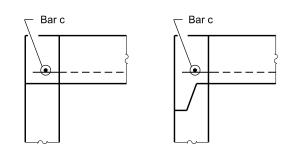


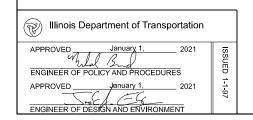
SECTION PARALLEL TO PIPE

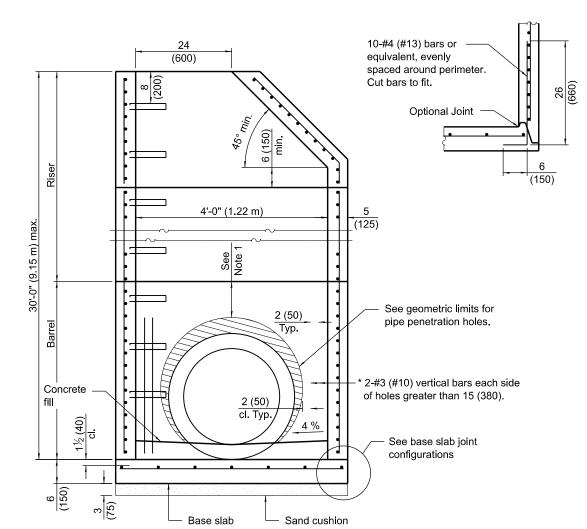
(Without conical top riser)



FLAT SLAB TOP JOINT CONFIGURATIONS

(Shown at access hole)





10-#4 (#13) bars or equivalent, evenly spaced around perimeter. Cut bars to fit. Optional Joint Optional Joint 2 (50) 10-#4 (#13) bars evenly spaced drilled and grouted in place at center of slab

Single-element shear key at

center of slab

BASE SLAB JOINT CONFIGURATIONS

(200)

(50)

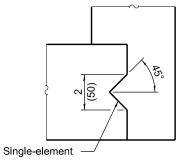
SECTION PERPENDICULAR TO PIPE

(With conical top riser

* As an alternate, the barrel wall reinforcement may be reduced to riser wall reinforcement with #3 (#10) bars placed around the pipe penetration holes as shown. This option may be utilized when the pipe penetration holes are formed as opposed to cored.

GEOMETRIC LIMITS FOR PIPE PENETRATION HOLES

- Note 1: A minimum of 9 (230) of monolithic reinforced concrete shall be maintained above pipe penetration holes > 24 (600).
- Note 2: A minimum 12 (300) inside arc length of reinforced concrete shall be maintained between pipe penetration holes > 15 (380).
- Note 3: A maximum of 60 percent of the inside perimeter of the reinforced concrete manhole walls may be removed.
- Note 4: Horizontal joints that intersect pipe penetration holes > 15 (380) shall have one joint splice for every location around the perimeter of the joint where the inside arc length between pipe penetration holes is < 24 (600). See joint splice detail.
- Note 5: The recommended pipe penetration hole is equal to the O.D. of the pipe plus 4 (100).
 - te 6: Only pipe penetration holes ≤ 15 (380) are allowed in riser sections.



shear key at center of slab

SHEAR KEY GEOMETRY

(Reinforcement not shown for clarity)

GENERAL NOTES

The manufacturer shall ensure that all precast manhole sections are additionally reinforced where required to resist damage from handling, shipping and installation stresses.

Lifting holes shall be located in the sections as per the manufacturer's recommendations.

See Standard 602701 for details of manhole steps.

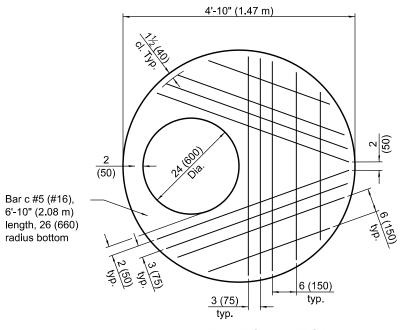
All dimensions are in inches (millimeters) unless otherwise

DATE	REVISIONS	
1-1-21	Revised Note 1 and lift hole	1
	general note.	
3-1-19	Moved wall reinforcement from	H
	inside face to middle.]
		1

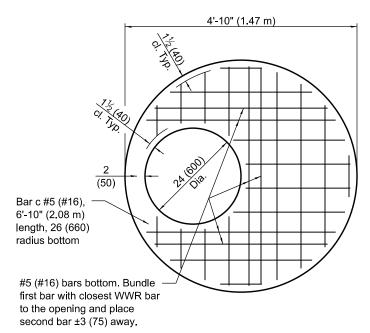
PRECAST MANHOLE TYPE A 4' (1.22 m) DIAMETER

(Sheet 1 of 2)

STANDARD 602401-07



PLAN - FLAT SLAB TOP (Showing layout of reinforcement bars and c bars)



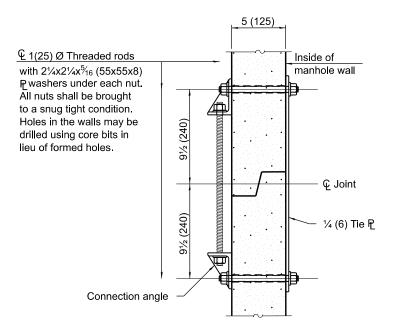
Illinois Department of Transportation

ENGINEER OF POLICY AND PROCEDURES

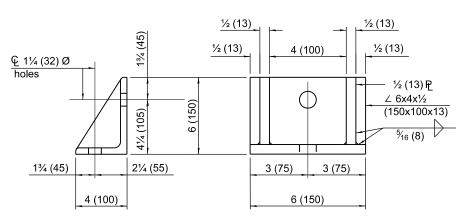
APPROVED_

PLAN - FLAT SLAB TOP

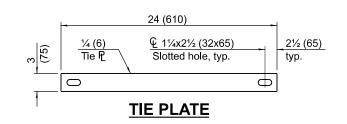
(Showing layout of welded wire reinforcement and c bars)



JOINT SPLICE



CONNECTION ANGLE



FLAT SLAB TOP REINFORCEMENT

Location	WWR (eac	h direction)	Rebar		
Location	A _s (min.)	Spacing (max.)	A _s (min.)	Spacing (max.)	Bar Size
Bottom	** 0.62 sq. in./ft.	6	See plan view for rebar orientation and		#5
Mat	(1312 sq. mm/m)	(150)	spacing and this table for bar size (#16		(#16)

^{**} Only one layer of WWR permitted to avoid congestion.

WALL REINFORCEMENT

Location	Orientation	WWR or Rebar		
Location	Orientation	A _s (min.)	Spacing (max.)	
Riser	Circumferential	0.12 sq. in./ft.	6	
		(254 sq. mm/m)	(150)	
	Vertical	0.045 sq. in./ft.	8	
		(95 sq. mm/m)	(200)	
Barrel	Circumferential	0.12 sq. in./ft.	6	
		(254 sq. mm/m)	(150)	
	Vertical	0.16 sq. in./ft.	4	
		(339 sq. mm/m)	(100)	

BASE SLAB REINFORCEMENT

Location	Total Height	WWR or Rebar (each direction)		
		A _s (min.)	Spacing (max.)	
Top Mat	≤ 20 ft. (6.10 m)	0.24 sq. in./ft.	10	
		(508 sq. mm/m)	(250)	
	> 20 ft. (6.10 m)	0.24 sq in./ft.	10	
		(508 sq. mm/m)	(250)	

PRECAST MANHOLE TYPE A 4' (1.22 m) DIAMETER

(Sheet 2 of 2)

STANDARD 602401-07