# NAVAJO DIVISION OF TRANSPORTATION
# N19(1-1)2 SAFETY IMPROVEMENT PROJECT

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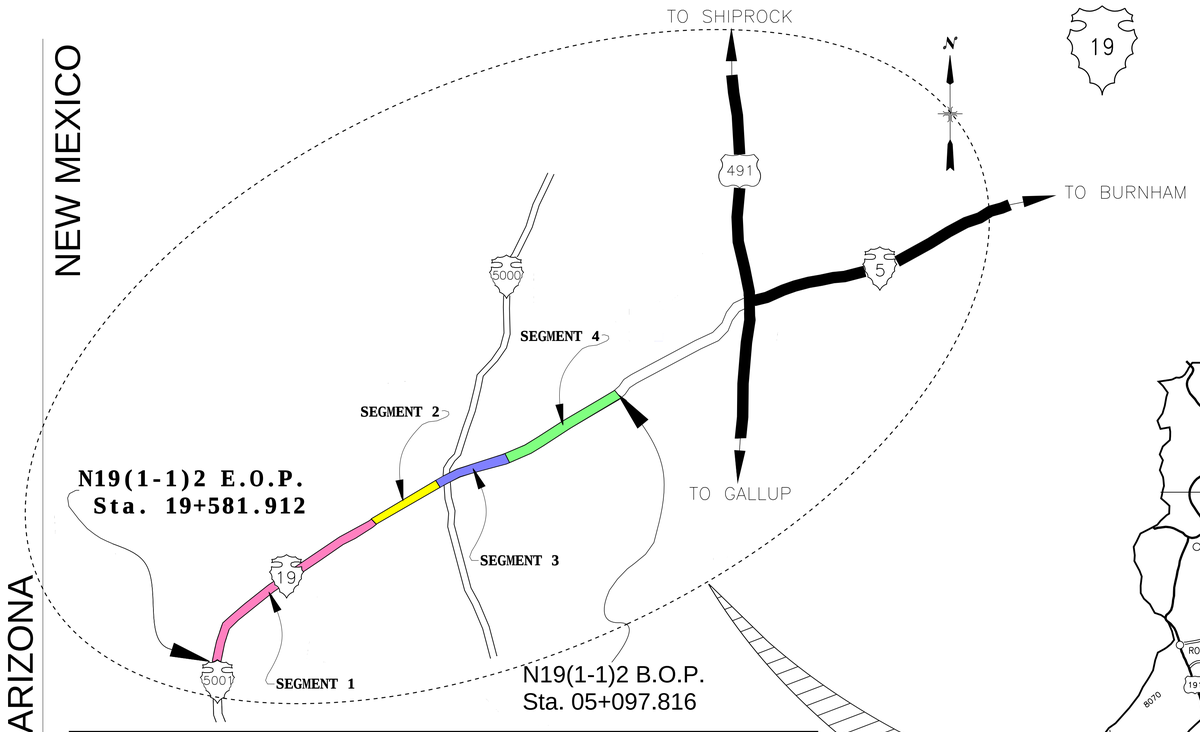


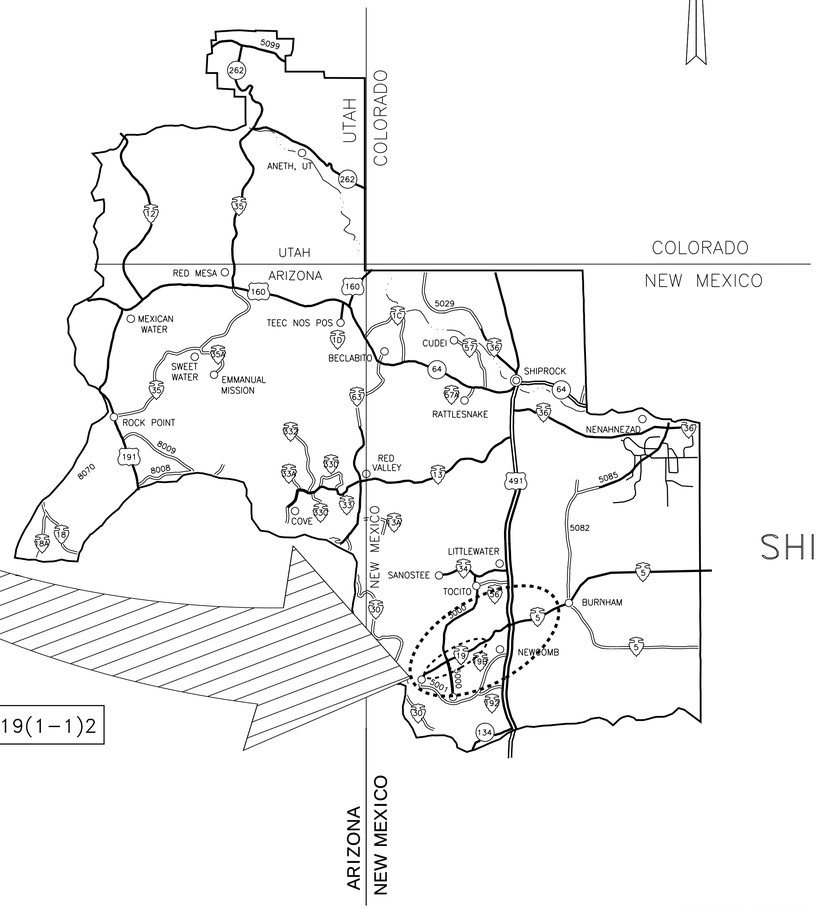


SHIPROCK AGENCY

## PROJECT LENGTH

| SEGMENT | DESCRIPTION | STATION TO STATION | | | METER | KILOMETER |
|---|---|---|---|---|---|---|
| N19(1-1)2 | | | | | | |
| 1 | BASE BID | 19+581.912 | TO | 13+144.536 | 6,437.38 | 6.437 |
| 2 | ADD. ALT. 1 | 13+144.536 | TO | 11+535.192 | 1,609.34 | 1.609 |
| 3 | ADD. ALT. 2 | 11+535.192 | TO | 09+925.848 | 1,609.34 | 1.609 |
| 4 | ADD. ALT. 3 | 09+925.848 | TO | 05+097.816 | 4,828.03 | 4.828 |
| TOTAL | | | | | 14,484.10 | 14.484 |

## DESIGN DATA–MAINLINE

| | |
|---|---|
| Design Speed | 80 km/h |
| Maximum Radius of Curve | 280 m |
| Maximum Gradient | 6.00% |
| Minimum Stopping Sight Distance | 140 m |
| Minimum Passing Sight Distance | 541 m |
| Average Daily Traffic (2014) | 894 vpd |
| Estimated ADT (2034) | 1204 vpd |
| Maximum Super Elev. (e max.) | 4 % |
| Design Hourly Volume (DHV) | 45 vph |
| Right–of–Way Width Lt. & Rt. | 22.86 m - 35.00 m |

NAVAJO D.O.T

RECOMMENDED:

_____ DATE: _____

PRINCIPAL ENGINEER
NAVAJO DIVISION OF TRANSPORTATION

APPROVED:

_____ DATE: _____

DIRECTOR
NAVAJO DIVISION OF TRANSPORTATION

| REGION | STATE | RESERVATION | ROUTE | PROJECT NO. | SHEET | TOTAL SHEETS |
|---|---|---|---|---|---|---|
| NAVAJO | ARIZONA | NAVAJO | N19 | N19(1-1)2 | 2 | 9 |

## N19(1-1)2 ESTIMATED QUANTITIES

| ITEM | DESCRIPTION | UNIT | Segment 1 Base Bid | Segment 2 Add. Alt. 1 | Segment 3 Add. Alt. 2 | Segment 4 Add. Alt. 3 | TOTAL | AS-BUILTS |
|---|---|---|---|---|---|---|---|---|
| 10901-0000 | Extra & Miscellaneous Work Authorized under Section 109.02(m) | LPSM | 1 | 1 | 1 | 1 | 1 | |
| 15101-0000 | Mobilization | LPSM | 1 | 1 | 1 | 1 | 1 | |
| 15201-0000 | Construction survey and staking | LPSM | 1 | 1 | 1 | 1 | 1 | |
| 15301-0020 | Contractor Quality Control | LPSM | 1 | 1 | 1 | 1 | 1 | |
| 20304-1000 | Removal of Structures and Obstructions | LPSM | 1 | 1 | 1 | 1 | 1 | |
| 61901-1000 | Fence, Barbed Wire, 5 Strand | m | 12750 | 3310 | 3280 | 9900 | 29240 | |
| 61902-1300 | Gate, Metal, 4200 mm Width | Each | 7 | 0 | 1 | 0 | 8 | |
| 61902-2600 | Gate, Barbed Wire, 5 Strand | Each | 6 | 1 | 3 | 6 | 16 | |
| 61903-0310 | Cattleguard, 4800 mm (2 Unit), With Type II Gate | Each | 3 | 1 | 0 | 3 | 7 | |
| 61903-0300 | Cattleguard, 4800 mm (2 Unit), Without Gate | Each | 3 | 0 | 1 | 0 | 4 | |
| 61903-0700 | Cattleguard, 7200 mm (3-Unit) Without Gate | Each | 1 | 0 | 2 | 1 | 4 | |
| 63501-0000 | Temporary Traffic Control | LPSM | 1 | 1 | 1 | 1 | 1 | |

ITEM No. 61901-1000; FENCE, BARBED WIRE, 5 STRAND

| | Station | To | Station | Offset (m) | Length (m) | Remark | Subtotal (m) | Project Use (m) |
|---|---|---|---|---|---|---|---|---|
| SEGMENT 4 | 05+097.816 | | 09+925.848 | 15.24-RT | 4801.492 | | 9602.98 | 9900 |
| | 05+097.816 | | 09+925.848 | 15.24-LT | 4801.492 | | | |
| SEGMENT 3 | 09+925.848 | | 11+535.192 | 15.24-RT | 1587.68 | | 3184.18 | 3280 |
| | 09+925.848 | | 11+535.192 | 15.24-LT | 1596.49 | | | |
| SEGMENT 2 | 11+535.192 | | 13+144.536 | 15.24-RT | 1604.46 | | 3207.86 | 3310 |
| | 11+535.192 | | 13+144.536 | 15.24-LT | 1603.39 | | | |
| SEGMENT 1 | 13+144.536 | | 15+940.000 | 15.24-RT | 2785.70 | | 12374.82 | 12750 |
| | 15+940.000 | | 15+940.000 | 15.24-RT to 12.19-RT | 3.05 | Jog for Site NM-H-47-119 | | |
| | 15+940.000 | | 16+240.000 | 12.19-RT | 300.00 | Jog for Site NM-H-47-119 | | |
| | 16+240.000 | | 16+240.000 | 12.19-RT to 15.24-RT | 3.05 | Jog for Site NM-H-47-119 | | |
| | 16+240.000 | | 19+581.912 | 15.24-RT | 3314.53 | | | |
| | 13+144.536 | | 18+540.000 | 15.24-LT | 5360.99 | | | |
| | 18+540.000 | | 18+540.000 | 15.24-LT to 6.10-LT | 9.14 | Jog for Site NM-H-49-111 | | |
| | 18+540.000 | | 18+620.000 | 6.10-LT | 80.00 | Jog for Site NM-H-49-111 | | |
| | 18+620.000 | | 18+620.000 | 6.10-LT to 15.24-LT | 9.14 | Jog for Site NM-H-49-111 | | |
| | 18+620.000 | | 19+050.000 | 15.24-LT | 425.73 | | | |
| | 19+050.000 | | 19+050.000 | 15.24-LT to 12.19-LT | 3.05 | Jog for Site NM-H-49-113 | | |
| | 19+050.000 | | 19+100.000 | 12.19-LT | 50.00 | Jog for Site NM-H-49-113 | | |
| | 19+100.000 | | 19+100.000 | 12.19-LT to 15.24-LT | 3.05 | Jog for Site NM-H-49-113 | | |
| | 19+100.000 | | 19+104.100 | 15.24-LT | 4.10 | | | |
| | 19+104.100 | | 19+581.912 | -- | -- | Existing fence from STA 19+104.100 to STA 19+581.912 to remain | | |
| | 19+581.912 | | | 15.24-RT to 15.24-LT | 23.28 | Tie fence perpendicular to roadway at cattleguard | | |

**Note**: 3% added to total to account for terrain slope and staggered fencing

## ENVIRONMENTAL MITIGATION REQUIREMENTS

| Site Number: | Station #: | NDOT Recommendations for Fence Installation: |
|---|---|---|
| NM-H-47-101 | 5+800 to 5+900 | No further work required. |
| NM-H-47-105 | 5+800 to 5+900 | No further work required. |
| NM-H-47-106 | 6+500 to 6+600 | No further work required. |
| NM-H-47-107 | 7+300 to 7+400 | No further work required. |
| NM-H-47-108 | 8+100 to 8+300 | Flag and monitor, no heavy machinery, hand installation of fencing. |
| NM-H-47-109 | 8+500 to 8+800 | Flag and monitor, no heavy machinery, hand installation of fencing. |
| NM-H-47-110 | 8+800 to 9+300 | No further work required. |
| NM-H-47-111 | 9+160 to 9+420 | Flag and monitor, no heavy machinery, hand installation of fencing. (All work should be monitored by a qualified archaeologist near Burial 1 – 100 feet) |
| NM-H-47-112 | 9+400 to 9+600 | No further work required. |
| NM-H-47-113 | 9+500 to 9+700 | No further work required. |
| NM-H-47-114 | 10+600 to 10+700 | No further work required. |
| NM-H-47-115 | 13+000 to 13+300 | No further work required. |
| NM-H-47-116 | 14+700 to 14+900 | Flag and monitor, no heavy machinery, hand installation of fencing. |
| NM-H-47-117 | 15+500 to 15+700 | No further work required. |
| NM-H-47-118 | 16+070 to 16+300 | Flag and monitor, no heavy machinery, hand installation of fencing. |
| NM-H-47-119 | 16+630 to 16+910 | No further work required. |
| NM-H-49-110 | 18+300 to 18+500 | No further work required. |
| NM-H-49-111 | 18+500 to 18+600 | Flag and monitor, no heavy machinery, hand installation of fencing (Installation of the T-post fencing should be done by hand at 15-20 feet right (south) of centerline and width of 70 feet wide). |
| NM-H-49-112 | 18+800 to 19+000 | No further work required. |
| NM-H-49-113 | 19+000 to 19+100 | Flag and monitor, no heavy machinery, hand installation of fencing (Installation of the T-post fencing should be done by hand at 35-40 feet right (south) of centerline and width of 90 feet wide). |

ITEM No. 61902-1300
GATE, METAL, 4200 mm WIDTH (TYPE 1)

| | STATION | LOC. | REMARKS |
|---|---|---|---|
| SEGMENT 3 | 10+770.00 | Left | Existing T/O |
| SEGMENT 1 | 13+912.40 | Left | Existing T/O |
| SEGMENT 1 | 15+485.70 | Left | 4.5 m T/O, To Residence |
| SEGMENT 1 | 16+975.00 | Left | Existing T/O |
| SEGMENT 1 | 18+256.50 | Right | Existing T/O |
| SEGMENT 1 | 19+050.00 | Left | Type - 1 Gate Only. Cemetary Entrance. |
| SEGMENT 1 | 19+345.00 | Left | Type - 1 Gate Only. BIA Auditorium Building. |
| SEGMENT 1 | 19+345.00 | Left | Type - 1 Gate Only. BIA Auditorium Building. |

ITEM No. 61902-2600
GATE, BARBED WIRE, 5 STRAND (TYPE 2)

| | STATION | LOC. | REMARKS |
|---|---|---|---|
| SEGMENT 4 | 5+147.00 | Left | Type - 2 Gate Only. Livestock Crossing. |
| SEGMENT 4 | 5+147.00 | Right | Type - 2 Gate Only. Livestock Crossing. |
| SEGMENT 4 | 6+100.00 | Right | Type - 2 Gate Only. Livestock Crossing. |
| SEGMENT 4 | 7+816.00 | Left | Type - 2 Gate Only. Livestock Crossing. |
| SEGMENT 4 | 9+300.00 | Left | Type - 2 Gate Only. Livestock Crossing. |
| SEGMENT 4 | 9+300.00 | Right | Type - 2 Gate Only. Livestock Crossing. |
| SEGMENT 3 | 10+240.00 | Right | Type - 2 Gate Only. Lagoon Entrance. |
| SEGMENT 3 | 11+500.00 | Left | Type - 2 Gate Only. Livestock Crossing. |
| SEGMENT 3 | 11+500.00 | Right | Type - 2 Gate Only. Livestock Crossing. |
| SEGMENT 2 | 12+700.00 | Right | Type - 2 Gate Only. Livestock Crossing. |
| SEGMENT 1 | 14+875.00 | Left | Type - 2 Gate Only. Livestock Crossing. |
| SEGMENT 1 | 14+875.00 | Right | Type - 2 Gate Only. Livestock Crossing. |
| SEGMENT 1 | 15+485.70 | Right | Type - 2 Gate Only. Livestock Crossing. |
| SEGMENT 1 | 17+707.40 | Right | Existing T/O |
| SEGMENT 1 | 18+240.00 | Left | Type - 2 Gate Only. Livestock Crossing. |
| SEGMENT 1 | 18+240.00 | Right | Type - 2 Gate Only. Livestock Crossing. |

ITEM No. 20304-1000; REMOVAL OF STRUCTURES AND OBSTRUCTIONS

| | Station | To | Station | Offset | REMARKS |
|---|---|---|---|---|---|
| SEGMENT 4 | 05+097.816 | | 09+925.848 | R & L | Remove trees, brush, sbrubs as needed to place new ROW fencing and appurtances. |
| SEGMENT 3 | 09+925.848 | | 11+535.192 | R & L | Remove trees, brush, sbrubs as needed to place new ROW fencing and appurtances. |
| SEGMENT 2 | 11+535.192 | | 13+144.536 | R & L | Remove trees, brush, sbrubs as needed to place new ROW fencing and appurtances. |
| SEGMENT 1 | 13+144.536 | | 19+104.100 | R & L | Remove trees, brush, sbrubs as needed to place new ROW fencing and appurtances. Remove existing pavement to install cattleguards. |
| SEGMENT 1 | 19+104.100 | | 19+581.912 | R & L | Remove existing fence to install 1 cattleguard and 2 gates. |

ITEM No. 61903-0310:
CATTLEGUARD, 4800 mm (2-Unit) WITH TYPE 2 GATE

| | STATION | LOC. | REMARKS |
|---|---|---|---|
| SEGMENT 4 | 7+813.00 | Right | 4.5 m T/O, To residence |
| SEGMENT 4 | 9+060.00 | Left | 4.5 m T/O, To residence |
| SEGMENT 4 | 9+060.00 | Right | 4.5 m T/O, To residence |
| SEGMENT 2 | 12+719.20 | Left | 4.5 m T/O, To residence |
| SEGMENT 1 | 16+377.80 | Left | Existing T/O |
| SEGMENT 1 | 16+982.10 | Right | Existing T/O |
| SEGMENT 1 | 17+716.40 | Left | Existing T/O |

ITEM No. 61903-0300:
CATTLEGUARD, 4800 mm (2-Unit) WITHOUT GATE

| | STATION | LOC. | REMARKS |
|---|---|---|---|
| SEGMENT 3 | 10+193.00 | Left | 4.5 m T/O, To residence |
| SEGMENT 1 | 18+535.80 | Right | Existing T/O |
| SEGMENT 1 | 19+279.00 | Right | T/O, Church Entrance. |
| SEGMENT 1 | 19+497.00 | Left | T/O, N19. |

ITEM No. 61903-0700:
CATTLEGUARD, 7200 mm (3-Unit) WITHOUT GATE

| | STATION | LOC. | REMARKS |
|---|---|---|---|
| SEGMENT 4 | 6+080.00 | Left | T/O, BIA Route N191 |
| SEGMENT 3 | 11+226.00 | Right | T/O, To Senior Citizen Center |
| SEGMENT 3 | 11+455.50 | Right | T/O. embeded into paved road N5000 |
| SEGMENT 1 | 19+581.91 | Centerline | Tie fencing perpendicular to roadway (End of ROW Fencing) |

## 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. THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY AND EXPENSE FOR DISPOSAL OF TRASH AND/OR CONSTRUCTION DEBRIS IN ACCORDANCE WITH SECTIONS 107 AND 203 OF FP-14 AS WELL AS ANY AND ALL PERMIT REQUIREMENTS. THIS WORK SHALL BE INCIDENTAL OBLIGATIONS OF THE CONTRACTOR.
3. 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, OR THE ENGINEER, SHALL NOT RELIEVE THE CONTRACTOR FROM ANY RISK OR FROM FULFILLING THE TERMS OF THE CONTRACT.
4. 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. THE CONTRACTOR SHALL FIELD VERIFY THE CATTLEGUARD AND GATE LOCATIONS WITH THE OWNER AND CM BEFORE INSTALLATION BEGINS.
5. REMOVAL AND RE-ATTACHMENT OF NEW FENCING REQUIRED TO COMPLETE SPECIFIED WORK AT DRAINAGE STRUCTURES, CATTLE GUARDS, GATES, TURNOUTS, GUARDRAIL AND SCHOOL COMPOUND SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEMS RELATED TO THE WORK REQUIRING SAID FENCE REMOVAL/RE-ATTACHMENT. FENCING REPAIRS, TEMPORARY FENCING AND/OR REMOVAL AND RE-ATTACHMENT OF FENCING, SHALL BE COMPLETED IN THE SAME WORK DAY SO AS NOT TO ALLOW LIVESTOCK ONTO THE PROJECT. IF WIRE TENSION IS LOST IN THE EXISTING FENCE, THE CONTRACTOR SHALL RE-TIGHTEN THE FENCE AS DIRECTED BY THE CM.
6. AT MAJOR DRAINAGE STRUCTURES GUARDRAIL AND LIVESTOCK PASS LOCATIONS, THE CONTRACTOR SHALL EITHER TIE THE WING FENCES TO THE STRUCTURES IN ACCORDANCE WITH THE DETAILS ON SHEET 4 OF 9 OR INSTALL FENCE OVER THE STRUCTURE AT THE CLEAR RECOVERY ZONE AS NOTED ON THE PLANS. IF NO CORNER FENCE POST/BRACE/STRAIN EXISTS AT TIE-IN TO RIGHT-OF-WAY FENCE, THE CONTRACTOR SHALL INSTALL A STRAIN POST ASSEMBLY AS PER PLAN SHEET 4 OF 9. ANY EXISTING CATTLE PASS CLOSURES ARE TO BE REMOVED. THIS WORK TO BE INCIDENTAL TO BID ITEM 61901-0000 AND NO ADDITIONAL PAYMENT SHALL BE MADE.
7. AT A NUMBER OF THE TURNOUT LOCATIONS, EXISTING CATTLE GUARDS, GATES, SCHOOL SEWER LAGOONS AND/OR WING BRACES ASSEMBLIES ARE TO BE REPLACED, RESET OR RE-ATTACHED (SEE TABLES ON THIS SHEET). THE CONTRACTOR IS ADVISED TO FIELD REVIEW EACH TURNOUT PRIOR TO SUBMITTING A BID. ALL WORK ASSOCIATED WITH RESETTING OR REATTACHING EXISTING CATTLE GUARDS, GATES, AND/OR WING BRACES, SHALL MATCH AS CLOSE AS POSSIBLE THE EXISTING LOCATIONS AND REQUIREMENTS FOR SIMILAR TYPES OF NEW CONSTRUCTION. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE SECTION 203 AND 619 BID ITEMS. THE WING BRACES ASSEMBLIES SHALL BE INCLUDED UNDER EACH BID ITEM 61903- FOR CATTLEGUARDS.
8. THE CONTRACTOR SHALL SAW CUT THE EXISTING N19 PAVEMENT AND REMOVE THE SURFACING AND SUBGRADE AS NEEDED TO SET THE NEW 3 UNIT CATTLEGUARD IN PLACE AT 19+581.91. THE REMOVED MATERIAL SHALL BE DISPOSED OF OFF THE PROJECT IN ACCORDANCE WITH SECTION 203. THE CONTRACTOR SHALL COMPACT MINOR HOT ASPHALT CONCRETE AROUND THE CATTLEGUARD FLUSH WITH THE TOP OF THE PAVEMENT IN ACCORDANCE WITH SECTION 404. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE INSTALLATION OF THE 3 UNIT CATTLEGUARD AT THIS LOCATION.
9. THE CONTRACTOR SHALL EXCAVATE AND REMOVE ANY NECESSARY SUBGRADE MATERIAL FOR THE INSTALLATION OF CATTLEGUARD UNITS AND REUSE THE EXCAVATED MATERIAL TO BACKFILL AND COMPACT AROUND THE CATTLEGUARD SO THAT THE TOP OF THE GRATES FIT FLUSH WITH THE TURNOUT GRADES OR ROADWAY PAVEMENT. THIS WORK SHALL BE CONSIDERED INCIDENTAL WORK UNDER THE CATTLEGUARD BID ITEMS SHOWN.
10. THE CONTRACTOR SHALL PERFORM HAND INSTALLATION OF FENCE AT ALL LOCATIONS SPECIFIED IN THE "ENVIRONMENTAL MITIGATION REQUIREMENTS" SCHEDULE FOR CULTURALLY SENSITIVE AREAS. REFER TO "ENVIRONMENTAL MITIGATION REQUIREMENTS" SCHEDULE, THIS SHEET. IF ARCHAELOGY MONITORING IS REQUIRED PER THE SCHEDULE, A NAVAJO DIVISON OF TRANPORTATION ARCHAELOGIST SHALL BE PRESENT DURING FENCE INSTALLATION AT THE LOCATIONS SPECIFIED.

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

# ESTIMATED QUANTITIES & TURNOUT DETAILS

| | |
|---|---|
| DRAWN BY: NRDOT | DATE: 4/19/2017 |
| DESIGNED BY: NRDOT | DATE: 4/19/2017 |
| REVISED: 10/2/2017 | BY: Harold.Riley |
| N19 Sht_2-Esimated Quantity fencing 41917.dgn | |

I:\DESIGN\Users\DESIGN2\CURRENT PROJECT_093008\ALL FILES FOR_SAFETY PROJECT FOR 2013\Shiprock Safety Projects\Safety Project for N19\N19 Fencing CADD Files\N19 Sht_2-Esimated Quantity fencing 41917.dgn

| REGION | STATE | RESERVATION | ROUTE | PROJECT NO. | SHEET | TOTAL SHEETS |
|---|---|---|---|---|---|---|
| NAVAJO | NEW MEXICO | NAVAJO | N19 | N19(1-1)2 | 3 | 9 |

## N19(1-1)2 HORIZONTAL ALIGNMENT TABLE

| | POINT | STATION (m) | ELEMENT | DIRECTION | NORTHING (m) | EASTING (m) |
|---|---|---|---|---|---|---|
| | POB | 0+000.000 | | | 591,999.565 | 751,066.876 |
| | | | Linear= 19.854 (m) | S 74°05'02" W | | |
| | PC | 0+019.854 | | | 591,994.120 | 751,041.783 |
| | PI | 0+193.021 | **CURVE DATA** | | 591,946.633 | 750,875.254 |
| | | | Delta = 43°14'00" Lt. | | | |
| | | | Deg. = 3°59'47" | | | |
| | | | R = 437.008 (m) | | | |
| | | | L = 329.744 (m) | | | |
| | | | T = 173.168 (m) | | | |
| | | | e = 33.060 (m) | | | |
| | PT | 0+349.598 | | | 591,797.968 | 750,786.454 |
| | | | Linear= 506.018 (m) | S 30°54'02" W | | |
| | PC | 0+855.616 | | | 591,383.548 | 750,526.965 |
| | PI | 1+853.197 | **CURVE DATA** | | 591,193.923 | 750,425.646 |
| | | | Delta = 31°39'12" Rt. | | | |
| | | | Deg. = 2°30'20" | | | |
| | | | R = 697.060 (m) | | | |
| | | | L = 385.060 (m) | | | |
| | | | T = 197.581 (m) | | | |
| | | | e = 27.463 (m) | | | |
| | PT | 1+240.676 | | | 591,102.703 | 750,250.384 |
| | | | Linear= 2851.867 (m) | S 62°30'14" W | | |
| | PC | 4+092.543 | | | 589,786.029 | 747,720.658 |
| | PI | 4+229.203 | **CURVE DATA** | | 589,722.935 | 747,599.434 |
| | | | Delta = 24°17'28" Lt. | | | |
| | | | Deg. = 2°45'01" | | | |
| | | | R = 635.000 (m) | | | |
| | | | L = 269.214 (m) | | | |
| | | | T = 136.660 (m) | | | |
| | | | e = 14.539 (m) | | | |
| | PT | 4+361.757 | | | 589,615.558 | 747,514.895 |
| | | | Linear= 183.117 (m) | S 38°12'46" W | | |
| | PC | 4+544.874 | | | 589,471.680 | 747,401.625 |
| | PI | 4+673.288 | **CURVE DATA** | | 589,370.782 | 747,322.190 |
| | | | Delta = 21°51'33" Rt. | | | |
| | | | Deg. = 2°37'34" | | | |
| | | | R = 665.000 (m) | | | |
| | | | L = 253.706 (m) | | | |
| | | | T = 128.414 (m) | | | |
| | | | e = 12.285 (m) | | | |
| | PT | 4+798.580 | | | 589,306.715 | 747,210.900 |
| | | | Linear= 3519.005 (m) | S 60°04'19" W | | |
| SEGMENT 4 | PC | 8+317.585 | | | 587,551.034 | 744,161.148 |
| | PI | 8+433.293 | **CURVE DATA** | | 587,493.306 | 744,060.870 |
| | | | Delta = 7°40'30" Lt. | | | |
| | | | Deg. = 1°00'45" | | | |
| | | | R = 1725.000 (m) | | | |
| | | | L = 231.070 (m) | | | |
| | | | T = 115.708 (m) | | | |
| | | | e = 3.876 (m) | | | |
| | PT | 8+548.655 | | | 587,422.702 | 743,969.199 |
| | | | Linear= 1306.843 (m) | S 52°23'49" W | | |
| | PC | 9+855.498 | | | 586,625.281 | 742,933.845 |
| SEGMENT 3 | PI | 9+985.291 | **CURVE DATA** | | 586,546.083 | 742,831.015 |
| | | | Delta = 8°43'19" Rt. | | | |
| | | | Deg. = 1°01'34" | | | |
| | | | R = 1702.000 (m) | | | |
| | | | L = 259.086 (m) | | | |
| | | | T = 129.794 (m) | | | |
| | | | e = 4.942 (m) | | | |
| | PT | 10+114.583 | | | 586,483.393 | 742,717.365 |
| | | | Linear= 8402.562 (m) | S 61°07'07" W | | |
| SEGMENT 1 | PC | 18+517.146 | | | 582,424.979 | 735,359.897 |
| | PI | 18+646.943 | **CURVE DATA** | | 582,362.287 | 735,246.244 |
| | | | Delta = 36°48'59" Lt. | | | |
| | | | Deg. = 4°28'40" | | | |
| | | | R = 390.000 (m) | | | |
| | | | L = 250.601 (m) | | | |
| | | | T = 129.798 (m) | | | |
| | | | e = 21.032 (m) | | | |
| | PT | 18+767.747 | | | 582,243.991 | 735,192.825 |
| | | | Linear= 184.238 (m) | S 24°18'08" W | | |
| | PC | 18+951.984 | | | 582,076.080 | 735,117.002 |
| | PI | 19+041.253 | **CURVE DATA** | | 581,994.722 | 735,080.264 |
| | | | Delta = 30°16'25" Rt. | | | |
| | | | Deg. = 5°17'31" | | | |
| | | | R = 330.000 (m) | | | |
| | | | L = 174.364 (m) | | | |
| | | | T = 89.268 (m) | | | |
| | | | e = 11.861 (m) | | | |
| | PT | 19+126.348 | | | 581,942.980 | 735,007.520 |
| | | | Linear= 172.060 (m) | S 54°34'33" W | | |
| | PC | 19+298.408 | | | 581,843.249 | 734,867.311 |
| | PI | 19+373.786 | **CURVE DATA** | | 581,799.559 | 734,805.887 |
| | | | Delta = 24°47'19" Lt. | | | |
| | | | Deg. = 5°05'29" | | | |
| | | | R = 343.000 (m) | | | |
| | | | L = 148.397 (m) | | | |
| | | | T = 75.378 (m) | | | |
| | | | e = 8.185 (m) | | | |
| | PT | 19+446.805 | | | 581,734.140 | 734,768.441 |
| | | | Linear= 64.828 (m) | S 29°47'14" W | | |
| | PC | 19+511.632 | | | 581,677.878 | 734,736.236 |
| | PI | 19+550.518 | **CURVE DATA** | | 581,644.130 | 734,716.918 |
| | | | Delta = 61°00'40" Lt. | | | |
| | | | Deg. = 26°27'37" | | | |
| | | | R = 66.000 (m) | | | |
| | | | L = 70.280 (m) | | | |
| | | | T = 38.886 (m) | | | |
| | | | e = 10.603 (m) | | | |
| | PT | 19+581.912 | | | 581,610.877 | 734,737.075 |
| | | | Linear= 70.403 (m) | S 31°13'26" E | | |
| | POE | 19+652.315 | | | 581,550.642 | 734,773.671 |

General Note:

1. ALIGNMENT PROJECTION IS NAD83 NEW MEXICO, STATE PLANE COORDINATES WEST ZONE GRID. SEE ROW TABLE THIS SHEET.

## N19(1-1) GRID CONTROL POINTS ---- NAD83 NMSPC WEST ZONE

| Point ID | Point Name | Northing | Easting | ELEVATION | CODE |
|---|---|---|---|---|---|
| NM491ROWM?1 | 100 | 593,125.708 | 750,855.574 | 1,706.796 | ROWM |
| NM491ROWM?1 | 101 | 591,972.285 | 751,065.726 | 1,706.998 | ROWM |
| AP?34 | 103 | 581,238.502 | 734,744.992 | 2,062.970 | NWPT |
| GREY | 104 | 585,000.697 | 741,595.006 | 1,834.174 | NWPT |
| ROC | 106 | 582,490.989 | 735,571.802 | 1,998.831 | NWPT |
| YCNM4962 | 108 | 589,374.747 | 747,532.422 | 1,757.621 | NWPT |
| PCP?12 | 120 | 581,768.129 | 734,754.720 | 2,055.222 | NWPT |

## ROW TABLE LENGTHS & AREA

| | Station Lt | to Station Rt | Length Left (m) | Length Right (m) | ROW Width RT (m) | ROW Width LT (m) | Area (ha) | Area (Ac) | Total Area (ha) | Total Area (Ac) |
|---|---|---|---|---|---|---|---|---|---|---|
| | 00+000.000 | 00+000.000 | 0.000 | 0.000 | 22.860 | 22.860 | 0.000 | 0.000 | | |
| | 00+019.854 | 00+019.854 | 19.854 | 19.854 | 22.860 | 22.860 | 0.091 | 0.224 | | |
| | 00+349.598 | 00+349.598 | 329.744 | 329.744 | 22.860 | 22.860 | 1.508 | 3.725 | | |
| | 00+855.616 | 00+855.616 | 506.018 | 506.018 | 22.860 | 22.860 | 2.314 | 5.717 | | |
| | 01+240.676 | 01+240.676 | 385.060 | 385.060 | 22.860 | 22.860 | 1.760 | 4.350 | | |
| | 04+092.543 | 04+092.543 | 2,851.867 | 2,851.867 | 22.860 | 22.860 | 13.039 | 32.219 | | |
| | 04+361.757 | 04+361.757 | 269.214 | 269.214 | 22.860 | 22.860 | 1.231 | 3.041 | | |
| | 04+544.874 | 04+544.874 | 183.117 | 183.117 | 22.860 | 22.860 | 0.837 | 2.069 | | |
| | 04+798.580 | 04+798.580 | 253.706 | 253.706 | 22.860 | 22.860 | 1.160 | 2.865 | | |
| SEGMENT 4 | 08+317.585 | 08+317.585 | 3,519.005 | 3,519.005 | 22.860 | 22.860 | 16.089 | 39.757 | 23.12 | 57.131 |
| | 08+548.655 | 08+548.655 | 231.070 | 231.070 | 22.860 | 22.860 | 1.056 | 2.611 | | |
| | 09+855.498 | 09+855.498 | 1,306.843 | 1,306.843 | 22.860 | 22.860 | 5.975 | 14.764 | | |
| SEGMENT 3 | 10+114.583 | 10+114.583 | 259.085 | 259.085 | 22.860 | 22.860 | 1.185 | 2.927 | 1.185 | 2.928 |
| SEGMENT 2 | 12+430.000 | 12+430.000 | 2,315.417 | 2,315.417 | 22.860 | 22.860 | 10.586 | 26.159 | 12.206 | 30.162 |
| | 12+710.000 | 12+710.000 | 280.000 | 280.000 | 22.860 | 35.000 | 1.620 | 4.003 | | |
| SEGMENT 1 | 18+517.145 | 18+517.145 | 5,807.145 | 5,807.145 | 22.860 | 22.860 | 26.550 | 65.607 | 30.423 | 75.177 |
| | 18+767.748 | 18+767.748 | 0.000 | 250.603 | 22.860 | 22.860 | 0.573 | 1.416 | | |
| | 18+951.984 | 18+951.984 | 0.000 | 184.236 | 22.860 | 22.860 | 0.421 | 1.041 | | |
| | 19+126.348 | 19+126.348 | 174.364 | 174.364 | 22.860 | 22.860 | 0.797 | 1.970 | | |
| | 19+298.408 | 19+298.408 | 172.060 | 172.060 | 22.860 | 22.860 | 0.787 | 1.944 | | |
| | 19+446.805 | 19+446.805 | 148.397 | 148.397 | 22.860 | 22.860 | 0.678 | 1.677 | | |
| | 19+511.632 | 19+511.632 | 64.827 | 64.827 | 22.860 | 22.860 | 0.296 | 0.732 | | |
| | 19+581.912 | 19+581.912 | 70.280 | 70.280 | 22.860 | 22.860 | 0.321 | 0.794 | | |
| | 19+652.315 | 19+652.315 | 70.403 | 70.403 | 22.860 | 22.860 | 0.322 | 0.796 | | |
| | | | | | | Total: | 89.196 | 220.409 | | |

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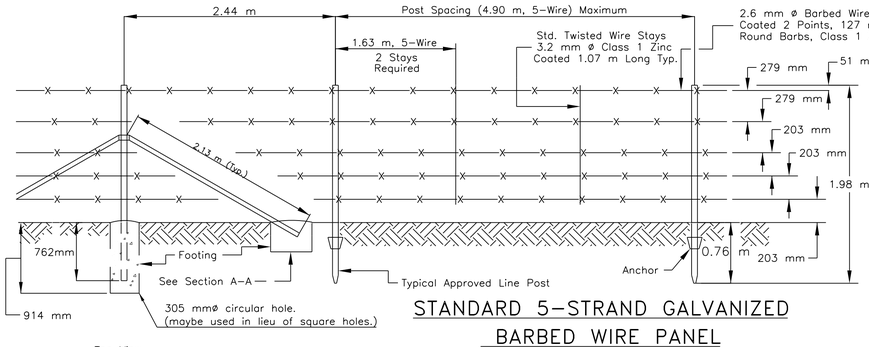
# N19 CENTERLINE ALIGNMENT

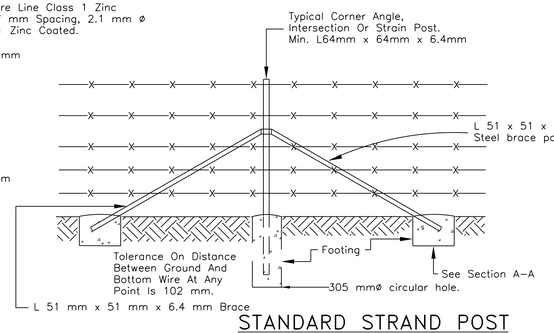
| | |
|---|---|
| DRAWN BY: NRDOT | DATE: 9/5/2014 |
| DESIGNED BY: NRDOT | DATE: 9/5/2014 |
| REVISED: 10/2/2017 | BY: Gerald.Hood |
| N19 Sht_3-Route Centerline Alignment 092817.dgn | |

I:\DESIGN\Users\DESIGN2\CURRENT PROJECT_093008\ALL FILES FOR_SAFETY PROJECT FOR 2013\Shiprock Safety Projects\Safety Project for N19\N19 Fencing CADD Files\N19 Sht_3-Route Centerline Alignment 092817.dgn

| REGION | STATE | RESERVATION | ROUTE | PROJECT NO. | SHEET | TOTAL SHEETS |
|---|---|---|---|---|---|---|
| NAVAJO | NEW MEXICO | NAVAJO | N19 | N19(1-1)2 | 4 | 9 |

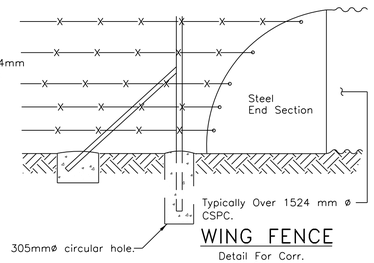



## STANDARD 5-STRAND GALVANIZED BARBED WIRE PANEL



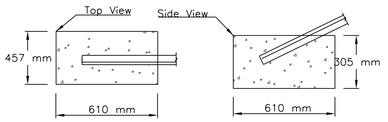

## STANDARD STRAND POST

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



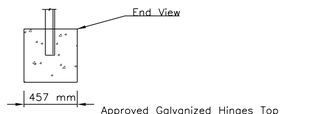

## WING FENCE

Detail For Corr. Metal Culvert

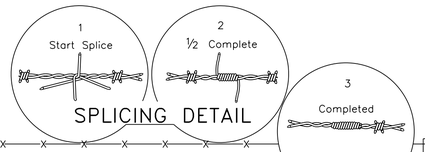



## SECTION A-A

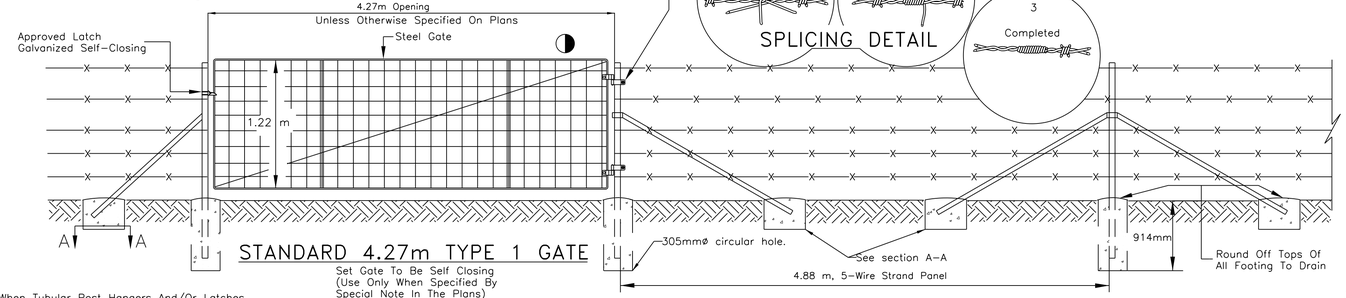
Concrete Footing for Corner and Strain Posts.




Approved Galvanized Hinges Top Hinge Down. Weld Pins To Prevent Unauthorized Removal.




## SPLICING DETAIL



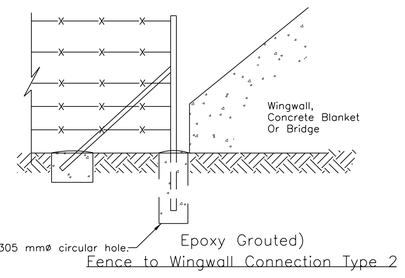

## STANDARD 4.27m TYPE 1 GATE

Set Gate To Be Self Closing (Use Only When Specified By Special Note In The Plans)

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

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

## END POST




## CONCRETE SAG WEIGHT DETAIL

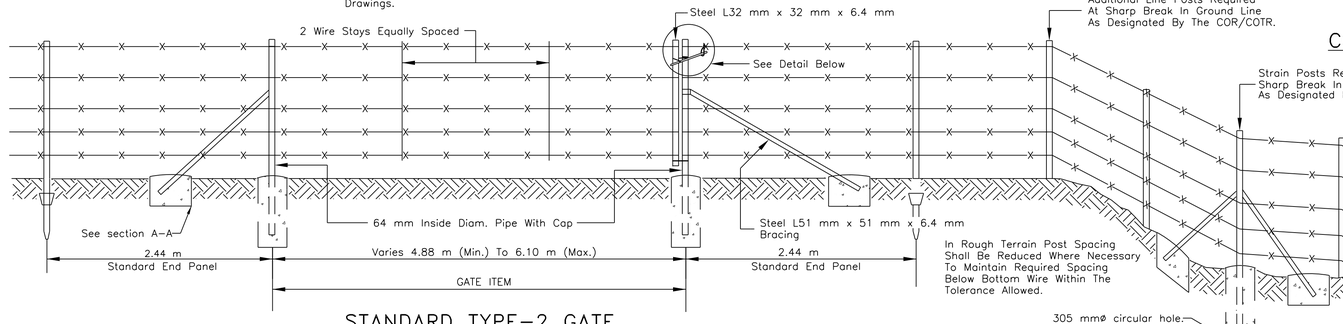
Min. Weight Of Concrete Sag Shall Be 16 kg.

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




Fence to Wingwall Connection Type 2

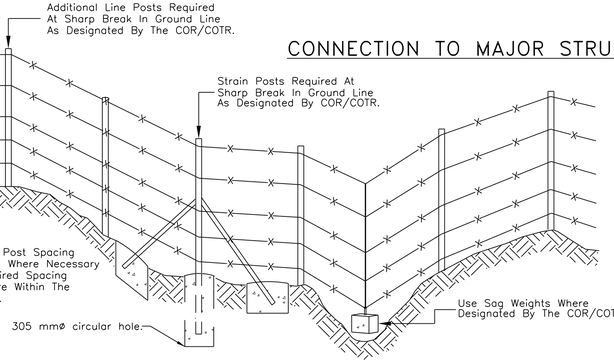
For Gate Details At Cattle guard Location See Standard Cattle guard Drawings.



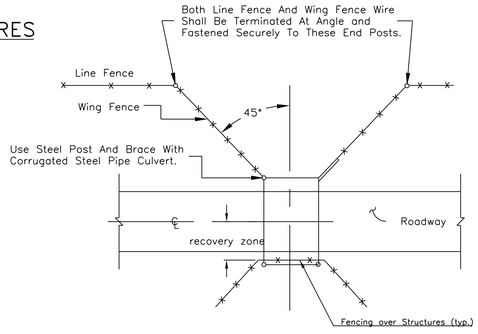

## STANDARD TYPE-2 GATE

Use At Locations Noted On Plans

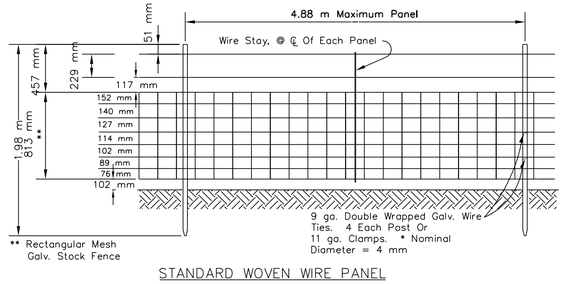
## CONNECTION TO MAJOR STRUCTURES




## FENCE PROFILE IN ROUGH TERRAIN

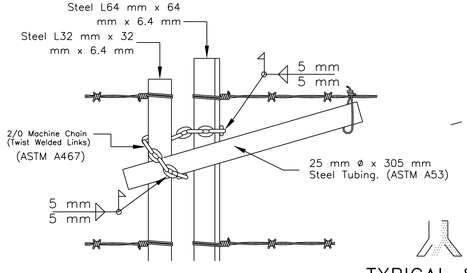



## WING FENCE DETAIL

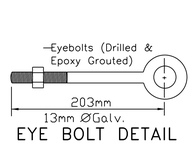



** Rectangular Mesh Galv. Stock Fence

## STANDARD WOVEN WIRE PANEL

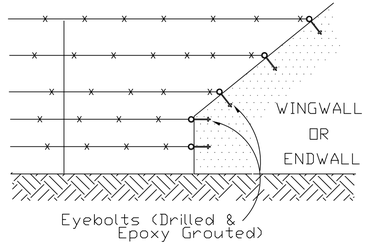



## GATE SECURING DETAIL




## EYE BOLT DETAIL

## TYPICAL STEEL POST SECTION




Fence to Wingwall Connection Type 1

## GENERAL NOTES

1. CORNER, GATE, INTERMEDIATE BRACE POSTS AND LINE POSTS SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M 281-96. METAL POST AND BRACES SHALL BE FABRICATED FROM RAIL, BILLET, OR COMMERCIAL GRADE STEEL CONFORMING WITH THE REQUIREMENT OF ASTM A 702.

2. LINE POSTS SHALL HAVE A NOMINAL WEIGHT OF 1.98 kg/m EXCLUSIVE OF ANCHOR PLATES. ANCHOR PLATES SHALL BE CLAMPED, WELDED OR RIVETED TO THE SECTION IN SUCH A MANNER AS TO PREVENT DISPLACEMENT WHEN THE POSTS ARE DRIVEN.

3. WHEN LINE POST ANCHORS ARE OMITTED, DUE TO CHANGE IN SOIL CONDITIONS SUCH AS ROCK, THEN THE POSTS SHALL BE SET IN CONCRETE. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO ITEM 61901-1000.

4. TIE WIRE, WIRE FASTENERS OR WIRE CLIPS FOR FASTENING BARBED AND WOVEN FABRIC FENCING TO THE STEEL POSTS SHALL BE 3.0 mm DIA. STEEL WIRE, CLASS 1 (ZINC COATED), SOFT TEMPER AND MEET THE REQUIREMENTS OF ASTM A 641. FURNISHING AND PLACEMENT OF FASTENERS SHALL BE INCLUDED WITH ITEM 61901-1000.

5. CONCRETE FOR ANCHORS, POST HOLES, ETC. SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 20.7 MPa IN 28 DAYS AND SHALL CONFORM TO SECTION 601 OF THE FP-03. FURNISHING AND PLACEMENT OF CONCRETE SHALL BE INCLUDED IN THE UNIT BID PRICE FOR BID ITEM 61901-1000.

6. TWO SPLICES ON THE SAME LINE BETWEEN THE STRAIN POST ASSEMBLIES SHALL NOT BE PERMITTED. NO SPLICES SHALL BE PLACED CLOSER THAN 30 METER OF ANY STRAIN POST ASSEMBLIES.

7. CONNECT ALL R.O.W. FENCING TO CATTLE GUARDS, CULVERTS (GREATER THAN 1524 mm DIA.), AND CONCRETE BOX STRUCTURES AS SHOWN ON THESE PLANS, AND/OR AS DIRECTED BY THE COR/COTR.

8. ANY CONFLICT IN PLACEMENT OF THE R/W FENCING AT DRAINAGE PIPE LOCATION, DUE TO NARROW R/W WIDTH OR OTHER CONSTRICTIONS, THE FENCE MAY BE PLACED OVER THE DRAINAGE STRUCTURE. THIS WORK AND ADJUSTED LENGTH INSTALLED SHALL BE PAID FOR UNDER BID ITEM 61901-1000.

9. CLEARING AND GRUBBING SHALL INCLUDE SHAPING AND/OR REMOVAL OF SMALL MOUNDS NECESSARY TO PRESENT A SMOOTH UNIFORM APPEARANCE OF BOTH GROUND AND FENCING LINE. THIS WORK SHALL BE INCIDENTAL TO THE INSTALLATION OF FENCING AND NO ADDITIONAL PAYMENT SHALL BE MADE.

10. ALL DRILLING INTO ROCK MATERIAL, ETC. SHALL BE INCIDENTAL TO THE INSTALLATION OF FENCING AND NO ADDITIONAL PAYMENT SHALL BE MADE.

11. TYPE 2 GATE CLOSURE DEVICE SHALL BE STEEL PIPE, NPS 26.7 mm ø SCHEDULE 40, CONFORMING TO THE REQUIREMENT OF ASTM A 53. THE GATE CLOSURE STEEL CHAIN SHALL BE WELDED TO THE STEEL PIPE AND ANGLE IRON FENCE POST. THIS WORK SHALL BE INCIDENTAL TO THE INSTALLATION OF FENCING AND NO ADDITIONAL PAYMENT SHALL BE MADE.

12. CONTRACTOR SHALL BE REQUIRED TO INSTALL SAG WEIGHTS WHERE VERTICAL CLEARANCE BETWEEN THE BOTTOM WIRE AND NATURAL GROUND IS 610 mm OR GREATER. THIS WORK SHALL BE INCIDENTAL TO THE INSTALLATION OF FENCING.

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# STANDARD FENCING DETAIL

| | |
|---|---|
| DRAWN BY: NRDOT | DATE: 7/24/2012 |
| DESIGNED BY: NRDOT | DATE: 7/24/2012 |
| REVISED: 3/22/2017 | BY: Gerald.Hood |
| N19 Sht_4-Standard Fencing Details.dgn | |

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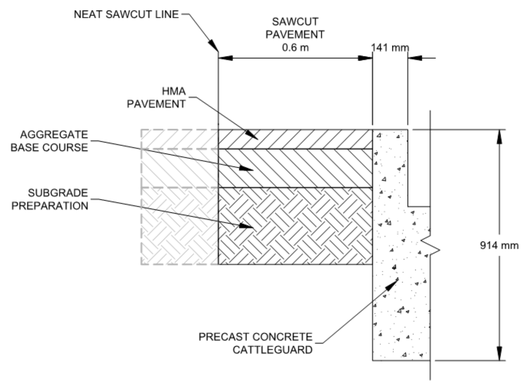
| REGION | STATE | RESERVATION | ROUTE | PROJECT NO. | SHEET | TOTAL SHEETS |
|---|---|---|---|---|---|---|
| NAVAJO | NEW MEXICO | NAVAJO | N19 | N19(1-1)2 | 5 | 9 |




## PAVEMENT SECTION WITH CATTLEGUARD DETAIL
NTS

## ESTIMATED MATERIAL LIST

| PART NO. | MATERIAL | SIZE AND THICKNESS | LENGTH | QUANTITY |
|---|---|---|---|---|
| 1 | Structural Steel Pipe | 64 mm ø Nominal | 4.23 m | 2 |
| 2 | Structural Steel Pipe | 32 mm ø Nominal | 4.19 m | 2 |
| 3 | Steel Angle (See Note 6 & 7) | L 64 x 64 x 9.5 mm | 2.29 m | 2 |
| 4 | Steel Plate | 89 mm x 10 mm | 178 mm | 2 |
| 5 | Steel Angle | L 152 x 89 x 9.5 mm | 89 mm | 4 |
| 6 | Bar | 25 mm x 6 mm | 1.68 m | 2 |
| | Bolts, Nuts and Washers | As Shown | | |

### GENERAL NOTES

1. Structural pipe shall conform to ASTM A53-93a, Grade B. All other structural steel shall conform to ASTM-A36.

2. Bolts, nuts, and washers shall be galvanized in accordance with AASHTO M111 (ASTM A123).

3. All wing brace structural steel and pipe shall receive one (1) primer coat, one (1) intermediate coat, and one (1) finish coat in accordance with Section 563, Paint System 2 of FP-03.

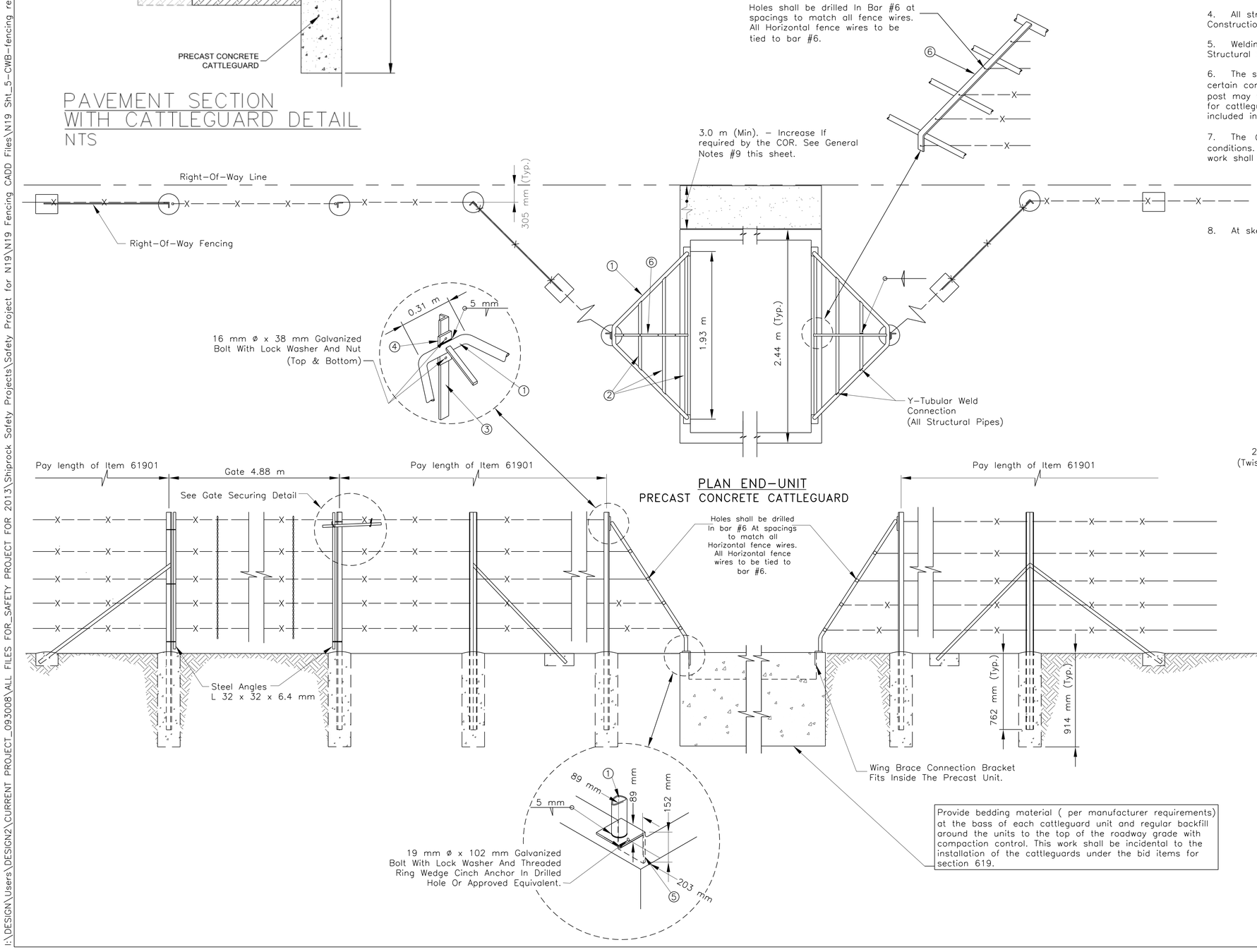
4. All structural pipe joints shall be fabricated in accordance with AISC Manual of Steel Construction, Latest Edition.

5. Welding design details shall conform to the AASHTO Standard Specifications for welding at Structural Steel Highway Bridges, Latest Edition.

6. The supporting wing brace posts length (part 3) shall be 2.3 meter (minimum). Under certain conditions (such as drain through cattleguard, high embankment, etc) the length of the post may vary to fully support the wing braces. This work shall be incidental to the bid items for cattleguard under section 619. Installation of Gates at cattleguard locations shall be included in the unit price bid for the cattleguard bid item(s) shown in the bid schedule.

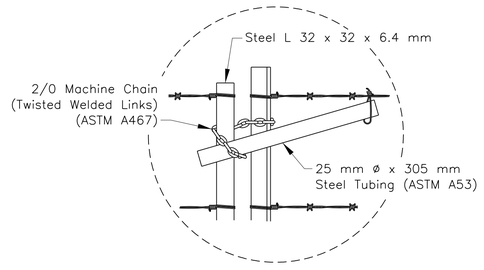
7. The CM may adjust the finished cattleguard elevation as needed to fit field/drainage conditions. The Contractor shall re-grade the adjoining turnout approaches as required. This work shall be considered incidental to the bid items under section 619 of FP-14.

8. At skewed turnout locations, the cattleguard shall be installed perpendicular to turnout.




## PLAN END-UNIT PRECAST CONCRETE CATTLEGUARD

Provide bedding material ( per manufacturer requirements) at the bass of each cattleguard unit and regular backfill around the units to the top of the roadway grade with compaction control. This work shall be incidental to the installation of the cattleguards under the bid items for section 619.




## GATE SECURING DETAIL

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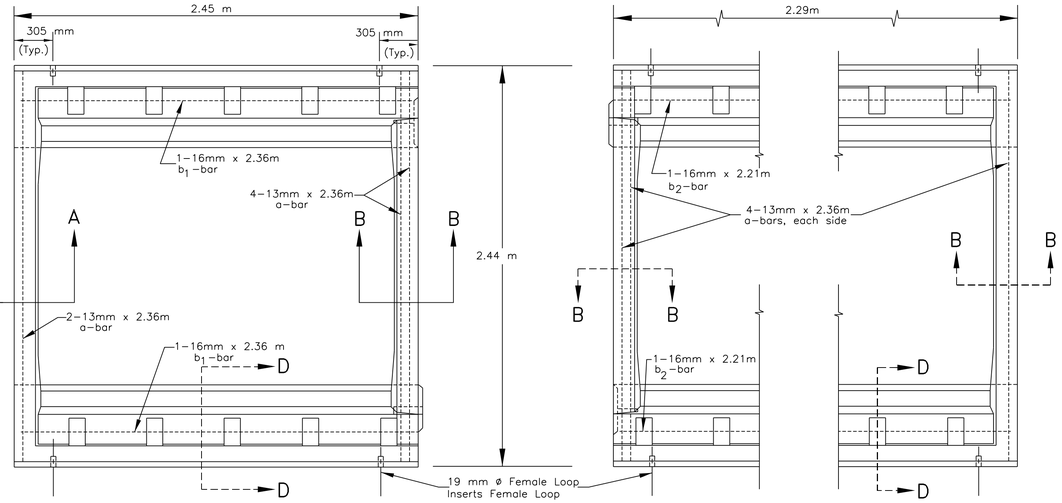
NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

## CATTLEGUARD WING BRACE DETAIL

| | |
|---|---|
| DRAWN BY: NRDOT | DATE: 8/7/2012 |
| DESIGNED BY: NRDOT | DATE: 8/7/2012 |
| REVISED: 9/7/2017 | BY: Gerald.Hood |
| N19 Sht_5-CWB-fencing repair.dgn | |

I:\DESIGN\Users\DESIGN2\CURRENT PROJECT_093008\ALL FILES FOR_SAFETY PROJECT FOR 2013\Shiprock Safety Projects\Safety Project for N19\N19 Fencing CADD Files\N19 Sht_5-CWB-fencing repair.dgn

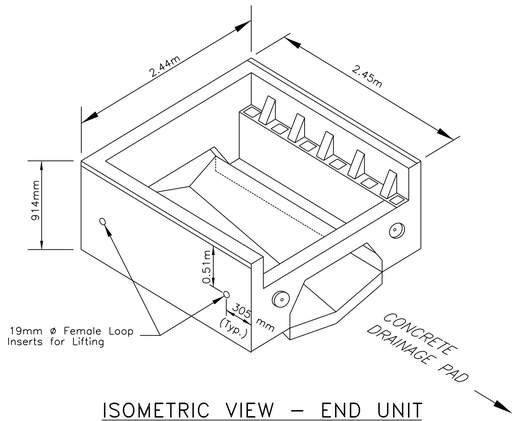
| REGION | STATE | RESERVATION | ROUTE | PROJECT NO. | SHEET | TOTAL SHEETS |
|---|---|---|---|---|---|---|
| NAVAJO | NEW MEXICO | NAVAJO | N19 | N19(1-1)2 | 6 | 9 |




PLAN – END UNIT



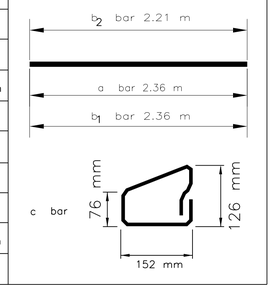

PLAN – INTERMEDIATE UNIT

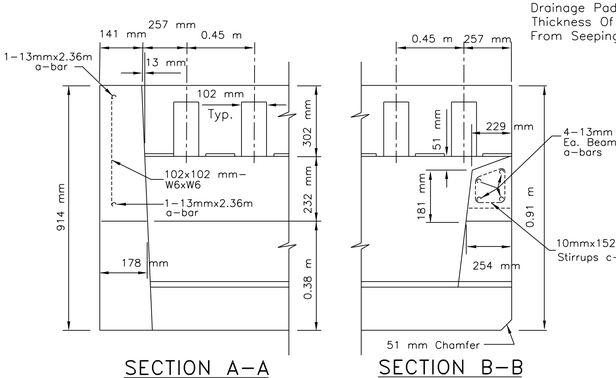



ISOMETRIC VIEW – END UNIT

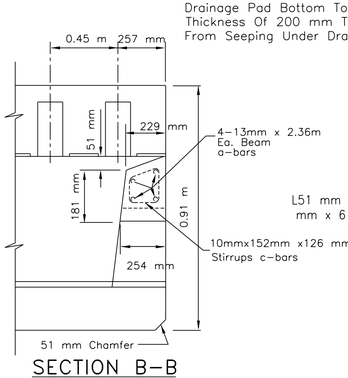
## REINFORCING STEEL SCHEDULE

| STRAIGHT BARS | | | | BENT BARS | | | | BENDING DIAGRAMS |
|---|---|---|---|---|---|---|---|---|
| MARK | NO. | SIZE | LENGTH | MARK | NO. | SIZE | LENGTH | ALL DIMENSIONS ARE OUT TO OUT |
| END UNIT | | | | | | | | |
| a | 6 | 13 | 2.36 m | | | | | |
| $b_1$ | 2 | 16 | 2.36 m | | | | | |
| | | | | c | 3 | 10 | 0.61 m | |
| $D_1$ | 20 | 13 | 0.46 m | | | | | |
| INTERMEDIATE UNIT | | | | | | | | |
| a | 8 | 13 | 2.36 m | | | | | |
| $b_2$ | 2 | 16 | 2.21 m | | | | | |
| | | | | c | 6 | 10 | 0.61 m | |
| $D_1$ | 18 | 13 | 0.46 m | | | | | |

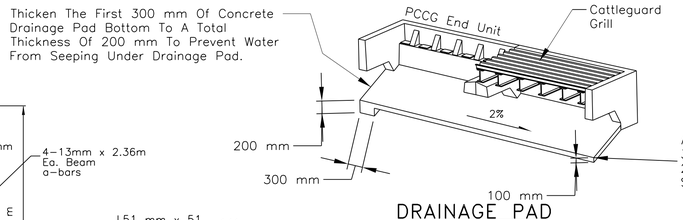


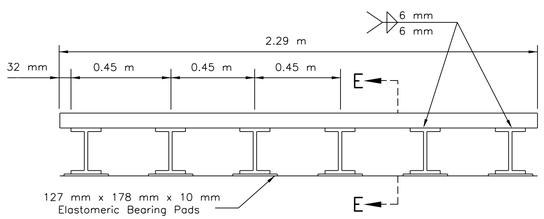

SECTION A–A



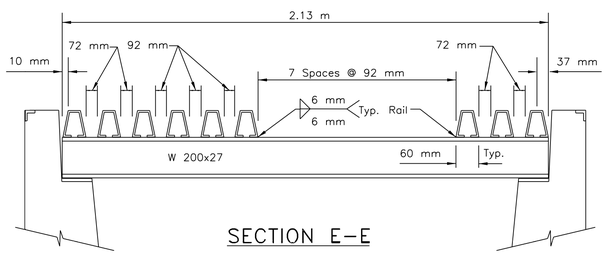

SECTION B–B



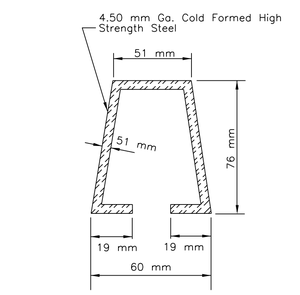

DRAINAGE PAD




TRAFFIC GRILLE UNIT

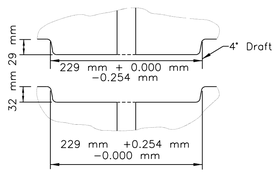



SECTION E–E

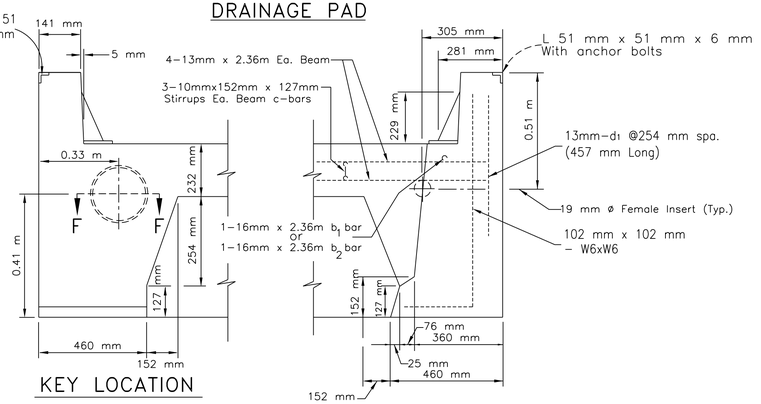



STEEL CROSSBAR SECTION

15 Req'd for 1 Grid

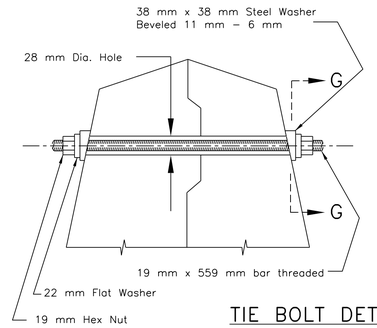



SECTION F–F

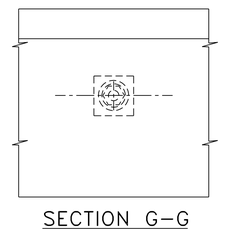



KEY LOCATION

SECTION D–D




TIE BOLT DETAIL



SECTION G–G

## GENERAL NOTES

1. PRECAST CONCRETE SHALL ATTAIN A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 27.6 MPa, IN ACCORDANCE WITH AASHTO T22 (ASTM C-39). THE CONCRETE SHALL BE CLASS A(AE) CONFORMING TO SECTION 552 OF THE FP-14.
2. REINFORCING STEEL SHALL CONFORM TO ASTM SPECIFICATION A615, GRADE 300. ALL STRUCTURAL STEEL SHALL CONFORM TO AASHTO M270M, GRADE 250.
3. EACH UNIT SHALL CONFORM TO THE AASHTO MS-18 HIGHWAY LOADING REQUIREMENTS.
4. EACH UNIT SHALL BE FABRICATED TO CONFORM TO THE ROADWAY CROWN AS SHOWN ON THE PLANS, OR AS DESIGNATED BY THE CM.
5. BOLTS, WASHER, AND NUTS, SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M-111.
6. ALL TRAFFIC GRILL UNIT, INCLUDING STEEL ANGLES SHALL BE SHOP PAINTED WITH ONE (1) PRIMER COAT, ONE (1) INTERMEDIATE COAT, AND ONE (1) FINISH COAT IN ACCORDANCE WITH SECTION 563, PAINT SYSTEM 2 OF FP-14.
7. WING BRACES SHALL BE CONSIDERED SUBSIDIARY ITEMS TO THE CATTLEGUARD UNIT.
8. NO STEEL CATTLEGUARDS TO BE USED AT PCC DRAINAGE PAD CATTLEGUARD LOCATIONS.
9. ALL STEEL CATTLEGUARDS MAYBE SUBSTITUTED PROVIDED THE CONTRACTOR CAN SHOW THEY ARE MORE COST EFFECTIVE WITH SUPPORTING DATA. THE CONTRACTOR IS RESPONSIBLE FOR PATENT PROTECTION RIGHTS AND ALL SHOP DRAWINGS AND MATERIAL CERTIFICATIONS.

UNITED STATES
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NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

# PRECAST CONCRETE CATTLEGUARD DETAILS

| | |
|---|---|
| DRAWN BY: NRDOT | DATE: 9/5/2014 |
| DESIGNED BY: NRDOT | DATE: 9/5/2014 |
| REVISED: 9/7/2017 | BY: Gerald.Hood |
| N19 Sht_6- PCC cattleguard STD1.dgn | |

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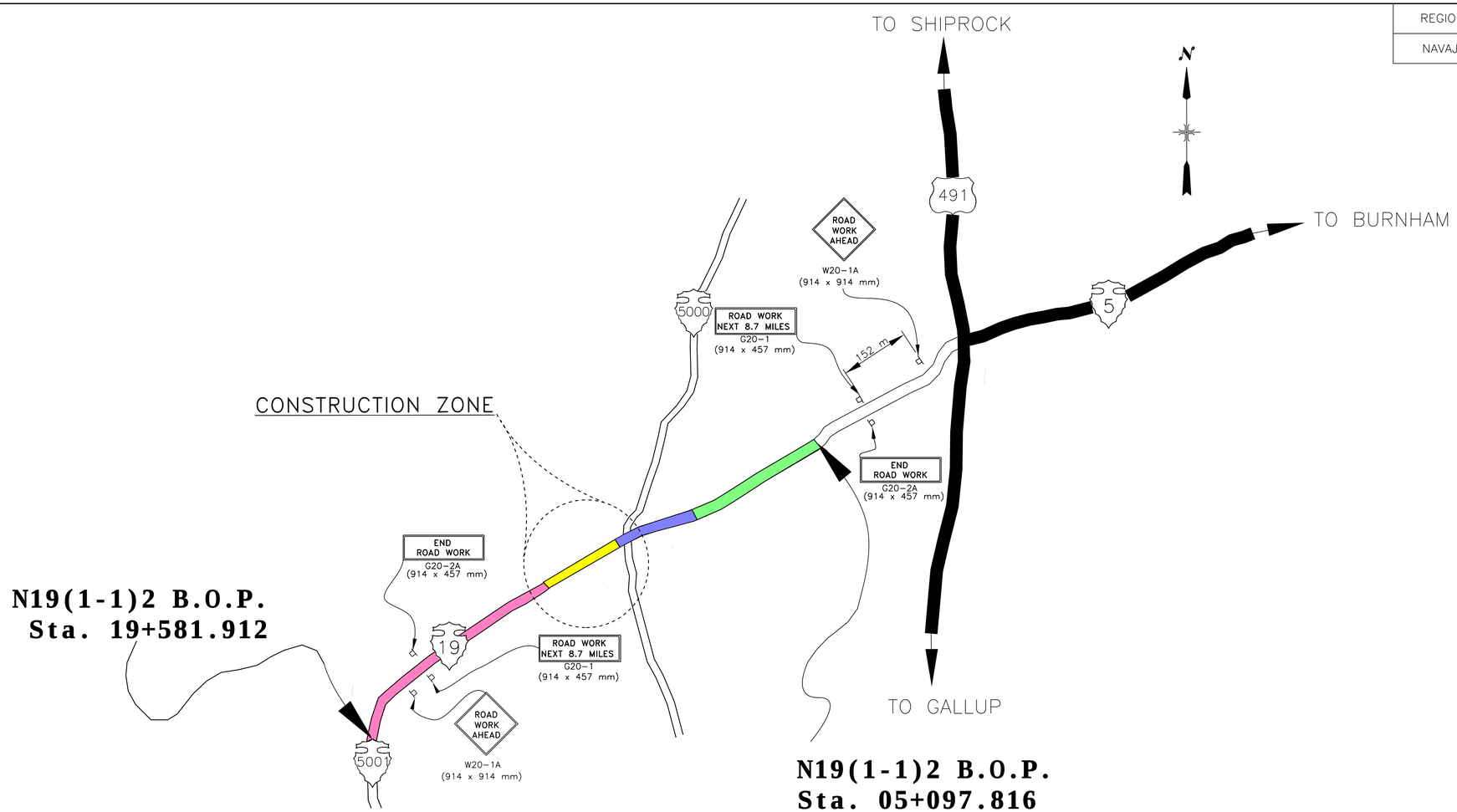
| REGION | STATE | RESERVATION | ROUTE | PROJECT NO. | SHEET | TOTAL SHEETS |
|---|---|---|---|---|---|---|
| NAVAJO | NEW MEXICO | NAVAJO | N19 | N19(1-1)2 | 7 | 9 |




## GENERAL NOTES

1. ALL TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH THE MUTCD MANUAL (LATEST EDITION AND AMENDMENTS) AND THE SUPPLEMENTAL SPECIFICATIONS FOR THIS PROJECT.

2. THE TRAFFIC CONTROL DETAILS SHOWN ARE ONLY A GUIDE AND REFLECTS GENERAL REQUIREMENTS. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR IMPLEMENTING HIS TCP IN ACCORDANCE WITH THIS PLAN AND THE MUTCD UNDER CONTRACT ITEM 63501. ANY ADDITIONAL TRAFFIC CONTROL DEVICES CALLED FOR ON THE CONTRACTOR'S TCP WILL NOT BE MEASURED FOR PAYMENT BUT SHALL BE CONSIDERED INCIDENTAL TO CONTRACT ITEM 63501. SEE SUPPLEMENTAL SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

3. SIGNS (G20-1, W20-1A & B, AND G20-2A) SHALL BE PLACED AT THE PROJECT LIMITS AND REMAIN IN PLACE THROUGH THE DURATION OF THE PROJECT.

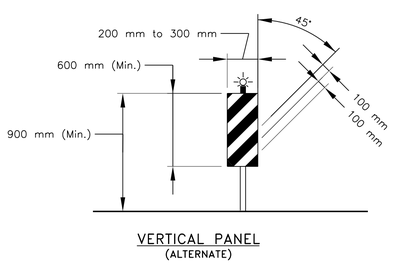
4. FLAGGERS SHALL BE STATIONED LEFT & RIGHT AS SHOWN WHEN EQUIPMENT IS CROSSING OR WORKING WITHIN EXISTING ROADWAY PRISM OR AT DETOURS.

5. AT THE END OF EACH WORKING DAY, IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE A DRIVING SURFACE FREE OF OBSTRUCTIONS AS SHOWN ON THE PHASED CONSTRUCTION DETAIL. ACCESS TO ALL ADJOINING PROPERTIES AND BIA SYSTEM ROUTES SHALL BE MAINTAINED AT ALL TIMES DAY AND NIGHT.

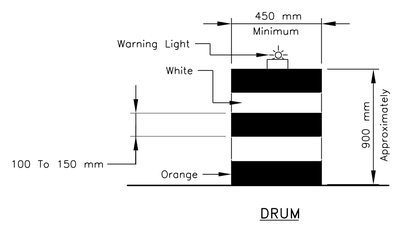
6. ALL TRAFFIC CONTROL DEVICES (EXCEPT AT DETOUR ROAD LOCATIONS AND AS NOTED IN ABOVE NOTE #3) SUCH AS CONSTRUCTION SIGNS, DRUMS, BARRICADES, ETC., SHALL BE REMOVED TO A LOCATION AT LEAST NINE (9) METERS FROM EDGE OF THE SHOULDER WHEN CONSTRUCTION IS NOT IN PROGRESS.

7. DURING CONSTRUCTION OPERATIONS, TRAFFIC SHALL BE MOVED THROUGH THE WORK ZONE USING PILOT CARS (AS REQUIRED). APPLICABLE SIGNS AND OTHER ITEMS (TWO-WAY RADIO CONTACT) RELATED TO THE USE OF THE PILOT CARS SHALL BE CONSIDERED INCIDENTAL TO CONSTRUCTION AND NO PAYMENT OR MEASUREMENT SHALL BE MADE.

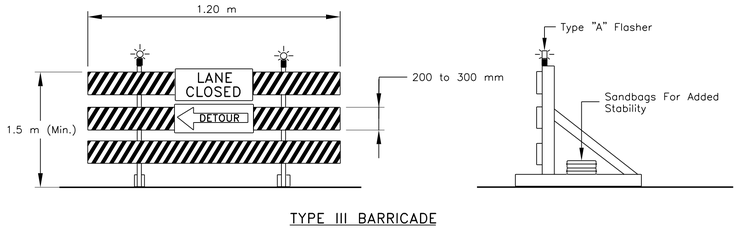
8. THE CONTRACTOR HAS THE OPTION TO EITHER USE DRUMS OR VERTICAL PANELS, BUT SHALL NOT USE A COMBINATION OF BOTH. NO TRAFFIC CONES ARE ALLOWED.




VERTICAL PANEL
(ALTERNATE)




DRUM




TYPE III BARRICADE

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

# TEMPORARY TRAFFIC CONTROL DETAILS

| | |
|---|---|
| DRAWN BY: NRDOT | DATE: 3/28/2017 |
| DESIGNED BY: NRDOT | DATE: 3/28/2017 |
| REVISED: 7/27/2017 | BY: Gerald.Hood |
| N19 Sht_7 tcp REV.dgn | |

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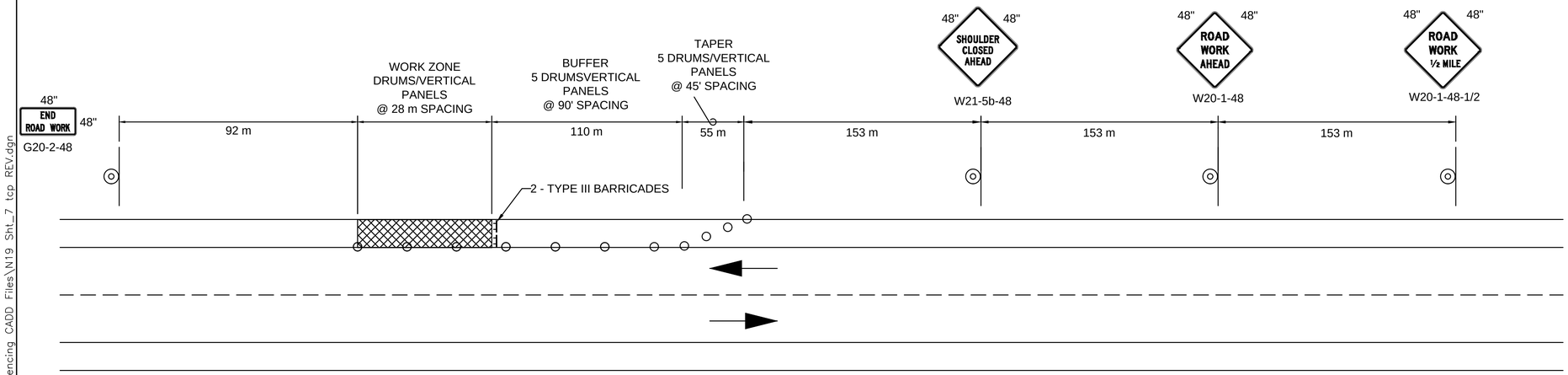
| REGION | STATE | RESERVATION | ROUTE | PROJECT NO. | SHEET | TOTAL SHEETS |
|---|---|---|---|---|---|---|
| NAVAJO | NEW MEXICO | NAVAJO | N19 | N19(1-1)2 | 8 | 9 |




# TYPICAL SHOULDER CLOSURE DETAIL

FOR 45 MPH SPEEDS

## GENERAL NOTES

1. ALL TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH THE MUTCD MANUAL (LATEST EDITION AND AMENDMENTS) AND THE SUPPLEMENTAL SPECIFICATIONS FOR THIS PROJECT.

2. THE TRAFFIC CONTROL DETAILS SHOWN ARE ONLY A GUIDE AND REFLECTS GENERAL REQUIREMENTS. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR IMPLEMENTING HIS TCP IN ACCORDANCE WITH THIS PLAN AND THE MUTCD UNDER CONTRACT ITEM 63501. ANY ADDITIONAL TRAFFIC CONTROL DEVICES CALLED FOR ON THE CONTRACTOR'S TCP WILL NOT BE MEASURED FOR PAYMENT BUT SHALL BE CONSIDERED INCIDENTAL TO CONTRACT ITEM 63501. SEE SUPPLEMENTAL SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

3. SIGNS (G20-1, W20-1A & B, AND G20-2A) SHALL BE PLACED AT THE PROJECT LIMITS AND REMAIN IN PLACE THROUGH THE DURATION OF THE PROJECT.

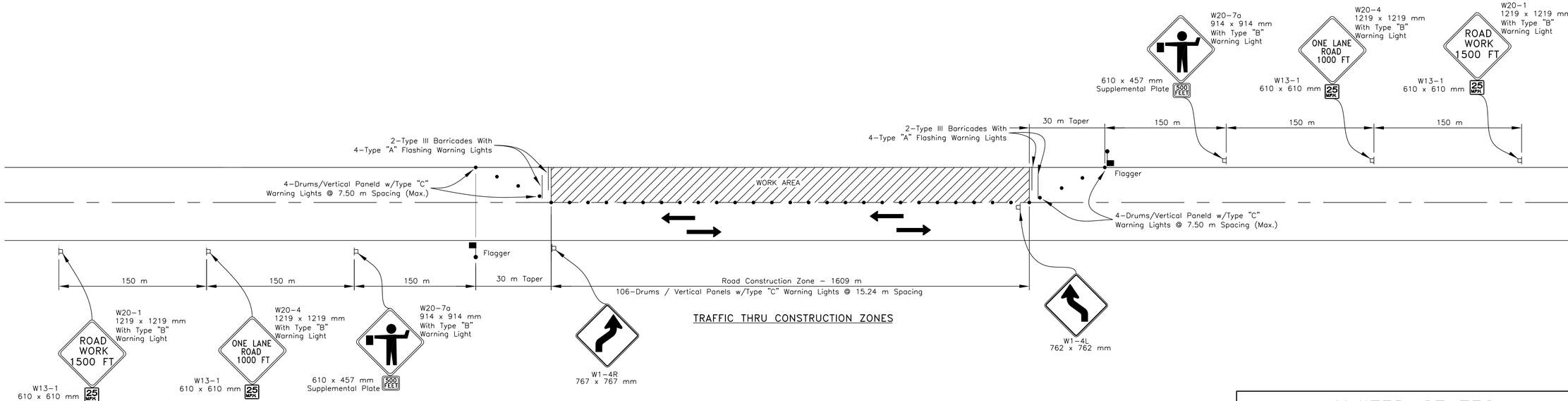
4. FLAGGERS SHALL BE STATIONED LEFT & RIGHT AS SHOWN WHEN EQUIPMENT IS CROSSING OR WORKING WITHIN EXISTING ROADWAY PRISM OR AT DETOURS.

5. AT THE END OF EACH WORKING DAY, IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE A DRIVING SURFACE FREE OF OBSTRUCTIONS AS SHOWN ON THE PHASED CONSTRUCTION DETAIL. ACCESS TO ALL ADJOINING PROPERTIES AND BIA SYSTEM ROUTES SHALL BE MAINTAINED AT ALL TIMES DAY AND NIGHT.

6. ALL TRAFFIC CONTROL DEVICES (EXCEPT AT DETOUR ROAD LOCATIONS AND AS NOTED IN ABOVE NOTE #3) SUCH AS CONSTRUCTION SIGNS, DRUMS, BARRICADES, ETC., SHALL BE REMOVED TO A LOCATION AT LEAST NINE (9) METERS FROM EDGE OF THE SHOULDER WHEN CONSTRUCTION IS NOT IN PROGRESS.

7. DURING CONSTRUCTION OPERATIONS, TRAFFIC SHALL BE MOVED THROUGH THE WORK ZONE USING PILOT CARS (AS REQUIRED). APPLICABLE SIGNS AND OTHER ITEMS (TWO-WAY RADIO CONTACT) RELATED TO THE USE OF THE PILOT CARS SHALL BE CONSIDERED INCIDENTAL TO CONSTRUCTION AND NO PAYMENT OR MEASUREMENT SHALL BE MADE.

8. THE CONTRACTOR HAS THE OPTION TO EITHER USE DRUMS OR VERTICAL PANELS, BUT SHALL NOT USE A COMBINATION OF BOTH. NO TRAFFIC CONES ARE ALLOWED.




TRAFFIC THRU CONSTRUCTION ZONES

UNITED STATES
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NAVAJO REGIONAL OFFICE * DIVISION OF TRANSPORTATION

## TEMPORARY TRAFFIC CONTROL DETAILS

| | |
|---|---|
| DRAWN BY: NRDOT | DATE: 3/28/2017 |
| DESIGNED BY: NRDOT | DATE: 3/28/2017 |
| REVISED: 7/27/2017 | BY: Gerald.Hood |
| N19 Sht_7 tcp REV.dgn | |

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