



SCALE

HOR. 1 MILE, VER. 1 MILE

MINNESOTA DEPARTMENT OF TRANSPORTATION CONSTRUCTION PLAN FOR: CULVERT REPLACEMENTS

COUNTY STATE AID HIGHWAY 13

BETWEEN C.S.A.H. 2 (41ST ST) AND MN TH 30 FROM: THE SW CORNER OF SEC. 7-105-46 TO: THE NW CORNER OF SEC. 18-106-46 2.5 MILES WEST OF THE CITY OF IHLEN

THIS PLAN WAS ESTABLISHED BY USING NAD83(2011) PIPESTONE COUNTY COORDINATES

75 U.S., 23 STATE, 16 C.S.A.H., 79 TWP/C.H.

GROSS LENGTH 31880.24 FEET 5.905 MILES BRIDGES LENGTH FEET MILES EXCEPTIONS LENGTH FEET MILES NET LENGTH 31880.24 FEET 5.905 MILES

INDEX OF SHEETS SHEET NO. 1 TITLE SHEET, LAYOUT MAP & INDEX NO. 2 ESTIMATED QUANTITIES NO. 3 TYPICAL DETAILS

THIS PLAN CONTAINS 3 SHEETS



END S.A.P. 059-613-021 STA. 318+80.24

BEGIN S.A.P. 059-613-021 STA. 0+00.00

STOPPING SIGHT DISTANCE BASED ON: 3.5' HEIGHT OF EYE 2.0' HEIGHT OF OBJECT FUNCTIONAL CLASS MAJOR COLLECTOR 2 TRAFFIC LANES

DESIGN DESIGNATION

RURAL

ADT (167) 2017 ADT (200) 2037 HCADT (HEAVY COMMERCIAL) <150 9 TON DESIGN 10 "R" VALUE 130 %S.F. EN18 46,000 BESALS SHOULDER WIDTH 5' DESIGN SPEED: 40 MPH DESIGN SPEED NOT ACHIEVED AT: STA. --- TO STA. --- MPH ---

GOVERNING SPECIFICATIONS

THE 2016 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

ALL APPLICABLE FEDERAL, STATE AND LOCAL LAWS AND ORDINANCES WILL BE COMPLIED WITH, IN THE CONSTRUCTION OF THIS PROJECT.

SIGNATURE: [Signature] PRINTED NAME: DAVID J. HALBERSMA

DESIGN ENGINEER: I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

DATE: 3/16/17 LICENSE NUMBER: 19952

APPROVED: PIPESTONE COUNTY ENGINEER

DISTRICT STATE AID ENG.: REVIEWED FOR COMPLIANCE WITH STATE AID RULES/POLICY

FOR STATE AID ENGINEER: APPROVED FOR STATE AID FUNDING

ESTIMATED QUANTITIES

| SPEC. NUMBER | ITEM | UNIT | REGULAR | TOTAL QUANTITY |
|--------------|---------------------------------------|----------|---------|----------------|
| 2104.501 | REMOVE PIPE CULVERTS | LIN. FT. | 712 | 712 |
| 2104.505 | REMOVE BITUMINOUS PAVEMENT | SQ. YD. | 852 | 852 |
| 2104.509 | REMOVE BOX CULVERT | EACH | 1 | 1 |
| 2211.501 | AGGREGATE BASE, CLASS 5 MOD. | TON | 1095 | 1095 |
| 2451.503 | GRANULAR BACKFILL (CV) | CU. YD. | 2293 | 2293 |
| 2451.507 | GRANULAR BEDDING MOD. (LV) | CU. YD. | 163 | 163 |
| 2501.511 | 24" RC PIPE CULVERT | LIN. FT. | 394 | 394 |
| 2501.511 | 30" RC PIPE CULVERT | LIN. FT. | 160 | 160 |
| 2501.511 | 36" RC PIPE CULVERT | LIN. FT. | 108 | 108 |
| 2501.515 | 24" RC PIPE APRON | EACH | 14 | 14 |
| 2501.515 | 30" RC PIPE APRON | EACH | 6 | 6 |
| 2501.515 | 36" RC PIPE APRON | EACH | 4 | 4 |
| 2501.521 | 65" SPAN RC PIPE-ARCH CULV CL IIA | LIN. FT. | 162 | 162 |
| 2501.525 | 65" SPAN RC PIPE-ARCH APRON | EACH | 6 | 6 |
| 2573.502 | SILT FENCE, TYPE HI | LIN. FT. | 180 | 180 |
| 2575.501 | SEEDING - (P) | ACRE | 2 | 2 |
| 2575.502 | SEED, MIXTURE 25-142 | POUND | 90 | 90 |
| 2575.511 | MULCH MATERIAL, TYPE 1 | TON | 4 | 4 |
| 2575.519 | DISK ANCHORING - (P) | ACRE | 2 | 2 |
| 2575.523 | EROSION CONTROL BLANKETS, CATEGORY 4N | SQ. YD. | 117 | 117 |

(P) - PLANNED QUANTITY

BASIS FOR PLANNED QUANTITIES

COMPACTED DENSITY AGGREGATE (140 LBS. / CU. FT.) (DRY WEIGHT)

| STANDARD PLATES | |
|---|---|
| THE FOLLOWING STANDARD PLATES AS APPROVED BY THE F.H.W.A. SHALL APPLY ON THIS PROJECT | |
| PLATE NO. | DESCRIPTION |
| 3000L | REINFORCED CONCRETE PIPE |
| 3007E | SHEAR REINFORCEMENT FOR PRECAST DRAINAGE STRUCTURES |
| 3014J | REINFORCED CONCRETE PIPE ARCH |
| 3100G | CONCRETE APRON FOR REINFORCED CONCRETE PIPE |
| 3110G | CONCRETE APRON FOR REINFORCED CONCRETE PIPE-ARCH |
| 3145G | CONCRETE PIPE TIES |
| 8000J | CHANNELIZERS |

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SIGNATURE:  PRINTED NAME: DAVID J. HALBERSMA

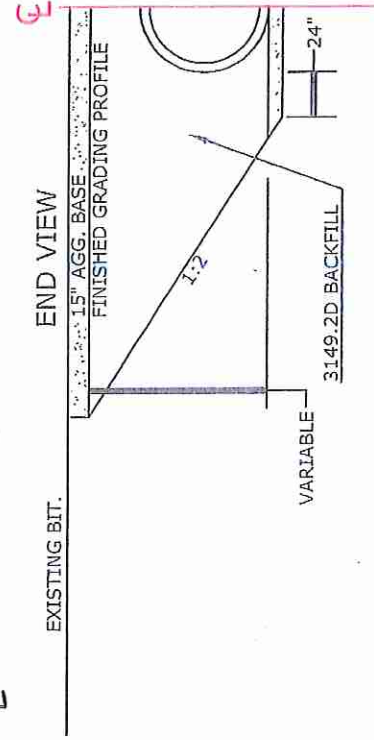
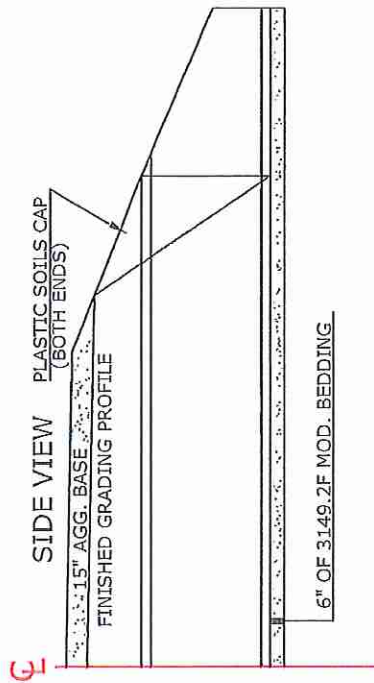
DATE: 3/22/17 LICENSE NUMBER: 19952

PIPE LOCATIONS

| STA. | LT/RT /CL | REMOVE INPLACE PIPE SIZE (LENGTH) TYPE | REMOVE BIT. PAVE (SQ. YD.) | 24" RC CULVERT PIPE (APRON) (PIPER) | 30" RC CULVERT PIPE (APRON) (PIPER) | 36" RC CULVERT PIPE (APRON) (PIPER) | 65" SPAN RC ARCH CULV. PIPE (APRON) | BACKFILL (CU. YD.) | SILT FEN. H.I. (LIN. FT.) | ER. CONT. BLANKET (SQ. YD.) | AGG. BASE (TON) | NEW INV. LT./NORTH | NEW INV. RT./SOUTH | SEEDING 25-142 (ACRE) | DISK ANCHOR (LB) | MULCH (TON) |
|----------------|-----------|--|----------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------|---------------------------|-----------------------------|-----------------|--------------------|--------------------|-----------------------|------------------|-------------|
| 39+75 | CL | 36" 42' RC | 77 | | | 54' 2 | | 184 | 12 | 7 | 77 | 1625.73 | 1626.03 | 0.2 | 9 | 0.4 |
| 53+27 | 41' RT | 24" 45' RC | 0 | 54' 2 | | | | 107 | 12 | 7 | 77 | 1617.05 | 1617.35 | 0.1 | 4.5 | 0.2 |
| 57+36 | CL | 36" 84' RC | 87 | | | | 54' 2 | 208 | 12 | 11 | 87 | 1612.62 | 1612.92 | 0.2 | 9 | 0.4 |
| 106+88 | 41' LT | 24" 51' RC | 52 | 58' 2 | | | | 121 | 12 | 7 | 66 | 1622.53 | 1620.69 | 0.1 | 4.5 | 0.2 |
| 106+88 | 41' RT | 24" 43' CS | 28 | 58' 2 | | | | 116 | 10 | 7 | 75 | 1623.09 | 1621.20 | 0.1 | 4.5 | 0.2 |
| 136+96 | CL | 24" 46' RC | 65 | 62' 2 | | | | 180 | 12 | 7 | 65 | 1614.84 | 1615.14 | 0.1 | 4.5 | 0.2 |
| 159+83 | 41' LT | 24" 46' CS | 0 | 50' 2 | | | | 91 | 12 | 7 | 54 | 1616.16 | 1615.66 | 0.1 | 4.5 | 0.2 |
| 159+83 | 41' RT | 30" 44' RC | 43 | | 48' 2 | | | 103 | 12 | 7 | 67 | 1616.01 | 1615.61 | 0.1 | 4.5 | 0.2 |
| 197+94 | CL | 30" 44' RC | 71 | | 56' 2 | | | 163 | 12 | 7 | 71 | 1624.04 | 1624.34 | 0.1 | 4.5 | 0.2 |
| 207+61 | CL | 36" 43' RC | 76 | | | 54' 2 | | 180 | 12 | 7 | 76 | 1618.92 | 1619.22 | 0.2 | 9 | 0.2 |
| 253+10 | CL | 30" 46' RC | 72 | | 56' 2 | | | 169 | 12 | 7 | 72 | 1616.78 | 1617.08 | 0.1 | 4.5 | 0.2 |
| 265+80 | 41' LT | 18" 48' RC | 44 | 54' 2 | | | | 102 | 12 | 7 | 66 | 1623.64 | 1625.43 | 0.1 | 4.5 | 0.2 |
| 265+80 | 41' RT | 18" 48' RC | 61 | 58' 2 | | | | 129 | 12 | 7 | 65 | 1624.32 | 1625.45 | 0.1 | 4.5 | 0.2 |
| 276+72 | CL | 36" 82' RC | 84 | | | | 54' 2 | 192 | 12 | 11 | 84 | 1607.53 | 1607.83 | 0.2 | 9 | 0.2 |
| 316+09 | CL | 4x3 * 42' CIP | 92 | | | | 54' 2 | 248 | 12 | 11 | 93 | 1597.77 | 1598.07 | 0.2 | 9 | 0.2 |
| TOTALS: | | 712' | 852 | 394' | 14 | 160' | 6 | 108' | 4 | 162' | 6 | 2293 | 163 | 180 | 117 | 1095 |

* REMOVE BOX CULVERT PER 2104.509

TYPICAL BACKFILL DETAIL FOR Q CULVERT PIPE



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SIGNATURE: *David J. Halbersma* PREPARED NAME: DAVID J. HALBERSMA

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