

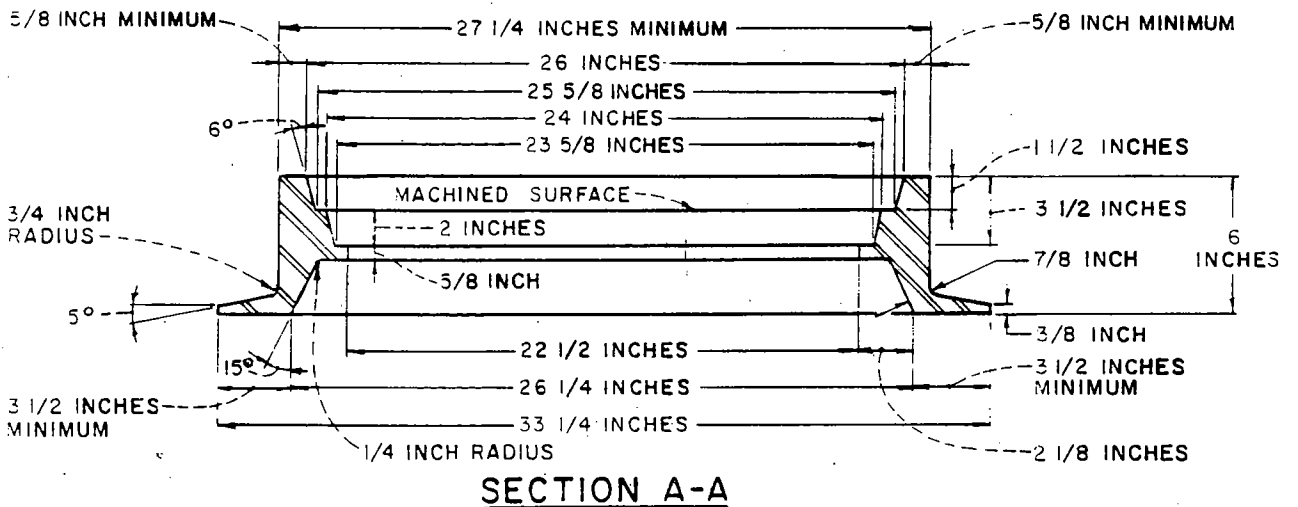
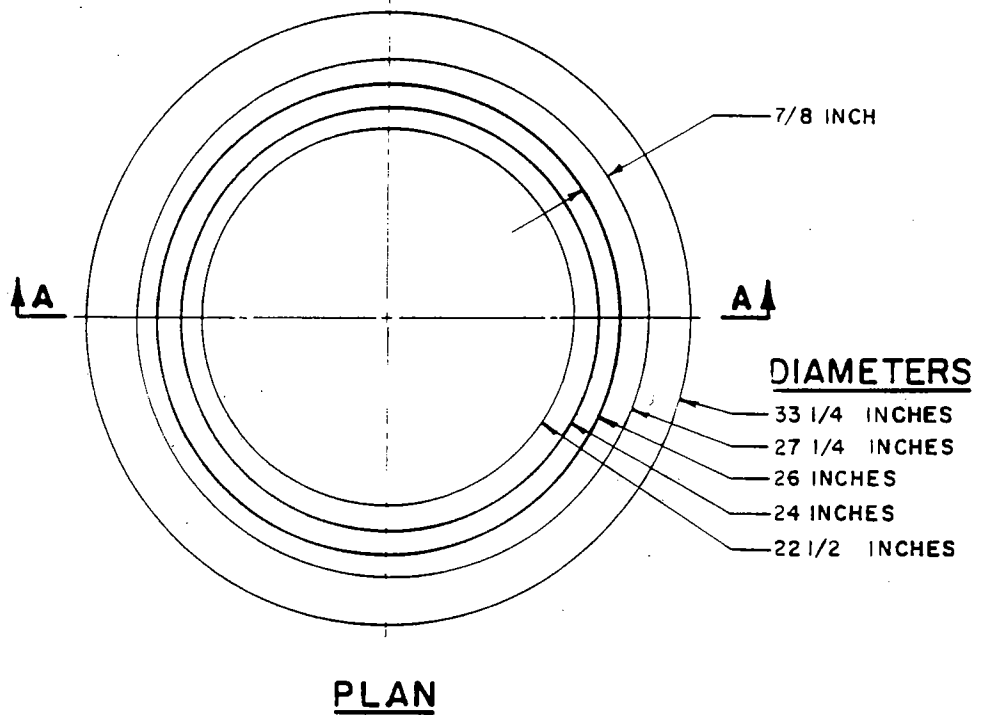
VERTICAL SECTION

NOTES

1. STEPS SHALL CONFORM WITH SHEET 4 AND SHALL BE UNIFORMLY SPACED AT A MAXIMUM OF 17 INCHES. WHERE THE DISTANCE FROM TOP STEP IN THE SHAFT IS GREATER THAN 12 INCHES BELOW FINISH GRADE, A STEP SHALL BE INSTALLED BELOW THE MANHOLE FRAME. THE TOP STEP AND THOSE IN THE 24 INCH DIAMETER SECTION SHALL PROJECT 3 INCHES INSIDE THE MANHOLE; ALL OTHERS SHALL PROJECT 5 INCHES.
2. THE PRECAST CONCRETE SHALL BE 564-B-3000 CONCRETE.
3. ALL MORTAR SHALL BE CLASS "B".
4. EXCEPT AS NOTED HEREON, PRECAST UNIT SHALL BE MANUFACTURED AND TESTED IN ACCORDANCE WITH A.S.T.M. C-478. THE CURING OF THE PRECAST UNITS SHALL CONFORM TO SECTION 207-2.7 OF STANDARD SPECIFICATIONS.
5. RISER SECTIONS AND ECCENTRIC CONE MAY BE REINFORCED OR NONREINFORCED. REINFORCED SECTIONS SHALL BE REINFORCED IN ACCORDANCE WITH A.S.T.M. C-478 AND SHALL HAVE A MINIMUM WALL THICKNESS OF 4 INCHES. MINIMUM WALL THICKNESS FOR NONREINFORCED SECTIONS SHALL BE 6 INCHES.
6. JOINTS MAY BE KEY TYPE OR TONGUE AND GROOVE AND SHALL CONFORM WITH A.S.T.M. C-478, SECTION 14.

LONG BEACH WATER DEPARTMENT	
PRECAST REINFORCED CONCRETE MANHOLE SHAFT	
DESIGNED BY	RECOMMENDED
CHECKED BY JUNIER	<i>Don Davis</i> BUREAU ENGINEER C.E. NO. 19113
DATE 5-25-89	APPROVED
SCALE NONE	<i>W. T. McMillan FOR</i> GENERAL MANAGER C.E. NO. 18644
SUPERSEDES DWG. NO. S-SD-7	SHEET
DRAWN BY GONZALEZ	1 OF 4

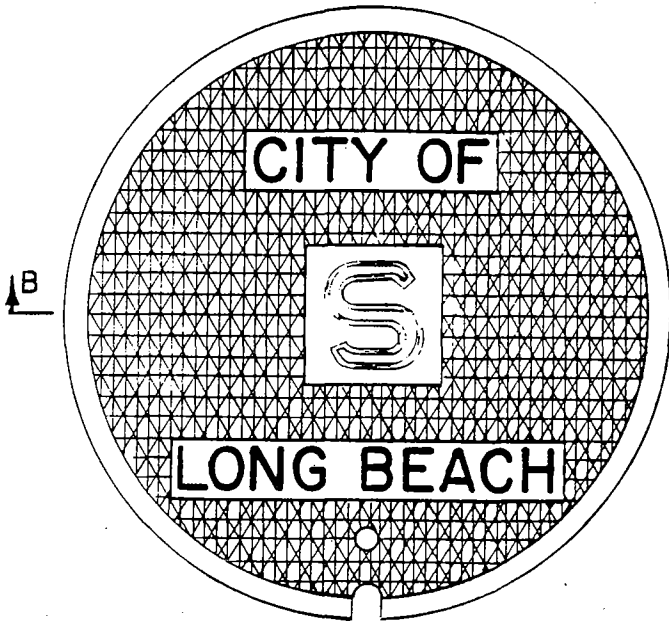
WDS-505



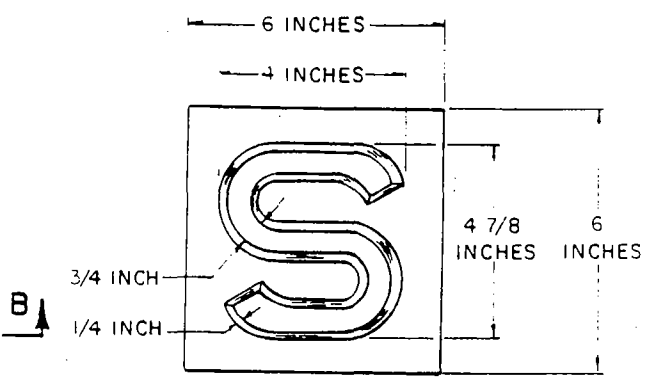
NOTES

1. CAST IRON SHALL CONFORM TO A.S.T.M. SPECIFICATION A-48-64 CLASS 30 MINIMUM.
2. INSIDE DIAMETER OF TOP EDGE OF FRAME SHALL NOT EXCEED A DIMENSIONAL TOLERANCE OF $\pm 1/16$ INCH.
3. ALL FILLET RADII 1/8 INCH UNLESS OTHERWISE NOTED.

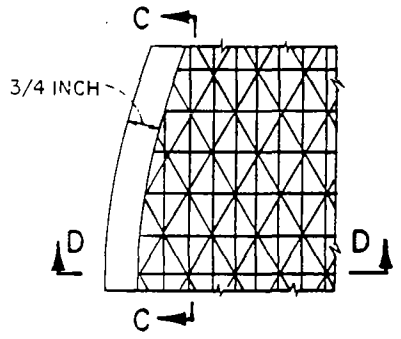
LONG BEACH WATER DEPARTMENT	
MANHOLE FRAME	
DESIGNED BY	RECOMMENDED
CHECKED BY JUNIER	<i>[Signature]</i>
DATE 5-25-89	BUREAU ENGINEER C.E. NO. 19113
SCALE NONE	APPROVED
SUPERSEDES DWG. NO.	<i>[Signature]</i>
S-SD-II	GENERAL MANAGER C.E. NO. 18844
DRAWN BY GONZALEZ	SHEET
	2 OF 4
	WDS-505



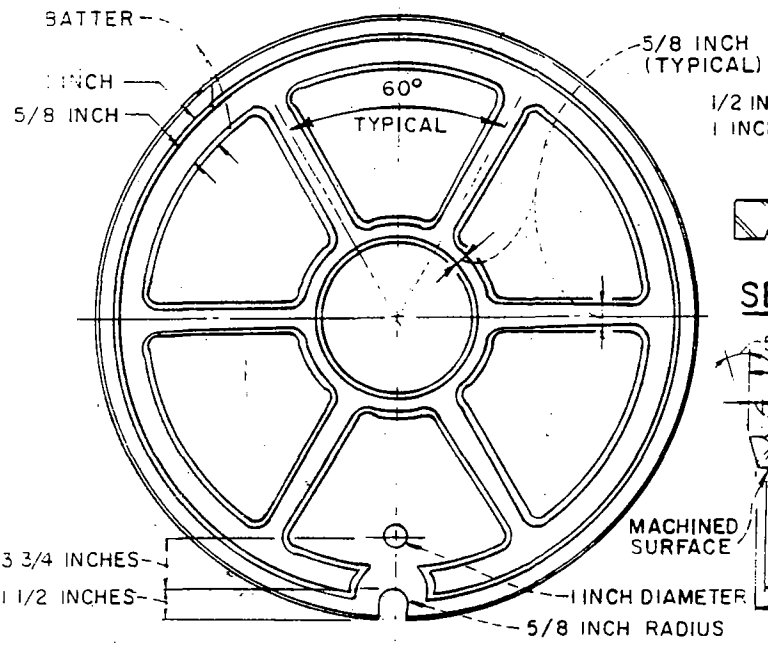
PLAN OF TOP



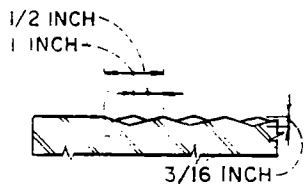
PLAN OF LETTER



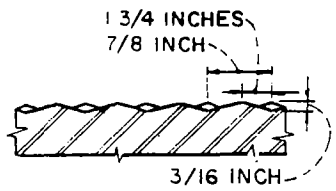
DETAIL OF DIAMONDS



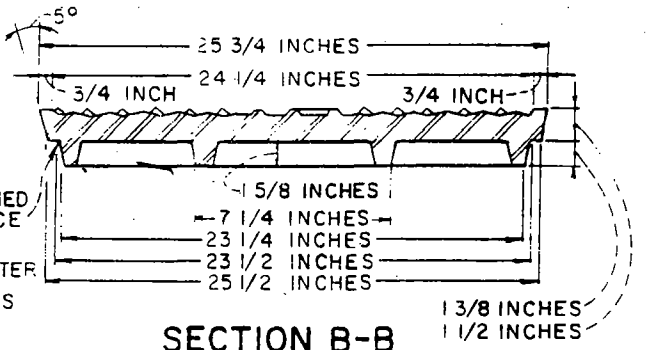
PLAN OF BOTTOM



SECTION D-D



SECTION C-C

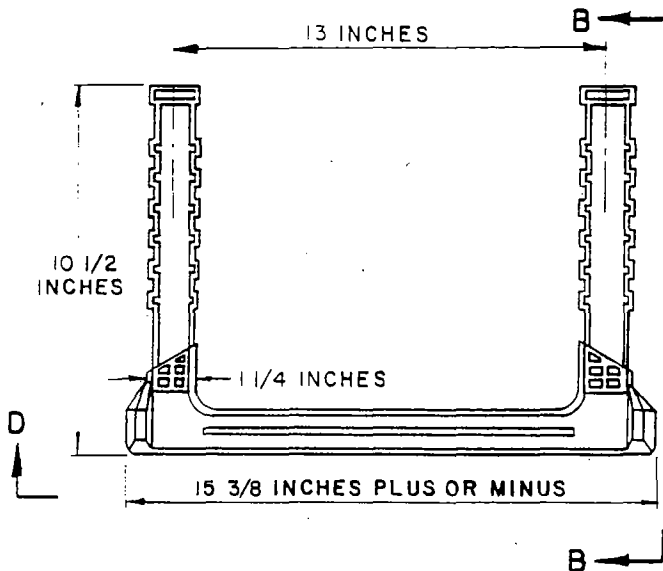


SECTION B-B

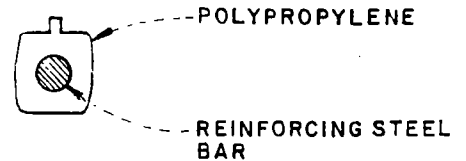
NOTES

1. CAST IRON SHALL CONFORM TO A.S.T.M. SPECIFICATION A-48-64 CLASS 30 MINIMUM.
2. TOP EDGE OF MANHOLE COVER SHALL BE FLUSH WITH TOP EDGE OF FRAME $\pm 1/32$ INCH.
3. DIAMETER OF TOP OF MANHOLE COVER SHALL NOT EXCEED A DIMENSIONAL TOLERANCE OF $\pm 1/16$ INCH.

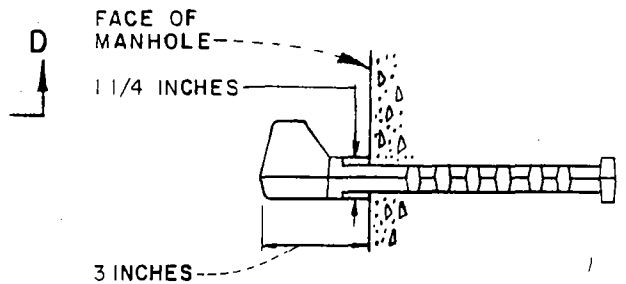
LONG BEACH WATER DEPARTMENT	
MANHOLE COVER	
DESIGNED BY	RECOMMENDED
CHECKED BY JUNIER	<i>John Davis</i>
DATE 5-25-89	BUREAU ENGINEER C.E. NO. 19113
SCALE NONE	APPROVED
SUPERSEDES DWG. NO.	<i>Wm. C. McWilliam</i>
S-SD-II	GENERAL MANAGER C.E. NO. 18644
DRAWN BY GONZALEZ	SHEET 3 OF 4
	WDS-505



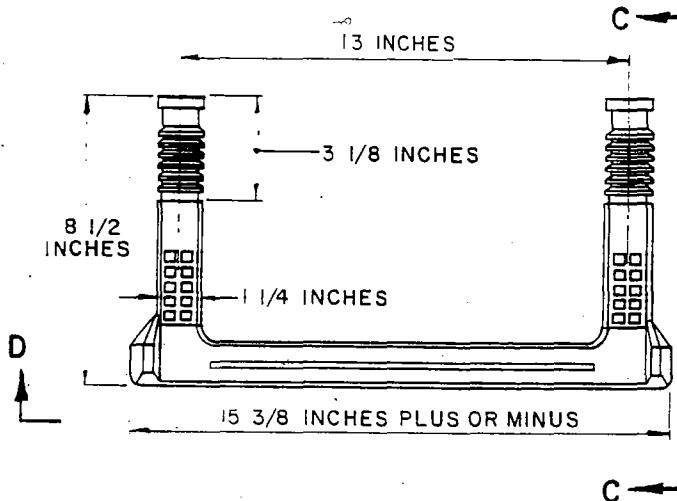
**PLAN
STANDARD FIELD-USE
SAFETY STEP**



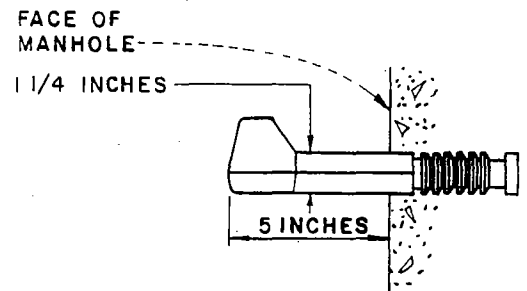
**TYPICAL
SECTION A-A**



ELEVATION B-B



**PLAN
STANDARD CAST-IN-PLACE
SAFETY STEP**



ELEVATION C-C



**TYPICAL
ELEVATION D-D**

NOTES.

1. CAST-IN-PLACE STEP TO BE USED IN ALL PRECAST REINFORCED CONCRETE MANHOLE SHAFTS.
2. FIELD-USE STEP TO BE USED FOR PLACEMENT BETWEEN GRADE RINGS.
3. BOTH STEPS TO BE MADE OF POLYPROPYLENE ASTM TYPE II GRADE 43758 IN CONFORMANCE WITH ASTM C-478 PARAGRAPH II.
4. REINFORCING STEEL BAR TO BE 1/2 INCH DIAMETER COLD DRAWN STEEL; MINIMUM TENSILE STRENGTH 80,000 POUNDS PER SQUARE INCH, PER ASTM A-82.

LONG BEACH WATER DEPARTMENT

STEPS

DESIGNED BY	RECOMMENDED
CHECKED BY JUNIER	<i>Stanley</i>
DATE 5-25-89	BUREAU ENGINEER C.E. NO. 19113
SCALE NONE	APPROVED
SUPERSEDES DWG. NO. S-SD-9	<i>W. T. M. Williams P.E.</i>
	GENERAL MANAGER C.E. NO. 18644
DRAWN BY STANLEY	SHEET 4 OF 4
	WDS-505