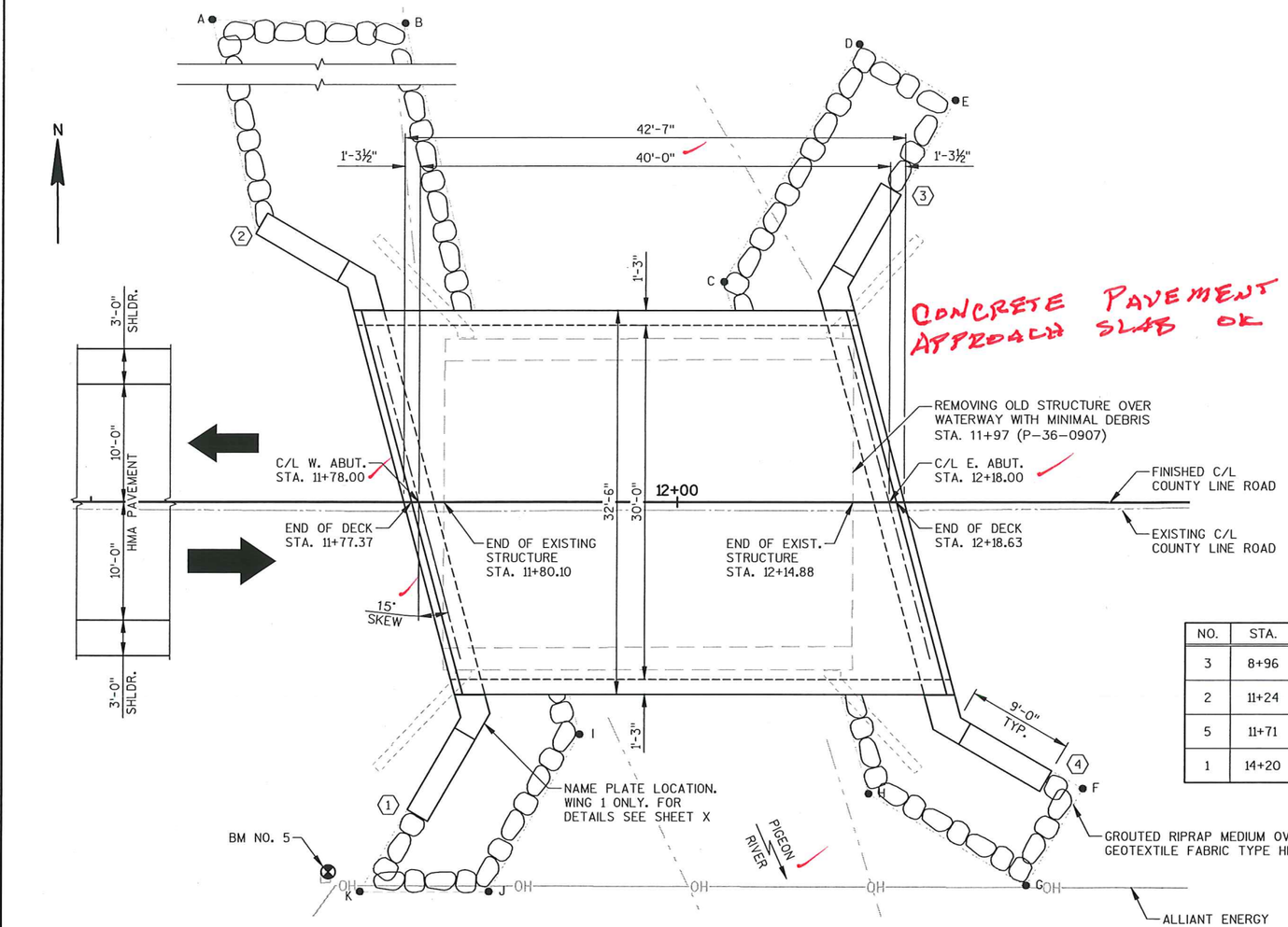
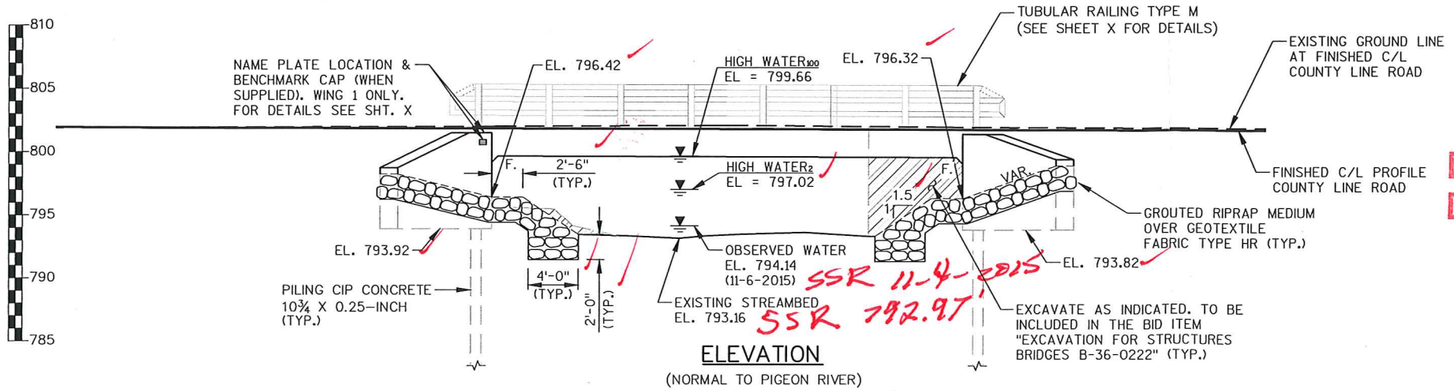
STATE PROJECT NUMBER
4313-10-71



PLAN B-36-0222

(SINGLE-SPAN REINFORCED CONCRETE FLAT SLAB)



ELEVATION

(NORMAL TO PIGEON RIVER)

⬡ INDICATES WING NUMBER

RIPRAP HEAVY LAYOUT

POINT	STATION	OFFSET
A	11+58	49.7' LT.
B	11+75	49.7' LT.
C	12+04	18.7' LT.
D	12+15	38.7' LT.
E	12+24	33.9' LT.
F	12+35	24.3' RT.
G	12+30	32.4' RT.
H	12+16	24.7' RT.
I	11+92	19.7' RT
J	11+84	33.0' RT
K	11+73	33.0' RT

BRIDGE MANUAL 6.4.10 ROUND TO 5 FT.

⊗ BENCH MARKS

NO.	STA.	DESCRIPTION	ELEV.
3	8+96	3/4" IRON REBAR SET, 27.3' RT.	808.38
2	11+24	3/4" IRON REBAR SET, 29.1' LT.	801.24
5	11+71	STAR SPIKE IN PP, 31.4' RT.	798.20
1	14+20	3/4" IRON REBAR SET, 14.3' LT.	800.54

DESIGN DATA

LIVE LOAD:

DESIGN LOADING — HL-93
INVENTORY RATING FACTOR — RF=X.XX
OPERATING RATING FACTOR — RF=X.XX
WISCONSIN STANDARD PERMIT VEHICLE (WIS-SPV) — 250 KIPS

STRUCTURE IS DESIGNED FOR A FUTURE WEARING SURFACE OF 20 P.S.F.

MATERIAL PROPERTIES:

CONCRETE MASONRY, SLAB — f'c = 4,000 P.S.I.
ALL OTHER — f'c = 3,500 P.S.I.
HIGH-STRENGTH BAR STEEL REINFORCEMENT, GRADE 60 — fy = 60,000 P.S.I.

FOUNDATION DATA

ABUTMENTS TO BE SUPPORTED ON PILING CIP CONCRETE 10¾ X 0.25-INCH DRIVEN TO A REQUIRED DRIVING RESISTANCE OF 130 TONS PER PILE AS DETERMINED BY THE MODIFIED GATES DYNAMIC FORMULA. ESTIMATE 68 FT. PILE LENGTHS AT BOTH ABUTMENTS. ~~68~~ 70

**THE FACTORED AXIAL RESISTANCE OF PILES IN COMPRESSION USED FOR DESIGN IS THE REQUIRED DRIVING RESISTANCE MULTIPLIED BY A RESISTANCE FACTOR OF 0.5 USING MODIFIED GATES TO DETERMINE DRIVEN PILE CAPACITY.

TRAFFIC DATA

A.D.T. (2017) — 230
A.D.T. (2037) — 250
DESIGN SPEED — 25 M.P.H.

HYDRAULIC DATA

100 YEAR FREQUENCY
DRAINAGE AREA — 12.2 SQ. MI.
Q_{100} TOTAL — 1,040 C.F.S.
THROUGH STRUCTURE — 1,040 C.F.S.
OVERTOPPING ROADWAY — N/A
VELOCITY - THROUGH STRUCTURE — 6.35 F.P.S.
WATERWAY AREA - THROUGH STRUCTURE — 163.8 SQ. FT.
HIGH $WATER_{100}$ ELEVATION — 799.66
SCOUR CRITICAL CODE — 5

EROSION CONTROL
Q_2 — 270 C.F.S.
HIGH $WATER_2$ ELEVATION — 797.02

LIST OF DRAWINGS

GENERAL PLAN — 1.
CROSS SECTION AND QUANTITIES — 2.
SUBSURFACE EXPLORATION — 3.

TYPE, SIZE & LOCATION APPROVED
BY MLH
DATE 3-22-2016

NO.	DATE	REVISION	BY

JEWELL associates engineers, inc.
Engineers - Surveyors - Architects
560 SUNRISE DRIVE
SPRING GREEN, WI 53588
PHONE: (608) 588-7484
FAX: (608) 588-9322

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

ACCEPTED _____ _____
CHIEF STRUCTURES DESIGN ENGINEER — DATE

STRUCTURE B-36-0222

COUNTY LINE ROAD OVER PIGEON RIVER

COUNTY	TOWN/~~CITY/VILLAGE~~
MANITOWOC	MEEME

DESIGN SPEC. AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

DESIGNED BY	DESIGN CK'D.	DRAWN BY	PLANS CK'D.
·	·	RBH	PTB

GENERAL PLAN

SHEET 1 OF 3

EXHIBIT A

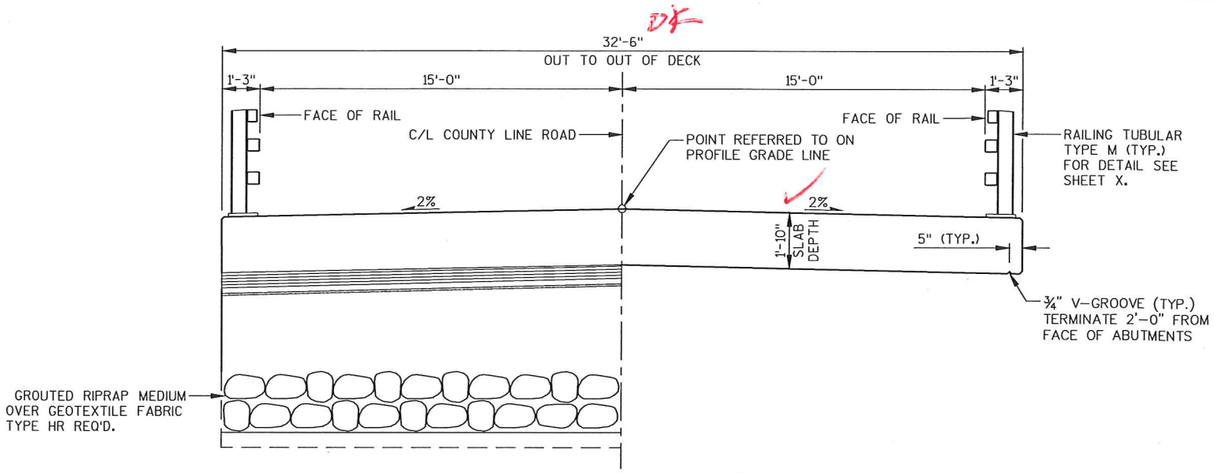
DESIGN CONSULTANT
PATRICK BOLAND, PE
(608) 588-7484

BRIDGE OFFICE CONTACT
WILLIAM DREHER, PE
(608) 266-8489

FILE NAME : S:\PROJECTS\W11551 COUNTY LINE RD, MANITOWOC COUNTY\STRUCTURE\CAD FILES\PRELIMS\01 GENERAL PLAN.DWG
LAYOUT : LAYOUT1
PLOT DATE : 3/1/2016
PLOT TIME : 8:08:02 AM
PLOT BY : BOLAND, PATRICK
PLOT SCALE : 1" = 1'

8

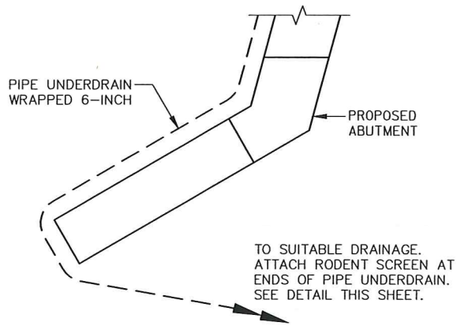
8



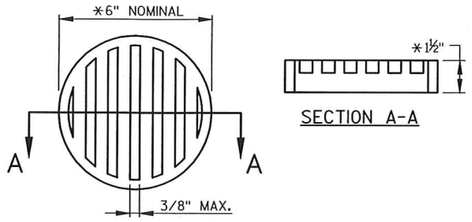
AT ABUTMENT IN SPAN

PROPOSED CROSS-SECTION THROUGH ROADWAY

(LOOKING EAST)



PIPE UNDERDRAIN DETAIL



RODENT SCREEN

SECTION A-A

NOTES:

*DIMENSIONS ARE APPROXIMATE. THE GRATE IS SIZED TO FIT INTO A PIPE COUPLING.

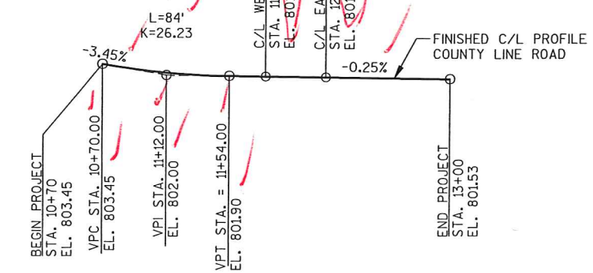
ORIENT SCREEN SO SLOTS ARE VERTICAL.

THE RODENT SCREEN, PIPE COUPLING AND SCREWS SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM "PIPE UNDERDRAIN WRAPPED 6-INCH".

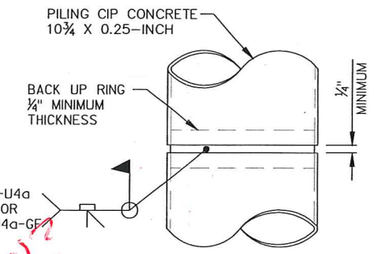
THE RODENT SCREEN SHALL BE A PVC GRATE SIMILAR TO THIS DETAIL. THE GRATE IS COMMERCIALLY AVAILABLE AS A FLOOR STRAINER. A PIPE COUPLING IS REQUIRED FOR THE ATTACHMENT OF THIS SCREEN TO THE EXPOSED ENDS OF THE PIPE UNDERDRAIN. THE SCREEN SHALL BE FASTENED TO THE PIPE COUPLING WITH TWO OR MORE NO. 10 X 1-INCH STAINLESS STEEL SHEET METAL SCREWS.

TOTAL ESTIMATED QUANTITIES

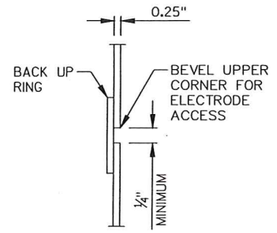
ITEM NUMBER	ITEM DESCRIPTION	UNIT	W. ABUT.	SUPER	E. ABUT.	TOTALS
203.0600.S	REMOVING OLD STRUCTURE OVER WATERWAY WITH MINIMAL DEBRIS STA. 11+97	LS	--	--	--	--
206.1000	EXCAVATION FOR STRUCTURES BRIDGES B-36-0222	LS	--	--	--	--
210.0100	BACKFILL STRUCTURE	CY	--	--	--	--
502.0100	CONCRETE MASONRY BRIDGES	CY	--	--	--	--
502.3200	PROTECTIVE SURFACE TREATMENT	SY	--	--	--	--
505.0400	BAR STEEL REINFORCEMENT HS STRUCTURES	LB	--	--	--	--
505.0600	BAR STEEL REINFORCEMENT HS COATED STRUCTURES	LB	--	--	--	--
513.4061	RAILING TUBULAR TYPE M B-36-0222	LF	--	--	--	--
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	--	--	--	--
550.2104	PILING CIP CONCRETE 10¾ X 0.25-INCH	LF	--	--	--	--
606.0600	GROUTED RIPRAP MEDIUM	CY	--	--	--	--
612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	--	--	--	--
645.0120	GEOTEXTILE FABRIC TYPE HR	SY	-	--	--	--
	NON-BID ITEMS					
	FILLER	SIZE	--	--	--	½" & ¾"



COUNTY LINE ROAD - PROFILE GRADE LINE



CAST-IN-PLACE CONCRETE PILE



C.I.P. PILE WELD DETAIL

NOTES:

CAST-IN-PLACE PILE SHELL MATERIAL SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS

STATE PROJECT NUMBER

4313-10-71

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED. BAR STEEL REINFORCEMENT SHALL BE EMBEDDED 2" CLEAR UNLESS OTHERWISE SHOWN OR NOTED.

ELEVATIONS SHOWN ON THE PLAN ARE REFERENCED TO THE NORTH AMERICA VERTICAL DATUM OF 1988 (NAVD 88).

JOINT FILLER SHALL CONFORM TO A.A.S.H.T.O. DESIGNATION M153, TYPE I, II OR III OR A.A.S.H.T.O. DESIGNATION M213.

THE SLOPE OF FILL IN FRONT OF THE ABUTMENTS SHALL BE COVERED WITH RIPRAP HEAVY AND GEOTEXTILE FABRIC TYPE HR TO THE EXTENT SHOWN ON SHEET 1 AND IN THE ABUTMENT DETAILS, OR AS DIRECTED BY THE ENGINEER IN THE FIELD.

AT THE BACK FACE OF ABUTMENTS, ALL VOLUME WHICH CANNOT BE PLACED BEFORE ABUTMENT CONSTRUCTION AND IS NOT OCCUPIED BY THE NEW STRUCTURE SHALL BE BACKFILLED WITH BACKFILL STRUCTURE.

THE QUANTITY FOR BACKFILL STRUCTURE, BID ITEM 210.0100, IS CALCULATED BASED ON THE APPLICABLE FIGURES 12.6-1 AND 12.6-2 IN THE WISCONSIN DEPARTMENT OF TRANSPORTATION BRIDGE MANUAL.

THE GRADATION OF THE STRUCTURE BACKFILL SHALL MEET THE REQUIREMENTS OF SECTION 209.2.2 OF THE STANDARD SPECIFICATIONS FOR GRADE 1 MATERIAL.

APPLY PROTECTIVE SURFACE TREATMENT TO THE TOP OF THE DECK, THE SIDES OF THE DECK AND EXTERIOR 12" OF THE UNDERSIDE OF THE DECK (CONCRETE MATERIAL ONLY).

THE EXISTING STRUCTURE (P-36-0907) IS A SINGLE SPAN CONCRETE DECK GIRDER STRUCTURE, SUPPORTED ON CONCRETE ABUTMENTS. THE STRUCTURE HAS A 24.0' CLEAR ROADWAY WIDTH AND A 33.0" OVERALL LENGTH AND SHALL BE REMOVED.

ALL STATIONS AND ELEVATIONS SHOWN ARE IN FEET.

THE EXISTING GROUNDLINE SHALL BE THE UPPER LIMITS OF EXCAVATION FOR STRUCTURES.

SLAB FALSEWORK SHALL BE SUPPORTED ON PILES OR THE SUBSTRUCTURE UNLESS AN ALTERNATIVE METHOD IS APPROVED BY THE ENGINEER IN THE FIELD.

THE FIRST OR FIRST TWO DIGITS OF A BAR MARK SIGNIFIES THE BAR SIZE.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-36-0222

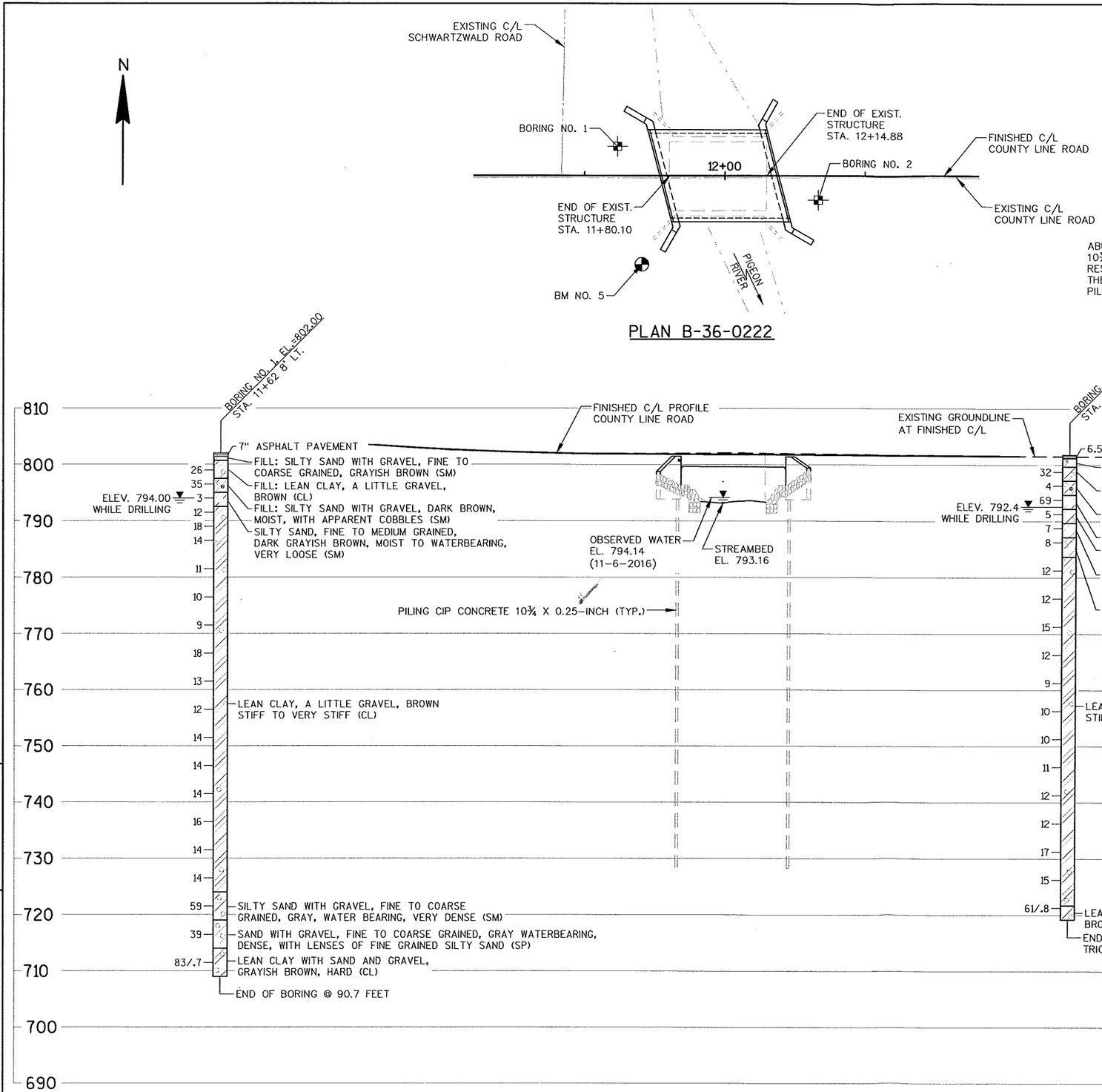
DRAWN BY RBH | PLANS CK'D. PTB

CROSS SECTION AND QUANTITIES

SHEET 2 OF 3

8

8



SOIL BORINGS

BY: AMERICAN ENGINEERING TESTING, INC.
3194 MARKET ST, SUITE C
GREEN BAY, WI 53704

ON: JANUARY 27-28, 2016

ABUTMENTS TO BE SUPPORTED ON PILING CIP CONCRETE 10¾ X 0.25-INCH DRIVEN TO A REQUIRED DRIVING RESISTANCE OF 130 TONS PER PILE AS DETERMINED BY THE MODIFIED GATES DYNAMIC FORMULA. ESTIMATE 68 FT. PILE LENGTHS AT BOTH ABUTMENTS.

STATE PROJECT NUMBER

4313-10-71

ABBREVIATIONS

F-Fine M-Medium C-Course
Ws-Weathered So-Sound

MATERIAL SYMBOLS

Asphalt, Silt, Sandstone, Sand, Peat, Limestone, Gravel, Clay, Igneous Rock

LEGEND OF PROBING

PROBING No.: Elevation
Station

95/6 = 96 Blows for 6" Penetration. Probing Taken with a 350# Weight Falling 18" on a 2" O.D. Point.

7 Average Blows Per Foot

Refusal 95/6

LEGEND OF BORING

Boring No.: Elevation
Station

Unconfined Strength — 7.7 8 *

Blows Per Ft. Using 140# Wt. Falling 30"

Wash Sample

Shelby Tube — S.T.

No Ground Water Observed Above This Elevation

Ground Water Elevation

Sandy Gravel
Boulders or Cobbles
F. Sand
Silty Clay
So. Limestone

UNLESS OTHERWISE SPECIFIED, THE BLOWS PER FOOT AT THE LOCATIONS INDICATED ARE BASED ON DRIVING A 2" O.D. X 1.4" I.D. SPLIT SPOON SAMPLER WITH A 140# HAMMER HAVING A FREE FALL OF 30". THE BLOW COUNT IS TAKEN IN UNDISTURBED SOIL IMMEDIATELY BELOW A CASED OR OPEN HOLE ELIMINATING SIDE FRICTION ON THE DRIVE PIPE.

SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

TO OBTAIN RELATIVE DATA CONCERNING THE CHARACTER OF MATERIAL IN AND UPON WHICH THE FOUNDATION MIGHT BE BUILT, BORINGS AND/OR SOUNDINGS WERE MADE AT POINTS APPROXIMATELY AS INDICATED ON THIS DRAWING. THE DATA PRESENTED HEREIN REPRESENTS THE FINDINGS OF THE SUBSURFACE EXPLORATIONS MADE. HOWEVER, BECAUSE THE DEPTHS INVESTIGATED ARE LIMITED AND THE AREA OF THE BORINGS AND/OR SOUNDINGS IS VERY SMALL IN RELATION TO THE ENTIRE AREA, THE WISCONSIN DEPARTMENT OF TRANSPORTATION DOES NOT WARRANT CONDITIONS BELOW THE DEPTHS INVESTIGATED OR THAT THE CLASSIFICATION OF MATERIAL ENCOUNTERED IN THESE INVESTIGATIONS IS NECESSARILY TYPICAL OF THE ENTIRE SITE.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-36-0222

DRAWN BY TMS | PLANS CK'D. PTB

SUBSURFACE EXPLORATION

SHEET 3 OF 3

8

8

FILE NAME : S:\PROJECTS\W11551 COUNTY LINE RD, MANITOWOC COUNTY\STRUCTURE\CAD FILES\PRELIMS\03 SOIL BORING.DWG
LAYOUT : BORING

PLOT DATE : 3/1/2016
PLOT TIME : 8:08:22 AM

PLOT BY : BOLAND, PATRICK

PLOT SCALE : 1" = 1'

2

2

EXISTING C/L
SCHWARTZWALD ROAD

TLE REQ'D

R/W

STREAMBED BASELINE

FEE REQ'D

EXISTING RIGHT
OF WAY

EXISTING STRUCTURE
STA. 11+80.10

EXISTING STRUCTURE
STA. 12+14.88

11+00

12+00

13+00

33'-0"

EXISTING C/L
COUNTY LINE ROAD

PROPOSED STRUCTURE
B-36-0222

FINISHED C/L
COUNTY LINE ROAD

GROUTED RIPRAP MEDIUM
OVER GEOTEXTILE
FABRIC TYPE 'HR'

TLE REQ'D

EXISTING RIGHT
OF WAY

TDS TELECOM

PIGEON
RIVER

EXISTING C/L
HIGHLAND ROAD

ALLIANT ENERGY

EXHIBIT C

PROJECT NO: 4313-10-71	HWY: COUNTY LINE RD	COUNTY: MANITOWOC	20-SCALE CONTOUR MAP	SHEET	E

FILE NAME : S:\PROJECTS\W11551 COUNTY LINE RD, MANITOWOC COUNTY\STRUCTURE\STRUCTURE SURVEY REPORT\HYDRAULICS\CONTOUR MAP.DWG
LAYOUT :

PLOT DATE : 2/26/2016
PLOT TIME : 7:54:19 AM

PLOT BY : BOLAND, PATRICK

PLOT SCALE : 1" = 1'

VARISH GEORGE P & WENDY LC

SIEMERS FARM, INC.

EXISTING ℄ SCHWARTZWALD ROAD

FINISHED C/L SCHWARTZWALD ROAD

0.06 ACRES OF FEE REQ'D

REMOVING OLD STRUCTURE OVER WATERWAY WITH MINIMAL DEBRIS STA. 11+97 (P-36-0907) SINGLE SPAN CONCRETE DECK GIRDER STRUCTURE 24.0' CLEAR ROADWAY WIDTH 33.0' OVERALL LENGTH

~LIMITS OF AGRICULTURE FIELD~

C/L STA. 11+41.59 COUNTY LINE ROAD
C/L STA. 50+00.00 SCHWARTZWALD ROAD

P.L.

R/W

EXISTING 18" CMP TO REMAIN

0.01 ACRES OF TLE REQ'D.

800.74
800.62
800.39
BM 2
1.2%
3.3%
N01°00'42"E
801.16
801.47
801.60
0.4%
0.2%
802.57
90°41'18"
801.51
803.23
2.0%
3.0%
11+00
50+00
2.0%
801.54
801.45
801.39
801.84
12+00
801.74
S89°40'20"E
2.0%
2.3%
13+00
801.24
801.53
803.45
802.58
2.5%
9.2%
801.89
2.0%
801.53
801.69
803.07
802.61
801.53
801.59
801.39
801.29
BM 5
801.40
CONCRETE BRIDGE APPROACH REQ'D TYP.

LUEBKE REVOC LIV TRUST NAOMI R

LIMITS OF DELINEATED WETLANDS

REALIGNING DITCH REQ'D (SEE CROSS SECTIONS)

FINISHED ℄ COUNTY LINE ROAD

BM 1

BM 4

EXISTING ℄ COUNTY LINE ROAD

33'

(ASPHALT)

33'

BM 3

BEGIN PROJECT
STA. 10+70
Y= 179,739.84
X= 227,943.53

ARNO W. PAARMANN

~LIMITS OF AGRICULTURE FIELD~

EXISTING ℄ HIGHLAND ROAD

STRUCTURE B-36-0222 REQ'D.

TDS TELECOM

ALLIANT ENERGY

PIGEON RIVER

0.03 ACRES OF TLE REQ'D

KERRY & SHERRY SEMPH

END PROJECT
STA. 13+00
Y= 179,969.84
X= 227,942.21

LEGEND

- GROUTED RIPRAP MEDIUM OVER GEOTEXTILE FABRIC TYPE HR
- DIRECTION OF FLOW
- XXXXXXXXX SAWING ASPHALT
- SILT FENCE
- TEMPORARY DITCH CHECK
- WETLANDS

5

5

808
806
804
802
800
798
796
794
792

VPC STA = 10+70.00
EL = 803.45

3.45%

VPT STA = 11+54.00
EL = 801.90

FINISHED ℄ PROFILE COUNTY LINE ROAD

EXISTING ℄ PROFILE COUNTY LINE ROAD

MATCH EXISTING
STA. 10+70
EL. = 803.45

STA. 10+70

PI STA 11+12.00
EL 802.00
K = 26.23'
L = 84.00'

HIGH WATER100
EL = 799.66

-0.25%

STA. 13+00

MATCH EXISTING
STA. 13+00
EL. = 801.53

HIGH WATER2
EL = 797.02

OBSERVED WATER
EL. 794.14
(11-6-2015)

S = +3.06%

END SPECIAL DITCH
STA. 13+00
EL. 796.83

EXISTING ℄ ELEVATION

FINISHED ℄ ELEVATION

BEGIN SPECIAL DITCH
STA. 11+97
EL. 793.62

STREAMBED
EL. 793.16

STA. 11+98
STRUCTURE B-36-0222 REQ'D.
SINGLE SPAN CONCRETE FLAT SLAB
CLEAR ROADWAY WIDTH = 30.0'
O.A.L. = 42.58'
SKEW = 15° RHF

808.79 808.20 807.61 807.01 806.40 805.78 805.10 804.42 803.76 803.13 803.12 802.52 802.59 802.22 802.20 801.92 801.97 801.96 801.88 802.02 801.83 802.07 801.78 801.93 801.73 801.84 801.68 801.73 801.63 801.63 801.58 801.53 801.53 801.49 801.44 801.41 801.38 801.34

9+00 9+20 9+40 9+60 9+80 10+00 10+20 10+40 10+60 10+80 11+00 11+20 11+40 11+60 11+80 12+00 12+20 12+40 12+60 12+80 13+00 13+20 13+40 13+60 13+80 14+00 14+20 14+40 14+60

BENCH MARKS

NO.	STA.	DESCRIPTION	ELEV.
1	14+20	3/4" IRON REBAR SET, 14.3' LT	800.54
2	11+24	3/4" IRON REBAR SET, 29.1' LT	801.16
3	8+96	3/4" IRON REBAR SET, 27.3' RT	808.38
4	13+99	STAR SPIKE IN POWER POLE, 30.1' RT	799.28
5	11+71	STAR SPIKE IN POWER POLE, 31.4' RT	798.23

EARTHWORK SUMMARY

EXCAVATION COMMON	=	C.Y.
FILL	=	C.Y.
FILL EXPANSION (25%)	=	C.Y.
BORROW	=	C.Y.

PROJECT NO: 4313-10-00	HWY: COUNTY LINE ROAD	COUNTY: MANITOWOC	PLAN AND PROFILE: MAINLINE	SHEET	E

FILE NAME : S:\PROJECTS\W11551 COUNTY LINE RD, MANITOWOC COUNTY\SHEETSPLAN\PLAN & PROFILE SHEETS\43131011-P&P.DWG
LAYOUT : SHEET - P&P

PLOT DATE : 3/1/2016
PLOT TIME : 8:22:56 AM

PLOT BY : BOLAND, PATRICK

PLOT SCALE : 1 IN:40 FT