	36	EACH	
63309-0020	DELINEATOR, TYPE GLASS FIBER, TYPE "1b"	99	EACH	
63401-1510	PAVEMENT MARKINGS, TYPE "H", SOLID YELLOW	7 381	m	
63401-1520	PAVEMENT MARKINGS, TYPE "H", SOLID WHITE	19 985	m	
63401-1610	PAVEMENT MARKINGS, TYPE "H", BROKEN YELLOW	7 647	m	
63405-3260	PAVEMENT MARKINGS, "STOP BAR". SOLID WHITE, TYPE "H"	10	Each	
63501-0000	TEMPORARY TRAFFIC CONTROL	ALL REQ'D	LUMP SUM	
63509-1000	FLAGGER	2800	MAN HOUR	

TURNOUTS

STATION	LOC.	SIZE ✱	TYPE	REMARKS
34+977.000	RT.	7.0 m Wide x 18.29 m	A	N5046 Access Road, Remove Exist. 914 mm CSPC, Install New 610 mm CSPC
35+187.000	LT.	7.0 m Wide x 18.29 m	A	Install New 610 mm CSPC
35+641.000	LT.	7.0 m Wide x 18.29 m	A	Install New 610 mm CSPC
35+890.000	LT.	4.5 m Wide x 19.10 m	S	Install New 610 mm CSPC
36+740.000	LT.	4.5 m Wide x 18.29 m	A	Install New 610 mm CSPC
36+850.000	RT.	9.1 m Wide x 18.29 m	A	Remove Exist. 610 mm CSPC, Install New 610 mm CSPC
37+700.000	RT.	4.5 m Wide x 19.10 m	S	No CSPC
38+943.000	RT.	9.1 m Wide x 18.29 m	A	N5049 Access Road, Install New 610 mm CSPC
39+577.500	LT.	4.5 m Wide x 19.10 m	S	Install New 610 mm CSPC
40+987.500	LT.	7.0 m Wide x 18.29 m	A	No CSPC
41+023.700	RT.	4.5 m Wide x 18.29 m	A	No CSPC
42+337.500	RT.	4.5 m Wide x 18.29 m	A	Install New 610 mm CSPC
43+223.000	LT.	7.0 m Wide x 18.29 m	A	No CSPC
43+400.000	RT.	4.5 m Wide x 18.29 m	A	Install New 610 mm CSPC
43+835.000	RT.	7.0 m Wide x 19.10 m	S	No CSPC
44+009.000	LT.	8.3 m Wide x 38.01 m	S	No Cattleguard. Install New 610 mm CSPC, NHA Acess
44+082.510	LT.	8.3 m Wide x 31.65 m	S	No Cattleguard. Install New 610 mm CSPC, NHA Access

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

SURFACING QUANTITIES

LOCATION	ITEM No. 30101-2000	ITEM No. 40201-0500	ITEM No. 40502-0800	ITEM No. 41101-5000
33+868.598 - 44+117.432	44 103.00	20 693.00	1 241.60	141.50
7 - 4.50 m WIDE TURNOUT	447.86	202.23	11.90	1.61
6 - 7.00 m WIDE TURNOUT	512.76	242.40	14.40	1.86
2 - 8.30 m WIDE TURNOUT	252.26	123.16	7.40	1.00
2 - 9.10 m WIDE TURNOUT	252.26	123.16	7.40	1.00
TOTAL:	45 568.14	21 383.95	1 282.70	146.97

ITEM No. 30301-6000: ROADWAY RECONDITIONING

STATION TO STATION	LENGTH (m)	LENGTH (km)
33+868.598 - 44+117.432	10 248.834	10.249
TOTAL:	10.249	

ITEM No. 60405-0000: MANHOLE ADJUSTMENT

STATION	LOCATION	QUANTITY	DESCRIPTION
44+082.500	1.6 m LT.	1	EXISTING SEWER MANHOLE, ADJUST TO GRADE
TOTAL:	1		

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

STATION TO STATION	LOCATION	LENGTH (m)
33+868.598 - 44+117.432	RT.	10 248.834
33+868.598 - 43+975.000	LEFT	10 106.402
VARIABLES	4500 mm Cattleguard With Gate	- 68.46
VARIABLES	7000 mm Cattleguard With Gate	- 62.66
VARIABLES	9000 mm Cattleguard Without Gate	- 18.96
7- 4.27 m Steel Gate	VARIABLES LEFT	- 29.89
6- 4.27 m Steel Gate	VARIABLES RT.	- 25.62
33+868.598 & 44+117.432	B.O.P. & E.O.P. Centerline	+ 101.04
SUB-TOTAL:		20 250.69
3% Added To Account For Terrain Slope		+ 607.52
GRAND-TOTAL:		20 858.21

✱✱FROM STATION 39+200 LT. TO STATION 39+300 LT., THE ROW FENCING SHALL BE SET AT 23m LT. TO CLEAR ARCHAEOLOGICAL SITE. THE FENCE SHALL BE TAPERED 15 METERS AT BOTH ENDS OF THIS FENCE CONSTRUCTION.

ITEM No. 61902-0000: GATE, TYPE I

STATION	LOC.	DESCRIPTION
34+740.00	RT.	Livestock Crossing Access Gate At Right-Of-Way Line.
34+740.00	LT.	Livestock Crossing Access Gate At Right-Of-Way Line.
35+631.00	RT.	Livestock Crossing Access Gate At Right-Of-Way Line.
35+631.00	LT.	Livestock Crossing Access Gate At Right-Of-Way Line.
36+400.00	LT.	Utility Access Gate At Right-Of-Way Line.
37+210.00	RT.	Livestock Crossing Access Gate At Right-Of-Way Line.
37+210.00	LT.	Livestock Crossing Access Gate At Right-Of-Way Line.
42+530.00	RT.	Livestock Crossing Access Gate At Right-Of-Way Line.
42+530.00	LT.	Livestock Crossing Access Gate At Right-Of-Way Line.
43+485.00	RT.	Utility Access Gate At Right-Of-Way Line.
43+505.00	LT.	Utility Access Gate At Right-Of-Way Line.
43+835.00	RT.	Livestock Crossing Access Gate At Right-Of-Way Line.
43+855.00	LT.	Livestock Crossing Access Gate At Right-Of-Way Line.
TOTAL:	13	

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

STATION	LOC.	TURNOUT SIZE (WxL) Δ	DESCRIPTION	CSPC SIZE
35+890.00	LT.	4.5 x 19.76	Install 2-Unit Cattleguard w/Type II Gate	1-610 mm x 9.14 m
36+740.00	LT.	4.5 x 19.76	Install 2-Unit Cattleguard w/Type II Gate	1-610 mm x 9.14 m
37+700.00	RT.	4.5 x 20.81	Install 2-Unit Cattleguard w/Type II Gate	N/A
39+577.50	LT.	4.5 x 20.81	Install 2-Unit Cattleguard w/Type II Gate	1-610 mm x 9.14 m
41+023.70	RT.	4.5 x 19.76	Install 2-Unit Cattleguard w/Type II Gate	N/A
42+337.00	RT.	4.5 x 19.76	Install 2-Unit Cattleguard w/Type II Gate	1-610 mm x 9.14 m
43+400.00	RT.	4.5 x 19.76	Install 2-Unit Cattleguard w/Type II Gate	1-610 mm x 9.14 m
TOTAL:	7			

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

STATION	LOC.	TURNOUT SIZE (WxL) Δ	DESCRIPTION	CSPC SIZE
34+977.00	RT.	7.0 x 19.76	Install 3-Unit Cattleguard W/Type II Gate	1-610 mm x 10.98 m
35+187.00	LT.	7.0 x 19.76	Install 3-Unit Cattleguard W/Type II Gate	1-610 mm x 10.98 m
35+641.00	LT.	7.0 x 20.81	Install 3-Unit Cattleguard Only.	1-610 mm x 10.98 m
40+987.50	LT.	7.0 x 19.76	Install 3-Unit Cattleguard W/Type II Gate	N/A
43+223.00	LT.	7.0 x 19.76	Install 3-Unit Cattleguard W/Type II Gate	N/A
43+835.00	RT.	7.0 x 20.81	Install 3-Unit Cattleguard Only.	N/A
TOTAL:	6			

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

STATION	LOC.	TURNOUT SIZE (WxL) Δ	DESCRIPTION	CSPC SIZE
33+868.59	CL	N/A	Install 4-Unit Cattleguard At B.O.P.	N/A
36+850.00	RT.	9.1 x 19.76	Install 4-Unit Cattleguard	1-610 mm x 13.42 m
38+943.00	RT.	9.1 x 19.76	Install 4-Unit Cattleguard	1-610 mm x 13.42 m
TOTAL:	3			

Δ Length Of Turnout Is To Inside Of Cattleguard And Does Not Include Cattleguard, Aggregate Surfacing Beyond The Cattleguard, Or Additional Tie-in Length Required.

ITEM No. 63309-0020: DELINEATORS, GLASS FIBER, TYPE "1B"

STATION	LOC.	63309 REQ'D	STATION	LOC.	63309 REQ'D	STATION	LOC.	63309 REQ'D	STATION	LOC.	63309 REQ'D
33+919.151	LT.	1	36+296.958	RT.	1	PT 37+566.289	LT.	1	39+313.780	RT.	1
PC 33+979.151	LT.	1	PT 36+372.057	RT.	1	PC 37+714.080	LT.	1	39+345.934	RT.	1
34+151.937	LT.	1	36+462.057	RT.	1	37+762.119	LT.	1	39+378.089	RT.	1
34+238.329	LT.	1	36+552.057	RT.	1	37+810.158	LT.	1	39+410.244	RT.	1
34+324.722	LT.	1	36+642.057	RT.	1	37+858.198	LT.	1	39+474.553	RT.	1
34+411.115	LT.	1	36+709.642	RT.	1	37+906.237	LT.	1	39+506.707	RT.	1
PT 34+497.508	LT.	1	36+799.642	RT.	1	37+954.276	LT.	1	PT 39+538.862	RT.	1
PC 34+824.967	RT.	1	36+896.964	RT.	1	38+002.315	LT.	1	39+605.862	RT.	1
34+883.614	RT.	1	36+927.286	RT.	1	38+050.354	LT.	1	39+695.862	RT.	1
34+942.261	RT.	1	36+957.608	RT.	1	38+098.393	LT.	1	42+829.307	LT.	1
35+000.908	RT.	1	36+987.930	RT.	1	38+146.433	LT.	1	43+009.307	LT.	1
35+059.555	RT.	1	37+018.251	RT.	1	38+194.472	LT.	1	PC 43+099.307	LT.	1
35+118.202	RT.	1	37+048.573	RT.	1	PT 38+242.511	LT.	1	43+152.397	LT.	1
PT 35+176.849	RT.	1	37+078.895	RT.	1	38+616.615	RT.	1	43+205.488	LT.	1
35+266.849	RT.	1	PT 37+109.217	RT.	1	38+706.615	RT.	1	43+258.578	LT.	1
35+356.849	RT.	1	37+176.217	RT.	1	38+796.615	RT.	1	43+311.668	LT.	1
35+446.849	RT.	1	37+278.352	LT.	1	PC 38+863.615	RT.	1	43+364.759	LT.	1
35+651.461	RT.	1	PC 37+345.352	LT.	1	38+927.924	RT.	1	PT 43+417.849	LT.	1
35+741.461	RT.	1	37+372.969	LT.	1	38+992.233	RT.	1	43+507.849	LT.	1
35+831.461	RT.	1	37+400.586	LT.	1	39+056.543	RT.	1	43+597.849	LT.	1
PC 35+921.461	RT.	1	37+428.203	LT.	1	39+120.852	RT.	1	43+700.221	LT.	1
35+996.560	RT.	1	37+455.821	LT.	1	39+153.007	RT.	1	43+790.221	LT.	1
36+071.660	RT.	1	37+483.438	LT.	1	39+185.161	RT.	1	43+880.221	LT.	1
36+146.759	RT.	1	37+511.055	LT.	1	39+217.316	RT.	1	PC 43+955.221	LT.	1
36+221.858	RT.	1	37+538.672	LT.	1	39+249.470	RT.	1	SUBTOTAL:	24	
SUBTOTAL:	25		SUBTOTAL:	25		SUBTOTAL:	25		TOTAL:	99	

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N35	N35(9-1)4	3	14

Alignment Name: N35(9)2 Δ Δ

Description								
POINT TYPE	POINT NO.	STATION	NORTHING+	EASTING+	RADIUS	LENGTH	DELTA / THETA	ROTATION DIRECTION
POB	1	33+868.598	652972.897	284778.543				
PC	12	33+979.151	653056.542	284850.832				
PI		34+238.806	653252.996	285020.615	3492.758	518.356	8'30"12"	Right
CC	13		650772.696	287493.446				
PT	14	34+497.508	653422.186	285217.581				
PC	15	34+824.967	653635.557	285465.981				
PI		35+001.506	653750.589	285599.897	1746.379	351.882	11'32'41"	Left
CC	16		654960.302	284328.048				
PT	17	35+176.849	653890.094	285708.083				
PC	18	35+921.461	654478.506	286164.392				
PI		36+147.072	654656.79	286302.65	3492.758	450.597	7'23'30"	Left
CC	19		656618.922	283404.323				
PT	20	36+372.057	654851.379	286416.823				
PC	21	36+866.642	655277.958	286667.112				
PI		36+991.891	655385.985	286730.495	395	242.575	35'11'10"	Left
CC	22		655477.851	286326.425				
PT	23	37+109.217	655510.797	286720.048				
PC	24	37+345.352	655746.109	286700.353				
PI		37+458.794	655859.156	286690.891	395	220.937	32'02'51"	Right
CC	25		655779.055	287093.977				
PT	26	37+566.289	655959.996	286742.856				
PC	27	37+714.080	656091.369	286810.556				
PI		37+986.666	656333.674	286935.421	873.19	528.432	34'40'26"	Right
CC	28		655691.38	287586.745				
PT	29	38+242.511	656461.91	287175.959				
PC	30	38+863.615	656754.103	287724.04				
PI		39+289.649	656954.528	288099.986	436.841	675.247	88'33'54"	Left
CC	31		657139.585	287518.531				
PT	32	39+538.862	657335.375	287909.039				
PC	33	43+099.307	660518.184	286313.263				
PI		43+259.021	660660.958	286241.68	1746.379	318.542	10'27'03"	Right
CC	34		661300.903	287874.413				
PT	35	43+417.849	660814.348	286197.182				
PC	36	43+955.221	661330.443	286047.466				
PI		44+037.424	661409.391	286024.564	513.557	163.024	18'11'17"	Right
CC	37		661473.524	286540.689				
FOP		44+117.432	661490.732	286027.421				
PT	38	44+118.244	661491.544	286027.448				
POE	11	44+147.187	661520.469	286028.464				

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N35	N35(9-1)4	4	14

SUPERELEVATION TABLE

CURVE	Section1 Centerline-LEOP Type: Linear		Super Control Line	Section1 Centerline-REOP Type: Linear	
	STATION	CROSS SLOPE	POINT TYPE	STATION	CROSS SLOPE
C1	33+560.288	-2.00%	Normal Crown	33+560.288	-2.00%
	33+968.431	-2.00%	Runoff	33+968.431	-2.00%
	33+957.711	-2.00%	Normal Crown	33+957.711	-2.00%
	33+973.711	0.00%	Zero Cross Slope	33+973.711	-2.00%
	33+989.711	2.00%	Reverse Crown	33+989.711	-2.00%
	33+989.711	2.00%	Full Super	33+989.711	-2.00%
	34+486.948	2.00%	Full Super	34+486.948	-2.00%
	34+486.948	2.00%	Reverse Crown	34+486.948	-2.00%
	34+502.948	0.00%	Zero Cross Slope	34+502.948	-2.00%
	34+508.228	-2.00%	Runoff	34+508.228	-2.00%
C2	34+518.948	-2.00%	Normal Crown	34+518.948	-2.00%
			Normal Crown	34+797.051	-2.00%
	34+808.218	-2.00%	Runoff	34+808.218	-2.00%
	34+813.718	-2.00%	Zero Cross Slope	34+813.718	0.00%
	34+830.384	-2.00%	Normal Crown	34+830.384	2.00%
	34+838.718	-3.00%	Full Super	34+838.718	3.00%
	35+163.100	-3.00%	Full Super	35+163.100	3.00%
	35+171.433	-2.00%	Normal Crown	35+171.433	2.00%
	35+188.100	-2.00%	Zero Cross Slope	35+188.100	0.00%
	35+193.600	-2.00%	Runoff	35+193.600	-2.00%
C3	35+204.766	-2.00%	Normal Crown	35+204.766	-2.00%
			Normal Crown	35+900.021	-2.00%
	35+910.741	-2.00%	Runoff	35+910.741	-2.00%
	35+916.021	-2.00%	Zero Cross Slope	35+916.021	0.00%
	35+932.021	-2.00%	Normal Crown	35+932.021	2.00%
	35+932.021	-2.00%	Full Super	35+932.021	2.00%
	36+361.498	-2.00%	Full Super	36+361.498	2.00%
	36+361.498	-2.00%	Normal Crown	36+361.498	2.00%
	36+377.498	-2.00%	Zero Cross Slope	36+377.498	0.00%
	36+382.778	-2.00%	Runoff	36+382.778	-2.00%
C4	36+393.498	-2.00%	Normal Crown	36+393.498	-2.00%
			Normal Crown	36+812.205	-2.00%
	36+823.092	-2.00%	Runoff	36+823.092	-2.00%
	36+828.455	-2.00%	Zero Cross Slope	36+828.455	0.00%
	36+844.705	-2.00%	Normal Crown	36+844.705	2.00%
	36+893.455	-8.00%	Full Super	36+893.455	8.00%
	37+082.405	-8.00%	Full Super	37+082.405	8.00%
	37+131.155	-2.00%	Normal Crown	37+131.155	2.00%
	37+147.405	-2.00%	Zero Cross Slope	37+147.405	0.00%
	37+152.767	-2.00%	Runoff	37+152.767	-2.00%
C5	37+163.655	-2.00%	Normal Crown	37+163.655	-2.00%
	37+290.915	-2.00%	Normal Crown		
	37+301.802	-2.00%	Runoff	37+301.802	-2.00%
	37+307.165	0.00%	Zero Cross Slope	37+307.165	-2.00%
	37+323.415	2.00%	Reverse Crown	37+323.415	-2.00%
	37+372.165	8.00%	Full Super	37+372.165	-8.00%
	37+539.477	8.00%	Full Super	37+539.477	-8.00%
	37+588.227	2.00%	Reverse Crown	37+588.227	-2.00%
	37+604.477	0.00%	Zero Cross Slope	37+604.477	-2.00%
	37+609.840	-2.00%	Runoff	37+609.840	-2.00%
C6	37+620.727	-2.00%	Normal Crown	37+620.727	-2.00%
	37+673.682	-2.00%	Normal Crown		
	37+684.600	-2.00%	Runoff	37+684.600	-2.00%
	37+689.978	0.00%	Zero Cross Slope	37+689.978	-2.00%
	37+706.274	2.00%	Reverse Crown	37+706.274	-2.00%
	37+733.978	5.40%	Full Super	37+733.978	-5.40%
	38+222.614	5.40%	Full Super	38+222.614	-5.40%
	38+250.318	2.00%	Reverse Crown	38+250.318	-2.00%
	38+266.614	0.00%	Zero Cross Slope	38+266.614	-2.00%
	38+271.992	-2.00%	Runoff	38+271.992	-2.00%
C7	38+282.910	-2.00%	Normal Crown	38+282.910	-2.00%
			Normal Crown	38+809.177	-2.00%
	38+820.065	-2.00%	Runoff	38+820.065	-2.00%
	38+825.427	-2.00%	Zero Cross Slope	38+825.427	0.00%
	38+841.677	-2.00%	Normal Crown	38+841.677	2.00%
	38+890.427	-8.00%	Full Super	38+890.427	8.00%
	39+512.049	-8.00%	Full Super	39+512.049	8.00%
	39+560.799	-2.00%	Normal Crown	39+560.799	2.00%
	39+577.049	-2.00%	Zero Cross Slope	39+577.049	0.00%
	39+582.412	-2.00%	Runoff	39+582.412	-2.00%
C8	39+593.299	-2.00%	Normal Crown	39+593.299	-2.00%
	43+071.390	-2.00%	Normal Crown		
	43+082.557	-2.00%	Runoff	43+082.557	-2.00%
	43+088.057	0.00%	Zero Cross Slope	43+088.057	-2.00%
	43+104.724	2.00%	Reverse Crown	43+104.724	-2.00%
	43+113.057	3.00%	Full Super	43+113.057	-3.00%
	43+404.099	3.00%	Full Super	43+404.099	-3.00%
	43+412.433	2.00%	Reverse Crown	43+412.433	-2.00%
	43+429.099	0.00%	Zero Cross Slope	43+429.099	-2.00%
	43+434.599	-2.00%	Runoff	43+434.599	-2.00%
C9	43+445.766	-2.00%	Normal Crown	43+445.766	-2.00%
	43+955.221	-2.00%	Normal Crown	43+955.221	-2.00%
	44+118.245	-2.00%	Normal Crown	44+118.245	-2.00%

PROJECT N35(9)2&4 – VERTICAL ALIGNMENT											
	STATION	ELEVATION		STATION	ELEVATION		STATION	ELEVATION		STATION	ELEVATION
Element: Linear			Element: Linear			Element: Linear			Element: Linear		
POB	33+868.5	1754.482	PVT	36+570.0	1783.214	PVT	39+158.5	1694.046	PVI	42+080.0	1669.160
PVI	34+200.0	1758.400	PVI	36+920.0	1778.350	PVC	39+435.0	1685.237	PVC	42+480.5	1666.599
Tangent Grade:	1.182		Tangent Grade:	-1.390		Tangent Grade:	-3.186		Tangent Grade:	-0.640	
Tangent Length:	331.402		Tangent Length:	350.000		Tangent Length:	276.500		Tangent Length:	400.500	
Element: Linear			Element: Linear			Element: Parabola			Element: Parabola		
PVI	34+200.0	1758.400	PVI	36+920.0	1778.350	PVC	39+435.0	1685.237	PVC	42+480.5	1666.599
PVC	34+555.0	1765.005	PVI	37+380.0	1773.860	PVI	39+503.0	1683.070	PVI	42+510.0	1666.410
Tangent Grade:	1.861		Tangent Grade:	-0.976		PVT	39+571.0	1682.955	PVT	42+539.5	1666.606
Tangent Length:	355.000		Tangent Length:	460.000		Length:	136.000		VLOW	42+509.4	1666.506
Element: Parabola			Element: Linear			Entrance Grade:	-3.186		Length:	59.000	
PVC	34+555.0	1765.005	PVI	37+380.0	1773.860	Exit Grade:	-0.169		Headlight Sight Distance:	187.247	
PVI	34+580.0	1765.470	PVC	37+763.5	1770.619	$r = (g_2 - g_1) / L:$	2.219		Entrance Grade:	-0.640	
PVT	34+605.0	1765.696	Tangent Grade:	-0.845		$K = l / (g_2 - g_1):$	45.073		Exit Grade:	0.665	
Length:	50.000		Tangent Length:	383.500		Middle Ordinate:	0.513		$r = (g_2 - g_1) / L:$	2.211	
Entrance Grade:	1.861					Element: Linear			$K = l / (g_2 - g_1):$	45.219	
Exit Grade:	0.906		Element: Parabola			PVT	39+571.0	1682.955	Middle Ordinate:	0.096	
$r = (g_2 - g_1) / L:$	-1.909		PVC	37+763.5	1770.619	PVI	39+900.0	1682.400	Element: Linear		
$K = l / (g_2 - g_1):$	52.382		PVI	37+845.0	1769.930	Tangent Grade:	-0.169		PVT	42+539.5	1666.606
Middle Ordinate:	-0.060		PVT	37+926.5	1766.692	Tangent Length:	329.000		PVC	43+100.5	1670.338
Element: Linear			Length:	163.000		Element: Linear			Tangent Grade:	0.665	
PVT	34+605.0	1765.696	Entrance Grade:	-0.845		PVI	39+900.0	1682.400	Tangent Length:	561.000	
PVC	35+054.5	1769.769	Exit Grade:	-3.973		PVI	40+240.0	1681.112	Element: Parabola		
Tangent Grade:	0.906		$r = (g_2 - g_1) / L:$	-1.919		PVI			PVC	43+100.5	1670.338
Tangent Length:	449.500		$K = l / (g_2 - g_1):$	52.120		Tangent Grade:	-0.379		PVI	43+200.0	1671.000
Element: Parabola			Middle Ordinate:	-0.637		Tangent Length:	340.000		PVT	43+299.5	1667.857
PVC	35+054.5	1769.769	Element: Linear			Element: Linear			VHIGH	43+135.1	1670.453
PVI	35+080.0	1770.000	PVT	37+926.5	1766.692	PVI	40+240.0	1681.112	Length:	199.000	
PVT	35+105.5	1770.520	PVC	38+161.5	1757.357	PVI	40+650.0	1681.930	Stopping Sight Distance:	381.682	
Length:	51.000		Tangent Grade:	-3.973		Tangent Grade:	0.200		Entrance Grade:	0.665	
Entrance Grade:	0.906		Tangent Length:	235.000		Tangent Length:	410.000		Exit Grade:	-3.159	
Exit Grade:	2.038		Element: Parabola			Element: Linear			$r = (g_2 - g_1) / L:$	-1.922	
$r = (g_2 - g_1) / L:$	2.220		PVC	38+161.5	1757.357	PVI	40+650.0	1681.930	$K = l / (g_2 - g_1):$	52.036	
$K = l / (g_2 - g_1):$	45.049		PVI	38+246.0	1754.000	PVC	40+979.0	1685.196	Middle Ordinate:	-0.951	
Middle Ordinate:	0.072		PVT	38+330.5	1747.899	Tangent Grade:	0.993		Element: Linear		
Element: Linear			Length:	169.000		Tangent Length:	329.000		PVT	43+299.5	1667.857
PVT	35+105.5	1770.520	Entrance Grade:	-3.973		Element: Parabola			PVC	43+573.0	1659.217
PVC	35+470.0	1777.949	Exit Grade:	-7.220		PVC			Tangent Grade:	-3.159	
Tangent Grade:	2.038		$r = (g_2 - g_1) / L:$	-1.922		PVI	40+979.0	1685.196	Tangent Length:	273.500	
Tangent Length:	364.500		$K = l / (g_2 - g_1):$	52.038		PVI	41+060.0	1686.000			
Element: Parabola			Middle Ordinate:	-0.686		PVT	41+141.0	1684.266	Element: Parabola		
PVC	35+470.0	1777.949	Element: Linear			VHIGH	41+030.3	1685.451	PVC	43+573.0	1659.217
PVI	35+500.0	1778.560	PVT	38+330.5	1747.899	Length:	162.000		PVI	43+640.0	1657.100
PVT	35+530.0	1778.824	PVC	38+774.5	1715.841	Stopping Sight Distance:	425.356		PVT	43+707.0	1656.974
Length:	60.000		Tangent Grade:	-7.220		Entrance Grade:	0.993		Length:	134.000	
Entrance Grade:	2.038		Tangent Length:	444.000		Exit Grade:	-2.141		Entrance Grade:	-3.159	
Exit Grade:	0.880		Element: Parabola			$r = (g_2 - g_1) / L:$	-1.935		Exit Grade:	-0.189	
$r = (g_2 - g_1) / L:$	-1.930		PVC	38+774.5	1715.841	$K = l / (g_2 - g_1):$	51.694		$r = (g_2 - g_1) / L:$	2.217	
$K = l / (g_2 - g_1):$	51.809		PVI	38+800.0	1714.000	Middle Ordinate:	-0.635		$K = l / (g_2 - g_1):$	45.109	
Middle Ordinate:	-0.087		PVT	38+825.5	1712.445	Element: Linear			Middle Ordinate:	0.498	
Element: Linear			Length:	51.000		PVC	41+141.0	1684.266	Element: Linear		
PVT	35+530.0	1778.824	Entrance Grade:	-7.220		PVI	41+694.0	1672.425	PVT	43+707.0	1656.974
PVI	36+100.0	1783.840	Exit Grade:	-6.098		Tangent Grade:	-2.141		POE	44+117.4	1656.200
Tangent Grade:	0.880		$r = (g_2 - g_1) / L:$	2.201		Tangent Length:	553.000		Tangent Grade:	-0.189	
Tangent Length:	570.000		$K = l / (g_2 - g_1):$	45.444		Element: Parabola			Tangent Length:	410.432	
Element: Linear			Middle Ordinate:	0.072		PVC	41+694.0	1672.425			
PVI	36+100.0	1783.840	Element: Linear			PVI	41+726.0	1671.740			
PVC	36+500.0	1783.711	PVT	38+825.5	1712.445	PVT	41+758.0	1671.507			
Tangent Grade:	-0.032		PVC	39+027.5	1700.127	Length:	64.000				
Tangent Length:	400.000		Tangent Grade:	-6.098		Entrance Grade:	-2.141				
Element: Parabola			Tangent Length:	202.000		Exit Grade:	-0.729				
PVC	36+500.0	1783.711	Element: Parabola			$r = (g_2 - g_1) / L:$	2.207				
PVI	36+535.0	1783.700	PVC	39+027.5	1700.127	$K = l / (g_2 - g_1):$	45.315				
PVT	36+570.0	1783.214	PVI	39+158.5	1694.046	Middle Ordinate:	0.113				
Length:	70.000		Length:	131.000		Element: Linear					
Entrance Grade:	-0.032		Entrance Grade:	-6.098		PVT	41+758.0	1671.507			
Exit Grade:	-1.390		Exit Grade:	-3.186		PVI	42+080.0	1669.160			
$r = (g_2 - g_1) / L:$	-1.939		Exit Grade:	-3.186		Tangent Grade:	-0.729				
$K = l / (g_2 - g_1):$	51.568		$r = (g_2 - g_1) / L:$	2.223		Tangent Length:	322.000				
Middle Ordinate:	-0.119		$K = l / (g_2 - g_1):$	44.989							
			Middle Ordinate:	0.477							

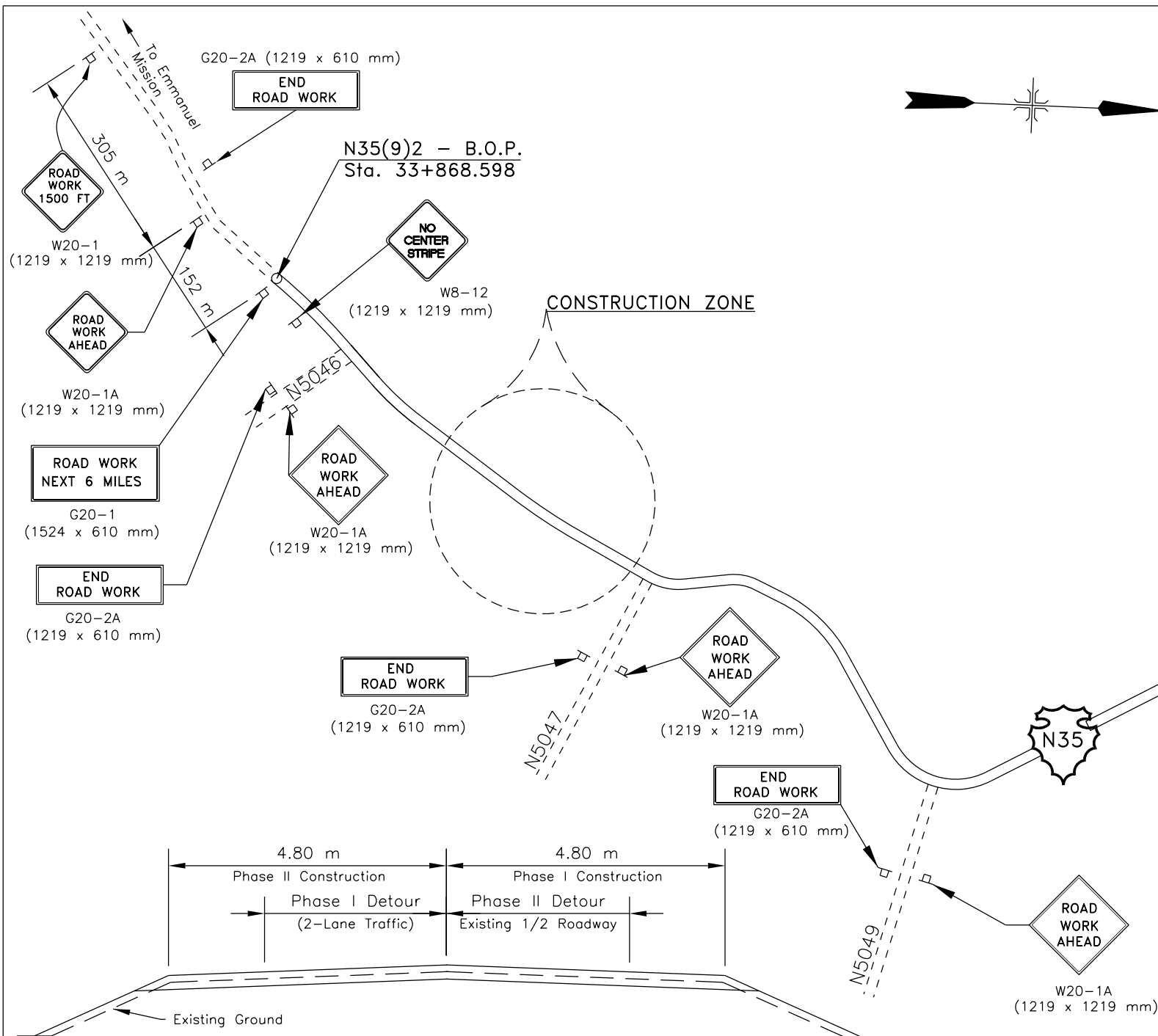
UNITED STATES
DEPARTMENT OF
BUREAU OF
NAVAJO REGIONAL OFFICE

VERTICAL

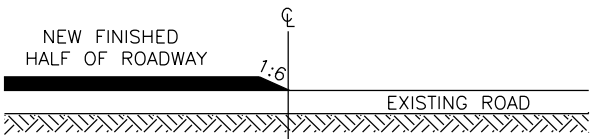
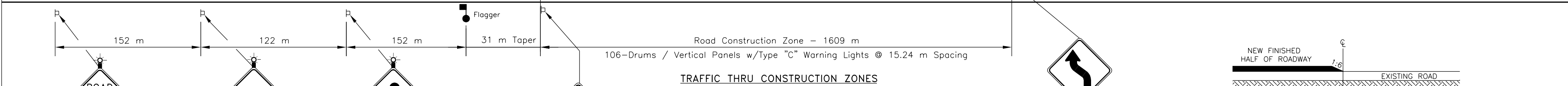
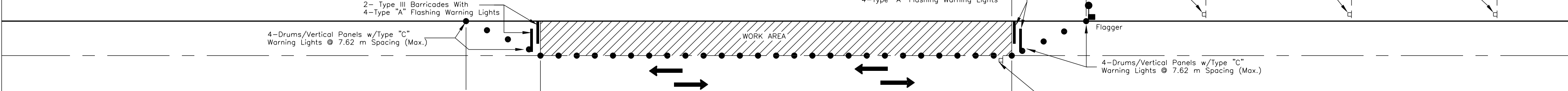
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N35	N35(9-1)4	5	14

GENERAL NOTES

- ALL TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH THE MUTCD MANUAL (LATEST EDITION AND AMENDMENTS) AND THE SUPPLEMENTAL SPECIFICATIONS FOR THIS PROJECT.
- THE TRAFFIC CONTROL DETAILS SHOWN ARE ONLY A GUIDE. 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, W20-1A, AND G20-2A SHALL BE PLACED AT THE PROJECT LIMITS AND REMAIN IN PLACE THROUGH THE DURATION OF THE PROJECT.
- FLAGGERS SHALL BE STATIONED LEFT & RIGHT AS SHOWN WHEN EQUIPMENT IS CROSSING OR WORKING WITHIN EXISTING ROADWAY PRISM OR AT DETOURS.
- AT THE END OF EACH WORKING DAY, IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE A DRIVING SURFACE FREE OF OBSTRUCTIONS AS SHOWN ON THE PHASED 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 MOVED 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 SHALL BE USED 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.
- AT LOCATIONS WHERE NEW ROAD CONSTRUCTION CROSSES EXISTING ROADWAY AND AT TIE-INS WITH EXISTING ROADS AT THE END OF THE NEW CONSTRUCTION, SPECIAL TRAFFIC CONTROL PROCEDURES SHALL BE INCLUDED IN THE CONTRACTOR'S TCP. THESE INCLUDED BUT ARE NOT NECESSARILY LIMITED TO THE TYPE III BARRICADES WITH "ROAD CLOSED"; DETOUR; SIGNS; FLAG MEN; AND/OR DRUMS.



- NOTE:
- THE CONTRACTOR MAY PAVED 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 COMPLETE UP TO THE NEW FINISH GRADES; THEN TRAFFIC SHALL BE DIRECTED TO THE NEW HALF OF ROADWAY WHILE THE OTHER (EXISTING) HALF IS PAVED.
 - THIS PHASED CONSTRUCTION SHALL BE CONSIDERED INCIDENTAL TO THE TCP AND NO ADDITIONAL PAYMENT SHALL BE MADE.
 - THE CONTRACTOR'S CONSTRUCTION SCHEDULE AND SHALL REFLECT THIS PHASED CONSTRUCTION.



FILLET DETAIL

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

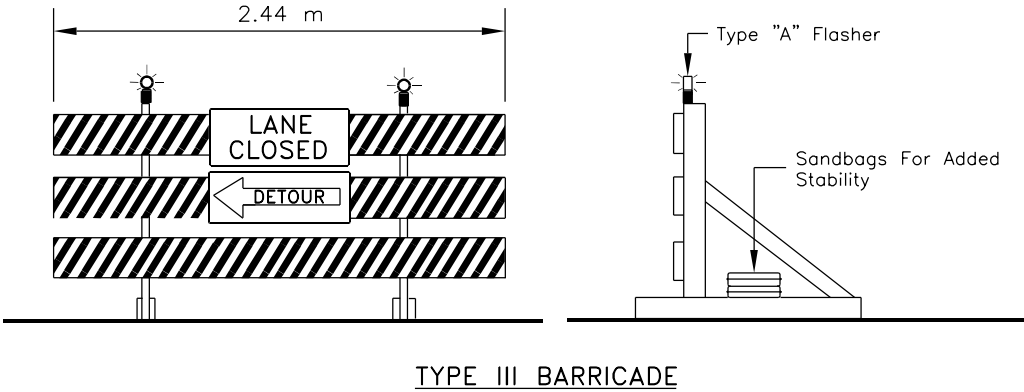
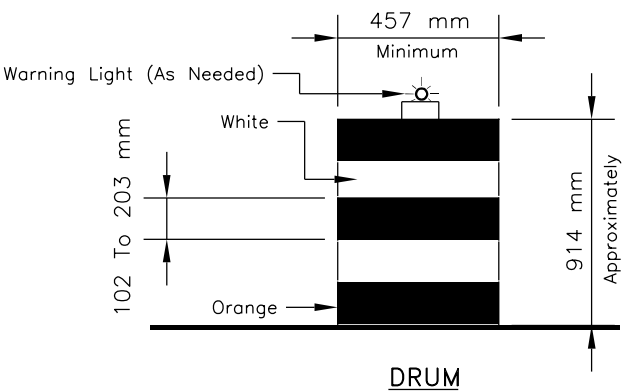
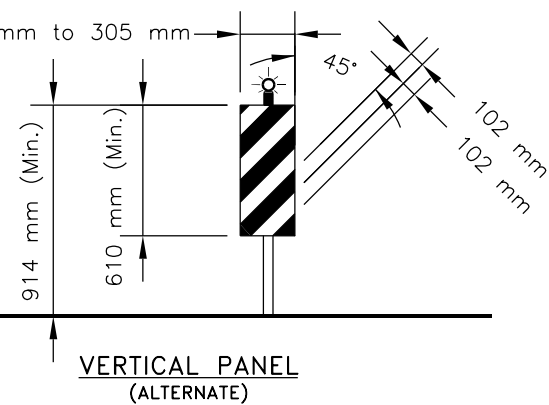
TEMPORARY TRAFFIC CONTROL DETAILS

DRAWN BY: D.O.T. DATE: 8/2009

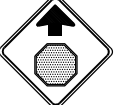
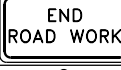
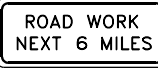
DESIGNED BY: D.O.T. DATE: 2/2009

REVISED: FILENAME: N35(9)TCP

BY: SCALE: NTS



TEMPORARY TRAFFIC CONTROL SIGNS (Minimum)

TYPE	DESCRIPTION	SIZE (mm)
R1-1		914 x 914
W3-1a		914 x 914
W20-1		1219 x 1219
W20-4		1219 x 1219
W13-1		610 x 610
W20-7a	 supplemental plate 	1219 x 1219 610 x 457
G20-2A		1219 x 610
W1-4L		762 x 762
W1-4R		762 x 762
W20-1A		1219 x 1219
G20-1		1524 x 610
W8-12		1219 x 1219

ITEM NO. 63405-3260: PAVEMENT MARKINGS, TYPE "H" STOP BAR-305mm WIDE

STATION	LOCATION	QUANTITY	DESCRIPTION
34+977.000	RT.	1	7.0 m TURNOUT
35+187.000	LT.	1	7.0 m TURNOUT
35+641.000	LT.	1	7.0 m TURNOUT
36+850.000	RT.	1	9.1 m TURNOUT
38+943.000	RT.	1	9.1 m TURNOUT
40+987.500	LT.	1	7.0 m TURNOUT
43+223.000	LT.	1	7.0 m TURNOUT
43+835.000	RT.	1	7.0 m TURNOUT
44+009.000	LT.	1	8.3 m TURNOUT
44+082.510	LT.	1	8.3 m TURNOUT
TOTAL:		10	

ITEM NO. 63401-1510: PAVEMENT MARKINGS, TYPE "H" SOLID YELLOW-102mm WIDE

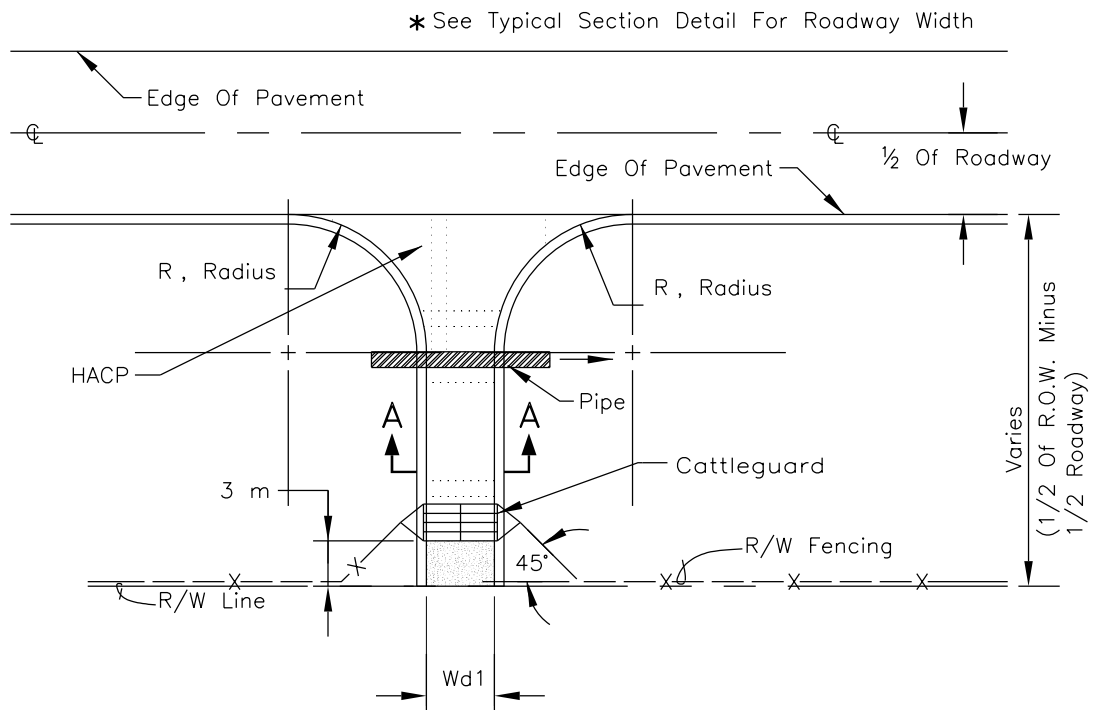
STATION TO STATION	LOCATION	LENGTH
33+868.598 - 34+180.000	DOUBLE CENTERLINE	622.804
34+180.000 - 34+580.000	CENTER RIGHT	400.000
34+580.000 - 34+740.000	CENTER LEFT	160.000
35+330.000 - 35+500.000	CENTER RIGHT	170.000
35+500.000 - 35+686.000	CENTER LEFT	186.000
35+940.000 - 36+522.000	CENTER RIGHT	582.000
36+100.000 - 36+681.000	CENTER LEFT	581.000
37+579.000 - 39+100.000	CENTER RIGHT	1 521.000
37+700.000 - 39+100.000	CENTER LEFT	1 400.000
40+785.000 - 41+110.000	CENTER RIGHT	325.000
40+960.000 - 41+326.000	CENTER LEFT	366.000
42+914.000 - 43+273.000	CENTER RIGHT	359.000
43+135.000 - 43+482.000	CENTER LEFT	347.000
43+937.000 - 44+117.432	DOUBLE CENTERLINE	360.864
TOTAL:		7 380.668

ITEM NO. 63401-1520: PAVEMENT MARKINGS, TYPE "H" SOLID WHITE-102mm WIDE

STATION TO STATION	LOCATION	LENGTH (m)
33+868.598 - 44+117.432	RT. SHOULDER	10 248.83
Minus 4 - 4.5 m T/O @ RT.: (No. x 20.73)	RT.	-82.92
Minus 2 - 7.0 m T/O @ RT.: (No. x 35.97)	RT.	-71.94
Minus 2 - 9.1 m T/O @ RT.: (No. x 38.40)	RT.	-76.80
SUBTOTAL:		10 017.17
33+868.598 - 44+117.432	LT. SHOULDER	10 248.83
Minus 3 - 4.5 m T/O @ LT.: (No. x 20.73)	LT.	-62.19
Minus 4 - 7.0 m T/O @ LT.: (No. x 35.97)	LT.	-143.88
Minus 2 - 8.3 m T/O @ LT.: (No. x 36.47)	LT.	-74.94
SUBTOTAL:		9 967.82
TOTAL:		19 985.00

ITEM NO. 63401-1610: PAVEMENT MARKINGS, TYPE "H" BROKEN YELLOW-102mm WIDE

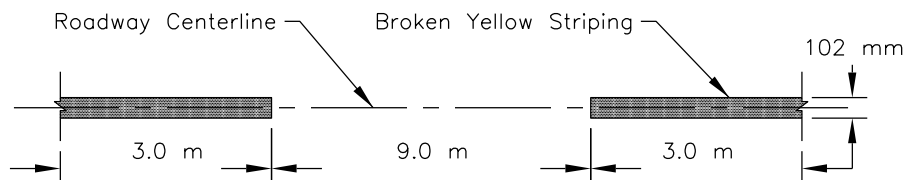
STATION TO STATION	LOCATION	LENGTH (m)
34+180.000 - 34+580.000	CENTER LEFT	400.000
34+580.000 - 34+740.000	CENTER RIGHT	160.000
34+740.000 - 35+330.000	CENTER RIGHT	590.000
35+330.000 - 35+500.000	CENTER LEFT	170.000
35+500.000 - 35+940.000	CENTER RIGHT	440.000
35+940.000 - 36+100.000	CENTER LEFT	160.000
36+522.000 - 36+681.000	CENTER RIGHT	159.000
36+681.000 - 37+579.000	CENTER RIGHT	898.000
37+579.000 - 37+700.000	CENTER LEFT	121.000
39+100.000 - 40+785.000	CENTER RIGHT	1 685.000
40+785.000 - 40+960.000	CENTER LEFT	175.000
41+110.000 - 42+914.000	CENTER RIGHT	1 804.000
42+914.000 - 43+135.000	CENTER LEFT	221.000
43+273.000 - 43+937.000	CENTER RIGHT	664.000
TOTAL:		7 647.000



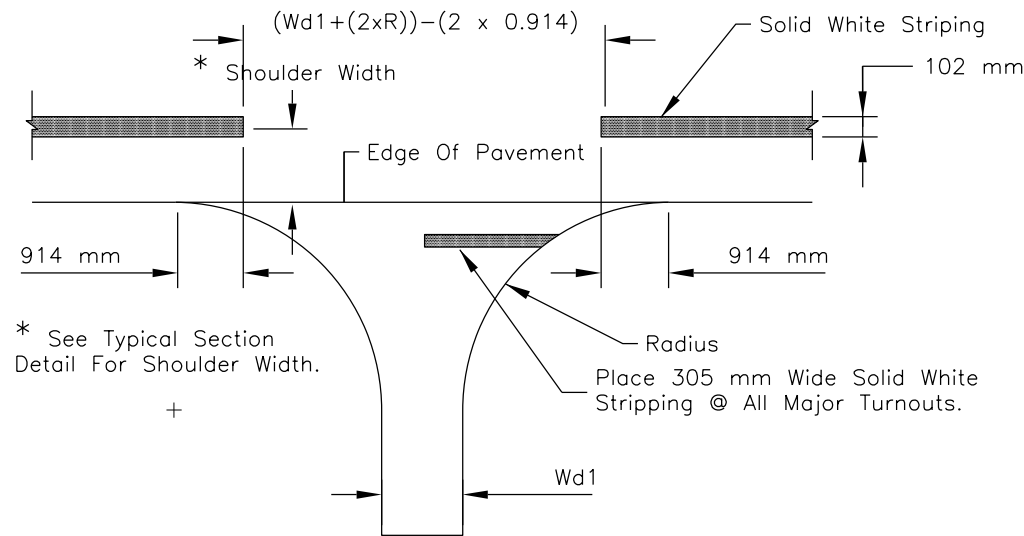
TYPICAL TYPE "A" TURNOUT

TYPE "A" TURNOUT

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



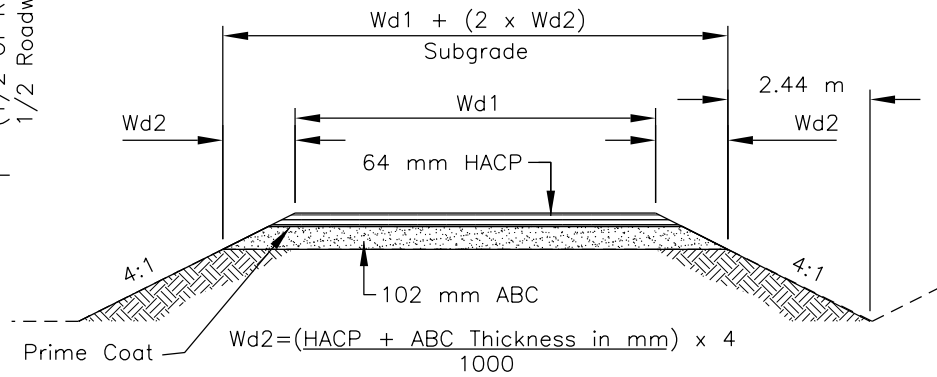
TYPICAL PAVEMENT MARKING "BROKEN YELLOW"



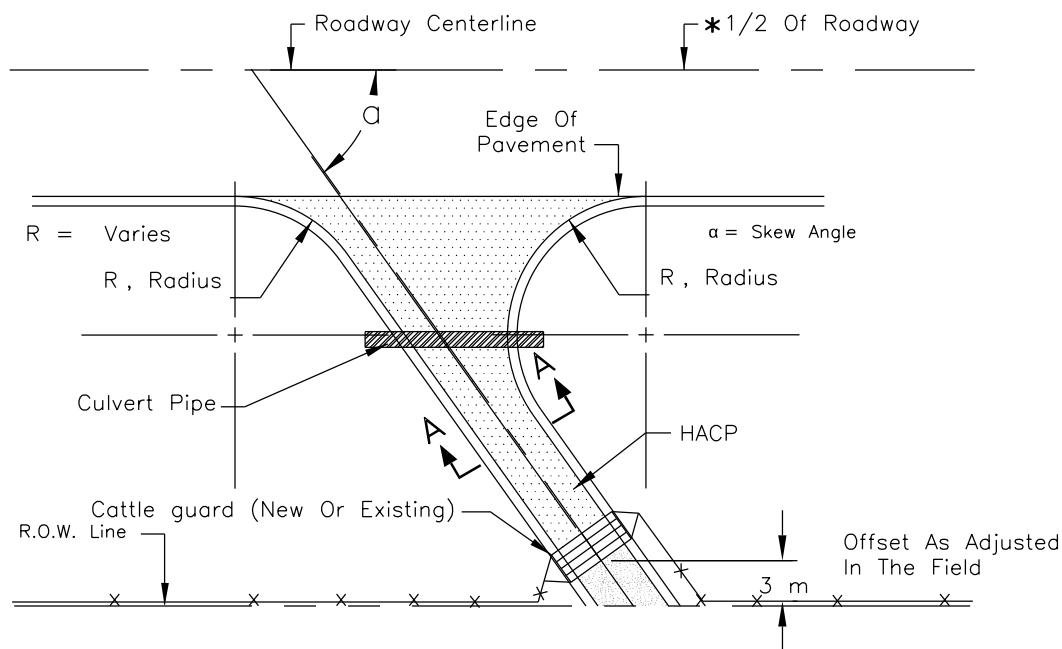
TYPICAL PAVEMENT MARKING @ TURNOUT

GENERAL NOTES

- SEE SHEET 5 FOR TEMPORARY TRAFFIC CONTROL LAYOUT AND DETAILS.



SECTION A-A



TYPICAL TYPE "S" TURNOUT

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

PERMANENT PAVEMENT QUANTITY & MARKINGS DETAIL

DRAWN BY: D.O.T.	DATE: 8/2009
DESIGNED BY: D.O.T.	DATE: 2/2008
REVISED:	FILENAME: N35PPM
BY:	SCALE: NTS



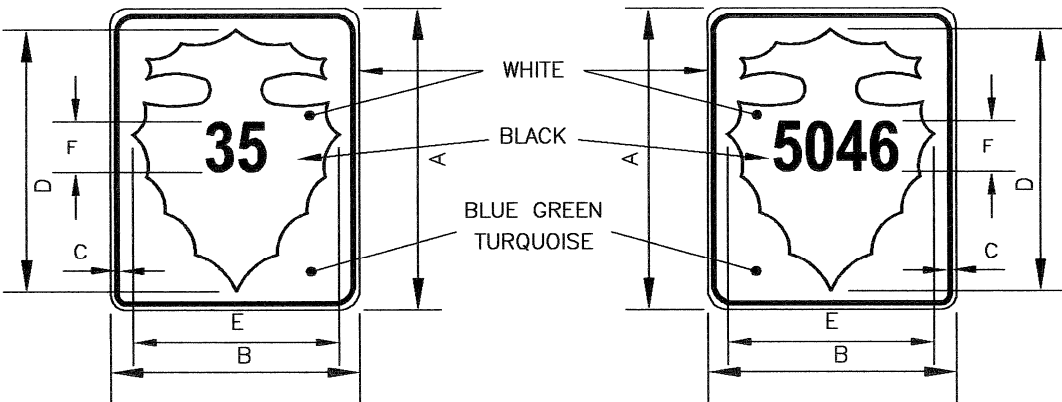
PROJECT: N35(9-1)4 - PERMANENT TRAFFIC CONTROL SIGNS

Station	Loc.	Detail No.	Description	Size Of Sign Panels	Area m ²	No. Of Post	kg/m	Total Sign Panels
34+980.000 35+183.000 35+637.000 36+863.000 38+937.000 40+975.000 43+214.000 43+843.000 44+000.000 44+071.000	RT. LT. LT. RT. LT. LT. RT. LT. LT. LT.	R1-1		762 x 762 mm	0.58	2	2.98	10
34+000.000 43+900.000 44+108.000	LT. RT. LT.	R2-1		610 x 762 mm	0.46	1	3.35	2
33+960.000 43+807.000	RT. LT.	R2-1		610 x 762 mm	0.46	1	3.35	2
33+868.598 34+180.000 34+740.000 35+330.000 35+686.000 35+940.000 36+681.000 37+579.000 39+100.000 40+785.000 41+326.000 42+914.000 43+482.000 43+937.000	RT. LT. LT. RT. LT. LT. RT. LT. LT. RT. LT. RT. LT. RT.	R4-1		610 x 762 mm	0.46	1	3.35	14
34+580.000 36+522.000 37+700.000 39+200.000 40+960.000 41+110.000 43+135.000 43+273.000	RT. RT. LT. RT. LT. LT. LT. LT.	R4-2		610 x 762 mm	0.46	1	3.35	8
33+868.598 34+180.000 34+740.000 35+330.000 35+686.000 35+940.000 36+681.000 37+579.000 39+100.000 40+785.000 41+326.000 42+914.000 43+482.000 43+937.000	LT. RT. RT. LT. RT. LT. LT. LT. LT. RT. LT. LT. RT. LT.	W14-3		914x1219x1219mm	0.52	2	2.98	14
34+588.000 34+700.000 35+830.000 37+640.000 38+334.000 43+560.000	LT. RT. RT. LT. LT. LT.	W1-2L		762 x 762 mm	0.58	2	2.98	6
33+888.000 35+268.000 36+463.000 37+227.000 37+640.000 43+008.000	RT. LT. LT. RT. RT. RT.	W1-2R		762 x 762 mm	0.58	2	2.98	6
37+227.000 39+680.000 43+864.000	LT. LT. RT.	W1-10R		762 x 762 mm	0.58	2	2.98	3
36+728.000 38+750.000	RT. RT.	W1-10L		762 x 762 mm	0.58	2	2.98	2
40+850.000 41+200.000	RT. LT.	W2-2A		762 x 762 mm	0.58	2	2.98	2
43+050.000	RT.	W2-2L		762 x 762 mm	0.58	2	2.98	1
43+380.000	LT.	W2-2R		762 x 762 mm	0.58	2	2.98	1

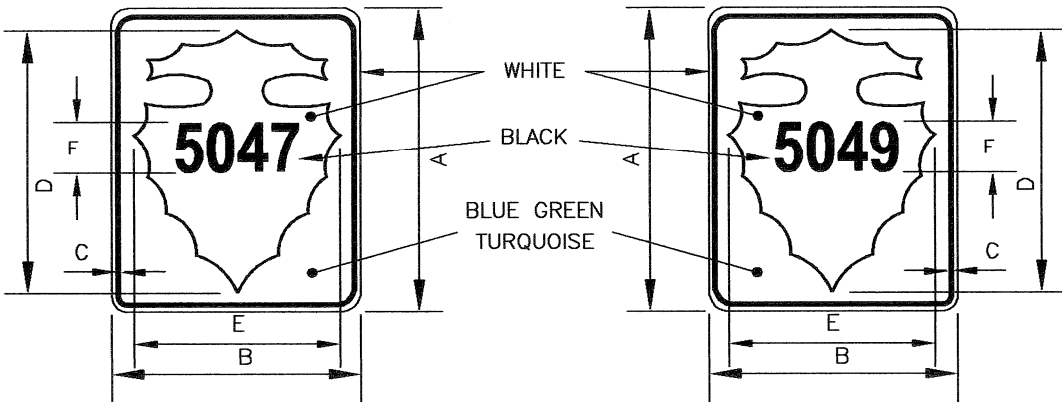
Station	Loc.	Detail No.	Description	Size Of Sign Panels	Area m ²	No. Of Post	kg/m	Total Sign Panels
44+040.000	RT.	W3-1A		762 x 762 mm	0.58	2	2.98	1
34+120.000 43+807.000	LT. RT.	W3-5		762 x 762 mm	0.58	2	2.98	2
34+070.000	LT.	W8-3		762 x 762 mm	0.58	2	2.98	1
34+325.000	LT.	W8-3 W16-2		762 x 762 mm 457 x 610 mm	0.58 0.28	2	2.98	1
38+100.000 38+100.000	RT. RT.	W7-1B W7-2B	 	914 x 914 mm 457 x 610 mm	0.84 0.28	2	3.35	1
33+960.000 33+960.000	LT. LT.	W8-3A W16-2	 	762 x 762 mm 457 x 610 mm	0.58 0.28	2	2.98	1
34+070.000	RT.	M3-1		375 x 525 mm 457 x 610 mm	0.20 0.28	1	4.10	1
44+050.000	LT.	M3-3		375 x 525 mm 457 x 610 mm	0.20 0.28	1	4.10	1
34+855.000	RT.	M6-1R		375 x 525 mm 457 x 610 mm	0.20 0.28	1	4.10	1
35+099.000	LT.	M6-1L		375 x 525 mm 457 x 610 mm	0.20 0.28	1	4.10	1
36+789.000	RT.	M6-1R		375 x 525 mm 457 x 610 mm	0.20 0.28	1	4.10	1
36+972.000	LT.	M6-1L		375 x 525 mm 457 x 610 mm	0.20 0.28	1	4.10	1
38+852.000	RT.	M6-1R		375 x 525 mm 457 x 610 mm	0.20 0.28	1	4.10	1
39+010.000	LT.	M6-1L		375 x 525 mm 457 x 610 mm	0.20 0.28	1	4.10	1
34+100.000	RT.	D1-2		1576 x 658 mm	1.04	2	2.98	1
43+990.000	LT.	D1-2		1656 x 877 mm	1.45	2	3.35	1

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N35	N35(9-1)4	7	14

Station	Loc.	Detail No.	Description	Size Of Sign Panels	Area m ²	No. Of Post	kg/m	Total Sign Panels
44+117.000	RT.	D1-3		2324 x 877 mm	2.04	2	4.10	1
63302-0002	Sign Installation, 1-Post & Hardware, 3.35 kg/m							12.42 m ²
63302-0003	Sign Installation, 1-Post & Hardware, 4.10 kg/m							3.84 m ²
63302-0010	Sign Installation, 2-Post & Hardware, 2.98 kg/m							30.86 m ²
63302-0011	Sign Installation, 2-Post & Hardware, 3.35 kg/m							2.57 m ²
63302-0012	Sign Installation, 2-Post & Hardware, 4.10 kg/m							2.04 m ²



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



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

PERMANENT TRAFFIC
CONTROL DETAILS

DRAWN BY: D.O.T. DATE: 8/2009

DESIGNED BY: D.O.T. DATE: 9/2008

REVISED: 06/2012 FILENAME: N35(9)TFS

BY: HJR SCALE: NTS



SINGLE POST REQUIREMENT CHART													
K factor (B x A)	POST WEIGHT	B = Height To Bottom Of Traffic Sign + 1/2 Height Of Traffic Sign (Meter)											
		1.83	2.13	2.44	2.74	3.05	3.35	3.66	3.96	4.27	4.57	4.87	A (m ²) SIGN AREA (W x D)
		2.976 kg/m	0.36	0.36	0.36	0.36	0.36	0.36	0.34	0.32	0.30	0.27	
		3.348 kg/m	0.47	0.47	0.47	0.47	0.47	0.43	0.39	0.36	0.33	0.32	
		4.092 kg/m	0.62	0.62	0.62	0.62	0.62	0.56	0.51	0.47	0.44	0.41	
		4.464 kg/m	0.68	0.68	0.68	0.68	0.68	0.62	0.58	0.52	0.47	0.46	
		5.952 kg/m	0.87	0.87	0.87	0.87	0.87	0.87	0.80	0.74	0.70	0.65	

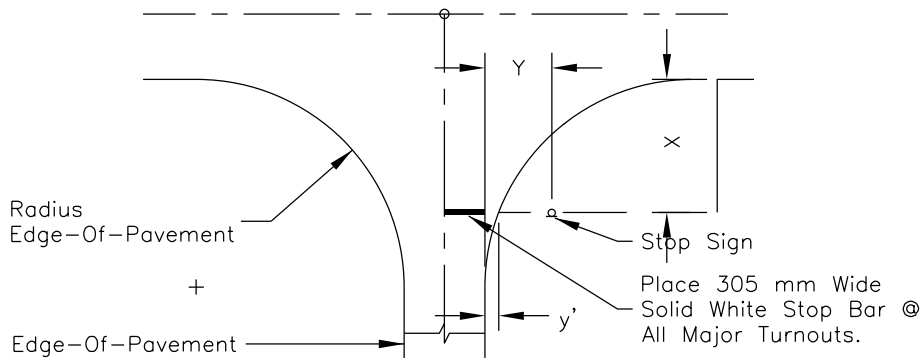
DOUBLE POST REQUIREMENT CHART															
K factor (B x A)	POST WEIGHT	B = Height To Bottom Of Traffic Sign + 1/2 Height Of Traffic Sign (Meter)													
		1.83	2.13	2.44	2.74	3.05	3.35	3.66	4.27	4.57	4.87	A (m ²) SIGN AREA (W x D)			
		2.74	2.976 kg/m	1.50	1.28	1.12	1.00	0.90	0.82	0.75	0.70		0.64	0.60	0.57
		3.08	3.348 kg/m	1.69	1.45	1.27	1.13	1.01	0.92	0.85	0.78		0.72	0.68	0.63
		4.03	4.092 kg/m	2.20	1.89	1.65	1.47	1.32	1.20	1.10	1.01		0.94	0.88	0.83
		4.91	4.464 kg/m	2.69	2.31	2.03	1.79	1.62	1.47	1.35	1.24		1.15	1.08	1.01
		6.83	5.952 kg/m	3.73	3.20	2.80	2.49	2.24	2.03	1.87	1.72		1.60	1.50	1.40

THREE POST REQUIREMENT CHART													
K factor (B x A)	POST WEIGHT	B = Height To Bottom Of Traffic Sign + 1/2 Height Of Traffic Sign (Meter)											
		1.83	2.13	2.44	2.74	3.05	3.35	3.66	3.96	4.27	4.57	4.87	
4.12	2.976 kg/m	2.25	1.92	1.68	1.50	1.35	1.23	1.12	1.04	0.97	0.90	0.85	A (m ²) SIGN AREA (W x D)
4.65	3.348 kg/m	2.54	2.17	1.90	1.69	1.52	1.38	1.27	1.17	1.09	1.01	0.96	
6.02	4.092 kg/m	3.30	2.82	2.47	2.19	1.98	1.79	1.64	1.52	1.41	1.32	1.24	
7.40	4.464 kg/m	4.04	3.47	3.03	2.69	2.42	2.20	2.02	1.86	1.73	1.62	1.51	
10.20	5.952 kg/m	5.58	4.78	4.19	3.73	3.35	3.05	2.79	2.57	2.40	2.23	2.09	

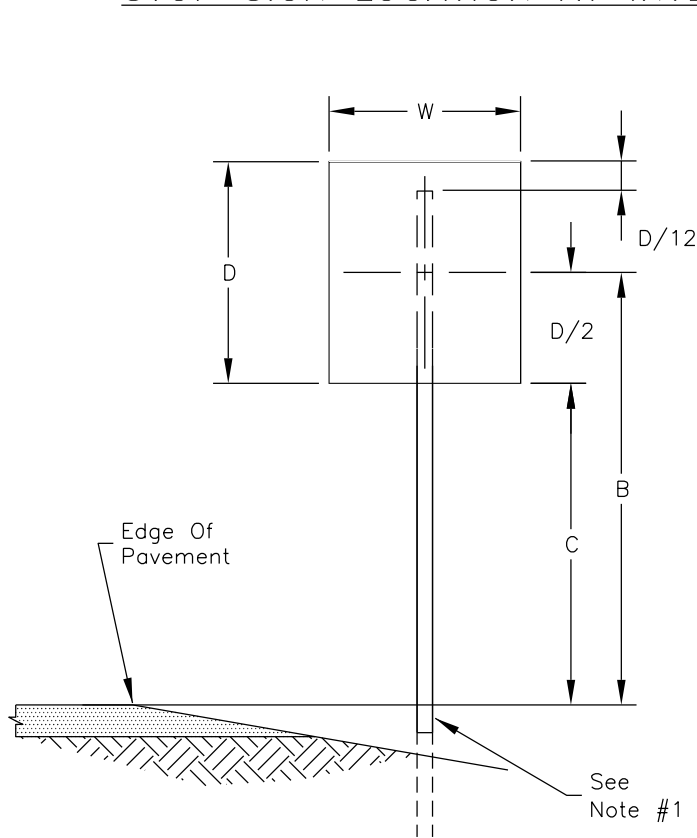
STOP SIGN AND LINE LOCATION TABLE

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

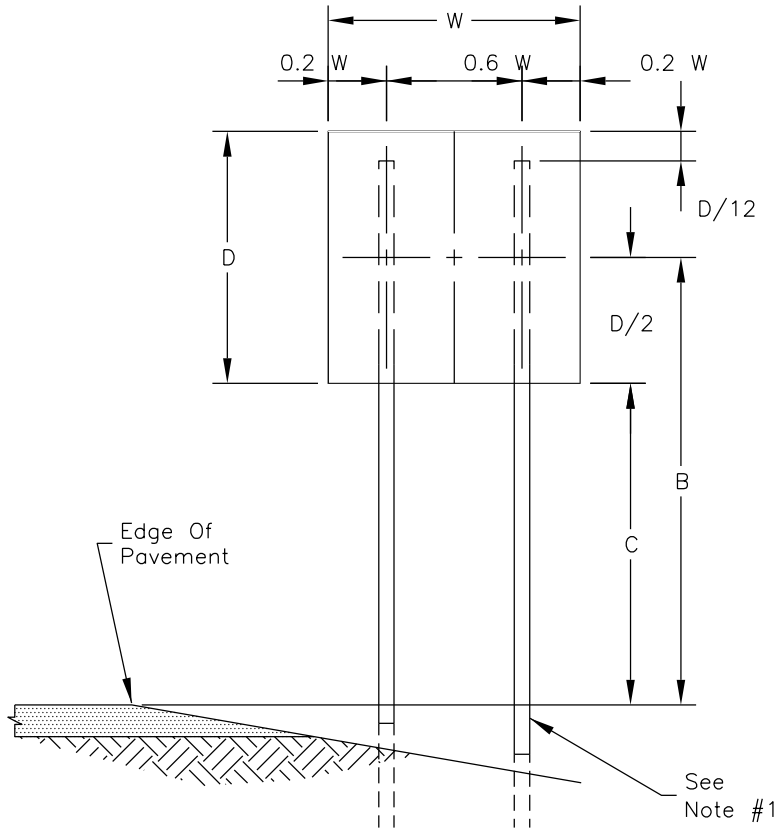
y' = Distance From Roadway EOP To Radius EOP
Lateral Offset(LO) From EOP (m)=1.80



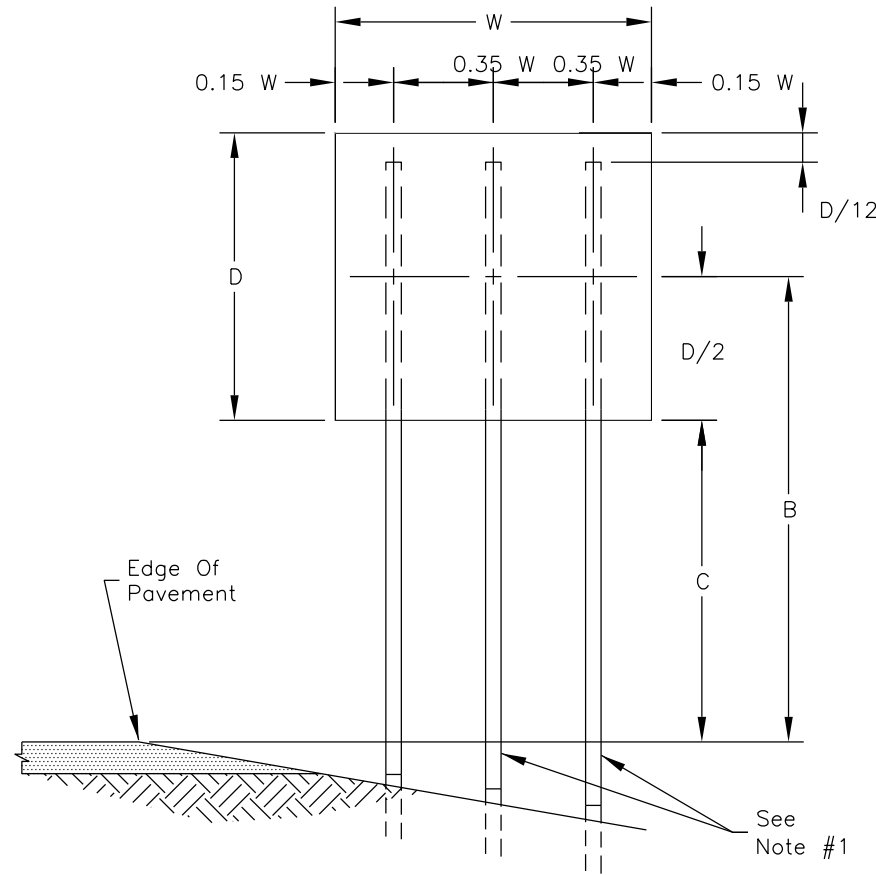
STOP SIGN LOCATION AT INTERSECTION



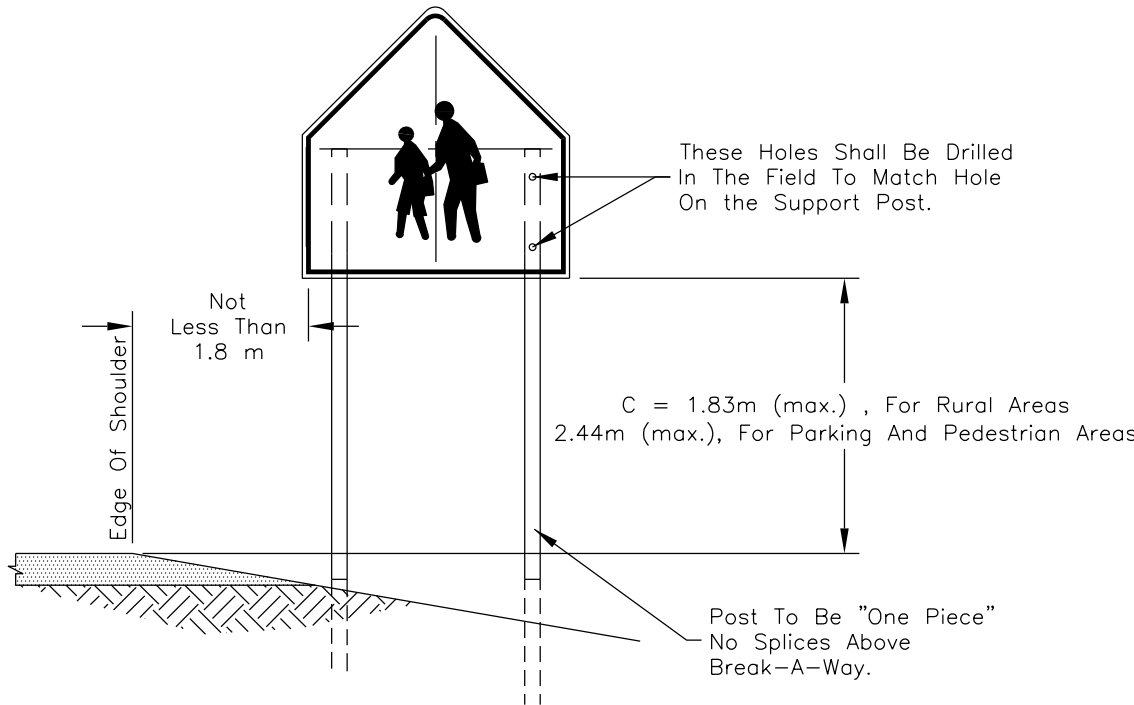
SINGLE POST SIZE (TYP.)



DOUBLE POST SIZE (TYP.)



THREE POST SIZE (TYP.)



TYPICAL ROADSIDE SIGN LOCATION

REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N35	N35(9-1)4	8	14

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. SIGN DIMENSION EQUAL TO OR IN EXCEED OF 762 MM X 762 MM SIZE SHALL BE INSTALLED WITH A MINIMUM OF TWO (2) STEEL POSTS.

METHOD TO DETERMINE NUMBER OF POST(S) & POST WEIGHT REQUIREMENT:

For A 1.52 m Wide x 1.22 m High Traffic Sign.
Located On A Rural Highway.

GIVEN: W= 1.52 m
D= 1.22 m
C= 1.83 m For Rural Areas

SOLUTION: 1.) B = C + D/2
B= 1.83 + (1.22/2)
B= 2.44 m

2.) A = W x D
A= 1.52 x 1.22
A= 1.85 sq. m

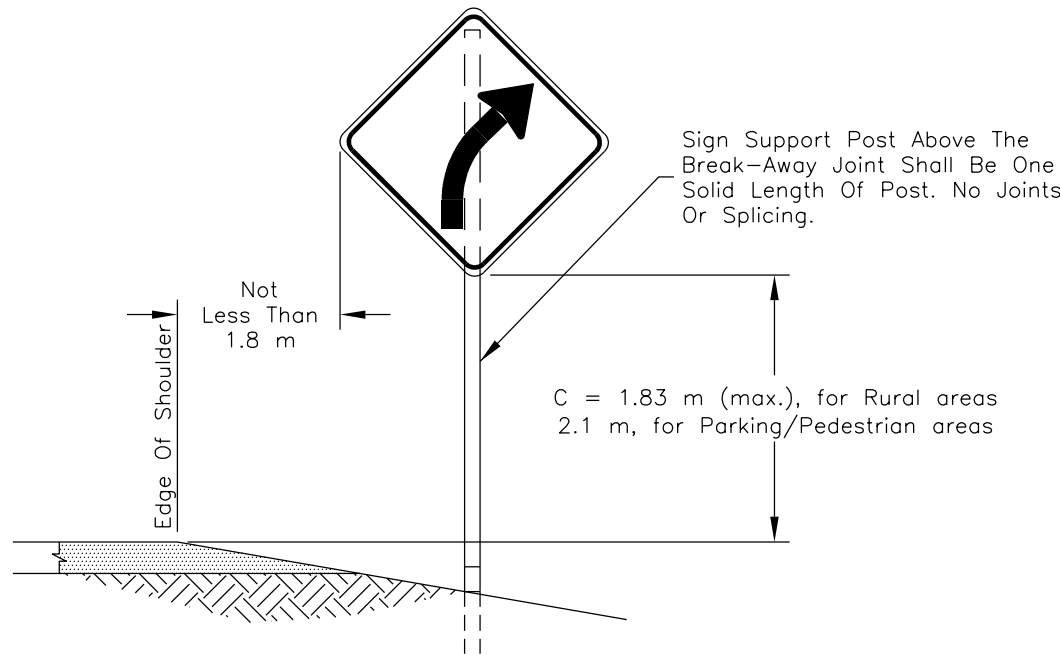
3.) K factor = A x B
K factor= 1.85 x 2.44
K factor= 4.51 cu. m

4.) Begin With The Single Post Chart For Column Of B= 2.44 m, And Continue Down Until The Area Of The Sign Equals Or Exceeds 1.85 sq. m, OR Down The K factor Column Until The Value Equals or Exceeds 4.51 cu. m. Both The Area & K factor Exceed The Single Post Chart So Go To The Double Post Chart.

Select Two (2) Posts Of 4.46 kg/m Yields A Factor Of 4.91 Which Is Optimum.

EXAMPLE:

K factor	POST WEIGHT	2.44
4.03	4.09 kg/m	1.65
4.91	4.46 kg/m	2.03
6.83	5.95 kg/m	2.80



TYPICAL ROADSIDE SIGN LOCATION

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

PERMANENT SIGNING DETAIL

DRAWN BY: D.O.T. DATE: 11/1997

DESIGNED BY: D.O.T. DATE: 11/1997

REVISED: FILENAME: SGN1

BY: SCALE: NTS

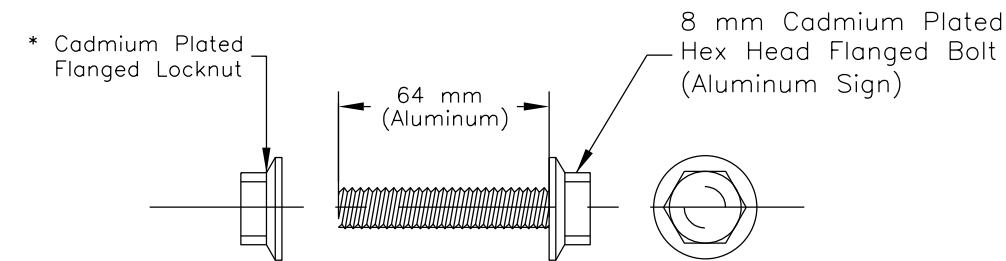


REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N35	N35(9-1)4	9	14

RIB-BAK U-CHANNEL SIGN SUPPORTS

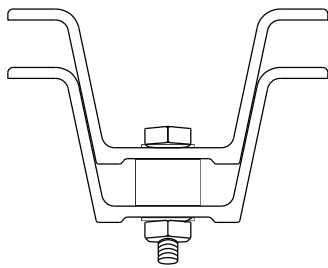
WEIGHT *kg/m	DIMENSIONS (mm)				AREA mm ²	X-X AXIS		Y-Y AXIS	
	A	B	C	D		I(mm ⁴)	S(mm ³)	I(mm ⁴)	S(mm ³)
2.97	38.30	76.91	33.12	16.10	54.83	81.99	42.27	195.62	50.96
3.71	38.68	79.35	33.15	18.33	51.28	103.22	51.29	249.73	62.92
4.08	39.47	78.77	32.72	16.94	55.74	112.38	54.89	278.04	70.62
4.45	48.34	85.85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

* ±5%

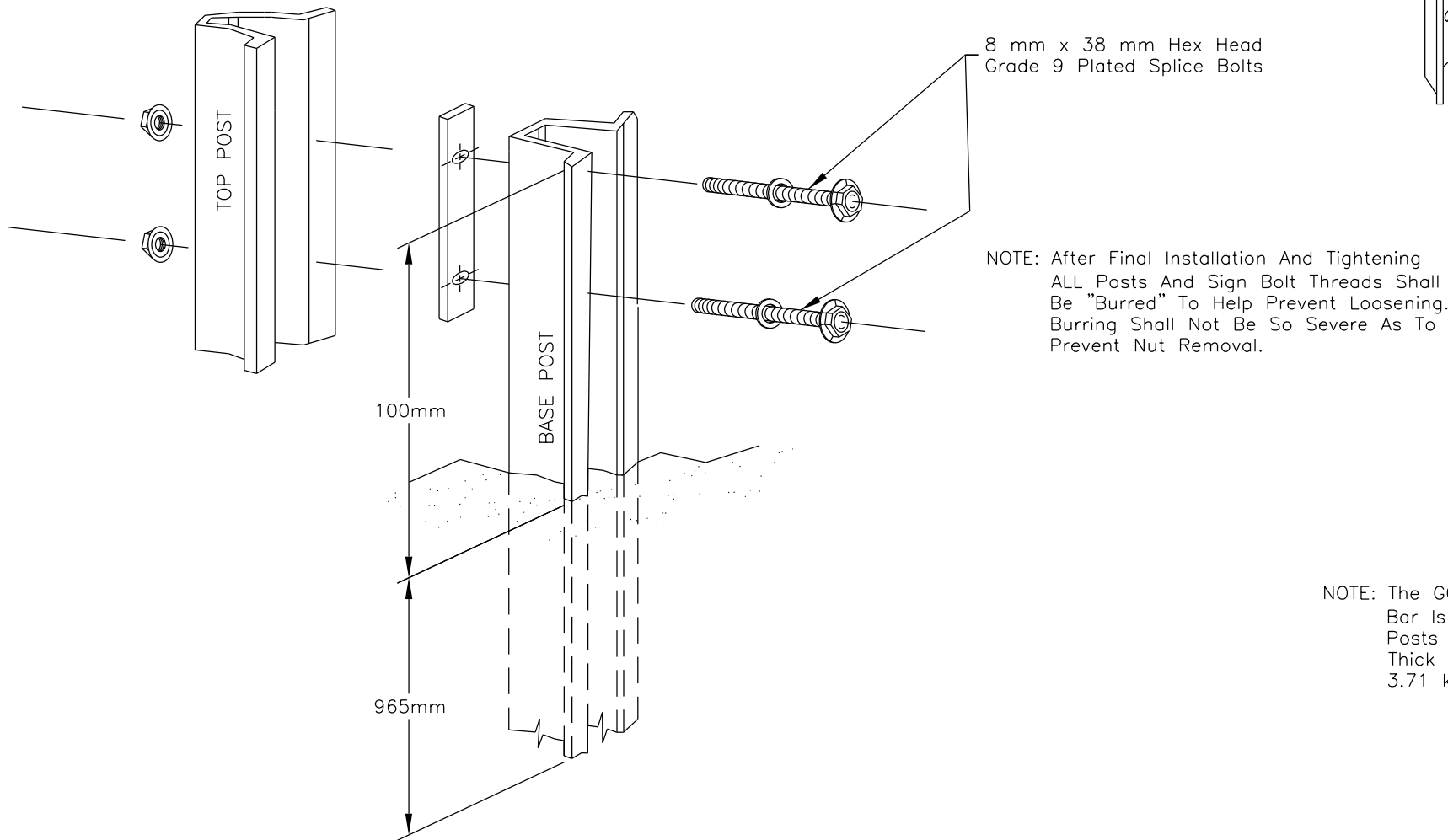


BOLTS AND LOCKNUT - SIGN ATTACHMENT

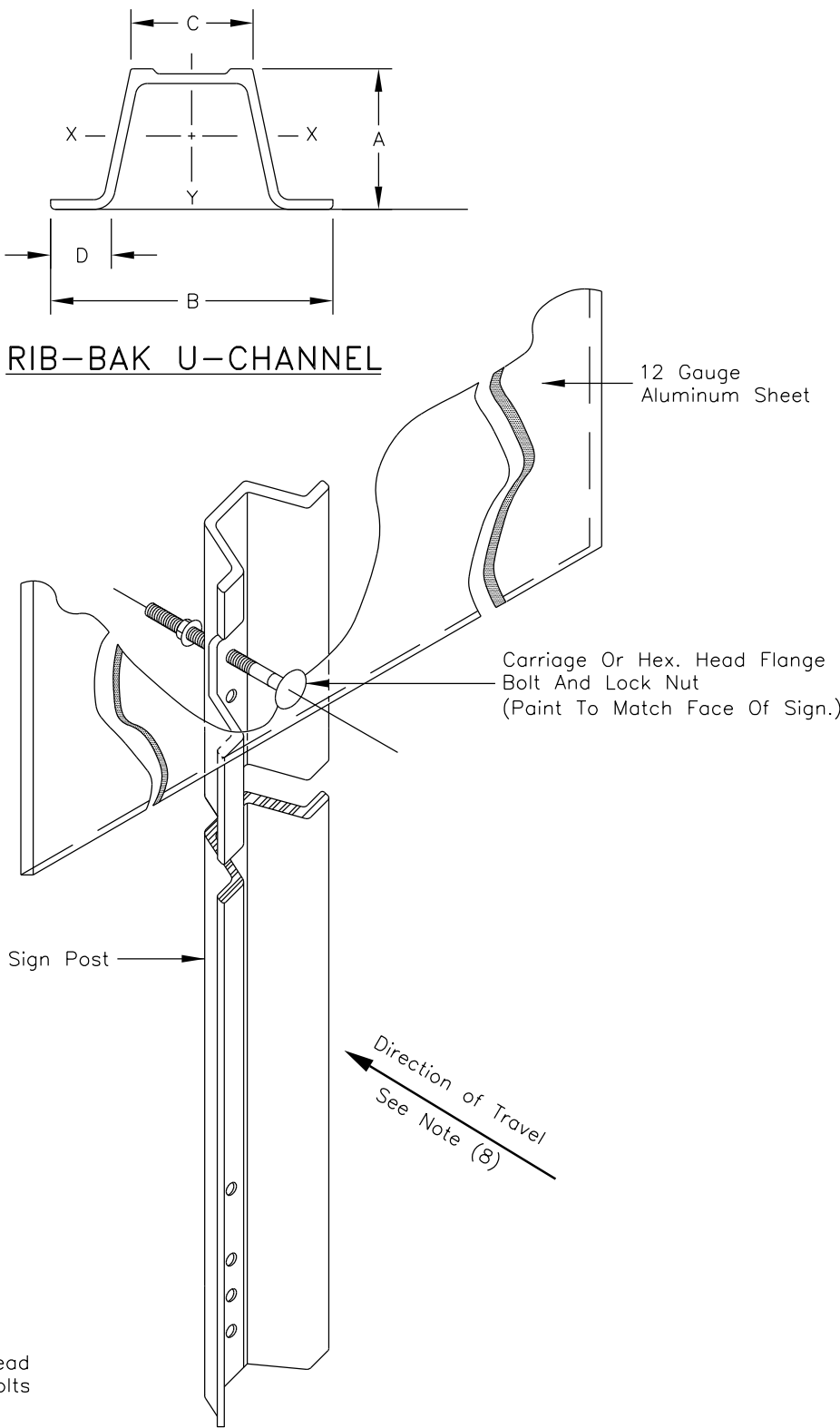
* Flanged Locknut Required For Carriage And Hex.



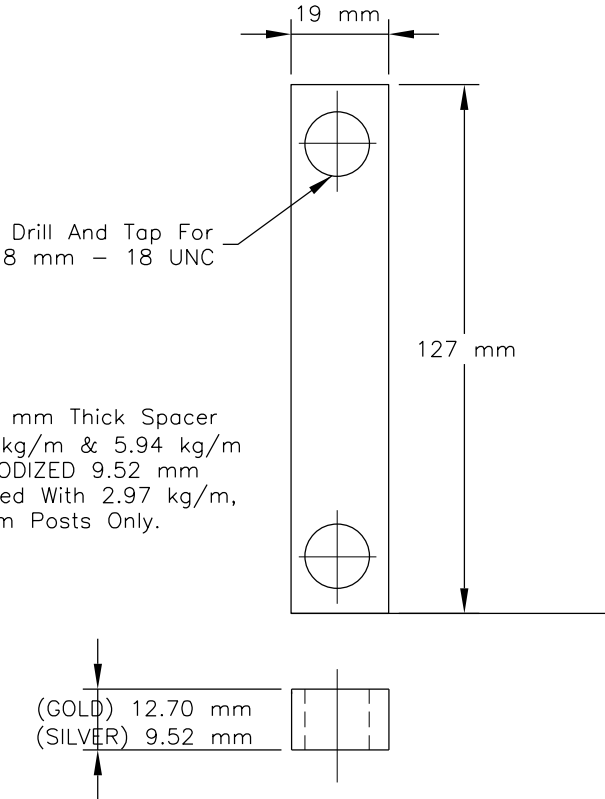
LAP SPLICE - TOP VIEW



LAP SPLICE CONNECTION DETAIL



NOTE: The GOLD ANODIZED 12.70 mm Thick Spacer Bar Is To Used With 4.45 kg/m & 5.94 kg/m Posts Only. The SILVER ANODIZED 9.52 mm Thick Spacer Bar Is To Used With 2.97 kg/m, 3.71 kg/m, And 4.08 kg/m Posts Only.



LAP SPLICE SPACER BAR

GENERAL NOTES

1. BASE POST AND SIGN POST SHALL BE RIB-BAK U-CHANNEL FABRICATED FROM HOT ROLLED CARBON STEEL BARS CONFORMING TO THE REQUIREMENTS OF ASTM A499. YIELD POINT OF THE STEEL SHALL BE 550 MPa (MINIMUM) TENSILE SHALL BE 689.47 MPa (MINIMUM).
2. POSTS SHALL BE A UNIFORM, MODIFIED, FLANGED CHANNEL SECTION OF THE RIB-BAK DESIGN. WEIGHT OF THE POSTS SHALL BE AS SPECIFIED BY THE USER, ±5% BEFORE PUNCHING. THE POSTS SHALL BE PUNCHED WITH CONTINUOUS 9 mm HOLES ON 25 mm CENTERS FOR THE ENTIRE LENGTH OF THE POST.
3. THE POSTS SHALL BE MACHINE STRAIGHTENED TO HAVE A SMOOTH UNIFORM FINISH, FREE FROM DEFECTS AFFECTING THEIR STRENGTH, DURABILITY, OR APPEARANCE. ALL HOLES AND ROUGH EDGES SHALL BE FREE FROM BURRS. THE PERMISSIBLE TOLERANCE FOR STRAIGHTNESS SHALL BE WITHIN 6.35 mm IN 1.52 METER.
4. POSTS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A 123. BOLTS, NUTS, WASHERS AND SPACER SHALL BE CADMIUM PLATED IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A 165 OR ZINC PLATED IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM B 633.
5. SPLICE HARDWARE SHALL CONSIST OF TWO FULLY THREADED, 8 mm x 38 mm GRADE 9 PLATED, HEX HEAD BOLTS, WITH FLAT WASHERS, AND SELF LOCKING HEX NUTS PER POST. IN ADDITION, ONE 19 mm x 127 mm PLATED SPACER BAR SHALL BE USED, PER POST, TO STIFFEN THE SPLICE CONNECTION. EACH SPACER BAR SHALL BE DRILLED AND TAPPED WITH 8 mm - 18 UNC THREADS. THE SPACER SHALL BE FABRICATED FROM HOT ROLLED CARBON STEEL BARS CONFORMING TO ASTM A 36 OR M 1020. BOLTS SHALL BE RED IN COLOR, WITH THE HEAD MARKING "M180".
6. BOLTS AND LOCK NUT HARDWARE FOR SIGN ATTACHMENT SHALL BE HEX HEAD FLANGE TYPE, SIZE SHALL BE 8 mm-18 UNC. BOLTS AND NUTS SHALL BE CADMIUM PLATED TO ASTM B 766 SPECIFICATION.
7. AN ALTERNATE BREAKAWAY POST ASSEMBLY MAY BE SUBMITTED TO THE REGIONAL ROAD ENGINEER FOR REVIEW AND APPROVAL.
8. SUPPLEMENTAL SIGNS ON THE OPPOSITE SIDE OF ROAD SHALL HAVE THE POST REVERSED SO THAT RIB-BAK IS FACING AWAY FROM THE OPPOSING TRAFFIC.
9. THE POST SHALL BE POWDER COATED WITH A BAKED ON GREEN ALKYD RESIN WITH A POLYESTER POWDER OR GALVANIZED PER NOTE 4 ABOVE. SEE SPECIFICATIONS FOR SECTION 718 FOR FURTHER REQUIREMENTS.

INSTALLATION PROCEDURE

- STEP 1:
DRIVE BASE POST TO WITHIN APPROXIMATELY 300 mm ABOVE GROUND LEVEL. PLACE ONE BOLT AND CUT WASHER IN FIFTH HOLE FROM THE TOP, AND SECURELY TIGHTEN THREADED SPACER ONTO BOLT.
- STEP 2:
DRIVE BASE POST TO 100 mm ABOVE GROUND LEVEL. PLACE REMAINING BOLT AND CUT WASHER IN FIRST HOLE FROM THE END, AND SECURELY TIGHTEN THREADED SPACER ONTO BOLT.
- STEP 3:
DIG OUT APPROXIMATELY 50 mm FROM AROUND BACK OF GROUND POST TO ALLOW ROOM FOR TOP POST TO BE ATTACHED.
- STEP 4:
NEST TOP POST ONTO PROTRUDING BASE POST BOLTS, THROUGH THE FIRST AND FIFTH HOLES OF THE TOP POST.
- STEP 5:
PLACE A SELF-LOCKING FLANGE NUT ON EACH BOLT. TIGHTEN NUTS AND TAMP EARTH AROUND POST FIRMLY.

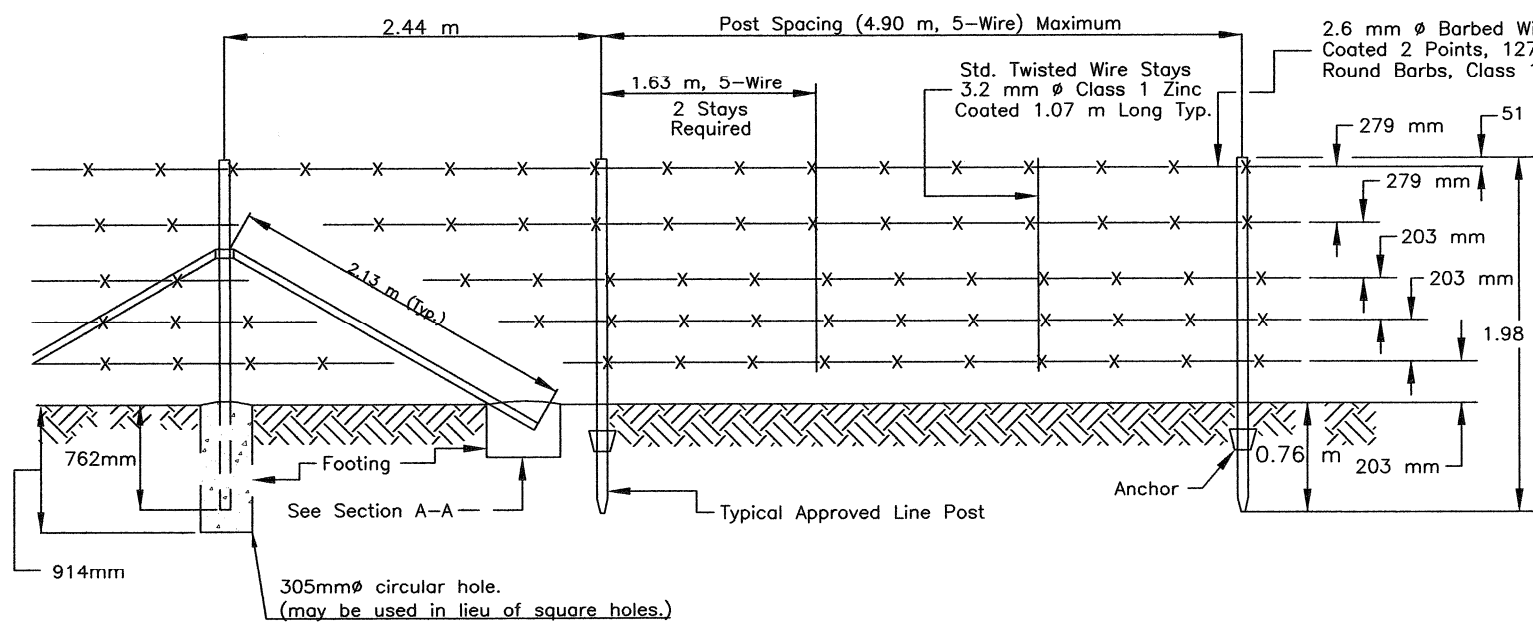
UNITED STATES
DEPARTMENT OF THE INTERIOR
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NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

LAP SPLICE U-CHANNEL
BREAKAWAY SYSTEM
POSTS AND HARDWARE DETAILS

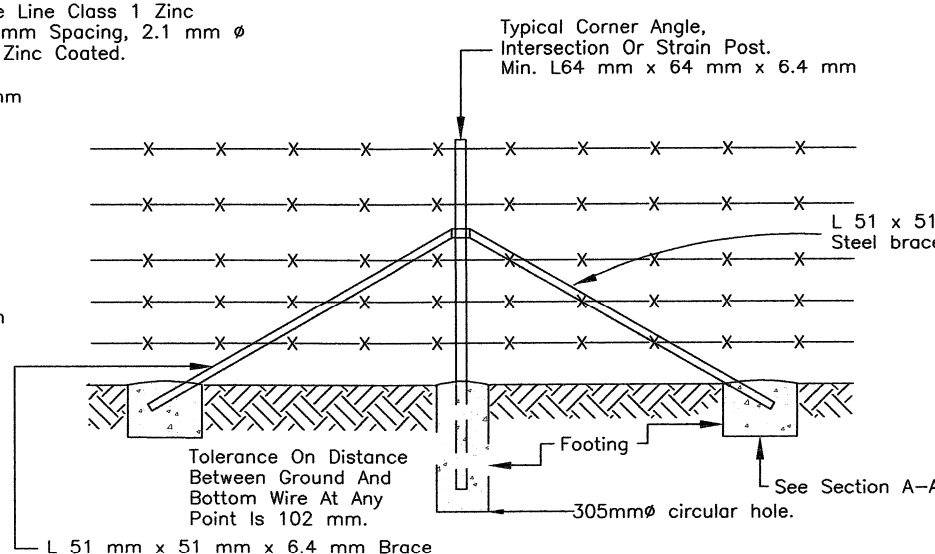
DRAWN BY: D.O.T.	DATE: 6/2002
DESIGNED BY: D.O.T.	DATE: 6/2002
REVISED: 06/2012	FILENAME: SGN2
BY: HJR	SCALE: NTS



REGIONAL AREA	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N35	N35(9-1)4	10	14

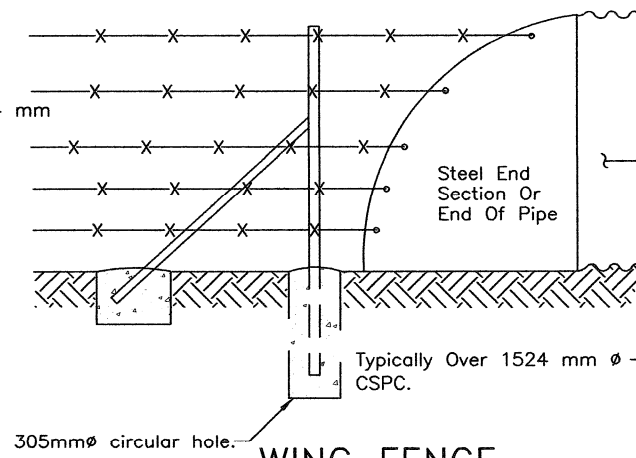


STANDARD 5 LINE GALVANIZED BARBED WIRE PANEL



STANDARD STRAIN POST

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

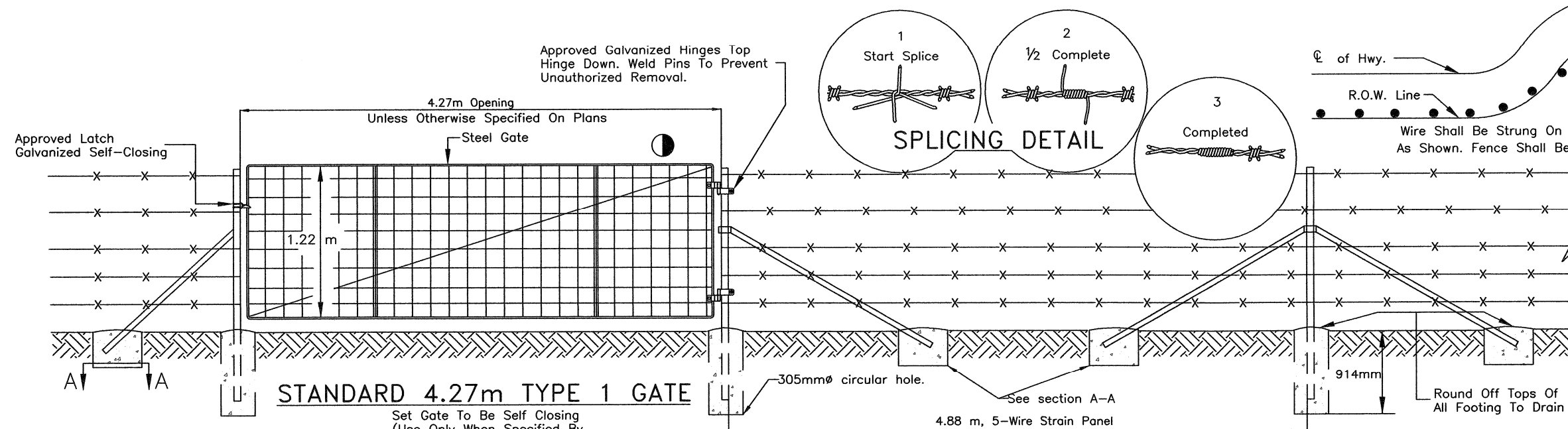


WING FENCE

Detail For Corr. Metal Culvert

GENERAL NOTES

- CORNER, GATE, INTERMEDIATE BRACE POSTS AND LINE POSTS SHALL BE EITHER GALVANIZED OR PAINTED IN ACCORDANCE WITH AASHTO M 281-96. METAL POST AND BRACES SHALL BE FABRICATED FROM RAIL, BILLET, OR COMMERCIAL GRADE STEEL CONFORMING WITH THE REQUIREMENT OF ASTM A 702.
- LINE POSTS SHALL BE FABRICATED IN ACCORDANCE WITH AASHTO M 281-96, AND SHALL A NOMINAL WEIGHT OF 1.98 kg/m EXCLUSIVE OF ANCHOR PLATES. ANCHOR PLATES SHALL BE CLAMPED, WELDED OR RIVETED TO THE SECTION IN SUCH A MANNER AS TO PREVENT DISPLACEMENT WHEN THE POSTS ARE DRIVEN.
- 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.
- TIE WIRE, WIRE FASTENERS OR WIRE CLIPS FOR FASTENING BARBED AND WOVEN FABRIC FENCING TO THE STEEL POSTS SHALL BE 3.0 mm DIA. STEEL WIRE, CLASS 1 (ZINC COATED), SOFT TEMPER AND MEET THE REQUIREMENTS OF ASTM A 641. FURNISHING AND PLACEMENT OF FASTENERS SHALL BE INCLUDED WITH ITEM 61901-1000.
- CONCRETE FOR ANCHORS, POST HOLES, ETC. SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 20.7 MPa IN 28 DAYS AND SHALL CONFORM TO SECTION 601 OF THE FP-03. FURNISHING AND PLACEMENT OF CONCRETE SHALL BE INCLUDED WITH ITEM 61901.
- TWO SPLICES ON THE SAME LINE BETWEEN THE STRAIN POST ASSEMBLIES SHALL NOT BE PERMITTED. NO SPLICES SHALL BE PLACED CLOSER THAN 30 METER OF ANY STRAIN POST ASSEMBLIES.
- CONNECT ALL R.O.W. FENCING TO CATTLE GUARDS, CULVERTS (GREATER THAN 1524 mm DIA), AND CONCRETE STRUCTURES AS SHOWN ON THESE PLANS, AND/OR AS DIRECTED BY THE C.O.R.
- 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. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO ITEM 61901.
- CLEARING AND GRUBBING SHALL INCLUDE SHAPING AND/OR REMOVAL OF SMALL MOUNDS NECESSARY TO PRESENT A SMOOTH UNIFORM APPEARANCE OF BOTH GROUND AND FENCING LINE. THIS WORK SHALL BE INCIDENTAL TO THE INSTALLATION OF FENCING AND NO ADDITIONAL PAYMENT SHALL BE MADE.
- ALL DRILLING INTO ROCK MATERIAL, ETC. SHALL BE INCIDENTAL TO THE INSTALLATION OF FENCING AND NO ADDITIONAL PAYMENT SHALL BE MADE.
- TYPE 2 GATE CLOSURE DEVICE SHALL BE STEEL PIPE, NPS 26.7 mm 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.

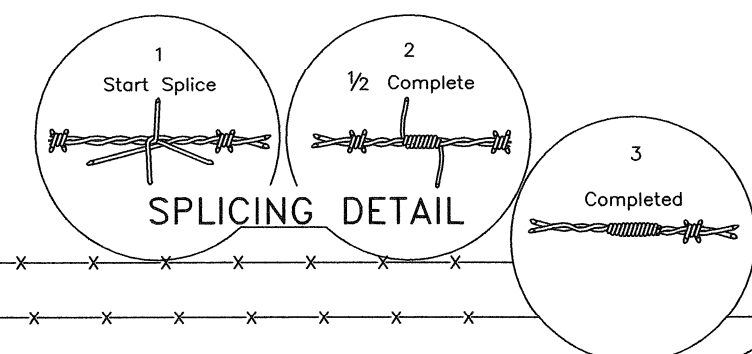


STANDARD 4.27m TYPE 1 GATE

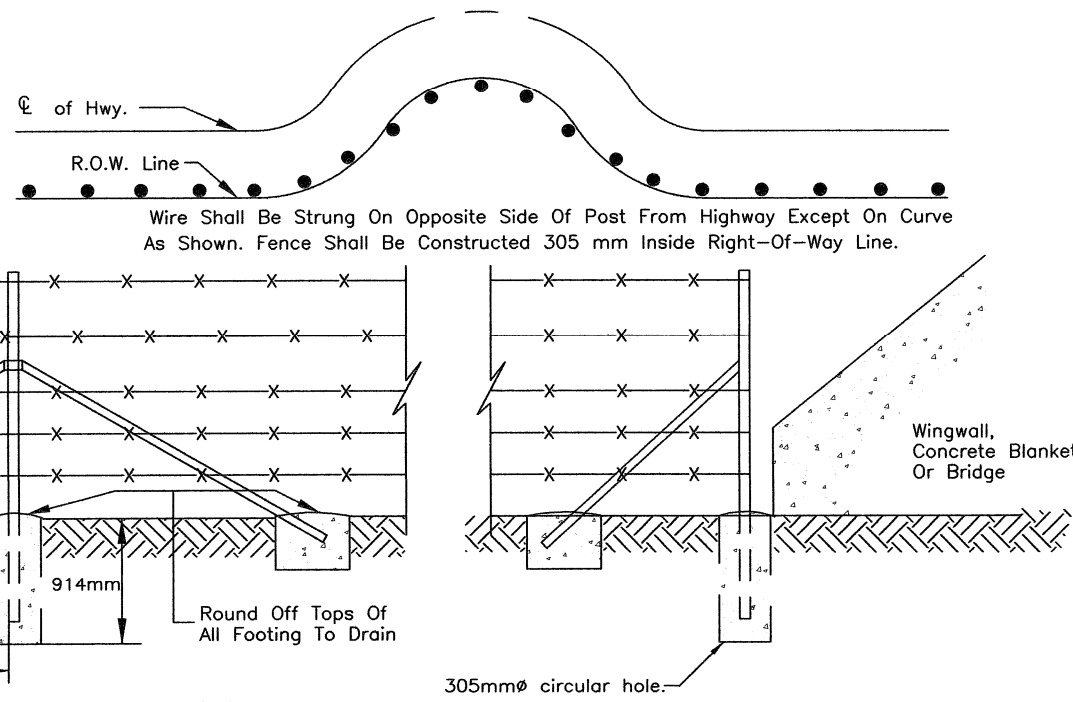
NOTE: When Tubular Post Hangers And/Or Latches Are Used, It Shall Be Drilled For A Single 2.38 mm Min. Drive Pin To Prevent Rotation Of The Hangers And/Or Latches.

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.

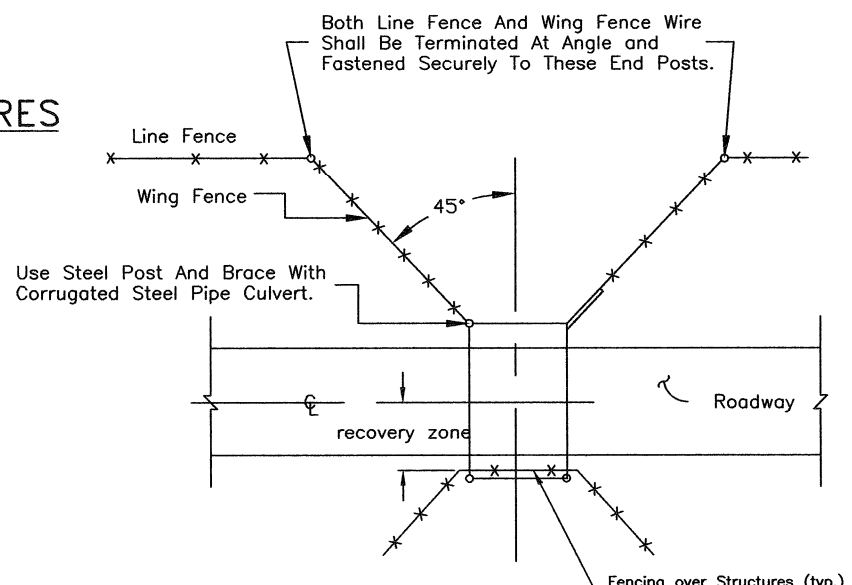


SPLICING DETAIL

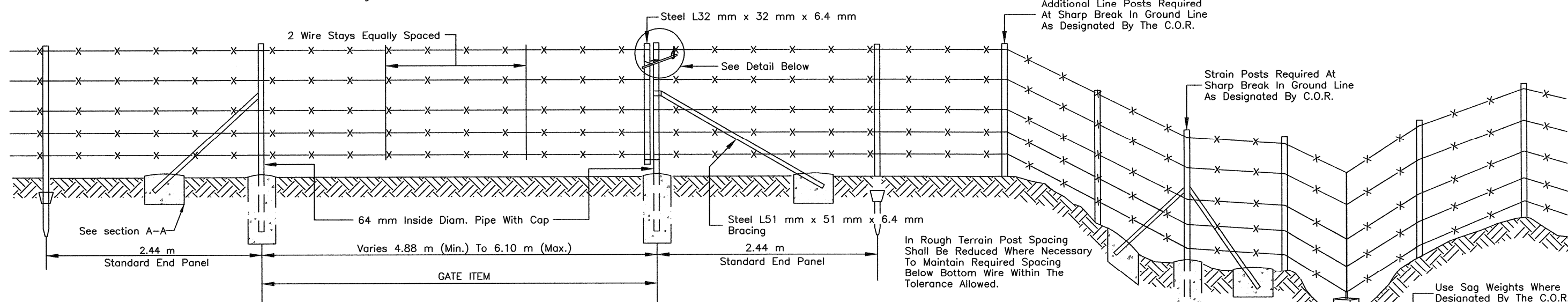


END POST

CONNECTION TO MAJOR STRUCTURES

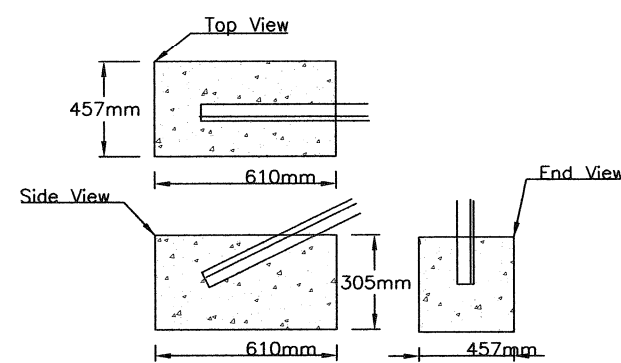


WING FENCE DETAIL



STANDARD TYPE-2 GATE

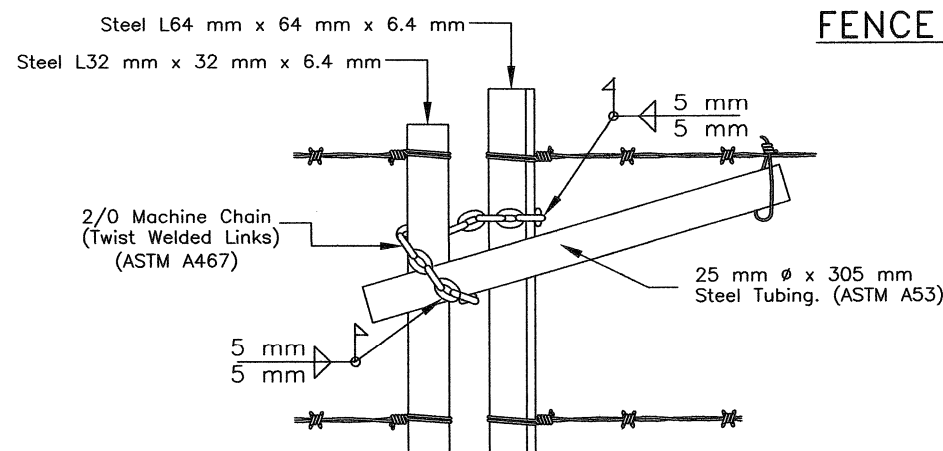
Use At Locations Noted On Plans



TYPICAL STEEL POST SECTION

SECTION A-A

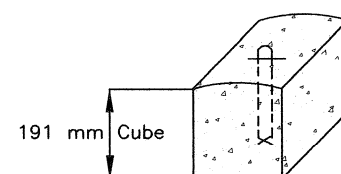
Concrete Footing for Corner and Strain Posts.



GATE SECURING DETAIL

FENCE PROFILE IN ROUGH TERRAIN

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



CONCRETE SAG WEIGHT DETAIL

Min. Weight Of Concrete Sag Shall Be 16 kg.

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NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

STANDARD FENCING DETAILS

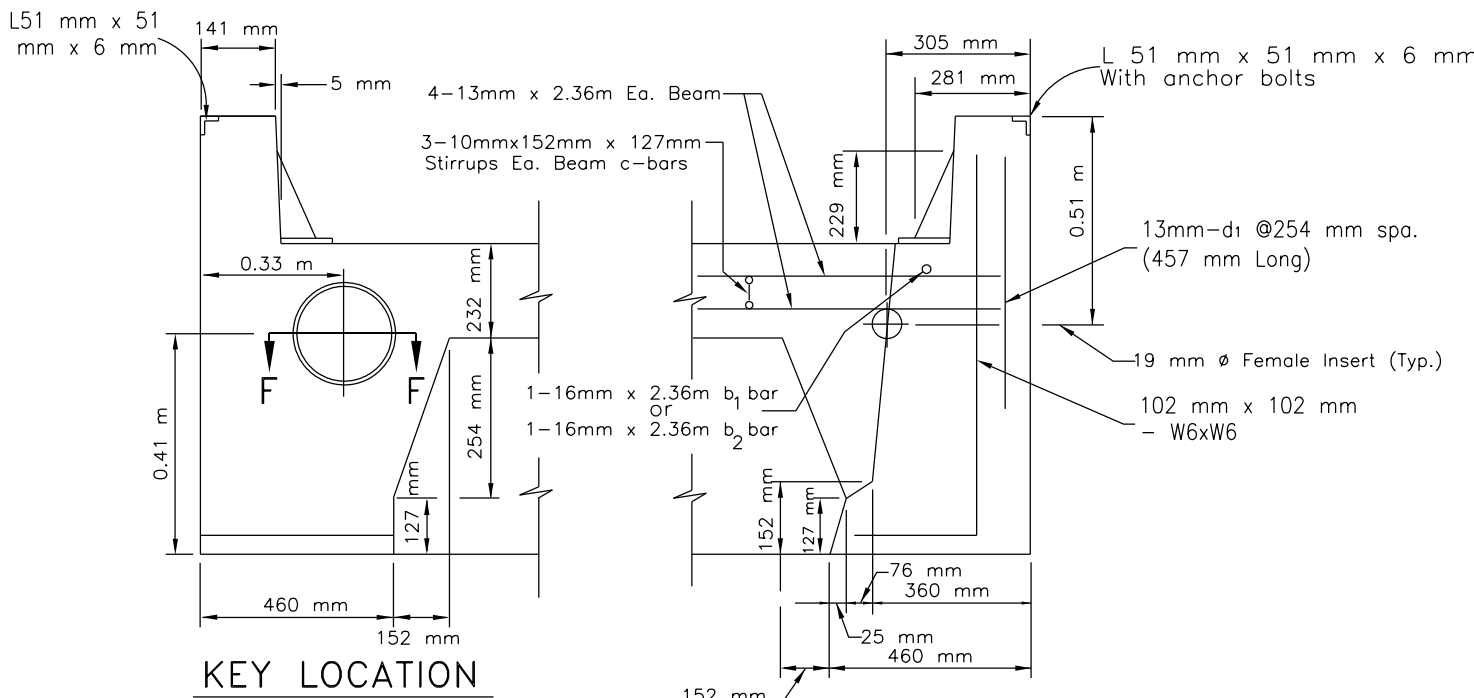
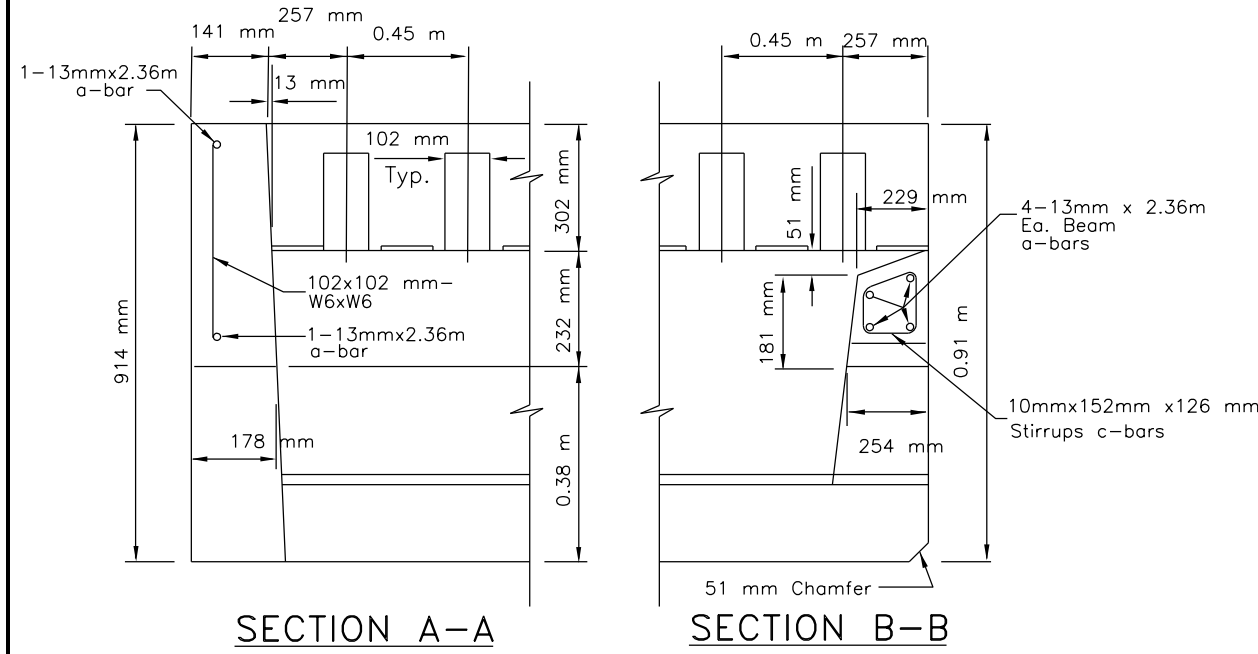
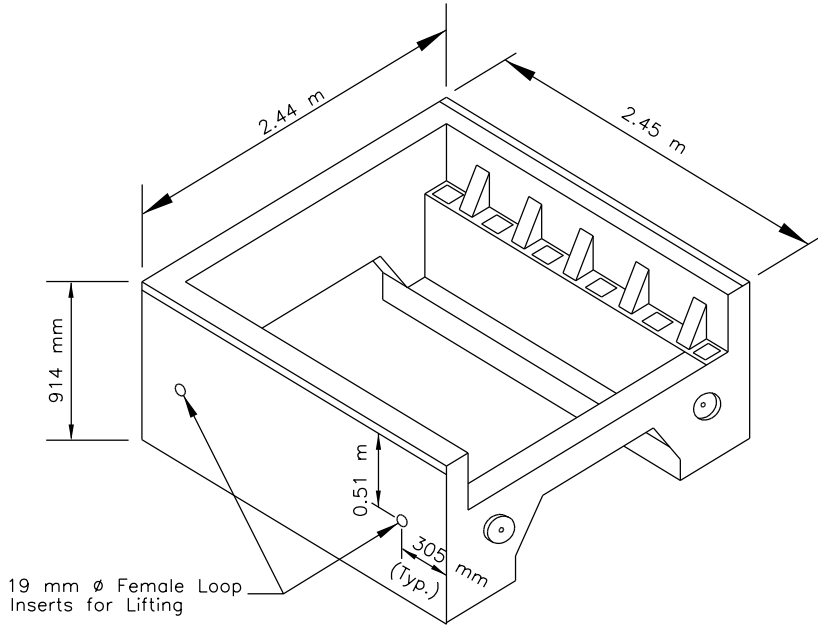
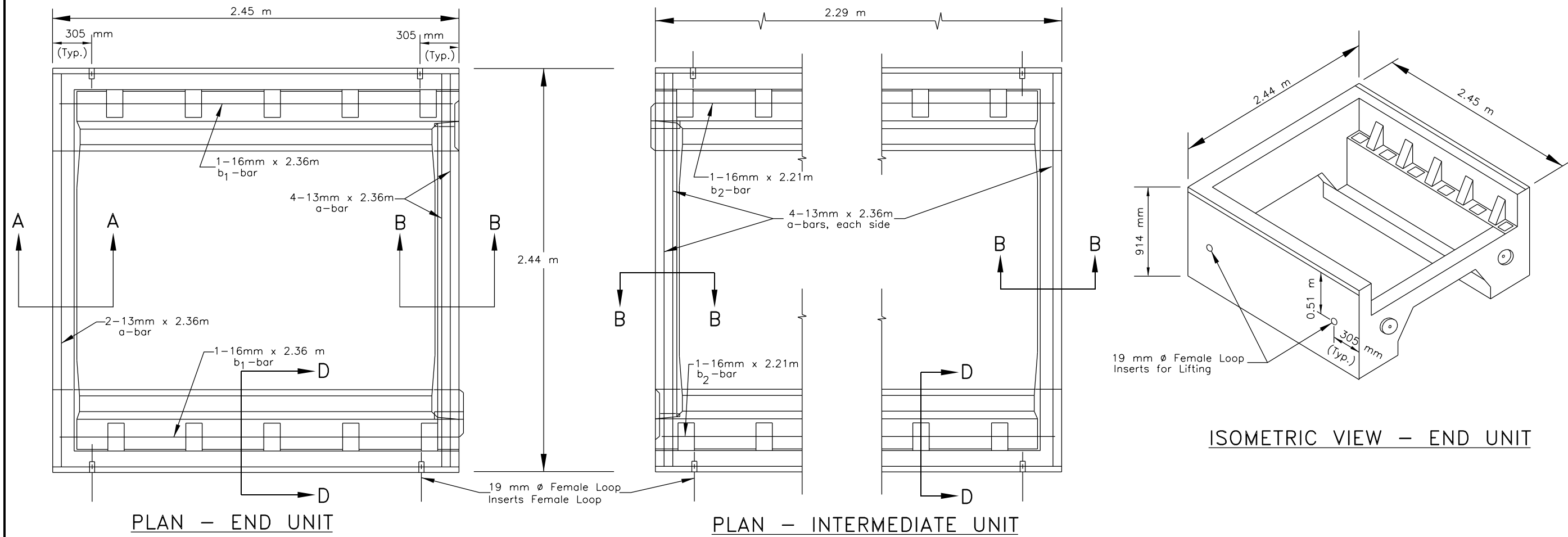
DRAWN BY: D.O.T. DATE: 2/2008
DESIGNED BY: D.O.T. DATE: 1/2001
REVISED: 11/2009 FILENAME: FENCE
BY: NRDOT SCALE: NTS



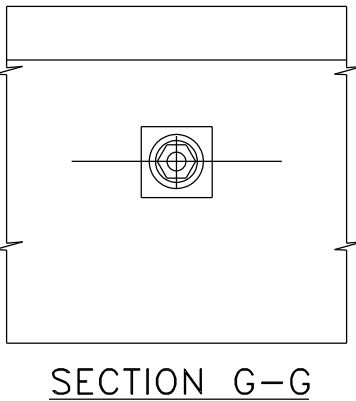
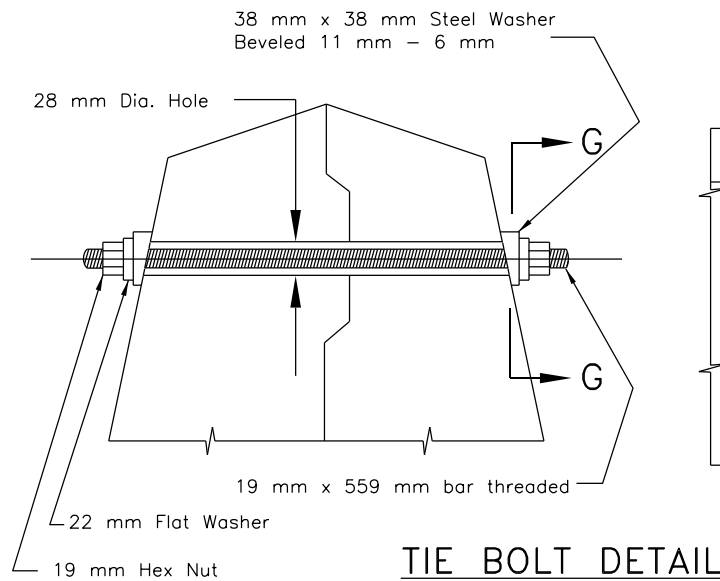
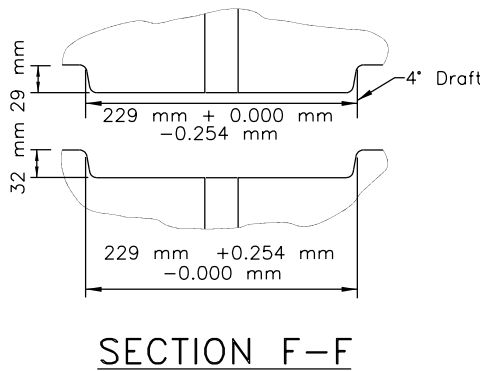
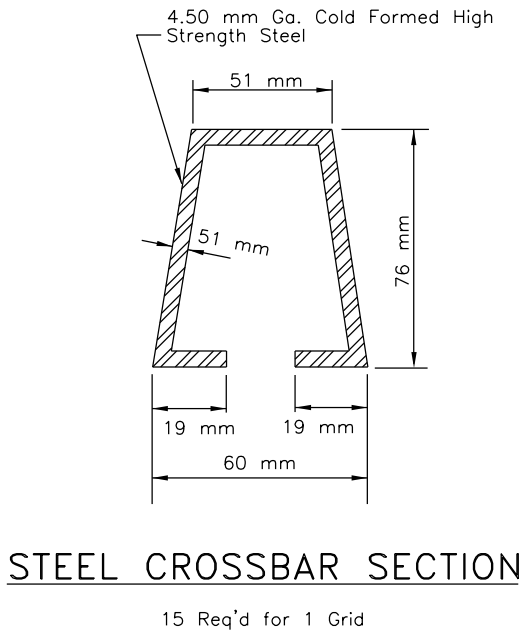
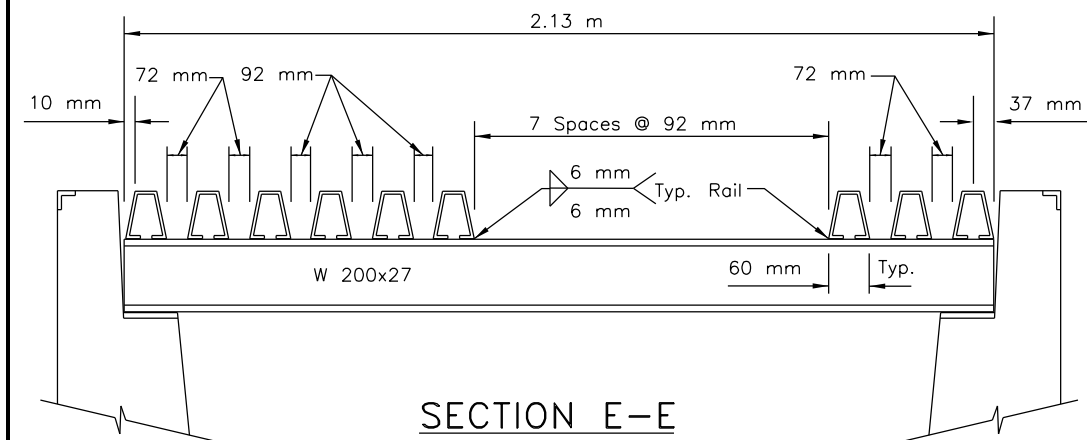
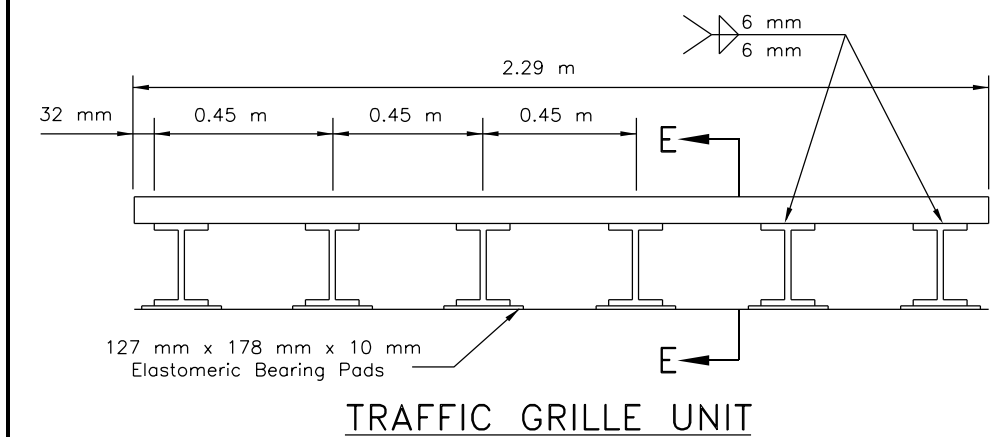
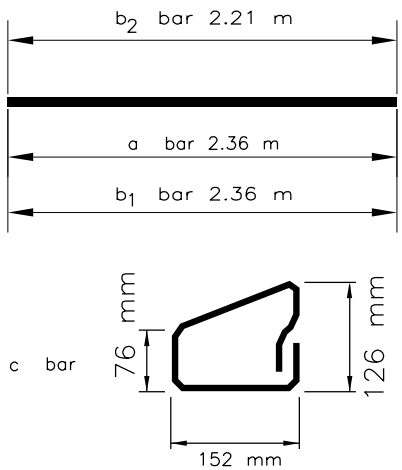
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N35	N35(9-1)4	11	14

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-03.
2. REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 420. ALL STRUCTURAL STEEL SHALL CONFORM TO AASHTO M-183.
3. EACH UNIT SHALL CONFORM TO AASHTO MS-18 HIGHWAY LOADING REQUIREMENTS.
4. EACH UNIT SHALL BE FABRICATED TO CONFORM TO THE ROADWAY CROWN AS SHOWN ON THE PLANS OR AS DESIGNATED BY COR/AOTR.
5. BOLTS, WASHERS, AND NUTS SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M-111.
6. ALL TRAFFIC GRILL UNIT, INCLUDING THE STEEL ANGLES SHALL RECEIVE ONE (1) PRIMER COAT, ONE (1) INTERMEDIATE COAT, AND ONE (1) FINISH COAT IN ACCORDANCE WITH SECTION 563, PAINT SYSTEM 2, OF FP-03.
7. WING BRACES SHALL BE CONSIDERED SUBSIDIARY ITEMS TO THE CATTLEGUARD UNIT.
8. THE CONTRACTOR HAS THE OPTION TO USE ALL STEEL FRAME CATTLEGUARD. IF THE CONTRACTOR ELECTS TO SUBSTITUTE FOR THE STEEL FRAME CATTLEGUARD, HE/HER SHALL PROVE THEY ARE MORE COST EFFECTIVE WITH SUPPORTING DATA SUBMITTED FOR APPROVAL PRIOR TO USE. THE CONTRACTOR IS RESPONSIBLE FOR ALL PATENT PROTECTION RIGHTS, SHOP DRAWINGS, AND MATERIAL CERTIFICATIONS. HOWEVER, NO STEEL FRAME CATTLEGUARD SHALL BE USED FOR CONCRETE DRAINAGE PAD CATTLEGUARD LOCATIONS.
9. ELASTOMERIC BEARING PADS SHALL BE SET WITH EPOXY ADHESIVE PRIOR TO THE INSTALLATION OF TRAFFIC GRILL UNIT.



REINFORCING STEEL SCHEDULE							
STRAIGHT BARS				BENT BARS			
MARK	NO.	SIZE	LENGTH	MARK	NO.	SIZE	LENGTH
END UNIT							
a	6	13	2.36 m				
b ₁	2	16	2.36 m				
				c	3	10	0.61 m
D ₁	20	13	0.46 m				
INTERMEDIATE UNIT							
a	8	13	2.36 m				
b ₂	2	16	2.21 m				
				c	6	10	0.61 m
D ₁	18	13	0.46 m				



UNITED STATES

DEPARTMENT OF THE INTERIOR

BUREAU OF INDIAN AFFAIRS

NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

PRECAST CONCRETE

CATTLEGUARD DETAILS

DRAWN BY: D.O.T. DATE: 8/2008

DESIGNED BY: D.O.T. DATE: 4/2003

REVISED: 11/2009 FILENAME: PCCG

BY: NRDOT SCALE: NTS

BM No.	STATION	OFFSET	NORTHING+	EASTING+	ELEVATION+	DESCRIPTION
0	33+976.197	17.534	653042.841	284862.166	1755.573	#16 Rebar With Cap
1	34+200.842	-22.285	653235.173	284985.112	1758.818	#16 Rebar With Cap
2	34+522.435	23.111	653420.897	285251.549	1763.732	#16 Rebar With Cap
3	34+847.045	-21.297	653666.027	285468.556	1768.638	#16 Rebar With Cap
3A	35+142.119	22.982	653848.421	285704.405	1771.762	#16 Rebar With Cap
4	35+453.581	-23.098	654122.930	285859.416	1778.190	#16 Rebar With Cap
5	35+698.799	22.380	654288.838	286045.627	1781.564	#16 Rebar With Cap
6	35+956.365	-22.791	654519.981	286167.495	1783.959	#16 Rebar With Cap
7	36+236.870	21.932	654724.311	286364.643	1785.024	#16 Rebar With Cap
8	36+554.008	-19.159	655018.007	286492.376	1785.384	#16 Rebar With Cap
9	36+822.366	21.869	655228.703	286663.567	1779.854	#16 Rebar With Cap
10	37+054.627	-23.205	655457.525	286697.664	1777.294	#16 Rebar With Cap
11	37+328.317	22.097	655730.977	286723.794	1774.602	#16 Rebar With Cap
12	37+541.241	-24.684	655947.275	286709.481	1772.042	#16 Rebar With Cap
13	37+761.263	24.191	656120.480	286854.165	1771.564	#16 Rebar With Cap
14A	38+035.580	-11.603	656352.605	286998.833	1771.564	#16 Rebar With Cap
15	38+084.861	19.680	656360.201	287056.502	1759.216	#16 Rebar With Cap
16	38+213.877	-22.049	656467.134	287139.912	1752.161	#16 Rebar With Cap
17	38+398.481	18.895	656518.611	287322.481	1749.227	#16 Rebar With Cap
18	38+570.795	-17.187	656631.515	287457.562	1730.555	#16 Rebar With Cap
19	38+716.779	43.683	656646.478	287615.018	1726.366	#16 Rebar With Cap
20	38+797.001	-31.557	656750.612	287650.412	1711.655	#16 Rebar With Cap
19A	38+865.269	55.018	656706.433	287751.565	1711.316	#16 Rebar With Cap
21	38+938.180	22.638	656776.737	287800.422	1705.836	#16 Rebar With Cap
22	39+104.014	-29.299	656933.316	287870.019	1693.230	#16 Rebar With Cap
23	39+296.340	23.656	657098.001	287977.147	1688.349	#16 Rebar With Cap
24	39+564.143	-19.235	657349.354	287880.513	1682.478	#16 Rebar With Cap
25	39+805.591	22.798	657584.032	287809.872	1680.423	#16 Rebar With Cap
26	40+062.046	-21.259	657793.540	287655.546	1682.010	#16 Rebar With Cap
27	40+383.812	24.285	658101.591	287552.045	1680.169	#16 Rebar With Cap
28	40+678.809	-21.129	658344.945	287379.232	1683.317	#16 Rebar With Cap
29	40+921.137	18.804	658579.468	287306.319	1685.473	#16 Rebar With Cap
30	41+134.252	-19.464	658752.828	287176.593	1686.617	#16 Rebar With Cap
31	41+394.742	28.755	659007.301	287102.947	1678.860	#16 Rebar With Cap
32	41+722.276	-21.323	659277.650	286911.381	1671.824	#16 Rebar With Cap
33	42+030.406	22.188	659572.600	286812.174	1667.957	#16 Rebar With Cap
34	42+342.174	-23.329	659830.900	286631.752	1668.199	#16 Rebar With Cap
35	42+685.623	22.730	660158.565	286518.994	1666.169	#16 Rebar With Cap
36	42+968.732	-22.397	660391.420	286351.765	1670.191	#16 Rebar With Cap
37	43+251.396	29.638	660667.865	286278.650	1671.161	#16 Rebar With Cap
38	43+506.457	-21.096	660893.570	286152.235	1660.267	#16 Rebar With Cap
39	43+798.919	22.304	661186.544	286112.434	1655.578	#16 Rebar With Cap
40	43+961.624	-22.493	661330.606	286024.042	1657.155	#16 Rebar With Cap

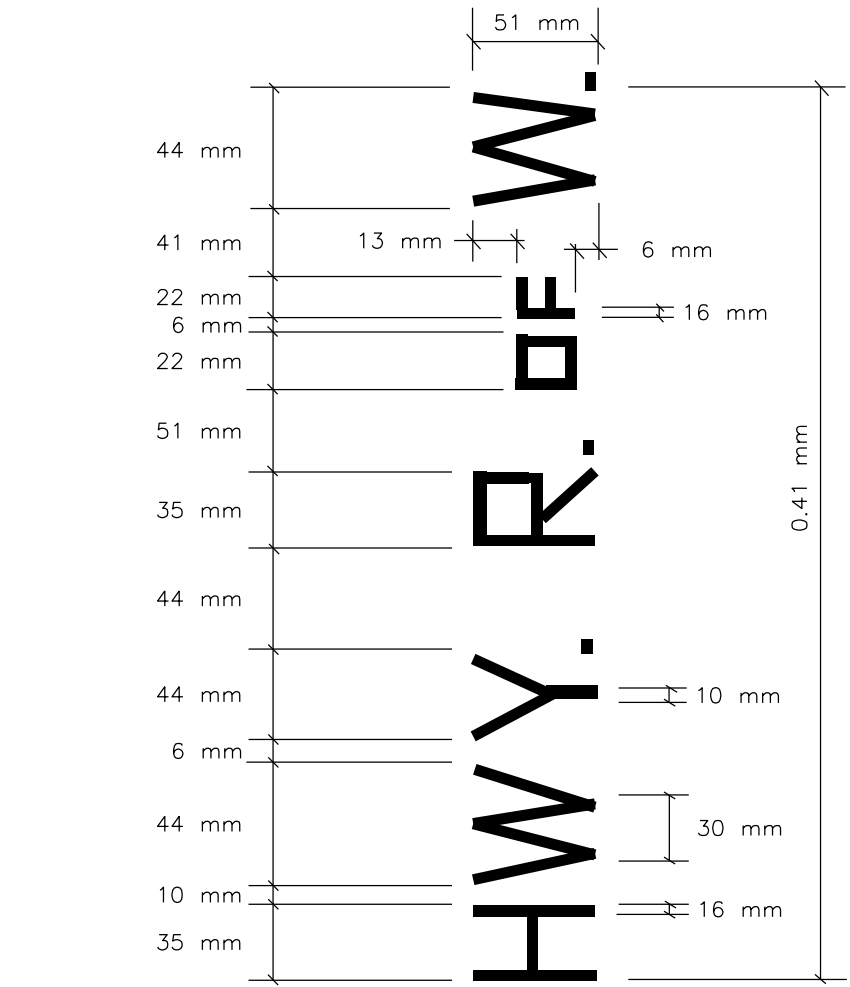
+ All The Coordinates Shown On These Plans Are Arizona State Plane Ground Coordinates.

ITEM No. 62101-0000 : RIGHT-OF-WAY MONUMENT

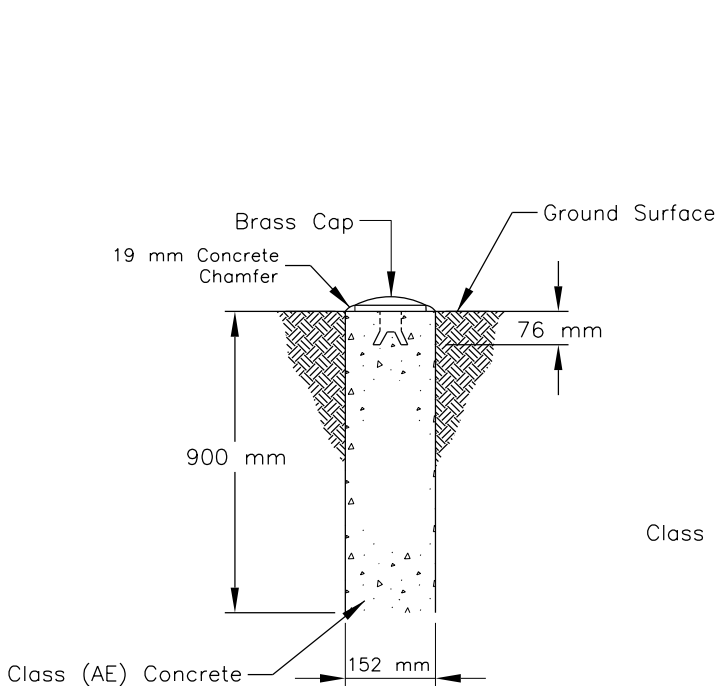
ITEM No. 62102-0000 : REFERENCE MARKER

STATION	LOCATION	MONUMENT	MARKER	Offset From CL	NORTHING	EASTING
B.O.P. 33+868.598	RT. & LT.	2.00	2.00	30.48 m	652972.897	284778.543
PC 33+979.151	RT. & LT.	2.00	2.00	30.48 m	653056.542	284850.832
PT 34+497.508	RT. & LT.	2.00	2.00	30.48 m	653422.186	285217.581
PC 34+824.967	RT. & LT.	2.00	2.00	30.48 m	653635.557	285465.981
PT 35+176.849	RT. & LT.	2.00	2.00	30.48 m	653890.094	285708.083
PC 35+921.461	RT. & LT.	2.00	2.00	30.48 m	654478.506	286164.392
PT 36+372.057	RT. & LT.	2.00	2.00	30.48 m	654851.379	286416.823
PC 36+866.642	RT. & LT.	2.00	2.00	30.48 m	655277.958	286667.112
PT 37+109.217	RT. & LT.	2.00	2.00	30.48 m	655510.797	286720.048
PC 37+345.352	RT. & LT.	2.00	2.00	30.48 m	655746.109	286700.353
PT 37+566.289	RT. & LT.	2.00	2.00	30.48 m	655959.996	286742.856
PC 37+714.080	RT. & LT.	2.00	2.00	30.48 m	656091.369	286810.556
PT 38+242.511	RT. & LT.	2.00	2.00	30.48 m	656461.910	287175.959
PC 38+863.615	RT. & LT.	2.00	2.00	30.48 m	656754.103	287724.040
PT 39+538.862	RT. & LT.	2.00	2.00	30.48 m	657335.375	287909.039
PC 43+099.307	RT. & LT.	2.00	2.00	30.48 m	660518.184	286313.263
PT 43+417.849	RT. & LT.	2.00	2.00	30.48 m	660814.348	286197.182
PC 43+955.221	RT. & LT.	2.00	2.00	30.48 m	661330.443	286047.466
PT 44+118.244	RT. & LT.	2.00	2.00	30.48 m	661491.544	286027.448
TOTAL:		38.00	38.00			

* NOTE: NORTHING AND EASTING COORDINATES ARE FROM THE CENTERLINE ALIGNMENT.

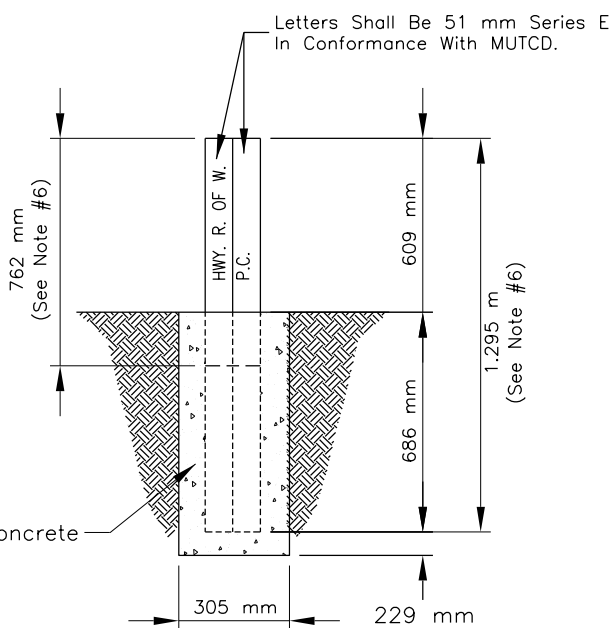


DETAIL OF LETTERS



SURVEY MONUMENT
NTS

ELEVATION

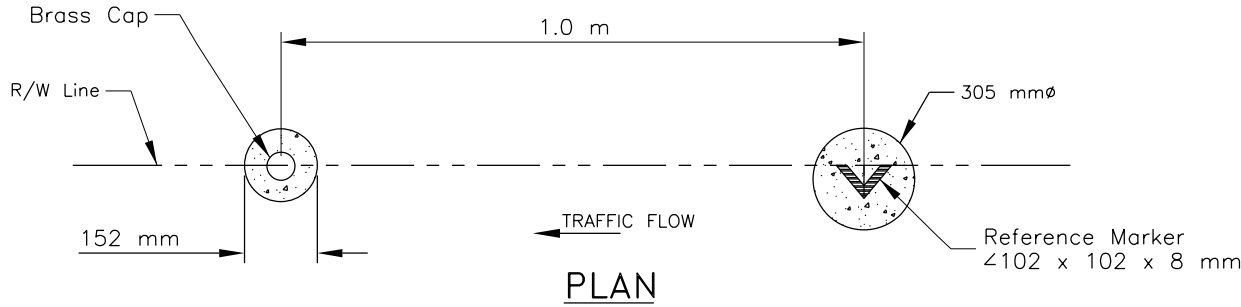
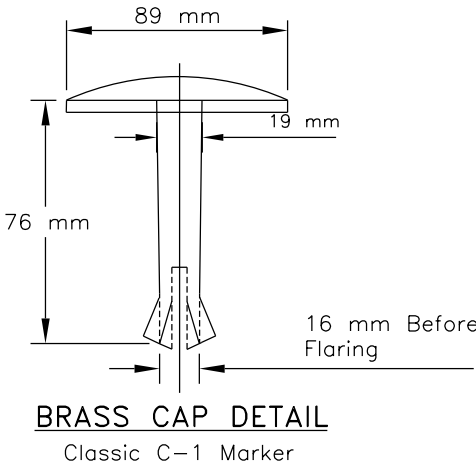


REFERENCE MARKER
NTS

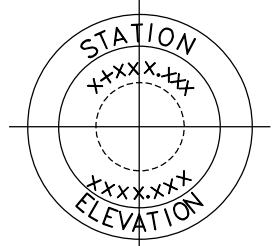
REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N35	N35(9-1)4	13	14

GENERAL NOTES

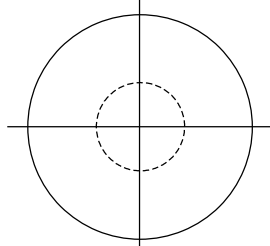
- Survey monument and reference markers shall be placed as shown on the plans or as directed by AOTR/COR. The cost of supplying all materials and installation of Right-of-Way Monument and Markers shall be included in the unit price bid under Item 62101-0000 & 62102-0000.
- If rock is encountered when installing the right-of-way monument and reference marker, drill a 152mmø for survey monument and 305mmø for reference marker hole in the rock to the depth required to install the monument and marker to full depth. All hole drilling into rock material, shall be considered incidental to the completion of the work and no additional payment shall be made thereof.
- 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-03. Furnishing and placing of concrete shall be considered incidental to Items 62101-0000 & 62102-0000.
- Roadway stationing and elevations shall be stamped on all brass caps by the Contractor after installation, unless otherwise directed in writing by the AOTR/COR.
- The Contractor shall be required to paint the reference markers per Section 708 and subsection 708.04 of FP-03:
 - Prime coat entire steel material and shall conform to subsection 708.04(a) or (b) of FP-03.
 - Coat white finish of paint the top 762mm and shall conform to subsection 708.04(c), (d), or (e) of FP-03.
 - All letters, numerals, symbols, etc. shall be painted on the reference markers using the dimensions shown using Black Lamp paint conforming to ASTM D 209. The required information to place on the reference markers shall be furnished to the Contractor by the AOTR/COR.
- The Contractor has the option to use an approved State Highway point specifications in lieu of that stated in Note (6) above. The Contractor shall submit (in writing) the point specifications and request for use on the project at least 14 days in advance of the point use for review and approval. The Contractor shall not be allowed to use any point until the proper approval has been given by the COR. Any painting performed by the Contractor without the proper approval shall cause the work to be rejected.



PLAN



TOP VIEW



BOTTOM VIEW

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

RIGHT-OF-WAY MONUMENT
& MARKER DETAILS

DRAWN BY: D.O.T. DATE: 2/2009

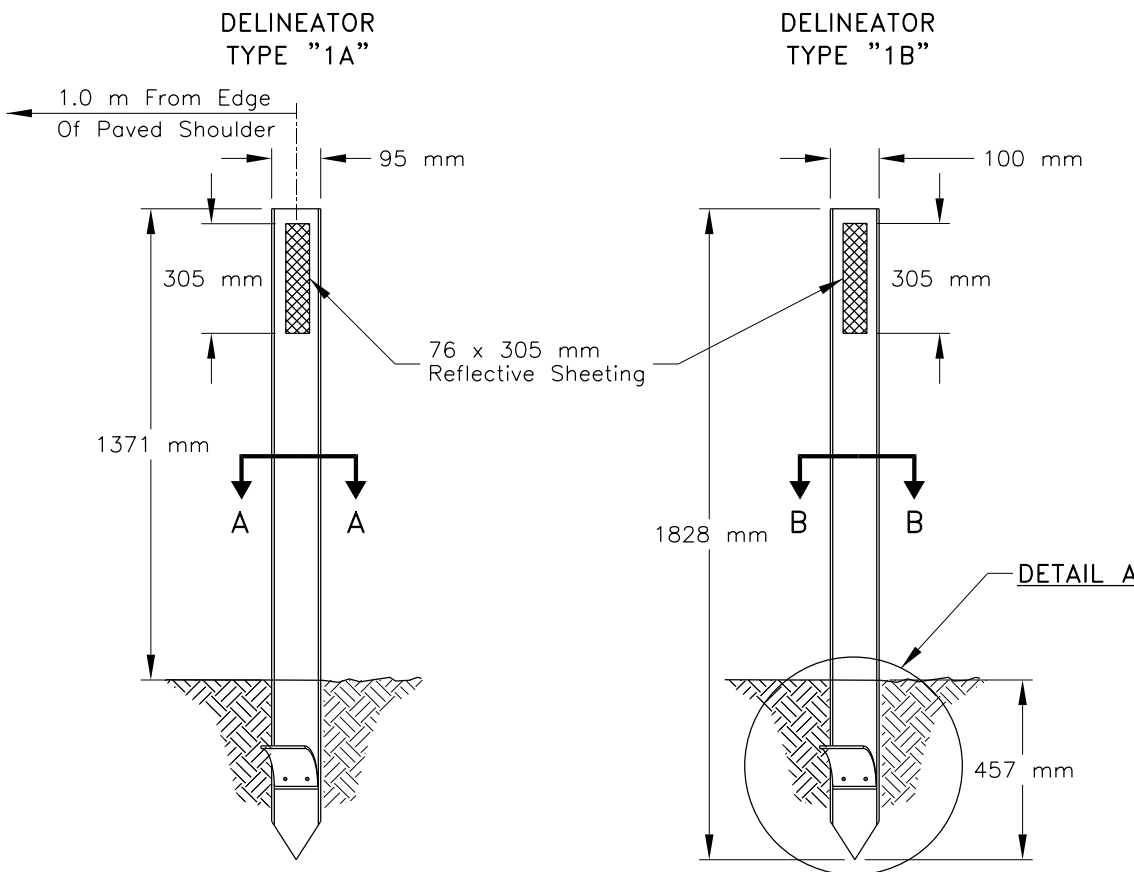
DESIGNED BY: D.O.T. DATE: 2/2009

REVISED: FILENAME: N35ROW

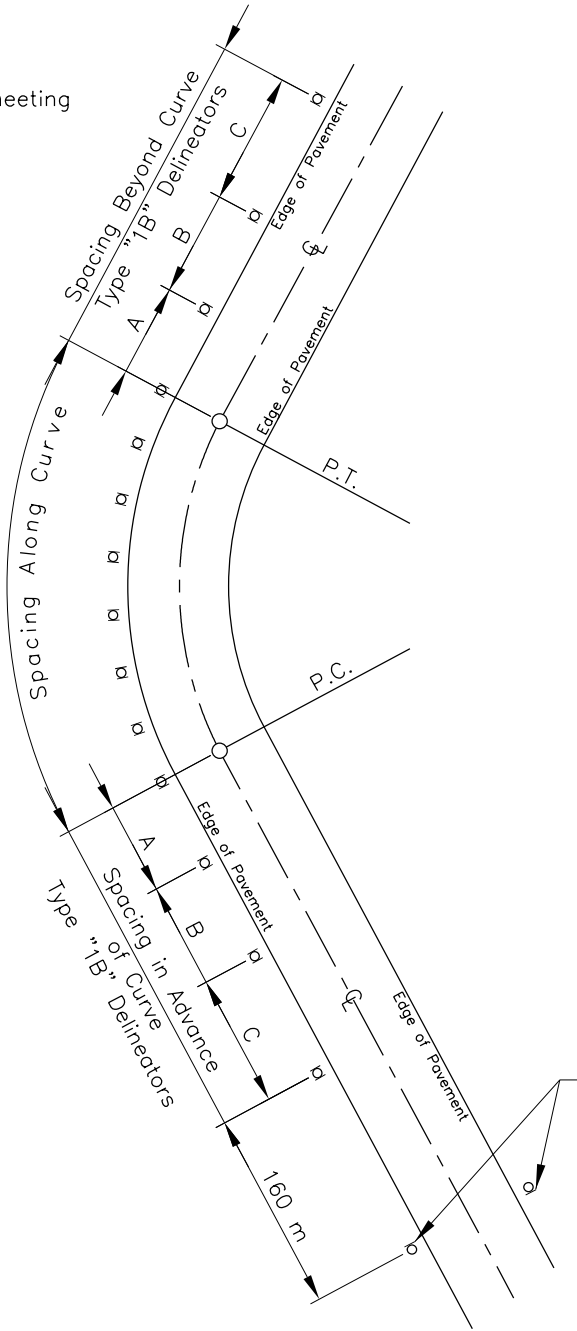
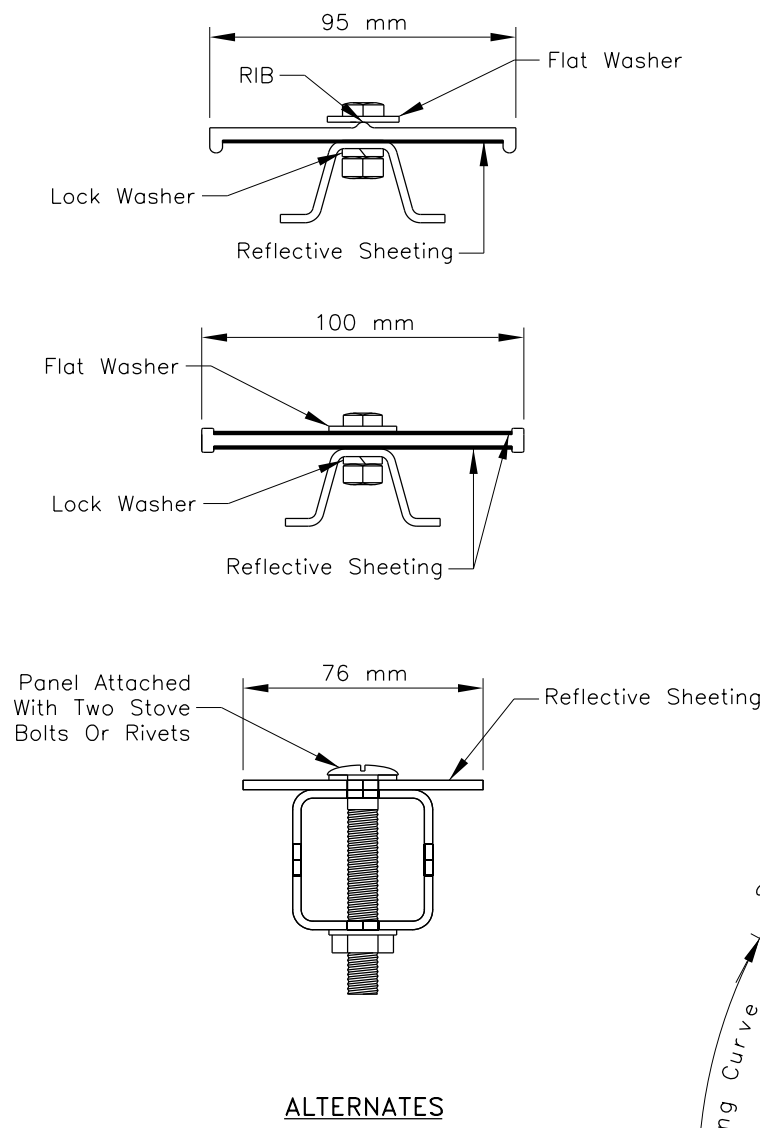
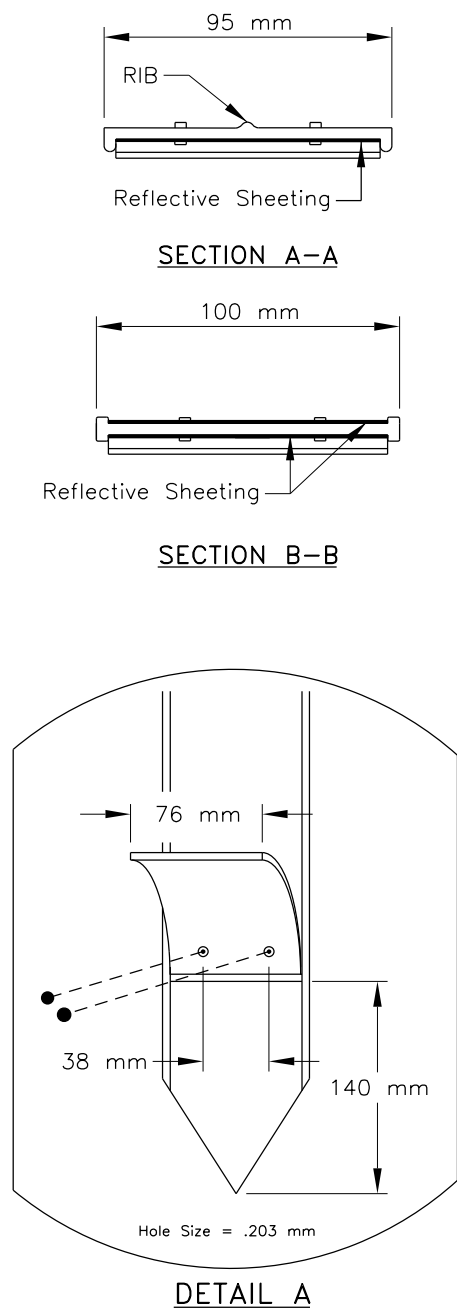
BY: SCALE: NTS



GLASS FIBER TYPE DELINEATOR

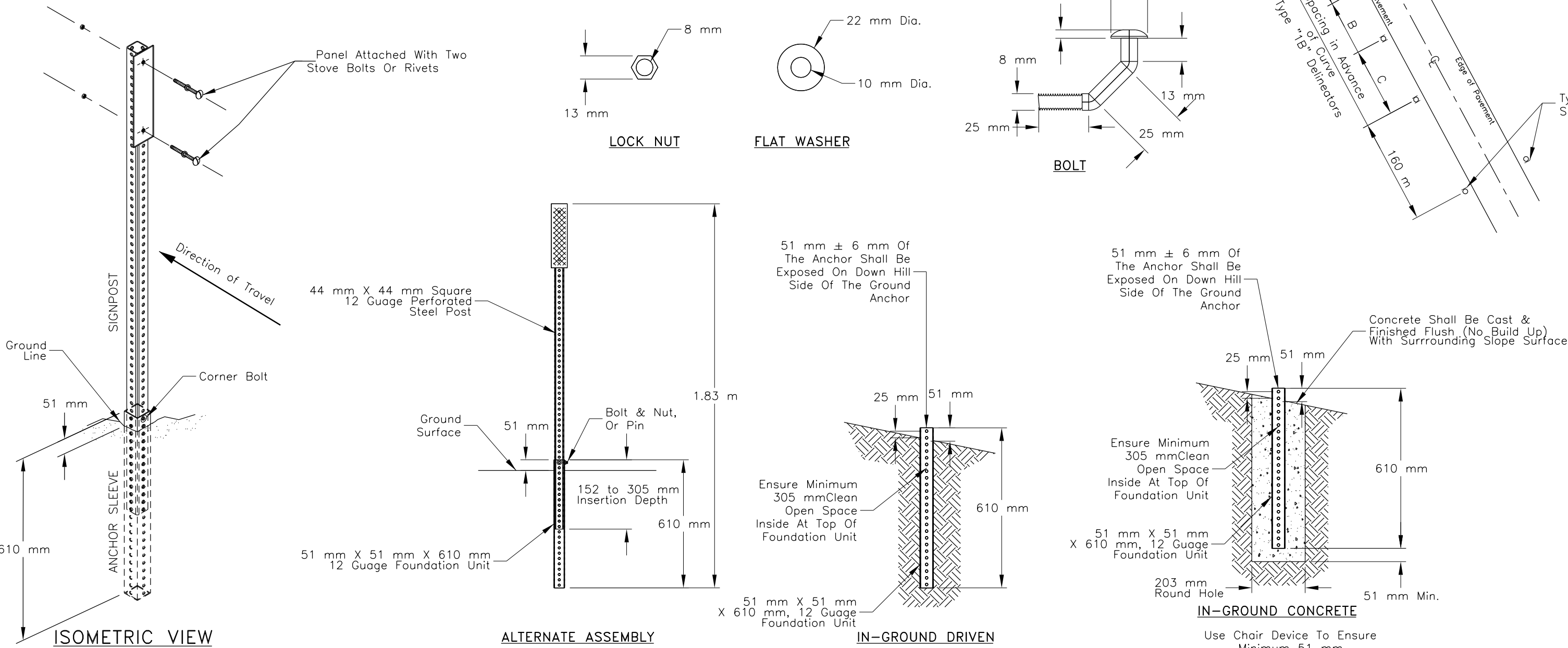
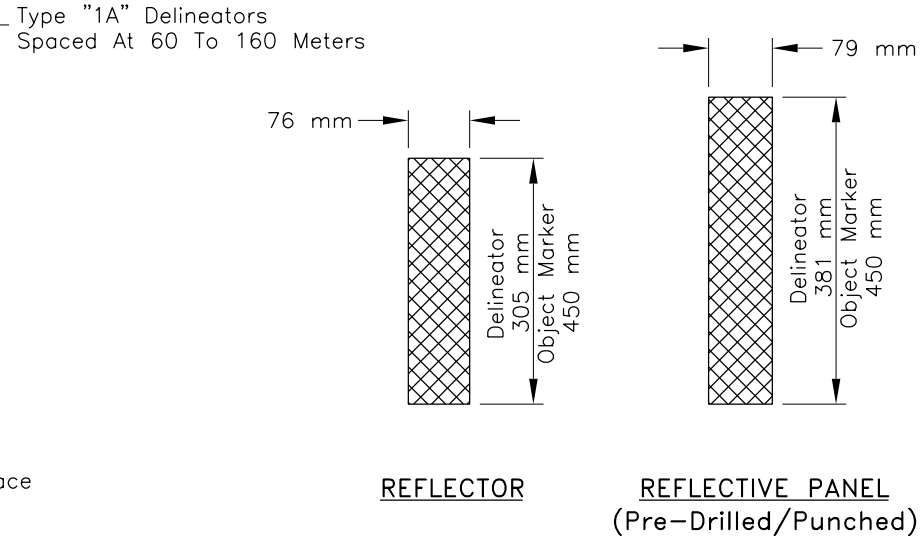


TYPE	POST COLOR	HIGH INTENSITY REFLECTIVE SHEETING
1A	WHITE	WHITE, ONE SIDE
1B	WHITE	WHITE, BOTH SIDES



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

$S = 1.7 \times \sqrt{(R-15)}$
Spacing For Specific Radii May Be Interpolated From Table. The Spacing On Curves Should Not Exceed 90 Meters. Shaded Areas Denotes To Use 90 Meter Spacings. Delineators Should Be Spaced 60 To 160 Meters Apart On Mainline Tangent Sections.
NOTE: When Uniform Spacing Is Interrupted By Such Features As Culverts, Signs, Driveways, Intersections, Delineators Which Would Ordinarily Be Located Within The Features May Be Relocated In Either Direction For A Distance Not Exceeding One Quarter Of The Uniform Spacing. Delineators Still Falling Within Such Features May Be Eliminated.



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

GLASS FIBER & SQUARE STEEL
TUBE POST DELINEATOR DETAILS

DRAWN BY: D.O.T. DATE: 3/2012
DESIGNED BY: D.O.T. DATE: 3/2012
REVISED: FILENAME: N35(9)MIS
BY: SCALE: NTS