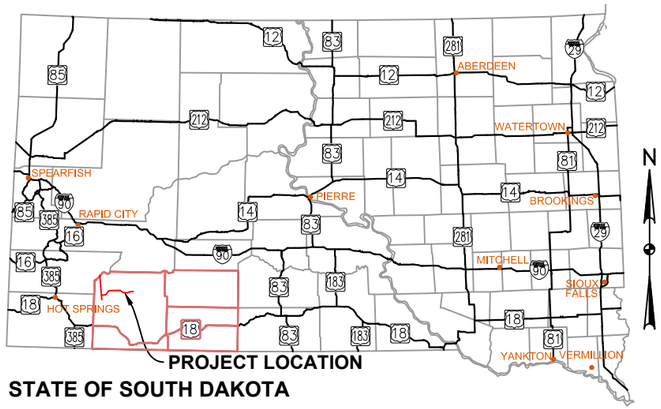
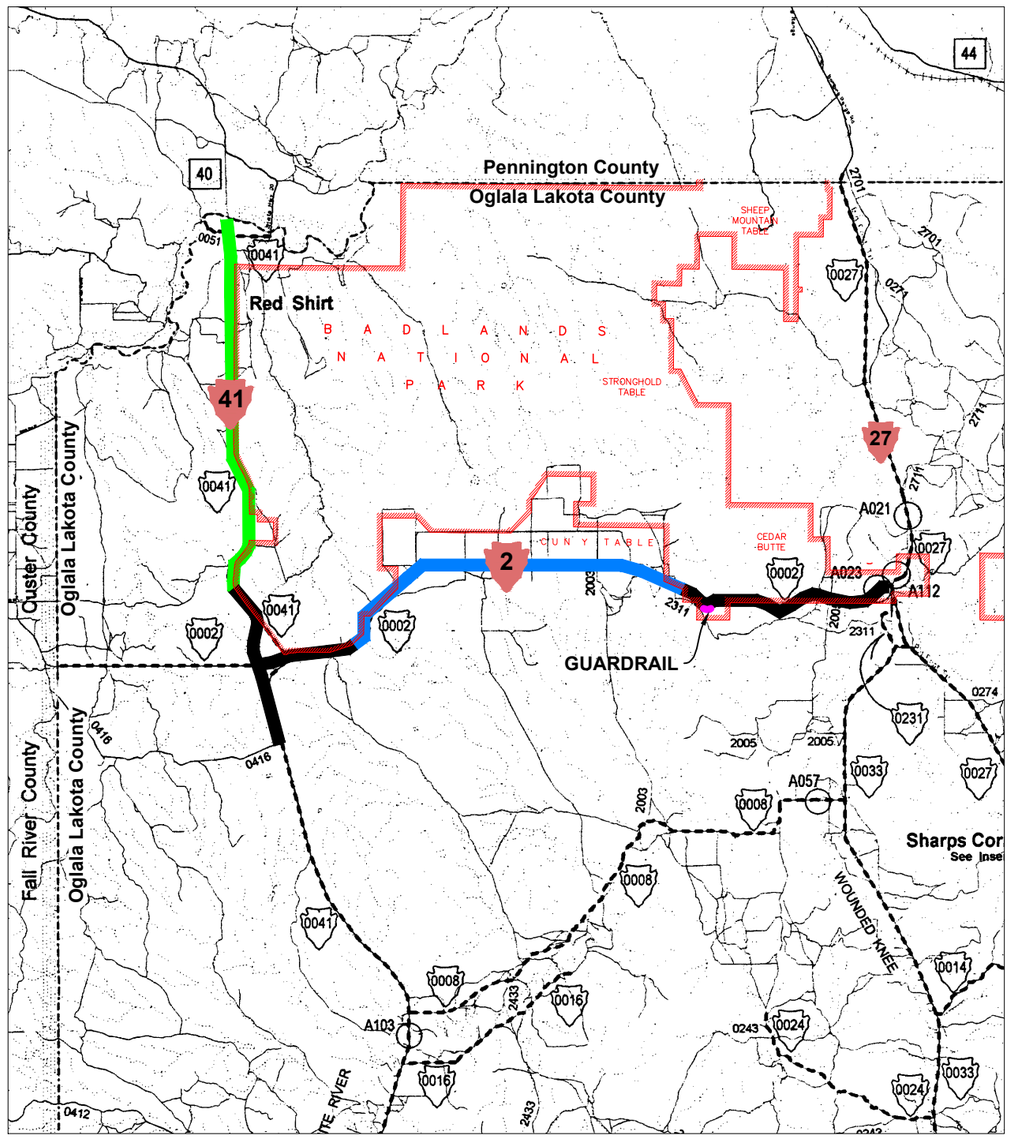
CRAZY HORSE SCENIC BYWAY
PAVEMENT RESILIENCY AND RESTORATION
OGLALA SIOUX TRIBE
PINE RIDGE INDIAN RESERVATION

NOVEMBER 2023



STATE OF SOUTH DAKOTA



VICINITY MAP

NO SCALE

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- GUARDRAIL
- BADLANDS NATIONAL PARK SOUTH UNIT BOUNDARY

CERTIFICATION

I HEREBY CERTIFY THAT THE ATTACHED PLANS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF SOUTH DAKOTA.

DATE: .

FOR REVIEW ONLY

ONE CALL
BEFORE DIGGING
1-800-781-7474

18th E MAIN ST, STE 125
RAPID CITY, SD 57701
PH: 605.721.5553
www.kljeng.com

KLJ PROJECT NO. 2311-00354

PAVEMENT RESILIENCY AND RESTORATION

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SPECIFICATIONS

THE SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROADS & BRIDGES, CURRENT EDITION AND REQUIRED PROVISIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS AS INCLUDED IN THE PROJECT MANUAL, OR AS OTHERWISE NOTED IN THESE PLANS.

APPROVED PRODUCTS

THE APPROVED PRODUCTS WILL BE LISTED OR MAY REFERENCE THE SDDOT APPROVED PRODUCTS LIST WHICH MAY BE VIEWED AT THE FOLLOWING INTERNET SITE:
http://dot.sd.gov/doing-business/certification-accreditation/approved-products

ESTIMATED RATES AND UNIT WEIGHTS

BASE COURSE	145 LBS/CU FT
ASPHALT CONCRETE COMPOSITE	150 LBS/CU FT
SALVAGED ASPHALT MIX AND GRANULAR BASE MATERIAL	148 LBS/CU FT
ASPHALT FLUSH SEAL	0.05 GAL/SQ YD
SEEDING, "DRY METHOD"	18 LBS/ACRE
MULCHING, "DRY METHOD"	2 TONS/ACRE
FERTILIZER, "DRY METHOD"	1,500 LBS/ACRE
WATER FOR EMBANKMENT	10 GAL/CU YD
WATER FOR GRANULAR MATERIAL	20 GAL/TON
WATER FOR DUST CONTROL	5 GAL/TON

PROJECT LIMITS

THE PROJECT LIMITS INCLUDE ALL AREAS WHICH ARE WITHIN THE EXISTING RIGHT-OF-WAY AND DESIGNATED AREA AT SOLID WASTE SITE.

UTILITY CONTACT

LAKREEK ELECTRIC CONTACT:
MIKE PISHA - OFFICE:605-745-1334
MIKEP@LACREEK.COM

OGLALA SIOUX TRIBE RURAL WATER: 605-455-1367

GOLDEN WEST: 605-745-1334

OST WATER AND SEWER: 605-867-5804

CONSTRUCTION SURVEYING AND STAKING

THE ENGINEER WILL PROVIDE STANDARD CONSTRUCTION SURVEYING AND STAKING FOR THE PROJECT. THE CONTRACTOR SHALL INCLUDE STAKING ACTIVITIES IN THE CONSTRUCTION SCHEDULE AND COORDINATE WORK WITH THE ENGINEER. THE CONTRACTOR WILL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH REPLACING CONSTRUCTION STAKES WHICH WERE UNNECESSARILY DAMAGED, DESTROYED, OR REMOVED BY THE CONTRACTOR'S OPERATIONS.

EXISTING ROAD CONDITIONS, TRAFFIC VOLUMES AND DESIGN SPEED

BIA 41 - SURFACE CONDITION: PAVED
TRAFFIC VOLUME (2017): ADT 513
POSTED SPEED: 65 MPH

BIA 2 - SURFACE CONDITION: PAVED
TRAFFIC VOLUME (2016): ADT 2,575
POSTED SPEED: 65 MPH

MATERIALS OR LAND USE OUTSIDE OF PROJECT LIMITS

THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS, CLEARANCES, AND AGREEMENTS FROM THE OGLALA SIOUX TRIBE, US ARMY CORP OF ENGINEERS, COUNTY, STATE, AND ANY OTHER REGULATORY AGENCY, OR PRIVATE ENTITY, AS APPLICABLE FOR ALL STAGING AREAS, PITS, STOCKPILE SITES, DISPOSAL SITES OR ANY OTHER LOCATION OUTSIDE OF THE PROJECT LIMITS USED FOR THE CONTRACTOR'S CONVENIENCE.

NO PAYMENT WILL BE MADE FOR THIS WORK AS IT WILL BE INCIDENTAL TO THE MOBILIZATION ITEM. COPIES OF ALL PERMITS, CLEARANCES, AND AGREEMENTS SHALL BE SUBMITTED TO THE ENGINEER PRIOR TO USE.

TRAFFIC CONTROL

TRAFFIC CONTROL OF THE PROJECT SHALL BE IN ACCORDANCE WITH SDDOT SECTION 4.5. THE CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN TO THE ENGINEER A MINIMUM OF SEVEN DAYS PRIOR TO THE PRECONSTRUCTION CONFERENCE FOR REVIEW. AT A MINIMUM, TRAFFIC SHALL BE MAINTAINED IN ALTERNATING ONE-WAY DIRECTION DURING THE HOURS OF CONSTRUCTION OPERATION.

TRAFFIC MAY BE DELAYED FOR CONSTRUCTION OPERATIONS FOR A MAXIMUM OF 20 MINUTES. TRAFFIC DELAY IS DEFINED AS: NO SINGLE DELAY LONGER THAN 15 MINUTES AND TOTAL DELAY NO LONGER THAN 20 MINUTES. DURING THE HOURS OF NON-CONSTRUCTION OPERATIONS, TWO-WAY TRAFFIC SHALL BE MAINTAINED. ACCESS FOR LOCAL TRAFFIC AND EMERGENCY VEHICLES MUST BE MAINTAINED AT ALL TIMES.

ALL MATERIALS AND EQUIPMENT SHALL BE STORED A MINIMUM DISTANCE OF 30 FEET FROM THE TRAVELED LANES DURING NON-WORK HOURS. NON-APPLICABLE TRAFFIC CONTROL DEVICES SHALL BE REMOVED AND STORED AS NEAR AS POSSIBLE TO THE RIGHT-OF-WAY LINE. STORAGE OF VEHICLES AND EQUIPMENT SHALL BE AS NEAR THE RIGHT-OF-WAY AS POSSIBLE. CONTRACTOR'S EMPLOYEES SHOULD MOBILIZE AT A LOCATION OFF THE RIGHT-OF-WAY AND ARRIVE AT THE WORK SITES IN A MINIMUM NUMBER OF VEHICLES NECESSARY TO PERFORM THE WORK.

NO WORK WILL BE ALLOWED DURING THE HOURS OF DARKNESS. HOURS OF DARKNESS ARE DEFINED AS ONE-HALF HOUR AFTER SUNSET UNTIL ONE-HALF HOUR BEFORE SUNRISE.

INDISCRIMINATE DRIVING AND PARKING OF VEHICLES WITHIN THE RIGHT-OF-WAY WILL NOT BE PERMITTED. ANY DAMAGE TO THE VEGETATION, SURFACING, EMBANKMENT, DELINEATORS AND EXISTING SIGNS RESULTING FROM SUCH INDISCRIMINATE USE SHALL BE REPAIRED AND/OR RESTORED BY THE CONTRACTOR, AT NO EXPENSE TO THE OWNER, AND TO THE SATISFACTION OF THE ENGINEER.

DURING PERIODS OF WORK, THE ENGINEER WILL ASSESS LIQUIDATED DAMAGES IN THE AMOUNT OF $250 IF DAMAGED OR DEFICIENT DEVICES ARE NOT PROPERLY MAINTAINED WITHIN 30 MINUTES OF NOTIFICATION OR ATTEMPTED NOTIFICATION. DURING PERIODS OF NON-WORK, THE ENGINEER WILL ASSESS LIQUIDATED DAMAGES IN THE AMOUNT OF $250 IF DAMAGED OR DEFICIENT DEVICES ARE NOT PROPERLY MAINTAINED WITHIN TWO HOURS AFTER NOTIFICATION OR ATTEMPTED NOTIFICATION. THEREAFTER, IN EITHER OF THE ABOVE CASES, ADDITIONAL LIQUIDATED DAMAGES IN THE AMOUNT OF $250 WILL BE ASSESSED FOR EACH SUCCESSIVE TWO-HOUR PERIOD DURING WHICH THE REQUIRED MAINTENANCE IS NOT PERFORMED. THESE DAMAGES WILL BE IN ADDITION TO THE OVERTIME CHARGES SPECIFIED FOR FAILURE TO COMPLETE CONTRACT WORK ON TIME AND WILL BE ASSESSED SIMULTANEOUSLY WITH THE OVERTIME CHARGES.

PAINT WILL BE REQUIRED FOR TEMPORARY PAVEMENT MARKING ON THE BOTTOM LIFT OF ASPHALT CONCRETE. AFTER THE TOP LIFT OF ASPHALT CONCRETE, THE CONTRACTOR SHALL INSTALL NIGHT VISIBLE TEMPORARY RAISED PAVEMENT MARKERS AS PER SDDOT SPECIFICATION 634.3.L.2.B OR PERMANENT STRIPING. ANY MARKERS THAT ARE NON-REFLECTIVE SHALL BE CLEANED OR REPLACED.

FLAGGER SYMBOL SIGNS AND FLAGGERS OR SHADOW VEHICLE WITH ADVANCED WARNING ARROW BOARD IN ACCORDANCE WITH MUTCD SHALL BE POSITIONED ON THE ROADWAY SHOULDER IN ADVANCE OF THE WORKERS IN BOTH DIRECTIONS OF TRAFFIC DURING THE INSTALLATION AND REMOVAL OF THE TEMPORARY PAVEMENT MARKING.

THE TRAFFIC CONTROL SHALL BE MOVED INTERMITTENTLY TO PROVIDE PROPER WARNING OF THE WORK OPERATION. A ROAD WORK AHEAD (W20-1), WORKERS SYMBOL (W21-1) OR BE PREPARED TO STOP (W3-4) SHALL BE MOUNTED ON THE REAR OF THE SHADOW VEHICLE. THE METHOD OF TRAFFIC CONTROL USED FOR THIS OPERATION SHALL BE APPROVED BY THE ENGINEER.

HAUL ROUTE

THE ENGINEER SHALL APPROVE THE HAUL ROUTE PROPOSED BY THE CONTRACTOR BEFORE INSPECTIONS OR AGREEMENTS ARE MADE. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY HAUL ROUTE AGREEMENTS AND PERMITS FROM LOCAL JURISDICTIONS AND SUBMIT TO ENGINEER PRIOR TO USE. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE MAINTENANCE AND REPAIR OF ANY DAMAGED AREAS CAUSED BY HAULING. ALL AREAS WILL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER AND ROAD OWNER. ALL COSTS SHALL BE INCIDENTAL TO MAINTENANCE OF TRAFFIC.

WATER

WATER USED WITHIN THE LIMITS OF THE PROJECT FOR THE PURPOSES OF DUST CONTROL, EMBANKMENT, AND GRANULAR MATERIAL WILL BE MEASURED IN ACCORDANCE WITH SDDOT SECTION 120.4.I AND PAID FOR UNDER THE BID ITEM, WATER. COSTS FOR WATER USED FOR OTHER PROJECT ITEMS SHALL BE CONSIDERED INCIDENTAL TO THOSE ASSOCIATED BID ITEMS.

WATER WASTED OR USED CONTRARY TO THE CONTRACT WILL NOT BE MEASURED AND PAID FOR. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING THE WATER SOURCE AND ALL APPLICABLE PERMITS, CLEARANCES, AND AGREEMENTS. COPIES OF ALL PERMITS, CLEARANCES, AND AGREEMENTS SHALL BE SUBMITTED TO THE ENGINEER PRIOR TO USE. ALL COSTS ASSOCIATED WITH LOADING, PUMPING, HAULING OR OBTAINING THE WATER SOURCE SHALL BE CONSIDERED INCIDENTAL TO THE WATER ITEM.

STOCKPILE SITE

PRIOR TO STOCKPILING OF MATERIALS, TOPSOIL SHALL BE SALVAGED FROM AND STOCKPILED WITHIN THE AREA IN A LOCATION SPECIFIED BY LESLIE MESTETH AT (605) 867-2919. UPON COMPLETION OF REMOVAL OF SALVAGED ASPHALT MIX AND GRANULAR BASE MATERIAL, THE AREA SHALL BE SHAPED TO MATCH THE PREVIOUS CONDITION AND TO THE SATISFACTION OF THE ENGINEER. PAYMENT FOR STOCKPILE SITE PREPARATION, INCLUDING TOPSOIL STRIPPING SHALL BE INCLUDED IN THE BID ITEMS "SALVAGE AND STOCKPILE ASPHALT AND GRANULAR MIX MATERIAL".

SALVAGE AND REMOVAL

ALL EXISTING ITEMS SPECIFIED TO BE SALVAGED, WITH THE EXCEPTION OF SALVAGED ASPHALT MIX AND GRANULAR BASE MATERIAL, SHALL BE DELIVERED AND STOCKPILED AS DIRECTED BY THE ENGINEER TO THE OGLALA SIOUX TRIBE DEPARTMENT OF TRANSPORTATION MAINTENANCE YARD IN PINE RIDGE. ALL SALVAGED ITEMS SHALL REMAIN THE PROPERTY OF THE OSTDOT. REMOVED ITEMS MUST BE PROPERLY DISPOSED OF AT AN APPROVED DISPOSAL SITE. IF THE MATERIAL IS DISPOSED OF ON PRIVATE LAND, A SIGNED COPY OF THE WRITTEN AGREEMENT BETWEEN THE LANDOWNER AND THE CONTRACTOR MUST BE SUBMITTED AND APPROVED BY THE ENGINEER. COPIES OF ALL PERMITS, CLEARANCES, AND AGREEMENTS SHALL BE SUBMITTED TO THE ENGINEER PRIOR TO DISPOSAL.

WHERE NOTED IN THE PLANS, EXISTING ASPHALT PAVEMENT SHALL BE SAWED FULL DEPTH WITH A VERTICAL FACE. THE COST FOR SAWCUTTING EXISTING ITEMS SHALL BE INCIDENTAL TO THE ASSOCIATED ITEM OF REMOVAL. ALL COSTS TO REMOVE, HAUL AND DISPOSE SHALL BE INCIDENTAL TO THE ASSOCIATED ITEM OF REMOVAL. IF A SPECIFIC REMOVAL BID ITEM IS NOT LISTED, THE COSTS FOR THAT REMOVAL SHALL BE INCIDENTAL TO THE ASSOCIATED INSTALLATION BID ITEM.

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PAVEMENT RESILIENCY AND RESTORATION
OGLALA SIOUX TRIBE
PINE RIDGE INDIAN RESERVATAION
GENERAL NOTES

SHEET 1.1

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EXISTING CULVERTS

EXISTING CULVERTS SHALL BE PROTECTED DURING CONSTRUCTION. CULVERTS DAMAGED DUE TO CONSTRUCTION ACTIVITIES SHALL BE REPLACED AT CONTRACTORS EXPENSE.

WOVEN GEOTEXTILE SEPARATOR

THE WOVEN GEOTEXTILE SEPARATOR SHALL BE INSTALLED IN LOCATIONS SHOWN IN THE TYPICAL SECTIONS AND WHERE DIRECTED BY THE ENGINEER AND SHALL BE INSTALLED IN COMPLIANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

WOVEN GEOTEXTILE SEPARATOR SHALL BE FROM THE SDDOT APPROVED PRODUCTS LIST FOR WOVEN SEPARATOR, OR SHALL BE CERTIFIED TO CONFORM TO SECTION 831 WOVEN SEPARATOR FABRIC STANDARD SPECIFICATION.

WOVEN GEOTEXTILE SEPARATOR WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER SQUARE YARD FOR "WOVEN GEOTEXTILE SEPARATOR". PAYMENT QUANTITIES WILL BE BASED ON ACTUAL AREA COVERED AND APPROVED. OVERLAPS WILL NOT BE PAID. THE CONTRACT UNIT PRICE SHALL BE FULL COMPENSATION FOR PREPARATION OF THE GEOTEXTILE BED, PLACING, AND FOR LABOR, TOOLS, EQUIPMENT, GEOTEXTILE MATERIAL, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK. GRANULAR BACKFILL MATERIALS WILL BE PAID FOR UNDER A DIFFERENT BID ITEM.

RUMBLE STRIPS

THE RUMBLE STRIPS SHALL RECEIVE A FLUSH SEAL COAT WITH SS-1h OR CSS-1h ASPHALT AT THE RATE OF 0.05 GALLONS PER SQUARE YARD. COSTS FOR FLUSH SEAL COAT SHALL BE INCIDENTAL TO THE RUMBLE STRIPS BID ITEMS.

HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

COMPOSITE REFLECTIVE ELEMENTS WILL NOT BE INSTALLED ON SURFACE APPLIED WATERBORNE PAVEMENT MARKING PAINT WITH HIGH GRADE POLYMER.

ALL MATERIALS WILL BE APPLIED AS PER MANUFACTURER'S RECOMMENDATIONS. HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT WILL CONFORM TO THE SUPPLEMENTAL SPECIFICATIONS FOR SECTION 980.1 B.

REFLECTIVE MEDIA WILL CONSIST OF GLASS BEADS.

HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT APPLIED AFTER OCTOBER 15 MUST BE FORMULATED AS COLD-WEATHER WATERBORNE PAINT. COLD WEATHER WATERBORNE PAINT WILL MEET THE REQUIREMENTS OF SECTION 980.1 C.

RATES OF MATERIALS OF HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

SOLID 4" LINE = 22.5 GALS/MILE

BROKEN 4" LINE = 6.2 GAL/MILE

GLASS BEADS = 8 LBS/GAL.

ALL COST FOR MATERIALS, LABOR AND EQUIPMENT NECESSARY TO FURNISH AND INSTALL THE PAVEMENT MARKINGS WILL BE INCIDENTAL TO THE CONTRACT UNIT PRICE FOR THE RESPECTIVE HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT ITEMS.

PERMANENT PAVEMENT MARKING PAINT

THE CONTRACTOR SHALL ADVISE THE ENGINEER A MINIMUM OF 2 WEEKS PRIOR TO THE APPLICATION OF THE PERMANENT PAVEMENT MARKING. SPECIFIED STATIONING IS APPROXIMATE AND SHALL BE VERIFIED BY THE ENGINEER PRIOR TO APPLICATION. THE APPLICATION OF PERMANENT MARKING PAINT SHALL BEGIN NO SOONER THAN 7 CALENDAR DAYS FOLLOWING PLACEMENT OF FINAL SURFACING AND SHALL BE COMPLETED WITHIN 21 CALENDAR DAYS FOLLOWING PLACEMENT OF FINAL SURFACING.

IF THE APPLICATION OF PERMANENT PAVEMENT MARKING PAINT DOES NOT MEET PREVIOUSLY STATED TIME REQUIREMENTS, THE CONTRACTOR WILL BE ASSESSED LIQUIDATED DAMAGES AT THE RATE OF $250.00 PER CALENDAR DAY UNTIL THE PERMANENT PAVEMENT MARKING PAINT IS COMPLETE. THIS PROVISION APPLIES UP TO THE CONTRACT COMPLETION DATE, AS EXTENDED. AFTER THE COMPLETION DATE, LIQUIDATED DAMAGES WILL BE ASSESSED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, UNTIL THE PERMANENT PAVEMENT MARKING IS COMPLETE, EVEN THOUGH THE PROJECT MAY BE OPEN TO TRAFFIC.

PERMANENT VEGETATION ESTABLISHMENT

FERTILIZER: THE CONTRACTOR SHALL APPLY AN ALL-NATURAL SLOW RELEASE FERTILIZER PRIOR TO SEEDING. THE ALL-NATURAL FERTILIZER SHALL HAVE A MINIMUM GUARANTEED ANALYSIS OF 4-4-4 AND BE USDA CERTIFIED BIOBASED. IT SHOULD PROVIDE A MINIMUM OF 4% (N) NITROGEN WITH A MINIMUM WATER INSOLUBLE NITROGEN (WIN) FRACTION OF 2.07%, A MINIMUM OF 4% (P_2O_5) AVAILABLE PHOSPHATE, A MINIMUM OF 4% (K_2O) SOLUBLE POTASH, AND A MAXIMUM CARBON TO NITROGEN RATIO (C:N RATIO) OF 5:1. THE ALL-NATURAL FERTILIZER SHALL BE FREE OF WEED-SEED AND PATHOGENS ACCOMPLISHED THROUGH THERMOPHILIC COMPOSTING, AND NOT MECHANICAL OR CHEMICAL STERILIZATION, TO ASSURE PRESENCE OF BENEFICIAL SOIL MICROBIOLOGY. THE FERTILIZER SHALL HAVE A NEAR NEUTRAL PH, A LOW SALT INDEX, A LOW BIOLOGICAL OXYGEN DEMAND, CONTAIN ORGANIC HUMIC AND FULVIC ACIDS, AND HAVE HIGH AEROBIC ORGANISM COUNTS. THE FERTILIZER SHALL ALSO BE STABLE, FREE OF BAD ODORS, AND BE UNATTRACTIVE AS A FOOD SOURCE FOR ANIMALS. IT SHOULD ALSO BE IN A GRANULAR FORM THAT IS EASILY SPREAD.

THE ALL-NATURAL SLOW RELEASE FERTILIZER SHALL BE APPLIED ACCORDING TO THE MANUFACTURER'S APPLICATION RECOMMENDATIONS. THE APPLICATION RATE IS 1,500 POUNDS PER ACRE.

THE ALL-NATURAL SLOW RELEASE FERTILIZER SHALL BE FROM THE LIST BELOW OR AN APPROVED EQUAL:

PRODUCT	MANUFACTURER
SUSTANE	SUSTANE CORPORATE HEADQUARTERS CANNON FALLS, MINNESOTA PHONE: 1-800-352-9245 WWW.SUSTANE.COM
PERFECT BLEND	PERFECT BLEND, LLC BELLEVUE, WA PHONE: 1-866-456-8890 WWW.PERFECT-BLEND.COM
NATURE SAFE	NATURE SAFE FERTILIZERS IRVING, TX PHONE: 1-605-759-5622 WWW.NATURESAFE.COM

MYCORRHIZAL INOCULUM: MYCORRHIZAL INOCULUM SHALL CONSIST OF MYCORRHIZAL FUNGI SPORES AND MYCORRHIZAL FUNGI-INFECTED ROOT FRAGMENTS IN A SOLID CARRIER. THE CARRIER MAY INCLUDE ORGANIC MATERIALS, CALCINATED CLAY, OR OTHER MATERIALS CONSISTENT WITH APPLICATION AND GOOD PLANT GROWTH. THE SUPPLIER SHALL PROVIDE CERTIFICATION OF THE FUNGAL SPECIES CLAIMED AND THE LIVE PROPAGULE COUNT. THE INOCULUM SHALL INCLUDE A MINIMUM 25% THE FUNGAL SPECIES RHIZOPHAGUS INTRARADICES, THE REMAINING 75% MAY INCLUDE OTHER ENDOMYCORRHIZAL FUNGUS SPECIES.

ALL SEED SHALL BE INOCULATED WITH A MINIMUM OF 100,000 LIVE PROPAGULES OF MYCORRHIZAL FUNGI PER ACRE. ALL COSTS OF INOCULATING THE SEED SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER POUND FOR THE CORRESPONDING PERMANENT SEED MIXTURE.

THE MYCORRHIZAL INOCULUM WILL BE AS SHOWN OR AN APPROVED EQUAL:

PRODUCT	MANUFACTURER
MYCOAPPLY	MYCORRHIZAL APPLICATIONS, INC. GRANTS PASS, OR PHONE: 1-866-476-7800 WWW.MYCORRHIZAE.COM
AM 120 MULTI SPECIES BLEND	REFORESTATION TECHNOLOGIES INT. GILROY, CA PHONE: 1-800-784-4769 WWW.REFOREST.COM
LALRISE PRIME AND MAX WP	LALLEMAND SPECIALTIES INC. MILWAUKEE, WI PHONE: 1-844-590-7781 WWW.LALLEMANDPLANTCARE.COM

SEEDING:

TYPE A PERMANENT SEED MIXTURE SHALL CONSIST OF THE FOLLOWING:

GRASS SPECIES	VARIETY	PURE LIVE SEED (PLS) (POUNDS/ACRE)
WESTERN WHEATGRASS	ARRIBA, FLINTLOCK, RODAN, ROSANA	7
GREEN NEEDLEGRASS	LODORM, AC MALLARD ECOVAR	4
SIDEOATS GRAMA	BUTTE, PIERRE	3
BLUE GRAMA	BAD RIVER	2
CANADA WILDRYE	MANDAN	2
	TOTAL =	**18**

MULCHING:

BALES WITH NOXIOUS WEED CONTAMINATION WILL BE REJECTED AND THE CONTRACTOR WILL BE REQUIRED TO REMOVE THE CONTAMINATED BALES FROM THE PROJECT.

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PAVEMENT RESILIENCY AND RESTORATION

OGLALA SIOUX TRIBE

PINE RIDGE INDIAN RESERVATAION

GENERAL NOTES

SHEET 1.2

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PERMANENT SIGNS

EXISTING SIGNS SHALL BE PROTECTED DURING CONSTRUCTION.

NEW SIGN LOCATIONS IN THE PERMANENT SIGN SUMMARY WILL BE STAKED BY THE ENGINEER.

MEASUREMENT OF SIGN AREAS SHALL BE AS SHOWN IN THE PERMANENT SIGN SUMMARY TABLE UNDER SHEETING TYPE. REFLECTIVE SHEETING TYPE IV (HIGH INTENSITY) OR TYPE XI (SUPER/VERY HIGH INTENSITY) SHALL BE APPLIED TO FLAT ALUMINUM SIGN PANELS AND COMPLY WITH SDDOT SECTION 982.2.H. PAYMENT FOR SIGNS WITH TYPE IV SHEETING WILL BE MADE UNDER THE BID ITEM FLAT ALUMINUM SIGN, NONREMOVABLE COPY HIGH INTENSITY. PAYMENT FOR SIGNS WITH TYPE XI SHEETING WILL BE MADE UNDER THE BID ITEM ALUMINUM SIGN, NONREMOVABLE COPY SUPER/VERY HIGH INTENSITY.

ALUMINUM U-CHANNEL STIFFENERS SHALL BE USED ON ALL STANDARD HIGHWAY SIGNS GREATER THAN 36" (48" FOR YIELD SIGNS) IN WIDTH AND SHALL CONFORM TO ALLOY 6063-T6 OR 6061-T6. ALUMINUM U-CHANNELS SHALL BE 2 INCHES IN WIDTH AND FREE OF HOLES. THE U-CHANNEL STIFFENERS SHALL ALSO BE USED TO CONNECT VARIOUS SIGNS AND PERFORATED TUBE POSTS TOGETHER SO AN ENTIRE SIGN CAN BE ERECTED AS A SINGLE INSTALLATION. COSTS TO FURNISH AND INSTALL STIFFENERS AS SPECIFIED IN THE DETAILS SHALL BE INCIDENTAL TO THE BID ITEM, PERFORATED TUBE POST.

TELESPAR BRAND (OR APPROVED EQUIVALENT) POSTS AND BASES SHALL BE USED. ALL POST MATERIALS SHALL CONFORM TO SDDOT SECTION 982, AND BE IN ACCORDANCE WITH ASTM SPECIFICATIONS.

DELINEATORS

IF WORK CANNOT AVOID EXISTING DELINEATORS, ROADSIDE DELINEATORS SHALL BE 4"X4" BACK TO BACK DELINEATORS WITH WHITE DIAMOND GRADE REFLECTIVE SHEETING ON 1.12 LBS/FOOT FLANGED CHANNEL POST, PAINTED GREEN. CONTRACTOR SHALL FURNISH AND INSTALL IN LOCATIONS AS SPECIFIED IN PLANS AS DETAILED IN SDDOT SPECIAL DETAIL L30.

CONTRACTOR TESTING

MINIMUM TESTING REQUIREMENTS	
GRADING AND SURFACING	
SURFACE PREPARATION	
DENSITY/MOISTURE ROAD FOUNDATION	1/ HALF MILE
SUBBASE COURSE	
DENSITY/MOISTURE	1/ MILE/ LIFT
BASE COURSE	
DENSITY/MOISTURE	1/ MILE/ LIFT
GRADATION, L.L., P.I., FRACTURED FACES (SAMPLE ON SITE)	1/3,000 TON
ASPHALT CONCRETE COMPOSITE	
ASPHALT CONCRETE COMPOSITE	SEE SPECIAL PROVISION ITEM 320

ALL COSTS ASSOCIATED WITH PERFORMING THE MATERIAL TESTING AS SHOWN IN THE TABLE ABOVE WILL BE PAID FOR UNDER CONTRACTOR TESTING. ALL TESTS SHALL BE IN ACCORDANCE WITH THE SDDOT MATERIAL TESTING MANUAL AND SHALL BE CONDUCTED BY AN INDEPENDENT CERTIFIED TESTING FIRM OR LABORATORY. TEST LOCATIONS WILL BE DETERMINED RANDOMLY BY THE ENGINEER.

THE CONTRACTOR IS REMINDED THAT THE POINT OF ACCEPTANCE SAMPLING AND TESTING IS ON SITE. THE CONTRACTOR WILL BE REQUIRED TO CONDUCT TESTS DURING PRODUCTION ON ALL MATERIAL PRODUCED FOR THE PROJECT TO ENSURE THAT IT MEETS SPECIFICATIONS. THE PRODUCTION TEST RESULTS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO PLACING THE MATERIAL ON THE PROJECT. AT A MINIMUM, GRADATION, L.L., P.I., AND FRACTURED FACES TESTS DURING PRODUCTION SHALL BE CONDUCTED AT THE RATE OF 1 PER 3,000 TON FOR ALL GRANULAR PRODUCTS. ALL PRODUCTION TESTING SHALL BE CONSIDERED INCIDENTAL TO CONTRACTOR TESTING.

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PAVEMENT RESILIENCY AND RESTORATION

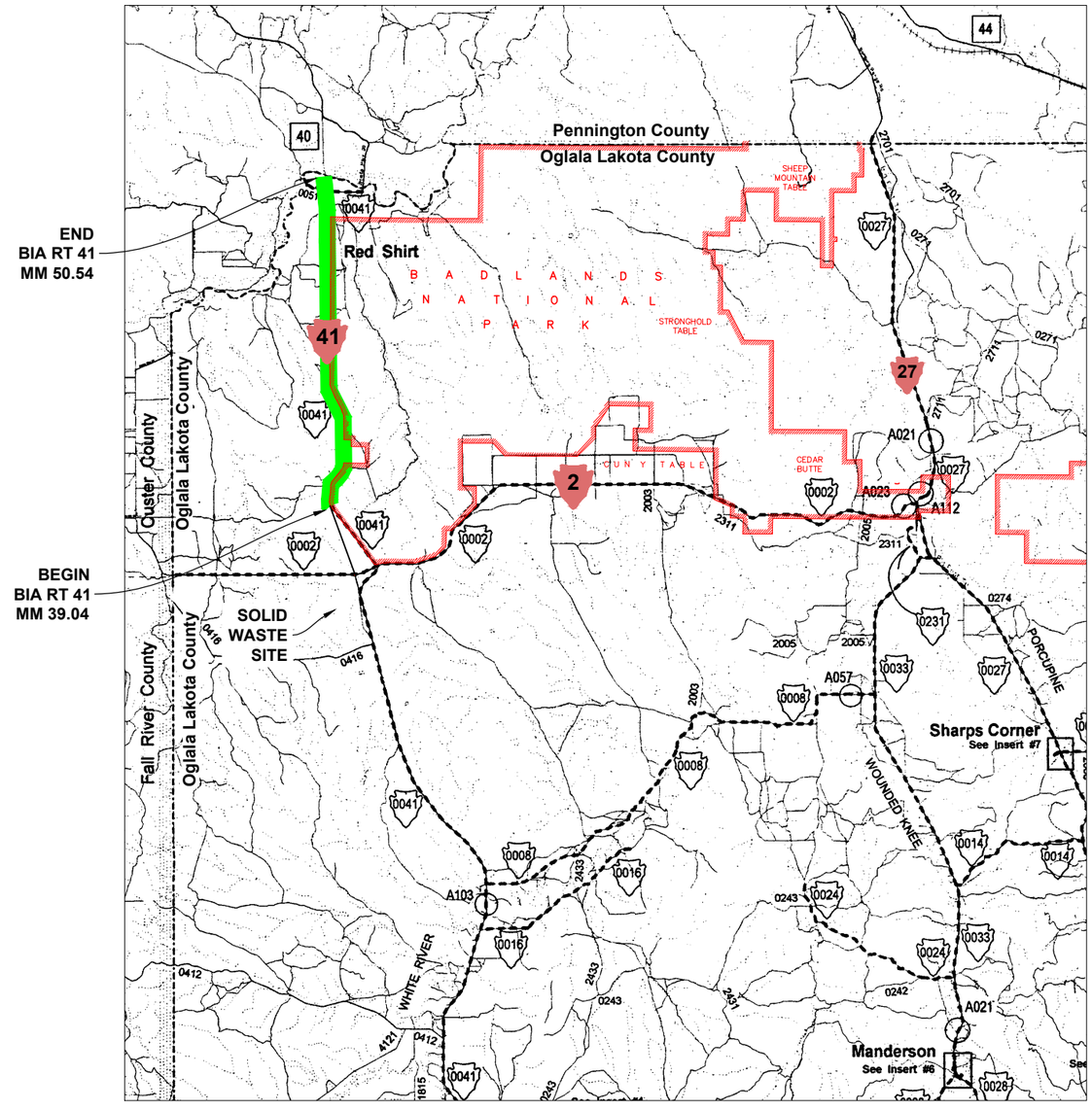
OGLALA SIOUX TRIBE

PINE RIDGE INDIAN RESERVATAION

GENERAL NOTES

SHEET 1.3

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SITE PLAN

SECTION 2

ASPHALT PAVEMENT REPLACEMENT

2.1 SITE PLAN
2.2 NOTES AND QUANTITIES
2.3 TYPICAL SECTIONS (BIA RT 41 - MM 39.04 TO 39.55)
2.4 TYPICAL SECTIONS (BIA RT 41 - MM 39.55 TO 50.54)
2.5 TRAFFIC CONTROL

N

2.5 0 2.5 5
SCALE MILES

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PAVEMENT RESILIENCY AND RESTORATION
OGLALA SIOUX TRIBE
PINE RIDGE INDIAN RESERVATAION
ASPHALT PAVEMENT REPLACEMENT - SITE PLAN

SHEET 2.1

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ITEM NUMBER	ITEM	QUANTITY	UNIT
004E0010	BLADING	10	HR
009E0010	MOBILIZATION	1	LS
120E6100	WATER	60	MGAL
210E3500	HEAVY ROADWAY SHAPING	11.5	MILE
260E1050	BASE COURSE, SALVAGED ASPHALT MIX	49,700	TON
260E1210	BASE COURSE	46,740	TON
270E0020	SALVAGE AND STOCKPILE ASPHALT AND GRANULAR MIX MATERIAL	95,000	TON
320E1200	ASPHALT CONCRETE COMPOSITE	44,000	TON
320E7012	GRIND 12" RUMBLE STRIP IN ASPHALT CONCRETE	23	MILE
332E0010	COLD MILLING ASPHALT CONCRETE	95,000	SQYD
633E0630	TEMPORARY PAVEMENT MARKING	23	MILE
633E1200	HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT, WHITE	520	GAL
633E1205	HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT, YELLOW	200	GAL
634E0010	FLAGGING	200	HR
634E0020	PILOT CAR	200	HR
634E0110	TRAFFIC CONTROL SIGNS	200	SQFT
634E0120	TRAFFIC CONTROL, MISCELLANEOUS	1	LS
730E0200	TYPE A PERMANENT SEED MIXTURE	600	LB
731E0100	FERTILIZING	25	TON
732E0100	MULCHING	67	TON
831E0200	WOVEN GEOTEXTILE SEPERATOR FABRIC	215,893	SQYD
831E1020	TRIAXIAL GEOGRID	209,147	SQYD
900E9999	CONTRACTOR TESTING	1	LS

SALVAGE AND STOCKPILE ASPHALT AND GRANULAR MIX MATERIAL

THE CONTRACTOR SHALL SALVAGE EXISTING ASPHALT MIX AND GRANULAR BASE MATERIAL ON BIA 41 AS SPECIFIED IN THE PLANS IN ACCORDANCE WITH SDDOT SECTION 270. THE SALVAGED MATERIAL SHALL BE HAULED AND STOCKPILED AT THE SOLID WASTE SITE FURNISHED BY THE OWNER, NEAR THE INTERSECTION OF BIA 2 AND BIA 41. SEE SITE PLAN ON SHEET 2.1. CONTRACTOR SHALL COORDINATE ACTUAL STOCKPILE LOCATION WITH LESLIE MESTETH AT (605) 867-2919.

SALVAGED ASPHALT MIX AND GRANULAR BASE MATERIAL SHALL MEET THE REQUIREMENTS OF SECTION 884 FOR SUBBASE SALVAGED.

HEAVY ROADWAY SHAPING

THE CONTRACTOR SHALL SCARIFY THE EXPOSED SUBGRADE SURFACE FOR THE WIDTH OF THE SUBGRADE TO A DEPTH OF 12 INCHES BELOW THE SUBGRADE IN ACCORDANCE WITH SECTIONS 120.3 B.3.a.

BLADING INCLUDES TOPSOIL STRIPPING AND PLACEMENT.

EXISTING FIELD ENTRANCES SHALL BE GRADED TO MAINTAIN ACCESS DURING THE RECONSTRUCTION OF BIA 41. THE APPROACH SHALL THEN BE GRADED TO EXISTING WIDTH BEYOND ASPHALT SURFACE (SEE DETAIL 320.01). 2" OF SALVAGED SUBBASE MATERIAL SHALL BE PLACED ON THE DISTURBED PORTION OF THE APPROACH. IF THERE IS NO REMAINING SUBBASE, BASE COURSE MAY BE USED. GRADING EXISTING APPROACHES SHALL BE INCIDENTAL TO BLADING. THE 2" OF SUBBASE OR APPROVED SUBSTITUTE SHALL BE PAID FOR UNDER THE RELATED BID ITEM.

PROOF ROLLING

BEFORE PLACEMENT OF WOVEN GEOTEXTILE SEPARATOR OR SUBBASE COURSE, THE PREPARED SUBGRADE SHALL BE PROOF ROLLED. PROOF ROLLING SHALL BE PERFORMED WITH A LOADED TANDEM AXLE DUMP TRUCK OR WATER TRUCK. IF THE EXPOSED SUBGRADE IS UNSTABLE DURING PROOF ROLLING OPERATIONS, IT SHALL BE STABILIZED AS RECOMMENDED BY THE ENGINEER AND GEOTECHNICAL ENGINEER. ONCE THE SUBGRADE IS PROOF ROLLED, STABILIZED (IF NECESSARY) AND APPROVED BY THE ENGINEER AND GEOTECHNICAL ENGINEER, THE WOVEN GEOTEXTILE FABRIC SHALL BE PLACED.

SUBBASE, SALVAGED ASPHALT MIX AND GRANULAR BASE MATERIAL

THE SUBBASE MATERIAL SHALL BE MOISTURE CONDITIONED TO +/- 2% OF OPTIMUM PLACED IN 6-INCH MAXIMUM LOOSE LIFT THICKNESSES, AND COMPACTED TO AT LEAST 95% OF THE MAXIMUM DRY DENSITY (ASTM D 698 STANDARD PROCTOR). SUBBASE MATERIAL SHALL BE MEASURED AND PAID FOR IN ACCORDANCE WITH SECTIONS 260.4 AND 260.5. ANY SUBBASE REMAINING MAY BE USED FOR FIELD ENTRANCES.

GEOGRID

THE GEOGRID SHALL BE INSTALLED IN LOCATIONS SHOWN IN THE TYPICAL SECTIONS AND WHERE DIRECTED BY THE ENGINEER AND SHALL BE INSTALLED IN COMPLIANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

THE GEOGRID SHALL BE FROM THE LIST BELOW OR SHALL BE APPROVED BY THE ENGINEER. GEOGRID SHALL CONFORM TO SPECIAL PROVISION 831 IN THE PROJECT MANUAL.

PRODUCT	MANUFACTURER	CONTACT
TX-8	TENSAR CORPORATION	BRENDON STIEB
	SIOUX FALLS, SOUTH DAKOTA	1-531-800-4588
	WWW.TENSARCORP.COM	BRENDON.STIEB@CMC.COM

ASPHALT CONCRETE COMPOSITE

THE ASPHALT CONCRETE COMPOSITE SHALL BE CLASS E, TYPE I AS SPECIFIED IN SPECIAL PROVISION ITEM 320.

BIA ROUTE 41	EXISTING TOP WIDTH (FT)	HEAVY ROADWAY SHAPING (MILES)	COLD MILLING (SQYD)	SALVAGE AND STOCKPILE MATERIAL (TONS)	4" ASPHALT CONCRETE (TONS)	4" NEW BASE COURSE (TONS)	4" SALVAGED BASE COURSE (TONS)	TRIAXIAL GEOGRID (SQYD)	GEOTEXTILE SEPARATOR FABRIC (SQYD)
MM 39.04 to 39.55	32	0.5	4,500	4,500	2,222	2,320	2,490	9,093	9,387
MM 39.55 to 50.54	25	11.0	90,500	90,500	37,815	40,261	47,245	200,053	206,507
TOTAL:		**11.5**	**95,000**	**95,000**	**44,000**	**46,740**	**49,700**	**209,147**	**215,893**

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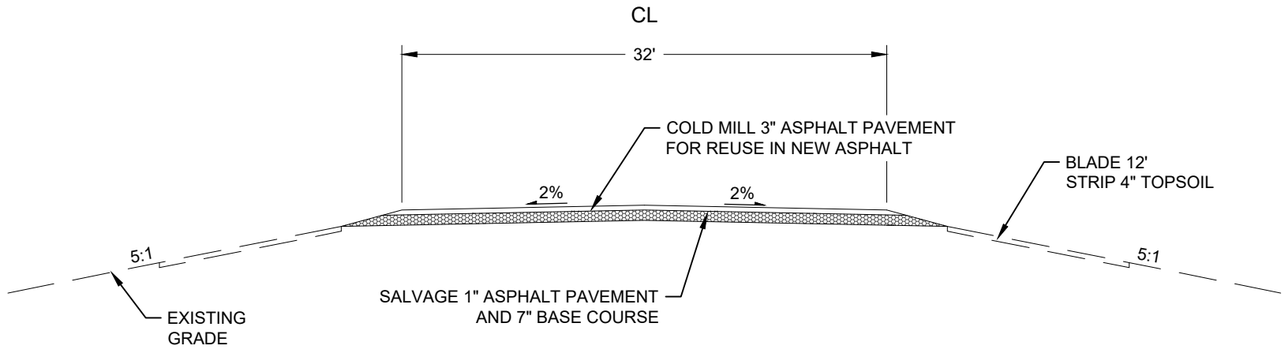
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PAVEMENT RESILIENCY AND RESTORATION
OGLALA SIOUX TRIBE
PINE RIDGE INDIAN RESERVATAION
NOTES AND QUANTITIES

SHEET 2.2

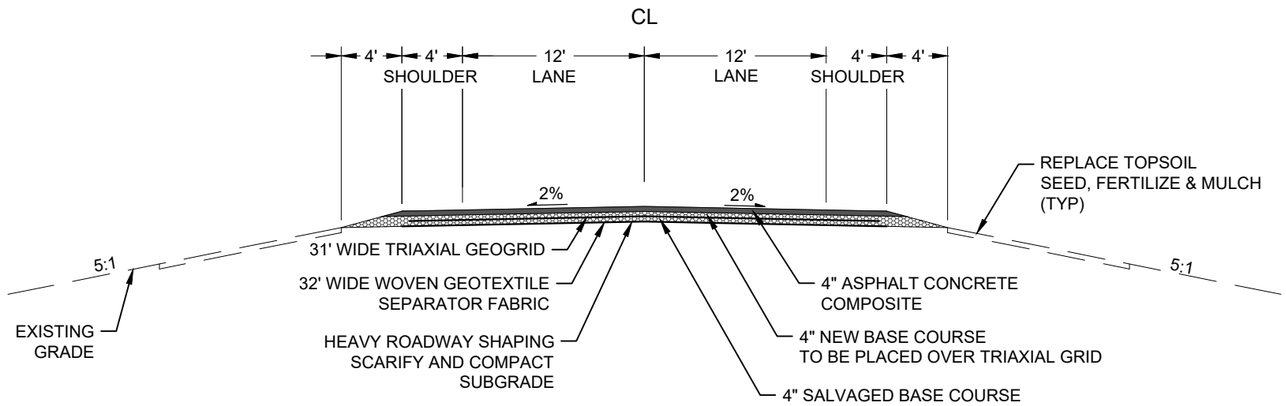
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EXISTING TYPICAL SECTION

BIA ROUTE 41 (MM 39.04 TO 39.55)

SCALE: 1" = 10'



PROPOSED TYPICAL SECTION
ASPHALT PAVEMENT REPLACEMENT

BIA ROUTE 41 (MM 39.04 TO 39.55)

SCALE: 1" = 10'

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PAVEMENT RESILIENCY AND RESTORATION

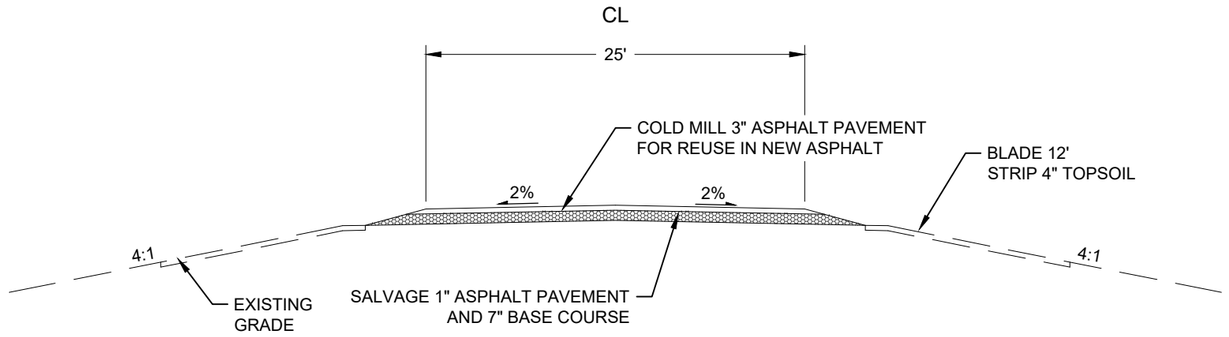
OGLALA SIOUX TRIBE

PINE RIDGE INDIAN RESERVATAION

TYPICAL SECTIONS (BIA 41 - MM 39.04 TO 39.55)

SHEET
2.3

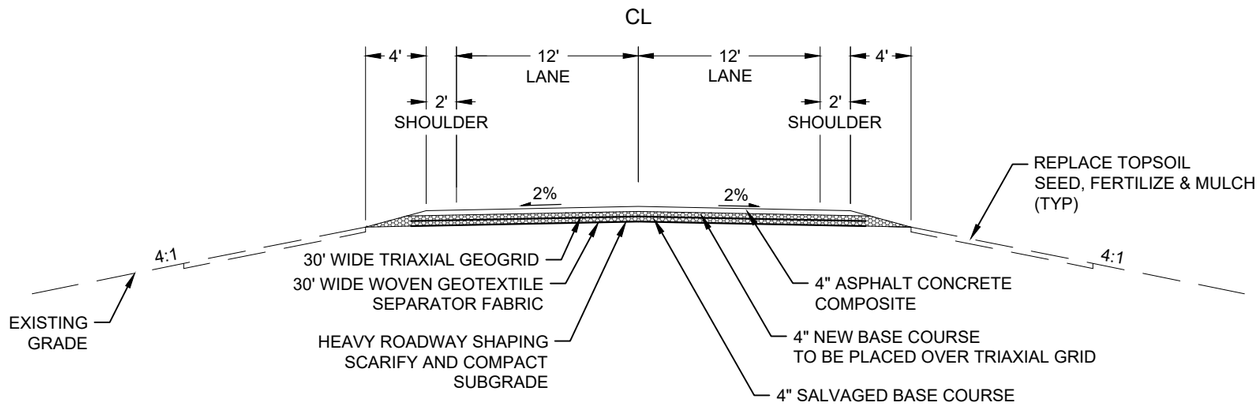
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EXISTING TYPICAL SECTION

BIA ROUTE 41 (MM 39.55 TO 50.54)

SCALE: 1" = 10'



PROPOSED TYPICAL SECTION
ASPHALT PAVEMENT REPLACEMENT

BIA ROUTE 41 (MM 39.55 TO 50.54)

SCALE: 1" = 10'

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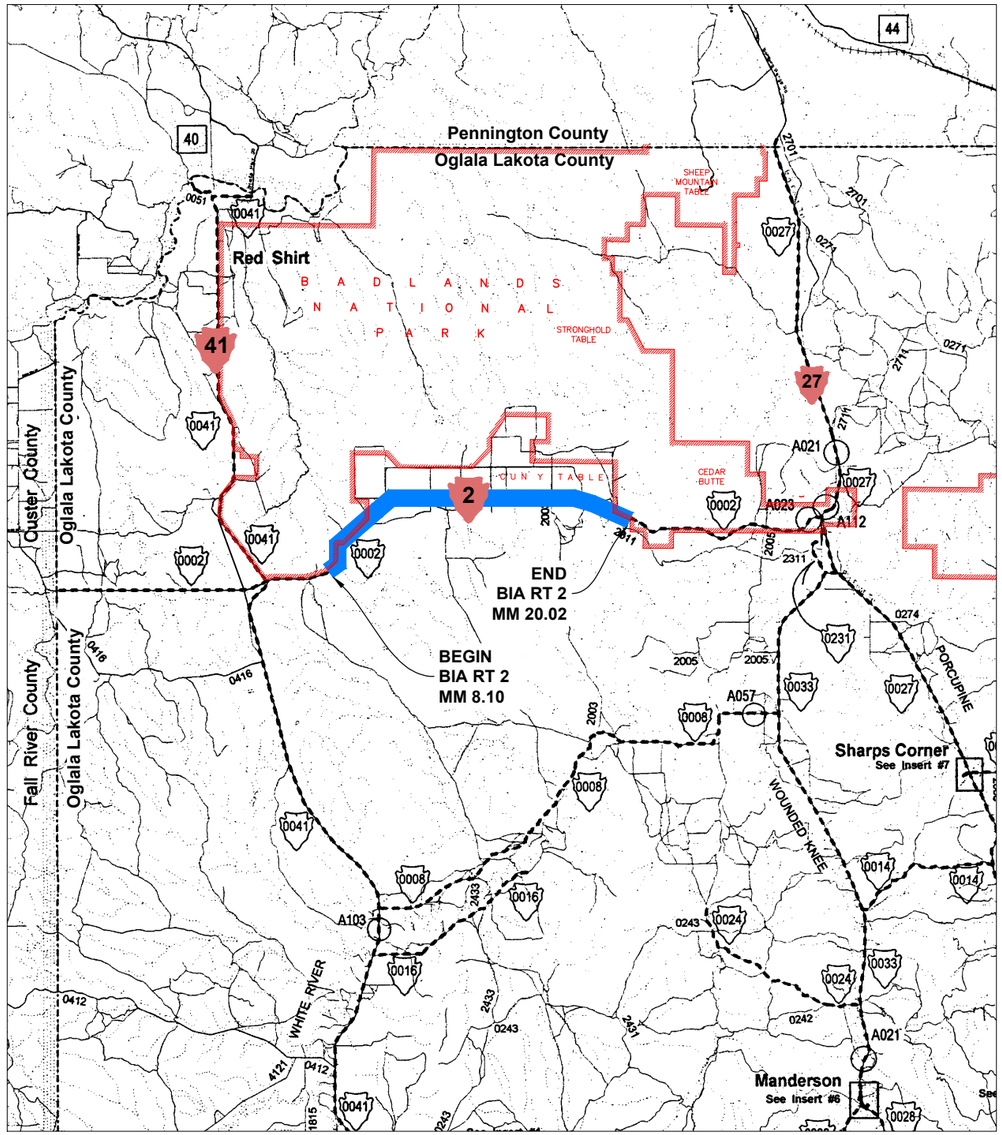
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PAVEMENT RESILIENCY AND RESTORATION
OGLALA SIOUX TRIBE
PINE RIDGE INDIAN RESERVATAION
TYPICAL SECTIONS (BIA 41 - MM 39.55 TO 50.54)

SHEET
2.4

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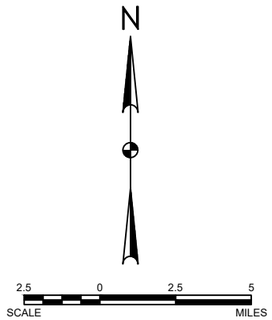


SITE PLAN

SECTION 3

ASPHALT PAVEMENT RESTORATION

3.1 SITE PLAN
3.2 NOTES AND QUANTITIES
3.3 TYPICAL SECTIONS (BIA 2 - MM 8.10 TO 20.02)
3.4 TRAFFIC CONTROL



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PAVEMENT RESILIENCY AND RESTORATION
OGLALA SIOUX TRIBE
PINE RIDGE INDIAN RESERVATAION
ASPHALT PAVEMENT RESTORATION - SITE PLAN

SHEET 3.1

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SALVAGE AND STOCKPILE ASPHALT MIX

THE CONTRACTOR SHALL SALVAGE EXISTING ASPHALT MIX ON BIA 2 AS SPECIFIED IN THE PLANS IN ACCORDANCE WITH SDDOT SECTION 270. THE SALVAGED MATERIAL SHALL BE HAULED AND STOCKPILED AT THE SOLID WASTE SITE FURNISHED BY THE OWNER. SEE SITE PLAN ON SHEET 3.1. CONTRACTOR SHALL COORDINATE ACTUAL STOCKPILE LOCATION WITH LESLIE MESTETH AT (605) 867-2919.

ASPHALT CONCRETE COMPOSITE

THE ASPHALT CONCRETE COMPOSITE SHALL BE CLASS E, TYPE I AS SPECIFIED IN SPECIAL PROVISION ITEM 320. SS-1h OR CSS-1h SHALL BE USED FOR TACK AT A RATE OF 0.05 GAL/ SQ YD AND SHALL BE INCIDENTAL TO THE BID ITEM ASPHALT CONCRETE COMPOSITE.

BLADING

PROVIDE DIESEL-POWERED MOTOR GRADER(S) WITH AN ENGINE RATING OF AT LEAST 80 FLYWHEEL HP AND WITH AT LEAST FOUR DRIVING WHEELS. EQUIP EACH WITH A POWER-OPERATED BLADE AT LEAST 12 FT LONG AND WITH AT LEAST 1 SCARIFIER WITH ALL TEETH IN PLACE.

ENSURE THE AVAILABILITY OF EQUIPMENT WITHIN THE TIME FRAMES NEEDED AND IN COORDINATION WITH OTHER WORK.

PRIOR TO BEGINNING RESURFACING OPERATIONS, A 4" DEPTH OF TOPSOIL SHALL BE BLADED DOWN THE RESPECTIVE INSLOPES AND LEFT IN A WINDROW 14'+/- FROM THE SUBGRADE SHOULDER. FOLLOWING COMPLETION OF RESURFACING OPERATIONS, TOPSOIL SHALL BE BLADED BACK UP THE INSLOPE TO THE POINT INDICATED ON THE TYPICAL SECTION.

ALL COSTS ASSOCIATED WITH REMOVING AND REPLACING THE TOPSOIL ALONG AREAS TO BE RESURFACED SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE FOR "BLADING".

THE TIME USED FOR THE PURPOSE OF REMOVING AND REPLACING TOPSOIL SHALL BE MEASURED TO THE NEAREST HALF HOUR.

THE ENGINEER WILL NOT MEASURE STANDBY TIME. UNIT PAYMENT INCLUDES SUPERVISION, OPERATOR AND LABOR COSTS, FUEL, OIL, LUBRICANTS, MAINTENANCE, AND OTHER RELATED ITEMS AND EQUIPMENT.

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PAVEMENT RESILIENCY AND RESTORATION

OGLALA SIOUX TRIBE

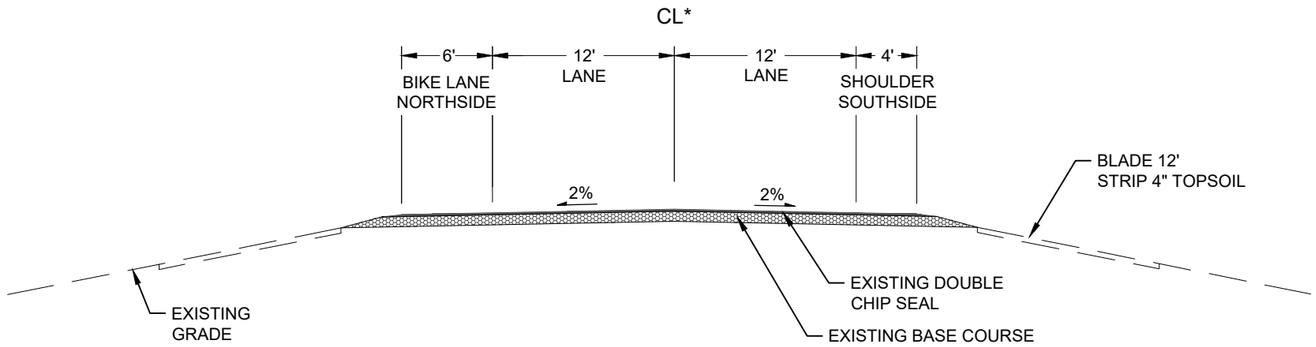
PINE RIDGE INDIAN RESERVATAION

NOTES AND QUANTITIES

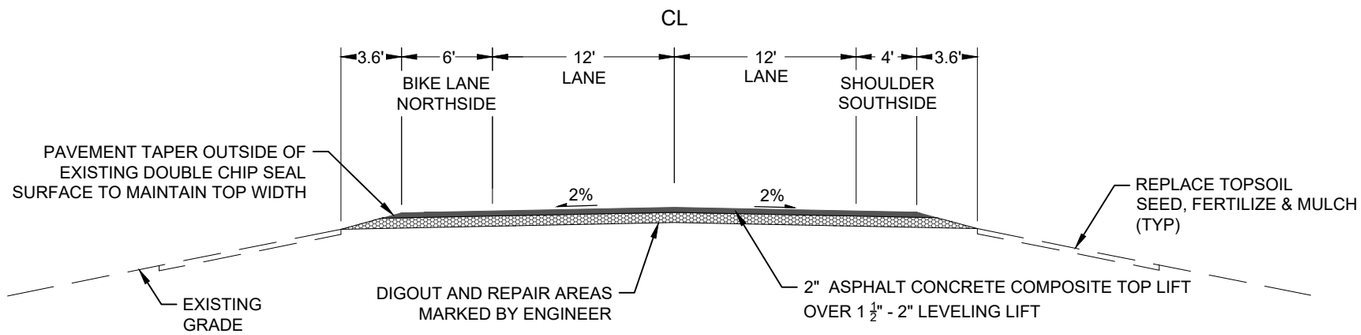
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* PLEASE NOTE: CROWN AND CENTERLINE ARE NOT IN THE CENTER OF THE ASPHALT



EXISTING TYPICAL SECTION
BIA ROUTE 2 (MM 8.10 - 20.02)
SCALE: 1" = 10'



PROPOSED TYPICAL SECTION
NEW ASPHALT PAVEMENT SURFACE
BIA ROUTE 2 (MM 8.10 - 20.02)
SCALE: 1" = 10'

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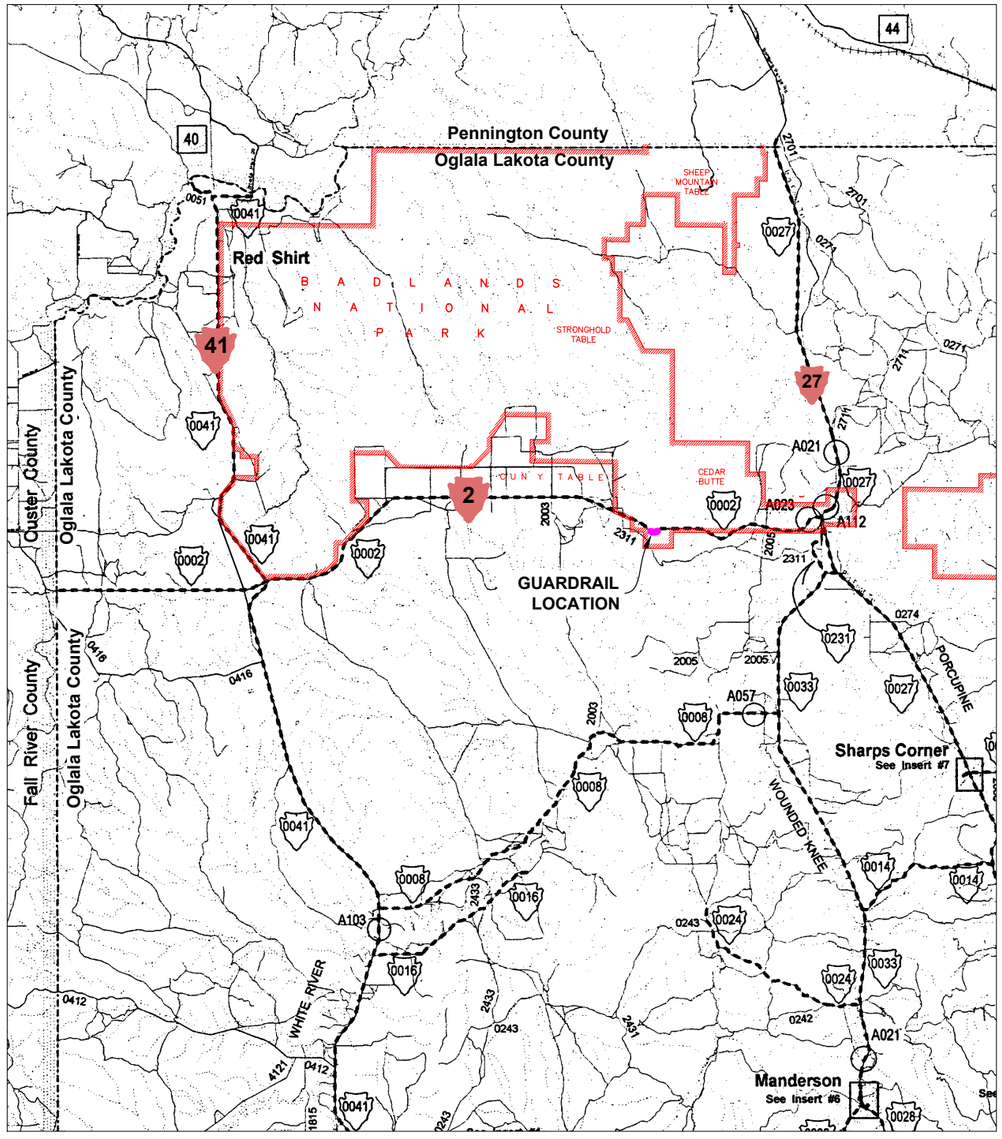
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PAVEMENT RESILIENCY AND RESTORATION
OGLALA SIOUX TRIBE
PINE RIDGE INDIAN RESERVATAION
TYPICAL SECTIONS (BIA 2 - MM 8.10 TO 20.02)

SHEET 3.3

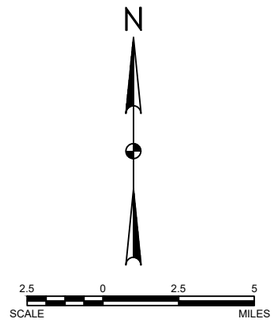
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SITE PLAN

SECTION 4
GUARDRAIL

3.1 SITE PLAN
3.2 BIA 2 GUARDRAIL PLAN



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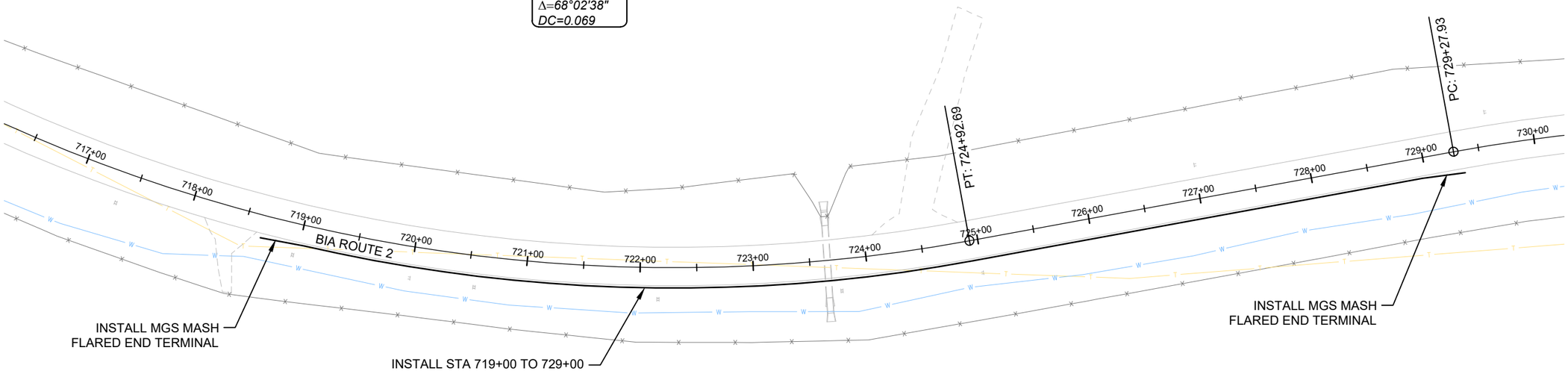
PAVEMENT RESILIENCY AND RESTORATION
OGLALA SIOUX TRIBE
PINE RIDGE INDIAN RESERVATAION
GUARDRAIL - SITE PLAN

SHEET 4.1

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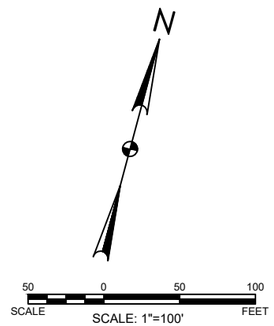
BADLANDS
NATIONAL PARK

CL Curve Data
PI=717+52.09
N=434854.67
E=1365112.05
R=1445.00'
L=1716.06'
Δ=68°02'38"
DC=0.069



BADLANDS
NATIONAL PARK

TYPE	STATION	DISTANCE	DIRECTION	NORTHING	EASTING
PT:	694+37.2			436,422.765	1,363,409.167
		TL = 1,339.43	S47° 21' 35.14"E		
PC:	707+76.62			435,515.446	1,364,394.479
PI:	717+52.09	R = 1,445	Delta = 68° 02' 37.53"	434,854.671	1,365,112.054
PT:	724+92.69			435,273.138	1,365,993.203
		TL = 435.24	N64° 35' 47.34"E		
PC:	729+27.93			435,459.851	1,366,386.358



SCALE: 1"=100'

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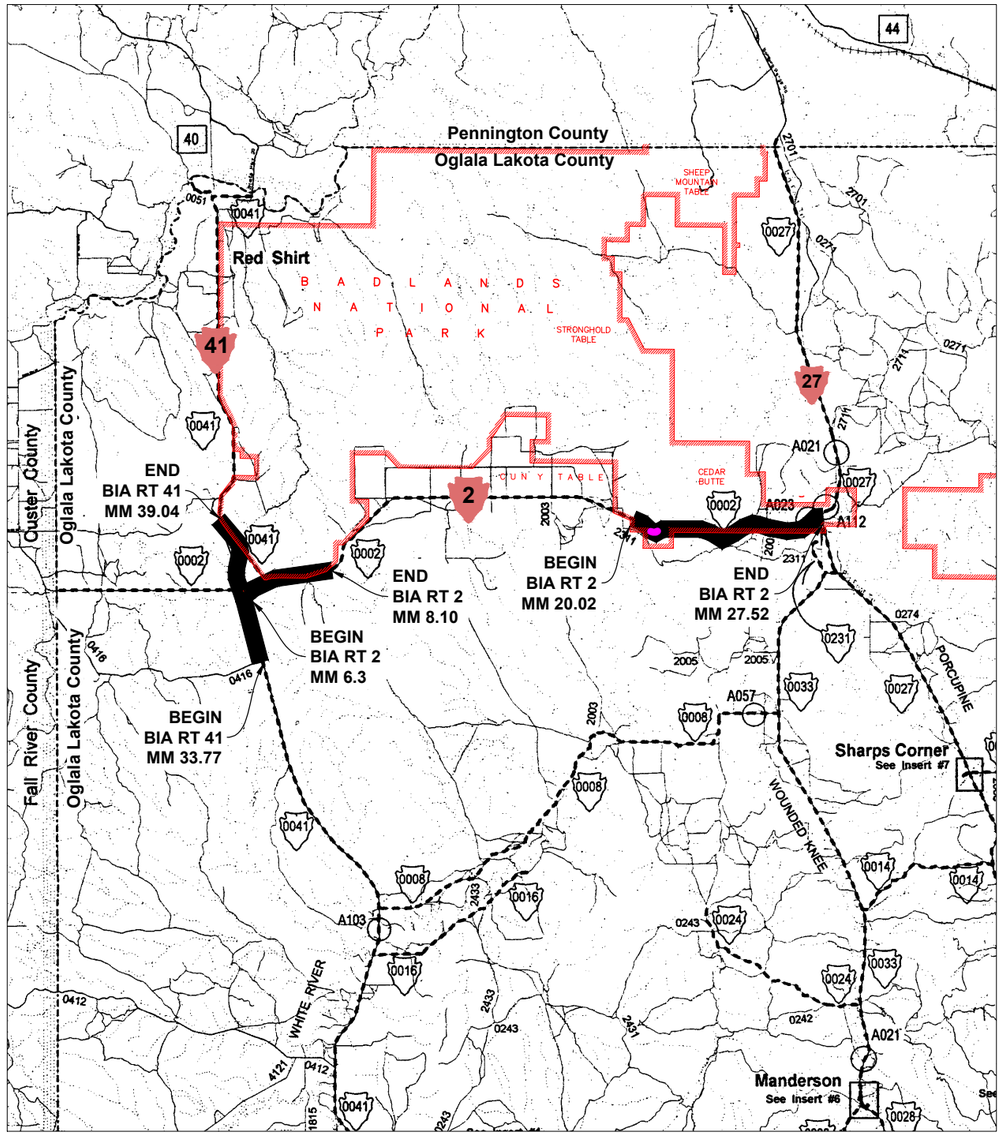
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PAVEMENT RESILIENCY AND RESTORATION
OGLALA SIOUX TRIBE
PINE RIDGE INDIAN RESERVATAION
BIA 2 GUARDRAIL PLAN

SHEET
4.2

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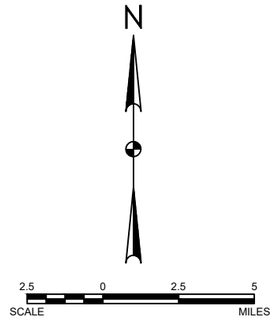


SITE PLAN

SECTION 5

PAVEMENT CRACK AND CHIP SEALING

5.1 SITE PLAN
5.2-5.3 NOTES AND QUANTITIES
5.4 TYPICAL SECTIONS (BIA 2 AND BIA 41)
5.5 SIGNAGE AND STRIPING DETAILS
5.6 TRAFFIC CONTROL



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PAVEMENT RESILIENCY AND RESTORATION
OGLALA SIOUX TRIBE
PINE RIDGE INDIAN RESERVATAION
PAVEMENT CRACK AND CHIP SEALING - SITE PLAN

SHEET 5.1

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ITEM NUMBER	ITEM	QUANTITY	UNIT
004E0040	MAINTENANCE OF TRAFFIC	1	LS
009E0010	MOBILIZATION	1	LS
110E1010	REMOVE ASPHALT CONCRETE PAVEMENT	35.0	SQYD
120E0100	UNCLASSIFIED EXCAVATION, DIGOUTS	15	CUYD
260E1210	BASE COURSE	5	CUYD
270E0020	SALVAGE AND STOCKPILE ASPHALT MIX MATERIAL	842	TON
320E1200	ASPHALT CONCRETE COMPOSITE (SPOT LEVELING AND ASPHALT PATCHING)	2,525	TON
330E0210	SS-1h OR CSS-1h ASPHALT FOR FOG SEAL	70	TON
330E3000	SAND FOR FOG SEAL	50	TON
332E0010	COLD MILLING ASPHALT CONCRETE	14,960	SQYD
350E0010	ASPHALT CONCRETE CRACK SEALING	15,500	LB
360E0020	AE 150 S ASPHALT FOR SURFACE TREATMENT	360	TON
360E1030	TYPE 2A COVER AGGREGATE	3,600	TON
630E0513	TYPE 1C MIDWEST GUARDRAIL SYSTEM (MSG)	1,000	FT
630E2017	MSG MASH FLARED END TERMINAL	2	EACH
632E2220	GUARDRAIL DELINEATOR (BACK TO BACK)	20	EACH
632E3203	FLAT ALUMINUM SIGN, NONREMOVABLE COPY HIGH INTENSITY	300	SQFT
632E1340	2.5" X 2.5" PERFORATED TUBE POST	300	FT
633E1200	HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT, WHITE	540	GAL
633E1205	HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT, YELLOW	180	GAL
634E0630	TEMPORARY PAVEMENT MARKING	28.2	MILE
634E0010	FLAGGING	400	HR
634E0020	PILOT CAR	200	HR
634E0110	TRAFFIC CONTROL SIGNS	200	SQFT
634E0120	TRAFFIC CONTROL, MISCELLANEOUS	1	LS
831E0200	WOVEN GEOTEXTILE SEPERATOR FABRIC	40	SQYD
900E9998	CLEANING	100	HR
900E9999	CONTRACTOR TESTING	1	LS

ESTIMATED RATES AND UNIT WEIGHTS

ESTIMATED RATES OF ASPHALT FOR SURFACE TREATMENT AND COVER AGGREGATE ARE BASED ON THE RATES SHOWN IN THE RATES OF MATERIALS. THIS IS ONLY AN ESTIMATE. THE ACTUAL APPLICATION RATES OF MATERIALS WILL BE DETERMINED BY THE MIX DESIGN. THE MIX DESIGN DESIGN RATES MAY VARY FROM THE ESTIMATED RATES STATED IN THE RATES OF MATERIALS DEPENDING ON AGGREGATE SOURCE, GRADATION, AND FLAKINESS INDEX AND DIFFERING SURFACE CONDITIONS. PAY QUANTITIES WILL BE THE ACTUAL USED EVEN THOUGH MAY VARY SIGNIFICANTLY FROM PLAN ESTIMATES.

CHIP SEAL SURFACING SUMMARY

DESCRIPTION ROUTE	LENGTH (MILES)	SS-IH OR CSS-1H (TON)	SAND FOR FOG SEAL (2 TON/MILE) (TON)	AE 150 S ASPHALT SURFACE TREATMENT (TON)	TYPE 2A COVER AGGREGATE (TON)
MM 33.77 to MM 39.04					
BIA 41	5.3	21.8	10.5	122.1	1,261.4
BIA 41 TO MM 8.10					
BIA 2	1.8	7.4	3.6	41.3	426.1
MM 20.02 to BIA 27					
BIA 2	7.5	30.8	14.9	172.7	1,783.2
	TOTAL:	60.0	29.0	336.1	3,470.7
	ESTIMATE:	**70**	**50**	**360**	**3,600**

ASPHALT CONCRETE CRACK SEALING SUMMARY

DESCRIPTION	BIA ROUTE	MILES	SEALANT (LB)
MM 33.77 to MM 39.04	41	5.3	5,589.2
BIA 41 to MM 8.10	2	1.8	1,885.3
MM 20.02 to BIA 27	2	7.5	8,024.5
		TOTAL:	15,499.1
		ESTIMATE:	15,500.0

CONTRACTOR TESTING

MINIMUM TESTING REQUIREMENTS	
GRADING AND SURFACING	
SUBBASE COURSE	
DENSITY/MOISTURE	1/ DIGOUT SITE
BASE COURSE	
DENSITY/MOISTURE	1/ DIGOUT SITE
GRADATION, L.L., P.I., FRACTURED FACES (SAMPLE ON SITE)	1/3,000 TON
ASPHALT CONCRETE COMPOSITE	
ASPHALT CONCRETE COMPOSITE	SEE SPECIAL PROVISION ITEM 320

ALL COSTS ASSOCIATED WITH PERFORMING THE MATERIAL TESTING AS SHOWN IN THE TABLE ABOVE WILL BE PAID FOR UNDER CONTRACTOR TESTING. ALL TESTS SHALL BE IN ACCORDANCE WITH THE SDDOT MATERIAL TESTING MANUAL AND SHALL BE CONDUCTED BY AN INDEPENDENT CERTIFIED TESTING FIRM OR LABORATORY. TEST LOCATIONS WILL BE DETERMINED RANDOMLY BY THE ENGINEER.

THE CONTRACTOR IS REMINDED THAT THE POINT OF ACCEPTANCE SAMPLING AND TESTING IS ON SITE. THE CONTRACTOR WILL BE REQUIRED TO CONDUCT TESTS DURING PRODUCTION ON ALL MATERIAL PRODUCED FOR THE PROJECT TO ENSURE THAT IT MEETS SPECIFICATIONS. THE PRODUCTION TEST RESULTS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO PLACING THE MATERIAL ON THE PROJECT. AT A MINIMUM, GRADATION, L.L., P.I., AND FRACTURED FACES TESTS DURING PRODUCTION SHALL BE CONDUCTED AT THE RATE OF 1 PER 3,000 TON FOR ALL GRANULAR PRODUCTS. ALL PRODUCTION TESTING SHALL BE CONSIDERED INCIDENTAL TO CONTRACTOR TESTING.

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PAVEMENT RESILIENCY AND RESTORATION
OGLALA SIOUX TRIBE
PINE RIDGE INDIAN RESERVATAION
NOTES AND QUANTITIES

SHEET 5.2

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CLEANING

CLEANING SHALL BE DONE PRIOR TO THE APPLICATION OF THE SURFACE TREATMENT. THIS WILL BE PAYMENT FOR CLEANING THAT TAKES EXTRA EFFORT DUE TO THE VEGETATION OR DIRT THAT WILL NEED TO BE SCRAPED OFF OR HAS ACCUMULATED IN AMOUNTS NOT PRACTICAL TO BROOM OR MAY REQUIRE THE USE OF A STREET SWEEPER. THE DETERMINATION AND APPROVAL WILL BE MADE BY THE ENGINEER AT THE TIME OF CONSTRUCTION. SILT AND DEBRIS REMOVED FROM THE STREET SHALL BE DISPOSED OF IN A LEGAL MANNER AND AT A LOCATION APPROVED BY THE ENGINEER AND IS INCIDENTAL TO THE CLEANING BID ITEM.

MASKING

BRIDGES AND APPROACH SLABS:

ASPHALT SURFACE TREATMENT SHALL NOT BE PLACED ON ANY BRIDGES OR APPROACH SLABS ALONG THE PROJECT. BRIDGE JOINTS SHALL BE COVERED WITH AN APPROVED MASKING MATERIAL TO PREVENT THE ASPHALT SURFACE TREATMENT FROM COMING IN CONTACT WITH THE BRIDGE AND/OR BRIDGE JOINT. ALL LOOSE AGGREGATE SHALL BE CLEANED FROM THE BRIDGE AND AROUND THE GUARDRAIL POSTS. ALL COSTS ASSOCIATED WITH THIS WORK SHALL BE INCIDENTAL TO THE ASPHALT SURFACE TREATMENT BID ITEMS.

CRACK SEALING

CRACK SEALANT MUST BE FROM THE SDDOT APPROVED PRODUCTS LIST. ASPHALT CRACK SEALING SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 350 OF THE STANDARD SPECIFICATIONS. OPERATIONS MAY BE EXTENDED BEYOND THE SEASONAL LIMITATIONS AT THE DISCRETION OF ENGINEER, AS LONG AS TEMPERATURE AND HUMIDITY LIMITATIONS ARE SATISFIED.

SEALANT SHALL BE INSTALLED TO EDGE OF ROAD ON TRANSVERSE CRACKS.

IF A PREVIOUS SEALED CRACK IS CRACKED OPEN THE CRACK SHALL BE ROUTED AND RESEALED.

SEALANT SHALL HAVE SUFFICIENT CURE TIME IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION PRIOR TO THE APPLICATION OF ASPHALT SURFACE TREATMENT.

ASPHALT SURFACE TREATMENT (CHIP SEAL) RATES OF MATERIALS

ASPHALT SURFACE TREATMENT (AE 150 S) ..... 0.28 GAL/SQ YD

COVER AGGREGATE (TYPE 2A)..... 24 LBS/ SQ YD

ASPHALT FLUSH SEAL (SS-1h OR CSS-1h)..... 0.05 GAL/SQ YD

SAND FOR FOG SEAL (AS NEEDED)..... 2 TON/MILE

CRACK SEALING AND ASPHALT SURFACE TREATMENT SEQUENCE OF OPERATIONS

THE FOLLOWING OPERATIONS WILL BE FOLLOWED UNLESS AN ALTERNATE SEQUENCE IS SUBMITTED IN WRITING TO AND APPROVED BY THE ENGINEER AT LEAST TWO WEEKS PRIOR TO THE REQUESTED CHANGE.

1. INSTALL FIXED LOCATION TRAFFIC CONTROL DEVICES.
2. INSTALL AND REMOVE TEMPORARY TRAFFIC CONTROL DEVICES AS NEEDED FOR EACH TYPE OF WORK.
3. COMPLETE DIGOUT REPAIR AND COLD MILLING IN LOCATIONS MARKED BY ENGINEER.
4. COMPLETE ROUTE AND SEAL AND CURE TIME OF 7 DAYS PRIOR TO ASPHALT SURFACE TREATMENT APPLICATION.
5. INSTALL TEMPORARY PAVEMENT MARKING TABS NOT MORE THAN 72 HOURS PRIOR TO ASPHALT SURFACE TREATMENT APPLICATION.
6. APPLY ASPHALT SURFACE TREATMENT AND REMOVE FIRST COVER ON DOUBLE COVERED TABS.
7. BROOM ASPHALT TREATED AREAS
8. APPLY SECOND ASPHALT SURFACE TREATMENT IF REQUIRED AND REMOVE SECOND COVER ON DOUBLE COVERED TABS.
9. BROOM ASPHALT TREATED AREAS.
10. APPLY FOG SEAL AND REINSTALL TABS AS NECESSARY.
11. IMMEDIATELY PRIOR TO APPLICATION OF THE PERMANENT PAVEMENT MARKING, THE AREAS TO BE PAINTED SHALL BE BROOMED OR BLOWN OFF WITH HIGH-PRESSURE COMPRESSED AIR. (IF HIGH-PRESSURE AIR DEVICE IS USED TO CLEAN THE PAVEMENT SURFACE, IT SHALL BE CAPABLE OF SUSTAINING CONTINUOUS HIGH PRESSURE FOR THE DURATION OF THE PAVEMENT MARKING PROCESS.)
12. APPLY PERMANENT PAVEMENT MARKING PAINT.

PROJECT BROOMING AND CLEANING

ALL LOOSE AGGREGATE SHALL BE BROOMED OFF ADJACENT SIDEWALK AND CURB AND GUTTER. AND NO MATERIAL WILL BE BROOMED UNDER THE GUARDRAIL, INTO INLETS, INTO DITCHES, OR ON BOULEVARDS. AND SHALL BE DISPOSED OF IN A MANNER SATISFACTORY TO THE ENGINEER.

MATERIAL THAT IS BROOMED ONTO THE ROADWAY INSLOPES WILL NOT BE LEFT IN PILES OR WINDOWS. THE MATERIAL WILL BE EVENLY DISTRIBUTED AT A HEIGHT THAT WILL NOT HINDER MOWING OPERATIONS OR AUSE DISPERSION OF THE MATERIAL INTO THE TRAVELED ROADWAY WHEN PASSED OVER WITH A MOWER.

PROJECT BROOMING AND CLEANING WILL NOT BE PAID SEPARATELY AND IS CONSIDERED INCIDENTAL TO THE PROJECT.

EXCAVATION OF UNSTABLE MATERIAL

INCLUDED IN THE ESTIMATE OF QUANTITIES ARE 15 CUBIC YARDS OF "UNCLASSIFIED EXCAVATION, DIGOUTS" FOR THE NECESSARY REMOVAL OF UNSTABLE MATERIAL.

THE DIGOUTS WILL BE EXTENDED TO THE SHOULDER AND THE GRANULAR MATERIAL BACKFILL WILL DAYLIGHT TO THE INSLOPE TO ALLOW WATER TO ESCAPE THE SUBGRADE.

BACKFILL WITH BASE COURSE OVER SEPARATOR FABRIC WILL BE PAID FOR AT THE CONTRACT UNIT PRICE.

THE LOCATIONS AND EXTENT OF DIGOUT AREAS WILL BE DETERMINED IN THE FIELD BY THE ENGINEER. EACH EDGE OF THE DIGOUT SHALL BE SAWCUT AT FULL DEPTH OF ASPHALT CONCRETE. THE EXISTING ASPHALT SHALL BE REMOVED. THE BACKFILLING MATERIAL FOR THE DIGOUTS WILL BE BASE COURSE.

INCLUDED IN THE ESTIMATE OF QUANTITIES ARE 10 CUBIC YARDS OF UNCLASSIFIED EXCAVATION, DIGOUTS FOR THE REMOVAL OF UNSTABLE MATERIAL THROUGHOUT THE PROJECT.

INCLUDED IN THE ESTIMATE OF QUANTITIES ARE 5 CUBIC YARDS OF BASE COURSE FOR BACKFILL OF UNCLASSIFIED EXCAVATION, DIGOUTS.

SPOT LEVELING

THE EXACT LOCATIONS OF THE AREAS TO BE PATCHED AND SPOT LEVELED WILL BE STAKED BY THE ENGINEER. 2" OF ASPHALT CONCRETE WAS ESTIMATED AS AN AVERAGE DEPTH OVER THE AREA TO BE SPOT LEVELED. 1.5 MILES WERE ESTIMATED TO BE SPOT LEVELED. POTHOLES AND AREAS OF LOCALIZED DISINTEGRATION SHALL BE CLEANED OF LOOSE MATERIAL AND TACKED BEFORE LEVELED WITH ASPHALT CONCRETE.

THE CONTRACTOR SHALL USE A MOTOR GRADER TO PERFORM THE SPOT LEVELING ASPHALT CONCRETE WORK. THE BLADE SHALL BE EQUIPPED WITH GATES, WINGS, OR OTHER DEVICES APPROVED BY THE ENGINEER TO PREVENT THE MATERIAL FROM WINDOWING AT THE EDGES OF THE BLADE. THE EQUIPMENT SHALL FORCE THE MIXTURE INTO THE WHEEL RUTS TO ADEQUATELY LEVEL AND FILL THE UNEVEN AREAS. SPOT LEVELING SHALL BE LAID IN LIFTS NOT EXCEEDING 3 INCHES OF UNCOMPACTED DEPTH.

COMPACTION SHALL BE BY SELF-PROPELLED PNEUMATIC TIRED ROLLER. THE ROLLER SHALL COVER AN OVERALL SURFACE WIDTH OF AT LEAST 60 INCHES AND SHALL FURNISH A MINIMUM ROLLING WEIGHT (MASS) OF 250 POUNDS PER INCH OF ROLLER WIDTH.

ONCE SPOT LEVELING IS COMPLETE, THE FULL LANE WIDTH SHALL BE FLUSH SEALED AT A RATE OF 0.07 GALLONS OF UNDILUTED EMULSION PER SQUARE YARD. THE RATE OF DILUTION SHALL BE AT A RATIO OF AT LEAST 1 PART EMULSION TO NO MORE THAN 1 PART ADDED WATER (1:1 RATIO MINIMUM) BY VOLUME.

WHEN APPLYING FLUSH SEAL COAT, A LIGHT APPLICATION OF SAND MAY BE ORDERED BY THE ENGINEER TO PREVENT MATERIAL PICK-UP. IF ORDERED, THE SAND SHALL BE PLACED BY A SELF-POWERED AGGREGATE SPREADER WITH POSITIVE CONTROLS OR OTHER EQUIPMENT ACCEPTABLE TO THE ENGINEER. THE SAND SHALL BE PLACED UNIFORMLY ON THE ASPHALT APPLICATION. ROLLING WILL NOT BE REQUIRED. THE FINISHED SURFACE SHALL BE SMOOTH RIDING WITHOUT TRANSVERSE OR LONGITUDINAL RIDGES AND SHALL PRESENT A UNIFORM SATISFACTORY APPEARANCE. BLEEDING AREAS SHALL BE RESANDED. ROUGH AND NONUNIFORM AREAS SHALL BE CORRECTED.

THE LOOSE SAND MATERIAL REMAINING ON THE SURFACE SHALL BE LIGHTLY BROOMED OFF AFTER A WAITING PERIOD OF TWENTY-FOUR HOURS FROM THE TIME OF APPLICATION OR AS OTHERWISE DIRECTED BY THE ENGINEER. UNAUTHORIZED INCREASES IN RATE OF APPLICATION WILL NOT BE ELIGIBLE FOR PAYMENT.

PAYMENT FOR ALL WORK, MATERIALS, LABOR AND INCIDENTALS REQUIRED TO COMPLETE SPOT LEVELING SHALL BE INCIDENTAL TO THE BID ITEM ASPHALT CONCRETE COMPOSITE (SPOT LEVELING AND ASPHALT PATCHES).

COLD MILLING

COLD MILLING WILL BE USED TO ASSIST WITH SOME AREAS OF SPOT LEVELING. AN ASSUMED AVERAGE DEPTH OF 1" AND A TOTAL LENGTH OF 0.75 MILES AND 34' WIDE WAS USED TO ESTIMATE QUANTITIES.

MILLINGS WILL BE SALVAGED AND STOCKPILED NEAR THE INTERSECTION OF BIA ROUTE 2 AND BIA ROUTE 41.

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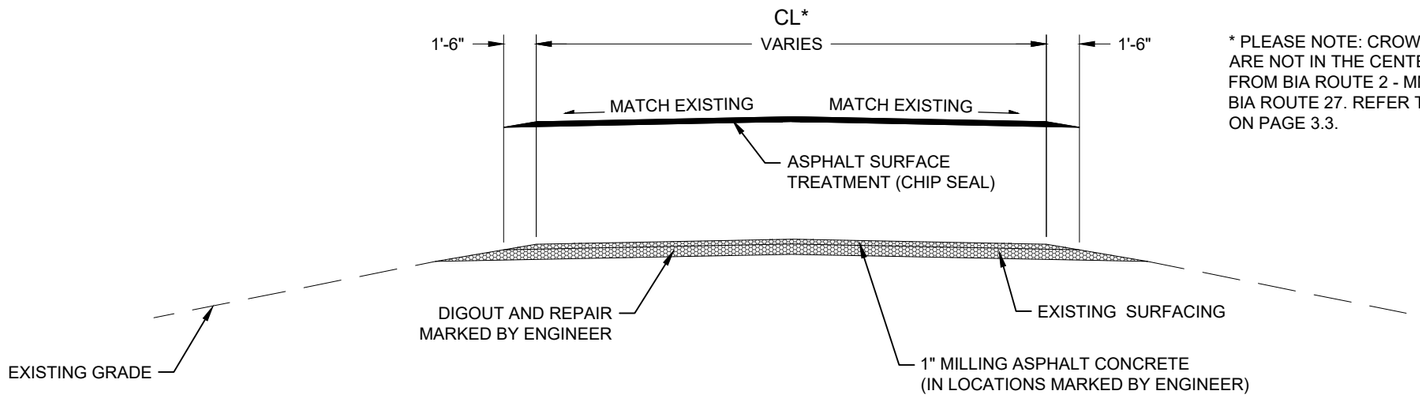
NO.	REVISION	DATE

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REVIEWED TMH
PROJECT NUMBER 2311-00354
ISSUE DATE NOV 2023

PAVEMENT RESILIENCY AND RESTORATION
OGLALA SIOUX TRIBE
PINE RIDGE INDIAN RESERVATAION
NOTES AND QUANTITIES

SHEET 5.3

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* PLEASE NOTE: CROWN AND CENTERLINE ARE NOT IN THE CENTER OF THE ASPHALT FROM BIA ROUTE 2 - MM 8.1 EASTBOUND TO BIA ROUTE 27. REFER TO TYPICAL SECTION ON PAGE 3.3.

TYPICAL SECTION
ASPHALT SURFACE TREATMENT (CHIP SEAL)
BIA ROUTE 2 & BIA ROUTE 41

SCALE: 1" = 10'

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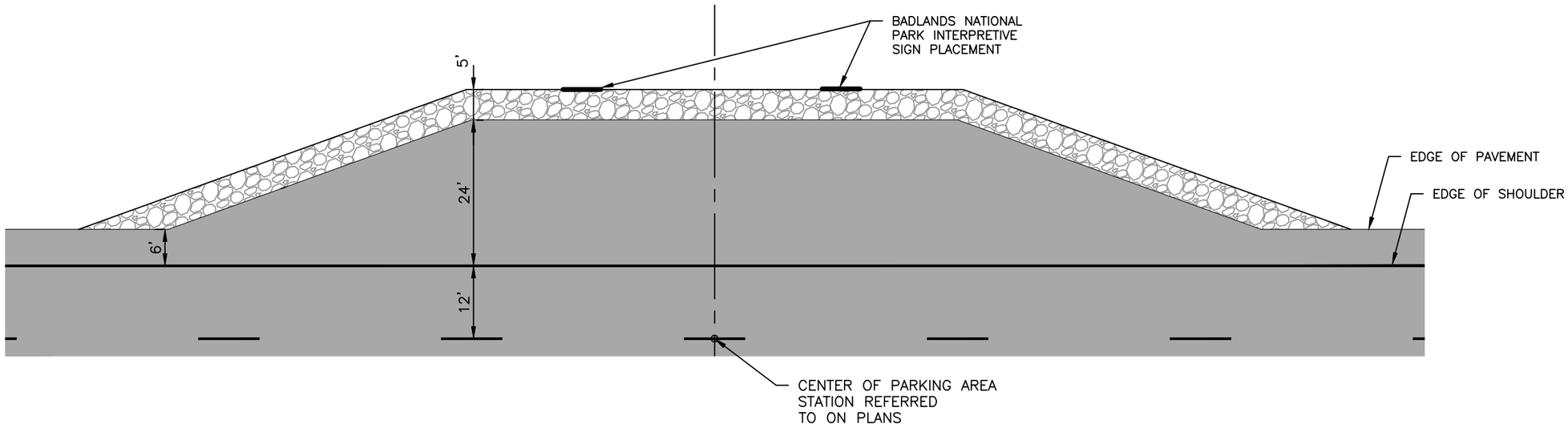
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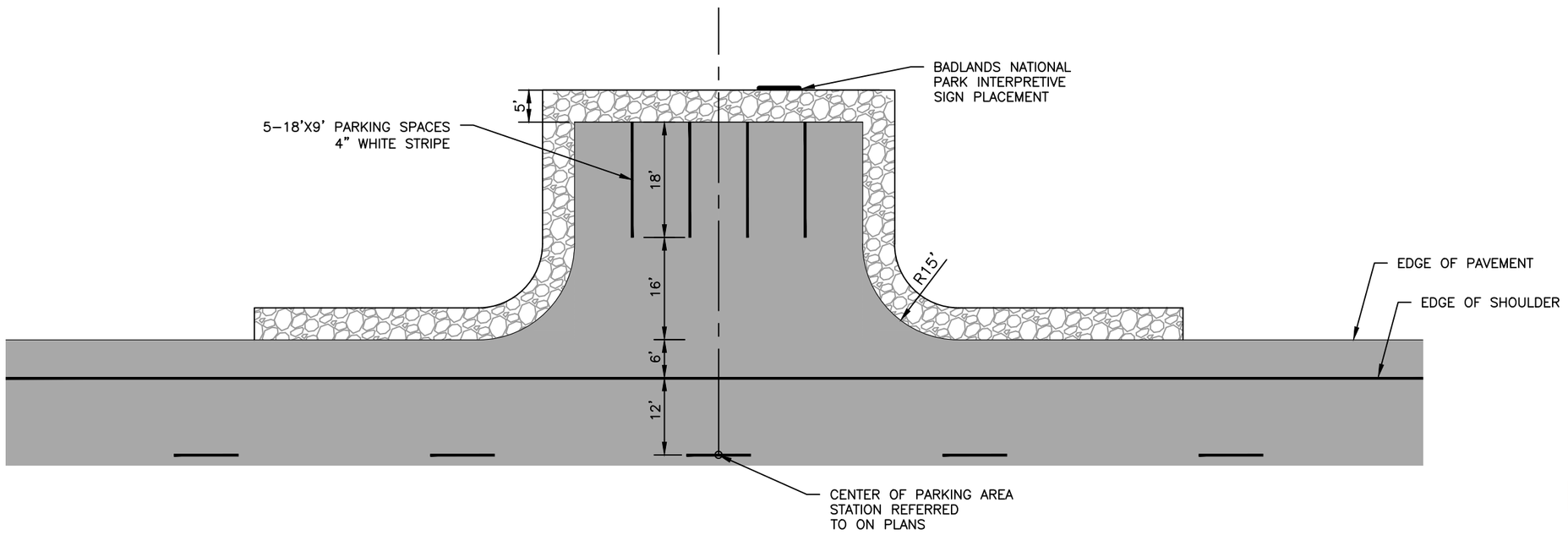
PAVEMENT RESILIENCY AND RESTORATION
OGLALA SIOUX TRIBE
PINE RIDGE INDIAN RESERVATAION
TYPICAL SECTIONS (BIA 2 AND BIA 41)

SHEET 5.4

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SCENIC PULL-OFF LAYOUT



PARKING PULL-OFF LAYOUT

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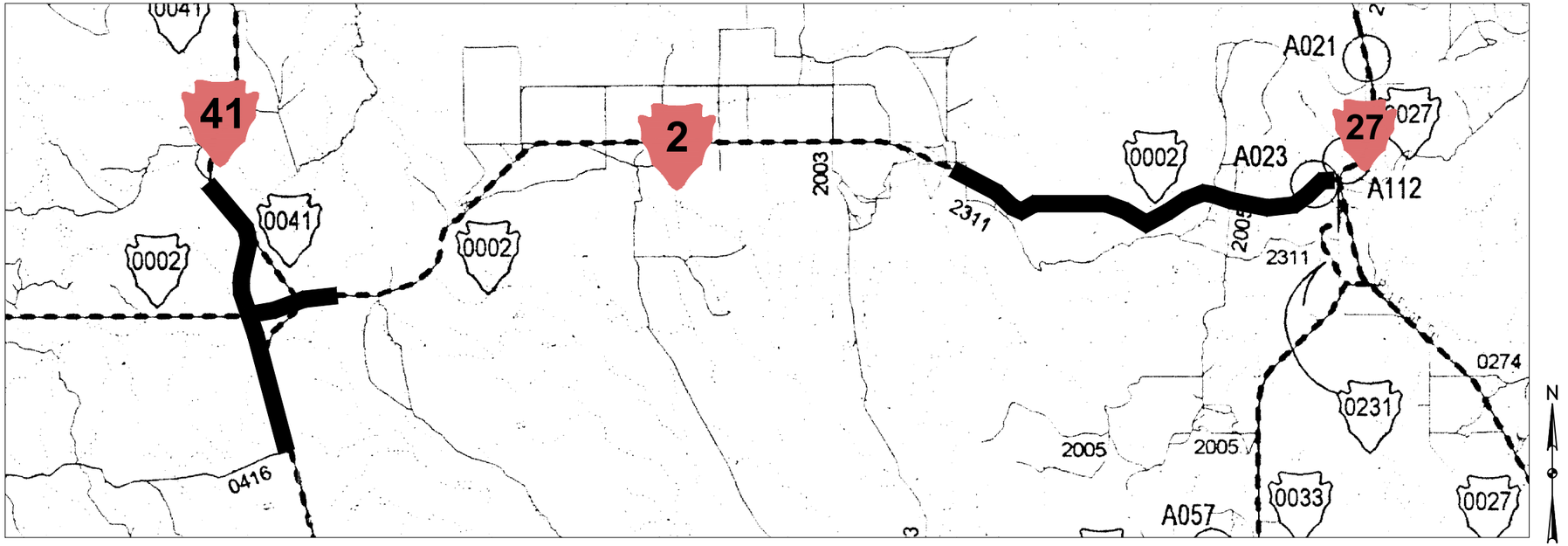
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TMH
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NOV 2023

PAVEMENT RESILIENCY AND RESTORATION
OGLALA SIOUX TRIBE
PINE RIDGE INDIAN RESERVATAION
SIGNAGE AND STRIPING DETAILS

SHEET
5.5

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TRAFFIC CONTROL SUMMARY							
SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE			SQFT PER SIGN	SQFT
W3-4	BE PREPARED TO STOP	5	48''	x	48''	16.0	80.0
W13-1P	ADVISORY SPEED (PLAQUE)	5	30''	x	30''	6.3	31.3
W20-1	ROAD WORK AHEAD	5	48''	x	48''	16.0	80.0
W20-7	FLAGGER (SYMBOL)	5	48''	x	48''	16.0	80.0
G20-2	END ROAD WORK	5	36''	x	18''	4.5	22.5
						TOTAL:	293.8
						FOR ESTIMATE:	**293.8**

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PROJECT NUMBER 2311-00354
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PAVEMENT RESILIENCY AND RESTORATION
OGLALA SIOUX TRIBE
PINE RIDGE INDIAN RESERVATAION
TRAFFIC CONTROL

SHEET 5.6

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SIGN DETAIL
1:20



BORDER
R=4"
TH=1.25"

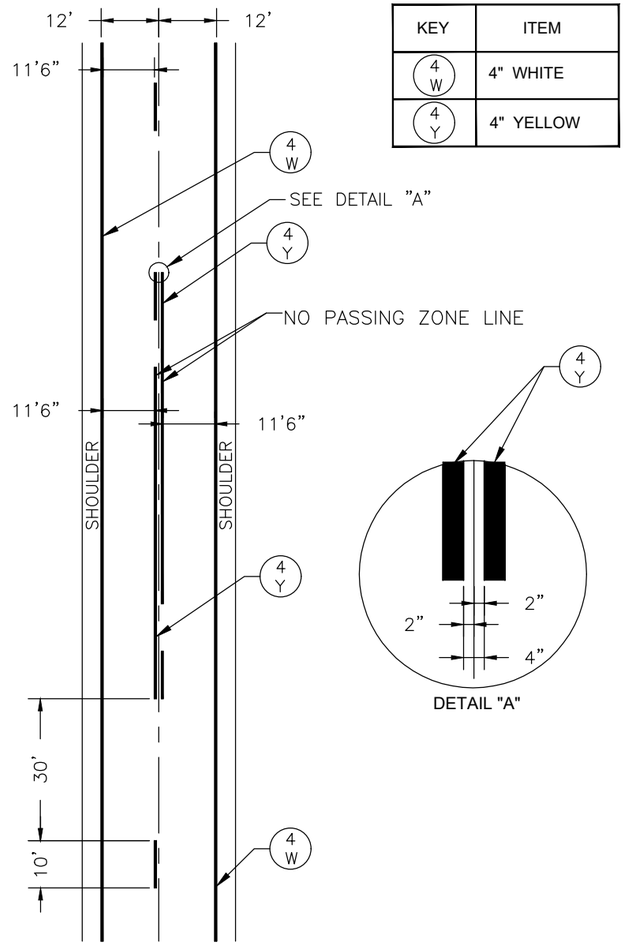
SIGN NUMBER	CHSB
WIDTH x HGHT.	7'-6" x 2'-6"
BORDER WIDTH	1.25"
CORNER RADIUS	4"
MOUNTING	POST
BACKGROUND	TYPE: REFLECTIVE
	COLOR: RED
LEGEND/BORDER	TYPE: REFLECTIVE
	COLOR: WHITE/WHITE

SYMBOL	ROT	X	Y	WID	HT

Panel Style: guide_exp_advance_a.ssi
Dimensions are in inches.tenths

Letter locations are panel edge to lower left corner

LETTER POSITIONS (X)																				LENGTH	SERIES/SIZE
C	R	A	Z	Y		H	O	R	S	E											EM 2000
11.1	17.3	22.8	29.5	35	41.1	47.1	53.4	59.9	65.8	72.2										65.5	6
S	C	E	N	I	C		B	Y	W	A	Y										EM 2000
10.2	16.3	22.5	28.2	34.7	37.4	42.2	48.2	53.8	60.4	67.2	73.7									69.6	6



STRIPING DETAIL

KEY	ITEM
4 W	4" WHITE
4 Y	4" YELLOW

DETAIL "A"

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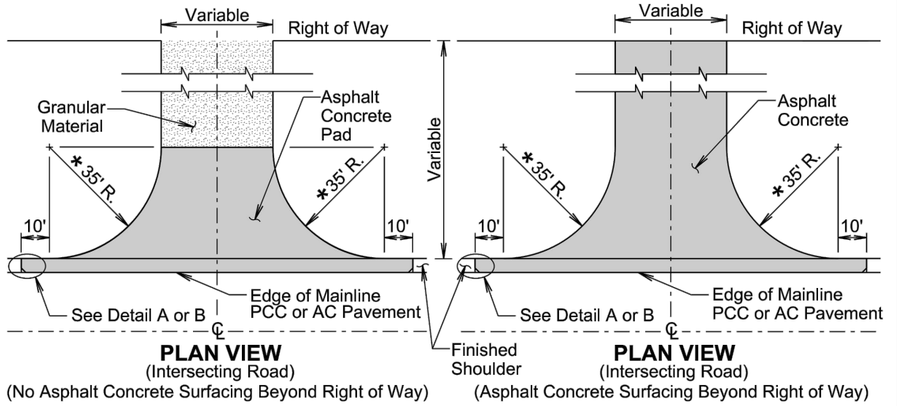
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ISSUE DATE NOV 2023

PAVEMENT RESILIENCY AND RESTORATION
OGLALA SIOUX TRIBE
PINE RIDGE INDIAN RESERVATAION
DETAILS

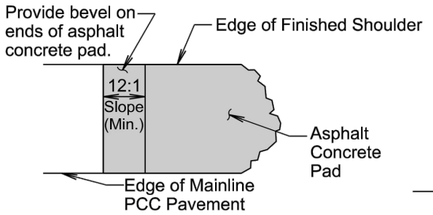
SHEET 6.1

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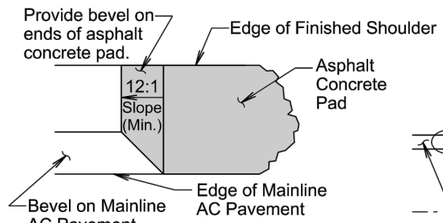


PLAN VIEW
(Intersecting Road)
(No Asphalt Concrete Surfacing Beyond Right of Way)

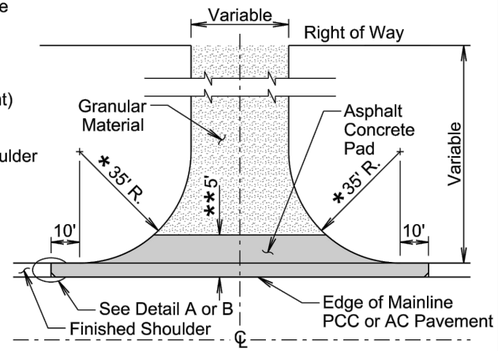
PLAN VIEW
(Intersecting Road)
(Asphalt Concrete Surfacing Beyond Right of Way)



DETAIL A
(Typ. For Projects with Mainline PCC Pavement)



DETAIL B
(Typ. For Projects with Mainline AC Pavement)



PLAN VIEW
(Entrance)

GENERAL NOTES:

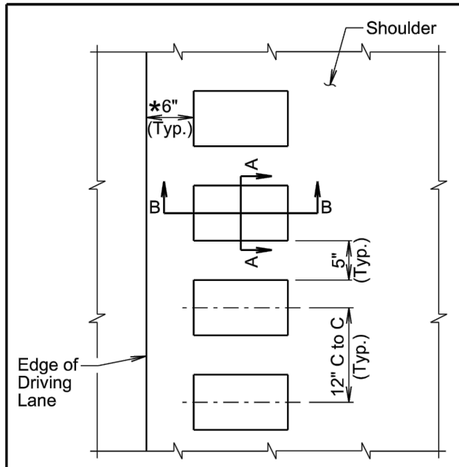
The precise construction limits for situations other than shown above will be determined by the Engineer during construction.

* For new construction, 35' radius typical or as specified in the plans. For resurfacing projects, radius is variable depending on existing conditions.

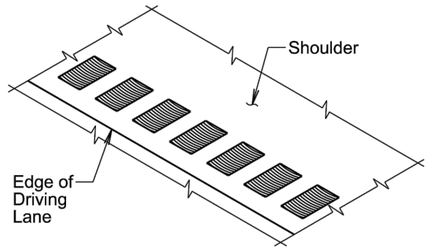
** For shoulder widths < 4', the Asphalt Concrete Pad width must be 5'. For shoulders widths of 4' or more, pave the full width of the shoulder only.

August 27, 2020

Published Date: 2024	SDDOT	SURFACING OR RESURFACING OF INTERSECTING ROADS AND ENTRANCES (SHOULDERS: GRANULAR MATERIAL OR COLD RECYCLED MATERIAL)	PLATE NUMBER 320.01 Sheet 1 of 1

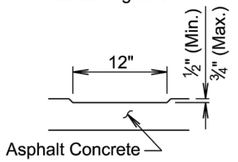


PLAN VIEW
(Typical Rumble Strip in Asphalt Concrete)

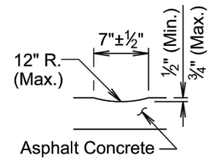


PERSPECTIVE VIEW
(Typical Rumble Strip in Asphalt Concrete)

* When PCC pavement width from centerline to edge of pavement is 12', the rumble strip may be placed a maximum of 2' from the edge of the driving lane.



SECTION B-B



SECTION A-A

GENERAL NOTES:

A rumble strip will be constructed on all of the asphalt concrete shoulders by grinding alternating patterns of 40' continuous indentations in the asphalt concrete. The rumble strip will receive a flush seal or asphalt surface treatment as specified in the plans.

A rumble strip will not be constructed through intersecting roads, entrances, turnouts, bridge decks, bridge approach slabs, and railroad crossings. The lengths of the 40' segments with continuous indentations and the 12' segments without a rumble strip adjacent to the intersecting roads, entrances, turnouts, bridge decks, bridge approach slabs, and railroad crossings will be adjusted as approved by the Engineer.

Prior to constructing the rumble strip the Contractor will submit to the Engineer, for approval, the proposed method of constructing the rumble strip.

Measurement of the rumble strip will be to the nearest 0.1 of a mile for each shoulder. Measurement and payment of the rumble strip will include the 12' long segments without rumble strips and the segments adjacent to intersecting roads, entrances, turnouts, bridge decks, bridge approach slabs, and railroad crossings without rumble strips. Payment for constructing the rumble strip will be at the contract unit price per mile for "Grind 12" Rumble Strip or Stripe in Asphalt Concrete".

PLAN VIEW

September 14, 2019

Published Date: 2024	SDDOT	12" RUMBLE STRIP IN ASPHALT CONCRETE ON NONDIVIDED HIGHWAY SHOULDERS	PLATE NUMBER 320.24 Sheet 1 of 1

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PAVEMENT RESILIENCY AND RESTORATION
OGLALA SIOUX TRIBE
PINE RIDGE INDIAN RESERVATAION
SDDOT STANDARD PLATES

SHEET 6.2

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TYPE AND DETAILS OF MGS						
Type of MGS	W Beam Rail Single or Double (Nested)	Blockout Size	Blockout Material	Post Size	Post Material	Post Spacing
1	Single	6"x12"x14"	Wood	6"x8"x6'-0"	Wood	6'-3"
1C	Single	6"x12"x14"	Wood	6"x8"x7'-6"	Wood	6'-3"
2	Single	6"x12"x14"	Wood	6"x8"x6'-0"	Wood	3'-1½"
3	Single	6"x12"x14"	Wood	6"x8"x6'-0"	Wood	1'-6¾"
4	Double	6"x12"x14"	Wood	6"x8"x6'-0"	Wood	6'-3"

STANDARD PLATE REFERENCE	
Type of MGS	See Standard Plate(s)
1	630.20, 630.22
1C	630.20, 630.25
2	630.20
3	630.20
4	630.20

GENERAL NOTES:

Asphalt concrete will be the same type used elsewhere on the project or will be as specified in the plans. If asphalt concrete is not specified in the plans, the asphalt concrete will conform to the Specifications for "Asphalt Concrete Composite".

Granular material will be the same type used elsewhere on the project or will be as specified in the plans. If granular material type is not specified in the plans, the material will conform to the Specifications for "Base Course". The granular material will be placed the same thickness as the mainline surfacing or as specified in the plans.

Topsoil is not shown in the transverse section drawing on sheet 2 of 6.

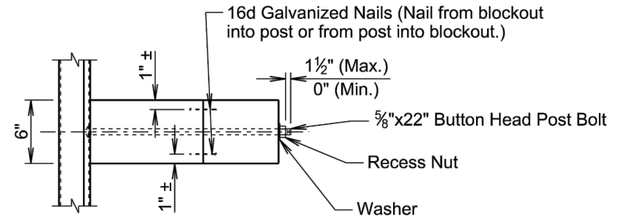
All W beam rail will be Type 1 and Class A (12 Ga.) unless specified otherwise in the plans.

W beam rail section lengths may be 12'-6" and/or 25'-0". The combination of section lengths used will be compatible with the total length of rail per site as shown in the plans.

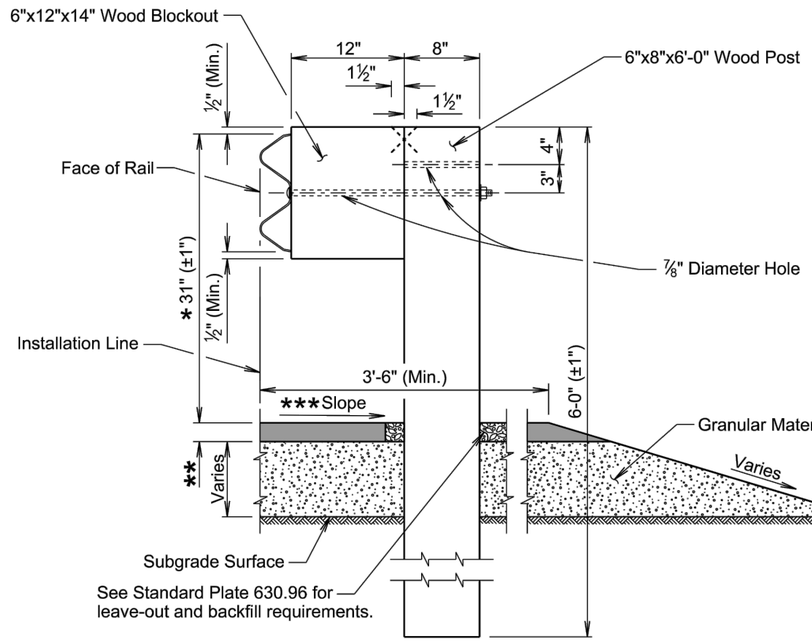
Slots in the rails will be provided as specified in the plans and by the manufacturer. A drilled hole through the rail is not allowed as a replacement for a slot. If the Contractor must create a slot, a cutting torch or plasma cutter is not allowed. The slot edges will be smooth and free of burrs or notches.

All costs for constructing the MGS including labor, equipment, and materials including all posts, blockouts, steel beam rail, and hardware will be incidental to the contract unit price per foot for the respective MGS contract item.

September 14, 2019



TOP VIEW
(Type 1, 2, or 3 MGS Installation)



TRANSVERSE SECTION
(Type 1, 2, or 3 MGS Installation)

* See Standard Plate 630.99

** 2" asphalt concrete or as specified in the plans.

*** The cross slope will be as specified in the plans; however, the cross slope will not be steeper than a 10:1 slope.

September 14, 2019

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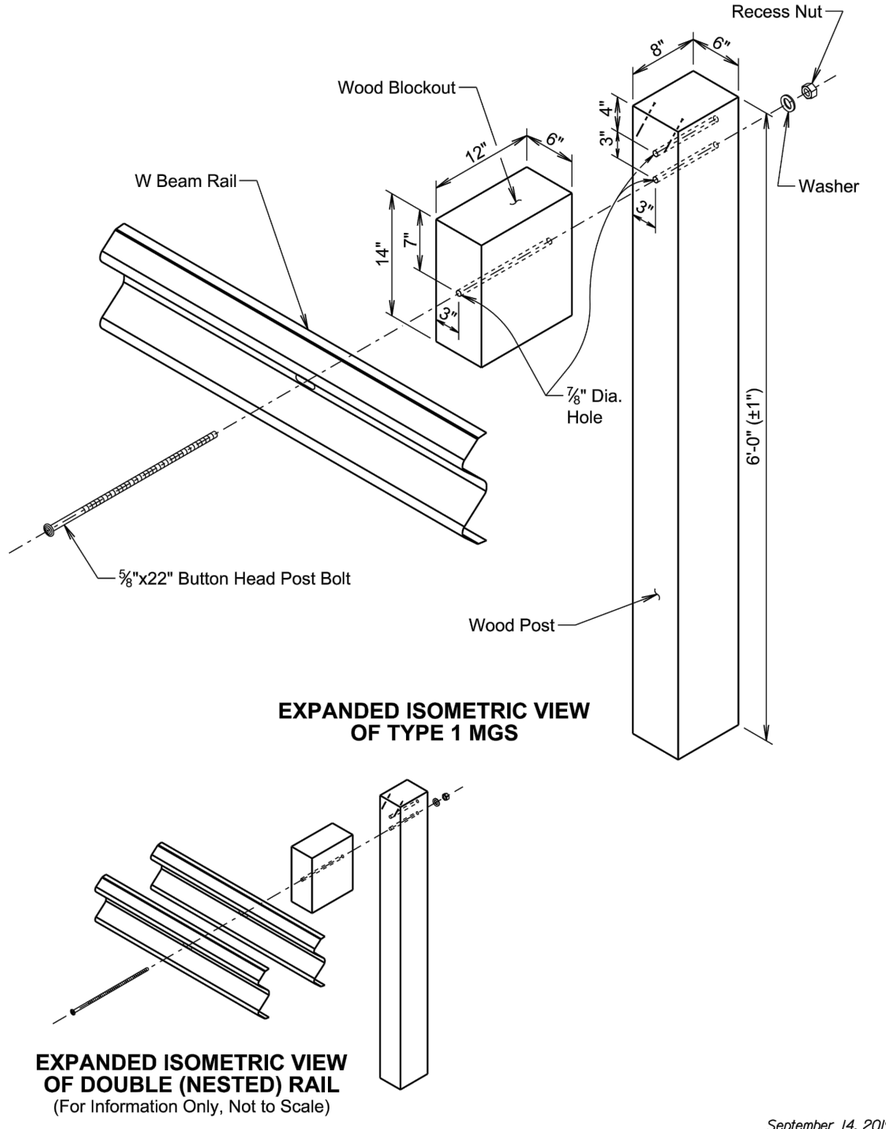
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PROJECT NUMBER 2311-00354
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PAVEMENT RESILIENCY AND RESTORATION
OGLALA SIOUX TRIBE
PINE RIDGE INDIAN RESERVATAION
SDDOT STANDARD PLATES

SHEET 6.3

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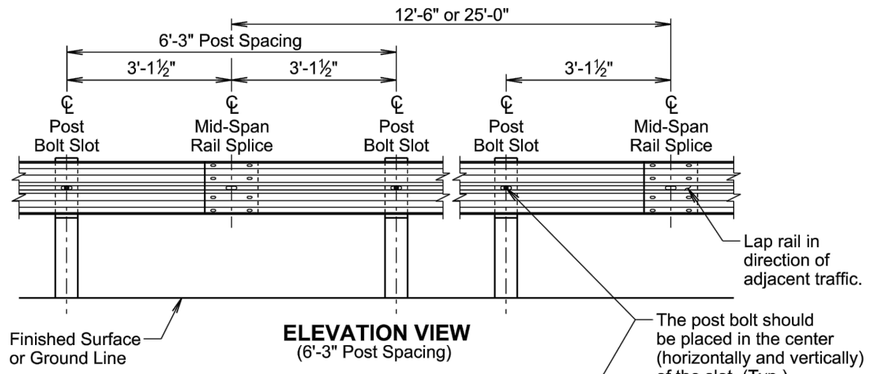


EXPANDED ISOMETRIC VIEW OF TYPE 1 MGS

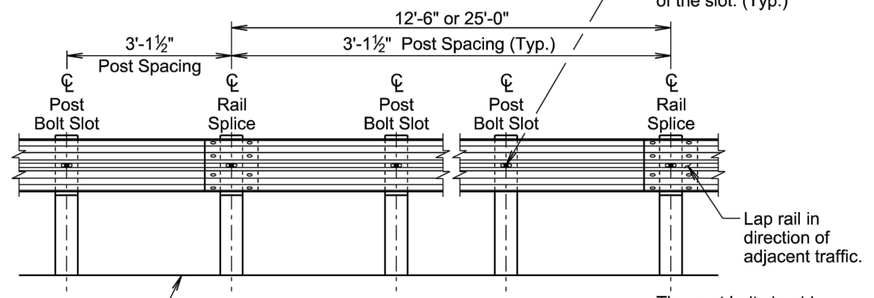
EXPANDED ISOMETRIC VIEW OF DOUBLE (NESTED) RAIL
(For Information Only, Not to Scale)

September 14, 2019

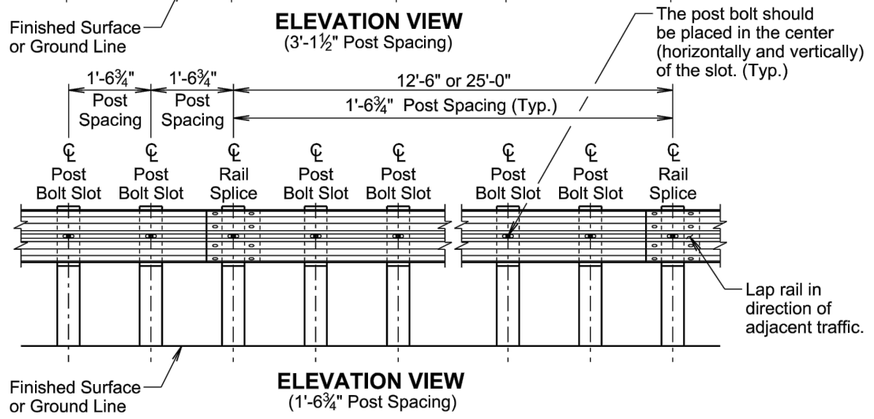
Published Date: 2024	SDDOT	MIDWEST GUARDRAIL SYSTEM (MGS)	PLATE NUMBER 630.20
			Sheet 3 of 6



ELEVATION VIEW
(6'-3" Post Spacing)



ELEVATION VIEW
(3'-1½" Post Spacing)



ELEVATION VIEW
(1'-6¾" Post Spacing)

September 14, 2019

Published Date: 2024	SDDOT	MIDWEST GUARDRAIL SYSTEM (MGS)	PLATE NUMBER 630.20
			Sheet 4 of 6

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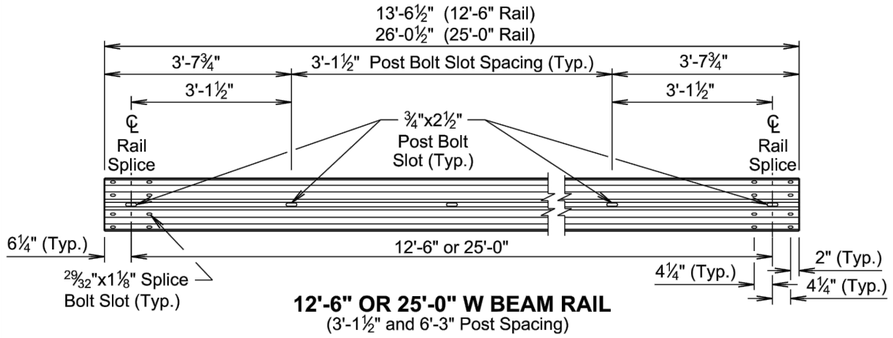
NO.	DATE	REVISION

DRAFTED PMW
REVIEWED TMH
PROJECT NUMBER 2311-00354
ISSUE DATE NOV 2023

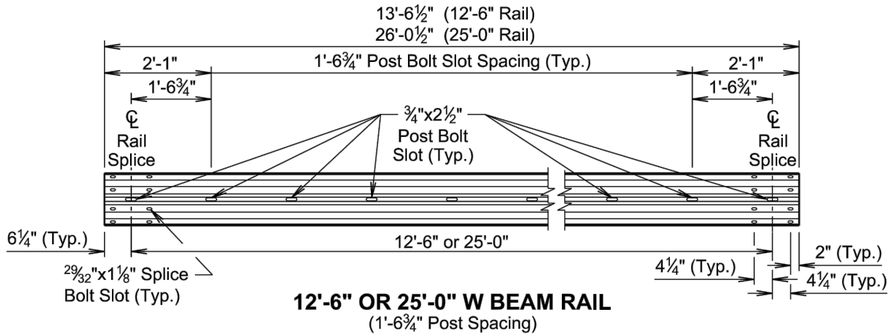
PAVEMENT RESILIENCY AND RESTORATION
OGLALA SIOUX TRIBE
PINE RIDGE INDIAN RESERVATAION
SDDOT STANDARD PLATES

SHEET 6.4

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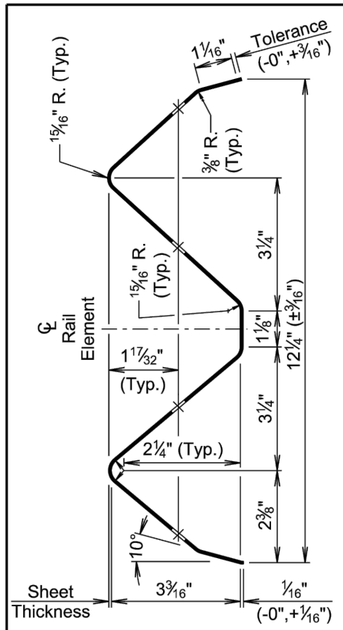
12'-6" OR 25'-0" W BEAM RAIL
(3'-1½" and 6'-3" Post Spacing)



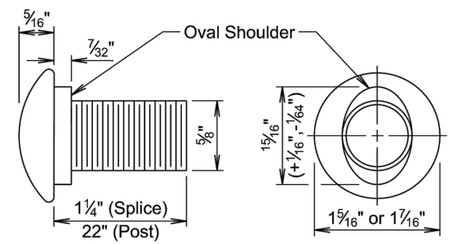
12'-6" OR 25'-0" W BEAM RAIL
(1'-6¾" Post Spacing)

September 14, 2019

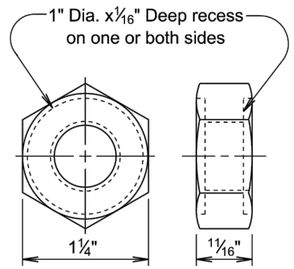
Published Date: 2024	SDDOT	MIDWEST GUARDRAIL SYSTEM (MGS)	PLATE NUMBER 630.20
			Sheet 5 of 6



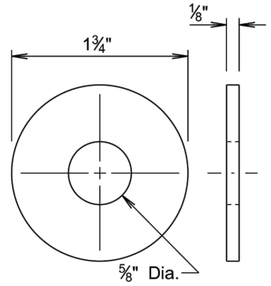
SECTION THROUGH W BEAM RAIL



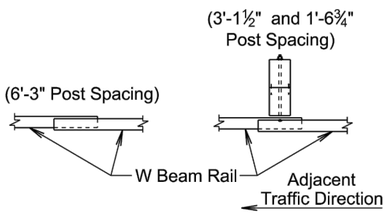
SPLICE BOLT AND POST BOLT
(⅝" Button Head Bolt)



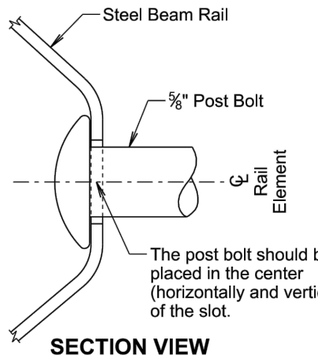
RECESS NUT
(At lap splices, the recess will be placed against the steel rail.)



WASHER
(The washer will be placed between the back side of wood post and the recess nut, see sheet 2 and 3.)



PLAN VIEW
(Lap Splice)
(Lap rail in direction of adjacent traffic.)
(8 splice bolts and 8 recess nuts per splice, NO washers)



SECTION VIEW
(At Post Bolt)

September 14, 2019

Published Date: 2024	SDDOT	MIDWEST GUARDRAIL SYSTEM (MGS)	PLATE NUMBER 630.20
			Sheet 6 of 6

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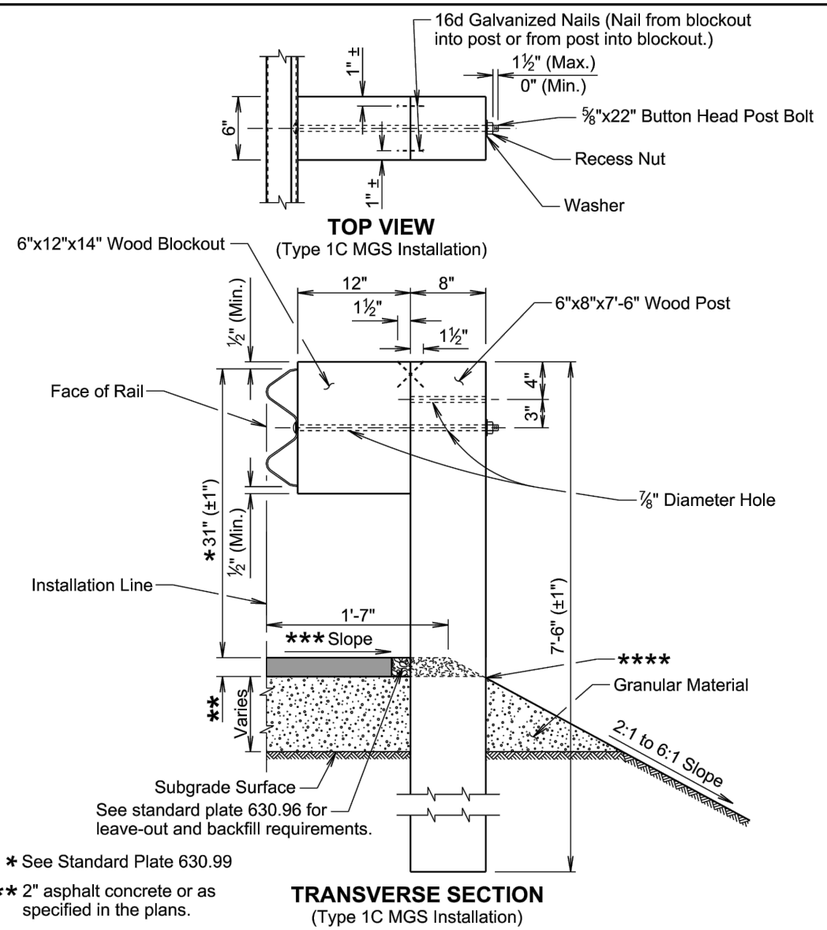
NO.	DATE	REVISION

DRAFTED PMW
REVIEWED TMH
PROJECT NUMBER 2311-00354
ISSUE DATE NOV 2023

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*** The cross slope will be as specified in the plans; however, the cross slope will not be steeper than a 10:1 slope.

**** For guardrail post installation purposes, the asphalt concrete sluff will end at this location. It will not be allowed to extend down the slope of the granular material.

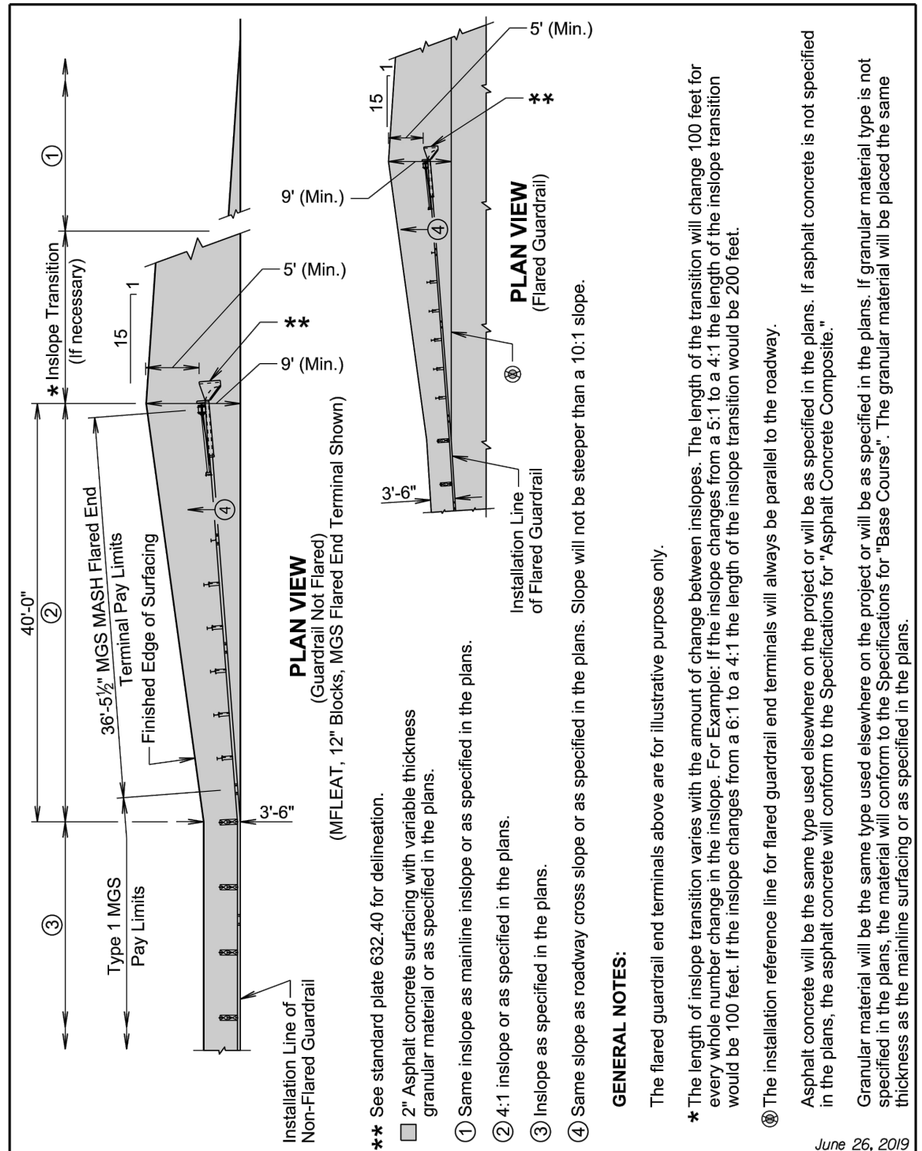
GENERAL NOTES:

The guardrail on this standard plate is Type 1C MGS. See standard plate 630.20 for specifications regarding Type 1C MGS.

Topsoil is not shown in the transverse section drawing.

November 19, 2021

Published Date: 2024	SDDOT	TYPE 1C MIDWEST GUARDRAIL SYSTEM (MGS) INSTALLATION AT BREAK POINT OF SLOPE	PLATE NUMBER 630.25 Sheet 1 of 1



** See standard plate 632.40 for delineation.

☐ 2" Asphalt concrete surfacing with variable thickness granular material or as specified in the plans.

① Same inslope as mainline inslope or as specified in the plans.

② 4:1 inslope or as specified in the plans.

③ Inslope as specified in the plans.

④ Same slope as roadway cross slope or as specified in the plans. Slope will not be steeper than a 10:1 slope.

GENERAL NOTES:

The flared guardrail end terminals above are for illustrative purpose only.

* The length of inslope transition varies with the amount of change between inslopes. The length of the transition will change 100 feet for every whole number change in the inslope. For Example: If the inslope changes from a 5:1 to a 4:1 the length of the inslope transition would be 200 feet. If the inslope changes from a 6:1 to a 4:1 the length of the inslope transition would be 200 feet.

⑧ The installation reference line for flared guardrail end terminals will always be parallel to the roadway.

Asphalt concrete will be the same type used elsewhere on the project or will be as specified in the plans. If asphalt concrete is not specified in the plans, the asphalt concrete will conform to the Specifications for "Asphalt Concrete Composite."

Granular material will be the same type used elsewhere on the project or will be as specified in the plans. If granular material type is not specified in the plans, the material will conform to the Specifications for "Base Course". The granular material will be placed the same thickness as the mainline surfacing or as specified in the plans.

June 26, 2019

Published Date: 2024	SDDOT	EMBANKMENT, SURFACING, AND PAYMENT LIMITS FOR MGS MASH FLARED END TERMINAL	PLATE NUMBER 630.87 Sheet 1 of 1

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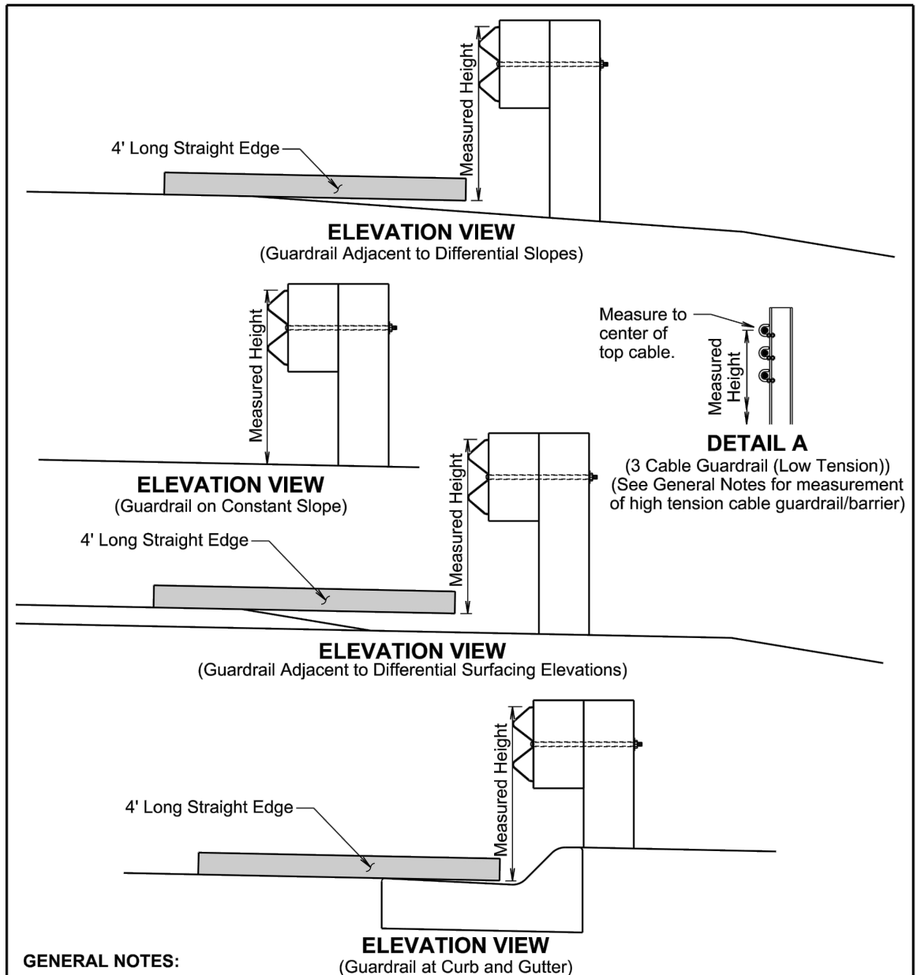
NO.	DATE	REVISION

DRAFTED PMW
REVIEWED TMH
PROJECT NUMBER 2311-00354
ISSUE DATE NOV 2023

PAVEMENT RESILIENCY AND RESTORATION
OGLALA SIOUX TRIBE
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GENERAL NOTES:

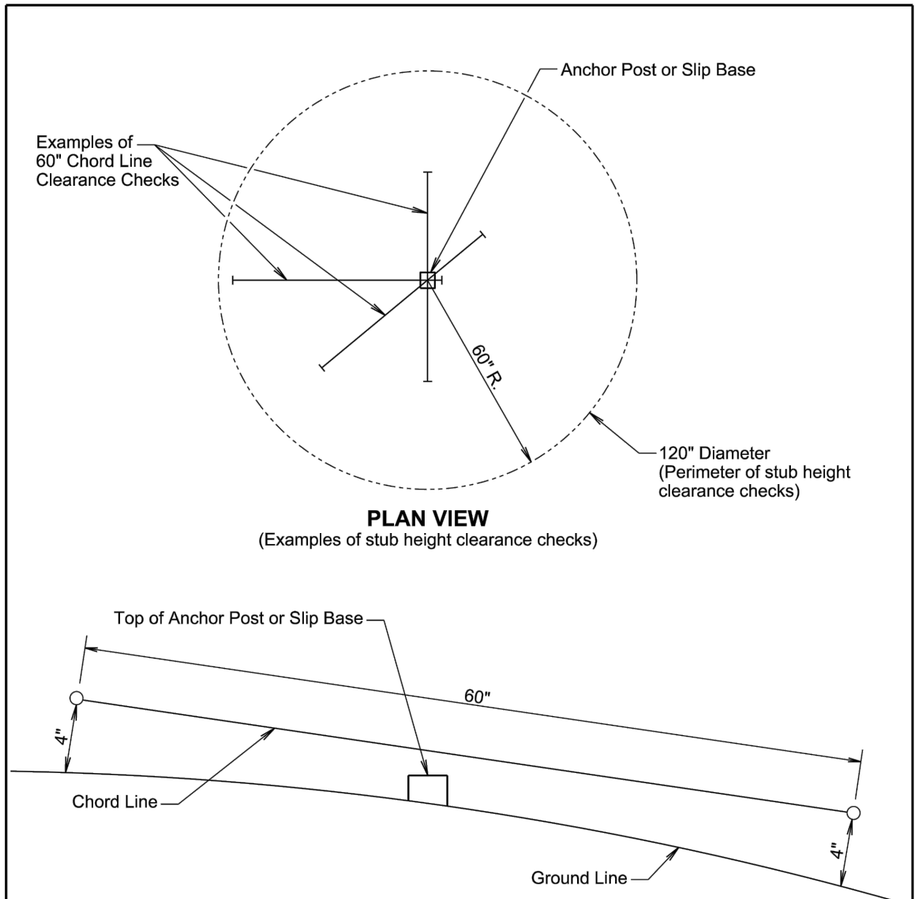
The W Beam guardrail shown is for illustrative purpose. The guardrail height for all types of guardrail systems except for high tension cable guardrail/barrier will be measured in accordance with this standard plate.

When measuring height of 3 cable guardrail (low tension) the height will be measured to the center of the top cable. See Detail A.

The height of high tension cable guardrail/barrier will be measured in accordance with the Manufacturer's installation instructions.

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Published Date: 2024	SDDOT	MEASURING GUARDRAIL HEIGHT	PLATE NUMBER 630.99 Sheet 1 of 1



GENERAL NOTES:

The top of anchor posts and slip bases WILL NOT extend above a 60" chord line within a 120" diameter circle around the post with ends 4" above the ground.

At locations where there is curb and gutter adjacent to the breakaway sign support, the stub height will be a maximum of 4" above the ground line at the localized area adjacent to the breakaway support stub.

January 22, 2021

Published Date: 2024	SDDOT	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 632.18 Sheet 1 of 1

KLJ

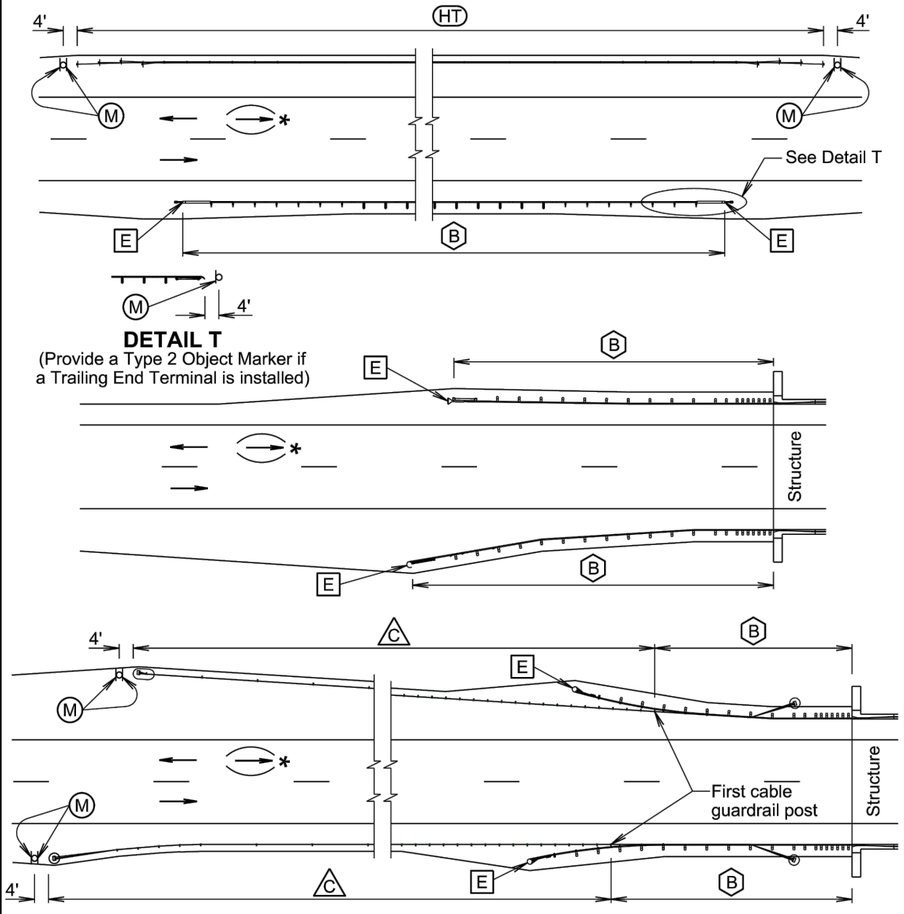
NO.	DATE	REVISION

DRAFTED PMW
REVIEWED TMH
PROJECT NUMBER 2311-00354
ISSUE DATE NOV 2023

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DETAIL T
(Provide a Type 2 Object Marker if a Trailing End Terminal is installed)

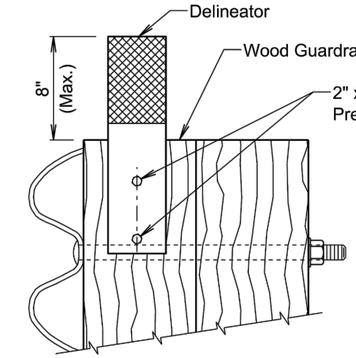
PLAN VIEW
(Typical Guardrail Layouts)

B Steel Beam Guardrail Delineation
E Guardrail End Terminal Object Marker
C 3 Cable Guardrail (Low Tension) Delineation
HT High Tension Cable Guardrail Delineation
M Type 2 Object Marker

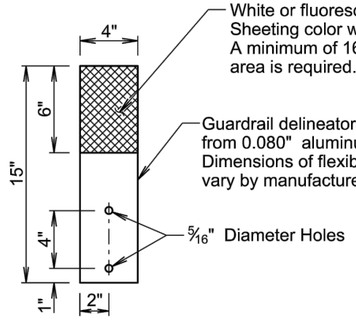
*For two-way traffic, install delineation at the opposite end of structure the same as shown. Back-to-back delineation is required for two-way traffic, single-sided delineation for one-way traffic.

December 23, 2019

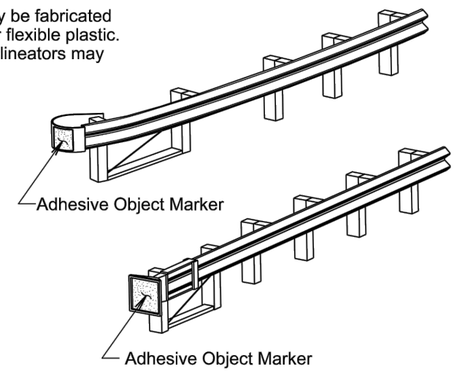
Published Date: 2024	SDDOT	DELINEATION OF GUARDRAIL	PLATE NUMBER 632.40
			Sheet 1 of 4



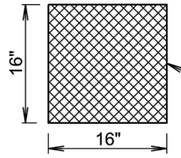
B STEEL BEAM GUARDRAIL DELINEATION



DELINEATOR
(For Steel Beam Guardrail)



E GUARDRAIL END TERMINAL OBJECT MARKER



ADHESIVE OBJECT MARKER

Adhesive object marker dimensions may vary due to shape of terminal end. A minimum of 256 square inches of object marker sheeting area is required. The sheeting will be fluorescent yellow.

December 23, 2019

Published Date: 2024	SDDOT	DELINEATION OF GUARDRAIL	PLATE NUMBER 632.40
			Sheet 2 of 4

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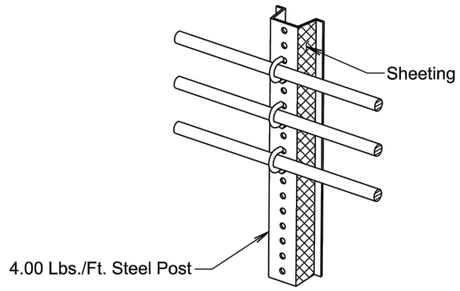
REVISION
NO. DATE

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PROJECT NUMBER 2311-00354
ISSUE DATE NOV 2023

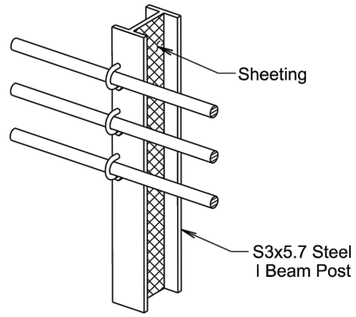
PAVEMENT RESILIENCY AND RESTORATION
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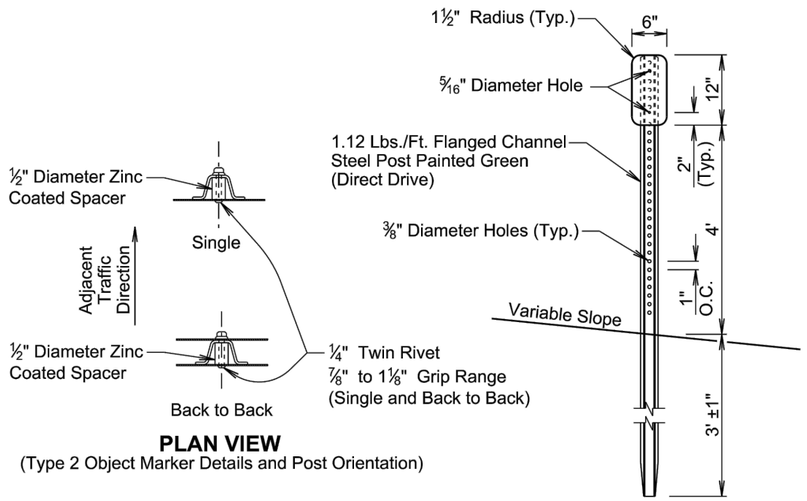
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Ⓒ **3 CABLE GUARDRAIL (LOW TENSION) DELINEATION**



Ⓒ **3 CABLE GUARDRAIL (LOW TENSION) DELINEATION**



PLAN VIEW
(Type 2 Object Marker Details and Post Orientation)

ELEVATION VIEW
Ⓜ (Type 2 Object Marker)
(For Marking 3 Cable Guardrail (Low Tension) Anchor, High Tension Cable Guardrail Anchor, and Trailing End Terminal)

December 23, 2019

Published Date: 2024	SDDOT	**DELINEATION OF GUARDRAIL**	PLATE NUMBER 632.40
			Sheet 3 of 4

GENERAL NOTES:

The delineation of high tension cable guardrail will be reflective sheeting placed back to back on every other post cap or cable spacer. The sheeting will be type XI in conformance with ASTM D4956. The color of the reflective sheeting shall be the same as the nearest pavement marking.

The delineators for steel beam guardrail and sheeting on 3 cable guardrail (low tension) posts will be covered with a minimum of 16 square inches of reflective sheeting. The reflective sheeting will be type XI in conformance with ASTM D4956. Along two-way roadways the sheeting will be on both sides of the delineators and guardrail posts and will be white in color. For one-way roadways the sheeting will only be required on the side facing traffic and the color will be the same as the nearest pavement marking, yellow on the left side of the roadway and white on the right side.

When steel beam guardrail is attached to a bridge the first delineator will be attached to the post nearest the bridge.

At bridges with guardrail less than 200 feet in length, a minimum of 4 delineators will be placed in addition to the end terminal yellow object marker. The spacing between the delineators will be approximately one third of the length of the guardrail.

At bridges with guardrail 200 feet and greater in length, including bridges that have steel beam guardrail transitioning to 3 cable guardrail (low tension), the delineators will be placed at a spacing of approximately 50 feet. Delineation will extend throughout the length of the guardrail system.

Steel beam guardrail that is not attached to a bridge and is less than 200 feet in length, a minimum of 4 delineators will be placed in addition to the end terminal yellow object markers. The spacing between the delineators will be approximately one third of the length of the guardrail.

Steel beam guardrail that is not attached to a bridge and is 200 feet and greater in length, including steel beam guardrail transitioning to 3 cable guardrail (low tension), the delineators will be placed at a spacing of approximately 50 feet. Delineation will extend throughout the length of the guardrail system.

All costs for furnishing and installing single or back to back guardrail delineation on 3 cable guardrail and steel beam guardrail will be included in the contract unit price per each for "Guardrail Delineator".

All costs for furnishing and installing the reflective sheeting on the cable spacers or post caps for the high tension cable guardrail will be incidental to the respective high tension cable guardrail contract item.

An adhesive object marker will be placed on the end of the W beam guardrail or MGS end terminal. The adhesive object marker dimensions may vary due to the shape of the terminal end. A minimum of 256 square inches of object marker reflective sheeting area is required. The reflective sheeting will be fluorescent yellow type XI sheeting in conformance with ASTM D4956. All costs for furnishing and installing the adhesive object marker will be incidental to various contract items.

A type 2 object marker will be placed adjacent to the 3 cable guardrail (low tension) anchor, high tension cable guardrail anchor, and trailing end terminal at the location noted on sheet 1 of this standard plate. The type 2 object marker (6" x 12") will have fluorescent yellow type XI sheeting in conformance with ASTM D4956. All costs for furnishing and installing the type 2 object marker including the steel post, 6" x 12" reflective panel, and hardware will be included in the contract unit price per each for "Type 2 Object Marker" for single-sided and "Type 2 Object Marker Back to Back" for back to back type 2 object markers.

December 23, 2019

Published Date: 2024	SDDOT	**DELINEATION OF GUARDRAIL**	PLATE NUMBER 632.40
			Sheet 4 of 4

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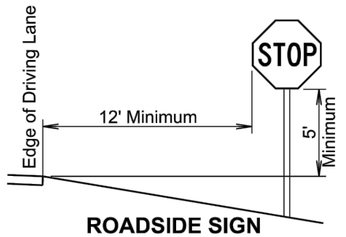
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PROJECT NUMBER 2311-00354
ISSUE DATE NOV 2023

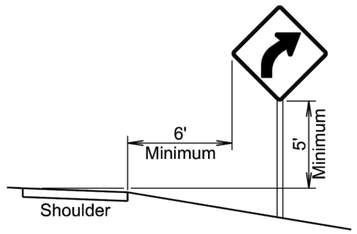
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OGLALA SIOUX TRIBE
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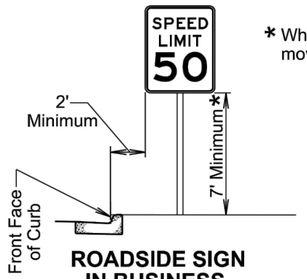
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ROADSIDE SIGN IN RURAL AREA

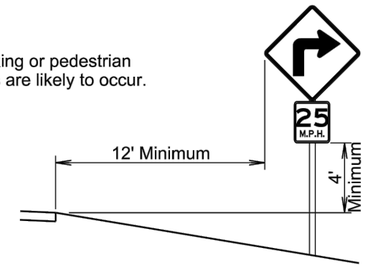


ROADSIDE SIGN IN RURAL AREA
(If shoulder width is greater than 6 foot)

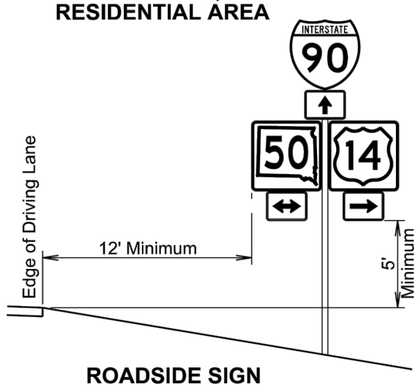


ROADSIDE SIGN IN BUSINESS, COMMERCIAL, OR RESIDENTIAL AREA

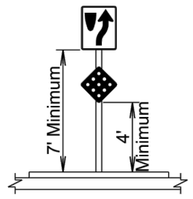
* Where parking or pedestrian movements are likely to occur.



WARNING SIGN ADVISORY SPEED PLAQUE IN RURAL AREA



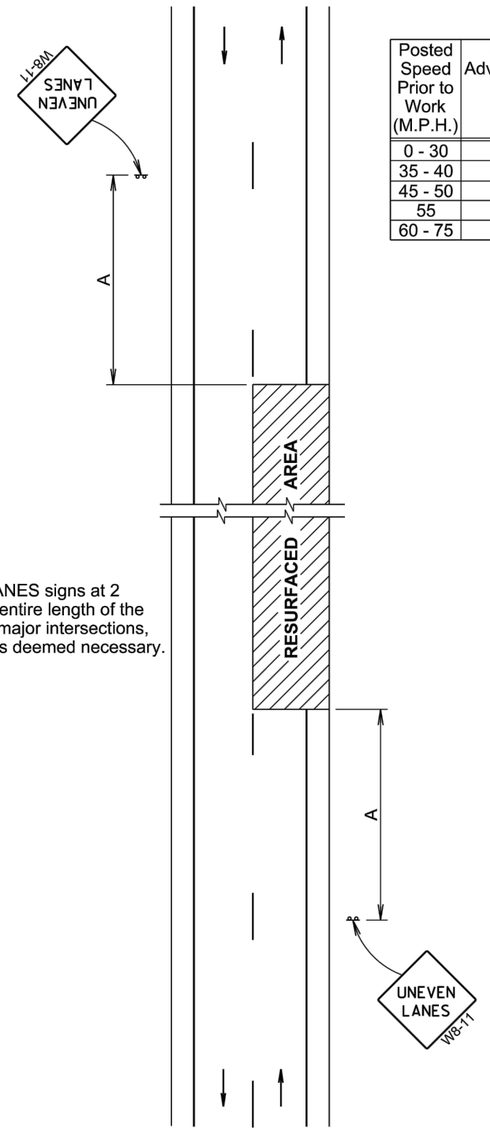
ROADSIDE SIGN IN RURAL AREA



SIGN ON NOSE OF MEDIAN

November 19, 2020

Published Date: 2024	SDDOT	OFFSETS FOR SIGN INSTALLATION	PLATE NUMBER 632.90
			Sheet 1 of 1



Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)
0 - 30	200
35 - 40	350
45 - 50	500
55	750
60 - 75	1000

Install additional UNEVEN LANES signs at 2 mile intervals throughout the entire length of the uneven area and at affected major intersections, edge of towns, and other sites deemed necessary.

January 22, 2021

Published Date: 2024	SDDOT	UNEVEN ROAD SURFACE	PLATE NUMBER 634.22
			Sheet 1 of 1

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PROJECT NUMBER 2311-00354
ISSUE DATE NOV 2023

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Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	25
35 - 40	350	25
45	500	25
50	500	50
55	750	50
60 - 65	1000	50

Flagger

Channelizing Device

For low-volume traffic situations with short work zones on straight roadways where the flagger is visible to road users approaching from both directions, a single flagger may be used.

The ROAD WORK AHEAD and the END ROAD WORK signs may be omitted for short duration operations (1 hour or less).

For tack and/or flush seal operations, when flaggers are not being used, the FRESH OIL sign (W21-2) will be displayed in advance of the liquid asphalt areas.

Flashing warning lights and/or flags may be used to call attention to the advance warning signs.

The channelizing devices will be drums or 42" cones.

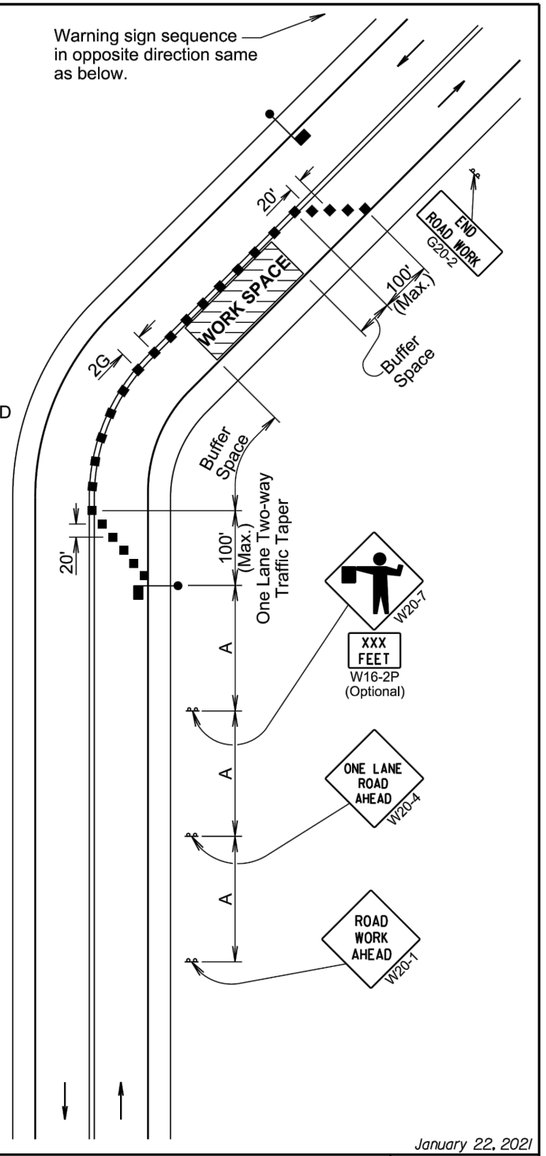
Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.

END ROAD WORK G20-2

Channelizing devices and flaggers will be used at intersecting roads to control intersecting road traffic as required.

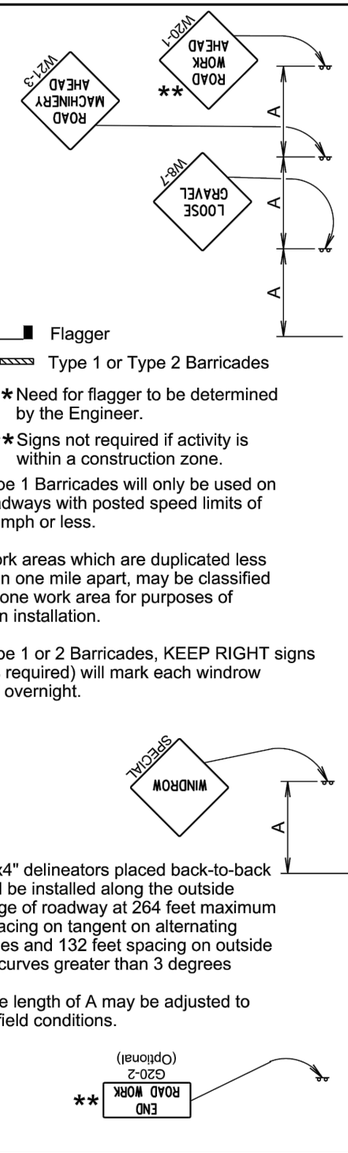
The buffer space should be extended so that the two-way traffic taper is placed before a horizontal or vertical curve to provide adequate sight distance for the flagger and queue of stopped vehicles.

The length of A may be adjusted to fit field conditions.

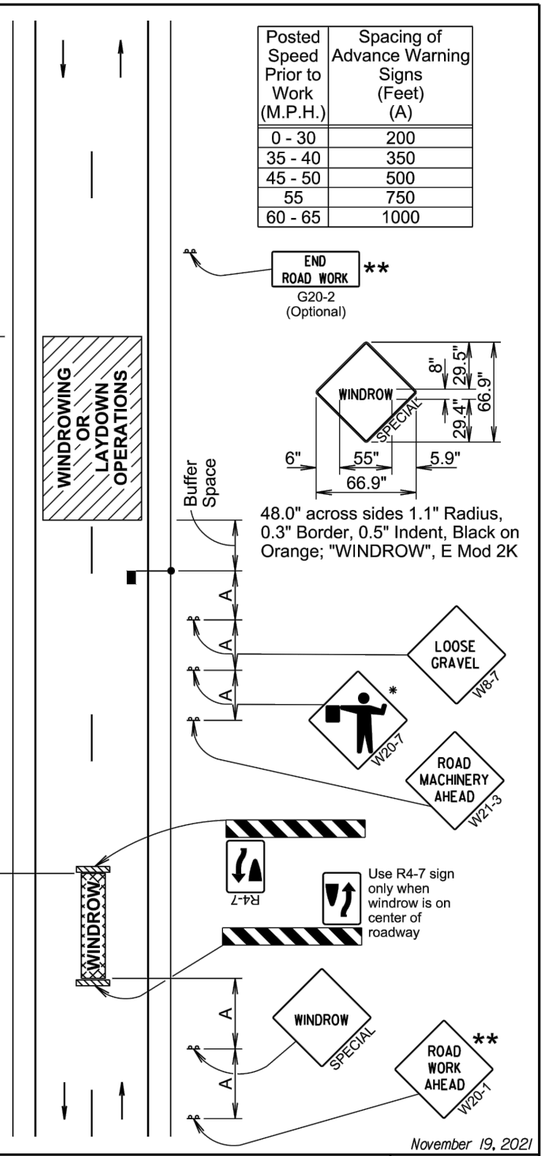


January 22, 2021

Published Date: 2024	SDDOT	LANE CLOSURE WITH FLAGGER PROVIDED	PLATE NUMBER 634.23
			Sheet 1 of 1



Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)
0 - 30	200
35 - 40	350
45 - 50	500
55	750
60 - 65	1000



November 19, 2021

Published Date: 2024	SDDOT	WINDROWING OR LAYDOWN OPERATION	PLATE NUMBER 634.27
			Sheet 1 of 1

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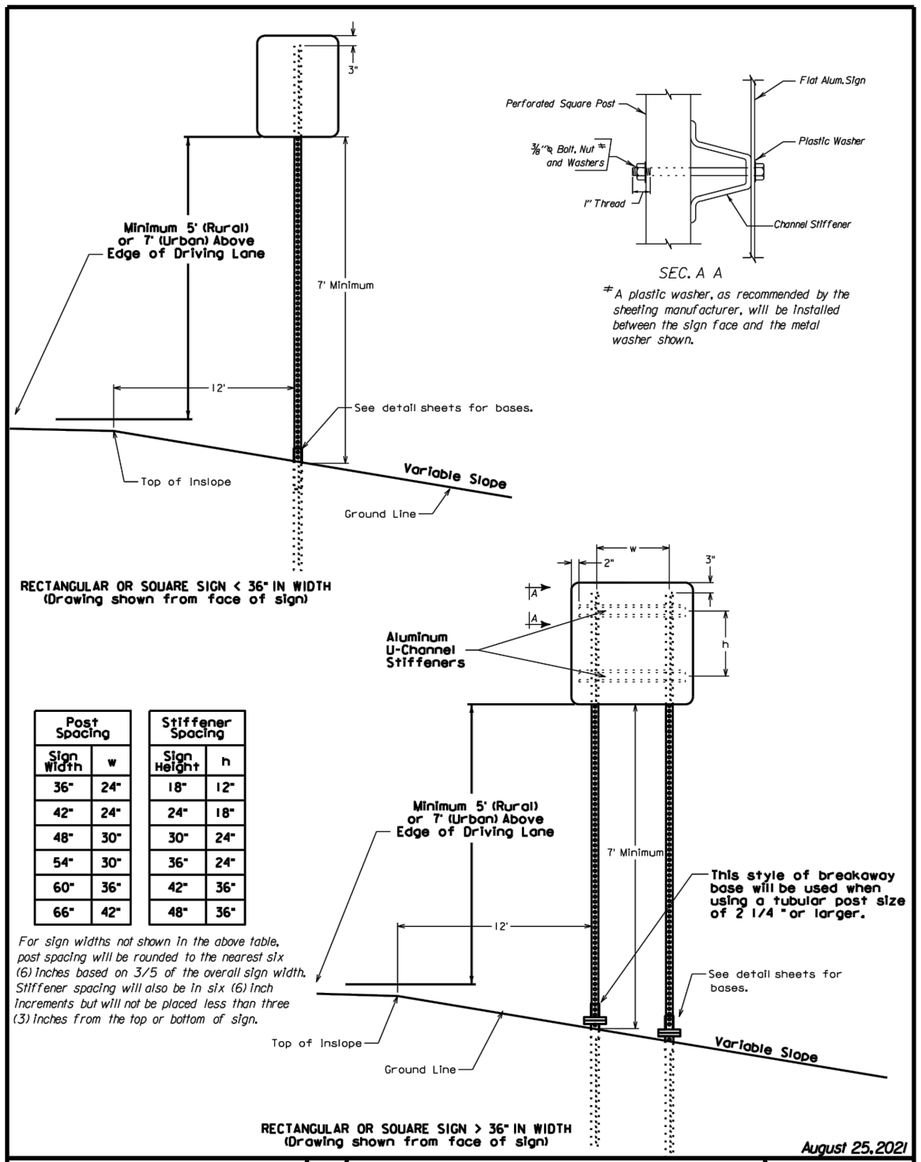
NO.	DATE	REVISION

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REVIEWED TMH
PROJECT NUMBER 2311-00354
ISSUE DATE NOV 2023

PAVEMENT RESILIENCY AND RESTORATION
OGLALA SIOUX TRIBE
PINE RIDGE INDIAN RESERVATAION
SDDOT STANDARD PLATES

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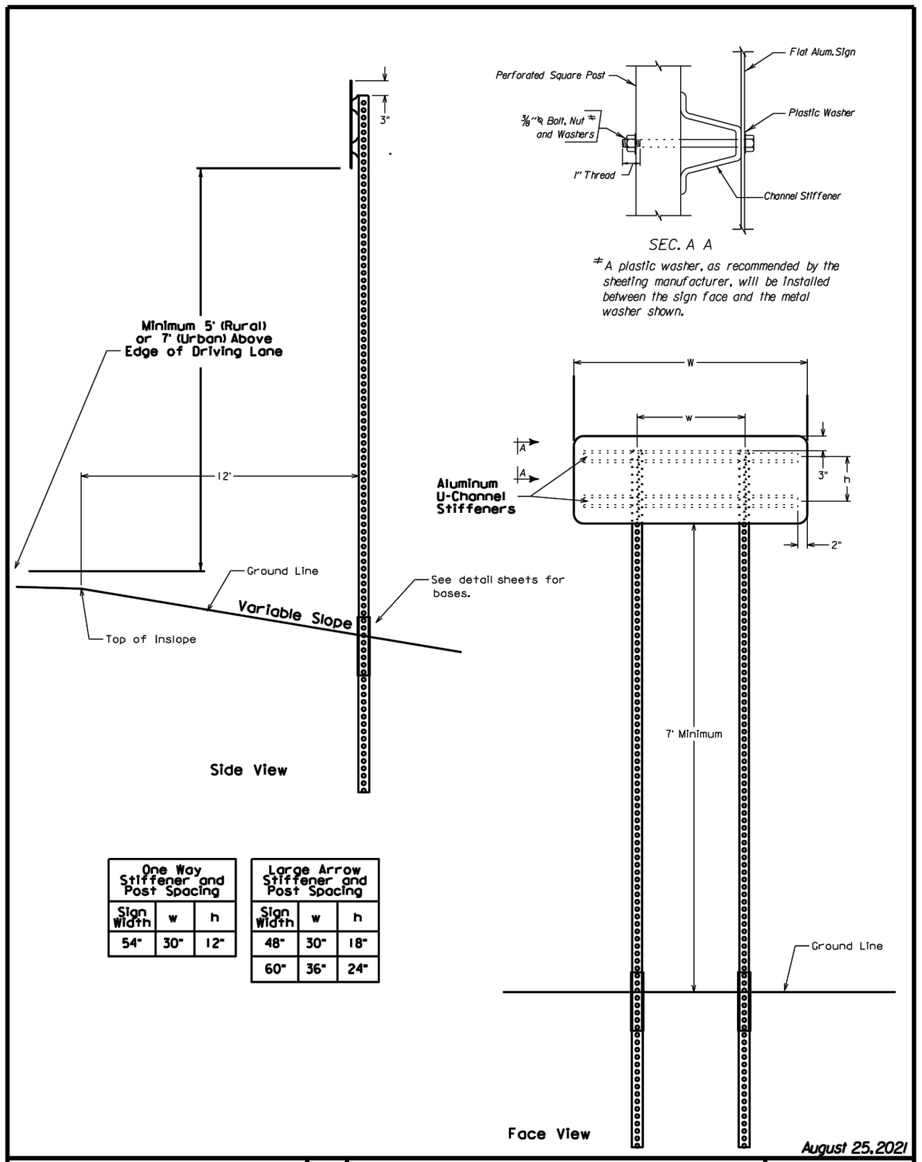
Post Spacing	
Sign Width	w
36"	24"
42"	24"
48"	30"
54"	30"
60"	36"
66"	42"

Stiffener Spacing	
Sign Height	h
18"	12"
24"	18"
30"	24"
36"	24"
42"	36"
48"	36"

For sign widths not shown in the above table, post spacing will be rounded to the nearest six (6) inches based on 3/5 of the overall sign width. Stiffener spacing will also be in six (6) inch increments but will not be placed less than three (3) inches from the top or bottom of sign.

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SDDOT	SQUARE OR RECTANGULAR SIGNS (Typical Sign and Stiffener Details)	SPECIAL DETAIL LO3
		Sheet 1 of 1



One Way Stiffener and Post Spacing		
Sign Width	w	h
54"	30"	12"

Large Arrow Stiffener and Post Spacing		
Sign Width	w	h
48"	30"	18"
60"	36"	24"

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SDDOT	ONE WAY SIGN OR LARGE ARROW SIGN (Typical Sign and Stiffener Details)	SPECIAL DETAIL LO4
		Sheet 1 of 1

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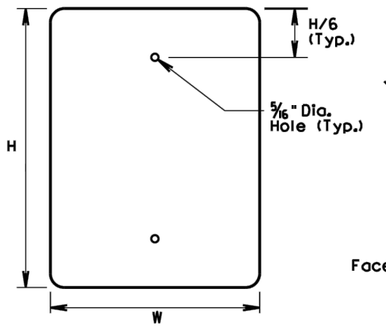
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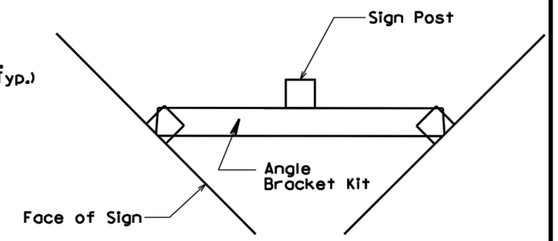
W1-8 Single Mount Detal

View from Face

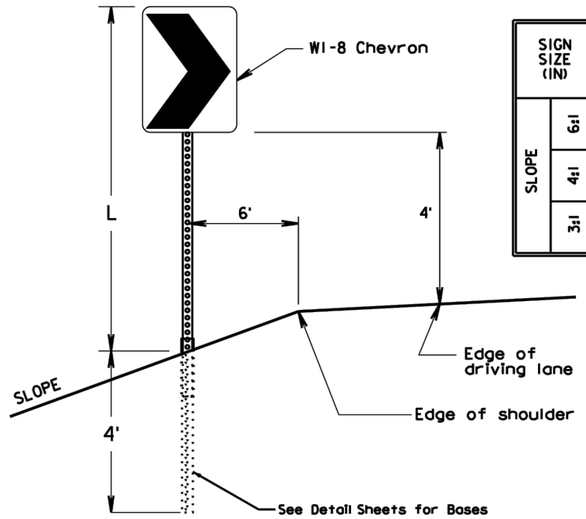


W1-8 Double Mount Detal

View from Top



NOTE: Chevrons will be installed on all curves where the difference between the speed limit and the advisory speed is 10 mph or greater. The first Chevron will be placed within 50' of begining of curve from each direction of travel and will be mounted as a single mount installation. All intermediate installations will be mounted as a double mount installation with approach angle adjusted such that 3 sign faces are visible at all times when traveling through the curve.

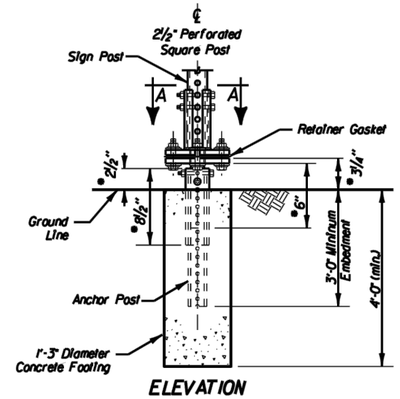


SIGN SIZE (IN)		12x18	18x24	24x30	30x36	36x48
		POST LENGTH L (FT)				
SLOPE	6:1	6½	7	7½	8	9
	4:1	7	7½	8	8½	9½
	3:1	7½	8	8½	9	10

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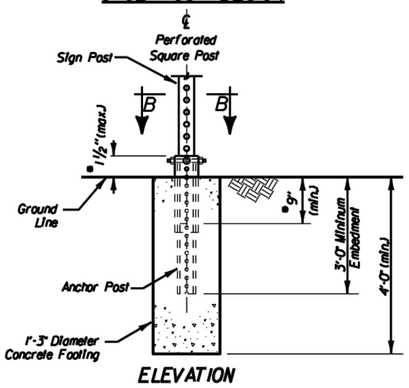
	SDDOT	CHEVRON SIGN (Typical Erection Details)	SPECIAL DETAIL L09
			Sheet 1 of 1

SLIP BASE DESIGN



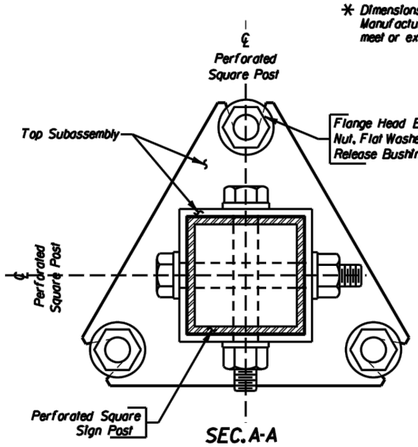
ELEVATION

STUB POST DESIGN

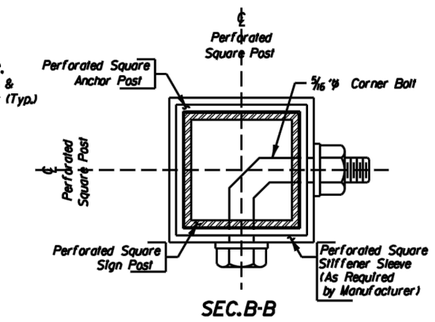


ELEVATION

* Dimensions shown may vary by Manufacturer. The Contractor will use Manufacturer recommended assembly parts and procedures. Sign installations must meet or exceed NCHRP 350 or MASH breakaway requirements and be FHWA approved.



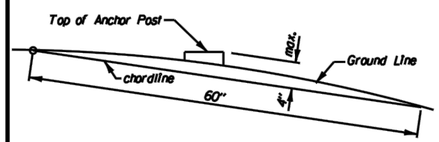
SEC. A-A



SEC. B-B

GENERAL NOTES-

1. Design Specification: AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, Latest Edition.
2. The manufacturer will provide certification that the posts and hardware furnished have essentially the same chemistry, mechanical properties and geometry as that used in the FHWA tests, and that it will meet the FHWA change in velocity requirements.
3. The manufacturer will also provide certification that the breakaway system furnished will develop the full shear and bending yield strength of the sign post section being spliced.
4. All posts will be galvanized in accordance with ASTM A653, Des. G-90.
5. All hardware will be galvanized in accordance with ASTM A153.



BREAKAWAY SUPPORT STUB CLEARANCE DIAGRAM

NOTE: The top of anchor post will NOT extend more than 4" max.

August 25, 2021

	SDDOT	BREAKAWAY SIGN SUPPORTS Perforated Steel Post w/Concrete Footings	SPECIAL DETAIL L20
			Sheet 1 of 1

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PAVEMENT RESILIENCY AND RESTORATION

OGLALA SIOUX TRIBE

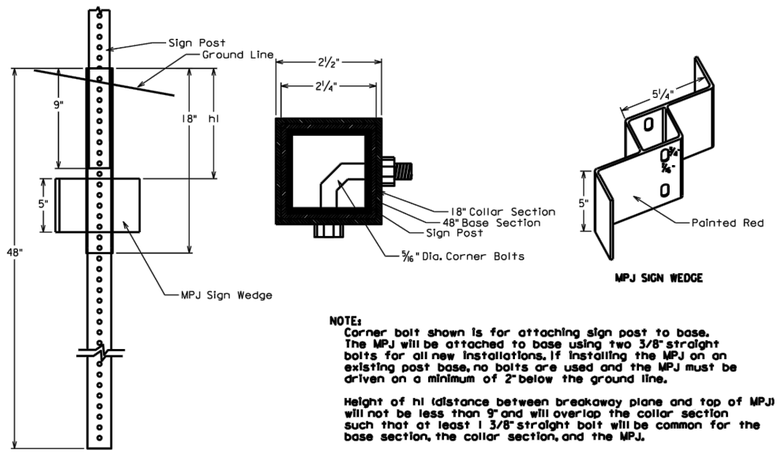
PINE RIDGE INDIAN RESERVATAION

SDDOT STANDARD PLATES

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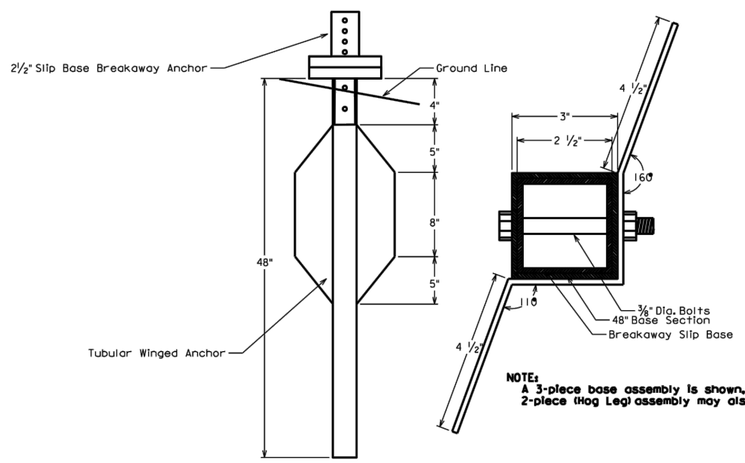
SIGN BASE DETAILS FOR A 2" SIGN POST



NOTE:
Corner bolt shown is for attaching sign post to base. The MPJ will be attached to base using two 3/8" straight bolts for all new installations. If installing the MPJ on an existing post base, no bolts are used and the MPJ must be driven on a minimum of 2" below the ground line.

Height of ht (distance between breakaway plane and top of MPJ) will not be less than 9" and will overlap the collar section such that at least 1 3/8" straight bolt will be common for the base section, the collar section, and the MPJ.

SIGN BASE DETAILS FOR A 2½" SIGN POST

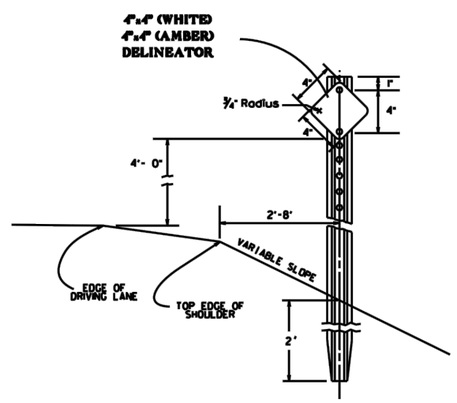


NOTE:
A 3-piece base assembly is shown, however, a 2-piece (Hog Leg) assembly may also be used.

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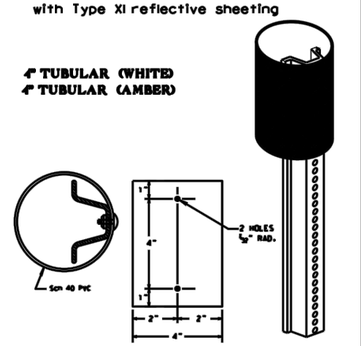
SDDOT	TUBULAR POST BASE DETAILS (Typical Soil Installation)	SPECIAL DETAIL L21
		Sheet 1 of 1

4"x4" DELINEATORS
with Type XI reflective sheeting

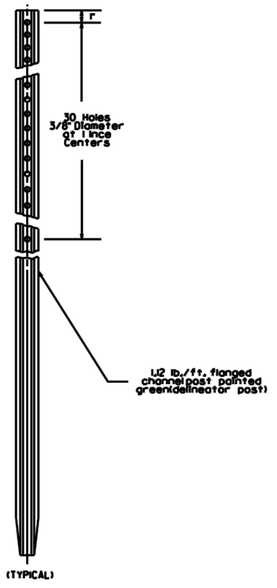


Mounting Holes in all Delineators to be ¼" diameter

4" TUBULAR DELINEATORS
with Type XI reflective sheeting

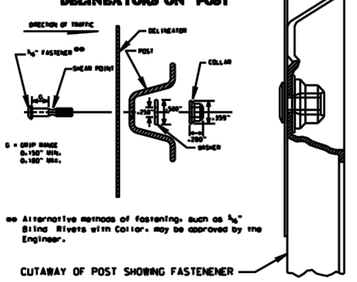


Detail shown represents delineator on its own post. When mounted on a sign assembly, the signpost will run through the delineator and top of delineator will be mounted at 4' elevation above the edge of driving lane.





DETAIL FOR SINGLE MOUNTING DELINEATORS ON POST

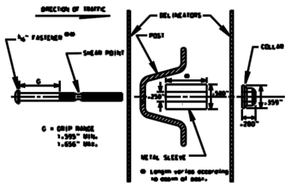


oo Alternative methods of fastening, such as ¼" Bling Rivets with Collar, may be approved by the Engineer.

CUTAWAY OF POST SHOWING FASTENENER

DETAIL FOR MOUNTING 4"x4" DELINEATORS BACK TO BACK ON POST





oo Alternative methods of fastening, such as ¼"- ½" Tein Rivets, may be approved by the Engineer.

August 25, 2021

SDDOT	DELINEATORS (Typical Placement and Mounting Details)	SPECIAL DETAIL L30
		Sheet 1 of 2

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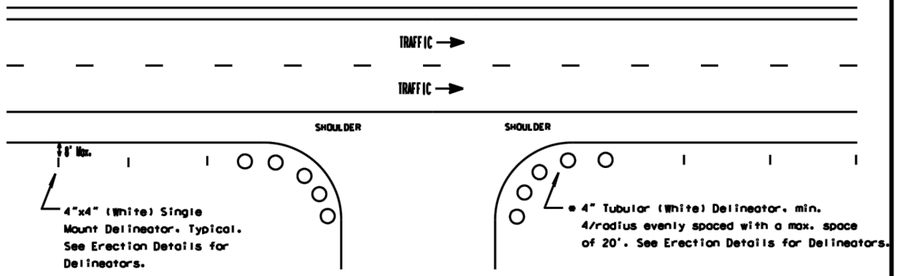
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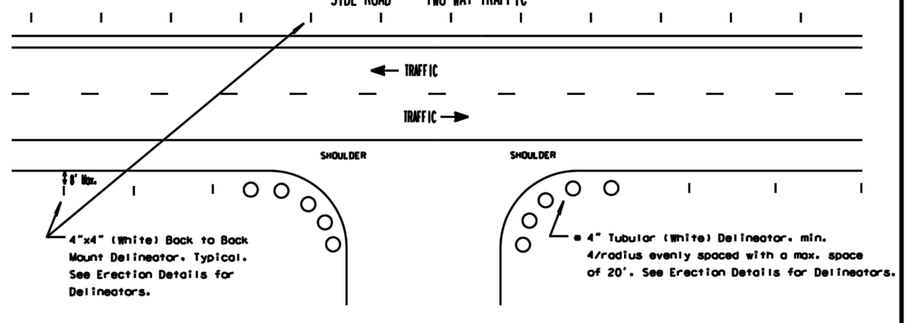
SHEET 6.14

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SIDE ROAD - ONE-WAY TRAFFIC



SIDE ROAD - TWO-WAY TRAFFIC



* 4" Tubular (White) Delineator installed as shown only on intersections with radius or a combination radius greater than 75' and also has stop/yield control. At all other intersections with stop/yield control, one 4" tubular delineator will be installed on each stop/yield sign assembly and large arrow (Tee-intersections).

August 25,2021

	SDDOT	DELINEATORS (Typical Placement and Mounting Details)	SPECIAL DETAIL L30
			Sheet 2 of 2

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