

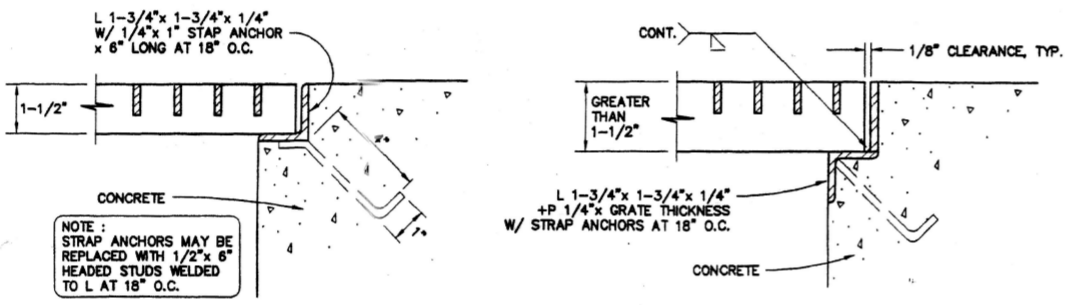
SQUARE OR RECTANGULAR OPENING

CIRCULAR OPENING

- * NOTES :**
- Area of extra reinforcement in each face equal to 1/2 area of reinforcing steel interrupted by opening in each direction.
 - Minimum steel at each side of opening shall be (2) #5 bars, each face, for opening up to 2'-6" in any direction, and (2) #5 bars, each face, for openings larger than 2'-6".
 - For wall openings with bottom edge within 12" of a horizontal slab or foundation, the horizontal and diagonal bars below the opening may be omitted. Provide vertical dowels with minimum lap splice for vertical side bars.

TYPICAL REINFORCING DETAILS AT OPENINGS IN WALL & FLOOR SLABS

NO SCALE



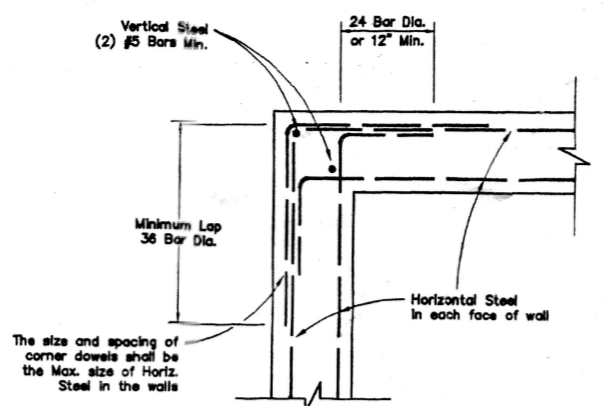
GRATING SUPPORT FOR 1-1/2" THK. GRATING

GRATING SUPPORT FOR GRATING THICKER THAN 1-1/2"

GRATING SUPPORT DETAILS

NO SCALE

- NOTES :** 1. ALL STEEL ITEMS TO BE GALVANIZED UNLESS OTHERWISE SPECIFIED.

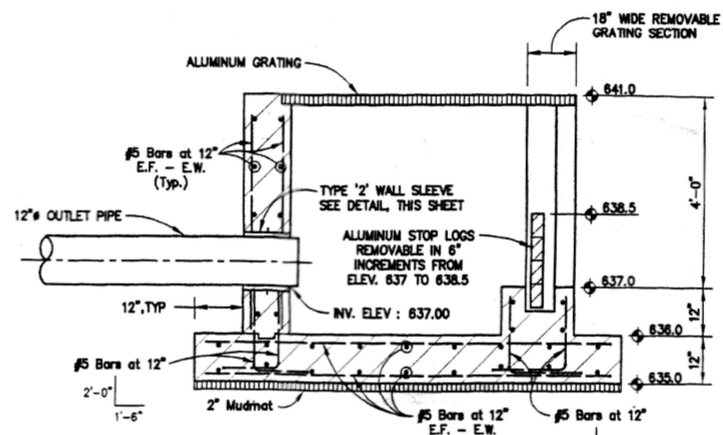


HORIZONTAL SECTION

- NOTE :** Vertical steel shown shall not be smaller than the smallest vertical steel in the adjacent walls.

CORNER REINFORCING DETAIL

NO SCALE



Section View

WETLAND OUTLET STRUCTURE

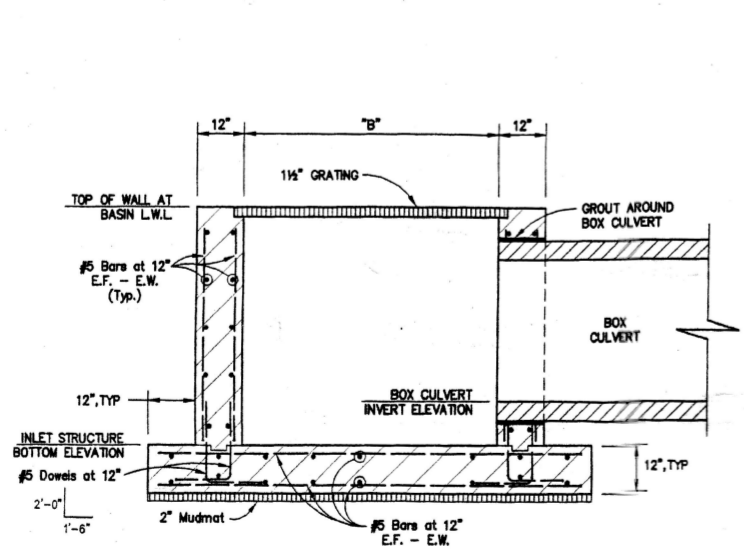
NO SCALE

BAR SIZE	TYPICAL SPACING = S		TOP BARS**	
	S < 6 in.	S > or = 6 in.	S < 6 in.	S > or = 6 in.
#4	24	24	29	24
#5	28	24	36	29
#6	31	25	43	34
#7	39	31	54	44
#8	51	41	72	57

- * Lap splice lengths shown to all members unless otherwise noted on the drawings : ACI Class C splice.
- ** Top bars are horizontal bars in slabs, joists, and beams with 12 inch or more of concrete cast below the bars.

ABBREVIATIONS

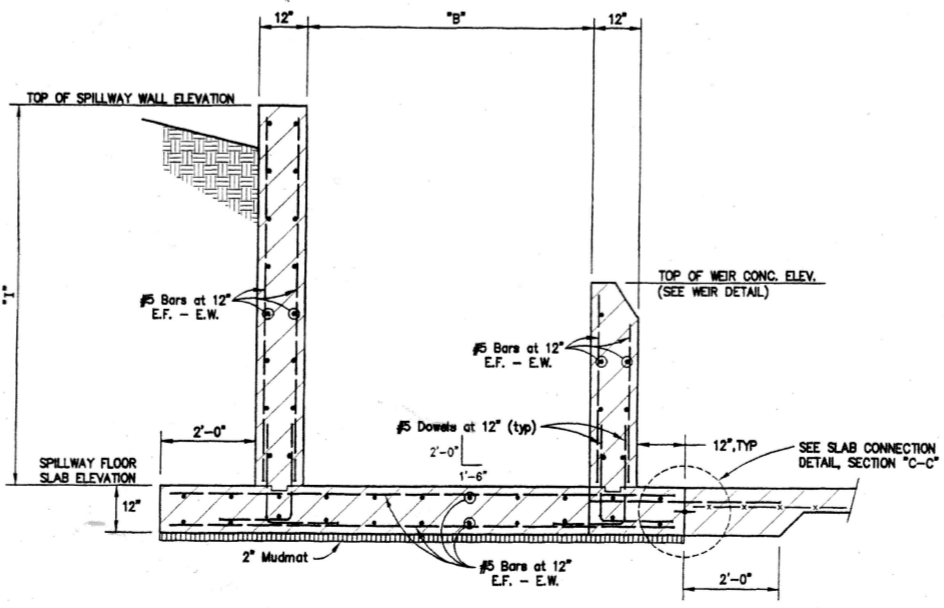
- E.F. = EACH FACE
E.W. = EACH WAY
T.O.W. = TOP OF WALL
T.O.S. = TOP OF SLAB



Section View

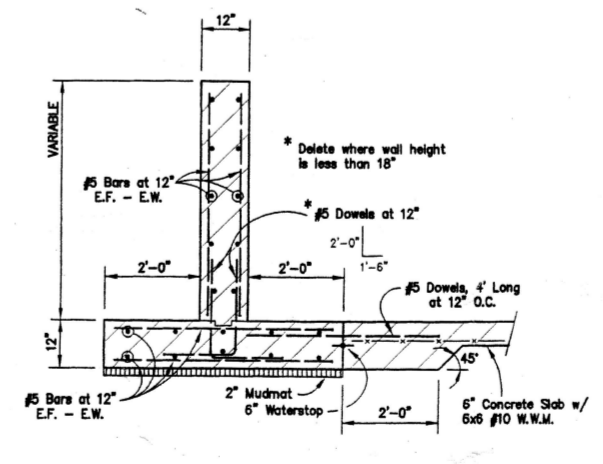
DETENTION BASIN INLET STRUCTURE

SCALE 1" = 2"



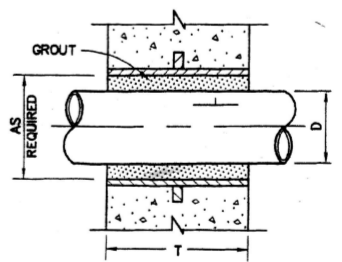
SECTION "B-B"

SCALE 1" = 2"



SECTION "C-C"

SCALE 1" = 2"



WALL SLEEVE-TYPE "2"

WALL SLEEVE DETAIL

NO SCALE

structural details

SCALE: 1" = 100'

GENERAL NOTES

- Foundations shall rest on soil having a minimum allowable bearing capacity of 2000 psf. Noted foundations shall rest on engineered granular fill built up from natural undisturbed strata. Foundations shall not be placed on existing fill, organic materials, or on frozen ground. Tank bottoms or structure foundations which otherwise would rest partly on an engineered fill shall be undercut a minimum of 24" so that they rest entirely on an engineered fill. See specifications and component drawing notes.
- All design, detailing, fabrication, erection, concrete cover, inserts, supports, and accessories for concrete work shall conform to the following standards unless otherwise shown: ACI 318, ACI 301, ACI 315, ACI 350, latest editions.
- All reinforcing steel shall conform to ASTM-A615 Grade 60. Concrete shall have a minimum 28 day strength of 4,000 psf. The C₃A content of all cementitious material shall be less than 8 percent for all concrete in direct contact with sewage or effluent.
- Minimum reinforcement for walls 6" and thicker shall be #5 @ 12" c/c each way each face, and for 6" walls #4 @ 12" c/c each way of the center, unless otherwise shown on the drawings or approved by the Engineer.
- Locations and sizes of all openings, sleeves, floor drains, piping, dimensions of concrete equipment base foundations, curbs, etc. shall be generally as shown on the plans but may be changed to suit equipment furnished if approved by the Engineer. Verify size and location with the mechanical, electrical, and equipment drawings.
- All sleeves, inserts, anchor bolts, and other embedded items shall be placed in the formwork prior to placing the concrete.
- All slabs on grade, excepting foundation slabs, shall rest on a minimum of 6" of engineered granular fill built up from undisturbed strata.
- All pipes buried in soil under floor slabs and foundations of any structure shall be encased in a 6" minimum thickness of fill concrete.
- Backfill shall be placed uniformly on both sides of the foundation walls. Do not backfill basement walls until the floor slabs above have been placed, unless adequate bracing and shoring for the wall is provided.
- See mechanical drawings for size, location, and material for gratings, checkered plates, hatch covers, and handrails.
- Coordinate structural drawings with equipment manufacturers. Changes required by the equipment manufacturer shall be subject to approval by the Engineer. Any additional cost caused by selected equipment shall be born by the Contractor.
- Typical lap lengths for rebar splices are given below. If splices are required between control joints, location of splices shall be staggered. All splices in circular tank walls shall be staggered.

1700 Highway 100
 Grandville, MI 49431
 Phone: 616-799-3333
 Fax: 616-799-3334
Geotek Consulting
 Engineering & Construction
 Environmental Services
 Date: 10-13-97
 Scale: AS NOTED
 Drawn By: LS
 Checked By: TSH/DAC
 Project: 96300.09
 Sheet: 36
 of 36
 Location: PART OF THE NORTH 1/2 OF SECTION 29, T 6 N, R 12 W, KENT COUNTY, MICHIGAN
STRUCTURAL DETAILS
RiverTown Crossings