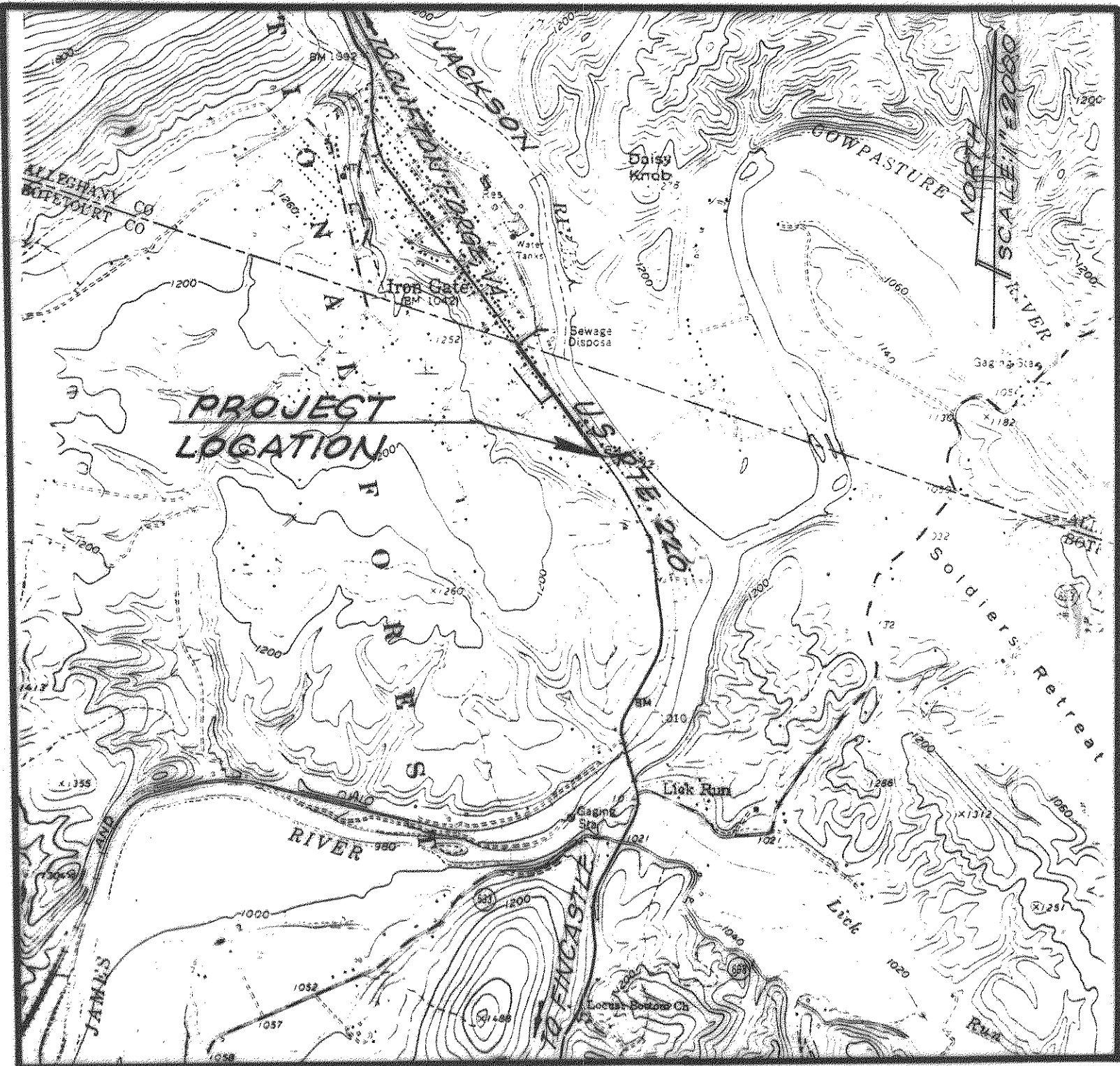


WASTEWATER COLLECTION SYSTEM

PROJECT NAME: Iron Gate Wastewater Collection System
DATE: July 81
TYPE: side plan
TOTAL # SHEETS: 7 & 3 (10-11) +
A/E FIRM: Clean Water AB
OF SETS: 1 Appendix
01/02/03

GENERAL NOTES

1. VERTICAL CONTROL: NATIONAL GEODETIC VERTICAL DATUM MEAN SEA LEVEL 1929
HORIZONTAL CONTROL: ASSUMED
2. SEWER LINES ARE LAID AT SUCH DEPTHS AS TO SERVE GROUND FLOOR PLUMBING ONLY AND TO PICK UP SEPTIC TANK DISCHARGE LINES.
3. ROCK QUANTITIES ARE THE ENGINEER'S ESTIMATE ONLY. THEY ARE TO BE USED BY THE CONTRACTOR AS AN AID TO PRICING THE LINE WORK AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO SATISFY HIMSELF AS TO ALL CONDITIONS OF WORK BEFORE BIDDING.
4. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE AND SHOULD BE VERIFIED BY CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY "UNDERGROUND CABLE LOCATION," 1-703-982-2400, AT LEAST 48 HOURS IN ADVANCE OF EXCAVATION IN ORDER TO VERIFY LOCATION OF UNDERGROUND UTILITIES.
5. EXISTING SURFACES DISTURBED BY CONTRACTOR'S WORK SHALL BE RESTORED TO THEIR PRESENT CONDITION.
6. HIGHWAY TRAFFIC SHALL BE PROTECTED AT ALL TIMES BY ADEQUATE LIGHTS, BARRICADES, AND CONSTRUCTION SIGNS. SIGNS SHALL BE IN ACCORDANCE WITH "VIRGINIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" AND ARE TO BE LOCATED AS DIRECTED BY THE RESIDENT ENGINEER OF THE DEPARTMENT OF HIGHWAYS. CONTRACTOR SHALL PROVIDE FLAGPERSONS AS REQUIRED.
7. CONTRACTOR SHALL PERFORM WORK IN SUCH A MANNER AS TO MINIMIZE EROSION OF SOILS.
8. THERE SHALL BE 10' MINIMUM HORIZONTAL SEPARATION BETWEEN WATER AND SEWER LINES AND 18" MINIMUM VERTICAL SEPARATION WHERE SPECIFIED.
9. ALL CONSTRUCTION MATERIAL AND EQUIPMENT SHALL BE KEPT WITHIN STATE RIGHT OF WAY AND NOT ON ADJACENT PROPERTIES (WHERE APPLICABLE).



VICINITY MAP
SCALE: 1"=2000'

INDEX

SHEET NO.	DESCRIPTION
1.	COVER SHEET-VICINITY MAP
2.	PLAN AND PROFILES STA. 10+00 - STA. 23+75 8" GRAVITY LINE STA. 7+70 TO STA. 23+75 4" FORCE MAIN
3.	PLAN AND PROFILES STA. 23+75 TO STA. 38+46 8" GRAVITY LINE STA. 23+75 TO STA. 28+31 4" FORCE MAIN
4.	PLAN AND PROFILES STA. 3+74 TO STA. 7+70 4" FORCE MAIN
5.	PUMP STATION AND MISCELLANEOUS DETAILS
6.	STANDARD SEWER DETAILS
7.	STANDARD WATER DETAILS

COMMUNITY OF IRON GATE

Clean Water Engineers, Inc.

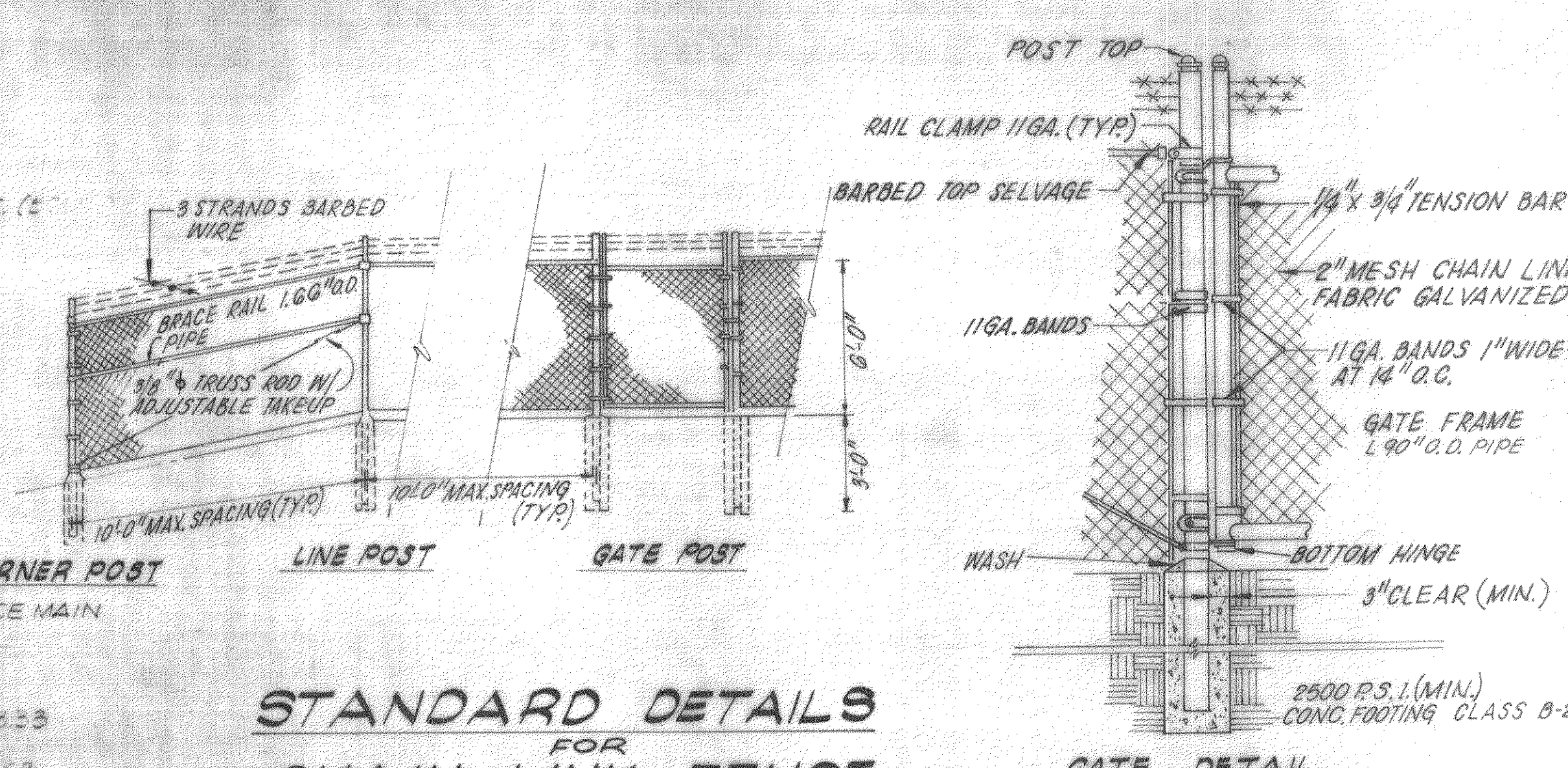
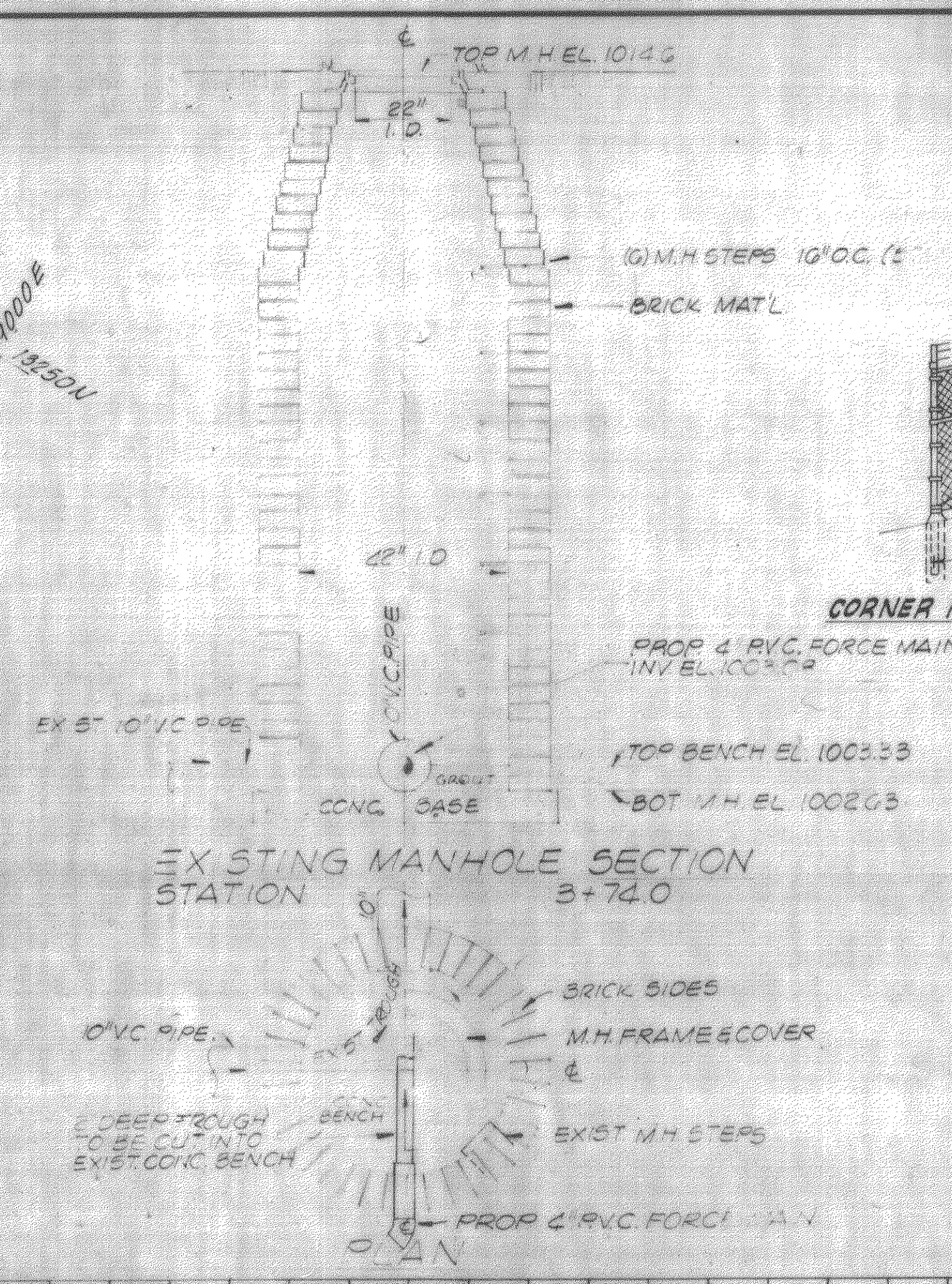
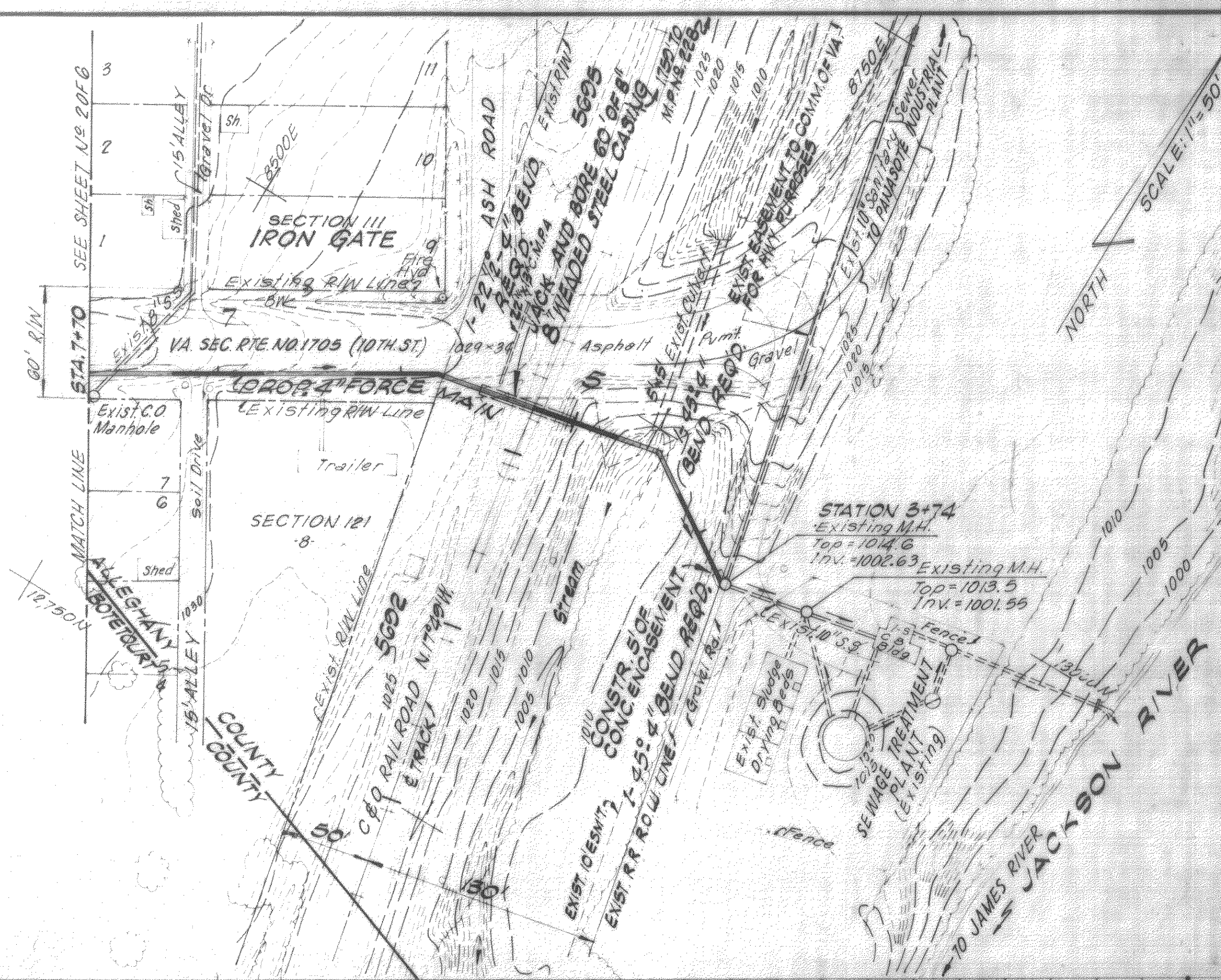
35 South Roanoke Street
Fincastle; Virginia 24090

Date: July 13, 1981

Project Number 8107

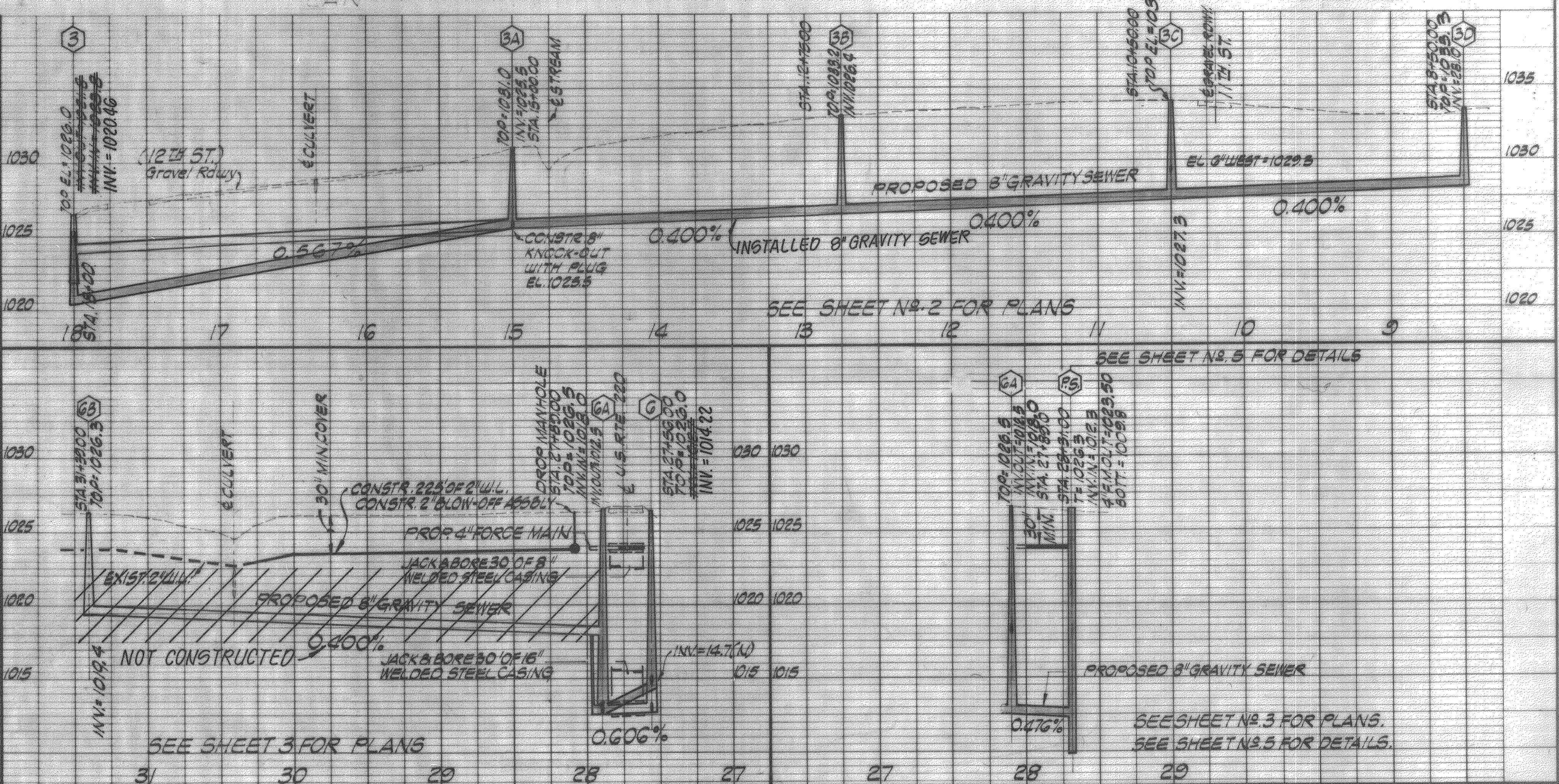
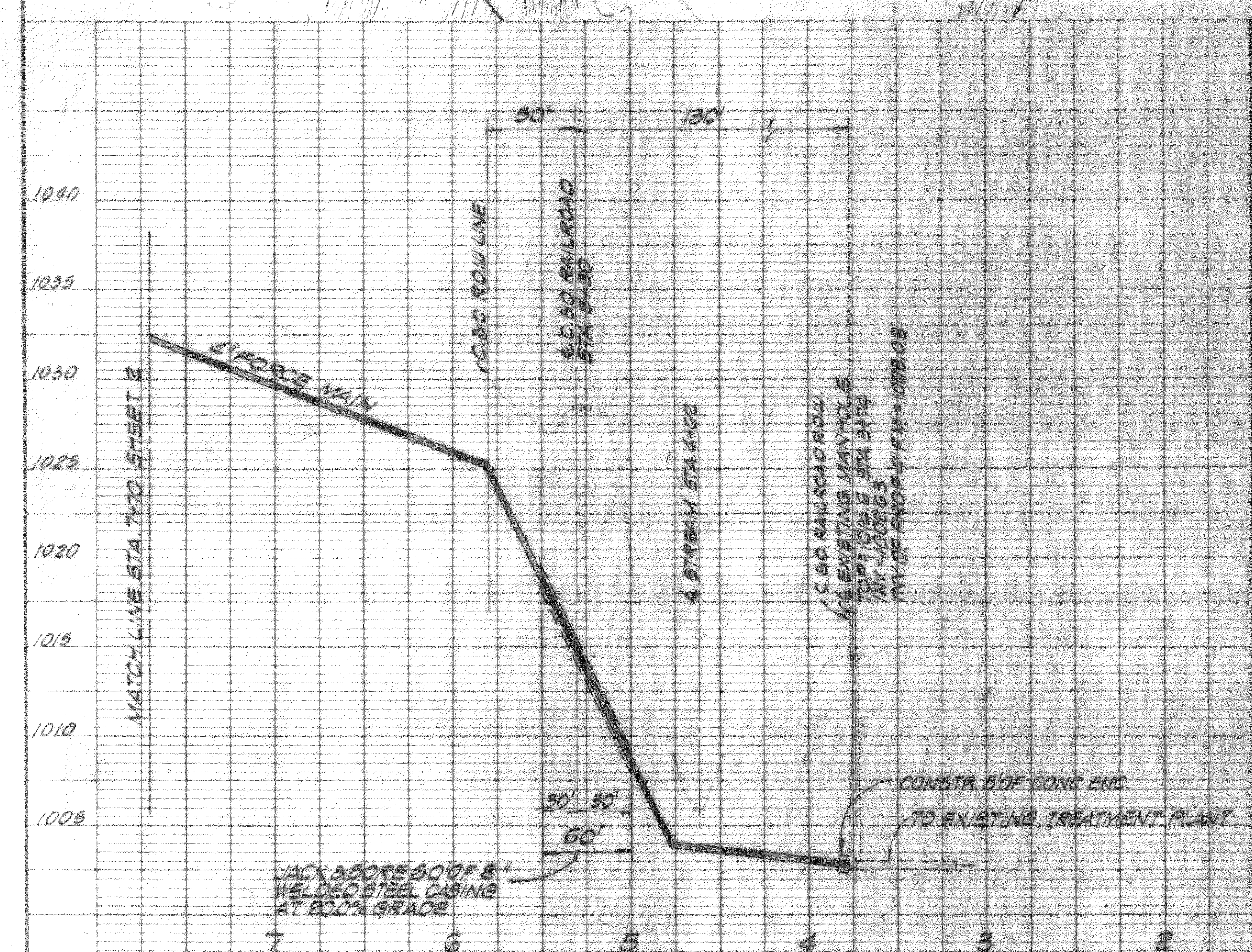
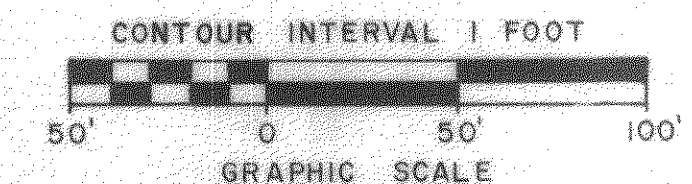
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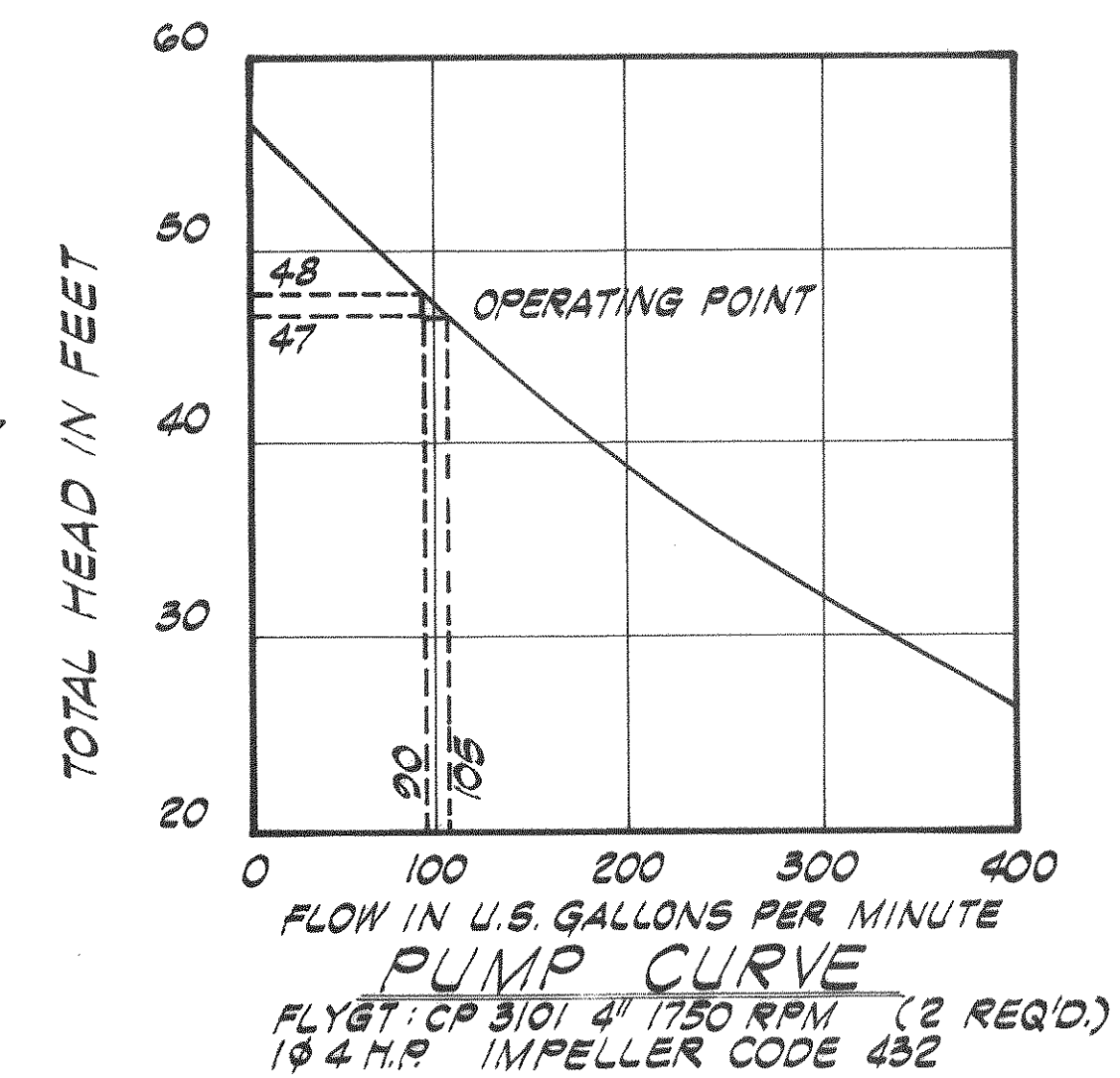
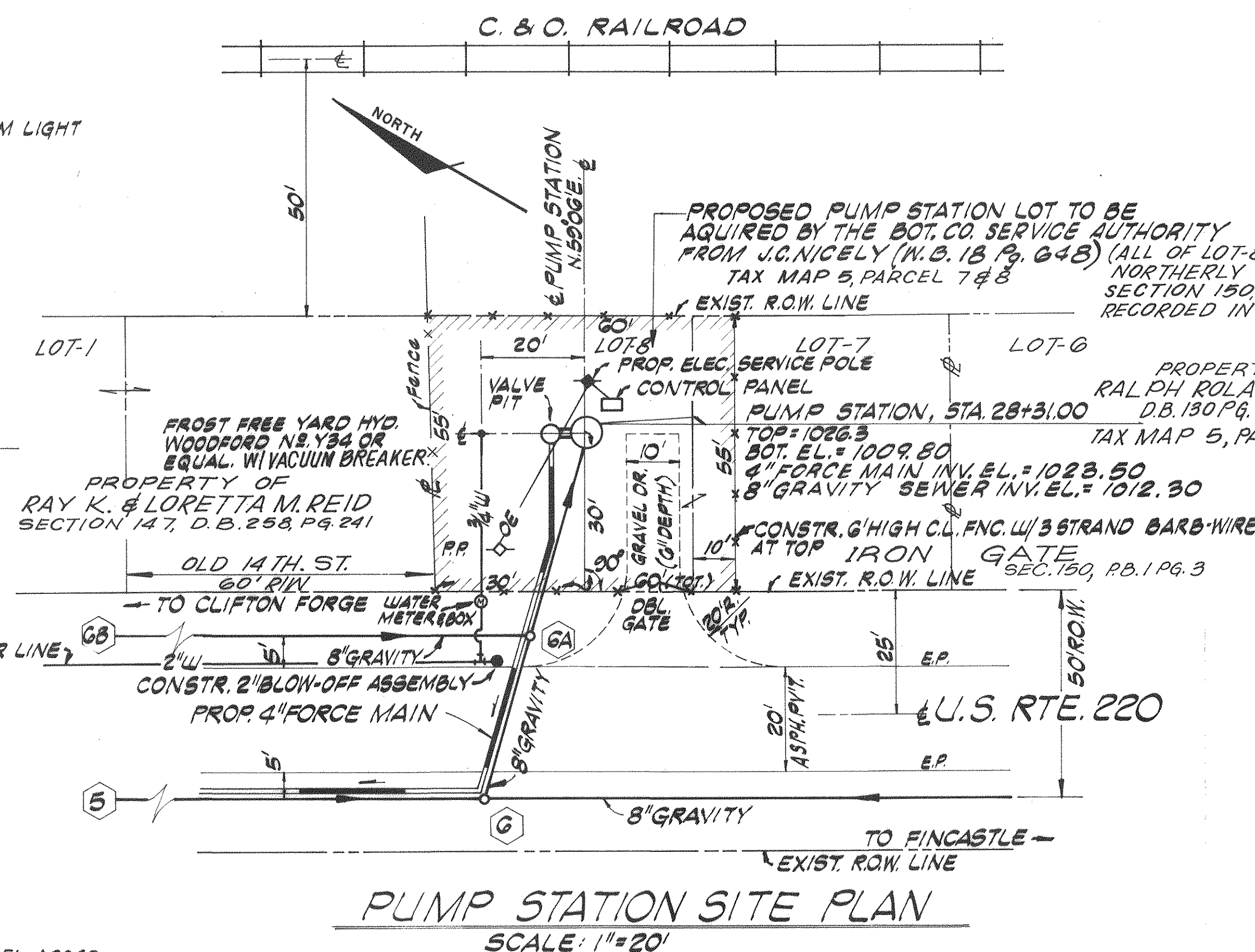
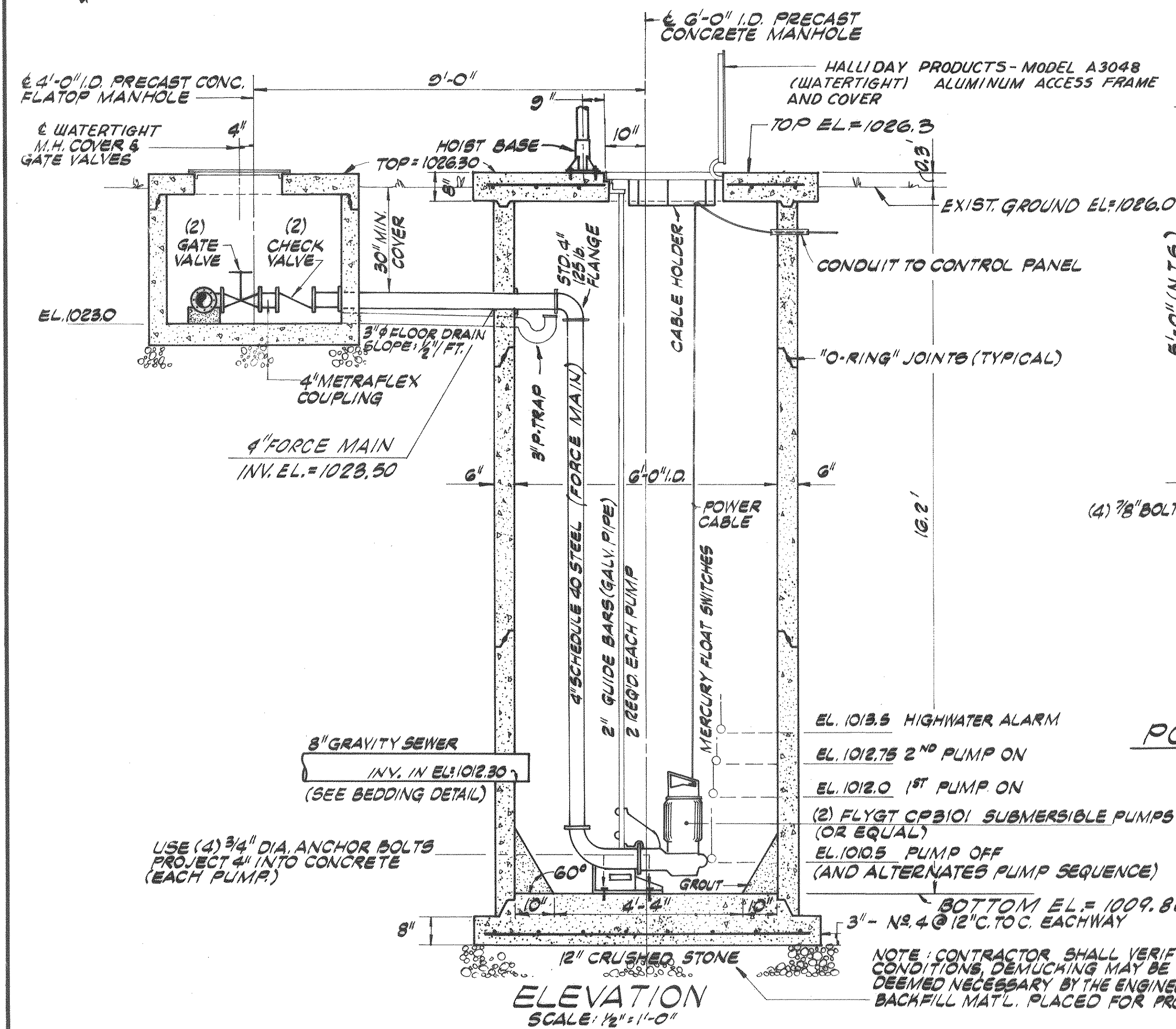
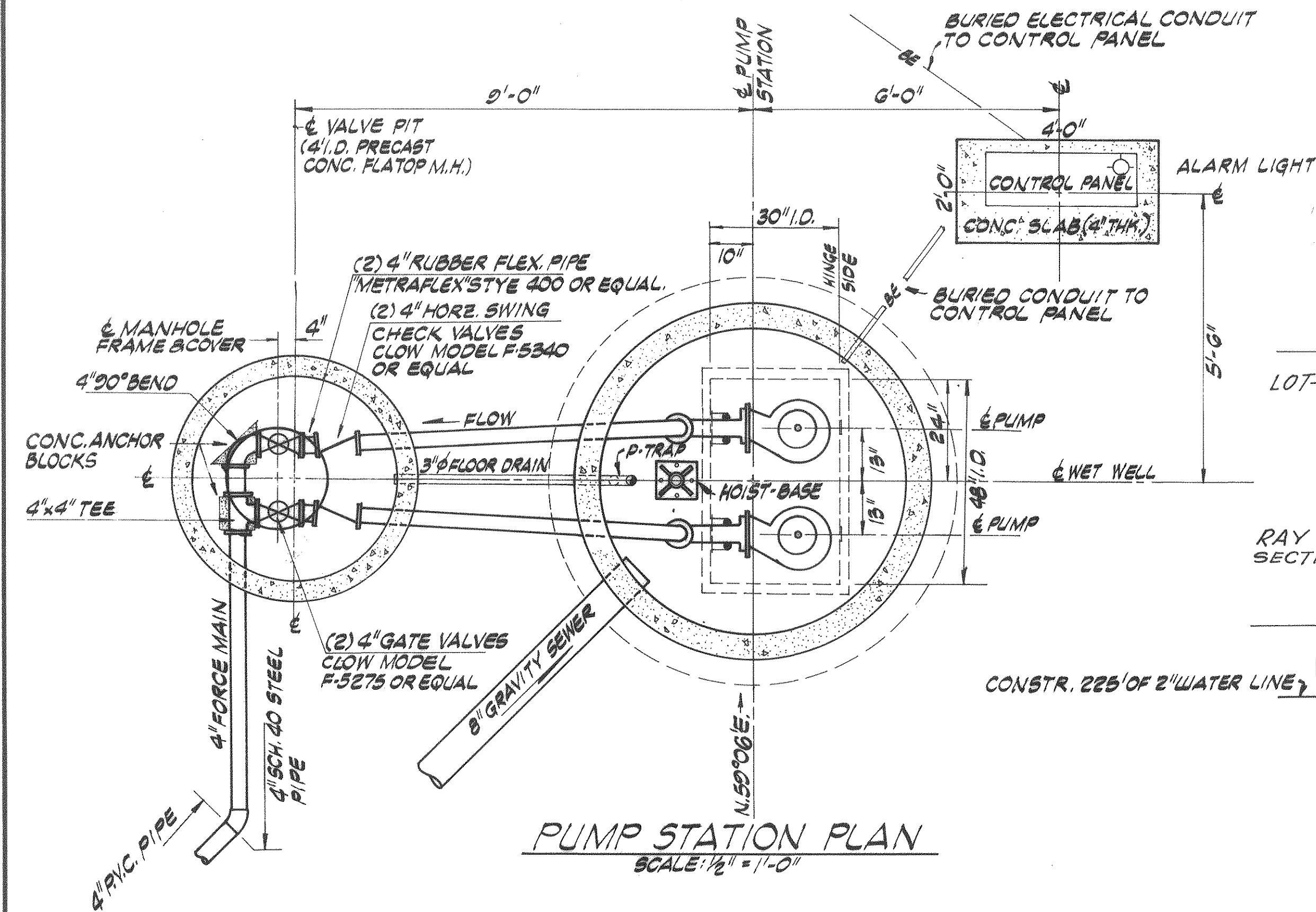




**STANDARD DETAILS
FOR
CHAIN LINK FENCE**
NOT TO SCALE

GATE DETAIL





- A. DESIGN CRITERIA

 1. Population served = 103
 2. Unit rate of flow = 100 gpcd
 3. Required pumping rate = 17.88 gpm
 4. Minimum rate of flow for 2 fps scour velocity = 80 gpm
 5. Design flow rate = 80 gpm

B. DETERMINATION OF HEAD

 1. Elevation of top of discharge pipe = 1033.5
 2. Low water shut off elevation = 1010.5
 3. Static head = 23.0 ft.
 4. Coefficient of roughness = 100
 5. Design pipe size = 4 in.
 6. Friction loss per 100 ft. of pipe = 0.8 ft.
 7. Length of force main to top hill = 2015 ft.

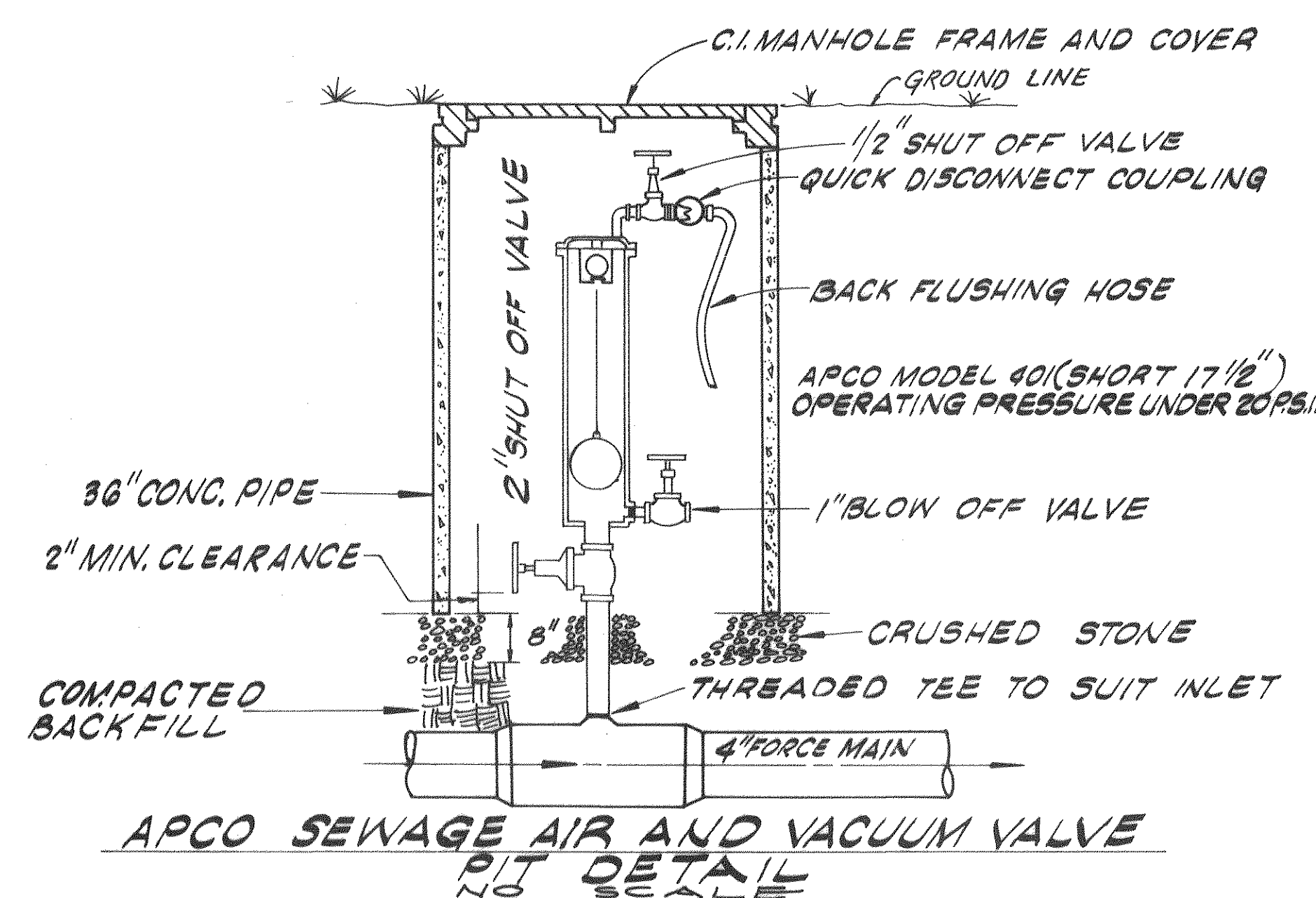
C. PUMP SELECTION

 1. Manufacturer: Flygt Corporation or equal
 2. Model Number: CP 3101
 3. Horsepower: 4 HP
 4. Speed: 1750 RPM
 5. Electrical Requirements: Single Phase
 6. Impeller number: 432
 7. Impeller diameter: 4 in.
 8. Actual pumping conditions: 90 GPM at 48 feet TDH

HORIZONTAL AND VERTICAL CONTROL INDEX					
SHEET NO.	POINT NO.	COORDINATES		ELEVATION	DESCRIPTION OF CONTROL POINT
		N.	E.		
3	2	10572.937	9727.279	1022.078	2" Sq. Steel Plate
3	3	11225.571	9349.809	1026.571	2" Sq. Steel Plate
2	4	12029.051	8821.357	1025.464	2" Sq. Steel Plate
2	5	12806.597	8401.042	1035.853	2" Sq. Steel Plate
3	TC	10671.674	9605.468	1022.753	8" Spike
2	JP2	12442.738	8567.047	1027.069	8" Spike
3	JP1	10874.591	9565.633	1024.569	Masonry Nail
2	SP1	12354.867	9374.109	1035.783	Masonry Nail

NOTE: ▲⁴ DENOTES ACTUAL LOCATION OF CONTROL POINTS ON PLAN SHEETS.

MANHOLE COORDINATE INDEX			
SHEET NO.	M.H. NO.	COORDINATES	
		N	E
2	1	12,706.000	8,422.000
2	2	12,627.774	8,627.417
2	3	12,019.548	8,832.893
2	4	11,745.825	8,996.527
3	5	11,472.103	9,160.472
3	6	11,199.238	9,323.778
3	7	10,856.012	9,529.195
3	8	10,596.204	9,679.195
3	9	10,244.196	9,847.094
2	3A	11,865.186	8,575.414
2	3B	12,058.550	8,549.667
2	3C	12,251.615	8,344.320
2	3D	12,423.228	8,241.612
3	6A	11,206.661	9,355.993
3	6B	11,506.984	9,176.193



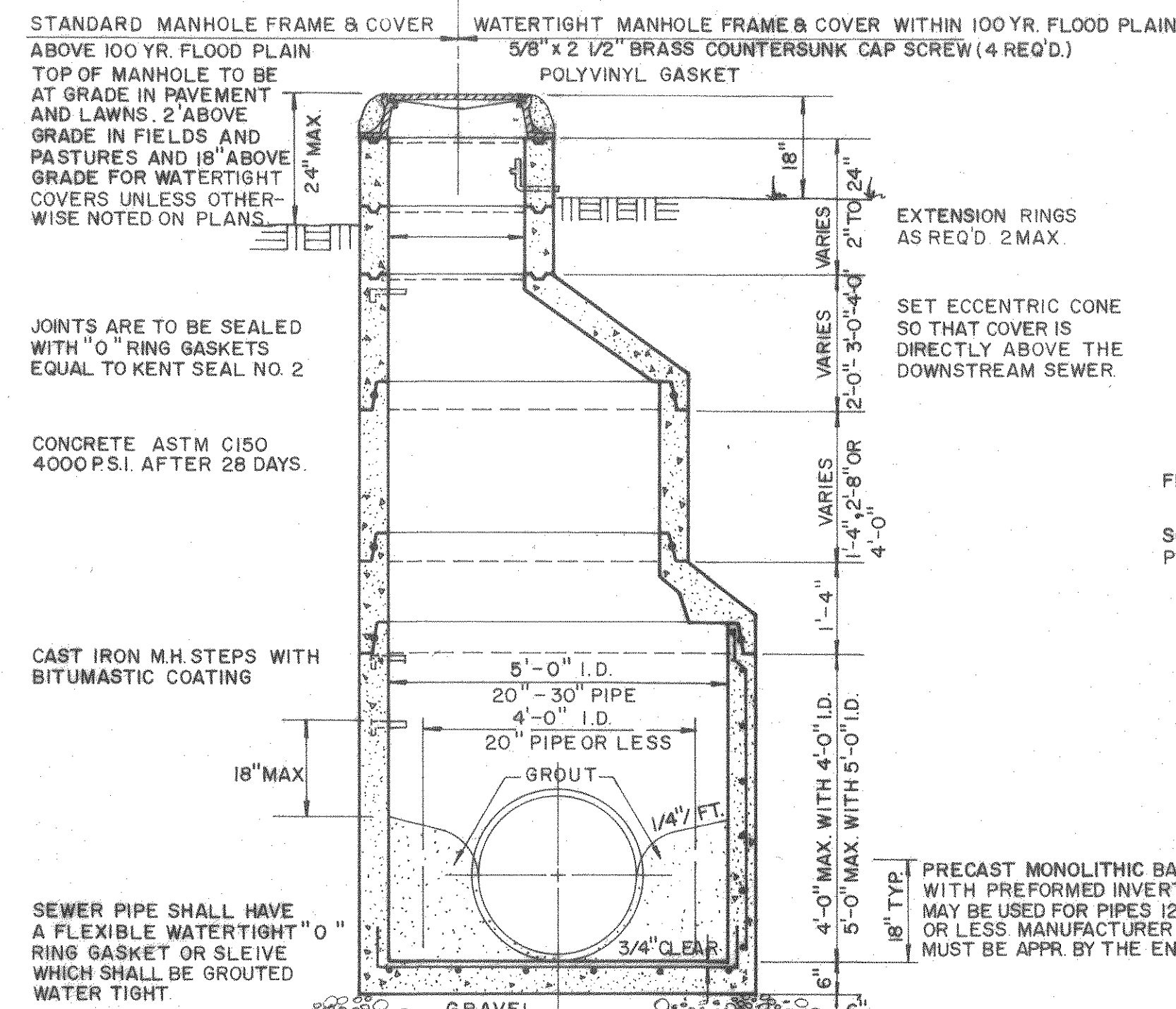
Designed:	JMD CEP
Drafted:	CEP RHG
Checked:	DJR
Approved:	DJR

Clean Water Engineers, Inc.

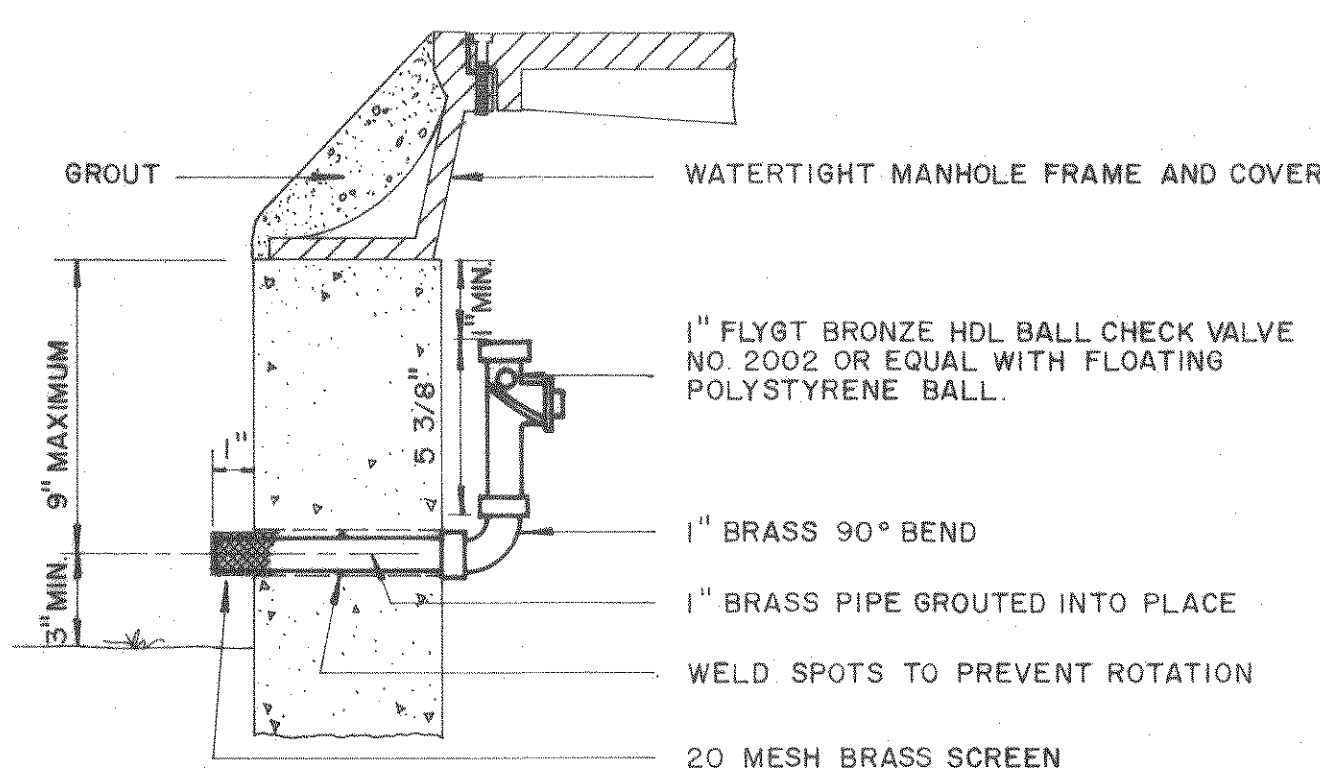
Fincastle, Virginia

WASTEWATER COLLECTION SYSTEM-COMMUNITY OF IRON GATE
FOR
BOTETOURT COUNTY SERVICE AUTHORITY
BOTETOURT COUNTY, VIRGINIA

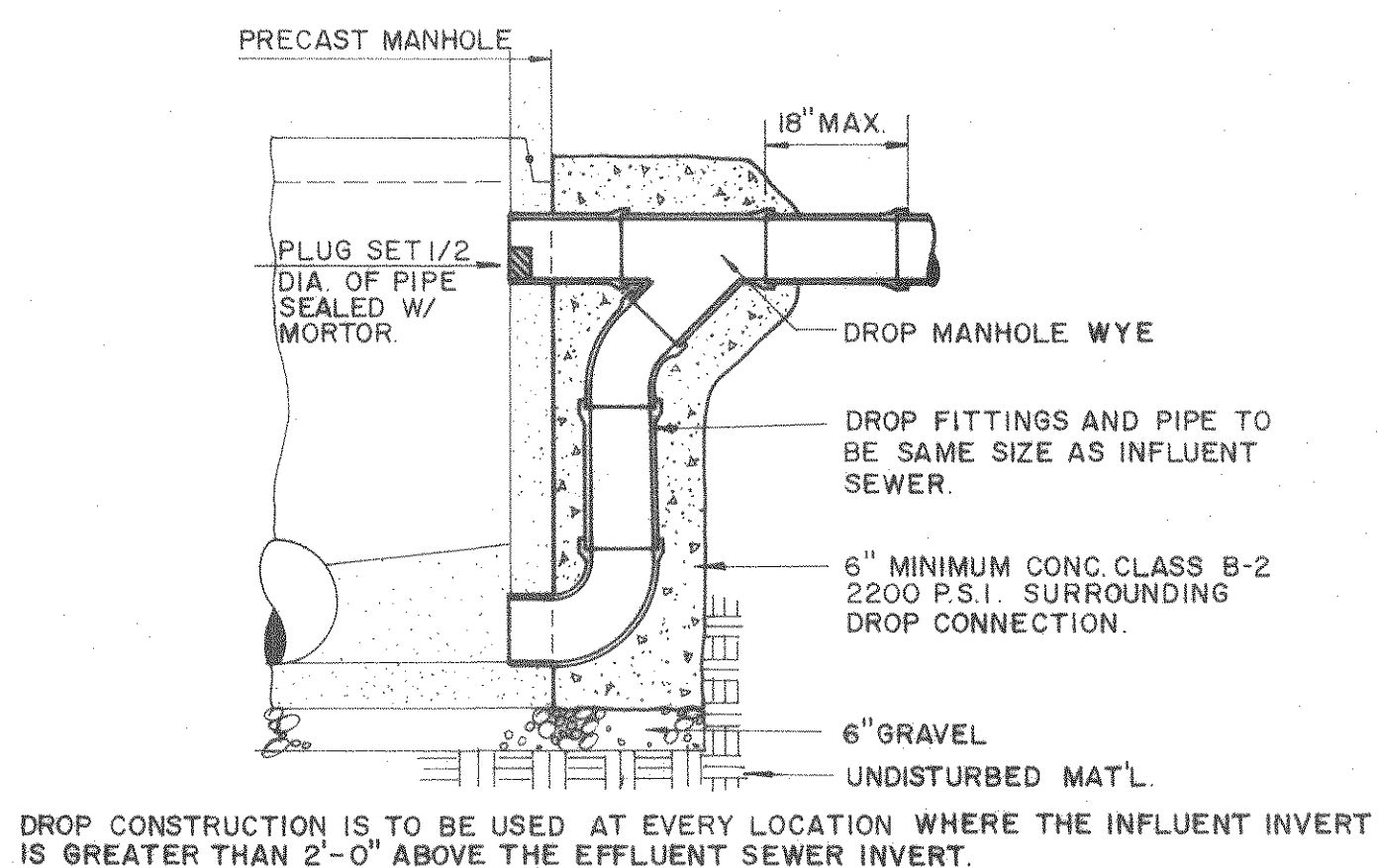
Sheet: 5 of 7
Scale: AS SHOWN
Date: JULY 13, 1981
Project: 8107



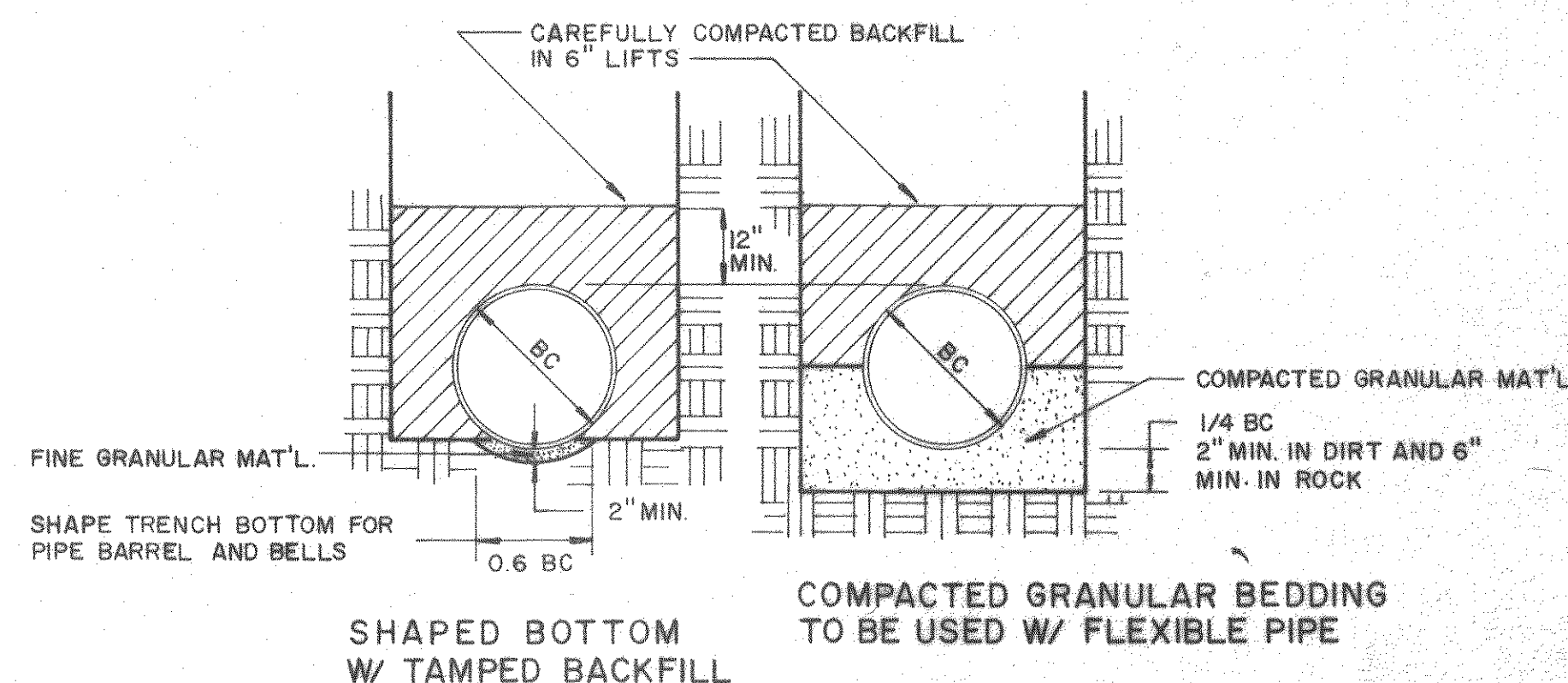
PRECAST ECCENTRIC MANHOLE



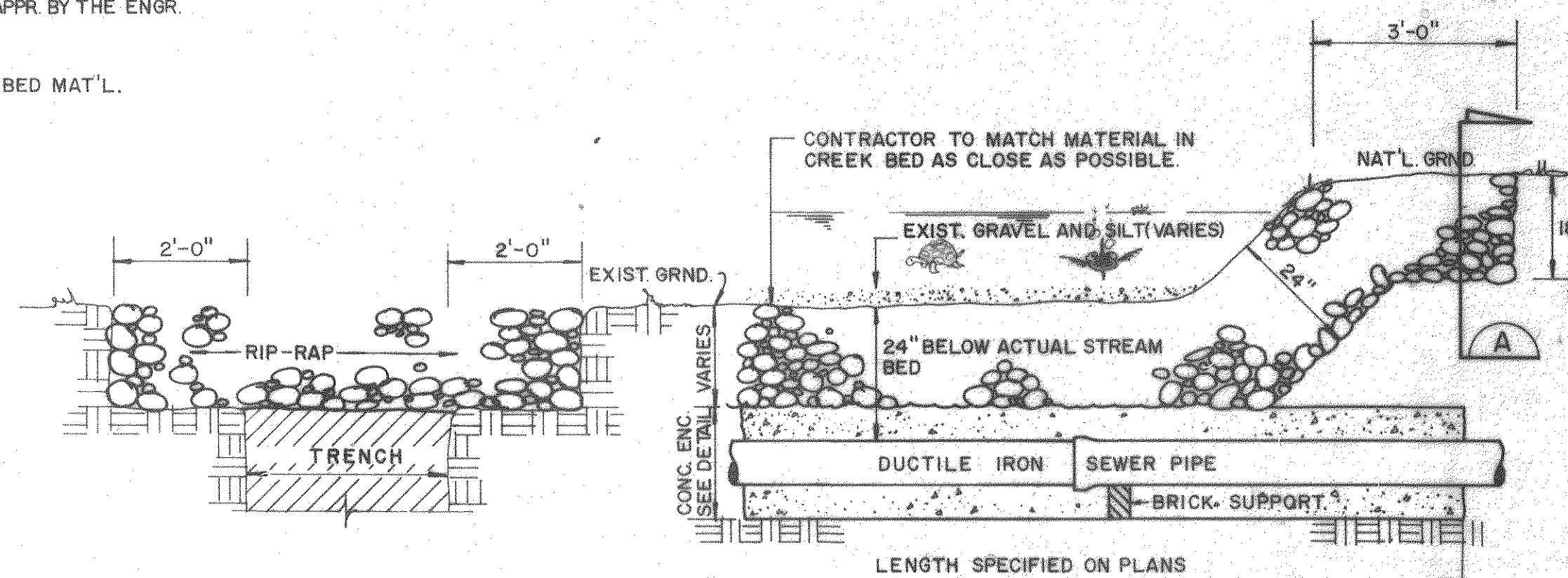
WATERTIGHT MANHOLE VENT DETAIL



DROP CONSTRUCTION AT STANDARD MANHOLE

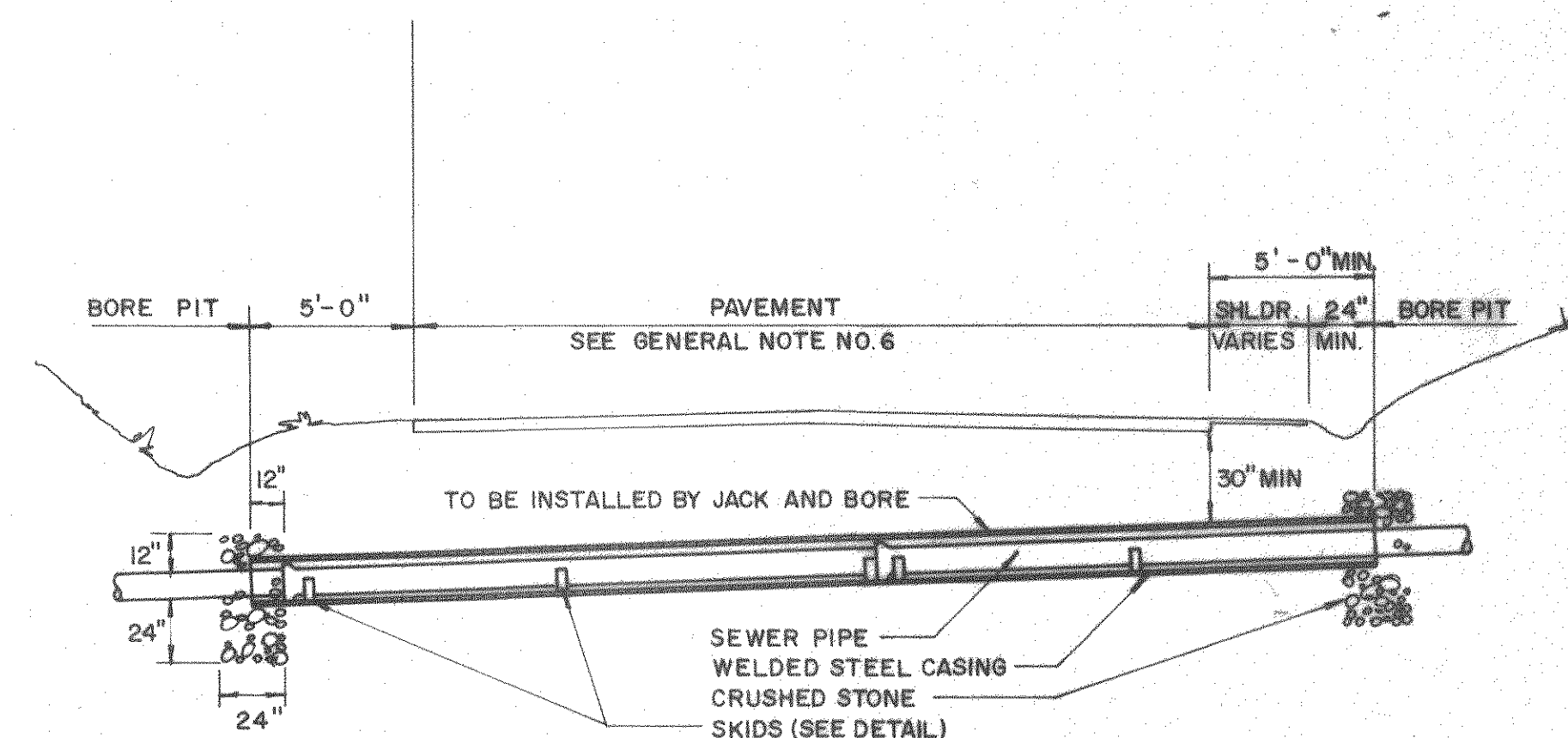


BEDDING DETAIL
FIRST CLASS — CLASS B BEDDING

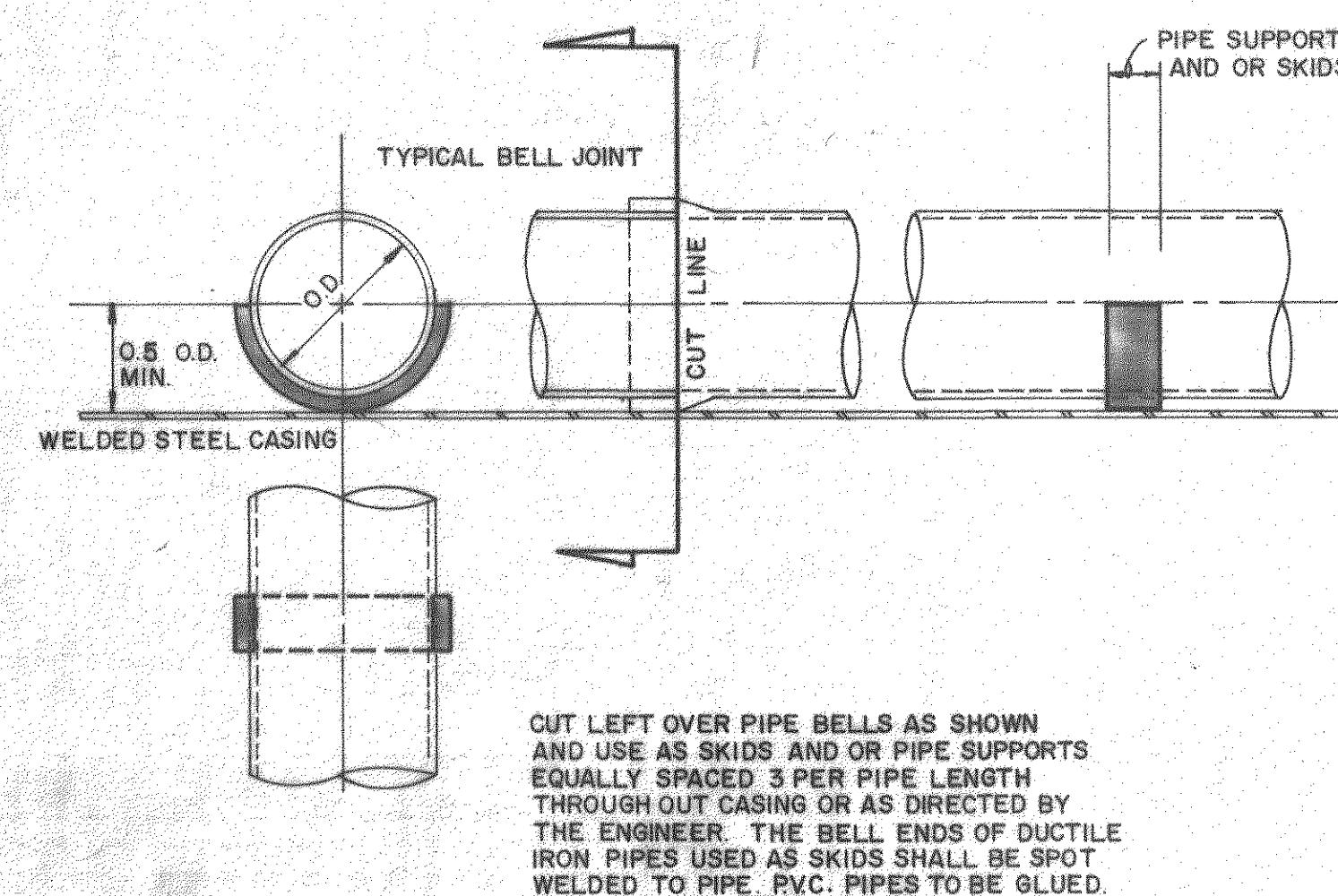


NOTE: AFTER CONSTR. OF EACH CREEK CROSSING THE LINES SHALL BE TESTED FOR INFILTRATION IN ACCORDANCE WITH THE SPECIFICATIONS WITH ZERO INFILTRATION. SHOULD INFILTRATION BE PRESENT, THE CONTRACTOR SHALL RECONSTRUCT THE CROSSING UNTIL ZERO INFILTRATION IS OBTAINED.

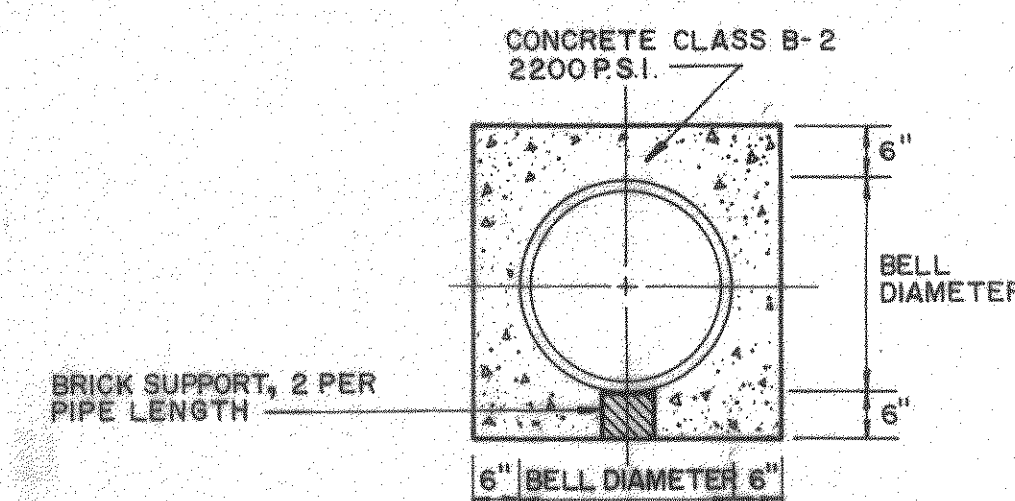
TYPICAL CREEK CROSSING AND BANK PROTECTION



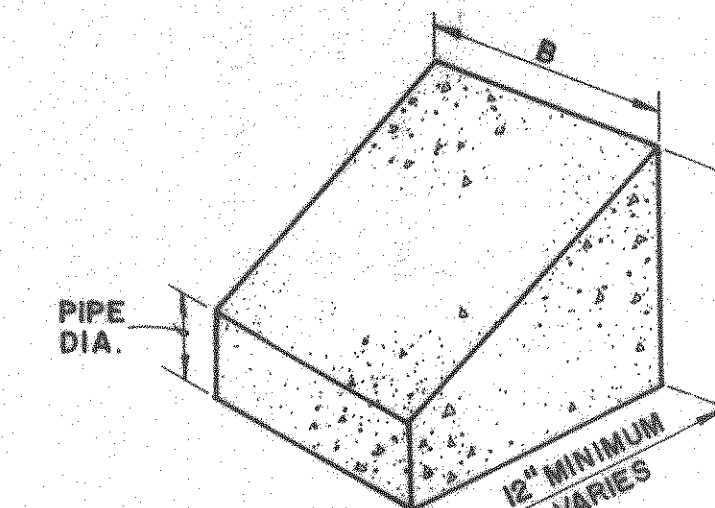
PRIMARY AND SECONDARY ROAD CROSSING



SKID DETAIL

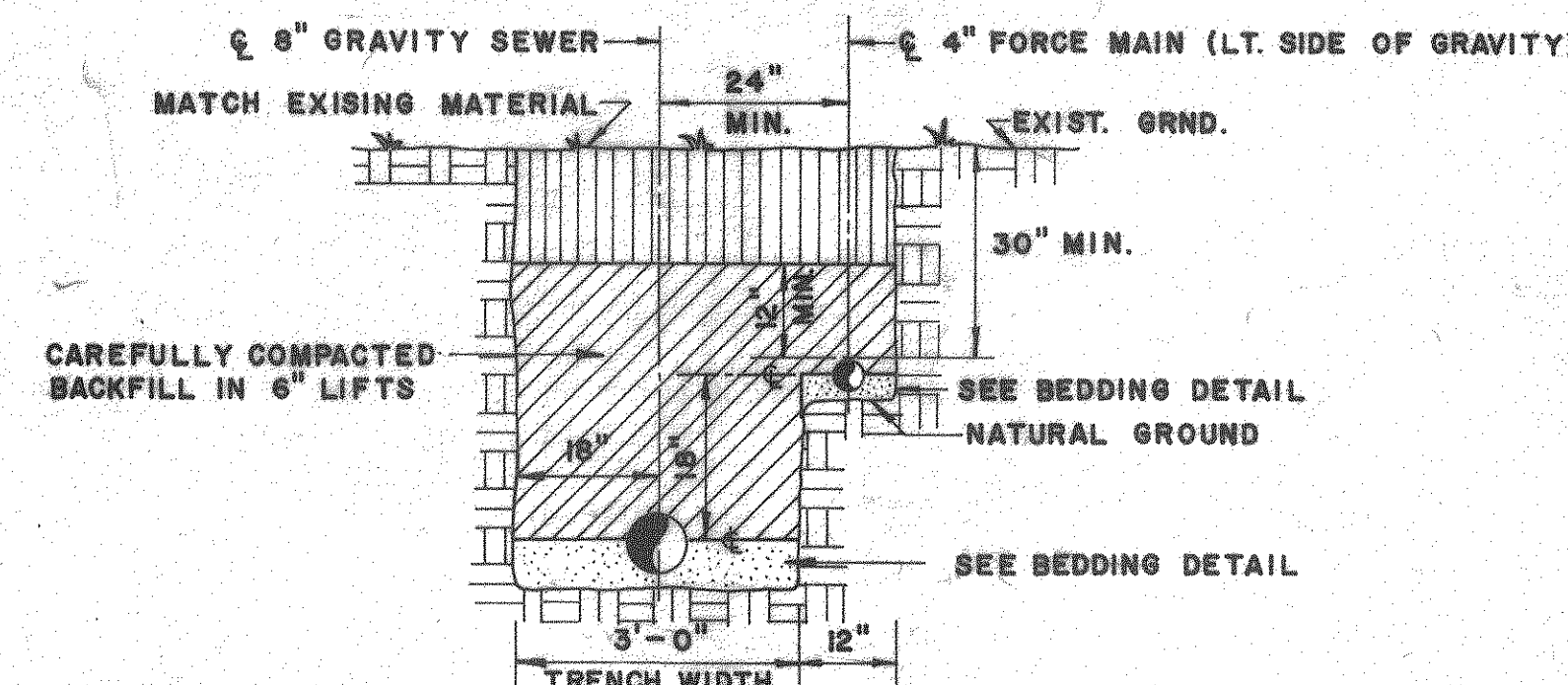


CONCRETE ENCASED PIPE

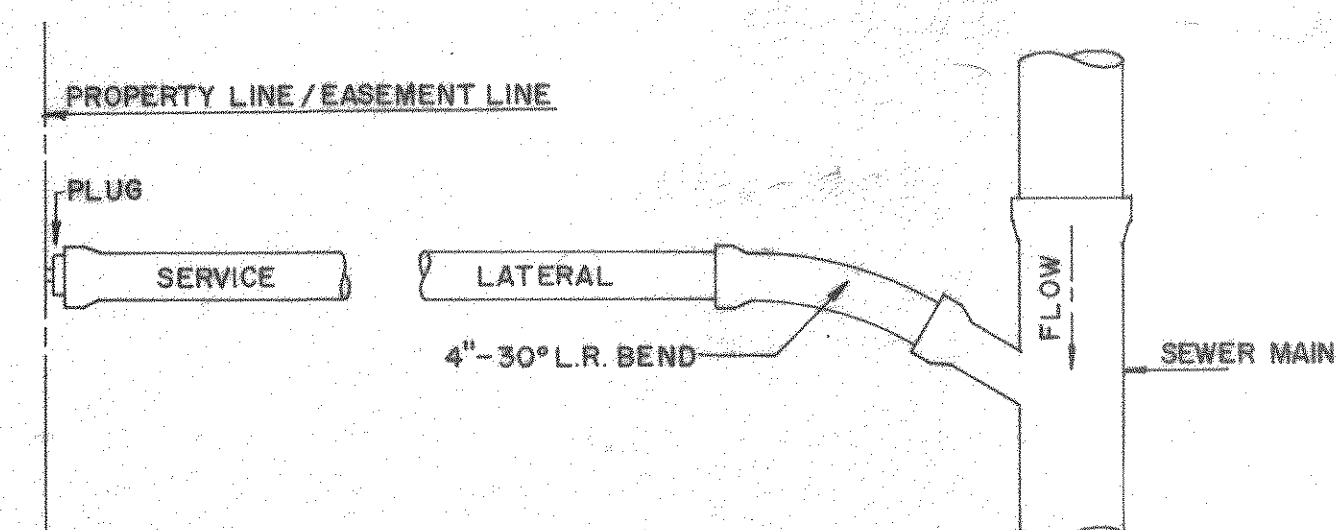


THRUST BLOCK SIZES

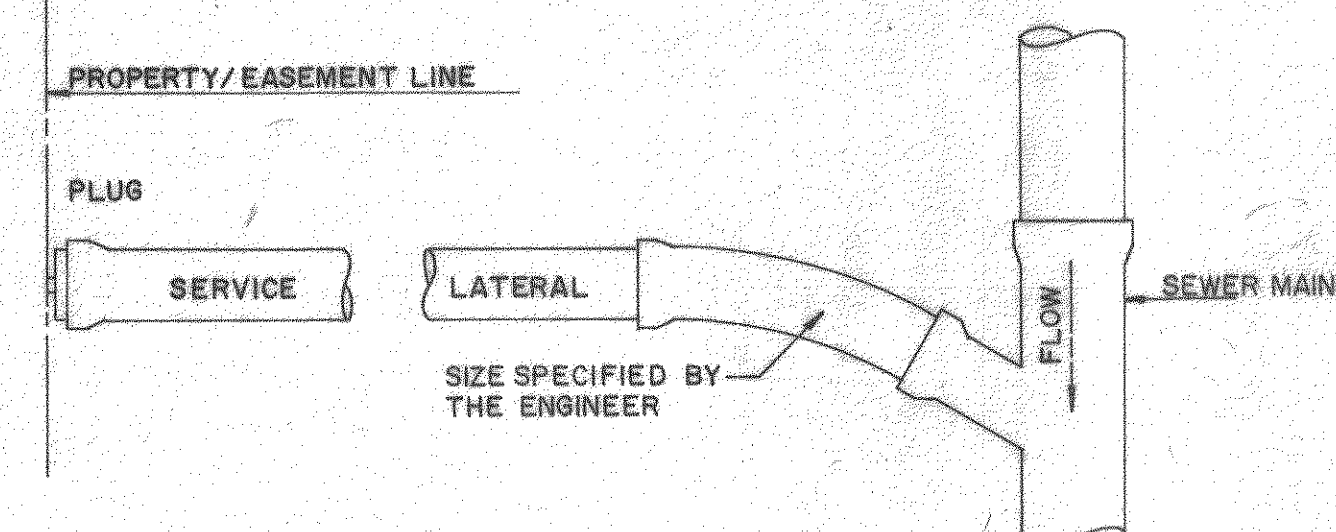
PIPE DIAMETER	TEE, CROSS, 90°		45° WYE		22 1/2°	
	A	B	A	B	A	B
4"	12"	12"	12"	12"	12"	12"
6"	12"	12"	12"	12"	12"	12"
8"	15"	24"	15"	18"	"	"
10"	18"	"	18"	"	"	18"
12"	24"	30"	"	24"	18"	"



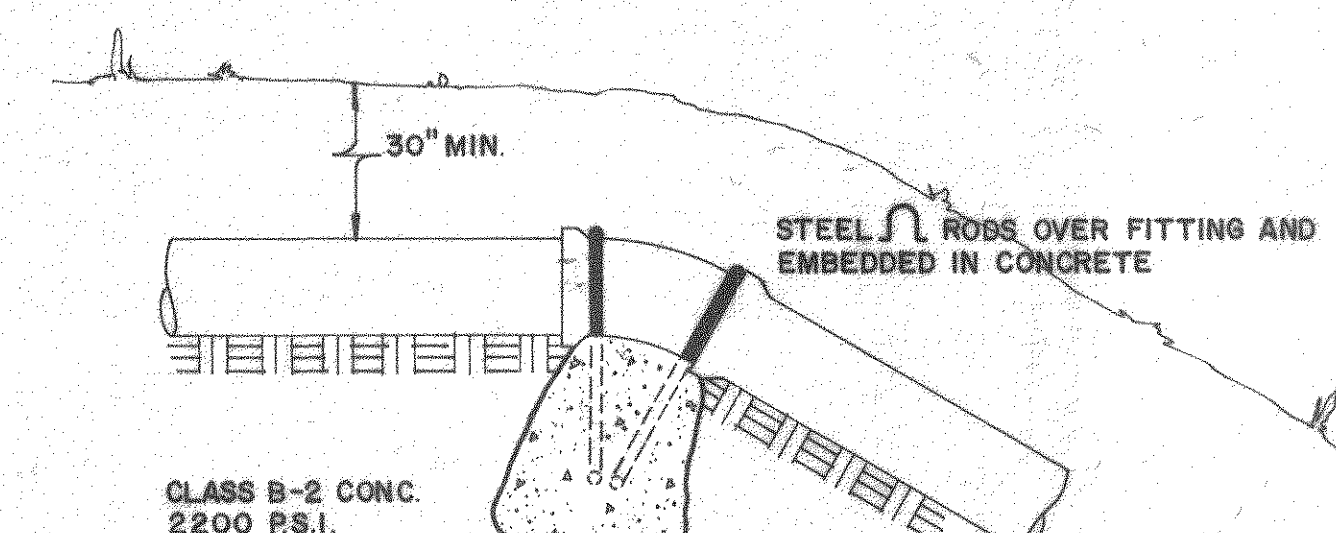
COMBINED GRAVITY/FORCE MAIN TRENCH



RESIDENTIAL SERVICE CONNECTION



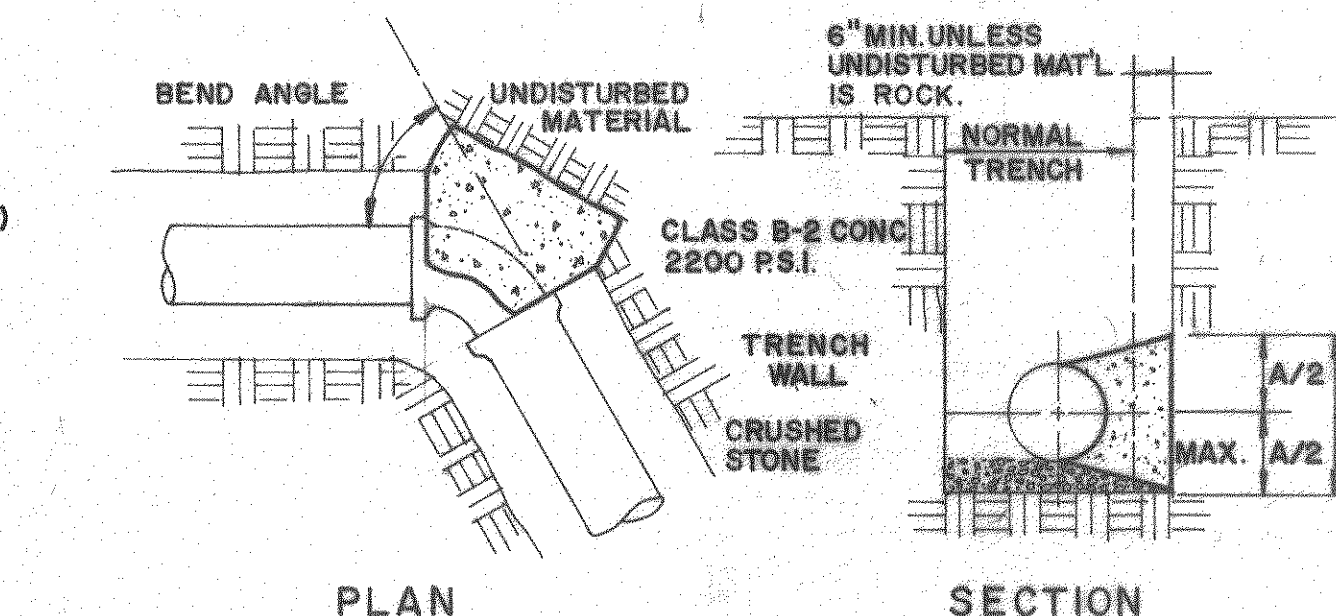
COMMERCIAL SERVICE CONNECTION



PROFILE				
FITTING SIZE	ROD SIZE	NO. OF RODS	EMBEDMENT	
4"-6"-8"	No. 4	2	24"	
10"-12"	6	"		
FITTING SIZE	VOLUME OF THRUST BLOCK IN CUBIC YARDS			
	90°	45°	22 1/2°	11 1/4°
4	0.25	0.15	0.1	0.1
6	0.5	0.35	0.25	0.2
8	0.9	0.65	0.5	0.35
10	1.4	1.0	0.8	0.55
12	2.0	1.4	1.0	0.7

- KEEP CONC. CLEAR OF JOINT AND JOINT ACCESSORIES.
- THRUST BLOCKS FOR VERTICAL UP BENDS SHALL BE THE SAME VOLUME AS FOR HORIZONTAL BENDS.

VERTICAL THRUST BLOCK DETAIL



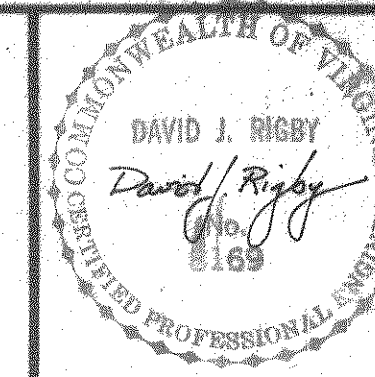
- NOTES:
- AREA OF THRUST BLOCK BASED ON 1500 P.S.F. LATERAL BEARING PRESSURE AND A TEST PRESSURE WITHIN PIPE OF 150 P.S.I., VELOCITY OF 10 F.P.S.
 - THRUST BLOCKS ARE REQUIRED AT ALL BENDS OF MORE THAN 10°.
 - BEARING SURFACE OF THRUST BLOCKS MUST BE NORMAL TO RESULTANT THRUST OF BEND AND BEAR ON SUITABLE UNDISTURBED MATERIAL.
 - KEEP CONCRETE CLEAR OF JOINT AND JOINT ACCESSORIES.

HORIZONTAL THRUST BLOCK DETAIL

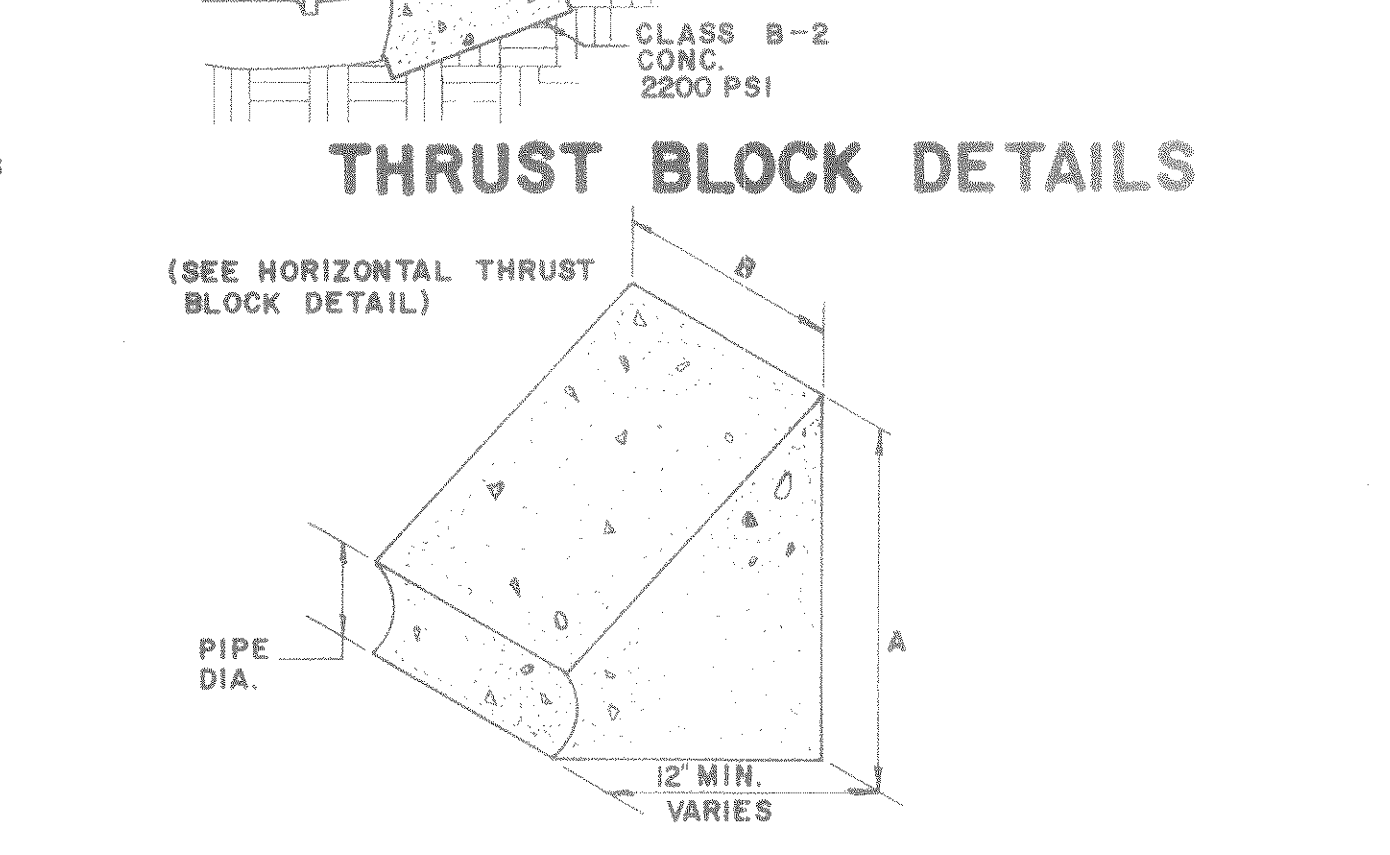
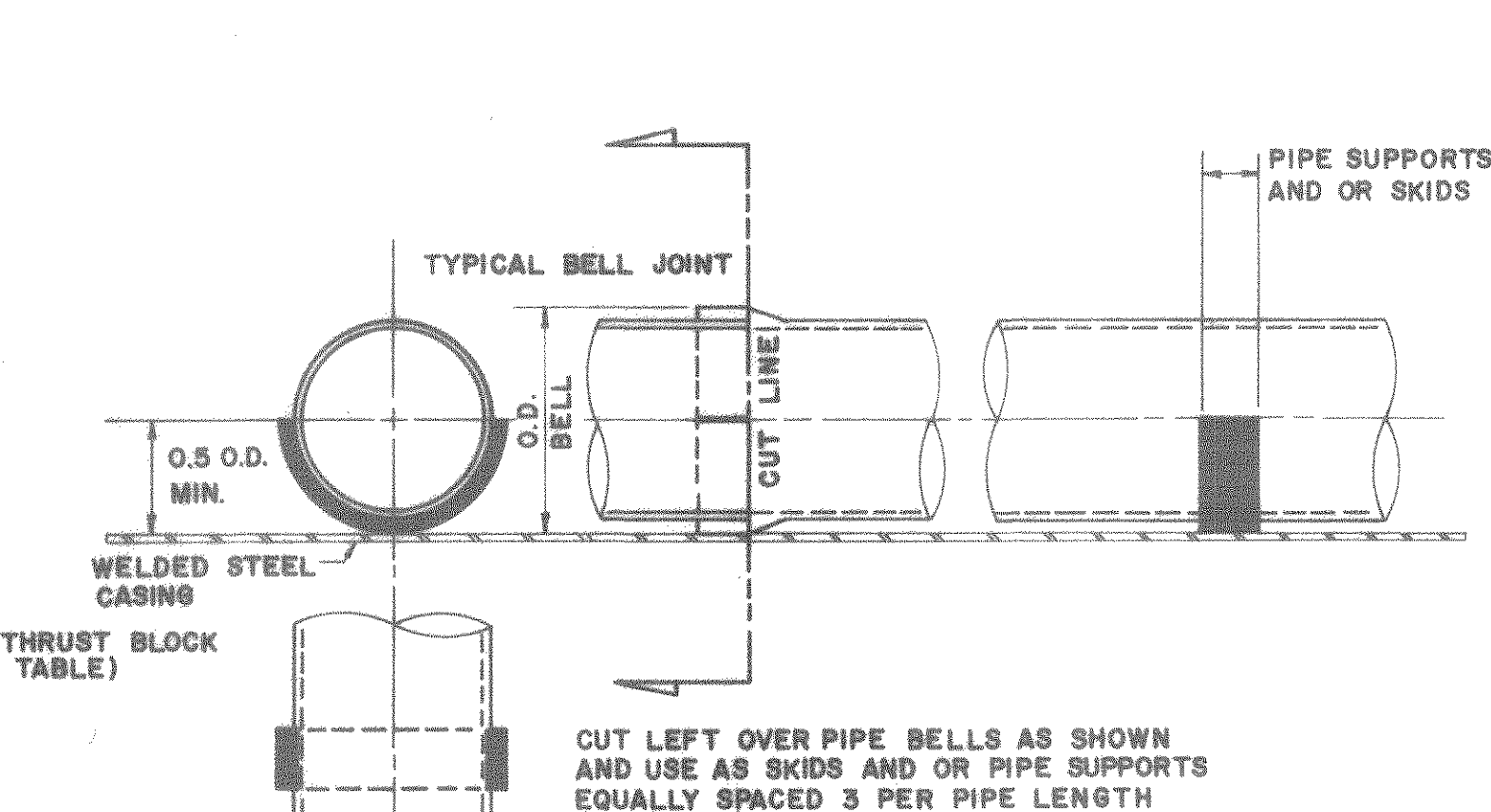
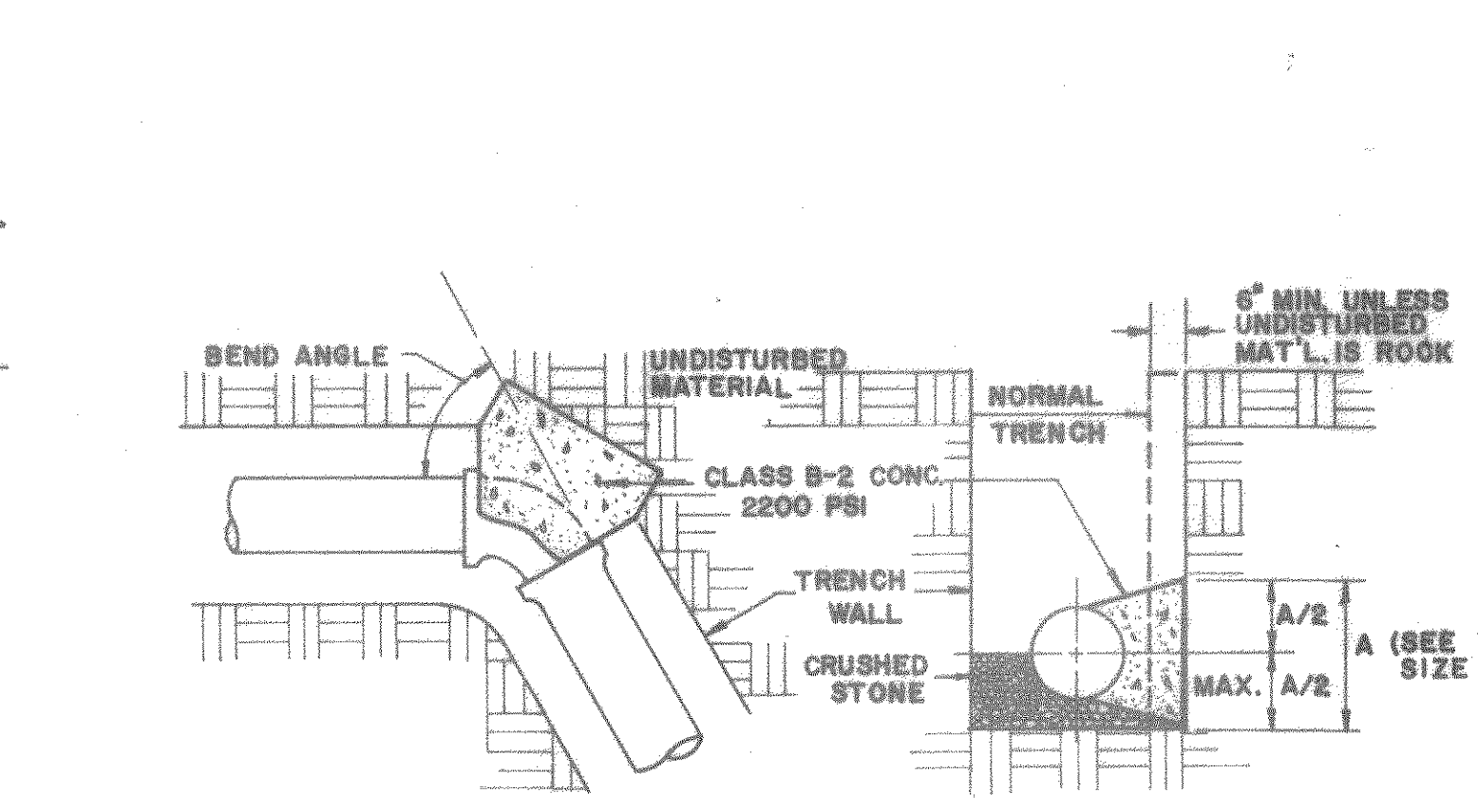
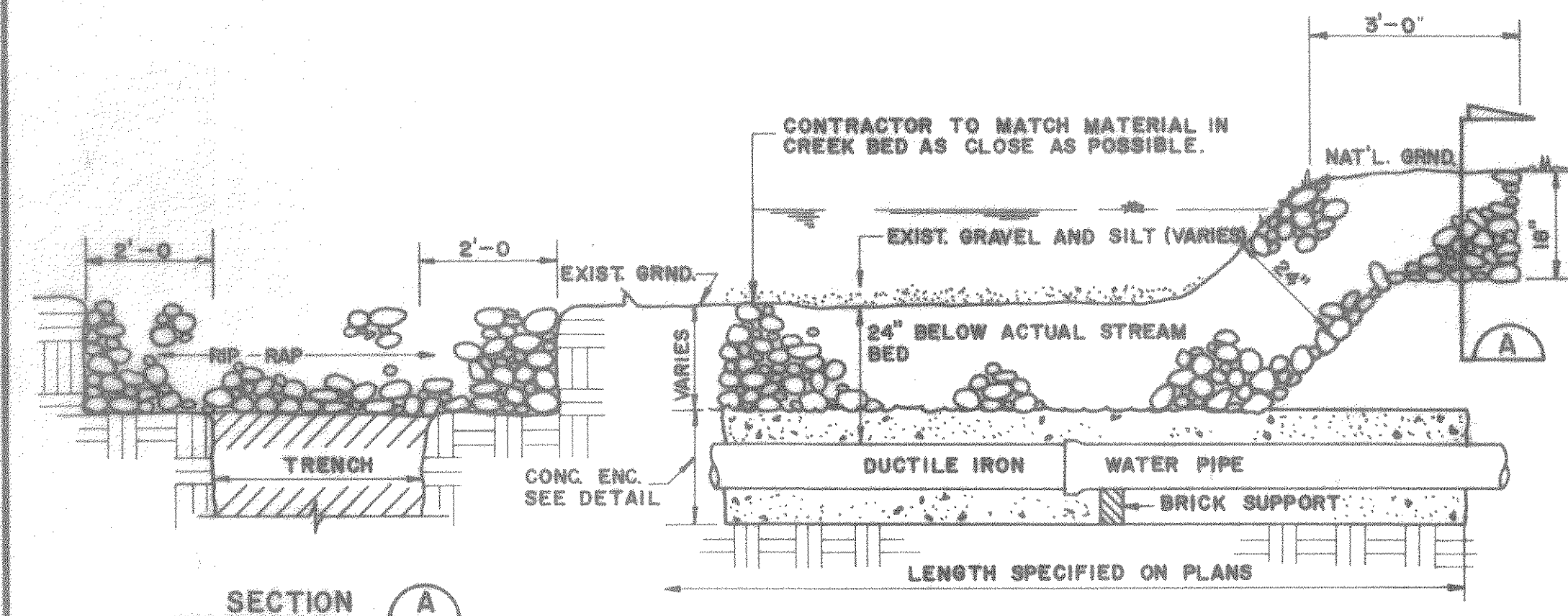
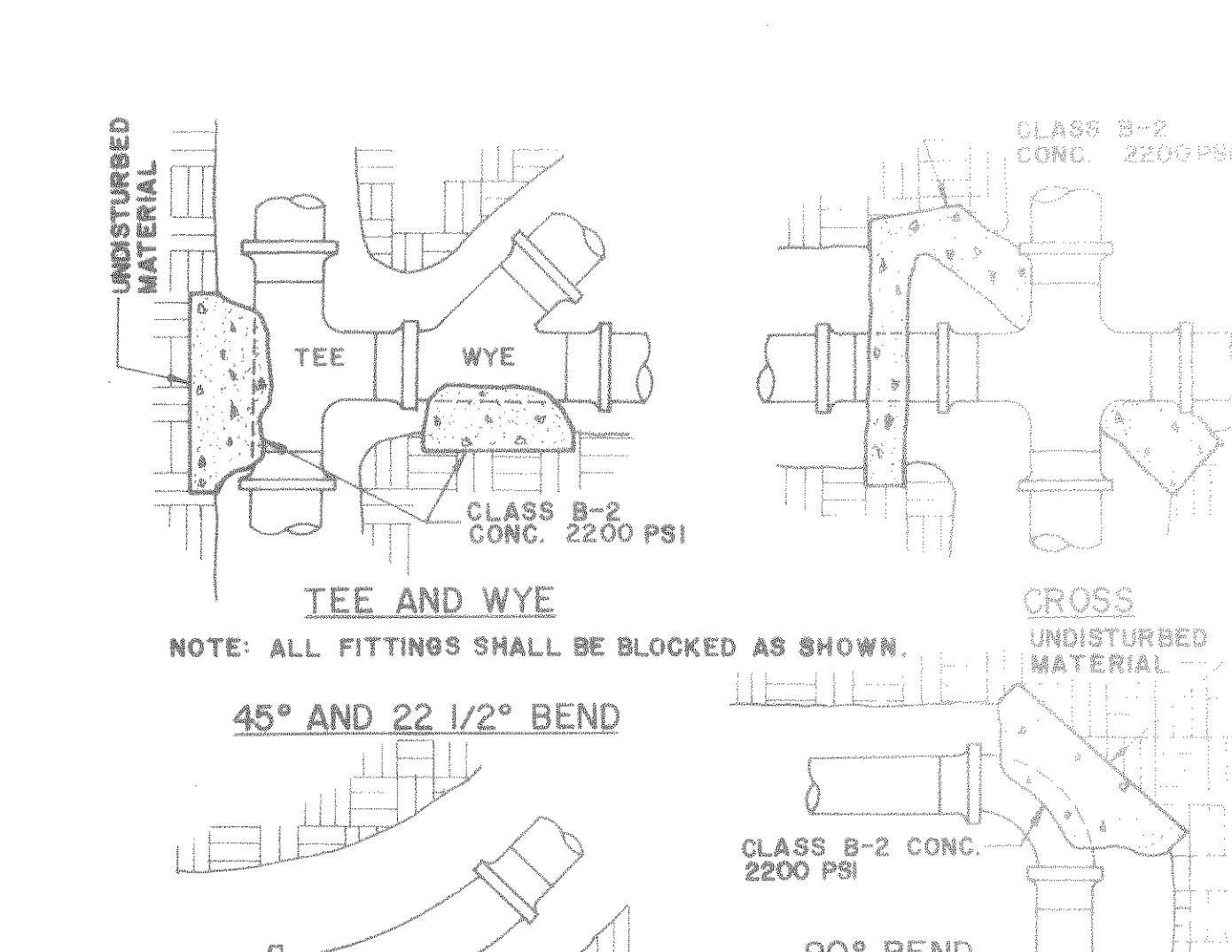
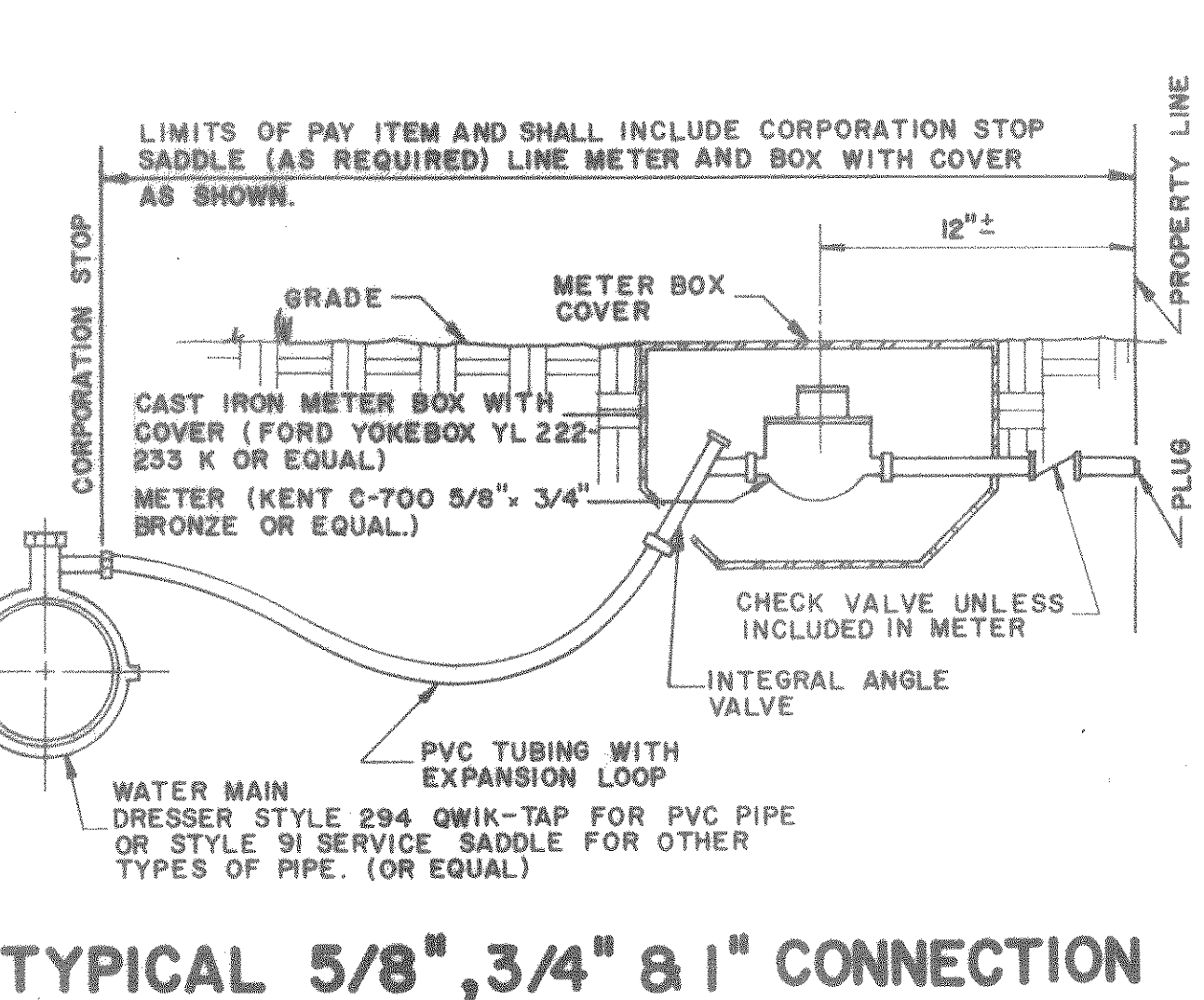
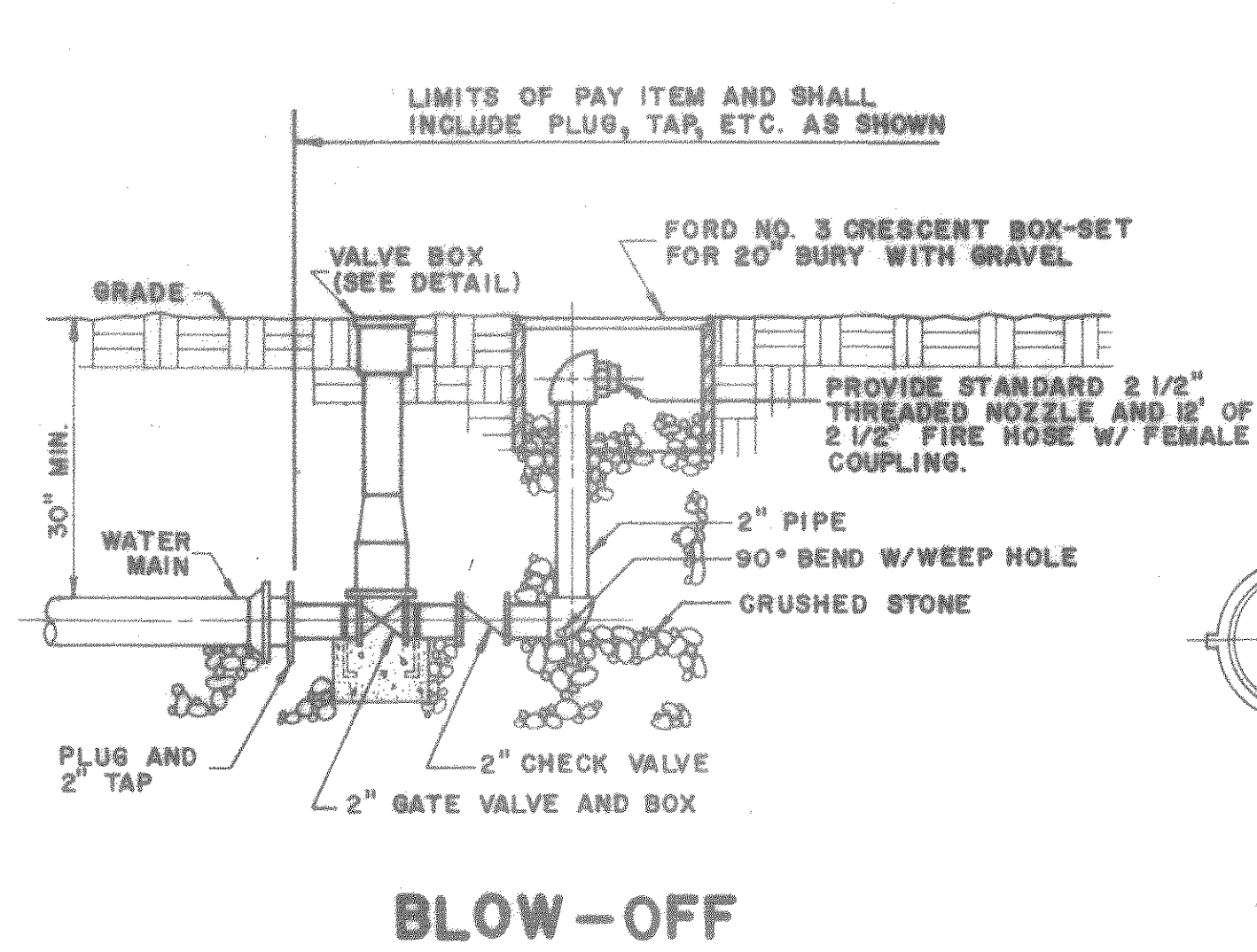
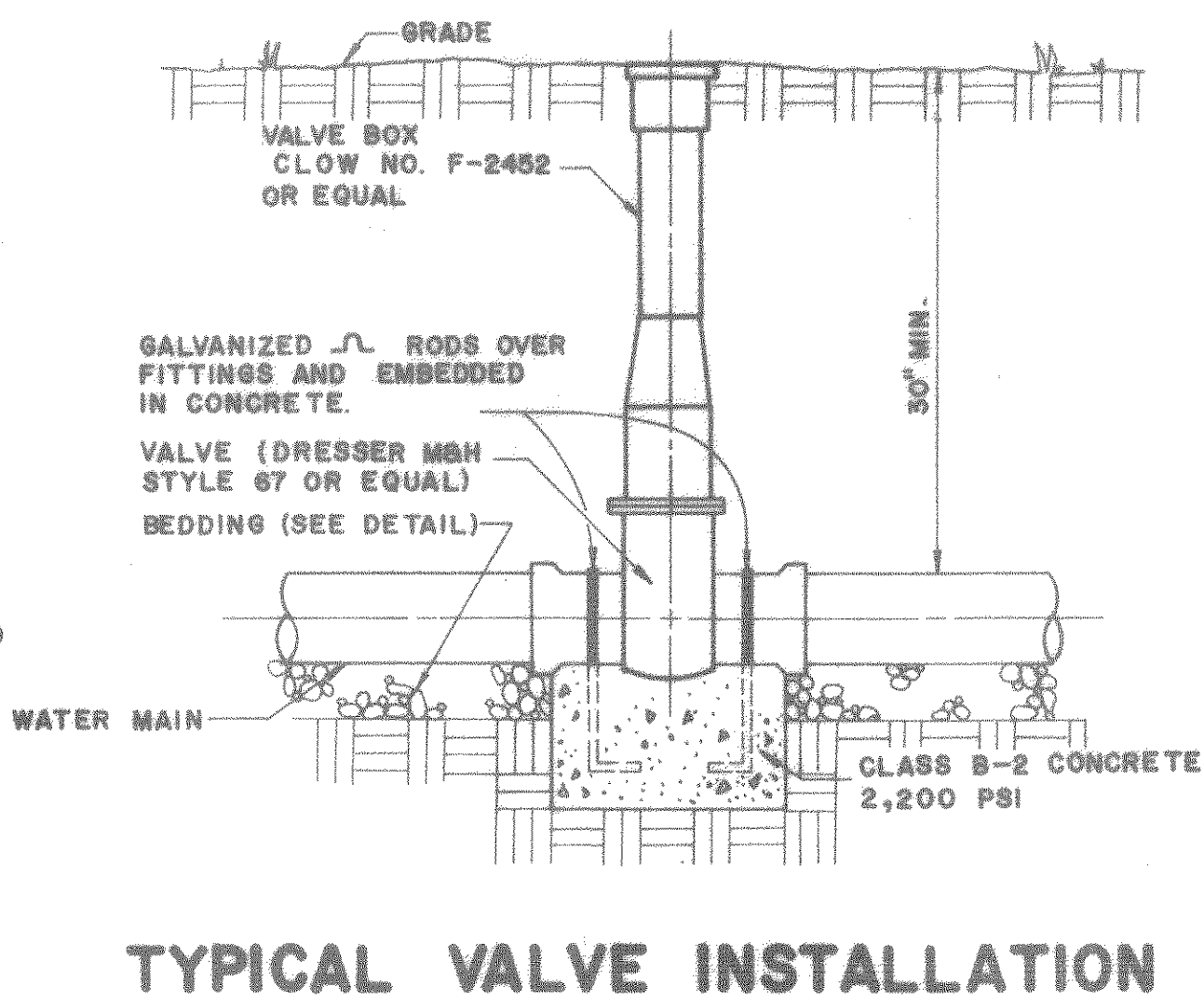
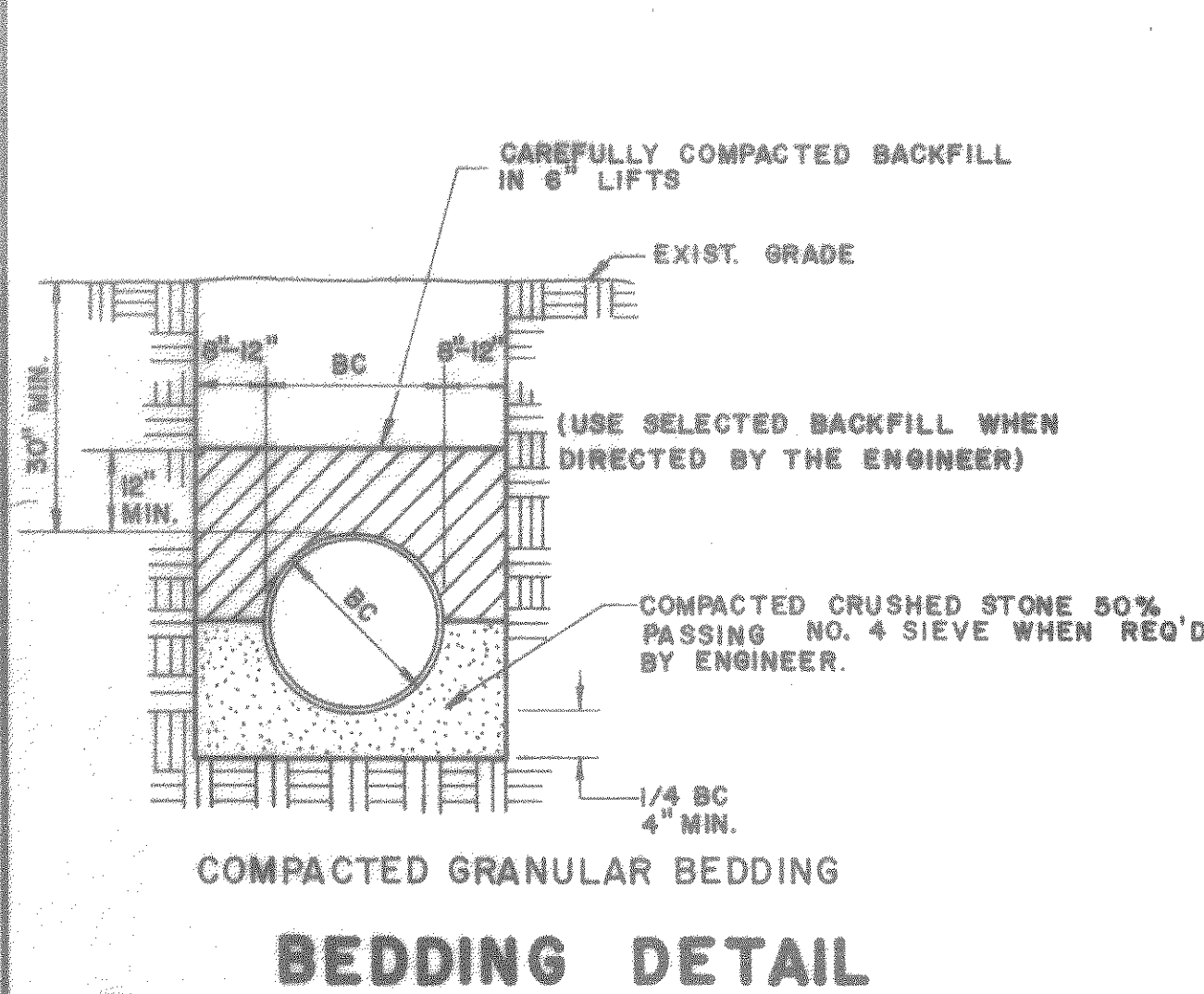
Designed: CEP
Drafted: CFA CEP
Checked: DJR
Approved: DJR

Clean Water Engineers, Inc.
Fincastle, Virginia

WASTEWATER COLLECTION SYSTEM—COMMUNITY OF IRON GATE
FOR
BOTETOURT COUNTY SERVICE AUTHORITY
BOTETOURT COUNTY, VIRGINIA



Sheet: 6 of 7
Scale: AS SHOWN
Date: JULY 13, 1981
Project: 8107



NOTE: AFTER CONSTR. OF EACH CREEK CROSSING THE LINES SHALL BE TESTED FOR INFILTRATION IN ACCORDANCE WITH THE SPECIFICATIONS WITH ZERO INFILTRATION. SHOULD INFILTRATION BE PRESENT, THE CONTRACTOR SHALL RECONSTRUCT THE CROSSING UNTIL ZERO FILTRATION IS OBTAINED.

NOTES:

1. AREA OF THRUST BLOCK BASED ON 1500 R.S.F. LATERAL BEARING PRESSURE AND A TEST PRESSURE WITHIN PIPE OF 150 PSI., VELOCITY OF 10 F.P.S.
2. THRUST BLOCKS ARE REQUIRED AT ALL BENDS OF MORE THAN 10°
3. BEARING SURFACE OF THRUST BLOCKS MUST BE NORMAL TO RESULTANT THRUST OF BEND AND BEAR ON SUITABLE UNDISTURBED MATERIAL.
4. KEEP CONCRETE CLEAR OF JOINT AND JOINT ACCESSORIES.

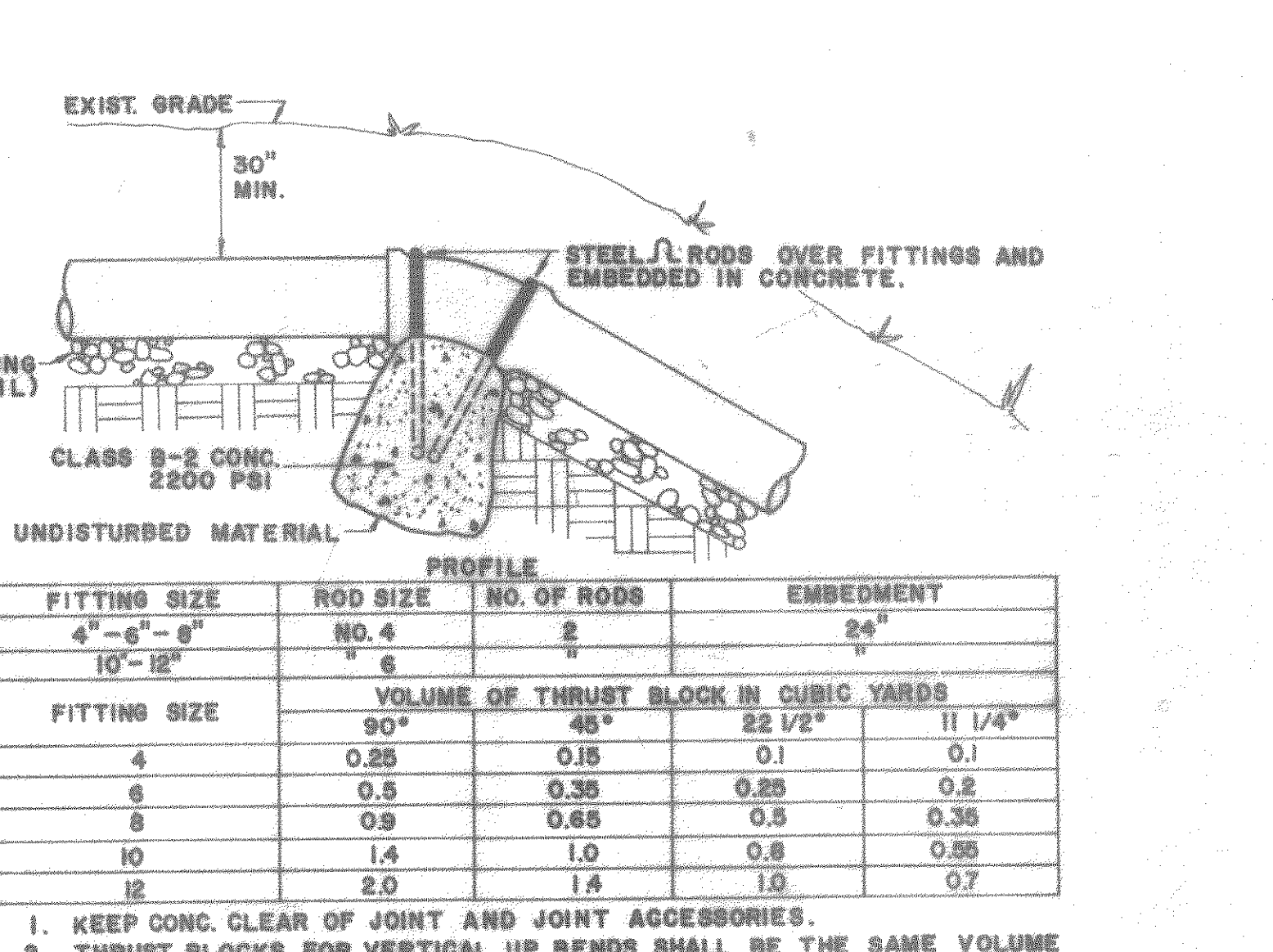
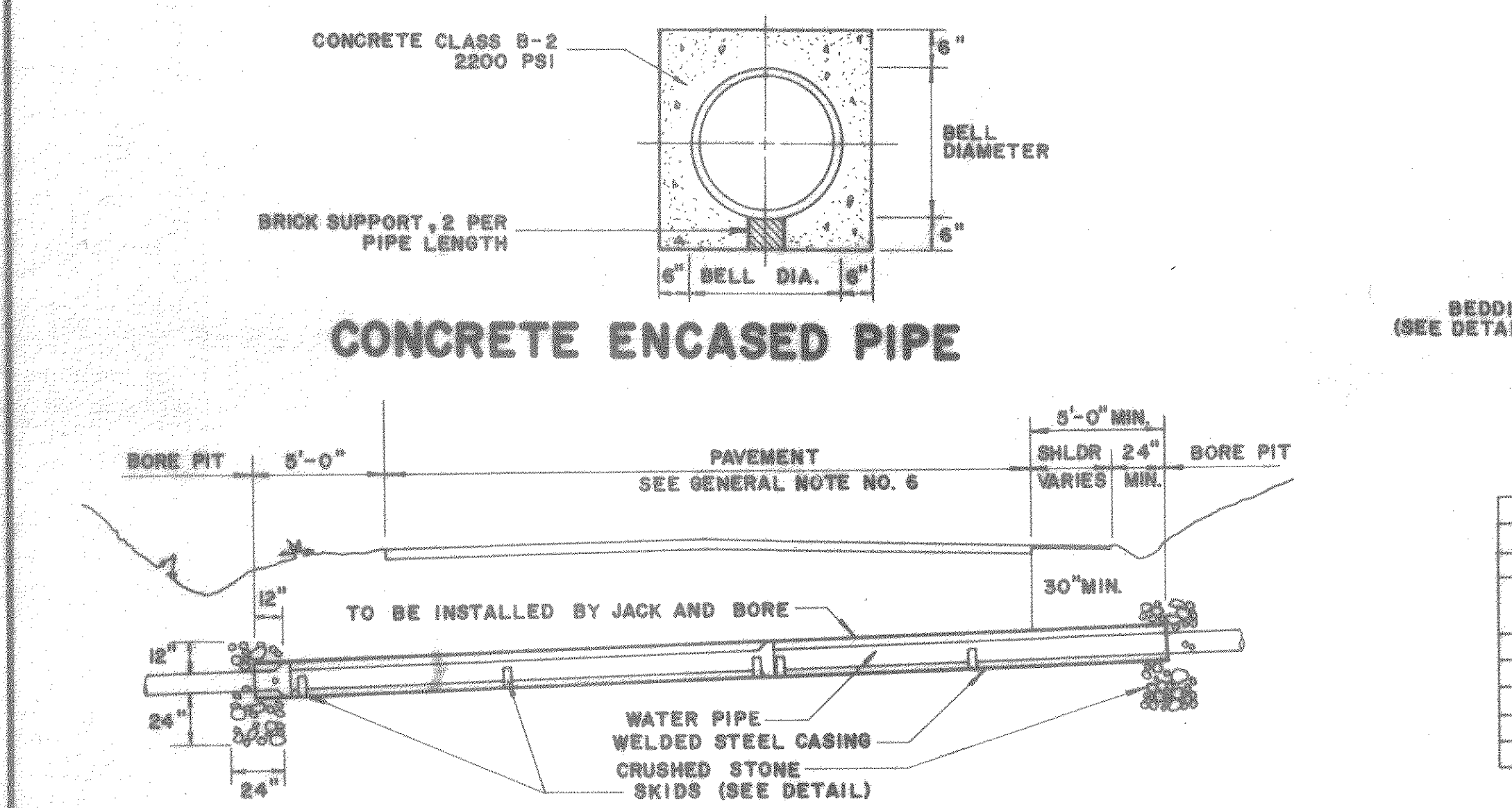
CUT LEFT OVER PIPE BELLS AS SHOWN AND USE AS SKIDS AND OR PIPE SUPPORTS EQUALLY SPACED 3 PER PIPE LENGTH THROUGHOUT CASING OR AS DIRECTED BY THE ENGINEER. THE BELL ENDS OF DUCTILE IRON PIPES USED AS SKIDS SHALL BE SPOT WELDED TO PIPE, P.V.C. PIPES TO BE GLUED.

TYPICAL CREEK CROSSING AND BANK PROTECTION

HORIZONTAL THRUST BLOCK DETAIL

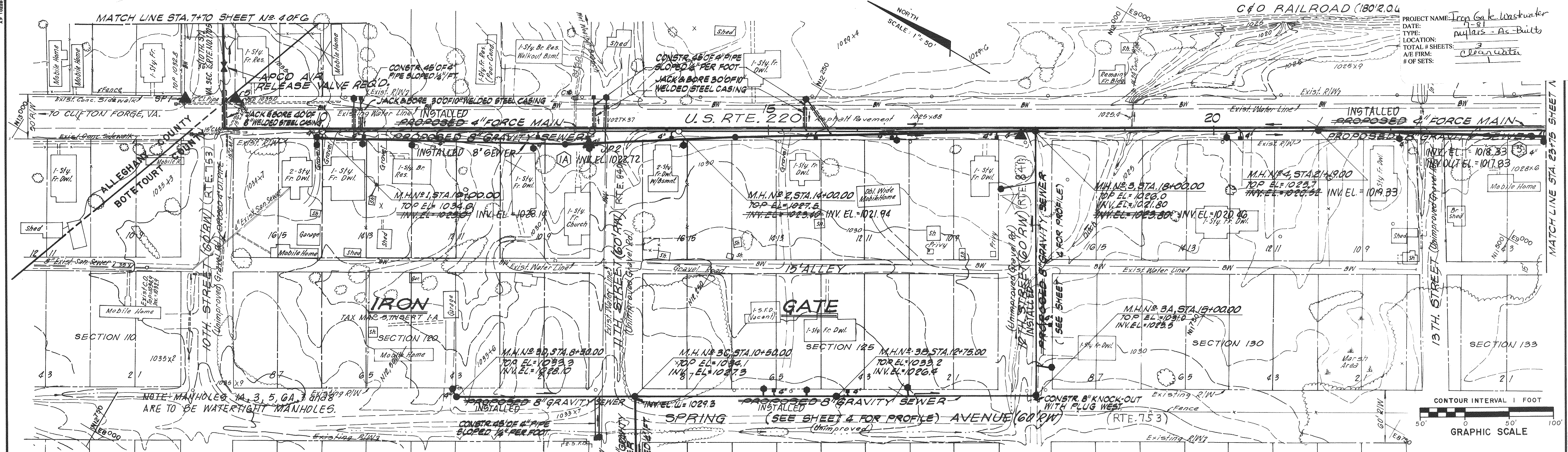
SKID DETAIL

THRUST BLOCK SIZES

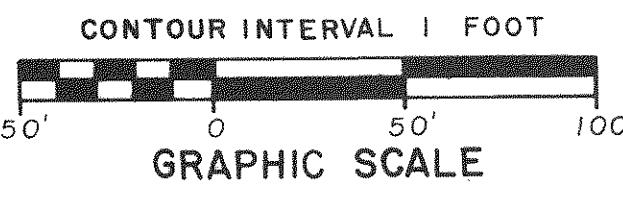


PRIMARY AND SECONDARY ROAD CROSSING

VERTICAL THRUST BLOCK DETAIL

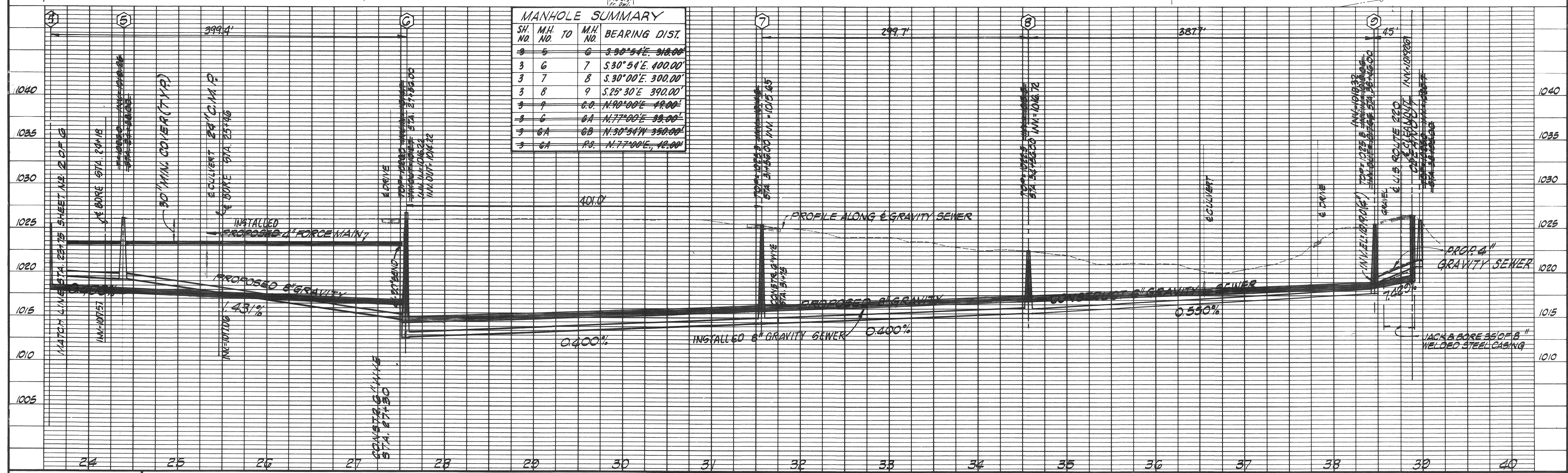
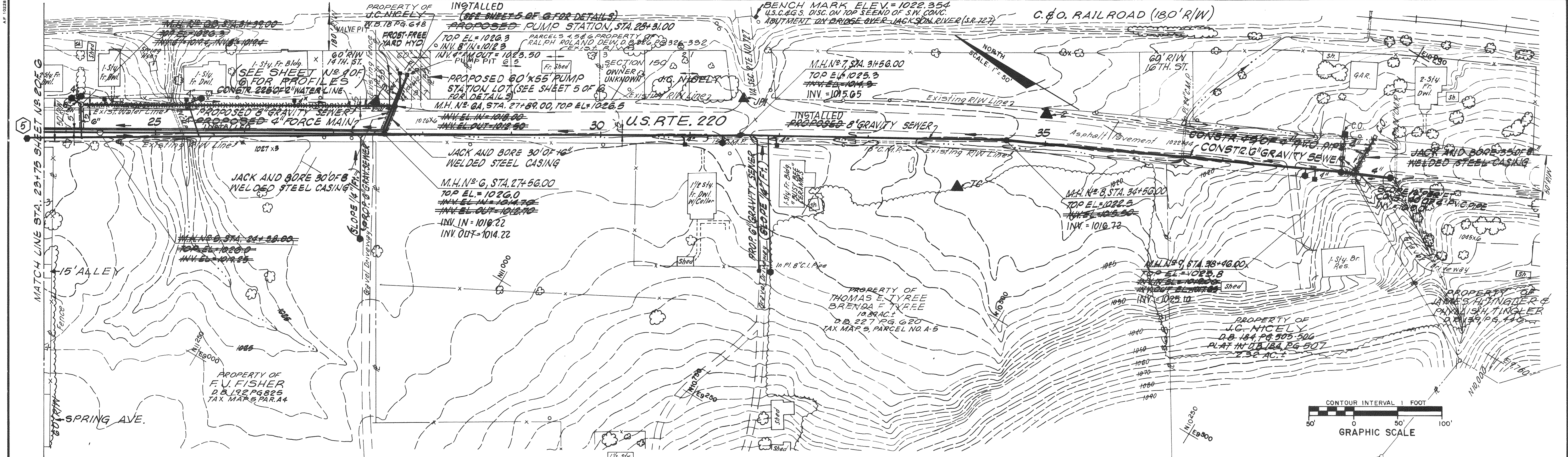


PROJECT NAME: Iron Gate Wastewater
DATE: 7-81
LOCATION: nullais - As-Built
TOTAL # SHEETS: 3
OF SETS: 1
A/E FIRM: Clean Water

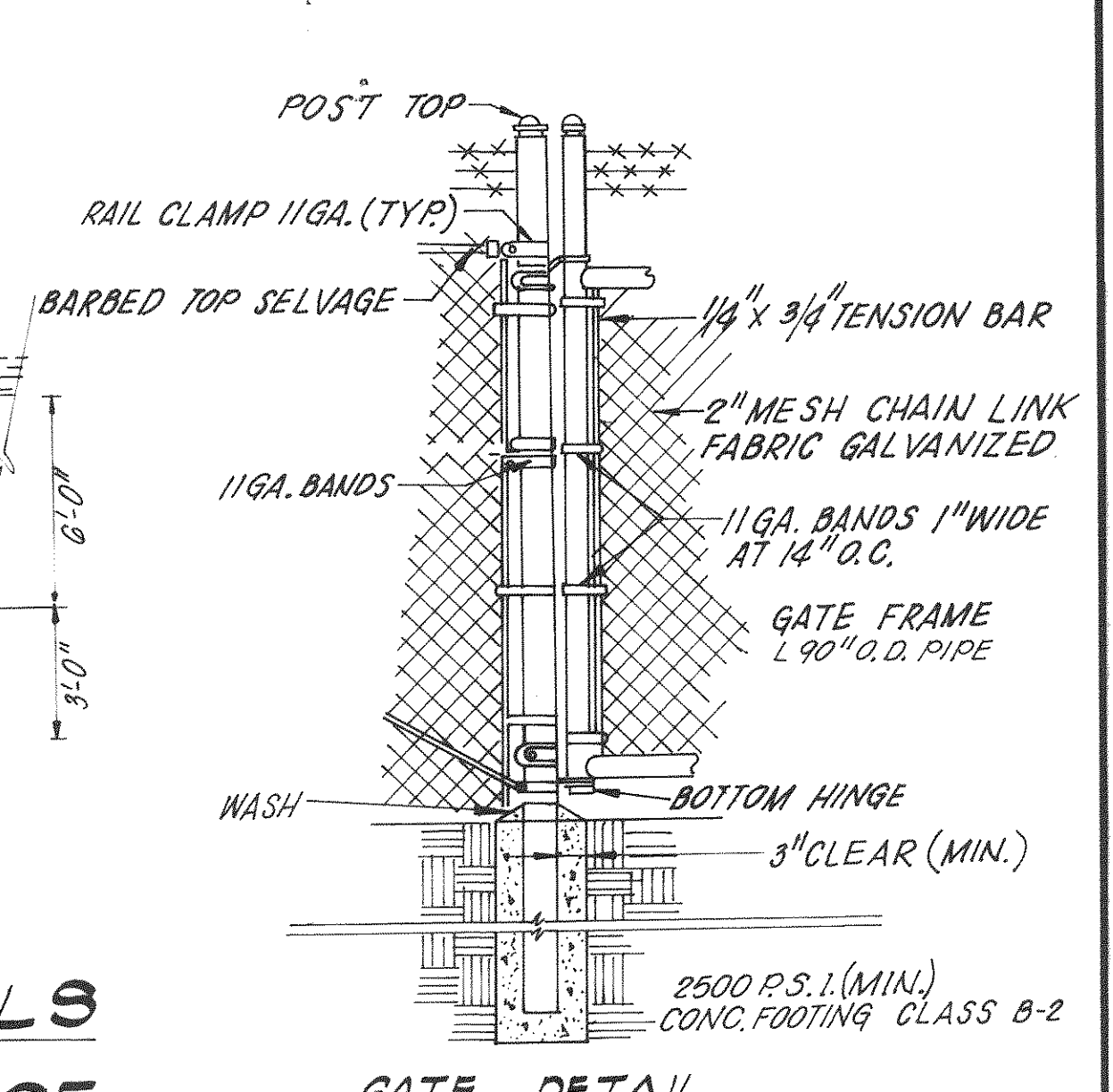
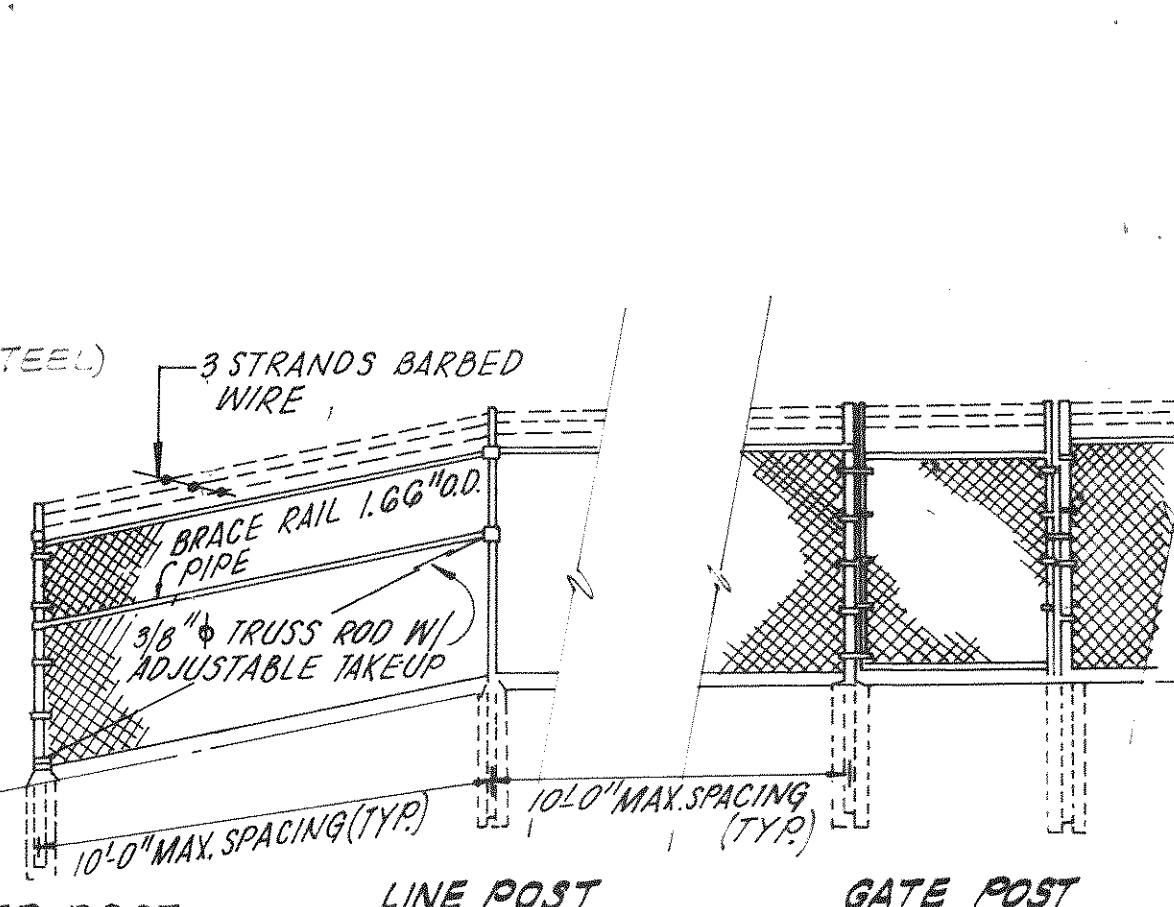
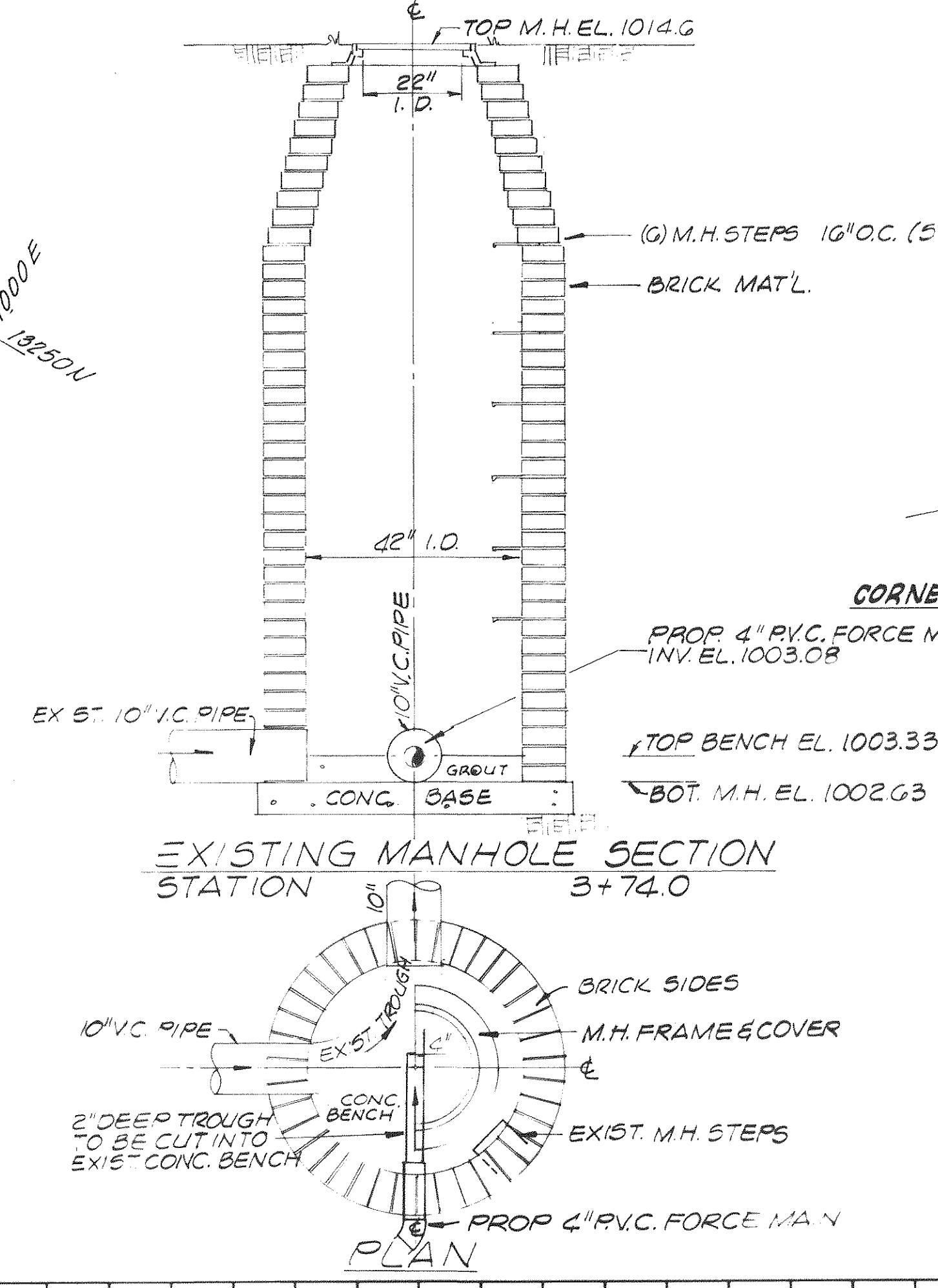
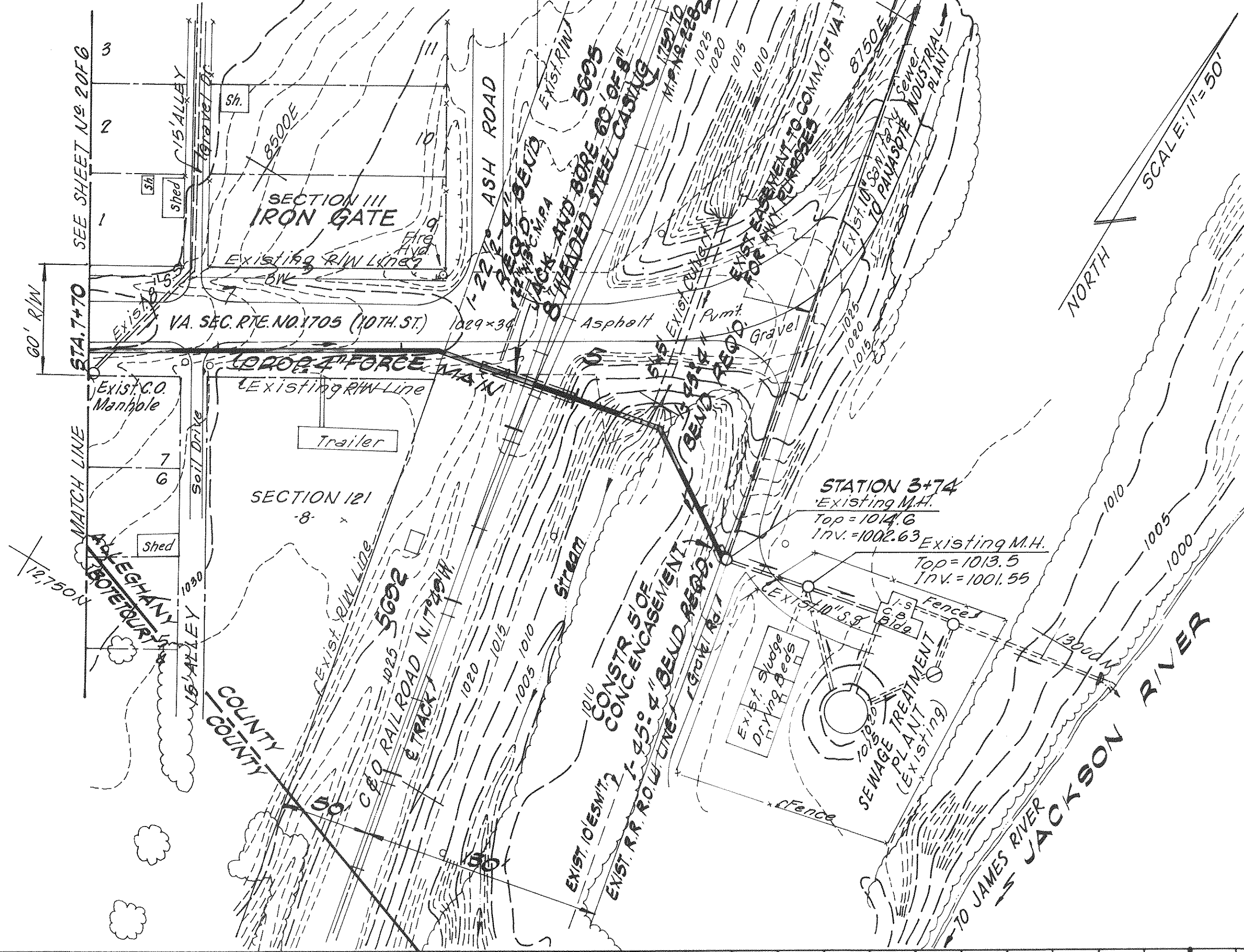


MANHOLE SUMMARY				
SH. NO.	M.H. NO.	TO M.H. NO.	BEARING	DIST.
2	1	2	S 30° 54' E	100.00'
2	2	3	S 30° 54' E	100.00'
2	3	4	S 30° 54' E	314.00'
2	3	5	S 30° 54' E	314.00'
2	3	3A	S 59° 06' W	300.00'
2	3A	3B	N 30° 54' W	225.00'
2	3B	3C	N 30° 54' W	225.00'
2	3C	3D	N 30° 54' W	200.00'
2	3C	C.D.	S 59° 06' W	110.00'

10/28/88



AS SHOWN



STANDARD DETAILS
FOR
CHAIN LINK FENCE
NOT TO SCALE

