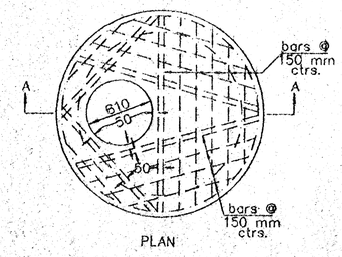
FHWA REGION NO.	STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
7	KANSAS	87-N-0093-01	1999	27	68

LEGEND (Concrete)

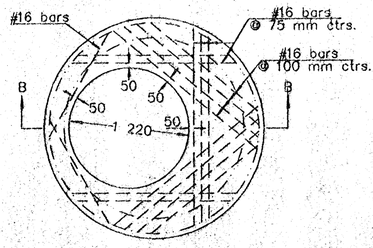
Precast

Cast in field

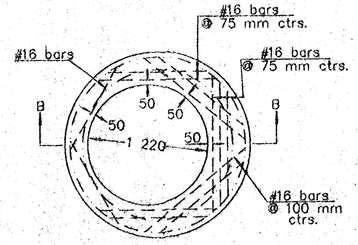


PLAN

TYPICAL REINFORCING FOR FLAT TOP SLABS



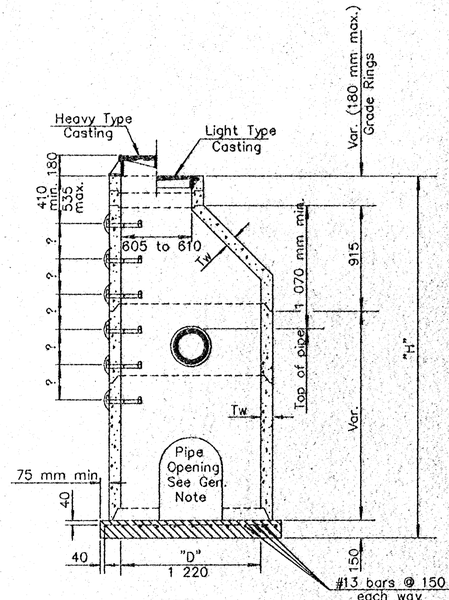
PLAN (D=1 830 mm)



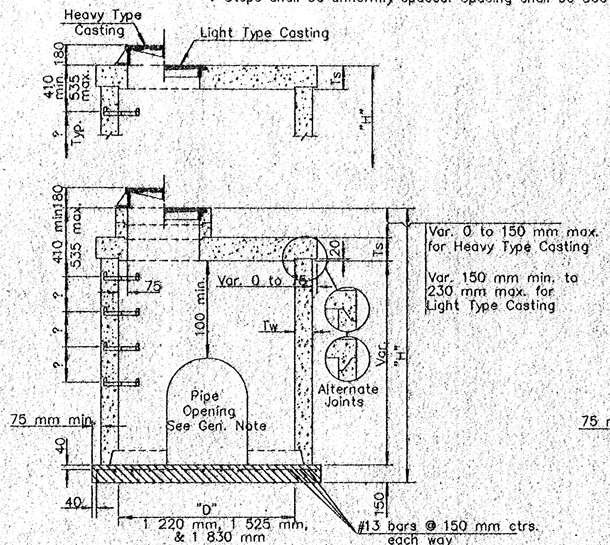
PLAN

TYPE I ALTERNATE (D=1 525 mm)

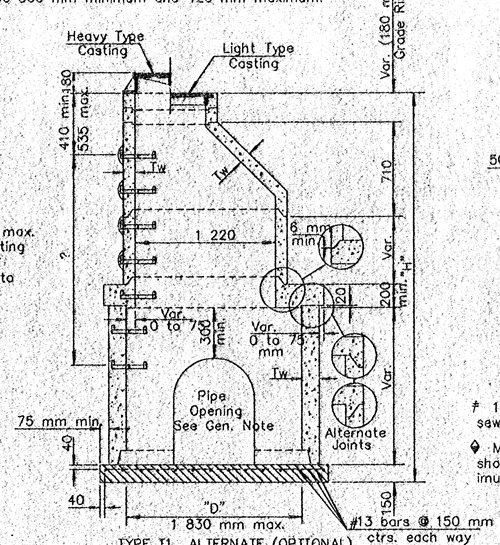
? Steps shall be uniformly spaced. Spacing shall be 300 mm minimum and 420 mm maximum.



TYPE I (SECTION)



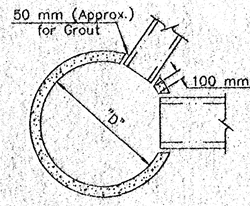
TYPE II (SECTION)



TYPE II ALTERNATE (OPTIONAL) (SECTION)

May be used when "H" is sufficiently large.

DIMENSIONS & REQUIREMENTS			
Type	"D"	Tw(min.) ♯	♦
I or II	1 220	100	610
II	1 525	125	760
II	1 830	150	1 220



SKETCH SHOWING MIN. WALL BETWEEN PIPES

♯ 125 mm Tw (min.) for portion of sanitary sewer manhole below 4.8 m.

♦ Maximum sewer pipe allowed for "D" shown. Increase "D" to provide 100 mm minimum wall between pipes. (see sketch)

GENERAL NOTE

Precast risers, cones, flat top slabs, reducing flat slabs, floors, grade rings, and rings and covers shall be manufactured according to the most recent ASTM C-478M Specifications and special provisions with specific details as shown on this sheet. Cone section shall be the eccentric type.

All manhole construction shall be water tight. All joints shall be filled with mortar or plastic joint compound as specified in the Standard Specifications. No payment will be made for this work.

When so ordered by the Engineer the top of the manhole shall be sloped slightly to approximately fit the ground line or other conditions.

Grade rings shall be formed with tongue and groove or lugs and notches. Grade rings shall be set in mortar.

When field conditions require "H" to be adjusted additional grade rings may be used as directed by the Engineer.

Contractor shall determine pipe locations in the field prior to ordering manholes, to insure proper positioning of pipe openings.

All dimensions relative to reinforcing steel are to center of bars unless otherwise noted.

Floor of manhole shall be shaped as shown on Standard Drawing RD730 SI. No additions in concrete quantities shall be made for shaping floor of manholes.

Steps shall be installed in all storm sewer manholes when specified in the plans or when "H" is equal to or greater than 1.8 m. Steps shall comply with the requirements of the KDOT Standard Specification.

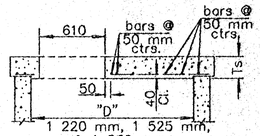
For notes and details on Cast Iron Manhole Covers and Rings see Standard Drawing RD730 SI.

Eccentric pipe decreasers may be used for transition of manhole diameter when "H" is sufficiently large.

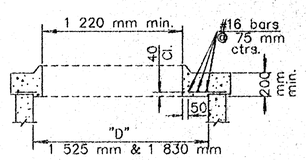
Type II manhole required when distance from top of sewer pipe is less than 1 m, for sewer pipes greater than 600 mm or to provide 100 mm min. wall between pipes.

Light type cast iron ring shall be set in flat top slab or grade ring as shown. This grade ring may be precast or cast in the field. Reinforcing for grade ring cast in the field shall be a #13 circular bar (min.).

Openings for sewer pipes to be constructed as follows:
Formed Openings: A 25 mm keyway shall be formed around the pipe opening.
Roughed In Openings: Reinforcing shall be left in place around the sewer pipe to reinforce the grout. Concrete shall be left rough to provide bond for grout.



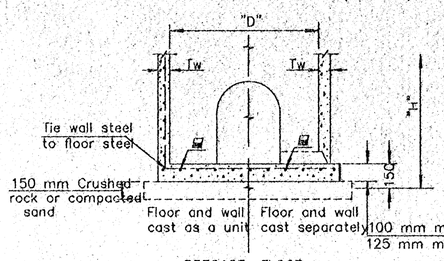
SECTION A-A



SECTION B-B

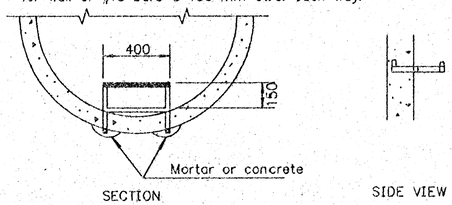
SLAB & BAR TABLE		
"D"	Ts(min.)	Bar size
1 220	150	#13
1 525	150	#13
1 830	200	#16

NOTE: Welded wire mesh of equivalent cross-sectional area may be substituted for bars @ 150 mm ctrs. (4 layers max.). Bars @ 50 mm ctrs. around opening shall be placed as shown.



PRECAST FLOOR

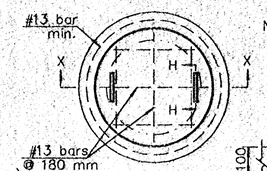
Floor reinforcing shall be double the reinforcing required for wall or #13 bars @ 150 mm ctrs. each way.



SECTION

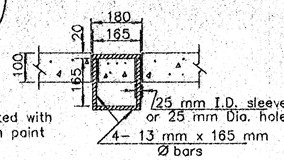
SIDE VIEW

STEP IN MANHOLE WALL



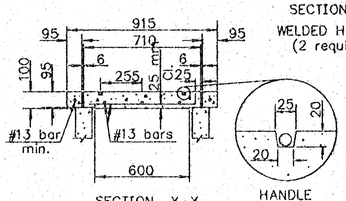
PLAN

NOTE: Precast ring and cover may be substituted for light type cast iron ring and cover.



SECTION H-H

Handles shall be painted with two coats of zinc rich paint (commercial grade).



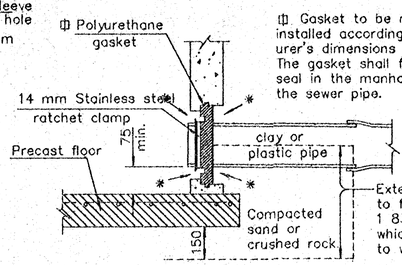
SECTION X-X

WELDED HANDLES (2 required)

HANDLE RECESS

PRECAST RING AND COVER (LIGHT TYPE) (Optional)

* Fill opening in manhole wall, around Sewer Pipe, with grout or concrete. (to prevent pipe movement)



Gasket to be manufactured and installed according to the manufacturer's dimensions and specifications. The gasket shall form a watertight seal in the manhole wall and around the sewer pipe.

MANHOLE WITH POLYURETHANE GASKET (Optional)

NO.	DATE	REVISIONS	BY	APP'D
3	12-15-97	Revised step spacing	R.J.S.	J.Q.B.
2	1-27-97	Revised Rebar Designation	R.J.S.	J.Q.B.
1	8-26-96	Reorganize details	R.J.S.	J.Q.B.

KANSAS DEPARTMENT OF TRANSPORTATION

PRECAST MANHOLES

RD731 SI

FHWA APPROVAL	2-2-98	APP'D James O. Brewer	
DESIGNED	DETAILED	QUANTITIES	TRACED Rembolt
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK. Seltz

Drawn By $$USERNAME$$ Plotted $$$$SYTIME$$$$
File $$$$$$$$$$$$$$$$DGNSPEC$$$$$$$$$$$$$$$$