



**Highway Division**

PLANS OF PROPOSED IMPROVEMENT ON THE

**PRIMARY ROAD SYSTEM  
POWESHIEK COUNTY  
PIPE CULVERTS**

1.5 mi W of Deep River

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

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



REVISIONS

TOTAL

X

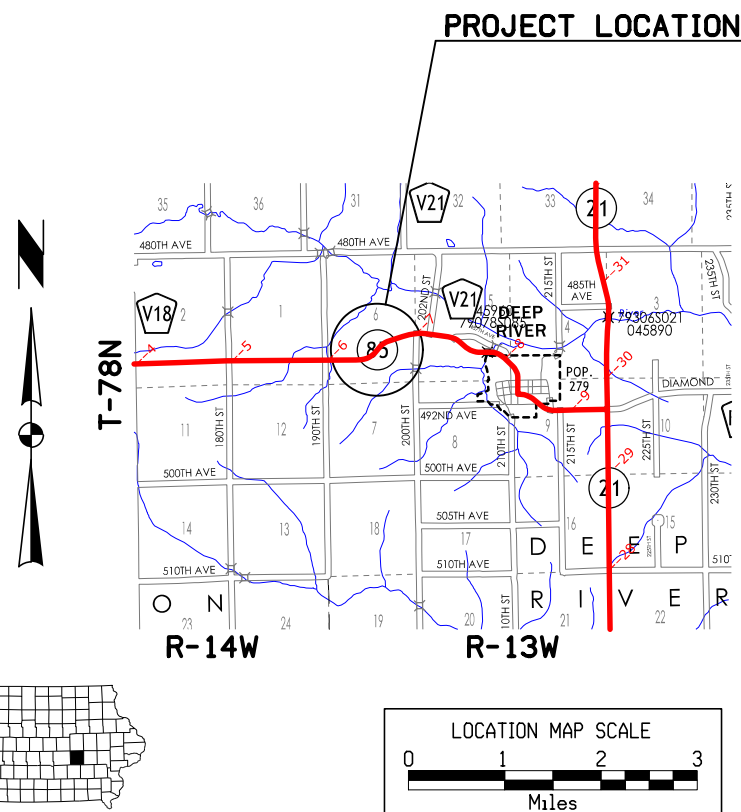
PROJECT IDENTIFICATION NUMBER

17-79-085-010

PROJECT NUMBER

STPN-085-1(7)--2J-79

R.O.W. PROJECT NUMBER



D0 - Concept	1/30/17	Complete
D2 - Field Exam	2/28/17	Complete
D5 - ROW Submittal	3/15/17	Pending
D9 - Contracts Submittal	4/4/17	Scheduled
L4 - Letting	6/20/17	Scheduled

INDEX OF SEALS		
SHEET NO.	NAME	TYPE
A.1	X	Primary Signature Block
X	X	X

**PRELIMINARY PLANS**

Subject to change by final design.

**D5 PLAN - Date: 3/15/17**

### SURVEY SYMBOLS

- SI Sign
- FWD Wood Fence
- TDC Tree Deciduous
- FW Wire Fence
- TIL Tile Line
- MIS Miscellaneous
- PIP Pipe Culvert
- EP Edge of Paved Roads (ML or SR)
- SNP Unpaved Shoulder
- ENU Edge Unpaved Entrance & Parking
- D Centerline Draw or Stream (Down)
- DIK Centerline of Dike or Dam
- DU Centerline Draw or Stream (Up)

### UTILITY LEGEND

- PPA Alliant Energy
- TPD Telephone Pedestal - Windstream
- FO1D Windstream Fiber Optic - Quality D
- FO2D Windstream Fiber Optic - Quality D
- WL1D Poweshiek Water Co. Water Line - Quality D

### 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

### 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

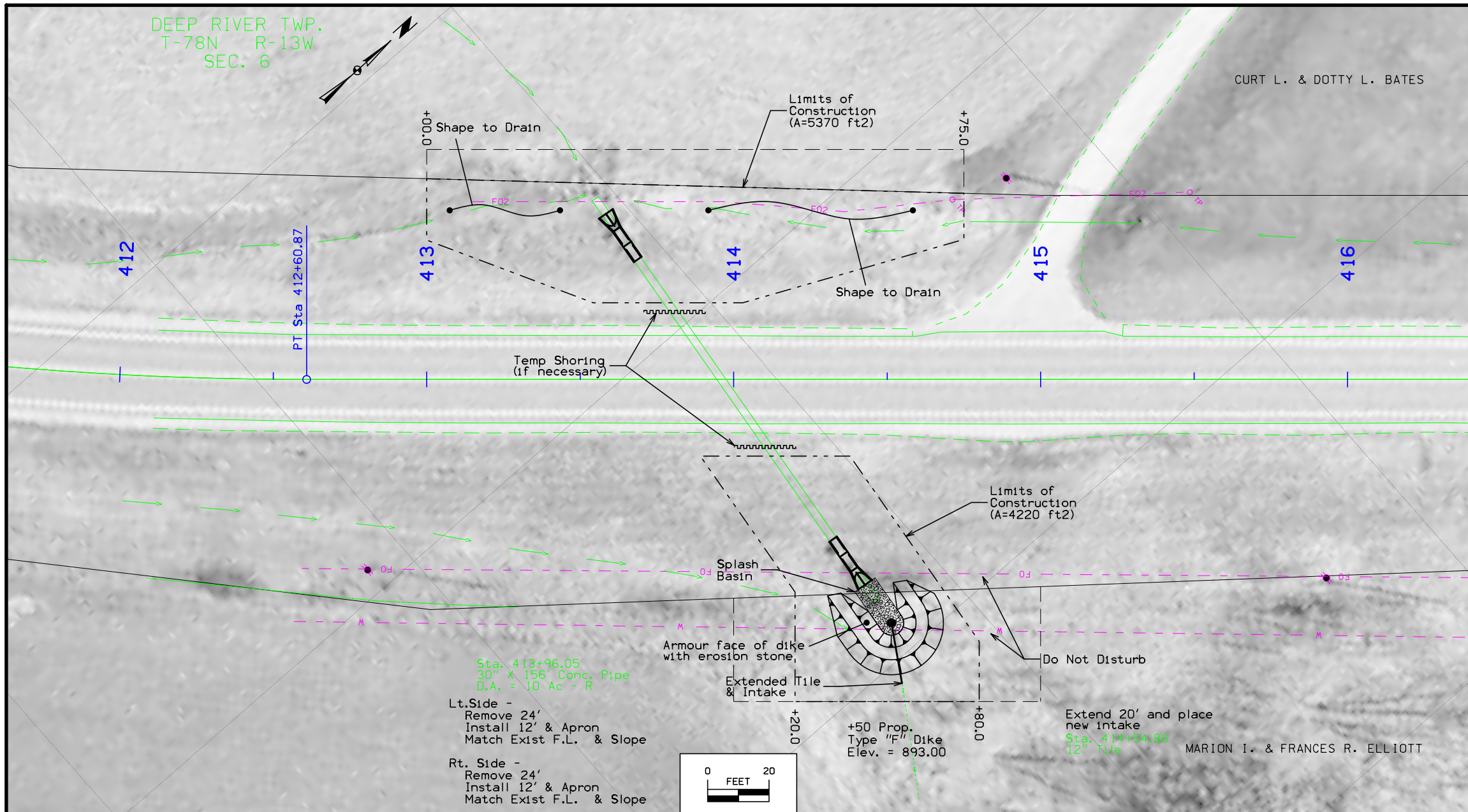
- Reference Point
- Station
- Survey Line
- Section Corner
- Ground Line Intercept
- Saw Cut
- Guardrail
- Trench Drain
- High Tension Cable Guardrail
- Sheet Pile
- Pavement Removal
- Clearing & Grubbing Area

- ### 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
  - Access Control
  - Property Line

## PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

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

DEEP RIVER TWP.  
T-78N R-13W  
SEC. 6



Lt. Side -  
Remove 24'  
Install 12' & Apron  
Match Exist F.L. & Slope

Rt. Side -  
Remove 24'  
Install 12' & Apron  
Match Exist F.L. & Slope

+50 Prop.  
Type "F" Dike  
Elev. = 893.00

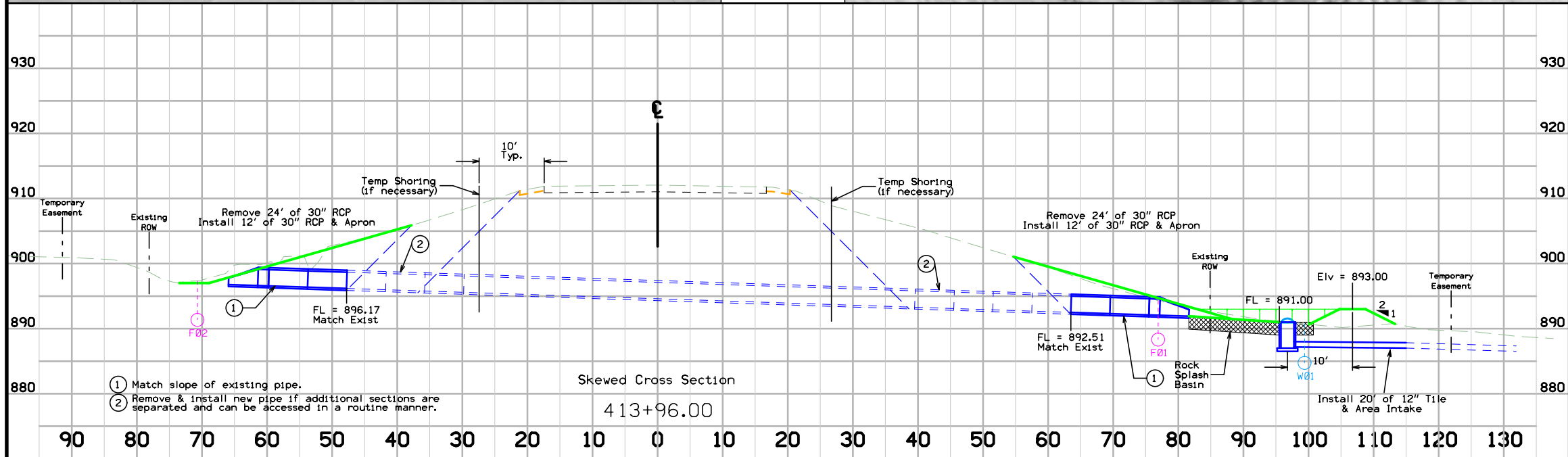
Extend 20' and place  
new intake  
Sta. 414+54.86  
12" Tile

MARION I. & FRANCES R. ELLIOTT

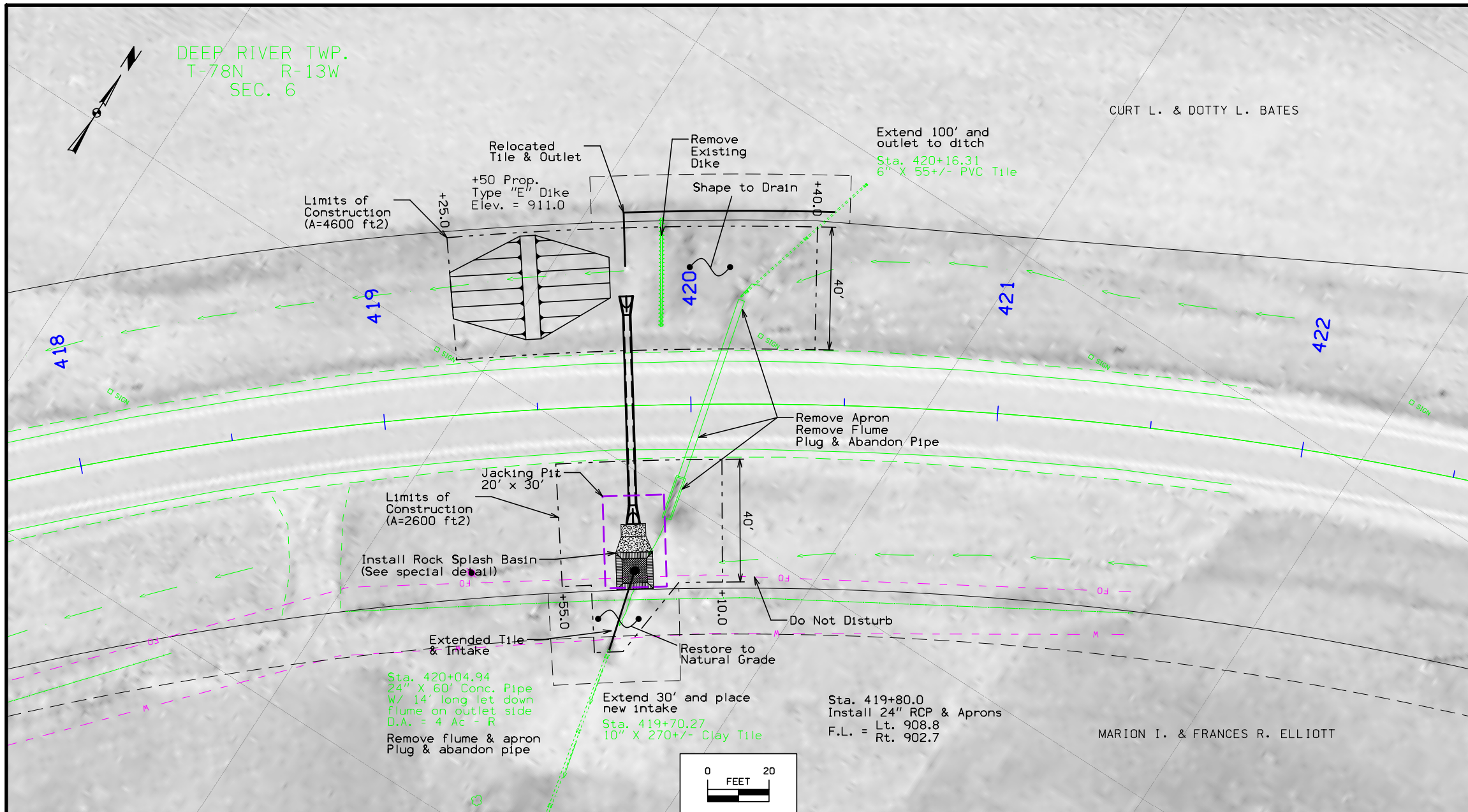
**Left Side Existing 30" Culvert**  
Remove 24 ft from existing culvert. Install 12 ft of pipe and apron, new sections only. Match existing flow lines and slopes.  
Reshape inlet to new culvert apron. Reshape ditches left and right of culvert.  
Restore all roadway foreslopes to match the existing slopes.  
Take precautions to maintain the existing fiber optic cable.  
If additional sections of culvert are separated consult with Engineer on how to proceed. Temporary shoring will likely be needed to repair the separations.

**Right Side Existing 30" Culvert**  
Remove 24 ft from existing culvert. Install 12 ft of pipe and apron, new sections only. Match existing flow lines and slopes.  
Install dike, area intake, and tile to extend tile placed by property owner. Install splash basin at culvert outlet and erosion stone on the face of the dike.  
Restore all roadway foreslopes to match the existing slopes.  
Take precautions to maintain the existing fiber optic cable and water line.  
If additional sections of culvert are separated consult with Engineer on how to proceed. Temporary shoring will likely be needed to repair the separations.

**Site Work**  
Clear and grub the area bounded by the limits of construction.  
Dress all disturbed areas with topsoil and seeding. Spread topsoil to a minimum depth of 4". Quantities are estimated based on the limits of construction.  
Remove & reinstall signs as necessary.



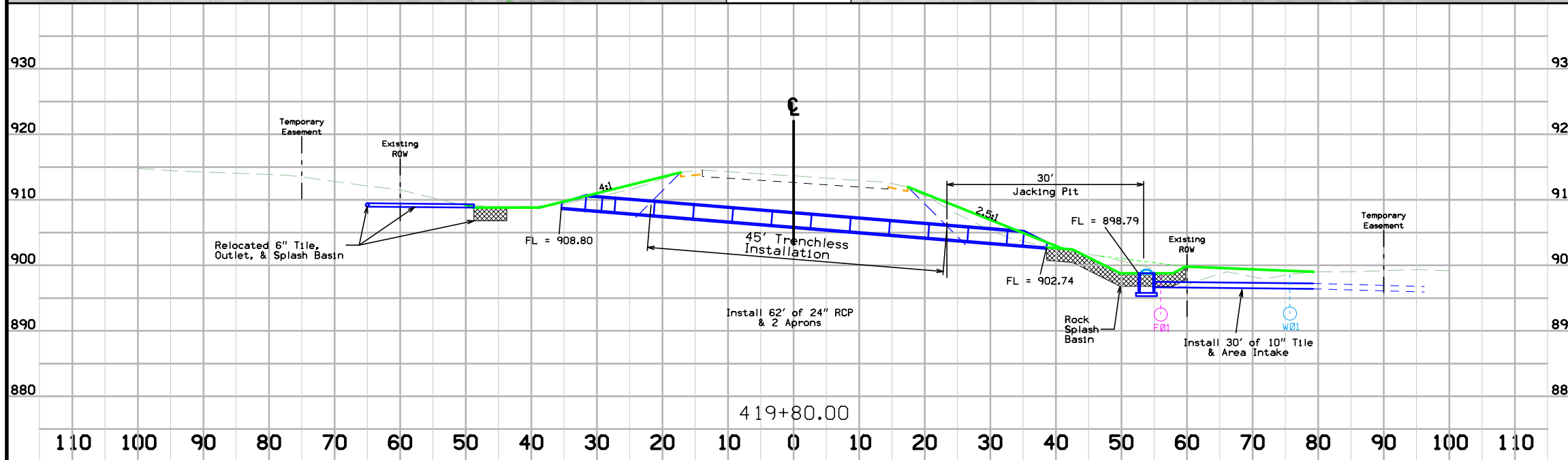
- ① Match slope of existing pipe.
- ② Remove & install new pipe if additional sections are separated and can be accessed in a routine manner.



**Proposed 24" Culvert**  
Install the new 24" roadway culvert, partially with trenchless construction (# ft) and trench construction (# ft).  
Maintain the existing ditch elevation at the inlet.  
Relocate the existing tile outlet into a splash basin in the highway ROW. Shape to drain to the new culvert.  
Remove existing dike, and build new dike west of new culvert.  
Construct a rock splash basin at the culvert outlet. Restore the slopes just beyond the ROW.  
Extend the existing tile at the south ROW to an intake in the rock splash basin.  
Restore all roadway foreslopes to match the existing slopes.  
Take precautions to maintain the existing fiber optic cable.

**Existing 24" Culvert**  
Plug and abandon the existing 24" culvert. Remove the inlet apron and outlet flume prior to filling the pipe with flowable mortar.  
Restore the roadway foreslope to match the existing slopes, and shape the north ditch to drain to the new inlet.

**Site Work**  
Clear and grub the area bounded by the limits of construction.  
Dress all disturbed areas with topsoil and seeding. Spread topsoil to a minimum depth of 4". Quantities are estimated based on the limits of construction.  
Remove & reinstall signs as necessary.



## Survey Information

### General Information

All measurements for this survey are in English Units (U.S. survey foot). The mainline alignment is a retrace of as-built plans FN-945. This survey was collected by the District 1 Land Survey Crew beginning 12/12/2016 and ending 1/12/2017.

District 1 Land Survey Crew consists of

Lucas Weigel - Party Chief

Ben Wickman - Highway Tech.

### Horizontal Control Information

The project coordinate system basis for this survey is from the Iowa Regional Coordinate System Zone 9 projection (U.S. Survey foot). This survey's control is dependant on the IaRTN reference stations. The IaRTN reference stations positions are derived from the NAD83 (2011) datum, Epoch 2010.00. Control point positions were established by 5 redundantly averaged RTK GPS shots utilizing the IaRTN.

### Vertical Control Information

The vertical control for this project is relative to NAVD88, computed using GEIOD 12A. This survey's control is dependant on the IaRTN reference stations. The IaRTN reference stations positions are derived from the NAD83(2011) datum, Epoch 2010.00. Control point elevations were established by 5 redundantly averaged RTK GPS shots utilizing the IaRTN.

### Horizontal Alignment

The horizontal alignment for this survey is a retrace of as-built plans for project FN-945. Survey stationing was equated to the plan PT at Sta. 423+35.2 and run back without equation throughout the survey.

Survey stationing relates to as-built plan stationing as follows:

PI Sta. 408+05.6 as-built plans for project FN-945 =

Survey PI Sta. 408+06.98

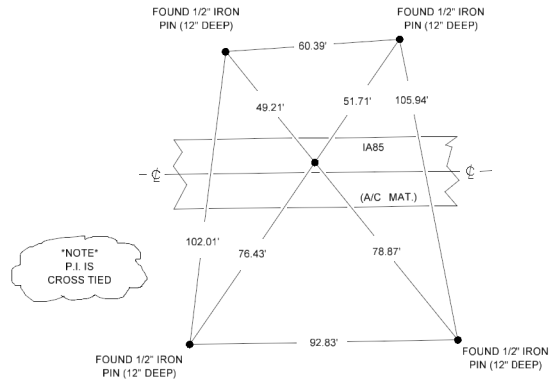
PI Sta 420+25.10 as-built plans for project FN-945 =

Survey PI Sta. 420+25.02

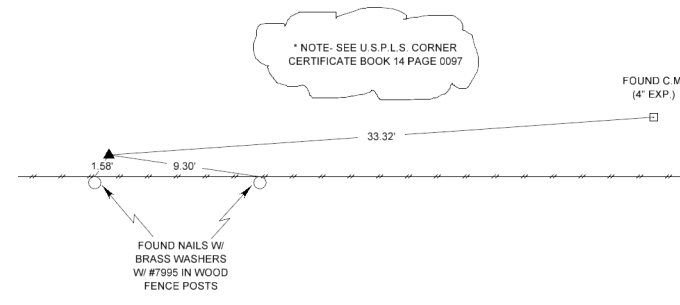
## VERTICAL CONTROL

Point	North	East	Elevation	Station	Offset	Feature	Description
CP101	7687218.42	19613265.58	917.36	411+62.10	58.95' LT.	CP	SET 5/8" RE-ROD (FLUSH)
CP100	7687957.88	19614125.29	922.20	422+83.53	67.09' LT.	CP	SET 5/8" RE-ROD (FLUSH)

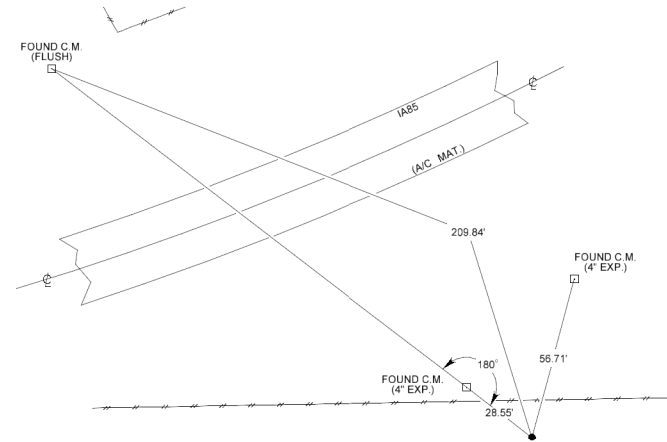
PI STA. 336+11.7 (PROJ. FN-945)  
 POINT NO. 3000  
 N = 7686884.53 E = 19605845.45  
 FOUND "P-K" NAIL



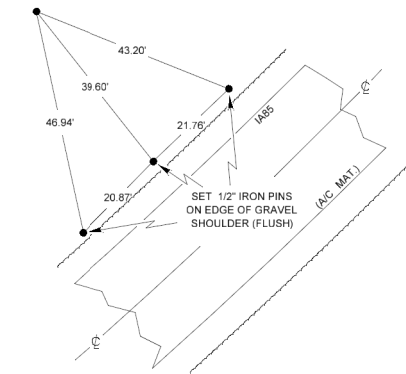
SW COR. NW<sup>1</sup>/<sub>4</sub> SE<sup>1</sup>/<sub>4</sub> SEC. 6-78N-13W  
 STA. 407+33.61 75.27' RT.  
 POINT NO. 8000  
 N = 7686875.73 E = 19612975.73  
 FOUND 1" IRON PIPE (FLUSH)



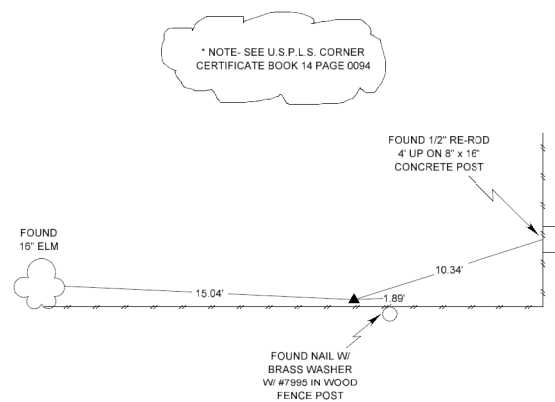
PI STA. 408+05.6 (PROJ. FN-945)  
 PI STA. 408+06.98 (THIS SURVEY)  
 POINT NO. 3502  
 N = 7686860.64 E = 19613031.61  
 SET 5/8" RE-ROD (1" DEEP)



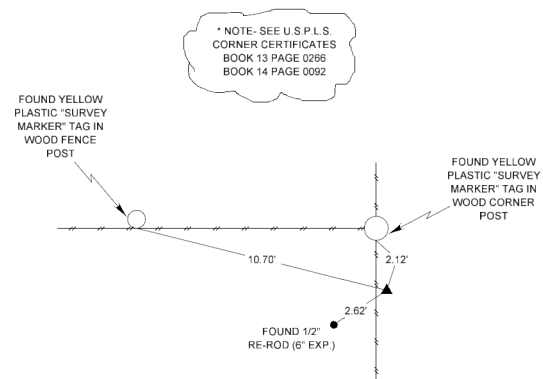
CONTROL POINT  
 STA. 411+62.10 58.95 LT.  
 POINT NO. CP101  
 N = 7687218.42 E = 19613265.58  
 SET 5/8" RE-ROD (FLUSH)



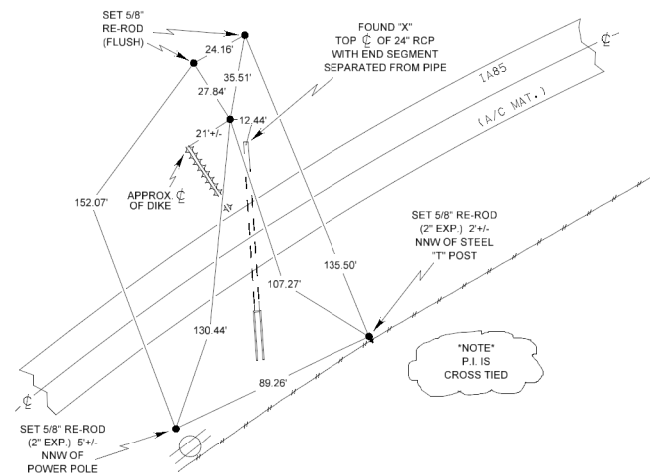
SE COR. NW<sup>1</sup>/<sub>4</sub> SE<sup>1</sup>/<sub>4</sub> SEC. 6-78N-13W  
 STA. 416+15.11 920.44' RT.  
 POINT NO. 8001  
 N = 7686899.37 E = 19614297.99  
 FOUND 5/8" RE-ROD W/ CAP 7995 (3" EXP.)



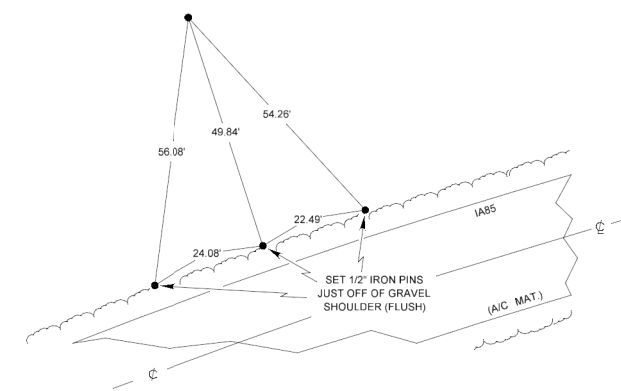
SW COR. GOV'T LOT 10 SEC. 6-78N-13W  
 STA. 416+98.24 928.88' LT.  
 POINT NO. 8003  
 N = 7688190.83 E = 19612971.70  
 FOUND 4"x 6"x 12" LIMESTONE (10" DEEP)



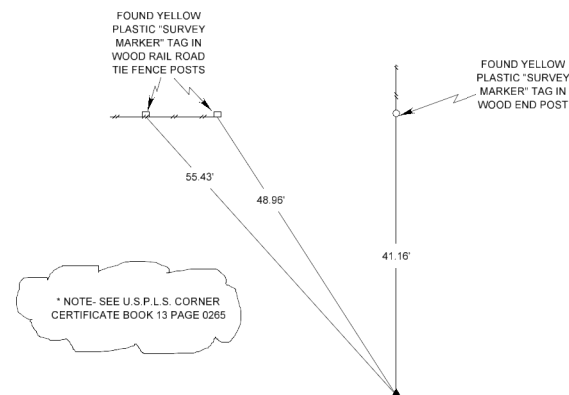
PI STA. 420+25.10 (PROJ. FN-945)  
 PI STA. 420+25.02 (THIS SURVEY)  
 POINT NO. 3001  
 N = 7687817.41 E = 19613882.73  
 FOUND 1/2" IRON PIN (6" DEEP)



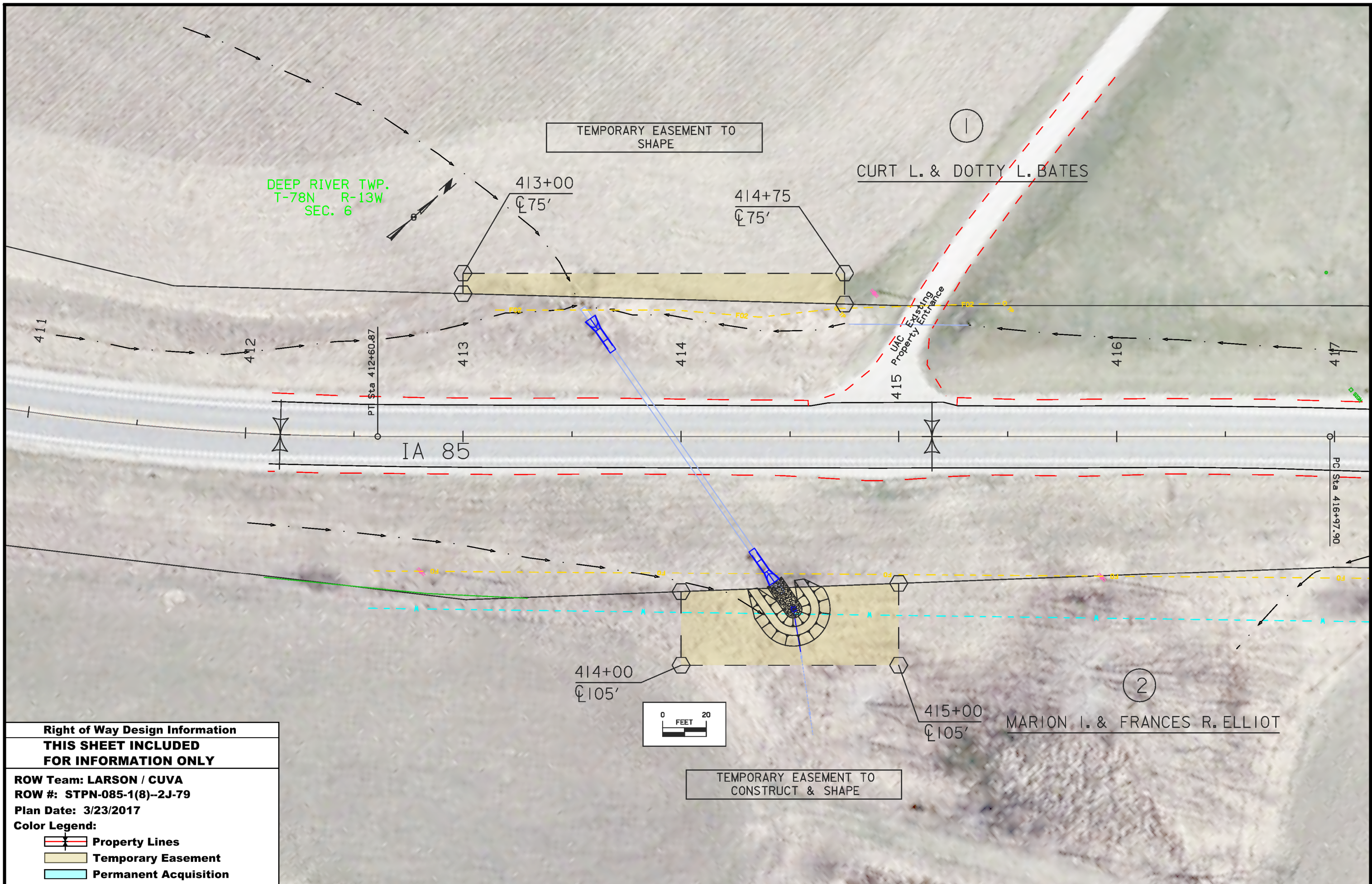
CONTROL POINT  
 STA 422+83.53 67.09' LT.  
 POINT NO. CP100  
 N = 7687957.88 E = 19614125.29  
 SET 5/8" RE-ROD (FLUSH)



SE COR. GOV'T LOT 10 SEC. 6-78N-13W  
 STA. 425+31.24 245.56 LT.  
 POINT NO. 8002  
 N = 7688201.34 E = 19614314.70  
 FOUND 1" IRON PIPE (10" DEEP)



Poweshiek	ROW: STPN-085-1(8)--2J-79					PIN 17-79-085-010											
	1.5 mi W of Deep River																
		STATE		COUNTY		CITY		BORROW									
PARCEL NO.	OWNER NAME	FEE	EASE	FEE	EASE	FEE	EASE	EXCESS	FEE	T.E.	MITIGATION	OTHER	HOUSE	BUILDING(S)	A/C ONLY	TOTAL ACQ.	
1	Curt L. Bates - Fee																
2	Marion I. Elliot - Fee																
2 Parcels	"TOTALS	0 AC	0 AC	0 AC	0 AC	0 AC	0 AC	0 AC	0 AC	0 AC	0 AC						
		0 SF	0 SF	0 SF	0 SF	0 SF	0 SF	0 SF	0 SF								



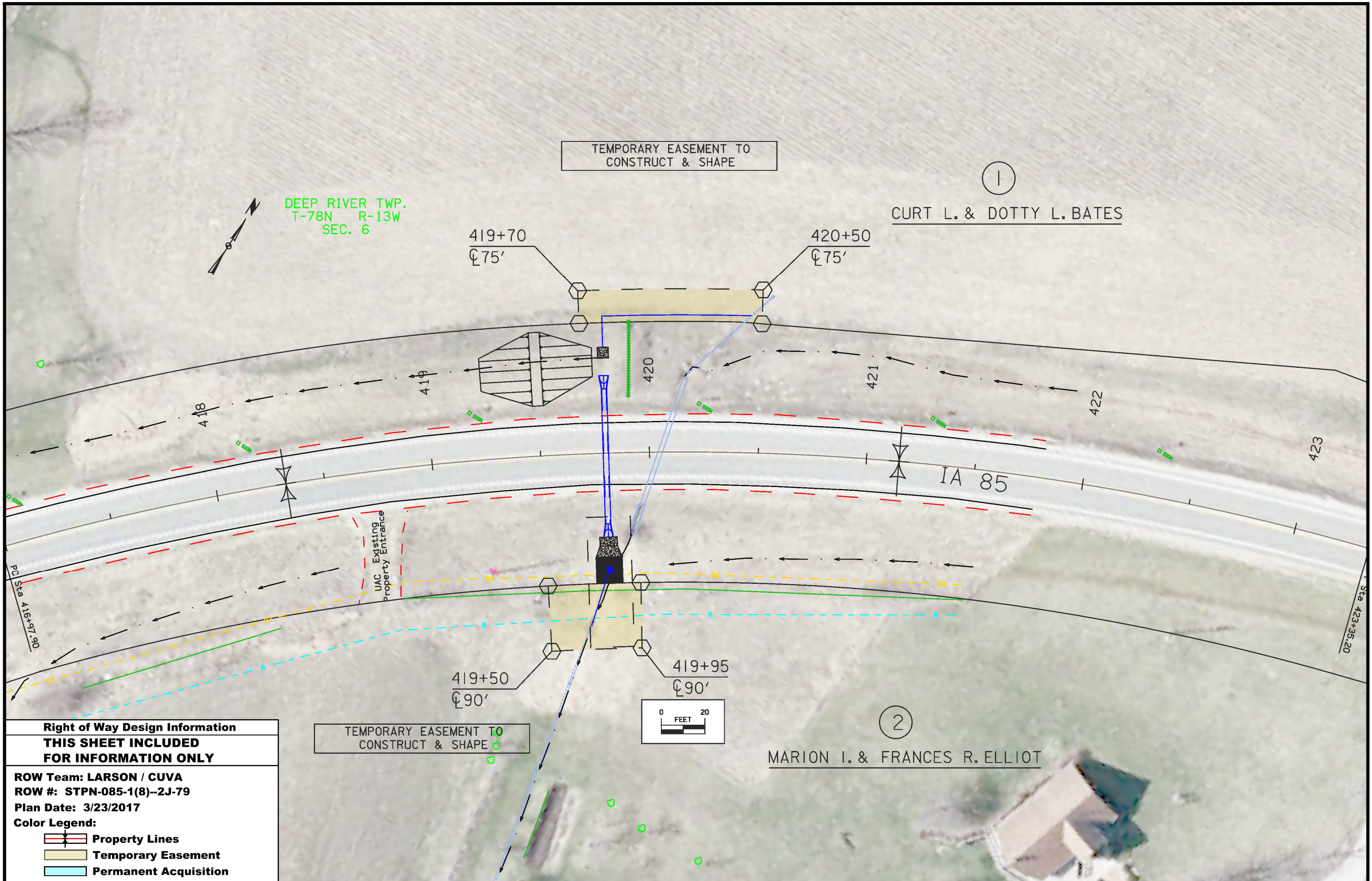
**Right of Way Design Information**  
**THIS SHEET INCLUDED**  
**FOR INFORMATION ONLY**

**ROW Team: LARSON / CUVA**  
**ROW #: STPN-085-1(8)--2J-79**  
**Plan Date: 3/23/2017**

**Color Legend:**

- Property Lines
- Temporary Easement
- Permanent Acquisition





TEMPORARY EASEMENT TO  
CONSTRUCT & SHAPE

1

CURT L. & DOTTY L. BATES

DEEP RIVER TWP.  
T-78N R-13W  
SEC. 6

419+70  
C 75'

420+50  
C 75'

418

419

420

421

422

423

IA '85

UAC Existing  
Property Entrance

P.C. Sta 416+97.90

Sta 423+35.20

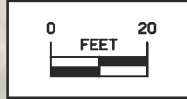
419+50  
C 90'

419+95  
C 90'

2

MARION I. & FRANCES R. ELLIOT

TEMPORARY EASEMENT TO  
CONSTRUCT & SHAPE



**Right of Way Design Information**  
**THIS SHEET INCLUDED FOR INFORMATION ONLY**

ROW Team: LARSON / CUVA  
ROW #: STPN-085-1(8)--2J-79  
Plan Date: 3/23/2017

**Color Legend:**

- Property Lines
- Temporary Easement
- Permanent Acquisition

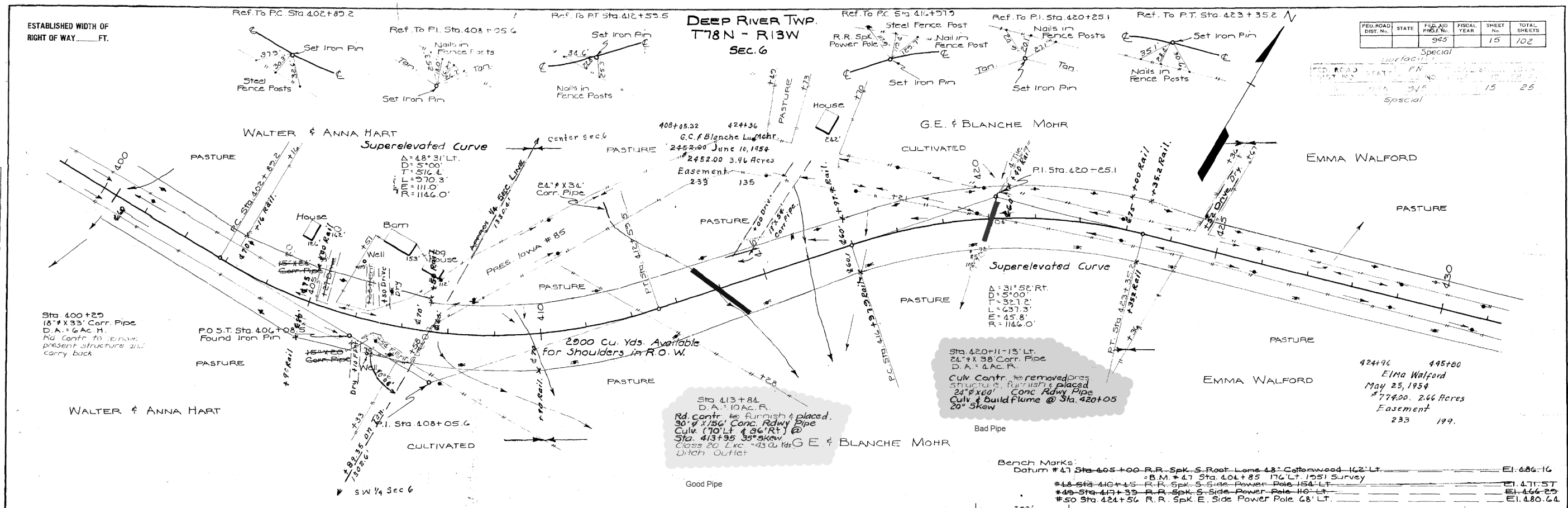
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IA	945		15	102

Special

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IA	945		15	25

Special

DEEP RIVER TWP.  
T78N - R13W  
SEC. 6



DATE	BY

PLAN

DATE

BY

NOTE BOOK

ALIGNMENT CHECKED

HT. OF WAY CHECKED

NO.

DATE	BY

PROFILE

DATE

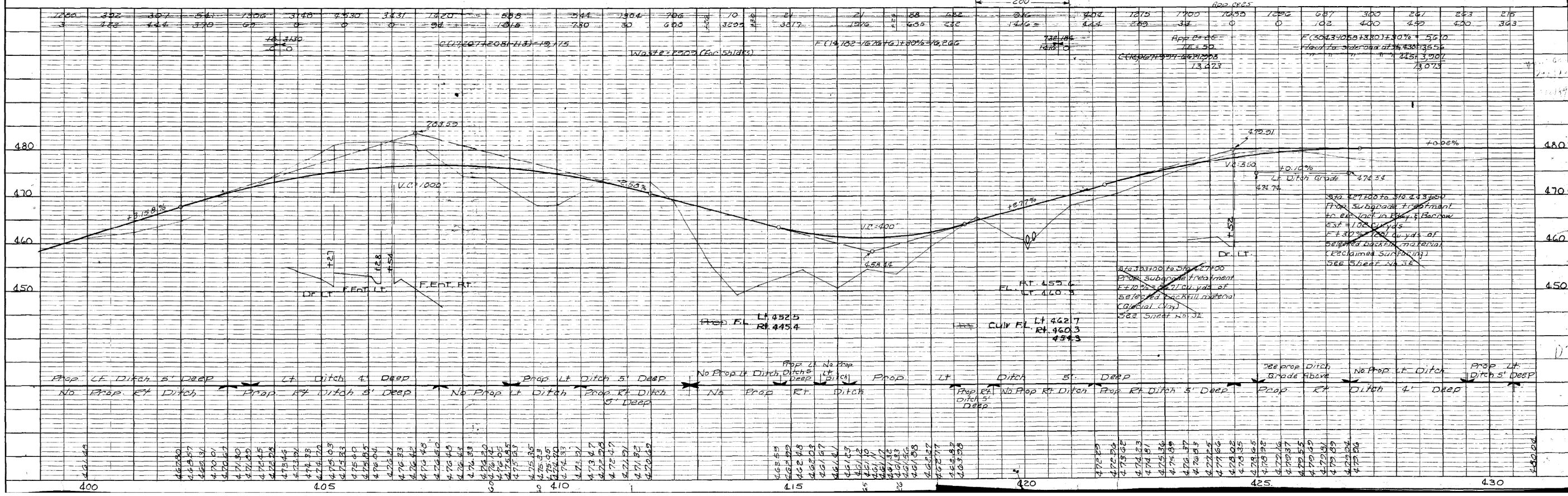
BY

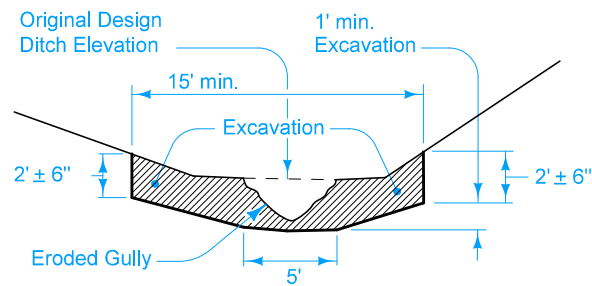
NOTE BOOK

GRADE NOTATIONS CHKD.

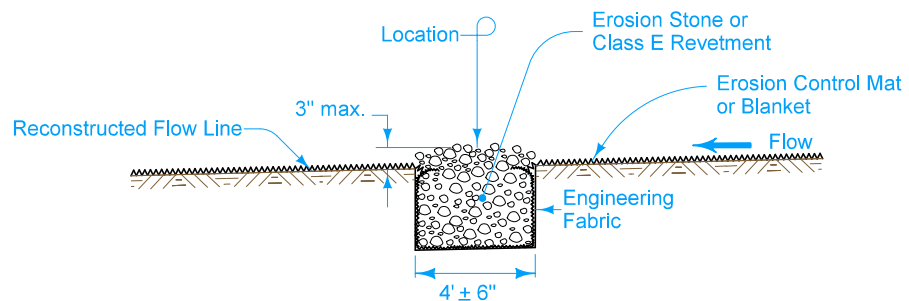
STRUCTURE NOTATIONS CHKD.

NO.



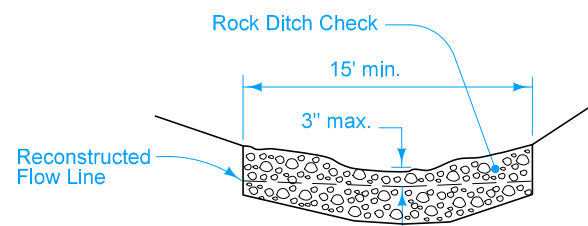


EXCAVATION SECTION



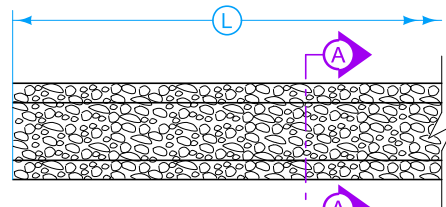
LONGITUDINAL SECTION AT CENTERLINE OF DITCH

TYPE 1  
(Rock Ditch Check)

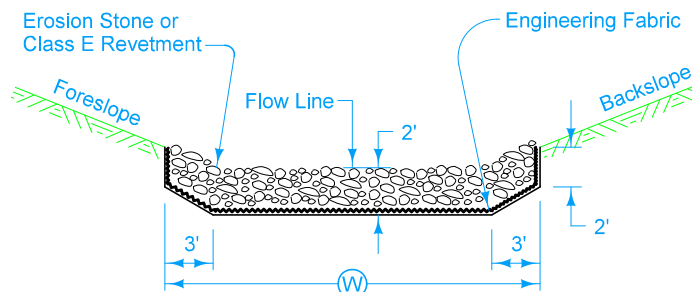


DITCH CHECK SECTION

Class 10 excavation required to install Rock Erosion Control is incidental and will not be paid for separately.

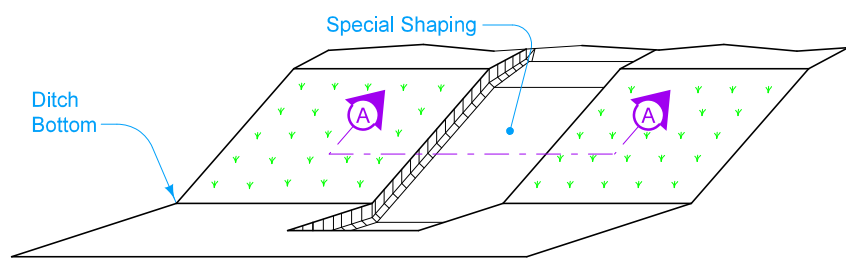


PLAN

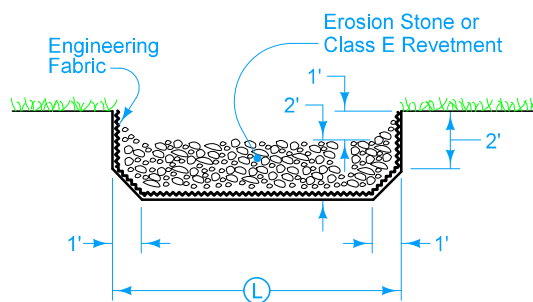


SECTION A-A

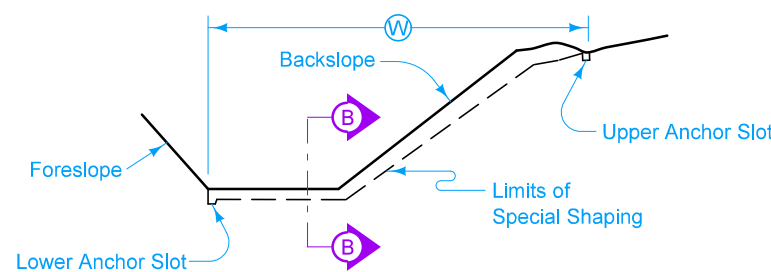
TYPE 2  
(Rock Ditch)



ISOMETRIC VIEW



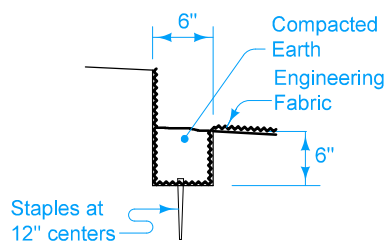
SECTION A-A



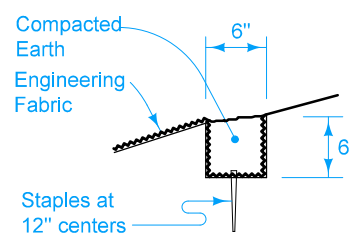
TYPICAL SECTION

Possible Contract Items:  
Erosion Stone  
Class E Revetment  
Engineering Fabric

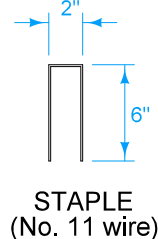
Possible Tabulation:  
100-23



LOWER ANCHOR SLOT

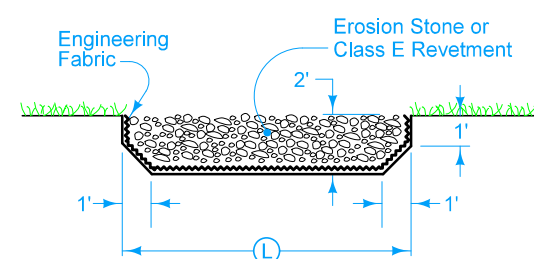


UPPER ANCHOR SLOT



STAPLE  
(No. 11 wire)

TYPE 3  
(Rock Flume)



SECTION B-B

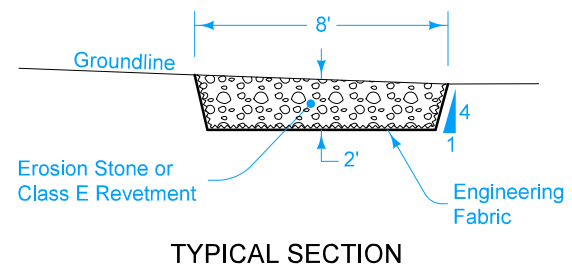
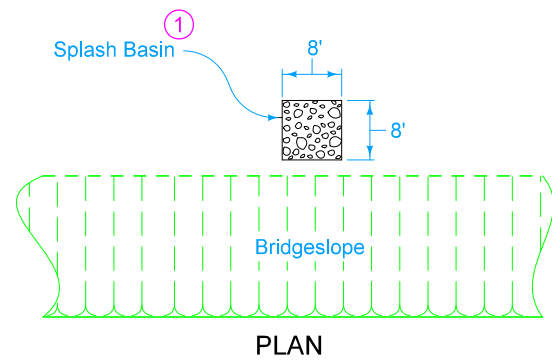
REVISION	
1	10-18-16

**STANDARD ROAD PLAN**  
EC-301  
SHEET 1 of 2

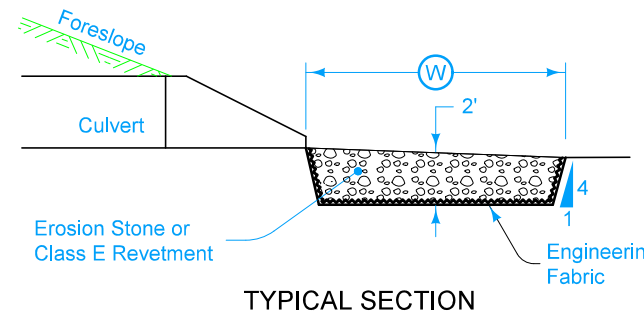
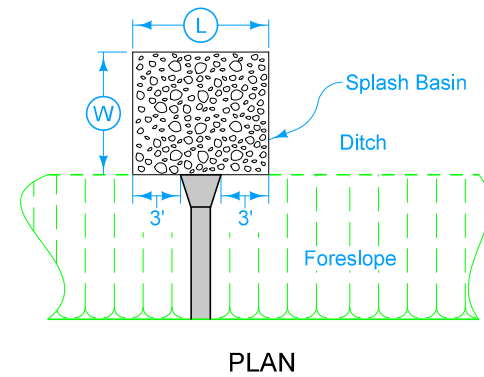
REVISIONS: Modified details for Type 3 and Type 4 installations. Deleted old note 2 and renumbered old note 3 as note 2. Added Designer Info button.

APPROVED BY DESIGN METHODS ENGINEER

**ROCK EROSION CONTROL  
(REC)**

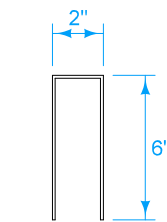
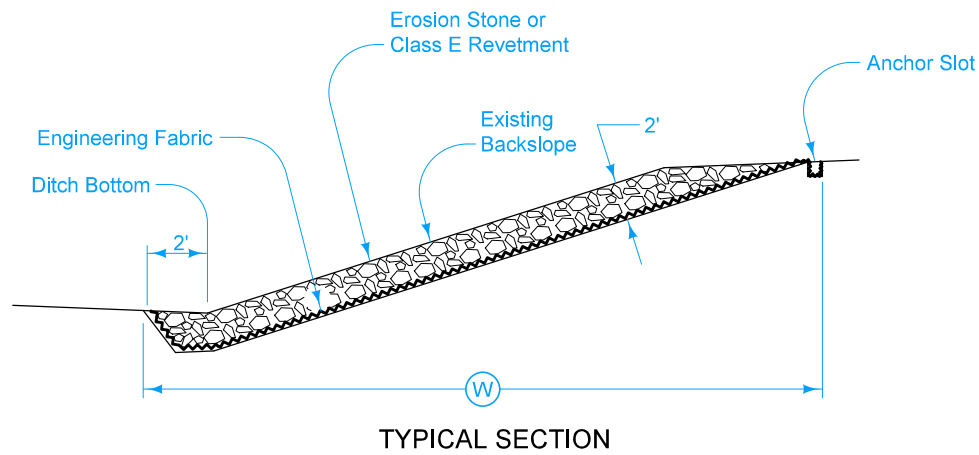
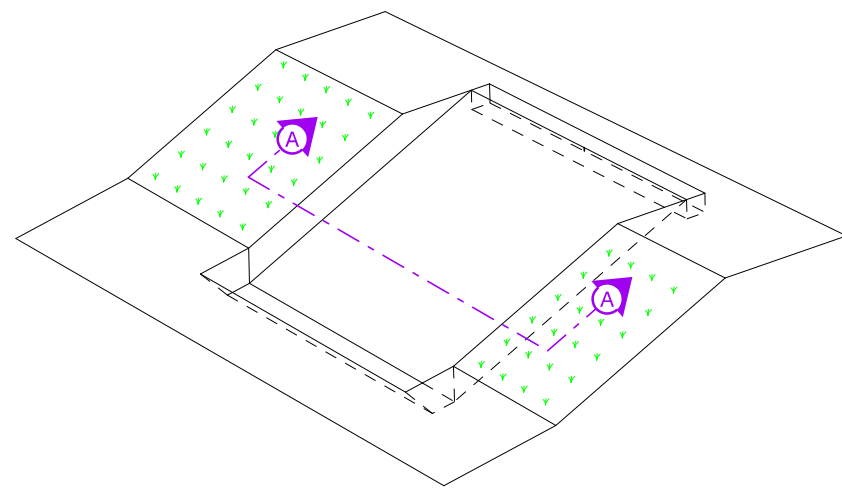


SPLASH BASIN UNDER BRIDGE DRAIN

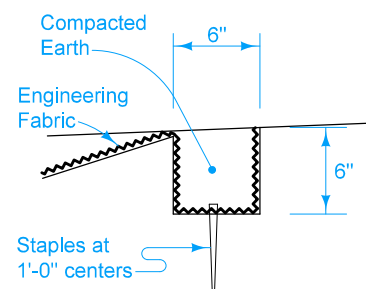


SPLASH BASIN AT PIPE CULVERT OUTLET

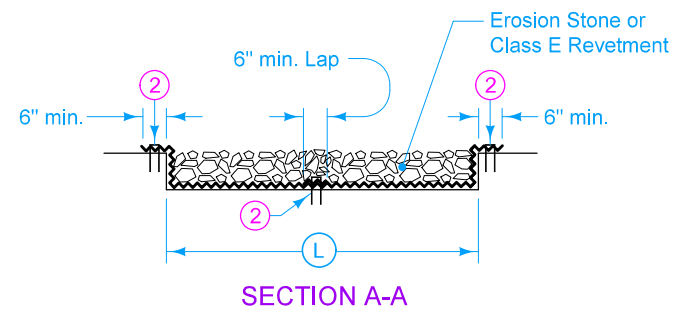
TYPE 4  
(Rock Splash Basin)



STAPLE  
(No. 11 wire)



ANCHOR SLOT



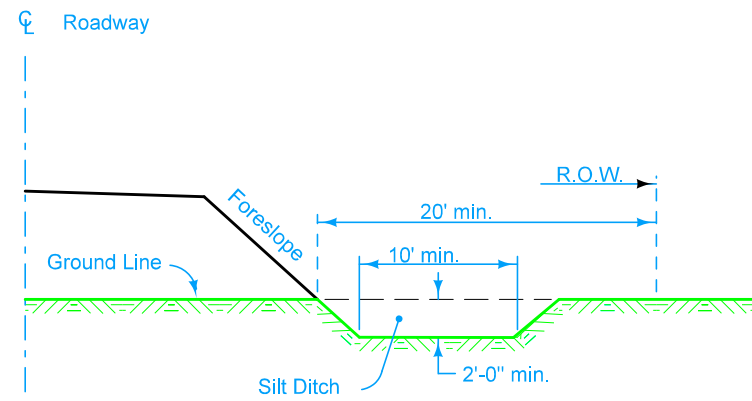
TYPE 5  
(Rock Slope Protection)

- ① Center splash basin directly under bridge drain.
- ② Staples at 12 inch centers.

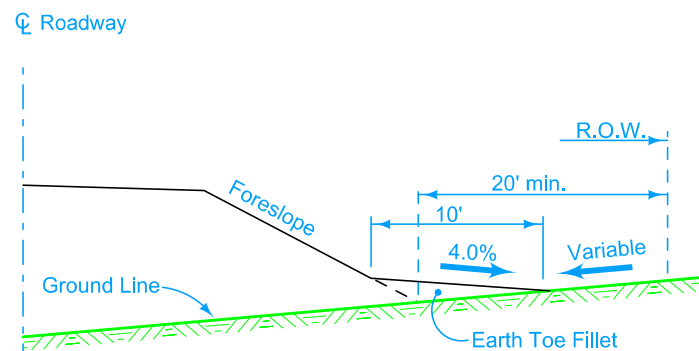
REVISION	
1	10-18-16
<b>EC-301</b>	
SHEET 2 of 2	
REVISIONS: Modified details for Type 3 and Type 4 installations. Deleted old note 2 and renumbered old note 3 as note 2. Added Designer Info button.	
APPROVED BY DESIGN METHODS ENGINEER	

**STANDARD ROAD PLAN**

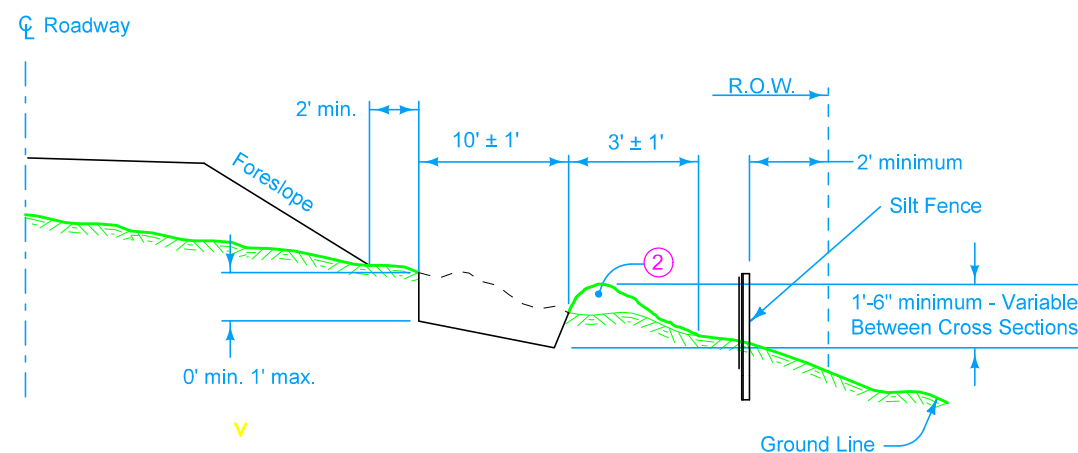
**ROCK EROSION CONTROL  
(REC)**



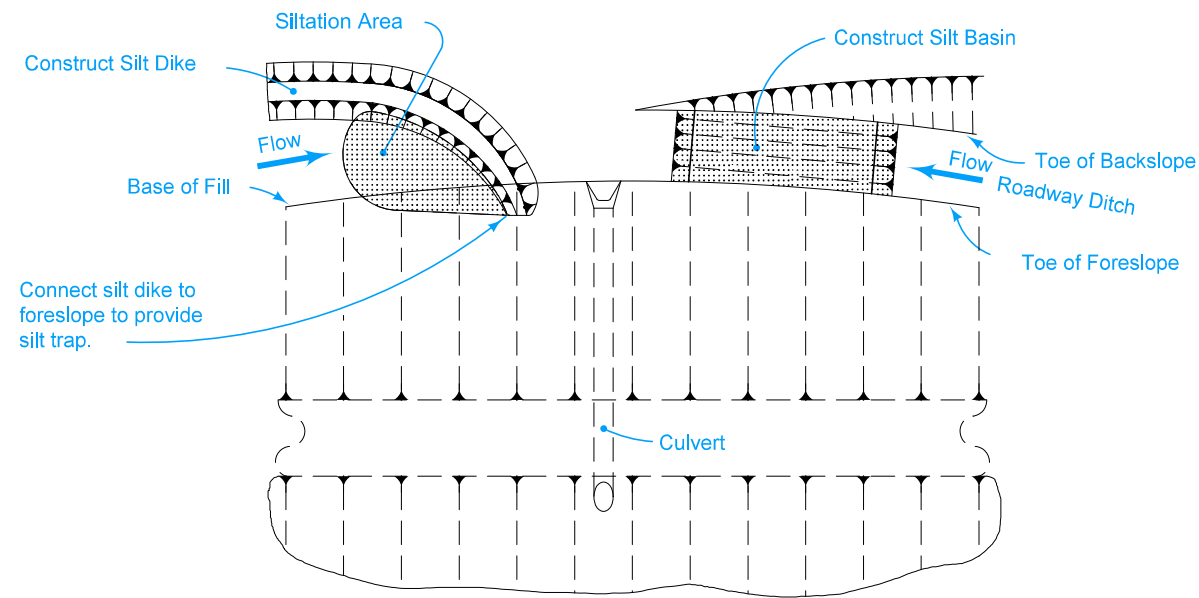
SILT DITCH



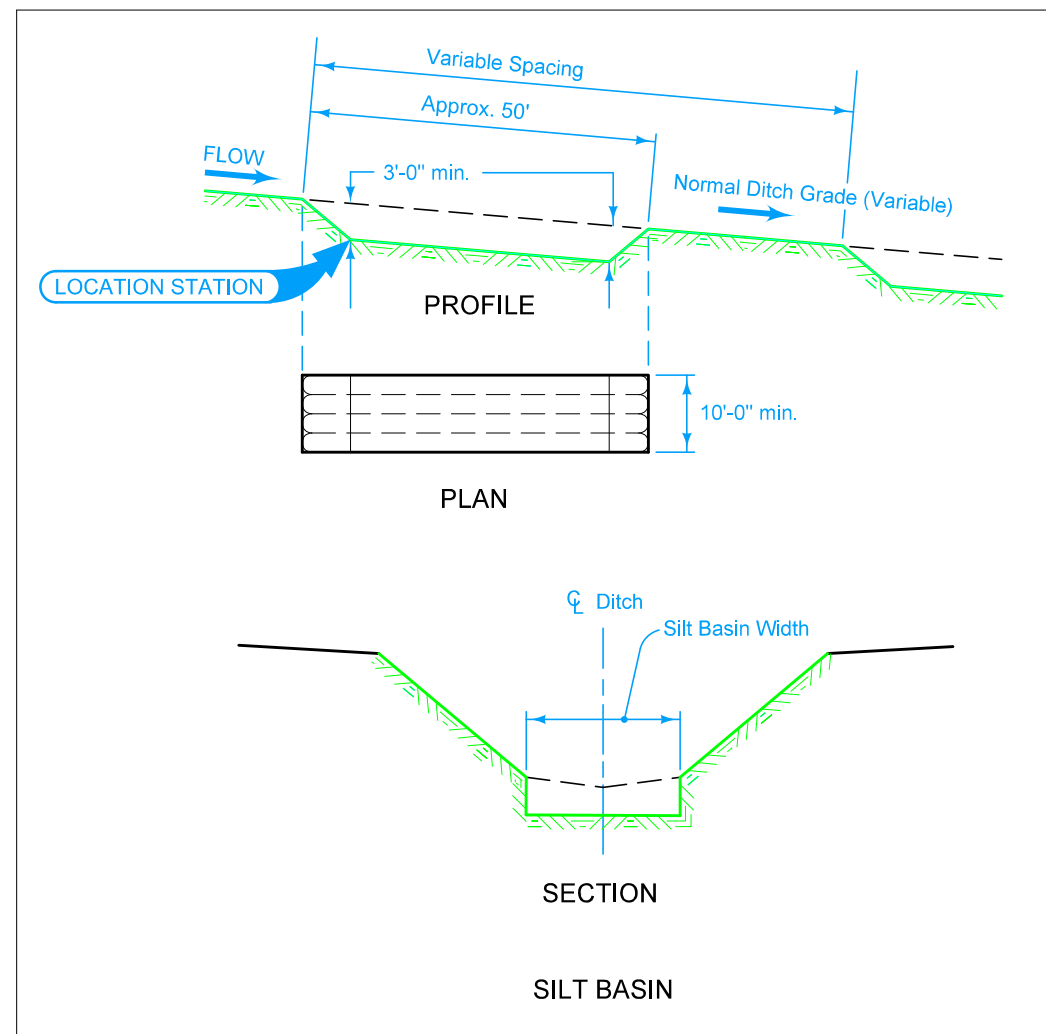
TOE FILLET ①



SILT DIKE



TYPICAL PLAN WITH PERMANENT CULVERT INSTALLATION



Obtain the Engineer's approval for installation locations.

- ① Construct an earth fillet at the toe of the roadway foreslope for areas where a roadway ditch, silt ditch, or silt dike is not provided. This Toe Fillet is incidental to "Roadway and Borrow Excavation".
- ② Windrow of excavated and compacted silt material or deposited and compacted earth.

Possible Contract Items:

- Silt Ditch
- Silt Dike
- Silt Basin

Possible Tabulations:

- 100-13
- 100-14
- 100-15

		REVISION	
		3	04-18-17
<b>STANDARD ROAD PLAN</b>		<b>EW-403</b>	
		SHEET 1 of 1	
REVISIONS: Added Location Station to Silt Basin view. Added Designer Info button.			
APPROVED BY DESIGN METHODS ENGINEER			

**TEMPORARY EROSION CONTROL MEASURES**