RCB CULVERT REPLACEMENT - SINGLE BOX LETTING DATE 01-22-2020
STPN-136-1(73)--2J-23

CLINTON COUNTY - DESIGN 119, 319-719

CLINTON COUNTY

RCB CULVERT REPLACEMENT - SINGLE BOX

LEGEND

- INTERSTATE HIGHWAY
- PRIMARY HIGHWAY-DIVIDED
- PRIMARY HIGHWAY
- PORTLAND CEMENT CONCRETE ROAD
- ASPHALT ROAD
- BITUMINOUS ROAD
- GRAVEL ROAD
- EARTHEN ROAD
- INTERSTATE HIGHWAY (80)
- UNITED STATES HIGHWAY (65)
- STATE HIGHWAY (175)
- COUNTY HIGHWAY (527)
- RAILROAD
- PIPELINE
- AIRPORT
- HYDROLOGY
- BRIDGE
- STATE BOUNDARY
- COUNTY BOUNDARY
- CORPORATE BOUNDARY
- TOWNSHIP LINE
- SECTION LINE
- ROAD NAMES (ABBEY ROAD)
- UNINCORPORATED PLACE (ELWOOD)

IOWA DOT
Highway Division

PLANS OF PROPOSED IMPROVEMENTS ON THE

PRIMARY ROAD SYSTEM

CLINTON COUNTY

RCB CULVERT REPLACEMENT - SINGLE BOX

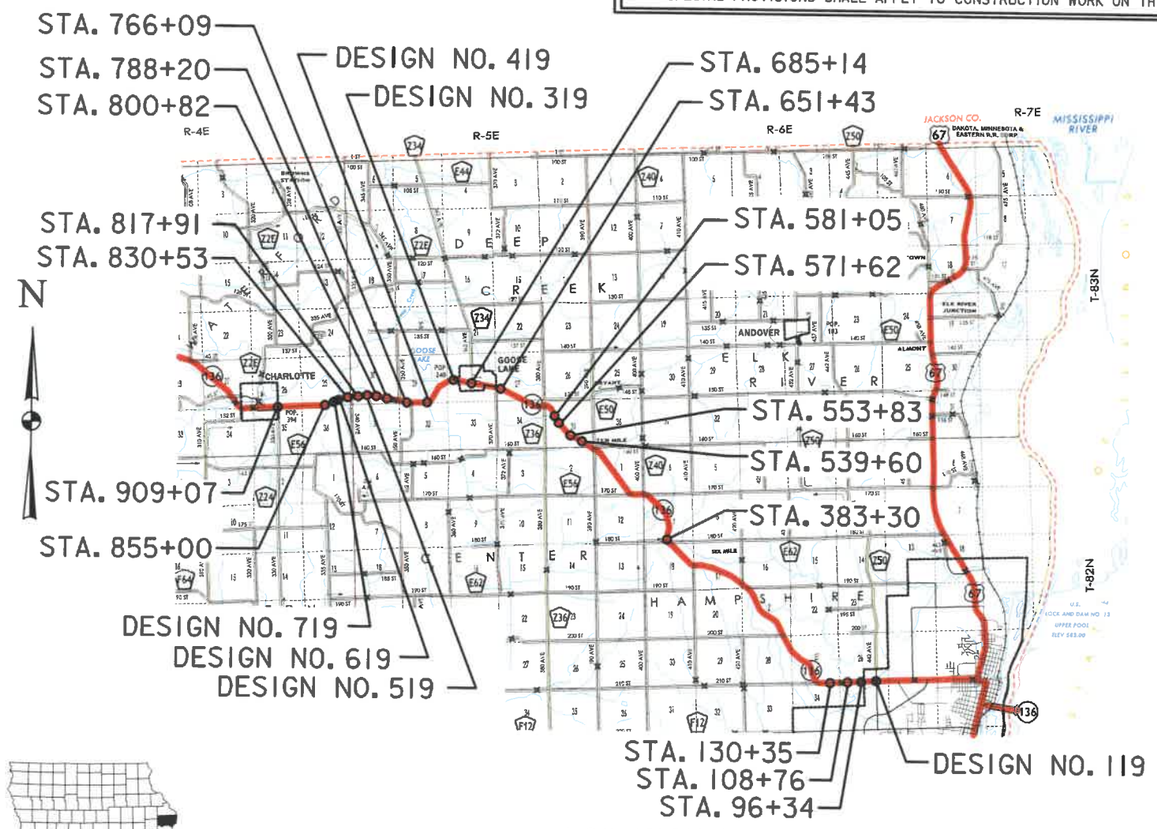
2.4 MILES W. OF US 67 NW TO CHARLOTTE

(6 - RCB & 15 - RCP LOCATIONS)

THE IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, SERIES 2015, PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.

SOVEREIGN LANDS CONSTRUCTION PERMIT 19-090 SHALL APPLY TO WORK ON THIS PROJECT. THE IOWA DNR CONSERVATION OFFICER FOR THE AREA SHALL BE CONTACTED AT LEAST 48 HOURS PRIOR TO COMMENCING WORK. CONTACT CURT KEMMERER AT 563-357-2035.

REVISIONS



LOCATION MAP

IOWA ONE CALL
1-800-292-8989
www.iowaonecall.com
811 Know what's below. Call before you dig.

	TOTAL SHEETS
	237
PROJECT NUMBER	
STPN-136-1(73)--2J-23	
R.O.W. PROJECT NUMBER	
PROJECT IDENTIFICATION NUMBER	
13-23-136-010	

INDEX OF SHEETS

NO.	DESCRIPTION
1	TITLE SHEET
2	ESTIMATE SHEET - DESIGN 119 PRECAST CULVERT
2-5	DES 119 PRECAST CULVERT
6	ESTIMATE SHEET - DESIGN 319 CAST IN PLACE CULVERT
6-11	DES 319 CAST IN PLACE CULVERT
12	ESTIMATE SHEET - DESIGN 419 CAST IN PLACE CULVERT
12-20	DES 419 CAST IN PLACE CULVERT
21	ESTIMATE SHEET - DESIGN 519 PRECAST CULVERT
21-24	DES 519 PRECAST CULVERT
25	ESTIMATE SHEET - DESIGN 619 PRECAST CULVERT
25-28	DES 619 PRECAST CULVERT
29	ESTIMATE SHEET - DESIGN 719 CAST IN PLACE CULVERT
29-35	DES 719 CAST IN PLACE CULVERT
SPS.1-SPS.8	SOIL PROFILE SHEETS
C.1	ESTIMATE SHEET FOR ROADWAY
A.1-W.74	ROADWAY SHEETS

STANDARD CULVERT PLANS

STANDARD CULVERT PLANS ARE LISTED ON INDIVIDUAL "ESTIMATED QUANTITIES" SHEETS.

STANDARD ROAD PLANS

STANDARD ROAD PLANS ARE LISTED ON SHEET NUMBER C.3

DESIGN DATA URBAN

REFER TO INDIVIDUAL SITUATION PLANS FOR TRAFFIC DATA INFORMATION

DESIGN DATA RURAL

REFER TO INDIVIDUAL SITUATION PLANS FOR TRAFFIC DATA INFORMATION

INDEX OF SEALS

SHEET NO.	NAME	TYPE
1	GORDON L. PORT	STRUCTURAL DESIGN
SPS.1	MARK DELL	GEOTECHNICAL DESIGN
A.1	BRANDYN G. CHEZICK	ROADWAY DESIGN
CULVERT STANDARDS	NORMAN L. McDONALD	STRUCTURAL DESIGN

STRUCTURAL DESIGN

LICENSED PROFESSIONAL ENGINEER Gordon L Port 8377 IOWA

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature Date

Gordon L. Port
Printed or Typed Name

My license renewal date is December 31, 2020

Pages or sheets covered by this seal: SHEETS 1-35

PROJECT DIRECTORY NAME: 2313601013

11/4/2019 9:20:49 AM wb L:\DEPT\6\7805.43\DRAWINGS\WORKING\BRG_23136073.dgn 23D-19S000 11x17_pdf.pltcfg

ESTIMATED CULVERT QUANTITIES

ITEM NO.	ITEM CODE	ITEM	UNIT	TOTAL	AS BUILT QUANTITY
1	2102-0425071	SPECIAL BACKFILL	CY	19.5	
2	2107-3825025	GRANULAR MATERIAL FOR BLANKET AND SUBDRAIN	CY	47.0	
3	2401-6745650	REMOVAL OF EXISTING STRUCTURES	LS	1.00	
4	2415-2110805	PRECAST CONCRETE BOX CULVERT, 8 FT. X 5 FT.	LF	70.0	
5	2415-2200805	PRECAST CONCRETE BOX CULVERT STRAIGHT END SECTION, 8 FT. X 5 FT.	EACH	2	
6	2418-0000010	TEMPORARY STREAM DIVERSION	LS	1	

ITEM NO.	ESTIMATE REFERENCE INFORMATION
1	RECLAIMED ASPHALT PAVEMENT (RAP) AND RECLAIMED HMA SHALL NOT BE USED FOR THE SPECIAL BACKFILL. INCLUDES COST OF 6" THICK GRANULAR BEDDING (SPECIAL BACKFILL).
2	AN APPROXIMATE 1 FOOT THICK WORKING BLANKET CONSISTING OF MACADAM STONE (GRADATION NO. 13, WITHOUT CHOKE STONE COURSE) IS RECOMMENDED TO BE INSTALLED BELOW THE GRANULAR BEDDING LAYER. SEE SHEET SPS.1. WORKING BLANKET IS OPTIONAL AND CAN BE ALTERED OR DELETED IF NOT NEEDED AT TIME OF CONSTRUCTION.
3	INCLUDES ALL WORK FOR REMOVAL AND OFF-SITE DISPOSAL OF THE EXISTING 6'x4' RCB. REMOVAL OF SCHEDULED ITEMS SHALL BE IN ACCORDANCE WITH SECTION 2401, OF THE STANDARD SPECIFICATIONS. ANY DAMAGE TO MATERIAL NOT TO BE REMOVED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND REPAIRED AT NO EXTRA COST TO THE STATE.
4	INCLUDES MATERIAL AND LABOR ASSOCIATED WITH PROVIDING AND INSTALLING THE CULVERT TIES, LIFTING HOLE PLUGS, ENGINEERING FABRIC, JOINT MATERIAL, AND GROUT AS REQUIRED. INCLUDES MATERIALS AND LABOR TO CAST 24" DIAMETER REINFORCED CONCRETE PIPE INTO CULVERT WALL AS NOTED AND SHOWN IN THESE PLANS. SEE THE SITUATION PLAN AND "PIPE CONNECTION NOTES" FOR MORE INFORMATION.
5	INCLUDES MATERIAL AND LABOR ASSOCIATED WITH PROVIDING AND INSTALLING THE CULVERT TIES, LIFTING HOLE PLUGS, ENGINEERING FABRIC, JOINT MATERIAL, AND GROUT AS REQUIRED. INCLUDES 2 PRECAST END SECTIONS, 2 PRECAST LINTEL BEAMS, AND 2 PRECAST CURTAIN WALLS, 1 EACH FOR 0 DEGREE AND 15 DEGREE SKEW.

STANDARDS:
FOR DETAILS AND NOTES NOT SHOWN REFER TO THE FOLLOWING IOWA D.O.T. - HIGHWAY STANDARDS:

DESIGN 119		
STANDARD	ISSUED	REVISED
PRCB G1-13	1-13	7-16
PRCB G2-13	1-13	7-16
PRCB 8-13	1-13	-
PES 1-13-T1	1-13	7-16
PES 1-13-T3	1-13	7-16
PES 2-13-T3	1-13	7-16
PES 3-13-T3	1-13	7-16

NOTE:
ROADWAY QUANTITIES SHOWN ELSEWHERE IN THESE PLANS.

DESIGN HISTORY AT THIS SITE
(INCLUDES THIS DESIGN)

DES. NO.	TYPE OF WORK
9	FEDERAL AID PROJECT NO. 189 6'x4' CONCRETE CULVERT EXTENSION
119	8'x5'x72' PRECAST REINFORCED CONCRETE BOX CULVERT

DESIGN FOR 10° SKEW (RA)

8'x5'x72' PRECAST REINFORCED CONCRETE BOX CULVERT

ESTIMATED QUANTITIES

STATION 80+13.55 NOVEMBER, 2018

CLINTON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 1 OF 4 FILE NO. 31558 DESIGN NO. 119

whks
engineers + planners + land surveyors

11/4/2019 10:37:35 AM wb L:\DEPT\6\7805.43\DRAWINGS\WORKING\BRG_23136073.dgn 230119S001 11x17_pdf.pltcfg

GENERAL NOTES:

IT IS THE INTENT OF THIS DESIGN TO REPLACE THE EXISTING 6'x4' RCB WITH A 8'x5'x72' PRECAST REINFORCED CONCRETE BOX CULVERT.

ELECTRONIC COPIES OF ORIGINAL DESIGN PLANS ARE AVAILABLE TO THE CONTRACTOR AS PART OF THE E-FILES SUPPLIED WITH THE CONTRACT DOCUMENTS. DIMENSIONS SHOWN ON THESE PLANS ARE BASED ON THE DIMENSIONS SHOWN ON THE PLANS REFERENCED IN THE "DESIGN HISTORY AT THIS SITE" ON DESIGN SHEET 1.

FAINT LINES ON PLANS INDICATE EXISTING STRUCTURE.

UTILITY COMPANIES AND MUNICIPALITIES WHOSE FACILITIES ARE SHOWN ON THE PLANS OR KNOWN TO BE WITHIN THE CONSTRUCTION LIMITS SHALL BE NOTIFIED BY THE CONTRACTOR OF THE CONSTRUCTION STARTING DATE.

THE PRECAST R.C.B. CULVERT SECTIONS ARE DESIGNED FOR HL-93 LIVE LOAD AND EARTH FILLS OF 2-9 FEET.

THE PRECAST R.C.B. BARREL AND END SECTIONS SHALL CONFORM TO IOWA D.O.T. SINGLE PRECAST R.C.B. CULVERT STANDARDS. AT THE CONTRACTOR'S OPTION, PRECAST BARREL SECTIONS MAY CONFORM TO ASTM C1577.

EXCESS CLASS 20 EXCAVATION MATERIAL SUITABLE FOR BACKFILLING SHALL BE STOCKPILED AT THE CONSTRUCTION SITE, AS DIRECTED BY THE ENGINEER.

THE BID ITEM "REMOVAL OF EXISTING STRUCTURES" SHALL INCLUDE ALL COSTS ASSOCIATED WITH REMOVING THE 6'x4' RCB. REMOVALS SHALL BE IN ACCORDANCE WITH SECTION 2401 OF THE STANDARD SPECIFICATIONS.

THE LENGTH IN LINEAR FEET OF PRECAST REINFORCED CONCRETE BOX CULVERT WILL BE BASED ON THE PLAN QUANTITY. FOR THE NUMBER OF LINEAR FEET GIVEN ON THE PLAN, THE CONTRACTOR WILL BE PAID THE CONTRACT UNIT PRICE PER LINEAR FOOT. THE PAYMENT SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, LABOR AND EQUIPMENT NECESSARY TO COMPLETE THE WORK EXCEPT FOR BID ITEMS "PRECAST CONCRETE BOX CULVERT STRAIGHT END SECTION", "CLASS 20 EXCAVATION", "CLASS E REVETMENT", "MOBILIZATION", AND "SPECIAL BACKFILL".

FOR EACH PRECAST BOX CONCRETE CULVERT STRAIGHT END SECTION INSTALLED THE CONTRACTOR WILL BE PAID THE CONTRACT PRICE PER EACH. THE PAYMENT SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL (INCLUDING LINTEL BEAMS AND CURTAIN WALLS), LABOR AND EQUIPMENT NECESSARY TO COMPLETE THE WORK EXCEPT FOR BID ITEMS "PRECAST CONCRETE BOX CULVERT", "CLASS 20 EXCAVATION", "CLASS E REVETMENT", "MOBILIZATION" AND "SPECIAL BACKFILL".

THE CURTAIN WALL AND THE TYPE 3 LINTEL BEAM OR TYPE I PARAPET SHALL BE PRECAST.

THE CONTRACTOR SHALL FURNISH AND INSTALL CULVERT TIES FOR ALL JOINTS. THE MAIN SECTION JOINTS WILL HAVE ONE TIE ON EACH SIDE OF THE BARREL AND THE LAST BARREL SECTION WILL BE ATTACHED TO THE END SECTIONS WITH TWO TIES PER SIDE. THE END SECTION JOINTS WILL HAVE TWO TIES PER SIDE.

CULVERT TIES SHALL BE INCLUDED IN THE COST FOR PRECAST CONCRETE BOX CULVERT. TIE RODS WILL BE 1 INCH DIAMETER STEEL AND SHALL MEET REQUIREMENTS OF ASTM A709 GRADE 36 OR EQUAL.

CULVERT TIE ASSEMBLIES SHALL BE GALVANIZED AFTER FABRICATION.

THE LIMITS FOR EXCAVATION FOR THE PRECAST CONCRETE BOX CULVERT SHALL BE AS SHOWN ON THE "GRANULAR BEDDING DETAIL".

A MINIMUM OF 6 INCHES OF GRANULAR MATERIAL WITH A MAXIMUM AGGREGATE SIZE OF $\frac{3}{8}$ INCH SHALL BE USED AS BEDDING FOR THE PRECAST CONCRETE BOX CULVERT. THE BEDDING SHALL BE SHAPED TO A FLAT BASE USING A TEMPLATE. THE 6 INCH GRANULAR BEDDING SHALL BE BID AS SPECIAL BACKFILL.

THE CONTRACTOR SHALL SUBMIT DETAILS OF THE PROPOSED PRECAST CONCRETE BOX SECTIONS FOR ALL PROJECTS. THE DETAILS SHALL INCLUDE THE FOLLOWING INFORMATION AS FOUND ON THE "SUBMITTAL SHOP DRAWING" STANDARD SHEET:

A. A SITUATION PLAN DRAWING SHOWING THE BACK TO BACK PARAPET DIMENSION FOR THE LINE OF THE CULVERT SECTIONS.
B. DIMENSION THE NUMBER OF PRECAST SECTIONS AND SECTION LENGTHS.
C. A DETAIL OF THE PRECAST BARREL SECTIONS SHOWING A CROSS SECTION VIEW OF THE SECTION, STEEL LOCATIONS, DIMENSIONS, ETC.
D. A DETAIL OF THE PRECAST CONCRETE CULVERT END SECTION SHOWING A CROSS SECTION VIEW OF THE SECTIONS, STEEL LOCATIONS, DIMENSIONS, ETC. SIMILAR TO THE END SECTION DETAILS SHOWN IN THE IDOT STANDARDS.

THE CONTRACTOR SHALL PROVIDE ALL INFORMATION SHOWN ON THE SUBMITTAL SHOP DRAWING SHEET REGARDLESS OF WHICH PRECAST CONCRETE BOX OPTION IS SELECTED. SHOP DRAWINGS SHALL BE SUBMITTED WITH THE FOLLOWING NAMING CONVENTION:

(Paren)_County_DesignNumber_SubmittalDescription.pdf
Example: (090)_BlackHawk_Design915_DeckDrains.pdf

APPROVAL OF DETAILS IS NOT REQUIRED FOR PROJECTS CONFORMING TO "ASTM C1577" AND "IDOT STANDARDS" PRECAST CONCRETE BOX OPTIONS WITH END SECTIONS CONFORMING TO "IDOT STANDARDS." HOWEVER, THE DETAILS SHALL BE RECEIVED BY THE OFFICE OF BRIDGES AND STRUCTURES PRIOR TO THE START OF FABRICATION.

APPROVAL OF DETAILS IS REQUIRED FOR "NONSTANDARD" PRECAST CONCRETE BOX OPTIONS AND "NONSTANDARD" END SECTION OPTIONS. BOXES AND END SECTIONS REQUIRING OPENINGS OR ATTACHMENTS SHALL BE CONSIDERED NONSTANDARD. THE CONTRACTOR SHALL ALLOW THIRTY WORKING DAYS FOR THE ENGINEER'S REVIEW PRIOR TO THE START OF FABRICATION.

DETAILS REQUIRING APPROVAL SHALL BE DESIGNED AND SEALED BY A PROFESSIONAL ENGINEER CURRENTLY REGISTERED IN THE STATE OF IOWA. BOXCAR SOFTWARE VERSION 3.1 OR LATER, OR OTHER EQUIVALENT SOFTWARE, CAN BE USED TO DESIGN THE PRECAST CONCRETE BOX CULVERT BARREL SECTIONS; PROVIDING THE ANALYSIS MEETS THE MINIMUM REQUIREMENTS ESTABLISHED FOR THE IDOT STANDARDS AS FOUND IN THE IDOT BRIDGE DESIGN MANUAL. THE MINIMUM REQUIREMENTS INCLUDE REINFORCEMENT CLEARANCE REQUIREMENTS USED IN THE "IDOT STANDARDS."

THE ROADWAY WILL BE CLOSED TO TRAFFIC DURING CONSTRUCTION. SEE TRAFFIC CONTROL PLAN NOTE.

INSTALLATION NOTES:

PRECAST CONCRETE BOX CULVERT SECTIONS SHALL BE LAID WITH THE GROOVE END OF EACH SECTION UP-GRADE, AND THE SECTIONS SHALL BE TIGHTLY JOINED. CONCRETE TIES TO BE USED ONLY TO HOLD BOX SECTIONS TOGETHER, NOT FOR PULLING SECTIONS TIGHT. JOINT OPENINGS BETWEEN SECTIONS SHOULD BE AS TIGHT AS PRACTICABLE AND LIMITED TO A MAXIMUM OF $\frac{3}{4}$ INCH OPENINGS. THE JOINT ON THE BOTTOM OF THE CULVERT SHALL BE SEALED WITH A FLEXIBLE WATER TIGHT 1 INCH BUTYL ROPE GASKET AS PER MATERIALS I.M. 491.09.

BUTYL ROPE GASKET SHALL BE INSTALLED IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE MANUFACTURER AND SHALL EXTEND VERTICALLY 6 INCHES ABOVE THE BOTTOM FILLET. ALL JOINTS SHALL BE TRIMMED CLEAN ON THE INSIDE AFTER SEALING.

THE CONTRACTOR SHALL PLACE A 2 FOOT WIDE PIECE OF ENGINEERING FABRIC AROUND THE TOP AND SIDES OF EACH PRECAST JOINT. THE FABRIC SHALL BE CENTERED WITH 1 FOOT ON EACH SIDE OF THE JOINT, THE FABRIC SHALL BE ATTACHED TO THE WALLS AND TOP OF EACH SECTION TO PREVENT THE FABRIC FROM SLIPPING OFF THE JOINT DURING BACKFILLING OPERATIONS. ATTACHMENT METHODS SHALL BE APPROVED BY THE ENGINEER. ALL COSTS INCLUDING MATERIAL AND LABOR ASSOCIATED WITH PROVIDING THE ENGINEERING FABRIC AND INSTALLING IT AS REQUIRED SHALL BE INCLUDED IN THE BID ITEMS "PRECAST CONCRETE BOX CULVERT" AND "PRECAST CONCRETE BOX CULVERT STRAIGHT END SECTION". THE ENGINEERING FABRIC SHALL BE IN ACCORDANCE WITH ARTICLE 4196.01, B, 3, OF THE STANDARD SPECIFICATIONS.

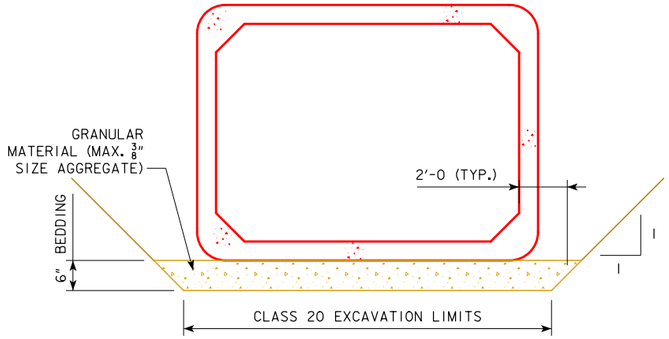
CLASS E REVETMENT WILL BE PLACED AROUND BOTH PRECAST CONCRETE BOX CULVERT END SECTIONS, AS SHOWN IN THESE PLANS.

DURING BACKFILLING THE COMPACTION ADJACENT TO THE BOTTOM CORNER RADII OR CHAMFER SHALL BE ACCOMPLISHED WITH A MECHANICAL HAND COMPACTOR.

THE CONTRACTOR SHALL FURNISH AND INSTALL LIFTING HOLE PLUGS FOR EACH SECTION. LIFTING HOLES SHALL BE PLUGGED WITH A PRECAST CONCRETE PLUG OR PLASTIC PLUG APPROVED BY THE ENGINEER, SEALED AND COVERED WITH A 2'-0 x 2'-0 PIECE OF ENGINEERING FABRIC CENTERED OVER THE HOLE AND ATTACHED TO THE SECTION TO PREVENT THE FABRIC FROM SLIPPING.

SINCE PRECAST CONCRETE BOX CULVERT END SECTIONS HAVE THE FORESLOPE LOCATED AT THE BOTTOM OF THE PARAPET INSTEAD OF THE TOP (AS IN THE CASE OF CAST IN PLACE RCB CULVERTS) THE MAIN BARREL SECTION HAS BEEN LENGTHENED.

ALL REINFORCING BARS AND BARS NOTED AS DOWELS SUPPLIED FOR THIS STRUCTURE SHALL BE DEFORMED REINFORCEMENT UNLESS OTHERWISE NOTED OR SHOWN.



GRANULAR BEDDING DETAIL

GRANULAR MATERIAL SHALL TERMINATE 3'-0 SHORT OF THE PRECAST CURTAIN WALL.

PIPE CONNECTION NOTES:

THE CONTRACTOR SHALL NOTE THAT A 24" REINFORCED CONCRETE PIPE IS TO BE CAST INTO THE WEST WALL OF THE CULVERT AS SHOWN ON THE SITUATION PLAN. THE FLOW LINE OF THE PIPE IS TO BE EL. 645.32' WHERE THE PIPE INTERSECTS THE INSIDE FACE OF THE CULVERT WALL. THE PIPE SHALL PROJECT INTO THE CULVERT 6" MIN. AND 12" MAX.

THE PRECAST CONCRETE BOX CULVERT SEGMENT INTERSECTED BY THE REINFORCED CONCRETE PIPE SHALL BE PRODUCED WITH A BLOCKOUT TO RECEIVE THE REINFORCED CONCRETE PIPE. THE BLOCKOUT SHALL BE 4" (MIN.) GREATER THAN THE DIMENSION OF THE PIPE. SHOP DRAWINGS SHALL INDICATE THE BLOCKOUT LOCATION AND DIMENSIONS AND ANY SPECIAL REINFORCING DETAILS REQUIRED. DESIGN CALCULATIONS SHALL SHOW THE ABILITY OF THIS SEGMENT TO CARRY THE DESIGN LOADS SPECIFIED IN THE STANDARD SPECIFICATIONS AND THESE PLANS.

THE CONTRACTOR SHALL FURNISH A 4 FOOT SECTION OF 24" DIAMETER REINFORCED CONCRETE PIPE. AFTER SETTING THE CULVERT SEGMENTS, THE 4 FOOT SECTION OF PIPE SHALL BE TEMPORARILY SUPPORTED IN THE FINAL POSITION. FORMS SHALL INSTALLED ON BOTH FACES OF THE CULVERT WALL AROUND THE PIPE AND FLOWABLE MORTAR SHALL BE PLACED TO COMPLETELY FILL THE BLOCKOUT VOID AROUND PILE. THE CONTRACTOR SHALL REMOVE THE FORMS AND TEMPORARY SUPPORTS ONCE THE FLOWABLE MORTAR HAS SET IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

THE 4 FOOT SECTION OF PIPE AND ALL LABOR AND MATERIALS (INCLUDING FLOWABLE MORTAR) TO CAST THE 24" REINFORCED CONCRETE PIPE INTO THE WEST OF THE CULVERT IS TO BE CONSIDERED INCIDENTAL TO THE UNIT PRICE BID FOR "PRECAST CONCRETE BOX CULVERT, 8 FT. x 5 FT.".

NOTE:
POLLUTION PREVENTION PLAN SHOWN ELSEWHERE IN THESE PLANS.

TRAFFIC CONTROL PLAN
NOTE: THE ROADWAY WILL BE CLOSED TO THRU TRAFFIC. REFER TO THE TRAFFIC CONTROL PLAN SHOWN ELSEWHERE IN THESE PLANS.

DESIGN FOR 10° SKEW (RA)

8'x5'x72' PRECAST REINFORCED CONCRETE BOX CULVERT

CULVERT GENERAL NOTES

STATION 80+13.55 NOVEMBER, 2018

CLINTON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 2 OF 4 FILE NO. 31558 DESIGN NO. 119

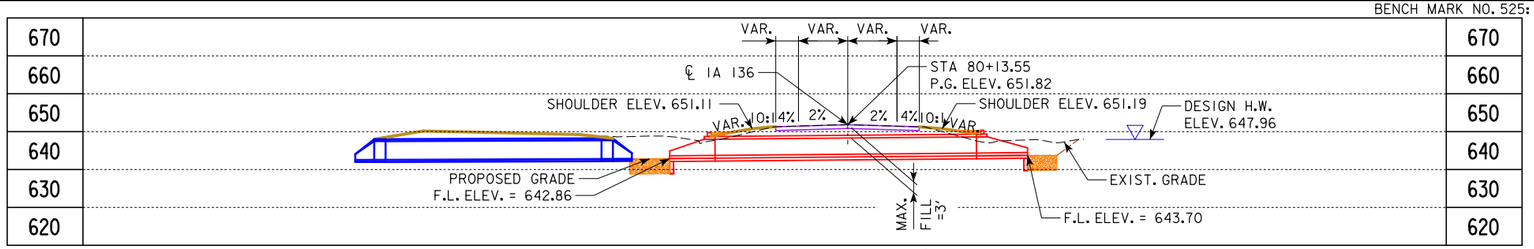
whks
engineers + planners + land surveyors

DESIGN TEAM: DA/BH/JS	PRECAST CULVERT GENERAL NOTES	STANDARD SHEET 108IP (MODIFIED)	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER 3

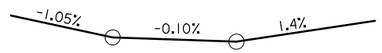
11/4/2019 10:37:43 AM wb L:\DEPT\6\7805.43\DRAWINGS\WORKING\BRG_23136073.dgn 230119S002 11x17_pdf.pltcfg

REVISED 03-2017 - CHANGED BID ITEM REFERENCES TO "SPECIAL BACKFILL" (WAS "GRANULAR BACKFILL").
REVISED 04-2017 - REMOVED REFERENCE "TO THE OFFICE OF BRIDGES AND STRUCTURES" IN NOTE STATING TO SUBMIT DETAILS OF PROPOSED PRECAST BOX SECTIONS. ADDED NOTE STATING "SHOP DRAWINGS SHALL BE SUBMITTED WITH THE FOLLOWING NAMING CONVENTION".
REVISED 09-2017 - CORRECTED TYPOS.
ENGLISHPRECASTCULVERTS.DGN - 108IP - THIS SHEET ISSUED 01-13.

BENCH MARK NO. 525: STA. 79+96.5, 33.3' RT. FOUND NGS DISK ON INLET HEADWALL 8x4 RCB
EL = 650.01



LONGITUDINAL SECTION ALONG ℄ CULVERT



PROPOSED PROFILE GRADE ON IA 136

NOTES:

ALL UNITS ARE IN FEET UNLESS OTHERWISE NOTED OR SHOWN.

SEE ROAD SHEETS FOR ADDITIONAL INFORMATION ON PROPOSED GRADING LIMITS.

DRAINAGE THROUGH EXISTING CULVERT/CHANNEL MUST BE MAINTAINED THROUGHOUT CONSTRUCTION.

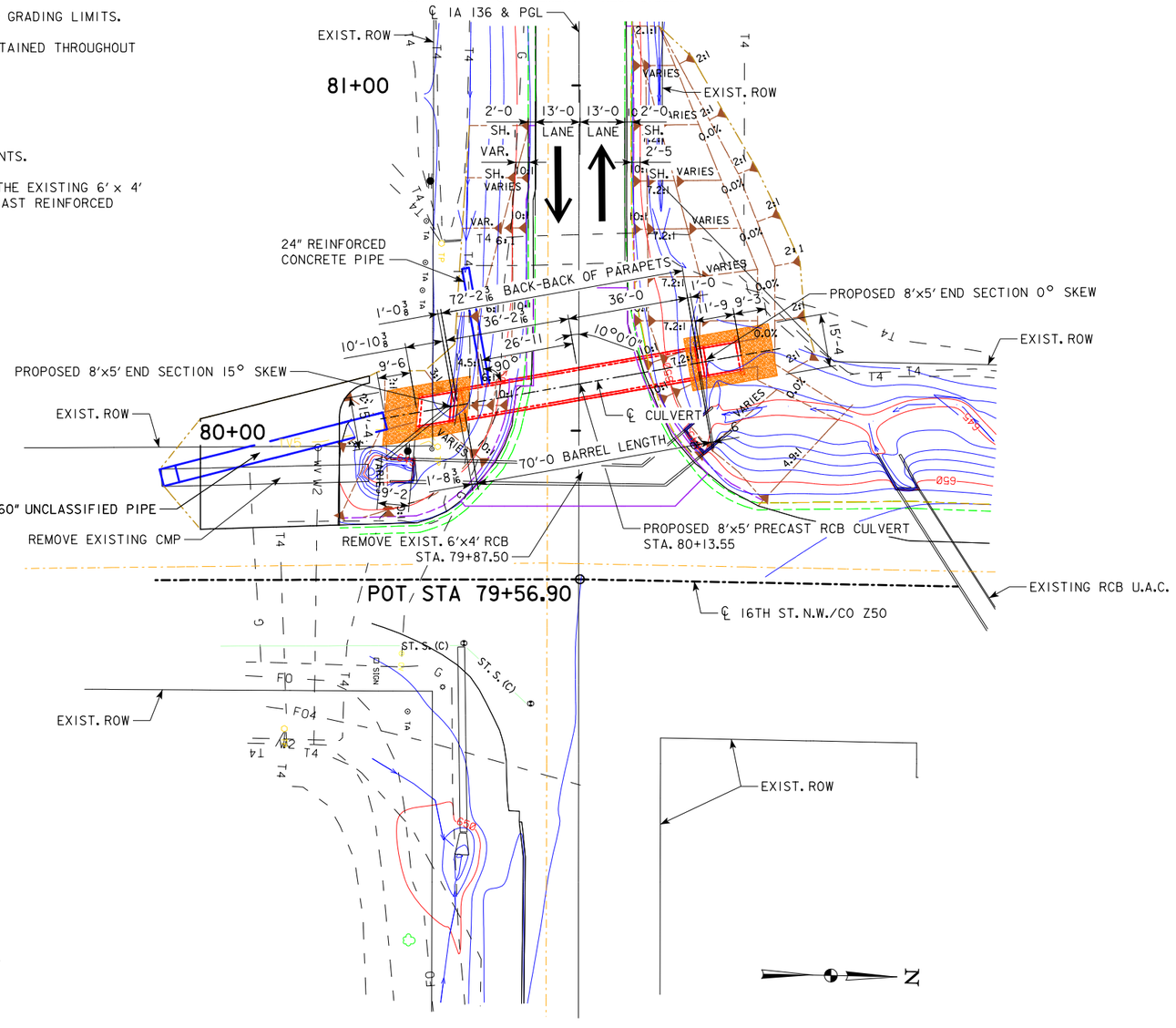
SEE H SHEETS FOR RIGHT OF WAY.

HEADWALLS SHALL BE PLACED LEVEL.

SEE STANDARD ROAD PLAN DR-111 FOR BACKFILLING REQUIREMENTS.

IT IS THE INTENT OF THIS DESIGN TO REMOVE AND REPLACE THE EXISTING 6' x 4' REINFORCED CONCRETE BOX CULVERT WITH A 8' x 5' x 71' PRECAST REINFORCED CONCRETE BOX.

DESIGN FILL HEIGHT = 3'-0
ANTICIPATED SETTLEMENT = NEGLIGIBLE



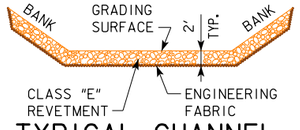
SITUATION PLAN

HYDRAULIC DATA

DRAINAGE AREA = 275 ACRES FLAT
Q_{50} = 206 CFS
HW ELEV. = 647.96

UTILITIES LEGEND:

St.S.(C)- STIC CITY OF CLINTON - QUALITY DI
-T4- TL4D CENTURY LINK - QUALITY DI
-TV5- TV5D MEDIACOM - QUALITY DI
-W2- WL2D IA AMERICAN WATER CO. - QUALITY DI
-G- GLID ALLIANT ENERGY - QUALITY DI
-FO- FOID WINDSTREAM - QUALITY DI
-FO4- FO4D CENTURY LINK - QUALITY DI



TYPICAL CHANNEL PROTECTION

ESTIMATED REVETMENT QUANTITIES INCLUDED WITH ROAD PLANS

LOCATION	REVETMENT CL. "E" (TON)	ENGINEERING FABRIC (SY)
INLET	28.3	85.4
OUTLET	29.8	88.0
TOTALS	58.1	173.3

QUANTITIES SHOWN FOR INFORMATION ONLY. SEE ROAD SHEETS.

TRAFFIC ESTIMATE

2014 AADT 2030 V.P.D.

LOCATION

ON IA 136 OVER DRAINAGE DITCH
T-82N R-6E
SECTION 26/35
HAMPSHIRE TOWNSHIP
CLINTON COUNTY
CITY OF CLINTON
LATITUDE 41.873839
LONGITUDE -90.223614

DESIGN FOR 10° SKEW (RA)

8'x5'x72' PRECAST REINFORCED CONCRETE BOX CULVERT

SITUATION PLAN

STATION 80+13.55 NOVEMBER, 2018

CLINTON COUNTY

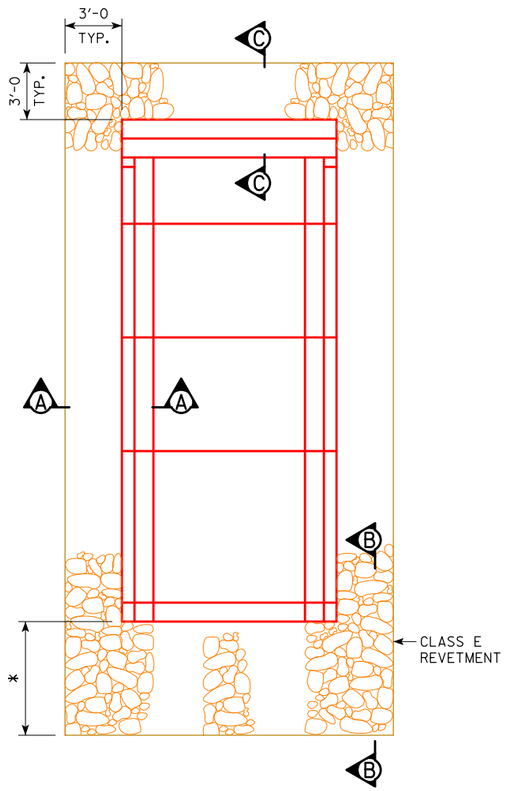
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 3 OF 4 FILE NO. 31558 DESIGN NO. 119

whks engineers + planners + land surveyors

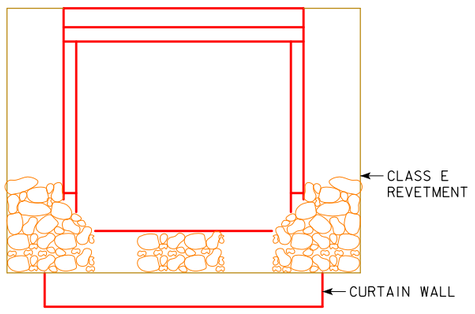
DESIGN TEAM: DA/BH/JS | CLINTON COUNTY | PROJECT NUMBER STPN-136-1(73)--2J-23 | SHEET NUMBER 4

11/4/2019 10:37:43 AM wb L:\DEPT\6\7805.43\DRAWINGS\WORKING\BRG_23136073.dgn 230119S003 11x17_pdf.pltcfg



PLAN VIEW

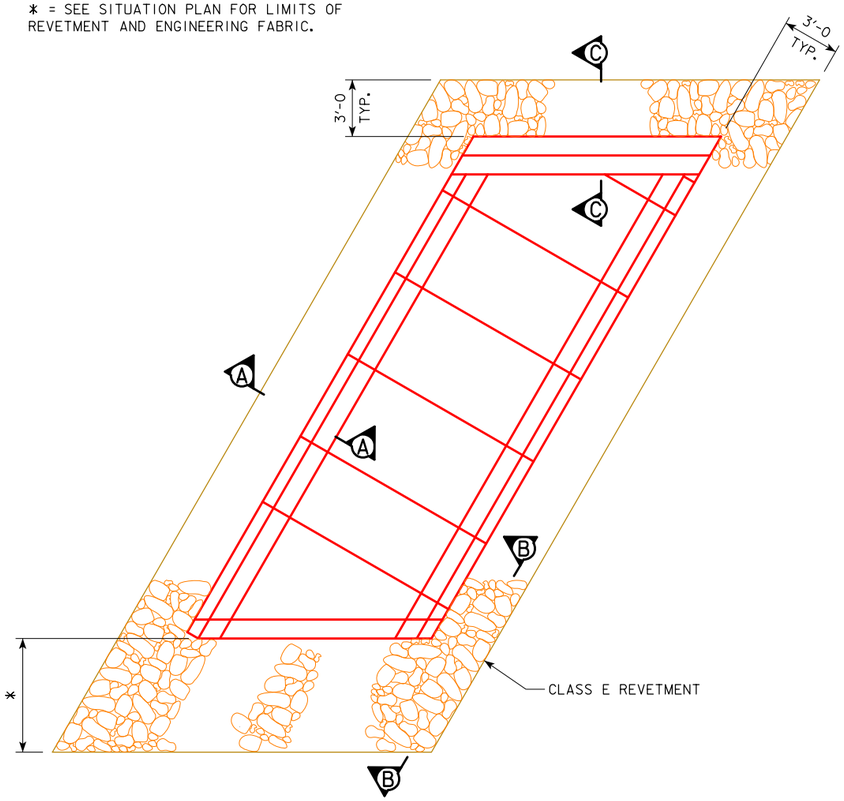
* = SEE SITUATION PLAN FOR LIMITS OF REVETMENT AND ENGINEERING FABRIC.



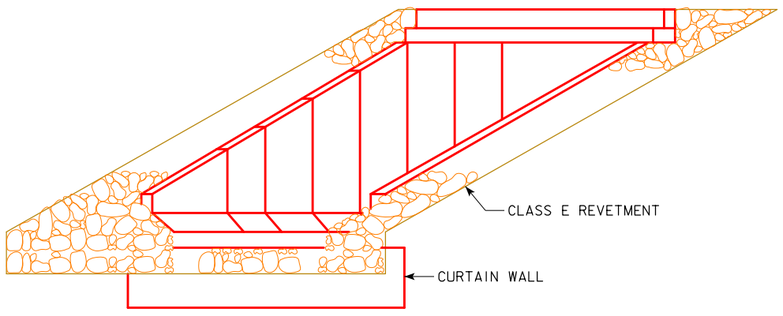
ELEVATION VIEW

NON-SKEW END SECTIONS

* = SEE SITUATION PLAN FOR LIMITS OF REVETMENT AND ENGINEERING FABRIC.

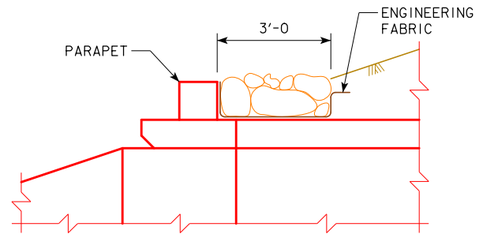


PLAN VIEW



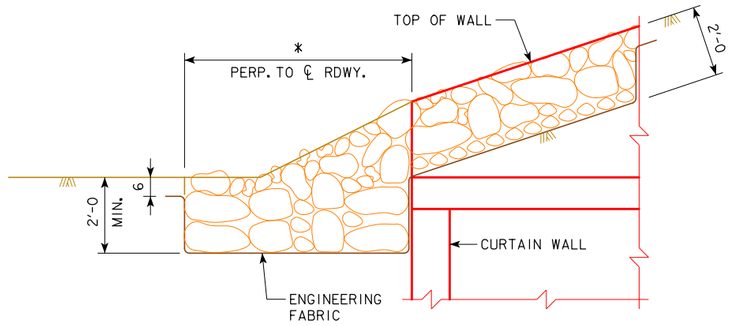
ELEVATION VIEW

15° SKEWED END SECTIONS

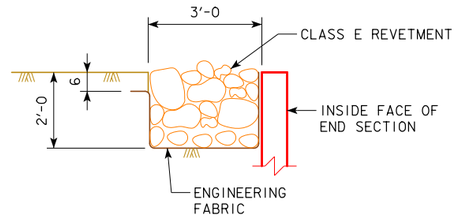


SECTION C-C

* = SEE SITUATION PLAN FOR LIMITS OF REVETMENT AND ENGINEERING FABRIC.



SECTION B-B



SECTION A-A

TYPICAL DETAILS

CONSTRUCTION NOTES:

CLASS E REVETMENT SHOULD BE USED AND PLACED ACCORDING TO ARTICLE 2507.03 OF THE STANDARD SPECIFICATIONS.

THE ENGINEERING FABRIC SHALL MEET THE MATERIAL REQUIREMENTS IN ACCORDANCE WITH ARTICLE 4196.01, B, 3 OF THE STANDARD SPECIFICATIONS.

DESIGN FOR 10° SKEW (RA)

8'x5'x72' PRECAST REINFORCED CONCRETE BOX CULVERT

REVETMENT PROTECTION DETAILS

STATION 80+13.55 NOVEMBER, 2018

CLINTON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 4 OF 4 FILE NO. 31558 DESIGN NO. 119

whks
engineers + planners + land surveyors

REVISED 10-14 - CHANGED THE AREA OF THE REVETMENT TO INCLUDE THE AREA IN FRONT OF THE APRON. CHANGED THE DEPTH OF REVETMENT TO 2'-0.
REVISED 12-15 - ADDED NOTE "SEE CULVERT PLANS FOR LIMITS OF REVETMENT AND ENGINEERING FABRIC."
ENGLISH\SIGNEDPRECASTCULVERTS.DGN - PEP 1-13 - THIS SHEET ISSUED 01-13.

11/4/2019 10:37:44 AM wb L:\DEPT\6\7805.43\DRAWINGS\WORKING\BRG_23136073.dgn 230119S004 11x17_pdf.pltcfg

ESTIMATED CULVERT QUANTITIES

ITEM NO.	ITEM CODE	ITEM	UNIT	TOTAL	AS BUILT QUANTITY
1	2401-6750001	REMOVALS, AS PER PLAN	LS	1.00	
2	2403-0100020	STRUCTURAL CONCRETE (RCB CULVERT)	CY	35.1	
3	2404-7775000	REINFORCING STEEL	LB	5866	
4	2418-0000010	TEMPORARY STREAM DIVERSION	LS	1	

ITEM NO. — ESTIMATE REFERENCE INFORMATION

1 INCLUDES ALL WORK FOR REMOVAL AND OFF-SITE DISPOSAL AS DETAILED ON THE SITUATION PLAN. REMOVAL OF SCHEDULED ITEMS SHALL BE IN ACCORDANCE WITH SECTION 2401, OF THE STANDARD SPECIFICATIONS. ANY DAMAGE TO MATERIAL NOT TO BE REMOVED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND REPAIRED AT NO EXTRA COST TO THE STATE.

SPECIFICATIONS:

DESIGN: AASHTO LRFD 5th Ed, SERIES OF 2010.

CONSTRUCTION: IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, SERIES 2015, PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.

DESIGN STRESSES:

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 5th Ed, SERIES OF 2010.
REINFORCING STEEL IN ACCORDANCE WITH AASHTO LRFD SECTION 5, GRADE 60.
CONCRETE IN ACCORDANCE WITH AASHTO LRFD SECTION 5, f'c = 4.0 KSI.

STANDARDS:
FOR DETAILS AND NOTES NOT SHOWN REFER TO THE FOLLOWING IOWA D.O.T. - HIGHWAY STANDARDS:

DESIGN 319		
STANDARD	ISSUED	REVISED
PWH 15-1-12	4-12	12-16
PWH 15-2-12	4-12	12-16
PWH 15-3-12	4-12	7-16
PWH 15-4-12	4-12	-
PWH 15-8-12	4-12	7-16

SUMMARY OF REINFORCING STEEL

LOCATION	QUANTITY	TOTAL
16'-0 BENT BARREL EXTENSION	2306	2306
HEADWALL 15° SKEW	3482	3482
5z1 BARS	78	78
	TOTAL (LBS.)	5866

CONCRETE PLACEMENT QUANTITIES

LOCATION	FOOTING	WALLS	SLAB	TOTAL
16'-0 BENT BARREL EXTENSION	4.5	6.8	3.5	14.8
HEADWALL 15° SKEW	9.9	9.3	1.1*	20.3
TOTAL (C.Y.)	14.4	16.1	4.6	35.1

* INCLUDES PARAPET AND TOP OF WINGWALL.

DESIGN HISTORY AT THIS SITE
(INCLUDES THIS DESIGN)

DES. NO.	TYPE OF WORK
---	ORIGINAL 6'x8'x33'-6 REINFORCED CONCRETE BOX CULVERT. PLANS NOT AVAILABLE.
319	8'x5' REINFORCED CONCRETE BOX CULVERT EXTENSION

NOTE:
ROADWAY QUANTITIES SHOWN ELSEWHERE IN THESE PLANS.

whks
engineers + planners + land surveyors

DESIGN FOR 0° SKEW

6'x8' REINFORCED CONCRETE BOX CULVERT EXTENSION

ESTIMATED QUANTITIES

STATION 704+69.70 — NOVEMBER, 2018

CLINTON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 1 OF 6 FILE NO. 31558 DESIGN NO. 319

REVISED 11-2016 - ADDED THE WORD "THEREFORE" TO THE PARAGRAPH STATING THE HIGHWAY WILL NOT BE CLOSED, IN THE GENERAL NOTES.
REVISED 02-2017 - UPDATED THE PARAGRAPH STATING THE HIGHWAY WILL NOT BE CLOSED, IN THE GENERAL NOTES TO MATCH WHAT IS WORDED IN THE DESIGN MANUAL. UPDATED PARAGRAPH DISCUSSING THE REMOVAL OF EXISTING CULVERT.
ENGLISHSINGLECULVERTS.DGN - 1043s2 - THIS SHEET ISSUED 10-08.

GENERAL NOTES:

IT IS THE INTENT OF THIS DESIGN TO EXTEND THE EXISTING 6′ x 8′ R.C.B. CULVERT ON THE NORTH END.

PLANS OF THE EXISTING STRUCTURE ARE NOT AVAILABLE. ELECTRONIC COPIES OF ORIGINAL ROADWAY PLANS ARE AVAILABLE TO THE CONTRACTOR AS PART OF THE E-FILES SUPPLIED WITH THE CONTRACT DOCUMENTS. DIMENSIONS SHOWN ON THESE PLANS ARE BASED ON ROADWAY PLANS.

FAINT LINES ON PLANS INDICATE EXISTING STRUCTURE.

UTILITY COMPANIES AND MUNICIPALITIES WHOSE FACILITIES ARE SHOWN ON THE PLANS OR KNOWN TO BE WITHIN THE CONSTRUCTION LIMITS SHALL BE NOTIFIED BY THE CONTRACTOR OF THE CONSTRUCTION STARTING DATE.

THE R.C.B. CULVERT EXTENSION SECTIONS ARE DESIGNED FOR HL-93 LIVE LOAD AND EARTH FILL OF 2 FEET. THIS DESIGN IS BASED ON LOAD AND RESISTANCE FACTOR DESIGN, ACCORDING TO THE 2010 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

VERTICAL EARTH PRESSURE, EV=0.120 kcf.

HORIZONTAL EARTH PRESSURE, EHmax = 0.060 kcf MAX, EHmin = 0.030 kcf.

THE CONTRACTOR MAY SUBMIT ALTERNATE FROST TROUGH DIMENSIONS FOR APPROVAL. ANY ADDITIONAL COSTS DUE TO CHANGE IN THE FROST TROUGH DIMENSIONS IS TO BE PAID FOR BY THE CONTRACTOR.

FLOOR OF BARREL IS TO BE FINISHED SMOOTH. SIDES OF FOOTING ARE TO BE FORMED TO INSURE CORRECT LINE AND GRADE.

THE PERMISSIBLE CONSTRUCTION JOINT AT THE TOP OF THE WALLS MAY BE LOWERED AT THE CONTRACTOR'S OPTION WITH ENGINEER'S APPROVAL.

THE VERTICAL BARS IN THE WALLS MAY BE SPLICED ABOVE THE FOOTING AT THE CONTRACTOR'S OPTION AS FOLLOWS:

BAR SIZE NUMBER	4	5	6	7	8
MINIMUM SPLICE LENGTH	21"	26"	31"	41"	54"

THIS SPLICE, IF USED WILL BE AT THE CONTRACTOR'S EXPENSE.

METAL BAR CHAIRS SPACED AT NOT OVER 3′-0 C.-C. IN EITHER DIRECTION ARE TO BE USED TO SUPPORT ALL SLAB AND FLOOR STEEL AS OUTLINED IN THE STANDARD SPECIFICATIONS.

THE REINFORCEMENT SUPPLIED FOR THIS STRUCTURE SHALL BE GRADE 60.

REINFORCING BAR CLEARANCES WILL BE AS FOLLOWS:

EDGE CLEARANCES: 2" EXCEPT
TOP OF FLOOR 2¼" TO NEAR TRANSV. REINF. BAR
BOTTOM OF FLOOR 3½" TO NEAR TRANSV. REINF. BAR
END CLEARANCES:
VERTICAL TOP 2"
VERTICAL BOTTOM 3" OR 3½" IF OVERALL HEIGHT OF THE CULVERT IS NOT TO A FULL INCH
TRANSVERSE 2"

ALL REINFORCING BARS AND BARS NOTED AS DOWELS SUPPLIED FOR THIS STRUCTURE SHALL BE DEFORMED REINFORCEMENT UNLESS OTHERWISE NOTED OR SHOWN.

EXCESS CLASS 20 EXCAVATION MATERIAL SUITABLE FOR BACKFILLING SHALL BE STOCKPILED AT THE CONSTRUCTION SITE, AS DIRECTED BY THE ENGINEER. CLASS 20 EXCAVATION MATERIAL UNSUITABLE FOR BACKFILLING SHALL BE DISPOSED OF IN A MANNER THAT WILL LEAVE THE SITE IN A NEAT CONDITION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE SITES FOR EXCESS EXCAVATED MATERIAL. NO PAYMENT FOR OVERHAUL WILL BE ALLOWED FOR MATERIAL HAULED TO THESE SITES.

THE PRICE BID FOR "REMOVALS AS PER PLAN" SHALL INCLUDE THE COST FOR REMOVALS OF PORTIONS OF THE EXISTING CULVERT AND THE SETTING OF THE DOWEL REINFORCING BARS INTO EXISTING CONCRETE.

ALL DIMENSIONS AND DETAILS SHOWN ON THESE PLANS PERTINENT TO NEW CONSTRUCTION IN RELATION TO EXISTING PORTIONS OF THE STRUCTURE SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR BEFORE STARTING CONSTRUCTION.

THE REMOVAL OF THE EXISTING CULVERT SHALL BE AT THE FRONT FACE OF THE EXISTING PARAPET. REMOVALS SHALL BE ON A VERTICAL PLANE PARALLEL WITH THE FRONT FACE OF THE EXISTING PARAPET, AND TO THE WIDTH OF THE FLOOR OF THE PROPOSED EXTENSION. THE WALLS SHALL BE CUT NORMAL TO THE BARREL WALLS AND AS SHOWN ON THE "PART REMOVAL PLAN". THE REMOVAL LINE SHALL BE INITIATED WITH A 2½"± DEEP SAW CUT ON THE TOP AND BOTH SIDES OF EACH WALL, AND ACROSS THE TOP OF THE FLOOR. THIS SAW CUT SHOULD CUT THRU ANY EXISTING LONGITUDINAL REINFORCING THEREBY FACILITATING A NEAT NON-SPALLED BREAK LINE. IF EXISTING TOP OF PARAPETS WILL BE WITHIN 0′-6 OF PROPOSED SUBGRADE ELEVATION, THE PARAPETS SHALL BE REMOVED DOWN TO AN ELEVATION 1"± ABOVE THE TOP OF THE EXISTING SLAB. ANY EXISTING PARAPET VERTICAL BARS EXPOSED DURING PARAPET REMOVAL SHALL BE CUT OFF FLUSH WITH THE PARAPET REMOVAL LINE AND PAINTED WITH TWO COATS OF ZINC RICH PAINT.

ALL REMOVALS SHALL BE CAREFULLY ACCOMPLISHED AND ANY CONCRETE DAMAGED BY THE CONTRACTOR THAT IS NOT TO BE REMOVED SHALL BE REPAIRED BY THE CONTRACTOR AT NO EXTRA COST TO THE STATE. REMOVALS SHALL BE IN ACCORDANCE WITH SECTION 2401 OF THE STANDARD SPECIFICATIONS.

THE ROADWAY WILL BE OPEN TO TRAFFIC DURING CONSTRUCTION.

SINCE THE HIGHWAY WILL NOT BE CLOSED TO TRAFFIC DURING THIS CONSTRUCTION, THE CONTRACTOR MAY FEEL TEMPORARY SHORING (SHEET PILE OR OTHER) IS NECESSARY TO ENSURE THAT THE SHOULDER WILL NOT SLOUGH IN WHILE CULVERT IS BEING EXTENDED. HOWEVER, IF FOR ANY REASON SUCH SHORING IS DEEMED NECESSARY, THE CULVERT CONTRACTOR SHALL SUBMIT THE SHORING PLAN TO THE ENGINEER FOR APPROVAL. COST OF SHORING, IF REQUIRED, WILL BE CONSIDERED INCIDENTAL TO CONSTRUCTION AND NO DIRECT PAYMENT WILL BE MADE. THEREFORE, ALL MATERIAL USED FOR SHORING SHALL REMAIN THE PROPERTY OF THE CONTRACTOR. IN ADDITION TO THE REQUIREMENTS NOTED ABOVE, ARTICLE 1107.07, OF THE STANDARD SPECIFICATIONS, STILL APPLIES.

THE PROPOSED CULVERT EXTENSION SHALL ABUT AGAINST THE FRONT FACE OF THE EXISTING PARAPET. 5zl x 2′-6 DOWEL REINFORCING BARS WITH A 10" MINIMUM EMBEDMENT INTO EXISTING CONCRETE SHALL BE SET AROUND THE ENTIRE PERIPHERY OF THE EXISTING CULVERT. 5zl DOWEL REINFORCING BARS SHALL BE CENTERED IN THE EXISTING SLAB, WALLS AND FLOOR. 5zl DOWEL REINFORCING BARS SHALL BE AT 1′-0 MAXIMUM SPACING C.-C. OF DOWELS. 5zl DOWEL REINFORCING BARS SHALL BE SET WITH POLYMER GROUT IN ACCORDANCE WITH ARTICLE 2301.03, E, OF THE STANDARD SPECIFICATIONS, AND CURRENT SUPPLEMENTAL SPECIFICATIONS OF THE IOWA D.O.T. HIGHWAY DIVISION.

KEYWAY DIMENSIONS SHOWN ON THE PLANS ARE BASED ON NOMINAL DIMENSIONS UNLESS STATED OTHERWISE. IN ADDITION, THE BEVEL USED ON THE KEYWAY SHALL BE LIMITED TO A MAXIMUM OF 10 DEGREES FROM VERTICAL.

THESE BRIDGE PLANS LABEL ALL REINFORCING STEEL WITH ENGLISH NOTATION (5a1 IS $\frac{5}{8}$ INCH DIAMETER BAR). ENGLISH REINFORCING STEEL RECEIVED IN THE FIELD MAY DISPLAY THE FOLLOWING "BAR DESIGNATION". THE "BAR DESIGNATION" IS THE STAMPED IMPRESSION ON THE REINFORCING BARS, AND IS EQUIVALENT TO THE BAR DIAMETER IN MILLIMETERS.

ENGLISH SIZE	3	4	5	6	7	8	9	10	11
BAR DESIGNATION	10	13	16	19	22	25	29	32	36

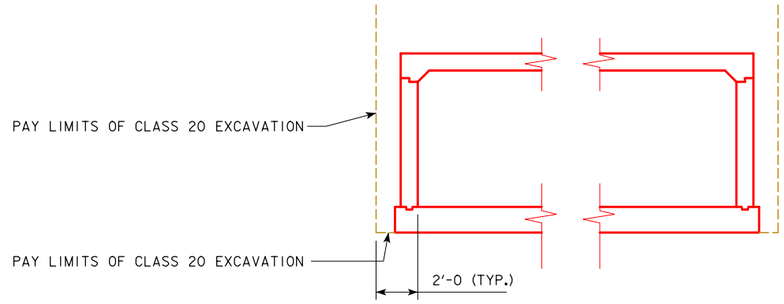
TRAFFIC WILL BE MAINTAINED AT ALL TIMES IN ACCORDANCE WITH THE TRAFFIC CONTROL PLANS SHOWN IN THESE PLANS.

TRAFFIC CONTROL ADJACENT TO THE CULVERT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR CONSTRUCTING THE CULVERT AND IS TO COORDINATE CONSTRUCTION OF THE CULVERT WITH THE CONTRACTOR DOING THE GRADING.

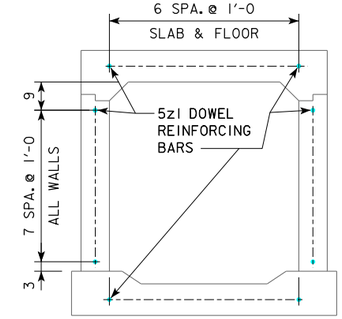
ANY DIMENSIONAL TRANSITION BETWEEN THE EXISTING STRUCTURE AND THE EXTENSION SHALL BE MADE IN THE FIRST 1′-0 MINIMUM AND 3′-0 MAXIMUM OF NEW WORK. THE TRANSITION SLOPE SHALL BE 1:6 OR SHALLOWER.

WHEN DE-WATERING PRESENTS A PROBLEM FOR PLACING THE CURTAIN WALLS AS DETAILED, ALTERNATE METHODS SUCH AS STEEL SHEET PILE AND PRECAST CONCRETE WALLS MAY BE APPROVED BUT AT NO ADDITIONAL COST. THE CONTRACTOR IS TO SUBMIT TO THE ENGINEER FOR APPROVAL COMPLETE DRAWINGS OF THE PROPOSED CURTAIN WALL ALTERNATE BEFORE BEGINNING CONSTRUCTION.

THE CLASS 20 EXCAVATION QUANTITY IS BASED ON THE ASSUMPTION THAT AT THE START OF CULVERT CONSTRUCTION, THE EXISTING GROUNDLINE SHOWN ON THE "SITUATION PLAN" ON DESIGN HAS REMAINED UNDISTURBED AND NO ROADWAY FILL HAS BEEN PLACED.



EXCAVATION DETAIL



SECTION NEAR EXTENSION
(SHOWING SPACING OF 5zl DOWEL BARS)

REINFORCING STEEL EXTENSION DOWELS						
BAR	LOCATION	SHAPE	NO./JT.	TOTAL NO.	LENGTH	WEIGHT
5zl	EXTENSION JOINT		30	30	2′-6	78

TRAFFIC CONTROL PLAN
NOTE: THE ROADWAY WILL BE OPEN TO THRU TRAFFIC. REFER TO THE TRAFFIC CONTROL PLAN SHOWN ELSEWHERE IN THESE PLANS.

NOTE:
POLLUTION PREVENTION PLAN SHOWN ELSEWHERE IN THESE PLANS.

whks
engineers + planners + land surveyors

DESIGN FOR 0° SKEW

6′x8′ REINFORCED CONCRETE BOX CULVERT EXTENSION

CULVERT GENERAL NOTES

STATION 704+69.70 NOVEMBER, 2018

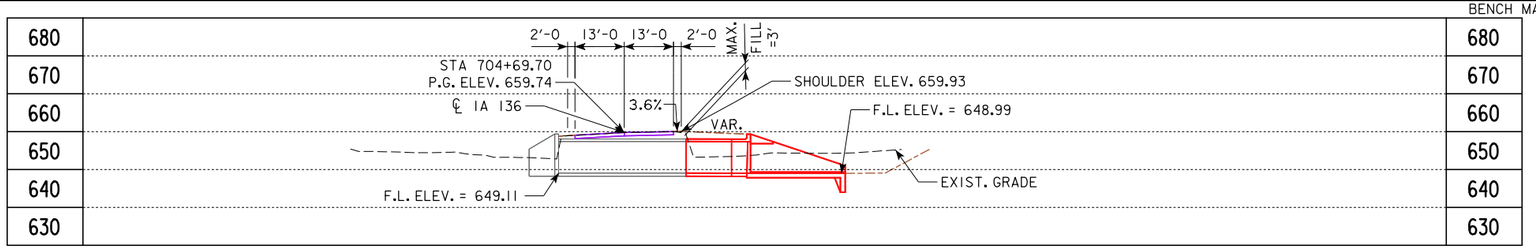
CLINTON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 2 OF 6 FILE NO. 31558 DESIGN NO. 319

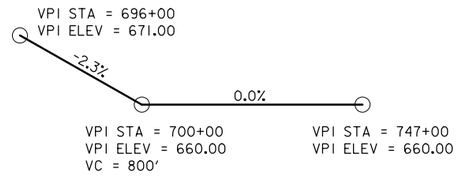
DESIGN TEAM: DA/BH/JS	CULVERT EXTENSION DETAILS (SHEET 2 OF 2)	STANDARD SHEET 1043s2 (MODIFIED)	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER 7

BENCH MARK NO. 515, STA. 705+00.9. SET RR SPIKE ON N SIDE OF PP 39.9' RT.
EL = 655.82



LONGITUDINAL SECTION ALONG ℄ CULVERT

DESIGN FILL HEIGHT = 2'-0
ANTICIPATED SETTLEMENT = NEGLIGIBLE



PROPOSED PROFILE GRADE ON IA 136

NOTES:

ALL UNITS ARE IN FEET UNLESS OTHERWISE NOTED OR SHOWN.

SEE ROAD SHEETS FOR ADDITIONAL INFORMATION ON PROPOSED GRADING LIMITS.

DRAINAGE THROUGH EXISTING CULVERT/CHANNEL MUST BE MAINTAINED THROUGHOUT CONSTRUCTION.

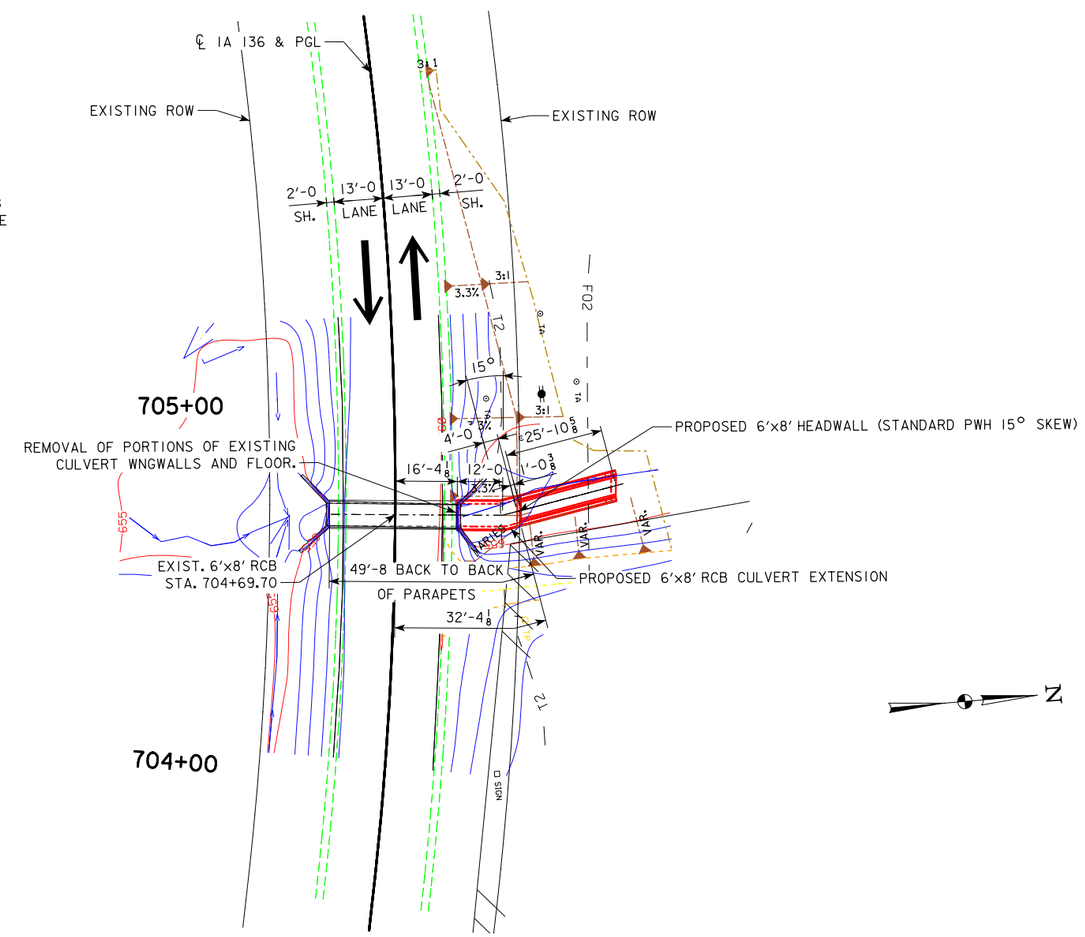
SEE H SHEETS FOR RIGHT OF WAY.

HEADWALLS SHALL BE PLACED LEVEL.

SEE GENERAL NOTES AND REMOVAL DETAILS FOR LIMITS OF EXISTING NORTH HEADWALL REMOVAL.

SOUTH END DOES NOT SATISFY CLEAR ZONE.

IT IS THE INTENT OF THIS DESIGN TO EXTEND THE EXISTING 6'x 8' REINFORCED CONCRETE BOX CULVERT BY REMOVING THE HEADWALL TO THE FACE OF THE PARAPET ON THE NORTH END AND ADDING A 6'x 8'x 16' REINFORCED CONCRETE BOX CULVERT EXTENSION WITH HEADWALL ON THE NORTH END.



HORIZONTAL CURVE DATA

Δ = 40° 26' 10.46" (LT)
T = 351.71
L = 673.98
R = 954.99
E = 62.71

HYDRAULIC DATA

DRAINAGE AREA = 600 ACRES FLAT
Q_{50} = 367 CFS

UTILITIES LEGEND:

-T2- TL2D PRESTON TELEPHONE - QUALITY DI
-FO2- FO2D PRESTON TELEPHONE - QUALITY DI

TRAFFIC ESTIMATE

2014 AADT 1240 V.P.D.

LOCATION

ON IA 136 OVER DRAINAGE DITCH
T-83N R-5E
SECTION 28
DEEP CREEK TOWNSHIP
CLINTON COUNTY
CITY OF GOOSE LAKE
LATITUDE 41.967252
LONGITUDE -90.390574

DESIGN FOR 0° SKEW

6'x8' REINFORCED CONCRETE BOX CULVERT EXTENSION

SITUATION PLAN

STATION 704+69.70 NOVEMBER, 2018

CLINTON COUNTY

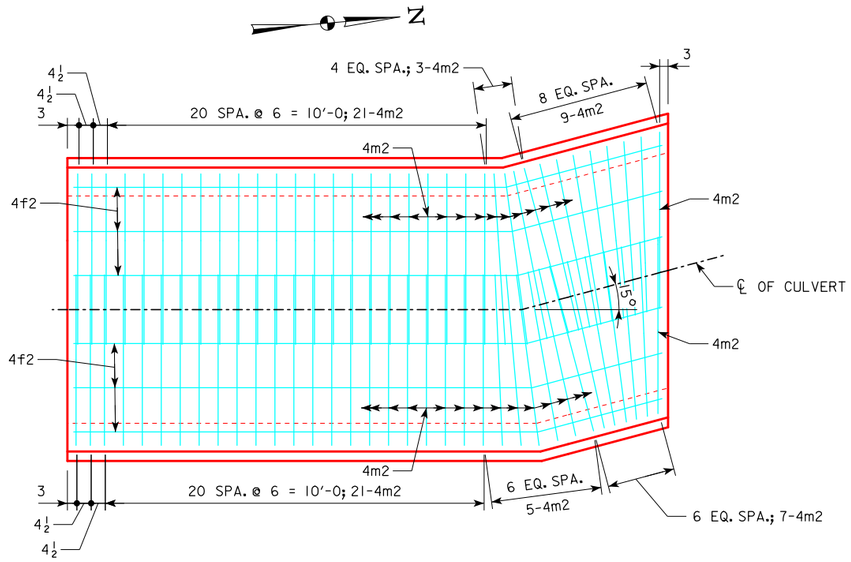
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 3 OF 6 FILE NO. 31558 DESIGN NO. 319

whks engineers + planners + land surveyors

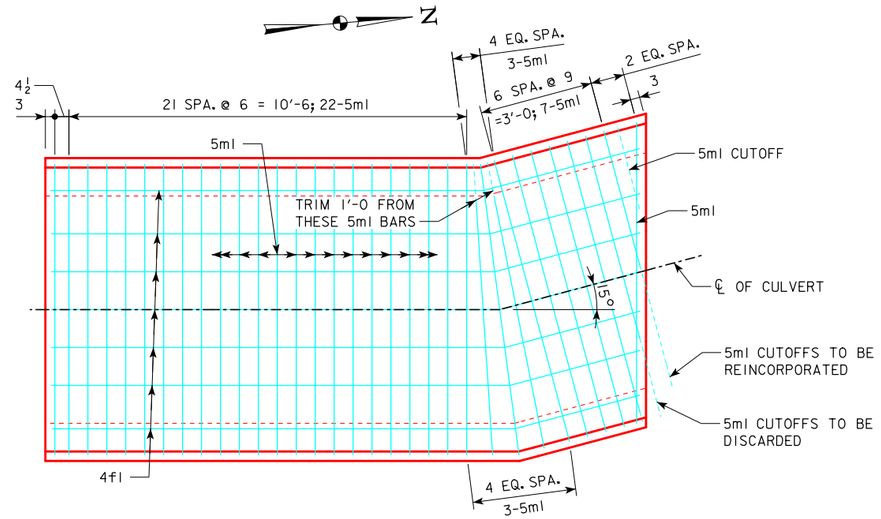
DESIGN TEAM: DA/BH/JS | CLINTON COUNTY | PROJECT NUMBER STPN-136-1(73)--2J-23 | SHEET NUMBER 8

11/4/2019 10:37:46 AM wb L:\DEPT\6\7805.43\DRAWINGS\WORKING\BRG_23136073.dgn 230319S003 11x17_pdf.pltcfg



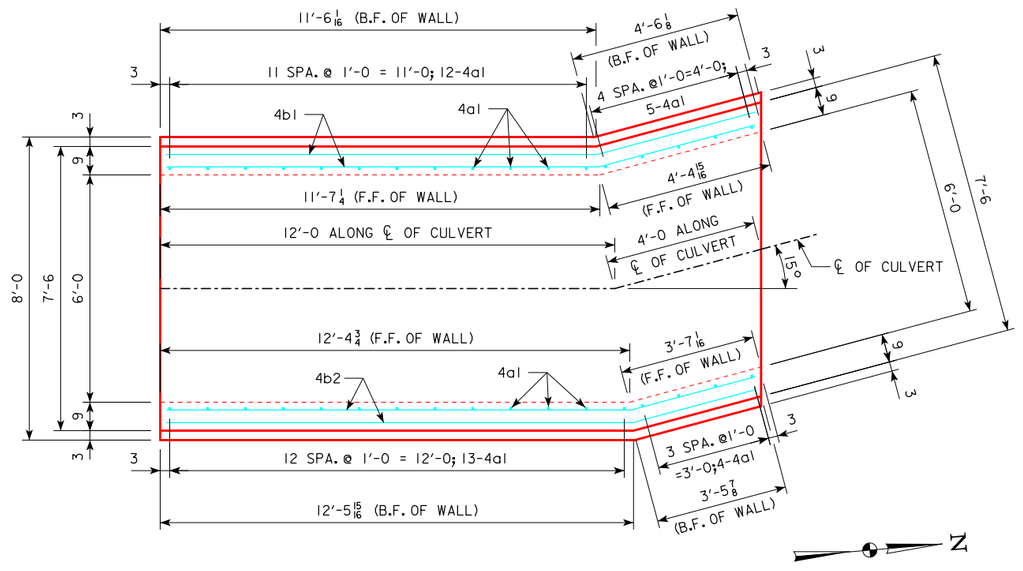
PLAN VIEW OF BOTTOM REINFORCING OF FLOOR

(FLARE 4m2 BARS AS SHOWN TO MAINTAIN EQ. SPA.)



PLAN VIEW OF TOP REINFORCING OF FLOOR

(FLARE 5m1 BARS THROUGH BEND TO MAINTAIN EQ. SPA.)



PLAN VIEW OF WALL REINFORCING

whks
engineers + planners + land surveyors

DESIGN FOR 0° SKEW

6'x8' REINFORCED CONCRETE BOX CULVERT EXTENSION

FLOOR & WALL REINF. DETAILS

STATION 704+69.70 NOVEMBER, 2018

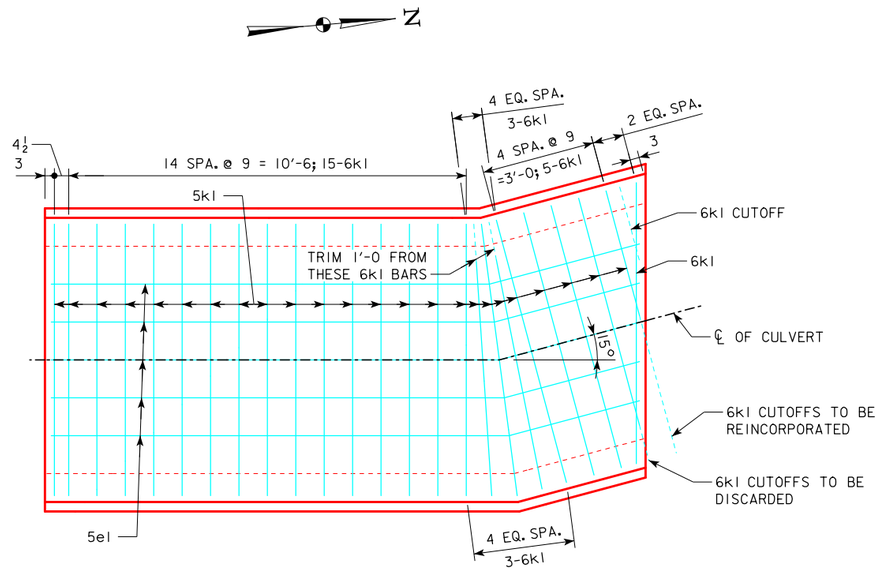
CLINTON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 4 OF 6 FILE NO. 31558 DESIGN NO. 319

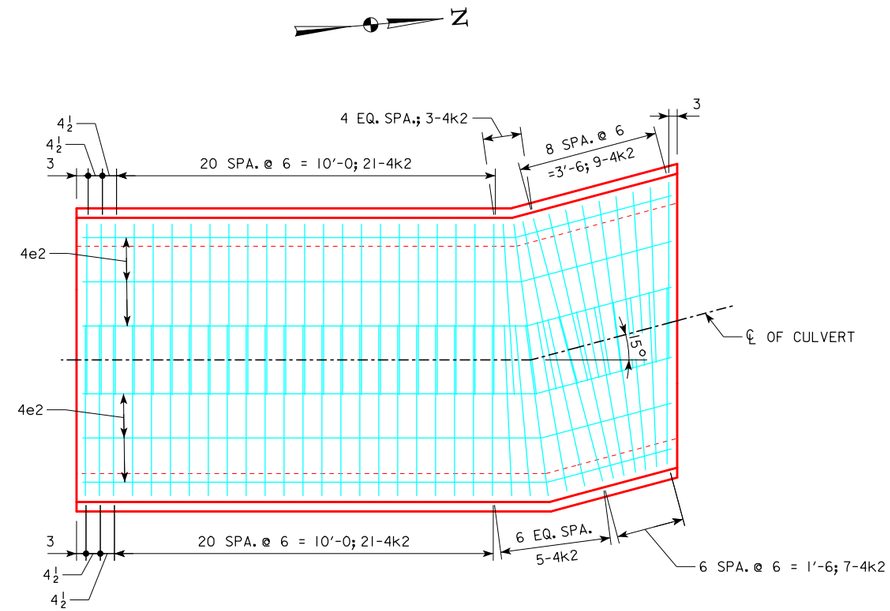
DESIGN TEAM: DA/BH/JS | CLINTON COUNTY | PROJECT NUMBER STPN-136-1(73)--2J-23 | SHEET NUMBER 9

11/4/2019 10:37:46 AM wb L:\DEPT\6\7805.43\DRAWINGS\WORKING\BRG_23136073.dgn 230319S004 11x17_pdf.pltcfg



PLAN VIEW OF BOTTOM REINFORCING OF SLAB

(FLARE 5k1 BARS THROUGH BEND TO MAINTAIN EQ. SPA.)



PLAN VIEW OF TOP REINFORCING OF SLAB

(FLARE 4k2 BARS AS SHOWN TO MAINTAIN EQ. SPA.)

whks
engineers + planners + land surveyors

DESIGN FOR 0° SKEW

6'x8' REINFORCED CONCRETE BOX CULVERT EXTENSION

SLAB REINFORCING DETAILS

STATION 704+69.70 NOVEMBER, 2018

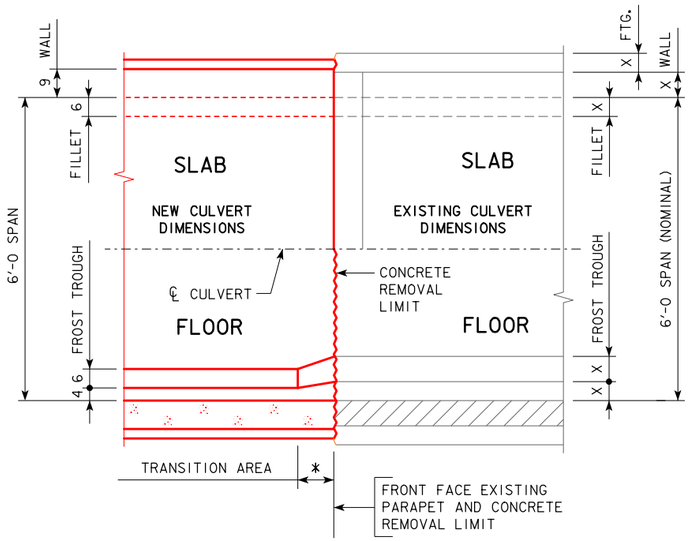
CLINTON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 5 OF 6 FILE NO. 31558 DESIGN NO. 319

DESIGN TEAM: DA/BH/JS | CLINTON COUNTY | PROJECT NUMBER STPN-136-1(73)--2J-23 | SHEET NUMBER 10

11/4/2019 10:37:47 AM wb L:\DEPT\6\7805.43\DRAWINGS\WORKING\BRG_23136073.dgn 230319S005 11x17_pdf.pltcfg

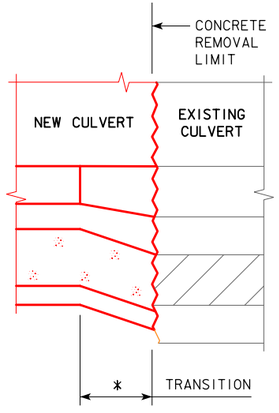


CONCRETE TRANSITION DETAILS

(PLAN VIEW)

NOTE:
'X' - EXISTING DIMENSION

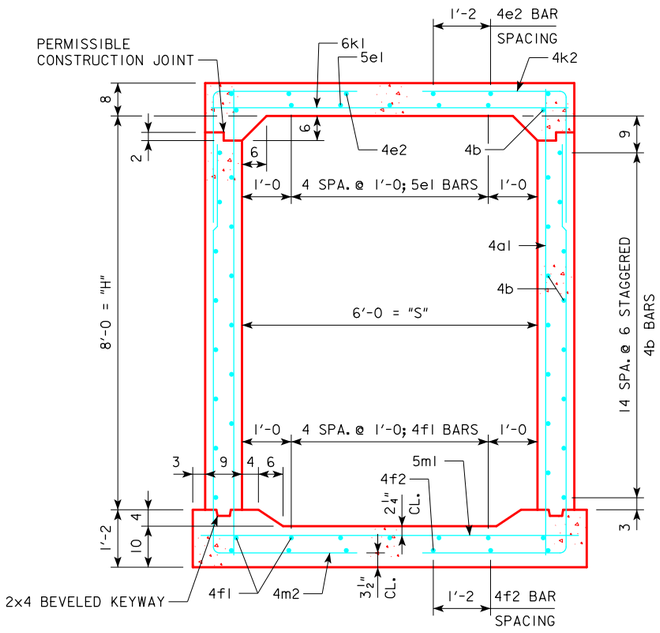
*NOTE:
ANY DIMENSIONAL TRANSITION BETWEEN THE EXISTING STRUCTURE AND THE EXTENSION SHALL BE MADE IN THE FIRST 1'-0 MINIMUM AND 3'-0 MAXIMUM OF NEW WORK. THE TRANSITION SLOPE SHALL BE 1:6 OR SHALLOWER.



NEW BARREL CONCRETE THICKNESSES SHALL BE MAINTAINED MINIMALLY WHEN TRANSITIONING TO MEET EXISTING BARREL INTERIOR SURFACES. OUTSIDE CONCRETE SURFACES DO NOT HAVE TO BE TRANSITIONED TO MATCH EXISTING SURFACES.

CONCRETE TRANSITION DETAILS

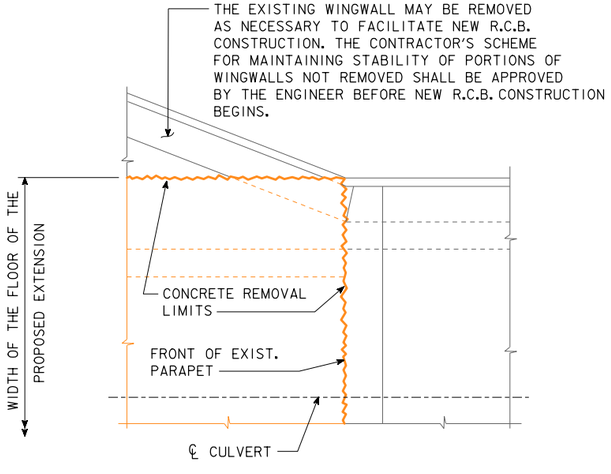
(WALL TRANSITION SHOWN - TYPICAL FOR SLAB)



BARREL SECTION

CONCRETE PLACEMENT QUANTITIES
ONE 16'-0 BENT BARREL

LOCATION	CY
SLAB	3.5
WALLS	6.8
FLOOR	4.5
TOTAL (C.Y.)	14.8

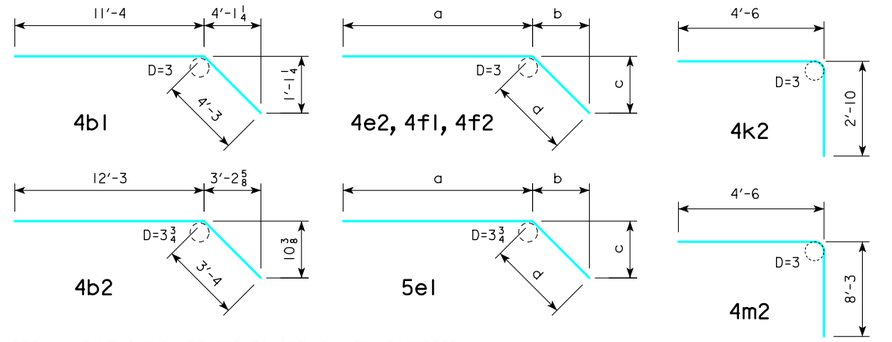


PART REMOVAL PLAN

REINFORCING BAR LIST - ONE EXTENSION

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
4a1	WALLS, FRONT FACE VERTICAL	—	34	9'-5	214
4b1	WEST WALL, HORIZONTAL	⟍	16	15'-7	167
4b2	EAST WALL, HORIZONTAL	⟍	16	15'-7	167
5e1	SLAB, BOTT. LONGIT.	⟍	5	VARIES	81
4e2	SLAB, TOP LONGIT.	⟍	6	VARIES	62
4f1	FLOOR, TOP LONGIT.	⟍	7	VARIES	73
4f2	FLOOR, BOTT. LONGIT.	⟍	6	VARIES	62
6k1	SLAB, BOTT. TRANSV.	—	25	7'-2	269
4k2	SLAB, TOP CORNER	⌐	70	7'-4	343
5m1	FLOOR, TOP TRANSV.	—	34	7'-8	272
4m2	FLOOR, BOTT. CORNER	⌐	70	12'-9	596
	REINFORCING STEEL - TOTAL (LBS.)				2,306

BENT BAR DETAILS



NOTE: ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

5e1 BAR DIMENSIONS

DIM. 'a'	DIM. 'b'	DIM. 'c'	DIM. 'd'
11'-6	3'-11 3/8	1'-0 5/8	4'-1
11'-8	3'-9 3/8	1'-0 1/8	3'-11
11'-10	3'-7 1/2	11 5/8	3'-10
11'-11	3'-6 1/2	11 3/8	3'-8
12'-1	3'-4 5/8	10 7/8	3'-6

BARS ARE LISTED FROM WEST TO EAST

4e2 & 4f2 BAR DIMENSIONS

DIM. 'a'	DIM. 'b'	DIM. 'c'	DIM. 'd'
11'-4	4'-1 1/4	1'-1 1/4	4'-3
11'-6	3'-11 3/8	1'-0 5/8	4'-1
11'-8	3'-9 3/8	1'-0 1/8	3'-11
11'-11	3'-6 1/2	11 3/8	3'-8
12'-1	3'-4 5/8	10 7/8	3'-6
12'-3	3'-2 5/8	10 3/8	3'-4

BARS ARE LISTED FROM WEST TO EAST

4f1 BAR DIMENSIONS

DIM. 'a'	DIM. 'b'	DIM. 'c'	DIM. 'd'
11'-5	4'-0 1/4	1'-1	4'-2
11'-6	3'-11 3/8	1'-0 5/8	4'-1
11'-8	3'-9 3/8	1'-0 1/8	3'-11
11'-10	3'-7 1/2	11 5/8	3'-10
11'-11	3'-6 1/2	11 3/8	3'-8
12'-1	3'-4 5/8	10 7/8	3'-6
12'-2	3'-3 5/8	10 5/8	3'-5

BARS ARE LISTED FROM WEST TO EAST

DESIGN FOR 0° SKEW

6'x8' REINFORCED CONCRETE BOX CULVERT EXTENSION

CULVERT EXTENSION DETAILS

STATION 704+69.70 NOVEMBER, 2018

CLINTON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 6 OF 6 FILE NO. 31558 DESIGN NO. 319

whks engineers + planners + land surveyors

DESIGN TEAM: DA/BH/JS | CLINTON COUNTY | PROJECT NUMBER STPN-136-1(73)--2J-23 | SHEET NUMBER 11

11/4/2019 10:37:47 AM wb L:\DEPT\6\7805.43\DRAWINGS\WORKING\BRG_23136073.dgn 230319S006 11x17_pdf.pltcfg

ESTIMATED CULVERT QUANTITIES

ITEM NO.	ITEM CODE	ITEM	UNIT	TOTAL	AS BUILT QUANTITY
1	2401-6750001	REMOVALS, AS PER PLAN	LS	1.00	
2	2403-0100020	STRUCTURAL CONCRETE (RCB CULVERT)	CY	39.8	
3	2404-7775000	REINFORCING STEEL	LB	5673	

ITEM NO. — ESTIMATE REFERENCE INFORMATION

1 INCLUDES ALL WORK FOR REMOVAL AND OFF-SITE DISPOSAL AS DETAILED ON THE SITUATION PLAN. REMOVAL OF SCHEDULED ITEMS SHALL BE IN ACCORDANCE WITH SECTION 2401, OF THE STANDARD SPECIFICATIONS. ANY DAMAGE TO MATERIAL NOT TO BE REMOVED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND REPAIRED AT NO EXTRA COST TO THE STATE.

SPECIFICATIONS:

DESIGN: AASHTO LRFD 5th Ed, SERIES OF 2010.

CONSTRUCTION: IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, SERIES 2015, PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.

DESIGN STRESSES:

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 5th Ed, SERIES OF 2010.
REINFORCING STEEL IN ACCORDANCE WITH AASHTO LRFD SECTION 5, GRADE 60.
CONCRETE IN ACCORDANCE WITH AASHTO LRFD SECTION 5, f'c = 4.0 KSI.

SUMMARY OF REINFORCING STEEL

LOCATION	QUANTITY	TOTAL
HEADWALL 0° SKEW	1047	1047
17'-0 END SECTION	1460	1460
7'-8 BENT BARREL EXTENSION	722	722
13'-2 END SECTION	1131	1131
HEADWALL 30° SKEW	1183	1183
5r1 BARS	26	26
5z1 BARS	104	104
	TOTAL (LBS.)	5673

CONCRETE PLACEMENT QUANTITIES

LOCATION	FOOTING	WALLS	SLAB	TOTAL
HEADWALL 0° SKEW	4.5	1.6	1.0*	7.1
17'-0 END SECTION	4.8	2.5	3.7	11.0
7'-8 BENT BARREL EXTENSION	2.2	1.1	1.7	5.0
13'-2 END SECTION	3.7	1.9	2.9	8.5
HEADWALL 30° SKEW	5.2	1.8	1.2*	8.2
TOTAL (C.Y.)	20.4	8.9	10.5	39.8

* INCLUDES PARAPET AND TOP OF WINGWALL.

STANDARDS:
FOR DETAILS AND NOTES NOT SHOWN REFER TO THE FOLLOWING IOWA D.O.T. - HIGHWAY STANDARDS:

DESIGN 419		
STANDARD	ISSUED	REVISED
RCB G2-12	4-12	12-16
RCB 6-3-12	4-12	-
PWH 0-1-12	4-12	12-16
PWH 0-2-12	4-12	12-16
PWH 0-3-12	4-12	7-16
PWH 0-4-12	4-12	-
PWH 0-8-12	4-12	7-16
PWH 30-1-12	4-12	12-16
PWH 30-2-12	4-12	12-16
PWH 30-3-12	4-12	7-16
PWH 30-4-12	4-12	-
PWH 30-8-12	4-12	7-16

NOTE:
ROADWAY QUANTITIES SHOWN ELSEWHERE IN THESE PLANS.

DESIGN HISTORY AT THIS SITE
(INCLUDES THIS DESIGN)

DES. NO.	TYPE OF WORK
53	ORIGINAL PRIMARY ROAD PROJECT NO. 352 PRIMARY BRIDGE PROJECT NO. B-257 6'x3'x28' CONCRETE BOX CULVERT
419	6'x3' REINFORCED CONCRETE BOX CULVERT EXTENSION

DESIGN FOR 0° SKEW

6'x3' REINFORCED CONCRETE BOX CULVERT EXTENSION

ESTIMATED QUANTITIES

STATION 743+25.20 — NOVEMBER, 2018

CLINTON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 1 OF 9 FILE NO. 31558 DESIGN NO. 419

whks engineers + planners + land surveyors

DESIGN TEAM: DA/BH/JS | CLINTON COUNTY | PROJECT NUMBER STPN-136-1(73)--2J-23 | SHEET NUMBER 12

11/4/2019 10:37:48 AM wb L:\DEPT\6\7805.43\DRAWINGS\WORKING\BRG_23136073.dgn 230419S001 11x17_pdf.pltcfg

REVISED 11-2016 - ADDED THE WORD "THEREFORE" TO THE PARAGRAPH STATING THE HIGHWAY WILL NOT BE CLOSED, IN THE GENERAL NOTES.
REVISED 02-2017 - UPDATED THE PARAGRAPH STATING THE HIGHWAY WILL NOT BE CLOSED, IN THE GENERAL NOTES TO MATCH WHAT IS WORDED IN THE DESIGN MANUAL. UPDATED PARAGRAPH DISCUSSING THE REMOVAL OF EXISTING CULVERT.
ENGLISHSINGLECULVERTS.DGN - 1043s2 - THIS SHEET ISSUED 10-08.

GENERAL NOTES:

IT IS THE INTENT OF THIS DESIGN TO EXTEND THE EXISTING 6′ x 3′ R.C.B. CULVERT ON BOTH ENDS.

ELECTRONIC COPIES OF ORIGINAL DESIGN PLANS ARE AVAILABLE TO THE CONTRACTOR AS PART OF THE E-FILES SUPPLIED WITH THE CONTRACT DOCUMENTS. DIMENSIONS SHOWN ON THESE PLANS ARE BASED ON THE DIMENSIONS SHOWN ON THE PLANS REFERENCED IN THE "DESIGN HISTORY AT THIS SITE" ON DESIGN SHEET 1.

FAINT LINES ON PLANS INDICATE EXISTING STRUCTURE.

UTILITY COMPANIES AND MUNICIPALITIES WHOSE FACILITIES ARE SHOWN ON THE PLANS OR KNOWN TO BE WITHIN THE CONSTRUCTION LIMITS SHALL BE NOTIFIED BY THE CONTRACTOR OF THE CONSTRUCTION STARTING DATE.

THE R.C.B. CULVERT EXTENSION SECTIONS ARE DESIGNED FOR HL-93 LIVE LOAD AND EARTH FILL OF 2 FEET. THIS DESIGN IS BASED ON LOAD AND RESISTANCE FACTOR DESIGN, ACCORDING TO THE 2010 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

VERTICAL EARTH PRESSURE, EV=0.120 kcf.

HORIZONTAL EARTH PRESSURE, EHmax = 0.060 kcf MAX, EHmin = 0.030 kcf.

THE CONTRACTOR MAY SUBMIT ALTERNATE FROST TROUGH DIMENSIONS FOR APPROVAL. ANY ADDITIONAL COSTS DUE TO CHANGE IN THE FROST TROUGH DIMENSIONS IS TO BE PAID FOR BY THE CONTRACTOR.

FLOOR OF BARREL IS TO BE FINISHED SMOOTH. SIDES OF FOOTING ARE TO BE FORMED TO INSURE CORRECT LINE AND GRADE.

THE PERMISSIBLE CONSTRUCTION JOINT AT THE TOP OF THE WALLS MAY BE LOWERED AT THE CONTRACTOR'S OPTION WITH ENGINEER'S APPROVAL.

THE VERTICAL BARS IN THE WALLS MAY BE SPLICED ABOVE THE FOOTING AT THE CONTRACTOR'S OPTION AS FOLLOWS:

BAR SIZE NUMBER	4	5	6	7	8
MINIMUM SPLICE LENGTH	21"	26"	31"	41"	54"

THIS SPLICE, IF USED WILL BE AT THE CONTRACTOR'S EXPENSE.

METAL BAR CHAIRS SPACED AT NOT OVER 3′-0 C.-C. IN EITHER DIRECTION ARE TO BE USED TO SUPPORT ALL SLAB AND FLOOR STEEL AS OUTLINED IN THE STANDARD SPECIFICATIONS.

THE REINFORCEMENT SUPPLIED FOR THIS STRUCTURE SHALL BE GRADE 60.

REINFORCING BAR CLEARANCES WILL BE AS FOLLOWS:

EDGE CLEARANCES: 2" EXCEPT
TOP OF FLOOR 2¼" TO NEAR TRANSV. REINF. BAR
BOTTOM OF FLOOR 3½" TO NEAR TRANSV. REINF. BAR
END CLEARANCES:
VERTICAL TOP 2"
VERTICAL BOTTOM 3" OR 3½" IF OVERALL HEIGHT OF THE CULVERT IS NOT TO A FULL INCH
TRANSVERSE 2"

ALL REINFORCING BARS AND BARS NOTED AS DOWELS SUPPLIED FOR THIS STRUCTURE SHALL BE DEFORMED REINFORCEMENT UNLESS OTHERWISE NOTED OR SHOWN.

EXCESS CLASS 20 EXCAVATION MATERIAL SUITABLE FOR BACKFILLING SHALL BE STOCKPILED AT THE CONSTRUCTION SITE, AS DIRECTED BY THE ENGINEER. CLASS 20 EXCAVATION MATERIAL UNSUITABLE FOR BACKFILLING SHALL BE DISPOSED OF IN A MANNER THAT WILL LEAVE THE SITE IN A NEAT CONDITION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE SITES FOR EXCESS EXCAVATED MATERIAL. NO PAYMENT FOR OVERHAUL WILL BE ALLOWED FOR MATERIAL HAULED TO THESE SITES.

THE PRICE BID FOR "REMOVALS AS PER PLAN" SHALL INCLUDE THE COST FOR REMOVALS OF PORTIONS OF THE EXISTING CULVERT AND THE SETTING OF THE DOWEL REINFORCING BARS INTO EXISTING CONCRETE.

ALL DIMENSIONS AND DETAILS SHOWN ON THESE PLANS PERTINENT TO NEW CONSTRUCTION IN RELATION TO EXISTING PORTIONS OF THE STRUCTURE SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR BEFORE STARTING CONSTRUCTION.

THE REMOVAL OF THE EXISTING CULVERT SHALL BE AT THE FRONT FACE OF THE EXISTING PARAPET. REMOVALS SHALL BE ON A VERTICAL PLANE PARALLEL WITH THE FRONT FACE OF THE EXISTING PARAPET, AND TO THE WIDTH OF THE FLOOR OF THE PROPOSED EXTENSION. THE WALLS SHALL BE CUT NORMAL TO THE BARREL WALLS AND AS SHOWN ON THE "PART REMOVAL PLAN". THE REMOVAL LINE SHALL BE INITIATED WITH A 2½"± DEEP SAW CUT ON THE TOP AND BOTH SIDES OF EACH WALL, AND ACROSS THE TOP OF THE FLOOR. THIS SAW CUT SHOULD CUT THRU ANY EXISTING LONGITUDINAL REINFORCING THEREBY FACILITATING A NEAT NON-SPALLED BREAK LINE. IF EXISTING TOP OF PARAPETS WILL BE WITHIN 0′-6 OF PROPOSED SUBGRADE ELEVATION, THE PARAPETS SHALL BE REMOVED DOWN TO AN ELEVATION 1"± ABOVE THE TOP OF THE EXISTING SLAB. ANY EXISTING PARAPET VERTICAL BARS EXPOSED DURING PARAPET REMOVAL SHALL BE CUT OFF FLUSH WITH THE PARAPET REMOVAL LINE AND PAINTED WITH TWO COATS OF ZINC RICH PAINT.

ALL REMOVALS SHALL BE CAREFULLY ACCOMPLISHED AND ANY CONCRETE DAMAGED BY THE CONTRACTOR THAT IS NOT TO BE REMOVED SHALL BE REPAIRED BY THE CONTRACTOR AT NO EXTRA COST TO THE STATE. REMOVALS SHALL BE IN ACCORDANCE WITH SECTION 2401 OF THE STANDARD SPECIFICATIONS.

THE ROADWAY WILL BE OPEN TO TRAFFIC DURING CONSTRUCTION.

SINCE THE HIGHWAY WILL NOT BE CLOSED TO TRAFFIC DURING THIS CONSTRUCTION, THE CONTRACTOR MAY FEEL TEMPORARY SHORING (SHEET PILE OR OTHER) IS NECESSARY TO ENSURE THAT THE SHOULDER WILL NOT SLOUGH IN WHILE CULVERT IS BEING EXTENDED. HOWEVER, IF FOR ANY REASON SUCH SHORING IS DEEMED NECESSARY, THE CULVERT CONTRACTOR SHALL SUBMIT THE SHORING PLAN TO THE ENGINEER FOR APPROVAL. COST OF SHORING, IF REQUIRED, WILL BE CONSIDERED INCIDENTAL TO CONSTRUCTION AND NO DIRECT PAYMENT WILL BE MADE. THEREFORE, ALL MATERIAL USED FOR SHORING SHALL REMAIN THE PROPERTY OF THE CONTRACTOR. IN ADDITION TO THE REQUIREMENTS NOTED ABOVE, ARTICLE 1107.07, OF THE STANDARD SPECIFICATIONS, STILL APPLIES.

THE PROPOSED CULVERT EXTENSION SHALL ABUT AGAINST THE FRONT FACE OF THE EXISTING PARAPET. 5zl x 2′-6 DOWEL REINFORCING BARS WITH A 10" MINIMUM EMBEDMENT INTO EXISTING CONCRETE SHALL BE SET AROUND THE ENTIRE PERIPHERY OF THE EXISTING CULVERT. 5zl DOWEL REINFORCING BARS SHALL BE CENTERED IN THE EXISTING SLAB, WALLS AND FLOOR. 5zl DOWEL REINFORCING BARS SHALL BE AT 1′-0 MAXIMUM SPACING C.-C. OF DOWELS. 5zl DOWEL REINFORCING BARS SHALL BE SET WITH POLYMER GROUT IN ACCORDANCE WITH ARTICLE 2301.03, E, OF THE STANDARD SPECIFICATIONS, AND CURRENT SUPPLEMENTAL SPECIFICATIONS OF THE IOWA D.O.T. HIGHWAY DIVISION.

KEYWAY DIMENSIONS SHOWN ON THE PLANS ARE BASED ON NOMINAL DIMENSIONS UNLESS STATED OTHERWISE. IN ADDITION, THE BEVEL USED ON THE KEYWAY SHALL BE LIMITED TO A MAXIMUM OF 10 DEGREES FROM VERTICAL.

THESE BRIDGE PLANS LABEL ALL REINFORCING STEEL WITH ENGLISH NOTATION (5a1 IS $\frac{5}{8}$ INCH DIAMETER BAR). ENGLISH REINFORCING STEEL RECEIVED IN THE FIELD MAY DISPLAY THE FOLLOWING "BAR DESIGNATION". THE "BAR DESIGNATION" IS THE STAMPED IMPRESSION ON THE REINFORCING BARS, AND IS EQUIVALENT TO THE BAR DIAMETER IN MILLIMETERS.

ENGLISH SIZE	3	4	5	6	7	8	9	10	11
BAR DESIGNATION	10	13	16	19	22	25	29	32	36

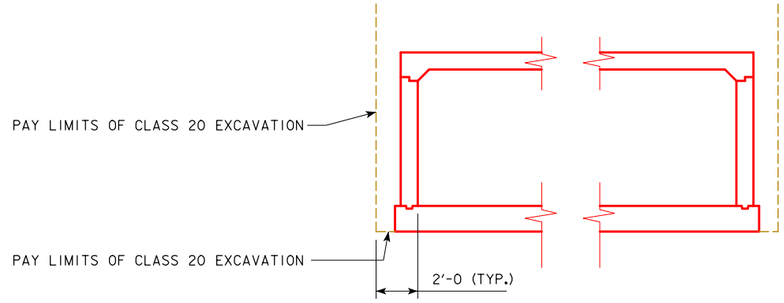
TRAFFIC WILL BE MAINTAINED AT ALL TIMES IN ACCORDANCE WITH THE TRAFFIC CONTROL PLANS SHOWN IN THESE PLANS.

TRAFFIC CONTROL ADJACENT TO THE CULVERT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR CONSTRUCTING THE CULVERT AND IS TO COORDINATE CONSTRUCTION OF THE CULVERT WITH THE CONTRACTOR DOING THE GRADING.

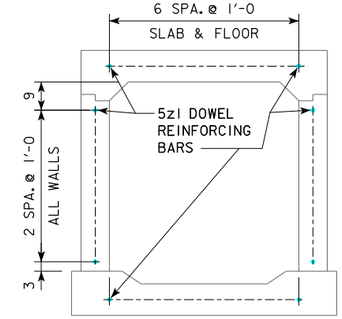
ANY DIMENSIONAL TRANSITION BETWEEN THE EXISTING STRUCTURE AND THE EXTENSION SHALL BE MADE IN THE FIRST 1′-0 MINIMUM AND 3′-0 MAXIMUM OF NEW WORK. THE TRANSITION SLOPE SHALL BE 1:6 OR SHALLOWER.

WHEN DE-WATERING PRESENTS A PROBLEM FOR PLACING THE CURTAIN WALLS AS DETAILED, ALTERNATE METHODS SUCH AS STEEL SHEET PILE AND PRECAST CONCRETE WALLS MAY BE APPROVED BUT AT NO ADDITIONAL COST. THE CONTRACTOR IS TO SUBMIT TO THE ENGINEER FOR APPROVAL COMPLETE DRAWINGS OF THE PROPOSED CURTAIN WALL ALTERNATE BEFORE BEGINNING CONSTRUCTION.

THE CLASS 20 EXCAVATION QUANTITY IS BASED ON THE ASSUMPTION THAT AT THE START OF CULVERT CONSTRUCTION, THE EXISTING GROUNDLINE SHOWN ON THE "SITUATION PLAN" ON DESIGN HAS REMAINED UNDISTURBED AND NO ROADWAY FILL HAS BEEN PLACED.



EXCAVATION DETAIL



SECTION NEAR EXTENSION
(SHOWING SPACING OF 5zl DOWEL BARS)

REINFORCING STEEL EXTENSION DOWELS						
BAR	LOCATION	SHAPE	NO./JT.	TOTAL NO.	LENGTH	WEIGHT
5zl	EXTENSION JOINT		20	40	2′-6	104

TRAFFIC CONTROL PLAN
NOTE: THE ROADWAY WILL BE OPEN TO THRU TRAFFIC. REFER TO THE TRAFFIC CONTROL PLAN SHOWN ELSEWHERE IN THESE PLANS.

NOTE:
POLLUTION PREVENTION PLAN SHOWN ELSEWHERE IN THESE PLANS.

whks
engineers + planners + land surveyors

DESIGN FOR 0° SKEW

6′x3′ REINFORCED CONCRETE BOX CULVERT EXTENSION

CULVERT GENERAL NOTES

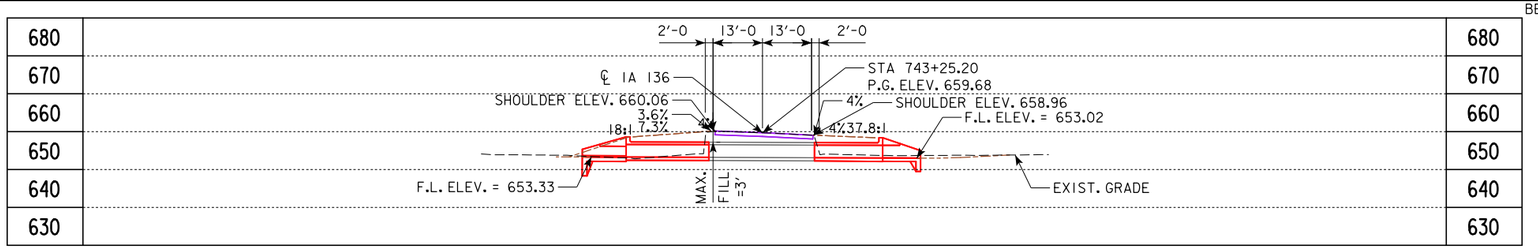
STATION 743+25.20 NOVEMBER, 2018

CLINTON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 2 OF 9 FILE NO. 31558 DESIGN NO. 419

DESIGN TEAM: DA/BH/JS	CULVERT EXTENSION DETAILS (SHEET 2 OF 2)	STANDARD SHEET 1043s2 (MODIFIED)	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER 13



LONGITUDINAL SECTION ALONG ℄ CULVERT

DESIGN FILL HEIGHT = 2'-0
ANTICIPATED SETTLEMENT = NEGLIGIBLE

NOTES:

ALL UNITS ARE IN FEET UNLESS OTHERWISE NOTED OR SHOWN.

SEE ROAD SHEETS FOR ADDITIONAL INFORMATION ON PROPOSED GRADING LIMITS.

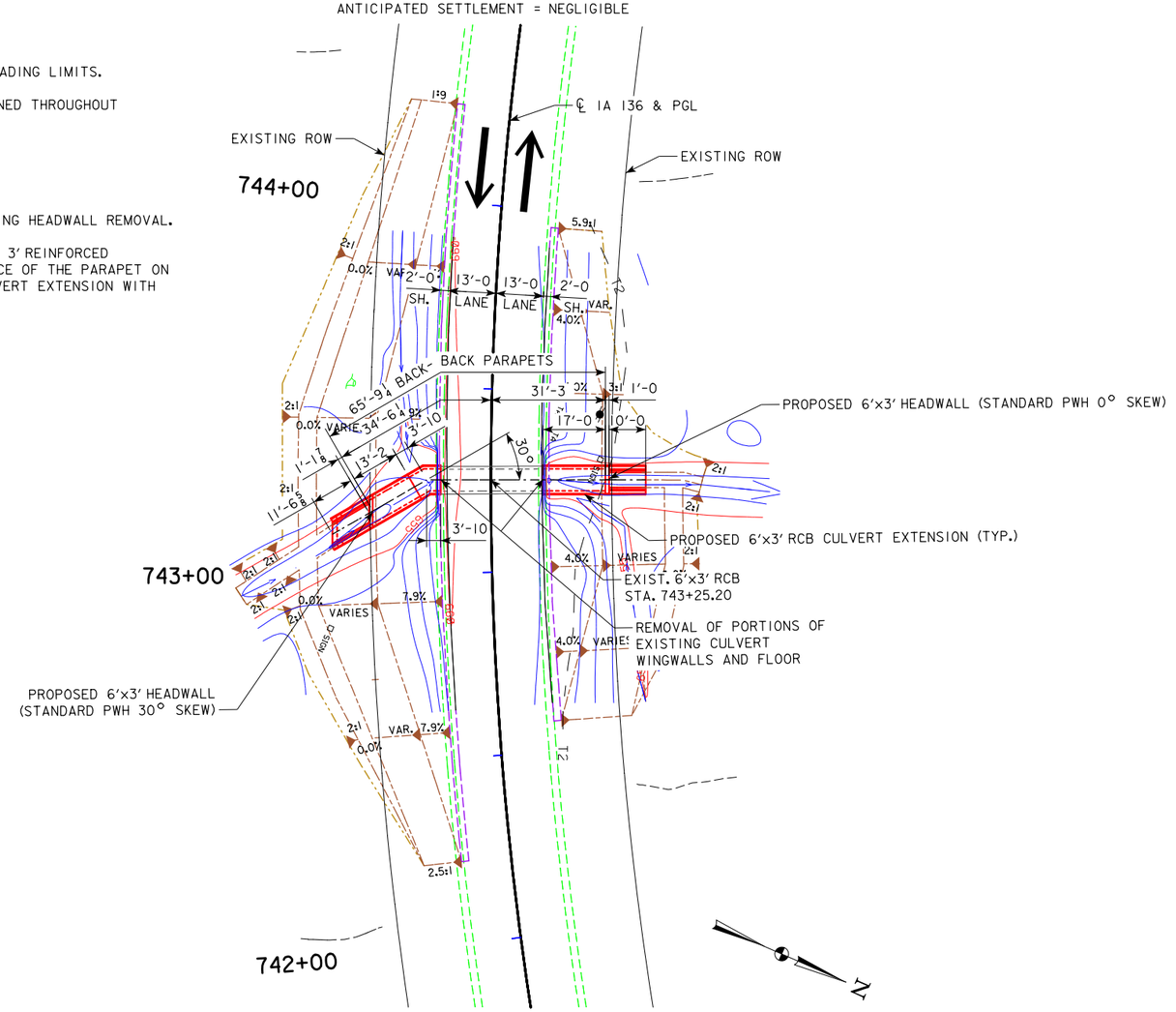
DRAINAGE THROUGH EXISTING CULVERT/CHANNEL MUST BE MAINTAINED THROUGHOUT CONSTRUCTION.

SEE H SHEETS FOR RIGHT OF WAY.

HEADWALLS SHALL BE PLACED LEVEL.

SEE GENERAL NOTES AND REMOVAL DETAILS FOR LIMITS OF EXISTING HEADWALL REMOVAL.

IT IS THE INTENT OF THIS DESIGN TO EXTEND THE EXISTING 6' x 3' REINFORCED CONCRETE BOX CULVERT BY REMOVING THE HEADWALLS TO THE FACE OF THE PARAPET ON BOTH ENDS AND ADDING A 6' x 3' REINFORCED CONCRETE BOX CULVERT EXTENSION WITH HEADWALL ON BOTH ENDS.



SITUATION PLAN

BENCH MARK NO. 514, STA. 743+43.5. SET RR SPIKE S SIDE PP 29.6' RT.
EL = 657.43



PROPOSED PROFILE GRADE ON IA 136

HORIZONTAL CURVE DATA

Δ = 58° 08' 19.71" (RT)
T = 531.68
L = 970.52
R = 956.45
E = 137.85

HYDRAULIC DATA

DRAINAGE AREA = 300 ACRES FLAT
Q_{50} = 220 CFS

UTILITIES LEGEND:

-T2- TL2D PRESTON TELEPHONE - QUALITY DI

TRAFFIC ESTIMATE

2014 AADT 1240 V.P.D.

LOCATION

ON IA 136 OVER DRAINAGE DITCH
T-83N R-5E
SECTION 29
DEEP CREEK TOWNSHIP
CLINTON COUNTY
LATITUDE 41.960861
LONGITUDE -90.401128

DESIGN FOR 0° SKEW

6'x3' REINFORCED CONCRETE BOX CULVERT EXTENSION

SITUATION PLAN

STATION 743+25.20 NOVEMBER, 2018

CLINTON COUNTY

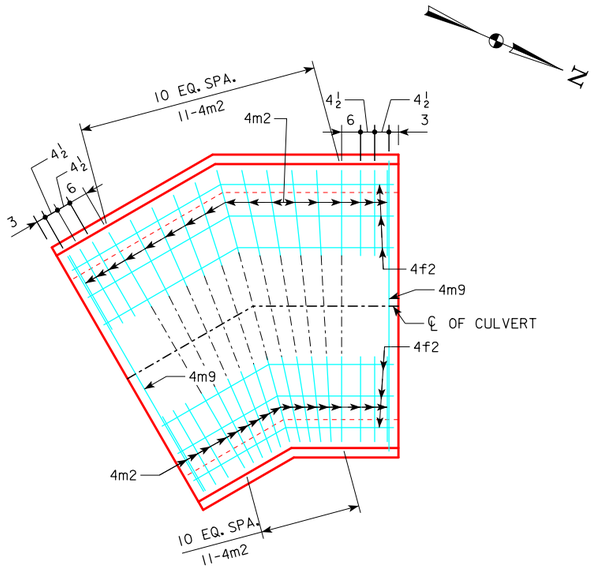
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 3 OF 9 FILE NO. 31558 DESIGN NO. 419

whks
engineers + planners + land surveyors

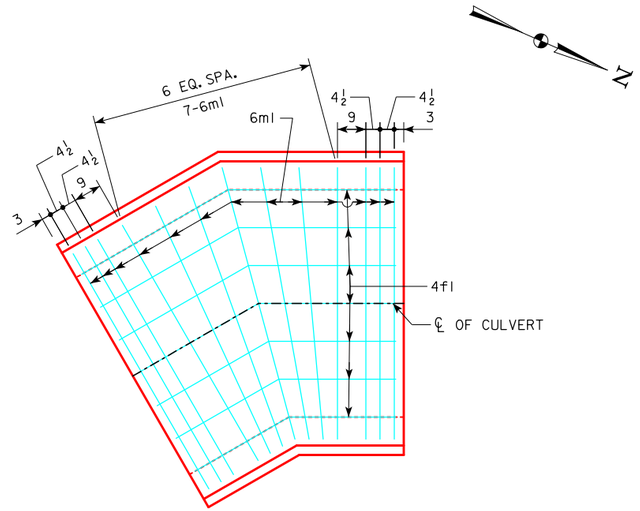
DESIGN TEAM: DA/BH/JS | CLINTON COUNTY | PROJECT NUMBER STPN-136-1(73)--2J-23 | SHEET NUMBER 14

11/4/2019 10:37:49 AM wb L:\DEPT\6\7805.43\DRAWINGS\WORKING\BRG_23136073.dgn 230419S003 11x17_pdf.pltcfg



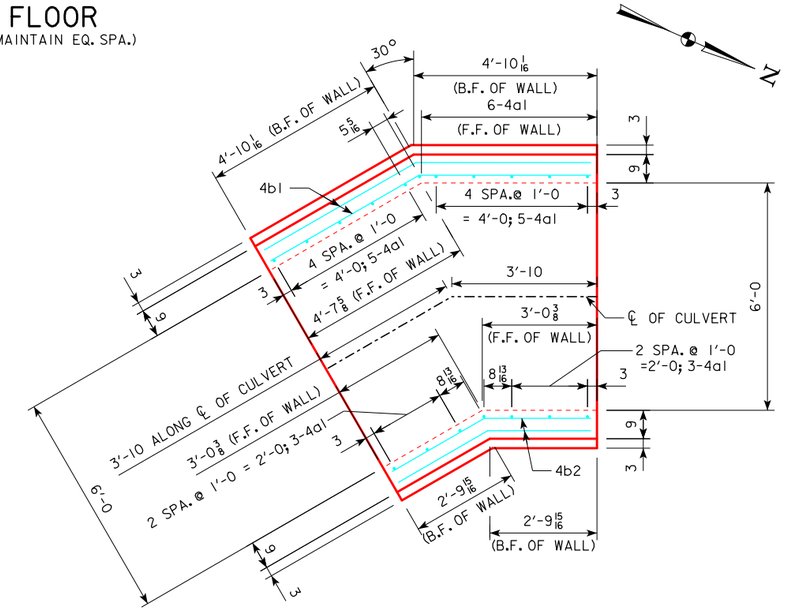
PLAN VIEW OF BOTTOM REINFORCING OF FLOOR

(FLARE 4m2 BARS THROUGH BEND TO MAINTAIN EQ. SPA.)



PLAN VIEW OF TOP REINFORCING OF FLOOR

(FLARE 6m1 BARS THROUGH BEND TO MAINTAIN EQ. SPA.)



PLAN VIEW OF WALL REINFORCING

DESIGN FOR 0° SKEW

6'x3' REINFORCED CONCRETE BOX CULVERT EXTENSION

BENT BARREL FLOOR/WALL REINF. DTLS.

STATION 743+25.20 NOVEMBER, 2018

CLINTON COUNTY

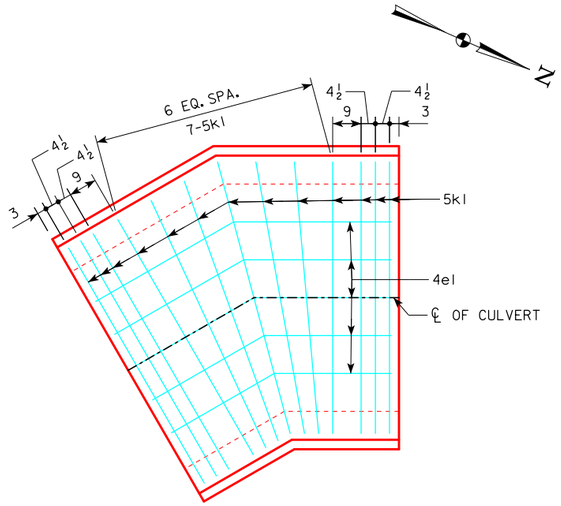
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 4 OF 9 FILE NO. 31558 DESIGN NO. 419

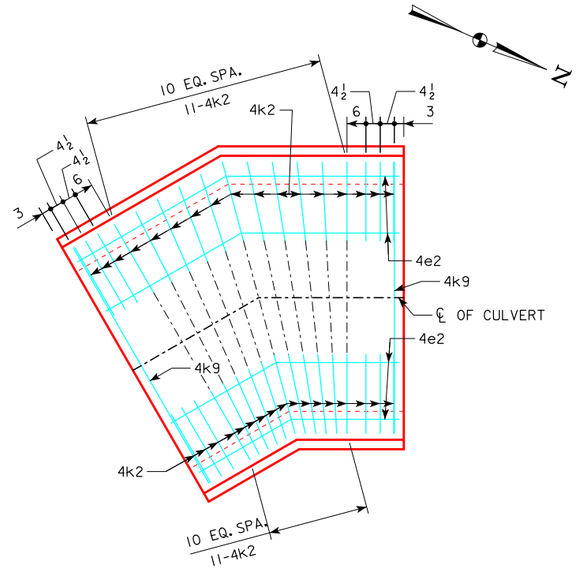
whks engineers + planners + land surveyors

DESIGN TEAM: DA/BH/JS | CLINTON COUNTY | PROJECT NUMBER STPN-136-1(73)--2J-23 | SHEET NUMBER 15

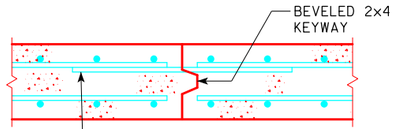
11/4/2019 10:37:50 AM wb L:\DEPT\6\7805.43\DRAWINGS\WORKING\BRG_23136073.dgn 230419S004 11x17_pdf.pltcfg



PLAN VIEW OF BOTTOM
REINFORCING OF SLAB
(FLARE 5k1 BARS THROUGH BEND TO MAINTAIN EQ. SPA.)



PLAN VIEW OF TOP
REINFORCING OF SLAB
(FLARE 4k2 BARS THROUGH BEND TO MAINTAIN EQ. SPA.)



ONE SET OF 5r1 x 3'-6 DOWEL BARS @ 1'-0
SPACING REQUIRED IN SLAB AT ALL CULVERT
BARREL JOINTS, EXCEPT JOINTS WITH BELL JOINTS.
SEE TABLE FOR NUMBER REQUIRED AND TOTAL WEIGHT.

TOP SLAB CONSTRUCTION JOINT DETAIL

REINFORCING STEEL EXTENSION DOWELS						
BAR	LOCATION	SHAPE	NO./JT.	TOTAL NO.	LENGTH	WEIGHT
5r1	TOP SLAB. CONST. JOINT	—	7	7	3'-6	26

whks
engineers + planners + land surveyors

DESIGN FOR 0° SKEW

6'x3' REINFORCED CONCRETE BOX CULVERT EXTENSION

BENT BARREL SLAB REINF. DTLS.

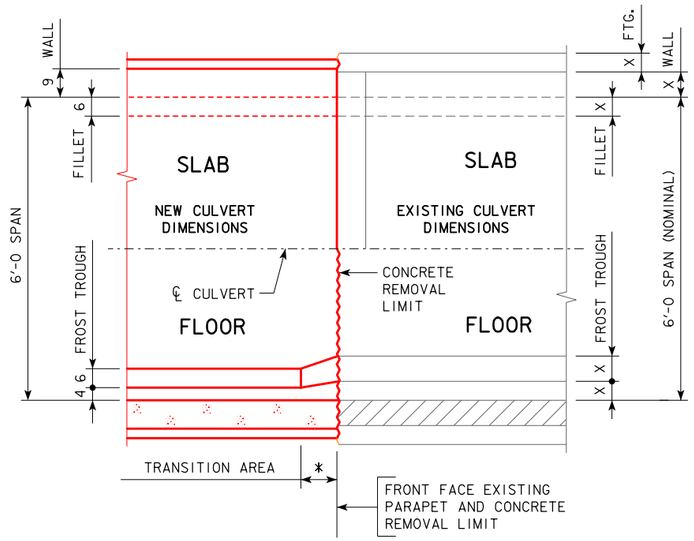
STATION 743+25.20 NOVEMBER, 2018

CLINTON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 5 OF 9 FILE NO. 31558 DESIGN NO. 419

DESIGN TEAM: DA/BH/JS | CLINTON COUNTY | PROJECT NUMBER STPN-136-1(73)--2J-23 | SHEET NUMBER 16

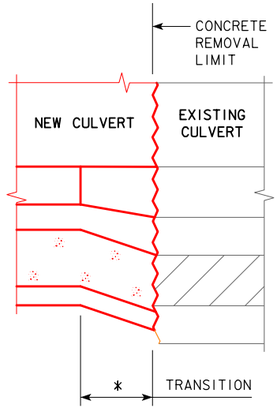


CONCRETE TRANSITION DETAILS

(PLAN VIEW)

NOTE:
'X' - EXISTING DIMENSION

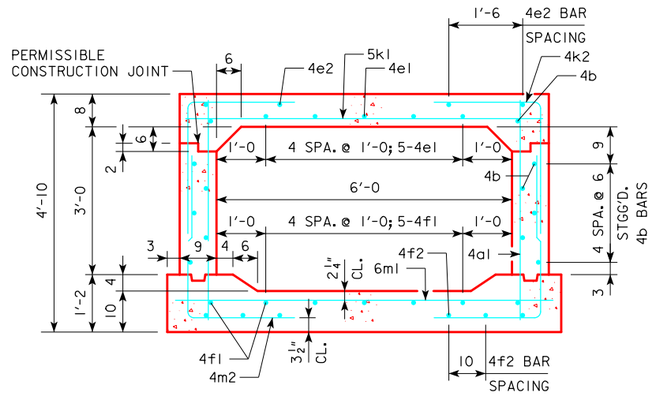
* NOTE:
ANY DIMENSIONAL TRANSITION BETWEEN THE EXISTING STRUCTURE AND THE EXTENSION SHALL BE MADE IN THE FIRST 1'-0 MINIMUM AND 3'-0 MAXIMUM OF NEW WORK. THE TRANSITION SLOPE SHALL BE 1:6 OR SHALLOWER.



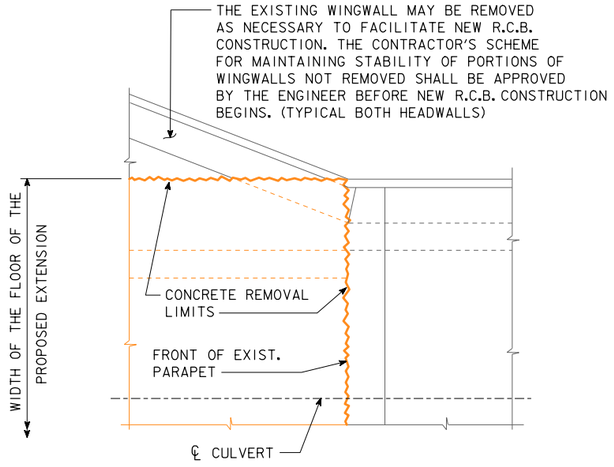
NEW BARREL CONCRETE THICKNESSES SHALL BE MAINTAINED MINIMALLY WHEN TRANSITIONING TO MEET EXISTING BARREL INTERIOR SURFACES. OUTSIDE CONCRETE SURFACES DO NOT HAVE TO BE TRANSITIONED TO MATCH EXISTING SURFACES.

CONCRETE TRANSITION DETAILS

(WALL TRANSITION SHOWN - TYPICAL FOR SLAB)



6 x 3 BARREL SECTION



PART REMOVAL PLAN

4e1 BAR DIMENSIONS

DIM. 'a'	DIM. 'b'	DIM. 'c'	DIM. 'd'
4'-2	3'-7 1/4	2'-1	4'-2
3'-11	3'-4 3/4	1'-11 1/2	3'-11
3'-8	3'-2 1/8	1'-10	3'-8
3'-4	2'-10 5/8	1'-8	3'-4
3'-1	2'-8	1'-6 1/2	3'-1

BARS ARE LISTED FROM WEST TO EAST

4e2 BAR DIMENSIONS

DIM. 'a'	DIM. 'b'	DIM. 'c'	DIM. 'd'
4'-6	3'-10 3/4	2'-3	4'-6
4'-1	3'-6 3/8	2'-0 1/2	4'-1
3'-2	2'-8 7/8	1'-7	3'-2
2'-9	2'-4 5/8	1'-4 1/2	2'-9

BARS ARE LISTED FROM WEST TO EAST

4f1 BAR DIMENSIONS

DIM. 'a'	DIM. 'b'	DIM. 'c'	DIM. 'd'
4'-5	3'-9 7/8	2'-2 1/2	4'-5
4'-2	3'-7 1/4	2'-1	4'-2
3'-11	3'-4 3/4	1'-11 1/2	3'-11
3'-8	3'-2 1/8	1'-10	3'-8
3'-4	2'-10 5/8	1'-8	3'-4
3'-1	2'-8	1'-6 1/2	3'-1
2'-10	2'-5 1/2	1'-5	2'-10

BARS ARE LISTED FROM WEST TO EAST

4f2 BAR DIMENSIONS

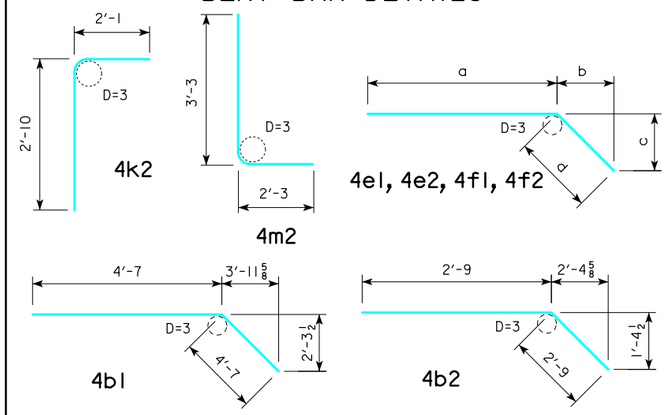
DIM. 'a'	DIM. 'b'	DIM. 'c'	DIM. 'd'
4'-6	3'-10 3/4	2'-3	4'-6
4'-3	3'-8 1/8	2'-1 1/2	4'-3
4'-1	3'-6 3/8	2'-0 1/2	4'-1
3'-2	2'-8 7/8	1'-7	3'-2
3'-0	2'-7 1/8	1'-6	3'-0
2'-9	2'-4 5/8	1'-4 1/2	2'-9

BARS ARE LISTED FROM WEST TO EAST

REINFORCING BAR LIST-ONE BENT EXTENSION

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
4a1	WALLS, FRONT FACE VERTICAL		18	4'-5	53
4b1	WEST WALL, HORIZONTAL		6	9'-2	37
4b2	EAST WALL, HORIZONTAL		6	5'-6	22
4e1	SLAB, BOTT. LONGIT.		5	VARIES	24
4e2	SLAB, TOP LONGIT.		4	VARIES	19
4f1	FLOOR, TOP LONGIT.		7	VARIES	34
4f2	FLOOR, BOTT LONGIT.		6	VARIES	29
5k1	SLAB, BOTT. TRANSV.		13	7'-2	97
4k2	SLAB, TOP CORNER		34	4'-11	112
4k9	SLAB, TOP TRANSV.		2	7'-2	10
6m1	FLOOR, TOP TRANSV.		13	7'-8	150
4m2	FLOOR, BOTT. CORNER		34	5'-6	125
4m9	FLOOR, BOTT. TRANSV.		2	7'-8	10
		REINFORCING STEEL - TOTAL (LBS.)			722

BENT BAR DETAILS



NOTE: ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

CONCRETE PLACEMENT QUANTITIES ONE 7'-8 BENT BARREL

LOCATION	CY
SLAB	1.7
WALLS	1.1
FLOOR	2.2
TOTAL (C.Y.)	5.0

whks
engineers + planners + land surveyors

DESIGN FOR 0° SKEW

6'x3' REINFORCED CONCRETE BOX CULVERT EXTENSION

BENT BARREL CULVERT EXTEN. DTLS.

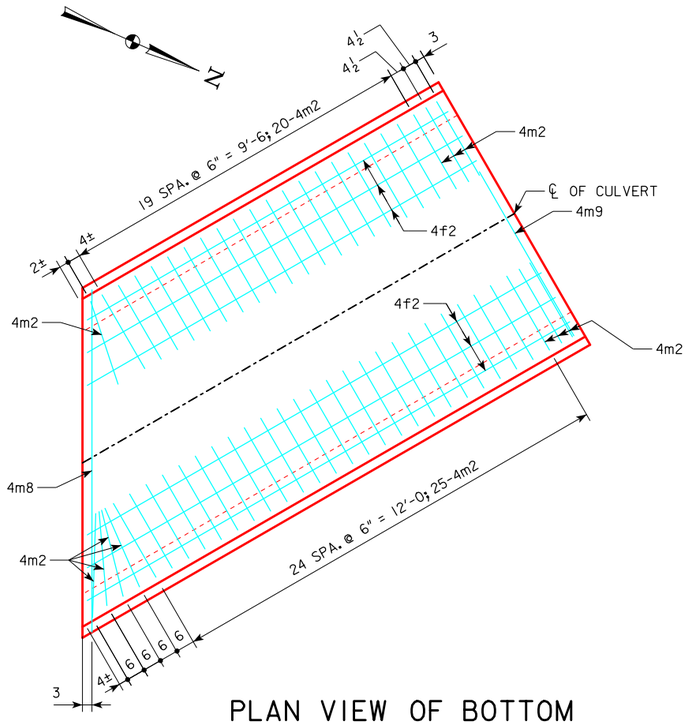
STATION 743+25.20 NOVEMBER, 2018

CLINTON COUNTY

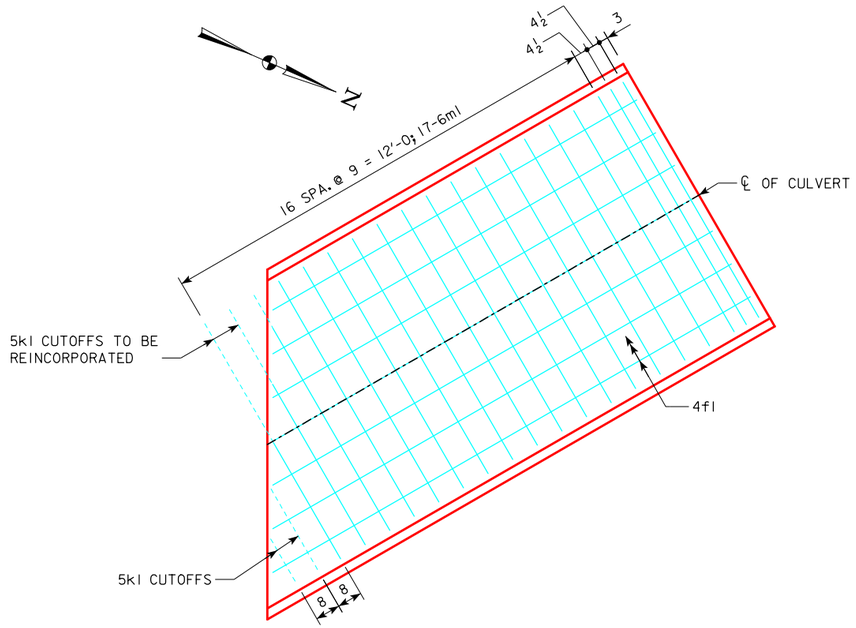
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 6 OF 9 FILE NO. 31558 DESIGN NO. 419

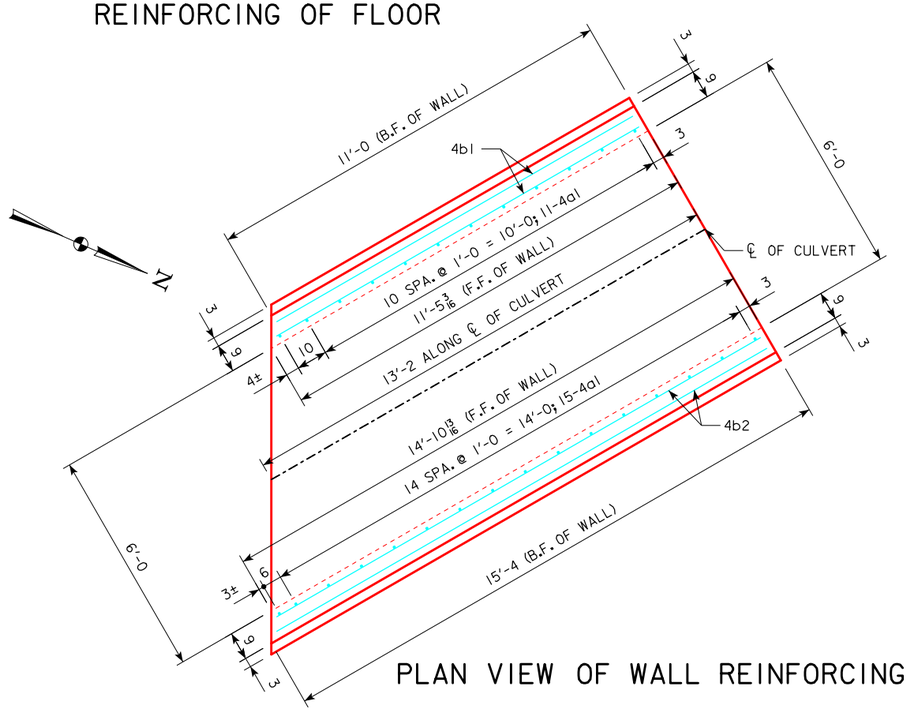
DESIGN TEAM: DA/BH/JS | CLINTON COUNTY | PROJECT NUMBER STPN-136-1(73)--2J-23 | SHEET NUMBER 17



PLAN VIEW OF BOTTOM REINFORCING OF FLOOR



PLAN VIEW OF TOP REINFORCING OF FLOOR



PLAN VIEW OF WALL REINFORCING

whks
engineers + planners + land surveyors

DESIGN FOR 0° SKEW

6'x3' REINFORCED CONCRETE BOX CULVERT EXTENSION

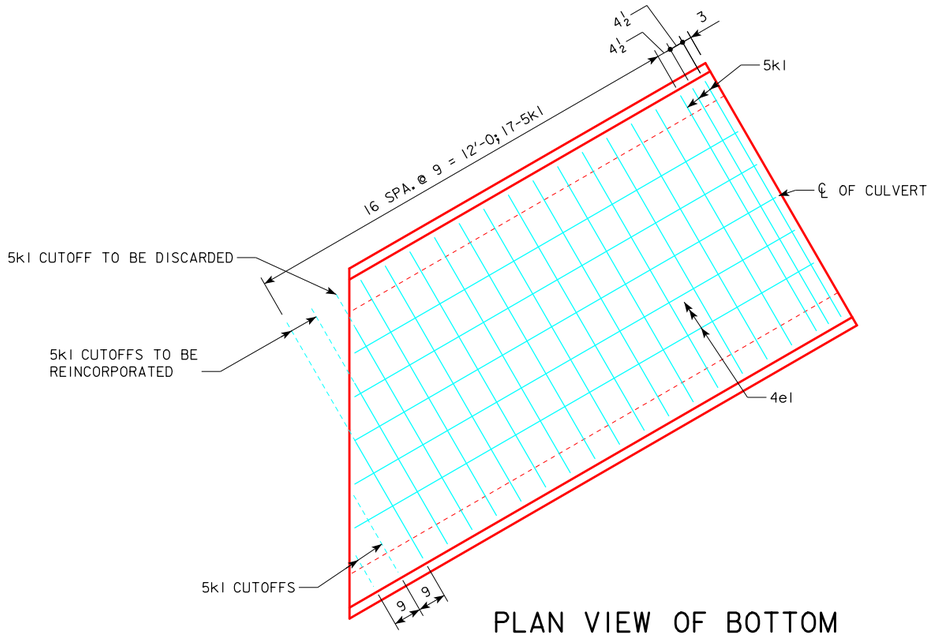
13'-2 FLOOR & WALL REINF. DTLS.

STATION 743+25.20 NOVEMBER, 2018

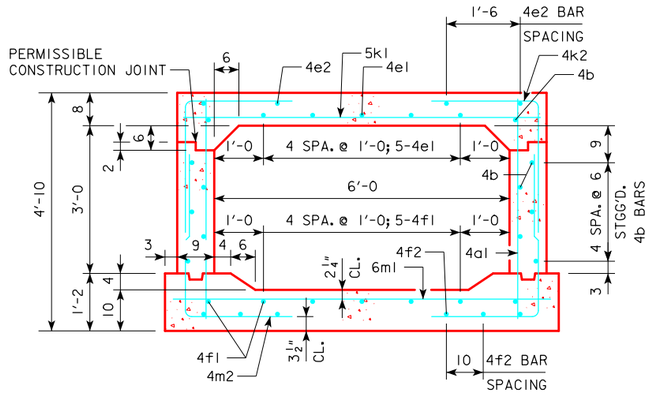
CLINTON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 7 OF 9 FILE NO. 31558 DESIGN NO. 419



PLAN VIEW OF BOTTOM REINFORCING OF SLAB

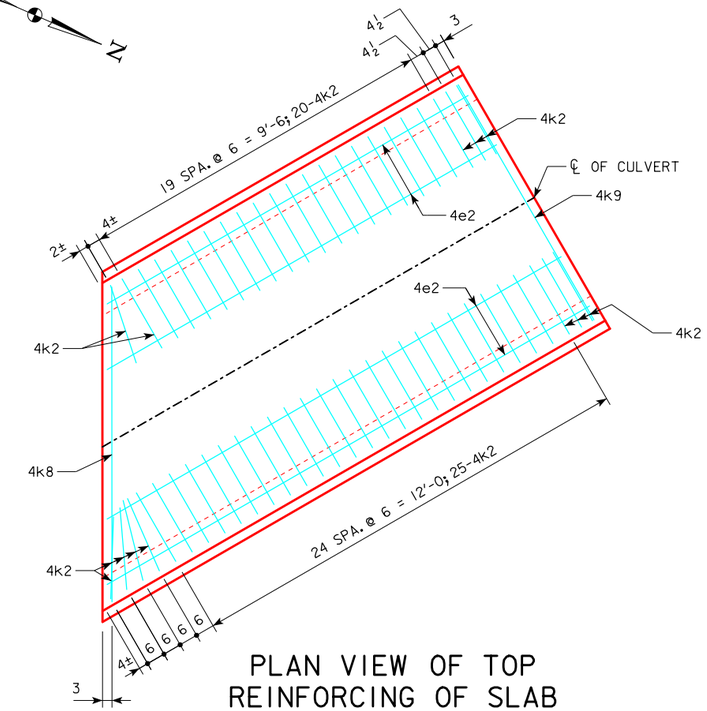


6 x 3 BARREL SECTION

REINFORCING BAR LIST-ONE 13'-2 EXTENSION

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
4a1	WALLS, FRONT FACE VERTICAL	—	28	4'-5	83
4b1	WEST WALL, HORIZONTAL	—	6	10'-11	44
4b2	EAST WALL, HORIZONTAL	—	6	14'-9	59
*4e1	SLAB, BOTT. LONGIT.	—	5	VARIES	43
*4e2	SLAB, TOP LONGIT.	—	4	VARIES	34
*4f1	FLOOR, TOP LONGIT.	—	7	VARIES	60
*4f2	FLOOR, BOTT LONGIT.	—	6	VARIES	51
5k1	SLAB, BOTT. TRANSV.	—	19	7'-2	142
4k2	SLAB, TOP CORNER	⌐	54	4'-11	177
4k8	SLAB, TOP TRANSV.	—	1	8'4	5
4k9	SLAB, TOP TRANSV.	—	1	7'-2	5
6m1	FLOOR, TOP TRANSV.	—	19	7'-8	219
4m2	FLOOR, BOTT. CORNER	⌐	54	5'-6	198
4m8	FLOOR, BOTT. TRANSV.	—	1	8'-10	6
4m9	FLOOR, BOTT. TRANSV.	—	1	7'-8	5
	REINFORCING STEEL - TOTAL (LBS.)				1,131

*4e1 BARS VARY FROM 11'-8 TO 13'-11 WEST TO EAST
*4e2 & 4f2 BARS VARY FROM 11'-1 TO 14'-7 WEST TO EAST
*4f1 BARS VARY FROM 11'-1 TO 14'-7 WEST TO EAST

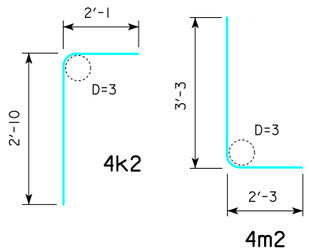


PLAN VIEW OF TOP REINFORCING OF SLAB

CONCRETE PLACEMENT QUANTITIES ONE 13'-2 END SECTION

LOCATION	CY
SLAB	2.9
WALLS	1.9
FLOOR	3.7
TOTAL (C.Y.)	8.5

BENT BAR DETAILS



NOTE: ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

DESIGN FOR 0° SKEW

6'x3' REINFORCED CONCRETE BOX CULVERT EXTENSION

13'-2 SLAB REINFORCING DETAILS

STATION 743+25.20 NOVEMBER, 2018

CLINTON COUNTY

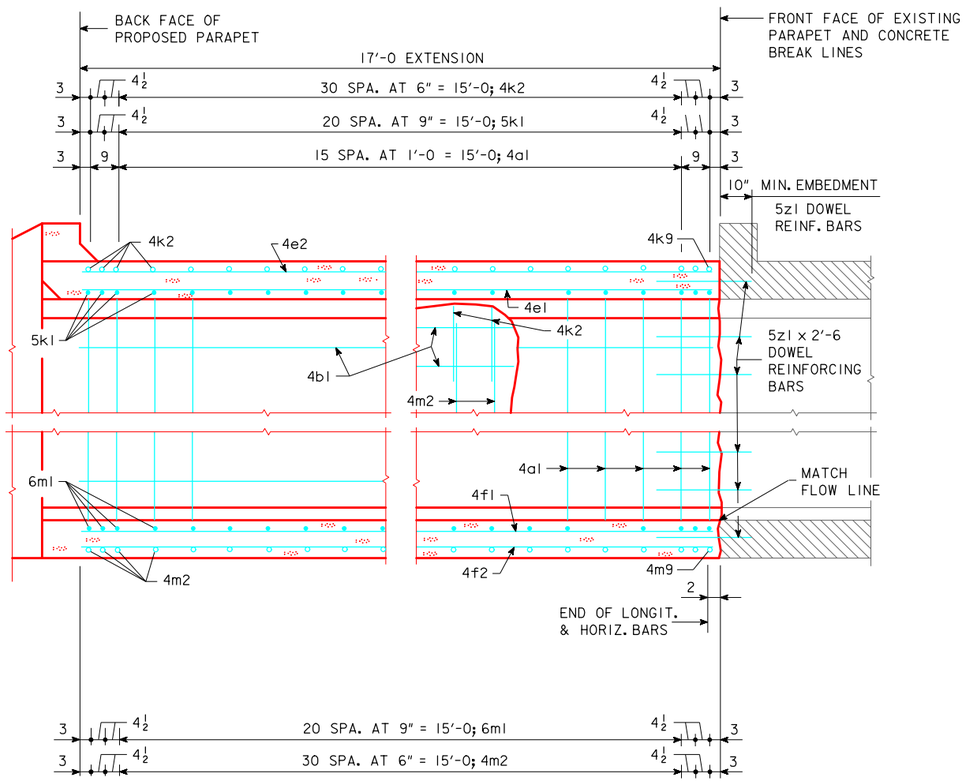
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 8 OF 9 FILE NO. 31558 DESIGN NO. 419

whks engineers + planners + land surveyors

DESIGN TEAM: DA/BH/JS | CLINTON COUNTY | PROJECT NUMBER STPN-136-1(73)--2J-23 | SHEET NUMBER 19

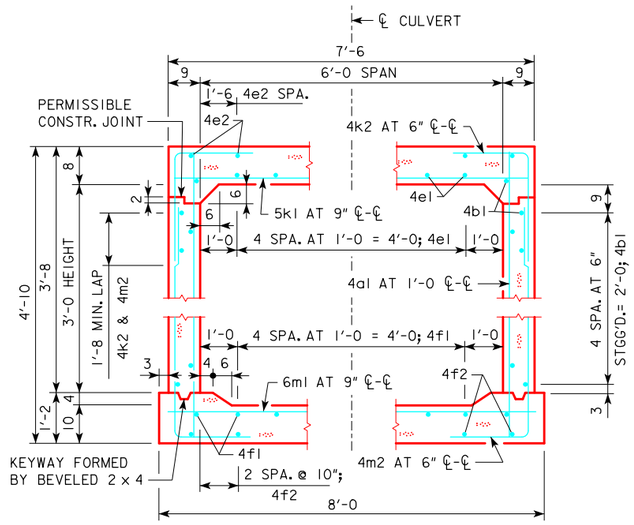
11/4/2019 10:37:52 AM wb L:\DEPT\6\7805.43\DRAWINGS\WORKING\BRG_23136073.dgn 230419S008 11x17_pdf.pltcfg



PART LONGITUDINAL SECTION

(ALONG ℄ OF CULVERT)

NOTE: ALL LONGITUDINAL BARREL STEEL SHALL EXTEND AT LEAST TO THE BACKFACE OF PARAPET.



SECTION THRU BARREL

(NORMAL TO ℄ CULVERT)

NOTE:
ALL TRANSVERSE REINFORCING BARS AND HORIZONTAL LEGS OF CORNER BARS SHALL BE PLACED PARALLEL TO THE CONCRETE BREAK LINE AND NEW PARAPET EXCEPT AS SHOWN.

DIMENSIONS SHOWN FOR ℄-℄ OF TRANSVERSE BARS, VERTICAL WALL BARS, AND CORNER BARS ARE MEASURED ALONG ℄ CULVERT.

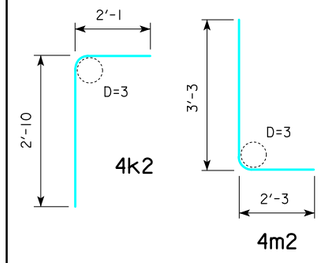
CONCRETE PER FOOT OF BARREL:

SLAB	= 3.7 CU. YDS.
WALLS	= 2.5 CU. YDS.
FLOOR	= 4.8 CU. YDS.
TOTAL	= 11.0 CU. YDS.

REINFORCING BAR LIST-ONE 17'-0 EXTENSION

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
4a1	WALLS, FRONT FACE VERTICAL	——	36	4'-5	106
4b1	EXTERIOR WALL, HORIZONTAL	——	12	16'-10	135
4e1	SLAB, BOTT. LONGIT.	——	5	16'-10	56
4e2	SLAB, TOP LONGIT.	——	4	16'-10	45
4f1	FLOOR, TOP LONGIT.	——	7	16'-10	79
4f2	FLOOR, BOTT LONGIT.	——	6	16'-10	67
5k1	SLAB, BOTT. TRANSV.	——	25	7'-2	187
4k2	SLAB, TOP CORNER	⌐	70	4'-11	230
4k9	SLAB, TOP TRANSV.	——	1	7'-2	5
6m1	FLOOR, TOP TRANSV.	——	25	7'-8	288
4m2	FLOOR, BOTT. CORNER	⌐	70	5'-6	257
4m9	FLOOR, BOTT. TRANSV.	——	1	7'-8	5
	REINFORCING STEEL - TOTAL (LBS.)				1460

BENT BAR DETAILS



NOTE: ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

whks
engineers + planners + land surveyors

DESIGN FOR 0° SKEW

6'x3' REINFORCED CONCRETE BOX CULVERT EXTENSION

17'-0 END BARREL DETAILS

STATION 743+25.20 NOVEMBER, 2018

CLINTON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 9 OF 9 FILE NO. 31558 DESIGN NO. 419

DESIGN TEAM: DA/BH/JS | CLINTON COUNTY | PROJECT NUMBER STPN-136-1(73)--2J-23 | SHEET NUMBER 20

ESTIMATED CULVERT QUANTITIES

ITEM NO.	ITEM CODE	ITEM	UNIT	TOTAL	AS BUILT QUANTITY
1	2102-0425071	SPECIAL BACKFILL	CY	20.2	
2	2107-3825025	GRANULAR MATERIAL FOR BLANKET AND SUBDRAIN	CY	53.0	
3	2401-6745650	REMOVAL OF EXISTING STRUCTURES	LS	1.00	
4	2415-2110805	PRECAST CONCRETE BOX CULVERT, 8 FT. X 5 FT.	LF	75.0	
5	2415-2200805	PRECAST CONCRETE BOX CULVERT STRAIGHT END SECTION, 8 FT. X 5 FT.	EACH	2	
6	2418-0000010	TEMPORARY STREAM DIVERSION	LS	1	

ITEM NO. — ESTIMATE REFERENCE INFORMATION

1 RECLAIMED ASPHALT PAVEMENT (RAP) AND RECLAIMED HMA SHALL NOT BE USED FOR THE SPECIAL BACKFILL. INCLUDES COST OF 6" THICK GRANULAR BEDDING (SPECIAL BACKFILL).

2 AN APPROXIMATE 1 FOOT THICK WORKING BLANKET CONSISTING OF SPECIAL BACKFILL IS RECOMMENDED TO BE INSTALLED BELOW THE GRANULAR BEDDING LAYER. SEE SHEET SPS.2. WORKING BLANKET IS OPTIONAL AND CAN BE ALTERED OR DELETED IF NOT NEEDED AT TIME OF CONSTRUCTION.

3 INCLUDES ALL WORK FOR REMOVAL AND OFF-SITE DISPOSAL OF THE EXISTING 8'x8' RCB. REMOVAL OF SCHEDULED ITEMS SHALL BE IN ACCORDANCE WITH SECTION 2401, OF THE STANDARD SPECIFICATIONS. ANY DAMAGE TO MATERIAL NOT TO BE REMOVED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND REPAIRED AT NO EXTRA COST TO THE STATE.

4 INCLUDES MATERIAL AND LABOR ASSOCIATED WITH PROVIDING AND INSTALLING THE CULVERT TIES, LIFTING HOLE PLUGS, ENGINEERING FABRIC, JOINT MATERIAL, AND GROUT AS REQUIRED.

5 INCLUDES MATERIAL AND LABOR ASSOCIATED WITH PROVIDING AND INSTALLING THE CULVERT TIES, LIFTING HOLE PLUGS, ENGINEERING FABRIC, JOINT MATERIAL, AND GROUT AS REQUIRED. INCLUDES 2 PRECAST END SECTIONS, 2 PRECAST LINTEL BEAMS, AND 2 PRECAST CURTAIN WALLS.

STANDARDS:
FOR DETAILS AND NOTES NOT SHOWN REFER TO THE FOLLOWING IOWA D.O.T. - HIGHWAY STANDARDS:

DESIGN 519		
STANDARD	ISSUED	REVISED
PRCB G1-13	1-13	7-16
PRCB G2-13	1-13	7-16
PRCB 8-13	1-13	-
PES 1-13-T1	1-13	7-16
PES 1-13-T3	1-13	7-16
PES 3-13-T3	1-13	7-16

DESIGN HISTORY AT THIS SITE
(INCLUDES THIS DESIGN)

DES. NO.	TYPE OF WORK
58	PRIMARY ROAD PROJECT NO. 352 PRIMARY BRIDGE PROJECT NO. B-257 8'x8' CONCRETE CULVERT EXTENSION
519	8'x5'x76' PRECAST REINFORCED CONCRETE BOX CULVERT

NOTE:
ROADWAY QUANTITIES SHOWN ELSEWHERE IN THESE PLANS.

whks
engineers + planners + land surveyors

DESIGN FOR 0° SKEW

8'x5'x76' PRECAST REINFORCED CONCRETE BOX CULVERT

ESTIMATED QUANTITIES

STATION 808+67.00 NOVEMBER, 2018

CLINTON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 1 OF 4 FILE NO. 31558 DESIGN NO. 519

DESIGN TEAM: DA/BH/JS | CLINTON COUNTY | PROJECT NUMBER STPN-136-1(73)--2J-23 | SHEET NUMBER 21

11/4/2019 10:37:53 AM wb L:\DEPT\6\7805.43\DRAWINGS\WORKING\BRG_23136073.dgn 230519S001 11x17_pdf.pltcfg

GENERAL NOTES:

IT IS THE INTENT OF THIS DESIGN TO REPLACE THE EXISTING 8'x8'x38.3' WITH A 8'x5'x76' PRECAST REINFORCED CONCRETE BOX CULVERT.

ELECTRONIC COPIES OF ORIGINAL DESIGN PLANS ARE AVAILABLE TO THE CONTRACTOR AS PART OF THE E-FILES SUPPLIED WITH THE CONTRACT DOCUMENTS. DIMENSIONS SHOWN ON THESE PLANS ARE BASED ON THE DIMENSIONS SHOWN ON THE PLANS REFERENCED IN THE "DESIGN HISTORY AT THIS SITE" ON DESIGN SHEET 1.

FAINT LINES ON PLANS INDICATE EXISTING STRUCTURE.

UTILITY COMPANIES AND MUNICIPALITIES WHOSE FACILITIES ARE SHOWN ON THE PLANS OR KNOWN TO BE WITHIN THE CONSTRUCTION LIMITS SHALL BE NOTIFIED BY THE CONTRACTOR OF THE CONSTRUCTION STARTING DATE.

THE PRECAST R.C.B. CULVERT SECTIONS ARE DESIGNED FOR HL-93 LIVE LOAD AND EARTH FILLS OF 2-9 FEET.

THE PRECAST R.C.B. BARREL AND END SECTIONS SHALL CONFORM TO IOWA D.O.T. SINGLE PRECAST R.C.B. CULVERT STANDARDS. AT THE CONTRACTOR'S OPTION, PRECAST BARREL SECTIONS MAY CONFORM TO ASTM C1577.

EXCESS CLASS 20 EXCAVATION MATERIAL SUITABLE FOR BACKFILLING SHALL BE STOCKPILED AT THE CONSTRUCTION SITE, AS DIRECTED BY THE ENGINEER.

THE BID ITEM "REMOVAL OF EXISTING STRUCTURES" SHALL INCLUDE ALL COSTS ASSOCIATED WITH REMOVING THE 8'x8' RCB. REMOVALS SHALL BE IN ACCORDANCE WITH SECTION 2401 OF THE STANDARD SPECIFICATIONS.

THE LENGTH IN LINEAR FEET OF PRECAST REINFORCED CONCRETE BOX CULVERT WILL BE BASED ON THE PLAN QUANTITY. FOR THE NUMBER OF LINEAR FEET GIVEN ON THE PLAN, THE CONTRACTOR WILL BE PAID THE CONTRACT UNIT PRICE PER LINEAR FOOT. THE PAYMENT SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, LABOR AND EQUIPMENT NECESSARY TO COMPLETE THE WORK EXCEPT FOR BID ITEMS "PRECAST CONCRETE BOX CULVERT STRAIGHT END SECTION", "CLASS 20 EXCAVATION", "CLASS E REVETMENT", "MOBILIZATION", AND "SPECIAL BACKFILL".

FOR EACH PRECAST BOX CONCRETE CULVERT STRAIGHT END SECTION INSTALLED THE CONTRACTOR WILL BE PAID THE CONTRACT PRICE PER EACH. THE PAYMENT SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL (INCLUDING LINTEL BEAMS AND CURTAIN WALLS), LABOR AND EQUIPMENT NECESSARY TO COMPLETE THE WORK EXCEPT FOR BID ITEMS "PRECAST CONCRETE BOX CULVERT", "CLASS 20 EXCAVATION", "CLASS E REVETMENT", "MOBILIZATION", AND "SPECIAL BACKFILL".

THE CURTAIN WALL AND THE TYPE 3 LINTEL BEAM OR TYPE I PARAPET SHALL BE PRECAST.

THE CONTRACTOR SHALL FURNISH AND INSTALL CULVERT TIES FOR ALL JOINTS. THE MAIN SECTION JOINTS WILL HAVE ONE TIE ON EACH SIDE OF THE BARREL AND THE LAST BARREL SECTION WILL BE ATTACHED TO THE END SECTIONS WITH TWO TIES PER SIDE. THE END SECTION JOINTS WILL HAVE TWO TIES PER SIDE.

CULVERT TIES SHALL BE INCLUDED IN THE COST FOR PRECAST CONCRETE BOX CULVERT. TIE RODS WILL BE 1 INCH DIAMETER STEEL AND SHALL MEET REQUIREMENTS OF ASTM A709 GRADE 36 OR EQUAL.

CULVERT TIE ASSEMBLIES SHALL BE GALVANIZED AFTER FABRICATION.

THE LIMITS FOR EXCAVATION FOR THE PRECAST CONCRETE BOX CULVERT SHALL BE AS SHOWN ON THE "GRANULAR BEDDING DETAIL".

A MINIMUM OF 6 INCHES OF GRANULAR MATERIAL WITH A MAXIMUM AGGREGATE SIZE OF $\frac{3}{8}$ INCH SHALL BE USED AS BEDDING FOR THE PRECAST CONCRETE BOX CULVERT. THE BEDDING SHALL BE SHAPED TO A FLAT BASE USING A TEMPLATE. THE 6 INCH GRANULAR BEDDING SHALL BE BID AS SPECIAL BACKFILL.

THE CONTRACTOR SHALL SUBMIT DETAILS OF THE PROPOSED PRECAST CONCRETE BOX SECTIONS FOR ALL PROJECTS. THE DETAILS SHALL INCLUDE THE FOLLOWING INFORMATION AS FOUND ON THE "SUBMITTAL SHOP DRAWING" STANDARD SHEET:

A. A SITUATION PLAN DRAWING SHOWING THE BACK TO BACK PARAPET DIMENSION FOR THE LINE OF THE CULVERT SECTIONS.
B. DIMENSION THE NUMBER OF PRECAST SECTIONS AND SECTION LENGTHS.
C. A DETAIL OF THE PRECAST BARREL SECTIONS SHOWING A CROSS SECTION VIEW OF THE SECTION, STEEL LOCATIONS, DIMENSIONS, ETC.
D. A DETAIL OF THE PRECAST CONCRETE CULVERT END SECTION SHOWING A CROSS SECTION VIEW OF THE SECTIONS, STEEL LOCATIONS, DIMENSIONS, ETC. SIMILAR TO THE END SECTION DETAILS SHOWN IN THE IDOT STANDARDS.

THE CONTRACTOR SHALL PROVIDE ALL INFORMATION SHOWN ON THE SUBMITTAL SHOP DRAWING SHEET REGARDLESS OF WHICH PRECAST CONCRETE BOX OPTION IS SELECTED. SHOP DRAWINGS SHALL BE SUBMITTED WITH THE FOLLOWING NAMING CONVENTION:

(Paren)_County_DesignNumber_SubmittalDescription.pdf
Example: (090)_BlackHawk_Design915_DeckDrains.pdf

APPROVAL OF DETAILS IS NOT REQUIRED FOR PROJECTS CONFORMING TO "ASTM C1577" AND "IDOT STANDARDS" PRECAST CONCRETE BOX OPTIONS WITH END SECTIONS CONFORMING TO "IDOT STANDARDS." HOWEVER, THE DETAILS SHALL BE RECEIVED BY THE OFFICE OF BRIDGES AND STRUCTURES PRIOR TO THE START OF FABRICATION.

APPROVAL OF DETAILS IS REQUIRED FOR "NONSTANDARD" PRECAST CONCRETE BOX OPTIONS AND "NONSTANDARD" END SECTION OPTIONS. BOXES AND END SECTIONS REQUIRING OPENINGS OR ATTACHMENTS SHALL BE CONSIDERED NONSTANDARD. THE CONTRACTOR SHALL ALLOW THIRTY WORKING DAYS FOR THE ENGINEER'S REVIEW PRIOR TO THE START OF FABRICATION.

DETAILS REQUIRING APPROVAL SHALL BE DESIGNED AND SEALED BY A PROFESSIONAL ENGINEER CURRENTLY REGISTERED IN THE STATE OF IOWA. BOXCAR SOFTWARE VERSION 3.1 OR LATER, OR OTHER EQUIVALENT SOFTWARE, CAN BE USED TO DESIGN THE PRECAST CONCRETE BOX CULVERT BARREL SECTIONS; PROVIDING THE ANALYSIS MEETS THE MINIMUM REQUIREMENTS ESTABLISHED FOR THE IDOT STANDARDS AS FOUND IN THE IDOT BRIDGE DESIGN MANUAL. THE MINIMUM REQUIREMENTS INCLUDE REINFORCEMENT CLEARANCE REQUIREMENTS USED IN THE "IDOT STANDARDS."

THE ROADWAY WILL BE CLOSED TO TRAFFIC DURING CONSTRUCTION. SEE TRAFFIC CONTROL PLAN NOTE.

INSTALLATION NOTES:

PRECAST CONCRETE BOX CULVERT SECTIONS SHALL BE LAID WITH THE GROOVE END OF EACH SECTION UP-GRADE, AND THE SECTIONS SHALL BE TIGHTLY JOINED. CONCRETE TIES TO BE USED ONLY TO HOLD BOX SECTIONS TOGETHER, NOT FOR PULLING SECTIONS TIGHT. JOINT OPENINGS BETWEEN SECTIONS SHOULD BE AS TIGHT AS PRACTICABLE AND LIMITED TO A MAXIMUM OF $\frac{3}{4}$ INCH OPENINGS. THE JOINT ON THE BOTTOM OF THE CULVERT SHALL BE SEALED WITH A FLEXIBLE WATER TIGHT 1 INCH BUTYL ROPE GASKET AS PER MATERIALS I.M. 491.09.

BUTYL ROPE GASKET SHALL BE INSTALLED IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE MANUFACTURER AND SHALL EXTEND VERTICALLY 6 INCHES ABOVE THE BOTTOM FILLET. ALL JOINTS SHALL BE TRIMMED CLEAN ON THE INSIDE AFTER SEALING.

THE CONTRACTOR SHALL PLACE A 2 FOOT WIDE PIECE OF ENGINEERING FABRIC AROUND THE TOP AND SIDES OF EACH PRECAST JOINT. THE FABRIC SHALL BE CENTERED WITH 1 FOOT ON EACH SIDE OF THE JOINT, THE FABRIC SHALL BE ATTACHED TO THE WALLS AND TOP OF EACH SECTION TO PREVENT THE FABRIC FROM SLIPPING OFF THE JOINT DURING BACKFILLING OPERATIONS. ATTACHMENT METHODS SHALL BE APPROVED BY THE ENGINEER. ALL COSTS INCLUDING MATERIAL AND LABOR ASSOCIATED WITH PROVIDING THE ENGINEERING FABRIC AND INSTALLING IT AS REQUIRED SHALL BE INCLUDED IN THE BID ITEMS "PRECAST CONCRETE BOX CULVERT" AND "PRECAST CONCRETE BOX CULVERT STRAIGHT END SECTION". THE ENGINEERING FABRIC SHALL BE IN ACCORDANCE WITH ARTICLE 4196.01, B, 3, OF THE STANDARD SPECIFICATIONS.

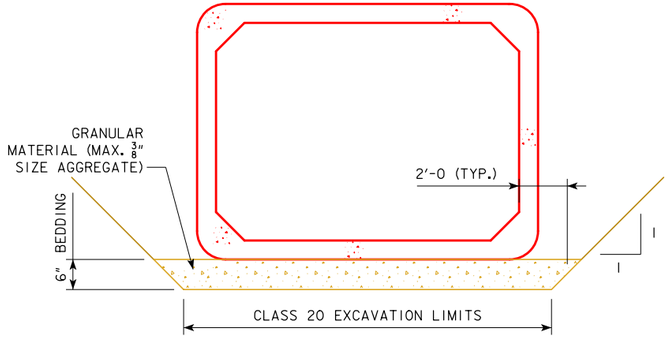
CLASS E REVETMENT WILL BE PLACED AROUND BOTH PRECAST CONCRETE BOX CULVERT END SECTIONS, AS SHOWN IN THESE PLANS.

DURING BACKFILLING THE COMPACTION ADJACENT TO THE BOTTOM CORNER RADII OR CHAMFER SHALL BE ACCOMPLISHED WITH A MECHANICAL HAND COMPACTOR.

THE CONTRACTOR SHALL FURNISH AND INSTALL LIFTING HOLE PLUGS FOR EACH SECTION. LIFTING HOLES SHALL BE PLUGGED WITH A PRECAST CONCRETE PLUG OR PLASTIC PLUG APPROVED BY THE ENGINEER, SEALED AND COVERED WITH A 2'-0 x 2'-0 PIECE OF ENGINEERING FABRIC CENTERED OVER THE HOLE AND ATTACHED TO THE SECTION TO PREVENT THE FABRIC FROM SLIPPING.

SINCE PRECAST CONCRETE BOX CULVERT END SECTIONS HAVE THE FORESLOPE LOCATED AT THE BOTTOM OF THE PARAPET INSTEAD OF THE TOP (AS IN THE CASE OF CAST IN PLACE RCB CULVERTS) THE MAIN BARREL SECTION HAS BEEN LENGTHENED.

ALL REINFORCING BARS AND BARS NOTED AS DOWELS SUPPLIED FOR THIS STRUCTURE SHALL BE DEFORMED REINFORCEMENT UNLESS OTHERWISE NOTED OR SHOWN.



GRANULAR BEDDING DETAIL

GRANULAR MATERIAL SHALL TERMINATE 3'-0 SHORT OF THE PRECAST CURTAIN WALL.

NOTE:
POLLUTION PREVENTION PLAN SHOWN ELSEWHERE IN THESE PLANS.

TRAFFIC CONTROL PLAN
NOTE: THE ROADWAY WILL BE CLOSED TO THRU TRAFFIC. REFER TO THE TRAFFIC CONTROL PLAN SHOWN ELSEWHERE IN THESE PLANS.

DESIGN FOR 0° SKEW

8'x5'x76' PRECAST REINFORCED CONCRETE BOX CULVERT

CULVERT GENERAL NOTES

STATION 808+67.00 NOVEMBER, 2018

CLINTON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

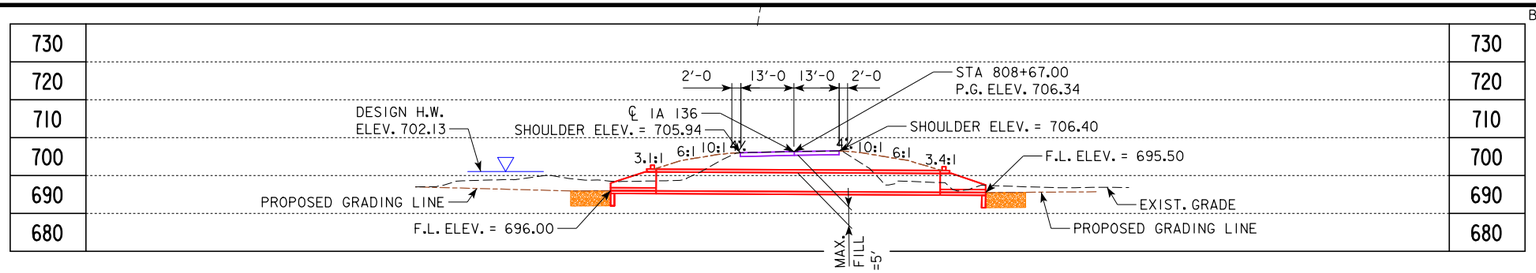
DESIGN SHEET NO. 2 OF 4 FILE NO. 31558 DESIGN NO. 519

REVISED 03-2017 - CHANGED BID ITEM REFERENCES TO "SPECIAL BACKFILL" (WAS "GRANULAR BACKFILL").
REVISED 04-2017 - REMOVED REFERENCE "TO THE OFFICE OF BRIDGES AND STRUCTURES" IN NOTE STATING TO SUBMIT DETAILS OF PROPOSED PRECAST BOX SECTIONS. ADDED NOTE STATING "SHOP DRAWINGS SHALL BE SUBMITTED WITH THE FOLLOWING NAMING CONVENTION".
REVISED 09-2017 - CORRECTED TYPOS.
ENGLISHPRECASTCULVERTS.DGN - I08IP - THIS SHEET ISSUED 01-13.

DESIGN TEAM: DA/BH/JS	PRECAST CULVERT GENERAL NOTES	STANDARD SHEET I08IP (MODIFIED)	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER 22

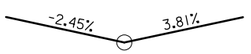
11/4/2019 10:37:53 AM wb L:\DEPT\6\7805.43\DRAWINGS\WORKING\BRG_23136073.dgn 230519S002 11x17_pdf.pltcfg

BENCH MARK NO. 509, STA. 809+14.1. SET RR SPIKE S SIDE PP 28.5' RT.
EL = 704.68



LONGITUDINAL SECTION ALONG ℄ CULVERT

DESIGN FILL HEIGHT = 5'-0
ANTICIPATED SETTLEMENT = NEGLIGIBLE



VPI STA = 808+95
VPI ELEV = 703.00
VC = 400'

PROPOSED PROFILE GRADE ON IA 136

NOTES:

ALL UNITS ARE IN FEET UNLESS OTHERWISE NOTED OR SHOWN.

SEE ROAD SHEETS FOR ADDITIONAL INFORMATION ON PROPOSED GRADING LIMITS.

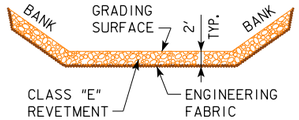
SEE H SHEETS FOR RIGHT OF WAY.

HEADWALLS SHALL BE PLACED LEVEL.

SEE STANDARD ROAD PLAN DR-111 FOR BACKFILLING REQUIREMENTS.

DRAINAGE THROUGH EXISTING CULVERT/CHANNEL MUST BE MAINTAINED THROUGHOUT CONSTRUCTION.

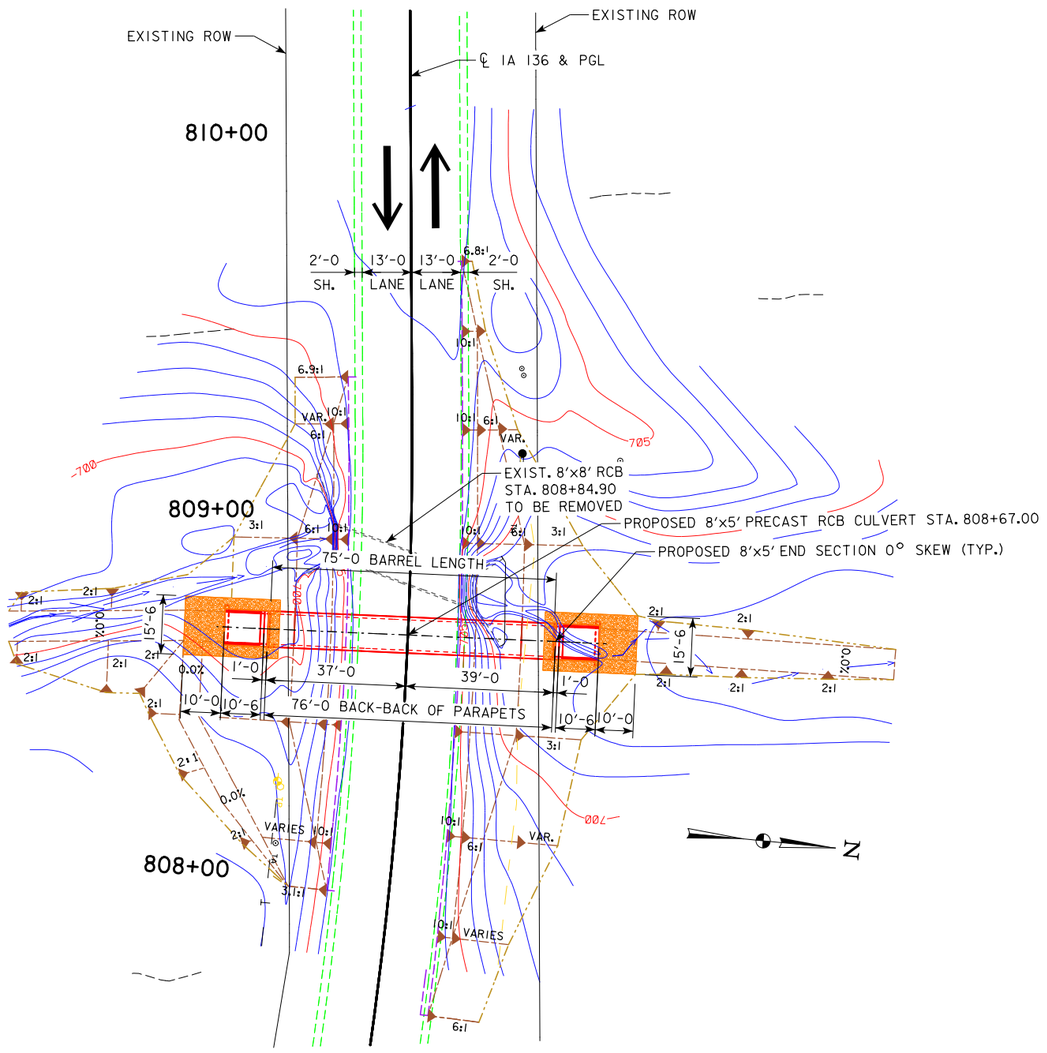
IT IS THE INTENT OF THIS DESIGN TO REMOVE AND REPLACE THE EXISTING 8' x 8' REINFORCED CONCRETE BOX CULVERT WITH A 8' x 5' x 76' PRECAST REINFORCED CONCRETE BOX.



TYPICAL CHANNEL PROTECTION

ESTIMATED REVETMENT QUANTITIES INCLUDED WITH ROAD PLANS		
LOCATION	REVETMENT CL. "E" (TON)	ENGINEERING FABRIC (SY)
INLET	29.3	87.1
OUTLET	29.3	85.6
TOTALS	58.7	172.7

QUANTITIES SHOWN FOR INFORMATION ONLY. SEE ROAD SHEETS.



SITUATION PLAN

HORIZONTAL CURVE DATA

Δ = 19° 23' 29.52" (LT)
T = 195.65
L = 387.55
R = 1,145.10
E = 16.59

HYDRAULIC DATA

DRAINAGE AREA = 300 ACRES ROLLING
Q_{50} = 323 CFS
HW ELEV. = 702.13

UTILITIES LEGEND:

-T1- TL1D WINDSTREAM MCLEOD - QUALITY D1
-T2- TL2D PRESTON TELEPHONE - QUALITY D1
-FO2- FO2D PRESTON TELEPHONE - QUALITY D1

TRAFFIC ESTIMATE

2014 AADT 1240 V.P.D.

LOCATION

ON IA 136 OVER DRAINAGE DITCH
T-83N R-5E
SECTION 30
DEEP CREEK TOWNSHIP
CLINTON COUNTY
LATITUDE 41.963401
LONGITUDE -90.424688

DESIGN FOR 0° SKEW

8'x5'x76' PRECAST REINFORCED CONCRETE BOX CULVERT

SITUATION PLAN

STATION 808+67.00 NOVEMBER, 2018

CLINTON COUNTY

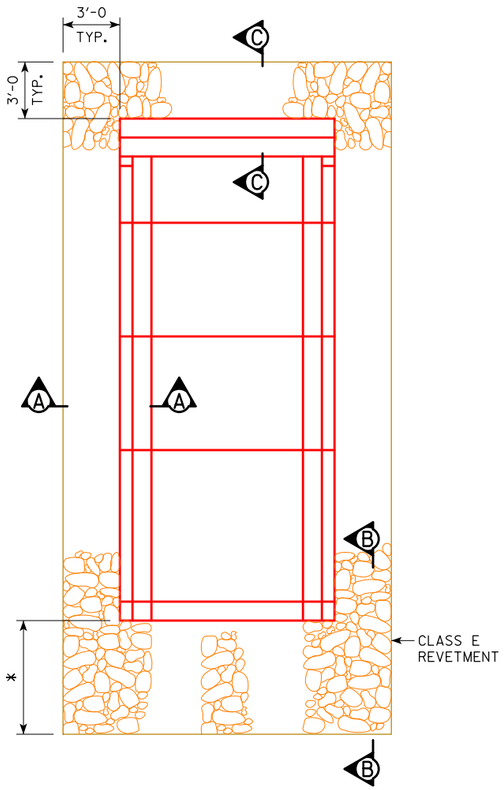
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 3 OF 4 FILE NO. 31558 DESIGN NO. 519

whks engineers + planners + land surveyors

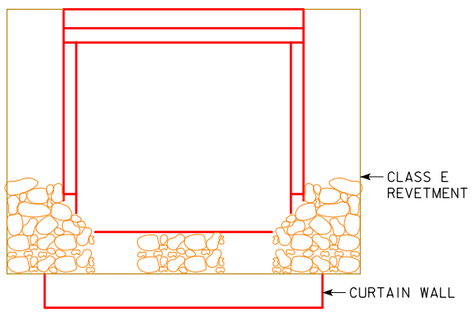
DESIGN TEAM: DA/BH/JS | CLINTON COUNTY | PROJECT NUMBER STPN-136-1(73)--2J-23 | SHEET NUMBER 23

11/4/2019 10:37:54 AM wb L:\DEPT\6\7805.43\DRAWINGS\WORKING\BRG_23136073.dgn 230519S003 11x17_pdf.pltcfg



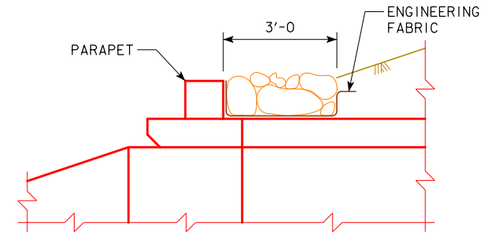
PLAN VIEW

* = SEE SITUATION PLAN FOR LIMITS OF REVETMENT AND ENGINEERING FABRIC.



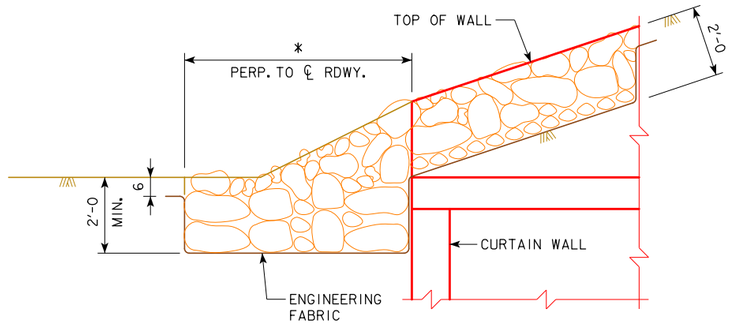
ELEVATION VIEW

NON-SKEW END SECTIONS

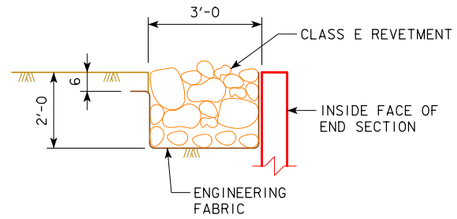


SECTION C-C

* = SEE SITUATION PLAN FOR LIMITS OF REVETMENT AND ENGINEERING FABRIC.



SECTION B-B



SECTION A-A

TYPICAL DETAILS

CONSTRUCTION NOTES:

CLASS E REVETMENT SHOULD BE USED AND PLACED ACCORDING TO ARTICLE 2507.03 OF THE STANDARD SPECIFICATIONS.

THE ENGINEERING FABRIC SHALL MEET THE MATERIAL REQUIREMENTS IN ACCORDANCE WITH ARTICLE 4196.01, B, 3 OF THE STANDARD SPECIFICATIONS.

DESIGN FOR 0° SKEW

8'x5'x76' PRECAST REINFORCED CONCRETE BOX CULVERT

REVETMENT PROTECTION DETAILS

STATION 808+67.00 NOVEMBER, 2018

CLINTON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 4 OF 4 FILE NO. 31558 DESIGN NO. 519

whks
engineers + planners + land surveyors

REVISED 10-14 - CHANGED THE AREA OF THE REVETMENT TO INCLUDE THE AREA IN FRONT OF THE APRON. CHANGED THE DEPTH OF REVETMENT TO 2'-0.
REVISED 12-15 - ADDED NOTE "SEE CULVERT PLANS FOR LIMITS OF REVETMENT AND ENGINEERING FABRIC."
ENGLISHSIGNEDPRECASTCULVERTS.DGN - PEP 1-13 - THIS SHEET ISSUED 01-13.

DESIGN TEAM: DA/BH/JS | CLINTON COUNTY | PROJECT NUMBER STPN-136-1(73)--2J-23 | SHEET NUMBER 24

11/4/2019 10:37:54 AM wb L:\DEPT\6\7805.43\DRAWINGS\WORKING\BRG_23136073.dgn 230519S004 11x17_pdf.pltcfg

ESTIMATED CULVERT QUANTITIES

ITEM NO.	ITEM CODE	ITEM	UNIT	TOTAL	AS BUILT QUANTITY
1	2102-0425071	SPECIAL BACKFILL	CY	21.0	
2	2401-6745650	REMOVAL OF EXISTING STRUCTURES	LS	1.00	
3	2415-2110805	PRECAST CONCRETE BOX CULVERT, 8 FT. X 5 FT.	LF	71.0	
4	2415-2200805	PRECAST CONCRETE BOX CULVERT STRAIGHT END SECTION, 8 FT. X 5 FT.	EACH	2	
5	2418-0000010	TEMPORARY STREAM DIVERSION	LS	1	

ITEM NO. — ESTIMATE REFERENCE INFORMATION

1 RECLAIMED ASPHALT PAVEMENT (RAP) AND RECLAIMED HMA SHALL NOT BE USED FOR THE SPECIAL BACKFILL. INCLUDES COST OF 6" THICK GRANULAR BEDDING (SPECIAL BACKFILL).

2 INCLUDES ALL WORK FOR REMOVAL AND OFF-SITE DISPOSAL OF THE EXISTING 6'x6' RCB. REMOVAL OF SCHEDULED ITEMS SHALL BE IN ACCORDANCE WITH SECTION 2401, OF THE STANDARD SPECIFICATIONS. ANY DAMAGE TO MATERIAL NOT TO BE REMOVED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND REPAIRED AT NO EXTRA COST TO THE STATE.

3 INCLUDES MATERIAL AND LABOR ASSOCIATED WITH PROVIDING AND INSTALLING THE CULVERT TIES, LIFTING HOLE PLUGS, ENGINEERING FABRIC, JOINT MATERIAL, AND GROUT AS REQUIRED.

4 INCLUDES MATERIAL AND LABOR ASSOCIATED WITH PROVIDING AND INSTALLING THE CULVERT TIES, LIFTING HOLE PLUGS, ENGINEERING FABRIC, JOINT MATERIAL, AND GROUT AS REQUIRED. INCLUDES 2 PRECAST END SECTIONS, 2 PRECAST LINTEL BEAMS, AND 2 PRECAST CURTAIN WALLS, BOTH WITH 30 DEGREE SKEWS.

STANDARDS:
FOR DETAILS AND NOTES NOT SHOWN REFER TO THE FOLLOWING IOWA D.O.T. - HIGHWAY STANDARDS:

DESIGN 619		
STANDARD	ISSUED	REVISED
PRCB G1-13	1-13	7-16
PRCB G2-13	1-13	7-16
PRCB 8-13	1-13	-
PES 2-13-T3	1-13	7-16
PES 3-13-T3	1-13	7-16

DESIGN HISTORY AT THIS SITE
(INCLUDES THIS DESIGN)

DES. NO.	TYPE OF WORK
61	PRIMARY ROAD PROJECT NO. 352 PRIMARY BRIDGE PROJECT NO. B-257 6'x6' CONCRETE CULVERT EXTENSION
619	8'x5'x76' PRECAST REINFORCED CONCRETE BOX CULVERT

NOTE:
ROADWAY QUANTITIES SHOWN ELSEWHERE IN THESE PLANS.

whks
engineers + planners + land surveyors

DESIGN FOR 20° SKEW (RA)

8'x5'x76' PRECAST REINFORCED CONCRETE BOX CULVERT

ESTIMATED QUANTITIES

STATION 838+23.00 NOVEMBER, 2018

CLINTON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 1 OF 4 FILE NO. 31558 DESIGN NO. 619

11/4/2019 10:37:55 AM wb L:\DEPT\6\7805.43\DRAWINGS\WORKING\BRG_23136073.dgn 230619S001 11x17_pdf.pltcfg

GENERAL NOTES:

IT IS THE INTENT OF THIS DESIGN TO REPLACE THE EXISTING 6'x6'x52.5' WITH A 8'x5'x76' PRECAST REINFORCED CONCRETE BOX CULVERT.

ELECTRONIC COPIES OF ORIGINAL DESIGN PLANS ARE AVAILABLE TO THE CONTRACTOR AS PART OF THE E-FILES SUPPLIED WITH THE CONTRACT DOCUMENTS. DIMENSIONS SHOWN ON THESE PLANS ARE BASED ON THE DIMENSIONS SHOWN ON THE PLANS REFERENCED IN THE "DESIGN HISTORY AT THIS SITE" ON DESIGN SHEET 1.

FAINT LINES ON PLANS INDICATE EXISTING STRUCTURE.

UTILITY COMPANIES AND MUNICIPALITIES WHOSE FACILITIES ARE SHOWN ON THE PLANS OR KNOWN TO BE WITHIN THE CONSTRUCTION LIMITS SHALL BE NOTIFIED BY THE CONTRACTOR OF THE CONSTRUCTION STARTING DATE.

THE PRECAST R.C.B. CULVERT SECTIONS ARE DESIGNED FOR HL-93 LIVE LOAD AND EARTH FILLS OF 2-9 FEET.

THE PRECAST R.C.B. BARREL AND END SECTIONS SHALL CONFORM TO IOWA D.O.T. SINGLE PRECAST R.C.B. CULVERT STANDARDS. AT THE CONTRACTOR'S OPTION, PRECAST BARREL SECTIONS MAY CONFORM TO ASTM C1577.

EXCESS CLASS 20 EXCAVATION MATERIAL SUITABLE FOR BACKFILLING SHALL BE STOCKPILED AT THE CONSTRUCTION SITE, AS DIRECTED BY THE ENGINEER.

THE BID ITEM "REMOVAL OF EXISTING STRUCTURES" SHALL INCLUDE ALL COSTS ASSOCIATED WITH REMOVING THE 6'x6' RCB. REMOVALS SHALL BE IN ACCORDANCE WITH SECTION 2401 OF THE STANDARD SPECIFICATIONS.

THE LENGTH IN LINEAR FEET OF PRECAST REINFORCED CONCRETE BOX CULVERT WILL BE BASED ON THE PLAN QUANTITY. FOR THE NUMBER OF LINEAR FEET GIVEN ON THE PLAN, THE CONTRACTOR WILL BE PAID THE CONTRACT UNIT PRICE PER LINEAR FOOT. THE PAYMENT SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, LABOR AND EQUIPMENT NECESSARY TO COMPLETE THE WORK EXCEPT FOR BID ITEMS "PRECAST CONCRETE BOX CULVERT STRAIGHT END SECTION", "CLASS 20 EXCAVATION", CLASS 22 EXCAVATION, "CLASS E REVETMENT", "MOBILIZATION", AND "SPECIAL BACKFILL".

FOR EACH PRECAST BOX CONCRETE CULVERT STRAIGHT END SECTION INSTALLED THE CONTRACTOR WILL BE PAID THE CONTRACT PRICE PER EACH. THE PAYMENT SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL (INCLUDING LINTEL BEAMS AND CURTAIN WALLS), LABOR AND EQUIPMENT NECESSARY TO COMPLETE THE WORK EXCEPT FOR BID ITEMS "PRECAST CONCRETE BOX CULVERT", "CLASS 20 EXCAVATION", CLASS 22 EXCAVATION, "CLASS E REVETMENT", "MOBILIZATION", AND "SPECIAL BACKFILL".

THE CURTAIN WALL AND THE TYPE 3 LINTEL BEAM OR TYPE I PARAPET SHALL BE PRECAST.

THE CONTRACTOR SHALL FURNISH AND INSTALL CULVERT TIES FOR ALL JOINTS. THE MAIN SECTION JOINTS WILL HAVE ONE TIE ON EACH SIDE OF THE BARREL AND THE LAST BARREL SECTION WILL BE ATTACHED TO THE END SECTIONS WITH TWO TIES PER SIDE. THE END SECTION JOINTS WILL HAVE TWO TIES PER SIDE.

CULVERT TIES SHALL BE INCLUDED IN THE COST FOR PRECAST CONCRETE BOX CULVERT. TIE RODS WILL BE 1 INCH DIAMETER STEEL AND SHALL MEET REQUIREMENTS OF ASTM A709 GRADE 36 OR EQUAL.

CULVERT TIE ASSEMBLIES SHALL BE GALVANIZED AFTER FABRICATION.

THE LIMITS FOR EXCAVATION FOR THE PRECAST CONCRETE BOX CULVERT SHALL BE AS SHOWN ON THE "GRANULAR BEDDING DETAIL".

A MINIMUM OF 6 INCHES OF GRANULAR MATERIAL WITH A MAXIMUM AGGREGATE SIZE OF $\frac{3}{8}$ INCH SHALL BE USED AS BEDDING FOR THE PRECAST CONCRETE BOX CULVERT. THE BEDDING SHALL BE SHAPED TO A FLAT BASE USING A TEMPLATE. THE 6 INCH GRANULAR BEDDING SHALL BE BID AS SPECIAL BACKFILL.

THE CONTRACTOR SHALL SUBMIT DETAILS OF THE PROPOSED PRECAST CONCRETE BOX SECTIONS FOR ALL PROJECTS. THE DETAILS SHALL INCLUDE THE FOLLOWING INFORMATION AS FOUND ON THE "SUBMITTAL SHOP DRAWING" STANDARD SHEET:

A. A SITUATION PLAN DRAWING SHOWING THE BACK TO BACK PARAPET DIMENSION FOR THE LINE OF THE CULVERT SECTIONS.
B. DIMENSION THE NUMBER OF PRECAST SECTIONS AND SECTION LENGTHS.
C. A DETAIL OF THE PRECAST BARREL SECTIONS SHOWING A CROSS SECTION VIEW OF THE SECTION, STEEL LOCATIONS, DIMENSIONS, ETC.
D. A DETAIL OF THE PRECAST CONCRETE CULVERT END SECTION SHOWING A CROSS SECTION VIEW OF THE SECTIONS, STEEL LOCATIONS, DIMENSIONS, ETC. SIMILAR TO THE END SECTION DETAILS SHOWN IN THE IDOT STANDARDS.

THE CONTRACTOR SHALL PROVIDE ALL INFORMATION SHOWN ON THE SUBMITTAL SHOP DRAWING SHEET REGARDLESS OF WHICH PRECAST CONCRETE BOX OPTION IS SELECTED. SHOP DRAWINGS SHALL BE SUBMITTED WITH THE FOLLOWING NAMING CONVENTION:

(Paren)_County_DesignNumber_SubmittalDescription.pdf
Example: (090)_BlackHawk_Design915_DeckDrains.pdf

APPROVAL OF DETAILS IS NOT REQUIRED FOR PROJECTS CONFORMING TO "ASTM C1577" AND "IDOT STANDARDS" PRECAST CONCRETE BOX OPTIONS WITH END SECTIONS CONFORMING TO "IDOT STANDARDS." HOWEVER, THE DETAILS SHALL BE RECEIVED BY THE OFFICE OF BRIDGES AND STRUCTURES PRIOR TO THE START OF FABRICATION.

APPROVAL OF DETAILS IS REQUIRED FOR "NONSTANDARD" PRECAST CONCRETE BOX OPTIONS AND "NONSTANDARD" END SECTION OPTIONS. BOXES AND END SECTIONS REQUIRING OPENINGS OR ATTACHMENTS SHALL BE CONSIDERED NONSTANDARD. THE CONTRACTOR SHALL ALLOW THIRTY WORKING DAYS FOR THE ENGINEER'S REVIEW PRIOR TO THE START OF FABRICATION.

DETAILS REQUIRING APPROVAL SHALL BE DESIGNED AND SEALED BY A PROFESSIONAL ENGINEER CURRENTLY REGISTERED IN THE STATE OF IOWA. BOXCAR SOFTWARE VERSION 3.1 OR LATER, OR OTHER EQUIVALENT SOFTWARE, CAN BE USED TO DESIGN THE PRECAST CONCRETE BOX CULVERT BARREL SECTIONS; PROVIDING THE ANALYSIS MEETS THE MINIMUM REQUIREMENTS ESTABLISHED FOR THE IDOT STANDARDS AS FOUND IN THE IDOT BRIDGE DESIGN MANUAL. THE MINIMUM REQUIREMENTS INCLUDE REINFORCEMENT CLEARANCE REQUIREMENTS USED IN THE "IDOT STANDARDS."

THE ROADWAY WILL BE CLOSED TO TRAFFIC DURING CONSTRUCTION. SEE TRAFFIC CONTROL PLAN NOTE.

INSTALLATION NOTES:

PRECAST CONCRETE BOX CULVERT SECTIONS SHALL BE LAID WITH THE GROOVE END OF EACH SECTION UP-GRADE, AND THE SECTIONS SHALL BE TIGHTLY JOINED. CONCRETE TIES TO BE USED ONLY TO HOLD BOX SECTIONS TOGETHER, NOT FOR PULLING SECTIONS TIGHT. JOINT OPENINGS BETWEEN SECTIONS SHOULD BE AS TIGHT AS PRACTICABLE AND LIMITED TO A MAXIMUM OF $\frac{3}{4}$ INCH OPENINGS. THE JOINT ON THE BOTTOM OF THE CULVERT SHALL BE SEALED WITH A FLEXIBLE WATER TIGHT 1 INCH BUTYL ROPE GASKET AS PER MATERIALS I.M. 491.09.

BUTYL ROPE GASKET SHALL BE INSTALLED IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE MANUFACTURER AND SHALL EXTEND VERTICALLY 6 INCHES ABOVE THE BOTTOM FILLET. ALL JOINTS SHALL BE TRIMMED CLEAN ON THE INSIDE AFTER SEALING.

THE CONTRACTOR SHALL PLACE A 2 FOOT WIDE PIECE OF ENGINEERING FABRIC AROUND THE TOP AND SIDES OF EACH PRECAST JOINT. THE FABRIC SHALL BE CENTERED WITH 1 FOOT ON EACH SIDE OF THE JOINT, THE FABRIC SHALL BE ATTACHED TO THE WALLS AND TOP OF EACH SECTION TO PREVENT THE FABRIC FROM SLIPPING OFF THE JOINT DURING BACKFILLING OPERATIONS. ATTACHMENT METHODS SHALL BE APPROVED BY THE ENGINEER. ALL COSTS INCLUDING MATERIAL AND LABOR ASSOCIATED WITH PROVIDING THE ENGINEERING FABRIC AND INSTALLING IT AS REQUIRED SHALL BE INCLUDED IN THE BID ITEMS "PRECAST CONCRETE BOX CULVERT" AND "PRECAST CONCRETE BOX CULVERT STRAIGHT END SECTION". THE ENGINEERING FABRIC SHALL BE IN ACCORDANCE WITH ARTICLE 4196.01, B, 3, OF THE STANDARD SPECIFICATIONS.

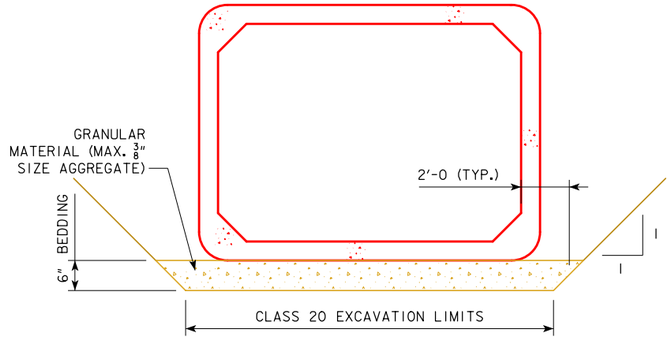
CLASS E REVETMENT WILL BE PLACED AROUND BOTH PRECAST CONCRETE BOX CULVERT END SECTIONS, AS SHOWN IN THESE PLANS.

DURING BACKFILLING THE COMPACTION ADJACENT TO THE BOTTOM CORNER RADII OR CHAMFER SHALL BE ACCOMPLISHED WITH A MECHANICAL HAND COMPACTOR.

THE CONTRACTOR SHALL FURNISH AND INSTALL LIFTING HOLE PLUGS FOR EACH SECTION. LIFTING HOLES SHALL BE PLUGGED WITH A PRECAST CONCRETE PLUG OR PLASTIC PLUG APPROVED BY THE ENGINEER, SEALED AND COVERED WITH A 2'-0 x 2'-0 PIECE OF ENGINEERING FABRIC CENTERED OVER THE HOLE AND ATTACHED TO THE SECTION TO PREVENT THE FABRIC FROM SLIPPING.

SINCE PRECAST CONCRETE BOX CULVERT END SECTIONS HAVE THE FORESLOPE LOCATED AT THE BOTTOM OF THE PARAPET INSTEAD OF THE TOP (AS IN THE CASE OF CAST IN PLACE RCB CULVERTS) THE MAIN BARREL SECTION HAS BEEN LENGTHENED.

ALL REINFORCING BARS AND BARS NOTED AS DOWELS SUPPLIED FOR THIS STRUCTURE SHALL BE DEFORMED REINFORCEMENT UNLESS OTHERWISE NOTED OR SHOWN.



GRANULAR BEDDING DETAIL

GRANULAR MATERIAL SHALL TERMINATE 3'-0 SHORT OF THE PRECAST CURTAIN WALL.

NOTE:
POLLUTION PREVENTION PLAN SHOWN ELSEWHERE IN THESE PLANS.

TRAFFIC CONTROL PLAN

NOTE: THE ROADWAY WILL BE CLOSED TO THRU TRAFFIC. REFER TO THE TRAFFIC CONTROL PLAN SHOWN ELSEWHERE IN THESE PLANS.

DESIGN FOR 20° SKEW (RA)

8'x5'x76' PRECAST REINFORCED CONCRETE BOX CULVERT

CULVERT GENERAL NOTES

STATION 838+23.00 NOVEMBER, 2018

CLINTON COUNTY

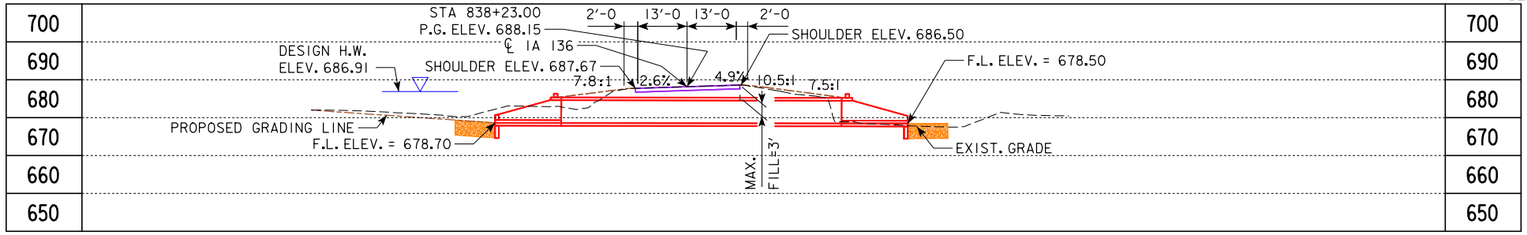
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

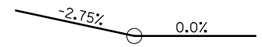
DESIGN SHEET NO. 2 OF 4 FILE NO. 31558 DESIGN NO. 619

whks
engineers + planners + land surveyors

REVISED 03-2017 - CHANGED BID ITEM REFERENCES TO "SPECIAL BACKFILL" (WAS "GRANULAR BACKFILL").
REVISED 04-2017 - REMOVED REFERENCE "TO THE OFFICE OF BRIDGES AND STRUCTURES" IN NOTE STATING TO SUBMIT DRAWINGS SHALL BE SUBMITTED WITH THE FOLLOWING NAMING CONVENTION".
REVISED 09-2017 - CORRECTED TYPOS.
ENGLISHPRECASTCULVERTS.DGN - I08IP - THIS SHEET ISSUED 01-13.

BENCH MARK NO. 505, STA. 838+27.7. SET MAG NAIL IN HEADWALL 14.7' LT
EL = 687.05





VPI STA = 838+75
VPI ELEV = 634.00
VC = 200'

PROPOSED PROFILE GRADE ON IA 136

LONGITUDINAL SECTION ALONG ℄ CULVERT

DESIGN FILL HEIGHT = 2'-0
ANTICIPATED SETTLEMENT = NEGLIGIBLE

NOTES:

ALL UNITS ARE IN FEET UNLESS OTHERWISE NOTED OR SHOWN.

SEE ROAD SHEETS FOR ADDITIONAL INFORMATION ON PROPOSED GRADING LIMITS.

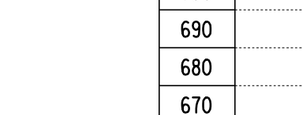
DRAINAGE THROUGH EXISTING CULVERT/CHANNEL MUST BE MAINTAINED THROUGHOUT CONSTRUCTION.

SEE H SHEETS FOR RIGHT OF WAY.

HEADWALLS SHALL BE PLACED LEVEL.

SEE STANDARD ROAD PLAN DR-111 FOR BACKFILLING REQUIREMENTS.

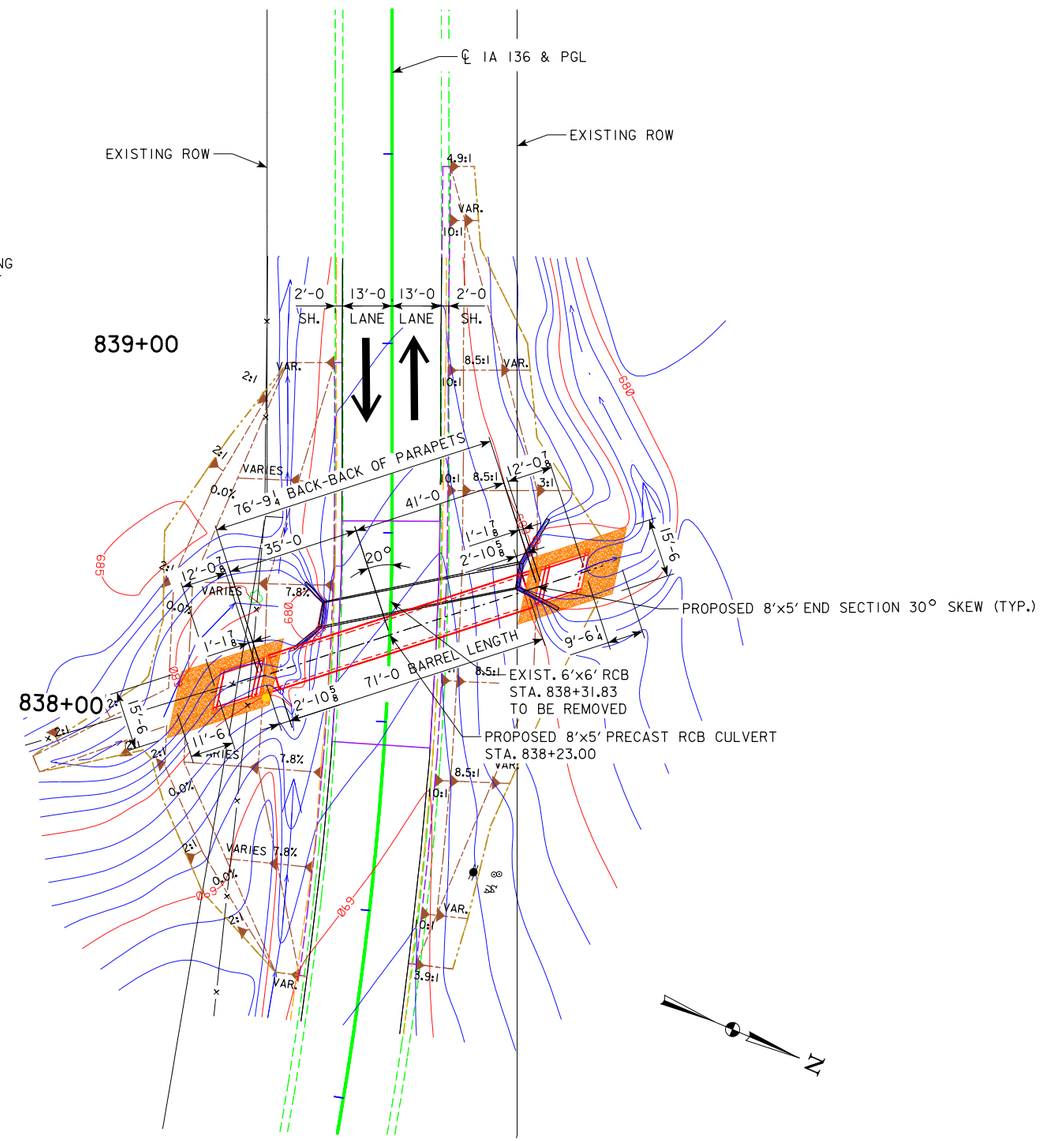
IT IS THE INTENT OF THIS DESIGN TO REMOVE AND REPLACE THE EXISTING 6' x 6' REINFORCED CONCRETE BOX CULVERT WITH A 8' x 5' x 76' PRECAST REINFORCED CONCRETE BOX.



TYPICAL CHANNEL PROTECTION

ESTIMATED REVETMENT QUANTITIES INCLUDED WITH ROAD PLANS		
LOCATION	REVETMENT CL. "E" (TON)	ENGINEERING FABRIC (SY)
INLET	35.7	107.8
OUTLET	32.4	102.4
TOTALS	72.1	210.1

QUANTITIES SHOWN FOR INFORMATION ONLY. SEE ROAD SHEETS.



SITUATION PLAN

HORIZONTAL CURVE DATA

Δ = 19° 05' 28.54" (LT)
T = 160.79
L = 318.59
R = 956.14
E = 13.42

HYDRAULIC DATA

DRAINAGE AREA = 380 ACRES ROLLING
Q_{50} = 382 CFS
HW ELEV. = 686.91

UTILITIES LEGEND:

NO KNOWN UTILITIES

TRAFFIC ESTIMATE

2014 AADT 1240 V.P.D.

LOCATION

ON IA 136 OVER DRAINAGE DITCH
T-83N R-4E
SECTION 25
WATERFORD TOWNSHIP
CLINTON COUNTY
LATITUDE 41.962604
LONGITUDE -90.435523

DESIGN FOR 20° SKEW (RA)

8'x5'x76' PRECAST REINFORCED CONCRETE BOX CULVERT

SITUATION PLAN

STATION 838+23.00 NOVEMBER, 2018

CLINTON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 3 OF 4 FILE NO. 31558 DESIGN NO. 619

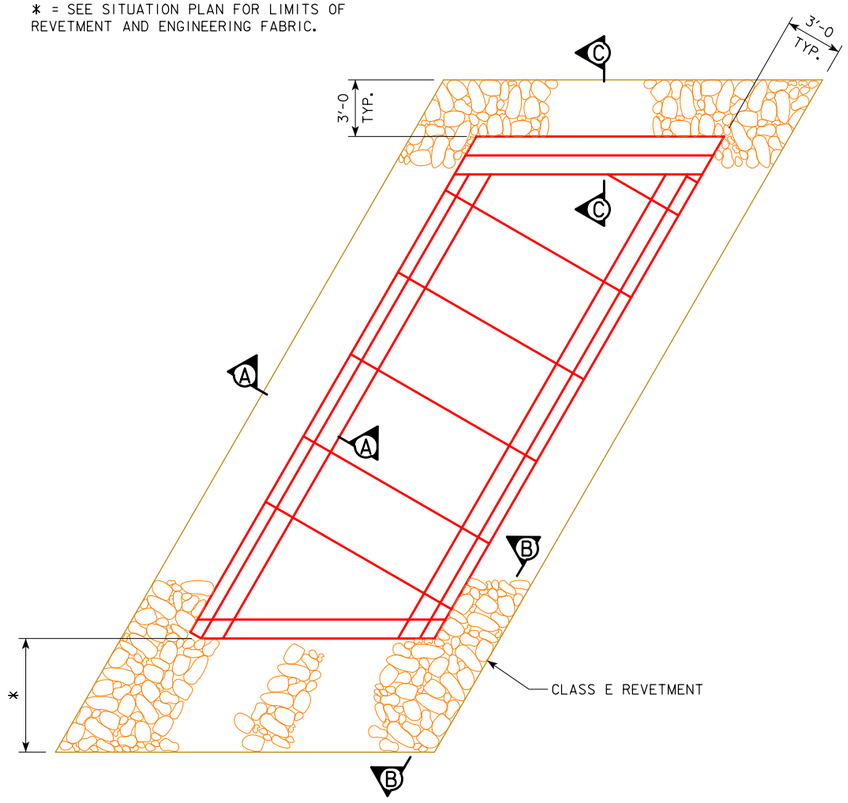
whks engineers + planners + land surveyors

DESIGN TEAM: DA/BH/JS | CLINTON COUNTY | PROJECT NUMBER STPN-136-1(73)--2J-23 | SHEET NUMBER 27

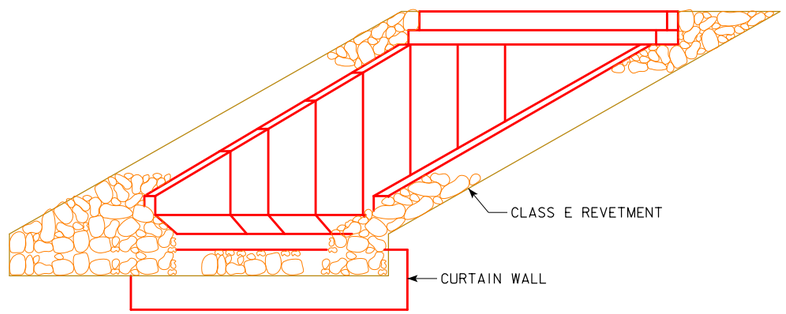
11/4/2019 10:37:56 AM wb L:\DEPT\6\7805.43\DRAWINGS\WORKING\BRG_23136073.dgn 230619S003 11x17_pdf.pltcfg

REVISED 10-14 - CHANGED THE AREA OF THE REVETMENT TO INCLUDE THE AREA IN FRONT OF THE APRON. CHANGED THE DEPTH OF REVETMENT TO 2'-0.
REVISED 12-15 - ADDED NOTE "SEE CULVERT PLANS FOR LIMITS OF REVETMENT AND ENGINEERING FABRIC."
ENGLISH\SIGNEDPRECASTCULVERTS.DGN - PEP 1-13 - THIS SHEET ISSUED 01-13.

* = SEE SITUATION PLAN FOR LIMITS OF REVETMENT AND ENGINEERING FABRIC.

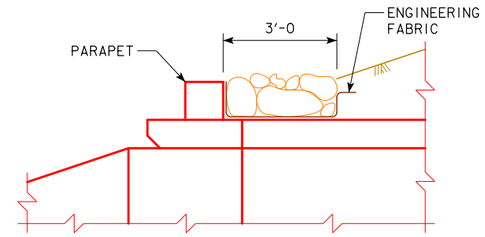


PLAN VIEW



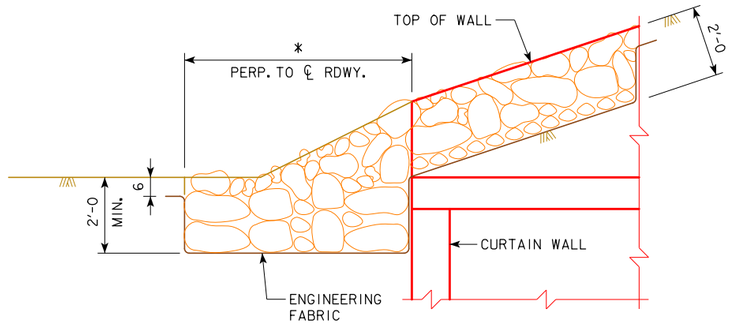
ELEVATION VIEW

30° SKEWED END SECTIONS

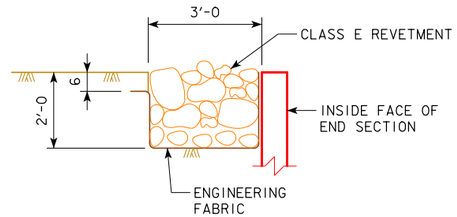


SECTION C-C

* = SEE SITUATION PLAN FOR LIMITS OF REVETMENT AND ENGINEERING FABRIC.



SECTION B-B



SECTION A-A

TYPICAL DETAILS

CONSTRUCTION NOTES:

CLASS E REVETMENT SHOULD BE USED AND PLACED ACCORDING TO ARTICLE 2507.03 OF THE STANDARD SPECIFICATIONS.

THE ENGINEERING FABRIC SHALL MEET THE MATERIAL REQUIREMENTS IN ACCORDANCE WITH ARTICLE 4196.01, B, 3 OF THE STANDARD SPECIFICATIONS.

DESIGN FOR 20° SKEW (RA)

8'x5'x76' PRECAST REINFORCED CONCRETE BOX CULVERT

REVETMENT PROTECTION DETAILS

STATION 838+23.00 NOVEMBER, 2018

CLINTON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 4 OF 4 FILE NO. 31558 DESIGN NO. 619

whks engineers + planners + land surveyors

DESIGN TEAM: DA/BH/JS | CLINTON COUNTY | PROJECT NUMBER STPN-136-1(73)--2J-23 | SHEET NUMBER 28

11/4/2019 10:37:56 AM wb L:\DEPT\6\7805.43\DRAWINGS\WORKING\BRG_23136073.dgn 230619S004 11x17_pdf.pltcfg

ESTIMATED CULVERT QUANTITIES

ITEM NO.	ITEM CODE	ITEM	UNIT	TOTAL	AS BUILT QUANTITY
1	2401-6750001	REMOVALS, AS PER PLAN	LS	1.00	
2	2403-0100020	STRUCTURAL CONCRETE (RCB CULVERT)	CY	32.9	
3	2404-7775000	REINFORCING STEEL	LB	5142	
4	2418-0000010	TEMPORARY STREAM DIVERSION	LS	1	

ITEM NO. — ESTIMATE REFERENCE INFORMATION

1 INCLUDES ALL WORK FOR REMOVAL AND OFF-SITE DISPOSAL AS DETAILED ON THE SITUATION PLAN. REMOVAL OF SCHEDULED ITEMS SHALL BE IN ACCORDANCE WITH SECTION 2401, OF THE STANDARD SPECIFICATIONS. ANY DAMAGE TO MATERIAL NOT TO BE REMOVED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND REPAIRED AT NO EXTRA COST TO THE STATE.

SPECIFICATIONS:

DESIGN: AASHTO LRFD 5th Ed, SERIES OF 2010.

CONSTRUCTION: IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, SERIES 2015, PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.

DESIGN STRESSES:

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 5th Ed, SERIES OF 2010.
REINFORCING STEEL IN ACCORDANCE WITH AASHTO LRFD SECTION 5, GRADE 60.
CONCRETE IN ACCORDANCE WITH AASHTO LRFD SECTION 5, f'c = 4.0 KSI.

STANDARDS:
FOR DETAILS AND NOTES NOT SHOWN REFER TO THE FOLLOWING IOWA D.O.T. - HIGHWAY STANDARDS:

DESIGN 719		
STANDARD	ISSUED	REVISED
PWH 30-1-12	4-12	12-16
PWH 30-2-12	4-12	12-16
PWH 30-3-12	4-12	7-16
PWH 30-4-12	4-12	-
PWH 30-7-12	4-12	7-16

SUMMARY OF REINFORCING STEEL

LOCATION	QUANTITY	TOTAL
17'-0 BENT BARREL EXTENSION	2334	2334
HEADWALL 30° SKEW	2730	2730
5z1 BARS	78	78
	TOTAL (LBS.)	5142

CONCRETE PLACEMENT QUANTITIES

LOCATION	FOOTING	WALLS	SLAB	TOTAL
17-0' BENT BARREL EXTENSION	5.9	5.3	4.5	15.7
HEADWALL 30° SKEW	10.2	5.7	1.3*	17.2
TOTAL (C.Y.)	16.1	11.0	5.8	32.9

* INCLUDES PARAPET AND TOP OF WINGWALL.

DESIGN HISTORY AT THIS SITE
(INCLUDES THIS DESIGN)

DES. NO.	TYPE OF WORK
62	PRIMARY ROAD PROJECT NO. 352 PRIMARY BRIDGE PROJECT NO. B-257 8'x6' CONCRETE CULVERT EXTENSION
719	8'x6' REINFORCED CONCRETE BOX CULVERT EXTENSION

NOTE:
ROADWAY QUANTITIES SHOWN ELSEWHERE IN THESE PLANS.

whks
engineers + planners + land surveyors

DESIGN FOR 18° SKEW (LA)

8'x6' REINFORCED CONCRETE BOX CULVERT EXTENSION

ESTIMATED QUANTITIES

STATION 844+26.62 — NOVEMBER, 2018

CLINTON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 1 OF 7 FILE NO. 31558 DESIGN NO. 719

GENERAL NOTES:

IT IS THE INTENT OF THIS DESIGN TO EXTEND THE EXISTING 8′ x 6′ R.C.B. CULVERT ON THE NORTH END.

ELECTRONIC COPIES OF ORIGINAL DESIGN PLANS ARE AVAILABLE TO THE CONTRACTOR AS PART OF THE E-FILES SUPPLIED WITH THE CONTRACT DOCUMENTS. DIMENSIONS SHOWN ON THESE PLANS ARE BASED ON THE DIMENSIONS SHOWN ON THE PLANS REFERENCED IN THE "DESIGN HISTORY AT THIS SITE" ON DESIGN SHEET 1.

FAINT LINES ON PLANS INDICATE EXISTING STRUCTURE.

UTILITY COMPANIES AND MUNICIPALITIES WHOSE FACILITIES ARE SHOWN ON THE PLANS OR KNOWN TO BE WITHIN THE CONSTRUCTION LIMITS SHALL BE NOTIFIED BY THE CONTRACTOR OF THE CONSTRUCTION STARTING DATE.

THE R.C.B. CULVERT EXTENSION SECTIONS ARE DESIGNED FOR HL-93 LIVE LOAD AND EARTH FILL OF 4 FEET. THIS DESIGN IS BASED ON LOAD AND RESISTANCE FACTOR DESIGN, ACCORDING TO THE 2010 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

VERTICAL EARTH PRESSURE, EV=0.120 kcf.

HORIZONTAL EARTH PRESSURE, EHmax = 0.060 kcf MAX, EHmin = 0.030 kcf.

THE CONTRACTOR MAY SUBMIT ALTERNATE FROST TROUGH DIMENSIONS FOR APPROVAL. ANY ADDITIONAL COSTS DUE TO CHANGE IN THE FROST TROUGH DIMENSIONS IS TO BE PAID FOR BY THE CONTRACTOR.

FLOOR OF BARREL IS TO BE FINISHED SMOOTH. SIDES OF FOOTING ARE TO BE FORMED TO INSURE CORRECT LINE AND GRADE.

THE PERMISSIBLE CONSTRUCTION JOINT AT THE TOP OF THE WALLS MAY BE LOWERED AT THE CONTRACTOR'S OPTION WITH ENGINEER'S APPROVAL.

THE VERTICAL BARS IN THE WALLS MAY BE SPLICED ABOVE THE FOOTING AT THE CONTRACTOR'S OPTION AS FOLLOWS:

BAR SIZE NUMBER	4	5	6	7	8
MINIMUM SPLICE LENGTH	21"	26"	31"	41"	54"

THIS SPLICE, IF USED WILL BE AT THE CONTRACTOR'S EXPENSE.

METAL BAR CHAIRS SPACED AT NOT OVER 3′-0 C.-C. IN EITHER DIRECTION ARE TO BE USED TO SUPPORT ALL SLAB AND FLOOR STEEL AS OUTLINED IN THE STANDARD SPECIFICATIONS.

THE REINFORCEMENT SUPPLIED FOR THIS STRUCTURE SHALL BE GRADE 60.

REINFORCING BAR CLEARANCES WILL BE AS FOLLOWS:

EDGE CLEARANCES: 2" EXCEPT
- TOP OF FLOOR $2\frac{1}{4}$" TO NEAR TRANSV. REINF. BAR
- BOTTOM OF FLOOR $3\frac{1}{2}$" TO NEAR TRANSV. REINF. BAR

END CLEARANCES:
- VERTICAL TOP 2"
- VERTICAL BOTTOM 3" OR $3\frac{1}{2}$" IF OVERALL HEIGHT OF THE CULVERT IS NOT TO A FULL INCH
- TRANSVERSE 2"

ALL REINFORCING BARS AND BARS NOTED AS DOWELS SUPPLIED FOR THIS STRUCTURE SHALL BE DEFORMED REINFORCEMENT UNLESS OTHERWISE NOTED OR SHOWN.

EXCESS CLASS 20 EXCAVATION MATERIAL SUITABLE FOR BACKFILLING SHALL BE STOCKPILED AT THE CONSTRUCTION SITE, AS DIRECTED BY THE ENGINEER. CLASS 20 EXCAVATION MATERIAL UNSUITABLE FOR BACKFILLING SHALL BE DISPOSED OF IN A MANNER THAT WILL LEAVE THE SITE IN A NEAT CONDITION. IT SHALL BE THE BRIDGE CONTRACTOR'S RESPONSIBILITY TO PROVIDE SITES FOR EXCESS EXCAVATED MATERIAL. NO PAYMENT FOR OVERHAUL WILL BE ALLOWED FOR MATERIAL HAULED TO THESE SITES.

THE PRICE BID FOR "REMOVALS AS PER PLAN" SHALL INCLUDE THE COST FOR REMOVALS OF PORTIONS OF THE EXISTING CULVERT AND THE SETTING OF THE DOWEL REINFORCING BARS INTO EXISTING CONCRETE.

ALL DIMENSIONS AND DETAILS SHOWN ON THESE PLANS PERTINENT TO NEW CONSTRUCTION IN RELATION TO EXISTING PORTIONS OF THE STRUCTURE SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR BEFORE STARTING CONSTRUCTION.

THE REMOVAL OF THE EXISTING CULVERT SHALL BE AT THE FRONT FACE OF THE EXISTING PARAPET. REMOVALS SHALL BE ON A VERTICAL PLANE PARALLEL WITH THE FRONT FACE OF THE EXISTING PARAPET, AND TO THE WIDTH OF THE FLOOR OF THE PROPOSED EXTENSION. THE WALLS SHALL BE CUT NORMAL TO THE BARREL WALLS AND AS SHOWN ON THE "PART REMOVAL PLAN". THE REMOVAL LINE SHALL BE INITIATED WITH A $2\frac{1}{2}$"± DEEP SAW CUT ON THE TOP AND BOTH SIDES OF EACH WALL, AND ACROSS THE TOP OF THE FLOOR. THIS SAW CUT SHOULD CUT THRU ANY EXISTING LONGITUDINAL REINFORCING THEREBY FACILITATING A NEAT NON-SPALLED BREAK LINE. IF EXISTING TOP OF PARAPETS WILL BE WITHIN 0′-6 OF PROPOSED SUBGRADE ELEVATION, THE PARAPETS SHALL BE REMOVED DOWN TO AN ELEVATION 1"± ABOVE THE TOP OF THE EXISTING SLAB. ANY EXISTING PARAPET VERTICAL BARS EXPOSED DURING PARAPET REMOVAL SHALL BE CUT OFF FLUSH WITH THE PARAPET REMOVAL LINE AND PAINTED WITH TWO COATS OF ZINC RICH PAINT.

ALL REMOVALS SHALL BE CAREFULLY ACCOMPLISHED AND ANY CONCRETE DAMAGED BY THE CONTRACTOR THAT IS NOT TO BE REMOVED SHALL BE REPAIRED BY THE CONTRACTOR AT NO EXTRA COST TO THE STATE. REMOVALS SHALL BE IN ACCORDANCE WITH SECTION 2401 OF THE STANDARD SPECIFICATIONS.

THE ROADWAY WILL BE OPEN TO TRAFFIC DURING CONSTRUCTION.

SINCE THE HIGHWAY WILL NOT BE CLOSED TO TRAFFIC DURING THIS CONSTRUCTION, THE CONTRACTOR MAY FEEL TEMPORARY SHORING (SHEET PILE OR OTHER) IS NECESSARY TO ENSURE THAT THE SHOULDER WILL NOT SLOUGH IN WHILE CULVERT IS BEING EXTENDED. HOWEVER, IF FOR ANY REASON SUCH SHORING IS DEEMED NECESSARY, THE CULVERT CONTRACTOR SHALL SUBMIT THE SHORING PLAN TO THE ENGINEER FOR APPROVAL. COST OF SHORING, IF REQUIRED, WILL BE CONSIDERED INCIDENTAL TO CONSTRUCTION AND NO DIRECT PAYMENT WILL BE MADE. THEREFORE, ALL MATERIAL USED FOR SHORING SHALL REMAIN THE PROPERTY OF THE CONTRACTOR. IN ADDITION TO THE REQUIREMENTS NOTED ABOVE, ARTICLE 1107.07, OF THE STANDARD SPECIFICATIONS, STILL APPLIES.

THE PROPOSED CULVERT EXTENSION SHALL ABUT AGAINST THE FRONT FACE OF THE EXISTING PARAPET. 5z1 x 2′-6 DOWEL REINFORCING BARS WITH A 10" MINIMUM EMBEDMENT INTO EXISTING CONCRETE SHALL BE SET AROUND THE ENTIRE PERIPHERY OF THE EXISTING CULVERT. 5z1 DOWEL REINFORCING BARS SHALL BE CENTERED IN THE EXISTING SLAB, WALLS AND FLOOR. 5z1 DOWEL REINFORCING BARS SHALL BE AT 1′-0 MAXIMUM SPACING C.-C. OF DOWELS. 5z1 DOWEL REINFORCING BARS SHALL BE SET WITH POLYMER GROUT IN ACCORDANCE WITH ARTICLE 2301.03, E, OF THE STANDARD SPECIFICATIONS, AND CURRENT SUPPLEMENTAL SPECIFICATIONS OF THE IOWA D.O.T. HIGHWAY DIVISION.

KEYWAY DIMENSIONS SHOWN ON THE PLANS ARE BASED ON NOMINAL DIMENSIONS UNLESS STATED OTHERWISE. IN ADDITION, THE BEVEL USED ON THE KEYWAY SHALL BE LIMITED TO A MAXIMUM OF 10 DEGREES FROM VERTICAL.

THESE BRIDGE PLANS LABEL ALL REINFORCING STEEL WITH ENGLISH NOTATION (5a1 IS $\frac{5}{8}$ INCH DIAMETER BAR). ENGLISH REINFORCING STEEL RECEIVED IN THE FIELD MAY DISPLAY THE FOLLOWING "BAR DESIGNATION". THE "BAR DESIGNATION" IS THE STAMPED IMPRESSION ON THE REINFORCING BARS, AND IS EQUIVALENT TO THE BAR DIAMETER IN MILLIMETERS.

ENGLISH SIZE	3	4	5	6	7	8	9	10	11
BAR DESIGNATION	10	13	16	19	22	25	29	32	36

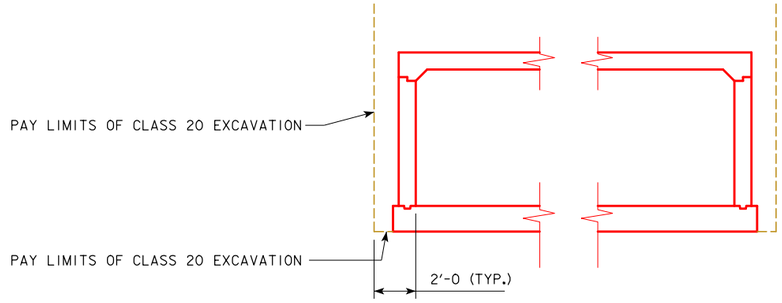
TRAFFIC WILL BE MAINTAINED AT ALL TIMES IN ACCORDANCE WITH THE TRAFFIC CONTROL PLANS SHOWN IN THESE PLANS.

TRAFFIC CONTROL ADJACENT TO THE CULVERT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR CONSTRUCTING THE CULVERT AND IS TO COORDINATE CONSTRUCTION OF THE CULVERT WITH THE CONTRACTOR DOING THE GRADING.

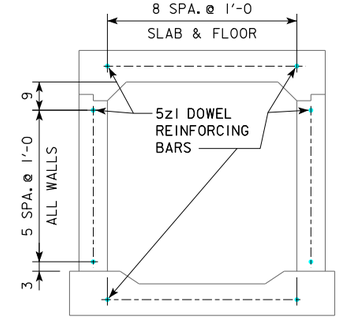
ANY DIMENSIONAL TRANSITION BETWEEN THE EXISTING STRUCTURE AND THE EXTENSION SHALL BE MADE IN THE FIRST 1′-0 MINIMUM AND 3′-0 MAXIMUM OF NEW WORK. THE TRANSITION SLOPE SHALL BE 1:6 OR SHALLOWER.

WHEN DE-WATERING PRESENTS A PROBLEM FOR PLACING THE CURTAIN WALLS AS DETAILED, ALTERNATE METHODS SUCH AS STEEL SHEET PILE AND PRECAST CONCRETE WALLS MAY BE APPROVED BUT AT NO ADDITIONAL COST. THE CONTRACTOR IS TO SUBMIT TO THE ENGINEER FOR APPROVAL COMPLETE DRAWINGS OF THE PROPOSED CURTAIN WALL ALTERNATE BEFORE BEGINNING CONSTRUCTION.

THE CLASS 20 EXCAVATION QUANTITY IS BASED ON THE ASSUMPTION THAT AT THE START OF CULVERT CONSTRUCTION, THE EXISTING GROUNDLINE SHOWN ON THE "SITUATION PLAN" ON DESIGN HAS REMAINED UNDISTURBED AND NO ROADWAY FILL HAS BEEN PLACED.



EXCAVATION DETAIL



SECTION NEAR EXTENSION

(SHOWING SPACING OF 5z1 DOWEL BARS)

REINFORCING STEEL EXTENSION DOWELS						
BAR	LOCATION	SHAPE	NO./JT.	TOTAL NO.	LENGTH	WEIGHT
5z1	TOP SLAB. CONST. JOINT		30	30	2′-6	78

TRAFFIC CONTROL PLAN

NOTE: THE ROADWAY WILL BE OPEN TO THRU TRAFFIC. REFER TO THE TRAFFIC CONTROL PLAN SHOWN ELSEWHERE IN THESE PLANS.

NOTE:
POLLUTION PREVENTION PLAN SHOWN ELSEWHERE IN THESE PLANS.

whks
engineers + planners + land surveyors

DESIGN FOR 18° SKEW (LA)

8′x6′ REINFORCED CONCRETE BOX CULVERT EXTENSION

CULVERT GENERAL NOTES

STATION 844+26.62 NOVEMBER, 2018

CLINTON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

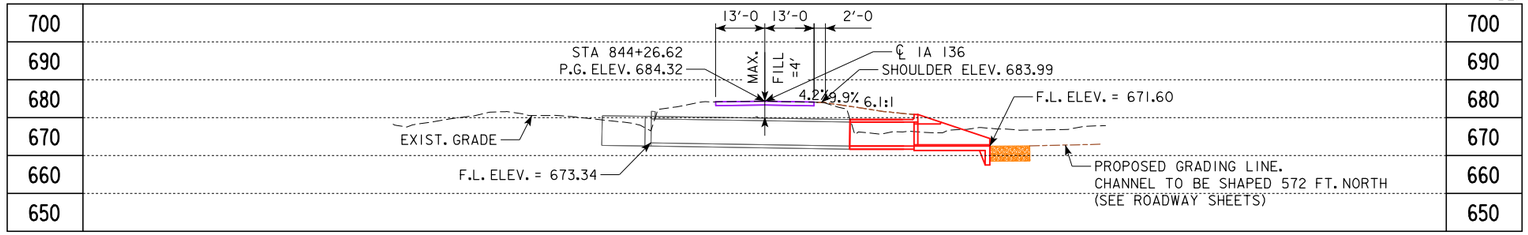
DESIGN SHEET NO. 2 OF 7 FILE NO. 31558 DESIGN NO. 719

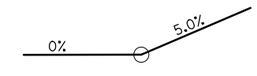
REVISED 11-2016 - ADDED THE WORD "THEREFORE" TO THE PARAGRAPH STATING THE HIGHWAY WILL NOT BE CLOSED, IN THE GENERAL NOTES.
REVISED 02-2017 - UPDATED THE PARAGRAPH STATING THE HIGHWAY WILL NOT BE CLOSED, IN THE GENERAL NOTES TO MATCH WHAT IS WORDED IN THE DESIGN MANUAL. UPDATED PARAGRAPH DISCUSSING THE REMOVAL OF EXISTING CULVERT.

ENGLISHSINGLECULVERTS.DGN - 1043s2 - THIS SHEET ISSUED 10-08.

DESIGN TEAM: DA/BH/JS	CULVERT EXTENSION DETAILS (SHEET 2 OF 2)	STANDARD SHEET 1043s2 (MODIFIED)	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER 30

BENCH MARK NO. 503, STA. 844+26.0. SET MAG NAIL IN HEADWALL 28.24' LT
EL = 681.73





VPI STA = 845+00
VPI ELEV = 684.00
VC = 300'

PROPOSED PROFILE GRADE ON IA 136

LONGITUDINAL SECTION ALONG ℄ CULVERT

DESIGN FILL HEIGHT = 4'-0
ANTICIPATED SETTLEMENT = NEGLIGIBLE

NOTES:

ALL UNITS ARE IN FEET UNLESS OTHERWISE NOTED OR SHOWN.

SEE ROAD SHEETS FOR ADDITIONAL INFORMATION ON PROPOSED GRADING LIMITS.

DRAINAGE THROUGH EXISTING CULVERT/CHANNEL MUST BE MAINTAINED THROUGHOUT CONSTRUCTION.

SEE H SHEETS FOR RIGHT OF WAY.

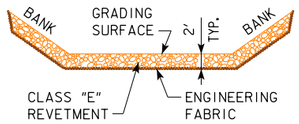
HEADWALLS SHALL BE PLACED LEVEL.

SOUTH END DOES NOT SATISFY CLEAR ZONE.

IT IS THE INTENT OF THIS DESIGN TO EXTEND THE EXISTING 8' x 6' REINFORCED CONCRETE BOX CULVERT BY REMOVING THE HEADWALL TO THE FACE OF THE PARAPET ON THE NORTH END AND ADDING A 8' x 6' x 17' REINFORCED CONCRETE BOX CULVERT EXTENSION WITH HEADWALL ON THE NORTH END.

SEE GENERAL NOTES AND REMOVAL DETAILS FOR LIMITS OF EXISTING HEADWALL REMOVAL.

SITUATION PLAN



TYPICAL CHANNEL PROTECTION

ESTIMATED REVETMENT QUANTITIES INCLUDED WITH ROAD PLANS		
LOCATION	REVETMENT CL. "E" (TON)	ENGINEERING FABRIC (SY)
INLET	--	--
OUTLET	33.4	100.2
TOTALS	33.4	100.2

QUANTITIES SHOWN FOR INFORMATION ONLY. SEE ROAD SHEETS.

HYDRAULIC DATA

DRAINAGE AREA = 560 ACRES ROLLING
Q_{50} = 510 CFS

UTILITIES LEGEND:

NO KNOWN UTILITIES

TRAFFIC ESTIMATE

2014 AADT 1240 V.P.D.

LOCATION

ON IA 136 OVER DRAINAGE DITCH
T-83N R-4E
SECTION 25
WATERFORD TOWNSHIP
CLINTON COUNTY
LATITUDE 41.961954
LONGITUDE -90.437576

DESIGN FOR 18° SKEW (LA)

8'x6' REINFORCED CONCRETE BOX CULVERT EXTENSION

SITUATION PLAN

STATION 844+26.62 NOVEMBER, 2018

CLINTON COUNTY

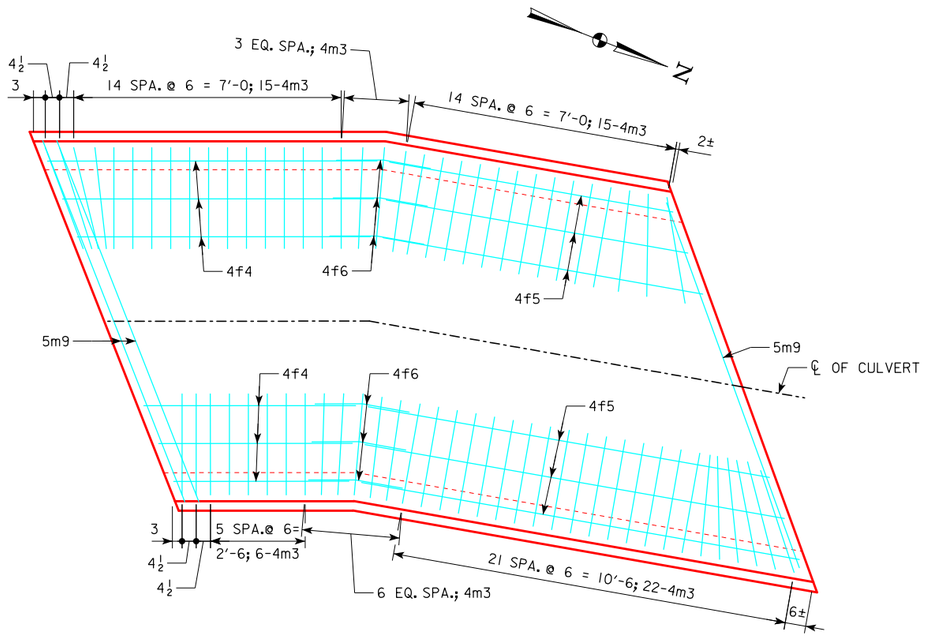
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 3 OF 7 FILE NO. 31558 DESIGN NO. 719

whks engineers + planners + land surveyors

DESIGN TEAM: DA/BH/JS | CLINTON COUNTY | PROJECT NUMBER STPN-136-1(73)--2J-23 | SHEET NUMBER 31

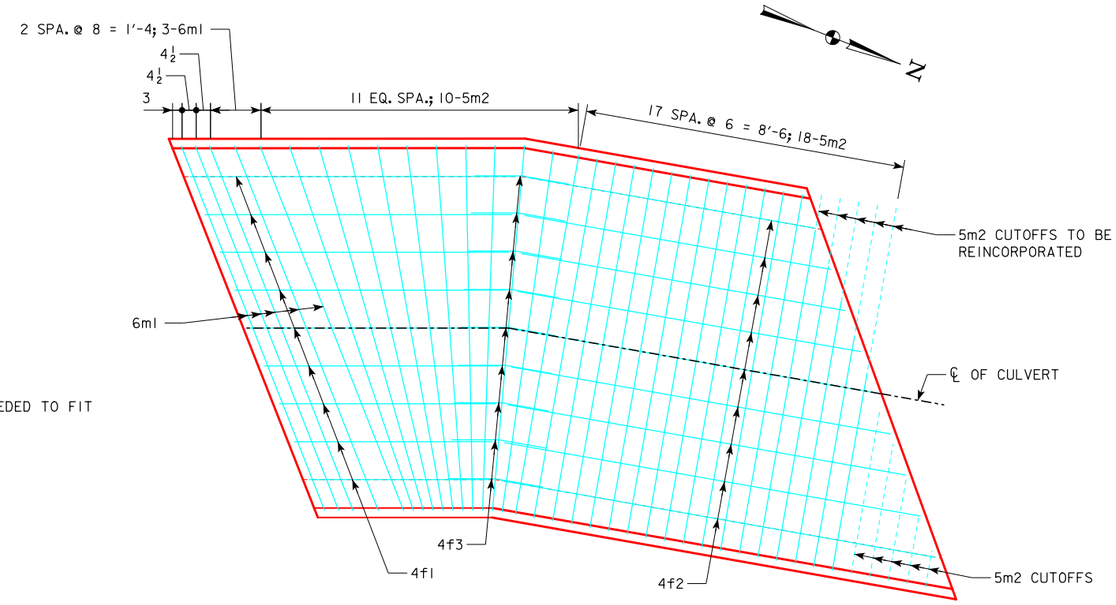
11/4/2019 10:37:58 AM wb L:\DEPT\6\7805.43\DRAWINGS\WORKING\BRG_23136073.dgn 230719S003 11x17_pdf.pltcfg



PLAN VIEW OF BOTTOM REINFORCING OF FLOOR

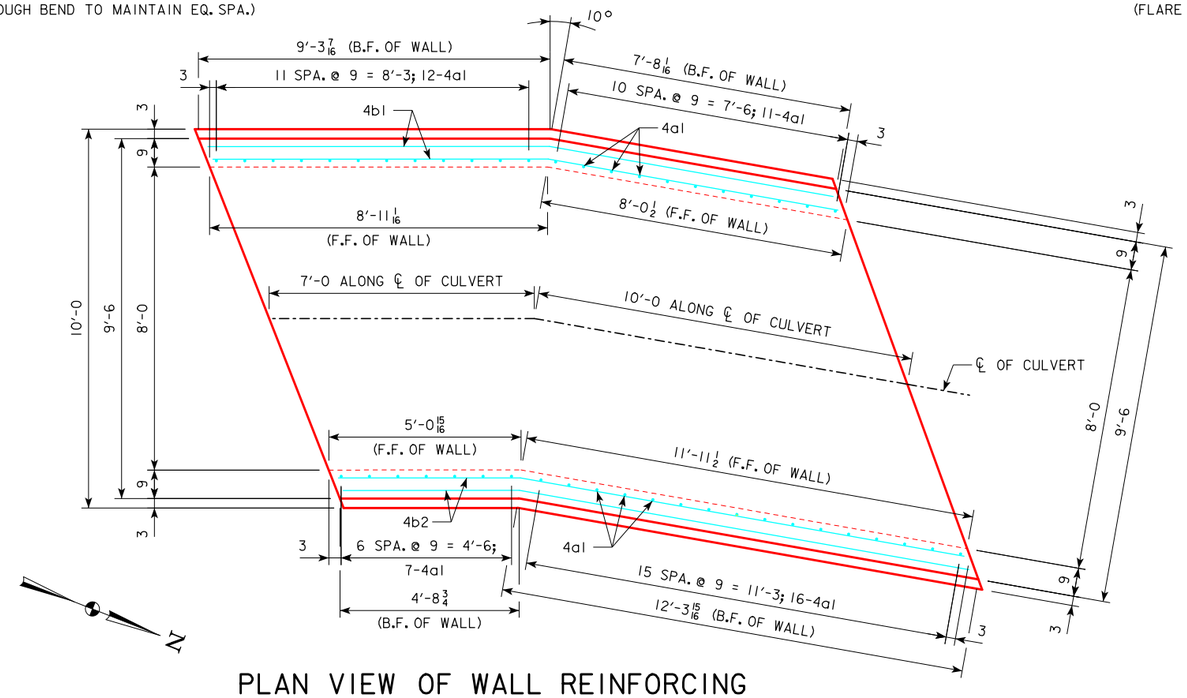
(FLARE 4m3 BARS THROUGH BEND TO MAINTAIN EQ. SPA.)

NOTE:
FLARE BARS AS NEEDED TO FIT



PLAN VIEW OF TOP REINFORCING OF FLOOR

(FLARE 5m2 BARS THROUGH BEND TO MAINTAIN EQ. SPA.)



PLAN VIEW OF WALL REINFORCING

whks
engineers + planners + land surveyors

DESIGN FOR 18° SKEW (LA)

8'×6' REINFORCED CONCRETE BOX CULVERT EXTENSION

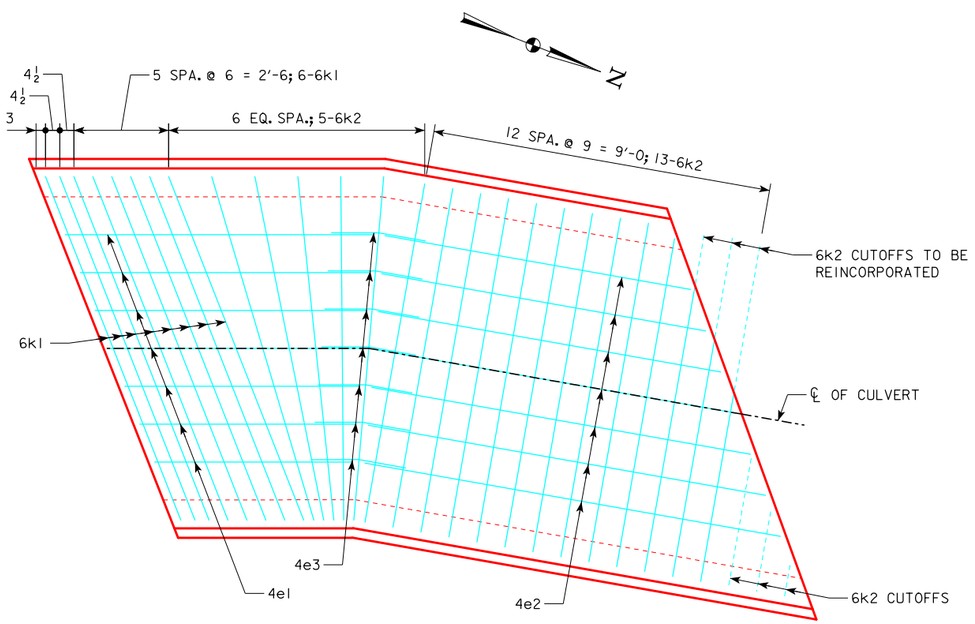
FLOOR & WALL REINF. DETAILS

STATION 844+26.62 NOVEMBER, 2018

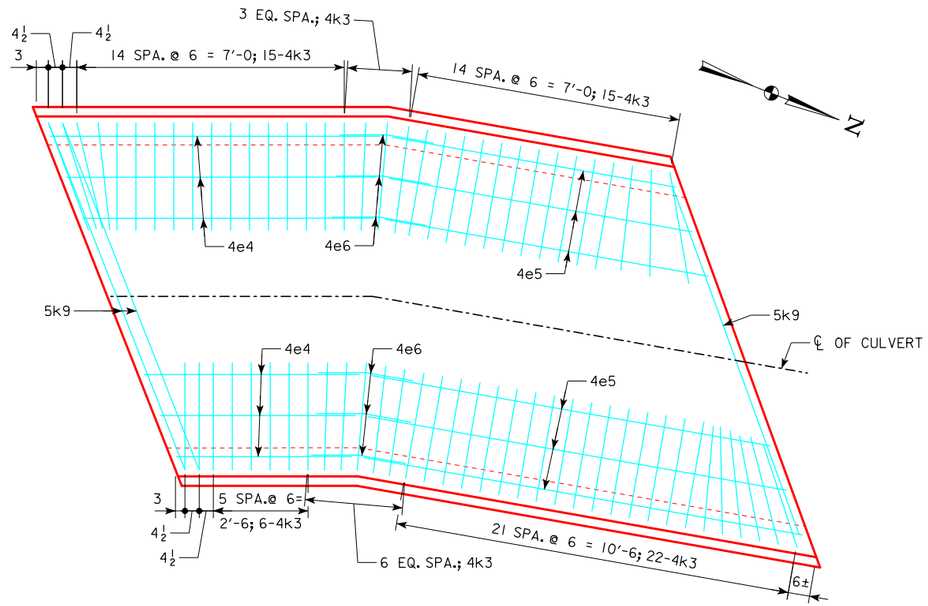
CLINTON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 4 OF 7 FILE NO. 31558 DESIGN NO. 719



PLAN VIEW OF BOTTOM
REINFORCING OF SLAB
(FLARE 6k2 BARS THROUGH BEND TO MAINTAIN EQ. SPA.)



PLAN VIEW OF TOP
REINFORCING OF SLAB
(FLARE 4k3 BARS THROUGH BEND TO MAINTAIN EQ. SPA.)

whks
engineers + planners + land surveyors

DESIGN FOR 18° SKEW (LA)

8'x6' REINFORCED CONCRETE BOX CULVERT EXTENSION

SLAB REINFORCING DETAILS

STATION 844+26.62 NOVEMBER, 2018

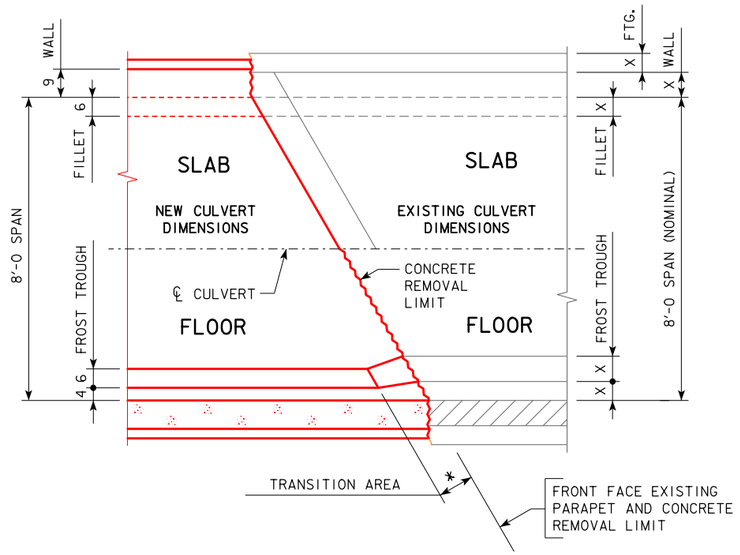
CLINTON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 5 OF 7 FILE NO. 31558 DESIGN NO. 719

DESIGN TEAM: DA/BH/JS | CLINTON COUNTY | PROJECT NUMBER STPN-136-1(73)--2J-23 | SHEET NUMBER 33

11/4/2019 10:37:59 AM wb L:\DEPT\6\7805.43\DRAWINGS\WORKING\BRG_23136073.dgn 230719S005 11x17_pdf.pltcfg

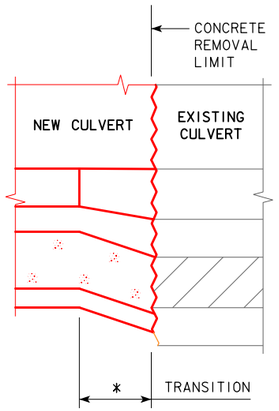


CONCRETE TRANSITION DETAILS

(PLAN VIEW)

NOTE:
'X' - EXISTING DIMENSION

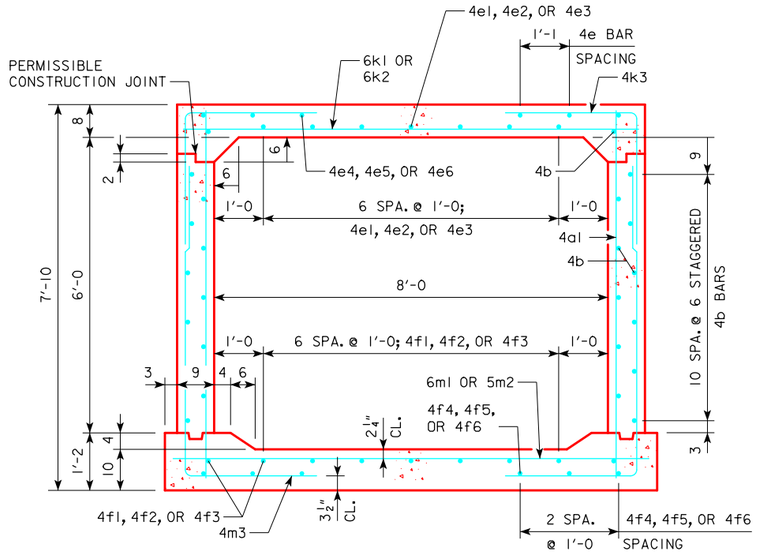
* NOTE:
ANY DIMENSIONAL TRANSITION BETWEEN THE EXISTING STRUCTURE AND THE EXTENSION SHALL BE MADE IN THE FIRST 1'-0 MINIMUM AND 3'-0 MAXIMUM OF NEW WORK. THE TRANSITION SLOPE SHALL BE 1:6 OR SHALLOWER.



NEW BARREL CONCRETE THICKNESSES SHALL BE MAINTAINED MINIMALLY WHEN TRANSITIONING TO MEET EXISTING BARREL INTERIOR SURFACES. OUTSIDE CONCRETE SURFACES DO NOT HAVE TO BE TRANSITIONED TO MATCH EXISTING SURFACES.

CONCRETE TRANSITION DETAILS

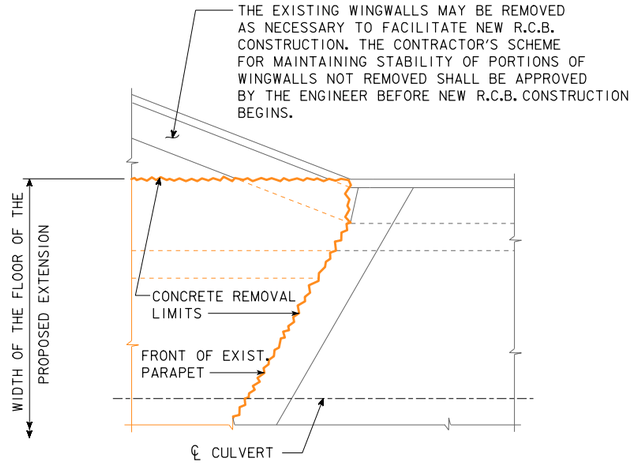
(WALL TRANSITION SHOWN - TYPICAL FOR SLAB)



8 x 6 BARREL SECTION

CONCRETE PLACEMENT QUANTITIES
ONE 17'-0 BENT BARREL

LOCATION	CY
SLAB	4.5
WALLS	5.3
FLOOR	5.9
TOTAL (C.Y.)	15.7



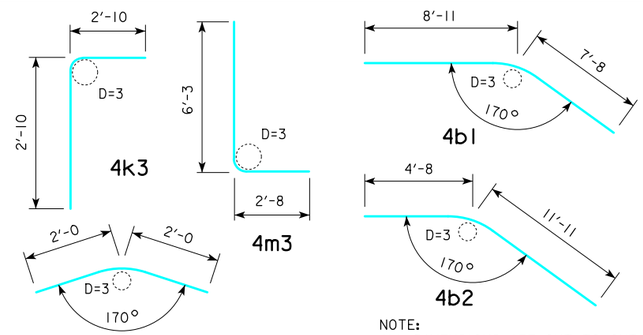
PART REMOVAL PLAN

REINFORCING BAR LIST - ONE EXTENSION

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
4a1	WALLS, FRONT FACE VERTICAL		46	7'-5	228
4b1	WEST WALL, HORIZONTAL		12	16'-7	133
4b2	EAST WALL, HORIZONTAL		12	16'-7	133
*4e1	SLAB, BOTT. LONGIT.		7	VARIES	31
*4e2	SLAB, BOTT. LONGIT.		7	VARIES	45
4e3	SLAB, BOTT. LONGIT.		7	4'-0	19
*4e4	SLAB, TOP LONGIT.		6	VARIES	27
*4e5	SLAB, TOP LONGIT.		6	VARIES	39
4e6	SLAB, TOP LONGIT.		6	4'-0	16
*4f1	FLOOR, TOP LONGIT.		9	VARIES	40
*4f2	FLOOR, TOP LONGIT.		9	VARIES	58
4f3	FLOOR, TOP LONGIT.		9	4'-0	24
*4f4	FLOOR, BOTT. LONGIT.		6	VARIES	27
*4f5	FLOOR, BOTT. LONGIT.		6	VARIES	39
4f6	FLOOR, BOTT. LONGIT.		6	4'-0	16
6k1	SLAB, BOTT. TRANSV.		8	9'-9	117
6k2	SLAB, BOTT. TRANSV.		18	9'-2	248
4k3	SLAB, TOP CORNER		69	5'-8	261
5k9	SLAB, TOP TRANSV.		3	9'-9	31
6m1	FLOOR, TOP TRANSV.		5	10'-3	77
5m2	FLOOR, TOP TRANSV.		28	9'-8	282
4m3	FLOOR, BOTT. CORNER		69	8'-11	411
5m9	FLOOR, BOTT. TRANSV.		3	10'-3	32
	REINFORCING STEEL - TOTAL (LBS.)				2,334

*4a1 BARS VARY FROM 8'-1 TO 5'-3 WEST TO EAST
*4e1 BARS VARY FROM 8'-1 TO 5'-3 WEST TO EAST
*4e2 BARS VARY FROM 8'-2 TO 11'-2 WEST TO EAST
*4e4 & 4f4 BARS VARY FROM 8'-8 TO 4'-8 WEST TO EAST
*4e5 & 4f5 BARS VARY FROM 7'-7 TO 11'-9 WEST TO EAST
*4f1 BARS VARY FROM 8'-7 TO 4'-9 WEST TO EAST
*4f2 BARS VARY FROM 7'-8 TO 11'-8 WEST TO EAST

BENT BAR DETAILS



NOTE:
ALL DIMENSIONS ARE OUT TO OUT.
D = PIN DIAMETER.

DESIGN FOR 18° SKEW (LA)

8'x6' REINFORCED CONCRETE BOX CULVERT EXTENSION

CULVERT EXTENSION DETAILS

STATION 844+26.62 NOVEMBER, 2018

CLINTON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

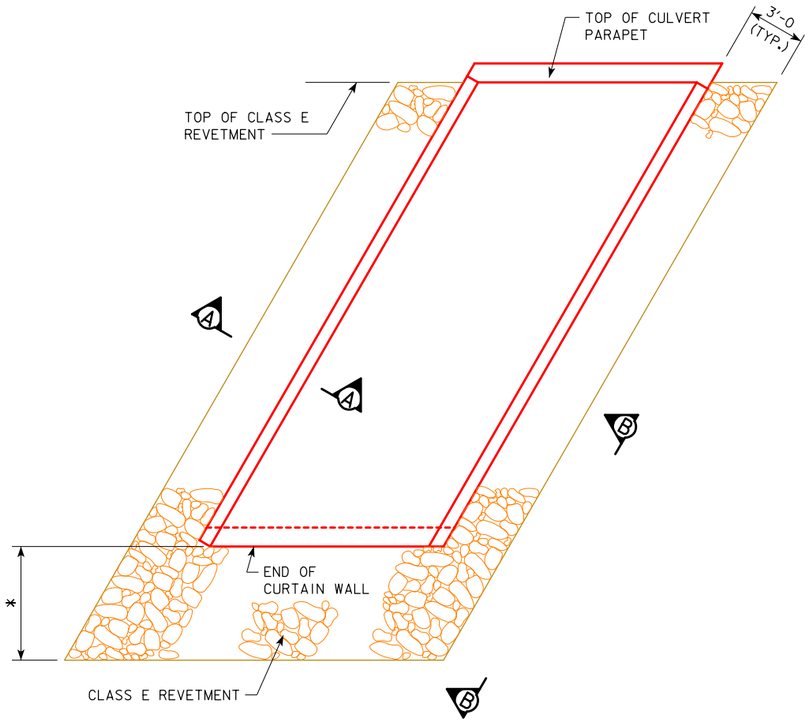
DESIGN SHEET NO. 6 OF 7 FILE NO. 31558 DESIGN NO. 719

whks engineers + planners + land surveyors

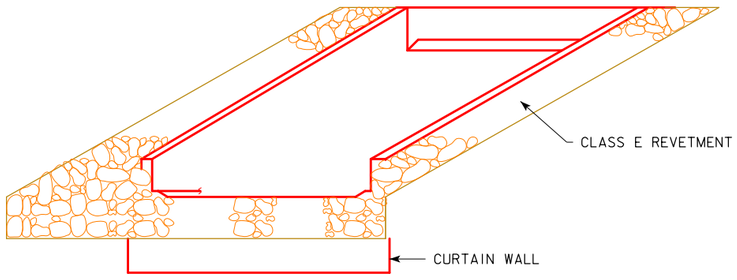
DESIGN TEAM: DA/BH/JS | CLINTON COUNTY | PROJECT NUMBER STPN-136-1(73)--2J-23 | SHEET NUMBER 34

11/4/2019 10:38:00 AM wb L:\DEPT\6\7805.43\DRAWINGS\WORKING\BRG_23136073.dgn 230719S006 11x17_pdf.pltcfg

* = SEE SITUATION PLAN FOR LIMITS OF REVETMENT AND ENGINEERING FABRIC.



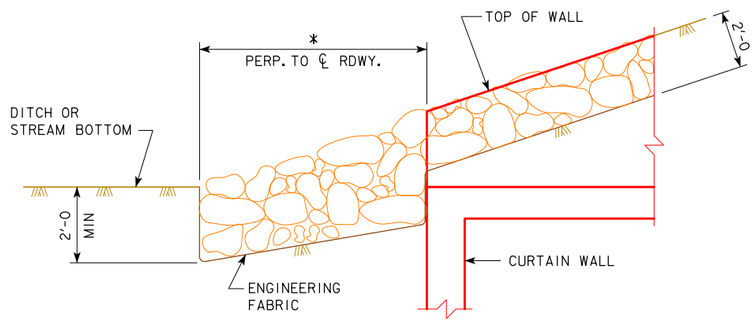
PLAN VIEW



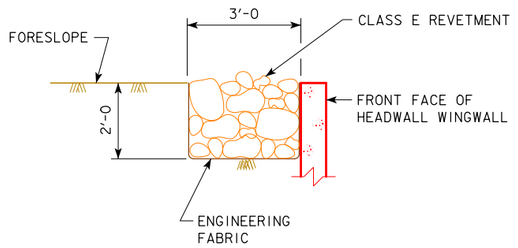
ELEVATION VIEW

30° SKEWED HEADWALL

* = SEE SITUATION PLAN FOR LIMITS OF REVETMENT AND ENGINEERING FABRIC.



VIEW B-B



SECTION A-A

TYPICAL DETAILS

CONSTRUCTION NOTES:

CLASS E REVETMENT SHALL BE USED AND PLACED ACCORDING TO ARTICLE 2507.03, OF THE STANDARD SPECIFICATIONS.
THE ENGINEERING FABRIC SHALL MEET THE MATERIAL REQUIREMENTS IN ACCORDANCE WITH ARTICLE 4196.01, B, 3, OF THE STANDARD SPECIFICATIONS.

DESIGN FOR 18° SKEW (LA)

8'x6' REINFORCED CONCRETE BOX CULVERT EXTENSION

REVETMENT PROTECTION DETAILS

STATION 844+26.62 NOVEMBER, 2018

CLINTON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 7 OF 7 FILE NO. 31558 DESIGN NO. 719

whks engineers + planners + land surveyors

REVISED I-16 - ADDED NOTE "SEE CULVERT PLANS FOR LIMITS OF REVETMENT AND ENGINEERING FABRIC."
REVISED 02-2017 - ADDED SECTION DIRECTORS "A-A" TO ZERO SKEW PLAN VIEW DETAIL.
ENGLISHSINGLECULVERTS.DGN - 1092 - THIS SHEET ISSUED 04-12.

DESIGN TEAM: DA/BH/JS	CAST-IN-PLACE CULVERT REVETMENT PROTECTION DETAILS	STANDARD SHEET 1092	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER 35

11/4/2019 10:38:00 AM wb L:\DEPT\6\7805.43\DRAWINGS\WORKING\BRG_23136073.dgn 230719S007 11x17_pdf.pltcfg

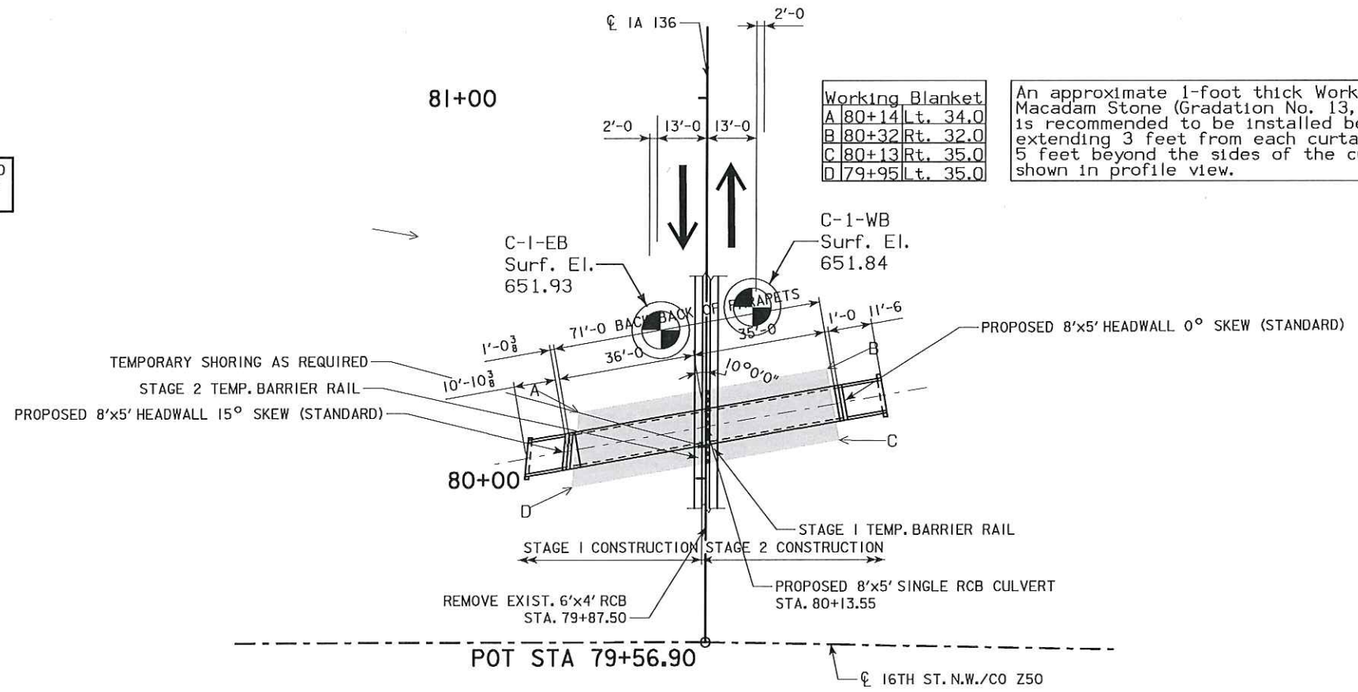
THIS SHEET IS INCLUDED TO SHOW SOIL INFORMATION.
DETAILS AND NOTES SHOWN ELSEWHERE IN THESE PLANS SHALL BE USED FOR STRUCTURE CONSTRUCTION.

N

0 ENGLISH 40
SCALE IN FEET

LOCATION

ON IA 136 OVER DRAINAGE DITCH
T-82N R-6E
SECTION 26/35
HAMPSHIRE TOWNSHIP
CLINTON COUNTY
LATITUDE 41.873839
LONGITUDE -90.223614



Working Blanket		
A	80+14	Lt. 34.0
B	80+32	Rt. 32.0
C	80+13	Rt. 35.0
D	79+95	Lt. 35.0

An approximate 1-foot thick Working Blanket consisting of Macadam Stone (Gradation No. 13, without choke stone course) is recommended to be installed below the Granular Bedding Layer extending 3 feet from each curtain wall to curtain wall and extending 5 feet beyond the sides of the culvert. The Working Blanket is not shown in profile view.

GEOTECHNICAL DESIGN

LICENSED PROFESSIONAL ENGINEER — Mark A. Dell — 21208 — IOWA

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Mark A Dell 7/23/18
Signature Date
Mark A. Dell
Printed or Typed Name

My license renewal date is December 31, 2019.

Pages or sheets covered by this seal: SPS.1, SPS.2, SPS.3, SPS.4, SPS.5, SPS.6, SPS.7, and SPS.8

DESIGN FOR A 10° SKEW (R.A.)

8'x5'x77' PRECAST REINFORCED CONCRETE BOX CULVERT

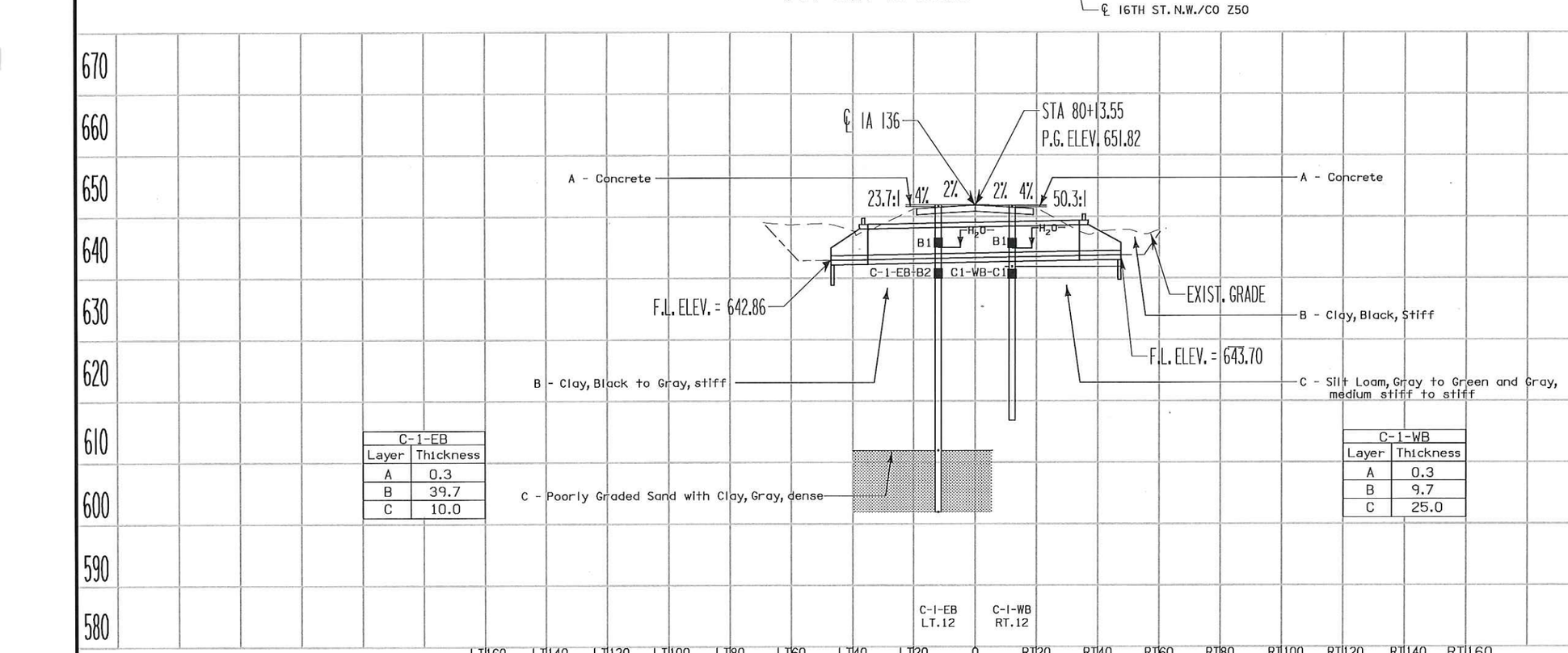
SOIL PROFILE SHEET

STATION 80+13.55

CLINTON COUNTY

DESIGN SHEET NO. 1 OF 8 FILE NO. 31558 DESIGN NO. 119

Water Level Observations (Ft.)				
Boring No.	Date Drilled	While Drilling	Immediately after Drilling	After Drilling
C-1-WB	07/13/2017	10	7	Boring Plugged After Drilling
C-1-EB	07/13/2017	10	7	Boring Plugged After Drilling



C-1-EB	
Layer	Thickness
A	0.3
B	39.7
C	10.0

C-1-WB	
Layer	Thickness
A	0.3
B	9.7
C	25.0

LEGEND

H2O WATER	BLOW COUNT LAYER - NO. BLOWS B2 # 5		SOIL REMEDIATION AREA
DRY			LIMESTONE (LS.)
PLUGGED		DIAMOND CORE	BROKEN & WEATHERED LS.
MOISTURE		SAND	SANDSTONE
SHELBY		GRAVELLY SAND	SHALE
BLOW COUNT		BOULDERS	SANDY SOIL
DENS. CORE			
SAMPLE			

Note:
Not all shelby tubes collected were tested in the laboretory.

SHELBY TUBE CORE DATA

CORE NO.	C-1-WB-C1	C-1-EB-B2
DEPTH IN FEET	10.0-12.0	10.0-12.0
CLASSIFICATION (AASHTO)	A-6(14)	--
COEFF.CONSOL. (SQ. FT /DAY)	0.107	--
TRIAXIAL COMPRESSION	--	--
COHESION - PSF	--	--
FRICTION COEFF.	--	--
MOISTURE CONTENT %	28.6	34.4
DRY DENSITY - PCF	89.0	84.7

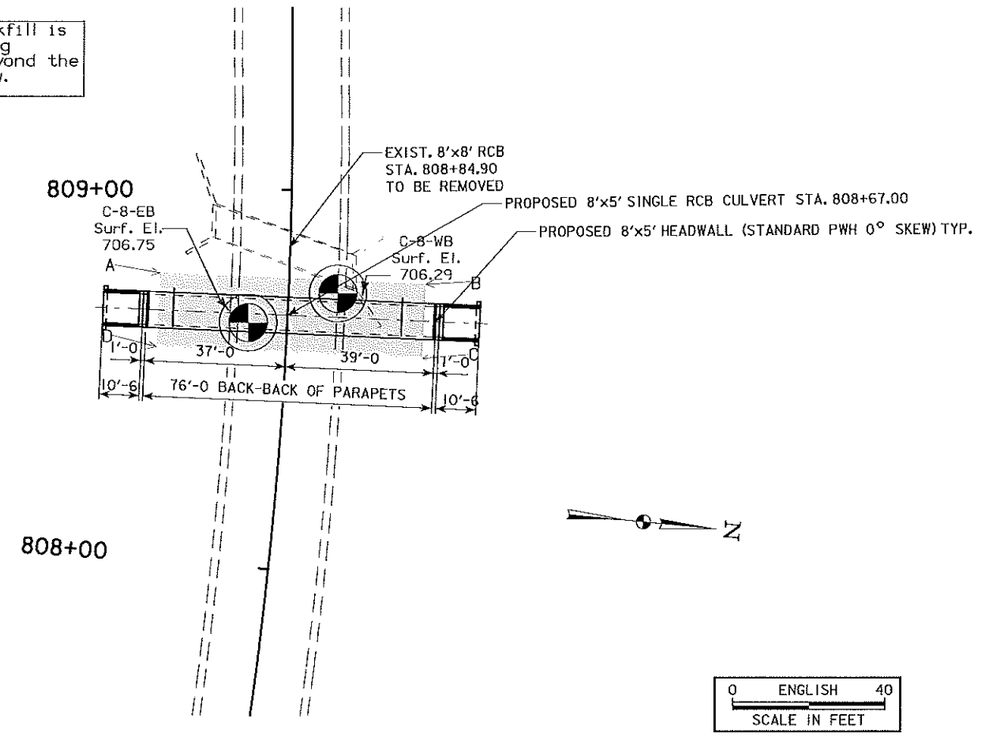
CU-CONSOLIDATED UNDRAINED
UU-UNCONSOLIDATED UNDRAINED
UC-UNCONFINED COMPRESSION (c=1/2 Qu)

FILE NO. 31558 | ENGLISH | DESIGN TEAM MEGIVERN \ DELL \ GORJACKOVSKI | CLINTON COUNTY | PROJECT NUMBER STPN-136-1(73)--2J-23 | SHEET NUMBER SPS.1

9:12:34 AM 7/16/2018 gmoyle pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\2313601013\Soils\Clinton 136 (73)\S4\23136073.sht

An approximate 1-foot thick Working Blanket consisting of Special Backfill is recommended to be installed below the Granular Bedding Layer extending 3 feet from each curtain wall to curtain wall and extending 5 feet beyond the sides of the culvert. The Working Blanket is not shown in profile view.

Working Blanket		
A	808+78	Lt. 34.0
B	808+75	Rt. 36.0
C	808+55	Rt. 36.0
D	808+60	Lt. 34.0



THIS SHEET IS INCLUDED TO SHOW SOIL INFORMATION.
DETAILS AND NOTES SHOWN ELSEWHERE IN THESE PLANS SHALL BE USED FOR STRUCTURE CONSTRUCTION.

LOCATION

ON IA 136 OVER DRAINAGE DITCH
T-83N R-5E
SECTION 30
DEEP CREEK TOWNSHIP
CLINTON COUNTY
LATITUDE 41.963401
LONGITUDE -90.424688

0 ENGLISH 40
SCALE IN FEET

DESIGN FOR A 0° SKEW

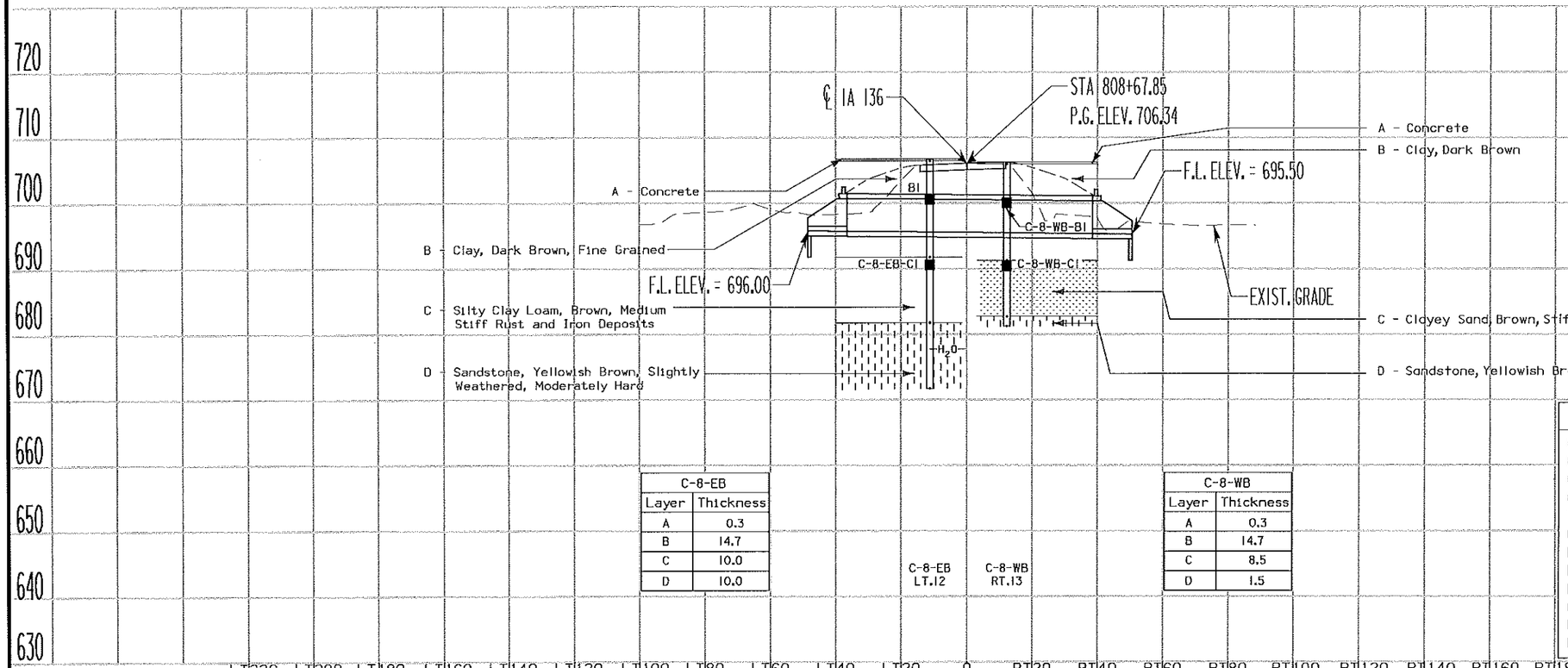
8'x5'x76' PRECAST REINFORCED CONCRETE BOX CULVERT

SOIL PROFILE SHEET

STATION 808+67.00

CLINTON COUNTY

DESIGN SHEET NO. 2 OF 8 FILE NO. 31558 DESIGN NO. 519



C-8-EB	
Layer	Thickness
A	0.3
B	14.7
C	10.0
D	10.0

C-8-EB LT.12

C-8-WB RT.13

C-8-WB	
Layer	Thickness
A	0.3
B	14.7
C	8.5
D	1.5

Water Level Observations (Ft.)				
Boring No.	Date Drilled	While Drilling	End of Drilling	After Drilling
C-8-WB	07/11/2017	Data not recorded		Boring Plugged After Drilling.
C-8-EB	07/11/2017	--	29	Boring Plugged After Drilling.

LEGEND

WATER, DRY, PLUGGED, MOISTURE, SHELBY, BLOW COUNT, DENS. CORE, SAMPLE
BLOW COUNT LAYER - NO. BLOWS B2-15
DIAMOND CORE, SAND, GRAVELLY SAND, BOULDERS
SOIL REMEDIATION AREA, LIMESTONE (L.S.), BROKEN & WEATHERED LS., SANDSTONE, SHALE, SANDY SOIL

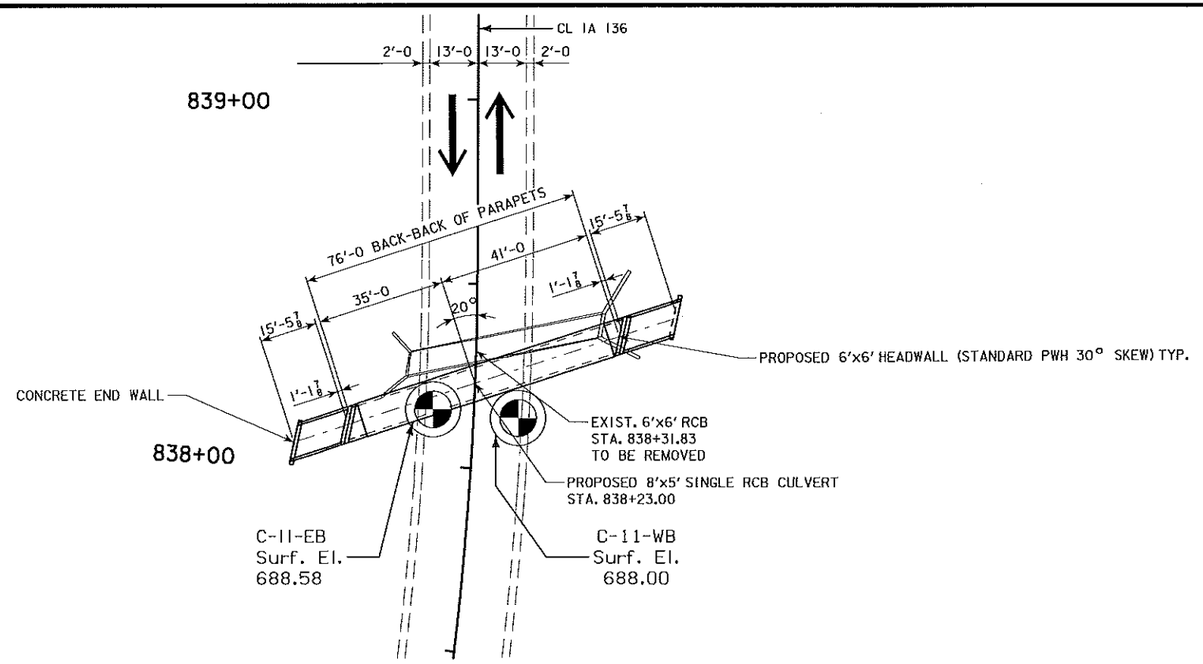
NOTE:
Not all Shelby Tubes collected were tested in the laboratory.

SHELBY TUBE CORE DATA

CORE NO.	C-8-WB-B1	C-8-WB-C1	C-8-EB-C1
DEPTH IN FEET	5.0-7.0	15.0-17.0	15.0-17.0
CLASSIFICATION (AASHTO)	--	--	A-6(17)
COEFF.CONSOL. (SQ. FT /DAY)	--	--	0.464
TRIAXIAL COMPRESSION	--	--	--
COHESION - PSF	--	--	--
FRICTION COEFF.	--	--	--
MOISTURE CONTENT %	31.9	28.2	26.9
DRY DENSITY - PCF	92.0	97.5	93.6

CU-CONSOLIDATED UNDRAINED
UU-UNCONSOLIDATED UNDRAINED
UC-UNCONFINED COMPRESSION (c=1/2 Qu)

THIS SHEET IS INCLUDED TO SHOW SOIL INFORMATION.
DETAILS AND NOTES SHOWN ELSEWHERE IN THESE PLANS SHALL BE USED FOR STRUCTURE CONSTRUCTION.





0 ENGLISH 40
SCALE IN FEET

LOCATION

ON IA 136 OVER DRAINAGE DITCH
T-83N R-4E
SECTION 25
WATERFORD TOWNSHIP
CLINTON COUNTY
LATITUDE 41.962604
LONGITUDE -90.435523

DESIGN FOR A 20° SKEW (R.A.)

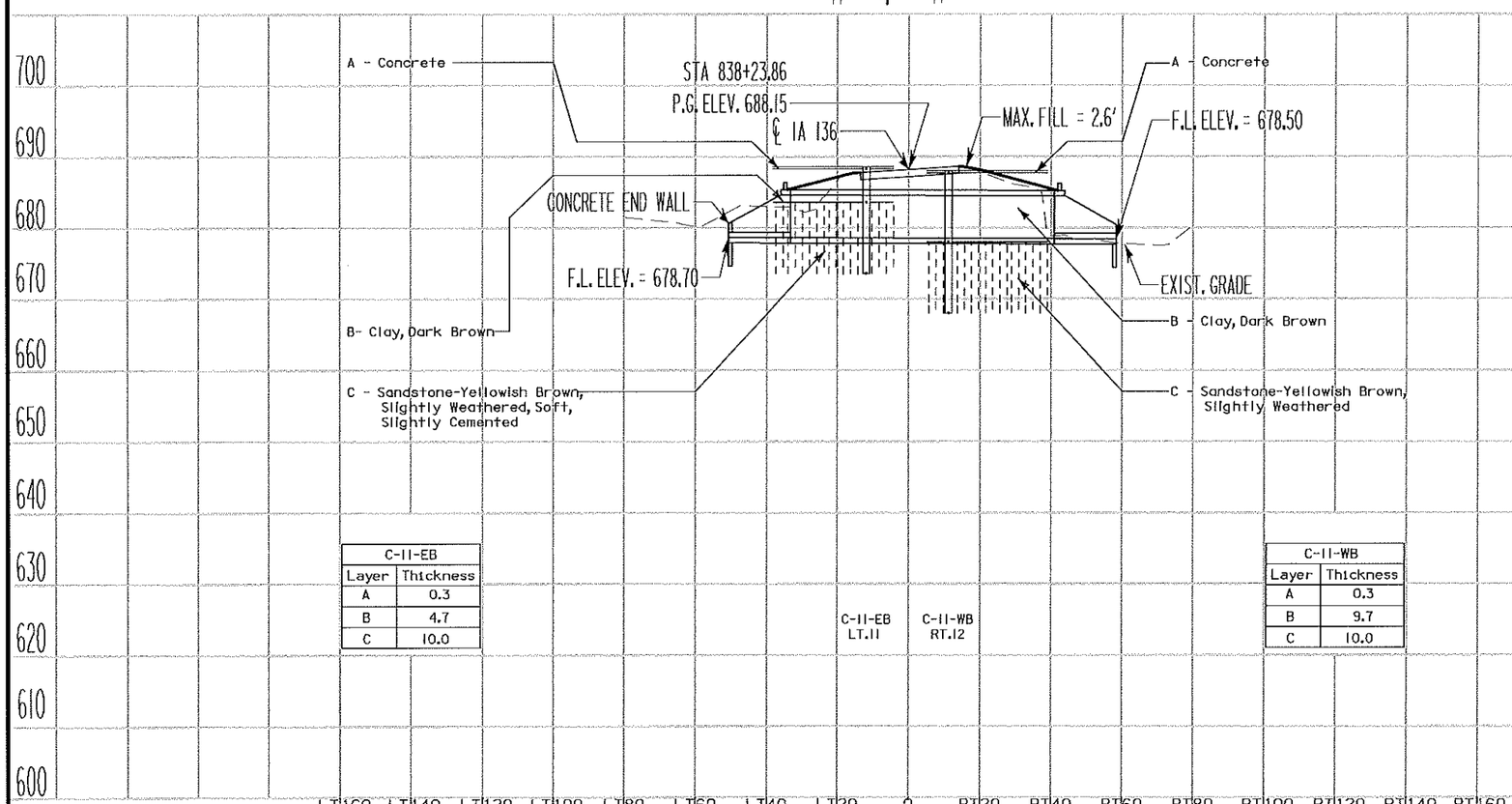
8'x5'x76' PRECAST REINFORCED CONCRETE BOX CULVERT

SOIL PROFILE SHEET

STATION 838+23.00

CLINTON COUNTY

DESIGN SHEET NO. 3 OF 8 FILE NO. 31558 DESIGN NO. 619

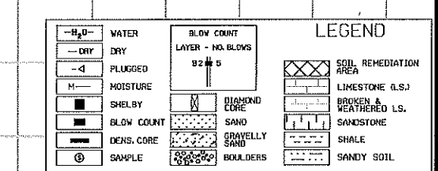


C-11-EB	
Layer	Thickness
A	0.3
B	4.7
C	10.0

C-11-WB	
Layer	Thickness
A	0.3
B	9.7
C	10.0

Water Level Observations (Ft.)

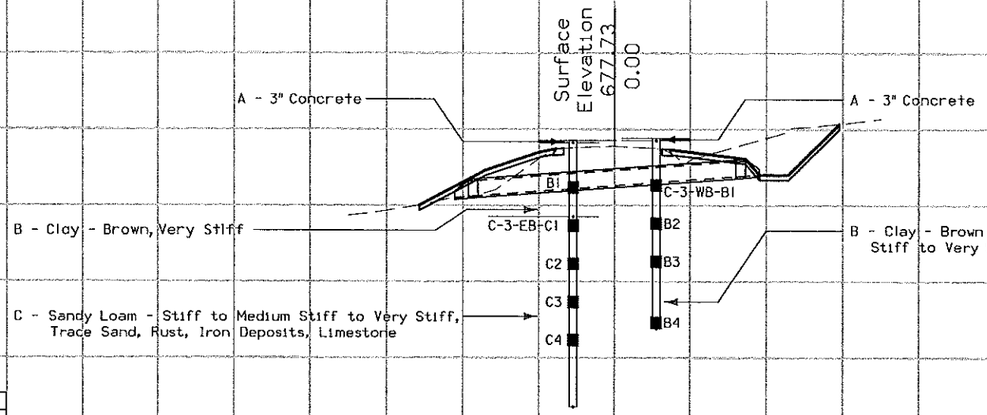
Boring No.	Date Drilled	While Drilling	Immediately after Drilling	After Drilling
C-11-WB	07/12/2017	N.E.	N.E.	Boring Plugged After Drilling
C-11-EB	07/12/2017	N.E.	N.E.	Boring Plugged After Drilling



FILE NO. 31558 | ENGLISH | DESIGN TEAM MEGIVERN \ DELL \ GORJACKOVSKI | CLINTON COUNTY | PROJECT NUMBER STPN-136-1(73)--2J-23 | SHEET NUMBER SPS.3

THIS SHEET IS INCLUDED TO SHOW SOIL INFORMATION.
DETAILS AND NOTES SHOWN ELSEWHERE IN THESE PLANS SHALL BE USED FOR STRUCTURE CONSTRUCTION.

STA. 108+76.00
CL IA 136



C-3-EB	
Layer	Thickness
A	0.3
B	9.7
C	25.0

C-3-WB	
Layer	Thickness
A	0.3
B	24.7

C-3-EB LT.11 C-3-WB RT.11

Water Level Observations (Ft.)							
Boring No.	Station	Offset	Surface Elevation	Date Drilled	While Drilling	End of Drilling	After Drilling
C-3-WB	108+42.00	RT 11	678.83	07/10/2017	---	---	Boring Plugged After Drilling
C-3-EB	108+47.00	LT 11	678.53	07/10/2017	---	--	Boring Plugged After Drilling

SHELBY TUBE CORE DATA

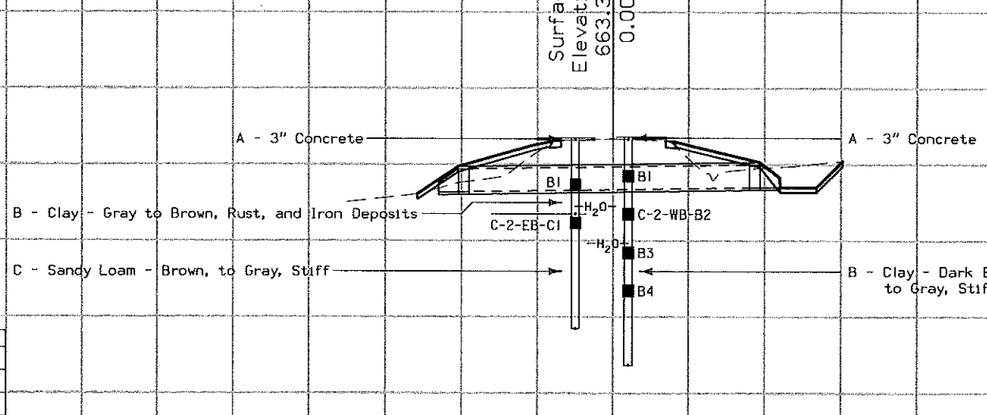
CORE NO.	C-3-WB-B1	C-3-EB-C1
DEPTH IN FEET	5.0-7.0	10.0-12.0
CLASSIFICATION (AASHTO)	--	A-7-6(23)
COEFF.CONSOL. (SQ.FT /DAY)	--	--
TRIAXIAL COMPRESSION	--	--
COHESION - PSF	--	--
FRICTION COEFF.	--	--
MOISTURE CONTENT %	27.8	25.5
DRY DENSITY - PCF	97.7	91.1

CU-CONSOLIDATED UNDRAINED
UU-UNCONSOLIDATED UNDRAINED
UC-UNCONFINED COMPRESSION (c=1/2 Qu)

LEGEND

WATER, DRY, PLUGGED, MOISTURE, SHELBY, BLOW COUNT, DENS. CORE, SAMPLE
BLOW COUNT LAYER - NO. BLOWS (B2 ■ 5)
DIAMOND CORE, SAND, GRAVELLY SAND, BOULDERS
SOIL REMEDIATION AREA, LIMESTONE (LS.), BROKEN & WEATHERED LS., SANDSTONE, SHALE, SANDY SOIL

STA. 96+34.00
CL IA 136



C-2-EB	
Layer	Thickness
A	0.3
B	9.7
C	15.0

C-2-WB	
Layer	Thickness
A	0.3
B	29.7

C-2-EB LT.10 C-2-WB RT.4

Water Level Observations (Ft.)							
Boring No.	Station	Offset	Surface Elevation	Date Drilled	While Drilling	End of Drilling	After Drilling
C-2-WB	96+28.00	RT 4	663.63	07/10/2017	14	--	Boring Plugged After Drilling
C-2-EB	96+44.00	LT 10	663.48	07/10/2017	10	9	Boring Plugged After Drilling

SHELBY TUBE CORE DATA

CORE NO.	C-2-WB-B2	C-2-EB-C1
DEPTH IN FEET	9.0-11.0	10.0-12.0
CLASSIFICATION (AASHTO)	--	A-6(24)
COEFF.CONSOL. (SQ.FT /DAY)	--	--
TRIAXIAL COMPRESSION	--	--
COHESION - PSF	--	--
FRICTION COEFF.	--	--
MOISTURE CONTENT %	27.8	25.4
DRY DENSITY - PCF	89.8	92.8

CU-CONSOLIDATED UNDRAINED
UU-UNCONSOLIDATED UNDRAINED
UC-UNCONFINED COMPRESSION (c=1/2 Qu)

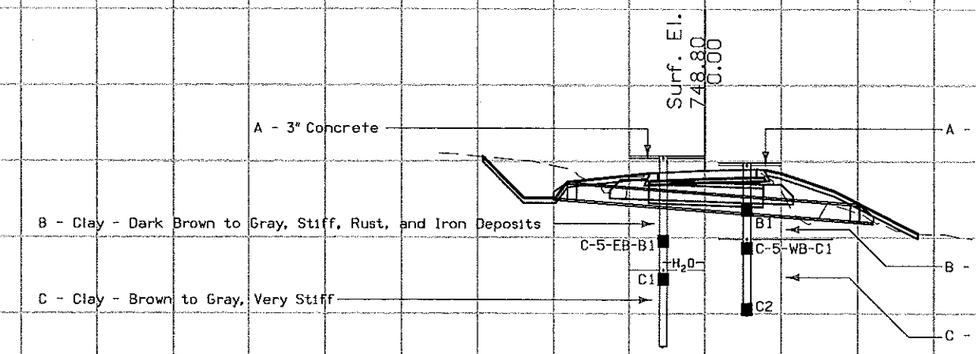
LT160 LT140 LT120 LT100 LT80 LT60 LT40 LT20 0 RT20 RT40 RT60 RT80 RT100 RT120 RT140 RT160

FILE NO. 31558	ENGLISH	DESIGN TEAM MEGIVERN \ DELL \ GORJACKOVSKI	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER SPS.4

3:33:38 PM 7/19/2018 ogorjac pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\231360\013\Soils\Clinton 136 (73)\S4\23136073.sht

THIS SHEET IS INCLUDED TO SHOW SOIL INFORMATION.
DETAILS AND NOTES SHOWN ELSEWHERE IN THESE PLANS SHALL BE USED FOR STRUCTURE CONSTRUCTION.

STA. 651+42.85
CL IA 136



Water Level Observations (Ft.)							
Boring No.	Station	Offset	Surface Elevation	Date Drilled	While Drilling	End of Drilling	After Drilling
C-5-WB	651+38.35	RT 11	749.81	07/11/2017	--	--	Boring Plugged After Drilling
C-5-EB	651+39.35	LT 11	750.09	07/11/2017	15	14	Boring Plugged After Drilling

C-5-EB	
Layer	Thickness
A	0.3
B	14.7
C	10.0

C-5-WB	
Layer	Thickness
A	0.3
B	9.7
C	10.0

SHELBY TUBE CORE DATA

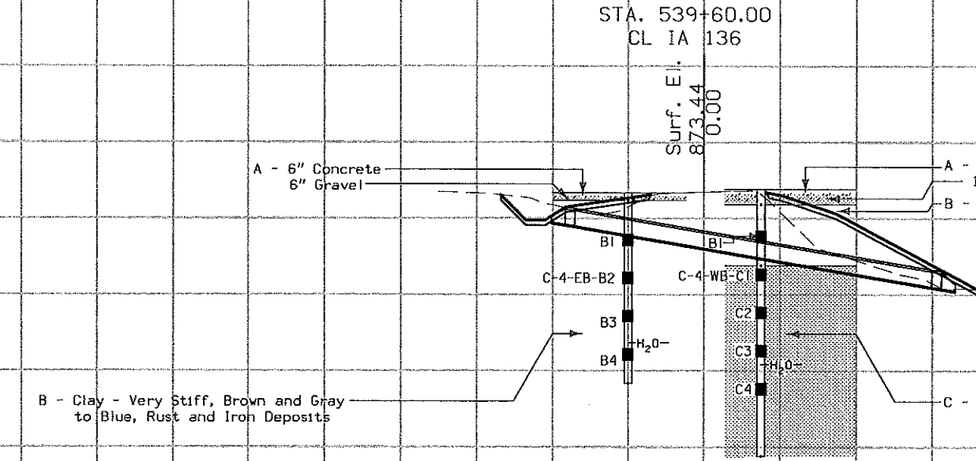
	C-5-WB-C1	C-5-EB-B1
CORE NO.		
DEPTH IN FEET	10.0-12.0	10.0-12.0
CLASSIFICATION (AASHTO)	A-6(7)	--
COEFF.CONSOL. (SQ.FT /DAY)	--	--
TRIAXIAL COMPRESSION	--	--
COHESION - PSF	--	--
FRICTION COEFF.	--	--
MOISTURE CONTENT %	17.2	28.9
DRY DENSITY - PCF	109.7	96.5

CU-CONSOLIDATED UNDRAINED
UU-UNCONSOLIDATED UNDRAINED
UC-UNCONFINED COMPRESSION (c=1/2 Qu)

LEGEND

$-H_2O-$	WATER	BLOW COUNT LAYER - NO. BLOWS B2 5	SOIL REMEDIATION AREA
— DRY	DRY		LIMESTONE (LS.)
-◁	PLUGGED		BROKEN & WEATHERED LS.
M---	MOISTURE	DIAMOND CORE	SANDSTONE
	SHELBY	SAND	SHALE
	BLOW COUNT	GRAVELLY SAND	SANDY SOIL
	DENS. CORE	BOULDERS	
S	SAMPLE		

STA. 539+60.00
CL IA 136



Water Level Observations (Ft.)							
Boring No.	Station	Offset	Surface Elevation	Date Drilled	While Drilling	End of Drilling	After Drilling
C-4-WB	539+63.00	RT 15	873.82	07/11/2017	15	23	Boring Plugged After Drilling
C-4-EB	539+61.00	LT 20	873.34	07/11/2017	20	20	Boring Plugged After Drilling

C-4-EB	
Layer	Thickness
A	1.0
B	24.0

C-4-WB	
Layer	Thickness
A	2.0
B	8.0
C	25.0

SHELBY TUBE CORE DATA

	C-4-WB-C1	C-4-EB-B2
CORE NO.		
DEPTH IN FEET	10.0-12.0	10.0-12.0
CLASSIFICATION (AASHTO)	A-6(9)	--
COEFF.CONSOL. (SQ.FT /DAY)	--	--
TRIAXIAL COMPRESSION	--	--
COHESION - PSF	--	--
FRICTION COEFF.	--	--
MOISTURE CONTENT %	20.9	28.3
DRY DENSITY - PCF	101.7	98.0

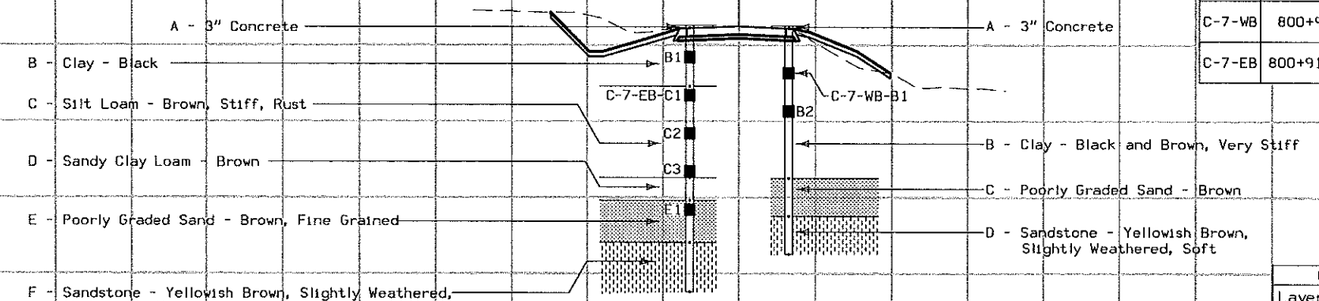
CU-CONSOLIDATED UNDRAINED
UU-UNCONSOLIDATED UNDRAINED
UC-UNCONFINED COMPRESSION (c=1/2 Qu)

LT160 LT140 LT120 LT100 LT80 LT60 LT40 LT20 0 RT20 RT40 RT60 RT80 RT100 RT120 RT140 RT160

FILE NO. 31558	ENGLISH	DESIGN TEAM MEGIVERN \ DELL \ GORJACKOVSKI	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER SPS.5

THIS SHEET IS INCLUDED TO SHOW SOIL INFORMATION.
DETAILS AND NOTES SHOWN ELSEWHERE IN THESE PLANS SHALL BE USED FOR STRUCTURE CONSTRUCTION.

STA. 801+00.00
CL IA 139
Surface Elevation 722.49
0.00



C-7-EB	
Layer	Thickness
A	0.3
B	7.7
C	12.0
D	3.0
E	5.5
F	6.5

C-7-WB	
Layer	Thickness
A	0.3
B	19.7
C	5.0
D	5.0

Water Level Observations (Ft.)

Boring No.	Station	Offset	Surface Elevation	Date Drilled	While Drilling	End of Drilling	After Drilling
C-7-WB	800+97	RT 13	722.52	07/13/2017	--	--	Boring Plugged After Drilling
C-7-EB	800+91.5	LT 13	722.60	07/26/2017	--	--	Boring Plugged After Drilling

SHELBY TUBE CORE DATA

CORE NO.	C-7-WB-B1	C-7-EB-C1
DEPTH IN FEET	5.0-7.0	8.0-10.0
CLASSIFICATION (AASHTO)	--	A-7-6(20)
COEFF.CONSOL. (SQ. FT /DAY)	--	--
TRIAXIAL COMPRESSION	--	--
COHESION - PSF	--	--
FRICTION COEFF.	--	--
MOISTURE CONTENT %	30.2	21.1
DRY DENSITY - PCF	84.1	104.2

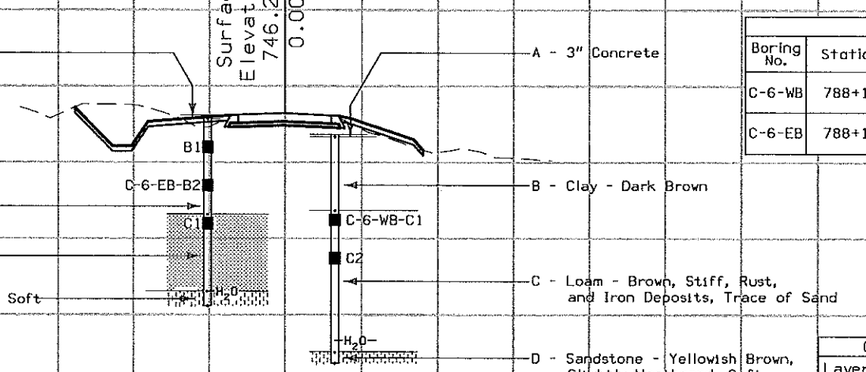
CU-CONSOLIDATED UNDRAINED
UU-UNCONSOLIDATED UNDRAINED
UC-UNCONFINED COMPRESSION (c=1/2 Q_u)

LEGEND

-H₂O-	WATER	BLOW COUNT LAYER - NO. BLOWS B2 — 5	SOIL REMEDIATION AREA
— DRY	DRY		LIMESTONE (LS.)
-◁	PLUGGED		BROKEN & WEATHERED LS.
M—	MOISTURE	DIAMOND CORE	SANDSTONE
■	SHELBY	SAND	SHALE
■	BLOW COUNT	GRAVELLY SAND	SANDY SOIL
▬	DENS. CORE	BOULDERS	
S	SAMPLE		

C-7-EB LT.13
C-7-WB RT.13

STA. 788+00.00
CL IA 139
Surface Elevation 746.23
0.00



C-6-EB	
Layer	Thickness
A	0.5
B	12.5
C	10.0
D	2.0

C-6-WB	
Layer	Thickness
A	0.3
B	9.7
C	18.5
D	1.5

Water Level Observations (Ft.)

Boring No.	Station	Offset	Surface Elevation	Date Drilled	While Drilling	End of Drilling	After Drilling
C-6-WB	788+10	RT 13	743.62	07/11/2017	--	27.0	Boring Plugged After Drilling
C-6-EB	788+18	LT 20.5	746.16	07/26/2017	13.5	23.0	Boring Plugged After Drilling

SHELBY TUBE CORE DATA

CORE NO.	C-6-WB-C1	C-6-EB-B2
DEPTH IN FEET	10.0-12.0	8.0-10.0
CLASSIFICATION (AASHTO)	A-6(18)	--
COEFF.CONSOL. (SQ. FT /DAY)	--	--
TRIAXIAL COMPRESSION	--	--
COHESION - PSF	--	--
FRICTION COEFF.	--	--
MOISTURE CONTENT %	28.2	26.8
DRY DENSITY - PCF	88.7	98.2

CU-CONSOLIDATED UNDRAINED
UU-UNCONSOLIDATED UNDRAINED
UC-UNCONFINED COMPRESSION (c=1/2 Q_u)

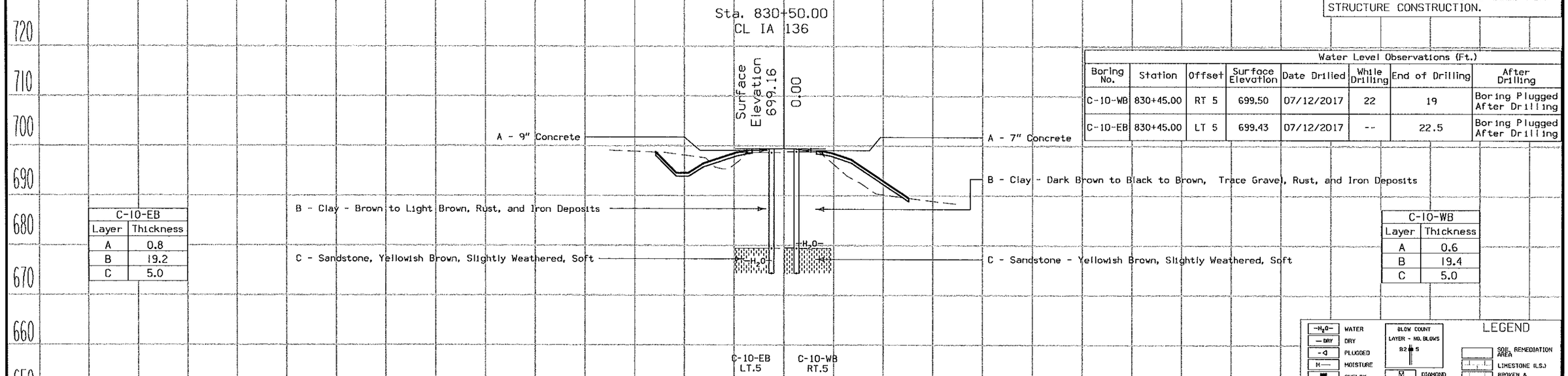
C-6-EB LT.20.5
C-6-WB RT.13

LT160 LT140 LT120 LT100 LT80 LT60 LT40 LT20 0 RT20 RT40 RT60 RT80 RT100 RT120 RT140 RT160

FILE NO. 31558	ENGLISH	DESIGN TEAM MEGIVERN \ DELL \ GORJACKOVSKI	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER SPS.6

2:19:13 PM 7/19/2018 ogorjac pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\2313601013\Soils\Clinton 136 (73)\S4\23136073.sht

THIS SHEET IS INCLUDED TO SHOW SOIL INFORMATION.
DETAILS AND NOTES SHOWN ELSEWHERE IN THESE PLANS SHALL BE USED FOR STRUCTURE CONSTRUCTION.



C-10-EB	
Layer	Thickness
A	0.8
B	19.2
C	5.0

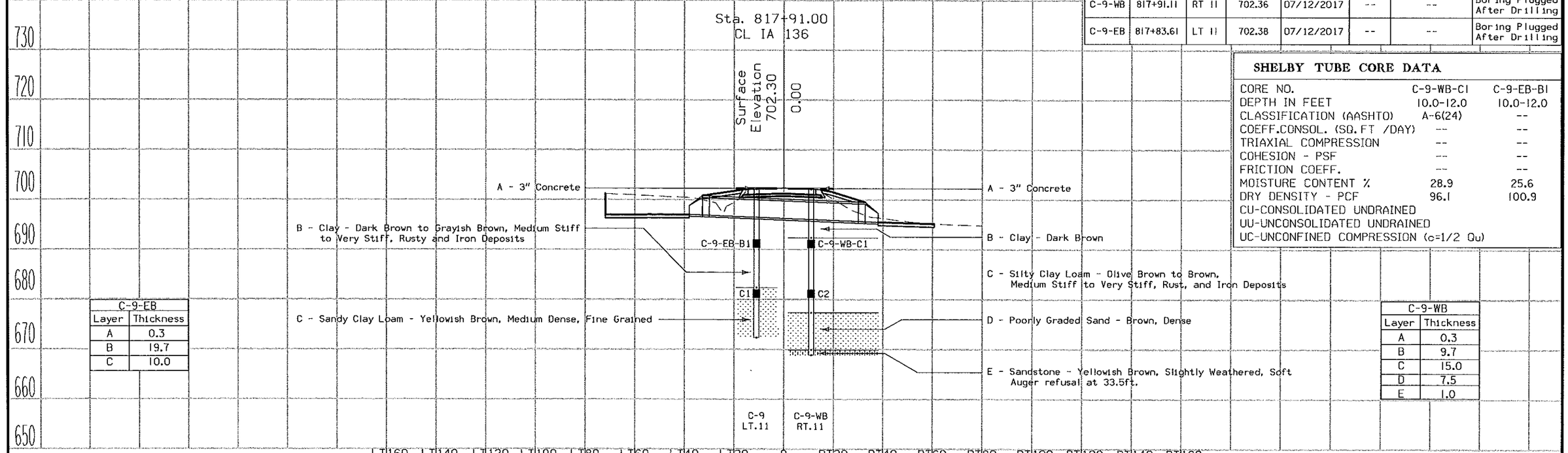
C-10-WB	
Layer	Thickness
A	0.6
B	19.4
C	5.0

Water Level Observations (Ft.)

Boring No.	Station	Offset	Surface Elevation	Date Drilled	While Drilling	End of Drilling	After Drilling
C-10-WB	830+45.00	RT 5	699.50	07/12/2017	22	19	Boring Plugged After Drilling
C-10-EB	830+45.00	LT 5	699.43	07/12/2017	--	22.5	Boring Plugged After Drilling

LEGEND

-H2O- WATER
DRY
PLUGGED
MOISTURE
SHELBY
BLOW COUNT
DENS. CORE
SAMPLE
BLOW COUNT LAYER - NO. BLOWS B2 5
DIAMOND CORE
SAND
GRAVELLY SAND
BOULDERS
SOIL REMEDIATION AREA
LIMESTONE (LS.)
BROKEN & WEATHERED LS.
SANDSTONE
SHALE
SANDY SOIL



C-9-EB	
Layer	Thickness
A	0.3
B	19.7
C	10.0

C-9-WB	
Layer	Thickness
A	0.3
B	9.7
C	15.0
D	7.5
E	1.0

Water Level Observations (Ft.)

Boring No.	Station	Offset	Surface Elevation	Date Drilled	While Drilling	End of Drilling	After Drilling
C-9-WB	817+91.11	RT 11	702.36	07/12/2017	--	--	Boring Plugged After Drilling
C-9-EB	817+83.61	LT 11	702.38	07/12/2017	--	--	Boring Plugged After Drilling

SHELBY TUBE CORE DATA

CORE NO.	C-9-WB-C1	C-9-EB-B1
DEPTH IN FEET	10.0-12.0	10.0-12.0
CLASSIFICATION (AASHTO)	A-6(24)	--
COEFF.CONSOL. (SQ.FT /DAY)	--	--
TRIAXIAL COMPRESSION	--	--
COHESION - PSF	--	--
FRICTION COEFF.	--	--
MOISTURE CONTENT %	28.9	25.6
DRY DENSITY - PCF	96.1	100.9

CU-CONSOLIDATED UNDRAINED
UU-UNCONSOLIDATED UNDRAINED
UC-UNCONFINED COMPRESSION (c=1/2 Qu)

THIS SHEET IS INCLUDED TO SHOW SOIL INFORMATION.
DETAILS AND NOTES SHOWN ELSEWHERE IN THESE PLANS SHALL BE USED FOR STRUCTURE CONSTRUCTION.

LEGEND

WATER
DRY
PLUGGED
MOISTURE
SHELBY
BLOW COUNT
DENS. CORE
SAMPLE
BLOW COUNT LAYER - NO. BLOWS B2@5
DIAMOND CORE
SAND
GRAVELLY SAND
BOULDERS
SOIL REMEDIATION AREA
LIMESTONE (LS.)
BROKEN & WEATHERED LS.
SANDSTONE
SHALE
SANDY SOIL

Water Level Observations (Ft.)

Boring No.	Station	Offset	Surface Elevation	Date Drilled	While Drilling	End of Drilling	After Drilling
C-12-WB	855+24	RT 6	723.45	07/12/2017	--	--	Boring Plugged After Drilling
C-12-EB	855+24	LT 7	723.37	07/12/2017	--	--	Boring Plugged After Drilling

STA. 855+25.00
CL IA 136

Surface Elevation 723.37

0.00

A - 16" Concrete
A - 2' Concrete
B - Clay - Gray, Trace Organics, Rust, and Iron Deposits
B - Clay - Gray, Rust, and Iron Deposits
C - Lean Clay, with Sand. Brown, Trace Calcium
C - Sandstone - Yellowish Brown, Slightly Weathered, Soft

C-12-EB	
Layer	Thickness
A	2.0
B	21.0
C	2.0

C-12-WB	
Layer	Thickness
A	1.3
B	22.2
C	1.5

C-12-EB LT.7
C-12-WB RT.6

820 810 800 790 780 770 760 750 740 730 720 710 700 690 680 670 660 650 640 630

LT160 LT140 LT120 LT100 LT80 LT60 LT40 LT20 0 RT20 RT40 RT60 RT80 RT100 RT120 RT140 RT160

FILE NO. 31558	ENGLISH	DESIGN TEAM MEGIVERN \ DELL \ GORJACKOVSKI	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER SPS.8

1:49:47 PM 7/19/2018 ogorjac pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\23136O1013\Soils\Clinton 136 (73)\S4\23136073.sht

INDEX OF SHEETS

No.	DESCRIPTION
A Sheets	**Title Sheets**
A.1	Roadway Title Sheet
B Sheets	**Typical Cross Sections and Details**
B.1 - 2	Typical Cross Sections and Details
C Sheets	**Quantities and General Information**
C.1	Project Description
C.1	Estimated Roadway Quantities
C.2	Estimate Reference Information
C.3	Standard Road Plans
C.3	Index of Tabulations
C.3	General Notes
C.4 - 9	Tabulations
D Sheets	**Mainline Plan and Profile Sheets**
* D.1	Plan & Profile Legend & Symbol Information Sheet
* D.2 - 24	Culvert Plan Sheets
G Sheets	**Survey Sheets**
G.1	Reference Ties and Bench Marks
G.2 - 5	Horizontal Control Tab.
H Sheets	**Right-of-Way Sheets**
H.1 - 21	Ia. 136 Right of Way Sheets
J Sheets	**Traffic Control and Staging Sheets**
J.1	Traffic Control Plan
J.1	Tabulation of Coordinated Operations
* J.2 - 3	Detour Maps
* J.4	Traffic Control Layout for Intersection at Co. Rd. Z50
RC Sheets	**Sediment Control Quantities Tabulations**
RC.1 - 2	Pollution Prevention Plan (PPP)
RC.3 - 5	Erosion Control Tabulations
RR Sheets	**Erosion Control Plan Sheets**
* RR.1	Erosion Control Legend and Symbol Information Sheet
* RR.2 - 24	Erosion Control Device Placement Plan Sheets
T Sheets	**Earthwork Quantity Sheets**
T.1 - 23	Earthwork Quantity Sheets
U Sheets	**500 Series, Mod.Stds. and Detail Sheets**
U.1 - 2	500 Series, Modified Standards and Detail Sheets
W Sheets	**Mainline Cross Sections**
W.1 - 74	Mainline Cross Sections
	* Color Plan Sheets

PROFESSIONAL ENGINEER
LICENSED
BRANDYN G. CHEZICK
24712
IOWA

I hereby certify that this plan was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature — Date: 11/4/19

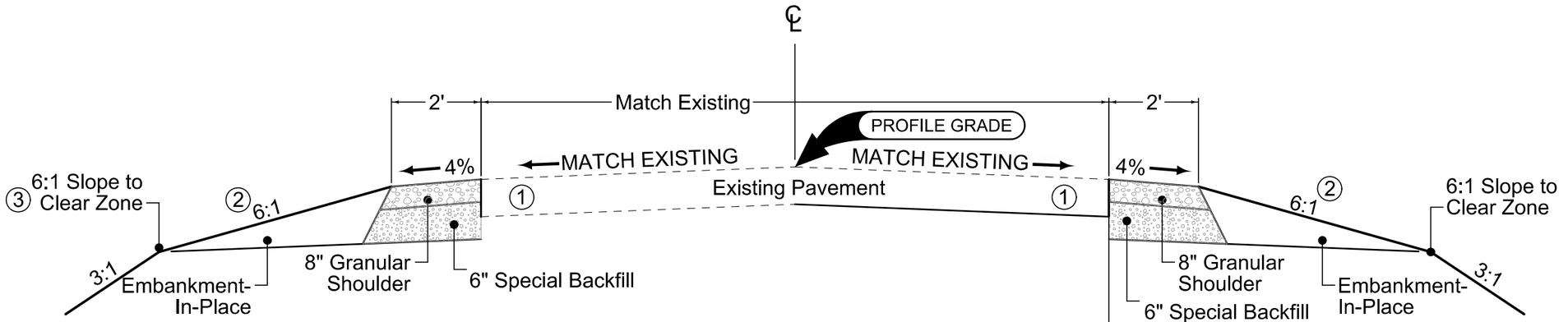
Brandyn Geoffrey Chezick
Printed or Typed Name

My license renewal date is December 31, 2019

Pages or sheets covered by this seal: A.1, B.1-B.2, C.1-C.9, D.1-D.24, G.1-G.5, H.1-H.21, J.1-J.4, RC.1-RC.5, RR.1-RR.24, T.1-T.23, U.1-U.2, W.1-W.74

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER A.1

11:25:50 AM 10/29/2019 tberry K:\7805\SA26 701BT Clinton Culverts\Design\2313601013ab01.sht



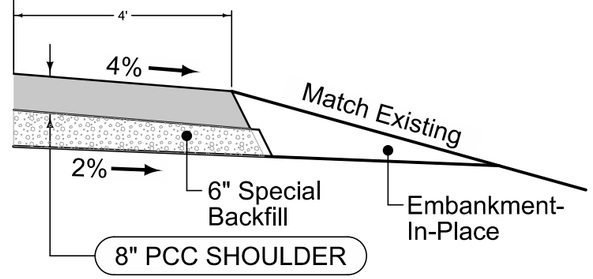
Section shown in direction of traffic.

BEGIN STATION	END STATION
79+78	81+17
95+28	97+41
107+78	109+66
382+07	384+85
538+64	540+17
552+74	554+93
569+97	573+30
580+62	581+49
650+42	652+41
704+61	705+85
742+22	744+26
765+24	766+94
787+20	789+48
800+17	801+87
807+68	809+66
816+72	818+84
829+62	831+34
837+31	839+47
843+17	845+11
854+18	855+78
878+05	879+54
908+42	909+87

① Possible Full Depth PCC Patch.
See D Sheets and Tab. 102-6C for locations.

② Slope may be flatter than 6:1.

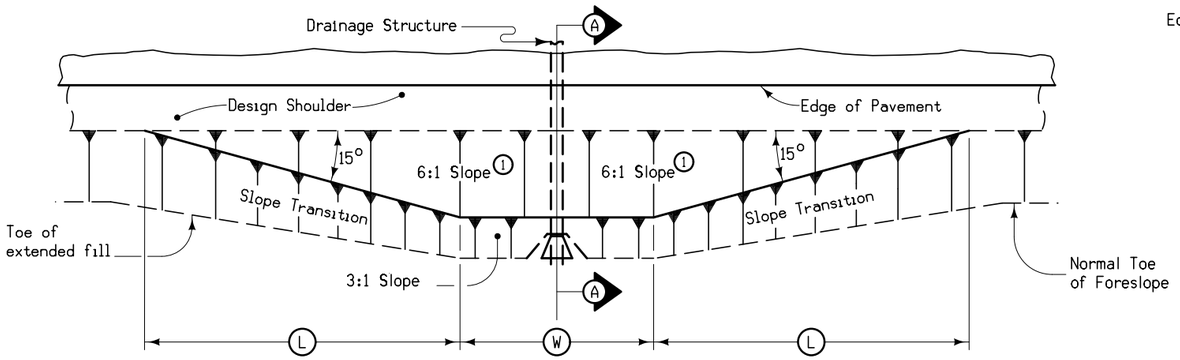
③ Refer to Sheet No. B.2 for additional details.



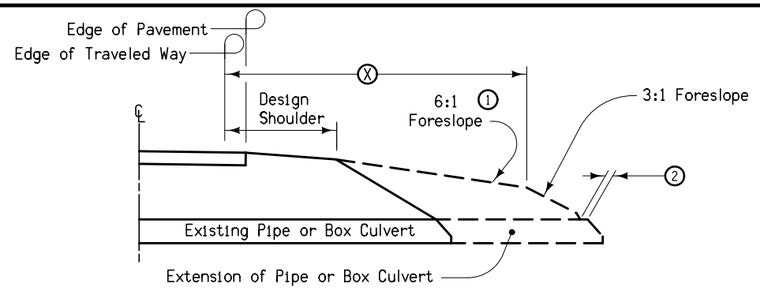
PCC Shoulder

Shoulder Jointing:
Longitudinal joint: B

STATION TO STATION	
684+50	685+20



PLAN VIEW



SECTION A-A

4311
MODIFIED

Notes:

At locations where an extended or newly constructed drainage structure extends beyond the normal foreslope cover, the foreslope shall be flattened as indicated so as to cover the structure. Minimum earth cover is 6".

(1) 6:1 Maximum - Slope may be flatter.
(2) 6" Minimum for pipe installations or to top of headwall on R.C.B.

STRUCTURE LOCATION		(W)	(L)	(X)
STATION	SIDE	Feet	Feet	Feet
80+13.55	LT	29.5	57.4	18.0
80+13.55	RT	29.6	49.1	18.0
96+34.00	LT	43.9	56.4	22.0
96+34.00	RT	45.0	65.0	22.0
108+76.00	LT	44.5	54.1	22.0
108+76.00	RT	43.8	55.0	22.0
383+30.13	LT	31.3	55.9	22.0
383+30.13	RT	30.3	49.1	22.0
539+60.00	LT	44.0	48.6	22.0
539+60.00	RT	43.0	54.7	22.0
553+83.41	LT	45.9	88.8	22.0
553+83.41	RT	44.0	65.7	22.0
571+62.20	LT	45.6	20.5	21.0
571+62.20	RT	45.6	125.8	21.0
581+05.47	RT	45.6	20.5	22.0
651+43.00	LT	41.6	72.0	22.0
651+43.00	RT	43.2	69.5	22.0
704+69.66	RT	29.1	93.4	16.0
743+25.20	LT	50.6	80.1	18.0
743+25.20	RT	46.8	42.9	18.0

STRUCTURE LOCATION		(W)	(L)	(X)
STATION	SIDE	Feet	Feet	Feet
766+09.00	LT	43.7	46.2	18.0
766+09.00	RT	43.3	44.1	18.0
788+20.00	LT	22.5	52.7	18.0
788+20.00	RT	44.4	70.3	18.0
800+82.00	LT	35.8	42.3	18.0
800+82.00	RT	45.7	47.0	18.0
808+67.00	LT	48.5	31.5	18.0
808+67.00	RT	50.5	55.7	18.0
817+91.00	LT	45.6	59.5	18.0
817+91.00	RT	45.6	64.6	18.0
830+53.00	LT	43.4	64.3	18.0
830+53.00	RT	42.5	56.3	18.0
838+23.00	LT	48.6	55.4	18.0
838+23.00	RT	51.3	81.4	18.0
844+26.62	RT	51.3	70.9	18.0
855+00.00	LT	43.0	61.7	18.0
855+00.00	RT	42.1	52.1	18.0
878+68.00	RT	44.8	52.7	18.0
909+07.20	RT	42.5	51.1	12.0

DETAILS OF
BARNROOF FORESLOPE
AT DRAINAGE STRUCTURE

100-1D
10-18-05

PROJECT DESCRIPTION

This project is for the installation and extension of multiple Roadway Pipe Culverts and Reinforced Box Culverts along IA 136 in Clinton County from Clinton to Charlotte. This project will involve RCP installation, RCB installation, grading, and Patching.

100-0A
10-28-97

ESTIMATED ROADWAY QUANTITIES
(1 DIVISION PROJECT)

Item No.	Item Code	Item	Unit	Total	As Built Qty.
1	2101-0850002	CLEARING AND GRUBBING	UNIT	350.0	
2	2102-0425070	SPECIAL BACKFILL	TON	671.5	
3	2102-2625000	EMBANKMENT-IN-PLACE	CY	4,560.0	
4	2102-2710070	EXCAVATION, CLASS 10, ROADWAY AND BORROW	CY	5,560.0	
5	2102-2710090	EXCAVATION, CLASS 10, WASTE	CY	3,383.0	
6	2105-8425005	TOPSOIL, FURNISH AND SPREAD	CY	2,902.0	
7	2105-8425015	TOPSOIL, STRIP, SALVAGE AND SPREAD	CY	2,282.0	
8	2107-0425020	COMPACTING BACKFILL ADJACENT TO BRIDGES, CULVERTS OR STRUCTU RES	CY	56.0	
9	2107-0875100	COMPACTION WITH MOISTURE CONTROL	CY	581.0	
10	2121-7425020	GRANULAR SHOULDERS, TYPE B	TON	739.7	
11	2122-5500080	PAVED SHOULDER, HOT MIX ASPHALT MIXTURE, 8 IN.	SY	31.0	
12	2213-2713300	EXCAVATION, CLASS 13, FOR WIDENING	CY	736.7	
13	2213-7100400	RELOCATION OF MAIL BOXES	EACH	1	
14	2315-8275025	SURFACING, DRIVEWAY, CLASS A CRUSHED STONE	TON	310.5	
15	2401-6745650	REMOVAL OF EXISTING STRUCTURES	LS	1.00	
16	2402-0425040	FLOODED BACKFILL	CY	398.0	
17	2402-2720000	EXCAVATION, CLASS 20	CY	1,666	
18	2402-2722000	EXCAVATION, CLASS 22	CY	10	
19	2416-0100015	APRONS, CONCRETE, 15 IN. DIA.	EACH	3	
20	2416-0100024	APRONS, CONCRETE, 24 IN. DIA.	EACH	10	
21	2416-0100030	APRONS, CONCRETE, 30 IN. DIA.	EACH	5	
22	2416-0100036	APRONS, CONCRETE, 36 IN. DIA.	EACH	6	
23	2416-0100042	APRONS, CONCRETE, 42 IN. DIA.	EACH	2	
24	2416-0100054	APRONS, CONCRETE, 54 IN. DIA.	EACH	1	
25	2416-1165024	CULVERT, 2000D CONCRETE ENTRANCE PIPE, 24 IN. DIA.	LF	210	
26	2416-1165030	CULVERT, 2000D CONCRETE ENTRANCE PIPE, 30 IN. DIA.	LF	54	
27	2416-1165036	CULVERT, 2000D CONCRETE ENTRANCE PIPE, 36 IN. DIA.	LF	104	
28	2416-1165042	CULVERT, 2000D CONCRETE ENTRANCE PIPE, 42 IN. DIA.	LF	60	
29	2416-1180054	CULVERT, CONCRETE ROADWAY PIPE, 54 IN. DIA.	LF	34	
30	2416-1262024	CULVERT, CONCRETE PIPE, 2000D, TRENCHLESS, 24 IN. DIA.	LF	212	
31	2416-1262030	CULVERT, CONCRETE PIPE, 2000D, TRENCHLESS, 30 IN. DIA.	LF	52	
32	2416-1262036	CULVERT, CONCRETE PIPE, 2000D, TRENCHLESS, 36 IN. DIA.	LF	114	
33	2417-0225024	APRONS, METAL, 24 IN. DIA.	EACH	4	
34	2417-1140024	CULVERT, CORRUGATED POLYETHYLENE ROADWAY PIPE, 24 IN.	LF	192	
35	2422-0360024	APRONS, UNCLASSIFIED, 24 IN. DIA.	EACH	1	
36	2422-0360060	APRONS, UNCLASSIFIED, 60 IN. DIA.	EACH	2	
37	2422-1722024	CULVERT, UNCLASSIFIED ENTRANCE PIPE, 24 IN. DIA.	LF	34	
38	2422-1722060	CULVERT, UNCLASSIFIED ENTRANCE PIPE, 60 IN. DIA.	LF	50	
39	2435-0251300	INTAKE, SW-513	EACH	1	
40	2435-0700020	CONNECTION TO EXISTING INTAKE	EACH	1	
41	2499-6000100	CLEAN OUT PIPE CULVERT	LF	74.0	
42	2503-0114215	STORM SEWER GRAVITY MAIN, TRENCHED, REINFORCED CONCRETE PIPE (RCP), 2000D (CLASS III), 15 IN.	LF	12.0	
43	2503-0114615	STORM SEWER GRAVITY MAIN, TRENCHED, REINFORCED CONCRETE PIPE (RCP), 3750D (CLASS V), 15 IN.	LF	49.0	
44	2503-0200036	REMOVE STORM SEWER PIPE LESS THAN OR EQUAL TO 36 IN.	LF	59	
45	2506-4984000	FLOWABLE MORTAR	CY	159.0	
46	2507-3250005	ENGINEERING FABRIC	SY	1,259.3	
47	2507-6800061	REVETMENT, CLASS E	TON	615.4	
48	2510-6745850	REMOVAL OF PAVEMENT	SY	7.2	
49	2510-6750600	REMOVAL OF INTAKES AND UTILITY ACCESSES	EACH	3	
50	2515-2475006	DRIVEWAY, P.C. CONCRETE, 6 IN.	SY	173.7	
51	2518-6910000	SAFETY CLOSURE	EACH	6	
52	2519-3280000	FENCE, FIELD	LF	1,848.1	
53	2519-3300400	FIELD FENCE BRACE PANELS	EACH	62	
54	2524-6765010	REMOVE AND REINSTALL SIGN AS PER PLAN	EACH	4	
55	2527-9263109	PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED	STA	37.28	
56	2527-9263180	PAVEMENT MARKINGS REMOVED	STA	10.03	
57	2528-8400048	TEMPORARY BARRIER RAIL, CONCRETE	LF	87.5	
58	2528-8400256	TEMPORARY TRAFFIC SIGNALS	EACH	2	
59	2528-8445110	TRAFFIC CONTROL	LS	1.00	
60	2528-8445113	FLAGGERS	EACH	See Proposal	
61	2529-2242304	CD JOINT ASSEMBLY	EACH	24	
62	2529-5070110	PATCHES, FULL-DEPTH FINISH, BY AREA	SY	421.5	
63	2529-5070111	PATCHES, FULL-DEPTH FINISH, BY AREA (50 FEET OR GREATER IN LENGTH)	SY	835.4	
64	2529-5070120	PATCHES, FULL-DEPTH FINISH, BY COUNT	EACH	8	
65	2529-8174010	SUBBASE (PATCHES)	SY	1,256.9	
66	2533-4980005	MOBILIZATION	LS	1.00	
67	2551-0000110	TEMP CRASH CUSHION	EACH	2	
68	2601-2634100	MULCHING	ACRE	6.7	
69	2601-2636015	NATIVE GRASS SEEDING	ACRE	5.2	
70	2601-2636043	SEEDING AND FERTILIZING (RURAL)	ACRE	1.2	
71	2601-2636044	SEEDING AND FERTILIZING (URBAN)	ACRE	0.3	
72	2602-0000020	SILT FENCE	LF	14,239.0	
73	2602-0000030	SILT FENCE FOR DITCH CHECKS	LF	1,777.0	

100-0A
10-28-97

ESTIMATED ROADWAY QUANTITIES
(1 DIVISION PROJECT)

Item No.	Item Code	Item	Unit	Total	As Built Qty.
74	2602-0000071	REMOVAL OF SILT FENCE OR SILT FENCE FOR DITCH CHECKS	LF	16,016.0	
75	2602-0000101	MAINTENANCE OF SILT FENCE OR SILT FENCE FOR DITCH CHECK	LF	1,602.0	
76	2602-0000160	ROCK CHECK DAM	LF	67	
77	2602-0000170	MAINTENANCE OF ROCK CHECK DAM	EACH	18	
78	2602-0000180	REMOVAL OF ROCK CHECK DAM	EACH	6	
79	2602-0000320	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 20 IN. DIA.	LF	279.3	
80	2602-0000350	REMOVAL OF PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE	LF	279.3	
81	2602-0010010	MOBILIZATIONS, EROSION CONTROL	EACH	1	
82	2602-0010020	MOBILIZATIONS, EMERGENCY EROSION CONTROL	EACH	1	

100-4A
10-29-02

ESTIMATE REFERENCE INFORMATION

Item No.	Item Code	Description
1	2101-0850002	**CLEARING AND GRUBBING**
		See Tab. 110-17 for details.
2	2102-0425070	**SPECIAL BACKFILL**
		Item is for subbase under proposed PCC and granular shoulders. See Typical WHKS-1 on Sheet B.1 and Tab. 112-9 for details. Bid items is increased by 5% for irregularities.
3	2102-2625000	**EMBANKMENT-IN-PLACE**
		Item is for additional fill material required for grading. Bid item estimated assuming 30% shrinkage. See T Sheets for details.
4	2102-2710070	**EXCAVATION, CLASS 10, ROADWAY AND BORROW**
		Item is for the total cut material required for grading. See T Sheets for details.
5	2102-2710090	**EXCAVATION, CLASS 10, WASTE**
		Item is for excess cut material. See T Sheets for details.
6	2105-8425005	**TOPSOIL, FURNISH AND SPREAD**
		Item is for additional topsoil fill material required for grading. Bid item estimated assuming 4 a depth of 8 inches and 40% shrinkage.
7	2105-8425015	**TOPSOIL, STRIP, SALVAGE AND SPREAD**
		Item is for the total topsoil cut material required for grading. Existing depth assumed to be 4 inches.
8	2107-0425020	**COMPACTING BACKFILL ADJACENT TO BRIDGES, CULVERTS OR STRUCTU RES**
9	2107-0875100	**COMPACTION WITH MOISTURE CONTROL**
		See Tab. 104-4 for details.
10	2121-7425020	**GRANULAR SHOULDERS, TYPE B**
		Item is for placement of 8" granular shoulders. See Typical WHKS-1 on Sheet B.1 and Tab. 112-9 for details.
11	2122-5190008	**PAVED SHOULDER, HOT MIX ASPHALT MIXTURE, 8 IN.**
		Item is for placement of 8" PCC shoulders. See Typical WHKS-1 on Sheet B.1 and Tab. 112-9 for details.
12	2213-2713300	**EXCAVATION, CLASS 13, FOR WIDENING**
		Item is for removal of existing granular shoulder material. See Tab. 112-9 for details.
13	2213-7100400	**RELOCATION OF MAIL BOXES**
		See Sheet D.15 for location.
14	2315-8275025	**SURFACING, DRIVEWAY, CLASS A CRUSHED STONE**
		Refer to Tab 102-3 for details.
15	2401-6745650	**REMOVAL OF EXISTING STRUCTURES**
		See Tab. 110-2 for details. Item is for removal of existing structures being replaced with pipe culverts. See structural sheets for removal of existing structures to be replaced with box culverts.
16	2402-0425040	**FLOODED BACKFILL**
17	2402-2720000	**EXCAVATION, CLASS 20**
18	2402-2722000	**EXCAVATION, CLASS 22**
		See Tab. 104-3 and Tab. 104-4 for detials.

ESTIMATE REFERENCE INFORMATION

Item No.	Item Code	Description
19	2416-0100015	**APRONS, CONCRETE, 15 IN. DIA.**
20	2416-0100024	**APRONS, CONCRETE, 24 IN. DIA.**
21	2416-0100030	**APRONS, CONCRETE, 30 IN. DIA.**
22	2416-0100036	**APRONS, CONCRETE, 36 IN. DIA.**
23	2416-0100042	**APRONS, CONCRETE, 42 IN. DIA.**
24	2416-0100054	**APRONS, CONCRETE, 54 IN. DIA.**
25	2416-1165024	**CULVERT, 2000D CONCRETE ENTRANCE PIPE, 24 IN. DIA.**
26	2416-1165030	**CULVERT, 2000D CONCRETE ENTRANCE PIPE, 30 IN. DIA.**
27	2416-1165036	**CULVERT, 2000D CONCRETE ENTRANCE PIPE, 36 IN. DIA.**
28	2416-1165042	**CULVERT, 2000D CONCRETE ENTRANCE PIPE, 42 IN. DIA.**
29	2416-1180054	**CULVERT, CONCRETE ROADWAY PIPE, 54 IN. DIA.**
30	2416-1262024	**CULVERT, CONCRETE PIPE, 2000D, TRENCHLESS, 24 IN. DIA.**
31	2416-1262030	**CULVERT, CONCRETE PIPE, 2000D, TRENCHLESS, 30 IN. DIA.**
32	2416-1262036	**CULVERT, CONCRETE PIPE, 2000D, TRENCHLESS, 36 IN. DIA.**
33	2417-0225024	**APRONS, METAL, 24 IN. DIA.**
34	2417-1140024	**CULVERT, CORRUGATED POLYETHYLENE ROADWAY PIPE, 24 IN.**
35	2422-0360024	**APRONS, UNCLASSIFIED, 24 IN. DIA.**
36	2422-0360060	**APRONS, UNCLASSIFIED, 60 IN. DIA.**
37	2422-1722024	**CULVERT, UNCLASSIFIED ENTRANCE PIPE, 24 IN. DIA.**
38	2422-1722060	**CULVERT, UNCLASSIFIED ENTRANCE PIPE, 60 IN. DIA.**
		See Tab. 104-3 and D Sheets for details.
39	2435-0251300	**INTAKE, SW-513**
		See Tab. 104-5A and Sheet D.11 for details.
40	2435-0700020	**CONNECTION TO EXISTING INTAKE**
		Item is for connection of proposed pipe culvert to exsiting intake at Sta. 909+07.20. See Sheet D.23 for details.
41	2499-6000100	**CLEAN OUT PIPE CULVERT**
		Item is for removal of silt in existing 2' x 2' box culvert at Sta. 130+35. See location map on Sheet 1.
42	2503-0114215	**STORM SEWER GRAVITY MAIN, TRENCHED, REINFORCED CONCRETE PIPE (RCP), 2000D (CLASS III), 15 IN.**
		Item is for storm sewer pipe replacement at SW-513 intake. See Sheet D.11 for details.
43	2503-0114615	**STORM SEWER GRAVITY MAIN, TRENCHED, REINFORCED CONCRETE PIPE (RCP), 3750D (CLASS V), 15 IN.**
		See Tab. 104-3 and Sheet D.23 for details.
44	2503-0200036	**REMOVE STORM SEWER PIPE LESS THAN OR EQUAL TO 36 IN.**
		See Tab. 110-14 for details.
45	2506-4984000	**FLOWABLE MORTAR**
		See Tab. 104-3 and Tab. 110-9 for details.
46	2507-3250005	**ENGINEERING FABRIC**
47	2507-6800061	**REVETMENT, CLASS E**
		See Tab. 104-4 and Tab. 100-23 for details.
48	2510-6745850	**REMOVAL OF PAVEMENT**
		See Tab. 102-3 for details.
49	2510-6750600	**REMOVAL OF INTAKES AND UTILITY ACCESSES**
		See Tab. 110-15 for details.
50	2515-2475006	**DRIVEWAY, P.C. CONCRETE, 6 IN.**
		Refer to Tab 102-3 for details.
51	2518-6910000	**SAFETY CLOSURE**
		Refer to Tab 108-13A on Sheet C.7 for details.
52	2519-3280000	**FENCE, FIELD**
53	2519-3300400	**FIELD FENCE BRACE PANELS**
		See Tab. 100-7 for details.
54	2524-6765010	**REMOVE AND REINSTALL SIGN AS PER PLAN**
		See Tab. 190-61 for details.
55	2527-9263109	**PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED**
56	2527-9263180	**PAVEMENT MARKINGS REMOVED**
		See Tab. 108-22 for details.
57	2528-8400048	**TEMPORARY BARRIER RAIL, CONCRETE**
		See Tab. 108-33 for details.
58	2528-8400256	**TEMPORARY TRAFFIC SIGNALS**
		See Tab. 108-28 for details.
59	2528-8445110	**TRAFFIC CONTROL**
		See J Sheets for details.
60	2528-8445113	**FLAGGERS**

100-4A
10-29-02

ESTIMATE REFERENCE INFORMATION

Item No.	Item Code	Description
61	2529-2242304	**CD JOINT ASSEMBLY**
62	2529-5070110	**PATCHES, FULL-DEPTH FINISH, BY AREA**
63	2529-5070111	**PATCHES, FULL-DEPTH FINISH, BY AREA (50 FEET OR GREATER IN LENGTH)**
64	2529-5070120	**PATCHES, FULL-DEPTH FINISH, BY COUNT**
65	2529-8174010	**SUBBASE (PATCHES)**
		See Tab. 102-6C for details and locations.
66	2533-4980005	**MOBILIZATION**
		Bid item includes mobilization for all Box Culvert and Pipe Culvert locations listed in the plans.
67	2551-0000110	**TEMP CRASH CUSHION**
		See Tab. 108-30 and Sheet J.4.
68	2601-2634100	**MULCHING**
69	2601-2636015	**NATIVE GRASS SEEDING**
70	2601-2636043	**SEEDING AND FERTILIZING (RURAL)**
71	2601-2636044	**SEEDING AND FERTILIZING (URBAN)**
72	2602-0000020	**SILT FENCE**
		See Tab. 100-17 on RC Sheets for details. The tabulation includes estimated locations for placement of Silt Fence to address possible erosion during construction. Verify the specific locations with the Engineer prior to beginning placement. Bid item includes 25% additional quantity for field adjustments and replacements.
73	2602-0000030	**SILT FENCE FOR DITCH CHECKS**
		See Tab. 100-18 on RC Sheets for details. The tabulation includes estimated placment of Silt Fence for Ditch Checks to address possible erosion during construction. Verify the specific locations with the Engineer prior to beginning placement. Bid item includes 50% additional quantity for field adjustments and replacements.
74	2602-0000071	**REMOVAL OF SILT FENCE OR SILT FENCE FOR DITCH CHECKS**
		This item so included for Silt Fence and Silt Fence for Ditch Check removal required for staging reasons, for replacement (replacement to be paid seperately), or for areas that have achieved 70% permanent growth. Item is estimated at 100% for the Silt Fence and Silt Fence for Ditch Checks bid quantities.
75	2602-0000101	**MAINTENANCE OF SILT FENCE OR SILT FENCE FOR DITCH CHECK**
		This item is included for cleanout and repair of the Silt Fence and Silt Fence for Ditch Checks during the project. Item is estimated at 10% of the Silt Fence and Silt Fence for Ditch Checks bid quantities.
76	2602-0000160	**ROCK CHECK DAM**
		See Tab. 100-32 on RC Sheets.
		METHOD OF MEASUREMENT: Linear Feet to the nearest 0.1 feet.
		BASIS OF PAYEMENT: The Contractor will be paid the contract unit price per linear foot. Payement is full compensation for all materials, labor, and equipment required to construct the Rock Check Dam properly.
		Class 10 excavation required to cut trench and engineering fabric installed prior to placing revetment are incidental and will not be paid for seperately.
77	2602-0000170	**MAINTENANCE OF ROCK CHECK DAM**
		See Tab. 100-32 on RC Sheets.
		METHOD OF MEASUREMENT: By count.
		BASIS OF PAYEMENT: The Contractor will be paid the contract unit price for each occurrence. Payment is full compensation for clean out and disposal of material when capacity reaches 50%, and for any repair that is needed during the project.
78	2602-0000180	**REMOVAL OF ROCK CHECK DAM**
		See Tab. 100-32 on RC Sheets.
		METHOD OF MEASUREMENT: By count.
		BASIS OF PAYMENT: The Contractor will be paid the contract unit price for each Rock Check Dam removed. Payment is full compensation for all labor and equipment required to remove all rock and material above original ditch grade. Rock, silt, and engineering fabric that is flush with and/or below final ditch grade will be allowed to remain in the excavation trench.
79	2602-0000320	**PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 20 IN. DIA.**
80	2602-0000350	**REMOVAL OF PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE**
		See Tab. 100-19 on RC Sheets for details.
81	2602-0010010	**MOBILIZATIONS, EROSION CONTROL**
82	2602-0010020	**MOBILIZATIONS, EMERGENCY EROSION CONTROL**

105-4
10-18-11

STANDARD ROAD PLANS

The following Standard Road Plans apply to construction work on this project.

Number	Date	Title
BA-500	04-19-16	Temporary Crash Cushions Sand Barrel
DR-101	04-18-17	Pipe Culvert (Bedding and Backfill)
DR-104	04-19-16	Depth of Cover Tables for Concrete and Corrugated Pipe
DR-111	04-17-18	Box Culvert (Backfill)
DR-121	10-17-17	Connected Pipe Joints
DR-122	10-18-16	Construction of Type "C" Concrete Adaptors for Pipe Culvert Connections
DR-141	04-18-17	Pipe Bends and Half Pipe
DR-201	10-16-18	Concrete Aprons
DR-213	10-17-17	Pipe Apron Guard
DR-601	04-18-17	Reinforced Concrete Pipe Culvert
DR-611	04-18-17	Reinforced Concrete Pipe Culvert Letdown Structure
DR-621	04-18-17	Pipe Extension
EC-201	10-15-19	Silt Fence
EC-202	10-21-14	Floating Silt Curtain
EC-204	04-18-17	Perimeter and Slope Sediment Control Devices
EC-301	10-18-16	Rock Erosion Control (REC)
EC-502	04-21-15	Seeding in Rural Areas
EW-401	10-20-15	Temporary Stream Crossing, Causeway, or Equipment Pad
EW-402	04-18-17	Temporary Stream Diversion
EW-403	04-18-17	Temporary Erosion Control Measures
EW-501	10-20-15	Rural Entrance
MI-101	10-20-15	Fencing Layout
MI-103	10-20-15	Deer Fence and Field Fence Construction
PM-110	10-16-18	Line Types
PR-102	04-21-15	Full Depth PCC Patch without Dowels
PR-103	10-21-14	Full Depth PCC Patch with Dowels
PR-140	04-21-15	Subbase Patches
PV-101	04-16-19	Joints
SW-101	04-17-18	Trench Bedding and Backfill Zones
SW-102	04-16-19	Rigid Gravity Pipe Trench Bedding
SW-513	04-17-18	Open-Sided Area Intake
SW-602	04-21-15	Castings for Storm Sewer Manholes
TC-1	10-15-19	Work Not Affecting Traffic (Two-Lane or Multi-Lane)
TC-202	04-21-15	Work Within 15 ft of Traveled Way
TC-213	10-15-19	Lane Closure with Flaggers
TC-216	10-18-16	Lane Closure with Signals
TC-252	04-19-16	Routes Closed to Traffic

111-25
10-18-11

INDEX OF TABULATIONS

Tabulation	Tabulation Title	Sheet No.
C Sheets		
100-0A	ESTIMATED ROADWAY QUANTITIES (1 DIVISION PROJECT)	C.1
100-1D	PROJECT DESCRIPTION	C.1
100-4A	ESTIMATE REFERENCE INFORMATION	C.1 - C.2
100-7	FENCING	C.4
102-5	EXISTING PAVEMENT	C.4
102-6C	FULL-DEPTH PATCHES	C.4
104-3	DRAINAGE STRUCTURES	C.5
104-4	REINFORCED CONCRETE BOX DRAINAGE STRUCTURES	C.5
104-5A	INTAKES AND UTILITY ACCESSES	C.7
105-4	STANDARD ROAD PLANS	C.3
108-13A	SAFETY CLOSURES	C.7
108-22	PAVEMENT MARKING LINE TYPES	C.6
108-28	TEMPORARY TRAFFIC SIGNALS	C.7
108-30	CRASH CUSHIONS	C.7
108-33	TEMPORARY BARRIER RAIL	C.7
110-2	REMOVAL OF EXISTING STRUCTURES	C.7
110-9	CULVERT ABANDONMENT	C.7
110-14	SANITARY OR STORM SEWER ABANDONMENT OR REMOVAL	C.6
110-15	REMOVAL OF INTAKES AND UTILITY ACCESSES	C.7
110-17	CLEARING AND GRUBBING	C.8
111-25	INDEX OF TABULATIONS	C.3
112-9	SHOULDERS	C.9
190-61	EXISTING SIGNS TO BE REINSTALLED	C.8

262-6
10-18-05

UTILITIES
(NOT A POINT 25 PROJECT)

This is NOT a POINT 25 project and is not subject to the provisions of IAC 761-115.25.

281-1
10-18-16

SECTION 404 PERMIT AND CONDITIONS

Construct this project according to the requirements of U.S. Army Corps of Engineers Nationwide Permit 14, Permit No. 2018-0860. A copy of this permit is available from the Iowa DOT website (http://www.envpermits.iowadot.gov/). The U.S. Army Corps of Engineers reserves the right to visit the site without prior notice.

100-7
10-16-12

FENCING

* Bid Item

Refer to MI-101, MI-102, MI-103, MI-104, 510-3, and 510-5

Location				Side	Chain Link				Deer				Field				Channel Crossing		Remarks
From		To			Fence		Gate				Gate				Gate				
Station	Offset	Station	Offset		Length*	Type	No.*	Type	Fence Length*	Brace Panels*	No.*	Type	Fence Length*	Brace Panels*	No.*	Type	Length*	Type	
					LF		EACH		LF	EACH	EACH		LF	EACH	EACH		LF		
107+82.05	27.7	109+47.59	27.3	RT									185.6	8					
382+01.87	33.3	384+08.51	33.2	RT									218.6	8					
382+04.17	32.7	384+79.03	32.9	LT									310.8	8					
539+97.11	75.3	540+49.01	75.3	RT									16.2	2					
539+94.16	59.4	540+49.02	54.1	RT									56.2	2					
540+49.01	35.1	540+49.02	54.1	RT									18.9	2					
552+77.20	33.1	554+97.68	33.0	LT									247.7	6					
787+58.31	34.9	789+72.00	30.0	RT									223.2	8					
816+62.04	30.6	818+50.23	29.8	RT									198.0	5					

102-5
04-18-17

EXISTING PAVEMENT

No.	Location					Year	Type	Project Number	Surface		Base		Subbase		Removal		Coarse Aggregate			Reinforcement	Remarks
	County	Route	Dir. of Travel	Begin Ref. Loc. Sign	End Ref. Loc. Sign				Type	Depth	Type	Depth	Type	Depth	Type	Depth	Source	Type	Durability Class	Type	
										IN		IN		IN		IN					
	Clinton	IA 136	EB/WB	0.5	18.27	1924	PCC		PCC	8							Muscatine	Gravel	3		
						1964	HMA		HMA	2							Behr Quarry	C. Lst			
						1985	HMA		HMA	3							Goose Lake	C. Lst			
	Clinton	IA 136	EB/WB	18.27	18.93	1929	PCC		PCC	7											
						1985	HMA		HMA	3											
	Clinton	IA 136	EB/WB	18.93	27.26	1929	PCC		PCC	7							Bellevue	Gravel			
						1991	HMA		HMA	2							Crescent	C. Lst	I		

102-6C
MODIFIED

FULL-DEPTH PATCHES

Possible Standards: PR-101, PR-102, PR-103, PR-104, PR-105 and PR-140.

Location				Dimension			PCC Patches				HMA Patches	Composite HMA	Subbase Patches	Subbase Patch w/ 'EF' Joint	Patch Subdrain	'CD' Joints	'CT' Joints	'EF' Joints	Anchor Lugs Removal	Remarks
Count	Station	Reference Location Sign	Lane	Length	Width	Patch Thickness	With Dowels	Without Dowels	Full Depth Patch > 50-ft Long ; With Dowels											
							PR-103	PR-102	PR-103				PR-140	PR-101	PR-101 or PR-140			PR-101		
			L, R, or B	FT	FT	IN	SY	SY	SY		SY	TON	SY	SY	No.	No.	No.	No.	No.	
1	80+03.97		B	63.2	40.1	10.0			293.8				293.8			4				
1	651+21.30		B	43.1	26.0	10.0	124.5						124.5			2				
1	685+14.27	10.50' Lt	L	10.0	6.0	10.0		6.7					6.7							
1	800+86.62		B	71.6	26.0	10.0			206.8				206.8			5				
1	808+71.40		B	57.2	26.0	10.0			165.1				165.1			4				
1	817+83.35		B	41.0	26.0	10.0	118.3						118.3			2				
1	838+23.00		B	59.2	25.9	9.0			169.7				169.7			4				
1	908+81.02		B	48.7	36.8	9.0	172.0						172.0			3				
8							**414.8**	**6.7**	**835.4**				**1256.9**			**24**				**TOTAL**

DRAINAGE STRUCTURES

Length of unclassified pipe calculated is based on using Reinforced Concrete Pipe.
* Not a bid item
(1) Diameter or equivalent diameter
(2) UNCL = Unclassified Pipe CMP = Corrugated Metal Pipe RCP = Reinforced Concrete Pipe LCP = Arch or Elliptical Low Clearance Pipe SARC = Steel Arch Pipe
(3) Backfill according to DR-101

Drainage Area	Location	Type	Size (1)	Kind Of Pipe (2)	Length New Const.	Bedding Class	Design Cover (H)	Camber* (DR-102)	Apron No.		Apron Guard* (DR-213)	Elbow* (DR-141)	Diaphragm* (DR-501)	Tee Section* (DR-142)	"D" Section* (DR-141)	Reducer*	Type 'C' Connections* (DR-122)		Connected Pipe Joint* (DR-121)	4" Perforated Subdrain*	Flow Line Elevations				Dimensions Lin. Ft. Total		Dimensions Lin. Ft. Extensions		Skew Ahead Degrees		Dike Rt./Lt.	Dike Location Station	Dike Top Elevation	Dike Type	Class 20	Flowable Mortar	Floodable* Backfill (A)	Porous* Backfill (B)	Flooded Backfill (3) (A+B)	Remarks **
ACRE			IN		LF		FT	FT	IN	OUT	No.	No.	No.	No.	No.	No.	Type	No.	Type	FT	Lt.	Rt.	Other	Other	Lt.	Rt.	Lt.	Rt.	Lt.	Rt.	Lt.				CY	CY	CY	CY	CY	
	79+99.41	DR-651	60	UNCL	50			0.08	X	X									Type 3		642.08	642.64			25.0	25.0			14									
	80+30.25	DR-651	24	UNCL	34		2.0	0.08	X										Type 3		647.02	645.32			17.0	17.0			10									(3)
26.0	96+34.00	DR-601	36	RCP	74	B	3.4	0.08	X	X									Type 3		656.30	657.00			38.0	36.0			20				37.0			4.0	4.0	48' (4)
6.0	108+76.00	DR-601	24	RCP	68	B	3.2	0.08	X	X									Type 3		671.00	674.00			36.0	32.0			0				32.0			3.0	3.0	52' (4)
2.0	383+30.14	DR-632	24	HDPE	108	B	6.4	0.11	X	X		2							Type 3		844.28	836.94	842.42	836.94	40.0	64.0			0				14.0			7.0	7.0	(8)
2.0	539+60.00	DR-601	24	RCP	94	B	6.0	0.10	X	X									Type 3		870.00	861.00			34.0	60.0			10				16.0			3.0	3.0	68' (4)
3.0	553+83.41	DR-632	24	HDPE	84	B	2.0	0.08	X	X		2							Type 3		854.73	847.34	854.25	847.66	32.0	48.0			0				14.0			5.0	5.0	(9)
4.0	571+62.00	DR-621	30	RCP	26	B	2.5	0.08	X	X	1	2					C-1	2	Type 3		855.30	845.00	855.07	845.27			8.0	18.0							12.0			4.0	4.0	(5)
2.0	581+05.00	DR-621	30	RCP	4	B	4.0	0.08	X		1						C-1	1	Type 3		842.49	852.10		851.25				4.0							2.0			1.0	1.0	
6.0	651+43.00	DR-601	24	RCP	72	B	3.6	0.08	X	X									Type 3		745.15	742.00			34.0	38.0			0				120.0	10.0	41.0	7.0	48.0	
30.0	766+09.00	DR-611	36	RCP	76	B	6.7	0.11	X	X		1							Type 3		697.00	691.00		691.33	30.0	46.0			0				35.0			3.0	3.0	66' (4) (6)
15.0	788+20.00	DR-611	30	RCP	76	B	2.8	0.08	X	X									Type 3		741.80	739.40			40.1	48.1			30				40.0			3.0	3.0	52' (4)
25.0	800+82.00	DR-601	36	RCP	68	B	2.0	0.08	X	X									Type 3		718.50	716.70			42.0	42.0			33				162.0	8.0	46.0	8.0	54.0	
33.0	817+91.00	DR-601	42	RCP	60	B	2.2	0.08	X	X									Type 3		697.00	695.50			38.0	38.0			16				159.0	12.0	48.0	8.0	56.0	
12.0	830+53.00	DR-601	24	RCP	76	B	6.3	0.11	X	X									Type 3		694.50	689.00			36.1	52.1			8				23.0			4.0	4.0	50' (4)
6.0	855+00.00	DR-611	24	RCP	112	B	12.5	0.21	X	X		1							Type 3		704.50	714.00	704.63		76.1	48.1			0				30.0			3.0	3.0	92' (4) (7)
140.0	878+67.85	DR-622	54	RCP	34	B	10.0	0.17		X		1					C-2	1	Type 3		681.91	677.79		677.96	31.3	81.3			0				48.0			4.0	4.0	(10)
6.0	909+07.20	DR-601	15	RCP	49	R-2	1.2	0.08		X									Type 3		698.35	697.00			25.0	30.1			16				37.0	16.0	7.0	4.0	11.0	(11)

15" STORM SEWER TRENCHED	49	LF	15" CONCRETE APRON	1	EACH	
24" UNCLASSIFIED PIPE	34	LF	24" CONCRETE APRON	10	EACH	
24" RCP TRENCHED	210	LF	24" UNCLASSIFIED APRON	1	EACH	
24" RCP TRENCHLESS	212	LF	24" METAL APRON	4	EACH	
24" POLYETHYLENE PIPE	192	LF	30" CONCRETE APRON	5	EACH	
30" RCP TRENCHED	54	LF	36" CONCRETE APRON	6	EACH	
30" RCP TRENCHLESS	52	LF	42" CONCRETE APRON	2	EACH	
36" RCP TRENCHED	104	LF	54" CONCRETE APRON	1	EACH	
36" RCP TRENCHLESS	114	LF	60" UNCLASSIFIED APRON	2	EACH	
42" RCP TRENCHED	60	LF				
54" RCP TRENCHED	34	LF				
60" UNCLASSIFIED PIPE	50	LF				

| | | | | | | | | | |

PAVEMENT MARKING LINE TYPES

See PM-110

*BCY4 - Place on the same side of the roadway to match existing markings near the project.
**NPY4 - For estimating purposes only. No Passing Zone Lines will be located in the field.
***MNY4 - Factor of 1.00 as value includes number of 4-inch passes to cover median nose area.

BCY4: Broken Centerline (Yellow) @ 0.25 | DCY4: Double Centerline (Yellow) @ 2.00 | NPY4: No Passing Zone Line (Yellow) @ 1.25 | BLW4: Broken Lane Line (White) @ 0.25 | ELW4: Edge Line Right (White) @ 1.00
ELY4: Edge Line Left (Yellow) @ 1.00 | SLW2: Stop Line (White) @ 6.00

Location								Length by Line Type (Unfactored)														Remarks
Road ID	Station to Station		Dir. of Travel	Marking Type	Side			BCY4*	DCY4	NPY4**	BLW4	ELW4	ELY4	SLW2								
					L	C	R	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	
IA 136	79+56.90	79+44.90	NB	Waterborne/Solvent Paint			X							0.12								
	79+68.90	79+56.90	SB	Waterborne/Solvent Paint			X							0.12								
	77+91.90	77+91.90	WB	Waterborne/Solvent Paint			X							0.12								
	79+56.90	79+44.90	NB	Removal of Paint			X							0.12								Remove existing stop bar
	79+68.90	79+56.90	SB	Removal of Paint			X							0.12								Remove existing stop bar
	79+50.00	80+50.00	BOTH	Waterborne/Solvent Paint		X		1.00														
	79+50.00	80+50.00	EB	Waterborne/Solvent Paint	X							1.00										
	79+50.00	80+50.00	WB	Waterborne/Solvent Paint			X					1.00										
	79+56.90	79+44.90	NB	Removal of Paint			X							0.12								Remove existing stop bar
	79+68.90	79+56.90	SB	Removal of Paint			X							0.12								Remove existing stop bar
	77+91.90	77+91.90	WB	Removal of Paint			X							0.12								Remove existing stop bar
	79+56.90	79+44.90	NB	Waterborne/Solvent Paint			X							0.12								Replace existing stop bar
	79+68.90	79+56.90	SB	Waterborne/Solvent Paint			X							0.12								Replace existing stop bar
	651+00.00	652+00.00	BOTH	Waterborne/Solvent Paint		X			1.00													
	651+00.00	652+00.00	EB	Waterborne/Solvent Paint	X							1.00										
	651+00.00	652+00.00	WB	Waterborne/Solvent Paint			X					1.00										
	684+50.00	685+50.00	EB	Waterborne/Solvent Paint	X							1.00										
	682+81.00	686+90.00	BOTH	Removal of Paint		X				4.09												
	682+81.00	682+81.00	WB	Waterborne/Solvent Paint			X							0.11								
	686+90.00	686+90.00	EB	Waterborne/Solvent Paint			X							0.11								
	682+81.00	682+81.00	WB	Removal of Paint			X							0.11								
	686+90.00	686+90.00	EB	Removal of Paint			X							0.11								
	682+81.00	686+90.00	BOTH	Waterborne/Solvent Paint		X				4.09												
	800+50.00	801+50.00	BOTH	Waterborne/Solvent Paint		X			1.00													
	800+50.00	801+50.00	EB	Waterborne/Solvent Paint	X							1.00										
	800+50.00	801+50.00	WB	Waterborne/Solvent Paint			X					1.00										
	808+00.00	809+00.00	BOTH	Waterborne/Solvent Paint		X			1.00													
	808+00.00	809+00.00	EB	Waterborne/Solvent Paint	X							1.00										
	808+00.00	809+00.00	WB	Waterborne/Solvent Paint			X					1.00										
	817+50.00	818+50.00	BOTH	Waterborne/Solvent Paint		X			1.00													
	817+50.00	818+50.00	EB	Waterborne/Solvent Paint	X							1.00										
	817+50.00	818+50.00	WB	Waterborne/Solvent Paint			X					1.00										
	837+50.00	838+50.00	BOTH	Waterborne/Solvent Paint		X			1.00													
	837+50.00	838+50.00	EB	Waterborne/Solvent Paint	X							1.00										
	837+50.00	838+50.00	WB	Waterborne/Solvent Paint			X					1.00										
	908+50.00	909+50.00	BOTH	Waterborne/Solvent Paint		X			1.00													
	908+50.00	909+50.00	EB	Waterborne/Solvent Paint	X							1.00										
	908+50.00	909+50.00	WB	Waterborne/Solvent Paint			X					1.00										
				Factored Total: Waterborne/Solvent Paint				0.25	12.00	5.11	-	15.00	-	4.92	-	-	-	-	-	-	-	-	
				Factored Total: Removal of Paint				-	-	5.11	-	-	-	4.92	-	-	-	-	-	-	-	-	
				Bid Quantity: Painted Pavement Markings, Waterborne or Solvent-Based							37.28												
				Bid Quantity: Pavement Markings Removed							10.03												

SANITARY OR STORM SEWER ABANDONMENT OR REMOVAL

* Not a bid item

Location/Description	Sanitary or Storm Sewer	Abandonment, Plug Only or Abandonment, Plug and Fill or Removal	Length of Pipe		Fill Material*	Remarks
			≤ 36 inch diameter	> 36 inch diameter	Flowable Mortar or CLSM	
			LF	LF	CY	
685+06.5, 19.69' Lt to 685+12.5, 19.61' Lt	Storm Sewer	Removal	6			Remove 6' of Existing CMP Pipe.
685+14.5, 17.84' Lt to 685+14.8, 11.85' Lt	Storm Sewer	Removal	6			Remove 6' of Existing CMP Pipe.
909+00.31, 24.00' Lt to 909+13.20, 20.83 Rt	Storm Sewer	Removal	47			
			59			TOTAL

108-33
10-15-19

TEMPORARY BARRIER RAIL

Possible Standards: BA-400, BA-401

* Not a bid item. Anchorage requirements are based on TBR locations shown in the plans. TBR alignments that vary from what is shown in the plans may result in additional TBR sections requiring anchorage.

No.	Station to Station	Length	(Select One) Steel BA-400	(Select One) Concrete BA-401	Anchored* (Y/N)	Modular Glare Screen System (Y/N)	Remarks
		LF					
1	79+76.13	87.5		X	No	No	For 5 day road closure of IA 136.

110-2
04-16-13

REMOVAL OF EXISTING STRUCTURES

Location	Description	Remarks
79+87.72 Lt.	60"x60'CMP Pipe Culvert	Remove existing CMP.
79+99.44 Lt.	12"x24' CMP Pipe Culvert	Remove existing CMP.
96+21.2	2'x2'x34.9' RCB W/ 30"x6.5' RCP Lt.	Remove existing RCB headwall/wingwall Rt. & Lt.
		Remove existing RCP Lt.
108+64.20	2'x2'x35' RCB W/ 24"x6.0' RCP Lt.	Remove existing RCB headwall/wingwall Rt. & Lt.
		Remove existing RCP Lt.
383+06.40	12"x67' Tile Pipe W/ Beehive Intake Lt.	Remove existing headwall Rt. See Tab. 110-15 for Intake removal.
383+30.14	6'x4'x28.2' RCB Stock Pass	Remove existing headwall/wingwall Rt. & Lt.
539+40.70	2'x2'x35.5' RCB W/ 30"x4.4' RCP Lt.	Remove existing headwall/apron Rt.
		Remove existing RCP and apron Lt.
553+83.41	3'x5'x31.8' RCB	Remove existing headwall/aprons.
571+62.20	2'x2'x48.0' RCB	Remove existing headwall/wingwall/apron Rt. & Lt.
581+05.47	2'x2'x37.1' RCB	Remove existing headwall/wingwall Rt. UAC Apron Lt.
651+42.85	2'x2'x30.1 RCB W/ 30"x11.9' RCP Rt. & Lt.	Remove existing RCB
		Remvoe existing RCP Rt. & Lt.
766+34.80	3'x2'x47.0' RCB	Remove existing headwall/wingwall/aprons Rt. & Lt.
788+31.90	3'x3'x33.3' RCB	Remove existing headwall Rt. & Lt.
800+97.90	3'x2'x41.3' RCB W/ 36"x13.8' RCP Rt. & Lt.	Remove existing headwall/wingwall Rt. & Lt.
		Remove existing RCP Rt. & Lt. and apron Rt.
808+84.93	8'x8'x38.7' RCB	Remove existing RCB
817+73.61	4'x4'x28.0' RCB W/ 42"x12.9' CMP Rt. & Lt.	Remove existing 4'x4'x28.0' RCB.
		Remove existing CMP and apron Rt. & Lt.
830+64.70	2'x2'x40.7' RCB	Remove existing headwall/wingwall/apron Rt. & Lt.
838+31.83	6'x6'x52.4' RCB	Remove existing RCB
855+10.00	2'x2'x74.1' RCB	Remove existing headwall/apron Rt. & Lt.
878+67.85	4'x4'x70.7' RCB	Remove existing headwall/apron Rt.

104-5A
10-15-13

INTAKES AND UTILITY ACCESSES

* Bid Item
** For SW-545

No.	Location Station	Type or Standard Road Plan*	Form Grade Elev.	Bottom Well Elev.	Extension Length** FT	Notes
1	685+14.27	SW-513	682.7	679.0		Replace with 42"x42" SW-513 Intake.

110-9
10-18-11

CULVERT ABANDONMENT

Refer to Details 4315 and 4316

* Not a bid item

Location Station	Description	Fill Material: Flowable Mortar CY	Fill Material: Granular Backfill* TON	4" Perforated Subdrain* LF	Remarks
96+21.20	Existing 2'x2'x34.9' RCB.	5.2			(1)
108+64.20	Existing 2'x2'x35' RCB.	5.2			(1)
383+06.40	Existing 12"x67' Tile Pipe	1.9			(1)
383+30.14	Existing 6'x4'x28.2' RCB S	25.1			(1)
539+40.70	Existing 2'x2'x35.5' RCB.	5.3			(1)
553+83.41	Existing 3'x5'x31.8' RCB	17.7			(1)
766+34.80	Existing 3'x2'x47.0' RCB	10.4			(1)
788+31.90	Existing 3'x3'x33.3' RCB	11.1			(1)
800+97.90	Existing 3'x2'x41.3' RCB	9.2			(1)
830+64.70	Existing 2'x2'x40.7' RCB	6.0			(1)
855+10.00	Existing 2'x2'x74.1' RCB.	16.0			(1)
TOTAL		**113.0**			**(1) Plug & Abandon with Flowable Mortar.**
					Do not apply Article 1109.14,C of the Standard
					Specifications to this item. Use Detail 4315.
					See Tab 110-2 for removal details.

110-15
04-16-13

REMOVAL OF INTAKES AND UTILITY ACCESSES

No.	Location/Description	Type	Remarks
1	STA. 383+07.81, 30.24' Lt. / Existing 24" Beehive Intake	Intakes	Remove existing intake.
2	STA. 685+14.27, 19.59' Lt / Existing Area Intake	Intakes	Replace with 42"x42" SW-513 Intake. See D.7 for details.
3	STA. 844+18.37, 39.12' Rt. / Existing 48" Drop Inlet	Intakes	Remove existing intake.

108-13A
08-01-08

SAFETY CLOSURES

Refer to Section 2518 of the Standard Specifications

Station	Closure Type: Road Qty.	Closure Type: Hazard Qty.	Remarks
79+70.28	1		
81+68.83	1		
808+67.00	2		
838+23.00	2		
	6		**Total**

108-28
08-01-08

TEMPORARY TRAFFIC SIGNALS

No.	Location Station	Type: One Lane Traffic	Type: Haul Road	Type: Intersection	Remarks
1	80+13.55			X	For 5 day detour of IA 136
2	581+05.47			X	

108-30
04-16-13

CRASH CUSHIONS

* Bid Item
(1) Lane(s) to which the installation is adjacent.
(2) Complete this section when using the Temporary Crash Cushion bid item and Earthwork is needed for Sand Barrel placement. Refer to BA-500

No.	(1) Direction of Traffic	Location Station	Side	Obstacle Width FT	Crash Cushion (Select One)*: Temporary	Temporary Redirective	Temporary Severe Use	Permanent	Permanent Severe Use	Sand Barrel Details (2): V Length FT	W Length FT	X Length FT	Y Length FT	Z Length FT	Earthwork*: Excavation Class 10 CY	Embankment in Place CY	Spare Parts Kit (Select One)*: Permanent EACH	Permanent Severe Use EACH	Obstacle Description	Remarks
2	SB	79+76.13	Rt	2.50	1						24.25	5.25	3.25	12.00					Temporary Barrier Rail	
1		79+76.13	Lt	2.50	1															
					2															**TOTAL**

110-17
04-18-17

CLEARING AND GRUBBING

Location		Work and Material Type	Trees, Stumps, and Logs and Down Timber Material Diameters												All Other Materials		Estimated Quantities			Remarks
Station to Station or Ref. Loc. Sign to Ref. Loc. Sign or Description	Direction of Travel		3"-6"	>6"-9"	>9"-12"	>12"-15"	>15"-18"	>18"-24"	>24"-30"	>30"-36"	>36"-42"	>42"-48"	>48"-60"	>60"-72"	>72"	Length	Width	Units	Area	Herbicide Application	
																FT	FT	Units	Acres	Each	
107+76.8 to 109+50.6, 27.6' Rt	WB	Field Fence - Clearing														174.0		11.0			
382+35.3 to 383+88.5, 32.5' Rt	WB	Field Fence - Clearing														146.7		9.0			
382+28.2 to 384+79.03, 35.0' Lt	EB	Field Fence - Clearing														262.8		16.0			
9+63.5, 36.8' Rt to 540+49.0, 35.1'	WB	Field Fence - Clearing														86.6		6.0			
9+90.0, 37.3' Rt to 539+97.1, 75.3'	WB	Field Fence - Clearing														38.7		3.0			
STA. 539+11.6, 44.1' Lt	EB	Trees - Clearing and Grubbing			1													7.0			
STA. 539+31.4, 44.6' Lt	EB	Trees - Clearing and Grubbing					1											14.0			
STA. 539+72.9, 37.7' Lt	EB	Trees - Clearing and Grubbing								1								50.0			
STA. 539+74.26, 41.6' Rt	WB	Trees - Clearing and Grubbing			1													7.0			
552+77.2 to 554+97.7, 32.7' Lt	EB	Field Fence - Clearing														225.5		14.0			
743+50.7, 38.52' Lt	EB	Stumps - Grubbing									1							50.0			
788+94.8 to 789+65.7, 31.7' Rt	WB	Field Fence - Clearing														70.9		5.0			
816+62.0 to 818+50.2, 30.2' Rt	WB	Field Fence - Clearing														188.2		12.0			
838+31.93	EB	Trees - Clearing and Grubbing										1						120.0			
Sta. 837+24.5 to Sta. 839+03.2 Lt.	EB	Field Fence - Clearing														173.7		11.0			
Sta. 837+98.3 to Sta. 838+09.7 Lt	EB	Field Fence - Clearing														62.1		4.0			
877+93.48 to 879+44.41, 38.0' Rt.	WB	Field Fence - Clearing														168.6		11.0			
																		350.0			**TOTAL**

190-61
10-15-13

EXISTING SIGNS TO BE REINSTALLED

SIGN DESCRIPTION	DIRECTION OF TRAVEL	LOCATION STATION	NUMBER OF POSTS	SQUARE TUBE STEEL POSTS	WOOD POSTS		INSTALLATION		SEE SIGNING NOTES
					4" x 4"	4" x 6"	TYPE	DIM 'X'	
					LF	LF			
R2-5	EB	95+87.87	1.0	--	13.5		1.0	2	Reinstall
R2-1	EB	652+15.37	1.0		13.5		1.0	2	Reinstall
DNR Sign	EB	742+86.45	1.0	PSST			1.0	2	Reinstall
DNR Sign	WB	743+30.95	1.0	PSST			1.0	2	Reinstall
							4.0		TOTAL

102-3
10-16-18

ACCESS POINTS AND SAFETY RAMPS

Refer to Cross-Sections

Length of Unclassified Pipe calculated is based on using Corrugated Metal Pipe.
(1) Refer to MI-210
(2) Refer to EW-501.
(3) Refer to EW-501 or EW-502.
*Predetermined for access point not constructed with this project.

Location		Type	Length of Opening (1)			W	(1) (2) PR	(2) SR	Pipe Culvert (3)					Aprons	Driveway Surface Area		Driveway Surfacing Material	Remarks
Station	Side	A, B, C, Safety Ramp, or Predetermined*	Case	1½" Dropped Curb	3" Dropped Curb				H	Size	Pipe Length	Lt.	Rt.		HMA	PCC		
			1 or 2	LF	LF	FT	FT	FT	FT	IN	LF	LF	LF	No.	SY	SY	TON	
79+88.00	Rt	C														166.5		
704+50.00	Rt	C															10.000	
705+61.36	Rt	C															19.000	
788+74.00	Lt	C															281.500	
909+00.30	Lt															7.2		Includes 7.2 SY of Pavement Removal
																173.7	**310.500**	**TOTAL**

SHOULDERS

(1) Lane(s) to which the shoulder is adjacent.
(2) Bid Item
(3) Applies only for Paved Shoulders constructed on project with existing granular shoulders.
(4) Does not include shrink.

Calculations assume a HMA unit weight (lbs/cf) of 0, a Special Backfill unit weight (lbs/cf) of 140, and a Granular Shoulder unit weight (lbs/cf) of 140.

Location					P	G	L	Quantities														Remarks
Road Identification	Direction Of Traffic (1)	Station to Station		Side	Width	Width	Length	Class 13 Excavation (3)	Hot Mix Asphalt		Binder	Paved Shoulder	Reinforced Paved Shoulder	Special Backfill				Modified Subbase	Granular Shoulder		Earth Shoulder Construction Alternates			
														HMA Alternate		PCC Alternate					STA (2)	HMA	PCC
					FT	FT	FT	CY (2)	TON	TON/STA	TONS	SY (2)	SY (2)	TON (2)	TON/STA	TON (2)	TON/STA	CY (2)	TON (2)	TON/STA		CY (4)	CY (4)	
IA 136	WB	79+78.20	81+17.17	Rt		2.0	139.0	14.9						12.952	9.320				15.222	10.954	(1)			
IA 136	EB	79+71.08	80+88.38	Lt		2.0	117.3	12.6						10.932	9.320				12.849	10.954	(1)			
IA-136	EB	95+27.51	97+14.16	Lt		2.0	186.7	20.0						17.395	9.320				20.445	10.954	(1)			
IA-136	WB	95+46.36	97+40.96	Rt		2.0	194.6	20.9						18.136	9.320				21.316	10.954	(1)			
IA 136	WB	107+78.27	109+14.48	Rt		2.0	136.2	14.6						12.694	9.320				14.920	10.954	(1)			
IA 136	EB	107+85.30	109+66.39	Lt		2.0	181.1	19.4						16.877	9.320				19.836	10.954	(1)			
IA 136	WB	382+35.25	383+88.45	Rt		2.0	153.2	16.4						14.278	9.320				16.781	10.954	(1)			
IA 136	EB	382+07.08	384+84.71	Lt		2.0	277.6	29.8						25.875	9.320				30.410	10.954	(1)			
IA 136	WB	538+68.15	540+16.99	Rt		2.0	148.8	16.0						13.872	9.320				16.303	10.954	(1)			
IA 136	EB	538+63.52	538+68.87	Lt		3.8 to 2	5.4	0.8						0.628	11.730				0.809	15.127	(1)			
IA 136	EB	538+68.87	540+11.95	Lt		2.0	143.1	15.3						13.335	9.320				15.672	10.954	(1)			
IA 136	WB	553+06.67	554+74.07	Rt		2.0	167.4	18.0						15.601	9.320				18.336	10.954	(1)			
IA 136	EB	552+74.04	554+93.37	Lt		2.0	219.3	23.5						20.441	9.320				24.025	10.954	(1)			
IA 136	WB	569+97.46	573+29.76	Rt		2.0	332.3	35.6						30.970	9.320				36.399	10.954	(1)			
IA 136	EB	571+06.77	572+16.54	Lt		2.0	109.8	11.8						10.230	9.320				12.024	10.954	(1)			
IA 136	WB	580+62.14	581+48.78	Rt		2.0	86.6	9.3						8.075	9.320				9.490	10.954	(1)			
IA 136	WB	650+41.53	652+41.34	Rt		2.0	199.8	21.4						18.622	9.320				21.886	10.954	(1)			
IA 136	EB	650+49.27	652+38.48	Lt		2.0	189.2	20.3						17.634	9.320				20.725	10.954	(1)			
IA 136	EB	684+50.00	685+19.69	Lt	4.0		69.7	12.9				31.0		10.211	14.652						(1)			
IA 136	WB	704+61.08	704+65.12	Rt		0 to 2	4.0	0.2						0.377	9.320				0.443	10.954	(1)			
		704+65.12	705+85.32	Rt		2.0	120.2	12.9						11.202	9.320				13.166	10.954	(1)			
IA 136	WB	742+58.34	743+95.10	Rt		2.0	136.8	14.7						12.746	9.320				14.980	10.954	(1)			
IA 136	EB	742+22.28	744+26.49	LT		2.0	204.2	21.9						19.032	9.320				22.368	10.954	(1)			
IA 136	WB	765+24.39	766+92.45	Rt		2.0	168.1	18.0						15.663	9.320				18.409	10.954	(1)			
IA 136	EB	765+32.86	766+94.00	Lt		2.0	161.1	17.3						15.018	9.320				17.651	10.954	(1)			
IA 136	WB	787+35.82	789+48.32	Rt		2.0	212.5	22.8						19.805	9.320				23.276	10.954	(1)			
IA 136	EB	787+20.48	788+33.12	Lt		2.0	112.6	12.1						10.498	9.320				12.338	10.954	(1)			
IA 136	EB	788+33.12	788+38.36	Lt		2 to 0	5.2	0.3						0.488	9.320				0.574	10.954	(1)			
IA 136	WB	800+17.33	801+86.58	Rt		2.0	169.3	18.2						15.774	9.320				18.539	10.954	(1)			
IA 136	EB	800+21.29	801+43.04	Lt		2.0	121.8	13.1						11.347	9.320				13.336	10.954	(1)			
IA 136	WB	807+67.93	809+65.64	Rt		2.0	197.7	21.2						18.426	9.320				21.656	10.954	(1)			
IA 136	EB	807+97.72	809+35.23	Lt		2.0	137.5	14.8						12.816	9.320				15.062	10.954	(1)			
IA 136	WB	816+72.29	818+68.63	Rt		2.0	196.3	21.1						18.298	9.320				21.506	10.954	(1)			
IA 136	EB	817+18.91	818+83.60	Lt		2.0	164.7	17.7						15.349	9.320				18.039	10.954	(1)			
IA 136	WB	829+79.97	831+34.26	Rt		2.0	154.3	16.6						14.380	9.320				16.900	10.954	(1)			
IA 136	EB	829+62.37	831+34.22	Lt		2.0	171.9	18.4						16.016	9.320				18.824	10.954	(1)			
IA 136	WB	837+37.42	839+46.69	Rt		2.0	209.3	22.4						19.504	9.320				22.923	10.954	(1)			
IA 136	EB	837+30.60	838+94.90	Lt		2.0	164.3	17.6						15.313	9.320				17.997	10.954	(1)			
IA 136	WB	843+17.25	845+10.56	RT		2.0	193.3	20.7						18.016	9.320				21.174	10.954	(1)			
IA 136	EB	854+17.59	858+78.36	Lt		2.0	460.8	49.4						42.943	9.320				50.471	10.954	(1)			
IA 136	WB	854+27.40	855+76.05	Rt		2.0	148.7	15.9						13.854	9.320				16.283	10.954	(1)			
IA 136	WB	878+05.54	879+54.28	Rt		2.0	148.7	16.0						13.862	9.320				16.292	10.954	(1)			
								736.7				31.0		639.482					739.657					TOTAL

(1) Earth Shoulder Construction quantity is included in Excavation Class 10, Roadway and Borrow quantity (Refer to T sheets)

SURVEY SYMBOLS

- TA TA Tower Anchor
- PPA Alliant Energy
- FW Wire Fence
- TDC Tree Deciduous
- TP TPD Telephone Pedestal
- PR Electic Riser Pole
- MIS Miscellaneous
- OUT Tile Outlet
- SIGN SI Sign
- MM MM Mile Marker Post
- STP Stump
- IN Storm Sewer Intake
- SIGN SL Speed Limit Sign
- SHR Shrub
- TEV Evergeen Tree
- INB Storm Sewer Beehive Intake
- LUM Luminaire
- MH Utility Access (Manhole)
- D Centerline Draw or Stream (Down)
- SP Stream Profile
- DU Centerline Draw or Stream (Up)
- SNP Unpaved Shoulder
- EG Edge of Gravel Road
- ENT Centerline BL of Entrance
- ENU Edge Unpaved Entrance & Parking
- FHD Fire Hydrants
- WV WV Water Valve
- GV GV Gas Valve
- TPA Windstream McLeod
- TR Telephone Riser Pole

SURVEYED UTILITY OWNER SYMBOLS

Sub-Surface Utility Mapping Quality Level is in accordance with CI/ASCE 38-02 Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data.

Remark Abbreviations
QLA Quality Level A Highest guideline quality level
QLD Quality Level D Lowest guideline quality level

- San.(C) SA1C City of Charlotte - Quality C
- St.S.(C) ST1C City of Clinton - Quality D1
- St.S.3(C) ST3C City of Goose Lake - Quality C
- TL1D Windstream McLeod - Quality D1
- TL2D Preston Telephone - Quality D1
- TL4D Century Link - Quality D1
- TV5D Mediacom - Quality D1
- WL2D IA American Water Co. - Quality D1
- WL3D City of Goose Lake - Quality D1
- GL1D Alliant Energy - Quality D1
- FO1D Windstream - Quality D1
- FO2D Preston Telephone - Quality D1
- FO4D Century Link - Quality D1

PLAN VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

LINEWORK	Design	Color No.	
Green	(2)		Existing Topographic Features and Labels
Blue	(1)		Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
Magenta	(5)		Existing Utilities
SHADING	**Design**	**Color No.**	
Yellow	(4)		Highlight for Critical Notes or Features
Red	(3)		Delineates Restricted Areas
Lavender	(9)		Temporary Pavement Shading
Gray, Light	(48)		Proposed Pavement Shading
Gray, Med	(80)		Proposed Granular Shading
Gray, Dark	(112)		Proposed Grade and Pave Shading "In conjunction with a paving project"
Brown, Light	(236)		Grading Shading
Tan	(8)		Proposed Sidewalk Shading
Blue, Light	(230)		Proposed Sidewalk Landing Shading
Pink	(11)		Proposed Sidewalk Ramp Shading
Blue, Light	(199)		Permanent Easement Shading
Brown	(8)		Temporary Easement Shading

PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

LINEWORK	Design	Color No.	
Green	(2)		Existing Ground Line Profile
Blue	(1)		Proposed Profile and Annotation
Magenta	(5)		Existing Utilities
Blue, Light	(230)		Proposed Ditch Grades, Left
Black	(0)		Proposed Ditch Grades, Median
Rust	(14)		Proposed Ditch Grades, Right

- Reference Point
- Survey Line
- Station
- Section Corner
- Ground Line Intercept
- Saw Cut
- Guardrail
- Trench Drain
- HighTension Cable Guardrail
- Sheet Pile
- Pavement Removal
- Clearing & Grubbing Area

RIGHT-OF-WAY LEGEND

- Proposed Right-of-Way
- Existing Right of Way
- Existing and Proposed Right-of-Way
- Easement and Existing Right-of-Way
- Easement (Temporary)
- Easement
- C/A Access Control
- Property Line

PLAN AND PROFILE

(COVERS SHEET SERIES D, E, F, & K)

FILE NO.	ENGLISH	DESIGN TEAM **WHKS & CO.**	**CLINTON** COUNTY	PROJECT NUMBER **STPN-136-1(73)--2J-23**	SHEET NUMBER **D.1**

12:20:43 PM 11/4/2019 bchezick K:\7805\SA26 701BT Clinton Culverts\Design\2313601013d01.sht

CITY OF CLINTON
HAMPSHIRE TWP.
T-82N R-6E
Sec. 26

CITY OF CLINTON
HAMPSHIRE TWP.
T-82N R-6E
Sec. 25

5' X 4' X 57.6' RCB
U.A.C.

16TH ST NW

STA. 79+87.50
8' X 4' X 15' INLET W/
6' X 4' X 68.9' RCB OUTLET
Remove
Construct 8'x5'x71' RCB Culvert

Class "E" Revetment
See Sheet 5

Construct 2' Granular Shoulder

Construct 293.8 SY
Full Depth PCC Patch

STA. 79+78
BEGIN CONSTRUCTION

STA. 81+17
END CONSTRUCTION

IA 136

IA 136

POT Sta 79+56.90

24" X 54' RCP
U.A.C.

Construct 2' Granular Shoulder

12" X 24' CMP
Remove

Sta. 80+30.25
Install 24" x 34' UNCL
F.L. Lt. = 647.02
F.L. Rt. = 645.32

Class "E" Revetment
See Sheet 5

+61 Reconstruct
Type "C" Ent.

60" X 60' CMP
Remove

Sta. 79+99.41, 69.7' Lt
Install 60" x 50' UNCL
F.L. Lt. = 642.08
F.L. Rt. = 642.64

Reconstruct 166.5 SY
Entrance Pavement

CITY OF CLINTON
HAMPSHIRE TWP.
T-82N R-6E
Sec. 35

CITY OF CLINTON
HAMPSHIRE TWP.
T-82N R-6E
Sec. 36

16TH ST NW

83 82 81 80

0 FEET 20

FOR CULVERT SITUATION PLAN
REFER TO SHEET NO. 4

For Right of Way Information
Refer to H Sheets

Sta. 80+13.55 Plan View

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER D.2

12:20:50 PM 11/4/2019 bchezick K:\7805\SA26 701BT Clinton Culverts\Design\2313601013d01.sht

HAMPSHIRE TWP.
T-82N R-6E
Sec. 26

Sta. 96+34.00
Install 36" x 74' RCP W/ Aprons
Trenchless Installation
F.L. Lt. = 656.30
F.L. Rt. = 657.00

Class "E" Revetment
See SRP EC-301

STA. 96+21.22
2' X 2' X 34.9' RCB
Plug & Abandon W/ Flowable Mortar
Remove 30" RCP Lt & Headwall Rt

Construct 2' Granular Shoulder

STA. 97+41
END CONSTRUCTION

STA. 95+28
BEGIN CONSTRUCTION

IA 136

Construct 2' Granular Shoulder

Class "E" Revetment
See SRP EC-301

HAMPSHIRE TWP.
T-82N R-6E
Sec. 35

For Right of Way Information
Refer to H Sheets

0 20
FEET

Sta. 96+34.00 Plan View

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER D.3

12:20:56 PM 11/4/2019 bchezick K:\7805\SA26 701BT Clinton Culverts\Design\2313601013d01.sht

HAMPSHIRE TWP.
T-82N R-6E
Sec. 26

Sta. 108+76.00
Install 24" x 68' RCP W/ Aprons
Trenchless Installation
F.L. Lt. = 671.00
F.L. Rt. = 674.00

Class "E" Revetment
See SRP EC-301

Install 185.6 LF Field Fence

Remove 174.0 LF Fence

Construct 2' Granular Shoulder

STA. 109+66
END CONSTRUCTION

STA. 107+78
BEGIN CONSTRUCTION

APPROX. SEC. LINE

IA 136

Construct 2' Granular Shoulder

111 110 109 108 107 106

Class "E" Revetment
See SRP EC-301

STA. 108+64.20
2' X 2' X 35.0' RCB W/
24" RCP OUTLET
Plug & Abandon w/ Flowable Mortar
Remove Lt Apron & Rt Headwall

HAMPSHIRE TWP.
T-82N R-6E
Sec. 35

For Right of Way Information
Refer to H Sheets

0 20
FEET

Sta. 108+76.00 Plan View

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER D.4

12:21:04 PM 11/4/2019 bchezick K:\7805\SA26 701BT Clinton Culverts\Design\2313601013d01.sht

STA. 384+85
END CONSTRUCTION

385

IA 136

Construct 2' Granular Shoulder

Curve Data
Δ = 68° 26' 16.66" (RT)
T = 487.70
L = 856.57
R = 717.12
E = 150.12

HAMPSHIRE TWP.
T-82N R-6E
Sec. 7

Install 218.6 LF Field Fence

Remove 146.7 LF Fence

Install 310.8 LF Field Fence

384

Sta. 383+30.14
4' X 6' X 28.2'
RCB Cattle Pass
Install 24"x108' Corrugated HPDE W/
Corrugated Metal Aprons Lt & Rt
Plug RCB & Encase 24" HDPE W/ Flowable Mortar
Remove Headwall Rt & Apron Lt

Class "E" Revetment
See SRP EC-301

Pi Sta 384+25.10

Class "E" Revetment
See SRP EC-301

Sta. 383+06.39
12' X 67' VIT Tile
Plug & Abandon W/ Flowable Mortar
Remove Rt Headwall
Remove Beehive Intake Lt

383

Remove 262.8 LF Fence

For Right of Way Information
Refer to H Sheets

Construct 2' Granular Shoulder

STA. 382+07
BEGIN CONSTRUCTION

382

180TH ST

APPROX. SEC. LINE

180TH ST

APPROX. SEC.

HAMPSHIRE TWP.
T-82N R-6E
Sec. 18

N

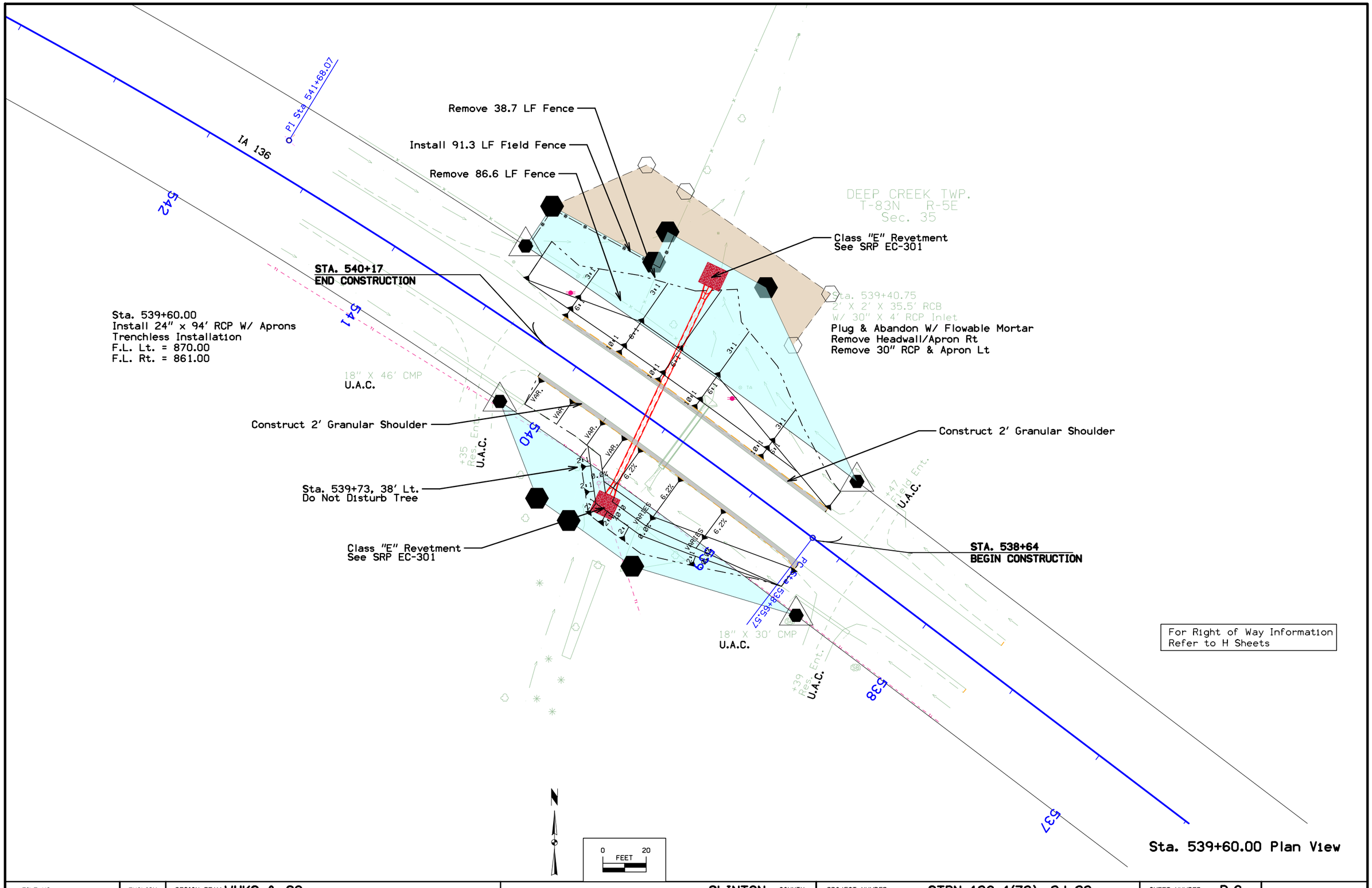
0 FEET 20

IA 136

Sta. 383+30.14 Plan View

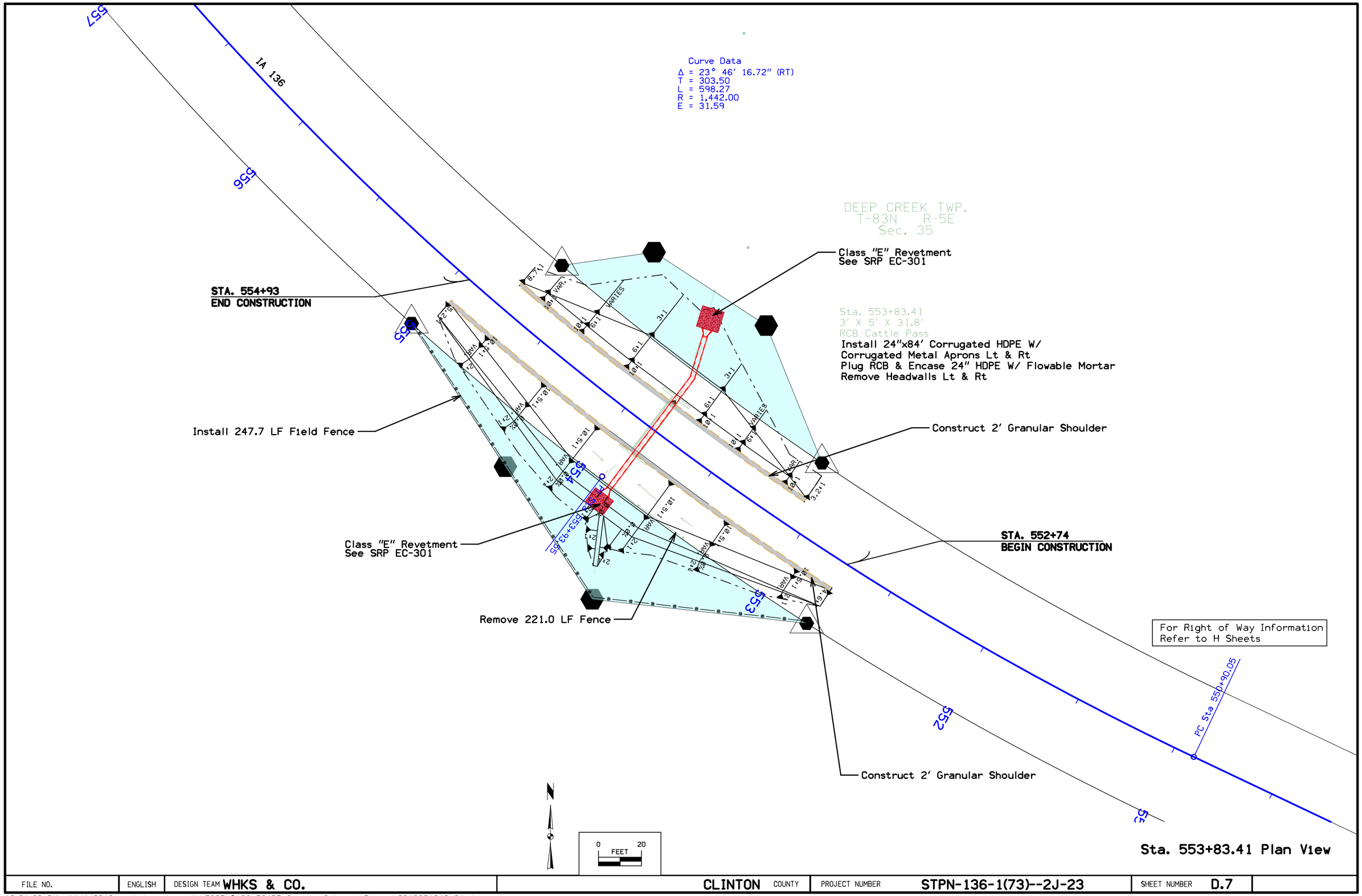
FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER D.5

12:21:10 PM 11/4/2019 bchezick K:\7805\SA26 701BT Clinton Culverts\Design\2313601013d01.sht



FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER D.6

12:21:17 PM 11/4/2019 bchezick K:\7805\SA26 701BT Clinton Culverts\Design\2313601013d01.sht



Sta. 553+83.41 Plan View

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER D.7

12:21:23 PM 11/4/2019 bchezick K:\7805\SA26 701BT Clinton Culverts\Design\2313601013d01.sht

IA 136

575

574

573

572

571

570

STA. 573+30
END CONSTRUCTION

Class "E" Revetment
See SRP EC-301

DEEP CREEK TWP.
T-83N R-5E
Sec. 35

Sta. 571+62.20
2' X 2' X 48.0' RCB
Extend 8' Lt & 18' Rt W/ 30" RCP
Remove Headwall Lt & Apron Rt

Construct 2' Granular Shoulder

Install Apron Safety Grate.
See SRP DR-213.

Class "E" Revetment
See SRP EC-301

Construct 2' Granular Shoulder

STA. 569+97
BEGIN CONSTRUCTION

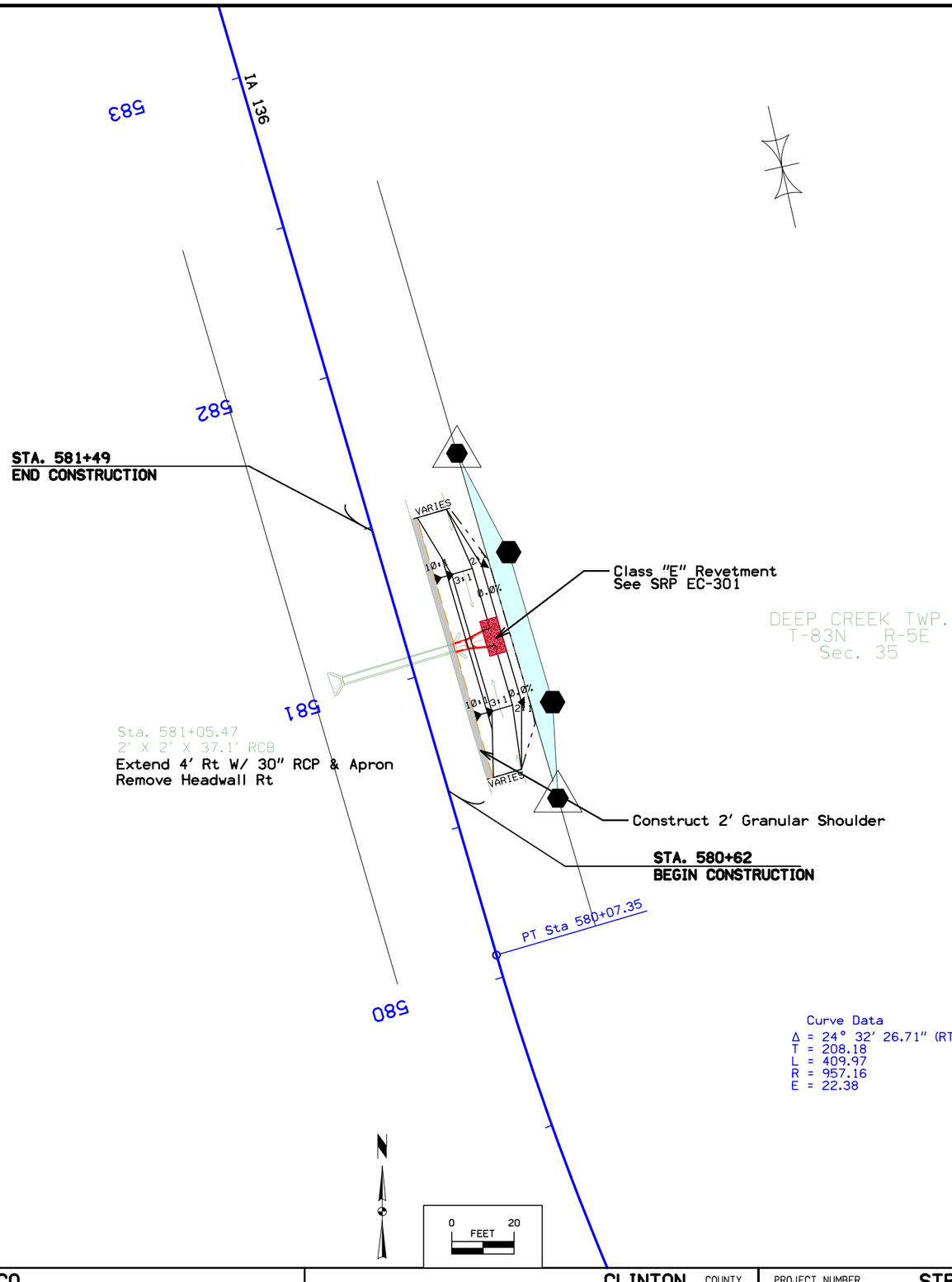
For Right of Way Information
Refer to H Sheets

0 20
FEET

Sta. 571+62.20 Plan View

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER D.8

12:21:30 PM 11/4/2019 bchezick K:\7805\SA26 701BT Clinton Culverts\Design\2313601013d01.sht



DEEP CREEK TWP.
T-83N R-5E
Sec. 35

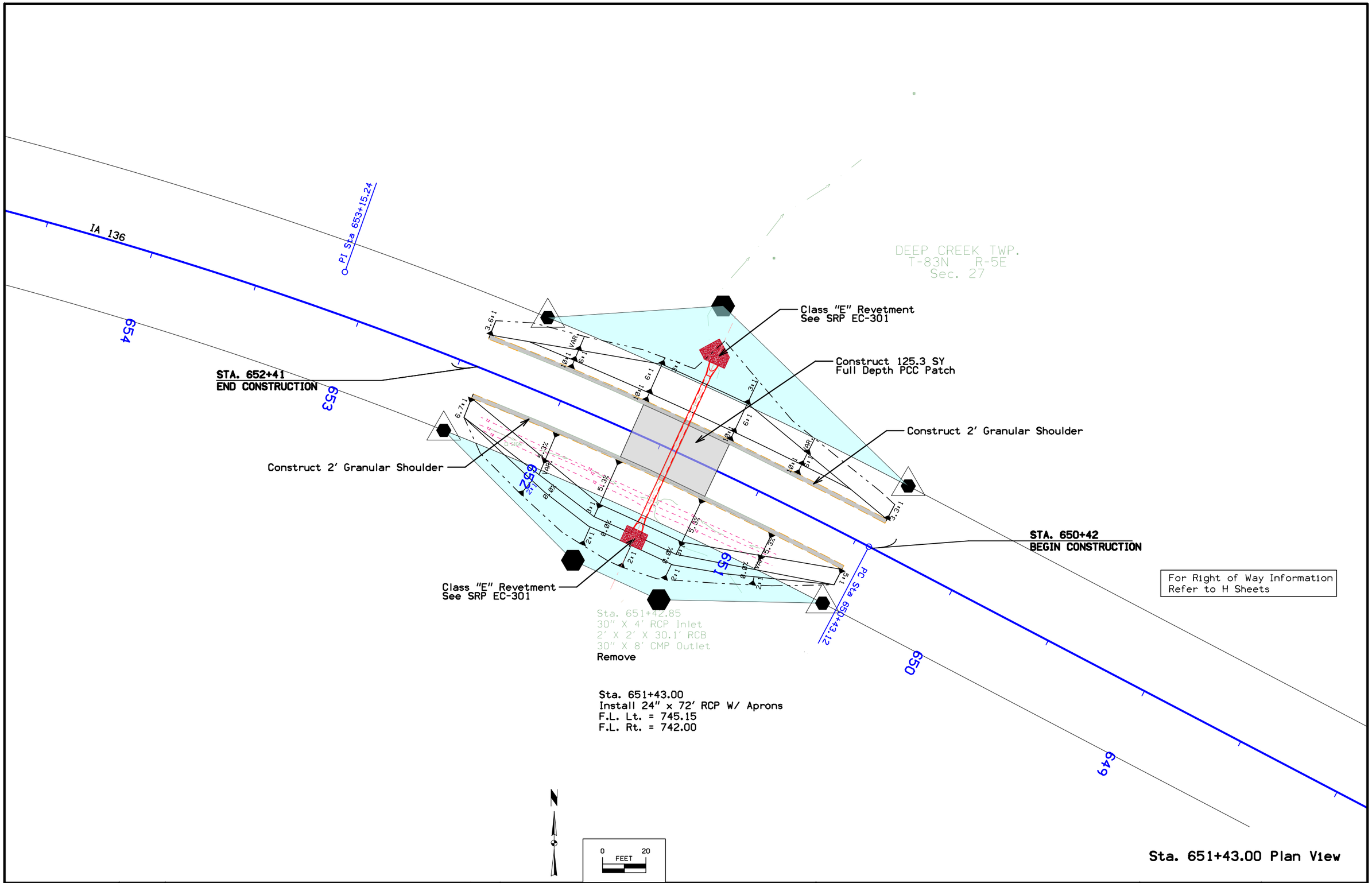
For Right of Way Information
Refer to H Sheets

Curve Data
Δ = 24° 32' 26.71" (RT)
T = 208.18
L = 409.97
R = 957.16
E = 22.38

Sta. 581+05.47 Plan View

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER D.9

12:21:37 PM 11/4/2019 bchezick K:\7805\SA26 701BT Clinton Culverts\Design\2313601013d01.sht



Sta. 651+43.00 Plan View

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER D.10

12:21:43 PM 11/4/2019 bchezick K:\7805\SA26 701BT Clinton Culverts\Design\2313601013d01.sht

MAIN ST.

T-83 N R-5 E
SECTION 28
DEEP CREEK TOWNSHIP
CITY OF GOOSE LAKE

EXISTING ROW

St.S.3(C)

W3

STA. 685+14.27, 10.50' LT.
CONSTRUCT 10' X 6'
FULL DEPTH PCC PATCH

REPLACE 6' EXISTING CMP PIPE
W/ 6' 15" 2000D RCP
INLET F.L. ELEV. = 679.54
OUTLET F.L. ELEV. = MATCH EXISTING

REPLACE 6' EXISTING CMP PIPE
W/ 6' 15" 2000D RCP
OUTLET F.L. ELEV. = 679.61
INLET F.L. ELEV. = MATCH EXISTING

PAVE TO EDGE OF
PROPOSED INTAKE

SIGN

STA. 684+50.00 TO 685+19.69
CONSTRUCT 8" HMA SHOULDER
SEE DETAIL WHKS-1 ON SHEET B.1.

IA 136

STA. 685+14.27, 19.59' LT.
EXISTING AREA INTAKE
REPLACE W/ 42" X 42" SW-513 INTAKE
F.G. ELEV. = 682.68
EAST INLET F.L. ELEV. = 679.61
NORTH OUTLET F.L. ELEV. = 679.54
B.W. ELEV. = 679.04

6980

6984

UTILITIES LEGEND

—St.S.3(C) ST3C City of Goose Lake - Quality C
— W3 - WL3D City of Goose Lake - Quality D1

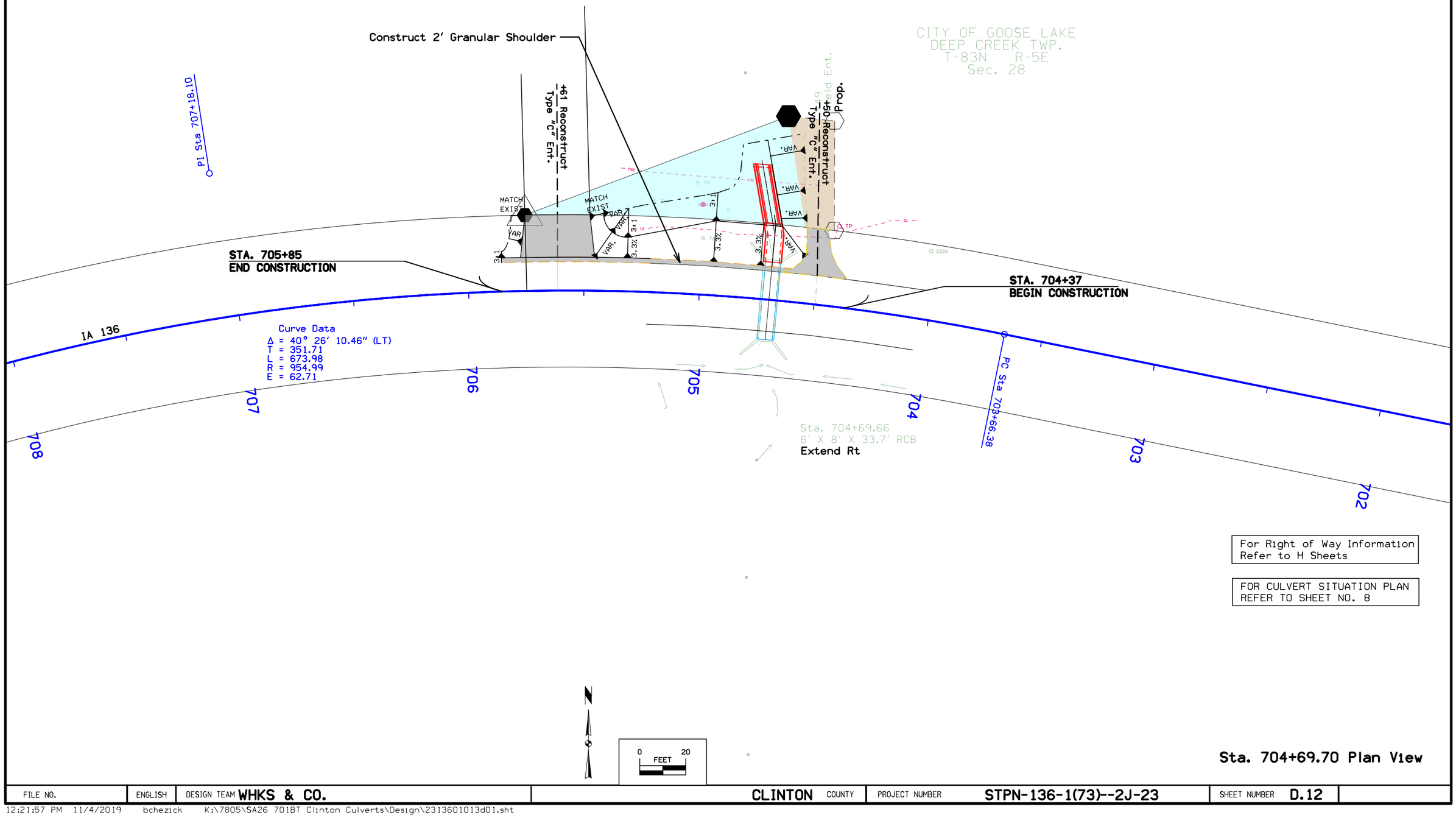
0 FEET 5

N

CITY OF GOOSE LAKE INTAKE REPLACEMENT

FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	CLINTON	COUNTY	PROJECT NUMBER	STPN-136-1(73)--2J-23	SHEET NUMBER	D.11

12:21:49 PM 11/4/2019 bchezick K:\7805\SA26 701BT Clinton Culverts\Design\2313601013d01.sht



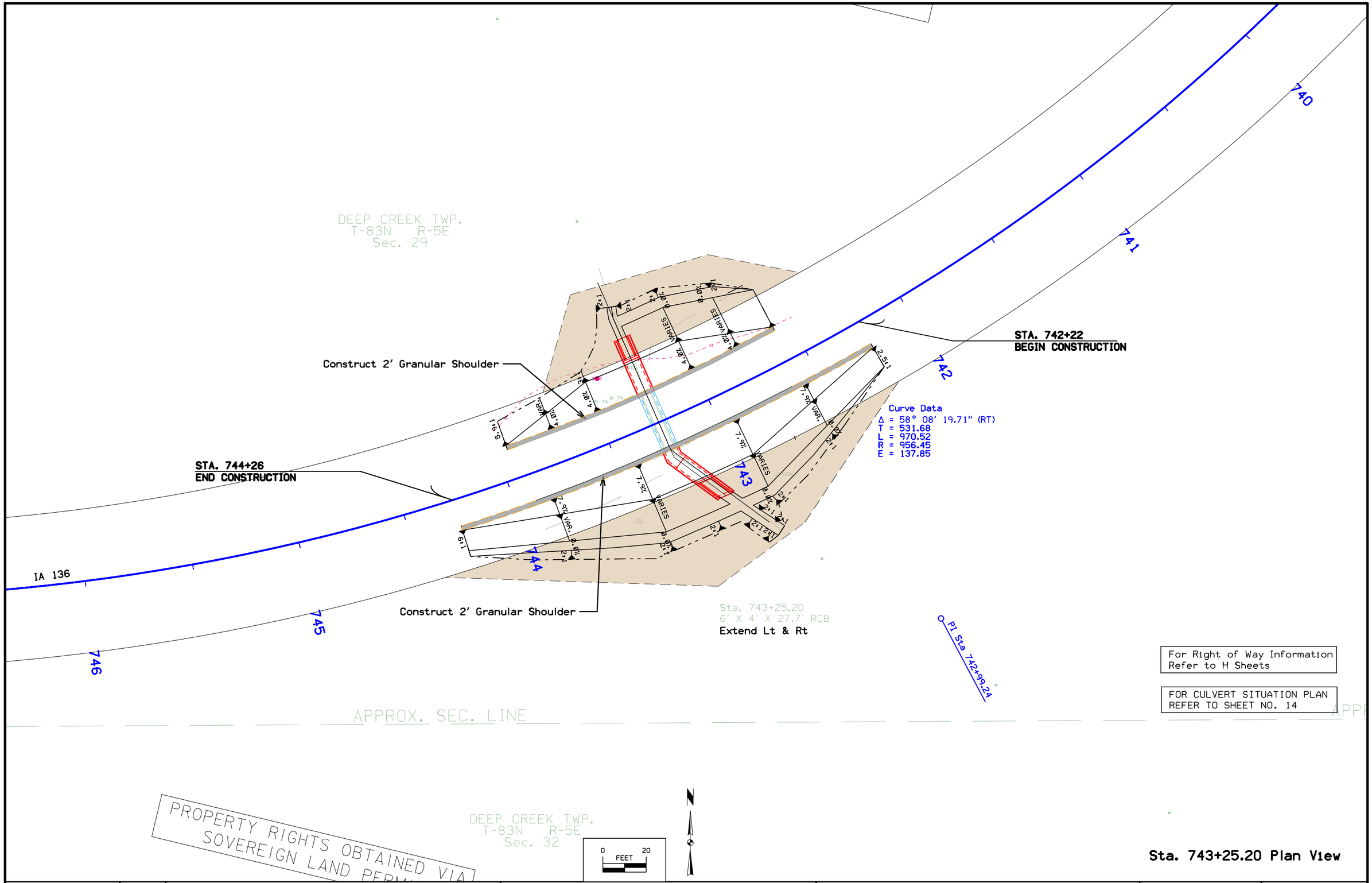
For Right of Way Information
Refer to H Sheets

FOR CULVERT SITUATION PLAN
REFER TO SHEET NO. 8

Sta. 704+69.70 Plan View

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER D.12

12:21:57 PM 11/4/2019 bchezick K:\7805\SA26 701BT Clinton Culverts\Design\2313601013d01.sht



Sta. 743+25.20 Plan View

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER D.13

12:22:03 PM 11/4/2019 bchezick K:\7805\SA26 701BT Clinton Culverts\Design\2313601013d01.sht

Curve Data
Δ = 12° 27' 39.81" (RT)
T = 312.78
L = 623.10
R = 2,865.00
E = 17.02

DEEP CREEK TWP.
T-83N R-5E
Sec. 29

Class "E" Revetment
See SRP EC-301

Sta. 766+34.81
3' X 2' X 47.0' RCB
Plug & Abandon W/ Flowable Mortar
Remove Headwall Lt & Rt

37.49' Rt
DR-141 3°Elbow

Construct 2' Granular Shoulder

Sta. 766+09.00
Install 36" x 76' RCP W/ Aprons
Trenchless Installation
F.L. Lt. = 697.00
F.L. Elbow = 691.33
F.L. Rt. = 691.00

IA 136

PT Sta 768+68.03

STA. 766+94
END CONSTRUCTION

STA. 765+24
BEGIN CONSTRUCTION

PT Sta 765+57.22

Construct 2' Granular Shoulder

Class "E" Revetment
See SRP EC-301

768 767 766 765 764 763

For Right of Way Information
Refer to H Sheets

0 20
FEET

DEEP CREEK TWP.
T-83N R-5E
Sec. 32

Sta. 766+09.00 Plan View

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER D.14

12:22:10 PM 11/4/2019 bchezick K:\7805\SA26 701BT Clinton Culverts\Design\2313601013d01.sht

Sta. 788+31.95
3' X 3' X 33.3' RCB
Plug & Abandon W/ Flowable Mortar
Remove Headwall Lt & Rt

Install 73.6 LF Field Fence

Class "E" Revetment
See SRP EC-301

DEEP CREEK TWP.
T-83N R-5E
Sec. 30

IA 136

STA. 789+48
END CONSTRUCTION

Sta. 788+20.00
Install 30" x 76' RCP W/ Aprons
Trenchless Installation
F.L. Lt. = 741.80
F.L. Elbow = 739.98
F.L. Rt. = 739.40

Remove 70.9 LF Fence

Remove and Reinstall
Mailbox

Construct 2' Granular Shoulder

STA. 787+20
BEGIN CONSTRUCTION

+08, 24.00' Lt
DR-141 6°Elbow

Construct 2' Granular Shoulder

Class "E" Revetment
See SRP EC-301

+74 PROP. ENT.
TYP. "C"

For Right of Way Information
Refer to H Sheets

0 20
FEET

Sta. 788+20.00 Plan View

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER D.15

12:22:16 PM 11/4/2019 bchezick K:\7805\SA26 701BT Clinton Culverts\Design\2313601013d01.sht

DEEP CREEK TWP.
T-83N R-5E
Sec. 30

IA 136

804

803

802

801

800

664

864

Class "E" Revetment
See SRP EC-301

STA. 801+87
END CONSTRUCTION

Construct 208.6 SY
Full Depth PCC Patch

Construct 2' Granular Shoulder

Construct 2' Granular Shoulder

STA. 800+17
BEGIN CONSTRUCTION

Sta. 800+97.89
36" X 10' RCP Inlet
3' X 2' X 41.3' RCB
36" X 4' RCP Outlet
Plug & Abandon W/ Flowable Mortar
Remove 36" RCP Lt & Rt
Remove Headwall Lt & Rt

Class "E" Revetment
See SRP EC-301

Sta. 800+82.00
Install 36" x 68' RCP W/ Aprons
Trenchless Installation
F.L. Lt. = 718.50
F.L. Rt. = 716.70

For Right of Way Information
Refer to H Sheets

0 20
FEET

Sta. 800+82.00 Plan View

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER D.16

12:22:23 PM 11/4/2019 bchezick K:\7805\SA26 701BT Clinton Culverts\Design\2313601013d01.sht

Curve Data
Δ = 19° 23' 29.52" (LT)
T = 195.65
L = 387.55
R = 1,145.10
E = 16.59

DEEP CREEK TWP.
T-83N R-5E
Sec. 30

Class "E" Revetment
See Sheet 24

Construct 165.5 SY
Full Depth PCC Patch

Construct 2' Granular Shoulder

STA. 809+66
END CONSTRUCTION

STA. 807+68
BEGIN CONSTRUCTION

PI Sta 807+90.64

IA 136

Construct 2' Granular Shoulder

PT Sta 809+22.54

Sta. 808+84.93
8' X 8' X 38.7' RCB
Remove

Class "E" Revetment
See Sheet 24

Sta. 808+67.00
Construct 8" x 5' x 76' RCB W/ Aprons

PC Sta 805+34.99

For Right of Way Information
Refer to H Sheets

FOR CULVERT SITUATION PLAN
REFER TO SHEET NO. 23

0 FEET 20

Sta. 808+67.00 Plan View

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER D.17

12:22:29 PM 11/4/2019 bchezick K:\7805\SA26 701BT Clinton Culverts\Design\2313601013d01.sht

DEEP CREEK TWP.
T-83N R-5E
Sec. 30

Sta. 817+73.74
4' X 4' X 28.0' RCB
W/ 42" Conc Pipe Extensions
Remove

Class "E" Revetment
See SRP EC-301

Install 198.0 LF Field Fence

Remove 188.2 LF Fence

Construct 2' Granular Shoulder

STA. 818+84
END CONSTRUCTION

STA. 816+72
BEGIN CONSTRUCTION

IA 136

815

816

817

818

819

820

Construct 118.2 SY
Full Depth PCC Patch

Construct 2' Granular Shoulder

Sta. 817+91.00
Install 42" x 60' RCP W/ Aprons
Trenchless Installation
F.L. Lt. = 697.00
F.L. Rt. = 695.00

Class "E" Revetment
See SRP EC-301

For Right of Way Information
Refer to H Sheets

0 20
FEET

Sta. 817+91.00 Plan View

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER D.18

12:22:36 PM 11/4/2019 bchezick K:\7805\SA26 701BT Clinton Culverts\Design\2313601013d01.sht

WATERFORD TWP.
T-83N R-4E
Sec. 25

Class "E" Revetment
See SRP EC-301

Sta. 830+64.71
2' X 2' X 40.7' RCB
Plug & Abandon W/ Flowable Mortar
Remove Headwall Lt & Apron Rt

Construct 2' Granular Shoulder

STA. 831+34
END CONSTRUCTION

STA. 829+62
BEGIN CONSTRUCTION

IA 136

833 832 831 830 829 828

Construct 2' Granular Shoulder

Class "E" Revetment
See SRP EC-301

Sta. 830+53.00
Install 24" x 76' RCP W/ Aprons
Trenchless Installation
F.L. Lt. = 694.50
F.L. Rt. = 689.00

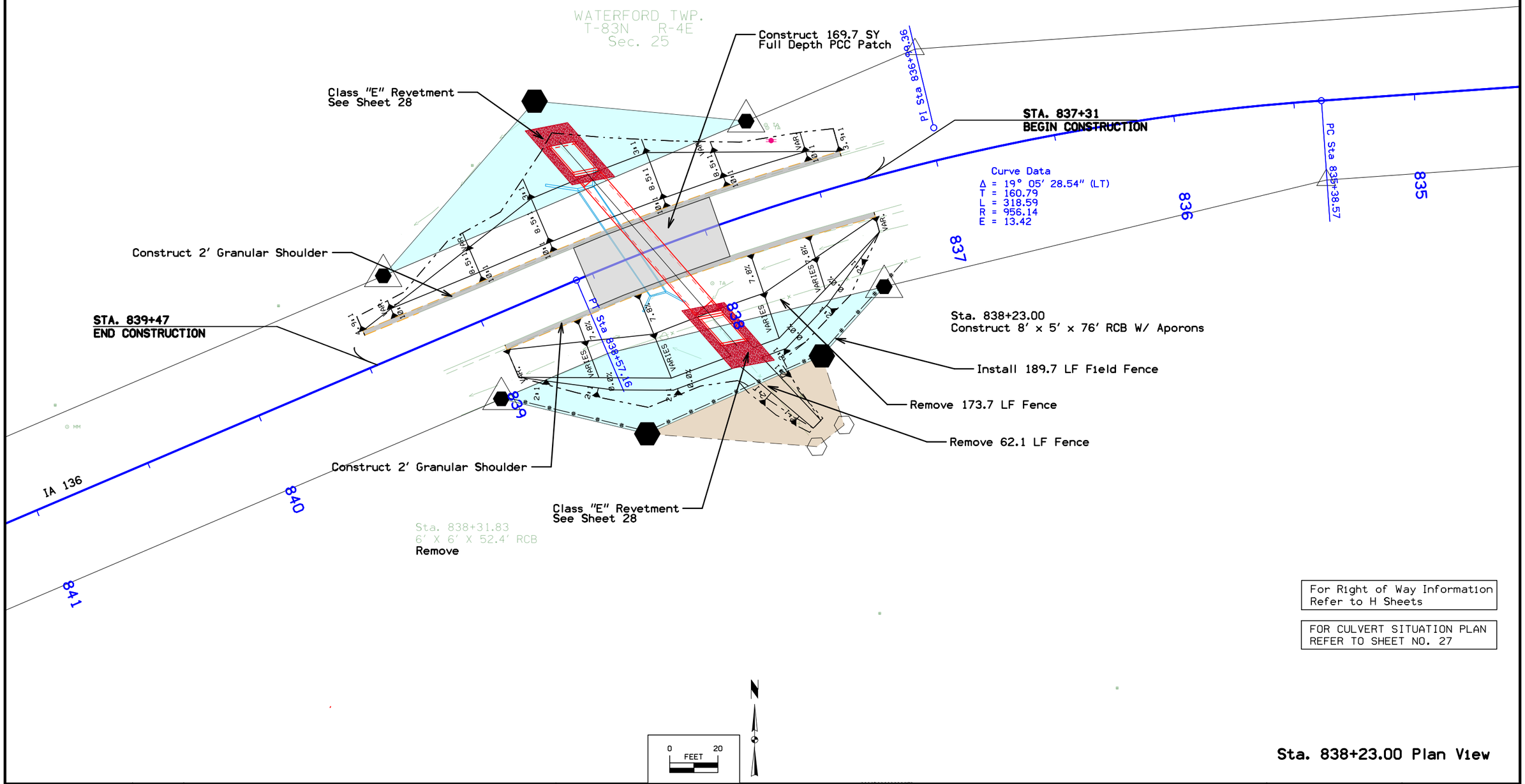
For Right of Way Information
Refer to H Sheets

0 FEET 20

Sta. 830+53.00 Plan View

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER D.19

12:22:41 PM 11/4/2019 bchezick K:\7805\SA26 701BT Clinton Culverts\Design\2313601013d01.sht



For Right of Way Information
Refer to H Sheets

FOR CULVERT SITUATION PLAN
REFER TO SHEET NO. 27

Sta. 838+23.00 Plan View

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER D.20

12:22:48 PM 11/4/2019 bchezick K:\7805\SA26 701BT Clinton Culverts\Design\2313601013d01.sht

572 LF Channel Shaping
See T Sheets for Earthwork

WATERFORD TWP.
T-83N R-4E
Sec. 25

Class "E" Revetment
See Sheet 35

Construct 2' Granular Shoulder

STA. 845+11
END CONSTRUCTION

STA. 843+17
BEGIN CONSTRUCTION

Sta. 844+26.62
8' X 6' X 51.9' RCB
Extend Rt

IA 136

842
843
844
845
846
847

0 FEET 20

For Right of Way Information
Refer to H Sheets

FOR CULVERT SITUATION PLAN
REFER TO SHEET NO. 31

Sta. 844+26.62 Plan View

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER D.21

12:22:54 PM 11/4/2019 bchezick K:\7805\SA26 701BT Clinton Culverts\Design\2313601013d01.sht

WATERFORD TWP.
T-83N R-4E
Sec. 25

PC Sta 851+67.17

852

853

854

855

856

857

858

IA 136

Class "E" Revetment
See SRP EC-301

Construct 2' Granular Shoulder

STA. 855+78
END CONSTRUCTION

STA. 854+18
BEGIN CONSTRUCTION

Curve Data
Δ = 23° 01' 02.72" (RT)
T = 583.34
L = 1,150.96
R = 2,865.00
E = 58.78

PI Sta 857+50.52

Construct 2' Granular Shoulder

Class "E" Revetment
See SRP EC-301

50.03' Lt
DR-141 5°Elbow

Sta. 855+00.00
Install 24" x 112' RCP W/ Aprons
Trenchless Installation
F.L. Lt. = 704.50
F.L. Elbow = 704.63
F.L. Rt. = 714.00

Sta. 855+09.96
2' X 2' X 74.1' RCB
Plug & Abandon W/ Flowable Mortar
Remove Aprons Lt & Rt

For Right of Way Information
Refer to H Sheets

0 20
FEET

N

Sta. 855+00.00 Plan View

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER D.22

12:23:01 PM 11/4/2019 bchezick K:\7805\SA26 701BT Clinton Culverts\Design\2313601013d01.sht

WATERFORD TWP.
T-83N R-4E
Sec. 25

Install 183.2 LF Field Fence

Class "E" Revetment
See SRP EC-301

Remove 168.6 LF Fence

47.2' Rt
DR-141 30°Elbow

STA. 879+54
END CONSTRUCTION

IA 136

STA. 878+05
BEGIN CONSTRUCTION

Construct 2' Granular Shoulder

Sta. 878+67.85
4' X 4' X 70.7' RCB
Extend 34' Rt. W/ 54" RCP & Apron
Remove Headwall/Apron Rt.

For Right of Way Information
Refer to H Sheets

0 FEET 20

Sta. 878+67.85 Plan View

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER D.23

12:23:08 PM 11/4/2019 bchezick K:\7805\SA26 701BT Clinton Culverts\Design\2313601013d01.sht

CITY OF CHARLOTTE
WATERFORD TWP.
T-83N R-4E
Sec. 26

Class "E" Revetment
See SRP EC-301

Construct 172.0 SY
Full Depth PCC Patch

STA. 909+87
END CONSTRUCTION

STA. 908+42
BEGIN CONSTRUCTION

IA 136

IA 136

San.(C)

San.(C)

2:1 VAR 10:1

2:1 VAR 10:1

2:1 VAR 10:1

2:1 VAR 10:1

1.9:1

PI Sta 908+75.39

330TH AVE

WV

WV

SIGN

TA

SIGN

SIGN

Connect to
Existing Intake

911

910

909

908

907

906

Sta. 909+07.20
15" X 47' Conc Pipe
Remove

Sta. 909+07.20
Install 15" x 49' RCP w/ Apron Rt
F.L. Lt. = 698.35
F.L. Rt. = 697.00

15" X 49' Conc Pipe
U.A.C.

CITY OF CHARLOTTE
WATERFORD TWP.
T-83N R-4E
Sec. 35

For Right of Way Information
Refer to H Sheets

0 20
FEET

Sta. 909+07.20 Plan View

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER D.24

12:23:13 PM 11/4/2019 bchezick K:\7805\SA26 701BT Clinton Culverts\Design\2313601013d01.sht

Survey Information

Clinton County
STPN-136-1(73)--2J-23
Ia 136 - Culvert Surveys from Approximately 2.4 Miles West of US 67 Northwest to Charlotte
SAP 0766.1

General Information

Measurement units for this survey are US survey feet. This survey is for pending structural repairs or replacement or culvert extensions at 22 separate locations along a 14 mile corridor. The project is on Zone 11 IaRCS coordinates. This project is full field survey at each of the 22 sites.

Vertical Control

Vertical datum for this survey is relative to NAVD88 Opus Datum. Four-hour static sessions were observed on six control points near this project. The processed orthometric height was held fixed in a constrained vertical adjustment.

Horizontal Control

Four plus hours of Opus observations were used to verify the values of six points named CP101, CP103, CP104, CP107, CP109, CP128. These Opus solutions were converted to Zone 11 IaRCS coordinates for the purpose of this survey. Additional supplemental control points were placed throughout the project.

Alignment Information

Four alignments were created. Roadway splits were used to generate PI locations. Nails were both found and set along the roadway splits, these points were observed in this survey. Occasionally we were unable to locate existing control. In these areas the horizontal alignment for this survey was established using roadway splits along the existing pavement. Stationing was carried forward and backward from the plan stationing.

Alignment 1 - Sta 45+20 +/- to Sta 145+17+/-

PI Sta 79+56.9 Fd PK Nail This Survey
= PI Sta 79+56.9 FA-189 Grade and Paving Plan
Stationing carried backward and forward from this PI

Alignment 2 - Sta 375+42.737 to Sta 397+53.041

PI Sta 384+25.10 Computed location This Survey
= PI Sta 384+25.10 FA-204-352 Paving Plan
Stationing carried backward and forward from this PI using roadway splits

Alignment 3 - Sta 518+20 to Sta 599+77+/-

PI Sta 528+39.6 Computed location This Survey
= PI Sta 528+39.6 FA-204-352 Paving Plan
Stationing carried backward and forward from this PI using roadway splits

Alignment 4 - Sta 600+14.5 to Sta 910+/- Best fit alignment using Rdwy splits

PI Sta 607+66.895 Computed location This Survey
= PI Sta 607+68.1 FA-204-352 Paving Plan

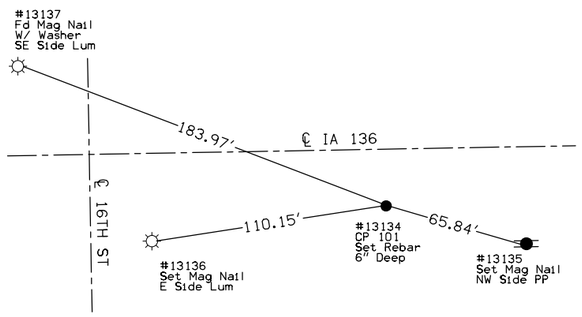
Stationing carried forward from this PI using roadway splits

VERTICAL CONTROL

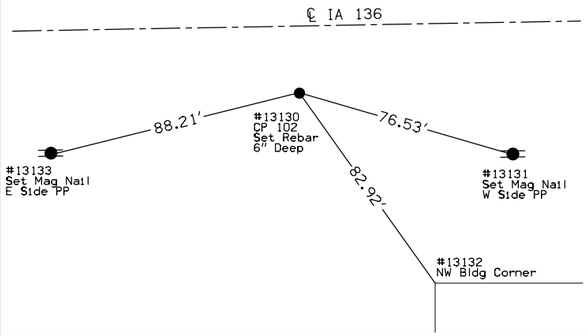
BENCHMARKS					ELEVATION
No. 500 Sta.	909+33.884	25.554 Rt.	Y:8223243.843 X:21519629.888	Set RR Spk S Side PP----------	697.272
No. 501 Sta.	855+25.824	40.233 Lt.	Y:8223340.995 X:21525038.712	Set RR Spk N Side PP----------	714.189
No. 502 Sta.	854+85.207	28.43 Rt.	Y:8223418.329 X:21525058.469	SetRR Spk SW Side PP----------	717.449
No. 503 Sta.	844+36.052	28.24 Lt.	Y:8223760.158 X:21526049.131	Set MAG NAIL IN HDWL----------	681.730
No. 504 Sta.	844+19.011	21.633 Rt.	Y:8223812.718 X:21526045.245	Set MAG NAIL IN HDWL----------	680.853
No. 505 Sta.	838+27.690	14.700 Lt.	Y:8224010.639 X:21526603.187	Set MAG NAIL IN HDWL----------	687.052
No. 506 Sta.	837+62.698	26.101 Rt.	Y:8224070.796 X:21526651.319	Set RR Spk SW Side PP----------	688.949
No. 507 Sta.	831+58.843	29.136 Rt.	Y:8224143.044 X:21527255.621	Set RR Spk S Side PP----------	695.654
No. 508 Sta.	817+61.741	32.719 Lt.	Y:8224195.193 X:21528653.293	Fd RR Spk N Side PP----------	702.169
No. 509 Sta.	809+14.134	28.514 Rt.	Y:8224342.821 X:21529490.398	Set RR Spk S Side PP----------	704.675
No. 510 Sta.	802+77.395	29.891 Rt.	Y:8224256.736 X:21530127.032	Set RR Spk S Side PP----------	717.239
No. 511 Sta.	787+78.539	28.464 Rt.	Y:8223904.970 X:21531584.026	Set RR Spk S Side PP----------	743.899
No. 512 Sta.	767+78.742	31.969 Rt.	Y:8223442.472 X:21533528.574	Set RR Spk S Side PP----------	700.625

BENCHMARKS					ELEVATION
No. 513 Sta.	766+34.838	19.455 Lt.	Y:8223366.234 X:21533660.651	CUT X IN HDWL----------	700.146
No. 514 Sta.	743+43.531	29.605 Rt.	Y:8223424.456 X:21535931.892	Set RR Spk S Side PP----------	657.428
No. 515 Sta.	705+00.862	39.921 Rt.	Y:8225782.009 X:21538799.108	Fd RR Spk N Side PP----------	655.817
No. 516 Sta.	649+95.365	29.32 Rt.	Y:8224599.896 X:21544181.332	Set RR Spk S Side PP----------	748.673
No. 517 Sta.	580+11.346	30.232 Rt.	Y:8221416.582 X:21549907.841	Set RR Spk W Side PP----------	856.398
No. 518 Sta.	571+45.997	30.811 Lt.	Y:8220685.505 X:21550346.691	Set RR Spk E Side PP----------	857.712
No. 519 Sta.	554+20.886	30.743 Rt.	Y:8219442.420 X:21551535.519	Set RR Spk S Side PP----------	854.487
No. 520 Sta.	539+32.354	28.565 Rt.	Y:8218727.849 X:21552835.594	SetRR Spk SW Side PP----------	867.702
No. 521 Sta.	383+91.957	22.962 Lt.	Y:8207735.182 X:21561733.355	Set RR Spk E Side PP----------	850.194
No. 522 Sta.	108+31.627	36.152 Lt.	Y:8191727.461 X:21581487.160	Set RR Spk N Side PP----------	673.514
No. 523 Sta.	93+66.424	63.768 Lt.	Y:8191726.649 X:21582952.729	Set RR Spk N Side PP----------	654.111
No. 524 Sta.	684+77.242	20.631 Rt.	Y:8225370.416 X:21540785.719	Set RR Spk S Side PP----------	684.846
No. 525 Sta.	79+96.500	33.278 Rt.	Y:8191849.682 X:21584320.526	Fd NGS Disk on Inlet Hdwl 8 x 4 RCB------	650.013
No. 526 Sta.	79+93.977	49.722 Lt.	Y:8191766.745 X:21584324.642	Fd RR Spk E Side PP----------	649.758

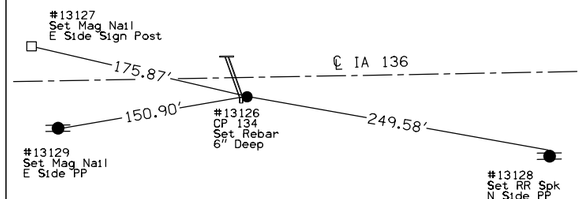
C.P. STA 78+16.32 LEFT 22.94
C.P. 101, Set Rebar 6" Deep
N=8191795.180 E=21584501.518



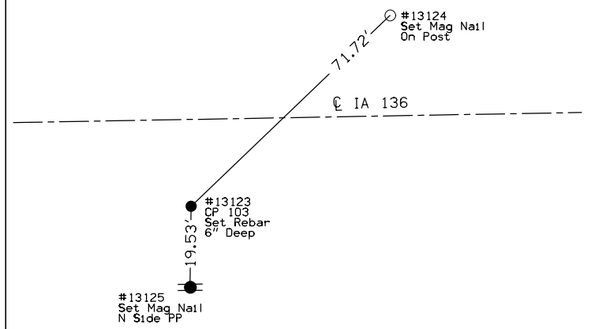
C.P. STA 81+45.86 LEFT 19.72
C.P. 102, Set Rebar 6" Deep
N=8191793.862 E=21584172.240



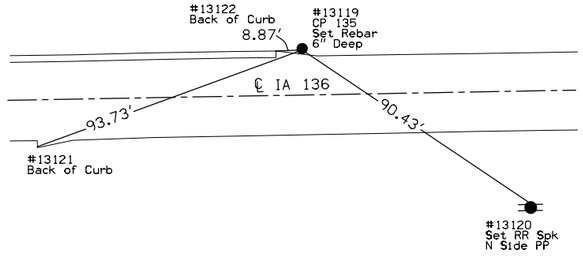
C.P. STA 96+11.26 LEFT 15.31
C.P. 134, Set Rebar 6" Deep
N=8191770.452 E=21582707.021



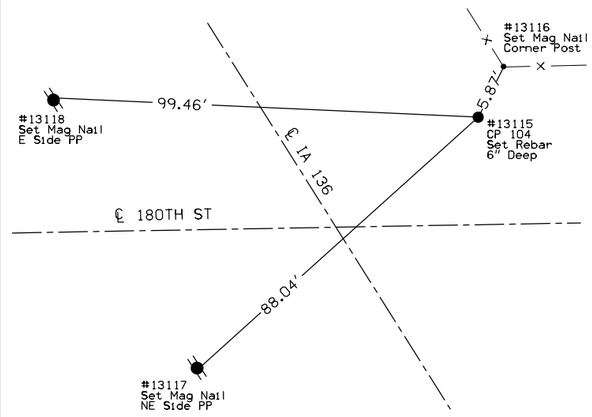
C.P. STA 105+54.13 LEFT 17.94
C.P. 103, Set Rebar 6" Deep
N=8191750.264 E=21581764.313



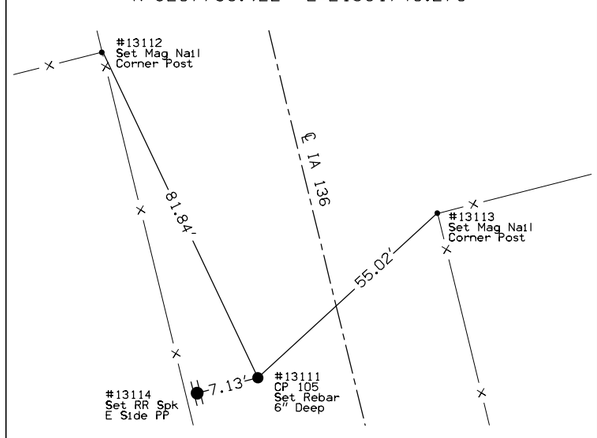
C.P. STA 109+05.85 RIGHT 15.49
C.P. 135, Set Rebar 6" Deep
N=8191777.872 E=21581412.090



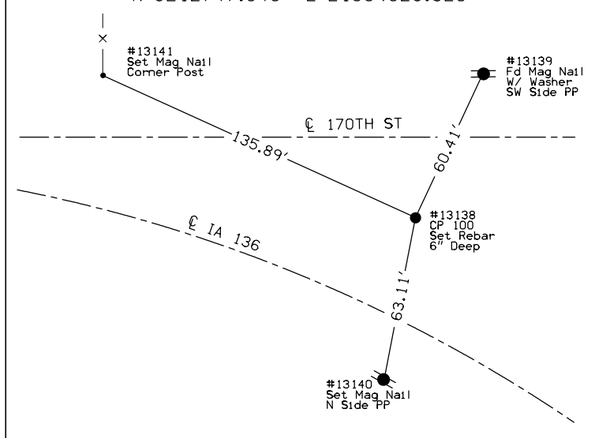
C.P. STA 381+59.50 RIGHT 28.91
C.P. 104, Set Rebar 6" Deep
N=8207545.746 E=21561874.270



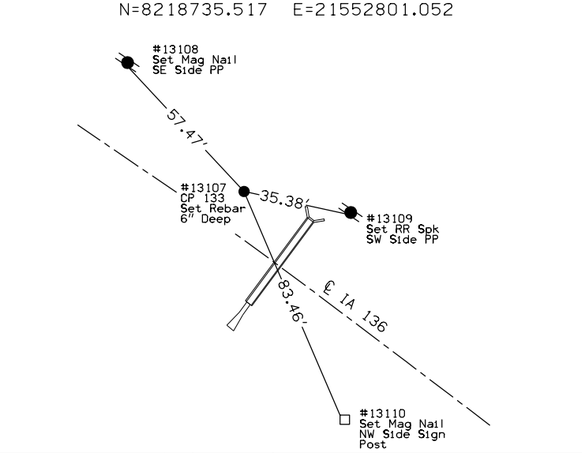
C.P. STA 383+91.87 LEFT 15.83
C.P. 105, Set Rebar 6" Deep
N=8207736.922 E=21561740.270



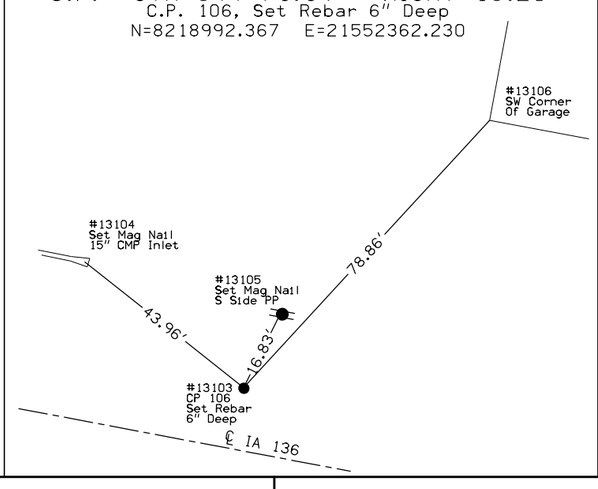
NO STATIONING
C.P. 100, Set Rebar 6" Deep
N=8212747.646 E=21559628.320



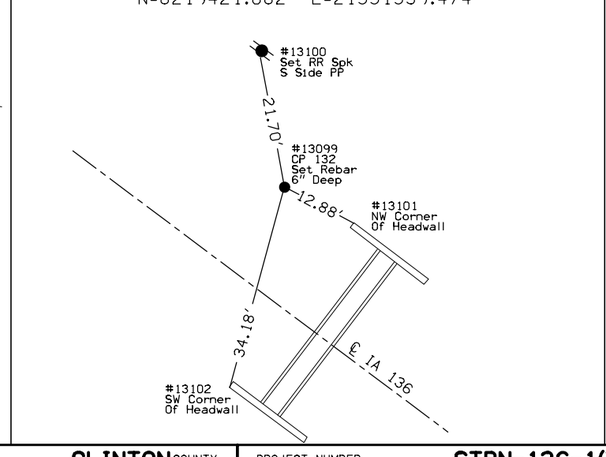
C.P. STA 539+64.67 RIGHT 14.71
C.P. 133, Set Rebar 6" Deep
N=8218735.517 E=21552801.052



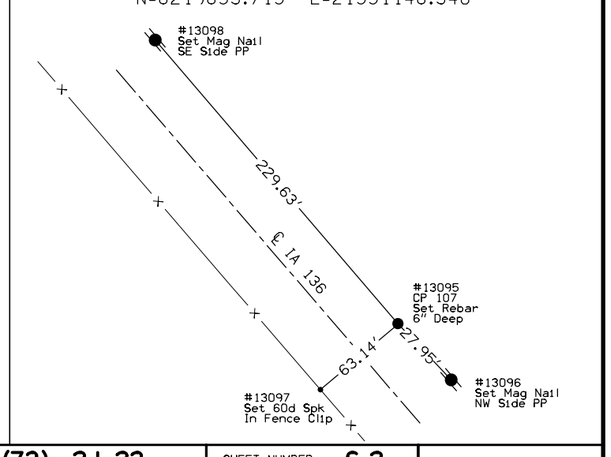
C.P. STA 544+71.19 RIGHT 15.20
C.P. 106, Set Rebar 6" Deep
N=8218992.367 E=21552362.230



C.P. STA 554+04.32 RIGHT 16.42
C.P. 132, Set Rebar 6" Deep
N=8219421.082 E=21551539.474



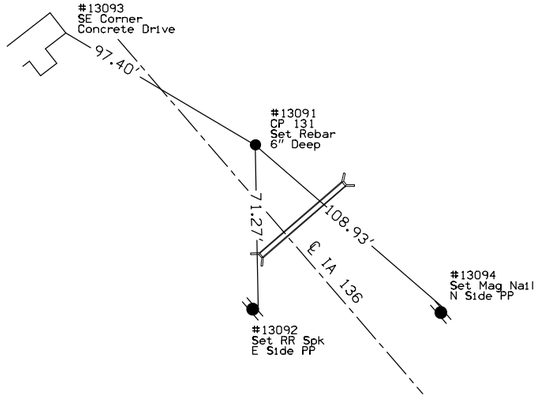
C.P. STA 559+92.45 RIGHT 31.23
C.P. 107, Set Rebar 6" Deep
N=8219853.715 E=21551148.340



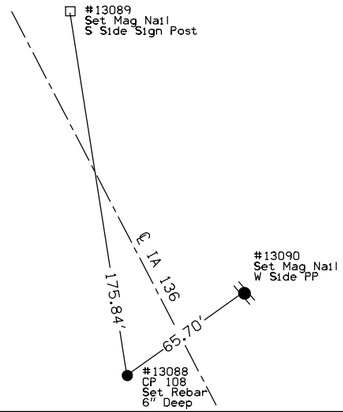
FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER	STPN-136-1(73)--2J-23	SHEET NUMBER	G.2

10:20:21 AM 10/29/2019 bchezick K:\7805\SA26 701BT Clinton Culverts\Prelim Survey\0766001.sur

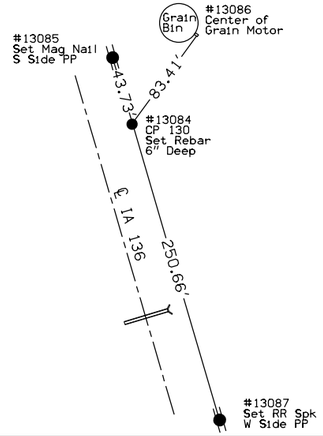
C.P. STA 572+00.76 RIGHT 14.81
C.P. 131, Set Rebar 6" Deep
N=8220756.766 E=21550345.361



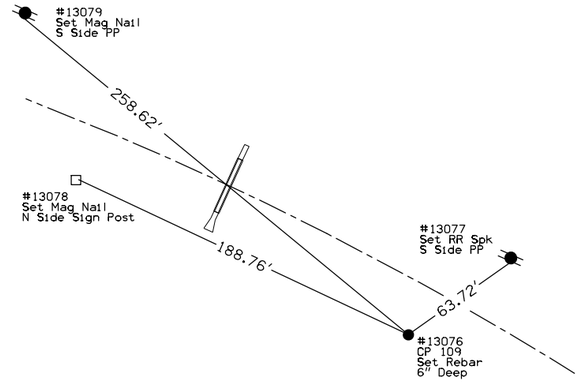
C.P. STA 577+15.33 LEFT 33.66
C.P. 108, Set Rebar 6" Deep
N=8221122.019 E=21549975.210



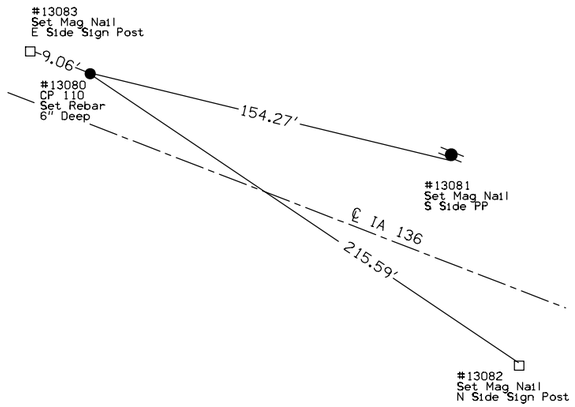
C.P. STA 582+62.00 RIGHT 30.12
C.P. 130, Set Rebar 6" Deep
N=8221657.101 E=21549837.281



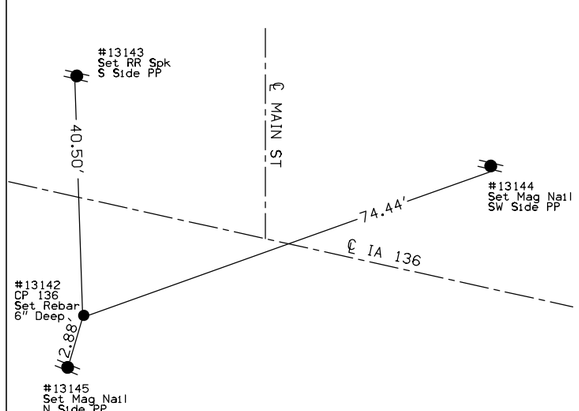
C.P. STA 650+24.37 LEFT 27.41
C.P. 109, Set Rebar 6" Deep
N=8224563.107 E=21544129.310



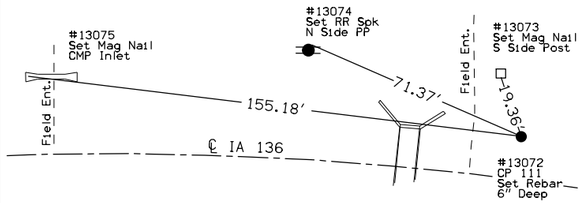
C.P. STA 654+24.50 RIGHT 26.55
C.P. 110, Set Rebar 6" Deep
N=8224763.820 E=21543779.660



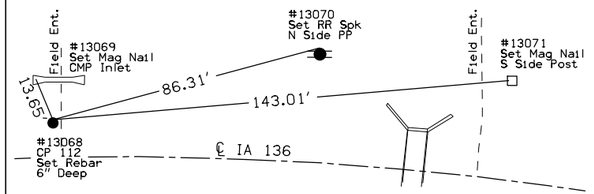
C.P. STA 684+67.90 LEFT 18.78
C.P. 136, Set Rebar 6" Deep
N=8225329.938 E=21540787.060



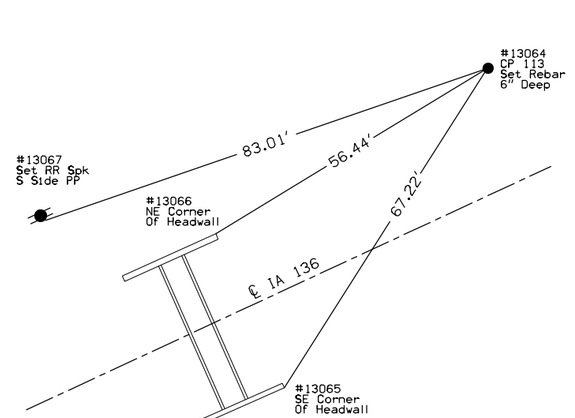
C.P. STA 704+35.04 RIGHT 17.59
C.P. 111, Set Rebar 6" Deep
N=8225753.475 E=21538864.530



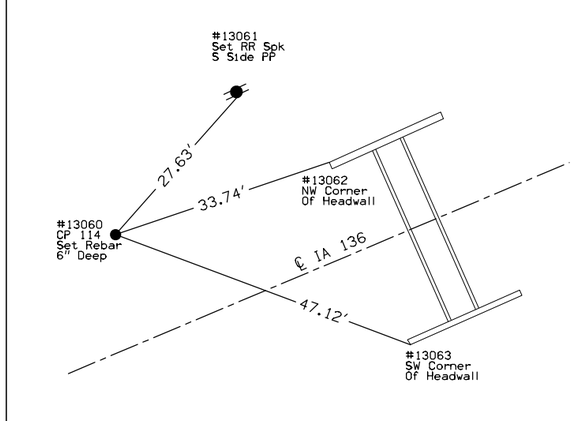
C.P. STA 705+81.49 RIGHT 16.12
C.P. 112, Set Rebar 6" Deep
N=8225759.608 E=21538715.760



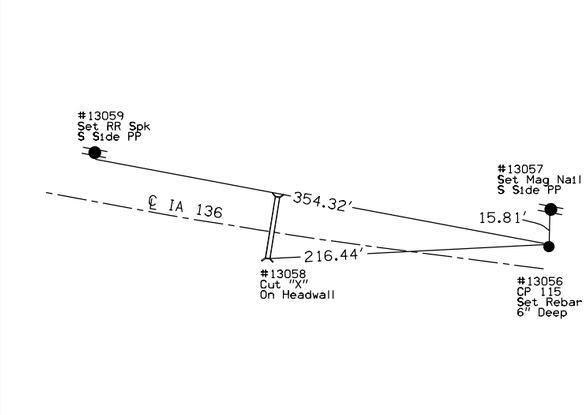
C.P. STA 742+58.75 RIGHT 20.71
C.P. 113, Set Rebar 6" Deep
N=8223451.439 E=21536010.390



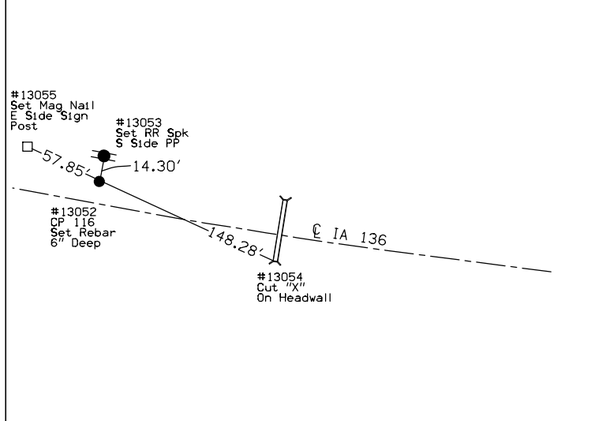
C.P. STA 743+68.86 RIGHT 17.24
C.P. 114, Set Rebar 6" Deep
N=8223403.792 E=21535913.550



C.P. STA 764+21.48 RIGHT 16.70
C.P. 115, Set Rebar 6" Deep
N=8223377.134 E=21533876.820

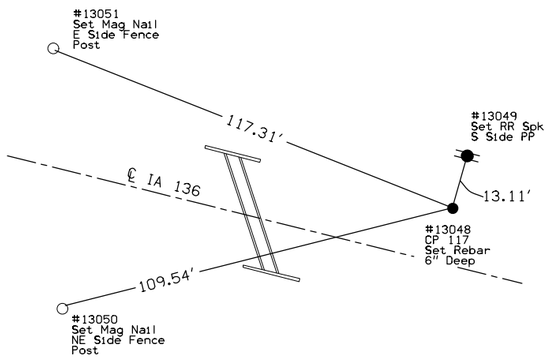


C.P. STA 767+78.37 RIGHT 17.68
C.P. 116, Set Rebar 6" Deep
N=8223428.401 E=21533526.030

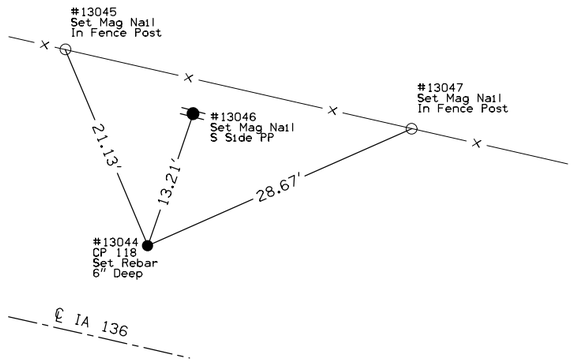


FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER G.3

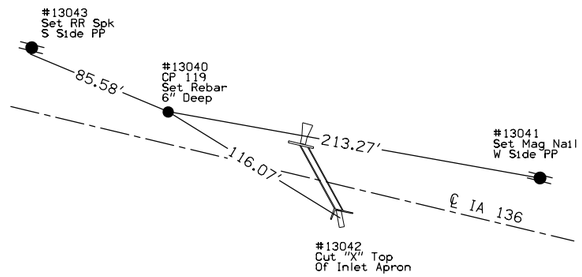
C.P. STA 787+79.06 RIGHT 15.36
C.P. 117, Set Rebar 6" Deep
N=8223892.354 E=21531580.460



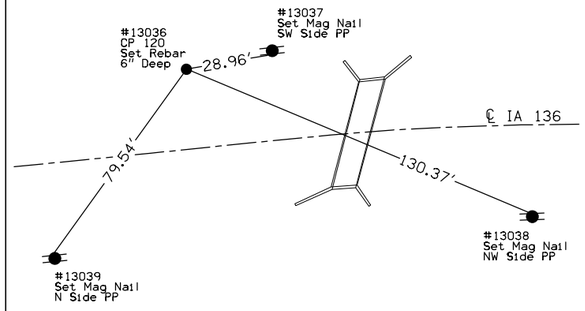
C.P. STA 793+81.02 RIGHT 15.59
C.P. 118, Set Rebar 6" Deep
N=8224033.287 E=21530995.230



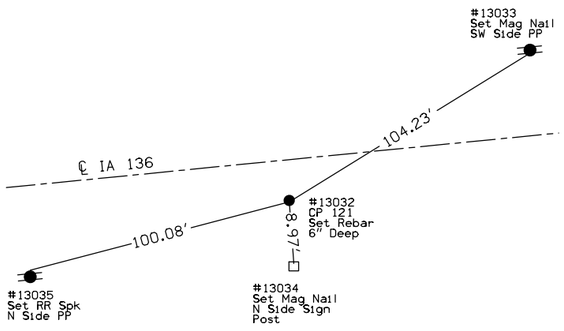
C.P. STA 801+92.90 RIGHT 16.29
C.P. 119, Set Rebar 6" Deep
N=8224223.763 E=21530206.010



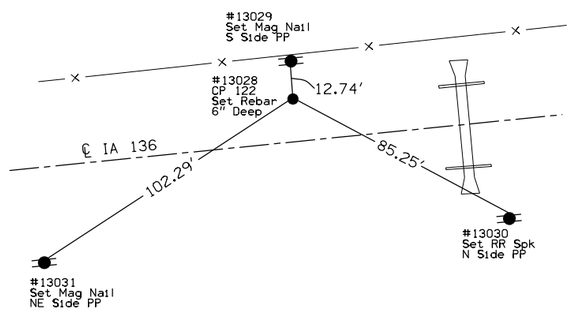
C.P. STA 809+42.83 RIGHT 26.60
C.P. 120, Set Rebar 6" Deep
N=8224337.993 E=21529461.840



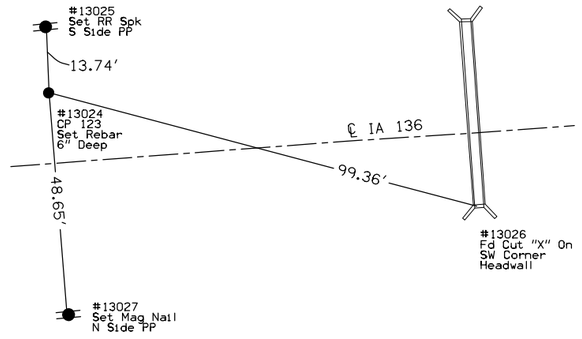
C.P. STA 816+62.87 LEFT 17.22
C.P. 121, Set Rebar 6" Deep
N=8224220.730 E=21528750.060



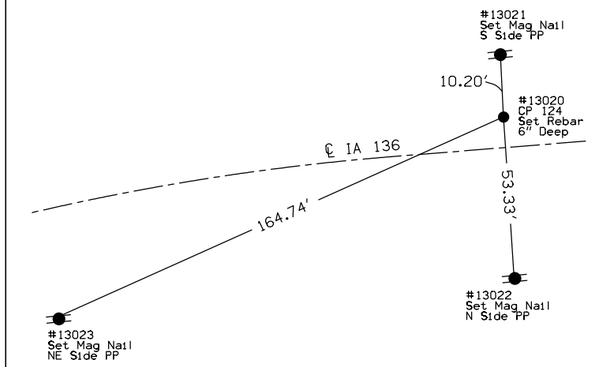
C.P. STA 818+32.51 RIGHT 14.80
C.P. 122, Set Rebar 6" Deep
N=8224235.224 E=21528578.030



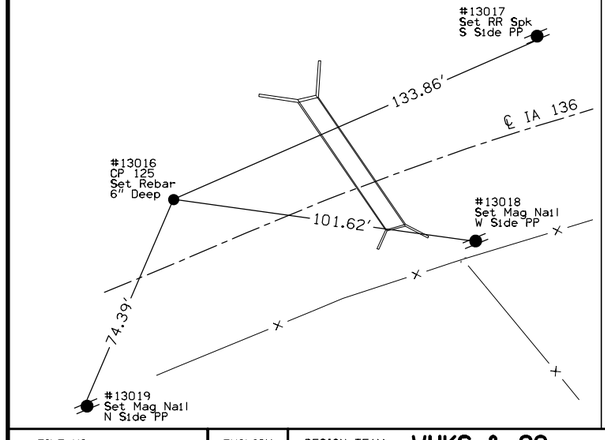
C.P. STA 831+59.26 RIGHT 15.40
C.P. 123, Set Rebar 6" Deep
N=8224129.313 E=21527256.160



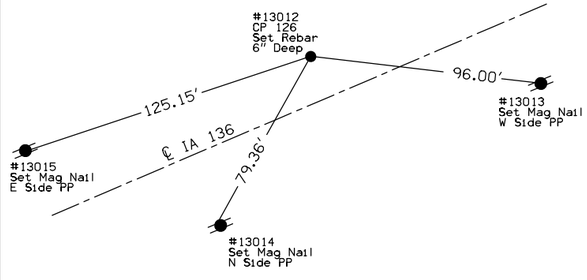
C.P. STA 834+99.96 RIGHT 17.29
C.P. 124, Set Rebar 6" Deep
N=8224107.424 E=21526916.160



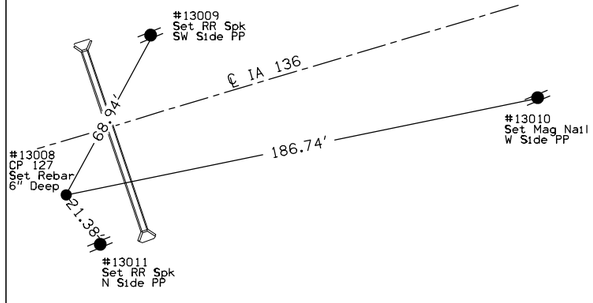
C.P. STA 838+94.13 RIGHT 20.01
C.P. 125, Set Rebar 6" Deep
N=8224017.095 E=21526528.700



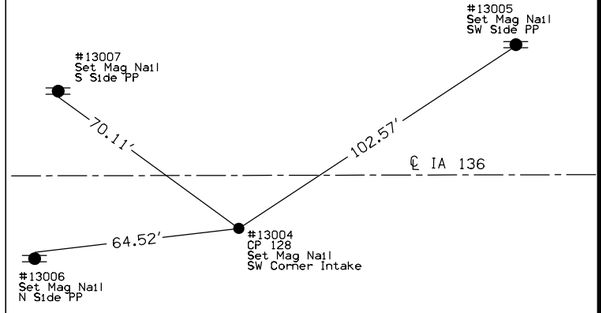
C.P. STA 844+64.08 RIGHT 18.37
C.P. 126, Set Rebar 6" Deep
N=8223792.037 E=21526005.070



C.P. STA 855+33.88 LEFT 20.46
C.P. 127, Set Rebar 6" Deep
N=8223357.795 E=21525025.480



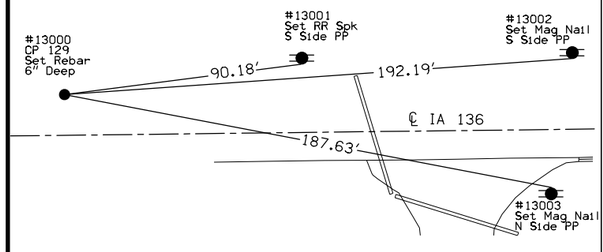
C.P. STA 907+75.59 LEFT 16.28
C.P. 128, Set Mag Nail
N=8223204.698 E=21519788.830



FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER G.4

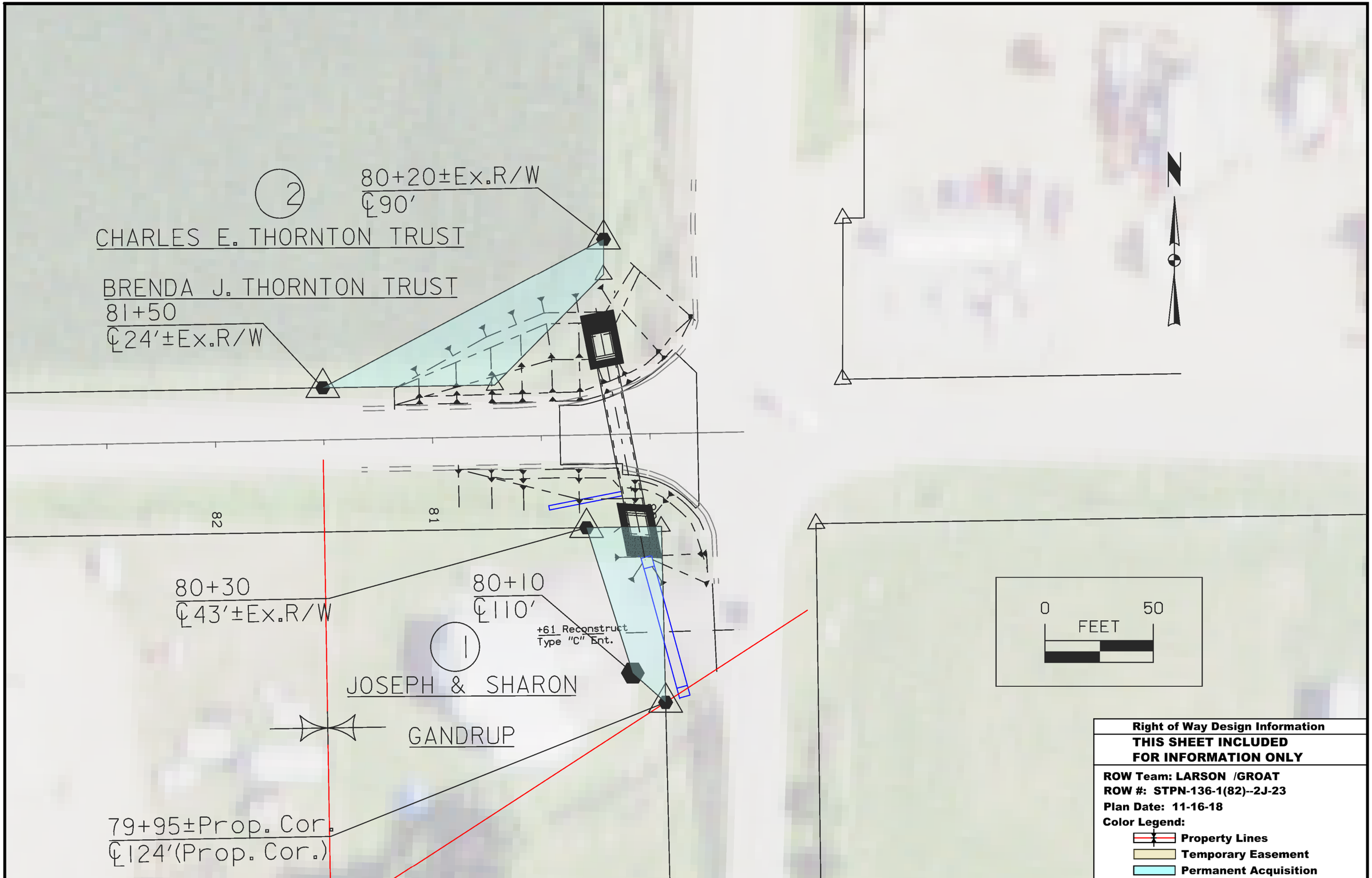
10:20:28 AM 10/29/2019 bchezick K:\7805\SA26 701BT Clinton Culverts\Prelim Survey\0766001.sur

C.P. STA 910+23.49 RIGHT 15.42
C.P. 129, Set Rebar 6" Deep
N=8223232.387 E=21519540.440



FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY
PROJECT NUMBER	STPN-136-1(73)--2J-23	SHEET NUMBER G.5	

10:20:31 AM 10/29/2019 bchezick K:\7805\SA26 701BT Clinton Culverts\Prelim Survey\0766001.sur



FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	CLINTON	COUNTY	PROJECT NUMBER	STPN-136-1(73)--2J-23	SHEET NUMBER	H.1

4:17:51 PM 11/16/2018 untitled pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\2313601013\ROW\STPN-136-1(82)--2J-23\2313601013H1.str

2

CHARLES E. THORNTON TRUST

BRENDA J. THORNTON TRUST

96+75
℄65'

96+20
℄65'

97+50
℄29'±Ex.R/W

95+45
℄28'±Ex.R/W

℄ IA 136

97+05
℄38'±Ex.R/W

95+30
℄38'±Ex.R/W

95+50
℄80'

3

MARTIN J. KROGMAN
GREGORYJ. KROGMAN
RENALDA EBENSBERGER
BARBARA KROGMAN
TRUST OF CLIFFORD SHOCKEY

96+25
℄65'

96+45
℄110'

TEMPORARY EASEMENT FOR
PIPE JACKING

0 50
FEET

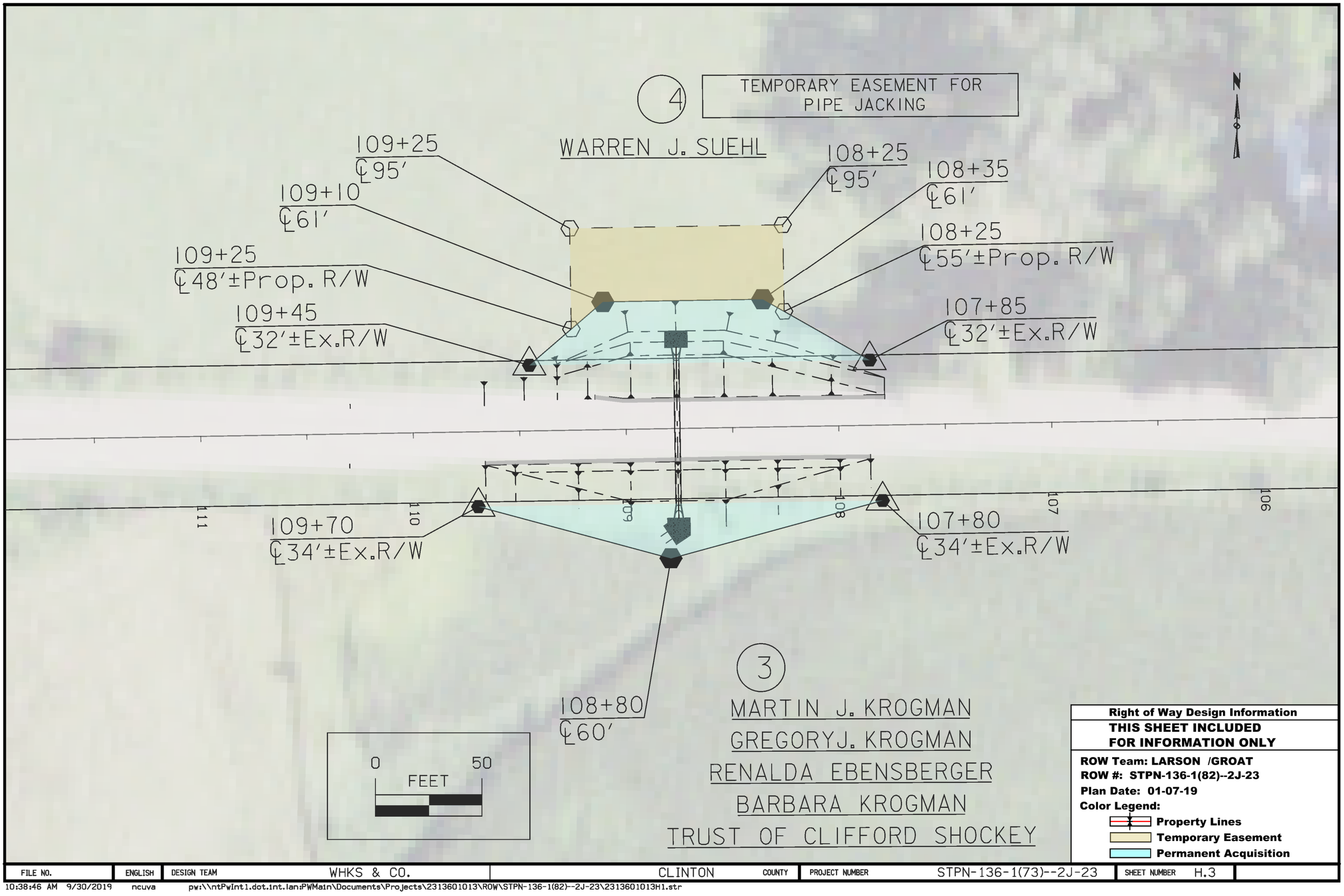
Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: LARSON /GROAT
ROW #: NHSN-136-1(92)--2J-23
Plan Date: 01-07-19
Color Legend:
Property Lines
Temporary Easement
Permanent Acquisition

FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	CLINTON	COUNTY	PROJECT NUMBER	STPN-136-1(73)--2J-23	SHEET NUMBER	H.2

10:39:00 AM 9/30/2019 ncuva pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\2313601013\ROW\STPN-136-1(82)--2J-23\2313601013H1.str



Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: LARSON /GROAT
ROW #: STPN-136-1(82)--2J-23
Plan Date: 01-07-19
Color Legend:
- **Property Lines**
- **Temporary Easement**
- **Permanent Acquisition**

FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	CLINTON	COUNTY	PROJECT NUMBER	STPN-136-1(73)--2J-23	SHEET NUMBER	H.3

10:38:46 AM 9/30/2019 ncuva pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\2313601013\ROW\STPN-136-1(82)--2J-23\2313601013H1.str

5

ROBERT WAGEMESTER

382+00
℄33′±Ex.R/W

382+85
℄80′

383+55
℄80′

384+10
℄33′±Ex.R/W

384+85
℄33′±Ex.R/W

383+50
℄75′

383+20
℄75′

382+07±Ex.R/W
℄40′

5

ROBERT WAGEMESTER

0 50
FEET

Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: LARSON /GROAT
ROW #: STPN-136-1(82)--2J-23
Plan Date: 11-16-18
Color Legend:
Property Lines
Temporary Easement
Permanent Acquisition

FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	CLINTON	COUNTY	PROJECT NUMBER	STPN-136-1(73)--2J-23	SHEET NUMBER	H.4

4:18:04 PM 11/16/2018 untitled pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\2313601013\ROW\STPN-136-1(82)--2J-23\2313601013H1.str

TEMPORARY EASEMENT FOR PIPE JACKING

TEMPORARY EASEMENT FOR PIPE JACKING

540+04±P.T.
℄95'

540+00±P.T.
℄75'

539+98±P.T.
℄60'

539+50
℄80'

539+25
℄95'

539+25
℄66'±Prop. R/W

8

SUSAN M. REYNOLDS

6

DUSTIN J. RICKERTSEN &
AMANDA M. RICKERTSEN
FAMILY TRUST

540+25
℄95'

540+50
℄55'

540+50
℄33'±EX.R/W

+47 U.A.C. Type "C" Ent.

538+65
℄33'±Ex.R/W

+07 U.A.C.

543 542 541 540 539 538 537

540+20
℄33'±Ex.R/W

+31 U.A.C. Type "C" Ent.

539+80
℄60'

539+62±P.T.
℄60'

+39 U.A.C. Type "C" Ent.

539+25
℄60'

7

JAY J. &
LAURIE GREEN

538+50

6

DUSTIN J. RICKERTSEN &
AMANDA M. RICKERTSEN
FAMILY TRUST

0 50
FEET

Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: LARSON /GROAT
ROW #: STPN-136-1(82)--2J-23
Plan Date: 01-24-19
Color Legend:
- **Property Lines**
- **Temporary Easement**
- **Permanent Acquisition**

FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	CLINTON	COUNTY	PROJECT NUMBER	STPN-136-1(73)--2J-23	SHEET NUMBER	H.5

9:19:38 AM 6/13/2019 jlarso1 pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\2313601013\ROW\STPN-136-1(82)--2J-23\2313601013H1.str

6

DUSTIN J. RICKERTSEN &
AMANDA M. RICKERTSEN
FAMILY TRUST

554+35
℄65'

554+65
℄33'±Ex.R/W

553+70
℄70'

553+10
℄33'±Ex.R/W

±71 U.A.C. Type "C" Ent.

+9b U.A.C. Type "C" Ent.

556

555

554

553

552

551

555+00
℄33'±Ex.R/W

552+75
℄33'±Ex.R/W

6

553+60
℄80'

554+26.20
℄55.65'

9

FLOYD A. MARX

0 50
FEET

Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: LARSON /GROAT
ROW #: STPN-136-1(82)--2J-23
Plan Date: 05-31-19
Color Legend:
Property Lines
Temporary Easement
Permanent Acquisition

FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	CLINTON	COUNTY	PROJECT NUMBER	STPN-136-1(73)--2J-23	SHEET NUMBER H.6	

9:26:36 AM 6/13/2019 jlarso1 pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\2313601013\ROW\STPN-136-1(82)--2J-23\2313601013H1.str

571+55
℄115′

571+45
℄80′

570+80±℄
℄55′

6

DUSTIN J. RICKERTSEN &
AMANDA M. RICKERTSEN
FAMILY TRUST

TEMPORARY EASEMENT
TO SHAPE

11

RANDY L. ROEDER

570+20
℄50′

569+95
℄33′±Ex.R/W

571+75
℄80′

573+10
℄33′±Ex.R/W

574 573 572 571 570 569

+10 U.A.C.
Type "C" Ent.

10

JACOB. P. DEVER

572+25
℄33′±Ex.R/W

571+75±℄
℄55′

571+30
℄55′

571+00±℄
℄33′±Ex.R/W

9

FLOYD A. MARX

0 50
FEET

Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: LARSON /GROAT
ROW #: STPN-136-1(82)--2J-23
Plan Date: 11-19-18
Color Legend:

- Property Lines
- Temporary Easement
- Permanent Acquisition

FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	CLINTON	COUNTY	PROJECT NUMBER	STPN-136-1(73)--2J-23	SHEET NUMBER H.7	

9:23:32 AM 9/23/2019 ncuva pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\2313601013\ROW\STPN-136-1(82)--2J-23\2313601013H1.str

11

RANDY L. ROEDER

581+30
℄ 40'

581+65
℄ 33' ± Ex. R/W

580+80
℄ 40'

580+50
℄ 33' ± Ex. R/W

584 583 582 581 580 579

11

RANDY L. ROEDER

0 50
FEET

Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: LARSON /GROAT
ROW #: STPN-136-1(82)--2J-23
Plan Date: 01-24-19
Color Legend:
Property Lines
Temporary Easement
Permanent Acquisition

FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	CLINTON	COUNTY	PROJECT NUMBER	STPN-136-1(73)--2J-23	SHEET NUMBER H.8	

6:26:59 AM 4/1/2019 jlarso1 pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\2313601013\ROW\STPN-136-1(82)--2J-23\2313601013H1.str

12

SHAWN A. & VALERIE S. RATHJE

652+20
℄33'±Ex.R/W

651+50
℄70'

650+40
℄33'±Ex.R/W

654

653

652

651

650

649

652+45
℄33'±Ex.R/W

651+65
℄65'

651+20
℄65'

650+50
℄33'±Ex.R/W

SAADI ALBAGHDADI

13

0 50
FEET

Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: LARSON /GROAT
ROW #: STPN-136-1(82)--2J-23
Plan Date: 11-16-18
Color Legend:
Property Lines
Temporary Easement
Permanent Acquisition

FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	CLINTON	COUNTY	PROJECT NUMBER	STPN-136-1(73)--2J-23	SHEET NUMBER	H.9

4:18:28 PM 11/16/2018 untitled pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\2313601013\ROW\STPN-136-1(82)--2J-23\2313601013H1.str

(1D)

DRAINAGE DISTRICT #17 & #28

(15)

THE BIELENBERG

LIVING TRUST

704+69± ℄

℄ 80'

TEMPORARY EASEMENT TO
SHAPE & CONST. ENTRANCE

DAVID & JULIA

MCCOY

(14)

704+50

℄ 80'

704+45

℄ 33'±Ex.R/W

705+75

℄ 33'±Ex.R/W

+49 Reconstruct Type "C" Ent.

+67 Reconstruct Type "C" Ent.

N

907 906 905 904 703 702

(1D)

DRAINAGE DISTRICT #17 & #28

0 50
FEET

Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: LARSON /GROAT
ROW #: STPN-136-1(82)--2J-23
Plan Date: 02-07-19
Color Legend:
Property Lines
Temporary Easement
Permanent Acquisition

FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	CLINTON	COUNTY	PROJECT NUMBER	STPN-136-1(73)--2J-23	SHEET NUMBER H.10	

6:09:36 AM 6/14/2019 jlarso1 pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\2313601013\ROW\STPN-136-1(82)--2J-23\2313601013H1.str

PROPERTY RIGHTS OBTAINED VIA
SOVEREIGN LAND PERMIT

(16)

IOWA STATE CONSERVATION

COMMISSION

743+40
℄70'

743+70
℄33'±EX.R/W

742+70
℄60'

742+35
℄33'±EX.R/W

745

744

743

742

741

440

744+40
℄33'±EX.R/W

743+30
±80'

742+20
℄33'±EX.R/W

742+85
℄70'

PROPERTY RIGHTS OBTAINED VIA
SOVEREIGN LAND PERMIT

(16)

IOWA STATE CONSERVATION

COMMISSION

0 50
FEET

Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: LARSON /GROAT
ROW #: STPN-136-1(82)--2J-23
Plan Date: 11-28-18
Color Legend:
Property Lines
Temporary Easement
Permanent Acquisition

FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	CLINTON	COUNTY	PROJECT NUMBER	STPN-136-1(73)--2J-23	SHEET NUMBER H.11	

11:58:35 AM 8/19/2019 chughes pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\2313601013\ROW\STPN-136-1(82)--2J-23\2313601013H1.str

17

KENNETH W. HOLDGRAFER REVOCABLE TRUST &
DARLENE R. HOLDGRAFER REVOCABLE TRUST

766+25
℄70'

766+00
℄70'

765+60
℄95'

766+60
℄95'

TEMPORARY EASEMENT FOR
PIPE JACKING

767+05
℄55'

765+10
℄55'

769

768

767

766

765

764

763

767+15
℄33'±Ex.R/W

765+30
℄33'±Ex.R/W

766+55
℄75'

765+70
℄75'

17

KENNETH W. HOLDGRAFER REVOCABLE TRUST &
DARLENE R. HOLDGRAFER REVOCABLE TRUST

0 50
FEET

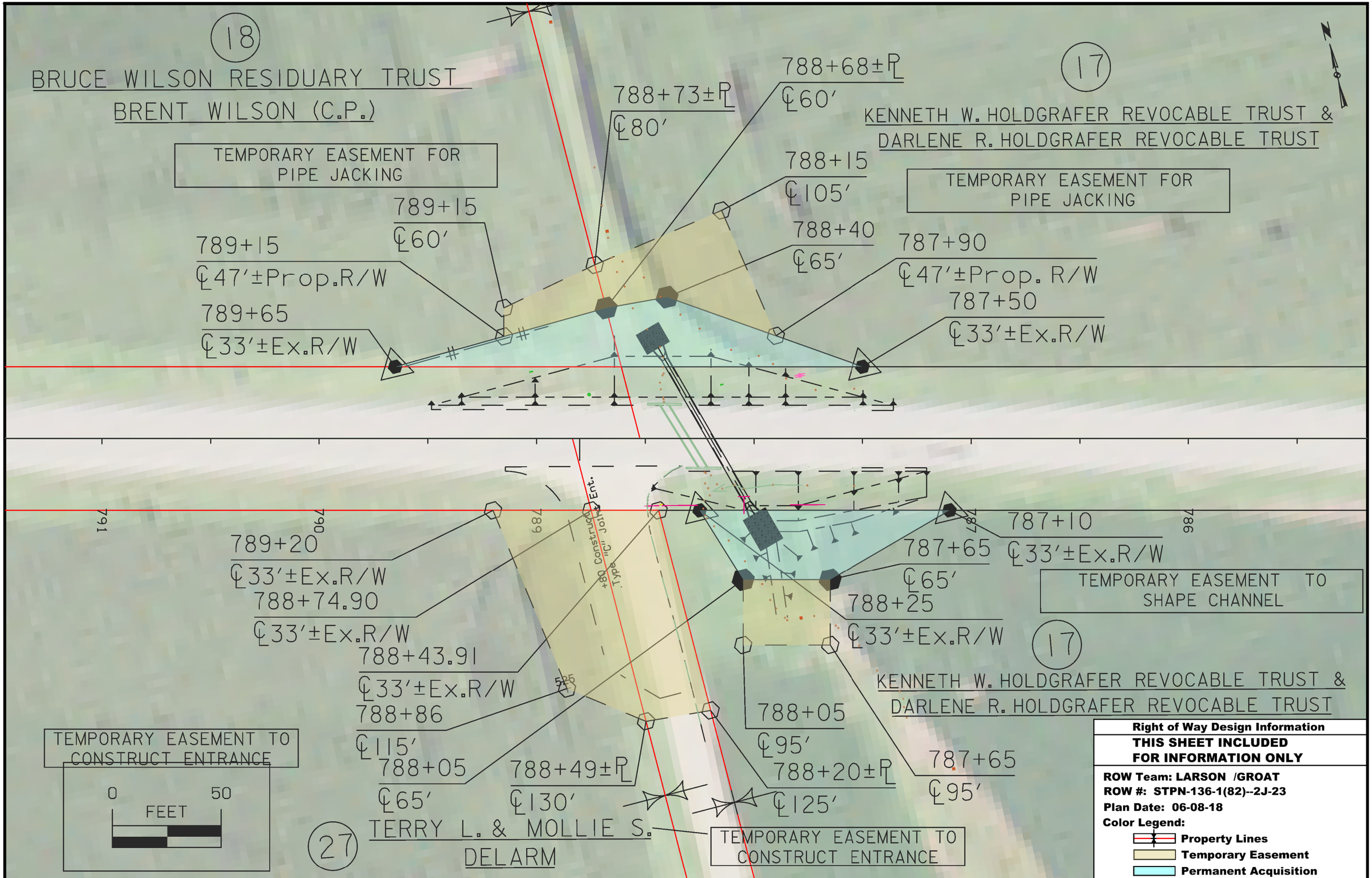
Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: LARSON /GROAT
ROW #: STPN-136-1(82)--2J-23
Plan Date: 06-08-18
Color Legend:
Property Lines
Temporary Easement
Permanent Acquisition

FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	CLINTON	COUNTY	PROJECT NUMBER	STPN-136-1(73)--2J-23	SHEET NUMBER	H.12

12:11:39 PM 8/15/2019 jlarso1 pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\2313601013\ROW\STPN-136-1(82)--2J-23\2313601013H1.str



FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	CLINTON	COUNTY	PROJECT NUMBER	STPN-136-1(73)--2J-23	SHEET NUMBER	H.13

12:12:05 PM 8/15/2019 jlarso1 pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\2313601013\ROW\STPN-136-1(82)--2J-23\2313601013H1.str

(18)

BRUCE WILSON RESIDUARY TRUST

BRENT WILSON (C.P.)

+04 U.A.C. Type "C" Ent.

801+10
℄70'

802+00
℄33'±Ex.R/W

800+20
℄33'±Ex.R/W

803 802 801 800 799 798

801+65
℄33'±Ex.R/W

801+05
℄65'

+10 U.A.C. Type "C" Ent.

800+20
℄65'

799+55
℄33'±Ex.R/W

799+95
℄110'

800+15
℄125'

(18)

BRUCE WILSON RESIDUARY TRUST

BRENT WILSON (C.P.)

0 50
FEET

TEMPORARY EASEMENT TO SHAPE CHANNEL

Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: LARSON /GROAT
ROW #: STPN-136-1(82)--2J-23
Plan Date: 06-08-18
Color Legend:
Property Lines
Temporary Easement
Permanent Acquisition

FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	CLINTON	COUNTY	PROJECT NUMBER	STPN-136-1(73)--2J-23	SHEET NUMBER	H.14

1:53:41 PM 7/9/2019 ncuva pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\2313601013\ROW\STPN-136-1(82)--2J-23\2313601013H1.str

Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: LARSON /GROAT
ROW #: STPN-136-1(82)--2J-23
Plan Date: 06-08-18
Color Legend:
- Property Lines
- Temporary Easement
- Permanent Acquisition

0 50 FEET

(18)

BRUCE WILSON RESIDUARY TRUST

BRENT WILSON (C.P.)

808+80 ℄135′

808+50 ℄135′

808+80 ℄65′

808+50 ℄65′

807+95 ℄50′

807+85 ℄42′±Ex.R/W

809+30 ℄33′±Ex.R/W

TEMPORARY EASEMENT TO SHAPE CHANNEL

+74 U.A.C. Type "C" Ent.

811 810 809 808 807 806

(19)

+47 U.A.C. Type "C" Ent.

TERRY & RUTHANN HAHN

809+35 ℄33′±Ex.R/W

809+00 ℄55′

808+81±℄ ℄55′

808+75±℄ ℄75′

808+90 ℄115′

808+64±℄ ℄115′

808+45 ℄115′

808+20 ℄65′

807+80±R/W Cor. ℄24′(R/W Cor.)

TEMPORARY EASEMENT TO SHAPE CHANNEL

(18)

TEMPORARY EASEMENT TO SHAPE CHANNEL

BRUCE WILSON RESIDUARY TRUST

BRENT WILSON (C.P.)

FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	CLINTON	COUNTY	PROJECT NUMBER	STPN-136-1(73)--2J-23	SHEET NUMBER	H.15

2:27:32 PM 6/26/2018 untitled pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\2313601013\ROW\STPN-136-1(82)--2J-23\2313601013H1.str

TEMPORARY EASEMENT TO SHAPE CHANNEL

(21)

BRIAN R. & JENNIFER M.

BLANCHARD

817+60
℄70'

817+75
℄75'

817+90
℄60'

817+60
℄53'±Prop.R/W

818+45
℄33'±Ex.R/W

816+70
℄33'±Ex.R/W

821 820 819 817 816 815

818+90
℄33'±Ex.R/W

817+10
℄33'±Ex.R/W

TEMPORARY EASEMENT TO SHAPE CHANNEL

818+40
℄65'

817+15
℄45'

818+40
℄90'

817+70
℄65'

(20)

817+70
℄90'

STEVEN C. & JUDITH A.

PETERSEN

0 50
FEET

Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: LARSON /GROAT
ROW #: STPN-136-1(82)--2J-23
Plan Date: 06-08-18
Color Legend:
Property Lines
Temporary Easement
Permanent Acquisition

FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	CLINTON	COUNTY	PROJECT NUMBER	STPN-136-1(73)--2J-23	SHEET NUMBER	H.16

2:27:44 PM 6/26/2018 untitled pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\2313601013\ROW\STPN-136-1(82)--2J-23\2313601013H1.str

23

TEMPORARY EASEMENT FOR
PIPE JACKING

RANDALL B. DICKEY REVOCABLE TRUST

830+80
℄65′

831+15 ℄65′
℄95′

831+15
℄52′±Prop. R/W

831+65
℄33′±Ex.R/W

830+30
℄65′

830+10
℄95′

830+10
℄49′±Prop. R/W

829+90
℄33′±Ex.R/W

833 832 831 830 829 828

831+30
℄33′±Ex.R/W

830+80
℄60′

22

BIELENBERG LIVING TRUST

829+55
℄33′±Ex.R/W

829+70
℄50′

830+25
℄60′

0 50
FEET

Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: LARSON /GROAT
ROW #: STPN-136-1(82)--2J-23
Plan Date: 06-08-18
Color Legend:
Property Lines
Temporary Easement
Permanent Acquisition

FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	CLINTON	COUNTY	PROJECT NUMBER	STPN-136-1(73)--2J-23	SHEET NUMBER H.17	

6:58:26 AM 1/9/2019 jlarso1 pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\2313601013\ROW\STPN-136-1(82)--2J-23\2313601013H1.str

Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: LARSON /GROAT
ROW #: STPN-136-1(82)--2J-23
Plan Date: 06-08-18
Color Legend:
- **Property Lines**
- **Temporary Easement**
- **Permanent Acquisition**

840+10
℄525′

839+40
℄485′

TEMPORARY EASEMENT TO SHAPE CHANNEL

841+75
℄300′

844+55
℄80′

845+20
℄33′±Ex.R/W

843+45
℄70′

841+85
℄180′

843+05
℄55′

(23)
RANDALL B. DICKEY REVOCABLE TRUST

838+45
℄75′

839+30
℄33′±Ex.R/W

837+70
℄37′±Ex.R/W

839+05
℄33′±Ex.R/W

838+55
℄70′

837+35
℄45′±Ex.R/W

837+70
℄65′

837+85
℄100′

837+70
℄95′

(22)
BIELENBERG LIVING TRUST

TEMPORARY EASEMENT TO SHAPE CHANNEL

0 100
FEET

FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	CLINTON	COUNTY	PROJECT NUMBER	STPN-136-1(73)--2J-23	SHEET NUMBER H.18

11:57:34 AM 12/20/2018 untitled pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\2313601013\ROW\STPN-136-1(82)--2J-23\2313601013H1.str

26

STEVE A. & TRACEY J.

DICKEY

TEMPORARY EASEMENT TO SHAPE CHANNEL

855+55
℄120′

855+43±℄
℄120′

23

RANDALL B. DICKEY REVOCABLE TRUST

854+65
℄65′

855+30
℄65′

TEMPORARY EASEMENT TO SHAPE CHANNEL

855+61±℄
℄55′

856+00
℄33′±Ex.R/W

854+30
℄40′±Ex.R/W

857

856

855

854

853

852

+23 U.A.C. Type "C" Ent.

+86 U.A.C. Type "C" Ent.

855+55
℄40′±Ex.R/W

PERRY & DARLENE

LAMP

855+20
℄101′±℄

24

24

JUANITA K. BIELENBERG

854+40
℄40′±Ex.R/W

854+65
℄90′

0 50
FEET

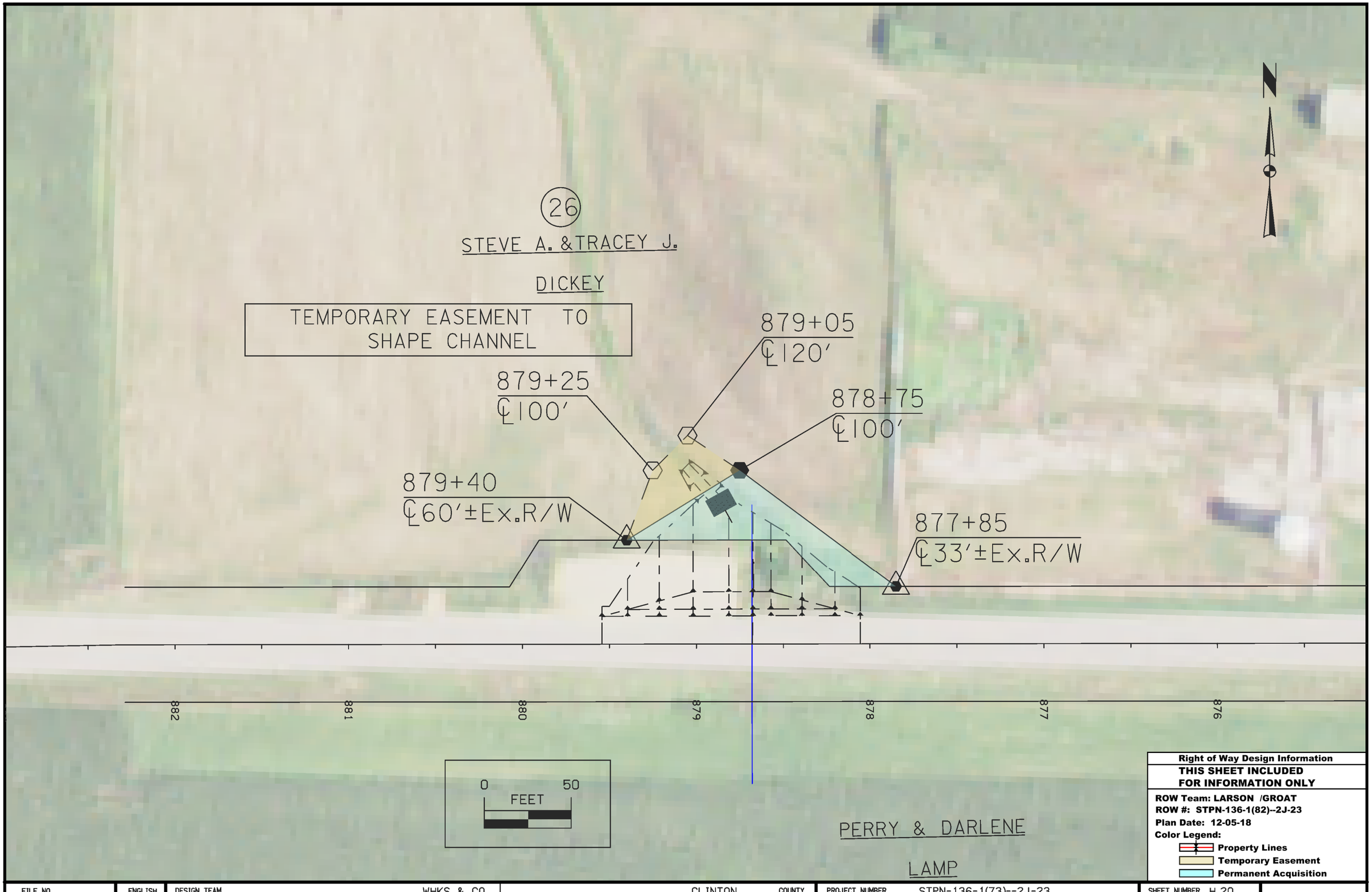
Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: LARSON /GROAT
ROW #: STPN-136-1(82)--2J-23
Plan Date: 12-05-18
Color Legend:
Property Lines
Temporary Easement
Permanent Acquisition

FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	CLINTON	COUNTY	PROJECT NUMBER	STPN-136-1(73)--2J-23	SHEET NUMBER	H.19

9:44:41 AM 6/13/2019 jlarso1 pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\2313601013\ROW\STPN-136-1(82)--2J-23\2313601013H1.str



Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: LARSON /GROAT
ROW #: STPN-136-1(82)--2J-23
Plan Date: 12-05-18
Color Legend:
- **Property Lines**
- **Temporary Easement**
- **Permanent Acquisition**

FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	CLINTON	COUNTY	PROJECT NUMBER	STPN-136-1(73)--2J-23	SHEET NUMBER	H.20

9:29:20 AM 12/5/2018 untitled pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\2313601013\ROW\STPN-136-1(82)--2J-23\2313601013H1.str

(23)

RANDALL B. DICKEY REVOCABLE TRUST

909+40
℄50'

908+90
℄50'

909+90
℄33'±Ex.R/W

908+40
℄33'±Ex.R/W

℄ 1A 136

912 911 910 909 908 907 906 905

+75 U.A.C.
Type "C" Ent.

0 50
FEET

Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: LARSON /GROAT
ROW #: STPN-136-1(82)--2J-23
Plan Date: 10-30-18
Color Legend:
Property Lines
Temporary Easement
Permanent Acquisition

FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	CLINTON	COUNTY	PROJECT NUMBER	STPN-136-1(73)--2J-23	SHEET NUMBER	H.21

11:31:07 AM 10/30/2018 untitled pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\2313601013\ROW\STPN-136-1(82)--2J-23\2313601013H1.str

108-23A
08-01-08

TRAFFIC CONTROL PLAN

Traffic will be reduced to one lane with flaggers for all trenchless installation/extension of culverts utilizing Standard Road Plans TC-1, TC-202, and TC-213. IA 136 will be open to two lanes of traffic during nighttime hours. See Tab. 108-23B for a list of lane closure times. The following culverts will require trenchless installation/extension:

- -Sta. 96+34
- -Sta. 108+76
- -Sta. 383+30
- -Sta. 539+60
- -Sta. 553+83
- -Sta. 571+62
- -Sta. 581+05
- -Sta. 704+70
- -Sta. 743+25
- -Sta. 766+09
- -Sta. 788+20
- -Sta. 830+53
- -Sta. 844+27
- -Sta. 855+00
- -Sta. 878+68

Traffic will be reduced to one lane for open cut installation of culverts utilizing Standard Road Plans TC-1, TC-202, and TC-213. Traffic will be staged so that one lane of traffic is open at all times. IA 136 will be open to two lanes of traffic during nighttime hours. See Tab. 108-23B for a list of lane closure times. The following culverts will require open cut installation:

- -Sta. 651+43
- -Sta. 800+82
- -Sta. 817+91
- -Sta. 909+07

The open cut installation of culverts at Sta. 808+67 and Sta. 838+23 will require a road closure to complete construction.
IA 136 will be closed utilizing Standard Road Plans TC-1, TC-202, and TC-252, and traffic will be detoured along County Road Z24, F12, and Z36. See Sheet J.2 for additional informations regarding the detour route.

The open cut installation of the culvert at Sta. 80+14 will require a road closure and temporary traffic signals to complete construction. The West leg of the IA 136 and Z50 intersection will be closed utilizing Standard Road Plans TC-1, TC-202, TC-252, TBR, and temporary traffic signals. Traffic will be detoured along County Road F12 and Z 36. See Sheet J.3 for detour information and Sheet J.4 for traffic control device details. Traffic will be detoured between the following dates:
May 27, 2019 to September 2, 2019.

Intake and storm sewer construction at Sta. 685+15 will utilize Standard Road Plans TC-1, TC-202, and TC-216.

111-01
04-17-12

COORDINATED OPERATIONS

Other work in progress during the same period of time will include the construction of the projects listed. Coordinate operations with those of other contractors working within the same area.

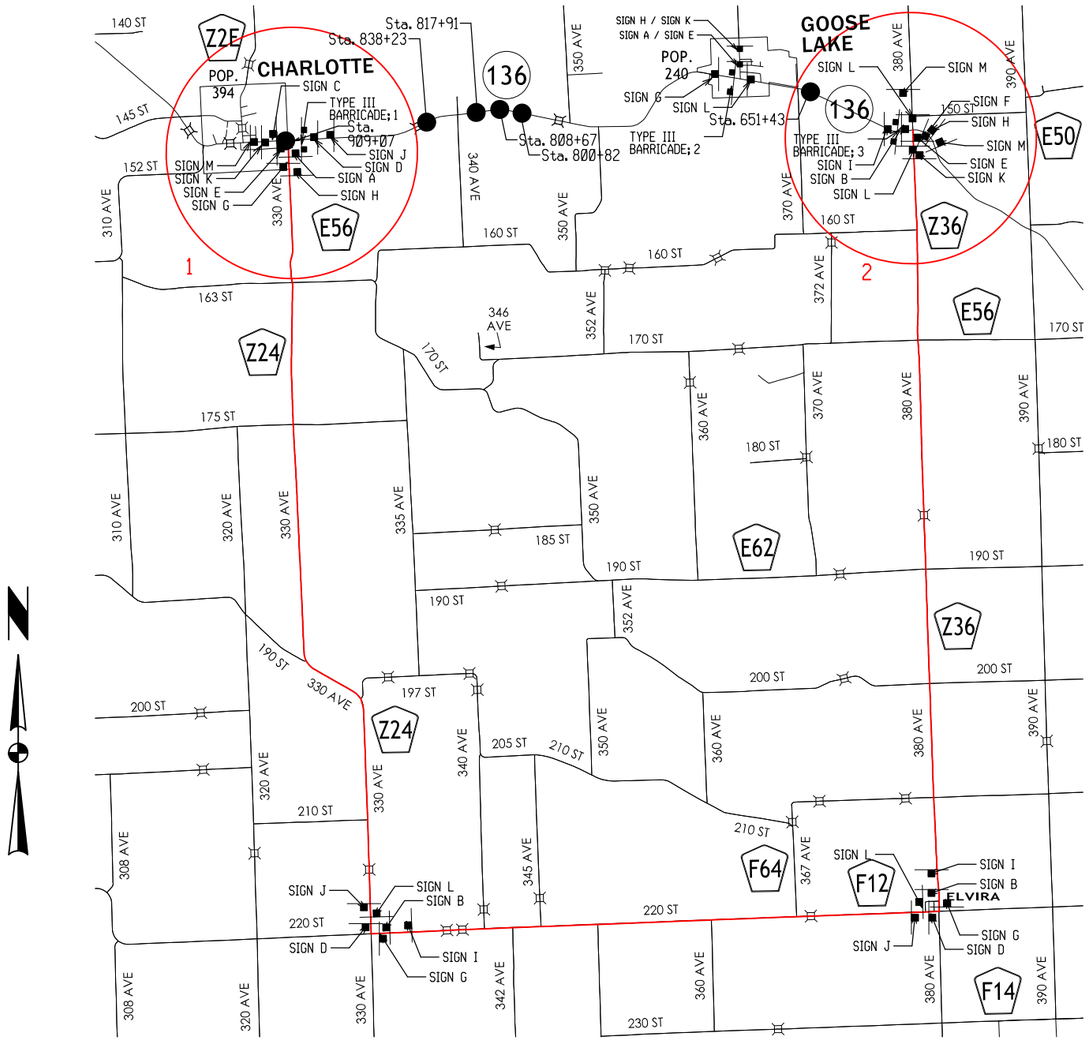
Project	Type of Work
NONE	

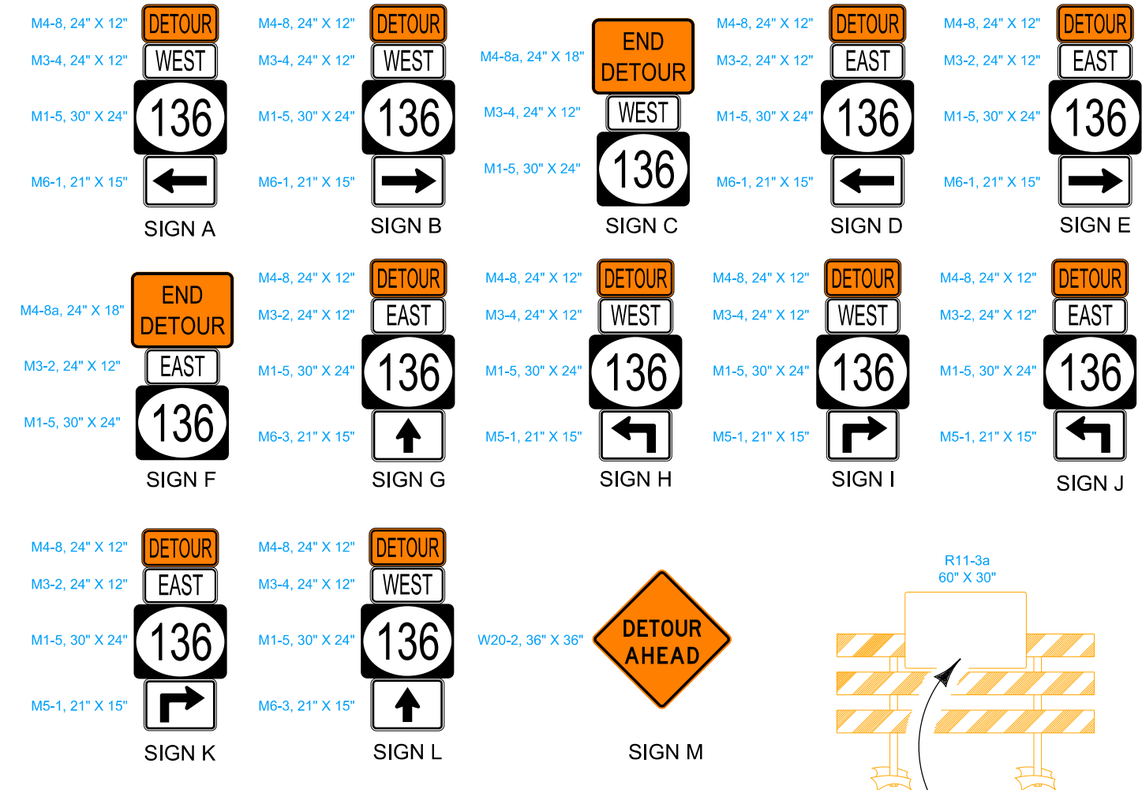
108-23B
10-17-17

* This is to only be used in conjunction with Tabulation 108-23A
Shaded area indicates times that lane closures are not allowed

TRAFFIC CONTROL CLOSURE TABLE(S)

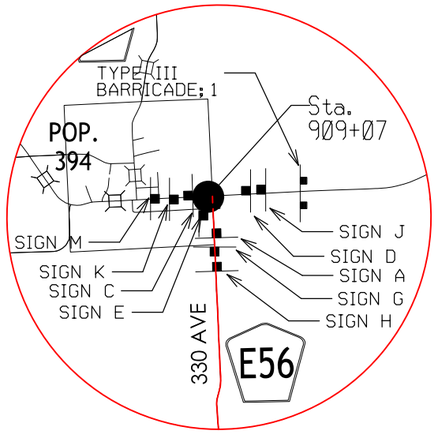
	AM																							Noon	PM																							
	12:00	12:30	1:00	1:30	2:00	2:30	3:00	3:30	4:00	4:30	5:00	5:30	6:00	6:30	7:00	7:30	8:00	8:30	9:00	9:30	10:00	10:30	11:00	11:30	12:00	12:30	1:00	1:30	2:00	2:30	3:00	3:30	4:00	4:30	5:00	5:30	6:00	6:30	7:00	7:30	8:00	8:30	9:00	9:30	10:00	10:30	11:00	11:30
SUN																																																
MON																																																
TUE																																																
WED																																																
THU																																																
FRI																																																
SAT																																																



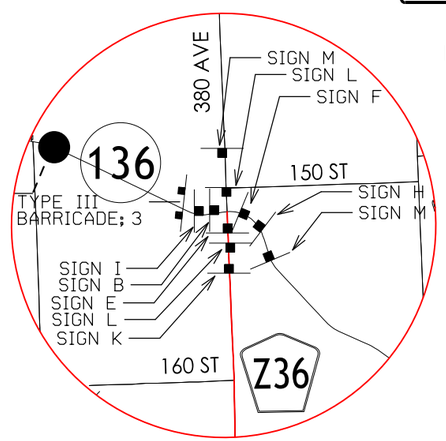




TYPE III BARRICADE



VIEW 1 - TC WEST DETOUR SITE



VIEW 2 - TC EAST DETOUR SITE

TYPE III BARRICADE STAGING FOR OPEN CUT CULVERTS						
TYPE III BARRICADE STA.	DISTANCE TO CULVERT CLOSURE (MILES)					
	909+07	838+23	817+91	808+67	800+82	651+43
1: 909+07	---	1.50	1.50	2.00	2.00	5.00
2: 685+25	4.00	3.00	2.50	2.50	2.00	0.50
3: 598+46	6.00	4.50	4.00	4.00	4.00	1.00

Sign Type	Quantity
M1-5	35
M3-2	17
M3-4	18
M4-8	33
M4-8a	2
M5-1	13
M6-1	12
M6-3	8
R11-3A	4
W20-2	3

Notes:

1). All work for Signing shall be included in "Traffic Control".

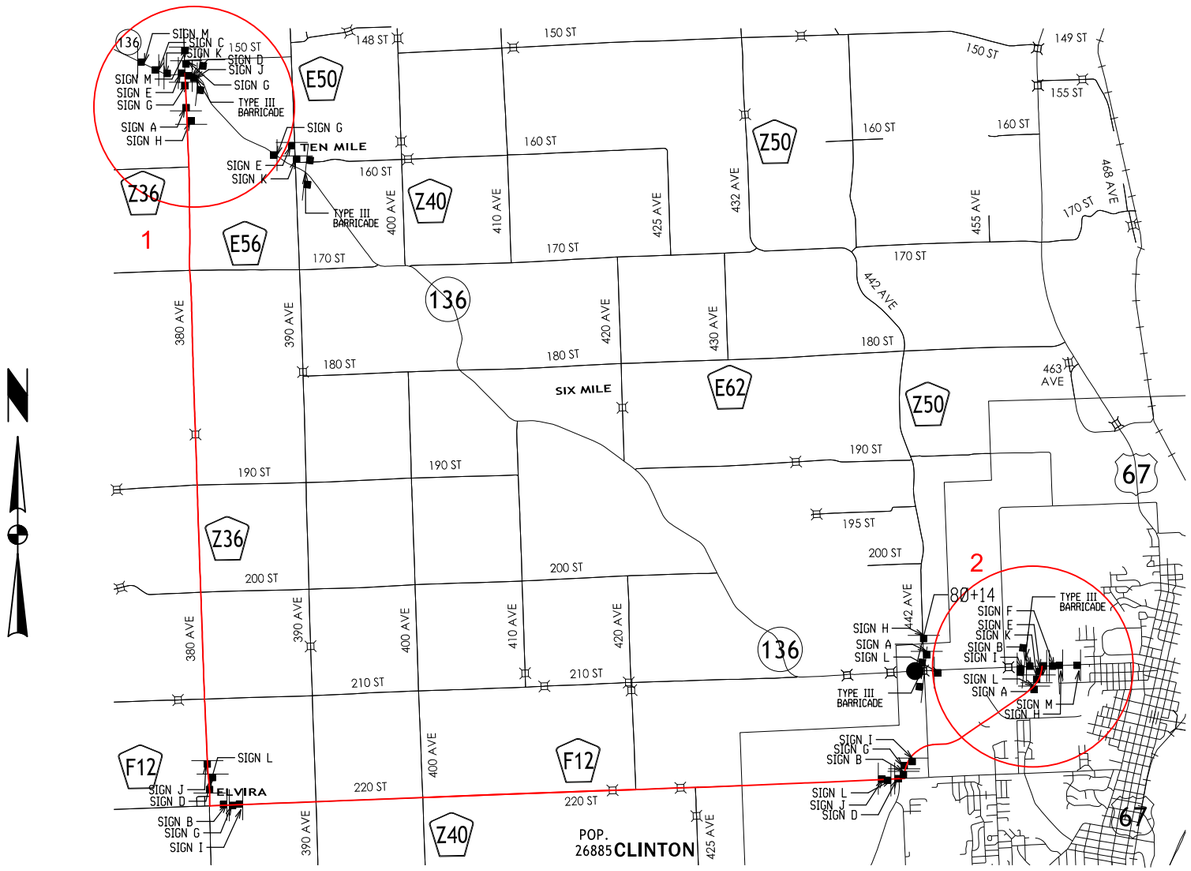
2). West detour signs shall be used at Barricade #2 for all stages except Sta. 651+43 in which East detour signs will be posted.

TRAFFIC DETOUR

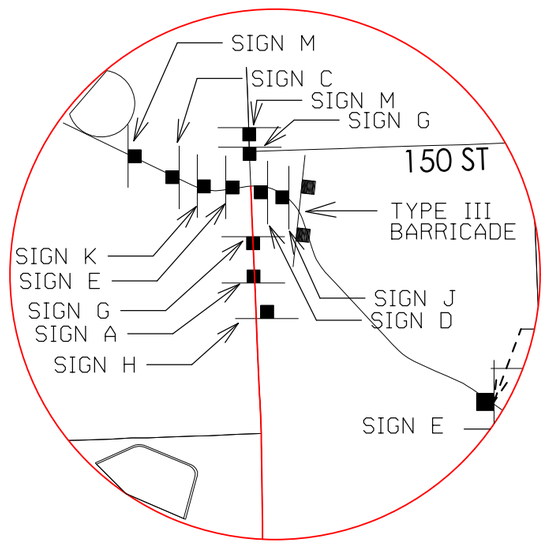
FOR CULVERTS AT THE FOLLOWING STATIONS:
651+43, 800+82, 808+67, 817+91, 838+24, 908+60

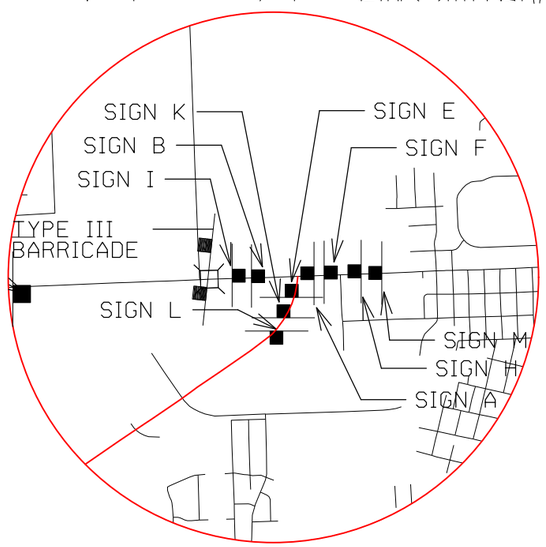
FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER J.2

11:19:50 AM 10/29/2019 dwherry K:\7805\SA26 701BT Clinton Culverts\Design\2313601013j02.sht

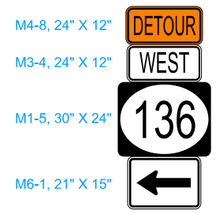


VIEW 1 - TC, NORTHWEST DETOUR SITE

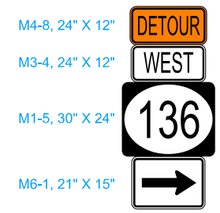




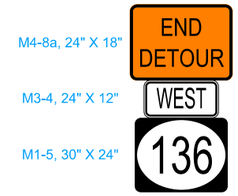
VIEW 2 - TC, EAST DETOUR SITE



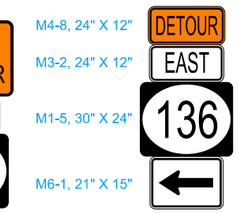
SIGN A



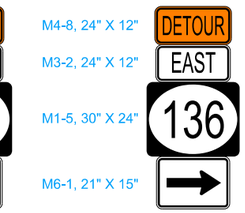
SIGN B



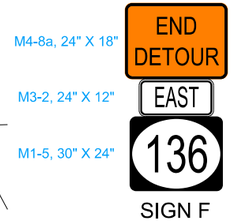
SIGN C



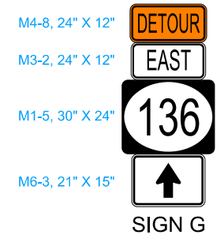
SIGN D



SIGN E



SIGN F



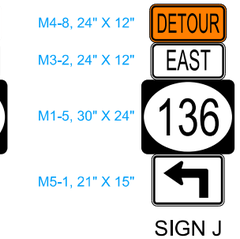
SIGN G



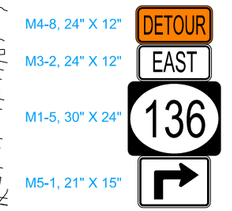
SIGN H



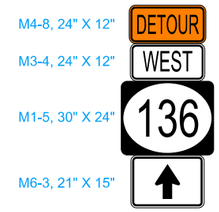
SIGN I



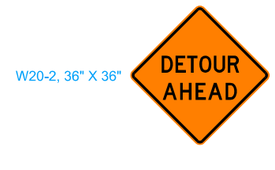
SIGN J



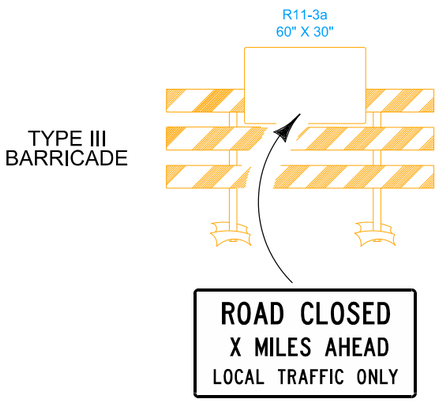
SIGN K



SIGN L



SIGN M



Sign Type	Quantity
M1-5	35
M3-2	18
M3-4	17
M4-8	33
M4-8a	2
M5-1	14
M6-1	12
M6-3	7
R11-3A	4
W20-2	3

Notes:

1). All work for Signing shall be included in "Traffic Control".

TRAFFIC DETOUR

FOR CULVERTS AT THE FOLLOWING STATIONS:
80+14

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER J.3

11:19:52 AM 10/29/2019 dwherry K:\7805\SA26 701BT Clinton Culverts\Design\2313601013j02.sht

W3-3
48" x 48"

350'

Temporary Signal

STOP HERE ON RED
R10-6
24" x 36"

12'

R11-2
48" x 30"
ROAD CLOSED
Safety Closure

Temporary Crash Cushion

Cover Existing Stop Sign

Temporary Barrier Rail

1

R11-2
48" x 30"
ROAD CLOSED
Safety Closure

W3-3
48" x 48"

BE PREPARED TO STOP
W20-7B
48" x 48"

ROAD CLOSED AHEAD
W20-3
48" x 48"

250'

350'

Temporary Signal

STOP HERE ON RED
R10-6
24" x 36"

12'

1

POT Sta 79+56.90

82

81

80

TP

TA

GV

SIGN

Cover Existing Stop Sign

Temporary Signal

+60 PROP. ENT.
TYP. "C"

1

12'

STOP HERE ON RED
R10-6
24" x 36"

250'

W3-3
48" x 48"

Note: See Sheet J.3 for sign placement details along detour route.

(1) Locate signal heads 70 to 100 feet beyond stop bar. Adjust location of signal heads as field conditions warrant.

N

0 FEET 20

Sta. 80+14 Traffic Control Layout

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER J.4

11:19:53 AM 10/29/2019 dwherry K:\7805\SA26 701BT Clinton Culverts\Design\2313601013j02.sht

POLLUTION PREVENTION PLAN

This project is regulated by the requirements of the Iowa Department of Natural Resources (DNR) National Pollutant Discharge Elimination System (NPDES) General Permit No. 2 OR an Iowa Department of Natural Resources (DNR) National Pollutant Discharge Elimination System (NPDES) individual storm water permit. The Contractor shall carry out the terms and conditions of this permit and the Pollution Prevention Plan (PPP).

This Base PPP includes information on Roles and Responsibilities, Project Site Description, Controls, Maintenance Procedures, Inspection Requirements, Non-Storm Water Controls, Potential Sources of Off Right-of-Way Pollution, and Definitions. This plan references other documents rather than repeating the information contained in the documents. A copy of this Base Pollution Prevention Plan, amended as needed per plan revisions or by contract modification, will be readily available for review.

All contractors shall conduct their operations in a manner that controls pollutants, minimizes erosion, and prevents sediments from entering waters of the state and leaving the highway right-of-way. The prime contractor shall be responsible for compliance and implementation of the PPP for their entire contract. This responsibility shall be further shared with subcontractors whose work is a source of potential pollution as defined in this PPP.

I. ROLES AND RESPONSIBILITES
- A. Designer:
  1. Prepares Base PPP included in the project plan.
  2. Prepares Notice of Intent (NOI) submitted to Iowa DNR.
  3. Signature authority on the Base PPP and NOI.
- B. Contractor/Subcontractor:
  1. Affected contractors/subcontractors are co-permittees with the IDOT and will sign a certification statement adhering to the requirements of the NPDES permit and this PPP plan. Affected contractors/subcontractors are anyone responsible for sediment or erosion controls or involved in land disturbing activities. All co-permittees are legally required under the Clean Water Act and the Iowa Administrative Code to ensure compliance with the terms and conditions of this PPP.
  2. Submit an Erosion Control Implementation Plan (ECIP) according to Specifications Section 2602 and any additional plan notes.
  3. Install and maintain appropriate controls.
  4. Supervise and implement good housekeeping practices.
  5. Conduct joint required inspections of the site with inspection staff.
  6. Comply with training and certification requirements of Specifications Section 2602.
  7. Signature authority on Co-Permittee Certification Statements and storm water inspection reports.
- C. RCE/Inspector:
  1. Update PPP whenever there is a change in design, construction, operation or maintenance, which has a significant effect on the discharge of pollutants from the project.
  2. Maintain an up-to-date record that identifies contractors and subcontractors as co-permittees.
  3. Make these plans available to the DNR upon their request.
  4. Conduct joint required inspections of the site with the contractor/subcontractor.
  5. Complete an inspection report after each inspection.
  6. Signature authority on storm water inspection reports and Notice of Discontinuation (NOD).

II. PROJECT SITE DESCRIPTION
- A. This Pollution Prevention Plan (PPP) is for the construction of various Pipe Culverts and Box Culverts.
- B. This PPP covers approximately 6.4 acres with an estimated 5.4 acres being disturbed. The portion of the PPP covered by this contract has 5.4 acres disturbed.
- C. The PPP is located in an area of 1 soil association (Downs-Fayette-Nordness). The estimated weighted average runoff coefficient number for this PPP after completion will be 0.46.
- D. Storm Water Site Map - Multiple sources of information comprise the base storm water site map including:
  1. Drainage patterns – Plan and Profile sheets and Situation plans.
  2. Proposed Slopes – Cross Sections.
  3. Areas of Soil Disturbance – construction limits shown on Plan and Profile sheets.
  4. Location of Structural Controls – Tabulations on C sheets.
  5. Locations of Non-structural Controls – Tabulations on C sheets.
  6. Locations of Stabilization Practices – generally within construction limits shown on Plan and Profile sheets.
  7. Surface Waters (including wetlands) – Project Location Map and Plan and Profile sheets.
  8. Locations where storm water is discharged – Plan and Profile sheets.
- E. The base site map is amended by contract modifications and progress payments (fieldbook entries) of completed erosion control work. Also, due to project phasing, erosion and sediment controls shown on project plans may not be installed until needed, based on site conditions. For example, silt fence ditch checks will typically not be installed until the ditch has been installed. Installed locations may also be modified from tabulation locations by field staff. Installed locations will be documented by fieldbook entries.
- F. Runoff from this work will flow into Deep Creek and Mill Creek.

III. CONTROLS
- A. The contractor's ECIP specified in Article 2602.03 for accomplishment of storm water controls should clearly describe the intended sequence of major activities and for each activity define the control measure and the timing during the construction process that the measure will be implemented.
- B. Preserve vegetation in areas not needed for construction.
- C. Sections 2601 and 2602 of the Standard Specifications define requirements to implement erosion and sediment control measures. Actual quantities used and installed locations may vary from the Base PPP and amendment of the plan will be documented via fieldbook entries or by contract modification. Additional erosion and sediment control items may be required as determined by the inspector and/or contractor during storm water monitoring inspections. If the work involved is not applicable to any contract items, the work will be paid for according to Article 1109.03 paragraph B.
  1. EROSION AND SEDIMENT CONTROLS
     a. Stabilization Practices
        1) Site plans will ensure that existing vegetation or natural buffers are preserved where attainable and disturbed portions of the site will be stabilized.
        2) Initialize stabilization of disturbed areas immediately after clearing, grading, excavating, or other earth disturbing activities have:
           a) Permanently ceased on any portion of the site, or
           b) Temporarily ceased on any portion of the site and will not resume for a period exceeding 14 calendar days.
        3) Staged permanent and/or temporary stabilizing seeding and mulching shall be completed as the disturbed areas are completed. Incomplete areas shall be stabilized according to paragraph III, C, 1, a, 2, b above.
        4) Permanent and Temporary Stabilization practices to be used for this project are located in the Estimated Project Quantities (100-0A, 100-1A, or 100-1C) and Estimate Reference Information (100-4A) located on the C sheets of the plan. Typical drawings detailing construction of the practices to be used on this project are referenced in the Standard Road Plans Tabulation.
        5) Preservation of existing vegetation within right-of-way or easements will act as vegetative buffer strips.
        6) Preservation of topsoil: Bid items to be used for this project are located in the Estimated Project Quantities (100-0A, 100-1A, or 100-1C) and Estimate Reference Information (100-4A) located on the C sheets of the plan. Additional information may be found in Tabulations in the C or T sheets of the plans or is referenced in Standard Specifications Section 2105.
     b. Structural Practices
        1) Structural practices will be implemented to divert flows from exposed soils and detain or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Additionally, structural practices may include: silt basins that provide 3600 cubic feet of storage per acre drained or equivalent sediment controls, outlet structures that withdraw water from surface when discharging basins, and controls to direct storm water to vegetated areas.
        2) Structural practices to be used for this project are located in the Estimated Project Quantities (100-0A, 100-1A, or 100-1C) and Estimate Reference Information (100-4A) located on the C sheets of the plan, as well as all other item specific Tabulations. Typical drawings detailing construction of the devices to be used on this project can be found on the B sheets of the plans or are referenced in the Standard Road Plans Tabulation.
     c. Storm Water Management
        1) Measures shall be installed during the construction process to control pollutants in storm water discharges that will occur after construction operations have been completed. This may include velocity dissipation devices at discharge locations and along length of outfall channel as necessary to provide a non-erosion velocity flow from structure to water course. If included with this project, these items are located in the Estimated Project Quantities (100-0A, 100-1A, or 100-1C) and Estimate Reference Information (100-4A) located on the C sheets of the plan, as well as all other item specific Tabulations. Typical drawings detailing construction of the practices to be used on this project are referenced in the Standard Road Plans Tabulation. The installation of these devices may be subject to Section 404 of the Clean Water Act.
  2. OTHER CONTROLS
     a. Contractor disposal of unused construction materials and construction material wastes shall comply with applicable state and local waste disposal, sanitary sewer, or septic system regulations. In the event of a conflict with other governmental laws, rules and regulations, the more restrictive laws, rules or regulations shall apply.
        1) Vehicle Entrances and Exits - Construct and maintain entrances and exits to prevent tracking of sediments onto roadways.
        2) Material Delivery, Storage and Use - Implement practices to prevent discharge of construction materials during delivery, storage, and use.
        3) Stockpile Management - Install controls to reduce or eliminate pollution of storm water from stockpiles of soil and paving.
        4) Waste Disposal - Do not discharge any materials, including building materials, into waters of the state, except as authorized by a Section 404 permit.
        5) Spill Prevention and Control - Implement procedures to contain and clean-up spills and prevent material discharges to the storm drain system and waters of the state.
        6) Concrete Residuals and Washout Wastes - Designate temporary concrete washout facilities for rinsing out concrete trucks. Provide directions to truck drivers where designated washout facilities are located. Designated washout areas should be located at least 50 feet away from storm drains, streams or other water bodies. Care should be taken to ensure these facilities do not overflow during storm events.
        7) Concrete Grooving/Grinding Slurry – Do not discharge slurry to a waterbody or storm drain. Slurry may be applied on foreslopes or removed from the project.
        8) Vehicle and Equipment Storage and Maintenance Areas - Perform on site fueling and maintenance in accordance with all environment laws such as proper storage of onside fuels and proper disposal of used engine oil or other fluids on site. Employ washing practices that prevent contamination of surface and ground water from wash water.
        9) Litter Management - Ensure employees properly dispose of litter.
        10) Dewatering – Properly treat water to remove suspended sediment before it re-enters a waterbody or discharges off-site. Measures are also to be taken to prevent scour erosion at dewatering discharge point.
  3. APPROVED STATE OR LOCAL PLANS
     During the course of this construction, it is possible that situations will arise where unknown materials will be encountered. When such situations are encountered, they will be handled according to all federal, state, and local regulations in effect at the time.

IV. MAINTENANCE PROCEDURES
The contractor is required to maintain all temporary erosion and sediment control measures in proper working order, including cleaning, repairing, or replacing them throughout the contract period. This shall begin when the features have lost 50% of their capacity.

V. INSPECTION REQUIREMENTS
- A. Inspections shall be made jointly by the contractor and the contracting authority at least once every seven calendar days. Storm water monitoring inspections will include:
  1. Date of the inspection.
  2. Summary of the scope of the inspection.
  3. Name and qualifications of the personnel making the inspection.
  5. Review erosion and sediment control measures within disturbed areas for the effectiveness in preventing impacts to receiving waters.
  6. Major observations related to the implementation of the PPP.
  7. Identify corrective actions required to maintain or modify erosion and sediment control measures.
- B. Include storm water monitoring inspection reports in the Amended PPP. Incorporate any additional erosion and sediment control measures determined as a result of the inspection. Immediately begin corrective actions on all deficiencies found within 3 calendar days of the inspection.

VI. NON-STORM WATER DISCHARGES
This includes subsurface drains (i.e. longitudinal and standard subdrains) and slope drains. The velocity of the discharge from these features may be controlled by the use of patio blocks, Class A stone, erosion stone or other appropriate materials. This also includes uncontaminated groundwater from dewatering operations, which will be controlled as discussed in Section III of the PPP.

VII. POTENTIAL SOURCES OF OFF RIGHT-OF-WAY (ROW) POLLUTION
Silts, sediment, and other forms of pollution may be transported onto highway right-of-way (ROW) as a result of a storm event. Potential sources of pollution located outside highway ROW are beyond the control of this PPP. Pollution within highway ROW will be conveyed and controlled per this PPP.

VIII. DEFINITIONS
- A. Base PPP - Initial Pollution Prevention Plan.
- B. Amended PPP - May include Plan Revisions or Contract Modifications for new items, storm water monitoring inspection reports, and

110-12A
10-17-17

POLLUTION PREVENTION PLAN

110-12A
10-17-17

POLLUTION PREVENTION PLAN

fieldbook entries made by the inspector.

C. IDR - Inspector's Daily Report – this contains the inspector's daily diary and bid item postings.

D. Controls - Methods, practices, or measures to minimize or prevent erosion, control sedimentation, control storm water, or minimize contaminants from other types of waste or materials. Also called Best Management Practices (BMPs).

E. Signature Authority - Representative from Designer, Contractor/Subcontractor, or RCE/Inspector authorized to sign various storm water documents.

CERTIFICATION STATEMENT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature

Brandyn Chezrck

Printed or Typed Name

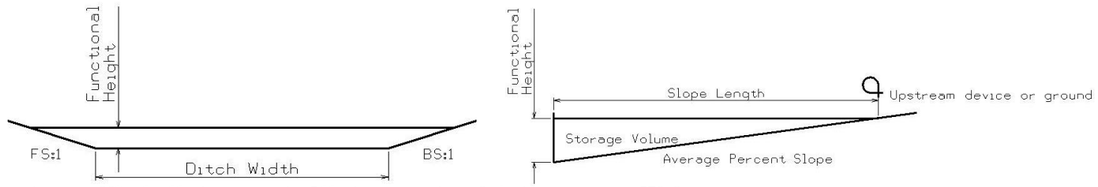
Signature

Printed or Typed Name

100-32
10-18-16

ROCK CHECK DAM

Possible Detail: 570-2



* The functional height used in the volume equation is 90% of effective height. Effective height is 2 feet as shown in 570-2.

* Volume equation: $[0.5*Spacing*(0.5*H^2*FS+DW*H+0.5*H^2*BS)]$

Basin No.	Location			Bid Items			Stormwater Storage Volume Summary					Remarks
	Station	Side	Offset	Installation	Maintenance	Removal	Foreslope	Backslope	Ditch Width	Avg. % Slope	Volume*	
			FT	LF	Each	Each	FS:1	BS:1	FT		CF	
1	808+17.72	Lt	42.1	16.5	3	1	3.0	2.0	4.5	9.2%	162.0	
1	808+37.72	Lt	54.1	19.0	3	1	3.5	2.0	5.0	9.2%	179.1	
1	808+57.72	Lt	56.8	19.0	3	1	3.5	2.0	5.0	9.2%	179.1	
2	837+49.30	Lt	35.1	4.0	3	1	4.5	2.0	3.0	13.5%	159.3	
2	837+66.96	Lt	45.8	4.0	3	1	3.5	2.0	5.0	13.5%	179.1	
2	837+85.91	Lt	55.0	4.0	3	1	3.0	2.0	5.0	13.5%	171.0	
				66.5	18	6		TOTAL				

TABULATION OF SILT FENCES

Refer to EC-201

Location			Length	Remarks
Begin Station	End Station	Side	LF	
79+83.25	80+14.33	Rt	40.9	
80+13.44	81+17.19	Rt	124.3	
80+23.60	81+17.83	Rt	95.8	
79+79.68	80+03.23	Lt	98.7	
79+88.82	80+17.38	Lt	85.3	
80+12.66	80+88.98	Lt	78.3	
95+45.85	96+45.91	Rt	103.2	
96+52.18	97+41.48	Rt	91.9	
95+50.00	97+40.92	Rt	202.7	
96+21.22		Rt	60.0	(1)
95+32.12	96+15.13	Lt	86.0	
96+21.40	97+14.16	Lt	96.6	
96+45.41		Lt	60.0	(1)
107+78.27	108+73.75	Rt	98.2	
108+78.25	109+47.67	Rt	71.2	
107+85.31	109+66.39	Rt	197.3	
108+99.75		Rt	60.0	(1)
107+85.30	108+73.75	Lt	91.8	
108+78.25	109+66.39	Lt	91.4	
108+99.75		Lt	60.0	(1)
382+35.25	383+05.99	Rt	85.7	
383+10.20	383+88.45	Rt	95.4	
382+07.08	383+28.02	Lt	130.4	
383+32.26	384+84.71	Lt	162.3	
382+06.02	384+85.47	Lt	307.2	
538+68.15	539+69.06	Rt	115.2	
539+73.40	540+41.29	Rt	83.3	
539+91.99		Rt	60.0	(1)
538+63.52	539+50.69	Lt	89.4	
539+55.19	540+11.53	Lt	62.0	
538+63.52	540+09.71	Lt	162.2	
539+77.94		Lt	60.0	(1)
553+06.67	553+89.78	Rt	90.1	
553+94.17	554+74.07	Rt	85.8	
554+14.08		Rt	60.0	(1)
552+74.04	553+81.21	Lt	111.5	
553+85.61	554+93.37	Lt	112.1	
552+75.00	553+67.79	Lt	101.4	
553+83.41	554+93.37	Lt	118.2	
554+06.52		Lt	60.0	(1)
569+97.46	571+59.40	Rt	167.1	
571+65.00	573+11.04	Rt	151.7	
571+06.77	571+59.40	Lt	54.0	
571+65.00	572+16.55	Lt	52.8	
571+06.77	572+16.55	Lt	115.8	
580+62.16	581+02.67	Rt	42.7	
581+08.27	581+48.78	Rt	42.7	
580+62.16	581+48.78	Rt	90.0	
650+41.53	651+40.80	Rt	104.8	
651+45.20	652+41.34	Rt	102.8	
650+49.27	651+41.73	Lt	93.5	
651+44.28	652+38.48	Lt	95.2	
650+50.00	652+38.48	Lt	199.4	
704+61.29	704+67.21	Rt	53.2	
704+74.62	704+85.72	Rt	38.2	
704+74.62	705+72.87	Rt	102.5	
742+58.34	743+21.32	Rt	63.2	
742+58.34	743+19.20	Rt	62.7	
743+29.07	743+95.10	Rt	66.3	
742+22.28	743+12.44	Lt	94.6	
742+22.28	742+91.03	Lt	79.2	
743+09.93	744+26.49	Lt	128.1	

100-17
04-20-10

TABULATION OF SILT FENCES

Refer to EC-201

Location			Length	Remarks
Begin Station	End Station	Side	LF	
743+20.40	744+26.49	Lt	110.4	
765+23.87	766+05.59	Rt	89.7	
766+12.40	766+92.45	Rt	88.1	
766+33.70		Rt	60.0	(1)
765+32.86	766+05.70	Lt	76.9	
766+12.29	766+93.99	Lt	86.2	
765+32.87	766+94.00	Lt	198.6	
766+33.01		Lt	60.0	(1)
787+35.82	788+41.65	Rt	109.1	
788+46.49	789+48.32	Rt	104.6	
788+16.42		Rt	60.0	(1)
787+20.48	787+97.50	Lt	79.4	
787+20.48	787+84.98	Lt	89.5	
787+89.58	788+02.35	Lt	49.1	
788+02.35	788+46.94	Lt	47.6	
787+75.92		Lt	60.0	(1)
800+17.33	801+01.92	Rt	87.2	
801+07.53	801+86.58	Rt	81.7	
800+21.29	800+56.46	Lt	38.8	
800+21.29	800+05.13	Lt	89.4	
800+13.42	801+43.03	Lt	158.2	
800+62.07	801+43.04	Lt	87.8	
807+67.93	808+62.39	Rt	98.5	
808+49.72	808+61.17	Rt	83.1	
808+68.67	808+74.97	Rt	79.7	
808+71.60	809+65.64	Rt	99.0	
807+97.72	808+62.10	Lt	64.8	
807+97.72	808+54.68	Lt	101.6	
808+71.89	809+35.23	Lt	64.0	
808+74.53	808+75.17	Lt	45.1	
816+93.34	817+77.03	Rt	86.3	
817+84.01	818+68.63	Rt	87.2	
817+18.91	817+97.98	Lt	81.6	
817+18.92	818+06.62	Lt	116.1	
818+04.96	818+42.47	Lt	39.1	
818+12.44	818+83.60	Lt	101.0	
829+79.97	830+58.02	Rt	88.7	
830+62.48	831+34.26	Rt	83.5	
830+34.83		Rt	60.0	(1)
829+62.37	830+45.74	Lt	85.4	
829+62.37	831+34.26	Lt	180.3	
830+50.20	831+19.26	Lt	73.2	
830+24.26		Lt	60.0	(1)
837+37.42	838+26.88	Rt	89.5	
838+43.84	839+46.69	Rt	102.9	
837+30.60	838+06.38	Lt	75.8	
837+49.48	837+64.85	Lt	15.4	
838+20.96	838+94.90	Lt	73.9	
837+52.81	837+85.77	Lt	33.0	
842+92.84	843+77.74	Rt	108.4	
843+17.25	844+04.88	Rt	90.3	
843+05.74	844+25.00	Rt	145.5	
844+18.30	845+10.56	Rt	94.9	
854+79.48	855+54.46	Rt	88.7	
855+19.37	855+56.83	Rt	61.4	
854+77.02		Rt	60.0	(1)
854+17.59	854+97.80	Lt	113.7	
855+02.20	855+78.36	Lt	112.7	
854+83.65			60.0	(1)
878+05.54	878+64.97	Rt	61.3	
878+69.54	879+54.28	Rt	86.6	
908+42.08	909+14.10	Rt	93.1	
909+16.87	909+87.26	Rt	87.5	

100-17
04-20-10

TABULATION OF SILT FENCES

Refer to EC-201

Location			Length	Remarks
Begin Station	End Station	Side	LF	
			11391.3	TOTAL
			2847.8	25% FOR REPLACEMENT
			14239.1	TOTAL BID QUANTITY

(1) Silt Fence to enclose excavated material for trenchless construction. See Detail 570-09 on Sheet U.2.

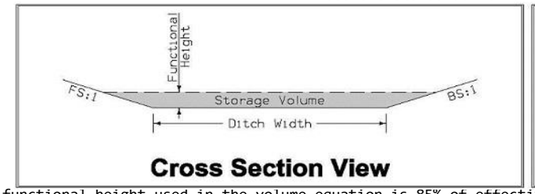
PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE

Possible Standards: EC-204

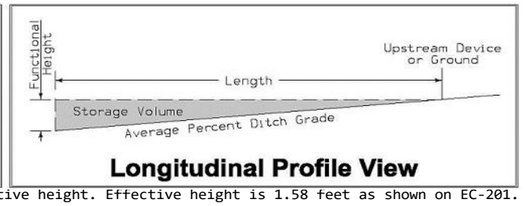
Location			Length of Installation			Remarks
Begin Station	End Station	Side	9 inch Dia	12 inch Dia	20 inch Dia	
			LF	LF	LF	
95+36.96		Lt			10.0	Use for Ditch Check
95+50.00		Lt			10.0	Use for Ditch Check
95+75.00		Lt			10.0	Use for Ditch Check
96+00.00		Lt			10.0	Use for Ditch Check
96+37.94		Lt			10.0	Use for Ditch Check
96+63.02		Lt			10.0	Use for Ditch Check
96+87.45		Lt			10.0	Use for Ditch Check
108+81.25		Rt			10.0	Use for Ditch Check
109+00.10		Rt			10.0	Use for Ditch Check
808+03.49		Lt			10.0	Use for Ditch Check
808+15.63		Lt			10.0	Use for Ditch Check
808+28.60		Lt			10.0	Use for Ditch Check
808+43.04		Lt			10.0	Use for Ditch Check
844+21.97		Rt			10.0	Use for Ditch Checks
844+34.97		Rt			10.0	Use for Ditch Checks
844+47.16		Rt			10.0	Use for Ditch Checks
844+58.93		Rt			10.0	Use for Ditch Checks
844+70.47		Rt			10.0	Use for Ditch Checks
844+81.92		Rt			10.0	Use for Ditch Checks
844+93.38		Rt			10.0	Use for Ditch Checks
845+04.83		Rt			10.0	Use for Ditch Checks
					210.0	TOTAL
					69.3	33% FOR REPLACEMENT
					279.3	TOTAL BID QUANTITY

SILT FENCES FOR DITCH CHECKS

Possible Standard: EC-201 Possible Detail: 570-4



Cross Section View



Longitudinal Profile View

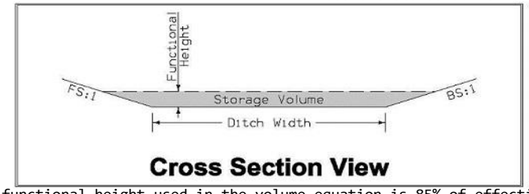
* The functional height used in the volume equation is 85% of effective height. Effective height is 1.58 feet as shown on EC-201.
* Volume equation: [0.5*Spacing*(0.5*H^2*FS+DW*H+0.5*H^2*BS)]

Basin No.	Type	Location		Bid Items			Stormwater Storage Volume Summary					Remarks
		Station	Side	Installation	Maintenance	Removal	Foreslope	Backslope	Ditch Width	Avg.% Slope Ditch Grade	Volume*	
				LF	LF	LF	FS:1	BS:1	FT		CF	
1	1	80+10.74	Rt	19.0	1.9	19.0	4.9	2.0	5.2	1.5%	658.6	
1	1	79+95.82	Lt	13.0	1.3	13.0	2.0	2.0	5.0	1.0%	799.4	
1	1	80+50.00	Rt	18.0	1.8	18.0	4.0	2.0	5.0	3.9%	243.1	
1	1	80+75.00	Rt	14.0	1.4	14.0	3.4	2.0	5.0	3.9%	232.8	
2	1	95+75.00	Rt	14.0	1.4	14.0	3.6	2.0	2.0	3.9%	154.3	
2	1	96+25.00	Rt	18.0	1.8	18.0	4.1	2.1	5.0	3.9%	246.1	
2	1	96+75.00	Rt	17.0	1.7	17.0	3.3	2.0	5.0	3.6%	229.9	
2	1	97+25.00	Rt	13.0	1.3	13.0	3.2	2.0	1.7	3.6%	139.5	
3	1	108+00.00	Rt	18.0	1.8	18.0	3.4	2.0	2.4	3.5%	183.3	
3	1	108+50.00	Rt	22.0	2.2	22.0	3.5	2.0	5.2	3.5%	267.5	
4	1	382+25.00	Lt	14.0	1.4	14.0	4.4	2.0	0.8	4.2%	120.3	
4	1	382+50.00	Lt	15.0	1.5	15.0	3.9	2.0	2.0	4.2%	139.6	
4	1	382+75.00	Lt	15.0	1.5	15.0	3.8	2.0	3.2	4.2%	165.6	
4	1	383+00.00	Lt	16.0	1.6	16.0	3.2	2.0	4.3	4.2%	184.0	
4	1	383+50.00	Lt	17.0	1.7	17.0	3.6	2.0	5.0	3.4%	264.7	
4	1	383+75.00	Lt	16.0	1.6	16.0	3.4	2.0	3.9	3.4%	228.6	
4	1	384+00.00	Lt	15.0	1.5	15.0	3.2	2.0	3.0	3.4%	196.9	
4	1	384+25.00	Lt	14.0	1.4	14.0	3.4	2.0	2.1	3.4%	173.6	
4	1	384+50.00	Lt	14.0	1.4	14.0	3.8	2.0	1.2	3.4%	154.7	
5	1	539+07.07	Lt	17.0	1.7	17.0	4.1	2.0	3.7	3.4%	233.2	
5	1	539+38.67	Lt	17.0	1.7	17.0	3.5	2.0	5.0	3.4%	262.7	
5	1	539+66.34	Lt	17.0	1.7	17.0	3.4	2.0	5.0	3.6%	230.8	
5	1	539+83.86	Lt	17.0	1.7	17.0	4.4	2.0	3.4	3.6%	206.9	
6	1	553+00.00	Lt	16.0	1.6	16.0	4.7	2.0	1.4	3.1%	198.5	
6	1	553+50.00	Lt	18.0	1.8	18.0	4.4	2.0	4.2	3.1%	284.1	
6	1	554+00.00	Lt	17.0	1.7	17.0	3.4	2.0	5.0	2.1%	347.5	
6	1	554+50.00	Lt	16.0	1.6	16.0	4.1	2.0	2.3	2.1%	259.5	
7	1	571+25.00	Lt	17.0	1.7	17.0	3.3	2.0	5.0	4.1%	229.9	
7	1	571+50.00	Lt	20.0	2.0	20.0	4.9	2.0	5.0	4.1%	258.8	
7	1	571+75.00	Lt	20.0	2.0	20.0	5.0	5.0	2.0	1.6%	438.9	
8	1	580+87.50	Rt	14.0	1.4	14.0	3.0	2.0	3.1	0.5%	1367.9	
8	1	581+15.24	Rt	14.0	1.4	14.0	3.0	2.0	3.1	0.5%	1367.9	
9	1	650+75.00	Lt	18.0	1.8	18.0	5.3	2.0	2.5	4.5%	175.1	
9	1	651+00.00	Lt	19.0	1.9	19.0	4.5	2.0	4.7	4.5%	212.5	
9	1	651+25.00	LT	18.0	1.8	18.0	3.0	2.0	5.0	4.5%	196.4	
9	1	651+50.00	Lt	15.0	1.5	15.0	3.0	2.0	5.0	2.7%	280.6	
9	1	652+00.00	Lt	14.0	1.4	14.0	3.0	2.0	4.0	2.7%	246.3	
10	1	743+00.00	Rt	19.0	1.9	19.0	4.3	2.0	5.0	3.4%	278.9	
10	1	742+75.00	Lt	19.0	1.9	19.0	4.1	2.0	5.0	3.4%	274.9	
10	1	743+50.00	Lt	21.0	2.1	21.0	5.1	2.0	5.0	3.6%	262.4	
10	1	743+75.00	Lt	18.0	1.8	18.0	4.8	2.0	3.8	3.6%	223.4	
11	1	765+50.00	Lt	15.0	1.5	15.0	3.0	2.0	5.0	4.0%	224.5	
11	1	765+75.00	Lt	14.0	1.4	14.0	3.0	2.0	3.7	4.0%	190.1	
11	1	766+25.00	Lt	15.0	1.5	15.0	3.0	2.0	5.0	3.0%	280.6	
11	1	766+50.00	Lt	15.0	1.5	15.0	3.0	2.0	5.0	3.0%	280.6	
12	1	787+25.00	Lt	13.0	1.3	13.0	4.1	2.0	3.4	4.4%	175.9	
12	1	787+50.00	Lt	14.0	1.4	14.0	2.8	2.0	5.5	4.4%	205.1	
12	1	787+75.00	Lt	14.0	1.4	14.0	2.1	2.0	5.3	4.4%	189.9	
12	1	788+20.00	Lt	16.0	1.6	16.0	5.9	2.0	0.0	3.6%	142.6	
13	1	800+27.91	Lt	11.0	1.1	11.0	2.9	2.0	1.0	4.9%	101.6	
13	1	800+41.14	Lt	14.0	1.4	14.0	3.4	2.0	3.1	4.9%	156.9	
13	1	800+75.00	LT	20.0	2.0	20.0	4.8	2.0	5.0	1.2%	642.4	
14	1	817+25.00	Lt	12.0	1.2	12.0	3.0	2.0	0.9	2.4%	172.9	
14	1	817+75.00	Lt	19.0	1.9	19.0	4.4	2.0	5.0	2.4%	374.6	

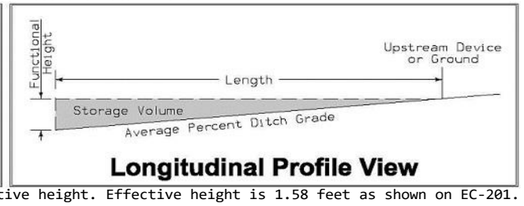
100-18
10-17-17

SILT FENCES FOR DITCH CHECKS

Possible Standard: EC-201 Possible Detail: 570-4



Cross Section View



Longitudinal Profile View

* The functional height used in the volume equation is 85% of effective height. Effective height is 1.58 feet as shown on EC-201.
* Volume equation: [0.5*Spacing*(0.5*H^2*FS+DW*H+0.5*H^2*BS)]

Basin No.	Type	Location		Bid Items			Stormwater Storage Volume Summary					Remarks
		Station	Side	Installation	Maintenance	Removal	Foreslope	Backslope	Ditch Width	Avg.% Slope Ditch Grade	Volume*	
				LF	LF	LF	FS:1	BS:1	FT		CF	
14	1	818+25.00	Lt	24.0	2.4	24.0	6.8	2.0	5.0	4.9%	256.4	
14	1	818+50.00	Lt	29.0	2.9	29.0	9.4	2.0	4.6	4.9%	287.7	
15	1	830+25.00	Lt	19.0	1.9	19.0	4.3	2.0	5.0	3.1%	309.9	
15	1	830+75.00	Lt	21.0	2.1	21.0	5.2	2.0	5.2	4.4%	235.6	
15	1	831+00.00	Lt	19.0	1.9	19.0	4.7	2.0	4.5	4.4%	211.7	
16	1	838+25.00	Lt	16.6	1.7	16.6	3.8	2.0	5.0	3.9%	238.9	
16	1	838+50.00	Lt	17.2	1.7	17.2	4.1	2.0	5.0	3.9%	244.3	
16	1	838+75.00	Lt	18.4	1.8	18.4	5.8	2.0	2.8	3.9%	215.9	
17	1	843+25.00	RT	13.6	1.4	13.6	3.2	2.0	3.2	5.4%	134.8	
17	1	843+50.00	RT	17.0	1.7	17.0	4.3	2.0	4.4	5.4%	173.9	
17	1	843+75.00	RT	15.2	1.5	15.2	3.1	2.0	5.2	5.4%	173.7	
18	1	854+50.00	RT	14.6	1.5	14.6	3.0	2.0	4.6	4.6%	187.0	
18	1	854+75.00	RT	16.3	1.6	16.3	3.4	2.0	5.5	4.6%	214.5	
18	1	855+25.00	RT	14.5	1.5	14.5	2.7	2.0	5.1	1.3%	554.4	
18	1	855+50.00	RT	13.4	1.3	13.4	2.4	2.0	4.6	1.3%	507.3	
19	1	908+50.00	Rt	12.2	1.2	12.2	3.1	2.0	2.0	3.4%	163.9	
19	1	908+75.00	Rt	17.2	1.7	17.2	4.1	2.0	5.0	3.4%	274.9	
19	1	909+50.00	Rt	11.2	1.1	11.2	3.2	2.0	0.8	1.8%	216.1	
				1184.4	118.4	1184.4		TOTAL				
				592.2	59.2	592.2		50% FPOR REPLACEMENT				
				1776.6	177.7	1776.6		BID ITEM QUANTITY				

ROCK EROSION CONTROL

Refer to EC-301 and Detail 570-8

Location				(L)	(W)	Rock Erosion Control (REC)					Material Bid Quantities			Remarks
Road Identification	Begin Station	End Station	Side			Type 1 Rock Ditch Check	Type 2 Rock Ditch	Type 3 Rock Flume	Type 4 Rock Splash Basin	Type 5 Rock Slope Protection	Eng. Fabric	Class E Revetment	Erosion Stone	
			Lt./Rt.	FT	FT						SY	TON	TON	
IA 136	79+95.68	80+15.75	Lt.	15.9	24.5				X					
IA 136	80+11.54	80+30.96	Rt.	15.3	24.8				X					
IA 136	96+08.89	96+24.22	Lt.	10	12.7				X		24.2	15.0		
IA 136	96+43.09	96+57.26	Rt.	9.3	13.5				X		23.7	14.4		
IA 136	108+70.75	108+83.05	Lt.	10.5	10.1				X		21.1	12.7		
IA 136	108+70.75	108+81.25	Rt.	10.5	7.6				X		17.0	9.5		
IA 136	382+97.68	383+13.38	Rt.	10.5	10				X		20.8	12.5		
IA 136	383+25.25	383+35.08	Lt.	10.5	7.9				X		17.4	9.8		
IA 136	539+45.89	539+58.18	Lt.	10.5	10				X		20.8	12.5		
IA 136	539+66.17	539+77.94	Rt.	10.5	10				X		20.8	12.5		
IA 136	553+78.32	553+88.53	Lt.	10.5	8.3				X		18.1	10.4		
IA 136	553+86.63	554+00.51	Rt.	10.5	10				X		20.8	12.5		
IA 136	571+56.40	571+68.00	Rt.	11.6	10				X		22.5	13.7		
IA 136	571+56.40	571+68.00	Lt.	11.6	10				X		22.5	13.7		
IA 136	580+99.67	581+11.27	Rt.	11.6	5.7				X		15.0	7.8		
IA 136	651+37.63	651+48.39	Lt.	10.5	7.6				X		17.0	9.5		
IA 136	651+37.88	651+51.54	Rt.	10.5	10.1				X		20.8	12.5		
IA 136	766+02.51	766+15.46	Rt.	12.7	10				X		24.2	15.0		
IA 136	766+02.74	766+15.25	Lt.	12.7	12.4				X		28.8	18.7		
IA 136	787+86.90	788+04.94	Lt.	11.6	16				X		32.9	22.0		
IA 136	788+39.05	788+54.09	Rt.	11.6	10				X		22.5	13.7		
IA 136	800+47.04	800+64.60	Lt.	12.7	12.7				X		26.4	19.2		
IA 136	800+99.39	801+15.47	Rt.	12.7	10				X		24.2	15.0		
IA 136	808+58.83	808+74.98	Lt.	15.1	25.1				X					
IA 136	808+59.48	808+74.35	Rt.	15.5	24.5				X					
IA 136	817+71.39	817+86.90	Rt.	13.3	10				X		25.1	15.7		
IA 136	817+95.09	818+11.46	Lt.	13.3	12.3				X		30.1	20.0		
IA 136	830+41.61	830+53.17	Lt.	10.5	7.5				X		16.9	9.4		
IA 136	830+55.05	830+66.84	Rt.	10.5	10				X		20.8	12.5		
IA 136	837+90.50	838+20.96	Lt.	17.9	31.7				X					
IA 136	838+26.88	838+52.75	Rt.	17.9	29.6				X					
IA 136	843+87.84	844+20.73	Rt.	17.9	33.9				X					
IA 136	854+94.11	855+05.10	Lt.	10.5	10.6				X		21.8	13.2		
IA 136	854+94.63	855+05.34	Rt.	10.5	10				X		20.8	12.5		
IA 136	878+77.01	878+94.47	Rt.	14.4	10				X		26.9	17.1		
IA 136	909+11.22	909+22.82	Rt.	8.9	9.9				X		18.1	10.4		

LINE STYLE LEGEND OF EROSION CONTROL SHEETS

- Silt Fence
- Perimeter and Slope Sediment Control Device (9")
- Perimeter and Slope Sediment Control Device (12")
- Perimeter and Slope Sediment Control Device (20")
- Open-Throat Curb Intake Sediment Filter
- Concentrated Flow
- Sheet Flow

CELL LEGEND OF EROSION CONTROL SHEETS



- Temporary Sediment Control basin
- Erosion Control for Circular Intake or Manhole Well
- Erosion Control for Rectangular Intake or Manhole Well
- Grate Intake Sediment Filter Bag
- Silt Basin
- Silt Fence Tail
- Stormwater Drainage Basin Discharge Point

PLAN VIEW COLOR LEGEND OF EROSION CONTROL SHEETS

LINEWORK	Design Color No.	
Green	(2)	Existing Topographic Features and Labels
Blue	(1)	Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
Magenta	(5)	Existing Utilities
Black	(Ø)	Permanent Erosion Control Features
Blaze Orange	(222)	Temporary Erosion Control Features

SHADING	Design Color No.		Transparency
Citron	(234)	Mulching, All Types	50%
Light Brown	(238)	Special Ditch Control, Wood Excelsior Mat	Ø%

PATTERN LEGEND OF EROSION CONTROL SHEETS

- Seeding and Fertilizing
- R — Seeding and Fertilizing (Rural)
- U — Seeding and Fertilizing (Urban)
- N — Native Grass Seeding
- ST — Salt Tolerant Seeding
- WL — Wetland Grass Seeding
- WF — Wildflower Seeding
- SOD — Sodding
- Turf Reinforcement Mat Type 1
- Turf Reinforcement Mat Type 2
- Turf Reinforcement Mat Type 3
- Turf Reinforcement Mat Type 4
- Slope Protection, Wood Excelsior Mat
- Transition Mat
- Rock Features, Permanent
- Rock Features, Temporary

EROSION CONTROL

(COVERS SHEET SERIES R)

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER RR.1

12:37:09 PM 11/4/2019 tclevenger K:\7805\SA26 701BT Clinton Culverts\Design\2313601013rr01.dgn

CITY OF CLINTON
HAMPSHIRE TWP.
T-82N R-6E
Sec. 26

CITY OF CLINTON
HAMPSHIRE TWP.
T-82N R-6E
Sec. 25

5' X 4' X 57.6' RCB

STA. 79+87.50
8' X 4' X 15' INLET W/
6' X 4' X 68.9' RCB OUTLET

16TH ST NW

IA 136

IA 136

POT Sta 79+56.90

24" X 54' RCP
U.A.C.

83 82 81

12" X 24' CMP

60" X 60' CMP

CITY OF CLINTON
HAMPSHIRE TWP.
T-82N R-6E
Sec. 35

CITY OF CLINTON
HAMPSHIRE TWP.
T-82N R-6E
Sec. 36

16TH ST NW

0 FEET 20

Sta. 80+13.55 Plan View
Erosion Control

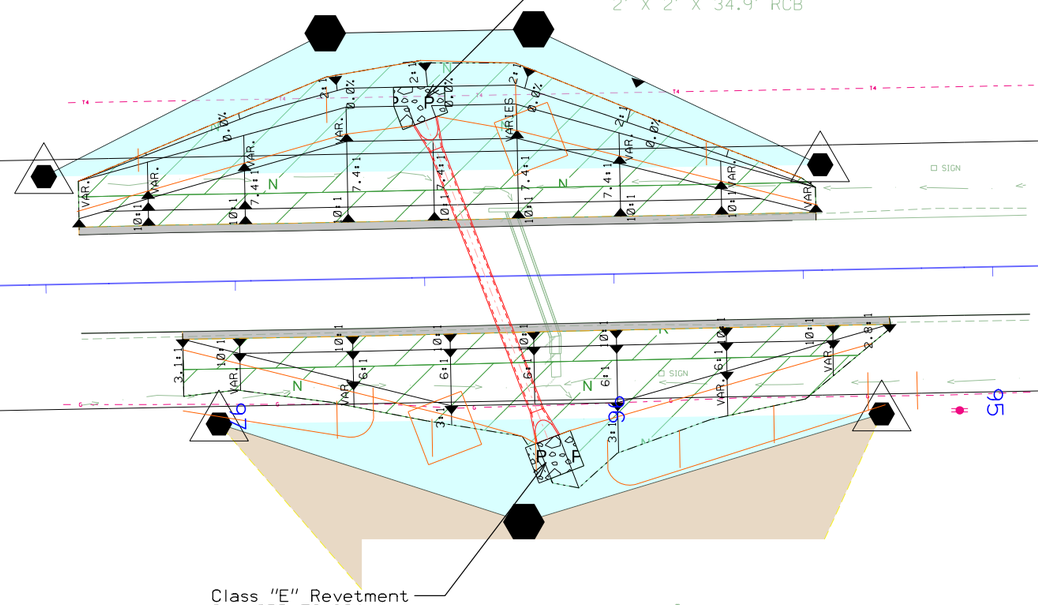
FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER RR.2

12:37:12 PM 11/4/2019 tclevenger K:\7805\SA26 701BT Clinton Culverts\Design\2313601013rr01.dgn

HAMPSHIRE TWP.
T-82N R-6E
Sec. 26

Class "E" Revetment
See SRP EC-301

STA. 96+21.22
2' X 2' X 34.9' RCB



IA 136

Class "E" Revetment
See SRP EC-301

HAMPSHIRE TWP.
T-82N R-6E
Sec. 35

N

0 20
FEET

Sta. 96+34.00 Plan View
Erosion Control

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER RR.3

12:37:14 PM 11/4/2019 tclevenger K:\7805\SA26 701BT Clinton Culverts\Design\2313601013rr01.dgn

HAMPSHIRE TWP.
T-82N R-6E
Sec. 26

Class "E" Revetment
See SRP EC-301

APPROX. SEC. LINE

IA 136

Construct 2' Granular Shoulder

111 110 109 108 107 106

STA. 108+64.20
2' X 2' X 35.0' RCB W/
24" RCP OUTLET

Class "E" Revetment
See SRP EC-301

HAMPSHIRE TWP.
T-82N R-6E
Sec. 35

0 20
FEET

Sta. 108+76.00 Plan View
Erosion Control

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER RR.4

12:37:16 PM 11/4/2019 tclevenger K:\7805\SA26 701BT Clinton Culverts\Design\2313601013rr01.dgn

Curve Data
Δ = 68° 26' 16.66" (RT)
T = 487.70
L = 856.57
R = 717.12
E = 150.12

HAMPSHIRE TWP.
T-82N R-6E
Sec. 7

Sta. 383+30.14
12' X 6' X 28.2'
RCB Cattle Pass

Sta. 383+06.39
12' X 67' VIT Tile

Class "E" Revetment
See SRP EC-301

Class "E" Revetment
See SRP EC-301

Pi Sta 384+25.10

385

384

383

382

IA 136

180TH ST

APPROX. SEC. LINE

180TH ST

APPROX. SEC.

HAMPSHIRE TWP.
T-82N R-6E
Sec. 18

0 FEET 20

Sta. 383+30.14 Plan View
Erosion Control

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER RR.5

12:37:18 PM 11/4/2019 tclevenger K:\7805\SA26 701BT Clinton Culverts\Design\2313601013rr01.dgn

PI Sta 541+68.07

IA 136

542

541

18" X 46' CMP

DEEP CREEK TWP.
T-83N R-5E
Sec. 35

Class "E" Revetment
See SRP EC-301

Sta. 539+40.75
2' X 2' X 35.5' RCB
W/ 30" X 4' RCP Inlet

+35
Res. Ent.

540

539

Class "E" Revetment
See SRP EC-301

PC Sta 538+65.57

18" X 30' CMP

+39
Res. Ent.

538

537

+47
Field Ent.

0 20
FEET

Sta. 539+60.00 Plan View
Erosion Control

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER RR.6

12:37:20 PM 11/4/2019 tclevenger K:\7805\SA26 701BT Clinton Culverts\Design\2313601013rr01.dgn

Curve Data
Δ = 23° 46′ 16.72″ (RT)
T = 303.50
L = 598.27
R = 1,442.00
E = 31.59

DEEP CREEK TWP.
T-83N R-5E
Sec. 35

Class "E" Revetment
See SRP EC-301

Sta. 553+83.41
3′ X 5′ X 31.8′
RCB Cattle Pass

Class "E" Revetment
See SRP EC-301

PC Sta 550+90.05

Sta. 553+83.41 Plan View
Erosion Control

0 20
FEET

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER RR.7

12:37:23 PM 11/4/2019 tclevenger K:\7805\SA26 701BT Clinton Culverts\Design\2313601013rr01.dgn

IA 136

575

574

573

572

571

570

Class "E" Revetment
See SRP EC-301

DEEP CREEK TWP.
T-83N R-5E
Sec. 35

Sta. 571+62.20
2' X 2' X 48.0' RCB

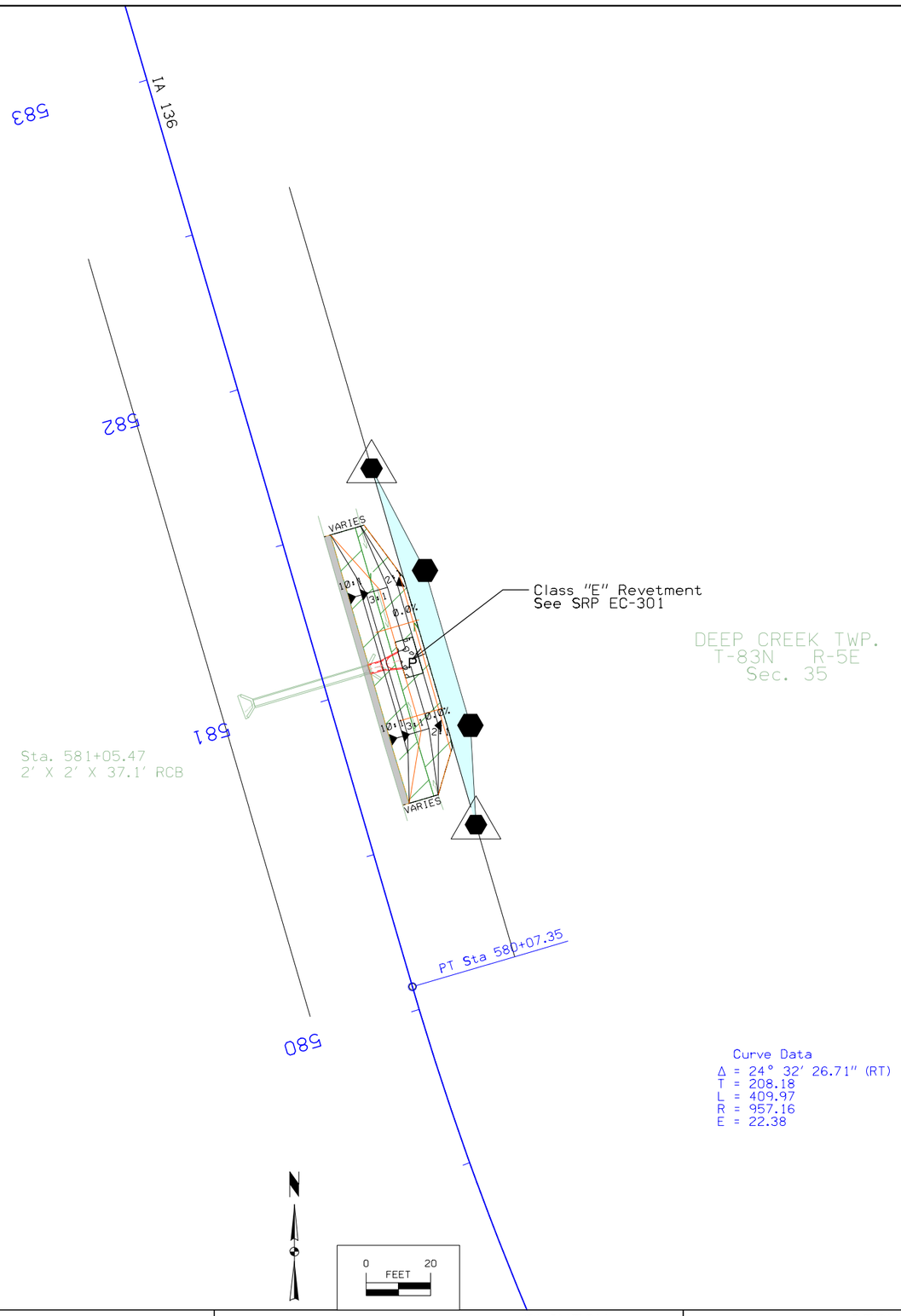
4.8:1
VAR.
10:1
3:1
2.8:1
2:1
3.4:1
4.1:1

N
0 20
FEET

Sta. 571+62.20 Plan View
Erosion Control

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER RR.8

12:37:25 PM 11/4/2019 tclevenger K:\7805\SA26 701BT Clinton Culverts\Design\2313601013rr01.dgn



Sta. 581+05.47 Plan View
Erosion Control

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER RR.9

12:37:27 PM 11/4/2019 tclevenger K:\7805\SA26 701BT Clinton Culverts\Design\2313601013rr01.dgn

IA 136

PI Sta 653+15.24

654

653

652

651

650

649

DEEP CREEK TWP.
T-83N R-5E
Sec. 27

Class "E" Revetment
See SRP EC-301

Class "E" Revetment
See SRP EC-301

Sta. 651+42.85
30" X 4' RCP Inlet
2' X 2' X 30.1' RCB
30" X 8' CMP Outlet

PC Sta 650+43.12

0 FEET 20

Sta. 651+43.00 Plan View
Erosion Control

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER RR.10

12:37:29 PM 11/4/2019 tclevenger K:\7805\SA26 701BT Clinton Culverts\Design\2313601013rr01.dgn

MAIN ST.

T-83 N R-5 E
SECTION 28
DEEP CREEK TOWNSHIP
CITY OF GOOSE LAKE

EXISTING ROW

St.S.3(C)

St.S.3(C)

W3

SIGN

IA 136

EXISTING ROW

UTILITIES LEGEND

—St.S.3(C) ST3C City of Goose Lake - Quality C
— W3 - WL3D City of Goose Lake - Quality D1

0 FEET 5

CITY OF GOOSE LAKE INTAKE REPLACEMENT Erosion Control

FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	CLINTON	COUNTY	PROJECT NUMBER	STPN-136-1(73)--2J-23	SHEET NUMBER	RR.11

12:37:31 PM 11/4/2019 tclevenger K:\7805\SA26 701BT Clinton Culverts\Design\2313601013rr01.dgn

CITY OF GOOSE LAKE
DEEP CREEK TWP.
T-83N R-5E
Sec. 28

PI Sta 707+18.10

+61 Reconstruct
Type "C" Ent.

+50 Reconstruct
Type "C" Ent.

Prop.

MATCH EXIST

VAR.

3:1

3.33:1

TP

SIGN

IA 136

Curve Data
Δ = 40° 26' 10.46" (LT)
T = 351.71
L = 673.98
R = 954.99
E = 62.71

PC Sta 708+69.38

Sta. 704+69.66
6' X 8' X 33.7' RCB

408 407 406 405 404 403 402

0 20
FEET

Sta. 704+69.70 Plan View
Erosion Control

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER RR.12

12:37:35 PM 11/4/2019 tclevenger K:\7805\SA26 701BT Clinton Culverts\Design\2313601013rr01.dgn

DEEP CREEK TWP.
T-83N R-5E
Sec. 29

740
741
742
743
744
745
746

IA 136

Curve Data
Δ = 58° 08' 17.71" (RT)
T = 531.68
L = 970.52
R = 956.45
E = 137.85

Sta. 743+25.20
6' X 4' X 27.7' RCB

PI Sta 742+99.24

APPROX. SEC. LINE

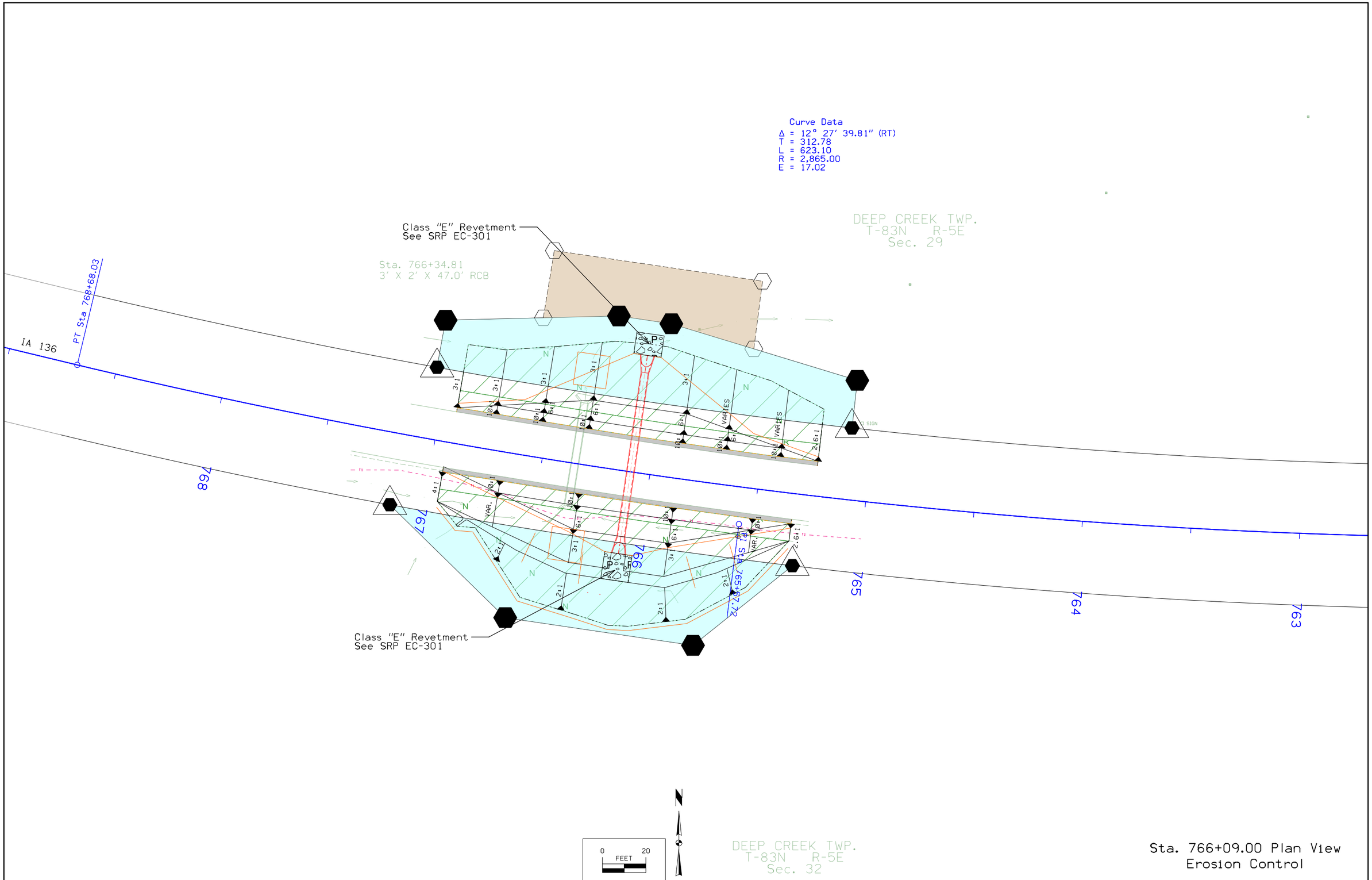
DEEP CREEK TWP.
T-83N R-5E
Sec. 32

0 20
FEET

Sta. 743+25.20 Plan View
Erosion Control

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER RR.13

12:37:37 PM 11/4/2019 tclevenger K:\7805\SA26 701BT Clinton Culverts\Design\2313601013rr01.dgn



Sta. 766+09.00 Plan View
Erosion Control

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER RR.14

12:37:40 PM 11/4/2019 tclevenger K:\7805\SA26 701BT Clinton Culverts\Design\2313601013rr01.dgn

Sta. 788+31.95
3' X 3' X 33.3' RCB

DEEP CREEK TWP.
T-83N R-5E
Sec. 30

Class "E" Revetment
See SRP EC-301

IA 136

791

790

789

788

787

786

785

525

+74 PROP. ENT.
TYP. "C"

MARIES

Class "E" Revetment
See SRP EC-301

0 20
FEET

Sta. 788+20.00 Plan View
Erosion Control

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER RR.15

12:37:42 PM 11/4/2019 tclevenger K:\7805\SA26 701BT Clinton Culverts\Design\2313601013rr01.dgn

DEEP CREEK TWP.
T-83N R-5E
Sec. 30

Class "E" Revetment
See SRP EC-301

IA 136

804

803

802

801

800

664

864

Sta. 800+97.89
36" X 10' RCP Inlet
3' X 2' X 41.3' RCB
36" X 4' RCP Outlet

Class "E" Revetment
See SRP EC-301

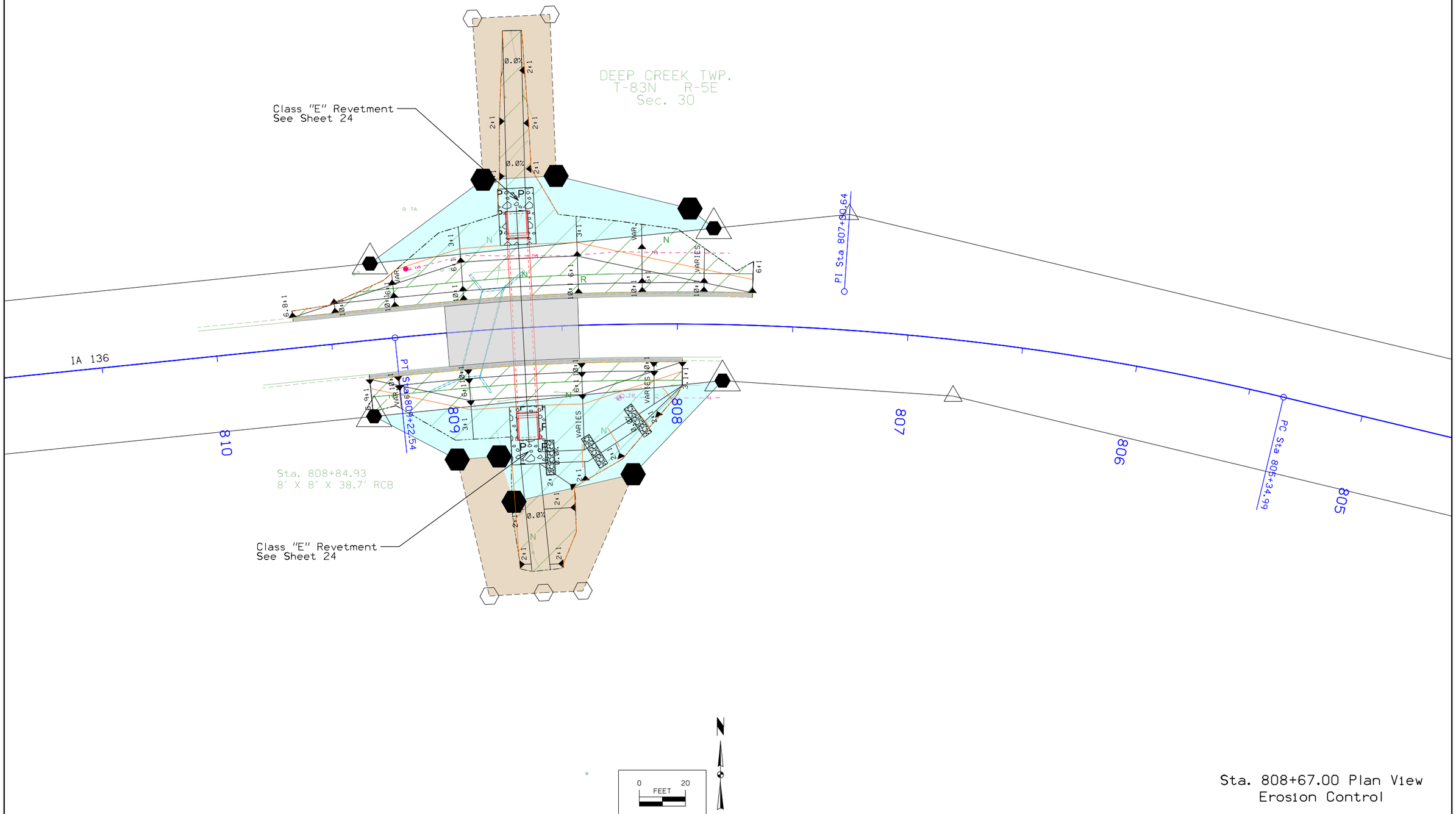
0 FEET 20

Sta. 800+82.00 Plan View
Erosion Control

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER RR.16

12:37:44 PM 11/4/2019 tclevenger K:\7805\SA26 701BT Clinton Culverts\Design\2313601013rr01.dgn

Curve Data
Δ = 19° 23′ 29.52″ (LT)
T = 195.65
L = 387.55
R = 1,145.10
E = 16.59



Sta. 808+67.00 Plan View
Erosion Control

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER RR.17

12:37:46 PM 11/4/2019 tclevenger K:\7805\SA26 701BT Clinton Culverts\Design\2313601013rr01.dgn

DEEP CREEK TWP.
T-83N R-5E
Sec. 30

Sta. 817+73.74
4' X 4' X 28.0' RCB
W/ 42" Conc Pipe Extensions
Remove

Class "E" Revetment
See SRP EC-301

IA 136

815
816
817
818
819
820

Class "E" Revetment
See SRP EC-301

0 20
FEET

Sta. 817+91.00 Plan View
Erosion Control

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER RR.18

12:37:49 PM 11/4/2019 tclevenger K:\7805\SA26 701BT Clinton Culverts\Design\2313601013rr01.dgn

WATERFORD TWP.
T-83N R-4E
Sec. 25

Class "E" Revetment
See SRP EC-301

Sta. 830+64.71
2' X 2' X 40.7' RCB

IA 136

833 832 831 830 829 828

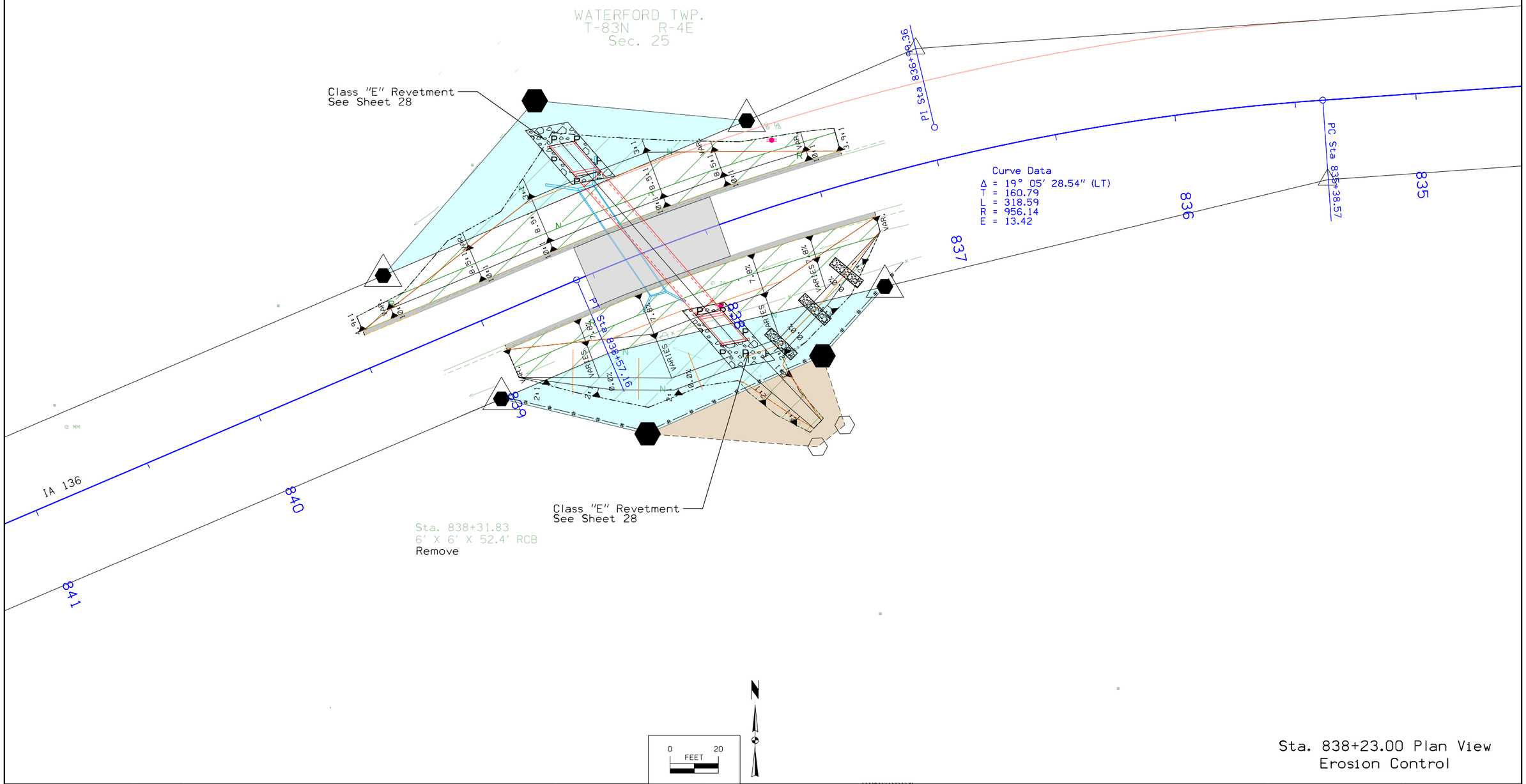
Class "E" Revetment
See SRP EC-301

0 20
FEET

Sta. 830+53.00 Plan View
Erosion Control

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER RR.19

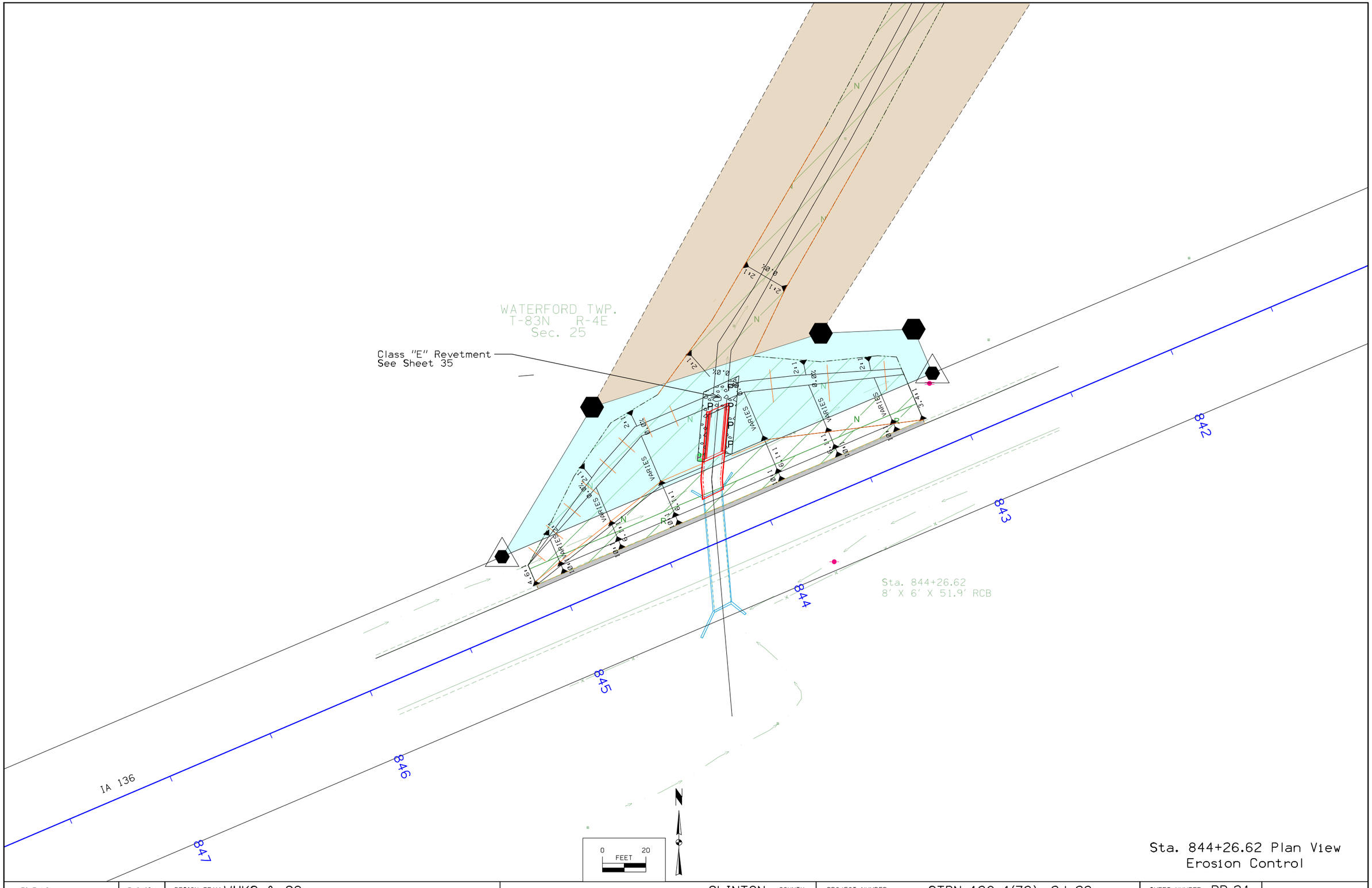
12:37:51 PM 11/4/2019 tclevenger K:\7805\SA26 701BT Clinton Culverts\Design\2313601013rr01.dgn



Sta. 838+23.00 Plan View
Erosion Control

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER RR.20

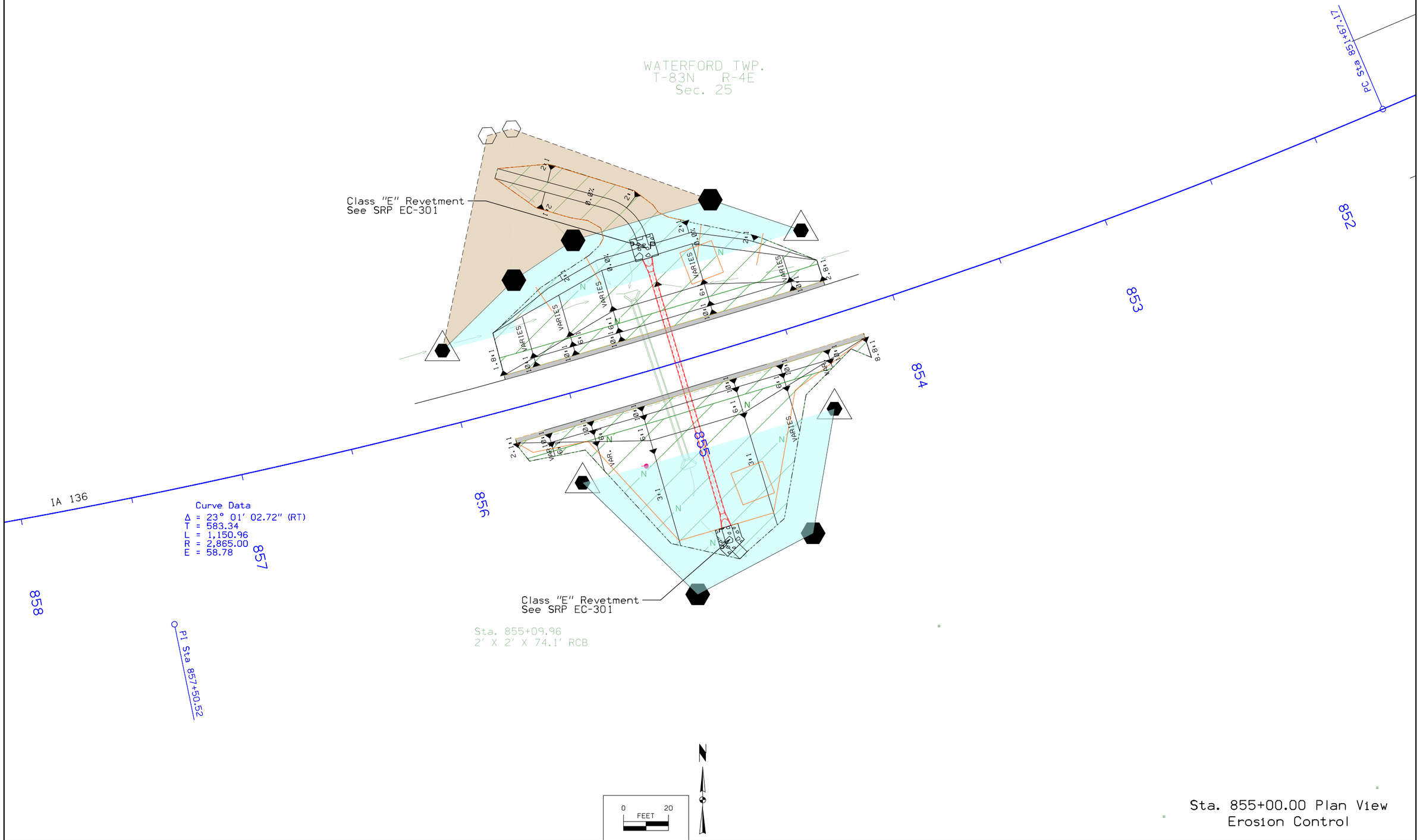
12:37:53 PM 11/4/2019 tclevenger K:\7805\SA26 701BT Clinton Culverts\Design\2313601013rr01.dgn



Sta. 844+26.62 Plan View
Erosion Control

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER RR.21

12:37:55 PM 11/4/2019 tclevenger K:\7805\SA26 701BT Clinton Culverts\Design\2313601013rr01.dgn

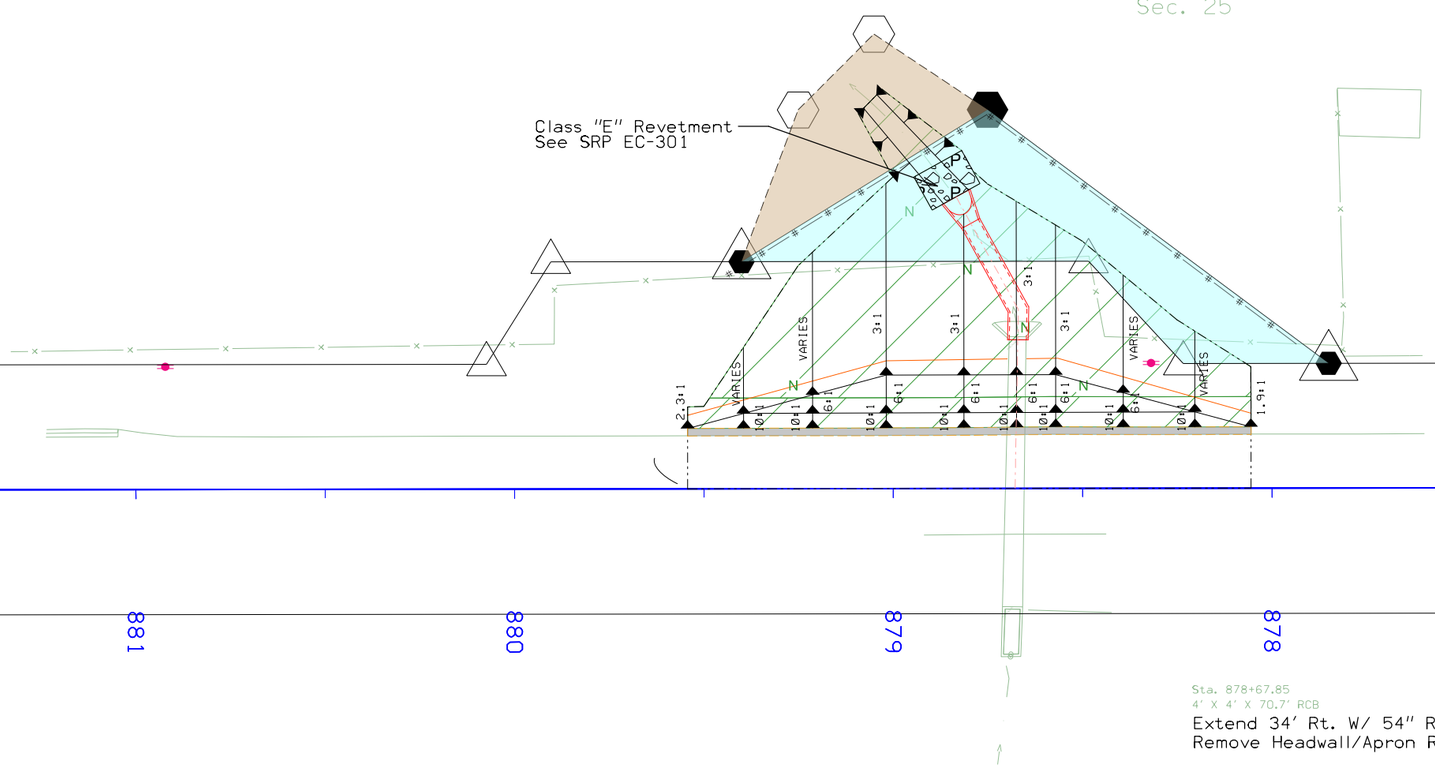


FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER RR.22

12:37:57 PM 11/4/2019 tclevenger K:\7805\SA26 701BT Clinton Culverts\Design\2313601013rr01.dgn

WATERFORD TWP.
T-83N R-4E
Sec. 25

Class "E" Revetment
See SRP EC-301



IA 136

Sta. 878+67.85
4' X 4' X 70.7' RCB
Extend 34' Rt. W/ 54" RCP & Apron
Remove Headwall/Apron Rt.

0 20
FEET

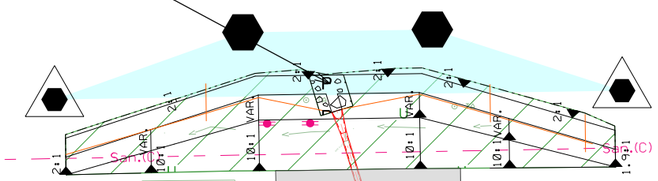
Sta. 878+67.85 Plan View
Erosion Control

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER RR.23

12:37:59 PM 11/4/2019 tclevenger K:\7805\SA26 701BT Clinton Culverts\Design\2313601013rr01.dgn

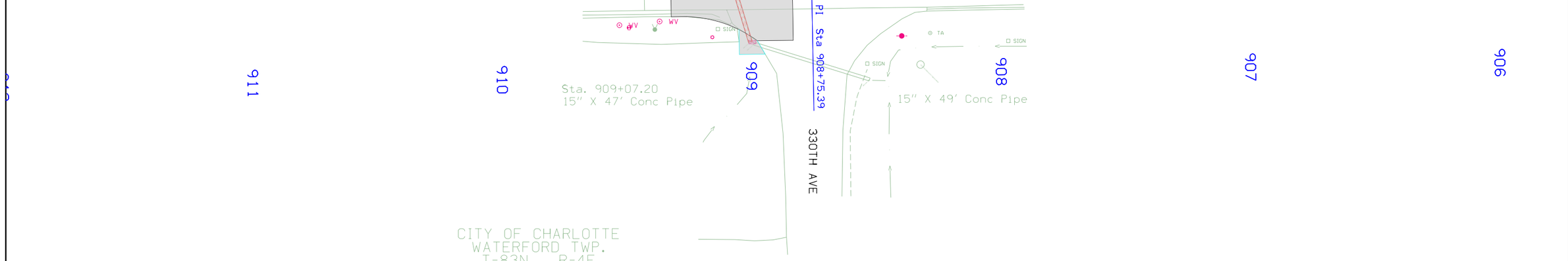
CITY OF CHARLOTTE
WATERFORD TWP.
T-83N R-4E
Sec. 26

Class "E" Revetment
See SRP EC-301

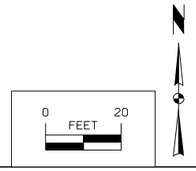


IA 136

IA 136



CITY OF CHARLOTTE
WATERFORD TWP.
T-83N R-4E
Sec. 35



Sta. 909+07.20 Plan View
Erosion Control

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER RR.24

12:38:02 PM 11/4/2019 tclevenger K:\7805\SA26 701BT Clinton Culverts\Design\2313601013rr01.dgn

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

	Cut					Fill						Checks (EW-102)		Topsoil								
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
Station	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Topsoil Cut Volume	Manually Calculated Cut Adjustments (+/- Cut)	Total Cut Adjusted	Total Fill Unadjusted Volume	Existing Topsoil Stripping Undercut (+ Fill)	Manual Calculated Fill Adjustments (+/- Fill)	Total Fill Adjusted	Total Fill Adjusted w/ Weighted Average 1.3 Shrink Factor	Total Cut Adjusted Minus Fill w/ Shrink	Approx. Fill Vol. Below 5' & Above 20' w/ Shrink	Approx. Fill Volume Below 3' w/ Shrink	Topsoil Stripping Undercut Volume	Topsoil Placement Undercut Volume	Topsoil Placement With 1.4 Shrink Factor	Topsoil Stripping Minus Topsoil Placement w/Shrink					
Sta.80+13																						
79+78.13																						
80+00.00	98	89	9		89	1	9		10	13	76	0	0	9	0	0	9					
80+13.55	74	65	9		65	2	9		11	14	51	0	0	9	17	24	-15					
80+25.00	78	67	11	280	347	4	11	12	27	35	312	0	0	11	24	34	-23					
80+50.00	130	109	21		109	11	21		32	42	67	0	0	21	42	59	-38					
80+75.00	91	71	20		71	12	20		32	42	29	0	0	20	37	52	-32					
81+00.00	50	38	12		38	9	12		21	27	11	0	0	12	23	32	-20					
Sta.80+13																						
Totals:	521	439	82	280	719	39	82	12	133	173	547	0	0	82	143	201	-119					

Excavation, Class 10, Roadway & Borrow
173 CY

Excavation, Class 10, Waste
547 CY

Topsoil, Strip, Salvage, & Spread
82 CY

Topsoil, Furnish & Spread
85 CY

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER T.1

10/29/2019 9:35:09 AM bchezick K:\7805\SA26 701BT Clinton Culverts\Design\DE Sheets\2313601013t01 (2).xlsm

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut					Fill						Checks (EW-102)		Topsoil								
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Topsoil Cut Volume	Manually Calculated Cut Adjustments (+/- Cut)	Total Cut Adjusted	Total Fill Unadjusted Volume	Existing Topsoil Stripping Undercut (+ Fill)	Manual Calculated Fill Adjustments (+/- Fill)	Total Fill Adjusted	Total Fill Adjusted w/ Weighted Average 1.3 Shrink Factor	Total Cut Adjusted Minus Fill w/ Shrink	Approx. Fill Vol. Below 5' & Above 20' w/ Shrink	Approx. Fill Volume Below 3' w/ Shrink	Topsoil Stripping Undercut Volume	Topsoil Placement Undercut Volume	Topsoil Placement With 1.4 Shrink Factor	Topsoil Stripping Minus Topsoil Placement w/Shrink					
Sta.96+34																						
95+50.00																						
95+75.00	24	13	11		13	15	11		26	34	-21	0	0	11	22	31	-20					
96+00.00	38	22	16		22	27	16		43	56	-34	0	0	16	32	45	-29					
96+25.00	54	34	20		34	50	20		70	91	-57	0	0	20	40	56	-36					
96+34.00	26	18	8		18	23	8		31	40	-22	0	0	8	17	24	-16					
96+50.00	48	34	14		34	34	14		48	62	-28	0	0	14	29	41	-27					
96+75.00	57	38	19		38	30	19		49	64	-26	0	0	19	37	52	-33					
97+00.00	38	23	15		23	15	15		30	39	-16	0	0	15	30	42	-27					
97+25.00	21	12	9		12	6	9		15	20	-8	0	0	9	19	27	-18					
Sta.96+34																						
Totals:	306	194	112	0	194	200	112	0	312	406	-212	0	0	112	226	317	-205					
	Excavation, Class 10, Roadway & Borrow																					
				194	CY																	
	Embankment-In-Place																					
				163	CY																	
	Topsoil, Trip, Salvage, & Spread																					
				112	CY																	
	Topsoil, Furnish & Spread																					
				146	CY																	

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER T.2

10/29/2019 9:35:10 AM bchezick K:\7805\SA26 701BT Clinton Culverts\Design\DE Sheets\2313601013t01 (2).xlsm

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut					Fill						Checks (EW-102)		Topsoil								
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Topsoil Cut Volume	Manually Calculated Cut Adjustments (+/- Cut)	Total Cut Adjusted	Total Fill Unadjusted Volume	Existing Topsoil Stripping Undercut (+ Fill)	Manual Calculated Fill Adjustments (+/- Fill)	Total Fill Adjusted	Total Fill Adjusted w/ Weighted Average 1.3 Shrink Factor	Total Cut Adjusted Minus Fill w/ Shrink	Approx. Fill Vol. Below 5' & Above 20' w/ Shrink	Approx. Fill Volume Below 3' w/ Shrink	Topsoil Stripping Undercut Volume	Topsoil Placement Undercut Volume	Topsoil Placement With 1.4 Shrink Factor	Topsoil Stripping Minus Topsoil Placement w/Shrink					
Sta.108+76																						
108+00.00																						
108+25.00	37	24	13		24	28	13		41	53	-29	0	0	13	27	38	-25					
108+50.00	72	53	19		53	46	19		65	85	-32	0	0	19	38	53	-34					
108+75.00	117	95	22		95	46	22		68	88	7	0	0	22	45	63	-41					
108+76.00	6	5	1		5	1	1		2	3	2	0	0	1	2	3	-2					
109+00.00	139	117	22		117	26	22		48	62	55	0	0	22	43	60	-38					
109+25.00	106	89	17		89	10	17		27	35	54	0	0	17	34	48	-31					
109+50.00	49	38	11		38	1	11		12	16	22	0	0	11	22	31	-20					
Sta.108+76																						
Totals:	526	421	105	0	421	158	105	0	263	342	80	0	0	105	211	296	-191					

Excavation, Class 10, Roadway & Borrow
342 CY

Excavation, Class 10, Waste
80 CY

Topsoil, Strip, Salvage, & Spread
105 CY

Topsoil, Furnish & Spread
136 CY

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER T.3

10/29/2019 9:35:10 AM bchezick K:\7805\SA26 701BT Clinton Culverts\Design\DE Sheets\2313601013t01 (2).xlsm

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut					Fill						Checks (EW-102)		Topsoil								
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Topsoil Cut Volume	Manually Calculated Cut Adjustments (+/- Cut)	Total Cut Adjusted	Total Fill Unadjusted Volume	Existing Topsoil Stripping Undercut (+ Fill)	Manual Calculated Fill Adjustments (+/- Fill)	Total Fill Adjusted	Total Fill Adjusted w/ Weighted Average 1.3 Shrink Factor	Total Cut Adjusted Minus Fill w/ Shrink	Approx. Fill Vol. Below 5' & Above 20' w/ Shrink	Approx. Fill Volume Below 3' w/ Shrink	Topsoil Stripping Undercut Volume	Topsoil Placement Undercut Volume	Topsoil Placement With 1.4 Shrink Factor	Topsoil Stripping Minus Topsoil Placement w/Shrink					
Sta.383+30																						
382+25.00																						
382+50.00	40	27	13		27	13	13		26	34	-7	0	0	13	25	35	-22					
382+75.00	59	37	22		37	85	22		107	139	-102	0	0	22	45	63	-41					
383+00.00	56	28	28		28	367	28		395	514	-486	0	0	28	38	53	-25					
383+25.00	53	31	22		31	463	22		485	631	-600	0	0	22	41	57	-35					
383+30.14	28	7	21		7	78	21		99	129	-122	0	0	21	12	17	4					
383+50.00	19	19	0		19	222			222	289	-270	0	0	0	45	63	-63					
383+75.00	49	27	22		27	83	22		105	137	-110	0	0	22	44	62	-40					
384+00.00	41	27	14		27	16	14		30	39	-12	0	0	14	27	38	-24					
384+25.00	30	22	8		22	0	8		8	10	12	0	0	8	16	22	-14					
384+50.00	23	17	6		17	0	6		6	8	9	0	0	6	12	17	-11					
384+75.00	19	14	5		14	0	5		5	7	8	0	0	5	9	13	-8					
Sta.383+30																						
Totals:	417	256	161	0	256	1,327	161	0	1,488	1,935	-1,679	0	0	161	314	440	-279					

Excavation, Class 10, Roadway & Borrow
256 CY

Embankment-In-Place
1,292 CY

Topsoil, Trip, Salvage, & Spread
161 CY

Topsoil, Furnish & Spread
199 CY

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER T.4

10/29/2019 9:35:10 AM bchezick K:\7805\SA26 701BT Clinton Culverts\Design\DE Sheets\2313601013t01 (2).xlsm

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut				Fill					Checks (EW-102)		Topsoil										
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Topsoil Cut Volume	Total Cut Adjusted	Total Fill Unadjusted Volume	Existing Topsoil Stripping Undercut (+ Fill)	Total Fill Adjusted	Total Fill Adjusted w/ Weighted Average 1.3 Shrink Factor	Total Cut Adjusted Minus Fill w/ Shrink	Approx. Fill Vol. Below 5' & Above 20' w/ Shrink	Approx. Fill Volume Below 3' w/ Shrink	Topsoil Stripping Undercut Volume	Topsoil Placement Undercut Volume	Topsoil Placement With 1.4 Shrink Factor	Topsoil Stripping Minus Topsoil Placement w/Shrink							
Sta.539+60																						
538+75.00	27	15	12	15	13	12	25	33	-18	0	0	12	25	35	-23							
539+00.00	52	32	20	32	53	20	73	95	-63	0	0	20	40	56	-36							
539+25.00	68	43	25	43	115	25	140	182	-139	0	0	25	49	69	-44							
539+50.00	28	17	11	17	59	11	70	91	-74	0	0	11	22	31	-20							
539+60.00	30	16	14	16	70	14	84	109	-93	0	0	14	28	39	-25							
539+75.00	25	9	16	9	66	16	82	107	-98	0	0	16	31	43	-27							
540+00.00	19	8	11	8	27	11	38	49	-41	0	0	11	21	29	-18							
540+25.00																						
Sta.539+60																						
Totals:	249	140	109	140	403	109	512	666	-526	0	0	109	216	303	-194							

Excavation, Class 10, Roadway & Borrow
140 CY

Embankment-In-Place
405 CY

Topsoil, Strip, Salvage, & Spread
109 CY

Topsoil, Furnish & Spread
139 CY

FILE NO.	ENGLISH	DESIGN TEAM WHKS & Co.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER T.5

10/29/2019 9:09:35 AM bchezick K:\7805\SA26 701BT Clinton Culverts\Design\Corridor Modeler\Cross Sections\539+40\539+40t01.xlsm

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut					Fill						Checks (EW-102)		Topsoil								
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Topsoil Cut Volume	Manually Calculated Cut Adjustments (+/- Cut)	Total Cut Adjusted	Total Fill Unadjusted Volume	Existing Topsoil Stripping Undercut (+ Fill)	Manual Calculated Fill Adjustments (+/- Fill)	Total Fill Adjusted	Total Fill Adjusted w/ Weighted Average 1.3 Shrink Factor	Total Cut Adjusted Minus Fill w/ Shrink	Approx. Fill Vol. Below 5' & Above 20' w/ Shrink	Approx. Fill Volume Below 3' w/ Shrink	Topsoil Stripping Undercut Volume	Topsoil Placement Undercut Volume	Topsoil Placement With 1.4 Shrink Factor	Topsoil Stripping Minus Topsoil Placement w/Shrink					
Sta.553+83																						
552+75.00																						
553+00.00	15	11	4		11	0	4		4	5	6	0	0	4	8	11	-7					
553+25.00	35	26	9		26	1	9		10	13	13	0	0	9	17	24	-15					
553+50.00	55	40	15		40	11	15		26	34	6	0	0	15	29	41	-26					
553+75.00	76	54	22		54	61	22		83	108	-54	0	0	22	43	60	-38					
553+83.41	24	18	6		18	52	6		58	75	-57	0	0	6	16	22	-16					
554+00.00	41	29	12		29	91	12		103	134	-105	0	0	12	31	43	-31					
554+25.00	75	51	24		51	43	24		67	87	-36	0	0	24	47	66	-42					
554+50.00	66	48	18		48	10	18		28	36	12	0	0	18	36	50	-32					
554+75.00	37	28	9		28	0	9		9	12	16	0	0	9	18	25	-16					
Sta.553+83																						
Totals:	424	305	119	0	305	269	119	0	388	505	-200	0	0	119	245	343	-224					
	Excavation, Class 10, Roadway & Borrow																					
				305	CY																	
	Embankment-In-Place																					
				154	CY																	
	Topsoil, Trip, Salvage, & Spread																					
				119	CY																	
	Topsoil, Furnish & Spread																					
				160	CY																	

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER T.6

10/29/2019 9:35:10 AM bchezick K:\7805\SA26 701BT Clinton Culverts\Design\DE Sheets\2313601013t01 (2).xlsm

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut					Fill						Checks (EW-102)		Topsoil								
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Topsoil Cut Volume	Manually Calculated Cut Adjustments (+/- Cut)	Total Cut Adjusted	Total Fill Unadjusted Volume	Existing Topsoil Stripping Undercut (+ Fill)	Manual Calculated Fill Adjustments (+/- Fill)	Total Fill Adjusted	Total Fill Adjusted w/ Weighted Average 1.3 Shrink Factor	Total Cut Adjusted Minus Fill w/ Shrink	Approx. Fill Vol. Below 5' & Above 20' w/ Shrink	Approx. Fill Volume Below 3' w/ Shrink	Topsoil Stripping Undercut Volume	Topsoil Placement Undercut Volume	Topsoil Placement With 1.4 Shrink Factor	Topsoil Stripping Minus Topsoil Placement w/Shrink					
Sta.571+62																						
570+00.00																						
570+25.00	9	5	4		5	0	4		4	5	0	0	0	4	8	11	-7					
570+50.00	11	4	7		4	4	7		11	14	-10	0	0	7	14	20	-13					
570+75.00	11	3	8		3	11	8		19	25	-22	0	0	8	17	24	-16					
571+00.00	12	3	9		3	21	9		30	39	-36	0	0	9	18	25	-16					
571+06.77	4	1	3		1	10	3		13	17	-16	0	0	3	6	8	-5					
571+25.00	26	13	13		13	48	13		61	79	-66	0	0	13	25	35	-22					
571+50.00	73	49	24		49	97	24		121	157	-108	0	0	24	47	66	-42					
571+62.20	29	18	11		18	27	11		38	49	-31	0	0	11	21	29	-18					
571+75.00	24	13	11		13	30	11		41	53	-40	0	0	11	21	29	-18					
572+00.00	50	30	20		30	66	20		86	112	-82	0	0	20	40	56	-36					
572+16.54	19	10	9		10	6	9		15	20	-10	0	0	9	18	25	-16					
572+25.00	5	2	3		2	2	3		5	7	-5	0	0	3	6	8	-5					
572+50.00	12	4	8		4	5	8		13	17	-13	0	0	8	15	21	-13					
572+75.00	10	4	6		4	2	6		8	10	-6	0	0	6	11	15	-9					
573+00.00	9	5	4		5	0	4		4	5	0	0	0	4	7	10	-6					
573+25.00	6	4	2		4	0	2		2	3	1	0	0	2	3	4	-2					
Sta.571+62																						
Totals:	310	168	142	0	168	329	142	0	471	613	-445	0	0	142	277	388	-246					

Excavation, Class 10, Roadway & Borrow
168 CY

Embankment-In-Place
342 CY

Topsoil, Trip, Salvage, & Spread
142 CY

Topsoil, Furnish & Spread
176 CY

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut					Fill						Checks (EW-102)		Topsoil								
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Topsoil Cut Volume	Manually Calculated Cut Adjustments (+/- Cut)	Total Cut Adjusted	Total Fill Unadjusted Volume	Existing Topsoil Stripping Undercut (+ Fill)	Manual Calculated Fill Adjustments (+/- Fill)	Total Fill Adjusted	Total Fill Adjusted w/ Weighted Average 1.3 Shrink Factor	Total Cut Adjusted Minus Fill w/ Shrink	Approx. Fill Vol. Below 5' & Above 20' w/ Shrink	Approx. Fill Volume Below 3' w/ Shrink	Topsoil Stripping Undercut Volume	Topsoil Placement Undercut Volume	Topsoil Placement With 1.4 Shrink Factor	Topsoil Stripping Minus Topsoil Placement w/Shrink					
Sta.581+05																						
580+75.00	17	11	6		11	7	6		13	17	-6	0	0	6	11	15	-9					
581+00.00	8	2	6		2	3	6		9	12	-10	0	0	6	2	3	3					
581+05.47	7	7	0		7	10			10	13	-6	0	0	0	9	13	-13					
581+25.00																						
Sta.581+05																						
Totals:	32	20	12	0	20	20	12	0	32	42	-22	0	0	12	22	31	-19					
	Excavation, Class 10, Roadway & Borrow																					
				20	CY																	
	Embankment-In-Place																					
				17	CY																	
	Topsoil, Trip, Salvage, & Spread																					
				12	CY																	
	Topsoil, Furnish & Spread																					
				14	CY																	

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER T.8

10/29/2019 9:35:10 AM bchezick K:\7805\SA26 701BT Clinton Culverts\Design\DE Sheets\2313601013t01 (2).xlsm

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut					Fill						Checks (EW-102)		Topsoil								
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Topsoil Cut Volume	Manually Calculated Cut Adjustments (+/- Cut)	Total Cut Adjusted	Total Fill Unadjusted Volume	Existing Topsoil Stripping Undercut (+ Fill)	Manual Calculated Fill Adjustments (+/- Fill)	Total Fill Adjusted	Total Fill Adjusted w/ Weighted Average 1.3 Shrink Factor	Total Cut Adjusted Minus Fill w/ Shrink	Approx. Fill Vol. Below 5' & Above 20' w/ Shrink	Approx. Fill Volume Below 3' w/ Shrink	Topsoil Stripping Undercut Volume	Topsoil Placement Undercut Volume	Topsoil Placement With 1.4 Shrink Factor	Topsoil Stripping Minus Topsoil Placement w/Shrink					
Sta.651+43																						
650+50.00	23	15	8		15	3	8		11	14	1	0	0	8	16	22	-14					
650+75.00	47	33	14		33	13	14		27	35	-2	0	0	14	27	38	-24					
651+00.00	102	83	19		83	19	19		38	49	34	0	0	19	39	55	-36					
651+25.00	110	93	17		93	31	17		48	62	31	0	0	17	34	48	-31					
651+42.85	47	41	6		41	12	6		18	23	18	0	0	6	13	18	-12					
651+50.00	144	124	20		124	18	20		38	49	75	0	0	20	39	55	-35					
651+75.00	103	86	17		86	15	17		32	42	44	0	0	17	34	48	-31					
652+00.00	64	51	13		51	7	13		20	26	25	0	0	13	26	36	-23					
652+25.00																						
Sta.651+43																						
Totals:	640	526	114	0	526	118	114	0	232	302	225	0	0	114	228	320	-206					

Excavation, Class 10, Roadway & Borrow
302 CY

Excavation, Class 10, Waste
225 CY

Topsoil, Strip, Salvage, & Spread
114 CY

Topsoil, Furnish & Spread
147 CY

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER T.9

10/29/2019 9:35:10 AM bchezick K:\7805\SA26 701BT Clinton Culverts\Design\DE Sheets\2313601013t01 (2).xlsm

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut					Fill						Checks (EW-102)		Topsoil								
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Topsoil Cut Volume	Manually Calculated Cut Adjustments (+/- Cut)	Total Cut Adjusted	Total Fill Unadjusted Volume	Existing Topsoil Stripping Undercut (+ Fill)	Manual Calculated Fill Adjustments (+/- Fill)	Total Fill Adjusted	Total Fill Adjusted w/ Weighted Average 1.3 Shrink Factor	Total Cut Adjusted Minus Fill w/ Shrink	Approx. Fill Vol. Below 5' & Above 20' w/ Shrink	Approx. Fill Volume Below 3' w/ Shrink	Topsoil Stripping Undercut Volume	Topsoil Placement Undercut Volume	Topsoil Placement With 1.4 Shrink Factor	Topsoil Stripping Minus Topsoil Placement w/Shrink					
Sta.704+70																						
704+69.66																						
704+75.00	14	11	3		11	23	3		26	34	-23	0	0	3	6	8	-5					
705+00.00	13	2	11		2	78	11		89	116	-114	0	0	11	20	28	-17					
705+25.00	11	3	8		3	30	8		38	49	-46	0	0	8	16	22	-14					
705+50.00	9	3	6		3	10	6		16	21	-18	0	0	6	12	17	-11					
705+75.00	6	3	3		3	2	3		5	7	-4	0	0	3	6	8	-5					
Sta.704+70																						
Totals:	53	22	31	0	22	143	31	0	174	227	-205	0	0	31	60	84	-53					
	Excavation, Class 10, Roadway & Borrow																					
				22	CY																	
	Embankment-In-Place																					
				158	CY																	
	Topsoil, Trip, Salvage, & Spread																					
				31	CY																	
	Topsoil, Furnish & Spread																					
				38	CY																	

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER T.10

10/29/2019 9:35:10 AM bchezick K:\7805\SA26 701BT Clinton Culverts\Design\DE Sheets\2313601013t01 (2).xlsm

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut					Fill						Checks (EW-102)		Topsoil								
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Topsoil Cut Volume	Manually Calculated Cut Adjustments (+/- Cut)	Total Cut Adjusted	Total Fill Unadjusted Volume	Existing Topsoil Stripping Undercut (+ Fill)	Manual Calculated Fill Adjustments (+/- Fill)	Total Fill Adjusted	Total Fill Adjusted w/ Weighted Average 1.3 Shrink Factor	Total Cut Adjusted Minus Fill w/ Shrink	Approx. Fill Vol. Below 5' & Above 20' w/ Shrink	Approx. Fill Volume Below 3' w/ Shrink	Topsoil Stripping Undercut Volume	Topsoil Placement Undercut Volume	Topsoil Placement With 1.4 Shrink Factor	Topsoil Stripping Minus Topsoil Placement w/Shrink					
Sta.743+25																						
742+25.00																						
742+50.00	15	9	6		9	2	6		8	10	-1	0	0	6	11	15	-9					
742+75.00	50	35	15		35	9	15		24	31	4	0	0	15	29	41	-26					
743+00.00	77	54	23		54	18	23		41	53	1	0	0	23	45	63	-40					
743+25.20	75	47	28		47	115	28		143	186	-139	0	0	28	55	77	-49					
743+50.00	74	49	25		49	114	25		139	181	-132	0	0	25	49	69	-44					
743+75.00	65	48	17		48	17	17		34	44	4	0	0	17	34	48	-31					
744+00.00	40	29	11		29	6	11		17	22	7	0	0	11	22	31	-20					
744+25.00	21	15	6		15	0	6		6	8	7	0	0	6	11	15	-9					
Sta.743+25																						
Totals:	417	286	131	0	286	281	131	0	412	536	-250	0	0	131	256	359	-228					

Excavation, Class 10, Roadway & Borrow
286 CY

Embankment-In-Place
192 CY

Topsoil, Trip, Salvage, & Spread
131 CY

Topsoil, Furnish & Spread
163 CY

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER T.11

10/29/2019 9:35:10 AM bchezick K:\7805\SA26 701BT Clinton Culverts\Design\DE Sheets\2313601013t01 (2).xlsm

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut					Fill						Checks (EW-102)		Topsoil								
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Topsoil Cut Volume	Manually Calculated Cut Adjustments (+/- Cut)	Total Cut Adjusted	Total Fill Unadjusted Volume	Existing Topsoil Stripping Undercut (+ Fill)	Manual Calculated Fill Adjustments (+/- Fill)	Total Fill Adjusted	Total Fill Adjusted w/ Weighted Average 1.3 Shrink Factor	Total Cut Adjusted Minus Fill w/ Shrink	Approx. Fill Vol. Below 5' & Above 20' w/ Shrink	Approx. Fill Volume Below 3' w/ Shrink	Topsoil Stripping Undercut Volume	Topsoil Placement Undercut Volume	Topsoil Placement With 1.4 Shrink Factor	Topsoil Stripping Minus Topsoil Placement w/Shrink					
Sta.766+09																						
765+25.00																						
765+50.00	52	37	15		37	29	15		44	57	-20	0	0	15	28	39	-24					
765+75.00	144	120	24		120	73	24		97	126	-6	0	0	24	48	67	-43					
766+00.00	216	186	30		186	108	30		138	179	7	0	0	30	58	81	-51					
766+09.00	88	77	11		77	46	11		57	74	3	0	0	11	22	31	-20					
766+25.00	142	122	20		122	90	20		110	143	-21	0	0	20	39	55	-35					
766+50.00	163	134	29		134	117	29		146	190	-56	0	0	29	56	78	-49					
766+75.00	80	58	22		58	57	22		79	103	-45	0	0	22	43	60	-38					
Sta.766+09																						
Totals:	885	734	151	0	734	520	151	0	671	873	-139	0	0	151	294	412	-261					

Excavation, Class 10, Roadway & Borrow
734 CY

Embankment-In-Place
107 CY

Topsoil, Trip, Salvage, & Spread
151 CY

Topsoil, Furnish & Spread
186 CY

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER T.12

10/29/2019 9:35:10 AM bchezick K:\7805\SA26 701BT Clinton Culverts\Design\DE Sheets\2313601013t01 (2).xlsm

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut					Fill						Checks (EW-102)		Topsoil								
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Topsoil Cut Volume	Manually Calculated Cut Adjustments (+/- Cut)	Total Cut Adjusted	Total Fill Unadjusted Volume	Existing Topsoil Stripping Undercut (+ Fill)	Manual Calculated Fill Adjustments (+/- Fill)	Total Fill Adjusted	Total Fill Adjusted w/ Weighted Average 1.3 Shrink Factor	Total Cut Adjusted Minus Fill w/ Shrink	Approx. Fill Vol. Below 5' & Above 20' w/ Shrink	Approx. Fill Volume Below 3' w/ Shrink	Topsoil Stripping Undercut Volume	Topsoil Placement Undercut Volume	Topsoil Placement With 1.4 Shrink Factor	Topsoil Stripping Minus Topsoil Placement w/Shrink					
Sta.788+20																						
787+25.00	64	54	10		54	0	10		10	13	41	0	0	10	19	27	-17					
787+50.00	104	89	15		89	2	15		17	22	67	0	0	15	29	41	-26					
787+75.00	139	121	18		121	5	18		23	30	91	0	0	18	36	50	-32					
788+00.00	172	149	23		149	27	23		50	65	84	0	0	23	45	63	-40					
788+25.00	155	133	22	33	166	27	22		49	64	102	0	0	22	43	60	-38					
788+50.00	72	60	12		60	4	12		16	21	39	0	0	12	24	34	-22					
788+75.00	18	9	9		9	0	9		9	12	-3	0	0	9	6	8	1					
789+00.00	4	4	0		4	0			0	0	4	0	0	0	3	4	-4					
789+25.00																						
Sta.788+20																						
Totals:	728	619	109	33	652	65	109	0	174	227	426	0	0	109	205	287	-178					

Excavation, Class 10, Roadway & Borrow
227 CY

Excavation, Class 10, Waste
426 CY

Topsoil, Strip, Salvage, & Spread
109 CY

Topsoil, Furnish & Spread
127 CY

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER T.13

10/29/2019 9:35:10 AM bchezick K:\7805\SA26 701BT Clinton Culverts\Design\DE Sheets\2313601013t01 (2).xlsm

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut					Fill						Checks (EW-102)		Topsoil								
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Topsoil Cut Volume	Manually Calculated Cut Adjustments (+/- Cut)	Total Cut Adjusted	Total Fill Unadjusted Volume	Existing Topsoil Stripping Undercut (+ Fill)	Manual Calculated Fill Adjustments (+/- Fill)	Total Fill Adjusted	Total Fill Adjusted w/ Weighted Average 1.3 Shrink Factor	Total Cut Adjusted Minus Fill w/ Shrink	Approx. Fill Vol. Below 5' & Above 20' w/ Shrink	Approx. Fill Volume Below 3' w/ Shrink	Topsoil Stripping Undercut Volume	Topsoil Placement Undercut Volume	Topsoil Placement With 1.4 Shrink Factor	Topsoil Stripping Minus Topsoil Placement w/Shrink					
Sta.800+82																						
800+25.00																						
800+50.00	102	88	14		88	8	14		22	29	59	0	0	14	28	39	-25					
800+75.00	169	149	20		149	19	20		39	51	98	0	0	20	40	56	-36					
800+82.00	60	54	6		54	8	6		14	18	36	0	0	6	13	18	-12					
801+00.00	152	136	16	83	219	18	16		34	44	175	0	0	16	32	45	-29					
801+25.00	106	87	19		87	30	19		49	64	23	0	0	19	37	52	-33					
801+50.00	34	21	13		21	28	13		41	53	-32	0	0	13	26	36	-23					
801+75.00	10	3	7		3	6	7		13	17	-14	0	0	7	13	18	-11					
Sta.800+82																						
Totals:	633	538	95	83	621	117	95	0	212	276	346	0	0	95	189	265	-170					

Excavation, Class 10, Roadway & Borrow
276 CY

Excavation, Class 10, Waste
346 CY

Topsoil, Strip, Salvage, & Spread
95 CY

Topsoil, Furnish & Spread
121 CY

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER T.14

10/29/2019 9:35:10 AM bchezick K:\7805\SA26 701BT Clinton Culverts\Design\DE Sheets\2313601013t01 (2).xlsm

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut					Fill						Checks (EW-102)		Topsoil								
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Topsoil Cut Volume	Manually Calculated Cut Adjustments (+/- Cut)	Total Cut Adjusted	Total Fill Unadjusted Volume	Existing Topsoil Stripping Undercut (+ Fill)	Manual Calculated Fill Adjustments (+/- Fill)	Total Fill Adjusted	Total Fill Adjusted w/ Weighted Average 1.3 Shrink Factor	Total Cut Adjusted Minus Fill w/ Shrink	Approx. Fill Vol. Below 5' & Above 20' w/ Shrink	Approx. Fill Volume Below 3' w/ Shrink	Topsoil Stripping Undercut Volume	Topsoil Placement Undercut Volume	Topsoil Placement With 1.4 Shrink Factor	Topsoil Stripping Minus Topsoil Placement w/Shrink					
Sta.808+67																						
807+75.00																						
808+00.00	47	10	37		10	6	37		43	56	-46	0	0	37	15	21	16					
808+25.00	48	48	0		48	22			22	29	19	0	0	0	35	49	-49					
808+50.00	146	115	31		115	70	31		101	131	-16	0	0	31	50	70	-39					
808+67.85	116	95	21		95	102	21		123	160	-65	0	0	21	43	60	-39					
808+75.00	32	24	8	83	107	57	8		65	85	23	0	0	8	15	21	-13					
809+00.00	43	24	19		24	179	19		198	257	-233	0	0	19	39	55	-36					
809+25.00	18	5	13		5	69	13		82	107	-102	0	0	13	25	35	-22					
809+50.00	22	15	7		15	0	7		7	9	6	0	0	7	13	18	-11					
Sta.808+67																						
Totals:	472	336	136	83	419	505	136	0	641	834	-415	0	0	136	235	329	-193					

Excavation, Class 10, Roadway & Borrow
419 CY

Embankment-In-Place
319 CY

Topsoil, Trip, Salvage, & Spread
136 CY

Topsoil, Furnish & Spread
138 CY

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER T.15

10/29/2019 9:35:10 AM bchezick K:\7805\SA26 701BT Clinton Culverts\Design\DE Sheets\2313601013t01 (2).xlsm

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut					Fill						Checks (EW-102)		Topsoil								
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Topsoil Cut Volume	Manually Calculated Cut Adjustments (+/- Cut)	Total Cut Adjusted	Total Fill Unadjusted Volume	Existing Topsoil Stripping Undercut (+ Fill)	Manual Calculated Fill Adjustments (+/- Fill)	Total Fill Adjusted	Total Fill Adjusted w/ Weighted Average 1.3 Shrink Factor	Total Cut Adjusted Minus Fill w/ Shrink	Approx. Fill Vol. Below 5' & Above 20' w/ Shrink	Approx. Fill Volume Below 3' w/ Shrink	Topsoil Stripping Undercut Volume	Topsoil Placement Undercut Volume	Topsoil Placement With 1.4 Shrink Factor	Topsoil Stripping Minus Topsoil Placement w/Shrink					
Sta.817+91																						
816+75.00	9	6	3		6	0	3		3	4	2	0	0	3	6	8	-5					
817+00.00	20	12	8		12	2	8		10	13	-1	0	0	8	17	24	-16					
817+25.00	51	36	15		36	17	15		32	42	-6	0	0	15	29	41	-26					
817+50.00	99	84	15		84	73	15		88	114	-30	0	0	15	38	53	-38					
817+75.00	76	62	14		62	37	14		51	66	-4	0	0	14	31	43	-29					
817+91.00	43	34	9	34	68	6	9		15	20	49	0	0	9	17	24	-15					
818+00.00	111	93	18		93	20	18		38	49	44	0	0	18	36	50	-32					
818+25.00	78	63	15		63	6	15		21	27	36	0	0	15	30	42	-27					
818+50.00	40	31	9		31	1	9		10	13	18	0	0	9	18	25	-16					
818+75.00																						
Sta.817+91																						
Totals:	527	421	106	34	455	162	106	0	268	349	107	0	0	106	222	311	-205					

Excavation, Class 10, Roadway & Borrow
349 CY

Excavation, Class 10, Waste
107 CY

Topsoil, Strip, Salvage, & Spread
106 CY

Topsoil, Furnish & Spread
146 CY

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER T.16

10/29/2019 9:35:10 AM bchezick K:\7805\SA26 701BT Clinton Culverts\Design\DE Sheets\2313601013t01 (2).xlsm

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut					Fill						Checks (EW-102)		Topsoil								
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Topsoil Cut Volume	Manually Calculated Cut Adjustments (+/- Cut)	Total Cut Adjusted	Total Fill Unadjusted Volume	Existing Topsoil Stripping Undercut (+ Fill)	Manual Calculated Fill Adjustments (+/- Fill)	Total Fill Adjusted	Total Fill Adjusted w/ Weighted Average 1.3 Shrink Factor	Total Cut Adjusted Minus Fill w/ Shrink	Approx. Fill Vol. Below 5' & Above 20' w/ Shrink	Approx. Fill Volume Below 3' w/ Shrink	Topsoil Stripping Undercut Volume	Topsoil Placement Undercut Volume	Topsoil Placement With 1.4 Shrink Factor	Topsoil Stripping Minus Topsoil Placement w/Shrink					
Sta.830+53																						
829+75.00																						
830+00.00	55	45	10		45	4	10		14	18	27	0	0	10	20	28	-18					
830+25.00	79	62	17		62	28	17		45	59	4	0	0	17	34	48	-31					
830+50.00	86	64	22		64	63	22		85	111	-47	0	0	22	43	60	-38					
830+53.29	11	8	3		8	13	3		16	21	-13	0	0	3	6	8	-5					
830+75.00	69	49	20		49	85	20		105	137	-88	0	0	20	39	55	-35					
831+00.00	56	37	19		37	66	19		85	111	-74	0	0	19	38	53	-34					
831+25.00	29	16	13		16	30	13		43	56	-40	0	0	13	26	36	-23					
Sta.830+53																						
Totals:	385	281	104	0	281	289	104	0	393	511	-230	0	0	104	206	289	-185					
	Excavation, Class 10, Roadway & Borrow																					
				281	CY																	
	Embankment-In-Place																					
				177	CY																	
	Topsoil, Trip, Salvage, & Spread																					
				104	CY																	
	Topsoil, Furnish & Spread																					
				132	CY																	

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER T.17

10/29/2019 9:35:10 AM bchezick K:\7805\SA26 701BT Clinton Culverts\Design\DE Sheets\2313601013t01 (2).xlsm

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut					Fill						Checks (EW-102)		Topsoil								
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Topsoil Cut Volume	Manually Calculated Cut Adjustments (+/- Cut)	Total Cut Adjusted	Total Fill Unadjusted Volume	Existing Topsoil Stripping Undercut (+ Fill)	Manual Calculated Fill Adjustments (+/- Fill)	Total Fill Adjusted	Total Fill Adjusted w/ Weighted Average 1.3 Shrink Factor	Total Cut Adjusted Minus Fill w/ Shrink	Approx. Fill Vol. Below 5' & Above 20' w/ Shrink	Approx. Fill Volume Below 3' w/ Shrink	Topsoil Stripping Undercut Volume	Topsoil Placement Undercut Volume	Topsoil Placement With 1.4 Shrink Factor	Topsoil Stripping Minus Topsoil Placement w/Shrink					
Sta.838+23																						
837+50.00	111	96	15		96	1	15		16	21	75	0	0	15	30	42	-27					
837+75.00	118	97	21		97	6	21		27	35	62	0	0	21	42	59	-38					
838+00.00	97	75	22		75	26	22		48	62	13	0	0	22	53	74	-52					
838+23.00	7	5	2	21	26	7	2		9	12	14	0	0	2	5	7	-5					
838+25.00	97	72	25		72	88	25		113	147	-75	0	0	25	51	71	-46					
838+50.00	90	69	21		69	19	21		40	52	17	0	0	21	42	59	-38					
838+75.00	30	19	11		19	1	11		12	16	3	0	0	11	22	31	-20					
839+00.00	11	6	5		6	0	5		5	7	-1	0	0	5	9	13	-8					
839+25.00																						
Sta.838+23																						
Totals:	561	439	122	21	460	148	122	0	270	351	109	0	0	122	254	356	-234					
	Excavation, Class 10, Roadway & Borrow																					
				351	CY																	
	Excavation, Class 10, Waste																					
				109	CY																	
	Topsoil, Strip, Salvage, & Spread																					
				122	CY																	
	Topsoil, Furnish & Spread																					
				167	CY																	

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER T.18

10/29/2019 9:35:10 AM bchezick K:\7805\SA26 701BT Clinton Culverts\Design\DE Sheets\2313601013t01 (2).xlsm

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut					Fill						Checks (EW-102)		Topsoil								
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Topsoil Cut Volume	Manually Calculated Cut Adjustments (+/- Cut)	Total Cut Adjusted	Total Fill Unadjusted Volume	Existing Topsoil Stripping Undercut (+ Fill)	Manual Calculated Fill Adjustments (+/- Fill)	Total Fill Adjusted	Total Fill Adjusted w/ Weighted Average 1.3 Shrink Factor	Total Cut Adjusted Minus Fill w/ Shrink	Approx. Fill Vol. Below 5' & Above 20' w/ Shrink	Approx. Fill Volume Below 3' w/ Shrink	Topsoil Stripping Undercut Volume	Topsoil Placement Undercut Volume	Topsoil Placement With 1.4 Shrink Factor	Topsoil Stripping Minus Topsoil Placement w/Shrink					
Sta.844+27																						
843+25.00																						
843+50.00	47	35	12		35	15	12		27	35	0	0	0	12	24	34	-22					
843+75.00	112	97	15		97	34	15		49	64	33	0	0	15	30	42	-27					
844+00.00	181	163	18		163	38	18		56	73	90	0	0	18	36	50	-32					
844+25.00	184	166	18		166	48	18		66	86	80	0	0	18	37	52	-34					
844+26.62	14	13	1		13	5	1		6	8	5	0	0	1	4	6	-5					
844+50.00	192	183	9	1,095	1,278	42	9		51	66	1,212	0	0	9	51	71	-62					
844+75.00	123	108	15		108	0	15		15	20	89	0	0	15	29	41	-26					
845+00.00	54	45	9		45	0	9		9	12	33	0	0	9	18	25	-16					
Sta.844+27																						
Totals:	907	810	97	1,095	1,905	182	97	0	279	363	1,543	0	0	97	229	321	-224					

Excavation, Class 10, Roadway & Borrow
363 CY

Excavation, Class 10, Waste
1,543 CY

Topsoil, Strip, Salvage, & Spread
97 CY

Topsoil, Furnish & Spread
160 CY

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER T.19

10/29/2019 9:35:10 AM bchezick K:\7805\SA26 701BT Clinton Culverts\Design\DE Sheets\2313601013t01 (2).xlsm

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut					Fill						Checks (EW-102)		Topsoil								
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Topsoil Cut Volume	Manually Calculated Cut Adjustments (+/- Cut)	Total Cut Adjusted	Total Fill Unadjusted Volume	Existing Topsoil Stripping Undercut (+ Fill)	Manual Calculated Fill Adjustments (+/- Fill)	Total Fill Adjusted	Total Fill Adjusted w/ Weighted Average 1.3 Shrink Factor	Total Cut Adjusted Minus Fill w/ Shrink	Approx. Fill Vol. Below 5' & Above 20' w/ Shrink	Approx. Fill Volume Below 3' w/ Shrink	Topsoil Stripping Undercut Volume	Topsoil Placement Undercut Volume	Topsoil Placement With 1.4 Shrink Factor	Topsoil Stripping Minus Topsoil Placement w/Shrink					
Sta.855+00																						
854+25.00																						
854+50.00	26	19	7		19	6	7		13	17	2	0	0	7	14	20	-13					
854+75.00	64	41	23		41	95	23		118	153	-112	0	0	23	46	64	-41					
855+00.00	113	77	36		77	185	36		221	287	-210	0	0	36	72	101	-65					
855+25.00	104	69	35		69	184	35		219	285	-216	0	0	35	71	99	-64					
855+50.00	48	26	22		26	94	22		116	151	-125	0	0	22	45	63	-41					
855+75.00	36	25	11		25	7	11		18	23	2	0	0	11	22	31	-20					
Sta.855+00																						
Totals:	391	257	134	0	257	571	134	0	705	917	-660	0	0	134	270	378	-244					

Excavation, Class 10, Roadway & Borrow
257 CY

Embankment-In-Place
508 CY

Topsoil, Trip, Salvage, & Spread
134 CY

Topsoil, Furnish & Spread
174 CY

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER T.20

10/29/2019 9:35:10 AM bchezick K:\7805\SA26 701BT Clinton Culverts\Design\DE Sheets\2313601013t01 (2).xlsm

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut				Fill					Checks (EW-102)		Topsoil										
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Topsoil Cut Volume	Total Cut Adjusted	Total Fill Unadjusted Volume	Existing Topsoil Stripping Undercut (+ Fill)	Total Fill Adjusted	Total Fill Adjusted w/ Weighted Average 1.3 Shrink Factor	Total Cut Adjusted Minus Fill w/ Shrink	Approx. Fill Vol. Below 5' & Above 20' w/ Shrink	Approx. Fill Volume Below 3' w/ Shrink	Topsoil Stripping Undercut Volume	Topsoil Placement Undercut Volume	Topsoil Placement With 1.4 Shrink Factor	Topsoil Stripping Minus Topsoil Placement w/Shrink							
Sta.878+67.85																						
878+25.00																						
878+50.00	13	1	12	1	116	12	128	166	-165	0	0	12	24	34	-22							
878+67.85	25	9	16	9	144	16	160	208	-199	0	0	16	31	43	-27							
878+75.00	11	4	7	4	74	7	81	105	-101	0	0	7	14	20	-13							
879+00.00	23	3	20	3	215	20	235	306	-303	0	0	20	40	56	-36							
879+25.00	22	5	17	5	89	17	106	138	-133	0	0	17	33	46	-29							
879+50.00	12	4	8	4	18	8	26	34	-30	0	0	8	15	21	-13							
Sta.878+67.85																						
Totals:	106	26	80	26	656	80	736	957	-931	0	0	80	157	220	-140							

Excavation, Class 10, Roadway & Borrow
26 CY

Embankment-In-Place
717 CY

Topsoil, Strip, Salvage, & Spread
80 CY

Topsoil, Furnish & Spread
100 CY

FILE NO.	ENGLISH	DESIGN TEAM WHKS & Co.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER T.21

10/29/2019 9:10:48 AM bchezick K:\7805\SA26 701BT Clinton Culverts\Design\Corridor Modeler\Cross Sections\878+68\878+68t01.xlsm

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut					Fill						Checks (EW-102)		Topsoil								
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Topsoil Cut Volume	Manually Calculated Cut Adjustments (+/- Cut)	Total Cut Adjusted	Total Fill Unadjusted Volume	Existing Topsoil Stripping Undercut (+ Fill)	Manual Calculated Fill Adjustments (+/- Fill)	Total Fill Adjusted	Total Fill Adjusted w/ Weighted Average 1.3 Shrink Factor	Total Cut Adjusted Minus Fill w/ Shrink	Approx. Fill Vol. Below 5' & Above 20' w/ Shrink	Approx. Fill Volume Below 3' w/ Shrink	Topsoil Stripping Undercut Volume	Topsoil Placement Undercut Volume	Topsoil Placement With 1.4 Shrink Factor	Topsoil Stripping Minus Topsoil Placement w/Shrink					
Sta.909+07																						
908+50.00																						
908+75.00	15	10	5		10	4	5		9	12	-2	0	0	5	11	15	-10					
909+00.00	22	16	6		16	8	6		14	18	-2	0	0	6	15	21	-15					
909+07.20	8	6	2		6	2	2		4	5	1	0	0	2	5	7	-5					
909+25.00	20	15	5		15	6	5		11	14	1	0	0	5	12	17	-12					
909+50.00	21	14	7		14	8	7		15	20	-6	0	0	7	15	21	-14					
909+75.00	13	8	5		8	4	5		9	12	-4	0	0	5	11	15	-10					
Sta.909+07																						
Totals:	99	69	30	0	69	32	30	0	62	81	-12	0	0	30	69	97	-67					

Excavation, Class 10, Roadway & Borrow
69 CY

Embankment-In-Place
9 CY

Topsoil, Trip, Salvage, & Spread
30 CY

Topsoil, Furnish & Spread
48 CY

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut					Fill						Checks (EW-102)		Topsoil								
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Topsoil Cut Volume	Manually Calculated Cut Adjustments (+/- Cut)	Total Cut Adjusted	Total Fill Unadjusted Volume	Existing Topsoil Stripping Undercut (+ Fill)	Manual Calculated Fill Adjustments (+/- Fill)	Total Fill Adjusted	Total Fill Adjusted w/ Weighted Average 1.3 Shrink Factor	Total Cut Adjusted Minus Fill w/ Shrink	Approx. Fill Vol. Below 5' & Above 20' w/ Shrink	Approx. Fill Volume Below 3' w/ Shrink	Topsoil Stripping Undercut Volume	Topsoil Placement Undercut Volume	Topsoil Placement With 1.4 Shrink Factor	Topsoil Stripping Minus Topsoil Placement w/Shrink					
Summary:																						
Sta.80+13	521	439	82	280	719	39	82	12	133	173	547	0	0	82	143	201	-119					
Sta.96+34	306	194	112	0	194	200	112	0	312	406	-212	0	0	112	226	317	-205					
Sta.108+76	526	421	105	0	421	158	105	0	263	342	80	0	0	105	211	296	-191					
Sta.383+30	417	256	161	0	256	1,327	161	0	1,488	1,935	-1,679	0	0	161	314	440	-279					
Sta.539+60	249	140	109	0	140	403	109	0	512	666	-526	0	0	109	216	303	-194					
Sta.553+83	424	305	119	0	305	269	119	0	388	505	-200	0	0	119	245	343	-224					
Sta.571+62	310	168	142	0	168	329	142	0	471	613	-445	0	0	142	277	388	-246					
Sta.581+05	32	20	12	0	20	20	12	0	32	42	-22	0	0	12	22	31	-19					
Sta.651+43	640	526	114	0	526	118	114	0	232	302	225	0	0	114	228	320	-206					
Sta.704+70	53	22	31	0	22	143	31	0	174	227	-205	0	0	31	60	84	-53					
Sta.743+25	417	286	131	0	286	281	131	0	412	536	-250	0	0	131	256	359	-228					
Sta.766+09	885	734	151	0	734	520	151	0	671	873	-139	0	0	151	294	412	-261					
Sta.788+20	728	619	109	33	652	65	109	0	174	227	426	0	0	109	205	287	-178					
Sta.800+82	633	538	95	83	621	117	95	0	212	276	346	0	0	95	189	265	-170					
Sta.808+67	472	336	136	83	419	505	136	0	641	834	-415	0	0	136	235	329	-193					
Sta.817+91	527	421	106	34	455	162	106	0	268	349	107	0	0	106	222	311	-205					
Sta.830+53	385	281	104	0	281	289	104	0	393	511	-230	0	0	104	206	289	-185					
Sta.838+23	561	439	122	21	460	148	122	0	270	351	109	0	0	122	254	356	-234					
Sta.844+27	907	810	97	1,095	1,905	182	97	0	279	363	1,543	0	0	97	229	321	-224					
Sta.855+00	391	257	134	0	257	571	134	0	705	917	-660	0	0	134	270	378	-244					
Sta.878+68	106	26	80	0	26	656	80	0	736	957	-931	0	0	80	157	220	-140					
Sta.909+07	99	69	30	0	69	32	30	0	62	81	-12	0	0	30	69	97	-67					
Project Totals:	9,621	7,330	2,291	1,629	8,959	6,548	2,291	12	8,851	11,516	-2,550	0	0	2,291	4,546	6,372	-4,081					

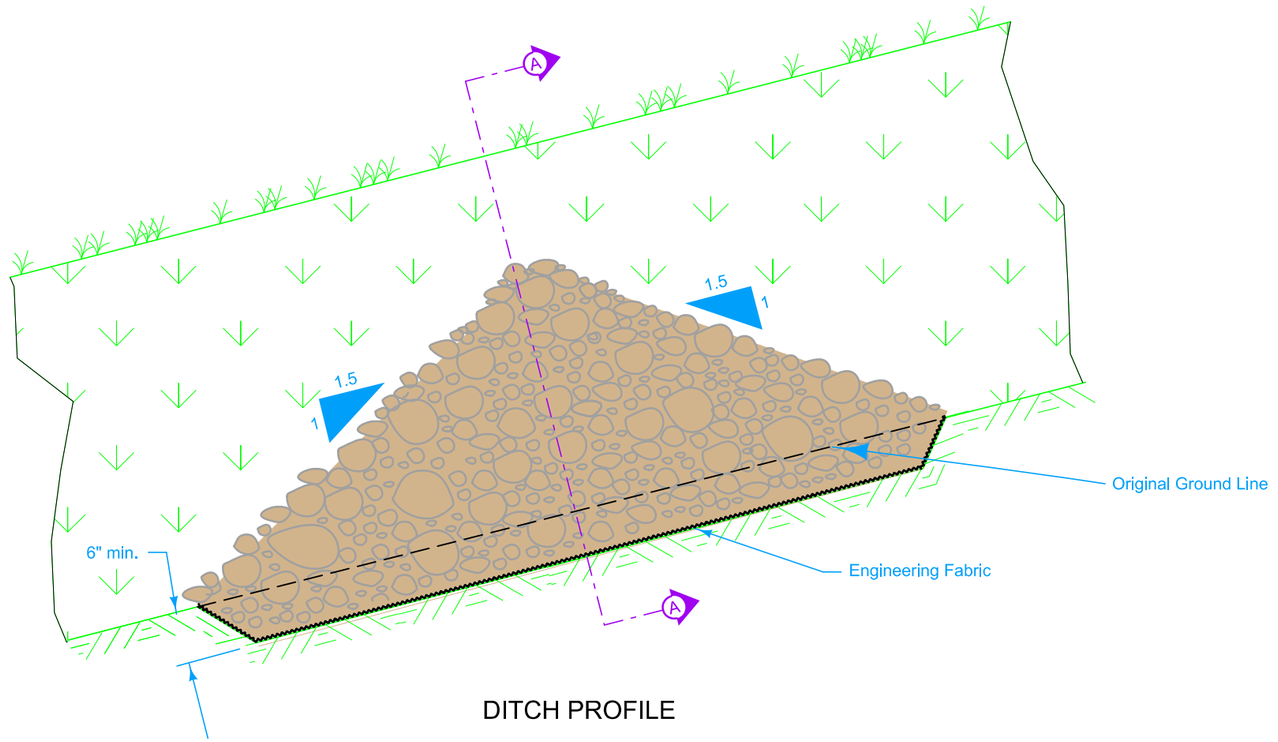
Excavation, Class 10, Roadway & Borrow
5,560 CY

Embankment-In-Place
4,560 CY

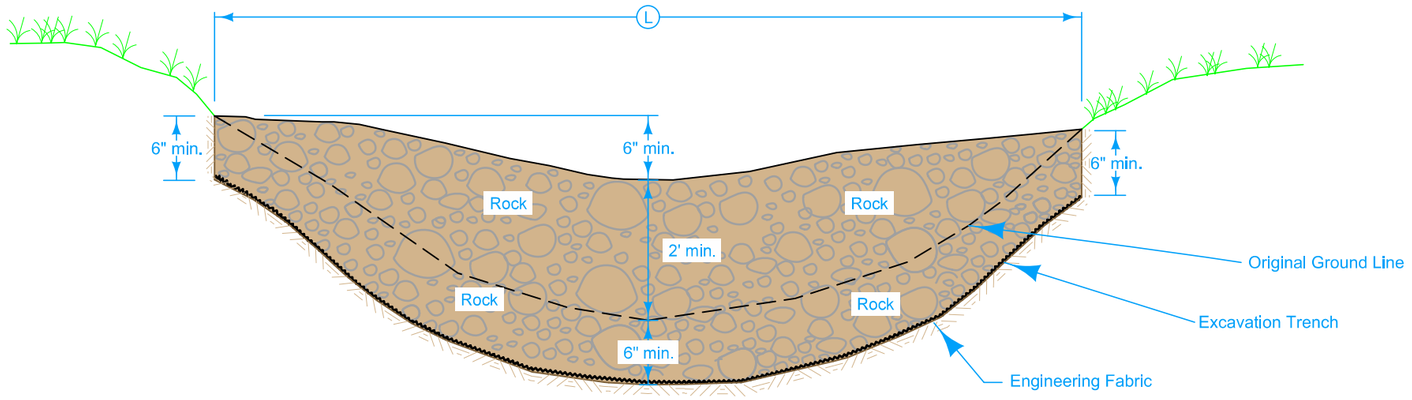
Excavation, Class 10, Waste
3,383 CY

Topsoil, Strip, Salvage, & Spread
2,282 CY

Topsoil, Furnish & Spread
2,902 CY



DITCH PROFILE



SECTION A-A

Use Class D Revetment to construct Rock Check Dam.

Method of Measurement for Rock Check Dam will be in linear feet to the nearest 0.1 feet.

Basis of Payment for Rock Check Dam will be the contract unit price per linear foot. Payment is full compensation for all materials, labor, and equipment required to construct the Rock Check Dam as shown. Class 10 excavation required to cut trench and engineering fabric installed prior to placing revetment are incidental and will not be paid for separately.

Method of Measurement for Maintenance of Rock Check Dam will be by count.

Basis of Payment for Maintenance of Rock Check Dam will be at the contract unit price for each occurrence. Payment is full compensation for clean out and disposal of material when capacity reaches 50%, and for any repair that is needed during the project.

Method of Measurement for Removal of Rock Check Dam will be by count.

Basis of Payment for Removal of Rock Check Dam will be at the contract unit price for each Rock Check Dam removed. Payment is full compensation for all labor and equipment required to remove all rock and material above original ditch grade. Rock, silt, and engineering fabric that is flush with and/or below final ditch grade will be allowed to remain in the excavation trench.

Possible Contract Items:
- Rock Check Dam
- Maintenance of Rock Check Dam
- Removal of Rock Check Dam

Possible Tabulation:
- 100-32

REVISION	
1	10-17-17

ROAD DESIGN DETAIL

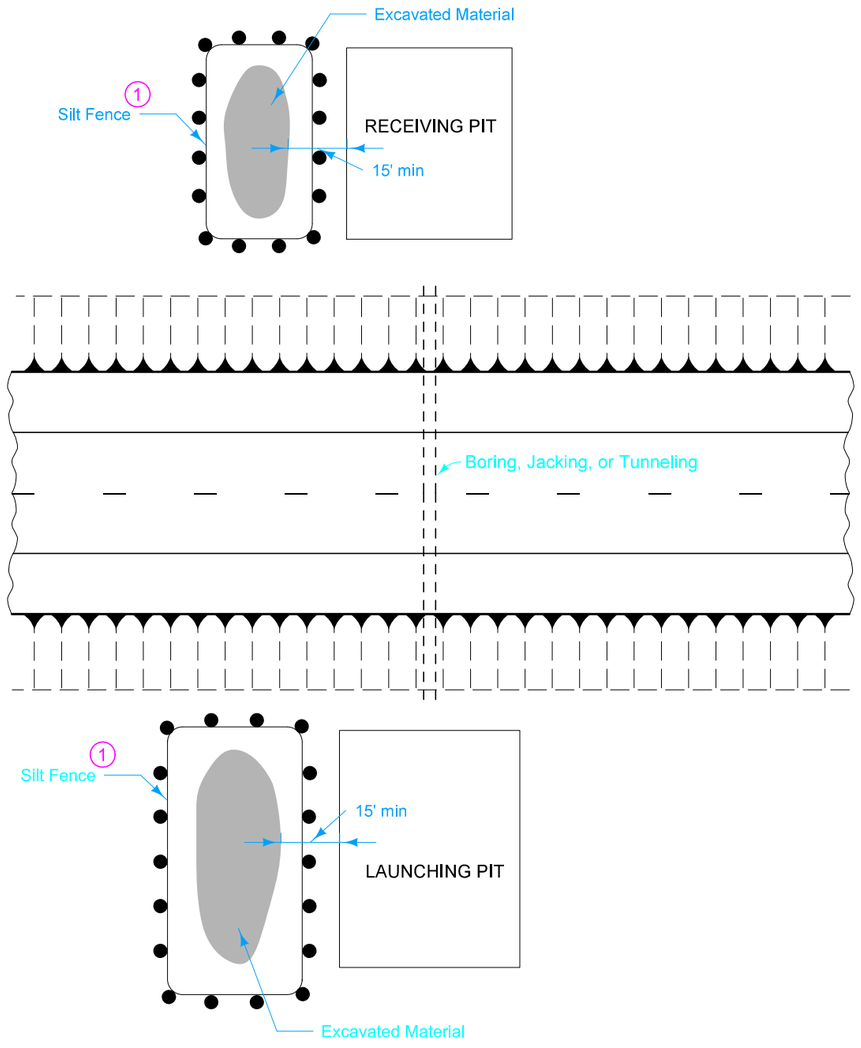
570-2

SHEET 1 of 1

REVISIONS: Modified some linework for clarity on the "Original Ground Line".

ROCK CHECK DAM

(1) Install silt fence to enclose excavated material.



Possible Contract Items:
Silt Fence
Removal of Silt Fence or Silt Fence for Silt Ditch Check

Possible Tabulations:
100-17

	REVISION
	NEW 04-18-17
ROAD DESIGN DETAIL	**570-09**
	SHEET 1 of 1

REVISIONS: NEW

EROSION CONTROL FOR TRENCHLESS CONSTRUCTION

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	CLINTON COUNTY	PROJECT NUMBER STPN-136-1(73)--2J-23	SHEET NUMBER U.2

11:45:22 AM 10/29/2019 dwherry K:\7805\SA26 701BT Clinton Culverts\Design\2313601013u01.sht