



Iowa Department of Transportation

Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM BENTON COUNTY PIPE CULVERTS

US 30, 1.5 MILES E. OF CO. RD. V-66

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

Value Engineering Saves. Refer to Article 1105.15 of the Specifications.

NO MILEAGE SUMMARY



REVISIONS

TOTAL

16

PROJECT IDENTIFICATION NUMBER

01-06-030-010

PROJECT NUMBER

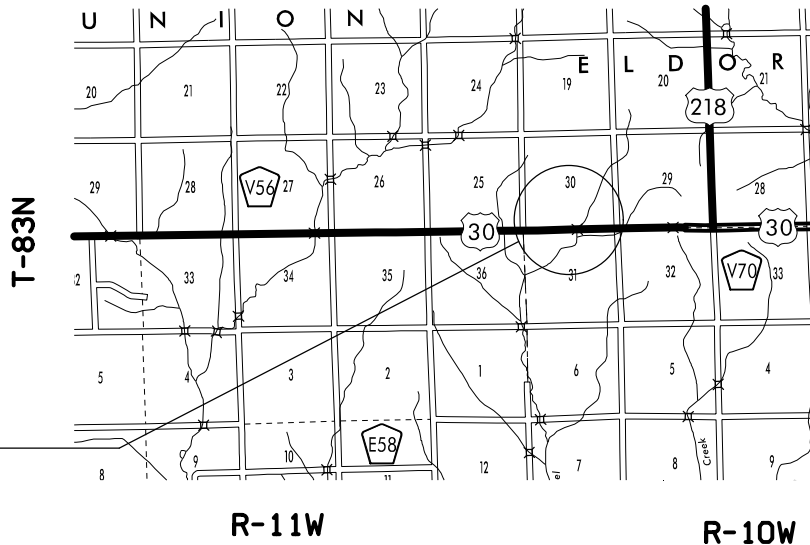
BRFN-030-6(128)--39-06

R.O.W. PROJECT NUMBER

NHSN-030-6(164)--2R-06

INDEX OF SHEETS

No.	DESCRIPTION
A Sheets	Title Sheets
A.1	Title Sheet
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C.1	Project Description
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C.1	Estimate Reference Information
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D Sheets	Mainline Plan and Profile Sheets
* D.1	Plan & Profile Legend & Symbol Information Sheet
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* D.3	Plan & Profiles - Clean out for Pipe Jacking
G Sheets	Survey Sheets
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G.1	Horizontal Control Tab. & Super for all Alignments
H Sheets	Right-of-Way Sheets
H.1	U.S. 30
J Sheets	Traffic Control and Staging Sheets
J.1	Traffic Control Plan
J.1	Staging Notes Stage
J.1	Tabulation of Special Events
J.1	Coordinated Operations
SPS Sheets	Bridge Plan Soils Sheets
SPS.1	Bridge Plan Soils Sheets
T Sheets	Earthwork Quantity Sheets
T.1	Earthwork Quantity Sheets
V Sheets	Bridge and Culvert Situation Plans
V.1	Bridge and Culvert Situation Plans
X Sheets	Pipe Jacking Cross Sections
X.1 - 3	Pipe jacking Cross Sections
	* Color Plan Sheets



PROJECT LOCATION

DESIGN DATA RURAL

2014 AADT	6,806	V.P.D.
2034 AADT	10,089	V.P.D.
2034 DHV	1,042	V.P.H.
TRUCKS	16	%
Total Design ESALs	--	

INDEX OF SEALS

SHEET NO.	NAME	TYPE
A.1	Paul W. Flattery	Primary Signature Block
SPS.1	Robert L. Stanley	Geotechnical Design
V.1	xxxxx	xxxxx

ROADWAY DESIGN



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.

Paul W. Flattery xx-xx-xxxx
Signature Date

Paul W. Flattery
Printed or Typed Name

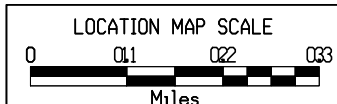
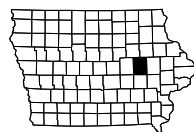
My license renewal date is December 31, 2013

Pages or sheets covered by this seal: A.1, C.1-C.3, D.1-D.3, G.1, J.1, T.1, and X.1-X.3

LETTING DATE
02/18/2014

PIPE CULVERTS
BRFN-030-6(128)--39-06

BENTON CO.



ENGLISH

IOWA DOT

DESIGN TEAM Flattery\Bell\Ringgenberg

BENTON COUNTY

PROJECT NUMBER

BRFN-030-6(128)--39-06

SHEET NUMBER

A.1

100-1D 10-18-05
PROJECT DESCRIPTION
Pipe Culverts for U.S. 30, 1.5 miles E. of Co. Rd. V-66

100-1A 07-15-97					
ESTIMATED PROJECT QUANTITIES (1 DIVISION PROJECT)					
Item No.	Item Code	Item	Unit	Total	As Built Qty.
1	2104-2710020	EXCAVATION, CLASS 10, CHANNEL	CY	168.0	
2	2506-4984000	FLOWABLE MORTAR	CY	32.5	
3	2507-3250005	ENGINEERING FABRIC	SY	125.0	
4	2507-6800061	REVTMENT, CLASS E	TON	90.0	
5	2528-8445110	TRAFFIC CONTROL	LS	1.00	
6	2533-4980005	MOBILIZATION	LS	1.00	
7	2599-9999005	GUARDRAIL POSTS	EACH	6	
8	2602-0000020	SILT FENCE	LF	250.0	
9	2602-0000071	REMOVAL OF SILT FENCE OR SILT FENCE FOR DITCH CHECKS	LF	250.0	
10	2602-0000212	FLOATING SILT CURTAIN (HANGING)	LF	200.0	
11	2602-0010010	MOBILIZATIONS, EROSION CONTROL	EACH	1	

100-4A 10-29-02		
ESTIMATE REFERENCE INFORMATION		
Item No.	Item Code	Description
1	2104-2710020	EXCAVATION, CLASS 10, CHANNEL For excavation involved in channel change of Weasel Creek located at Sta.635+18. Refer to Sheets T.1 and W
-	-	-
2	2506-4984000	FLOWABLE MORTAR Includes 32.5 cu.yds. for backfill over Steel Arch Pipe insert. Refer to Tab. 100-21 for locations and details.
-	-	-
3	2507-3250005	ENGINEERING FABRIC See Sheet V.1 for locations and details.
-	-	-
-	-	Refer to Tab. 100-23.
-	-	Engineering fabric shall be material as specified for embankment erosion control, Article 4196.01C. Material shall be measured in sq. yds. of actual area covered. Refer to details.
-	-	-----
-	-	The tabulation includes estimated locations for placement of "Engineering Fabric" to address erosion to be encountered during construction. Verify the specific locations with the Engineer prior to beginning placement. Bid item includes 30% additional quantity for other locations of erosion.
-	-	-
4	2507-6800061	REVTMENT, CLASS E Refer to Tab. 100-23 and V.1 Sheet for locations and details.
-	-	-
5	2528-8445110	TRAFFIC CONTROL - -
-	-	-
6	2533-4980005	MOBILIZATION - -
-	-	-
7	2599-9999005	GUARDRAIL POSTS For replacement of the existing guardrail posts impacted by the pipe jacking operation. Method of measurement will be by count of actual posts replaced. Basis of Payment will include all materials, equipment, and labor needed to install posts.
-	-	-
8	2602-0000020	SILT FENCE Refer to Tab. 100-17. The tabulation includes estimated locations for placement of "Silt Fence" to address erosion to be encountered during construction. Verify the specific locations with the Engineer prior to beginning placement. Bid item includes 25% additional quantity for field adjustments and replacements.
-	-	-
9	2602-0000071	REMOVAL OF SILT FENCE OR SILT FENCE FOR DITCH CHECKS This item is included for silt fence and silt fence for ditch check removal required for staging reasons, removal to allow for replacement (replacement to be paid separately), or for areas that have achieved 70% permanent growth.
-	-	-
10	2602-0000212	FLOATING SILT CURTAIN (HANGING) Refer to Tab. 100-10 for location and details.
-	-	-
11	2602-0010010	MOBILIZATIONS, 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
EC-201	04-20-10	Silt Fence
EC-202	04-17-12	Floating Silt Curtain
TC-1	04-16-13	Work Not Affecting Traffic (Two-Lane or Multi-Lane)

111-25
10-18-11

INDEX OF TABULATIONS

Tabulation	Tabulation Title	Sheet No.
C Sheets		
100-1A	ESTIMATED PROJECT QUANTITIES (1 DIVISION PROJECT)	C.1
100-1D	PROJECT DESCRIPTION	C.1
100-4A	ESTIMATE REFERENCE INFORMATION	C.1
100-10	FLOATING SILT CURTAINS	C.3
100-17	TABULATION OF SILT FENCES	C.3
100-21	TABULATION OF FLOWABLE MORTAR BACKFILL	C.3
100-23	ROCK DITCH CHECKS/DITCHES/FLUMES/SPLASH BASINS/SLOPE PROTECTION	C.3
104-4	DRAINAGE STRUCTURES BY CULVERT CONTRACTOR	C.3
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111-25	INDEX OF TABULATIONS	C.2
232-3A	EROSION CONTROL (RURAL SEEDING)	C.2
232-3C	EROSION CONTROL (NATIVE GRASS SEEDING)	C.2
232-11	EROSION CONTROL (STABILIZING CROP SEEDING)	C.2
262-5	UTILITIES (POINT 25 PROJECT)	C.2
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J Sheets		
102-15	TABULATION OF SPECIAL EVENTS	J.1
108-23A	TRAFFIC CONTROL PLAN	J.1
108-26A	STAGING NOTES	J.1
111-01	COORDINATED OPERATIONS	J.1

232-3A
Modified

EROSION CONTROL (RURAL SEEDING)

Following the completion of work in a disturbed area, place seed, fertilizer, and mulch on the disturbed area lying 8 feet adjacent to shoulder and median as follows:

Use seed mix and fertilizer meeting the requirements of Section 2601.03,C,3 of the Standard Specifications.

Use mulch meeting the requirements of Sections 2601.03,E,2,a and 4169.07,A of the Standard Specifications.

Preparing the seedbed and furnishing and applying seed, fertilizer, and mulch is incidental to mobilization and will not be paid for separately.

232-11
Modified

EROSION CONTROL (STABILIZING CROP SEEDING)

Following the completion of work in a disturbed area, place stabilizing crop, fertilizer, and mulch on the disturbed area as follows:

Use seed mix and fertilizer meeting the requirements of Section 2601.03,C,1 of the Standard Specifications.

Use mulch meeting the requirements of Sections 2601.03,E,2,a and 4169.07,A of the Standard Specifications.

Preparing the seedbed and furnishing and applying seed, fertilizer, and mulch is incidental to mobilization and will not be paid for separately.

262-5
10-18-05

UTILITIES (POINT 25 PROJECT)

This is a POINT 25 project and is subject to the provisions of IAC 761-115.25.

232-3C
Modified

EROSION CONTROL (NATIVE GRASS SEEDING)

Following the completion of work in a disturbed area, place seed and mulch on the disturbed area lying 8 feet or more beyond the shoulder as follows:

SEED MIX:

Big bluestem (<i>Andropogon gerardii</i>)	6 lbs. PLS/Acre (7.0 kg/ha)
Indiangrass (<i>Sorghastrum nutans</i>)	6 lbs. PLS/Acre (7.0 kg/ha)
Little bluestem (<i>Schizachyrium scoparium</i>)	6 lbs. PLS/Acre (7.0 kg/ha)
Partridge Pea (<i>Chamaecrista fasciculata</i>)	4 lbs. PLS/Acre (4.5 kg/ha)
Sideoats grama (<i>Bouteloua curtipendula</i>)	4 lbs. PLS/Acre (4.5 kg/ha)
Canada wildrye (<i>Elymus canadensis</i>)	2 lbs. PLS/Acre (2.2 kg/ha)
Switchgrass (<i>Panicum virgatum</i>)	1 lbs. PLS/Acre (1.1 kg/ha)
Oats (<i>Avena sativa</i>)	32 lbs./Acre (36.0 kg/ha)

Big bluestem, Indiangrass, Canada wildrye and Little bluestem shall be debarbed or equal to facilitate the application of seed.

Use mulch meeting the requirements of Sections 2601.03,E,2,a and 4169.07,A of the Standard Specifications.

Preparing the seedbed and furnishing and applying seed and mulch is incidental to mobilization and will not be paid for separately.

281-1
10-15-13

SECTION 404 PERMIT AND CONDITIONS

Construct this project according to the requirements of U.S. Army Corps of Engineers Nationwide, Permit No. 3. A copy of this permit is available from the Iowa DOT website (<http://envpermits.iowadot.gov/CMEPortalENV/Home.aspx>). The U.S. Army Corps of Engineers reserves the right to visit the site without prior notice.

DRAINAGE STRUCTURES BY CULVERT CONTRACTOR

* Not a Bid Item

Location	Design Number	Size Ft.	Kind	Lgth. New Const. Lin. Ft.	No. of Aprons	Flow Line Elevation				Dimensions - Lin. Ft.				Skew Ahead		By Road Contractor				Floodable* Backfill (A) Cu. Yds.	Porous* Backfill (B) Cu. Yds.	Flooded Backfill (A+B) Cu. Yds.	Remarks		
						Left	Right	Other	Other	Left	Right	Left	Right	Left	Right	Degrees	Dike							Comp. Backfill Cu. Yds.	
																	Rt.	Location Station	Top. Elev.						Type
635+00		7.0	RCP	86	0	864.00	862.00			40	46													NOTE (1)	
635+18			RF-32	40	0	866.20	865.88			19	21			ABOUT 2											NOTE (2)
																								NOTE (1): Entire pipe jacked after RCB lined. Ditch inlet, shape outlet	
																								NOTE (2): Line RCB prior to jacking pipe at Sta. 635+00 Minimal headroom clearance in portion to be lined.	

* Design shown for mandatory locations is the minimum allowed.

100-23
10-19-10

ROCK DITCH CHECKS/DITCHES/FLUMES/SPLASH BASINS/SLOPE PROTECTION

Refer to Typical 4401, 4402, 4403, 4404, and 4405

Location		Side Lt./Rt.	Mandatory* Location (yes or no)	Rock Ditch Check	Rock Ditch	Rock Flume	Rock Splash Basin	Rock Slope Protection	Type	Erosion Stone	Material		Remarks
Road Identification	Station										Class E Revetment	Eng. Fabric	
										TON	TON	SY	
U.S. 30	635+00.00	Lt. & Rt.									90.0	125.0	See V.1 Sheet

* Not a bid item

100-21
08-01-08

TABULATION OF FLOWABLE MORTAR BACKFILL

Mile Post	Station	Pavement		Subdrain		Subgrade			Remarks
		Thickness IN	Pave. Area SY	4" Perf. Subdrain* LF	Subdrain Outlet* STA	Lt./Rt.	Granular Backfill TON	Special Backfill TON	
	635+18.50								32.5 Line existing RCB with Steel Arch Pipe. Backfill around liner with Flowable Mortar.

100-10
10-18-11

FLOATING SILT CURTAINS

Refer to EC-202

Station	Hanging	Containment	Clean-out (Containment)	Remarks
	LF	LF	LF	
635+00.00	200.0			
















100-17
04-20-10

TABULATION OF SILT FENCES

Refer to EC-201

Location			Length LF	Remarks
Begin Station	End Station	Side		
635+00.00		Rt	100.0	
635+00.00		Lt	100.0	
		adjustments	50.0	
		Bid Quantity	250.0	

SURVEY SYMBOLS

-  SI Sign
-  MIS Miscellaneous
-  PPA Power Pole Co. 1
-  FW Wire Fence
-  TIL Tile Line
-  OUT Tile Outlet
-  D Centerline Draw or Stream (Down)
-  DIK Centerline of Dike or Dam
-  SNP Unpaved Shoulder
-  ENU Edge Unpaved Entrance & Parking
-  DU Centerline Draw or Stream (Up)
-  RIP Rip-Rap
-  FOA Underground Fiber Optic Co. 1
-  WLA Underground Water Line Co. 1
-  FOB Underground Fiber Optic Co. 2

UTILITY LEGEND

This is a POINT 25 Project and is subject to the provisions of IAC 761-115.25.














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 steve.marlow@ecirec.coop

-E1-







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 robert.sampson@centurylink.com

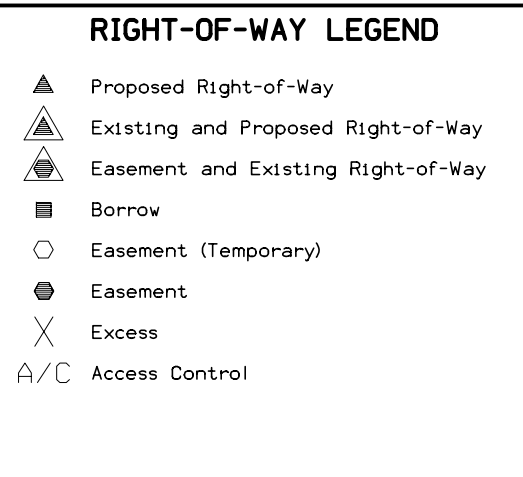
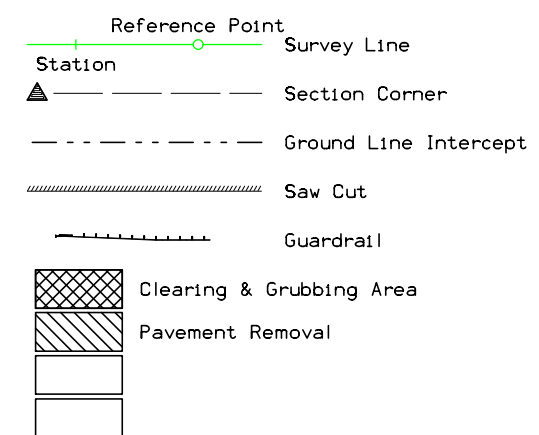
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PLAN VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

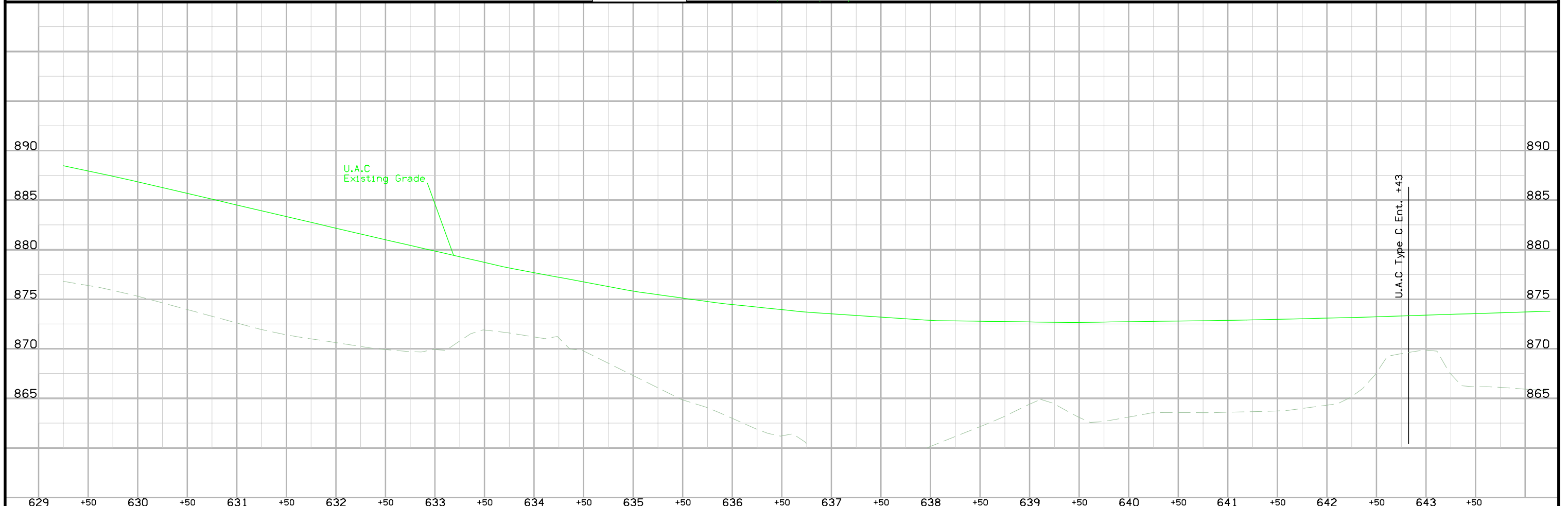
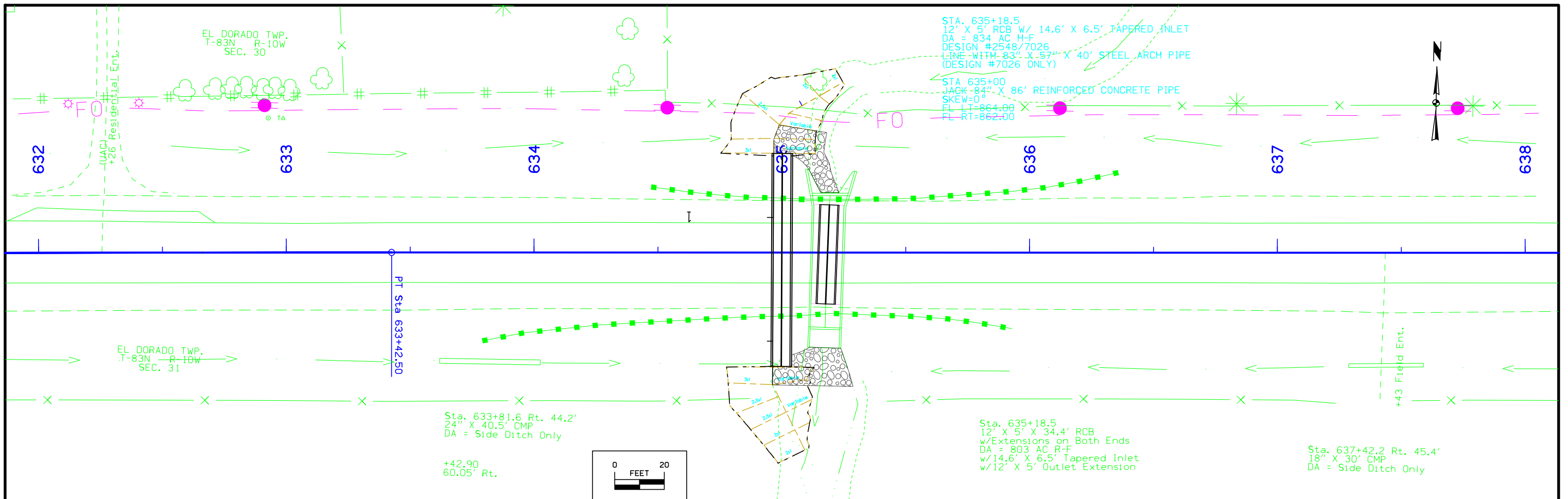
LINEWORK		Design Color No.	
Green	(2)		Existing Topographic Features and Labels
Blue	(1)		Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
Magenta	(5)		Existing Utilities
SHADING		Design Color No.	
Yellow	(4)		Highlight for Critical Notes or Features
Red	(3)		Delineates Restricted 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
Brown, Light	(236)		Grading Shading
Tan	(8)		Proposed Sidewalk Shading
Blue, Light	(230)		Proposed Sidewalk Landing Shading
Pink	(11)		Proposed Sidewalk Ramp 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



PLAN AND PROFILE
 LEGEND AND SYMBOL
 INFORMATION SHEET
 (COVERS SHEET SERIES D, E, F, & K)

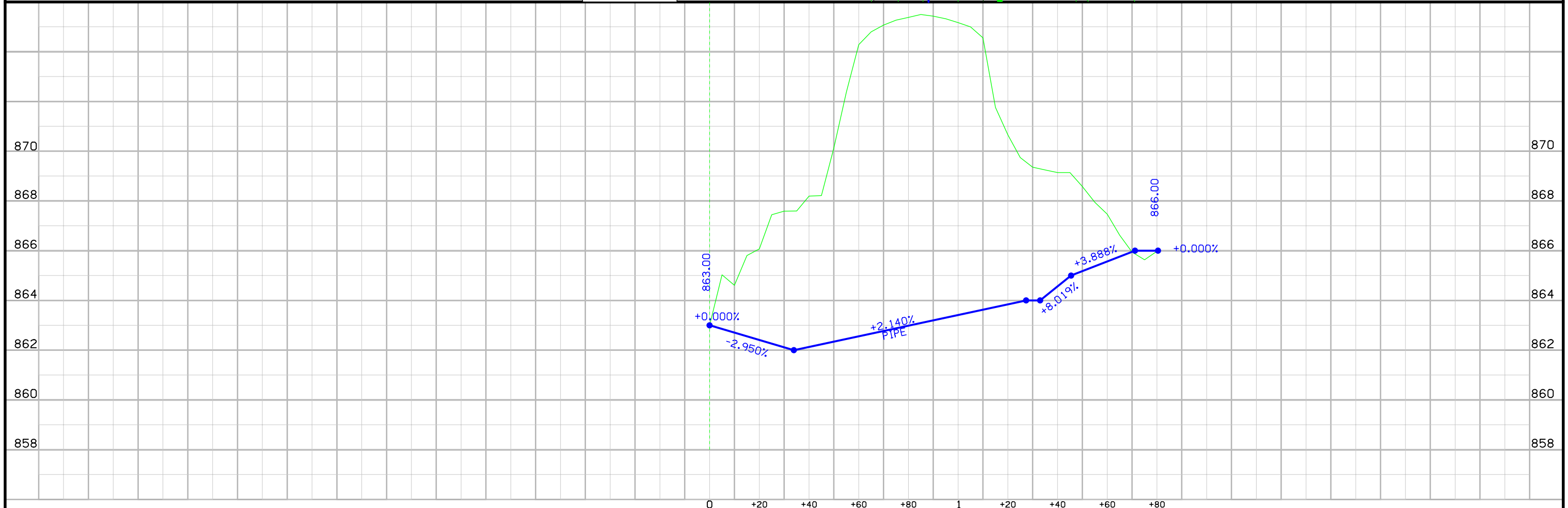
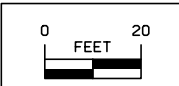


EL DORADO TWP.
T-83N R-10W
SEC. 30

Sta. 635+18.5
12' X 5' RCB W/ 14.6' X 6.5' TAPERED INLET
DA = 834 AC H-F
DESIGN #2548/7026
LINE WITH 83" X 57" X 40' STEEL ARCH PIPE
(DESIGN #7026 ONLY)

Sta. 635+00
JACK 83" X 86' REINFORCED CONCRETE PIPE
SKEW=0°
FL LT=864.00
FL RT=862.00

Sta. 635+18.5
12' X 5' X 34.4' RCB
w/Extensions on Both Ends
DA = 803 AC R-F
w/14.6' X 6.5' Tapered Inlet
w/12' X 5' Outlet Extension



Benton County
 SAP 0620
 BRP-30-6(128)--38-06
 Pin 01-06-030-010

US 30 - RCB 1.6 miles East of Co. Rd. V-66 (Ia 82 to South)

General Information:

Note: The horizontal coordinates on this project are state plane project feet minus 2 million/2 million. These coordinates are the same as previous IDOT surveys in the area. IDOT GPS Control network monuments & IDOT benchmarks found in the SAP 0149 & SAP 0150 projects were held fixed in the Horizontal & Vertical Calibration of this project.

6 points [61-65,67] were held in Horizontal RTK Calibration of this project,
 3 points [324,325,326] were held in the Horizontal and Vertical RTK Calibration of this project.
 7 points [662,664,667,669,670,672,674] were held in the Vertical RTK Calibration of this project.

Vertical Datum:

This survey is relative to NAVD 88 vertical datum. NGS datasheets show a vertical difference of 0.02' (88 Higher than 29) between NAVD88 to NGVD29.

The benchmarks at this site were established along an IDOT 3-wire level run that originated at 3rd order BM 613 (UE 13 B). That level run terminated at BM 677 (Young PID MH0453).

This survey datum is 3.61 feet +/- Lower than the elevations shown on the F-270 AB plan along US 30 at this site.

Vertical Equations:

BM # 669 this survey Elev. = 874.48 (NAVD 88 datum)
 =BM # 669 Elev. = 874.48 1999 IDOT Planning DTM Survey NHS-30-6(87)--19-06
 =BM # 669 Elev. = 874.48 2001 SAP 0388 Survey
 =BM # 63A Elev. = 878.09 F-270 AB Plans

Horizontal Datum & Project Coordinate Transformation:

The coordinate system for this survey is the same as the Tama Benton US 30 Planning DTM Surveys. Tama SAP 0149, NHS-30-6(88)--19-86 & Benton SAP 0150 NHS-30-6(87)--19-06. Note ** ALL Metric GPS Coordinates in the IDOT GPS Network were converted to English units then 2,000,000 was subtracted from Local Project Plane Y & X Coordinates.

Iowa State Plane North Zone coordinates found in the IDOT GPS Network in feet were transformed to project ground coordinates using a 1/combined scale factor broadcast about a held point (G040) near the center of the US 30 Tama Benton GPS Network. The held State Plane coordinate and project coordinate at Control Point # 40 are N=1452526.454 E= 3257114.226

COMBINED FACTOR (GRID) = 0.999975361
 1 / GRID = 1.00024640
 VERTICAL DATUM = NAVD 88 HORIZONTAL DATUM = NAD 83 (1996)

Local Project Plane Coordinate Conversion Equation:
 a. Local Project Coord y = [(State Plane y - hold point y) 1/grid factor] + hold point y
 b. Local Project Coord x = [(State Plane x - hold point x) 1/grid factor] + hold point x

POINT	Feet STATE PLANE COORD (Y)	Feet STATE PLANE COORD (X)	POINT SCALE FACTOR	Feet LOCAL PROJECT PLANE COORD (Y)	Feet LOCAL PROJECT PLANE COORD (X)	ESTIMATED GPS DERIVED ORTHOMETRIC HEIGHT
G040	1452526.454	3257114.226	1.00002013	1452526.454	3257114.226	948.013
G061	1453030.754	3308468.520	1.00002031	1453030.767	3308469.786	908.965
G062	1453119.586	3311851.118	1.00002029	1453119.599	3311852.466	893.755
G063	1453085.505	3313675.150	1.00002033	1453085.518	3313676.544	879.152
G064	1453142.539	3316335.305	1.00002032	1453142.555	3316336.765	884.313
G065	1453271.781	3318684.930	1.00002027	1453271.800	3318686.445	912.564
G066	1453098.733	3319609.364	1.00002038	1453098.746	3319610.902	901.642
G067	1453094.829	3321751.718	1.00002041	1453094.842	3321753.309	923.174

Alignment:

The mainline alignment is a retrace of the existing alignment found on the F-270 AB plans. Stationing was backed up & carried forward from PI Sta 630+42.50.

Alignment Equations:

PI Sta 617+35.35 This Survey
 = PI Sta 617+35.0 F-270 AB plan
 = PI Sta 1408+37.738 SAP 0150 Planning DTM Survey NHS-30-6(87)--19-06

PI Sta 630+42.50 This Survey
 = PI Sta 630+42.5 F-270 AB plan
 = PI Sta 1421+44.898 SAP 0150 Planning DTM Survey NHS-30-6(87)--19-06

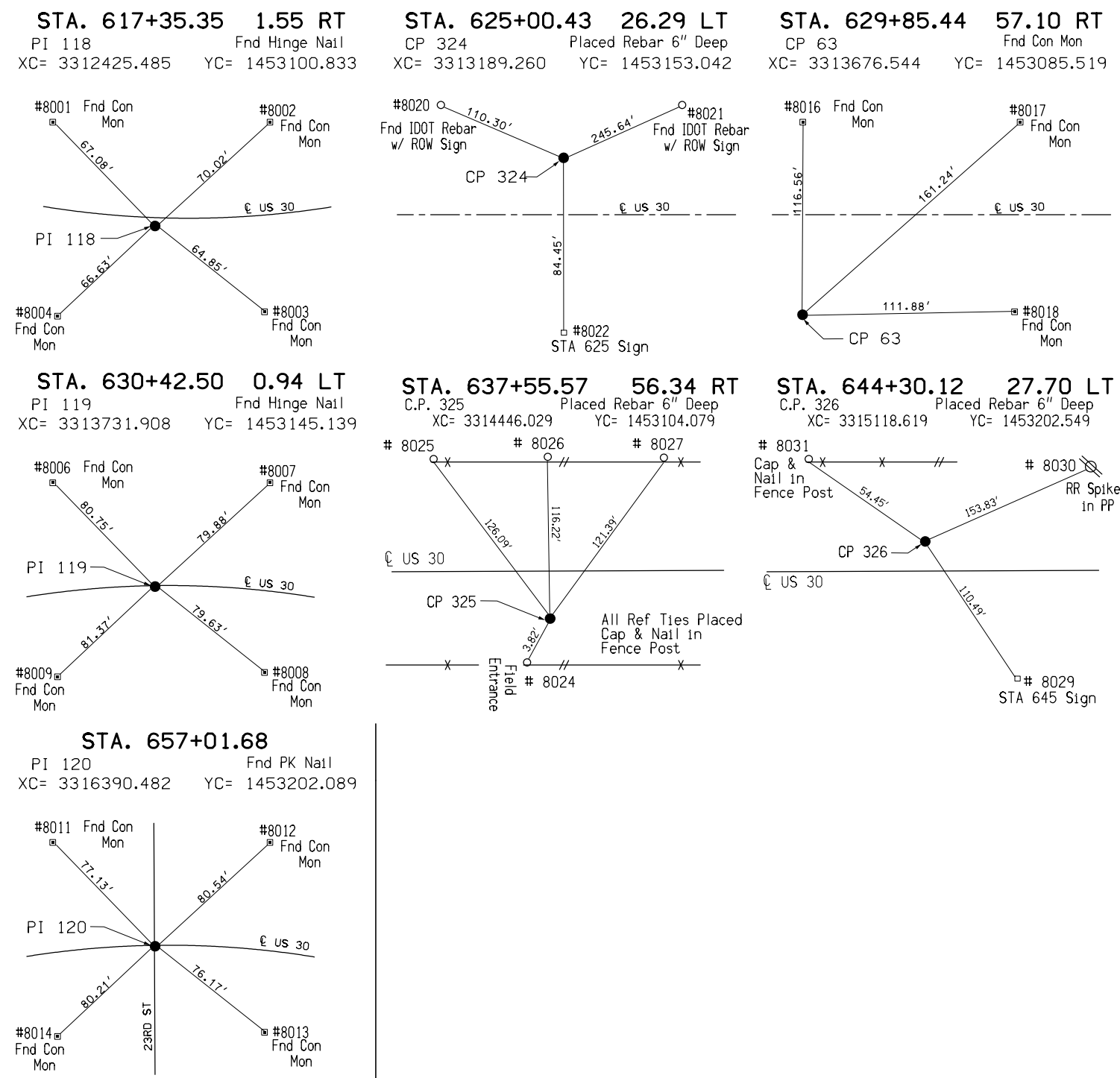
PI Sta 657+01.68 This Survey
 = PI Sta 657+03.2 F-270 AB plan
 = PI Sta 1448+04.078 SAP 0150 Planning DTM Survey NHS-30-6(87)--19-06

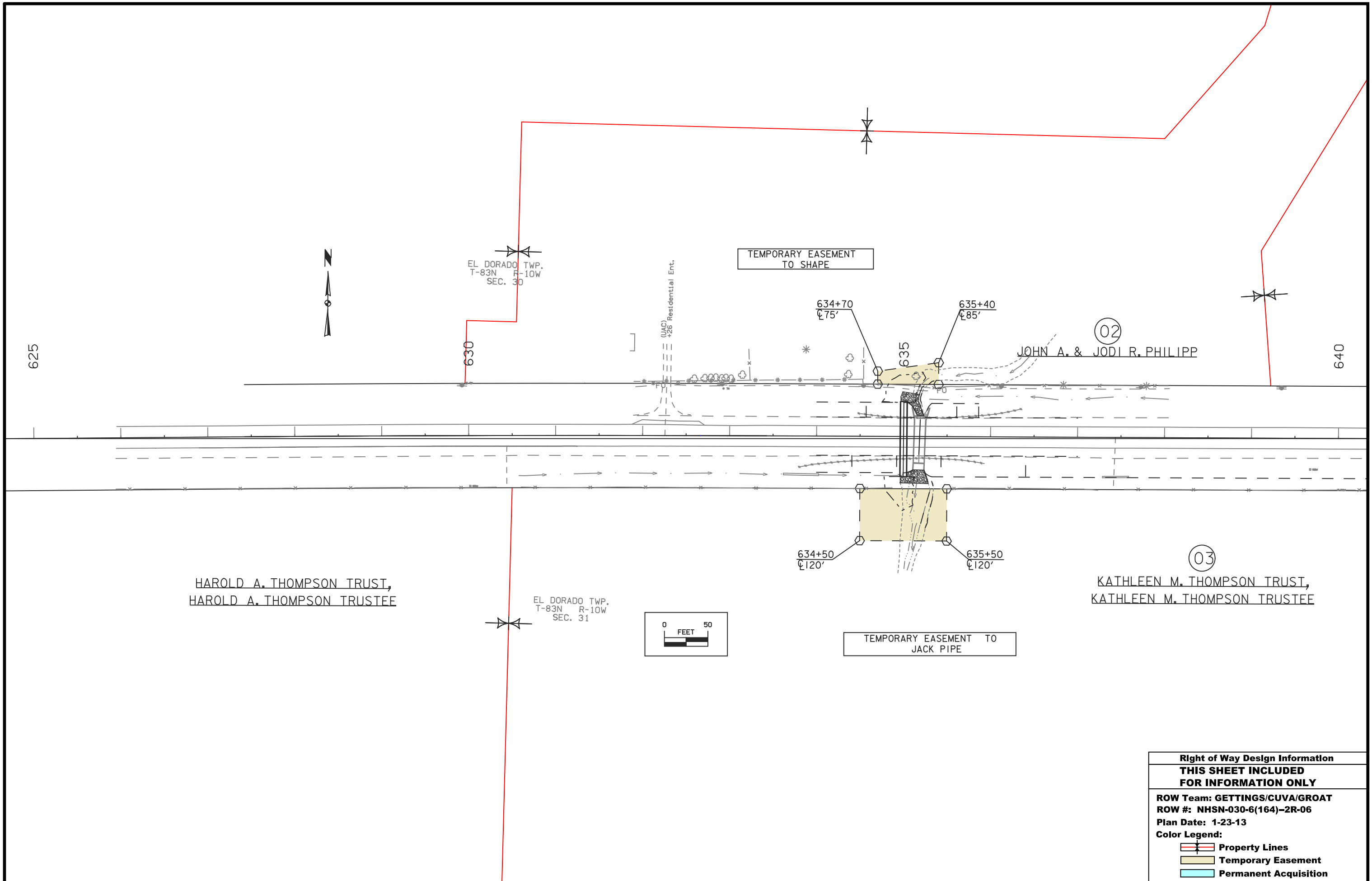
BENCHMARKS

No.	Sta.	Coord	Dist	Lat	Long	Description	ELEVATION
No. 667	Sta. 622+33.379	26.34	Lt.	Y:1453144.039	X:3312922.359	Fd IHC BM on Inlet Hdwl Twin 3 x 3 RCB	875.369
No. 668	Sta. 629+92.419	58.348	Lt.	Y:1453201.116	X:3313680.202	=F-270 AB Plan BM #61A EL879.03-----	884.675
No. 669	Sta. 635+19.454	23.476	Lt.	Y:1453178.824	X:3314208.258	Fd RR Spk S Side PP-----	874.482
No. 670	Sta. 645+80.776	58.762	Lt.	Y:1453236.832	X:3315268.580	=F-270 AB Plan BM #63A EL878.09-----	881.582
No. 671	Sta. 657+33.514	60.409	Lt.	Y:1453263.096	X:3316421.158	Fd RR Spk S Side PP-----	887.129
No. 672	Sta. 659+62.944	23.438	Lt.	Y:1453230.521	X:3316651.254	Fd IHC BM on Inlet Hdwl 6 x 5 RCB-----	886.659
No. 674	Sta. 686+94.163	30.255	Lt.	Y:1453289.584	X:3319381.842	Fd IHC BM on Inlet Hdwl 2 x 2 RCB-----	906.749

MISCELLANEOUS LOCATIONS

No. 662	Y:1453076.231	X:3308108.158	Fd IHC BM on Inlet Hdwl 2 x 2 RCB-----	911.392
No. 664	Y:1453098.943	X:3310236.274	Fd IHC BM on Inlet Hdwl 12 x 6 RCB-----	874.865





HAROLD A. THOMPSON TRUST,
HAROLD A. THOMPSON TRUSTEE

KATHLEEN M. THOMPSON TRUST,
KATHLEEN M. THOMPSON TRUSTEE

TEMPORARY EASEMENT
TO SHAPE

TEMPORARY EASEMENT TO
JACK PIPE

Right of Way Design Information	
THIS SHEET INCLUDED FOR INFORMATION ONLY	
ROW Team: GETTINGS/CUVA/GROAT	
ROW #: NHSN-030-6(164)-2R-06	
Plan Date: 1-23-13	
Color Legend:	
	Property Lines
	Temporary Easement
	Permanent Acquisition

102-15
08-01-08

TABULATION OF SPECIAL EVENTS

Event	Location	Date
NONE PROVIDED		

108-23A
08-01-08

TRAFFIC CONTROL PLAN

Traffic on U.S. 30 will be maintained at all times.

108-26A
08-01-08

STAGING NOTES

Stage 1: Line RCB with 83"x57"x40' Steel Arch Pipe.

Stage 2: Jack 84'x86' Reinforced Concrete Pipe. Stage 1 must be done prior to jacking pipe.

111-01
04-17-12

COORDINATED OPERATIONS

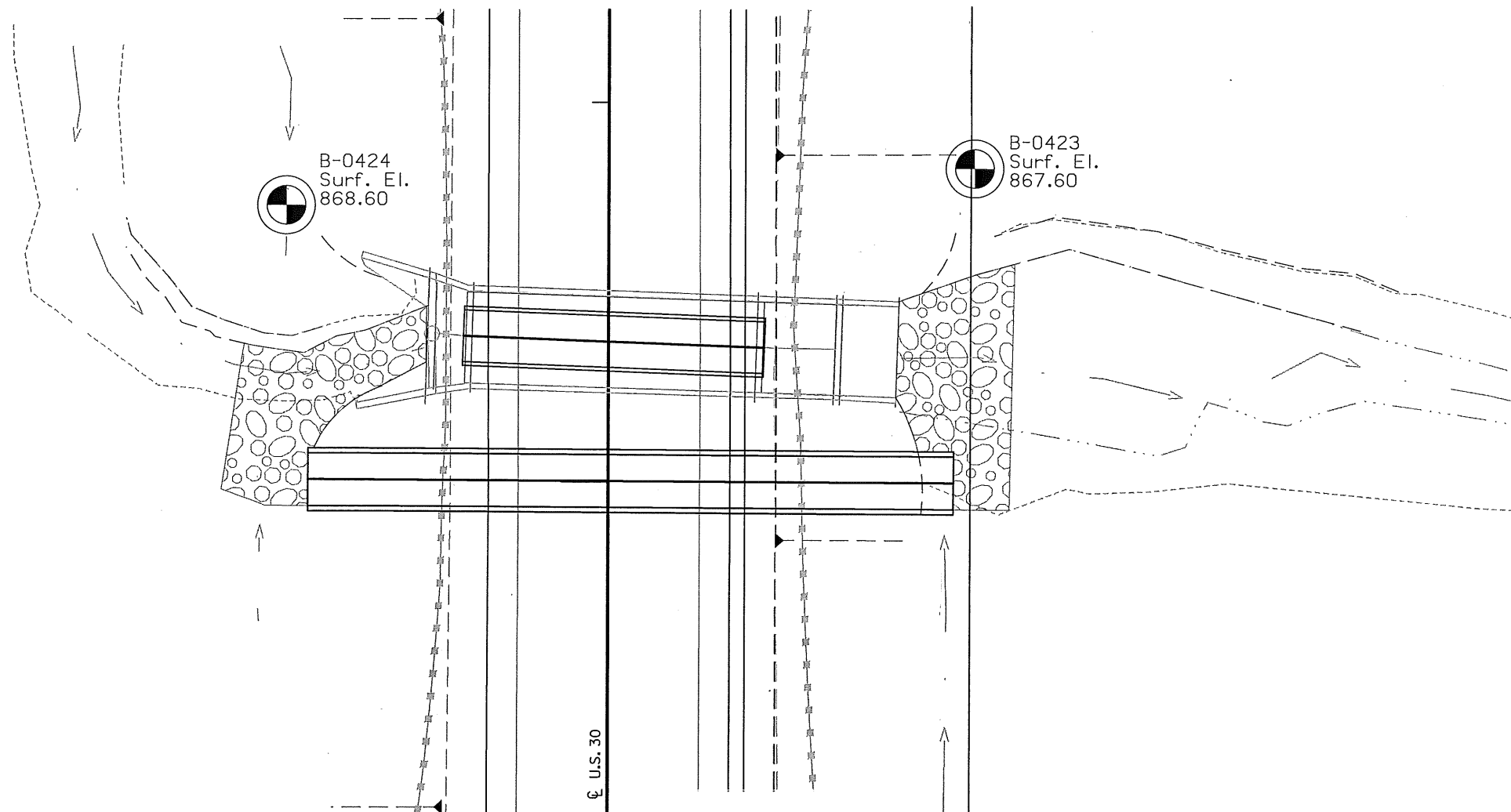
Other work in progress during the same period of time will include the construction of the projects listed. Coordinate operations with those of other contractors working within the same area.

Project	Type of Work
NONE PROVIDED	

STA 635+50

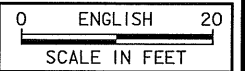
STA 635+00

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



LOCATION

U.S. 30 OVER WEASEL CREEK
T-83N R-10W
SECTION 30/31
EL DORADO TOWNSHIP
BENTON COUNTY
BRIDGE MAINT. NO. 0630.5P



GEOTECHNICAL DESIGN



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: *Robert L. Stanley* 4-17-13
Printed or Typed Name: Robert L. Stanley
My license renewal date is December 31, 2014.

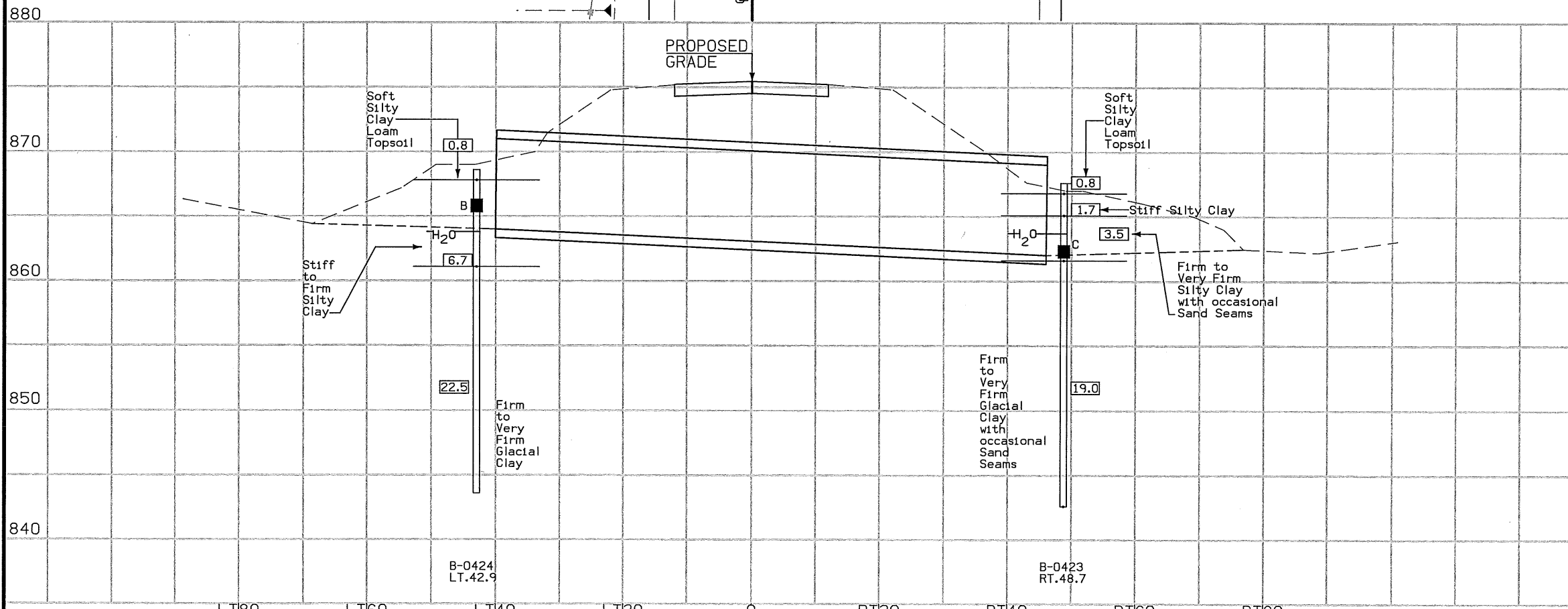
Pages or sheets covered by this seal: _____ SPS.1

DESIGN FOR 0° SKEW PIPE
84" x 86' REINFORCED CONCRETE PIPE
& 83" x 57" x 40' STEEL ARCH LINER

SOIL PROFILE SHEET
STATION: 635+00.00 (PIPE), 635+18.50 (LINER)
BENTON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 1 OF 1 FILE NO. 30822 DESIGN NO. _____

Note: 0.8
INDICATES LAYER THICKNESS



LEGEND		SOILS BOOK NO. _____
-H ₂ O-	WATER	SOIL REMEDIATION AREA LIMESTONE (L.S.) BROKEN & WEATHERED L.S. SANDSTONE SHALE SANDY SOIL
- DRY	DRY	
-4-	PLUGGED	
M	MOISTURE	
■	SHELBY	
■	BLOW COUNT	
■	DENS. CORE	
⊙	SAMPLE	
⊙	BLOW COUNT LAYER - NO. BLOWS	
⊙	DIAMOND CORE	
⊙	SAND	
⊙	GRAVELLY SAND	
⊙	BOULDERS	

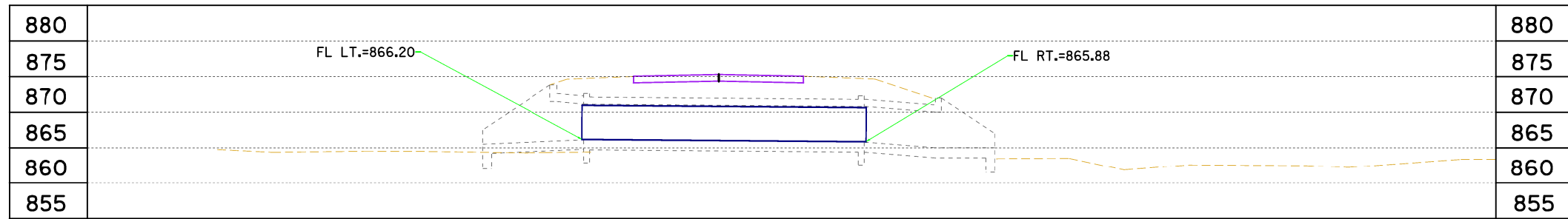
Boring No.	Date Drilled	GroundWater Level (Ft.)
B-0423	08/22/2012	3.90
B-0424	08/22/2012	4.80

SHELBY TUBE CORE DATA		
CORE NO.	B-0423-C	B-0424-B
CLASSIFICATION [AASHTO]	A-6(10)	A-7-6(29)
COEFF. CONSOL. SQ. FT / DAY	0.913	0.169
TRIAxIAL COMPRESSION	CU	CU*
COHESION - PSF	465	323
FRICTION COEFF.	0.150	0.204
MOISTURE CONTENT %	18.3	29.5
DRY DENSITY - PCF	101.1	84.5
CU-CONSOLIDATED UNDRAINED TRIAXIAL		
CU*-CU WITHOUT SATURATION OR PORE PRESSURE MEASUREMENTS		

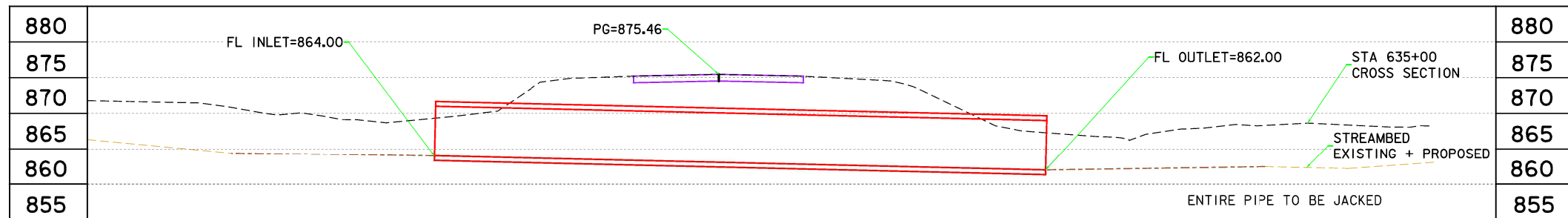
TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

Refer to Standard Plan EW-101 and RL-1B.

STATION	TOTAL CUT		Ø CLASS 10 SUITABLE CUT	Ø ADJUSTED CLASS 10 TOTAL									STATION	TOTAL CUT		Ø CLASS 10 SUITABLE CUT	Ø ADJUSTED CLASS 10 TOTAL							
0+10.00	19		19	19																				
0+20.00	34		34	34																				
0+30.00	20		20	20																				
0+40.00			0	0																				
1+20.00	20		20	20																				
1+30.00	38		38	38																				
1+40.00	26		26	26																				
1+50.00	11		11	11																				
1+60.00			0	0																				
Totals	168																							



LONGITUDINAL SECTION ALONG ϕ 83" x 57" x 40' STEEL ARCH LINER IN EXIST. RCB



LONGITUDINAL SECTION ALONG ϕ 84" x 86' JACKED PIPE

-2.400% 0.300%

PI STA 634+87.03 VC = 300'
PI ELEV 874.57

ESTIMATED PROFILE GRADE ON U.S. 30

PROFILE GRADE LINE (PGL) IS AT ϕ .
U.A.C. EXIST. GRADE

UTILITIES LEGEND:

PPA R.E.C. VINTON
FO LIGHT CORE

TRAFFIC ESTIMATE

A.A.D.T. = 6,806 VPD (2014)
A.A.D.T. = 10,089 VPD (2034)
D.H.V. = 1,042 VPH (2034)
16% TRUCKS
TOTAL DESIGN ESAL'S = ?

STA. 635+18.5
12' X 5' RCB W/ 14.6' X 6.5' TAPERED INLET
DA = 834 AC H-F
DESIGN #2548/7026
LINE WITH STEEL ARCH PIPE
(DESIGN #7026 ONLY)
PLUS JACK 84" X 86' CONCRETE PIPE

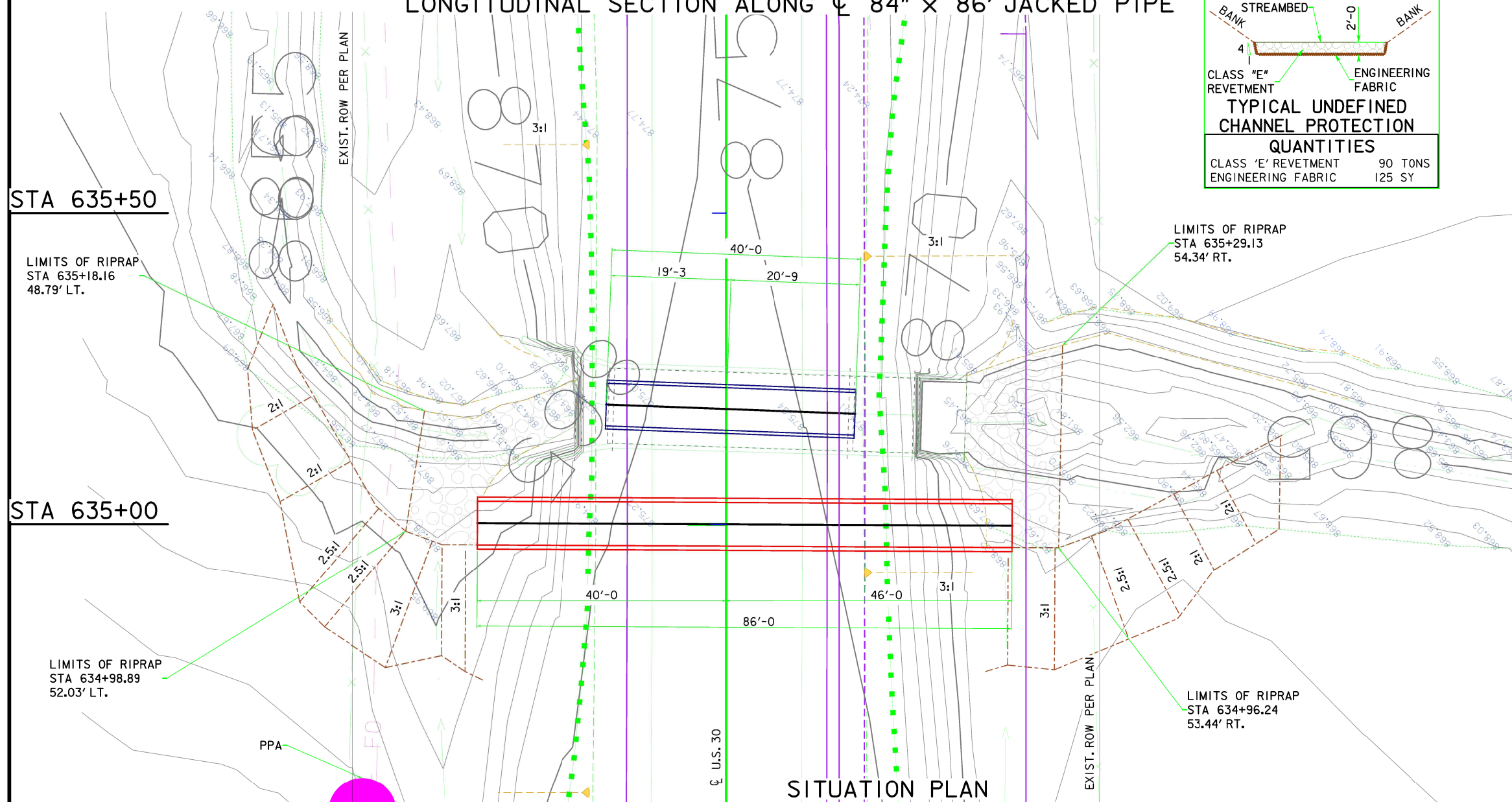
STREAMBED BANK 2'-0" BANK

CLASS "E" REVETMENT ENGINEERING FABRIC

TYPICAL UNDEFINED CHANNEL PROTECTION

QUANTITIES

CLASS 'E' REVETMENT	90 TONS
ENGINEERING FABRIC	125 SY



LIMITS OF RIPRAP
STA 635+29.13
54.34' RT.

LIMITS OF RIPRAP
STA 635+18.16
48.79' LT.

LIMITS OF RIPRAP
STA 634+98.89
52.03' LT.

LIMITS OF RIPRAP
STA 634+96.24
53.44' RT.

HYDRAULIC DATA

DRAINAGE AREA= 1.3 MI² H-R
STREAM SLOPE= 22.3 FT./MI.

Q₅ = 329 CFS
HEADWATER= 869.66

Q₅₀ = 658 CFS
HEADWATER= 872.56

Q₁₀₀ = 790 CFS
HEADWATER= 874.12

Q₅₀₀ = 1118 CFS
Q OVERTOPPING= 855 CFS, STA 636+00

LOCATION

U.S. 30 OVER WEASEL CREEK
T-83N R-10W
SECTION 30/31
EL DORADO TOWNSHIP
BENTON COUNTY
BRIDGE MAINT. NO. 0630.5B030



PRELIMINARY

DESIGN FOR 0° SKEW PIPE

84" x 86' REINFORCED CONCRETE PIPE & 83" x 57" x 40' STEEL ARCH LINER

SITUATION PLAN
STATION: 635+00.00 (PIPE), 635+18.50 (LINER) ?
BENTON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. _____ OF _____ FILE NO. 30822 DESIGN NO. _____

