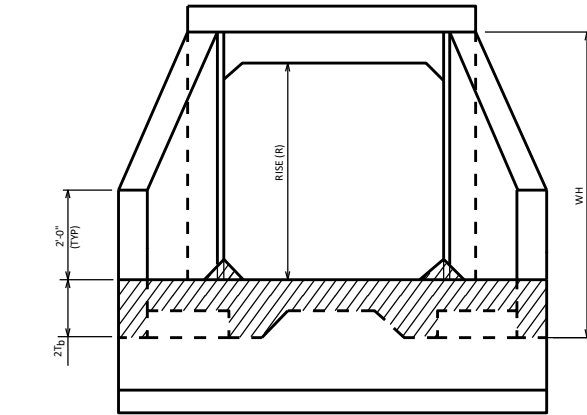
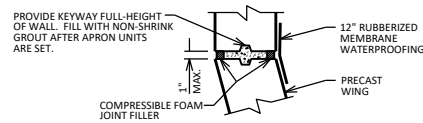


**APRON PLAN**  
(NON-SKEWED STRUCTURE)



**END VIEW**

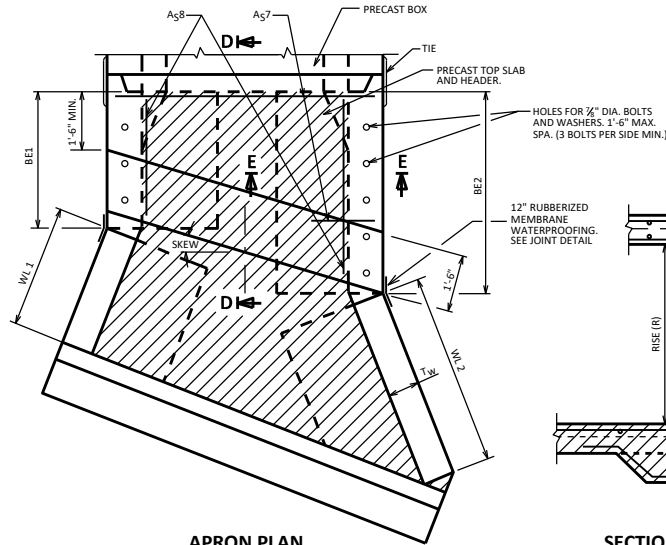


**JOINT DETAIL**

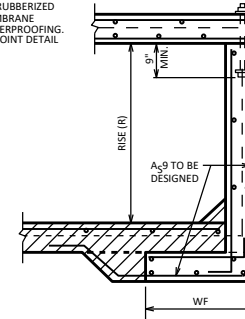
JOINT DETAIL EXAMPLE SHOWN. PRECAST SUPPLIER TO SUBMIT JOINT DETAIL FOR ACCEPTANCE.

**BOX CULVERT APRON DATA**

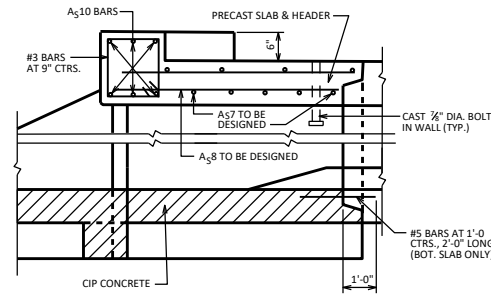
	R (Ft)	S (Ft)	T OR T <sub>5</sub> (IN)	SKEW	ANGLE A	ANGLE B	WL 1	WL 2	AL	AH	WH	BE1	BE2
INLET													
OUTLET													



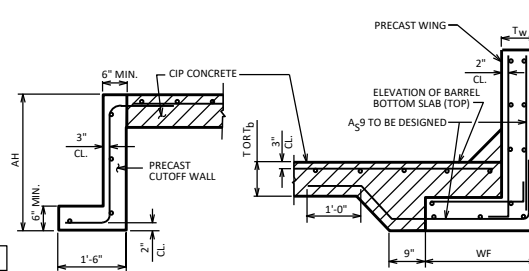
**APRON PLAN**  
(SKEWED STRUCTURE)



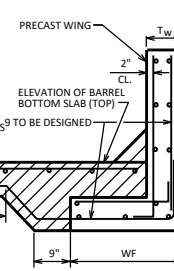
**SECTION E-E**



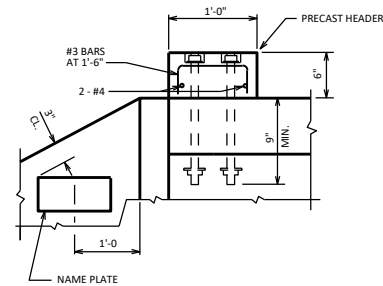
**SECTION D-D**



**SECTION B-B**



**SECTION A-A**



**SECTION C-C**

**NOTES**

CONCRETE COVER ON ALL REINFORCEMENT IN THE PRECAST ELEMENTS SHALL BE 2" UNLESS SHOWN OR NOTED OTHERWISE.

ALTERNATE DETAILS OF EQUAL STRENGTH AND HYDRAULIC CAPACITY TO THE DETAILS SHOWN ON THIS SHEET MAY BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

VERTICAL CONSTRUCTION JOINTS THRU THE WALLS AND FOOTING WILL BE ALLOWED ONLY WITH THE APPROVAL OF THE ENGINEER. DETAILS MUST BE SHOWN ON THE SHOP DRAWINGS FOR APPROVAL.

THE AREA OF REINFORCING STEEL NOT IDENTIFIED IN SECTIONS SHALL BE DESIGNED AND SHALL EXCEED TO THE FOLLOWING TEMPERATURE AND SHRINKAGE REQUIREMENTS:

THICKNESS	T&S REINF.
≤ 12"	#4 @ 18"
> 12" - 18"	#4 @ 12"

THE 1/2" DIA. ANCHOR BOLTS SHALL BE GALVANIZED AND CONFORM TO THE REQUIREMENTS OF ASTM A575.

**MATERIAL PROPERTIES:**

CONCRETE (CAST-IN-PLACE)	f <sub>c</sub> = 3,500 P.S.I.
CONCRETE (PRECAST WING)	f <sub>c</sub> = 4,000 P.S.I.
BAR STEEL REINFORCEMENT	f <sub>y</sub> = 60,000 P.S.I.
STEEL REINFORCEMENT (WIRE)	f <sub>y</sub> = 65,000 P.S.I.

RISE (R)	T <sub>w</sub> (MIN.)	WF (MIN.)
4'-0"	8"	2'-6"
6'-0"	8"	3'-6"
8'-0"	8"	4'-0"
10'-0"	10"	4'-9"

SPAN (S)	A510 BARS (MIN.)		
	SKEW		
	0°-15°	16°-30°	31°-45°
6'-0"	(6) - #6	(6) - #6	(6) - #6
7'-0"	(6) - #6	(6) - #6	(6) - #7
8'-0"	(6) - #6	(6) - #7	(6) - #8
10'-0"	(6) - #7	(6) - #8	(6) - #8

**DESIGNER NOTE:**

SEE STANDARD 36.02 FOR DESIGNER NOTES.

PROVIDE "BOX CULVERT APRON DATA" TABLE ON CONTRACT PLANS WHEN A PRECAST ONLY DESIGN IS PROVIDED.

**PRECAST WINGS, HEADERS, AND CUTOFF WALLS FOR PRECAST CONCRETE BOX CULVERT**



APPROVED: *Laura Shadewald* DATE: 7-25