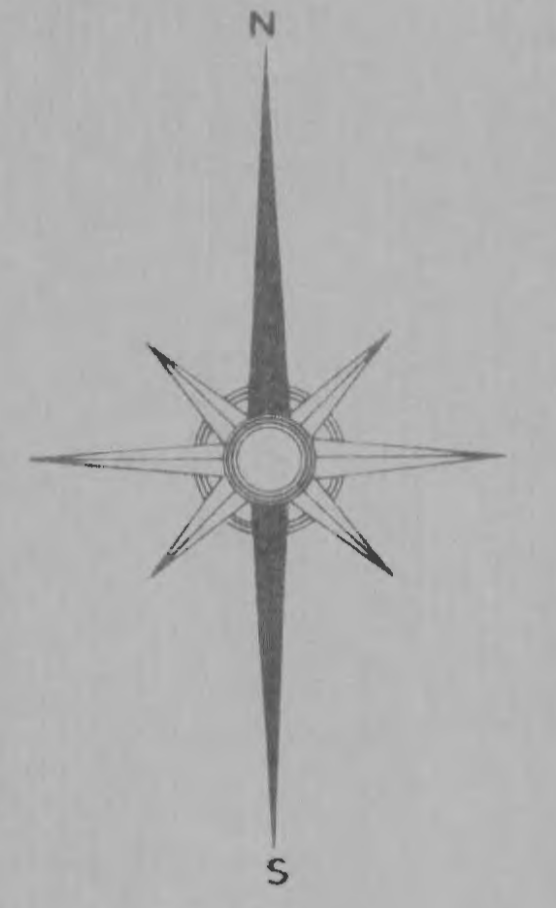




PATTON SUBDIVISION

LEO LUETKENHAUS  
S. 89°25'30"E. 1359.31'



DRUS PACKAGE INC.  
FORMERLY DICTOR OF WILLIAM F. SATTLER



LOCATION MAP

Note:  
1) All roadways shall be 25 feet wide.  
2) All roadways shall have 2% side slopes.  
3) All storm sewer pipes shall be reinforced concrete ASTM C-70, Class III, 59T.

BENCH MARKS:  
B.M. #1 - ELEV. 200.50 - 4" IN 330' E. & 39' N. OF SE HIGHWAY 40.  
B.M. #2 - ELEV. 169.64 - SPIKE IN ABOVE GROUND, 24" IN CORNER.  
EQUATION TO USGS:  
ADD 351.28 TO ASSUME  
DEVELOPER: MERIDIAN BUILDERS,  
8533 WABASH AVE.  
ST. LOUIS 34, MISSOURI  
JA. 1-7803

PART OF SW. 1/4 OF NE. 1/4 OF SECTION 28  
T. 47N. - R. 3E.  
O'FALLON, MO.

THATCHER & PATIENT INC. ENGINEERS SURVEYORS 70 N. FLOISSANT ROAD FERGUSON, MO.				
<b>STORM SEWER PLAN HILLTOP MANOR</b>				
NO.	DATE	BY	REVISION	REASON
1	3/30/61	RL	Original design	200' by 40'
2	5/12/61	RL	Storm sewer	50' by 24"
DES.	WAP	SCALE	1" = 60'	HORIZ.
CHK.	EHM	JOB NO.	7520	VERT.
DATE		SHEET	1 OF 2	

AS-BUILT PLANS 7-15-65 1/2

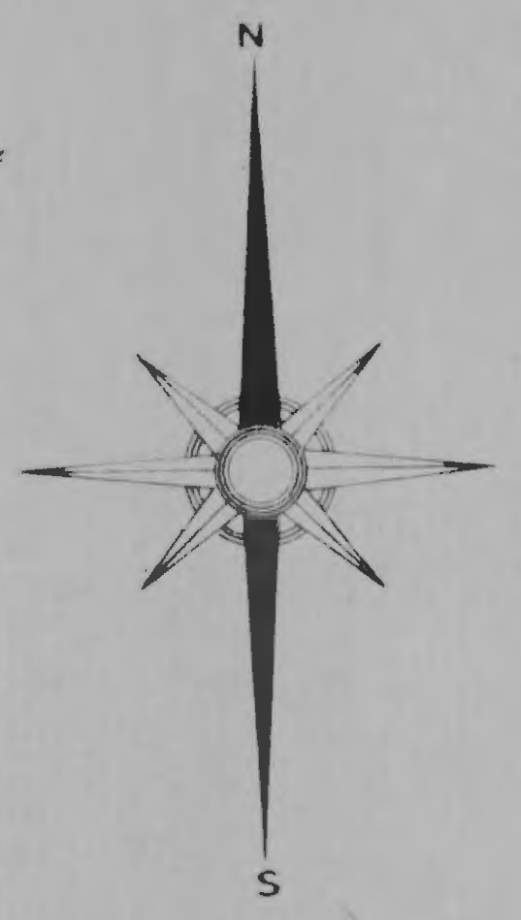
U. S. HIGHWAY 40 & I. 70





NOTE  
 8 Overlaid from  
 List Station (K) to (L) 4'

DRUG PACKAGE INC.  
 FORMERLY PROP. OF WILLIAM K. SATTLER



LOCATION MAP

BENCH MARKS:  
 B.M. #1 - ELEV. 200.50 - "O" IN "IOWA" ON FIRE HYDRANT  
 350' E. & 39' N. OF SE. PROP. CORNER ALONG  
 HIGHWAY 40.  
 B.M. #2 - ELEV. 169.64 - SPIKE IN UTILITY POLE 3.5'  
 ABOVE GROUND 24' N. & 31' W. OF NW. PROP.  
 CORNER.  
 EQUATION TO USGS.  
 ADD 351.28 TO ASSUMED DATUM.

DEVELOPER: MERIDIAN BUILDERS, INC.  
 9533 WABASH AVE  
 ST. LOUIS 34, MISSOURI  
 JA. 1-7603

PART OF SW. 1/4 OF NE. 1/4 OF  
 SECTION 28  
 T. 47N. - R. 3 E.  
 O'FALLON MO.

NOTES  
 Explanation of Information shown  
 on each lot. - y = 0.82  
 refers to distance wye lateral  
 is located from lower manhole  
 and measured over sewer line.  
 Minimum Finish Floor elevation  
 is the lowest elevation that  
 the house could be placed and  
 still drain into the wye  
 branch as designed. (The  
 design drop from finish floor  
 to flow line of the eight inch  
 sewer in the street = 11.0')

THATCHER & PATIENT INC. ENGINEERS SURVEYORS 1100 EMBASSY ROAD			
SANITARY SEWERS TO HILLTOP MANOR			
NO.	DATE	BY	REVISION
1	4-3-61	JGS	FHA REVISION
2	5-15-61	D.J.S.	B.M. Revised +0.5'
DES.	W.A.P.	SCALE	1" = 60'
DN.	B.G.	JOB NO.	7520
CHK.		DATE	12-29-50
		SHEET	1 OF 4

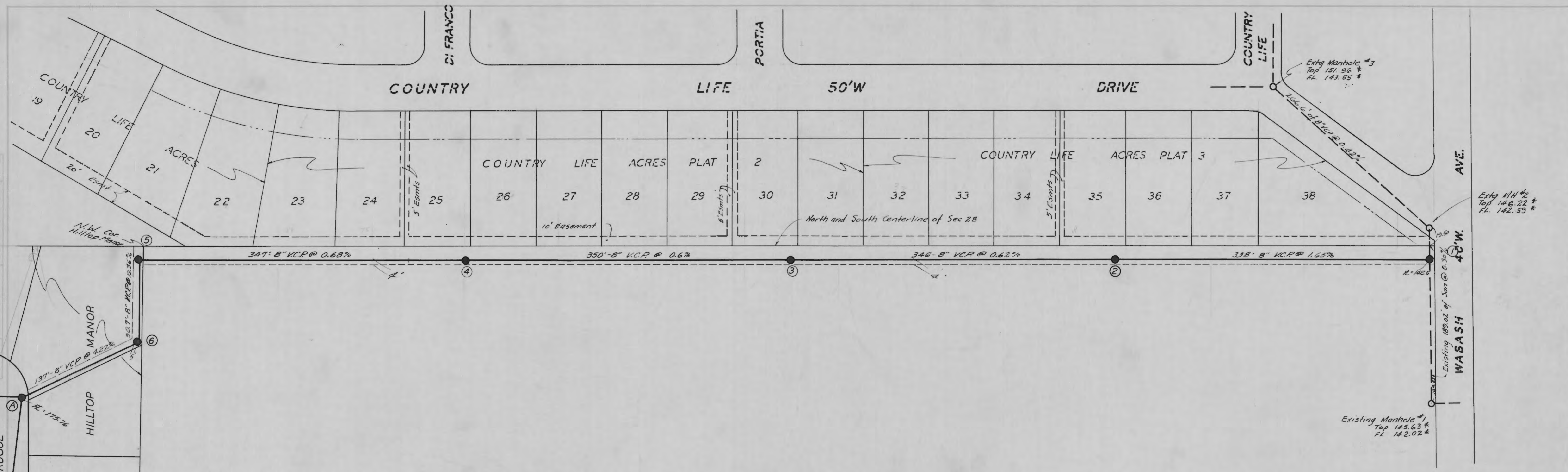
AS BUILT PLANS 7-15-60

PATTON SUBDIVISION

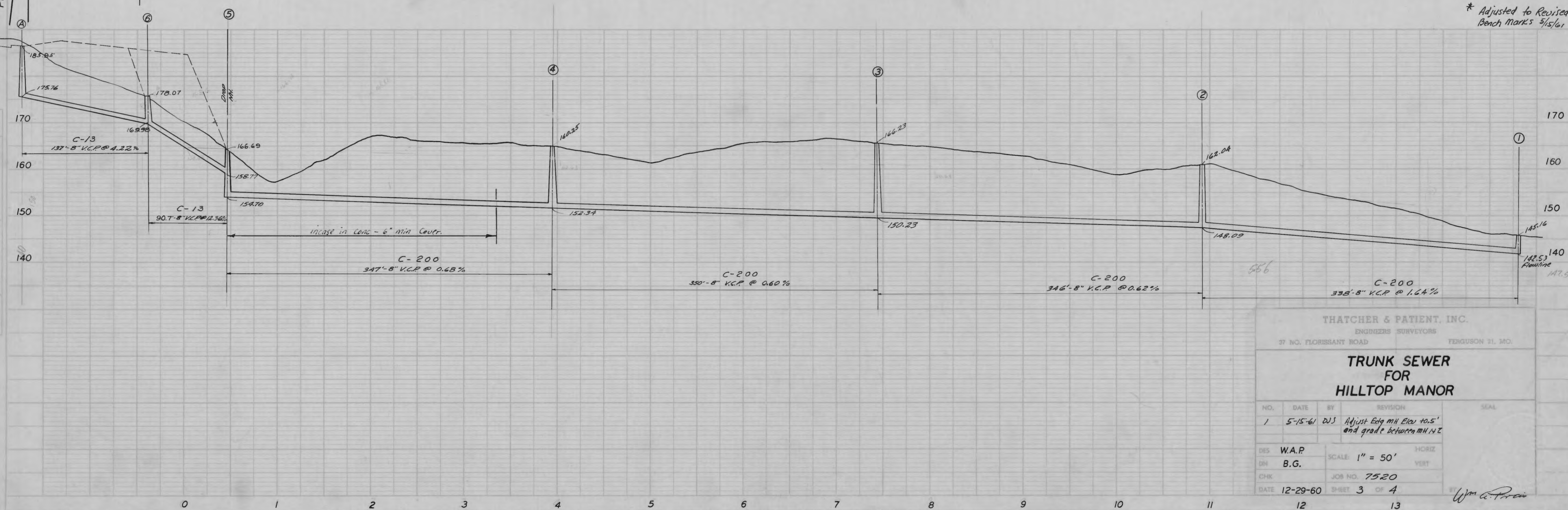
NOW OR FORMERLY  
 MARY W. HELLMAN  
 & CLARA M. HIS WIFE

U. S. HIGHWAY 40 & I. 70





\* Adjusted to Revised Bench Marks 5/15/61



THATCHER & PATIENT, INC.  
ENGINEERS SURVEYORS  
37 NO. FLOISSANT ROAD FERGUSON 21, MO.

**TRUNK SEWER FOR HILLTOP MANOR**

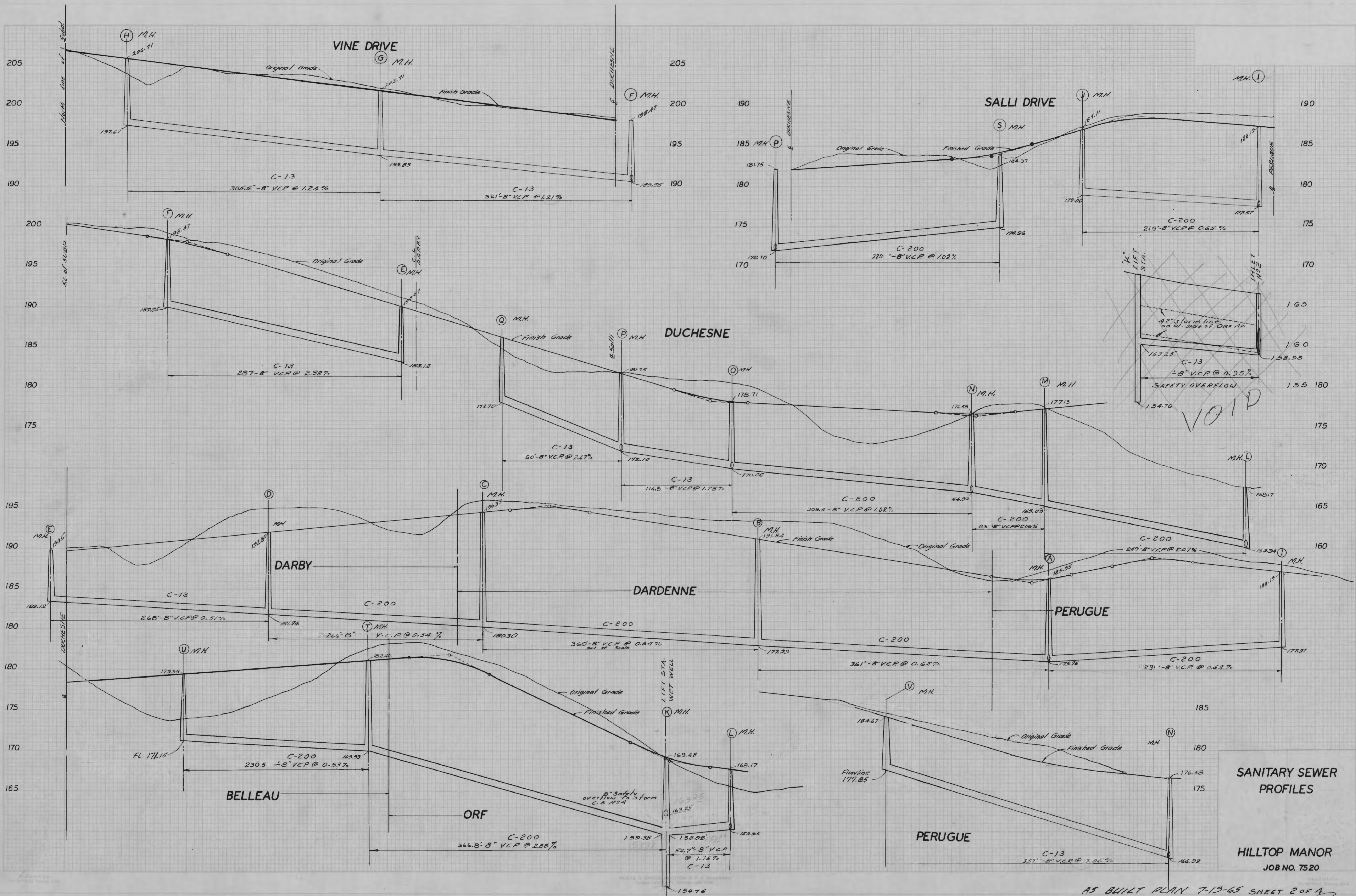
NO.	DATE	BY	REVISION	SEAL
1	5-15-61	DJS	Adjust Edg MH Elev to 5' and grade between MH 14 Z	

DES	W.A.P.	SCALE	1" = 50'	HORIZ
DN	B.G.			VERT
CHK		JOB NO.	7520	
DATE	12-29-60	SHEET	3 OF 4	

Wm. A. Patient

AS BUILT PLANS 7-15-65





SANITARY SEWER  
PROFILES

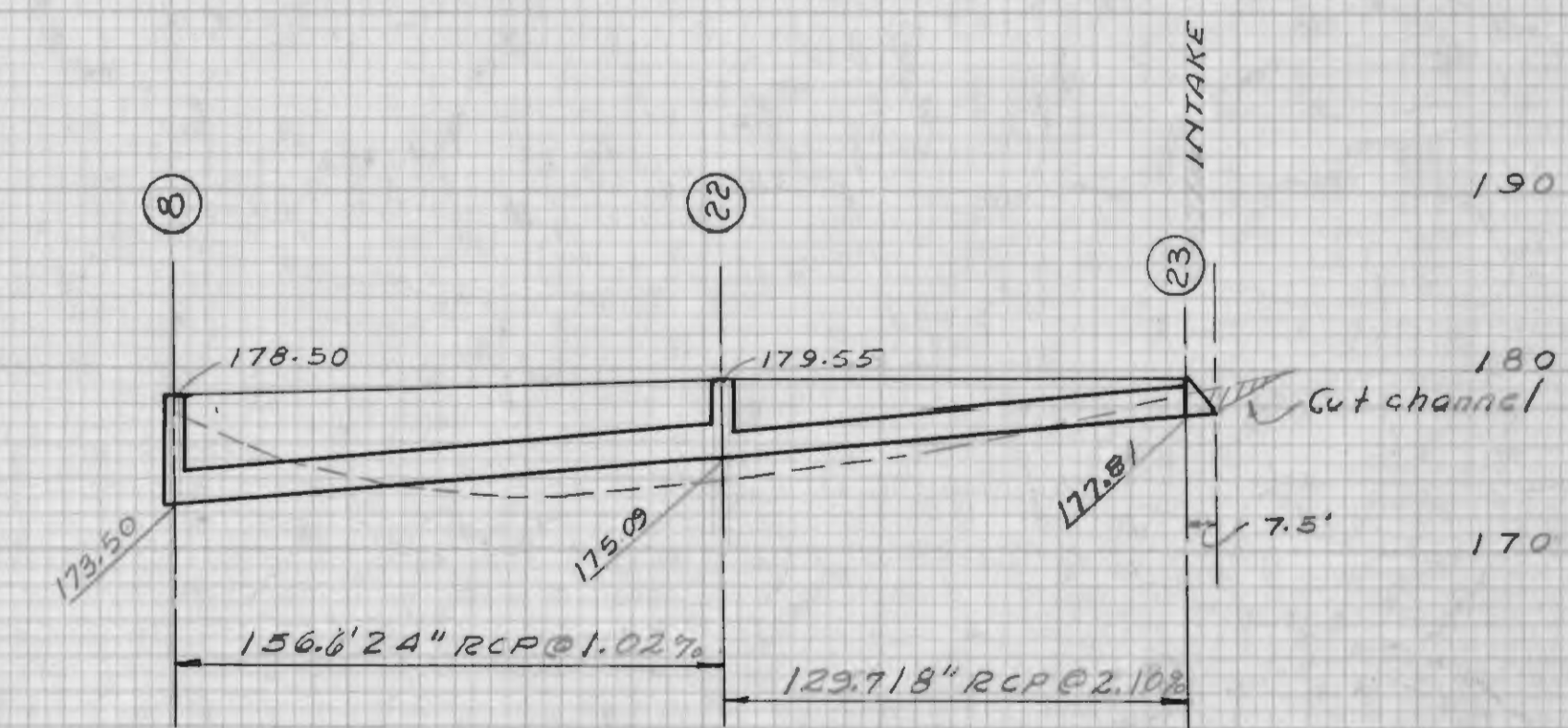
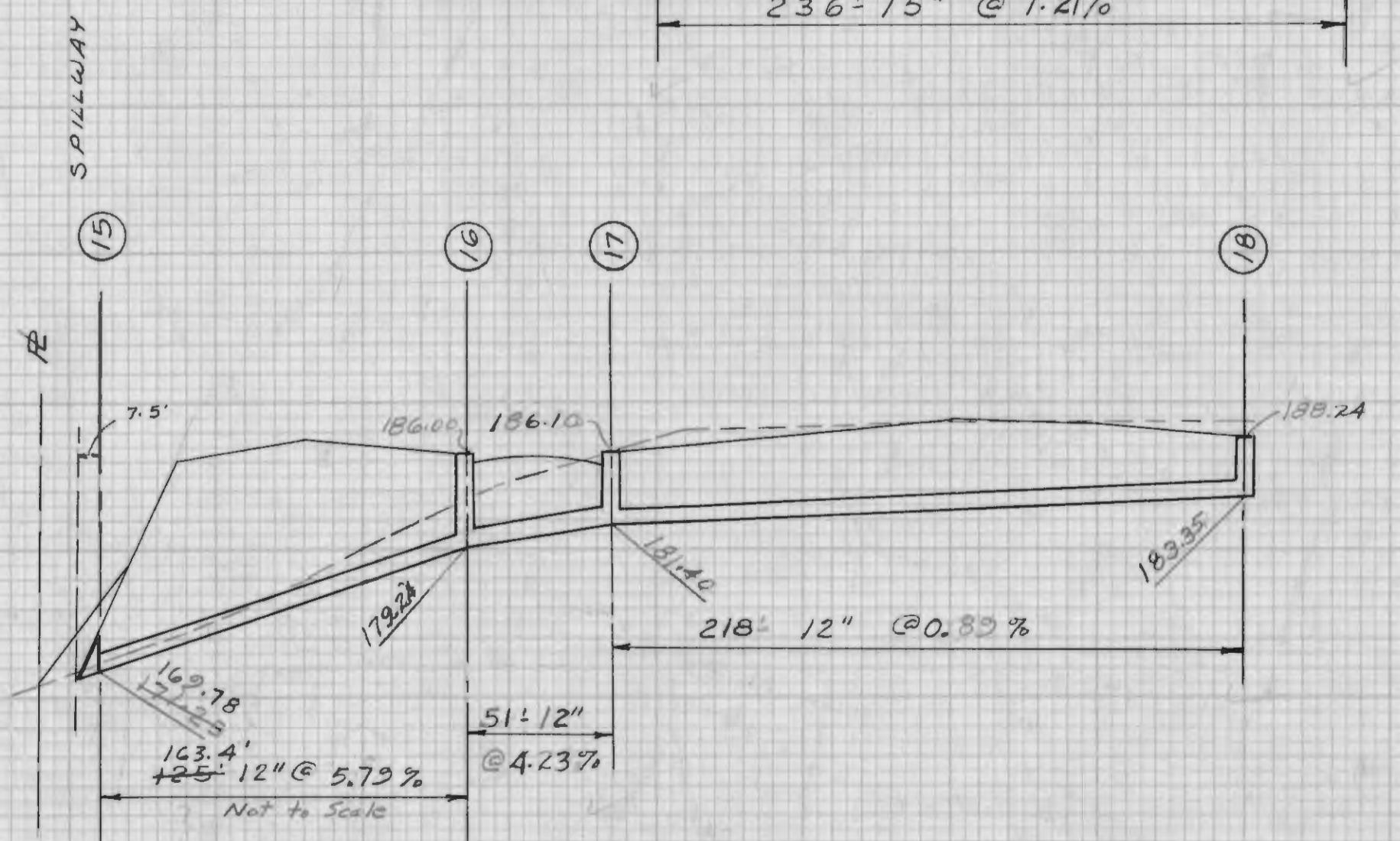
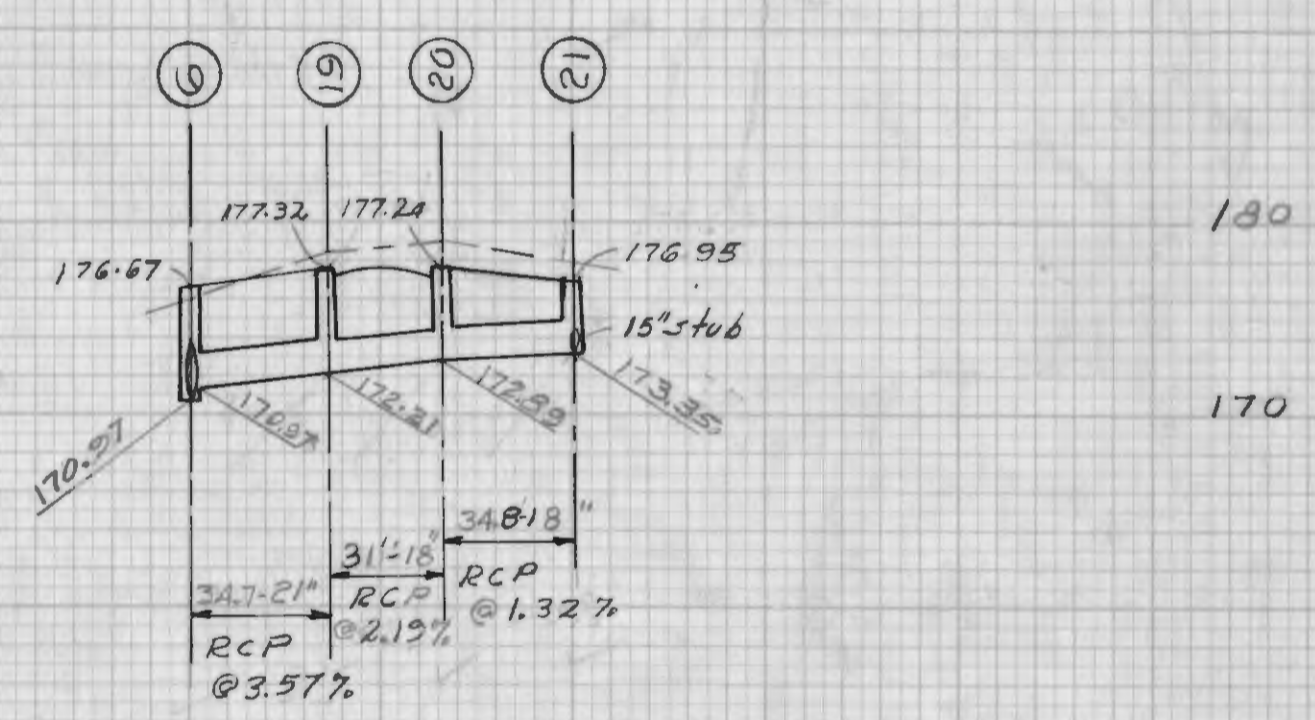
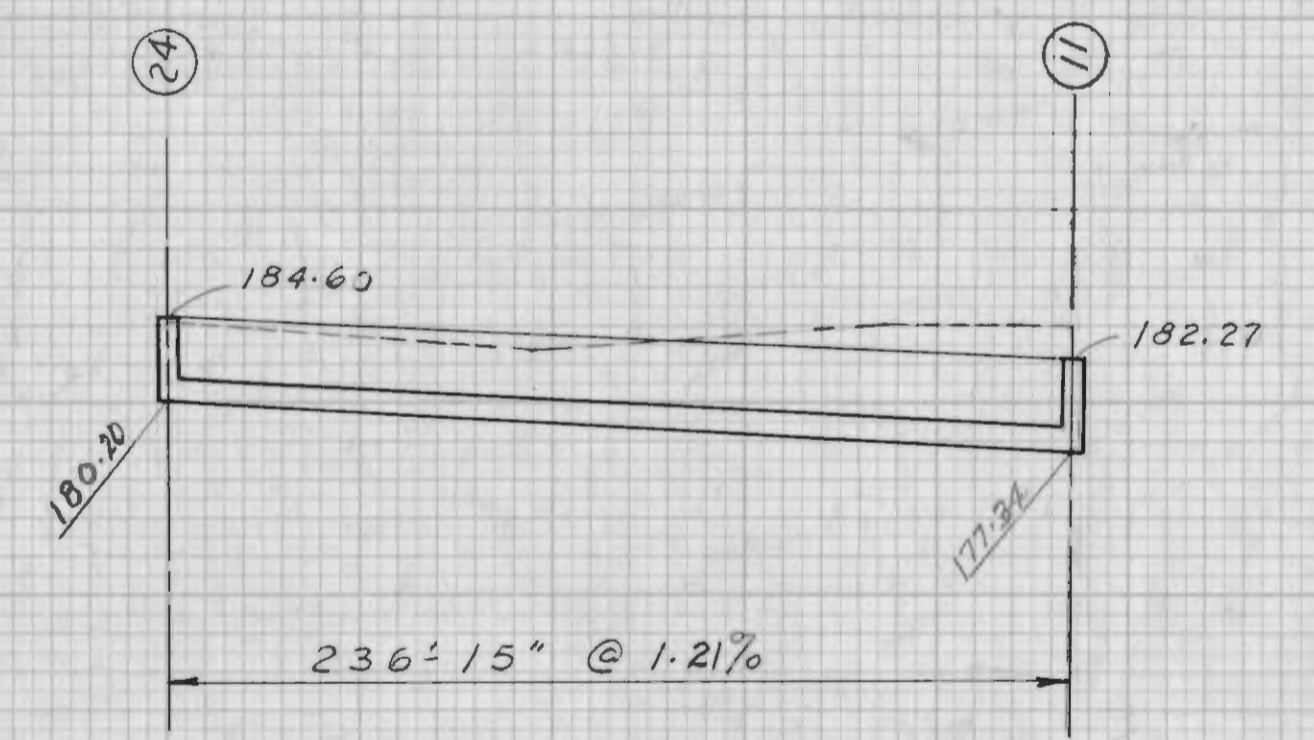
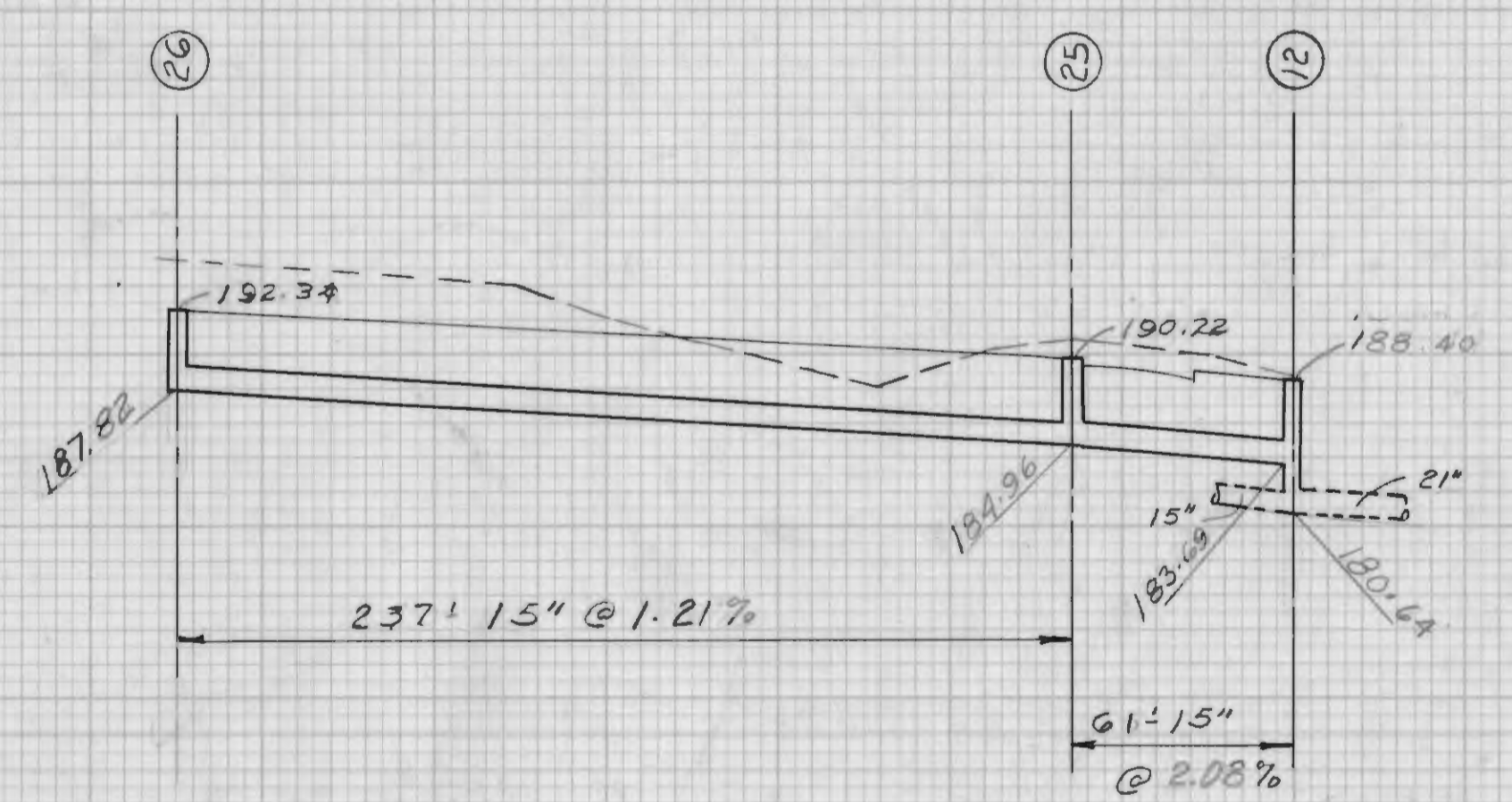
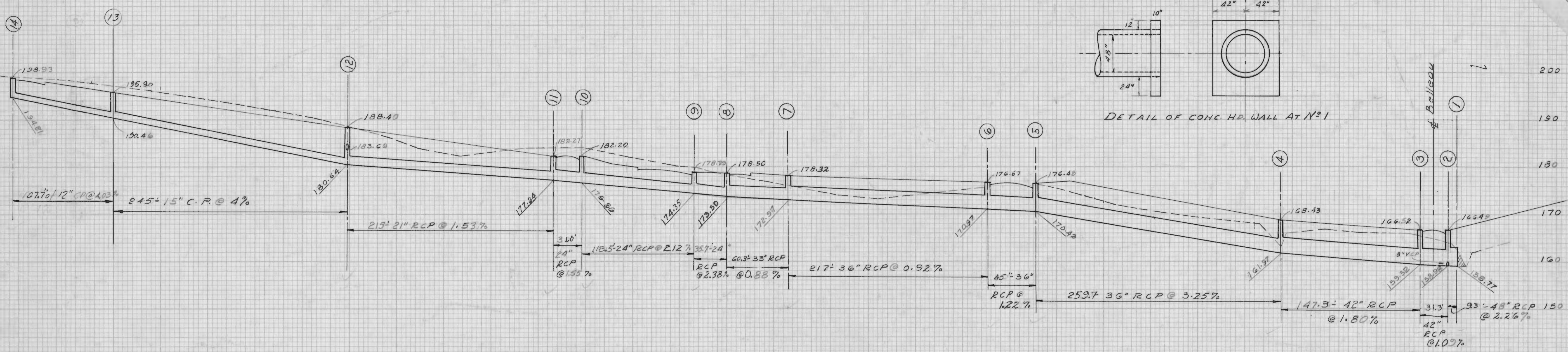
HILLTOP MANOR  
JOB NO. 7520

AS BUILT PLAN 7-19-65 SHEET 2 OF 4  
W.M.A. FROST



FINAL SURVEY  
 REVISIONS  
 DATE  
 DRAWN BY  
 CHECKED BY  
 APPROVED BY

ORIGINAL SURVEY  
 REVISIONS  
 DATE  
 DRAWN BY  
 CHECKED BY  
 APPROVED BY



Note: All storm sewer pipe to be A.S.T.M. C-76-57R CLASS III

**HILLTOP MANOR**  
 STORM SEWER PROFILES  
 Nov. 1960 JOB No 7520

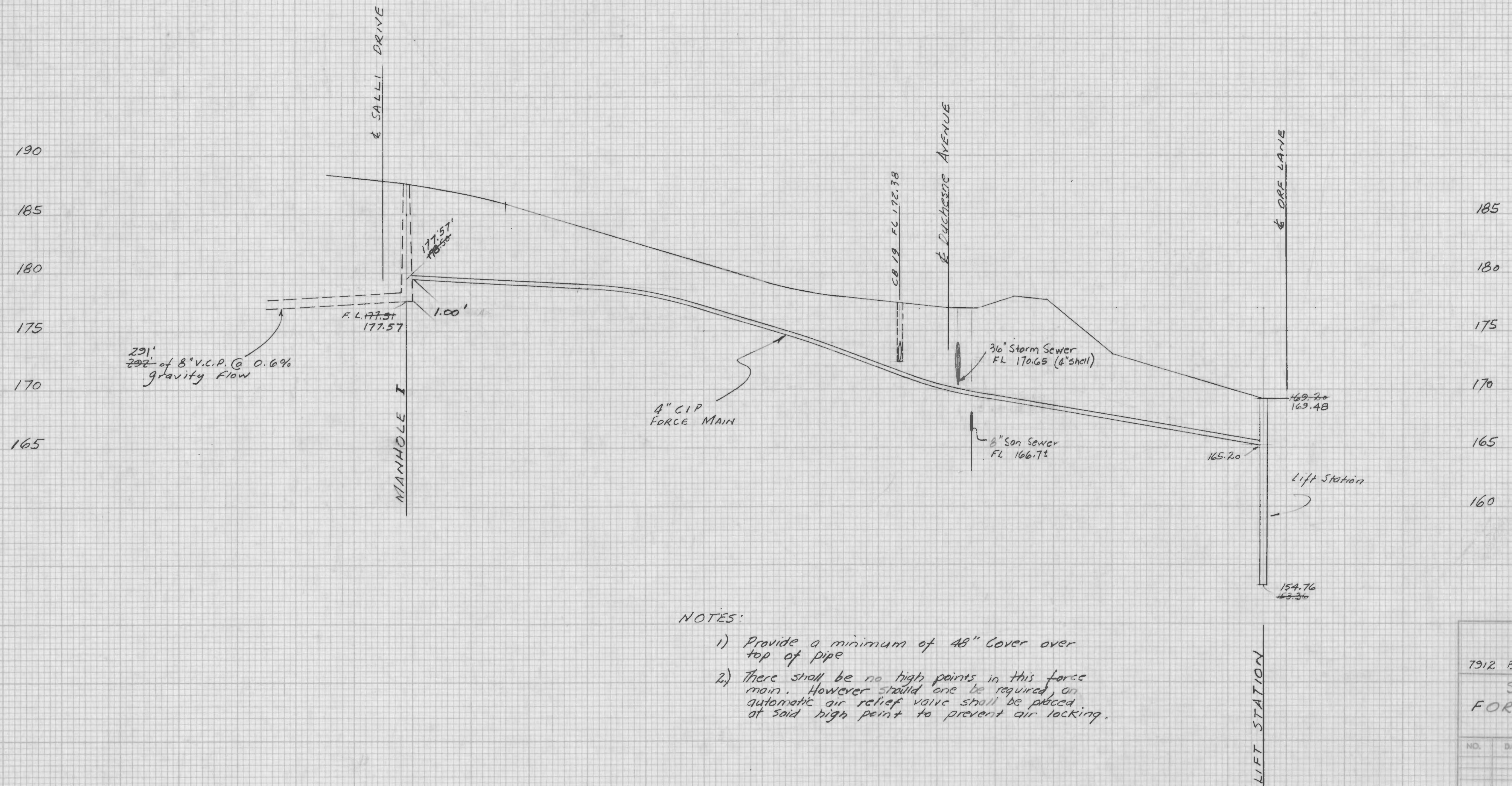
Revised 3/30/61  
 SHEET No. 2 OF 2  
 AS BUILT PLANS 7-15-65

PLATE 3 CROSS SECTION D. P. R. & S. R. STANDARD  
 1945 REDUCED SCALE - MAKE AND CHECKED IN P. R.  
 EUGENE BREYER, INC.



FINAL SURVEY	REVISIONS	DATE
NO.	NO.	

ORIGINAL SURVEY	REVISIONS	DATE
NO.	NO.	



NOTES:

- 1) Provide a minimum of 48" cover over top of pipe
- 2) There shall be no high points in this force main. However should one be required, an automatic air relief valve shall be placed at said high point to prevent air locking.

THATCHER & PATENT, INC.				
ENGINEERS SURVEYORS				
7912 BONHOMME		ST LOUIS 5, MO.		
SANITARY SEWER FORCE MAIN PROFILE HILLTOP MANOR				
NO.	DATE	BY	REVISION	SEAL
DES	DJS			
DN	DJS			
CHK				
DATE	8/28/61	SHEET	OF	BY

AS BUILT PLANS 7-15-65



**SPECIFICATIONS**

**GENERAL** - A complete prefabricated sewage pumping station shall be furnished and installed as shown on the plans. The station shall be a factory assembled steel structure complete with pumps, motors, controls, bubbler system, sump pump, dehumidifier, blower, air compressor and other necessary appurtenances. The station must be the product of a manufacturer regularly engaged in the design and fabrication of this type of equipment and have similar installations giving continuous and satisfactory service for a minimum of five (5) years. These specifications describe a station as manufactured by Zimmer & Francescon, Moline, Illinois. To receive consideration on alternate equipment, complete descriptive information including detailed plans, specifications, wiring diagrams and a list of installations meeting the experience requirements must be furnished the engineer.

**STRUCTURAL** - The station shall be built in two major sections comprising the equipment chamber and an entrance tube. Each section shall be fitted with mating flanges to be joined by field welding and shall be equipped with a ladder from top to bottom.

The walls of the equipment chamber shall be of 1/4" structural grade steel plate rolled and seam welded to have an outside diameter of 7'-0". The clear height inside the station from floor to ceiling shall be adequate to provide a minimum clearance of two feet between the top of the pump motor and the ceiling and not less than 7'-0". The top and bottom shall be of 3/8" structural grade steel plate continuously welded to the walls and shall be beamed to withstand the imposed soil and hydraulic loading. A 15" diameter by 8" deep sump shall be welded into the floor of the equipment chamber, so located that it is free of overhead equipment and piping. A drip-lip shall be formed around the entrance opening in the top of the chamber with a 1/4" copper tube to the sump. The normal walking area of the chamber shall be covered with a heavy neoprene mat. Lugs adequate to support the pump and motor shall be properly positioned and welded to the ceiling.

The entrance tube shall be of 1/4" structural steel plate, rolled and seam welded to a minimum inside diameter of 3'-0" and reinforced top and bottom with a 2" x 2" x 1/4" rolled angle. The entrance tube shall be adequate to place the top of the station approximately 1'-0" above the finish grade. Should the required length of the tube be over 8'-0", it may be fabricated in two or more sections to facilitate shipping. The top shall be covered with a hinged lid of 3/16" steel with a 1/2" deep flange that covers the outstanding leg of the top reinforcing angle. The lid shall be rain-tight and fitted with a handle and positive automatic latching device and have a lock that can be opened with a knob from the inside and a key from the outside. Two (2) 4" steel vent pipes shall be attached to the outside of the entrance tube to provide a fresh air intake and exhaust vent. The pipes shall extend to the top of the entrance tube where each shall have a screened, rain-proof opening. The lower end of each pipe shall be field welded into a sleeve in the top of the equipment chamber.

**PUMPS** - The equipment chamber shall be equipped with two (2) equal pumps, each pump designed to deliver 80 gpm against a total dynamic head of 28 feet at a speed not in excess of 1150 rpm. Passageways through the pump and impeller shall be large enough to pass up to 4 inch diameter spheres. The pump shall be of standard, vertical, non-clog construction and the impeller shall be (direct connected) to the motor shaft. The casing, impeller and stand shall be cast iron. Handhole clean-outs shall be provided in the suction elbow and discharge nozzle. The pump shaft shall be made of high grade SAE steel alloy accurately machined and ground to size. A renewable, hardened, stainless steel shaft sleeve shall be provided through the packing box. The entire pump assembly shall be securely bolted to a sub-base which, in turn, shall be welded to the station floor.

**PUMP SEALS** - The pump shaft shall be sealed against leakage by a double mechanical seal. The seal shall be of double carbon and ceramic construction with the mating surfaces lapped to a flatness tolerance of one light band. The rotating ceramics shall be held in mating position with the stationary carbons by a stainless steel spring. The seal housing with assembled parts shall be so constructed as to be readily removable from the shaft as a unit.

The seal shall be pressurized and lubricated by water taken directly from the pump discharge through a filter to the seal housing and introduced between the upper and lower sealing surfaces. The filter shall be of corrosion resistant materials and shall screen out all solids larger than 25 microns. A bronze globe type valve shall be connected near the top of the seal housing for manual venting.

**PUMP PACKING** (optional in lieu of mechanical seal) - Each pump shall be packed with 5 rings of semi-metallic packing and a lantern ring and lubricated with specially designed grease lubricator. This unit shall consist of a visible cylinder with an air-loaded, free-floating piston. The back side of the cylinder shall be filled with grease and connected by copper tubing to the pump stuffing box and contain a regulating valve and a hydraulic fitting to allow refilling. The front side shall be air-loaded through copper tubing from the air receiver. This line shall contain a 3-way Solenoid valve for each pump, an adjustable pressure regulator and pressure gauge. Pressure at least 5 psi greater than the pump discharge pressure shall be applied to the piston only during pump operation.

**MOTOR** - Mounted to each pump shall be a minimum 3 hp 1200 rpm 220 volt three phase 60 cycle vertical, solid-shaft, open drip-proof, squirrel cage induction motor. The motors shall have normal starting torque and low starting current characteristics. The motor shafts shall be of adequate strength and stiffness for the imposed loads and sized in strict accordance with NEMA standards. Heavy, grease lubricated ball bearings shall support the shafts.

**PIPING** - The station shall be furnished with all necessary interior cast iron pipe, fittings and valves, factory installed. The two suction lines shall be of 4 inch Class 150 cast iron pipe, passing through steel sleeves welded into the station wall and sealed with grout containing Embecco. Each suction line shall contain a 4 inch gate valve. Between each pump and the discharge header shall be a 4 inch check valve and a 4 inch gate valve. The check valves shall be iron body, full opening type with bronze seats and outside weight and levers. The gate valves shall be AWWA Standard, iron body, double disc, non-rising stem type. The force line shall be of 4 inch Class 150 cast iron pipe passing vertically through a steel sleeve welded in the top of the equipment chamber and sealed with grout containing Embecco.

**CONTROLS** - Accurate control of the sewage level in the wet well shall be made by a self-purging bubbler system. Air, provided by a separately mounted air compressor, shall flow through a bubbler line from the control to the wet well. Variation in the liquid level shall produce a corresponding variation in the air pressure required to maintain bubbling. Rate of bubbling shall be approximately 1-1/2 cu ft per hour and shall be adjustable from the exterior of the control panel. Level measurement shall be by means of independently adjustable high and low pressure sensor assemblies. Each pressure sensor shall be easily field adjustable and consist of an independent bellows which operates a dust proof mercury switch. The bellows shall be restricted to allow movement only at the measured point and the pressure elements shall be adjustable over the entire range of control with a minimum differential of 6 inches of water. Error shall not exceed plus or minus 1/2 of 1 percent of the full range. An individual pressure sensor shall be provided to detect each measured elevation. An altitude type pressure gauge shall be mounted in the cover to indicate the varying sewage level. An automatic alternator shall be included to alternate the starting sequence of two pumps. The alternator shall operate units singly or together as called by their pilot devices. In the event the lead pump fails to operate when called for by the first pilot device or fails to lower the sewage level in the wet well the alternator shall operate the stand-by pump through the secondary pilot device.

Across-the-line magnetic starters and thermomagnetic circuit breakers shall be provided for each pump and internally mounted in separate compartments behind dead front panels. A hand-off-automatic selector switch, 3-coil overload relay and reset button shall be provided for each starter. The selector switches and circuit breaker handles shall be operated externally. Single phase power for the lighting circuits shall be provided by a lighting panel containing six single pole, 15 ampere thermomagnetic circuit breakers of the quick-made quick-break type.

The station shall be completely wired at the factory in accordance with the wiring diagram to be furnished. All wiring external to the panel shall be in conduit except to the 110 volt accessory items equipped with their own insulating cords. In this case, conduit shall be run to a receptacle located near the accessory for a plug connection.

**SUMP PUMP** - Mounted in the station sump shall be a hermetically sealed and permanently lubricated sump pump with an enclosed iron impeller. The pump shall be driven by a 1/3 hp motor, controlled automatically by a float switch and shall be capable of delivering a minimum 1000 gph against a total head of 20 feet. The pump shall be piped to a coupling in the station wall with 1-1/4" cast iron pipe containing two check valves and a gate valve.

**AIR COMPRESSOR** - To deliver air to the bubbler system and pump seal assembly, the station shall be equipped with an oil-less, piston type motor compressor that will produce a minimum of 0.6 cfm at 35 psi and utilizing a 1/12 hp, 110 volt, 60 cycle motor. To produce dry air, the compressor shall have a built-in aftercooler and a filter trap shall prevent dirt from being drawn into the cylinder. The compressor shall be automatically controlled with an adjustable pressure switch and unloader valve. The compressor shall utilize a minimum 2 gallon air receiver.

**DEHUMIDIFIER** - The station shall be equipped with an automatic, electric dehumidifier operating on a refrigeration cycle with the condensate piped directly to the sump. It shall have a permanently lubricated, hermetically sealed, 1/6 hp compressor and a separate fan for circulating a minimum 200 cfm of air throughout the station and shall remove 12 quarts of moisture with a relative humidity of 90% at a dry bulb temperature of 90° F. in 24 hours. Automatic control shall be through an adjustable humidistat.

**BLOWER** - The station shall be fitted with centrifugal type blower capable of delivering a minimum 560 cfm at a 1.8" sp. The blower wheel shall be direct connected to a 1/3 hp, 110 volt, 60 cycle, split-phase motor. The blower inlet shall be placed within 12 inches of the station floor and deliver directly to the exhaust duct. The control shall be through interlocks on the pump motor starters so that it operates when either pump is operating or through a manual switch located just under the entrance tube cover.

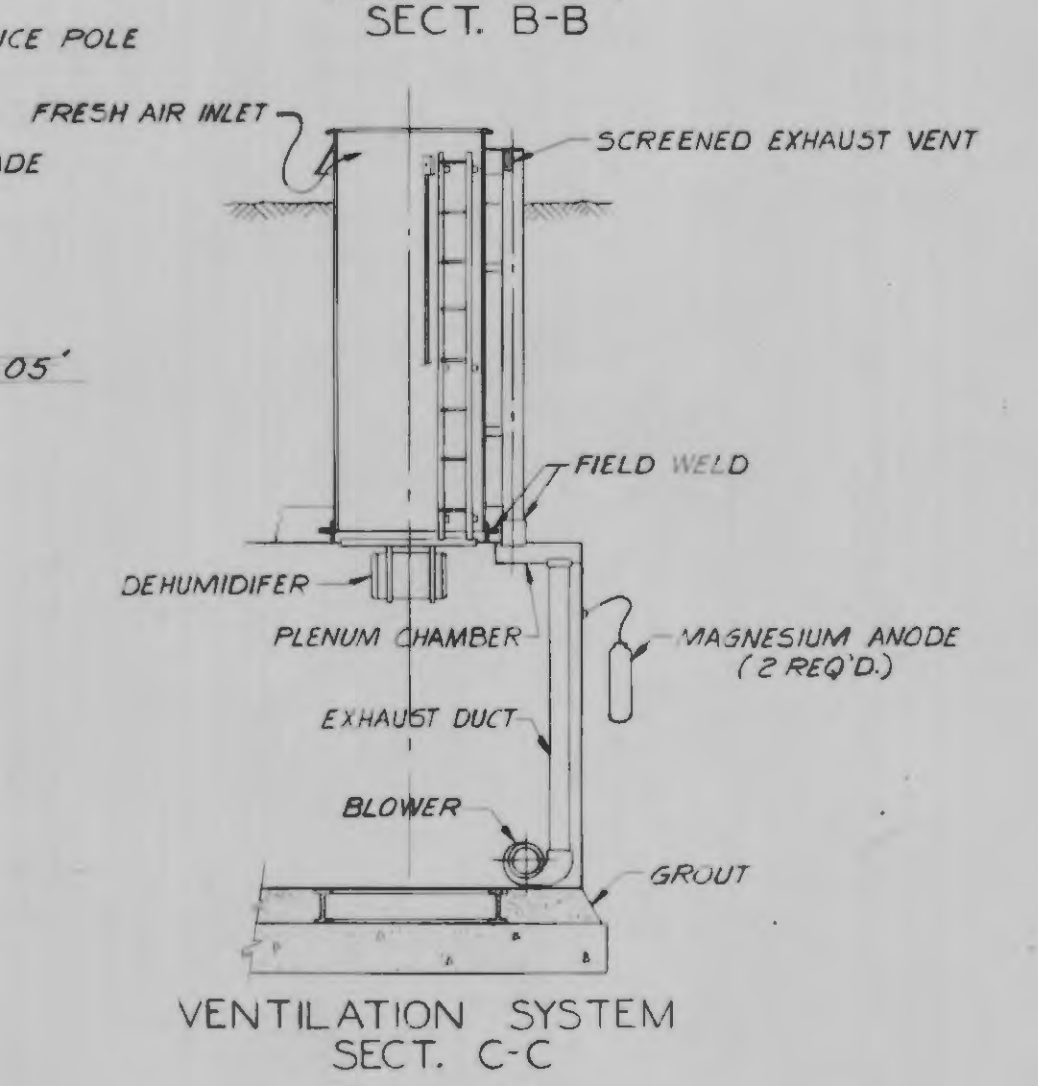
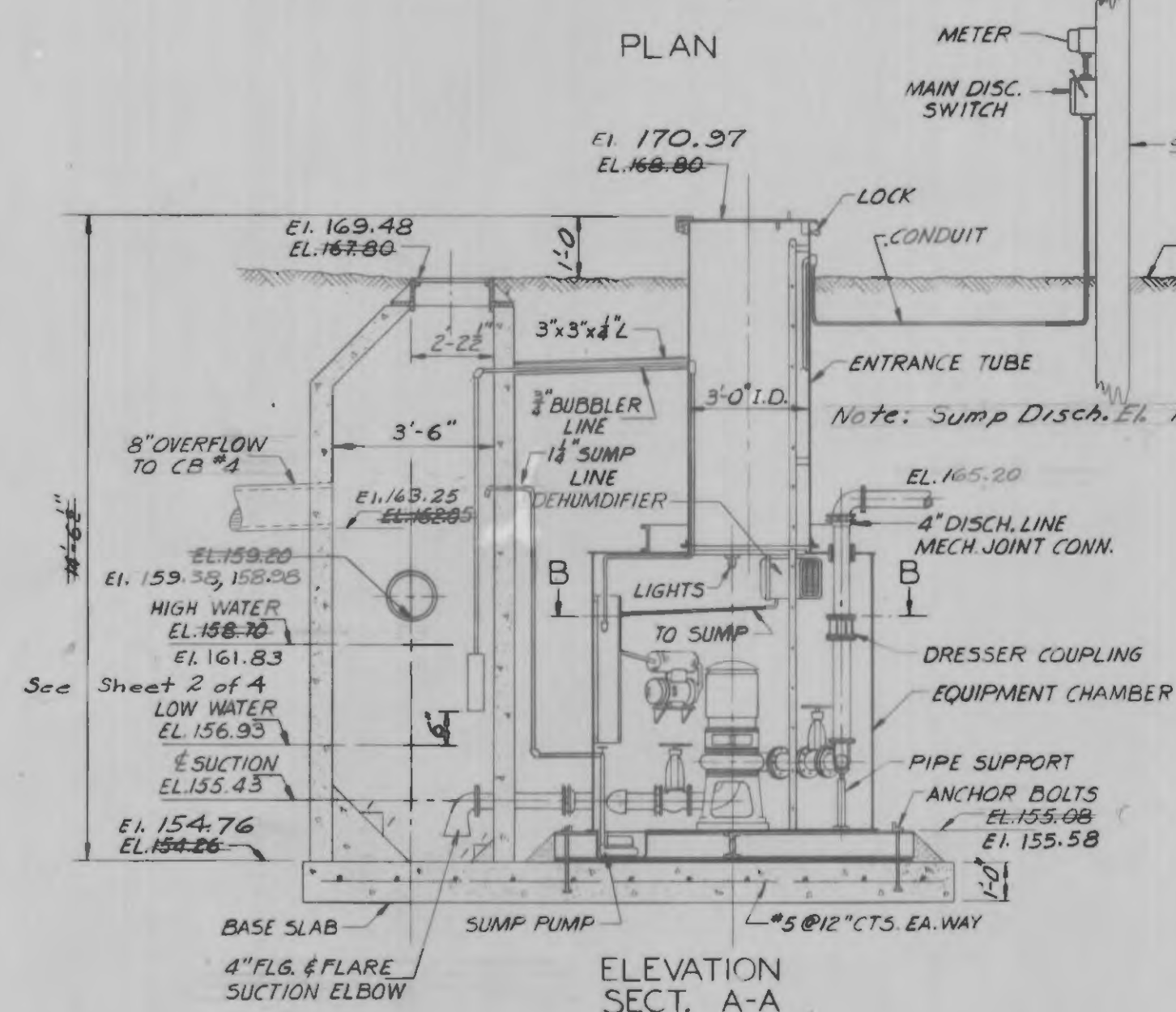
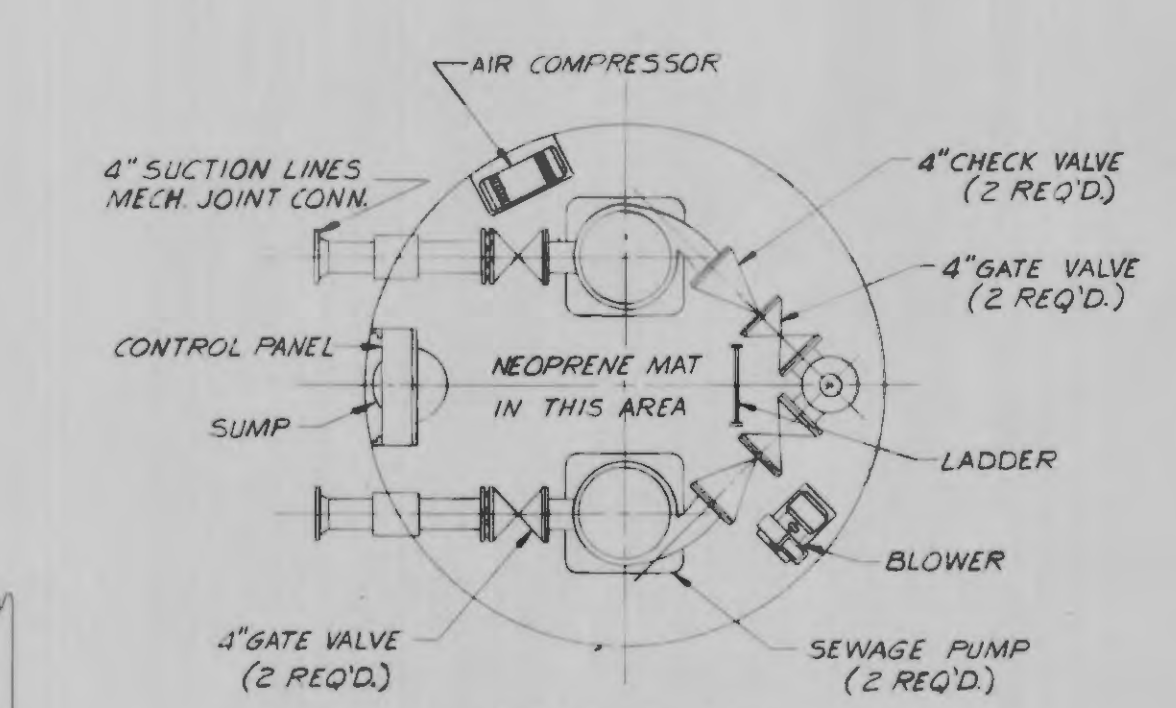
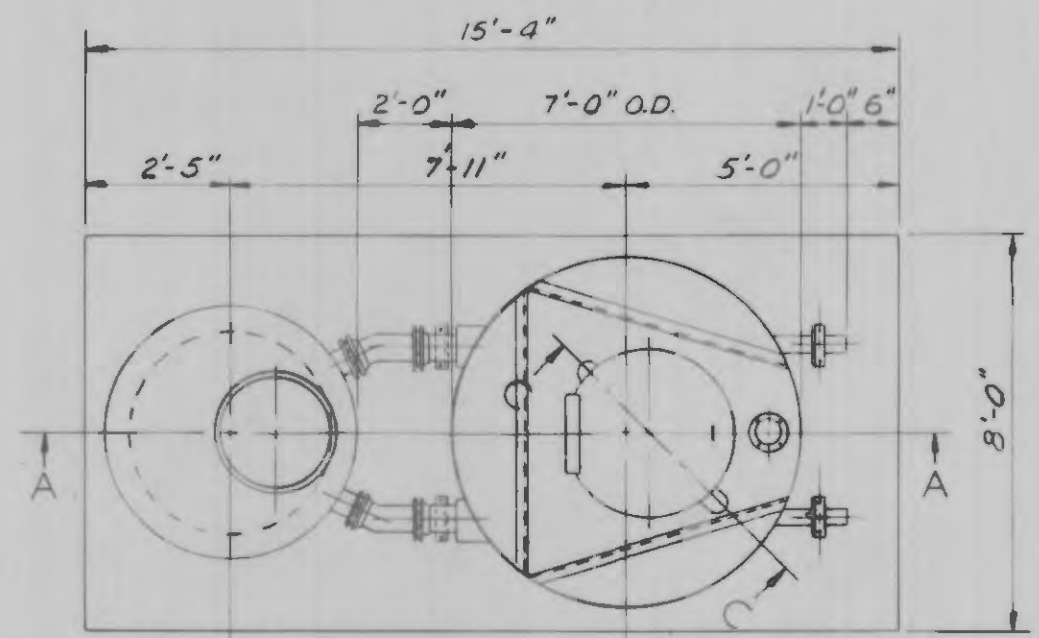
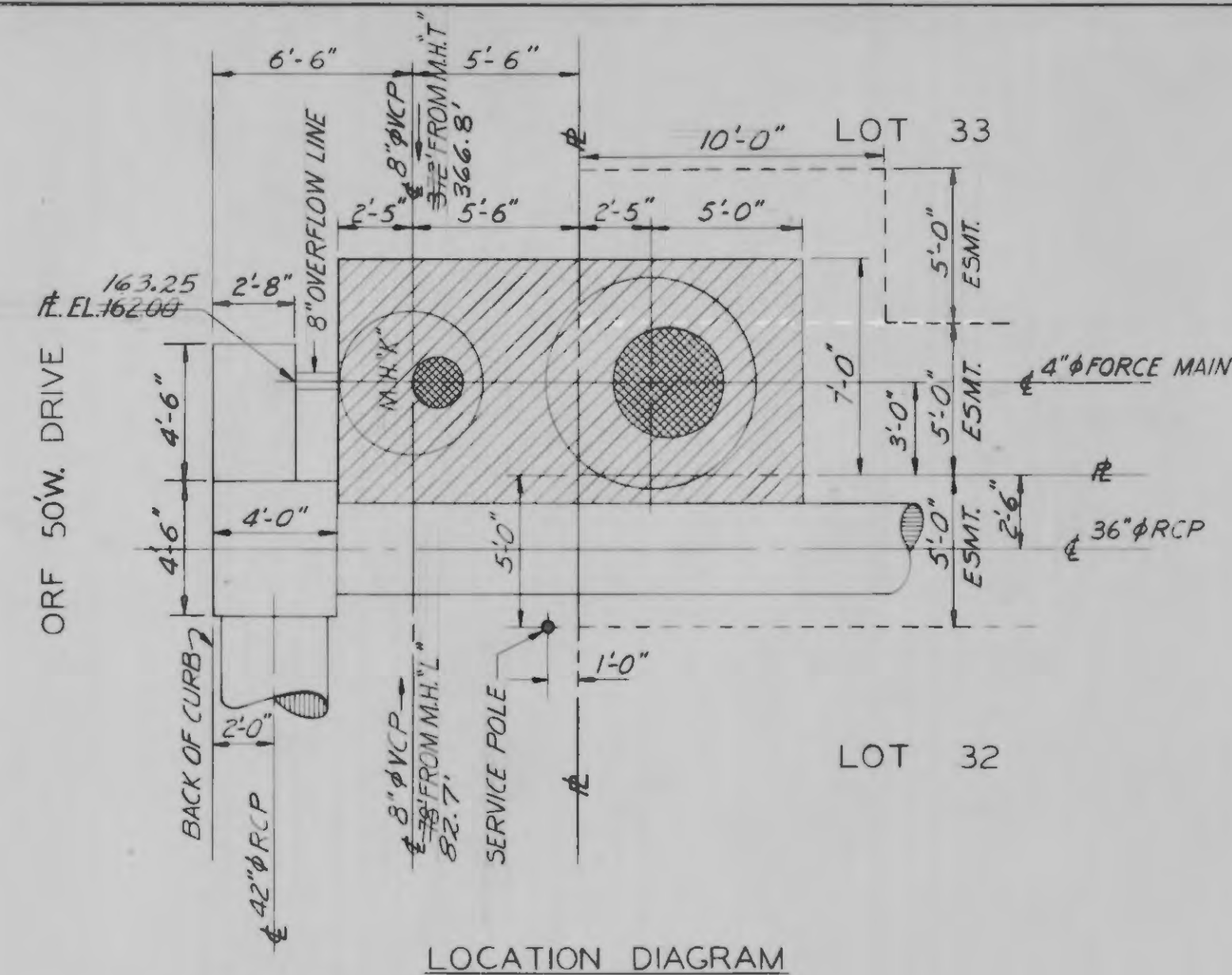
**LIGHTS** - The station shall be equipped with two 100 watt lamps, symmetrically located in the top of the equipment chamber and protected with vapor-tight and guarded enclosures. The lights shall be controlled by the same manual switch that operates the blower.

**CORROSION PROTECTION** - The entire station, both inside and out, shall be sandblasted down to bright metal. The entire exterior and the sump interior shall be given two (2) shop coats of special heavy-duty, high-solid coal-tar epoxy coating combining the best features of coal-tar and epoxy resins. The entire interior shall be given a coat of rust inhibitive primer followed by two coats of specially formulated epoxy ester protective-decorative enamel. The coating shall be resistant to normal floor abrasion, frequent scrubbing with strong soap, and oil or grease spillage.

Two (2) magnesium anodes shall be furnished with insulated wire to be attached to the station and placed in the backfill to provide cathodic protection. One (1) gallon of the two-component exterior coating and one (1) pint of each of the interior coating colors shall be furnished for retouching.

**FACTORY TESTING** - Prior to shipment, the station shall be operated to check for alignment, faulty equipment, proper wiring, leaking pipe joints and leak-proof welds. The suction and discharge piping shall be connected to a tank and water pumped, simulating field conditions. Any irregularities found shall be corrected at the factory.

**WORKMANSHIP AND GUARANTEES** - The manufacturer of the lift station shall guarantee for one (1) year from the date of shipment that the structure and all equipment shall be free from defects in design, materials and workmanship. The lift station manufacturer shall furnish parts for any component proved defective whether of his or other manufacture during the guarantee period excepting only those items which are normally consumed in service such as light bulbs, grease, packing, mechanical seals, etc.



HILLTOP MANOR  
PUMPING STATION

<b>THATCHER &amp; PATIENT, INC.</b>				
Consulting Engineers <b>TP</b> Land Surveyors				
7912 BONHOMME AVE. ST. LOUIS 5, MO. Ph. 7-7719				
NO.	DATE	BY	REVISION	SPAL
DES				
DN TAB	SCALE: NONE			
CHK RLS	JOB NO. 7520			
DATE 7-29-64	SHEET 4	OF 4		

AS BUILT PLANS 7-15-65