

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

APPROVED  
By Harold J Riley at 3:31 pm, Jan 12, 2018



N9402

PROJ. N9402(2)1,2&3  
RIO PUERCO BRIDGE

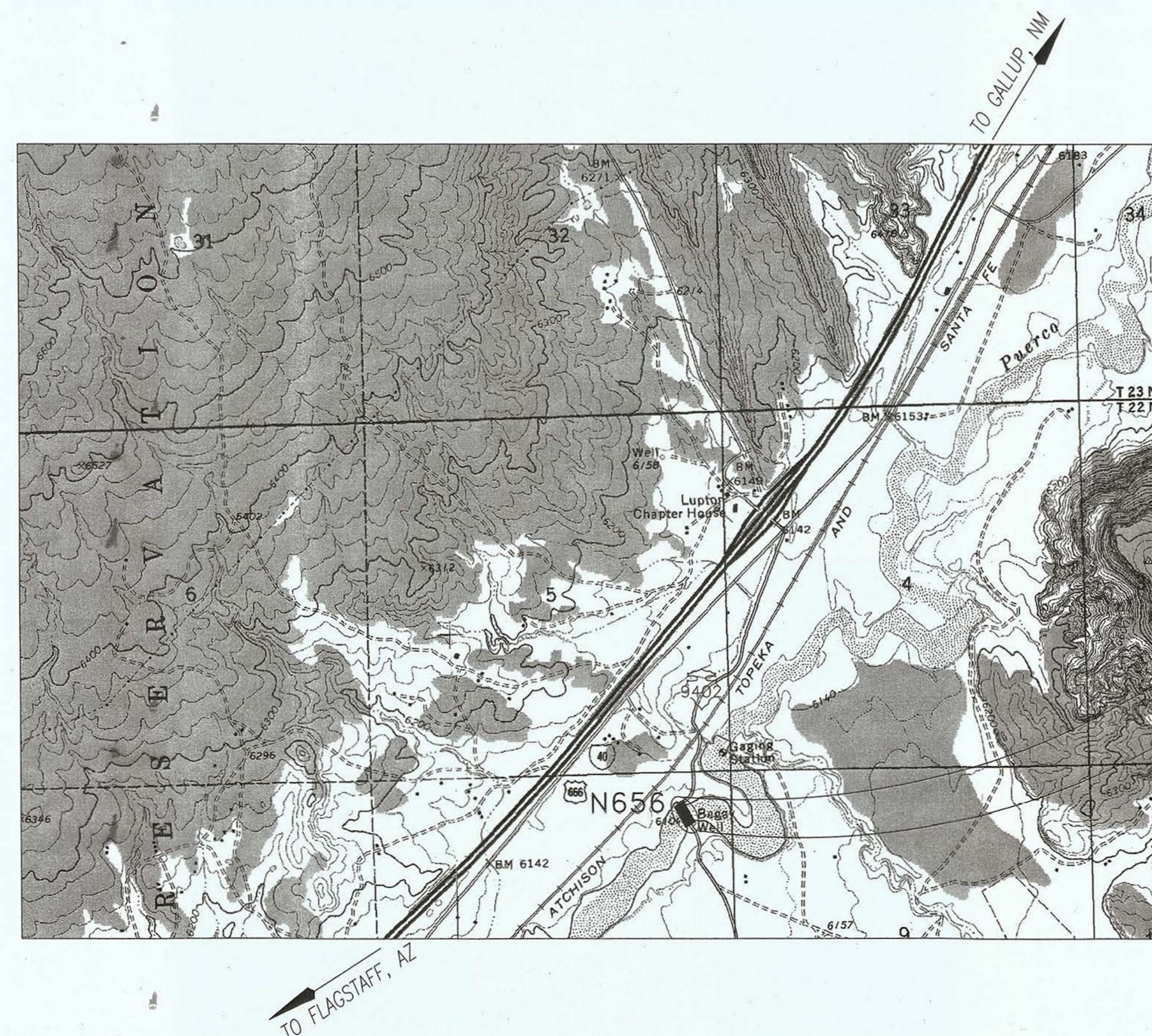
BRIDGE AND APPROACH ROADWAY  
I.D. NO. N36403

DESIGN DATA

Design Speed	50 km/h
Minimum Radius	100 m
Maximum Gradient	7%
Min. Stopping Sight Distance	65m
Min. Passing Sight Distance	345m
Current ADT (2001)	482 VPD
Future ADT (2021)	717 VPD
R.O.W. Width	23.0m RT & LT EXCEPT 70.0m RT & 60.0m LT STA 0+190 to STA 0+380

LENGTH OF PROJECT

STATION TO STATION	LIN. METERS	KILOMETERS
B.O.P. Station 0+100.000	124.032	0.1240
B.O.B. Station 0+224.032	126.914	0.1269
E.O.B. Station 0+350.946	139.054	0.1390
E.O.P. Station 0+490.000		
TOTAL	390.000	0.3900



B.O.B. Sta. 0+224.032  
E.O.B. Sta. 0+350.946

INDEX TO SHEETS

SHT. NO.	DESCRIPTION
1	TITLE SHEET
2	TYPICAL SECTIONS & GENERAL NOTES
3	ESTIMATED QUANTITIES
4	PLAN AND PROFILE
5	BRIDGE NOTES AND DESIGN DATA
6	STRUCTURE LOCATION PLAN
7	STRUCTURE LOCATION PROFILE
8	PILE AND BORING PLAN
12	GUIDEBANK GRADING PLAN
12A	WIRE ENCLOSED RIPRAP DETAILS AND RIPRAP NOTES
12B	CULVERT SECTION AND DETAILS
13	ABUTMENT DETAILS
14	WINGWALL DETAILS
15	FIXED PIER DETAILS, PIER 3
15A	EXPANSION PIER DETAILS, PIERS 1, 2 & 4
16	BEAM BEARING DETAILS
17	BEAM SEAT ELEVATIONS
18	FRAMING PLAN
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20	ABUTMENT DIAPHRAGM DETAILS
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21	TRANSVERSE SECTION
22	STEEL DIAPHRAGM DETAILS
23	DECK ELEVATIONS
24	DECK SLAB REINFORCING PLAN
25	APPROACH SLAB
26	REINFORCING SCHEDULE
27	GUARDRAIL DETAILS
27A	BRIDGE/RAIL/ROAD TRANSITION DETAILS
28,28A	STANDARD GUARDRAIL END BARRIER SKT-350, sht 1of3, 2of3, 3of3
29	STEEL BRIDGE RAILING
30	TEMPORARY TRAFFIC CONTROL
31	RIPRAP CUT TO FILL TRANSITION AND DITCH LINE W/ RIPRAP DETAILS
32	DELINEATOR & R/W MONUMENT DETAILS
33-34	STORMWATER POLLUTION AND EROSION/SEDIMENT CONTROL DETAILS 1&2
35	SIGN POST SIZE DETAILS
36	LAP SPICE U-CHANNEL BREAKAWAY POSTS & HARDWARE DETAILS
37	SQUARE STEEL TUBE POSTS & HARDWARE DETAILS
40	TOTAL SHEETS (DUE TO A AND B VERSIONS OF VARIOUS SHEETS)

LEGEND

STATE LINE	RESERVATION LINE	COUNTY LINE	TOWNSHIP or RANGE LINE	SECTION LINE	HIGHWAY RIGHT-OF-WAY LINE	SECTION CORNER and 1/4 CORNER	POWER LINE and POLES	TELEPHONE LINE and POLES	WATER LINE	TRAFFIC SIGN	GUARD RAIL	DELINEATOR	BARBED WIRE FENCE	CATTLE GUARD	CULVERTS	CONCRETE BOX CULVERTS	GROUND LINE - EARTH	GROUND LINE - ROCK	EXISTING ROAD	TREES and SHRUBS	CHANNEL or DITCH	RIPRAP	RAILROAD TRACK	DWELLING	SCHOOL	CHURCH	WINDMILL	RIGHT-OF-WAY MONUMENT
INDIAN SERVICE	COUNTY	STATE	FEDERAL																									
PAVED	GRADED	UNIMPROVED																										

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

RECOMMENDED APPROVAL

AGENCY ROAD ENGINEER  
DIVISION MANAGER  
PLANNING AND DESIGN CHIEF  
DATE  
1/3/2018  
DATE  
1/3/18  
DATE  
1/12/2018

APPROVAL

REGIONAL DIRECTOR  
DATE

REGION

STATE

RESERVATION

ROUTE

PROJECT

SHEET

NAVAJO

AZ

NAVAJO

N9402

N9402(2)1,2&3

2 of 40

ROADWAY GENERAL NOTES

1. ALL WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-14), AND THE SUPPLEMENTAL SPECIFICATIONS FOR THIS PROJECT.

2. ALL PERMANENT AND TEMPORARY ROADSIDE SIGNS SHALL BE PLACED IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS (MUTCD), LATEST EDITION, AND IN ACCORDANCE WITH THE DETAILS ON THESE PLANS. PLACEMENT OF PERMANENT TRAFFIC SIGNS SHALL BE FIELD ADJUSTED AS DIRECTED BY THE AT NO ADDITIONAL COST TO THE GOVERNMENT.

3. THE TEMPORARY TRAFFIC CONTROL DETAILS SHOWN ON THESE PLANS REFLECT 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 ON THESE PLANS SHALL NOT BE ALTERED OR MODIFIED IN ANYWAY DURING CONSTRUCTION WITHOUT THE EXPRESSED WRITTEN DIRECTION AND APPROVAL OF THE THE AWARDING UNLESS OTHERWISE NOTED IN THESE PLANS OR SPECIFICATIONS. DRAINAGE STRUCTURES AND TURNOUTS SHALL BE INSTALLED AS SHOWN WITH ONLY MINOR CORRECTIONS IN LOCATION, SKEW, AND/OR INVERT ELEVATIONS AS NEEDED TO FIT FIELD CONDITIONS. TURNOUTS MAY NOT BE RELOCATED MORE THAN 5.0 METERS FROM THE LOCATIONS SHOWN ON THE PLANS WITHOUT THE WRITTEN APPROVAL OF THE THROUGH THE COR/COTR.

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-14, AND ANY AND ALL PERMIT REQUIREMENTS. THIS WORK SHALL BE INCIDENTAL OBLIGATIONS OF THE CONTRACTOR.

6. 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 FROM THE ENGINEER, SHALL NOT RELIEVE THE CONTRACTOR FROM ANY RISK OR FROM FULFILLING THE TERMS OF THE CONTRACT. THERE MAY BE AREAS WITH LIMITED WORKING ROOM WITHIN THE PROJECT RIGHT OF WAY (R.O.W.), AND/OR EXISTING FEATURES WITHIN OR NEAR THE PROJECT R.O.W. THAT MAY REQUIRE SPECIAL CONSTRUCTION PROCEDURES; THE CONTRACTOR IS RESPONSIBLE FOR ADDRESSING THIS IN HIS BID AMOUNT IF APPLICABLE.

7. THE CONTRACTOR IS REQUIRED TO SUBMIT A REVISED PIPE LIST TO THE NRO-DOT, PLANNING & DESIGN BRANCH CHIEF THROUGH THE COR/COTR, BASED ON THE FIELD STAKING IN ACCORDANCE WITH SECTION 152 OF THE CONTRACT SUPPLEMENTAL SPECIFICATION. THE APPROVAL OF ANY AND ALL REVISED PIPE LISTS WITH ACCOMPANYING DRAWINGS IS RENDERED AS A SERVICE ONLY AND IS NOT CONSIDERED A GUARANTEE OF MEASUREMENTS, QUANTITIES, INSTALLATION PROCEDURES, AND/OR DIMENSIONS. NOR SHALL IT BE CONSIDERED AS RELIEVING THE CONTRACTOR FROM COMPLYING WITH THE CONTRACT SPECIFICATIONS AND DESIGN PLANS. THE CONTRACTOR IS HEREBY NOTIFIED THAT UNDER NO CIRCUMSTANCE SHALL ANY DRAINAGE STRUCTURE(S) BE INSTALLED BELOW THE NATURAL FLOW LINE OF THE WASH, CHANNEL, ARROYO, OR DITCH LINE.

8. NO WORK SHALL BE PERFORMED OR GROUND DISTURBED OUTSIDE OF THE DESIGNATED CONSTRUCTION LIMITS IN ACCORDANCE WITH SECTION 107 OF THE FP-14 WITHOUT WRITTEN APPROVAL BY THE NRO-DOT DIVISION MANAGER THROUGH THE COR/COTR UNLESS OTHERWISE SHOWN AND LABELED ON THESE PLANS AS "CONSTRUCTION ZONE". IN NO CASE SHALL ANY WORK BE PERFORMED OUTSIDE THE DESIGNATED R.O.W. LIMITS WITHOUT WRITTEN APPROVAL FROM THE NRO-DOT DIVISION MANAGER THROUGH THE COR/COTR UNLESS OTHERWISE SHOWN AND CALLED OUT ON THESE PLANS AS "CONSTRUCTION ZONE".

9. 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 CONTRACTOR IS REQUIRED TO SUBMIT COURTESY COPY OF THE APPROVED SWPPP TO THE NAVAJO NATION WATER QUALITY EPA OFFICE.

10. 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.

11. ALL TURNOUT/DRIVEWAYS, AS CALLED FOR ON THESE PLANS, SHALL BE CONSTRUCTED, REBUILT, RESHAPED AND/OR REMOVED UP TO THE R.O.W. OR TEMPORARY EASEMENT LIMITS AS SHOWN ON THESE PLANS. ALL TURNOUTS SHALL BE SURFACED TO THE CATTLEGUARD, THEN FROM THE BACK OF CATTLEGUARD TO THE R.O.W. OR TEMPORARY EASEMENT LINE AS SHOWN ON THESE PLANS. WIDTH OF TURNOUT SPECIFIED IS THE MEASURED AT THE TOP OF SURFACING. THIS WORK SHALL BE PAID FOR UNDER THE APPROPRIATE BID ITEMS FOR THIS WORK AS SHOWN IN THE BID SCHEDULE.

12. STRUCTURAL EXCAVATION AND BEDDING/BACKFILL OF ALL DRAINAGE STRUCTURES (CULVERTS, CONCRETE HEADWALLS AND WINGWALLS) SHALL BE CONSIDERED INCIDENTAL TO THE INSTALLATION OF STRUCTURES. BEDDING AND BACKFILL MATERIAL SHALL MEET ALL REQUIREMENTS OF FP-14, SECTIONS 209 AND 704. APPROVED EXCESS EXCAVATION MATERIAL MAY BE USED TO REBUILD TURNOUTS, EARTHEN DITCH BLOCKS, AND/OR PLACED ALONG ROADWAY SHOULDERS AS EMBANKMENT IN AREAS ADJACENT TO THE REMOVAL AND AS DIRECTED BY THE COR/COTR.

13. ALL FURROW AND DRAINAGE DITCHES SHALL BE STAKED AND GRADED TO DRAIN UP TO THE R.O.W. LIMITS. EARTHEN DITCH BLOCKS, DIKES AND DITCHES SHALL BE CONSTRUCTED AS SHOWN ON THESE PLANS AND/OR ADDED AT LOCATIONS DESIGNATED BY THE AOTR/COR. ALL DITCH BLOCKS, DIKES AND FURROW DITCHES SHALL BE PAID FOR UNDER THE APPROPRIATE BID ITEMS FOR THIS WORK AS SHOWN IN THE BID SCHEDULE. AT ALL DRAINAGE PIPE REPLACEMENTS, INSTALLATIONS, EXTENSIONS, AND IN-PLACE PIPE CLEANING LOCATIONS, THE CONTRACTOR SHALL CLEAN, REGRADE, AND RESHAPE THE INLET AND OUTLET CHANNELS TO THE R.O.W. LINE AS DIRECTED BY THE COR/COTR. THIS WORK SHALL BE INCIDENTAL TO BID ITEMS FOR SECTIONS 602, 603, AND/OR 607.

14. IMMEDIATELY PRIOR TO PLACING EMBANKMENT, AGGREGATE BASE AND/OR RECYCLED MATERIAL, THE TOP 152 mm OF THE ORIGINAL GROUND OR FINISHED SUBGRADE (INCLUDING TURNOUTS) SHALL BE CHECKED FOR COMPACTION AND GRADE IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS. IF COMPACTION DOES NOT MEET THE MINIMUM SPECIFIED COMPACTION AND TOLERANCE REQUIREMENTS, THE ORIGINAL GROUND AND/OR SUBGRADE SHALL BE RE-WATERED AND/OR SCARIFIED AS NEEDED AND RE-COMPACTED TO THE REQUIRED DENSITY AND TOLERANCE, AT THE CONTRACTOR'S EXPENSE. IN NO CASE SHALL ANY EMBANKMENT OR SURFACING MATERIAL BE PLACED ON FROZEN, MUDDY OR UNSTABLE NATURAL GROUND OR SUBGRADE. THIS WORK SHALL BE CONSIDERED AN INCIDENTAL OBLIGATION OF THE CONTRACTOR.

15.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 R.O.W. 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, AND EMBANKMENT MATERIAL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 20401-0000, ROADWAY EXCAVATION AND/OR ITEM 20403-0000 UNCLASSIFIED BORROW. UPON WRITTEN APPROVAL, OR IF DIRECTED BY THE CO, WASTE MATERIAL MAY BE USED AS NECESSARY TO CONSTRUCT TURNOUTS, DITCH BLOCKS, AND/OR BE PLACED AS EMBANKMENT ALONG THE SHOULDERS IN AREAS AS DIRECTED BY THE COR/COTR. WASTE MATERIAL NOT USED WITHIN THE PROJECT LIMITS, SHALL BE DISPOSED OF AS PER FP-14, SECTION 204.14.

16. THE CONTRACTOR SHALL REMOVE, CLEAN AND STOCKPILE ALL SALVAGEABLE EXISTING CULVERTS, GUARDRAIL, CATTLE GUARDS AND FENCING MATERIALS, ETC., AS CALLED FOR ON THESE PLANS AND SECTIONS 203 AND 607. ALL SALVAGEABLE MATERIALS AS DETERMINED BY THE COR/COTR SHALL BE TAKEN TO THE FORT DEFIANCE AGENCY MAINTENANCE YARD LOCATED IN FORT DEFIANCE, ARIZONA AND STOCKPILED IN A DESIGNATED AREA. ANY MATERIALS DETERMINED TO BE UNUSABLE BY THE COR/COTR SHALL BE DISPOSED OF BY THE CONTRACTOR IN ACCORDANCE WITH SECTIONS 107, 109.02(m), AND 203. THE SALVAGE WORK SHALL BE INCLUDED IN THE APPROPRIATE UNIT PRICE BID ITEMS FOR SECTIONS 203 AND/OR 607.

17. 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 MAY NOT BE ABLE TO BE CONSTRUCTED. IN THIS CASE THE NRO-DOT PLANNING & DESIGN BRANCH CHIEF, THROUGH THE COR/COTR, SHALL BE CONSULTED FOR CHANGES IN THE TYPICAL SECTIONS, PROFILES, 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 AS SHOWN IN THE STAKING NOTES, 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.

18. ANY EXISTING OR NEW ROADSIDE FEATURES OR OTHER IMPROVEMENTS NEGLIGENTLY DAMAGED BY THE CONTRACTOR DURING CONSTRUCTION SHALL BE RESTORED AND/OR REPLACED TO EQUAL OR BETTER CONDITION AT THE CONTRACTOR'S EXPENSE.

19. THE CONTRACTOR SHALL REMOVE EXISTING ROADSIDE SIGNS THAT INTERFERE WITH ROAD CONSTRUCTION AND/OR CONTRADICT THE CONTRACTOR'S TEMPORARY TRAFFIC CONTROL PLAN, AT THE START OF THE CONSTRUCTION. WARNING AND REGULATORY SIGNS THAT DO NOT CONTRADICT THE APPROVED TEMPORARY TRAFFIC CONTROL PLAN SHALL REMAIN IN PLACE UNTIL REPLACED WITH NEW SIGNS OR UNLESS OTHERWISE DIRECTED BY THE COR/COTR. THE CONTRACTOR SHALL NOTIFY THE AOTR/COR AT LEAST THREE (3) WORKING DAYS IN ADVANCE OF SUCH SIGN REMOVAL. REMOVED ROADSIDE SIGNS SHALL BE SALVAGED AND DELIVERED TO THE FORT DEFIANCE AGENCY MAINTENANCE YARD LOCATED IN FORT DEFIANCE, ARIZONA AND STOCKPILED IN A DESIGNATED LOCATION. SIGNS THAT IMPEDE CONSTRUCTION AND THAT ARE REQUIRED FOR THE SAFETY AND/OR INFORMATION OF THE TRAVELING PUBLIC SHALL BE REMOVED AND TEMPORARILY RESET AS DIRECTED BY THE COR/COTR. ANY OTHER SIGNS ALONG THE N9402 ROADWAY, NOT SPECIFICALLY DESIGNATED ON THE PLANS TO REMAIN, SHALL BE REMOVED. THIS WORK SHALL BE CONSIDERED AN INCIDENTAL OBLIGATION OF THE CONTRACTOR.

20. GRADE AND SHAPE THE SHOULDER AND DITCHES TO PROVIDE POSITIVE DRAINAGE (AS DIRECTED BY COR/COTR) FROM THE SUBGRADE HINGE POINTS TO, AND INCLUDING, THE EXISTING DITCH LINE AREAS FOR THE CONSTRUCTION OF RIPRAP DITCH LININGS, SLOPE PROTECTION, RUNDOWNS AND DOWNDRAINS. THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE APPLICABLE WORK ITEMS SHOWN IN THE BID SCHEDULE.

21. ALL R.O.W. REFERENCE MARKERS SHALL BE LABELED IN THE METRIC UNITS OF MEASURE. ALL EXISTING AND NEW BRASS CAPS SHALL BE STAMPED WITH BOTH ALIGNMENT STATIONING AND ELEVATIONS IN METRIC, UNLESS OTHERWISE NOTED UNDER SECTION 152 OF THE SUPPLEMENTAL SPECIFICATIONS. ANY EXISTING R.O.W. MONUMENTS AND BRASS CAPS THAT MAY BE MISSING SHALL BE RESURVEYED AND LOCATED TO THEIR ORIGINAL POSITION AND LABELED AND STAMPED ACCORDINGLY. ALL EXISTING REFERENCE MARKERS SHALL BE SAND BLASTED, CLEANED, AND REPAINTED WITH ENGLISH STATIONS ON ONE SIDE AND METRIC STATIONS ON THE OTHER. ANY DAMAGED MONUMENTS AND/OR MARKERS SHALL BE RESURVEYED AND REPLACED. THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 62101-0000, RIGHT OF WAY MONUMENT AND ITEM 62102-0000, REFERENCE MARKER.

22. A COPY OF THE GEOTECHNICAL INVESTIGATION REPORT FOR THE BRIDGE WILL BE PROVIDED TO THE CONTRACTOR UPON WRITTEN REQUEST TO THE CO/COTR.

23. 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 APPLICABLE BID ITEMS FOR SECTIONS 602, 603, 607, AND 619.

24. CONSTRUCTION SURVEY STAKING SHALL BE IN ACCORDANCE WITH SECTION 152 OF THE FP-14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING AND PROTECTING ANY GOVERNMENT FURNISHED REFERENCE AND CONTROL POINTS DURING CONSTRUCTION. THE COST OF ANY GOVERNMENT RESTAKING DUE TO THE NEGLIGENCE OF THE CONTRACTOR SHALL BE DEDUCTED FROM THE CONTRACTOR'S PROGRESS PAYMENTS.

25. THERE MAY BE 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 ANY ADDITIONAL INFORMATION AND/OR REQUIREMENTS. THE CONTRACTOR SHALL PLACE TEMPORARY FLEXIBLE SAFETY FENCE AROUND THE ARCHAEOLOGICAL SITE(S) AS NOTED ON THE PLANS. THE FENCING MATERIAL SHALL BE ORANGE COLORED, PLASTIC TYPE, MADE OF HI-DENSITY HDPE WITH SQUARE MESH OPENINGS PER SECTION 710.11 OF FP-14. TEMPORARY ARCHAEOLOGY FENCING SHALL BE CONSIDERED INCIDENTAL OBLIGATIONS OF THE CONTRACTOR IF A SPECIFIC BID ITEM IS NOT SHOWN IN THE BID SCHEDULE.

ROADWAY GENERAL NOTES

1. ALL WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-14), AND THE SUPPLEMENTAL SPECIFICATIONS FOR THIS PROJECT.

2. ALL PERMANENT AND TEMPORARY ROADSIDE SIGNS SHALL BE PLACED IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS (MUTCD), LATEST EDITION, AND IN ACCORDANCE WITH THE DETAILS ON THESE PLANS. PLACEMENT OF PERMANENT TRAFFIC SIGNS SHALL BE FIELD ADJUSTED AS DIRECTED BY THE AT NO ADDITIONAL COST TO THE GOVERNMENT.

3. THE TEMPORARY TRAFFIC CONTROL DETAILS SHOWN ON THESE PLANS REFLECT 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 ON THESE PLANS SHALL NOT BE ALTERED OR MODIFIED IN ANYWAY DURING CONSTRUCTION WITHOUT THE EXPRESSED WRITTEN DIRECTION AND APPROVAL OF THE THE AWARDING UNLESS OTHERWISE NOTED IN THESE PLANS OR SPECIFICATIONS. DRAINAGE STRUCTURES AND TURNOUTS SHALL BE INSTALLED AS SHOWN WITH ONLY MINOR CORRECTIONS IN LOCATION, SKEW, AND/OR INVERT ELEVATIONS AS NEEDED TO FIT FIELD CONDITIONS. TURNOUTS MAY NOT BE RELOCATED MORE THAN 5.0 METERS FROM THE LOCATIONS SHOWN ON THE PLANS WITHOUT THE WRITTEN APPROVAL OF THE THROUGH THE COR/COTR.

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-14, AND ANY AND ALL PERMIT REQUIREMENTS. THIS WORK SHALL BE INCIDENTAL OBLIGATIONS OF THE CONTRACTOR.

6. 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 FROM THE ENGINEER, SHALL NOT RELIEVE THE CONTRACTOR FROM ANY RISK OR FROM FULFILLING THE TERMS OF THE CONTRACT. THERE MAY BE AREAS WITH LIMITED WORKING ROOM WITHIN THE PROJECT RIGHT OF WAY (R.O.W.), AND/OR EXISTING FEATURES WITHIN OR NEAR THE PROJECT R.O.W. THAT MAY REQUIRE SPECIAL CONSTRUCTION PROCEDURES; THE CONTRACTOR IS RESPONSIBLE FOR ADDRESSING THIS IN HIS BID AMOUNT IF APPLICABLE.

7. THE CONTRACTOR IS REQUIRED TO SUBMIT A REVISED PIPE LIST TO THE NRO-DOT, PLANNING & DESIGN BRANCH CHIEF THROUGH THE COR/COTR, BASED ON THE FIELD STAKING IN ACCORDANCE WITH SECTION 152 OF THE CONTRACT SUPPLEMENTAL SPECIFICATION. THE APPROVAL OF ANY AND ALL REVISED PIPE LISTS WITH ACCOMPANYING DRAWINGS IS RENDERED AS A SERVICE ONLY AND IS NOT CONSIDERED A GUARANTEE OF MEASUREMENTS, QUANTITIES, INSTALLATION PROCEDURES, AND/OR DIMENSIONS. NOR SHALL IT BE CONSIDERED AS RELIEVING THE CONTRACTOR FROM COMPLYING WITH THE CONTRACT SPECIFICATIONS AND DESIGN PLANS. THE CONTRACTOR IS HEREBY NOTIFIED THAT UNDER NO CIRCUMSTANCE SHALL ANY DRAINAGE STRUCTURE(S) BE INSTALLED BELOW THE NATURAL FLOW LINE OF THE WASH, CHANNEL, ARROYO, OR DITCH LINE.

8. NO WORK SHALL BE PERFORMED OR GROUND DISTURBED OUTSIDE OF THE DESIGNATED CONSTRUCTION LIMITS IN ACCORDANCE WITH SECTION 107 OF THE FP-14 WITHOUT WRITTEN APPROVAL BY THE NRO-DOT DIVISION MANAGER THROUGH THE COR/COTR UNLESS OTHERWISE SHOWN AND LABELED ON THESE PLANS AS "CONSTRUCTION ZONE". IN NO CASE SHALL ANY WORK BE PERFORMED OUTSIDE THE DESIGNATED R.O.W. LIMITS WITHOUT WRITTEN APPROVAL FROM THE NRO-DOT DIVISION MANAGER THROUGH THE COR/COTR UNLESS OTHERWISE SHOWN AND CALLED OUT ON THESE PLANS AS "CONSTRUCTION ZONE".

9. 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 CONTRACTOR IS REQUIRED TO SUBMIT COURTESY COPY OF THE APPROVED SWPPP TO THE NAVAJO NATION WATER QUALITY EPA OFFICE.

10. 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.

11. ALL TURNOUT/DRIVEWAYS, AS CALLED FOR ON THESE PLANS, SHALL BE CONSTRUCTED, REBUILT, RESHAPED AND/OR REMOVED UP TO THE R.O.W. OR TEMPORARY EASEMENT LIMITS AS SHOWN ON THESE PLANS. ALL TURNOUTS SHALL BE SURFACED TO THE CATTLEGUARD, THEN FROM THE BACK OF CATTLEGUARD TO THE R.O.W. OR TEMPORARY EASEMENT LINE AS SHOWN ON THESE PLANS. WIDTH OF TURNOUT SPECIFIED IS THE MEASURED AT THE TOP OF SURFACING. THIS WORK SHALL BE PAID FOR UNDER THE APPROPRIATE BID ITEMS FOR THIS WORK AS SHOWN IN THE BID SCHEDULE.

12. STRUCTURAL EXCAVATION AND BEDDING/BACKFILL OF ALL DRAINAGE STRUCTURES (CULVERTS, CONCRETE HEADWALLS AND WINGWALLS) SHALL BE CONSIDERED INCIDENTAL TO THE INSTALLATION OF STRUCTURES. BEDDING AND BACKFILL MATERIAL SHALL MEET ALL REQUIREMENTS OF FP-14, SECTIONS 209 AND 704. APPROVED EXCESS EXCAVATION MATERIAL MAY BE USED TO REBUILD TURNOUTS, EARTHEN DITCH BLOCKS, AND/OR PLACED ALONG ROADWAY SHOULDERS AS EMBANKMENT IN AREAS ADJACENT TO THE REMOVAL AND AS DIRECTED BY THE COR/COTR.

13. ALL FURROW AND DRAINAGE DITCHES SHALL BE STAKED AND GRADED TO DRAIN UP TO THE R.O.W. LIMITS. EARTHEN DITCH BLOCKS, DIKES AND DITCHES SHALL BE CONSTRUCTED AS SHOWN ON THESE PLANS AND/OR ADDED AT LOCATIONS DESIGNATED BY THE AOTR/COR. ALL DITCH BLOCKS, DIKES AND FURROW DITCHES SHALL BE PAID FOR UNDER THE APPROPRIATE BID ITEMS FOR THIS WORK AS SHOWN IN THE BID SCHEDULE. AT ALL DRAINAGE PIPE REPLACEMENTS, INSTALLATIONS, EXTENSIONS, AND IN-PLACE PIPE CLEANING LOCATIONS, THE CONTRACTOR SHALL CLEAN, REGRADE, AND RESHAPE THE INLET AND OUTLET CHANNELS TO THE R.O.W. LINE AS DIRECTED BY THE COR/COTR. THIS WORK SHALL BE INCIDENTAL TO BID ITEMS FOR SECTIONS 602, 603, AND/OR 607.

14. IMMEDIATELY PRIOR TO PLACING EMBANKMENT, AGGREGATE BASE AND/OR RECYCLED MATERIAL, THE TOP 152 mm OF THE ORIGINAL GROUND OR FINISHED SUBGRADE (INCLUDING TURNOUTS) SHALL BE CHECKED FOR COMPACTION AND GRADE IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS. IF COMPACTION DOES NOT MEET THE MINIMUM SPECIFIED COMPACTION AND TOLERANCE REQUIREMENTS, THE ORIGINAL GROUND AND/OR SUBGRADE SHALL BE RE-WATERED AND/OR SCARIFIED AS NEEDED AND RE-COMPACTED TO THE REQUIRED DENSITY AND TOLERANCE, AT THE CONTRACTOR'S EXPENSE. IN NO CASE SHALL ANY EMBANKMENT OR SURFACING MATERIAL BE PLACED ON FROZEN, MUDDY OR UNSTABLE NATURAL GROUND OR SUBGRADE. THIS WORK SHALL BE CONSIDERED AN INCIDENTAL OBLIGATION OF THE CONTRACTOR.

15.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 R.O.W. 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, AND EMBANKMENT MATERIAL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 20401-0000, ROADWAY EXCAVATION AND/OR ITEM 20403-0000 UNCLASSIFIED BORROW. UPON WRITTEN APPROVAL, OR IF DIRECTED BY THE CO, WASTE MATERIAL MAY BE USED AS NECESSARY TO CONSTRUCT TURNOUTS, DITCH BLOCKS, AND/OR BE PLACED AS EMBANKMENT ALONG THE SHOULDERS IN AREAS AS DIRECTED BY THE COR/COTR. WASTE MATERIAL NOT USED WITHIN THE PROJECT LIMITS, SHALL BE DISPOSED OF AS PER FP-14, SECTION 204.14.

16. THE CONTRACTOR SHALL REMOVE, CLEAN AND STOCKPILE ALL SALVAGEABLE EXISTING CULVERTS, GUARDRAIL, CATTLE GUARDS AND FENCING MATERIALS, ETC., AS CALLED FOR ON THESE PLANS AND SECTIONS 203 AND 607. ALL SALVAGEABLE MATERIALS AS DETERMINED BY THE COR/COTR SHALL BE TAKEN TO THE FORT DEFIANCE AGENCY MAINTENANCE YARD LOCATED IN FORT DEFIANCE, ARIZONA AND STOCKPILED IN A DESIGNATED AREA. ANY MATERIALS DETERMINED TO BE UNUSABLE BY THE COR/COTR SHALL BE DISPOSED OF BY THE CONTRACTOR IN ACCORDANCE WITH SECTIONS 107, 109.02(m), AND 203. THE SALVAGE WORK SHALL BE INCLUDED IN THE APPROPRIATE UNIT PRICE BID ITEMS FOR SECTIONS 203 AND/OR 607.

17. 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 MAY NOT BE ABLE TO BE CONSTRUCTED. IN THIS CASE THE NRO-DOT PLANNING & DESIGN BRANCH CHIEF, THROUGH THE COR/COTR, SHALL BE CONSULTED FOR CHANGES IN THE TYPICAL SECTIONS, PROFILES, 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 AS SHOWN IN THE STAKING NOTES, 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.

18. ANY EXISTING OR NEW ROADSIDE FEATURES OR OTHER IMPROVEMENTS NEGLIGENTLY DAMAGED BY THE CONTRACTOR DURING CONSTRUCTION SHALL BE RESTORED AND/OR REPLACED TO EQUAL OR BETTER CONDITION AT THE CONTRACTOR'S EXPENSE.

19. THE CONTRACTOR SHALL REMOVE EXISTING ROADSIDE SIGNS THAT INTERFERE WITH ROAD CONSTRUCTION AND/OR CONTRADICT THE CONTRACTOR'S TEMPORARY TRAFFIC CONTROL PLAN, AT THE START OF THE CONSTRUCTION. WARNING AND REGULATORY SIGNS THAT DO NOT CONTRADICT THE APPROVED TEMPORARY TRAFFIC CONTROL PLAN SHALL REMAIN IN PLACE UNTIL REPLACED WITH NEW SIGNS OR UNLESS OTHERWISE DIRECTED BY THE COR/COTR. THE CONTRACTOR SHALL NOTIFY THE AOTR/COR AT LEAST THREE (3) WORKING DAYS IN ADVANCE OF SUCH SIGN REMOVAL. REMOVED ROADSIDE SIGNS SHALL BE SALVAGED AND DELIVERED TO THE FORT DEFIANCE AGENCY MAINTENANCE YARD LOCATED IN FORT DEFIANCE, ARIZONA AND STOCKPILED IN A DESIGNATED LOCATION. SIGNS THAT IMPEDE CONSTRUCTION AND THAT ARE REQUIRED FOR THE SAFETY AND/OR INFORMATION OF THE TRAVELING PUBLIC SHALL BE REMOVED AND TEMPORARILY RESET AS DIRECTED BY THE COR/COTR. ANY OTHER SIGNS ALONG THE N9402 ROADWAY, NOT SPECIFICALLY DESIGNATED ON THE PLANS TO REMAIN, SHALL BE REMOVED. THIS WORK SHALL BE CONSIDERED AN INCIDENTAL OBLIGATION OF THE CONTRACTOR.

20. GRADE AND SHAPE THE SHOULDER AND DITCHES TO PROVIDE POSITIVE DRAINAGE (AS DIRECTED BY COR/COTR) FROM THE SUBGRADE HINGE POINTS TO, AND INCLUDING, THE EXISTING DITCH LINE AREAS FOR THE CONSTRUCTION OF RIPRAP DITCH LININGS, SLOPE PROTECTION, RUNDOWNS AND DOWNDRAINS. THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE APPLICABLE WORK ITEMS SHOWN IN THE BID SCHEDULE.

21. ALL R.O.W. REFERENCE MARKERS SHALL BE LABELED IN THE METRIC UNITS OF MEASURE. ALL EXISTING AND NEW BRASS CAPS SHALL BE STAMPED WITH BOTH ALIGNMENT STATIONING AND ELEVATIONS IN METRIC, UNLESS OTHERWISE NOTED UNDER SECTION 152 OF THE SUPPLEMENTAL SPECIFICATIONS. ANY EXISTING R.O.W. MONUMENTS AND BRASS CAPS THAT MAY BE MISSING SHALL BE RESURVEYED AND LOCATED TO THEIR ORIGINAL POSITION AND LABELED AND STAMPED ACCORDINGLY. ALL EXISTING REFERENCE MARKERS SHALL BE SAND BLASTED, CLEANED, AND REPAINTED WITH ENGLISH STATIONS ON ONE SIDE AND METRIC STATIONS ON THE OTHER. ANY DAMAGED MONUMENTS AND/OR MARKERS SHALL BE RESURVEYED AND REPLACED. THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 62101-0000, RIGHT OF WAY MONUMENT AND ITEM 62102-0000, REFERENCE MARKER.

22. A COPY OF THE GEOTECHNICAL INVESTIGATION REPORT FOR THE BRIDGE WILL BE PROVIDED TO THE CONTRACTOR UPON WRITTEN REQUEST TO THE CO/COTR.

23. 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 APPLICABLE BID ITEMS FOR SECTIONS 602, 603, 607, AND 619.

24. CONSTRUCTION SURVEY STAKING SHALL BE IN ACCORDANCE WITH SECTION 152 OF THE FP-14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING AND PROTECTING ANY GOVERNMENT FURNISHED REFERENCE AND CONTROL POINTS DURING CONSTRUCTION. THE COST OF ANY GOVERNMENT RESTAKING DUE TO THE NEGLIGENCE OF THE CONTRACTOR SHALL BE DEDUCTED FROM THE CONTRACTOR'S PROGRESS PAYMENTS.

25. THERE MAY BE 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 ANY ADDITIONAL INFORMATION AND/OR REQUIREMENTS. THE CONTRACTOR SHALL PLACE TEMPORARY FLEXIBLE SAFETY FENCE AROUND THE ARCHAEOLOGICAL SITE(S) AS NOTED ON THE PLANS. THE FENCING MATERIAL SHALL BE ORANGE COLORED, PLASTIC TYPE, MADE OF HI-DENSITY HDPE WITH SQUARE MESH OPENINGS PER SECTION 710.11 OF FP-14. TEMPORARY ARCHAEOLOGY FENCING SHALL BE CONSIDERED INCIDENTAL OBLIGATIONS OF THE CONTRACTOR IF A SPECIFIC BID ITEM IS NOT SHOWN IN THE BID SCHEDULE.

ROADWAY GENERAL NOTES

1. ALL WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-14), AND THE SUPPLEMENTAL SPECIFICATIONS FOR THIS PROJECT.

2. ALL PERMANENT AND TEMPORARY ROADSIDE SIGNS SHALL BE PLACED IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS (MUTCD), LATEST EDITION, AND IN ACCORDANCE WITH THE DETAILS ON THESE PLANS. PLACEMENT OF PERMANENT TRAFFIC SIGNS SHALL BE FIELD ADJUSTED AS DIRECTED BY THE AT NO ADDITIONAL COST TO THE GOVERNMENT.

3. THE TEMPORARY TRAFFIC CONTROL DETAILS SHOWN ON THESE PLANS REFLECT 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 ON THESE PLANS SHALL NOT BE ALTERED OR MODIFIED IN ANYWAY DURING CONSTRUCTION WITHOUT THE EXPRESSED WRITTEN DIRECTION AND APPROVAL OF THE THE AWARDING UNLESS OTHERWISE NOTED IN THESE PLANS OR SPECIFICATIONS. DRAINAGE STRUCTURES AND TURNOUTS SHALL BE INSTALLED AS SHOWN WITH ONLY MINOR CORRECTIONS IN LOCATION, SKEW, AND/OR INVERT ELEVATIONS AS NEEDED TO FIT FIELD CONDITIONS. TURNOUTS MAY NOT BE RELOCATED MORE THAN 5.0 METERS FROM THE LOCATIONS SHOWN ON THE PLANS WITHOUT THE WRITTEN APPROVAL OF THE THROUGH THE COR/COTR.

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-14, AND ANY AND ALL PERMIT REQUIREMENTS. THIS WORK SHALL BE INCIDENTAL OBLIGATIONS OF THE CONTRACTOR.

6. 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 FROM THE ENGINEER, SHALL NOT RELIEVE THE CONTRACTOR FROM ANY RISK OR FROM FULFILLING THE TERMS OF THE CONTRACT. THERE MAY BE AREAS WITH LIMITED WORKING ROOM WITHIN THE PROJECT RIGHT OF WAY (R.O.W.), AND/OR EXISTING FEATURES WITHIN OR NEAR THE PROJECT R.O.W. THAT MAY REQUIRE SPECIAL CONSTRUCTION PROCEDURES; THE CONTRACTOR IS RESPONSIBLE FOR ADDRESSING THIS IN HIS BID AMOUNT IF APPLICABLE.

7. THE CONTRACTOR IS REQUIRED TO SUBMIT A REVISED PIPE LIST TO THE NRO-DOT, PLANNING & DESIGN BRANCH CHIEF THROUGH THE COR/COTR, BASED ON THE FIELD STAKING IN ACCORDANCE WITH SECTION 152 OF THE CONTRACT SUPPLEMENTAL SPECIFICATION. THE APPROVAL OF ANY AND ALL REVISED PIPE LISTS WITH ACCOMPANYING DRAWINGS IS RENDERED AS A SERVICE ONLY AND IS NOT CONSIDERED A GUARANTEE OF MEASUREMENTS, QUANTITIES, INSTALLATION PROCEDURES, AND/OR DIMENSIONS. NOR SHALL IT BE CONSIDERED AS RELIEVING THE CONTRACTOR FROM COMPLYING WITH THE CONTRACT SPECIFICATIONS AND DESIGN PLANS. THE CONTRACTOR IS HEREBY NOTIFIED THAT UNDER NO CIRCUMSTANCE SHALL ANY DRAINAGE STRUCTURE(S) BE INSTALLED BELOW THE NATURAL FLOW LINE OF THE WASH, CHANNEL, ARROYO, OR DITCH LINE.

8. NO WORK SHALL BE PERFORMED OR GROUND DISTURBED OUTSIDE OF THE DESIGNATED CONSTRUCTION LIMITS IN ACCORDANCE WITH SECTION 107 OF THE FP-14 WITHOUT WRITTEN APPROVAL BY THE NRO-DOT DIVISION MANAGER THROUGH THE COR/COTR UNLESS OTHERWISE SHOWN AND LABELED ON THESE PLANS AS "CONSTRUCTION ZONE". IN NO CASE SHALL ANY WORK BE PERFORMED OUTSIDE THE DESIGNATED R.O.W. LIMITS WITHOUT WRITTEN APPROVAL FROM THE NRO-DOT DIVISION MANAGER THROUGH THE COR/COTR UNLESS OTHERWISE SHOWN AND CALLED OUT ON THESE PLANS AS "CONSTRUCTION ZONE".

9. 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 CONTRACTOR IS REQUIRED TO SUBMIT COURTESY COPY OF THE APPROVED SWPPP TO THE NAVAJO NATION WATER QUALITY EPA OFFICE.

10. 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.

11. ALL TURNOUT/DRIVEWAYS, AS CALLED FOR ON THESE PLANS, SHALL BE CONSTRUCTED, REBUILT, RESHAPED AND/OR REMOVED UP TO THE R.O.W. OR TEMPORARY EASEMENT LIMITS AS SHOWN ON THESE PLANS. ALL TURNOUTS SHALL BE SURFACED TO THE CATTLEGUARD, THEN FROM THE BACK OF CATTLEGUARD TO THE R.O.W. OR TEMPORARY EASEMENT LINE AS SHOWN ON THESE PLANS. WIDTH OF TURNOUT SPECIFIED IS THE MEASURED AT THE TOP OF SURFACING. THIS WORK SHALL BE PAID FOR UNDER THE APPROPRIATE BID ITEMS FOR THIS WORK AS SHOWN IN THE BID SCHEDULE.

12. STRUCTURAL EXCAVATION AND BEDDING/BACKFILL OF ALL DRAINAGE STRUCTURES (CULVERTS, CONCRETE HEADWALLS AND WINGWALLS) SHALL BE CONSIDERED INCIDENTAL TO THE INSTALLATION OF STRUCTURES. BEDDING AND BACKFILL MATERIAL SHALL MEET ALL REQUIREMENTS OF FP-14, SECTIONS 209 AND 704. APPROVED EXCESS EXCAVATION MATERIAL MAY BE USED TO REBUILD TURNOUTS, EARTHEN DITCH BLOCKS, AND/OR PLACED ALONG ROADWAY SHOULDERS AS EMBANKMENT IN AREAS ADJACENT TO THE REMOVAL AND AS DIRECTED BY THE COR/COTR.

13. ALL FURROW AND DRAINAGE DITCHES SHALL BE STAKED AND GRADED TO DRAIN UP TO THE R.O.W. LIMITS. EARTHEN DITCH BLOCKS, DIKES AND DITCHES SHALL BE CONSTRUCTED AS SHOWN ON THESE PLANS AND/OR ADDED AT LOCATIONS DESIGNATED BY THE AOTR/COR. ALL DITCH BLOCKS, DIKES AND FURROW DITCHES SHALL BE PAID FOR UNDER THE APPROPRIATE BID ITEMS FOR THIS WORK AS SHOWN IN THE BID SCHEDULE. AT ALL DRAINAGE PIPE REPLACEMENTS, INSTALLATIONS, EXTENSIONS, AND IN-PLACE PIPE CLEANING LOCATIONS, THE CONTRACTOR SHALL CLEAN, REGRADE, AND RESHAPE THE INLET AND OUTLET CHANNELS TO THE R.O.W. LINE AS DIRECTED BY THE COR/COTR. THIS WORK SHALL BE INCIDENTAL TO BID ITEMS FOR SECTIONS 602, 603, AND/OR 607.

14. IMMEDIATELY PRIOR TO PLACING EMBANKMENT, AGGREGATE BASE AND/OR RECYCLED MATERIAL, THE TOP 152 mm OF THE ORIGINAL GROUND OR FINISHED SUBGRADE (INCLUDING TURNOUTS) SHALL BE CHECKED FOR COMPACTION AND GRADE IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS. IF COMPACTION DOES NOT MEET THE MINIMUM SPECIFIED COMPACTION AND TOLERANCE REQUIREMENTS, THE ORIGINAL GROUND AND/OR SUBGRADE SHALL BE RE-WATERED AND/OR SCARIFIED AS NEEDED AND RE-COMPACTED TO THE REQUIRED DENSITY AND TOLERANCE, AT THE CONTRACTOR'S EXPENSE. IN NO CASE SHALL ANY EMBANKMENT OR SURFACING MATERIAL BE PLACED ON FROZEN, MUDDY OR UNSTABLE NATURAL GROUND OR SUBGRADE. THIS WORK SHALL BE CONSIDERED AN INCIDENTAL OBLIGATION OF THE CONTRACTOR.

15.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 R.O.W. 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, AND EMBANKMENT MATERIAL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 20401-0000, ROADWAY EXCAVATION AND/OR ITEM 20403-0000 UNCLASSIFIED BORROW. UPON WRITTEN APPROVAL, OR IF DIRECTED BY THE CO, WASTE MATERIAL MAY BE USED AS NECESSARY TO CONSTRUCT TURNOUTS, DITCH BLOCKS, AND/OR BE PLACED AS EMBANKMENT ALONG THE SHOULDERS IN AREAS AS DIRECTED BY THE COR/COTR. WASTE MATERIAL NOT USED WITHIN THE PROJECT LIMITS, SHALL BE DISPOSED OF AS PER FP-14, SECTION 204.14.

16. THE CONTRACTOR SHALL REMOVE, CLEAN AND STOCKPILE ALL SALVAGEABLE EXISTING CULVERTS, GUARDRAIL, CATTLE GUARDS AND FENCING MATERIALS, ETC., AS CALLED FOR ON THESE PLANS AND SECTIONS 203 AND 607. ALL SALVAGEABLE MATERIALS AS DETERMINED BY THE COR/COTR SHALL BE TAKEN TO THE FORT DEFIANCE AGENCY MAINTENANCE YARD LOCATED IN FORT DEFIANCE, ARIZONA AND STOCKPILED IN A DESIGNATED AREA. ANY MATERIALS DETERMINED TO BE UNUSABLE BY THE COR/COTR SHALL BE DISPOSED OF BY THE CONTRACTOR IN ACCORDANCE WITH SECTIONS 107, 109.02(m), AND 203. THE SALVAGE WORK SHALL BE INCLUDED IN THE APPROPRIATE UNIT PRICE BID ITEMS FOR SECTIONS 203 AND/OR 607.

17. 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 MAY NOT BE ABLE TO BE CONSTRUCTED. IN THIS CASE THE NRO-DOT PLANNING & DESIGN BRANCH CHIEF, THROUGH THE COR/COTR, SHALL BE CONSULTED FOR CHANGES IN THE TYPICAL SECTIONS, PROFILES, 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 AS SHOWN IN THE STAKING NOTES, 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.

18. ANY EXISTING OR NEW ROADSIDE FEATURES OR OTHER IMPROVEMENTS NEGLIGENTLY DAMAGED BY THE CONTRACTOR DURING CONSTRUCTION SHALL BE RESTORED AND/OR REPLACED TO EQUAL OR BETTER CONDITION AT THE CONTRACTOR'S EXPENSE.

19. THE CONTRACTOR SHALL REMOVE EXISTING ROADSIDE SIGNS THAT INTERFERE WITH ROAD CONSTRUCTION AND/OR CONTRADICT THE CONTRACTOR'S TEMPORARY TRAFFIC CONTROL PLAN, AT THE START OF THE CONSTRUCTION. WARNING AND REGULATORY SIGNS THAT DO NOT CONTRADICT THE APPROVED TEMPORARY TRAFFIC CONTROL PLAN SHALL REMAIN IN PLACE UNTIL REPLACED WITH NEW SIGNS OR UNLESS OTHERWISE DIRECTED BY THE COR/COTR. THE CONTRACTOR SHALL NOTIFY THE AOTR/COR AT LEAST THREE (3) WORKING DAYS IN ADVANCE OF SUCH SIGN REMOVAL. REMOVED ROADSIDE SIGNS SHALL BE SALVAGED AND DELIVERED TO THE FORT DEFIANCE AGENCY MAINTENANCE YARD LOCATED IN FORT DEFIANCE, ARIZONA AND STOCKPILED IN A DESIGNATED LOCATION. SIGNS THAT IMPEDE CONSTRUCTION AND THAT ARE REQUIRED FOR THE SAFETY AND/OR INFORMATION OF THE TRAVELING PUBLIC SHALL BE REMOVED AND TEMPORARILY RESET AS DIRECTED BY THE COR/COTR. ANY OTHER SIGNS ALONG THE N9402 ROADWAY, NOT SPECIFICALLY DESIGNATED ON THE PLANS TO REMAIN, SHALL BE REMOVED. THIS WORK SHALL BE CONSIDERED AN INCIDENTAL OBLIGATION OF THE CONTRACTOR.

20. GRADE AND SHAPE THE SHOULDER AND DITCHES TO PROVIDE POSITIVE DRAINAGE (AS DIRECTED BY COR/COTR) FROM THE SUBGRADE HINGE POINTS TO, AND INCLUDING, THE EXISTING DITCH LINE AREAS FOR THE CONSTRUCTION OF RIPRAP DITCH LININGS, SLOPE PROTECTION, RUNDOWNS AND DOWNDRAINS. THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE APPLICABLE WORK ITEMS SHOWN IN THE BID SCHEDULE.

21. ALL R.O.W. REFERENCE MARKERS SHALL BE LABELED IN THE METRIC UNITS OF MEASURE. ALL EXISTING AND NEW BRASS CAPS SHALL BE STAMPED WITH BOTH ALIGNMENT STATIONING AND ELEVATIONS IN METRIC, UNLESS OTHERWISE NOTED UNDER SECTION 152 OF THE SUPPLEMENTAL SPECIFICATIONS. ANY EXISTING R.O.W. MONUMENTS AND BRASS CAPS THAT MAY BE MISSING SHALL BE RESURVEYED AND LOCATED TO THEIR ORIGINAL POSITION AND LABELED AND STAMPED ACCORDINGLY. ALL EXISTING REFERENCE MARKERS SHALL BE SAND BLASTED, CLEANED, AND REPAINTED WITH ENGLISH STATIONS ON ONE SIDE AND METRIC STATIONS ON THE OTHER. ANY DAMAGED MONUMENTS AND/OR MARKERS SHALL BE RESURVEYED AND REPLACED. THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 62101-0000, RIGHT OF WAY MONUMENT AND ITEM 62102-0000, REFERENCE MARKER.

22. A COPY OF THE GEOTECHNICAL INVESTIGATION REPORT FOR THE BRIDGE WILL BE PROVIDED TO THE CONTRACTOR UPON WRITTEN REQUEST TO THE CO/COTR.

23. 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 APPLICABLE BID ITEMS FOR SECTIONS 602, 603, 607, AND 619.

24. CONSTRUCTION SURVEY STAKING SHALL BE IN ACCORDANCE WITH SECTION 152 OF THE FP-14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING AND PROTECTING ANY GOVERNMENT FURNISHED REFERENCE AND CONTROL POINTS DURING CONSTRUCTION. THE COST OF ANY GOVERNMENT RESTAKING DUE TO THE NEGLIGENCE OF THE CONTRACTOR SHALL BE DEDUCTED FROM THE CONTRACTOR'S PROGRESS PAYMENTS.

25. THERE MAY BE 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 ANY ADDITIONAL INFORMATION AND/OR REQUIREMENTS. THE CONTRACTOR SHALL PLACE TEMPORARY FLEXIBLE SAFETY FENCE AROUND THE ARCHAEOLOGICAL SITE(S) AS NOTED ON THE PLANS. THE FENCING MATERIAL SHALL BE ORANGE COLORED, PLASTIC TYPE, MADE OF HI-DENSITY HDPE WITH SQUARE MESH OPENINGS PER SECTION 710.11 OF FP-14. TEMPORARY ARCHAEOLOGY FENCING SHALL BE CONSIDERED INCIDENTAL OBLIGATIONS OF THE CONTRACTOR IF A SPECIFIC BID ITEM IS NOT SHOWN IN THE BID SCHEDULE.

ROADWAY GENERAL NOTES

1. ALL WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-14), AND THE SUPPLEMENTAL SPECIFICATIONS FOR THIS PROJECT.

2. ALL PERMANENT AND TEMPORARY ROADSIDE SIGNS SHALL BE PLACED IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS (MUTCD), LATEST EDITION, AND IN ACCORDANCE WITH THE DETAILS ON THESE PLANS. PLACEMENT OF PERMANENT TRAFFIC SIGNS SHALL BE FIELD ADJUSTED AS DIRECTED BY THE AT NO ADDITIONAL COST TO THE GOVERNMENT.

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REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET
NAVAJO	AZ	NAVAJO	N9402	N9402(2)1,2&3	3 of 40

ESTIMATE OF QUANTITIES FOR ROADWAY & BRIDGE

ITEM	DESCRIPTION	QUANTITY	UNIT	AS BUILT
10901-0000	EXTRA AND MISC. WORK AUTHORIZED UNDER SECTION 109.02(s)	All Req'd	LS	
15101-0000	MOBILIZATION	All Req'd	LS	
15201-0000	CONSTRUCTION SURVEY AND STAKING	All Req'd	LS	
15301-0000	CONTRACTOR QUALITY CONTROL	8000	Man hr	
15701-0000	SOIL EROSION CONTROL	All Req'd	LS	
20102-0000	CLEARING AND GRUBBING	All Req'd	LS	
20304-1000	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	All Req'd	LS	
20401-0000	ROADWAY EXCAVATION	744	m <sup>3</sup>	
20403-0000	UNCLASSIFIED BORROW	3,604	m <sup>3</sup>	
20601-0000	DEVELOPMENT OF WATER SUPPLY	1.39	ML	
25101-3000	PLACED RIPRAP, CLASS 3 (DITCHES)	1,025	m <sup>3</sup>	
25112-2000	WIRE ENCLOSED RIPRAP, CLASS 2 (ABUTMENT PROTECTION)	833	m <sup>3</sup>	
30101-2000	AGGREGATE BASE, GRADING SPECIAL	154	t	
30401-0000	AGGREGATE STABILIZATION With EN-1 ROADBOND, IMPORTED SURFACE COURSE AGGREGATE GRADING D, 152 mm DEPTH	2,731	m <sup>2</sup>	
55101-0200	CONCRETE FILLED STEEL PIPE PILES, IN PLACE, PP610 x 9.53	269	m	
55120-0000	TEST PILES	100	m	
55201-0200	STRUCTURAL CONCRETE, CLASS A(AE)	500	m <sup>3</sup>	
55301-1700	PRECAST, PRESTRESSED CONCRETE BULB TEE GIRDERS, BT-1370	20	EA	
55401-1000	REINFORCING STEEL GRADE 420	9,114	kg	
55401-2000	REINFORCING STEEL, EPOXY COATED GRADE 420	58,288	kg	
55502-0000	STRUCTURAL STEEL, FURNISHED, FABRICATED, AND ERECTED (DIAPHRAGMS)	3,738	kg	
55502-0010	STRUCTURAL STEEL, FURNISHED, FABRICATED AND ERECTED (GIRT AND SWAY)	7,121	kg	
55601-0900	BRIDGE RAILING, STEEL	269	m	
56301-2000	PAINTING, STEEL STRUCTURE (PIPE PILES)	All Req'd	LS	
60201-0810	610mm CORRUGATED STEEL PIPE CULVERT	30.40	m	
60210-0810	END SECTION FOR 610mm CORRUGATED STEEL PIPE CULVERT	1	EA	
61701-5000	GUARDRAIL SYSTEM, SGR04b, TYPE PDE02, WITH MSKT-TL3-8 END TREATMENT TYPE A INSTALLATION	164	m	
62101-0000	MONUMENT (RIGHT OF WAY)	16	EA	
62102-0000	MARKER (REFERENCE)	16	EA	
62510-1000	SEEDING, DRY METHOD	0.64	HA	
62515-1000	MULCHING, DRY METHOD	0.47	HA	
62901-1100	ROLLED EROSION CONTROL PRODUCT, TYPE 4	1,664	m <sup>2</sup>	
63302-2002	SIGN INSTALLATION, 1 POST & HARDWARE: 44mm x 44mm	0.92	m <sup>2</sup>	
63302-2006	SIGN INSTALLATION, 2 POSTS & HARDWARE: 50mm x 50mm	1.13	m <sup>2</sup>	
63308-3000	OBJECT MARKER, TYPE 3	4	EA	
63309-0020	DELINEATOR, TYPE 1b, 51mm x 51mm	7	EA	
63501-0000	TEMPORARY TRAFFIC CONTROL	All Req'd	LS	

ESTIMATED EARTHWORK QUANTITIES

STATION TO STATION	CUT (m <sup>3</sup> )	*FILL (m <sup>3</sup> )	BORROW (m <sup>3</sup> )	WASTE (m <sup>3</sup> )
0+100.000 to 0+224.032	29	2982	2953	
ABUT. 1 GUIDE BANK **	160	2469	2309	
ABUT. 2 GUIDE BANK **	1756	758		998
0+350.946 to 0+490.000	715	1366	650	
TOTAL	744	4348	3604	0

\*Firteen % SHRINKAGE FACTOR APPLIED

\*\* these quantities are incidental to the riprap  
see note 4 of sheet 12A

**REVISED**  
10:46 am, Apr 01, 2020

ITEM 20304-1000 REMOVAL OF STRUCTURES AND OBSTRUCTIONS

STATION	LOCATION	DESCRIPTION
0+287	℄	EXISTING BRIDGE (SEE NOTE 12 Sht 5)

ITEM 61701-5000 GUARDRAIL SYSTEM, SGR04b, TYPE PDE02, WITH MSKT-TL3-8 END TREATMENT

LOCATION	ITEM 61701 LENGTH (m)	REMARKS
0+170.842 to 0+220.372 RT	49.530	WITHOUT CURB
0+170.842 to 0+220.372 LT	49.530	
0+354.606 to 0+377.466 RT	22.860	
0+354.606 to 0+396.516 LT	41.910	
TOTAL	163.83	

ITEM 62101-0000 MONUMENT (RIGHT OF WAY)

ITEM 62102-0000 MARKER (REFERENCE)

STATION	LOCATION	REQUIRED
0+100.000	23.0m RT & LT	2
0+190.000	23.0m RT & LT, 70.0m RT, 60.0m LT	4
0+357.490	70.0m RT, 60.0m LT	2
0+380.000	23.0m RT & LT, 70.0m RT, 60.0m LT	4
0+450.145	23.0m RT & LT	2
0+490.000	23.0m RT & LT	2
	TOTAL	16

ITEM 30101-2000 AGGREGATE BASE, GRADING SPECIAL

LOCATION	VOLUME (m <sup>3</sup> )	WEIGHT(t)
APPROACH SLABS	69	154
TOTAL:	69	154

ITEM 30401-0000 ROADBOND EN-1 AGGREGATE GRADING D STABILIZATION, IMPORTED SURFACE COURSE AGGREGATE, 152mm DEPTH

STATION	DESCRIPTION	BEGIN WIDTH (m)	END WIDTH (m)	LENGTH	SURFACE AREA
0+100 to 0+130	BOP taper to roadway width	7.700	10.200	30.000	268.500
0+130	Begin typical roadway width	10.200	10.200	34.842	355.388
0+164.842	Begin guardrail widening taper	10.200	12.800	6.000	69.000
0+170.842	Full guardrail widening	12.800	12.800	48.592	621.978
0+219.434	Sleeper slab edge @ BOB	12.800	12.800		
	BRIDGE				
0+355.544	Sleeper slab edge @ EOB	12.800	12.800		
0+377.466	Full guardrail widening, Rt.	6.400	6.400	21.922	140.301
0+396.516	Full guardrail widening, Lt.	6.400	6.400	40.972	262.221
0+383.466	End guardrail widening, Rt.	5.100	5.100	6.000	30.600
0+402.516	End guardrail widening, Lt.	5.100	5.100	6.000	30.600
Rt. 0+460	End typical roadway width	5.100	5.100	76.534	390.323
Lt. 0+460	End typical roadway width	5.100	5.100	57.484	293.168
0+460 to 0+490	typical roadway width taper	10.200	7.700	30.000	268.500
	TOTAL:				2,730.379

CENTERLINE ALIGNMENT DATA

POINT	NORTHING	EASTING	ELEVATION	REMARKS
B.O.P. STA. 0+100.000	480236.805	312994.375		BEGINNING OF PROJECT
B.O.B. STA. 0+224.032	480355.270	312957.632		
E.O.B. STA. 0+350.946	480476.487	312920.035		
P.C. STA. 0+357.490	480482.737	312918.096		
P.I. STA. 0+405.988	480529.058	312903.729		
P.T. STA. 0+450.145	480573.165	312923.894		
E.O.P. STA. 0+490.000	480609.412	312940.466		END OF PROJECT
CP-1	480537.751	312865.174	1870.549	SET RED PLASTIC CAP
CP-2	480291.630	313041.192	1871.180	SET RED PLASTIC CAP
CP-3	480470.872	312949.112	1863.690	SET RED PLASTIC CAP

Coordinate system are Modified State Plane NAD83 AZ-E  
Ground to Grid CFS= 0.999723303

ITEM 63308-3000 OBJECT MARKER, TYPE 3, WITH 1 POST AND HARDWARE:

STATION	REQUIRED	LOCATION
0+220	1	LEFT
0+220	1	RIGHT
0+354	1	LEFT
0+354	1	RIGHT
TOTAL REQ'D :	4	

ITEM 63309-0020 DELINEATOR, TYPE 1b

STATION	REQUIRED	LOCATION
0+110.000	1	LEFT
0+404.000	1	LEFT
0+427.000	1	LEFT
0+450.000	1	LEFT
0+491.000	1	LEFT
0+560.000	1	LEFT
0+697.000	1	LEFT
TOTAL REQ'D :	7	

ITEM 25101-3000 PLACED RIPRAP, CLASS 3

STATION TO STATION	LOCATION	LENGTH (L)	WIDTH (W)	THICKNESS	QUANTITY (m <sup>3</sup> )	REMARKS
(BOP)0+100.000 - 0+147.651	LT.	49.32m*	4 m	610mm	120 *	℄ DITCH
0+147.651 - 0+151.459	LT.	3.808m *	VARIES	610mm	12 *	DITCH END SECTION
0+190.087	LT.		VARIES	610mm	6 *	1-610 CMP OUTLET
0+375.528 - 0+378.592	LT.	3.370m*	VARIES	610mm	12 *	DITCH END SECTION
0+378.592 - 0+490.000 (EOP)	LT.	119.8m*	4m	610mm	292 *	℄ DITCH
(BOP)0+100.000 - 0+188.179	RT.	89.3m*	4m	610mm	218 *	℄ DITCH
0+188.179 - 0+193.085	RT.	9.909m*	VARIES	610mm	24 *	1-610 CMP INLET
0+343.423 - 0+490.000 (EOP)	RT.	139.600m*	4 m	610mm	341 *	℄ DITCH
				TOTAL:	1025 m <sup>3</sup>	

\* = COMPUTER CALCULATED TOTAL (AUTOCAD)

ITEM 62901-1100 ROLLED EROSION CONTROL PRODUCT, TYPE 4

STATION TO STATION	LOCATION	LENGTH (L)	WIDTH (W)	QUANTITY (m <sup>2</sup> )
0+164.000 TO 0+224.032	LT.	60.032	VARIES	577 *
0+350.946 TO 0+400.000	LT.	49.054m	VARIES	438 *
0+167.000 TO 0+224.032	RT.	57.032m	VARIES	448 *
0+350.946 TO 0+385.000	RT.	34.054m	VARIES	201 *
			TOTAL:	1664 m <sup>2</sup>

\* = COMPUTER CALCULATED TOTAL (AUTOCAD)

ITEM 25112-2000 WIRE ENCLOSED RIPRAP, CLASS 2

LOCATION	AREA (m <sup>2</sup> )	THICKNESS	QUANTITY (m <sup>3</sup> )
ABUT-1 WIRE ENCLOSED RIPRAP	934.110*	457mm	427
ABUT-2 WIRE ENCLOSED RIPRAP	889.143*	457mm	406
		TOTAL:	833

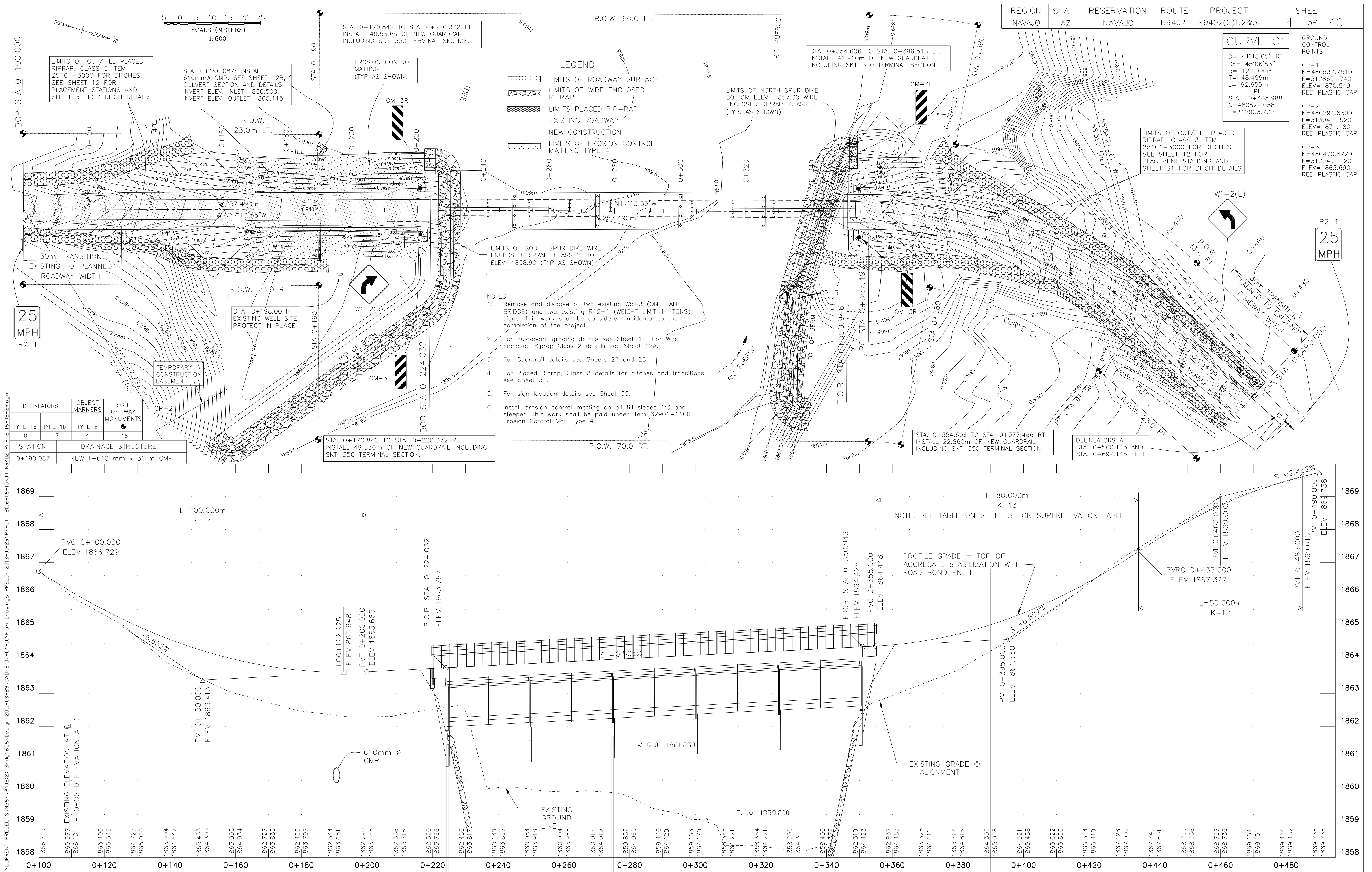
\* = COMPUTER CALCULATED TOTAL (AUTOCAD)

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ESTIMATED QUANTITES

Designed by: CK	
Drawn by: PF, rsh	Date: 11/14/17
Revised by:HRiley	Date: 3/18/2020
File Name: 03_N9402_Quantities	





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REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	
NAVAJO	AZ	NAVAJO	N9402	N9402(2)1,2&3	5	of 40

## BRIDGE NOTES

- SPECIFICATIONS: DESIGN: AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SEVENTEENTH EDITION, 2002, AND SUBSEQUENT INTERIM SPECIFICATIONS. CONSTRUCTION: FEDERAL HIGHWAY ADMINISTRATION, STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS, FP-14, 2003, AND SUPPLEMENTAL SPECIFICATIONS.
- UNITS: ALL DIMENSIONS ARE IN SI (METRIC) UNITS, DIMENSIONS ARE IN METERS UNLESS OTHERWISE NOTED.
- CONCRETE: CAST IN PLACE CONCRETE IN SUPERSTRUCTURE AND SUBSTRUCTURE SHALL BE CLASS A(AE) WITH A MINIMUM 28 DAY STRENGTH OF 27.6 MPa. THE AIR CONTENT FOR CLASS A(AE) CONCRETE SHALL NOT BE LESS THAN SPECIFIED IN THE FP-14, TABLE 552-2. CONCRETE IN PRECAST, PRESTRESSED CONCRETE TYPE BT 1370 BEAMS SHALL BE CLASS P AND SHALL HAVE AN  $f'_{ci} = 37.9\text{MPa}$  AT RELEASE OF PRESTRESSING STRANDS. CHAMFER EXPOSED CORNERS OF ALL CONCRETE 19mm UNLESS OTHERWISE SHOWN. ALL SUBSTRUCTURE CONCRETE SHALL CONTAIN TYPE II PORTLAND CEMENT. ALL STEEL EMBEDDED IN CONCRETE SUCH AS GUARD ANGLES, ABUTMENT ANCHOR BOLTS AND EXPANSION JOINTS SHALL BE CONSIDERED INCIDENTAL TO ITEM 55201-0200, STRUCTURAL CONCRETE, CLASS A(AE). THE TIME LIMITS FOR DISCHARGE OF CONCRETE FROM THE MIXER SPECIFIED IN THE FP-14, TABLE 552-4 SHALL APPLY. IF CONCRETE CANNOT BE DISCHARGED WITHIN THE SPECIFIED TIME LIMIT ALTERNATIVES SUCH AS DRY BATCHING, A SITE BATCHING PLANT COMFORMING TO SPECIFICATIONS, OR SET RETARDANT ADMIXTURES SHALL BE USED. ANY SUCH ALTERNATIVES SHALL BE DISCUSSED AT PRE-CONSTRUCTION MEETING. APPROVAL OF ALTERNATIVE METHODS SHALL BE BASED ON REVIEW OF HISTORICAL DATA FOR IDENTICAL STRENGTH CONCRETE PLACED AT SIMILARLY REMOTE LOCATIONS. HISTORICAL DATA SHALL INDICATE CONFORMANCE TO THE SPECIFICATIONS FOR THIS PROJECT. DRIVING SURFACES OF THE BRIDGE DECK AND APPROACH/SLEEPER SLABS SHALL BE GIVEN A FINISH IN ACCORDANCE WITH SECTIONS 552.14(a), (b) AND (c)(1) OF THE FP-14. EXPOSED SURFACES OF THE SUBSTRUCTURE DOWN TO 300mm BELOW THE GROUND LINE AS WELL AS EDGES AND BOTTOMS OF THE BRIDGE DECK OVERHANG, SHALL BE GIVEN A CLASS 2 RUBBED FINISH AS SPECIFIED IN SECTION 552.16 OF THE FP-14, (b). ALL OTHER SURFACES OF CONCRETE SHALL BE GIVEN A CLASS 1 ORDINARY FINISH.
- REINFORCING STEEL: ALL REINFORCING STEEL SHALL CONFORM TO AASHTO M 31M, GRADE 420, UNLESS A DIFFERENT GRADE IS SPECIFIED. THE MINIMUM COVER OF ANY REINFORCING STEEL SHALL BE 50 mm UNLESS OTHERWISE SPECIFIED. DIMENSIONS SHOWN REFER TO THE CENTERLINE OF BARS UNLESS NOTED OTHERWISE. LENGTHS OF REINFORCING STEEL BARS SHOWN INCLUDE REQUIRED SPLICE LENGTHS FOR SPLICES SHOWN. ANY ADDITIONAL SPLICES NOT SHOWN IN THE PLANS SHALL BE REQUESTED FOR APPROVAL BY THE CONTRACTOR AND SHALL NOT BE UTILIZED UNTIL WRITTEN APPROVAL IS GRANTED BY THE AOTR/COR. ADDITIONAL REINFORCING STEEL QUANTITIES REQUIRED FOR ADDITIONAL SPLICES NOT SHOWN IN THE PLANS AND REQUESTED BY THE CONTRACTOR SHALL NOT BE PAID FOR. ALL REINFORCING STEEL IN OR PROTRUDING FROM THE BRIDGE DECK AND APPROACH SLABS SHALL BE EPOXY COATED AND IS DESIGNED AS SUCH IN THESE PLANS.
- STRUCTURAL STEEL: ALL STRUCTURAL STEEL SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M 270M, GRADE 250. SEE SHEET 22 FOR STEEL DIAPHRAGMS.
- PRESTRESSED CONCRETE BEAMS: PRESTRESSED CONCRETE BEAMS SHALL BE MANUFACTURED AS DETAILED IN THESE PLANS. ALL CONCRETE, REINFORCED STEEL, PRESTRESSING STEEL, LIFTING DEVICES, INSERTS, SHOE PLATES, SOLE PLATES, BOLTS, WASHERS, NUTS, ELASTOMERIC BEARING PADS, AND ANY OTHER MATERIALS NECESSARY FOR THE FABRICATION, TRANSPORTATION AND INSTALLATION OF THE PRESTRESSED CONCRETE BEAMS SHALL BE CONSIDERED INCIDENTAL TO ITEM 55301-1700 PRECAST, PRESTRESSED CONCRETE BULB TEE GIRDERS, BT-1370. SEE SHEET 19 FOR PRESTRESSED CONCRETE BEAM INFORMATION.
- STAY-IN-PLACE DECK FORMS: PERMANENT STEEL DECK FORMS MAY BE UTILIZED FOR BRIGDE DECK CONSTRUCTION PROVIDED THAT BOTH TOP AND BOTTOM MATS OF DECK SLAB REINFORCING BARS ARE EPOXY COATED, COMPLETE SHOP DRAWINGS, DESIGN CALCULATIONS, AND SPECIFICATIONS IN ACCORDANCE WITH FP-14 SECTION 562 AND SUPPLEMENT SPECIFICATIONS, FOR THE PROPOSED FORMING SYSTEM MUST BE APPROVED IN WRITING BY THE CONTRACTING OFFICER PRIOR TO INSTALLATION.
- CONTRACTOR SHALL VERIFY IN THE FIELD ALL DIMENSIONS, ELEVATIONS, AND DETAILS WHICH WILL BE INVOLVED IN THE NEW CONSTRUCTION BEFORE PROCEEDING WITH NEW WORK.
- ALL STEEL PILES AND THEIR SWAYS AND GIRTS AT THE PIERS SHALL BE GIVEN A PROTECTIVE COATING IN ACCORDANCE WITH SECTION 551.14(b) OF THE FP-14 AND SECTION 563.07 OF FP-14. THE COATING SHALL CONFORM TO PAINT SYSTEM 3 OF TABLE 563-1. ALL PAINTING WORK SHALL CONFORM TO SECTION 563 OF FP-14 AND ANY APPLICABLE STATE, TRIBAL AND LOCAL REGULATIONS. SEE SHEET 8 FOR ADDITIONAL NOTES.
- TEST PILES THIS BRIDGE PROJECT INCLUDES TEST PILES. SEE SUPPLEMENTAL SPECIFICATIONS, SECTION 551 FOR IMPORTANT DETAILS, INCLUDING DETERMINATION OF PILE QUANTITIES REQUIRED FOR THE PROJECT. TEST PILES SHALL BE A PILE ADJACENT TO THE CENTERLINE OF THE ROADWAY IN EACH ABUTMENT AND PIER AS SHOWN IN THESE PLANS.
- SPLICES OF ALL STEEL PILES SHALL CONFORM TO THE REQUIREMENTS OF SECTION 551.10(b) AND 551.11(a) OF FP-14. SPLICES SHALL BE IN ACCORDANCE TO THE DETAILS ON THESE PLANS. IF NOT DETAILS ARE SHOWN, THE CONTRACTOR SHALL SUBMIT A SPLICE DETAIL TO THE CO FOR REVIEW AND APPROVAL. ALL SPLICES SHALL BE CONSIDERED INCIDENTAL TO STEEL PILES.
- EXISTING BRIDGE REMOVAL: THE CONTRACTOR SHALL REMOVE, CLEAN (IF SO DIRECTED) AND STOCKPILE ALL EXISTING SALVAGEABLE MATERIAL, AS INDICATED BY THE COR AND AS CALLED FOR ON THESE PLANS UNDER ITEM 20304-1000 REMOVAL OF STRUCTURES AND OBSTRUCTIONS. SALVAGEABLE MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR TO TRANSPORTED TO A SALAVAGE YARD OFF THE PROJECT. ANY EXISTING MATERIALS DETERMINED TO BE UNSALVAGEABLE BY THE COR & CONTRACTOR SHALL BE DISPOSED OF BY THE CONTRACTOR IN ACCORDANCE WITH SECTIONS 107 AND 203 OF THE FP-14 AND APPLICABLE SUPPLEMENTAL SPECIFICATIONS. EXISTING BRIDGE PILING SHALL BE REMOVED TO ONE (1) METER BELOW THE PLANNED FLOWLINE, OR LOWER IN ORDER TO ACCOMMODATE NEW CONSTRUCTION. ALL WORK INVOLVING SALVAGEABLE AND UNSALVAGEABLE MATERIAL SHALL BE INCLUDED IN THE UNIT BID PRICE FOR ITEM 20304-1000 REMOVAL OF STRUCTURES AND OBSTRUCTIONS.
- STRUCTURE EXCAVATION AND BACKFILL: ALL STRUCTURE EXCAVATION AND BACKFILL SHALL BE COMPLETED IN ACCORDANCE WITH FP-14, SECTION 208 - STRUCTURE EXCAVATION AND BACKFILL FOR SELECT MAJOR STRUCTURES. STRUCTURE EXCAVATION AND BACKFILLING IS CONSIDERED INCIDENTAL TO OTHER APPLICABLE PAY ITEMS IN THE CONTRACT.

## DESIGN DATA

DESIGN IS IN ACCORDANCE WITH AASHTO SPECIFICATIONS FOR HIGHWAY BRIDGES SEVENTEENTH EDITION, 2002 AND INTERIM SPECIFICATIONS TO DATE. SUPERSTRUCTURE IS DESIGNED IN ACCORDANCE WITH AASHTO LOAD FACTOR DESIGN AND STRENGTH DESIGN METHODS. SUBSTRUCTURE FOUNDATION ELEMENTS ARE DESIGNED IN ACCORDANCE WITH THE WORKING STRESS METHOD.

DESIGN STRESS:

STRUCTURAL STEEL:  
AASHTO M 270M, GRADE 250  
 $f_y = 250\text{ MPa}$        $f_s = 137.5\text{ MPa}$   
ASTM A252, GRADE 2  
 $f_y = 240\text{ MPa}$        $f_s = 132.0\text{ MPa}$

REINFORCED CONCRETE:  
SUPERSTRUCTURE  $f'_c = 27.6\text{ MPa}$  (28 DAYS)       $f_c = 11.04\text{ MPa}$   
SUBSTRUCTURE  $f'_c = 27.6\text{ MPa}$  (28 DAYS)       $f_c = 11.04\text{ MPa}$

REINFORCING STEEL:  
AASHTO M 31M, GRADE 420  
 $f_y = 420\text{ MPa}$        $f_s = 168\text{ MPa}$        $n = 8$

LOADS:

DEAD LOADS:  
CONCRETE =  $23.56\text{ kN/m}^3$   
STEEL =  $76.97\text{ kN/m}^3$

LIVE LOADS:  
MS-18 PLUS IMPACT  
IMPACT =  $15/L + 38$ , WHERE L = SPAN LENGTH IN METERS.  
MAXIMUM IMPACT FACTOR = 0.30

WEARING SURFACE:  
1.139 kPa ALLOWABLE FOR FUTURE WEARING SURFACE

STAY-IN-PLACE FORMS:  
720 Pa ALLOWANCE FOR STAY IN PLACE FORMS

WIND VELOCITY:  
130 km/hr

HORIZONTAL EARTH PRESSURE:  
ACTIVE PRESSURE:  $5.66\text{ kPa/m}$  (EQUIVALENT FLUID PRESSURE)  
AT REST PRESSURE:  $9.0\text{ kPa/m}$   
PASSIVE PRESSURE:  $35.33\text{ kPa/m}$   
SURCHARGE: 610mm (EQUIVALENT HEIGHT OF SOIL)

CAPACITY RATINGS:

INVENTORY: MS18  
OPERATING: MS49

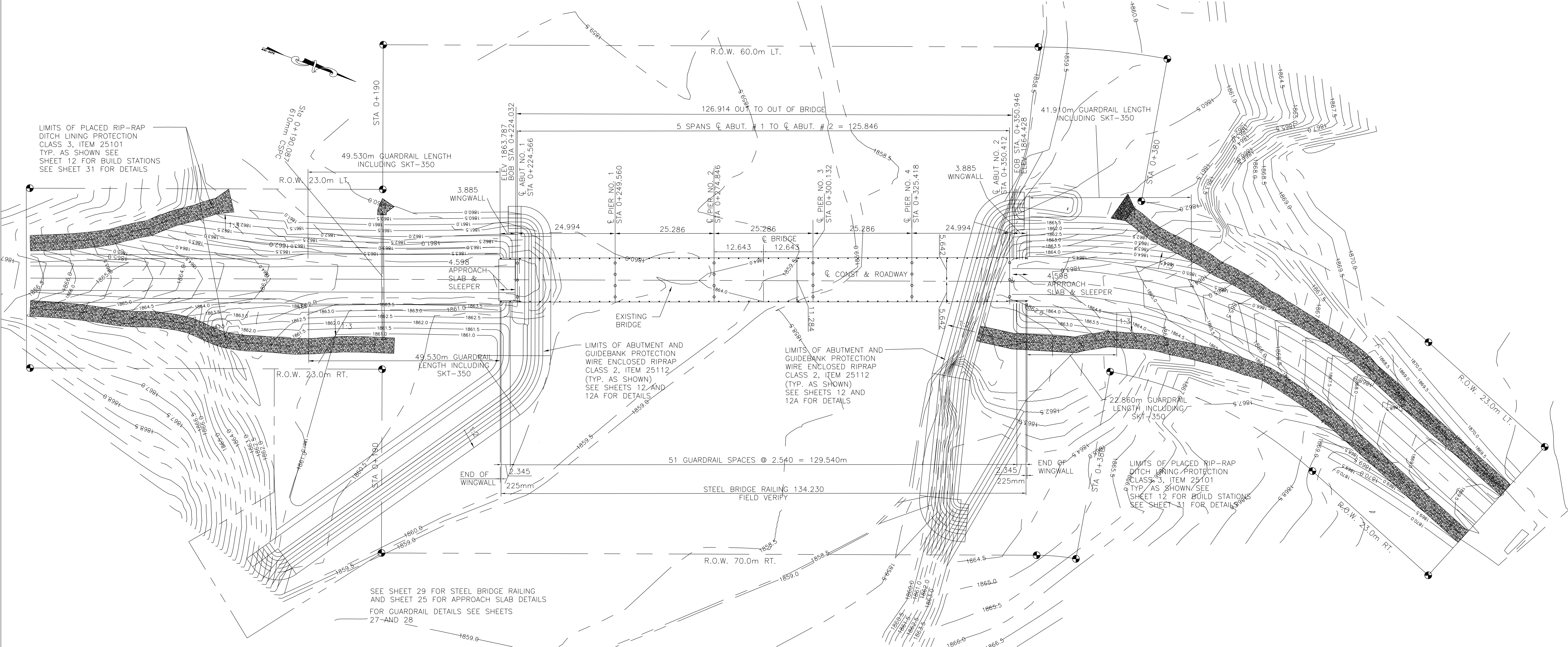
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NAVAJO REGIONAL OFFICE – D.O.T.

## BRIDGE NOTES AND DESIGN DATA

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Drawn by: PF, rsh	Date: 11/14/17
Revised by:HRiley	Date: 3/18/2020
File Name: 05_N9402_BridgeNotes	

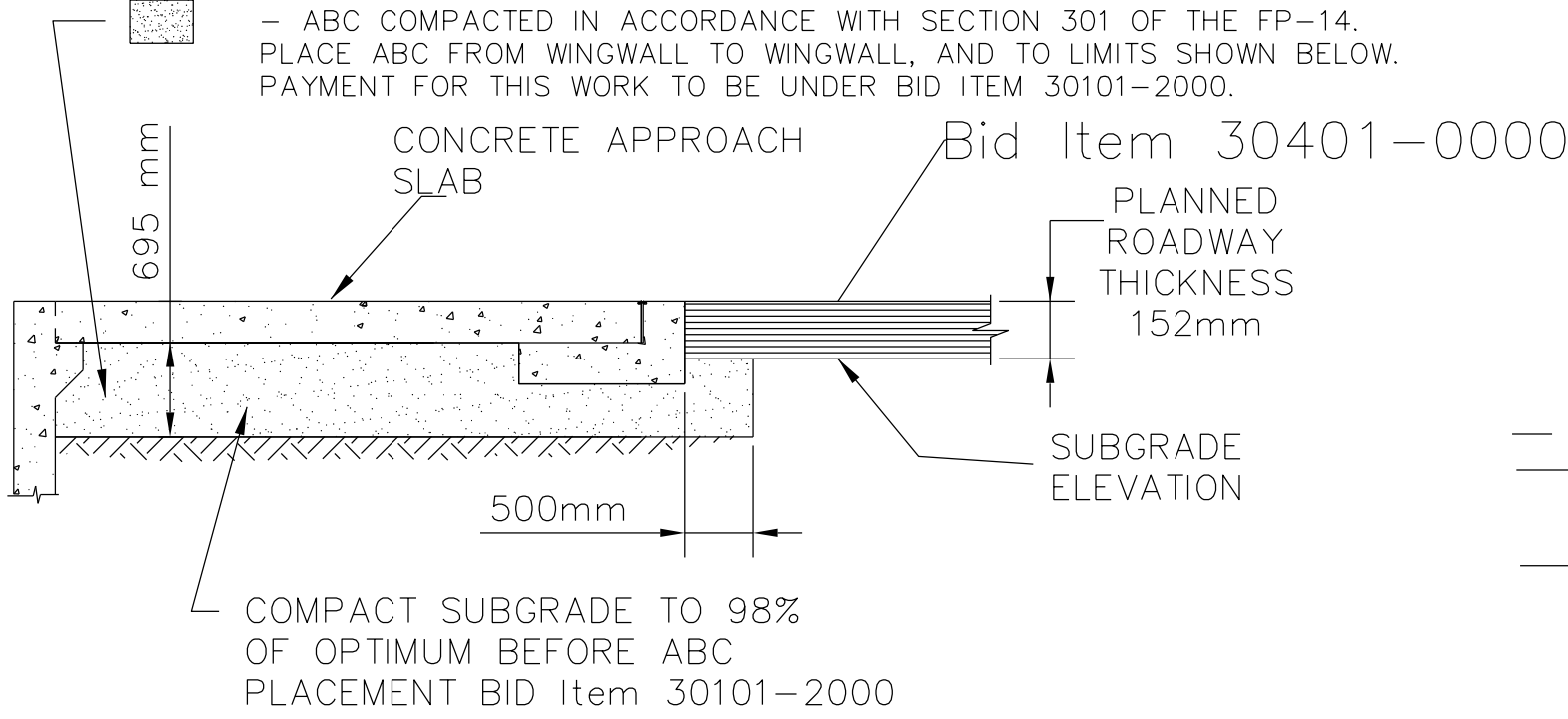


REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	
NAVAJO	AZ	NAVAJO	N9402	N9402(2)1,2&3	6	of 40



### CONTROL POINTS

REFER TO PLAN AND PROFILE (SHEET 4) FOR CONTROL POINTS FOR STATIONS AND ELEVATIONS. CONTROL POINTS ARE DESIGNATED AS CP



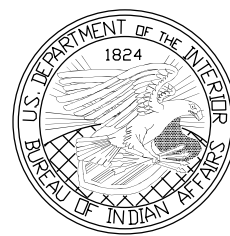
### LEGEND

- EXISTING FEATURES
- NEW CONSTRUCTION
- R.O.W. MONUMENT
- R.O.W. LIMITS

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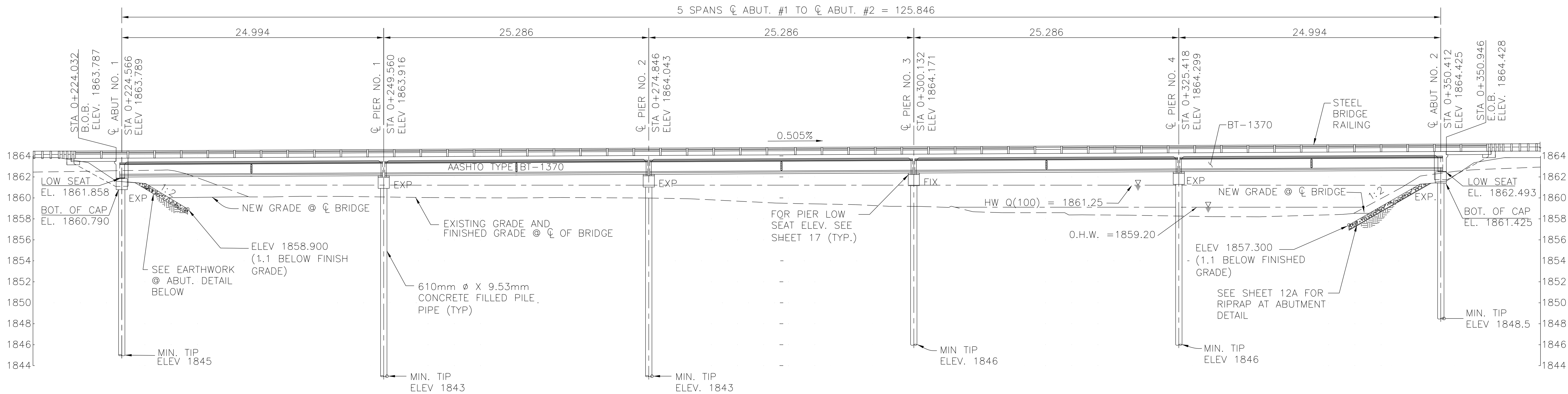
### STRUCTURE LOCATION PLAN

Designed by: CK  
Drawn by: PF, rsh Date: 6/16/16  
Revised by: HRiley Date: 3/18/2020  
File Name: 06\_N9402\_BridgeNotes

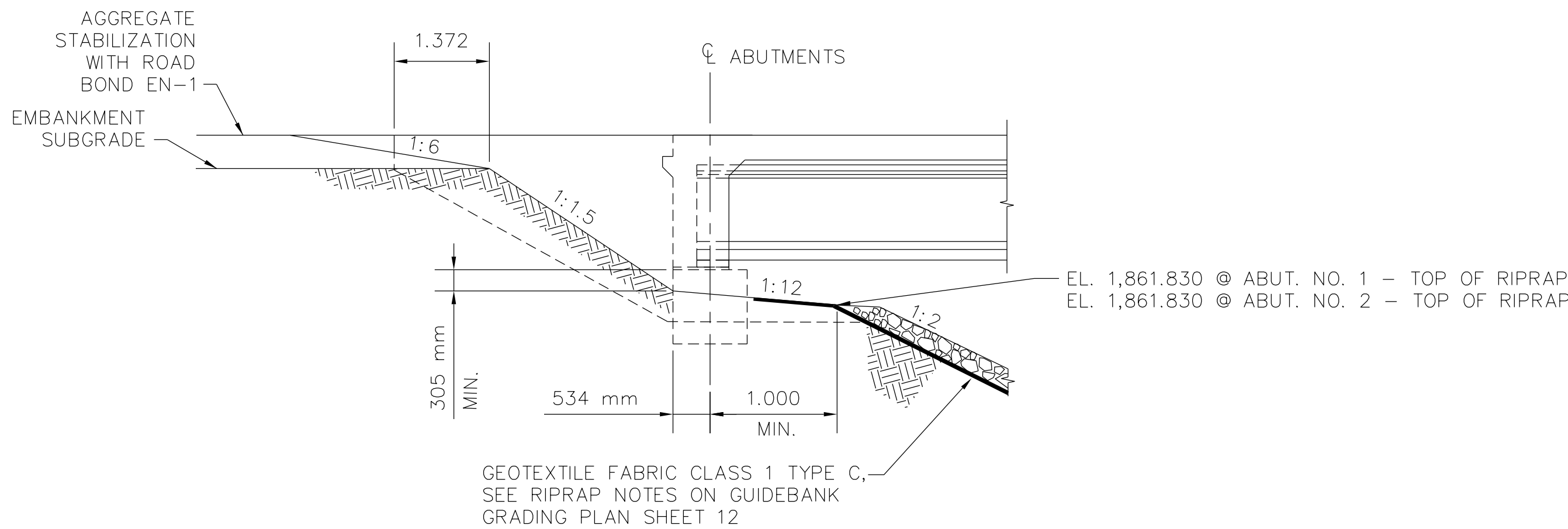


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REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET	
NAVAJO	AZ	NAVAJO	N9402	N9402(2)1,2&3	7	of 40



BRIDGE PROFILE ALONG  $\text{CL}$  CONSTRUCTION/ROADWAY  
SCALE=1:200



EARTHWORK AT ABUTMENTS  
SCALE=1:60

### WATERWAY DATA

DRAINAGE AREA = 2680.6 km<sup>2</sup>

Q(100) = 504.4 m<sup>3</sup>/sec

A(REQ'D) = 201.76 m<sup>2</sup>

A(PROVIDED) = 348.95 m<sup>2</sup>

V(100) = 2.50 m/sec

HW ELEV.(100) = 1861.25 m

FREE BOARD = 730 mm

PROVIDED)

Q(500) = 857.5 m<sup>3</sup>/sec

V(500) = 3.20 m/sec

A(REQ'D) = 267.97 m<sup>2</sup>

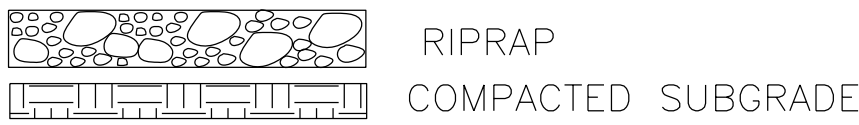
A(PROVIDED) = 348.95 m<sup>2</sup>

HW(500) = 1861.90 m

MAX. SCOUR(500) PIER = 3.71 m

SCOUR(500) ABUT = 12.13 m

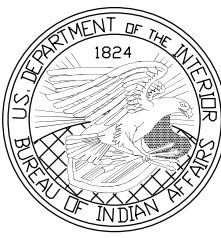
### LEGEND



UNITED STATES  
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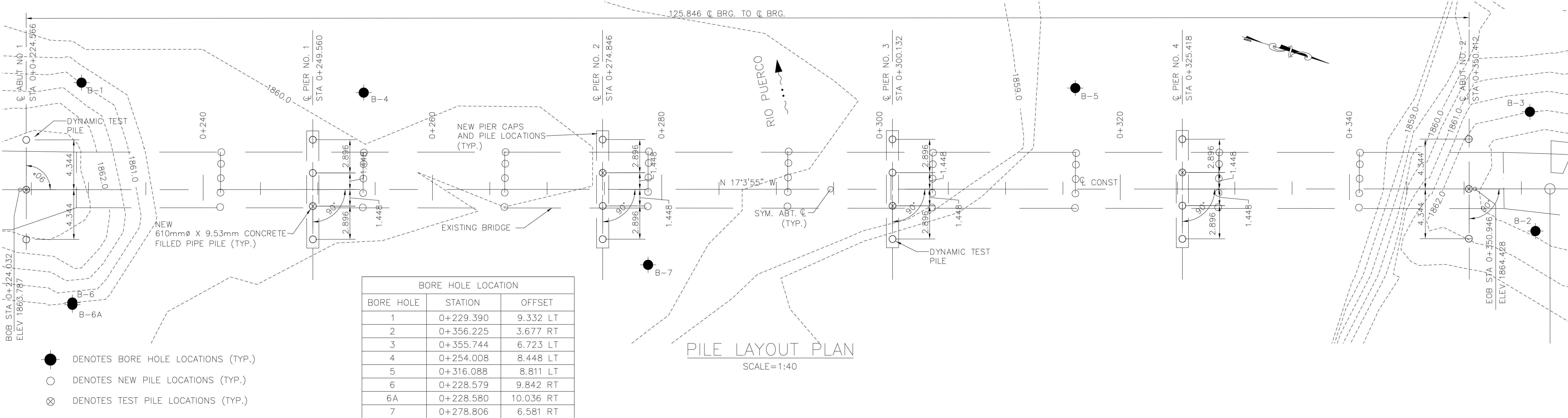
### STRUCTURE LOCATION PROFILE

Designed by: CK	
Drawn by: PF, rsh	Date: 11/15/17
Revised by: HRILEY	Date: 3/18/2020
File Name: 07_N9402_StructureProfile	



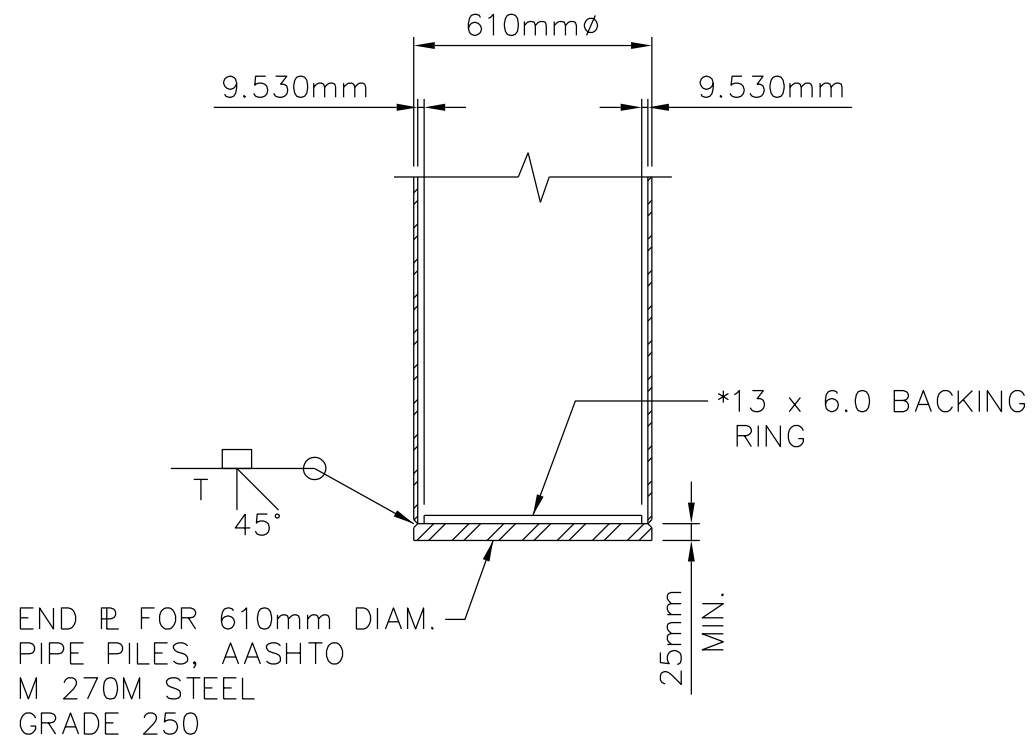
L:\CURRENT PROJECTS\N36\N9402\2. Brng\656\Design\_2011-03-29\CAL\_2007-04-10\Plan Drawings\_PRELIM\_2013-01-29\08\_N9402\_BORING\_PLN\_2016-02-09.dgn

REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET
NAVAJO	AZ	NAVAJO	N9402	N9402(2)1,2&3	8 of 40



## FOUNDATION NOTES

- PILING SHALL BE ASTM A252, GRADE 2 STEEL,  $F_y=240$  MPa. PILING SHALL BE PP 610 mm X 9.530 mm WALL STEEL PIPE PILES. ALL PILES SHALL BE DRIVEN CLOSED-ENDED, WITH A MINIMUM 25mm PLATE, AND SHALL BE FILLED WITH CLASS A CONCRETE. PAYMENT FOR THE VOLUME AND THE PLACEMENT SHALL BE CONSIDERED INCIDENTAL TO ITEM 55101-0200 AND NO DIRECT PAYMENT SHALL BE MADE THEREFOR.
- PILES SHALL BE DRIVEN WITH APPROVED HAMMER SYSTEM CAPABLE OF DEVELOPING ENERGY SUFFICIENT TO DRIVE PILES TO VIRTUAL REFUSAL, DEFINED AS LESS THAN 25mm OF PENETRATION IN 10 BLOWS WITHOUT CAUSING DAMAGE TO PILE. CONTRACTOR TO SUBMIT PILE DRIVING SYSTEM AND EQUIPMENT WITH CALCULATIONS TO COR/COTR FOR APPROVAL PRIOR TO INSTALLATION OF PILE SYSTEM.
- THIS BRIDGE PROJECT INCLUDES TEST PILES. SEE SUPPLEMENTAL SPECIFICATIONS SECTION 551 FOR IMPORTANT DETAILS, INCLUDING DETERMINATION OF PILE QUANTITIES REQUIRED FOR PROJECT.
- APPROVED TEST PILES SHALL BECOME PERMANENT PILES. TEST PILES WILL BE PAID UNDER BID ITEM 55120.
- STEEL PIPE PILES SHALL BE DRIVEN TO THREE TIMES THE APPLIED STRUCTURAL LOAD SHOWN IN THE PLANS. PILES SHALL BE DRIVEN UTILIZING THE DYNAMIC FORMULA GIVEN IN SECTION 551.08 (b) OF THE FP-14. THE ULTIMATE PILE CAPACITY SHALL BE THE APPLIED STRUCTURAL LOAD MULTIPLIED BY A FACTOR OF SAFETY OF THREE. PILES SHALL BE DRIVEN TO THE MINIMUM TIP ELEVATION OR BELOW AS SHOWN IN THE PLANS. SPLICING SHALL BE IN ACCORDANCE WITH SECTIONS 551.10 AND 551.11 OF THE FP-14. PREMANUFACTURED SPLICE DEVICES MAY BE UTILIZED UPON WRITTEN APPROVAL BY THE AOTR/COR. PILES SHALL BE DRIVEN TO THE TOLERANCES GIVEN IN SECTION 551.10 OF THE FP-14. AXIAL ALIGNMENT DEVIATIONS SHALL BE MEASURED STARTING FROM THE PLANNED PILE LOCATION AT THE CUTOFF ELEVATION AND SHALL NOT EXCEED THE TOLERANCE GIVEN IN SECTION 551.10 OF THE FP-14. ASSURE CORRECT PILE PLACEMENT AND ALIGNMENT (WITHIN APPLICABLE TOLERANCES) BY PROVIDING HORIZONTAL BRACING BETWEEN THE CRANE AND PILE DRIVING LEADS.



## PILE TIP - END CL DETAIL (TYP.)

(REQ'D AT ENDS OF ALL PILES)

\*END PLATE AND BACKING RING SHALL BE AASHTO M 270M STEEL, AND SHALL BE INCIDENTAL TO ITEM 55101-0200.

## DRIVEN PILE REQUIREMENTS

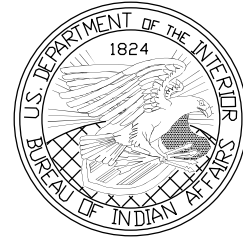
LOCATION	PILE TYPE	QUANTITY	AVERAGE ESTIMATED LENGTH*	MINIMUM PENETRATION ELEVATION	ESTIMATED PENETRATION ELEVATION	DESIGN LOAD (kN)	ULTIMATE CAPACITY (kN)	
ABUTMENT #1	PP 610x9.53 (ASTM A252 GRADE 2)	3	16.5 m	1845 m	N/A	1108	3047	
BENTS (PIERS 1&2)	PP 610x9.53 (ASTM A252 GRADE 2)	4	18.7 m	1843 m	N/A	1322	3636	
BENTS (PIERS 3&4)	PP 610x9.53 (ASTM A252 GRADE 2)	4	16 m	1846 m	N/A	1322	3636	
ABUTMENT #2	PP 610x9.53 (ASTM A252 GRADE 2)	3	13.7 m	1848.5 m	N/A	1108	3047	

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

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## PILE AND BORING PLAN

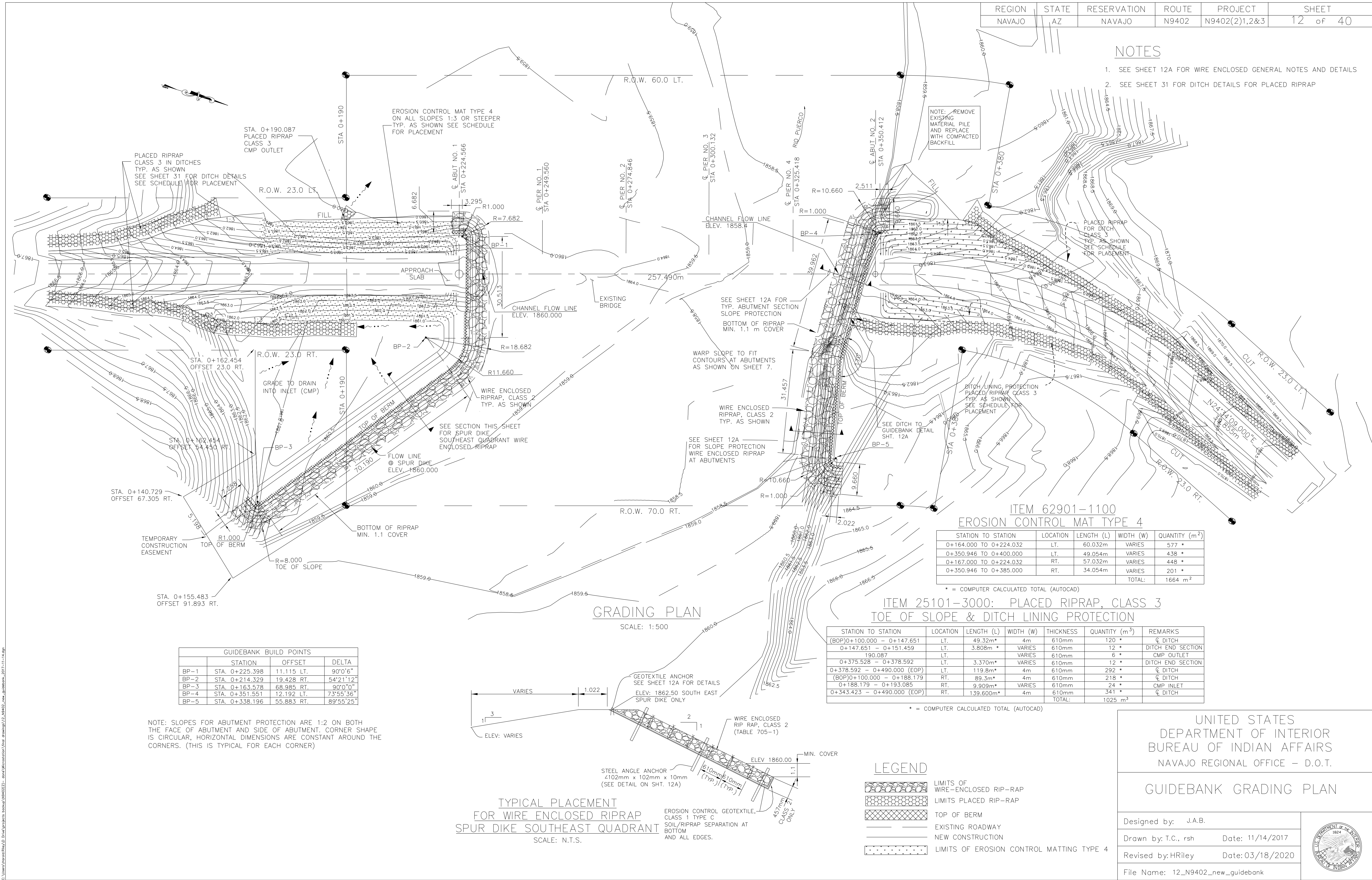
Designed by: CK  
Drawn by: PF, rsh Date: 11/14/17  
Revised by: Date:  
File Name: 08\_N9402\_BORING\_PLN



REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET
NAVAJO	AZ	NAVAJO	N9402	N9402(2)1,2&3	12 of 40

## NOTES

- SEE SHEET 12A FOR WIRE ENCLOSED GENERAL NOTES AND DETAILS
- SEE SHEET 31 FOR DITCH DETAILS FOR PLACED RIPRAP



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## GUIDEBANK GRADING PLAN

Designed by: J.A.B.

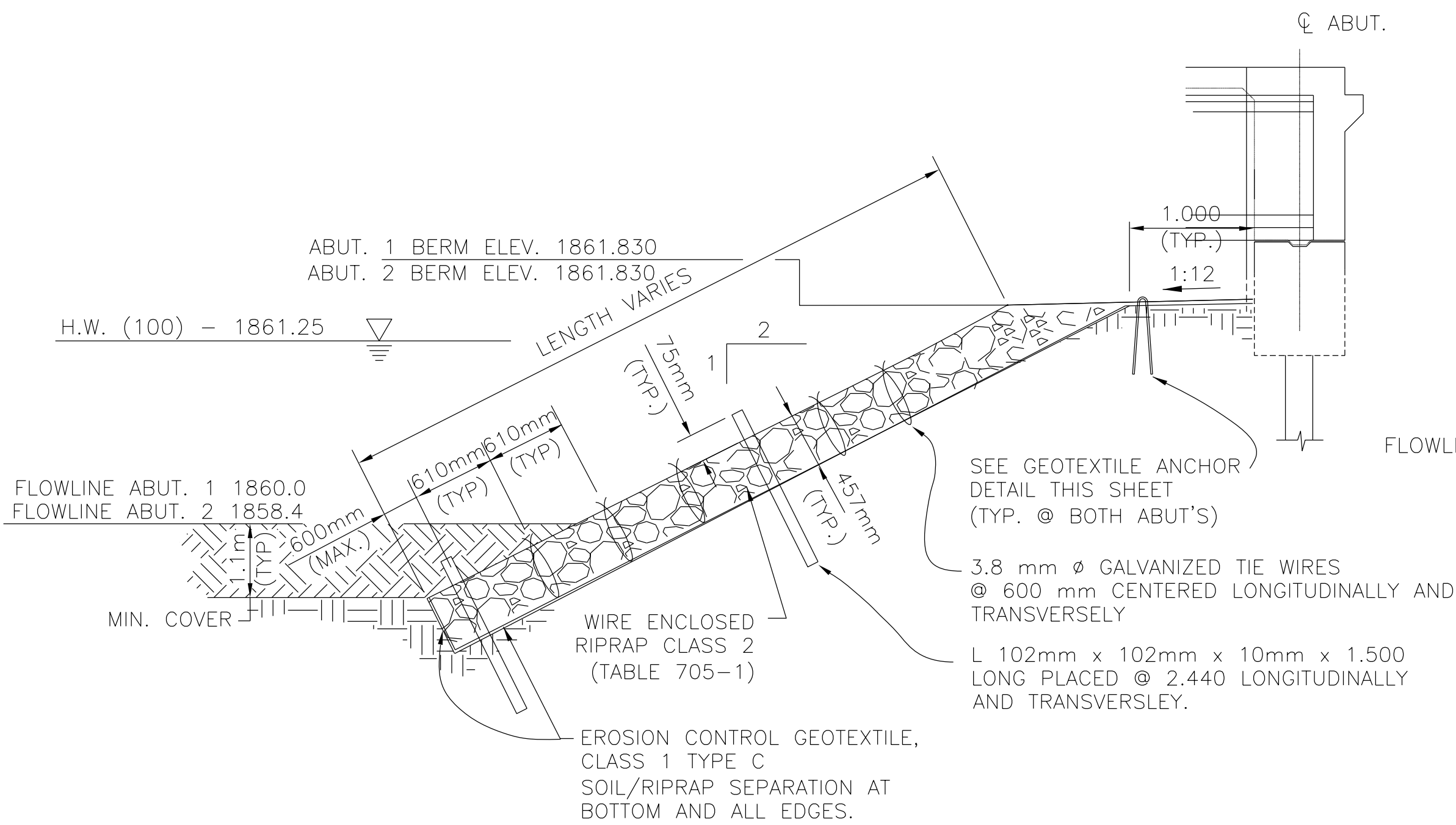
Drawn by: T.C., rsh Date: 11/14/2017

Revised by: HRiley Date: 03/18/2020

File Name: 12\_N9402\_new\_guidbank

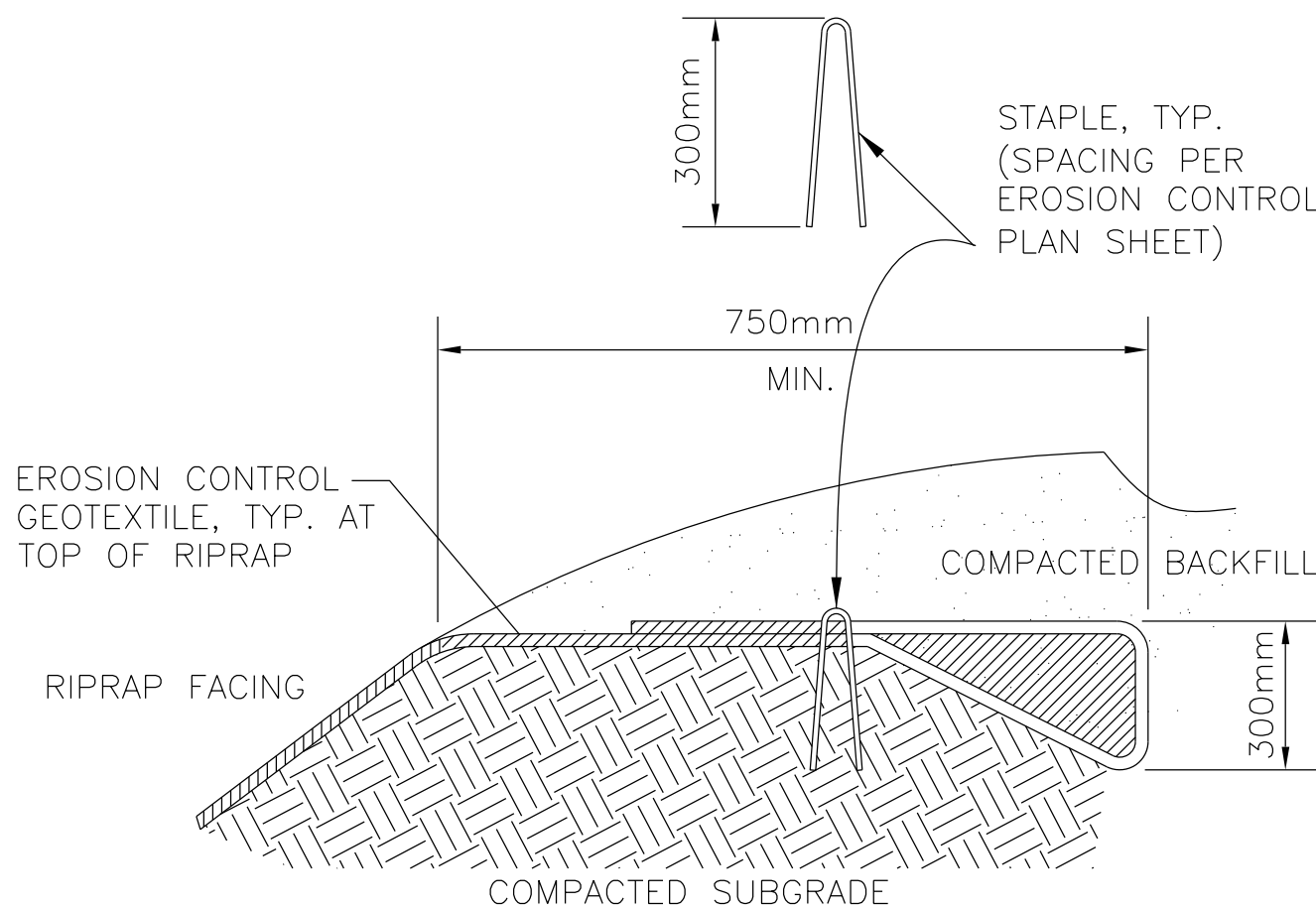


REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET
NAVAJO	AZ	NAVAJO	N9402	N9402(2)1,2&3	12A of 40



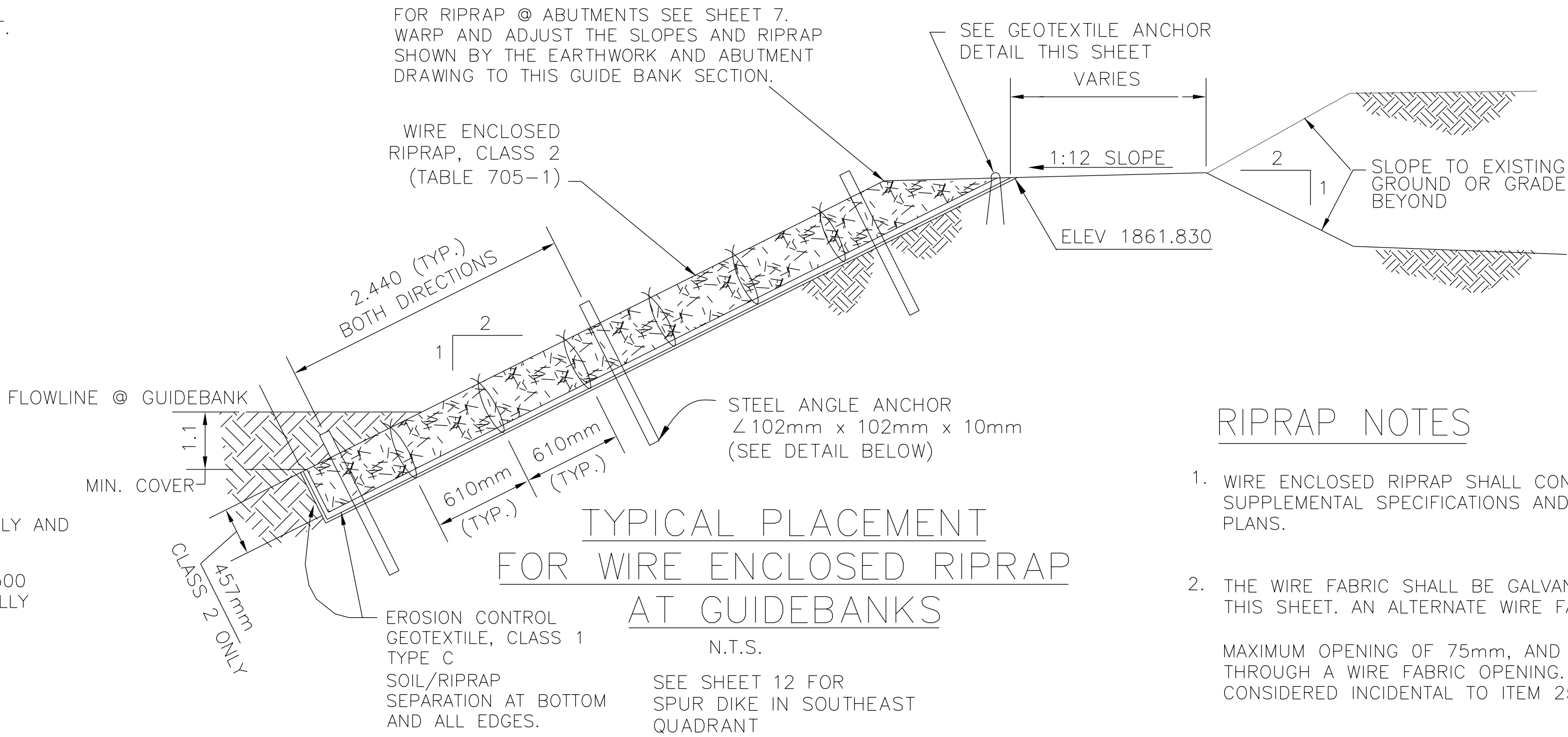
### TYPICAL PLACEMENT OF WIRE ENCLOSED RIPRAP AT $\phi$ ABUTMENTS

N.T.S.

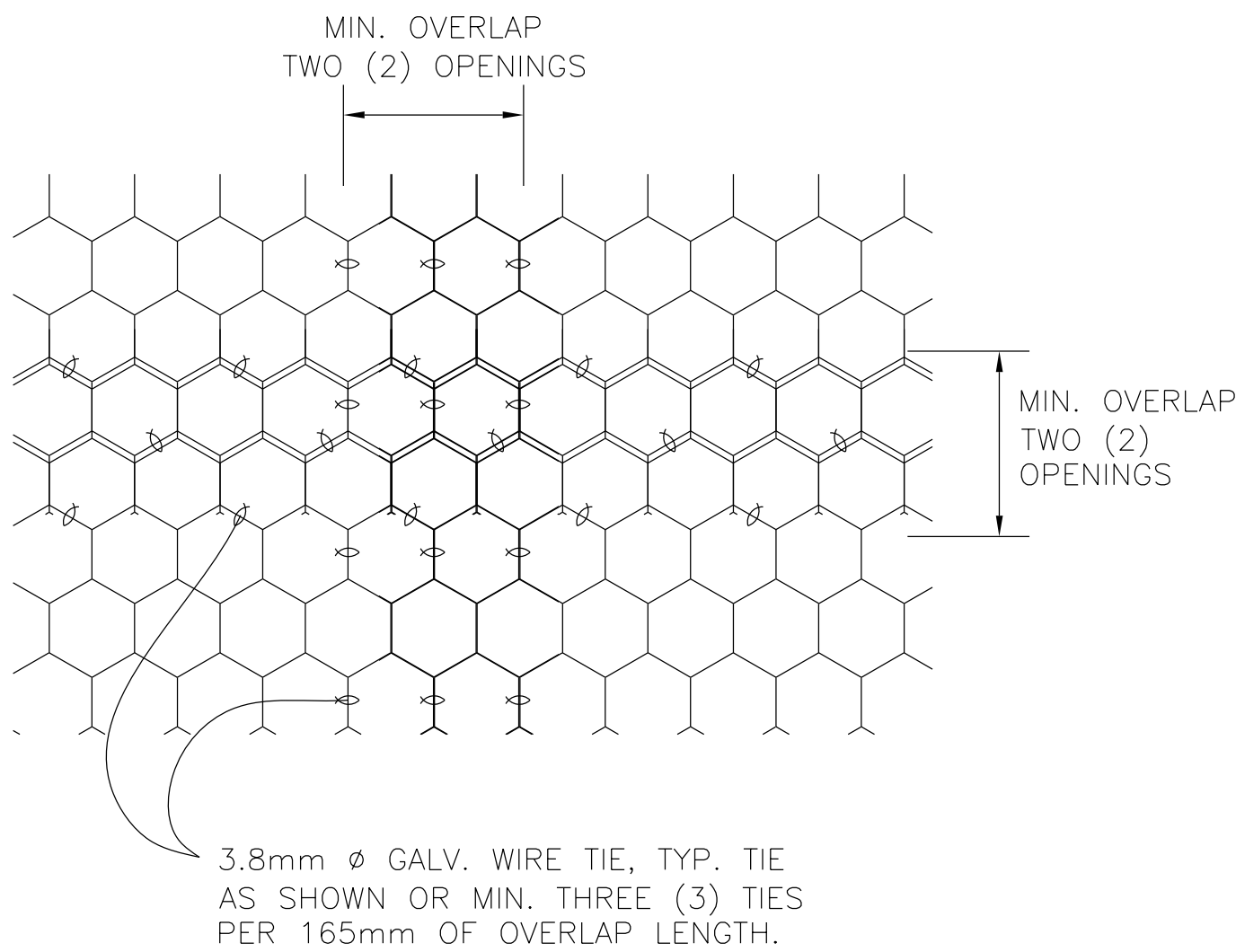


### EROSION CONTROL GEOTEXTILE KEY DETAIL @ TOP OF RIPRAP

N.T.S.

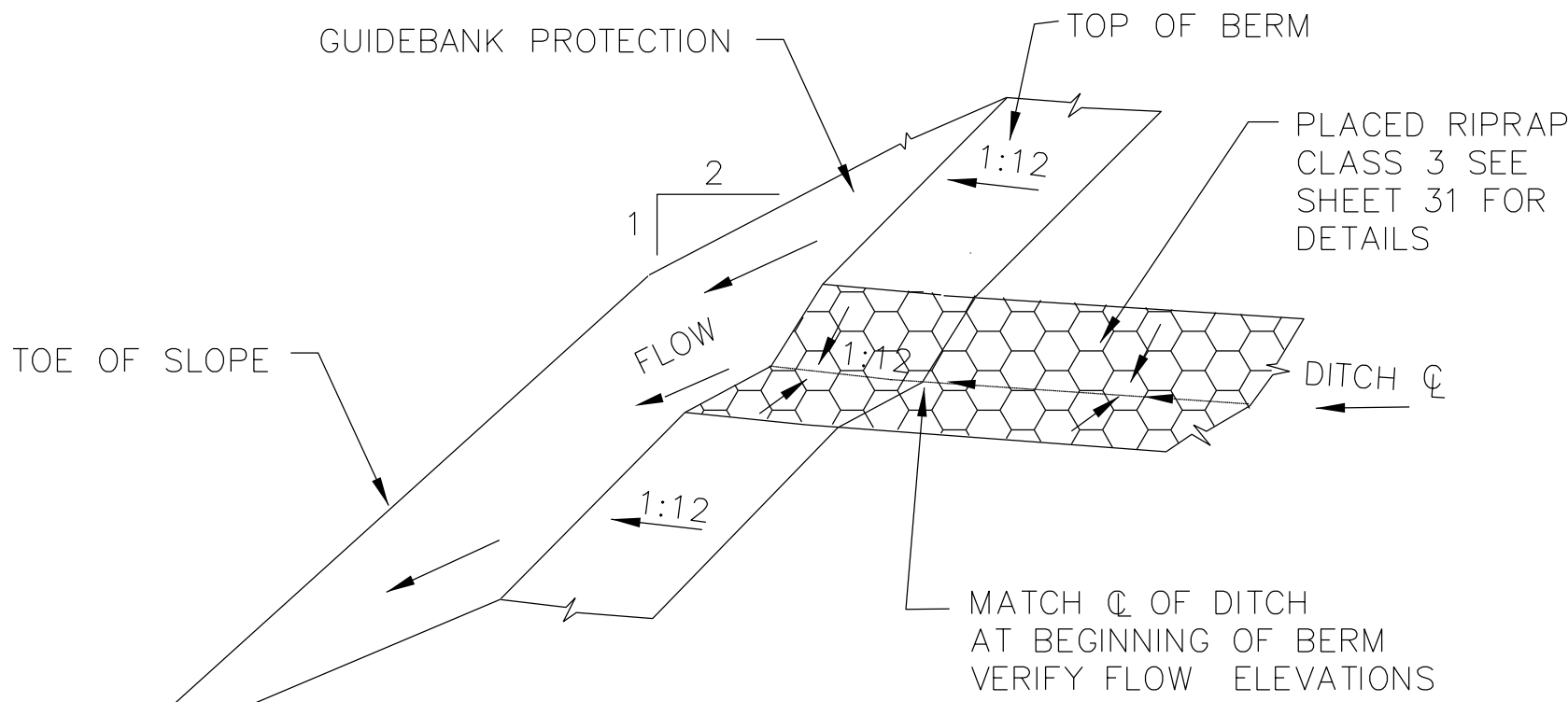


### TYPICAL PLACEMENT FOR WIRE ENCLOSED RIPRAP AT GUIDE BANKS



### FABRIC SPLICING DETAIL

N.T.S.

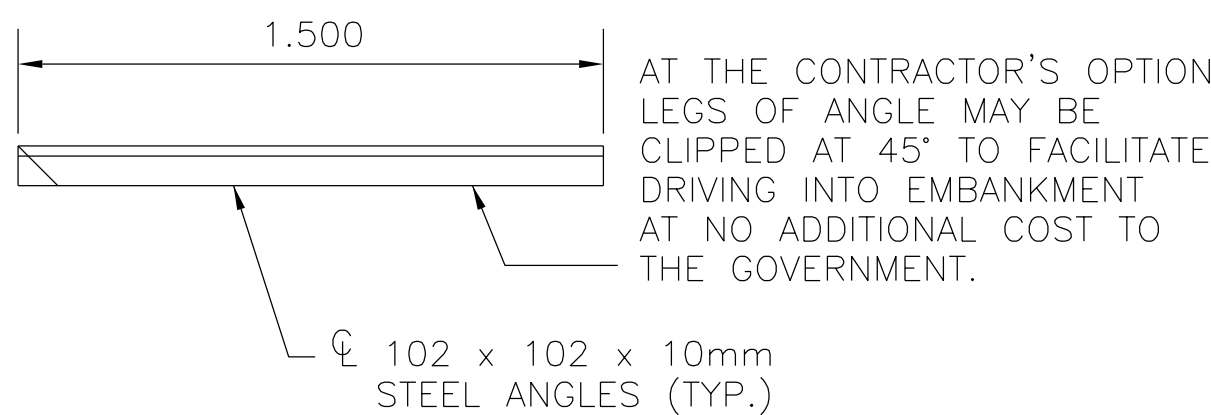


### DITCH TO GUIDE BANK DETAIL

N.T.S.

### RIPRAP NOTES

1. WIRE ENCLOSED RIPRAP SHALL CONFORM TO SECTION 251 OF THE FP-14 AND THE SUPPLEMENTAL SPECIFICATIONS AND TO THE DETAILS SHOWN IN THESE CONSTRUCTION PLANS.
2. THE WIRE FABRIC SHALL BE GALVANIZED AND BE OF THE CONFIGURATION SHOWN ON THIS SHEET. AN ALTERNATE WIRE FABRIC MAY BE SUBMITTED FOR REVIEW AND APPROVAL. MAXIMUM OPENING OF 75mm, AND SHALL NOT ALLOW A 75mm  $\phi$  SPHERE TO PASS THROUGH A WIRE FABRIC OPENING. COST FOR PLACING FABRIC AND MATERIAL SHALL BE CONSIDERED INCIDENTAL TO ITEM 25112 AND NO DIRECT PAYMENT SHALL BE MADE.
3. WIRE ENCLOSED RIPRAP SHALL BE ANCHORED AS SHOWN WITH L 102mm x 102mm x 10mm STEEL ANGLES SHALL EXTEND 75mm ABOVE THE TOP SURFACE OF WIRE ENCLOSED RIPRAP WHEN PLACED. COST OF PLACING STEEL ANGLES AND MATERIAL SHALL BE CONSIDERED INCIDENTAL TO ITEM 25112 AND NO DIRECT PAYMENT SHALL BE MADE.
4. EMBANKMENT BELOW RIPRAP SHALL CONFORM TO SECTION 204 OF THE FP-14. EXCAVATION FOR RIPRAP FOUNDATION SHALL CONFORM TO SECTION 209 OF THE FP-14. ALL EMBANKMENT AND EXCAVATION WORK FOR RIPRAP CONSTRUCTION SHALL BE CONSIDERED INCIDENTAL TO ITEM 25112, WIRE ENCLOSED RIPRAP, CLASS 2.
5. ROCK SIZE FOR WIRE ENCLOSED RIPRAP SHALL CONFORM TO FP-14, SECTION 705, TABLE 705-1, CLASS 2.
6. EROSION CONTROL GEOTEXTILE SHALL BE INSTALLED UNDER ALL RIPRAP AS SHOWN AND SHALL BE INCIDENTAL TO ITEM 25101, PLACED RIPRAP CLASS 3, AND ITEM 25112, WIRE-ENCLOSED RIPRAP. GEOTEXTILE SHALL CONFORM TO SECTION 714.01 Class 1 OF THE FP-14 FOR TYPE C.



### STEEL ANCHOR DETAIL

N.T.S.

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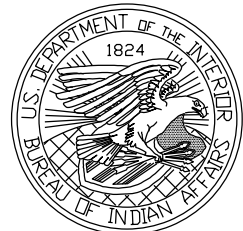
### WIRE ENCLOSED RIPRAP DETAILS AND RIPRAP NOTES

Designed by: CK

Drawn by: TC, rsh Date: 7/03/17

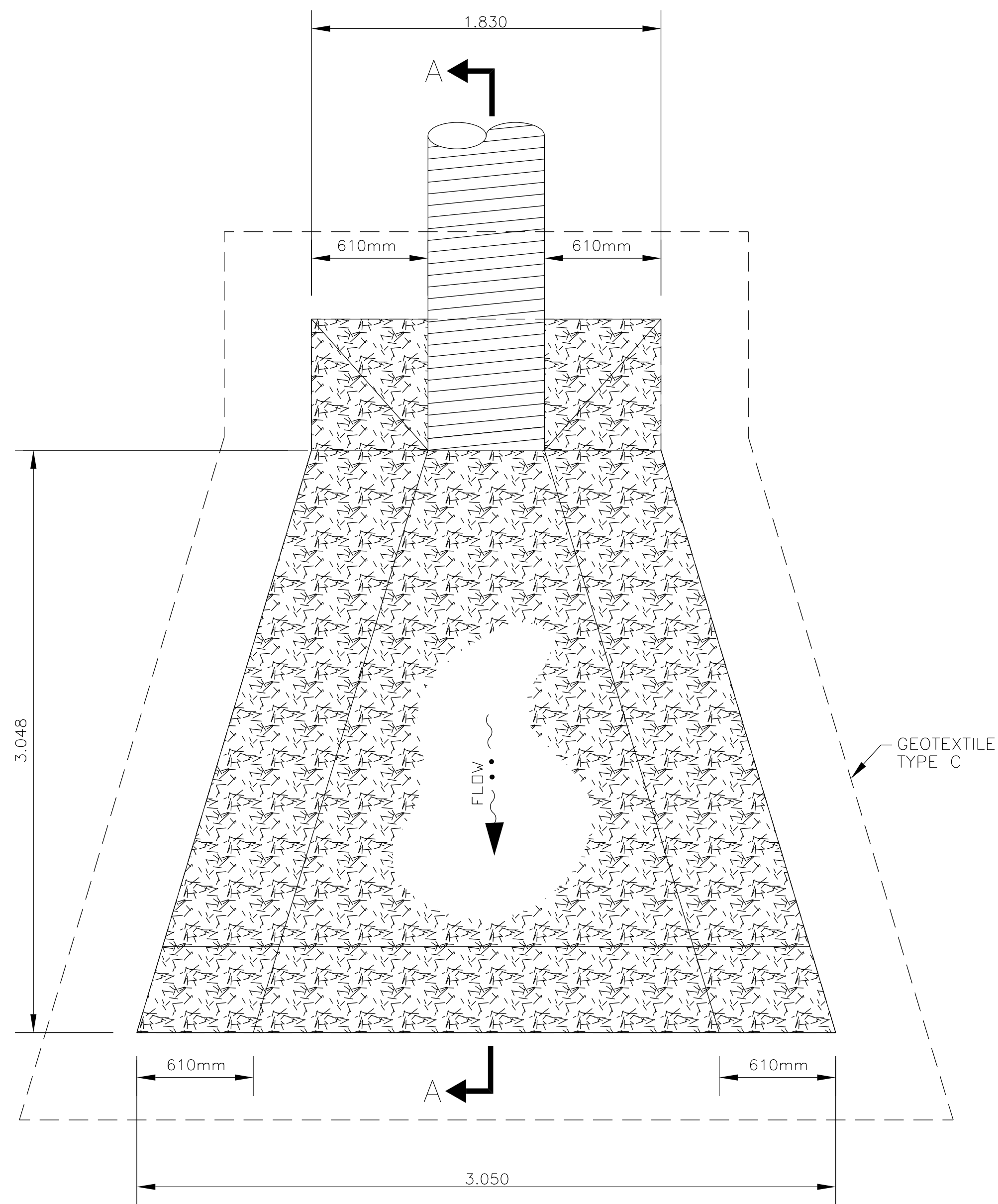
Revised by: HRiley Date: 3/18/2020

File Name: 12A\_N9042\_new12a\_DETAILS

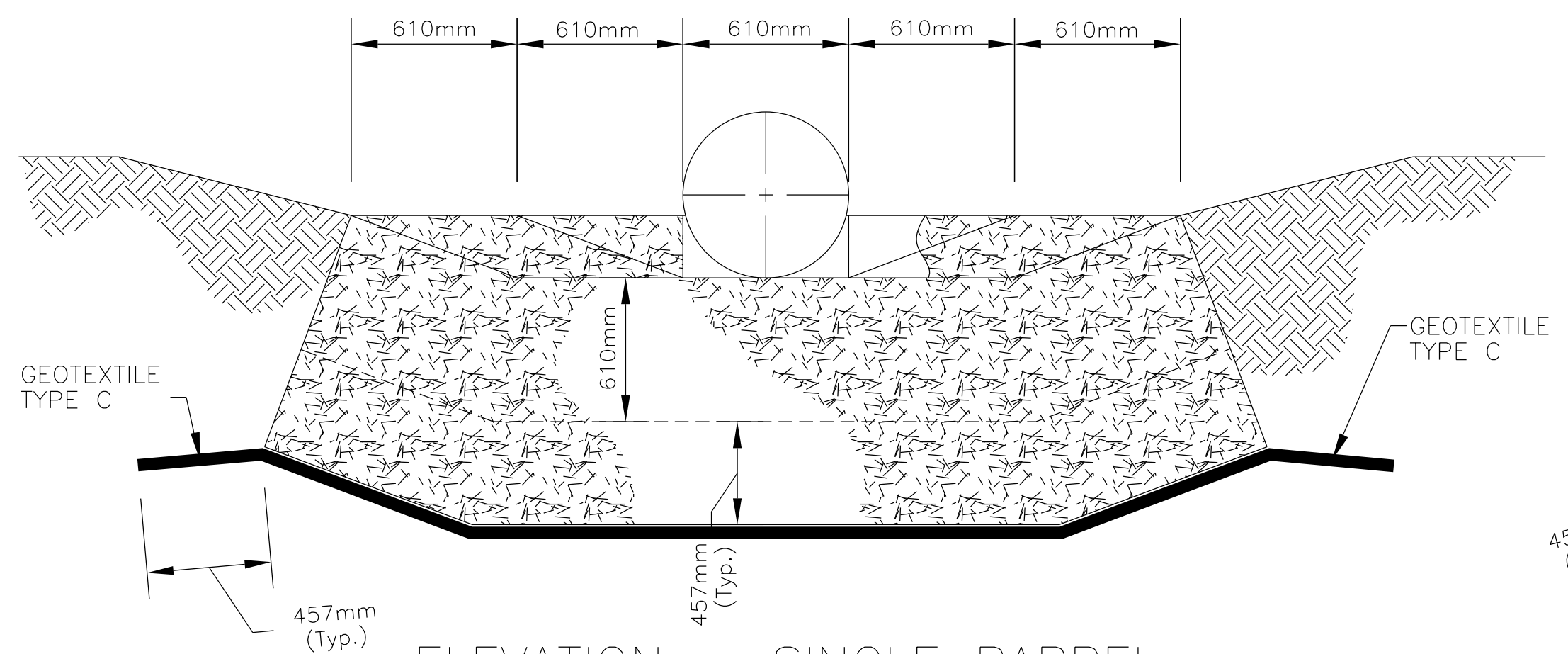


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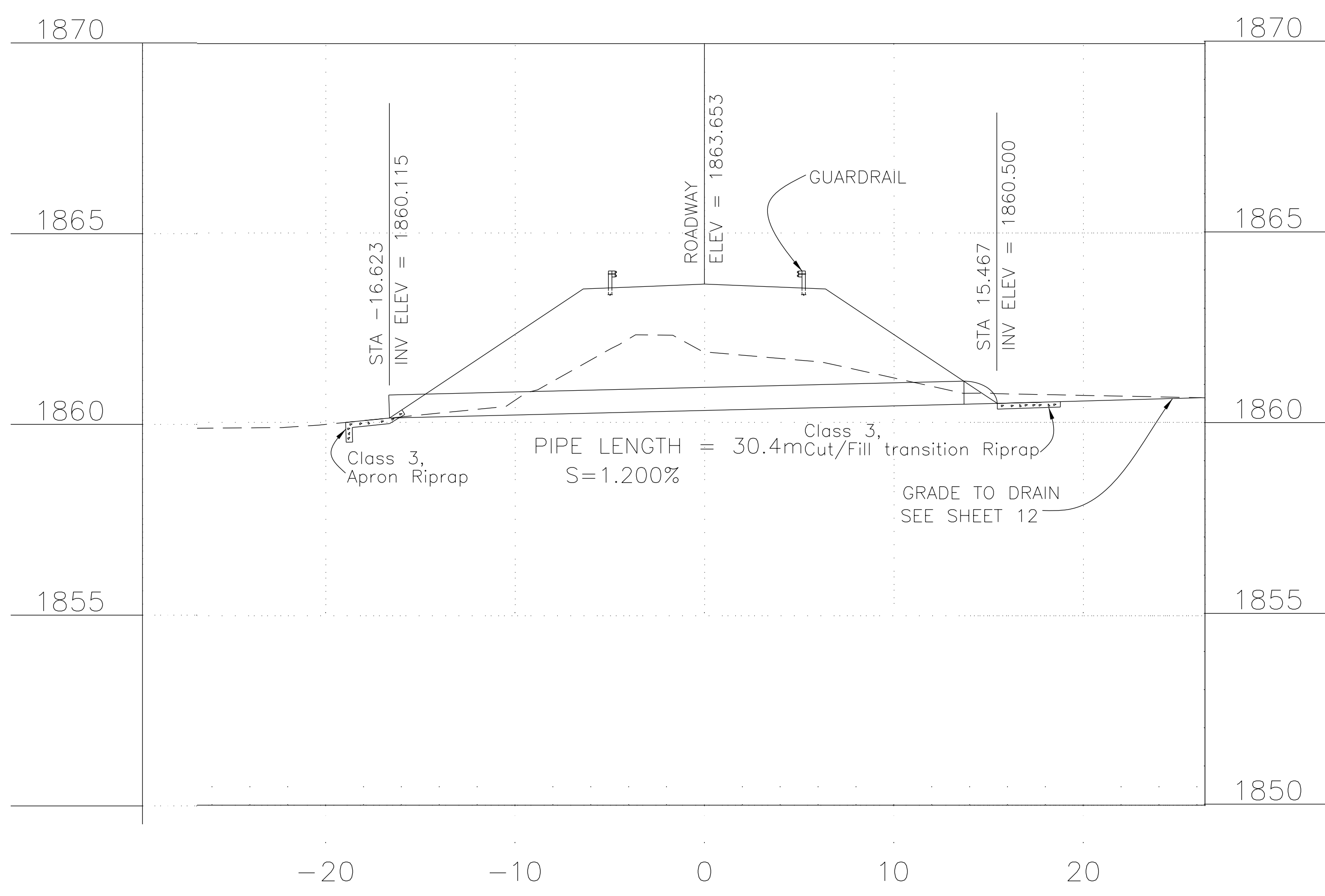
REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET
NAVAJO	AZ	NAVAJO	N9402	N9402(2)1,2&3	12B of 40



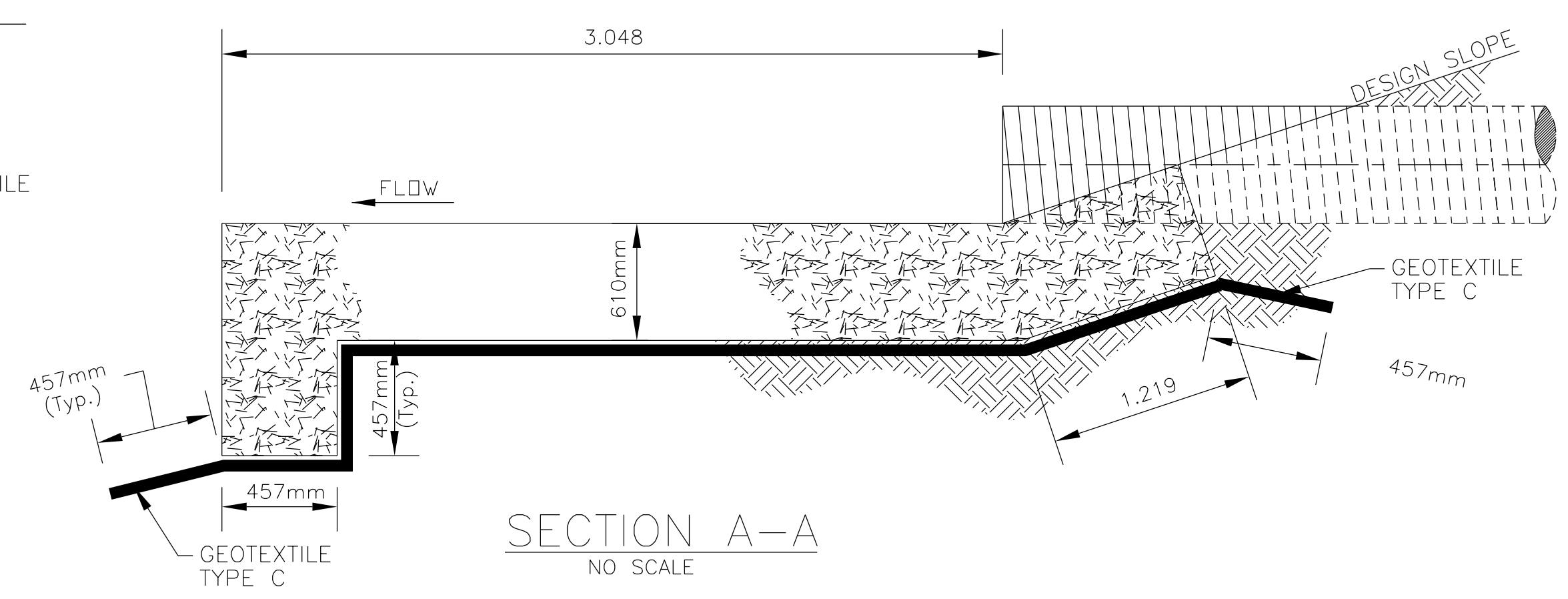
PLAN - SINGLE BARREL  
NO SCALE



ELEVATION - SINGLE BARREL  
NO SCALE



610mm PIPE CULVERT  
CULVERT SECTION @  
STA 0+190.087  
NO SCALE



SECTION A-A  
NO SCALE

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CULVERT SECTION  
AND DETAILS

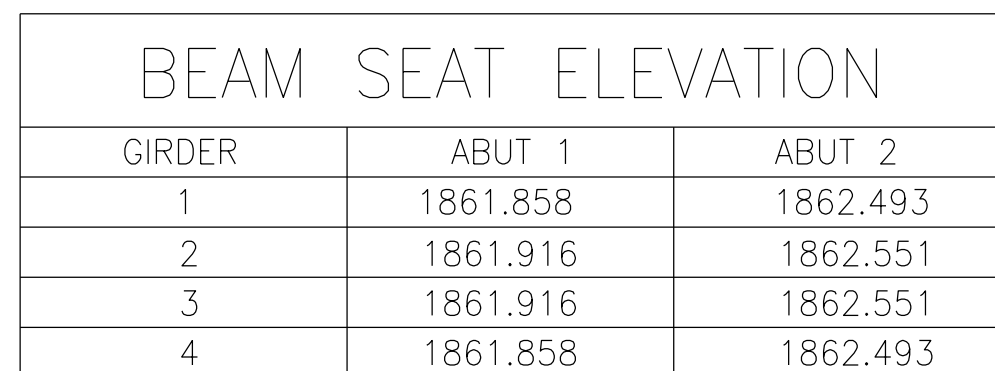
Designed by: CK	
Drawn by: A.O., rsh	Date: 11/14/17
Revised by: HRiley	Date: 3/18/2020
File Name: 12B_N9402_new12b_details	




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- 
- 68mm 1.750 1.146 1.750 10.574 573mm
- CL BEAM CL BEAM CL CONST. CL BEAM CL BEAM
- PB.JF (TYP.)
- CL ABUT
- 356mm (TYP.) 406mm (TYP.) 406mm (TYP.) 519mm 1.448 1.448 2.896
- BRG. PAD (TYP.)
- 229mm
- NOTE:  
SEE SHEET 16 FOR ANCHOR BOLT PLACEMENT AND DETAILS.
- ANCHOR BOLT LAYOUT
- SCALE=1:60



ABUTMENT DETAILS	
Designed by: CK	
Drawn by: PF, rsh      Date: 3/17/17	
Revised by: HRiley      Date: 3/18/2020	
File Name: 13_N9402_AbutDet	





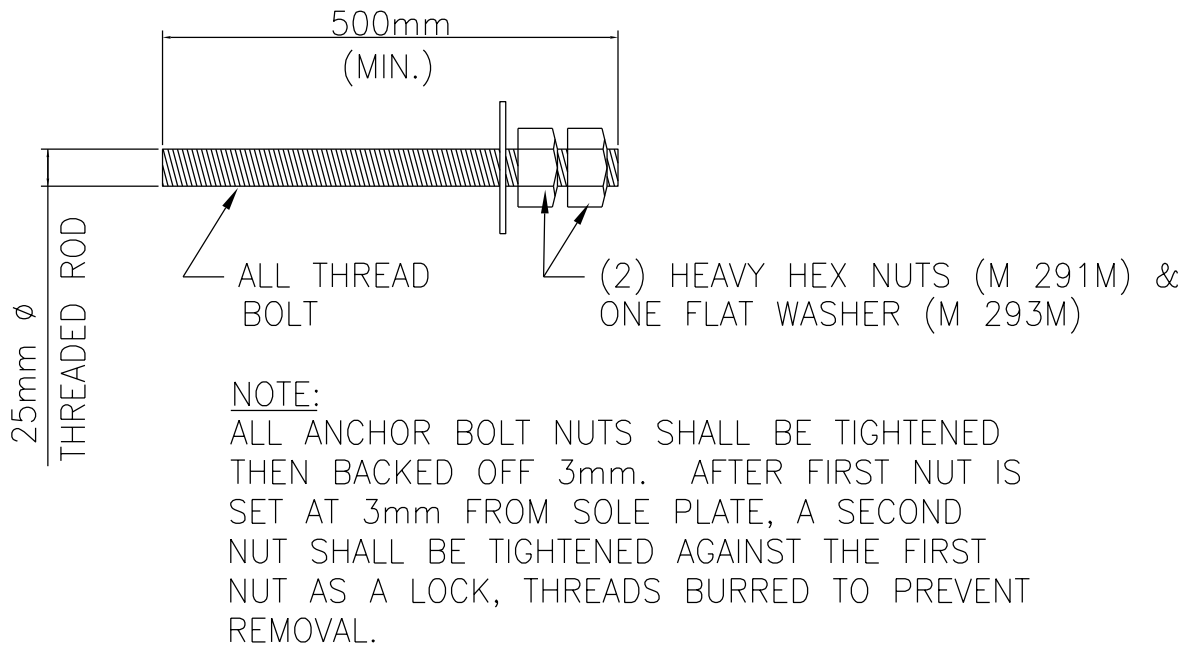


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REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET
NAVAJO	AZ	NAVAJO	N9402	N9402(2)1,2&3	16 of 40

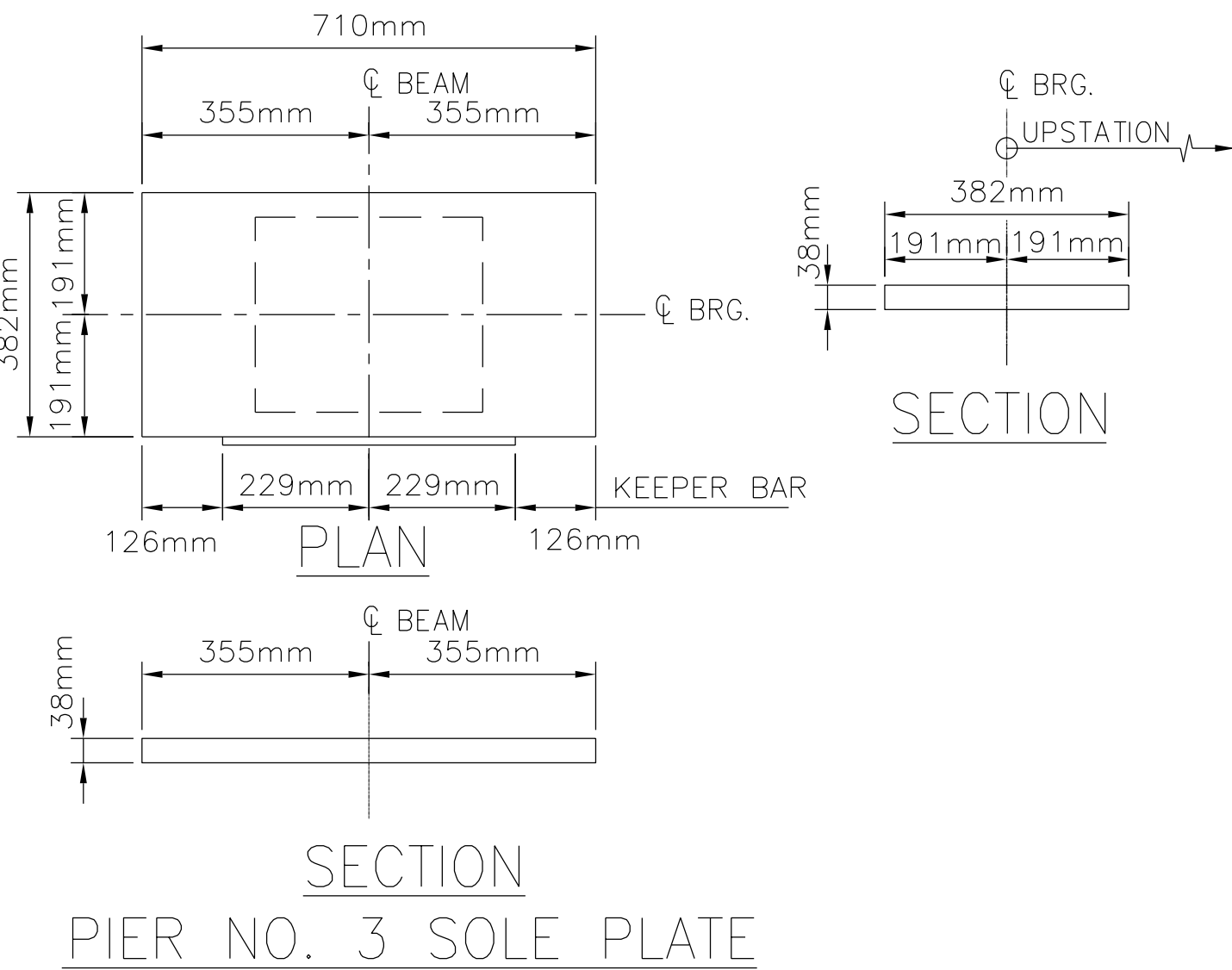
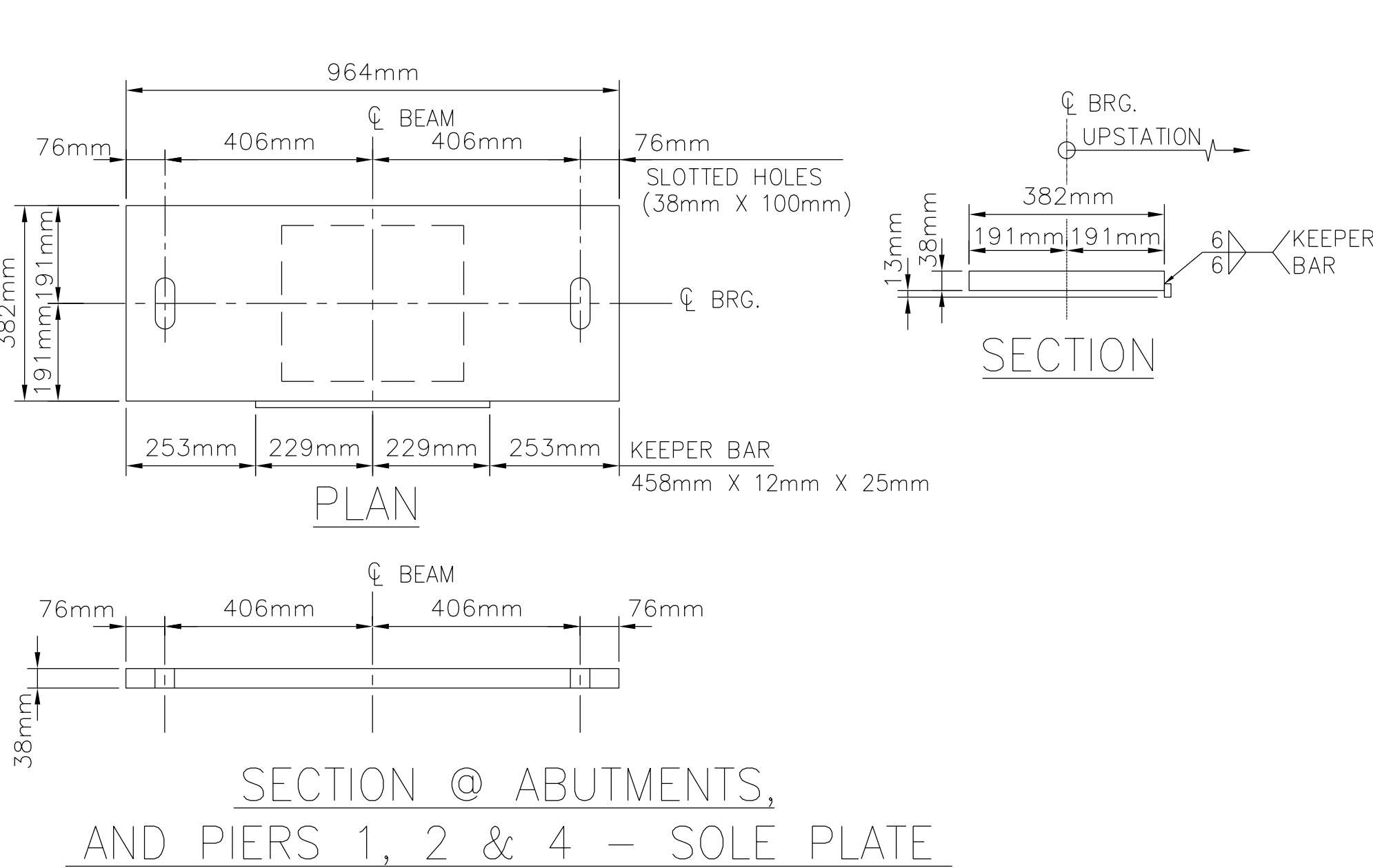
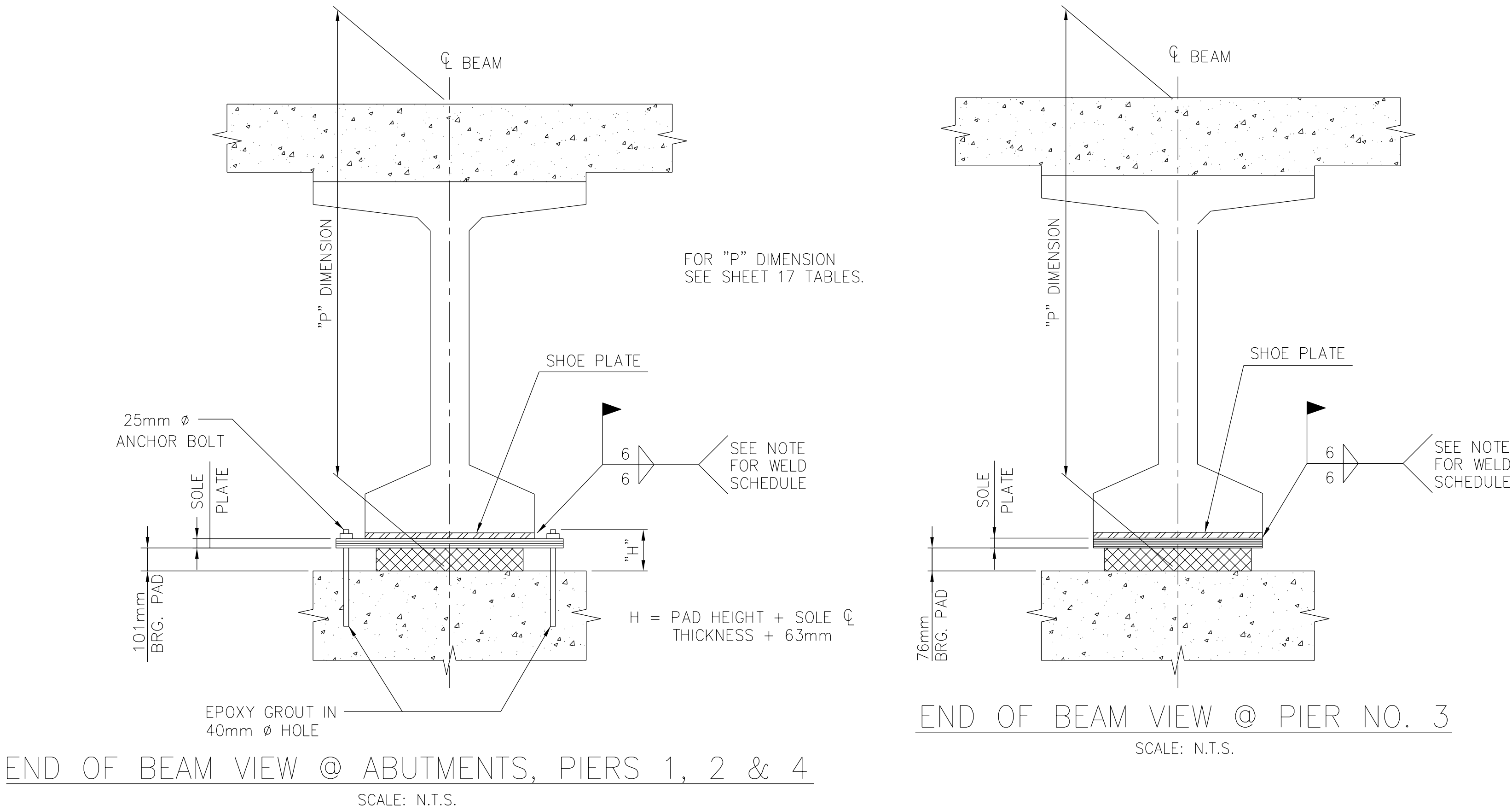
NOTES

1. THE FIELD WELDING OF THE GIRDER SHOE PLATE TO THE SOLE PLATE SHALL BE DONE ACCORDING TO THE FOLLOWING SCHEDULE:
- A) GREASE SHALL BE REMOVED AND SURFACES THAT ARE TO BE WELDED SHALL BE CLEANED PRIOR TO WELDING THE SHOE PLATES TO THE SOLE PLATES.
- B) ALL SOLE PLATES AT PIERS SHALL NOT BE WELDED ONTO SHOE PLATES UNTIL AFTER PLACEMENT OF THE DECK SLAB CONCRETE.
- C) FOR ABUTMENT 1 & 2, PIERS 1, 2 & 4 – THREE (3) MONTHS AFTER DECK PLACEMENT.
- D) WELDING SHALL BE DONE WITHOUT CAUSING HEAT DAMAGE TO BEARING PADS. WELDING SHALL MEET THE REQUIREMENTS OUTLINED UNDER SECTION 555.03 FP-14.
2. A SILICON NON-PETROLEUM BASED GREASE (DOW-CORNING 4, OR EQUAL, ITEM #6Y765) SHALL BE APPLIED ON THE TOP SURFACES OF THE SOLE PLATES IMMEDIATELY PRIOR TO PLACEMENT OF THE BEAMS. THE SURFACES OF THE SOLE PLATES AND SHOE PLATES SHALL BE CLEAN AND FREE OF FOREIGN MATERIAL PRIOR TO APPLYING THE GREASE. SEE SHEET 18 OF 40 FOR BEARING LOCATIONS WHERE THE GREASE SHALL BE APPLIED. THE COST OF THE GREASE AND ITS APPLICATION SHALL BE INCIDENTAL TO THE SOLE PLATES AND NO DIRECT PAYMENT SHALL BE MADE THEREFOR. GREASE SUPPLIER: GRAINGER, INC. – 3901 OSUNA RD. NE, ALBUQUERQUE NM 87109. PH. 505-345-8631 OR 505-345-9600. INTERNET ADDRESS: WWW.GRAINGER.COM., OR APPROVED ALTERNATE.



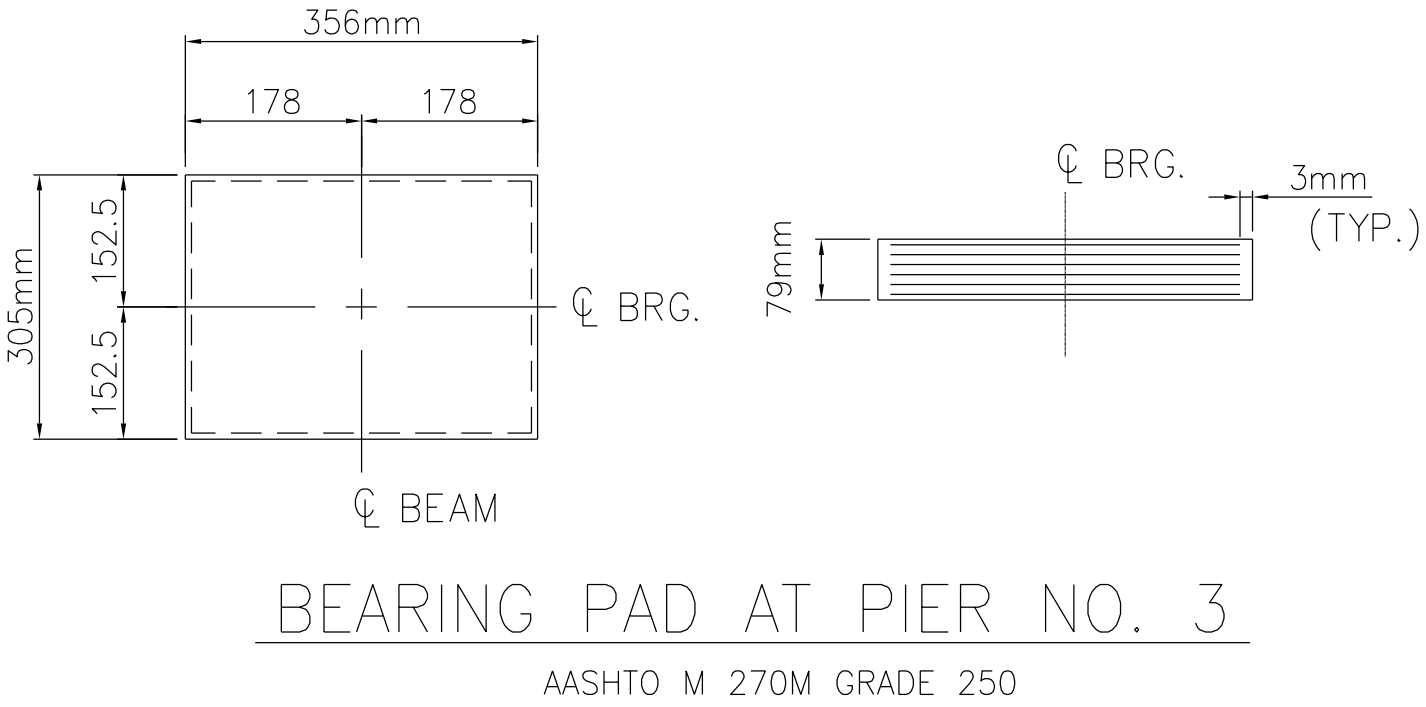
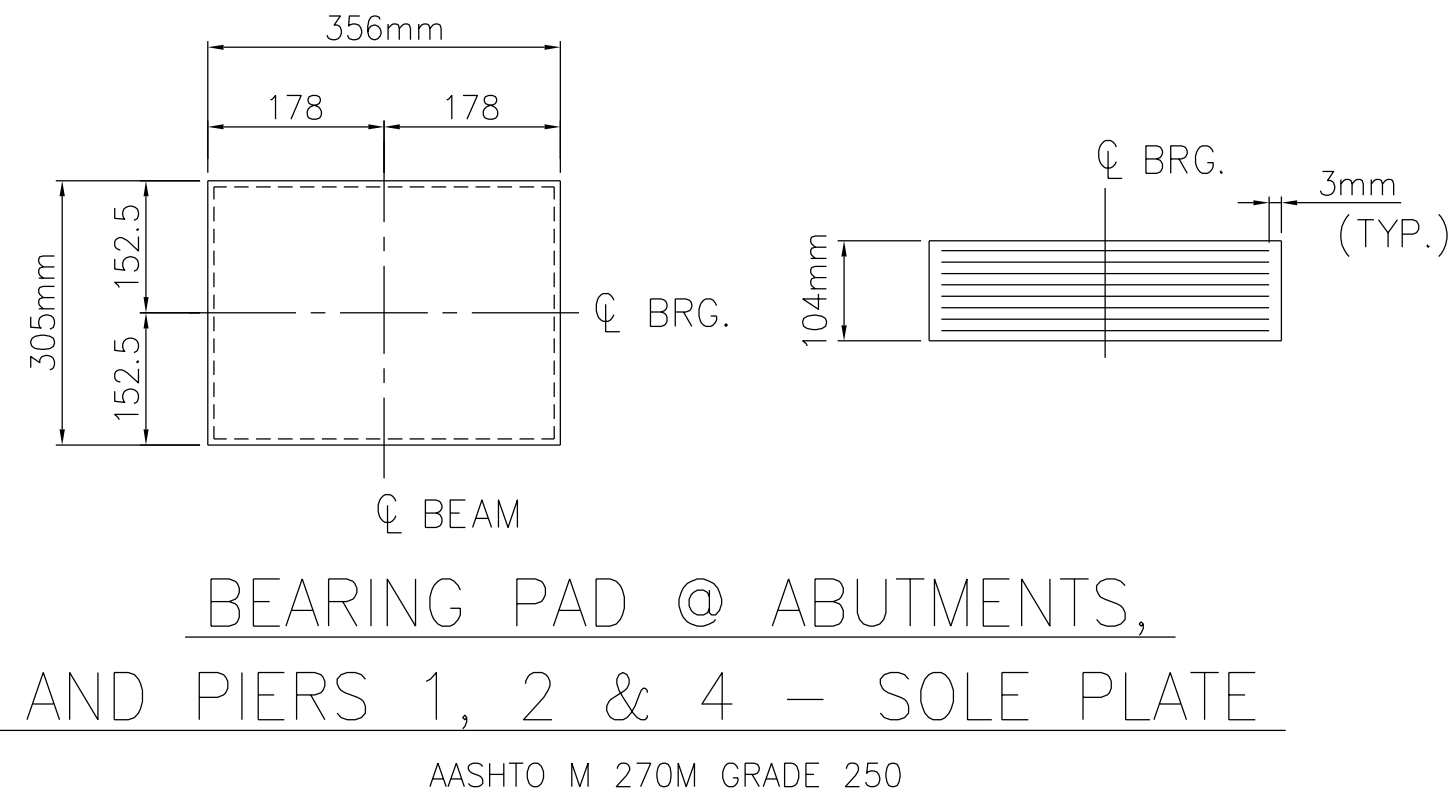
GALVANIZED ANCHOR BOLT

(24) REQUIRED  
ASTM A307 OR APPROVED EQUAL.  
GALVANIZE PER AASHTO M298.



ELASTOMERIC BEARING PAD SCHEDULE (60 DUROMETER)								
LOCATION	DIMENSIONS		THICKNESS (mm)			NO. OF SHIMS	DESIGN LOAD (kN)	NO REQ'D
	W(mm)	L(mm)	TOTAL(T)	INSTANTANEOUS DEFORMATION	FINAL			
ABUT. NO. 1	356	305	104	3	101	8	DL = 411 LL = 297	4
PIER NO. 1	356	305	104	3	101	8	DL = 433 LL = 317.8	8
PIER NO. 2	356	305	104	3	101	8	DL = 433 LL = 317.8	8
PIER NO. 3	356	305	79	3	76	6	DL = 433 LL = 317.8	8
PIER NO. 4	356	305	104	3	101	8	DL = 433 LL = 317.8	8
ABUT. NO. 2	356	305	104	3	101	8	DL = 411 LL = 297	4

\* ASTM A366 OR A569



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BEAM BEARING DETAILS

Designed by: CK

Drawn by: PF, rsh Date: 6/16/2016

Revised by: HRiley Date: 3/19/2020

File Name: 16\_N9402\_Bearing

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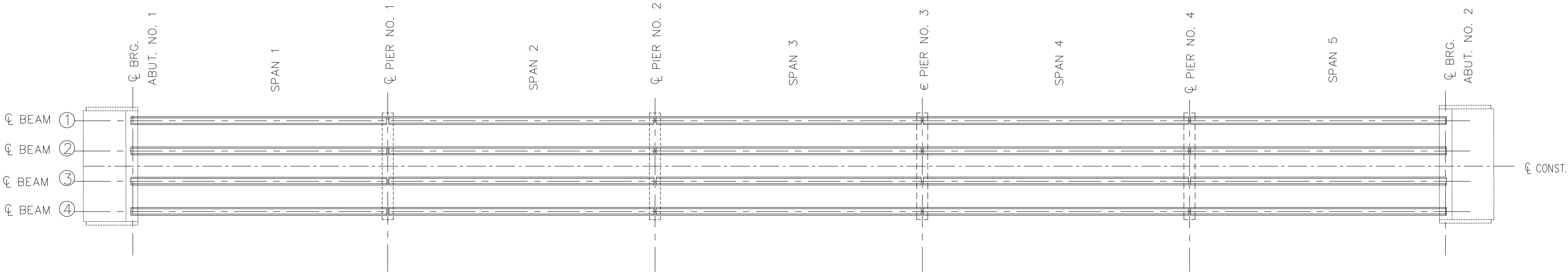
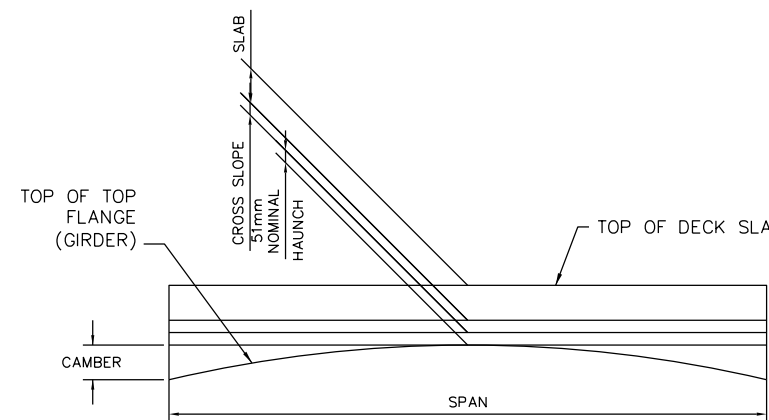
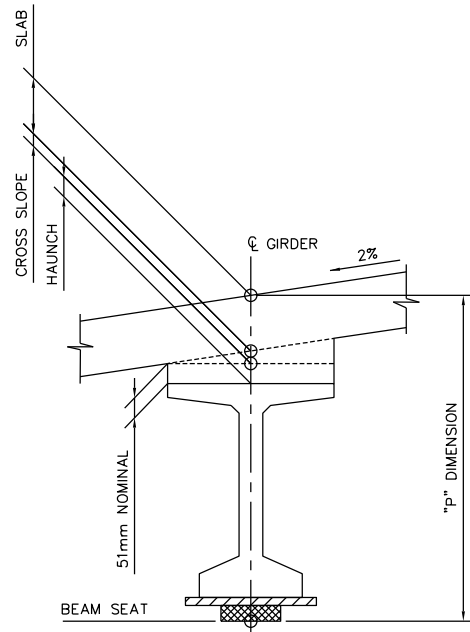
REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET
NAVAJO	AZ	NAVAJO	N9402	N9402(2)1,2&3	17 of 40

BEAM SEAT ELEVATIONS

Description	Location	Girder				Location	Girder				Location	Girder				Location	Girder			
		1	2	3	4		1	2	3	4		1	2	3	4		1	2	3	4
Deck Elev (m)	Abut 1	1863.703	1863.761	1863.761	1863.703	Pier 1	1863.827	1863.885	1863.885	1863.827	Pier 1	1863.830	1863.888	1863.888	1863.830	Pier 2	1863.955	1864.013	1864.013	1863.955
Slab (mm)		230	230	230	230		230	230	230	230		230	230	230	230		230	230	230	230
Cross Slope (mm)		11	11	11	11		11	11	11	11		11	11	11	11		11	11	11	11
Haunch (mm)		51	51	51	51		51	51	51	51		51	51	51	51		51	51	51	51
Camber (mm)		42	42	42	42		43	43	43	43		43	43	43	43		43	43	43	43
Beam (mm)		1372	1372	1372	1372		1372	1372	1372	1372		1372	1372	1372	1372		1372	1372	1372	1372
Sole Plate (mm)		38	38	38	38		38	38	38	38		38	38	38	38		38	38	38	38
Pad (mm)		101	101	101	101		101	101	101	101		101	101	101	101		101	101	101	101
"P" (mm)		1845	1845	1845	1845		1846	1846	1846	1846		1846	1846	1846	1846		1846	1846	1846	1846
Seat Elev (m)		1861.858	1861.916	1861.916	1861.858		1861.981	1862.039	1862.039	1861.981		1861.984	1862.042	1862.042	1861.984		1862.109	1862.167	1862.167	1862.109

Description	Location	Girder				Location	Girder				Location	Girder				Location	Girder			
		1	2	3	4		1	2	3	4		1	2	3	4		1	2	3	4
Deck Elev (m)	Pier 2	1863.958	1864.016	1864.016	1863.958	Pier 3	1864.083	1864.141	1864.141	1864.083	Pier 3	1864.086	1864.144	1864.144	1864.086	Pier 4	1864.210	1864.268	1864.268	1864.210
Slab (mm)		230	230	230	230		230	230	230	230		230	230	230	230		230	230	230	230
Cross Slope(mm)		11	11	11	11		11	11	11	11		11	11	11	11		11	11	11	11
Haunch (mm)		51	51	51	51		51	51	51	51		51	51	51	51		51	51	51	51
Camber (mm)		43	43	43	43		43	43	43	43		43	43	43	43		43	43	43	43
Beam (mm)		1372	1372	1372	1372		1372	1372	1372	1372		1372	1372	1372	1372		1372	1372	1372	1372
Sole Plate (mm)		38	38	38	38		38	38	38	38		38	38	38	38		38	38	38	38
Pad (mm)		101	101	101	101		76	76	76	76		76	76	76	76		101	101	101	101
"P" (mm)		1846	1846	1846	1846		1821	1821	1821	1821		1821	1821	1821	1821		1846	1846	1846	1846
Seat Elev (m)		1862.112	1862.170	1862.170	1862.112		1862.262	1862.320	1862.320	1862.262		1862.265	1862.323	1862.323	1862.265		1862.364	1862.422	1862.422	1862.364

Description	Location	Girder				Location	Girder				Location	Girder			
		1	2	3	4		1	2	3	4		1	2	3	4
Deck Elev (m)	Pier 4	1864.213	1864.271	1864.271	1864.213	Abut 2	1864.338	1864.396	1864.396	1864.338		1864.338	1864.396	1864.396	1864.338
Slab (mm)		230	230	230	230		230	230	230	230		230	230	230	230
Cross Slope (mm)		11	11	11	11		11	11	11	11		11	11	11	11
Haunch (mm)		51	51	51	51		51	51	51	51		51	51	51	51
Camber (mm)		43	43	43	43		42	42	42	42		42	42	42	42
Beam (mm)		1372	1372	1372	1372		1372	1372	1372	1372		1372	1372	1372	1372
Sole Plate (mm)		38	38	38	38		38	38	38	38		38	38	38	38
Pad (mm)		101	101	101	101		101	101	101	101		101	101	101	101
"P" (mm)		1846	1846	1846	1846		1845	1845	1845	1845		1845	1845	1845	1845
Seat Elev (m)		1862.367	1862.425	1862.425	1862.367		1862.493	1862.551	1862.551	1862.493		1862.493	1862.551	1862.551	1862.493



FRAMING DIAGRAM FOR ELEVATION LOCATIONS

SCALE: 1:25  
FOR TOP OF WINGWALL STATION AND ELEVATIONS SEE SHEET 23

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NAVAJO REGIONAL OFFICE – D.O.T.

BEAM SEAT ELEVATIONS

Designed by: CK

Drawn by: PF, rsh      Date: 9/19/2017

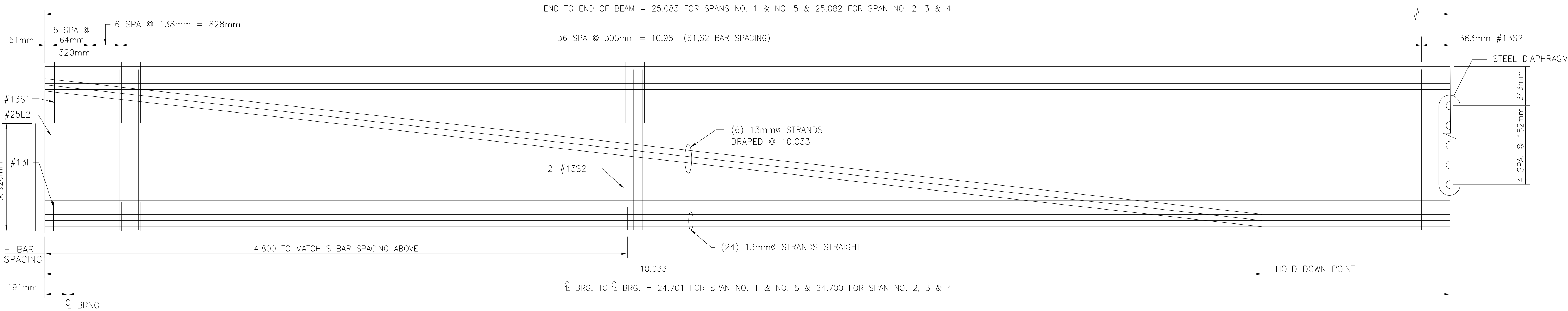
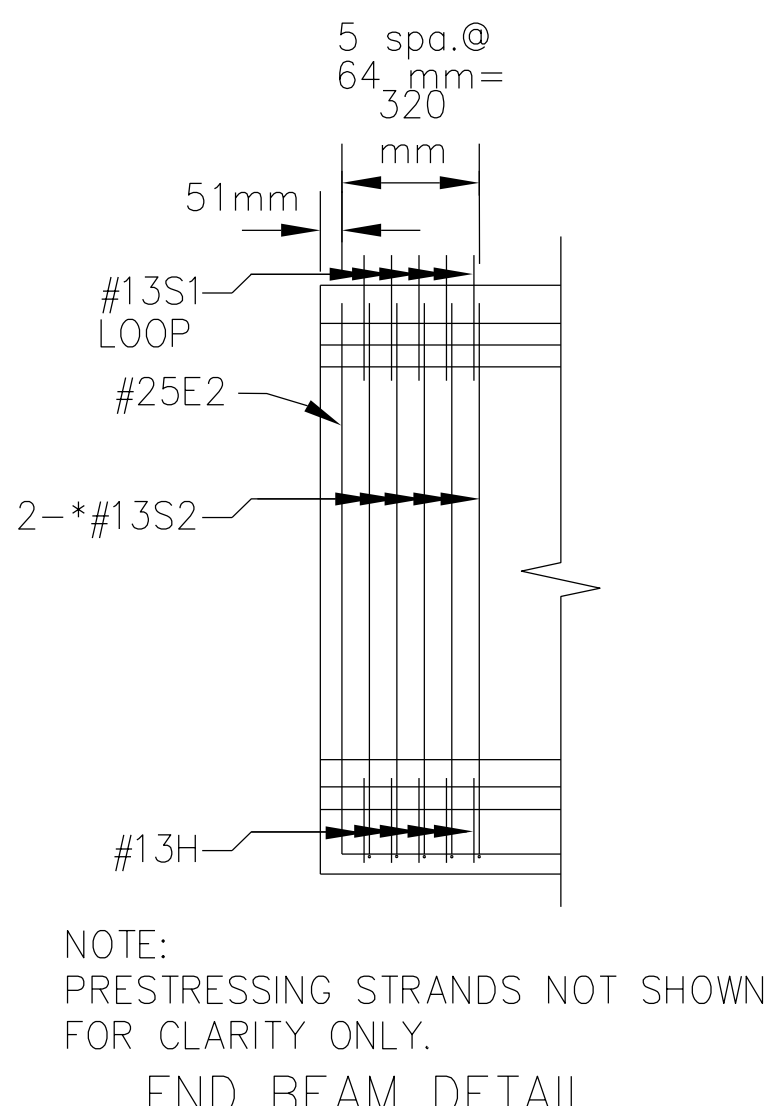
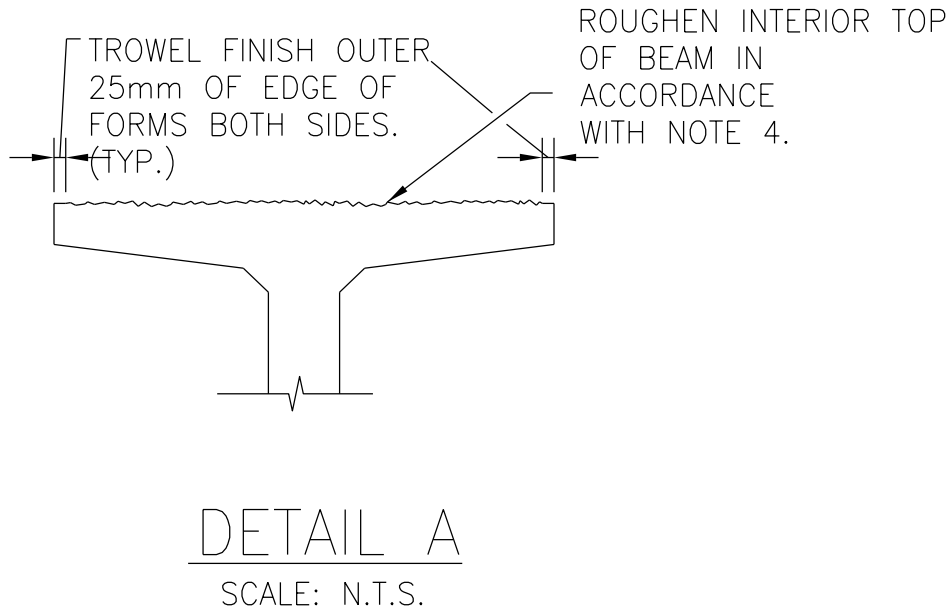
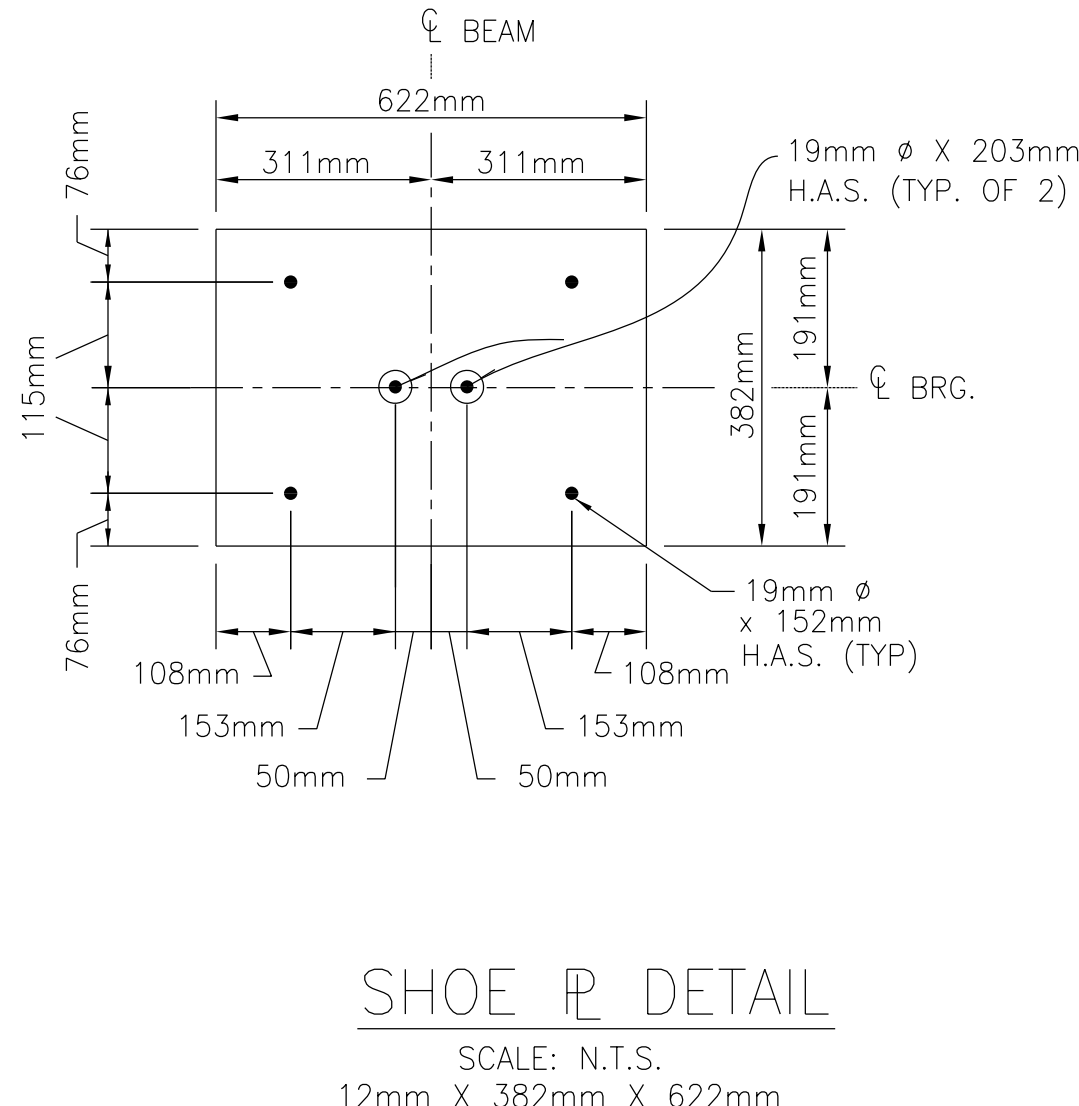
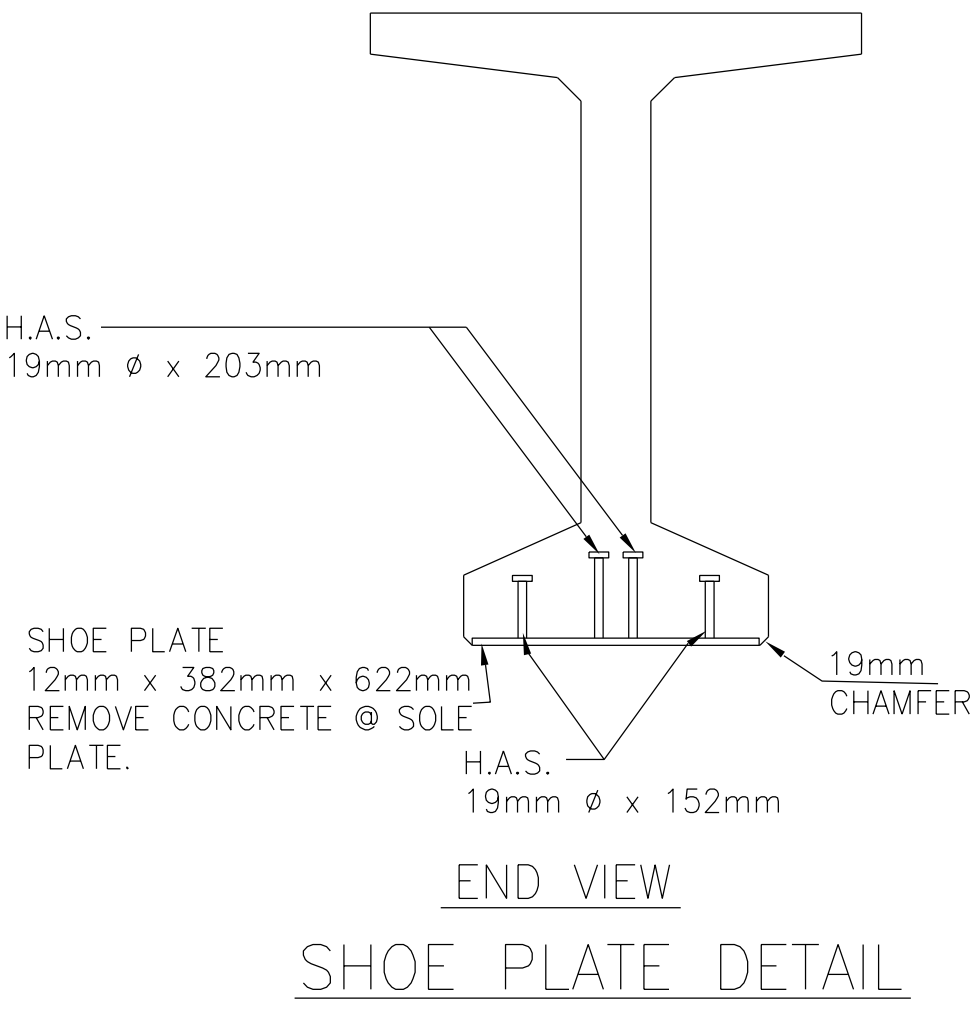
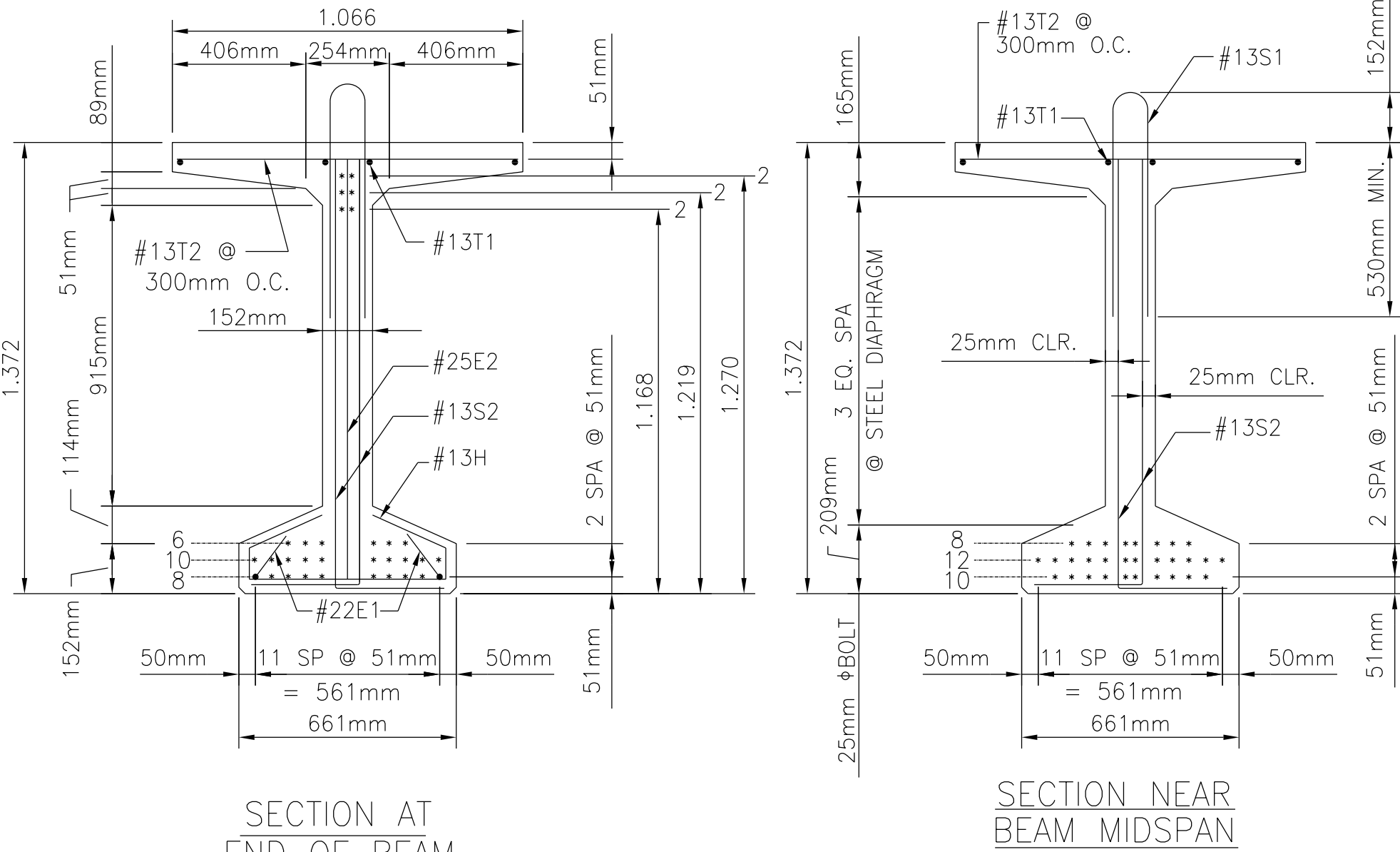
Revised by:HRiley      Date: 3/18/2020

File Name:    17\_N9402\_BeamSeat



C:\Users\Harold.Riley\Documents\Projects\19\_N9402\_BT1370-BEAM\_2017-03-20.dgn

REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET
NAVAJO	AZ	NAVAJO	N9402	N9402(2)1,2&3	19 of 40



## HALF ELEVATION TYPE BT-1370 BEAMS, 20 REQUIRED

(Pse = 112.43 kN PER STRAND; LOSSES = 26.45 kN PER STRAND)

## DESIGN DATA

DESIGN ACCORDING TO AASHTO SPECIFICATIONS DATED 2002 AND CURRENT INTERIM.

BEAMS:

f'ci (MIN. COMPRESSIVE STRENGTH OF CONCRETE AT TIME OF INITIAL PRESTRESS) = 35.0 MPa  
f'c = 43.75 MPa; n = 7

PRESTRESSING STEEL:

12.7 mm DIAMETER SEVEN WIRE LOW RELAXATION STRANDS.  
f's = 185.2 kN PER STRAND;  
f'y = 165.0 kN PER STRAND.

CONVENTIONAL REINFORCING BARS:

f'y = 420 MPa

COMPOSITE SLAB:

f'c = 27.6 MPa  
ALLOWANCE FOR STEEL DECK FORMS = 0.720 kPa  
ALLOWANCE FOR FUTURE WEARING SURFACE = 1.139 kPa  
LIVE LOAD = MS 18

## GENERAL NOTES

- ALL DIMENSIONS ARE IN METERS UNLESS NOTED OTHERWISE ON THE DRAWING (SOFT CONVERSION).
- COST OF REINFORCING BARS AND STRUCTURAL STEEL EMBEDDED IN BRIDGE BEAMS IS TO BE INCLUDED IN THE UNIT PRICE BID ITEM 55301 FOR PRECAST, PRESTRESSED CONCRETE STRUCTURAL MEMBERS TYPE BT-1370.
- BEAMS TO BE LIFTED BY MEANS OF DEVICES SATISFACTORY TO THE AOTR/CO. LIFTING DEVICES MUST BE APPROVED BY THE AOTR/CO PRIOR TO USE. BEAMS TO BE CAST, STORED, AND HAULED IN UPRIGHT POSITION.
- THE TOP SURFACES OF THE BEAMS ARE TO BE THOROUGHLY WIRE BRUSHED AND SCORED TRANSVERSELY AFTER INITIAL SET IN ACCORDANCE WITH DETAIL A AND HAVE MINIMUM ROUGHNESS PROJECTION OF 6mm AND 13mm MAXIMUM.
- THE CAMBER AT ERECTION DIMENSION LISTED IS THE CALCULATED VALUE DUE TO THE EFFECT OF PRESTRESSING WITH THE WEIGHT OF THE BEAM ACTING, WITH AN ALLOWANCE FOR CAMBER GROWTH TO 90 DAYS. THE CONTRACTOR SHALL LIMIT THE CAMBER GROWTH TO A VALUE NOT TO EXCEED THE PREDICTED CAMBER AT ERECTION DIMENSION BY 25 mm AT THE TIME OF DECK SLAB PLACEMENT. CAMBER GROWTH IS TO BE LIMITED BY WEIGHTING, FABRICATION SCHEDULING OR OTHER APPROVED MEANS.
- DEAD LOAD DEFLECTION IS THE COMPUTED DEFLECTION DUE TO WEIGHT OF SLAB, DIAPHRAGMS, AND SUPERIMPOSED DEAD LOAD.
- THE DESIGN SHOWN IS BASED ON THE USE OF 12.7mm DIAMETER LOW-RELAXATION STRANDS MEETING THE REQUIREMENTS OF AASHTO M-203 (GRADE 1860). INITIAL PRESTRESSING FORCE SHALL BE 137.8 kN PER STRAND. SLIGHT OVERSTRESSING UP TO 146.8 kN PER STRAND WILL BE ALLOWED TO OFFSET SEATING LOSSES.
- TYPE III CEMENT MAY BE USED AT THE FABRICATOR'S OPTION.
- SHOE PLATES MUST BE STRAIGHTENED PRIOR TO CASTING INTO BEAM.
- MATERIAL CERTIFICATIONS SHALL BE SUBMITTED FOR REVIEW AND APPROVAL FOR ALL MATERIALS.

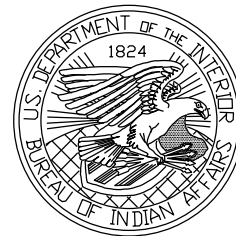
WEIGHT	CAMBER @ RELEASE	CAMBER @ ERECTION	DEAD LOAD DEFLECTION
25,624kg	39mm	69mm	27mm

## BEAM DATA

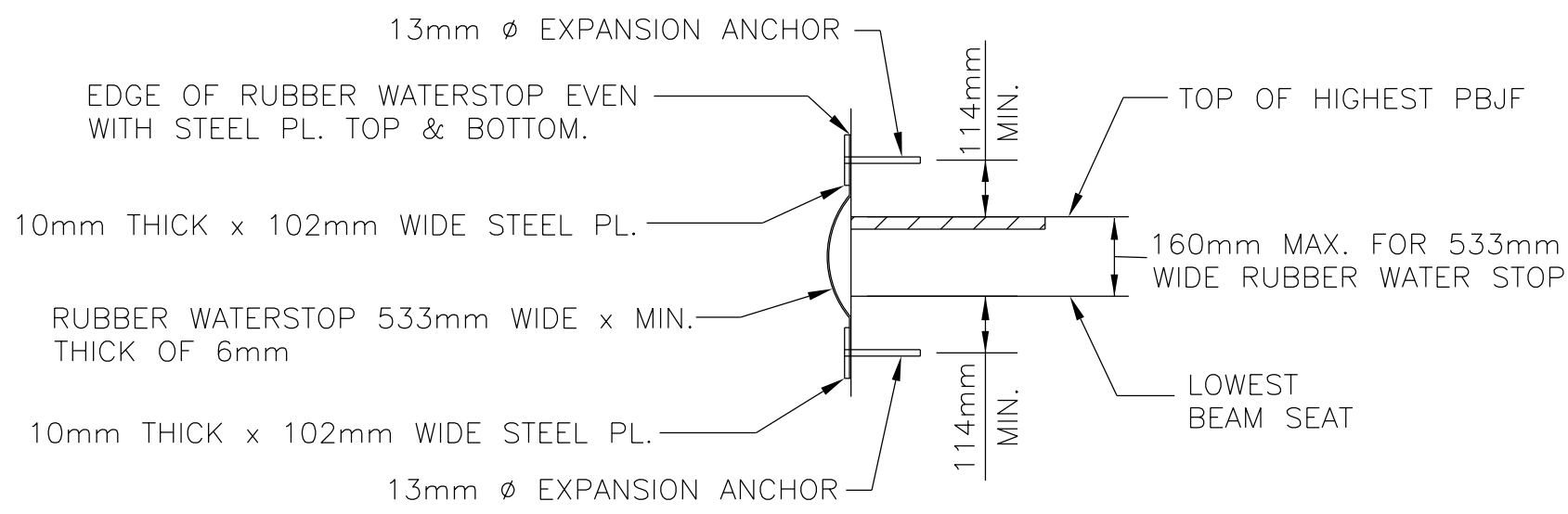
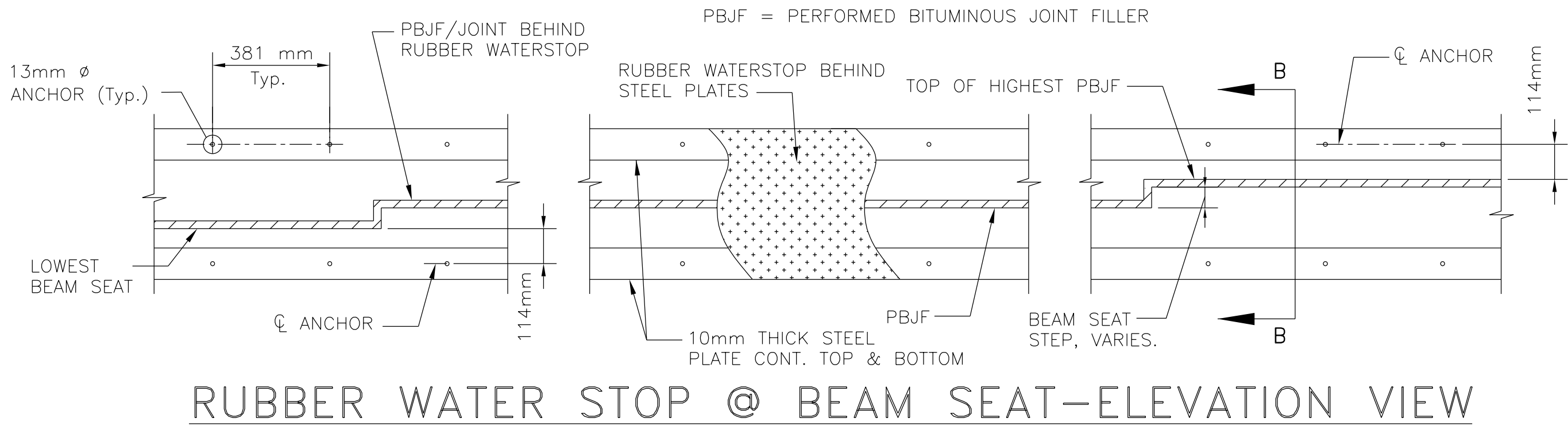
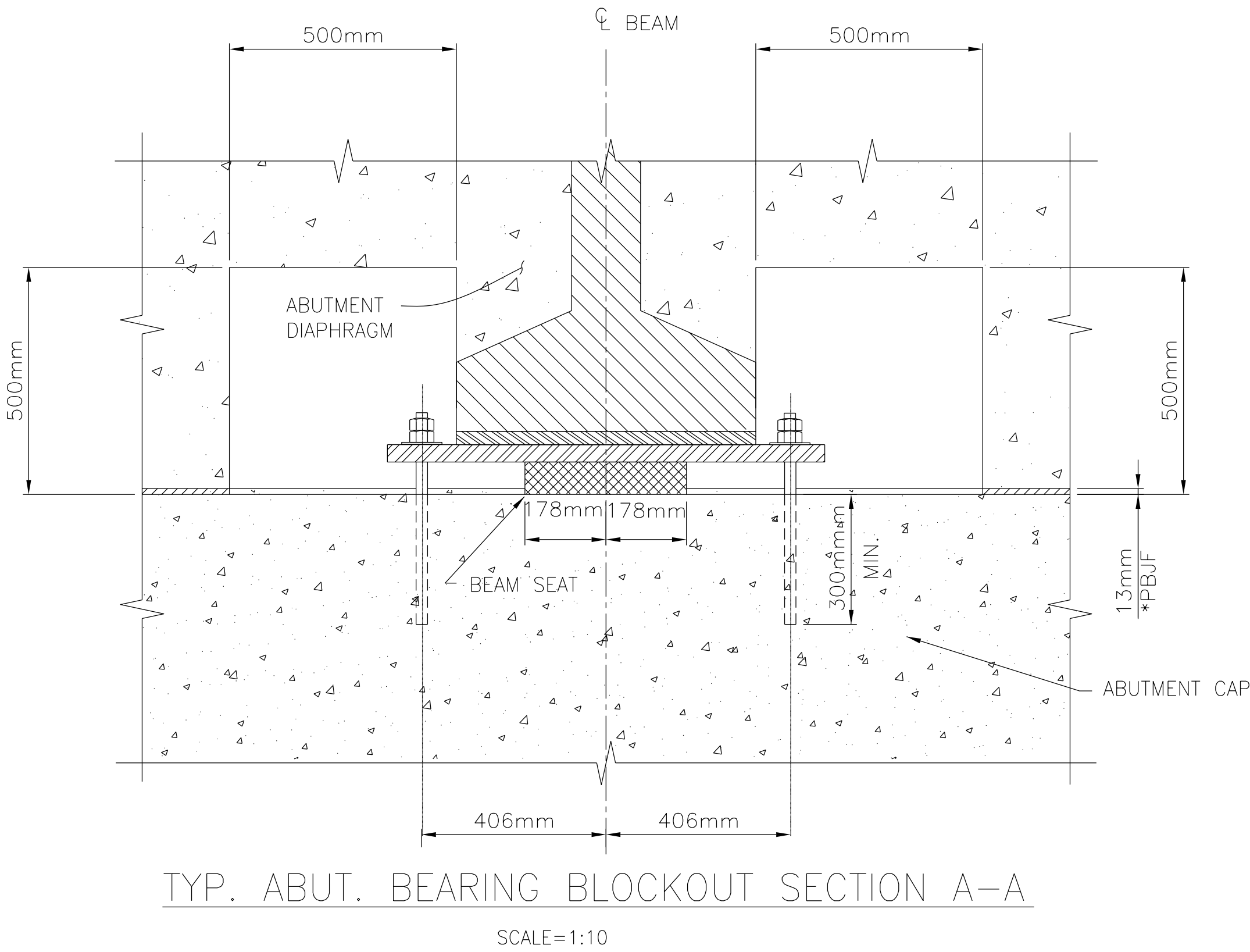
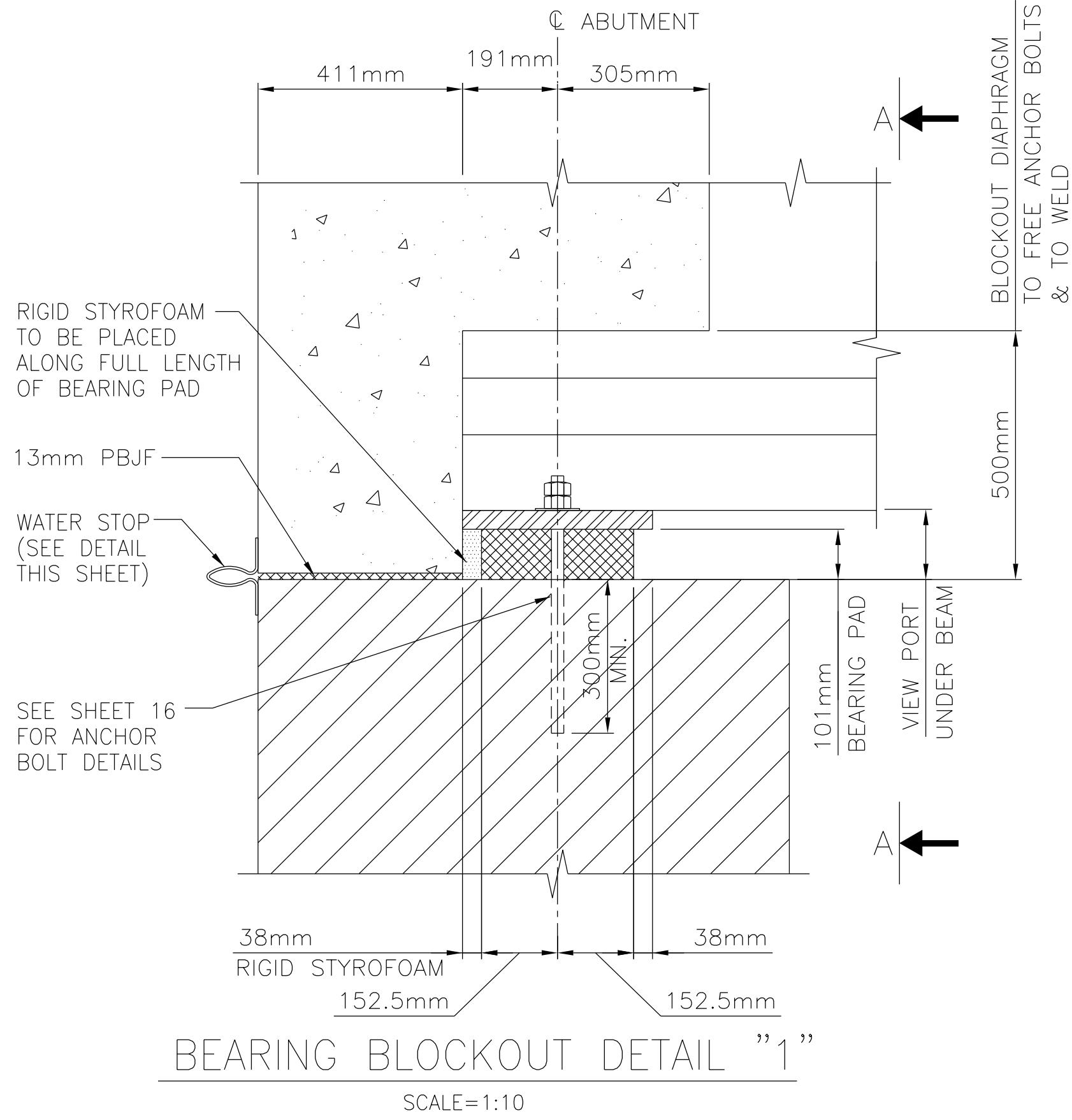
UNITED STATES  
DEPARTMENT OF INTERIOR  
BUREAU OF INDIAN AFFAIRS  
NAVAJO REGIONAL OFFICE – D.O.T.

## TYPE BT-1370 BEAM DETAILS

Designed by:	CK
Drawn by:	TC, rsh
Revised by:	HRiley
File Name:	19_N9402_BT1370-BEAM



REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET
NAVAJO	AZ	NAVAJO	N9402	N9402(2)1,2&3	20 of 40



WATERSTOP NOTES:

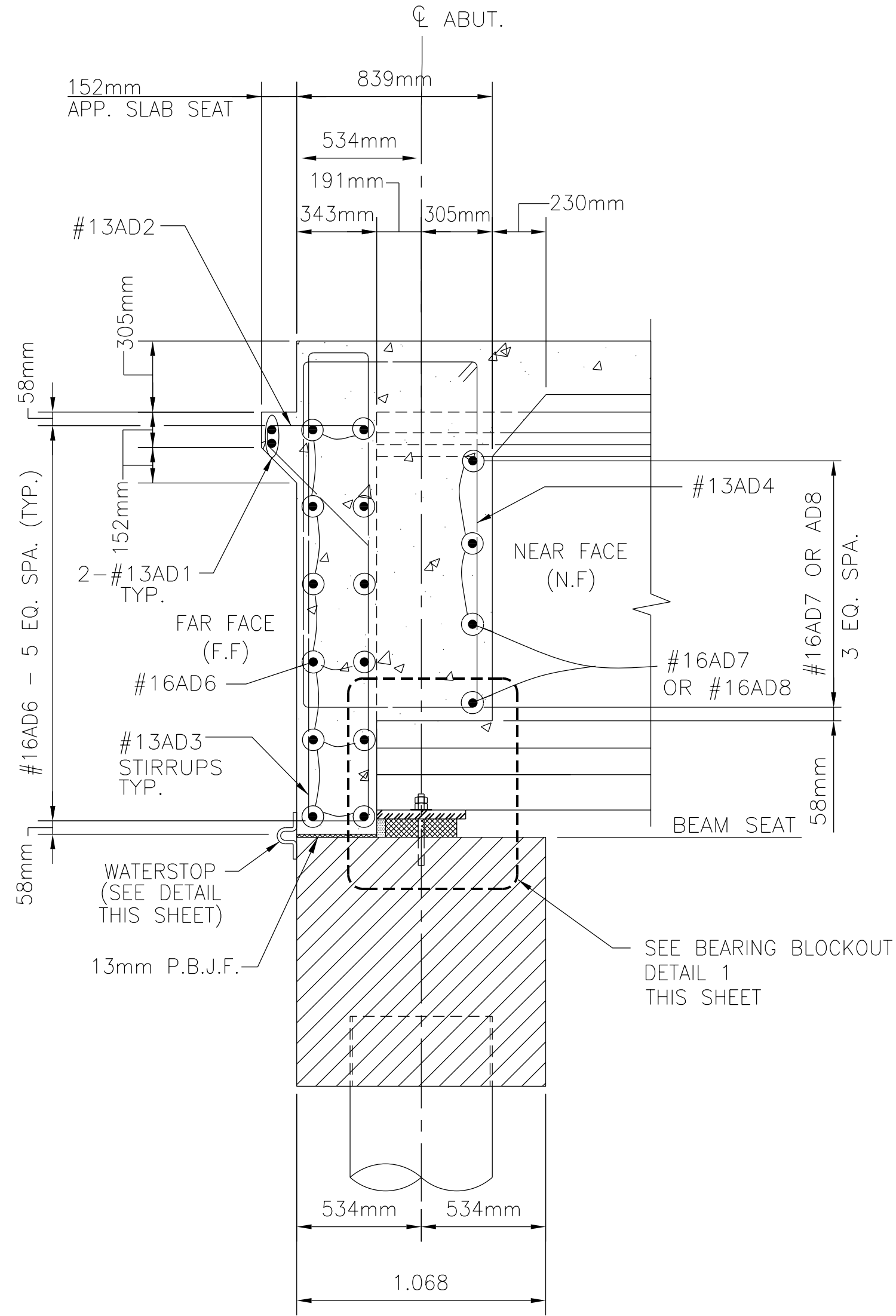
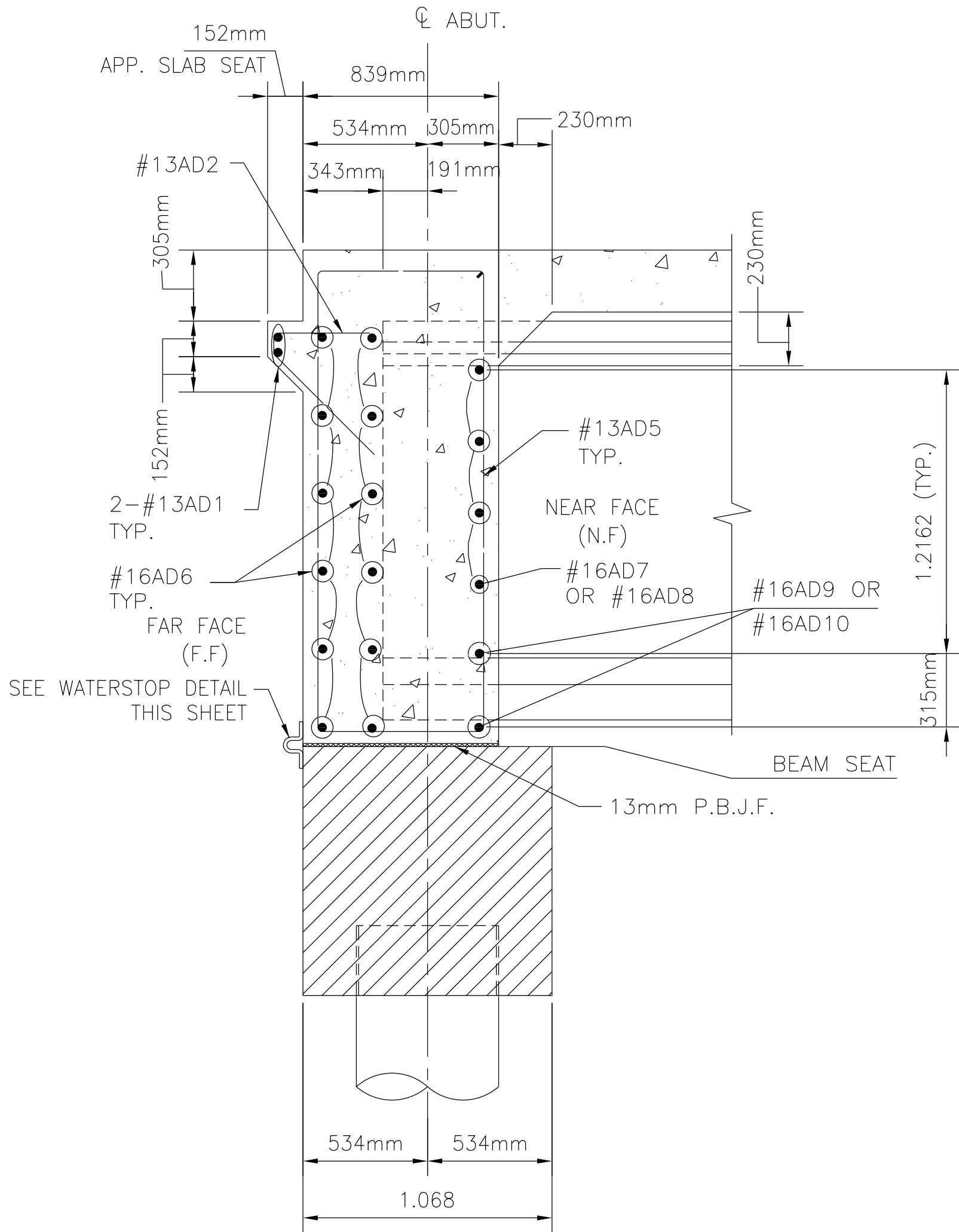
CONTINUOUS RUBBER WATERSTOP SHALL BE 533mm WIDE x 6mm THICK AND LONG ENOUGH TO PROVIDE A CONTINUOUS SEAL ACROSS THE ABUTMENT, AND SHALL CONFORM TO THE SUPPLEMENTAL SPECIFICATION 712.06.

THE RUBBER WATERSTOP SHALL BE SECURED WITH CONTINUOUS STEEL PLATES 102mm WIDE x 10mm THICK CONFORMING TO AASHTO M270M, GRADE 250 AT ONE(1) AT TOP AND ONE(1) AT BOTTOM AS SHOWN.

CONTINUOUS STEEL PLATES SECURING RUBBER WATERSTOP SHALL BE BOLTED TO THE CONCRETE WITH 13mm DIA., ASTM A307, GRADE A EXPANSION BOLTS AT 381mm c/c. EMBED THE BOLTS INTO PREDRILLED HOLES OF A MINIMUM DEPTH OF 152mm. PROVIDE STANDARD GALVANIZED WASHERS FOR ALL BOLTS.

GALVANIZE THE CONTINUOUS STEEL PLATES AND EXPANSION BOLTS IN ACCORDANCE WITH AASHTO M298, CLASS 50 OR AASHTO M232.

FURNISHING, FABRICATING AND INSTALLATION OF THE RUBBER WATERSTOPS SHALL BE CONSIDERED INCIDENTAL TO THE BID PRICE FOR ITEM 55201-0200, STRUCTURAL CONCRETE.



TYPICAL ABUTMENT DIAPHRAGM  
SECTION AT ANCHOR BOLT

SCALE=1:20

NOTES:

- UNLESS OTHERWISE NOTED ALL REBAR CLEARANCE SHALL BE 50mm.
- \*P.B.J.F. : PREFORMED BITUMINOUS JOINT FILLER

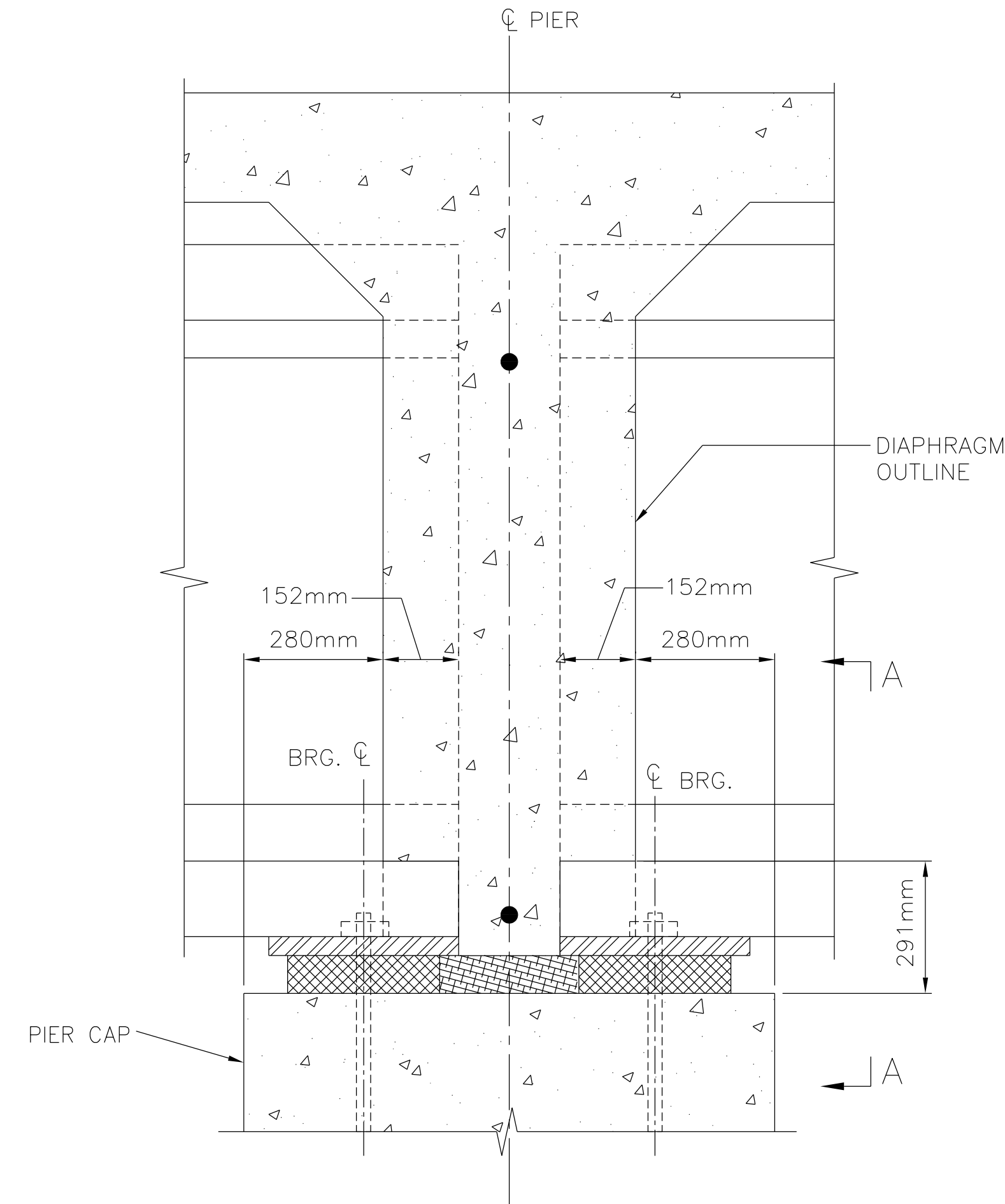
UNITED STATES  
DEPARTMENT OF INTERIOR  
BUREAU OF INDIAN AFFAIRS  
NAVAJO REGIONAL OFFICE – D.O.T.

ABUTMENT  
DIAPHRAGM DETAILS

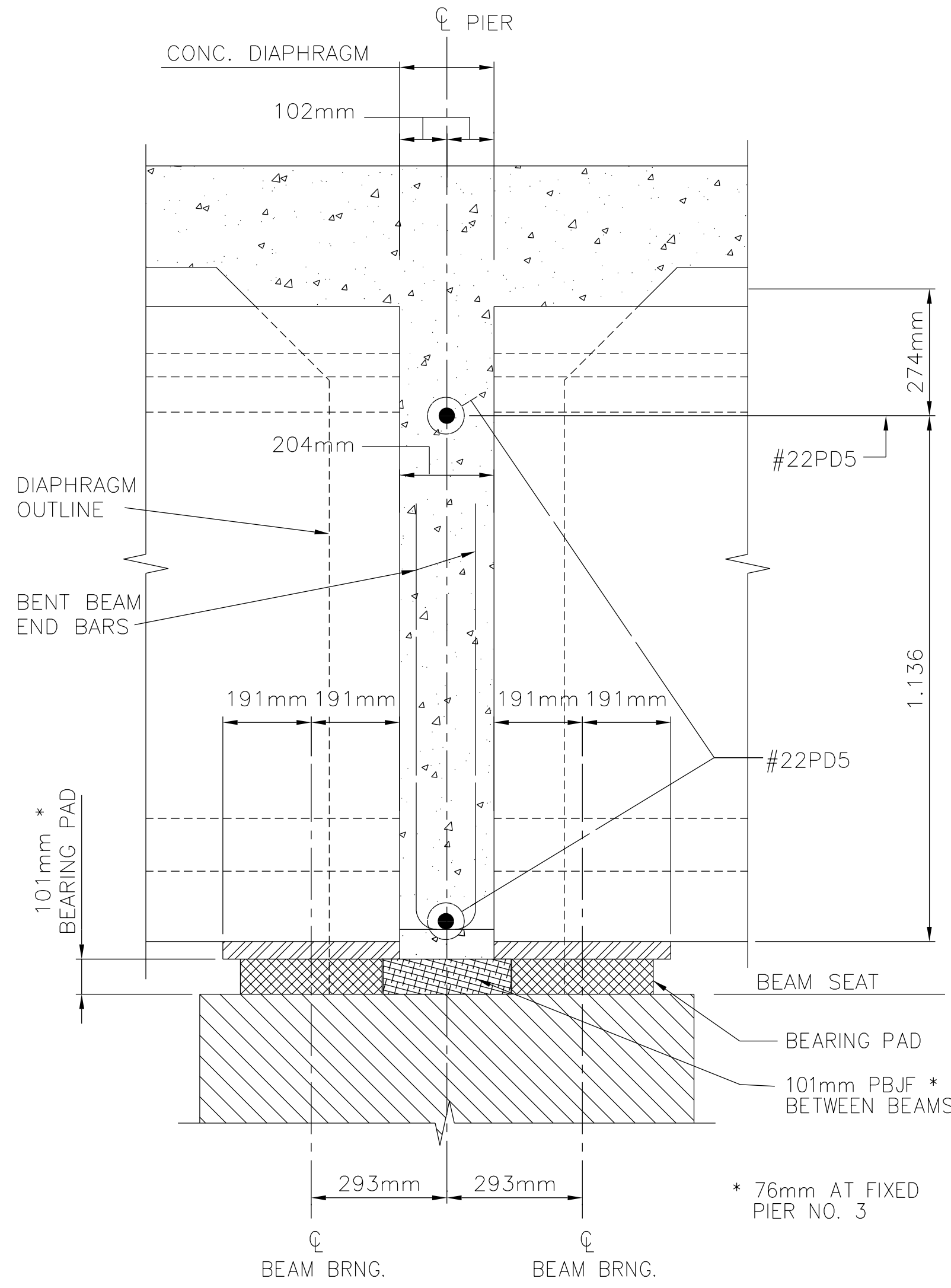
Designed by: CK	
Drawn by: PF, rsh	Date: 3/20/17
Revised by: HRiley	Date: 3/19/2020
File Name:	20_N9402_End_DiaphDet



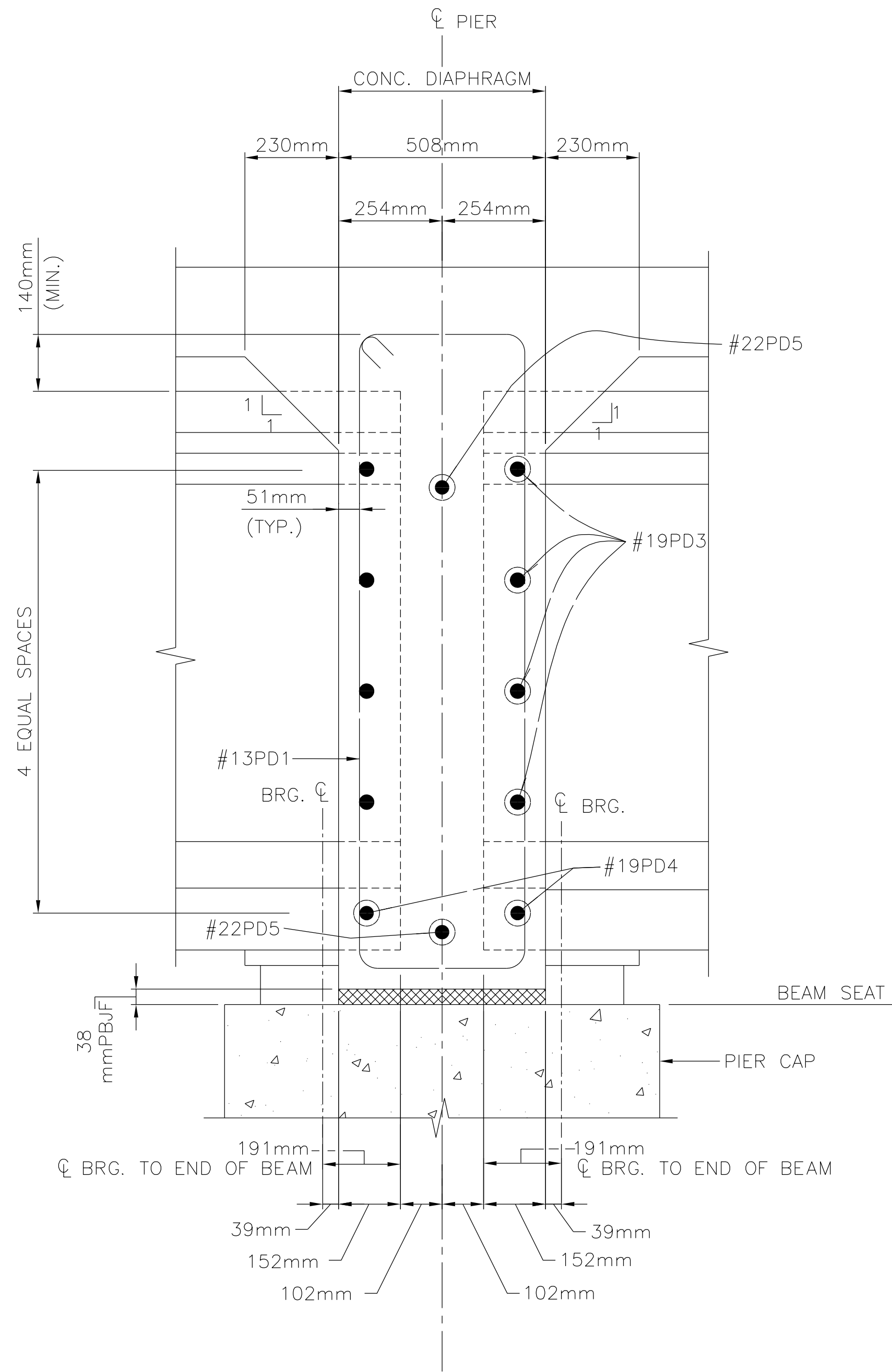
REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET
NAVAJO	AZ	NAVAJO	N9402	N9402(2)1,2&3	20A of 40



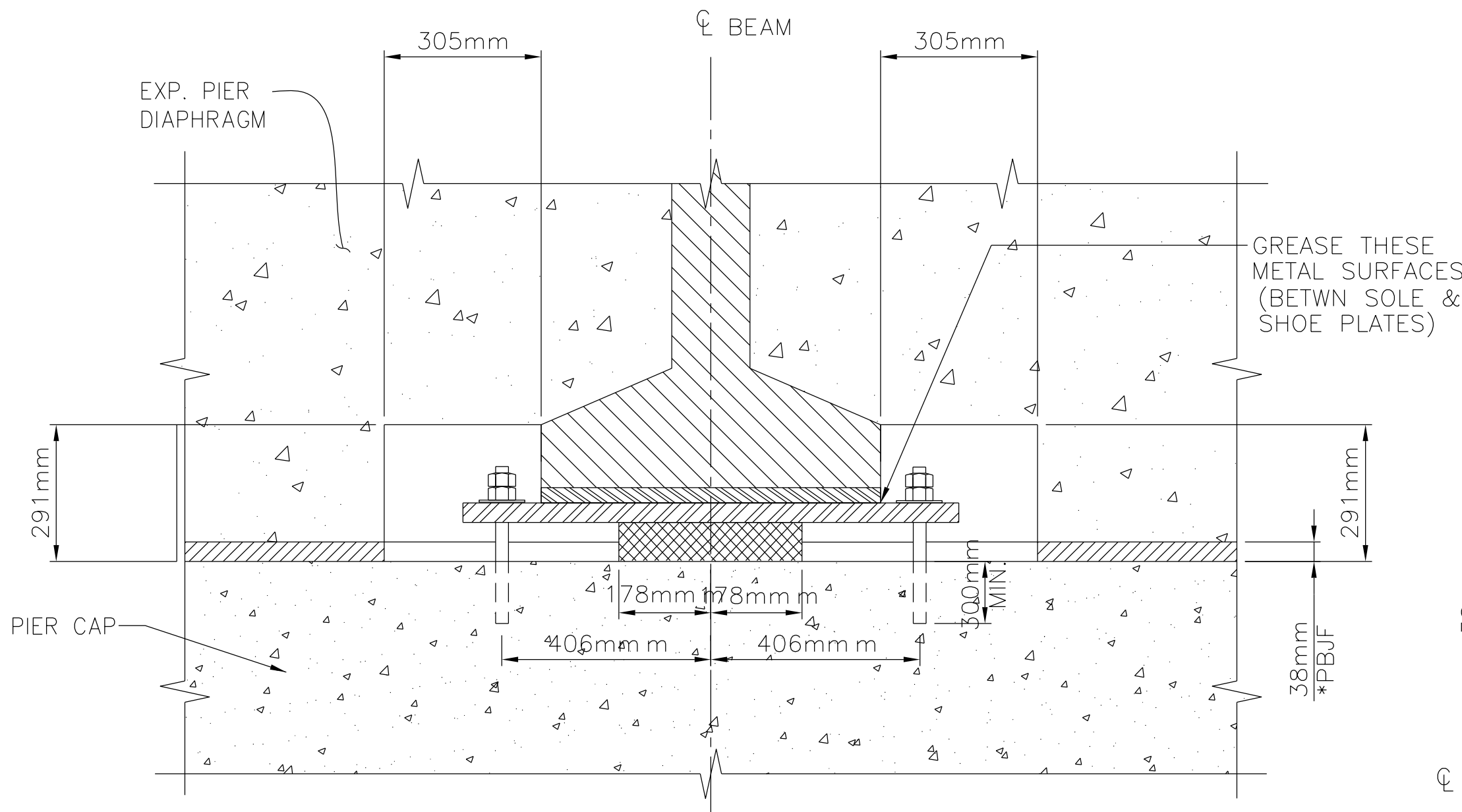
EXPANSION PIER BEARING BLOCKOUT DETAIL "1"  
PIERS NO. 1, 2 & 4  
SCALE=1:10



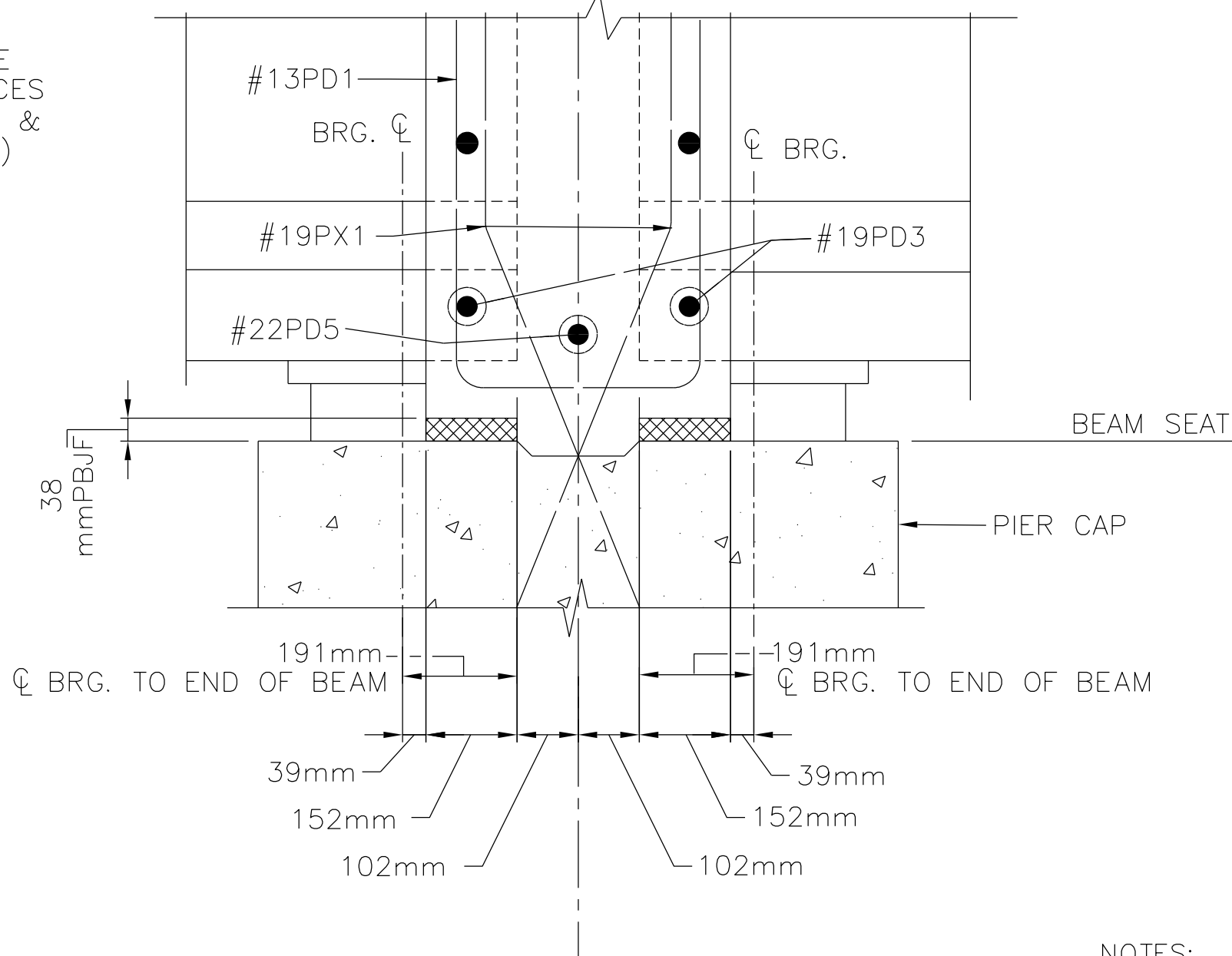
TYPICAL PIER DIAPHRAGM  
SECTION AT CL BEAMS  
SCALE=1:10



EXPANSION PIER DIAPHRAGM  
FULL SECTION BETWEEN BEAMS  
SCALE=1:10



TYP. BEARING BLOCKOUT SECTION A-A  
PIERS NO. 1, 2 & 4  
SCALE=1:10



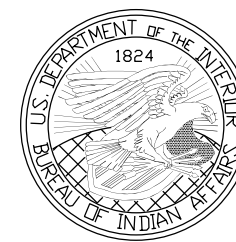
FIXED PIER NO. 3 DIAPHRAGM  
PARTIAL SECTION BETWEEN BEAMS  
SCALE=1:10

- NOTES:
1. UNLESS OTHERWISE NOTED ALL REBAR CLEARANCE SHALL BE 50mm.
  2. \*P.B.J.F. : PREFORMED BITUMINOUS JOINT FILLER

UNITED STATES  
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BUREAU OF INDIAN AFFAIRS  
NAVAJO REGIONAL OFFICE – D.O.T.

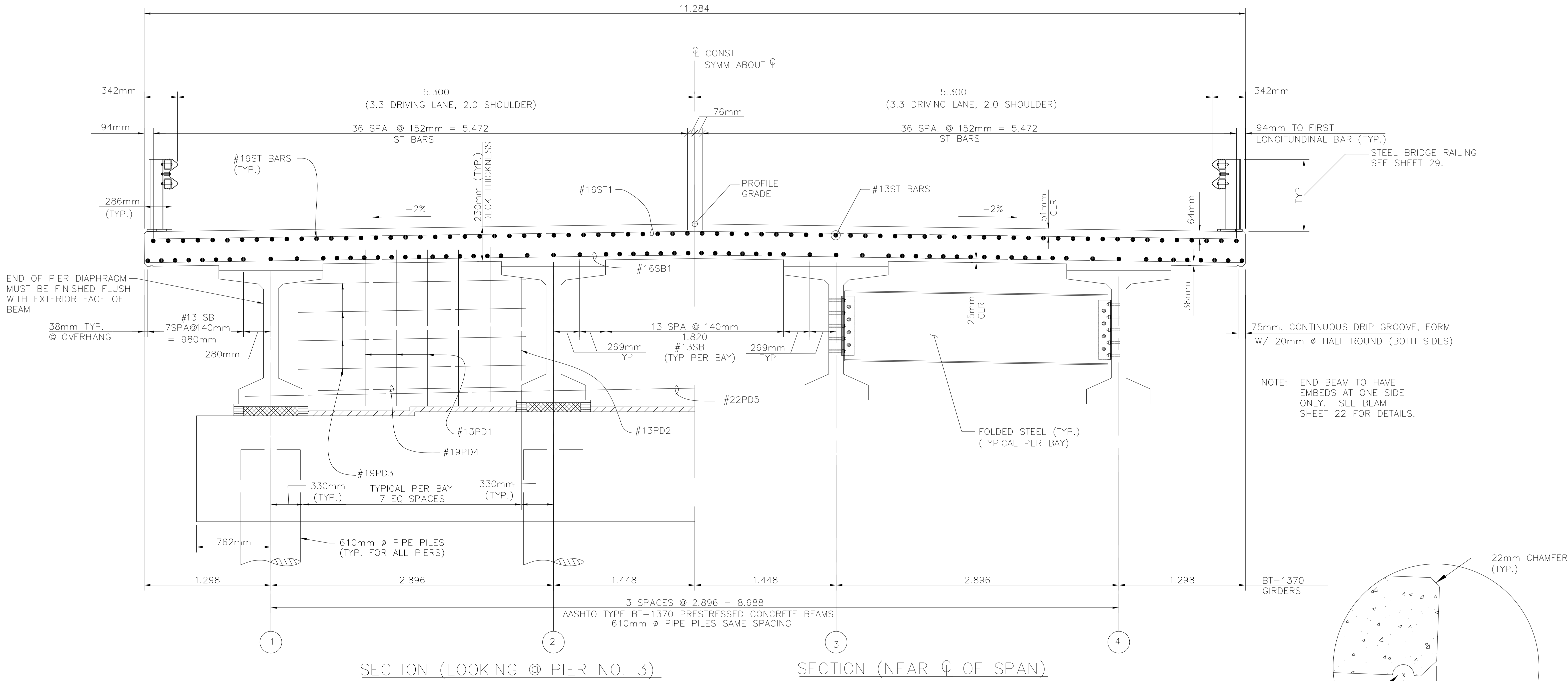
PIER DIAPHRAGM DETAILS

Designed by: CK  
Drawn by: PF, rsh Date: 3/20/17  
Revised by:HRiley Date: 3/19/2020  
File Name: 20A\_N9402\_End\_DiaphDet2



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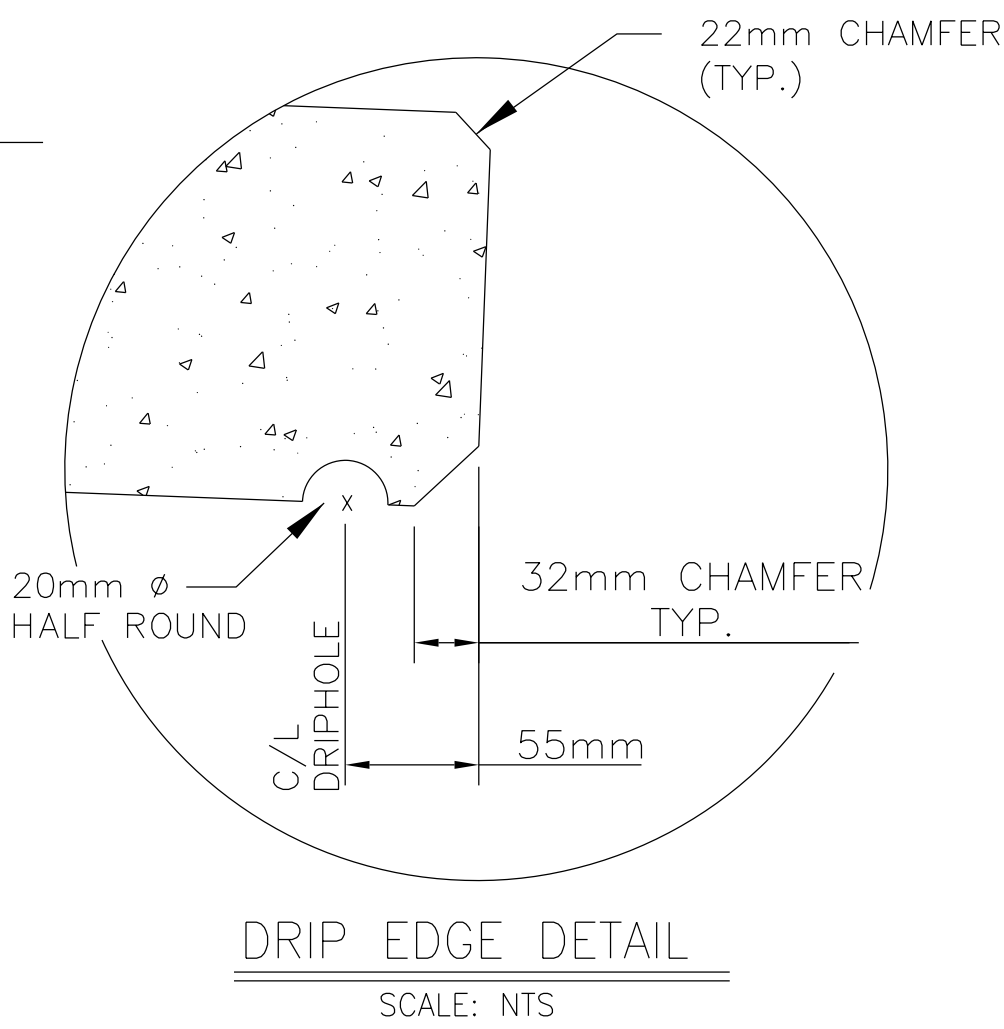
REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET
NAVAJO	AZ	NAVAJO	N9402	N9402(2)1,2&3	21 of 40



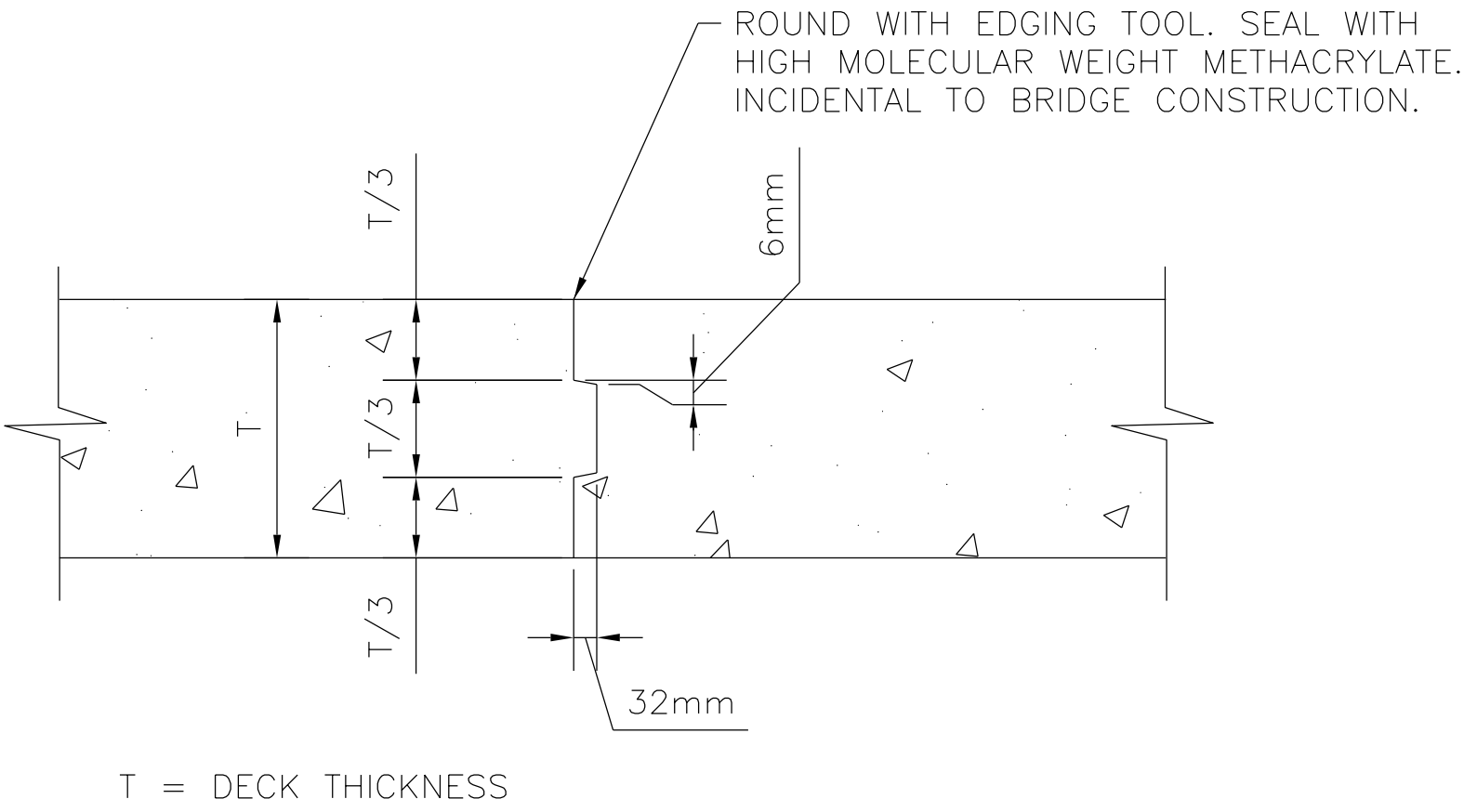
SECTION (LOOKING @ PIER NO. 3)

SECTION (NEAR C/L OF SPAN)


TRANSVERSE SECTION  
SCALE=1:20



DRIP EDGE DETAIL  
SCALE: NTS



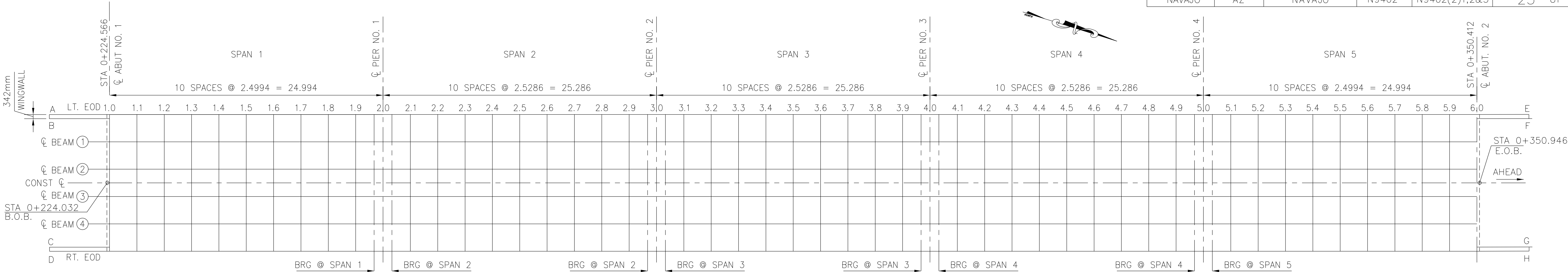
PERMISSIBLE TRANSVERSE  
CONSTRUCTION JOINT  
SCALE=1:10

UNITED STATES DEPARTMENT OF INTERIOR BUREAU OF INDIAN AFFAIRS NAVAJO REGIONAL OFFICE – D.O.T.	
TRANSVERSE SECTION	
Designed by: CK	
Drawn by: PF, rsh      Date: 3/20/17	
Revised by: HRiley      Date: 3/19/2020	
File Name: 21_N9402_TransSect	



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REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET
NAVAJO	AZ	NAVAJO	N9402	N9402(2)1,2&3	23 of 40



### REFERENCE DIAGRAM FOR ELEVATIONS AT 10TH POINTS

### DECK ELEVATIONS AT 10TH POINTS

SPAN 1	CL ABUT 1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	CL PIER 1	Brg at Span 1	Brg at Span 2
Lt. EOD	1863.677	1863.689	1863.701	1863.714	1863.727	1863.740	1863.752	1863.765	1863.778	1863.790	1863.803	1863.801	1863.804
BEAM 1	1863.703	1863.715	1863.727	1863.740	1863.753	1863.766	1863.778	1863.791	1863.804	1863.816	1863.829	1863.827	1863.830
BEAM 2	1863.761	1863.773	1863.785	1863.798	1863.811	1863.824	1863.836	1863.849	1863.862	1863.874	1863.887	1863.885	1863.888
CL CONST	1863.789	1863.802	1863.814	1863.827	1863.840	1863.853	1863.865	1863.878	1863.891	1863.903	1863.916	1863.914	1863.917
BEAM 3	1863.761	1863.773	1863.785	1863.798	1863.811	1863.824	1863.836	1863.849	1863.862	1863.874	1863.887	1863.885	1863.888
BEAM 4	1863.703	1863.715	1863.727	1863.740	1863.753	1863.766	1863.778	1863.791	1863.804	1863.816	1863.829	1863.827	1863.830
Rt. EOD	1863.677	1863.689	1863.701	1863.714	1863.727	1863.740	1863.752	1863.765	1863.778	1863.790	1863.803	1863.801	1863.804

SPAN 2	CL PIER 1	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	CL PIER 2	Brg at Span 2	Brg at Span 3
Lt. EOD	1863.803	1863.816	1863.828	1863.841	1863.854	1863.867	1863.879	1863.892	1863.905	1863.917	1863.930	1863.929	1863.932
BEAM 1	1863.829	1863.842	1863.854	1863.867	1863.880	1863.893	1863.905	1863.918	1863.931	1863.943	1863.956	1863.955	1863.958
BEAM 2	1863.887	1863.900	1863.912	1863.925	1863.938	1863.951	1863.963	1863.976	1863.989	1864.001	1864.014	1864.013	1864.016
CL CONST	1863.916	1863.929	1863.941	1863.954	1863.967	1863.980	1863.992	1864.005	1864.018	1864.030	1864.043	1864.042	1864.045
BEAM 3	1863.887	1863.900	1863.912	1863.925	1863.938	1863.951	1863.963	1863.976	1863.989	1864.001	1864.014	1864.013	1864.016
BEAM 4	1863.829	1863.842	1863.854	1863.867	1863.880	1863.893	1863.905	1863.918	1863.931	1863.943	1863.956	1863.955	1863.958
Rt. EOD	1863.803	1863.816	1863.828	1863.841	1863.854	1863.867	1863.879	1863.892	1863.905	1863.917	1863.930	1863.929	1863.932

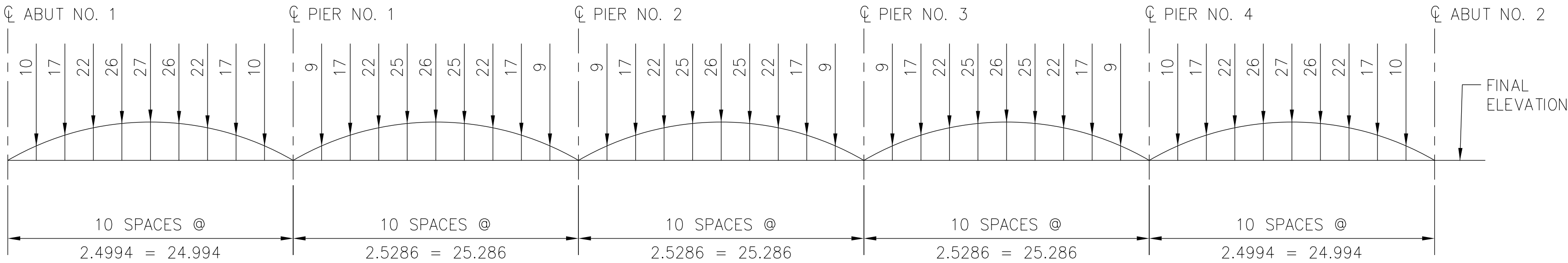
SPAN 3	CL PIER 2	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	CL PIER 3	Brg at Span 3	Brg at Span 4
Lt. EOD	1863.930	1863.943	1863.956	1863.968	1863.981	1863.994	1864.007	1864.020	1864.032	1864.045	1864.058	1864.057	1864.060
BEAM 1	1863.956	1863.969	1863.982	1863.994	1864.007	1864.020	1864.033	1864.046	1864.058	1864.071	1864.084	1864.083	1864.086
BEAM 2	1864.014	1864.027	1864.040	1864.052	1864.065	1864.078	1864.091	1864.104	1864.116	1864.129	1864.142	1864.141	1864.144
CL CONST	1864.043	1864.056	1864.069	1864.081	1864.094	1864.107	1864.120	1864.133	1864.145	1864.158	1864.171	1864.170	1864.173
BEAM 3	1864.014	1864.027	1864.040	1864.052	1864.065	1864.078	1864.091	1864.104	1864.116	1864.129	1864.142	1864.141	1864.144
BEAM 4	1863.956	1863.969	1863.982	1863.994	1864.007	1864.020	1864.033	1864.046	1864.058	1864.071	1864.084	1864.083	1864.086
Rt. EOD	1863.930	1863.943	1863.956	1863.968	1863.981	1863.994	1864.007	1864.020	1864.032	1864.045	1864.058	1864.057	1864.060

SPAN 4	CL PIER 3	4.1	4.2	4.3	4.4	4.5	4.6	4.7	4.8	4.9	CL PIER 4	Brg at Span 4	Brg at Span 5
Lt. EOD	1864.058	1864.071	1864.084	1864.096	1864.109	1864.122	1864.135	1864.148	1864.160	1864.173	1864.186	1864.184	1864.187
BEAM 1	1864.084	1864.097	1864.110	1864.122	1864.135	1864.148	1864.161	1864.174	1864.186	1864.199	1864.212	1864.210	1864.213
BEAM 2	1864.142	1864.155	1864.168	1864.180	1864.193	1864.206	1864.219	1864.232	1864.244	1864.257	1864.270	1864.268	1864.271
CL CONST	1864.171	1864.184	1864.197	1864.209	1864.222	1864.235	1864.248	1864.261	1864.273	1864.286	1864.299	1864.297	1864.300
BEAM 3	1864.142	1864.155	1864.168	1864.180	1864.193	1864.206	1864.219	1864.232	1864.244	1864.257	1864.270	1864.268	1864.271
BEAM 4	1864.084	1864.097	1864.110	1864.122	1864.135	1864.148	1864.161	1864.174	1864.186	1864.199	1864.212	1864.210	1864.213
Rt. EOD	1864.058	1864.071	1864.084	1864.096	1864.109	1864.122	1864.135	1864.148	1864.160	1864.173	1864.186	1864.184	1864.187

SPAN 5	CL PIER 4	5.1	5.2	5.3	5.4	5.5	5.6	5.7	5.8	5.9	CL ABUT 2
Lt. EOD	1864.186	1864.199	1864.211	1864.224	1864.236	1864.249	1864.262	1864.274	1864.287	1864.299	1864.312
BEAM 1	1864.212	1864.225	1864.237	1864.250	1864.262	1864.275	1864.288	1864.300	1864.313	1864.325	1864.338
BEAM 2	1864.270	1864.283	1864.295	1864.308	1864.320	1864.333	1864.346	1864.358	1864.371	1864.383	1864.396
CL CONST	1864.299	1864.312	1864.324	1864.337	1864.349	1864.362	1864.375	1864.387	1864.400	1864.412	1864.425
BEAM 3	1864.270	1864.283	1864.295	1864.308	1864.320	1864.333	1864.346	1864.358	1864.371	1864.383	1864.396
BEAM 4	1864.212	1864.225	1864.237	1864.250	1864.262	1864.275	1864.288	1864.300	1864.313	1864.325	1864.338
Rt. EOD	1864.186	1864.199	1864.211	1864.224	1864.236	1864.249	1864.262	1864.274	1864.287	1864.299	1864.312

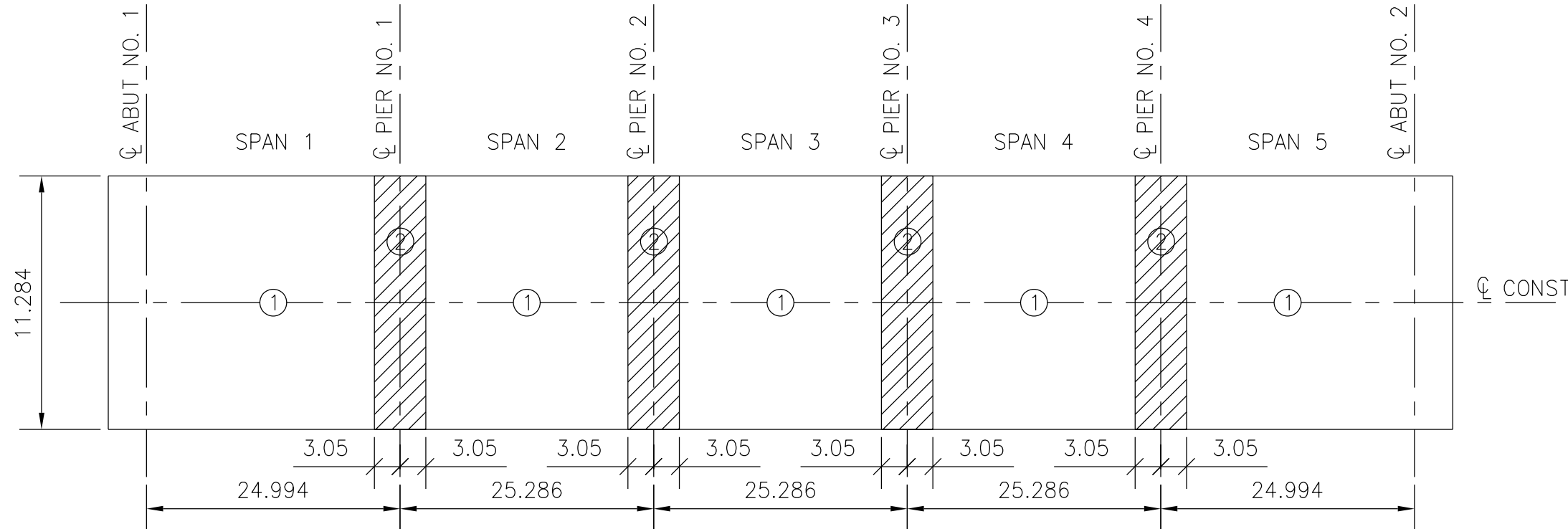
EOD = Edge of Deck

TOP OF WING WALL ELEVATIONS			
	STA	OFFSET	ELEVATION
A	0+220.147	5.642 LT.	1863.654
B	0+220.147	5.3 LT.	1863.661
C	0+220.147	5.3 RT.	1863.661
D	0+220.147	5.642 RT.	1863.654
E	0+354.831	5.642 LT.	1864.334
F	0+354.831	5.3 LT.	1864.341
G	0+354.831	5.3 RT.	1864.341
H	0+354.831	5.642 RT.	1864.334



### DEAD LOAD DEFLECTION DIAGRAM

TO COMPENSATE FOR DEAD LOAD DEFLECTION DUE TO WEIGHT OF SLAB AND COMPOSITE DEAD LOAD, SET SCREEDS ABOVE FINISHED GRADES BY DIMENSIONS (mm) SHOWN ABOVE.



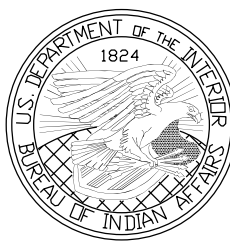
### CONCRETE DECK PLACEMENT DETAIL

NOTE: CONCRETE SHALL BE PLACED THE FULL WIDTH OF THE DECK SLAB IN THE SEQUENCE SHOWN ABOVE AT A FORWARD RATE OF PROGRESS OF NOT LESS THAN 9.15m PER HOUR. PLACEMENT ① MAY BE MADE ON THE SAME OR SEPARATE DAYS AND PLACEMENT ② MAY BE MADE ON THE SAME OR SEPARATE DAYS. PLACEMENT ② SHALL NOT BE MADE UNTIL THE CONCRETE IN ADJACENT PLACEMENT ① AREAS HAS BEEN IN PLACE AT LEAST 48 HOURS. SET RETARDANT SHALL NOT BE USED IF THE ATMOSPHERIC TEMPERATURE AT THE TIME OF PLACEMENT IS LESS THAN 16° C.

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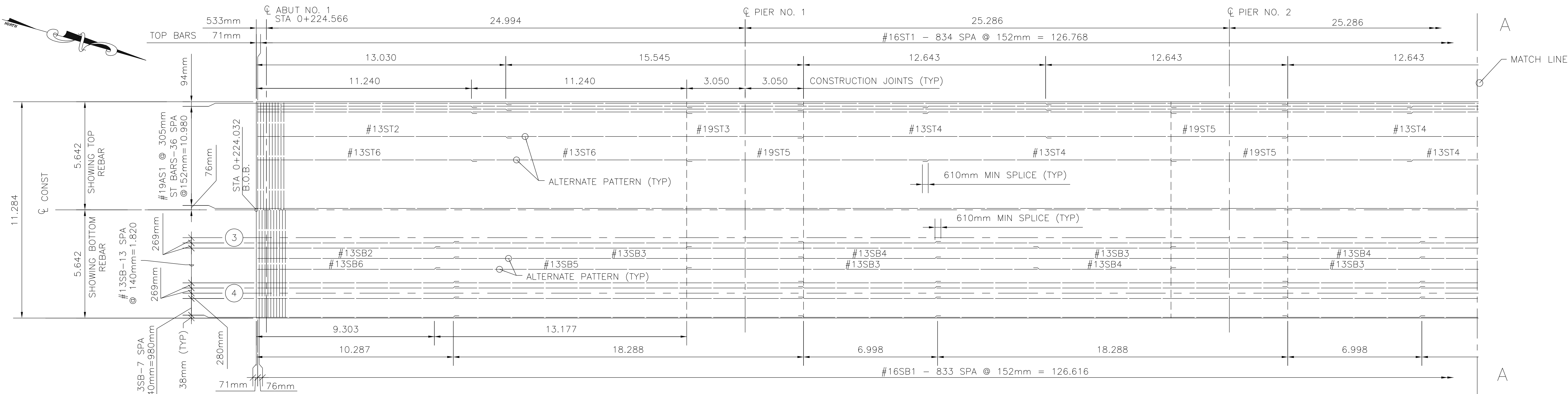
### DECK ELEVATIONS

Designed by: CK  
Drawn by: PF, rsh Date: 3/20/17  
Revised by: HRiley Date: 3/19/2020  
File Name: 23\_N9402\_DeckElev



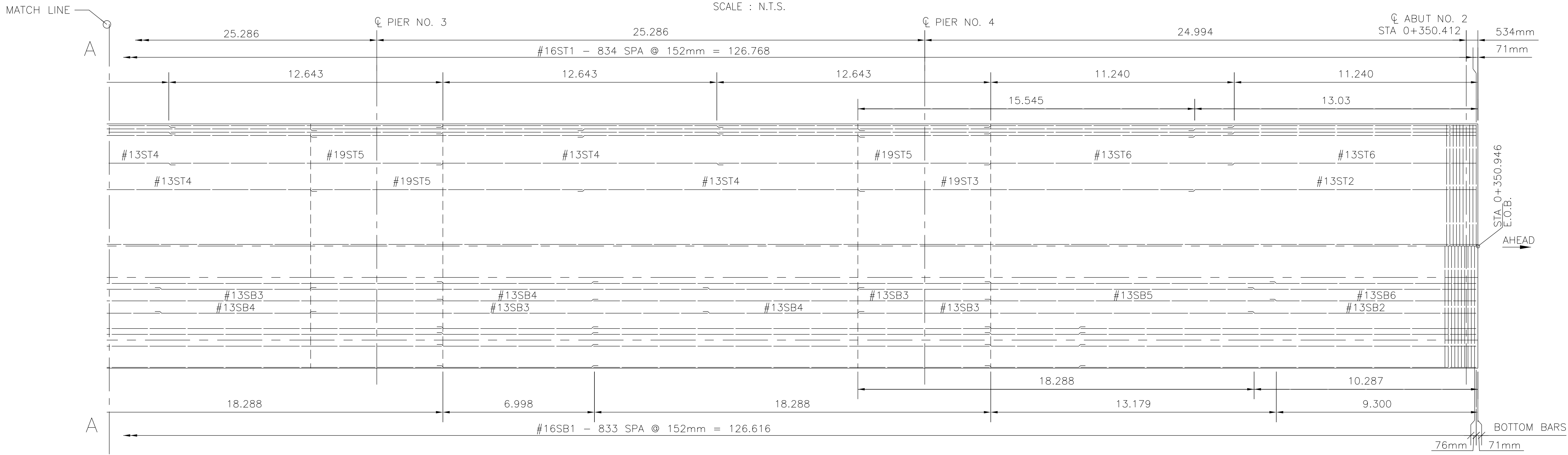
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REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET
NAVAJO	AZ	NAVAJO	N9402	N9402(2)1,2&3	24 of 40



DECK SLAB REINFORCING PLAN

SCALE : N.T.S.



TOP RE-BAR ALTERNATING PATTERN (PAIRED)	#13ST2	#19ST3	#13ST4	#19ST5	#13ST4	#19ST5	#13ST4	#19ST5	#13ST6	#13ST6
	13.7	15.6	13.9	12.7	13.9	12.7	13.9	12.7	11.9	11.9
BOTTOM RE-BAR ALTERNATING PATTERN (PAIRED)	#13SB2	#13SB3	#13SB4	#13SB3	#13SB4	#13SB3	#13SB4	#13SB3	#13SB5	#13SB6
	10.9	18.3	8.3	18.3	8.3	18.3	8.3	18.3	13.8	10.0
	#13SB6	#13SB5	#13SB3	#13SB4	#13SB3	#13SB4	#13SB3	#13SB4	#13SB3	#13SB2
	10.0	13.8	18.3	8.3	18.3	8.3	18.3	8.3	18.3	10.9

LONGITUDINAL REBAR PARTIAL SPLICING PLAN

SCALE N.T.S.  
(ALTERNATE RUNS TO STAGGER SPLICES)

UNITED STATES  
DEPARTMENT OF INTERIOR  
BUREAU OF INDIAN AFFAIRS  
NAVAJO REGIONAL OFFICE – D.O.T.

DECK SLAB  
REINFORCING PLAN

Designed by: CK  
Drawn by: PF, rsh Date: 3/27/17  
Revised by: Date:  
File Name: 24\_N9402\_DeckPlan





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SUPERSTRUCTURE

REINFORCING BAR SCHEDULE

	MARK	SIZE	TYPE	NO. REQD	LENGTH	a	b	c	d	REMARK
DECK	#16ST1	16	1	835	11.182					EPOXY COATED
	#13ST2	13	1	74	13.700					EPOXY COATED
	#19ST3	19	1	74	15.600					EPOXY COATED
	#13ST4	13	1	222	13.900					EPOXY COATED
	#19ST5	19	1	222	12.700					EPOXY COATED
	#13ST6	13	1	148	11.900					EPOXY COATED
	#16SB1	16	1	834	11.182					EPOXY COATED
	#13SB2	13	1	68	10.900					EPOXY COATED
	#13SB3	13	1	272	18.300					EPOXY COATED
	#13SB4	13	1	204	8.300					EPOXY COATED
	#13SB5	13	1	68	13.800					EPOXY COATED
	#13SB6	13	1	68	10.000					EPOXY COATED
	#19AS1	19	1	74	1.220					EPOXY COATED

ABUT. NO. 1 DIAPH. AND ABUT. NO. 2 DIAPH	#13AD1	13	1	4	11.182					
	#13AD2	13	4	66	1.050	395mm	50mm	556mm		
	#13AD3	13	3	16	4.046	227mm	1.716	80mm		EPOXY COATED
	#13AD4	13	3	16	3.880	723mm	1.137	80mm		EPOXY COATED
	#13AD5	13	3	34	5.038	723mm	1.716	80mm		EPOXY COATED
	#16AD6	16	1	24	11.182					
	#16AD7	16	1	24	2.640					
	#16AD8	16	1	16	1.120					
	#16AD9	16	1	12	1.140					
	#16AD10	16	1	8	360mm					
	#25AW1	25	5	20	1.830	1.220	305mm			

APP SLAB @ ABUT. NO. 1 & ABUT NO. 2	#13AST1	13	1	56	10.500					EPOXY COATED
	#13AST2	13	1	72	4.100					EPOXY COATED
	#29ASB1	29	1	142	4.165					EPOXY COATED
	#16ASB2	16	1	30	10.500					EPOXY COATED
	#13ASF1	13	1	16	10.460					EPOXY COATED
	#13ASF2	13	1	8	10.460					EPOXY COATED
	#13ASF3	13	2	72	2.438	1.117	204mm			EPOXY COATED
	#13ASF4	13	2	72	916mm	508mm	204mm			EPOXY COATED

PIER

	MARK	SIZE	TYPE	NO. REQD	LENGTH	a	b	c	d	REMARKS
CAP (TOTAL OF 4 PIERS)	#29PH1	29	1	16	10.110					
	#25PH2	25	1	16	10.110					
	#13PH3	13	1	24	10.110					
	#13PH4	13	1	16	5.690					
	#13PV1	13	3	204	3.968	952mm	952mm	80mm		
	#13PV2	13	2	108	1.562	305mm	952mm			
	#29PV3	29	8	64	2.65	650mm	2.0			

DIAPHRAGM (TOTAL OF 4 PIERS)	#13PD1	13	3	72	4.086	406mm	1.557	80mm		EPOXY COATED
	#13PD2	13	3	24	3.016	406mm	1.022	80mm		
	#19PD3	19	1	102	2.390					*
	#19PD4	19	1	18	1.550					**
	#22PD5	22	1	8	8.688					
	#19PX1	19	6	36	1.408	400mm	608mm			PAIRED, PIER 3 ONLY

\* USE IN PLACE OF #19PD4 AT PIER NO. 3

\*\* = PIER NO. 1, 2 & 4 ONLY

SUBSTRUCTURE

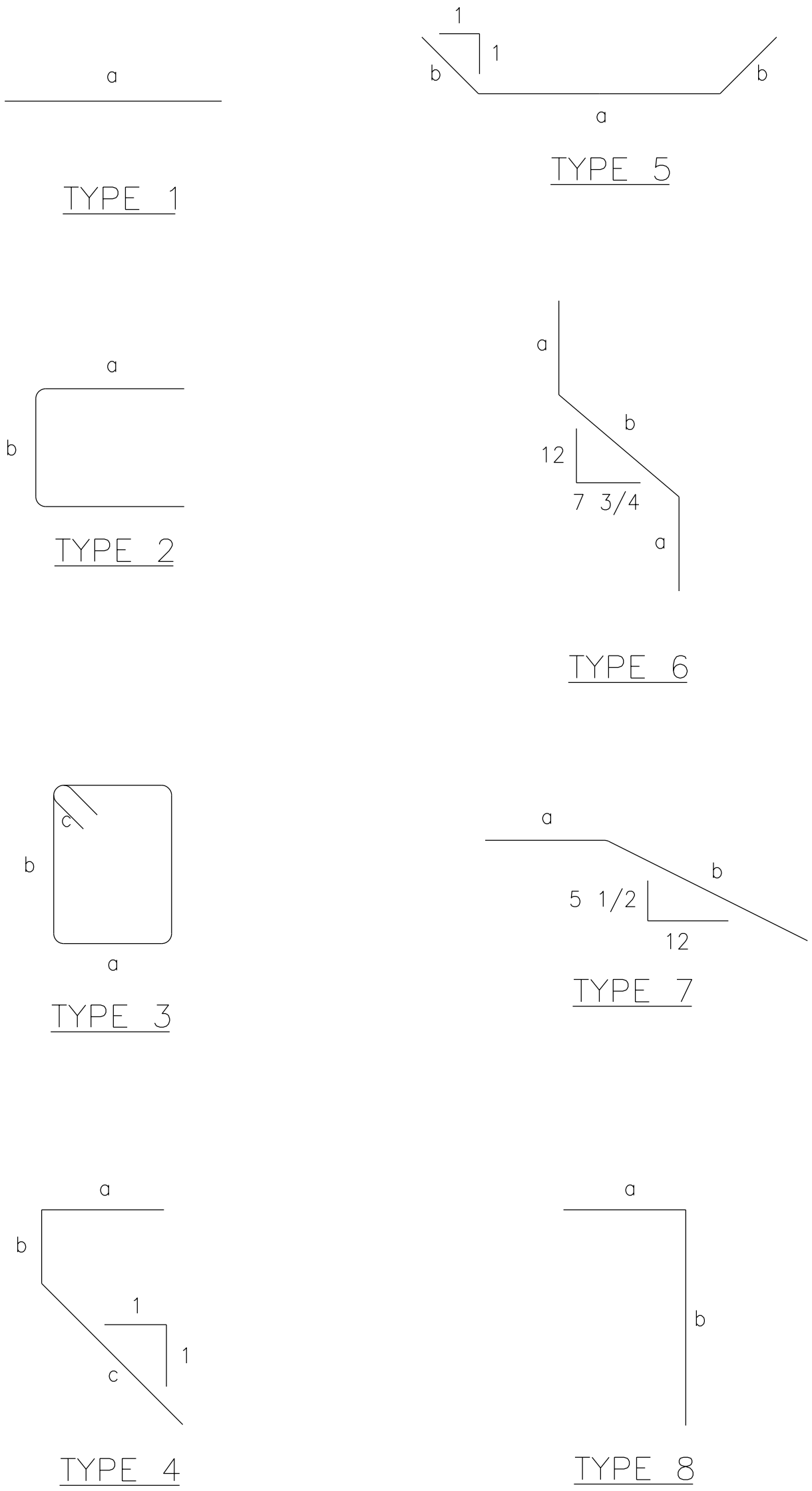
	MARK	SIZE	TYPE	NO. REQD	LENGTH	a	b	c	d	REMARKS
ABUT NO. 1 CAP AND ABUT NO. 2 CAP	#16AC1	16	3	112	4.012	968mm	942mm	96mm		
	#13AC2	13	2	36	1.578	305mm	968mm			
	#32AC3	32	1	12	10.470					
	#16AC4	16	1	12	10.470					
	#13AC5	13	1	8	5.690					
	#29AC6	29	1	8	10.470					
	#29AC7	29	8	24	2.65	650mm	2.0			

WING WALL @ ABUT. NO. 1 AND ABUT. NO. 2	#13WV1 thru	13	1	8	508mm					INCREASE BY EQUAL INCREMENTS OF 140mm
	#13WV14	13	1	8	2.325					
	#13WV15	13	1	16	2.325					
	#13WH1	13	7	8	5.260	1.017	4.243			
	#25WH2 thru	25	1	8	1.524					INCREASE BY EQUAL INCREMENTS OF 586mm
	#25WH7	25	1	8	4.454					
	#25WH8	25	1	16	4.851					

NOTE: TABLES INCLUDE QUANTITIES FOR BOTH ABUTMENTS, APPROACH SLABS AND WINGWALLS, AND FOR ALL PIERS AND DIAPHRAGMS.

REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET
NAVAJO	AZ	NAVAJO	N9402	N9402(2)1,2&3	26 of 40

BENDING DIAGRAMS  
ALL DIMENSIONS ARE C TO C



AASHTO MINIMUM DIAMETERS OF BEND

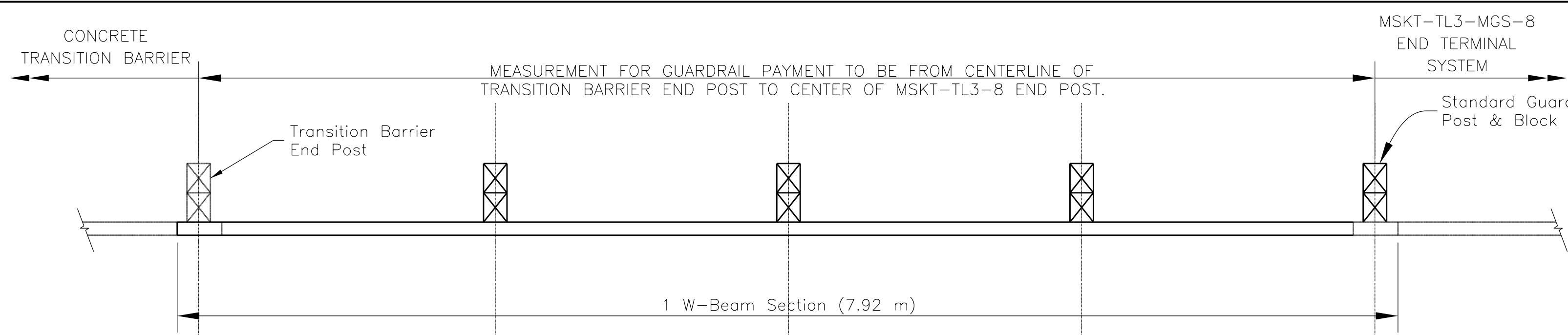
BAR SIZE	MINIMUM DIAMETER
NOS. 10 THROUGH 25	6-BAR DIAMETERS
NOS. 29, 32, AND 36	8-BAR DIAMETERS
NOS. 43 AND 57	10-BAR DIAMETERS

UNITED STATES  
DEPARTMENT OF INTERIOR  
BUREAU OF INDIAN AFFAIRS  
NAVAJO REGIONAL OFFICE – D.O.T.

REINFORCING SCHEDULE

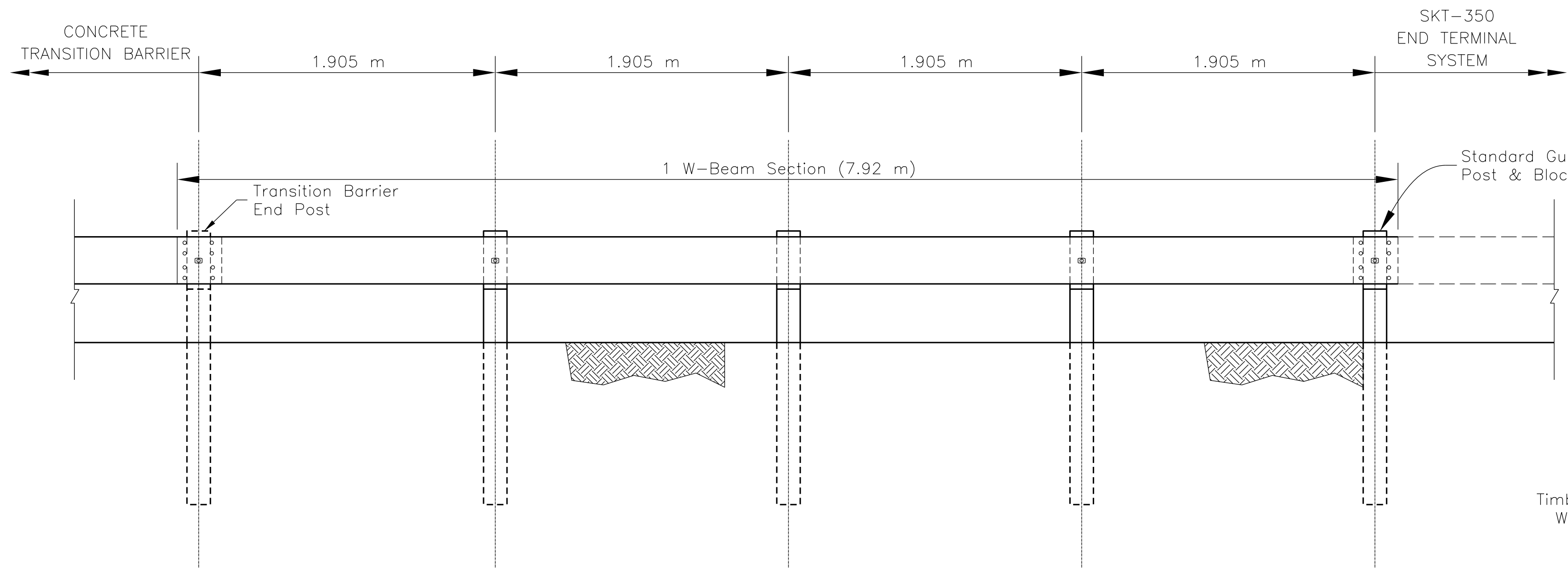
Designed by: CK	
Drawn by: PF, rsh	Date: 3/27/17
Revised by: HRiley	Date: 3/19/2020
File Name: 26_N9402_reinforcing_sched	



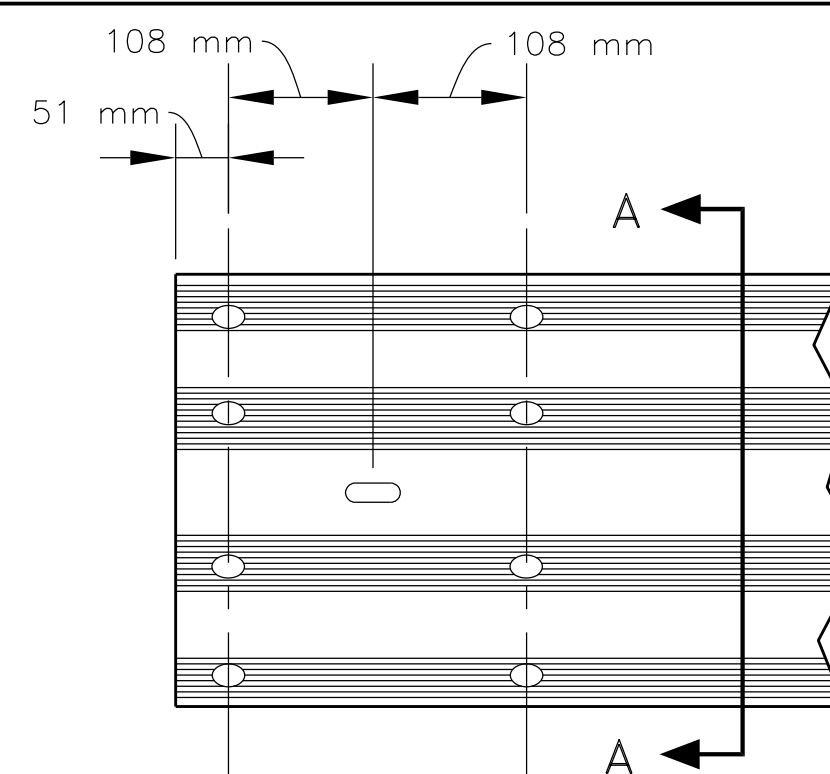


PLAN

TRAFFIC DIRECTION



ELEVATION

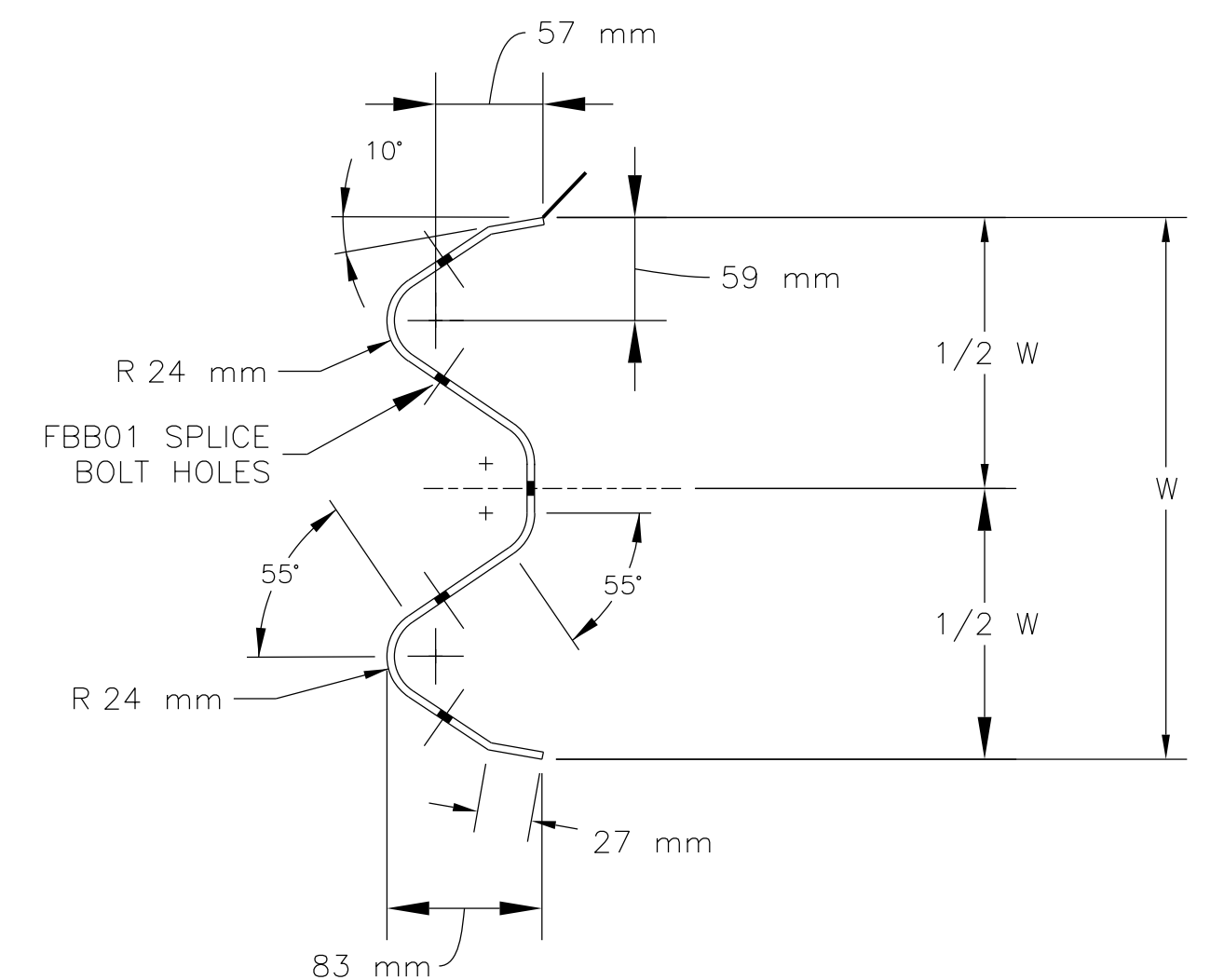


ELEVATION  
RAIL

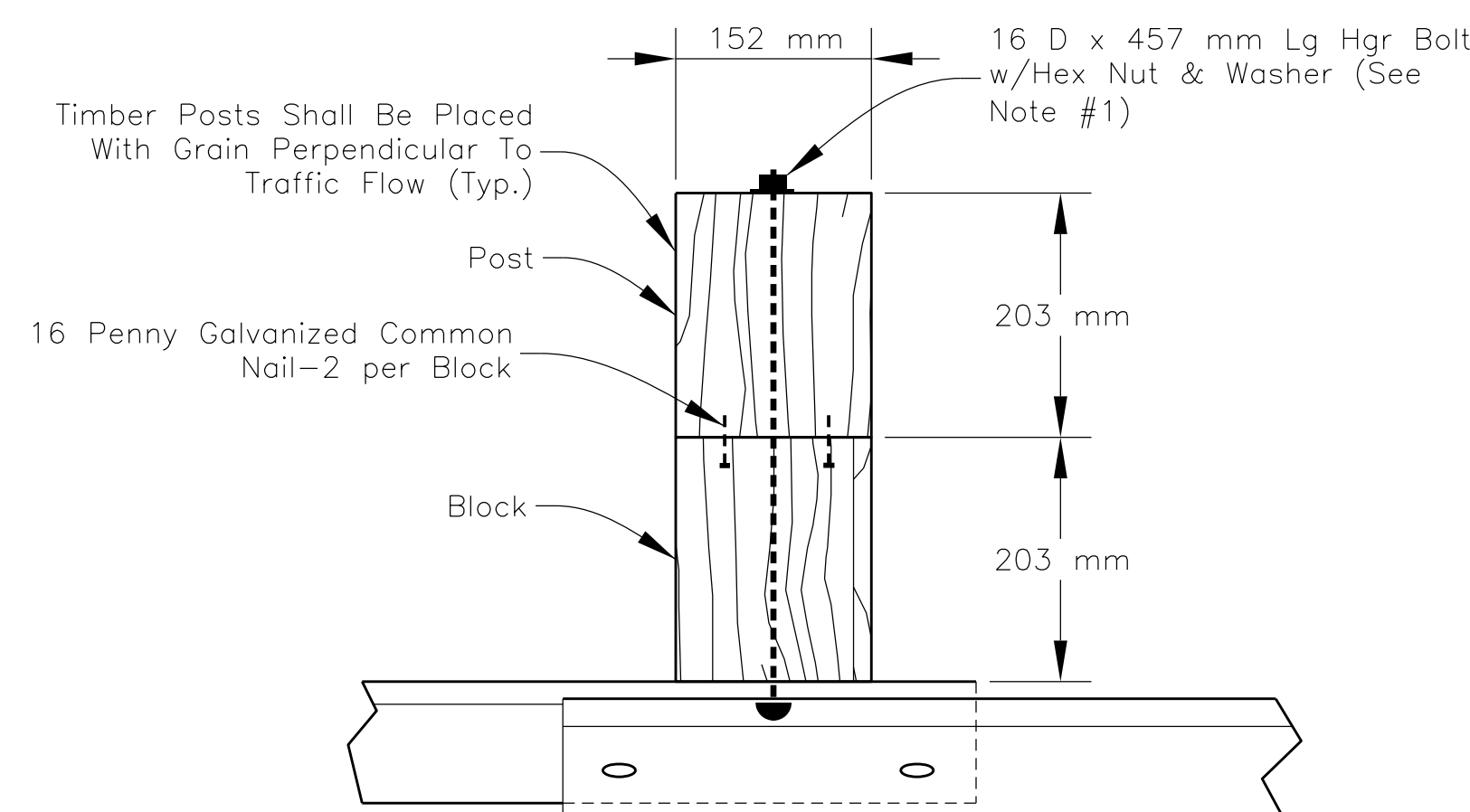
DESIGNATOR

DESIGNATOR	COMPONENT	NUMBER
FBBO1	Splice Bolt and Nut	2
FBBO2	Guardrail-Post Bolt and Nut	2
FBBO3	Guardrail-Post Bolt and Nut	2
FBBO4	Guardrail-Post Bolt and Nut	2
FBX16a	Post Blockout Bolt (40 mm)	4
FWC16a	Round Washer	2
PDB01a	Timber Post Blockout	2
PDB01b	Timber Post Blockout	2
PDE02	Timber Post	2
PDE13	Timber Post	2
PWB01	Steel Post Blockout	2
PWE01	Steel Post	2
PWE02	Steel Post	2
RWB01a	W-Beam Backup Plate	1
RWM02a	W-Beam Rail	1

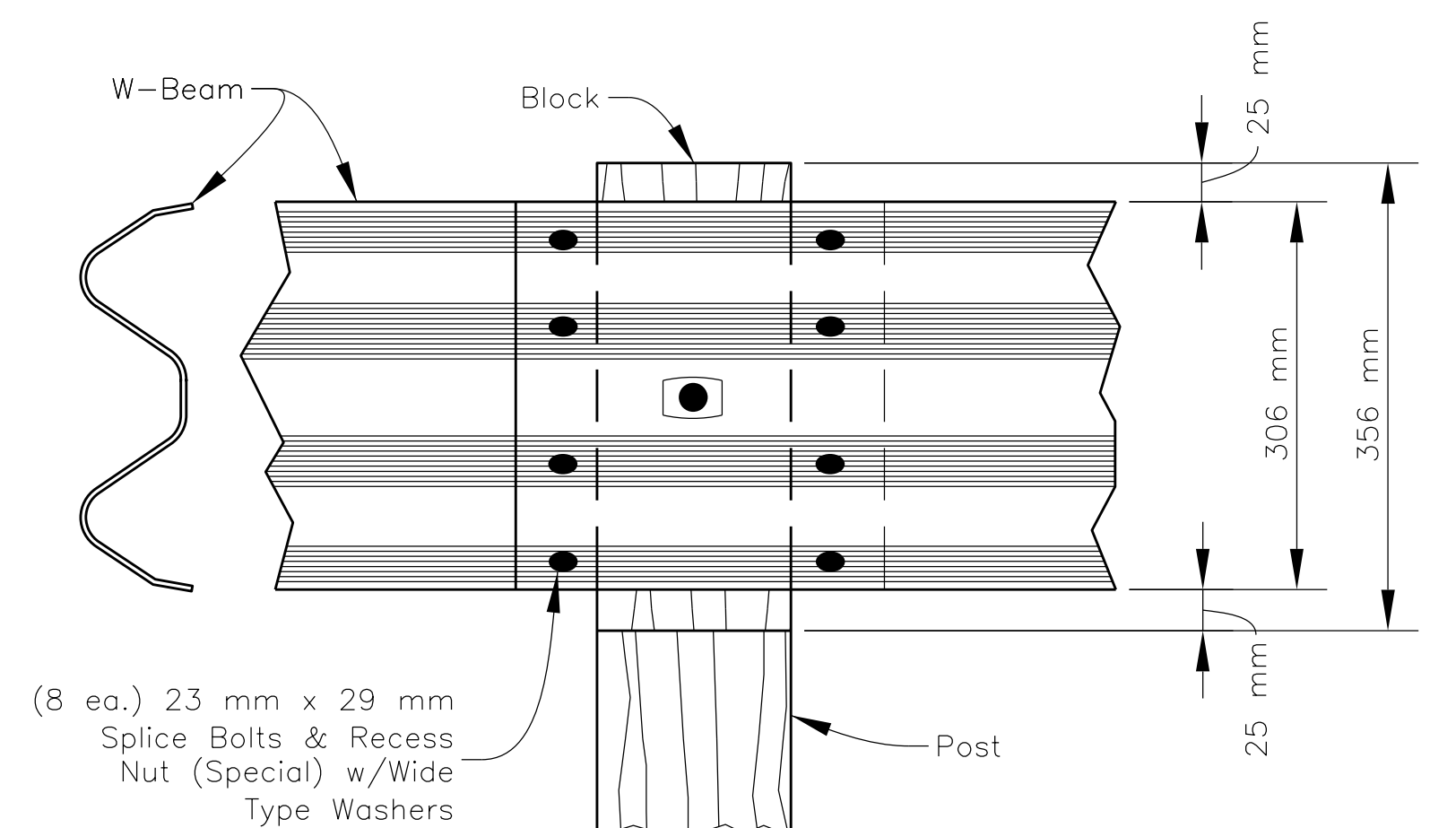
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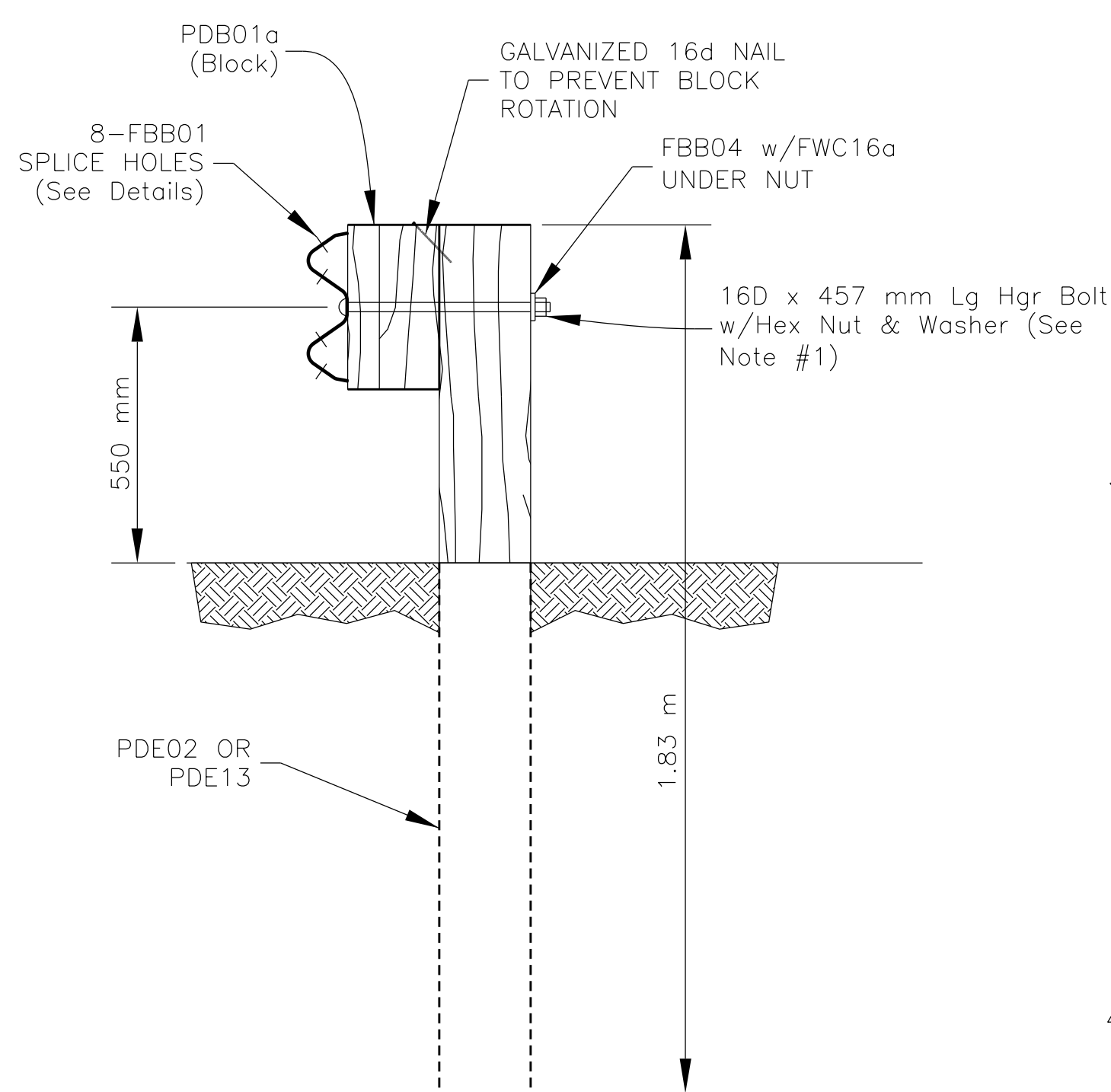
SECTION A-A  
W-BEAM (RWM02A)



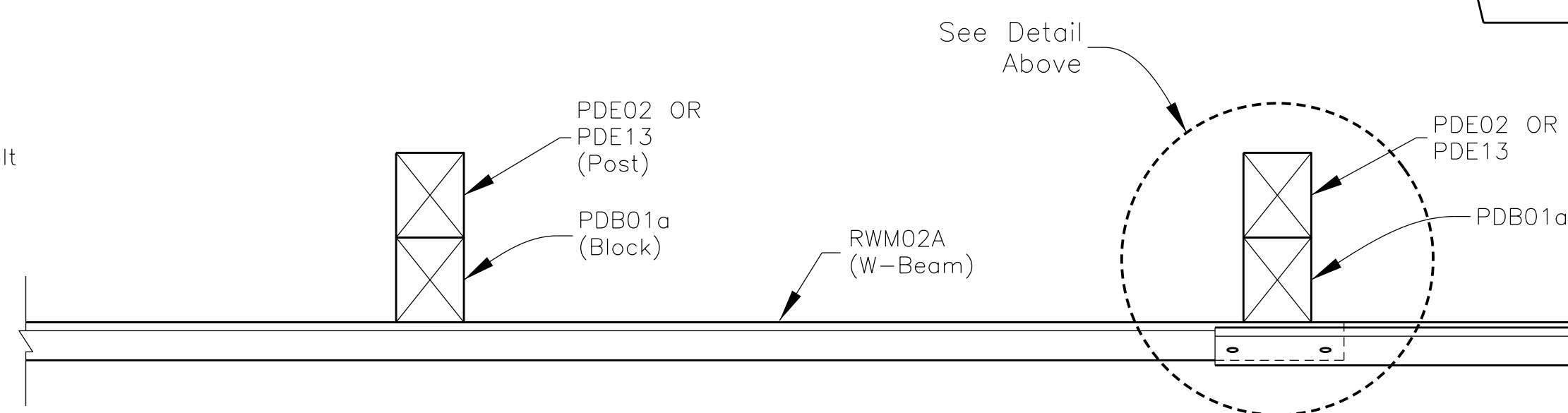
PLAN  
POST/BLOCK &  
SPLICE DETAIL



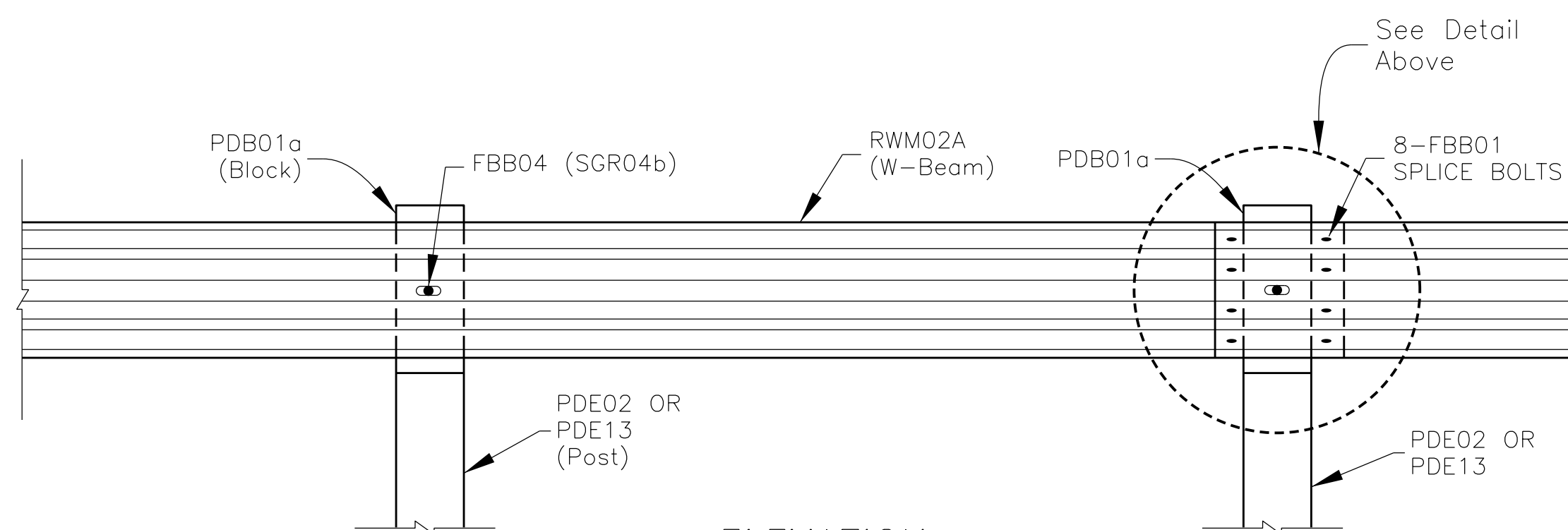
ELEVATION  
POST/BLOCK  
SPLICE DETAIL



ELEVATION  
STRONG-POST W-BEAM



PLAN  
W-BEAM/POST & BLOCK DETAILS



ELEVATION  
W-BEAM/POST & BLOCK DETAILS

GENERAL NOTES


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

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

STANDARD GUARDRAIL  
DETAIL 1

DRAWN BY: NRDOT  
DESIGNED BY: NRDOT  
REVISED: 7/5/2019  
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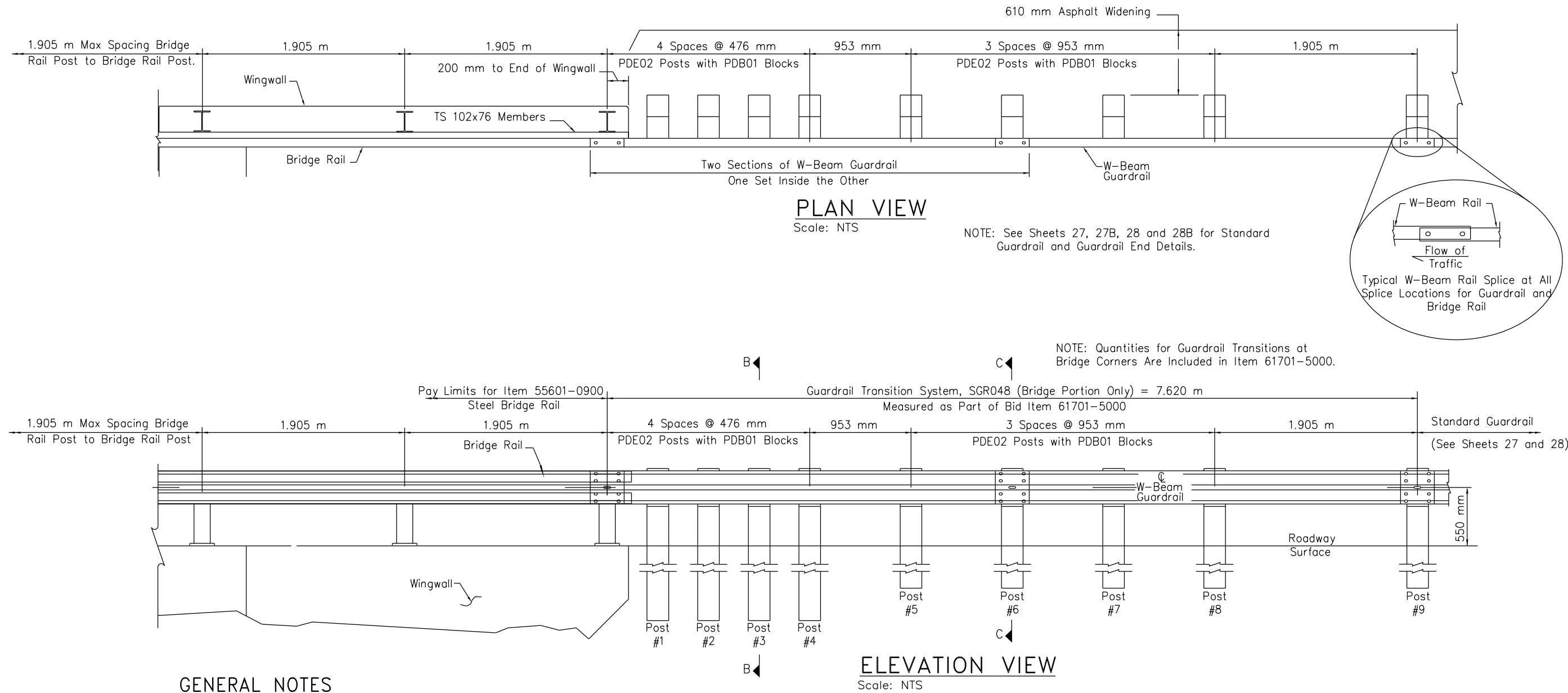
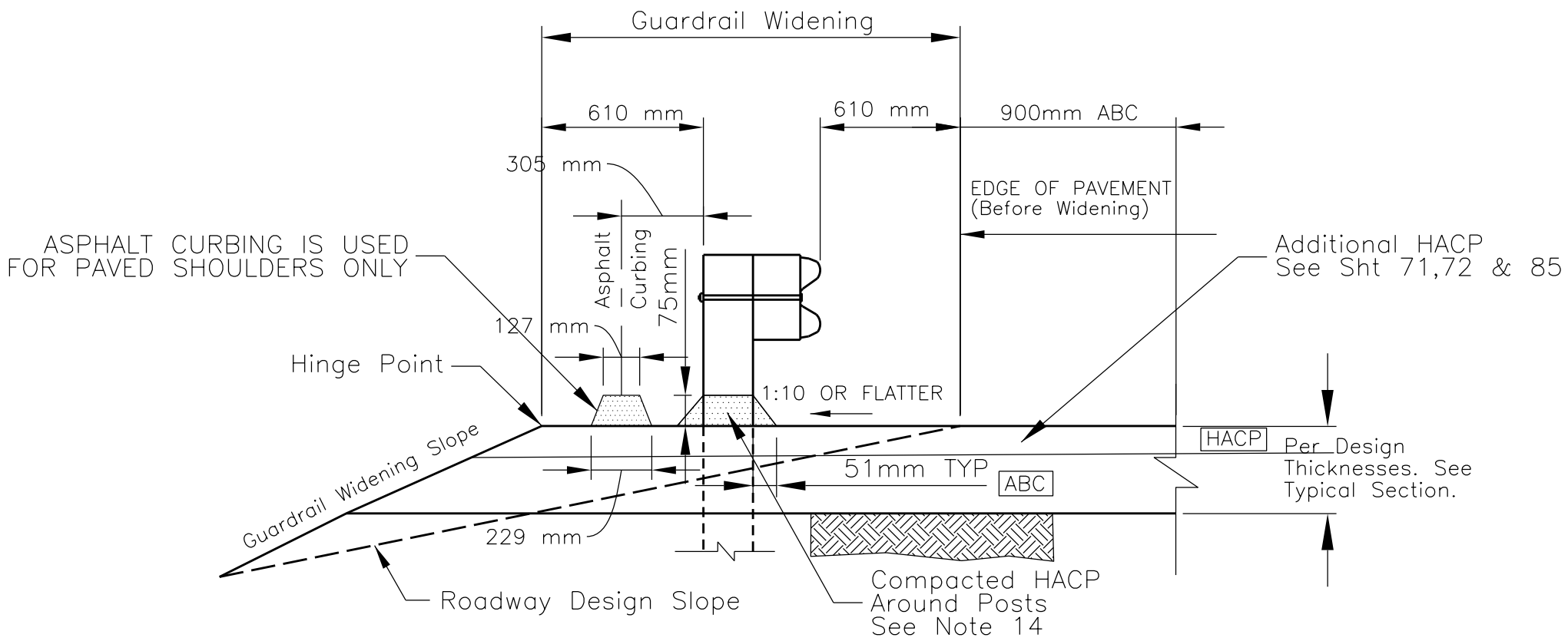
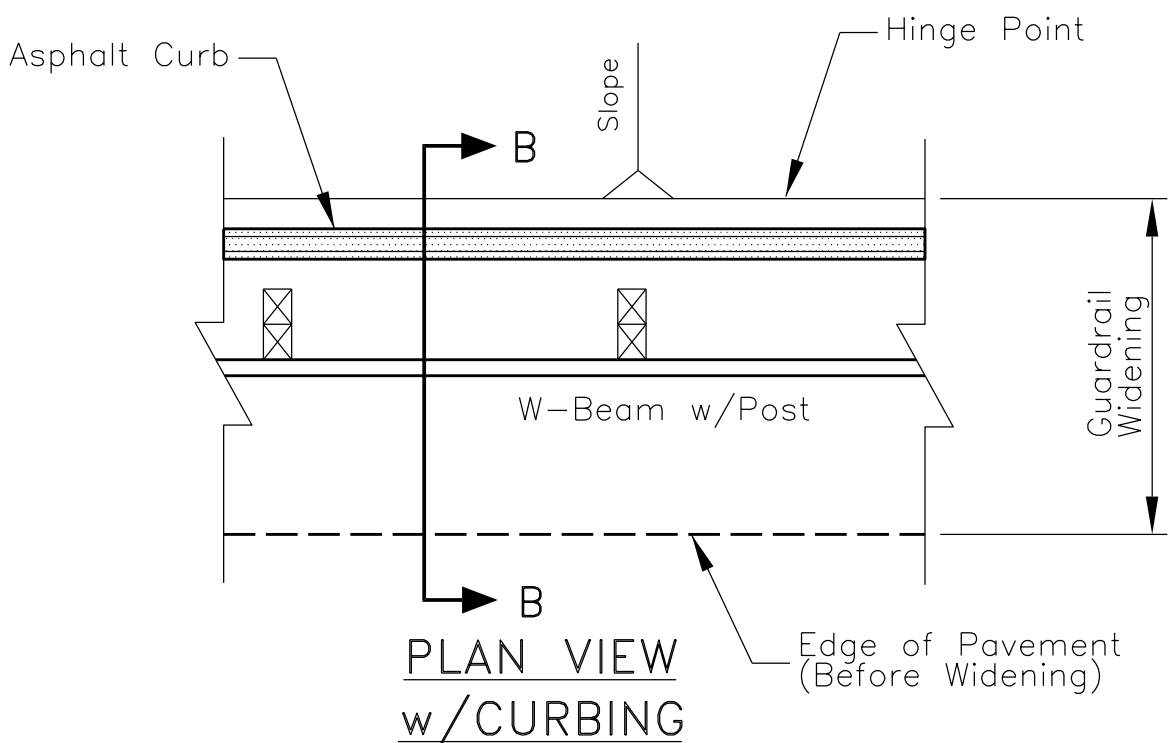
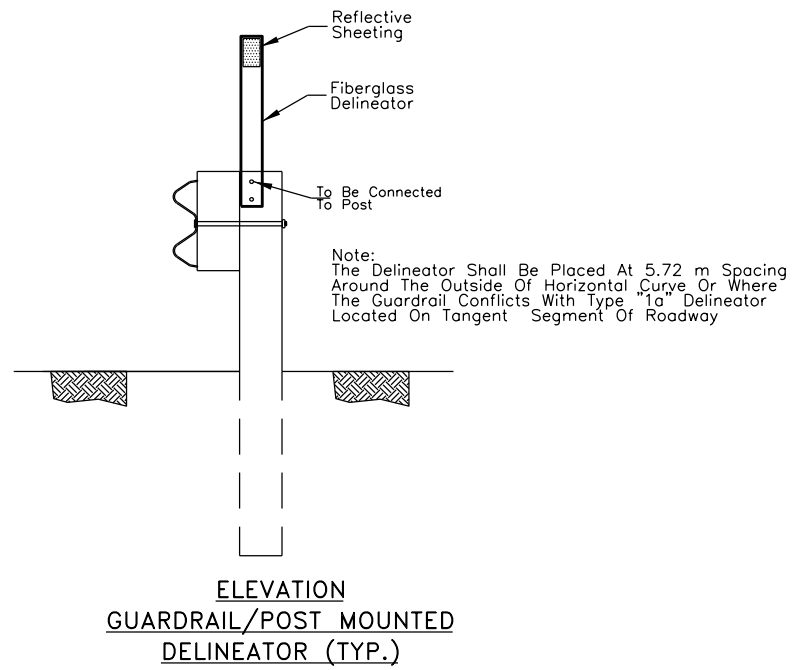
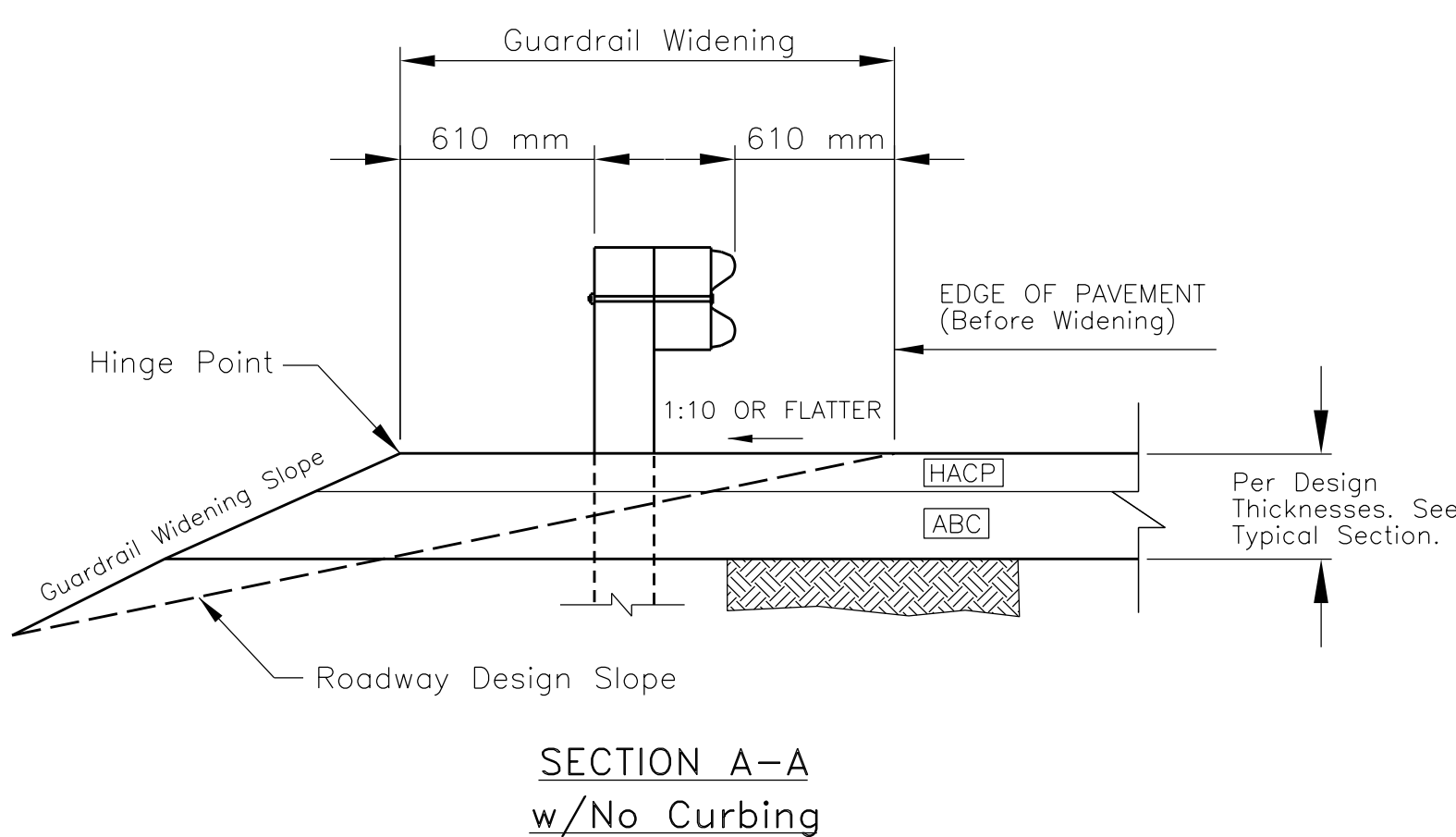
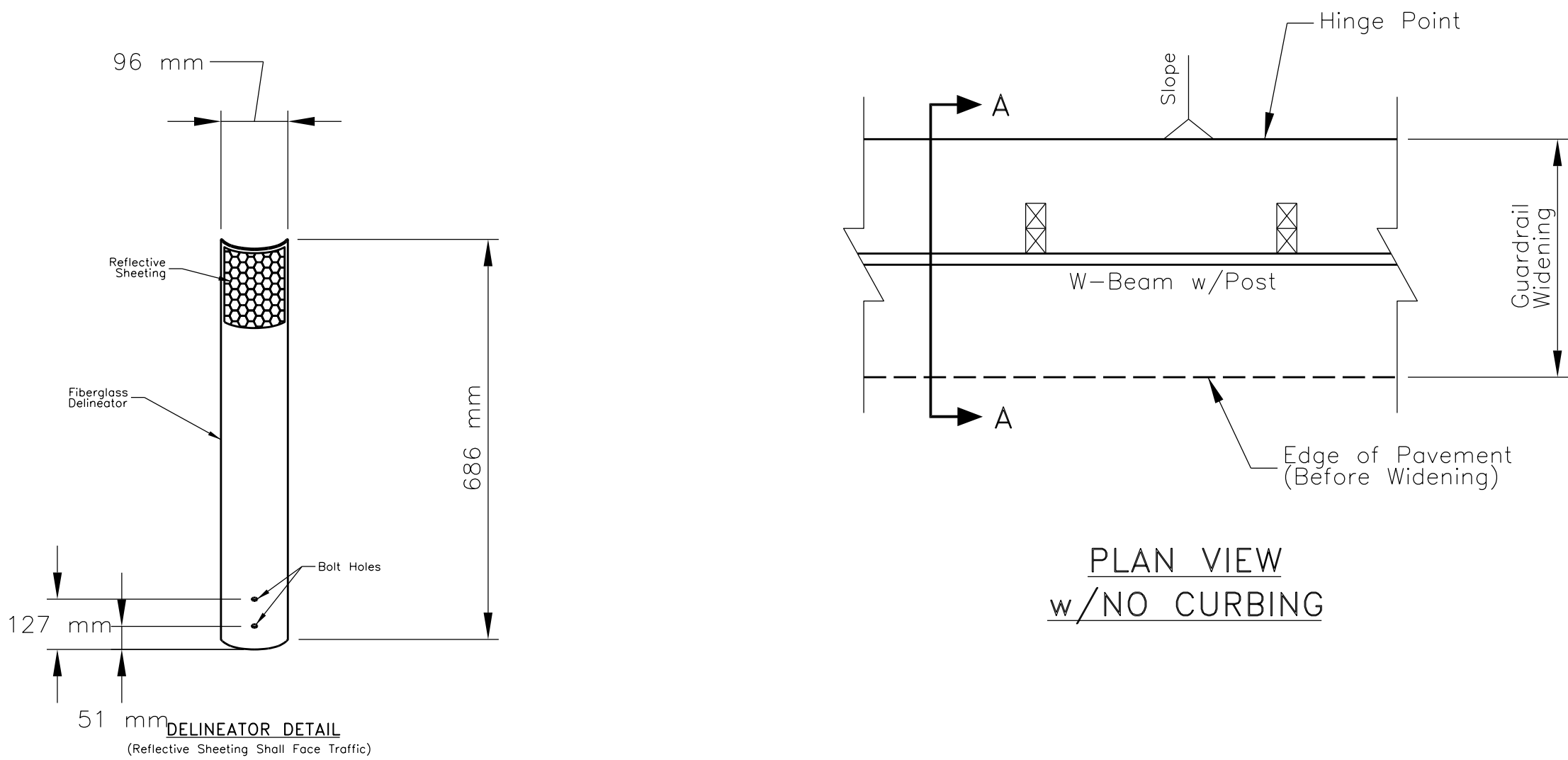
DATE: 7/5/2019  
DATE: 7/5/2019  
BY: HRiley



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	AZ	NAVAJO	N9402	N9402(2)1,2&3	27A	40

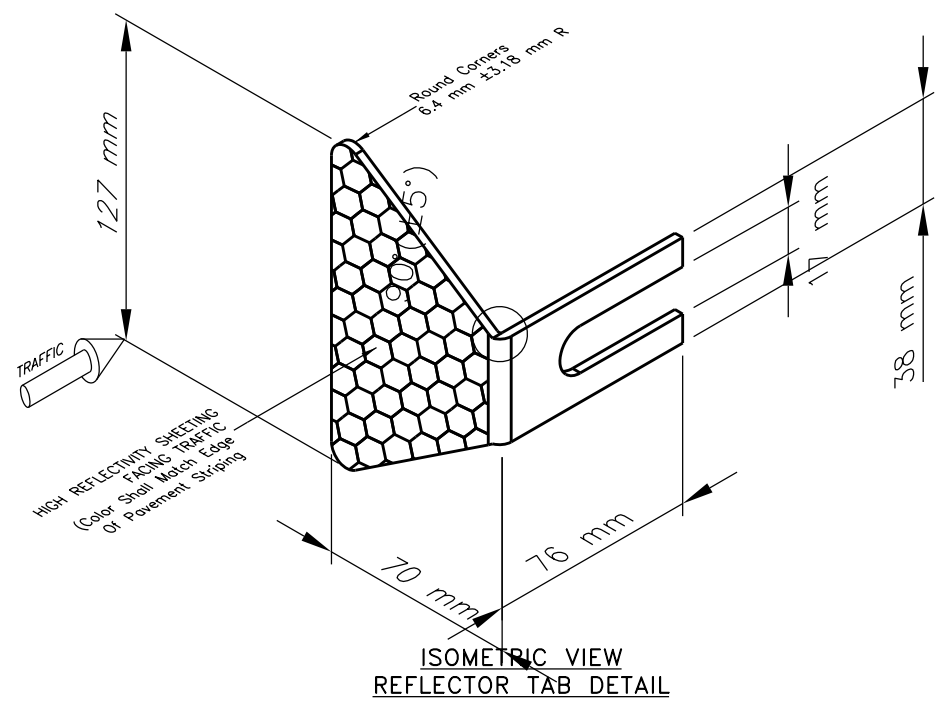
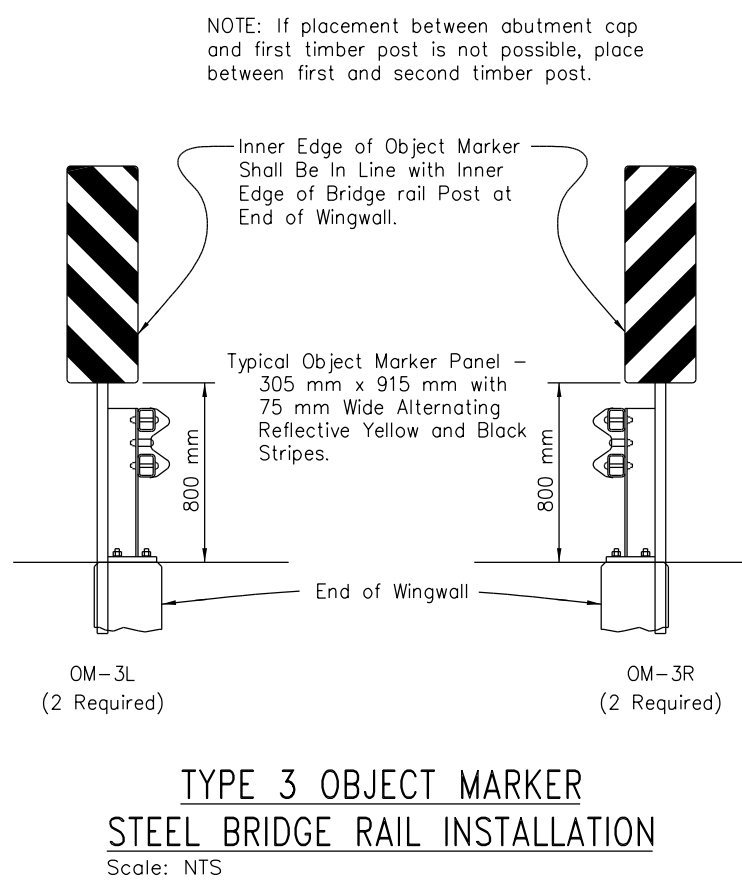
GENERAL NOTES

- ALL GUARDRAIL "W" BEAMS, SHALL BE GALVANIZED IN ACCORDANCE WITH (AASHTO M-180, CLASS A, TYPE 1) SPECIFICATION. ALL HARDWARE SHALL CONFORM TO (ASTM A-325) AND GALVANIZED IN ACCORDANCE WITH (ASTM A-153).
- ALL STRUCTURAL STEEL ITEMS SHOWN SHALL CONFORM TO (AASHTO N183/ASTM A36) AND BE GALVANIZED IN ACCORDANCE WITH (AASHTO M-111) SPECIFICATION.
- WIRE ROPE, FITTINGS AND HARDWARE SHALL CONFORM TO (ASSHTO M-30) SPECIFICATION TYPE II WITH A 19 mm DIAMETER AND A CLASS B ZINC COATING.
- WOOD POSTS AND BLOCKS SHALL BE ROUGH SAWN LUMBER OR (S4S) HAVING MINIMUM BENDING STRENGTH OF 8.27 MPa (SINGLE MEMBER USE) AND MEETING AASHTO N168 (21TH EDITION), ALL POSTS SHALL BE TREATED IN ACCORDANCE WITH (AASHTO M-133) SPECIFICATION.
- ASPHALT CONCRETE CURBING SHALL BE INSTALLED IN ACCORDANCE WITH SECTION B-B, AND CONSIDERED INCIDENTAL TO PAVING ITEMS AND NO DIRECT PAYMENT SHALL BE MADE.
- ALL EMBANKMENT AND AGGREGATE BASE COURSE MATERIALS SHALL BE COMPACTED TO 95% OF MAXIMUM DRY DENSITY.
- THE EMBANKMENT MATERIALS AND THE PLACING THEREOF SHALL BE INCLUDED IN CONTRACT BID ITEM 20401-0000 AND NO DIRECT PAYMENT SHALL BE MADE.
- THE CONTRACTOR SHALL BE REQUIRED TO COMPACT THE BACKFILL AND THE ASPHALT ALL AROUND EACH GUARD RAIL POST WITH HAND TAMPERS TO INSURE INTEGRITY OF THE PAVEMENT AND GUARDRAIL AND TO PREVENT SEEPAGE OF WATER INTO THE PAVEMENT FROM THE GUARD RAIL POST HOLES. THIS WORK SHALL BE INCIDENTAL OBLIGATIONS OF THE WORK DESCRIBED HEREIN.
- PLACEMENT OF HOT ASPHALT AND ABC MATERIAL FOR GUARDRAIL WIDENING SHALL BE INCLUDED IN BID ITEMS 30101-2000 AND 40201-0500.
- FURNISHING & PLACEMENT OF 371 mm x 701 mm REFLECTIVE SHEETING AND REFLECTIVE TABS SHALL BE CONSIDERED INCIDENTAL TO ITEM 61701-5000 AND NO DIRECT PAYMENT SHALL BE MADE.
- ANY RELATED PATENT RIGHTS WILL BE THE RESPONSIBILITY OF THE CONTRACTOR AS PER SECTION 107.01 OF THE FP-14.
- THE CONTRACTOR HAS THE OPTION TO USE STEEL POSTS. IF STEEL POSTS ARE APPROVED THEN RUBBER OR RECYCLED PLASTIC BLOCKS WILL BE REQUIRED.
- PLACE REFLECTIVE TABS ON POSTS AT EVERY FOURTH POST. THE COLOR OF THE TABS SHALL CONFORM TO THE COLOR OF THE ADJACENT EDGE LINE
- PLACE 75mm mound of Asphalt around each post and compact for paved shoulders. Place 75mm mound of bag mixed concrete around each post to a 101mm depth and let cure before mounting railing for gravel or dirt shoulders. This work shall be considered incidental work under the guardrail bid item.



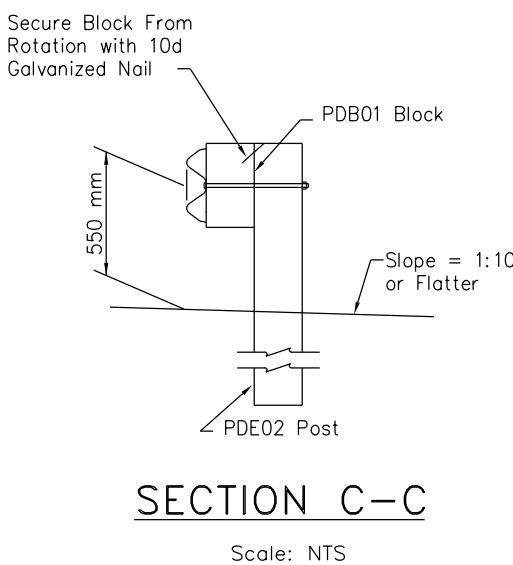
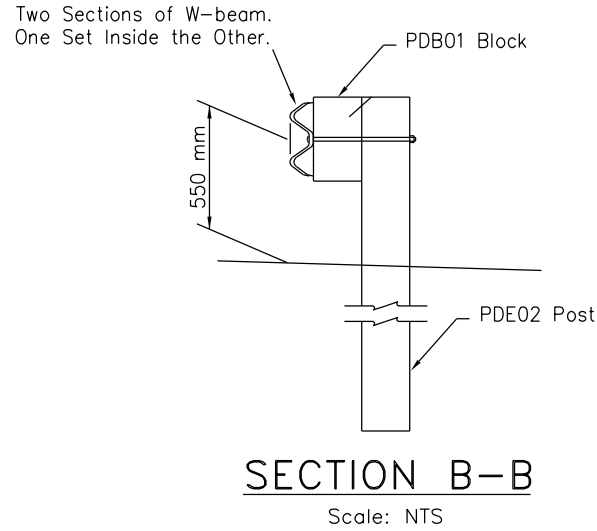
GENERAL NOTES

- Standard Barrier Hardware Has Been Used To Develop This Guardrail Transition. Designations Provided in Brackets Relate to Standard Elements Detailed In "A Guide To Standard Highway Barrier Rail Hardware", 1995, AASHTO-ACC-ARTBAM Joint Cooperative Committee and Modified Standard Elements As Detailed on This Sheet.
- All W-beams Shall Be Galvanized In Accordance With AASHTO M180-class A, Type 1. Furnishing, Fabricating and Installing These Items Shall Be Included in Item 61701-5000.
- W-Beam is Not Bolted to Posts and Blocks at Posts #1, #2, #3, #5, #7 and #8. Blocks Bolted Directly to Posts.
- Certificates of Compliance Shall Be Required for All Guardrail and Wood Post Materials and Associated Hardware Prior to Installation of Any Material Under Item 61701-5000.
- See Additional Notes On this sheet above



SECTION REFLECTOR TAB MOUNTING DETAIL

Install Tab on Every Second Post



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

STANDARD GUARDRAIL  
DETAIL 2

DRAWN BY: NRDOT DATE: 7/5/2019

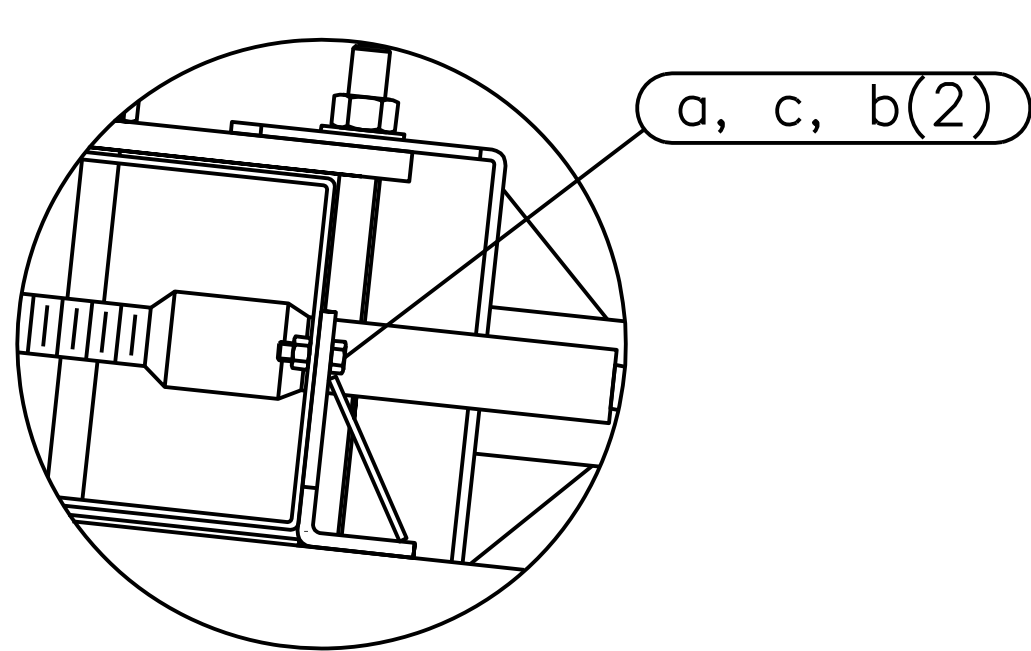
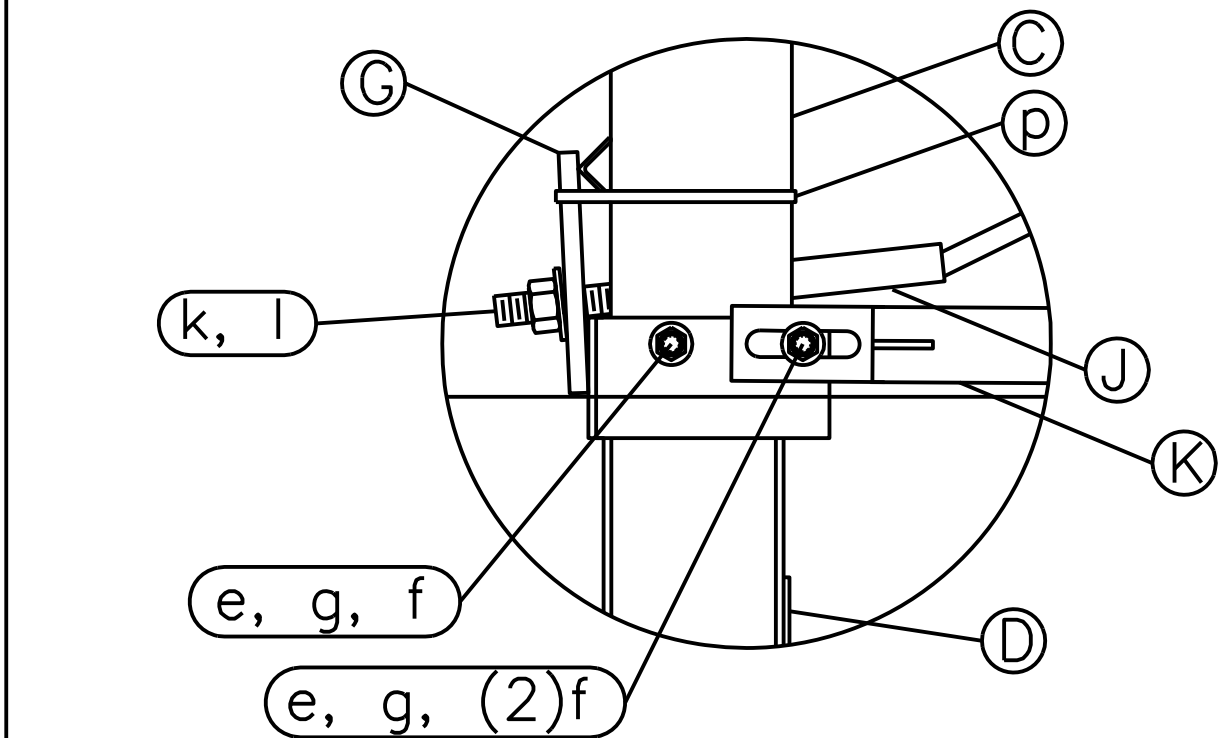
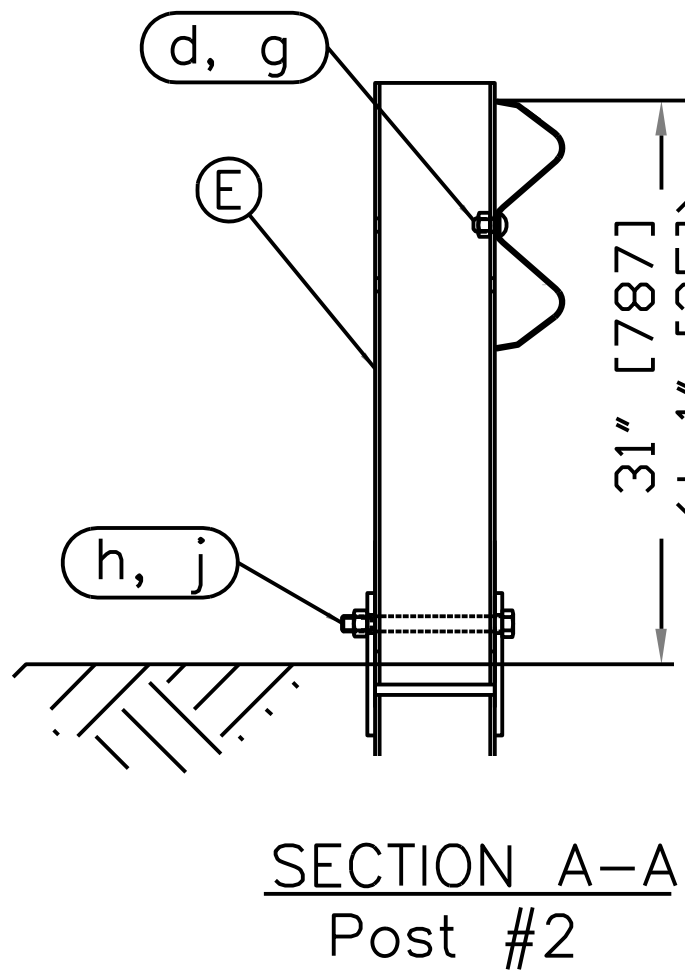
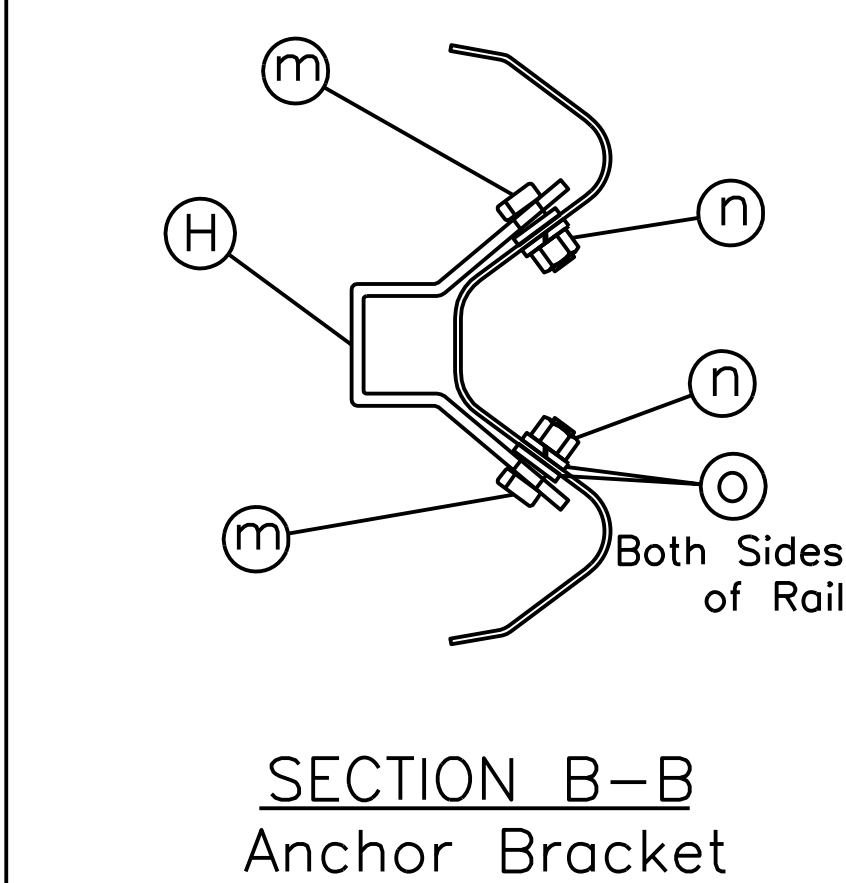
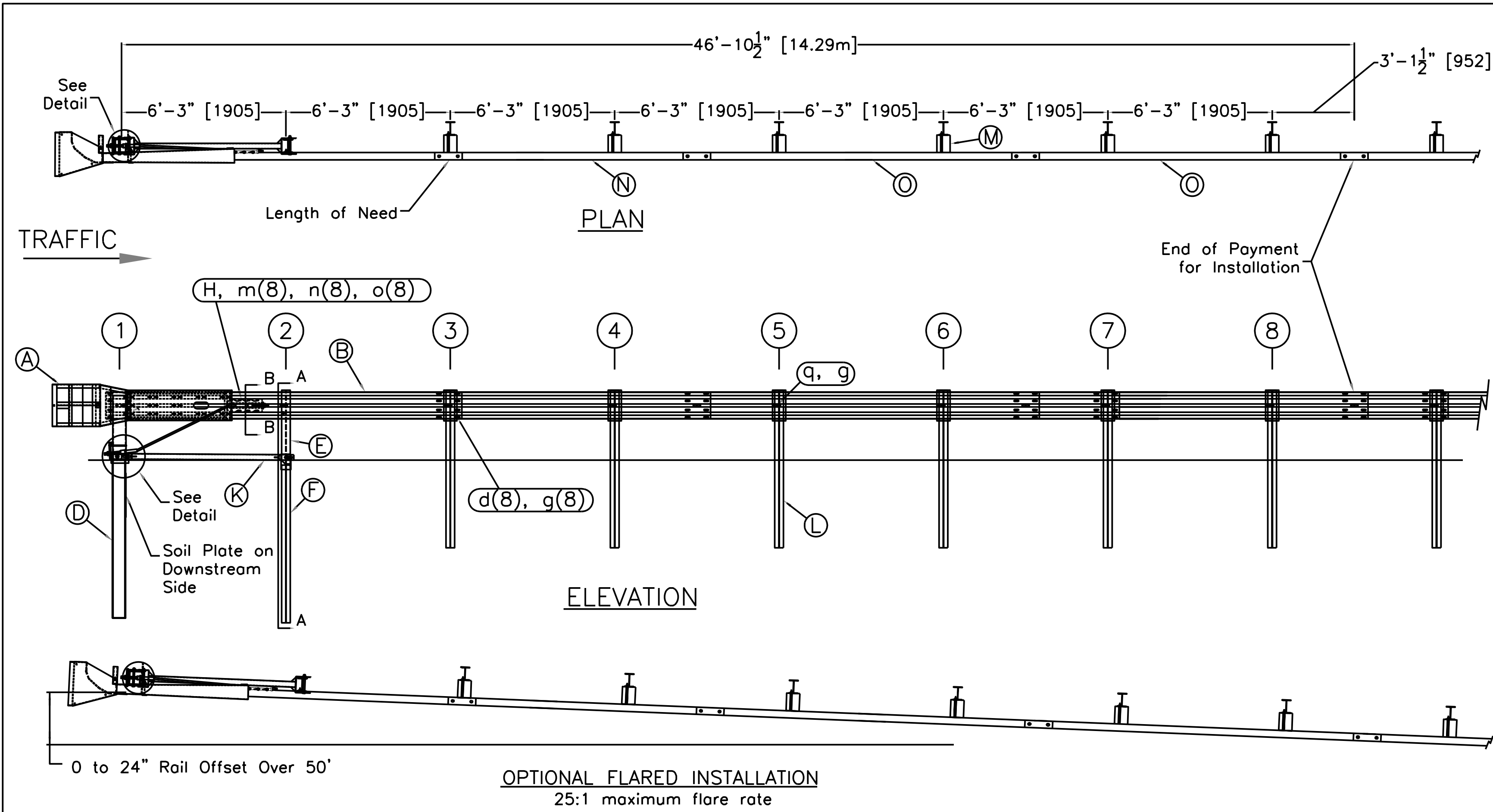
DESIGNED BY: NRDOT DATE: 7/5/2019

REVISED: 3/18/2020 BY: HRiley

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NOTES:

- BREAKAWAY POSTS ARE REQUIRED WITH THE SEQUENTIAL KINKING TERMINAL AS REQUIRED BY THE SUPPLIER.
- ALL BOLTS, NUTS, CABLE ASSEMBLIES, CABLE ANCHORS AND BEARING PLATES SHALL BE GALVANIZED.
- THE MSKT-TL3-8 CAN BE FLARED AT A RATE OF 25:1 TO PREVENT THE IMPACT HEAD FROM ENCRANCHING ON THE SHOULDER. THE FLARE IS NOT REQUIRED AND MAY BE DECREASED OR ELIMINATED FOR SPECIFIC INSTALLATIONS.
- THE SOIL TUBES SHALL NOT PROTRUDE MORE THAN 102 mm ABOVE GROUND (MEASURED ALONG A 1.5m CHORD). SITE GRADING MAY BE NECESSARY TO MEET THIS REQUIREMENT.
- THE SOIL TUBES MAY BE DRIVEN WITH AN APPROVED DRIVING HEAD. SOIL TUBES SHOULD NOT BE DRIVEN WITH THE POST IN THE TUBE. IF THE TUBES ARE PLACED IN DRILLED HOLES, THE BACKFILL MATERIAL MUST BE SATISFACTORILY COMPACTED TO PREVENT SETTLEMENT.
- WHEN ROCK IS ENCOUNTERED DURING EXCAVATION, A 305 mm DIA. POST HOLE, 508 mm INTO ROCK MAY BE USED IF APPROVED BY THE ENGINEER. GRANULAR MATERIAL WILL BE PLACED IN THE BOTTOM OF THE HOLE APPROX. 64 mm DEEP TO PROVIDE DRAINAGE. THE SOIL TUBES WILL BE FIELD CUT TO LENGTH, PLACED IN THE HOLE AND BACKFILLED WITH ADEQUATELY COMPACTED MATERIAL EXCAVATED FROM THE HOLE.
- THE BREAKAWAY CABLE ASSEMBLY MUST BE TAUT. A LOCKING DEVICE, (VICE-GRIPS OR CHANNEL-LOCK PLIERS) SHOULD BE USED TO PREVENT THE CABLE FROM TWISTING WHEN TIGHTENING NUTS.
- A SPECIAL SITE EVALUATION SHOULD BE CONSIDERED PRIOR TO USING THE MSKT-TL3-8 WHERE THERE IS LESS THAN 7.620 m BETWEEN THE OUTLET SIDE OF THE MSKT-TL3-8 AND ANY ADJACENT DRIVING LANE.
- THE WOOD BLOCKOUTS SHOULD BE "TOE-NAILED" TO THE WOOD POSTS TO PREVENT THEM FROM TURNING WHEN THE WOOD SHRINKS.
- GUARDRAIL SPLICES SHALL BE OVERLAPPED IN THE DIRECTION OF THE ADJACENT TRAFFIC.

- BILL OF MATERIALS AND SOME OF THE DETAILS HEREIN ARE PROVIDED BY ROAD SYSTEMS INC.
- ALL BOLTS, NUTS, CABLE ASSEMBLIES, CABLE ANCHORS AND BEARING PLATES SHALL BE GALVANIZED.
- THE LOWER SECTIONS OF THE POSTS 1 & 2 SHALL NOT PROTRUDE MORE THAN 4 in [100mm] ABOVE THE GROUND (MEASURED ALONG A 5' [1.5M] CORD LONGITUDINAL TO THE SYSTEM). SITE GRADING MAY BE NECESSARY TO MEET THIS REQUIREMENT.
- THE LOWER SECTION OF THE HINGED POST SHOULD NOT BE DRIVEN WITH THE UPPER POST ATTACHED. IF THE POST IS PLACED IN A DRILLED HOLE, THE BACKFILL MATERIAL MUST BE SATISFACTORILY COMPACTED TO PREVENT SETTLEMENT.
- WHEN COMPETENT ROCK IS ENCOUNTERED, A 12" [300mm] Ø POST HOLE, 20 in. [500mm] DEEP CORED INTO THE ROCK SURFACE MAY BE USED IF APPROVED BY THE ENGINEER FOR POSTS 1 AND/OR 2. GRANULAR MATERIAL WILL BE PLACED IN THE BOTTOM OF THE HOLE, APPROXIMATELY 2.5" [60mm] DEEP TO PROVIDE DRAINAGE. THE FIRST AND/OR SECOND POST CAN BE FIELD CUT TO LENGTH, PLACED IN THE HOLE AND BACKFILLED WITH SUITABLE BACKFILL. THE SOIL PLATE MAY BE TRIMMED IF REQUIRED.
- THE BREAKAWAY CABLE ASSEMBLY MUST BE TAUT. A LOCKING DEVICE (VICE GRIPS OR CHANNEL LOCK PLIERS) SHOULD BE USED TO PREVENT THE CABLE FROM TWISTING WHEN TIGHTENING NUTS.
- THE TERMINAL BREAK-AWAY SYSTEM SHALL MEET THE CRASH TEST AND EVALUATION CRITERIA (MASH) (NCHRP) REPORT 350.
- THE DETAILS PROVIDED ARE FROM ROAD SYSTEMS INC. THE CONTRACTOR SHALL PROVIDE THIS TYPE MASH SKT IMPACT HEAD WITH 350 SKT TERMINALS OR EQUAL FROM ANY APPROVED VENDOR.
- DIMENSIONS IN BRACKETS [ ] ARE METRIC.
- SEE THE CONTRACT SPECIAL CONTRACT REQUIREMENTS AND SUPPLEMENTAL SPECIFICATION FOR SECTION 617 FOR ADDITIONAL REQUIREMENTS.

ITEM	QTY	BILL OF MATERIALS	ITEM NO.
A	1	IMPACT HEAD	MS3000
B	1	W-BEAM GUARDRAIL END SECTION, 12 Go.	SF1303
C	1	FIRST POST TOP (6X6X $\frac{1}{8}$ " Tube)	MTPHP1A
D	1	FIRST POST BOTTOM (6' W6X15)	MTPHP1B
E	1	SECOND POST ASSEMBLY TOP	UHP2A
F	1	SECOND POST ASSEMBLY BOTTOM	HP2B
G	1	BEARING PLATE	E750
H	1	CABLE ANCHOR BOX	S760
J	1	BCT CABLE ANCHOR ASSEMBLY	E770
K	1	STRUT	MS785
L	6	6x9 (6x8.5) STEEL POST	P621
M	6	RECYCLED PLASTIC BLOCK OR EQUIV.	CBSP-14
N	1	W-BEAM MGS RAIL SECTION (9'-4 1/2")	G12025
O	2	W-BEAM MGS RAIL SECTION (12'-6")	G1203A
HARDWARE (ALL DIMENSIONS IN INCHES)			
a	2	5/16 x 1 HEX BOLT GRD 5	B5160104A
b	4	5/16 WASHER	W0516
c	2	5/16 HEX NUT	N0516
d	25	5/8 Dia. x 1 1/4 SPLICE BOLT (POST #2)	B580122
e	2	5/8 Dia. x 9 HEX BOLT A449	B580904A
f	3	5/8 WASHER	W050
g	33	5/8 Dia. H.G.R. NUT	N050
h	1	3/4 Dia. x 8 1/2 HEX BOLT GRD A449	B340854A
j	1	3/4 Dia. HEX NUT	N030
k	2	1 ANCHOR CABLE HEX NUT	N100
l	2	1 ANCHOR CABLE WASHER	W100
m	8	1/2 RSI SHOULDER BOLT W/WASHER	SB12A
n	8	1/2 STRUCTURAL NUT	N012A
o	8	1/2 STRUCTURAL WASHER	W012A
p	1	BEARING PLATE RETAINER TIE	CT-100ST
q	6	5/8" x 10" H.G.R. BOLT	B581002

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GUARDRAIL END TREATMENT  
MSKT-TL3-8 LAYOUT; SHEET 2 of 2

DRAWN BY: NRDOT DATE: 3/17/2020  
DESIGNED BY: NRDOT DATE: 7/05/2019  
REVISED: 3/18/2020 BY: Harold.Riley  
\$FILES\$

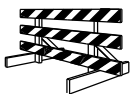

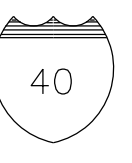




C:\Users\HaroldRiley\0 Drive\projects backup\N9402(2)- done\Microstation\final drawings\30\_N9402\_Traffic\_Control\_2017-03-27.dgn

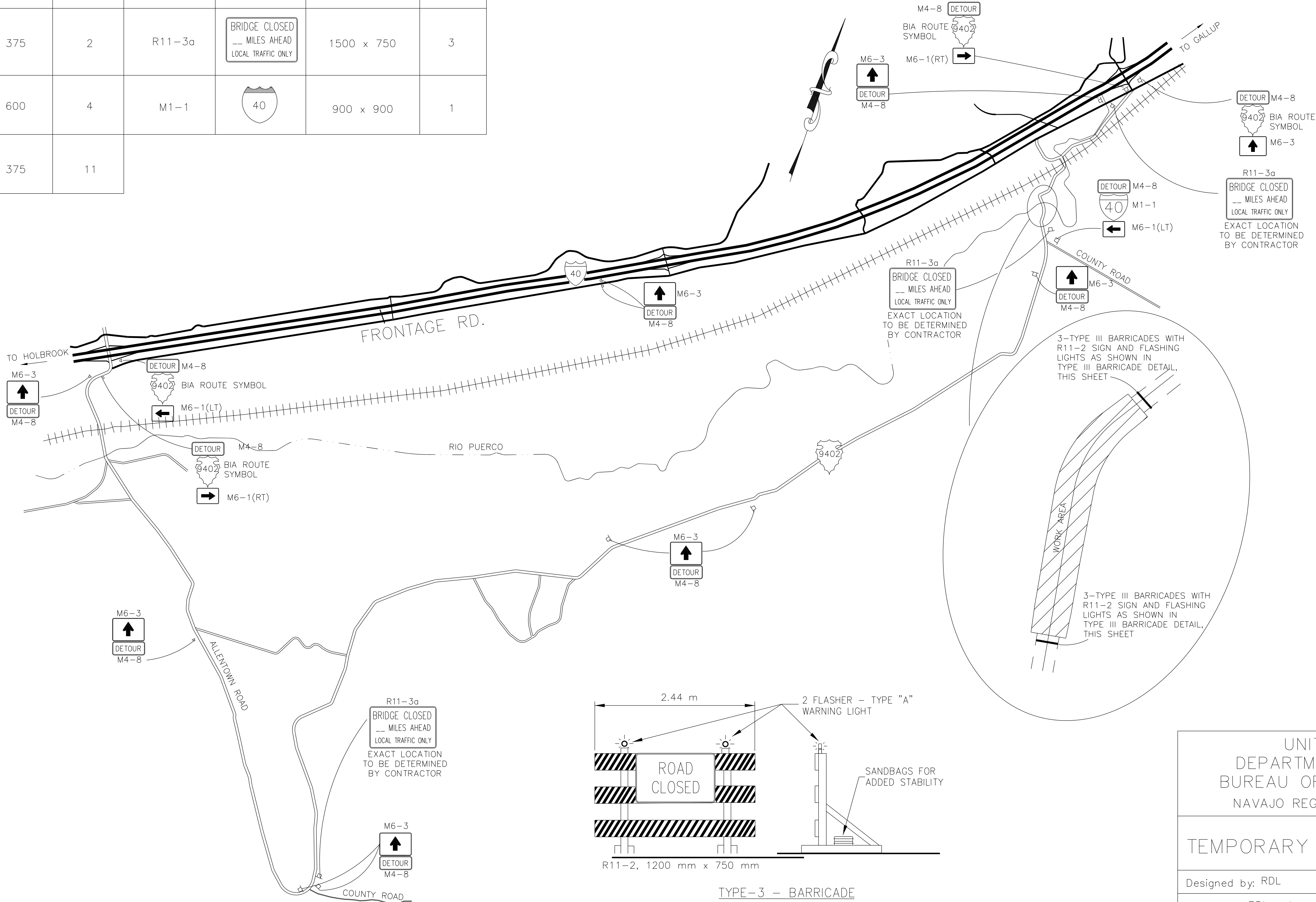
REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET
NAVAJO	AZ	NAVAJO	N9402	N9402(2)1,2&3	30 of 40

TEMPORARY TRAFFIC CONTROL DEVICES

DESIGNATION	DETAIL	MINIMUM SIZE (mm)	QUANTITY	DESIGNATION	DETAIL	MINIMUM SIZE (mm)	QUANTITY
M4-8	DETOUR	600 x 300	13	R11-2	ROAD CLOSED	1200 x 750	6
M6-1(LT)	←	525 x 375	2	Type III Barricade		As Shown	6
M6-1(RT)	→	525 x 375	2	R11-3a	BRIDGE CLOSED --- MILES AHEAD LOCAL TRAFFIC ONLY	1500 x 750	3
BIA ROUTE SYMBOL		600 x 600	4	M1-1		900 x 900	1
M6-3	↑	525 x 375	11				

GENERAL NOTES

1. THE TEMPORARY TRAFFIC CONTROL DETAILS SHOWN ARE TO BE CONSIDERED A GUIDE SHOWING ONLY MINIMUM REQUIREMENTS. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PREPARING AND IMPLEMENTING HIS/HER TRAFFIC CONTROL PLAN IN ACCORDANCE WITH THESE DETAILS AND THE MUTCD, UNDER CONTRACT ITEM 63501.
2. ALL CONSTRUCTION SIGNING, CHANNELIZING DEVICES AND DELINEATORS SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION AND THE SUPPLEMENTAL SPECIFICATIONS FOR THIS PROJECT.
3. BIDDERS ARE STRONGLY ADVISED TO DRIVE THE PROPOSED DETOUR ROUTE TO DETERMINE NEEDED (MUTCD) DETOUR REQUIREMENTS. THERE MAY BE ADDITIONAL INTERSECTING ROADS, OR OTHER FEATURES, THAT REQUIRE ADDITIONAL SIGNAGE.
4. THE CONTRACTOR MAY USE THE PROPOSED DETOUR ROUTE SHOWN, PROVIDED A GOVERNMENT APPROVED DETOUR/SIGNAGE PLAN IS DEVELOPED. THE CONTRACTOR MAY, HOWEVER, SUBMIT FOR APPROVAL AN ALTERNATE DETOUR ROUTE(S) PLAN.



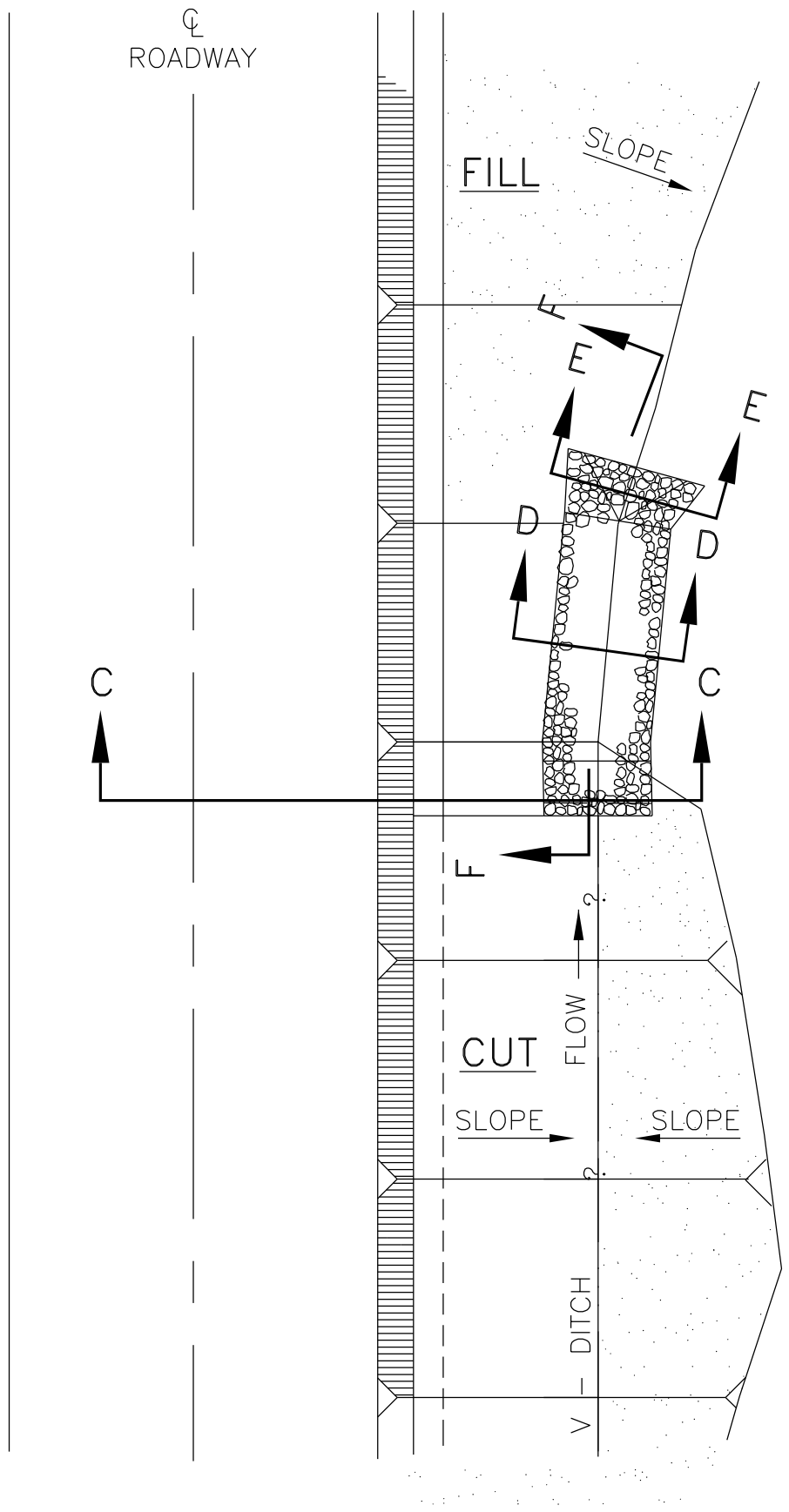
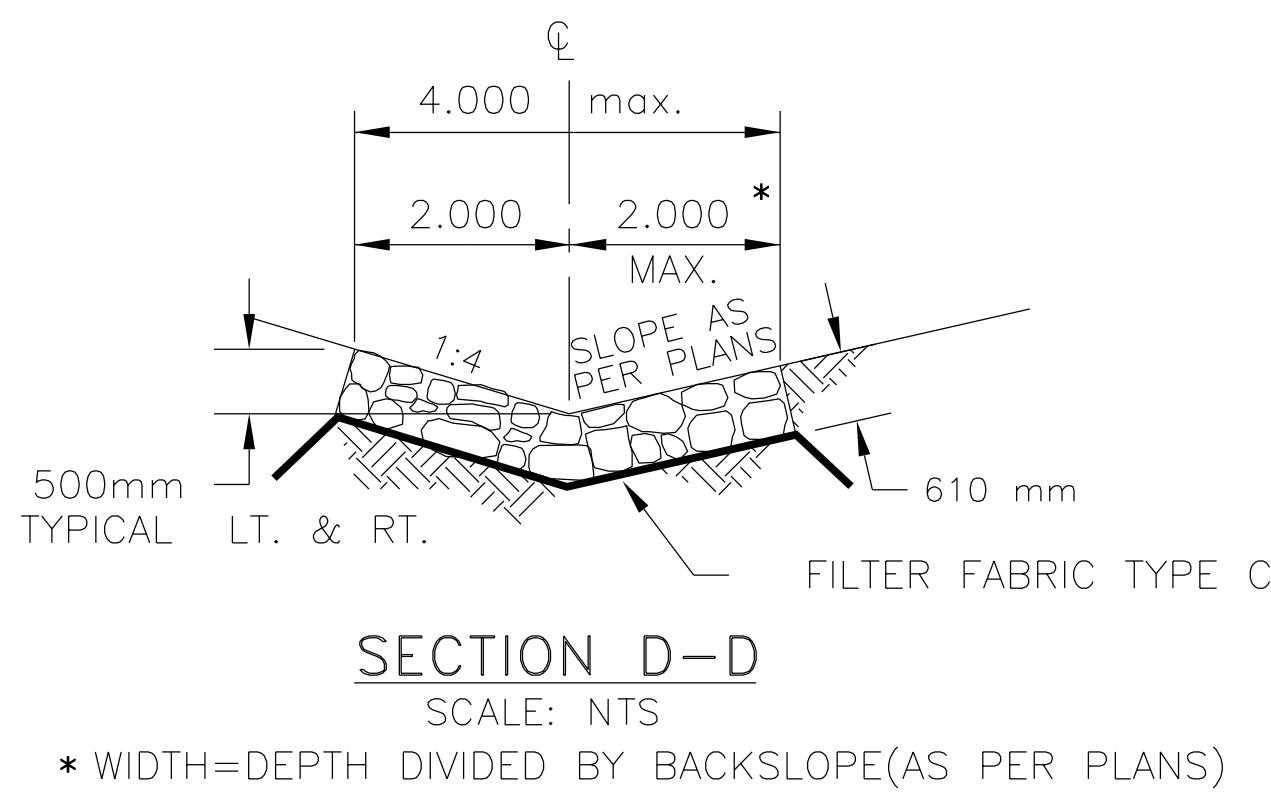
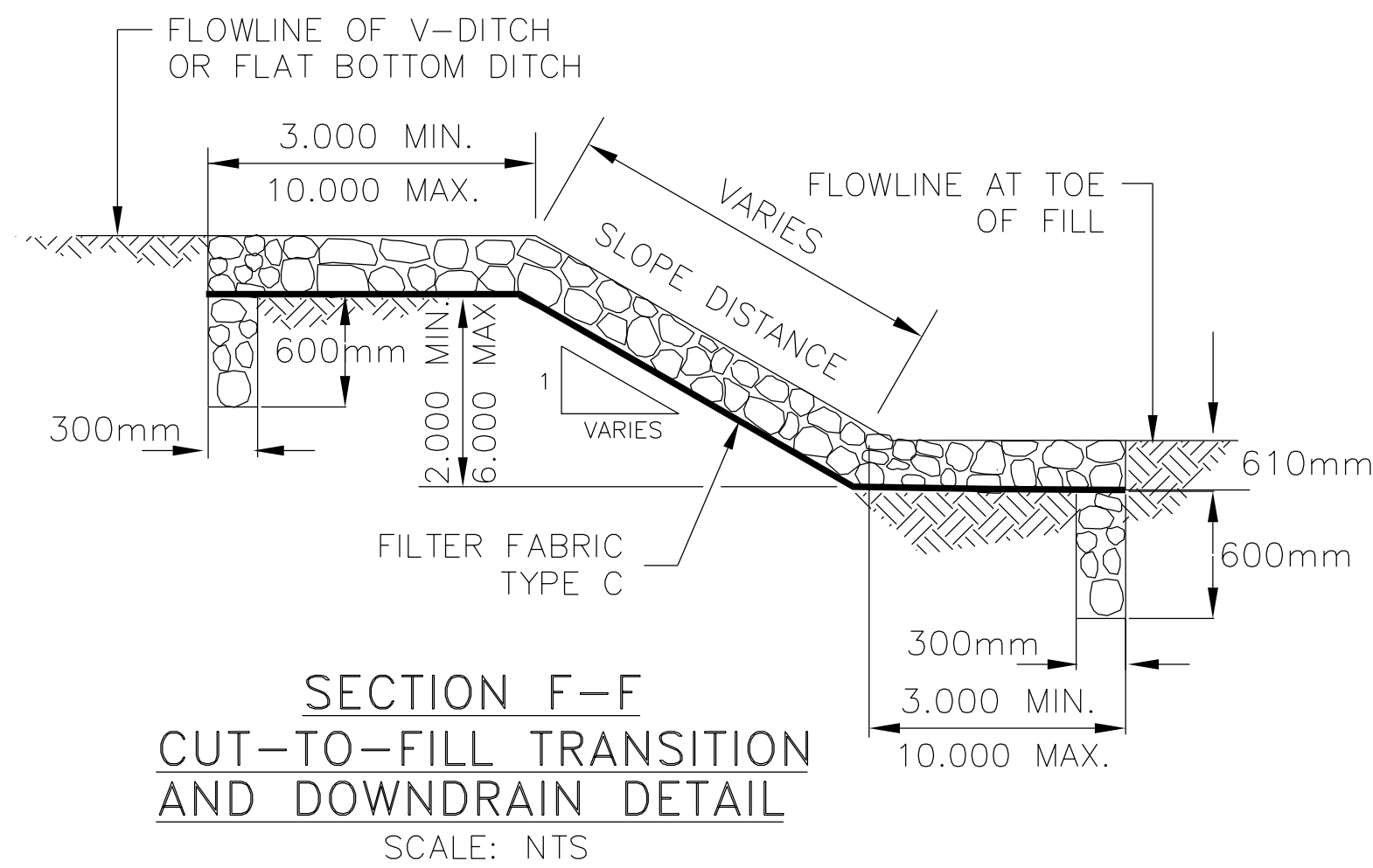
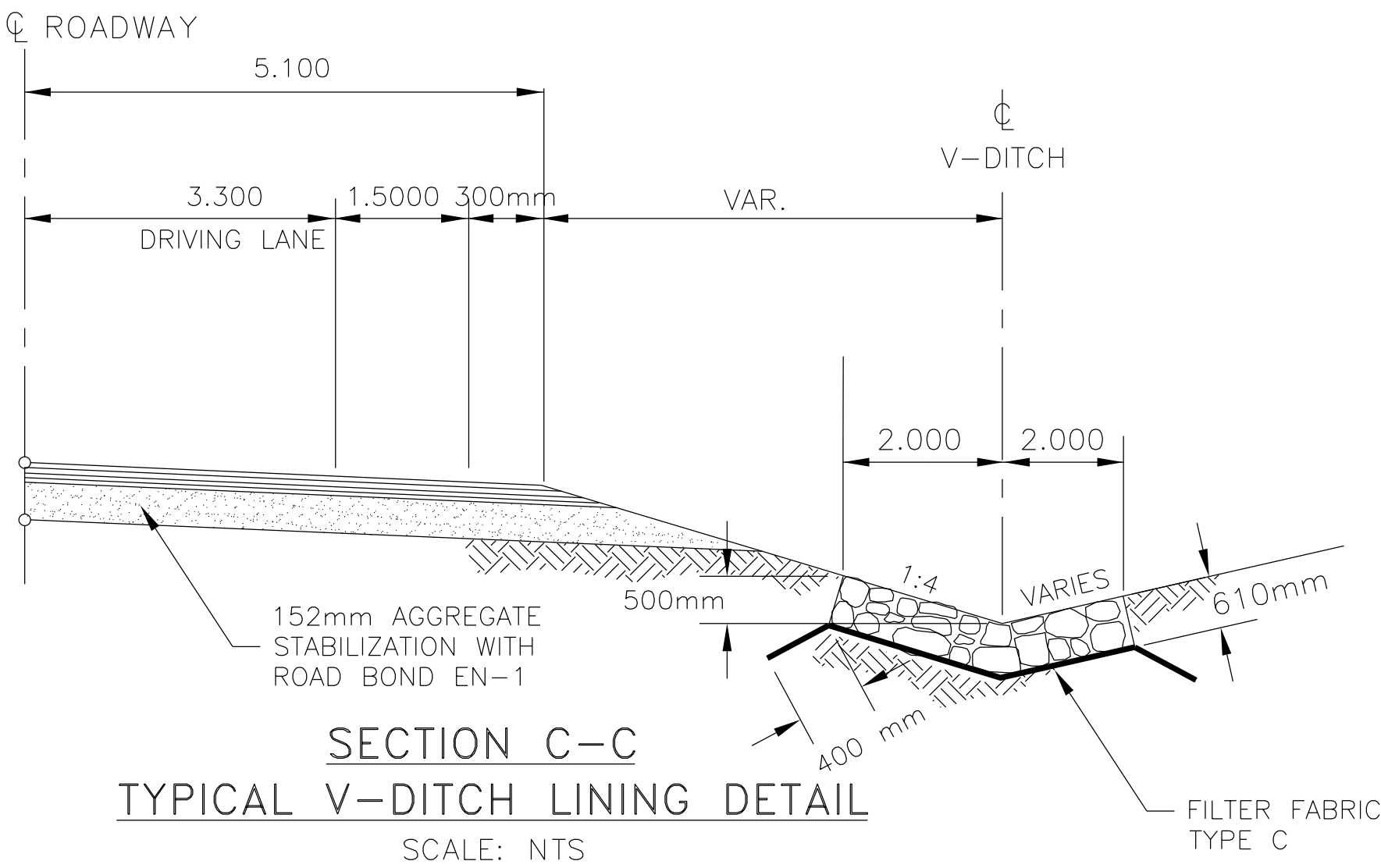
UNITED STATES  
DEPARTMENT OF INTERIOR  
BUREAU OF INDIAN AFFAIRS  
NAVAJO REGIONAL OFFICE - D.O.T.

TEMPORARY TRAFFIC CONTROL

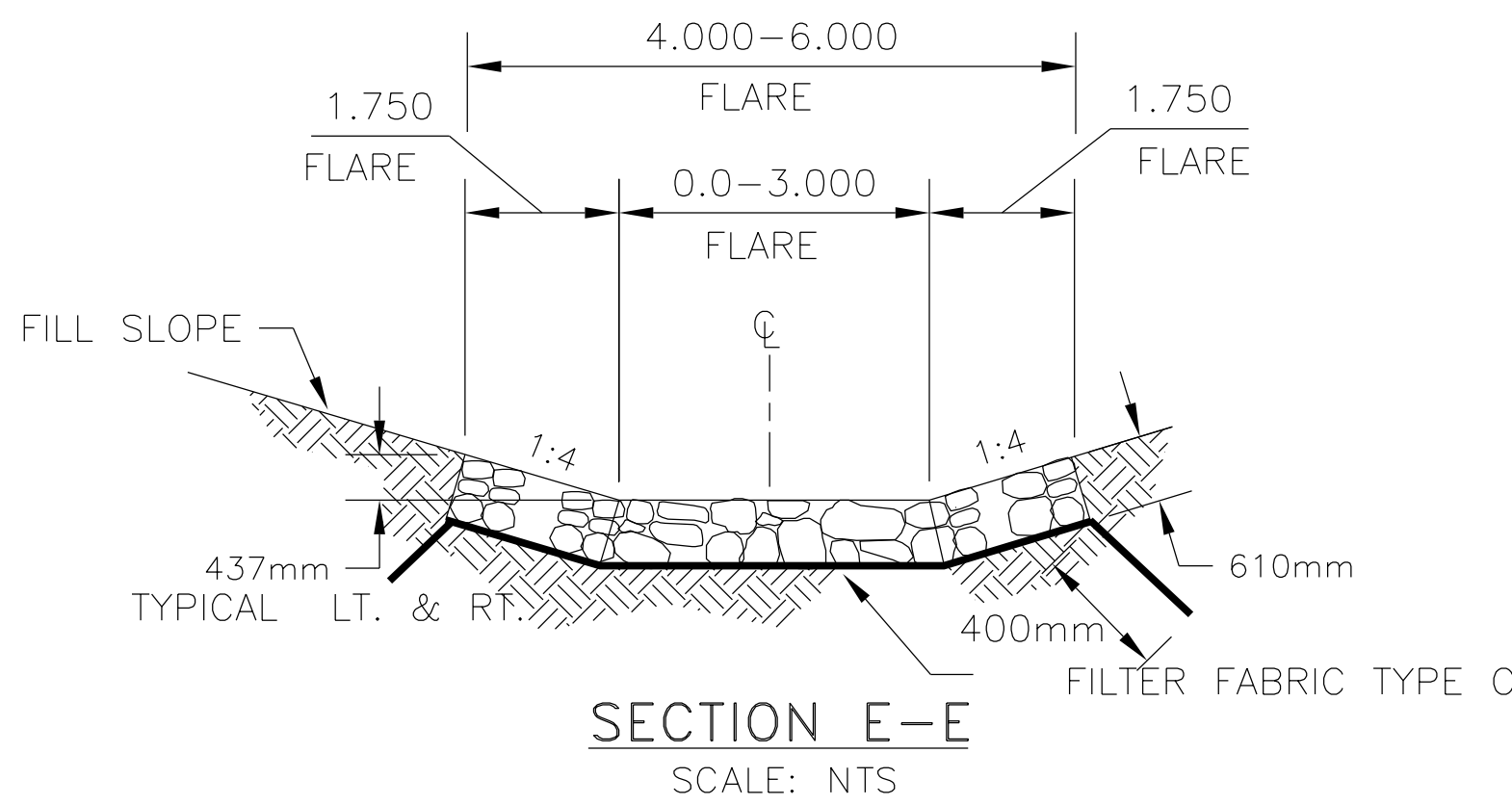
Designed by: RDL	
Drawn by: RDL, rsh	Date: 3/27/17
Revised by: HRiley	Date: 3/19/2020
File Name: 30_N9402_Traffic_Control	



REGION	STATE	RESERVATION	ROUTE	PROJECT	SHEET
NAVAJO	AZ	NAVAJO	N9402	N9402(2)1,2&3	31 of 40

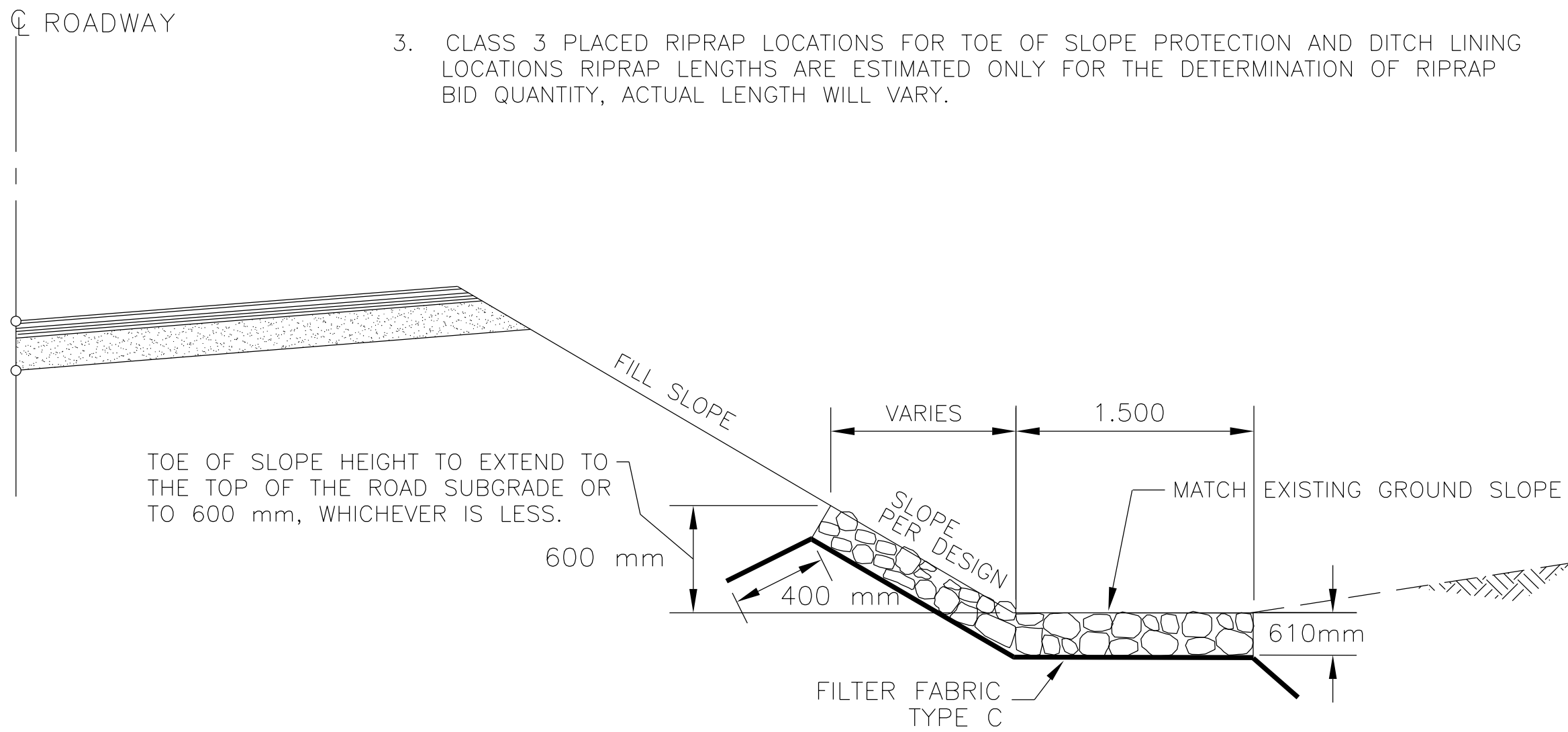


DITCH CUT-TO-FILL TRANSITION  
SCALE: NTS



### GENERAL NOTES

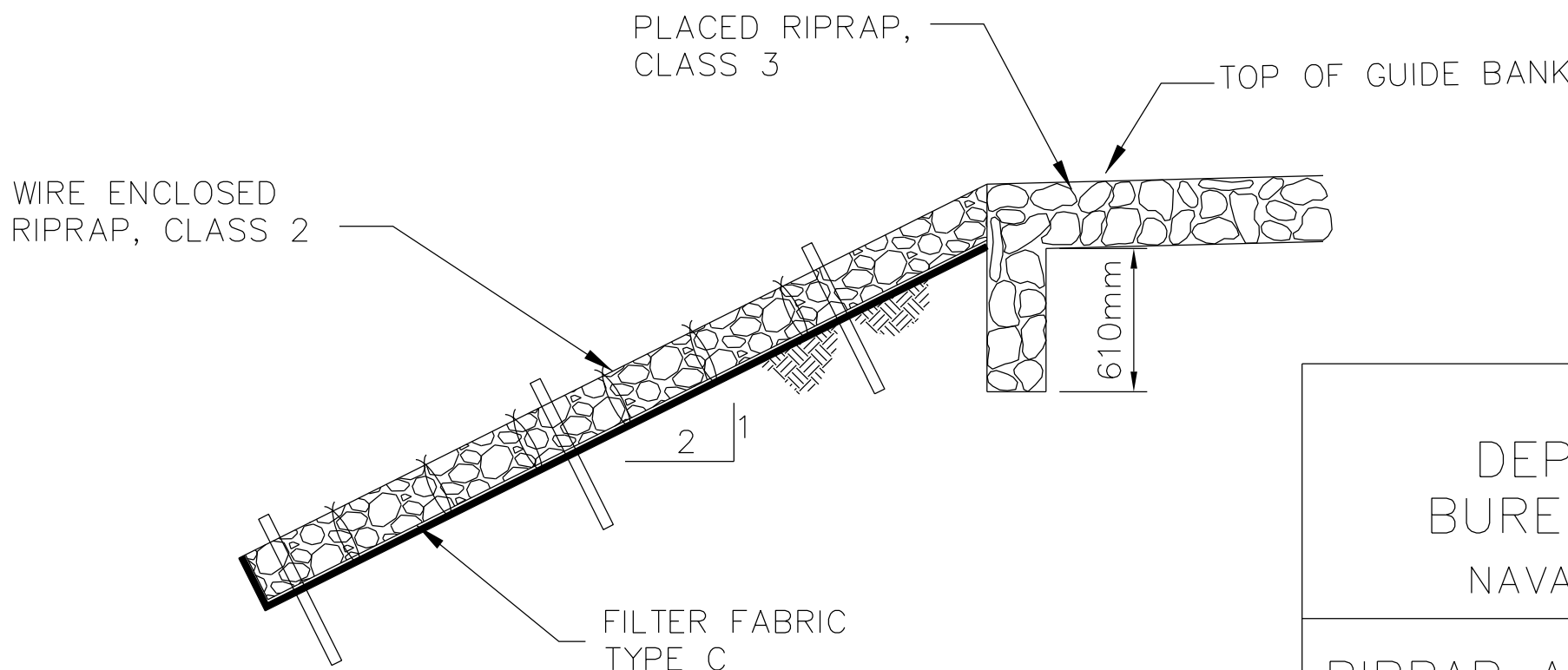
- SEE SHEET 02 FOR GENERAL NOTES.
- CLASS 3 PLACED RIPRAP LOCATIONS FOR CUT-TO-FILL TRANSITIONS, RIPRAP LENGTHS ARE ESTIMATED ONLY FOR THE DETERMINATION OF RIPRAP BID QUANTITY, ACTUAL LENGTH WILL VARY.
- CLASS 3 PLACED RIPRAP LOCATIONS FOR TOE OF SLOPE PROTECTION AND DITCH LINING LOCATIONS RIPRAP LENGTHS ARE ESTIMATED ONLY FOR THE DETERMINATION OF RIPRAP BID QUANTITY, ACTUAL LENGTH WILL VARY.



TOE OF SLOPE PROTECTION WITH PLACED RIPRAP, CLASS 3

### CONSTRUCTION NOTES:

- IN TOE OF SLOPE AREAS WITH EXISTING GROUND SLOPING AWAY FROM ROADWAY, RIPRAP PROTECTION TO BE DELETED.
- THE DITCH LINING AND TOE OF SLOPE DETAILS SHOWN ON THIS SHEET REPRESENT THE TWO (2) TYPES OF RIPRAP PROTECTION TO BE IN THE GENERAL STATIONS SHOWN FOR ITEM 25101. HOWEVER, IT IS THE COR/COTR'S RESPONSIBILITY, BASED ON FINAL EARTH WORK GRADING AND EXISTING GROUND CONDITIONS, TO FIELD DETERMINE THE TYPE OF REQUIRED RIPRAP PROTECTION FOR SPECIFIC AREAS. THE COR/COTR SHALL PROVIDE THE CONTRACTOR WITH A RIPRAP LOCATION AND TYPE PLAN PRIOR TO INSTALLATION OF THE RIPRAP.
- IN ADDITION TO IDENTIFYING THE DITCH LINING VS. TOE OF SLOPE PROTECTION LAYOUT PLAN, THE COR/COTR WILL ALSO REVIEW ALL ROCK AREAS AFTER THE DITCHES HAVE BEEN "ROUGHED-IN". IF IN THE OPINION OF THE COR/COTR, THE EXISTING ROCK IS "STABLE", THE COR/COTR MAY SELECT TO DELETE SECTIONS OF RIPRAP PROTECTION. THE COR/COTR WILL ALSO REVIEW TOE OF SLOPE AREAS FOR DIRECTION OF FLOW. IF THE EXISTING GROUND SLOPES AWAY FROM THE TOE OF SLOPE, IN THESE AREAS, THE RIPRAP CAN BE DELETED.
- FILTER FABRIC SHOWN HEREIN SHALL BE EARTHWORK GEOTEXTILE TYPE C. PLACEMENT OF FILTER FABRIC SHALL BE INCIDENTAL TO ITEM 25101, PLACED RIPRAP CLASS 3.
- SEE SCHEDULES FOR SLOPE PROTECTION ON SHEET 3, ITEM 25101.

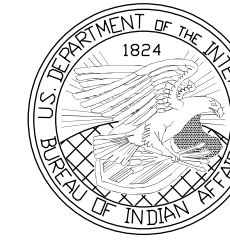


DITCH OUTLET AT GUIDE BANK  
SCALE: NTS  
(At Station 0+341, right)

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NAVAJO REGIONAL OFFICE - D.O.T.

RIPRAP AT CUT-TO-FILL TRANSITION  
AND TOE-OF-SLOPE PROTECTION

Designed by: BOR  
Drawn by: BOR, rsh Date: 11/15/17  
Revised by: HRiley Date: 3/19/2020  
File Name: 31\_N9402\_CutFill Ditch

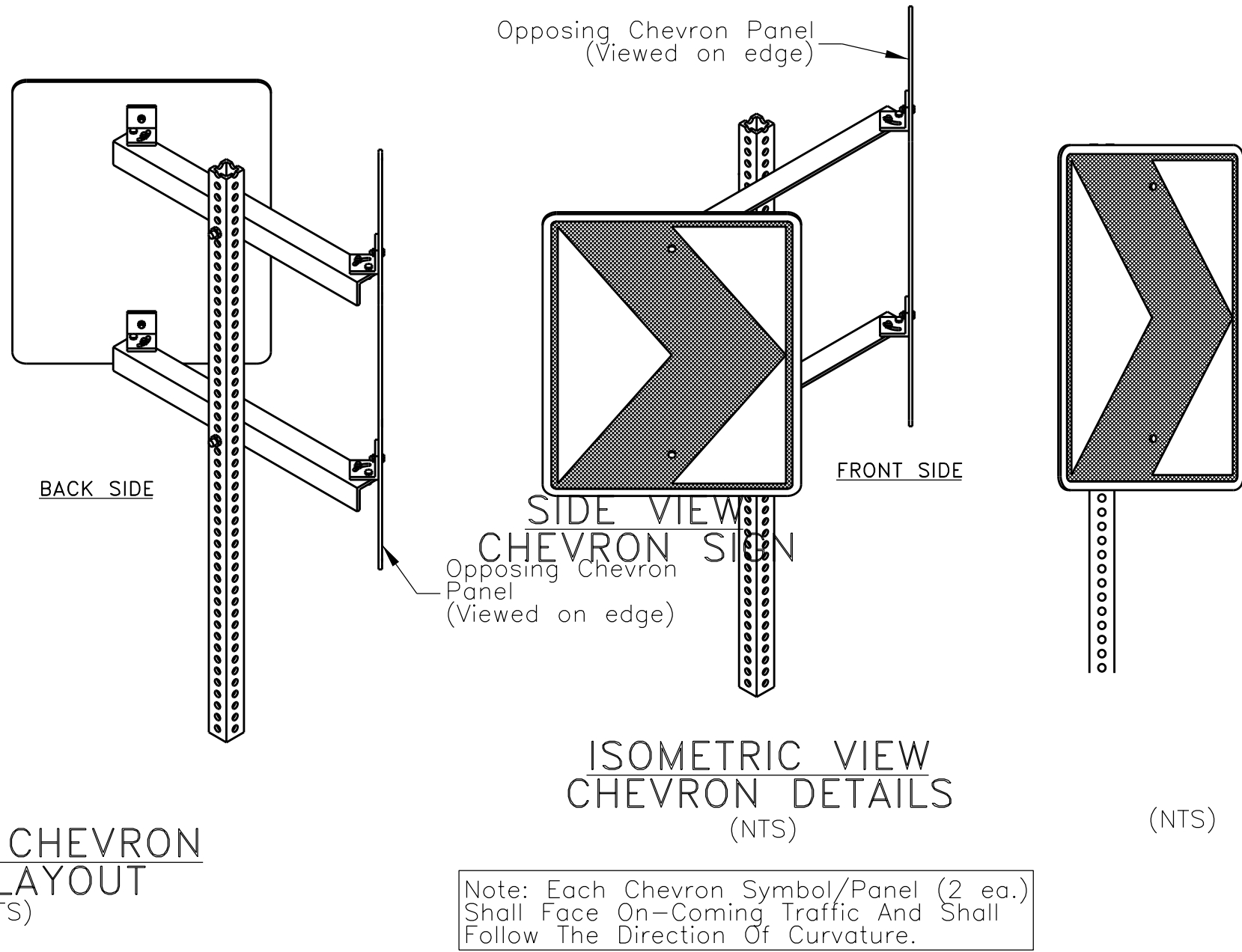
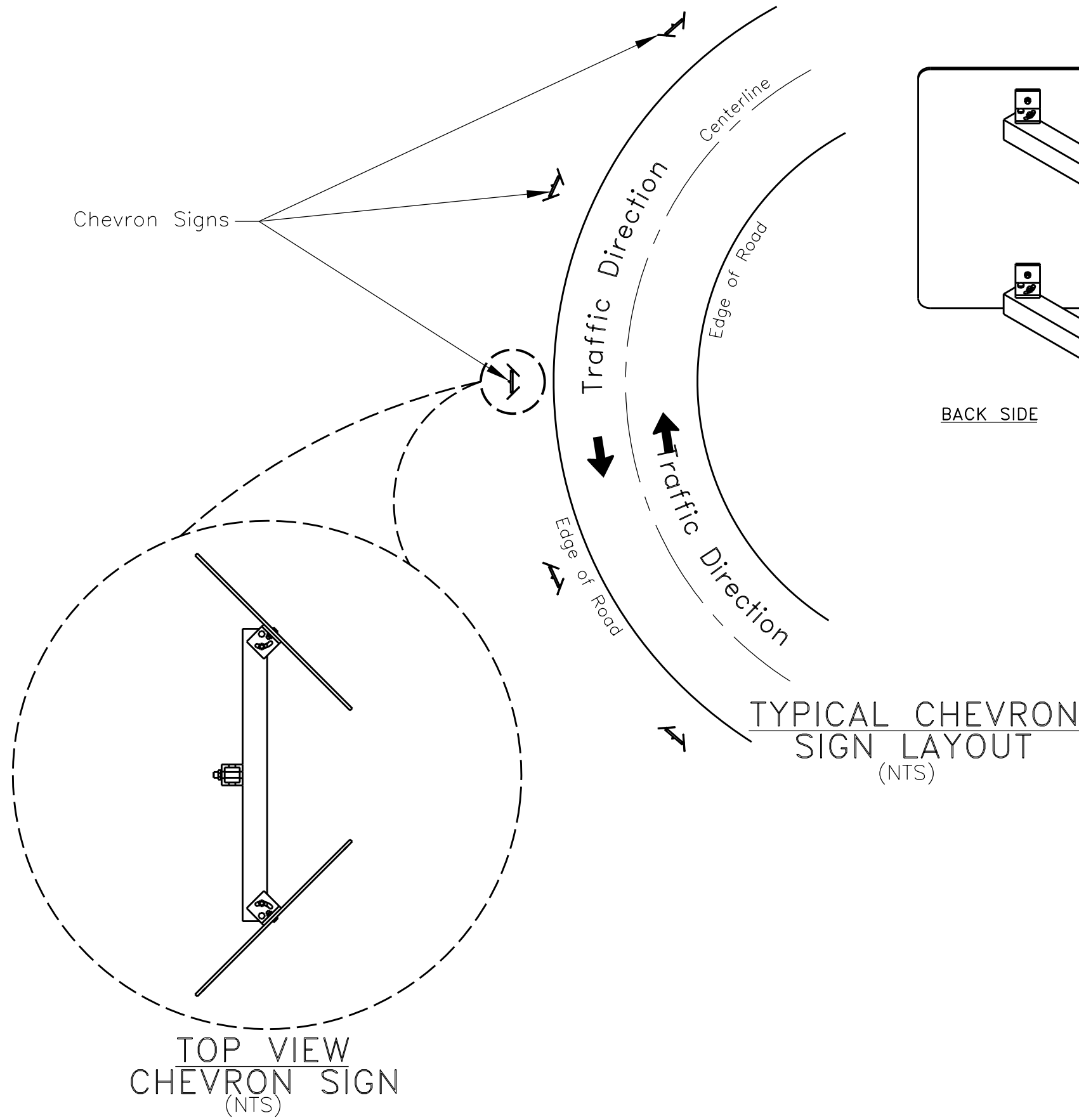
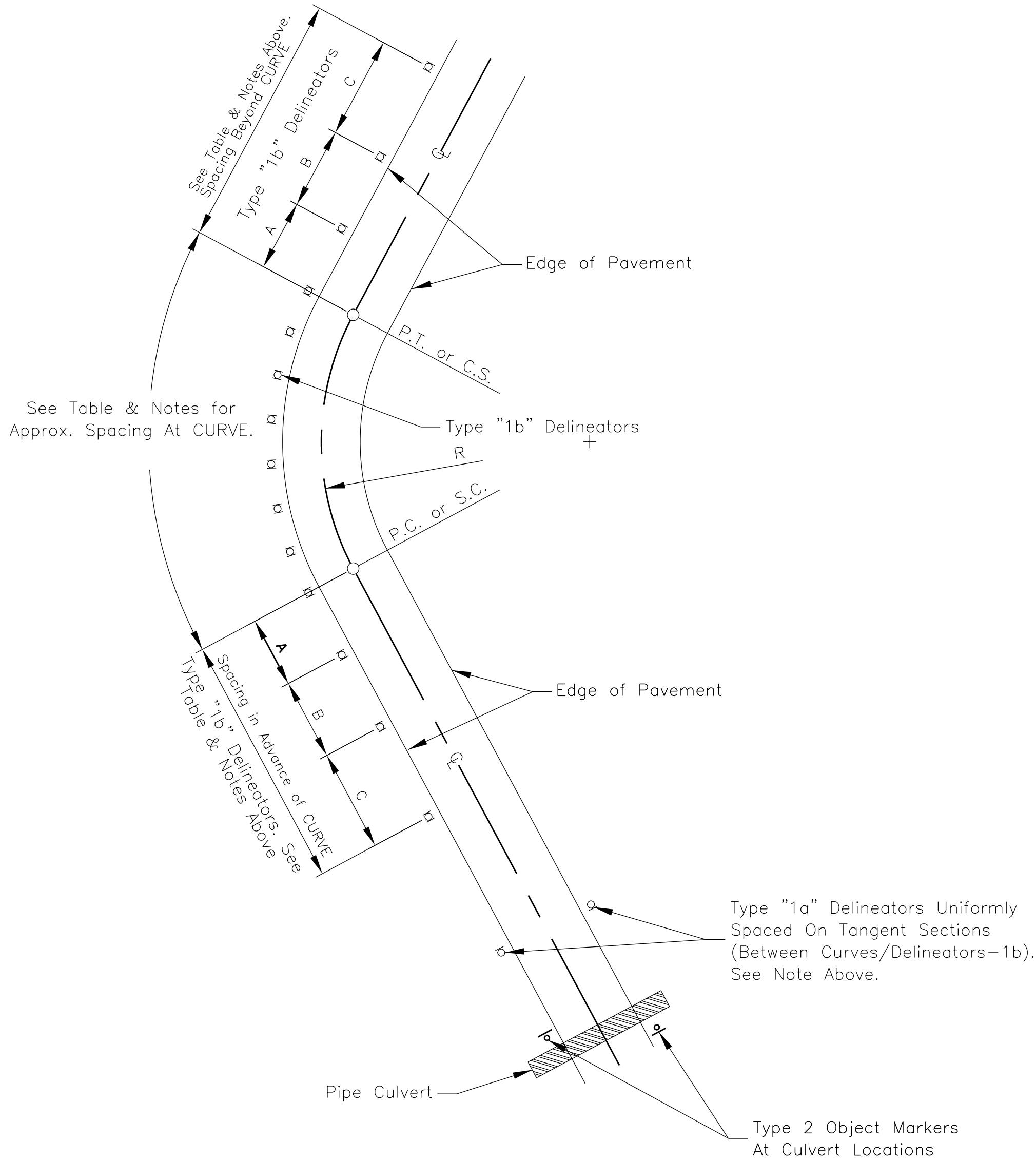


RADIUS OF CURVE (m)	APPROXIMATE SPACING (S) ON CURVE (m)	SPACING ON ADVANCE OF OR BEYOND A CURVE (m)		
		A (2S)	B (3S)	C (6S)
15	6	12	18	36
35	8	16	24	48
55	11	22	33	66
75	13	26	39	78
95	15	30	45	90
125	18	36	54	108
155	20	40	60	120
185	22	44	66	132
215	24	48	72	144
245	26	52	78	156
275	27	54	81	162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

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

NOTE: Delineator and Object Markers shall be installed 610 mm (min) or 1219 mm (normal), or in-line with the guardrail posts, measured from Roadway or shoulder edge.



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N9402	N9402(2)1,2&3	32	40

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DELINEATORS & OBJECT MARKER  
LAYOUT DETAIL & QUANTITY TABLES

DRAWN BY: NRDOT DATE: 1/24/2013  
DESIGNED BY: NRDOT DATE: 1/24/2013  
REVISED: 11/15/2017 BY: rsh  
FILE NAME: 32\_N9402\_STD Delineators

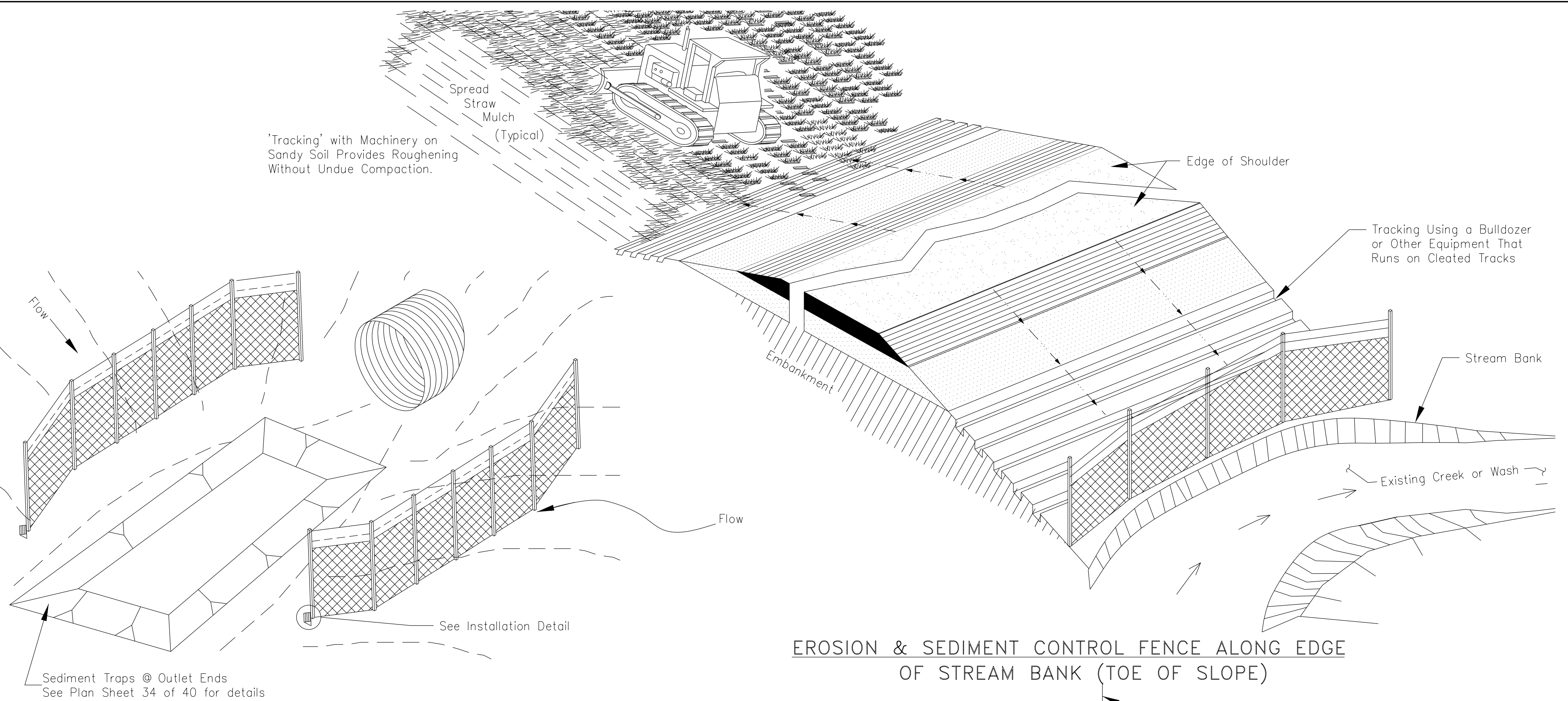


REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N9402	N9402(2)2&3	33	40

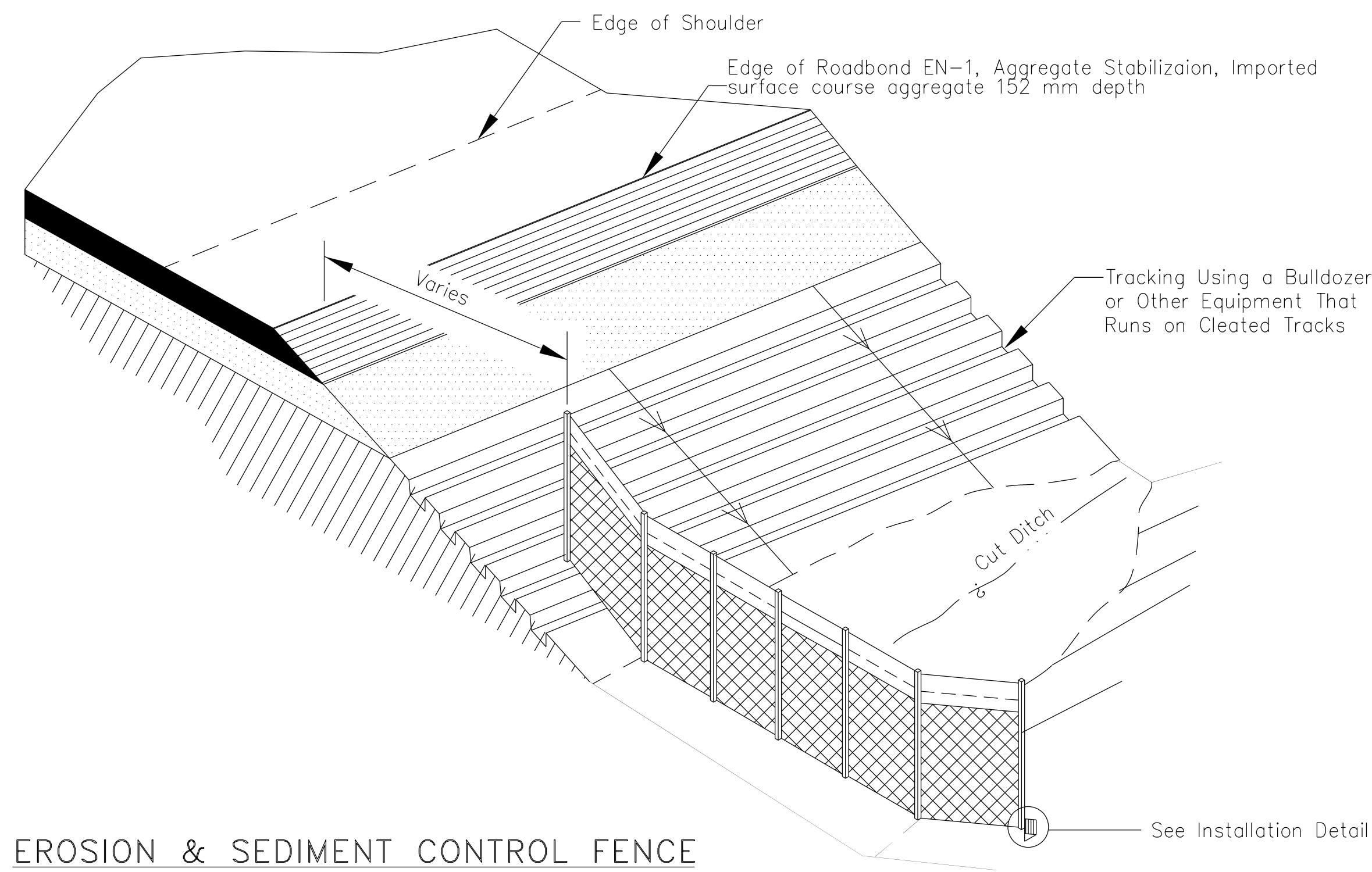
GENERAL NOTES

1. The Contractor Shall Prepare and Submit a Storm Water Pollution Prevention Plan (SWPPP) in Full Details For All Phases of the Work For Review and Approval at Least 14 Calendar Days Before Implementation. The Plan Shall Meet the Requirements Herein and in Section 157 of FP-14 As Modified in the Supplemental Specifications. See Special Contract Requirements For NPDES Permit Requirements.
2. The Silt Fencing Consists of 914 mm Sediment Control Fabric Cloth With Buried-Toe, and Steel Posts (Tee or U Type) Spaced at 2.0 m With 2 mm Size Welded Wire Back-Up Fence.
3. Woven Wire Fabric to Be Fastened Securely to Fence Posts With Wire Ties or 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 Class 1 Type C Under Sub-Section 714.01 of FP-14.
4. When Two Sections of Filter Cloth Adjoin Each Other They Shall Be Overlapped By 152 mm and Folded. Maintenance Shall Be Performed as Needed and Material Removed to Prevent "Bulges" Developing in the Silt Fence.
5. The Silt Fence Shall Be Installed Along the Roadway Ditches, Along the Bottom of All Embankment Fills That Are Within 2.0 m of Existing Streams, Creeks, or Washes, and in Areas With Highly Erosive Soils. Silt Fence to Be Placed 1-2 Meters Toward the R.O.W. Lines From the Base of Fill Slopes 1:3 or Steeper in Accordance With Section 157 of FP-14 and the Supplemental Specifications.
6. Straw Bales May Be Used at the Top of Cut Backslopes and For Dikes Provided They Are Properly Anchored With Steel Fence Posts or 51x51 mm X 1.22 m Wood Stakes (Two Per Bale) Chored 508 mm Into the Natural Ground. Straw Bales Shall Be Certified 0.5% Weed Free. Do Not Use Straw Bales in Areas of Concentrated Flow Nor in Cut Ditches.
7. Furnishing and Placement of Silt Fence Material and Other Erosion Control Measures Shall Be Included in the Unit Price Bid For Item 15701-0000.
8. Sediment/Silt Fencing Shall Be Placed at All Locations Where Embankments Have Slope Distances of 30.0 m or Greater. The Sediment Fencing Will Be Placed at the Toe of Slopes Offset 1-2 Meters.
9. The Contractor Shall Inspect and Maintain All SWPPP Measures Weekly and After Each Significant Storm Event (i.e. 25 mm of Moisture in 24 Hours).
10. Prior To Acceptance, All Project Areas (as Determined By the COR) Showing Erosion Damage Caused by the Contractor's Failure to Properly Maintain His Erosion Control Structures Shall Be Repaired. Any Specified Erosion Control Materials, Structures, or Devices Damaged or Lost Due to Improper Installation, the Contractor's Negligence or Improper Maintenance, Shall Also Be Repaired and/or Replaced Prior to Final Acceptance at the Contractor's Entire Expense.

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

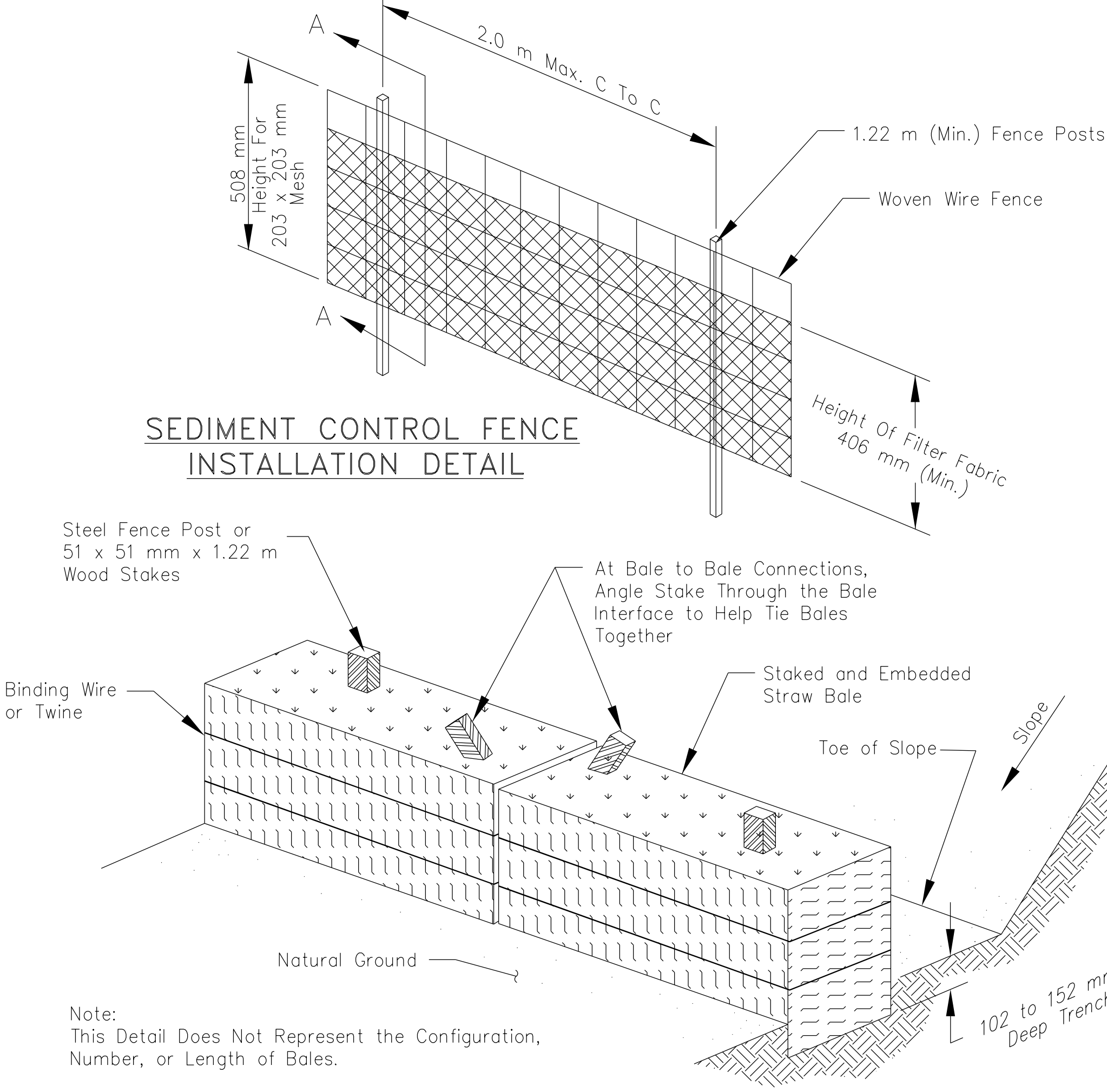


EROSION & SEDIMENT CONTROL FENCE AT DRAINAGE STRUCTURE

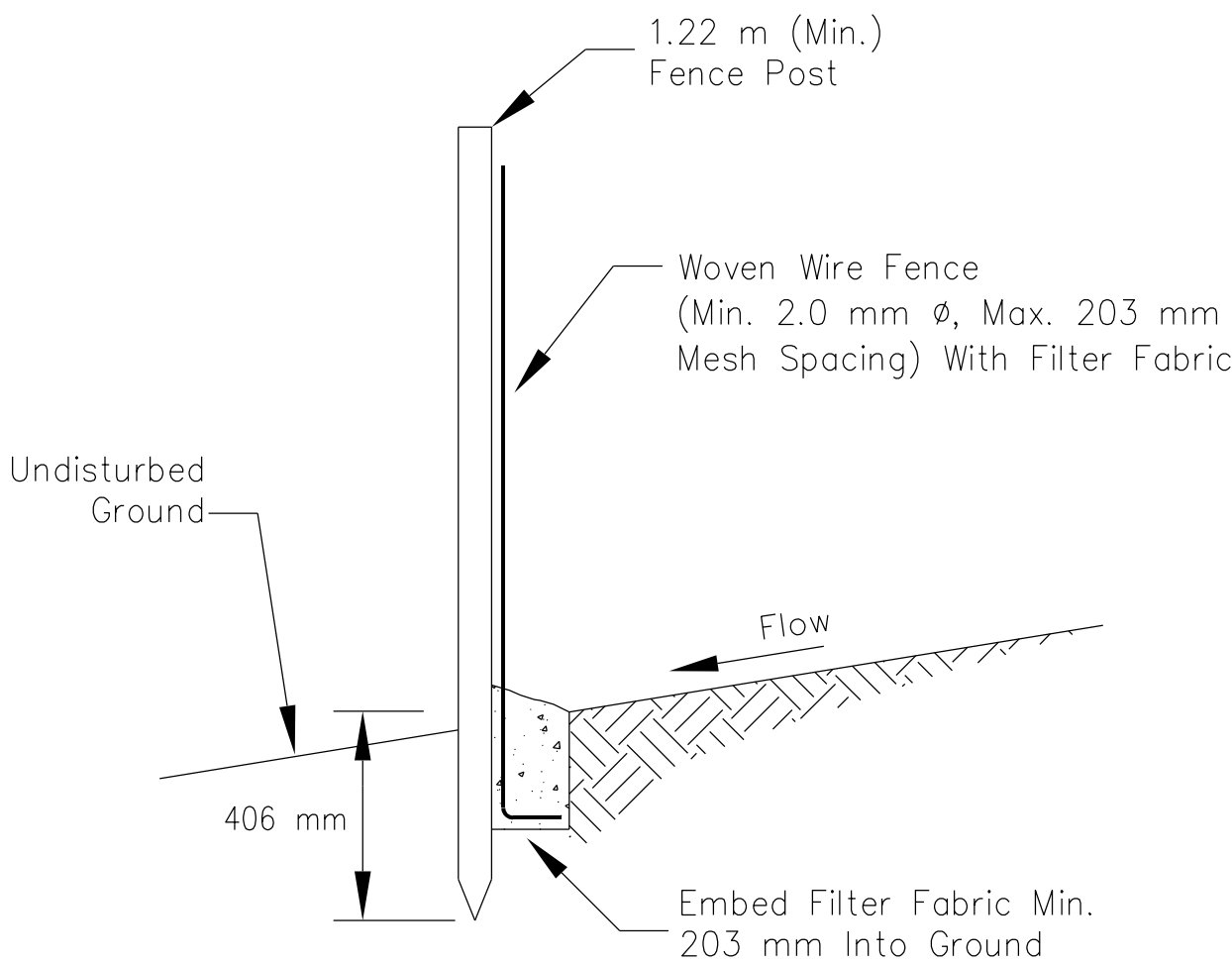


EROSION & SEDIMENT CONTROL FENCE IN MINOR SWALES OR CUT DITCHES (APPROX. 60 m SPACING FOR FABRIC)

SEDIMENT CONTROL FENCE INSTALLATION DETAIL



TYPICAL STRAW BALE STAKING AND TRENCHING DETAIL



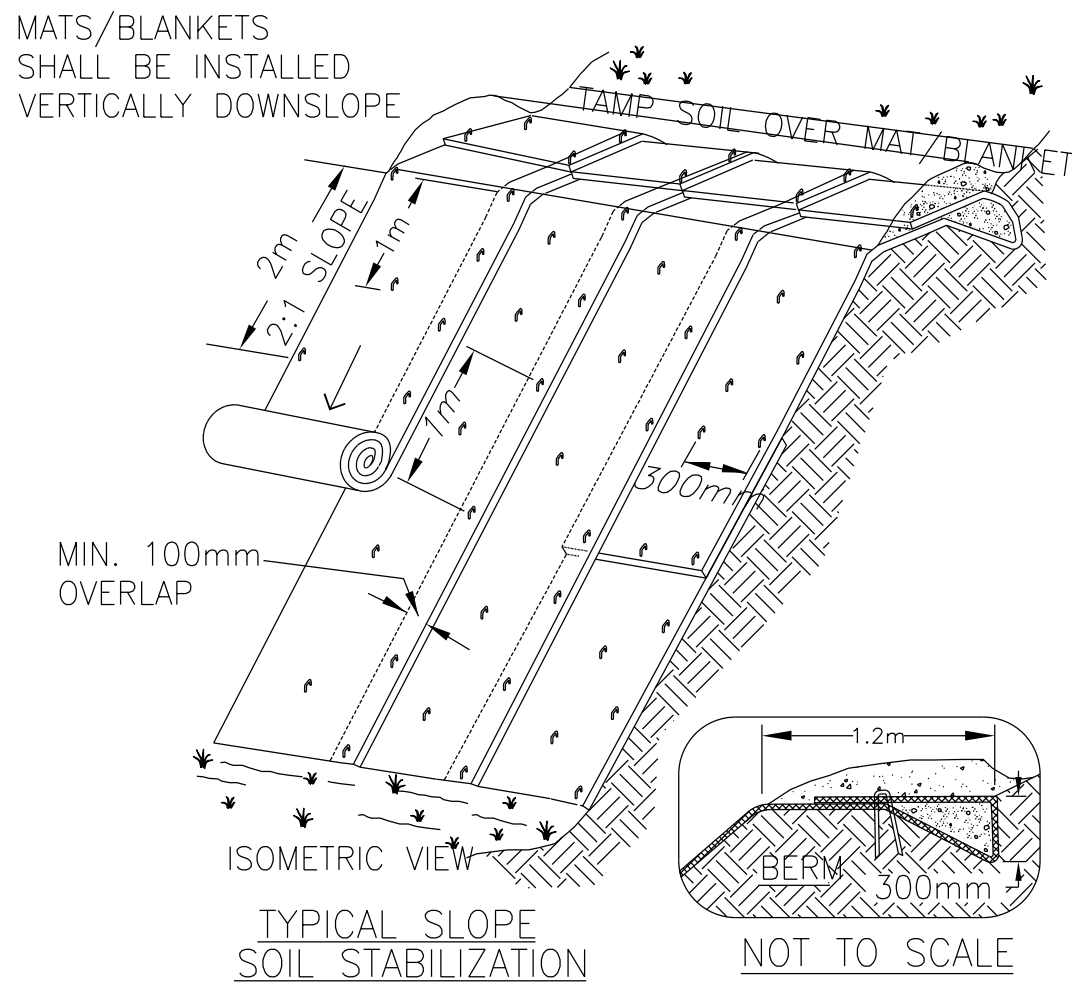
SECTION A-A

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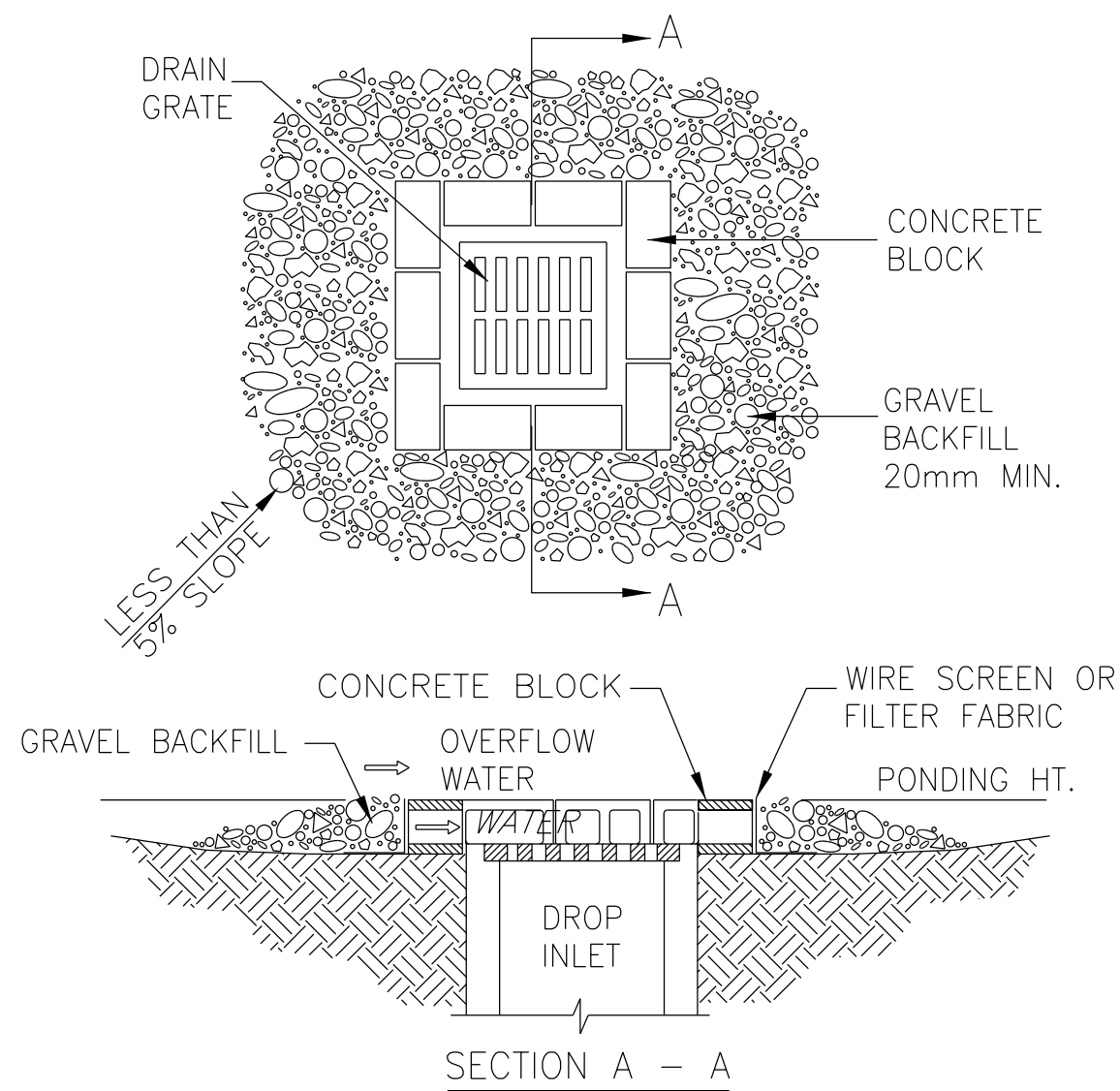
STORMWATER POLUTION &  
EROSION CONTROL DETAILS

DRAWN BY: NRDOT DATE: 1/24/2013  
DESIGNED BY: NRDOT DATE: 1/24/2013  
REVISED: 3/19/2020 BY: HRiley  
\$FILES\$





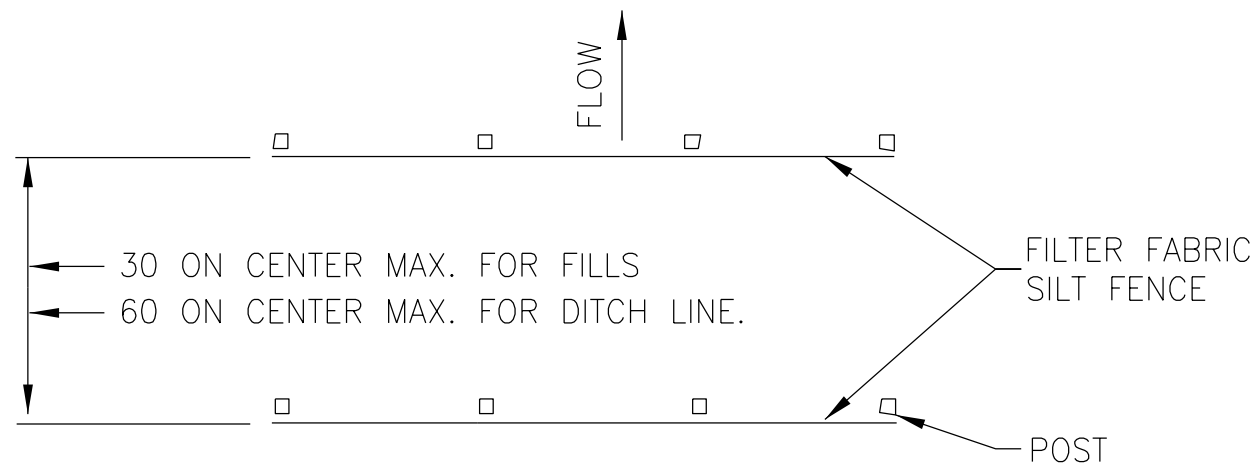
EROSION BLANKETS & TURF REINFORCEMENT SLOPE INSTALLATION



BLOCK AND GRAVEL DROP INLET SEDIMENT BARRIER

BLOCK AND GRAVEL DROP INLET NOTES:

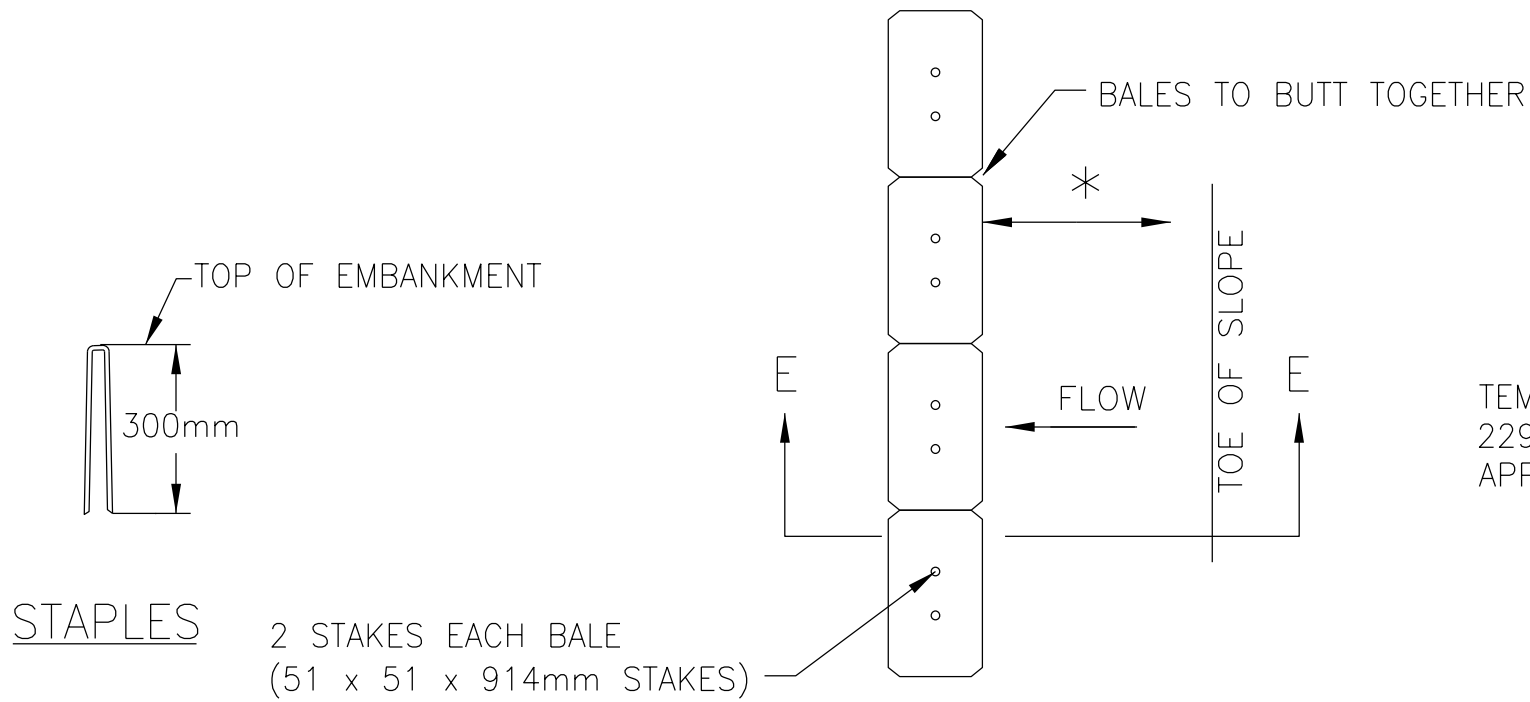
1. DROP INLET SEDIMENT BARRIERS ARE TO BE USED FOR SMALL, NEARLY LEVEL DRAINAGE AREAS (LESS THAN 5% SLOPE).
2. EXCAVATE A BASIN OF SUFFICIENT SIZE ADJACENT TO THE DROP INLET.
3. THE TOP OF THE STRUCTURE (PONDING HEIGHT) MUST BE WELL BELOW THE GROUND ELEVATION DOWNSLOPE TO PREVENT RUNOFF FROM BYPASSING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



SILT FENCE EROSION CHECK PLAN

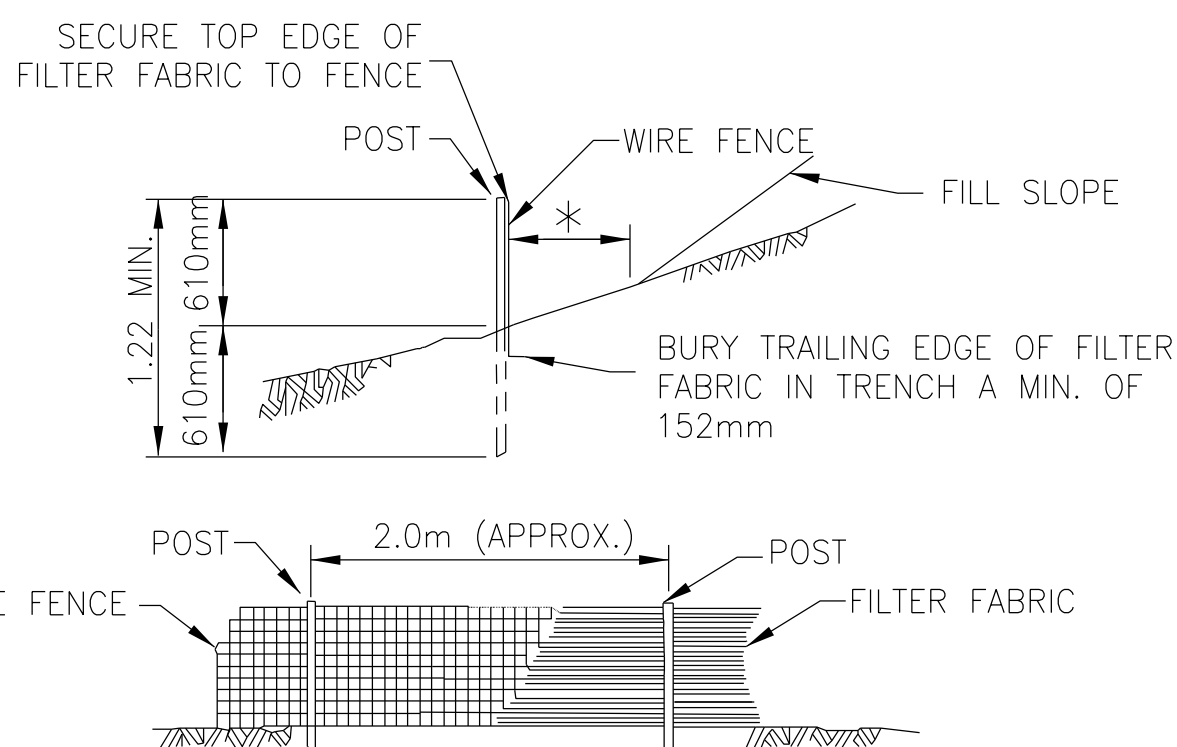
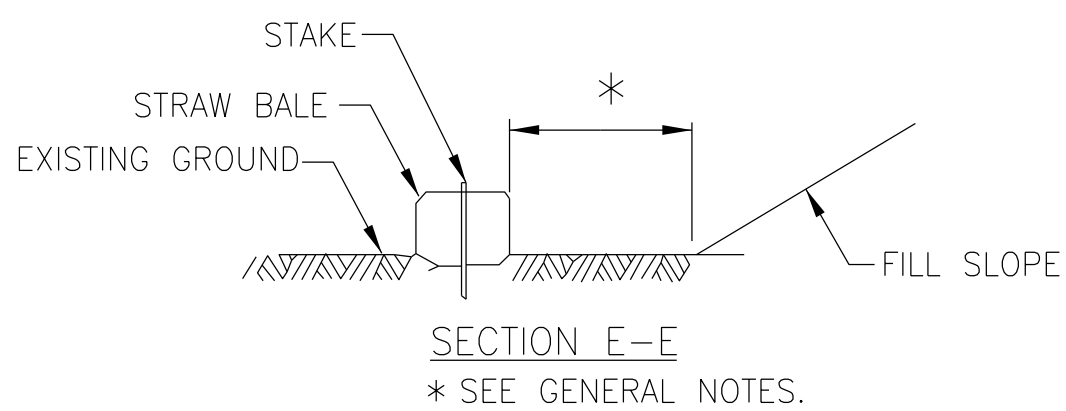
EROSION BLANKET NOTES:

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



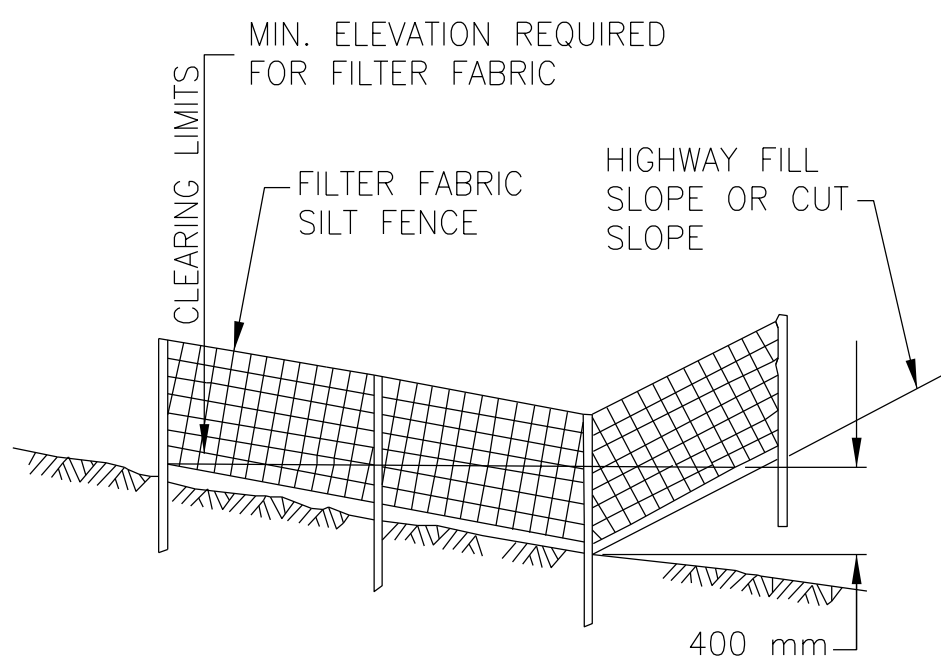
STRAW BALE SILT BARRIER PLAN

\* SEE GENERAL NOTES.

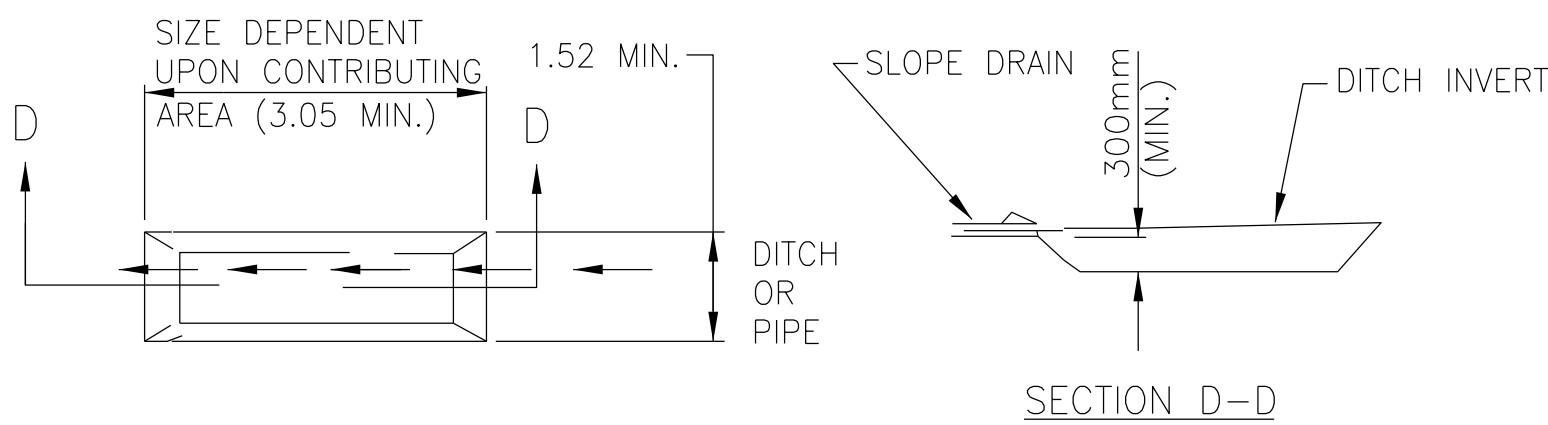


FILTER FABRIC SILT FENCE

\* SEE GENERAL NOTES.

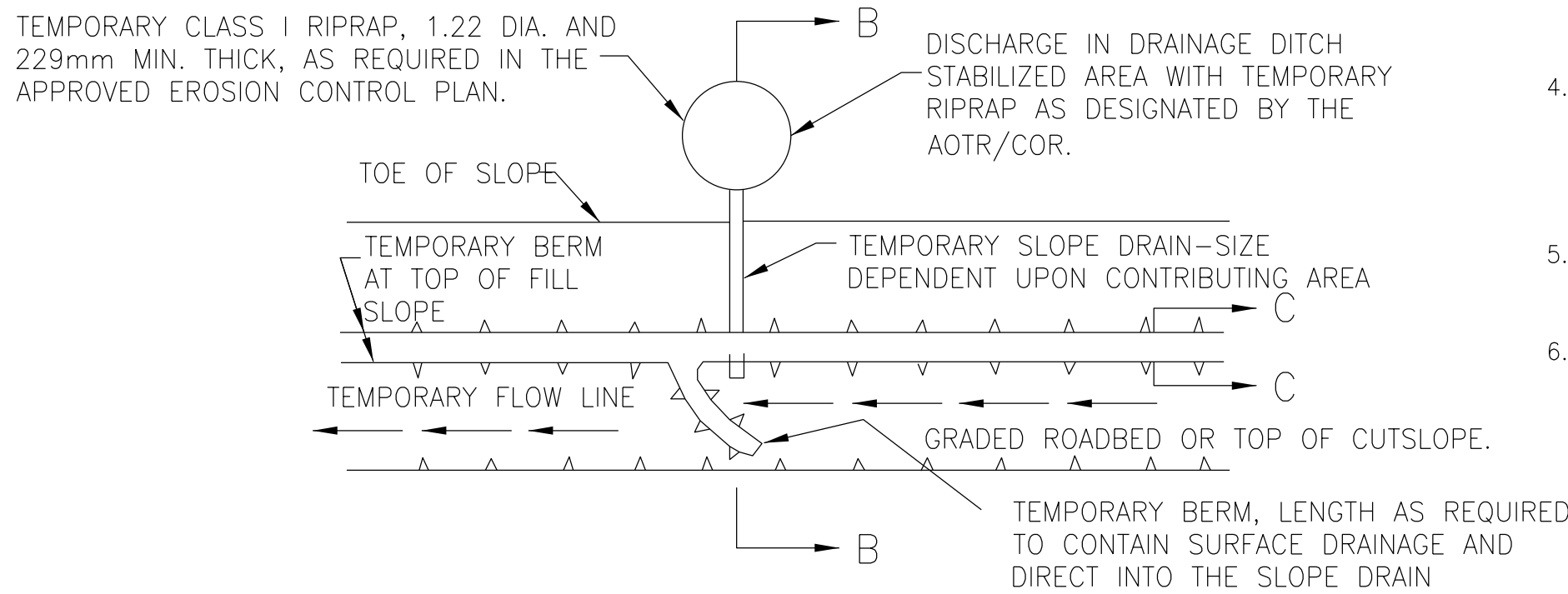


SILT FENCE ELEVATION

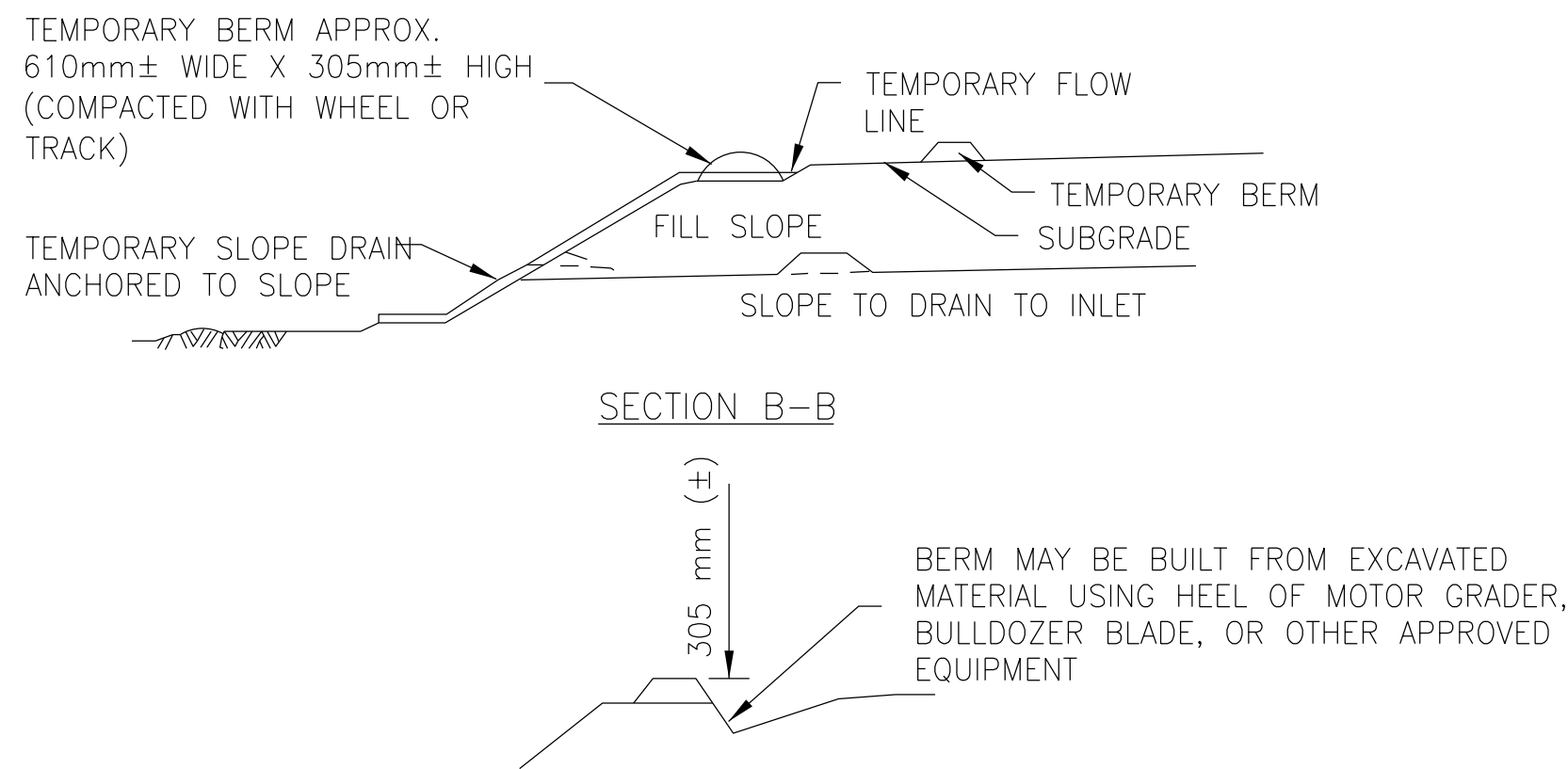


SEDIMENT TRAP

(TRAPS SHALL NOT FILL TO BEYOND ONE-HALF CAPACITY PRIOR TO CLEANING)

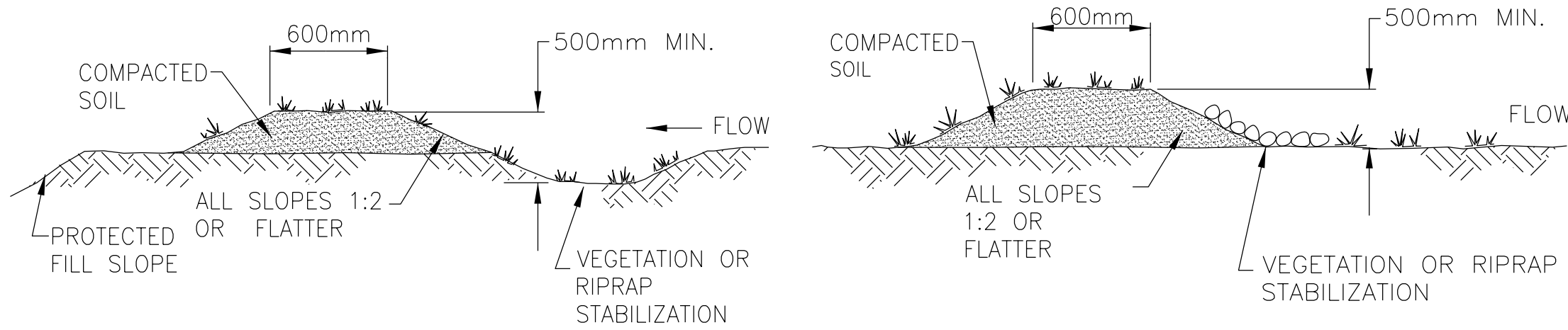


TEMPORARY BERM PLAN



SECTION C-C

TEMPORARY SLOPE DRAIN, BERM. (FOR FILL AND CUTSLOPES)  
[NOTE: TEMPORARY BERMS MAY ALSO BE CONSTRUCTED OF STRAW BALES SET 104-152mm INTO GROUND.]

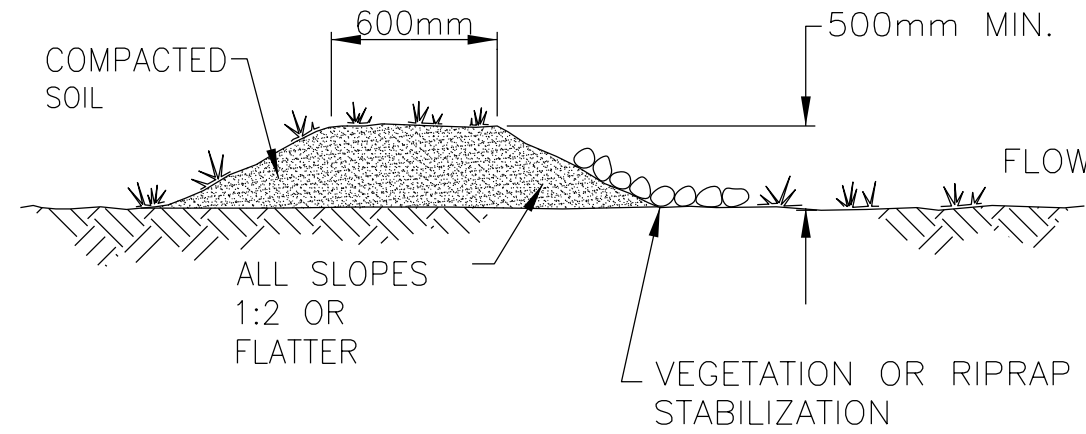


TYPICAL FILL DIVERSION

TEMPORARY DIVERSION DIKE

DIVERSION DIKE NOTES:

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

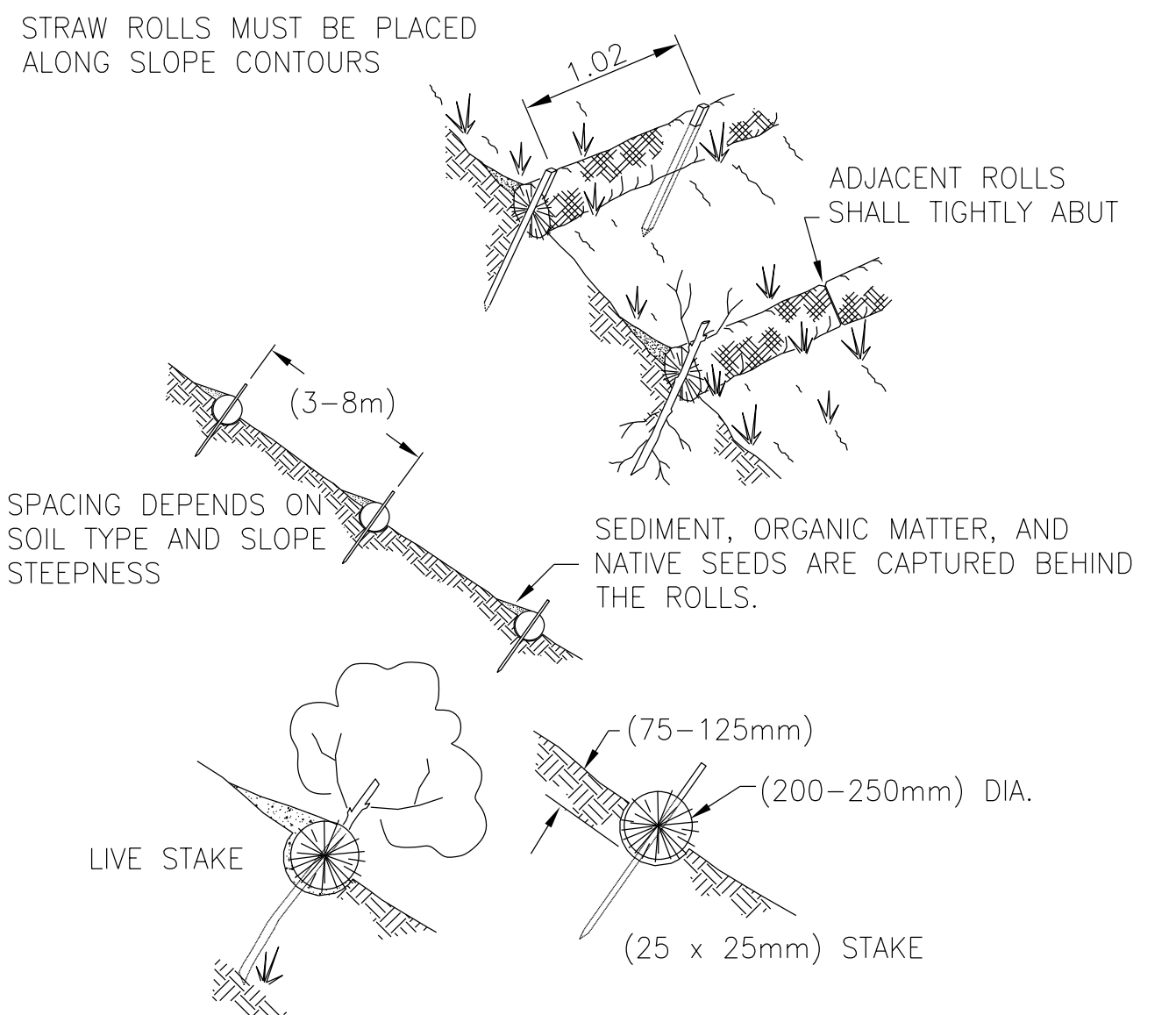


TYPICAL TEMPORARY DIVERSION DIKE  
(FOR TOP OF CUT BACK SLOPES.)

GENERAL NOTES

1. SEE SHEET 33 FOR ADDITIONAL NOTES AND DETAILS.
2. CONSTRUCT SEDIMENT BASINS 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.
3. CLEAN ALL SEDIMENT BASINS AND TRAPS OF ACCUMULATED SEDIMENT HALF FULL OF SEDIMENT.
4. USE DRAIN PIPE, RIPRAP, GEOTEXTILE FABRIC, OR GRASS-LINED WATERWAY FOR TEMPORARY SLOPE DRAINS TO CHANNEL RUNOFF DOWN SLOPES. CHANNEL WATER INTO SLOPE DRAINS WITH STRAW BALES, WATTLES OR EARTH BERMS CONSTRUCTED AT THE TOP OF A CUT SLOPE. ANCHOR SLOPE DRAINS TO THE SLOPE.
5. THE CONTRACTOR SHALL ADJUST THE DIMENSIONS AND/OR LOCATIONS OF TEMPORARY SEDIMENT AND EROSION CONTROL DEVICES TO FIT ACTUAL FIELD CONDITIONS.
6. REMOVE AND DISPOSE OF EROSION CONTROL MEASURES WHEN THE PERMANENT EROSION CONTROL MEASURES ARE SATISFACTORILY ESTABLISHED AND DRAINAGE DITCHES AND CHANNELS ARE LINED AND STABILIZED, IN ACCORDANCE WITH SECTION 157 OF FP-14.

STRAW ROLLS MUST BE PLACED ALONG SLOPE CONTOURS



STRAW ROLLS  
NOT TO SCALE

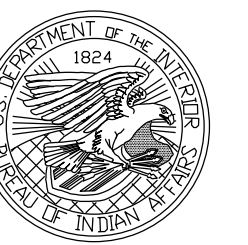
STRAW ROLL NOTES:

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

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STORMWATER POLLUTION & EROSION /SEDIMENT CONTROL DETAILS 2

Designed by: B.O.R.  
Drawn by: DESIGN2 Date: 3/27/17  
Revised by: HRiley Date: 03/20/2020  
File Name: 34\_N9402\_STD Ersn Det-2



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N9402	N9402(2)1,2&3	35	40

Square Tube Selection: Single Post – 2.80 mm thickness

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

Square Tube Selection: Double Post – 2.80 mm thickness

Post Size	H = Panel Height To Bottom Of sign + 1/2 Height Of Traffic Sign (meter)					Maximum Sign Area (m <sup>2</sup> )
	1.52	1.83	2.13	2.44	2.74	
50 mm x 50 mm	n/a	n/a	1.49	0.84	0.58	
57 mm x 57 mm	n/a	n/a	2.15	1.97	1.81	
64 mm x 64 mm			2.68	2.46	2.26	

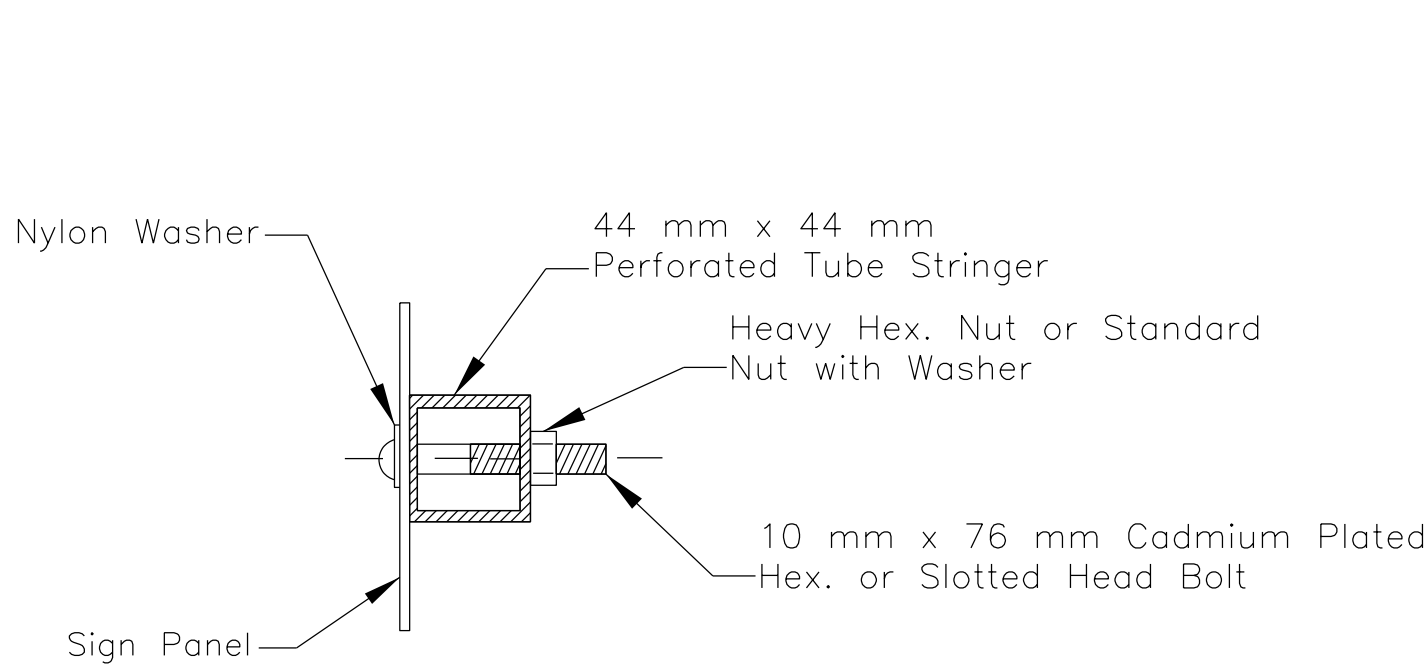
Square Tube Selection: Triple Post – 2.80 mm thickness

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

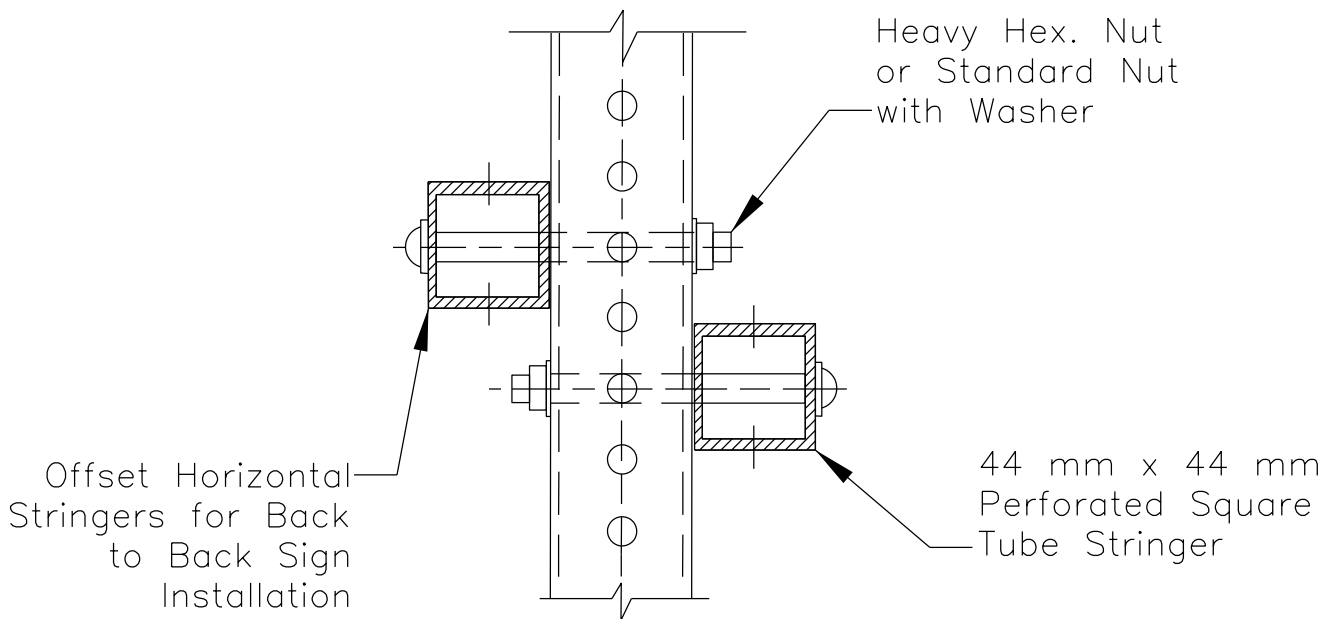
Guide Sign Post Dimensions

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

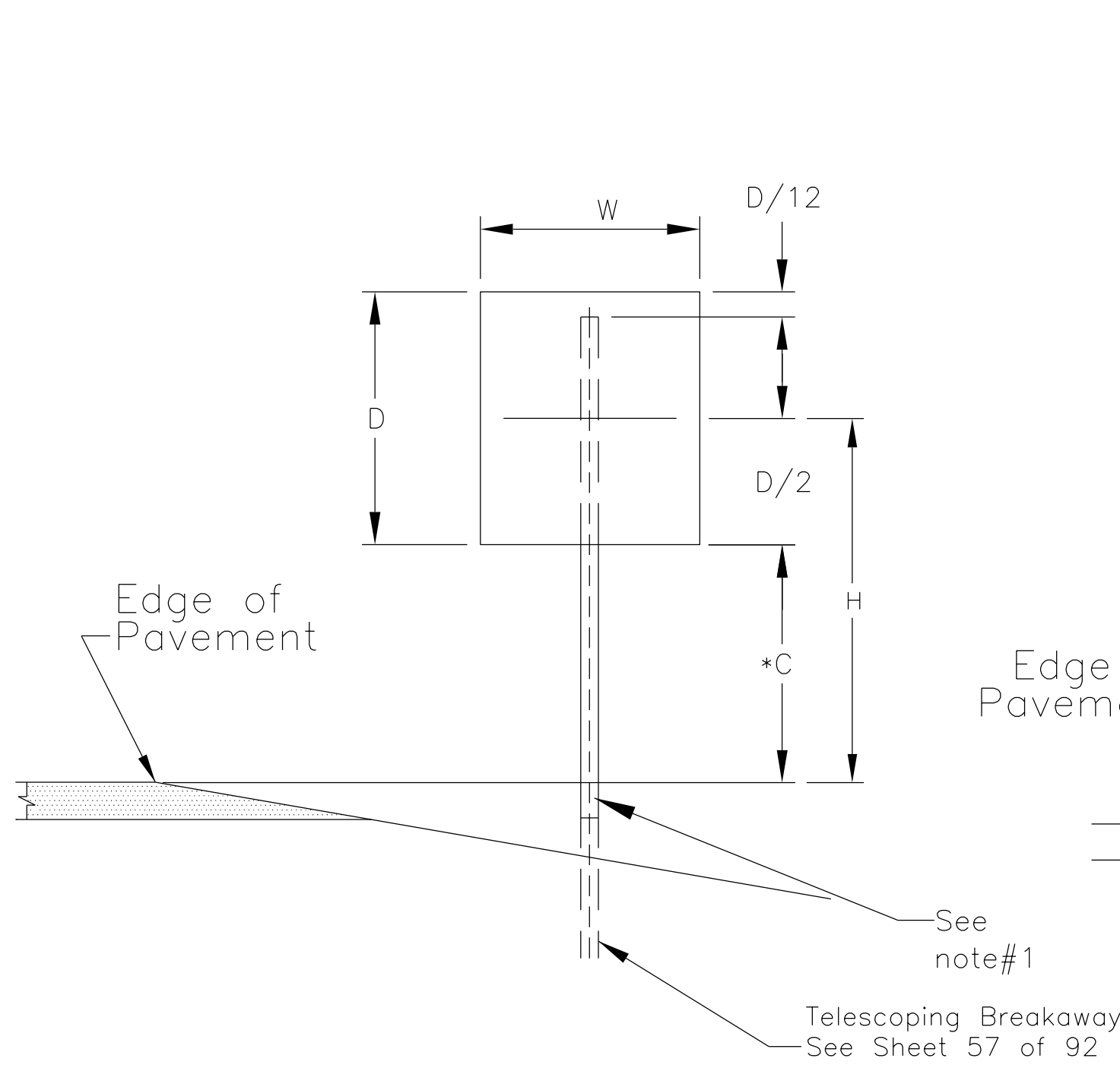
Panel Width	914 mm	1.22 m	1.52 m	1.83 m	2.13 m	2.44 m	2.74 m	3.05 m
two posts spacing (A)	559 mm	711 mm	914 mm	1.12 m	1.27 m	1.47 m	1.63 m	1.83m
bolts to panel (per stringer)			3	3	3	3	4	4
length of each stringer			1.22 m	1.42 m	1.57 m	1.78 m	1.93 m	2.13 m
two posts spacing (B)			533 mm	635 mm	737 mm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



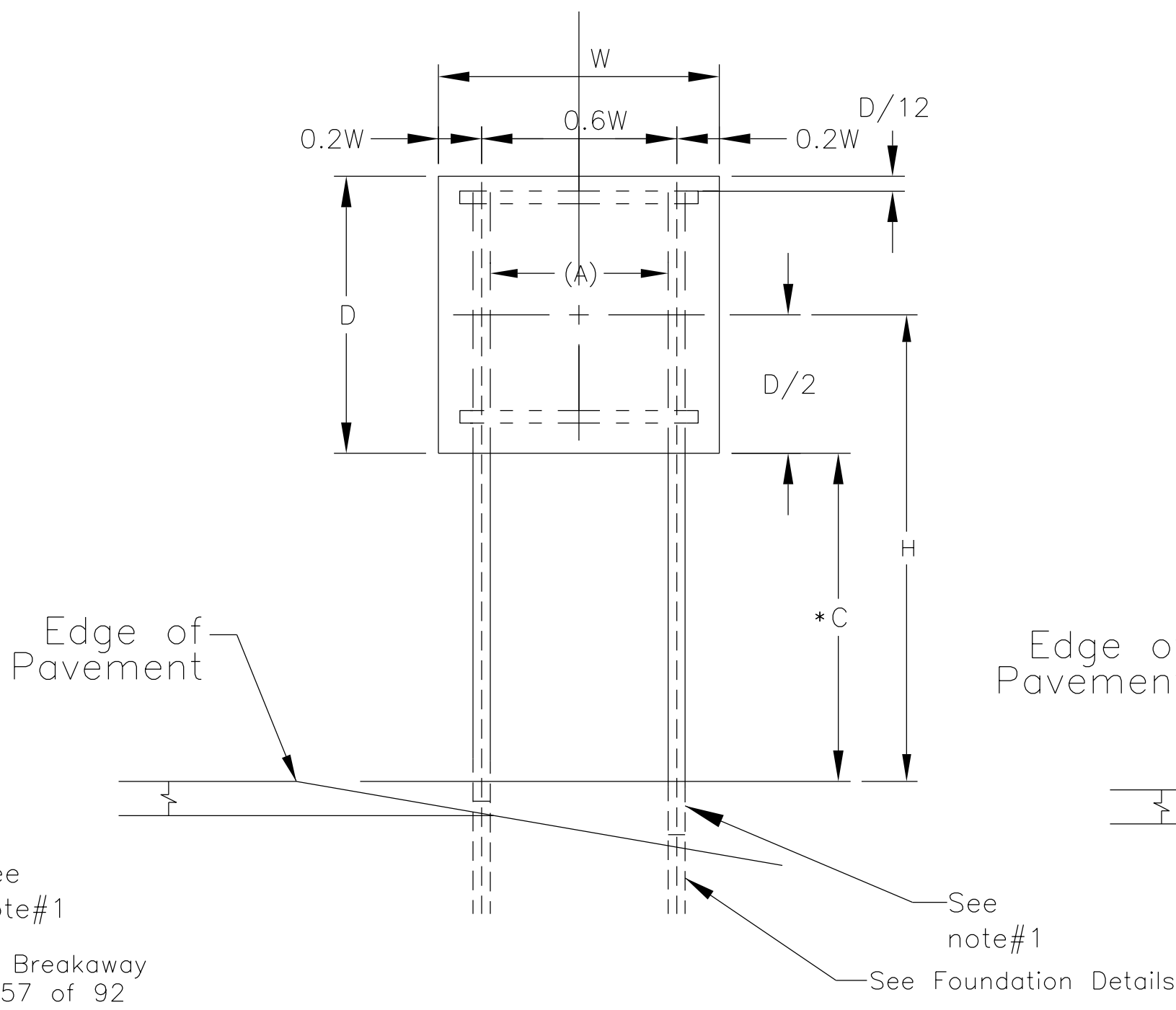
PANEL TO STRINGER OR POST



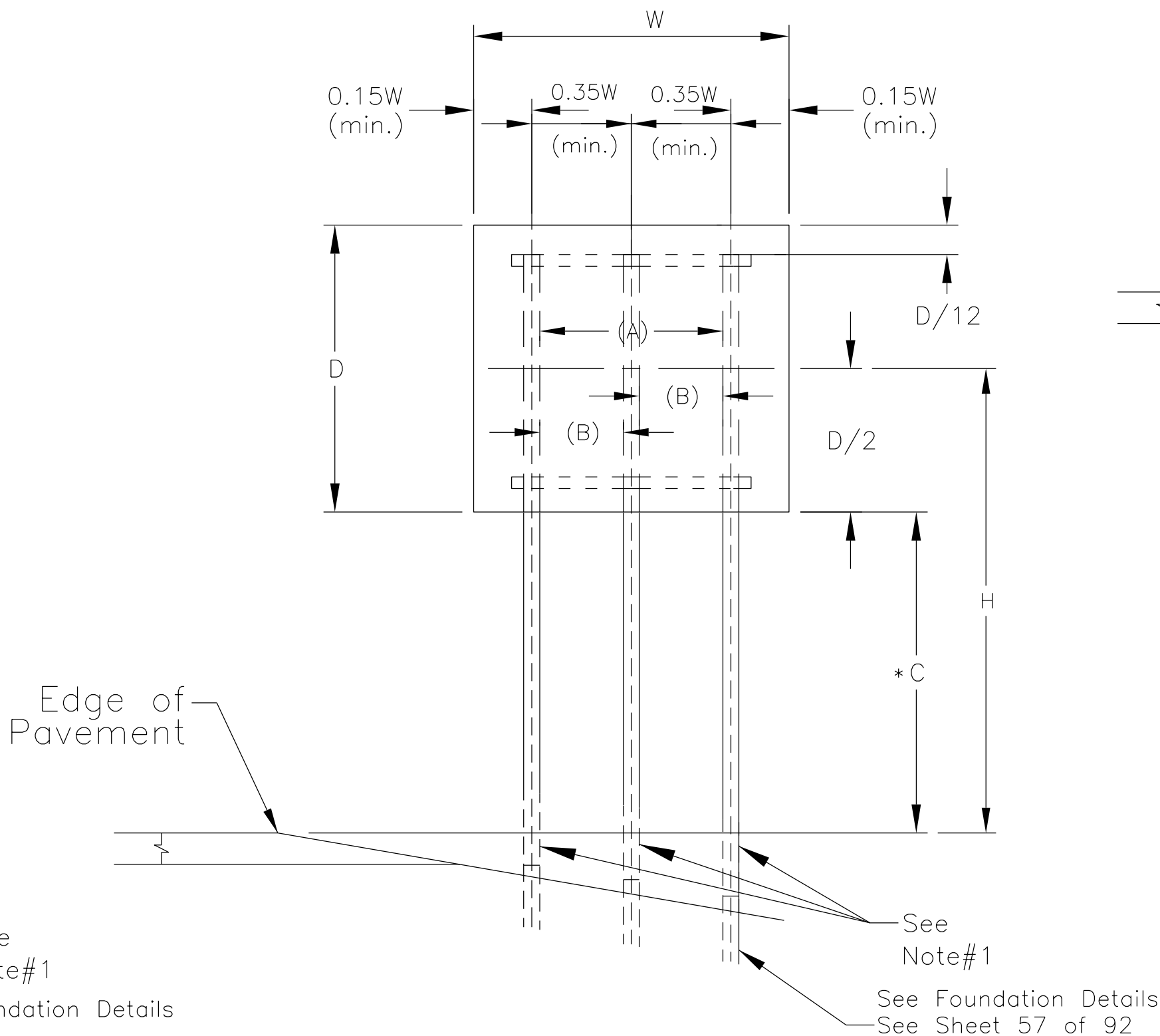
STRINGER TO POST



SINGLE POST SIZE (typ.)



DOUBLE POST SIZE (typ.)

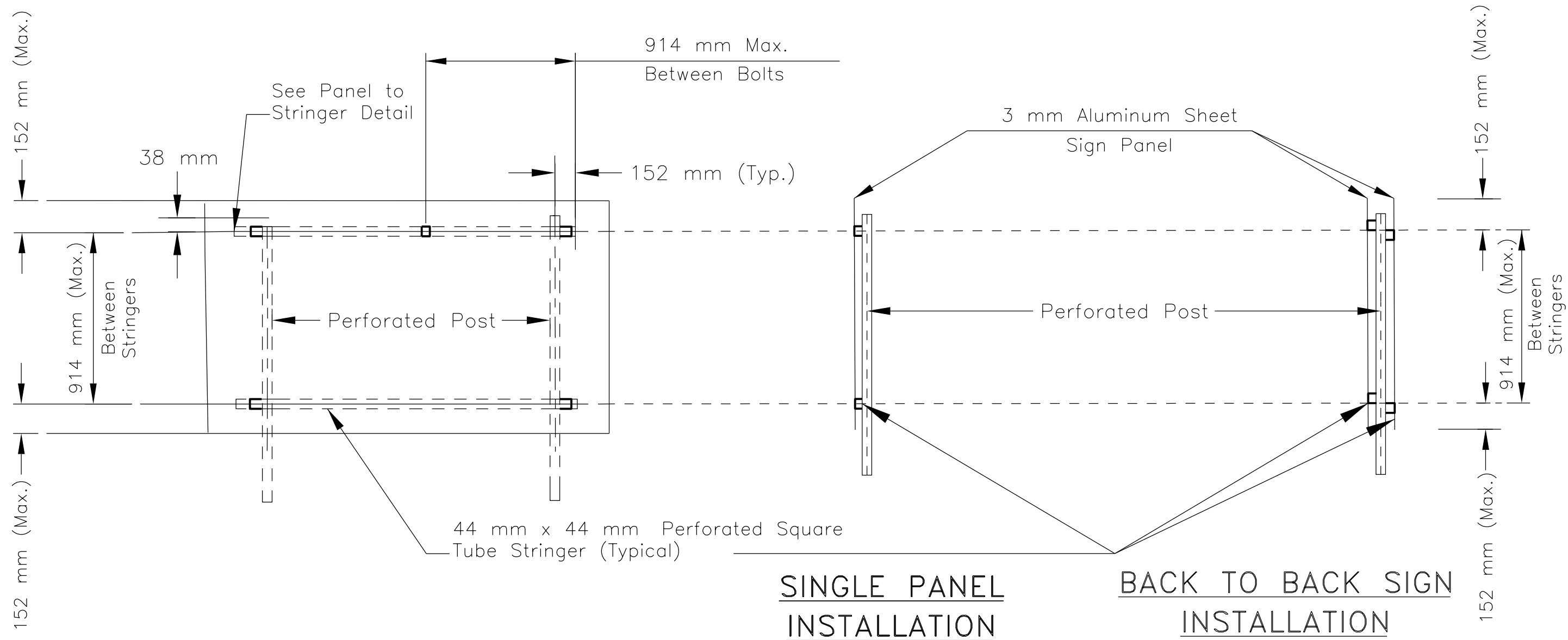


THREE POST SIZE (typ.)

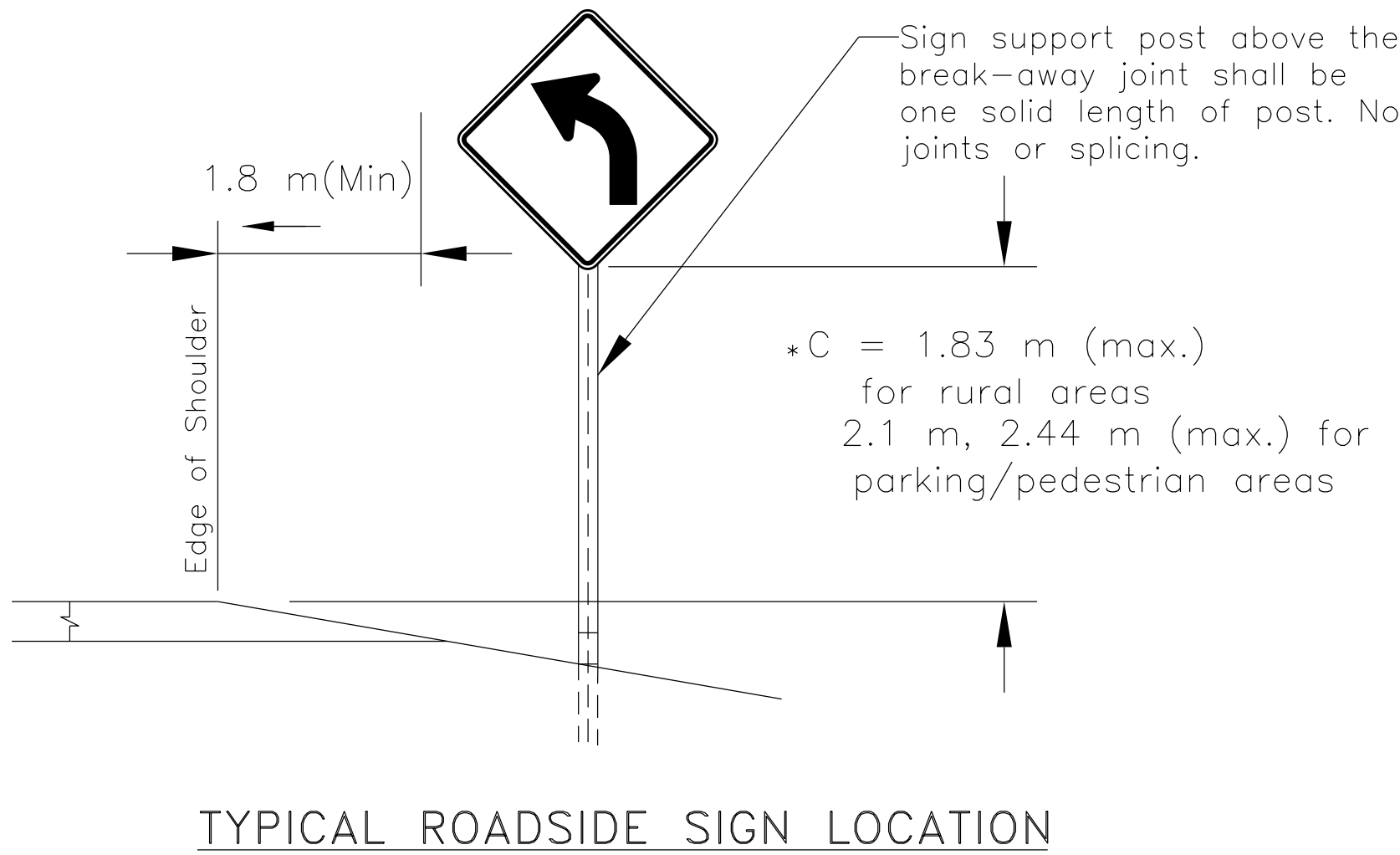
STATION AND PAY ITEM	LOC.	SIZE DETAIL NO.	DESCRIPTION	SIGN PANEL SIZE (mm)	SQUARE METER OF SIGN	NO. OF POSTS	Sign post (mm)	TOTAL SIGN PANELS
0+215	RT	W1-2 (R)		750 x 750	0.563	2	50	1
0+465	LT	W1-2 (L)		750 x 750	0.563	2	50	1
0+100	RT	R2-1		610 x 750	0.458	1	44	1
0+510	LT	R2-1		610 x 750	0.458	1	44	1
63302-2002	SIGN INSTALLATION, 1 POSTS AND HARDWARE, .....						0.92 m <sup>2</sup>	
63302-2006	SIGN INSTALLATION, 2 POSTS AND HARDWARE, .....						1.13 m <sup>2</sup>	

GENERAL NOTES:

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



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



TYPICAL ROADSIDE SIGN LOCATION

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

POST SELECTION AND  
SIGN MOUNTING DETAILS

DRAWN BY: NRDOT	DATE: 7/29/2014
DESIGNED BY: NRDOT	DATE: 7/29/2014
REVISED: 11/15/2017	BY: rsh
FILE NAME:	35_N9402_STDsignDet-1

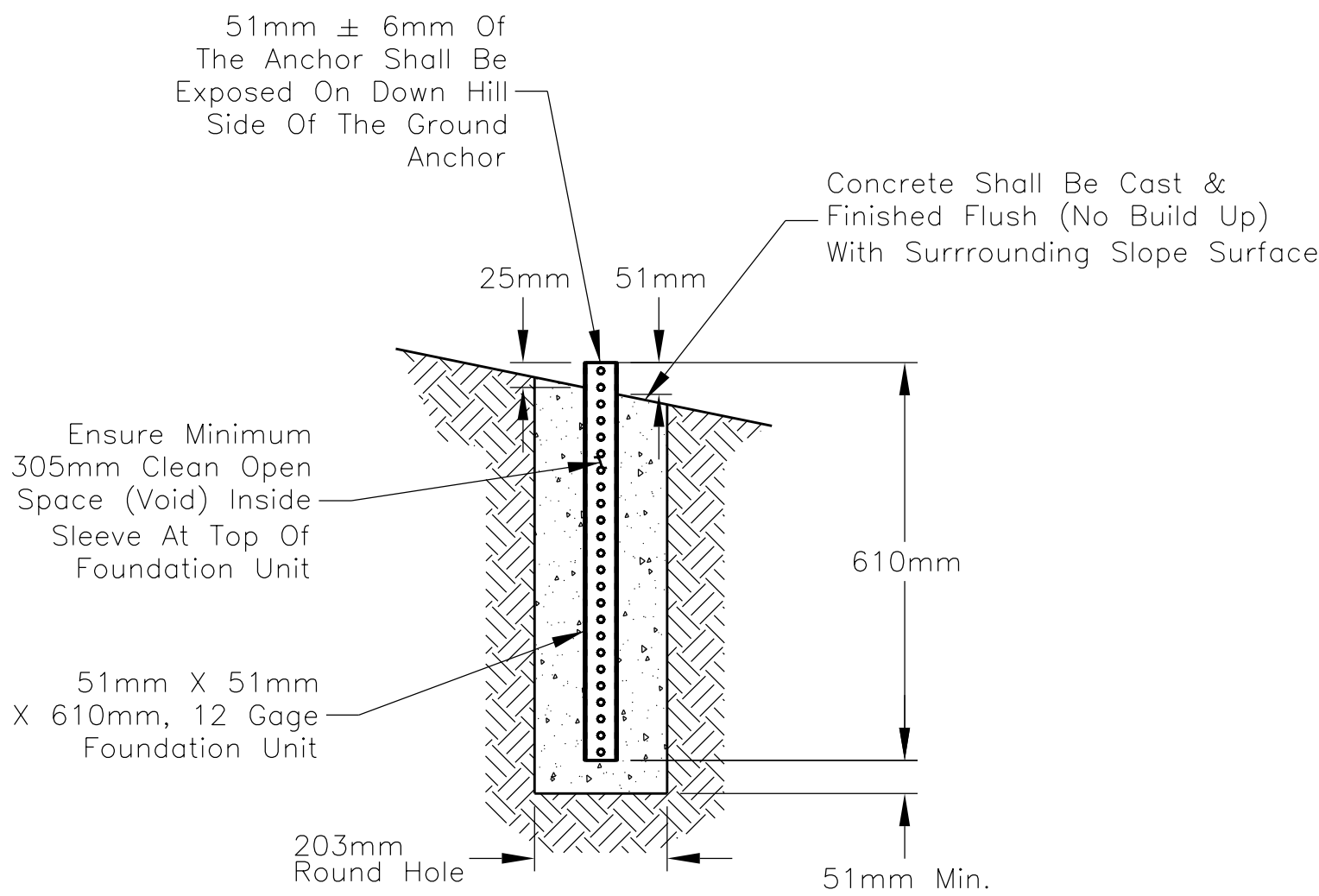
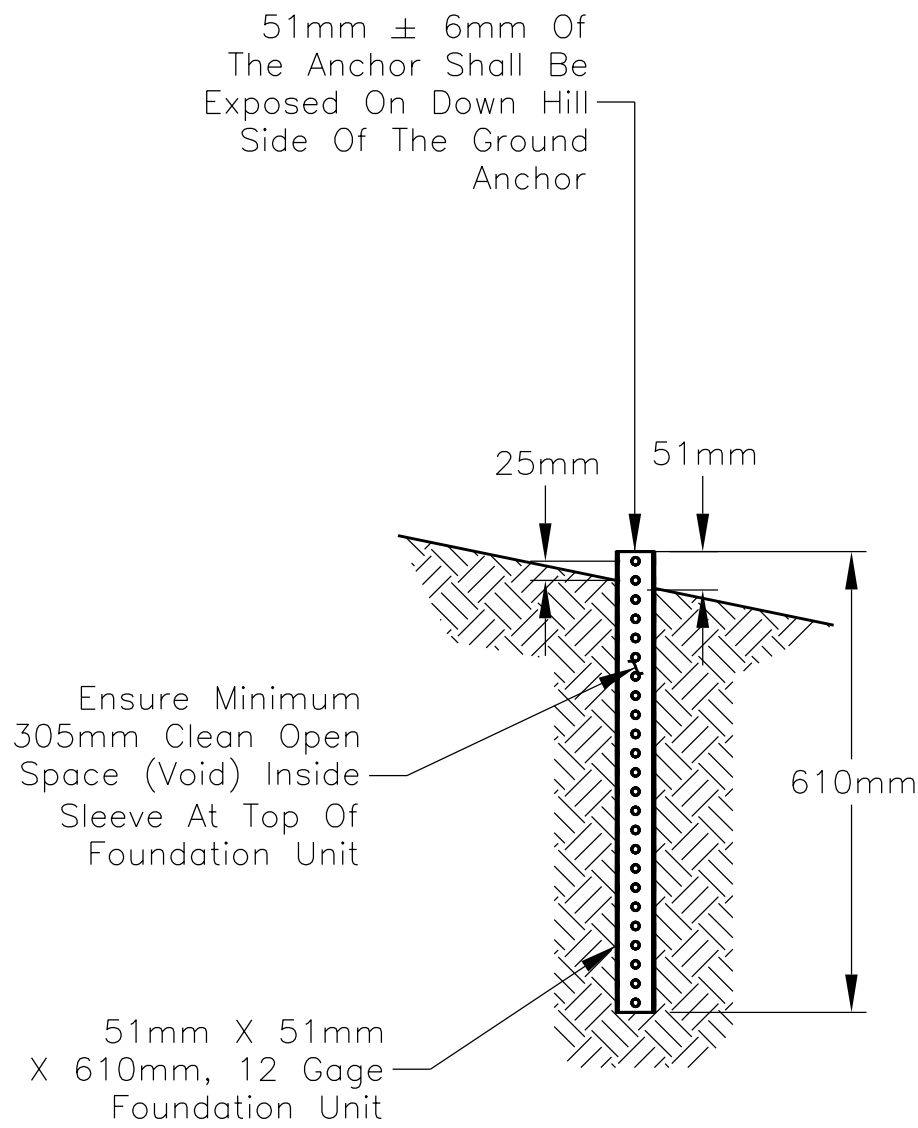
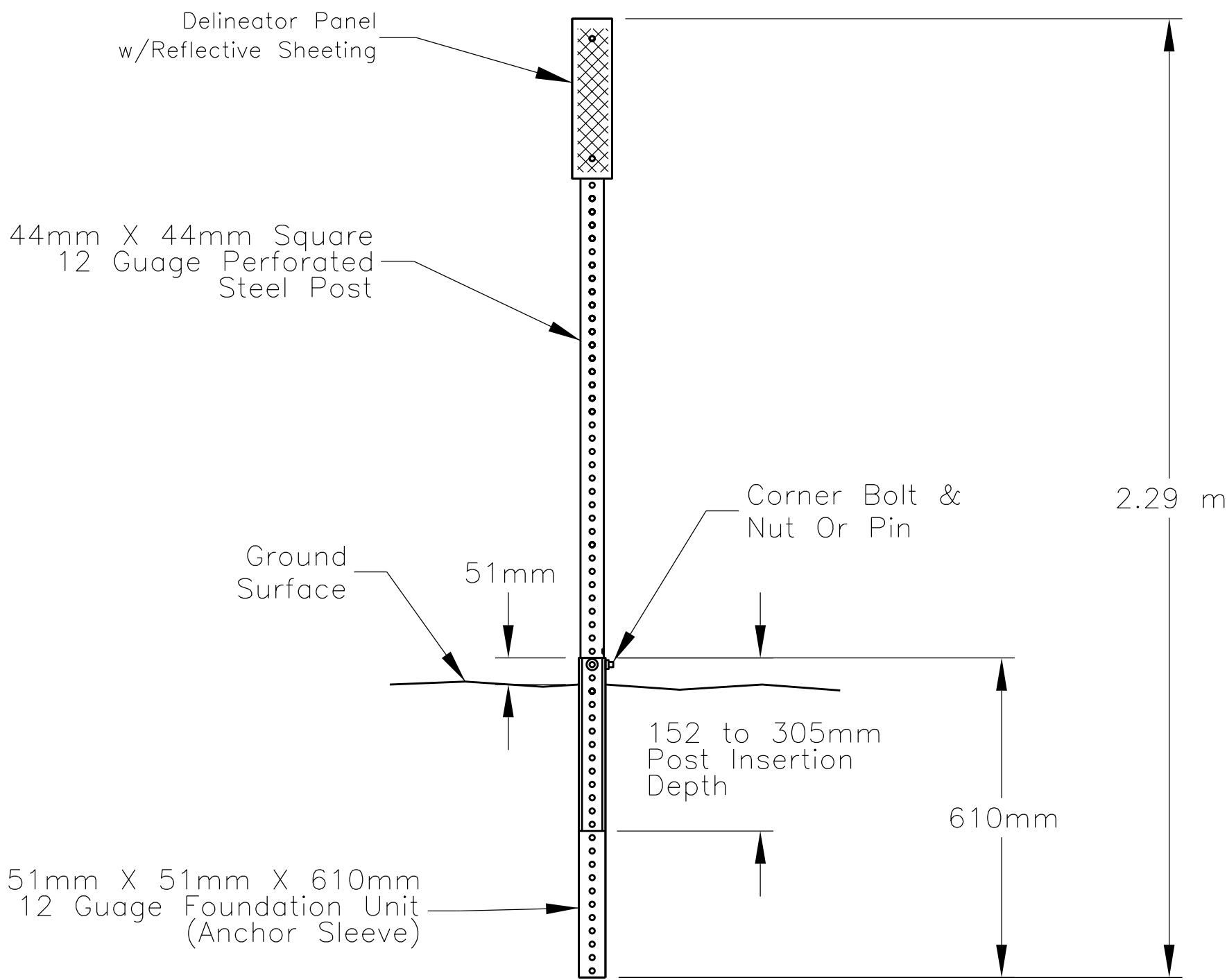
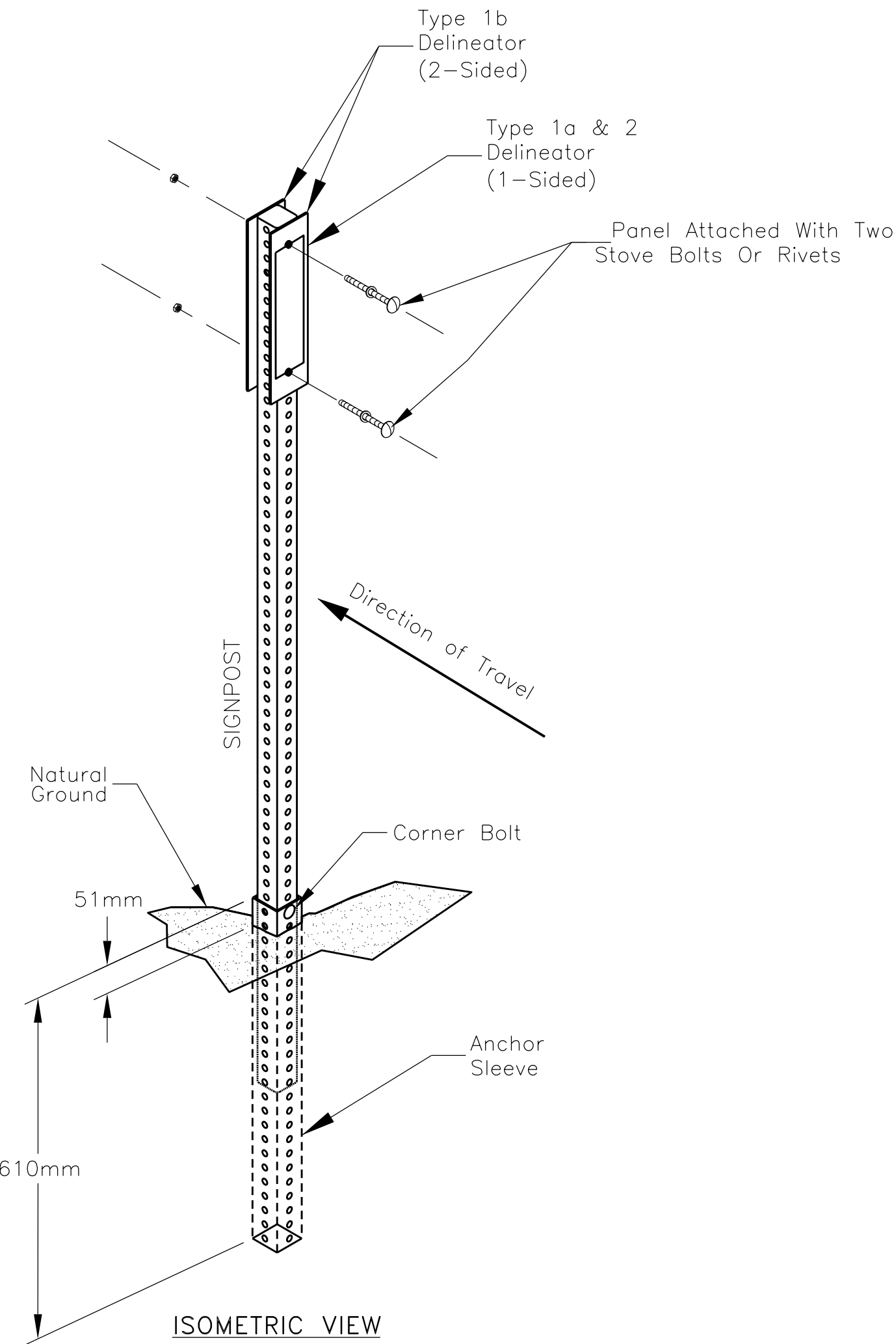




REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N9402	N9402(2)1,2&3	37	40

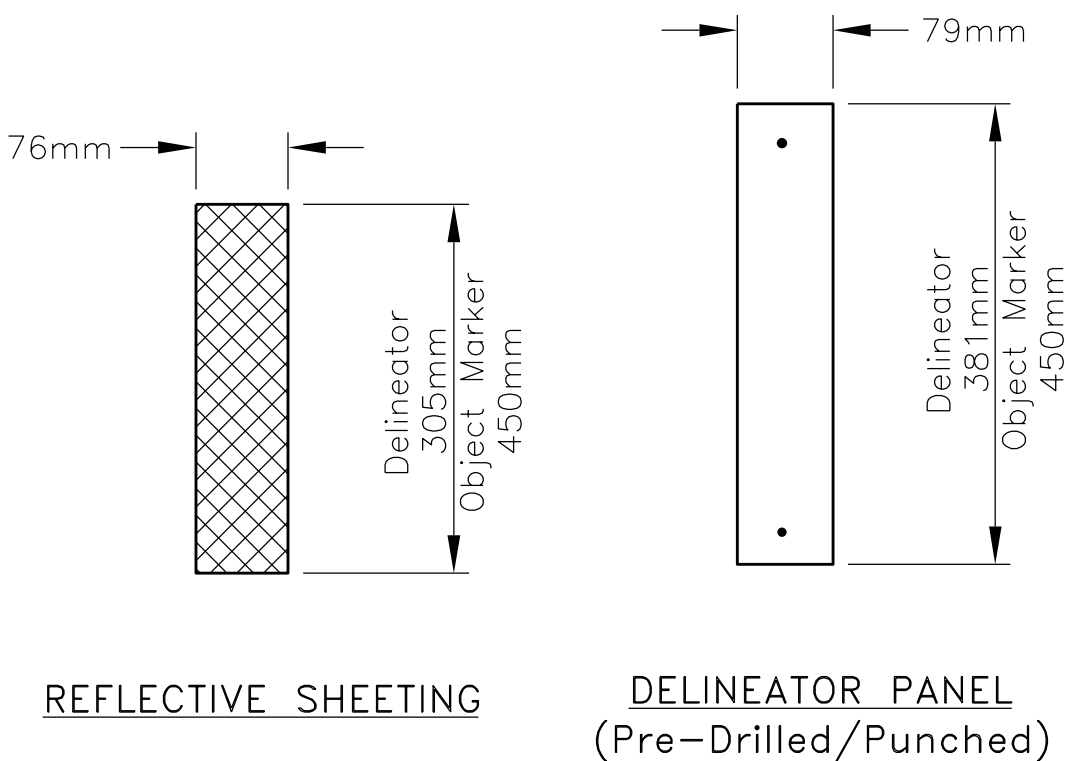
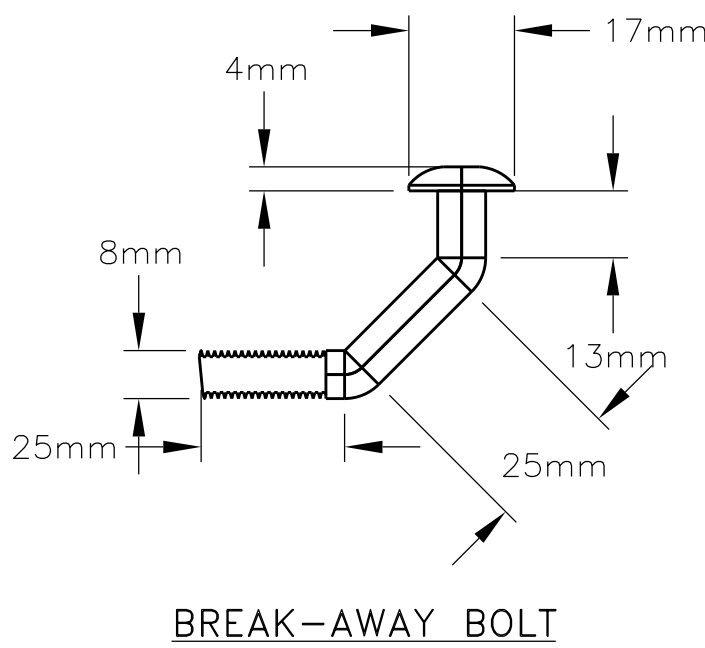
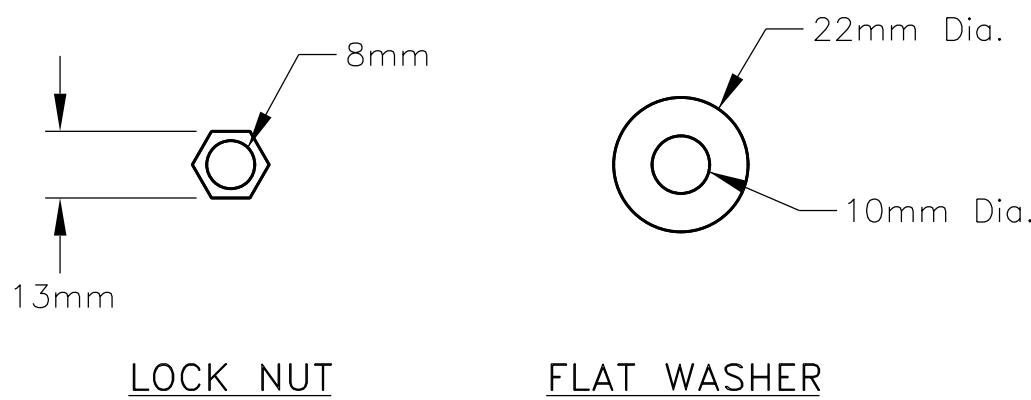
GENERAL NOTES

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

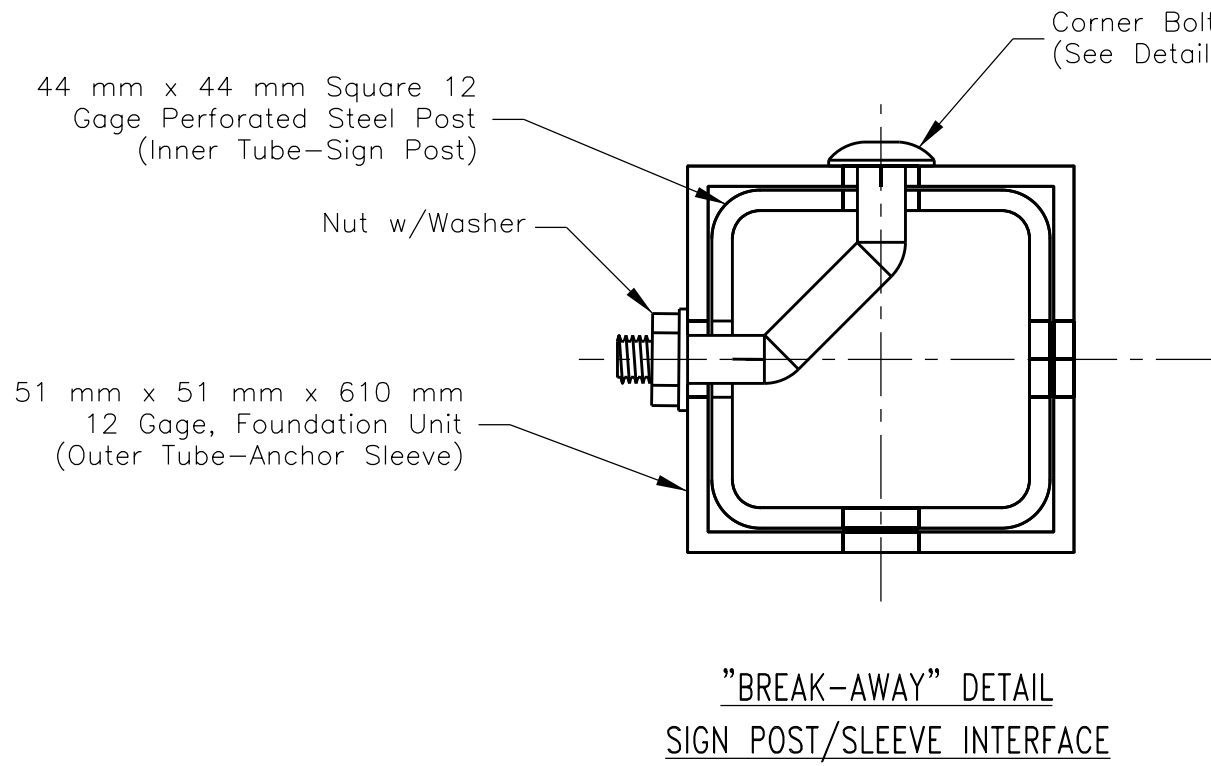
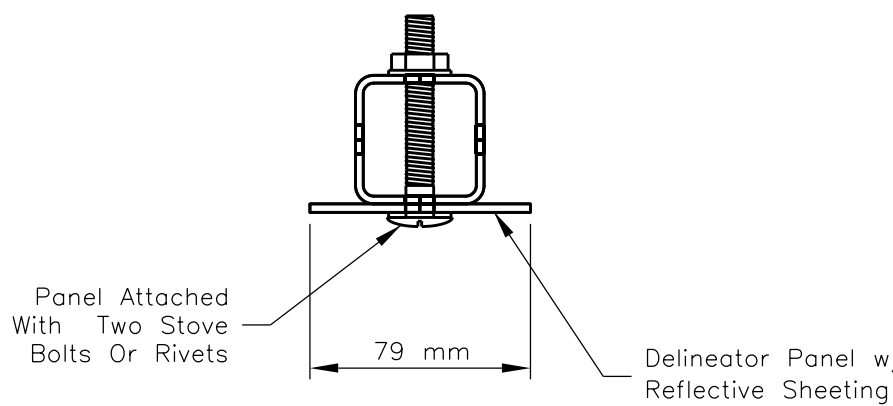
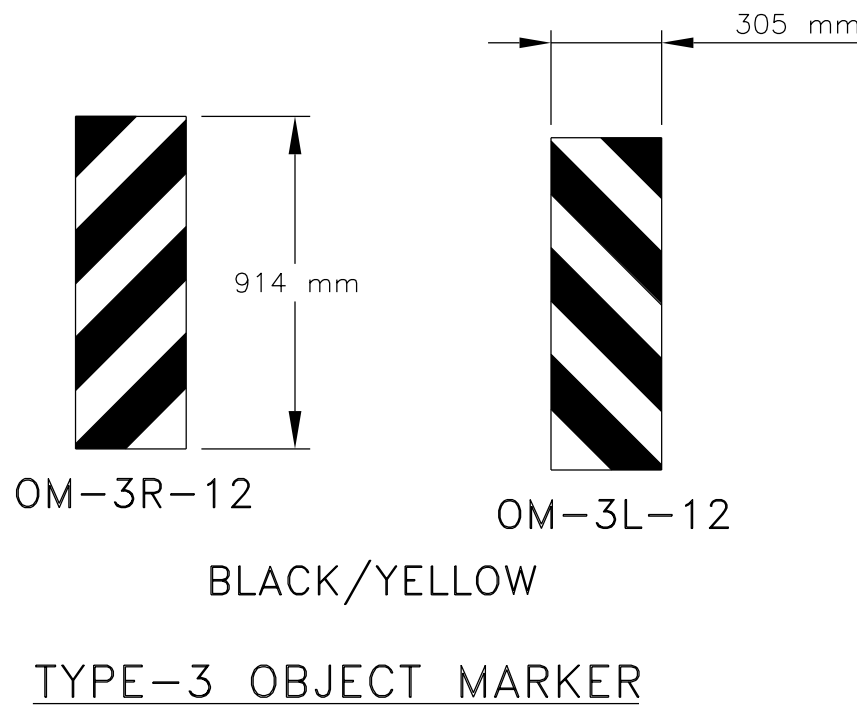


IN-GROUND CONCRETE

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



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



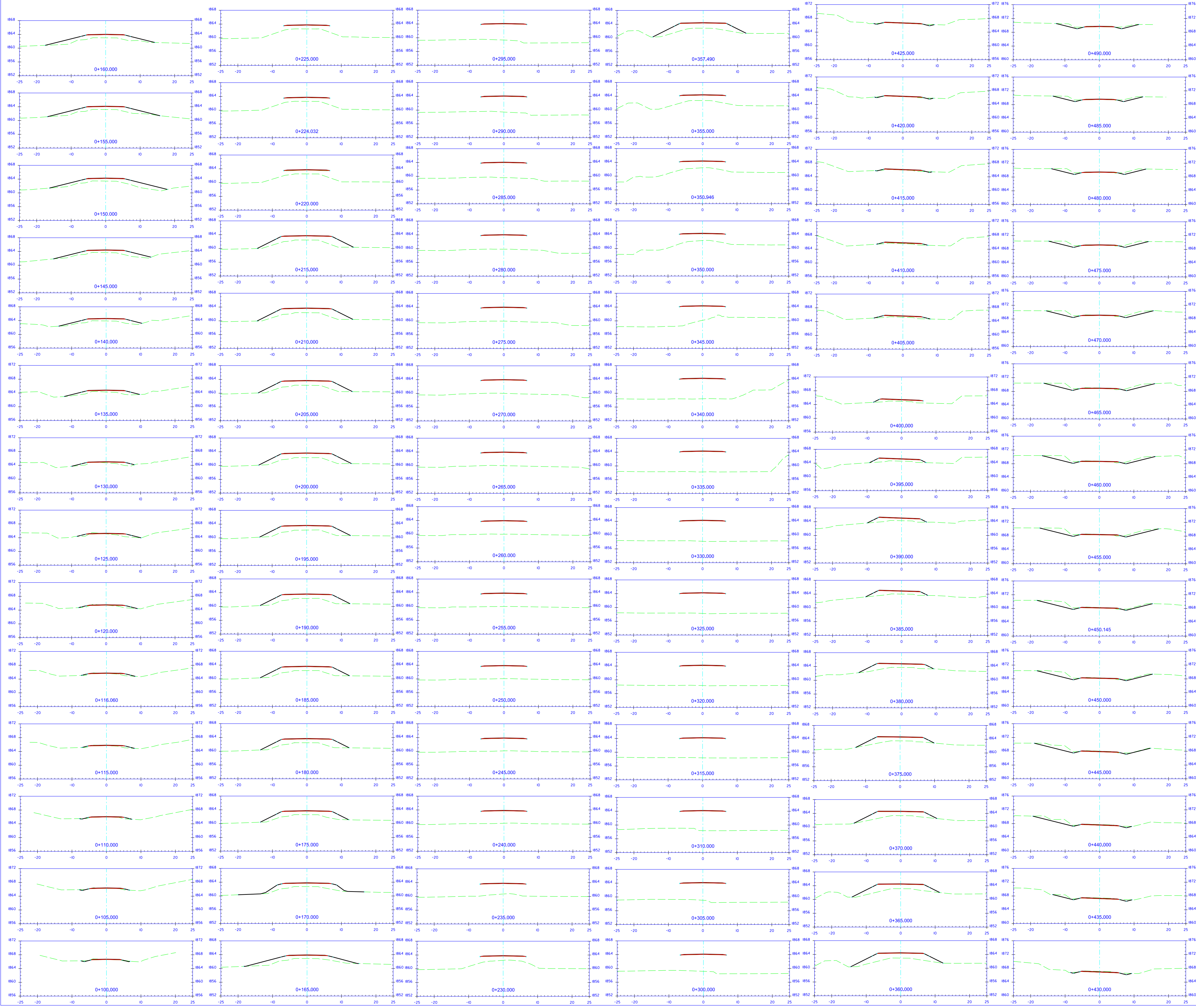
UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF INDIAN AFFAIRS  
NAVAJO REGIONAL OFFICE \* DIVISION OF TRANSPORTATION

SQUARE TUBE STEEL POST  
REFLECTIVE PANEL  
DELINEATOR DETAILS

DRAWN BY: NRDOT	DATE: 1/31/2013
DESIGNED BY: NRDOT	DATE: 1/31/2013
REVISED: 11/15/17	BY: rsh
FILE NAME: 37_N9402_DelinObjMkr detail	



REGION	STATE	RESERVATION	ROUTE	PROJECT NO.	SHEET	TOTAL SHEETS
NAVAJO	ARIZONA	NAVAJO	N9402	N9402(2)1,2,3	41	41



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

N9402  
X-SECTIONS

DRAWN BY: DRAWN BY DATE: 06/18/20

DESIGNED BY: HRiley DATE: 6/18/20

REVISED: BY:

SCALE: N/A

FILENAME: N9402 X-Sections

SHEET MODEL NAME: LAYOUT