RAMSEY COUNT

S.A.P. No. 062-607-001
S.A.P. No. 062-658-014
S.A.P. No. 062-676-002

CONSTRUCTION PLAN FOR CULVERT CROSSINGS

S.A.P. No. 062-607-001 BALD EAGLE BLVD. E. 250' OF BUFFALO STREET
S.A.P. No. 062-658-014 EDGERTON STREET 100' N. OF SUNSET COURT
S.A.P. No. 062-676-002 SNELLING AVENUE FROM 30 SOUTH OF COUNTY ROAD E

AT VARIOUS LOCATIONS ON RAMSEY COUNTY ROADS IN THE CITIES OF WHITE BEAR TOWNSHIP, ARDEN HILLS AND LITTLE CANADA.

PLAN SYMBOLS

STATE LINE
COUNTY LINE
TOWNSHIP OR RANGE LINE
SECTION LINE
QUARTER LINE
SIXTEENTH LINE
EXISTING RIGHT OF WAY LINE
PROPOSED RIGHT OF WAY LINE
PROPERTY LINE
CORPORATE OR CITY LIMITS
RAILROAD
RAILROAD RIGHT-OF-WAY
RIVER OF CREEK
CULVERT
GUARDRAIL
WOOD FENCE
BARBED WIRE FENCE
WOVEN WIRE FENCE
CHAIN LINK FENCE
TIMBER WALL
STONE WALL
HEDGE
RAILROAD CROSSING SIGN
CROSSING GATE
MEANDER CORNER
SLOPE EASEMENT (CONST. LIMITS)
MARSH
DECIDUOUS TREE
CONIFEROUS TREE
BUSH OR SHRUB
WOODS
CATCH BASIN
BRIDGE
IRON PIPE OR ROD
MONUMENT (STONE, CONCRETE OR METAL)
WOODEN HUB

UTILITY SYMBOLS

UTILITY POLE
GUY OR ANCHOR
STREET LIGHT
TELEPHONE PEDESTAL
GAS MAIN
WATER MAIN
TELEPHONE VAULT
ELECTRIC VAULT
TELEPHONE CABLE
ELECTRIC CABLE
STORM SEWER
SANITARY SEWER
SEWER MANHOLE
GATE VALVE
CONTROLLER CABINET
EXISTING HYDRANT
CABLE TELEVISION-BURIED
FIBER OPTIC CABLE
TRAFFIC SIGNAL LINE
TRAFFIC SIGNAL HAND HOLE

FOR PLANS AND UTILITIES SYMBOLS SEE MN/DOT TECHNICAL MANUAL.

	SNELLING AVE.		EDGERTON ST.		BALD EAGLE BLVD E.	
GROSS LENGTH	120 FEET	0.023 MILES	187 FEET	0.035 MILES	100 FEET	0.018 MILES
BRIDGE LENGTH	----	----	----	----	----	----
EXCEPTIONS	----	----	----	----	----	----
NET LENGTH	120 FEET	0.023 MILES	187 FEET	0.035 MILES	100 FEET	0.018 MILES

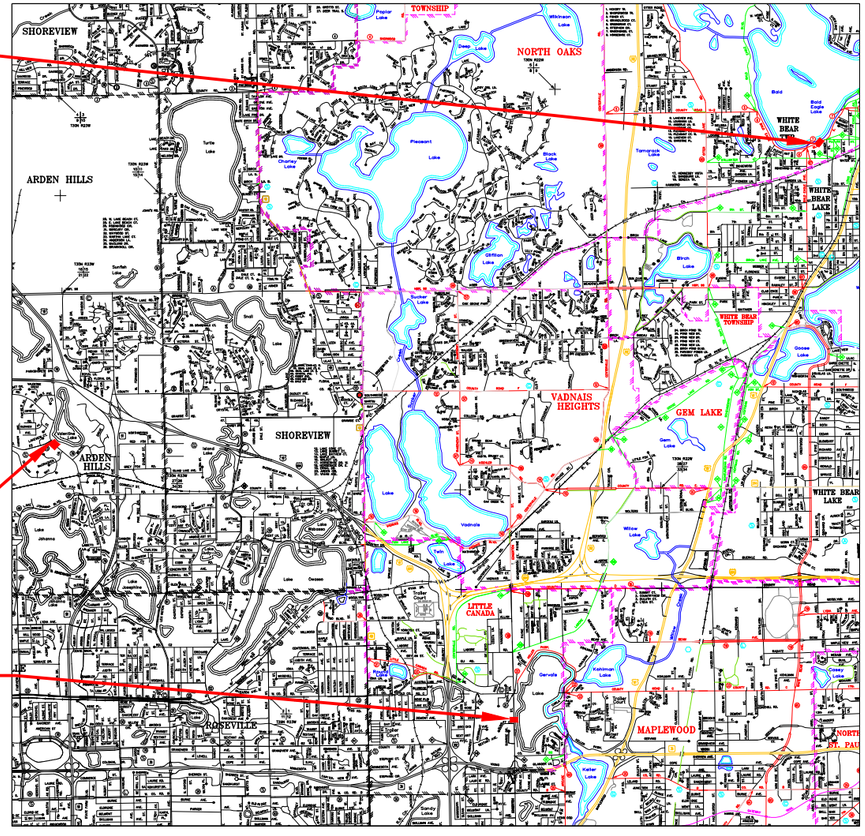
SCALES IN FEET

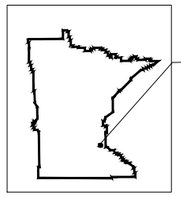
INDEX MAP 0 4000 8000
PLAN 0 50 100
STRIPING PLAN 0 100 200

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL IS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD DEPICTION OF EXISTING SUBSURFACE UTILITY DATA

PLAN REVISIONS		
DATE	SHEET NO. & DESCRIPTION	BY

S.A.P. 062-607-001
BALD EAGLE BLVD. E.
250' S. OF BUFFALO ST.





PROJECT LOCATION
RAMSEY COUNTY
METRO DISTRICT

S.A.P. 062-676-002
SNELLING AVENUE
300' SOUTH OF
COUNTY ROAD E2

S.A.P. 062-658-014
EDGERTON STREET 100' N.
OF SUNSET COURT

-GOVERNING SPECIFICATIONS-

THE 2014 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" AND THE 2014 EDITION OF THE "MATERIALS LAB SUPLEMENTAL SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM TO THE MMUTCD, INCLUDING FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS, SEE HTTP: //WWW.DOT.STATE.MN.US/TRAFFICENG/

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

INDEX

THIS PLAN CONTAINS 22 SHEETS

ASBUILT PLAN
CONFORMING TO CONST. RECORDS

DONE BY: - KR, CT

DATE: - 11/22/16

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.

GERALD J AUGE JR _____ REG. NO. _____ DATE _____

RECOMMENDED FOR APPROVAL _____ DATE _____
COUNTY ENGINEER

APPROVED _____ DATE _____
CITY OF ARDEN HILLS

APPROVED _____ DATE _____
CITY OF LITTLE CANADA

APPROVED _____ DATE _____
WHITE BEAR TOWNSHIP

DESIGN DESIGNATION

	SNELLING AVE. SOUTH OF CO. RD E2	EDGERTON ST. NORTH OF SUNSET BLVD.	BALD EAGLE BLVD E. SOUTH OF BUFFALO ST.
PRESENT ADT (2015)	6450	6800	1475
PROJECTED ADT (2035)	7740	8160	1770
FUNCTIONAL CLASS	B MINOR	A MINOR RELIEVER	MAJOR COLLECTOR
TRAFFIC LANES	4	2	2
PARKING LANES	0	0	0

BASED ON STOPPING DISTANCE
HEIGHT OF EYE: 3.50 FEET
HEIGHT OF OBJECT: 2.00 FEET
DESIGN SPEED NOT ACHIEVED AT STA NA TO STA NA

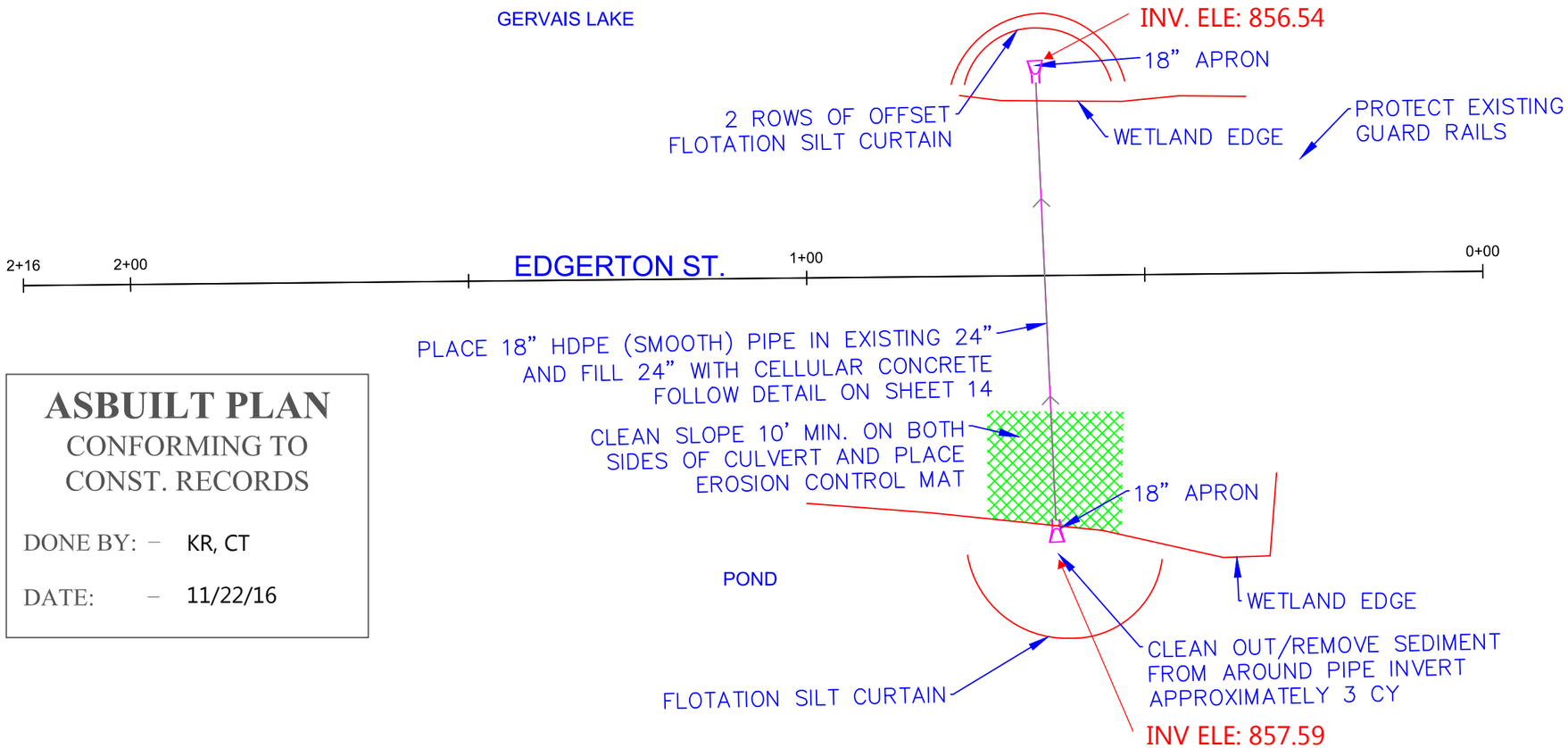
DRAWN BY KRR, AJM DATE 1/29/14
CHECKED BY _____ DATE _____

S.A.P. No.062-607-001
S.A.P. No.062-658-014
S.A.P. No.062-676-002

MINNESOTA DEPARTMENT OF TRANSPORTATION

RECOMMENDED FOR APPROVAL _____ DATE _____
DISTRICT STATE AID ENGINEER
REVIEWED FOR COMPLIANCE WITH STATE-AID AID RULES/POLICY

APPROVED _____ DATE _____
APPROVED FOR STATE AID AID FUNDING: STATE AID ENGINEER



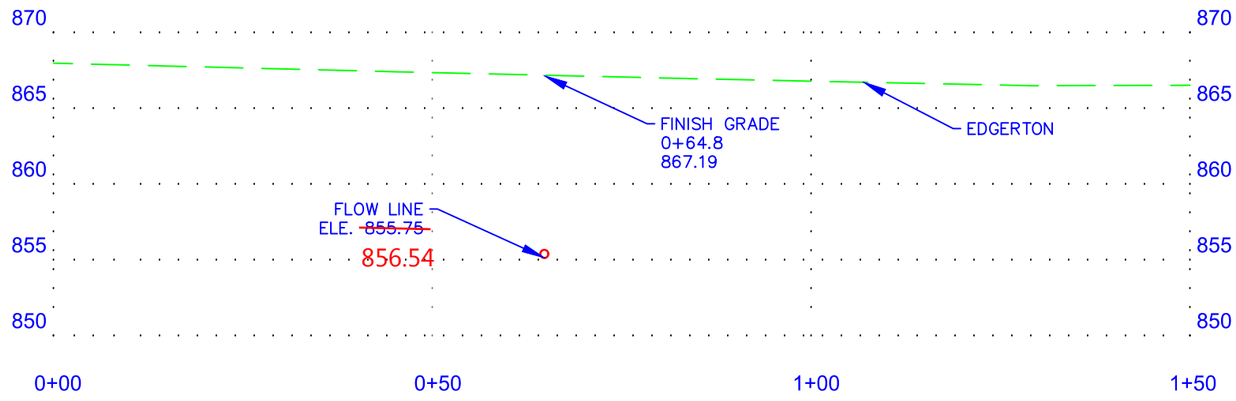
ASBUILT PLAN
CONFORMING TO
CONST. RECORDS

DONE BY: – KR, CT

DATE: – 11/22/16

SCALE IN FEET
0 20 40

NAVD 1988



LEGEND

EROSION STABILIZATION MAT CLASS 5 TOPPED WITH TOPSOIL THAN SEEDED AND BLANKETED

NOTES:

1. EROSION CONTROL BLANKET CATEGORY 7, SEED MIX 21–112 AND SEED MIX 32–241 COVERING ALL DISTURBED AREAS. USE FULL APPLICATION RATES FOR BOTH SEEDS.

NO.	REV-DATE	BY:	DESCRIPTION

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.

SIGNED:

REG NO: 26511 DATE: 06/25/2014

EDGERTON STREET

100' N. OF SUNSET COURT

S.A.P. 062-607-001
S.A.P. 062-658-014
S.A.P. 062-676-002

RAMSEY COUNTY

EDGERTON CULVERT PLAN AND PROFILE

SHEET 16 OF 22 SHEETS

C:\USERS\KELLEY.ROSENBERGER\DESKTOP\CULVERT'S\11-GERVAIS PLAN AND PROFILE2.DWG March 20, 2015 1:40 PM

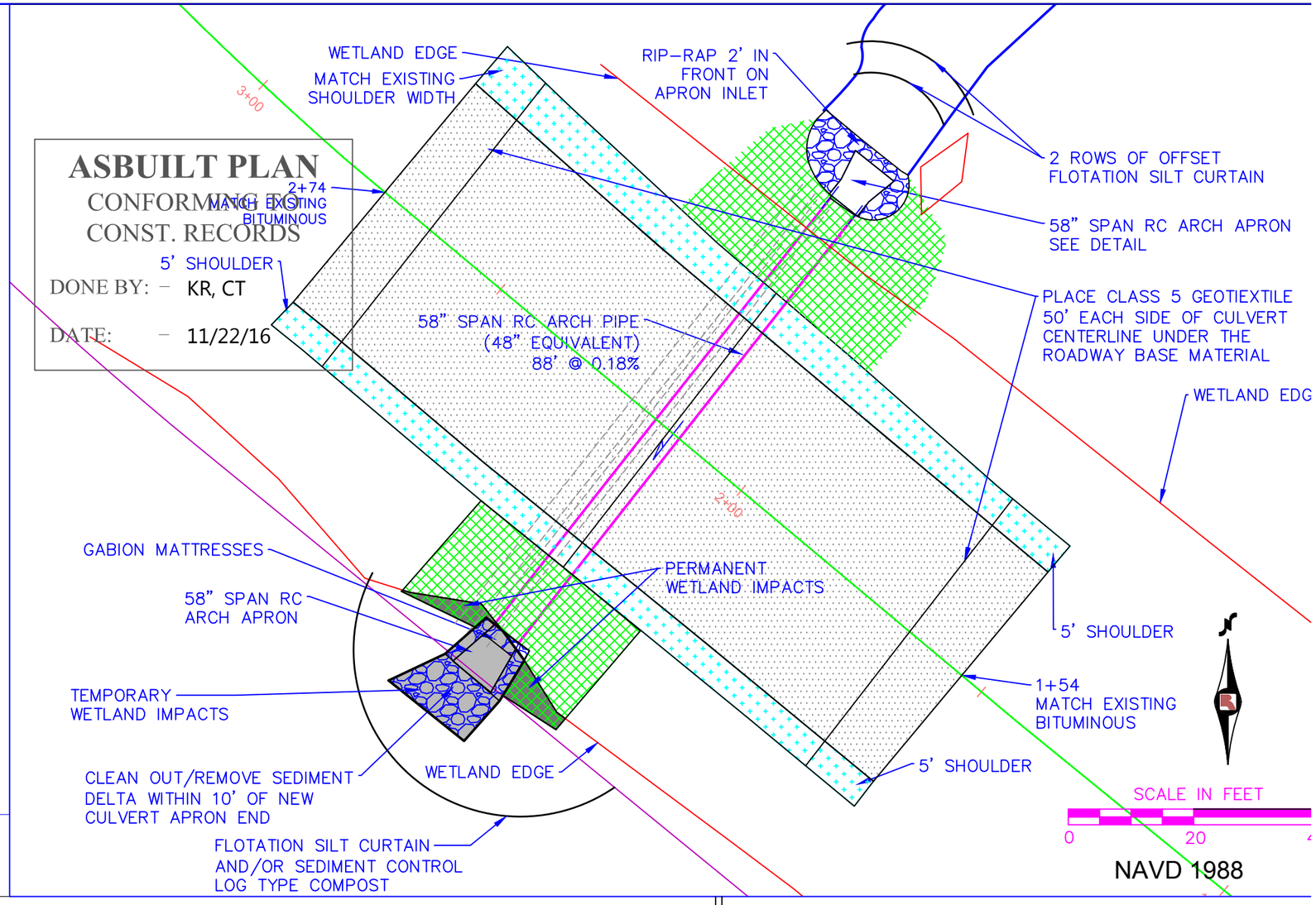
NOTES

1. EROSION CONTROL BLANKET AND MNDOT 33-261 SEED COVERING ALL DISTURBED AREAS
2. WORK TO BE CONDUCTED IN "DRY" CONDITIONS
3. FLOW RATE CAPABILITY MUST BE MAINTAINED DURING CONSTRUCTION TO PREVENT UPSTREAM FLOODING IN THE EVENT OF A STORM. PUMPING EQUIPMENT OF THE APPROPRIATE CAPACITY MUST BE AVAILABLE ON SIGHT WITHIN 2 HOURS
4. "WATER MANAGEMENT PLAN" WILL REQUIRE APPROVAL BY COUNTY.
5. GABION MATTRESSES SHALL BE FILLED WITH CLASS 1 RIP RAP
6. RIP-RAP AND GABION MATTRESSES SHALL HAVE A RODENT PROOF GEOTEXTILE OR WIRE MESH PLACED IN THEIR BEDDING. THIS SHALL BE INCIDENTAL TO RIP-RAP AND GABION BASKET ITEMS

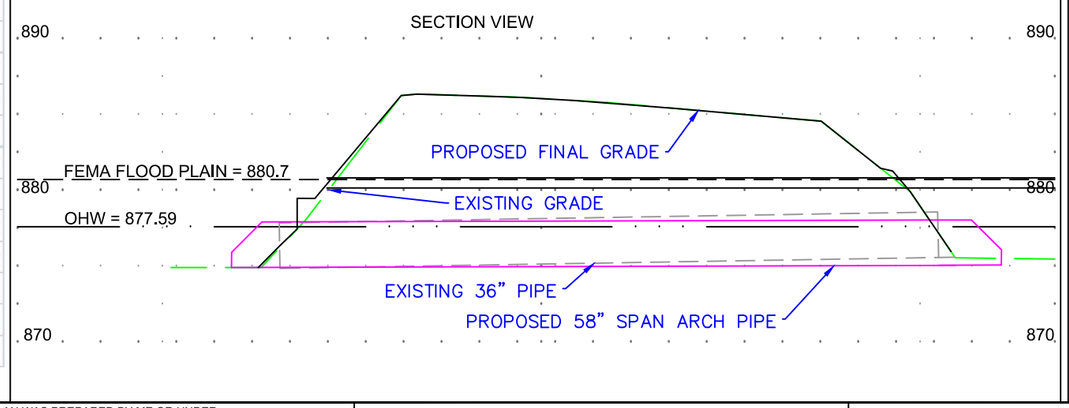
LEGEND

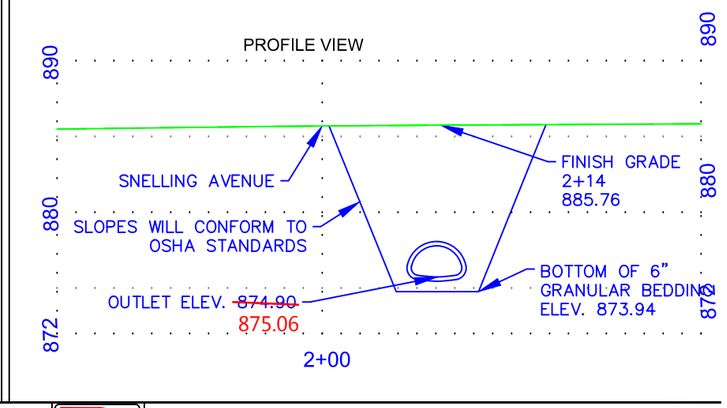
- BITUMINOUS PAVEMENT
- 6" GRAVEL SHOULDER
- EROSION STABILIZATION MAT CLASS 3
- RIP-RAP CLASS 3

ASBUILT PLAN
CONFORMING TO CONST. RECORDS
DONE BY: – KR, CT
DATE: – 11/22/16



BITUMINOUS ROAD RE ESTABLISHMENT ELEVATIONS		
STATION	OFFSET	ELEV.
1+75	22 LT	885.95
1+75	0	885.60
1+75	22 RT	884.86
2+00	22 LT	886.28
2+00	0	885.70
2+00	22 RT	884.90
2+25	22 LT	886.58
2+25	0	885.83
2+25	22 RT	884.83
2+50	22 LT	886.78
2+50	0	885.88
2+50	22 RT	884.76





NO.	REV-DATE	BY:	DESCRIPTION

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.
SIGNED:
REG NO: 26511 DATE: 06/25/2014

SNELLING AVENUE
300' SOUTH OF COUNTY ROAD E2

S.A.P. 062-607-001
S.A.P. 062-658-014
S.A.P. 062-676-002

RAMSEY COUNTY

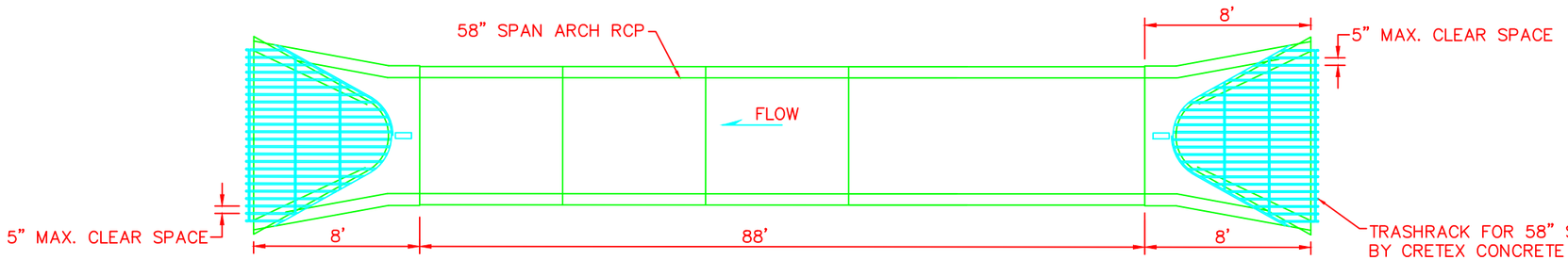
SNELLING CULVERT PLAN AND PROFIL
SHEET 19 OF 22 SHEETS

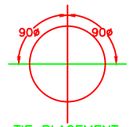
NAVD 1988

ASBUILT PLAN
CONFORMING TO
CONST. RECORDS

DONE BY: – KR, CT

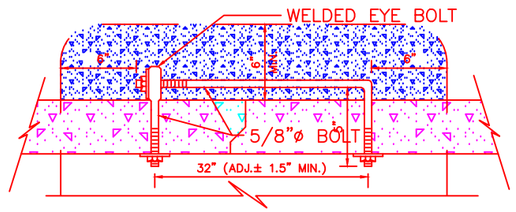
DATE: – 11/22/16



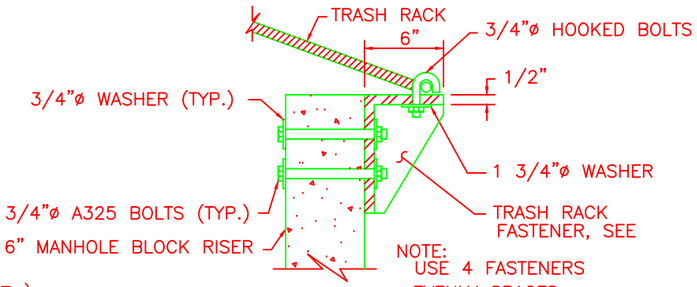


NOTES:

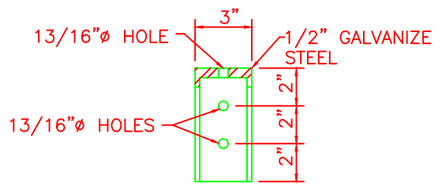
1. HOLES SHALL BE DRILLED 16" FROM SHOULDER AND 16" FROM BELL.



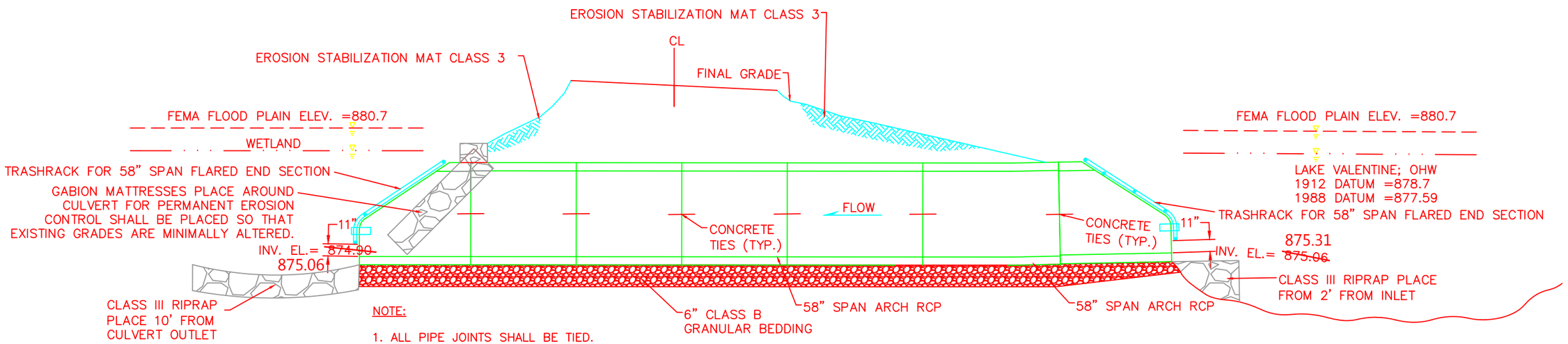
DETAIL: ADJUSTABLE EYE BOLT TIE (TYP.)



DETAIL: TRASH RACK FASTENER ATTACHMENT



DETAIL: TRASH RACK FASTENER



NOTE:

1. ALL PIPE JOINTS SHALL BE TIED. TIES SHALL BE CONSIDERED INCIDENTAL TO THE PIPE
2. ALL RIP–RAP SHALL BE WASHED BEFORE ARRIVING TO WORK SITE.

NO.	REV-DATE	BY:	DESCRIPTION

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.

SIGNED:

REG NO: 26511 DATE: 06/25/2014

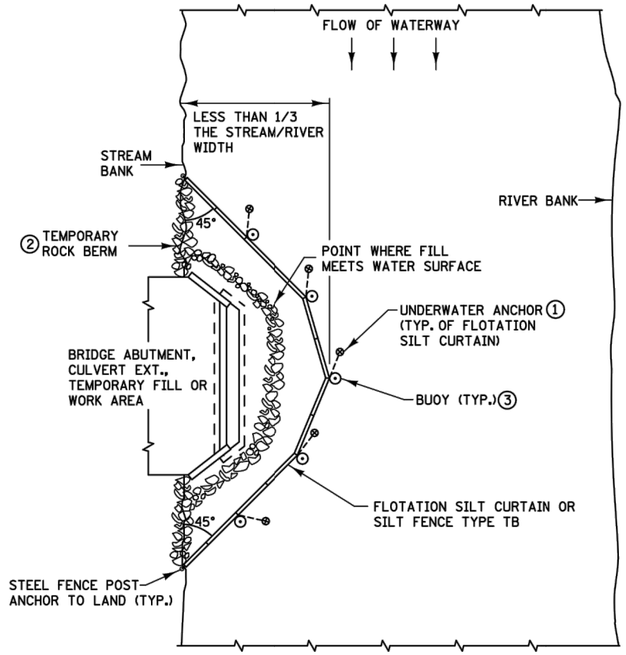
SNELLING AVENUE
300' SOUTH OF COUNTY ROAD E2

S.A.P. 062-607-001
S.A.P. 062-658-014
S.A.P. 062-676-002

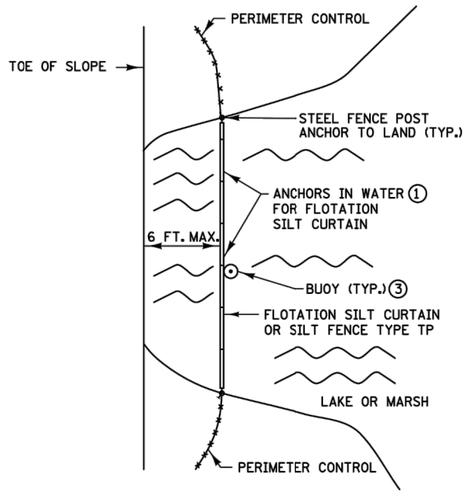
RAMSEY COUNTY

SNELLING AVE. CULVERT DETAIL

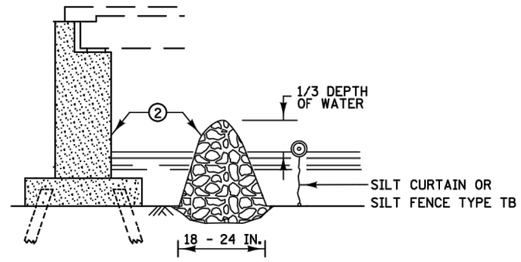
SHEET 20 OF 22 SHEETS



PLAN VIEW FOR STREAM ⑤



PLAN VIEW FOR LAKE OR MARSH ⑤

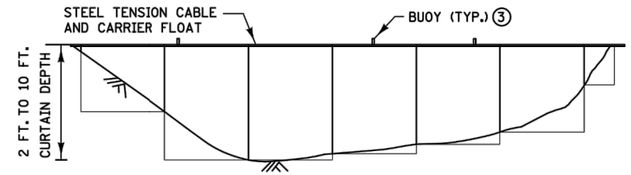


TEMPORARY ROCK BERM
FOR SEDIMENT CONTROL

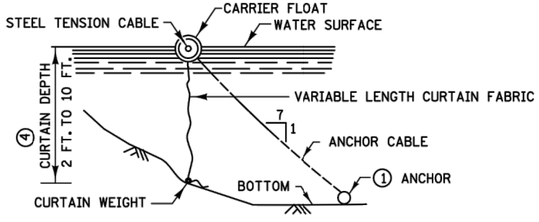
INSTALLATION GUIDELINES
SILT FENCE TYPE TB
MINIMUM WATER DEPTH: 1 FT.
MAXIMUM WATER DEPTH: 3 FT.
MAXIMUM WATER VELOCITY: 5 FT./SEC.

INSTALLATION GUIDELINES ④
FLOTATION SILT CURTAIN
TYPE: STILL WATER
MINIMUM WATER DEPTH: 3 FT.
MAXIMUM WATER DEPTH: 10 FT.
MAXIMUM WATER VELOCITY: 2 FT./SEC.
MAXIMUM WAVE HEIGHT: 1 FT

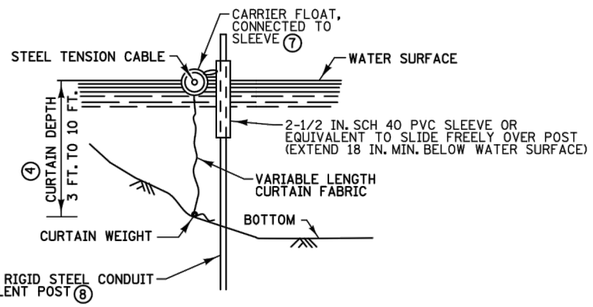
INSTALLATION GUIDELINES ④
FLOTATION SILT CURTAIN
TYPE: MOVING WATER
MINIMUM WATER DEPTH: 3 FT.
MAXIMUM WATER DEPTH: 10 FT.
MAXIMUM WATER VELOCITY: 5 FT./SEC.
MAXIMUM WAVE HEIGHT: 2 FT.



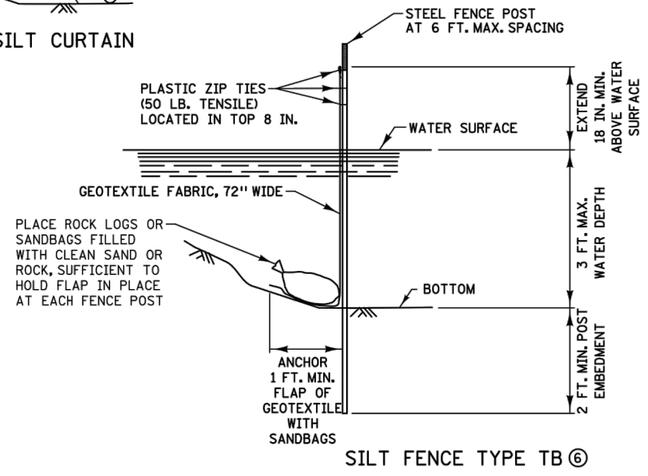
FRONT VIEW FOR FLOTATION SILT CURTAIN



FLOTATION SILT CURTAIN



ALTERNATE FLOTATION SILT CURTAIN



SILT FENCE TYPE TB ⑥

ASBUILT PLAN
CONFORMING TO
CONST. RECORDS

DONE BY: – KR, CT

DATE: – 11/22/16

NOTES:

SEE SPECS. 2573, 3886, 3887 & 3893.

① FOR ANCHOR SPACING AND WEIGHT REQUIREMENTS, SEE SPEC. 2573.

② IN AREAS WHERE THE PLAN CALLS FOR RIPRAP AT A BRIDGE, CULVERT, OR SLOPE, A TEMPORARY ROCK BERM CONSTRUCTED FROM THE RIPRAP CAN BE USED TO PROVIDE ADDITIONAL PROTECTION. WHEN THE WORK IS COMPLETE THE RIPRAP CAN THEN BE MOVED TO THE PERMANENT LOCATION INDICATED IN THE PLANS. THE TEMPORARY ROCK BERM IS INCIDENTAL.

③ ON U.S. COAST GUARD OR OTHER MOTORIZED WATERWAYS, BUOYS ARE REQUIRED TO MARK THE ENDS AND SPECIAL AREAS FOR VISIBILITY. PLACE BUOYS AS REQUIRED FOR NAVIGATIONAL PURPOSES.

④ MINIMUM WATER DEPTH APPLIES TO THE DEEPEST POINT ALONG THE FLOTATION SILT CURTAIN OR SILT FENCE TYPE TB FOR DETERMINING APPLICABILITY OF FLOTATION SILT CURTAIN OR SILT FENCE TYPE TB.

⑤ SILT CURTAIN SHOULD BE REMOVED WHEN THE AREA CONTRIBUTING DIRECT RUNOFF HAS BEEN TEMPORARILY OR PERMANENTLY STABILIZED. SILT CURTAIN SHOULD ALSO BE REMOVED BEFORE WINTER IF ICE UP OR ICE FLOW IS ANTICIPATED.

⑥ EMBED POST INTO BOTTOM A MINIMUM OF 40% OF THE WATER DEPTH (INCLUDING WAVE HEIGHT), BUT IN NO CASE SHALL EMBEDMENT BE LESS THAN 2 FEET.

⑦ ANCHOR FLOAT MUST BE CONNECTED SECURELY TO SLEEVE WITH A MINIMUM TENSILE STRENGTH OF 100 LBS. CONNECTION METHOD MUST ALLOW FOR SLEEVE TO MOVE FREELY ON POST.

⑧ PROVIDE SUFFICIENT NUMBER OF POST ANCHORS TO MAINTAIN SILT CURTAIN POSITION.

REVISION:
APPROVED: 8-6-2014
CHIEF ENVIRONMENTAL OFFICER

REVISED:
APPROVED: 8-6-2014
STATE DESIGN ENGINEER

TEMPORARY SEDIMENT CONTROL
SILT CURTAIN OR SILT FENCE TYPE TB

STANDARD PLAN 5-297.405 | 1 OF 7

CULVERT PLAN
RAMSEY COUNTY

S.A.P. 062-607-001
S.A.P. 062-658-014
S.A.P. 062-676-002

EROSION CONTROL STANDARD PLANS
SHEET 22 OF 22 SHEETS

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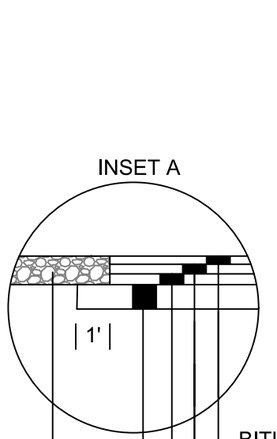
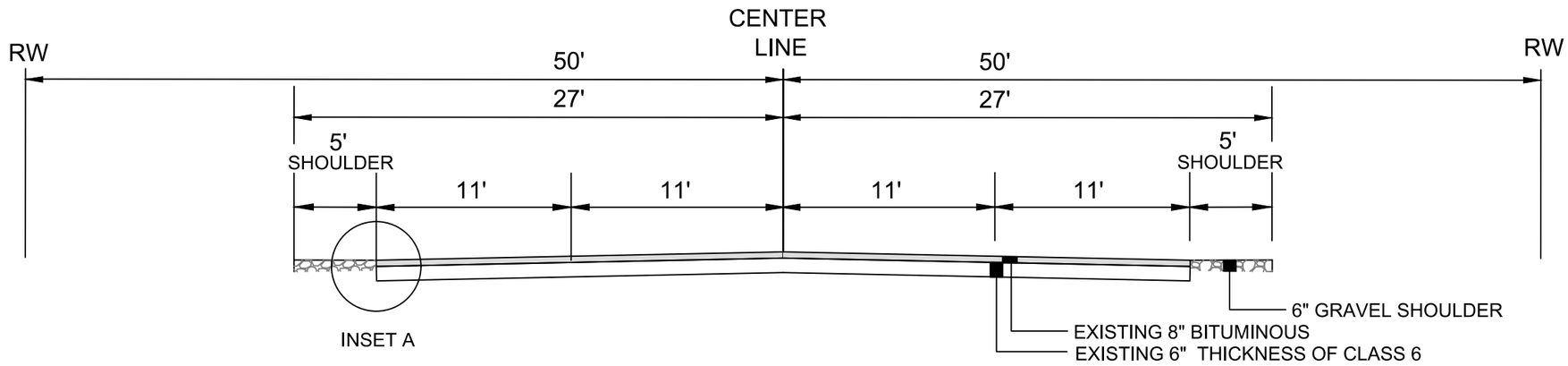




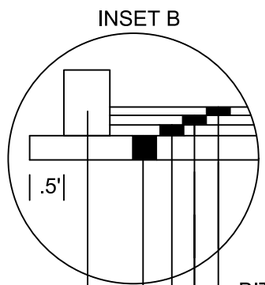
BITUMINOUS TACK COAT BETWEEN BIT. COURSES MN/DOT SPEC. 2357
2" - 2360 BITUMINOUS WEARING COURSE MIXTURE SPWEB440F
2.5" - 2360 BITUMINOUS WEARING COURSE MIXTURE SPWEB440F
3.5" - 2360 BITUMINOUS NONWEARING COURSE MIXTURE SPNWB430B
6" - CLASS 6 AGGREGATE BASE COURSE MN/DOT SPEC 3138
6" - AGGREGATE SHOULDERING CLASS 2 MNDOT SPEC 2221

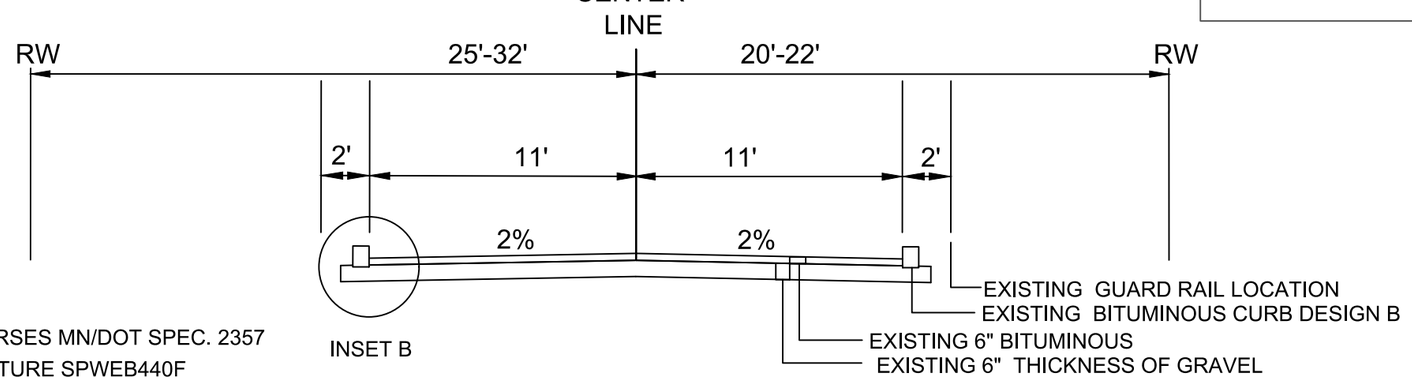
EXISTING/PROPOSED TYPICAL SECTION SNELLING AVENUE

ASBUILT PLAN
CONFORMING TO CONST. RECORDS

DONE BY: – KR, CT

DATE: – 11/22/16





BITUMINOUS TACK COAT BETWEEN BIT. COURSES MN/DOT SPEC. 2357
2" - 2360 BITUMINOUS WEARING COURSE MIXTURE SPWEB440F
2" - 2360 BITUMINOUS WEARING COURSE MIXTURE SPWEB440F
2" - 2360 BITUMINOUS NONWEARING COURSE MIXTURE SPNWB430B
6" - CLASS 6 AGGREGATE BASE COURSE MN/DOT SPEC 3138
CONCRETE CURB DESIGN B

EXISTING/PROPOSED TYPICAL SECTION BALD EAGLE BLVD E

C:\USERS\KELLEY.ROSENBERGER\DESKTOP\CULVERT'S\3--TYPICAL SECTIONS.DWG March 20, 2015 1:30 PM

NO.	REV-DATE	BY:	DESCRIPTION

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.

SIGNED:

REG NO: 26511 DATE: 06/25/2014

CULVERT PLAN
RAMSEY COUNTY

S.A.P. 062-607-001
S.A.P. 062-658-014
S.A.P. 062-676-002

RAMSEY COUNTY

TYPICAL SECTION

SHEET 3 OF 22 SHEETS

ASBUILT PLAN

CONFORMING TO CONST. RECORDS

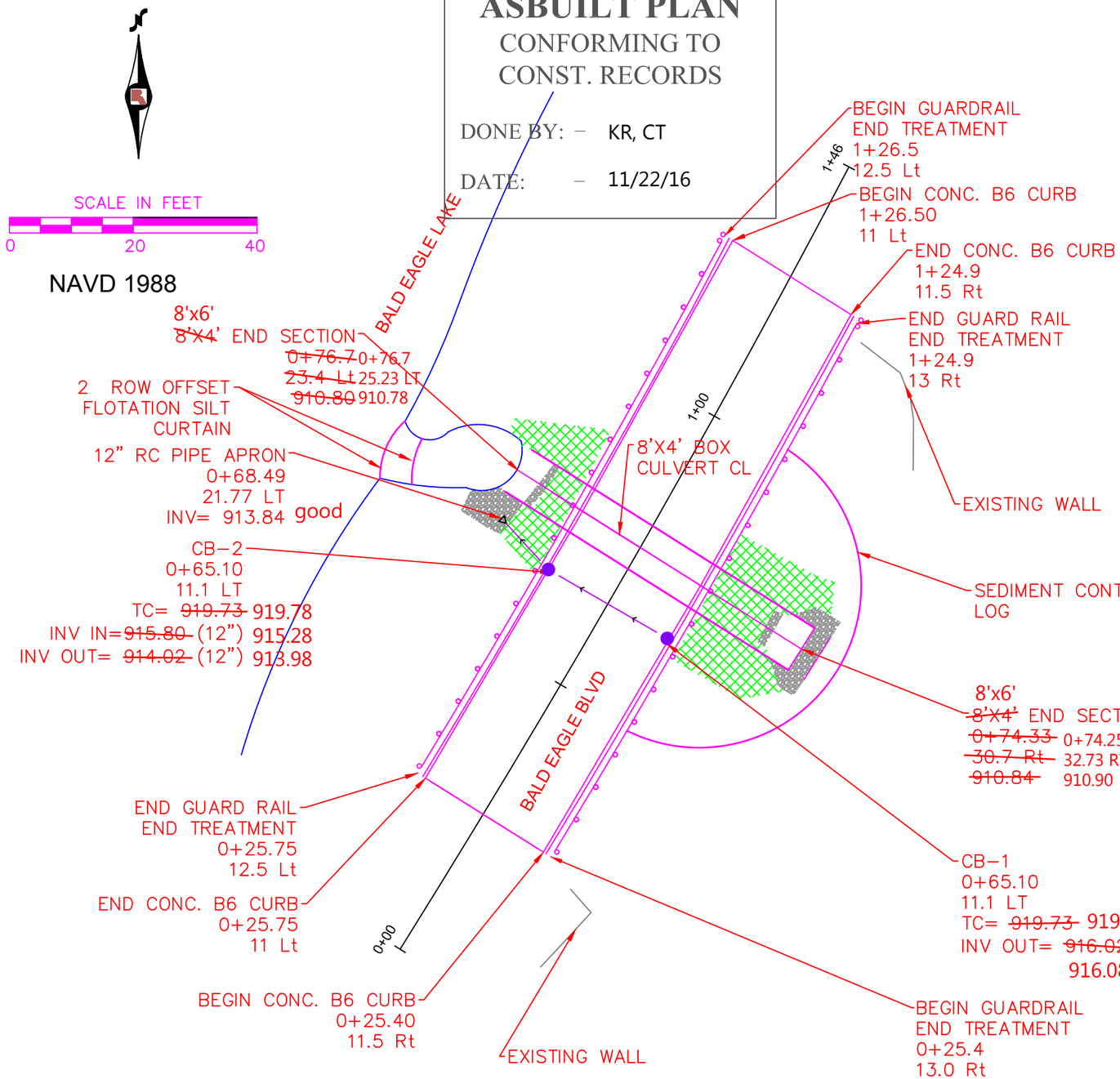
DONE BY: – KR, CT

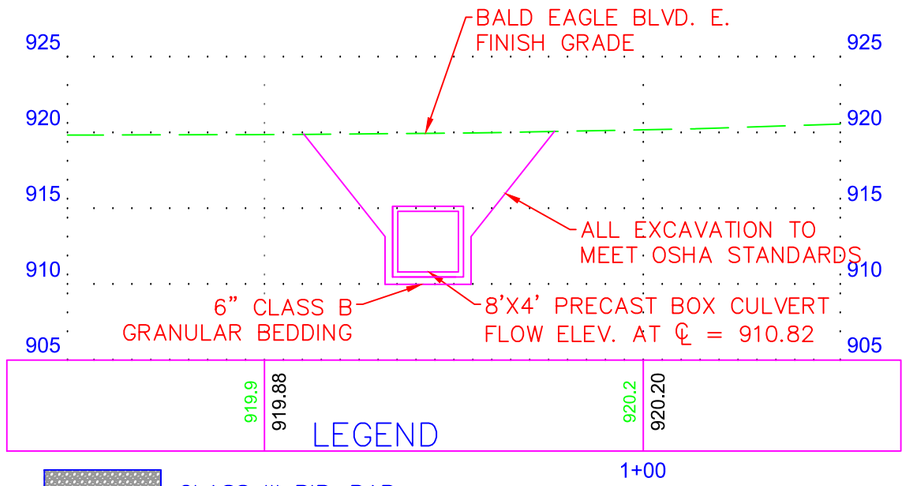
DATE: – 11/22/16

SCALE IN FEET

0 20 40

NAVD 1988





CONSTRUCTION NOTES

1. BOX CULVERT SECTIONS SHALL BE TIED IN ACCORDANCE WITH MNDOT STANDARD PLATE 3145 AND SHALL BE INCLUDED IN THE 8'X4' BOX CULVERT PAY ITEM
2. 12" RCP SECTIONS INCLUDING APRON SHALL BE TIED IN ACCORDANCE WITH MNDOT STANDARD PLATE 3145 AND SHALL BE INCLUDED IN THE 12" RCP PAY ITEM.
3. BOX CULVERT SHALL HAVE CLASS B BEDDING
4. EROSION CONTROL BLANKET AND MNDOT 33-261 SEED MIX COVERING ALL DISTURBED AREAS
5. WORK TO BE CONDUCTED IN "DRY" CONDITIONS
6. FLOW RATE CAPABILITY MUST BE MAINTAINED DURING CONSTRUCTION TO PREVENT UPSTREAM FLOODING IN THE EVENT OF A STORM. PUMPING EQUIPMENT OF THE APPROPRIATE CAPACITY MUST BE AVAILABLE ON SIGHT WITHIN 2 HOURS
7. "WATER MANAGEMENT PLAN" WILL REQUIRE APPROVAL BY COUNTY.
8. INSTALL SALVAGED SIGNS AT GUARDRAIL ENDS TO RAMSEY COUNTY SPECIFICATIONS

ROAD PROFILE GRADES	
STATION	PROFILE GRADE
0+25.6	919.87
0+50.8	919.89
0+75.6	919.99
1+06.64	920.26
1+25.7	920.33

NO.	REV-DATE	BY:	DESCRIPTION

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.

SIGNED:

REG NO: 26511 DATE: 06/25/2014

BALD EAGLE BLVD E.

250' S. OF BUFFALO STREET

S.A.P. 062-607-001
S.A.P. 062-658-014
S.A.P. 062-676-002

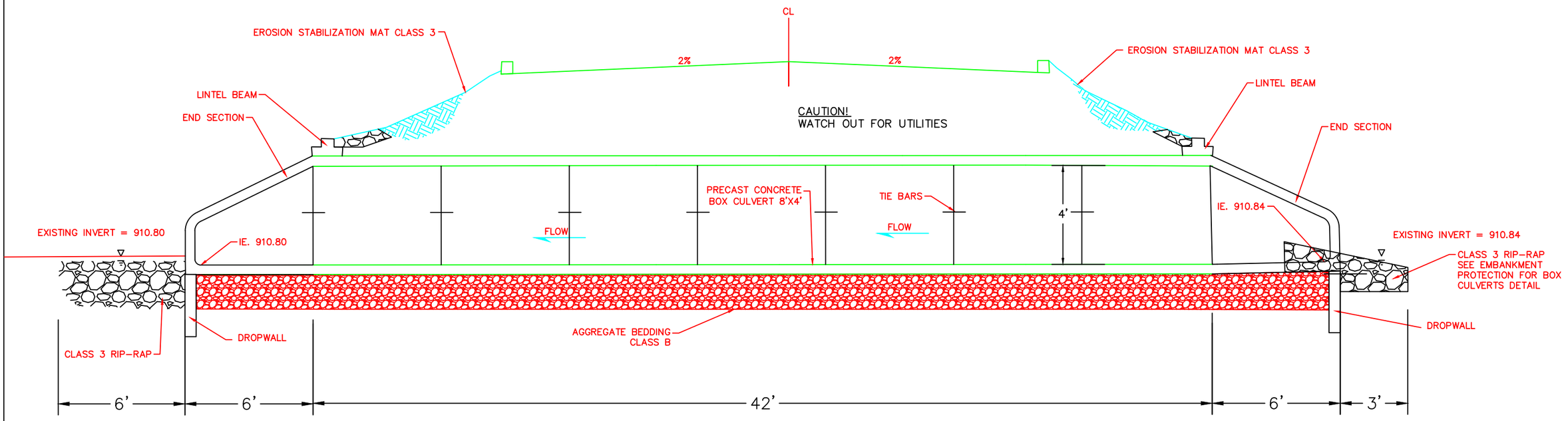
RAMSEY COUNTY

BALD EAGLE CULVERT PLAN

SHEET 5 OF 22 SHEETS

C:\USERS\KELLEY.ROSENBERGER\DESKTOP\CULVERTS\5- BALD EAGLE PLA AND PROFILE (8X4).DWG March 20, 2015 1:33 PM

NAVD 1988

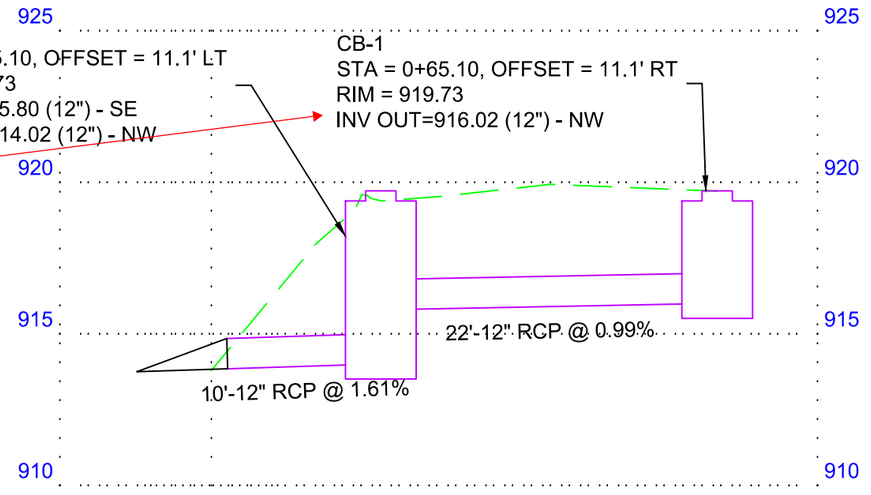


ASBUILT PLAN
CONFORMING TO
CONST. RECORDS

DONE BY: – KR, CT

DATE: – 11/22/16

SEE PAGE 7 FOR FINAL ELE



STRUCTURE NO.	STATION	OFFSET	STRUCTURE TYPE	PAY HEIGHT	CATING TYPE	CASTING ELEVATION	INVERT	12 RC PIPE SEWER CLASS V	DRAINS TO	SLOPE	INVERT
CB-1	0+65.10	11.1 RT	48-4020	3.7	B-9	919.73	916.02	22	CB-2	0.99%	915.8
CB-2	0+65.10	11.1 LT	48-4020	5.7	B-9	919.73	914.02	10	APRON	1.61%	913.84
APRON	0+68.49	21.77 LT	12" RC APRON								

NO.	REV-DATE	BY:	DESCRIPTION

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.

SIGNED:

REG NO: 26511 DATE: 06/25/2014

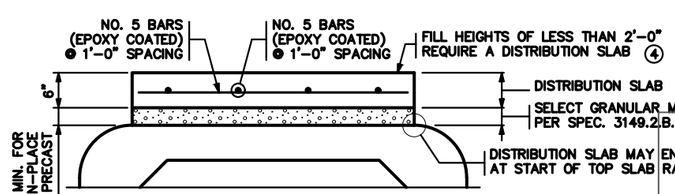
BALD EAGLE BLVD E.
250' S. OF BUFFALO STREET

S.A.P. 062-607-001
S.A.P. 062-658-014
S.A.P. 062-676-002

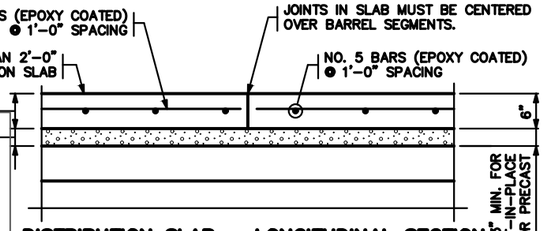
RAMSEY COUNTY

BALD EAGLE CULVERT PROFILES
SHEET 6 OF 22 SHEETS

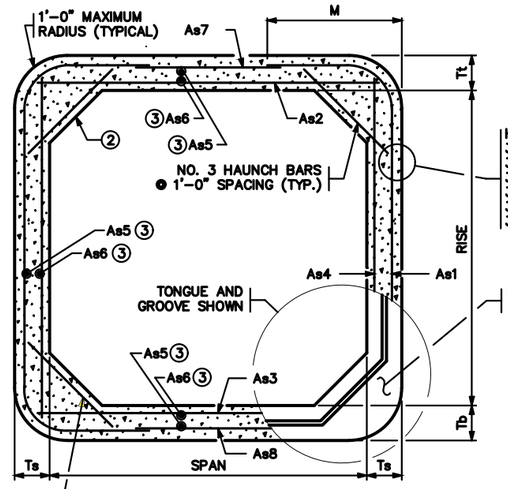
C:\USERS\KELLEY.ROSENBERGER\DESKTOP\CULVERT'S\5-- BALD EAGLE PLA AND PROFILE (8X4).DWG March 20, 2015 1:33 PM



DISTRIBUTION SLAB SECTION



DISTRIBUTION SLAB – LONGITUDINAL SECTION

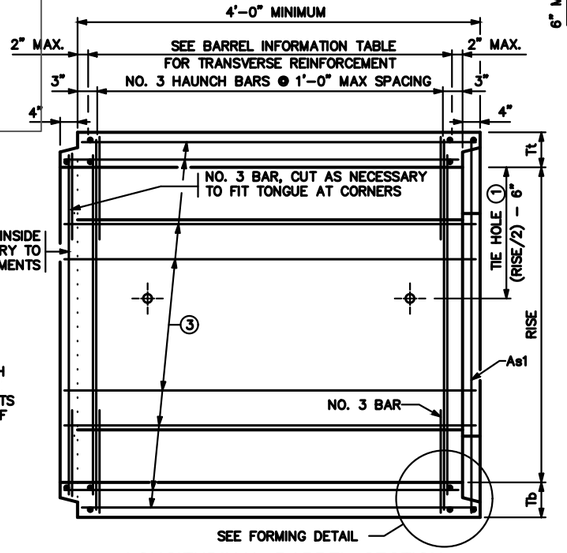


HAUNCH BAR LENGTH:
31" FOR 8" WALL THICKNESS
34" FOR 9" WALL THICKNESS
34" FOR 10" WALL AND 10" SLAB
36" FOR 10" WALL AND 11" SLAB
38" FOR 10" WALL AND 12" SLAB
38" FOR 11" WALL THICKNESS

REINFORCEMENT NOT SHOWN FOR CLARITY

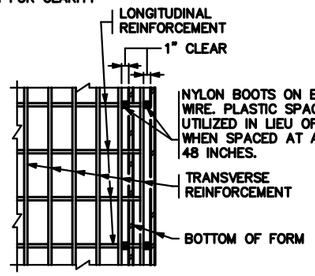
TRANSVERSE BARREL SECTION

BAR REINFORCEMENT OPTION SHOWN

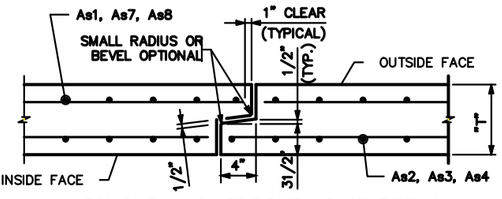


LONGITUDINAL BARREL SECTION

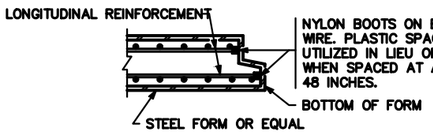
BAR REINFORCEMENT OPTION SHOWN



PLAN

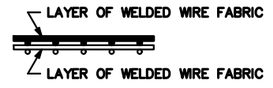


TONGUE AND GROOVE JOINT DETAIL



SECTION

FORMING DETAIL



FABRIC LAYER DETAIL

WHEN MORE THAN ONE LAYER OF WELDED WIRE FABRIC IS USED TO OBTAIN THE REQUIRED REINFORCEMENT AREAS, THE WIRES OF THE WELDED WIRE FABRIC SHALL BE PLACED AS SHOWN

CONSTRUCTION NOTES

CULVERTS TO BE CONSTRUCTED AS PER SPEC. 2412 EXCEPT AS NOTED.

REFER TO THE GENERAL PLAN AND ELEVATION SHEET FOR THE DISTANCE BETWEEN BARRELS OF ADJACENT BOXES AND TO STANDARD FIGURE 5–395.115 FOR MATERIAL REQUIREMENTS FOR FILL BETWEEN ADJACENT BOXES.

THE WELDED WIRE FABRIC, SHEAR REINFORCEMENT AND REINFORCEMENT BARS SHALL CONFORM TO APPLICABLE REQUIREMENTS OF AASHTO M259.

11/2" MIN. AND 2" MAX. CONCRETE COVER ON ALL REINFORCEMENT, INCLUDING SHEAR REINFORCEMENT, EXCEPT FOR TONGUE AND GROOVE DETAIL.

ANY OF THE FOLLOWING COMBINATIONS OF STEEL REINFORCEMENT MAY BE USED:
(a) 1 OR 2 LAYERS OF WELDED WIRE FABRIC OR
(b) 1 LAYER OF WELDED WIRE FABRIC AND 1 LAYER OF REINFORCEMENT BARS OR
(c) 1 LAYER OF REINFORCEMENT BARS.
THE REINFORCEMENT SHALL BE DEVELOPED IN ACCORDANCE WITH AASHTO "LRFD BRIDGE DESIGN SPECIFICATIONS". IF BAR REINFORCEMENT IS SUBSTITUTED FOR WELDED WIRE FABRIC, THE AREA OF REINFORCEMENT SHALL BE INCREASED BY 8%, AND CONTRACTOR SHALL SUBMIT DESIGN CALCULATIONS VERIFYING COMPLIANCE WITH AASHTO 5.7.3.4. "CONTROL OF CRACKING BY DISTRIBUTION OF REINFORCEMENT".

THE MAXIMUM SIZE OF REINFORCEMENT BARS SHALL BE NO. 6. THE MAXIMUM WELDED WIRE FABRIC SIZE SHALL BE A W23 PER LAYER (MAXIMUM OF 2 LAYERS).

THE SPACING CENTER TO CENTER OF THE TRANSVERSE WIRES SHALL NOT BE LESS THAN 2" NOR MORE THAN 4". THE SPACING CENTER TO CENTER OF THE LONGITUDINAL WIRES SHALL NOT BE MORE THAN 8".

WELDING WILL NOT BE ALLOWED ON REINFORCEMENT BARS OR WELDED WIRE FABRIC, EXCEPT THAT THE ORIGINAL WELDING REQUIRED TO MANUFACTURE WIRE FABRIC IS ACCEPTABLE.

WHEN REINFORCEMENT IS CUT, ADDITIONAL REINFORCEMENT SHALL BE ADDED ON BOTH SIDES OF THE CUT MEMBER TO REPLACE OR EXCEED THE CUT STEEL.

CONCRETE SHALL BE MIX NO. 3W36 WITH NO CALCIUM CHLORIDE ALLOWED.

SHOP DRAWING APPROVAL PER SPEC. 3238.2.A IS NOT REQUIRED UNLESS OPENINGS OR ATTACHMENTS ARE PLACED ON A BARREL SEGMENT.

COMPACT THE FIRST 1.5' (LOOSE) OF FILL ABOVE THE BOX WITH LIGHT COMPACTION EQUIPMENT SUCH AS PLATE COMPACTORS OR WALK BEHIND ROLLERS.

TRANSVERSE REINFORCEMENT IS PARALLEL TO THE CULVERT SPAN.
LONGITUDINAL REINFORCEMENT IS PERPENDICULAR TO THE CULVERT SPAN.

① CULVERT TIES ARE TO BE 1" DIAMETER RODS. SEE STANDARD PLATE NO. 3145 FOR CONNECTION DETAILS.

② HAUNCH SIZES ARE TO BE 12" VERTICAL, 12" HORIZONTAL ON ALL BOX SIZES.

③ LONGITUDINAL REINFORCEMENT DENOTED AS As5 AND As6 MUST BE PLACED IN ALL SLABS AND WALLS AND MUST BE 0.06 SQ. IN./FT. MIN.

④ ROADWAY OR SHOULDER FILL HEIGHTS OF LESS THAN 2'–0" REQUIRE A DISTRIBUTION SLAB.

USE CONCRETE MIX 3Y43 FOR THE DISTRIBUTION SLAB.

CAST–IN–PLACE DISTRIBUTION SLABS SHALL BE 6" THICK. PROVIDE 3" MINIMUM SELECT GRANULAR MATERIAL PER SPEC. 3149.2.B.2 BETWEEN BARREL AND DISTRIBUTION SLAB.

PRECAST DISTRIBUTION SLABS SHALL BE 6" THICK AND MAY BE USED FOR FILL HEIGHTS OVER 1'–0". PROVIDE 6" MINIMUM SELECT GRANULAR MATERIAL PER SPEC. 3149.2.B.2 BETWEEN BARREL AND DISTRIBUTION SLAB.

THE WIDTH OF THE DISTRIBUTION SLAB SHALL EXTEND BETWEEN THE OUTSIDE EDGES OF THE SHOULDERS UNLESS DIRECTED BY THE ENGINEER.

PAYMENT FOR THE DISTRIBUTION SLAB AND SELECT GRANULAR MATERIAL BENEATH THE SLAB SHALL BE CONSIDERED INCIDENTAL.

IF DISTRIBUTION SLAB IS USED AS PAVEMENT SURFACE IT MUST BE REDESIGNED PER THE MnDOT PAVEMENT DESIGN MANUAL.

BARREL INFORMATION TABLE * * *

LOCATION	SIZE	CLASS	f'c (P.S.I.)	FILL HEIGHT RANGE (FT.)	DISTRIBUTION SLAB REQUIRED *	RECESSED TIE RODS REQUIRED * *	DIMENSIONS					WEIGHT (LBS./FT.)	WELDED WIRE FABRIC REINFORCEMENT											
							SPAN (FT.)	RISE (FT.)	Tt (IN.)	Tb (IN.)	Ts (IN.)		As1			As2		As3		As4		As7		As8	
													AREA (IN.I/FT.)	LENGTH (FT.)	M (FT.)	AREA (IN.I/FT.)	LENGTH (FT.)	AREA (IN.I/FT.)	LENGTH (FT.)	AREA (IN.I/FT.)	LENGTH (FT.)	AREA (IN.I/FT.)	LENGTH (FT.)	AREA (IN.I/FT.)	LENGTH (FT.)
0+75	8x4	2	5000	3–8	YES	NO	8	4	9	10	8	3325	0.36	10'–8"	2'–10"	0.35	8'–6"	0.36	8'–6"	0.20	4'–6"	0.24	6'–3"	0.24	6'–3"
					YES	NO																			

* ALL CLASS 1 CULVERTS WITH FILL HEIGHTS OF LESS THAN 2'–0" REQUIRE A DISTRIBUTION SLAB. IF A DISTRIBUTION SLAB IS NOT REQUIRED, INDICATE "NO" IN THIS BOX.

* * FOR PEDESTRIAN CULVERT APPLICATIONS HIDE–AWAY OR RECESSED TIE CONNECTIONS ARE REQUIRED, SEE STANDARD PLATE 3145. IF REQUIRED, INDICATE "YES" IN THIS BOX.

* * * BOX CULVERTS WITH SPANS FROM 6 TO 14 FT. ARE DESIGNED FOR HL–93 LIVE LOADS (AASHTO LRFD 3.6.2.1) NOT INCLUDING THE DESIGN LANE LOAD. BOXES WITH SPANS OF 16 FT. ARE DESIGNED FOR HL–93 LIVE LOADS INCLUDING THE DESIGN LANE LOAD.

REVISION: 09–11–2014

APPROVED: MARCH 24, 2011
Nancy Daubenberger
STATE BRIDGE ENGINEER

STATE PROJ. NO – (T.H.) STA. + .

FIG. 5–395.101(A)

CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER _____ DATE

NAME: LIC. NO.

TITLE: PRECAST CONCRETE BARREL DETAILS

DES: DR: APPROVED:
CHK: CHK:

SHEET NO. OF SHEETS

BRIDGE NO.

BALD EAGLE BLVD E.
250' S. OF BUFFALO STREET

S.A.P. 062-607-001
S.A.P. 062-658-014
S.A.P. 062-676-002

RAMSEY COUNTY

BOX CULVERT DETAILS
SHEET 7 OF 22 SHEETS

FILENAME: $$$@FILENAME@$$$

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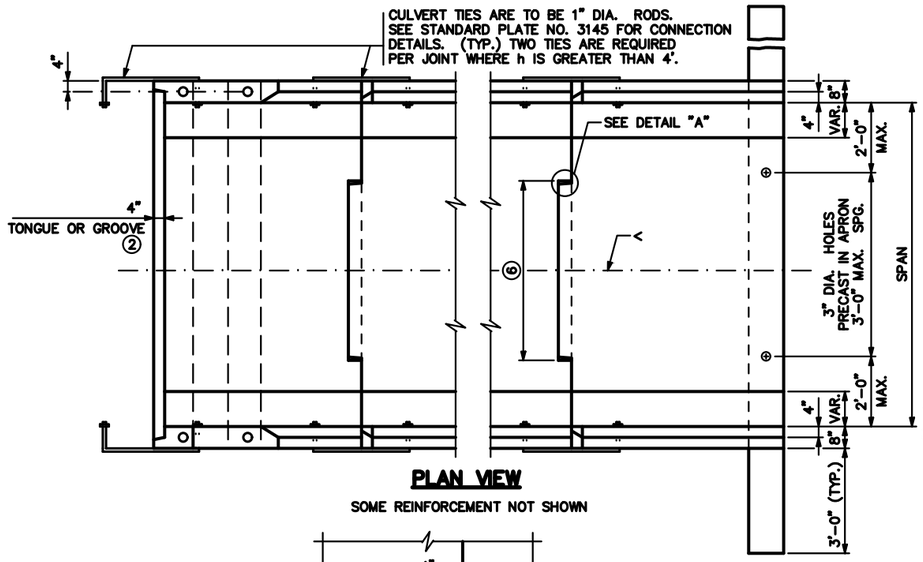
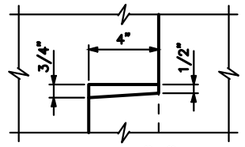
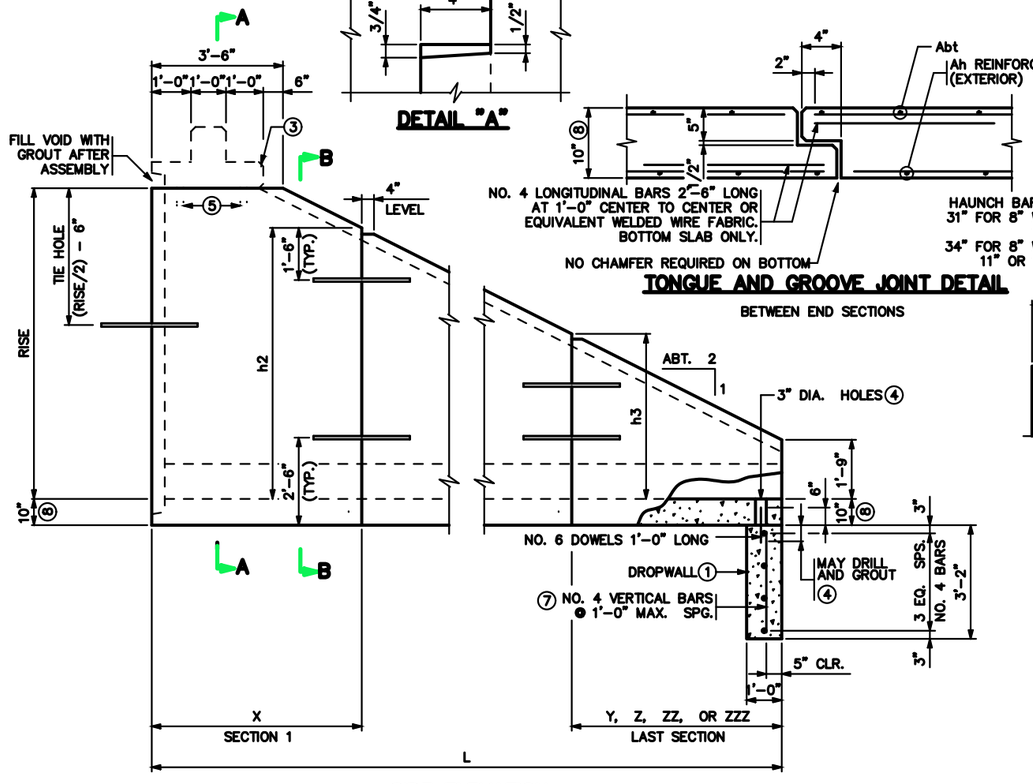


PLAN VIEW

SOME REINFORCEMENT NOT SHOWN



DETAIL "A"

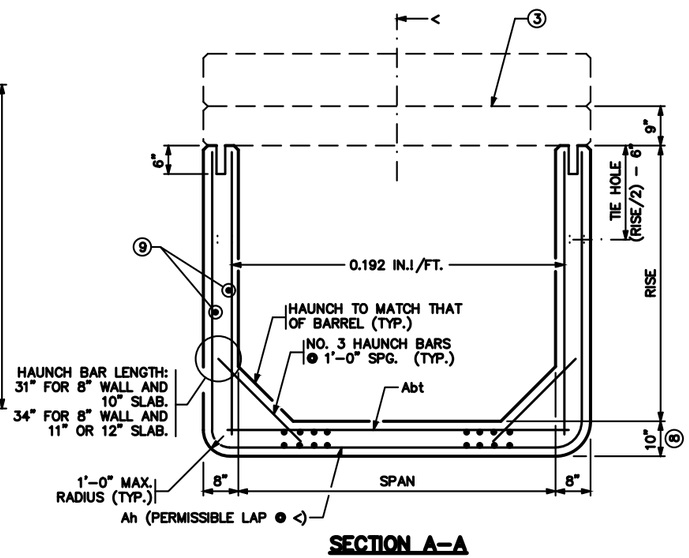


SIDE ELEVATION

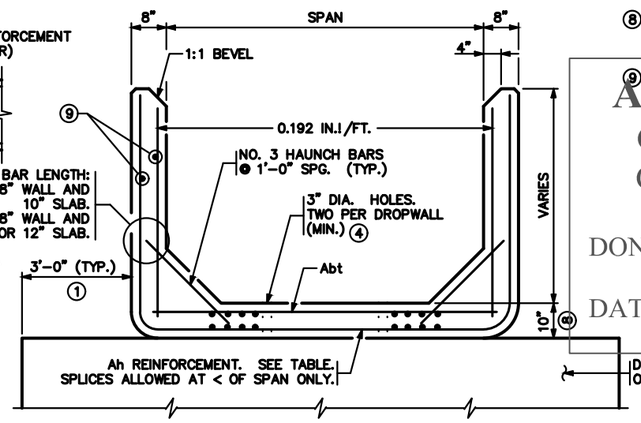
TONGUE AND GROOVE JOINT DETAIL

BETWEEN END SECTIONS

Abt REINFORCEMENT	
SPAN (FT.)	Abt (IN.²/FT.)
6–10	0.20
12	0.30
14	0.39
16	0.39



SECTION A–A



SECTION B–B

CONSTRUCTION NOTES

SEE STANDARD FIG. 5–395.101(A) AND FIG. 5–395.101(B) FOR ADDITIONAL DIMENSIONS AND CONSTRUCTION NOTES.

ON ALL END SECTIONS FOR WATERWAYS, USE DROPWALLS ON INLET AND OUTLET ENDS.

SEE STANDARD FIG. 5–395.115 FOR EMBANKMENT PROTECTION.

FINISH ALL EXPOSED EDGES OF CONCRETE WITH 1/2" OR 3/4" CHAMFER OR RADIUS UNLESS OTHERWISE NOTED.

① WITH DOUBLE BOXES LOCATE DROPWALL JOINTS BETWEEN END SECTIONS. SEE STANDARD FIG. 5–395.111 FOR ALTERNATE DROPWALLS. LIMITS OF EXCAVATION FOR DROPWALL TO BE APPROXIMATELY THE SAME AS DROPWALL DIMENSIONS. DROPWALL TO BE CONCRETE MIX NO. 1A43 OR 3Y43. FURNISHING AND INSTALLATION OF DROPWALL TO BE INCLUDED IN PRICE BID FOR END SECTIONS. DROPWALL NOT REQUIRED FOR NON–WATERWAY USE.

② CHECK LOCATION TO DETERMINE WHETHER A TONGUE OR A GROOVE IS USED.

③ SEE STANDARD FIG. 5–395.104(B) FOR LINTEL BEAM DETAILS.

④ FILL HOLE WITH GROUT. GROUT SHALL CONSIST OF 1 PART CEMENT AND 2 PARTS SAND. USE TYPE 1A AIR ENTRAINED PORTLAND CEMENT. GROUT MIX SHALL HAVE A MAXIMUM SLUMP OF 4".

⑤ 2" DIAMETER HOLE, 6" DEEP IN TOP OF THE SECTION WALL.

⑥ 3'–6" MIN. TONGUE AND 3'–7" MIN. GROOVE FOR CULVERTS WITH 6'–0" SPANS. 5'–0" MIN. TONGUE AND 5'–1" MIN. GROOVE FOR CULVERTS WITH SPANS GREATER THAN 6'–0". CENTER TONGUE AND GROOVE ON < OF EACH APRON JOINT. TONGUE AND GROOVE JOINT ON ALL THREE SIDES OF APRON IS PERMISSIBLE.

⑦ AS AN ALTERNATE TO THE ONE LAYER WELDED WIRE FABRIC, PROVIDE TWO LAYERS OF REBAR OR WELDED WIRE FABRIC WITH THE STEEL AREA EQUAL TO HALF OF THE TEMPERATURE STEEL PER CODE REQUIREMENTS IN EACH FACE OF THE DROPWALL.

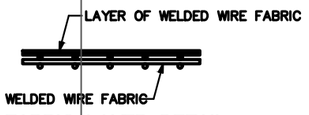
⑧ APRON BOTTOM SLAB THICKNESS MAY BE 8" FOR CULVERTS WITH 6' SPANS ONLY. BOTTOM SLAB THICKNESS MAY BE INCREASED UP TO 2" MAX. PROVIDED COVER IS 1 1/2" MIN., 2" MAX.

⑨ LONGITUDINAL REINFORCEMENT PERPENDICULAR TO THE CULVERT BARS SHALL HAVE A MINIMUM OF 0.06 SQUARE INCHES PER PERIPHERAL FOOT ON ALL FACES OF THE BARREL.

AS BUILT
CONFORMING TO
CONST. RECORDS

DONE BY: – KR, CT

DATE: – 11/22/16



FABRIC LAYER DETAIL

WHEN MORE THAN ONE LAYER OF WELDED WIRE FABRIC IS USED TO OBTAIN THE REQUIRED REINFORCEMENT AREAS, THE WIRES OF THE WELDED WIRE FABRIC SHALL BE PLACED AS SHOWN.

APRON DIMENSIONS & Ah REINFORCEMENT

RISE FT.	L FT.	SECTION 1 X	SECTION 1 Ah	h2	SECTION 2 Y	SECTION 2 Ah	h3	SECTION 3 Z	SECTION 3 Ah	h4	SECTION 4 ZZ	SECTION 4 Ah	h5	SECTION 5 ZZZ	SECTION 5 Ah	h6
4	8	3' (4')	0.192	1'–9" (3'–9")	(4')	(0.192)	(1'–9")									
5	10	6'	0.192	3'–9"	4'	0.192	1'–9"									
6	12	6'	0.192	4'–9"	6'	0.192	1'–9"									
7	14	6'	0.192	5'–9"	3' (4')	0.192	1'–9" (3'–9")	(4')	(0.192)	(1'–9")						
8	16	6'	0.20	6'–9"	6'	0.192	3'–9"	4'	0.192	1'–9"						
9	18	6'	0.29	7'–9"	6'	0.20	4'–9"	6'	0.192	1'–9"						
10	20	6'	0.42	8'–9"	6'	0.29	5'–9"	3' (4')	0.192	1'–9" (3'–9")	(4')	(0.192)	(1'–9")			
11	22	6'	0.60	9'–9"	6'	0.42	6'–9"	6'	0.192	3'–9"	4'	0.192	1'–9"			
12	24	6'	0.78	10'–9"	6'	0.60	7'–9"	6'	0.20	4'–9"	6'	0.192	1'–9"			
13	26	6'	1.03	11'–9"	6'	0.78	8'–9"	6'	0.28	5'–9"	3' (4')	0.192	1'–9" (3'–9")	(4')	(0.192)	(1'–9")
14	28	6'	1.38	12'–9"	6'	1.03	9'–9"	6'	0.40	6'–9"	6'	0.192	3'–9"	4'	0.192	1'–9"

NOTE: Ah IS AREA OF REINFORCEMENT PER FOOT OF LENGTH (IN.²/FT.) VALUES IN ( ) MAY BE USED FOR END SECTIONS WITH SPANS OF 14' AND 16' ONLY.

REVISION: 11–06–2013

APPROVED: MARCH 24, 2011
Nancy Daubenberger
STATE BRIDGE ENGINEER

STATE PROJ. NO – (T.H.) STA. + .

FIG. 5–395.104(A)

CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER _____ DATE

NAME: LIC. NO.

TITLE: PRECAST CONCRETE END SECTION TYPE III – SINGLE OR DOUBLE BARREL FOR SKEWS UP TO 71/2°

DES: DR: APPROVED:
CHK: CHK:
SHEET NO. OF SHEETS

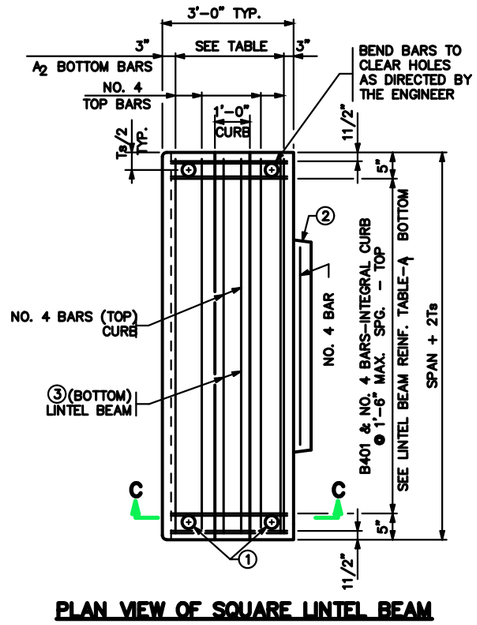
BRIDGE NO.

BALD EAGLE BLVD E.
250' S. OF BUFFALO STREET

S.A.P. 062-607-001
S.A.P. 062-658-014
S.A.P. 062-676-002

RAMSEY COUNTY

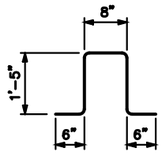
BOX CULVERT DETAILS
SHEET 8 OF 22 SHEETS



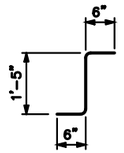
PLAN VIEW OF SQUARE LINTEL BEAM

LINTEL BEAM BOTTOM REINFORCEMENT		
SPAN (FT.)	A_1	A_2
6	NO. 4 @ 1'-2"	NO. 4 @ 91/2"
8	NO. 4 @ 8"	NO. 5 @ 8"
10	NO. 5 @ 8"	NO. 6 @ 71/2"
12	NO. 5 @ 6"	NO. 6 @ 6"
14	NO. 6 @ 6"	NO. 7 @ 6"
16	NO. 6 @ 6"	NO. 7 @ 6"

NOTE: MAXIMUM BAR SPACING GIVEN, REDUCE AS NECESSARY

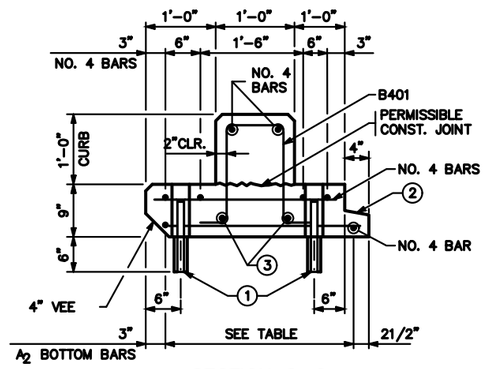


B401



B401 ALTERNATE

④ 2 REQUIRED



SECTION C-C

INTEGRAL CURB WITH TONGUE.
ADDITIONAL REINFORCEMENT IN TONGUE NOT SHOWN.

CONSTRUCTION NOTES

SEE STANDARD FIG. 5-395.101(A) AND FIG. 5-395.101(B) FOR ADDITIONAL DIMENSIONS AND CONSTRUCTION NOTES.

ALL END SECTIONS REQUIRE CURB ON LINTEL BEAM.

GROUT SHALL CONSIST OF 1 PART CEMENT AND 2 PARTS SAND. USE TYPE 1A AIR ENTRAINED PORTLAND CEMENT. GROUT MIX SHALL HAVE A MAXIMUM SLUMP OF 4".

① 3" DIA. HOLE THROUGH LINTEL BEAM AND 2" DIA. HOLE IN TOP OF WALL SECTION. PLACE NO. 8 DOWEL, 1'-0" LONG, IN HOLE AND FILL HOLE WITH GROUT.

② CHECK THE LOCATION TO DETERMINE WHETHER A TONGUE OR A GROOVE IS USED. TONGUE AND GROOVE TO TERMINATE AT HAUNCH.

③ FOR SPANS UNDER 10'-0" USE NO. 8 BARS. FOR SPANS OF 10'-0" TO 12'-0" USE NO. 9 BARS. FOR 14'-0" AND 16'-0" SPAN, USE NO. 10 BARS.

④ ALTERNATE BAR BEND MAY BE USED FOR B401.

ASBUILT PLAN
CONFORMING TO CONST. RECORDS

DONE BY: – KR, CT

DATE: – 11/22/16

REVISION: 11-06-2013
APPROVED: MARCH 24, 2011
STATE BRIDGE ENGINEER

STATE PROJ. NO – (T.H.) STA. + .

FIG. 5-395.104(B)

CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER _____ DATE
NAME: LIC. NO.

TITLE: PRECAST CONCRETE END SECTION TYPE III - SINGLE OR DOUBLE BARREL FOR SKEWS UP TO 71/2"

DES: DR: APPROVED:
CHK: CHK:
SHEET NO. OF SHEETS

BRIDGE NO.

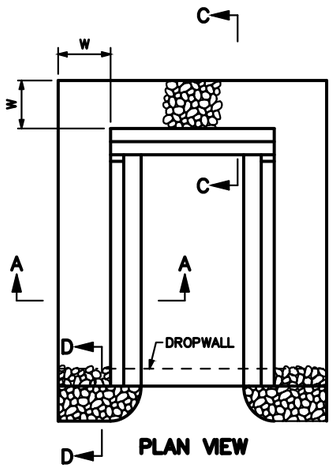
BALD EAGLE BLVD E.
250' S. OF BUFFALO STREET

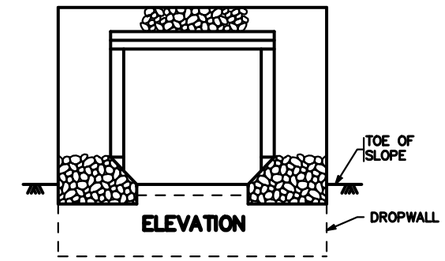
S.A.P. 062-607-001
S.A.P. 062-658-014
S.A.P. 062-676-002

RAMSEY COUNTY

BOX CULVERT DETAILS
SHEET 9 OF 22 SHEETS

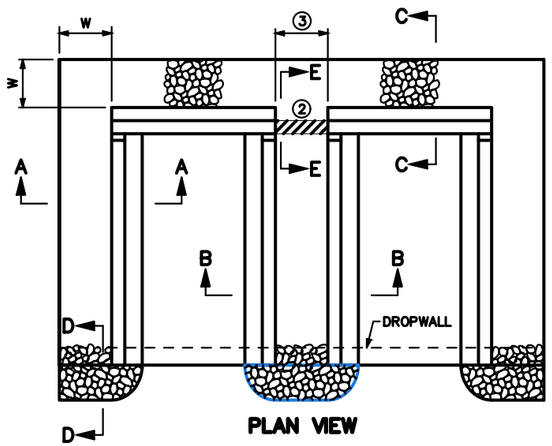
FILENAME: $$$@FILENAME@$$$
C:\USERS\KELLEY.ROSENBERGER\DESKTOP\CULVERT'S\6- BALD EAGLE DETAIL.DWG April 17, 2015 7:31 AM

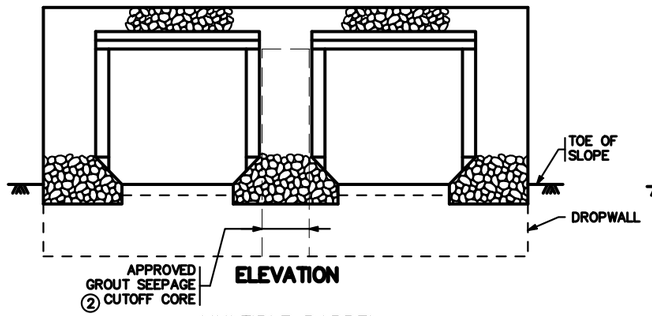




SINGLE BARREL

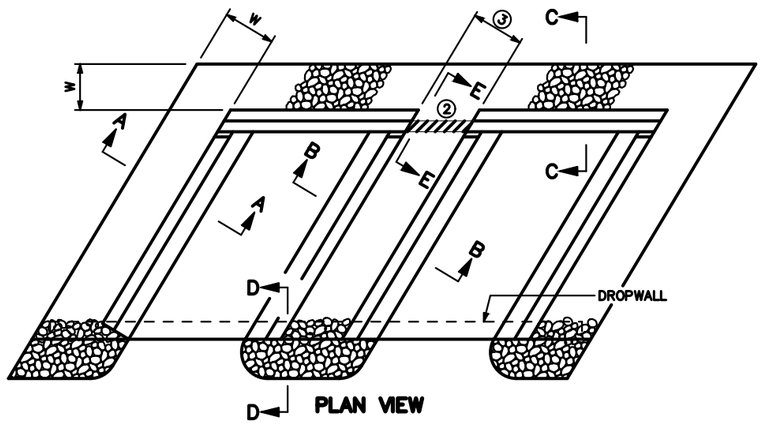
CLASS III OR IV SHOWN
FOR SKEWS UP TO 71/2°

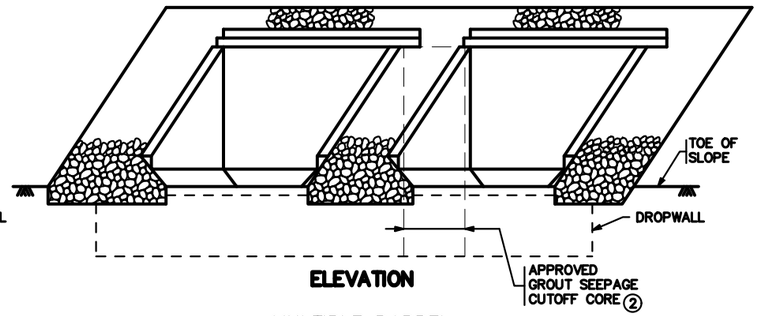




MULTIPLE BARREL

FOR SKEWS UP TO 71/2°
CLASS III OR IV SHOWN
DOUBLE BARREL SHOWN





MULTIPLE BARREL

FOR SKEWS OVER 71/2°
CLASS III OR IV SHOWN
DOUBLE BARREL SHOWN,
OTHER BARREL CONFIGURATIONS SIMILAR.

CONSTRUCTION NOTES

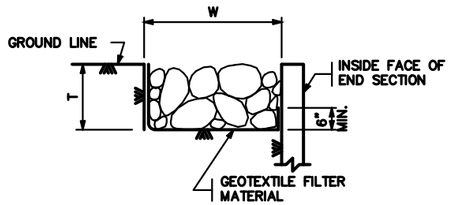
THIS PLAN SHEET IS FOR CULVERT EMBANKMENT PROTECTION ONLY. REFER TO THE GRADING PLANS FOR ADDITIONAL RIPRAP OR OTHER SCOUR PROTECTION MEASURES.

RIPRAP SHALL COMPLY WITH SPECS. 2511 AND 3601.

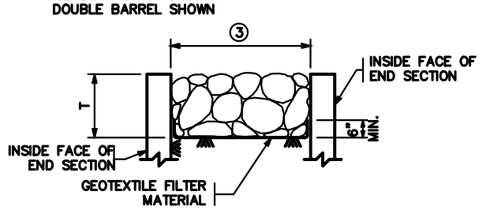
① FOR TYPE OF GEOTEXTILE FILTER MATERIAL REQUIRED, SEE SPEC. 3733. GEOTEXTILE STRIPS SHOULD BE CONTINUOUS WITHOUT OVERLAPS, EXCEPT FOR THE TOP STRIP, WHICH SHOULD SHINGLE VERTICAL STRIPS. THE TOP EDGE SHOULD BE BURIED TO PREVENT UNDERMINING.

② IF THE DISTANCE BETWEEN DOUBLE BARRELS IS LESS THAN 2'–0" USE EITHER PEA ROCK OR LEAN MIX BACKFILL (SPEC. 2520) BETWEEN THE CULVERTS AS APPROVED BY THE ENGINEER. IF PEA ROCK IS USED PROVIDE APPROVED GROUT SEEPAGE CUTOFF CORE, MINIMUM 12" THICK BETWEEN THE CULVERT'S TWO ENDS AND PROVIDE CLASS I GROUTED RIPRAP IN LIEU OF CLASS III RIPRAP.

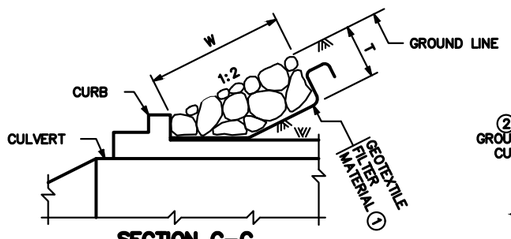
③ REFER TO THE GENERAL PLAN AND ELEVATION SHEET FOR THE DISTANCE BETWEEN BARRELS OF ADJACENT BOXES.



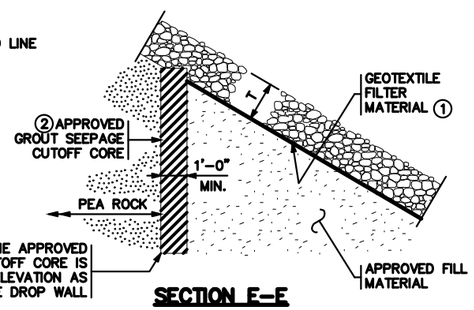
SECTION A–A



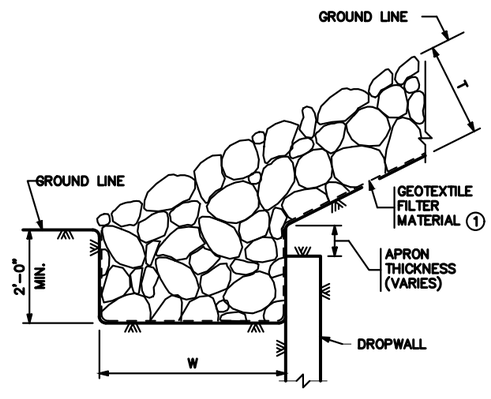
SECTION B–B



SECTION C–C



SECTION E–E



SECTION D–D

RIPRAP CLASS

RIPRAP CLASS	RIPRAP CLASS	T	W
☒	III	1'–6"	3'–0"
☐	IV	2'–0"	4'–0"

ASBUILT PLAN
CONFORMING TO
CONST. RECORDS

DONE BY: – KR, CT

DATE: – 11/22/16

REVISION:

APPROVED: SEPTEMBER 11, 2014
Nancy Daubenberger
STATE BRIDGE ENGINEER

STATE PROJ. NO – (T.H.) STA. + .

FIG. 5–395.115

CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER _____ DATE

NAME: LIC. NO.

TITLE: EMBANKMENT PROTECTION FOR BOX CULVERTS

DES: DR: APPROVED:

CHK: CHK:

SHEET NO. OF SHEETS

BRIDGE NO.

BALD EAGLE BLVD E.
250' S. OF BUFFALO STREET

S.A.P. 062-607-001
S.A.P. 062-658-014
S.A.P. 062-676-002

RAMSEY COUNTY

BOX CULVERT DETAILS
SHEET 10 OF 22 SHEETS

FILENAME: $$$@FILENAME@$$$

C:\USERS\KELLEY.ROSENBERGER\DESKTOP\CULVERTS\6– BALD EAGLE DETAIL.DWG April 17, 2015 7:31 AM

NOTES

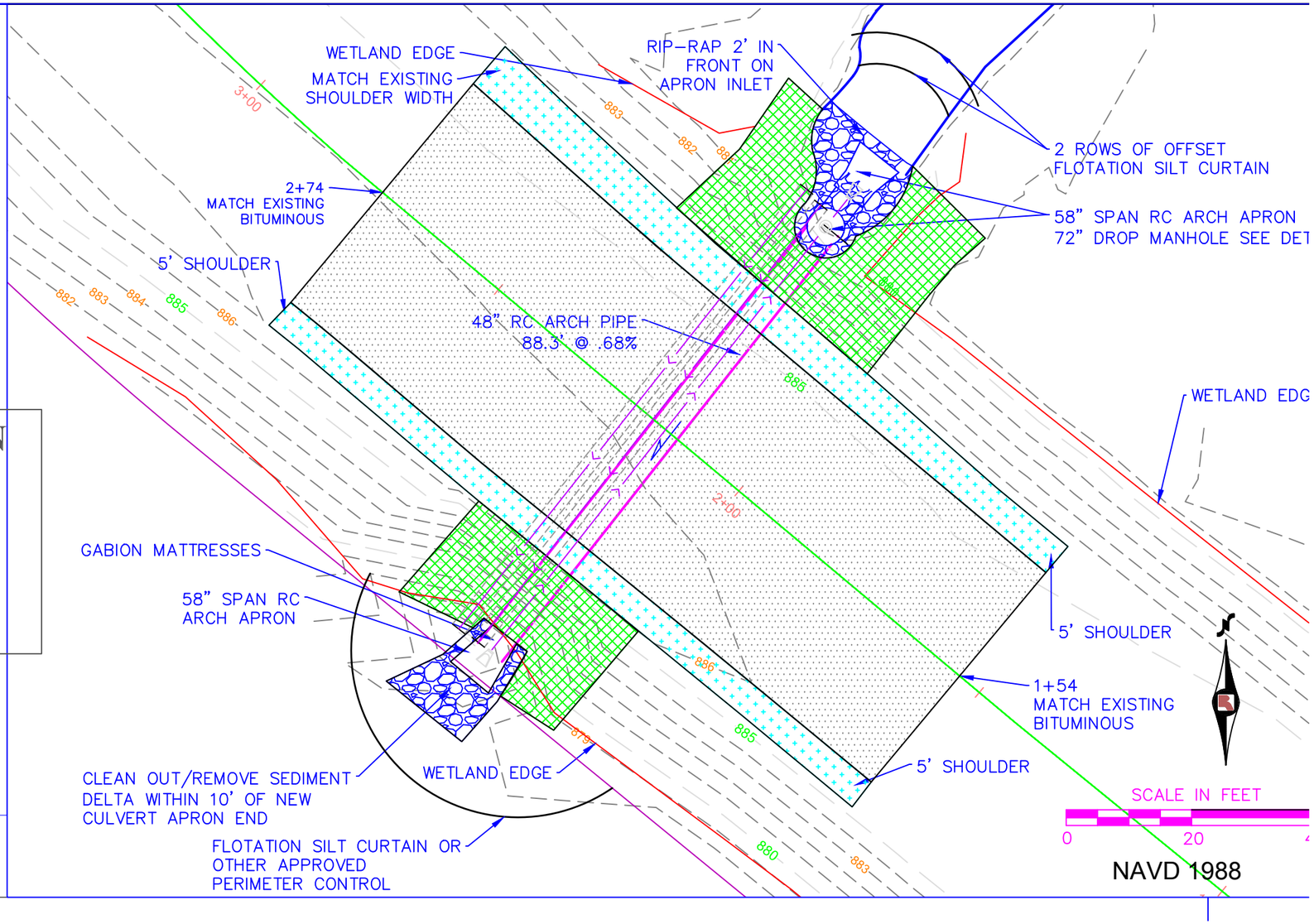
1. EROSION CONTROL BLANKET AND MNDOT 328/33-261 SEED COVERING ALL DISTURBED AREAS
2. WORK TO BE CONDUCTED IN "DRY" CONDITIONS
3. FLOW RATE CAPABILITY MUST BE MAINTAINED DURING CONSTRUCTION TO PREVENT UPSTREAM FLOODING IN THE EVENT OF A STORM. PUMPING EQUIPMENT OF THE APPROPRIATE CAPACITY MUST BE AVAILABLE ON SIGHT WITHIN 2 HOURS
4. "WATER MANAGEMENT PLAN" WILL REQUIRE APPROVAL BY COUNTY.

ASBUILT PLAN
CONFORMING TO
CONST. RECORDS

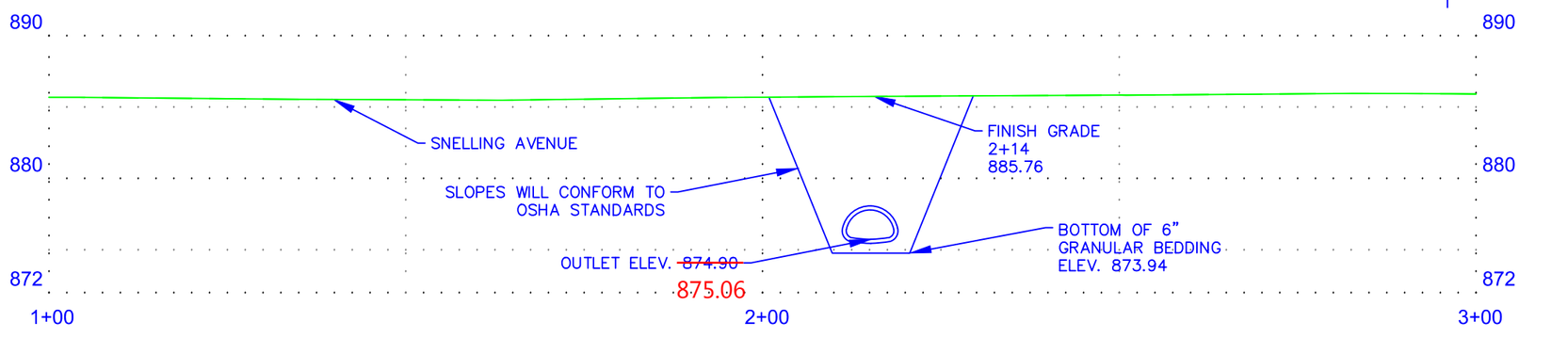
DONE BY: – KR, CT
DATE: – 11/22/16

LEGEND

- BITUMINOUS PAVEMENT
- 6" GRAVEL SHOULDER
- EROSION STABILIZATION MAT CLASS 3
- RIP-RAP CLASS 3



BITUMINOUS ROAD RE ESTABLISHMENT ELEVATIONS		
STATION	OFFSET	ELEV.
1+75	22 LT	885.95
1+75	0	885.60
1+75	22 RT	884.86
2+00	22 LT	886.28
2+00	0	885.70
2+00	22 RT	884.90
2+25	22 LT	886.58
2+25	0	885.83
2+25	22 RT	884.83
2+50	22 LT	886.78
2+50	0	885.88
2+50	22 RT	884.76



NO.	REV-DATE	BY:	DESCRIPTION

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.
SIGNED:
REG NO: 26511 DATE: 06/25/2014

SNELLING AVENUE
300' SOUTH OF COUNTY ROAD E2

S.A.P. 062-607-001
S.A.P. 062-658-014
S.A.P. 062-676-002

RAMSEY COUNTY

SNELLING CULVERT PLAN AND PROFIL

SHEET 16 OF 19 SHEETS

NOTES

1. EROSION CONTROL BLANKET AND MNDOT 328/33–261 SEED COVERING ALL DISTURBED AREAS
2. WORK TO BE CONDUCTED IN "DRY" CONDITIONS
3. FLOW RATE CAPABILITY MUST BE MAINTAINED DURING CONSTRUCTION TO PREVENT UPSTREAM FLOODING IN THE EVENT OF A STORM. PUMPING EQUIPMENT OF THE APPROPRIATE CAPACITY MUST BE AVAILABLE ON SIGHT WITHIN 2 HOURS
4. "WATER MANAGEMENT PLAN" WILL REQUIRE APPROVAL BY COUNTY.

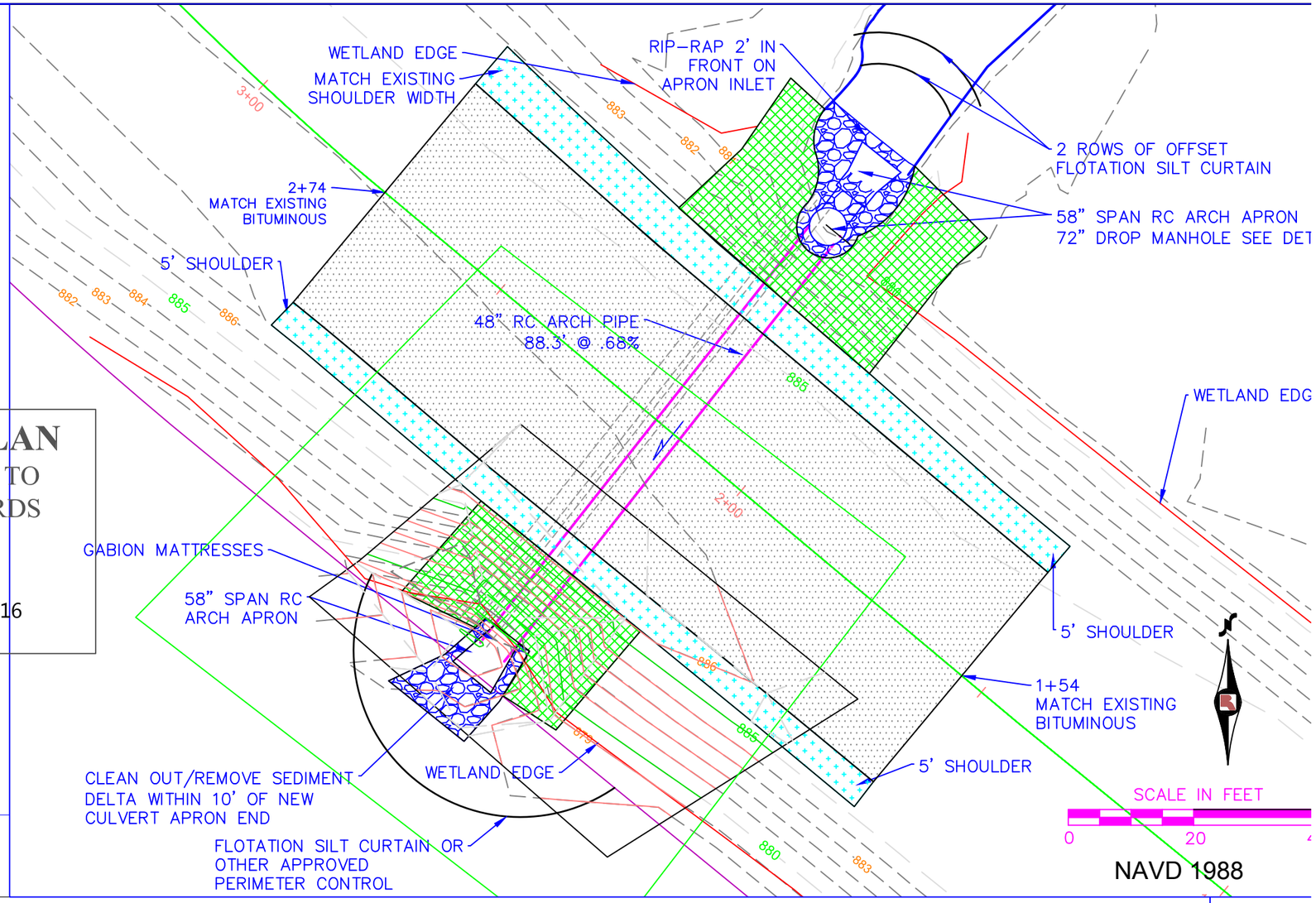
LEGEND

- BITUMINOUS PAVEMENT
- 6" GRAVEL SHOULDER
- EROSION STABILIZATION MAT CLASS 3
- RIP–RAP CLASS 3

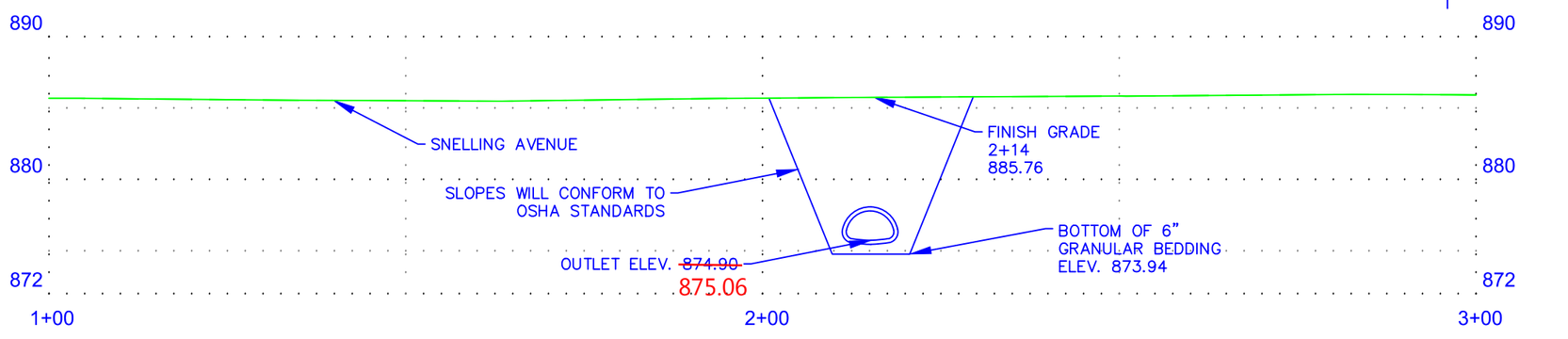
ASBUILT PLAN
CONFORMING TO
CONST. RECORDS

DONE BY: – KR, CT

DATE: – 11/22/16



BITUMINOUS ROAD RE ESTABLISHMENT ELEVATIONS		
STATION	OFFSET	ELEV.
1+75	22 LT	885.95
1+75	0	885.60
1+75	22 RT	884.86
2+00	22 LT	886.28
2+00	0	885.70
2+00	22 RT	884.90
2+25	22 LT	886.58
2+25	0	885.83
2+25	22 RT	884.83
2+50	22 LT	886.78
2+50	0	885.88
2+50	22 RT	884.76



NO.	REV-DATE	BY:	DESCRIPTION

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.

SIGNED:

REG NO: 26511 DATE: 06/25/2014

SNELLING AVENUE

300' SOUTH OF COUNTY ROAD E2

S.A.P. 062-607-001
S.A.P. 062-658-014
S.A.P. 062-676-002

RAMSEY COUNTY

SNELLING CULVERT PLAN AND PROFIL