

GENERAL NOTES:

1. $f_c' = 4000$ PSI $f_y = 60,000$ PSI
2. The weight of the manure with bedding and free stall manure was assumed as 45 and 60 pcf respectively.

STEEL

3. The 8 inch sidewall and 9 inch floor shall have one mat of steel.
4. All steel placed in the 8 inch sidewall and 9 inch floor shall have a minimum concrete cover over reinforcement of two inches, except when the concrete is placed on or against the earth, then the minimum concrete cover shall be 3 inches.

FLOOR SLAB

5. The 5 inch floor slab shall be constructed by the following method: Place concrete on top of 3 inch layer on approved base course material. Use number 4 bars at 15 inch spacing each way. Concrete cover for steel placed in floor slab shall be 2 inch minimum.
6. Where ever the floor slab exceeds 30 feet in length or width, water tight expansion joints with dowel bars will be installed. Commercial water tight joint material will be installed as per manufacturers recommendation.
7. Approved base course material includes IDOT Grad No CA 7, 8, 11, 12, 13, 14, 15, 16 or FA 1, 2, 4.

WALL

8. The manure pit walls will withstand 60 pcf/ft. of fluid pressure.
9. The backfill loading was assumed to be 60 pcf/ft of equivalent pressure.
10. The wall will be built with expansion joints see (Expansion Joint Detail-Wall). No section of wall will be over 30 feet long between expansion joint.
11. A construction joint must be placed anywhere the concrete placement is not continuous. See Construction Joint Notes on page 3.

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Concrete (28 Days, 4000 PSI)	Cu. Yd.	
Reinforcing Steel #4 Rebars	Lbs.	
Reinforcing Steel #5 Rebars	Lbs.	
3/4" Dowel Bar	Lin. Ft.	
6" Nonmetallic Water Stop	Lin. Ft.	
1/2" Preformed Joint Filler	Lin. Ft.	
Base Course Material	Tons	
Perimeter Drain Fill	Tons	
4" Perforated CPT	Lin. Ft.	

STEEL SCHEDULE	
A	-----
B	-----
C	#4 @ 12"
D	#4 @ 12"
E	-----
F	-----
G	#5 @ 12"
H	#5 @ 12"
L	#4 @ 12"

LEGEND

- WALL: A - Not Required
 B - Not Required
 C - Center Vertical Face
 D - Horizontal Layer
- FLOOR: E - Not Required
 F - Not Required
 G - Center Face, Perpendicular To Wall
 H - Parallel To Wall
- CORNER: L - Corner Horizontal Layer, Wall

- WS = 6" Nonmetallic Water Stop
 CJ = Construction Joint
 EJ = Expansion Joint

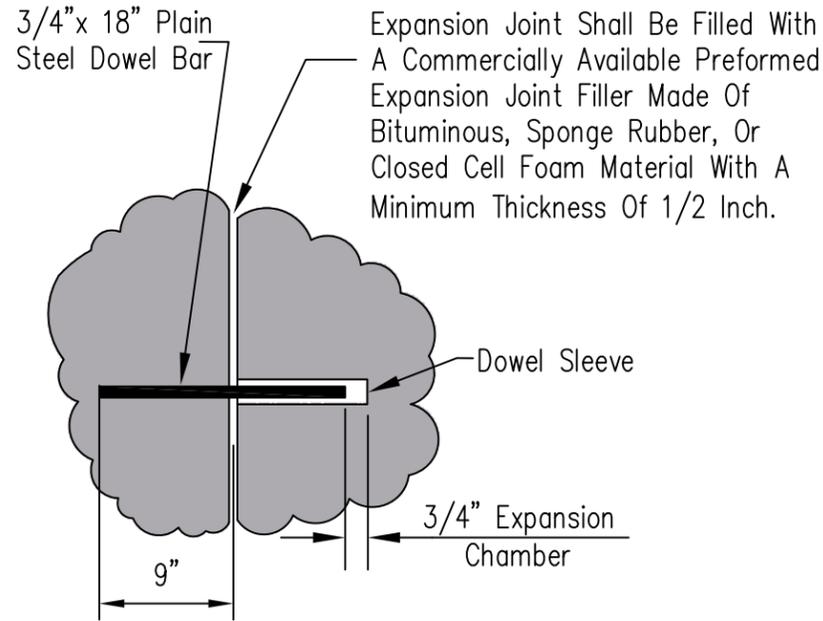
Date	5/1/14
Designed	M. QUINONES
Drawn	
Checked	
Approved	

**MANURE STORAGE FACILITY
4' HIGH R/C WALL**

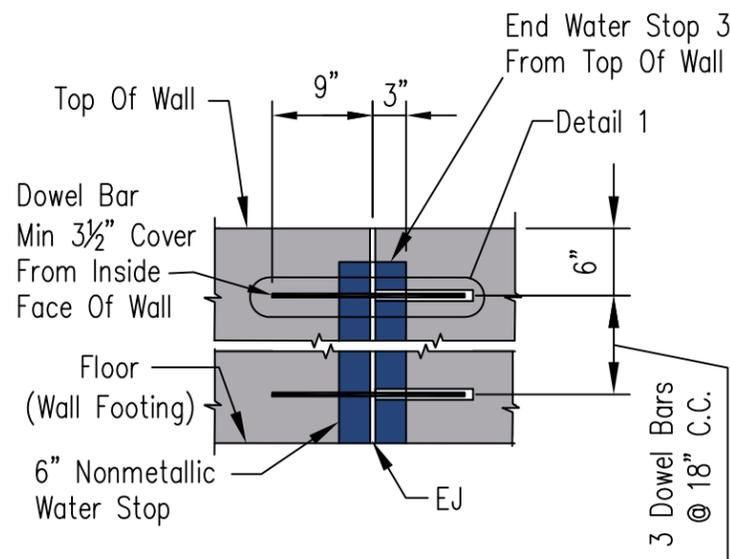


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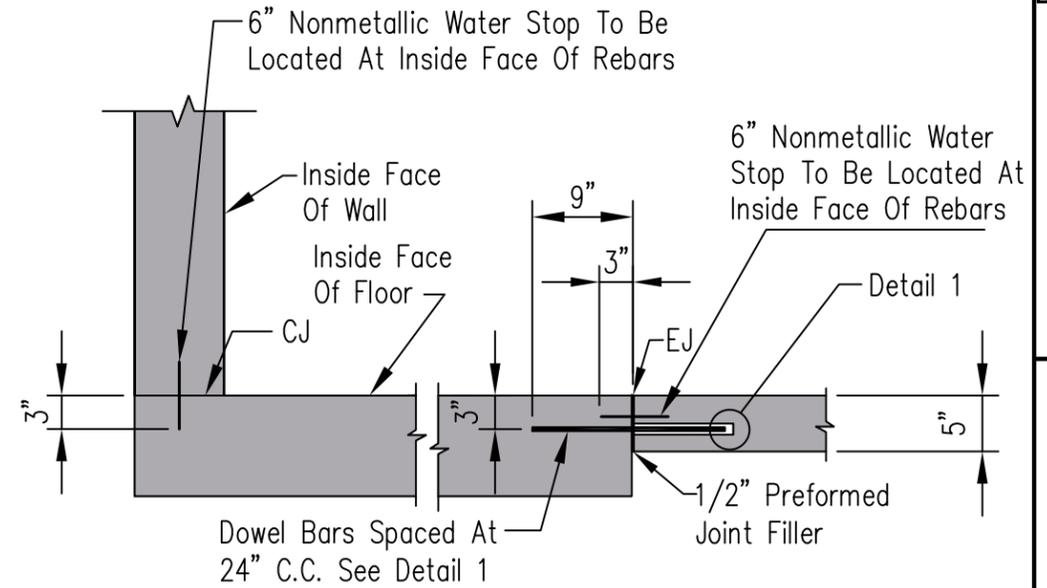
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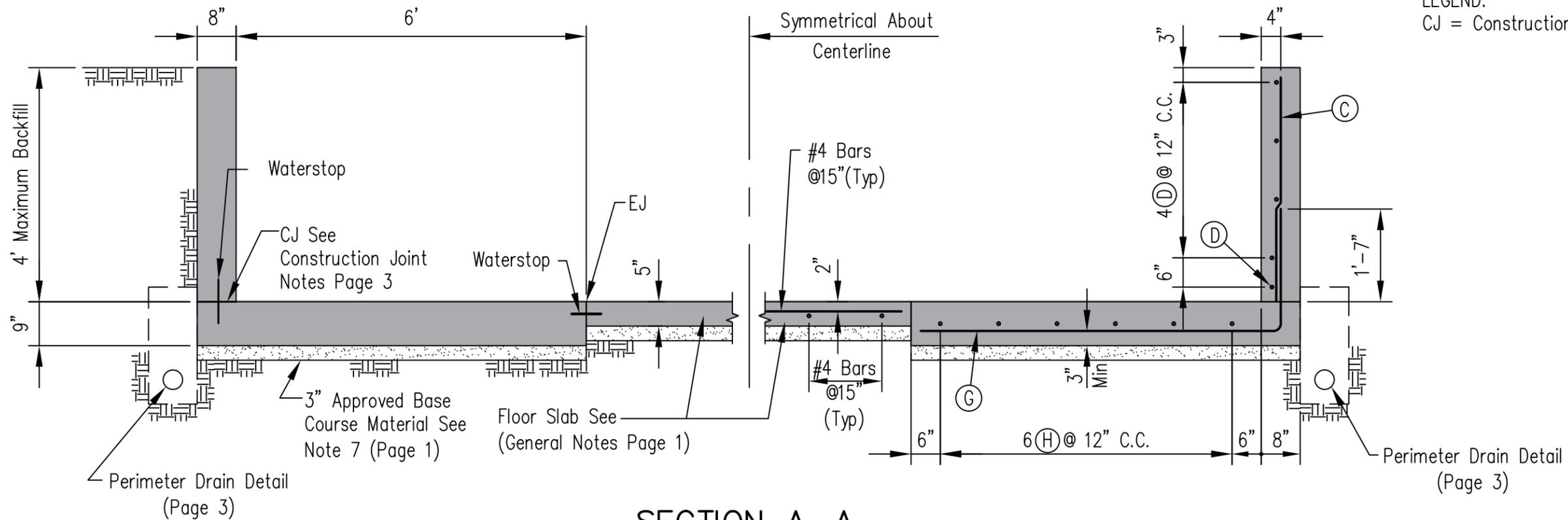
DETAIL 1
Not To Scale



Spacing Not Greater Than 30' C.C.
EXPANSION JOINT
DETAIL - WALL
Not To Scale



EXPANSION JOINT DETAIL - FLOOR
Not To Scale



SECTION A-A
Scale 1/2" = 1'-0"

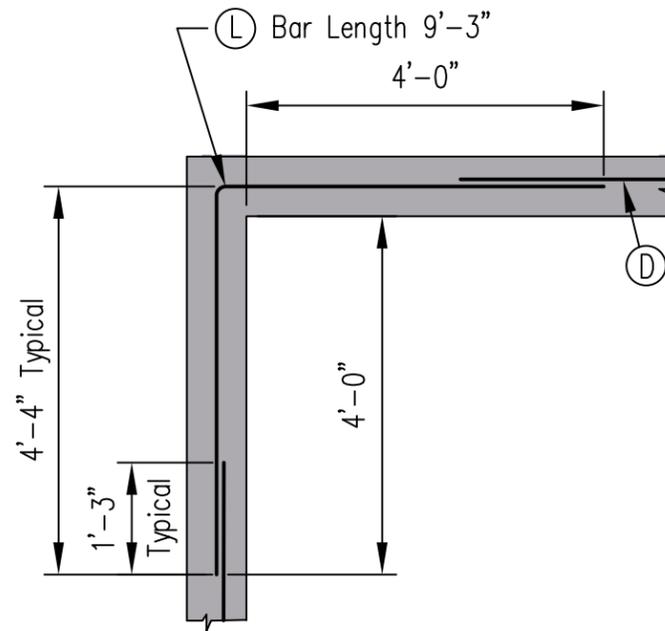
LEGEND:
CJ = Construction Joint

Scale As Noted

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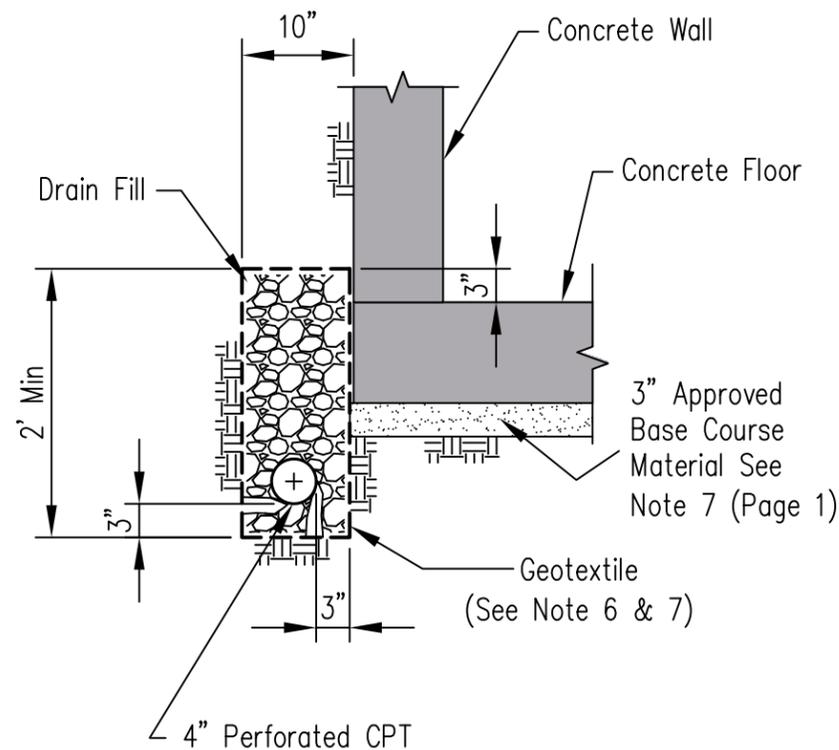
MANURE STORAGE FACILITY
4' HIGH R/C WALL





CORNER DETAIL-PLAN VIEW

Scale 1/2" = 1'-0"



PERIMETER DRAIN DETAIL

Scale 3/4" = 1'-0"

DRAINAGE NOTES:

1. Provide perimeter drain to adequate outlet if water table can rise above floor level.
2. Perimeter drain pipe and gravel/geotextile filter is to be routed around all sides of the tank and drain freely to a surface water outlet or other subsurface drainage outlet.
3. Perimeter drain pipe and fittings shall be perforated, corrugated polyethylene (CPT) meeting ASTM specifications listed below:

CPT	ASTM F405, F667
Dual Wall CPT	ASTM F2306, F2648, F405, F667

4. Drain fill shall consist of sand, gravel or concrete aggregate mixture with a maximum size of 3" and not more than 5% passing a #200 sieve. Qualifying IDOT gradations for drain fill include:
CA-1, CA-3, CA-5, CA-7, CA-8, CA-11, CA-12, CA-13, CA-14, CA-15, CA-16, CA-18
5. Geotextile (non-woven, needle punched) minimum criteria:
Grab tensile strength (lb) ASTM D 4632 _____ 202
Elongation at failure (%) ASTM D 4632 _____ ≥50
Trapezoidal tear strength (lb) ASTM D 4533 _____ 79
Puncture strength (lb) ASTM D 6241 _____ 433
Ultraviolet light (% retained strength) ASTM D 4355 _____ min50
Apparent opening size (AOS) ASTM D 4751 _____
max 0.22 mm (US sieve size 70)
Permittivity sec⁻¹ ASTM D 4491 _____ min 0.70
6. Any geotextile splices shall overlap a minimum of 18 inches.
7. Geotextile shall encase all drain fill.

Construction Joint Notes

1. A construction joint must be prepared when the concrete pour is not continuous, typically between the floor and wall.
2. Prepare all surfaces that will be in contact with new concrete as per note 5.
3. Let concrete cure at least 12 hours prior to steel tying and form construction for the next pour.
4. New concrete must not be placed until the hardened concrete has cured at least 12 hours.
5. Construction joints must be prepared using one of the following two methods:

Method 1 – Water–Air or Sandblasting. Clean the joint surface of all unsatisfactory concrete, laitance, coating, stains, and debris by sandblasting or high–pressure air–water cutting, or both. Sandblasting can be used after the concrete has gained sufficient strength to resist excessive cutting, and high–pressure air–water cutting can be used as soon as the concrete has hardened sufficiently to prevent the jet from displacing the coarse aggregates. The surface of the concrete in place must be cut to expose clean, sound aggregate, but not so deep as to undercut the edges of larger particles of the aggregate. Cut the surface to at least 1/4" depth. Thoroughly wash the surface to remove all material after cutting.

Method 2 – Mechanical. Clean the joint surface of all unsatisfactory concrete, laitance, coatings, stains, and debris by washing and scrubbing with a wire brush, wire broom, or other means approved by the engineer to expose coarse aggregate without displacing it. The surface must be roughened to at least 1/4" depth.

6. All construction joints must be wetted and standing water removed immediately before new concrete is placed.
7. New concrete must be sufficiently vibrated to ensure good contact into the prepared joint.
8. Keyways or steel plates cannot be substituted for the construction joint methods above.

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4' HIGH R/C WALL



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Scale As Noted