

Job Name: 26-3603 - Murfreesboro Headwalls
Job Location: Murfreesboro, TN
Contractor: Bear Construction LLC

Plant: 100
9/22/2026 1:16:08 PM

Tech: Jared - F
PC: T. Ryan



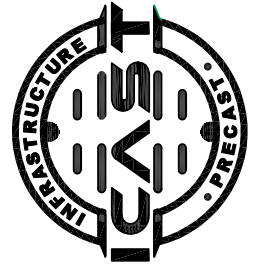
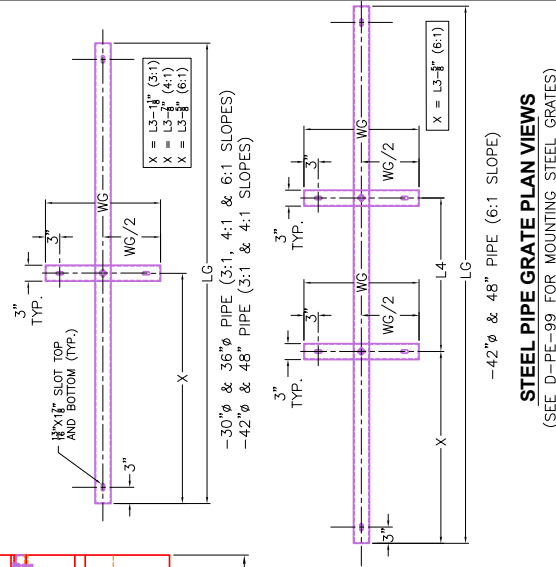
Structure ID: 1 - 2

P1 HWTDOT6-1SA24

24" - HW TDOT 6:1 Type Safety Side Drain Endwall F/F

GENERAL NOTES

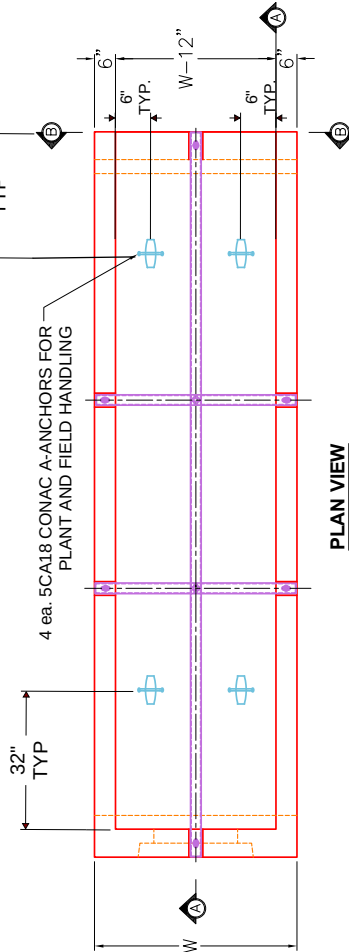
1. DRAWING TO BE USED FOR ALL 12" THROUGH 48" SIDE DRAIN CONCRETE ENDWALLS.
2. MANUFACTURING: FOR CROSS DRAINS ONLY.
3. CONCRETE: $F'_c = 4,500$ PSI @ 28 DAYS.
4. REINFORCING STEEL: ASTM A615, $F_y = 60,000$ PSI.
5. SEE STD. DWGS. D-PE-15A, D-PE-18, D-PE-24A, D-PE-30A, D-PE-36A, D-PE-42A & D-PE-48A FOR BILL OF STEEL.
6. SPLICING OF REINFORCEMENT IS ACCEPTABLE PROVIDED THAT A MINIMUM 21" SPLICE LENGTH IS USED.
7. APPROPRIATE SIZING AND LOCATIONS OF THE LIFTING INSERTS WILL BE THE RESPONSIBILITY OF INFRASTRUCTURE PRECAST, INC.
8. LIFTING INSERT POCKETS SHALL BE GROUTED ON SITE BY THE CONTRACTOR AFTER THE ENDWALL IS SET AS PER TDOT REQUIREMENTS.
9. DIMENSIONAL AND REINFORCING TOLERANCES WILL BE AS SHOWN IN STANDARD OPERATING PROCEDURE (SOP) S-3.
10. PIPE OPENINGS FOR HEADWALLS ARE BASED ON REINFORCED CONCRETE PIPE WITH TYPE "B" WALL AS PER AMERICAN CONCRETE PIPE ASSOCIATION (ACPA). OUTSIDE DIAMETER + 3"-4".
11. TOE WALL BACK SLOPE MAY BE CONSTRUCTED VARIABLE FROM VERTICAL UP TO 15°.



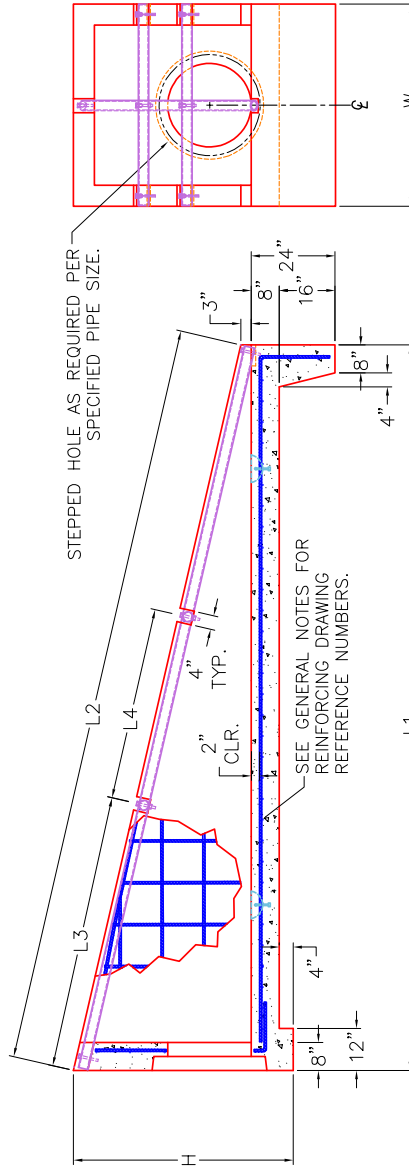
INFRASTRUCTURE PRECAST, INC.
981 WEST 7TH ST., BEAVER DAM, KY. 42320
PHONE: (270) 363-2238, FAX: (270) 298-7424

TDOT TYPE "U" CROSS DRAIN ENDWALL WITH STEEL PIPE GRATE FOR 15" THROUGH 48" PIPES (3:1 SLOPE)
DRAWING NO.: ET-TDOT-202
DATE: 10-07-25
REVIEWED BY: J.H. ROSS, PE
DRAWN BY: N. RICHARDS
SCALE: NTS

WEB: WWW.ICASTINC.COM



PLAN VIEW



SECTION A-A

ELEVATION B-B

STEPPED HOLE AS REQUIRED PER SPECIFIED PIPE SIZE.

NOTE:
JBS 24" TDOT 6:1 Safety side Drain
EW Grate Set supplied by ICAST

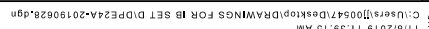
PIPE DIA. (D)	CONCRETE ENDWALL DIMENSIONS				GRATE DISPLACEMENT DIMENSIONS			STRUCT. STEEL	WEIGHT LBS.
	H	W	L1	L2	L3	L4	L5		
15"	2'-11"	2'-8"	8'-0"	8'-3"	N/A	N/A	N/A	N/A	3,484
18"	3'-2"	2'-11"	8'-8"	8'-11"	N/A	N/A	N/A	N/A	4,228
24"	3'-9"	3'-6"	11'-0"	11'-4"	N/A	N/A	N/A	N/A	6,503
30"	4'-5"	4'-1"	13'-8"	14'-1"	6'-1"	N/A	137	137	9,083
36"	5'-0"	4'-8"	16'-0"	16'-3"	8'-2"	N/A	160	160	12,058
42"	5'-6"	5'-3"	18'-0"	18'-6"	9'-2"	N/A	180	180	15,073
48"	6'-1"	5'-10"	20'-4"	20'-11"	10'-3"	N/A	203	203	18,910

PIPE DIA. (D)	CONCRETE ENDWALL DIMENSIONS				GRATE DISPLACEMENT DIMENSIONS			STRUCT. STEEL	WEIGHT LBS.
	H	W	L1	L2	L3	L4	L5		
15"	2'-11"	2'-8"	6'-0"	6'-3"	N/A	N/A	N/A	N/A	2,819
18"	3'-2"	2'-11"	6'-8"	7'-0"	N/A	N/A	N/A	N/A	3,406
24"	3'-9"	3'-6"	8'-5"	8'-10"	N/A	N/A	N/A	N/A	5,011
30"	4'-5"	4'-1"	10'-5"	10'-11"	5'-2"	N/A	114	114	7,204
36"	5'-0"	4'-8"	12'-2"	12'-6"	6'-4"	N/A	132	132	9,513
42"	5'-6"	5'-3"	13'-8"	14'-4"	7'-4"	N/A	148	148	11,862
48"	6'-1"	5'-10"	15'-5"	16'-3"	7'-4"	N/A	167	167	14,838

STEEL PIPE GRATE DIMENSIONS					
PIPE DIA.	ALL SLOPES	3:1	4:1	6:1	
15"	4'-1"	10'-10"	14'-0"	20'-4"	LG
18"	4'-8"	12'-8"	16'-5"	23'-11"	LG
24"	5'-0"	14'-3"	18'-5"	26'-11"	LG
30"	5'-10"	16'-11"	20'-10"	30'-6"	LG

DIMENSIONS & QUANTITIES FOR ONE ENDWALL 6:1					
PIPE DIA. (D)	CONCRETE ENDWALL DIMENSIONS	GRATE DISPLACEMENT DIMENSIONS	STRUCT. STEEL	WEIGHT LBS.	
15"	2'-11"	2'-8"	11'-2"	11'-3"	N/A
18"	3'-2"	2'-11"	12'-8"	12'-10"	N/A
24"	3'-9"	3'-6"	16'-2"	16'-4"	N/A
30"	4'-5"	4'-1"	20'-2"	20'-3"	N/A
36"	5'-0"	4'-8"	23'-8"	23'-11"	N/A
42"	5'-6"	5'-3"	26'-8"	27'-0"	N/A
48"	6'-1"	5'-10"	30'-2"	30'-7"	N/A

24" - HW TDOT 6:1 Type Safety Side Drain Endwall



Job Name: 26-3603 - Murfreesboro Headwalls
Job Location: Murfreesboro, TN
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Plant: 100
9/24/2026 1:43:17 PM

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Structure ID: 1 - 2

P1 HWTDOT6-1SA24

24" - HW TDOT 6:1 Type Safety Side Drain Endwall

REV 06/26/19 REMAIN AND REDRAW SHEET.

BILL OF STEEL																		
CODE NO.	LOCATION	BAR SIZE	3:1 WINGWALL SLOPE				4:1 WINGWALL SLOPE				6:1 WINGWALL SLOPE							
			BENDING DIMENSIONS			NO. REQD	BENDING DIMENSIONS			NO. REQD	BENDING DIMENSIONS			NO. REQD				
			a	b	c	d	LENGTH	a	b	c	d	LENGTH	a	b	c	d	LENGTH	
A400	TORWALL	4	3'-2"	-	-	-	3'-2"	3'-2"	-	-	-	-	3'-2"	-	-	-	-	3'-2"
A431	WINGWALLS	4	7'-4"	-	-	-	7'-4"	-	-	-	-	-	-	-	-	-	-	-
A432	WINGWALLS	4	4'-4"	-	-	-	4'-4"	-	-	-	-	-	-	-	-	-	-	-
A433	WINGWALLS	4	7'-10"	-	-	-	7'-10"	-	-	-	-	-	-	-	-	-	-	-
A441	WINGWALLS	4	-	-	-	-	-	9'-10"	-	-	-	-	9'-10"	-	-	-	-	-
A442	WINGWALLS	4	-	-	-	-	-	5'-10"	-	-	-	-	5'-10"	-	-	-	-	-
A461	WINGWALLS	4	-	-	-	-	-	10'-4"	-	-	-	-	10'-4"	-	-	-	-	-
A462	WINGWALLS	4	-	-	-	-	-	-	-	-	-	-	14'-11"	-	-	-	-	14'-11"
A463	WINGWALLS	4	-	-	-	-	-	-	-	-	-	-	8'-11"	-	-	-	-	8'-11"
A701	HEADWALL	7	1'-8"	-	-	-	1'-8"	-	-	-	-	-	1'-8"	-	-	-	-	1'-8"
A702	HEADWALL	7	3'-2"	-	-	-	3'-2"	-	-	-	-	-	3'-2"	-	-	-	-	3'-2"
SERIES																		
H430	BOTTOM SLAB & WINGWALL	4	3'-2"	*	-	-	1	43'-9"	-	-	-	-	-	-	-	-	-	-
			* DIMENSION "b" VARIES FROM 2'-6 1/2" TO 0'-6 1/2" IN INCREMENTS OF 0'-4"															
			(7 BARS)															
H431	BOTTOM SLAB & HEADWALL	4	3'-2"	3'-2 1/2"	-	-	1	9'-7"	-	-	-	-	-	-	-	-	-	-
SERIES																		
H440	BOTTOM SLAB & WINGWALL	4	-	-	-	-	-	3'-2"	*	-	-	-	58'-3 3/4"	-	-	-	-	-
			* DIMENSION "b" VARIES FROM 2'-7 1/2" TO 0'-7 1/2" IN INCREMENTS OF 0'-2" (9 BARS)															
H441	BOTTOM SLAB & HEADWALL	4	-	-	-	-	-	3'-2"	3'-2 3/4"	-	-	-	9'-7 3/4"	-	-	-	-	-
SERIES																		
H460	BOTTOM SLAB & WINGWALL	4	-	-	-	-	-	-	-	-	-	-	3'-2"	*	-	-	1	91'-7"
			* DIMENSION "b" VARIES FROM 2'-9 1/4" TO 0'-7 1/2" IN INCREMENTS OF 0'-2" (11 BARS)															
H461	BOTTOM SLAB & HEADWALL	4	-	-	-	-	-	-	-	-	-	-	3'-2"	3'-3 1/4"	-	-	1	9'-8 1/2"
R431	WINGWALL & HEADWALL	4	1'-4"	0'-8"	-	-	2	2'-0"	-	-	-	-	-	-	-	-	-	-
R441	WINGWALL & HEADWALL	4	-	-	-	-	-	1'-10"	0'-0"	-	-	-	2'-0"	-	-	-	-	-
R461	WINGWALL & HEADWALL	4	-	-	-	-	-	-	-	-	-	-	2'-11"	0'-8"	-	-	2	3'-7"
S430	BOTTOM SLAB & TOEWALL	4	7'-4 1/2"	0'-4 1/2"	0'-8"	1'-5"	6	9'-10"	-	-	-	-	-	-	-	-	-	-
S440	BOTTOM SLAB & TOEWALL	4	-	-	-	-	-	9'-11 1/2"	0'-4 1/2"	0'-8"	1'-5"	5	12'-5"	-	-	-	-	-
S460	BOTTOM SLAB & TOEWALL	4	-	-	-	-	-	-	-	-	-	-	15'-1 1/4"	0'-4 1/2"	0'-8"	1'-5"	6	17'-7"

MINOR REVISION - FHWA APPROVAL NOT REQUIRED

STATE OF TENNESSEE DEPARTMENT OF TRANSPORTATION
DRAWING
TYPE "U"
CROSS DRAIN ENDWALL FOR 24" PIPE, BILL OF STEEL AND PRECAST NOTES
03/01/2012
D-PE-24B

PRECAST UNITS:
THE CONTRACTOR MAY, WITH PERMISSION FROM THE ENGINEER, SUBSTITUTE PRECAST ENDWALLS FOR CAST-IN-PLACE ENDWALLS PROVIDED THAT:
① 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.
② 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.
③ PAYMENT FOR PRECAST ENDWALLS BASED ON THE QUANTITIES FOR CAST-IN-PLACE ENDWALLS IS ACCEPTABLE.
④ 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.
⑤ PIPE OPENINGS FOR HEADWALLS ARE BASED ON REINFORCED CONCRETE PIPE WITH TYPE "B" WALL THICKNESS (ASHTO M170).
⑥ 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.

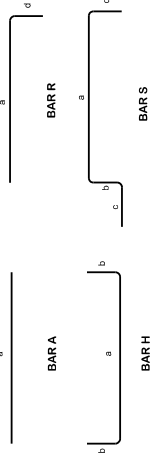
PRECAST NOTES

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.

REINFORCING STEEL LEGEND



NOT TO SCALE