

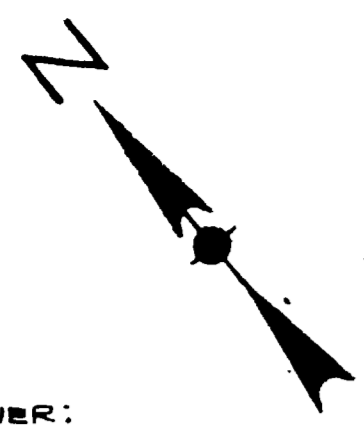
GRAND JUNCTION, COLORADO  
ELKS CLUB  
GRAVITY SEWER

PLAN & PROFILE  
STA. 1+00 TO STA. 15+00

HENNINGSON, DURHAM & RICHARDSON, INC.  
ENGINEERS - PLANNERS - CONSULTANTS  
DENVER, COLORADO

DESIGNED BY: J. FRANKLIN  
CHECKED BY: A. TACITO  
APPROVED BY: H. HENNINGSON  
DATE: JAN-14-75  
R-5000110  
SHEET 1 OF 2

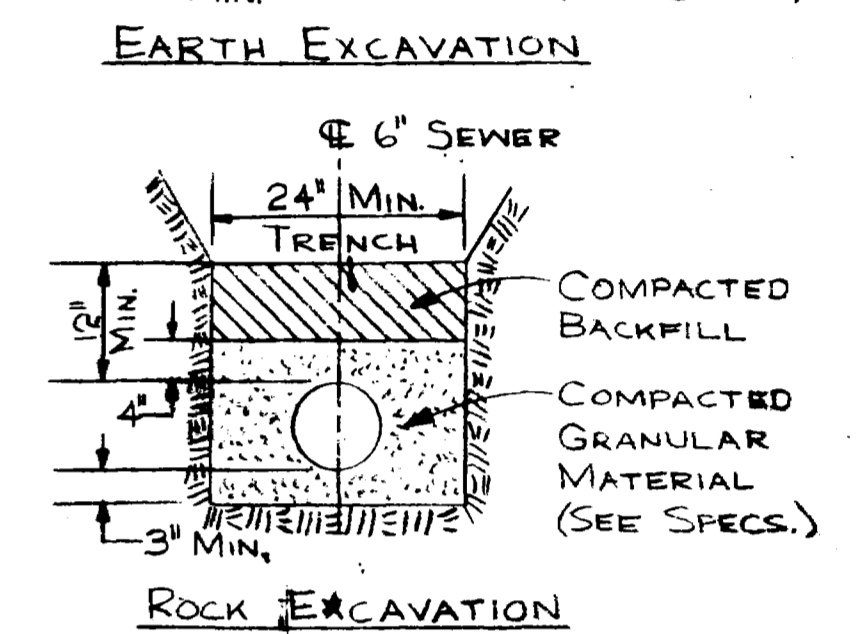
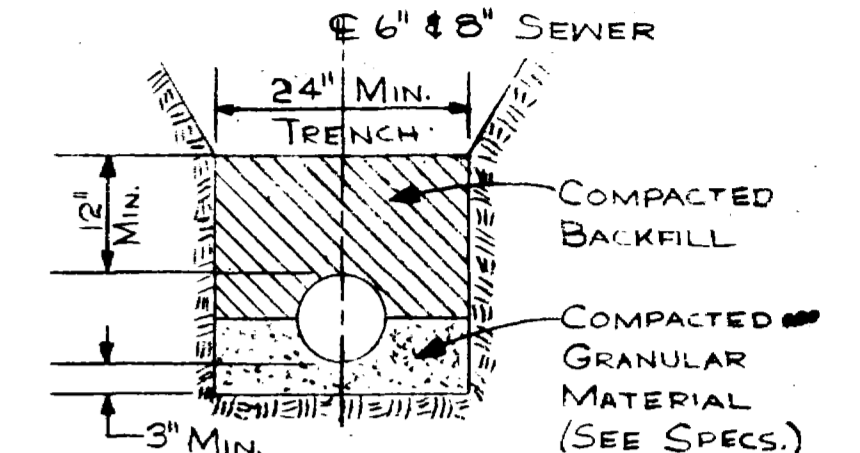
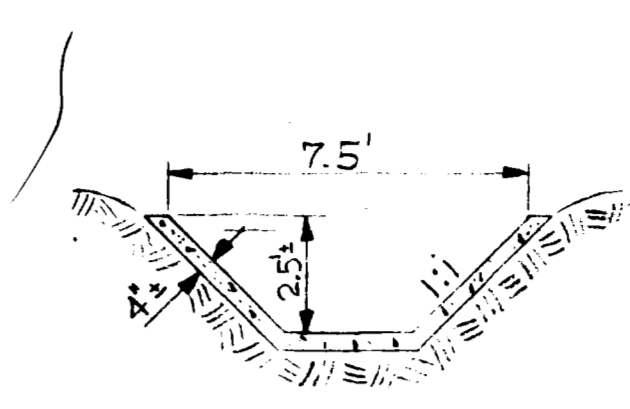
NO.	DATE	DESCRIPTION	MADE	APPROV.



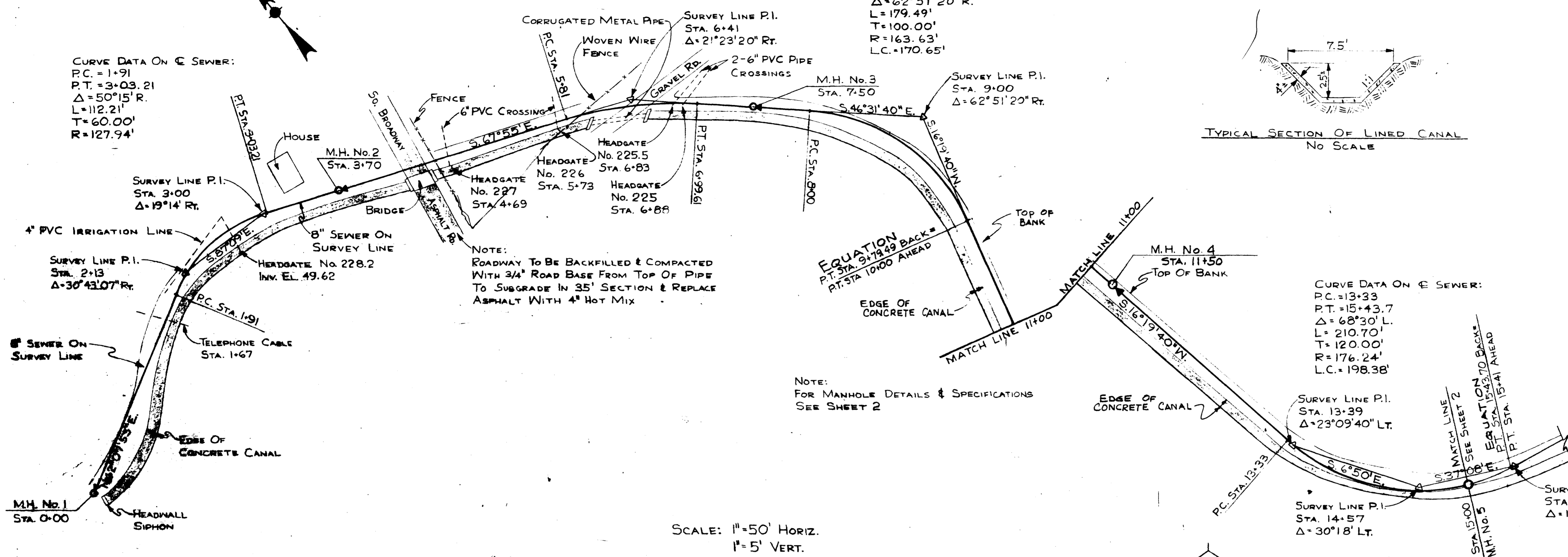
CURVE DATA ON 6" SEWER:  
P.C. = 5+81  
P.T. = 6+99.61  
 $\Delta = 21^{\circ}23'20''$  R.  
L = 118.61'  
T = 60.00'  
R = 317.72'

CURVE DATA ON 6" SEWER:  
P.C. = 8+00  
P.T. = 9+79.49  
 $\Delta = 62^{\circ}51'20''$  R.  
L = 179.49'  
T = 100.00'  
R = 163.63'  
L.C. = 170.65'

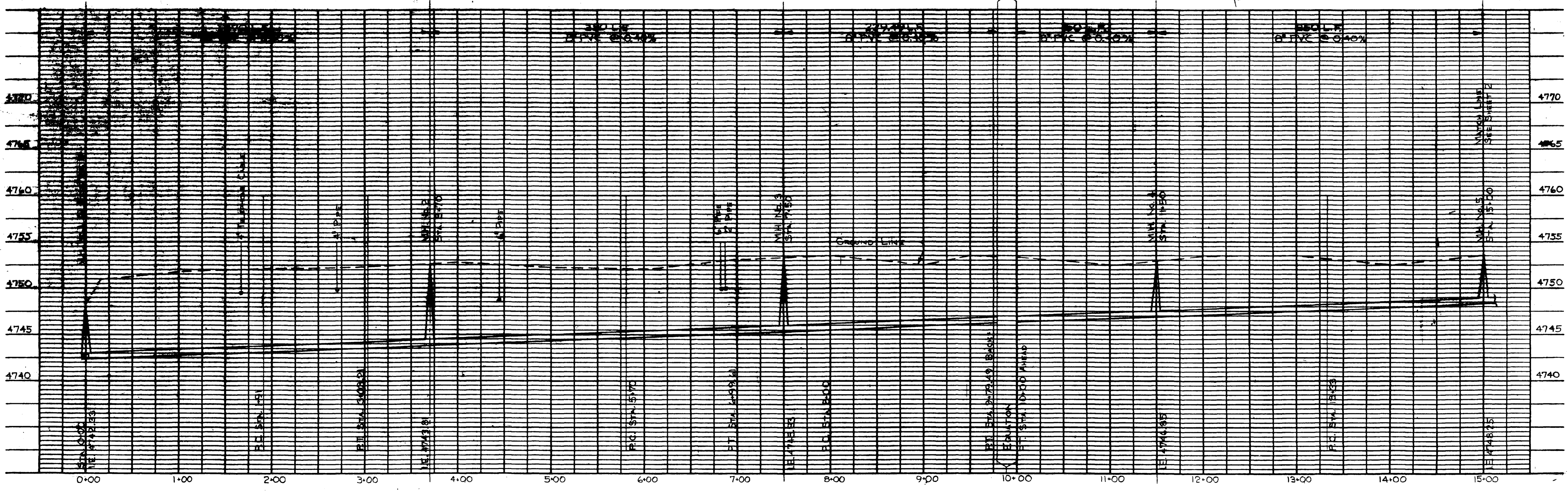
CURVE DATA ON 6" SEWER:  
P.C. = 1+91  
P.T. = 3+03.21  
 $\Delta = 50^{\circ}15'15''$  R.  
L = 112.21'  
T = 60.00'  
R = 127.94'



BEDDING & TRENCH DETAILS  
No SCALE



SCALE: 1" = 50' HORIZ.  
1" = 5' VERT.



ELKS' CLUB  
GRAVITY SEWER

PLAN & PROFILE  
STA. 15+00 TO STA. 24+20

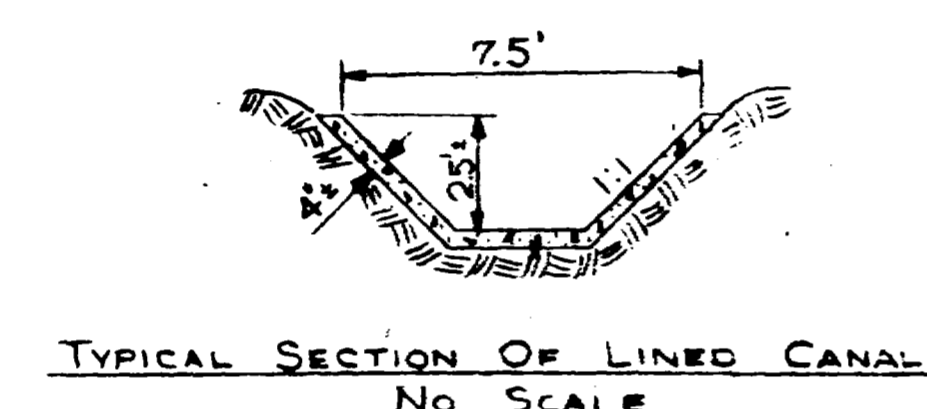
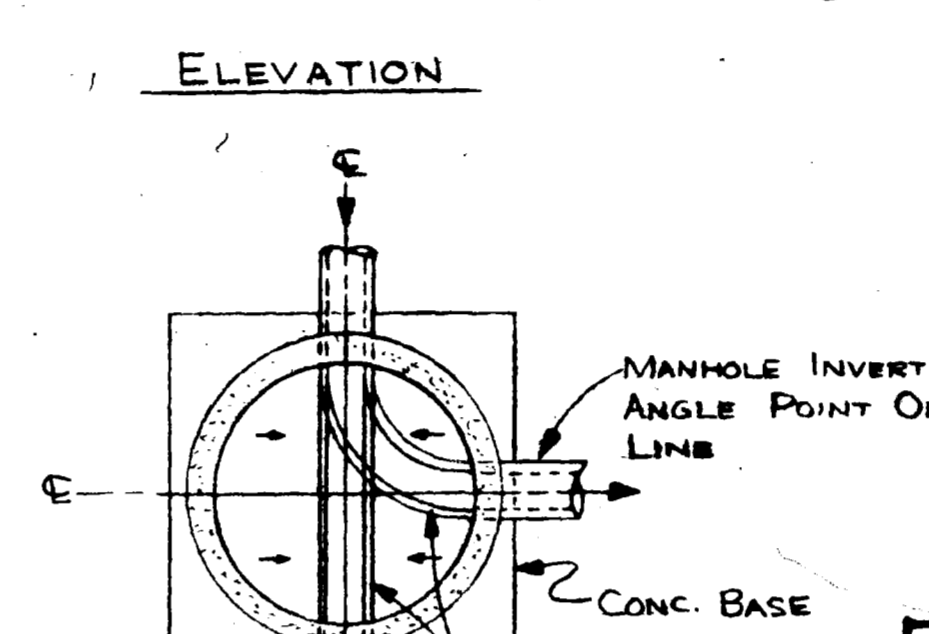
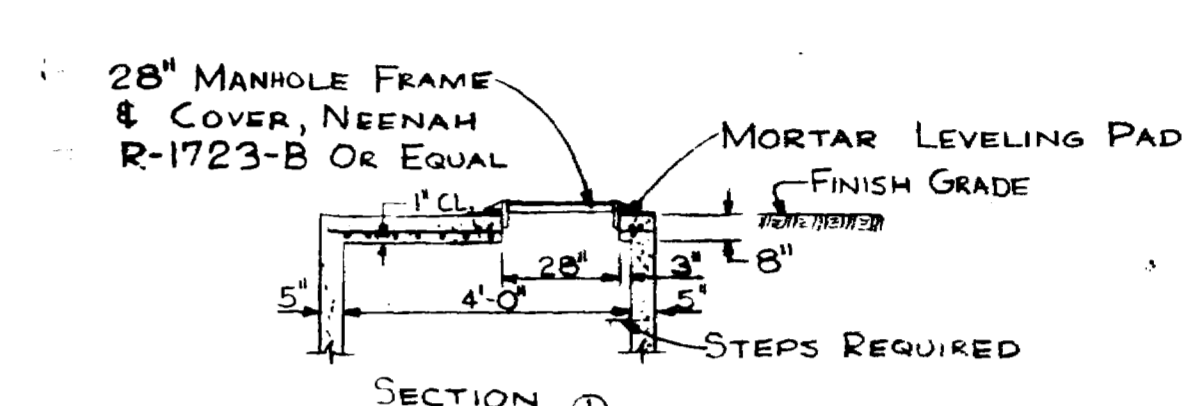
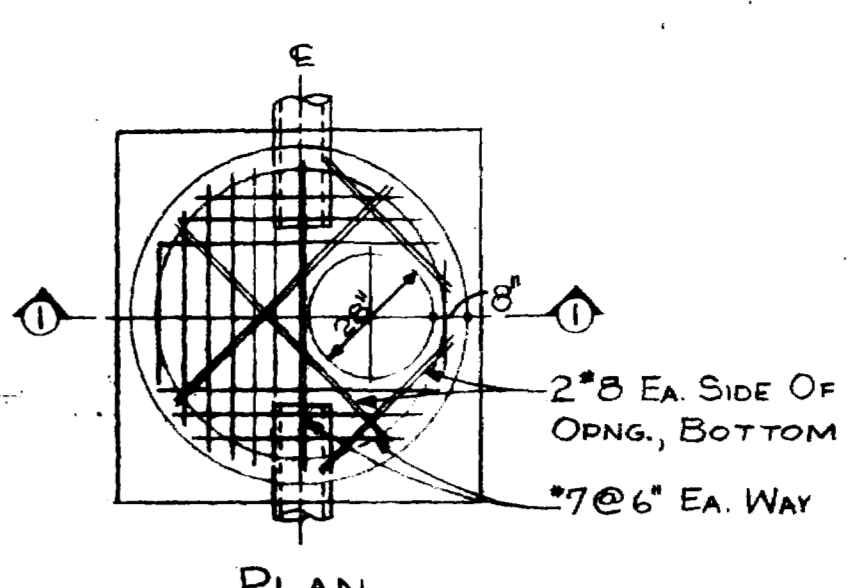
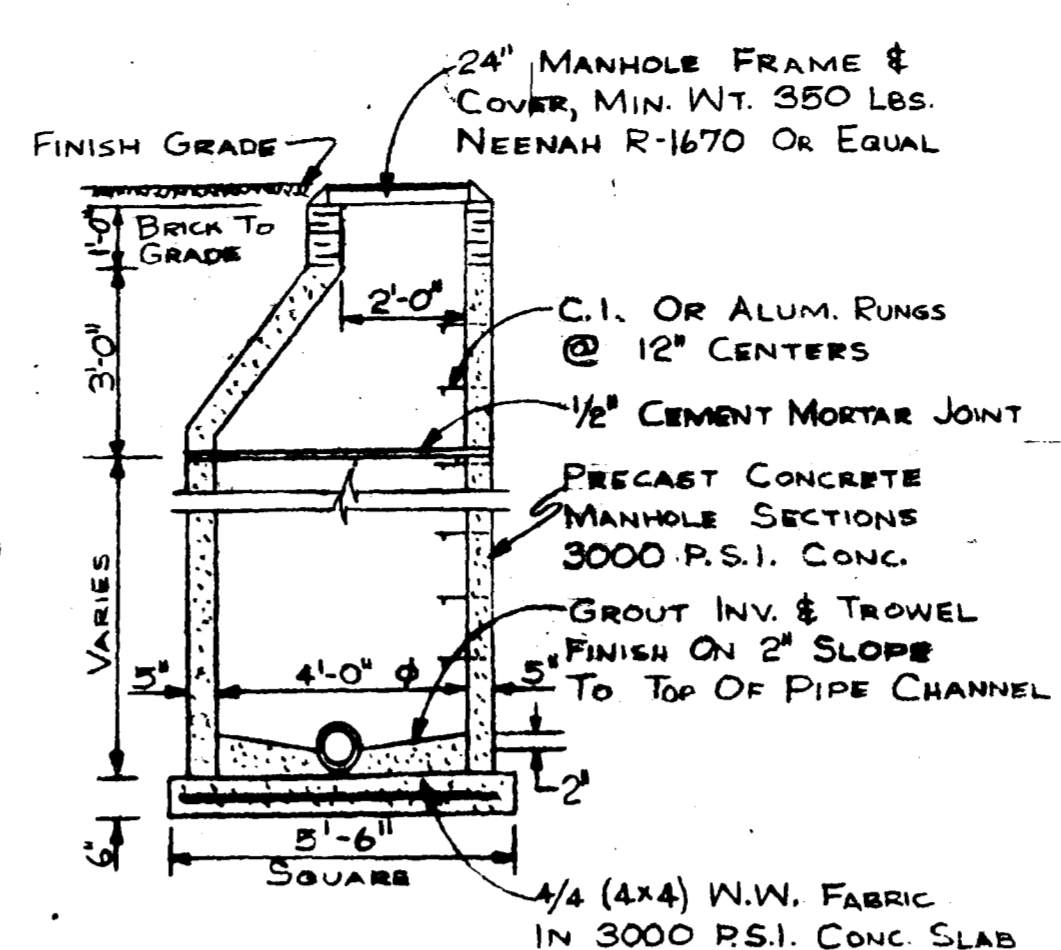
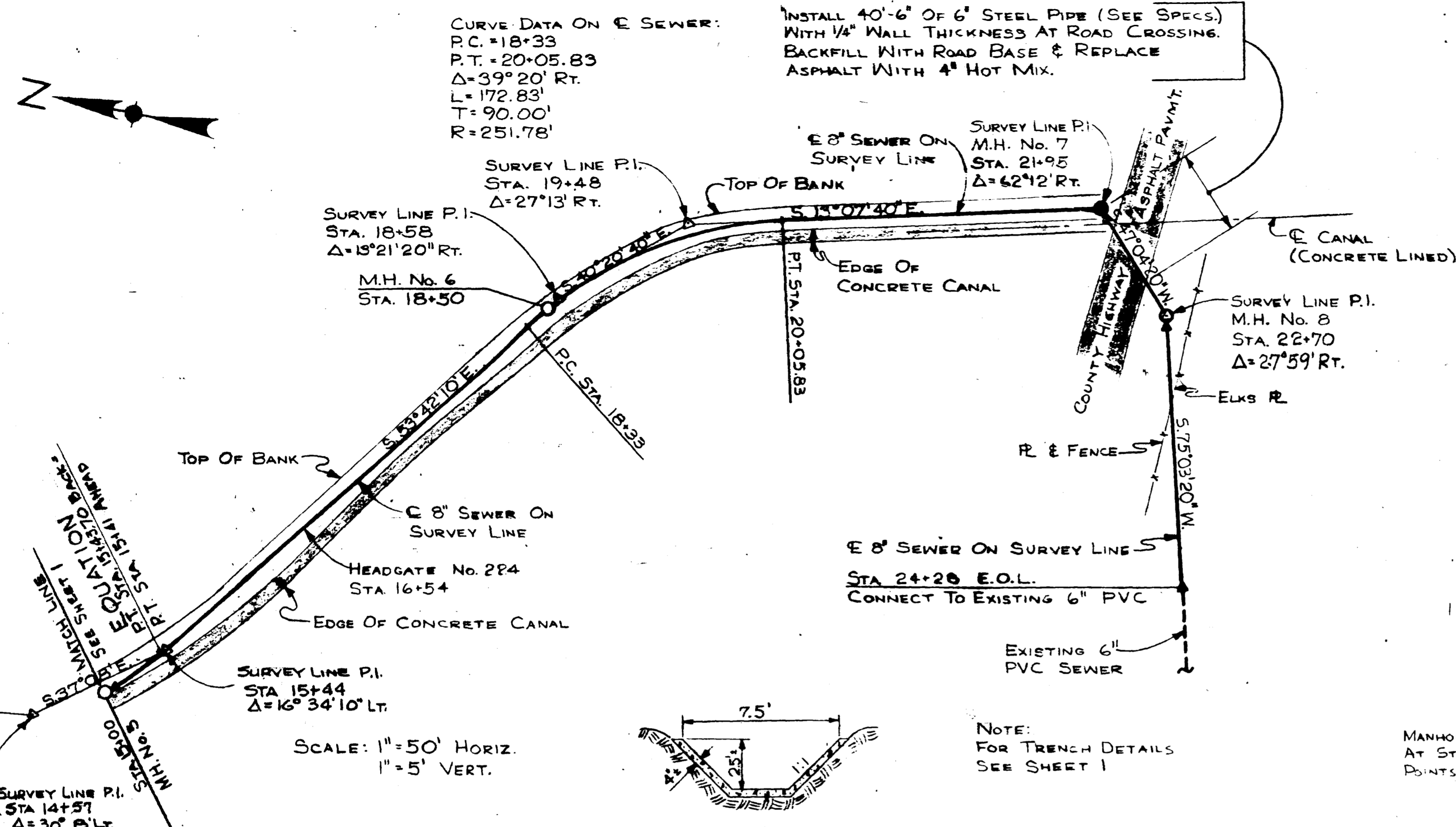
HENDERSON, DUBMAN & RICHARDSON, INC.

ENGINEERS - PLANNERS - CONSULTANTS

DEVELOPERS

NO.	DATE	BY	APP'D
R-5000110		J. FRANKLIN	A. TACITO
		G. MULSTEIN	M. HENRISEN
			JAN-14-78

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NOTE:  
FOR TRENCH DETAILS  
SEE SHEET 1

TYPICAL PRECAST MANHOLE DETAILS  
NO SCALE

- SPECIFICATIONS**
- MATERIALS**
- SEWER PIPE AND FITTINGS:**
    - SEWER PIPE, FITTINGS, AND ADAPTERS SHALL BE AN UNPLASTICIZED POLYVINYL CHLORIDE (PVC) GRAVITY SEWER PIPE WITH AN INTEGRAL WALL BELL AND SPIGOT JOINT, MEETING EXTRA STRENGTH MINIMUM OF SUR = 35, AND ALL REQUIREMENTS OF ASTM SPECIFICATION D 3034-73. JOINTS SHALL BE OF THE RUBBER-RING TYPE JOINT PASSING A 25 PSI HYDROSTATIC TEST. THE ASSEMBLY OF JOINTS SHALL BE IN ACCORDANCE WITH THE PIPE MANUFACTURER'S RECOMMENDATIONS. MAXIMUM LENGTH OF PIPE USED ON CURVED SEWER LINE SHALL NOT EXCEED 12 FEET. ALL DEFECTIVE PIPE AND FITTINGS SHALL BE REJECTED.
    - STEEL PIPE SHALL BE OF THE SIZE AND LENGTH AS NOTED ON THE DRAWINGS WITH 1/4" WALL THICKNESS. ALL PIPE SHALL BE GALVANNELED INSIDE IN ACCORDANCE WITH AWWA SPECIFICATIONS C-203. SUITABLE ADAPTERS SHALL BE PROVIDED BY PVC PIPE MANUFACTURERS TO PERFORM THE CONNECTIONS BETWEEN PVC PIPE AND STEEL PIPE.
  - MANHOLES:**
    - MANHOLE BARREL SHALL BE PRECAST CONCRETE SECTIONS WITH A MINIMUM WALL THICKNESS OF 5" AND HAVING A TOTAL STEEL REINFORCEMENT AREA EQUAL TO ASTM REQUIREMENTS FOR STANDARD REINFORCED CONCRETE SEWER PIPE OF 48" DIAMETER OR MORE. CONCRETE FOR MANHOLE SECTIONS SHALL HAVE A 28 DAY COMPRESSIVE TEST OF 4000 PSI. CAST IRON OR ALUMINUM LADDER RUNGS SHALL BE EMBEDDED IN THE CONCRETE SECTIONS WITH A PROJECTION OF NOT LESS THAN 6 INCHES, AND AT 12 INCH CENTERS. THE TOP 3'-0" SECTION OF THE MANHOLE SHALL BE OF THE ECCENTRIC TYPE HAVING AN OPENING OF NOT LESS THAN 24" DIAMETER AT THE TOP FOR MANHOLES GREATER THAN 5'-0" DEEP. FOR MANHOLES 5'-0" DEEP OR LESS THE MANHOLE SHALL HAVE THE FLAT TOP COVER WITH AN OPENING OF NOT LESS THAN 28" IN DIAMETER, MINIMUM THICKNESS OF SLAB TO BE 8" AND REINFORCED IN ACCORDANCE WITH ASTM SPECIFICATIONS, C478-61T.
    - MANHOLE FRAME AND COVER: THE MANHOLE FRAME AND COVER SHALL BE CAST IRON HAVING A MINIMUM WEIGHT OF 350 LBS. WITH THE WORD "SEWER" EMBOSSED IN THE COVER, SIMILAR TO NEENAH #R-1670 OR EQUAL, AND #R-1723-B OR EQUAL FOR FLAT TOP MANHOLES.
    - BASE SLAB: CONCRETE FOR BASE SLAB SHALL BE CLASS "A", HAVING A MINIMUM STRENGTH OF 3000 PSI IN 28 DAYS, REINFORCED WITH WELDED WIRE FABRIC AS NOTED ON THE DRAWING.
    - BEDDING MATERIAL: BEDDING MATERIALS SHALL BE CLASS II AS DEFINED IN ASTM SPECIFICATION D 2321 COMPOSED OF COARSE SANDS AND GRAVEL WITH MAXIMUM PARTICLE SIZE OF 3/4" INCLUDING 20% GRADED FINE SAND AND GRAVEL.
- INSTALLATION**
- SEWER PIPE SHALL BE LAID IN THE TRENCH TO THE GRADES SHOWN ON THE DRAWINGS, WITH FULL SUPPORT PROVIDED FOR THE BARREL OF THE PIPE SECTION IN THE BEDDING MATERIAL. IN CURVED PORTION OF SEWER LINE, ALIGNMENT SHALL BE ACHIEVED WITH MAXIMUM DEFLECTION OF JOINTS AS RECOMMENDED BY PIPE MANUFACTURER, USING 12 FOOT LENGTHS OF PIPE. BENDING OR BUCKLING OF THE PIPE WILL NOT BE PERMITTED. BEDDING MATERIAL SHALL BE COMPACTED WITH HAND OR MECHANICAL TAMPERS UP TO THE SPRINGLINE OF THE PIPE. IN ROCK EXCAVATION, THE TRENCH SHALL BE OVER EXCAVATED 3" TO RECEIVE THE BEDDING MATERIAL AND THE BEDDING MATERIAL SHALL BE PLACED TO 4" OVER THE TOP OF THE PIPE. BACKFILL SHALL BE CAREFULLY PLACED AND COMPACTED OVER THE PIPE, OMITTING ALL LARGE STONES AND ROCKS SO AS NOT TO INJURE THE PIPE WHEN COMPACTING. COMPACTION DENSITY SHALL EQUAL THAT OF THE ADJACENT UNDISTURBED SOIL.
- TESTING & ACCEPTANCE:**
- ALIGNMENT OF THE SEWER LINE IN A STRAIGHT RUN WILL BE CHECKED BY SIGHTING WITH A LAMP OR LIGHT FROM ONE MANHOLE TO THE NEXT MANHOLE. MISALIGNMENT TO THE EXTENT THAT THE LIGHT IS NOT VISIBLE THROUGH THE SEWER LINE FROM ONE MANHOLE TO THE NEXT MANHOLE WILL BE REJECTED AND THE CONTRACTOR WILL BE REQUIRED TO CORRECT THE ALIGNMENT AT HIS OWN EXPENSE. ANY OBSTRUCTION FOUND IN THE SEWER PIPE SHALL BE REMOVED AT CONTRACTOR'S EXPENSE. INFILTRATION SHALL NOT EXCEED 50 GALLONS PER INCH PER MILE PER DAY. AT COMPLETION OF PROJECT, CONTRACTOR SHALL FLUSH LINE TO REMOVE ALL DIRT AND DEBRIS.
- PERMITS**
- ALL PERMITS SHALL BE OBTAINED BY THE CONTRACTOR.

