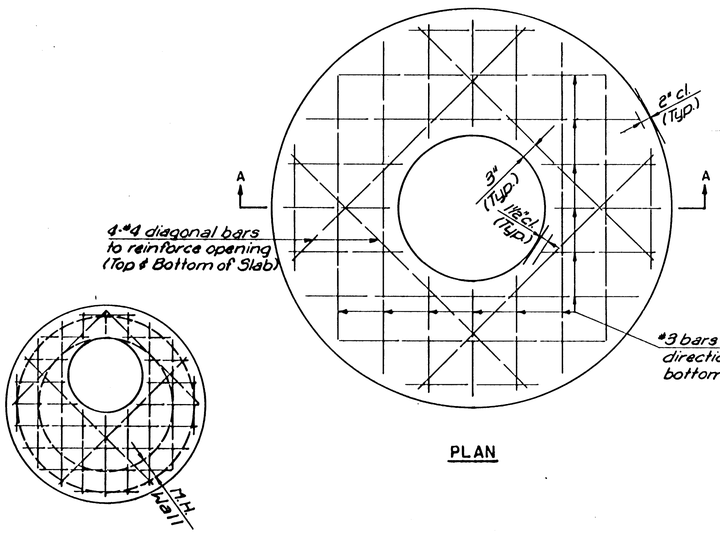
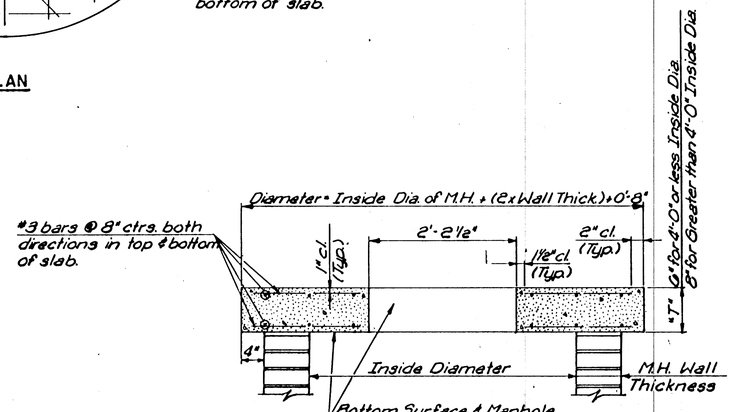
PROJECT NO.	SHEET NO.	TOTAL SHEETS
	U13	



PLAN

* PLAN
ALTERNATE OPENING LOCATION

*: To be used only if necessary to keep ring and cover from conflicting with curb or combined curb and gutter. Flat concrete slab shall be rotated on existing manhole to position ring and cover in pavement or behind curb.



SECTION A-A

FLAT CONCRETE SLAB DETAILS

GENERAL NOTES:

MANHOLES DESIGNATED FOR ADJUSTMENT SHALL BE RAISED OR LOWERED AS NECESSARY SUCH THAT THE CASTING WILL CONFORM TO THE REQUIRED ELEVATION. TOPS OF STORM OR SANITARY SEWER MANHOLES LOCATED IN PAVED AREAS SHALL BE SET FLUSH WITH THE PAVEMENT. TOPS OF SANITARY SEWER MANHOLES LOCATED IN GRASSED AREAS SHALL BE SET FOUR TENTHS OF ONE FOOT (0.40') HIGHER THAN THE FINISHED GRADE.. TOPS OF STORM SEWER MANHOLES LOCATED IN GRASSED AREAS SHALL BE SET FLUSH WITH THE FINISHED GRADE. TOPS OF STORM OR SANITARY SEWER MANHOLES LOCATED IN UNPAVED TRAVEL WAYS SHALL BE SET SIX INCHES (6") BELOW FINISHED GRADE.

THE NEW TOP ELEVATION SPECIFIED ON THE PLANS WAS ESTABLISHED FROM THE BEST INFORMATION AVAILABLE AT THE TIME THE PLANS WERE PREPARED. THE ACTUAL TOP ELEVATION SHALL BE VERIFIED OR ESTABLISHED, IN THE FIELD, BY THE ENGINEER AT THE TIME THE ADJUSTMENT IS BEING MADE. NO ADJUSTMENT IN BID PRICE SHALL BE MADE FOR A CHANGE IN TOP ELEVATION DEEMED NECESSARY BY THE ENGINEER.

THE ADJUSTMENT OF ALL MANHOLES EXCEPT PRECAST WHICH ARE TO BE LOWERED OR RAISED TWELVE (12") OR LESS SHALL BE ACCOMPLISHED BY REMOVING THE EXISTING RING AND COVER AND REMOVING OR ADDING THE APPROPRIATE COURSE(S) OF BRICK AND REPLACEMENT OF THE RING AND COVER. PRECAST MANHOLES MAY BE ADJUSTED BY THIS METHOD PROVIDED THAT THE RESULTING ADJUSTMENT SECTION BETWEEN THE TOP OF CONE AND BOTTOM OF CASTING DOES NOT EXCEED EIGHTEEN INCHES (18"). ALL WORK SHALL BE IN ACCORDANCE WITH NOTES BELOW.

ALL OTHER UPWARD OR DOWNWARD ADJUSTMENTS SHALL BE IN ACCORDANCE WITH DETAILS AND NOTES SHOWN ON PREVIOUS SHEET.

ALL CASTINGS (RINGS AND COVERS) SHALL BE CAREFULLY REMOVED, CLEANED AND REINSTALLED AS PART OF THE ADJUSTMENT. WHEN THE PLANS CALL FOR NEW OR DIFFERENT CASTINGS, THE EXISTING CASTINGS SHALL BE CAREFULLY REMOVED, CLEANED AND STOCKPILED ON THE RIGHT-OF-WAY FOR REMOVAL BY THE OWNER.

WHEN THE PLANS CALL FOR NEW CASTINGS, THEY SHALL CONFORM TO THE SHAPE AND DIMENSIONS AS SHOWN ON THE PLANS. CASTINGS SHALL BE MADE OF GOOD QUALITY GRAY IRON, FREE FROM CRACKS, HOLES, SWELLS AND COLD SHUTS. CASTINGS SHALL CONFORM TO CLASS 30 OF A.S.T.M. DESIGNATION A-48. MANHOLE CASTINGS SHALL BE COATED WITH A HOT ASPHALTUM VARNISH COATING APPLIED AT THE FOUNDRY. SEPARATE PAYMENT WILL NOT BE MADE FOR NEW CASTINGS REQUIRED AS PART OF MANHOLE ADJUSTMENTS. THEIR COST SHALL BE CONSIDERED A PART OF THE UNIT PRICE BID PER EACH FOR "ADJUSTMENT OF MANHOLES."

NEW BRICK USED IN THE ADJUSTMENT OF MANHOLES SHALL CONFORM TO THE REQUIREMENTS SPECIFIED FOR GRADE MS IN A.S.T.M. C 32-73 OR GRADE SW IN A.S.T.M. C 62-69. BRICK SHALL HAVE NOMINAL DIMENSIONS WHICH WILL PERMIT THE ADJUSTED PORTION TO MATCH THE DIMENSIONS OF THE WALLS OF THE STRUCTURE BEING ADJUSTED. UNDAMAGED EXISTING BRICK, SALVAGED AS PART OF EXISTING MANHOLE ADJUSTMENT(S), FOR THIS PROJECT, MAY BE REUSED IN COMPLETING ADJUSTMENT(S) IF THOROUGHLY CLEANED OF EXISTING MORTAR AND IF APPROVED AS TO SUITABILITY BY THE ENGINEER.

ALL BRICK SHALL BE LAID WITH SHOVE JOINTS. PORTLAND CEMENT MORTAR, AS SPECIFIED BELOW, SHALL BE USED IN LAYING THE BRICK. THE ENTIRE OUTSIDE SURFACE OF THE MANHOLES, ADJUSTED WITH BRICK, SHALL BE PLASTERED WITH A MINIMUM OF ONE INCH (1") OF THE CEMENT MORTAR. ALL CONTACT SURFACES BETWEEN BRICK MASONRY, FLAT CONCRETE SLABS (IF REQUIRED), AND CAST IRON RINGS SHALL BE SEALED WITH A LAYER OF THE CEMENT MORTAR. BACKFILL OF ADJUSTED SECTIONS SHALL NOT BE ACCOMPLISHED UNTIL THE MORTAR HAS CURED FOR TWENTY-FOUR (24) HOURS.

MORTAR USED IN ADJUSTMENT OF MANHOLES SHALL CONTAIN EIGHT (8) SACKS OF PORTLAND CEMENT PER CUBIC YARD, FINE AGGREGATE, AND SUFFICIENT WATER TO PRODUCE A WORKABLE AND PLASTIC MIX OF SUCH CONSISTENCY AS TO PERFORM PROPERLY THE FUNCTION OF MASONRY CONSTRUCTION.

CEMENT USED FOR MORTAR SHALL BE TYPE I COMPLYING WITH THE REQUIREMENTS OF THE LATEST REVISION OF A.S.T.M. DESIGNATION C-150.

FINE AGGREGATE USED FOR MORTAR SHALL MEET THE REQUIREMENTS FOR CONCRETE PAVEMENT EXCEPT THAT IT SHALL HAVE A GRADATION FACTOR NOT LESS THAN 2.75 AND SHALL BE FREE FROM DUST, DIRT, OR LOAM.

WATER USED FOR MORTAR SHALL BE FREE FROM OIL, GREASE, OR OTHER DELETERIOUS SUBSTANCES.

AN APPROVED TYPE OF FLAT CONCRETE SLAB, CONFORMING TO THE REQUIREMENTS OF A.S.T.M. C-478, SHALL BE USED TO SUPPORT THE MANHOLE RING AND COVER WHERE IT IS NECESSARY TO LOWER MANHOLES OTHER THAN PRECAST MORE THAN TWELVE INCHES (12"). ALL SURFACES OF THE FLAT CONCRETE SLAB, FOR SANITARY SEWER MANHOLES, WHICH WOULD BE EXPOSED TO SEWER GAS SHALL BE PROTECTED BY AN EPOXY COATING. A MINIMUM SIX INCH (6") BRICK COLLAR CONFORMING TO THE SAME TYPE OF CONSTRUCTION AS SPECIFIED ABOVE SHALL BE INSTALLED BETWEEN THE MANHOLE RING AND THE FLAT CONCRETE SLAB TO FACILITATE MINOR ADJUSTMENTS IN ELEVATION.

CAST IN PLACE CIRCULAR CONCRETE MANHOLES SHALL BE COATED ON THE INSIDE WITH AN APPROVED EPOXY COATING EXCEPT WHEN SUCH MANHOLES EXIST OVER SEWERS SMALLER THAN TEN INCH (10") DIAMETER. THE INTERIOR SURFACES, EXCLUDING BRICK MASONRY SURFACES, SHALL BE COATED WITH TWO COATS OF INEMEC SERIES 66 HI-BUILD EPOXY OR OTHER APPROVED EQUAL, WITH EACH COAT HAVING A MINIMUM DRY FILM THICKNESS OF 4 MILS. INTERIOR CONCRETE SURFACES TO BE COATED WITH AN EPOXY COATING SHALL BE BROOMED OR BRUSHED WITH GROUT TO FILL VOIDS IN THE SURFACE PRIOR TO APPLYING THE EPOXY COATING.

NEW PRECAST CONCRETE MANHOLE SECTIONS SHALL COMPLY WITH THE LATEST REVISION OF A.S.T.M. C-478 AS MODIFIED BY THE SPECIFICATIONS.

ALL INSIDE SURFACES OF THE CONCRETE MANHOLE WHICH WOULD BE EXPOSED TO SEWER GAS SHALL BE COATED WITH 2 COATS INEMEC SERIES 66 HI-BUILD EPOXY OR APPROVED EQUAL. DRY THICKNESS OF 8 MILS (MIN.).

EXTERIOR MANHOLE WALLS SHALL BE COATED WITH 1 COAT MOBILARMA 633 BITUMINOUS COATING.

WATERPROOF GROUT FOR PRECAST JOINTS SHALL BE PREPARED WITH THE PROPORTIONS LISTED BELOW, OR ACCORDING TO POLYMER MANUFACTURER'S RECOMMENDATIONS IF APPROVED BY THE ENGINEER.

WATERPROOF JOINT GROUT

MATERIAL	PARTS BY WEIGHT
ACRYLIC POLYMER	27
PORTLAND CEMENT	100
WATER	18
SAND	150

ACRYLIC POLYMER SHALL BE ACRYL-60 BY THORO-SEAL, ACRYLIC ADMIX-101 BY LARSEN PRODUCTS, CORP., OR APPROVED EQUAL.

"ADJUSTMENT OF MANHOLES" SHALL BE MEASURED AS A UNIT FOR THE ADJUSTMENT OF A SINGLE STRUCTURE AND NO MEASUREMENT OF THE SEPARATE ITEMS SUCH AS EXCAVATION, BRICK, FLAT CONCRETE SLABS, PRECAST CONCRETE RISERS AND/OR ADJUSTING RINGS, CAST IRON OR BACKFILL WILL BE MADE. THE AMOUNT OF COMPLETED AND ACCEPTED WORK, MEASURED AS PROVIDED ABOVE, SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER UNIT FOR "ADJUSTMENT OF MANHOLES." SAID PRICE BID SHALL BE FULL PAYMENT FOR FURNISHING ALL MATERIALS (INCLUDING NEW CASTINGS WHEN CALLED FOR ON THE PLANS OR REPLACEMENT MATERIALS DAMAGED DURING SALVAGING OPERATIONS) FOR ALL EXCAVATION, BACKFILLING, AND FOR ALL LABOR, EQUIPMENT, TOOLS AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.

See previous sheet for additional details

MANHOLE ADJUSTMENT DETAILS

PROFESSIONAL ENGINEERING CONSULTANTS P.A.
ENGINEERS
WICHITA, KANSAS

11 JULY 1977

Designed by	GDS	Checked by	MHB
Drawn by	DJW	Date	

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