

TOWN OF TROUTVILLE

BOTETOURT COUNTY, VIRGINIA

WATER SUPPLY AND DISTRIBUTION SYSTEM

DRAPER ADEN ASSOCIATES
INC.

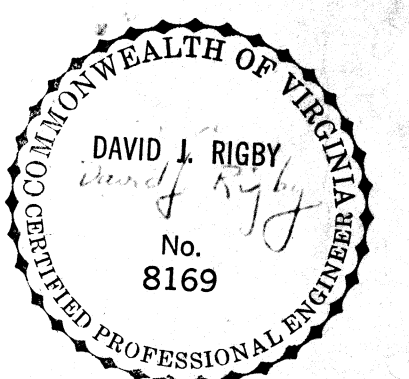
ENGINEERS

SURVEYORS

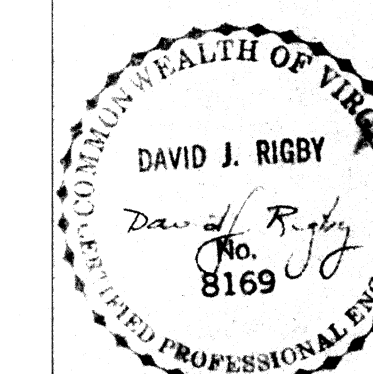
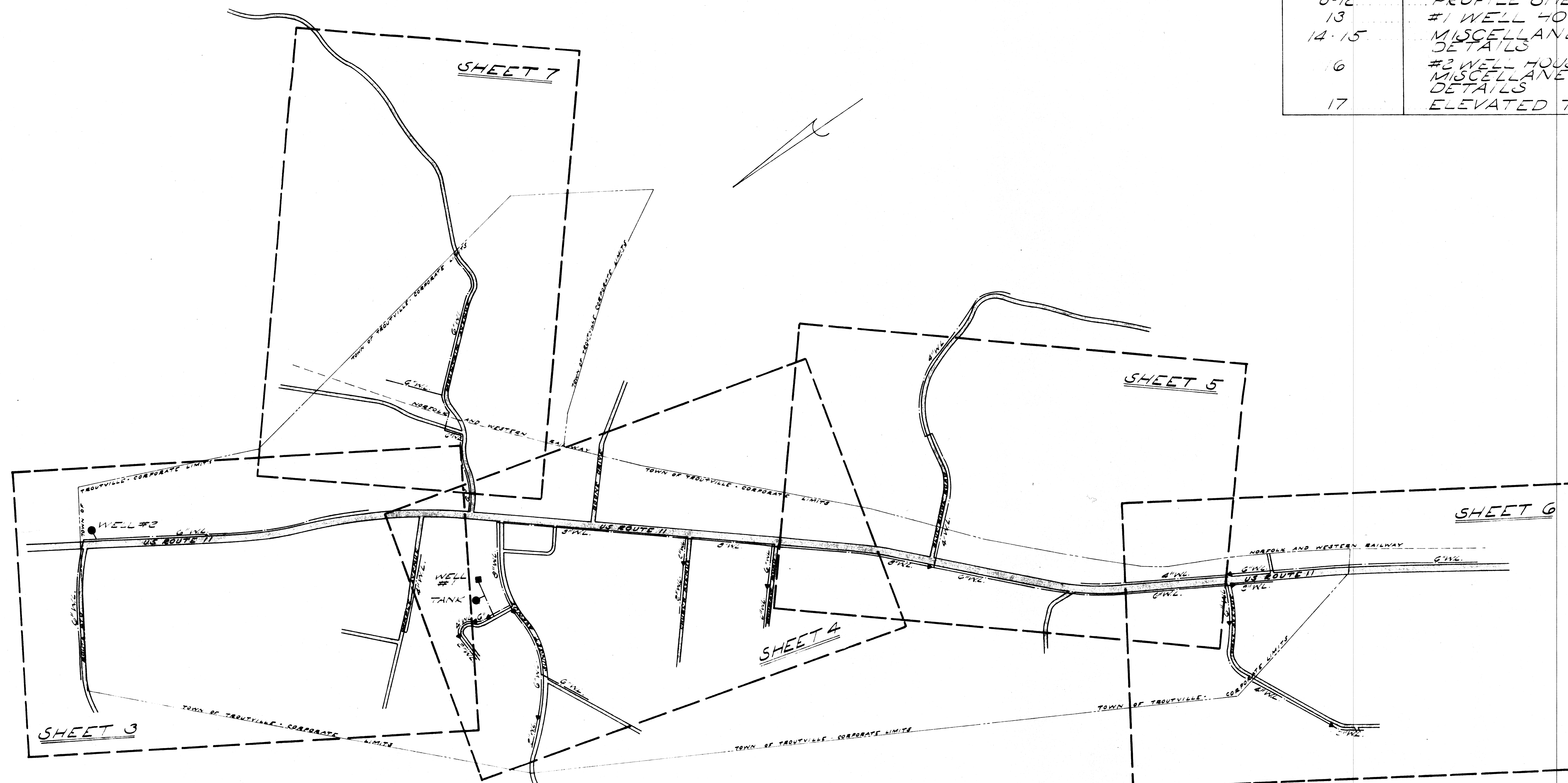
PLANNERS

BLACKSBURG, VA.

JOB NUMBER: 75-303



SHEET NO.	DESCRIPTION
1	COVER SHEET
2	INDEX & KEY SHEET
3-7	PLAN SHEETS
8-12	PROFILE SHEETS
13	#1 WELL HOUSE
14-15	MISCELLANEOUS DETAILS
16	#2 WELL HOUSE AND MISCELLANEOUS DETAILS
17	ELEVATED TANK

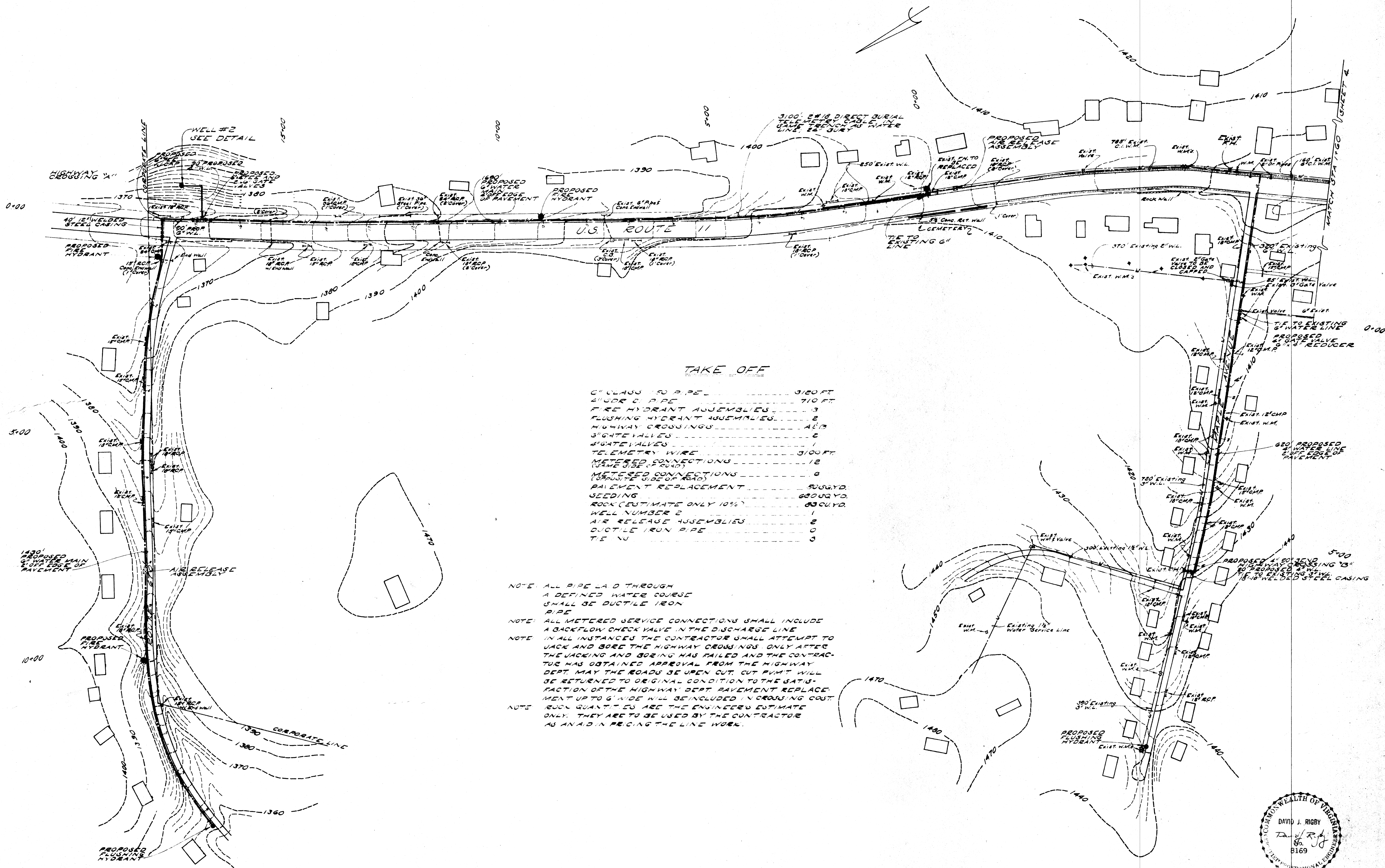


DRAPER - ADEN ASSOCIATES, INC.
ENGINEERS - SURVEYORS - PLANNERS
BLACKSBURG, VIRGINIA

DESIGNED D.J.R.
DRAWN L.H.W.
CHECKED D.J.R.
DATE 31 MAY, 1978

THE TOWN OF TROUTVILLE PROPOSED WATER SUPPLY AND DISTRIBUTION SYSTEM

REVISIONS:
2, 4, 13
10, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 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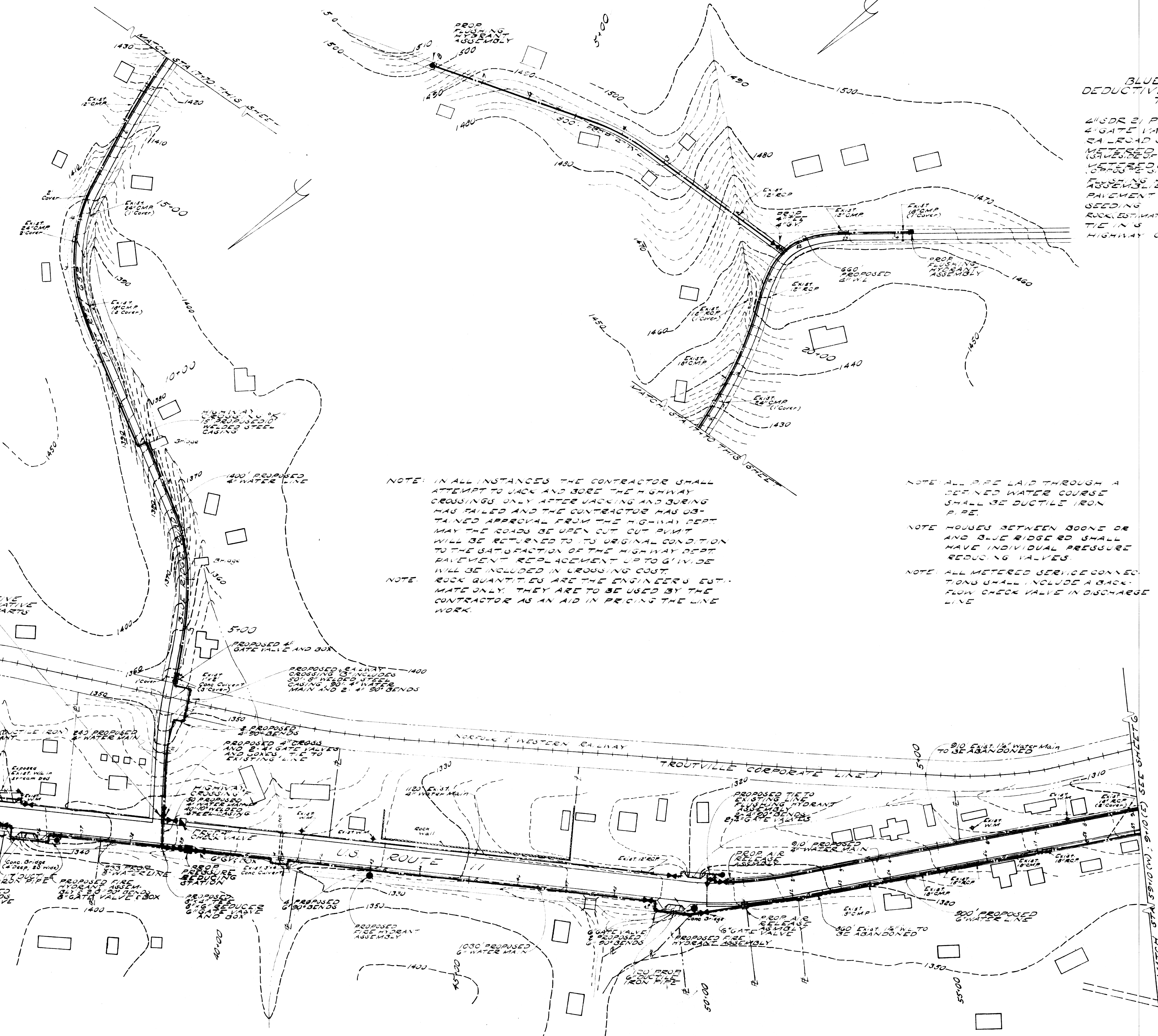
TAKE OFF

8" CLASS 150 PIPE
 6" CLASS 150 PIPE
 4" DR. 21 PIPE
 FIRE HYDRANT ASSEMBLIES
 FLUSHING HYDRANT ASSEMBLIES
 8" GATE VALVES
 6" GATE VALVES
 4" GATE VALVES
 HOUSEHOLD FRY'S
 AIR RELEASE ASSEMBLIES
 PAVEMENT REPLACEMENT
 SEEDING
 ROCK (ESTIMATE ONLY 35%)
 TIE IN'S
 METERED SERVICE CONNECTIONS
 (OPPOSITE SIDE OF ROAD)
 METERED CONNECTIONS
 (OPPOSITE SIDE OF ROAD)
 HIGHWAY CROSSINGS
 MAIN LINES
 STREAM CROSSINGS
 TRANSFER EXISTING METERS TO
 NEW LINES
 4 CHECK VALVE

1000 FT.
 2050 FT.
 1050 FT.
 3
 2
 2
 4
 5
 12
 1
 1500 SQ. YD.
 10700 SQ. YD.
 9100 YD.
 6
 0
 1
 1
 3
 15
 1

BLUE RIDGE ROAD DEDUCTIVE ALTERNATE #1 TAKE OFF

4" DR. 21 PIPE 2440 FT.
 4" GATE VALVES 3
 2" AIR ROAD CROSSING #1 1
 METERED CONNECTIONS 18
 (OPPOSITE SIDE OF ROAD)
 METERED CONNECTIONS 3
 (OPPOSITE SIDE OF ROAD)
 FLUSHING HYDRANT ASSEMBLY 2
 PAVEMENT REPLACEMENT 0
 SEEDING 5550 YD.
 ROCK (ESTIMATE ONLY 35%) 12000 YD.
 TIE IN'S 1
 HIGHWAY CROSSINGS K



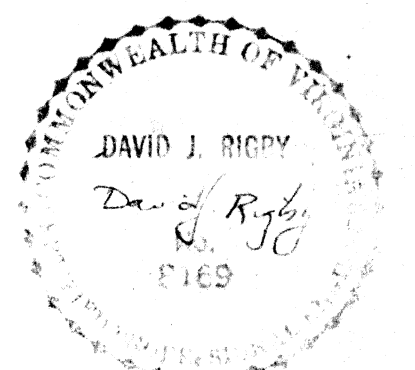
NOTE: IN ALL INSTANCES THE CONTRACTOR SHALL ATTEMPT TO JACK AND BORE THE HIGHWAY CROSSINGS ONLY AFTER JACKING AND BORING HAS FAILED AND THE CONTRACTOR HAS OBTAINED APPROVAL FROM THE HIGHWAY DEPT. MAY THE ROADS BE OPEN CUT OUT POINT WILL BE RETURNED TO ITS ORIGINAL CONDITION TO THE SATISFACTION OF THE HIGHWAY DEPT. PAVEMENT REPLACEMENT UP TO 6" IN WIDE WILL BE INCLUDED IN CROSSING COST.

NOTE: ROCK QUANTITIES ARE THE ENGINEER'S ESTIMATE ONLY. THEY ARE TO BE USED BY THE CONTRACTOR AS AN AID IN PRICING THE LINE WORK.

NOTE: ALL PIPE LAID THROUGH A DEFINED WATER COURSE SHALL BE DUCTILE IRON PIPE.

NOTE: HOUSES BETWEEN BOONE DR AND BLUE RIDGE RD SHALL HAVE INDIVIDUAL PRESSURE REDUCING VALVES.

NOTE: ALL METERED SERVICE CONNECTIONS SHALL INCLUDE A BACKFLOW CHECK VALVE IN DISCHARGE LINE.



DRAPER - ADEN ASSOCIATES, INC.
 ENGINEERS - SURVEYORS - PLANNERS
 BLACKSBURG, VIRGINIA

DESIGNED DJR
 DRAWN LHM, MEL
 CHECKED DJR
 DATE 31 MAY, 1978

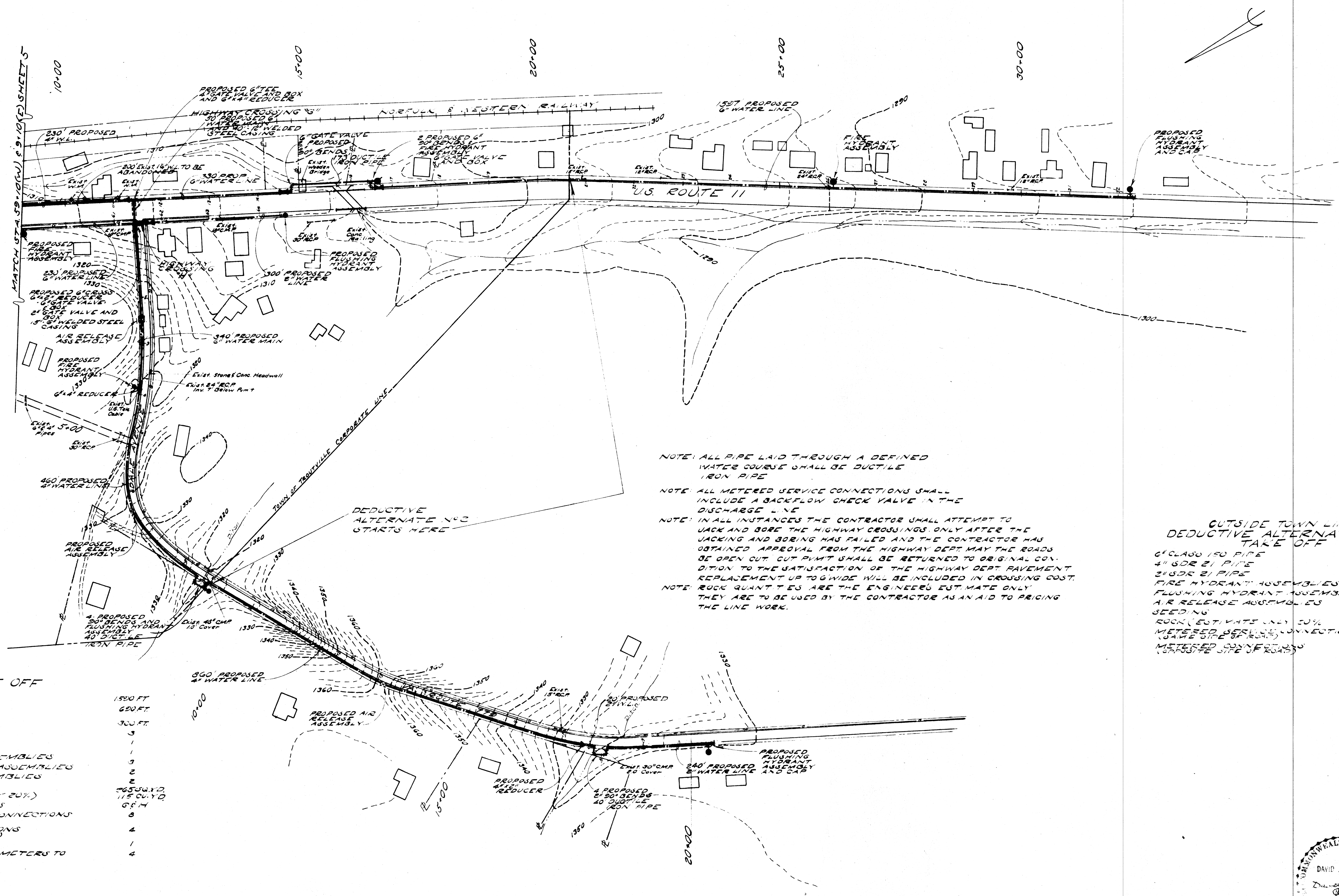
THE TOWN OF TROUTVILLE PROPOSED WATER SUPPLY AND DISTRIBUTION SYSTEM

REVISIONS:
 1. 4-73 Stream X-Cross
 2. 6-73 2" Air Road Crossing
 3. 6-73 4" Gate Valve

SCALE: 1" = 100'

PLAN No T 75-303

SHEET
 5 OF 17



NOTE: ALL PIPE LAID THROUGH A DEFINED WATER COURSE SHALL BE DUCTILE IRON PIPE

NOTE: ALL METERED SERVICE CONNECTIONS SHALL INCLUDE A BACKFLOW CHECK VALVE IN THE DISCHARGE LINE

NOTE: IN ALL INSTANCES THE CONTRACTOR SHALL ATTEMPT TO JACK AND BORE THE HIGHWAY CROSSINGS. ONLY AFTER THE JACKING AND BORING HAS FAILED AND THE CONTRACTOR HAS OBTAINED APPROVAL FROM THE HIGHWAY DEPT. MAY THE ROADS BE OPEN CUT. CUT PUMP SHALL BE RETURNED TO ORIGINAL CONDITION TO THE SATISFACTION OF THE HIGHWAY DEPT. PAVEMENT REPLACEMENT UP TO 6" WIDE WILL BE INCLUDED IN CROSSING COST.

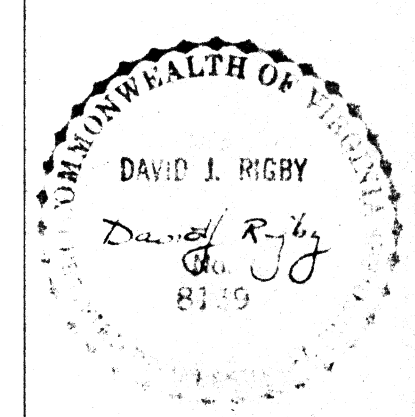
NOTE: ROCK QUANTITIES ARE THE ENGINEER'S ESTIMATE ONLY. THEY ARE TO BE USED BY THE CONTRACTOR AS AN AID TO PRICING THE LINE WORK.

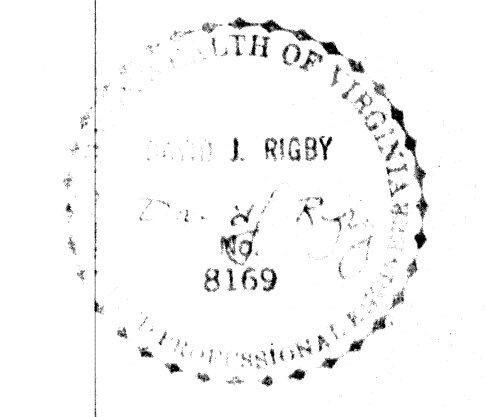
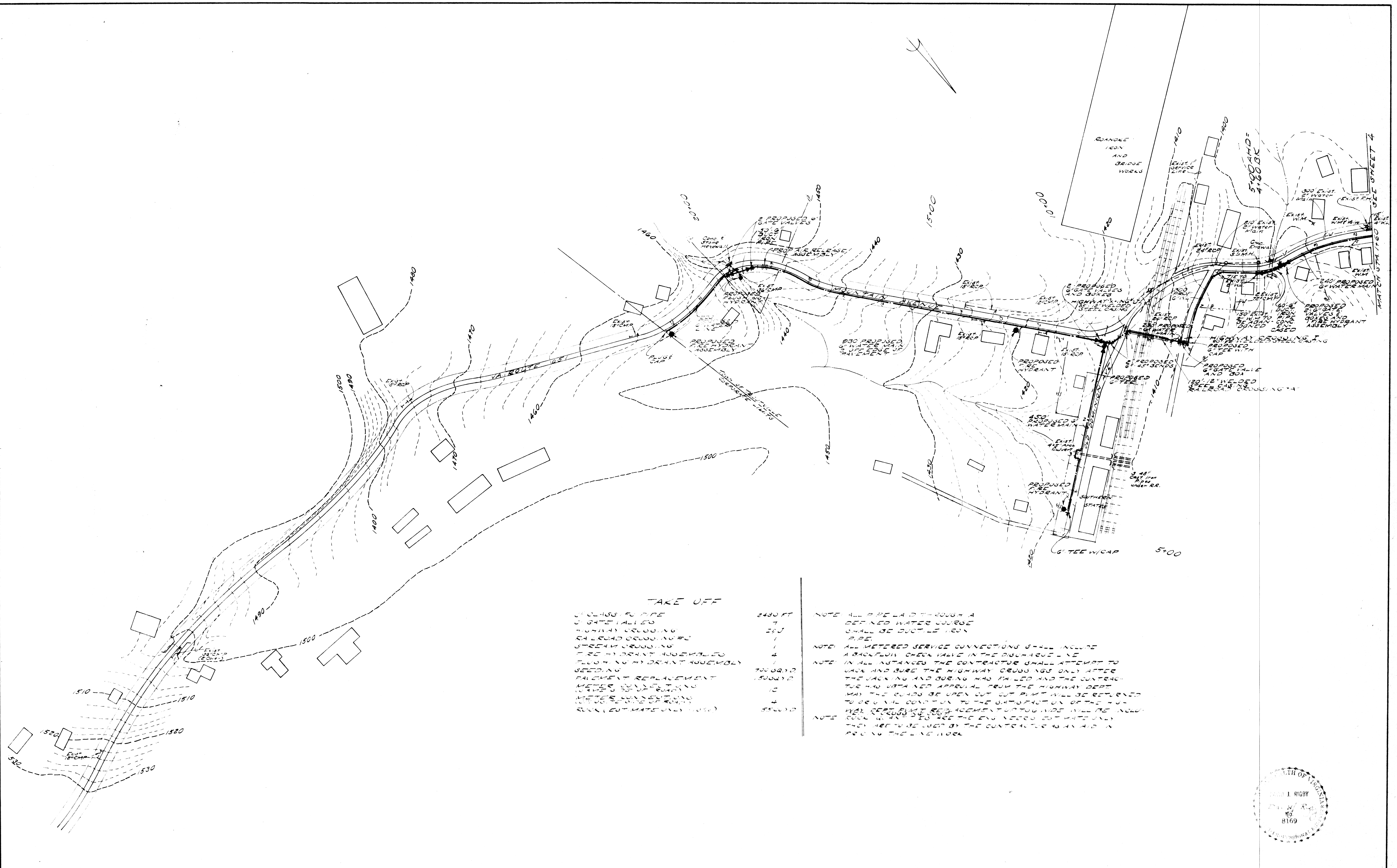
OUTSIDE TOWN LIMITS
DEDUCTIVE ALTERNATE NO 2
TAKE OFF

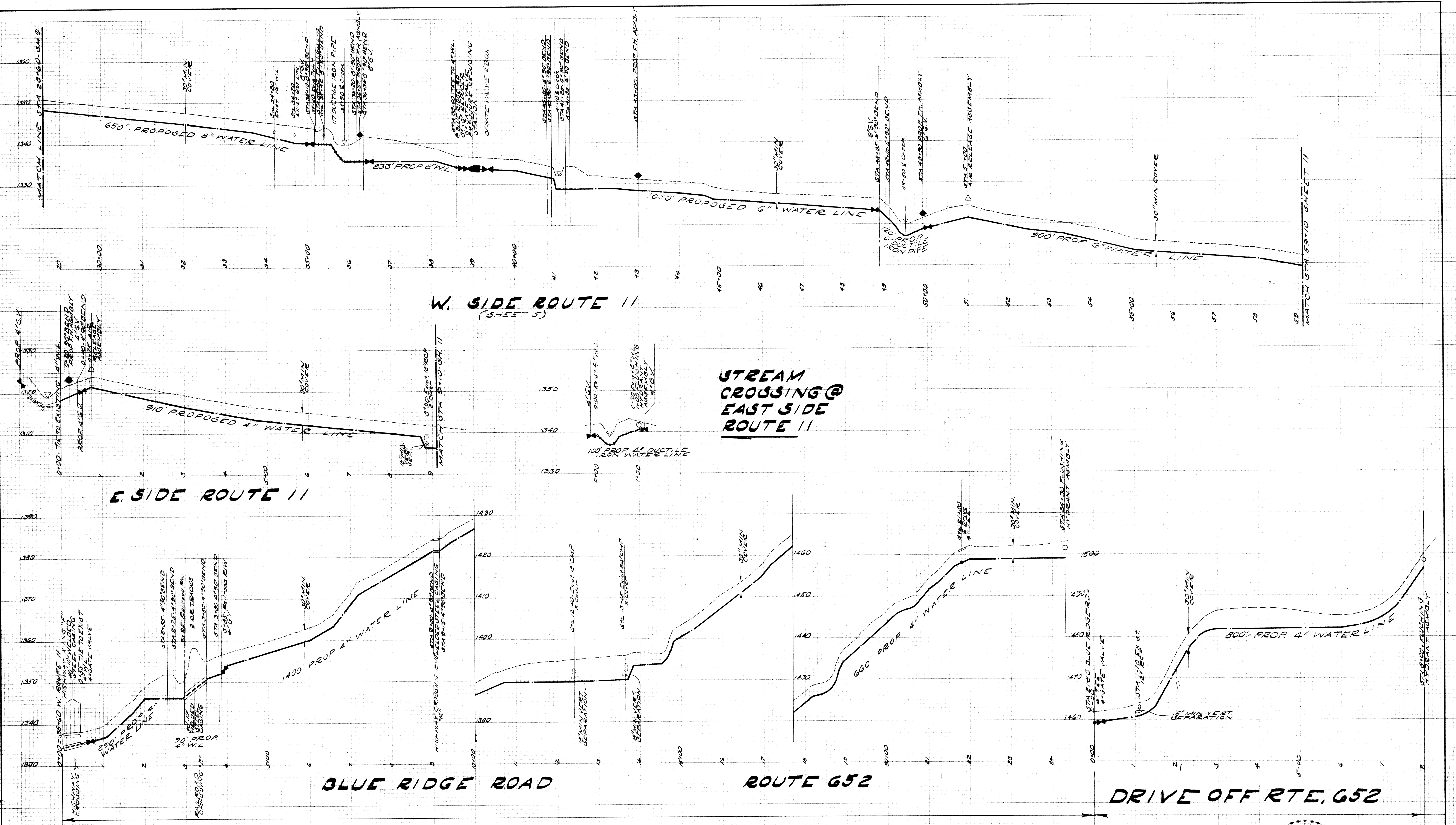
6" CLASS 150 PIPE	1150 FT
4" SDR 21 PIPE	800 FT
3" SDR 21 PIPE	100 FT
FIRE HYDRANT ASSEMBLIES	2
FLUSHING HYDRANT ASSEMBLIES	2
AIR RELEASE ASSEMBLIES	1
SEEDING	385 SQ YD
ROCK (ESTIMATE ONLY 20%)	10.3 CU YD
METERED SERVICE CONNECTIONS (SAME SIDE OF ROAD)	17
METERED SERVICE CONNECTIONS (OPPOSITE SIDE OF ROAD)	1

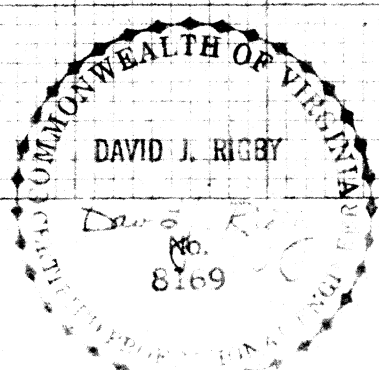
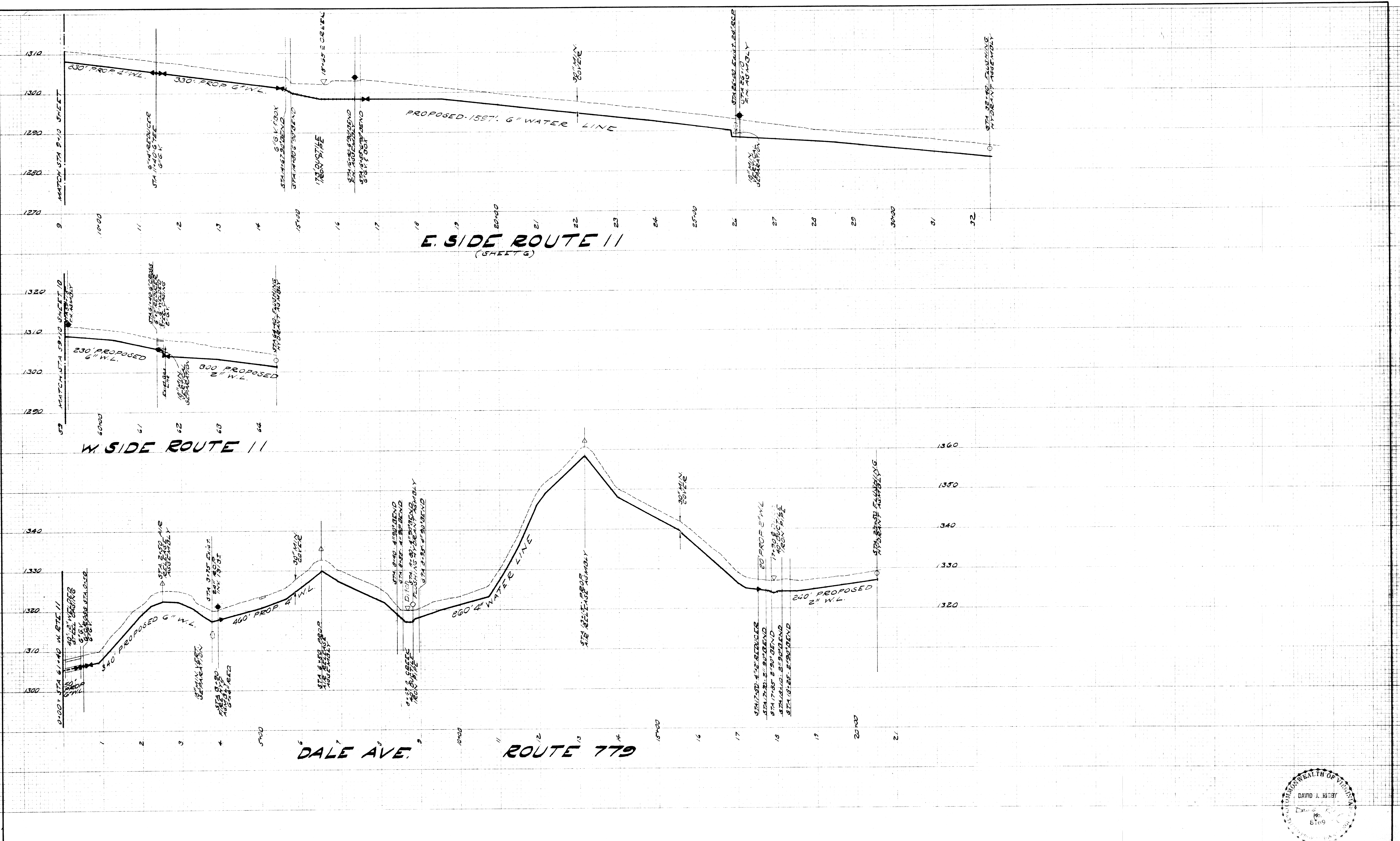
TAKE OFF

6" CLASS 150 PIPE	1500 FT
4" SDR 21 PIPE	650 FT
3" SDR 21 PIPE	300 FT
6" GATE VALVE	3
4" GATE VALVE	1
2" GATE VALVE	1
FIRE HYDRANT ASSEMBLIES	3
FLUSHING HYDRANT ASSEMBLIES	2
AIR RELEASE ASSEMBLIES	2
SEEDING	265 SQ YD
ROCK (ESTIMATE ONLY 20%)	11.5 CU YD
HIGHWAY CROSSINGS	6.4
METERED SERVICE CONNECTIONS (SAME SIDE OF ROAD)	8
METERED SERVICE CONNECTIONS (OPPOSITE SIDE OF ROAD)	4
STREAM CROSSING	1
TRANSFER EXISTING METERS TO NEW LINES	4

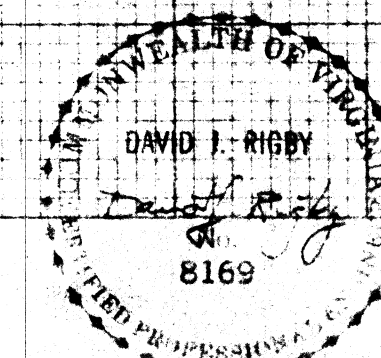
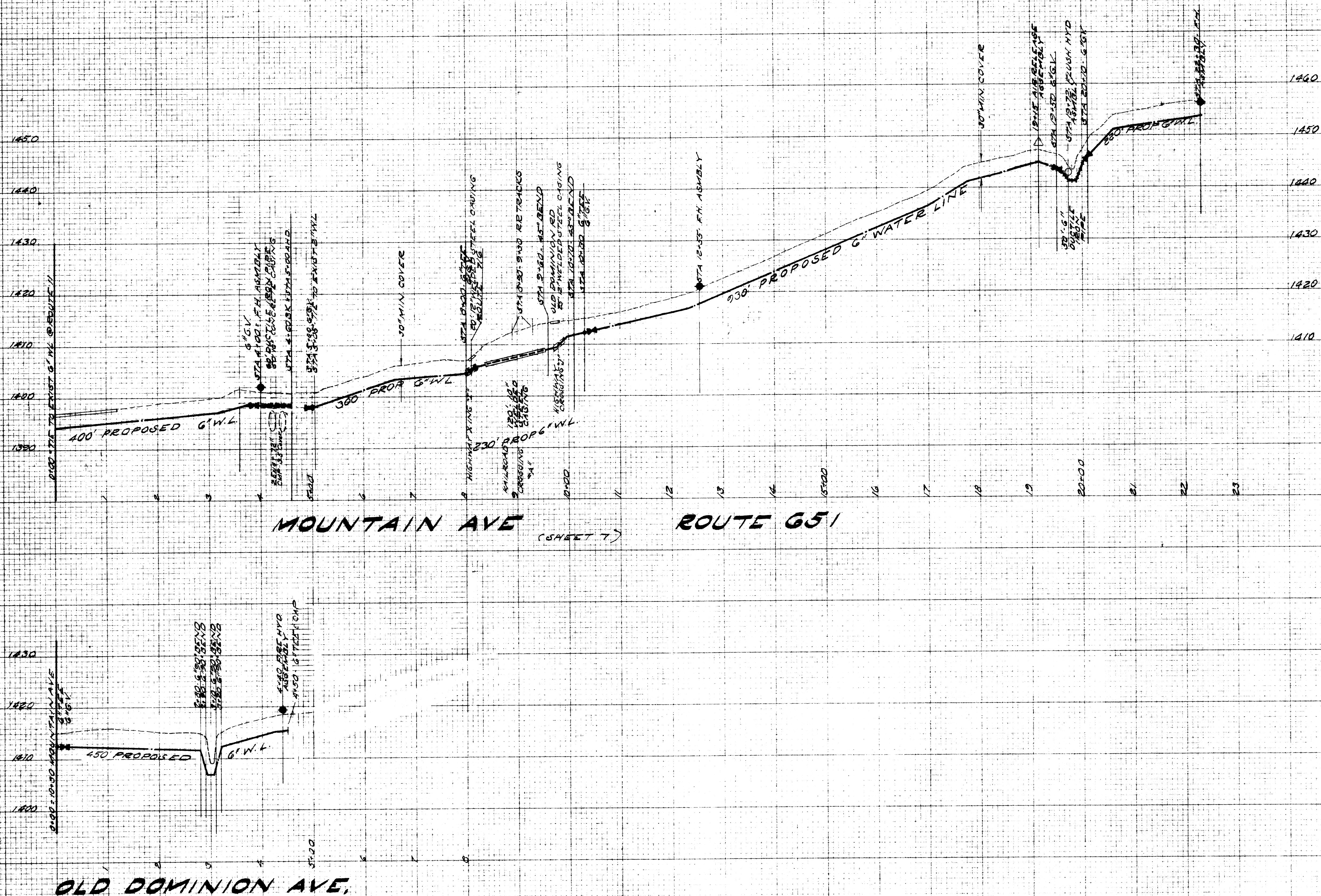


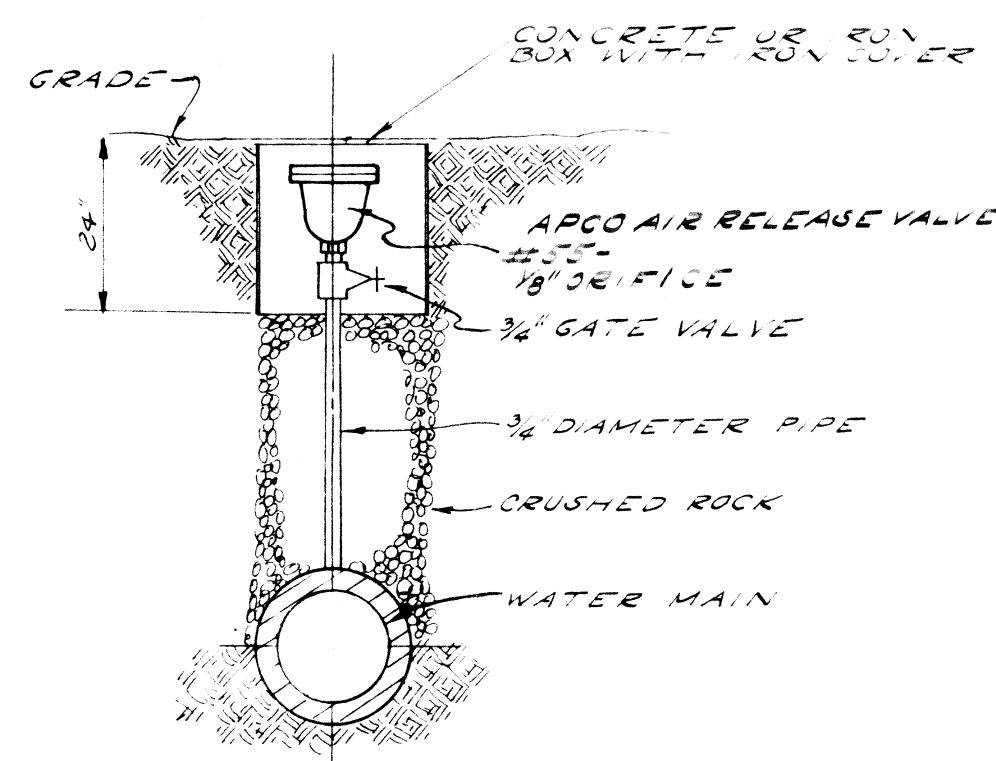




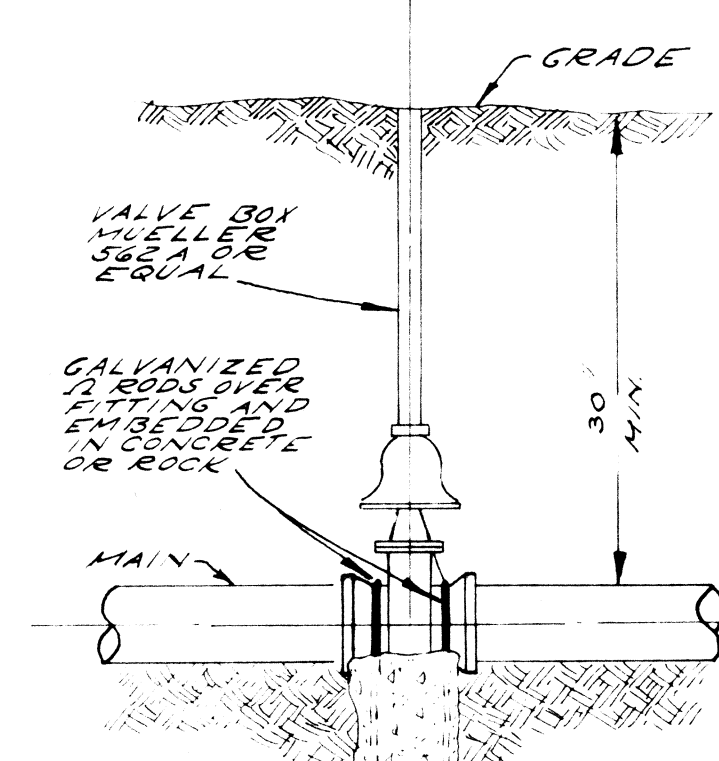


DRAPER - ADEN ASSOCIATES, INC. ENGINEERS - SURVEYORS - PLANNERS BLACKSBURG, VIRGINIA	DESIGNED DRAWN CHECKED DATE DJR LHW DJR 31 MAY, 1978	THE TOWN OF TROUTVILLE PROPOSED WATER SUPPLY AND DISTRIBUTION SYSTEM	REVISIONS 2/12/78 - HYDROLOGIC	SCALE: 1" = 100' HORIZ. 1" = 10' VERT. PLAN N ^o T-75-303	SHEET 11 OF 17
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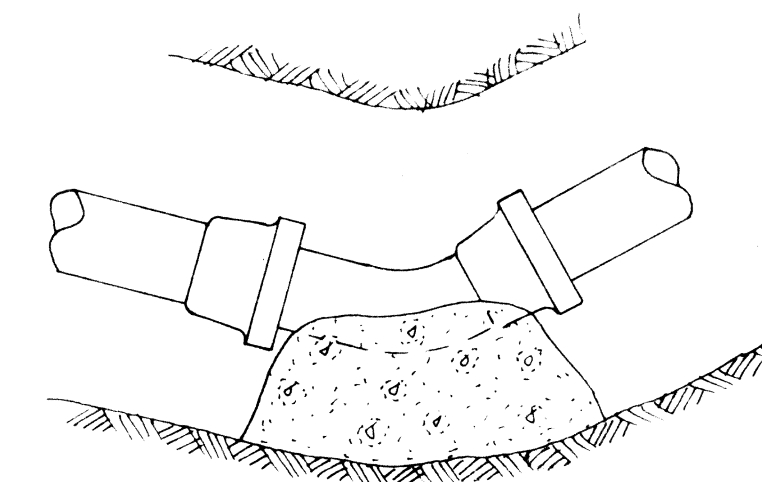




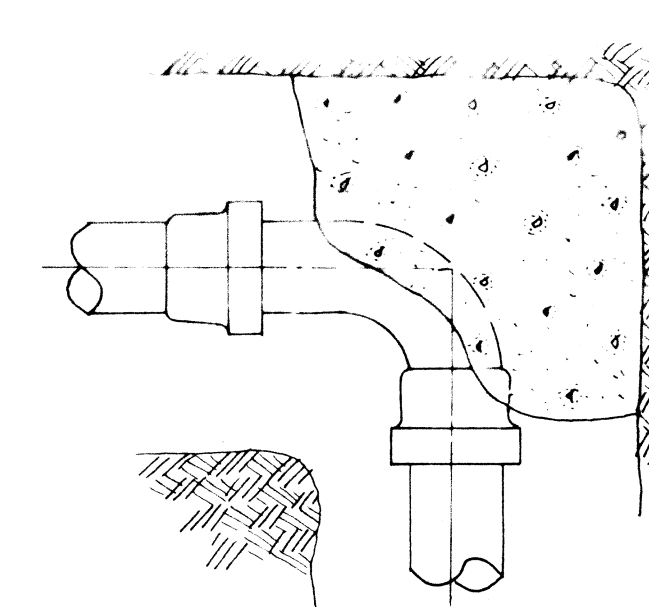
AUTOMATIC AIR RELEASE VALVE



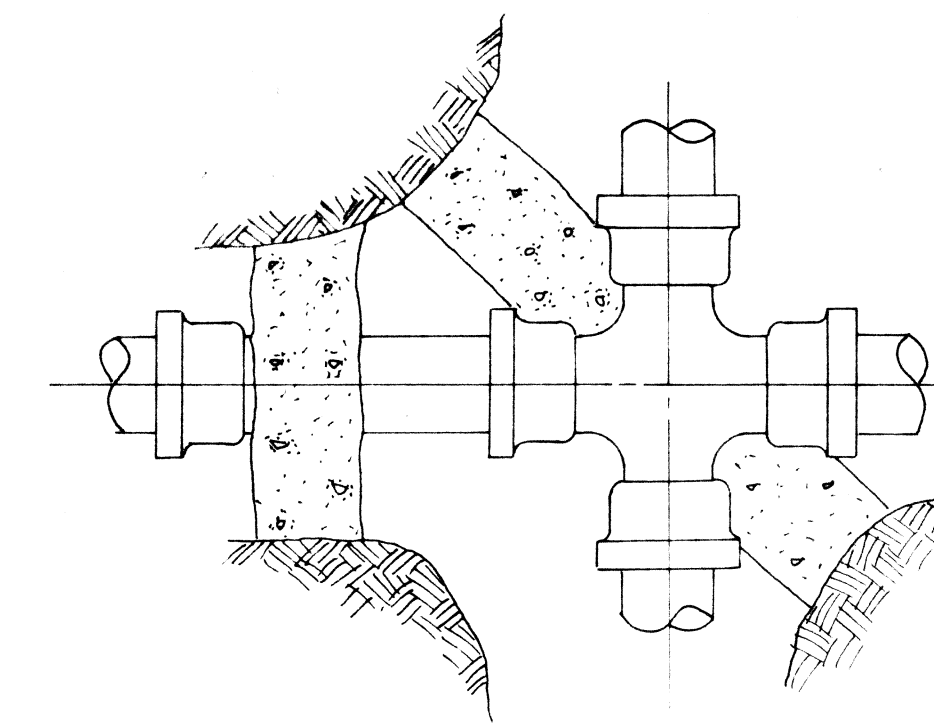
TYPICAL VALVE INSTALLATION



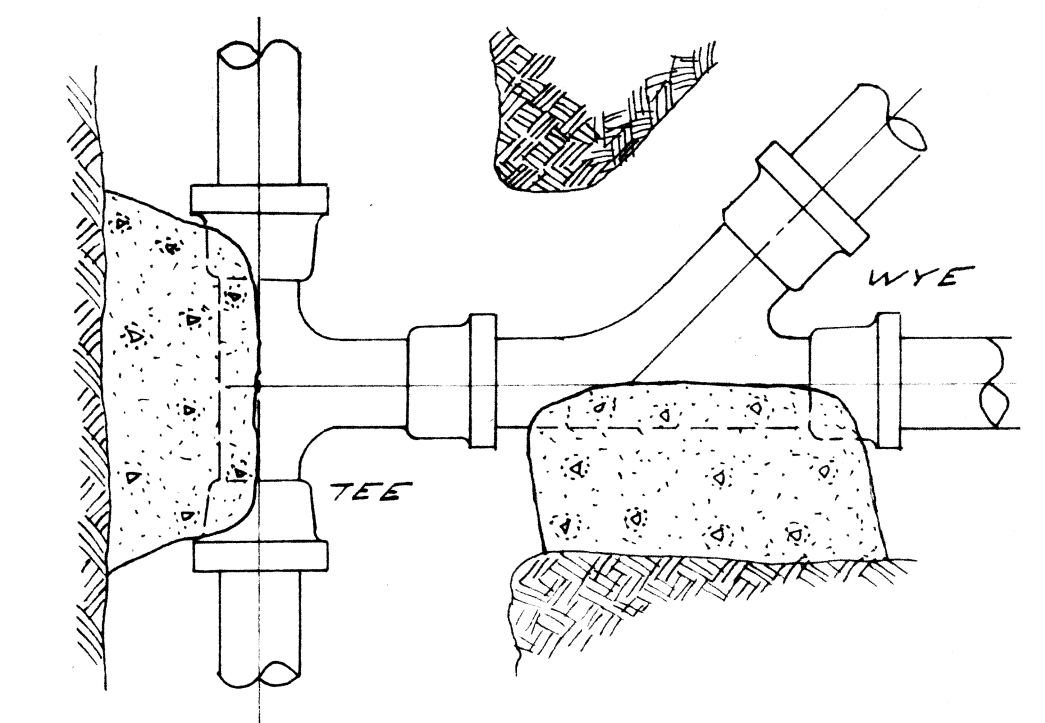
45° & 22 1/2° BEND



90° BEND



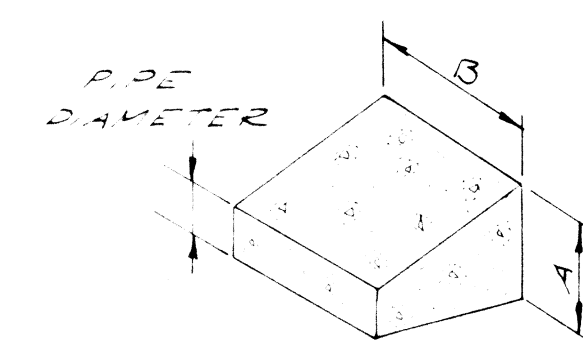
CROSS



TEE & WYE

THRUST BLOCK DETAILS

NOTE: ALL FITTINGS SHALL BE BLOCKED AS SHOWN ABOVE



THRUST BLOCK SIZES

PIPE D.I.A.	TEE, CROSS		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"	12"	18"	12"	12"

NOTES:

1. AREA OF THRUST BLOCKS BASED ON 1500 P.S.F. LATERAL BEARING PRESSURE AND A TEST PRESSURE WITHIN PIPE OF 50 P.S.I.
2. THRUST BLOCKS ARE REQUIRED AT ALL BENDS OF MORE THAN 65°
3. BEARING SURFACE OF THRUST BLOCKS MUST BE NORMAL TO RESULTANT THRUST OF BEND AND BEAR ON UNDISTURBED MATERIAL
4. KEEP CONCRETE CLEAR OF JOINT & JOINT ACCESSORIES

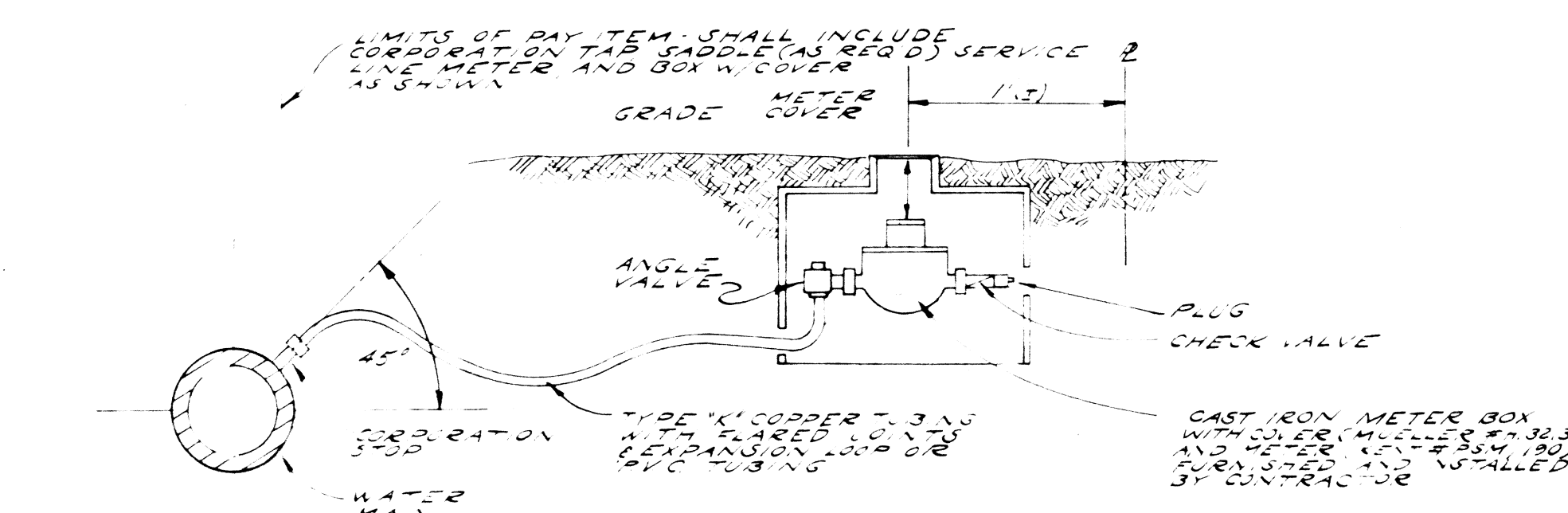
HORIZONTAL THRUST BLOCK DETAIL

FITTING SIZE	ROD SIZE	NO. RODS	EMBEDMENT
4", 6" & 8"	4"	2	24"

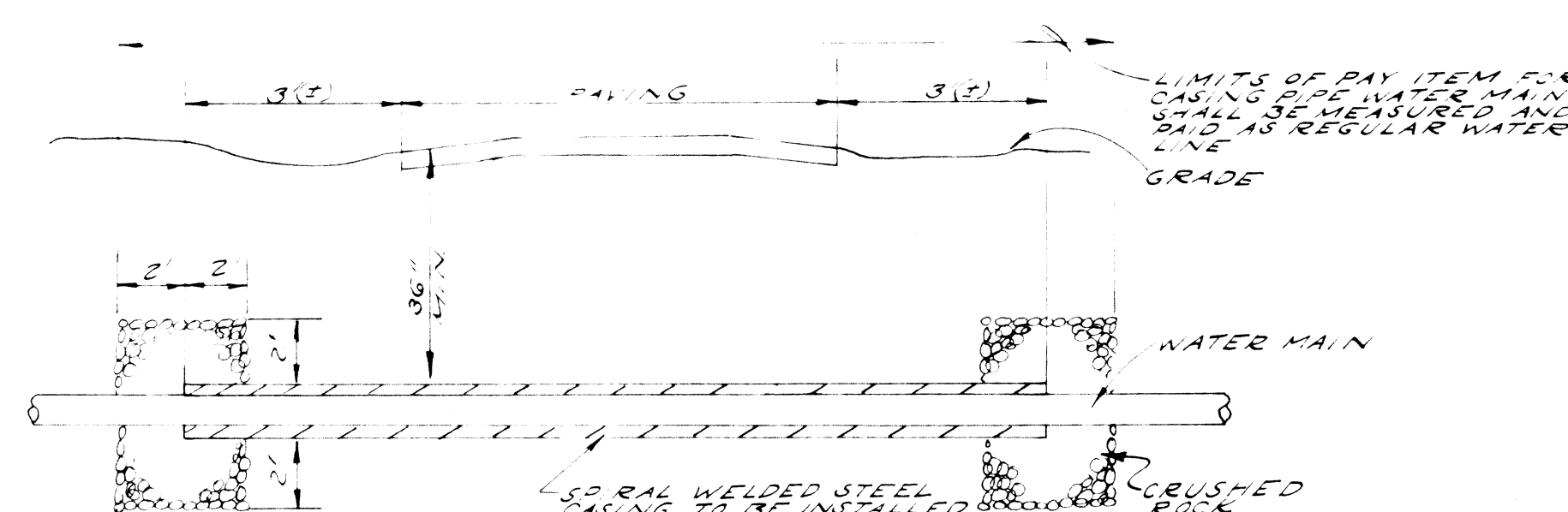
FITTING SIZE	VOLUME OF THRUST BLOCKS IN CU. YDS			
	90°	45°	22 1/2°	11 1/4°
4"	0.7	0.3	0.1	0.1
6"	1.3	0.5	0.3	0.3
8"	2.3	1.1	0.5	0.5

1. KEEP CONCRETE CLEAR OF JOINT & JOINT ACCESSORIES
2. THRUST BLOCKS FOR VERTICAL UP BENDS SHALL BE THE SAME AS FOR HORIZONTAL BENDS

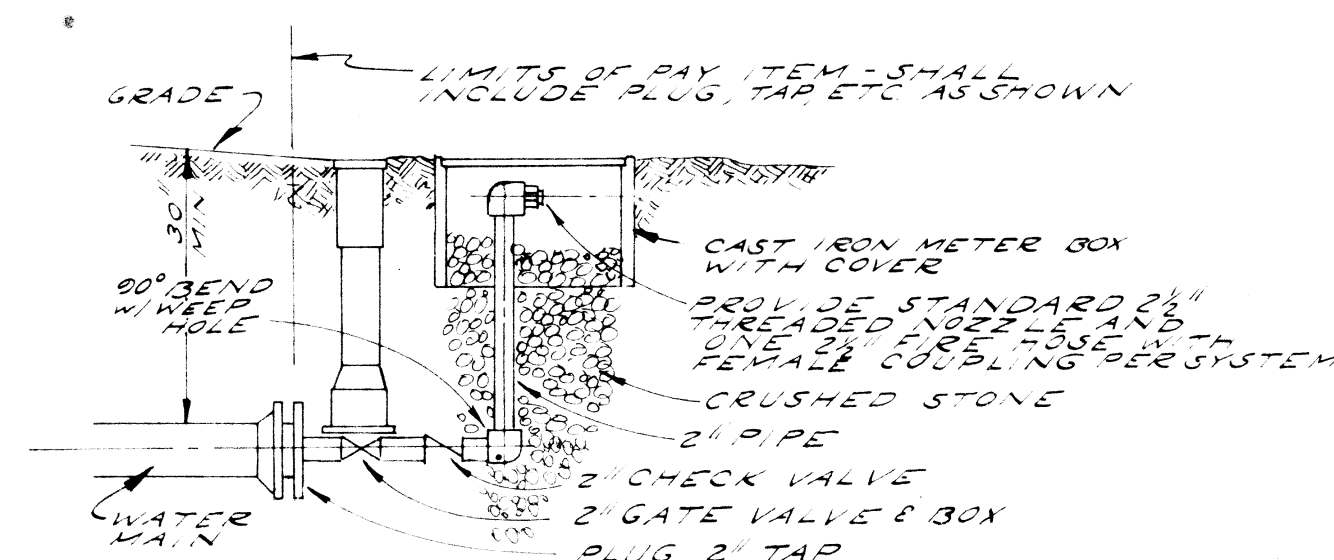
VERTICAL THRUST BLOCK DETAIL



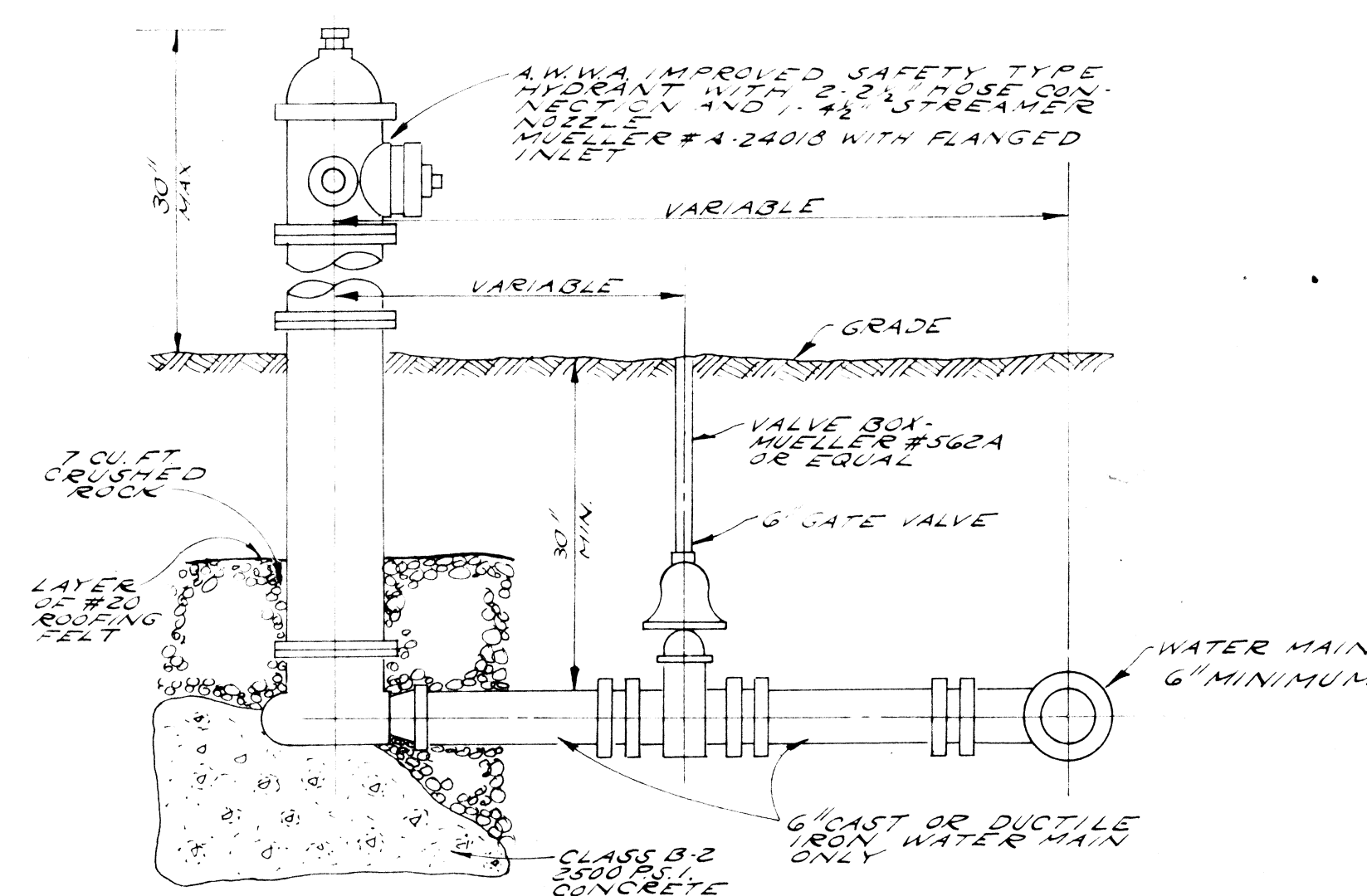
TYPICAL 3/8", 3/4" & 1" CONNECTION DETAIL



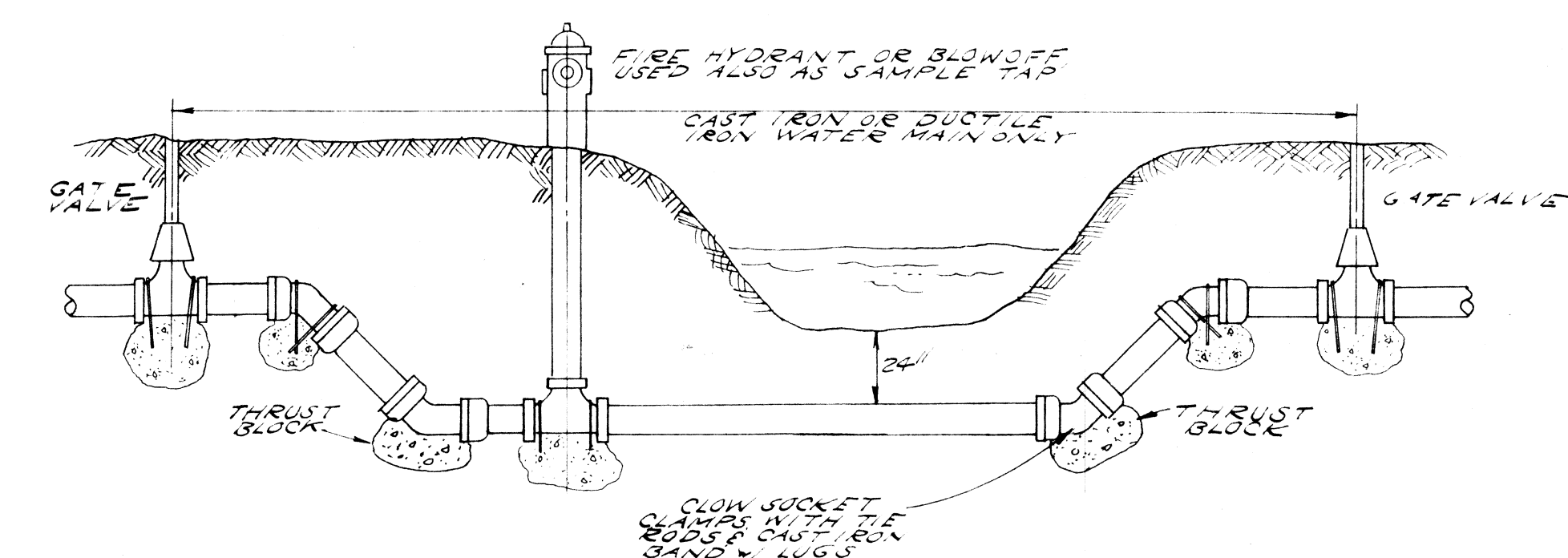
TYPICAL HIGHWAY CROSSING DETAIL



FLUSHING HYDRANT



TYPICAL FIRE HYDRANT ASSEMBLY



NOTE: WHERE BEDROCK IS ENCOUNTERED IN THE STREAM BED, THE TOP OF THE WATER MAIN MAY BE 12" ABOVE THE BEDROCK. THE ALL TENS SHALL BE PAID AT UNIT B.D. PRICES.

TYPICAL CREEK CROSSING

MISCELLANEOUS DETAILS

DRAPER - ADEN ASSOCIATES, INC.
ENGINEERS - SURVEYORS - PLANNERS
BLACKSBURG, VIRGINIA

DESIGNED D.J.R.
DRAWN L.H.W.
CHECKED D.J.R.
DATE 31 MAY, 1978

THE TOWN OF TROUTVILLE
PROPOSED WATER SUPPLY AND DISTRIBUTION SYSTEM

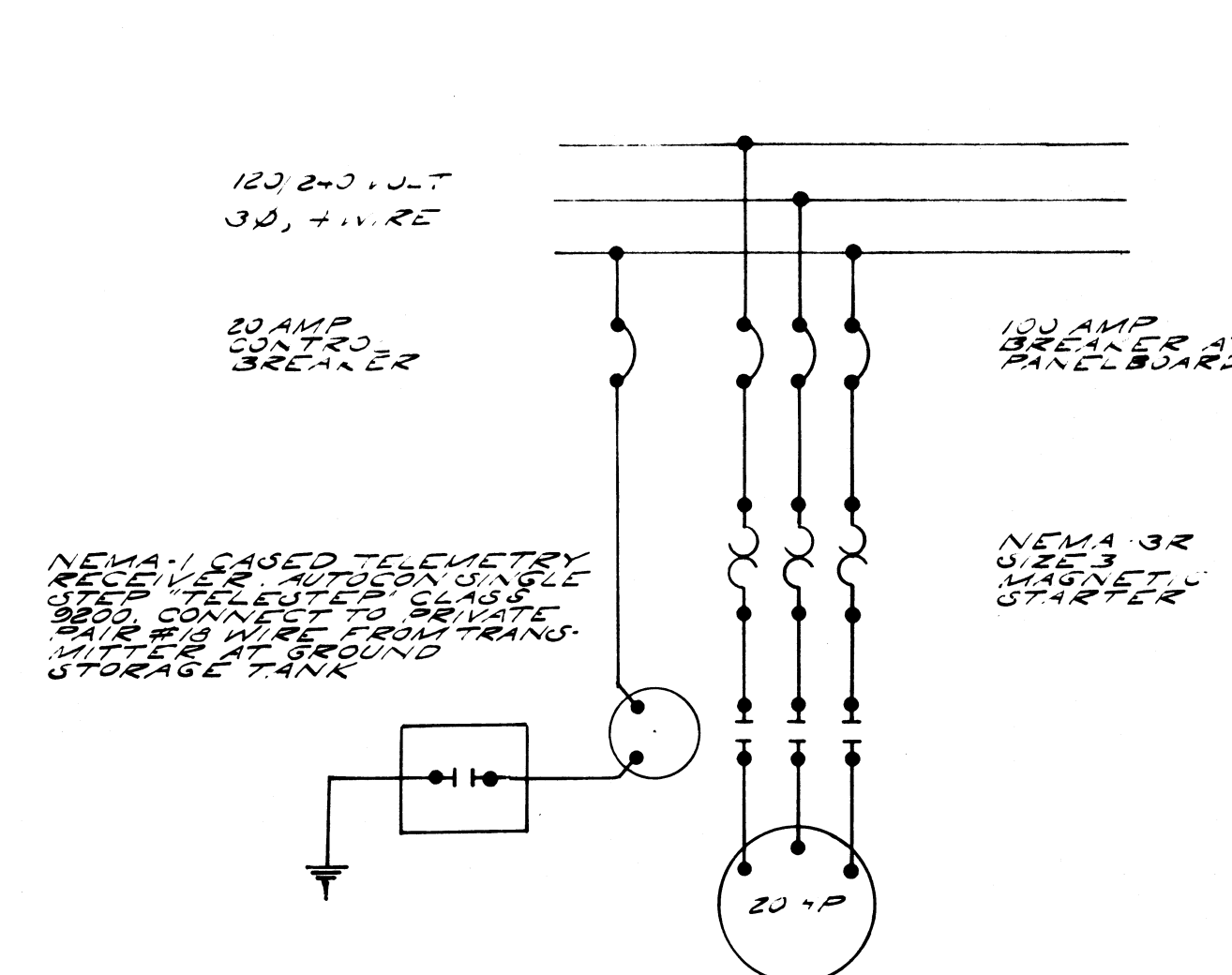
REVISIONS:
1. 4-78 K-179

SCALE: AS SHOWN

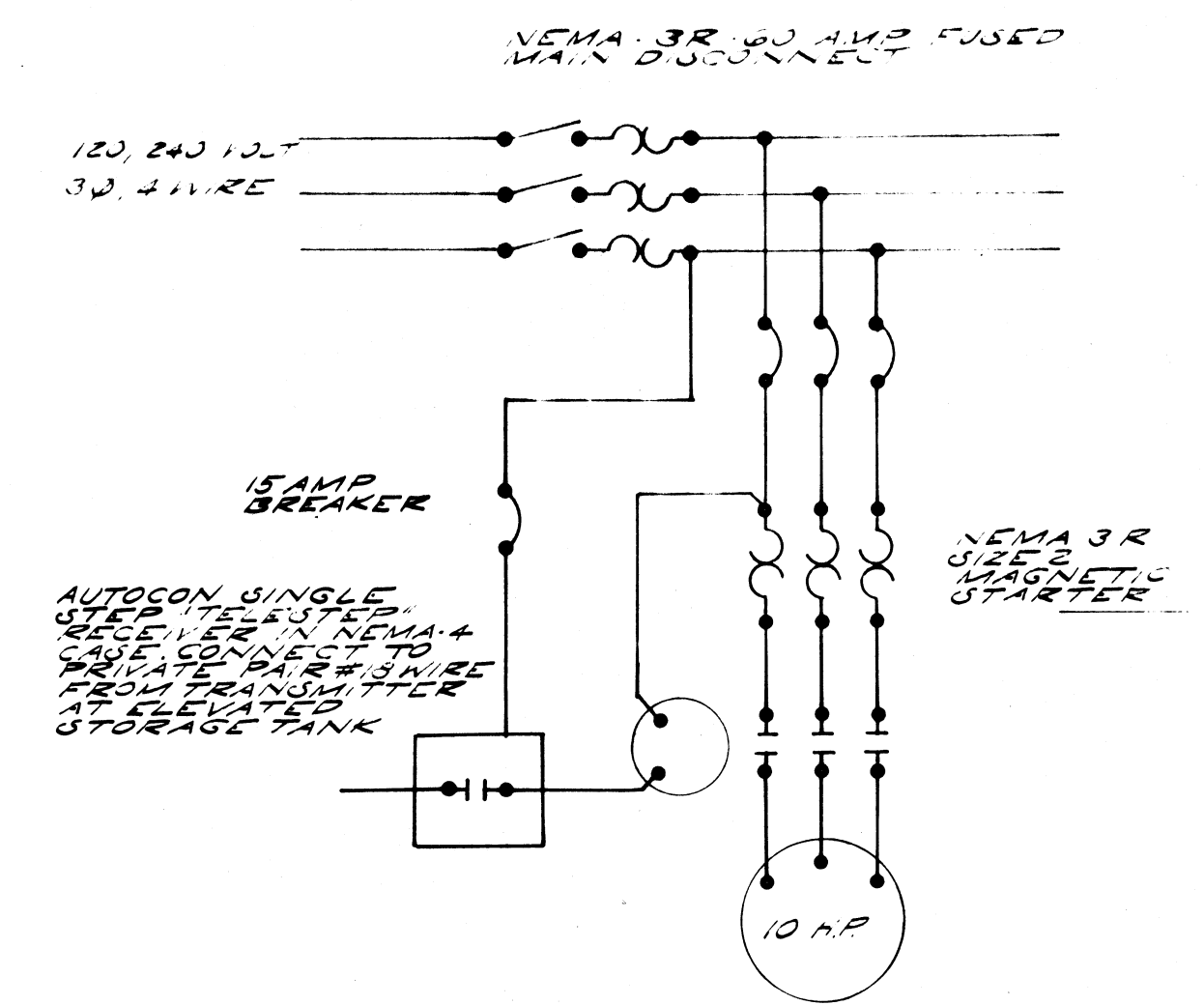
PLAN N° T-75-303

SHEET
14 OF 17

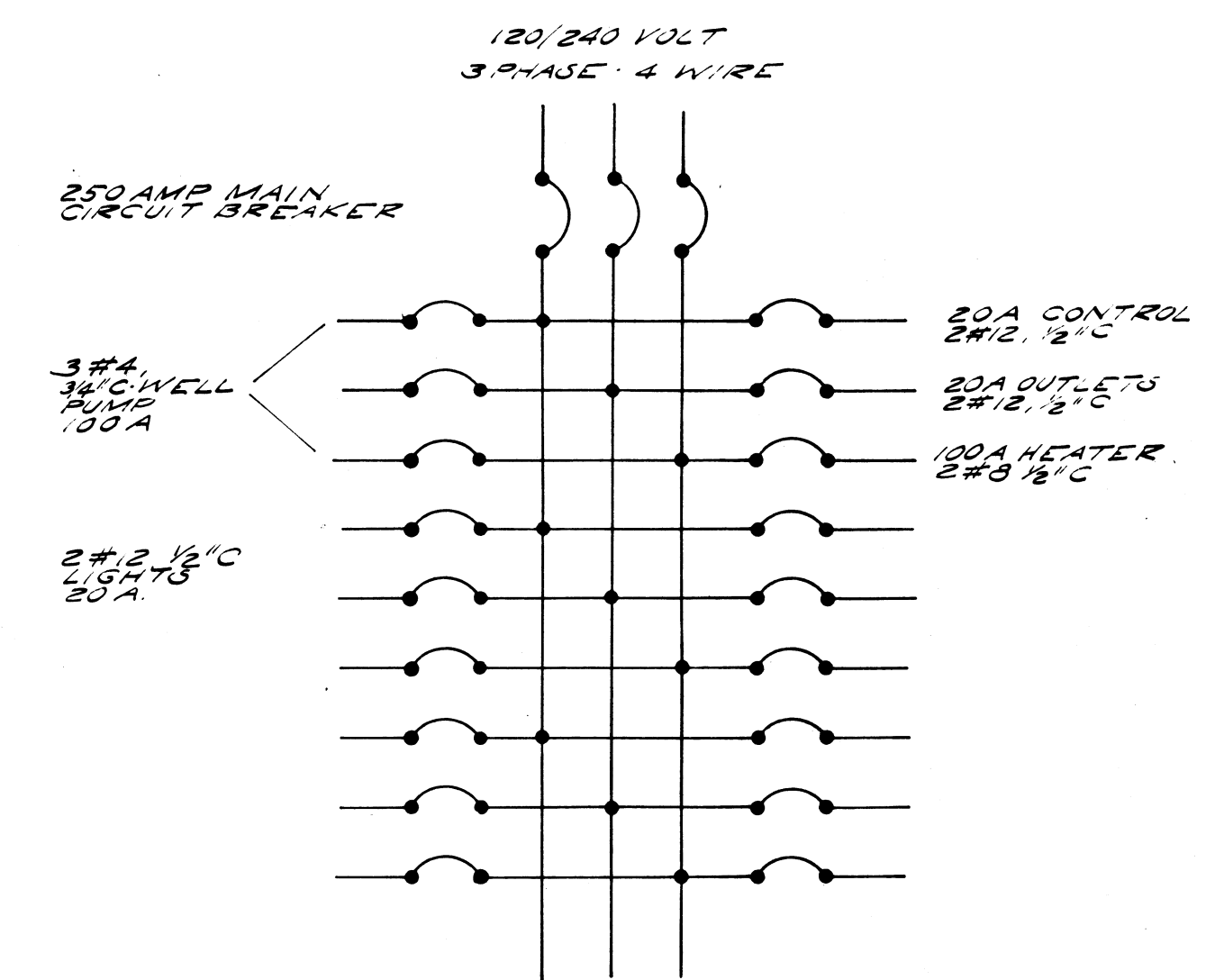




**ELECTRIC SCHEMATIC
WELL PUMP 1**



**ELECTRIC SCHEMATIC
WELL PUMP 2**



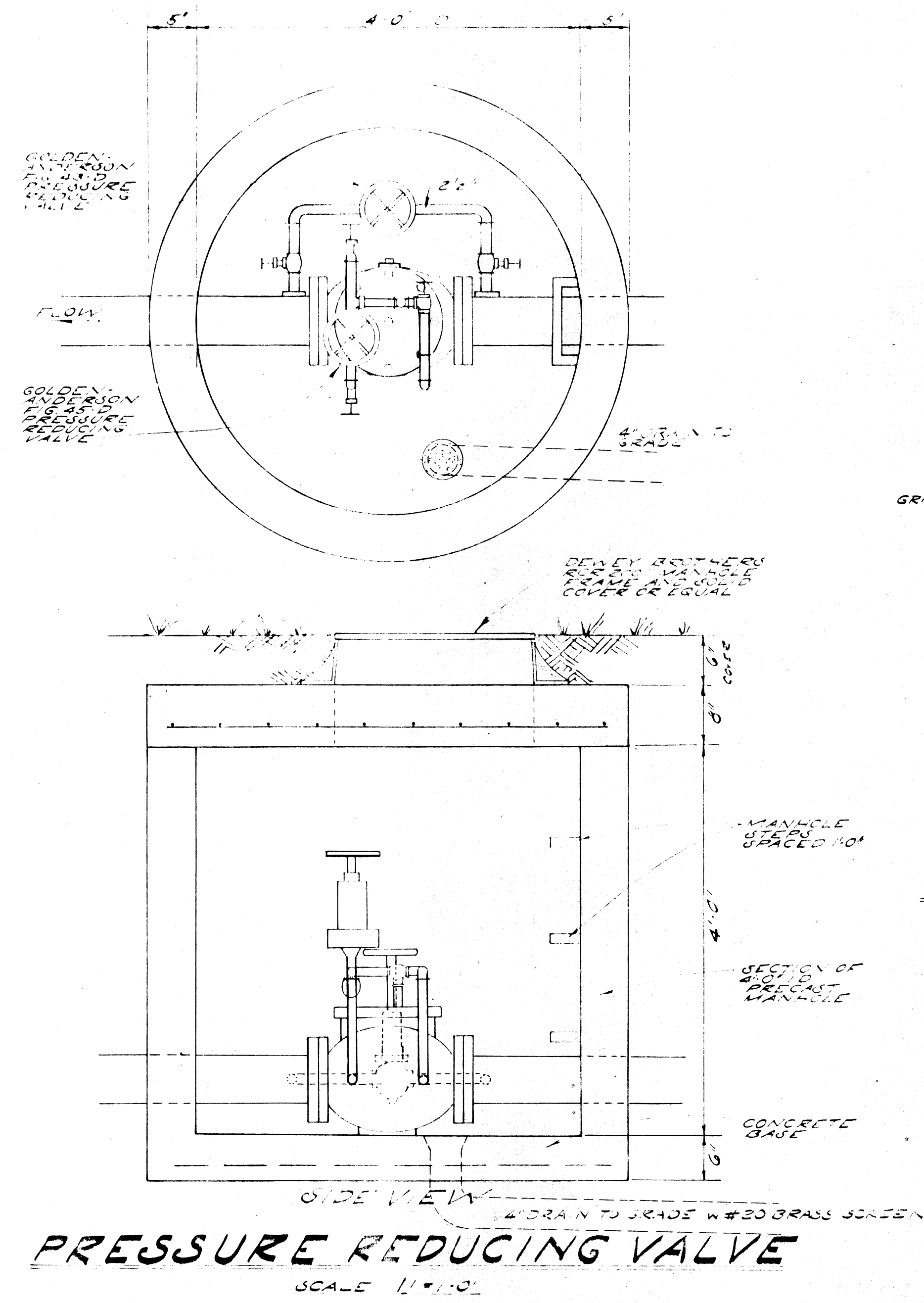
**PANELBOARD DIAGRAM
WELL N° 1**

HYDRAULIC CALCULATIONS

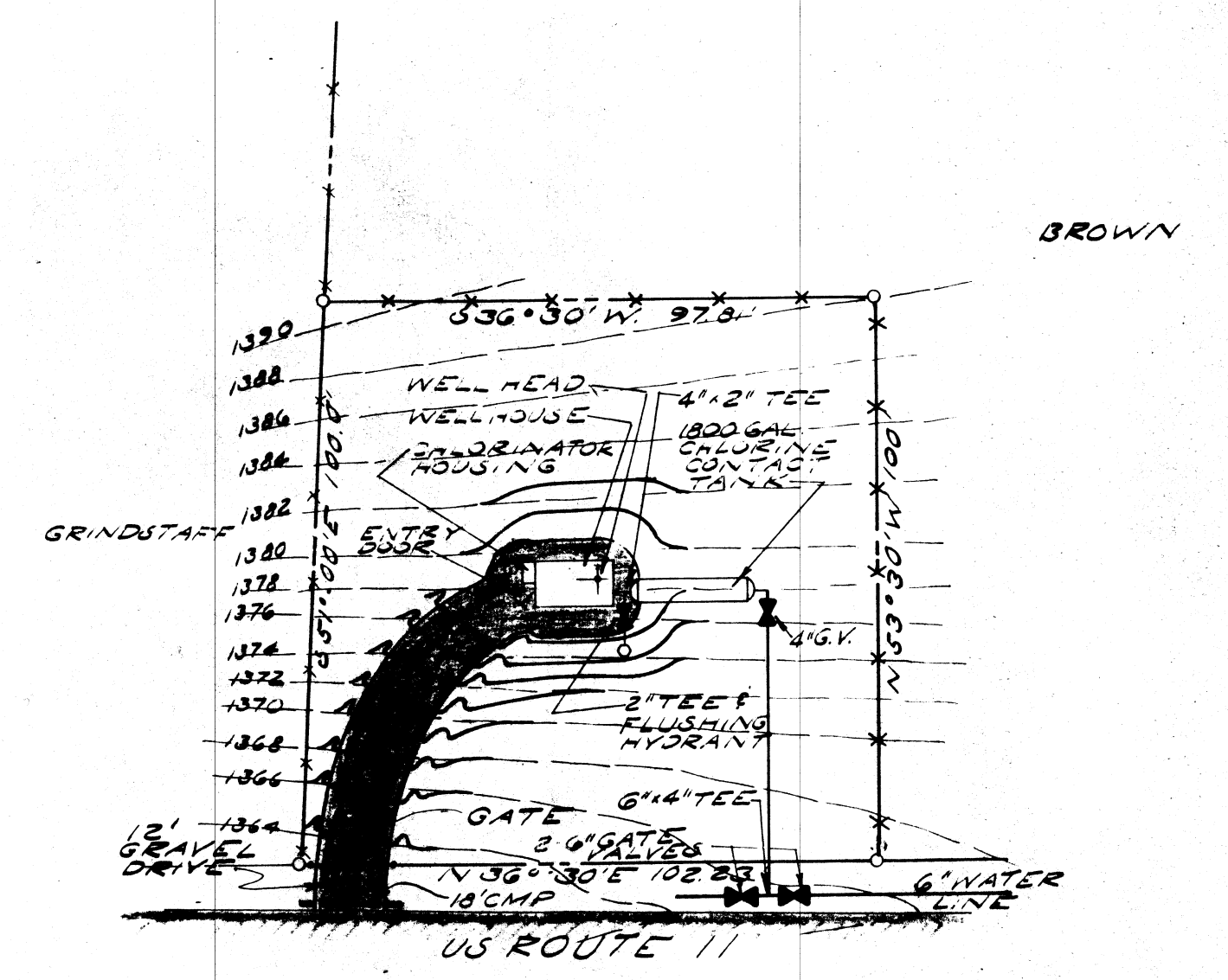
NOTE: NO HARDY-CROSS NECESSARY SINCE NO LOOPS IN SYSTEM

ASSUME: FIRE AT SOUTHERN END OF TOWN
 4H TO 652 (BLUE RIDGE ROAD)
 1400' 8" @ 525 GPM (C=120) = 9.32
 3250' 3" @ 475 GPM (C=120) = 17.41
 3250' 4" @ 50 GPM (C=100) = 26.43 FT
 ELEVATION DIFFERENCE: TANK TO END OF 652
 1590' - 1490' = 100'
 MINUS HEAD LOSS = 25.43
 MINUS TANK DROP = 20.0'
 MINIMUM HEAD = 53.6 FT = 23.0 PSI

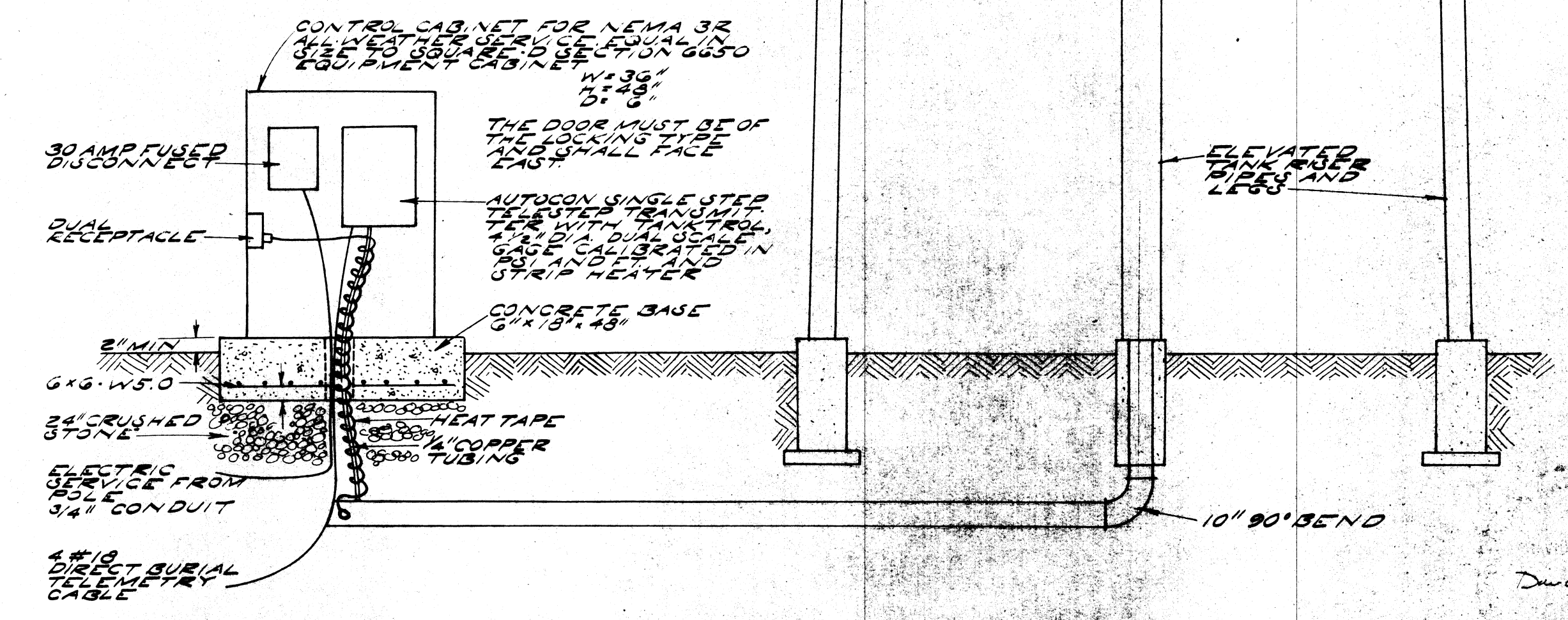
4H TO DALE AVENUE
 2300' 6" @ 400 GPM (C=120) = 36.25
 2300' 4" @ 120 GPM (C=113) = 8.11
 340' 6" @ 500 GPM (C=120) = 44.36 FT
 ELEVATION DIFFERENCE TO AIR RELEASE
 1590' - 1360' = 230'
 MINUS HEAD LOSS = 70.8
 MINUS TANK DROP = 20'
 MINUS REDUCED PRESSURE 75'
 MINIMUM HEAD 64.2 FT = 27.8 PSI



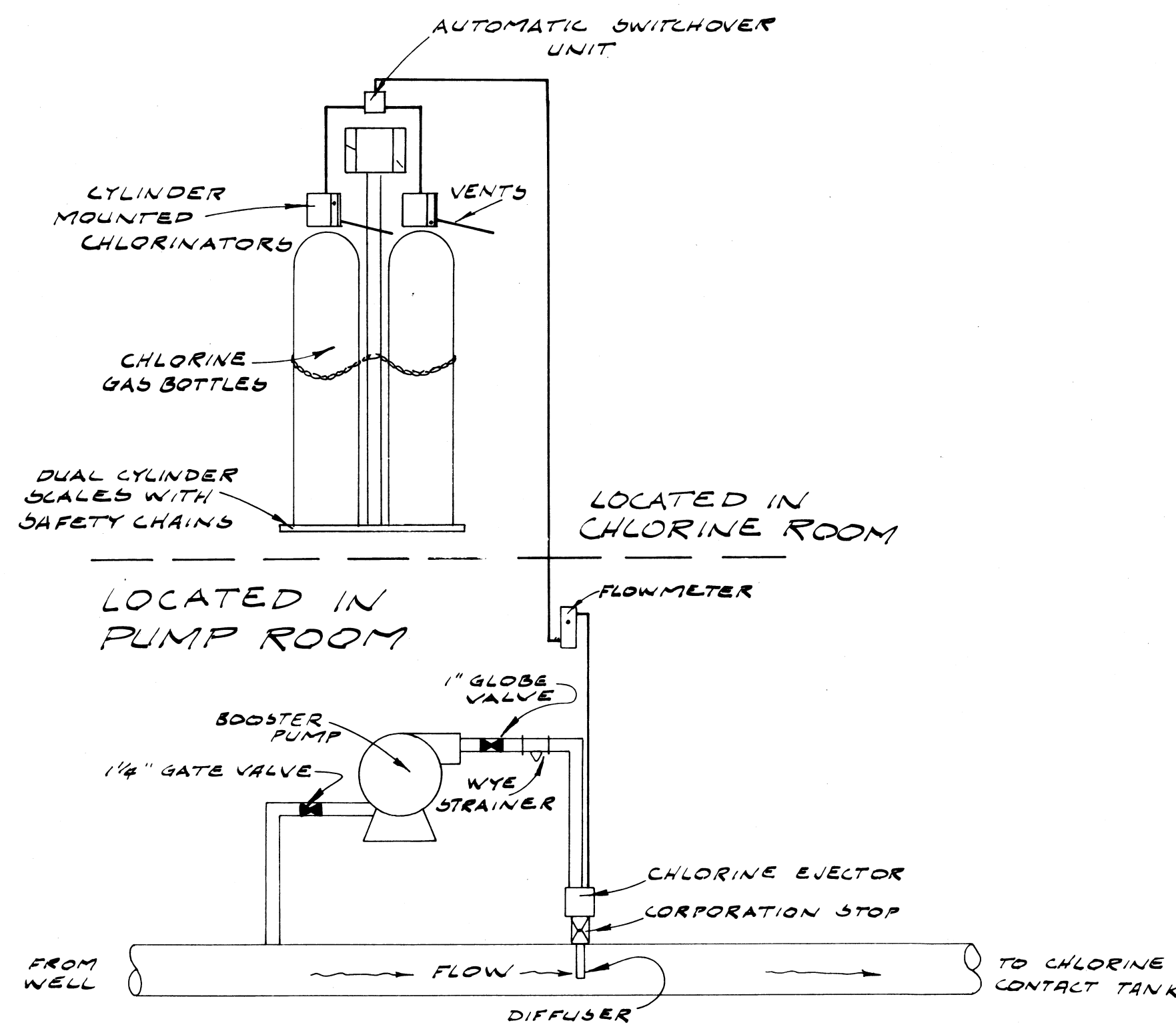
PRESSURE REDUCING VALVE
SCALE 1" = 10'



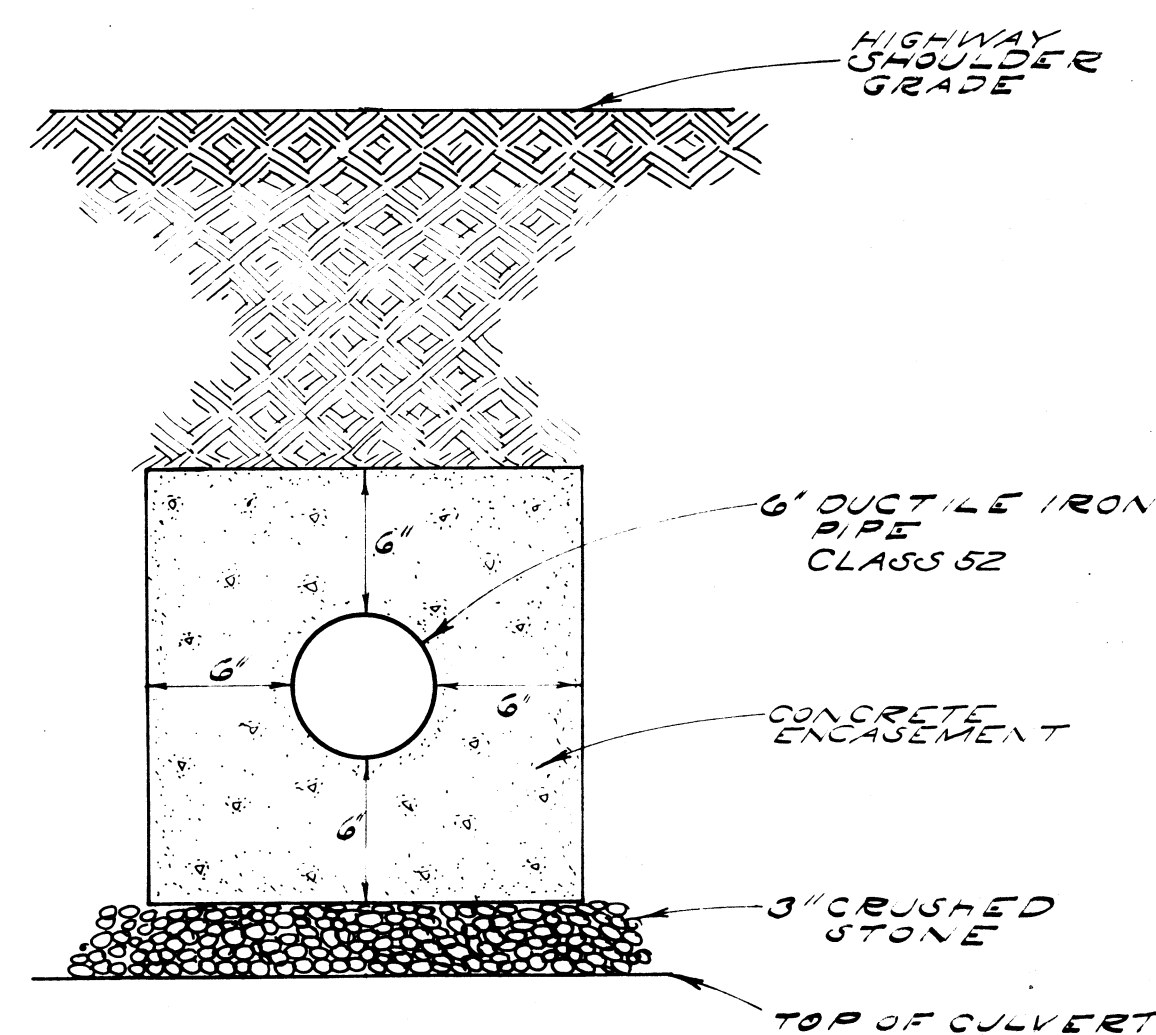
SITE PLAN WELL N° 2
SCALE 1" = 30'



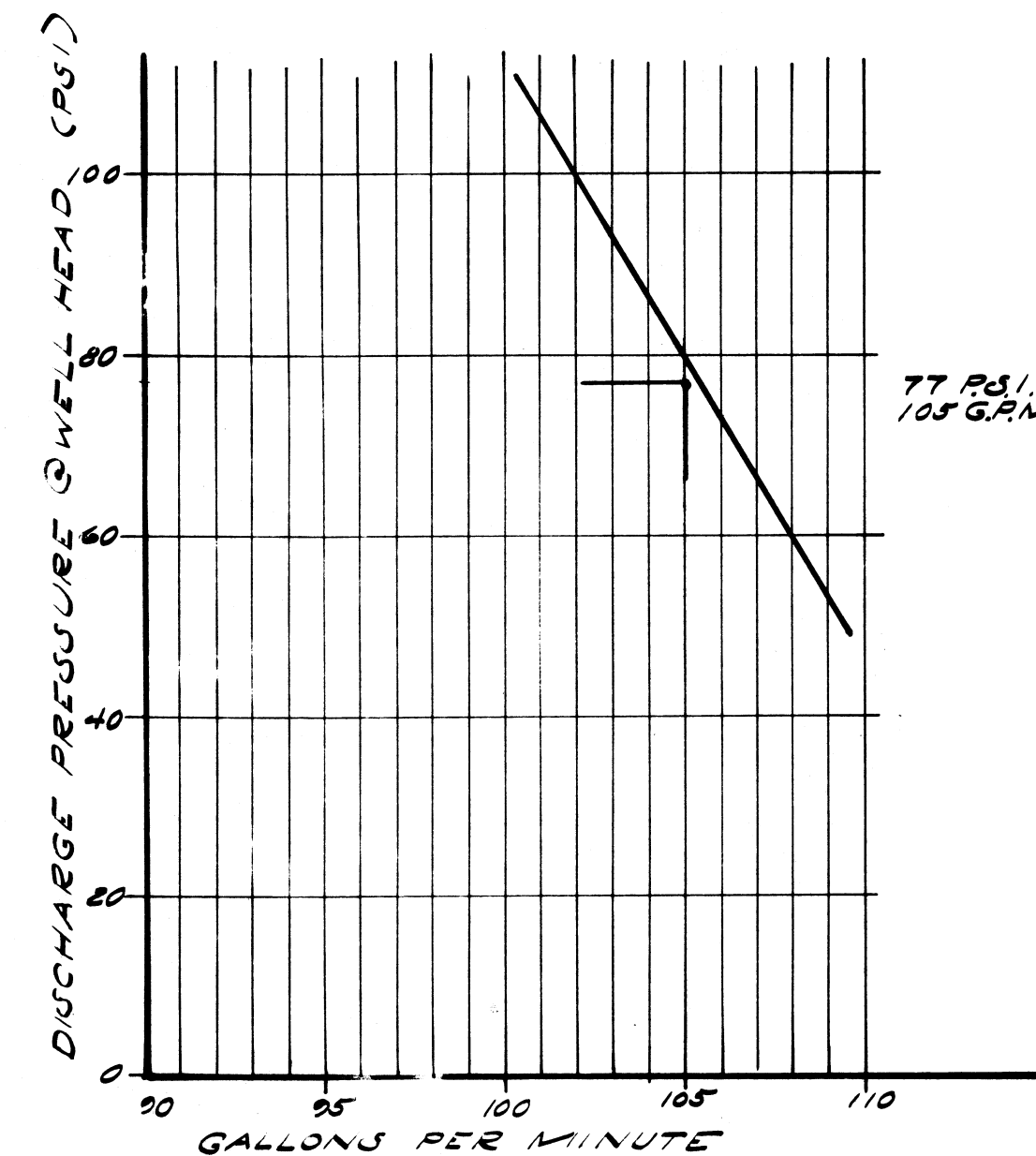
TELEMETRY TRANSMITTER DETAIL
NOT TO SCALE



CHLORINE SCHEMATIC

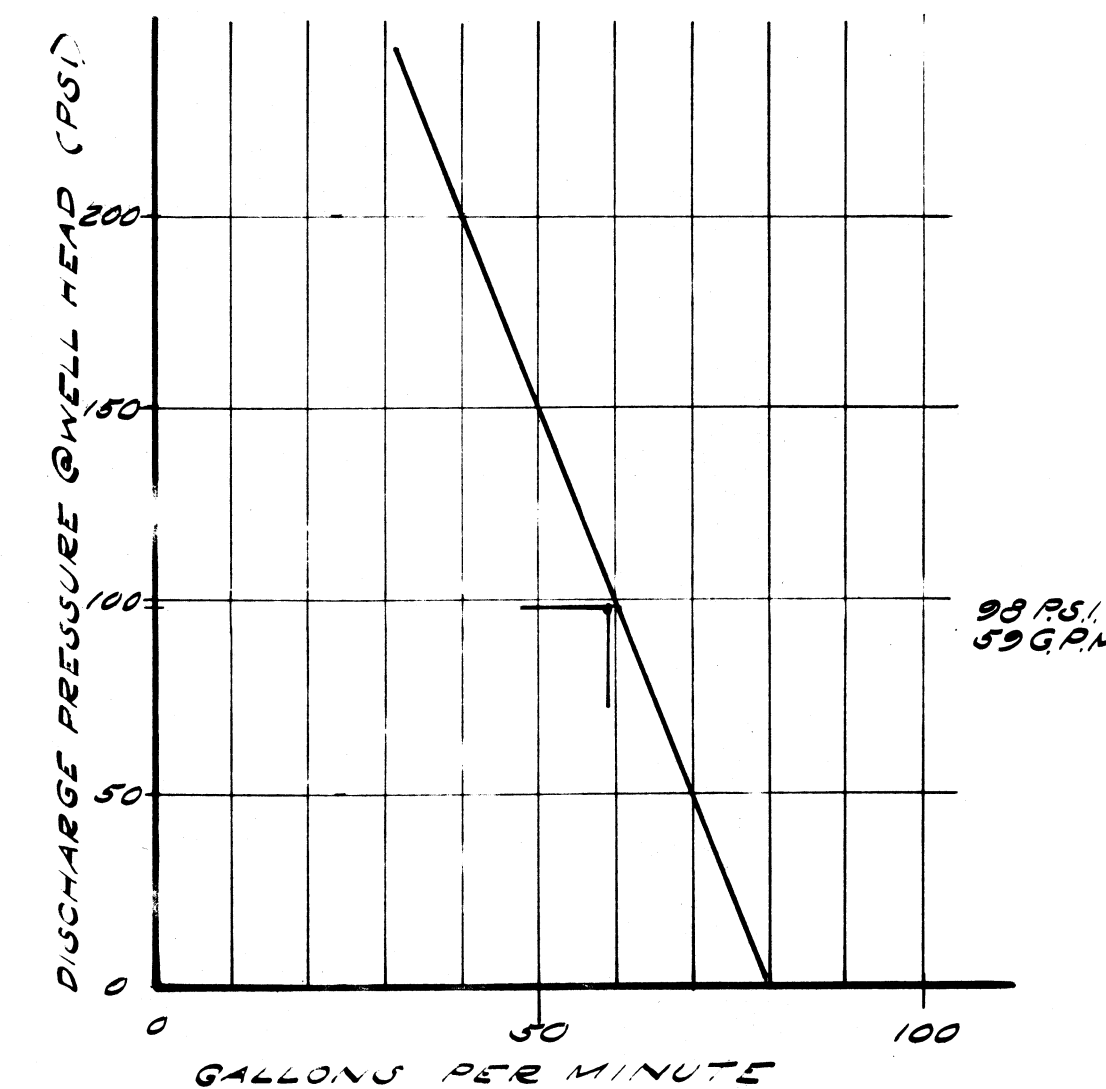


CONCRETE ENCASUREMENT
DETAIL



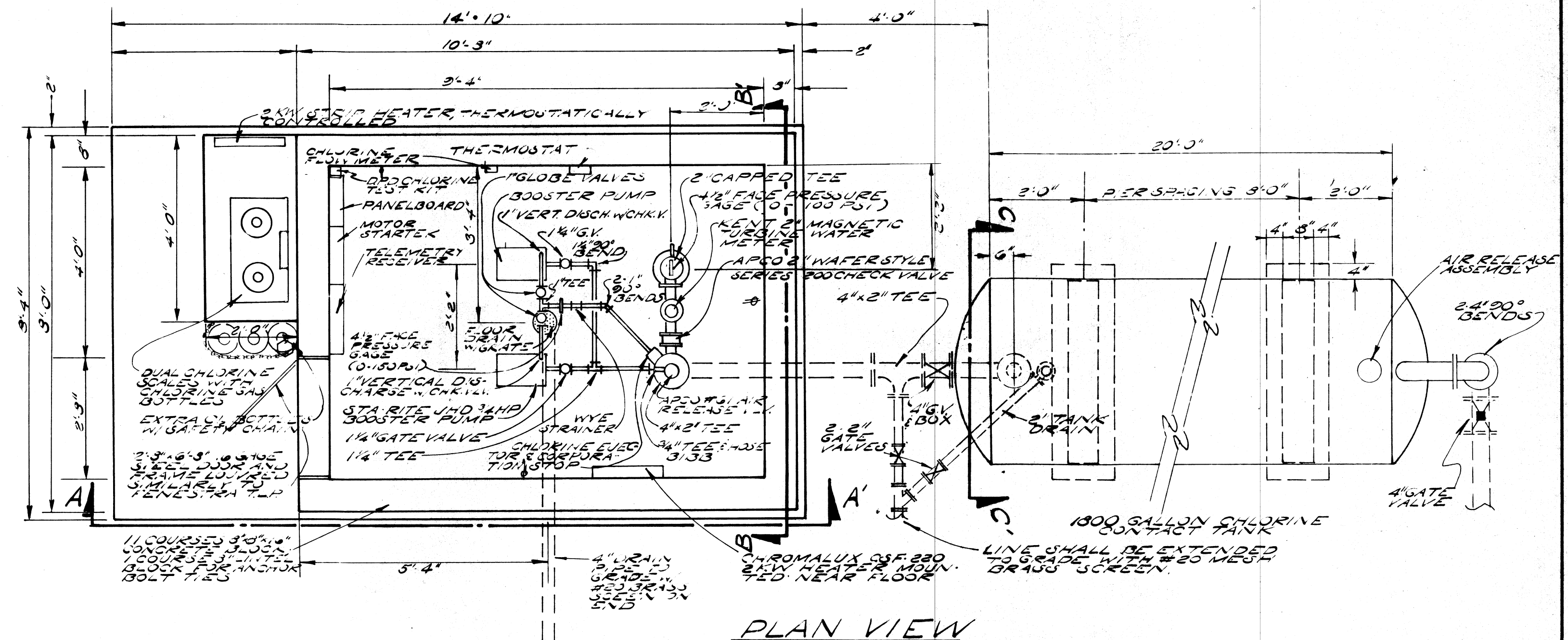
WELL BATED AT 75 G.P.M.
PUMP 2036820 20 H.P. 30 STAGE
3450 R.P.M.
STATIC HEAD = 160 FT. FRICTION HEAD = 10 FT.
DEPTH OF WELL = 300 FT.
ASSUMED DEPTH OF WATER = 200 FT.
DEPTH OF DROP PIPE = 250'
RISER PIPE DIAMETER = 4"

WELL NO. 1 --- PUMP CURVE

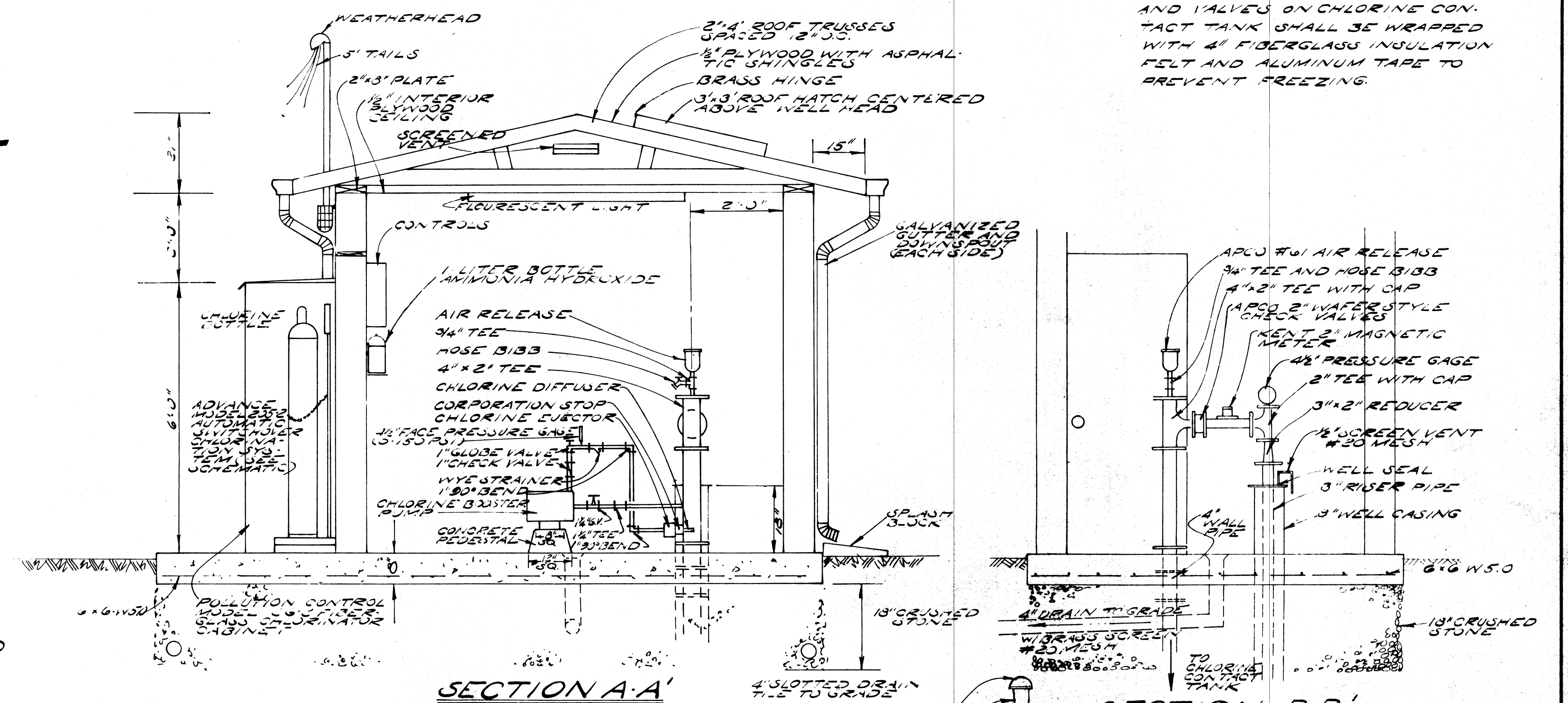


PUMP: JAGUZZI 1036820 10 H.P.
20 STAGE, 3450 R.P.M.
STATIC HEAD = 82.3 FRICTION HEAD = 10 FT.
DEPTH TO WATER = 203 FT.
LENGTH OF DROP PIPE = 231 FT.
RISER PIPE DIAMETER = 4"

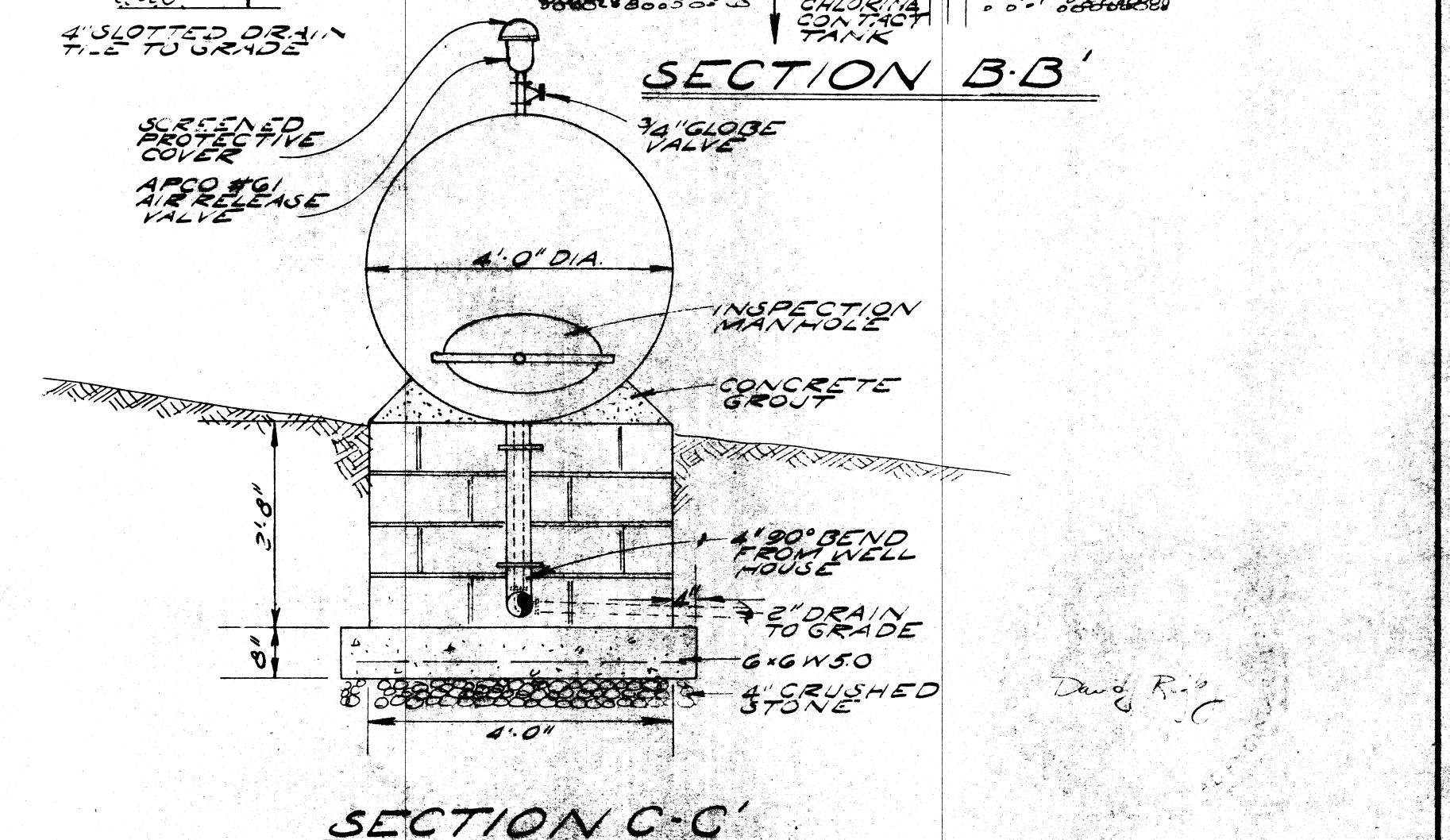
WELL NO. 2 --- PUMP CURVE

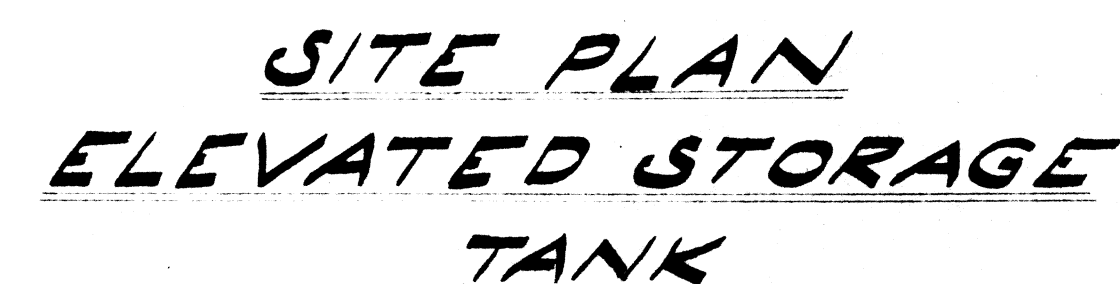


NOTE: ALL INLET AND OUTLET PIPING AND VALVES ON CHLORINE CONTACT TANK SHALL BE WRAPPED WITH 1/2" FIBERGLASS INSULATION FELT AND ALUMINUM TAPE TO PREVENT FREEZING.



#2 WELL HOUSE
DETAILS

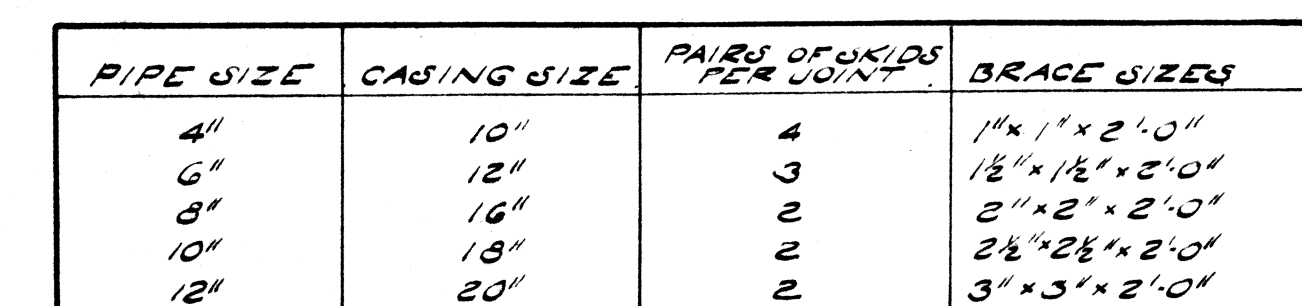




SCALE: 1" = 20'

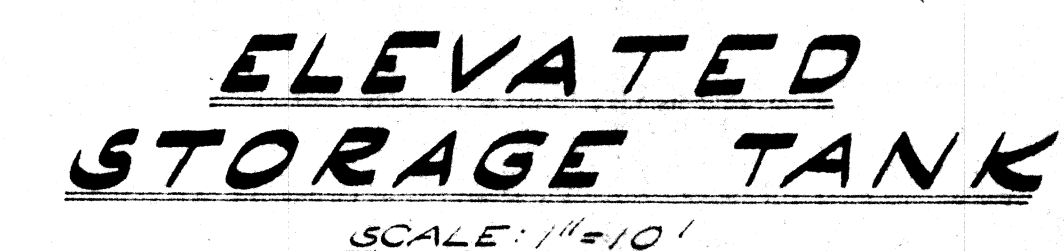
NOTE: ACCESS TO TANK SITE SHALL BE FROM THE TOWN OF TROUTVILLE PROPERTY AND SHALL BE AT THE CONTRACTOR'S EXPENSE

NOTE: THE EXISTING RESIDENTIAL POWER SERVICE ACROSS THE TANK SITE SHALL BE PLACED UNDERGROUND AND REINSTALLED BY THE WATER LINE CONTRACTOR TO THE SATISFACTION OF THE POWER COMPANY



NOTE: CASING IS SIZED FOR PUSH-ON JOINTS

CASING SKIDS DETAIL



DEPARTMENT OF HEALTH OF THE PROVINCE OF ONTARIO
DAVID J. RIGBY
David Rigby
8169