

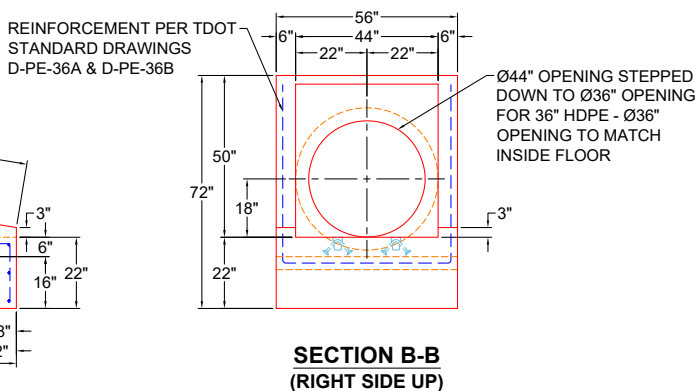
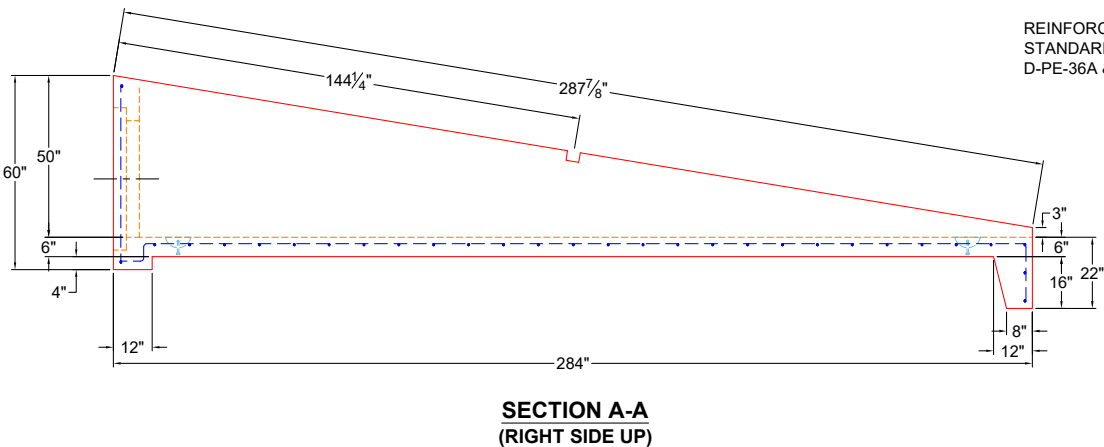
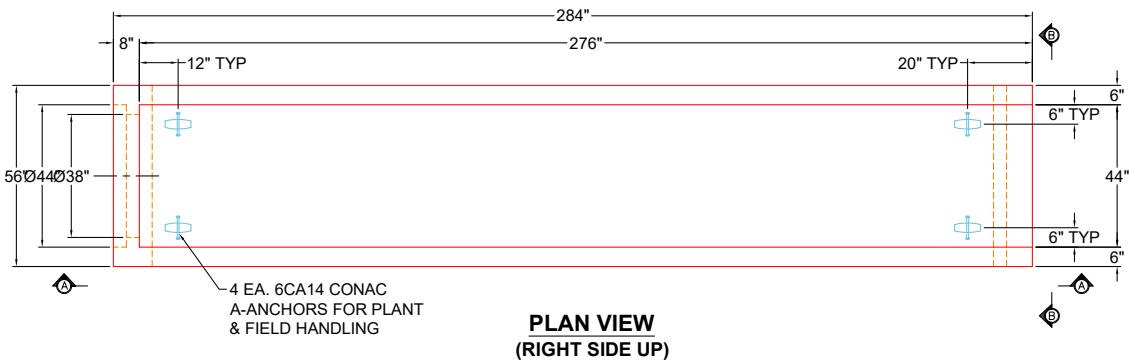
Structure ID: QL1 HW

P1 HWTDOT6-1TU36

36" - HW TDOT 6:1 Type U Cross Drain Endwall F/F

GENERAL NOTES:

- PER TDOT D-PE-36 SPECIFICATIONS
- CONCRETE: 4,500 PSI AT 28 DAYS
- REINFORCEMENT: PER TDOT STANDARD DRAWINGS D-PE-36A & D-PE-36B
- WEIGHT: 17,186 LBS
- FIRST POUR: 9,217 LBS
- SECOND POUR: 7,969 LBS



PRODUCTION WORK ORDER

PRODUCT I.D.: HWTDOT6-1TU36

DESCRIPTION: 36" TDOT D-PE-36A TYPE "U" CROSS DRAIN EW 6:1

QUALITY CONTROL CHECKLIST

- ☐ ALL DIMENSIONS CORRECT.
- ☐ LIFTERS INSTALLED.
- ☐ OPENING CENTERED.
- ☐ REINFORCING CORRECT.
- ☐ SURFACE QUALITY ACCEPTABLE.
- ☐ EDGES CHAMFERED.
- ☐ ALL PATCHWORK ACCEPTABLE.

PRODUCT VIEW: RIGHT SIDE UP

PLANT: BEAVER DAM, KY

WEIGHT: 17,186 LBS

TOP SECTION JOINT: N / A

BASE SECTION JOINT: N / A

QC CHECK INITIALS:

CUSTOMER: L.B. FOSTER COMPANY

PROJECT: TDOT 36" TYPE U ENDWALL

STRUCTURE: QL1 HW

ORDER NO: 26-2640

PC: C. GOFF

DRAWING: S. FELLETTTER

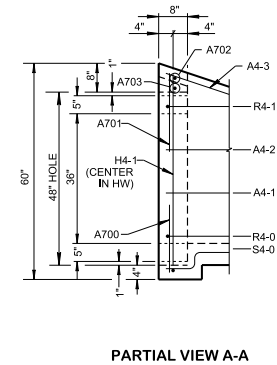
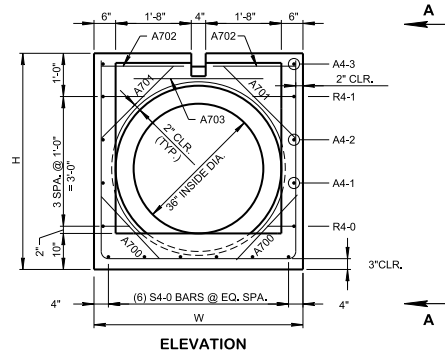
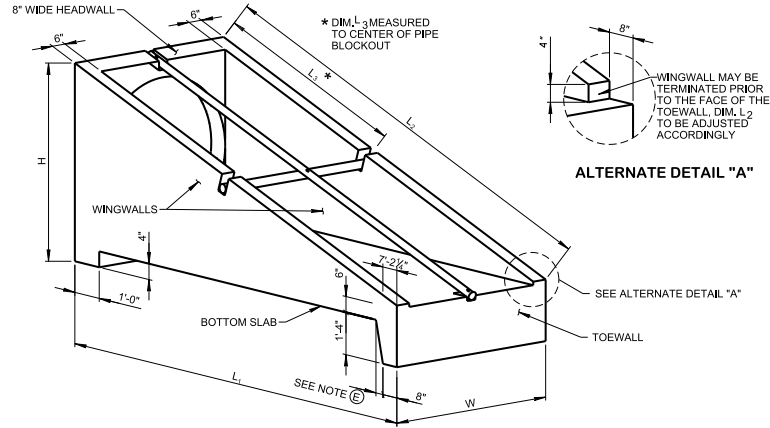
DATE: 06/08/26

SCALE: NTS

PG. 1 OF 1

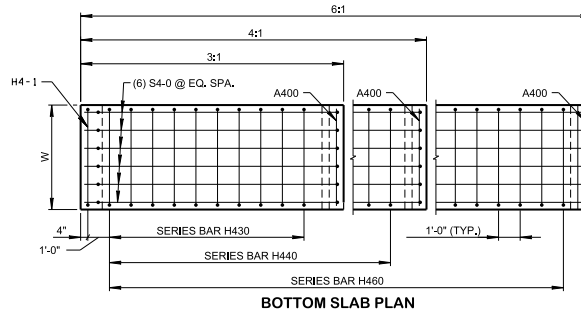
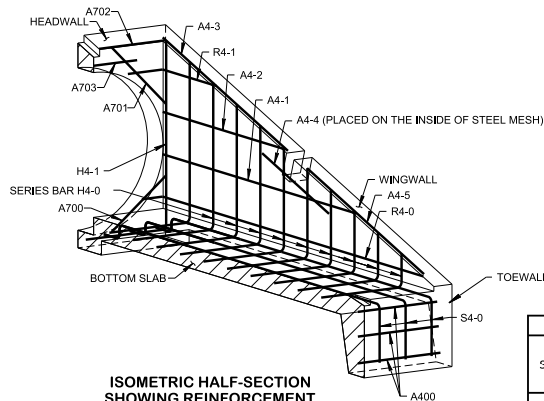
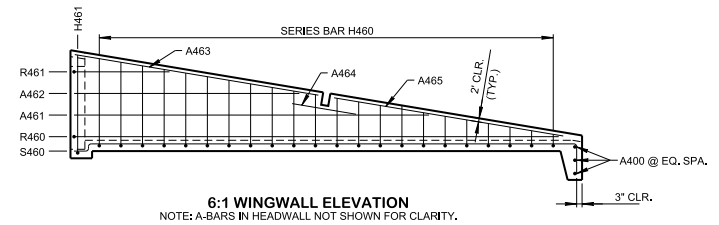
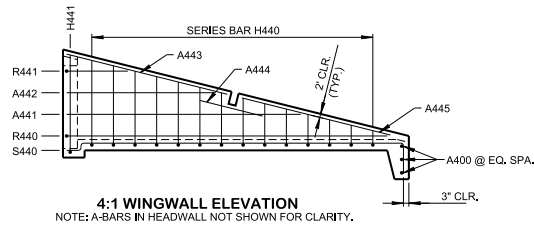
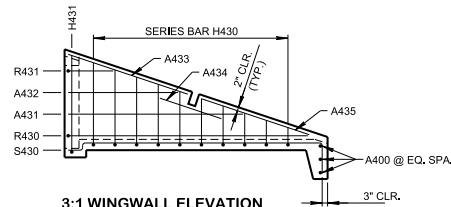


REV. 6/14/13: REVISED NOTE (E) ADDED NOTES (C) AND (H)
REV. 06-28-19: ADJUSTED A-A AND ELEVATION VIEWS. RENAMED AND REDREW SHEET.



HEADWALL DETAILS

NOTES: INSTALL BARS A701 AT 45°
SEE GENERAL NOTE (C)



DIMENSIONS AND QUANTITIES FOR ONE ENDWALL 36" PIPE									
SLOPE	CONCRETE ENDWALL DIMENSIONS					STRUCTURAL STEEL PIPE DIMENSIONS		ESTIMATED QUANTITIES	
	H	L ₁	L ₂	L ₃	W	LG	WG	CLASS "A" CONC. CU. YD.	STEEL BAR REINF. LB.
3:1	5'-0"	12'-2"	12'-9 3/4"	6'-4 3/4"	4'-8"	12'-8 3/4"	4'-8"	2.43	219
4:1		16'-0"	16'-5 3/4"	8'-2 1/2"		16'-5"	4'-8"	3.08	276
6:1		23'-8"	23'-11 3/4"	12'-0 1/4"		23'-11 3/4"	4'-8"	4.39	388

NOTE: SEE STD. DWG. D-PE-99 FOR STRUCTURAL STEEL PIPE DIMENSIONS LG & WG.

GENERAL NOTES

- (A) DRAWING TO BE USED FOR ALL CAST-IN-PLACE AND ALL PRECAST 36" CONCRETE ENDWALLS (TYPE "U") FOR CROSS DRAINS ONLY. "U" ENDWALL TO BE PLACED AT 90° SKEW TO CENTERLINE. SEE STD. DWG. D-PE-99 FOR SKEWED CONNECTION DETAIL WHEN CROSS DRAIN IS NOT PERPENDICULAR TO CENTERLINE. CAST-IN-PLACE CONCRETE ENDWALL SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARD SPECIFICATIONS, SECTION 611 AND/OR SPECIAL PROVISIONS.
- (B) SEE STD. DWG. D-PE-36B FOR BILL OF STEEL & PRECAST NOTES.
- (C) "I" IN BAR DESIGNATION REPRESENTS 3, 4 OR 6 FOR 3:1, 4:1 OR 6:1 SLOPES, RESPECTIVELY.
- (D) SPLICING OF REINFORCEMENT IS ACCEPTABLE PROVIDED THAT A MINIMUM 21" SPLICE LENGTH IS USED.
- (E) TOEWALL BACK SLOPE MAY BE CONSTRUCTED VARIABLE FROM VERTICAL UP TO 15°.
- (F) PAYMENT WILL BE MADE UNDER:
- | | | |
|-----------|--------------------------------|------|
| 611-07.63 | 36IN ENDWALL (CROSS DRAIN) 3:1 | EACH |
| 611-07.64 | 36IN ENDWALL (CROSS DRAIN) 4:1 | EACH |
| 611-07.65 | 36IN ENDWALL (CROSS DRAIN) 6:1 | EACH |
- (G) THE CONTRACTOR MAY ELECT TO SUBSTITUTE AN APPROVED ALTERNATIVE DESIGN.
- (H) DIMENSIONAL AND REINFORCING TOLERANCES WILL BE AS SHOWN IN STANDARD OPERATING PROCEDURE (SOP) 5-3.

MINOR REVISION -- FHWA
APPROVAL NOT REQUIRED

STATE OF TENNESSEE
STANDARD
DRAWING
DEPARTMENT OF TRANSPORTATION

TYPE "U"
CROSS DRAIN ENDWALL
FOR 36" PIPE
WITH STEEL PIPE GRATE
(FOR 3:1, 4:1 & 6:1 SLOPES)

03-01-2012

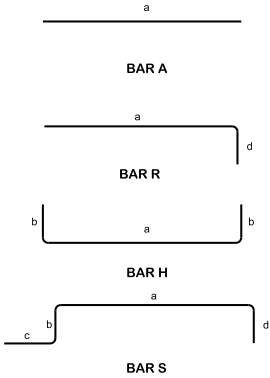
D-PE-36A

NOT TO SCALE

BILL OF STEEL

CODE NO.	LOCATION	BAR SIZE	3:1 WINGWALL SLOPE						4:1 WINGWALL SLOPE						6:1 WINGWALL SLOPE					
			BENDING DIMENSIONS				NO. REQ'D	LENGTH	BENDING DIMENSIONS				NO. REQ'D	LENGTH	BENDING DIMENSIONS				NO. REQ'D	LENGTH
			a	b	c	d			a	b	c	d			a	b	c	d		
A400	TOEWALL	4	4' - 4"	-	-	-	3	4' - 4"	4' - 4"	-	-	-	3	4' - 4"	4' - 4"	-	-	-	3	4' - 4"
A431	WINGWALLS	4	8' - 1"	-	-	-	2	8' - 1"	-	-	-	-	-	-	-	-	-	-	-	-
A432	WINGWALLS	4	5' - 1"	-	-	-	2	5' - 1"	-	-	-	-	-	-	-	-	-	-	-	-
A433	WINGWALLS	4	5' - 9 ½"	-	-	-	2	5' - 9 ½"	-	-	-	-	-	-	-	-	-	-	-	-
A434	WINGWALLS	4	3' - 0"	-	-	-	2	3' - 0"	-	-	-	-	-	-	-	-	-	-	-	-
A435	WINGWALLS	4	5' - 4"	-	-	-	2	5' - 4"	-	-	-	-	-	-	-	-	-	-	-	-
A441	WINGWALLS	4	-	-	-	-	-	-	10' - 10"	-	-	-	2	10' - 10"	-	-	-	-	-	-
A442	WINGWALLS	4	-	-	-	-	-	-	6' - 10"	-	-	-	2	6' - 10"	-	-	-	-	-	-
A443	WINGWALLS	4	-	-	-	-	-	-	7' - 7 ½"	-	-	-	2	7' - 7 ½"	-	-	-	-	-	-
A444	WINGWALLS	4	-	-	-	-	-	-	3' - 0"	-	-	-	2	3' - 0"	-	-	-	-	-	-
A445	WINGWALLS	4	-	-	-	-	-	-	7' - 2 ½"	-	-	-	2	7' - 2 ½"	-	-	-	-	-	-
A461	WINGWALLS	4	-	-	-	-	-	-	-	-	-	-	-	-	16' - 5"	-	-	-	2	16' - 5"
A462	WINGWALLS	4	-	-	-	-	-	-	-	-	-	-	-	-	10' - 5"	-	-	-	2	10' - 5"
A463	WINGWALLS	4	-	-	-	-	-	-	-	-	-	-	-	-	11' - 5 ½"	-	-	-	2	11' - 5 ½"
A464	WINGWALLS	4	-	-	-	-	-	-	-	-	-	-	-	-	3' - 0"	-	-	-	2	3' - 0"
A465	WINGWALLS	4	-	-	-	-	-	-	-	-	-	-	-	-	10' - 10"	-	-	-	2	10' - 10"
A700	HEADWALL	7	1' - 11"	-	-	-	2	1' - 11"	1' - 11"	-	-	-	2	1' - 11"	1' - 11"	-	-	-	2	1' - 11"
A701	HEADWALL	7	2' - 4"	-	-	-	2	2' - 4"	2' - 4"	-	-	-	2	2' - 4"	2' - 4"	-	-	-	2	2' - 4"
A702	HEADWALL	7	1' - 10"	-	-	-	2	1' - 10"	1' - 10"	-	-	-	2	1' - 10"	1' - 10"	-	-	-	2	1' - 10"
A703	HEADWALL	7	3' - 0"	-	-	-	1	3' - 0"	3' - 0"	-	-	-	1	3' - 0"	3' - 0"	-	-	-	1	3' - 0"
SERIES H430	BOTTOM SLAB & WINGWALL	4	4' - 4"	*	-	-	1	89' - 2"	-	-	-	-	-	-	-	-	-	-	-	-
			* DIMENSION "b" VARIES FROM 3'-9 ½" TO 0'-9 ½" IN INCREMENTS OF 0'-4" (10 BARS)																	
H431	BOTTOM SLAB & HEADWALL	4	4' - 4"	4' - 5 ½"	-	-	1	13' - 3"	-	-	-	-	-	-	-	-	-	-	-	-
SERIES H440	BOTTOM SLAB & WINGWALL	4	-	-	-	-	-	-	4' - 4"	*	-	-	1	124' - 10"	-	-	-	-	-	-
			* DIMENSION "b" VARIES FROM 3'-11" TO 0'-8" IN INCREMENTS OF 0'-3" (14 BARS)																	
H441	BOTTOM SLAB & HEADWALL	4	-	-	-	-	-	-	4' - 4"	4' - 6"	-	-	1	13' - 4"	-	-	-	-	-	-
SERIES H460	BOTTOM SLAB & WINGWALL	4	-	-	-	-	-	-	-	-	-	-	-	-	4' - 4"	*	-	-	1	195' - 3"
			* DIMENSION "b" VARIES FROM 4'-0 ¾" TO 0'-6 ¾" IN INCREMENTS OF 0'-2" (22 BARS)																	
H461	BOTTOM SLAB & HEADWALL	4	-	-	-	-	-	-	-	-	-	-	-	-	4' - 4"	4' - 6 ¾"	-	-	1	13' - 4 ½"
R430	HEADWALL & WINGWALL	4	11' - 1"	0' - 7 ½"	-	-	2	11' - 8 ½"	-	-	-	-	-	-	-	-	-	-	-	-
R431	HEADWALL & WINGWALL	4	2' - 1"	1' - 0"	-	-	2	3' - 1"	-	-	-	-	-	-	-	-	-	-	-	-
R440	HEADWALL & WINGWALL	4	-	-	-	-	-	-	14' - 10"	0' - 7 ½"	-	-	2	15' - 5 ½"	-	-	-	-	-	-
R441	HEADWALL & WINGWALL	4	-	-	-	-	-	-	2' - 10"	1' - 0"	-	-	2	3' - 10"	-	-	-	-	-	-
R460	HEADWALL & WINGWALL	4	-	-	-	-	-	-	-	-	-	-	-	-	22' - 5"	0' - 7 ½"	-	-	2	23' - 0 ½"
R461	HEADWALL & WINGWALL	4	-	-	-	-	-	-	-	-	-	-	-	-	4' - 5"	1' - 0"	-	-	2	5' - 5"
S430	BOTTOM SLAB & TOEWALL	4	11' - 1 ½"	0' - 4 ½"	0' - 8"	1' - 5"	6	13' - 7"	-	-	-	-	-	-	-	-	-	-	-	-
S440	BOTTOM SLAB & TOEWALL	4	-	-	-	-	-	-	14' - 11 ½"	0' - 4 ½"	0' - 8"	1' - 5"	6	17' - 5"	-	-	-	-	-	-
S460	BOTTOM SLAB & TOEWALL	4	-	-	-	-	-	-	-	-	-	-	-	-	22' - 7 ½"	0' - 4 ½"	0' - 8"	1' - 5"	6	25' - 1"

REINFORCING STEEL LEGEND



REINFORCING STEEL CODE

TYPE	SIZE	SERIES
A	5	06

DIMENSIONS SHOWN ON THIS SHEET ARE OUTSIDE TO OUTSIDE OF BAR.

STANDARD C.R.S.I. HOOK DETAILS SHALL APPLY, EXCEPT AS NOTED.

PRECAST NOTES

PRECAST UNITS:

THE CONTRACTOR MAY, WITH PERMISSION FROM THE ENGINEER, SUBSTITUTE PRECAST ENDWALLS FOR CAST-IN-PLACE ENDWALLS PROVIDED THAT:

- APPROPRIATE SIZING AND LOCATION OF THE LIFTING INSERTS SHALL BE THE RESPONSIBILITY OF THE FABRICATOR TO ASSURE BALANCED HANDLING DURING INSTALLATION OF THE PRECAST ENDWALL.
- THE CONTRACTOR TO PATCH ALL LIFTING INSERT HOLES AND PLACE A MINIMUM OF ONE (1) INCH OF COVER OVER THE HARDWARE OF THESE DEVICES ON BOTH TOP AND BOTTOM SURFACES.
- PAYMENT FOR PRECAST ENDWALLS BASED ON THE QUANTITIES FOR CAST-IN-PLACE ENDWALLS IS ACCEPTABLE.
- PRECAST ENDWALL UNITS WHICH ARE DAMAGED DURING SHIPMENT OR INSTALLATION WILL BE REJECTED. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPLACE THE DAMAGED ENDWALL UNITS AT HIS OWN EXPENSE.
- PIPE OPENINGS FOR HEADWALLS ARE BASED ON REINFORCED CONCRETE PIPE WITH TYPE "B" WALL THICKNESS (AASHTO M170).
- ADDITIONAL REINFORCING STEEL NECESSARY TO MAINTAIN THE INTEGRITY OF THE STRUCTURE DURING HANDLING AND PLACEMENT SHALL BE THE RESPONSIBILITY OF THE FABRICATOR.

CONCRETE: Fc=4,500 POUNDS PER SQUARE INCH MINIMUM AT 28 DAYS.
REINFORCING STEEL: ASTM A615, Fy=60,000 POUNDS PER SQUARE INCH.

MINOR REVISION -- FHWA APPROVAL NOT REQUIRED

STATE OF TENNESSEE
STANDARD
DRAWING
DEPARTMENT OF TRANSPORTATION

TYPE "U"
CROSS DRAIN ENDWALL
FOR 36" PIPE,
BILL OF STEEL AND
PRECAST NOTES

03-01-2012

D-PE-36B

NOT TO SCALE