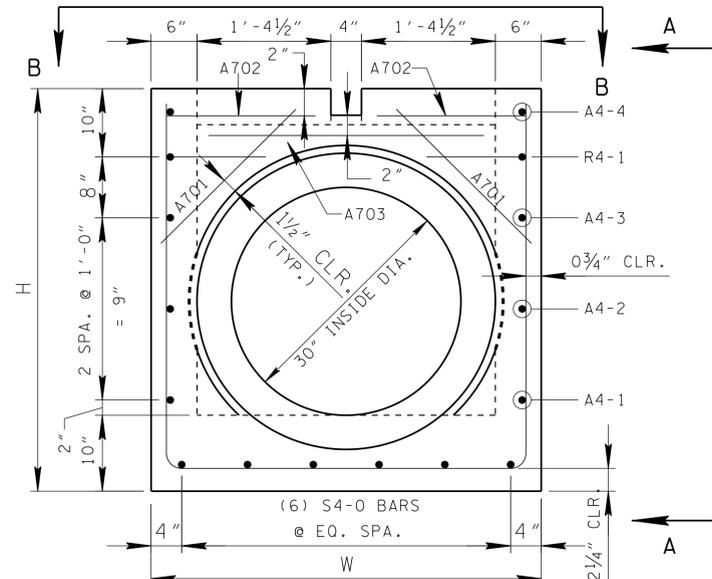


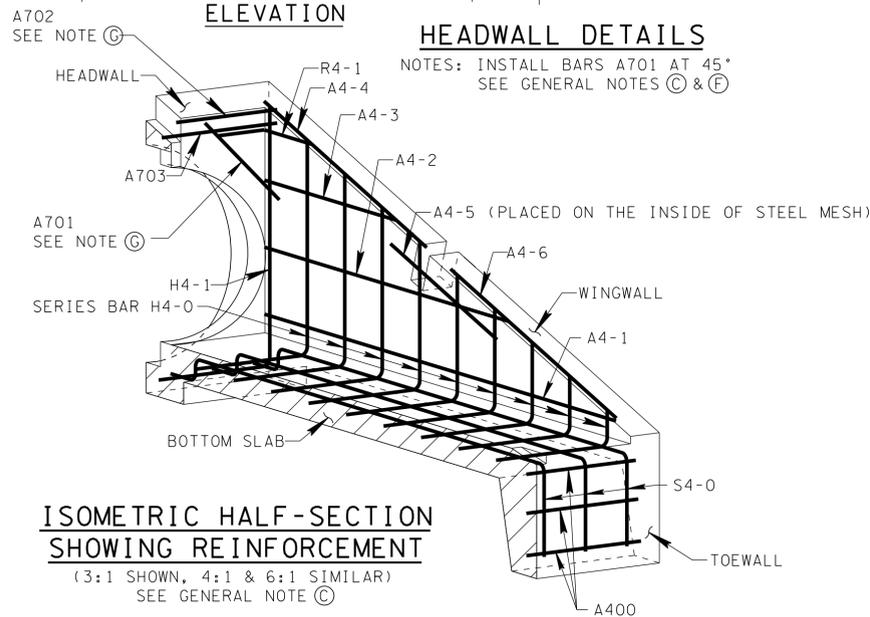
NOTE: SEE D-PE-99 FOR STEEL PIPE GRATE DETAILS
 3/4\"/>



ELEVATION

HEADWALL DETAILS

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



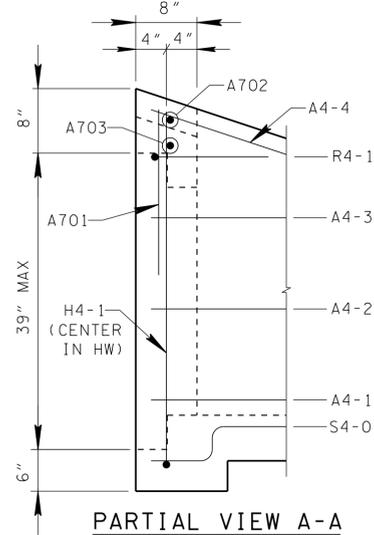
ISOMETRIC HALF-SECTION
 SHOWING REINFORCEMENT

(3:1 SHOWN, 4:1 & 6:1 SIMILAR)
 SEE GENERAL NOTE (C)

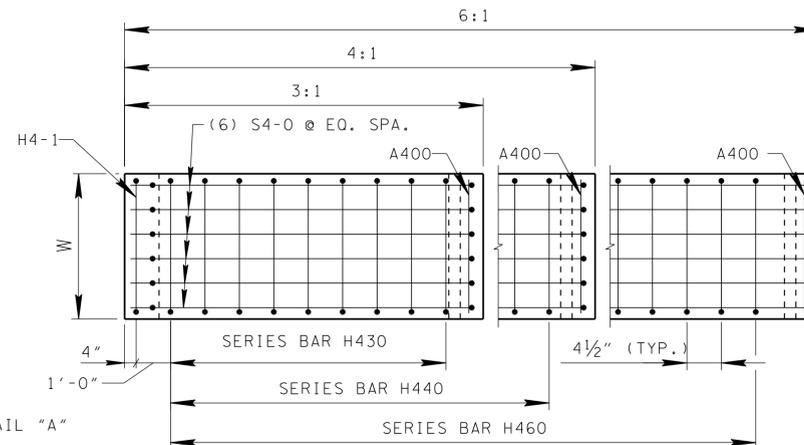
ALTERNATE DETAIL A

SEE ALTERNATE DETAIL "A"

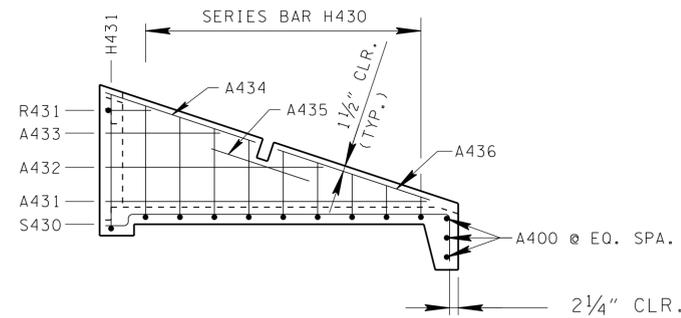
SEE BELOW NOTE



PARTIAL VIEW A-A

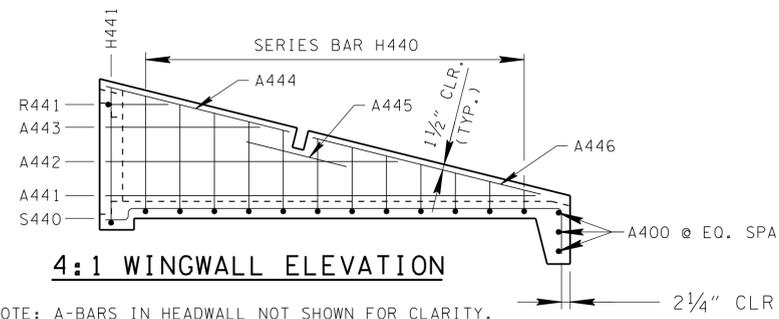


BOTTOM SLAB PLAN



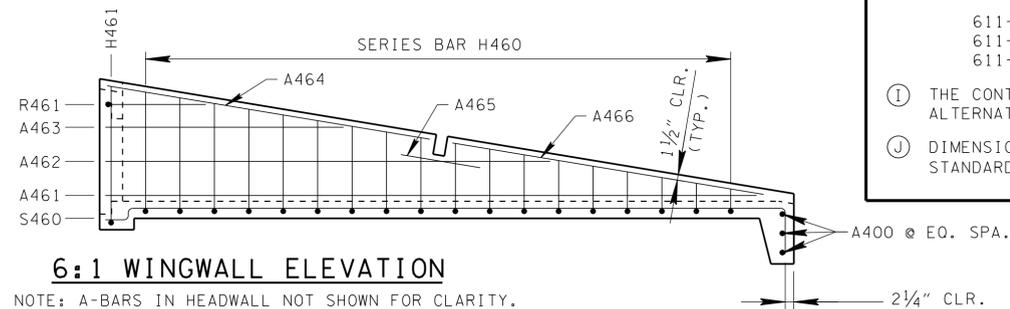
3:1 WINGWALL ELEVATION

NOTE: A-BARS IN HEADWALL NOT SHOWN FOR CLARITY.



4:1 WINGWALL ELEVATION

NOTE: A-BARS IN HEADWALL NOT SHOWN FOR CLARITY.



6:1 WINGWALL ELEVATION

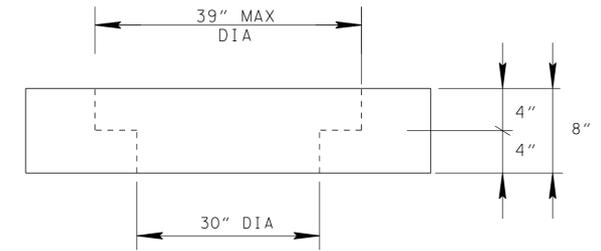
NOTE: A-BARS IN HEADWALL NOT SHOWN FOR CLARITY.

DIMENSIONS AND QUANTITIES FOR ONE ENDWALL 30" 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.	STRUCTURAL STEEL LB.
3:1	4' - 5"	10' - 5"	10' - 11 3/4"	5' - 2"	4' - 1"	10' - 10 3/8"	4' - 1"	1.84	174	114
4:1		13' - 8"	14' - 1"	6' - 1"		14' - 0 3/8"		2.32	216	137
6:1		20' - 2"	20' - 5 3/8"	10' - 1"		20' - 4 3/8"		3.29	303	186

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

- REV. 6-14-13: REVISED NOTE (G) ADDED NOTE (H) AND (I).
- REV. 1-6-15: REVISED HOLE OPENING SIZE. ADDED STEPPED HOLE DETAIL.
- REV. 1-21-16: REVISED GENERAL NOTE (B).
- REV. 10-10-16: REVISED GENERAL NOTE (A).

STEPPED HOLE DETAIL



PARTIAL VIEW B-B

SEE NOTE (F)

GENERAL NOTES

- (A) DRAWING TO BE USED FOR ALL CAST-IN-PLACE AND ALL PRECAST 30" CONCRETE ENDWALLS (TYPE "U") FOR CROSS DRAINS ONLY. "U" ENDWALL TO BE PLACED AT 90° SKEW TO CENTERLINE. SEE 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 D-PE-30B FOR BILL OF STEEL & PRECAST NOTES.
- (C) "-" 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) 90° STEPS ARE SHOWN ON THE STEPPED HOLE DETAIL; HOWEVER MINOR VARIATIONS OF THE TAPER ARE ACCEPTABLE.
- (G) OPTIONAL STEPPED HOLE OR HOLE FORMERS ARE ALLOWED, PROVIDED THE AMOUNT OF COVER BETWEEN THE PIPE OPENING AND BARS A701 AND A702 IS THE SAME OR GREATER THAN SHOWN ON THIS DRAWING.
- (H) PAYMENT WILL BE MADE UNDER:
 - 611-07.60 30IN ENDWALL (CROSS DRAIN) 3:1 PER EACH
 - 611-07.61 30IN ENDWALL (CROSS DRAIN) 4:1 PER EACH
 - 611-07.62 30IN ENDWALL (CROSS DRAIN) 6:1 PER EACH
- (I) THE CONTRACTOR MAY ELECT TO SUBSTITUTE AN APPROVED ALTERNATIVE DESIGN.
- (J) DIMENSIONAL AND REINFORCING TOLERANCES WILL BE AS SHOWN IN STANDARD OPERATING PROCEDURE 5-3.

□ MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
 DEPARTMENT OF TRANSPORTATION

30" CONCRETE ENDWALL
 CROSS DRAIN WITH
 STEEL PIPE GRATE
 (FOR 3:1, 4:1 & 6:1 SLOPES)