

QUANTITIES

ITEM	ESTIMATED	AS-BUILT		
		QUANTITIES	TYPE	SUPPLIER
4" FORCE MAIN & 8" GRAVITY SEWER				
4" D.I.P.	4137 L.F.			
4"-45" H.B.	4			
4"-22.5" H.B.	2			
4" CAP	1			
8" PVC SCH 35	135 L.F.			
MANHOLE	1 EA.			
WATERTIGHT MANHOLE FRAME AND COVER *	2 EA.			
8" WATER MAIN :				
8" D.I.P.	3800 L.F.			
6" D.I.P.	144 L.F.			
8" MAINLINE VALVES (G.V.)	11			
6" VALVE	1			
6" FIRE HYDRANTS	6			
8" X6" F.H.T.	6			
12" X8" RED.	1			
8" X6" RED.	2			
8"-22.5" H.B.	1			
8"-45" H.B.	1			
8"-90" H.B.	1			
6"-90" H.B.	1			
8" X8" TEE	6			
8" CAP	4			
8" X6" TEE	1			
6" X6" TEE	1			
AIR RELEASE VALVE & MANHOLE	1			
PRV VAULT & APPURTENANCES:				
PRECAST CONC. VAULT	1			
6" RESILIENT SEAT GATE VALVE	5			
6" X3" RED.	2			
3" PRESSURE REDUCING VALVE	1			
6" PRESSURE REDUCING VALVE	1			
6" X6" TEE (BASE)	1			
6" DRESSER COUPLING	1			
3" FLANGE ADAPTOR	1			
6" FLANGE ADAPTOR	1			
6" RELIEF VALVE	1			
36" X36" ALUMINUM HATCH	1			
STANDARD ALUMINUM STEPS	7			
SUMP PUMP PIT (12" X12" X18")	1			
SUMP PUMP (NOT SHOWN)	1			
1 1/2" RELIEF DRAIN	30 L.F.			
6" EMERGENCY OVERFLOW	31 L.F.			
3000 PSI CONC. (INSIDE VAULT)	1.5 C.Y.			
3" D.I.P. (PIPING IN VAULT)	4 L.F.			
6" D.I.P. (PIPING IN VAULT)	15 L.F.			
TELEMETRY & ELECTRICAL EQUIPMENT (COMPLETED)	1			

* REPLACE EX. MANHOLE FRAME & COVER WITH WATERTIGHT FRAME AND COVER AT EX. MH.S 410 & 412 (GATHER HOLLOW CT.)

B.M. NO. 1777 ELEV. 470.157 FT.
CONCRETE MONUMENT
@ SURFACE 20'
N. OF C.R.
66' E. OF CHAPEL AVE.

B.M. NO. 177A ELEV. 477.488 FT.
STANDARD BRASS OR
ALUMINUM DISK 1" - 2"
BELOW SURFACE
207' EAST OF UTILITY
POLE, 24.7' NORTH OF C
OLD FREDERICK RD.,
AND 294.6' WEST OF
X-CUT IN 3RD. POST
OF GUARD RAIL.

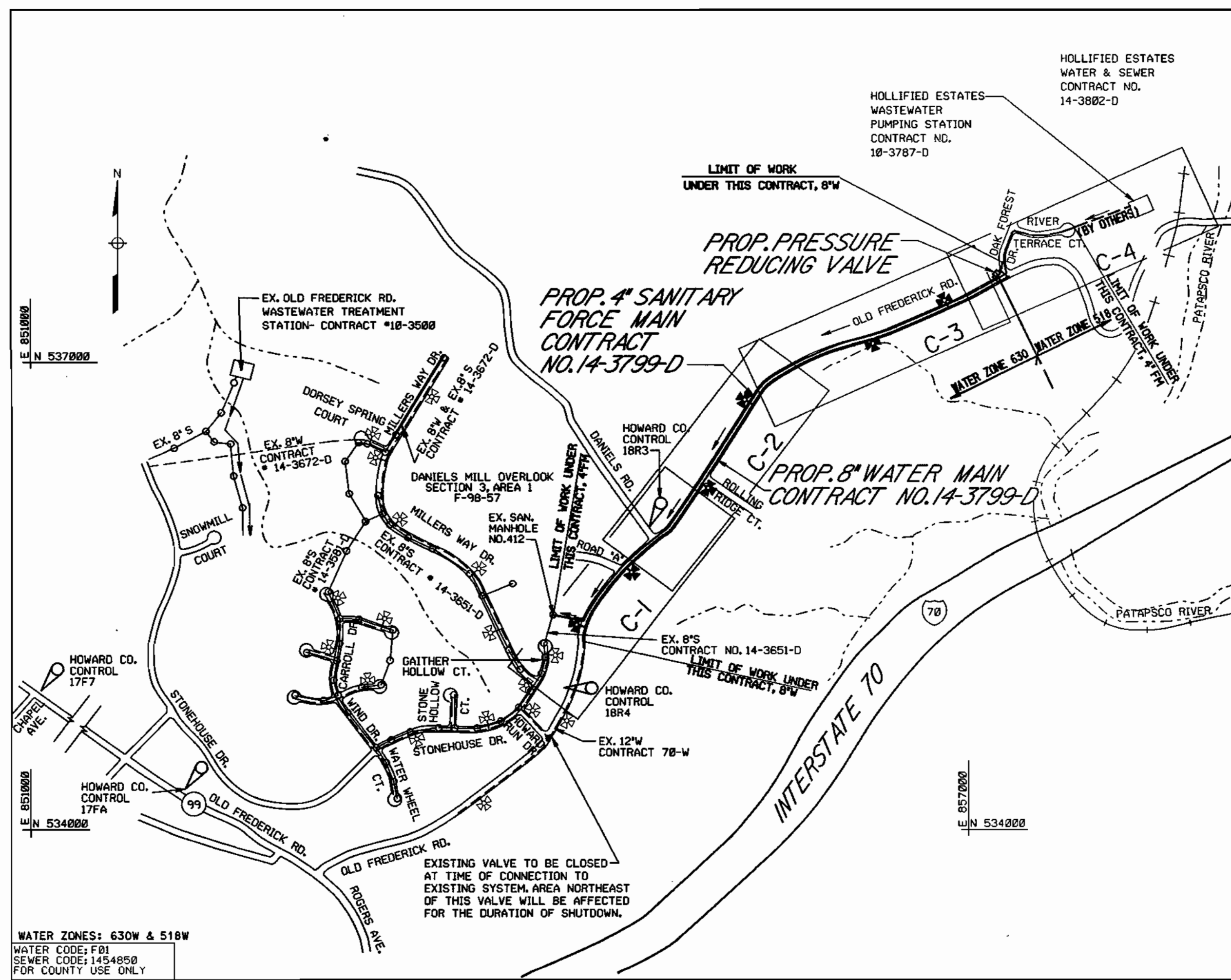
B.M. NO. 18R3 ELEV. 459.680 FT.
3/4" IRON ROD WITH
PLASTIC CAP SET
FLUSH WITH GROUND
SURFACE 99' +/- WEST OF
WEST EDGE OF
OLD FREDERICK ROAD
4.5' +/- NORTH OF
NORTH EDGE OF
DANIELS ROAD,
39.2' EAST OF G&E POLE
NO. 499943

B.M. NO. 18R4 ELEV. 475.951 FT.
3/4" IRON ROD WITH
PLASTIC CAP SET
FLUSH WITH GROUND
SURFACE 12.5' WEST FROM C
OLD FREDERICK RD.
32.2' WEST OF LIGHT POST
LOCATED IN MEDIAN STRIP
BETWEEN ASPHALT DRIVEWAYS
FOR HOUSE NO. S
8589 & 8599, 91.4' NORTH OF
LIGHT POLE ON EAST SIDE
OF ROAD.

INDEX OF DRAWINGS

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1	G-1	TITLE SHEET, VICINITY MAP, QUANTITIES, INDEX OF DRAWINGS AND GENERAL NOTES
2	C-1	PLAN AND PROFILE
3	C-2	PLAN AND PROFILE
4	C-3	PLAN AND PROFILE
5	C-4	PLAN AND PROFILE
6	C-5	DETAILS
7	E-1	ELECTRICAL DETAILS
8	I-1	PRV SCADA INTERFACE
9	SC-1	SEDIMENT CONTROL NOTES AND DETAILS
10	SC-2	SEDIMENT CONTROL NOTES

FOR SEDIMENT AND EROSION CONTROL LEGEND, SEE DRAWING SC-1.



VICINITY MAP

SCALE: 1" = 600'

CONTRACT NO. 14-3799-D
HOLLIFIELD ESTATES
4" FORCE MAIN, 8" WATER MAIN AND
PRESSURE REDUCING VALVE
SECOND ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

[Signature]
6-8-00
[Stamp]

GENERAL NOTES

- APPROXIMATE LOCATION OF EXISTING MAINS ARE SHOWN. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT EXISTING MAINS AND SERVICES AND MAINTAIN UNINTERRUPTED SUPPLY. ANY DAMAGE INCURRED SHALL BE REPAIRED IMMEDIATELY TO THE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE.
- THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND PLANE COORDINATE SYSTEM. (NORTH AMERICAN DATUM OF 1983-NAD 83) HOWARD COUNTY MONUMENTS NOS. 1777, 177A, 18R4 AND 18R3 WERE USED FOR THIS PROJECT.
- ALL VERTICAL CONTROLS ARE BASED ON U.S.G.S. DATUM. (NAVD29)
- ALL PIPE ELEVATIONS ARE INVERT ELEVATIONS UNLESS OTHERWISE NOTED ON PLANS.
- CLEAR ALL UTILITIES BY A MINIMUM OF 6" CLEAR ALL POLES BY 2'-0" MINIMUM, OR TUNNEL AS REQUIRED. THE CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANIES TO SCHEDULE THE BRACING OF THE POLES, IF REQUIRED.
- FOR DETAILS NOT SHOWN ON DRAWINGS, AND FOR MATERIALS AND CONSTRUCTION METHODS, USE HOWARD COUNTY DESIGN MANUAL, VOLUME IV, STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION (LATEST EDITION). THE CONTRACTOR SHALL HAVE A COPY OF VOLUME IV ON THE JOB SITE.
- EXISTING UTILITIES IN THE VICINITY OF PROPOSED WORK FOR WHICH TEST PITS HAVE NOT BEEN DONE SHALL BE VERIFIED BY THE CONTRACTOR TO HIS OWN SATISFACTION. ANY DAMAGE TO EXISTING FACILITIES DUE TO THE CONTRACTOR'S NEGLIGENCE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
- CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITIES OR AGENCIES AT LEAST FIVE WORKING DAYS BEFORE STARTING WORK SHOWN ON THESE PLANS:
BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION, HOWARD CO. DPW 410-313-1880
STATE HIGHWAY ADMINISTRATION 410-531-5533
BGE (CONTRACTOR SERVICES) 410-850-4620
BGE (UNDERGROUND DAMAGE CONTROL) 410-291-4607
BUREAU OF UTILITIES, HOWARD CO. DPW 410-313-4900
MISS UTILITY 1-800-257-7777
AT&T 410-865-3808
COLONIAL PIPELINE CO. 410-795-1330
BELL ATLANTIC 1-800-446-5266
- TREES AND SHRUBS ARE TO BE PROTECTED FROM DAMAGE TO THE MAXIMUM EXTENT POSSIBLE.
- CONTRACTOR SHALL REMOVE TREES, STUMPS AND ROOTS ALONG LINE OF EXCAVATION. PAYMENT FOR SUCH REMOVAL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONSTRUCTION OF THE MAIN.
- ALL WATER AND FORCE MAINS SHALL HAVE A MINIMUM OF 3'-6" OF COVER UNLESS OTHERWISE NOTED.
- VALVES ADJACENT TO TEES SHALL BE STRAPPED TO TEES.
- ALL DIP FITTINGS SHALL BE IN ACCORDANCE WITH ANWA SPECIFICATIONS C-153; DUCTILE IRON COMPACT FITTINGS, 3-INCH THROUGH 12-INCH FOR WATER AND SEWER MAIN.
- NO WETLAND EXISTS WITHIN THE LIMITS OF THIS CONTRACT.
- THE CONTRACTOR SHALL NOT OPERATE ANY WATER VALVES ON THE EXISTING WATER SYSTEM. THE CONTRACTOR SHALL CONTACT HOWARD COUNTY DPW BUREAU OF UTILITIES IF OPERATION OF VALVES IS NEEDED.
- ALL FITTINGS ON WATER MAIN SHALL BE BUTTRESSED OR ANCHORED WITH CONCRETE IN ACCORDANCE WITH THE COUNTY STANDARD DETAILS UNLESS OTHERWISE NOTED ON DRAWINGS OR SPECIFICATIONS. ALL FITTINGS ON THE SANITARY FORCE MAIN SHALL BE RESTRAINED AS INDICATED IN THE SPECIFICATIONS.
- THE CONTRACTOR SHALL NOTIFY THE BUREAU OF HIGHWAYS, HOWARD COUNTY, AT 410-313-2450 AT LEAST FIVE DAYS BEFORE OPEN CUT OF ANY COUNTY ROAD OR BORING/JACKING OPERATION IN COUNTY ROADS FOR LAYING WATER AND SEWER MAIN OR HOUSE CONNECTIONS. THE APPROVAL OF THESE DRAWINGS WILL CONSTITUTE COMPLIANCE WITH THE DPW REQUIREMENTS PER SECTION 18.114(c) OF THE HOWARD COUNTY CODE.
- TRAFFIC CONTROL DEVICES, MARKINGS AND SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). ALL DEVICES AND REGULATORY SIGNS SHALL BE IN PLACE PRIOR TO THE PLACEMENT OF ANY ASPHALT.
- THE EXISTING TOPOGRAPHY IS TAKEN FROM FIELD RUN SURVEY WITH TWO FOOT CONTOUR INTERVALS
- EXISTING WATER IS PUBLIC, CONTRACT NO. 70-W. PROPOSED WATER IS PUBLIC, CONTRACT NO. 14-3799-D. THE EXISTING WATER ZONE IS 630. THE NEW WATER ZONE CREATED BY THE PRV VALVE IS 518.
- EXISTING SEWER IS PUBLIC, CONTRACT NO. 14-3651-D. PROPOSED SEWER IS PUBLIC, CONTRACT NO. 14-3799-D DRAINAGE AREA IS PATAPSCO.
- CONTRACTOR TO PROTECT EXISTING PROPERTY MARKERS FROM BEING DISTURBED. IF A DISTURBANCE OCCURS, REPLACEMENT MUST BE DONE BY A LICENSED LAND SURVEYOR AT THE CONTRACTOR EXPENSE.
- ALL WATER MAINS AND SANITARY FORCE MAINS TO BE SPECIAL THICKNESS CLASS 52 D.I.P. UNLESS OTHERWISE NOTED.
- EXISTING GROUND IS ALONG C 8" WATER MAIN EXCEPT AS NOTED.
- FIRE HYDRANTS SHALL BE SET TO BURY ELEVATIONS SHOWN ON THE DRAWINGS. ALL FIRE HYDRANTS SHALL BE RESTRAINED AND BUTTRESSED WITH CONCRETE IN ACCORDANCE WITH THE STANDARD DETAILS. SOIL AROUND THE FIRE HYDRANT SHALL BE COMPACTED IN ACCORDANCE WITH SECTION 1000 AND 1005 OF THE STANDARD SPECIFICATIONS.
- MANHOLE DESIGNATED WT. IN PLAN AND IN PROFILE SHALL HAVE WATERTIGHT FRAME AND COVERS, STANDARD DETAIL 05.52.
- ALL MANHOLES SHALL BE 4'-0" INSIDE DIAMETER UNLESS OTHERWISE NOTED ON DRAWINGS.
- MANHOLE LOCATED IN ROADWAY SHALL HAVE STANDARD HEAVY WATERTIGHT TRAFFIC MANHOLE FRAME AND COVER.

NEW	LEGEND	EXISTING
---	UTILITY EASEMENT LINE	---
---	PROPERTY LINE- R/W LINE	---
---	TRAFFIC, PROPERTY SIGN	---
---	UTILITY POLE & GUY WIRE	---
---	LIGHT POLE	---
---	BANK/SLOPE	---
---	FENCE	---
---	TREE/TREE LINE	---
---	CONTOUR	---
---	PIPELINE CURVE P.I./ TRAV. P.I.	---
---	SEWER MANHOLE	---
---	SEWAGE FORCE MAIN	---
---	SEWER CLEAN-OUT	---
---	WATER VALVE	---
---	WATER METER	---
---	FIRE HYDRANT	---
---	FHT (8" X6" FIRE HYDRANT TEE)	---
---	FHV (6" FIRE HYDRANT VALVE)	---
---	BLOW-OFF VAULT TYPE	---
---	LIMITS OF DISTURBANCE	---
---	WATER	---
---	GAS	---
---	UNDERGROUND TELE. CABLE	---
---	TEST PIT	---
---	BENCHMARK	---
---	IRON PIN/IRON PIPE	---
---	CONCRETE MONUMENT	---
---	STONE	---

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND.

PREPARED BY:

WR&A
Whitman, Reardon and Associates, LLP.
2315 ST. Paul ST.
Baltimore, Md. 21218
410-235-3450



DES: SEA/EJM

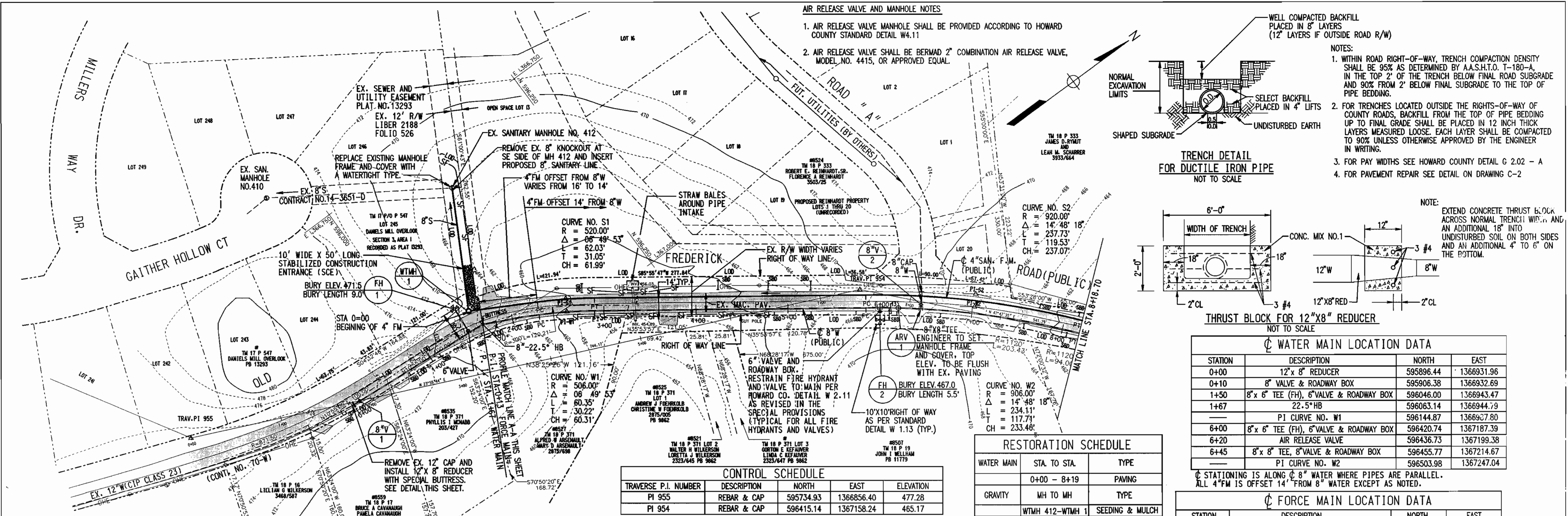
DRN: EJM/GG

CHK: EJM/WRD

DATE: 10-22-99

TITLE SHEET, VICINITY MAP,
QUANTITIES,
INDEX OF DRAWINGS &
GENERAL NOTES

HOLLIFIELD ESTATES
4" FORCE MAIN, 8" WATER MAIN AND
PRESSURE REDUCING VALVE
SECOND ELECTION DISTRICT
HOWARD COUNTY, MARYLAND



CONTROL SCHEDULE

TRAVERSE P.I. NUMBER	DESCRIPTION	NORTH	EAST	ELEVATION
PI 955	REBAR & CAP	595734.93	1366856.40	477.28
PI 954	REBAR & CAP	596415.14	1367158.24	465.17

RESTORATION SCHEDULE

WATER MAIN	STA. TO STA.	TYPE
	0+00 - 8+19	PAVING
GRAVITY	MH TO MH	TYPE
	WTMH 412 - WTMH 1	SEEDING & MULCH
FORCE MAIN	STA. TO STA.	TYPE
	1+37 - 8+19	PAVING

WATER MAIN LOCATION DATA

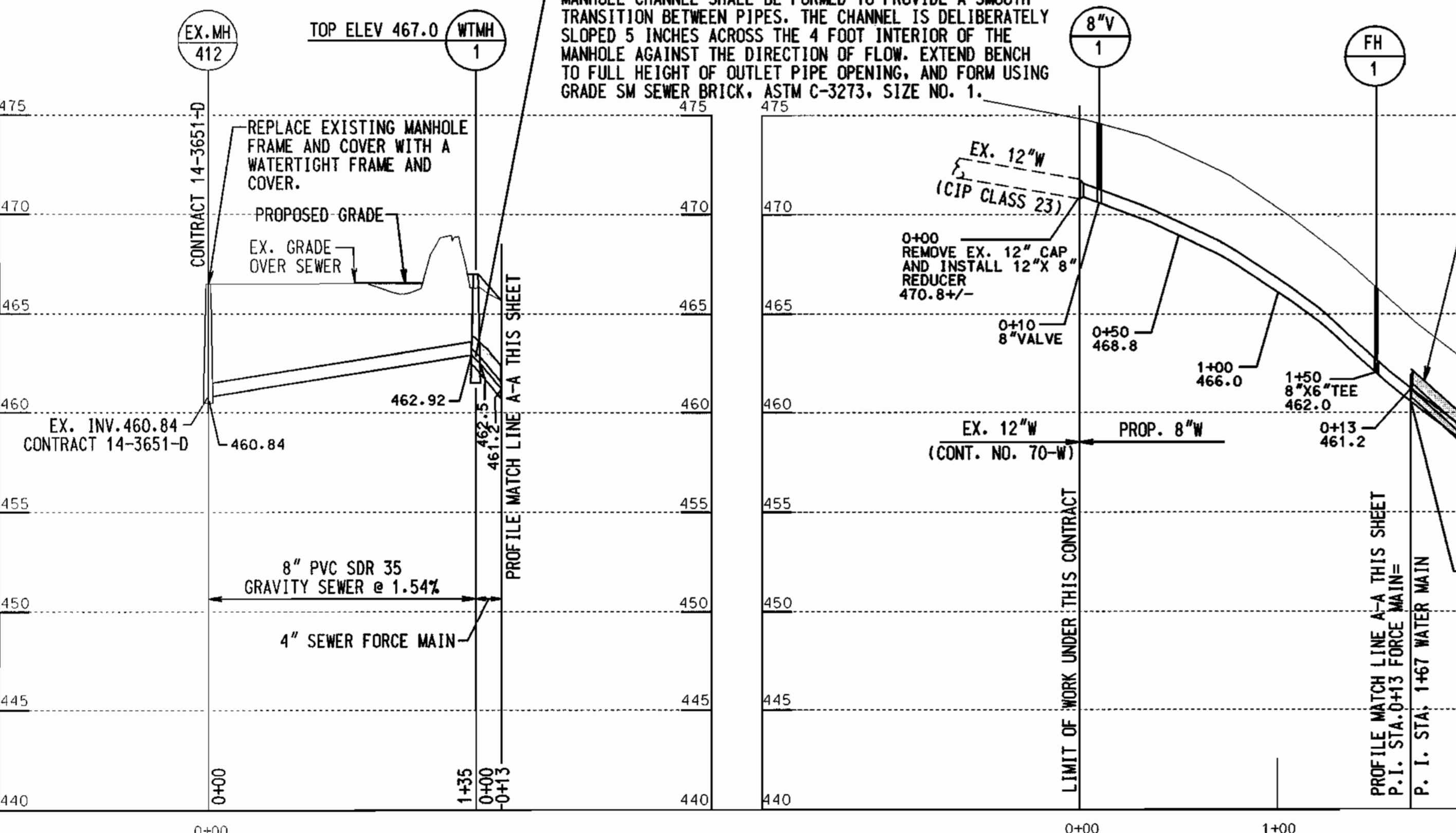
STATION	DESCRIPTION	NORTH	EAST
0+00	12" x 8" REDUCER	595896.44	1366931.96
0+10	8" VALVE & ROADWAY BOX	595906.38	1366932.69
1+50	8" x 6" TEE (FH), 6" VALVE & ROADWAY BOX	596046.00	1366943.47
1+67	22.5" HB	596063.14	1366944.79
	PI CURVE NO. W1	596144.87	1366907.80
6+00	8" x 6" TEE (FH), 6" VALVE & ROADWAY BOX	596420.74	1367187.39
6+20	AIR RELEASE VALVE	596436.73	1367199.38
6+45	8" x 8" TEE, 8" VALVE & ROADWAY BOX	596455.77	1367214.67
	PI CURVE NO. W2	596503.98	1367247.04

FORCE MAIN LOCATION DATA

STATION	DESCRIPTION	NORTH	EAST
0+00	SAN. MANHOLE NO. 1	596124.89	1366805.84
	STA. 0+13 FORCE MAIN = 1+67 WATER MAIN	596070.54	1366930.61
	PI CURVE NO. S1	596152.36	1366975.95
	PI CURVE NO. S2	596513.65	1367236.75

PLAN
SCALE: 1" = 50'

- NOTES:**
- STATIONING IS ALONG 8" WATER MAIN WHERE PIPES ARE PARALLEL. ALL 4" FM IS OFFSET 14" FROM 8" WATER EXCEPT AS NOTED.
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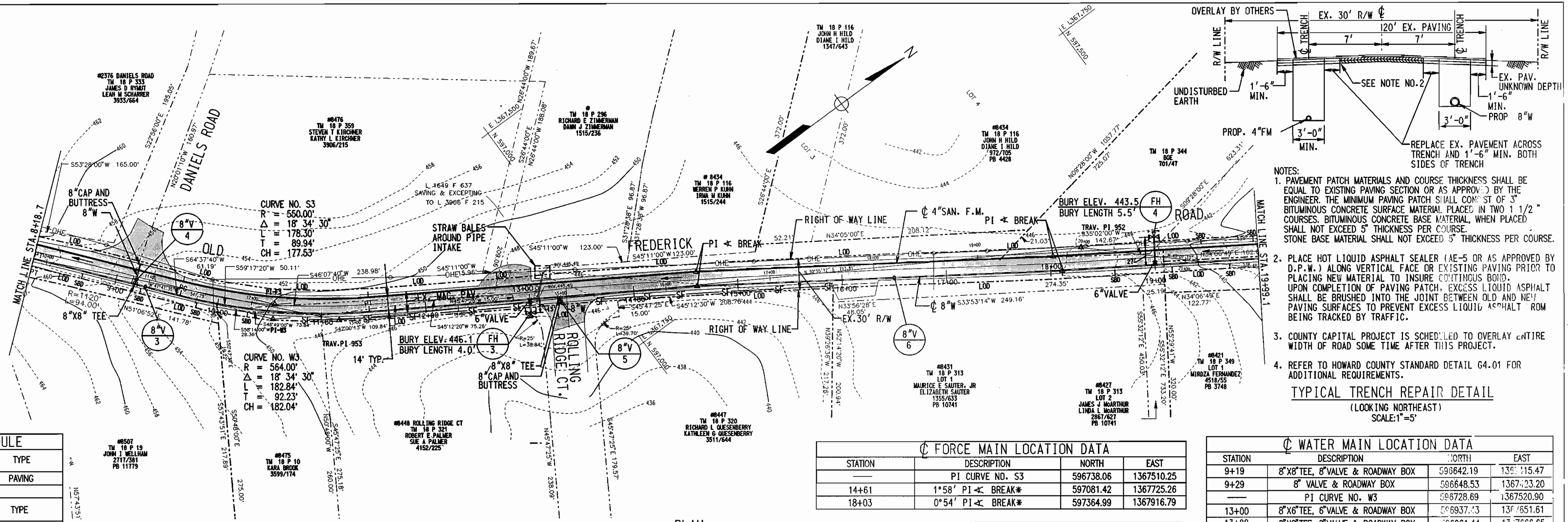


PROFILES
SCALE: HOR. 1" = 50'
VERT. 1" = 5'

SEDIMENT CONTROL APPLICABLE TO ALL SHEETS:

- SPOIL FROM THE TRENCHING OPERATIONS SHALL BE PLACED ON THE UPHILL SIDE OF THE CONSTRUCTION.
- THE TRENCHING OPERATION SHALL BE LIMITED TO THAT WHICH CAN BE BACKFILLED AND STABILIZED EACH WORKING DAY.
- SEE SHEET 9 AND 10 OF 10 FOR OTHER SEDIMENT CONTROL NOTES.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND.	DEPARTMENT OF PLANNING AND ZONING HOWARD COUNTY, MARYLAND.	PREPARED BY: WR&A Whitman, Reardon and Associates, LLP. 2315 ST. PAUL ST. BALTIMORE, MD. 21218 410-235-3450	DES: SEA/EJM DRN: EJM/GG CHK: EJM/WRD DATE: 10-22-99	BY: NO. REVISION DATE	600' SCALE MAP NO. 18 BLOCK NO. 1, 2 & 7	HOLLIFIELD ESTATES 4" FORCE MAIN, 8" WATER MAIN AND PRESSURE REDUCING VALVE SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND	SCALE AS SHOWN SHEET OF 10
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NOTES:

- PAVEMENT PATCH MATERIALS AND COURSE THICKNESS SHALL BE EQUAL TO EXISTING PAVING SECTION OR AS APPROVED BY THE ENGINEER. THE MINIMUM PAVING PATCH SHALL CONSIST OF 3" BITUMINOUS CONCRETE SURFACE MATERIAL PLACED IN TWO 1 1/2" COURSES. BITUMINOUS CONCRETE BASE MATERIAL, WHEN PLACED SHALL NOT EXCEED 5" THICKNESS PER COURSE. STONE BASE MATERIAL SHALL NOT EXCEED 5" THICKNESS PER COURSE.
- PLACE HOT LIQUID ASPHALT SEALER (AE-5 OR AS APPROVED BY D.P.W.) ALONG VERTICAL FACE OR EXISTING PAVING PRIOR TO PLACING NEW MATERIAL TO INSURE CONTINUOUS BOND. UPON COMPLETION OF PAVING PATCH, EXCESS LIQUID ASPHALT SHALL BE BRUSHED INTO THE JOINT BETWEEN OLD AND NEW PAVING SURFACES TO PREVENT EXCESS LIQUID ASPHALT FROM BEING TRACKED BY TRAFFIC.
- COUNTY CAPITAL PROJECT IS SCHEDULED TO OVERLAY ENTIRE WIDTH OF ROAD SOME TIME AFTER THIS PROJECT.
- REFER TO HOWARD COUNTY STANDARD DETAIL G4.01 FOR ADDITIONAL REQUIREMENTS.

TYPICAL TRENCH REPAIR DETAIL
(LOOKING NORTHEAST)
SCALE: 1"=5'

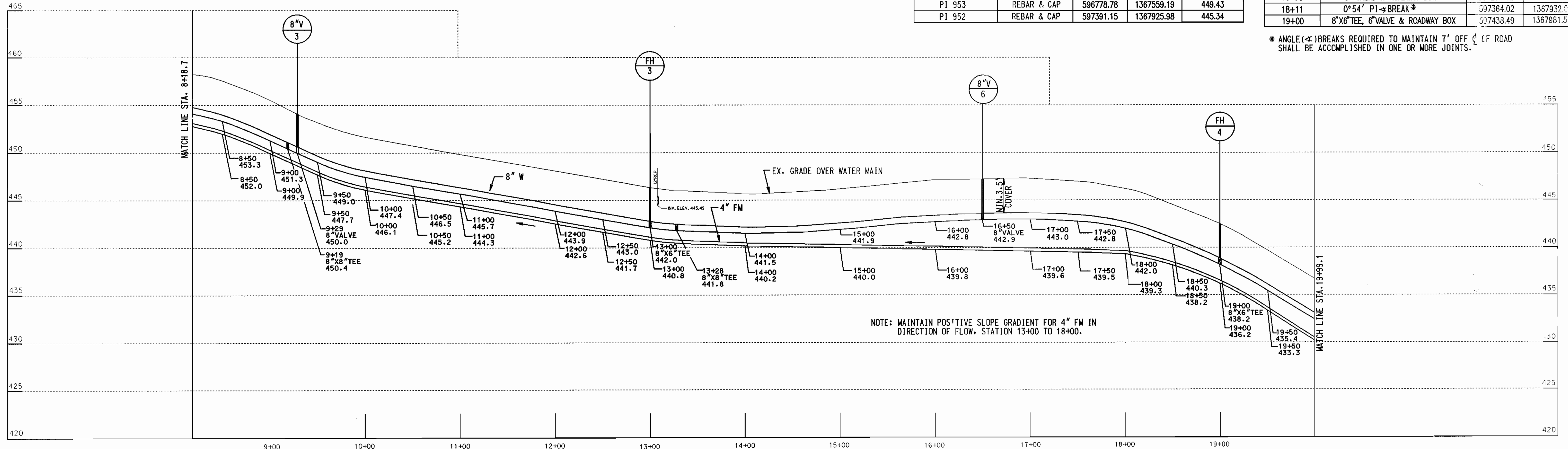
RESTORATION SCHEDULE		
WATER MAIN	STA. TO STA.	TYPE
	8+19 - 20+00	PAVING
FORCE MAIN	STA. TO STA.	TYPE
	8+19 - 20+00	PAVING

FORCE MAIN LOCATION DATA			
STATION	DESCRIPTION	NORTH	EAST
	PI CURVE NO. S3	596738.06	1367510.25
14+61	1°58' PI ← BREAK*	597081.42	1367725.26
18+03	0°54' PI ← BREAK*	597364.99	1367916.79

WATER MAIN LOCATION DATA			
STATION	DESCRIPTION	NORTH	EAST
9+19	8"X8" TEE, 8" VALVE & ROADWAY BOX	596642.19	1367115.47
9+29	8" VALVE & ROADWAY BOX	596648.53	1367423.20
	PI CURVE NO. W3	596728.69	1367520.90
13+00	8"X6" TEE, 6" VALVE & ROADWAY BOX	596937.43	1367651.61
13+28	8"X8" TEE, 8" VALVE & ROADWAY BOX	596961.44	1367666.65
14+61	2°0' PI ← BREAK*	597073.99	1367737.13
16+50	8" VALVE & ROADWAY BOX	597230.52	1367812.67
18+11	0°54' PI → BREAK*	597364.02	1367932.00
19+00	8"X6" TEE, 6" VALVE & ROADWAY BOX	597453.49	1367981.51

CONTROL SCHEDULE			
TRAVERSE PI NUMBER	DESCRIPTION	NORTH	EAST
PI 953	REBAR & CAP	596778.78	1367559.19
PI 952	REBAR & CAP	597391.15	1367925.98

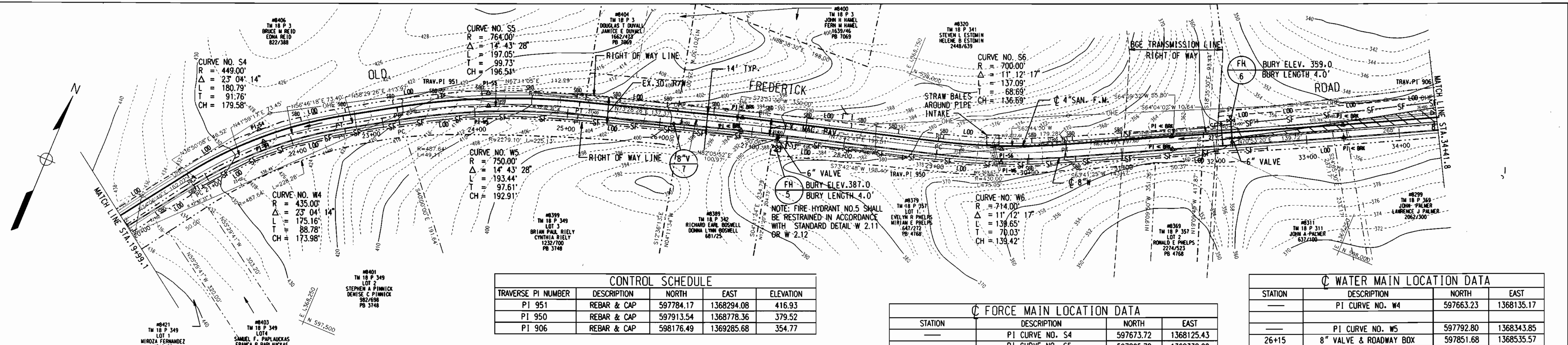
PLAN
SCALE: 1"=50'



PROFILE
SCALE: HOR. 1"=50'
VERT. 1"=5'

* ANGLE (←) BREAKS REQUIRED TO MAINTAIN 7' OFF (←) OF ROAD SHALL BE ACCOMPLISHED IN ONE OR MORE JOINTS.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND. DATE: 6-7-07	DEPARTMENT OF PLANNING AND ZONING HOWARD COUNTY, MARYLAND. DATE:	PREPARED BY: WR&A Whitman, Reardon and Associates, LLP. 2315 St. Paul St. Baltimore, Md. 21218 410-235-3450	DES: SEA/EJM DRN: EJM/GG CHK: EJM/WRD DATE: 10-22-99 BY NO. REVISION DATE: 6/30/07 SCALE MAP NO. 18 BLOCK NO. 1, 2 & 7	4" FORCE MAIN, 8" WATER MAIN PLAN AND PROFILE	HOLLIFIELD ESTATES 4" FORCE MAIN, 8" WATER MAIN AND PRESSURE REDUCING VALVE SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND	SCALE AS SHOWN SHEET 3 OF 10
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CONTROL SCHEDULE

TRAVERSE PI NUMBER	DESCRIPTION	NORTH	EAST	ELEVATION
PI 951	REBAR & CAP	597784.17	1368294.08	416.93
PI 950	REBAR & CAP	597913.54	1368778.36	379.52
PI 906	REBAR & CAP	598176.49	1369285.68	354.77

FORCE MAIN LOCATION DATA

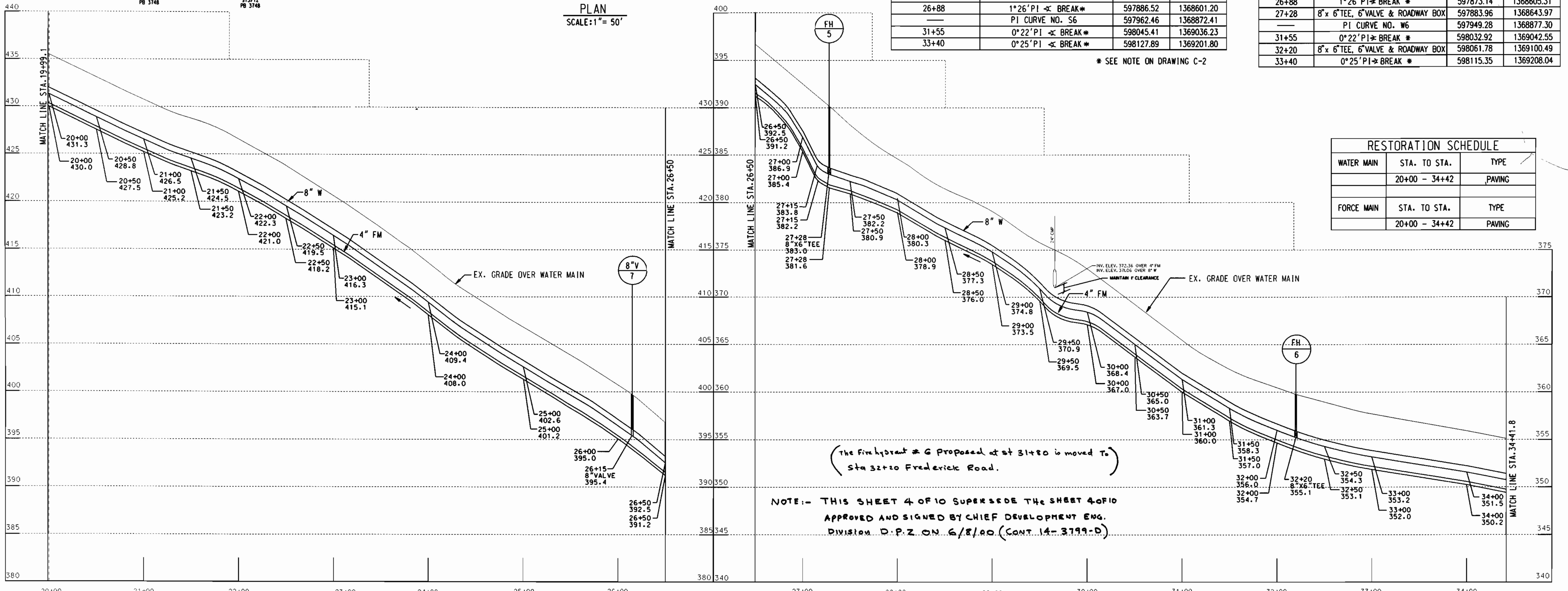
STATION	DESCRIPTION	NORTH	EAST
---	PI CURVE NO. S4	597673.72	1368125.43
---	PI CURVE NO. S5	597805.78	1368338.22
26+88	1" 26' PI < BREAK *	597886.52	1368601.20
---	PI CURVE NO. S6	597962.46	1368872.41
31+55	0" 22' PI < BREAK *	598045.41	1369036.23
33+40	0" 25' PI < BREAK *	598127.89	1369201.80

* SEE NOTE ON DRAWING C-2

WATER MAIN LOCATION DATA

STATION	DESCRIPTION	NORTH	EAST
---	PI CURVE NO. W4	597663.23	1368135.17
---	PI CURVE NO. W5	597792.80	1368343.85
26+15	8" VALVE & ROADWAY BOX	597851.68	1368535.57
26+88	1" 26' PI < BREAK *	597873.14	1368605.31
27+28	8" x 6" TEE, 6" VALVE & ROADWAY BOX	597883.96	1368643.97
---	PI CURVE NO. W6	597949.28	1368877.30
31+55	0" 22' PI < BREAK *	598032.92	1369042.55
32+20	8" x 6" TEE, 6" VALVE & ROADWAY BOX	598061.78	1369100.49
33+40	0" 25' PI < BREAK *	598115.35	1369208.04

PLAN
SCALE: 1" = 50'



PROFILE
SCALE: HOR. 1" = 50'
VERT. 1" = 5'

RESTORATION SCHEDULE

WATER MAIN	STA. TO STA.	TYPE
	20+00 - 34+42	PAVING

FORCE MAIN	STA. TO STA.	TYPE
	20+00 - 34+42	PAVING

NOTE: - THIS SHEET 4 OF 10 SUPERSEDES THE SHEET 4 OF 10 APPROVED AND SIGNED BY CHIEF DEVELOPMENT ENG. DIVISION D.P.Z. ON 6/8/00 (CONT. 14-3799-D)

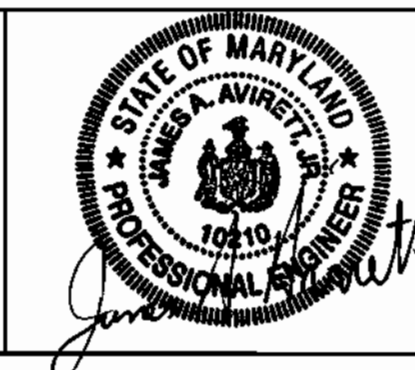
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

Robert Berman 11-14-00
CHIEF, BUREAU OF UTILITIES

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND.

Stephen A. Pinnick 11/16/00
CHIEF, DEVELOPMENT ENGINEERING DIVISION

PREPARED BY:
WR&A
Whitman, Reardon and Associates, LLP.
2315 St. Paul St.
Baltimore, Md. 21218
410-235-3450



DES: SEA/EJM
DRN: EJM/GG
CHK: EJM/WRD
DATE: 10-22-99

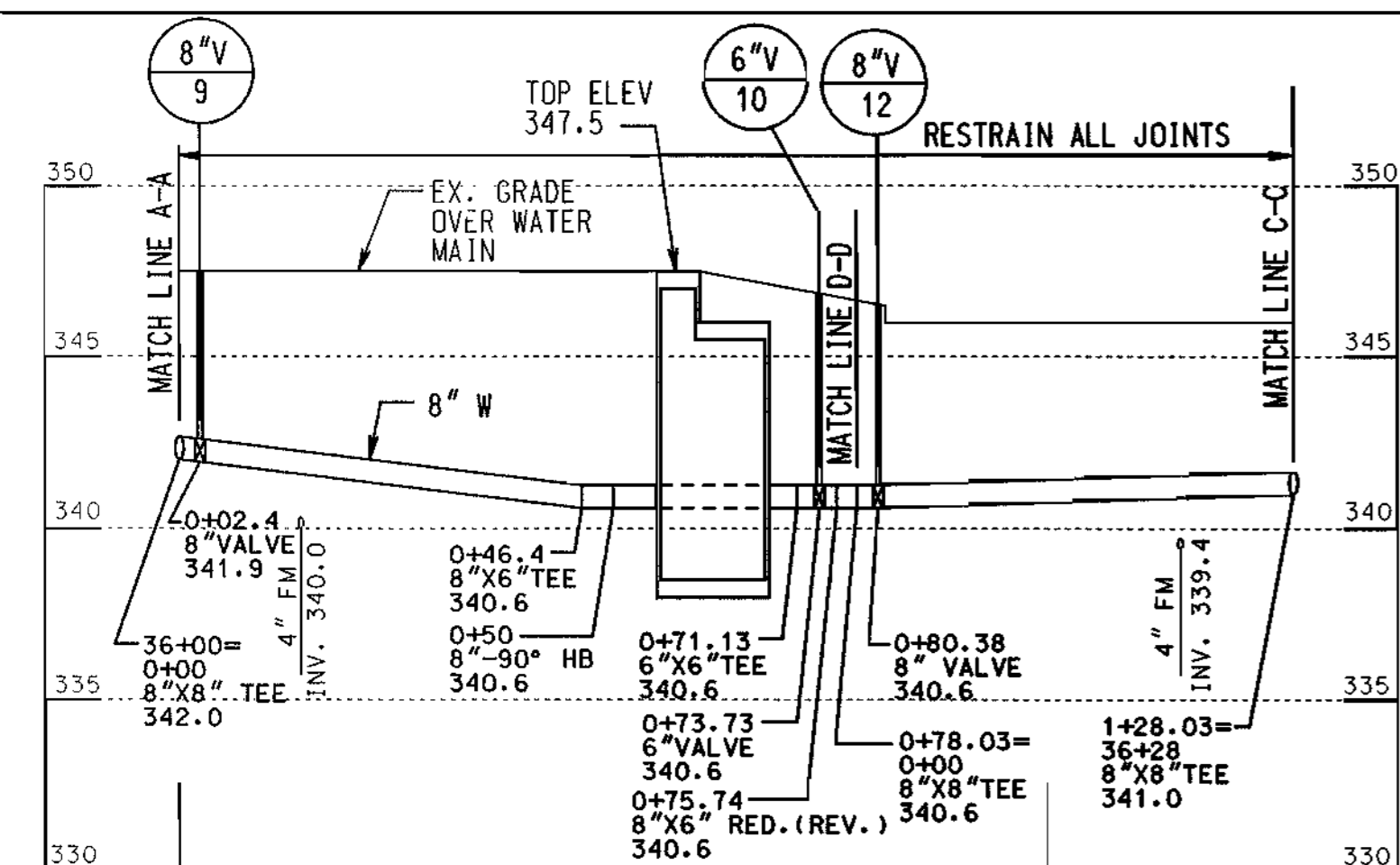
CONTRACT 14-3799-D
4" FORCE MAIN, 8" WATER MAIN
PLAN AND PROFILE

600' SCALE MAP NO. 18 BLOCK NO. 1 & 2

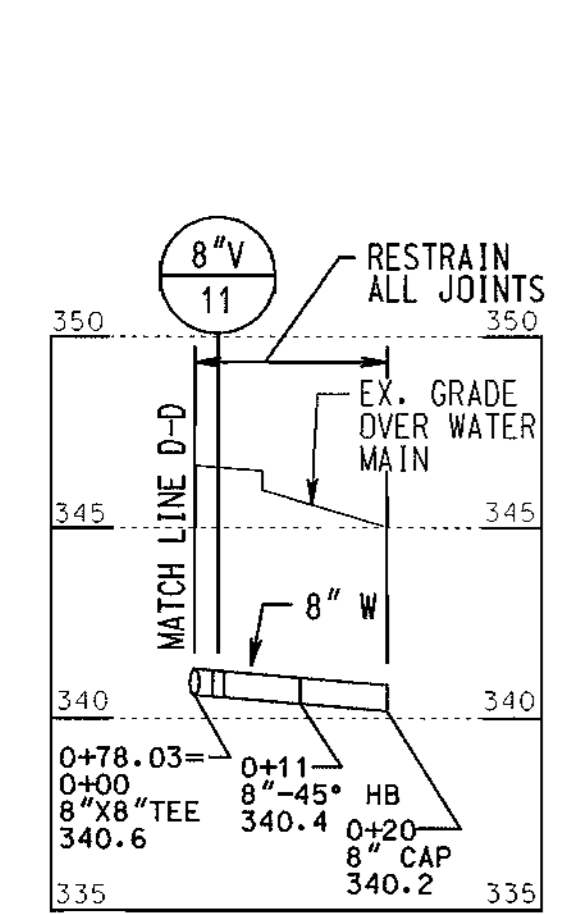
HOLLIFIELD ESTATES
4" FORCE MAIN, 8" WATER MAIN AND
PRESSURE REDUCING VALVE
SECOND ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

C-3
SCALE AS SHOWN
SHEET 4 OF 10

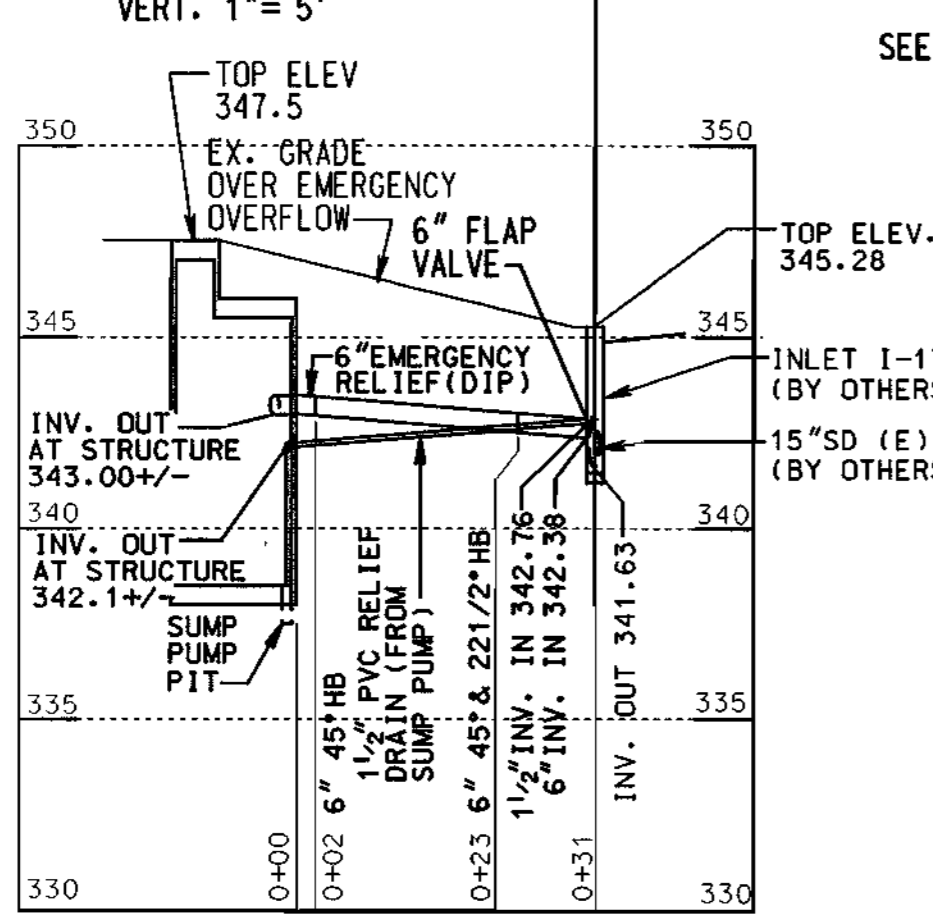
RESTORATION SCHEDULE		
WATER MAIN	STA. TO STA.	TYPE
	34+42 - 36+31	PAVING
FORCE MAIN	STA. TO STA.	TYPE
	34+42 - 36+31	PAVING
	36+31 - 41+38	SEED & MULCHING



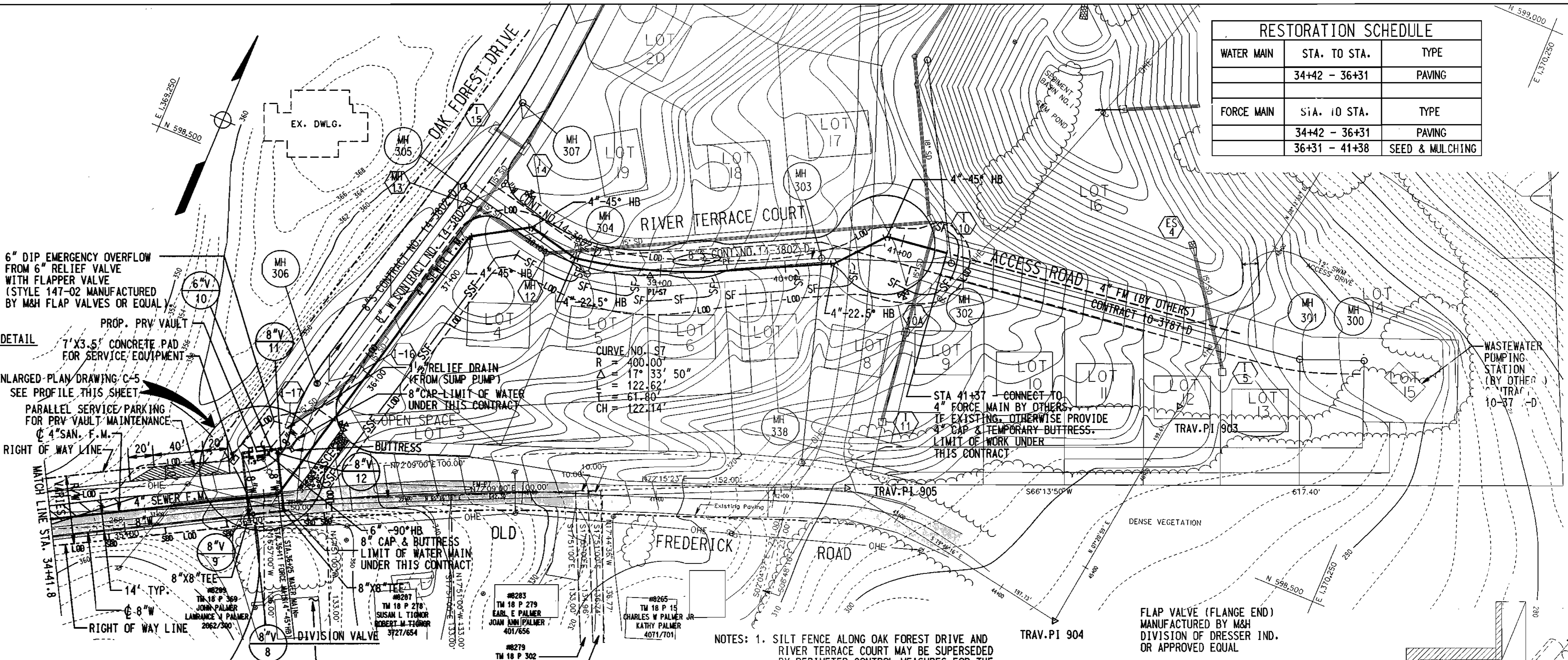
PRV AND BYPASS PROFILE
SCALE: HOR. 1" = 20', VERT. 1" = 5'



WATER EXTENSION FROM BYPASS TO CONNECTION BY OTHERS
SCALE: HOR. 1" = 20', VERT. 1" = 5'

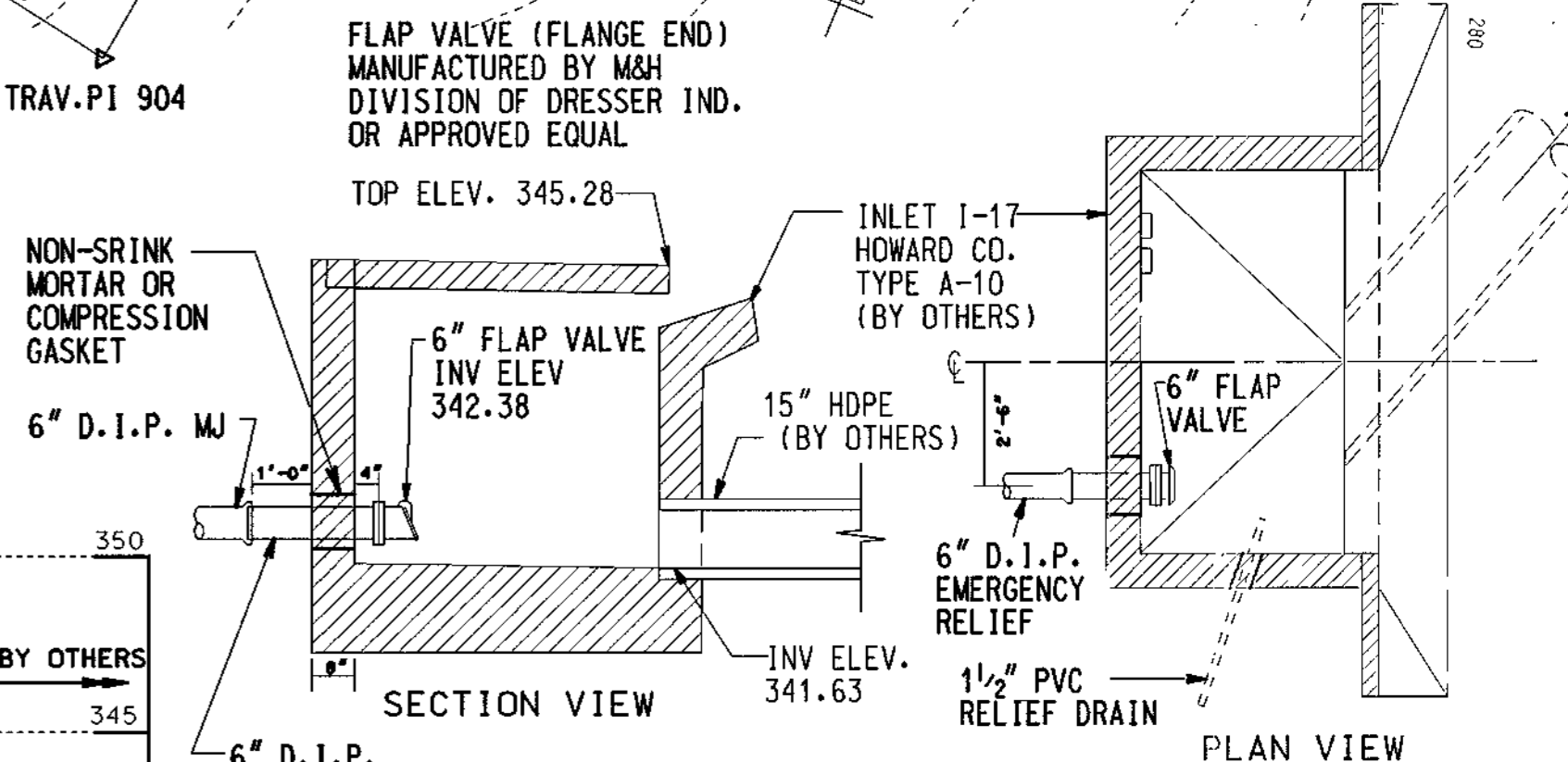


EMERGENCY OVERFLOW AND RELIEF DRAIN PROFILE
SCALE: HOR. 1" = 20', VERT. 1" = 5'

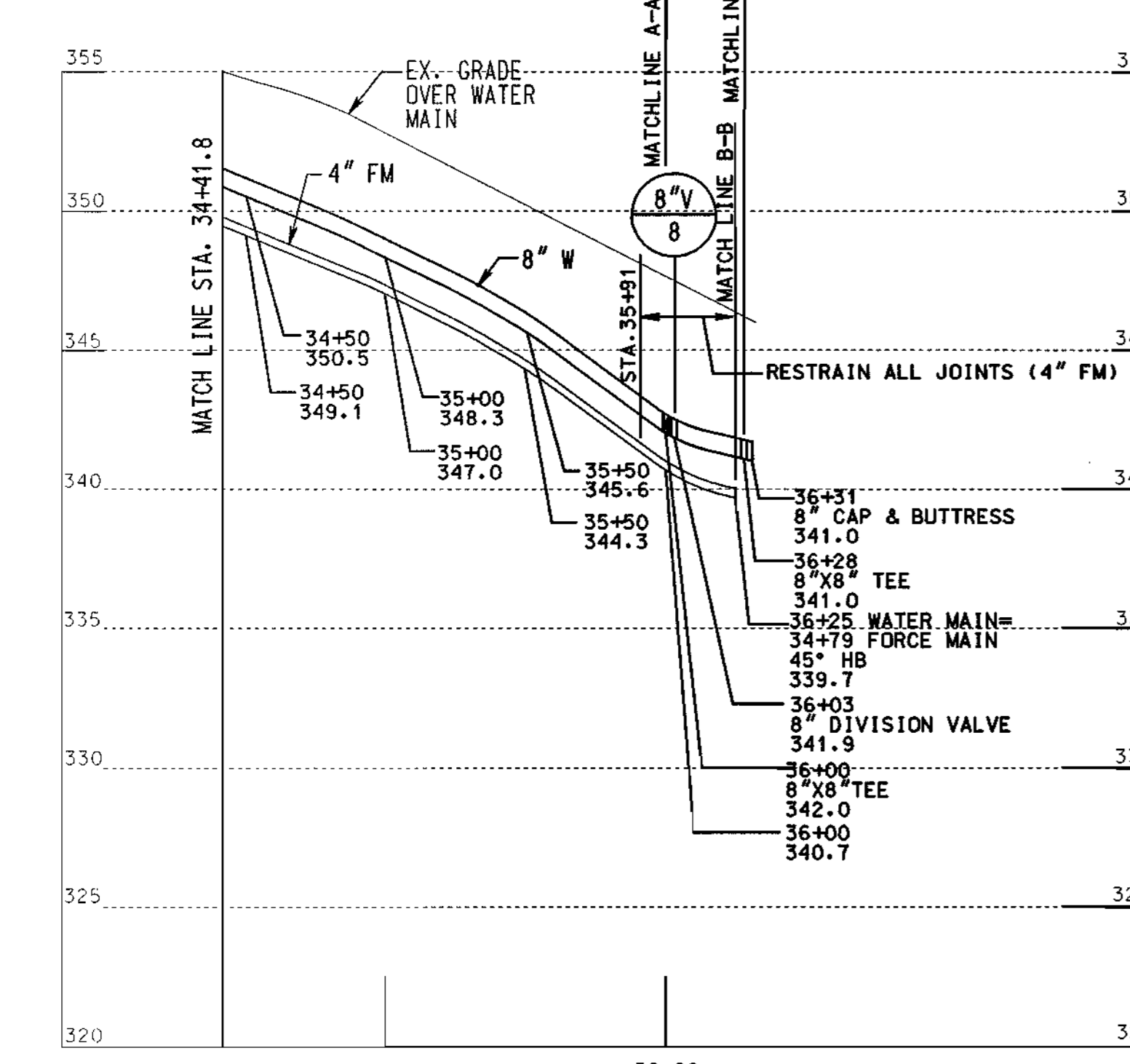


PLAN
SCALE: 1" = 50'

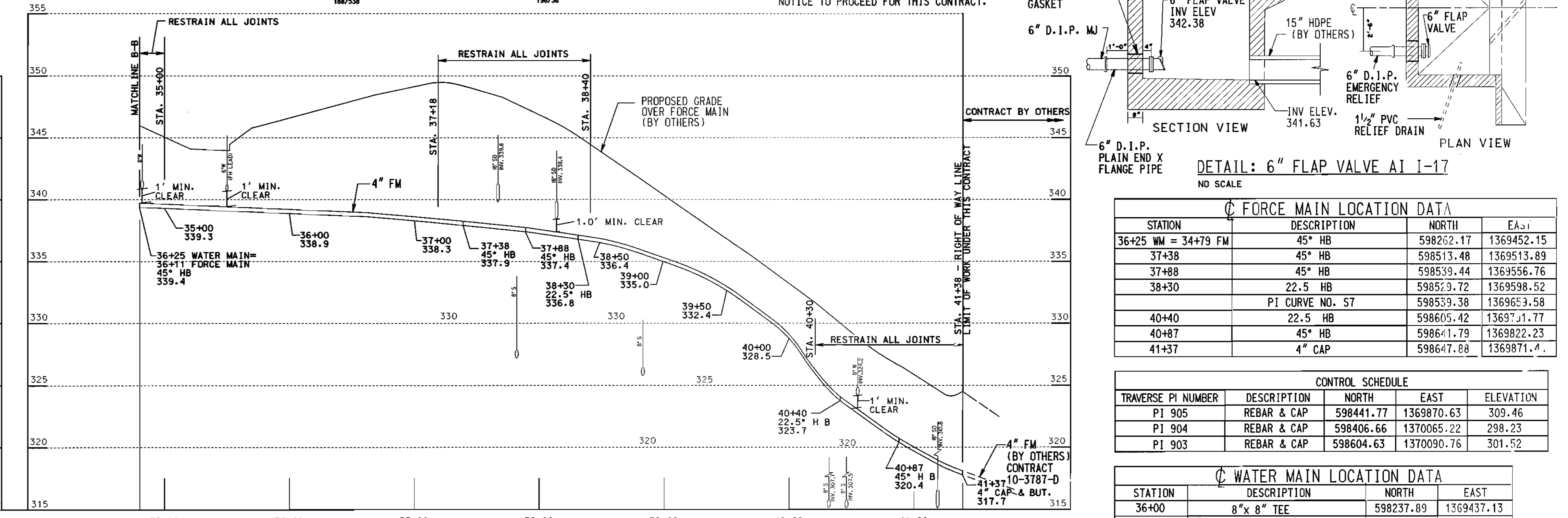
- NOTES:
- SILT FENCE ALONG OAK FOREST DRIVE AND RIVER TERRACE COURT MAY BE SUPERSEDED BY PERIMETER CONTROL MEASURES FOR THE MASS GRADING OF HOLLIFIELD ESTATES.
 - HOLLIFIELD ESTATES DEVELOPMENT WILL BE MASS GRADED TO THE PROPOSED GRADES SHOWN LESS FINAL STABILIZATION, BEFORE NOTICE TO PROCEED FOR THIS CONTRACT.



SECTION VIEW
PLAN VIEW
DETAIL: 6" FLAP VALVE AT I-17
NO SCALE



PROFILE
SCALE: HOR. 1" = 50', VERT. 1" = 5'



PROFILE
SCALE: HOR. 1" = 50', VERT. 1" = 5'

C FORCE MAIN LOCATION DATA				
STATION	DESCRIPTION	NORTH	EAST	ELEV.
36+25	WM = 34+79 FM	45° HB	598262.17	1369452.15
37+38	45° HB	598513.48	1369513.89	
37+88	45° HB	598539.44	1369556.76	
38+30	22.5° HB	598529.72	1369598.52	
40+40	PI CURVE NO. 57	598539.38	1369653.58	
40+87	22.5° HB	598605.42	1369711.77	
40+87	45° HB	598641.79	1369822.23	
41+37	4" CAP	598647.88	1369871.41	

CONTROL SCHEDULE				
TRAVERSE PI NUMBER	DESCRIPTION	NORTH	EAST	ELEVATION
PI 905	REBAR & CAP	598441.77	1369870.63	309.46
PI 904	REBAR & CAP	598406.66	1370065.22	298.23
PI 903	REBAR & CAP	598604.63	1370090.76	301.52

C WATER MAIN LOCATION DATA			
STATION	DESCRIPTION	NORTH	EAST
36+00	8" x 8" TEE	598237.89	1369437.13
36+02.45	8" DIVISION VALVE & ROADWAY BOX	598239.54	1369440.03
36+28	8" x 8" TEE	598251.44	1369461.60
36+32	8" CAP & BUTTRESS	598253.39	1369451.13

FOR BYPASS LOCATION DATA, SEE DRAWING C-5

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.
R. H. B... 6-7-00
CHIEF, BUREAU OF UTILITIES

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND.
...
CHIEF, DEVELOPMENT ENGINEERING DIVISION

PREPARED BY:
WR&A
Whitman, Reardon and Associates, LLP.
2315 ST. PAUL ST.
BALTIMORE, MD. 21218
410-235-3450



DES: SEA/EJM
DRN: EJM/GG
CHK: EJM/WRD
DATE: 10-22-99
BY NO. REVISION DATE

4" FORCE MAIN, 8" WATER MAIN
PLAN AND PROFILE
600' SCALE MAP NO. 18 BLOCK NO. 1, 2 & 7

HOLLIFIELD ESTATES
4" FORCE MAIN, 8" WATER MAIN AND
PRESSURE REDUCING VALVE
SECOND ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
SCALE AS SHOWN
SHEET 5 OF 10

EQUIPMENT SCHEDULE

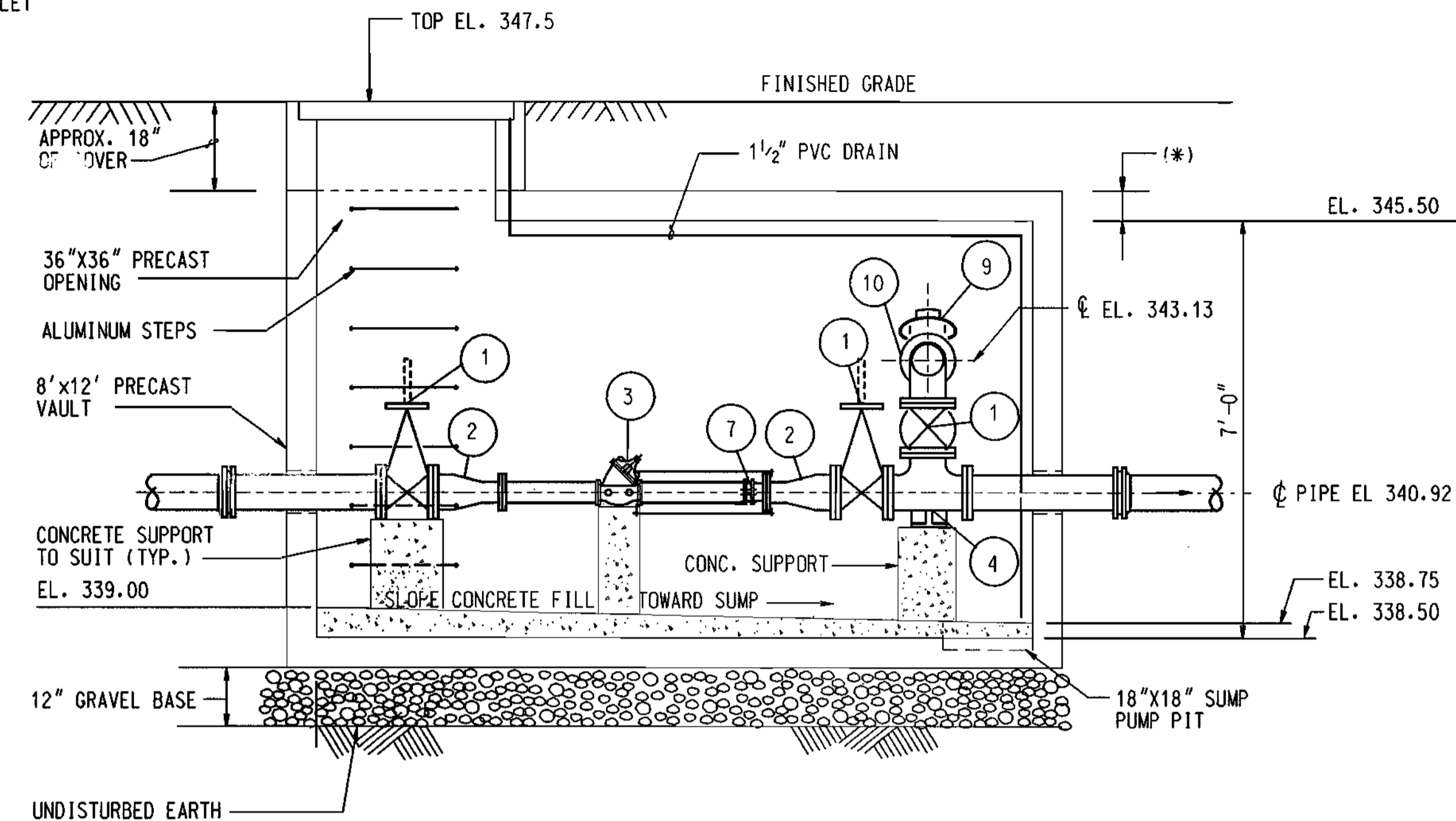
- 1 6" GATE VALVE WITH FLANGED ENDS AND HANDWHEEL OPERATOR.
- 2 6"x3" STEEL REDUCER, WITH WELD-NECK FLANGED ENDS.
- 3 3" PRESSURE REDUCING VALVE WITH FLANGED ENDS.
- 4 6"x6" D.I. BASE TEE.
- 5 PRESSURE TRANSDUCER AND GAUGE ASSEMBLY.
- 6 6" PRESSURE REDUCING VALVE WITH FLANGED ENDS.
- 7 3" FLANGE ADAPTOR WITH TIE-RODS.
- 8 6" FLANGE ADAPTOR WITH TIE-RODS.
- 9 6" RELIEF VALVE WITH FLANGED ENDS.
- 10 6" 90 DEGREE FLANGED BASE D.I. ELBOW.
- 11 6" FLEXIBLE COUPLING WITH TIE-RODS.

NOTE: ALL JOINTS INSIDE THE STRUCTURE SHALL BE FLANGED JOINTS, AND ALL JOINTS OUTSIDE OF THE STRUCTURE SHALL BE RESTRAINED MECHANICAL JOINTS.

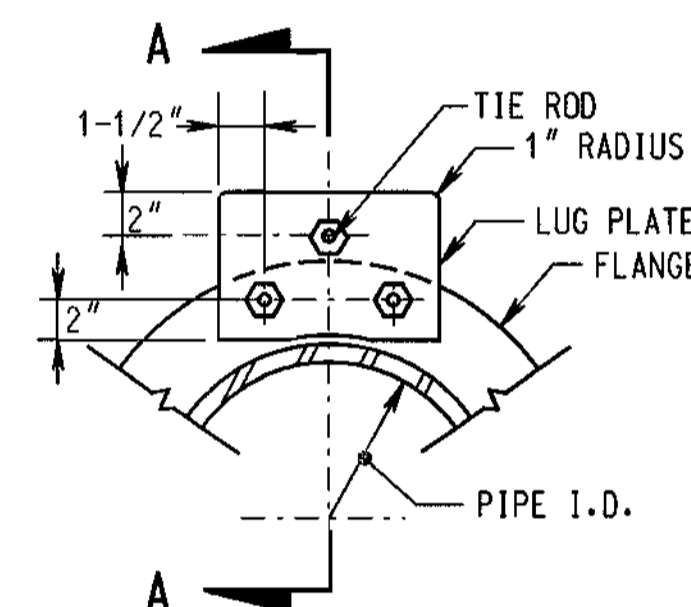
(*): WALL THICKNESS VARIES WITH MANUFACTURER

MECHANICAL SPECIFICATIONS

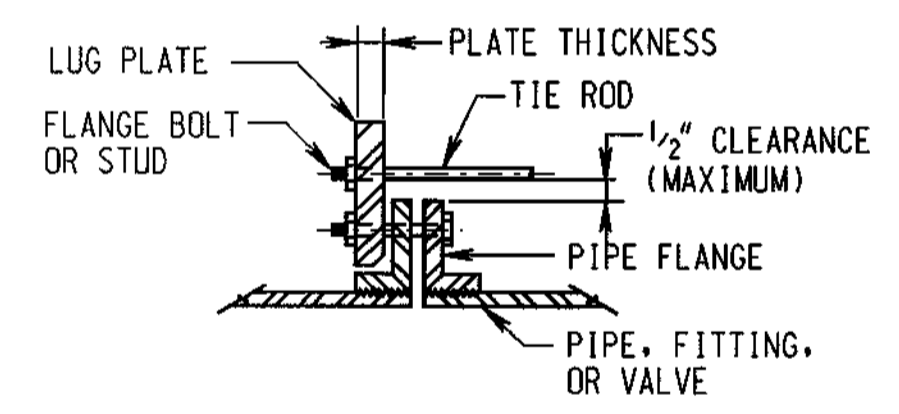
1. FLOAT SWITCH: MERCURY SWITCH INSIDE A RUBBER ENCAPSULATED FLOAT WITH RUBBER CORD, MANUFACTURED BY HYDRAMATIC, MODEL NUMBER 3900 WITH NORMALLY OPEN CONTACTS AND SUPPORT BRACKET, OR EQUAL.
2. SUMP PUMP: CAST-IRON CONSTRUCTION WITH MECHANICAL SEAL AND INTEGRAL FLOAT SWITCH. THE MOTOR SHALL INCLUDE THERMAL OVER-LOAD PROTECTION. THE PUMP SHALL BE SUITABLE FOR 120V, 1-PHASE SERVICE, MANUFACTURED BY HYDRAMATIC MODEL D25, OR EQUAL.
3. UNIT HEATER: TOTALLY ENCLOSED NICKEL CHROMIUM RESISTANT ELEMENT WITH ALUMINUM SHEATHING AND FINS, FURNISH 500 WATT CAPACITY SUITABLE FOR A 120V, SINGLE-PHASE SERVICE. PROVIDE REMOTE THERMOSTAT, MANUFACTURED BY OMARK, MODEL OMK-2512-6 WITH THERMOSTAT OMK-TA-1, OR EQUAL.
4. PRESSURE GAUGE: STEM MOUNTED, GRADE (A) PHOSPHOR BRONZE BOURDON TUBE WITH 4-INCH DIAMETER ALUMINUM CASE, MANUFACTURED BY ASHCROFT TYPE 1010, OR EQUAL.
5. PRESSURE TRANSDUCER: SENSING ELEMENTS SHALL BE LIQUID FILLED, STRAIN GAUGE DESIGN WITH STAINLESS STEEL (S.S.) DIAPHRAGMS AND SILICONE OIL FILL. BODY AND HARDWARE SHALL BE OF 316 S.S. CONSTRUCTION. TRANSDUCER SHALL BE 300 PSI RATED WITH AN ACCURACY OF 0.25% OF SPAN, SUITABLE FOR LOOP-POWER 12 TO 24 VDC SERVICE WITH NEMA 4 RATING, FURNISH 4 TO 20 mA OUTPUT, MANUFACTURED BY BRISTOL BABCOCK, OR EQUAL.
6. BOLTING HARDWARE: ALL BOLTS, NUTS AND WASHERS SHALL BE OF MILD STEEL, U.S. STANDARD SIZES. BOLTS SHALL PROJECT 1/4-INCH BEYOND NUT WHEN ASSEMBLED, GASKETS SHALL BE RUBBER RING (1/8-INCH THICK).
7. PIPE (D.I.): DUCTILE ANSI A21.51 IRON WITH ANSI A21.10 MECHANICAL JOINT OR FLANGED JOINTS. FITTINGS SHALL BE DUCTILE IRON. PIPE AND FITTINGS SHALL BE DOUBLE THICKNESS CEMENT LINED IN ACCORDANCE WITH ANSI A21.4, SECTION 4-10.1 AND 4-8.2. PIPE SHALL BE CLASS 53 RATED FOR A MINIMUM 150 PSI. FLANGES SHALL BE DRILLED AND FACES FOR ANSI B16.1 CLASS 125.
8. PIPE (STEEL): BLACK STEEL, ASTM A-53, SCHEDULE 40 FOR WELDED JOINTS. FITTINGS SHALL BE BLACK ANSI B16.9.
9. PIPE (PVC): PVC IN ACCORDANCE WITH ASTM D-1784 AND D-1785 FOR CLASS 1245-B. PVC FITTINGS IN ACCORDANCE WITH ASTM D-1784 AND D-2846. PIPE AND FITTINGS SHALL BE SCHEDULE 80 SOCKET STYLE, MANUFACTURED BY B.F. GOODRICH COMPANY, OR EQUAL.
10. FLEXIBLE COUPLINGS: STYLE 38 OF DRESSER MANUFACTURING DIVISION OR EQUAL.
11. FLANGED ADAPTERS: STYLE 128 OF DRESSER MANUFACTURING DIVISION OR EQUAL.
12. GATE VALVES: VALVES INSIDE THE VAULT OPERATE TO OPEN (LEFT) OF A RISING STEM STYLE, SOLID WEDGE, RUBBER ENCAPSULATED RESILIENT SEAT TYPE, 200 PSI RATED WORKING PRESSURE, TEST TO 400 PSI IN ACCORDANCE WITH ANNA C509. VALVE BODY, BONNET AND SEAL PLATES SHALL BE CAST-IRON CONFORMING TO ASTM A-126B. WEDGES SHALL BE DUCTILE IRON CONFORMING TO ASTM A-536. STEMS SHALL BE BRONZE. VALVES SHALL INCLUDE O-RING OR CONVENTIONAL PACKAGING, MANUFACTURED BY M&H VALVE, STYLE 3068, OR EQUAL. VALVES OUTSIDE THE VAULT OPERATE TO OPEN RIGHT (CLOCKWISE) AND OTHERWISE CONFORM TO SECTION 909.15 OF THE STANDARD SPECIFICATIONS.
13. PRESSURE REDUCING VALVES: VALVES SHALL BE FLANGED CLASS 125 SUITABLE FOR A MAXIMUM OF 175 PSI, CONFORMING TO ANSI B16.1. THE VALVE SHALL BE CAST-IRON CONFORMING TO ASTM A126 CLASS B, WITH STAINLESS STEEL TRIM. THE PILOT CONTROL SYSTEM SHALL BE BRONZE. THE DIAPHRAGM SHALL BE NEOPRENE WITH BUNA-N SEALS. THE SOLENOID VALVES SHALL BE NEMA 4 120V RATED, CONFIGURED FOR (NORMALLY OPEN). VALVES SHALL BE FURNISHED WITH LOCAL POSITION INDICATOR, MANUFACTURED BY BERMAID, MODEL 720-55-V1, OR EQUAL. SET POINTS AS FOLLOWS: 3"PRV (77 PSIG) 6"PRV (95 PSIG)
14. DESIGN STANDARDS FOR THE PRECAST VAULT ARE GIVEN IN THE SPECIAL PROVISIONS.
15. PRESSURE RELIEF VALVE: VALVE SHALL BE FLANGED CLASS 125 SUITABLE FOR A MAXIMUM OF 175 PSI, CONFORMING TO ANSI B16.1. THE VALVE SHALL BE CAST-IRON CONFORMING TO ASTM A126 CLASS B, WITH STAINLESS STEEL TRIM. VALVE SHALL BE FURNISHED WITH LOCAL POSITION INDICATOR, MANUFACTURED BY BERMAID, MODEL 730-1, OR EQUAL. SET POINT AS FOLLOWS: 6"RELIEF (95 PSIG.)
16. PRESSURE REDUCING/PRESSURE RELIEF VALVES GENERAL: ALL VALVES SHALL BE FURNISHED WITH FULL-OPEN LIMIT SWITCHES TO INTERFACE WITH THE TELEMETRY SYSTEM.
17. HOWARD COUNTY BUREAU OF UTILITIES MASTER RTU SYSTEM SHALL PROVIDE SET-POINT ADJUSTMENT AND ANNUNCIATION FOR PRV DOWN-STREAM HIGH AND LOW PRESSURE ALARMS AS FOLLOWS: PAH= 90 PSIG - PAL= 40 PSIG



SECTION C-5A/C-5
SCALE: 1/2"=1'-0"



PLAN



SECTION A - A

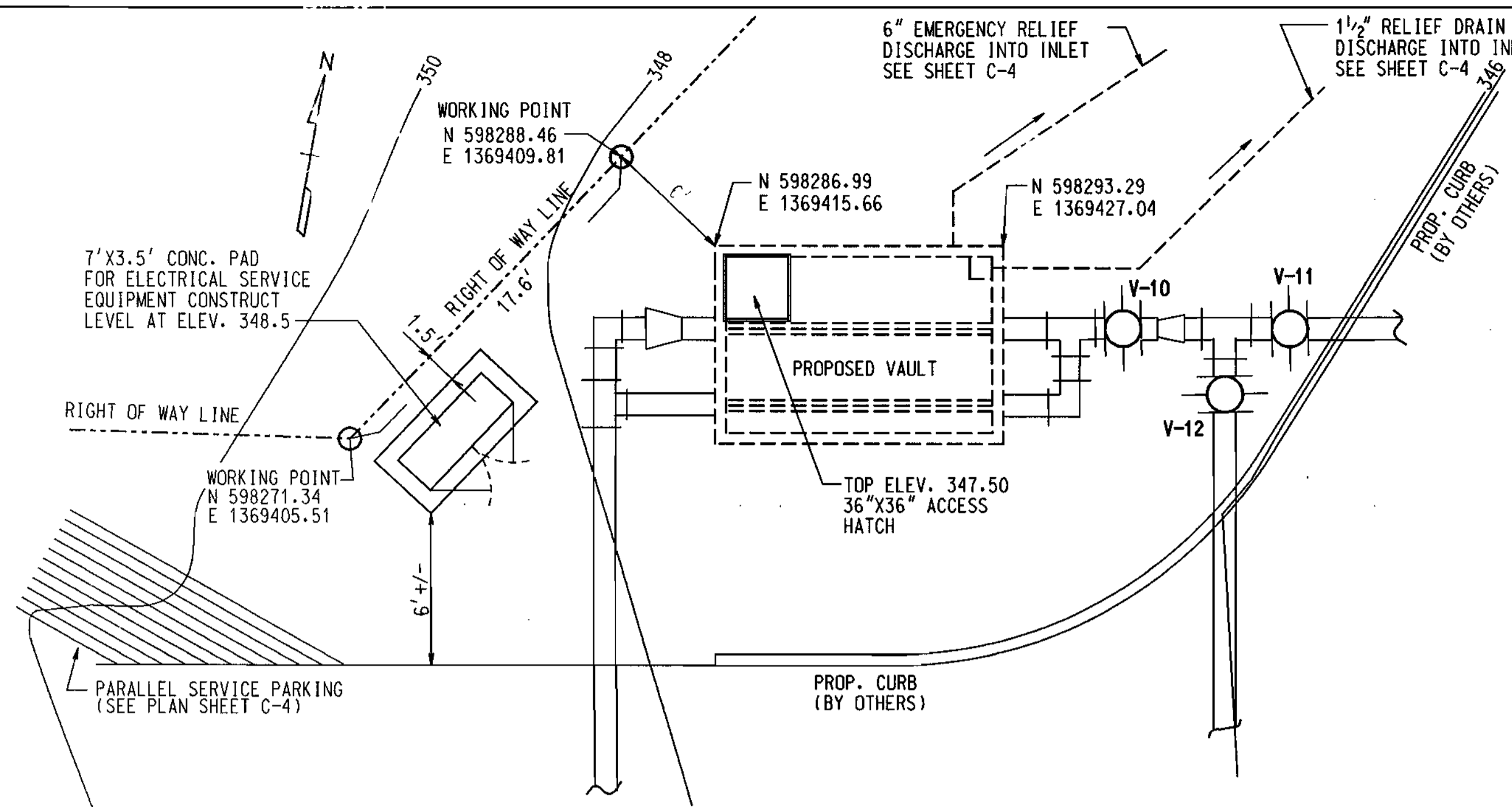
PIPE SIZE	NUMBER OF RODS	DIAMETER OF RODS	PLATE THICKNESS	DESIGN PRESSURE PSI
3"	2	3/4"	3/4"	150
6"	3	3/4"	3/4"	150

ROD MATERIAL - ASTM A588
 PLATE MATERIAL - ASTM A36
 SLEEVE MATERIAL - SCHEDULE 40 STEEL PIPE

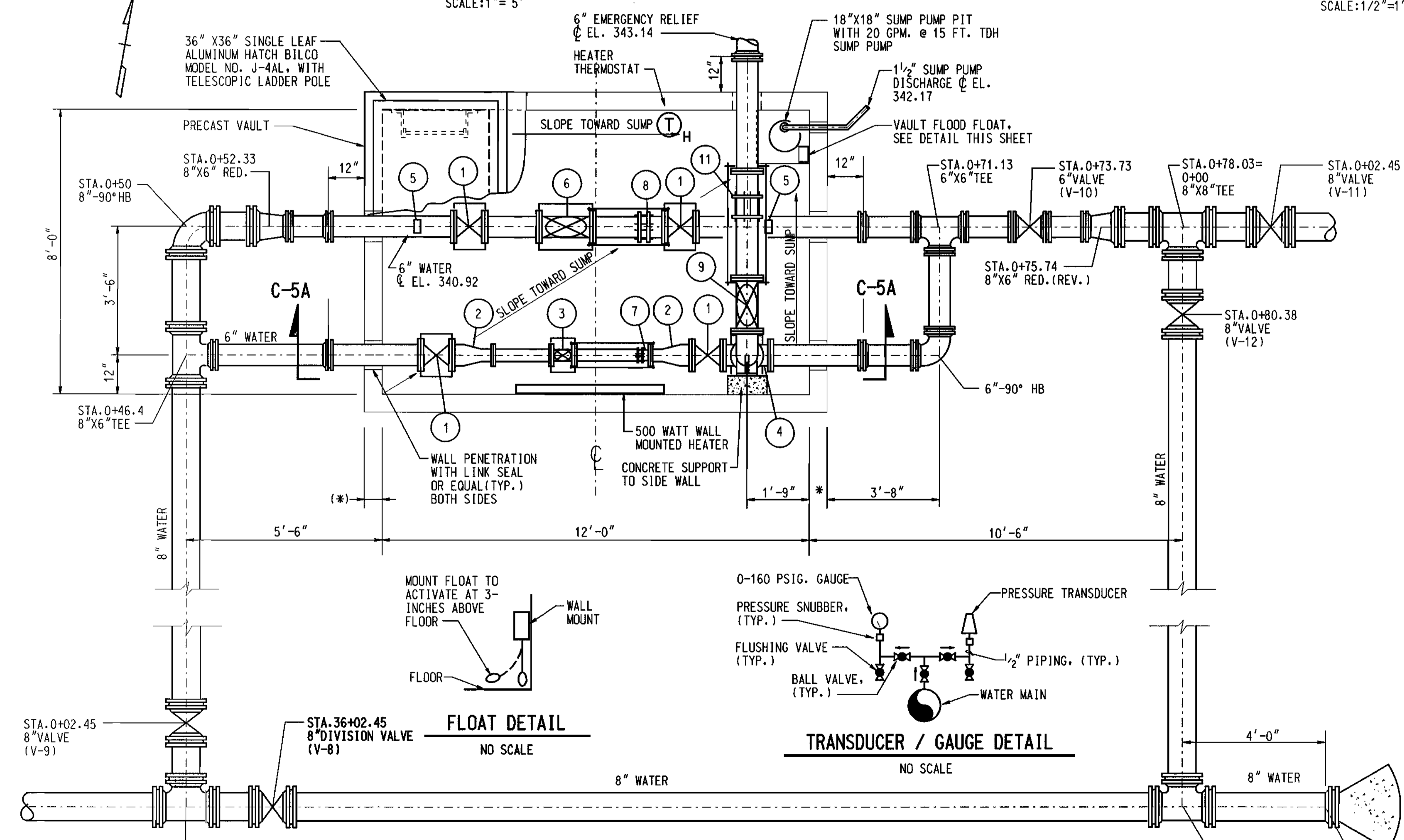
NOTE:
 IF PLATE IS REQUIRED TO BE MOUNTED ON REVERSE SIDE OF FLANGE, PROVIDE A PIPE SLEEVE AND WASHER ON THE END OF THE TIE-ROD, SO THE MAXIMUM CLEARANCE BETWEEN THE SLEEVE AND THE FLANGE CAN BE MAINTAINED. FLANGE SURFACE IN CONTACT WITH LUG PLATE SHALL BE GROUND SMOOTH TO CLEAR THE CASTING IRREGULARITY AND EMBOSSED LETTERING. CONTACT SURFACE OF LUG SHALL BE MACHINED TO A ONE-DEGREE TAPER FOR PIPE DIAMETERS 12-INCH AND LARGER.

TIE-ROD INSTALLATION REQUIREMENTS

DETAIL C-5A
NO SCALE



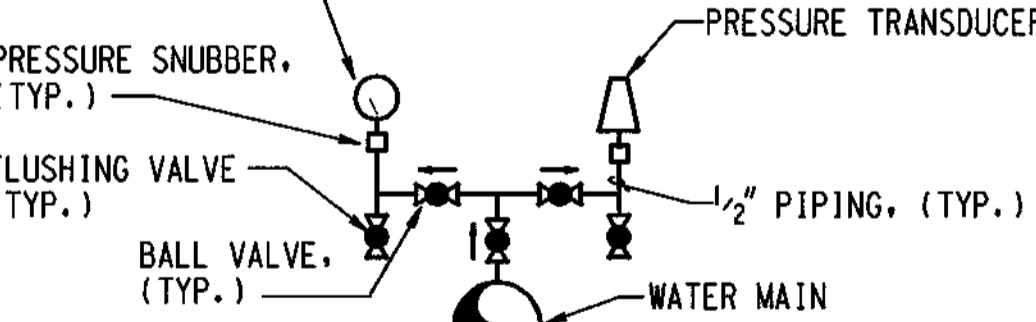
SITE PLAN
SCALE: 1"=5'



PRESSURE REDUCING VALVE VAULT AND BYPASS PLAN
SCALE: 1/2"=1'-0"



FLOAT DETAIL
NO SCALE



TRANSDUCER / GAUGE DETAIL
NO SCALE

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND.
 Chief, Bureau of Utilities
 6-7-00

DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY, MARYLAND.
 Chief, Development Engineering Division
 6/6/00

PREPARED BY:
WR&A
 Whitman, Reardon and Associates, LLP.
 2315 ST. PAUL ST.
 BALTIMORE, MD. 21218
 410-235-3450

DES: SEA/EJM
 DRN: EJM/GG
 DATE: 10-22-99

BY	NO.	REVISION	DATE

600' SCALE MAP NO. 18 BLOCK NO. L2 & 7

HOLLIFIELD ESTATES
 4" FORCE MAIN, 8" WATER MAIN AND
 PRESSURE REDUCING VALVE
 SECOND ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 6 OF 10
 C-5

ELECTRICAL SPECIFICATIONS:

- INSTALLATION SHALL BE INSTALLED BY A LICENSED ELECTRICAL CONTRACTOR FOR THIS JURISDICTION.
- ALL MATERIALS SHALL BEAR THE "UL" LABEL.
- WORK SHALL BE INSTALLED AS REQUIRED BY THE NATIONAL ELECTRICAL CODE AND/OR THE LOCAL CODE ENFORCING AUTHORITIES.
- AN "APPROVED" PERMIT SHALL BE OBTAINED FROM THE PROPER AUTHORITIES.
- CONDUIT RUNS SHALL BE ROUTED AS SHOWN AND CONTRACTOR SHALL VISIT JOB SITE PRIOR TO BID TO VERIFY INSTALLATION.
- NUTS, BOLTS, AND SCREWS SHALL BE STAINLESS STEEL.
- EQUIPMENT SUPPORT MOUNTING SHALL BE WITH EITHER TOGGLE BOLTS OR LEAD ANCHOR TAMP-INS, OR BULLDOG INSERTS.
- CONDUITS AND FITTINGS - PVC, SCHEDULE 40, MINIMUM SIZE 3/4". (EXCEPT FOR NOTE 1)
- CONDUIT STRAPS - PVC WITH STAINLESS STEEL NUTS, BOLTS, SCREWS, ETC.
- CONDUITS TO BE STRAPPED EVERY 5 FT. MAXIMUM FOR POWER. FLEXIBLE CONDUITS - PVC LIQUID-TITE WITH APPROVED FITTINGS NOT MORE THAN TWO FEET IN LENGTH.
- WIRE - TYPE THWN, STRANDED - #14 CONTROL, #12 MINIMUM FOR POWER.
- LIGHTING - 2 LAMP, 32 WATT, ELECTRONIC BALLASTS, 120 VOLT, CLEAR ACRYLIC LENS, AND VAPOR-TITE HOUSING, MANUFACTURED BY THOMAS INDUSTRIES, CATALOG NO. VD232EB-120V, WITH F32T8 LAMPS OR APPROVED EQUAL.
- CONDUIT WALL SEALS - TYPE FSK, MANUFACTURED BY CROUSE-HINDS, FOR THROUGH VAULT WALLS FOR RIGID HEAVY WALL GALVANIZED CONDUITS.
- GF1 OUTLETS AND TOGGLE SWITCHES - 20 AMP, 120V RATED IN WEATHER PROOF ENCLOSURES IN VAULT WITH COVER PLATES MANUFACTURED BY TAY-WAC.
- PANELBOARD - NUMBER OF CIRCUITS AS SHOWN IN SCHEDULE MANUFACTURED BY SQUARE D, CUTLER-HAMMER OR GENERAL ELECTRIC WITH TYPE "QD" BREAKERS AND MAIN BREAKER RETAINING CLIP.
- LIGHTNING ARRESTOR - CATALOG NO. QO2175SB, MANUFACTURED BY SQUARE D, OR EQUAL.
- EQUIPMENT CABINET - FREE STANDING DOUBLE DOOR STAINLESS STEEL NEMA 4X WITH THE FOLLOWING OPTIONS - RAIN PROTECTED LOUVERS ON EACH SIDE AT TOP WITH BUG SCREEN, 1-1/2" DRAIN HOLE IN BOTTOM WITH SCREEN, PROVIDE HASP ARRANGEMENT FOR ATTACHING BUREAU OF UTILITIES PADLOCKS. PROVIDE A HEAVY PHENOLIC NAME PLATE INDICATING THAT THE PANEL IS OWNED BY THE BUREAU OF UTILITIES, PHONE: (410) 313 - 4900. MANUFACTURED BY HOFFMAN, CATALOG NOS. A606016SSLP, A60P60, A-DSTOPK, L38, ALF15D24, A-VK335S6, D-AH2001A, OR EQUAL.
- 4-20mA SIGNAL WIRING SHALL BE 4/C#18 SHIELDED, TWISTED PAIRS.
- TELEMETRY EQUIPMENT

TELEMETRY SIGNALS FOR OPERATING THE HOLLIFIELD PRV SHALL INCLUDE: 6" PRV VALVE STATUS, 3" PRV VALVE STATUS, PRESSURE RELIEF VALVE STATUS, FLOOD STATUS, TELEMETRY STATUS, PRV INLET PRESSURE, PRV OUTLET PRESSURE, AND REMOTE CONTROL OF THE 3" VALVE.

TELEMETRY EQUIPMENT FOR TRANSMITTING AND RECEIVING SIGNALS VIA DEDICATED TELEPHONE LINE SHALL INCLUDE: TONE TRANSMITTERS, TONE RECEIVERS, LINE PROTECTORS, GAS TUBE ARRESTORS, POWER SUPPLIES, MOUNTING BRACKETS, AND CABINETS.

EQUIPMENT SHALL BE QEI, MODEL QDTS90 DIGITAL TELEMETRY SYSTEM FOR STATUS SIGNALS; AND MODEL QEI 30 FOR CONTROL SIGNALS. EQUIPMENT SHALL INCLUDE:

- TONE TRANSMITTER (QDTS90)
- TONE RECEIVER (QDTR90)
- TONE TRANSMITTER (QT30)
- TONE RECEIVER (QR30)
- LINE PROTECTORS (QLP-1)
- GAS TUBE ARRESTORS (QGT-11)
- POWER SUPPLIES (QP-3)
- MOUNTING FRAMES
- CABINETS

THE POWER SUPPLY SHALL BE 12 VOLT D.C. A BATTERY BACKUP UNIT (QBP2) SHALL BE PROVIDED AT THE HOLLIFIELD PRV VAULT AND PINE ORCHARD PUMPING STATION.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLETE INSTALLATION OF THE TELEMETRY SYSTEM.

THE TONE TRANSMITTER (QDTS90) AND TONE RECEIVER (QR30) SHALL BE INSTALLED AT THE PRV AND MOUNTED WITHIN A SUITABLE, WEATHER PROOF CONTROL CABINET LOCATED ABOVE GRADE. THE CONTRACTOR SHALL PROVIDE AND INSTALL A TELEPHONE CABLE FROM THE CONTROL CABINET UP TO BELL ATLANTIC'S DEMARCATION. THE TELEPHONE CABLE SHALL BE, AT A MINIMUM, A 5-PAIR CABLE SUITABLE FOR BURIED SERVICE AND SHALL MEET BELL ATLANTIC'S REQUIREMENTS. CONTRACTOR SHALL NOTIFY THE BUREAU OF UTILITIES FOUR WEEKS PRIOR TO COMPLETION OF THE TELEMETRY SYSTEM SO THAT THE DEDICATED PHONE CIRCUIT CAN BE ORDERED. THE CONTRACTOR SHALL COORDINATE WITH BELL ATLANTIC REGARDING CONNECTION AND TESTING OF THE DEDICATED TELEMETRY CIRCUIT.

TONE RECEIVER (QDTR90) AND TONE TRANSMITTER (QT30) SHALL BE PROVIDED AND INSTALLED AT THE PINE ORCHARD WATER PUMPING STATION. A QEI CABINET WILL BE NEEDED AT THE PINE ORCHARD STATION FOR HOUSING AND MOUNTING THE EQUIPMENT. A 16 POINT DIGITAL INPUT BOARD (AUTOCON MODEL 9543), AS MANUFACTURED BY U.S. FILTER CONTROL SYSTEMS, SHALL BE PROVIDED FOR CONNECTING THE INPUT SIGNALS TO THE EXISTING RTU. EXISTING ANALOG INPUT TERMINALS ARE AVAILABLE.

ALL TERMINAL WIRES SHALL BE LABELED AT BOTH THE TRANSMITTING AND RECEIVING ENDS.

SYSTEM SUPPLIER SHALL BE RETRO ELECTRIC, CO., INC. OR EQUAL.

- VALVE CONTROL CABINET SHALL BE NEMA 4X, STAINLESS STEEL, SIZED AS REQUIRED FOR EQUIPMENT WITH HINGED DOOR AND HASP. INDICATING LIGHTS TO BE 30mm PUSH-TO-TEST TYPE, SWITCHES TO BE CORROSION RESISTANT 30mm WITH BLACK GLOVED HAND KNOB. CONTROL RELAYS SHALL BE 10 AMP RATED AT 120V., PLUG-IN TYPE, CLASS 8501 TYPE KP13P14120. LIGHTS - CLASS 9001, TYPE SK, SELECTOR SWITCHES TYPE SK, CLASS 9001, 2 POSITION AND 3 POSITION WITH BLACK GLOVED HAND KNOBS. NAMEPLATES TO BE PHENOLIC, BLACK WITH WHITE LETTERING 1/16" THICK, BOLTED OR SCREWED TO CABINET. LIGHTS, SWITCHES & RELAYS ARE AS MANUFACTURED BY SQUARE D OR EQUAL. CABINET AS MANUFACTURED BY HOFFMAN OR EQUAL, MINIMUM SIZE 10" x 7" W x 5 1/2" D, TYPE Q LINE "E" WITH MOUNTING FEET & HINGED DOOR. PILOT LIGHTS & SELECTOR SWITCHES TO BE MOUNTED ON DOOR.

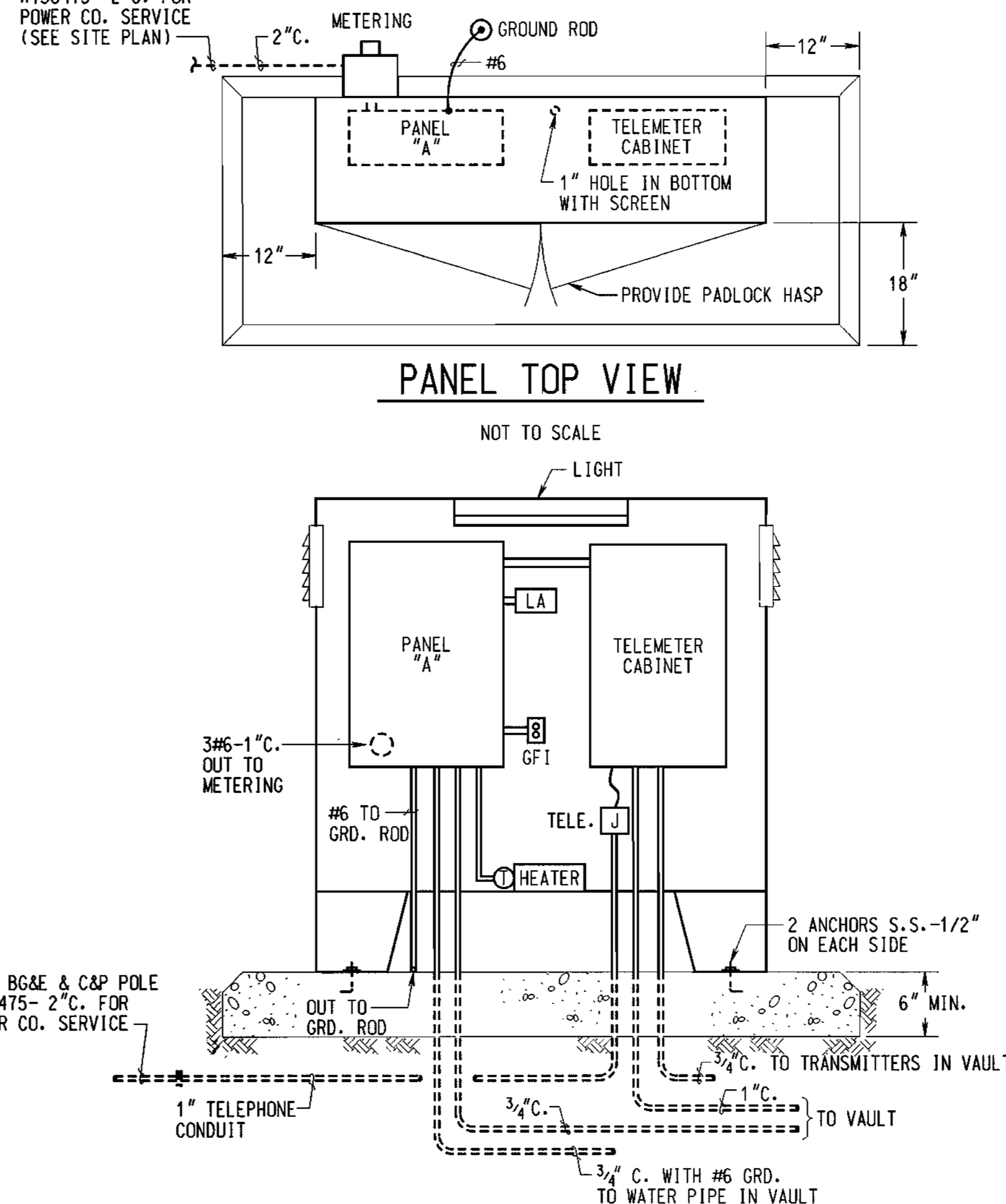
ELECTRICAL LEGEND

SYMBOL	DESCRIPTION
	RECEPTACLE 20A, 125V., SINGLE LOCKING TYPE, DUPLEX, GF1 TYPE - M.H. = 1'-6" UNLESS OTHERWISE NOTED.
	WALL MOUNTED HEATER
	LIGHTNING SURGE SUPPRESSOR
	JUNCTION BOX
	SOLENOID
	SINGLE POLE SWITCH, 20A, 120V
	SWITCH, WEATHER PROOF
	THERMOSTAT - HEAT
	TRANSMITTERS
	SELECTOR SWITCH
	HOMERUNS TO PANEL. NO. OF ARROWS INDICATE NO. OF CIRCUITS AND NO. OF CROSSINGS INDICATE NO. OF #12 CONDUCTORS
	CONDUIT RUN EXPOSED
	CONDUIT RUN UNDERGROUND OR BELOW FLOOR SLABS
	GROUND CONNECTION
	3" PRESSURE REDUCING VALVE, 250# FLANGED ENDS
	6" PRESSURE REDUCING VALVE, 250# FLANGED ENDS
	6" PRESSURE RELIEF VALVE
	CIRCUIT BREAKER
	CONTACTS - NORMALLY OPEN
	CONTACTS - NORMALLY CLOSED
	THERMOSTAT (HEAT)

ABBREVIATIONS

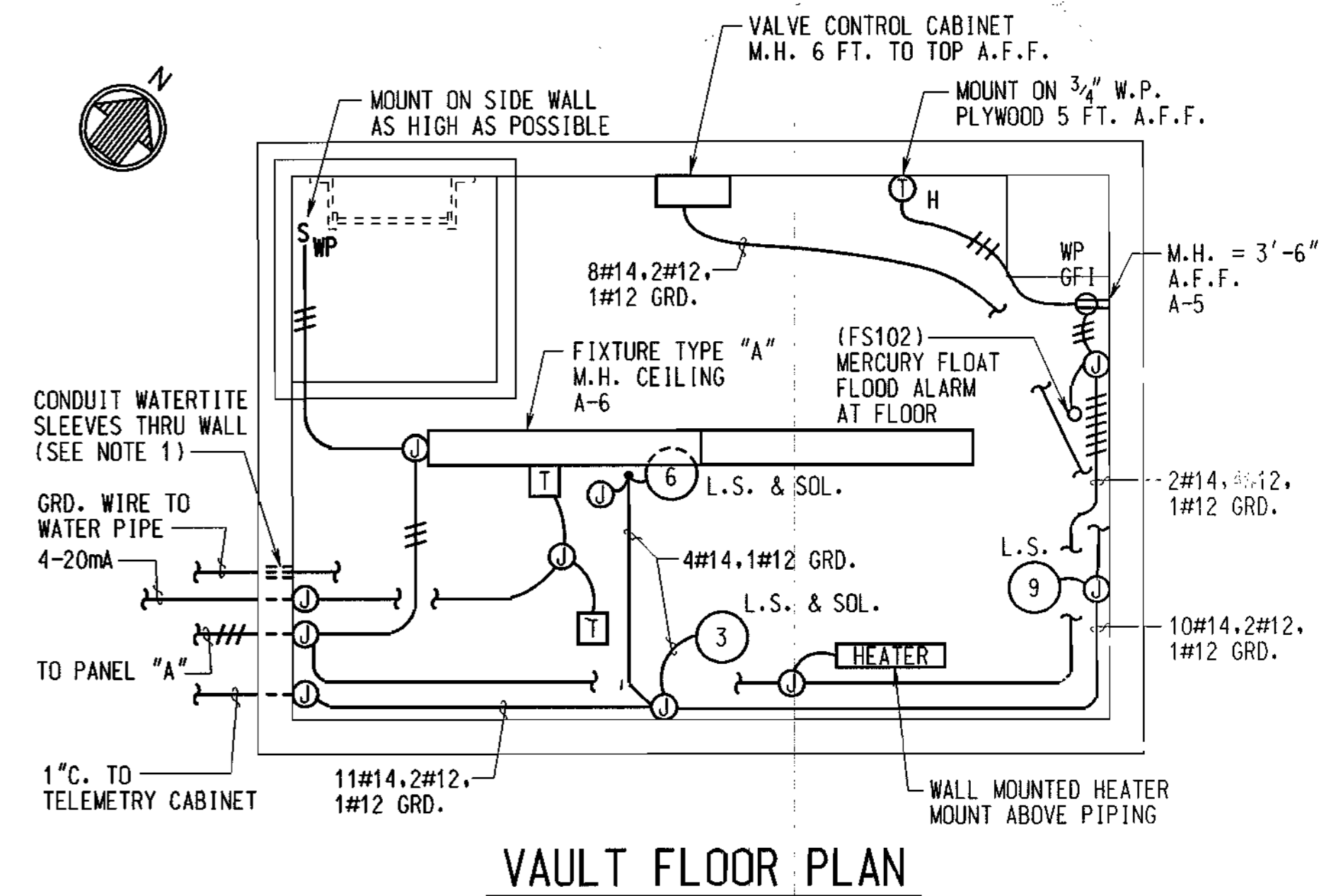
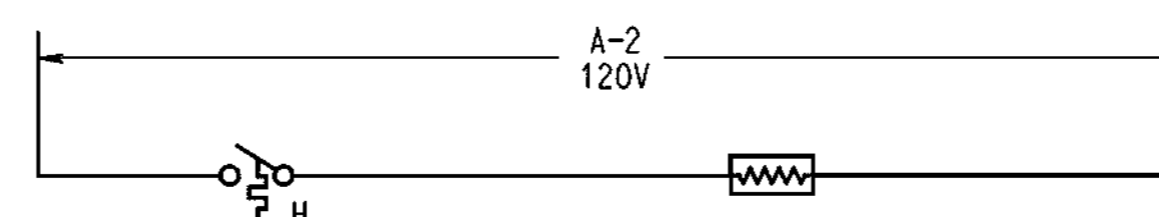
ABBREV.	DESCRIPTION
A, AMP	AMPERE (S)
AFF	ABOVE FINISHED FLOOR
C	CONDUIT
CB	CIRCUIT BREAKER
GF1	GROUND FAULT INTERRUPTER
GRD, GND	GROUND
L-R	LOCAL-REMOTE
L.S.	LIMIT SWITCH
M.H.	MOUNTING HEIGHT
NO., #	NUMBER
P	POLE (S)
PVC	POLYVINYL CHLORIDE
S	SWITCH
SCH.	SCHEDULE
SOL	SOLENOID
S.S.	STAINLESS STEEL
TH	THICK
V	VOLT (S)
W	WIRE
WP	WEATHERPROOF
Ø	PHASE

FROM BG&E & C&P POLE #138475-2" C. FOR POWER CO. SERVICE (SEE SITE PLAN)



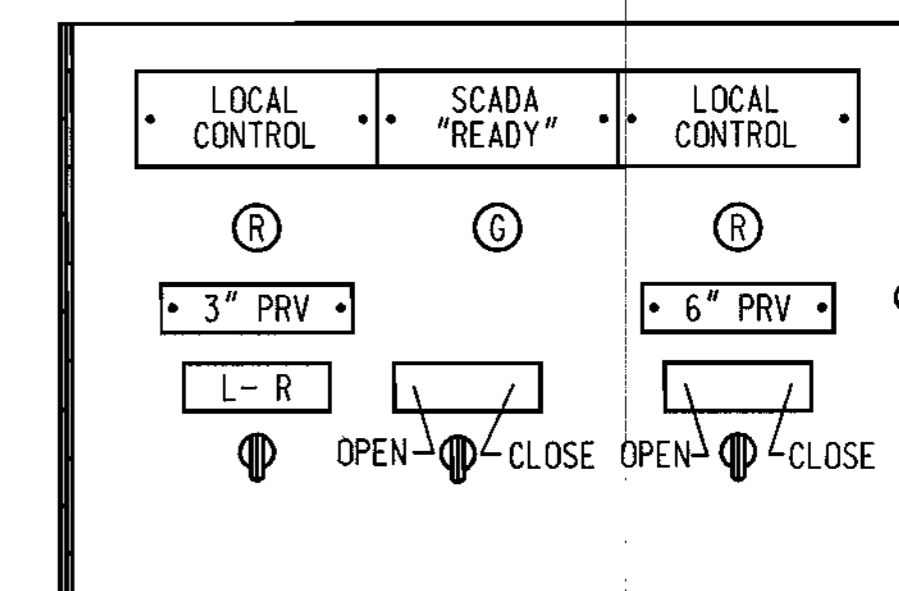
PANEL SCHEDULE "A"											
240/120 VOLT, 1 PHASE, 3 WIRE, SURFACE MOUNTED											
CIR	FOR	BREAKER			I.C. *	CIR	FOR	BREAKER			I.C. *
		FRAME	POLES	CALIB.				FRAME	POLES	CALIB.	
1	MAIN	100	2	60	10	2	VAULT UNIT HEATER	100	1	20	10
3	MAIN	-	-	-	10	4	SPARE	100	1	-	10
5	VAULT SUMP PUMP	100	1	20	10	6	VAULT LIGHTING	100	1	15	10
7	CABINET GF1 OUTLET	100	1	20	10	8	VAULT P.R. SOLENOID VALVES	100	1	15	10
9	TELEMETER CABINET	100	1	20	10	10	CABINET HEATER & LIGHT	100	1	15	10
11	SPARE	100	1	20	10	12	TRANSMITTERS	100	1	15	10

* I.C. = INTERRUPTING CAPACITY IN THOUSANDS OF SYMMETRICAL R.M.S. AMPERES.

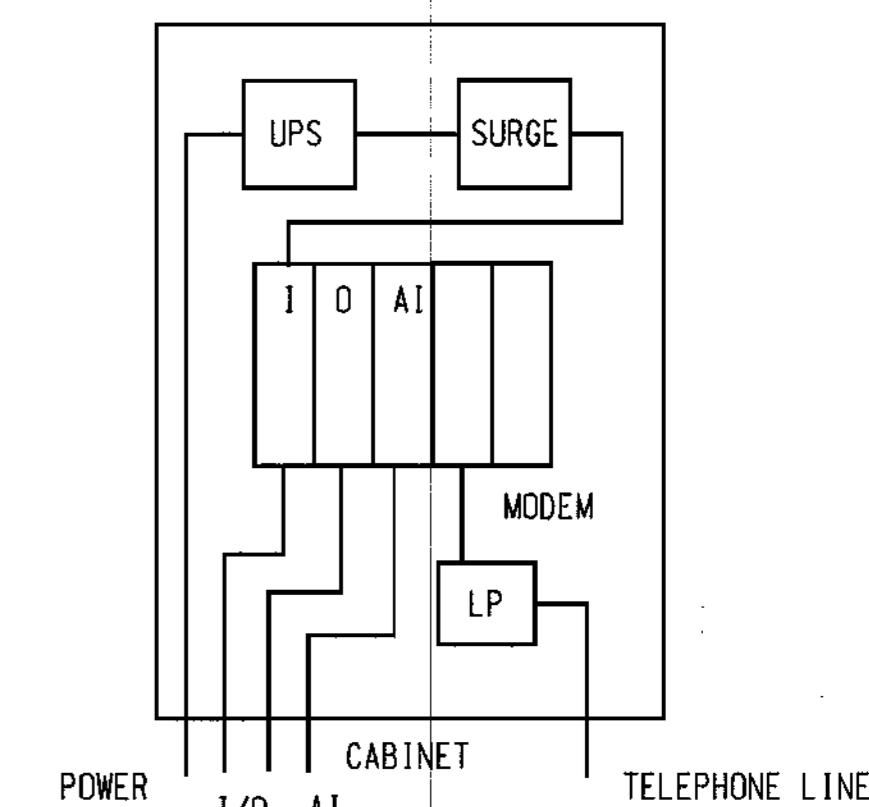


NOTES:

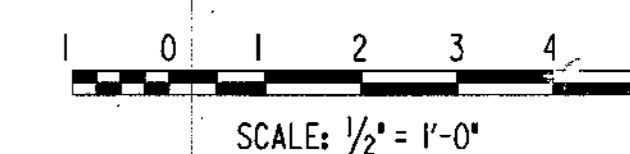
- INSTALL RIGID GALVANIZED HEAVY WALL CONDUITS FROM PANEL "A" & TELEMETER CABINET TO VAULT JUNCTION BOXES.



TELEMETER CABINET LAYOUT



GRAPHIC SCALE



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.
6-7-03

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND.
6/6/03

PREPARED BY:
WR&A
Whitman, Reardon and Associates, LLP.
2315 ST. PAUL ST.
BALTIMORE, MD. 21218
410-235-3450

DES: SEA/EJM
DRN: EJM/GG
CHK: EJM/WRD
DATE: 10-22-99

ELECTRICAL DETAILS

600' SCALE MAP NO. 18 BLOCK NO. 1, 2 & 7

HOLLIFIELD ESTATE S
4" FORCE MAIN, 8" WATER MAIN AND
PRESSURE REDUCING VALVE
SECOND ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

E-1
SCALE AS SHOWN
SHEET 7 OF 10

INSTRUMENT IDENTIFICATION SCHEDULE

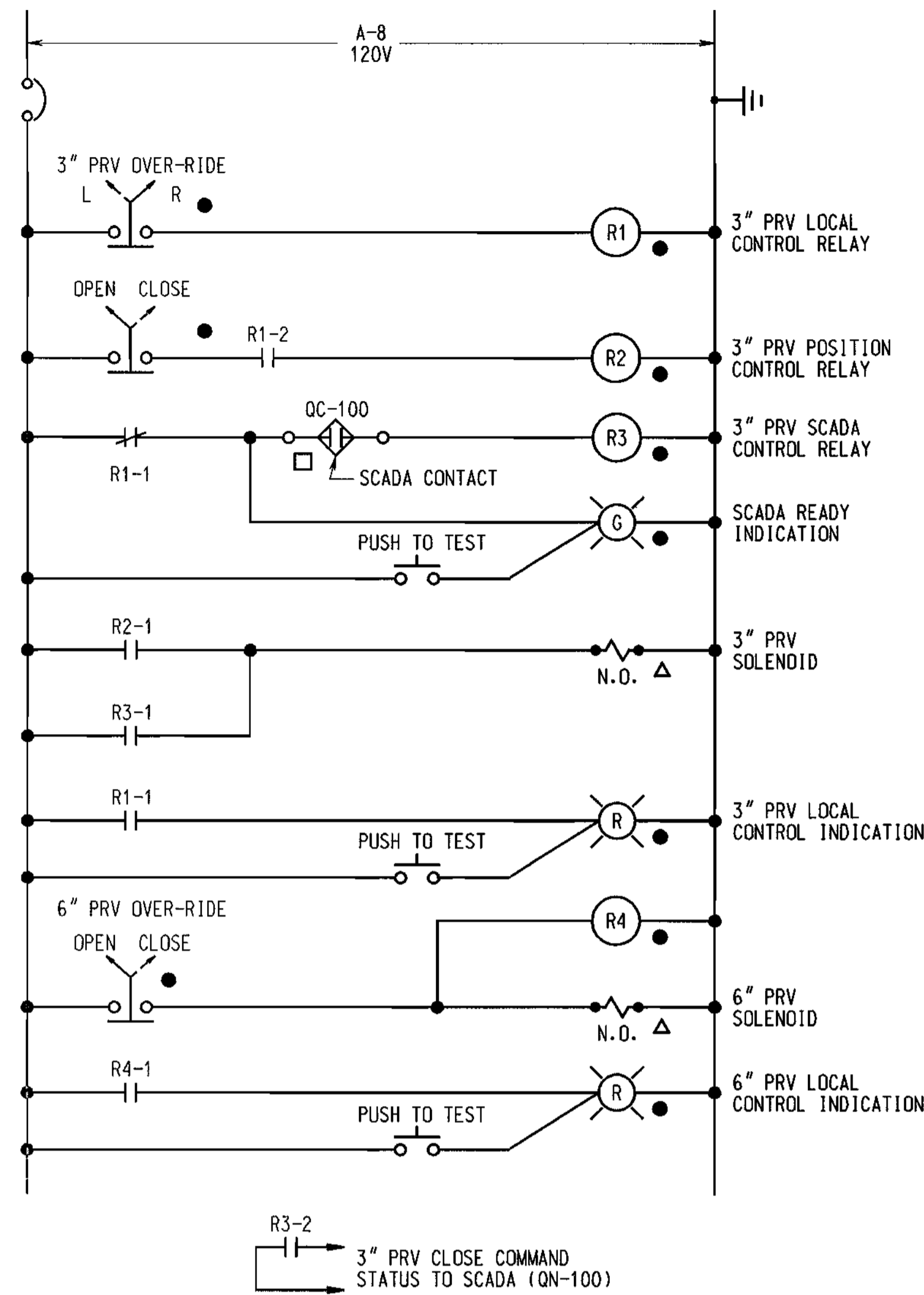
FIRST LETTER		SUCCEEDING LETTER		
VARIABLE	MODIFIER	PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS	ALARM		AUTOMATIC
B	BREAKER	USER'S CHOICE	CLOSE OR STOP	BYPASS
C	CONDUCTIVITY		CONTROL	
D	DENSITY		OPEN OR START	
E	VOLTAGE (EMF)	PRIMARY ELEMENT	SENSOR	
F	FLOW RATE	FAIL	FAIL	FAIL
G	GAUGING	GLASS		LOCAL/MANUAL
H	HAND			HIGH OR OPEN
I	CURRENT	INDICATE		INTERMEDIATE
J	POWER			
K	TIME		CONTROL STATION	
L	LEVEL	LIGHT		LOW OR CLOSE
M	MOTOR		MOTOR	MIDDLE
N	USER'S CHOICE		FORWARD	ON OR OPERATE
O			OFF	OVERLOAD
P	PRESSURE	POINT (TEST)	POSITION	
Q	QUANTITY OR EVENT			
R	RADIOACTIVITY	RECORD OR PRINT	REMOTE	RUN
S	SPEED OR FREQUENCY	SEQUENCE	SWITCH	STOP
T	TEMPERATURE		TRANSMIT	
U	MULTIVARIABLE	MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VARIABLE OR VISCOSITY		VALVE OR DAMPER	
W	WEIGHT OR FORCE	WELL		
X	MOD, LIGHT OR VALVE	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	INTERLOCK		RELAY OR COMPUTE	REVERSE
Z	POSITION		DRIVE OR ACTUATOR	

EXAMPLES

- AIT = ANALYSIS INDICATING TRANSMITTER
- FIT = FLOW INDICATING TRANSMITTER
- LIT = LEVEL INDICATING TRANSMITTER
- PAH = PRESSURE ALARM HIGH
- PAL = PRESSURE ALARM LOW
- ZSH = POSITION SWITCH OPEN
- ZSL = POSITION SWITCH CLOSED

SCADA CONTACTS:

STATUS		VAULT TRANSMITTER		VAULT RECEIVER	
DI	= 3" PRV CALL STATUS	- CONTROL	QN-100	DI	= 3" PRV CLOSE
DI	= 3" PRV LIMITS	- OPEN	ZH-100		
		- CLOSE	ZL-100		
DI	= 6" PRV	- OPEN	ZH-101		
		- CLOSE	ZL-101		
DI	= VAULT FLOOD	- ALARM	LH-102		
DI	= 6" RELIEF VALVE	- OPEN	ZH-103		
		- CLOSE	ZL-103		
DI	= TELEMETRY FAIL	- FAIL	OF-104		
AI	= UP STREAM (HIGH) PRESSURE TRANSDUCER	- PRESS.	PT-105		
AI	= DOWN STREAM (LOW) PRESSURE TRANSDUCER	- PRESS.	PT-106		



PRV OVER-RIDE SOLENOID CONTROL DIAGRAM

PRV OVER-RIDE CONTROLS:

3" PRV CONTROL MODES:

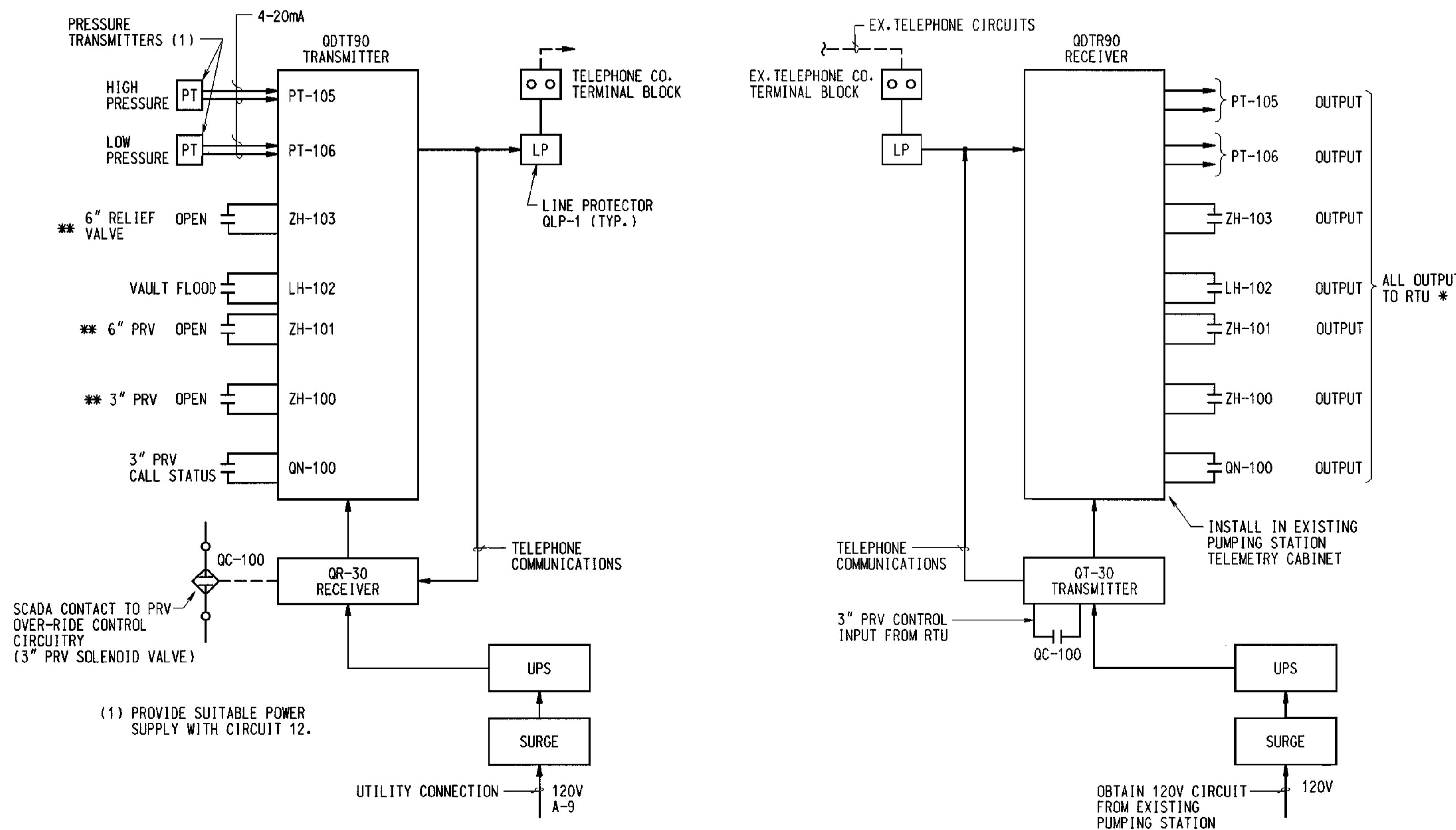
LOCAL: WHEN THE L-R SELECTOR SWITCH IS IN THE LOCAL POSITION, OPEN/CLOSE CONTROLS SHALL BE ACTIVE. WHEN THE CLOSE POSITION IS SELECTED, THE OVER-RIDE SOLENOID VALVE SHALL ENERGIZE, CYCLING THE PRV TO A CLOSED POSITION. THE LOCAL CONTROL INDICATION LIGHT SHALL BE ENERGIZED.

REMOTE: WHEN THE L-R SELECTOR SWITCH IS IN THE REMOTE POSITION, THE PRV SHALL BE INTERLOCKED TO THE HOWARD COUNTY BUREAU OF UTILITIES MASTER RTU SCADA SYSTEM VIA TELEPHONE TELEMETRY. THE SCADA CONTACT SHALL OVER-RIDE INTEGRAL HYDRAULIC PILOT SET-POINTS AND ENERGIZE THE OVER-RIDE SOLENOID VALVE, CYCLING THE PRV TO A CLOSED POSITION. THE SCADA READY INDICATION LIGHT SHALL BE ENERGIZED.

6" PRV CONTROL MODES:

CLOSE: WHEN THE ON-OFF SELECTOR SWITCH IS IN THE ON POSITION, THE PRV OVER-RIDE SHALL BE ACTIVE. THE OVER-RIDE SOLENOID VALVE SHALL ENERGIZE, CYCLING THE PRV TO A CLOSED POSITION. THE LOCAL CONTROL INDICATION LIGHT SHALL BE ENERGIZED.

OPEN: WHEN THE ON-OFF SELECTOR SWITCH IS IN THE OFF POSITION, THE PRV SHALL BE CONTROLLED BY INTEGRAL HYDRAULIC PILOT SET-POINTS.



HOLLIFIELD PRV VAULT

(** LIMIT SWITCHES AT VALVES)

PINE ORCHARD WATER PUMPING STATION

NOTE:

* THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WORK PERFORMED AT THE PINE ORCHARD WATER PUMPING STATION. THE CONTRACTOR SHALL COORDINATE WITH U.S. FILTER CONTROL SYSTEMS "AUTOCON" FOR THE PROGRAMMING OF THE PINE ORCHARD P.S. RTU. "AUTOCON" SHALL BE RESPONSIBLE FOR PROGRAMMING AND GRAPHICS REQUIRED AT THE MASTER RTU LOCATED AT HOWARD COUNTY BUREAU OF UTILITIES, 8250 OLD MONTGOMERY ROAD.

LOCATION LEGEND:

- △ IN VAULT
- IN TELEMETRY CABINET
- AT VAULT CABINET

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND.

PREPARED BY:

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2315 ST. PAUL ST.
BALTIMORE, MD. 21218
410-235-3450

DES: SEA/EJM

DRN: EJM/GG

CHK: EJM/WRD

DATE: 10-22-99

PRV SCADA INTERFACE

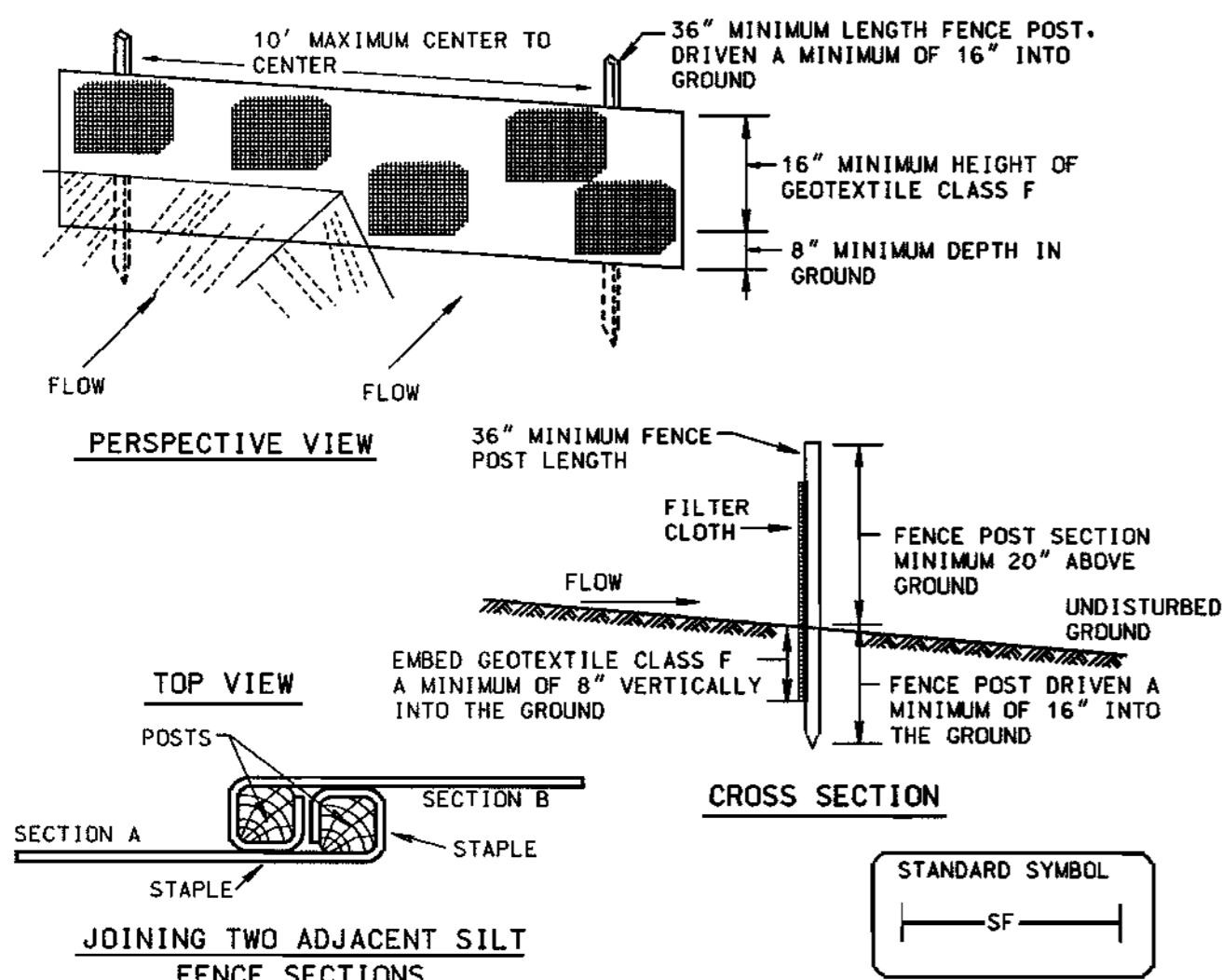
HOLLIFIELD ESTATES
4" FORCE MAIN, 8" WATER MAIN AND
SECOND ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

I-1

SCALE AS SHOWN

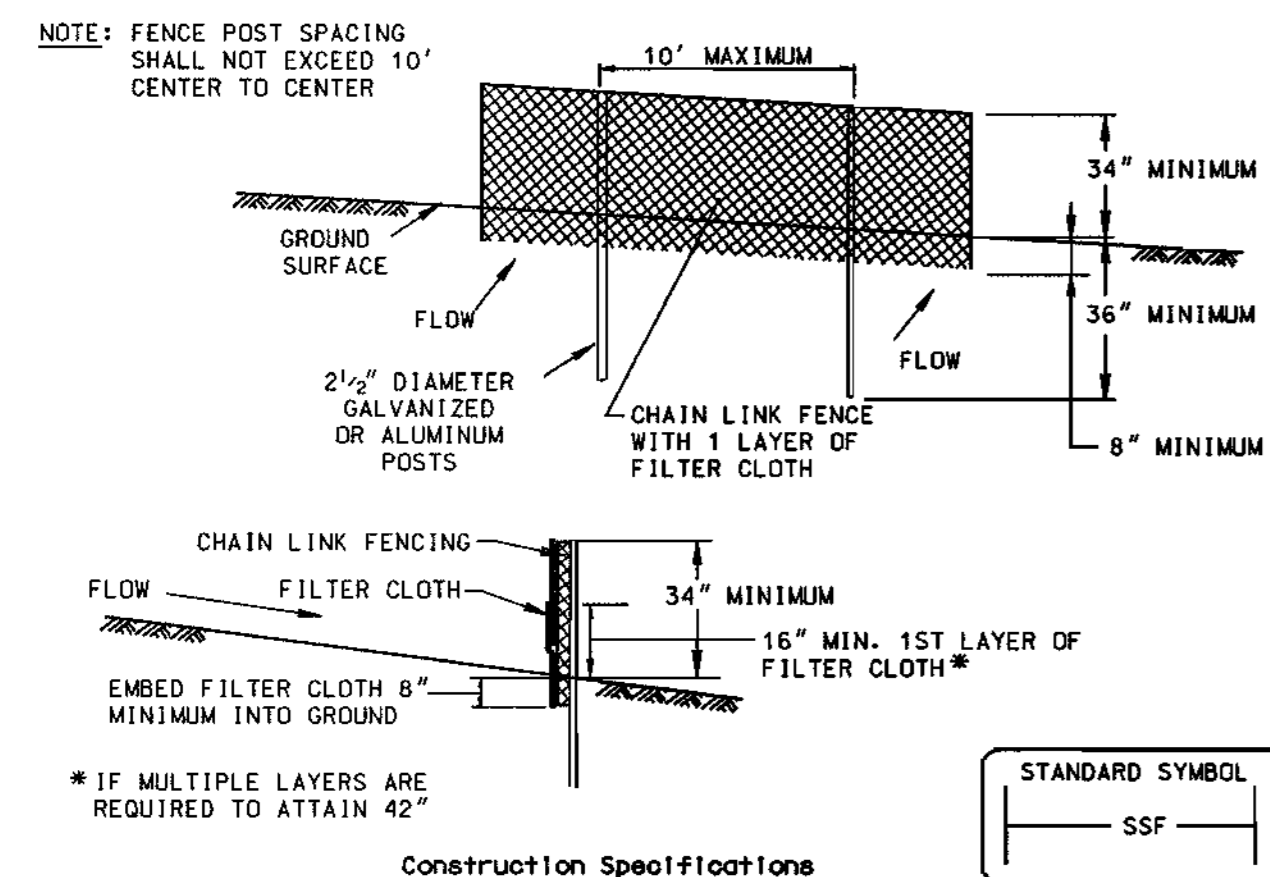
SHEET 8 OF 18

DETAIL 22 - SILT FENCE



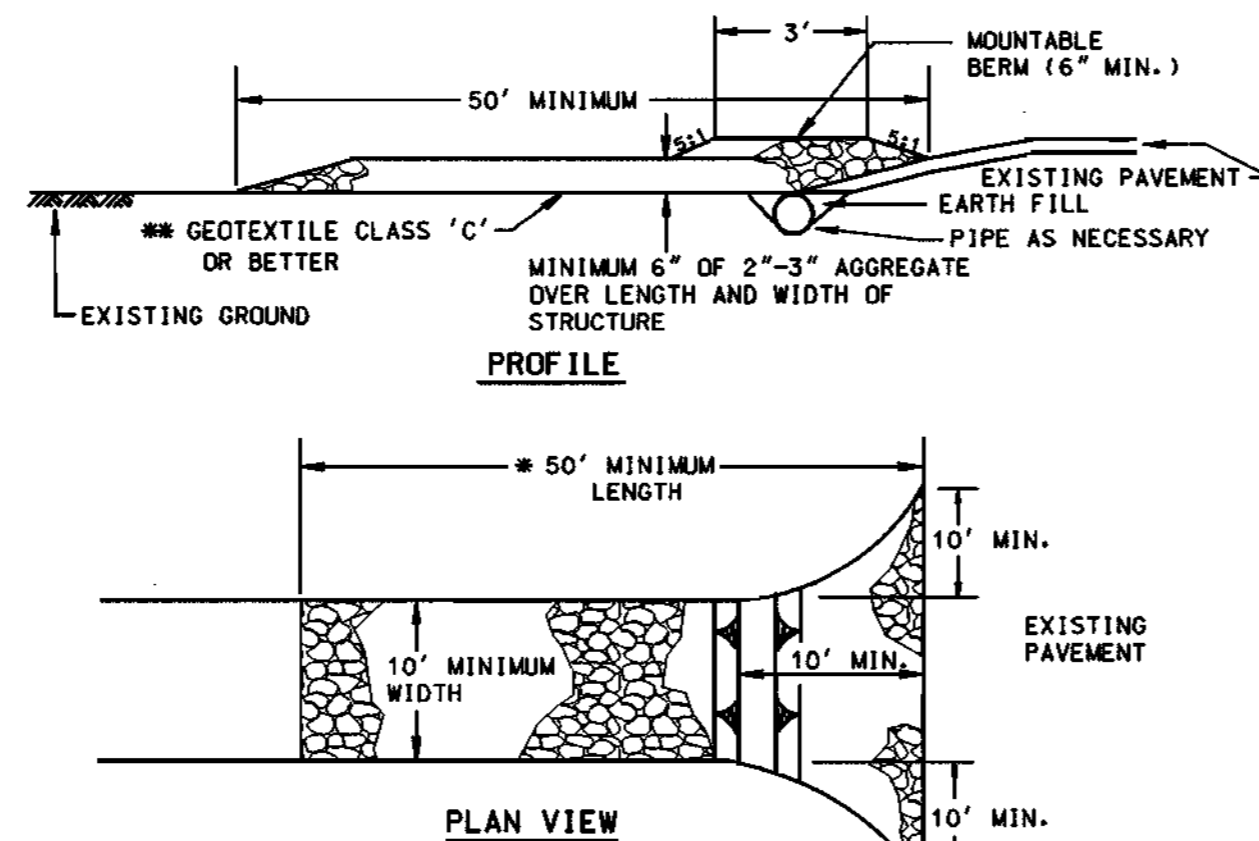
- Construction Specifications**
- Fence posts shall be a minimum of 36" long driven 16" minimum into the ground. Wood posts shall be 1 1/2" x 1 1/2" square (minimum) cut, or 1 1/2" diameter (minimum) round and shall be of sound quality hardwood. Steel posts will be standard T or U section weighting not less than 1.00 pound per linear foot.
 - Geotextile shall be fastened securely to each fence post with wire ties or staples at top and mid-section and shall meet the following requirements for Geotextile Class F:
- | | | |
|----------------------|--|----------------|
| Tensile Strength | 50 lbs/in (min.) | Test: MSMT 509 |
| Tensile Modulus | 20 lbs/in (min.) | Test: MSMT 509 |
| Flow Rate | 0.3 gal/ft ² /minute (max.) | Test: MSMT 322 |
| Filtering Efficiency | 75% (min.) | Test: MSMT 322 |
- Where ends of geotextile fabric come together, they shall be overlapped, folded and stapled to prevent sediment bypass.
 - Silt Fence shall be inspected after each rainfall event and maintained when bulges occur or when sediment accumulation reached 50% of the fabric height.

DETAIL 33 - SUPER SILT FENCE



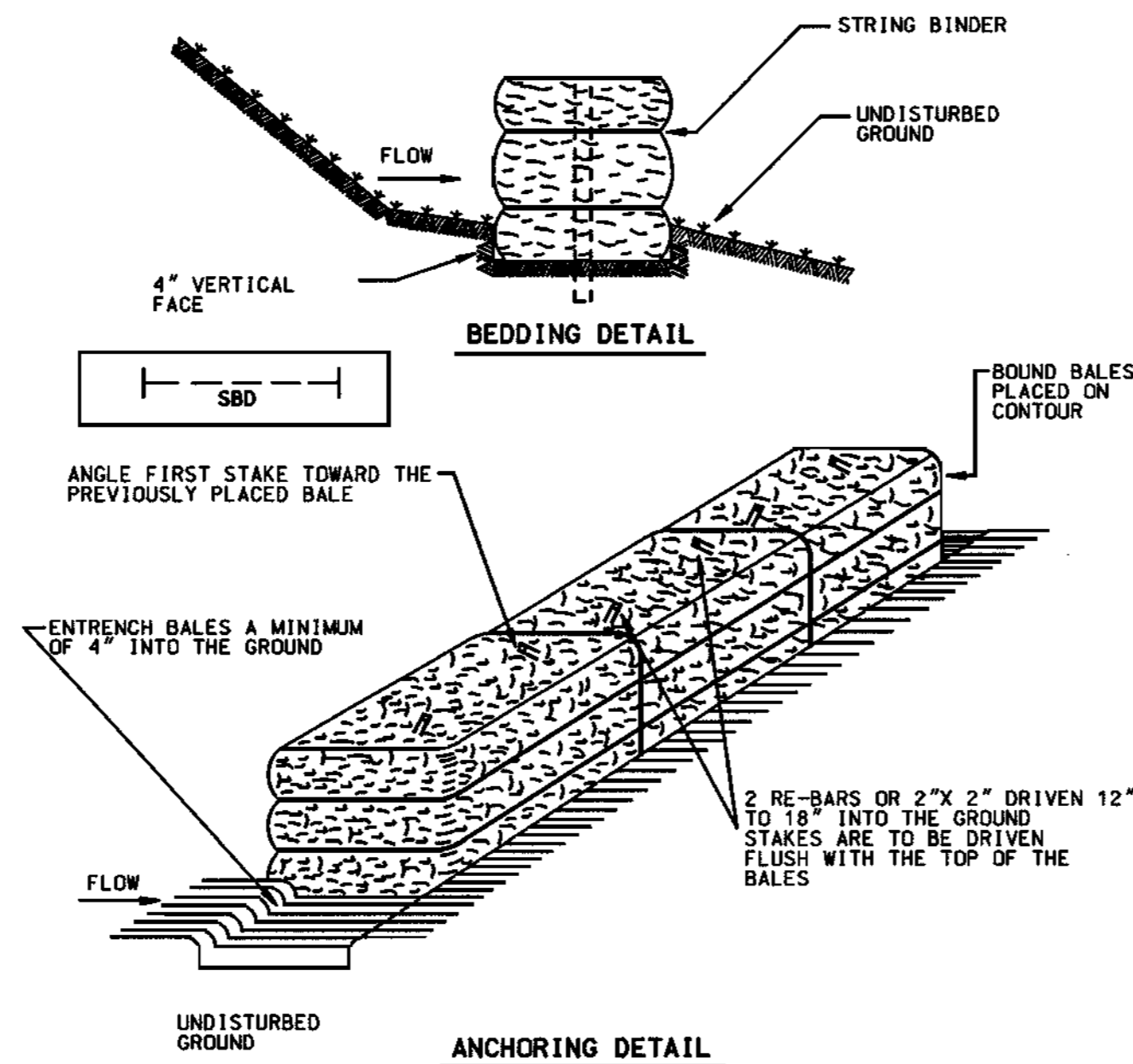
- Construction Specifications**
- NOTE: FENCE POST SPACING SHALL NOT EXCEED 10' CENTER TO CENTER
- Fencing shall be 42" in height and constructed in accordance with the latest Maryland State Highway Details for Chain Link Fencing. The specification for a 6' fence shall be used, substituting 42" fabric and 6' length posts.
 - Chain link fence shall be fastened securely to the fence posts with wire ties. The lower tension wire, brace and truss rods, drive anchors and post caps are not required except on the ends of the fence.
 - Filter cloth shall be fastened securely to the chain link fence with ties spaced every 24" at the top and mid section.
 - Filter cloth shall be embedded a minimum of 8" into the ground.
 - When two sections of filter cloth adjoin each other, they shall be overlapped by 6" and folded.
 - Maintenance shall be performed as needed and silt buildups removed when "bulges" develop in the silt fence, or when silt reaches 50% of fence height
 - Filter cloth shall be fastened securely to each fence post with wire ties or staples at top and mid section and shall meet the following requirements for Geotextile Class F:
- | | | |
|----------------------|--|----------------|
| Tensile Strength | 50 lbs/in (min.) | Test: MSMT 509 |
| Tensile Modulus | 20 lbs/in (min.) | Test: MSMT 509 |
| Flow Rate | 0.3 gal/ft ² /minute (max.) | Test: MSMT 322 |
| Filtering Efficiency | 75% (min.) | Test: MSMT 322 |

DETAIL 24 - STABILIZED CONSTRUCTION ENTRANCE



- Construction Specifications**
- Length - minimum of 50' (#30' for single residence lot).
 - Width - 10' minimum, should be flared at the existing road to provide a turning radius.
 - Geotextile fabric (filter cloth) shall be placed over the existing ground prior to placing stone. The plan approval authority may not require single family residences to use geotextile.
 - Stone - crushed aggregate (2" to 3") or reclaimed or recycled concrete equivalent shall be placed at least 6" deep over the length and width of the entrance.
 - Surface Water - all surface water flowing to or diverted toward construction entrances shall be piped through the entrance, maintaining positive drainage. Pipe installed through the stabilized construction entrance shall be protected with a mountable berm with 5:1 slopes and a minimum of 6" of stone over the pipe. Pipe has to be sized according to the drainage. When the SCE is located at a high spot and has no drainage to convey a pipe will not be necessary. Pipe should be sized according to the amount of runoff to be conveyed. A 6" minimum will be required.

DETAIL 32 - STRAW BALE DIKE



- Construction Specifications**
- Bales shall be placed at the toe of a slope, on the contour, and in a row with the ends of each bale tightly abutting the adjacent bales.
 - Each bale shall be entrenched in the soil a minimum of 4" and placed so the bindings are horizontal.
 - Bales shall be securely anchored in place by either two stakes or re-bars driven through the bale 12" to 18" into the ground. The first stake in each bale shall be driven toward the previously laid bale at an angle to force the bales together. Stakes shall be driven flush with the top of the bale.
 - Straw bale dikes shall be inspected frequently and after each rain event and maintenance performed as necessary.
 - All bales shall be removed when the site has been stabilized. The trench where the bales were located shall be graded flush and stabilized.

SEDIMENT CONTROL NOTES

- A MINIMUM OF 24 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION. (410-313-1855)
 - ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, AND REVISIONS THERETO.
 - FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: a) 7 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3:1, b) 14 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
 - ALL SEDIMENT TRAPS/BASINS SHOWN MUST BE FENCED AND WARNING SIGNS POSTED AROUND THEIR PERIMETER IN ACCORDANCE WITH VOL. 1, CHAPTER 7, OF THE HOWARD COUNTY DESIGN MANUAL, STORM DRAINAGE.
 - ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDINGS, SO2, TEMPORARY SEEDING, AND MULCHING (SEC). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
 - ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
 - SITE ANALYSIS:**
 TOTAL AREA OF SITE: N/A
 AREA DISTURBED: 135000 SF +/- OR 3.1 ACRES L.O.D.*
 AREA TO BE VEGETATED: 8100 SF +/- OR .18 ACRES +/-
 AREA TO BE VEGETATIVELY STABILIZED: 63000 SF +/- OR 1.4 ACRES +/-
 TOTAL CUT: 4700 CU. YDS. +/-
 TOTAL BACKFILL: 4700 CU. YDS. +/-
 OFFSITE WASTE/BORROW AREA LOCATION: APPROVED
 - ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
 - ADDITIONAL SEDIMENT CONTROLS MUST BE PROVIDED, IF DEEMED NECESSARY BY HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, IN PARTICULAR, EROSION CONTROL MATTING SHALL BE USED TO RE-LINE EXISTING ROAD-SIDE DITCHES DISTURBED BY CONSTRUCTION.
 - ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING, OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.
 - TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH ARE BACKFILLED AND STABILIZED WITHIN ONE WORKING DAY, WHICHEVER IS SHORTER. IMMEDIATELY FOLLOWING PIPE INSTALLATION, THE TRENCH SHALL BE BACKFILLED, COMPACTED AND IMMEDIATELY STABILIZED (CRUSHER RUN STONE AND TEMPORARY COLD PATCH MATERIALS, MULCHED, SEEDED, AND OR SODDED MECHANICAL STABILIZATION) AT THE END OF EACH WORKING DAY. SILT FENCE SHALL BE PLACED IMMEDIATELY DOWNHILL OF ANY DISTURBED AREA INTENDED TO REMAIN DISTURBED LONGER THAN ONE (1) DAY.
- * NOTE : LIMIT OF DISTURBANCE (L.O.D.) IS WIDTH OF RIGHT OF WAY UNLESS SHOWN OTHERWISE.
 ** NOTE: COUNTY CAPITAL PROJECT IS SCHEDULED TO OVERLAY ENTIRE WIDTH OF ROAD

REQUIRED SEQUENCE OF CONSTRUCTION

- OBTAIN THE REQUIRED GRADING PERMIT. (10 DAYS)
- NOTIFY MISS UTILITY 48 HOURS BEFORE BEGINNING ANY WORK @ (1-800-257-7777). NOTIFY HOWARD COUNTY CONSTRUCTION INSPECTION DIVISION 24 HOURS BEFORE STARTING ANY WORK @ 410-313-1870 (2 DAYS).
- INSTALL THE REQUIRED SEDIMENT AND EROSION CONTROL DEVICES AND STABILIZE CONSTRUCTION ENTRANCE AS INDICATED ON THESE PLANS.(5 DAYS)
- CONSTRUCT PIPELINES AS SHOWN ON THE CONSTRUCTION DRAWINGS, KEEPING ALL CONSTRUCTION ACTIVITIES WITHIN THE LIMIT OF DISTURBANCE. SEE SEDIMENT CONTROL NOTE NO.11. ALL TREES SHALL BE PRESERVED AND PROTECTED OUTSIDE OF THE UTILITY EASEMENTS, ALTHOUGH THEY MAY BE WITHIN THE LIMITS OF DISTURBANCE.(120 DAYS). FOR ALL CONSTRUCTION IN OLD FREDERICK ROAD, SEE WORK ZONE TRAFFIC CONTROL PLAN SHOWN BELOW.
- THE CONTRACTOR SHALL INSPECT AND PROVIDE NECESSARY MAINTENANCE ON THE SEDIMENT AND EROSION CONTROL DEVICES SHOWN HEREON, AFTER EACH RAINFALL AND ON A DAILY BASIS. (2 DAYS)
- REMOVE SEDIMENT FROM ROADWAY AND DRESS STONE CONSTRUCTION ENTRANCE AS REQUIRED. (1 DAY)
- FINE GRADE ALL AREAS DISTURBED BY PIPELINE CONSTRUCTION AND STABILIZE ACCORDING TO RESTORATION SCHEDULES ON EACH SHEET OF THE CONSTRUCTION DRAWINGS.REMOVE CRUSHER RUN STONE AND COLD PATCH MATERIAL FROM SURFACE OF TRENCH BACKFILL IN OLD FREDERICK ROAD AND CONSTRUCT ASPHALT PAVING BASE TO MATCH FULL THICKNESS OF EXISTING PAVING. A COUNTY CAPITAL PROJECT WILL CONSTRUCT ASPHALT PAVING OVERLAY OVER ENTIRE ROAD SURFACE AT A LATER DATE.
- FOLLOWING SUCCESSFUL STABILIZATION OF ALL DISTURBED AREAS, AND AFTER PERMISSION HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, REMOVE SEDIMENT CONTROL MEASURES AND STABILIZE REMAINING DISTURBED AREAS WITH PERMANENT SEEDING MULCH.(5 DAYS)

WORK ZONE TRAFFIC CONTROL PLAN

- GENERAL NOTES**
- ALL WORK SHALL BE CONDUCTED IN ACCORDANCE WITH THE LATEST VERSION OF THE HOWARD COUNTY DESIGN MANUAL VOLUME 10 SECTION 107, THE MARYLAND STATE HIGHWAY ADMINISTRATION (MSHA) BOOK OF STANDARDS, THE FEDERAL HIGHWAY ADMINISTRATION (FHWA) MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), AND THE MARYLAND SUPPLEMENT TO THE MUTCD.
 - ALL SIGNS SHALL CONFORM TO THE LATEST VERSION OF MSHA'S STANDARD SIGN BOOK AND FHWA'S MUTCD.
 - ALL EXISTING TRAFFIC SIGNS IN CONFLICT WITH THIS WORK ZONE TRAFFIC CONTROL PLANS AND/OR TEMPORARY TRAFFIC SIGNS NOT IN USE DURING A SPECIFIC STAGE OF CONSTRUCTION SHALL BE COVERED.
 - VEHICULAR ACCESS TO ALL SIDE STREETS AND DRIVEWAYS SHALL BE MAINTAINED THROUGHOUT THE WORK ZONE USING FLAGGERS PER MSHA STD. NO. MD 104.32-02 (SEE COPY IN SPECIAL PROVISIONS) OR AS DIRECTED BY THE ENGINEER.
 - DURING NON-WORKING HOURS, UTILITY EXCAVATIONS ACROSS/ ALONG TRAFFIC LANES (INCLUDING SIDE STREETS AND DRIVEWAYS) SHALL BE BACKFILLED OR PLATED PER MSHA STD. NOS. 104.89-01 THROUGH MD 104.32, WITH 18" x 18" BUMP AND/OR 18" x 18" STEEL PLATES* SIGNS INSTALLED IN ADVANCE OF THE PATCH OR PLATES. (SEE SPECIAL PROVISIONS FOR COPIES OF MSHA STANDARD DETAILS.)
- WORK RESTRICTIONS**
- CONSTRUCTION SHALL ONLY BE CONDUCTED DURING THE HOURS BETWEEN 9:00 AM AND 4:00 PM (WORKING HOURS). EXISTING TRAFFIC LANES SHALL BE MAINTAINED DURING NON-WORKING HOURS.
 - DURING WORKING HOURS, A MINIMUM OF ONE 10' WIDE TRAFFIC LANE ON OLD FREDERICK ROAD SHALL BE MAINTAINED USING FLAGGERS PER MSHA STD. NOS. 104.31-02 AND/OR MD104.32-02 (SEE SPECIAL PROVISIONS FOR COPIES OF MSHA STANDARD DETAILS.)

BY THE DEVELOPER:

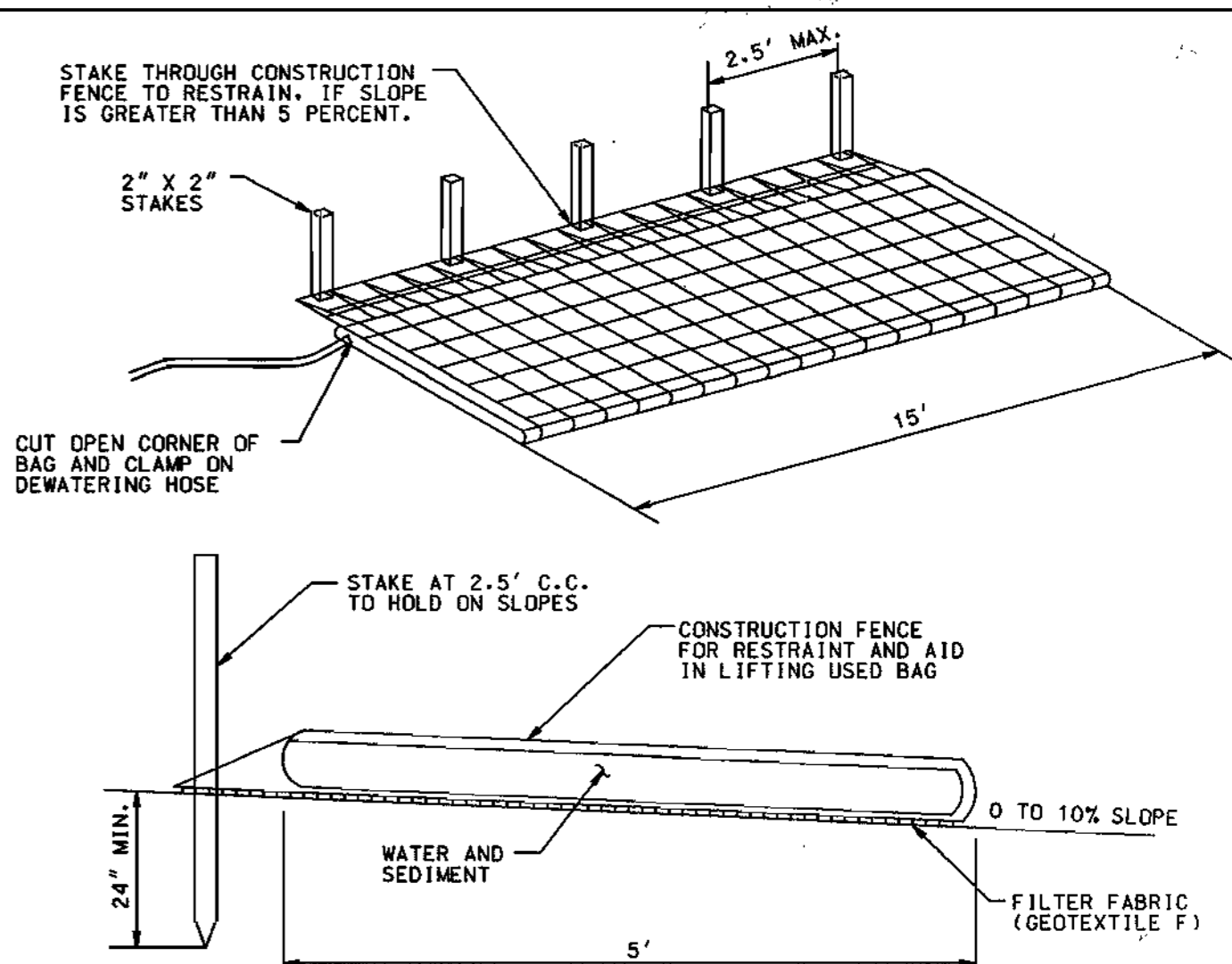
"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I, ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT".

KOREN DEVELOPMENT COMPANY, INC. DATE

BY THE ENGINEER:

"I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."

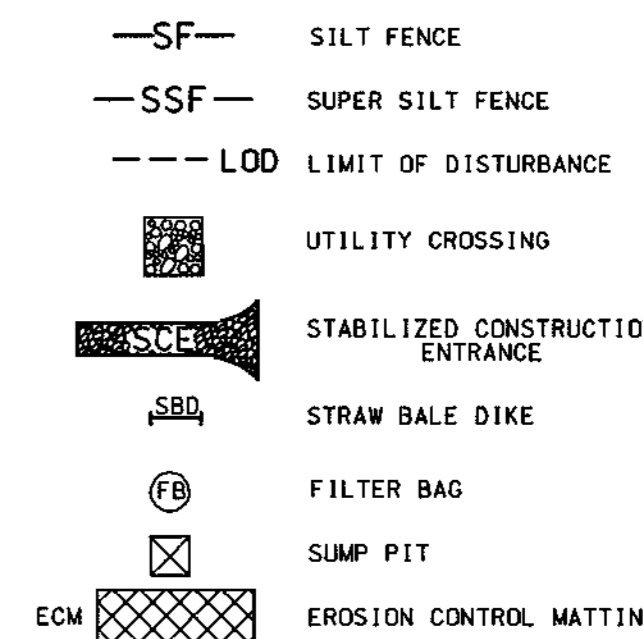
James A. Avirett Jr. P.E. 10210 DATE 3/17/2000



- NOTES:**
- FILTER BAG SHALL BE PLACED ON A SLOPING OR LEVEL, WELL GRADED VEGETATED SITE SUCH THAT WATER WILL FLOW AWAY FROM DEVICE AND ANY WORK AREAS.
 - WIDTH AND LENGTH SHALL BE AS SHOWN.
 - THE FILTER BAG MUST BE STAKED IN PLACE AND SECURED TO THE PUMP DISCHARGE LINE.
 - FILTER BAG SHALL NOT BE USED FOR DISCHARGE FLOWS GREATER THAN 300 GPM.
 - DEVICE SHALL BE REMOVED AND DISPOSED OF AFTER BAG IS FILLED WITH SEDIMENT. SEDIMENT FROM BAG SHALL BE SPREAD IN AN UPLAND AREA.
 - FILTER FABRIC SHALL MEET THE FOLLOWING REQUIREMENTS FOR GEOTEXTILE CLASS F:
- | | | |
|----------------------|--|----------------|
| TENSILE STRENGTH | 50 LBS/IN (MIN.) | TEST: MSMT 509 |
| TENSILE MODULUS | 20 LBS/IN (MIN.) | TEST: MSMT 509 |
| FLOW RATE | 0.3 GAL/FT ² /MINUTE (MAX.) | TEST: MSMT 322 |
| FILTERING EFFICIENCY | 75% (MIN.) | TEST: MSMT 322 |

FILTER BAG TEMPORARY EROSION CONTROL MEASURE (FB)

SEDIMENT CONTROL LEGEND



DEVELOPER

KOREN DEVELOPMENT COMPANY, INC.
 8815 CENTRE PARK DRIVE, SUITE 104
 COLUMBIA, MD. 21045

THESE PLANS HAVE BEEN REVIEWED FOR HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SOIL EROSION AND SEDIMENT CONTROL.

Clay Simmon 6-8-00 DATE
 USDA-NATURAL RESOURCES CONSERVATION SERVICE
 THESE PLANS FOR SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

John R. Roberson 6-8-00 DATE
 HOWARD S.C.D.

20.0 STANDARDS AND SPECIFICATIONS

FOR VEGETATIVE STABILIZATION

Definition

Using vegetation as cover for barren soil to protect it from forces that cause erosion.

PURPOSE

Vegetative Stabilization specifications are used to promote the establishment of vegetation on exposed soil. When soil is stabilized with vegetation, the soil is less likely to erode and more likely to allow infiltration of rainfall, thereby reducing sediment loads and runoff to downstream areas, and improving wildlife habitat and visual resources.

Conditions Where Practice Applies

This practice shall be used on denuded areas as specified on the plans and may be used on highly erodible or critically eroding areas. This specification is divided into Temporary Seeding, to quickly establish vegetative cover for short duration (up to one year), and Permanent Seeding, for long term vegetative cover. Examples of applicable areas for Temporary Seeding are temporary soil stockpiles, cleared areas being left idle between construction phases, earth dikes, etc. and for Permanent Seeding are lawns, dams, cut and fill slopes and other areas at final grade, former stockpile and staging areas, etc.

Effects on Water Quality and Quantity

Planting vegetation in disturbed areas will have an effect on the water budget, especially on volumes and rates of runoff, infiltration, evaporation, transpiration, percolation, and groundwater recharge. Vegetation, over time, will increase organic matter content and improve the water holding capacity of the soil and subsequent plant growth.

Vegetation will help reduce the movement of sediment, nutrients, and other chemicals carried by runoff to receiving waters. Plants will also help protect groundwater supplies by assimilating those substances present within the root zone.

Sediment control devices must remain in place during grading, seedbed preparation, seeding, mulching and vegetative establishment to prevent large quantities of sediment and associated chemicals and nutrients from washing into surface waters.

Section I - Vegetative Stabilization Methods and Materials

A. Site Preparation

- Install erosion and sediment control structures (either temporary or permanent) such as diversions, grade stabilization structures, berms, waterways, or sediment control basins.
- Perform all grading operations at right angles to the slope. Final grading and shaping is not usually necessary for temporary seeding.
- Schedule required soil tests to determine soil amendment composition and application rates for sites having disturbed area over 5 acres.

B. Soil Amendments (Fertilizer and Lime Specifications)

- Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed area over 5 acres. Soil analysis may be performed by the University of Maryland or a recognized commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analyses.
- Fertilizers shall be uniform in composition, free flowing and suitable for accurate application by approved equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers shall all be delivered to the site fully labeled according to the applicable state fertilizer laws and shall bear the name, trade name or trademark and warrantee of the producer.
- Lime materials shall be ground limestone (hydrated or burnt lime may be substituted) which contains at least 50% total oxides (calcium oxide plus magnesium oxide). Limestone shall be ground to such fineness that at least 50% will pass through a #100 mesh sieve and 98 - 100% will pass through a #20 mesh sieve.
- Incorporate lime and fertilizer into the top 3 - 5" of soil by disking or other suitable means.

C. Seedbed Preparation

- Temporary Seeding
 - Seedbed preparation shall consist of loosening soil to a depth of 3" to 5" by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or rippers mounted on construction equipment. After the soil is loosened it should not be rolled or dragged smooth but left in the roughened condition. Steep areas (greater than 3:1) should be tracked leaving the surface in an irregular condition with ridges running parallel to the contour of the slope.
 - Apply fertilizer and lime as prescribed on the plans.
 - Incorporate lime and fertilizer into the top 3 - 5" of soil by disking or other suitable means.
- Permanent Seeding
 - Minimum soil conditions required for permanent vegetative establishment:
 - Soil pH shall be between 6.0 and 7.0
 - Soluble salts shall be less than 500 parts per million (ppm).
 - The soil shall contain less than 40% clay but enough fine grained material (2-30% silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception is if lowgrass or serotia lespedeza is to be planted, then a sandy soil (10-30% silt plus clay) would be acceptable.
 - Soil shall contain 1.5% minimum organic matter by weight.
 - Soil must contain sufficient pore space to permit adequate root penetration.
 - If these conditions cannot be met by soils on site, adding topsoil is required in accordance with Section 21 Standard and Specification for Topsoil.
 - Areas previously graded in conformance with the drawings shall be maintained in a true and even grade, then scarified or otherwise loosened to a depth of 3 - 5" to permit banding of the topsoil to the surface area and to create horizontal erosion check slots to prevent topsoil from sliding down a slope.
 - Apply soil amendments as per soil test or as included on the plans.
 - Mix soil amendments into the top 3 - 5" of topsoil by disking or other suitable means. Lawn areas should be raked to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Where site conditions will not permit normal seedbed preparation, loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface. Steep slopes (steeper than 3:1) should be tracked by a dozer leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. The top 1 - 3" of soil should be loose and friable. seedbed loosening may not be necessary on newly disturbed areas.

D. Seed Specifications

- All seed must meet the requirements of the Maryland State Seed Law. All seed shall be subject to re-testing by a recognized seed laboratory. All seed used shall have been tested within the 6 months immediately preceding the date of sowing such material on this job.

Note: Seed tags shall be made available to the Inspector to verify type and rate of seed used.
- Inoculant - The inoculant for treating legume seed in the seed mixtures shall be a pure culture of nitrogen-fixing bacteria prepared specifically for the species. Inoculants shall not be used later than the date indicated on the container. Add fresh inoculant as directed on package. Use four times the recommended rate when hydroseeding. Note: It is very important to keep inoculant as cool as possible until used. Temperatures above 75 - 80°F. can weaken bacteria and make the inoculant less effective.

E. Methods of Seeding

- Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer), broadcast or drop seeder, or a cultipacker seeder.
 - If fertilizer is being applied at the time of seeding, the application rates amounts will not exceed the following: Nitrogen maximum of 100 lbs. per acre total of soluble nitrogen P205 (phosphorus): 200 lbs/acre K20 (potassium): 200 lbs/acre.
 - Lime - use only ground agricultural limestone, (up to 3 tons per acre may be applied by hydroseeding). Normally, not more than 2 tons are applied by hydroseeding of any one time. Do not use burnt or hydrated lime when hydroseeding.
 - Seed and fertilizer shall be mixed on site and seeding shall be done immediately and without interruption.
- Dry Seeding: This includes use of conventional drop or broadcast spreaders.
 - Seed spread dry shall be incorporated into the soil at the rates prescribed on the temporary or Permanent Seeding Summaries or Tables 25 or 26. The seeded area shall then be rolled with a weighted roller to provide good seed to soil contact.
 - Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.
- Drill or Cultipacker Seeding: Mechanized seeders that apply and cover seed with soil.
 - Cultipacker seeders are required to bury the seed in such a fashion as to provide at least 1/4 inch of soil covering. Seeded must be firm after planting.
 - Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.

F. Mulch Specifications (In order of preference)

- Straw shall consist of thoroughly threshed wheat, rye or oat straw, reasonably bright in color, and shall not be musty, moldy, caked, decayed, or excessively dusty and shall be free of noxious weed seeds as specified in the Maryland Seed Law.
- Wood Cellulose Fiber Mulch (WCFM)
 - WCFM shall consist of specially prepared wood cellulose processed into a uniform fibrous physical state.
 - WCFM shall be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly spread slurry.
 - WCFM, including dye, shall contain no germination or growth inhibiting factors.
 - WCFM materials shall be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogeneous slurry. The mulch material shall form a blotter-like ground cover, on application, having moisture absorption and percolation properties and shall cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings.
 - WCFM material shall contain no elements or compounds at concentration levels that will be phytotoxic.
 - WCFM must conform to the following physical requirements: fiber length to approximately 10 mm., diameter approximately 1 mm., pH range of 4.0 to 8.5, ash content of 1.5% maximum and water holding capacity of 90% minimum.

Note: Only sterile straw mulch should be used in areas where one species of grass is desired.

G. Mulching Seeded Areas - Mulch shall be applied to all seeded areas immediately after seeding.

- If grading is completed outside of the seeding season, mulch alone shall be applied as prescribed in this section and maintained until the seeding season returns and seeding can be performed in accordance with these specifications.
- When straw mulch is used, it shall be spread over all seeded areas at the rate of 2 tons/acre. Mulch shall be applied to a uniform loose depth of between 1" and 2". Mulch applied shall achieve a uniform distribution and depth so that the soil surface is not exposed. If a mulch anchoring tool is to be used, the rate should be increased to 2.5 tons/acre.
- Wood cellulose fiber used as a mulch shall be applied at a net dry weight of 1,500 lbs. per acre. The wood cellulose fiber shall be mixed with water, and the mixture shall contain a maximum of 50 lbs. of wood cellulose fiber per 100 gallons of water.
- Securing Straw Mulch (Mulch Anchoring): Mulch anchoring shall be performed immediately following mulch application to minimize loss by wind or water. This may be done by one of the following methods (listed by preference), depending upon size of area and erosion hazard:
 - A mulch anchoring tool is a tractor drawn implement designed to punch and anchor mulch into the soil surface a minimum of two (2) inches. This practice is most effective on large areas, but is limited to flatter slopes where equipment can operate safely. If used on sloping land, this practice should be used on the contour if possible.
 - Wood cellulose fiber may be used for anchoring straw. The fiber binder shall be applied at a net dry weight of 750 pounds/acre. The wood cellulose fiber shall be mixed with water and the mixture shall contain a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.
 - Application of liquid binders should be heavier at the edges where wind catches mulch, such as in valleys and on crests of banks. The remainder of area should be appear uniform after binder application. Synthetic binders - such as Acrylic DLR (Agra-Tack), DCA-70, Petrosol, Terra Tax II, Terra Tack AB or other approved equal may be used at rates recommended by the manufacturer to anchor mulch.
 - Lightweight plastic netting may be stapled over the mulch according to manufacturer's recommendations. Netting is usually available in rolls 4' to 15' feet wide and 300 to 3,000 feet long.

Section II - Temporary Seeding

Vegetation - annual grass or grain used to provide cover on disturbed areas for up to 12 months. For longer duration of vegetative cover, Permanent Seeding is required.

A. Seed Mixtures - Temporary Seeding

- Select one or more of the species or mixtures listed in Table 26 for the appropriate Plant Hardiness Zone (from Figure 5) and enter them in the Temporary Seeding Summary below, along with application rates, seeding dates and seeding depths. If this summary is not put on the plans and completed, then Table 26 must be put on the plans.
- For sites having soil tests performed, the rates shown on this table shall be deleted and the rates recommended by the testing agency shall be written in. Soil tests are not required for Temporary Seeding.

TEMPORARY SEEDING SUMMARY

NO.	SPECIES	SEED MIXTURE (FOR HARDINESS ZONE 6-b)		SEEDING DEPTHS	FERTILIZER RATE (10-10-10)	LIME RATE
		APPLICATION RATE (lb/acc)	SEEDING DATES			
	ANNUAL RYEGRASS	50	3/1 - 4/30 8/15 - 11/1	1/4" - 1/2"	600 lb/acc (15 lb/1000 sf)	2 tons/acc (100 lb/1000 sf)

Section III: Permanent Seeding

Seeding grass and legumes to establish ground cover for a minimum period of one year on disturbed areas generally receiving low maintenance.

A. Seed Mixtures - Permanent Seeding

- Select one or more of the species or mixtures listed in Table 25 for the appropriate Plant Hardiness Zone (from Figure 5) and enter them in the Permanent Seeding Summary below, along with application rates and seeding dates. Seeding depths can be estimated using Table 26. If this summary is not put on the construction plans and completed, then Table 25 must be put on the plans. Additional planting specifications for exceptional sites such as shorelines, streambanks, or dunes or for special purposes such as wildlife or aesthetic treatment may be found in USDA-SCS Technical Field Office Guide, Section 342 - Critical Area Planting. For special lawn maintenance areas, see Section IV Sod and V Turfgrass.
- For sites having disturbed area over 5 acres, the rates shown on this table shall be deleted and the rates recommended by the soil testing agency shall be written.
- For areas receiving low maintenance, apply ureaform fertilizer (46-0-0) at 3 1/2 lbs./1000 sq. ft. (150 lbs/acc), in addition to the above soil amendments shown in the table below, to be performed at the time of seeding.

PERMANENT SEEDING SUMMARY

NO.	Species	Seed Mixture (For Hardiness Zone 6-b)		Seeding Dates	Seeding Depths	Fertilizer Rate (10-20-20)			Lime Rate
		Application Rate (lb/acc)	(From Table 25)			N	P205	K20	
2	KENTUCKY BLUEGRASS 50%	150		3/1 - 5/15 8/15 - 11/15	1/4" - 1/2"				
	CREEPING RED FESCUE 40%					90 lb/acc (2.01 lb/1000 sf)	175 lb/acc (4 lb/1000 sf)	175 lb/acc (4 lb/1000 sf)	2 tons/acc (100 lb/1000 sf)
	RED TOP 10%								

Section IV - Sod: To provide quick cover on disturbed areas (2:1 grade or flatter).

A. General Specifications

- Class of turfgrass sod shall be Maryland or Virginia State Certified or Approved. Sod labels shall be made available to the job foreman and inspector.
- Sod shall be machine cut at a uniform soil thickness of 3/4", plus or minus 1/4", at the time of cutting. Measurement for thickness shall exclude top growth and thatch. Individual pieces of sod shall be cut to the suppliers width and length. Maximum allowable deviation from standard widths and lengths shall be 5 percent. Broken pods and torn or uneven ends will not be acceptable.
- Standard size sections of sod shall be strong enough to support their own weight and retain their size and shape when suspended vertically with a firm grasp on the upper 10 percent of the section.
- Sod shall not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.
- Sod shall be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted within this period shall be approved by an agronomist or soil scientist prior to its installation.

B. Sod Installation

- During periods of excessively high temperature or in areas having dry subsoil, the subsoil shall be lightly irrigated immediately prior to laying the sod.
- The first row of sod shall be laid in a straight line with subsequent rows placed parallel to and tightly wedged against each other. Lateral joints shall be staggered to promote more uniform growth and strength. Ensure that sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would cause air drying of the roots.
- Wherever possible, sod shall be laid with the long edges parallel to the contour and with staggering joints. Sod shall be rolled and tamped, pegged or otherwise secured to prevent slippage on slopes and to ensure solid contact between sod roots and the underlying soil surface.
- Sod shall be watered immediately following rolling or tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. The operations of laying, tamping and irrigating for any piece of sod shall be completed within eight hours.

C. Sod Maintenance

- In the absence of adequate rainfall, watering shall be performed daily or as often as necessary during the first week and in sufficient quantities to maintain moist soil to a depth of 4". Watering should be done during the heat of the day to prevent wilting.
- After the first week, sod watering is required as necessary to maintain adequate moisture content.
- The first mowing of sod should not be attempted until the sod is firmly rooted. No more than 1/3 of the grass leaf shall be removed by the initial cutting or subsequent cuttings. Grass height shall be maintained between 2" and 3" unless otherwise specified.

SECTION IV - TURFGRASS ESTABLISHMENT

Areas where turfgrass may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance. Areas to receive seed shall be filled by disking or other approved methods to a depth of 2 to 4 inches, leveled and raked to prepare a proper seedbed. Stones and debris over 1/2 inches in diameter shall be removed. The resulting seedbed shall be in such condition that future mowing of grasses will pose no difficulty.

NOTE: Choose certified material. Certified material is the best guarantee of cultivar purity. The certification program of the Maryland Department of Agriculture, Turf and Seed Section, provides a reliable means of consumer protection and assures a pure genetic line.

A. Turfgrass Mixtures

- Kentucky Bluegrass - Full sun mixture - For use in areas that receive intensive management. Irrigation required in the areas of central Maryland and eastern shore. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds/1000 square feet. A minimum of three bluegrass cultivars shall be chosen ranging from a minimum of 10% to a maximum of 35% of the mixture by weight.
- Kentucky Bluegrass/Perennial Rye - Full sun mixture - For use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass Cultivars/Certified Kentucky Bluegrass Seeding rate: 2 pounds mixture/1000 square feet. A minimum of 3 Kentucky Bluegrass Cultivars must be chosen, with each cultivar ranging from 10% to 35% of the mixture by weight.
- Tall Fescue/Kentucky Bluegrass - Full sun mixture - For use in drought prone areas and/or for areas receiving low to medium management in full sun to medium shade. Recommended mixture includes certified Tall Fescue Cultivars 95 - 100% certified Kentucky Bluegrass Cultivars 0 - 5%. Seeding rate: 5 to 8 lb/1000 sf. One or more cultivars may be blended.
- Kentucky Bluegrass/Fine Fescue - Shade Mixture - For use in areas with shade in Bluegrass lawns. For establishment in high quality, intensively managed turf area. Mixture includes certified Kentucky Bluegrass Cultivars 30-40% and certified Fine fescue and 60-70%. Seeding rate: 1 1/2 lbs/1000 square feet. A minimum of 3 Kentucky bluegrass cultivars must be chosen, with each cultivar ranging from a minimum of 10% to a maximum of 35% of the mixture by weight.

NOTE: Turfgrass varieties should be selected from those listed in the most current University of Maryland Publication, Agronomy Memo #71, "Turfgrass Cultivar Recommendations for Maryland".

B. Ideal times of seeding

- Western MD: March 15 - June 1, August 1 - October 1 (Hardiness Zones - 5b, 6a)
- Central MD: March 1 - May 15, August 1 - October 15 (Hardiness Zone - 6b)
- Southern MD, Eastern Shore: March 1 - May 15, August 15 - October 15 (Hardiness Zones - 7a, 7b)

C. Irrigation

If soil moisture is deficient, supply new seedings with adequate water for plant growth (1/2" - 1" every 3 to 4 days depending on soil texture) until they are firmly established. This is especially true when seedings are made late in the planting season, in abnormally dry or hot seasons, or on adverse sites.

D. Repair and Maintenance

- Inspect all seeded areas for failures and make necessary repairs, replacements, and reseeding within the planting season.
- Once the vegetation is established, the site shall have 95% groundcover to be considered adequately stabilized.
- If the stand provides less than 40% ground coverage, overseeding and fertilizing using half of the rates originally applied may be necessary.
- If the stand provides between 40% and 94% ground coverage, overseeding and fertilizing using half of the rates originally applied may be necessary.
- Maintenance fertilizer rates for permanent seedings are shown in Table 24. For lawns and other medium to high maintenance turfgrass areas refer to the University of Maryland publication "Lawn Care in Maryland" Bulletin No. 111.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND. 6-7-00 CHIEF, BUREAU OF UTILITIES	DEPARTMENT OF PLANNING AND ZONING HOWARD COUNTY, MARYLAND. DATE	PREPARED BY: Whitman, Reardon and Associates, LLP. 2315 ST. PAUL ST. BALTIMORE, MD. 21218 410-235-3450	DES: SEA/EJM DRN: EJM/GG CHK: EJM/WRD DATE: 10-22-99	BY NO. REVISION DATE	SEDIMENT CONTROL NOTES 600' SCALE MAP NO. 18 BLOCK NO. 1, 2 & 7	HOLLIFIELD ESTATES 1" FORCE MAIN, 8" WATER MAIN AND PRESSURE REDUCING VALVE SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND	SCALE AS SHOWN SHEET 10 OF 10
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QUANTITIES				
ITEM	ESTIMATED	AS-BUILT		
		QUANTITIES	TYPE	SUPPLIER
4" FORCE MAIN & 8" GRAVITY SEWER				
4" D.I.P.	4137 L.F.	4013	DIP	GRIFFIN
4"-45" H.B.	4	4	DIP	TYLER
4"-22.5" H.B.	2	2	DIP	TYLER
4" CAP	1	1	DIP	TYLER
8" PVC SCH 35 MANHOLE	135 L.F.	133	P.V.C.	J.M.
WATERTIGHT MANHOLE FRAME AND COVER *	2 EA.	2 EA.	PRECAST	ATLANTIC
8" WATER MAIN :				
8" D.I.P.	3800 L.F.	3818	DIP	TYLER HUGHES
6" D.I.P.	144 L.F.	127	DIP	"
8" MAINLINE VALVES (G.V.)	11	11	R.S.	KENNEY
6" VALVE	1	7	"	"
6" FIRE HYDRANTS	6	6	KENNEY	"
8"x6" F.H.T.	6	6	DIP	TYLER
12"x8" RED.	1	1	DIP	"
8"x6" RED.	2	1	DIP	"
8"-22.5" H.B.	1	1	DIP	"
8"-45" H.B.	1	1	DIP	"
8"-90" H.B.	1	1	DIP	"
6"-90" H.B.	1	1	DIP	"
8"x8" TEE	6	6	DIP	"
8" CAP	4	2	DIP	"
8"x6" TEE	1	1	DIP	"
6"x6" TEE	1	1	DIP	"
AIR RELEASE VALVE & MANHOLE	1	1		
PRV VAULT & APPURTENANCES:				
PRECAST CONC. VAULT	1	1	PRECAST	TERRA HILL
6" RESILIENT SEAT GATE VALVE	5	5	R.S.	KENNEY
6"x3" RED.	2	2	DIP	TYLER
3" PRESSURE REDUCING VALVE	1	1		
6" PRESSURE REDUCING VALVE	1	1		
6"x6" TEE (BASE)	1	1		
6" DRESSER COUPLING	1	1		
3" FLANGE ADAPTOR	1	1		
6" FLANGE ADAPTOR	1	1		
6" RELIEF VALVE	1	1		
36"x36" ALUMINUM HATCH	1	1		
STANDARD ALUMINUM STEPS	7			
SUMP PUMP PIT (12"x12"x18")	1	1		
SUMP PUMP (NOT SHOWN)	1	1		
1 1/2" RELIEF DRAIN	30 L.F.	29		
6" EMERGENCY OVERFLOW	31 L.F.	32		
3000 PSI CONC. (INSIDE VAULT)	1.5 C.Y.			
3" D.I.P. (PIPING IN VAULT)	4 L.F.	4		
6" D.I.P. (PIPING IN VAULT)	15 L.F.	15		
TELEMETRY & ELECTRICAL EQUIPMENT (COMPLETED)	1			

* REPLACE EX. MANHOLE FRAME & COVER WITH WATERTIGHT FRAME AND COVER AT EX. MH.S 410 & 412 (GATHER HOLLOW CT.)

B.M. NO. 1777 ELEV. 470.157 FT.
CONCRETE MONUMENT
@ SURFACE 20'
N. OF C.R.
66' E. OF CHAPEL AVE.

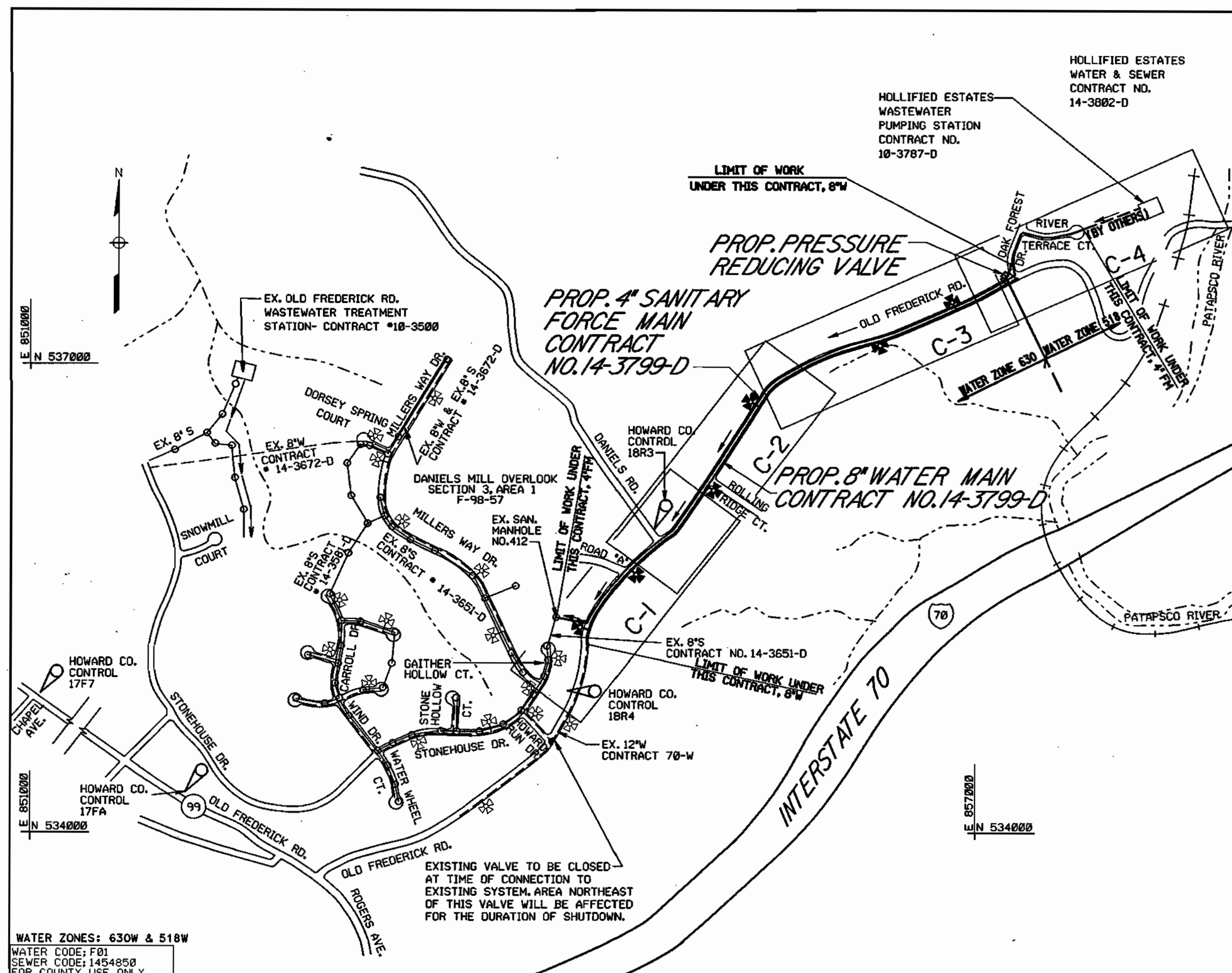
B.M. NO. 17FA ELEV. 477.488 FT.
STANDARD BRASS OR
ALUMINUM DISK 1" - 2"
BELOW SURFACE
207' EAST OF UTILITY
POLE, 24.7' NORTH OF
OLD FREDERICK RD.,
AND 294.6' WEST OF
X-CUT IN 3RD. POST
OF GUARD RAIL.

B.M. NO. 18R3 ELEV. 459.680 FT.
3/4" IRON ROD WITH
PLASTIC CAP SET
FLUSH WITH GROUND
SURFACE 99' +/- WEST OF
WEST EDGE OF
OLD FREDERICK ROAD
4.5' +/- NORTH OF
NORTH EDGE OF
DANIELS ROAD,
39.2' EAST OF G&E POLE
NO. 499943

B.M. NO. 18R4 ELEV. 475.951 FT.
3/4" IRON ROD WITH
PLASTIC CAP SET
FLUSH WITH GROUND
SURFACE 12.5' WEST FROM
OLD FREDERICK RD.
32.2' WEST OF LIGHT POST
LOCATED IN MEDIAN STRIP
BETWEEN ASPHALT DRIVEWAYS
FOR HOUSE NO. 5
8589 & 8599, 91.4' NORTH OF
LIGHT POLE ON EAST SIDE
OF ROAD.

INDEX OF DRAWINGS		
SHEET NO.	DRAWING NO.	DESCRIPTION
1	G-1	TITLE SHEET, VICINITY MAP, QUANTITIES, INDEX OF DRAWINGS AND GENERAL NOTES
2	C-1	PLAN AND PROFILE
3	C-2	PLAN AND PROFILE
4	C-3	PLAN AND PROFILE
5	C-4	PLAN AND PROFILE
6	C-5	DETAILS
7	E-1	ELECTRICAL DETAILS
8	I-1	PRV SCADA INTERFACE
9	SC-1	SEDIMENT CONTROL NOTES AND DETAILS
10	SC-2	SEDIMENT CONTROL NOTES

FOR SEDIMENT AND EROSION CONTROL LEGEND, SEE DRAWING SC-1.



VICINITY MAP
SCALE: 1" = 600'

CONTRACT NO. 14-3799-D
HOLLIFIELD ESTATES
4" FORCE MAIN, 8" WATER MAIN AND
PRESSURE REDUCING VALVE
SECOND ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

- GENERAL NOTES**
- APPROXIMATE LOCATION OF EXISTING MAINS ARE SHOWN. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT EXISTING MAINS AND SERVICES AND MAINTAIN UNINTERRUPTED SUPPLY. ANY DAMAGE INCURRED SHALL BE REPAIRED IMMEDIATELY TO THE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE.
 - THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC COUNTY CONTROL WHICH IS BASED UPON THE MARYLAND PLANE COORDINATE SYSTEM. (NORTH AMERICAN DATUM OF 1983-NAD 83) HOWARD COUNTY MONUMENTS NOS. 1777, 17FA, 18R4 AND 18R3 WERE USED FOR THIS PROJECT.
 - ALL VERTICAL CONTROLS ARE BASED ON U.S.G.S. DATUM. (NAVD29)
 - ALL PIPE ELEVATIONS ARE INVERT ELEVATIONS UNLESS OTHERWISE NOTED ON PLANS.
 - CLEAR ALL UTILITIES BY A MINIMUM OF 6" CLEAR ALL POLES BY 2'-0" MINIMUM, OR TUNNEL AS REQUIRED. THE CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANIES TO SCHEDULE THE BRACING OF THE POLES, IF REQUIRED.
 - FOR DETAILS NOT SHOWN ON DRAWINGS, AND FOR MATERIALS AND CONSTRUCTION METHODS, USE HOWARD COUNTY DESIGN MANUAL, VOLUME IV, STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION (LATEST EDITION). THE CONTRACTOR SHALL HAVE A COPY OF VOLUME IV ON THE JOB SITE.
 - EXISTING UTILITIES IN THE VICINITY OF PROPOSED WORK FOR WHICH TEST PITS HAVE NOT BEEN DUG SHALL BE VERIFIED BY THE CONTRACTOR TO HIS OWN SATISFACTION. ANY DAMAGE TO EXISTING FACILITIES DUE TO THE CONTRACTOR'S NEGLIGENCE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
 - CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITIES OR AGENCIES AT LEAST FIVE WORKING DAYS BEFORE STARTING WORK SHOWN ON THESE PLANS:
BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION, HOWARD CO. DPW 410-313-1880
STATE HIGHWAY ADMINISTRATION 410-531-5533
BGE (CONTRACTOR SERVICES) 410-850-4620
BGE (UNDERGROUND DAMAGE CONTROL) 410-291-4607
BUREAU OF UTILITIES, HOWARD CO. DPW 410-313-4900
MISS UTILITY 1-800-257-7777
AT&T 410-651-1111
COLONIAL PIPELINE CO. 410-795-1390
BELL ATLANTIC 1-800-446-5266
 - TREES AND SHRUBS ARE TO BE PROTECTED FROM DAMAGE TO THE MAXIMUM EXTENT POSSIBLE.
 - CONTRACTOR SHALL REMOVE TREES, STUMPS AND ROOTS ALONG LINE OF EXCAVATION. PAYMENT FOR SUCH REMOVAL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONSTRUCTION OF THE MAIN.
 - ALL WATER AND FORCE MAINS SHALL HAVE A MINIMUM OF 3" - 6" OF COVER UNLESS OTHERWISE NOTED.
 - VALVES ADJACENT TO TEES SHALL BE STRAPPED TO TEES.
 - ALL DIP FITTINGS SHALL BE IN ACCORDANCE WITH AWWA SPECIFICATIONS C-153; DUCTILE IRON CL.M.A.T. FITTINGS, 3-INCH THROUGH 12-INCH FOR WATER AND SEWER MAIN.
 - NO WETLAND EXISTS WITHIN THE LIMITS OF THIS CONTRACT.
 - THE CONTRACTOR SHALL NOT OPERATE ANY WATER VALVES ON THE EXISTING WATER SYSTEM. THE CONTRACTOR SHALL CONTACT HOWARD COUNTY DPW BUREAU OF UTILITIES IF OPERATION OF VALVES IS NEEDED.
 - ALL FITTINGS ON WATER MAIN SHALL BE BUTTRESSED OR ANCHORED WITH CONCRETE IN ACCORDANCE WITH THE COUNTY STANDARD DETAILS. OTHERWISE NOTED ON DRAWINGS OR SPECIFICATIONS. ALL FITTINGS ON THE SANITARY FORCE MAIN SHALL BE RESTRAINED AS INDICATED IN THE SPECIFICATIONS.
 - THE CONTRACTOR SHALL NOTIFY THE BUREAU OF HIGHWAYS, HOWARD COUNTY, AT 410-313-2450 AT LEAST FIVE DAYS BEFORE OPEN CUT OF ANY COUNTY ROAD OR BORING/JACKING OPERATION IN COUNTY ROADS FOR LAYING WATER AND SEWER MAIN OR HOUSE CONNECTIONS. THE APPROVAL OF THESE DRAWINGS WILL CONSTITUTE COMPLIANCE WITH THE DPW REQUIREMENTS PER SECTION 18.114(c) OF THE HOWARD COUNTY CODE.
 - TRAFFIC CONTROL DEVICES, MARKINGS AND SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). ALL DEVICES AND REGULATORY SIGNING SHALL BE IN PLACE PRIOR TO THE PLACEMENT OF ANY ASPHALT.
 - THE EXISTING TOPOGRAPHY IS TAKEN FROM FIELD SURVEY WITH TWO FOOT CONTOUR INTERVALS PREPARED BY MILDENBERG BOENDER AND ASSOCIATES.
 - EXISTING WATER IS PUBLIC, CONTRACT NO. 70-W. PROPOSED WATER IS PUBLIC, CONTRACT NO. 14-3799-D. THE EXISTING WATER ZONE IS 630. THE NEW WATER ZONE CREATED BY THE PRV VALVE IS 518.
 - EXISTING SEWER IS PUBLIC, CONTRACT NO. 14-3651-D. PROPOSED SEWER IS PUBLIC, CONTRACT NO. 14-3799-D DRAINAGE AREA IS PATAPSCO.
 - CONTRACTOR TO PROTECT EXISTING PROPERTY MARKERS FROM BEING DISTURBED. IF A DISTURBANCE OCCURS, REPLACEMENT MUST BE DONE BY A LICENSED LAND SURVEYOR AT THE CONTRACTOR'S EXPENSE.
 - ALL WATER MAINS AND SANITARY FORCE MAINS TO BE SPECIAL THICKNESS CLASS 52 D.I.P. UNLESS OTHERWISE NOTED.
 - EXISTING GROUND IS ALONG 8" WATER MAIN EXCEPT AS NOTED.
 - FIRE HYDRANTS SHALL BE SET TO BURY ELEVATIONS SHOWN ON THE DRAWINGS. ALL FIRE HYDRANTS SHALL BE RESTRAINED AND BUTTRESSED WITH CONCRETE IN ACCORDANCE WITH THE STANDARD DETAILS. SOIL AROUND THE FIRE HYDRANT SHALL BE COMPACTED IN ACCORDANCE WITH SECTION 1000 AND 1005 OF THE STANDARD SPECIFICATIONS.
 - MANHOLE DESIGNATED WT. IN PLAN AND IN PROFILE SHALL HAVE WATERTIGHT FRAME AND COVERS, STANDARD DETAIL 05.52.
 - ALL MANHOLES SHALL BE 4'-0" INSIDE DIAMETER UNLESS OTHERWISE NOTED ON DRAWINGS.
 - MANHOLE LOCATED IN ROADWAY SHALL HAVE STANDARD HEAVY WATERTIGHT TRAFFIC MANHOLE FRAME AND COVER.

NEW	LEGEND	EXISTING
---	UTILITY EASEMENT LINE	---
---	PROPERTY LINE- R/W LINE	---
---	TRAFFIC, PROPERTY SIGN	---
---	UTILITY POLE & GUY WIRE	---
---	LIGHT POLE	---
---	BANK/SLOPE	---
---	FENCE	---
---	TREE/TREE LINE	---
---	CONTOUR	---
---	PIPELINE CURVE P.1./ TRAV. P.1.	---
---	SEWER MANHOLE	---
---	SEWAGE FORCE MAIN	---
---	SEWER CLEAN-OUT	---
---	WATER VALVE	---
---	WATER METER	---
---	FIRE HYDRANT	---
---	FHT 18"x6" FIRE HYDRANT TEE	---
---	FHV 6" FIRE HYDRANT VALVE	---
---	BLOW-OFF VAULT TYPE	---
---	LIMITS OF DISTURBANCE	---
---	WATER	---
---	GAS	---
---	UNDERGROUND TELE. CABLE	---
---	TEST PIT	---
---	BENCHMARK	---
---	IRON PIN/IRON PIPE	IP
---	CONCRETE MONUMENT	CM
---	STONE	STONE

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.
6-7-00

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND.
6-8-00

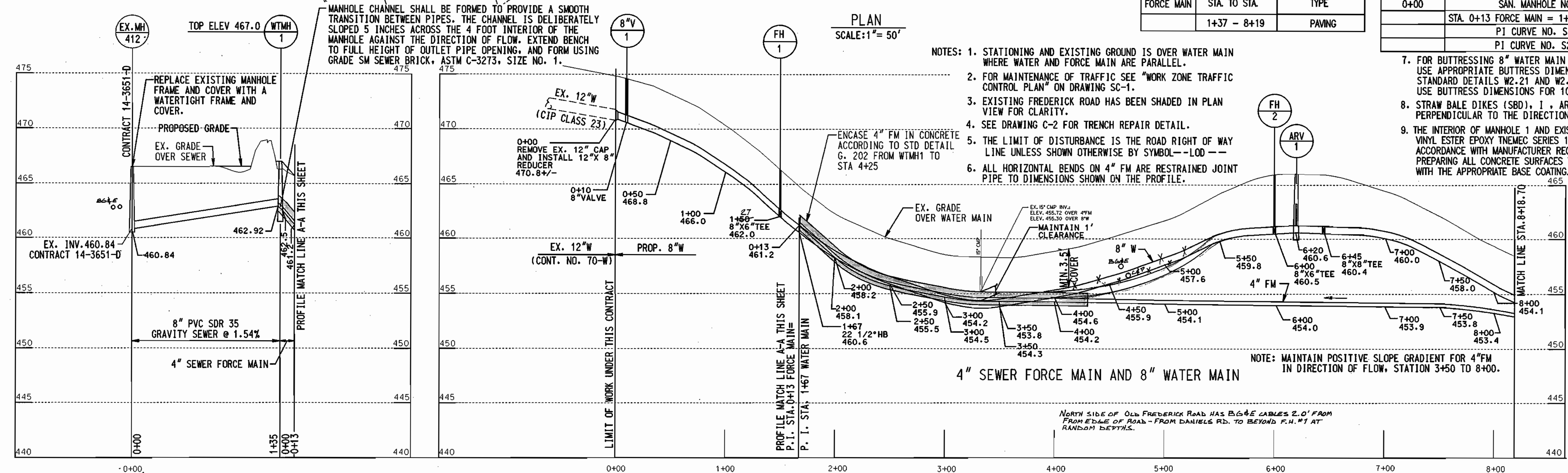
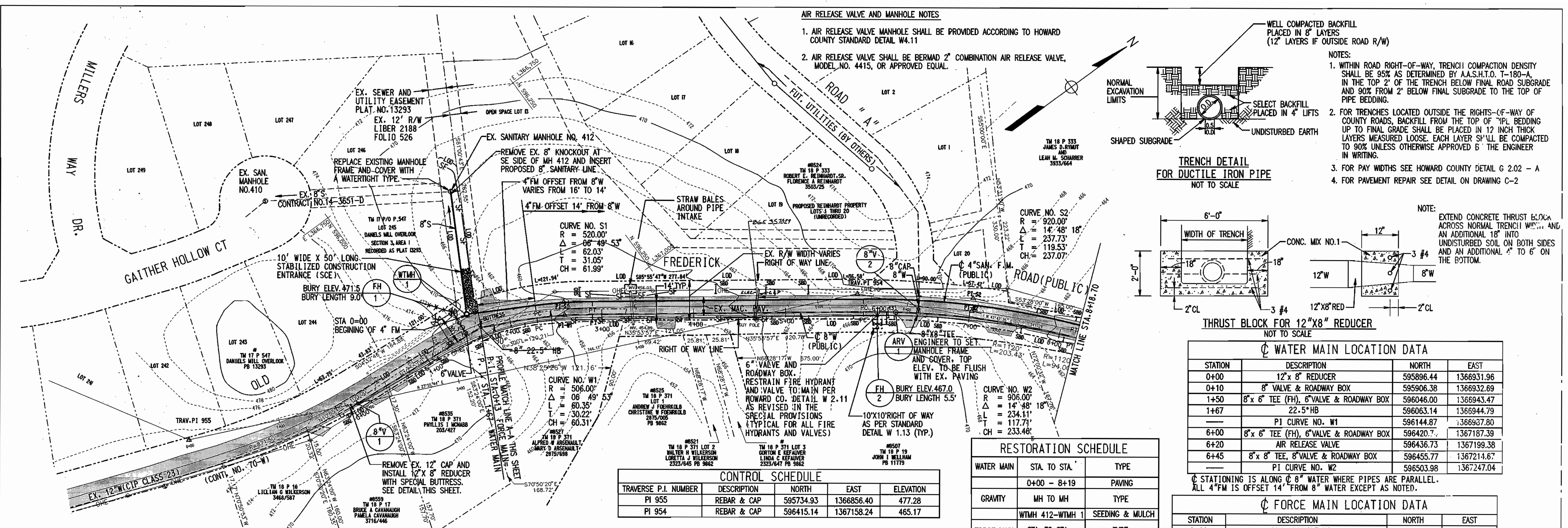
PREPARED BY:
WR&A
Whitman, Reardon and Associates, LLP.
2315 ST. PAUL ST.
BALTIMORE, MD. 21218
410-235-3450



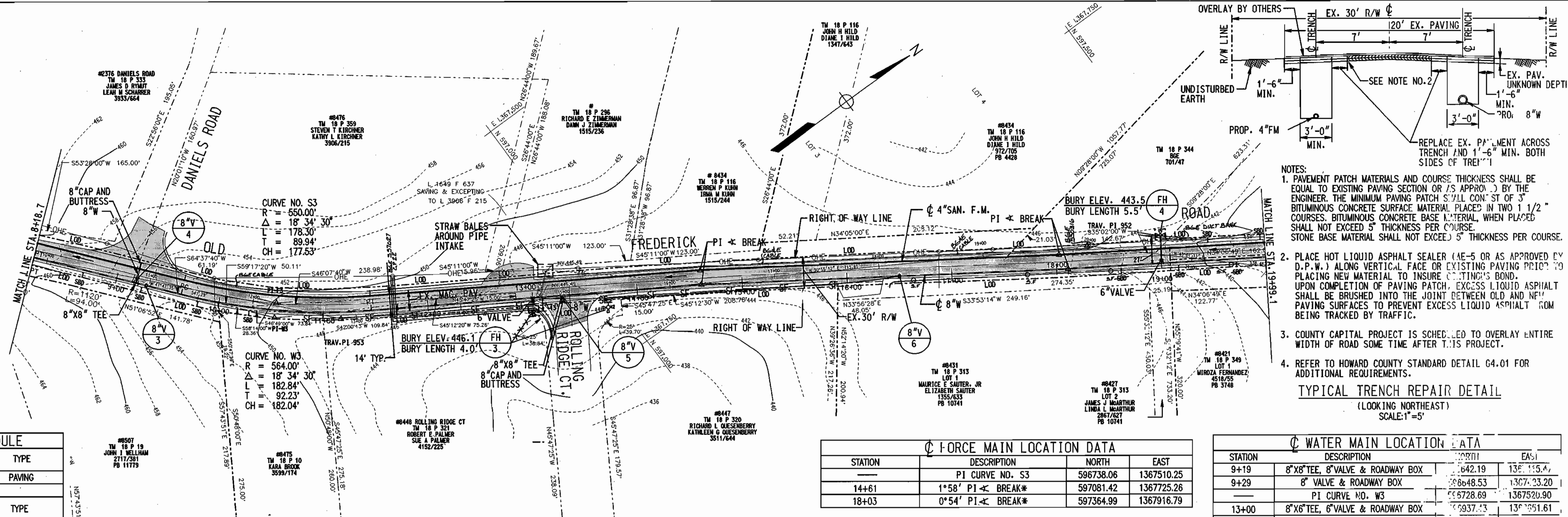
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DRN: EJM/GG			
CHK: EJM/WRD			
DATE: 10-22-99	KCI	ADDED AS BUILT DATA	6-4-02
BY NO.		REVISION	DATE

TITLE SHEET, VICINITY MAP,
QUANTITIES,
INDEX OF DRAWINGS &
GENERAL NOTES
600' SCALE MAP NO. 18 BLOCK NOS. 1, 2 & 7

HOLLIFIELD ESTATES
4" FORCE MAIN, 8" WATER MAIN AND
PRESSURE REDUCING VALVE
SECOND ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
SHEET 1 OF 10



DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND. R. B. B... 6-7-00 CHIEF, BUREAU OF UTILITIES	DEPARTMENT OF PLANNING AND ZONING HOWARD COUNTY, MARYLAND. M. ... 6/6/00 CHIEF, DEVELOPMENT ENGINEERING DIVISION	PREPARED BY: WR&A Whitman, Reardon and Associates, LLP. 2315 ST. PAUL ST. BALTIMORE, MD. 21218 410-235-3450	DES: SEA/EJM DRN: EJM/GG CHK: EJM/WRD DATE: 10-22-99	STATE OF MARYLAND PROFESSIONAL ENGINEER LICENSE NO. ...	4" FORCE MAIN, 8" WATER MAIN PLAN AND PROFILE	HOLLIFIELD ESTATES 4" FORCE MAIN, 8" WATER MAIN PRESSURE REDUCING VALVE SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND	SCALE AS SHOWN SHEET ... OF ...
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- NOTES:
- PAVEMENT PATCH MATERIALS AND COURSE THICKNESS SHALL BE EQUAL TO EXISTING PAVING SECTION OR 75 APPROX. BY THE ENGINEER. THE MINIMUM PAVING PATCH SHALL CONSIST OF 3" BITUMINOUS CONCRETE SURFACE MATERIAL PLACED IN TWO 1 1/2" COURSES. BITUMINOUS CONCRETE BASE MATERIAL WHEN PLACED SHALL NOT EXCEED 5" THICKNESS PER COURSE. STONE BASE MATERIAL SHALL NOT EXCEED 5" THICKNESS PER COURSE.
 - PLACE HOT LIQUID ASPHALT SEALER (AE-5 OR AS APPROVED BY D.P.W.) ALONG VERTICAL FACE OR EXISTING PAVING PRIOR TO PLACING NEW MATERIAL TO INSURE SETTING'S BOND. UPON COMPLETION OF PAVING PATCH, EXCESS LIQUID ASPHALT SHALL BE BRUSHED INTO THE JOINT BETWEEN OLD AND NEW PAVING SURFACES TO PREVENT EXCESS LIQUID ASPHALT FROM BEING TRACKED BY TRAFFIC.
 - COUNTY CAPITAL PROJECT IS SCHEDULED TO OVERLAY ENTIRE WIDTH OF ROAD SOME TIME AFTER THIS PROJECT.
 - REFER TO HOWARD COUNTY STANDARD DETAIL G4.01 FOR ADDITIONAL REQUIREMENTS.

TYPICAL TRENCH REPAIR DETAIL
(LOOKING NORTHEAST)
SCALE: 1"=5'

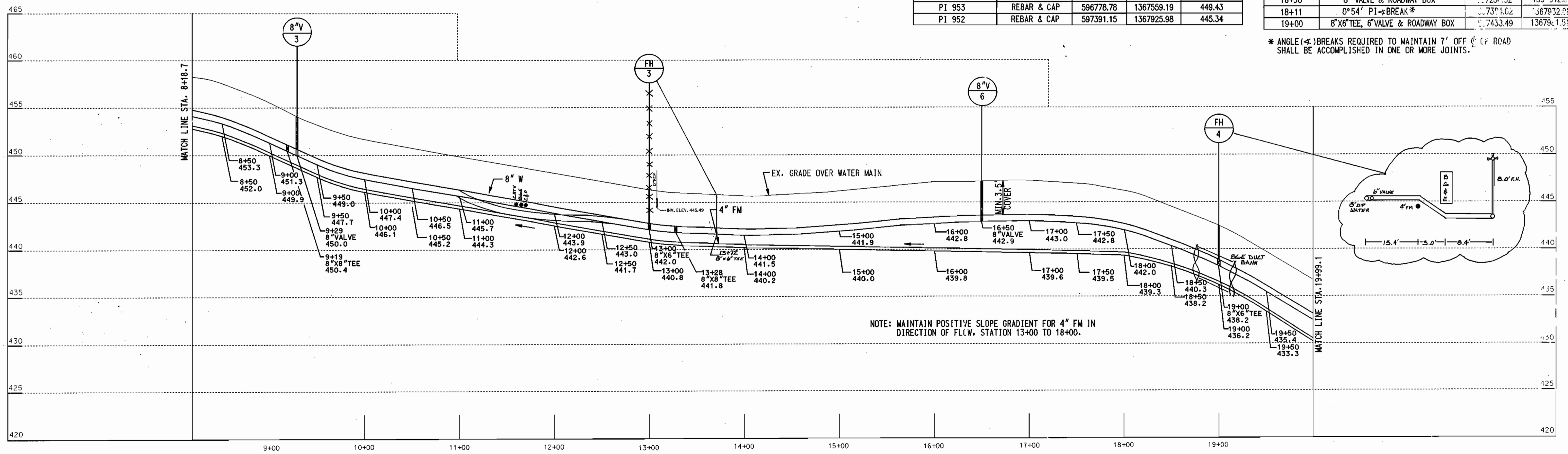
RESTORATION SCHEDULE		
WATER MAIN	STA. TO STA.	TYPE
	8+19 - 20+00	PAVING
FORCE MAIN	STA. TO STA.	TYPE
	8+19 - 20+00	PAVING

FORCE MAIN LOCATION DATA			
STATION	DESCRIPTION	NORTH	EAST
	PI CURVE NO. S3	596738.06	1367510.25
14+61	1°58' PI BREAK*	597081.42	1367725.26
18+03	0°54' PI BREAK*	597364.99	1367916.79

WATER MAIN LOCATION DATA			
STATION	DESCRIPTION	NORTH	EAST
9+19	8"X8" TEE, 8" VALVE & ROADWAY BOX	6642.19	1367115.47
9+29	8" VALVE & ROADWAY BOX	6648.53	1367133.20
	PI CURVE NO. W3	66728.69	1367520.90
13+00	8"X8" TEE, 8" VALVE & ROADWAY BOX	6937.43	1367351.61
13+28	8"X8" TEE, 8" VALVE & ROADWAY BOX	6961.44	1367333.55
14+61	2" 0" PI BREAK*	7073.99	1367737.13
16+50	8" VALVE & ROADWAY BOX	7230.32	1367512.87
18+11	0°54' PI BREAK*	7391.62	1367932.93
19+00	8"X8" TEE, 8" VALVE & ROADWAY BOX	7433.49	1367911.51

CONTROL SCHEDULE				
TRAVERSE PI NUMBER	DESCRIPTION	NORTH	EAST	ELEVATION
PI 953	REBAR & CAP	596778.78	1367559.19	449.43
PI 952	REBAR & CAP	597391.15	1367925.98	445.34

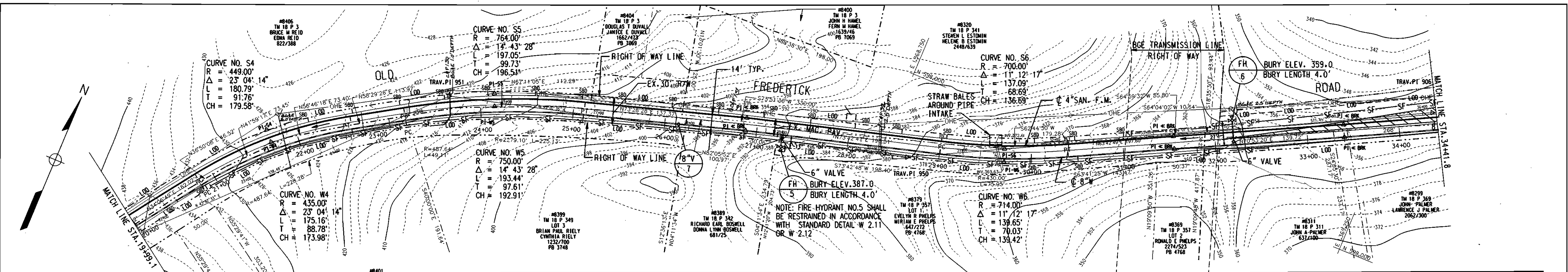
PLAN
SCALE: 1"=50'



NOTE: MAINTAIN POSITIVE SLOPE GRADIENT FOR 4" FM IN DIRECTION OF FLOW, STATION 13+00 TO 18+00.

PROFILE
SCALE: HOR. 1"=50'
VERT. 1"=5'

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND. 	DEPARTMENT OF PLANNING AND ZONING HOWARD COUNTY, MARYLAND. 	PREPARED BY: Whitman, Reardon and Associates, LLP. 2315 ST. PAUL ST. BALTIMORE, MD. 21218 410-235-3450	DES: SEA/EJM DRN: EJM/GG CHK: EJM/WRD DATE: 10-22-99 BY: NO.	HOLLIFIELD ESTATES 4" FORCE MAIN, 8" WATER MAIN AND PRESSURE REDUCING VALVE SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND	SCALE: AS SHOWN SHEET: 3 OF 10
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CONTROL SCHEDULE

TRAVERSE PI NUMBER	DESCRIPTION	NORTH	EAST	ELEVATION
PI 951	REBAR & CAP	597784.17	1368294.08	416.93
PI 950	REBAR & CAP	597913.54	1368778.36	379.52
PI 906	REBAR & CAP	598176.49	1369285.68	354.77

FORCE MAIN LOCATION DATA

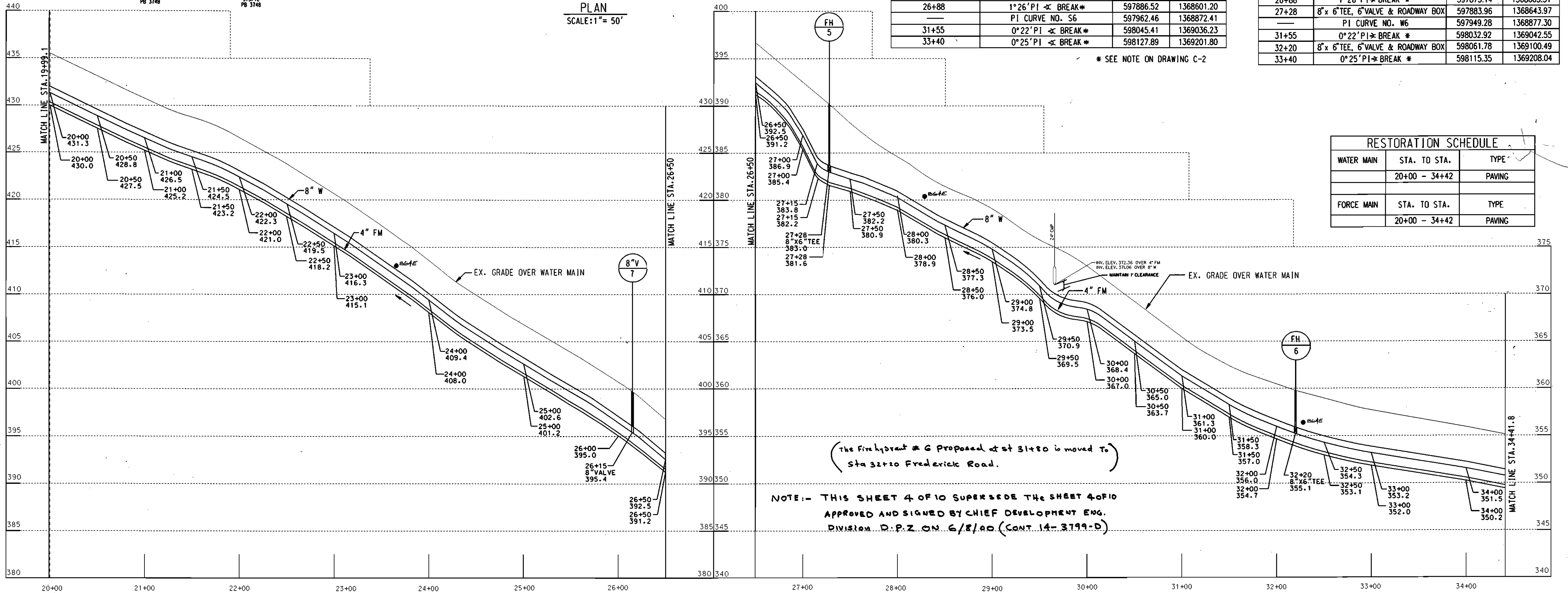
STATION	DESCRIPTION	NORTH	EAST
—	PI CURVE NO. S4	597673.72	1368125.43
—	PI CURVE NO. S5	597805.78	1368338.22
26+88	1°26'PI < BREAK *	597886.52	1368601.20
—	PI CURVE NO. S6	597962.46	1368872.41
31+55	0°22'PI < BREAK *	598045.41	1369036.23
33+40	0°25'PI < BREAK *	598127.89	1369201.80

* SEE NOTE ON DRAWING C-2

WATER MAIN LOCATION DATA

STATION	DESCRIPTION	NORTH	EAST
—	PI CURVE NO. W4	597663.23	1368135.17
—	PI CURVE NO. W5	597792.80	1368343.85
26+15	8" VALVE & ROADWAY BOX	597851.68	1368535.57
26+88	1°26'PI < BREAK *	597873.14	1368605.31
27+28	8" x 6" TEE, 6" VALVE & ROADWAY BOX	597883.96	1368643.97
—	PI CURVE NO. W6	597949.28	1368877.30
31+55	0°22'PI < BREAK *	598032.92	1369042.55
32+20	8" x 6" TEE, 6" VALVE & ROADWAY BOX	598061.78	1369100.49
33+40	0°25'PI < BREAK *	598115.35	1369208.04

PLAN
SCALE: 1" = 50'



PROFILE
SCALE: HOR. 1" = 50'
VERT. 1" = 5'

RESTORATION SCHEDULE

WATER MAIN	STA. TO STA.	TYPE
	20+00 - 34+42	PAVING

FORCE MAIN	STA. TO STA.	TYPE
	20+00 - 34+42	PAVING

NOTE: - THIS SHEET 4 OF 10 SUPERSEDES THE SHEET 4 OF 10 APPROVED AND SIGNED BY CHIEF DEVELOPMENT ENG. DIVISION D.P.Z. ON 6/8/00 (CONT. 14-3199-D)

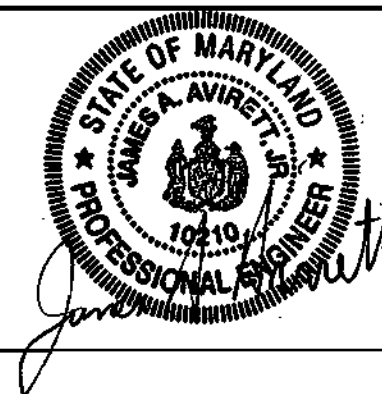
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

John B. ...
CHIEF, BUREAU OF UTILITIES

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND.

...
CHIEF, DEVELOPMENT ENGINEERING DIVISION

PREPARED BY:
WR&A
Whitman, Reardon and Associates, LLP.
2315 ST. PAUL ST.
Baltimore, Md. 21218
410-235-3450



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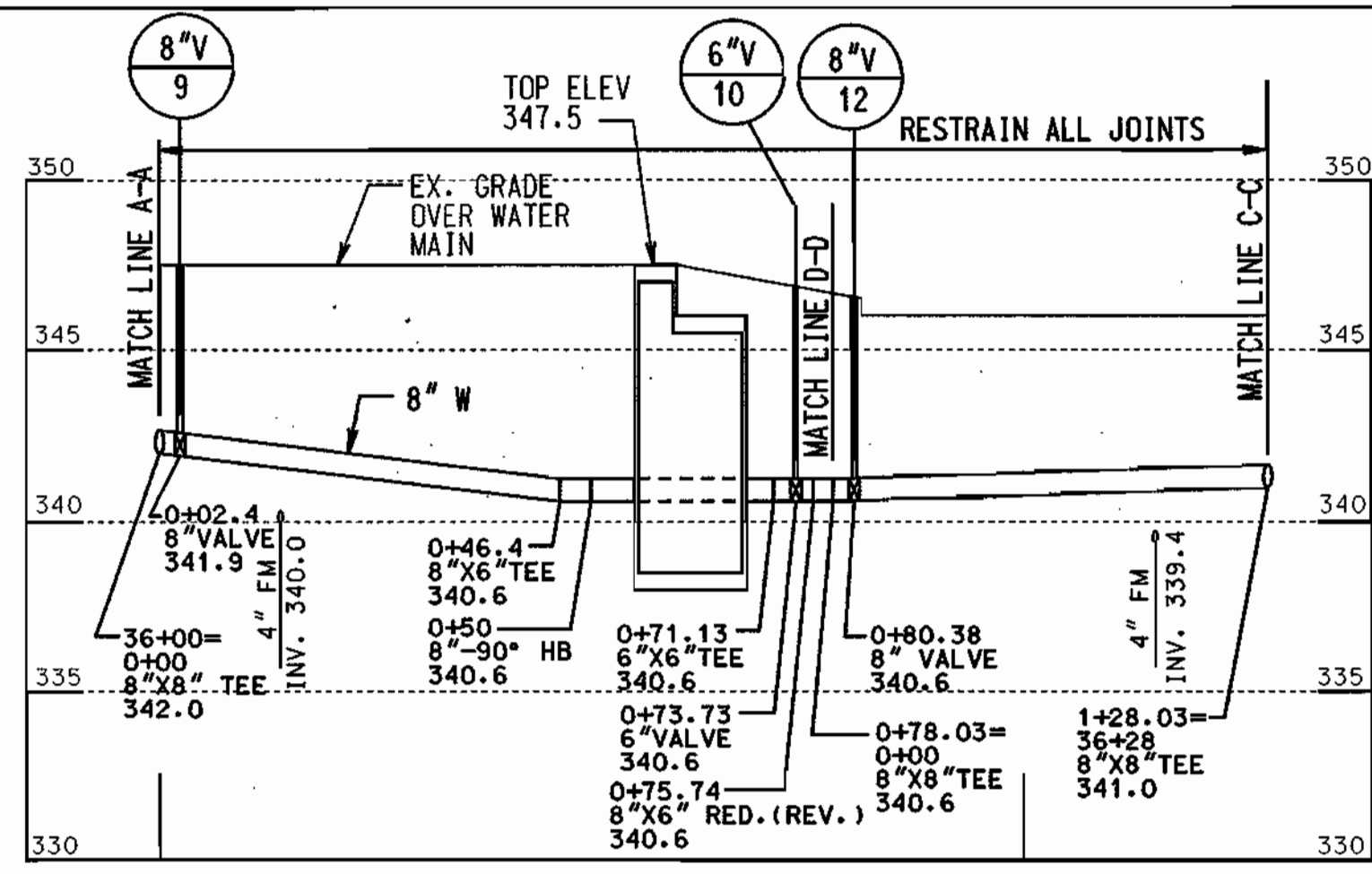
CONTRACT 14-3199-D
4" FORCE MAIN, 8" WATER MAIN
PLAN AND PROFILE

600' SCALE MAP NO. 18 BLOCK NO. 1-2-87

HOLLIFIELD ESTATES
4" FORCE MAIN, 8" WATER MAIN AND
PRESSURE REDUCING VALVE
SECOND ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

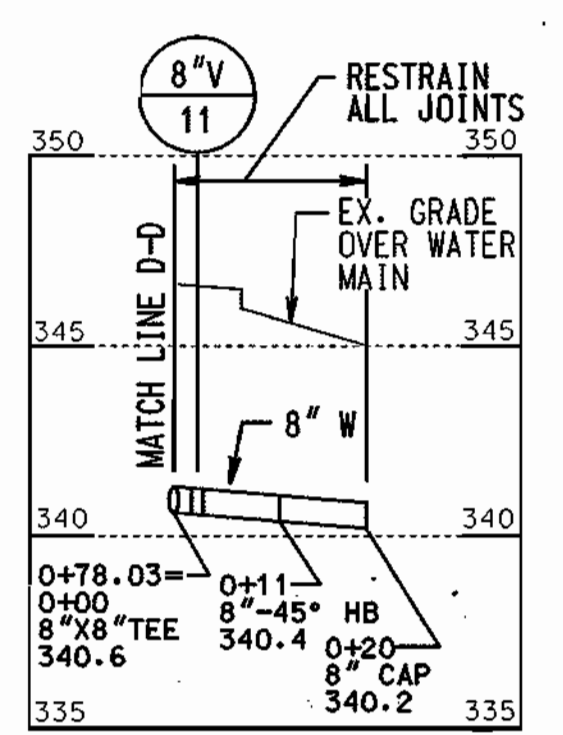
SCALE AS SHOWN
SHEET 4 OF 10

RESTORATION SCHEDULE		
WATER MAIN	STA. TO STA.	TYPE
	34+42 - 36+31	PAVING
FORCE MAIN	STA. TO STA.	TYPE
	34+42 - 36+31	PAVING
	36+31 - 41+38	SEED & MULCHING



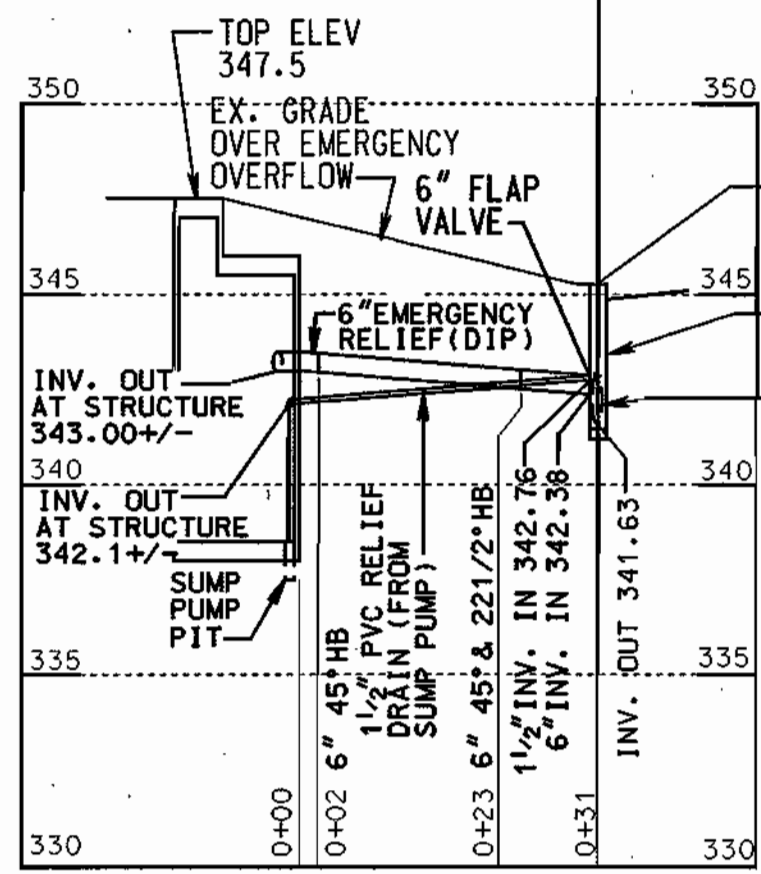
PRV AND BYPASS PROFILE

SCALE: HOR. 1" = 20'
VERT. 1" = 5'



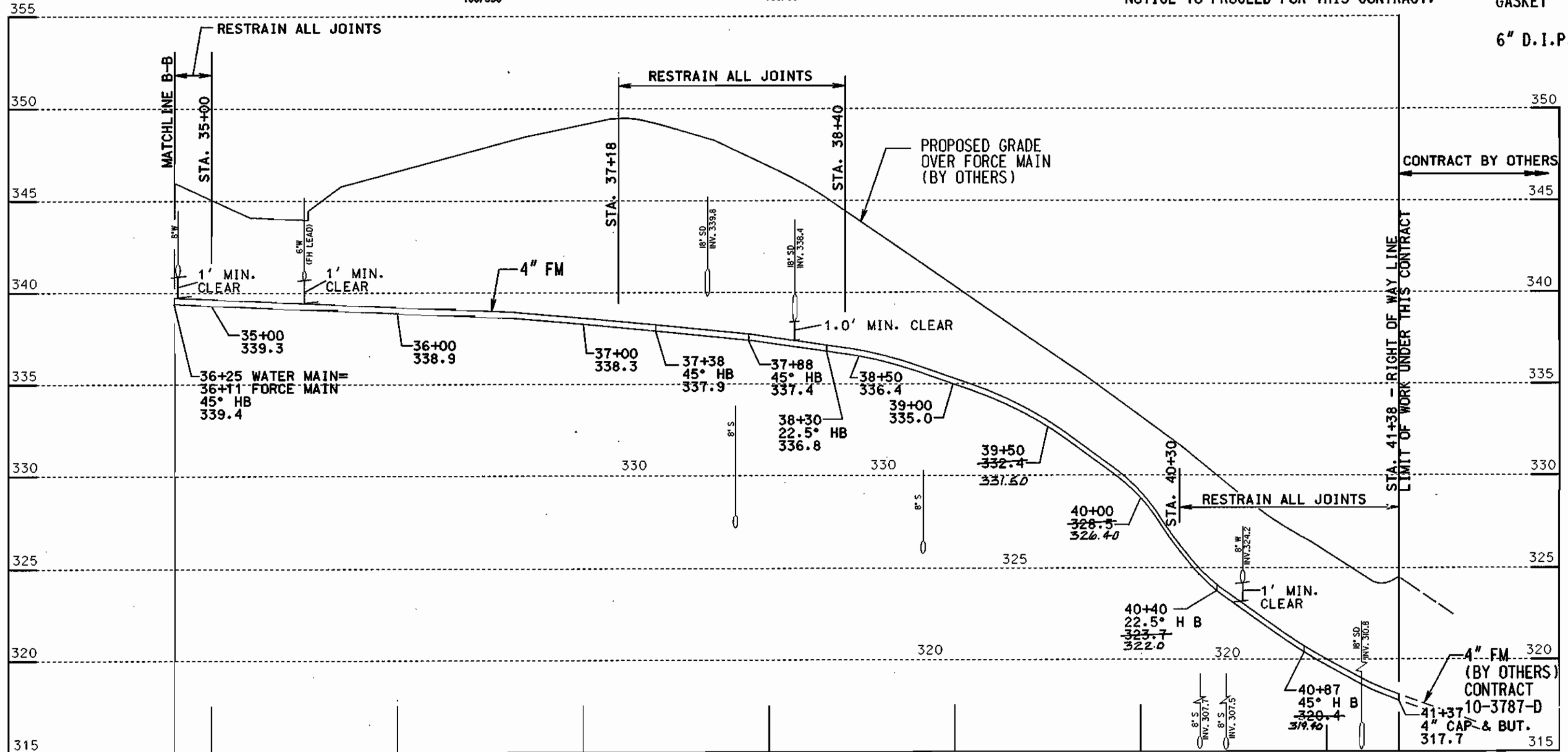
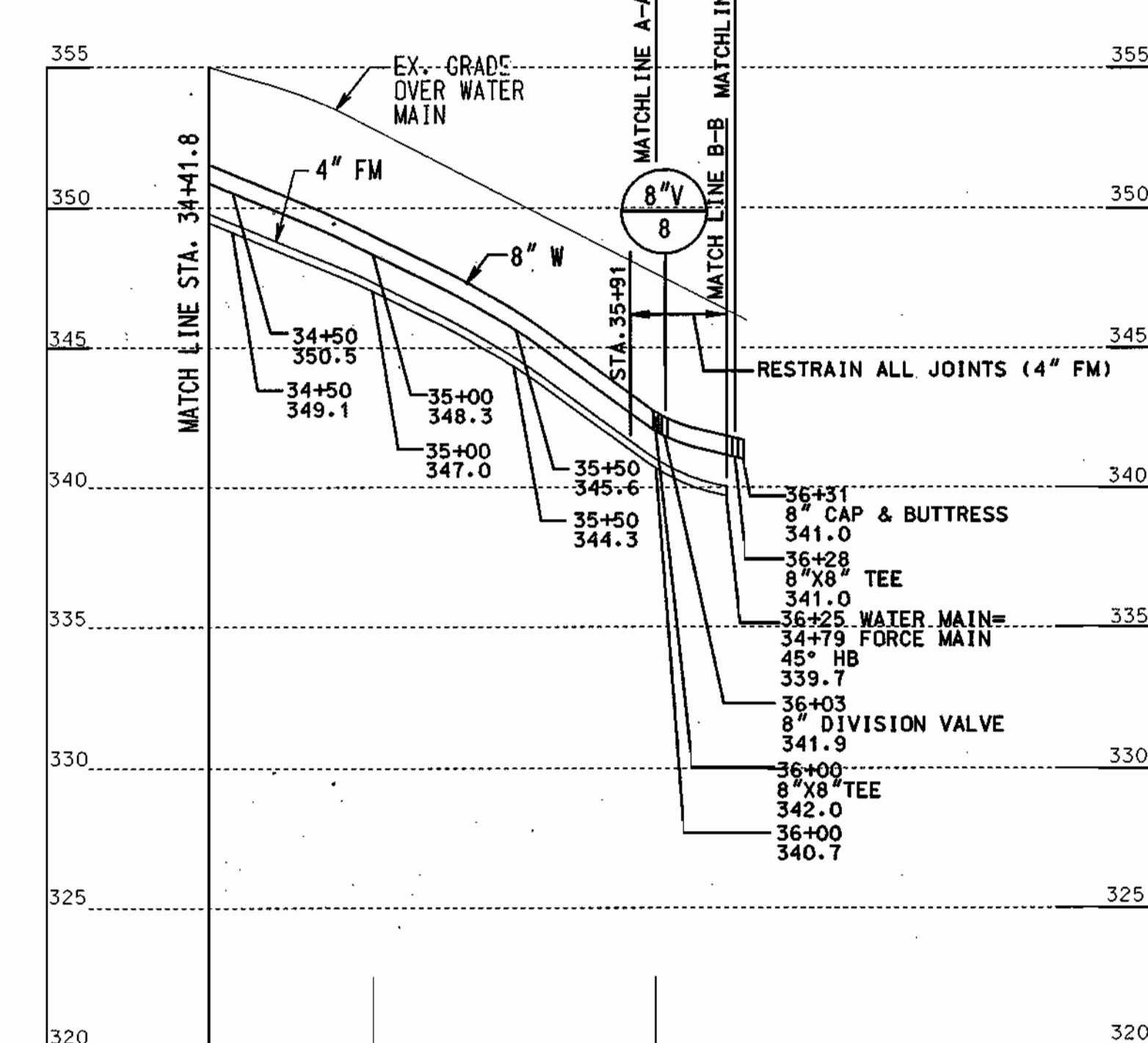
WATER EXTENSION FROM BYPASS TO CONNECTION BY OTHERS

SCALE: HOR. 1" = 20'
VERT. 1" = 5'



EMERGENCY OVERFLOW AND RELIEF DRAIN PROFILE

SCALE: HOR. 1" = 20'
VERT. 1" = 5'



PROFILE

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

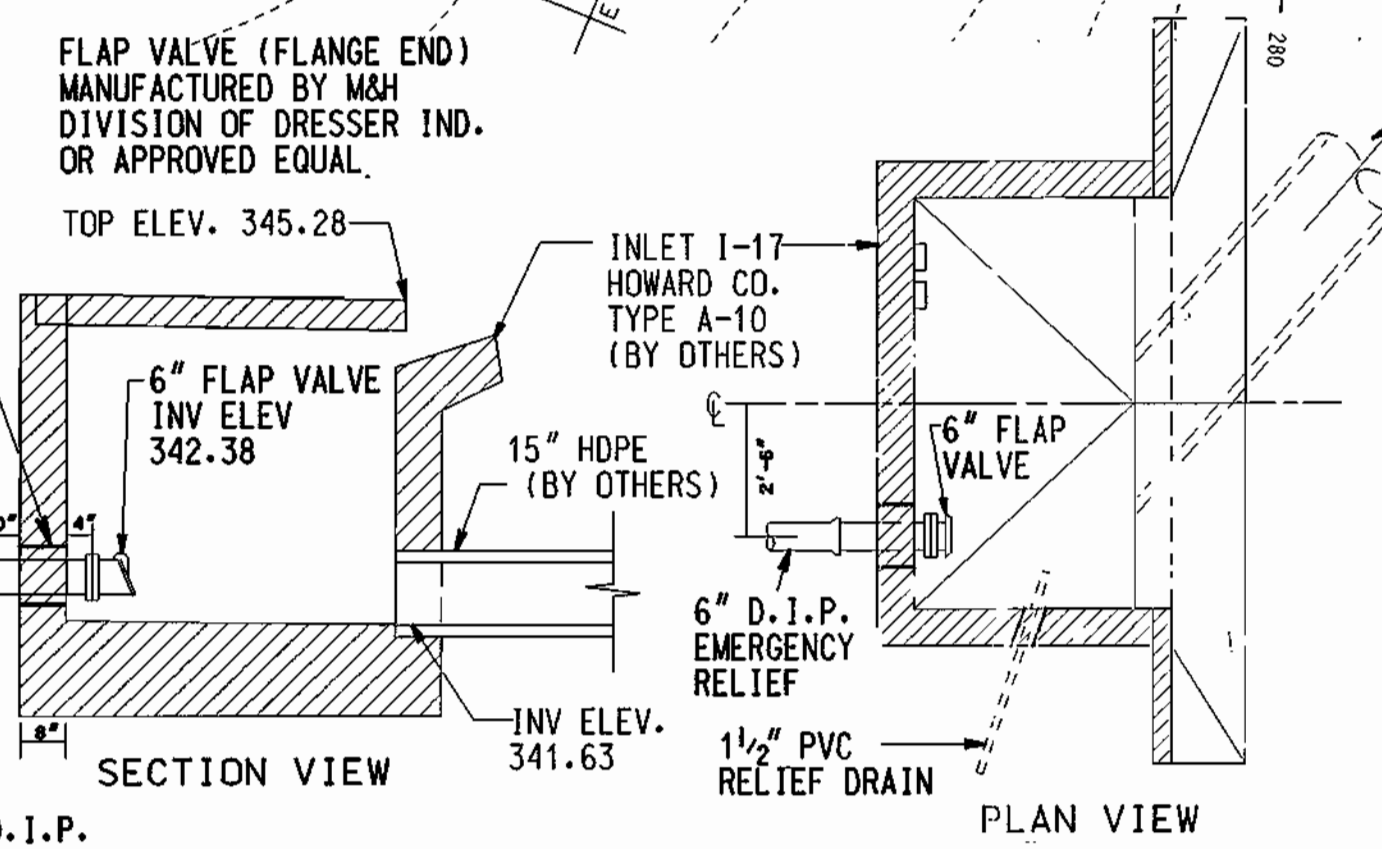
6" DIP EMERGENCY OVERFLOW FROM 6" RELIEF VALVE WITH FLAPPER VALVE (STYLE 147-02 MANUFACTURED BY M&H FLAP VALVES OR EQUAL)

SEE ENLARGED PLAN DRAWING C-5 SEE PROFILE THIS SHEET

NOTES: 1. SILT FENCE ALONG OAK FOREST DRIVE AND RIVER TERRACE COURT MAY BE SUPERSEDED BY PERIMETER CONTROL MEASURES FOR THE MASS GRADING OF HOLLIFIELD ESTATES.
2. HOLLIFIELD ESTATES DEVELOPMENT WILL BE MASS GRADED TO THE PROPOSED GRADES SHOWN LESS FINAL STABILIZATION, BEFORE NOTICE TO PROCEED FOR THIS CONTRACT.

PLAN

SCALE: 1" = 50'



DETAIL: 6" FLAP VALVE AT I-17

FORCE MAIN LOCATION DATA			
STATION	DESCRIPTION	NORTH	EAST
36+25	WM = 34+79 FW	45° HB	598262.17 1369457.15
37+38	45° HB	598513.48	1369513.89
37+88	45° HB	598539.44	1369556.76
38+30	22.5 HB	598529.72	1369598.52
	PI CURVE NO. S7	598539.38	1369659.58
40+40	22.5 HB	598605.42	136971.77
40+87	45° HB	598641.79	1369822.23
41+37	4" CAP	598647.88	1369871.41

CONTROL SCHEDULE				
TRAVERSE PI NUMBER	DESCRIPTION	NORTH	EAST	ELEVATION
PI 905	REBAR & CAP	598441.77	1369870.63	309.45
PI 904	REBAR & CAP	598406.66	1370065.22	298.23
PI 903	REBAR & CAP	598604.63	1370090.76	301.52

WATER MAIN LOCATION DATA			
STATION	DESCRIPTION	NORTH	EAST
36+00	8" x 8" TEE	598237.89	1369437.13
36+02.45	8" DIVISION VALVE & ROADWAY BOX	598239.54	1369440.03
36+28	8" x 8" TEE	598251.44	1369461.60
36+32	8" CAP & BUTTRESS	598253.39	136945.13

FOR BYPASS LOCATION DATA, SEE DRAWING C-5

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

R. L. ...
CHIEF, BUREAU OF UTILITIES
6-7-00
DATE

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND.

...
CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE

PREPARED BY:

WR&A
Whitman, Reardon and Associates, LLP.
2315 St. Paul St.
Baltimore, Md. 21218
410-235-3450

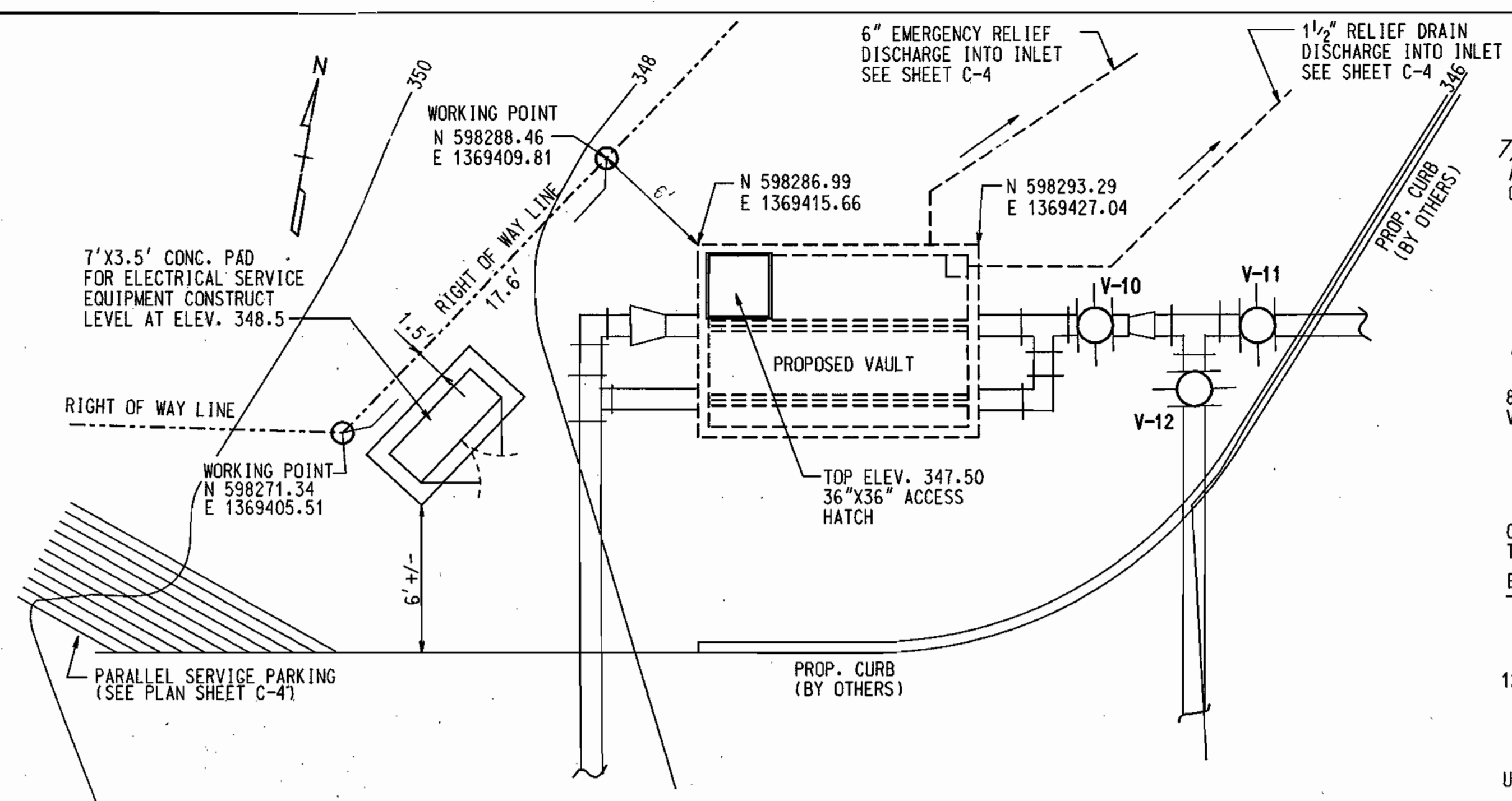
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DRN: EJM/GG	
CHK: EJM/WRD	
DATE: 10-22-99	
BY: NO.	
REVISION	ADDED AS-BUILT DATA
DATE: 6-4-02	

4" FORCE MAIN, 8" WATER MAIN
PLAN AND PROFILE

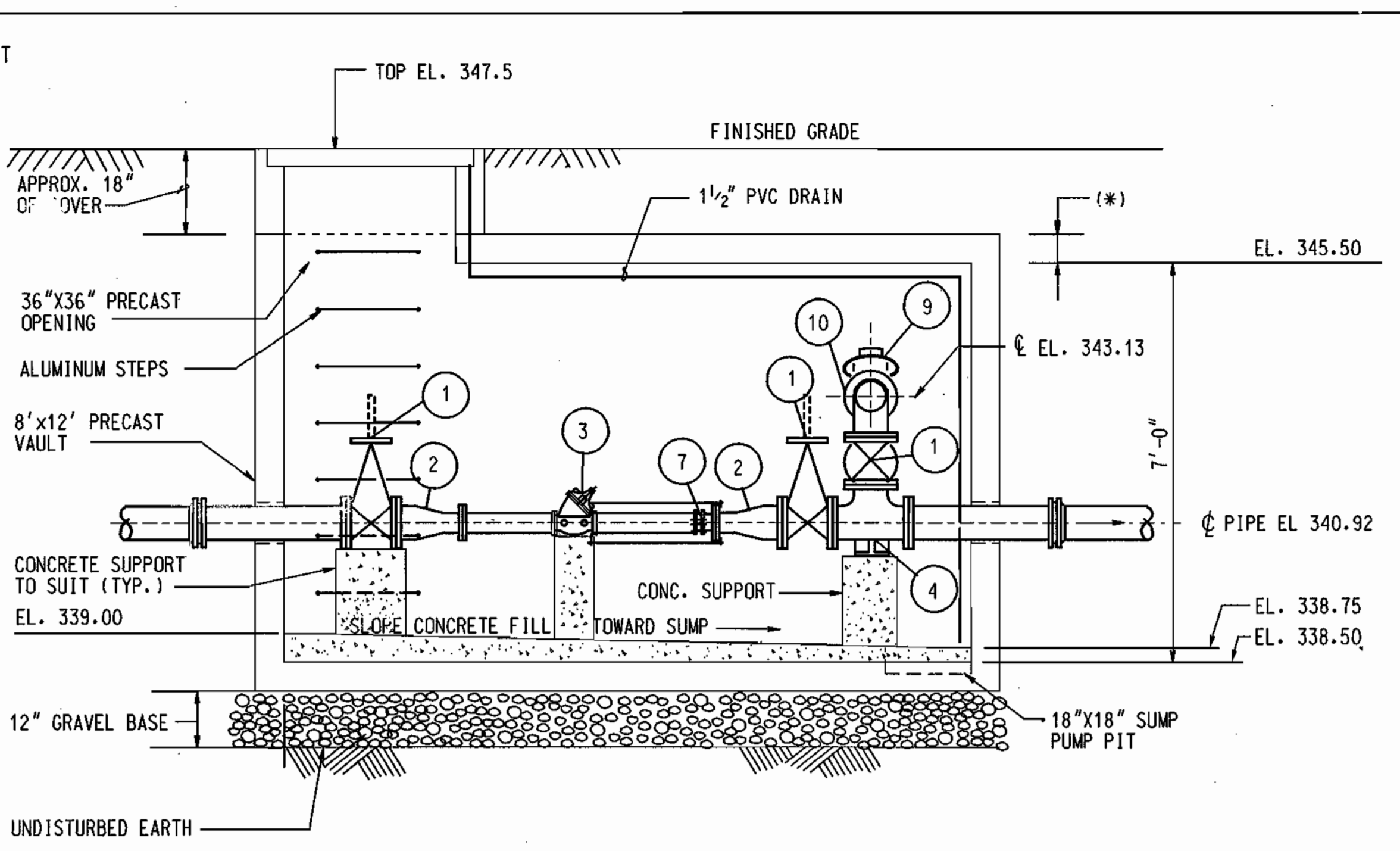
680' SCALE MAP NO. 18 BLOCK NO. 1.2 & 7

HOLLIFIELD ESTATES
4" FORCE MAIN, 8" WATER MAIN AND
PRESSURE REDUCING VALVE
SECOND ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

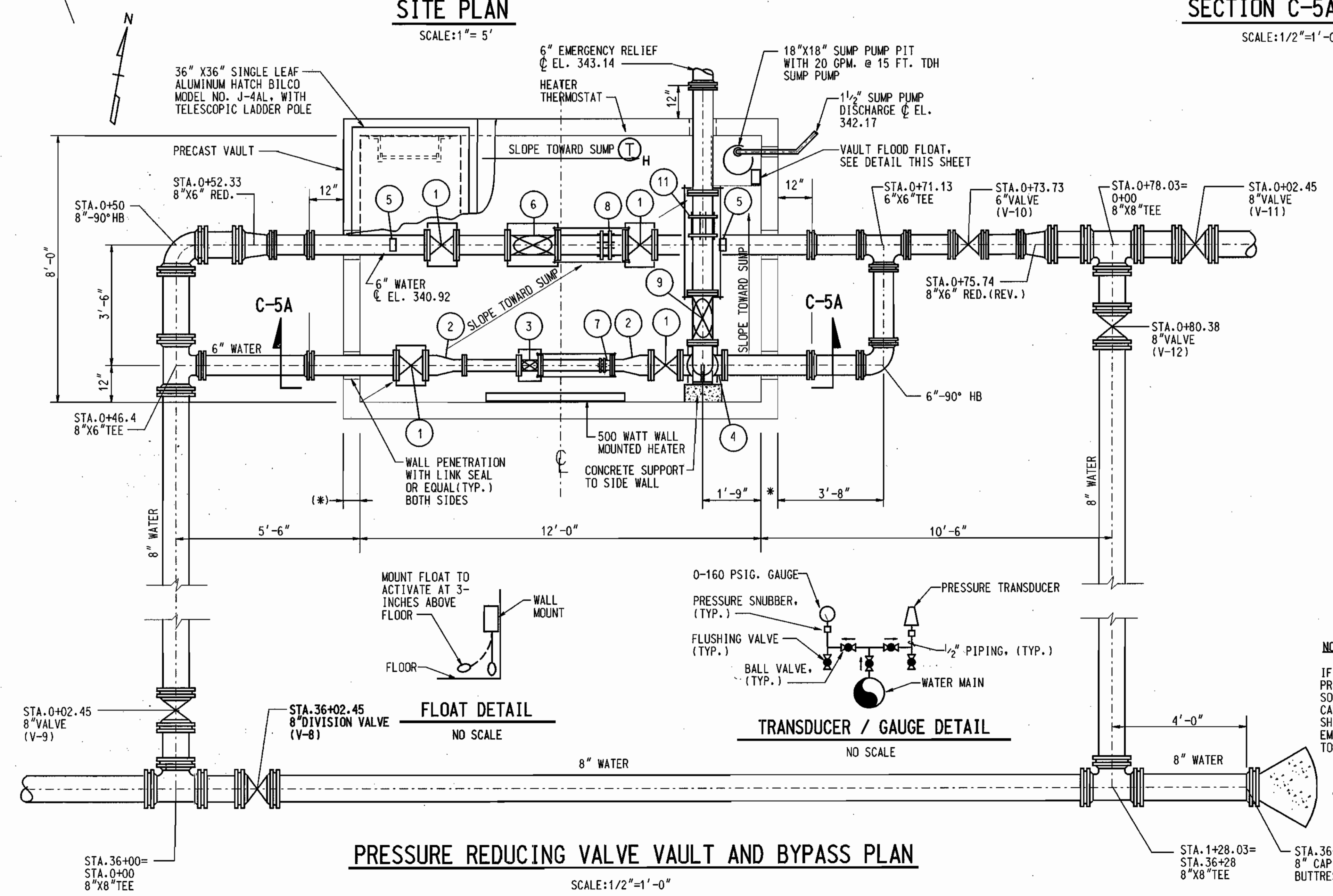
SCALE AS SHOWN
SHEET 5 OF 10



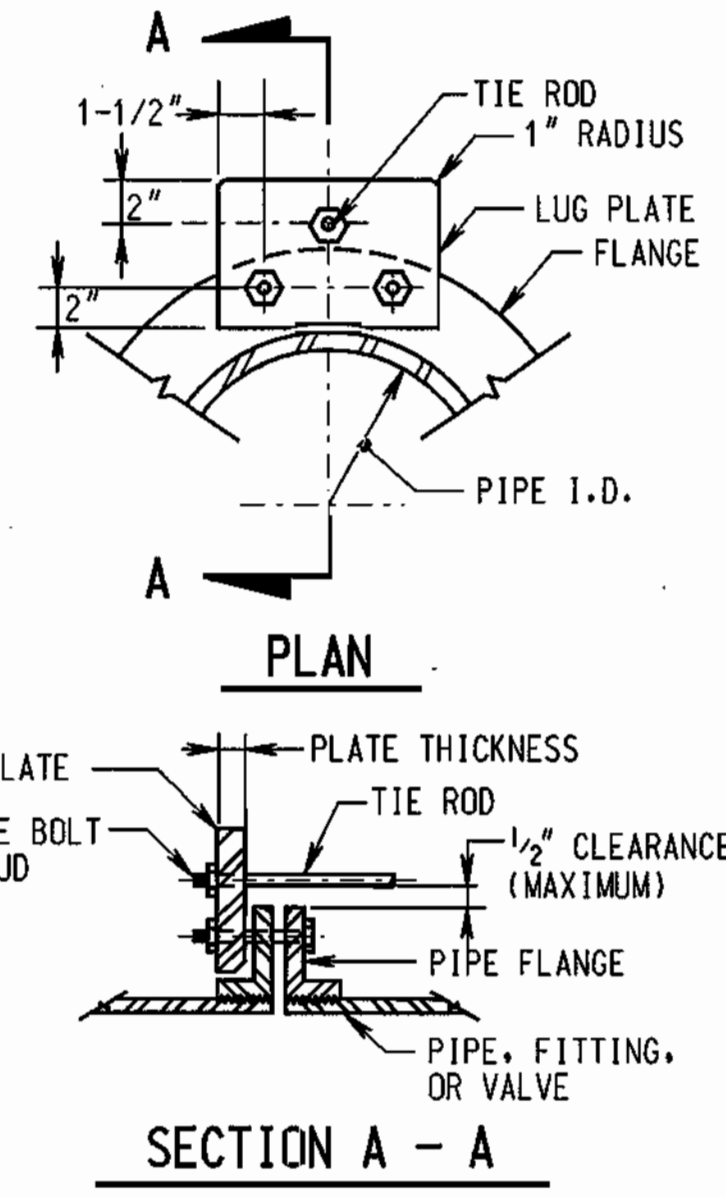
SITE PLAN
SCALE: 1"=5'



SECTION C-5A/C-5
SCALE: 1/2"=1'-0"



PRESSURE REDUCING VALVE VAULT AND BYPASS PLAN
SCALE: 1/2"=1'-0"



PIPE SIZE	NUMBER OF RODS	DIAMETER OF RODS	PLATE THICKNESS	DESIGN PRESSURE PSI
3"	2	3/4"	3/4"	150
6"	3	3/4"	3/4"	150

ROD MATERIAL - ASTM A588
PLATE MATERIAL - ASTM A36
SLEEVE MATERIAL - SCHEDULE 40 STEEL PIPE

NOTE:
IF PLATE IS REQUIRED TO BE MOUNTED ON REVERSE SIDE OF FLANGE, PROVIDE A PIPE SLEEVE AND WASHER ON THE END OF THE TIE-ROD, SO THE MAXIMUM CLEARANCE BETWEEN THE SLEEVE AND THE FLANGE CAN BE MAINTAINED. FLANGE SURFACE IN CONTACT WITH LUG PLATE SHALL BE GROUND SMOOTH TO CLEAR THE CASTING IRREGULARITY AND EMBOSSED LETTERING. CONTACT SURFACE OF LUG SHALL BE MACHINED TO A ONE-DEGREE TAPER FOR PIPE DIAMETERS 12-INCH AND LARGER.

TIE-ROD INSTALLATION REQUIREMENTS

DETAIL C-5A
NO SCALE

EQUIPMENT SCHEDULE

- 1 6" GATE VALVE WITH FLANGED ENDS AND HANDWHEEL OPERATOR.
- 2 6"x3" STEEL REDUCER, WITH WELD-NECK FLANGED ENDS.
- 3 3" PRESSURE REDUCING VALVE WITH FLANGED ENDS.
- 4 6"x6" D.I. BASE TEE.
- 5 PRESSURE TRANSDUCER AND GAUGE ASSEMBLY.
- 6 6" PRESSURE REDUCING VALVE WITH FLANGED ENDS.
- 7 3" FLANGE ADAPTOR WITH TIE-RODS.
- 8 6" FLANGE ADAPTOR WITH TIE-RODS.
- 9 6" RELIEF VALVE WITH FLANGED ENDS.
- 10 6" 90 DEGREE FLANGED BASE D.I. ELBOW.
- 11 6" FLEXIBLE COUPLING WITH TIE-RODS.

NOTE: ALL JOINTS INSIDE THE STRUCTURE SHALL BE FLANGED JOINTS AND ALL JOINTS OUTSIDE OF THE STRUCTURE SHALL BE RESTRAINED MECHANICAL JOINTS.

(*): WALL THICKNESS VARIES WITH MANUFACTURER

MECHANICAL SPECIFICATIONS

1. FLOAT SWITCH: MERCURY SWITCH INSIDE A RUBBER ENCAPSULATED FLOAT WITH RUBBER CORD, MANUFACTURED BY HYDRAMATIC, MODEL NUMBER 3900 WITH NORMALLY OPEN CONTACTS AND SUPPORT BRACKET, OR EQUAL.
2. SUMP PUMP: CAST-IRON CONSTRUCTION WITH MECHANICAL SEAL AND INTEGRAL FLOAT SWITCH. THE MOTOR SHALL INCLUDE THERMAL OVER-LOAD PROTECTION. THE PUMP SHALL BE SUITABLE FOR 120V, 1-PHASE SERVICE, MANUFACTURED BY HYDRAMATIC MODEL D25, OR EQUAL.
3. UNIT HEATER: TOTALLY ENCLOSED NICKEL CHROMIUM RESISTANT ELEMENT WITH ALUMINUM SHEATHING AND FINS. FURNISH 500 WATT CAPACITY SUITABLE FOR A 120V, SINGLE-PHASE SERVICE. PROVIDE REMOTE THERMOSTAT, MANUFACTURED BY QMARK, MODEL QMK-2512-6 WITH THERMOSTAT QMK-TA-1, OR EQUAL.
4. PRESSURE GAUGE: STEM MOUNTED, GRADE (A) PHOSPHOR BRONZE BOURDON TUBE WITH 4-INCH DIAMETER ALUMINUM CASE, MANUFACTURED BY ASHCROFT TYPE 1010, OR EQUAL.
5. PRESSURE TRANSDUCER: SENSING ELEMENTS SHALL BE LIQUID FILLED, STRAIN GAUGE DESIGN WITH STAINLESS STEEL (S.S.) DIAPHRAGMS AND SILICONE OIL FILL. BODY AND HARDWARE SHALL BE OF 316 S.S. CONSTRUCTION. TRANSDUCER SHALL BE 300 PSI RATED WITH AN ACCURACY OF 0.25% OF SPAN, SUITABLE FOR LOOP-POWER 12 TO 24 VDC SERVICE WITH NEMA 4 RATING. FURNISH 4 TO 20 mA OUTPUT. MANUFACTURED BY BRISTOL BABCOCK, OR EQUAL.
6. BOLTING HARDWARE: ALL BOLTS, NUTS AND WASHERS SHALL BE OF MILD STEEL, U.S. STANDARD SIZES. BOLTS SHALL PROJECT 1/4-INCH BEYOND NUT WHEN ASSEMBLED, GASKETS SHALL BE RUBBER RING (1/8-INCH THICK).
7. PIPE (D.I.): DUCTILE ANSI A21.51 IRON WITH ANSI A21.10 MECHANICAL JOINT OR FLANGED JOINTS. FITTINGS SHALL BE DUCTILE IRON. PIPE AND FITTINGS SHALL BE DOUBLE THICKNESS CEMENT LINED IN ACCORDANCE WITH ANSI A21.4, SECTION 4-10.1 AND 4-8.2. PIPE SHALL BE CLASS 53 RATED FOR A MINIMUM 150 PSI. FLANGES SHALL BE DRILLED AND FACES FOR ANSI B16.1 CLASS 125.
8. PIPE (STEEL): BLACK STEEL, ASTM A-53, SCHEDULE 40 FOR WELDED JOINTS. FITTINGS SHALL BE BLACK ANSI B16.9.
9. PIPE (PVC): PVC IN ACCORDANCE WITH ASTM D-1784 AND D-1785 FOR CLASS 12454-B. PVC FITTINGS IN ACCORDANCE WITH ASTM D-1784 AND D-2846. PIPE AND FITTINGS SHALL BE SCHEDULE 80 SOCKET STYLE, MANUFACTURED BY B.F. GOODRICH COMPANY, OR EQUAL.
10. FLEXIBLE COUPLINGS: STYLE 38 OF DRESSER MANUFACTURING DIVISION OR EQUAL.
11. FLANGED ADAPTERS: STYLE 128 OF DRESSER MANUFACTURING DIVISION OR EQUAL.
12. GATE VALVES: VALVES INSIDE THE VAULT OPERATE TO OPEN (LEFT) OF A RISING STEM STYLE, SOLID WEDGE, RUBBER ENCAPSULATED RESILIENT SEAT TYPE, 200 PSI RATED WORKING PRESSURE. TEST TO 400 PSI IN ACCORDANCE WITH ANWA C509. VALVE BODY, BONNET AND SEAL PLATES SHALL BE CAST-IRON CONFORMING TO ASTM A-126B. WEDGES SHALL BE DUCTILE IRON CONFORMING TO ASTM A-536. STEMS SHALL BE BRONZE. VALVES SHALL INCLUDE O-RING OR CONVENTIONAL PACKAGING, MANUFACTURED BY M&H VALVE, STYLE 3068, OR EQUAL. VALVES OUTSIDE THE VAULT OPERATE TO OPEN RIGHT (CLOCKWISE) AND OTHERWISE CONFORM TO SECTION 909.15 OF THE STANDARD SPECIFICATIONS.
13. PRESSURE REDUCING VALVES: VALVES SHALL BE FLANGED CLASS 125 SUITABLE FOR A MAXIMUM OF 175 PSI, CONFORMING TO ANSI B16.1. THE VALVE SHALL BE CAST-IRON CONFORMING TO ASTM A126 CLASS B, WITH STAINLESS STEEL TRIM. THE PILOT CONTROL SYSTEM SHALL BE BRONZE. THE DIAPHRAGM SHALL BE NEOPRENE WITH BUNA-N SEALS. THE SOLENOID VALVES SHALL BE NEMA 4 RATED, CONFIGURED FOR (NORMALLY OPEN). VALVES SHALL BE FURNISHED WITH LOCAL POSITION INDICATOR, MANUFACTURED BY BERMAID, MODEL 720-55-VI, OR EQUAL. SET POINTS AS FOLLOWS: 3" PRV (77 PSIG) 6" PRV (95 PSIG).
14. DESIGN STANDARDS FOR THE PRECAST VAULT ARE GIVEN IN THE SPECIAL PROVISIONS.
15. PRESSURE RELIEF VALVE: VALVE SHALL BE FLANGED CLASS 125 SUITABLE FOR A MAXIMUM OF 175 PSI, CONFORMING TO ANSI B16.1. THE VALVE SHALL BE CAST-IRON CONFORMING TO ASTM A126 CLASS B, WITH STAINLESS STEEL TRIM. VALVE SHALL BE FURNISHED WITH LOCAL POSITION INDICATOR, MANUFACTURED BY BERMAID, MODEL 730-1, OR EQUAL. SET POINT AS FOLLOWS: 6" RELIEF (95 PSIG).
16. PRESSURE REDUCING/PRESSURE RELIEF VALVES GENERAL: ALL VALVES SHALL BE FURNISHED WITH FULL-OPEN LIMIT SWITCHES TO INTERFACE WITH THE TELEMETRY SYSTEM.
17. HOWARD COUNTY BUREAU OF UTILITIES MASTER RTU SYSTEM SHALL PROVIDE SET-POINT ADJUSTMENT AND ANNUNCIATION FOR PRV DOWN-STREAM HIGH AND LOW PRESSURE ALARMS AS FOLLOWS: PAH= 90 PSIG - PAL= 40 PSIG

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND.

John A. ...
CHIEF, BUREAU OF UTILITIES
DATE: 6-7-09

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND.

John A. ...
CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE: 6-7-09

PREPARED BY:
WR&A
Whitman, Requardt and Associates, LLP.
2315 ST. PAUL ST.
BALTIMORE, MD. 21218
410-235-3450



DES: SEA/EJM					
DRN: EJM/GG					
CHK: EJM/WRD					
DATE: 10-22-99					
BY: NO.		REVISION		DATE	

600' SCALE MAP NO. 18 BLOCK NO. 1, 2 & 7

HOLLIFIELD ESTATES
4" FORCE MAIN, 8" WATER MAIN AND
PRESSURE REDUCING VALVE
SECOND ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 6 OF 10

ELECTRICAL SPECIFICATIONS:

- INSTALLATION SHALL BE INSTALLED BY A LICENSED ELECTRICAL CONTRACTOR FOR THIS JURISDICTION.
- ALL MATERIALS SHALL BEAR THE "UL" LABEL.
- WORK SHALL BE INSTALLED AS REQUIRED BY THE NATIONAL ELECTRICAL CODE AND/OR THE LOCAL CODE ENFORCING AUTHORITIES.
- AN "APPROVED" PERMIT SHALL BE OBTAINED FROM THE PROPER AUTHORITIES.
- CONDUIT RUNS SHALL BE ROUTED AS SHOWN AND CONTRACTOR SHALL VISIT JOB SITE PRIOR TO BID TO VERIFY INSTALLATION.
- NUTS, BOLTS, AND SCREWS SHALL BE STAINLESS STEEL.
- EQUIPMENT SUPPORT MOUNTING SHALL BE WITH EITHER TOGGLE BOLTS OR LEAD ANCHOR TAMP-INS, OR BULLDOG INSERTS.
- CONDUITS AND FITTINGS - PVC, SCHEDULE 40, MINIMUM SIZE 3/4". (EXCEPT FOR NOTE 1)
- CONDUIT STRAPS - PVC WITH STAINLESS STEEL NUTS, BOLTS, SCREWS, ETC.
- CONDUITS TO BE STRAPPED EVERY 5 FT. MAXIMUM FOR POWER. FLEXIBLE CONDUITS - PVC LIQUID-TITE WITH APPROVED FITTINGS NOT MORE THAN TWO FEET IN LENGTH.
- WIRE - TYPE THWN, STRANDED - #14 CONTROL, #12 MINIMUM FOR POWER.
- LIGHTING - 2 LAMP, 32 WATT, ELECTRONIC BALLASTS, 120 VOLT, CLEAR ACRYLIC LENS, AND VAPOR-TITE HOUSING, MANUFACTURED BY THOMAS INDUSTRIES, CATALOG NO. V0232EB-120V, WITH F32T8 LAMPS OR APPROVED EQUAL.
- CONDUIT WALL SEALS - TYPE FSK, MANUFACTURED BY CROUSE-HINDS, FOR THROUGH VAULT WALLS FOR RIGID HEAVY WALL GALVANIZED CONDUITS.
- GFI OUTLETS AND TOGGLE SWITCHES - 20 AMP, 120V RATED IN WEATHER PROOF ENCLOSURES IN VAULT WITH COVER PLATES MANUFACTURED BY TAY-MAC.
- PANELBOARD - NUMBER OF CIRCUITS AS SHOWN IN SCHEDULE MANUFACTURED BY SQUARE D, CUTLER-HAMMER OR GENERAL ELECTRIC WITH TYPE "QO" BREAKERS AND MAIN BREAKER RETAINING CLIP.
- LIGHTNING ARRESTOR - CATALOG NO. 002175SB, MANUFACTURED BY SQUARE D, OR EQUAL.
- EQUIPMENT CABINET - FREE STANDING DOUBLE DOOR STAINLESS STEEL NEMA 4X WITH THE FOLLOWING OPTIONS - RAIN PROTECTED LOUVERS ON EACH SIDE AT TOP WITH BUG SCREEN, 1-1/2" DRAIN HOLE IN BOTTOM WITH SCREEN, PROVIDE HASP ARRANGEMENT FOR ATTACHING BUREAU OF UTILITIES PADLOCKS, PROVIDE A HEAVY PHENOLIC NAME PLATE INDICATING THAT THE PANEL IS OWNED BY THE BUREAU OF UTILITIES, PHONE: (410) 313 - 4900, MANUFACTURED BY HOFFMAN, CATALOG NOS. AG06016SSLP, AG0P60, A-DSTOPK, L38, ALF15D24, A-VK33SS6, D-AH2001A, OR EQUAL.
- 4-20mA SIGNAL WIRING SHALL BE 4/C#18 SHIELDED, TWISTED PAIRS.
- TELEMETRY EQUIPMENT

TELEMETRY SIGNALS FOR OPERATING THE HOLLIFIELD PRV SHALL INCLUDE: 6" PRV VALVE STATUS, 3" PRV VALVE STATUS, PRESSURE RELIEF VALVE STATUS, FLOOD STATUS, TELEMETRY STATUS, PRV INLET PRESSURE, PRV OUTLET PRESSURE, AND REMOTE CONTROL OF THE 3" VALVE.

TELEMETRY EQUIPMENT FOR TRANSMITTING AND RECEIVING SIGNALS VIA DEDICATED TELEPHONE LINE SHALL INCLUDE: TONE TRANSMITTERS, TONE RECEIVERS, LINE PROTECTORS, GAS TUBE ARRESTORS, POWER SUPPLIES, MOUNTING BRACKETS, AND CABINETS.

EQUIPMENT SHALL BE QEI, MODEL QDTS90 DIGITAL TELEMETRY SYSTEM FOR STATUS SIGNALS; AND MODEL QEI 30 FOR CONTROL SIGNALS. EQUIPMENT SHALL INCLUDE:

- TONE TRANSMITTER (QDTS90)
- TONE RECEIVER (QDTR90)
- TONE TRANSMITTER (QT30)
- TONE RECEIVER (QR30)
- LINE PROTECTORS (QLP-1)
- GAS TUBE ARRESTORS (QGT-A-11)
- POWER SUPPLIES (QP-3)
- MOUNTING FRAMES
- CABINETS

THE POWER SUPPLY SHALL BE 12 VOLT D.C. A BATTERY BACKUP UNIT (QUP2) SHALL BE PROVIDED AT THE HOLLIFIELD PRV VAULT AND PINE ORCHARD PUMPING STATION.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLETE INSTALLATION OF THE TELEMETRY SYSTEM.

THE TONE TRANSMITTER (QDTS90) AND TONE RECEIVER (QR30) SHALL BE INSTALLED AT THE PRV AND MOUNTED WITHIN A SUITABLE, WEATHER PROOF CONTROL CABINET LOCATED ABOVE GRADE. THE CONTRACTOR SHALL PROVIDE AND INSTALL A TELEPHONE CABLE FROM THE CONTROL CABINET UP TO BELL ATLANTIC'S DEMARCATION. THE TELEPHONE CABLE SHALL BE, AT A MINIMUM, A 5-PAIR CABLE SUITABLE FOR BURIED SERVICE AND SHALL MEET BELL ATLANTIC'S REQUIREMENTS. CONTRACTOR SHALL NOTIFY THE BUREAU OF UTILITIES FOUR WEEKS PRIOR TO COMPLETION OF THE TELEMETRY SYSTEM SO THAT THE DEDICATED PHONE CIRCUIT CAN BE ORDERED. THE CONTRACTOR SHALL COORDINATE WITH BELL ATLANTIC REGARDING CONNECTION AND TESTING OF THE DEDICATED TELEMETRY CIRCUIT.

TONE RECEIVER (QDTR90) AND TONE TRANSMITTER (QT30) SHALL BE PROVIDED AND INSTALLED AT THE PINE ORCHARD WATER PUMPING STATION. A QEI CABINET WILL BE NEEDED AT THE PINE ORCHARD STATION FOR HOUSING AND MOUNTING THE EQUIPMENT. A 16 POINT DIGITAL INPUT BOARD (AUTOCON MODEL 9543), AS MANUFACTURED BY U.S. FILTER CONTROL SYSTEMS, SHALL BE PROVIDED FOR CONNECTING THE INPUT SIGNALS TO THE EXISTING RTU. EXISTING ANALOG INPUT TERMINALS ARE AVAILABLE.

ALL TERMINAL WIRES SHALL BE LABELED AT BOTH THE TRANSMITTING AND RECEIVING ENDS. SYSTEM SUPPLIER SHALL BE RETRO ELECTRIC, CO., INC. OR EQUAL.

- VALVE CONTROL CABINET SHALL BE NEMA 4X, STAINLESS STEEL, SIZED AS REQUIRED FOR EQUIPMENT WITH HINGED DOOR AND HASP. INDICATING LIGHTS TO BE 30mm PUSH-TO-TEST TYPE, SWITCHES TO BE CORROSION RESISTANT 30mm WITH BLACK GLOVED HAND KNOB. CONTROL RELAYS SHALL BE 10 AMP RATED AT 120V., PLUG-IN TYPE, CLASS 8501 TYPE KP13P14120. LIGHTS - CLASS 9001, TYPE SK, SELECTOR SWITCHES TYPE SK, CLASS 9001, 2 POSITION AND 3 POSITION WITH BLACK GLOVED HAND KNOBS. NAMEPLATES TO BE PHENOLIC, BLACK WITH WHITE LETTERING 1/16" THICK, BOLTED OR SCREWED TO CABINET. LIGHTS, SWITCHES & RELAYS ARE AS MANUFACTURED BY SQUARE D OR EQUAL. CABINET AS MANUFACTURED BY HOFFMAN OR EQUAL, MINIMUM SIZE 10"H x 7"W x 5 1/2"D, TYPE "O" LINE "E" WITH MOUNTING FEET & HINGED DOOR. PILOT LIGHTS & SELECTOR SWITCHES TO BE MOUNTED ON DOOR.

ELECTRICAL LEGEND

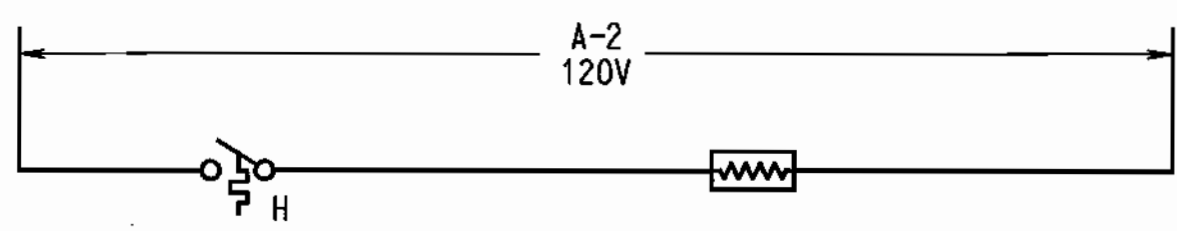
SYMBOL	DESCRIPTION
	RECEPTACLE 20A, 125V., SINGLE LOCKING TYPE, DUPLEX, GFI TYPE - M.H. = 1'-6" UNLESS OTHERWISE NOTED.
	WALL MOUNTED HEATER
	LIGHTNING SURGE SUPPRESSOR
	JUNCTION BOX
	SOLENOID
	SINGLE POLE SWITCH, 20A, 120V
	SWITCH, WEATHER PROOF
	THERMOSTAT - HEAT
	TRANSMITTERS
	SELECTOR SWITCH
	HOME RUNS TO PANEL, NO. OF ARROWS INDICATE NO. OF CIRCUITS AND NO. OF CROSSINGS INDICATE NO. OF #12 CONDUCTORS
	CONDUIT RUN EXPOSED
	CONDUIT RUN UNDERGROUND OR BELOW FLOOR SLABS
	GROUND CONNECTION
	3" PRESSURE REDUCING VALVE, 250# FLANGED ENDS
	6" PRESSURE REDUCING VALVE, 250# FLANGED ENDS
	6" PRESSURE RELIEF VALVE
	CIRCUIT BREAKER
	CONTACTS - NORMALLY OPEN
	CONTACTS - NORMALLY CLOSED
	THERMOSTAT (HEAT)

ABBREVIATIONS

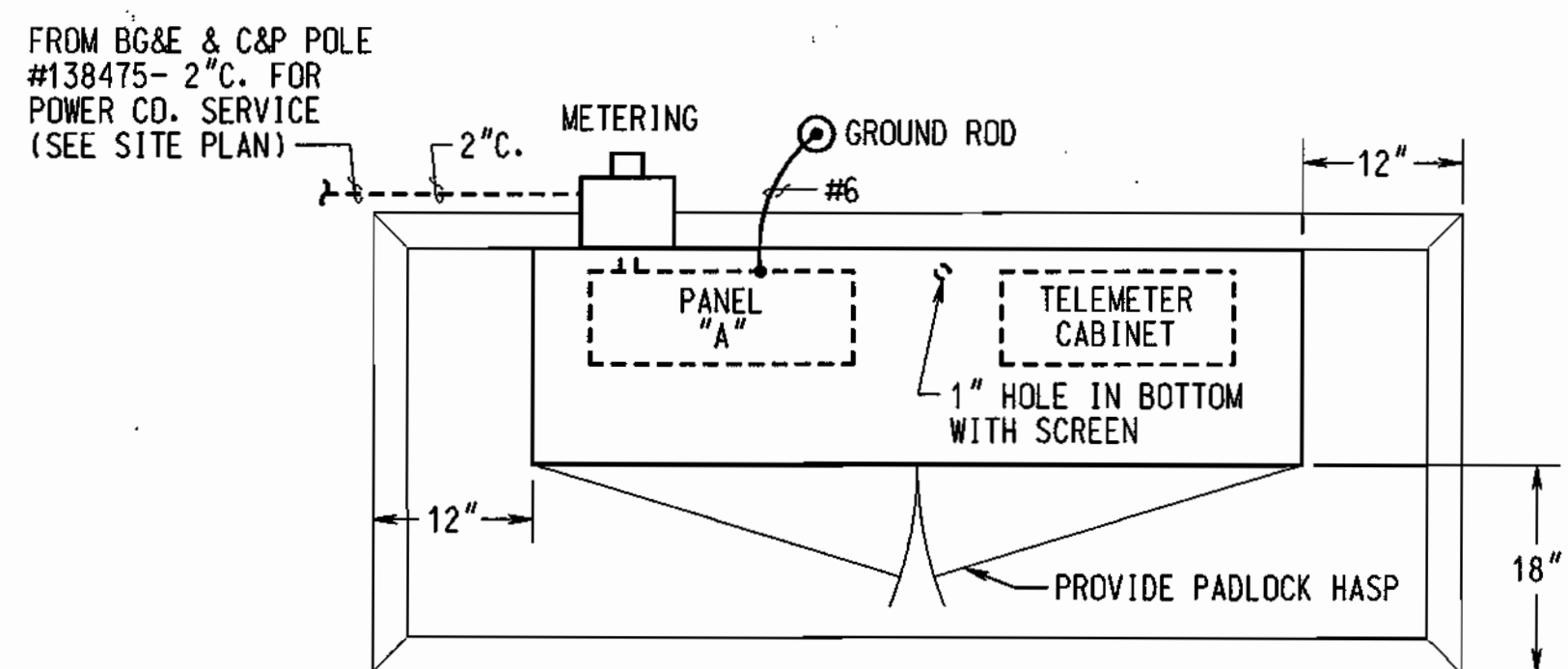
ABBREV.	DESCRIPTION
A, AMP	AMPERE (S)
AFF	ABOVE FINISHED FLOOR
C	CONDUIT
CB	CIRCUIT BREAKER
GFI	GROUND FAULT INTERRUPTER
GRD, GND	GROUND
L-R	LOCAL-REMOTE
L.S.	LIMIT SWITCH
M.H.	MOUNTING HEIGHT
NO., #	NUMBER
P	POLE (S)
PVC	POLYVINYL CHLORIDE
S	SWITCH
SCH.	SCHEDULE
SOL	SOLENOID
S.S.	STAINLESS STEEL
TH	THICK
V	VOLT (S)
W	WIRE
WP	WEATHERPROOF
Ø	PHASE

PANEL SCHEDULE "A"											
240/120 VOLT, 1 PHASE, 3 WIRE, SURFACE MOUNTED											
CIR	FOR	BREAKER			I.C.	CIR	FOR	BREAKER			I.C.
		FRAME	POLES	CAL. IB.				FRAME	POLES	CAL. IB.	
1	MAIN	100	2	60	10	2	VAULT UNIT HEATER	100	1	20	10
3	MAIN	-	-	-	10	4	SPARE	100	1	-	10
5	VAULT SUMP PUMP	100	1	20	10	6	VAULT LIGHTING	100	1	15	10
7	CABINET GFI OUTLET	100	1	20	10	8	VAULT P.R. SOLENOID VALVES	100	1	15	10
9	TELEMETRY CABINET	100	1	20	10	10	CABINET HEATER & LIGHT	100	1	15	10
11	SPARE	100	1	20	10	12	TRANSMITTERS	100	1	15	10

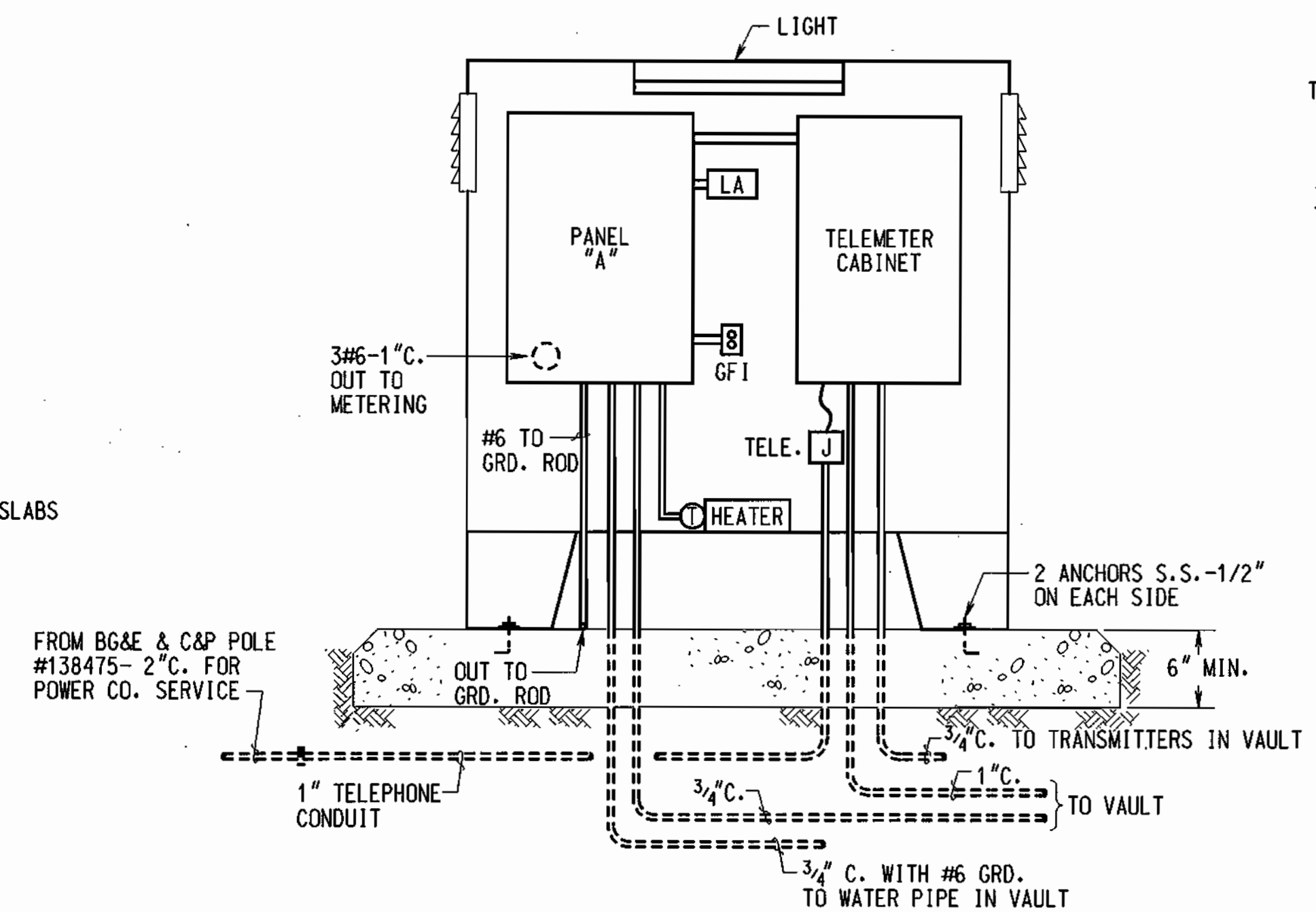
* I.C. = INTERRUPTING CAPACITY IN THOUSANDS OF SYMMETRICAL R.M.S. AMPERES.



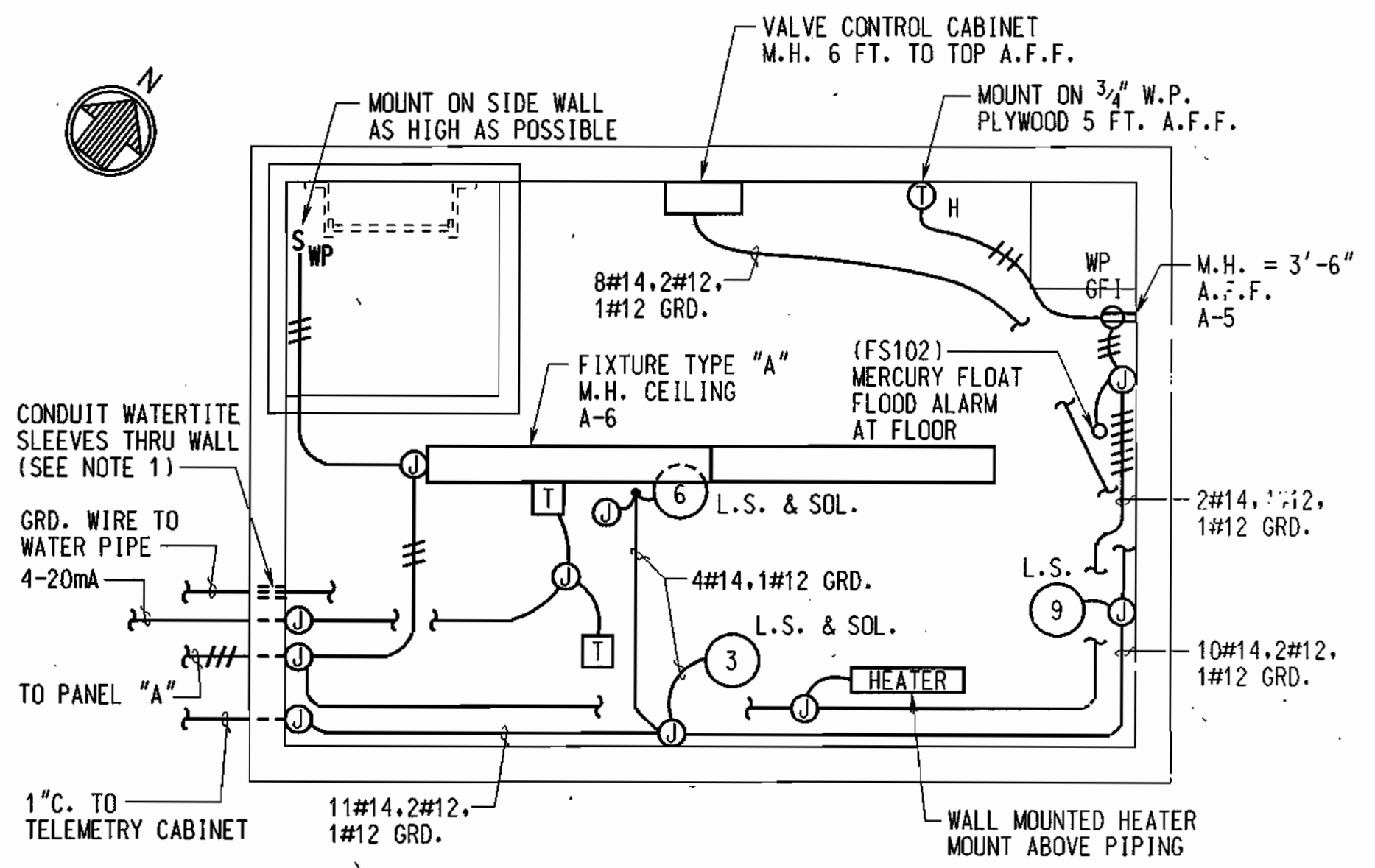
STRIP HEATER CONTROL DIAGRAM



PANEL TOP VIEW



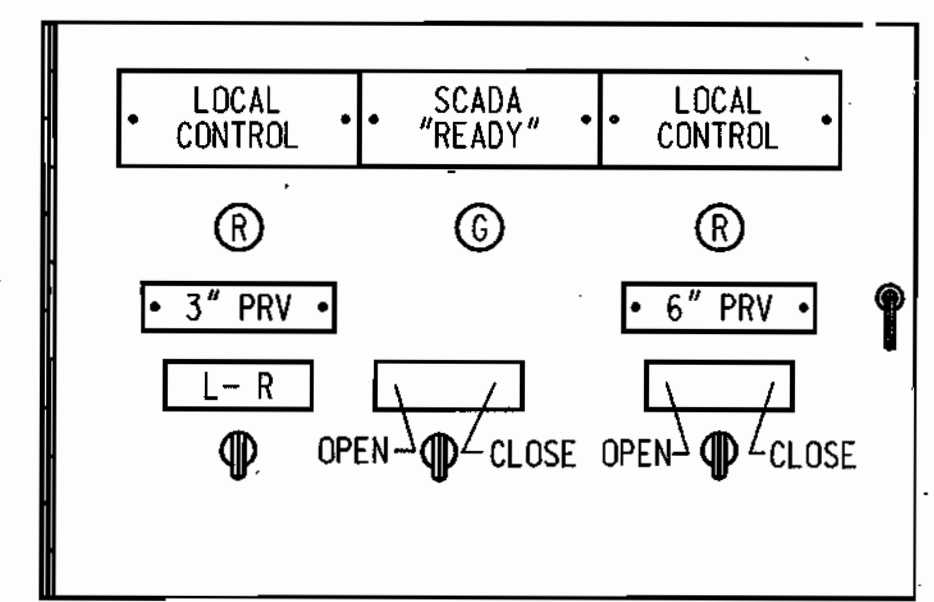
ELEVATION - SERVICE EQUIPMENT CABINET



VAULT FLOOR PLAN

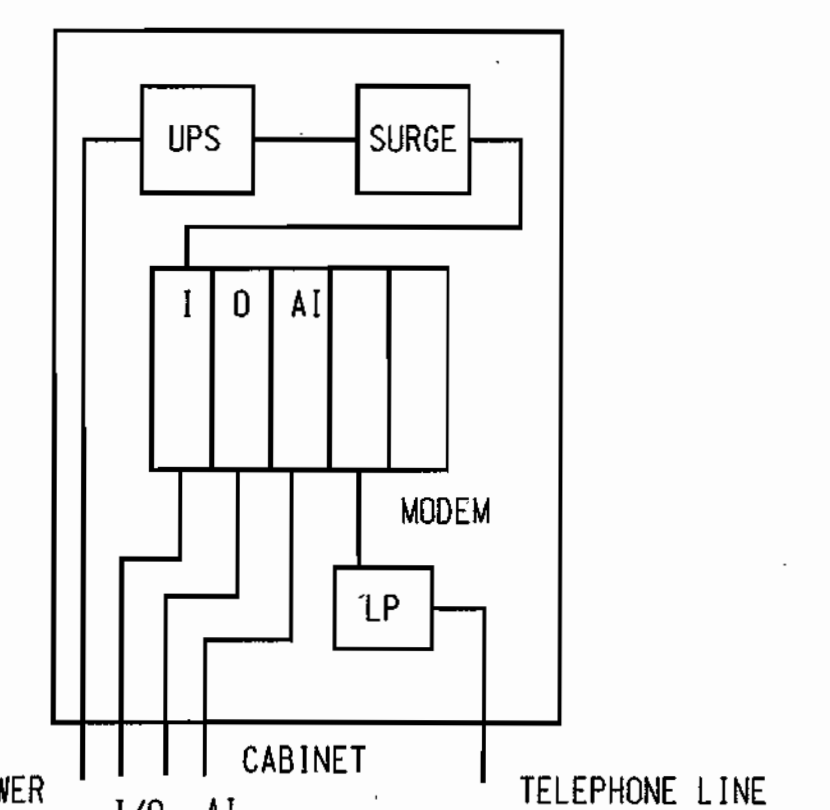
NOTES:

- INSTALL RIGID GALVANIZED HEAVY WALL CONDUITS FROM PANEL "A" & TELEMETRY CABINET TO VAULT JUNCTION BOXES.



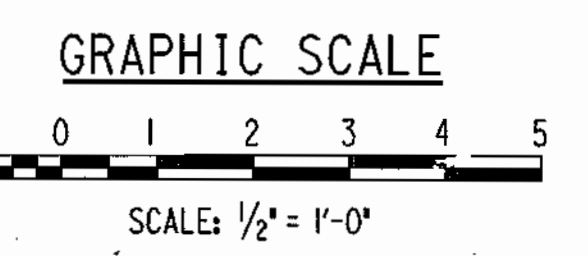
VALVE CONTROL CABINET LAYOUT

NOT TO SCALE



TELEMETRY CABINET DETAIL

NOT TO SCALE



SCALE: 1/2" = 1'-0"

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND. DATE: 6-7-03	DEPARTMENT OF PLANNING AND ZONING HOWARD COUNTY, MARYLAND. DATE: 6/10/03	PREPARED BY: WR&A Whitman, Reardon and Associates, LLP. 2315 ST. Paul ST. Baltimore, Md. 21218 410-235-3450	DES: SEA/EJM DRN: EJM/GG CHK: EJM/WRD DATE: 10-22-99	BY: NO. REVISION DATE	600' SCALE MAP NO. 18 BLOCK NO. 1, 2 & 7	HOLLIFIELD ESTATES 4" FORCE MAIN, 8" WATER MAIN AND PRESSURE REDUCING VALVE SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND	SCALE AS SHOWN SHEET 7 OF 10
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INSTRUMENT IDENTIFICATION SCHEDULE

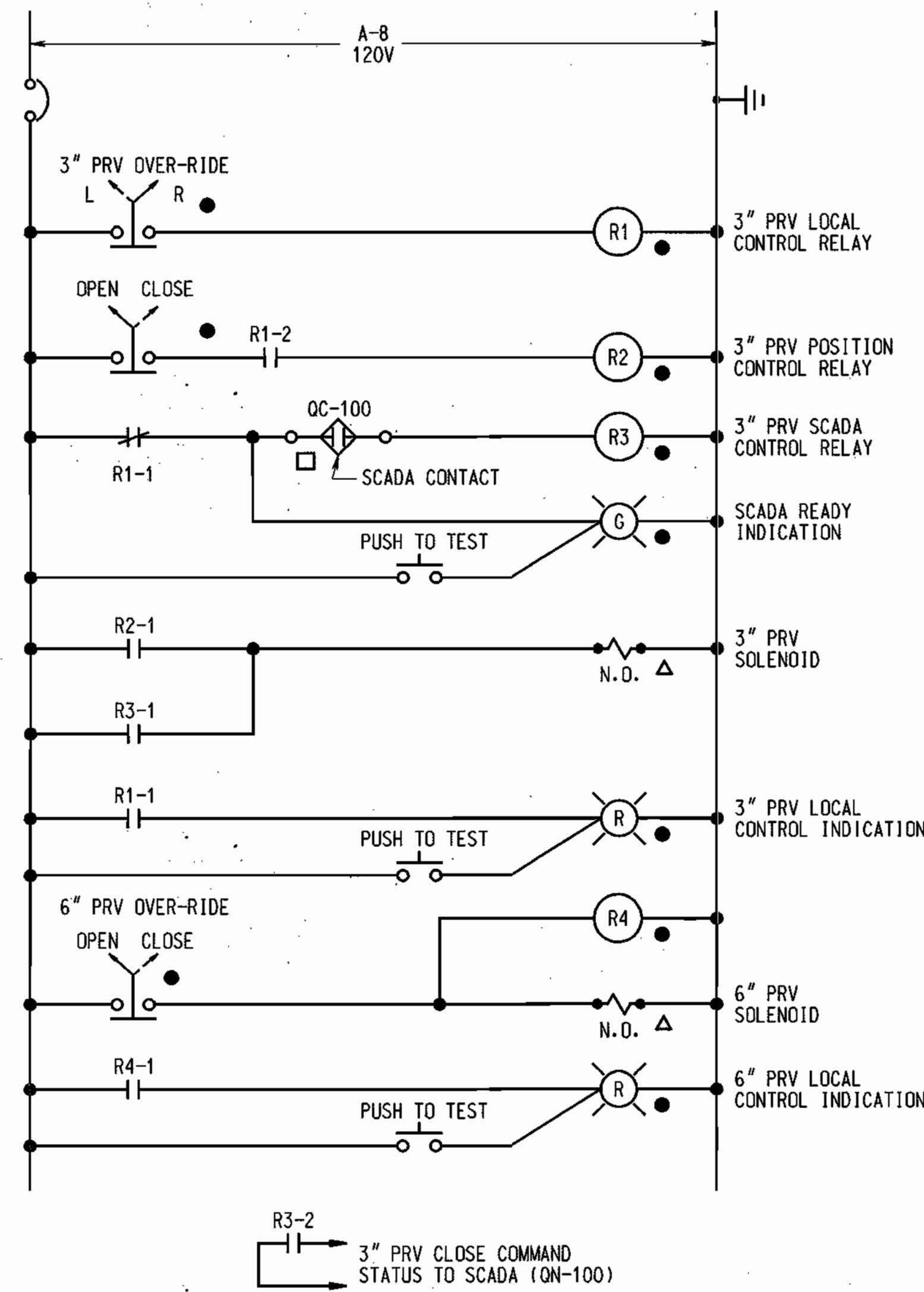
FIRST LETTER		SUCCEEDING LETTER		
VARIABLE	MODIFIER	PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS	ALARM		AUTOMATIC
B	BREAKER	USER'S CHOICE	CLOSE OR STOP	BYPASS
C	CONDUCTIVITY		CONTROL	
D	DENSITY		OPEN OR START	
E	VOLTAGE (EMF)	PRIMARY ELEMENT	SENSOR	
F	FLOW RATE	FAIL	FAIL	FAIL
G	GAUGING	GLASS		LOCAL/MANUAL
H	HAND			HIGH OR OPEN
I	CURRENT	INDICATE		INTERMEDIATE
J	POWER			
K	TIME		CONTROL STATION	
L	LEVEL	LIGHT		LOW OR CLOSE
M	MOTOR		MOTOR	MIDDLE
N	USER'S CHOICE		FORWARD	ON OR OPERATE
O			OFF	OVERLOAD
P	PRESSURE	POINT (TEST)	POSITION	
Q	QUANTITY OR EVENT			
R	RADIOACTIVITY	RECORD OR PRINT	REMOTE	RUN
S	SPEED OR FREQUENCY	SEQUENCE	SWITCH	STOP
T	TEMPERATURE		TRANSMIT	
U	MULTIVARIABLE	MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VARIABLE OR VISCOSITY		VALVE OR DAMPER	
W	WEIGHT OR FORCE	WELL		
X	MOD. LIGHT OR VALVE	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	INTERLOCK		RELAY OR COMPUTE	REVERSE
Z	POSITION		DRIVE OR ACTUATOR	

EXAMPLES

- AIT = ANALYSIS INDICATING TRANSMITTER
- FIT = FLOW INDICATING TRANSMITTER
- LIT = LEVEL INDICATING TRANSMITTER
- PAH = PRESSURE ALARM HIGH
- PAL = PRESSURE ALARM LOW
- ZSH = POSITION SWITCH OPEN
- ZSL = POSITION SWITCH CLOSED

SCADA CONTACTS:

STATUS		VAULT TRANSMITTER		VAULT RECEIVER	
DI	= 3" PRV CALL STATUS	- CONTROL	QN-100	DI	= 3" PRV CLOSE
DI	= 3" PRV LIMITS	- OPEN	ZH-100		
		- CLOSE	ZL-100		
DI	= 6" PRV	- OPEN	ZH-101		
		- CLOSE	ZL-101		
DI	= VAULT FLOOD	- ALARM	LH-102		
DI	= 6" RELIEF VALVE	- OPEN	ZH-103		
		- CLOSE	ZL-103		
DI	= TELEMETRY FAIL	- FAIL	QF-104		
AI	= UP STREAM (HIGH) PRESSURE TRANSDUCER	- PRESS.	PT-105		
AI	= DOWN STREAM (LOW) PRESSURE TRANSDUCER	- PRESS.	PT-106		



PRV OVER-RIDE SOLENOID CONTROL DIAGRAM

PRV OVER-RIDE CONTROLS:

3" PRV CONTROL MODES:

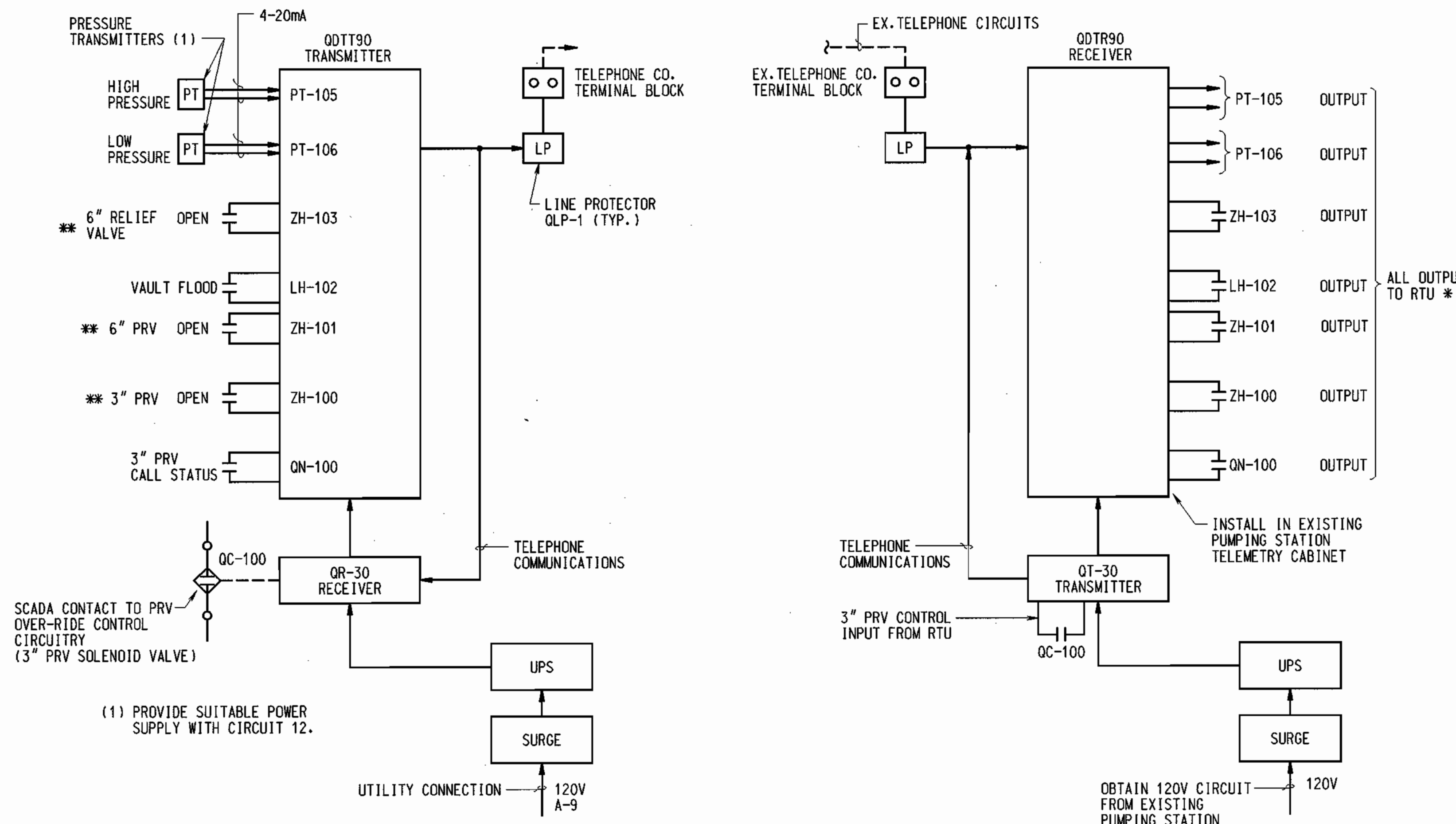
LOCAL: WHEN THE L-R SELECTOR SWITCH IS IN THE LOCAL POSITION, OPEN/CLOSE CONTROLS SHALL BE ACTIVE. WHEN THE CLOSE POSITION IS SELECTED, THE OVER-RIDE SOLENOID VALVE SHALL ENERGIZE, CYCLING THE PRV TO A CLOSED POSITION. THE LOCAL CONTROL INDICATION LIGHT SHALL BE ENERGIZED.

REMOTE: WHEN THE L-R SELECTOR SWITCH IS IN THE REMOTE POSITION, THE PRV SHALL BE INTERLOCKED TO THE HOWARD COUNTY BUREAU OF UTILITIES MASTER RTU SCADA SYSTEM VIA TELEPHONE TELEMETRY. THE SCADA CONTACT SHALL OVER-RIDE INTEGRAL HYDRAULIC PILOT SET-POINTS AND ENERGIZE THE OVER-RIDE SOLENOID VALVE, CYCLING THE PRV TO A CLOSED POSITION. THE SCADA READY INDICATION LIGHT SHALL BE ENERGIZED.

6" PRV CONTROL MODES:

CLOSE: WHEN THE ON-OFF SELECTOR SWITCH IS IN THE ON POSITION, THE PRV OVER-RIDE SHALL BE ACTIVE. THE OVER-RIDE SOLENOID VALVE SHALL ENERGIZE, CYCLING THE PRV TO A CLOSED POSITION. THE LOCAL CONTROL INDICATION LIGHT SHALL BE ENERGIZED.

OPEN: WHEN THE ON-OFF SELECTOR SWITCH IS IN THE OFF POSITION, THE PRV SHALL BE CONTROLLED BY INTEGRAL HYDRAULIC PILOT SET-POINTS.



NOTE:

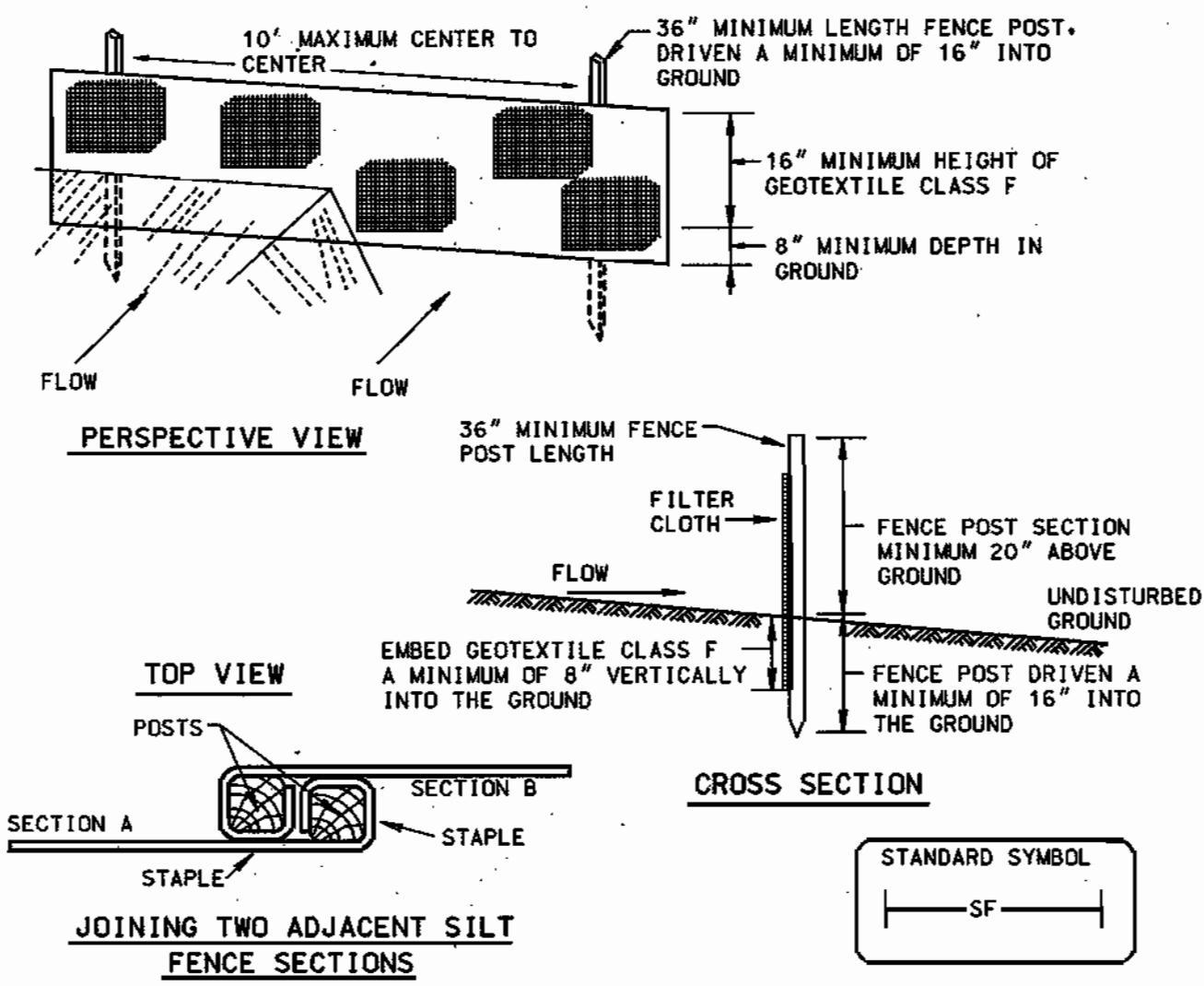
* THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WORK PERFORMED AT THE PINE ORCHARD WATER PUMPING STATION. THE CONTRACTOR SHALL COORDINATE WITH U.S. FILTER CONTROL SYSTEMS "AUTOCON" FOR THE PROGRAMMING OF THE PINE ORCHARD P.S. RTU. "AUTOCON" SHALL BE RESPONSIBLE FOR PROGRAMMING AND GRAPHICS REQUIRED AT THE MASTER RTU LOCATED AT HOWARD COUNTY BUREAU OF UTILITIES, 8250 OLD MONTGOMERY ROAD.

LOCATION LEGEND:

- △ IN VAULT
- IN TELEMETRY CABINET
- AT VAULT CABINET

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND. Chief, Bureau of Utilities 6-7-00	DEPARTMENT OF PLANNING AND ZONING HOWARD COUNTY, MARYLAND. Chief, Development Engineering Division 6/6/00	PREPARED BY: WR&A Whitman, Requardt and Associates, LLP. 2315 ST. PAUL ST. Baltimore, Md. 21218 410-235-3450	DES: SEA/EJM DRN: EJM/GG CHK: EJM/WRD DATE: 10-22-99	PRV SCADA INTERFACE	HOLLIFIELD ESTATES 4" FORCE MAIN, 8" WATER MAIN AND PRESSURE REDUCING VALVE SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND	I-1 SCALE AS SHOWN SHEET 8 OF 18
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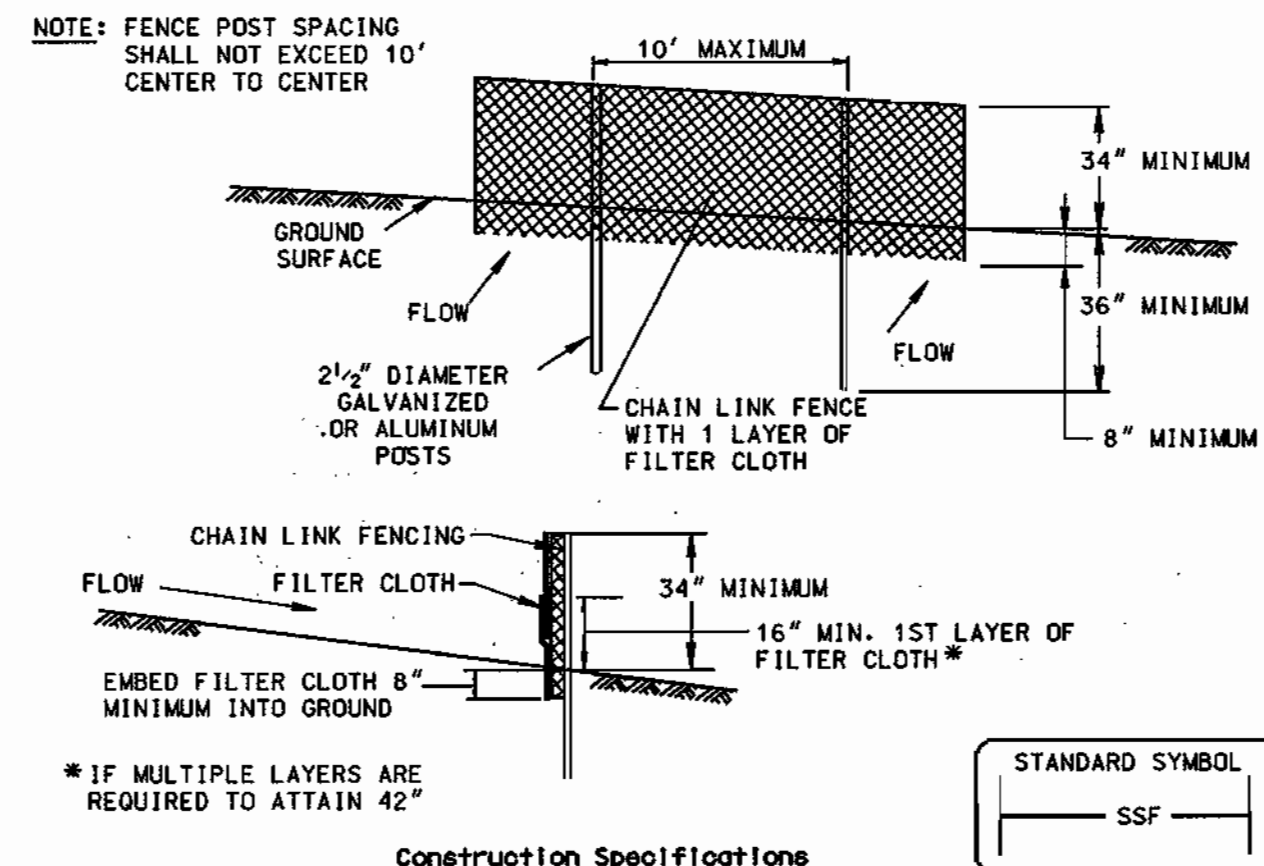
DETAIL 22 - SILT FENCE



- Construction Specifications**
- Fence posts shall be a minimum of 36" long driven 16" minimum into the ground. Wood posts shall be 1 1/2" x 1 1/2" square (minimum) cut, or 1 1/2" diameter (minimum) round and shall be of sound quality hardwood. Steel posts will be standard T or U section weighting not less than 1.00 pound per linear foot.
 - Geotextile shall be fastened securely to each fence post with wire ties or staples at top and mid-section and shall meet the following requirements for Geotextile Class F:

Tensile Strength	50 lbs/in (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MSMT 509
Flow Rate	0.3 gal/ft ² /minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322
 - Where ends of geotextile fabric come together, they shall be overlapped, folded and stapled to prevent sediment bypass.
 - Silt Fence shall be inspected after each rainfall event and maintained when bulges occur or when sediment accumulation reached 50% of the fabric height.

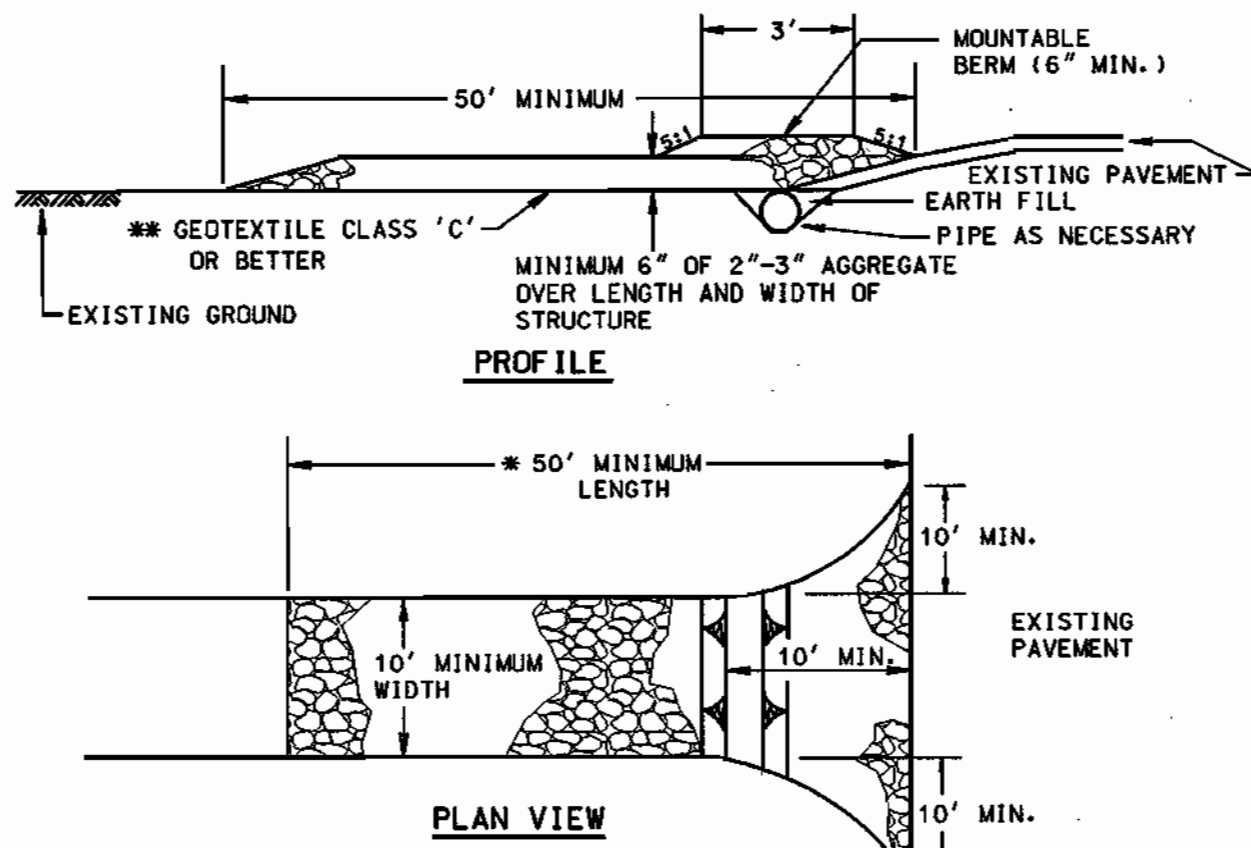
DETAIL 33 - SUPER SILT FENCE



- Construction Specifications**
- Fencing shall be 42" in height and constructed in accordance with the latest Maryland State Highway Details for Chain Link Fencing. The specification for a 6' fence shall be used, substituting 42" fabric and 6' length posts.
 - Chain link fence shall be fastened securely to the fence posts with wire ties. The lower tension wire, brace and truss rods, drive anchors and post caps are not required except on the ends of the fence.
 - Filter cloth shall be fastened securely to the chain link fence with ties spaced every 24" at the top and mid section.
 - Filter cloth shall be embedded a minimum of 8" into the ground.
 - When two sections of filter cloth adjoin each other, they shall be overlapped by 6" and folded.
 - Maintenance shall be performed as needed and silt buildups removed when "bulges" develop in the silt fence, or when silt reaches 50% of fence height
 - Filter cloth shall be fastened securely to each fence post with wire ties or staples at top and mid section and shall meet the following requirements for Geotextile Class F:

Tensile Strength	50 lbs/in (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MSMT 509
Flow Rate	0.3 gal/ft ² /minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

DETAIL 24 - STABILIZED CONSTRUCTION ENTRANCE



- Construction Specifications**
- Length - minimum of 50' (#30' for single residence lot).
 - Width - 10' minimum, should be flared at the existing road to provide a turning radius.
 - Geotextile fabric (filter cloth) shall be placed over the existing ground prior to placing stone. The plan approval authority may not require single family residences to use geotextile.
 - Stone - crushed aggregate (2" to 3") or reclaimed or recycled concrete equivalent shall be placed at least 6" deep over the length and width of the entrance.
 - Surface Water - all surface water flowing to or diverted toward construction entrances shall be piped through the entrance, maintaining positive drainage. Pipe installed through the stabilized construction entrance shall be protected with a mountable berm with 5:1 slopes and a minimum of 6" of stone over the pipe. Pipe has to be sized according to the drainage. When the SCE is located at a high spot and has no drainage to convey a pipe will not be necessary. Pipe should be sized according to the amount of runoff to be conveyed. A 6" minimum will be required.

SEDIMENT CONTROL NOTES

- A MINIMUM OF 24 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION. (410-313-1855)
- ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, AND REVISIONS THERETO.
- FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: a) 7 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES; b) 14 CALENDAR DAYS FOR ALL SLOPES GREATER THAN 3:1; c) 14 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
- ALL SEDIMENT TRAPS/BASINS SHOWN MUST BE FENCED AND WARNING SIGNS POSTED AROUND THEIR PERIMETER IN ACCORDANCE WITH VOL. 1, CHAPTER 7, OF THE HOWARD COUNTY DESIGN MANUAL - STORM DRAINAGE.
- ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDINGS, SOD, TEMPORARY SEEDING, AND MULCHING (SEC. G). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
- ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- SITE ANALYSIS:

TOTAL AREA OF SITE	N/A
AREA TO BE PAVED (STA.0+00 TO 36+25)	135000 SF +/- OR 3.1 ACRES L.O.D.*
AREA TO BE VEGETATIVELY STABILIZED (63000 SF +/- OR 1.4 ACRES +/-)	8100 SF +/-
TOTAL CUT	4700 CU. YDS. +/-
TOTAL BACKFILL	4700 CU. YDS. +/-
OFFSITE WASTE/BORROW AREA LOCATION:	APPROVED
- ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
- ADDITIONAL SEDIMENT CONTROLS MUST BE PROVIDED, IF DEEMED NECESSARY BY HOWARD COUNTY SEDIMENT CONTROL INSPECTOR. PARTICULAR EROSION CONTROL MATTING SHALL BE USED TO RE-LINE EXISTING ROAD-SIDE DITCHES DISTURBED BY CONSTRUCTION.
- ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING, OTHER BUILDING OR GRADING INSPECTION APPROVAL IS NOT AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.
- TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH SHALL BE BACKFILLED AND STABILIZED WITHIN ONE WORKING DAY, WHICHEVER IS SHORTER. IMMEDIATELY FOLLOWING PIPE INSTALLATION, THE TRENCH SHALL BE BACKFILLED, COMPACTED AND IMMEDIATELY STABILIZED (CRUSHER RUN STONE AND TEMPORARY COLD PATCH MATERIALS, MULCHED, SEEDED, AND OR SODDED MECHANICAL STABILIZATION) AT THE END OF EACH WORKING DAY. SILT FENCE SHALL BE PLACED IMMEDIATELY DOWNHILL OF ANY DISTURBED AREA INTENDED TO REMAIN DISTURBED LONGER THAN ONE (1) DAY.

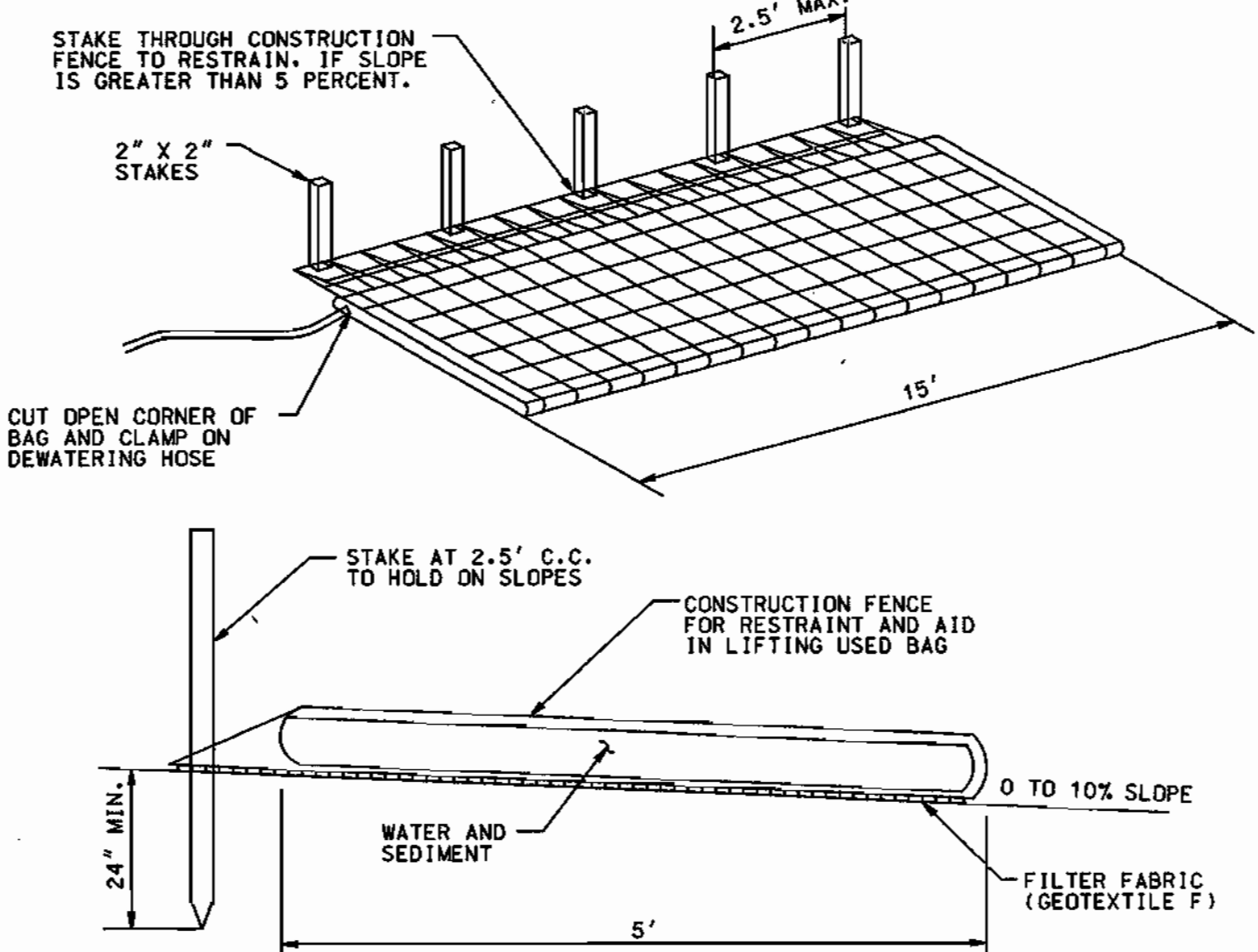
* NOTE : LIMIT OF DISTURBANCE (L.O.D.) IS WIDTH OF RIGHT OF WAY UNLESS SHOWN OTHERWISE.

REQUIRED SEQUENCE OF CONSTRUCTION

- OBTAIN THE REQUIRED GRADING PERMIT. (10 DAYS)
- NOTIFY MISS UTILITY 48 HOURS BEFORE BEGINNING ANY WORK @ (1-800-257-7777). NOTIFY HOWARD COUNTY CONSTRUCTION INSPECTION DIVISION 24 HOURS BEFORE STARTING ANY WORK @ 410-313-1870 (2 DAYS).
- INSTALL THE REQUIRED SEDIMENT AND EROSION CONTROL DEVICES AND STABILIZE CONSTRUCTION ENTRANCE AS INDICATED ON THESE PLANS. (5 DAYS)
- CONSTRUCT PIPELINES AS SHOWN ON THE CONSTRUCTION DRAWINGS, KEEPING ALL CONSTRUCTION ACTIVITIES WITHIN THE LIMIT OF DISTURBANCE. SEDIMENT CONTROL, NOTE NO.11, ALL TREES SHALL BE PRESERVED AND PROTECTED OUTSIDE OF THE UTILITY EASEMENTS, ALTHOUGH THEY MAY BE WITHIN THE LIMITS OF DISTURBANCE. (120 DAYS) FOR ALL CONSTRUCTION IN OLD FREDERICK ROAD, SEE WORK ZONE TRAFFIC CONTROL PLAN SHOWN BELOW.
- THE CONTRACTOR SHALL INSPECT AND PROVIDE NECESSARY MAINTENANCE ON THE SEDIMENT AND EROSION CONTROL DEVICES SHOWN HEREON, AFTER EACH RAINFALL AND ON A DAILY BASIS. (2 DAYS)
- REMOVE SEDIMENT FROM ROADWAY AND DRESS STONE CONSTRUCTION ENTRANCE AS REQUIRED. (1 DAY)
- FINE GRADE ALL AREAS DISTURBED BY PIPELINE CONSTRUCTION AND STABILIZE ACCORDING TO RESTORATION SCHEDULES ON EACH SHEET. THE CONSTRUCTION DRAWINGS REMOVE CRUSHER RUN STONE AND COLD PATCH MATERIAL FROM SURFACE OF TRENCH BACKFILL IN OLD FREDERICK ROAD AND CONSTRUCT ASPHALT PAVING BASE TO MATCH FULL DEPTH OF EXISTING PAVING. A COUNTY CAPITAL PROJECT WILL CONSTRUCT ASPHALT PAVING OVERLAY OVER ENTIRE ROAD SURFACE AT A LATER DATE.
- FOLLOWING SUCCESSFUL STABILIZATION OF ALL DISTURBED AREAS, AND AFTER PERMISSION HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, REMOVE SEDIMENT CONTROL MEASURES AND STABILIZE REMAINING DISTURBED AREAS WITH PERMANENT SEEDING MIXTURE AND STRAW MULCH. (5 DAYS)

WORK ZONE TRAFFIC CONTROL PLAN

- GENERAL NOTES**
- ALL WORK SHALL BE CONDUCTED IN ACCORDANCE WITH THE LATEST VERSION OF THE HOWARD COUNTY DESIGN MANUAL VOLUME IV, SECTION 107, THE MARYLAND STATE HIGHWAY ADMINISTRATION (MSHA) BOOK OF STANDARDS, THE FEDERAL HIGHWAY ADMINISTRATION (FHWA) MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), AND THE MARYLAND SUPPLEMENT TO THE MUTCD.
 - ALL SIGNS SHALL CONFORM TO THE LATEST VERSION OF MSHA'S STANDARD SIGN BOOK AND FHWA'S MUTCD.
 - ALL EXISTING TRAFFIC SIGNS IN CONFLICT WITH THIS WORK ZONE TRAFFIC CONTROL PLANS AND ANY TEMPORARY TRAFFIC SIGNS NOT IN USE DURING A SPECIFIC STAGE OF CONSTRUCTION SHALL BE COVERED.
 - VEHICULAR ACCESS TO ALL SIDE STREETS AND DRIVEWAYS SHALL BE MAINTAINED THROUGHOUT THE WORK ZONE USING FLAGGERS PER MSHA STD. NOS. 104.32-02 (SEE COPY IN SPECIAL PROVISIONS) OR AS DIRECTED BY THE ENGINEER.
 - DURING NON-WORKING HOURS, UTILITY EXCAVATIONS ACROSS/ ALONG TRAFFIC LANES (INCLUDING SIDE STREETS AND DRIVEWAYS) SHALL BE BACKFILLED OR PLATED PER MSHA STD. NOS. 104.89-01 THROUGH MD 104.92 WITH W-1 "BUMP" AND/OR WES-5(1) "STEEL PLATES" SIGNS INSTALLED IN ADVANCE OF THE PATCH OR PLATE(S). (SEE SPECIAL PROVISIONS FOR COPIES OF MSHA STANDARD DETAILS.)
- WORK RESTRICTIONS**
- CONSTRUCTION SHALL ONLY BE CONDUCTED DURING THE HOURS BETWEEN 9:00 AM AND 4:00 PM (WORKING HOURS). EXISTING TRAFFIC LANES SHALL BE MAINTAINED DURING NON-WORKING HOURS.
 - DURING WORKING HOURS, A MINIMUM OF ONE 10' WIDE TRAFFIC LANE ON OLD FREDERICK ROAD SHALL BE MAINTAINED USING FLAGGERS PER MSHA STD. NOS. 104.51-02 AND /OR MD104.32-02 (SEE SPECIAL PROVISIONS FOR COPIES OF MSHA STANDARD DETAILS.)

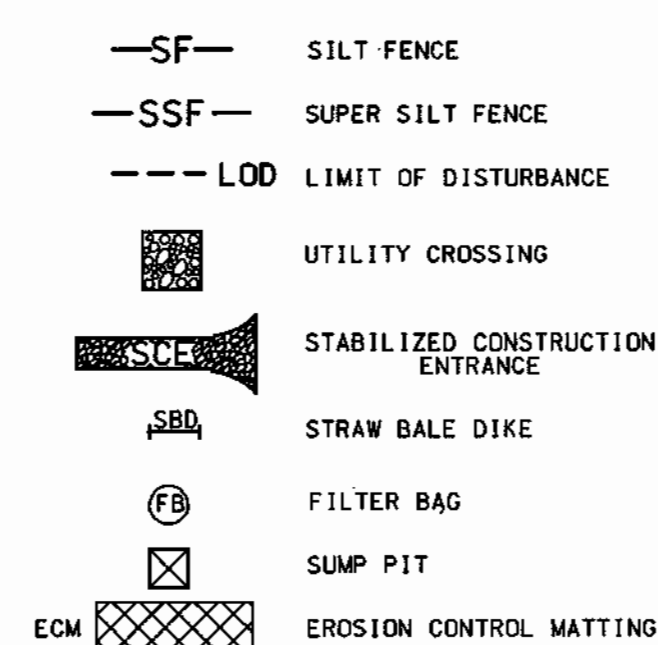


- NOTES:**
- FILTER BAG SHALL BE PLACED ON A SLOPING OR LEVEL, WELL GRADED VEGETATED SITE SUCH THAT WATER WILL FLOW AWAY FROM DEVICE AND ANY WORK AREAS.
 - WIDTH AND LENGTH SHALL BE AS SHOWN.
 - THE FILTER BAG MUST BE STAKED IN PLACE AND SECURED TO THE PUMP DISCHARGE LINE.
 - FILTER BAG SHALL NOT BE USED FOR DISCHARGE FLOWS GREATER THAN 300 GPM.
 - DEVICE SHALL BE REMOVED AND DISPOSED OF AFTER BAG IS FILLED WITH SEDIMENT. SEDIMENT FROM BAG SHALL BE SPREAD IN AN UPLAND AREA.
 - FILTER FABRIC SHALL MEET THE FOLLOWING REQUIREMENTS FOR GEOTEXTILE CLASS F:

TENSILE STRENGTH	50 LBS/IN (MIN.)	TEST: MSMT 509
TENSILE MODULUS	20 LBS/IN (MIN.)	TEST: MSMT 509
FLOW RATE	0.3 GAL/FT ² /MINUTE (MAX.)	TEST: MSMT 322
FILTERING EFFICIENCY	75% (MIN.)	TEST: MSMT 322

FILTER BAG TEMPORARY EROSION CONTROL MEASURE (FB)

SEDIMENT CONTROL LEGEND



DEVELOPER

KOREN DEVELOPMENT COMPANY, INC.
8815 CENTRE PARK DRIVE, SUITE 104
COLUMBIA, MD. 21045

THESE PLANS HAVE BEEN REVIEWED FOR HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SOIL EROSION AND SEDIMENT CONTROL.

Chief Simmons 6-8-00 DATE
USDA-NATURAL RESOURCES CONSERVATION SERVICE

THESE PLANS FOR SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

John R. Robertson 6-8-00 DATE
HOWARD S.C.D.

BY THE DEVELOPER:

"I HEREBY CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT."

KOREN DEVELOPMENT COMPANY, INC. DATE

BY THE ENGINEER:

"I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."

James A. Avrette J.R. P.E. 10210 DATE
3/17/2000

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND.	DEPARTMENT OF PLANNING AND ZONING HOWARD COUNTY, MARYLAND.	PREPARED BY: WR&A Whitman, Requardt and Associates, LLP. 2315 St. Paul St. Baltimore, Md. 21218 410-235-3450	DES: SEA/EJM DRN: EJM/GG CHK: EJM/WRD DATE: 10-22-99	BY: NO. REVISION DATE	600' SCALE MAP NO. 18 BLOCK NO. 1, 2 & 7	SCALE AS SHOWN SHEET 9 OF 10
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20.0 STANDARDS AND SPECIFICATIONS
FOR
VEGETATIVE STABILIZATION

Using vegetation as cover for barren soil to protect it from forces that cause erosion.

PURPOSE

Vegetative Stabilization specifications are used to promote the establishment of vegetation on exposed soil. When soil is stabilized with vegetation, the soil is less likely to erode and more likely to allow infiltration of rainfall, thereby reducing sediment loads and runoff to downstream areas, and improving wildlife habitat and visual resources.

Conditions Where Practice Applies

This practice shall be used on denuded areas as specified on the plans and may be used on highly erodible or critically eroding areas. This specification is divided into Temporary Seeding, to quickly establish vegetative cover for short duration (up to one year), and Permanent Seeding, for long term vegetative cover. Examples of applicable areas for Temporary Seeding are temporary soil stockpiles, cleared areas being left idle between construction phases, earth dikes, etc. and for Permanent Seeding are lawns, dunes, cut and fill slopes and other areas of final grade, former stockpile and staging areas, etc.

Effects on Water Quality and Quantity

Planting vegetation in disturbed areas will have an effect on the water budget, especially on volumes and rates of runoff, infiltration, evaporation, transpiration, percolation, and groundwater recharge. Vegetation, over time, will increase organic matter content and improve the water holding capacity of the soil and subsequent plant growth.

Vegetation will help reduce the movement of sediment, nutrients, and other chemicals carried by runoff to receiving waters. Plants will also help protect groundwater supplies by assimilating those substances present within the root zone.

Sediment control devices must remain in place during grading, seedbed preparation, seeding, mulching and vegetative establishment to prevent large quantities of sediment and associated chemicals and nutrients from washing into surface waters.

Section I - Vegetative Stabilization Methods and Materials

A. Site Preparation

- i. Install erosion and sediment control structures (either temporary or permanent) such as diversions, grade stabilization structures, berms, waterways, or sediment control basins.
- ii. Perform all grading operations at right angles to the slope. Final grading and shaping is not usually required for temporary seeding.
- iii. Schedule required soil tests to determine soil amendment composition and application rates for sites having disturbed area over 5 acres.

B. Soil Amendments (Fertilizer and Lime Specifications)

- i. Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas over 5 acres. Soil analysis may be performed by the University of Maryland or a recognized commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analysis.
- ii. Fertilizers shall be uniform in composition, free flowing and suitable for accurate application by approved equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers shall all be delivered to the site fully labeled according to the applicable state fertilizer laws and shall bear the name, trade name or trademark and warrantee of the producer.
- iii. Lime materials shall be ground limestone (hydrated or burnt lime may be substituted) which contains at least 50% total oxides (calcium oxide plus magnesium oxide). Limestone shall be ground to such fineness that at least 50% will pass through a #100 mesh sieve and 98 - 100% will pass through a #20 mesh sieve.
- iv. Incorporate lime and fertilizer into the top 3 - 5" of soil by disking or other suitable means.

C. Seedbed Preparation

i. Temporary Seeding

- a. Seedbed preparation shall consist of loosening soil to a depth of 3" to 5" by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or rippers mounted on construction equipment. After the soil is loosened it should not be rolled or dragged smooth but left in the roughened condition. Sloped areas (greater than 3:1) should be tracked leaving the surface in an irregular condition with ridges running parallel to the contour of the slope.
- b. Apply fertilizer and lime as prescribed on the plans.
- c. Incorporate lime and fertilizer into the top 3 - 5" of soil by disking or other suitable means.

ii. Permanent Seeding

- a. Minimum soil conditions required for permanent vegetative establishment:
 1. Soil pH shall be between 6.0 and 7.0
 2. Soluble salts shall be less than 500 parts per million (ppm).
 3. The soil shall contain less than 40% clay but enough fine grained material (6-30% silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception is if lowgrass or sarracenia (sagepea) is to be planted, then a sandy soil (8-30% silt plus clay) would be acceptable.
 4. Soil shall contain 1.5% minimum organic matter by weight.
 5. Soil must contain sufficient pore space to permit adequate root penetration.
 6. If these conditions cannot be met by soils on site, adding topsoil is required in accordance with Section 21 Standard and Specification for Topsoil.
- b. Areas previously graded in conformance with the drawings shall be maintained in a true and even grade, then scarified or otherwise loosened to a depth of 3 - 5" to permit bonding of the topsoil to the surface area and to create horizontal erosion check slots to prevent topsoil from sliding down a slope.
- c. Apply soil amendments as per soil test or as included on the plans.
- d. Mix soil amendments into the top 3 - 5" of topsoil by disking or other suitable means. Lawn areas should be raked to smooth the surface, remove large objects like stones and branches, and ready the area for seed application, where site conditions will not permit normal seedbed preparation, loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface. Steep slopes (steeper than 3:1) should be tracked by a dozer leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. The top 1 - 3" of soil should be loose and friable, seedbed loosening may not be necessary on newly disturbed areas.

D. Seed Specifications

- i. All seed must meet the requirements of the Maryland State Seed Law. All seed shall be subject to re-testing by a recognized seed laboratory. All seed used shall have been tested within the 6 months immediately preceding the date of sowing such material on this job.

Note: Seed tags shall be made available to the inspector to verify type and rate of seed used.
- ii. Inoculant - The inoculant for treating legume seed in the seed mixtures shall be a pure culture of nitrogen-fixing bacteria prepared specifically for the species. Inoculants shall not be used later than the date indicated on the container. Add fresh inoculant as directed on package. Use four times the recommended rate when hydroseeding. Note: It is very important to keep inoculant as cool as possible until used. Temperatures above 75 - 80°F. can weaken bacteria and make the inoculant less effective.

E. Methods of Seeding

- i. Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer), broadcast or drop seeder, or a cultipacker seeder.
 - a. If fertilizer is being applied at the time of seeding, the application rates amounts will not exceed the following: Nitrogen: maximum of 100 lbs. per acre total of soluble nitrogen P205 (phosphorous): 200 lbs/acre K2O (potassium): 200 lbs/acre.
 - b. Lime - use only ground agricultural limestone. (Up to 3 tons per acre may be applied by hydroseeding). Normally, not more than 2 tons are applied by hydroseeding of any one time. Do not use burnt or hydrated lime when hydroseeding.
 - c. Seed and fertilizer shall be mixed on site and seeding shall be done immediately and without interruption.
- ii. Dry Seeding: This includes use of conventional drop or broadcast spreaders.
 - a. Seed spread dry shall be incorporated into the subsoil at the rates prescribed on the temporary or Permanent Seeding Summary or Tables 25 or 26. The seeded area shall then be rolled with a weighted roller to provide good seed to soil contact.
 - b. Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.
- iii. Drill or Cultipacker Seeding: Mechanized seeders that apply and cover seed with soil.
 - a. Cultipacker seeders are required to bury the seed in such a fashion as to provide at least 1/4 inch of soil covering. Seeded must be firm after planting.
 - b. Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.

F. Mulch Specifications (In order of preference)

- i. Straw shall consist of thoroughly threshed wheat, rye or oat straw, reasonably bright in color, and shall not be musty, moldy, coked, decayed, or excessively dusty and shall be free of noxious weed seeds as specified in the Maryland Seed Law.
- ii. Wood Cellulose Fiber Mulch (WCFM)
 - a. WCFM shall consist of specially prepared wood cellulose processed into a uniform fibrous physical state.
 - b. WCFM shall be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly spread slurry.
 - c. WCFM, including dye, shall contain no germination or growth inhibiting factors.
 - d. WCFM materials shall be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogeneous slurry. The mulch material shall form a blotter-like ground cover, on application, having moisture absorption and percolation properties and shall cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings.
 - e. WCFM material shall contain no elements or compounds at concentration levels that will be phytotoxic.
 - f. WCFM must conform to the following physical requirements: fiber length to approximately 10 mm, diameter approximately 1 mm, pH range of 4.0 to 8.5, ash content of 1.5% maximum and water holding capacity of 90% minimum.

Note: Only sterile straw mulch should be used in areas where one species of grass is desired.

G. Mulching Seeded Areas - Mulch shall be applied to all seeded areas immediately after seeding.

- i. If grading is completed outside of the seeding season, mulch alone shall be applied as prescribed in this section and maintained until the seeding season returns and seeding can be performed in accordance with these specifications.
- ii. When straw mulch is used, it shall be spread over all seeded areas at the rate of 2 tons/acre. Mulch shall be applied to a uniform loose depth of between 1" and 2". Mulch applied shall achieve a uniform distribution and depth so that the soil surface is not exposed. If a mulch anchoring tool is to be used, the rate should be increased to 2.5 tons/acre.
- iii. Wood cellulose fiber used as a mulch shall be applied at a net dry weight of 1,500 lbs. per acre. The wood cellulose fiber shall be mixed with water, and the mixture shall contain a maximum of 50 lbs. of wood cellulose fiber per 100 gallons of water.
- iv. Securing Straw Mulch (Mulch Anchoring): Mulch anchoring shall be performed immediately following mulch application to minimize loss by wind or water. This may be done by one of the following methods (listed by preference), depending upon size of area and erosion hazard:
 1. A mulch anchoring tool is a tractor drawn implement designed to punch and anchor mulch into the soil surface a minimum of two (2) inches. This practice is most effective on large areas, but is limited to flatter slopes where equipment can operate safely. If used on sloping land, this practice should be used on the contour if possible.
 2. Wood cellulose fiber may be used for anchoring straw. The fiber binder shall be applied at a net dry weight of 750 pounds/acre. The wood cellulose fiber shall be mixed with water and the mixture shall contain a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.
 3. Application of liquid binders should be heavier at the edges where wind catches mulch, such as in valleys and on crests of banks. The remainder of area should be applied uniform after binder application. Synthetic binders - such as Krytox DLR (Ago-Tack), DCA-70, Petrosel, Terra Tax II, Terra Tack AR or other approved equal may be used at rates recommended by the manufacturer to anchor mulch.
 4. Lightweight plastic netting may be stapled over the mulch according to manufacturer's recommendations. Netting is usually available in rolls 4' to 15' feet wide and 300 to 3,000 feet long.

Section II - Temporary Seeding

Vegetation - annual grass or grain used to provide cover on disturbed areas for up to 12 months. For longer duration of vegetative cover, Permanent Seeding is required.

A. Seed Mixtures - Temporary Seeding

- i. Select one or more of the species or mixtures listed in Table 26 for the appropriate Plant Hardiness Zone (from Figure 5) and enter them in the Temporary Seeding Summary below, along with application rates, seeding dates and seeding depths. If this Summary is not put on the plans and completed, then Table 26 must be put on the plans.
- ii. For sites having soil tests performed, the rates shown on this table shall be deleted and the rates recommended by the testing agency shall be written in. Soil tests are not required for Temporary Seeding.

TEMPORARY SEEDING SUMMARY

SEED MIXTURE (FOR HARDINESS ZONE 6-b)				FERTILIZER RATE (10-10-10)	LIME RATE
NO.	SPECIES	APPLICATION RATE (lb/acre)	SEEDING DATES		
1	ANNUAL RYEGRASS	50	3/1 - 4/30 8/15 - 11/1	600 lb/acre (15 lb/1000 sf)	2 tons/acre (100 lb/1000 sf)

Section III: Permanent Seeding

Seeding grass and legumes to establish ground cover for a minimum period of one year on disturbed areas generally receiving low maintenance.

A. Seed Mixtures - Permanent Seeding

- i. Select one or more of the species or mixtures listed in Table 25 for the appropriate Plant Hardiness Zone (from Figure 5) and enter them in the Permanent Seeding Summary below, along with application rates and seeding dates. Seeding depths can be estimated using Table 26. If this summary is not put on the construction plans and completed, then Table 25 must be put on the plans. Additional planting specifications for exceptional sites such as shorelines, streambanks, or dunes or for special purposes such as wildlife or aesthetic treatment may be found in USDA-SCS Technical Field Office Guide, Section 342 - Critical Area Planting. For special lawn maintenance areas, see Section IV Sod and V Turfgrass.
- ii. For sites having disturbed area over 5 acres, the rates shown on this table shall be deleted and the rates recommended by the soil testing agency shall be written.
- iii. For areas receiving low maintenance, apply ureaform fertilizer (46-0-0) at 3 1/2 lbs./1000 sq. ft. (150 lbs/acre), in addition to the above soil amendments shown in the table below, to be performed at the time of seeding.

PERMANENT SEEDING SUMMARY

Seed Mixture (For Hardiness Zone 6-b)				Fertilizer Rate (10-20-20)			Lime Rate
NO.	SPECIES	Application Rate (lb/acre)	Seeding Dates	N	P205	K20	
2	KENTUCKY BLUEGRASS 50%	150	3/1 - 5/15 8/15 - 11/15	90 lb/acre (2.0 lb/1000 sf)	175 lb/acre (4 lb/1000 sf)	175 lb/acre (4 lb/1000 sf)	2 tons/acre (100 lb/1000 sf)
	CREeping RED FESCUE 40%						
	RED TOP 10%						

Section IV - Sod: To provide quick cover on disturbed areas (2:1 grade or flatter).

A. General Specifications

- i. Class of turfgrass sod shall be Maryland or Virginia State Certified or Approved. Sod labels shall be made available to the job foreman and inspector.
- ii. Sod shall be machine cut of a uniform soil thickness of 3/4", plus or minus 1/8", at the time of cutting. Measurement for thickness shall exclude top growth and thatch. Individual pieces of sod shall be cut to the suppliers width and length. Maximum allowable deviation from standard widths and lengths shall be 5 percent. Broken pads and torn or uneven ends will not be acceptable.
- iii. Standard size sections of sod shall be strong enough to support their own weight and retain their size and shape when suspended vertically with a firm grasp on the upper 10 percent of the section.
- iv. Sod shall not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.
- v. Sod shall be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted within this period shall be approved by an agronomist or soil scientist prior to its installation.

B. Sod Installation

- i. During periods of excessively high temperature or in areas having dry subsoil, the sod shall be lightly irrigated immediately prior to laying the sod.
- ii. The first row of sod shall be laid in a straight line with subsequent rows placed parallel to and tightly wedged against each other. Lateral joints shall be staggered to promote more uniform growth and strength. Ensure that sod is not stretched or overlapped and that all joints are bedded tight in order to prevent voids which would cause air drying of the roots.
- iii. Wherever possible, sod shall be laid with the long edges parallel to the contour and with staggering joints. Sod shall be rolled and tamped, pegged or otherwise secured to prevent slippage on slopes and to ensure solid contact between sod roots and the underlying soil surface.
- iv. Sod shall be watered immediately following rolling or tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. The operations of laying, tamping or irrigating for any piece of sod shall be completed within eight hours.

C. Sod Maintenance

- i. In the absence of adequate rainfall, watering shall be performed daily or as often as necessary during the first week and in sufficient quantities to maintain moist soil to a depth of 4". Watering should be done during the heat of the day to prevent wilting.
- ii. After the first week, sod watering is required as necessary to maintain adequate moisture content.
- iii. The first mowing of sod should not be attempted until the sod is firmly rooted. No more than 1/3 of the grass leaf shall be removed by the initial cutting or subsequent cuttings. Grass height shall be maintained between 2" and 3" unless otherwise specified.

SECTION IV - TURFGRASS ESTABLISHMENT

Areas where turfgrass may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance. Areas to receive seed shall be filled by disking or other approved methods to a depth of 2 to 4 inches, leveled and raked to prepare a proper seedbed. Stones and debris over 1/4 inches in diameter shall be removed. The resulting seedbed shall be in such condition that future mowing of grasses will pose no difficulty.

NOTE: Choose certified material. Certified material is the best guarantee of cultivar purity. The certification program of the Maryland Department of Agriculture, Turf and Seed Section, provides a reliable means of consumer protection and assures a pure genetic line.

A. Turfgrass Mixtures

- i. Kentucky Bluegrass - Full sun mixture - For use in areas that receive intensive management. Irrigation required in the areas of central Maryland and eastern shore. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds/1000 square feet. A minimum of three bluegrass cultivars should be chosen ranging from a minimum of 10% to a maximum of 35% of the mixture by weight.
- ii. Kentucky Bluegrass/Perennial Rye - Full sun mixture - For use in full sun areas where rye establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass Cultivars/Certified Kentucky Bluegrass Seeding rate: 2 pounds mixture/1000 square feet. A minimum of 3 Kentucky Bluegrass cultivars must be chosen with each cultivar ranging from 10% to 35% of the mixture by weight.
- iii. Tall Fescue/Kentucky Bluegrass - Full sun mixture - For use in drought prone areas and/or for areas receiving low to medium maintenance in full sun to medium shade. Recommended mixture includes certified Tall Fescue Cultivars 95 - 100%, certified Kentucky Bluegrass Cultivars 0 - 5%. Seeding rate: 5 to 8 lb/1000 sf. One or more cultivars may be bled.
- iv. Kentucky Bluegrass/Fine Fescue - Shade Mixture - For use in areas with shade 1: Bluegrass lawns. For establishment in high quality, intensively managed turf areas. Mixture includes certified Kentucky Bluegrass Cultivars 30-40% and certified Fine Fescue and 60-70%. Seeding rate: 1 1/2 lbs/1000 square feet. A minimum of 3 Kentucky bluegrass cultivars must be chosen, with each cultivar ranging from a minimum of 10% to a maximum of 35% of the mixture by weight.

NOTE: Turfgrass varieties should be selected from those listed in the most current University of Maryland Publication, Agronomy Memo #17, "Turfgrass Cultivar Recommendations for Maryland".

B. Ideal times of seeding

- Western MD: March 15 - June 1, August 1 - October 1 (Hardiness Zones - 5b, 6a)
- Central MD: March 1 - May 15, August 1 - October 15 (Hardiness Zone - 6b)
- Southern MD, Eastern Shore: March 1 - May 15, August 15 - October 15 (Hardiness Zones - 7a, 7b)

C. Irrigation

If soil moisture is deficient, supply new seedlings with adequate water for plant growth (1/2" - 1" every 3 to 4 days depending on soil texture) until they are firmly established. This is especially true when seedlings are made late in the planting season, in abnormally dry or hot seasons, or on adverse sites.

D. Repair and Maintenance

- Inspect all seeded areas for failures and make necessary repairs, replacements, and reseedings within the planting season.
- i. Once the vegetation is established, the site shall have 95% groundcover to be considered adequately stabilized.
- ii. If the stand provides less than 40% ground coverage, overseeding and fertilizing using half of the rates originally applied may be necessary.
- iii. If the stand provides between 40% and 94% ground coverage, overseeding and fertilizing using half of the rates originally applied may be necessary.
- iv. Maintenance fertilizer rates for permanent seedings are shown in Table 24. For lawns and other medium to high maintenance turfgrass areas, refer to the University of Maryland publication "Lawn Care in Maryland" Bulletin No. 171.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND.	DEPARTMENT OF PLANNING AND ZONING HOWARD COUNTY, MARYLAND.	PREPARED BY: WR&A Whitman, Requardt and Associates, LLP. 2315 ST. PAUL ST. BALTIMORE, MD. 21218 410-235-3450	DES: SEA/EJM DRN: EJM/GG CHK: EJM/WRD DATE: 10-22-99	BY: _____ NO. _____	REVISION: _____ DATE: _____	600' SCALE MAP NO. _____ BLOCK NO. 1, 2 & 7	SC-2	SCALE AS SHOWN	SHEET 10 OF 11
DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND.							DEPARTMENT OF PLANNING AND ZONING HOWARD COUNTY, MARYLAND.		
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SEDIMENT CONTROL NOTES

HOLLIFIELD ESTATES
1" FORCE MAIN, 8" WATER MAIN AND
PRESSURE REDUCING VALVE
SECOND ELECTION DISTRICT
HOWARD COUNTY, MARYLAND