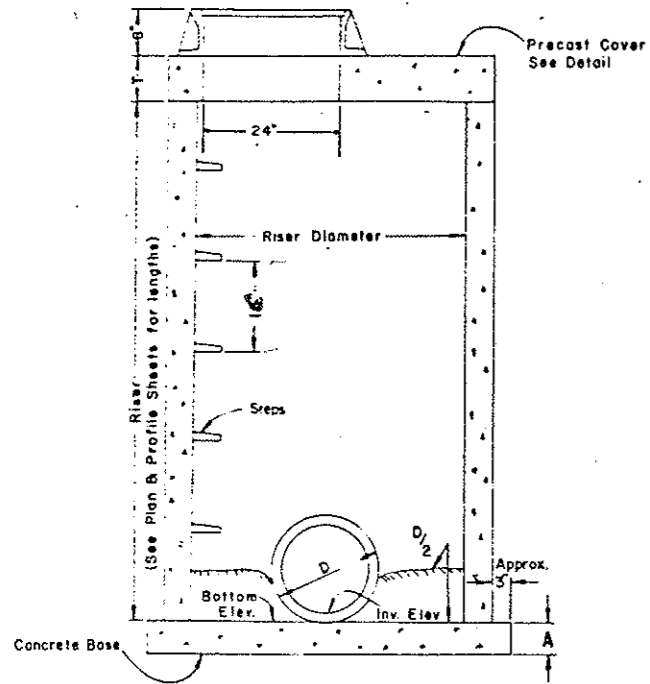
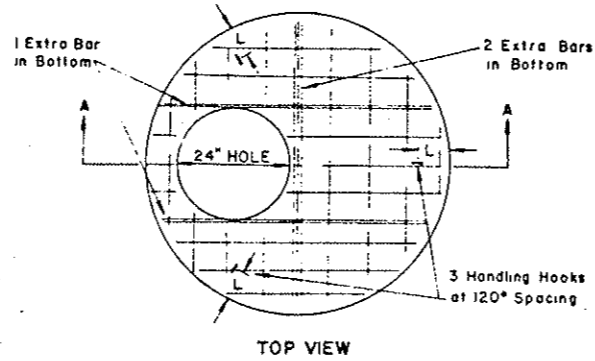


MANHOLE DETAILS

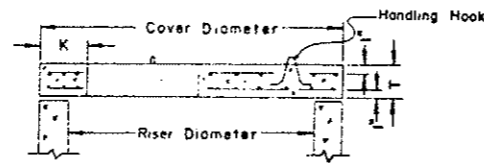
8	N.D.	MG-1-010(05)	10
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MANHOLE



TOP VIEW



SECTION A-A
PRECAST COVER

PRECAST MANHOLE COVERS

PIPE DIAMETER	COVER DIAMETER	WEIGHT OF SECTION	T	K	L	BOTTOM BARS	TOP BARS
42"	51"	800#	6"	6"	7"	#4 AT 6"	
48"	58"	1110#	6"	6"	8"	#4 AT 6"	
54"	65"	1950#	8"	6"	8"	#4 AT 6"	
60"	72"	2470#	8"	7"	9"	#4 AT 6" #3 AT 6"	
66"	79"	3050#	8"	7"	9"	#4 AT 6" #3 AT 6"	
72"	86"	3630#	8"	8"	10"	#4 AT 6" #3 AT 6"	
78"	93"	4350#	8"	8"	10"	#4 AT 4" #3 AT 4"	
84"	100"	5100#	8"	9"	11"	#4 AT 4" #3 AT 4"	
90"	107"	5890#	8"	9"	11"	#4 AT 4" #3 AT 4"	
96"	114"	6730#	8"	9"	11"	#4 AT 4" #3 AT 4"	
102"	121"	7630#	8"	9"	12"	#4 AT 4" #3 AT 4"	
108"	128"	12450#	12"	10"	12"	#4 AT 4" #3 AT 4"	
120"	140"	15500#	12"	11"	13"	#4 AT 4" #3 AT 4"	

Top and Bottom Bars run in both directions.

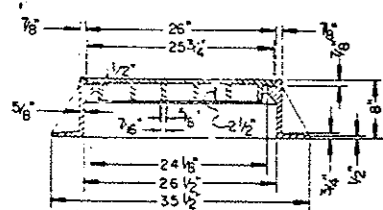
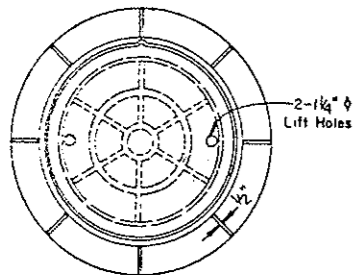
PRECAST MANHOLE BASES

PIPE DIAMETER	BASE DIAMETER	WEIGHT OF SECTION	A	BARS
42"	58"	1380#	6"	#3 AT 6"
48"	66"	1780#	6"	#3 AT 6"
54"	72"	2120#	6"	#3 AT 6"
60"	79"	3410#	8"	#3 AT 8"
66"	87"	4130#	8"	#3 AT 8"
72"	94"	4820#	8"	#3 AT 8"
78"	101"	5570#	8"	#3 AT 8"
84"	108"	6370#	8"	#3 AT 8"
90"	115"	7220#	8"	#3 AT 8"
96"	122"	8130#	8"	#3 AT 8"
102"	129"	9080#	8"	#3 AT 8"
108"	136"	15130#	12"	#3 AT 8"
120"	149"	18170#	12"	#3 AT 8"

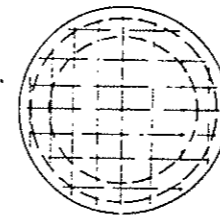
NOTE: METHOD OF MEASUREMENT FOR MANHOLES SHALL BE AS FOLLOWS: THE CONTRACT UNIT PRICE BID FOR MANHOLES SHALL INCLUDE THE FURNISHING AND INSTALLING THE FOLLOWING:

1. CAST IRON RING AND COVER.
2. PRECAST COVER.
3. CONCRETE BASE.

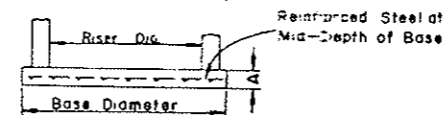
THE ITEM "MANHOLE RISER" SHALL INCLUDE THE FURNISHING & INSTALLING OF THE REQUIRED LENGTH OF RISER & CAST IRON STEPS.



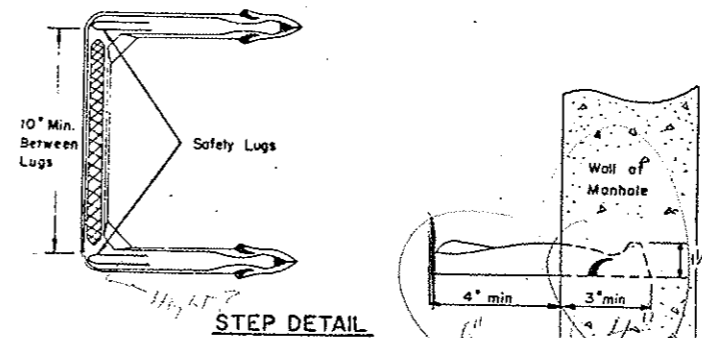
MANHOLE CAST IRON RING & COVER



TOP VIEW



PRECAST MANHOLE BASE



STEP DETAIL

Notes:

- Bottoms of manholes shall be cut or precast square to fit the base. Grout joint between base and wall with cement mortar.
- The Contractor may, if he so desires, construct the manholes lower than plan grade and bring the casting to grade using precast adjusting rings in a manner satisfactory to the Engineer in the field.
- The Contractor shall have the option of using precast or poured in place bases.
- Precast bases shall be reinforced as shown in listing for each size base. The class of concrete used in poured bases shall be class AE. The aggregate size shall be approved by the engineer.
- Precast bases shall be constructed in accordance with ASTM 478. Other castings, similar in dimension, may be used if accepted by the engineer in writing.
- Manhole steps shall be made of non-corrosive materials. The steps shall be certified capable of withstanding a minimum static load of 1500 pounds. Configuration of the steps shall be approved by the engineer.
- Manhole riser shall be produced in accordance with ASTM 478.

12-22-75 REVISIONS		NORTH DAKOTA STATE HIGHWAY DEPARTMENT
DATE	CHANGE	
2-24-76	Step Dimensions	Submitted: <i>[Signature]</i> Design Engineer
		Recommended: <i>[Signature]</i> Asst. Chief Engineer Pre-Construction
		Approved: <i>[Signature]</i> Chief Engineer