

WASTEWATER TREATMENT PUMPING AND DISPOSAL FACILITIES FOR RIVERWOOD PHASE II

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GENERAL NOTES:

- CONTRACTOR SHALL COORDINATE HIS WORK WITH ANY OTHER WORK BEING DONE BY OTHER CONTRACTOR(S) CONSTRUCTING OTHER PORTIONS OF THE DEVELOPMENT.
- SOILS WORK FOR THE SUBSURFACE DISPOSAL AREA WAS PERFORMED BY EARTH DATA INC. CONTRACTOR SHALL OBTAIN AND REVIEW THE REPORT "RESULTS OF THE SOIL INVESTIGATION - RIVERWOOD PHASE II PROPOSED WASTEWATER TREATMENT AND DISPOSAL SYSTEM, HOWARD COUNTY, MARYLAND" DATED DECEMBER 2005 IN CONFIRMING COMPLIANCE WITH REQUIRED CONSTRUCTION METHODS AND REGULATIONS.
- SEDIMENT AND EROSION CONTROL (S&EC) IS THE RESPONSIBILITY OF THE DEVELOPMENT CONTRACTOR(S) AND NOT PART OF THIS WORK. WASTEWATER CONTRACTOR TO COORDINATE SCHEDULING OF S&EC WITH THE DEVELOPMENT CONTRACTOR(S).
- LANDSCAPING, TOPSOILING, SEEDING, STORMWATER, AND OTHER UTILITIES OUTSIDE OF THE AREA ARE THE RESPONSIBILITY OF THE DEVELOPMENT CONTRACTOR(S) AND ARE NOT PART OF THIS WORK.
- ALL DETAILS IN THE NEW VOLUME IV TAKE PRECEDENT WHERE APPLICABLE OVER THOSE IN THE CURRENT DESIGN.

TRENCH DISPOSAL SYSTEM		
DESIGN FLOW	10800	GPD (@ 600 GPD/4 BEDROOM HOUSING UNIT)
APPLICATION RATE	1.2	GPD/SF
TRENCH WIDTH	3'-0"	
USABLE SIDEWALL	0'-0"	
TRENCH REQUIRED	3000	LF
TRENCH PROVIDED	3336	LF
150% REQUIRED	4500	LF
150% PROVIDED	4992	LF
200% REQUIRED	6000	LF
200% PROVIDED	6656	LF
CELLS PROVIDED (150%)	9	
TRENCHES/CELL	6	
TRENCH LENGTH	92	FT (EXCEPT CELL A6, B3, B4)
TOTAL TRENCH LENGTH (150%)	4536	FT
LATERAL SPACING	12	FT (ON CENTER)
DISCHARGE HOLE DIA.	1/4	INCH
DOSING CELLS	9	
CELLS IN SERVICE	6	
CELLS RESTING	3	
INACTIVE, PIPED CELLS	3	
DOSING TANK VOLUME	5400	GAL MINIMUM
DOSING PIPE VOLUME (CELL B6)	263	GAL
EFFLUENT (DOSING) PUMPS		
FLOW	90	GPM
HEAD	55	FT
HP	5	
PUMP OPERATION TIME PER CELL	20	MINUTES

FLOW ESTIMATES		
SINGLE FAMILY UNITS	-18	UNITS
ESTIMATED POPULATION	72	BEDROOMS
AVERAGE DAILY FLOW PER BEDROOM	75	GPD
AVERAGE DAILY FLOW (TOTAL)	5400	GPD
PEAK DAILY FLOW (TOTAL)	10800	GPD
INFLUENT CHARACTERISTICS		
BOD ₅ (20°C)	300	mg/L
TOTAL SUSPENDED SOLIDS	300	mg/L
NH ₃ -N	60	mg/L
ALKALINITY (AS CaCO ₃)	100	mg/L
pH	6.0-9.0	S.U.
WATER TEMPERATURE MIN.	50 <input type="checkbox"/>	F
WATER TEMPERATURE MAX.	82	F
AIR TEMPERATURE MIN.	5	F
AIR TEMPERATURE MAX.	100	F
SITE ELEVATION (DISPOSAL FIELD)	334 TO 362	FT
INFLUENT PUMPS		
FLOW	30	GPM
HEAD	20	FT
HP	2	
EFFLUENT CHARACTERISTICS		
BOD ₅ (20°C)	30	mg/L
TOTAL SUSPENDED SOLIDS	30	mg/L
NH ₃ -N	1.0	mg/L
TOTAL NITROGEN (N)	8.0	mg/L

CONTINUOUS INFLUENT SEQUENCING BATCH REACTOR (CSBR)		
RATED CAPACITY* <input type="checkbox"/>	5400 <input type="checkbox"/>	GPD/TRAIN <input type="checkbox"/>
PEAK CAPACITY** <input type="checkbox"/>	10,800 <input type="checkbox"/>	GPD/TRAIN <input type="checkbox"/>
SLUDGE STORAGE 4'-0" L x 12'-0" W x 11'-0" H x 9'-6" SWD <input type="checkbox"/>		
NO. TANKS	1	
VOLUME	11,400 <input type="checkbox"/>	GALS.
BLOWER	1	
CAPACITY	22 <input type="checkbox"/>	CFM @ 5.0 psi <input type="checkbox"/>
SBR REACTOR 20'-6" L x 12'-0" W x 11'-0" H x 9'-6" SWD <input type="checkbox"/>		
NO. TANKS	2	TRAINS
VOLUME	11,700 <input type="checkbox"/>	GALS. EACH TRAIN
TOTAL VOL.	11,740 <input type="checkbox"/>	GALS.
MIXERS/TANK	1	
TOTAL MIXERS	2	
BLOWER(S)	2	1 SERVICE, 1 SPARE
CAPACITY	11,54.0 <input type="checkbox"/>	CFM @ 3.5 psi <input type="checkbox"/>
DECANT RATE	11,46.0 <input type="checkbox"/>	GPM
DOSING TANK (POST EQ) 11'-0" L x 12'-0" W x 11'-0" H x 9'-6" SWD <input type="checkbox"/>		
NO. TANKS	1	
VOLUME	5400	GALS. MIN.

* AVERAGE DAILY FLOW
 ** PEAK DRY WEATHER FLOW - 4 HRS DURATION

APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT
 [Signature] 9/14/07
 COUNTY HEALTH OFFICER

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
 License No. 18992, Expiration Date: 01/18/2009.

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 [Signature] 9-17-07
 CHIEF, BUREAU OF UTILITIES

DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY, MARYLAND
 [Signature] 9/16
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

URS
 URS CORP.
 CONSULTING ENGINEERING AND PLANNING
 1099 Winterson Road
 Linthicum, MD 21090
 Phone: 410-855-6160 Fax: 410-855-6163

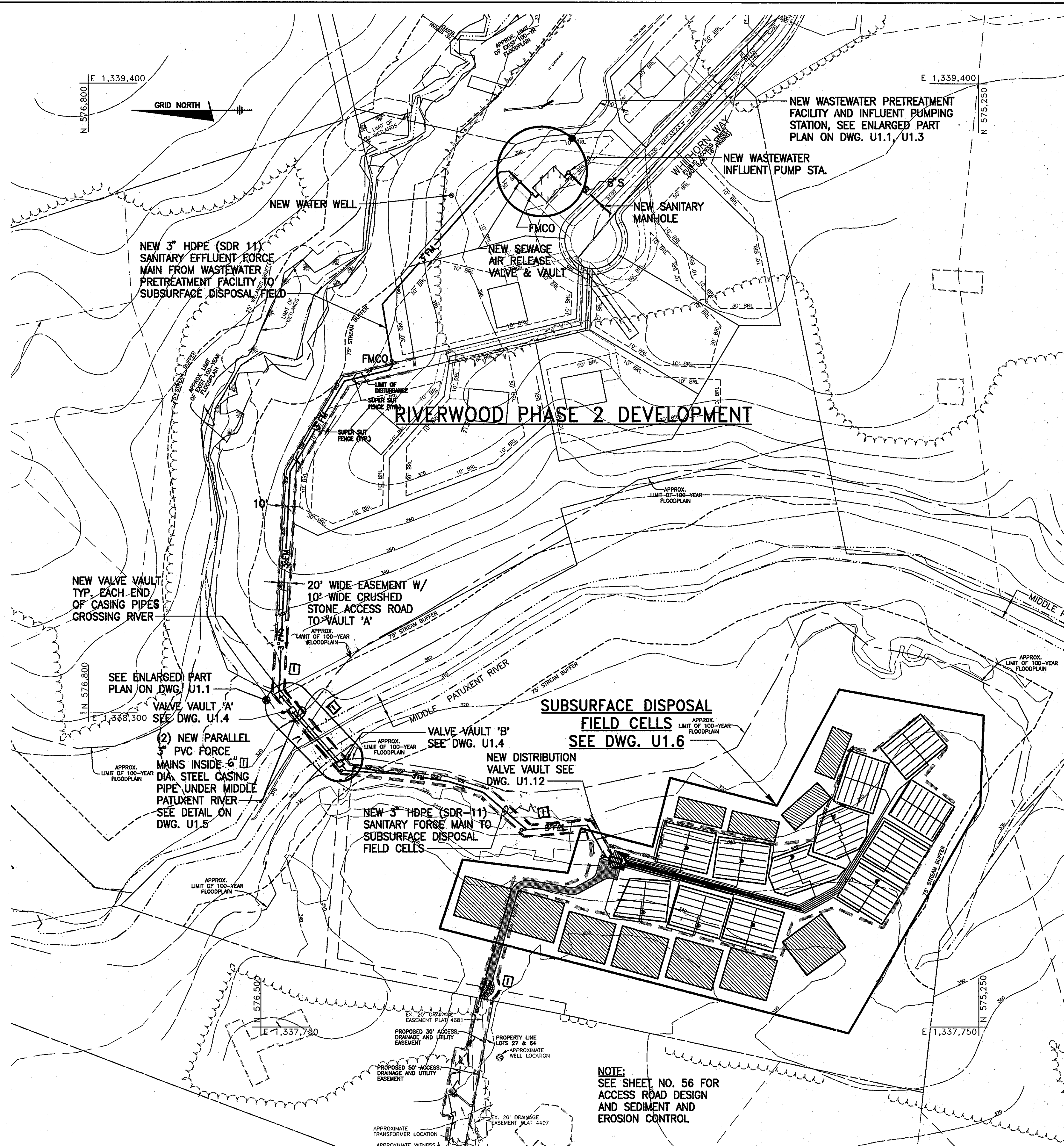


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CHK: NG			
DATE: 5/2007	REV <input type="checkbox"/>	REVISION #1	DATE: 4-28-11
BY: NO.			REVISIONS

SHARED SEPTIC SYSTEM
 TITLE SHEET

RIVERWOOD - PHASE 2
 A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'T' THRU 'Z', 'AA' AND 'BS' AND NON-BUILDABLE BULK PARCEL 'U' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S', 'AN' 'U' TO ADD OR MODIFY FOREST PRESERVATION AREAS
 THIRD ELECTION DISTRICT
 CONTRACT NO. 50-4287-D

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 SCALE:
 AS SHOWN
 SHEET NO.
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GENERAL NOTES

- COORDINATE ALL WORK AND PROJECT SCHEDULES WITH THE ENGINEER.
- VERIFY THE LOCATION OF EXISTING UTILITIES BY CONTACTING "MISS UTILITY" (1-800-257-7777) AT LEAST 5 DAYS PRIOR TO START OF CONSTRUCTION.
- THOROUGHLY INSPECT THE SITE PRIOR TO CONSTRUCTION TO VERIFY EXISTING CONDITIONS AND PROVIDE ALL NECESSARY STAKE OUT OF LINE AND GRADE FOR PIPE INSTALLATION. THE LOCATION AND ELEVATIONS OF EXISTING UTILITIES SHOWN ARE APPROXIMATE.
- SHOULD THE CONTRACTOR ENCOUNTER OBSTRUCTIONS AND/OR UTILITIES NOT SHOWN ON THE PLANS, NOTIFY THE RESIDENT ENGINEER FOR DISPOSITION PRIOR TO PROCEEDING WITH THE WORK.
- INSTALL ALL EXCAVATION, TRENCHING, SHEETING, SHORING, BRACING, AND BACKFILL IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS, INCLUDING STATE AND FEDERAL OSHA REGULATIONS.
- CONSTRUCT SUMPS AND PROVIDE PUMPS AS NECESSARY TO KEEP TRENCH AND HOLE EXCAVATIONS DRY DURING CONSTRUCTION OPERATIONS.
- PROVIDE ADEQUATE BARRICADES AROUND TRENCH AND HOLE EXCAVATIONS. MAINTAIN BARRICADES UNTIL BACKFILL HAS BEEN PLACED TO APPROXIMATE FINISHED GRADE.
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH MARYLAND STATE OCCUPATIONAL SAFETY LAWS. SEE STATE HIGHWAY ADMINISTRATION SPECIFICATIONS.
- COMPLY WITH LOCAL AND APPLICABLE CODES. IN THE EVENT OF A CONFLICT, THE MOST STRINGENT SHALL GOVERN. SHOULD A CONFLICT ARISE BETWEEN CONSTRUCTION DOCUMENT CODES, WORK SHALL COMPLY WITH THE REQUIREMENTS OF THE ENFORCING CODE AUTHORITIES.
- SANITARY FORCE MAIN TO HAVE A MINIMUM OF 3'-6" COVER EXCEPT WHERE OTHERWISE INDICATED. INSTALL TRACER WIRE ALONG ENTIRE 3" FORCE MAIN RUN WITH TEST STATIONS SET AT 200' MAXIMUM SPACING.
- CONSTRUCTION OF UTILITIES SHALL NOT TAKE PLACE UNTIL ALL APPROVED EROSION AND SEDIMENT CONTROL MEASURES ARE IN PLACE. SEDIMENT CONTROL MEASURES SHALL BE IN ACCORDANCE WITH THE APPROVED SEDIMENT CONTROL PLANS FOR THIS PROJECT.

LEGEND

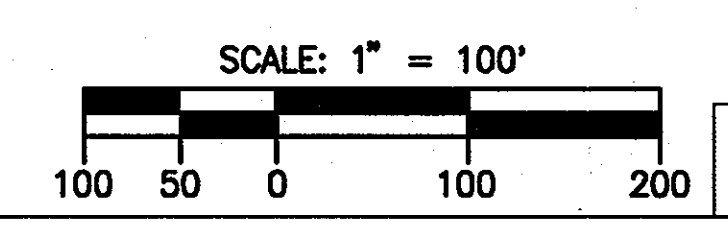
- NEW WASTEWATER PRETREATMENT FACILITY
- NEW INFLUENT PUMPING STATION
- NEW SANITARY EFFLUENT FORCE MAIN
- NEW SANITARY FORCE MAIN FLUSHING CONNECTION
- NEW CASING PIPE CROSSING UNDER RIVER
- DISPOSAL FIELD CELL THIS CONTRACT
- FUTURE DISPOSAL FIELD CELL
- EXISTING RIVER
- 100 YEAR FLOOD PLAIN
- 75' STREAM BUFFER
- PROPERTY LINE
- SUPER SILT FENCE
- LIMIT OF DISTURBANCE

NOTE:
SEE SHEET NO. 56 FOR ACCESS ROAD DESIGN AND SEDIMENT AND EROSION CONTROL

PLAN
SCALE: 1"=100'

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 18992, Expiration Date: 01/18/2009.

APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT
Peter Beilman 9/14/07
COUNTY HEALTH OFFICER

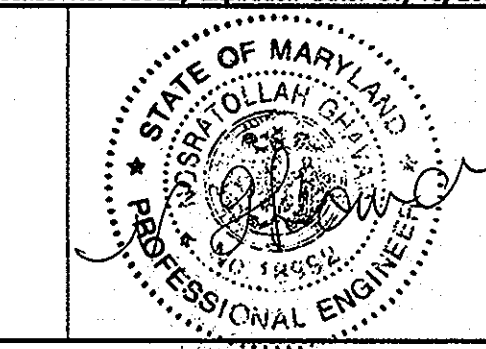


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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
Michael D. Swannell 9-17-07
CHIEF, BUREAU OF UTILITIES

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND
[Signature] 9/16/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION

URS
URS CORP.
CONSULTING ENGINEERING AND PLANNING
1099 Winterson Road
Linthicum, MD 21090
Phone: 410-855-6160 Fax: 410-855-6163

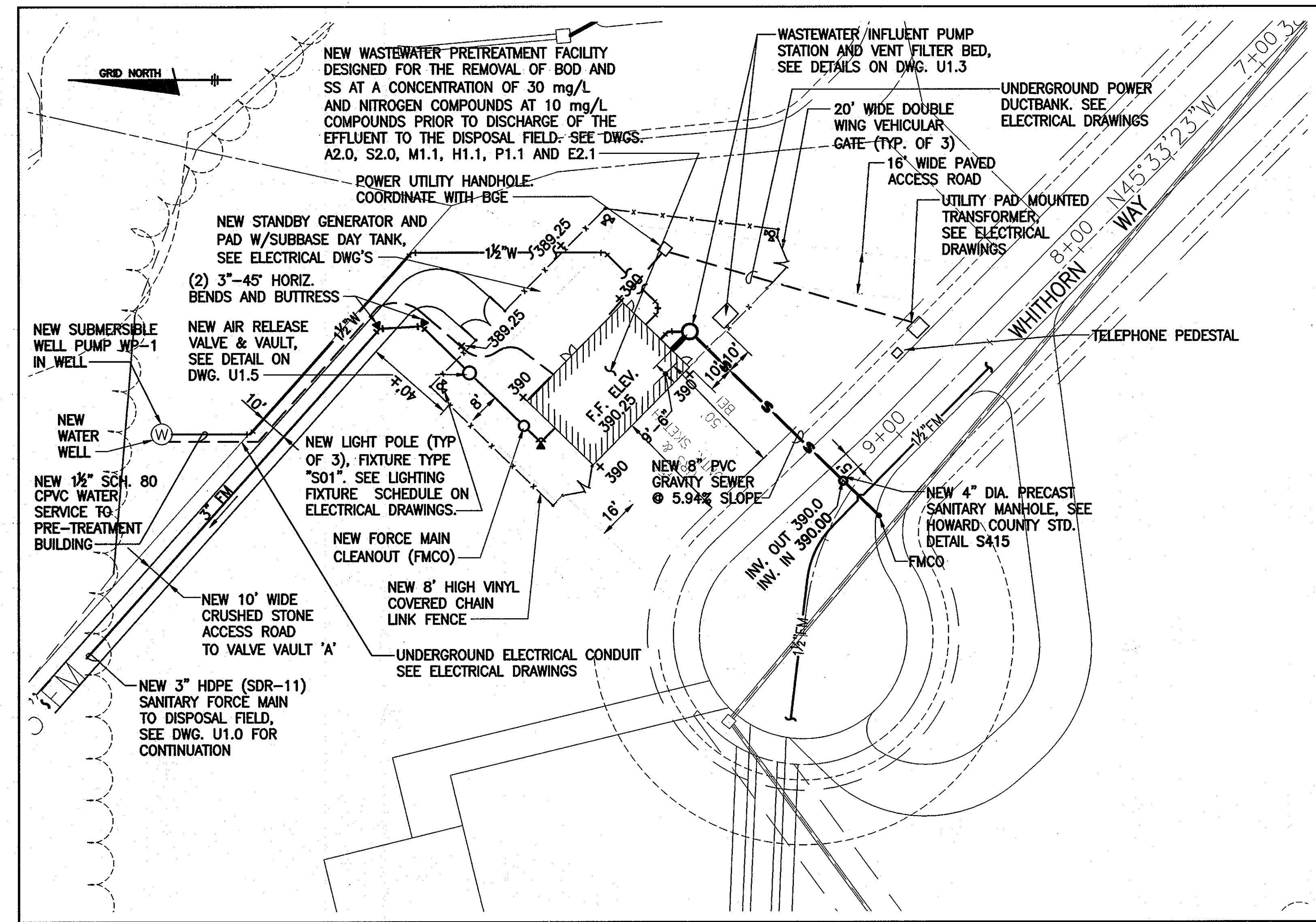


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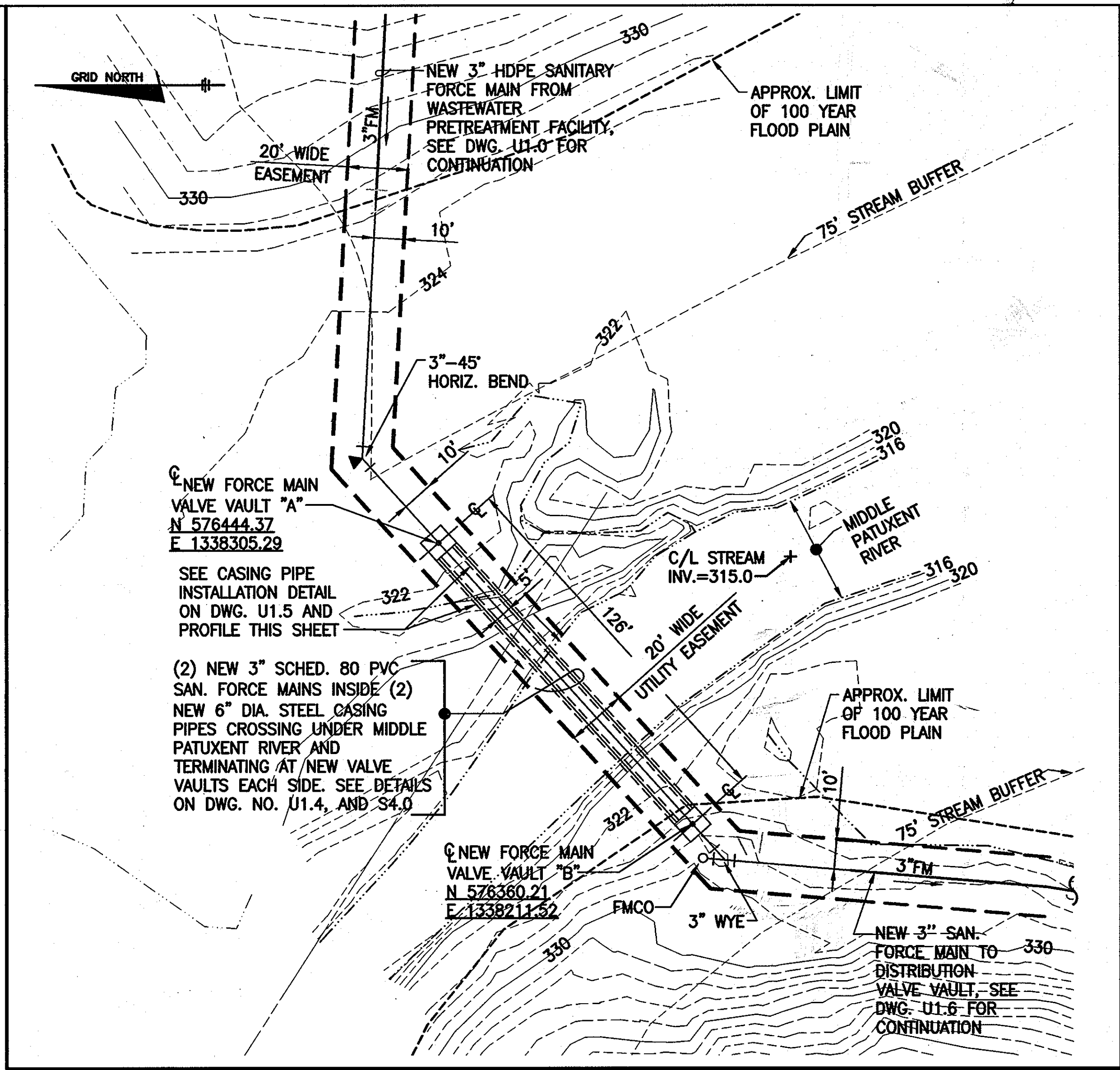
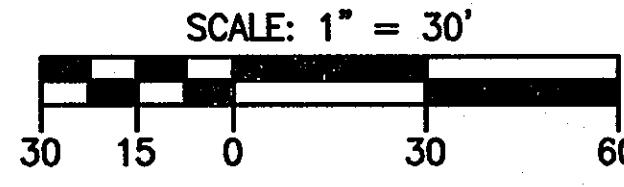
SHARED SEPTIC SYSTEM
OVERALL WASTEWATER PLAN
AND GENERAL NOTES

RIVERWOOD - PHASE 2
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THIRD ELECTION DISTRICT
CONTRACT NO. 50-4287-D

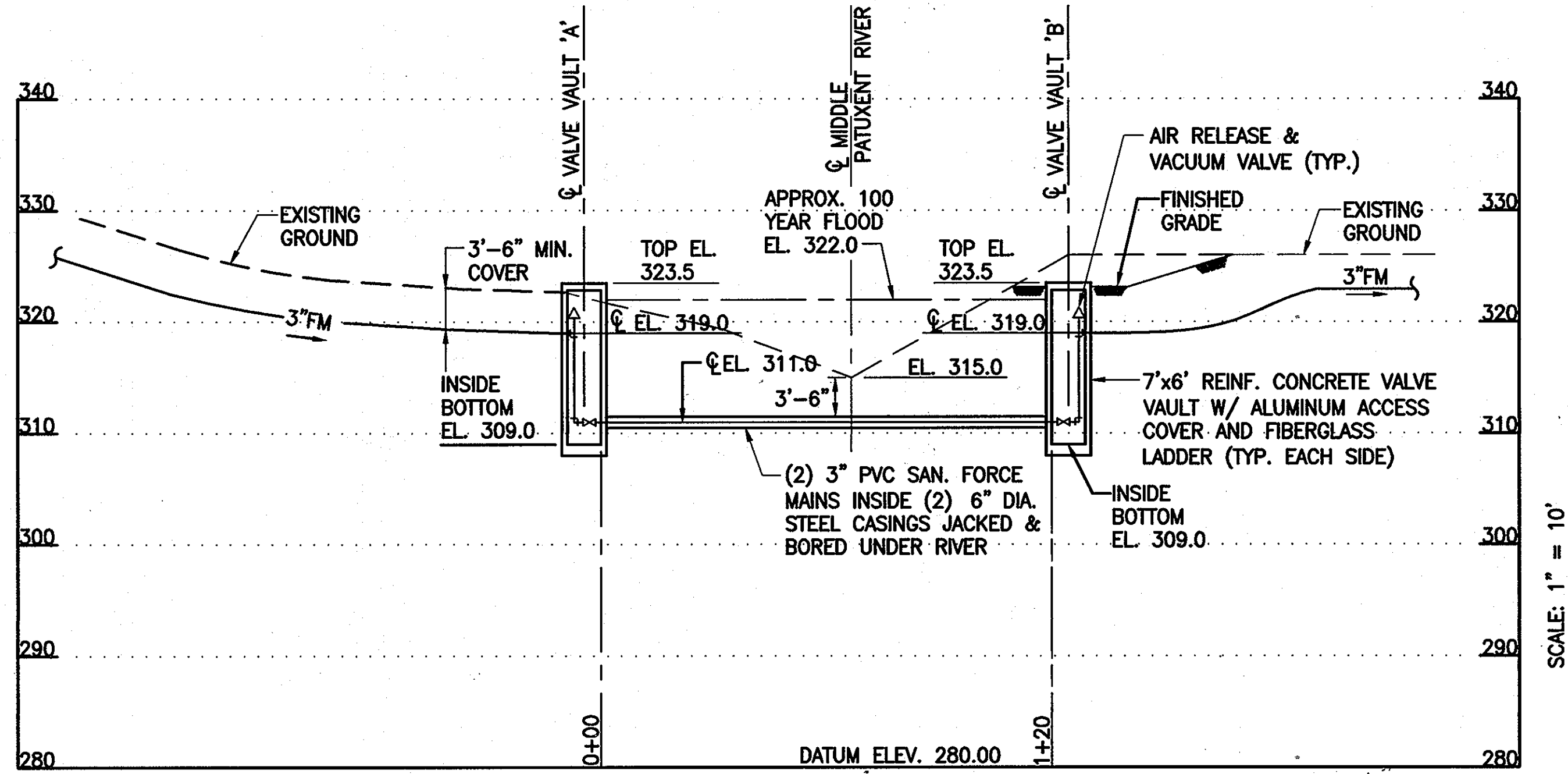
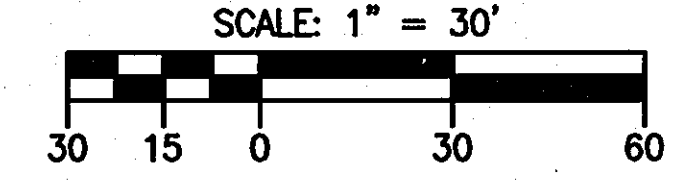
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2 of 56



WASTEWATER PRETREATMENT FACILITY PART PLAN



RIVER CROSSING PART PLAN



PROFILE - SANITARY SEWER EFFLUENT FORCE MAINS CROSSING MIDDLE PATUXENT RIVER



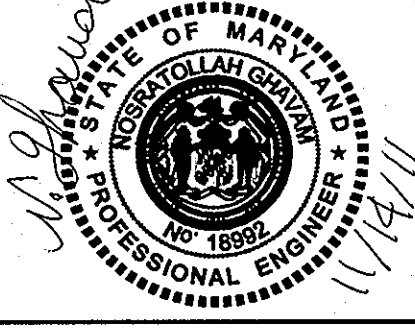
APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT
 COUNTY HEALTH OFFICER: _____ DATE: _____

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
 License No. 18892, Expiration Date: 01/18/2013.

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Chief, Bureau of Utilities
 3/15/12

DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY, MARYLAND
 Chief, Development Engineering Division
 3/15/12

URS
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 CONSULTING ENGINEERING AND PLANNING
 1099 Whitson Road
 Linthicum, MD 21090
 Phone: 410-855-6160 Fax: 410-855-6163

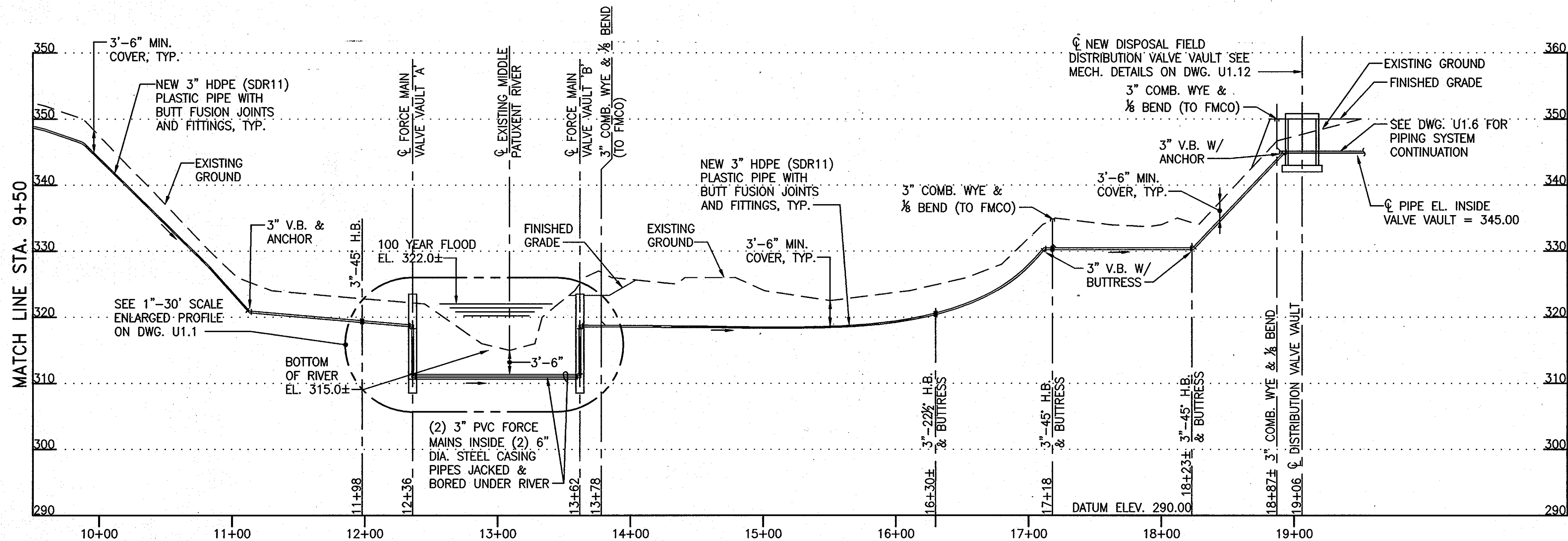
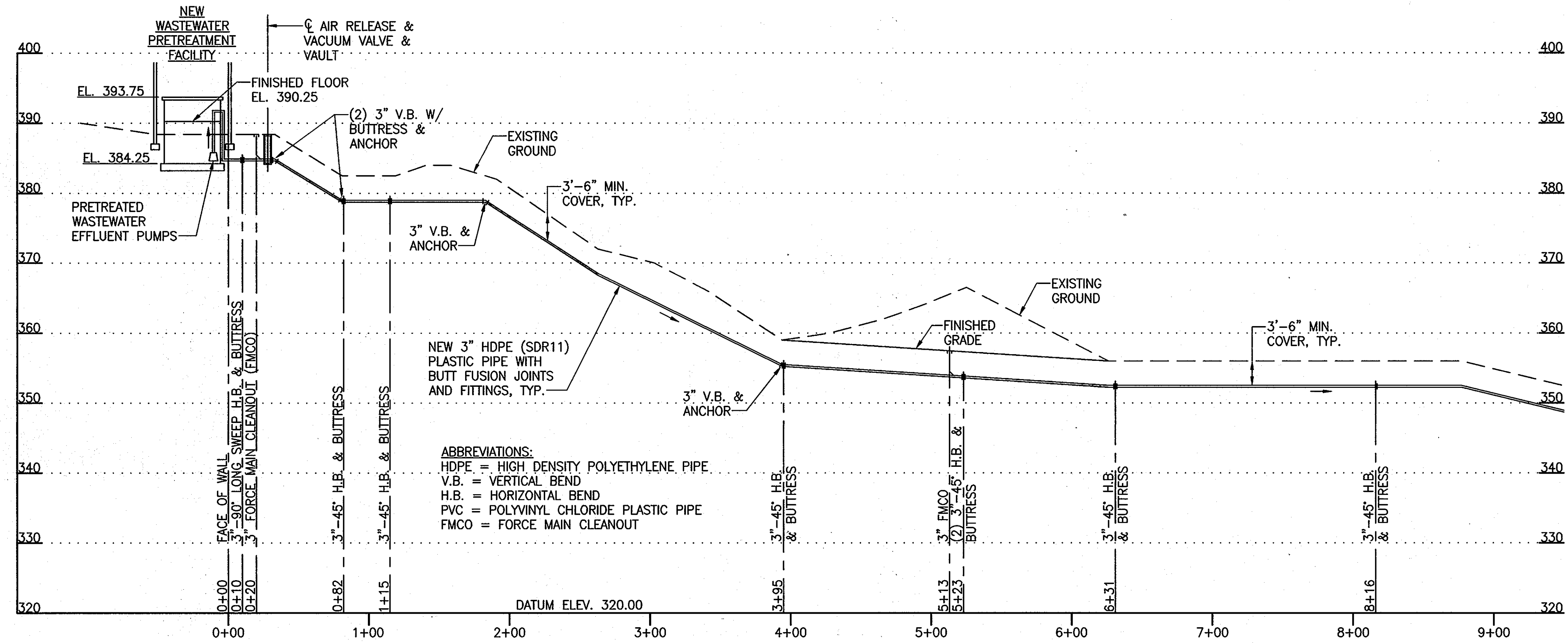


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CHK: NG	RER	REPLACEMENT SHEET	11-14-11
DATE: 11/2010	RER	REVISION #1	4-28-11
BY: NO.		REVISIONS	DATE

600 SCALE MAP NO. 23 BLOCKS 21 & 22 AND MAP NO. 29 BLOCKS 3 & 4
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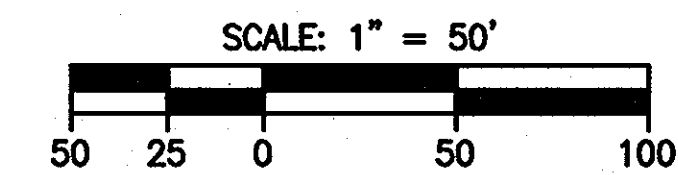
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 WASTEWATER TREATMENT FACILITY &
 RIVER CROSSING PART PLANS & PROFILE
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 THIRD ELECTION DISTRICT
 CONTRACT NO. 50-4287-D

U1.1
 SCALE: AS SHOWN
 SHEET NO. 3 of 56



**3-INCH SANITARY FORCE MAIN PROFILE
FROM PRETREATMENT FACILITY TO DISPOSAL FIELD VALVE VAULT**

SCALE: HORIZ. 1"=50'
VERT. 1"=10'



APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT
COUNTY HEALTH OFFICER _____ DATE: _____

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HOWARD COUNTY, MARYLAND

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND



URS CORP.
CONSULTING ENGINEERING AND PLANNING
1099 Whittemore Road
Linthicum, MD 21090
Phone: 410-855-6160 Fax: 410-855-6163



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DATE: 11/2010

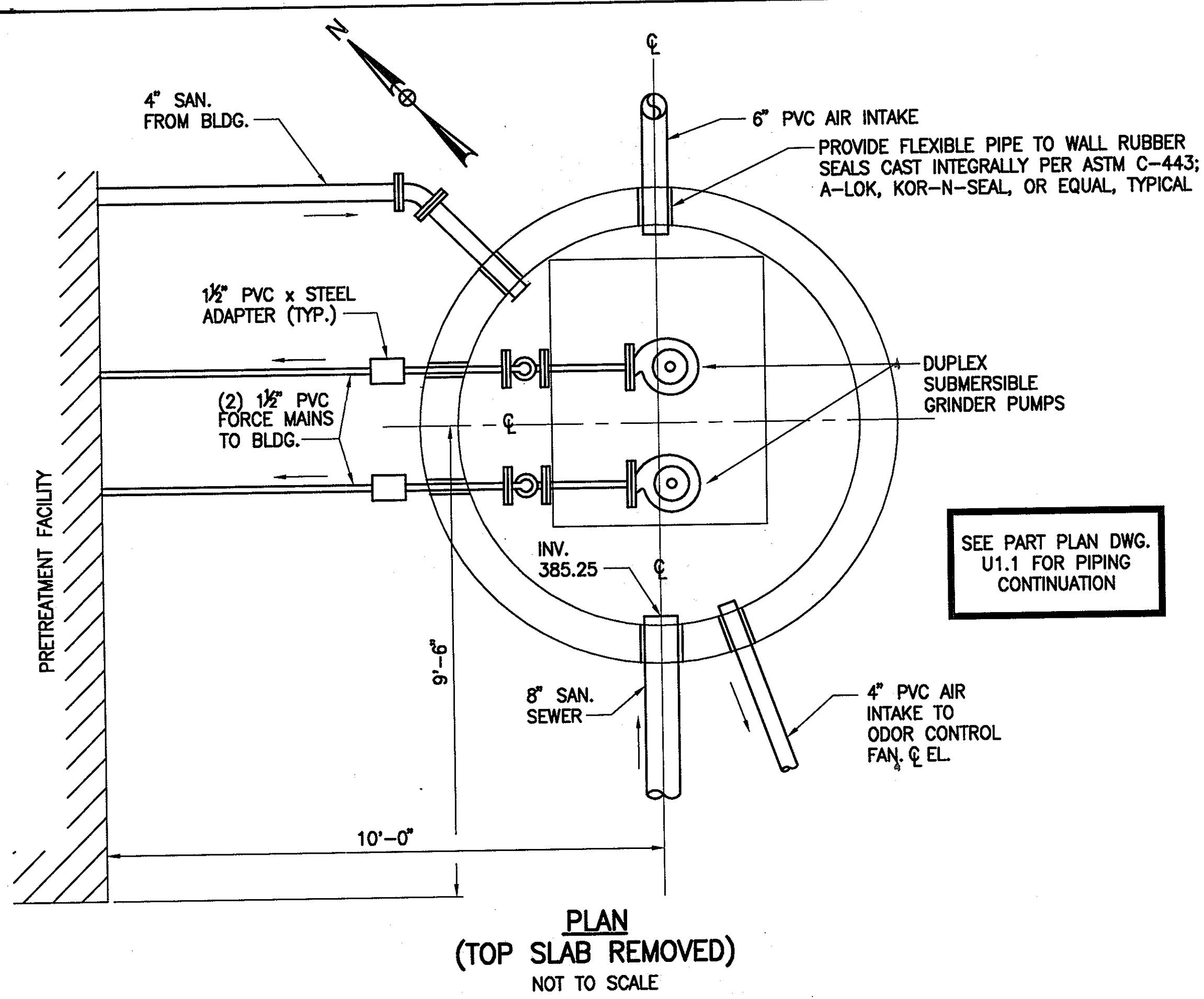
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DATE	DATE

SHARED SEPTIC SYSTEM
3-INCH SANITARY
FORCE MAIN PROFILE

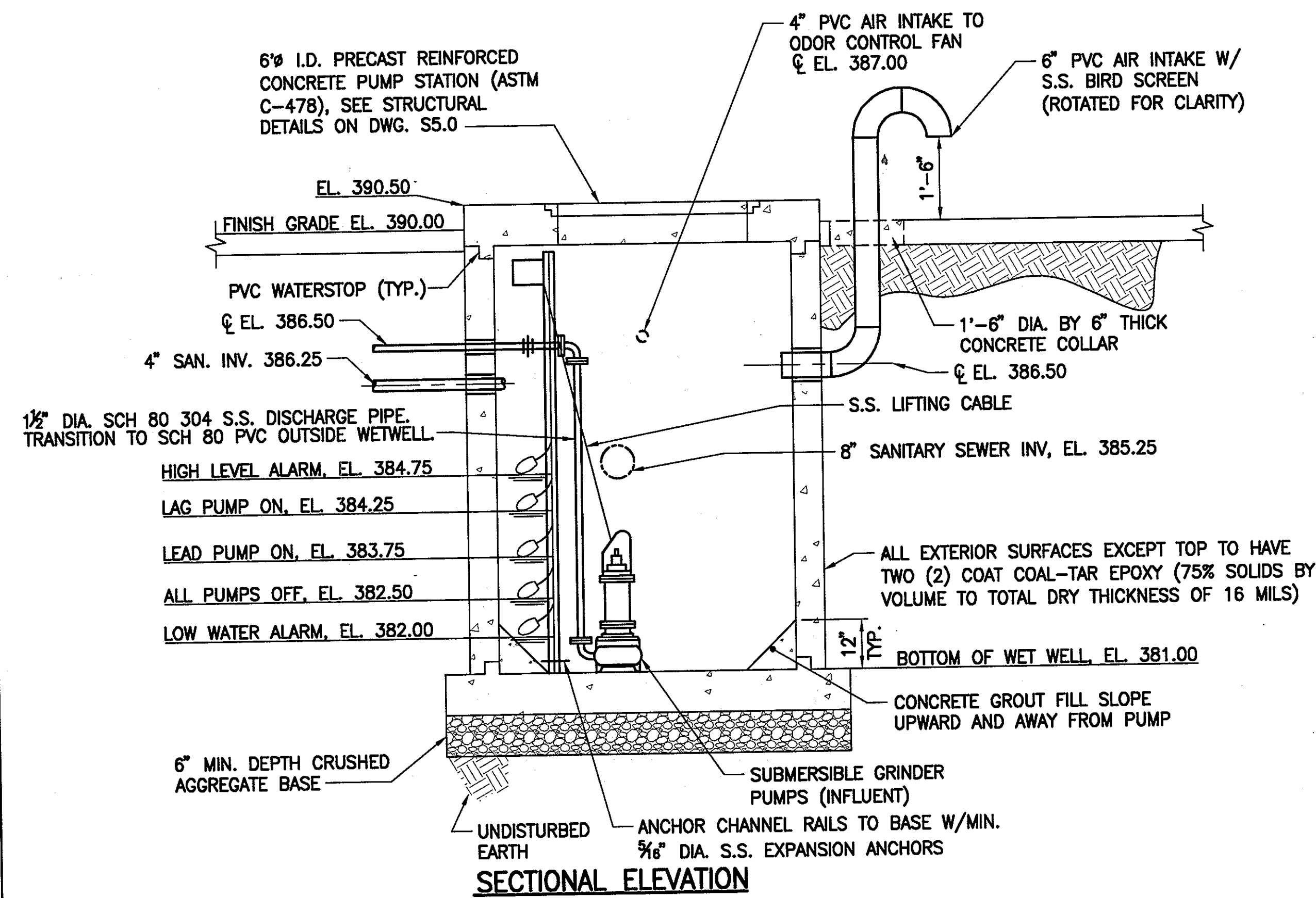
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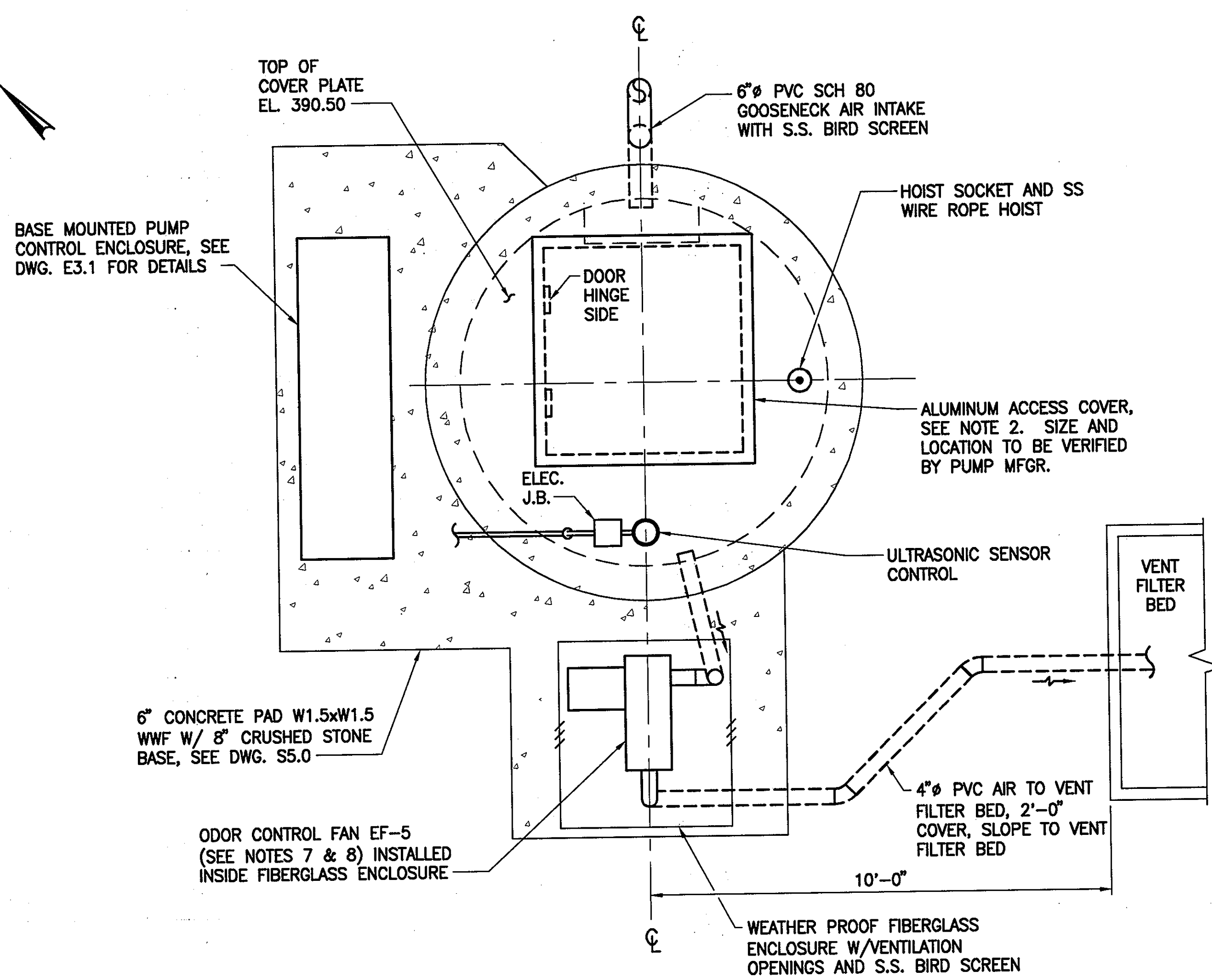
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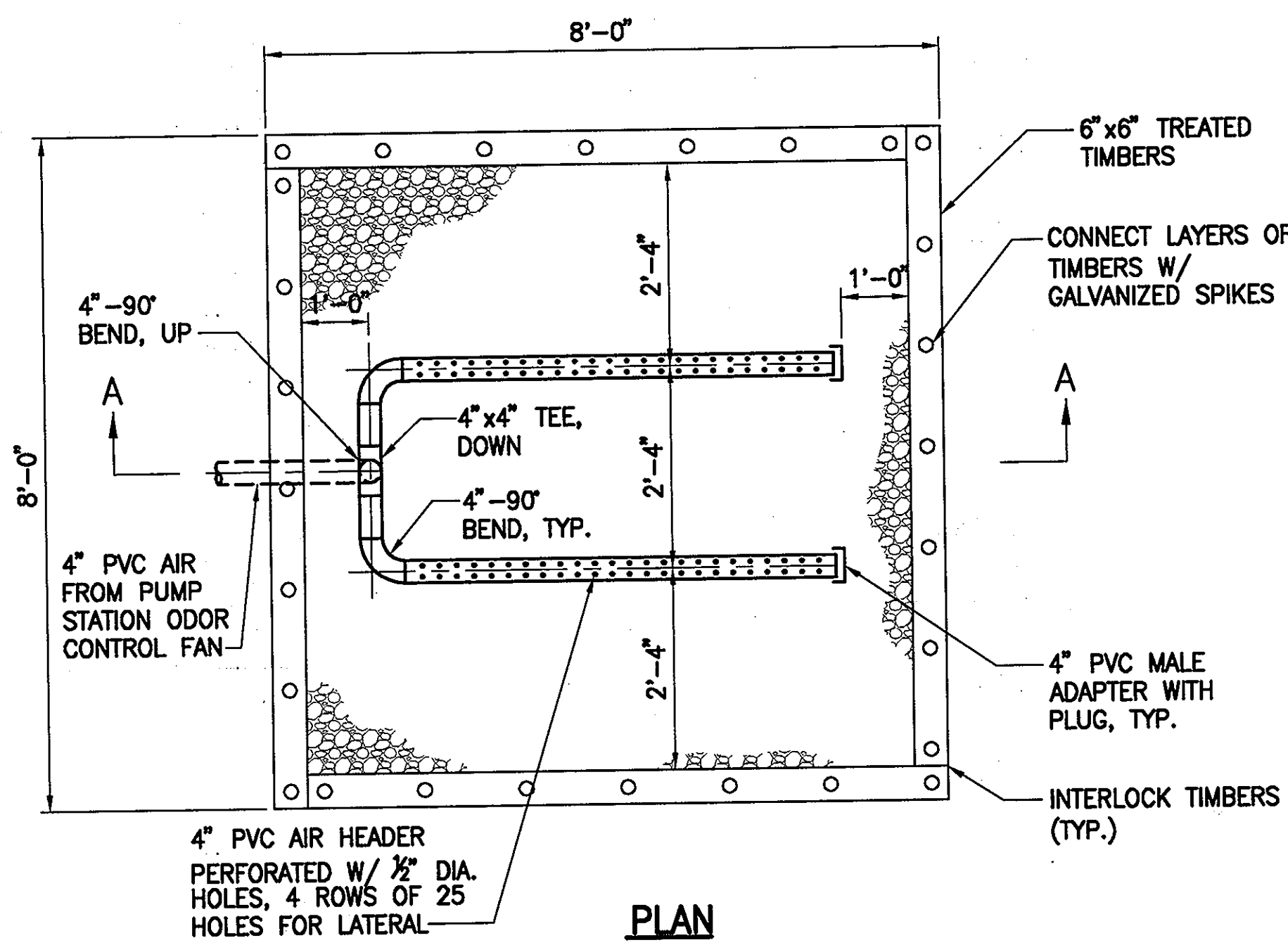
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NOT TO SCALE



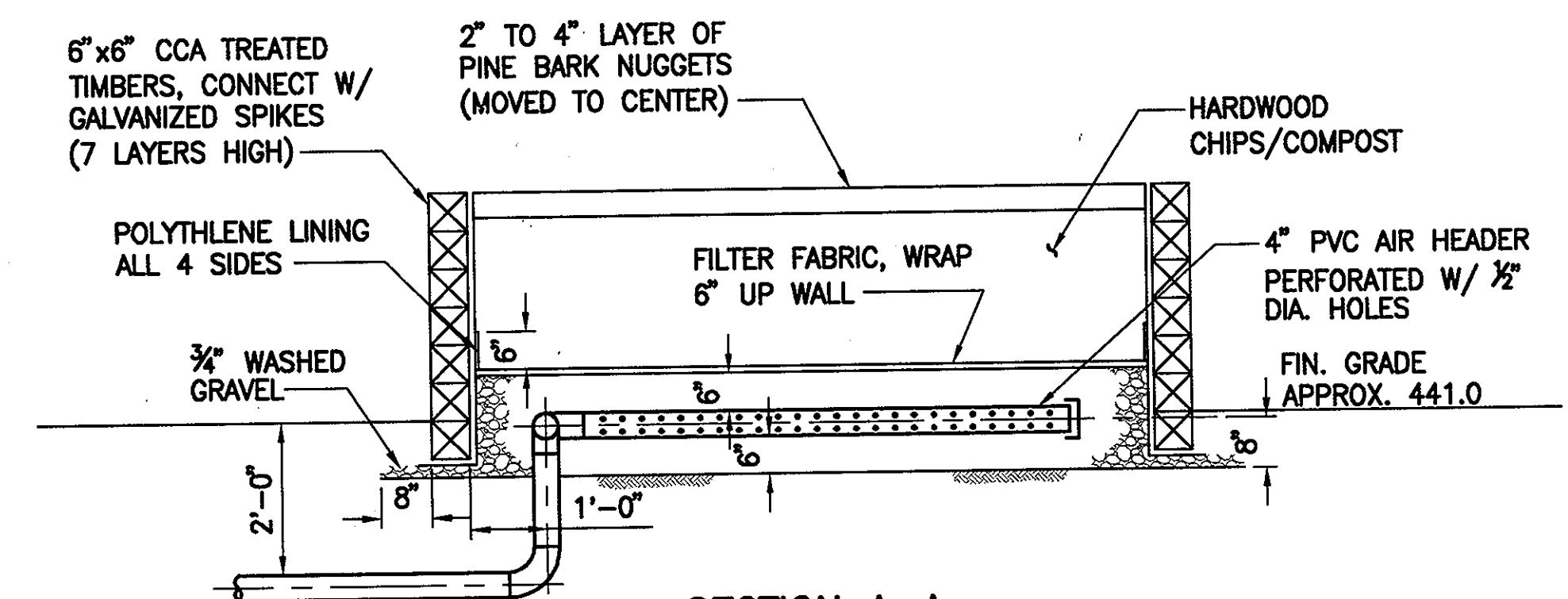
INFLUENT PUMPING STATION DETAIL
NOT TO SCALE



WET WELL TOP PLAN
NOT TO SCALE



PLAN
NOT TO SCALE



VENT FILTER BED DETAIL
NOT TO SCALE

INFLUENT WASTEWATER PUMP STATION NOTES:

- PUMP STATION WET WELL SHALL BE A PRECAST MANHOLE OF THE SAME QUALITY AND MANUFACTURE AS THE MANHOLES SPECIFIED FOR THE GRAVITY SEWER SYSTEM, BUT OF THE DIMENSIONS SHOWN IN THESE DRAWINGS. CONTRACTOR SHALL COORDINATE OPENING SIZES AND LOCATIONS WITH MECHANICAL EQUIPMENT AND ACCESS HATCH PROVIDED.
- ACCESS HATCH FOR PUMP STATION SHALL BILCO MODEL "J", SINGLE LEAF OR EQUAL, 1/2" ALUMINUM DIAMOND PATTERN PLATE TO WITHSTAND A LIVE LOAD OF 300 POUNDS PER SQUARE FOOT. CHANNEL FRAME SHALL BE 1/2" INCH ALUMINUM WITH AN ANCHOR FLANGE AROUND THE PERIMETER. DOORS SHALL BE EQUIPPED WITH HEAVY FORGED BRASS HINGES, STAINLESS STEEL PINS, SPRING OPERATORS FOR EASY OPERATION AND AN AUTOMATIC HOLD OPEN ARM WITH RELEASE HANDLE. PROVIDE FLUSH-TYPE LOCK WITH REMOVABLE HANDLE WITH A 1/2" DRAINAGE COUPLING LOCATED IN THE FRONT RIGHT CORNER OF THE CHANNEL FRAME. ALL HARDWARE SHALL BE STAINLESS STEEL. CHANNEL FRAME AND OTHER PARTS IN CONTACT WITH CONCRETE SHALL BE MILL-FINISHED AND A BITUMINOUS COATING APPLIED TO EXTERIOR OF FRAME.
- CONTRACTOR TO COORDINATE FINAL DIMENSIONS AND ASSEMBLY WITH EQUIPMENT FURNISHED, I.E. PUMP DISCHARGE PIPE PENETRATIONS THROUGH MANHOLE, ACCESS FRAME ORIENTATION ABOVE PUMP AND GUIDE RAIL ASSEMBLY TO FACILITATE UNENCUMBERED PUMP RETRIEVAL, ETC.
- RAW WASTE PUMPS (INFLUENT PUMP) SHALL BE HYDRAMATIC MODEL HPGLX200JD SUBMERSIBLE GRINDER PUMPS, 2HP, 3500 RPM, 460V, 3 PHASE, 60 HERTZ. PROVIDE TWO INSTALLED, ONE UNIT AS SPARE. PROVIDE AND INSTALL 2" BREAK AWAY FITTING WITH STAINLESS STEEL "C" CHANNEL GUIDE RAIL FOR CONCRETE INSTALLATION FOR EACH PUMP. INCLUDE UPPER SUPPORT BRACKETS. PUMPS SHALL HAVE AN OPERATING POINT OF APPROXIMATELY 30 GPM AT 20 FT TDH.
- PROVIDE MANUFACTURER'S DUPLEX CONTROL PANEL AND CONTROLS TO PROVIDE FOR FULLY OPERATIONAL ALTERNATING DUPLEX OPERATION INCLUDING:
 - NEMA 3R ENCLOSURE MOUNTED IN THE LOCATION SHOWN ON THE DRAWINGS
 - ALARM CONTACTS FOR INITIATING REMOTE AUTO DIALER
 - ELAPSED TIME METER FOR EACH PUMP
 - H-O-A SWITCHES AND RUN LIGHTS FOR EACH PUMP
 - MASTER CIRCUIT BREAKER
 - LIGHTNING ARRESTOR
 - CONVENIENCE OUTLET
 - PUMP ALTERNATOR
 - TWO DRY CONTACTS
 - ONE NEMA 6 JUNCTION BOX
 - ULTRASONIC LEVEL SENSOR FOR PRIMARY PUMP CONTROL AND FIVE MERCURY FLOAT SWITCHES WITH BRACKET FOR SECONDARY PUMP CONTROL (HIGH WATER ALARM; LAG PUMP ON; LEAD PUMP ON; ALL PUMPS OFF; LOW WATER ALARM)
- PROVIDE AND INSTALL ONE ADJUSTABLE PORTABLE WIRE ROPE HOIST WITH FLOOR MOUNTED SOCKET, HALLIDAY PRODUCTS SERIES DB STAINLESS STEEL.
- INFLUENT ODOR CONTROL FAN: PROVIDE .33HP AERATION BLOWER RATED AT MAX. 29 SCFM. PROVIDE AUTOMATIC TIMER FOR TEN MINUTE OPERATION EVERY HOUR AND MANUAL ON/OFF SWITCH AT ENCLOSURE.
- ATTACH CAUTION SIGN TO FAN ENCLOSURE REMOVABLE ACCESS DOOR READING "ODOR CONTROL FAN. CAUTION: FAN DOES NOT PROVIDE ADEQUATE LIFE SUPPORT VENTILATION." SIGN SHALL BE BLACK/WHITE ENGRAVED PLASTIC WITH 1/2" HIGH LETTERS.

APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT

B. Wilson for Peter Brilderson 9/14/07
COUNTY HEALTH OFFICER

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 18992, Expiration Date: 01/18/2009.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND



URS CORP.
CONSULTING ENGINEERING AND PLANNING
1099 Waterson Road
Linthicum, MD 21090
Phone: 410-855-6160 Fax: 410-855-6163



DESIGN: RER
DRAFT: CMD
CHK: NG
DATE: 5/2007

BY NO.

REVISIONS

DATE

600 SCALE MAP NO. 23 BLOCKS 21 & 22 AND MAP NO. 29 BLOCKS 3 & 4

SHARED SEPTIC SYSTEM

INFLUENT PUMPING STATION DETAILS

RIVERWOOD - PHASE 2
A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'T' THRU 'Z', 'AA' AND 'BB' AND NON-BUILDABLE BULK PARCEL 'II' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S', AND 'U' TO ADD OR MODIFY FOREST PRESERVATION AREAS

THIRD ELECTION DISTRICT
CONTRACT NO. 50-4287-D

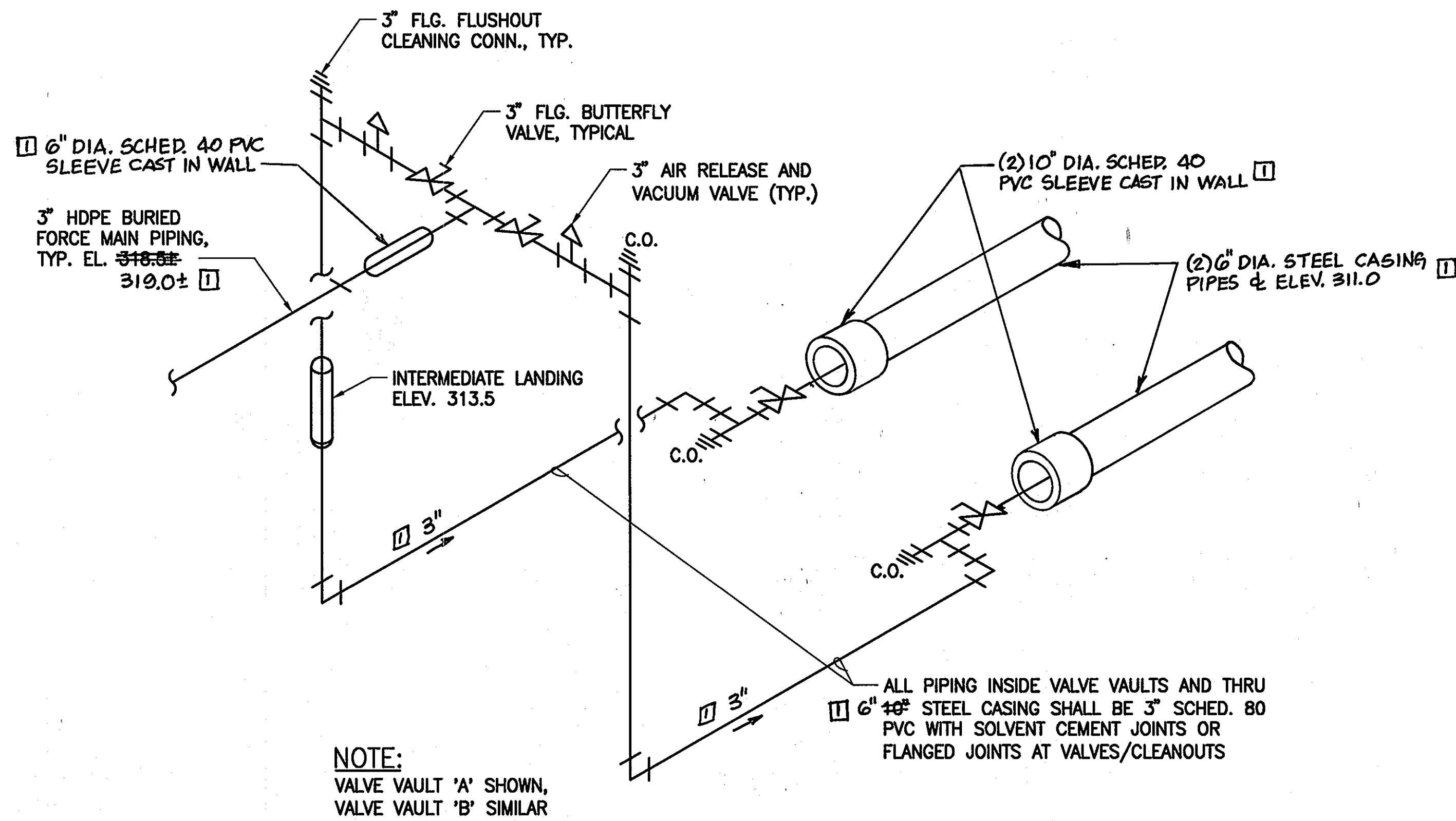
U1.3

SCALE:
AS SHOWN

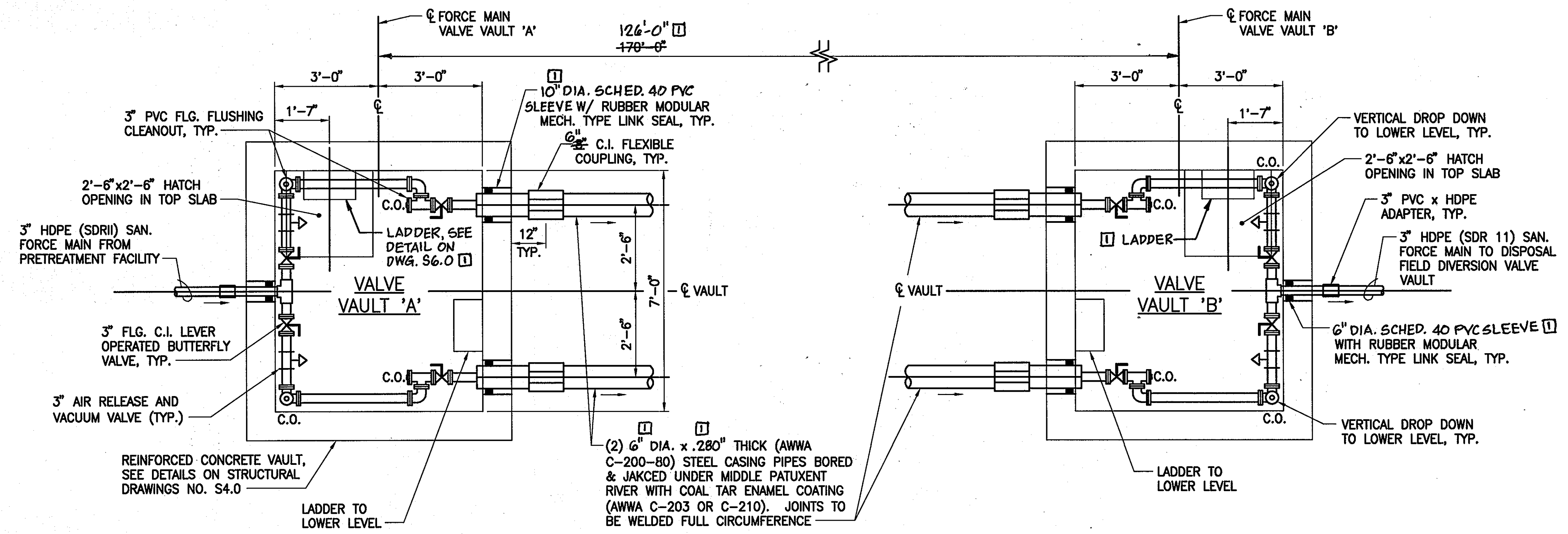
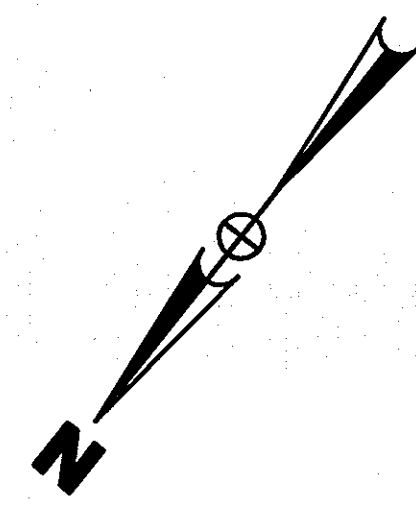
SHEET NO.
5 of 56

Michael A. Swain 9/17/07
CHIEF, BUREAU OF UTILITIES

[Signature] 9/16/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION



**PIPE & VALVE SCHEMATIC
INSIDE VALVE VAULTS 'A' & 'B'**
NOT TO SCALE



**FORCE MAIN VALVE VAULTS A & B
MECHANICAL PLAN**
SCALE: 1/2" = 1'-0"

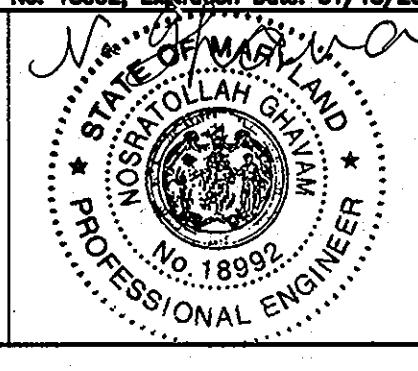
APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT
B. Wilson for Peter Beilanger 9/14/07
COUNTY HEALTH OFFICER DATE:

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 18992, Expiration Date: 01/18/2009.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
Michael A. Scavallone 9-17-07
CHIEF, BUREAU OF UTILITIES DATE

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND
[Signature] 9/16/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

URS
URS CORP.
CONSULTING ENGINEERING AND PLANNING
1099 Winterson Road
Linthicum, MD 21090
Phone: 410-855-6160 Fax: 410-855-6163

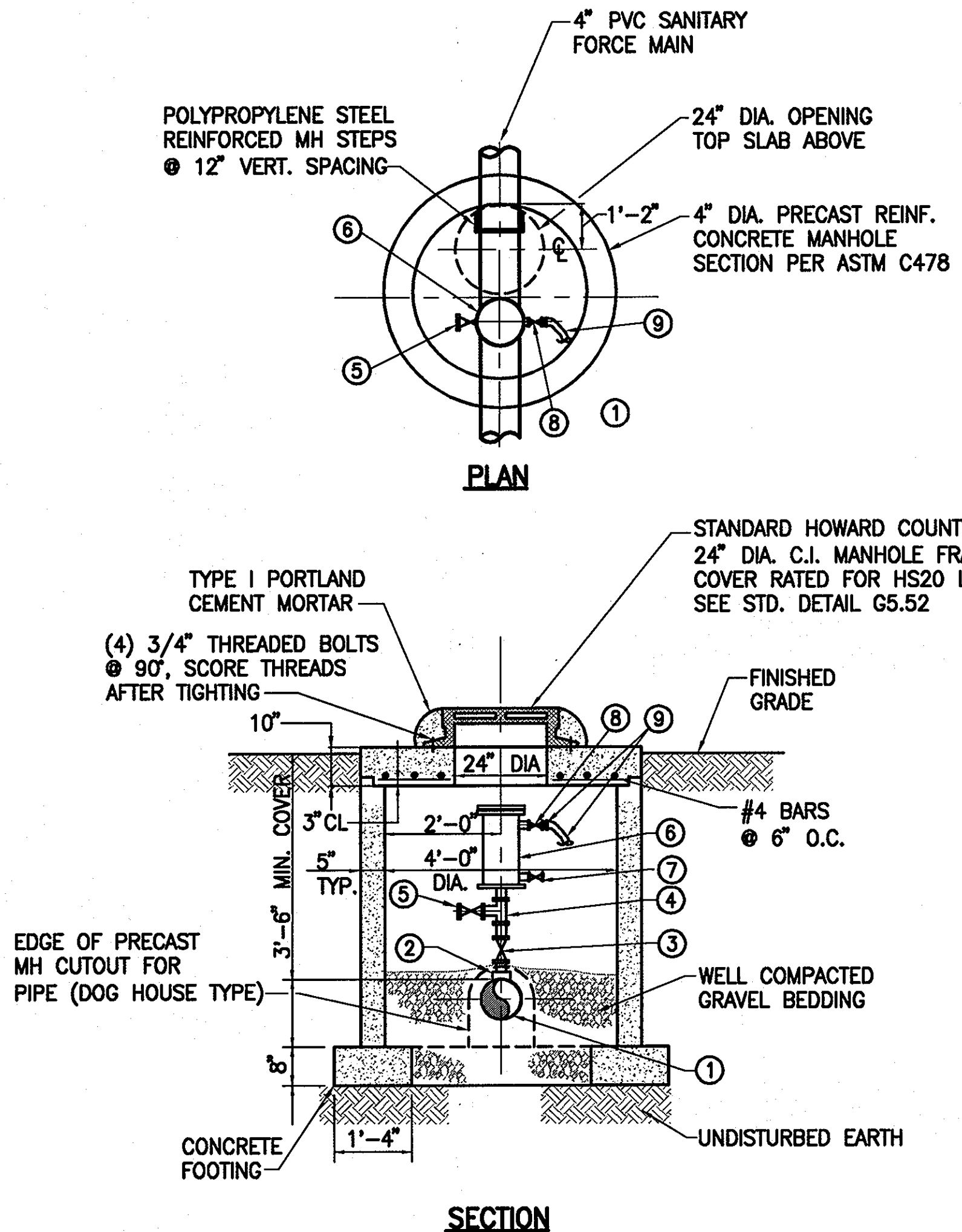


DESIGN: RER			
DRAFT: JRG			
CHK: NG			
DATE: 5/2007	RER	REVISION #1	4-28-11
	BY	NO.	REVISIONS

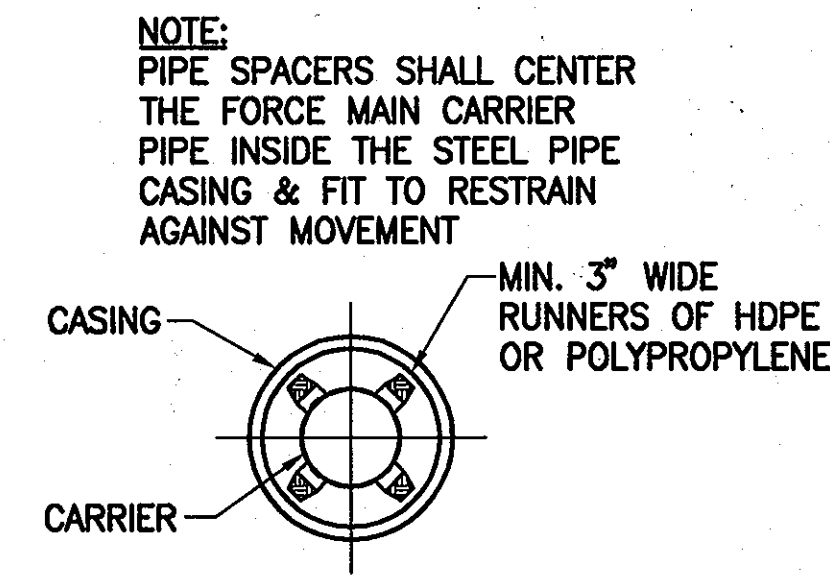
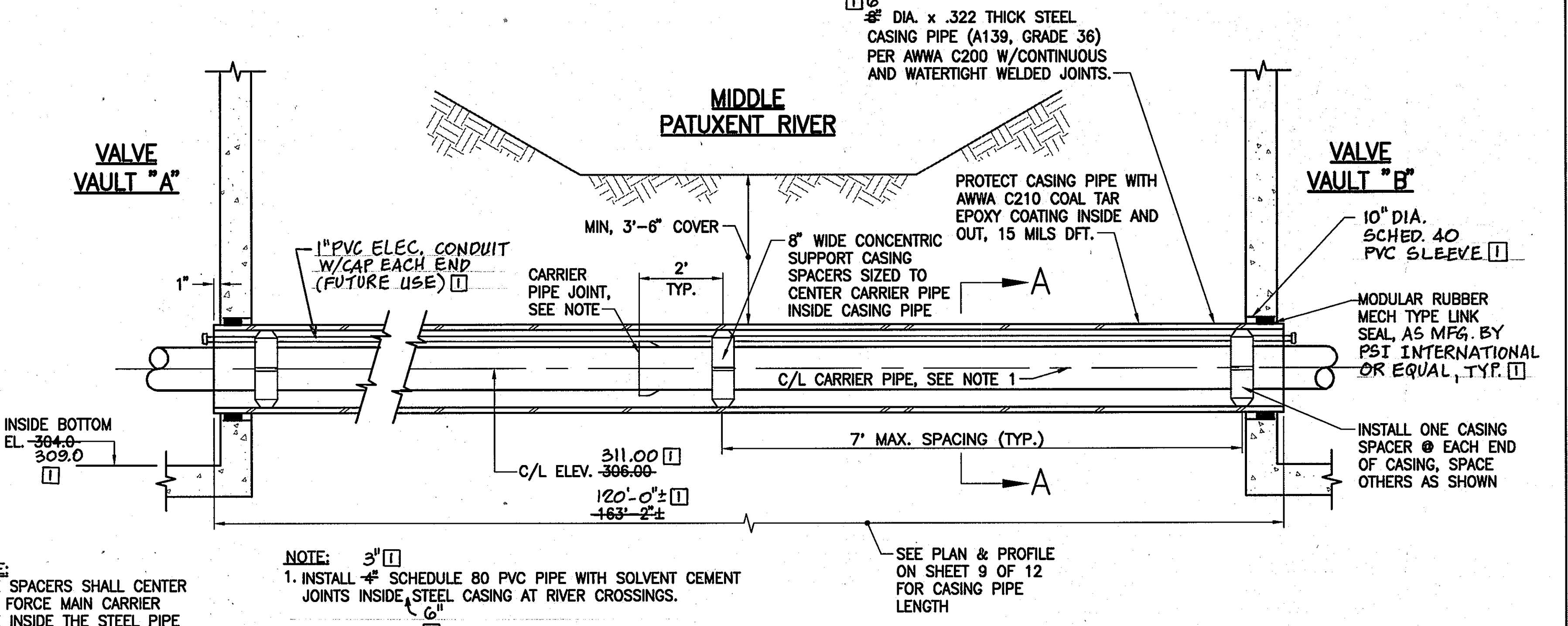
SHARED SEPTIC SYSTEM
FORCE MAIN VALVE VAULTS A & B DETAILS
600 SCALE MAP NO. 23 BLOCKS 21 & 22 AND MAP NO. 29 BLOCKS 3 & 4

RIVERWOOD - PHASE 2
A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'T' THRU 'Z', 'AA' AND 'BB' AND NON-BUILDABLE BULK PARCEL '1' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S', AND 'U' TO ADD OR MODIFY FOREST CONSERVATION AREAS
THIRD ELECTION DISTRICT
CONTRACT NO. 50-4287-D

U1.4
SCALE:
AS SHOWN
SHEET NO.
6 of 56

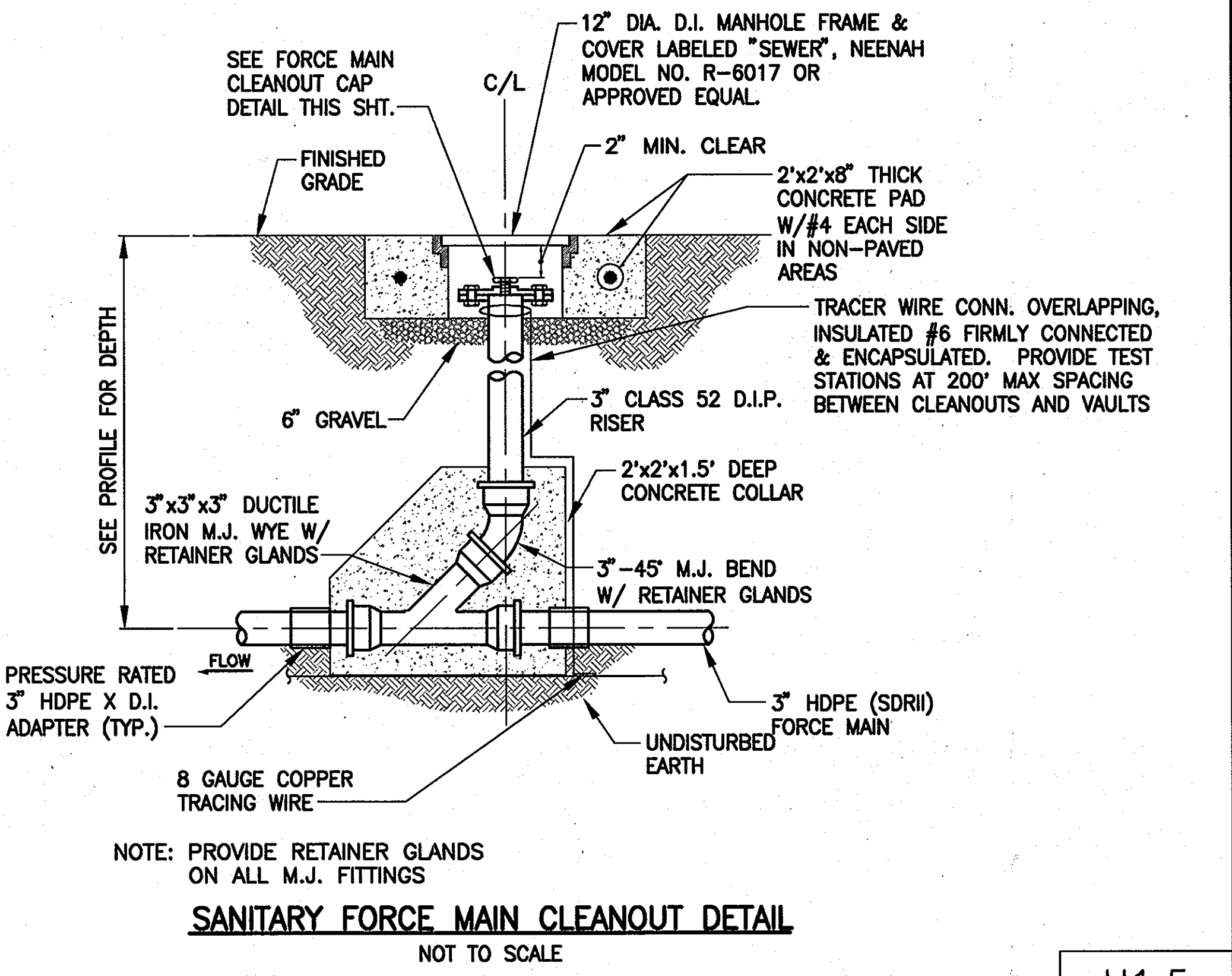
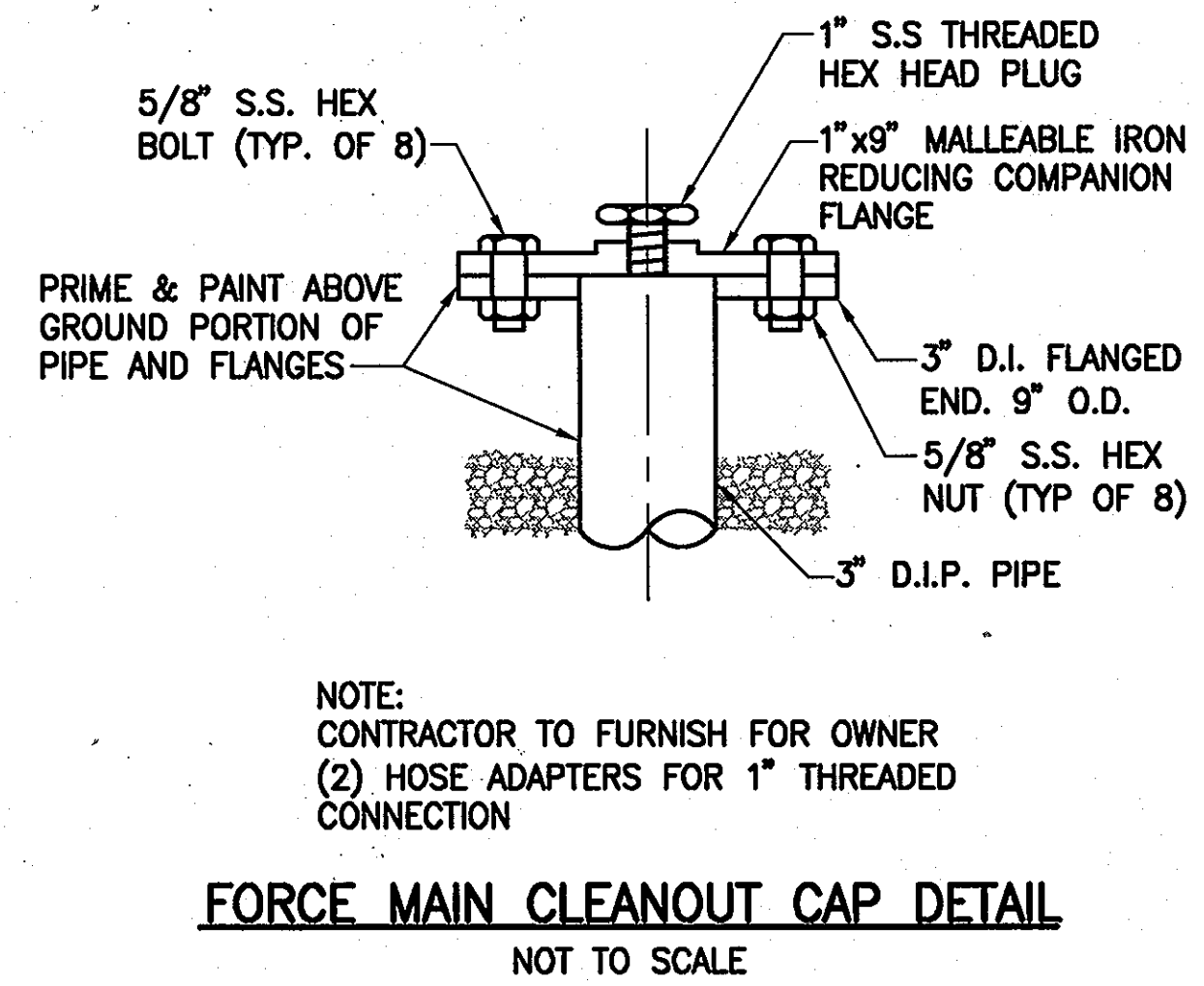
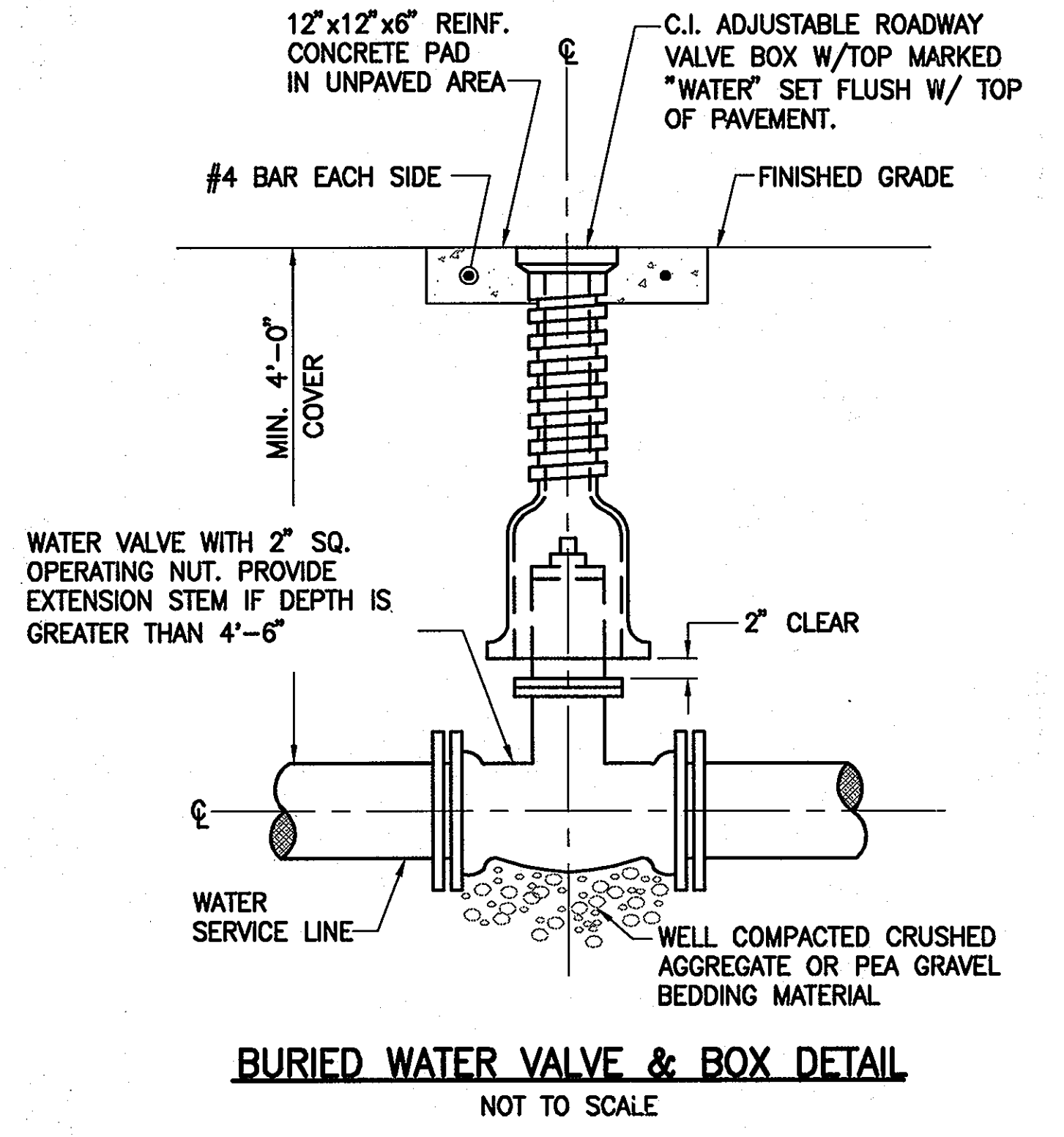
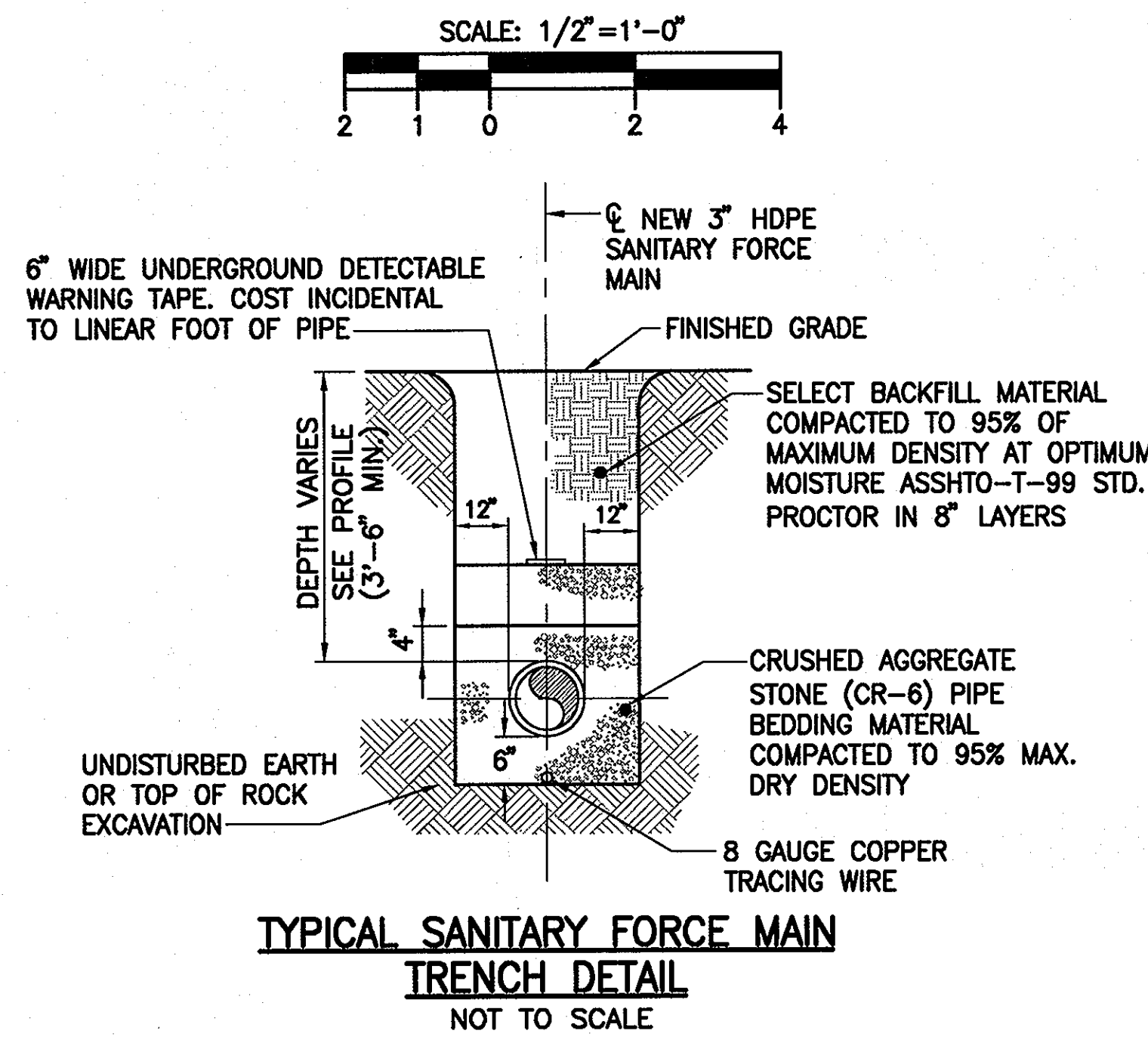


- LEGEND**
- ① 3" HDPE (SDR 11) SANITARY FORCE MAIN
 - ② THREADED TAP AND SADDLE FOR 2" SCHED 80 STEEL PIPE CONNECTION
 - ③ 2" BRONZE NRS GATE VALVE
 - ④ 2" MALLEABLE IRON TEE
 - ⑤ 2" BRONZE BLOW-OFF VALVE (SAME AS 3)
 - ⑥ 2" SEWAGE AIR & VACUUM VALVE ARI MODEL D025 WITH STAINLESS STEEL BODY OR ACCEPTED EQUAL
 - ⑦ 1" BRONZE BLOW-OFF VALVE (SAME AS 3)
 - ⑧ 1/2" BRONZE SHUT-OFF VALVE
 - ⑨ BACK FLUSHING HOSE W/ QUICK DISCONNECT COUPLING (6' MIN. LENGTH)



TYPICAL CASING PIPE INSTALLATION DETAIL
NOT TO SCALE

SEWAGE AIR RELEASE/VACUUM VALVE & VAULT DETAIL



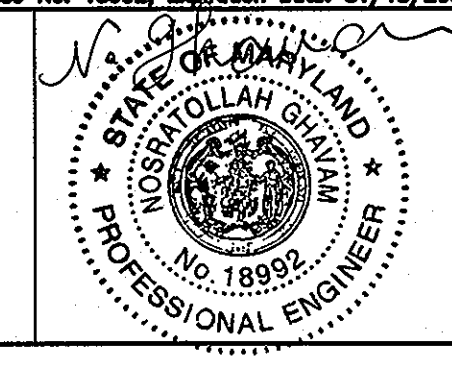
APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT
Baron for Peter Brileman 9/14/07
COUNTY HEALTH OFFICER

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 18992, Expiration Date: 01/18/2009.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
Richard D. Swainville 9-11-07
CHIEF, BUREAU OF UTILITIES

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND
[Signature]
CHIEF, DEVELOPMENT ENGINEERING DIVISION

URS
URS CORP.
CONSULTING ENGINEERING AND PLANNING
1099 Winterson Road
Linthicum, MD 21090
Phone: 410-855-6160 Fax: 410-855-6163

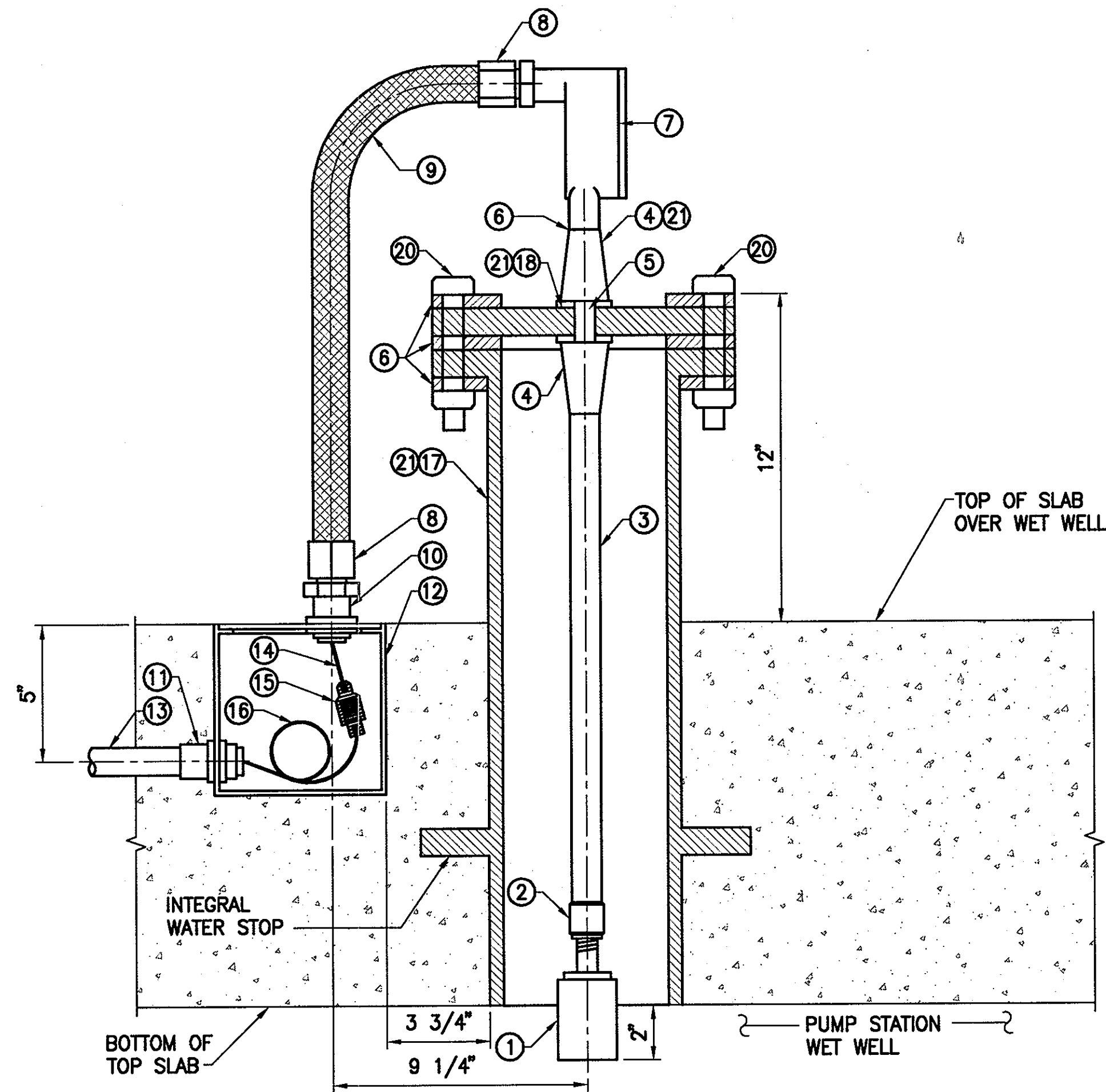


DESIGN: RER	
DRAFT: JRG	
CHK: NG	
DATE: 5/2007	
REVISION #1	4-28-11
BY: [Signature]	NO. [Signature]
REVISIONS	DATE

SHARED SEPTIC SYSTEM
MISCELLANEOUS
DETAILS I
600 SCALE MAP NO. 23 BLOCKS 21 & 22 AND MAP NO. 29 BLOCKS 3 & 4
FILE NAME: P:\20831575-20831577\CAD\Mech\Sheets\U-07-15.dwg LAYOUT NAME: U1.5 PLOTTED: Friday, July 20, 2007 - 10:38am

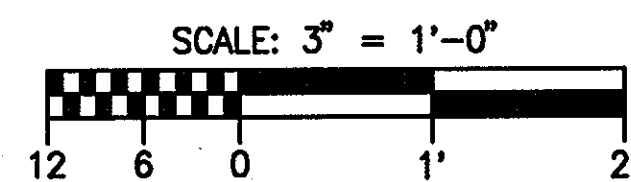
RIVERWOOD - PHASE 2
A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'T' THRU 'Z', 'AA' AND 'BB' AND NON-BUILDABLE BULK PARCEL '1' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S', AND 'U' TO ADD OR MODIFY FOREST CONSERVATION AREAS
THIRD ELECTION DISTRICT
CONTRACT NO. 50-4287-D

U1.5
SCALE: AS SHOWN
SHEET NO. 7 of 56



ULTRASONIC LEVEL SENSOR DETAIL

SCALE: 3" = 1'-0"



LEVEL SENSOR NOTES:

- ① ULTRASONIC LEVEL SENSOR
- ② ISOLATING COUPLING (FURNISHED WITH SENSOR)
- ③ CONDUIT NIPPLE, PVC COATED RIGID GALVANIZED STEEL, 3/4-INCH DIAMETER BY 18-INCHES LONG
- ④ THROUGH-BULKHEAD CONDUIT FITTING, GASKETED, ALUMINUM, PVC COATED, 3/4-INCH
- ⑤ CONDUIT SHORT NIPPLE, RIGID GALVANIZED STEEL, 3/4-INCH BY LENGTH TO SUIT
- ⑥ CONDUIT CLOSE NIPPLE, RIGID GALVANIZED STEEL, 3/4-INCH
- ⑦ CONDUIT OUTLET BODY, CAST IRON ALLOY, SHAPE TYPE LB, 3/4-INCH FURNISHED COMPLETE WITH CAST IRON ALLOY COVER, STAINLESS STEEL RETAINING SCREWS AND SOLID NEOPRENE GASKET
- ⑧ STRAIGHT CONNECTOR, LIQUIDTIGHT FLEXIBLE METAL CONDUIT FITTING, ZINC ELECTROPLATED STEEL, INSULATED THROAT, 3/4-INCH, FURNISHED COMPLETE WITH WIRE MESH STRAIN RELIEF CONDUIT GRIP
- ⑨ LIQUIDTIGHT FLEXIBLE METAL (STEEL) CONDUIT, TYPE UL, 3/4-INCH
- ⑩ CONDUIT HUB, TWO-PIECE, THREAD-ON, INSULATED THROAT, STAINLESS STEEL WITH INSULATED THROAT, 3/4-INCH
- ⑪ CONDUIT HUB, TWO-PIECE, THREAD-ON, INSULATED THROAT, CAST AND MACHINED ZINC WITH INSULATED THROAT, 3/4-INCH
- ⑫ JUNCTION BOX, CAST IRON ALLOY, 6-INCH BY 6-INCH X 6-INCH INSIDE DIMENSIONS WITH HOT DIPPED GALVANIZED FINISH, FULLY GASKETED, RECESSED FLAT DIAMOND PLATE COVER ATTACHED TO THE BODY WITH STAINLESS STEEL SCREWS. BOX SHALL BE WATERTIGHT.
- ⑬ CONDUIT, RIGID GALVANIZED STEEL WITH OVERALL PVC JACKET, 3/4-INCH
- ⑭ SENSOR OUTPUT LEAD, TYPE RG62AU COAXIAL CABLE
- ⑮ COAXIAL CABLE CONNECTOR ASSEMBLY
- ⑯ COAXIAL CABLE, TYPE RG62AU TO LEVEL INDICATING TRANSMITTER LOCATED ON THE DDC EQUIPMENT RACK. COIL A MINIMUM OF 30-INCHES SLACK IN JUNCTION BOX, ITEM 12.
- ⑰ 6-INCH PE X FLG. DUCTILE IRON WALL PIPE WITH INTEGRAL WATER STOP
- ⑱ DUCTILE IRON BLIND FLANGE, 6-INCH WITH CENTERED, 1-1/8-INCH THROUGH HOLE
- ⑲ NEOPRENE GASKET, FULL CIRCUMFERENCE OF FLANGE, 1/4-INCH THICK, MINIMUM AND PROVIDED WITH CLEARANCE HOLES FOR BOLTS.
- ⑳ PROVIDE STAINLESS STEEL HARDWARE FOR CONNECTING BLIND FLANGE TO WALL PIPE
- ㉑ PROVIDE ONE COAT OF PRIMER, MINIMUM, AND TWO COATS BRIGHT ORANGE GLOSS ENAMEL FINISH TO DESIGNATED ITEMS

EBARA SUBMERSIBLE VORTEX SEWAGE PUMPS

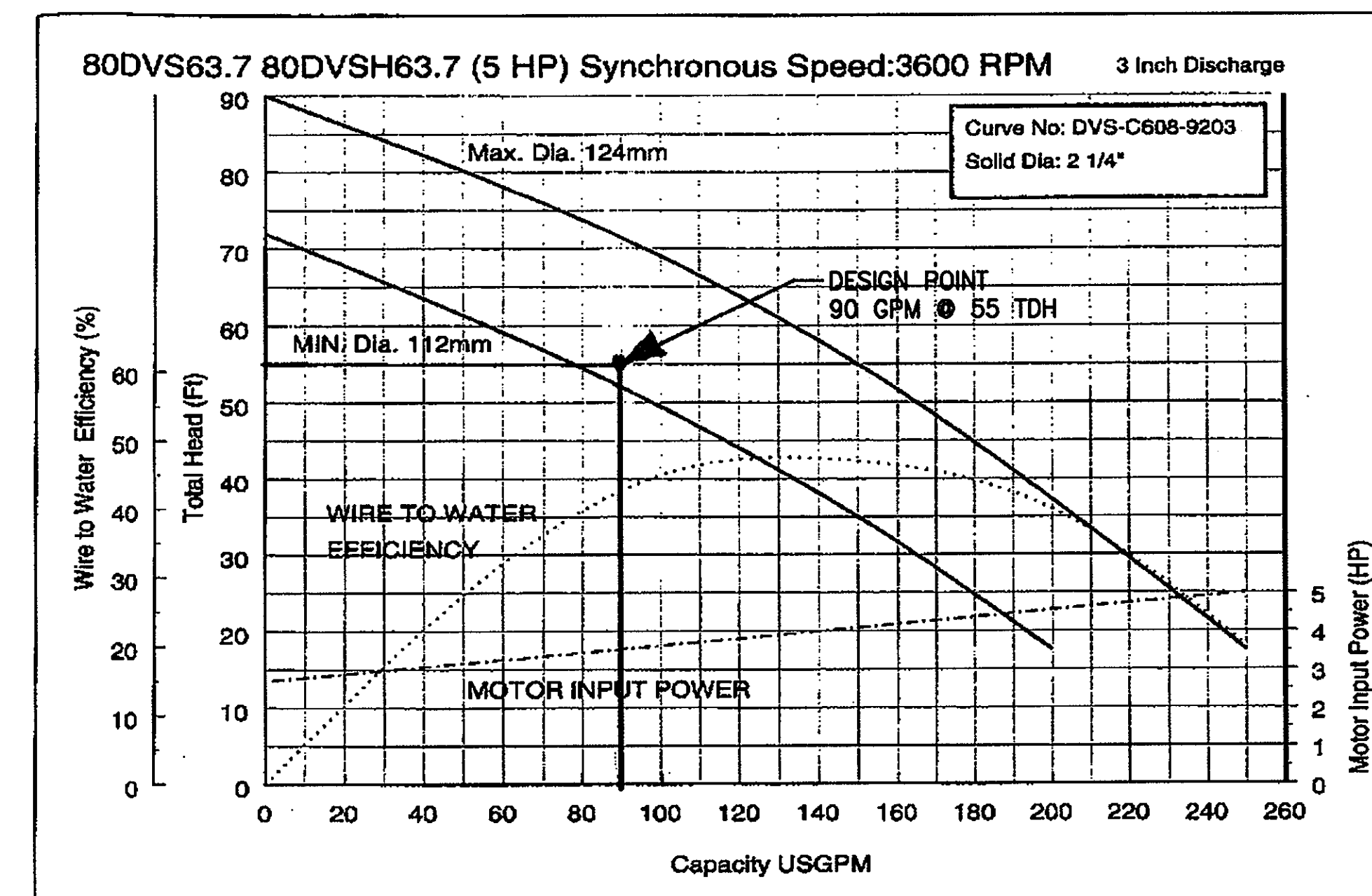
DVSU

PERFORMANCE CURVES

1-180

March 1, 1997

PROJECT: _____ GPM: _____ TDH: _____ EFF: _____ HP: _____ CHK'D: _____ DATE: _____



DOSING PUMP (EFFLUENT) CURVE

SCALE: NOT TO SCALE



EBARA INTERNATIONAL CORPORATION

APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT

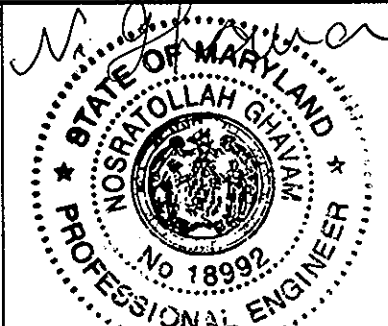
B. Nelson for Peter Beilman 9/14/07
COUNTY HEALTH OFFICER DATE

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND

URS
URS CORP. &
CONSULTING ENGINEERING AND PLANNING
1099 Winterson Road
Linthicum, MD 21090
Phone: 410-855-6160 Fax: 410-855-6163

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 18992, Expiration Date: 01/18/2009.



DESIGN: RER			
DRAFT: JRG			
CHK: NG			
DATE: 5/2007	BY	NO.	REVISIONS

SHARED SEPTIC SYSTEM

MISCELLANEOUS
DETAILS II

RIVERWOOD - PHASE 2

A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'CC' TO CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'T' THRU 'Z', 'AA' AND 'BB' AND NON-BUILDABLE BULK PARCEL 'II' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S', AND 'U' TO ADD OR MODIFY FOREST CONSERVATION AREAS

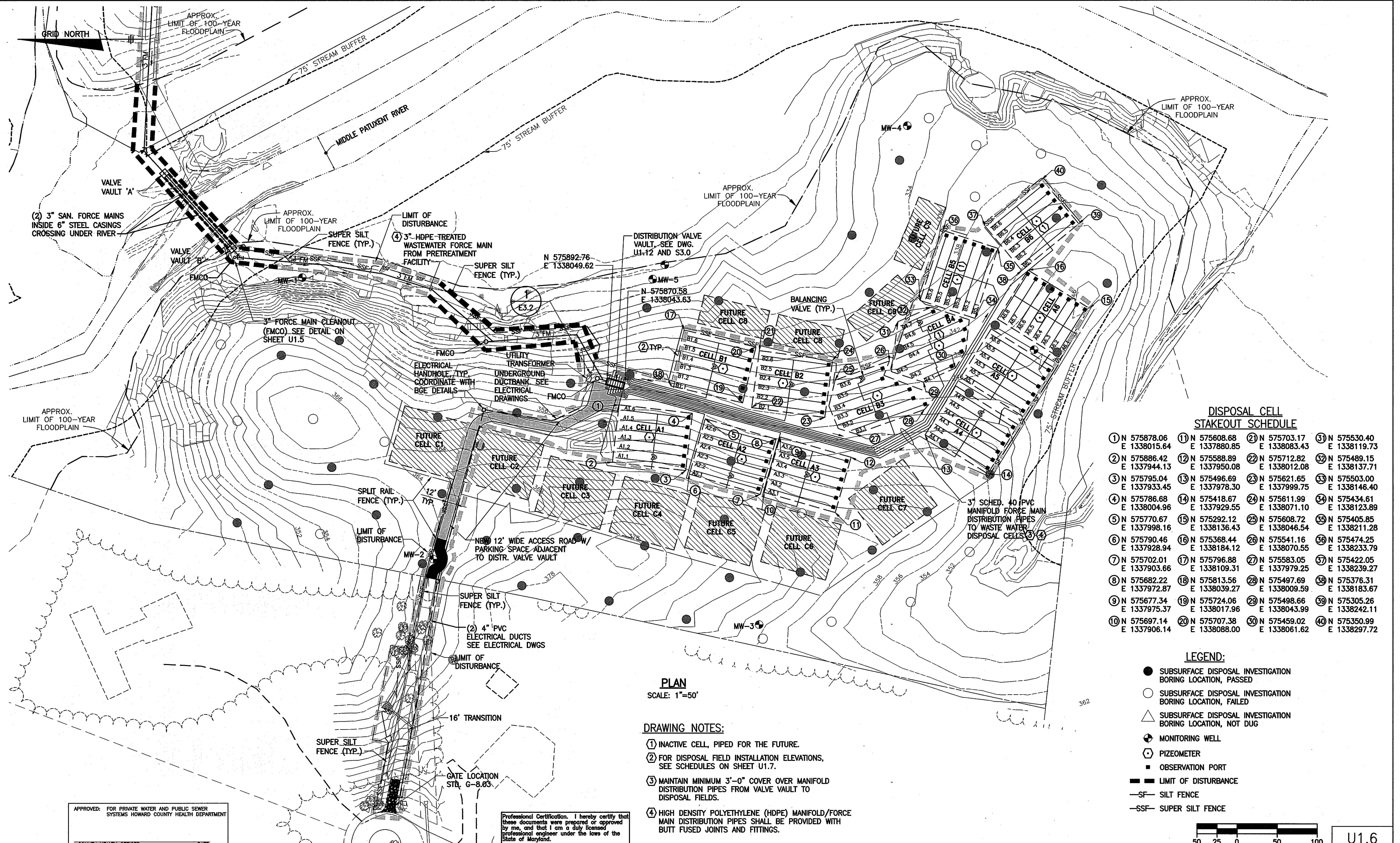
THIRD ELECTION DISTRICT

CONTRACT NO. 50-4287-D

U1.5A

SCALE:
AS SHOWN

SHEET NO.
8 of 56



**DISPOSAL CELL
STAKEOUT SCHEDULE**

① N 575878.06 E 1338015.64	⑪ N 575608.68 E 1337880.85	⑲ N 575703.17 E 1338083.43	⑳ N 575530.40 E 1338119.73
② N 575886.42 E 1337944.13	⑫ N 575588.89 E 1337950.08	⑳ N 575712.82 E 1338012.08	㉑ N 575489.15 E 1338137.71
③ N 575795.04 E 1337933.45	⑬ N 575496.69 E 1337978.30	㉒ N 575621.65 E 1337999.75	㉒ N 575503.00 E 1338146.40
④ N 575786.68 E 1338004.96	⑭ N 575418.67 E 1337929.55	㉓ N 575611.99 E 1338071.10	㉓ N 575434.61 E 1338123.89
⑤ N 575770.67 E 1337998.16	⑮ N 575292.12 E 1338136.43	㉔ N 575608.72 E 1338046.54	㉔ N 575405.85 E 1338211.28
⑥ N 575790.46 E 1337928.94	⑯ N 575368.44 E 1338184.12	㉕ N 575541.16 E 1338070.55	㉕ N 575474.25 E 1338233.79
⑦ N 575702.01 E 1337903.66	⑰ N 575796.88 E 1338109.31	㉖ N 575583.05 E 1337979.25	㉖ N 575422.05 E 1338239.27
⑧ N 575682.22 E 1337972.87	⑱ N 575813.56 E 1338039.27	㉗ N 575497.69 E 1338009.59	㉗ N 575376.31 E 1338183.67
⑨ N 575677.34 E 1337975.37	⑳ N 575724.06 E 1338017.96	㉘ N 575498.66 E 1338043.99	㉘ N 575305.26 E 1338242.11
⑩ N 575697.14 E 1337906.14	㉑ N 575707.38 E 1338088.00	㉙ N 575459.02 E 1338061.62	㉙ N 575350.99 E 1338297.72

LEGEND:

- SUBSURFACE DISPOSAL INVESTIGATION BORING LOCATION, PASSED
- SUBSURFACE DISPOSAL INVESTIGATION BORING LOCATION, FAILED
- △ SUBSURFACE DISPOSAL INVESTIGATION BORING LOCATION, NOT DUG
- ⊕ MONITORING WELL
- ⊖ PIZIOMETER
- OBSERVATION PORT
- SF— LIMIT OF DISTURBANCE
- SF— SILT FENCE
- SSF— SUPER SILT FENCE

PLAN
SCALE: 1"=50'

DRAWING NOTES:

- ① INACTIVE CELL, PIPED FOR THE FUTURE.
- ② FOR DISPOSAL FIELD INSTALLATION ELEVATIONS, SEE SCHEDULES ON SHEET U1.7.
- ③ MAINTAIN MINIMUM 3'-0" COVER OVER MANIFOLD DISTRIBUTION PIPES FROM VALVE VAULT TO DISPOSAL FIELDS.
- ④ HIGH DENSITY POLYETHYLENE (HDPE) MANIFOLD/FORCE MAIN DISTRIBUTION PIPES SHALL BE PROVIDED WITH BUTT FUSED JOINTS AND FITTINGS.

APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT
COUNTY HEALTH OFFICER DATE:

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 18992, Expiration Date: 01/18/2013.



U1.6

<p>DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND</p> <p><i>Steve Chan</i> CHIEF, BUREAU OF UTILITIES</p>	<p>DEPARTMENT OF PLANNING AND ZONING HOWARD COUNTY, MARYLAND</p> <p><i>John Dorman</i> CHIEF, DEVELOPMENT ENGINEERING DIVISION</p>	<p>URS</p> <p>URS CORP. CONSULTING ENGINEERING AND PLANNING 1099 Winterson Road Linthicum, MD 21090 Phone: 410-855-6160 Fax: 410-855-6163</p>		<p>DESIGN: NG</p> <p>DRAFT: CLD/JRG</p> <p>CHK: RER</p> <p>DATE: 11/2010</p>	<p>REPLACEMENT SHEET</p> <p>REVISION #1</p> <p>11-14-11 4-28-11</p>	<p>SHARED SEPTIC SYSTEM</p> <p>SUBSURFACE DISPOSAL FIELD PLAN</p>	<p>RIVERWOOD - PHASE 2</p> <p>A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'A' THRU 'G' TO CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'T' THRU 'Z', 'AA' AND 'BB' AND NON-BUILDABLE BULK PARCEL 'U' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S', AND 'U' TO ADD OR MODIFY FOREST CONSERVATION AREAS THIRD ELECTION DISTRICT</p> <p>CONTRACT NO. 50-4287-D</p>	<p>SCALE: AS SHOWN</p> <p>SHEET NO. 9 of 56</p>
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TYPICAL DISPOSAL CELL SCHEDULE

CELL	LATERAL NUMBER	EXISTING GRADE		TRENCH BOTTOM ELEV.	LATERAL ELEV.	TRENCH LENGTH EL.	LATERAL LENGTH EL.	LATERAL DIA. IN.	HEAD FT.	NO. OF HOLES	HOLE SPACING FT.-IN.	FLOW PER HOLE GPM	TOTAL FLOW PER LATERAL GPM
		LOW END	HIGH END										
A1	A1.1	363	363.7	357	359.5	92	84	1 1/2	2	14	6'-5.5"	1.04	14.59
	A1.2	361.2	361.7	355	357.5	92	84	1 1/2	3.38	② 11	8'-5"	1.35	14.85
	A1.3	359.4	359.8	353	355.5	92	84	1 1/2	5.21	② 9	10'-6"	1.68	15.12
	A1.4 ①	357.7	357.8	351.5	354	92	84	1 1/2	2	14	6'-5.5"	1.04	14.59
	A1.5	355.8	355.9	349.5	352	92	84	1 1/2	3.38	② 11	8'-5"	1.35	14.85
	A1.6	353.9	353.9	347.5	350	92	84	1 1/2	5.21	② 9	10'-6"	1.68	15.12
A2	A2.1	362.7	363.7	356	359	92	84	1 1/2	2	14	6'-5.5"	1.04	14.59
	A2.2	360.7	361.8	354	357	92	84	1 1/2	3.38	② 11	8'-5"	1.35	14.85
	A2.3	358.7	360	352	355	92	84	1 1/2	5.21	② 9	10'-6"	1.68	15.12
	A2.4 ①	356.7	358	350	353	92	84	1 1/2	2	14	6'-5.5"	1.04	14.59
	A2.5	354.8	355.8	348	351	92	84	1 1/2	3.38	② 11	8'-5"	1.35	14.85
	A2.6	352.7	353.7	346	349	92	84	1 1/2	5.21	② 9	10'-6"	1.68	15.12
A3	A3.1	360	361.5	353.5	356.5	92	84	1 1/2	2	14	6'-5.5"	1.04	14.59
	A3.2	359	360	352	355	92	84	1 1/2	3.1	12	7'-5.5"	1.30	15.57
	A3.3	358	358	351	354	92	84	1 1/2	3.84	10	9'-4"	1.44	14.44
	A3.4 ①	356.2	356.9	349	352	92	84	1 1/2	2.08	14	6'-5.5"	1.11	15.58
	A3.5	354.3	355.9	348	350.8	92	84	1 1/2	2.66	12	7'-7.5"	1.25	14.95
	A3.6	352.7	354.8	346.7	349.2	92	84	1 1/2	4.09	10	9'-4"	1.53	15.26
A4	A4.1	352.1	353.8	346	348.5	92	84	1 1/2	2	14	6'-5.5"	1.04	14.56
	A4.2	351.3	352.7	345	347.5	92	84	1 1/2	2.6	12	7'-7.5"	1.19	14.28
	A4.3	350.3	352	344	346.5	92	84	1 1/2	3.34	② 11	8'-5"	1.35	14.85
	A4.4	349.3	351.1	343.3	345.8	92	84	1 1/2	3.58	② 11	8'-5"	1.39	15.29
	A4.5	348.3	350.3	342.3	344.8	92	84	1 1/2	3.96	10	9'-4"	1.47	14.70
	A4.6 ①	347.4	349.5	341.4	343.9	92	84	1 1/2	3	12	7'-5.5"	1.28	15.36
A5	A5.1	345.8	347.8	339.8	342.3	92	84	1 1/2	2	14	6'-5.5"	1.04	14.56
	A5.2	345.2	347.2	339.2	341.7	92	84	1 1/2	2.2	14	6'-5.5"	1.09	15.30
	A5.3	344.5	346.7	338.7	341.2	92	84	1 1/2	2.44	② 13	7'-0"	1.15	14.95
	A5.4	344.1	346.2	338.2	340.7	92	84	1 1/2	2.48	② 13	7'-0"	1.16	15.08
	A5.5	343.9	346	338	340.5	92	84	1 1/2	2.06	14	6'-5.5"	1.06	14.81
	A5.6	343.6	345.6	337.5	340	92	84	1 1/2	2.39	② 13	7'-0"	1.14	14.82
A6	A6.1	345.5	346	339	342	72	64	1 1/2	3	8	9'-2"	1.28	10.21
	A6.2	345.6	345.6	339	342	72	64	1 1/2	2.56	10	7'-1"	1.18	11.79
	A6.3	345.5	345.6	339	342	72	64	1 1/2	2.23	10	7'-1"	1.10	11.00
	A6.4	345	345.2	338.5	341.5	72	64	1 1/2	2.49	10	7'-1"	1.16	11.63
	A6.5	344.5	344.7	338	341	72	64	1 1/2	2.53	10	7'-1"	1.17	11.72
	A6.6	344	344.3	337.5	340.5	72	64	1 1/2	2.76	10	7'-1"	1.22	12.24
	A6.7	343.3	343.7	336.5	339.5	72	64	1 1/2	3.41	8	9'-2"	1.36	10.89
	A6.8	342.6	343.9	336	339	72	64	1 1/2	3.81	8	9'-2"	1.44	11.51

TYPICAL DISPOSAL CELL SCHEDULE

CELL	LATERAL NUMBER	EXISTING GRADE		TRENCH BOTTOM ELEV.	LATERAL ELEV.	TRENCH LENGTH EL.	LATERAL LENGTH EL.	LATERAL DIA. IN.	HEAD FT.	NO. OF HOLES	HOLE SPACING FT.	FLOW PER HOLE GPM	TOTAL FLOW PER LATERAL GPM
		LOW END	HIGH END										
B1	B1.1	346.4	347.8	340.4	342.9	92	84	1 1/2	2	14	6'-5.5"	1.04	14.56
	B1.2	344.8	346	338.8	341.3	92	84	1 1/2	3.2	12	7'-7.5"	1.32	15.84
	B1.3	343.5	344.2	337	340	92	84	1 1/2	4.24	10	9'-4"	1.52	15.20
	B1.4 ①	342	342.5	335	338	92	84	1 1/2	2.18	14	6'-5.5"	1.09	15.26
	B1.5	340.3	340.7	333.5	336.5	92	84	1 1/2	3.06	12	7'-7.5"	1.29	15.48
	B1.6	339	339.2	332	335	92	84	1 1/2	4.39	10	9'-4"	1.54	15.40
B2	B2.1	346.8	347.9	340	343	92	84	1 1/2	2	14	6'-5.5"	1.04	14.56
	B2.2	345.5	346.6	339	342	92	84	1 1/2	2.06	12	7'-7.5"	1.19	14.28
	B2.3	343.9	345.5	337.5	340	92	84	1 1/2	4.34	10	9'-4"	1.54	15.40
	B2.4 ①	342.3	344.3	336.3	338.8	92	84	1 1/2	3	12	7'-7.5"	1.28	15.36
	B2.5	340.9	343.9	334.9	337.4	92	84	1 1/2	2.38	② 13	7'-0"	1.14	14.82
	B2.6	339.6	342.6	333.6	336.1	92	84	1 1/2	3.51	② 11	8'-5"	1.38	15.18
B3	B3.1	348.7	350.8	342.8	345.3	106	98	1 1/2	2	16	6'-6"	1.04	16.64
	B3.2	348	350	342	344.5	108	100	1 1/2	2.4	16	6'-8"	1.14	18.24
	B3.3	346.8	348.5	340.5	343	108	100	1 1/2	3.64	12	9'-1"	1.41	16.92
	B3.4	346	347.4	339.5	342	92	84	1 1/2	4.18	10	9'-4"	1.51	15.10
	B3.5	345	346	338	341	70	62	1 1/2	4.56	8	8'-10"	1.57	12.56
	B3.6 ①	343.7	344.5	337	340	68	60	1 1/2	3.39	8	8'-7"	1.36	10.88
B4 NOT IN SERVICE, PIPED AND RESERVED FOR THE FUTURE	B4.1	344.7	345.6	338	341	46	38	1 1/2	2	6	7'-7"	1.04	6.24
	B4.2	343.7	344.7	337.5	340	78	70	1 1/2	2.81	10	7'-9"	1.24	12.40
	B4.3	342.8	344	336.5	339	100	92	1 1/2	3.45	12	8'-4"	1.37	16.44
	B4.4	342	342.7	335	338	108	100	1 1/2	4.23	12	9'-1"	1.52	18.24
	B4.5	341.3	341.7	334.5	337.5	98	90	1 1/2	4.42	10	10'-0"	1.55	15.50
	B4.6	340.4	340.5	334	336.5	78	70	1 1/2	5.12	8	10'-0"	1.67	13.36
	B4.7 ①	339.5	339.7	332.5	335.5	52	44	1 1/2	3.04	6	8'-9"	1.28	7.68
B5 NOT IN SERVICE, PIPED AND RESERVED FOR THE FUTURE	B5.1	339.7	341.5	333.5	336	92	84	1 1/2	2	14	6'-5.5"	1.04	14.56
	B5.2	339.2	340.8	332.8	335.5	92	84	1 1/2	2.1	14	6'-5.5"	1.07	14.98
	B5.3	338.6	340.3	332.3	335	92	84	1 1/2	2.34	14	6'-5.5"	1.13	15.82
	B5.4	338.1	339.7	331.7	334.5	92	84	1 1/2	2.38	14	6'-5.5"	1.14	15.96
	B5.5	337.3	339.2	331.2	333.7	92	84	1 1/2	2.56	12	7'-7.5"	1.18	14.16
	B5.6	336.4	338.5	330.5	333	92	84	1 1/2	3.09	12	7'-7.5"	1.30	15.60
B6 NOT IN SERVICE, PIPED AND RESERVED FOR THE FUTURE	B6.1	341.7	341.8	335.5	338	92	84	1 1/2	2	14	6'-5.5"	1.04	14.56
	B6.2	341	341.2	335	337.5	92	84	1 1/2	2.1	14	6'-5.5"	1.07	14.98
	B6.3	340.3	340.5	334	336.5	92	84	1 1/2	2.84	12	7'-7.5"	1.24	14.88
	B6.4	339.5	340	333.5	336	92	84	1 1/2	2.88	12	7'-7.5"	1.25	15.00
	B6.5	338.8	339.5	332.5	335	92	84	1 1/2	3.26	12	7'-7.5"	1.33	15.96
	B6.6	338	339.3	332	334.5	92	84	1 1/2	3.59	10	9'-4"	1.4	14.00

DRAWING NOTES:

- ① PROVIDE BALANCING VALVE WHERE SHOWN ON SHEETS U1.6 AND U.13 AND AS DETAILED ON SHEET U1.11, SET @ INDICATED HEAD
- ② FOR LATERALS THAT HAVE ODD NUMBER OF HOLES, INSTALL MIDDLE HOLE 6" FROM THE CENTERLINE OF MANIFOLD

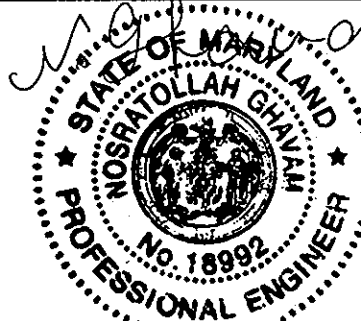
APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT
B. Peter Billemore 9/14/07
 COUNTY HEALTH OFFICER DATE

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
 License No. 18992, Expiration Date: 01/18/2009.

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY, MARYLAND

URS
 URS CORP.
 CONSULTING ENGINEERING AND PLANNING
 1099 Winterson Road
 Linthicum, MD 21090
 Phone: 410-855-6160 Fax: 410-855-6163



DESIGN: NG
 DRAFT: JRG
 CHK: RER
 DATE: 5/2007

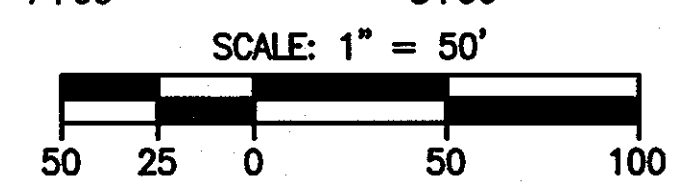
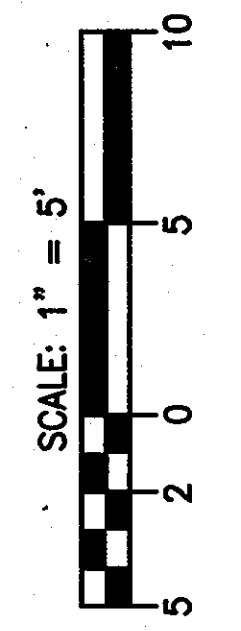
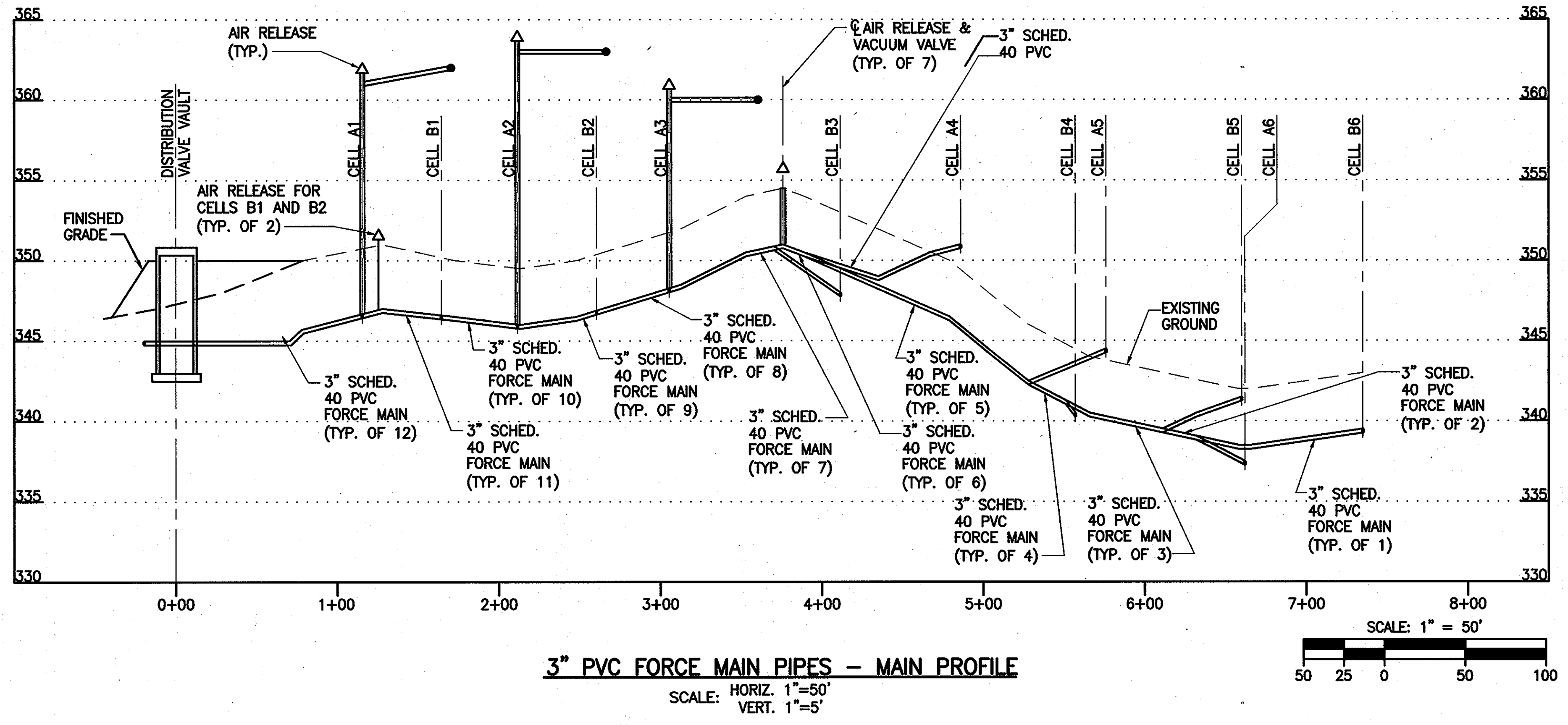
SHARED SEPTIC SYSTEM
 DISPOSAL CELL SCHEDULE

RIVERWOOD - PHASE 2
 A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'I' THRU 'Z', 'AA' AND 'BB' AND NON-BUILDABLE BULK PARCEL 'II' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S', AND 'U' TO ADD OR MODIFY FOREST CONSERVATION AREAS
 THIRD ELECTION DISTRICT
CONTRACT NO. 50-4287-D

U1.7

SCALE:
 AS SHOWN

SHEET NO.
 10 of 56



3" PVC FORCE MAIN PIPES - MAIN PROFILE
 SCALE: HORIZ. 1"=50'
 VERT. 1"=5'

APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT
 COUNTY HEALTH OFFICER _____ DATE: _____

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
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DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

 CHIEF, BUREAU OF UTILITIES

DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY, MARYLAND

 CHIEF, DEVELOPMENT ENGINEERING DIVISION

URS
 URS CORP.
 CONSULTING ENGINEERING AND PLANNING
 1099 Winterson Road
 Linthicum, MD 21090
 Phone: 410-855-6160 Fax: 410-855-6163

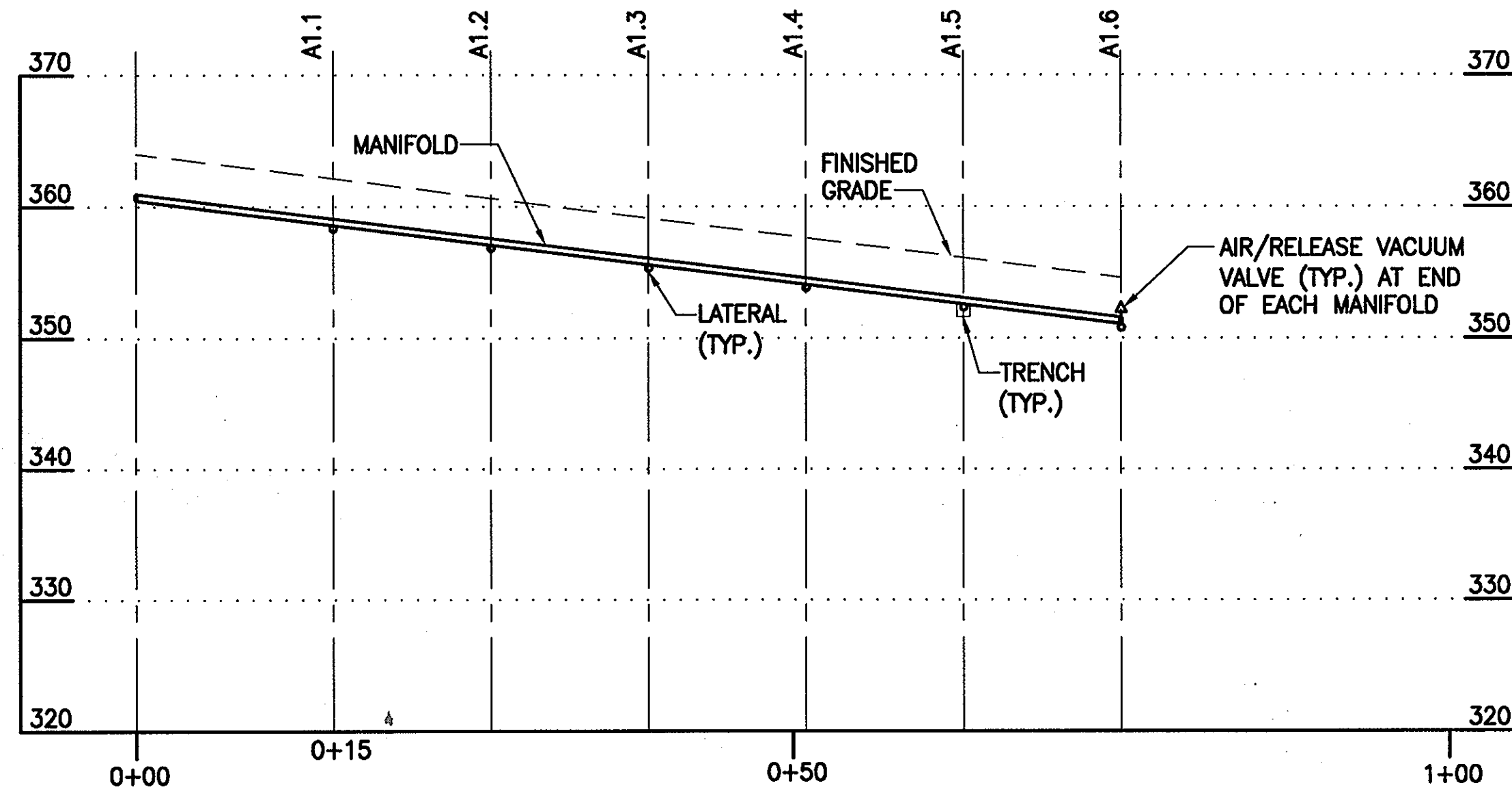


DESIGN:	RLH		
DRAFT:	RLH		
CHK:	NG	RER	REPLACEMENT SHEET 11-14-11
DATE:	11/2010	RER	REVISION #1 4-28-11
BY:	NO.		REVISIONS

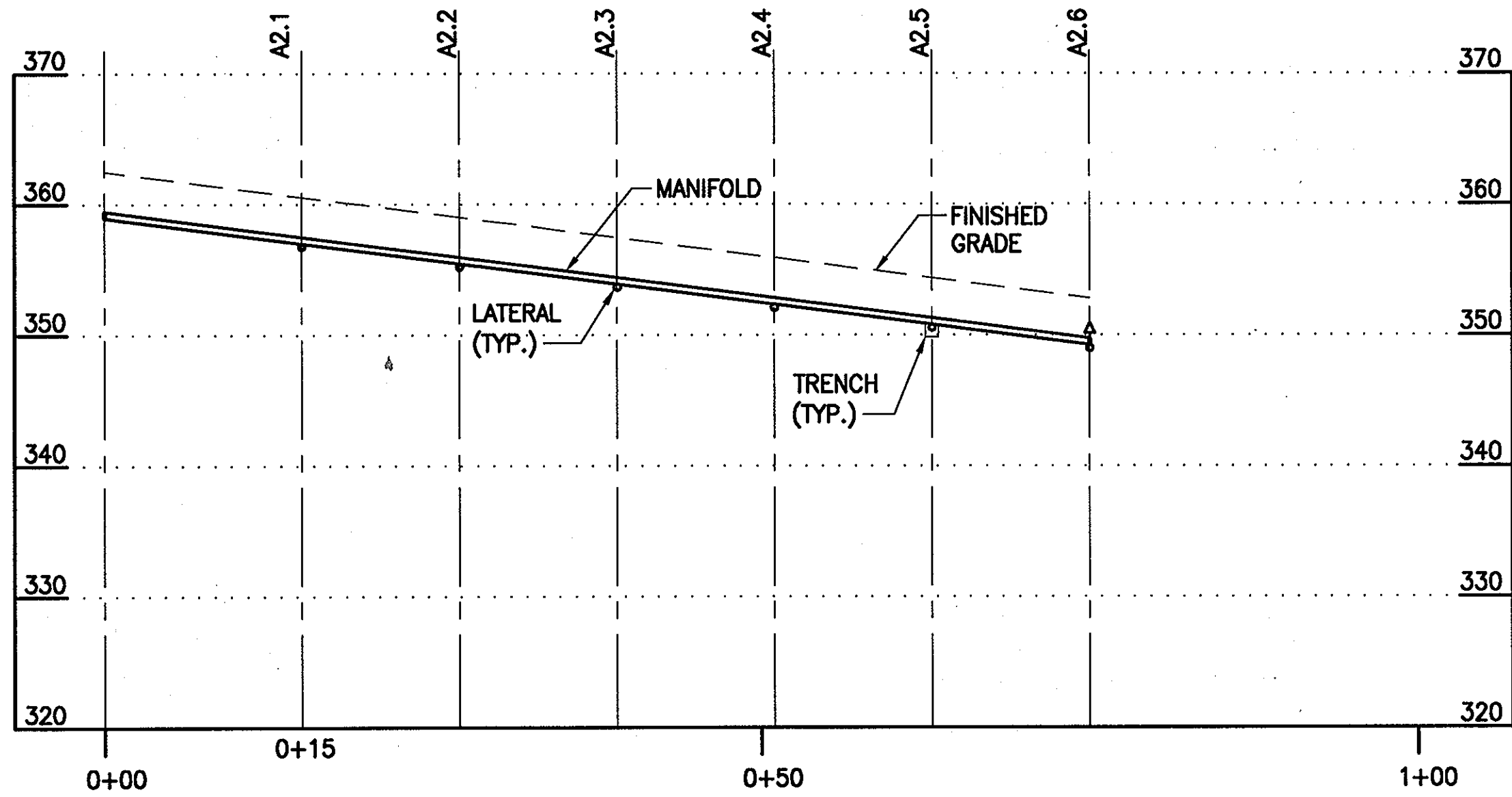
SHARED SEPTIC SYSTEM
 VALVE VAULT MAIN PROFILE

RIVERWOOD - PHASE 2
 A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'T' THRU 'Z', 'AA' AND 'BB' AND NON-BUILDABLE BULK PARCEL 'U' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S', AND 'U' TO ADD OR MODIFY FOREST CONSERVATION AREAS
 THIRD ELECTION DISTRICT
CONTRACT NO. 50-4287-D

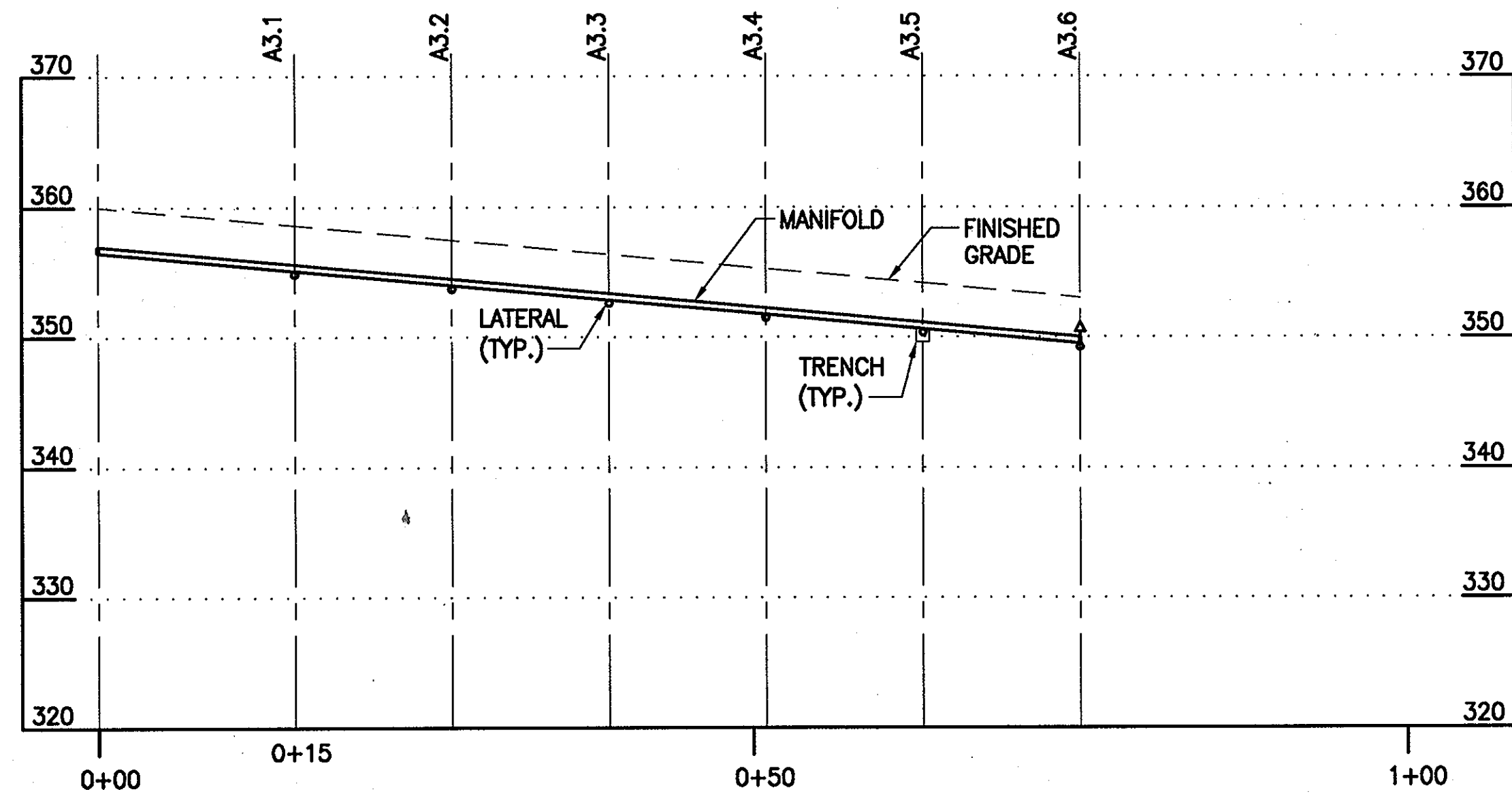
U1.8
 SCALE: AS SHOWN
 SHEET NO. 11 of 56



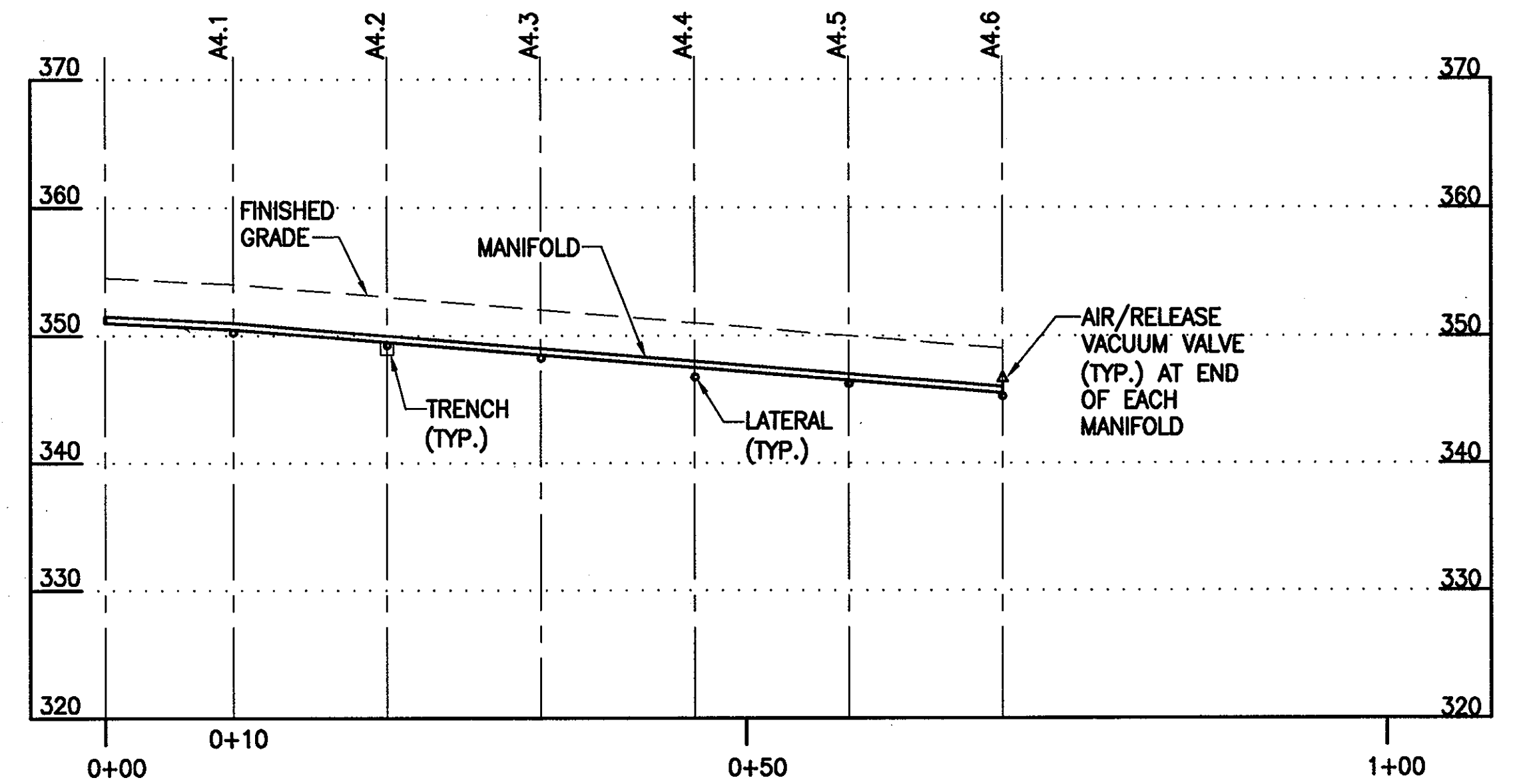
CELL A1



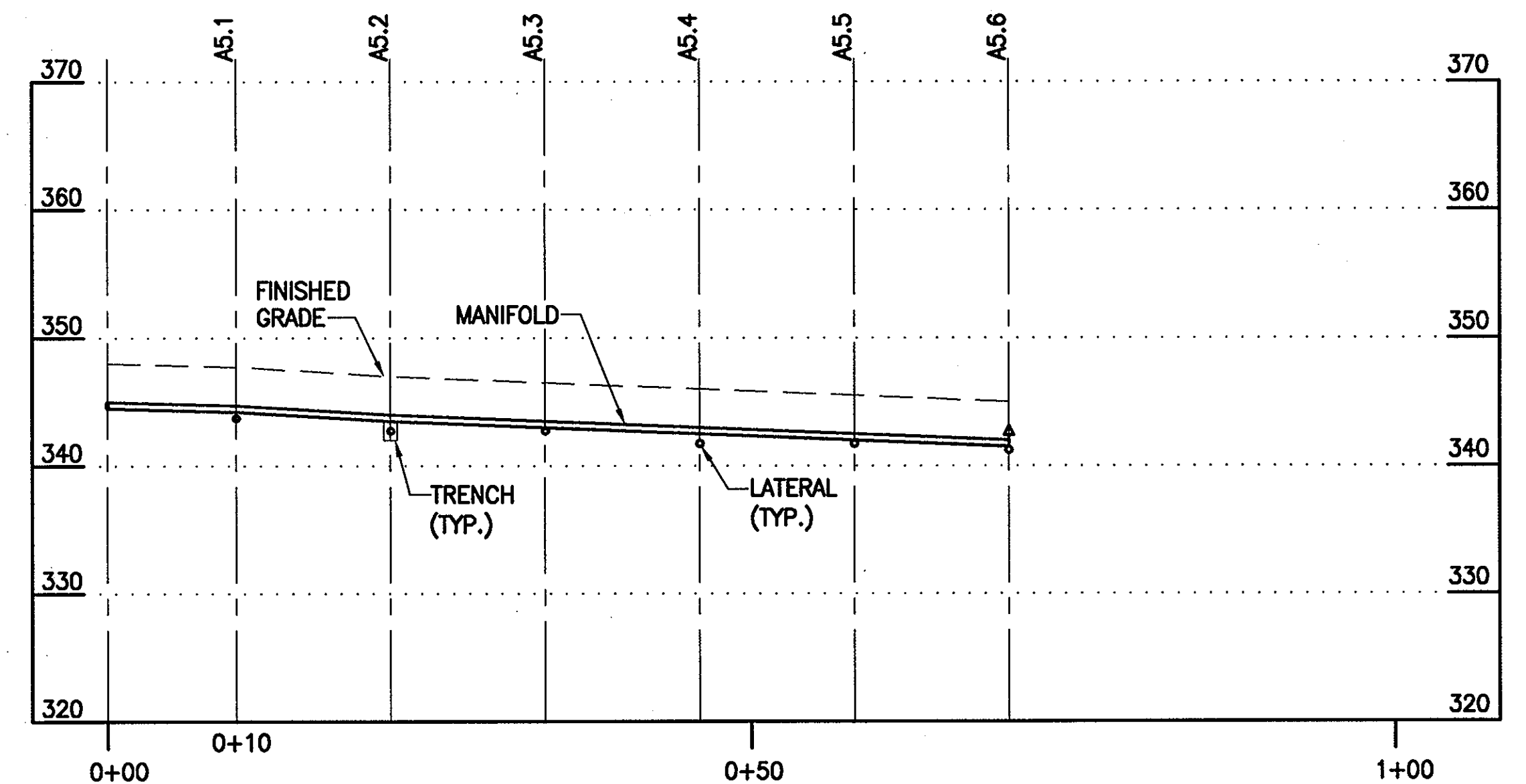
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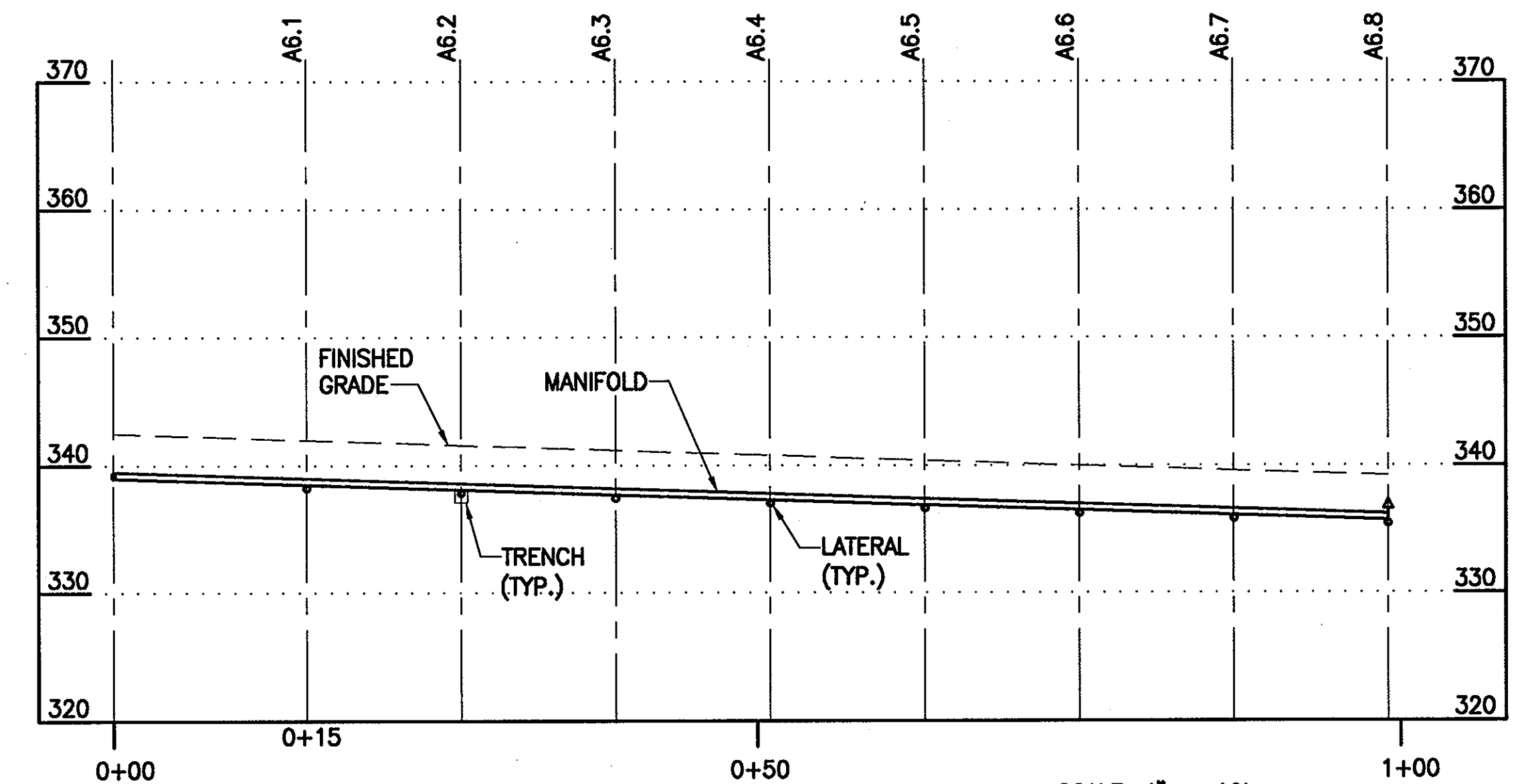
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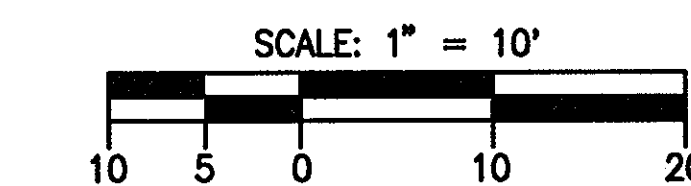
CELL A4



CELL A5



CELL A6

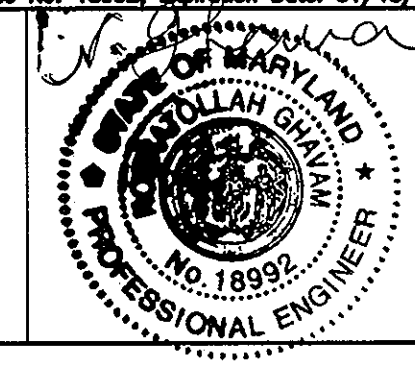


APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT
B. Wilson for Peter Beilman 9/17/07
 COUNTY HEALTH OFFICER DATE

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
 License No. 18992, Expiration Date: 01/18/2009.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND
 DEPARTMENT OF PLANNING AND ZONING HOWARD COUNTY, MARYLAND
Nicholas A. Guarnello 9-17-07
 CHIEF, BUREAU OF UTILITIES DATE
[Signature] 9/17/07
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

URS
 URS CORP.
 CONSULTING ENGINEERING AND PLANNING
 1099 Winterson Road
 Linthicum, MD 21090
 Phone: 410-855-6160 Fax: 410-855-6163

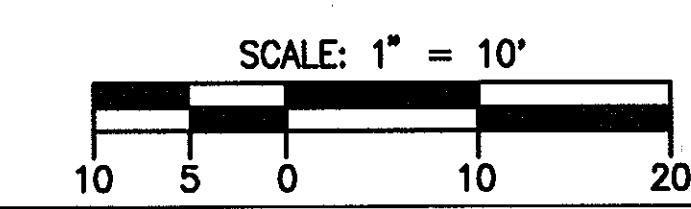
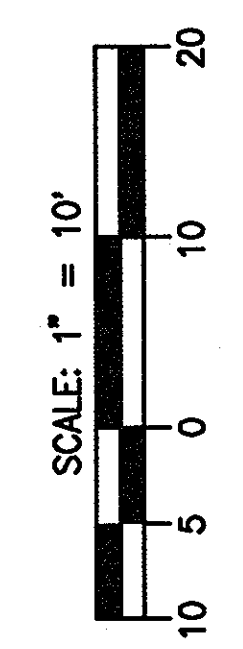
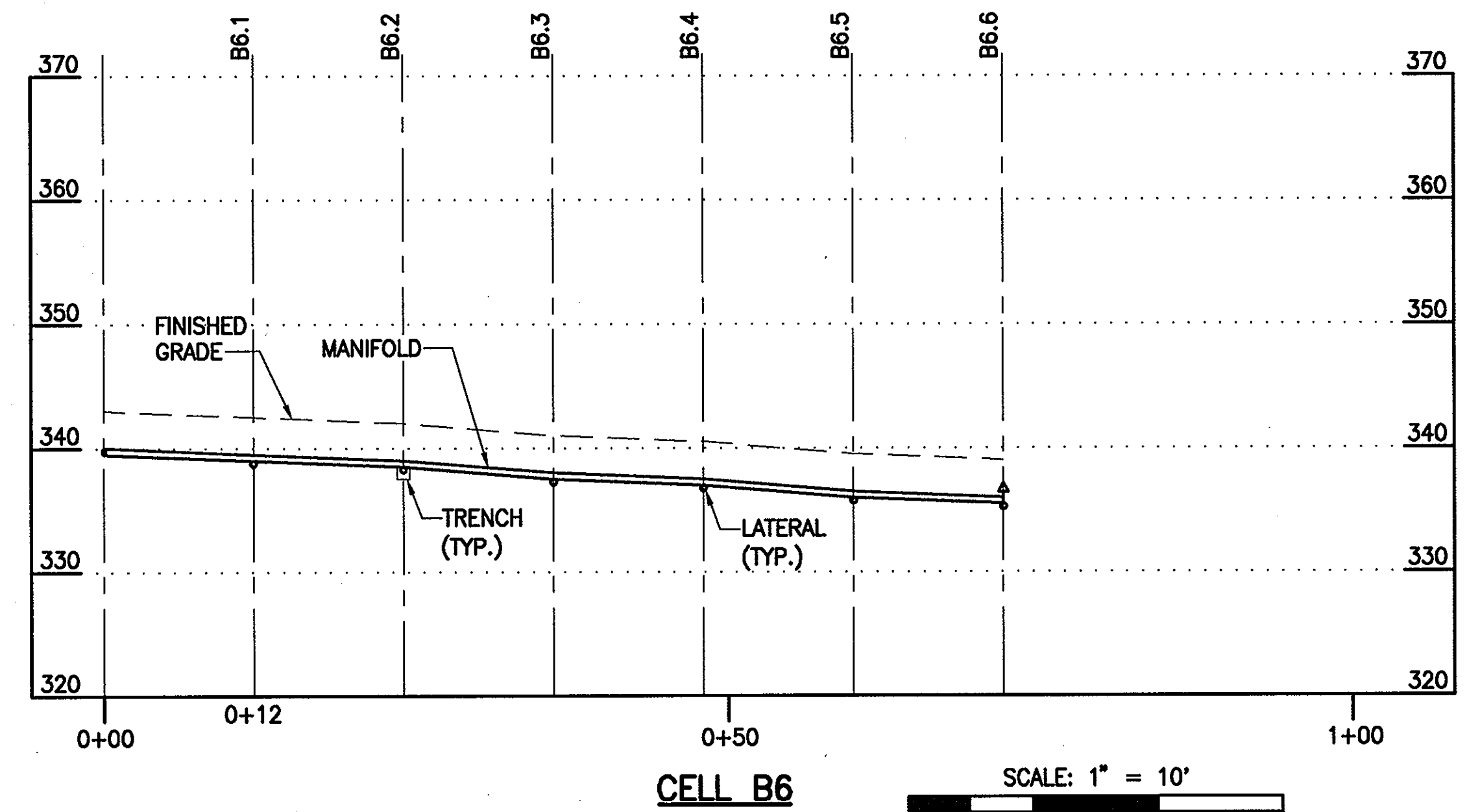
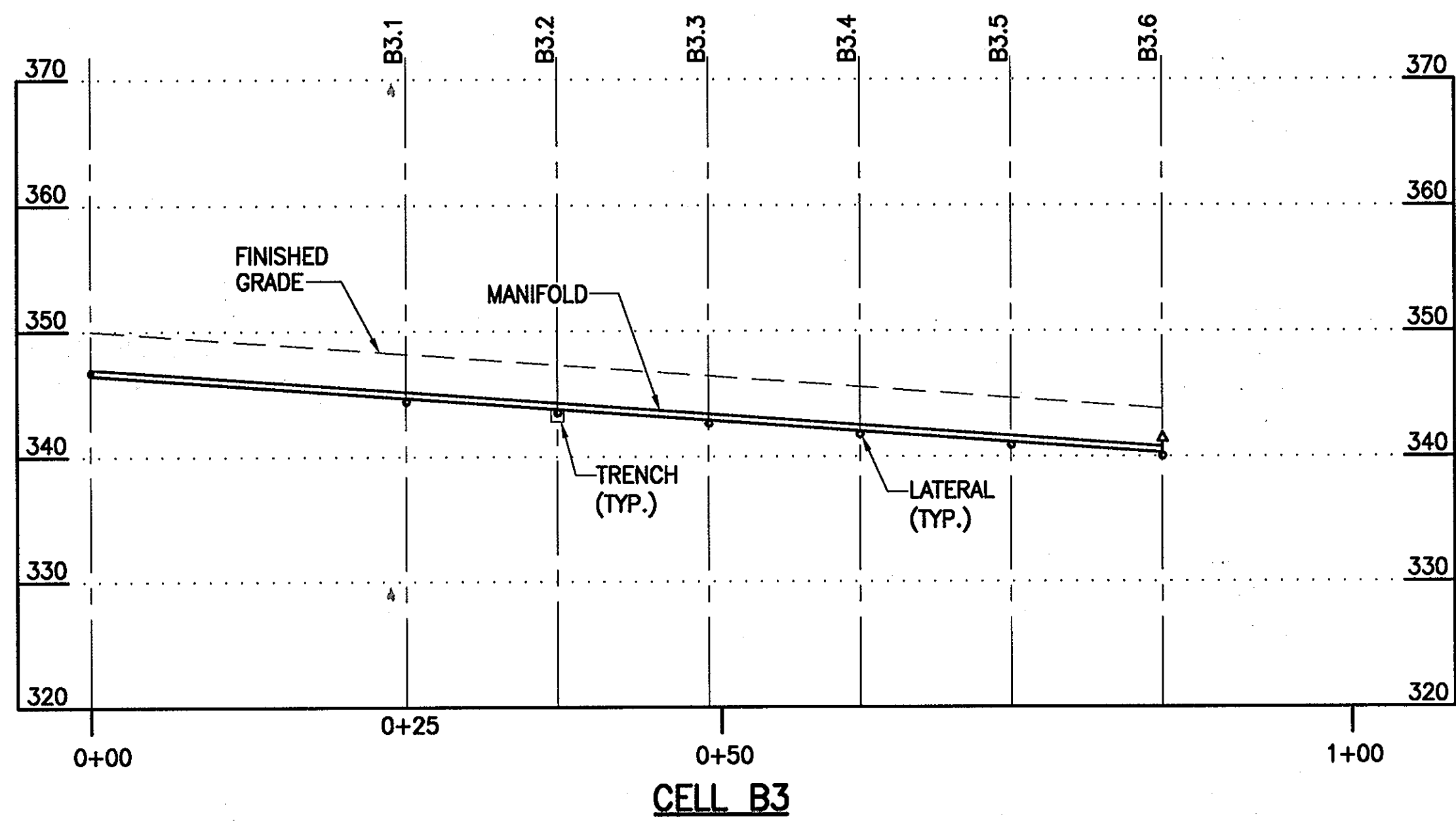
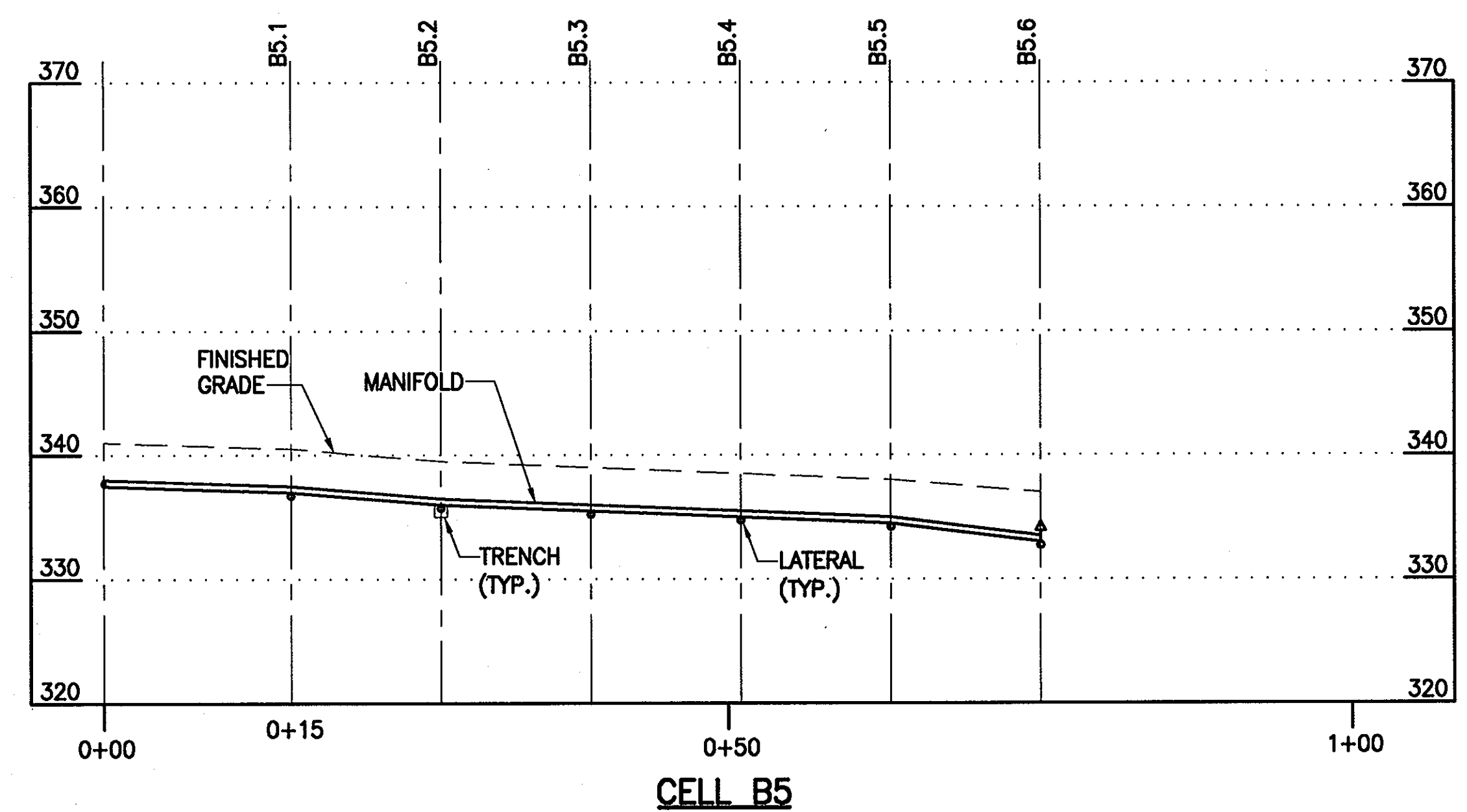
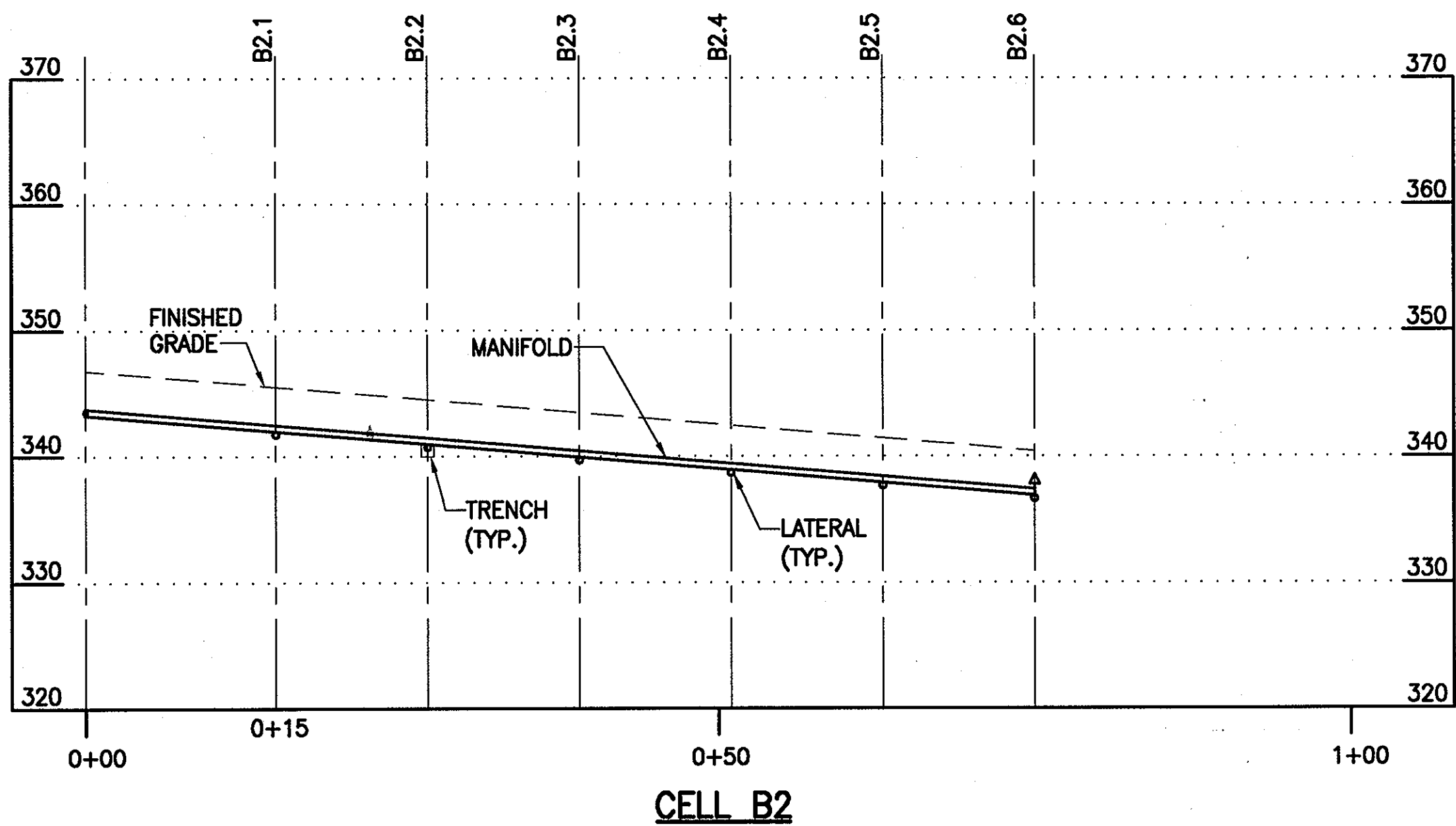
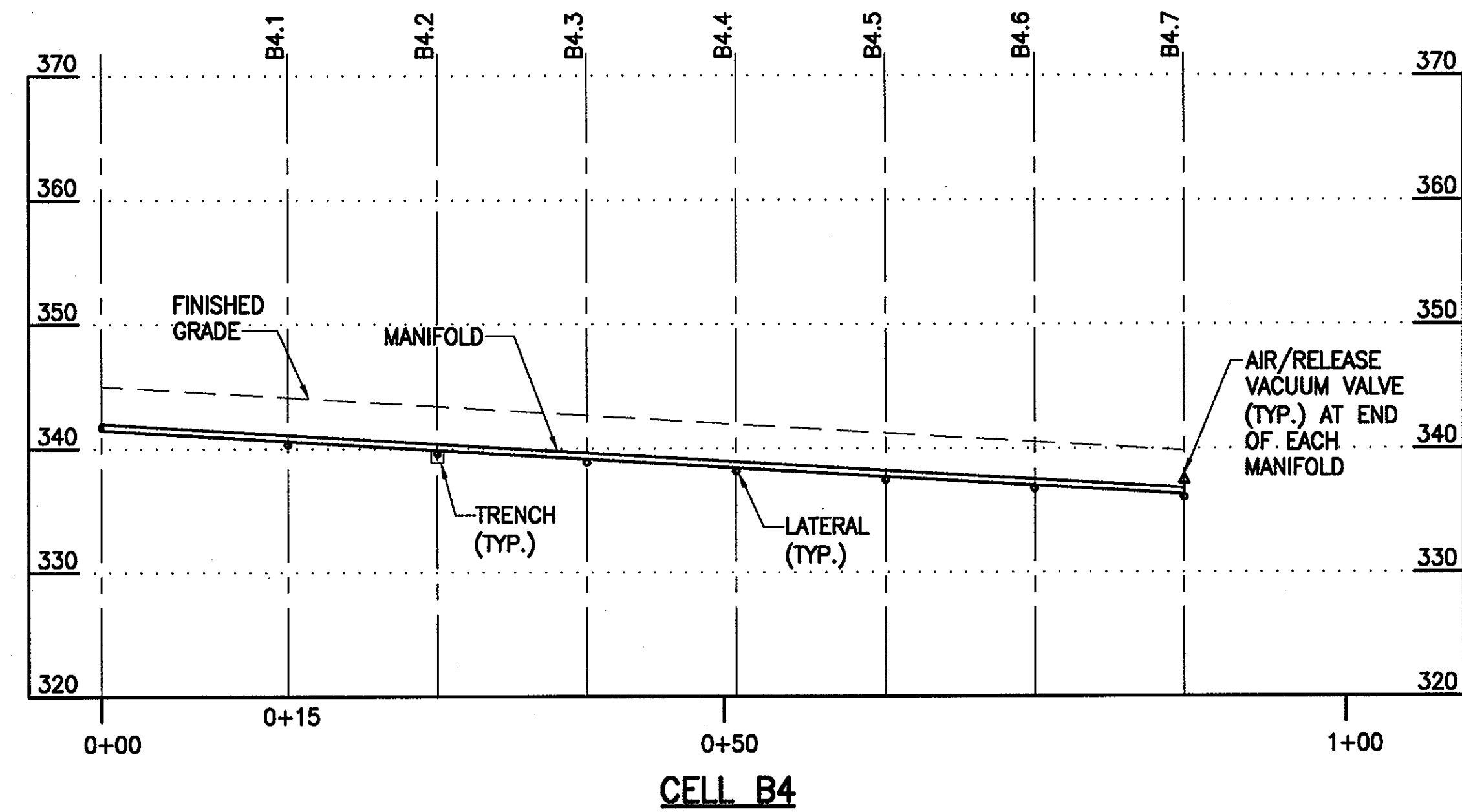
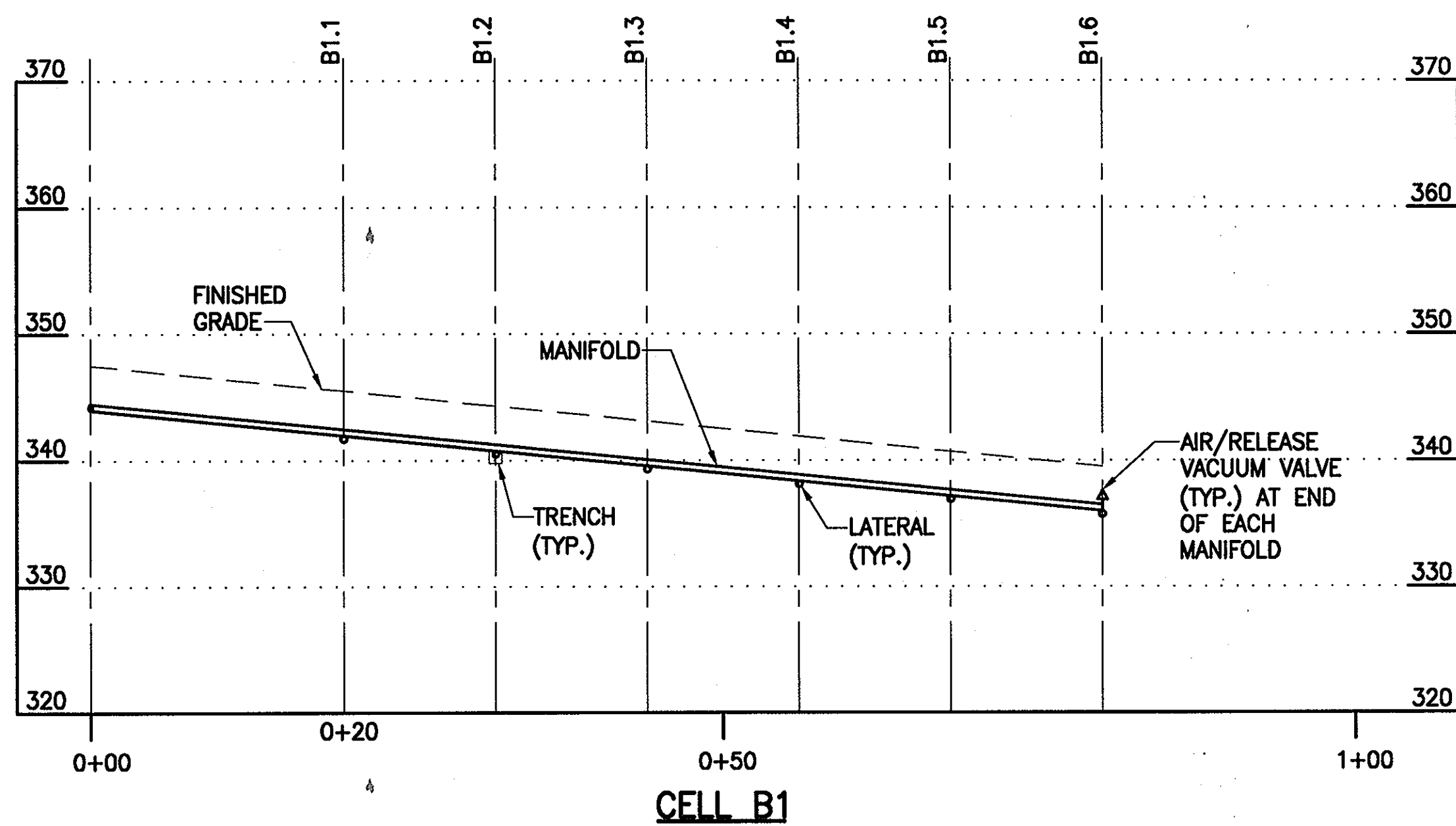


DESIGN: RLH	
DRAFT: RLH	
CHK: NG	
DATE: 5/2007	
BY NO.	
REVISIONS	

SHARED SEPTIC SYSTEM
 DISPOSAL CELLS
 MANIFOLD PROFILES

RIVERWOOD - PHASE 2
 A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'T' THRU 'Z', 'AA' AND 'BB' AND NON-BUILDABLE BULK PARCEL 'H' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S', AND 'U' TO ADD OR MODIFY FOREST CONSERVATION AREAS
 THIRD ELECTION DISTRICT
 CONTRACT NO. 50-4287-D

U1.9
 SCALE: AS SHOWN
 SHEET NO. 12 of 56

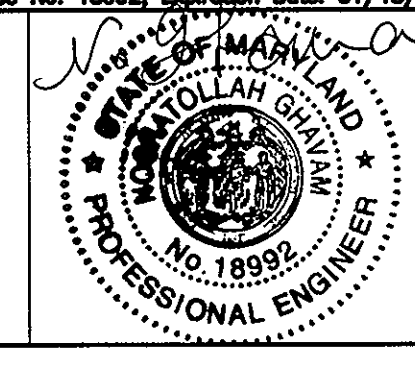


APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT
Signature 9/17/07
 COUNTY HEALTH OFFICER DATE

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
 License No. 18992, Expiration Date: 01/18/2009.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND
 DEPARTMENT OF PLANNING AND ZONING HOWARD COUNTY, MARYLAND
Signature 9/17/07
 CHIEF, BUREAU OF UTILITIES DATE

URS
 URS CORP.
 CONSULTING ENGINEERING AND PLANNING
 1099 Winterson Road
 Linthicum, MD 21090
 Phone: 410-855-6160 Fax: 410-855-6163

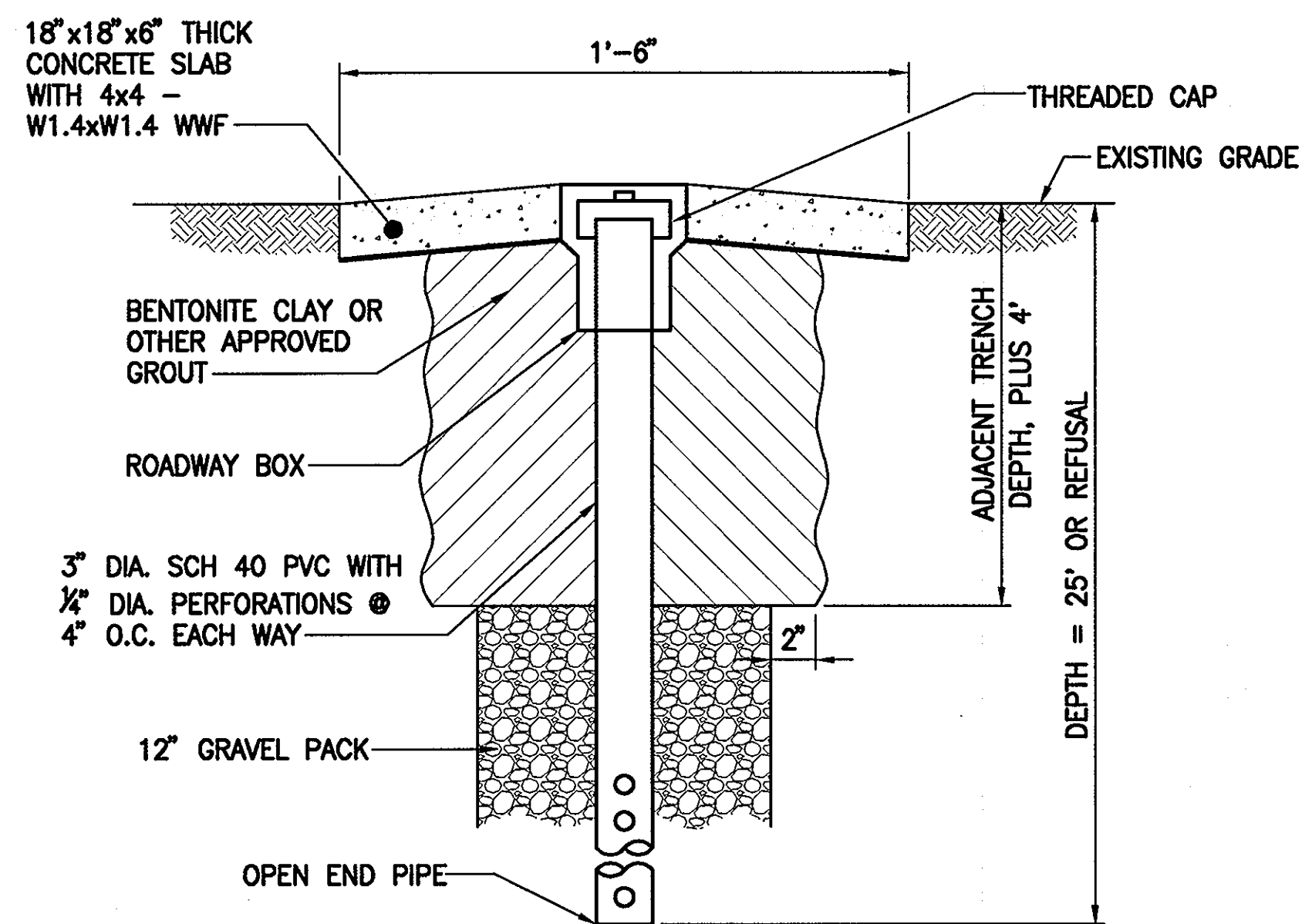


DESIGN: RLH	
DRAFT: RLH	
CHK: NG	
DATE: 5/2007	
BY NO.	
REVISIONS	

SHARED SEPTIC SYSTEM
 DISPOSAL CELLS
 MANIFOLD PROFILES

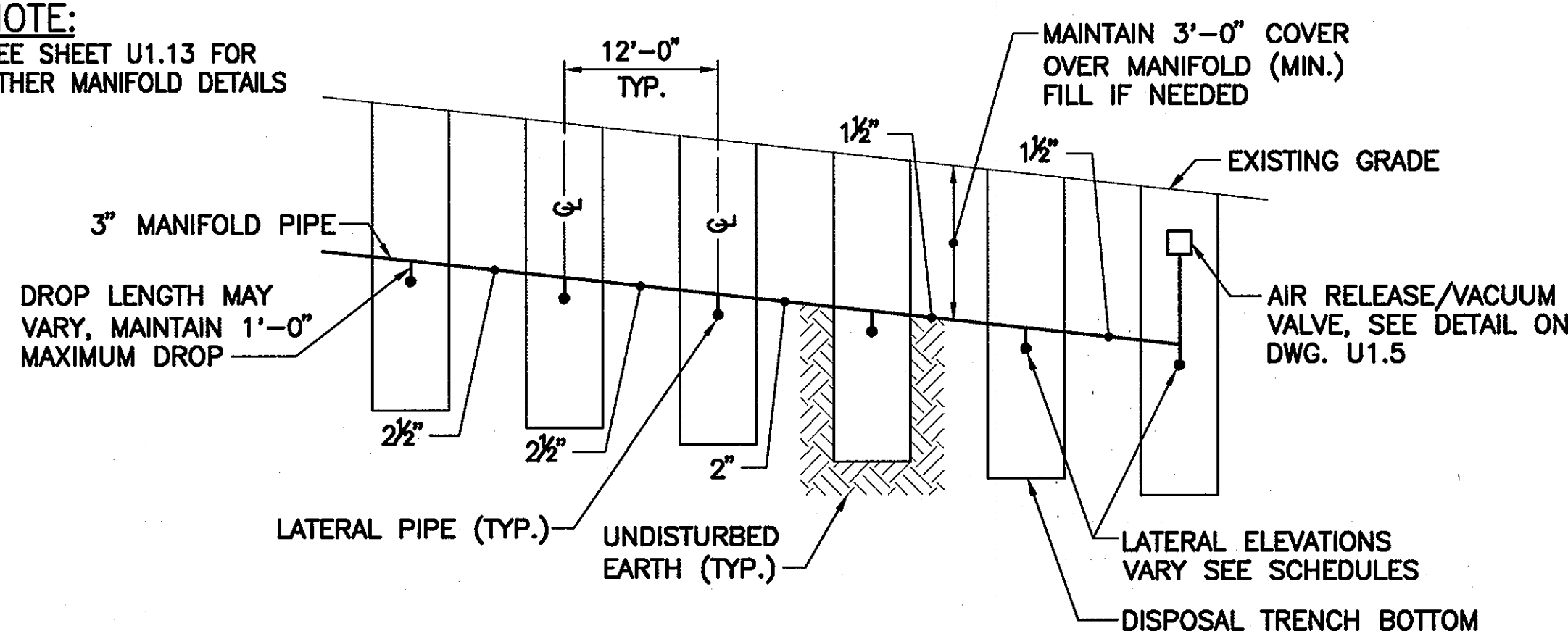
RIVERWOOD - PHASE 2
 A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'T' THRU 'Z', 'AA' AND 'BB' AND NON-BUILDABLE BULK PARCEL 'II' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S', AND 'U' TO ADD OR MODIFY FOREST CONSERVATION AREAS
 THIRD ELECTION DISTRICT
CONTRACT NO. 50-4287-D

U1.10
 SCALE: AS SHOWN
 SHEET NO. 13 of 56

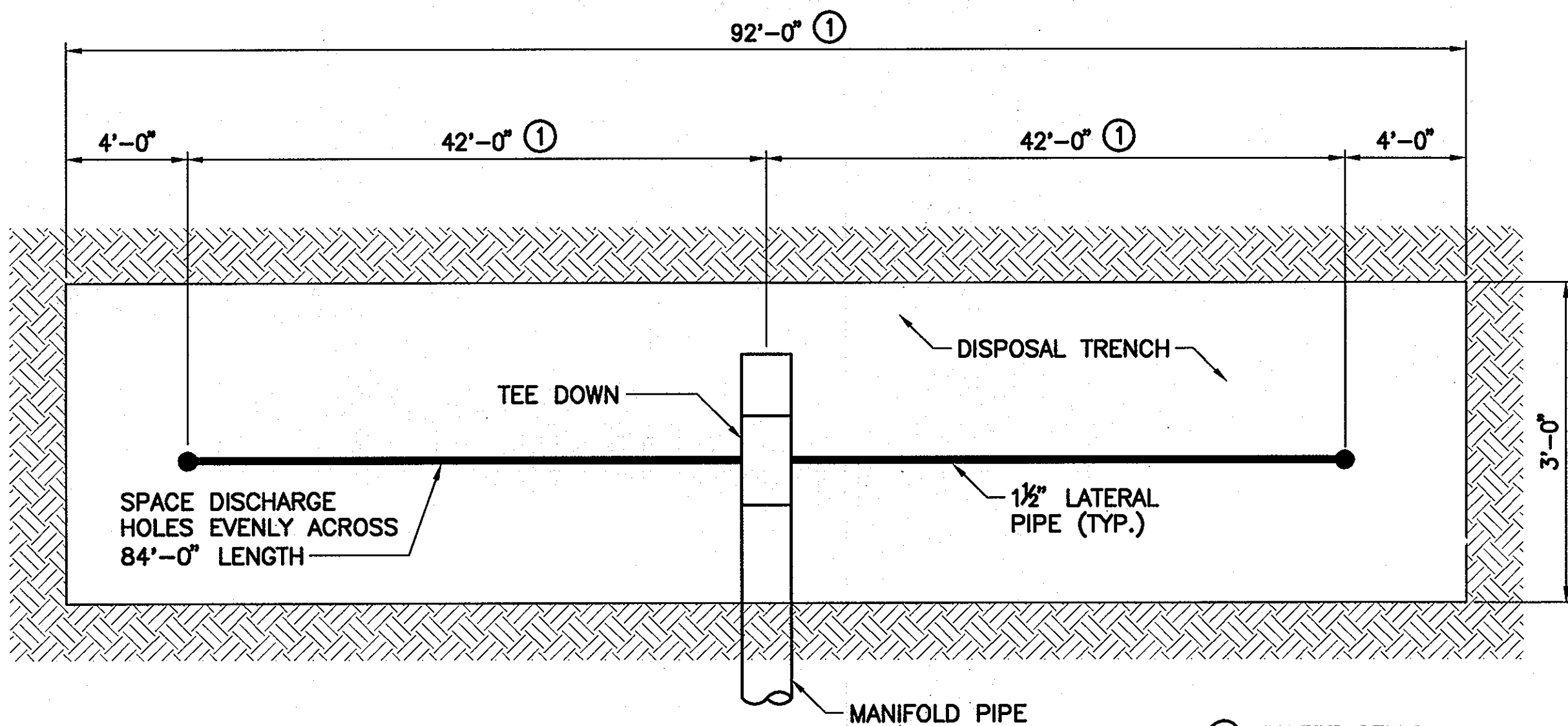


PIEZOMETER DETAIL
NOT TO SCALE

NOTE:
SEE SHEET U1.13 FOR
OTHER MANIFOLD DETAILS



CELL SECTION AND MANIFOLD DETAIL - TYPICAL
FOR A4, A5, A6, B5 AND B6
NOT TO SCALE

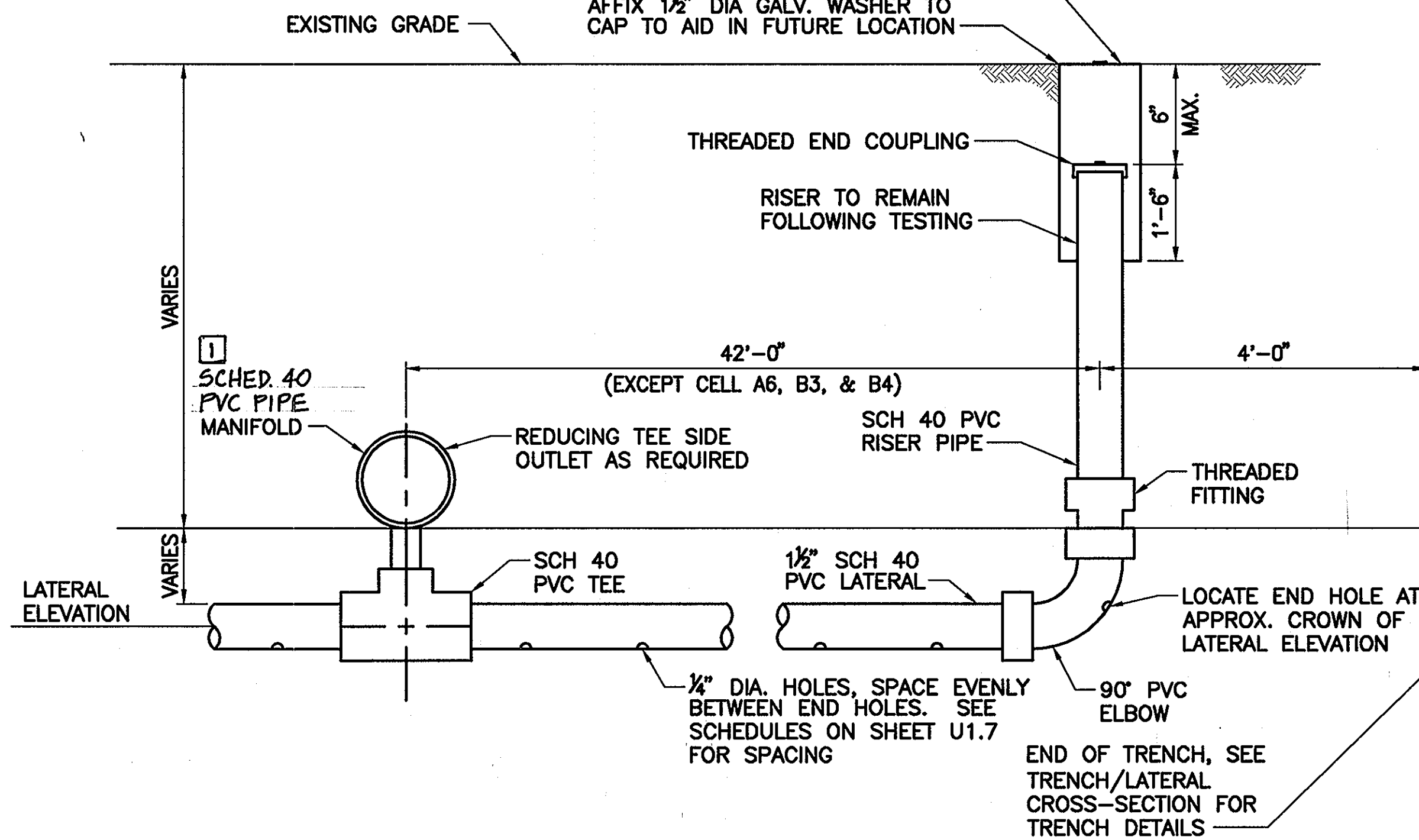


TYPICAL LATERAL DETAIL
NOT TO SCALE

① EXCEPT CELLS
B3, B4 & A6

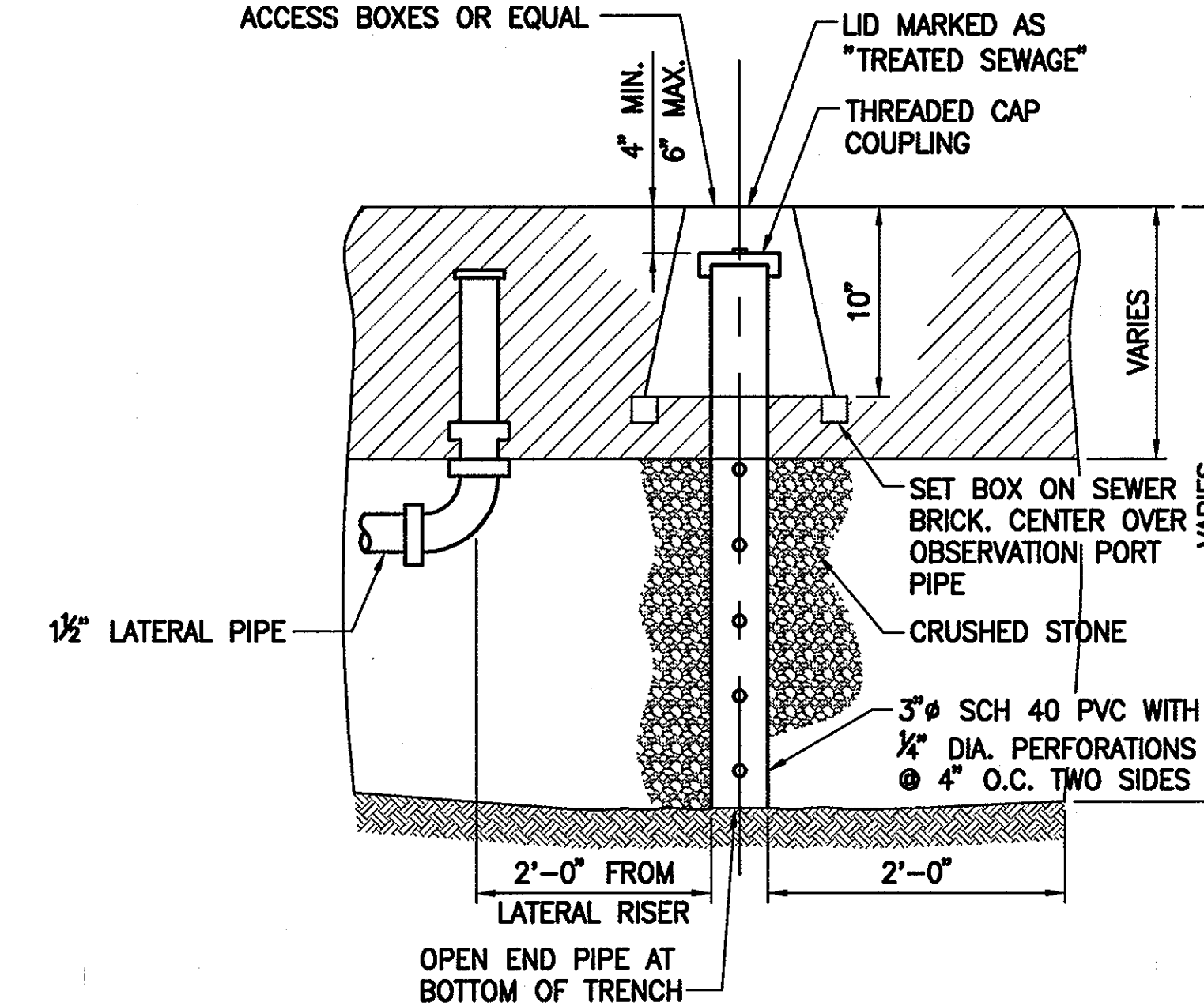
Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 18992, Expiration Date: 01/18/2009.

8" DIAMETER SCH 80 PVC ENCASEMENT ACCESS. PROVIDE AT CORNER RISERS ONLY. (FOUR EACH CELL) DIRECT BURY THREADED CAPPED RISER AT ALL OTHER LOCATIONS
SET AT OR SLIGHTLY BELOW GRADE. TOP TO HAVE THREADED COUPLING WITH THREADED CAP. AFFIX 1 1/2" DIA GALV. WASHER TO CAP TO AID IN FUTURE LOCATION



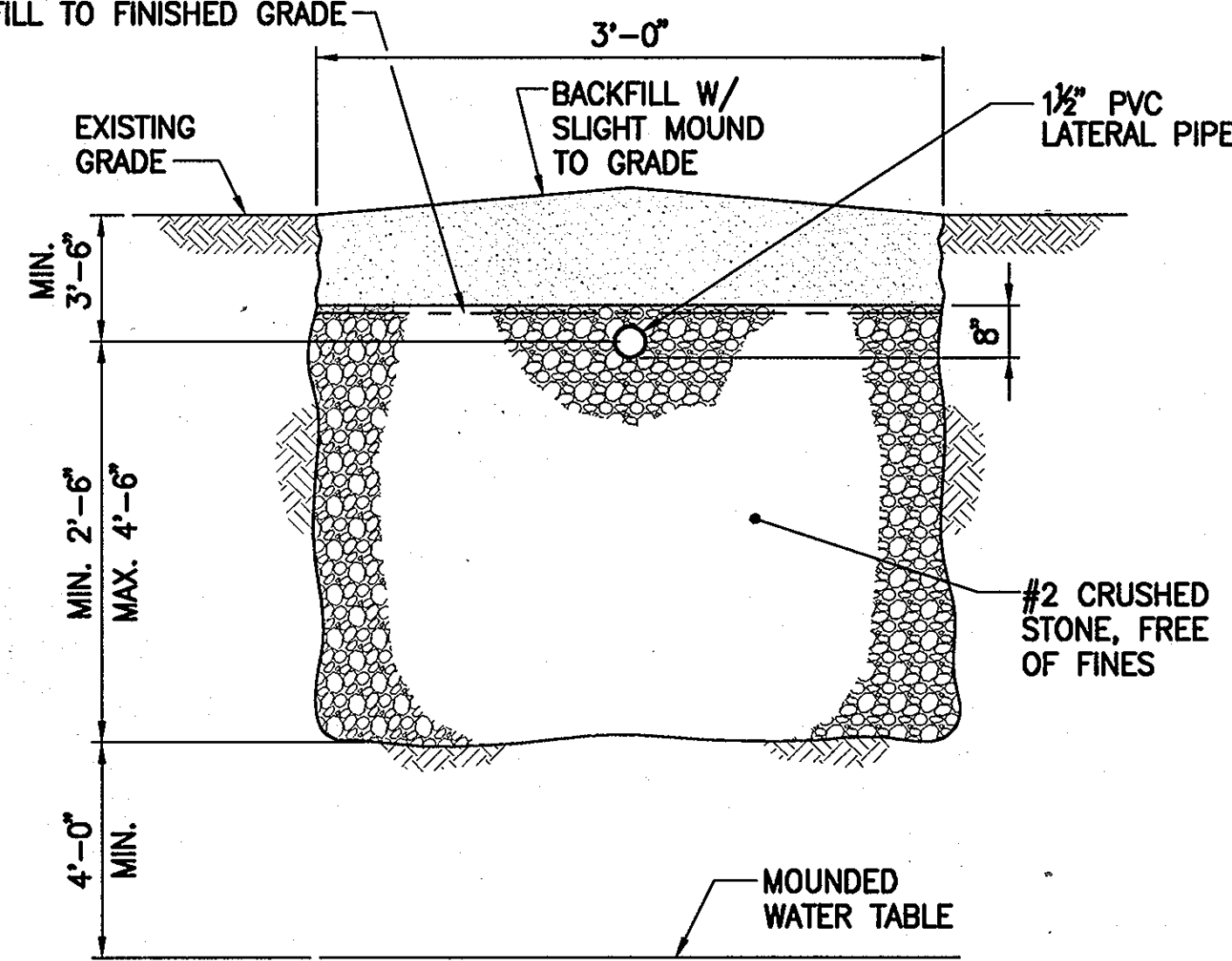
LATERAL AND INSPECTION PIPE DETAIL
NOT TO SCALE

TURF IRRIGATION BOX 10" ROUND ASSEMBLY W/ LOCKING SCREW BY ARMOR ACCESS BOXES OR EQUAL

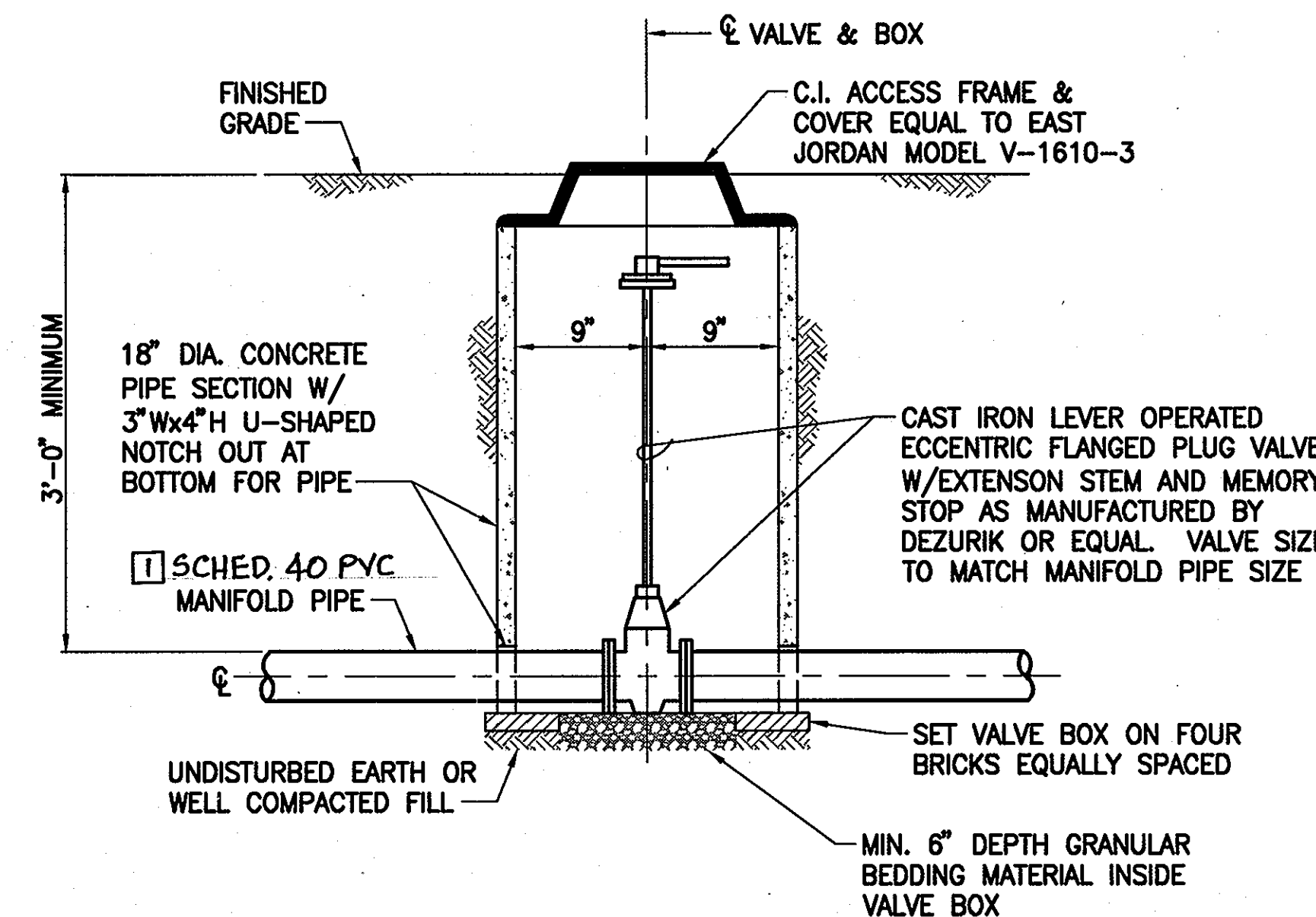


OBSERVATION PORT DETAIL
NOT TO SCALE

COVER CRUSHED STONE WITH GEOTEXTILE MATERIAL PRIOR TO PLACING REMAINDER OF BACKFILL TO FINISHED GRADE



SECTION PRESSURE DOSED TRENCH DETAIL
NOT TO SCALE



DISPOSAL CELL MANIFOLD PIPE BALANCING VALVE DETAIL
SCALE: NOT TO SCALE

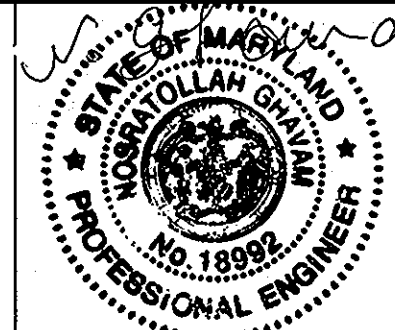
APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT

Michael A. DiGirolamo 9/17/07
COUNTY HEALTH OFFICER

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND

Michael A. DiGirolamo 9/17/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION

URS
URS CORP.
CONSULTING ENGINEERING AND PLANNING
1099 Winterson Road
Linthicum, MD 21090
Phone: 410-855-6160 Fax: 410-855-6163



DESIGN: NG			
DRAFT: CLD/JRG			
CHK: RER			
DATE: 5/2007	RER	REVISION #1	4-28-11
BY	NO.	REVISIONS	DATE

SHARED SEPTIC SYSTEM

DISPOSAL FIELD DETAILS I

600 SCALE MAP NO. 23 BLOCKS 21 & 22 AND MAP NO. 29 BLOCKS 3 & 4

RIVERWOOD - PHASE 2

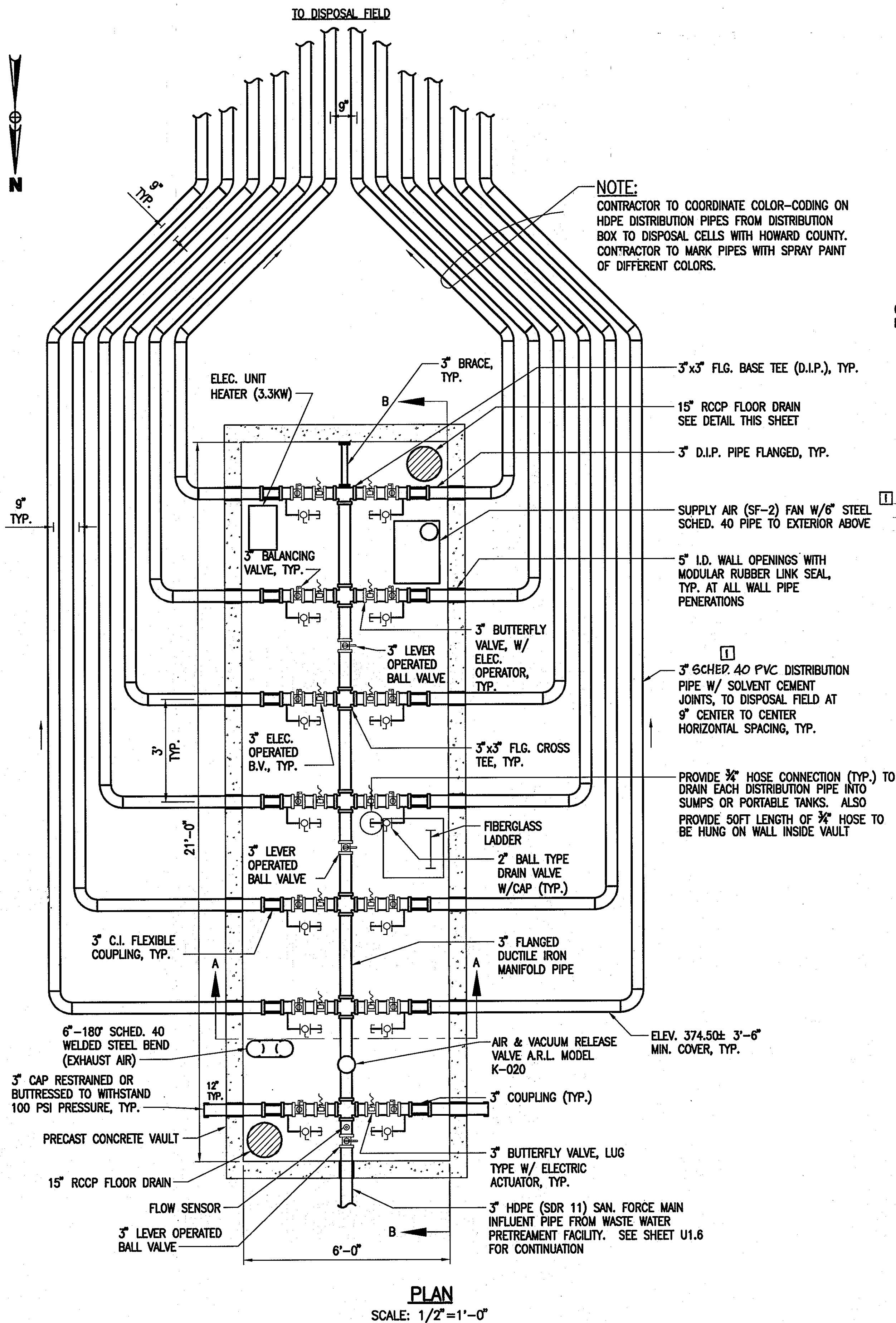
A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'T' THRU 'Z', 'AA' AND 'BB' AND NON-BUILDABLE BULK PARCEL 'II' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S', AND 'U' TO ADD OR MODIFY FOREST CONSERVATION AREAS

THIRD ELECTION DISTRICT
CONTRACT NO. 50-4287-D

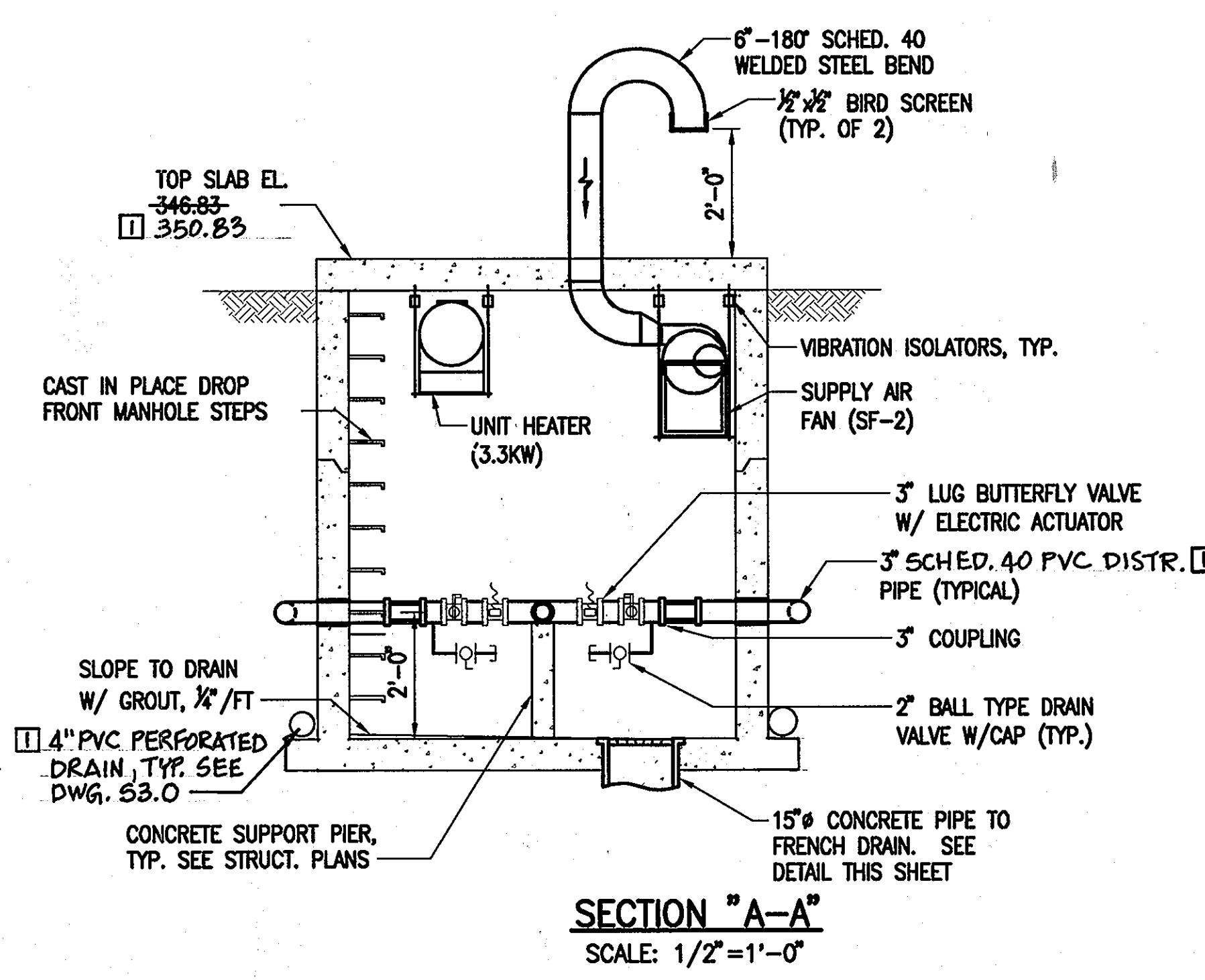
U1.11

SCALE:
AS SHOWN

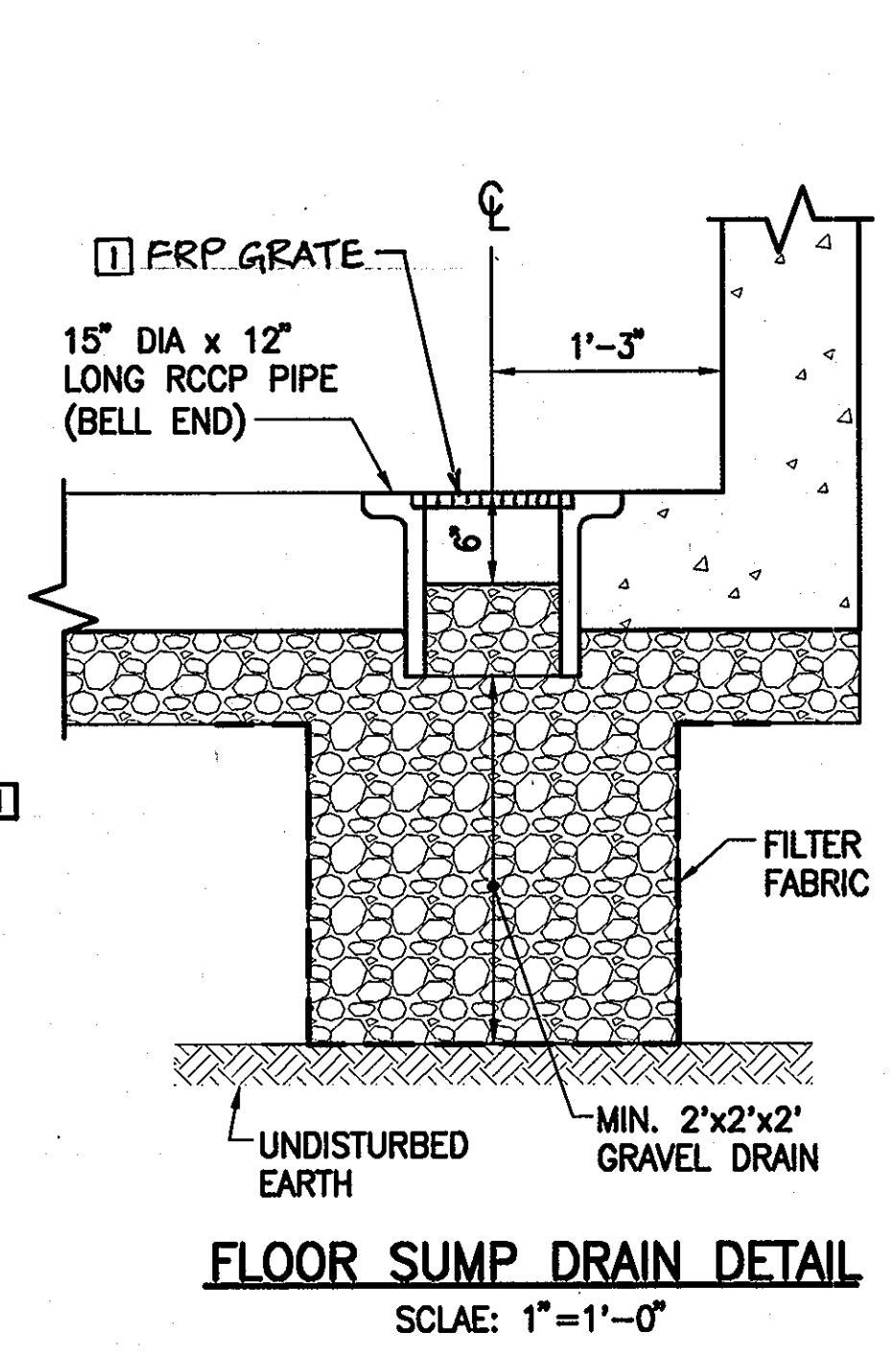
SHEET NO.
14 of 56



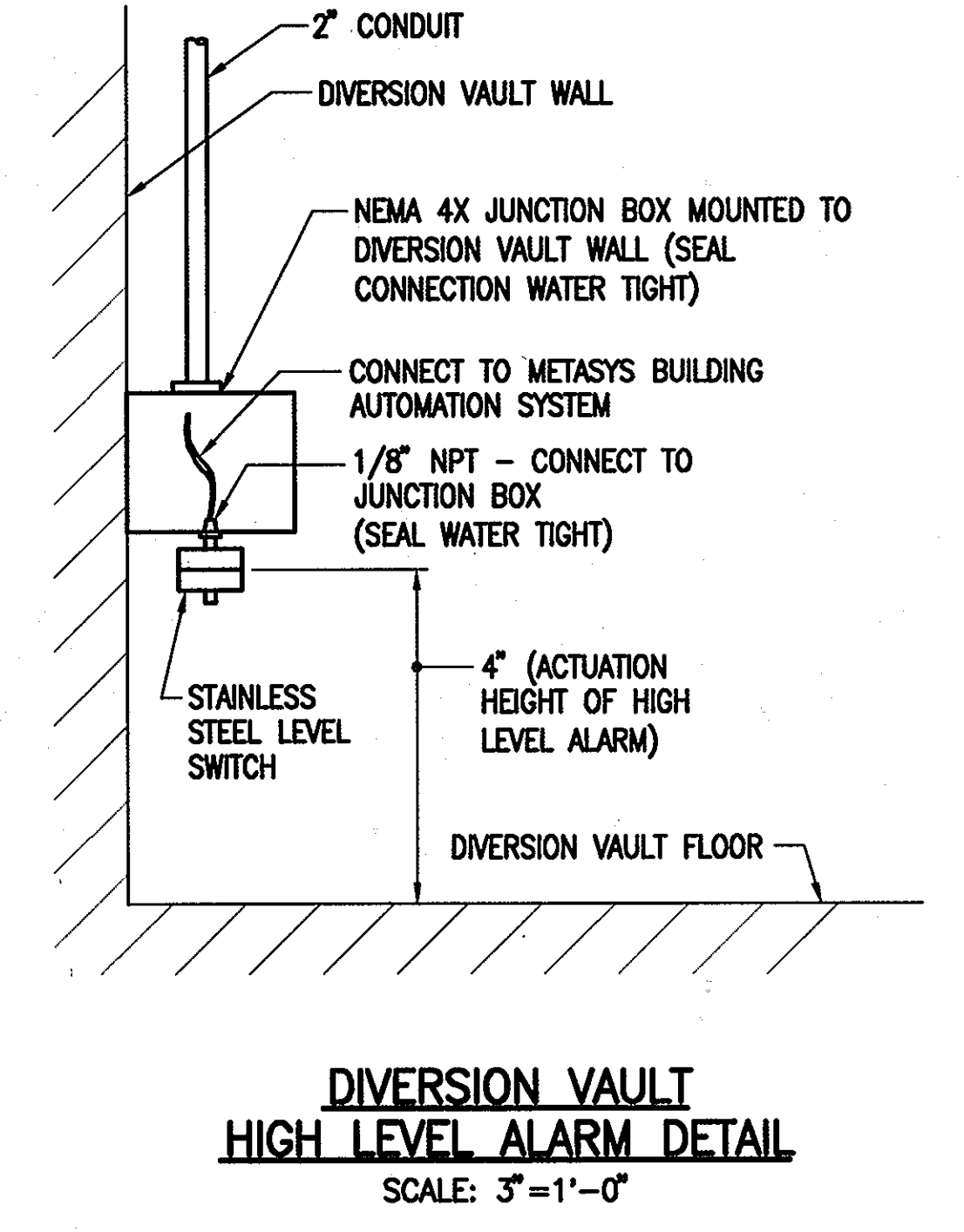
PLAN
SCALE: 1/2"=1'-0"



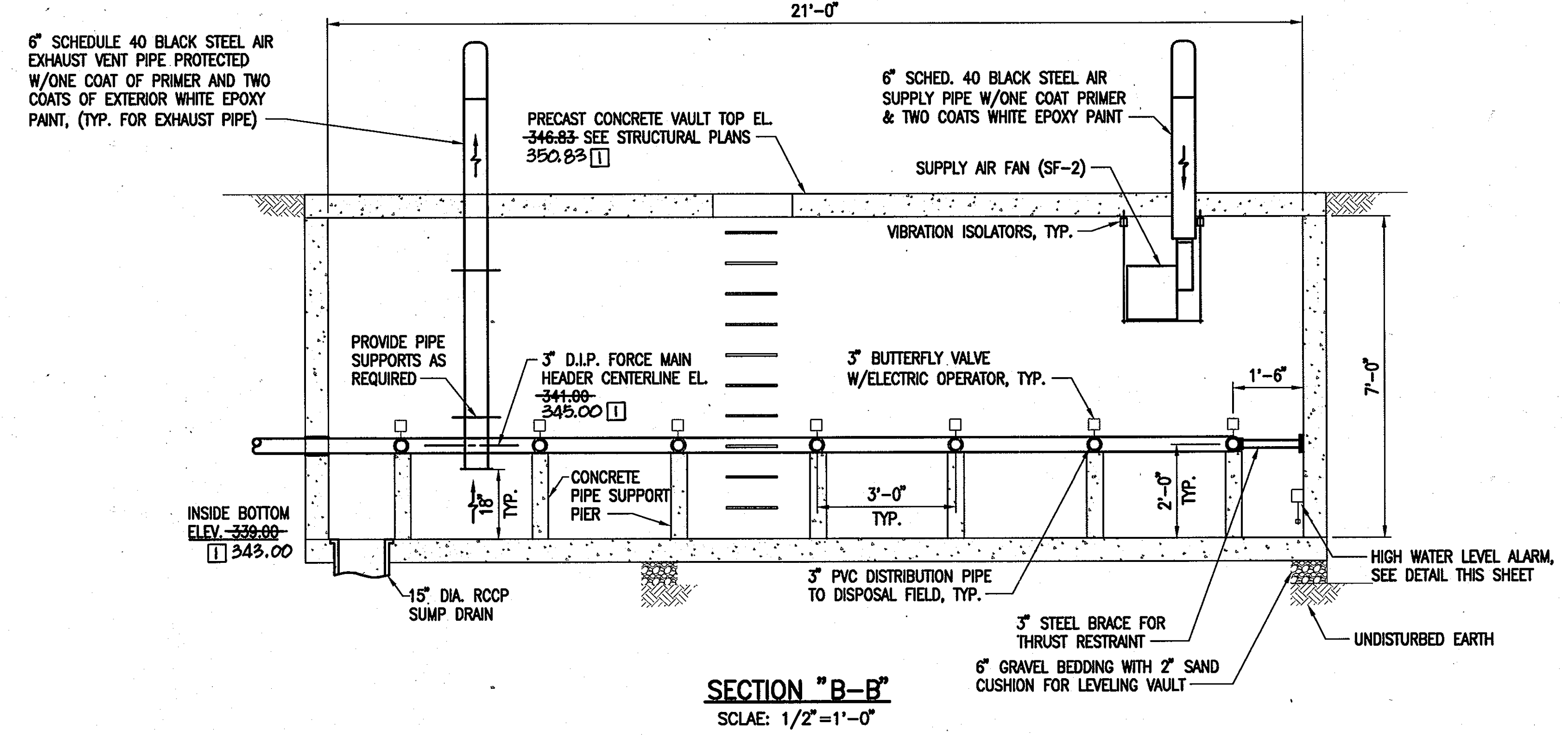
SECTION "A-A"
SCALE: 1/2"=1'-0"



FLOOR SUMP DRAIN DETAIL
SCALE: 1"=1'-0"

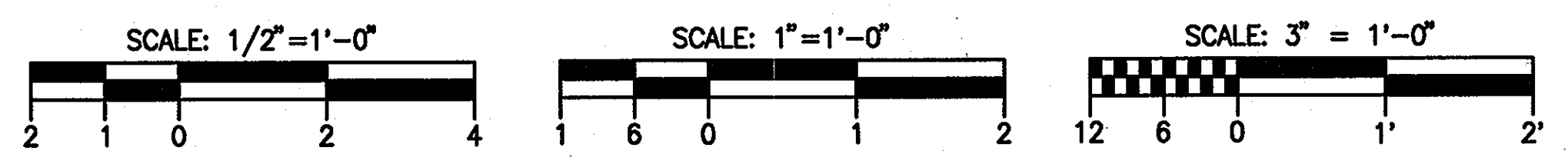


DIVERSION VAULT HIGH LEVEL ALARM DETAIL
SCALE: 3"=1'-0"



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

DISPOSAL FIELD DISTRIBUTION VALVE VAULT DETAILS
SCALE: 1/2"=1'-0"



APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT
B. DeLeon for Peter Beileman 9/14/07

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 18992, Expiration Date: 01/18/2009.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
Richard Dominello 9-17-07
CHIEF, BUREAU OF UTILITIES

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND
6/2/06
CHIEF, DEVELOPMENT ENGINEERING DIVISION

URS
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CONSULTING ENGINEERING AND PLANNING
1099 Winntown Road
Linthicum, MD 21090
Phone: 410-855-6160 Fax: 410-855-6163

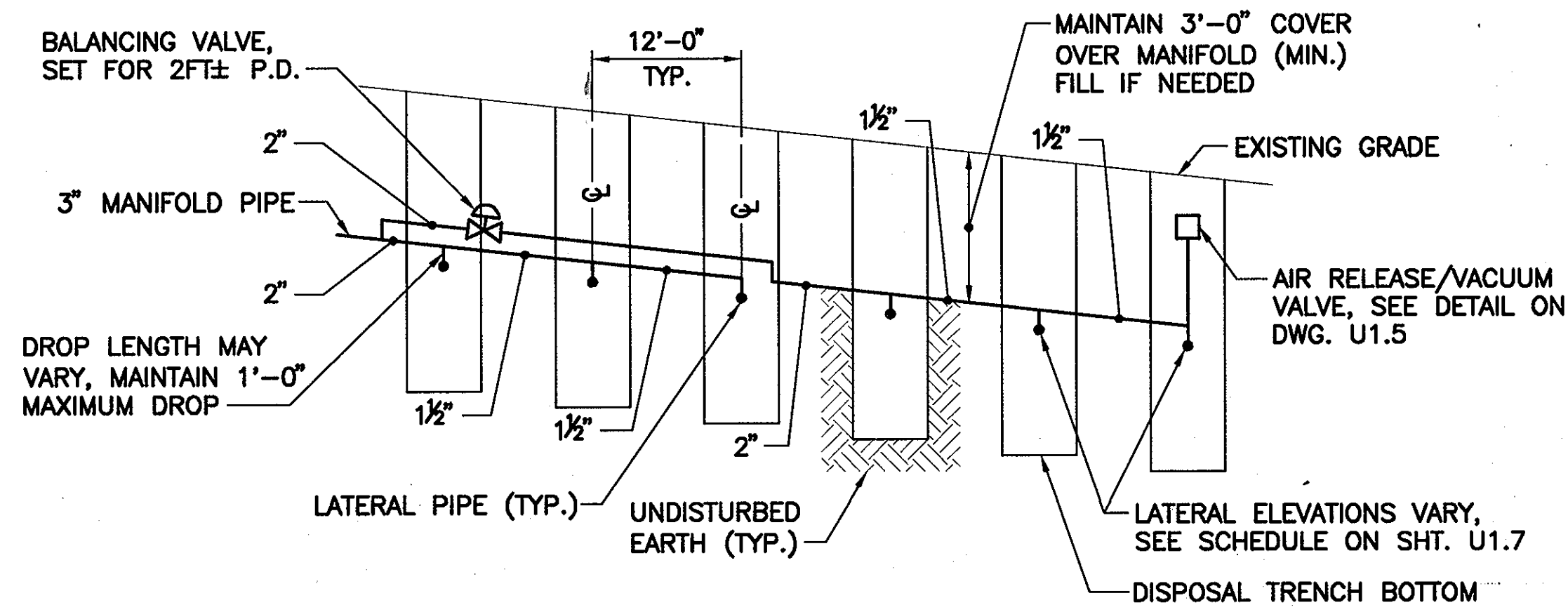
STATE OF MARYLAND
PROFESSIONAL ENGINEER

DESIGN: RLH			
DRAFT: JRG			
CHK: NG			
DATE: 5/2007			
REVISION #1	4-28-11		

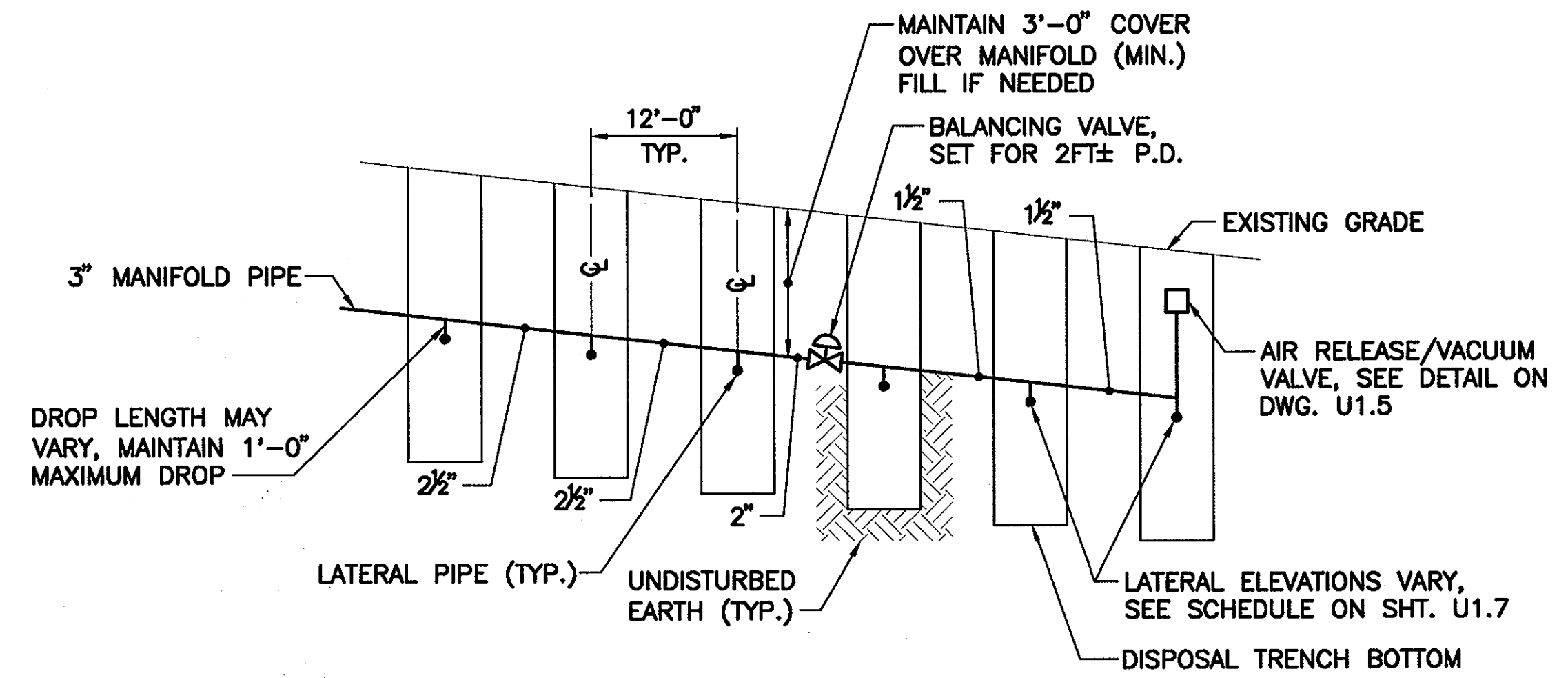
SHARED SEPTIC SYSTEM
DISPOSAL FIELD DETAILS II

RIVERWOOD - PHASE 2
A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'T' THRU 'Z', 'AA' AND 'BB' AND NON-BUILDABLE BULK PARCEL 'II' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S', AND 'U' TO ADD OR MODIFY FOREST PRESERVATION AREAS
THIRD ELECTION DISTRICT
CONTRACT NO. 50-4287-D

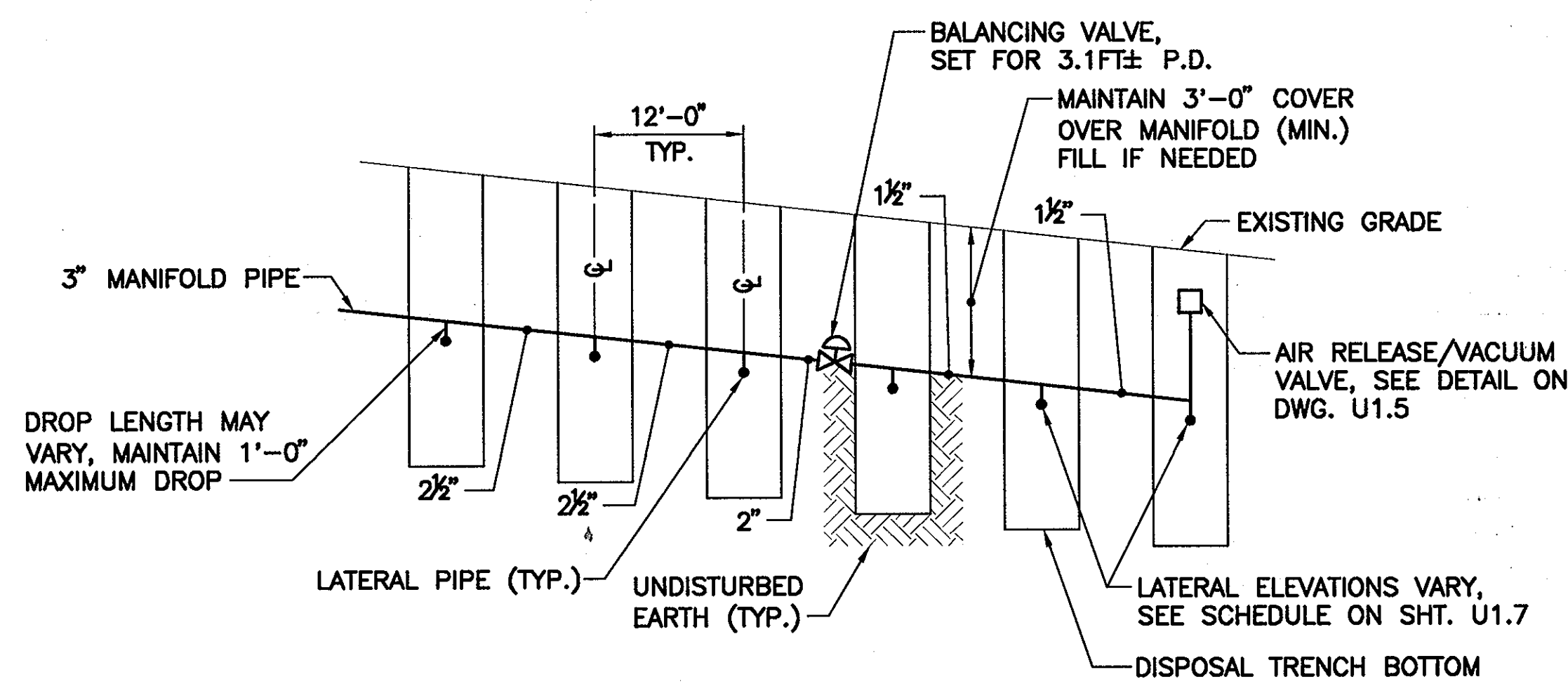
U1.12
SCALE: AS SHOWN
SHEET NO. 15 OF 56



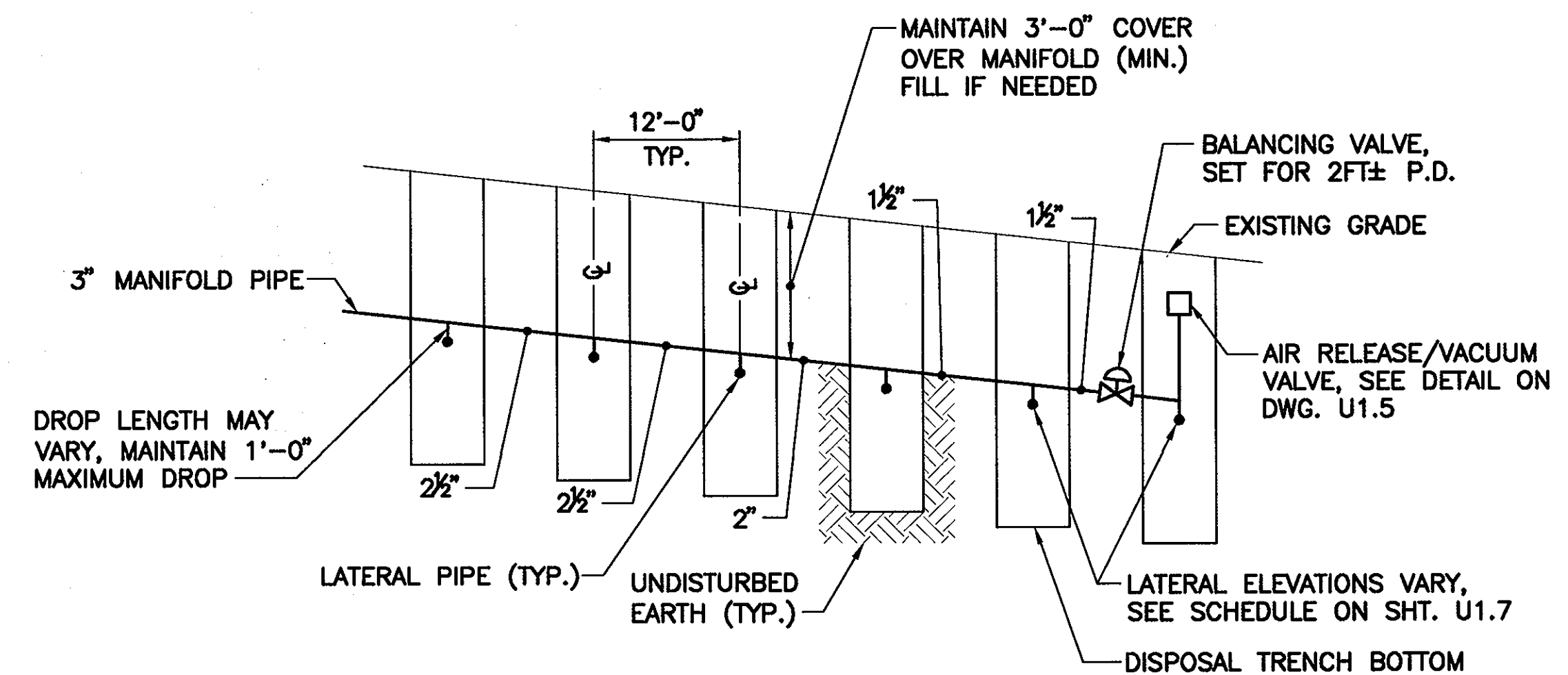
CELL SECTION AND MANIFOLD DETAIL - CELLS A1/A2
NOT TO SCALE



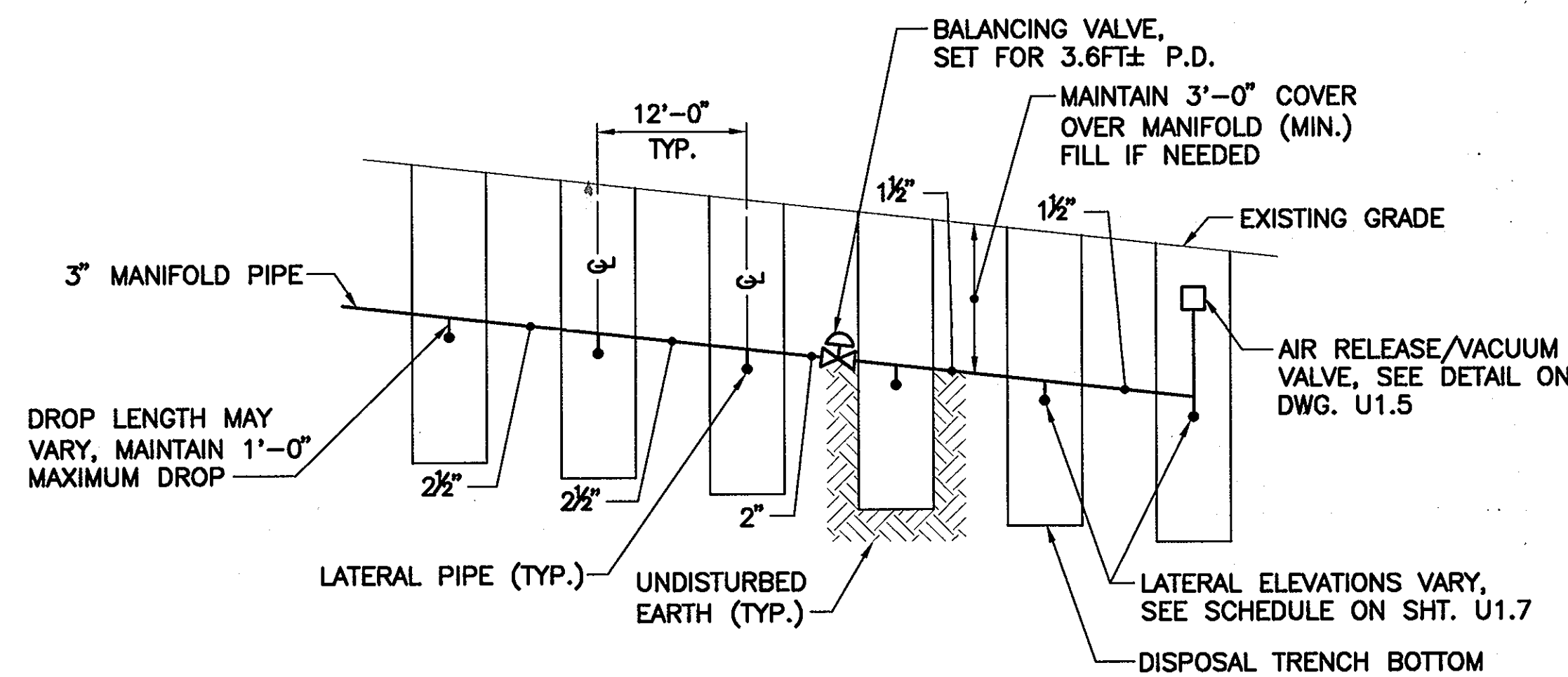
CELL SECTION AND MANIFOLD DETAIL - CELL B2
NOT TO SCALE



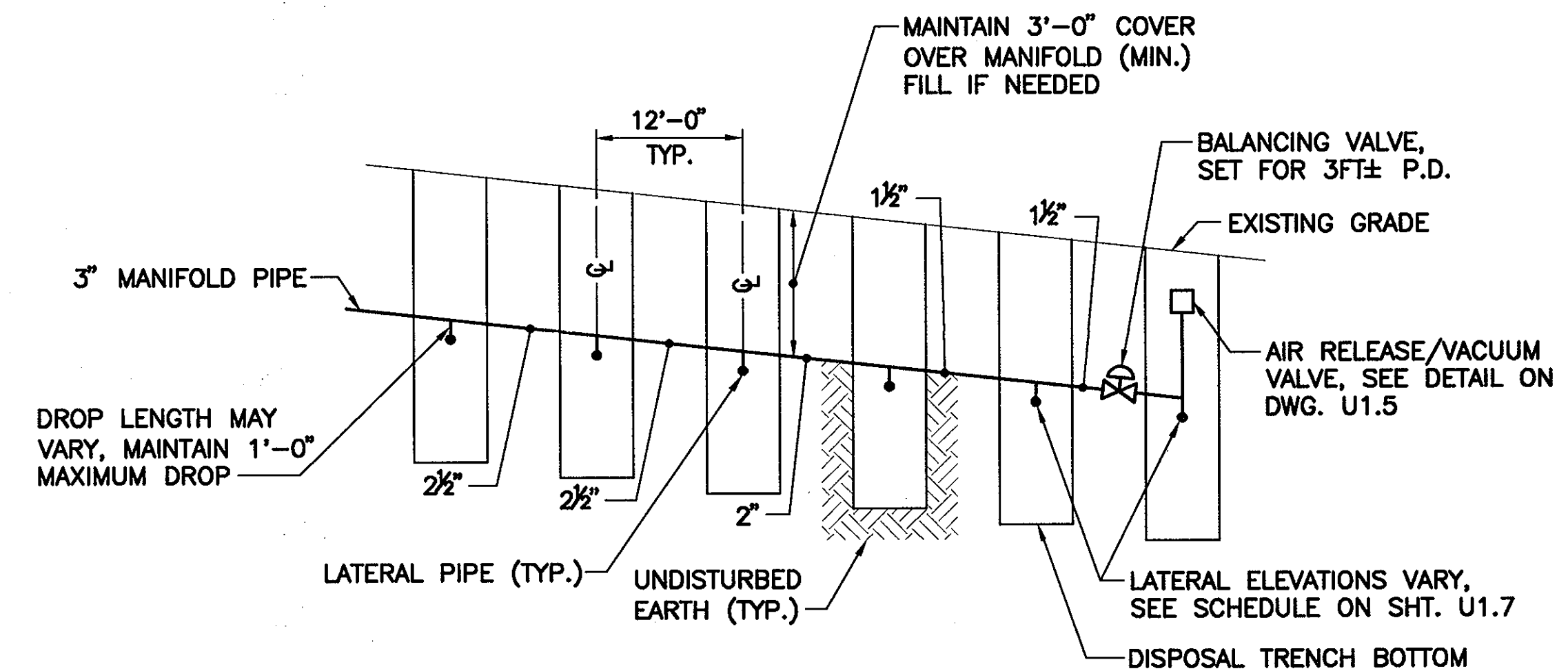
CELL SECTION AND MANIFOLD DETAIL - CELL A3
NOT TO SCALE



CELL SECTION AND MANIFOLD DETAIL - CELL B3
NOT TO SCALE



CELL SECTION AND MANIFOLD DETAIL - CELL B1
NOT TO SCALE



CELL SECTION AND MANIFOLD DETAIL - CELL A4 & B4
NOT TO SCALE

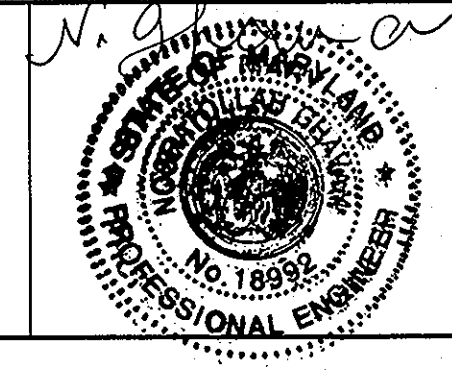
NOTE:
SEE SHEET U1.11 FOR TYPICAL CELL A4, A5, A6, B5, AND B6 SECTION AND MANIFOLD DETAIL.

APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT
William P. Peter 9/14/07
COUNTY HEALTH OFFICER

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 18992, Expiration Date: 01/16/2009.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND
DEPARTMENT OF PLANNING AND ZONING HOWARD COUNTY, MARYLAND
Michael A. Duvainville 9-17-07
CHIEF, BUREAU OF UTILITIES

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CONSULTING ENGINEERING AND PLANNING
1099 Winterson Road
Linthicum, MD 21090
Phone: 410-855-6160 Fax: 410-855-6163

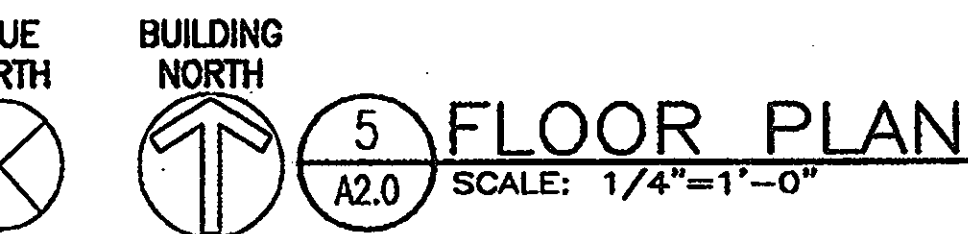
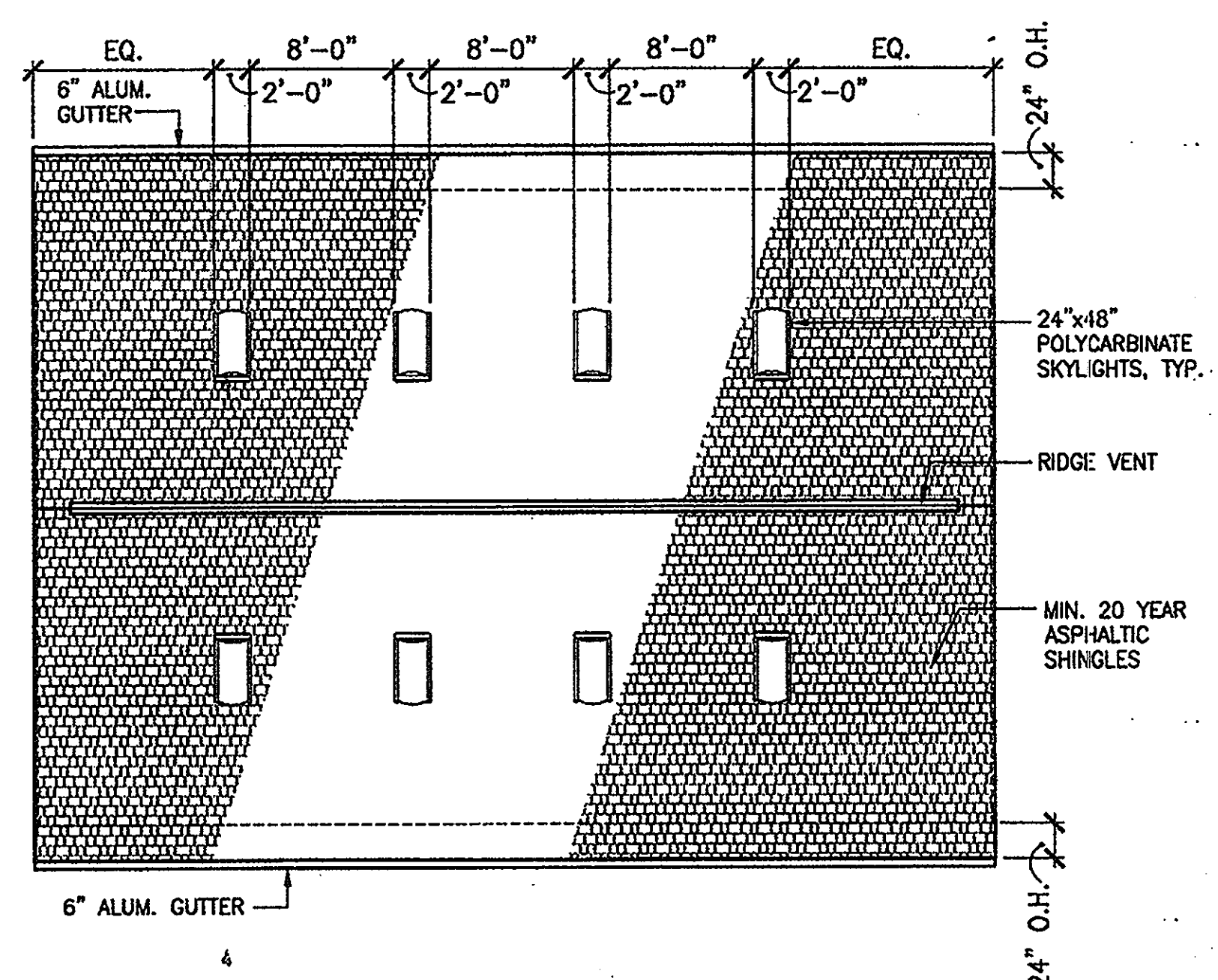
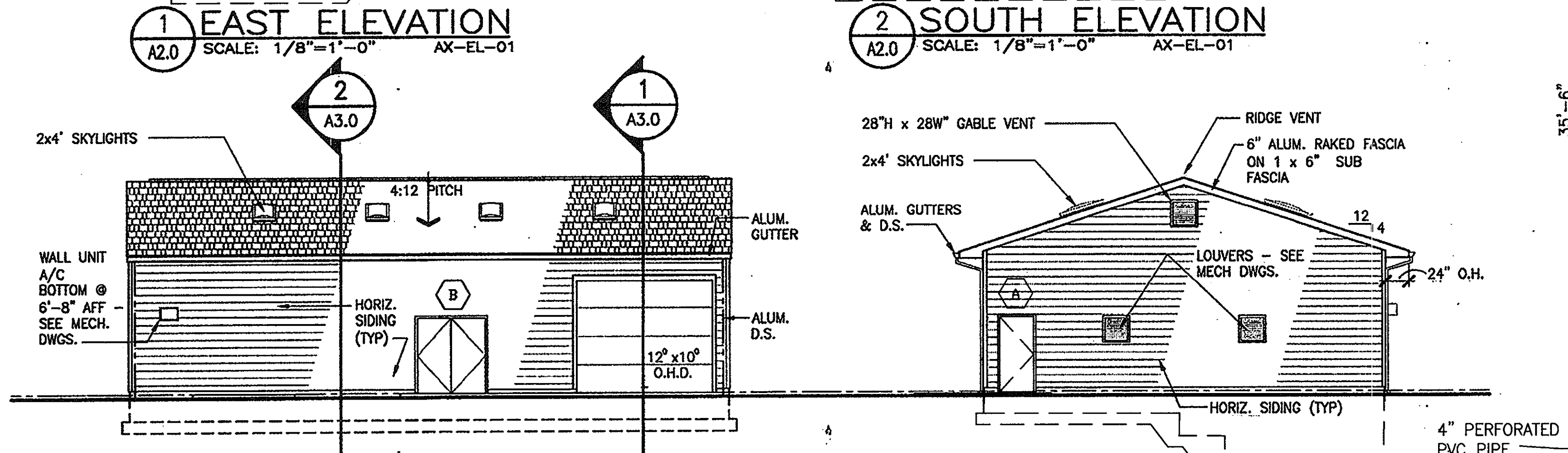
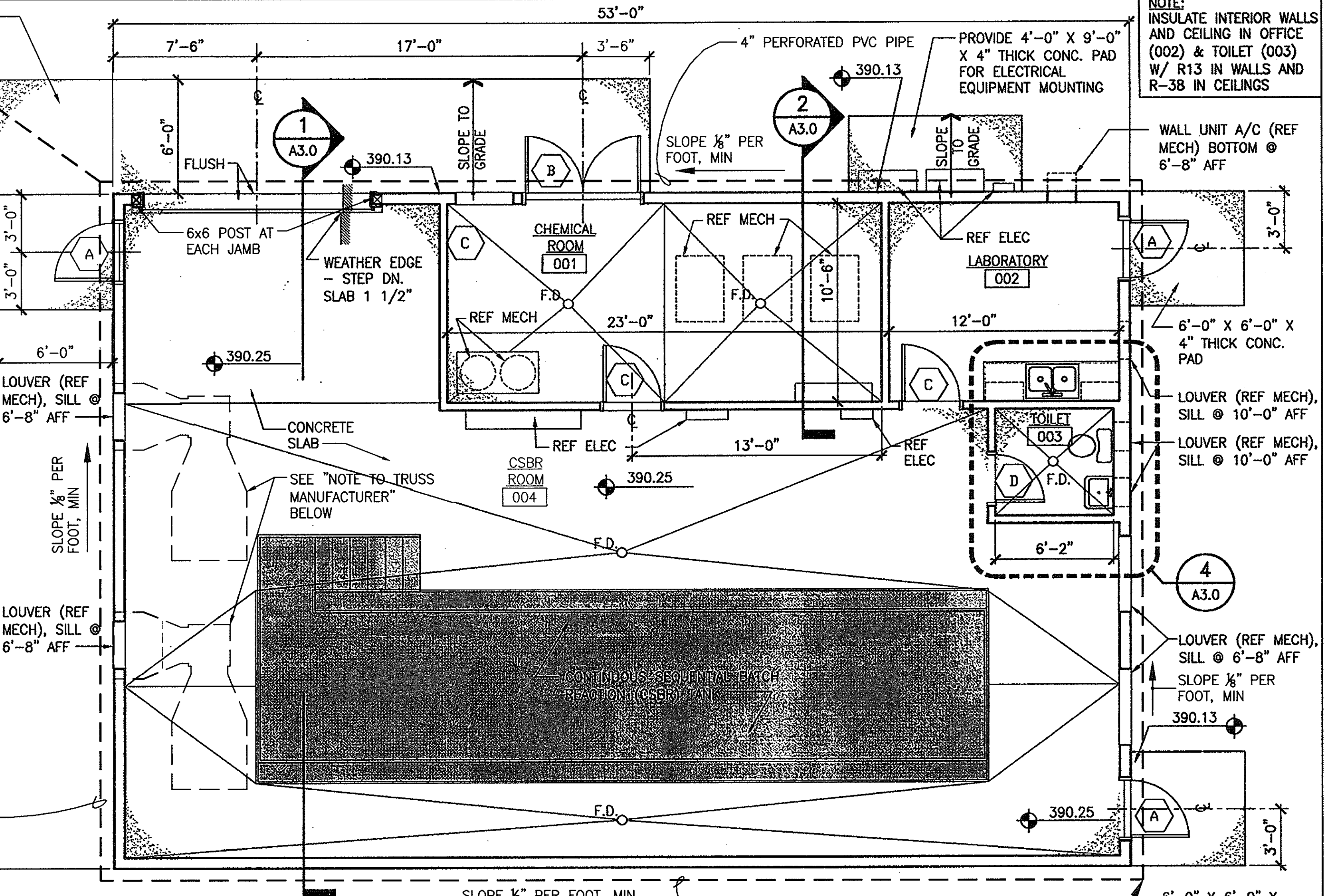
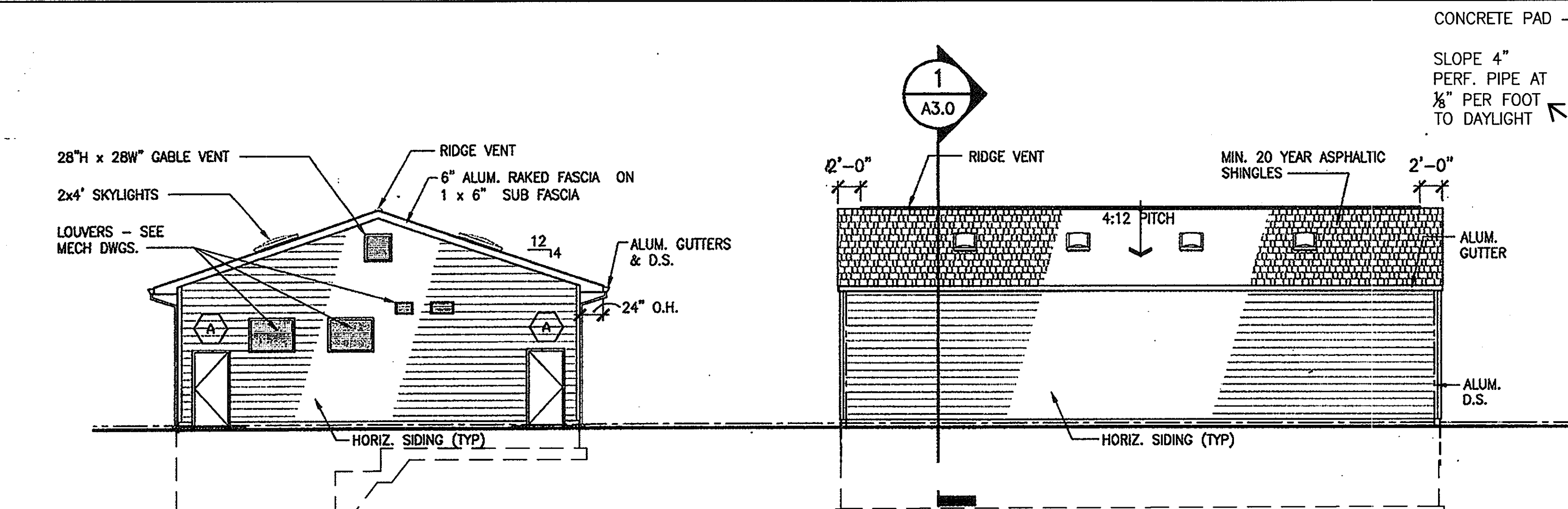


DESIGN: NG	
DRAFT: JRG	
CHK: RER	
DATE: 5/2007	
BY NO.	
REVISIONS	

SHARED SEPTIC SYSTEM
DISPOSAL FIELD DETAILS III

RIVERWOOD - PHASE 2
A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'T' THRU 'Z', 'AA' AND 'BB' AND NON-BUILDABLE BULK PARCEL 'U' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S', AND 'U' TO ADD OR MODIFY FOREST CONSERVATION AREAS
THIRD ELECTION DISTRICT
CONTRACT NO. 50-4287-D

U1.13
SCALE: AS SHOWN
SHEET NO. 16 of 56



NOTE TO TRUSS MANUFACTURER:
 DASHED LINES INDICATE APPROXIMATE LOCATION OF EXHAUST FANS TO BE SUSPENDED FROM TRUSSES. APPROXIMATE DESIGN WEIGHT OF EACH FAN UNIT AND FILTER MEDIA IS 1150 LBS (TWO EQUIPMENT UNITS TOTAL). COORDINATE TRUSS DESIGN WITH ACTUAL EQUIPMENT WEIGHT AS NECESSARY TO SUPPORT FAN UNITS. REFERENCE MECHANICAL DRAWINGS FOR FURTHER INFORMATION.

DOOR SCHEDULE		
TYPE	SIZE	HARDWARE/NOTES
A	3'-0" x 6'-8" x 1 3/4"	INSULATED EXTERIOR DOOR—PROVIDE LOCKING LATCH AND PANIC HDWR.
B	(2) 3'-0" x 6'-8" x 1 3/4"	INSULATED EXTERIOR DOOR—PROVIDE LOCKING LATCH AND HOLD-OPEN
C	3'-0" x 6'-8" x 1 3/4"	PROVIDE OFFICE LOCKSET
D	3'-0" x 6'-8" x 1 3/4"	PROVIDE PRIVACY LOCKSET

6 ROOF PLAN
 A2.0 SCALE: 1/8"=1'-0" AX-RP-NEWW

APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT
 COUNTY HEALTH OFFICER DATE:

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
 License No. 16352, Expiration Date: 10/21/2012.

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Chief, Bureau of Utilities
 3/15/12

DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY, MARYLAND
 Chief, Development Engineering Division
 3/15/12

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 1099 Winterson Road
 Linthicum, MD 21090
 Phone: 410-855-6160 Fax: 410-855-6163

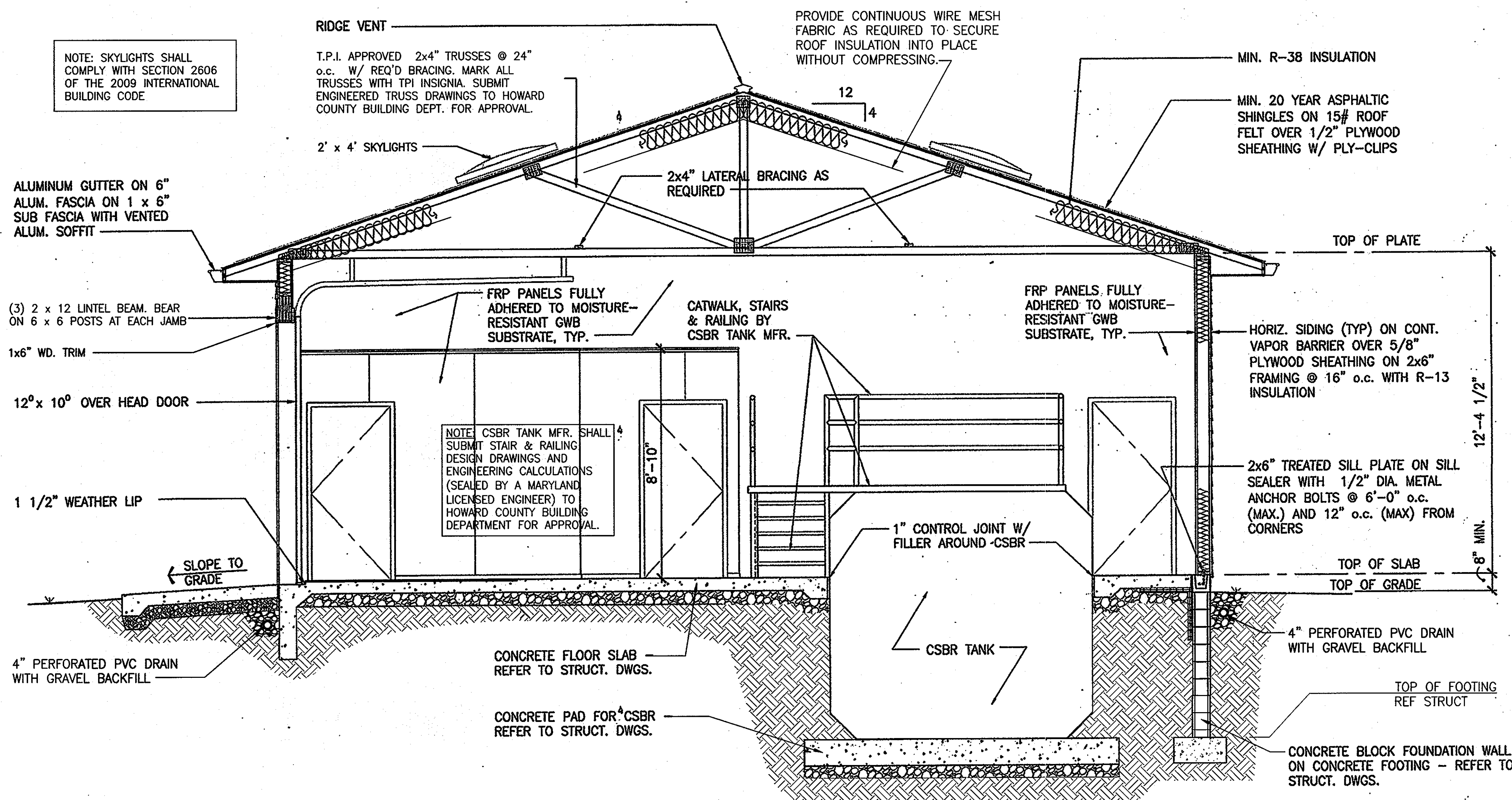
ARCHITECT
 License #016352
 JANE E. LEE
 STATE OF MARYLAND

DESIGN: MPM	
DRAFT: CC	
CHK: NG	MM
DATE: 11/2010	MM
BY: NO.	REVISIONS

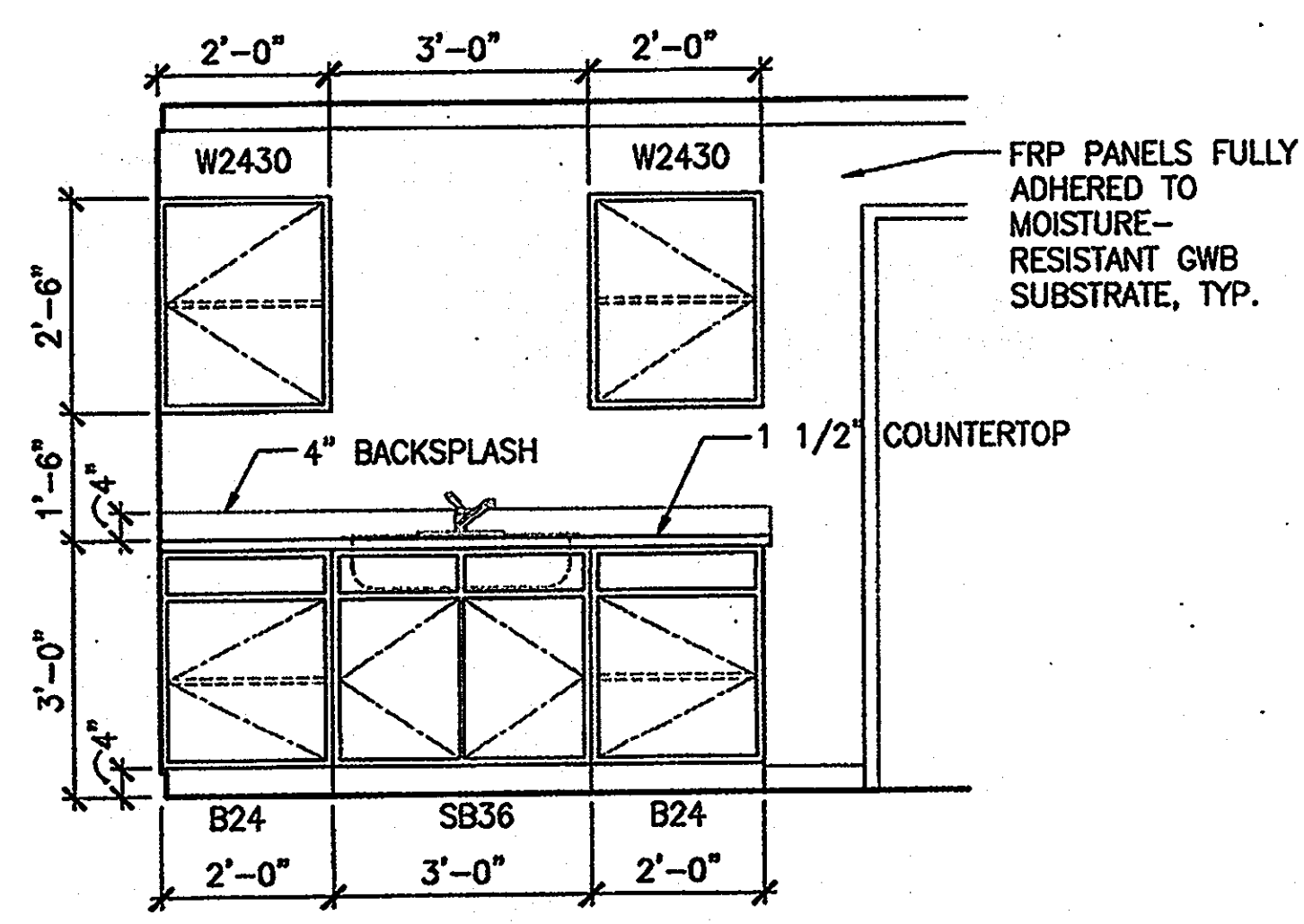
SHARED SEPTIC SYSTEM
 FLOOR PLAN, ELEVATIONS
 AND ROOF PLAN
 600 SCALE MAP NO. 23 BLOCKS 21 & 22 AND MAP NO. 29 BLOCKS 3 & 4

RIVERWOOD - PHASE 2
 A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'T' THRU 'Z', 'AA' AND 'BB' AND NON-BUILDABLE BULK PARCEL 'II' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S', AND 'U' TO ADD OR MODIFY FOREST PRESERVATION AREAS
 THIRD ELECTION DISTRICT
CONTRACT NO. 50-4287-D

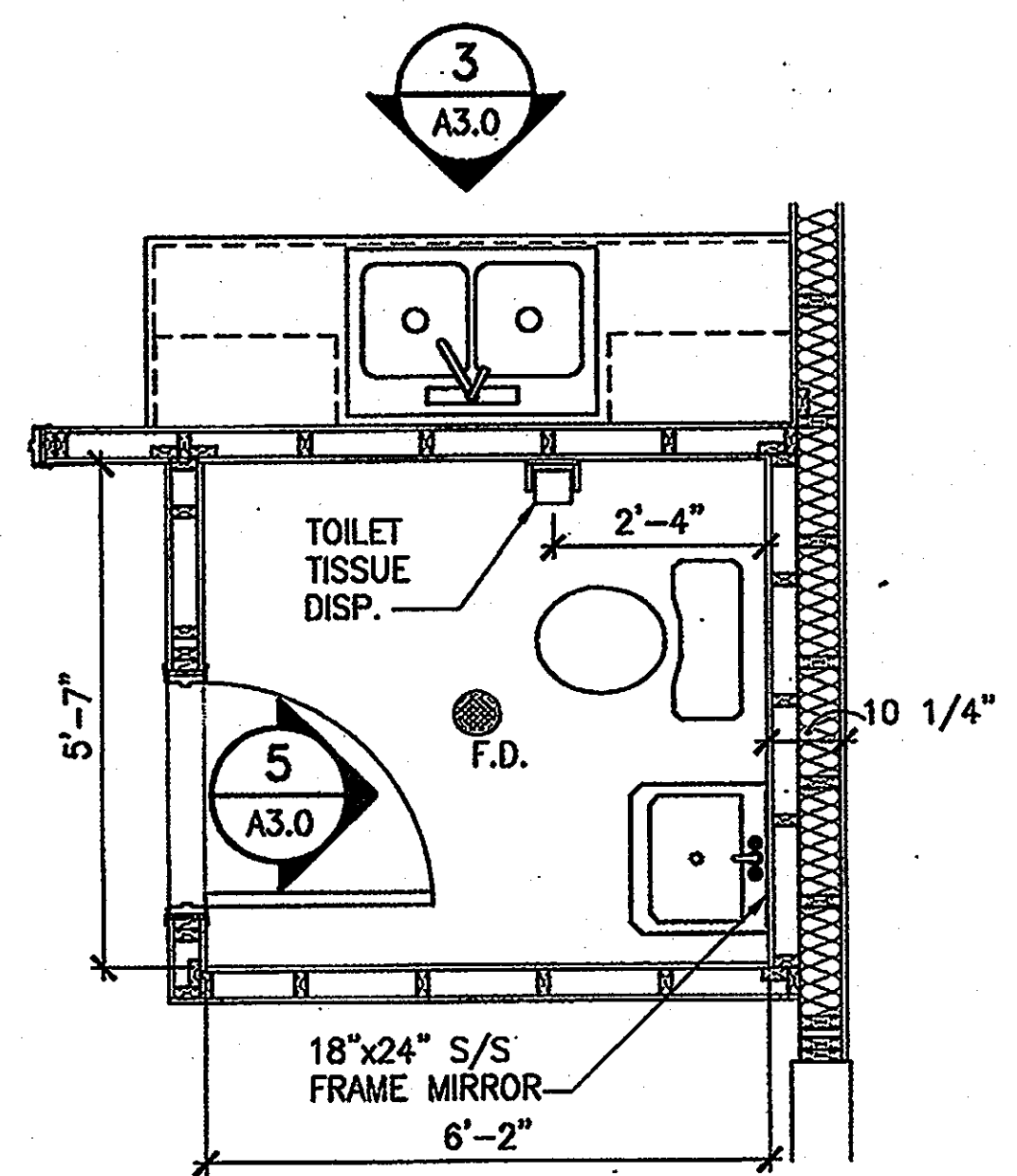
A2.0
 SCALE:
 AS SHOWN
 SHEET NO.
 18 of 56



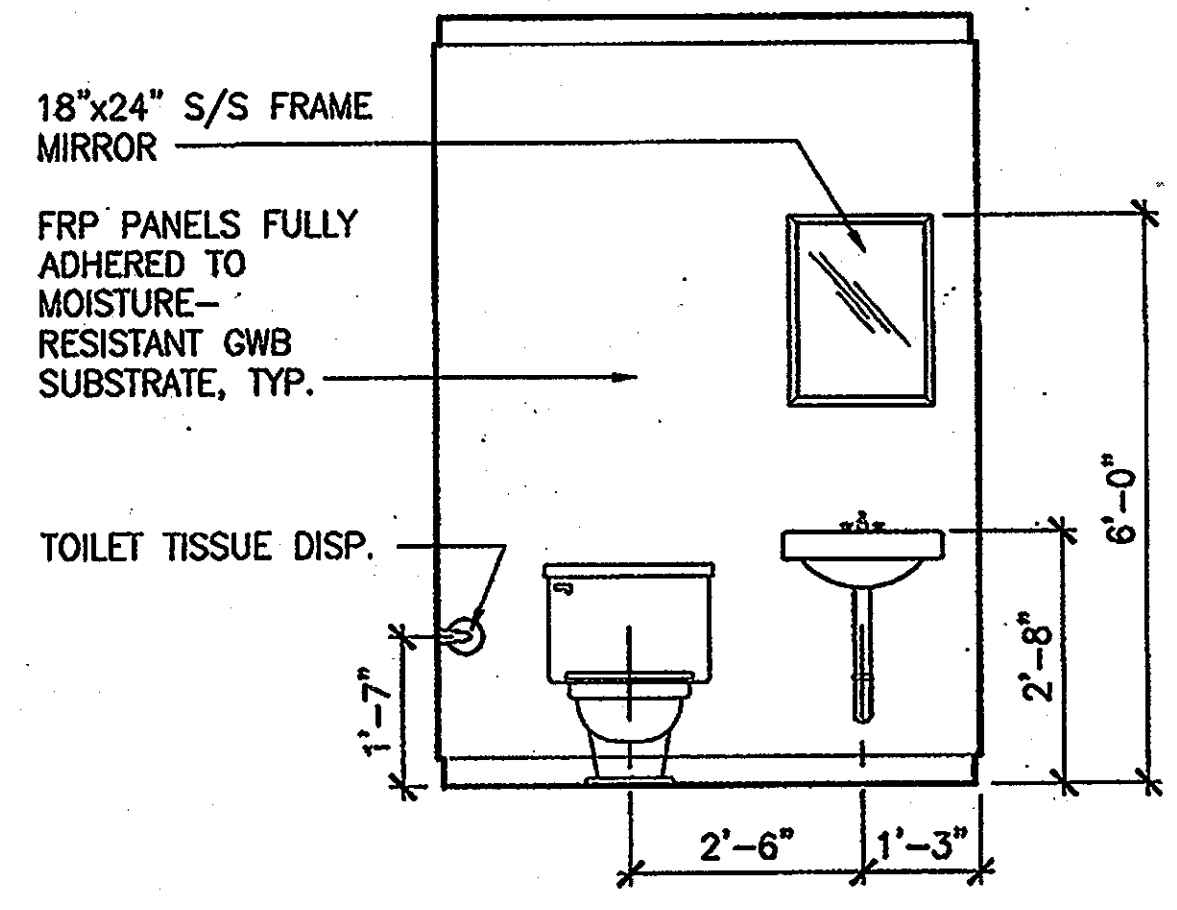
1 BUILDING SECTION
 A3.0 SCALE: 3/8"=1'-0" AX-DT-01



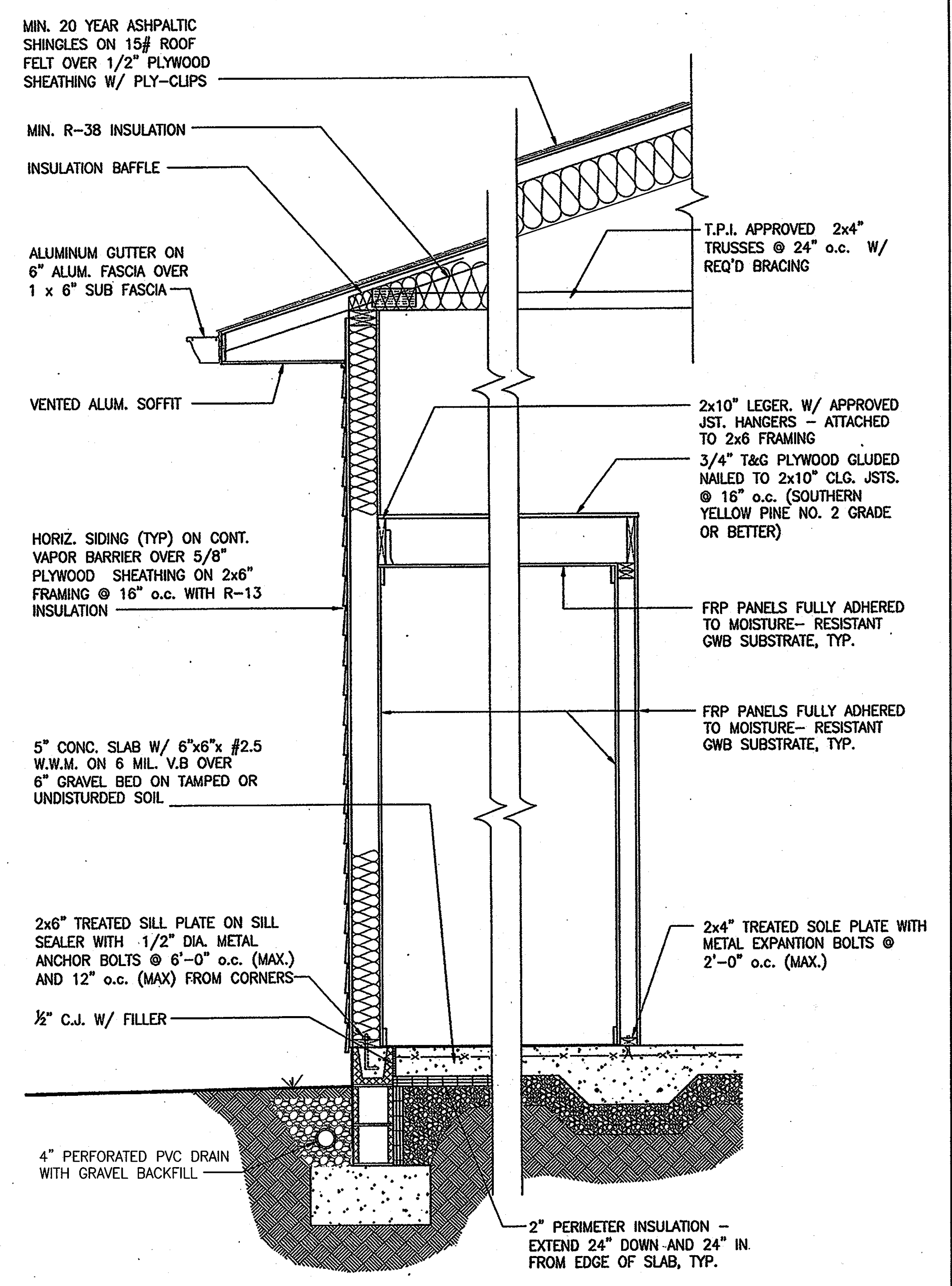
3 KITCHEN ELEVATION
 A3.0 SCALE: 1/2"=1'-0" AX-DT-02



4 TOILET PLAN
 A3.0 SCALE: 1/2"=1'-0" AX-DT-02



5 TOILET ELEVATION
 A3.0 SCALE: 1/2"=1'-0" AX-DT-02



2 WALL SECTION
 A3.0 SCALE: 3/4"=1'-0" AX-DT-02

NOTE: AT THE INTERIOR OF THE BUILDING, ALL METAL FASTENERS, CONNECTORS, GUSSET PLATES, MESH SCREENS, ETC. SHALL BE STAINLESS STEEL OR GALVANIZED STEEL.

APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT
 COUNTY HEALTH OFFICER DATE:

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
 License No. 16352, Expiration Date: 10/21/2012.

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Chief, Bureau of Utilities

DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY, MARYLAND
 Chief, Development Engineering Division

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 URS CORP.
 CONSULTING ENGINEERING AND PLANNING
 1099 Winterson Road
 Linthicum, MD 21090
 Phone: 410-855-6160 Fax: 410-855-6163

ARCHITECT
 License #016352
 JANE E. LEE
 STATE OF MARYLAND

DESIGN: MPM			
DRAFT: CC			
CHK: NG	MM	REPLACEMENT SHEET	11-14-11
DATE: 11/2010	MM	REVISION #1	04-28-11
BY: NO.		REVISIONS	DATE

600 SCALE MAP NO. 23 BLOCKS 21 & 22 AND MAP NO. 29 BLOCKS 3 & 4

CONTRACT NO. 50-4287-D
 RIVERWOOD - PHASE 2
 A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'T' THRU 'Z', 'AA' AND 'BB' AND NON-BUILDABLE BULK PARCEL 'II' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S', AND 'U' TO ADD OR MODIFY FOREST CONSERVATION AREAS.
 THIRD ELECTION DISTRICT

A3.0
 SCALE: AS SHOWN
 SHEET NO. 19 OF 56

GENERAL NOTES:

- GENERAL: ALL NOTES ARE FOR SUPPLEMENTING THE PLANS AND SPECIFICATIONS AND ARE IN NO WAY TO BE CONSIDERED AS EXCLUDING ANY ITEM IN THEM.
- COORDINATION: IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE THE STRUCTURAL DRAWINGS AND THEIR DIMENSIONS WITH OTHER DRAWINGS AND IF A CONFLICT EXISTS HE SHALL NOT CARRY OUT THE AFFECTED WORK UNTIL THE ARCHITECT HAS RESOLVED THE CONFLICT.
- CODE: DESIGN AND CONSTRUCTION TO BE IN ACCORDANCE WITH THE IBC-2003 CODE AND PARTICULAR CODES AS REFERENCED IN IBC-2003.
- DEAD LOADS: THE STRUCTURE HAS BEEN DESIGNED FOR DEAD LOADS AS FOLLOWS:
COMPONENTS AND EQUIPMENT - ACTUAL WEIGHT
- ~~LIVE LOADS: THE STRUCTURE HAS BEEN DESIGNED FOR LIVE LOADS AS FOLLOWS:~~

FLOOR LOAD	100 PSF
ROOF LOAD	20 PSF
WIND: SPEED	90 MPH
EXPOSURE	C
GROUND SNOW	30 PSF
- CONSTRUCTION SAFETY: LOADS GREATER THAN THE APPLICABLE DESIGN LOADS SHALL NOT BE PLACED ON THE STRUCTURE. PROVISION SHALL BE MADE FOR ADEQUATE BRACING AND SUPPORT OF ADJACENT CONSTRUCTION, UTILITIES AND EXCAVATIONS. JOB SITE SAFETY AND CONSTRUCTION PROCEDURES ARE THE RESPONSIBILITY OF THE CONTRACTOR.
- THE FOOTINGS SHALL BE EXCAVATED AFTER THE BUILDING AREAS HAVE BEEN PROPERLY PREPARED
- COMPACTION: EACH LAYER OF FILL SHALL BE COMPACTED AT OPTIMUM MOISTURE CONTENT (PLUS OR MINUS 2%) TO NOT LESS THAN 95% OF MAXIMUM DRY DENSITY.

CONCRETE MASONRY UNITS:

- MASONRY SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE AMERICAN CONCRETE INSTITUTE "SPECIFICATION FOR MASONRY STRUCTURES" (ACI 530.1-05). THE SPECIFIED COMPRESSIVE STRENGTH $F_m = 1500$ PSI. IN ADDITION TO ALL OTHER REQUIREMENTS, MASONRY CONSTITUENTS SHALL POSSESS THE REQUIRED PROPERTIES TO ACHIEVE THIS DESIGN STRENGTH.
- MATERIALS.

CONCRETE MASONRY UNITS (CMU) - ASTM SPECIFICATION C90, TYPE 1, LIGHTWEIGHT.

REINFORCING STEEL - ASTM SPECIFICATION A615, DEFORMED, GRADE 60

MORTAR - PROPORTIONED AS NECESSARY TO CONFORM WITH THE REQUIREMENTS OF ASTM C270, TYPE S MORTAR

GROUT - ASTM SPECIFICATION C476 MINIMUM 6 SACK COURSE GROUT MIX. CEMENT CONTENT OF THE GROUT SHALL BE INCREASED AS NECESSARY TO ACHIEVE THE SPECIFIED MORTAR ASSEMBLY STRENGTH (F_m) AND ADEQUATE WORKABILITY. GROUT COMPRESSIVE STRENGTH SHALL EQUAL OR EXCEED THE CONCRETE MASONRY UNIT STRENGTH.

HORIZONTAL JOINT REINFORCEMENT SHALL BE 9 GAGE HEAVY DUTY WELDED LADDER TYPE, GALVANIZED AFTER FABRICATION, AND SHALL BE PLACED IN ALTERNATE COURSES.

- STRUCTURAL LOADS
 - LIVE LOADS: THE STRUCTURE HAS BEEN DESIGNED FOR LIVE LOADS AS FOLLOWS:

FLOOR LOAD (CSBR ROOM)	100 PSF
FLOOR LOAD (CHEMICAL ROOMS)	100 PSF
FLOOR LOAD (LABORATORY ROOMS)	100 PSF
ROOF LOAD	30 PSF
 - WIND LOADS:

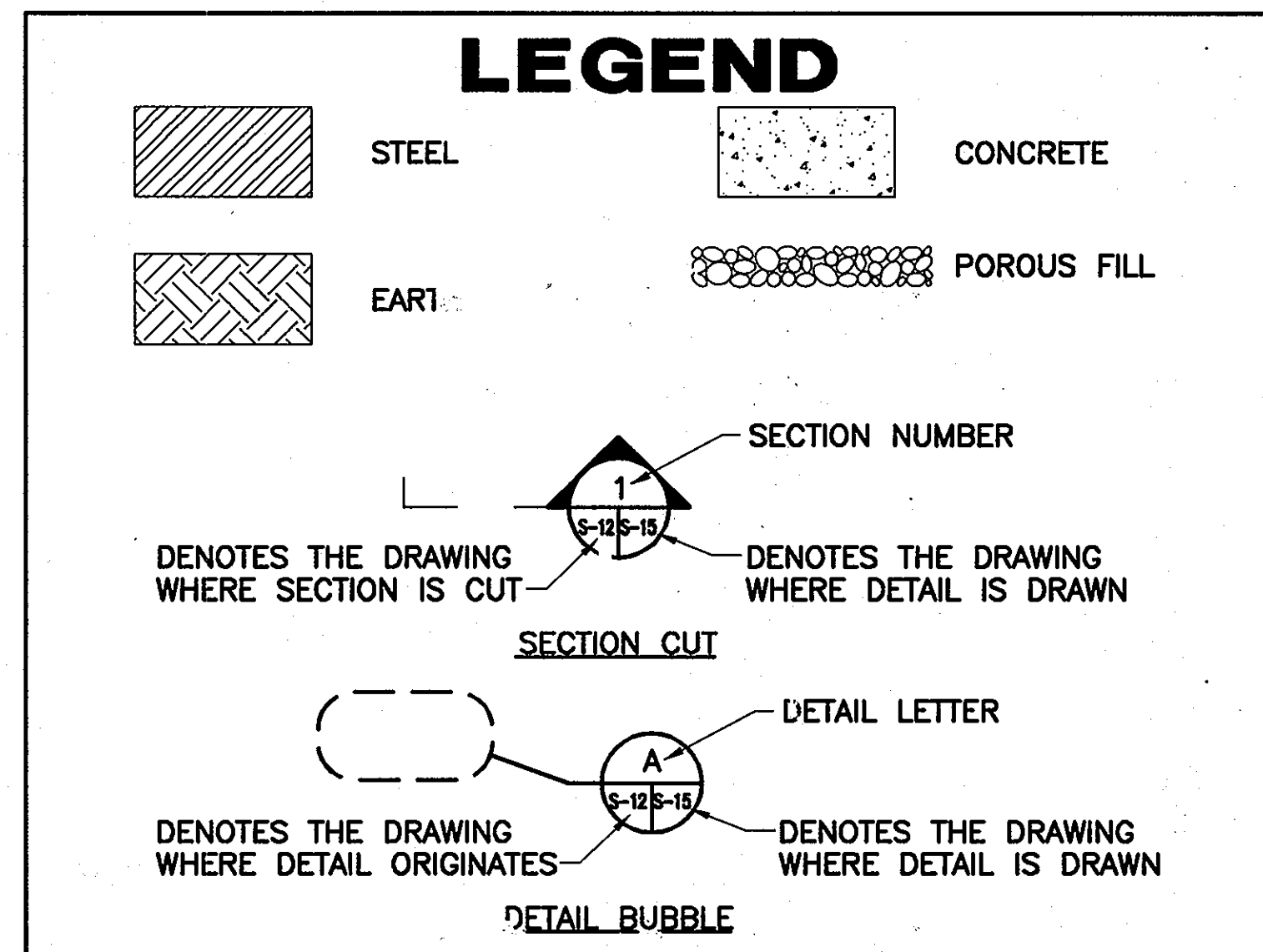
BASIC WIND SPEED	90 MILES/HOUR (MPH)
EXPOSURE	C
WALL PRESSURE COEFFICIENT	
WINDWARD WALL	+0.8
LEEWARD WALL	-0.5
INTERNAL PRESSURE COEFFICIENT	
GCFI	+0.55
GCFI	-0.55
IMPORTANCE FACTOR (Iw)	1.15
 - SNOW LOADS:

GROUND SNOW (Ps)	30 PSF
FLAT SNOW LOAD (Pf)	26 PSF
EXPOSURE FACTOR (Ce)	1.00
THERMAL FACTOR (Ct)	1.10
IMPORTANCE FACTOR (Is)	1.10
 - SEISMIC LOADS:

0.2 SECOND SPECTRAL RESPONSE ACCELERATION (Ss)	0.16
1.0 SECOND SPECTRAL RESPONSE ACCELERATION (S1)	0.05
SHORT PERIOD DESIGN ACCELERATIONS (Sds)	0.171
1.0 SECOND DESIGN ACCELERATIONS (Sd1)	0.08
SITE SOIL CLASS	D
SEISMIC USE GROUP	II
SEISMIC DESIGN CATEGORY	B
RESPONSE MODIFICATION FACTOR (R)	2.00
SEISMIC DESIGN COEFFICIENT (Cs)	0.107
SEISMIC BASE SHEAR (V)	0.5 KIPS
IMPORTANCE FACTOR (Ie)	1.25
BASIC SEISMIC FORCE RESISTING SYSTEM	BEARING WALL SYSTEM
- SOIL LOADS:
ASSUMED ALLOWABLE SOIL BEARING CAPACITY 2.5 KSF

ABBREVIATIONS

ALT	ALTERNATE
ALUM	ALUMINUM
AB	ANCHOR BOLT
B	BOTTOM
B/	BOTTOM OF
CLR	CLEAR
CL	CENTERLINE
CMU	CONCRETE MASONRY UNIT
CONT	CONTINUOUS
COTR	CONTRACTING OFFICER'S TECHNICAL REPRESENTATIVE
CJ	CONTROL JOINT
DIA	DIAMETER
DN	DOWN
EF	EACH FACE
EW	EACH WAY
EL	ELEVATION
EMB	EMBEDMENT
EJ	EXPANSION JOINT
FB	FLAT BAR
FD	FLOOR DRAIN
FTG	FOOTING
FDN	FOUNDATION
FS	FAR SIDE
GA	GAGE
GALV	GALVANIZED
HP	HIGH POINT
HS	HIGH STRENGTH
HOR	HORIZONTAL
ID	INSIDE DIAMETER
IJ	ISOLATION JOINT
JT	JOINT
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LP	LOW POINT
MAX	MAXIMUM
MIN	MINIMUM
MISC	MISCELLANEOUS
NS	NEAR SIDE
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
NO (#)	NUMBER
OC	ON CENTER
OD	OUTSIDE DIAMETER
PL	PLATE
PT	POINT
R	RADIUS
REINF	REINFORCEMENT
REQ'D	REQUIRED
SPEC	SPECIFICATION
SST	STAINLESS STEEL
STAG	STAGGERED
STA	STATION
SYM	SYMMETRICAL
T	TOP
T/	TOP OF
T.O.F.	TOP OF FOOTING
TOS	TOP OF STEEL
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
WT	WEIGHT
WWF	WELDED WIRE FABRIC
WD	WIDTH
W/	WITH
W/O	WITHOUT
WP	WORKING POINT



APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT

Signature Peter Beilenger 9/14/07
COUNTY HEALTH OFFICER

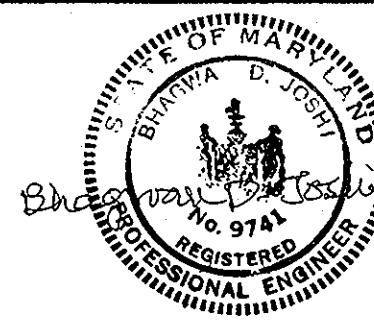
Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 9741, Expiration Date: 2/19/2008.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND



URS CORP.
CONSULTING ENGINEERING AND PLANNING
1099 Winterson Road
Linthicum, MD 21090
Phone: 410-855-6160 Fax: 410-855-6163



DESIGN: CDS	
DRAFT: CDS	
CHK: BDJ	
DATE: 5/20/07	
BY: BDJ	
NO.:	
REVISION #1	4-28-11
REVISIONS	

SHARED SEPTIC SYSTEM

GENERAL NOTES, LEGEND
AND ABBREVIATIONS

RIVERWOOD - PHASE 2

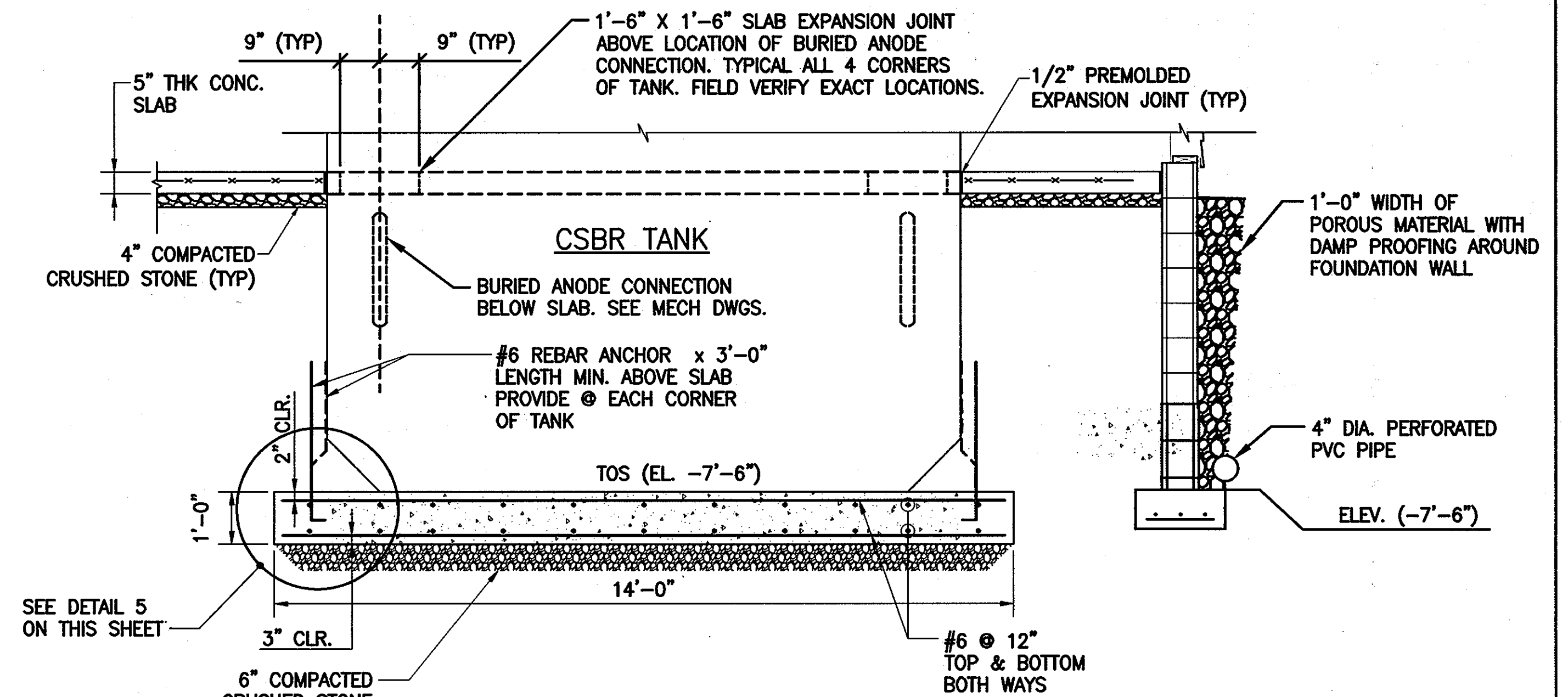
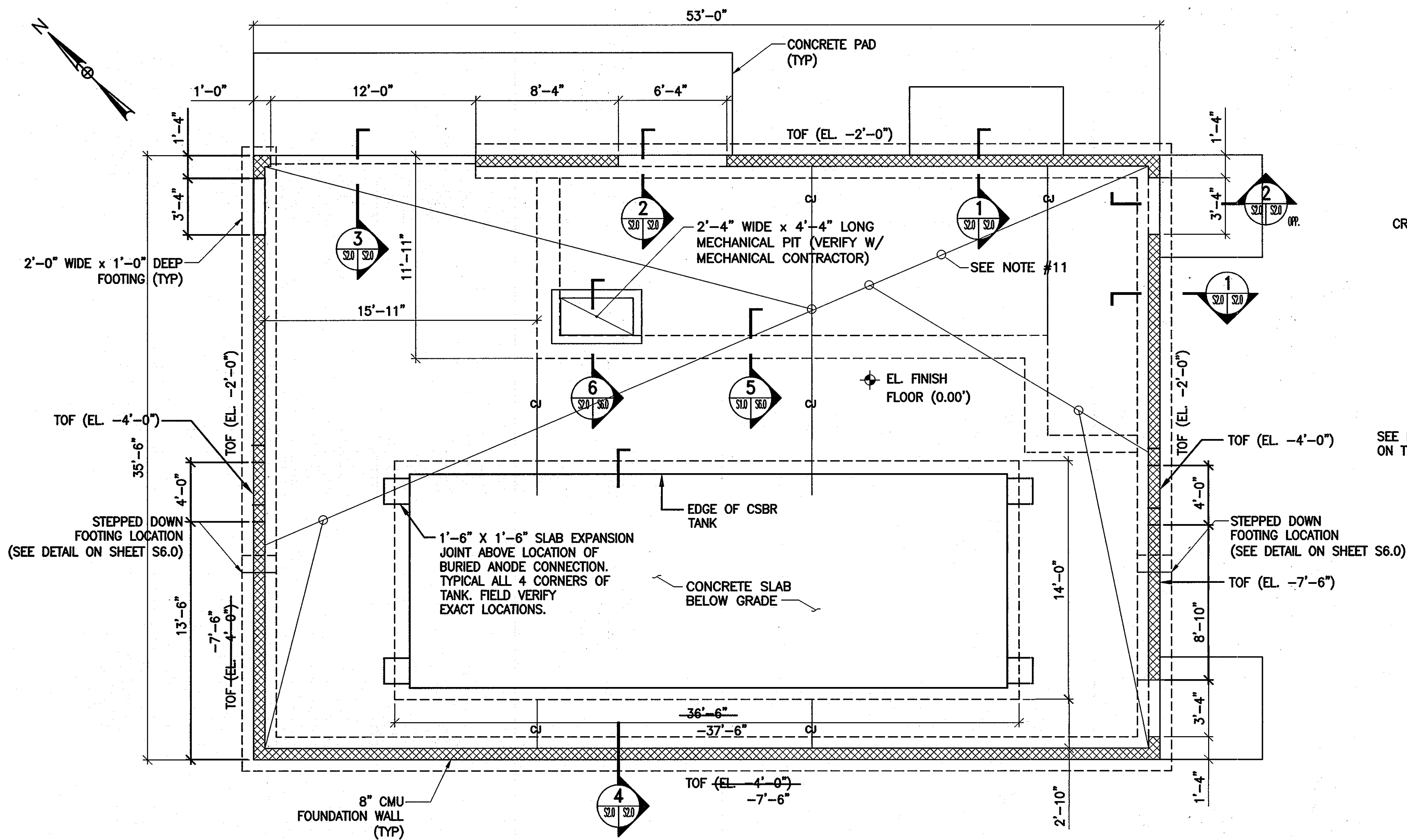
A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'I' THRU 'Z', 'AA' AND 'BB' AND NON-BUILDABLE BULK PARCEL 'II' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S', AND 'U' TO ADD OR MODIFY FOREST CONSERVATION AREAS
THIRD ELECTION DISTRICT

CONTRACT NO. 50-4287-D

S1.0

SCALE:
AS SHOWN

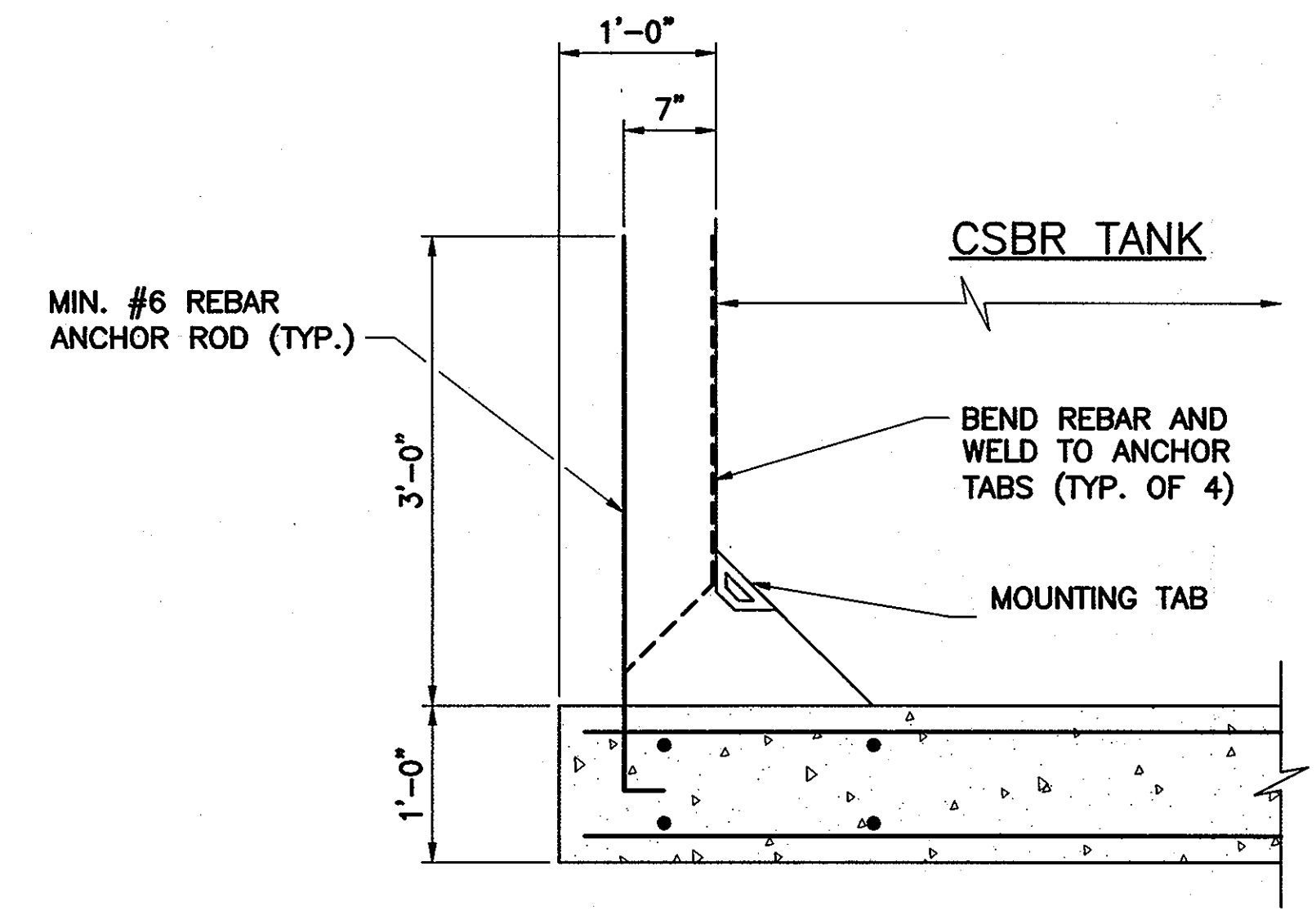
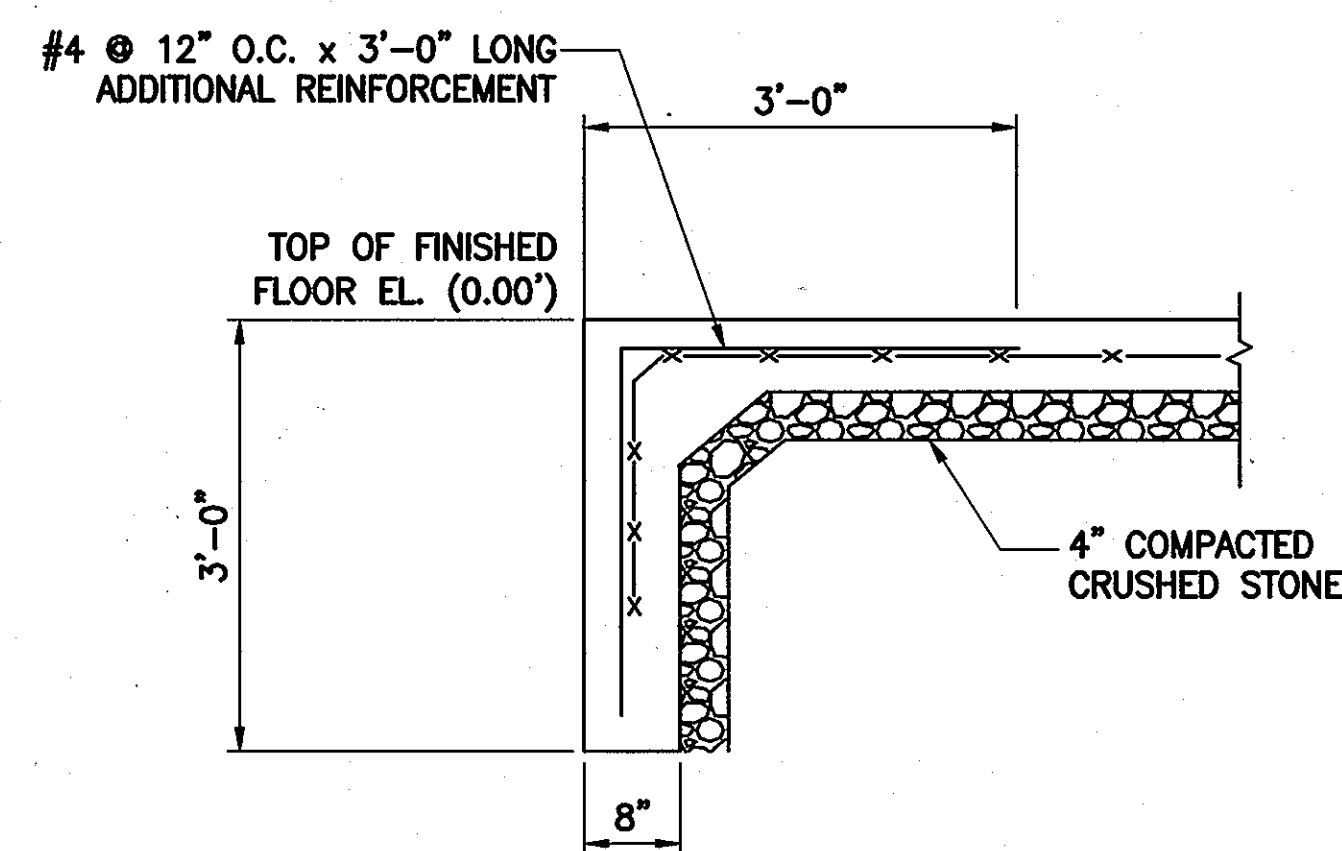
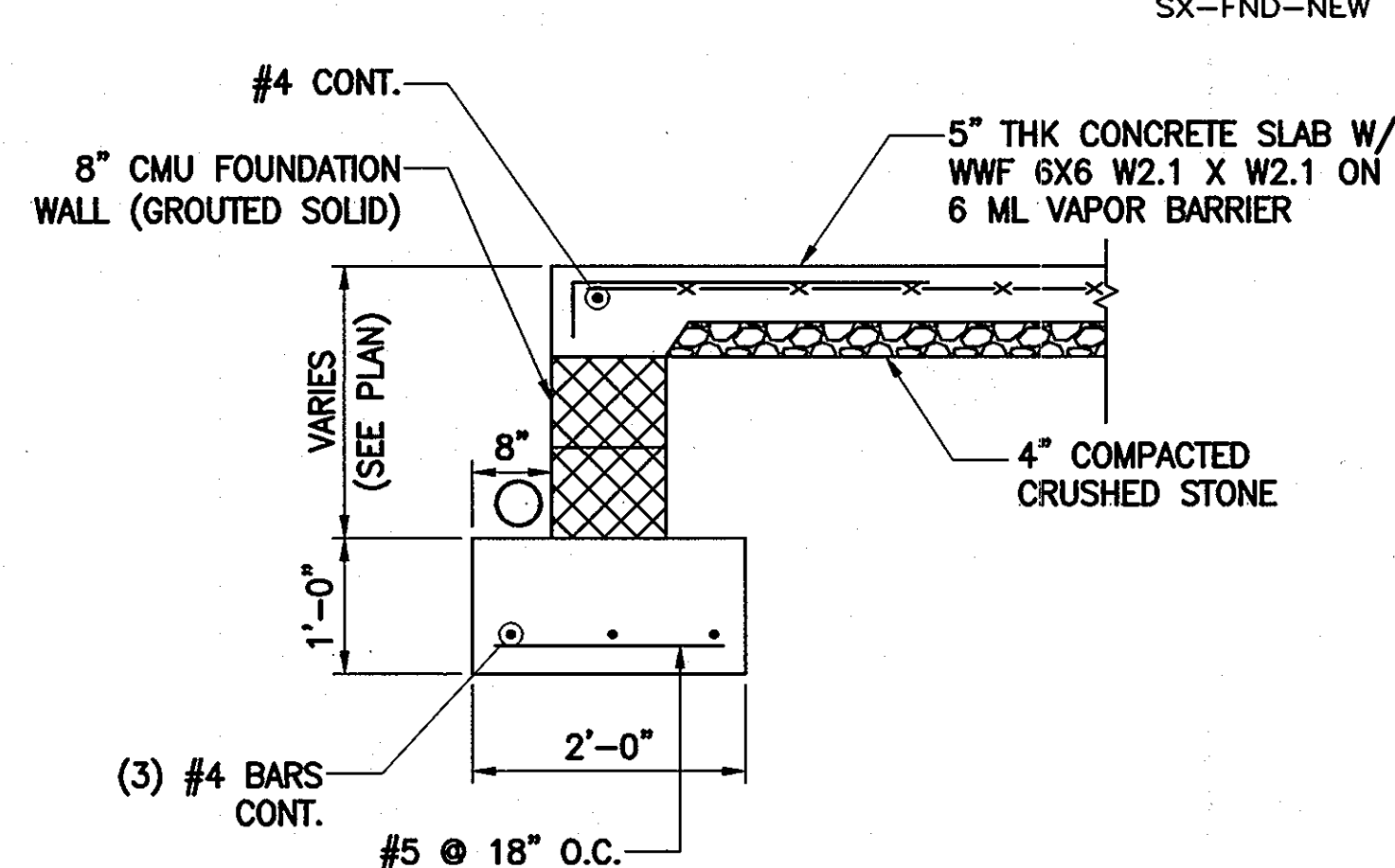
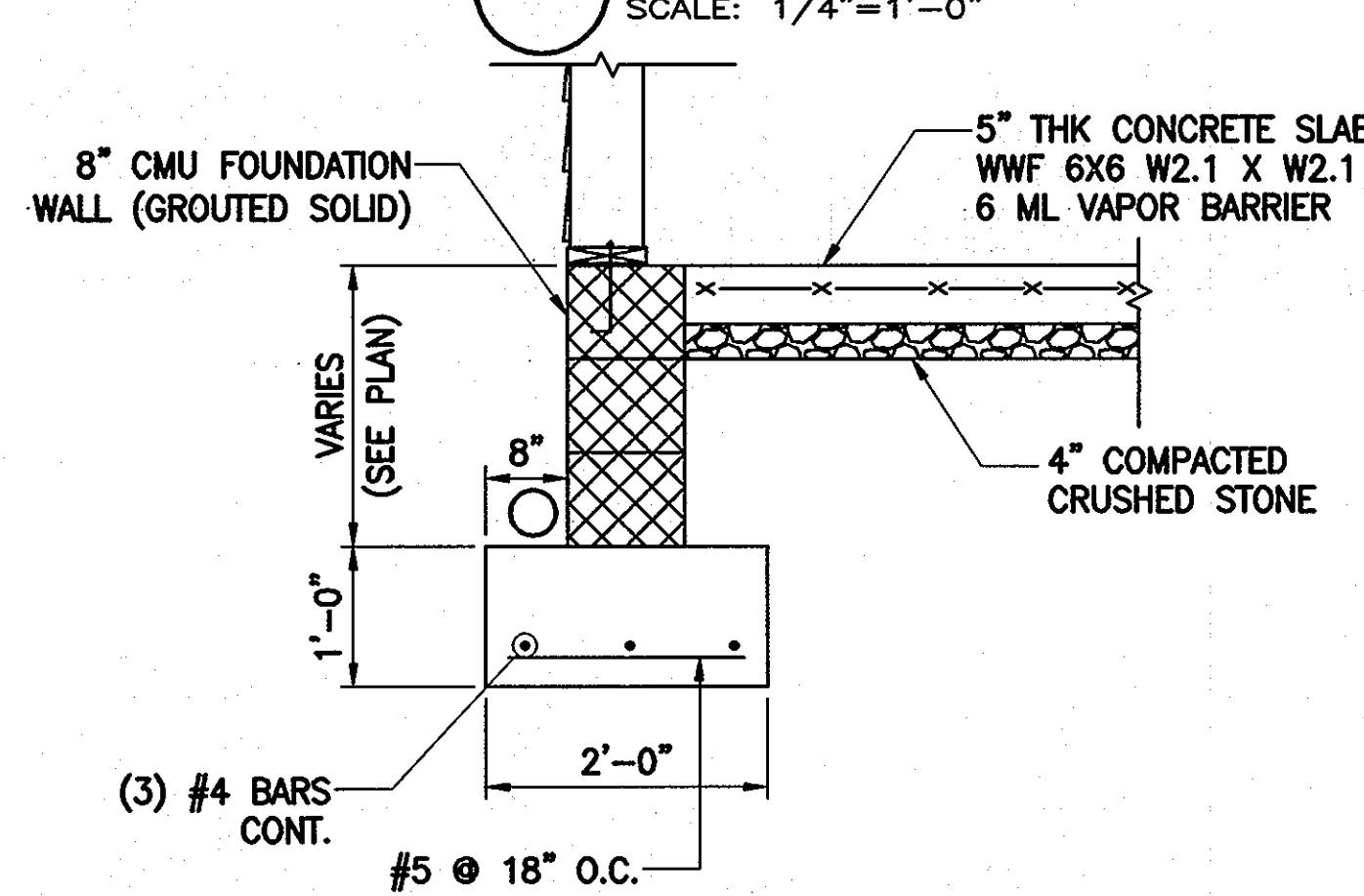
SHEET NO.
20 of 56



NOTES:

- BUILDING FINISH FLOOR ELEVATION IS 390.25'
- ALL CONCRETE SHALL BE NORMAL WEIGHT (145 PCF) & HAVE A COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS.
- PROVIDE 5" THK SLAB ON GRADE W/6x6 W2.1xW2.1 WWF ON 6 MIL VAPOR BARRIER.

FOUNDATION PLAN
SCALE: 1/4"=1'-0"



APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT

COUNTY HEALTH OFFICER: _____ DATE: _____

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

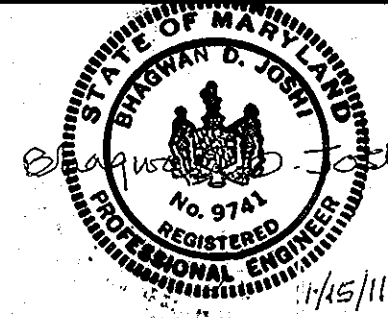
License No. 9741, Expiration Date: 02/19/2012.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND

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1099 Winterson Road
Linthicum, MD 21090
Phone: 410-855-6160 Fax: 410-855-6163



DESIGN:	CDS		
DRAFT:	CDS		
CHK:	BDJ	BDJ	REPLACEMENT SHEET 11-14-11
DATE:	11/2010	CDS	REVISION #1 4-28-11
BY:	NO.	REVISIONS	DATE

SHARED SEPTIC SYSTEM

FLOOR PLAN & SECTIONS

RIVERWOOD - PHASE 2

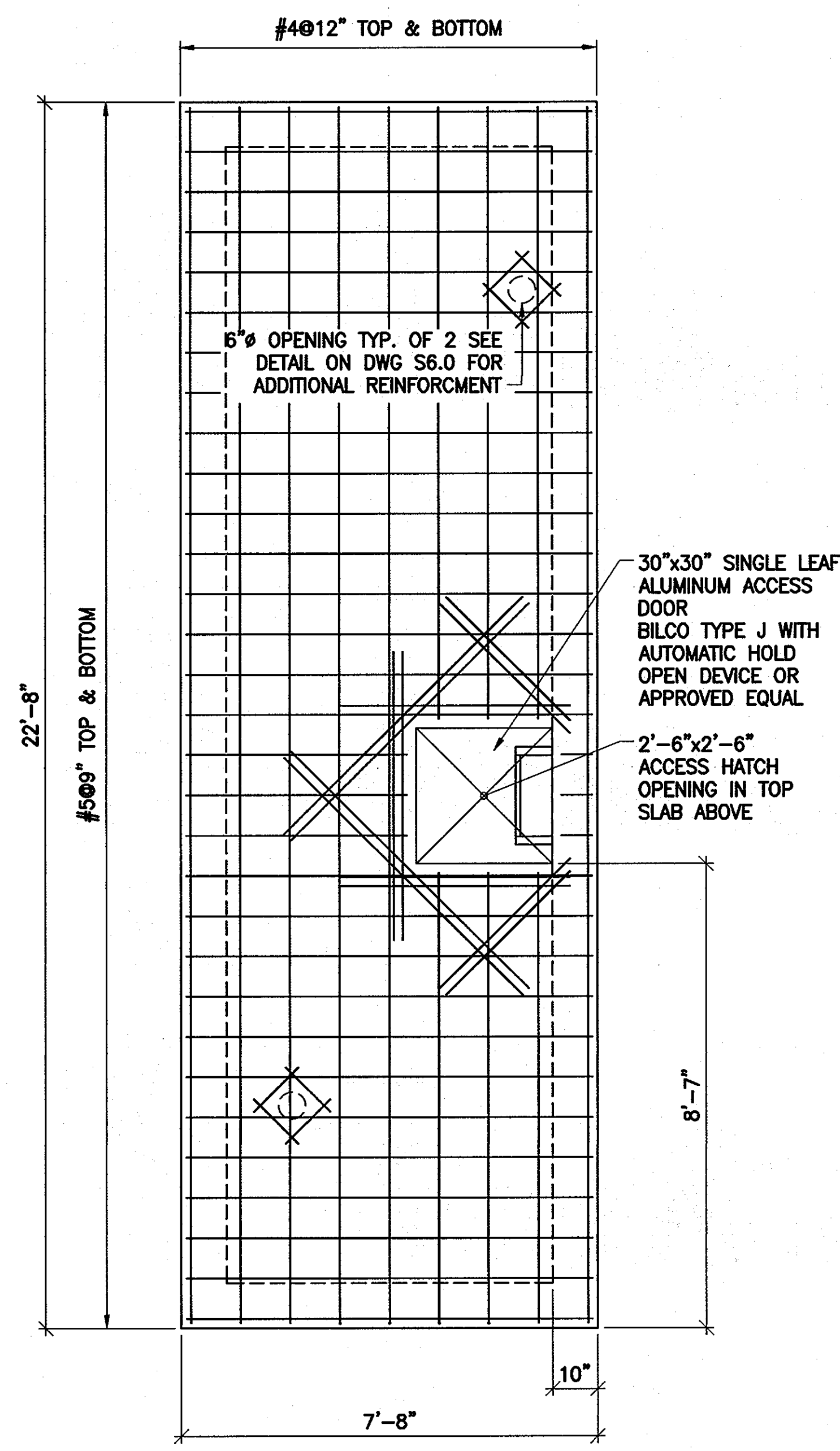
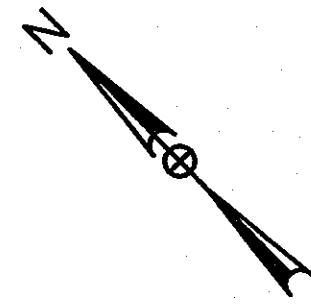
A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'I' THRU 'Z', 'AA' AND 'BB' AND NON-BUILDABLE BULK PARCEL 'II' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S', AND 'U' TO ADD OR MODIFY FOREST CONSERVATION AREAS THIRD ELECTION DISTRICT

CONTRACT NO. 50-4287-D

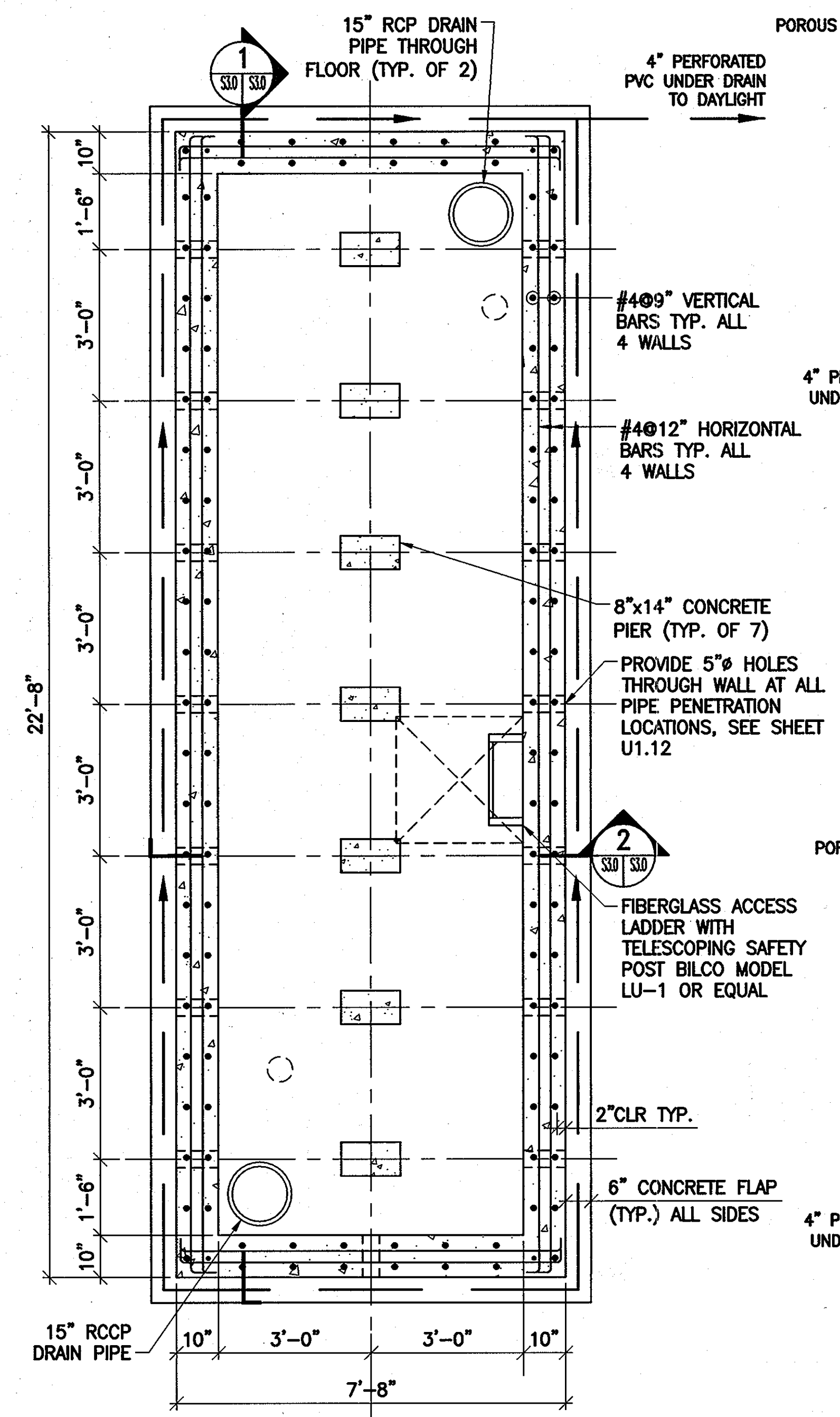
S2.0

SCALE:
AS SHOWN

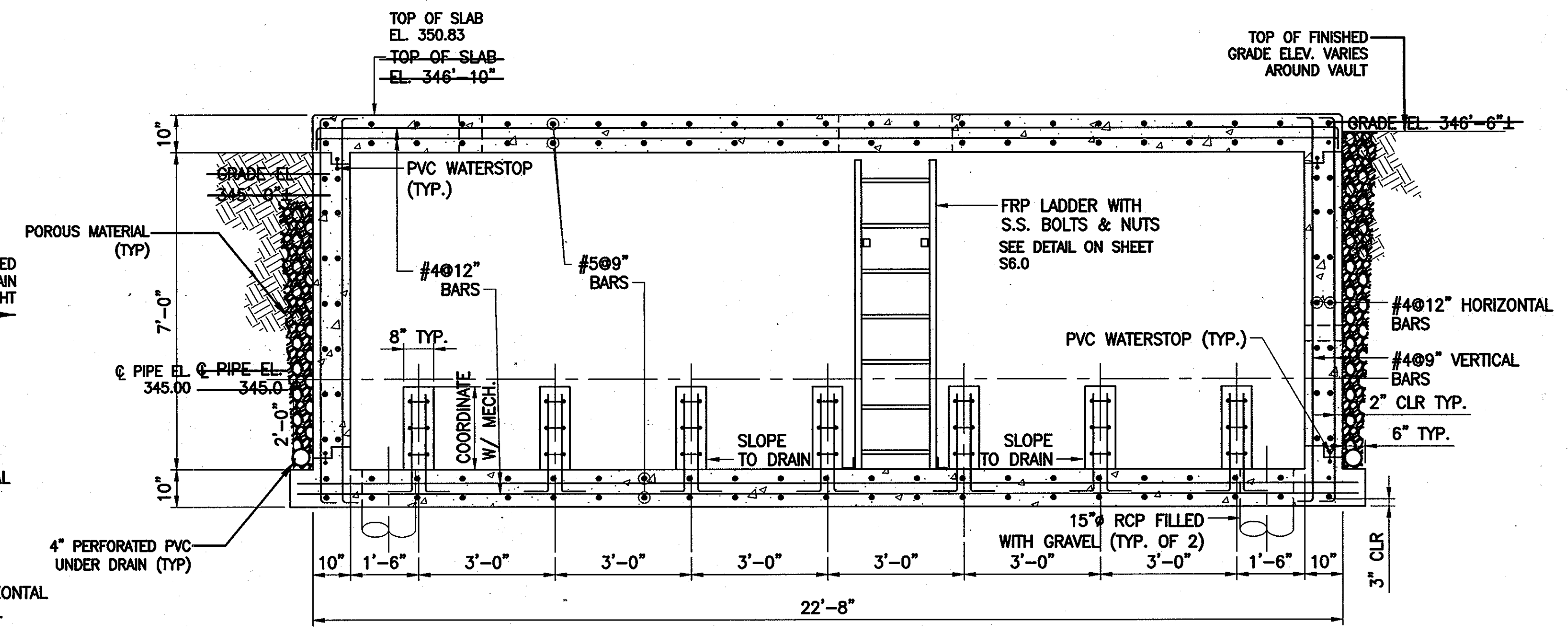
SHEET NO.
21 of 56



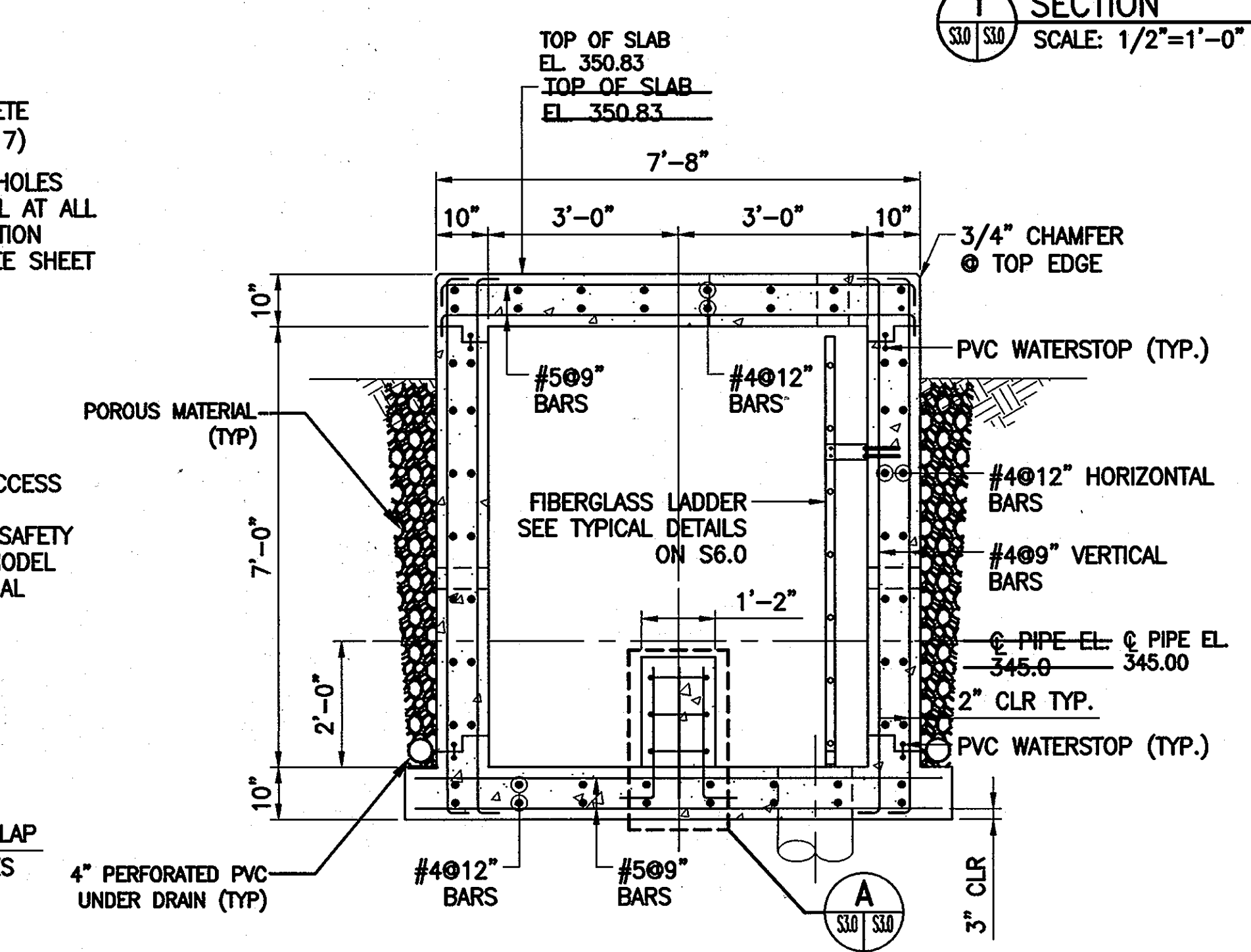
TOP SLAB REINFORCEMENT PLAN
SCALE: 1/2"=1'-0"



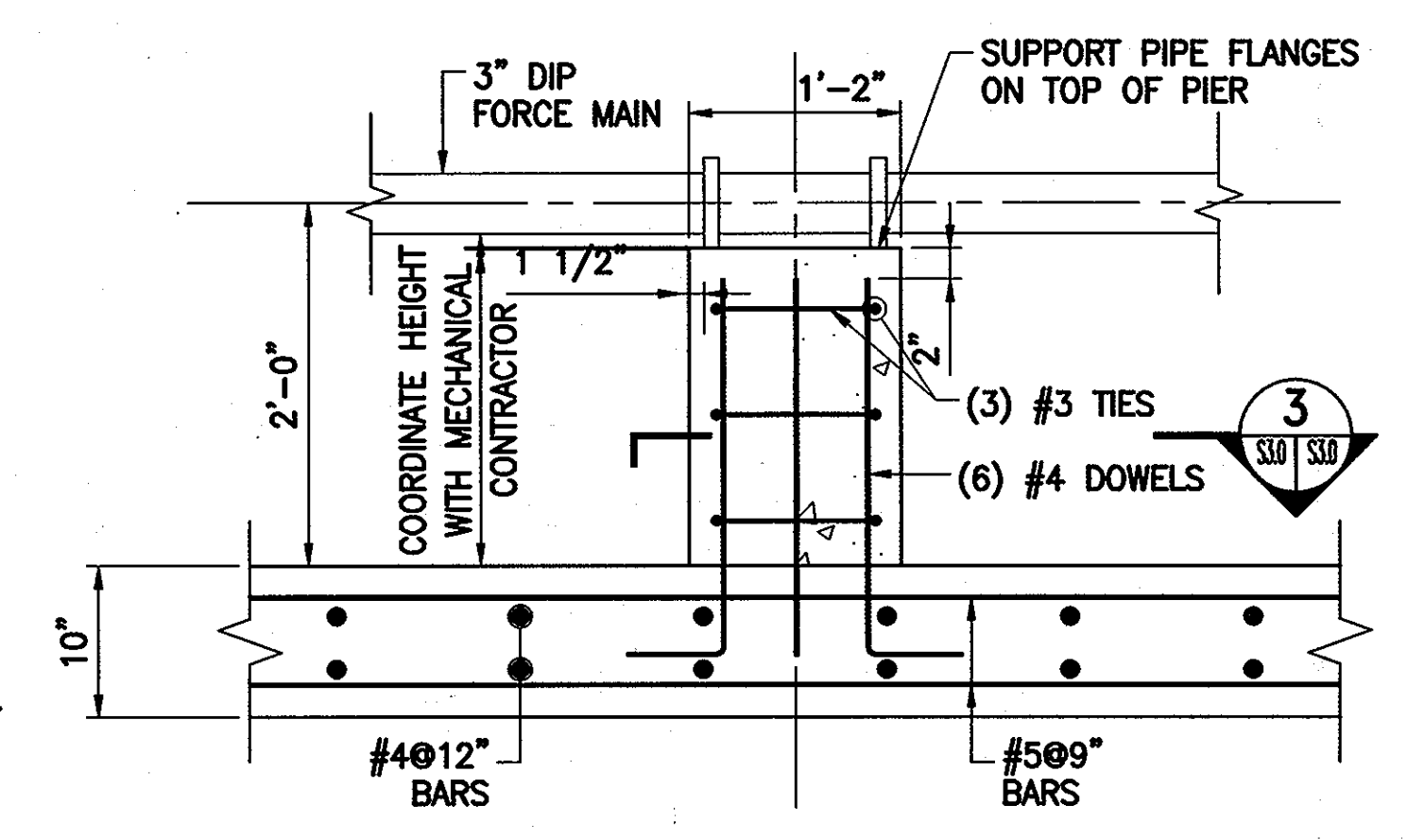
VAULT PLAN (TOP SLAB REMOVED)
SCALE: 1/2"=1'-0"



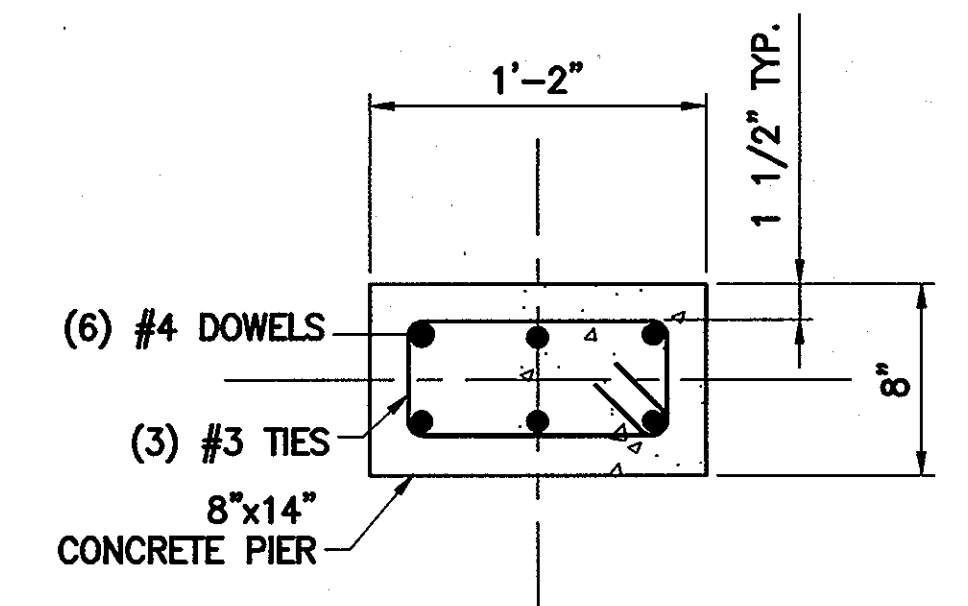
SECTION 1
SCALE: 1/2"=1'-0"



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



PIER DETAIL
SCALE: 1"=1'-0"



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

DISTRIBUTION VALVE VAULT DETAILS
SCALE: AS NOTED

- NOTES:**
1. ALL CONCRETE SHALL BE f'c=4000 PSI.
 2. REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60.
 3. STRUCTURE IS DESIGNED FOR HS-20 LOADING.
 4. STRUCTURE IS DESIGNED BY ACI 350.
 5. COORDINATE PIPE OPENINGS THRU. WALLS AND SLABS WITH UTILITY DWG. U1.12.
 6. THE CONTRACTOR MAY USE PRECAST CONCRETE STRUCTURE INSTEAD OF CAST-IN-PLACE CONCRETE STRUCTURE AS SHOWN ON THE DRAWING WITHOUT CHANGING SIZES AND REINFORCEMENT OF THE MEMBERS, THEN SUBMIT COMPUTATION STAMPED BY REGISTERED ENGINEER IN THE STATE OF MARYLAND WITH THE SHOP DRAWINGS.

APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT
COUNTY HEALTH OFFICER DATE:

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 9741, Expiration Date: 2/19/2012.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
Silvia C. Lee
CHIEF, BUREAU OF UTILITIES
DATE: 11/15/11

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND
DATE: 3/15/11

URS
URS CORP.
CONSULTING ENGINEERING AND PLANNING
1099 Winterson Road
Linthicum, MD 21090
Phone: 410-855-6160 Fax: 410-855-6163

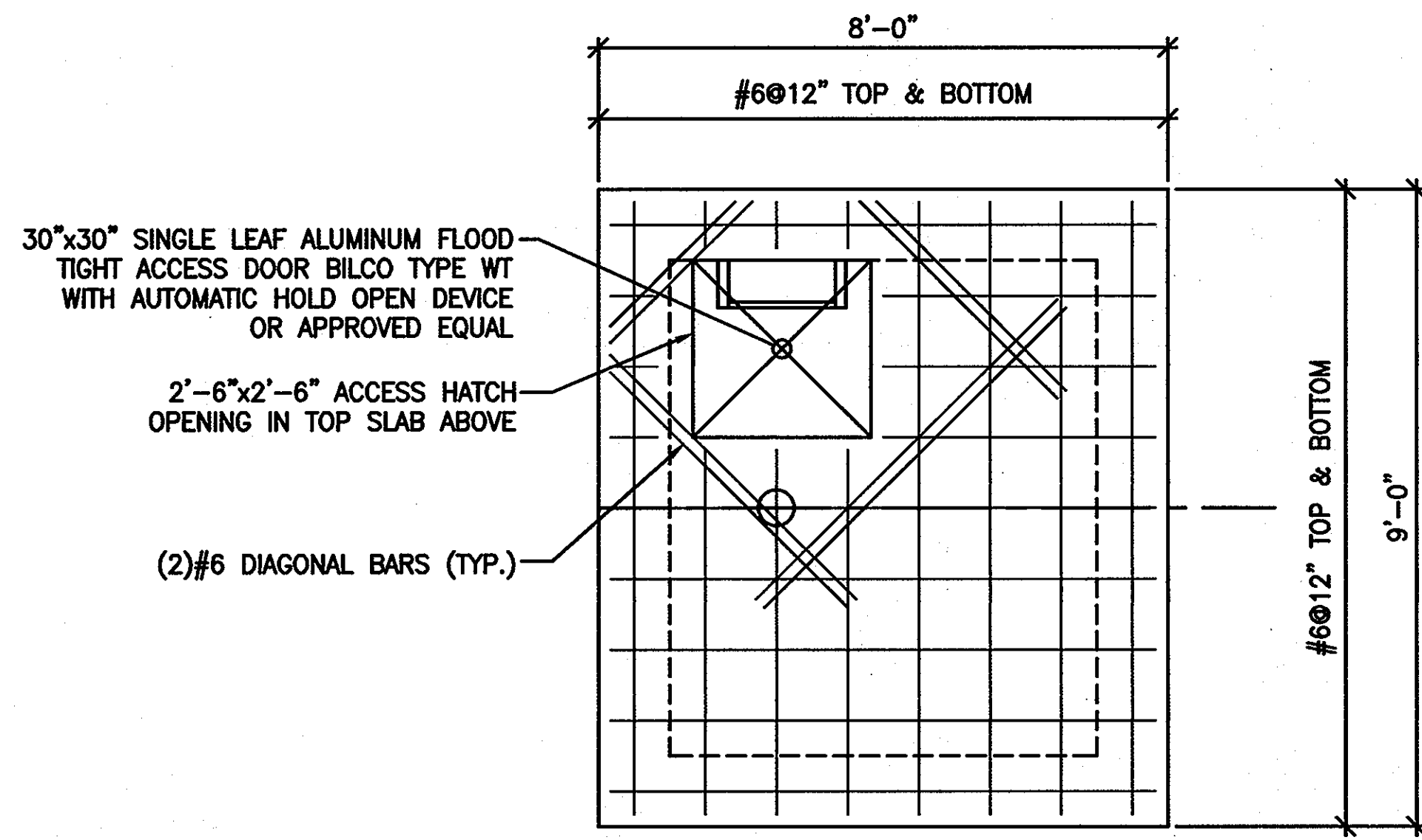


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DRAFT:	KDPC
CHK:	CDS BJD
DATE:	11/2010
BY:	NO.

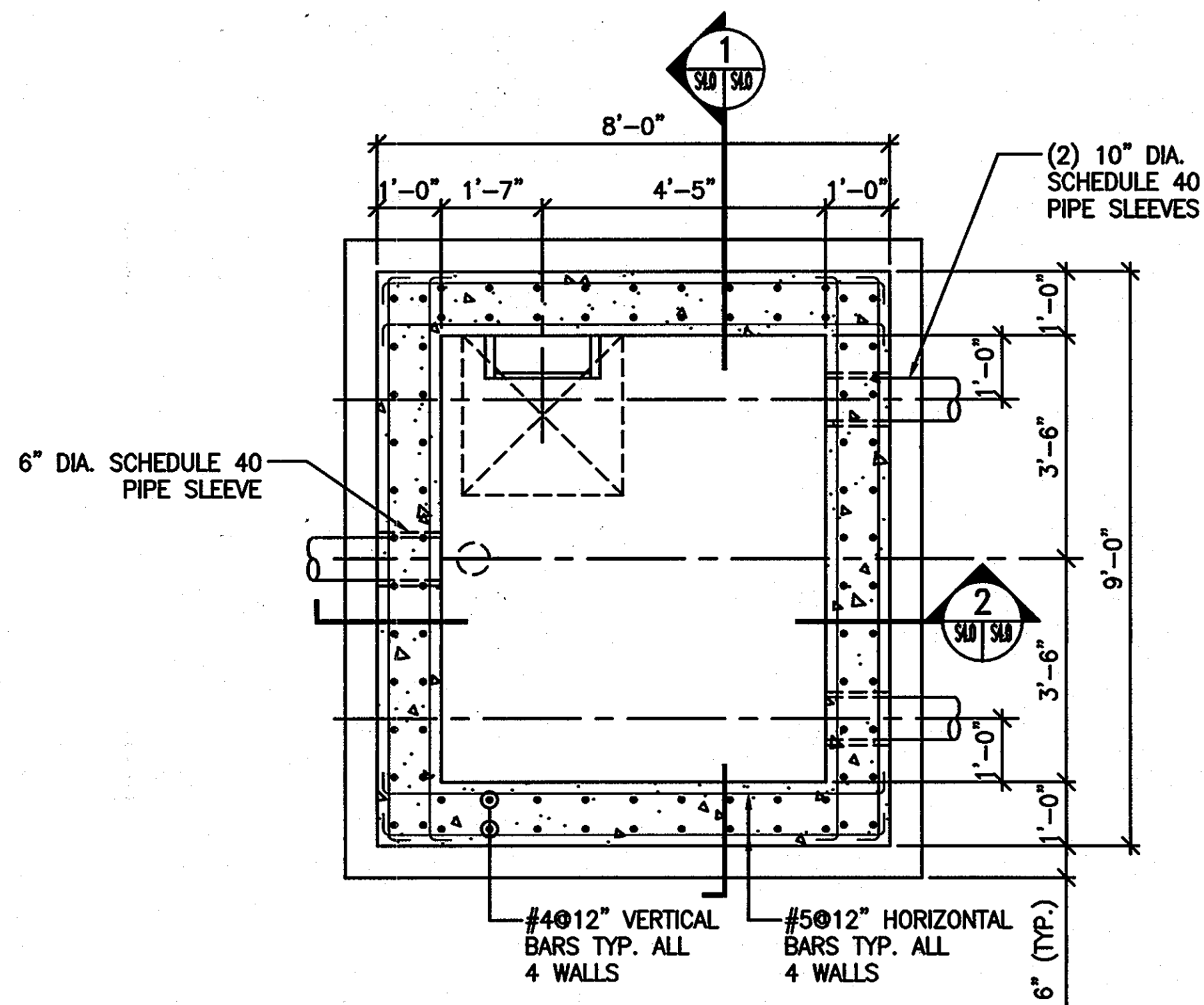
REVISION #1	11-14-11
REVISION #1	4-28-11
REVISIONS	DATE

SHARED SEPTIC SYSTEM
DISTRIBUTION VALVE VAULT DETAILS
RIVERWOOD - PHASE 2
A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'A' THRU 'GG' TO CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'T' THRU 'Z', 'AA' AND 'BB' AND NON-BUILDABLE BULK PARCEL 'II' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S', AND 'U' TO ADD OR MODIFY FOREST CONSERVATION AREAS
THIRD ELECTION DISTRICT
CONTRACT NO. 50-4287-D

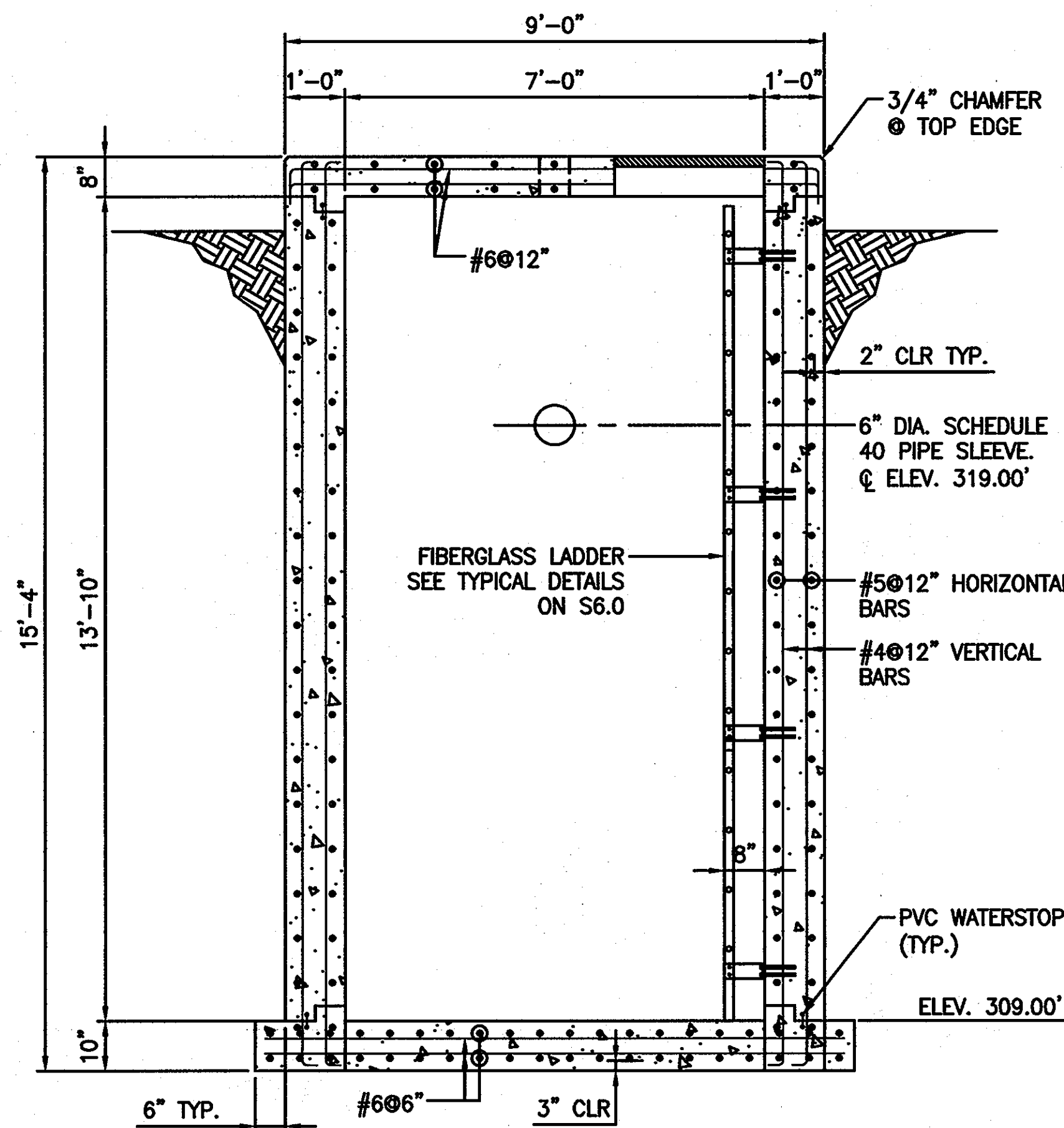
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SCALE: AS SHOWN
SHEET NO. 22 of 56



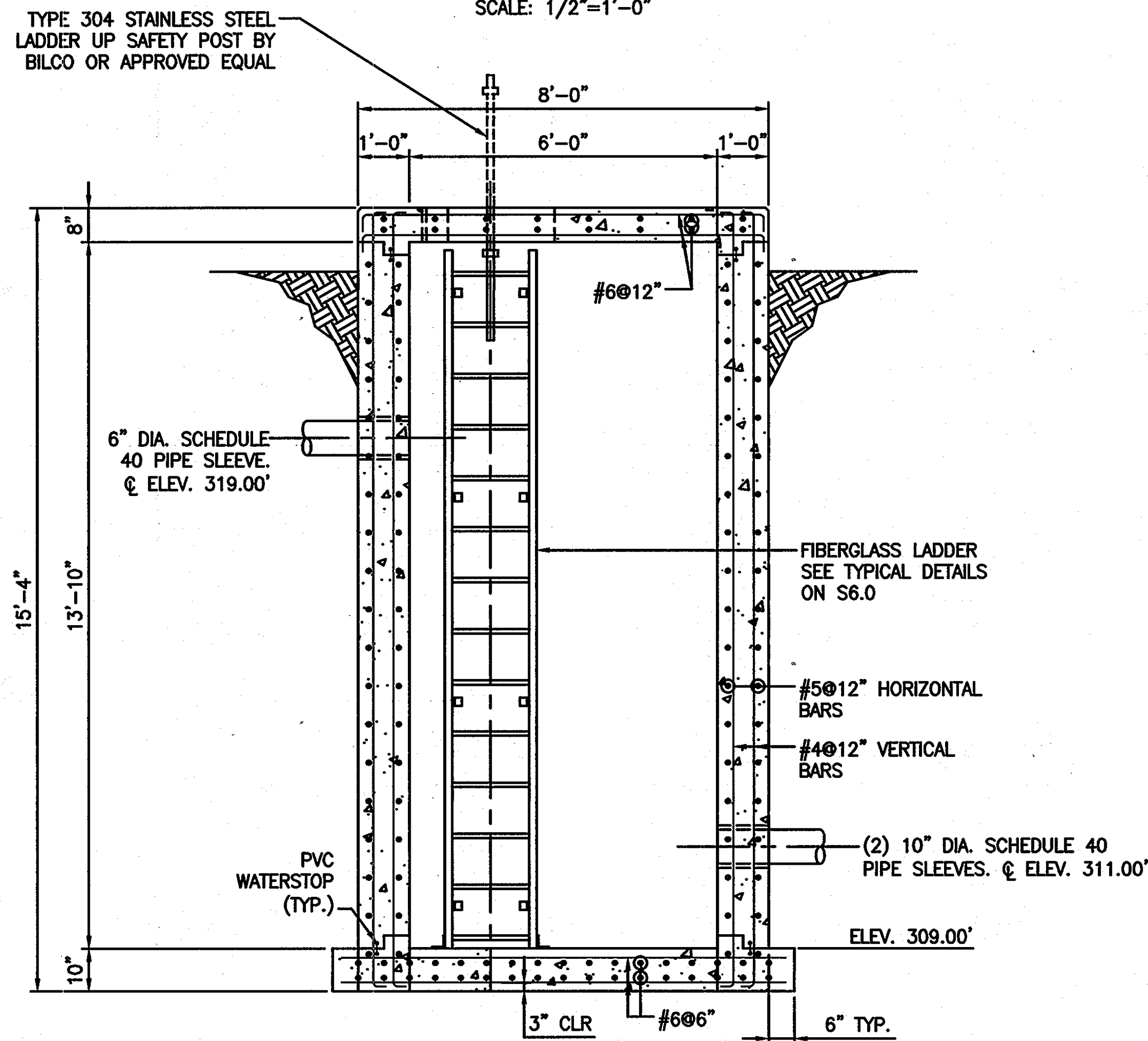
VALVE VAULT 'A'
TOP SLAB REINFORCEMENT PLAN
 SCALE: 1/2"=1'-0"



VALVE VAULT 'A'
VAULT PLAN (TOP SLAB REMOVED)
 SCALE: 1/2"=1'-0"



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



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

CONSTRUCTION NOTES:

VALVE VAULT 'B' IS A MIRROR IMAGE OF VALVE VAULT 'A'.
 SEE DWG U1.4 FOR LOCATIONS.

NOTES:

1. ALL CONCRETE SHALL BE $f'_c=4000$ PSI.
2. REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60.
3. STRUCTURE IS DESIGNED FOR AASHTO HS-20 TRUCK LOADING.
4. STRUCTURE IS DESIGNED BY ACI 350.
5. THE CONTRACTOR MAY USE PRECAST CONCRETE STRUCTURE INSTEAD OF CAST-IN-PLACE CONCRETE STRUCTURE AS SHOWN ON THE DRAWING WITHOUT CHANGING SIZES AND REINFORCEMENT OF THE MEMBERS. THEN SUBMIT COMPUTATION STAMPED BY REGISTERED ENGINEER IN THE STATE OF MARYLAND WITH THE SHOP DRAWINGS.
6. IF THE CONTRACTOR ELECTS TO USE PRECAST STRUCTURE, THEN ONLY ALLOW 1 JOINT IN THE WALL. JOINT SHOULD BE LOCATED AT LEAST 6'-0" ABOVE THE TOP OF BOTTOM SLAB.

APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT

COUNTY HEALTH OFFICER DATE:

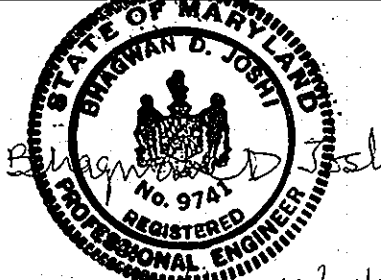
Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
 License No. 9741, Expiration Date: 2/19/2012.

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY, MARYLAND

URS

URS CORP.
 CONSULTING ENGINEERING AND PLANNING
 1099 Winterson Road
 Linthicum, MD 21090
 Phone: 410-855-6160 Fax: 410-855-6163



DESIGN:	
DRAFT:	KDPC
CHK:	CDS
DATE:	11/2010
BY:	NO.
REVISIONS:	
REVISION #1 - REPLACEMENT SHEET	11-14-11
REVISION #1 - REPLACEMENT SHEET	4-28-11

SHARED SEPTIC SYSTEM
 FORCE MAIN VALVE VAULTS
 A & B DETAILS

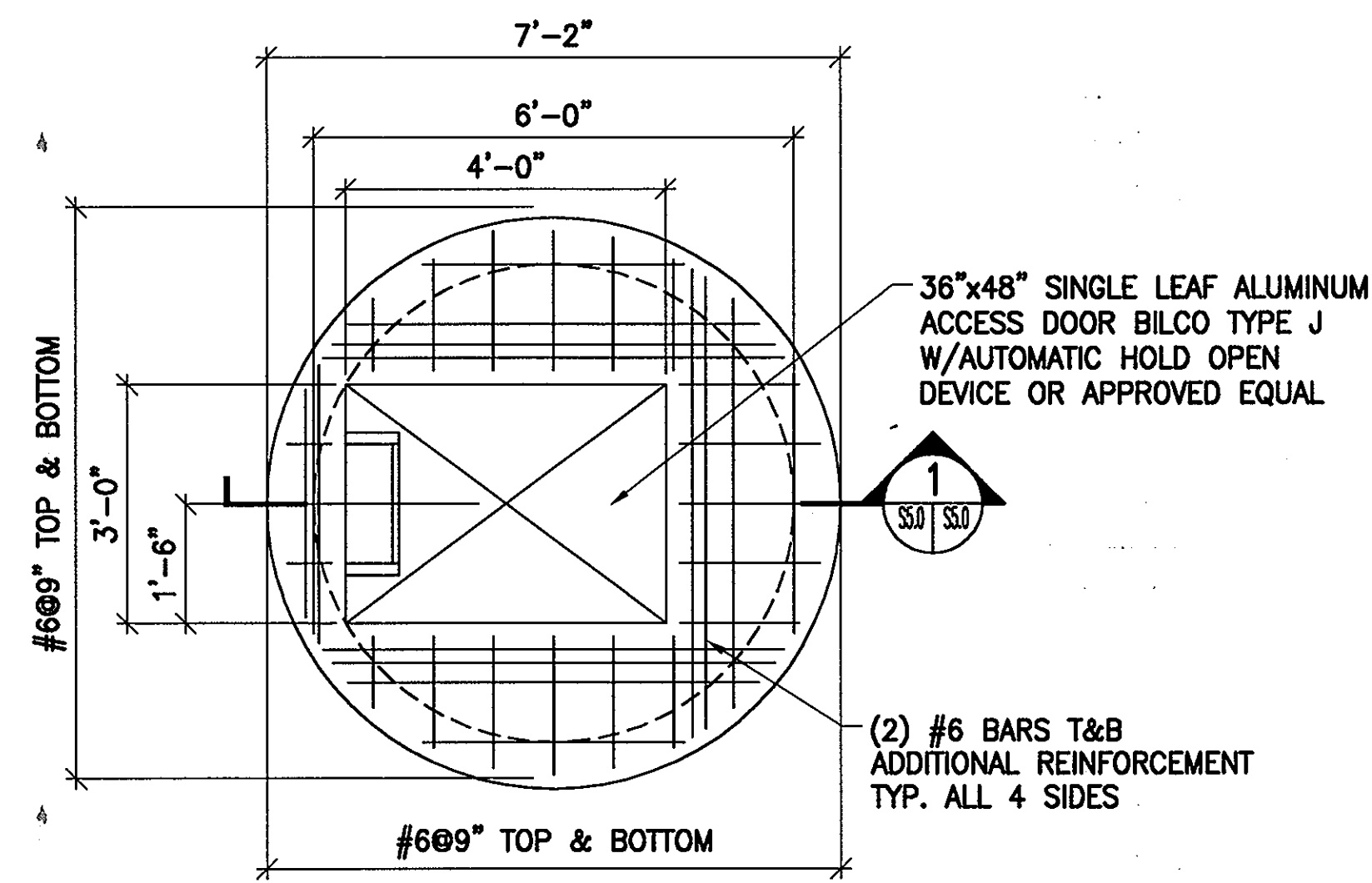
RIVERWOOD - PHASE 2
 A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS '1' THRU 'Z', 'AA' AND 'BB' AND NON-BUILDABLE BULK PARCEL '11' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S', AND 'U' TO ADD OR MODIFY FOREST PRESERVATION AREAS
 THIRD ELECTION DISTRICT

S4.0

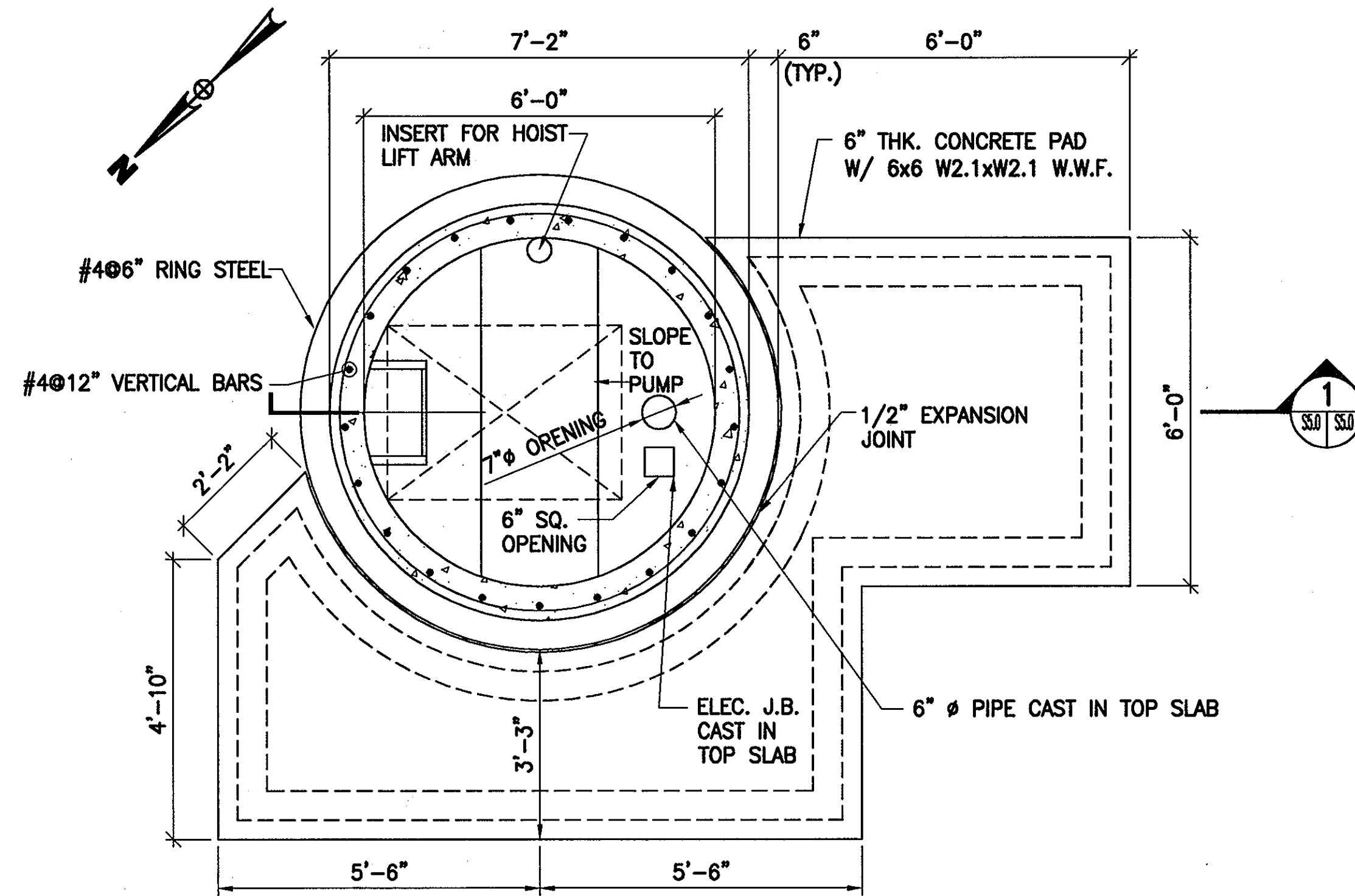
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 AS SHOWN

SHEET NO.
 23 of 56

CONTRACT NO. 50-4287-D

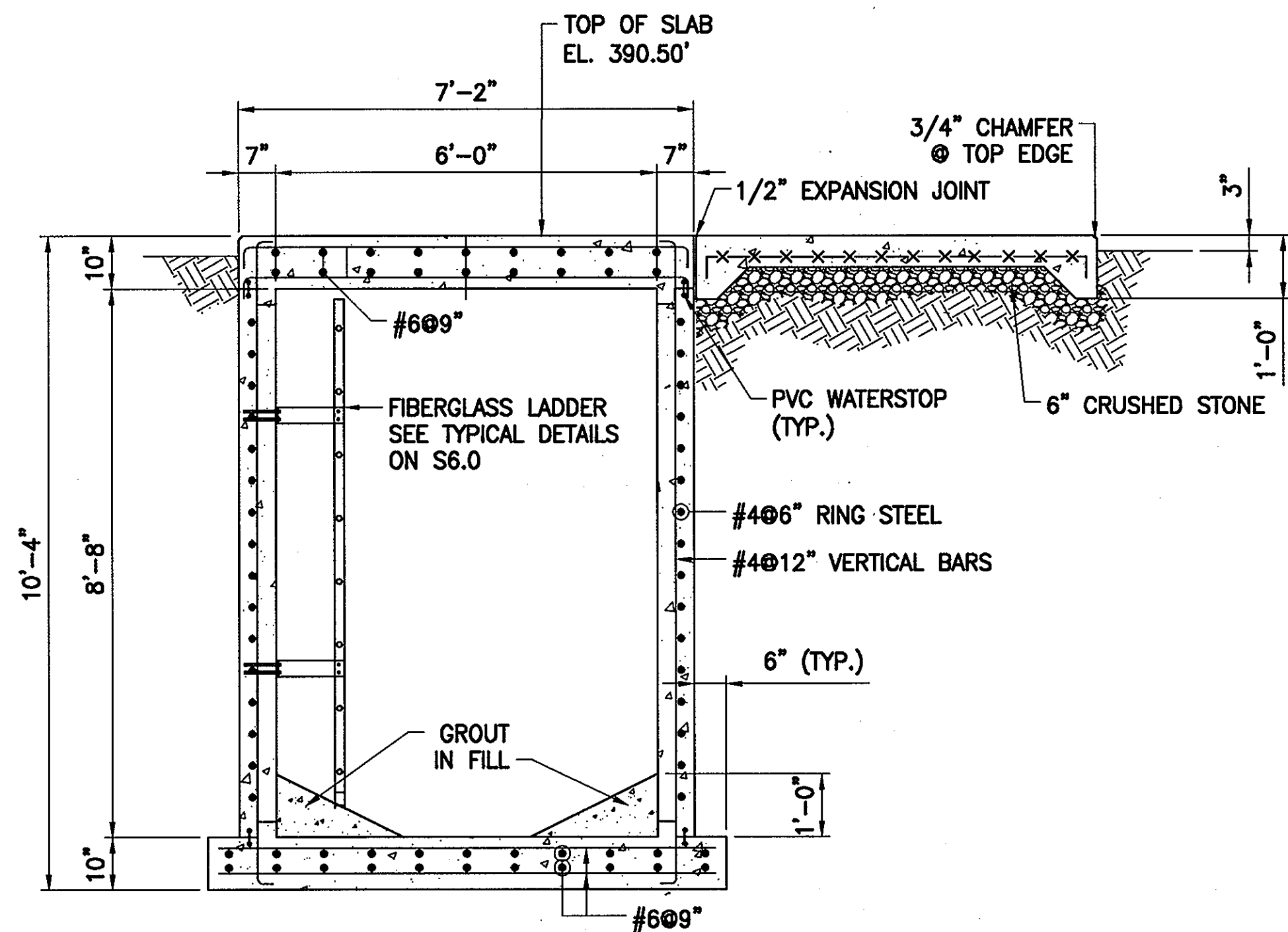


TOP SLAB REINFORCEMENT PLAN
SCALE: 1/2"=1'-0"



PUMP STATION PLAN (TOP SLAB REMOVED)
SCALE: 1/2"=1'-0"

NOTES:
CONTRACTOR SHALL COORDINATE OPENINGS IN TOP SLAB
W/ DWG. U1.3 TO VERIFY FINAL LOCATIONS AND DIMENSIONS.



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

INFLUENT STATION DETAILS
SCALE: AS NOTED

- NOTES:
1. ALL CONCRETE SHALL BE f'c=4000 PSI.
 2. REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60.
 3. STRUCTURE IS DESIGNED FOR HS-20 LOADING.
 4. STRUCTURE IS DESIGNED BY ACI 350.

APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT

B. Wilson
COUNTY HEALTH OFFICER
DATE: 9/14/07

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 9741, Expiration Date: 2/19/2008.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND

URS
URS CORP.
CONSULTING ENGINEERING AND PLANNING
1099 Whiterson Road
Linthicum, MD 21090
Phone: 410-855-6160 Fax: 410-855-6163



DESIGN:
DRAFT: KDPC
CHK: CDS
DATE: 5/2007

SHARED SEPTIC SYSTEM

INFLUENT PUMP STATION DETAILS

RIVERWOOD - PHASE 2

A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'T' THRU 'Z', 'AA' AND 'BB' AND NON-BUILDABLE BULK PARCEL 'II' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S', AND 'U' TO ADD OR MODIFY FOREST PRESERVATION AREAS
THIRD ELECTION DISTRICT

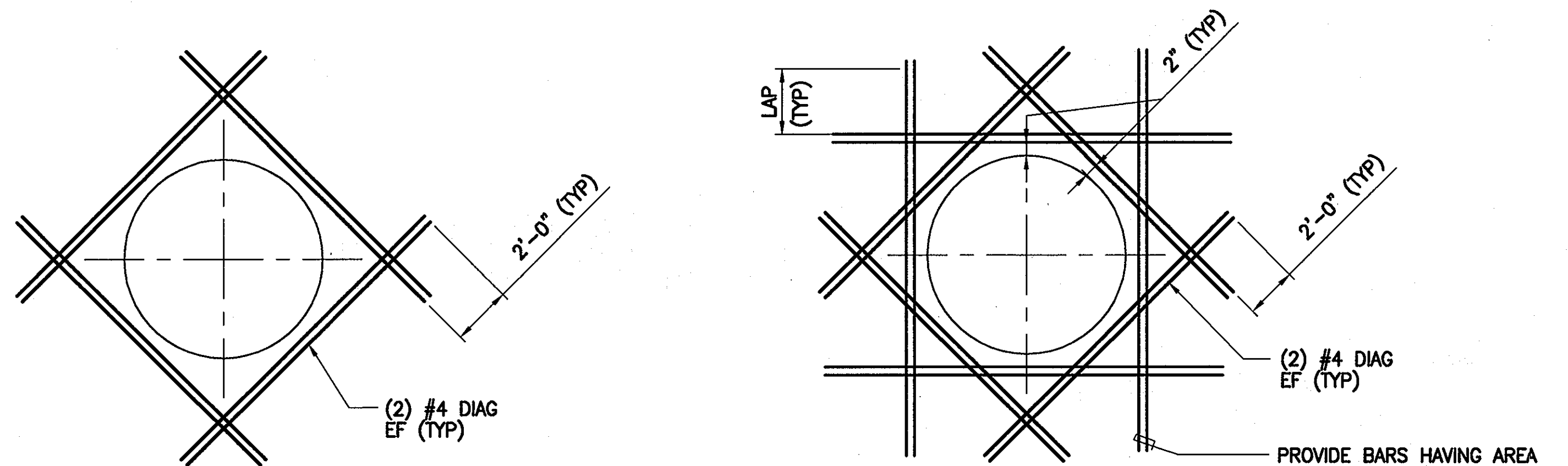
CONTRACT NO. 50-4287-D

S5.0

SCALE:
AS SHOWN

SHEET NO.

24 of 56



WITHOUT INTERRUPTING REINFORCING STEEL BARS

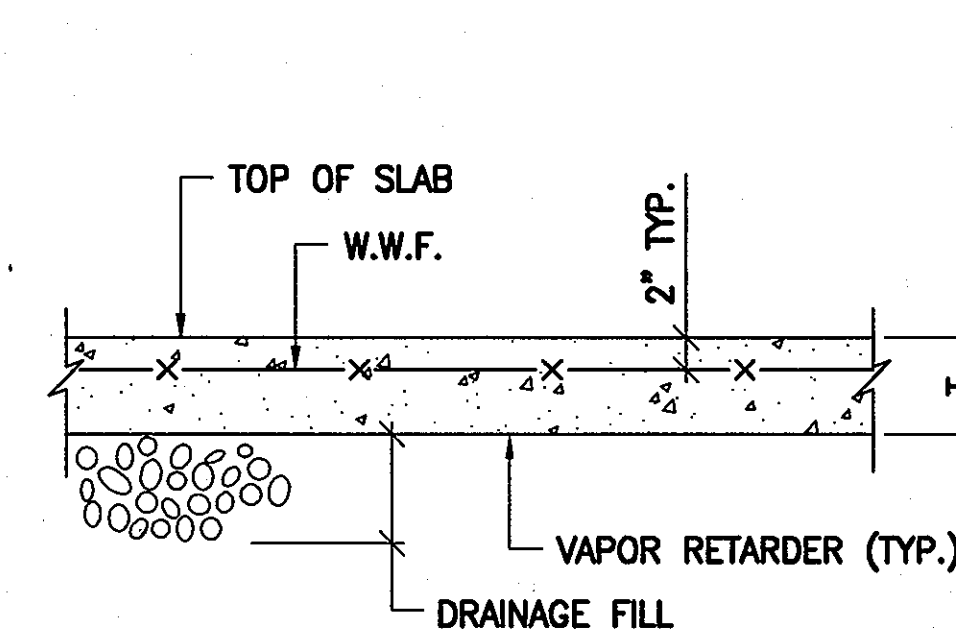
WITH INTERRUPTING REINFORCING STEEL BARS

TYPICAL REINFORCEMENT FOR CONCRETE PENETRATION (UNLESS OTHERWISE SHOWN)

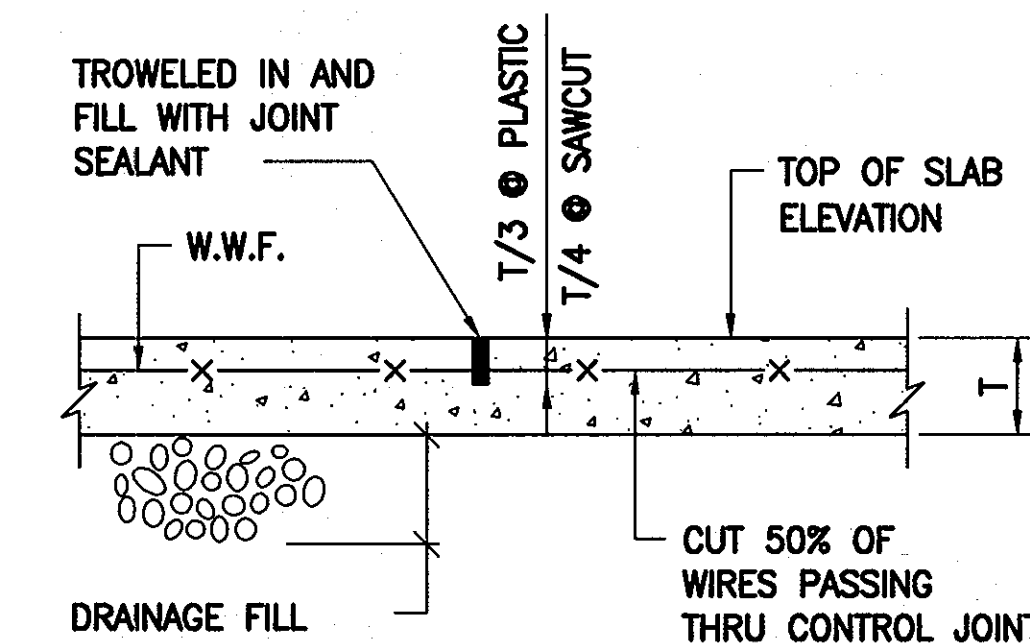
NOT TO SCALE

NOTE:

PARALLEL REINFORCEMENT IS TO BE SAME SIZE AS INTERRUPTED BARS.



TYPICAL SLAB ON GRADE



PLASTIC CJ (ALTERNATE 1)

SAWCUT CJ (ALTERNATE 2)

PLASTIC CONTROL JOINT FORMER INSTALLED PER MANUFACTURER RECOMMENDATIONS

SAWCUT CONTROL JOINT AS SOON AS SURFACE IS FIRM ENOUGH SO THAT IT WILL NOT BE TORN OR DAMAGED BY BLADE

CONTROL JOINT

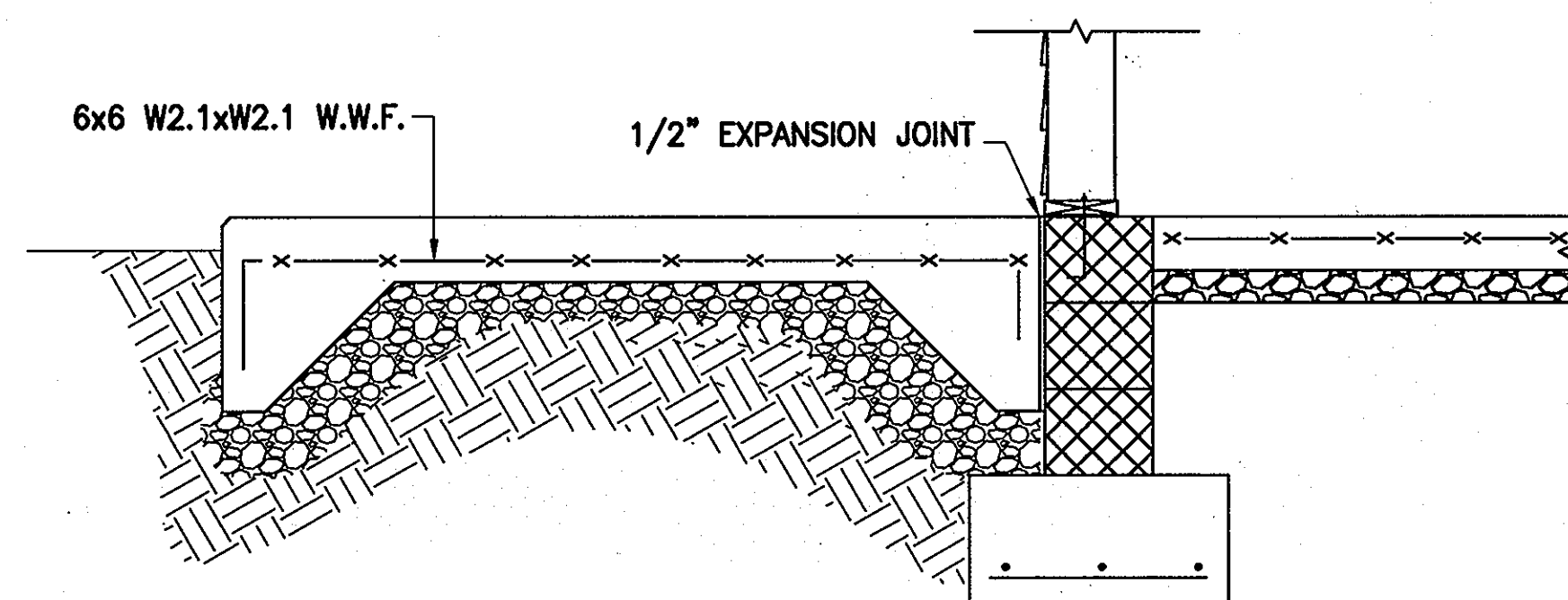
NOTES:

1. CONTROL JOINT NOTED THUS: C.J. ON PLAN.

1 TYPICAL SLAB ON GRADE DETAILS

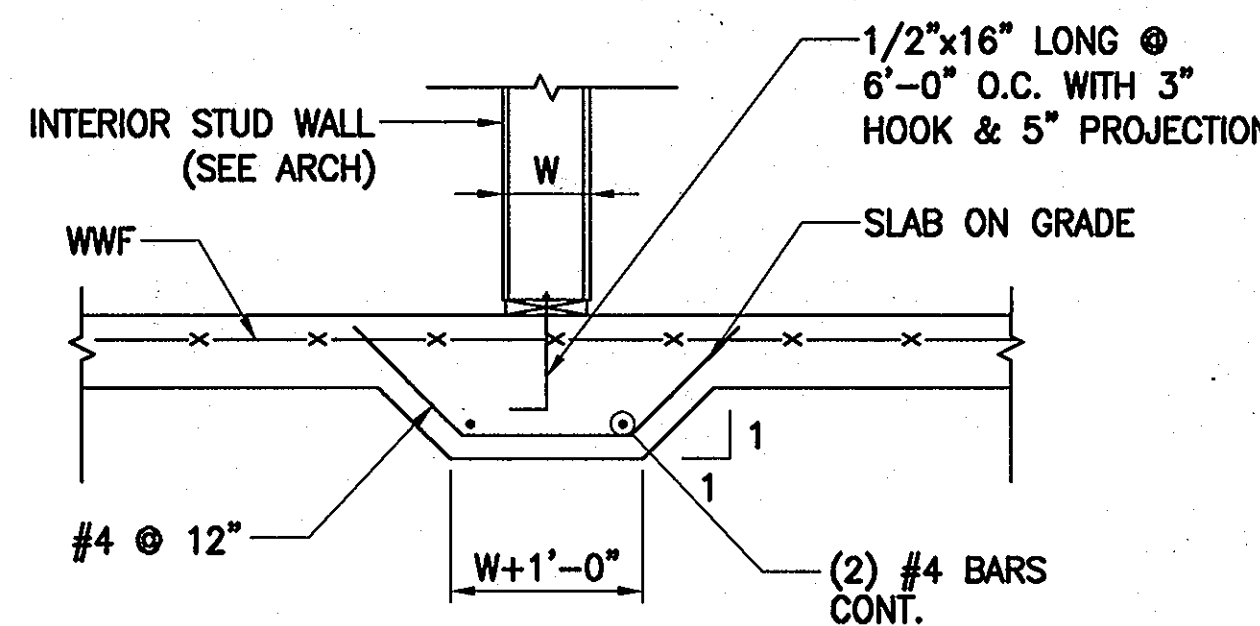
NOT TO SCALE

*" INDICATES SLAB THICKNESS. SEE PLAN.



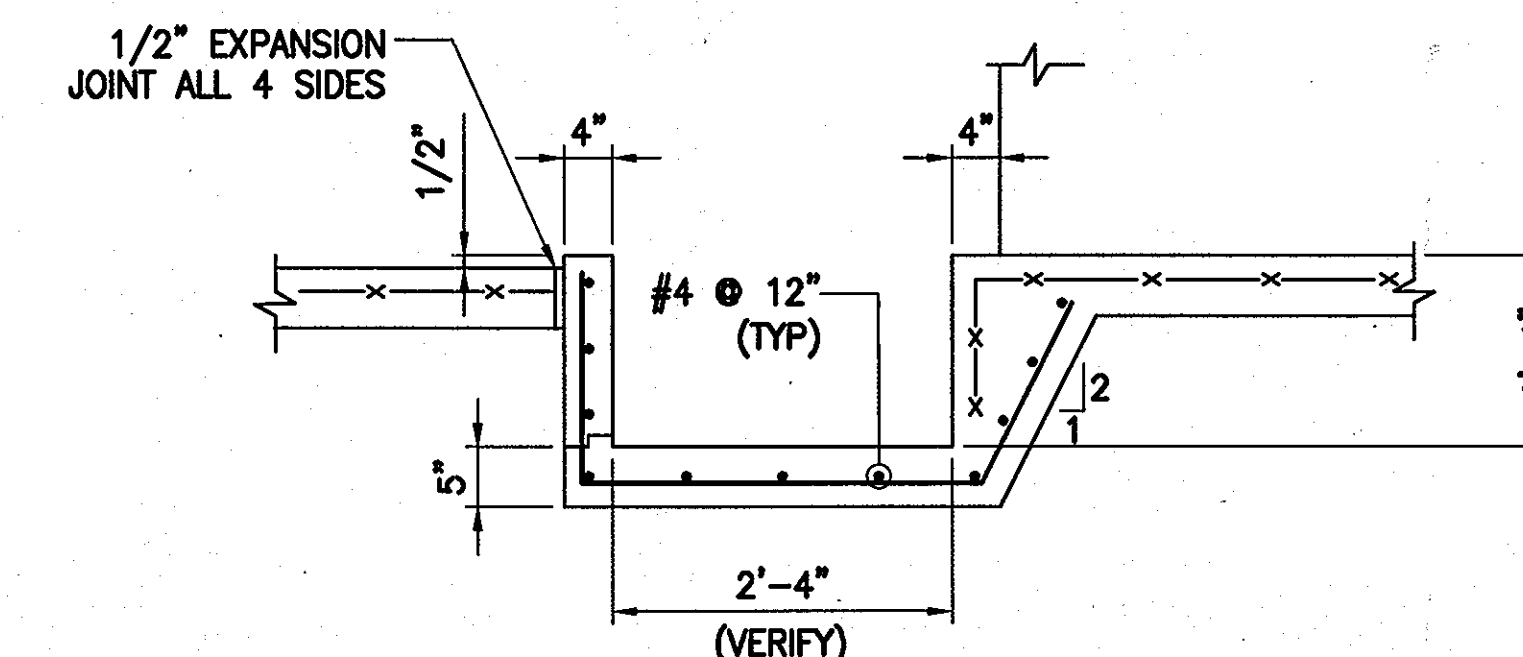
TYPICAL EXTERIOR CONCRETE PAD DETAIL

SCALE: 3/4"=1'-0"



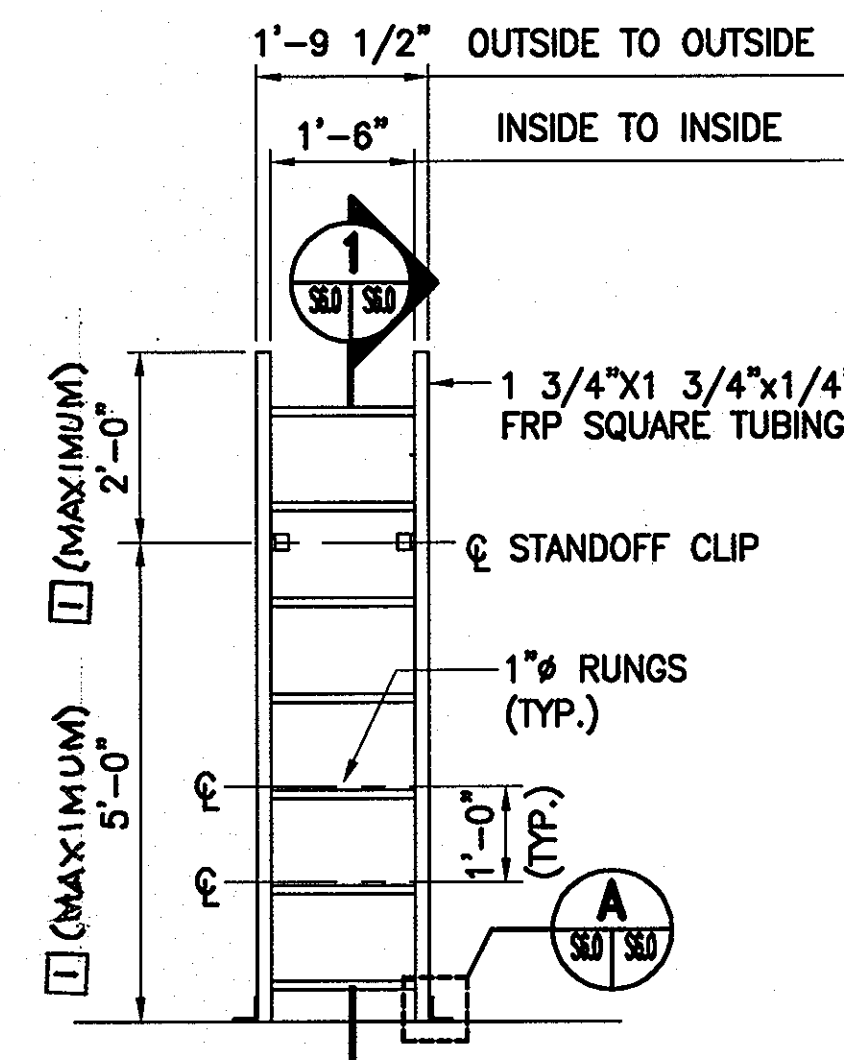
5 SECTION

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



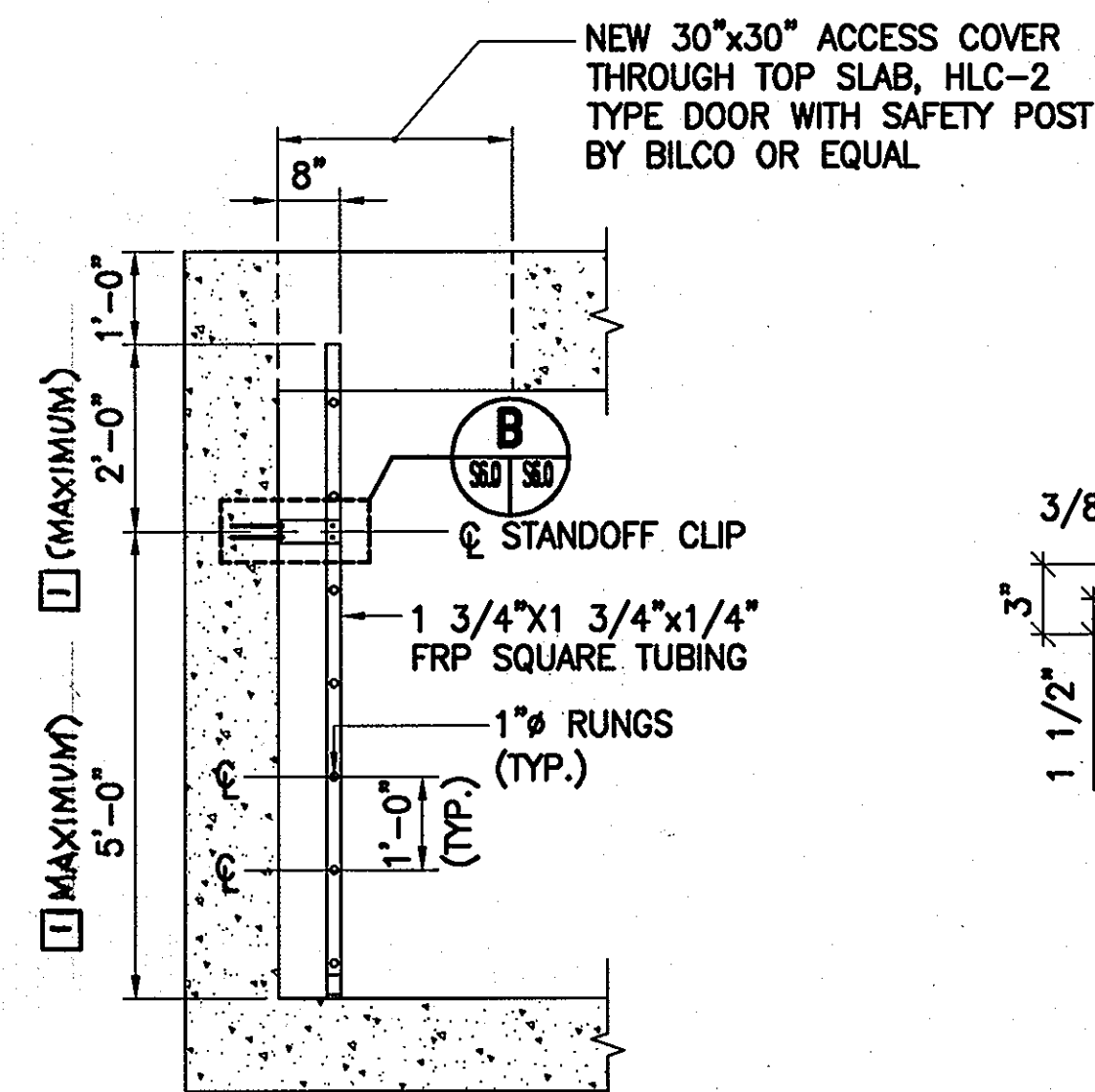
6 SECTION

SCALE: 3/4"=1'-0"



FIBERGLASS LADDER DETAIL

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

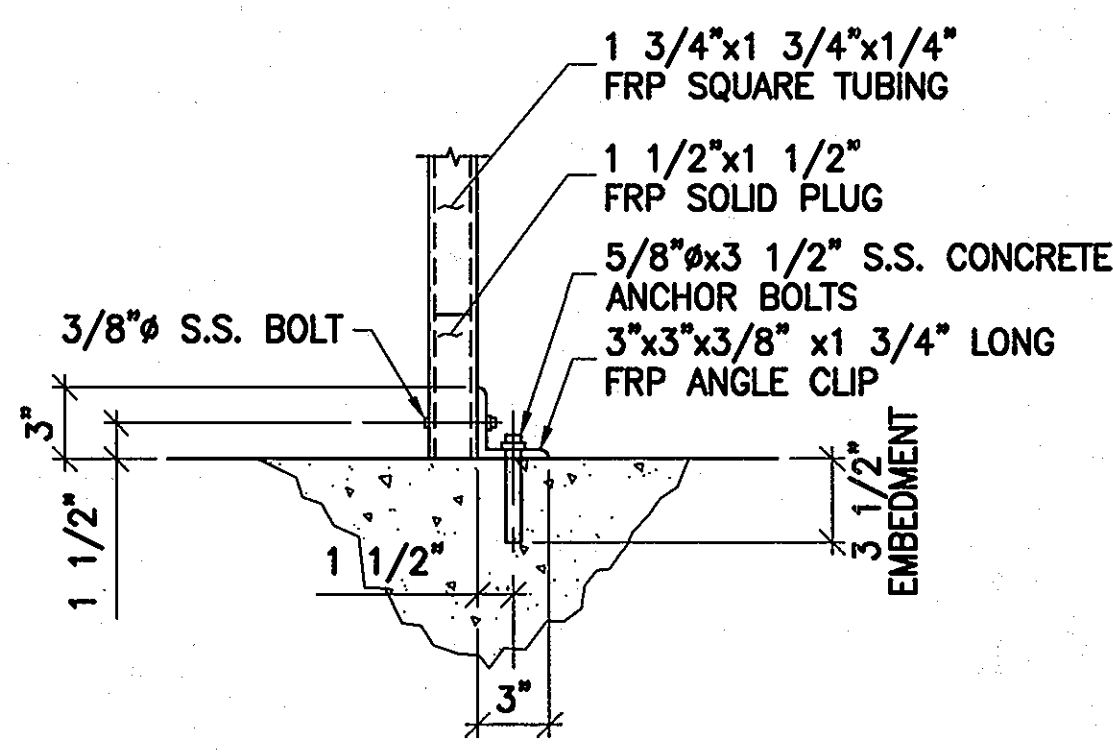


1 SECTION

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

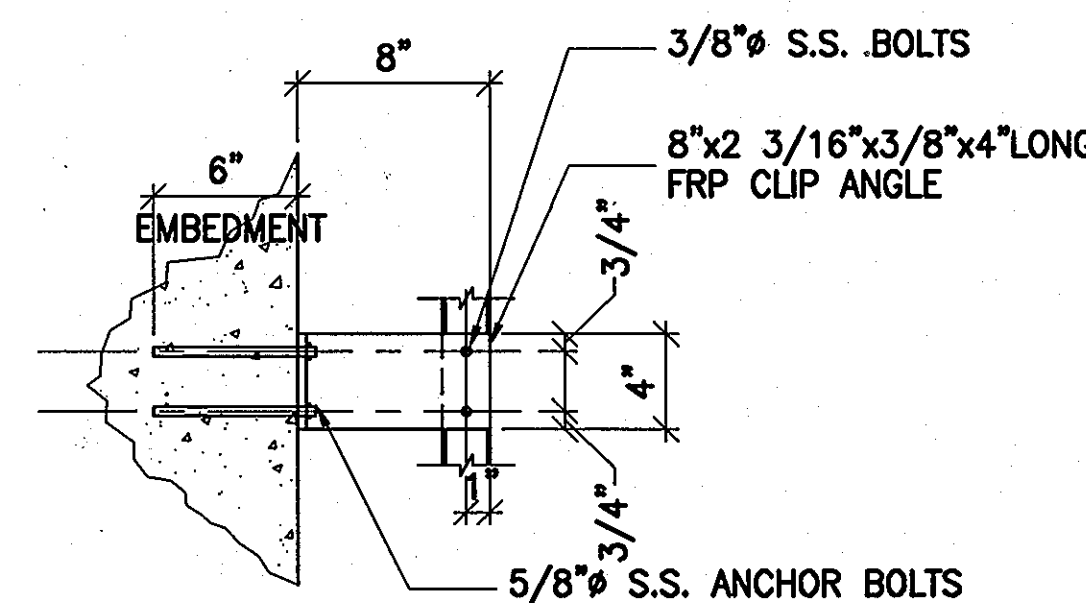
NOTES:

- LADDER LENGTHS VARY, SEE DETAIL SHEETS FOR EXACT DIMENSIONS OF VAULT STRUCTURES.
- PROVIDE TYPE 304 S.S. LADDER UP SAFETY POST MOUNTED ON LADDER RUNGS.



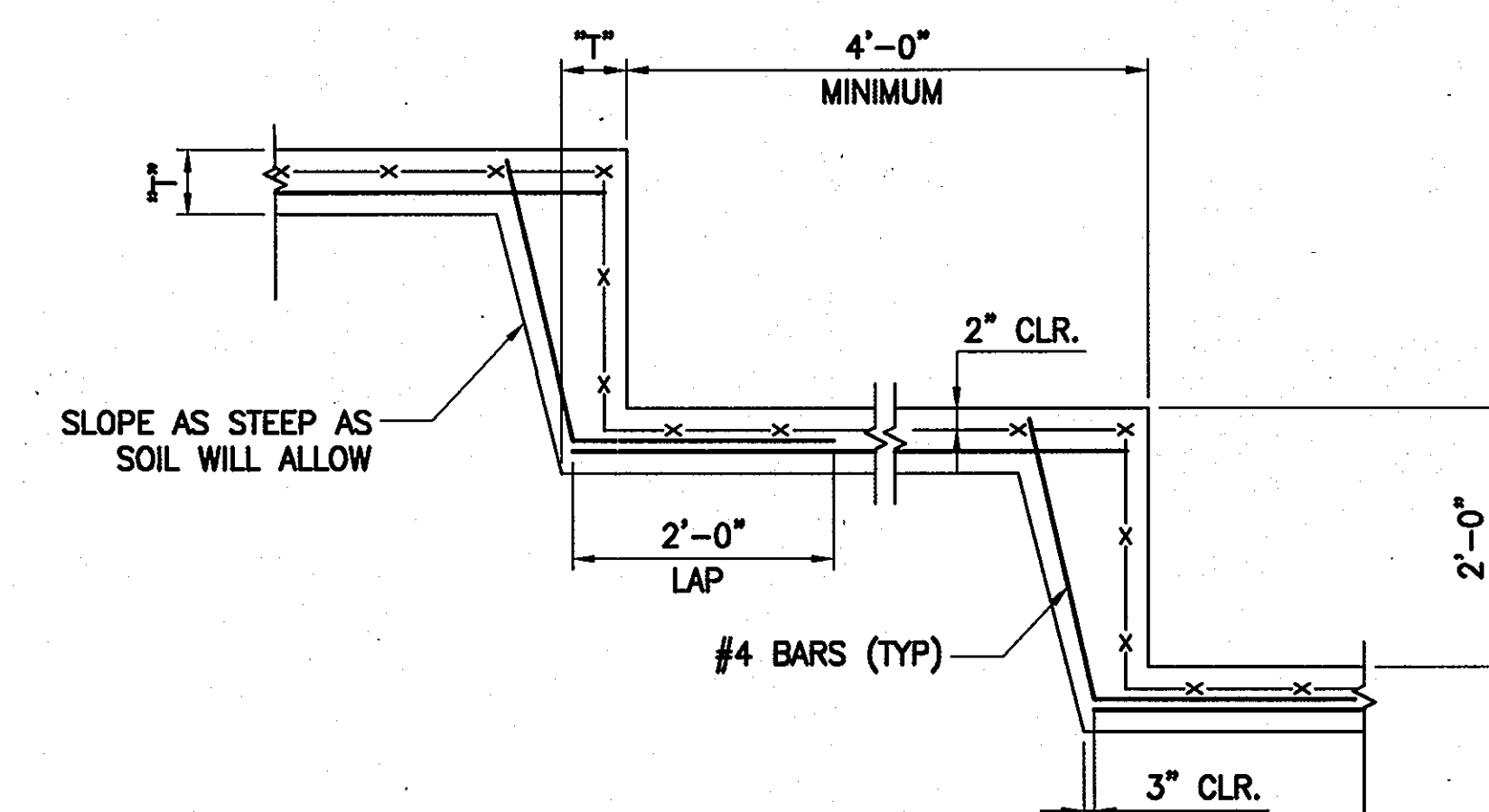
A DETAIL

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



B SECTION

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



TYPICAL STEPPED FOOTING DETAIL

SCALE: 3/4"=1'-0"

APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT

B. Wilson for Peter Beilman 9/14/07
COUNTY HEALTH OFFICER DATE

1 SECTION

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

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 9741, Expiration Date: 2/19/2008.



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND



URS CORP.
CONSULTING ENGINEERING AND PLANNING
1099 Winterson Road
Linthicum, MD 21090
Phone: 410-855-6160 Fax: 410-855-6163

DESIGN: CDS

DRAFT: KDPC

CHK: BDJ

DATE: 5/2007

BY	NO.	REVISION #1	DATE
BDJ			4-28-11

SHARED SEPTIC SYSTEM

TYPICAL DETAILS

RIVERWOOD - PHASE 2

A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'I' THRU 'Z', 'AA' AND 'BB' AND NON-BUILDABLE BULK PARCEL 'II' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S', AND 'U' TO ADD OR MODIFY FOREST CONSERVATION AREAS
THIRD ELECTION DISTRICT

CONTRACT NO. 50-4287-D

S6.0

SCALE:
AS SHOWN

SHEET NO.

25 of 56

GENERAL NOTES

- COORDINATE LOCATION OF ALL EQUIPMENT, PIPING, DUCTWORK, ETC. WITH THE OTHER BUILDING TRADES. ALL MECHANICAL ITEMS SHALL BE INSTALLED PER LOCAL, STATE, AND FEDERAL CODES, AS WELL AS PER MANUFACTURER'S INSTRUCTIONS. CONTRACTOR SHALL TAKE SPECIAL CARE TO ENSURE ALL CLEARANCES ARE MAINTAINED FOR PROPER ACCESS AND MAINTENANCE OF THE EQUIPMENT.
- WHERE THE CONTRACTOR SUBMITS EQUIPMENT OTHER THAN THAT SCHEDULED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THAT ALL ELECTRICAL POWER, PIPING CONNECTIONS, DUCTWORK CONNECTIONS, AND OTHER ASSOCIATED ITEMS ARE COORDINATED. NO ADDITIONAL COSTS WILL BE ALLOWED FOR NECESSARY CHANGES TO FURNISH AND INSTALL THE SUBMITTED EQUIPMENT.
- PROVIDE VIBRATION ISOLATORS FOR ALL MOVING EQUIPMENT PER MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS.
- UNLESS OTHERWISE NOTED, ALL ISOLATION VALVES SHALL BE THE SAME SIZE AS THE PIPE THEY ARE INSTALLED IN.
- PROVIDE ISOLATION VALVES AT ALL EQUIPMENT AND PLUMBING FIXTURES.
- ALL EXPOSED STEEL PIPING AND EQUIPMENT SUPPORTS SHALL BE PAINTED IN THE FIELD. PROVIDE MINIMUM TWO COATS OF PRIMER AND TWO COATS OF EPOXY FINISH, WITH COLOR(S) SELECTED BY THE ARCHITECT/ENGINEER.
- PROVIDE MANUAL AIR VENTS AT ALL HIGH POINTS IN ALL PIPING SYSTEMS. PROVIDE DRAINS AT ALL LOW POINTS IN ALL PIPING SYSTEMS. PROVIDE AUTOMATIC AIR VENTS AT LOCATIONS INDICATED ON THE PLANS.
- PROVIDE FLEXIBLE DUCT CONNECTIONS AT INLET AND OUTLETS TO SUPPLY AND EXHAUST.
- PROVIDE FLEXIBLE PIPE CONNECTIONS AT ALL PUMPS, AIR COMPRESSORS, AND AT OTHER EQUIPMENT THAT MOVES.
- PROVIDE MANUAL AIR VOLUME DAMPERS ON BRANCH CONNECTIONS TO EACH AIR DIFFUSER UNLESS OTHERWISE NOTED.
- UNLESS OTHERWISE NOTED, ALL MECHANICAL SYSTEMS SHALL BE TESTED AND BALANCED PER AABC OR NEBB REQUIREMENTS.

MECHANICAL LEGEND	
SYMBOL	DESCRIPTION
	GATE VALVE
	CHECK VALVE
	GLOBE VALVE
	BALL VALVE
	TWO WAY CONTROL VALVE
	BALANCE SHUT OFF VALVE (CIRCUIT SETTER)
	STRAINER
	PRESSURE GAUGE AND COCK
	SAFETY OR RELIEF VALVE
	PRESSURE REDUCING VALVE (PRV)
	BUTTERFLY VALVE
	PIPE UP, PIPE DOWN
	MANUAL AIR VENT
	AUTOMATIC AIR VENT
	THERMOMETER
	FLOW SENSOR
	FLOW METER
	SUPPLY AIR DIFFUSER (PLAN,ELEV.) (S.A.D.)
	EXHAUST GRILLE
	FLEXIBLE CONNECTION
	VOLUME DAMPER (VD)
	MOTOR OPERATED DAMPER
	UNIT HEATER
	THERMOSTAT/ TEMPERATURE SENSOR
	PUMP
	DUCT ELBOW TURNING VANES (DOUBLE/ SINGLE LINE)
	BACK DRAFT DAMPER (BDD)
	HEAT TRACED PIPE

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
AFF	ABOVE FINISHED FLOOR	MAX	MAXIMUM
APPROX	APPROXIMATE	MBH	THOUSAND BTU PER HOUR
BDD	BACKDRAFT DAMPER	MECH	MECHANICAL
BLDG	BUILDING	MIN	MINIMUM
BTU	BRITISH THERMAL UNIT	MOD	MOTOR OPERATED DAMPER
CAP	CAPACITY	NTS	NOT TO SCALE
CD	CEILING DIFFUSER	OA	OUTSIDE AIR
CFM	CUBIC FEET PER MINUTE	OED	OPEN END DUCT
CL	CENTERLINE	PH	PHASE
DN	DOWN	PRESS	PRESSURE
DWG	DRAWING	PSI	POUNDS PER SQUARE INCH
EG	EXHAUST GRILLE	PSIG	POUNDS PER SQ INCH GAGE
EAT	ENTERING AIR TEMPERATURE	RPM	REVOLUTIONS PER MINUTE
EF	EXHAUST FAN	SAR/SR	SUPPLY AIR REGISTER
EFF	EFFICIENCY	SP	STATIC PRESSURE
EL	ELEVATION	TEMP	TEMPERATURE
ELECT	ELECTRICAL	TYP	TYPICAL
ESP	EXTERNAL STATIC PRESSURE	UH	UNIT HEATER
EXT	EXTERNAL	V	VOLT
F	DEGREE FAHRENHEIT	VD	VOLUME DAMPER
FT	FEET	WC	WATER COLUMN
FPM	FEET PER MINUTE	WG	WATER GAGE
FT OF W	FEET OF WATER	L-	LOUVER
GA	GAGE	L	LONG
GAL	GALLON	SA	SUPPLY AIR
GALV	GALVANIZED	CH	CABINET HEATER
GPM	GALLONS PER MINUTE	D	DEEP
HP	HORSE POWER	H	HIGH
HZ	HERTZ	W	WIDE
IN	INCH	PRV	PRESSURE REDUCING VALVE
KW	KILOWATT	DP	DIFFERENTIAL PRESSURE
LAT	LEAVING AIR TEMPERATURE	AG	ABOVE GRADE
		AC	AIR CONDITIONING UNIT
		CH	CABINET HEATER
		FTR	FINNED TUBE RADIATOR
		OC	ON CENTER

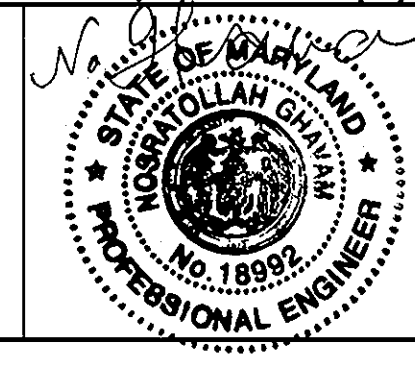
APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT
B. Wilson by *Peter Beilensen* 9/14/07
 COUNTY HEALTH OFFICER DATE

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
 License No. 18992, Expiration Date: 01/18/2009.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND
Michael A. Giovanniello 9-17-07
 CHIEF, BUREAU OF UTILITIES DATE

DEPARTMENT OF PLANNING AND ZONING HOWARD COUNTY, MARYLAND
[Signature] 9/16
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

URS
 URS CORP.
 CONSULTING ENGINEERING AND PLANNING
 1099 Winterson Road
 Luthien, MD 21090
 Phone: 410-855-6160 Fax: 410-855-6163

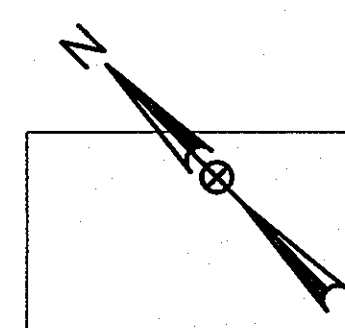


DESIGN: CMD	
DRAFT: CLD	
CHK: NG	
DATE: 5/2007	
BY NO.	
REVISIONS	
DATE	

SHARED SEPTIC SYSTEM
 MECHANICAL GENERAL NOTES,
 LEGEND & ABBREVIATIONS

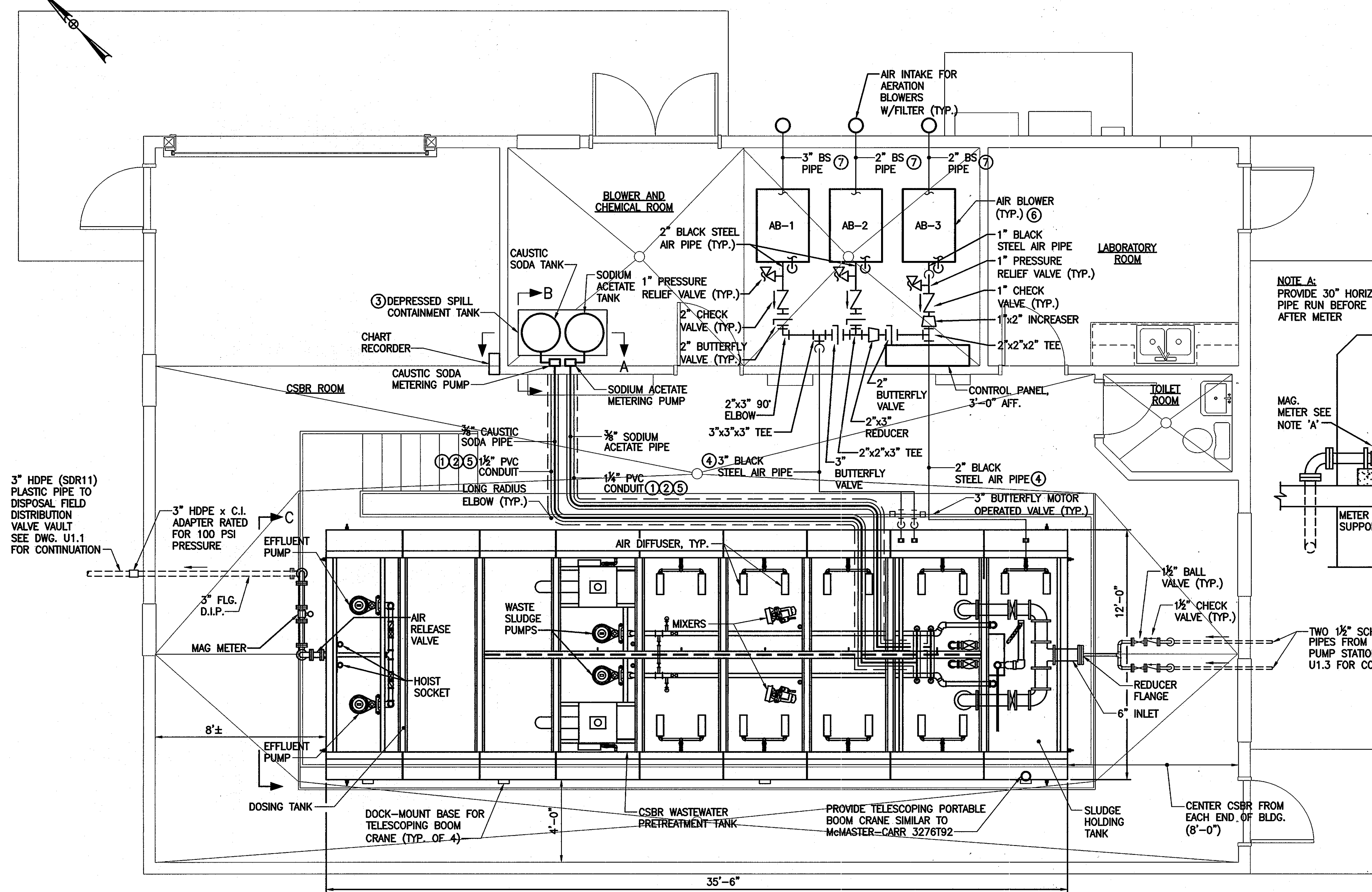
RIVERWOOD - PHASE 2
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 THIRD ELECTION DISTRICT
 CONTRACT NO. 50-4287-D

MH1.0
 SCALE:
 AS SHOWN
 SHEET NO.
 26 of 56

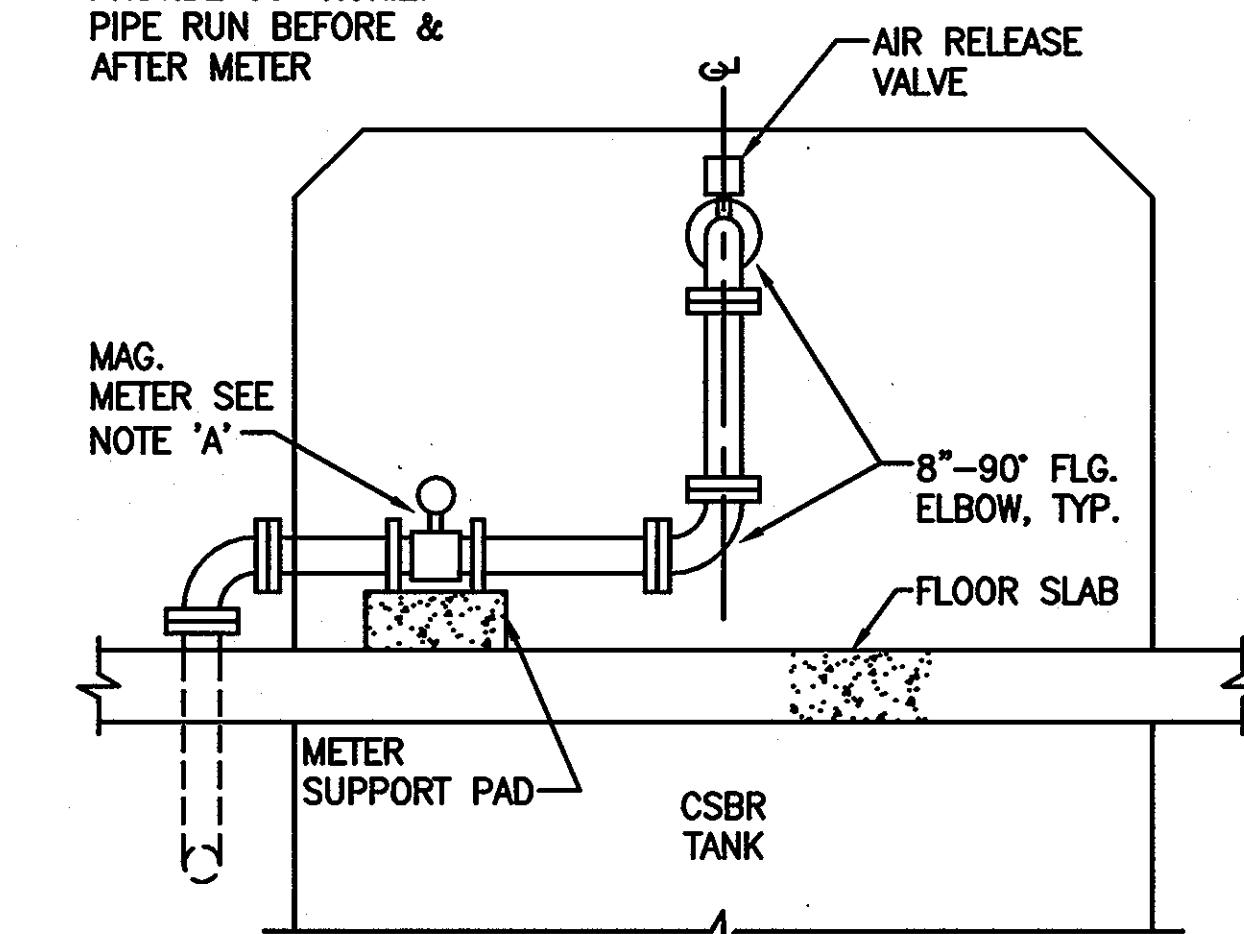


DRAWING NOTES:

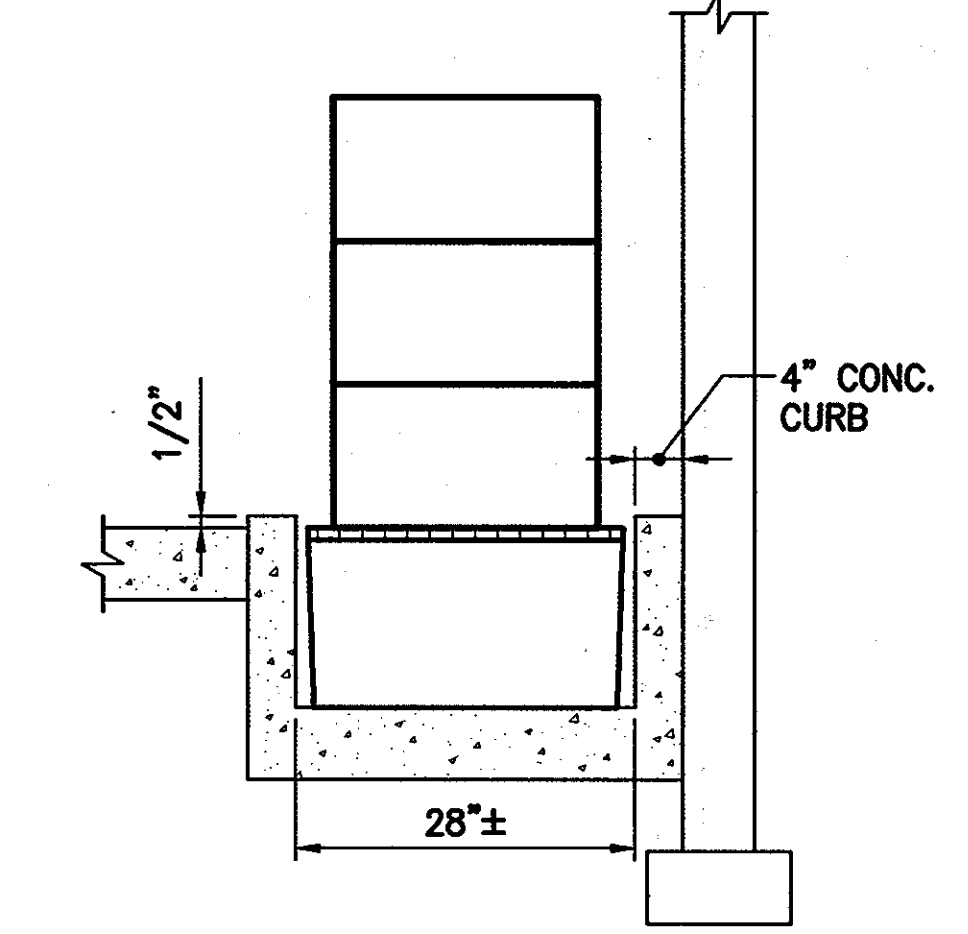
- ① INSULATE CHEMICAL LINE CONDUIT W/ 1" FIBERGLASS INSULATION. COVER INSULATION W/ PVC JACKET
- ② HEAT TRACE CHEMICAL LINE CONDUITS AS SPECIFIED
- ③ SPILL CONTAINMENT TANK SHALL BE MADE OF POLYETHYLENE SIZED FOR TWO DRUMS. TOP GRATING SHALL BE REMOVABLE WITH 1.75" SQUARE OPENINGS. TANK DIMENSION SHALL BE 51" L x 26.25" W x 15" D
- ④ SUPPORT AIR PIPES FROM ROOF TRUSSES, 15'-0" ± AFF
- ⑤ SUPPORT CHEMICAL PIPES FROM ROOF TRUSSES, 15'-0" ± AFF
- ⑥ AIR BLOWERS SHALL BE INSTALLED ON 4" HIGH CONCRETE PAD.
- ⑦ INSTALL THE AIR INTAKE PIPES 7'-6" AFF.



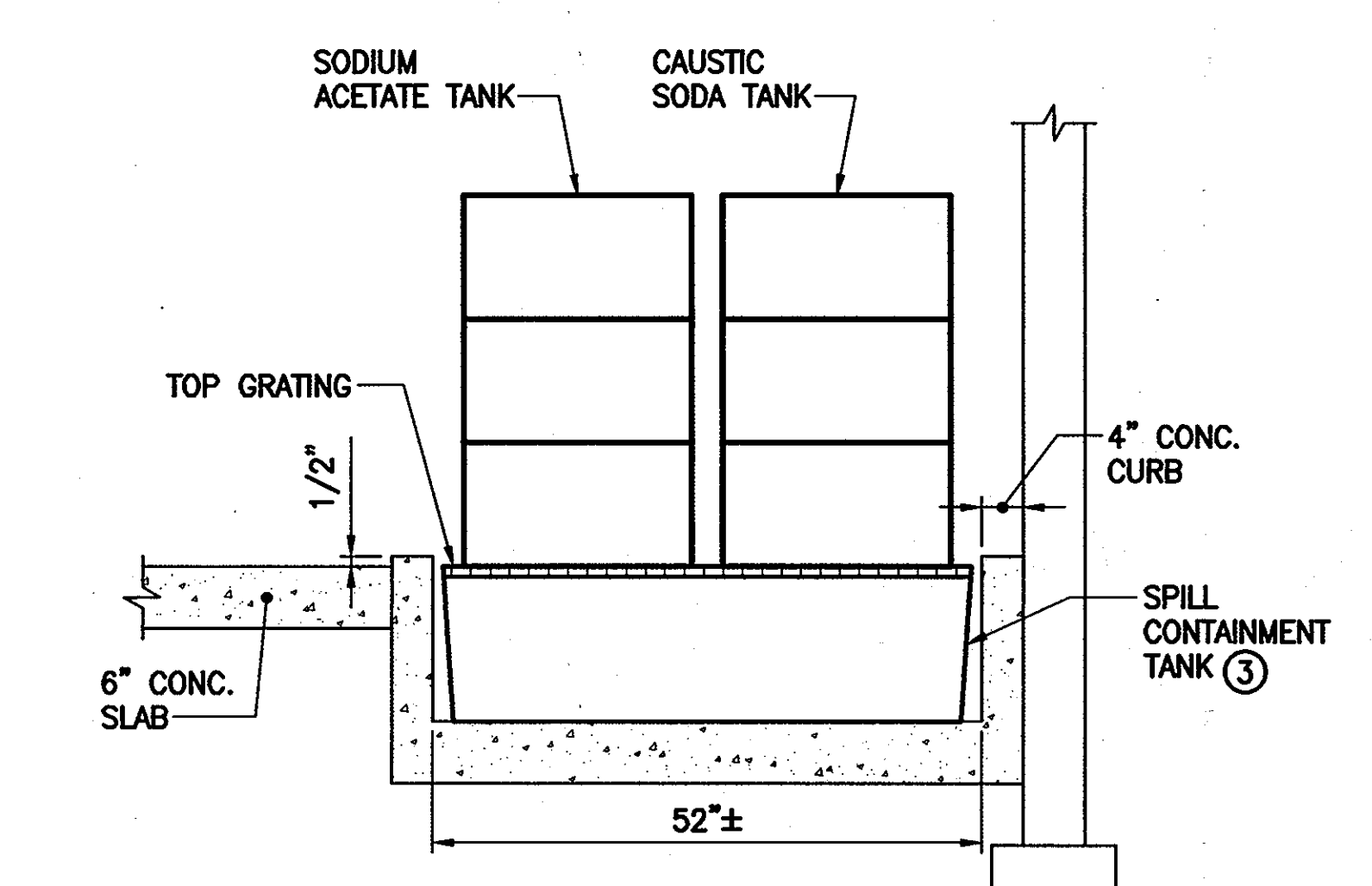
NOTE A:
PROVIDE 30" HORIZ.
PIPE RUN BEFORE &
AFTER METER



SECTION C-C
NOT TO SCALE



SECTION B-B
SCALE: 3/4"=1'-0"



SECTION A-A
SCALE: 3/4"=1'-0"

MECHANICAL FLOOR PLAN
SCALE: NOT TO SCALE

NOTE:
THE BASIS OF DESIGN FOR THE CSBR
(CONTINUOUS SEQUENTIAL BATCH
REACTION) TANK AND ASSOCIATED
SYSTEMS BY KA ENGINEERING SYSTEMS.

APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER
SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT

COUNTY HEALTH OFFICER DATE:

Professional Certification. I hereby certify that
these documents were prepared or approved
by me, and that I am a duly licensed
professional engineer under the laws of the
State of Maryland.
License No. 18992, Expiration Date: 01/18/2013.

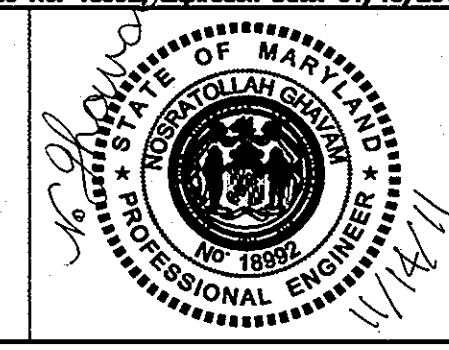
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF UTILITIES

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND

CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE: 3/15/12

URS
URS CORP.
CONSULTING ENGINEERING AND PLANNING
1099 Winterson Road
Linthicum, MD 21090
Phone: 410-855-6160 Fax: 410-855-6163



DESIGN: CMD				
DRAFT: CMD				
CHK: NG	RRR	REPLACEMENT SHEET	11-14-11	
DATE: 11/2010	RRR	REVISION #1	4-28-11	
BY NO.		REVISIONS	DATE	

600 SCALE MAP NO. 23 BLOCKS 21 & 22 AND MAP NO. 29 BLOCKS 3 & 4
FILE NAME: P:\20831575-1\20831577\CAD\Mech\Sheets\m-fp-11-CP.dwg LAYOUT NAME: M1.1 PLOTTED: Wednesday, November 09, 2011 - 11:37am

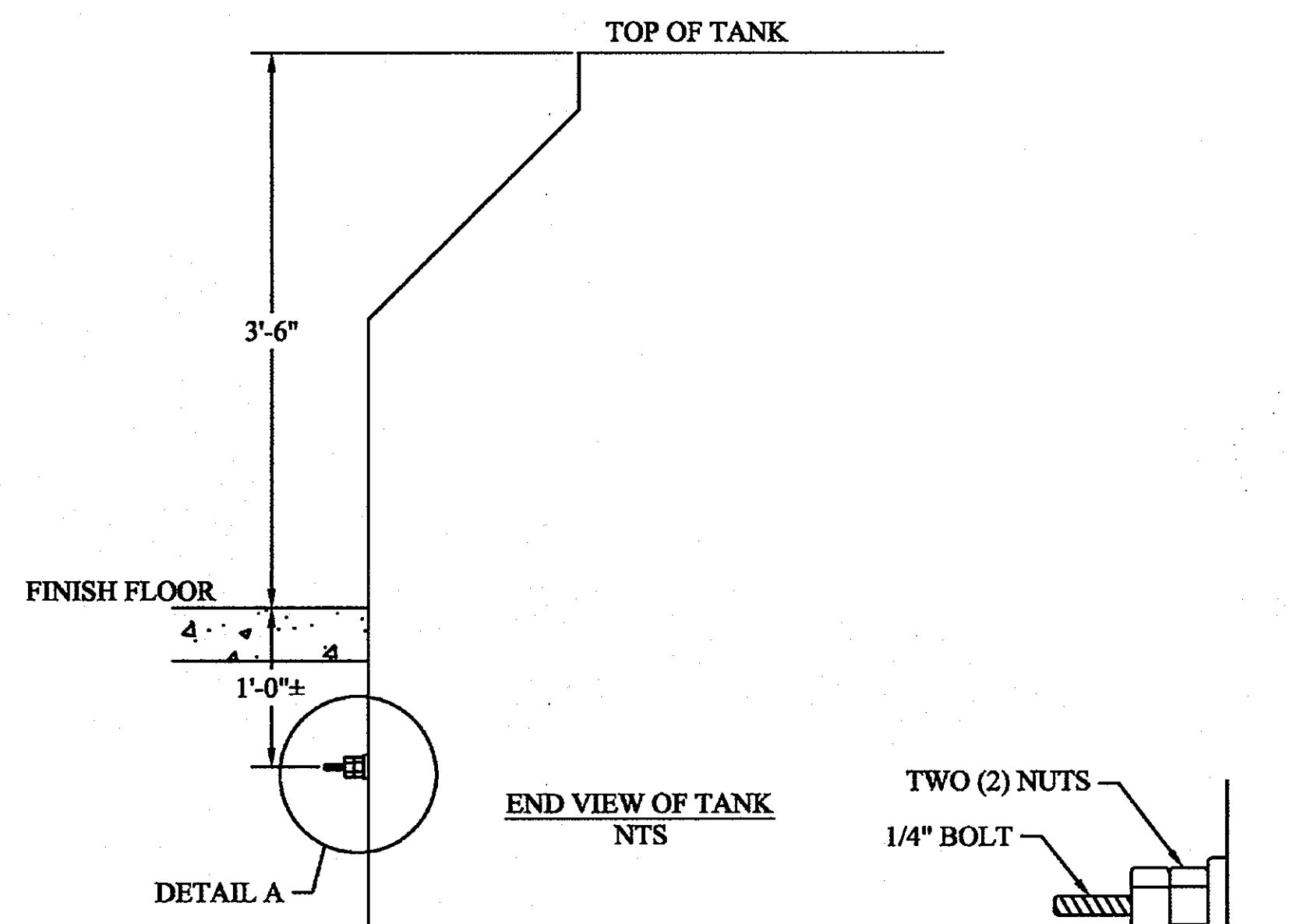
SHARED SEPTIC SYSTEM
MECHANICAL FLOOR PLAN
RIVERWOOD - PHASE 2
A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'A' THRU 'GG' TO CREATE LOTS
43-77, NON-BUILDABLE PRESERVATION PARCELS 'T' THRU 'Z', 'AA' AND 'BB' AND
NON-BUILDABLE BULK PARCEL 'U' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A',
'B', 'C', 'E', 'F', 'R', 'S', AND 'U' TO ADD OR MODIFY FOREST CONSERVATION AREAS.
THIRD ELECTION DISTRICT
CONTRACT NO. 50-4287-D

M1.1
SCALE:
AS SHOWN
SHEET NO.
27 of 56

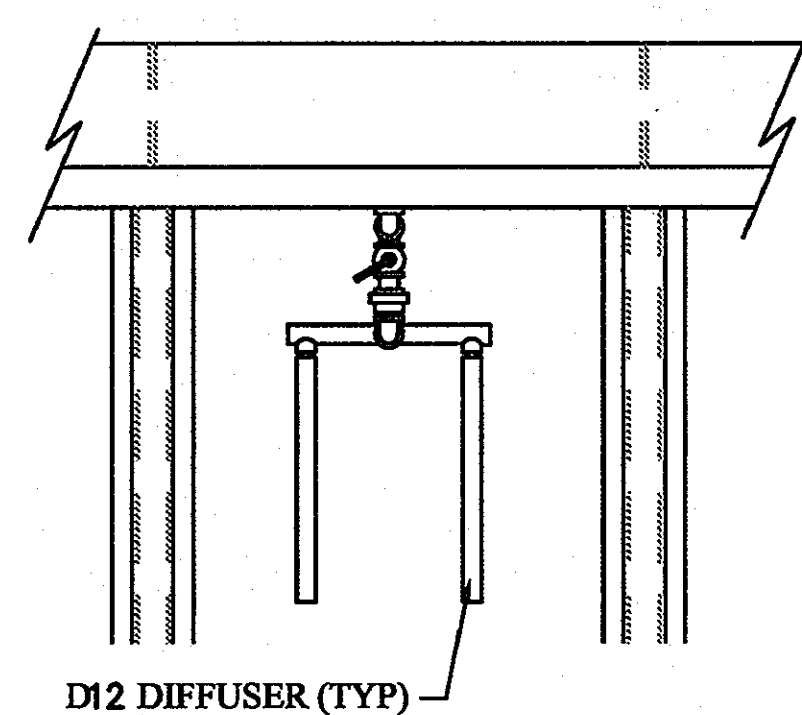
The Magnesium Anodes' No. 12 TW copper lead wire must be connected to each of the 1/4-in. bolt connections located along each side of the tank.

When the two (2) nuts are removed, a clean section of the bolt should be available to wind the anode wire around. If there is point on the bolt section, it must be cleaned prior to attaching the wire.

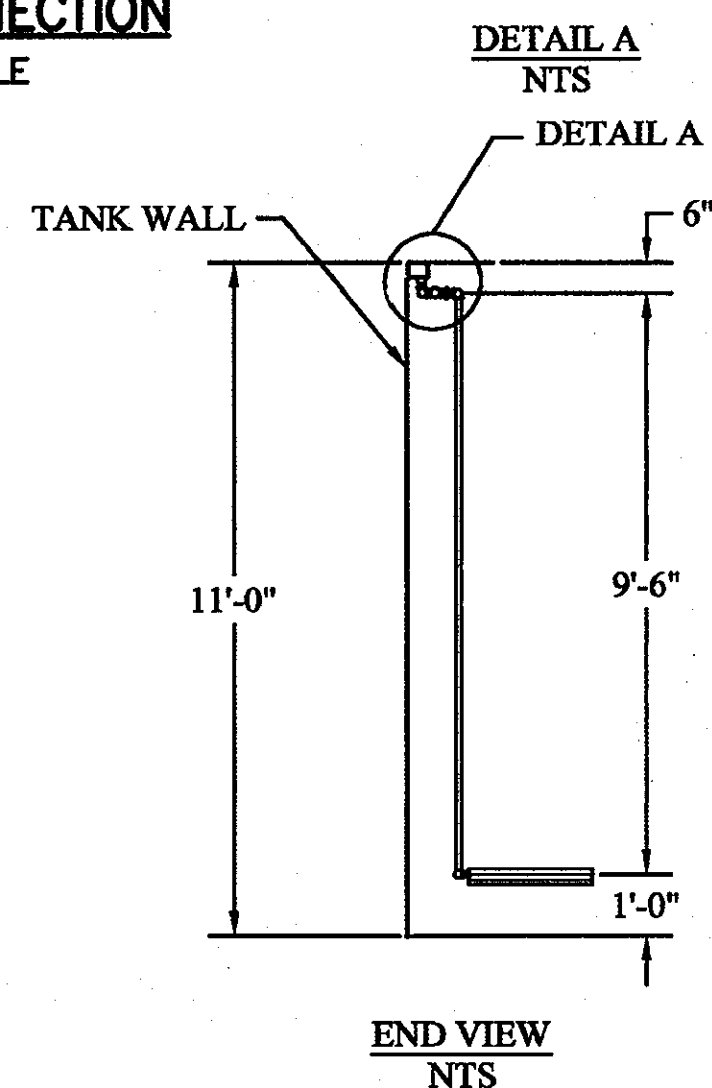
The anode wire must be wound around the bolt several times in order to assure a good connection. After the wire is attached, the bolts must be screwed down to obtain a tight fit to assure that the anode wire will remain connected.



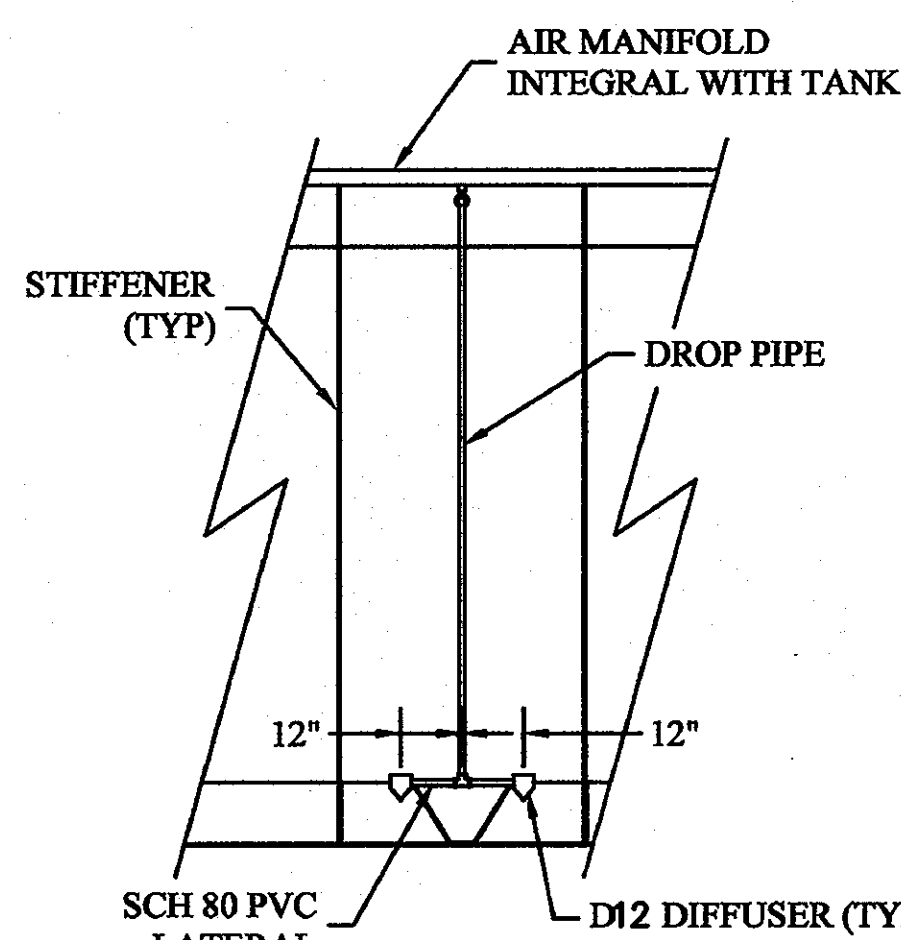
**REGULAR MAGNESIUM ANODES
TYPICAL CONNECTION**
NOT TO SCALE



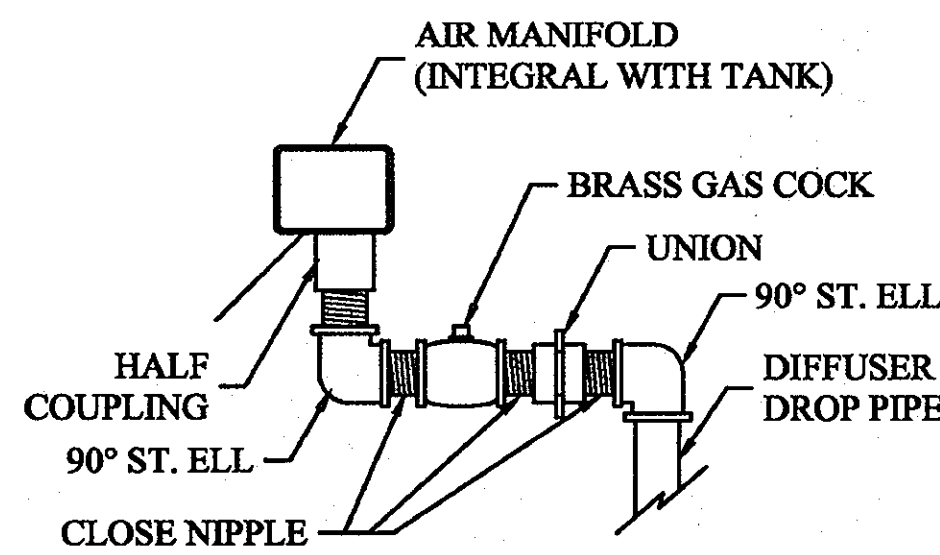
TOP VIEW
NTS



END VIEW
NTS

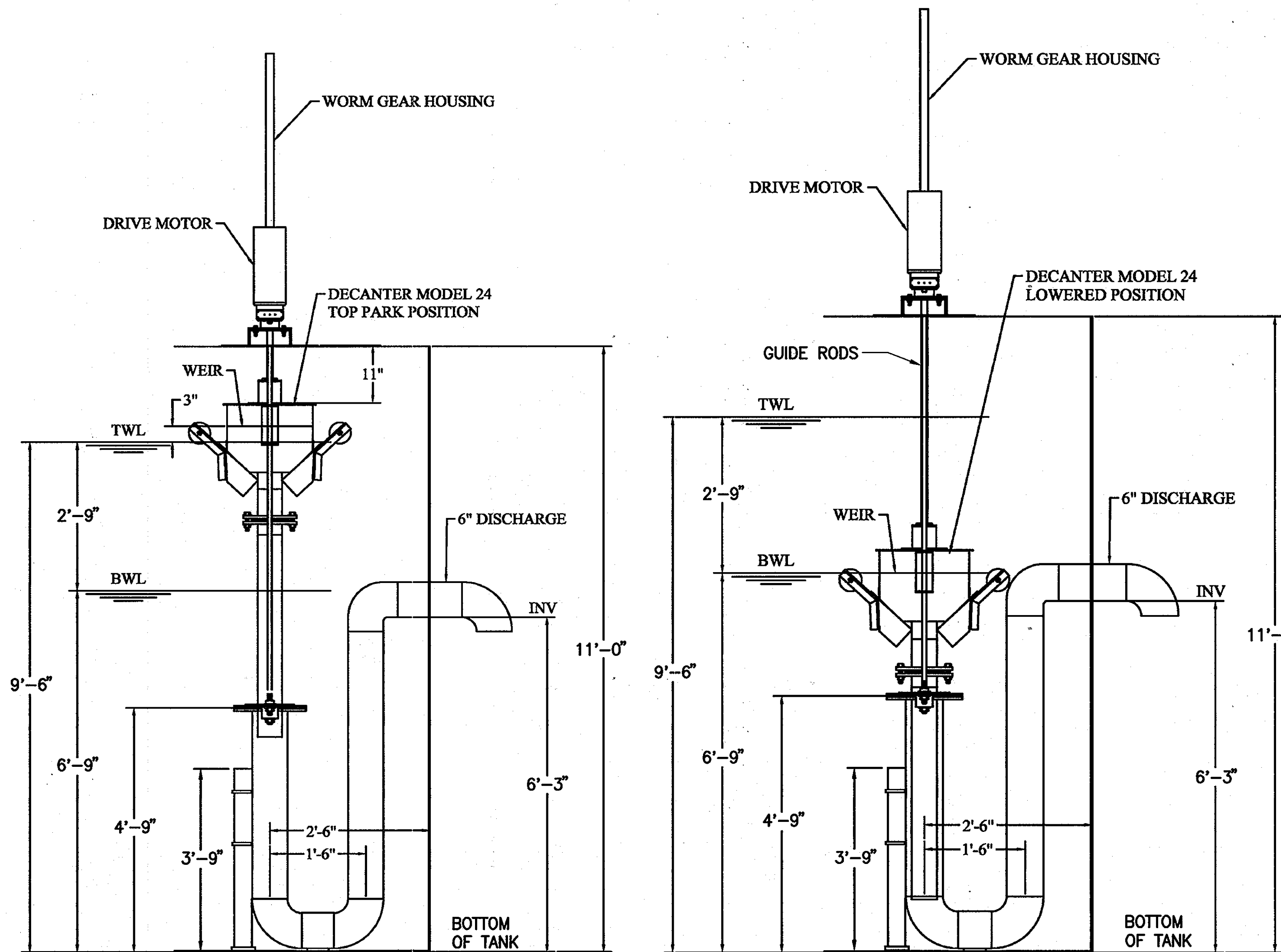


SIDE VIEW
NTS



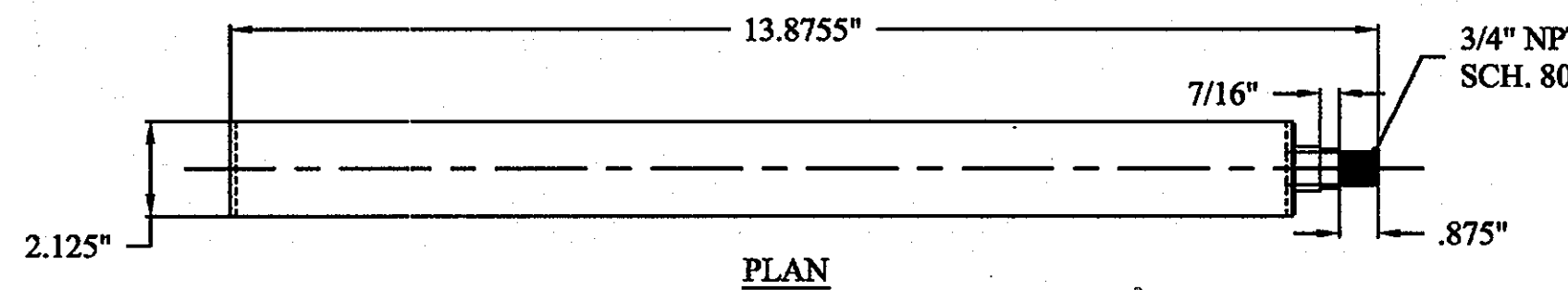
DETAIL A
NTS

TYPICAL DIFFUSER ASSEMBLY
NOT TO SCALE

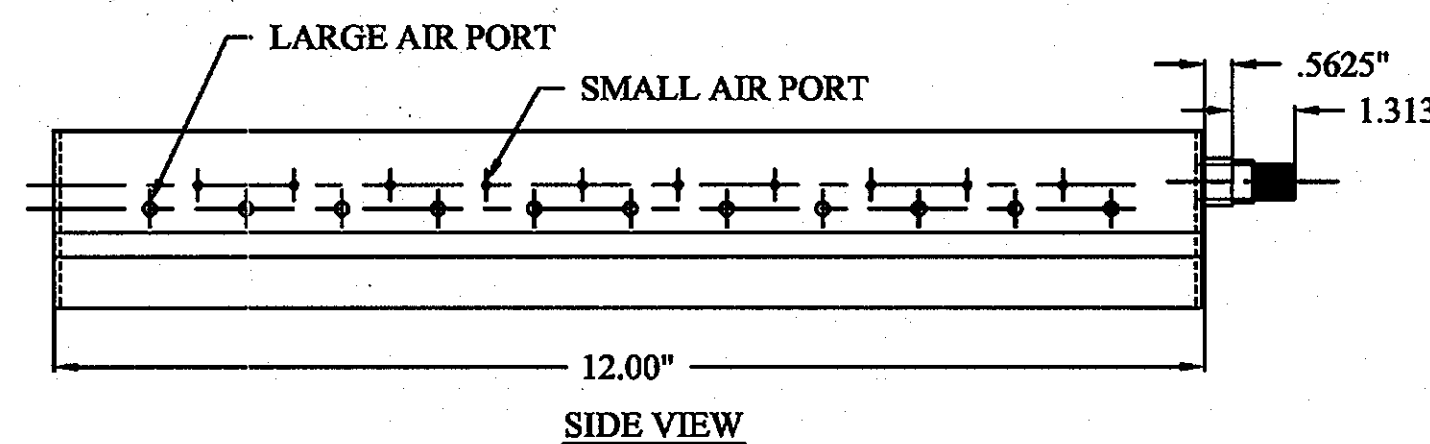


**DETAIL OF DECANTER
IN PARK POSITION**
NOT TO SCALE

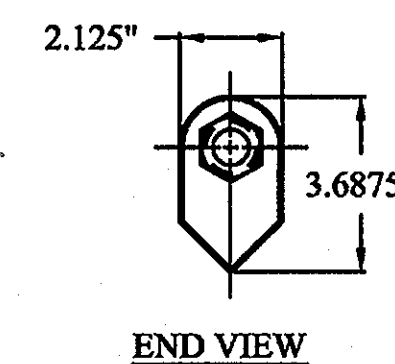
**DETAIL OF DECANTER
IN LOWERED POSITION**
NOT TO SCALE



PLAN



SIDE VIEW



END VIEW

NOTE:
STAINLESS STEEL MODEL PROVIDED
WITH 304 S.S. CAST END CAP, INTEGRAL
HEX NUT AND 3/4" NPT CONNECTION

COURSE BUBBLE DIFFUSER
NOT TO SCALE

O.S.H.A. Standard Pipe Railing
1910.23 Guarding floor and wall openings and holes.

1910.23 (e)(1) Standard railing shall consist of top rail, intermediate rail, and posts, and shall have a vertical height of 42-in. nominal from upper surface of top rail to floor, platform, runway, or ramp level.

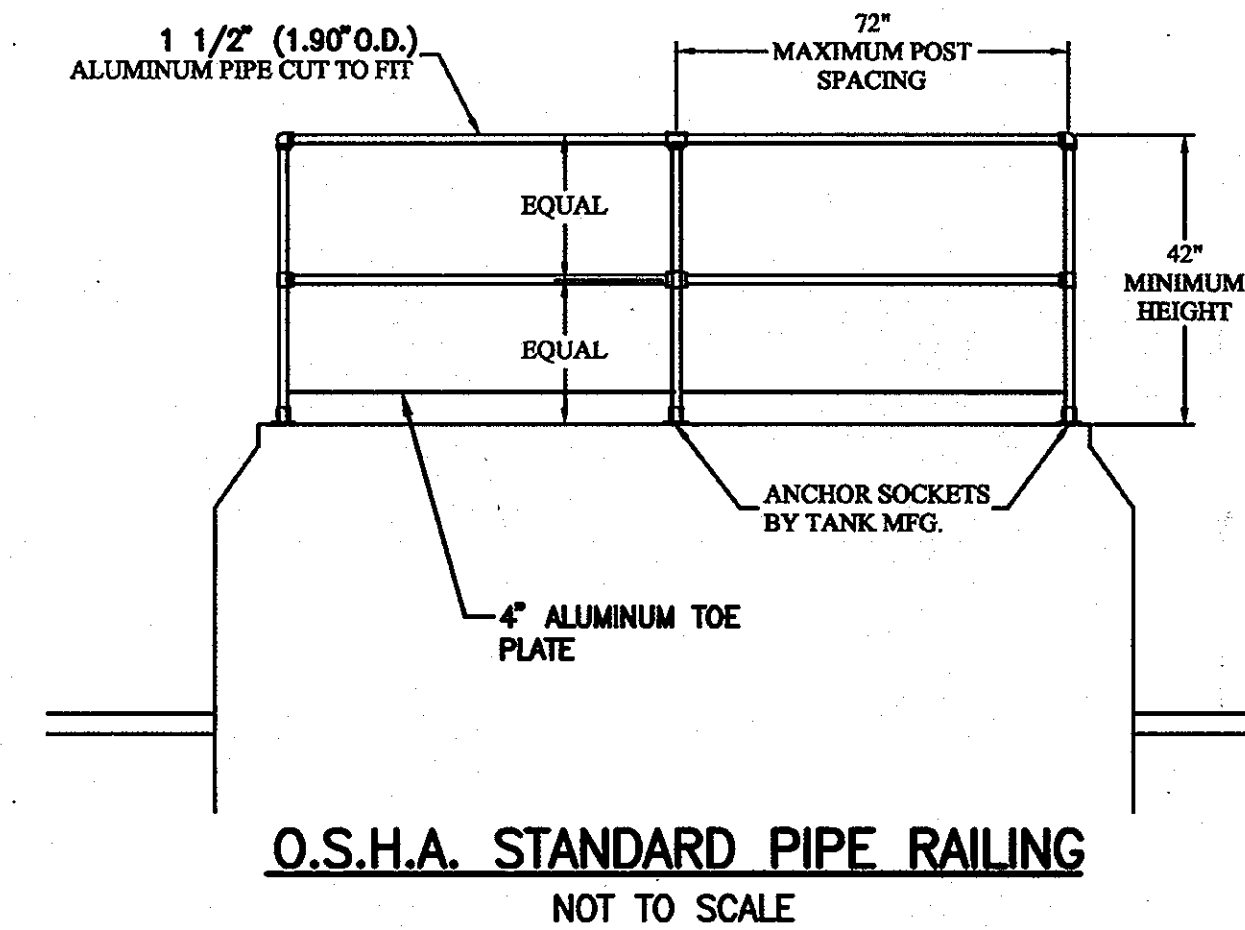
(e)(3)(ii) For pipe railings, posts and top and intermediate railings shall be at least 1-1/2 inches nominal diameter with posts spaced not more than 8 feet on centers.

(e)(3)(iv) The anchoring of posts and framing of members for railings of all types shall be of such construction that the complete structure shall be capable of withstanding a load of at least 200 pounds applied in any direction at any point on the top rail.

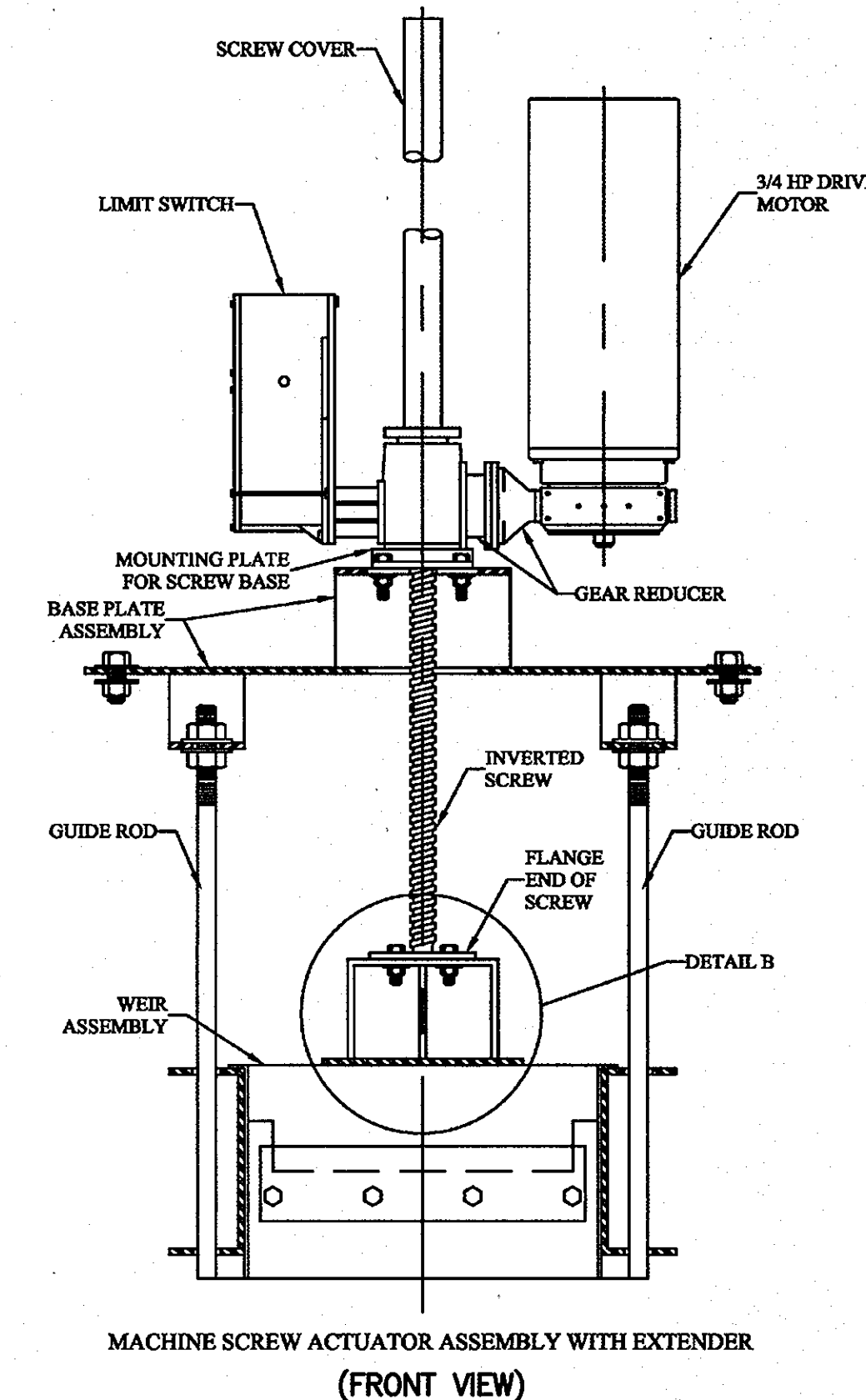
(e)(4) A standard toeboard shall be 4 inches nominal in height from its top edge to the level of the floor, platform, runway, or ramp. It shall be securely fastened in place and with not more than 1/4-in. clearance above floor level.

(c)(4) The railing shall be provided with a toeboard whenever beneath the open sides.

- Persons can pass.
- There is moving machinery, or
- There is equipment with which falling materials could create a hazard.



O.S.H.A. STANDARD PIPE RAILING
NOT TO SCALE



MACHINE SCREW ACTUATOR ASSEMBLY WITH EXTENDER
(FRONT VIEW)

MACHINE SCREW ACTUATOR ASSEMBLY WITH EXTENDER
NOT TO SCALE

M1.2

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Chief, Bureau of Utilities
3/15/12

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND

Chief, Development Engineering Division
3/15/12

URS
URS CORP.
CONSULTING ENGINEERING AND PLANNING
1099 Winterson Road
Linthicum, MD 21090
Phone: 410-855-6160 Fax: 410-855-6163

DESIGN: KA ENG			
DRAFT: JRG			
CHK: NG	RER	REPLACEMENT SHEET	11-14-11
DATE: 11/2010	RER	REVISION #1	4-28-11
BY: NO.	REVISIONS	DATE	

SHARED SEPTIC SYSTEM
MECHANICAL DETAILS I

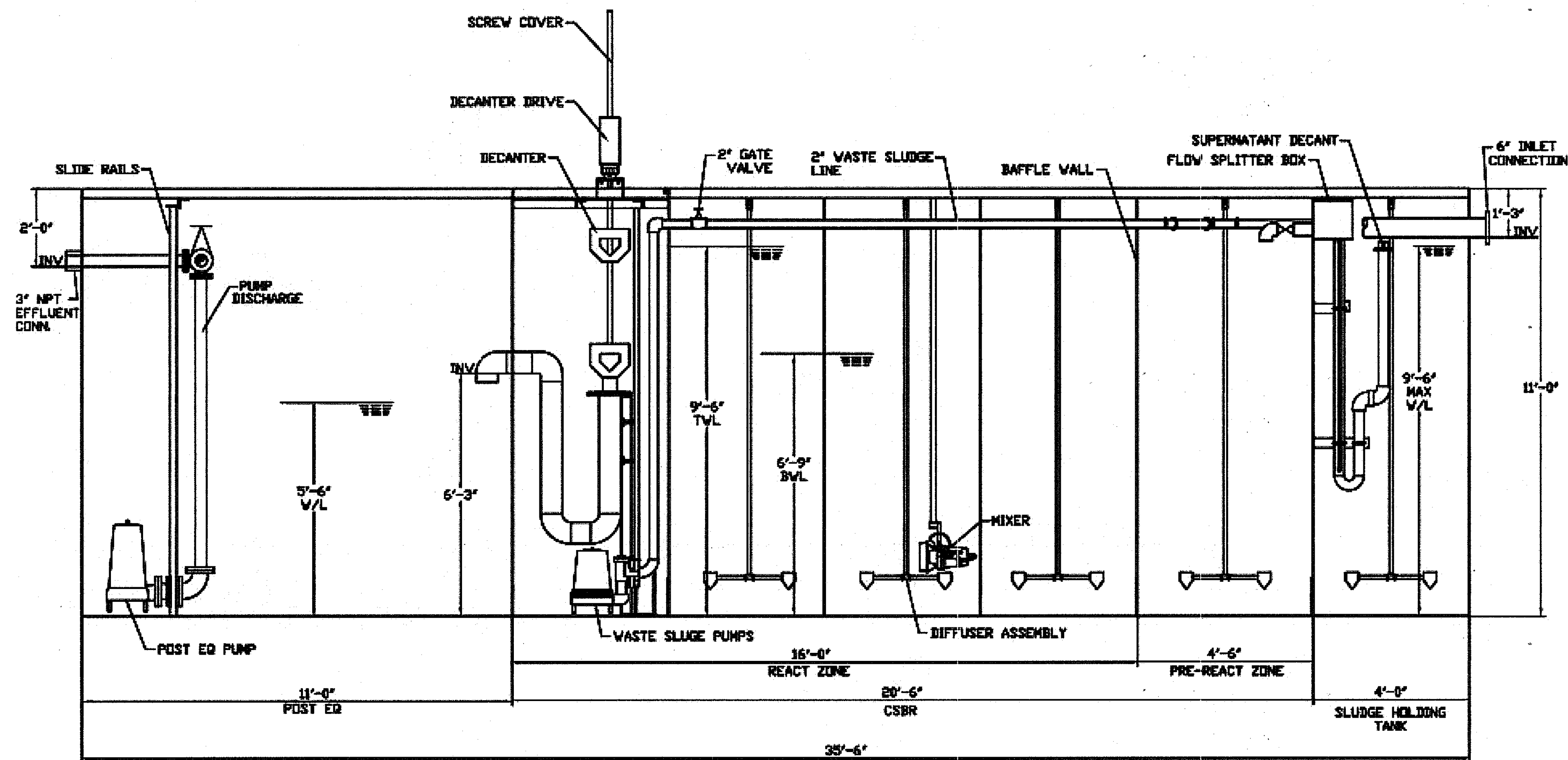
600 SCALE MAP NO. 23 BLOCKS 21 & 22 AND MAP NO. 29 BLOCKS 3 & 4
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RIVERWOOD - PHASE 2
A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'T' THRU 'Z', 'AA' AND 'BB' AND NON-BUILDABLE BULK PARCEL 'II' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S', AND 'U' TO ADD OR MODIFY FOREST CONSERVATION AREAS

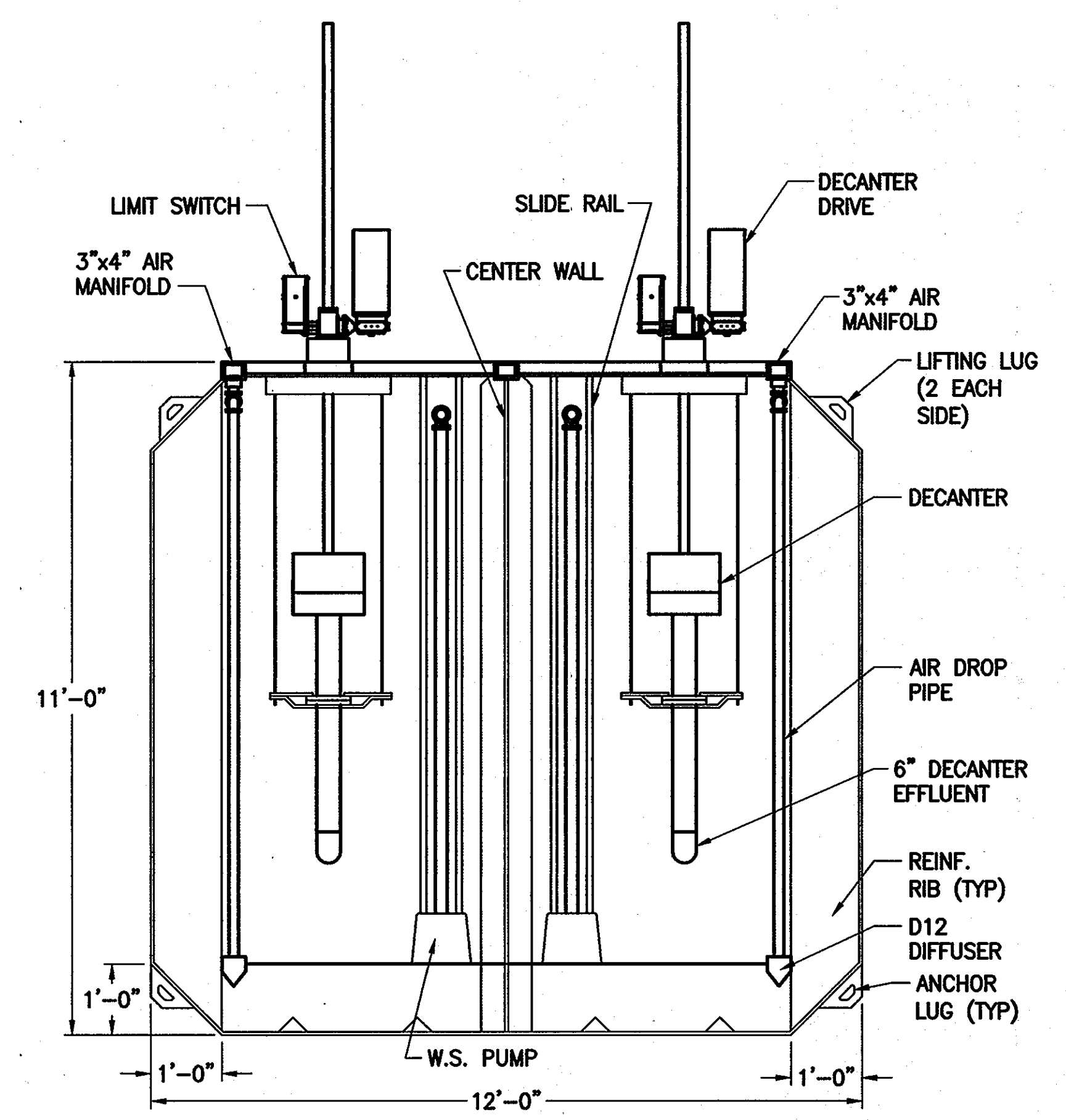
THIRD ELECTION DISTRICT
CONTRACT NO. 50-4287-D

SCALE:
AS SHOWN

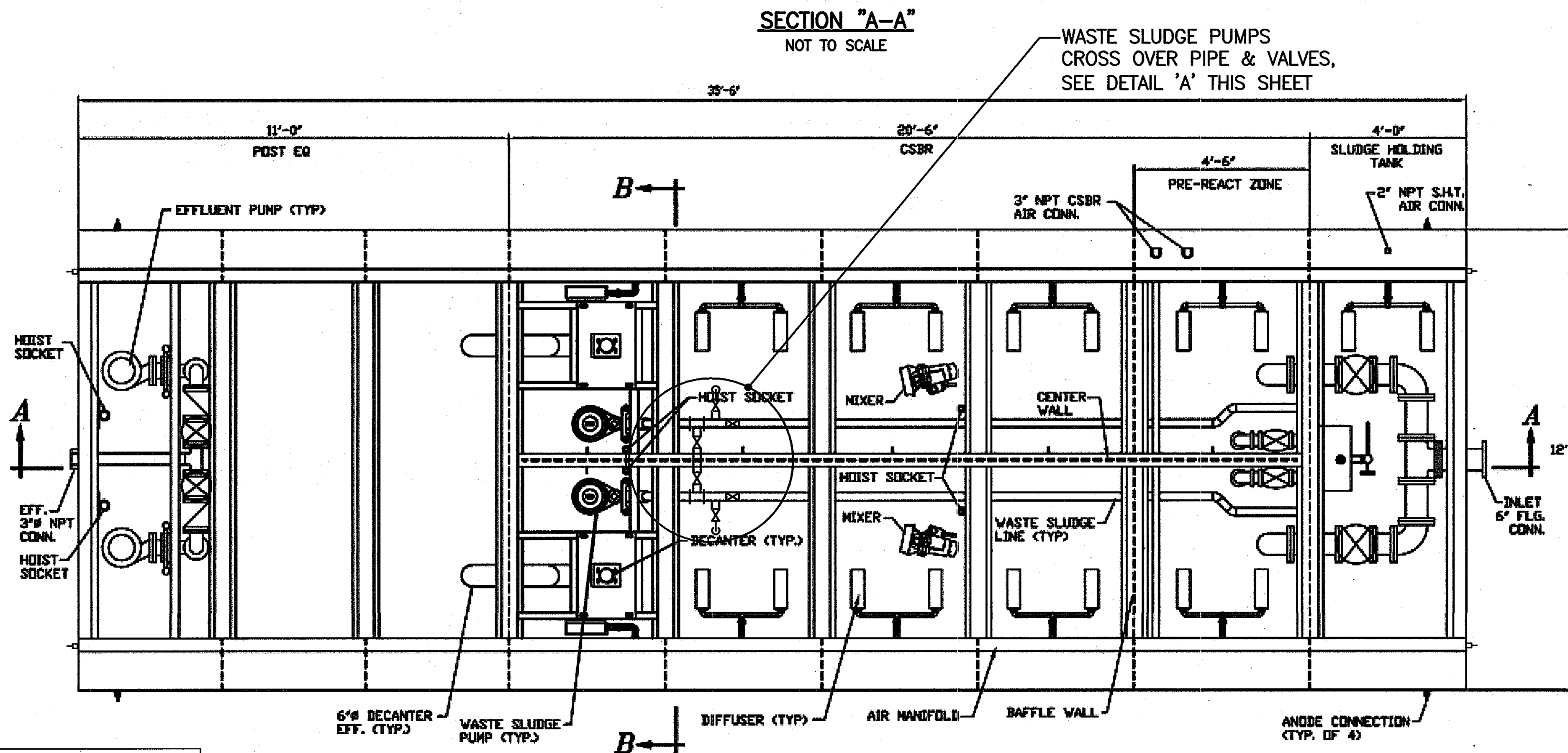
SHEET NO.
28 of 56



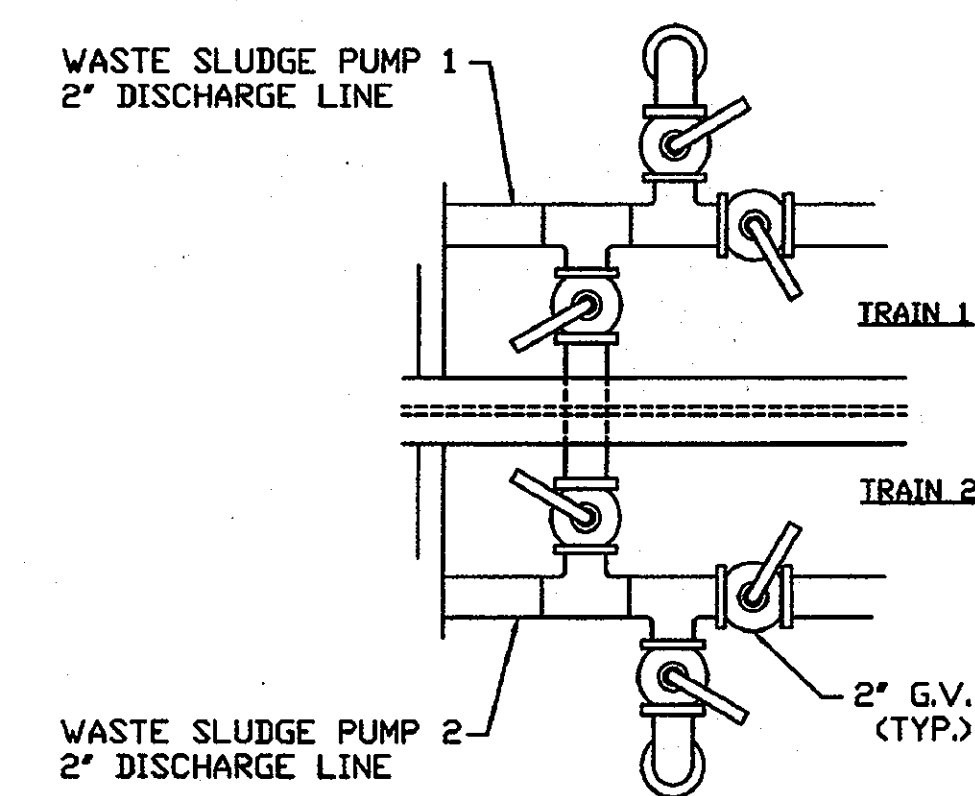
SECTION "A-A"
NOT TO SCALE



SECTION "B-B"
NOT TO SCALE



PLAN VIEW
NOT TO SCALE



DETAIL A
WASTE SLUDGE PUMPS CROSS OVER PIPE LAYOUT
SCALE: NONE

NOTE:
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APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT

COUNTY HEALTH OFFICER DATE:

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND

URS

URS CORP.
CONSULTING ENGINEERING AND PLANNING
1099 Winterson Road
Linthicum, MD 21090
Phone: 410-855-6160 Fax: 410-855-6163

Steve Chen
CHIEF, BUREAU OF UTILITIES

William
CHIEF, DEVELOPMENT ENGINEERING DIVISION

DESIGN: KA ENG			
DRAFT: JRG			
CHK: NG	RER	REPLACEMENT SHEET	11-14-11
DATE: 11/2010	RER	REVISION #1	4-28-11
BY NO.		REVISIONS	DATE

SHARED SEPTIC SYSTEM

MECHANICAL DETAILS II

RIVERWOOD - PHASE 2

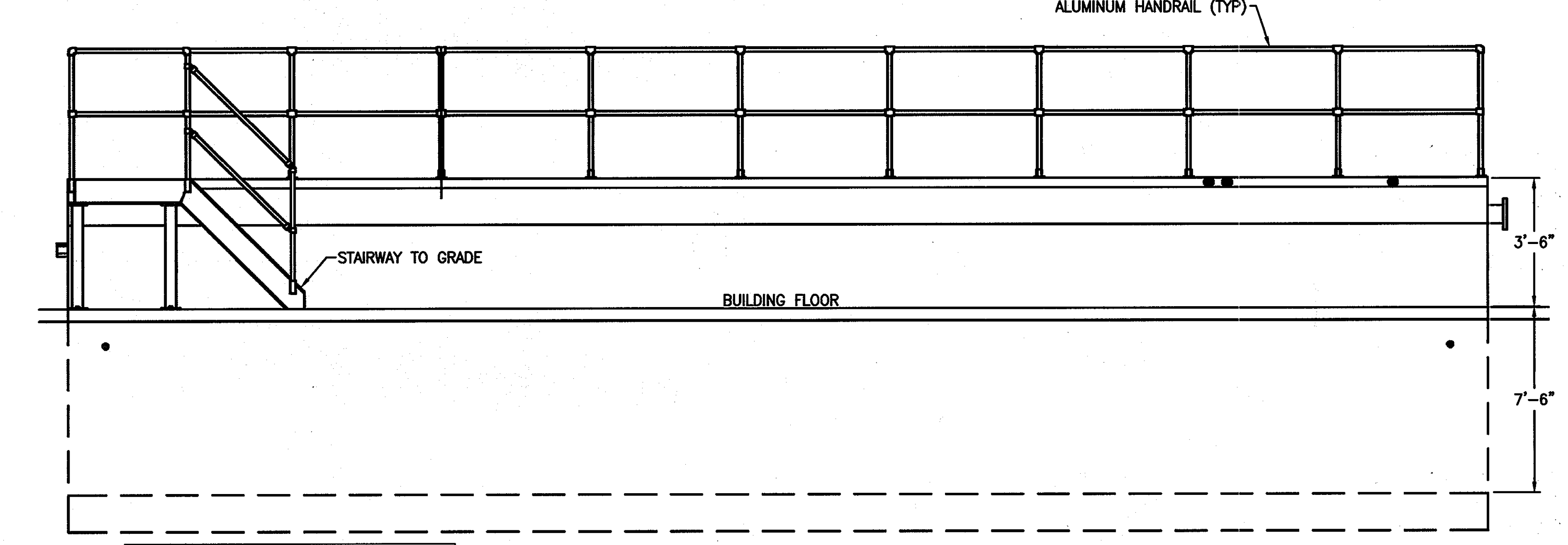
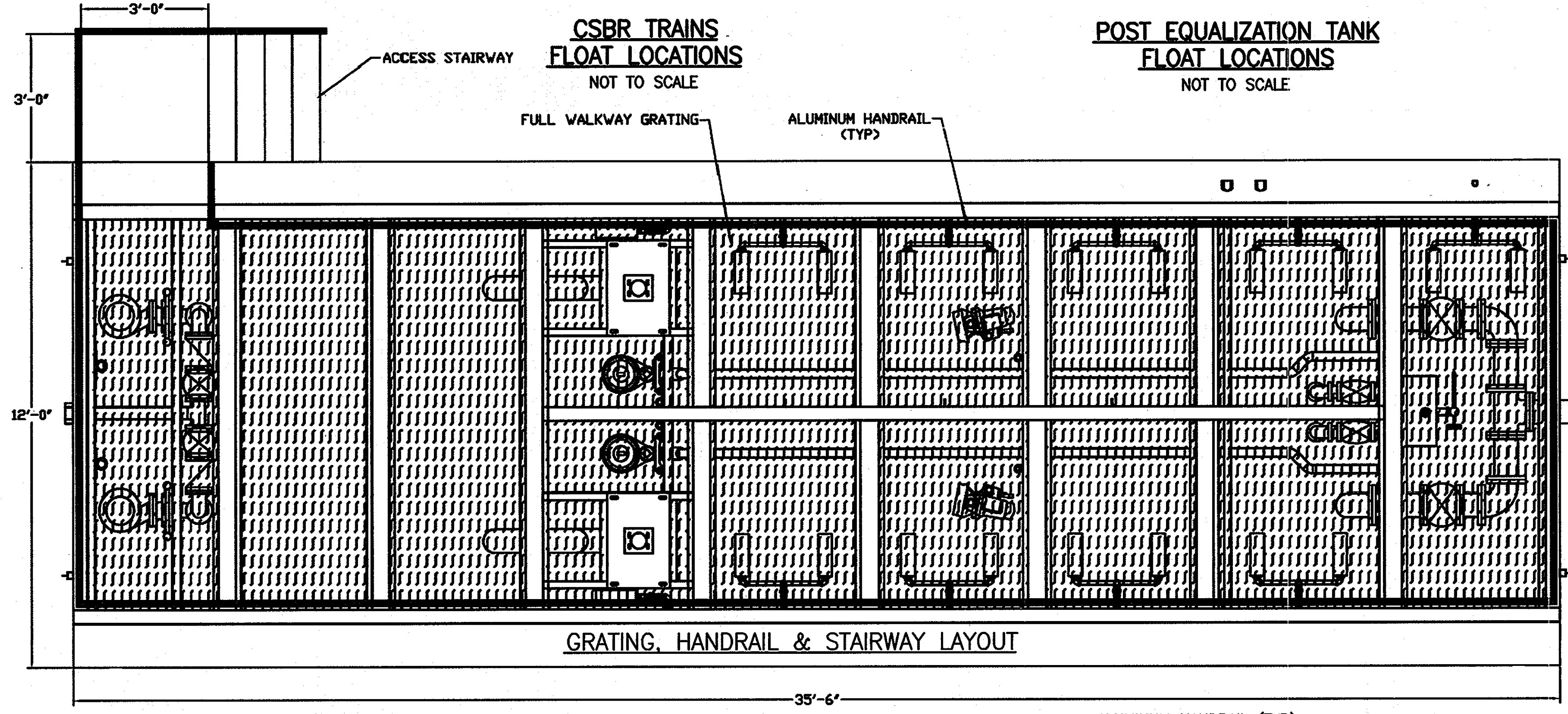
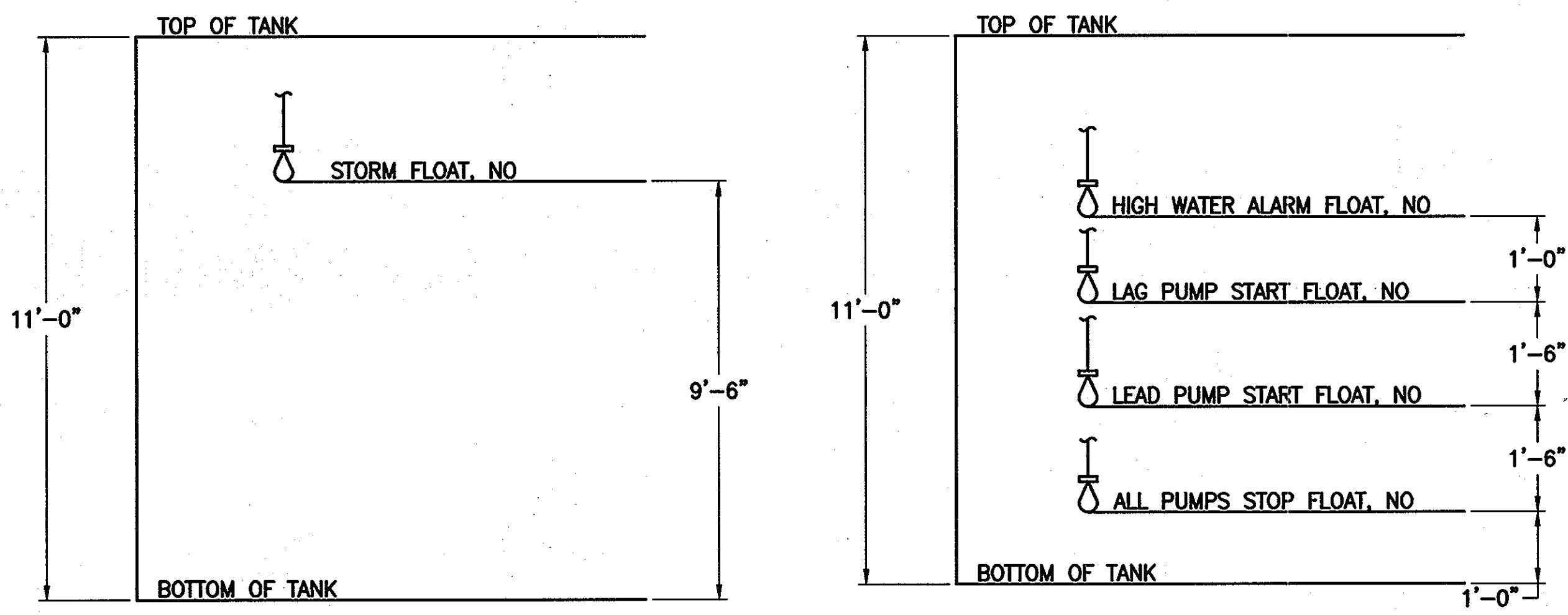
A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'T' THRU 'Z', 'AA' AND 'BB' AND NON-BUILDABLE BULK PARCEL 'II' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S', AND 'U' TO ADD OR MODIFY FOREST PRESERVATION AREAS THIRD ELECTION DISTRICT

CONTRACT NO. 50-4287-D

M1.3

SCALE:
AS SHOWN

SHEET NO.
29 of 56

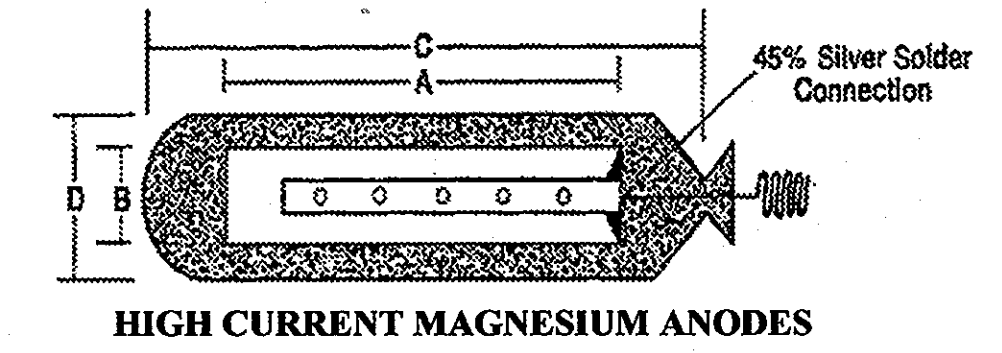


APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT
 COUNTY HEALTH OFFICER DATE:

ELEVATION
 TYPICAL ALUMINUM HANDRAIL
 NOT TO SCALE

SPECIFICATIONS

Anode Size	No.17
Weight Bare	17 lb.
Weight Pak	45 lb.
Size Bare	4 3/4 x 18 3/4
Size Pak	6 3/4 x 22
No. in Container	2
Wt. per Container	90 lb.



SPECIFICATIONS

Anode Weight Pounds	DIMENSIONS SHOWN IN INCHES				Amp-Pak Total Wt.-Lb. Approx.	
	BARE		AMP-PAK			
	A	B	Shape	C	D	
17	39	3	Square	43	5 3/4	55

ALLOYS AVAILABLE

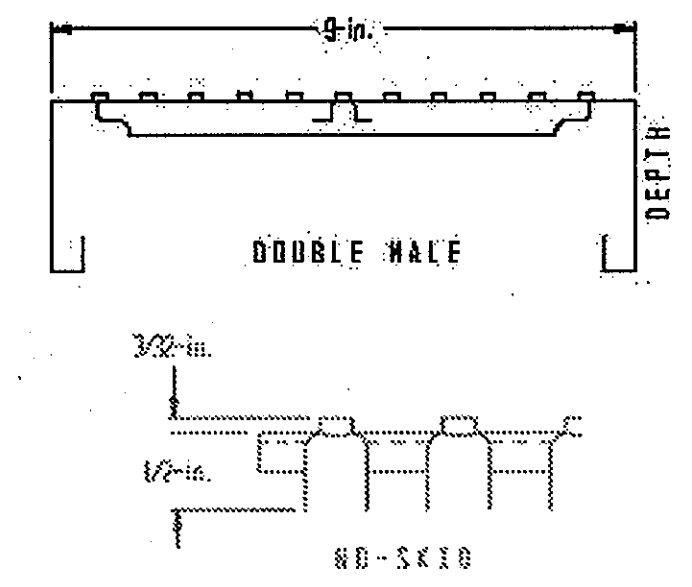
	Grade A	Grade B	Special
Aluminum	5.3 - 6.7%	5.3 - 6.7%	5.3 - 6.7%
Zinc	2.5 - 3.5%	2.5 - 3.5%	2.5 - 3.5%
Manganese	.15 Min.	.15 Min.	.15 Min.
Silicon	.20 Max.	.30 Max.	.10 Max.
Copper	.05 Max.	.10 Max.	.02 Max.
Nickel	.003 Max.	.003 Max.	.002 Max.
Iron	.003 Max.	.003 Max.	.003 Max.
Other Impurities	.20 Max.	.30 Max.	.20 Max.
Magnesium	Remainder	Remainder	Remainder

REGULAR MAGNESIUM ANODES
 NOT TO SCALE

Full walkway grating shall be provided to cover all tank openings to service the plant equipment. Grating panels shall each consist of one piece skid resistant steel plank. All grating panels shall be constructed of 18 gauge, galvanized sheet steel with a maximum yield strength of 37,000 PSI. Each grating panel has a standard 9-in. surface width and a 2-1/2-in. rib depth. Furthermore, each panel shall be so supported as to have a safe uniform load carrying capacity of 80 pounds per square foot.

Each metal plank grating panel shall be fabricated from 18 gauge pre-galvanized coils and formed to provide suitable strength for a variety of supporting spans. The raised "NO-SKID" holes are set in an open design that allows easy passage of air and dirt.

	Width ± 1/8-in.	Depth	Gage	Lengths w/Tol to 1/4-in.
Galvanized ASTM-A525-73 Coating Designation G-90	9-in.	2.5-in.	18	10-ft. 12-ft.



PHYSICAL PROPERTIES

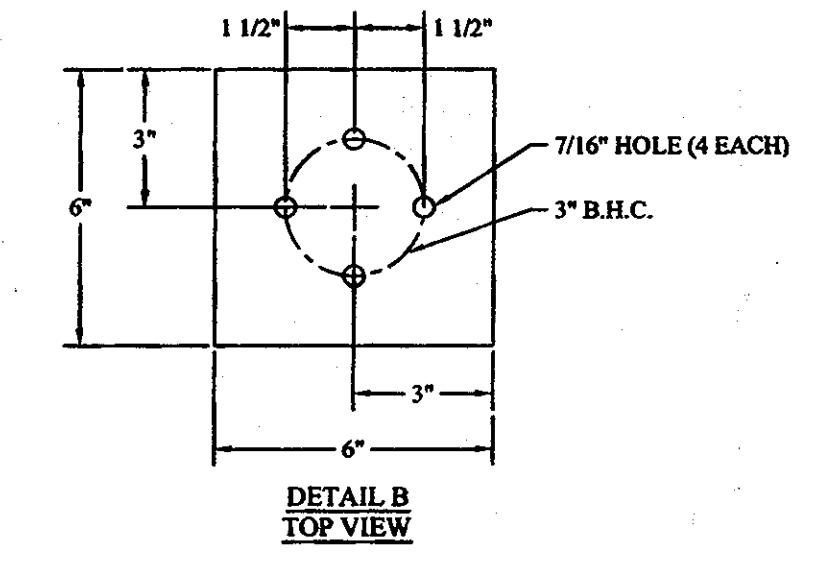
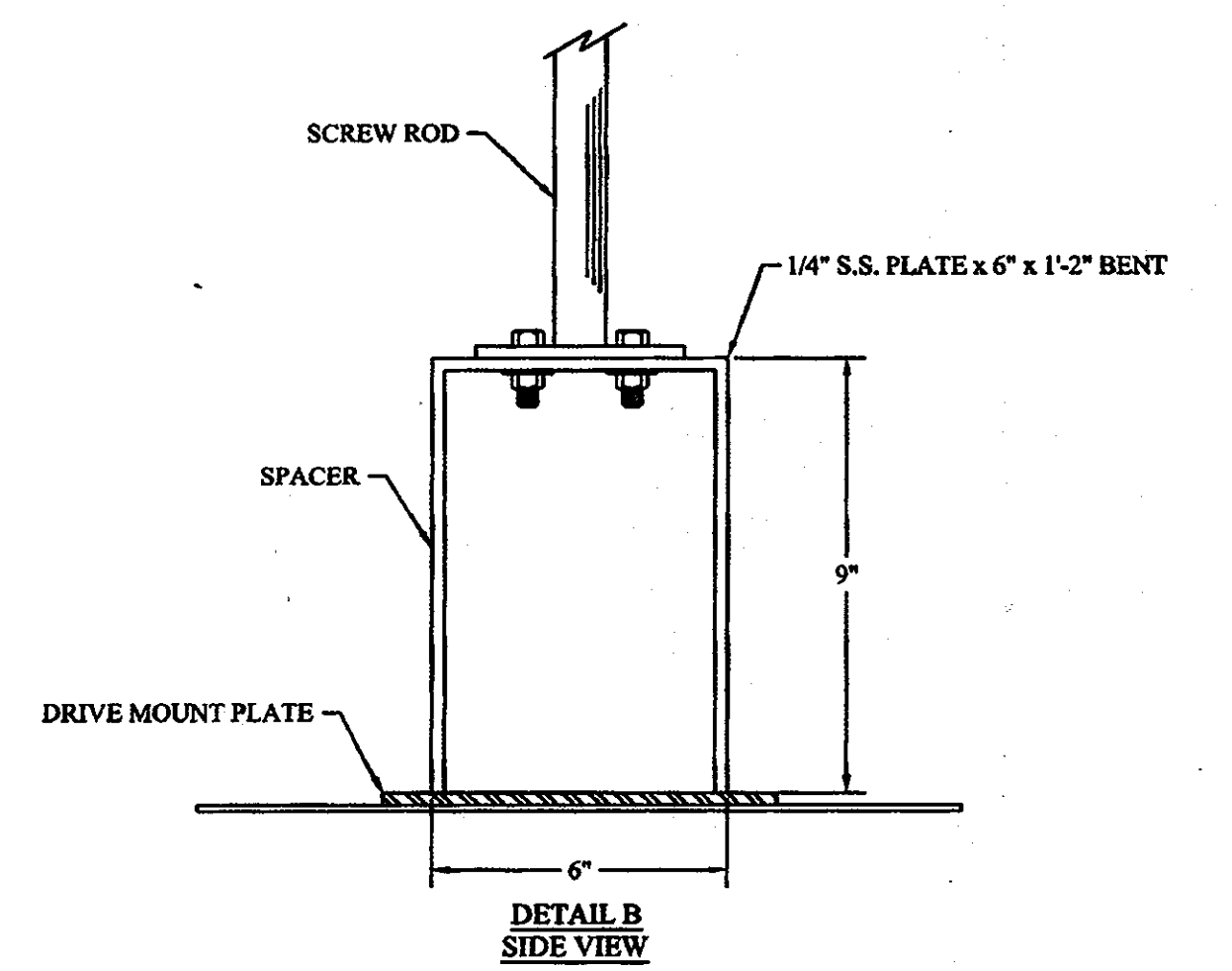
Channel Depth (in.)	Gage	Wt (PSF)	I (In ⁴)	S (In ³)	Loads and Δ's	SPAN (FT.)									
						2	2.5	3	3.5	4	4.5	5	5.5	6	6.5
2.5	18	3.52	.372	.291	PSF	1293	828	575	422	323	255	207	171	141	122
					In.	.042	.066	.095	.129	.169	.213	.264	.319	.373	.444

Loads and Δ's	SPAN (FT.)									
	7	7.5	8	8.5	9	9.5				
PSF	106	92	81	72	64	57				
In.	.519	.594	.677	.767	.857	.947				

CONCENTRATED LOADING

Loads and Δ's	SPAN (FT.)																
	2	2.5	3	3.5	4	4.5	5	5.5	6	7.0	7.5	8.0	8.5	9.0	9.5	10	
PLF	970	776	646	554	485	431	388	353	323	298	277	259	242	228	215	204	194
In.	.025	.039	.056	.077	.100	.127	.156	.189	.225	.264	.306	.352	.399	.451	.505	.563	.625

FORMED GRATING
 NOT TO SCALE



6" STAINLESS STEEL SPACER ON DRIVE MOUNT PLATE
 NOT TO SCALE

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DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Chief, Bureau of Utilities

DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY, MARYLAND
 Chief, Development Engineering Division

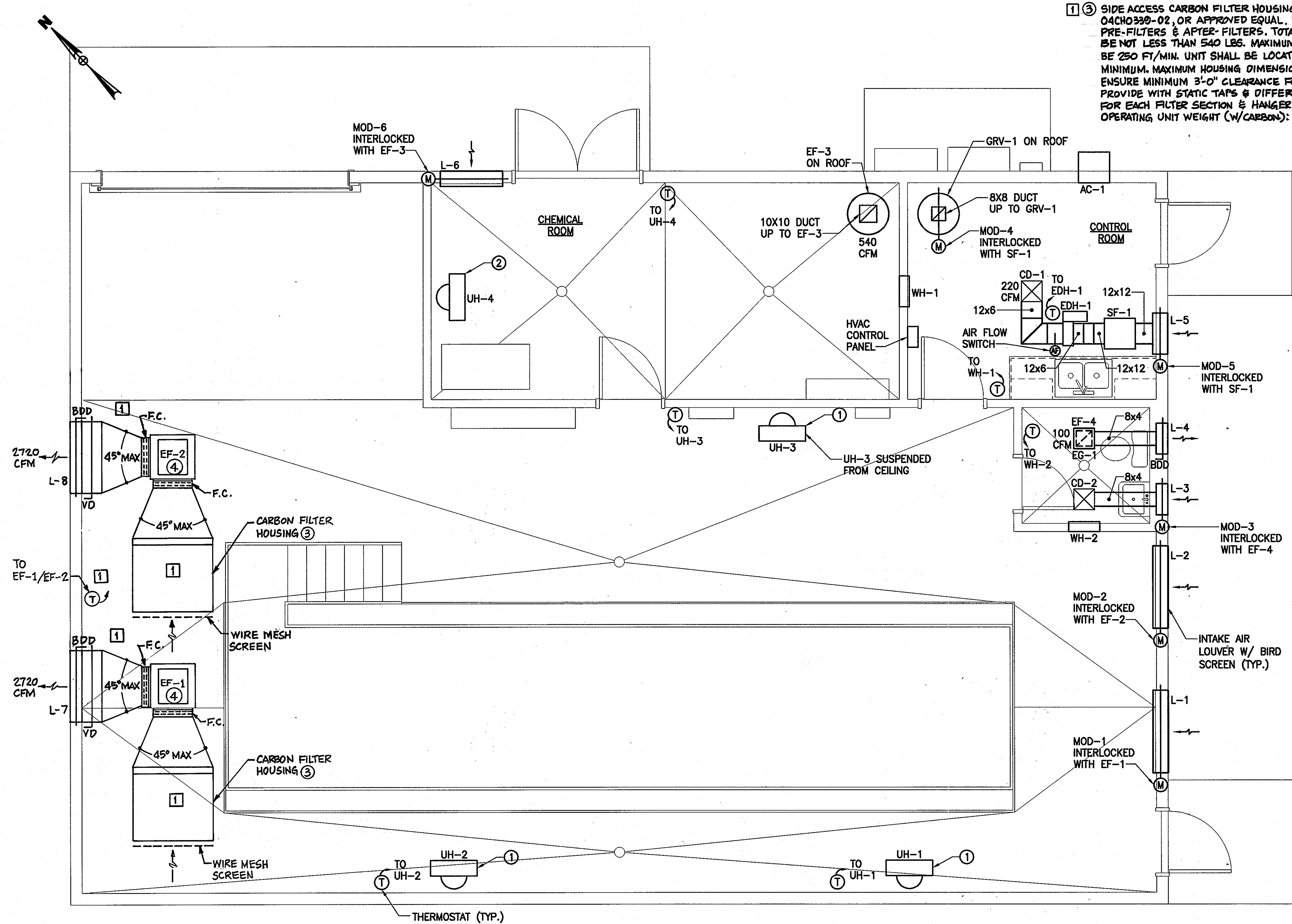
URS
 URS CORP.
 CONSULTING ENGINEERING AND PLANNING
 1099 Winterson Road
 Linthicum, MD 21090
 Phone: 410-855-6160 Fax: 410-855-6163

DESIGN:	KA ENG
DRAFT:	JRG
CHK:	NG
DATE:	11/2010
BY:	NO.
REVISIONS:	

SHARED SEPTIC SYSTEM
 MECHANICAL DETAILS III

RIVERWOOD - PHASE 2
 A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'T' THRU 'Z', 'AA' AND 'BB' AND NON-BUILDABLE BULK PARCEL 'U' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S', AND 'U' TO ADD OR MODIFY FOREST CONSERVATION AREAS
 THIRD ELECTION DISTRICT
 CONTRACT NO. 50-4287-D

M1.4
 SCALE: AS SHOWN
 SHEET NO. 30 of 56



① ③ SIDE ACCESS CARBON FILTER HOUSING, AIRGUARD MODEL 04CH0330-02, OR APPROVED EQUAL. PROVIDE WITH MERV-8 PRE-FILTERS & AFTER-FILTERS. TOTAL CARBON WEIGHT SHALL BE NOT LESS THAN 540 LBS. MAXIMUM FACE VELOCITY SHALL BE 250 FT/MIN. UNIT SHALL BE LOCATED AT 8'-0" A.F.F. MINIMUM. MAXIMUM HOUSING DIMENSIONS: 39-1/8" L x 47" W x 39" H. ENSURE MINIMUM 3'-0" CLEARANCE FOR FILTER ACCESS. PROVIDE WITH STATIC TAPS & DIFFERENTIAL PRESSURE GAUGES FOR EACH FILTER SECTION & HANGER BRACKETS. MAXIMUM OPERATING UNIT WEIGHT (W/CARBON): 1,150 LBS.

DRAWING NOTES:

- ① INSTALL UNIT HEATER 10'-0" AFF
- ② INSTALL UNIT HEATER 7'-0" AFF
- ③
- ④ INSTALL AT 9'-0" A.F.F. TO UNDERSIDE OF FAN, MINIMUM.

SEQUENCE OF OPERATION

1. EF-1 AND EF-2: EXHAUST FANS, EF-1 AND EF-2, SHALL RUN CONTINUOUSLY. IF SPACE TEMP. DROPS BELOW 40°F, EF-1 (EF-2) SHALL STOP. UPON DROPPING TEMP. BELOW 35°F, THEN EF-2 (EF-1) SHALL STOP. EXHAUST FANS EF-1 AND EF-2 SHALL OPERATE LEAD AND LAG TO MAINTAIN EQUAL RUN TIME.
 2. EF-3: EXHAUST FAN, EF-3, SHALL RUN CONTINUOUSLY. IF SPACE TEMP. DROPS BELOW 40°F, EF-3 SHALL STOP.
 3. EF-4: EXHAUST FAN, EF-4, SHALL START/STOP MANUALLY.
 4. SF-1: SUPPLY FAN, SF-1, SHALL RUN CONTINUOUSLY IN OCCUPIED MODE. PROVIDE START/STOP SWITCH TO OPERATE SF-1.
 5. EDH-1: ELECTRIC DUCT HEATER, EDH-1, SHALL BE CONTROLLED BY A DUCT MOUNTED THERMOSTAT THROUGH CSR CONTROLLER. TO MAINTAIN THE SUPPLY AIR TEMP. @ 65°F (ADJUSTABLE). ELECTRIC DUCT HEATER SHALL BE INTERLOCKED W/ SF-1 AND SHALL ENERGIZE WHEN AIR FLOW SWITCH PROVIDES AIR FLOW.
 6. AC-1: AIR CONDITIONING UNIT, AC-1, SHALL START/STOP MANUALLY.
 7. UNIT HEATERS: UNIT HEATERS SHALL BE CONTROLLED BY THE WALL MOUNTED THERMOSTATS.
 8. WALL HEATER: BUILT IN ELECTRICAL CONTROLS AND UNIT MOUNTED THERMOSTATS SHALL CONTROL THE WALL HEATERS TO MAINTAIN THE SPACE TEMPERATURE SETPOINT.
- ① ③ CONTROL PANEL: CONTROL PANEL SHALL OPERATE HVAC EQUIPMENT DESCRIBED IN SEQUENCES 1 THROUGH 8, AS REQUIRED. CONTROL PANEL SHALL BE DIRECT DIGITAL CONTROL (DDC) TYPE, BACNET COMPATIBLE. CONTROL PANEL SHALL FEATURE THE FOLLOWING:
- A. LOCAL KEYPAD & LCD GRAPHICAL DISPLAY
 - B. DIAGNOSTIC LED'S FOR POWER, COMMUNICATION, AND PROCESSOR
 - C. PROGRAMMABLE FUNCTIONS
 - D. DUSTPROOF ENCLOSURE RATED FOR OPERATION AT 32°F TO 120°F
 - E. CONTROL PANEL SHALL BE EQUAL TO HONEYWELL XL5000 SERIES CONTROLLER

MECHANICAL HVAC FLOOR PLAN
SCALE: 3/8" = 1'-0"

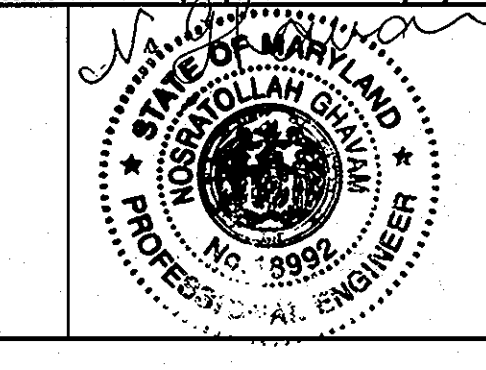
APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT
P. Wilson for Peter Besilawaan 9/14/07
COUNTY HEALTH OFFICER

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 18992, Expiration Date: 01/18/2009.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
Michael A. Dornanville 9-17-07
CHIEF, BUREAU OF UTILITIES

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND
[Signature]
CHIEF, DEVELOPMENT ENGINEERING DIVISION

URS
URS CORP.
CONSULTING ENGINEERING AND PLANNING
1099 Winterson Road
Linthicum, MD 21090
Phone: 410-855-6160 Fax: 410-855-6163



DESIGN: CMD			
DRAFT: CMD			
CHK: NG			
DATE: 5/2007	RER	①	REVISION #1
	BY	NO.	REVISIONS
			4-28-11

SHARED SEPTIC SYSTEM
MECHANICAL HVAC FLOOR PLAN
600 SCALE MAP NO. 23 BLOCKS 21 & 22 AND MAP NO. 29 BLOCKS 3 & 4
FILE NAME: P:\20831575-1\20831577\CAD\Mech\Sheets\h-fp-11.dwg LAYOUT NAME: H1.1 PLOTTED: Friday, July 20, 2007 - 11:01am

RIVERWOOD - PHASE 2
A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'T' THRU 'Z', 'AA' AND 'BB' AND NON-BUILDABLE BULK PARCEL 'II' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S', AND 'U' TO ADD OR MODIFY FOREST CONSERVATION AREAS
THIRD ELECTION DISTRICT
CONTRACT NO. 50-4287-D

H1.1
SCALE:
AS SHOWN
SHEET NO.
31 of 56

EXHAUST FAN SCHEDULE

DESIGNATION	CFM	S.P. IN. W.G.	ELECTRICAL					FAN TYPE	MANUFACTURER / MODEL NO.	SERVES	REMARKS
			HP(W)	RPM	VOLTS	PHASE	Hz				
EF-1	2720	1.5 [1]	1 1/2 [1]	1725	115	1	60	CENTRIFUGAL [1]	GREENHECK BSQ-160-15 [1]	PLANT/MAIN ROOM	[1] INLINE MOUNTED-BELT DRIVE
EF-2	2720	1.5 [1]	1 1/2 [1]	1725	115	1	60	CENTRIFUGAL [1]	GREENHECK BSQ-160-15 [1]	PLANT/MAIN ROOM	[1] INLINE MOUNTED-BELT DRIVE
EF-3	540	0.25	1/4	1725	115	1	60	CENTRIFUGAL	GREENHECK GB-101-4	CHEMICAL ROOM	ROOF MOUNTED
EF-4	100	0.50	1/4	950	115	1	60	CENTRIFUGAL	GREENHECK SP-B110	RESTROOM	CEILING MOUNTED
EF-5	25	7.5	1/3	1300	115	1	60	CENTRIFUGAL	AMETEK/DR101BX9M	INFLUENT	INSIDE ENCLOSURE

UNIT HEATER SCHEDULE

DESIGNATION	CAPACITY MBH	CFM	FAN SPEED RPM	ELECTRICAL					SERVES	MANUFACTURER / MODEL NO.	REMARKS
				KW	AMPS	VOLTS	PHASE	Hz			
UH-1	51.2	1100	1550	15.0	62.5	240	1	60	PLANT/MAIN ROOM	MARKEL H1HUH12C03	-
UH-2	51.2	1100	1550	15.0	62.5	240	1	60	PLANT/MAIN ROOM	MARKEL H1HUH12C03	-
UH-3	51.2	1100	1550	15.0	62.5	240	1	60	PLANT/MAIN ROOM	MARKEL H1HUH12C03	-
UH-4	25.6	700	1550	7.5	27.1	277	1	60	CHEMICAL ROOM	MARKEL G1G5107CA1L	-
UH-5	11.2	400	1550	3.3	13.7	240	1	60	VALVE VAULT	MARKEL 5500	WASHDOWN

SUPPLY FAN SCHEDULE

DESIGNATION	CFM	S.P. IN. W.G.	ELECTRICAL					FAN TYPE	MANUFACTURER / MODEL NO.	SERVES	REMARKS
			HP(W)	RPM	VOLTS	PHASE	Hz				
SF-1	220	0.25	1/4	1725	115	1	60	CENTRIFUGAL	GREENHECK BSQ-70-4	PLANT/MAIN ROOM	INLINE MOUNTED, BELT DRIVE
SF-2	220	0.25	1/4	1725	120	1	60	BLOWER	TWIN CITY CIW705	VALVE VAULT	-

WALL HEATER SCHEDULE

DESIGNATION	CAPACITY BTU/H	CFM	FAN SPEED RPM	ELECTRICAL					SERVES	MANUFACTURER / MODEL NO.	REMARKS
				KW	AMPS	VOLTS	PHASE	Hz			
WH-1	3413	175	600	1.0	8.3	120	1	60	CONTROL ROOM	MARKEL E3322TTD-RP	-
WH-2	5120	175	600	1.5	12.5	120	1	60	RESTROOM	MARKEL E3323TTD-RP	-

LOUVER SCHEDULE

DESIGNATION	ROOM NAME/NUMBERS	LENGTH IN.	HEIGHT IN.	CFM	FRAME DEPTH IN.	BLADE STYLE	BLADE CENTER IN.	FREE AREA %	MANUFACTURER / MODEL NO.	REMARKS
L-1	PLANT/MAIN ROOM	48	36	[1] 2720	4	DRAINABLE	5	51	RUSKIN, ELF375DX	PROVIDE BIRD SCREEN
L-2	PLANT/MAIN ROOM	48	36	[1] 2720	4	DRAINABLE	5	51	RUSKIN, ELF375DX	PROVIDE BIRD SCREEN
L-3	RESTROOM	18	12	100	4	DRAINABLE	5	27	RUSKIN, ELF375DX	PROVIDE BIRD SCREEN
L-4	CONTROL ROOM	18	12	100	4	DRAINABLE	5	27	RUSKIN, ELF375DX	PROVIDE BIRD SCREEN
L-5	CONTROL ROOM	24	12	220	4	DRAINABLE	5	28	RUSKIN, ELF375DX	PROVIDE BIRD SCREEN
L-6	CHEMICAL ROOM	36	18	540	4	DRAINABLE	5	46	RUSKIN, ELF375DX	PROVIDE BIRD SCREEN
[1] L-7	PLANT/MAIN ROOM	42	24	2720	4	DRAINABLE	5	50	RUSKIN, ELF375DX	PROVIDE BIRD SCREEN
[1] L-8	PLANT/MAIN ROOM	42	24	2720	4	DRAINABLE	5	50	RUSKIN, ELF375DX	PROVIDE BIRD SCREEN

MOTOR OPERATED DAMPER SCHEDULE

MOD DESIGNATION	LENGTH (INCHES)	WIDTH (INCHES)	LOCATION	SERVES	MOTOR DATA			
					MOTOR TYPE	VOLTS	PHASE	HERTZ
MOD-1	48	36	PLANT/MAIN ROOM	L-1	ELECTRIC	120	1	60
MOD-2	48	36	PLANT/MAIN ROOM	L-2	ELECTRIC	120	1	60
MOD-3	18	12	RESTROOM	L-3	ELECTRIC	120	1	60
MOD-4	18	18	CONTROL ROOM	GRV-1	ELECTRIC	120	1	60
MOD-5	24	12	CONTROL ROOM	L-5	ELECTRIC	120	1	60
MOD-6	36	18	CHEMICAL ROOM	L-6	ELECTRIC	120	1	60

GRAVITY VENTILATOR/RELIEF SCHEDULE

DESIGNATION	SERVES	CFM	SP IN. W.G.	OPENING SIZE (IN.)	MANUFACTURER / MODEL NO.	REMARKS
GRV-1	CONTROL ROOM	220	0.01	8.25	GREENHECK GRSR-8	ROOF MOUNTED W/ 12" CURB

NOTE:
1) PROVIDE BACK DRAFT DAMPER ON VENTILATOR

AIR DEVICE SCHEDULE

DESIGNATION	TYPE	BORDER TYPE	CFM RANGE	BLOW PATTERN	SIZE		INLET/FLEXIBLE DUCT SIZE	MANUFACTURER / MODEL NO.	REMARKS
					NECK	FACE (IN)			
CD-1	SUPPLY DIFFUSER	SEE ARCH.	220	4-WAY	9 x 9	12 x 12	-	TITUS TDC	-
CD-2	SUPPLY DIFFUSER	SEE ARCH.	100	2-WAY	6 x 6	12 x 12	-	TITUS TDC	-
EG-1	EXHAUST AIR	SEE ARCH.	100	1-WAY	8 x 4	-	-	TITUS 350-FS	-

DUCT MOUNTED HEATING COIL SCHEDULE

DESIGNATION	SUPPLY AIR(CFM)	ELECTRICAL					MANUFACTURER/ MODEL NO.	SIZE
		KW	AMPS	VOLTS	PHASE	Hz		
EDH-1	220	4.0	12.5	240	1	60	MARKEL	12 x 6

AIR CONDITIONER SCHEDULE

DESIGNATION	CAPACITY BTU/H	CFM	FAN SPEED RPM	ELECTRICAL					SERVES	MANUFACTURER / MODEL NO.	REMARKS
				KW	AMPS	VOLTS	PHASE	Hz			
AC-1	6000	216/135	-	0.59	5.4	115	1	60	CONTROL ROOM	CARRIER FCB061RB	-

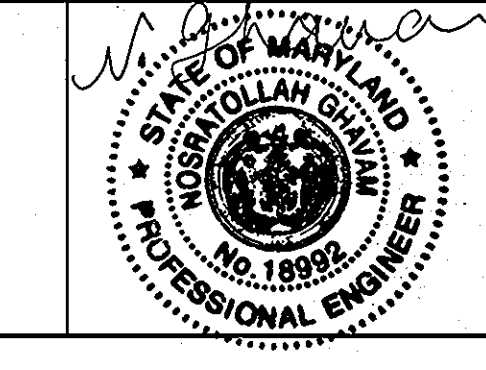
APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT
Brian for Peter Beilman 9/14/07
 COUNTY HEALTH OFFICER DATE

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
 License No. 18992, Expiration Date: 01/18/2009.

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
Michael A. Karamella 9-17-07
 CHIEF, BUREAU OF UTILITIES DATE

DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY, MARYLAND
[Signature] 9/17/07
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

URS
 URS CORP.
 CONSULTING ENGINEERING AND PLANNING
 1099 Winterson Road
 Linthicum, MD 21090
 Phone: 410-855-6160 Fax: 410-855-6163



DESIGN: CMD
 DRAFT: CMD
 CHK: NG
 DATE: 5/2007
 RER [1] REVISION #1
 BY NO. REVISIONS DATE: 4-28-11

SHARED SEPTIC SYSTEM
 MECHANICAL HVAC SCHEDULES

RIVERWOOD - PHASE 2
 A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'T' THRU 'Z', 'AA' AND 'BB' AND NON-BUILDABLE BULK PARCEL 'II' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S', AND 'U' TO ADD OR MODIFY FOREST CONSERVATION AREAS
 THIRD ELECTION DISTRICT
 CONTRACT NO. 50-4287-D

H1.2
 SCALE:
 AS SHOWN
 SHEET NO.
 32 of 56

ABBREVIATION	DESCRIPTION
AFF	ABOVE FINISHED FLOOR
BLDG	BUILDING
CAP.	CAPACITY
CI	CAST IRON
CO	CLEAN OUT
CW	COLD WATER
DIA.	DIAMETER
D.I.P.	DUCTILE IRON PIPE
DN	DOWN
DWG.	DRAWING
EFF.	EFFICIENCY
EL	ELEVATION
ELECT.	ELECTRICAL
F	DEGREE FAHRENHEIT
F.D.	FLOOR DRAIN
FT.	FEET
FT/MIN.	FEET PER MINUTE
FT OF W	FEET OF WATER
GAL.	GALLON
GCO	GROUND CLEANOUT
GPM	GALLONS PER MINUTE
G.P.H.	GALLONS PER HOUR
HP	HORSE POWER
HW	HOT WATER
HZ	HERTZ
INV.	INVERT
MAX	MAXIMUM
MIN	MINIMUM
N.T.S.	NOT TO SCALE
PD	PRESSURE DROP
PH	PHASE
PRESS	PRESSURE
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH GAGE
RPM	REVOLUTION PER MINUTE
SAN	SANITARY
TEMP.	TEMPERATURE
TYP.	TYPICAL
UFS	UNDER FLOOR SLAB
UG	UNDERGROUND
V	VENT, VOLT
VTR	VENT THROUGH ROOF
W.C.	WATER COLUMN
W.G.	WATER GAGE
1 HT	HYDROPNEUMATIC TANK
1 WP	WELL PUMP

PLUMBING LEGEND	
SYMBOL	DESCRIPTION
----	COLD WATER
----	SANITARY LINE
----	VENT
	VENT THROUGH ROOF (VTR)
----	HEAT TRACING
⊗	BALANCING VALVE
○ C.O.	SANITARY CLEAN OUT
⊗	FLOOR DRAIN
⊗	CHECK VALVE
⊗	SHUT OFF VALVE (GATE VALVE)
⊗	GLOBE VALVE
⊗	BALL VALVE
----	SANITARY PIPING UNDER FLOOR SLAB
○ — ○	PIPE DOWN / PIPE UP
⊙	SANITARY MANHOLE

GENERAL NOTES

1. ALL INVERTS AND LOCATIONS OF PIPING SHALL BE VERIFIED BY THE CONTRACTORS PRIOR TO THE START OF CONSTRUCTION.
2. CLEANOUTS SHALL BE LOCATED IN SANITARY & DRAINAGE PIPING IN ACCORDANCE TO LOCAL AND STATE CODES.

PLUMBING FIXTURE SCHEDULE										
DESIGNATION	DESCRIPTION	FLOW RATE	CW	HW	SAN	VENT	MANUFACTURER	MODEL NUMBER	ACCESSORIES	REMARKS
P-1	WATER CLOSET	1.6 G.P.F.	3/4"		4"	2"	AMERICAN STANDARD	CADET-2386.012		
	SEAT							#5284.016		
P-2	LAVATORY				1-1/4"	1-1/4"	AMERICAN STANDARD	LUCERNE-WALL HUNG 0355.012		
	FAUCET		1/2"	1/2"			AMERICAN STANDARD-HERITAGE	5400.142H		POLISHED CHROME
P-3	DOUBLE BOWL LABORATORY SINK						HAMILTON	52L967L0	22" x 33" x 7-1/2"	SELF RIM - 18 GAUGE
	FAUCET		1/2"	1/2"			HAMILTON	6" GOOSENECK		POLISHED CHROME
P-4	1 EMERGENCY SHOWER	1 VARIES	1"				SPEAKMAN	1 SE-227-SS		1 FLOW VARIES BASED ON TANK CAPACITY/PRESSURE & PUMP CAPACITY
P-5	WATER HEATER-TANKLESS	1.0 GPM	1/2"				1 CHRONMITE LABORATORIES	SR-20L		
P-6	POST HYDRANT		2"				ZURN	Z1390		
P-7	BACKFLOW PREVENTER		3/4"				WATTS	SERIES 909M1		
P-8	WALL HYDRANT		3/4"				ZURN	Z1309		NON-FREEZE
1 P-9	1 WATER HEATER-TANKLESS		3/4"	1			1 BOSCH	1 AE115		1 17.25kW; 240V/1φ/60HZ
1 P-10	1 EMERGENCY EYE WASH	VARIES	1/2"	1			1 SPEAKMAN	1 SE-401		

1 PUMP SCHEDULE												
DESIGNATION	SERVES	PUMP TYPE	GPM	HEAD FT. - WATER	SIZE, IN.		MOTOR				MANUFACTURER / MODEL NUMBER	REMARKS
					DISCH.	HP	RPM	V	PH	HZ		
WP-1	CW SYSTEM	TURBINE	10	360	1.25	2.0	3450	240	1	60	GRUNDFOS/10515-21	SEE SHEET UI.1 FOR PUMP LOCATION

1 NOTE: SUGGESTED PUMP SELECTION. CONTRACTOR SHALL ENSURE THAT WELL DEPTH AND INSTALLED PUMP ARE CAPABLE OF DELIVERING 10 GPM FOR 20 MINUTES CONTINUOUS OPERATION. CONTRACTOR SHALL DRILL TO DEEPER DEPTH & RESELECT PUMP, AS REQUIRED, TO ENSURE CAPACITY IS MET AS NOTED. FLOW SWITCH ON SAFETY SHOWER SHALL OVERRIDE PRESSURE SWITCH ON PUMP CONTROLLER.

1 HYDROPNEUMATIC TANK SCHEDULE										
DESIG.	TANK VOLUME GAL	ACCEPTANCE VOLUME, GAL	CONN. SIZE, IN.	INITIAL PRESSURE PSIG	HEIGHT IN.	DIAMETER IN.	SERVES	MANUFACTURER		REMARKS
								MAKE	MODEL	
HT-1	422	170	3	40	80.5	48	WP-1	AMTROL	WX-455-C	FURNISH WITH AMTROL'S DIGITAL PUMP CONTROLLER & RELIEF VALVE SET @ 80 PSI

APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT

B. Wilson for Peter Baileman 9/14/07
COUNTY HEALTH OFFICER DATE

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

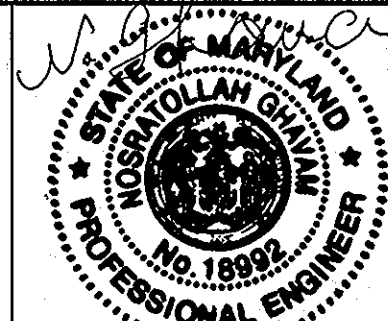
License No. 18992, Expiration Date: 01/18/2009.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND

URS

URS CORP.
CONSULTING ENGINEERING AND PLANNING
1099 Winterson Road
Linthicum, MD 21090
Phone: 410-855-6160 Fax: 410-855-6163



DESIGN: RLH

DRAFT: CLD

CHK: NG

DATE: 5/2007

RER 1

BY NO. REVISION #1

DATE 4-28-11

REVISIONS

SHARED SEPTIC SYSTEM

PLUMBING GENERAL NOTES,
LEGEND & ABBREVIATIONS

RIVERWOOD - PHASE 2

A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'T' THRU 'Z', 'AA' AND 'BB' AND NON-BUILDABLE BULK PARCEL '1F' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S', AND 'U' TO ADD OR MODIFY FOREST CONSERVATION AREAS

THIRD ELECTION DISTRICT

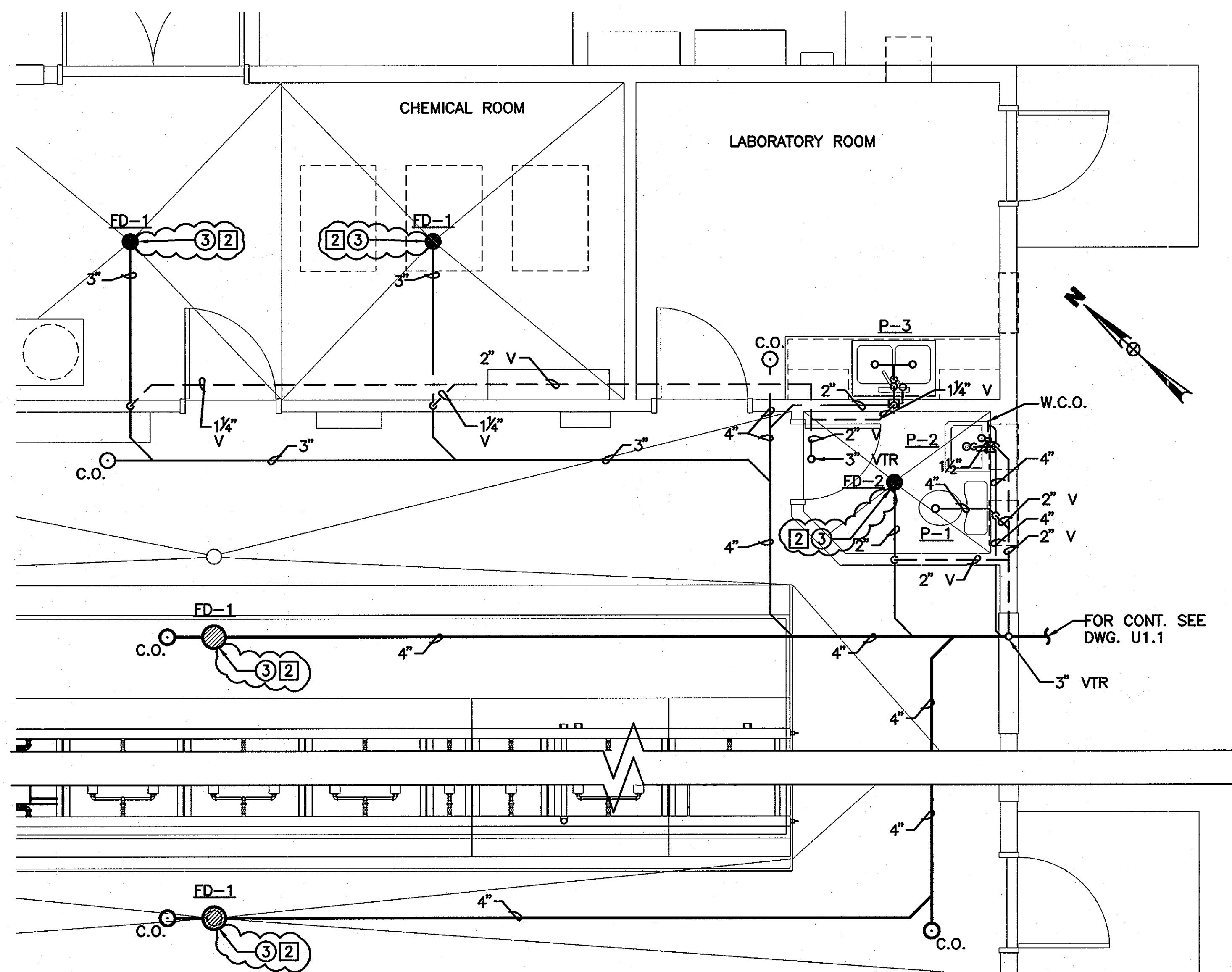
CONTRACT NO. 50-4287-D

P1.0

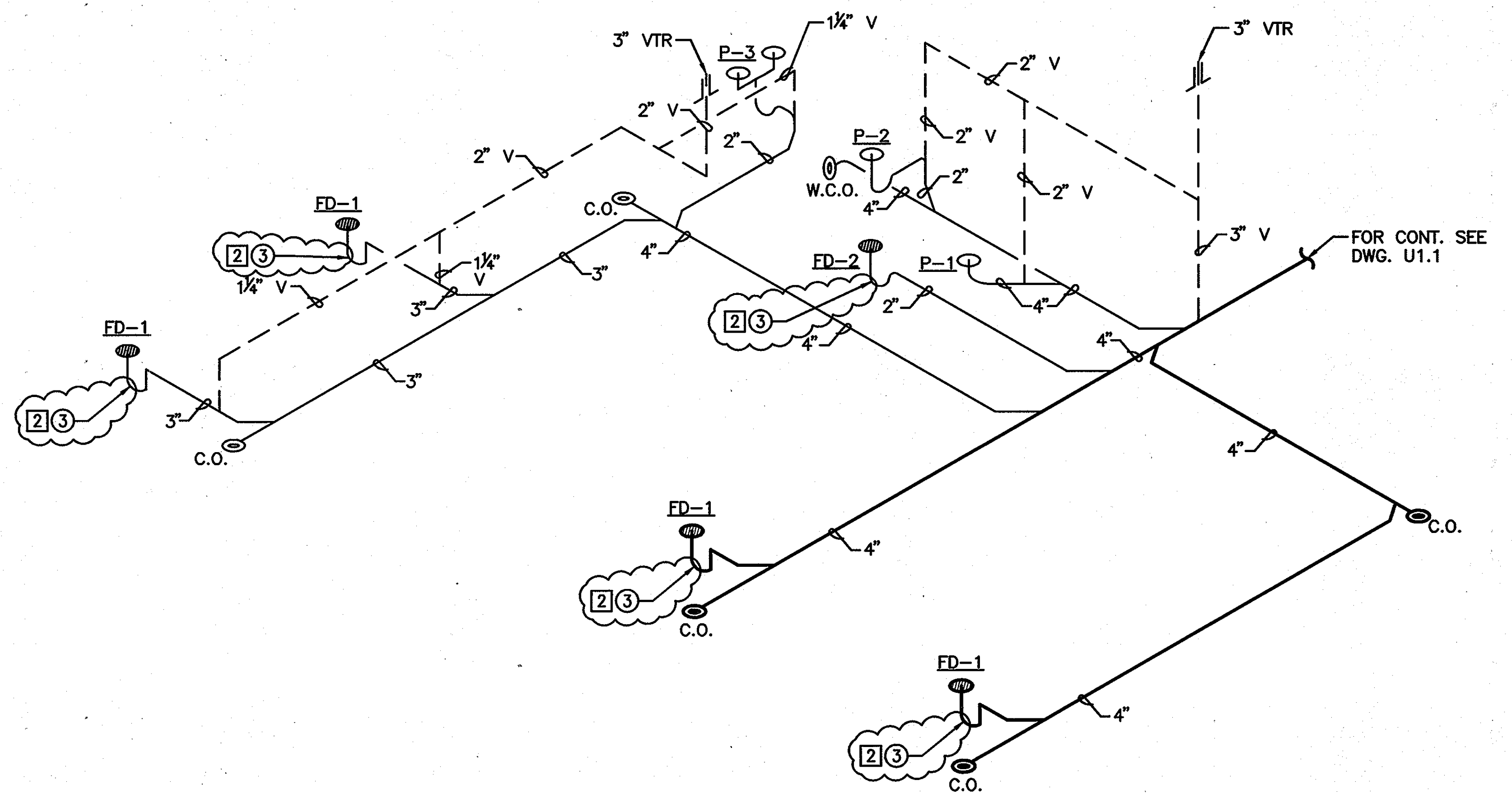
SCALE:
AS SHOWN

SHEET NO.

33 of 56



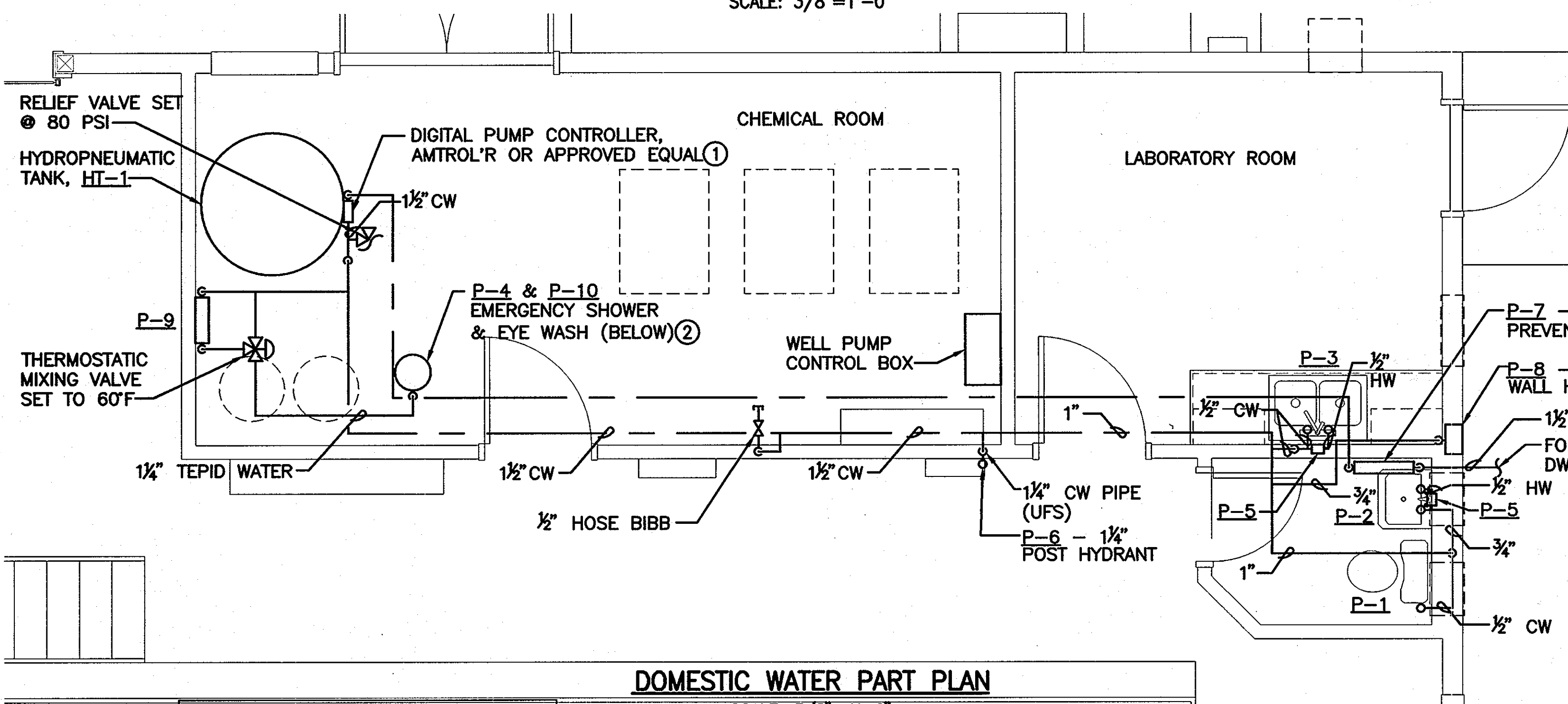
SANITARY PART PLAN
SCALE: 3/8"=1'-0"



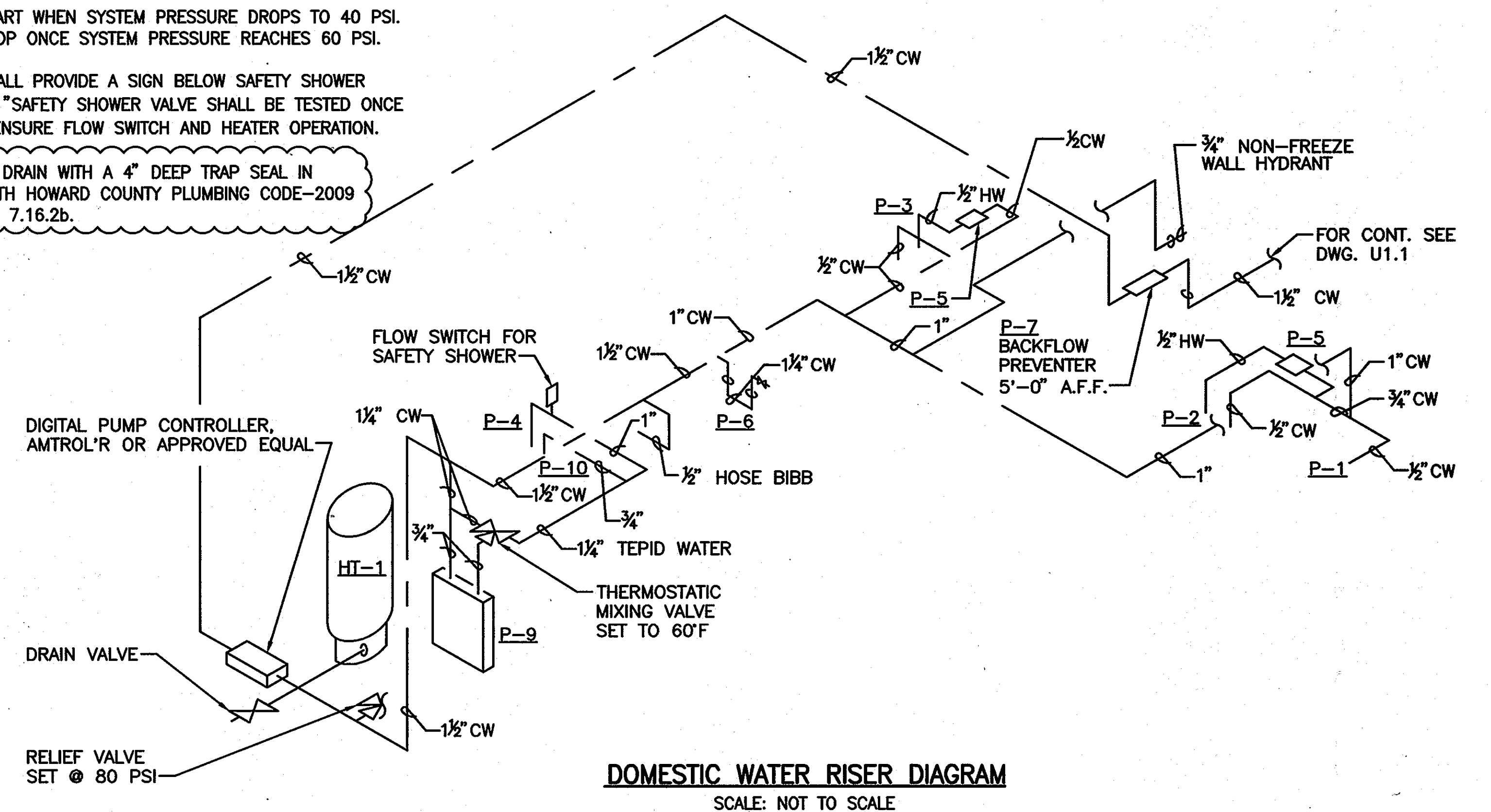
SANITARY RISER DIAGRAM
SCALE: NOT TO SCALE

DRAWING NOTES

- ① PUMP SHALL START WHEN SYSTEM PRESSURE DROPS TO 40 PSI. PUMP SHALL STOP ONCE SYSTEM PRESSURE REACHES 60 PSI.
- ② CONTRACTOR SHALL PROVIDE A SIGN BELOW SAFETY SHOWER INDICATING THAT "SAFETY SHOWER VALVE SHALL BE TESTED ONCE PER YEAR" TO ENSURE FLOW SWITCH AND HEATER OPERATION.
- ②③ PROVIDE FLOOR DRAIN WITH A 4" DEEP TRAP SEAL IN ACCORDANCE WITH HOWARD COUNTY PLUMBING CODE-2009 EDITION SECTION 7.16.2b.



DOMESTIC WATER PART PLAN
SCALE: 3/8"=1'-0"

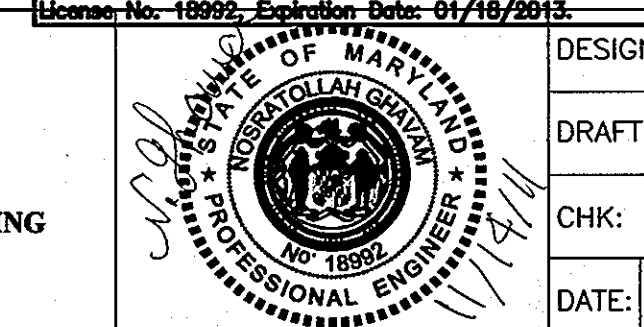


DOMESTIC WATER RISER DIAGRAM
SCALE: NOT TO SCALE

APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT

COUNTY HEALTH OFFICER DATE:

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 18892, Expiration Date: 01/18/2013.



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND



URS CORP.
CONSULTING ENGINEERING AND PLANNING
1099 Winterson Road
Linthicum, MD 21090
Phone: 410-855-6160 Fax: 410-855-6163

DESIGN: RLH/DAB

DRAFT: JRG

CHK: NG

DATE: 11/2010

NO.	REVISIONS	DATE
1	REPLACEMENT SHEET	11-14-11
2	REVISION #2	11-4-11
3	REVISION #1	4-28-11

SHARED SEPTIC SYSTEM

PLUMBING PART PLANS
AND RISER DIAGRAMS

RIVERWOOD - PHASE 2

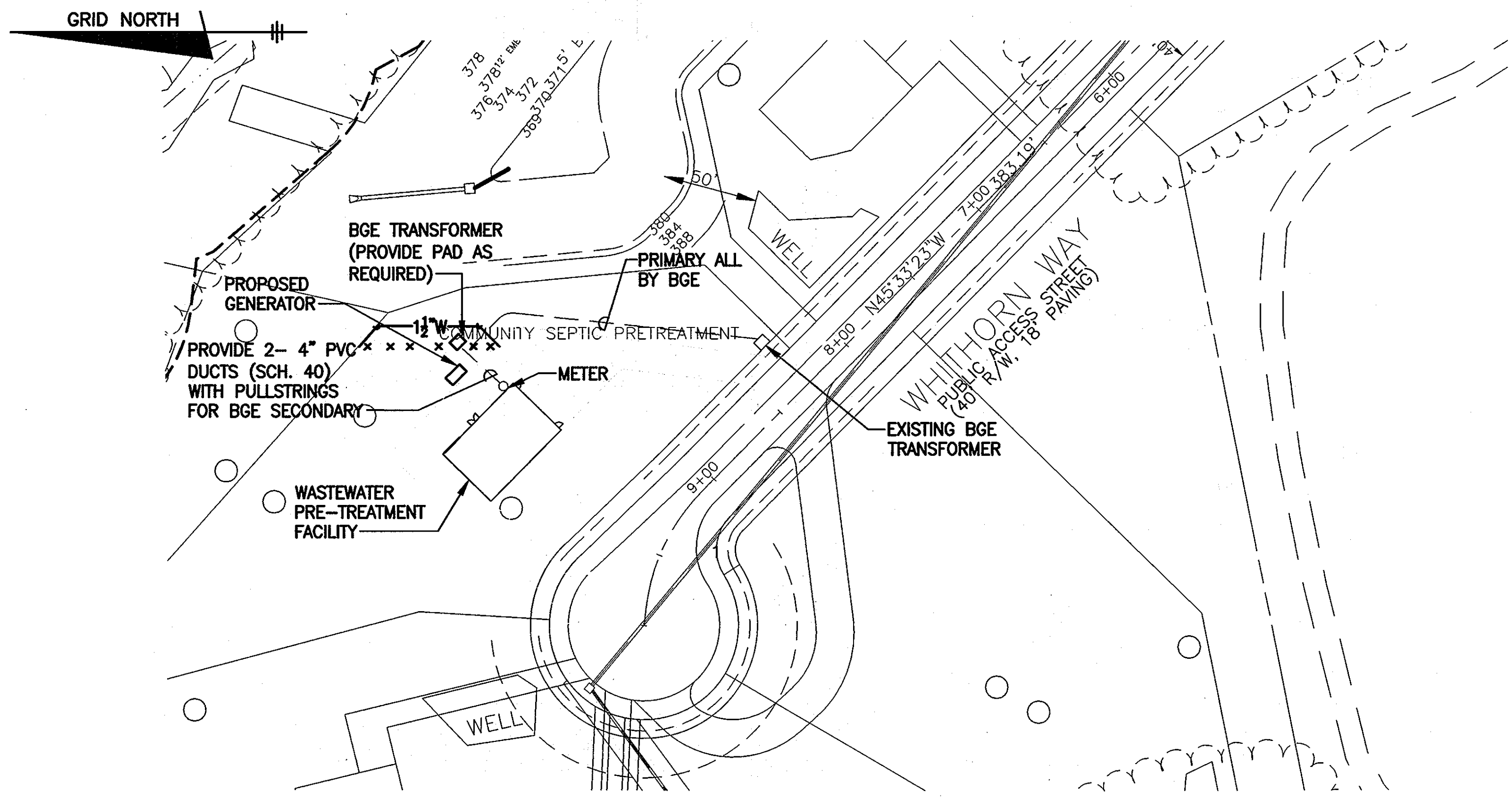
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THIRD ELECTION DISTRICT
CONTRACT NO. 50-4287-D

P1.1

SCALE:
AS SHOWN

SHEET NO.
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**WASTEWATER PRETREATMENT FACILITY-
WHITHORN WAY PLAN**
SCALE: 1"=50'

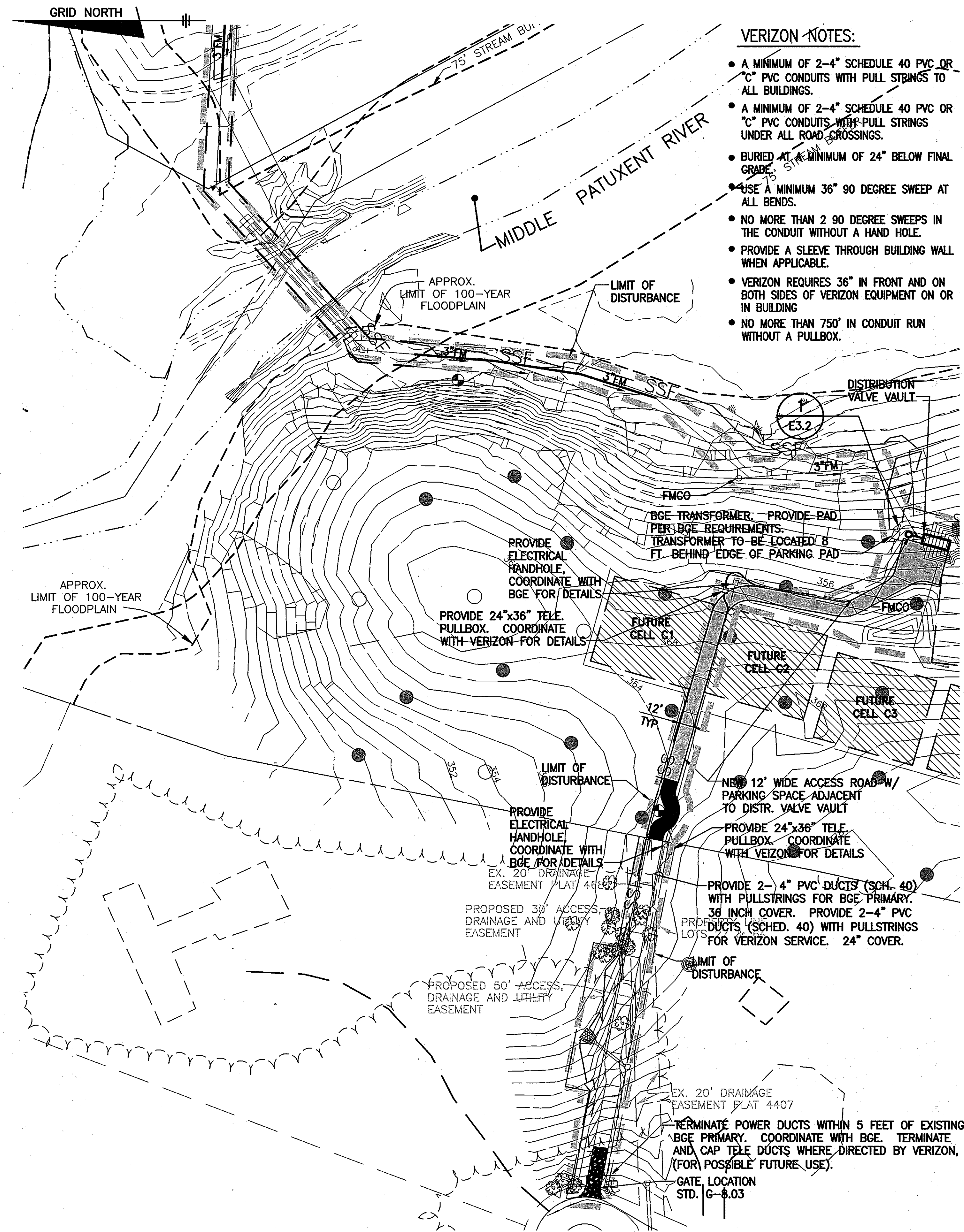
ABBREVIATIONS

- HORSE POWER
- KILOVOLT AMPERES
- MINIMUM CIRCUIT AMPACITY
- MAXIMUM OVERCURRENT PROTECTION DEVICE
- AUTOMATIC TRANSFER SWITCH
- BALTIMORE GAS & ELECTRIC
- HORSEPOWER
- CIRCUIT BREAKER
- MAIN CIRCUIT BREAKER
- TYPICAL
- ENCLOSED CIRCUIT BREAKER
- GROUND
- CONTROL SWITCH
- LIMIT SWITCH
- FLOAT
- FULL VOLTAGE NON REVERSING
- SURFACE MOUNTED
- MOTOR OPERATED DAMPER
- HAND-OFF-AUTOMATIC
- EXPLOSIONPROOF
- GROUNDING ELECTRODE SYSTEM
- NOT TO SCALE
- CONTINUOUS SEQUENTIAL BATCH REACTORS
- TIMECLOCK
- TELEPHONE DIALER
- NAMEPLATE

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
E1.1	ELECTRICAL LEGEND, ABBREVIATIONS & SHEET INDEX
E2.1	ELECTRICAL FLOOR PLANS AND LIGHTING SCHEDULE
E3.1	INFLUENT PUMPING STATION PLAN & DETAILS
E3.2	DISTRIBUTION VALVE VAULT PLAN & DETAILS
E3.3	DISTRIBUTION VALVE VAULT CONTROL PANEL DETAILS
E4.1	ONE-LINE DIAGRAM
E4.2	INFLUENT PUMPING STATION CONTROL DIAGRAM
E4.3	MISC. CONTROL DIAGRAMS
E5.1	SCHEDULES
E6.1	MISC. DETAILS

ELECTRICAL SYMBOL LEGEND	
	SOLID LINE DENOTES CONDUIT RUN CONCEALED IN WALL, ABOVE CEILING, EXPOSED IN UNFINISHED AREAS. RUN PARALLEL OR PERPENDICULAR TO STRUCTURE OR WALL. DASHED LINE DENOTES CONDUIT RUN BELOW GRADE OR BELOW FINISHED FLOOR.
	HOMERUN TO PANELBOARD. QUANTITY OF ARROWS INDICATES NUMBER OF CIRCUITS.
	SURFACE, RECESSED, OR WALL MOUNTED LIGHTING FIXTURE CONNECTED TO NORMAL BRANCH CIRCUIT. SEE LIGHTING FIXTURE SCHEDULE FOR EXACT REQUIREMENTS.
	EMERGENCY BATTERY PACK UNIT. LETTER INDICATES TYPE. SEE LIGHTING FIXTURE SCHEDULE FOR EXACT REQUIREMENTS. CONNECT UNSWITCHED TO INDICATED BRANCH CIRCUIT.
	SINGLE-POLE TOGGLE SWITCH IN FLUSH (FINISHED SPACES) OR SURFACE (UNFINISHED SPACES) OUTLET BOX. MOUNT 46-INCHES ABOVE FINISHED FLOOR UNLESS OTHERWISE INDICATED OR REQUIRED BY SITE CONDITIONS.
	THREE-WAY TOGGLE SWITCH IN FLUSH (FINISHED SPACES) OR SURFACE (UNFINISHED SPACES) OUTLET BOX. MOUNT 46" ABOVE FINISHED FLOOR UNLESS OTHERWISE INDICATED OR REQUIRED BY SITE CONDITIONS.
	MOTOR RATED CONTACT TOGGLE SWITCH IN FLUSH (FINISHED SPACES) OR SURFACE (UNFINISHED SPACES) OUTLET BOX. MOUNT 46-INCHES ABOVE FINISHED FLOOR UNLESS OTHERWISE INDICATED OR REQUIRED BY SITE CONDITIONS.
	COMBINATION MAGNETIC MOTOR STARTER, FVNR UNLESS OTHERWISE INDICATED. SUBSCRIPT INDICATES NEMA SIZE. SUBSCRIPT WP INDICATES IN NEMA 3R ENCLOSURE.
	NON-FUSED SAFETY SWITCH, SIZE AND NUMBER OF POLES AS INDICATED BY SUBSCRIPTS. SUBSCRIPT WP INDICATES IN NEMA 3R ENCLOSURE.
	MOTOR CONNECTION.
	JUNCTION BOX WITH COVER. SIZE PER NEC.
	125 VOLT, 3 WIRE GROUND FAULT TYPE DUPLEX RECEPTACLE. MOUNTING AS INDICATED.
	125 VOLT, 3 WIRE SAFETY TYPE DUPLEX RECEPTACLE. MOUNTING AS INDICATED.
	EXIT LIGHT SEE LIGHTING FIXTURE SCHEDULE



DISPOSAL FIELD ACCESS ROAD PLAN
SCALE: 1"=50'

VERIZON NOTES:

- A MINIMUM OF 2-4" SCHEDULE 40 PVC OR "C" PVC CONDUITS WITH PULL STRINGS TO ALL BUILDINGS.
- A MINIMUM OF 2-4" SCHEDULE 40 PVC OR "C" PVC CONDUITS WITH PULL STRINGS UNDER ALL ROAD CROSSINGS.
- BURIED AT A MINIMUM OF 24" BELOW FINAL GRADE.
- USE A MINIMUM 36" 90 DEGREE SWEEP AT ALL BENDS.
- NO MORE THAN 2 90 DEGREE SWEEPS IN THE CONDUIT WITHOUT A HAND HOLE.
- PROVIDE A SLEEVE THROUGH BUILDING WALL WHEN APPLICABLE.
- VERIZON REQUIRES 36" IN FRONT AND ON BOTH SIDES OF VERIZON EQUIPMENT ON OR IN BUILDING
- NO MORE THAN 750' IN CONDUIT RUN WITHOUT A PULLBOX.

APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT

COUNTY HEALTH OFFICER DATE:

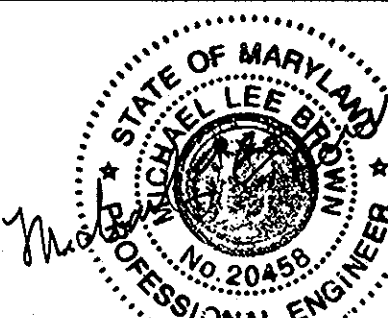
Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 10714, Expiration Date: 12/01/2011.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND



URS CORP.
CONSULTING ENGINEERING AND PLANNING
1099 Winterson Road
Linthicum, MD 21090
Phone: 410-855-6160 Fax: 410-855-6163



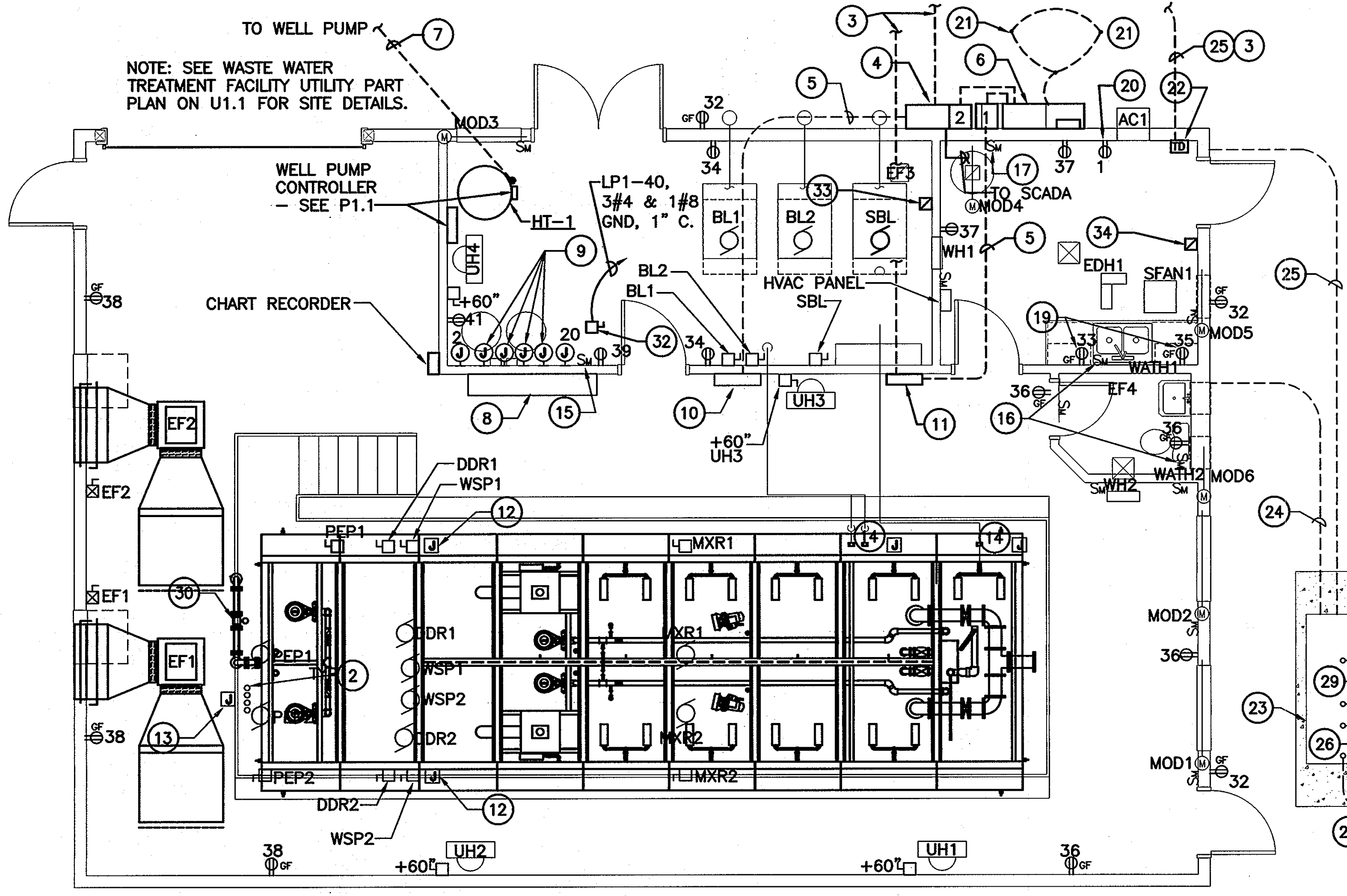
DESIGN: TAH
DRAFT: TAH
CHK: RRW
DATE: 11/2010

REVISIONS	DATE
DB	11-14-11
DB	6-15-11
DB	4-28-11

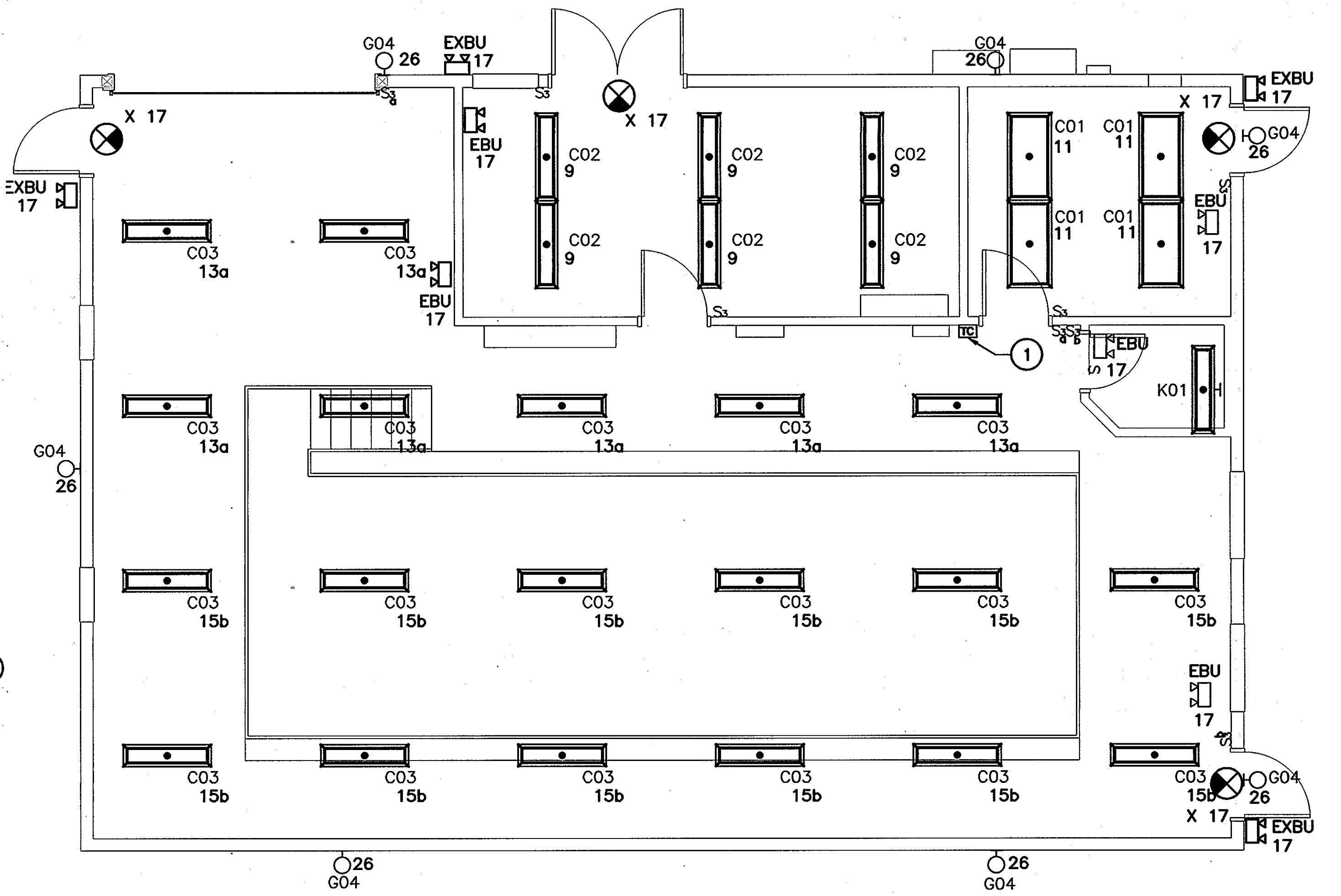
SHARED SEPTIC SYSTEM
ELECTRICAL SITE PLANS,
ELECTRICAL LEGEND, ABBREVIATIONS
AND SHEET INDEX

RIVERWOOD - PHASE 2
A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'A' THRU 'G' TO CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'T' THRU 'Z', 'AA' AND 'BB' AND NON-BUILDABLE BULK PARCEL 'U' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S', AND 'U' TO ADD OR MODIFY FOREST CONSERVATION AREAS
THIRD ELECTION DISTRICT
CONTRACT NO. 50-4287-D

E1.1
SCALE:
AS SHOWN
SHEET NO.
35 of 56



ELECTRICAL FLOOR PLAN - POWER (18)
SCALE: 1/4" = 1'-0"

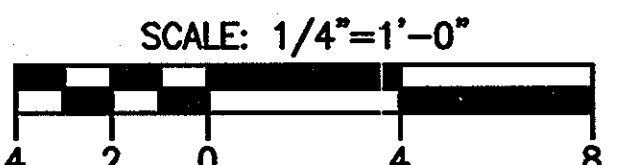


ELECTRICAL CEILING PLAN - LIGHTING (2)
SCALE: 1/4" = 1'-0"

POWER SHEET NOTES:

- ① REFER TO ONE-LINE DIAGRAM, CSBR EQUIPMENT CONNECTION SCHEDULE AND HVAC EQUIPMENT CONNECTION SCHEDULE FOR EQUIPMENT SIZES AND CONNECTION DETAILS.
- ② EFFLUENT PUMP FLOATS; STOP FLOAT, START FLOAT, LAG FLOAT, HIGH WATER ALARM FLOAT.
- ③ TO GENERATOR SEE U1.1 FOR LOCATION.
- ④ FREESTANDING AUTOMATIC TRANSFER SWITCH, WITH ENCLOSED SERVICE CIRCUIT BREAKER ON CONCRETE PAD.
- ⑤ COORDINATE U/G CONDUIT ROUTING WITH FOUNDATION.
- ⑥ FREESTANDING C/T CABINET, METER AND SERVICE DISCONNECT, SEE SERVICE METER AND C/T CABINET DETAIL AND ONE-LINE DIAGRAM FOR FURTHER DETAILS.
- ⑦ UNDERGROUND CONDUIT SEE E4.1.
- ⑧ CSBR PANEL SUPPLIED BY OTHERS. ELECTRICAL CONTRACTOR TO FURNISH AND INSTALL WIRE AND CONDUIT FROM CSBR TO EQUIPMENT FED FROM CSBR.
- ⑨ JUNCTION BOXES FOR SODIUM ACETATE PUMPS 1 & 2 AND CAUSTIC SODA PUMPS 1 & 2.
- ⑩ 240/120V, 1Ø PANEL "LP1".
- ⑪ 240/120V, 1Ø PANEL "LP2".
- ⑫ NEMA 4X DECANter JUNCTION BOX FOR DECANter LIMIT SWITCH, DECANter LOCAL CONTROL SWITCH AND STORM FLOAT.
- ⑬ NEMA 4X JUNCTION BOX FOR EFFLUENT PUMPS STOP FLOAT, EFFLUENT PUMPS START FLOAT, EFFLUENT PUMPS LAG FLOAT AND EFFLUENT PUMPS HIGH WATER ALARM FLOAT.
- ⑭ NEMA 4X JUNCTION BOX FOR AIR CONTROL VALVE.
- ⑮ MOTOR RATED TOGGLE SWITCH FOR HEAT TRACE.
- ⑯ MOTOR RATED TOGGLE SWITCH FOR INSTANTANEOUS WATER HEATER, MOUNT +18" AFF, BELOW SINK.
- ⑰ MOTOR RATED TOGGLE SWITCH FOR MOTOR OPERATED DAMPER (TYPICAL OF 6).

- ⑱ SEE PANEL SCHEDULES FOR COMPLETE CIRCUIT DESIGNATIONS.
- ⑲ MOUNT AT 12" ABOVE COUNTER TOP.
- ⑳ RECEPTACLE FOR AIR CONDITIONER. MOUNT AT 60" AFF.
- ㉑ GROUND RING CONSISTING OF (3) 10' LONG x 3/4" DIAMETER GROUND RODS DRIVEN 1 FOOT BELOW GRADE INTERCONNECTED WITH #2 BARE COPPER EXOTHERMICALLY WELDED.
- ㉒ AUTOMATIC TELEPHONE DIALER RECEIVING INPUTS FROM CSBR, ATS, GENERATOR, AND INFLUENT PUMPING STATION.
- ㉓ PUMP STATION CONTROL PANEL, SEE SHEET E3.1
- ㉔ RUN CONDUIT & WIRING 24" BELOW GRADE FROM PUMP CONTROL PANEL TO PANEL L2.
- ㉕ RUN 2#14 IN 3/4" C. 24" BELOW GRADE TO TELEPHONE DIALER.
- ㉖ 3/4" RGS CONDUIT FOR FLOATS AND HATCH LIMIT SWITCH.
- ㉗ CONDUIT AND WIRING FOR EF-5.
- ㉘ HATCH LIMIT SWITCH CONTROLLING EF-5.
- ㉙ RUN 3/4" RGS CONDUIT WITH (2)#12 & (1)#12 GND FOR WASTE PUMP.
- ㉚ MAG METER. RUN 2/C #16 SHIELDED CABLE IN 3/4" C. TO EFFLUENT FLOW CHART RECORDER. SEE HVAC EQUIPMENT CONNECTION SCHEDULE FOR POWER CONNECTION.
- ㉛ TELEPHONE TERMINAL CABINET.
- ㉜ 100A, 2P, 240V NFSS. CONNECT TO INST. WATER HEATER.
- ㉝ THERMAL STARTER AND RELAY FOR EF3.
- ㉞ START/STOP P.B., THERMAL STARTER AND RELAY FOR SF1.



Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 20458, Expiration Date: 05/23/2012.

LIGHTING SHEET NOTES:

- ① EXTERIOR BUILDING LIGHTS AND SITE POLE LIGHTS SHALL BE CONTROLLED VIA TIMECLOCK. SEE SITE PLAN FOR LIGHT POLE LOCATIONS.
- ② INTERIOR LIGHTS FED FROM PANEL LP2, EXTERIOR LIGHTS FED FROM PANEL LP1.

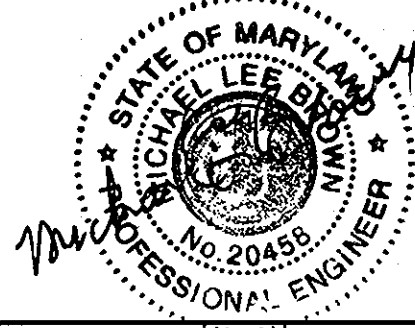
LIGHTING FIXTURE SCHEDULE

TYPE	MANUFACTURERS	CATALOG INFORMATION	LAMP DATA NO	LAMP TYPE	BALLAST DATA NO	BALLAST TYPE	INPUT WATTS	VOLTAGE	MOUNTING	FIXTURE DESCRIPTION	REMARKS
C01	LITHONIA	LB-332-120ES OR APPROVED EQUAL	3	32W T8, 3500K	1	ELECTRONIC	96	120	SURFACE	FLUOR. LOW PROFILE WRAPAROUND WHITE ENAMEL END PLATES ACRYLIC PRISMATIC DIFFUSER.	MOUNT ON PLYWOOD CEILING
C02	LITHONIA	AF10232120ES OR APPROVED EQUAL	2	32W T8, 3500K	1	ELECTRONIC	64	120	SURFACE	4' FLUOR. INDUSTRIAL STEEL BAKED WHITE ENAMEL FINISH 10% UPLIGHT	MOUNT ON PLYWOOD CEILING
C03	LITHONIA	DM332120ES OR APPROVED EQUAL	3	32W T8, 3500K	1	ELECTRONIC	96	120	SURFACE	4' INDUSTRIAL FLUORESCENT ENCLOSED AND GASKETED ABS THERMOPLASTIC HOUSING PRISMATIC ACRYLIC DIFFUSER	MOUNT ON BOARDS PERPENDICULAR TO TRUSSES
G04	FAIL-SAFE	HPBC SERIES	1	35WHP/COATED	1	MAGNETIC	46	120	WALL	CAST ALUM. HOUSING, .130" THK CLEAR POLYCARB. LENS, LOW PROFILE, 120V, SEALED & GASKETED, U.L. LISTED WET.	MOUNT +120"
K01	THOMAS & BETTS	VXHF22G OR APPROVED EQUAL	1	200WMBASE			200	120	WALL	ENCLOSED & GASKETED 200 WATT INCANDESCENT WALL MOUNTED	MOUNT 78" AFF
S01	HAPCO	CATALOG# PT70-HPS- POLY ALUMINUM OR APPROVED EQUAL	1	70WHP/CLEAR	1	MAGNETIC	90		AS NOTED	POLE - TOP MOUNTED, ALUMINUM CLEAR POLYCARBONATE TYPE V REFRACTOR BOLT DOWN BASE POLE, ROUND STRAIGHT ALUMINUM 12-FT POLE	
EBU	CHLORIDE OR EQUAL	CB50	2	9W HALOGEN			30	120	WALL	EMERGENCY LIGHT LEAD CALCIUM BATTERY, 50 WATT THERMOPLASTIC HOUSING	
X	CHLORIDE OR EQUAL	SLN	1	PL7			10	120	WALL/CEILING	SINGLE FACE EXIT LIGHT, BATTERY	
EXBU	CHLORIDE OR EQUAL	SV16	2	MR 16			11	120	WALL	EXTERIOR EMERGENCY LIGHT, LEAD CALCIUM BATTERY FOR WET LOCATION WITH BATTERY HEATER	MOUNT 8 FT. AFF

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
S. J. CLINE
CHIEF, BUREAU OF UTILITIES
DATE: 3/15/12

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND
M. J. JAMES
CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE: 3/15/12

URS
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CONSULTING ENGINEERING AND PLANNING
1099 Winterson Road
Linthicum, MD 21090
Phone: 410-855-6160 Fax: 410-855-6163

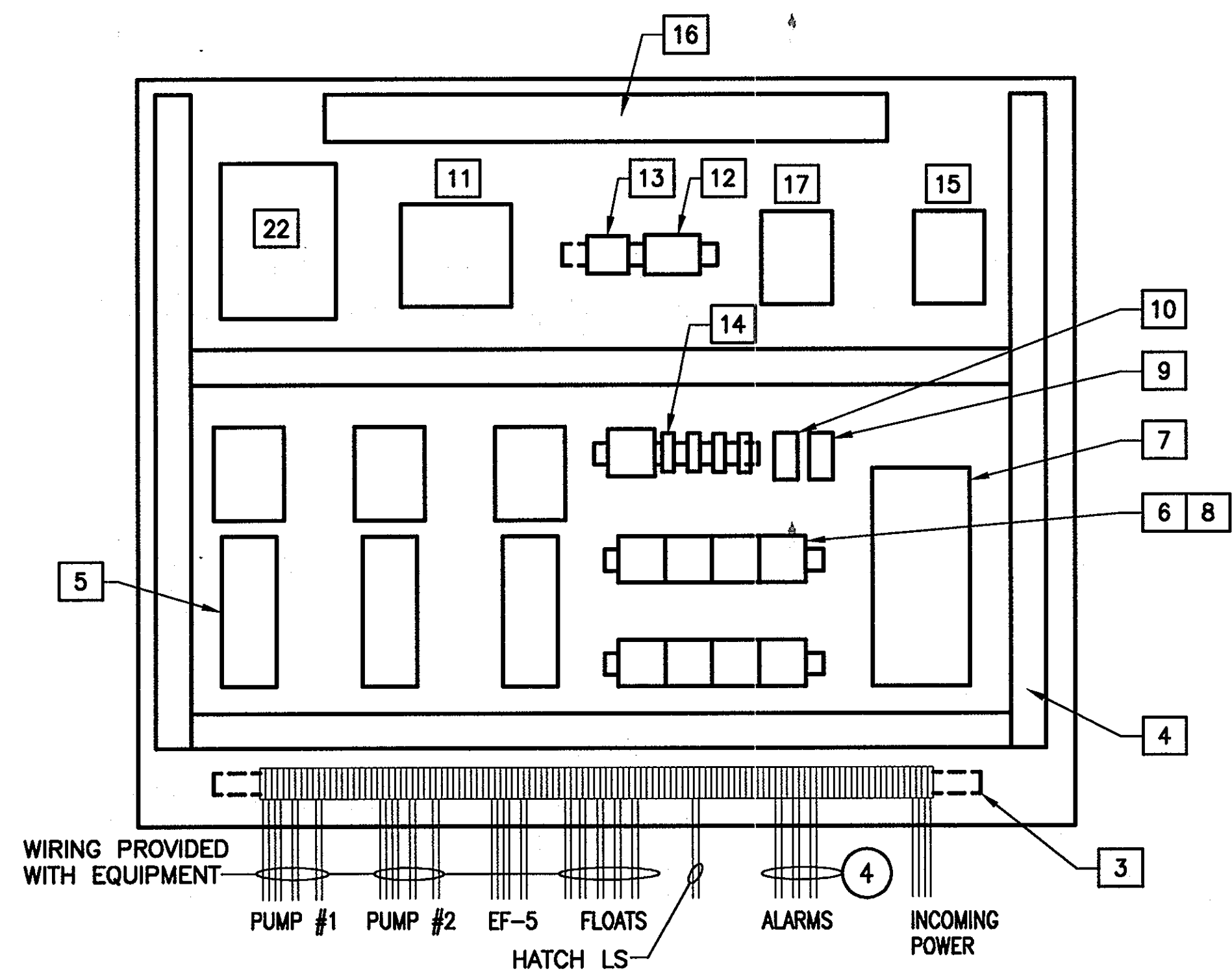


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CHK: RRR	DB
DATE: 11/2010	BY NO.
	REVISIONS
	DATE

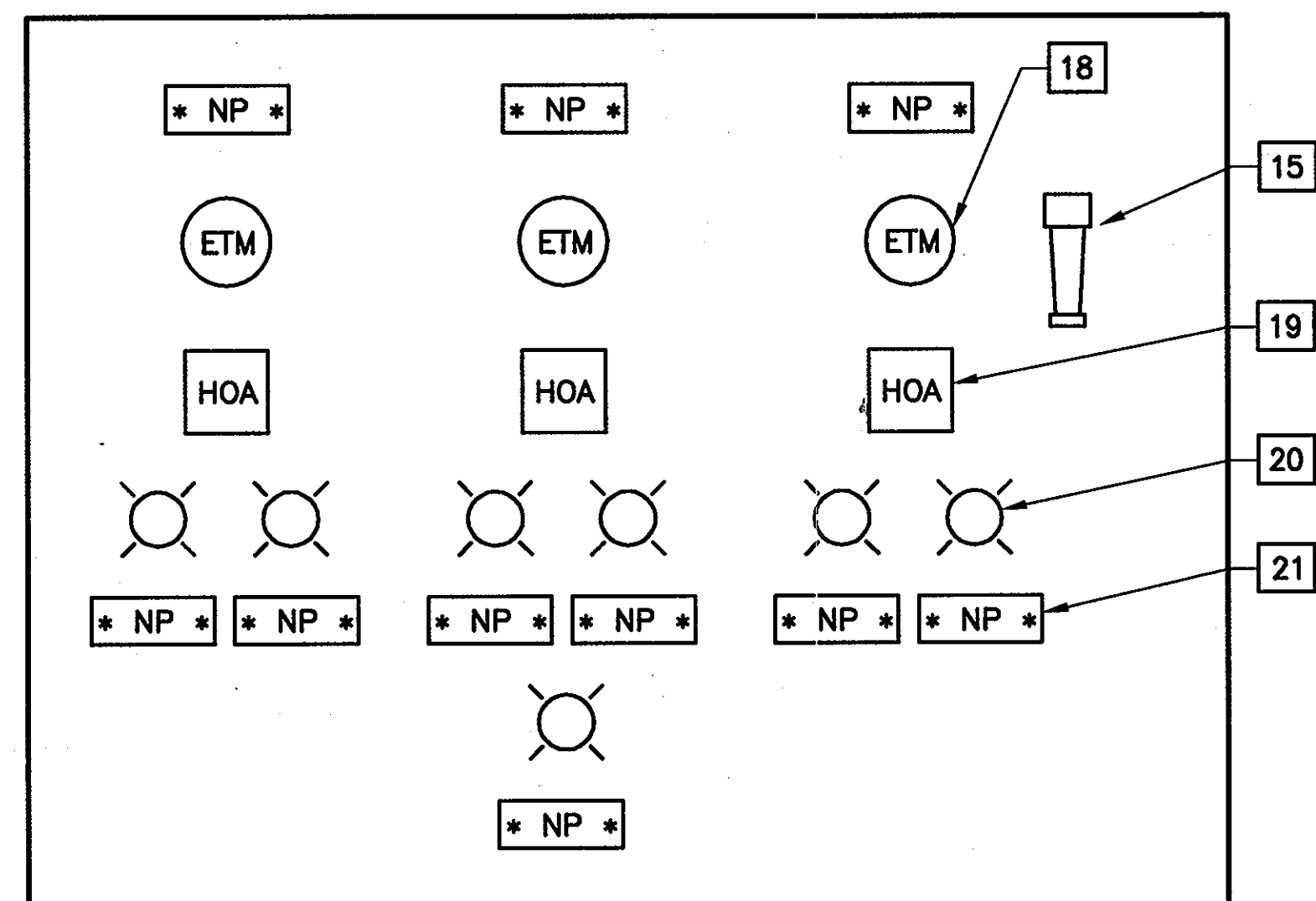
SHARED SEPTIC SYSTEM
ELECTRICAL FLOOR PLANS
AND LIGHTING SCHEDULE
600 SCALE MAP NO. 23 BLOCKS 21 & 22 AND MAP NO. 29 BLOCKS 3 & 4
FILE NAME: P:\20831575-1\20831577\CAD\Elec\Sheets\E-PP-01P-CP.dwg LAYOUT NAME: E2.1 PLOTTED: Tuesday, November 08, 2011 - 2:50pm

RIVERWOOD - PHASE 2
A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'A' THRU 'G' TO CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'T' THRU 'Z', 'AA' AND 'BB' AND NON-BUILDABLE BULK PARCEL 'U' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S', AND 'U' TO ADD OR MODIFY FOREST CONSERVATION AREAS
THIRD ELECTION DISTRICT
CONTRACT NO. 50-4287-D

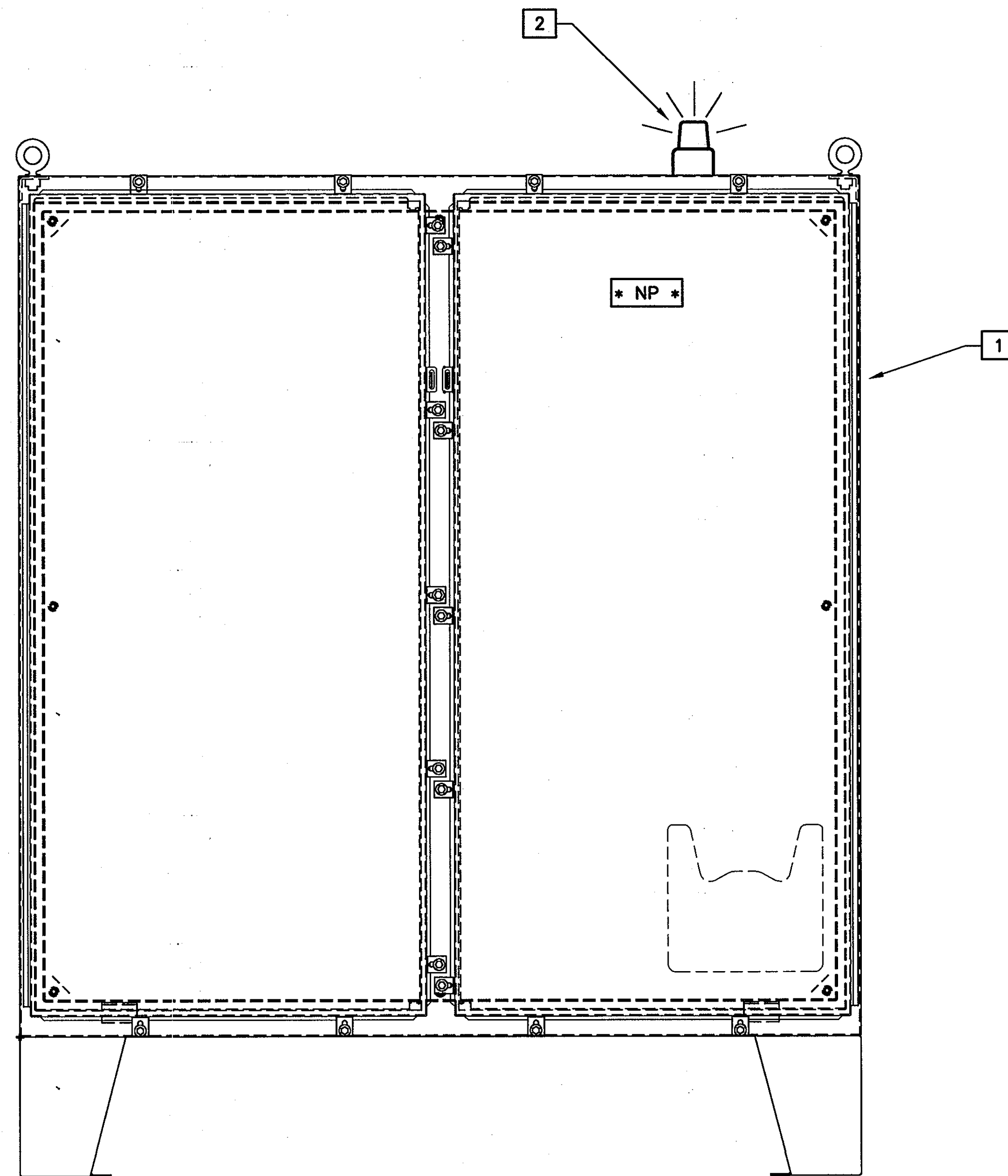
E2.1
SCALE:
AS SHOWN
SHEET NO.
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PUMP STATION BACK PANEL LAYOUT ③
SCALE: NTS



PUMP STATION INNER DOOR PANEL LAYOUT
SCALE: NTS



PUMP STATION FREE STANDING CABINET - FRONT VIEW ① ②
SCALE: NTS

DRAWING NOTES:

- ① THE CONTROL PANEL SHALL BE AS MANUFACTURED BY MICRO-TECH DESIGNS, INC. AND SHALL BE UL-508 LABELED. THEIR PHONE NUMBER IS (410) 239-2885. CAD DRAWINGS SHALL BE SUBMITTED FOR APPROVAL ALONG WITH HEAT LOAD CALCULATIONS, CONTROL POWER TRANSFORMER SIZING CALCULATIONS, CONTROL DIAGRAMS AND BILL OF MATERIAL.
- ② REFER TO CONTROL DIAGRAM ON DRAWING E4.2 AND SITE PLAN ON DRAWING E2.1 FOR LOCATION.
- ③ REFER TO SINGLE-LINE DIAGRAM & EQUIPMENT SCHEDULE FOR WIRING/CONDUIT INFORMATION.
- ④ WIRES FOR:
1. COMMON ALARM
2. PUMP-1, FOR CAUSTIC PUMPS
3. PUMP-2, FOR CAUSTIC PUMPS

BILL OF MATERIAL: (OR APPROVED EQUAL)

- ① NEMA 4X FREESTANDING CABINET - HOFFMAN, CAT #A-74H7224SSLP
- ② RED FLASHING LIGHT - FEDERAL SIGNAL CORPORATION, MODEL #141
- ③ TERMINAL BLOCKS - IDEC, CAT #BNH30W
- ④ WIRE MANAGEMENT - PANDUIT, CAT #G2.5X3LG6
- ⑤ FWR STARTERS - SQUARE D, CLASS 8536, TYPE SB01
- ⑥ CONTROL RELAYS/DIN RAIL - SQUARE D, TYPE CA2KN22
- ⑦ CABINET HEATER/THERMOSTAT - HOFFMAN, CAT #D-AH8001B
- ⑧ ALTERNATOR/DIN RAIL - DIVERSIFIED ELECTRONICS, CAT#ARB-120-ABA
- ⑨ RECEPTACLE - ARROW HART, CAT #GF5242BK
- ⑩ LIGHT SWITCH - ARROW HART, CAT #1891
- ⑪ CONTROL POWER TRANSFORMER/FUSES - SQUARE D, CLASS 9070, TYPE TF2000
- ⑫ TVSS - SQUARE D, CAT #12740
- ⑬ PHASE MONITOR - SQUARE D, CAT #RM4U
- ⑭ CIRCUIT BREAKERS/DIN RAIL - SQUARE D, CLASS 720
- ⑮ MAIN CIRCUIT BREAKER W/ DEAD FRONT OPERATOR - SQUARE D, CLASS 650
- ⑯ LIGHT - HOFFMAN, CAT #A-LF16M48
- ⑰ PERCENTAGE TIMER - SQUARE D, CLASS 9050, TYPE JCK
- ⑱ ELAPSED TIME METERS - REDINGTON, CAT#711-0160
- ⑲ HOA SWITCHES - SQUARE D, CLASS 9001, TYPE SKS43BH13
- ⑳ LED INDICATING LIGHTS - SQUARE D, CLASS 9001, TYPEJP38LRR29
- ㉑ NAME PLATES - CUSTOMED FABRICATED, LAMINATED
- ㉒ ULTRASONIC LEVEL CONTROLLER (PROVIDED BY OTHERS)

APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT

Peter Reilenson 9/14/07
COUNTY HEALTH OFFICER DATE

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 10714, Expiration Date: 12/1/2007.



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND

URS
URS CORP.
CONSULTING ENGINEERING AND PLANNING
1099 Winterson Road
Linthicum, MD 21090
Phone: 410-855-6160 Fax: 410-855-6163

DESIGN: TAH			
DRAFT: TAH			
CHK: RRW			
DATE: 5/2007			
BY	NO.	REVISIONS	DATE

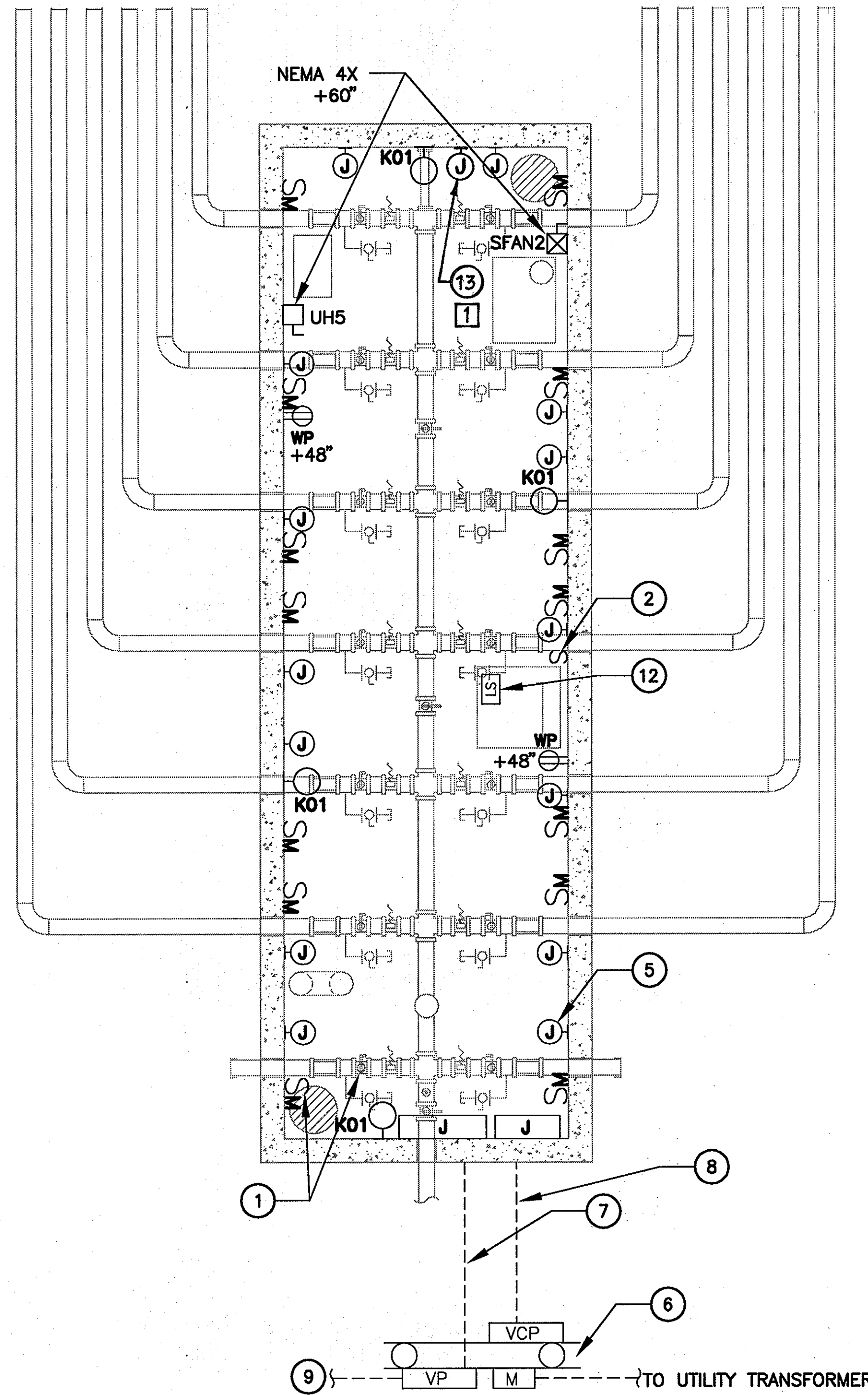
SHARED SEPTIC SYSTEM
INFLUENT PUMPING STATION
PLAN & DETAILS

RIVERWOOD - PHASE 2
A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'T' THRU 'Z', 'AA' AND 'BB' AND NON-BUILDABLE BULK PARCEL 'H' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S', AND 'U' TO ADD OR MODIFY FOREST CONSERVATION AREAS
THIRD ELECTION DISTRICT
CONTRACT NO. 50-4287-D

E3.1

SCALE:
AS SHOWN

SHEET NO.
37 of 56



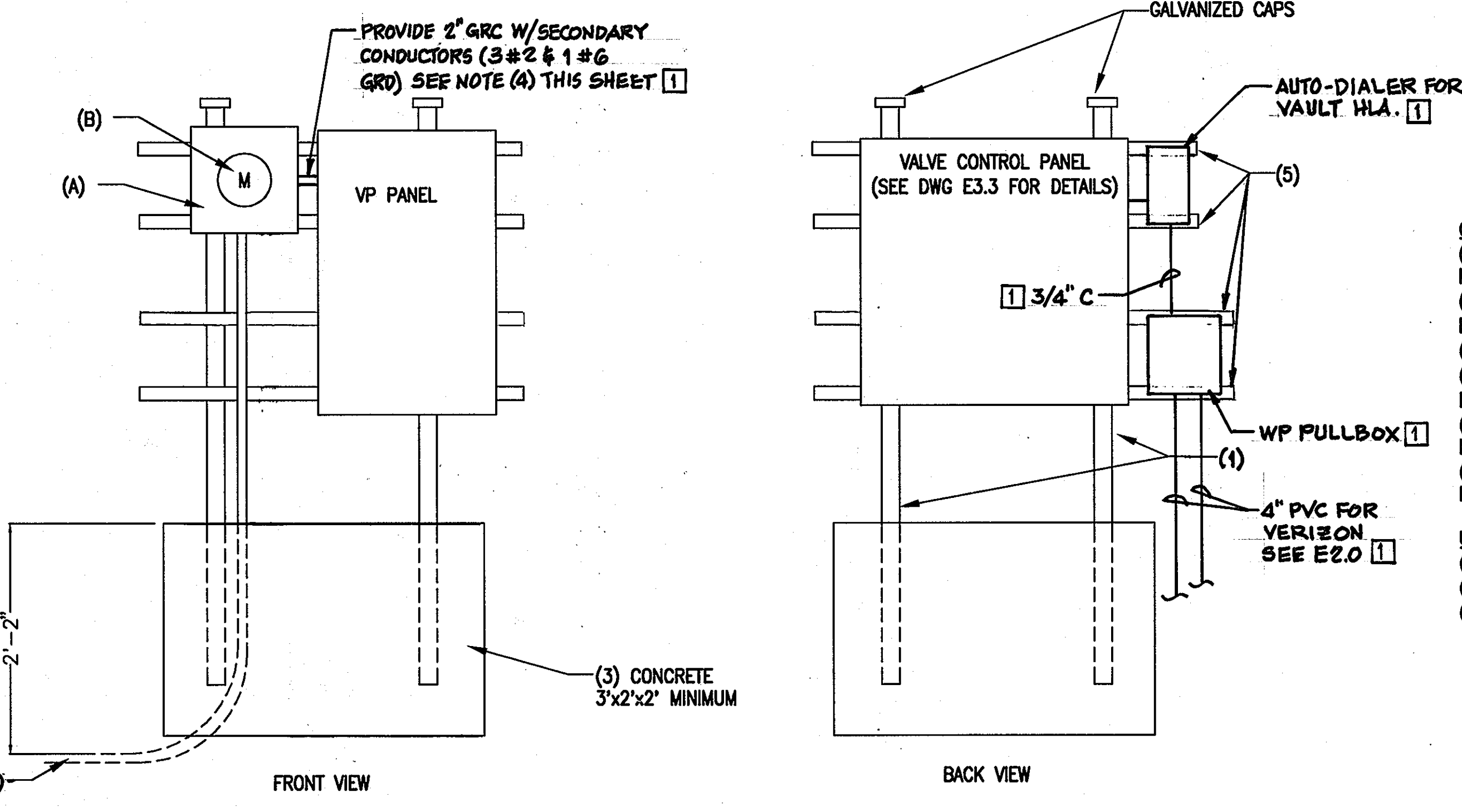
ELECTRICAL PLAN - VALVE VAULT
SCALE:NTS

VP																				
BUS NUMBER: 1				AMPERE RATING: 100				VOLTAGE (L-L): 240				PHASE: 1								
SERVED FROM: N/A				MAIN TYPE: MAIN BREAKER				VOLTAGE (L-N): 120				WIRE: 3								
MOUNTING: SURFACE				LUG OPTIONS:								MIN. KAIC:								
REMARKS:																				
CKT NO.	CIRCUIT BRKR TRIP P	LOAD DESCRIPTION	C O D E	LOAD KVA	BRANCH CIRCUIT			BRANCH CIRCUIT			C O D E	LOAD DESCRIPTION	CIRCUIT BRKR TRIP P	CKT NO.						
					PHASE/NEUT	WIRE SIZE	GND SIZE	PHASE/NEUT	WIRE SIZE	GND SIZE										
1	20	1	L	1.00	1	2	12	12	3/4	1	2	12	12	3/4	3.30	H	UNIT HEATER #5	20	2	2
3	20	1	R	0.50	1	2	12	12	3/4						3.30	H				
5	15	1	N	0.10	1	2	12	12	3/4	1	2	12	12	3/4	0.10	N	ELECTRIC VALVE	15	1	6
7	15	1	N	0.10	1	2	12	12	3/4	1	2	12	12	3/4	0.10	N	ELECTRIC VALVE	15	1	8
9	15	1	N	0.10	1	2	12	12	3/4	1	2	12	12	3/4	0.10	N	ELECTRIC VALVE	15	1	10
11	15	1	N	0.10	1	2	12	12	3/4	1	2	12	12	3/4	0.10	N	ELECTRIC VALVE	15	1	12
13	15	1	N	0.10	1	2	12	12	3/4	1	2	12	12	3/4	0.10	N	ELECTRIC VALVE	15	1	14
15	15	1	N	0.10	1	2	12	12	3/4	1	2	12	12	3/4	0.10	N	ELECTRIC VALVE	15	1	16
17	15	1	N	0.10	1	2	12	12	3/4	1	2	12	12	3/4	0.10	N	ELECTRIC VALVE	15	1	18
19	2									1	2	12	12	1/2	0.50	M	VALVE CONTROL PANEL	20	1	20
																	DIALER 1	20	1	22
23	20	1	D	0.69	1	2	12	12	3/4								SPARE	20	1	24

NEC ART. 220 LOAD CATEGORY	TOTAL CONNECTED LOAD (KVA)	NEC ART. 220 FEEDER SIZING FACTOR	NEC ART. 220 FEEDER SIZING LOAD (KVA)	PHASE BALANCE (% OF 3 PHASE LOAD)
A - HOSPITAL LIGHTING	0.00	0.00	0.00	A: 95.4% B: 104.6% C: N/A%
B - HOTEL/MOTEL LIGHTING	0.00	0.00	0.00	
C - SPACE COOLING*	0.00	0.00	0.00	BALANCED 3 PHASE NEC ART. 220 FEEDER SIZING LOAD (AMPS): 52.9A
D - OTHER HVAC LOADS	0.69	0.99	0.69	X LARGEST UNBALANCED PHASE %: x 1.04
H - SPACE HEATING*	6.60	1.25	8.25	TOTAL: 55.4 A.
K - KITCHEN APPLIANCES	0.00	0.00	0.00	+ RESERVED FUTURE CAPACITY: + 10.0 A.
L - GENERAL LIGHTING	1.00	1.24	1.24	TOTAL UNBALANCED 3 PHASE NEC ART. 220 FEEDER SIZING LOAD: 65.4 A.
M - MISC. CONTINUOUS	0.50	0.50	0.50	
N - MISC. NONCONTINUOUS	1.40	1.00	1.40	
R - RECEPTACLES	0.50	0.99	0.50	
W - WAREHOUSE LIGHTING	0.00	0.00	0.00	
LARGEST MOTOR**	0.00	0.25	0.00	
	10.69		12.71	MIN. NEC ART. 220 REQUIRED OVERCURRENT PROTECTION: 70 A.

* NON-COINCIDENTAL LOADS. LARGEST LOAD INCLUDED IN TOTAL. ** LARGEST MOTOR LOAD INCLUDED IN CATEGORIZED LOADS.

- DRAWING NOTES:**
- NEMA 4X MOTOR RATED SWITCH FOR ELECTRIC OPERATED BUTTERFLY VALVE. MOUNT AT 48" AFF. (TYP OF 14).
 - NEMA 4X LIGHT SWITCH MOUNTED 6" BELOW TOP SLAB.
 - SEE VP PANEL SCHEDULE FOR CIRCUIT INFORMATION.
 - COORDINATE MOUNTING WITH BGE. SEE DETAIL 206 IN BGE GAS & ELECTRIC METERING MANUAL.
 - NEMA 4X JUNCTION BOX FOR CONTROL WIRING FOR VALES (TYPICAL OF 14).
 - FREESTANDING METER, VALVE PANEL, AND VALVE CONTROL PANEL. SEE BGE DETAIL 206 IN THE GAS & ELECTRIC METERING MANUAL FOR MOUNTING DETAILS. SEE SITE PLAN U1.6 FOR LOCATION.
 - RUN ALL POWER CIRCUITS FROM VP PANEL 24" UNDERGROUND ALL IN (1) 2" RGS CONDUIT TO JUNCTION BOX IN VALVE VAULT. CORE DRILL INTO VAULT. USE SEALANT TO SEAL PENETRATION. RUN INDIVIDUAL CONDUITS ALONG THE WALL FROM JUNCTION BOX TO EACH MANUAL MOTOR STARTER FOR THE VALVES.
 - RUN ALL COMMUNICATION CABLE 24" UNDERGROUND FROM VCP PANEL TO JUNCTION BOX IN VALVE VAULT IN (1) 1-1/2" RGS CONDUIT. CORE DRILL INTO VAULT AND USE SEALANT TO SEAL PENETRATION. RUN INDIVIDUAL CONDUITS ALONG THE WALL FROM JUNCTION BOX TO EACH VALVE.
 - TO GROUND GRID CONSISTING OF (3) 10' LONG 3/4" DIAMETER GROUND ROUNDS INTERCONNECTED BY #2 BARE COPPER WIRE EXOTHERMICALLY WELDED.
 - VALVE OPEN INDICATING LIGHT (GREEN - TYP. OF 14)
 - VALVE CLOSED INDICATING LIGHT (RED - TYP. OF 14)
 - LIMIT SWITCH
 - NEMA 4X JUNCTION BOX FOR VALVE HIGH WATER ALARM



- CUSTOMER FURNISHES AND INSTALLS:**
- TWO 2" HOT DIP GALVANIZED CONDUIT STANDARDS AND INSTALL COMPANY METER SOCKET
 - PVC CONDUIT RACEWAY (EPC 40) FOR LINE AND LOAD WIRING. ELLS SHOULD BE A MINIMUM 36" RADIUS.
 - ASSEMBLY MUST BE INSTALLED IN CONCRETE AS SHOWN.
 - SERVICE ENTRANCE WIRING FROM LOAD SID OF METER SOCKET (LEAVE 30" OF EACH CONDUCTOR FOR CONNECTION INSIDE METER SOCKET).
 - 1-1/2"x1-1/2" KINDORF FOR MOUNTING SOCKET BOXES. USE NON-CORROSIVE MOUNTING BOLTS.
 - A MINIMUM CLEAR SPACE OF 48" IN FRONT OF ALL METERING EQUIPMENT IS REQUIRED.
- UTILITY COMPANY FURNISHES AND INSTALLS:**
- METER SOCKET (CUSTOMER SHALL INSTALL)
 - WATT-HOUR METER
 - SERVICE LATERAL

1 DISTRIBUTION VALVE VAULT SERVICE METER, VP PANEL, & VALVE CONTROL PANEL
SCALE:NTS

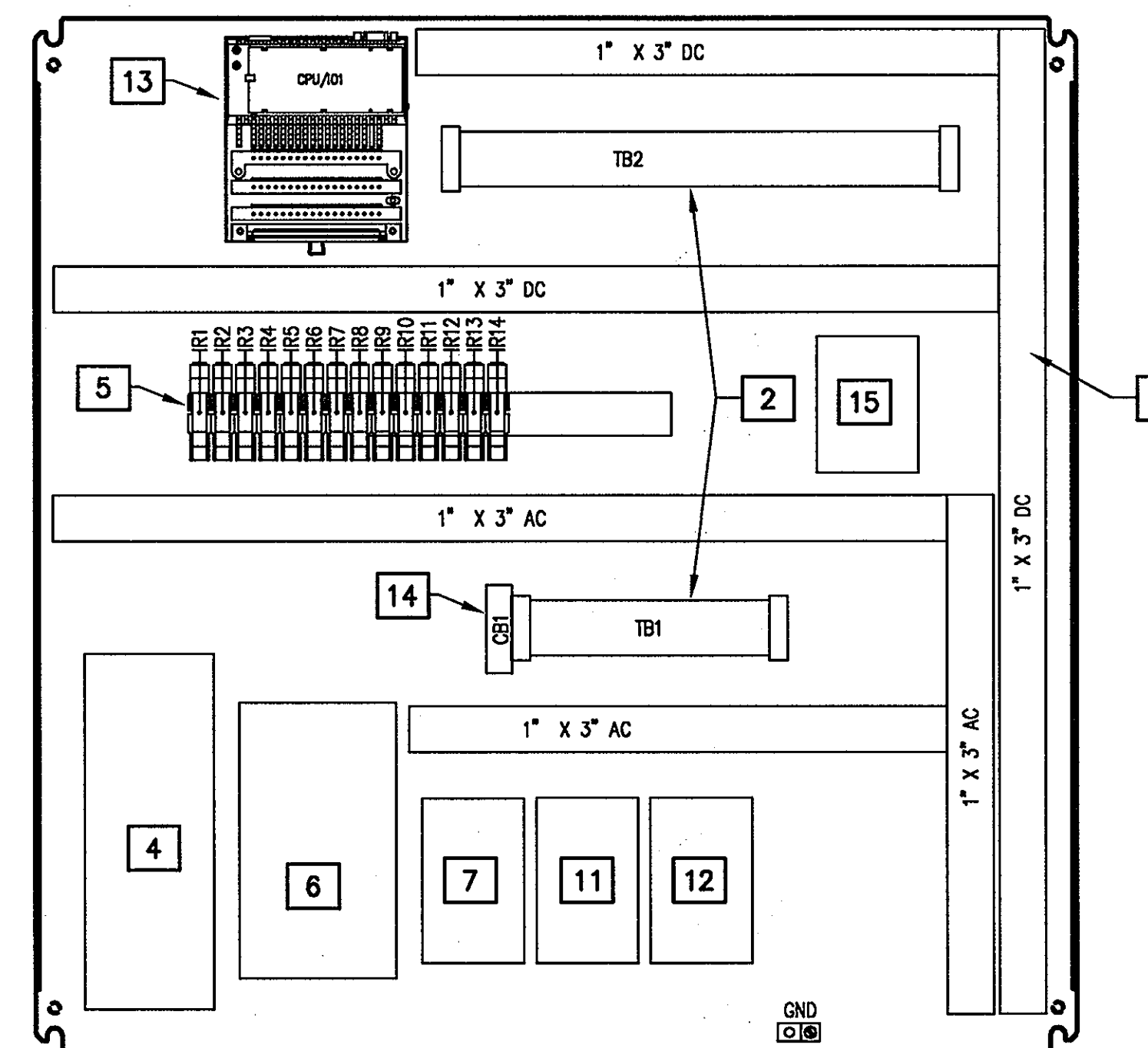
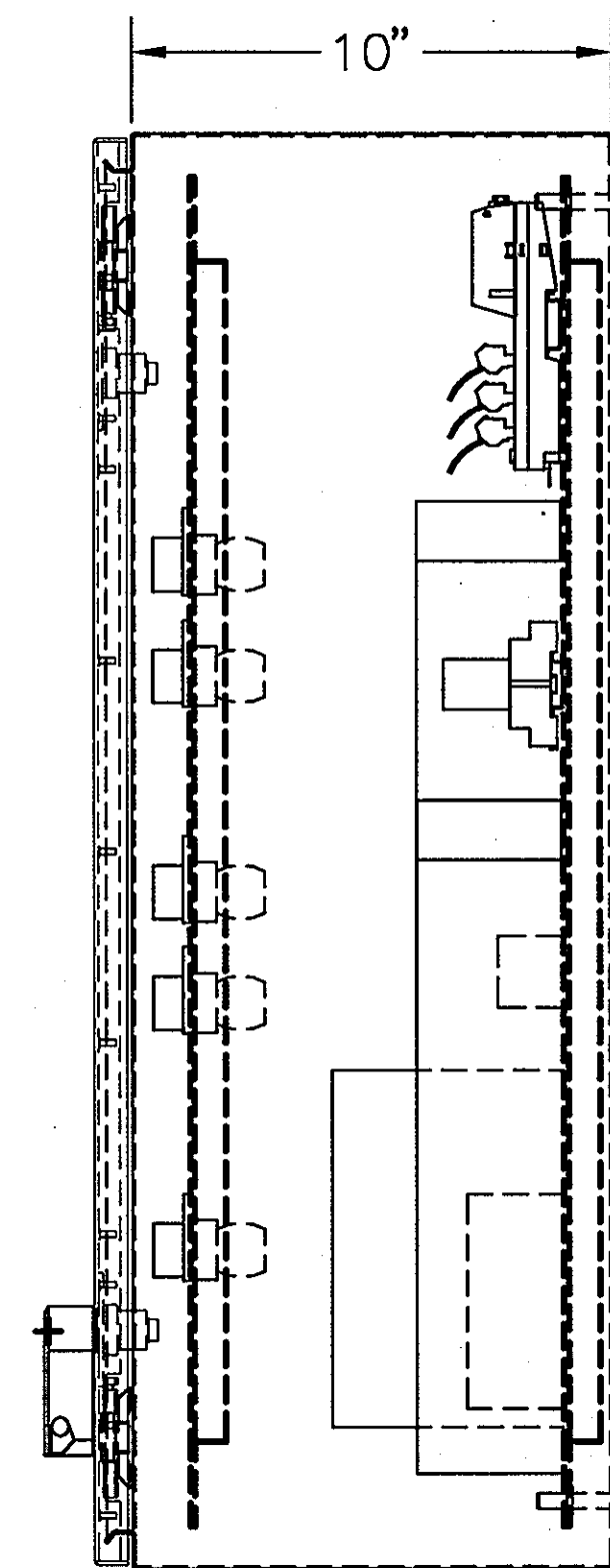
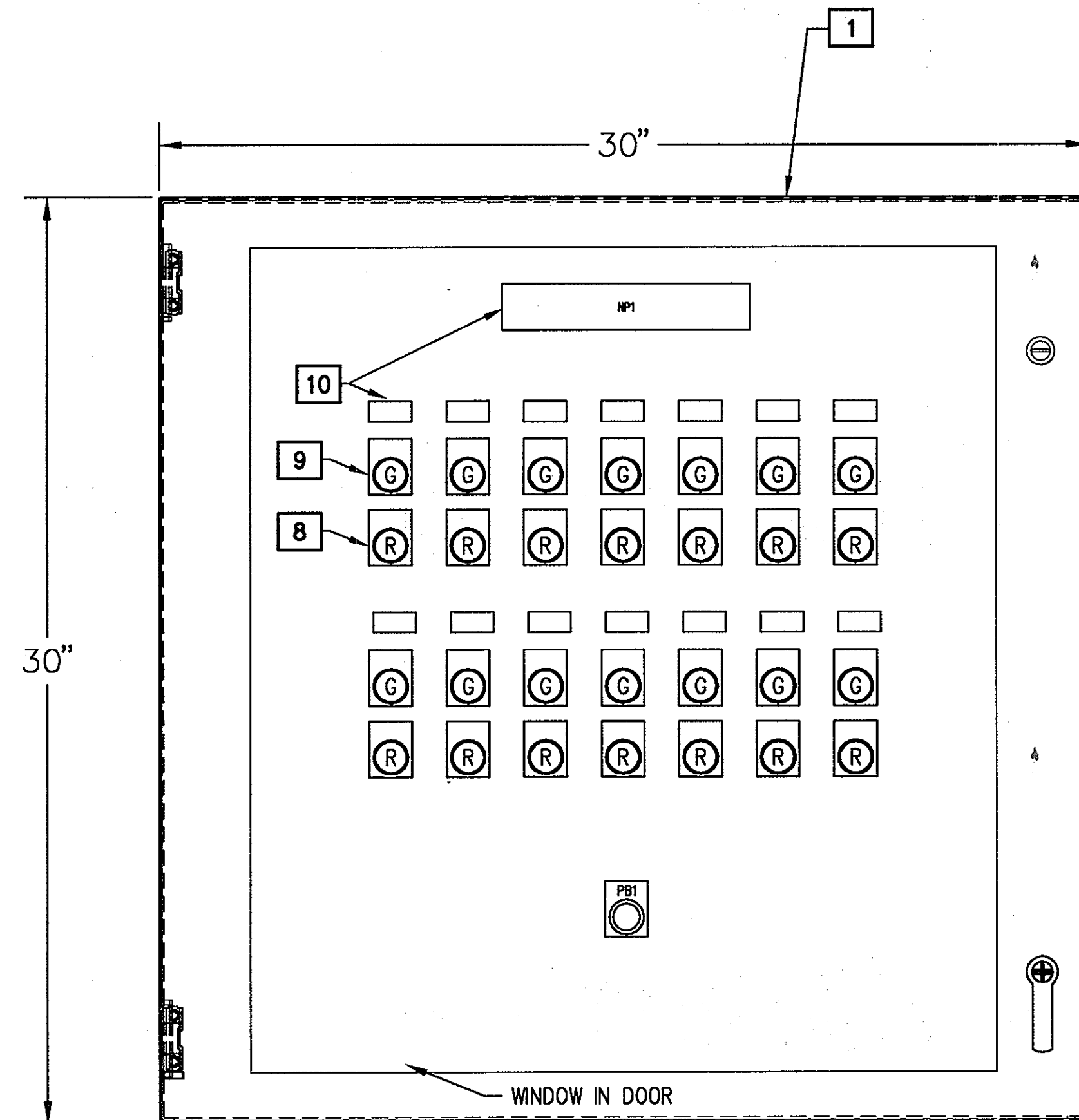
APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT <i>B. Wilson for Peter Brileman</i> 9/17/07 COUNTY HEALTH OFFICER DATE:	Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland. License No. 10714, Expiration Date: 12/1/2007.	DESIGN: TAH DRAFT: TAH CHK: RRW DATE: 5/2007	MB 1 REVISION #1 BY NO. REVISIONS DATE: 4-28-11	SHARED SEPTIC SYSTEM DISTRIBUTION VALVE VAULT PLAN & DETAILS	RIVERWOOD - PHASE 2 A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'T' THRU 'Z', 'AA' AND 'BB' AND NON-BUILDABLE BULK PARCEL 'I' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S', AND 'U' TO ADD OR MODIFY FOREST CONSERVATION AREAS THIRD ELECTION DISTRICT CONTRACT NO. 50-4287-D	SCALE: AS SHOWN SHEET NO. 38 of 56
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DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND
 DEPARTMENT OF PLANNING AND ZONING HOWARD COUNTY, MARYLAND
 URS CORP. CONSULTING ENGINEERING AND PLANNING 1099 Winterson Road Linthicum, MD 21090 Phone: 410-855-6160 Fax: 410-855-6163
 STATE OF MARYLAND PROFESSIONAL ENGINEER
 600 SCALE MAP NO. 23 BLOCKS 21 & 22 AND MAP NO. 29 BLOCKS 3 & 4
 FILE NAME: P:\20831575-20831577\CAD\Elec\Sheets\E-DT-02P.dwg LAYOUT NAME: Layout1 PLOTTED: Friday, July 20, 2007 - 1:45pm

NOTES:

THE CONTROL PANEL SHALL BE AS MANUFACTURED BY MICRO-TECH DESIGNS, INC. AND SHALL BE UL-508 LABELED. THEIR PHONE NUMBER IS (410) 239-2885. CAD DRAWINGS SHALL BE SUBMITTED FOR APPROVAL ALONG WITH HEAT LOAD CALCULATIONS, CONTROL POWER TRANSFORMER SIZING CALCULATIONS, CONTROL DIAGRAMS AND BILL OF MATERIAL.

REFER TO SITE PLAN U1.6 FOR LOCATION.



BILL OF MATERIAL: (OR APPROVED EQUAL)

- 1 NEMA 4X CABINET - HOFFMAN, 30"x30"x10"
- 2 TERMINAL BLOCKS - IDEC, CAT #BNH30W
- 3 WIRE MANAGEMENT - PANDUIT, CAT #G2.5X3LG6
- 4 FVNR STARTERS - SQUARE D, CLASS 8536, TYPE SB01
- 5 CONTROL RELAYS/DIN RAIL - SQUARE D, TYPE CA2KN22
- 6 CABINET HEATER/THERMOSTAT - HOFFMAN, CAT #D-AH8001B
- 7 RECEPTACLE - ARROW HART, CAT #GF5242BK
- 8 PILOT LIGHT (TYP OF 14) - RED - SQUARE D, CLASS 9001, TYPEJP38LRR29
- 9 PILOT LIGHT (TYP OF 14) - GREEN- SQUARE D, CLASS 9001, TYPEJP38LGG29
- 10 NAME PLATES - CUSTOMED FABRICATED, LAMINATED
- 11 CONTROL POWER SURGE PROTECTOR
- 12 24VDC POWER SUPPLY
- 13 CENTRAL PROCESSING UNIT
- 14 10 AMP CIRCUIT BREAKER
- 15 PERCENTAGE TIMER - SQUARE D, CLASS 9050, TYPE JCK

DISTRIBUTION VALVE VAULT CONTROL PANEL - FRONT VIEW
SCALE: NTS

DISTRIBUTION VALVE VAULT CONTROL PANEL SIDE VIEW
SCALE: NTS

DISTRIBUTION VALVE VAULT BACK PANEL LAYOUT
SCALE: NTS

APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT

B. Wilson for B. Sten. B. Silvers 9/14/07
COUNTY HEALTH OFFICER DATE

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 10714, Expiration Date: 12/1/2007.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND

URS
URS CORP.
CONSULTING ENGINEERING AND PLANNING
1099 Whiterson Road
Linthicum, MD 21090
Phone: 410-855-6160 Fax: 410-855-6163



DESIGN: TAH
DRAFT: TAH
CHK: RRW
DATE: 5/2007

SHARED SEPTIC SYSTEM

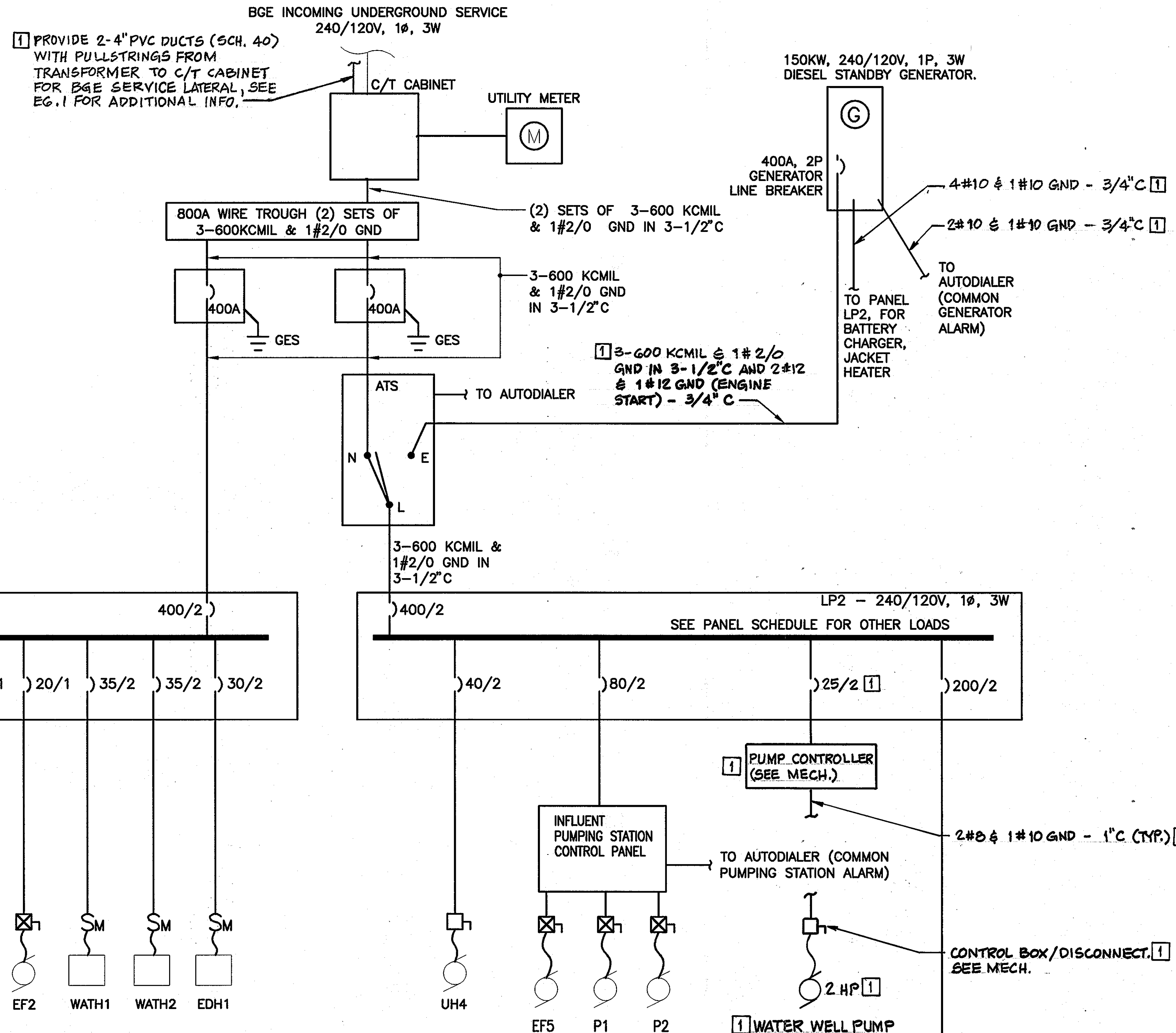
DISTRIBUTION VALVE VAULT
CONTROL PANEL DETAILS

RIVERWOOD - PHASE 2
A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'T' THRU 'Z', 'AA' AND 'BB' AND NON-BUILDABLE BULK PARCEL 'H' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S', AND 'U' TO ADD OR MODIFY FOREST CONSERVATION AREAS
THIRD ELECTION DISTRICT
CONTRACT NO. 50-4287-D

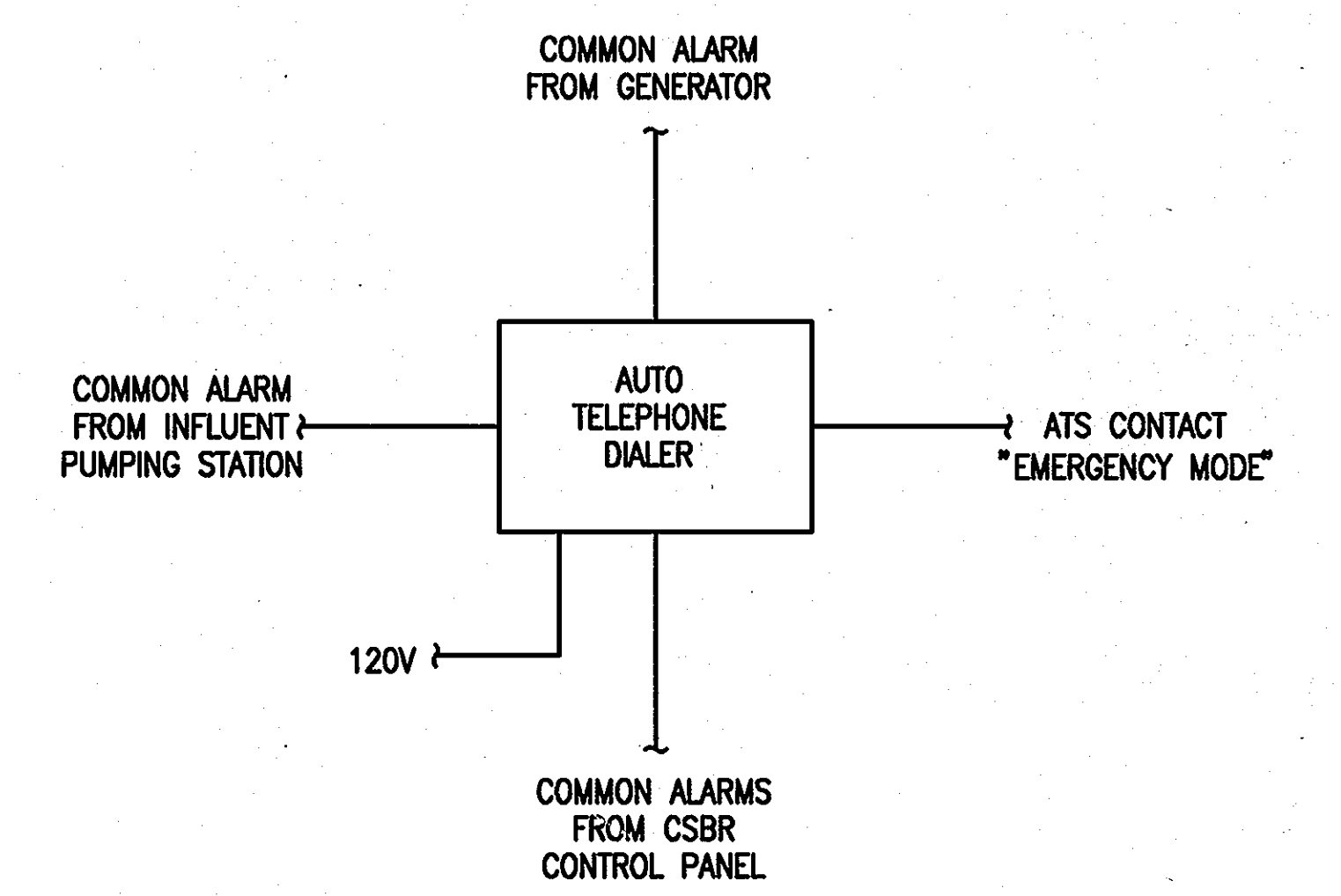
E3.3

SCALE:
AS SHOWN

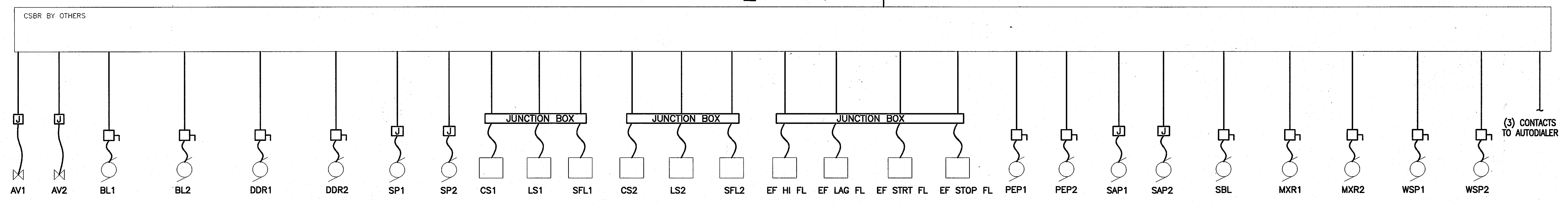
SHEET NO.
39 of 56



- DRAWING NOTES:**
1. ALL EQUIPMENT SHOWN AS DARK WEIGHT SOLID LINES DENOTES WORK WITHIN THIS CONTRACT.
 2. ALL EQUIPMENT SHOWN AS LIGHT WEIGHT LINES DENOTES EQUIPMENT PROVIDED UNDER SEPARATE CONTRACT, NOT INCLUSIVE WITHIN THIS CONTRACT.
 3. SEE EQUIPMENT CONNECTION SCHEDULES FOR WIRE AND CONDUIT SIZES FOR HVAC AND CSBR EQUIPMENT.
 4. LIQUID TIGHT FLEXIBLE METAL CONDUIT SHALL BE USED FROM DISCONNECT/JUNCTION BOX/MOTOR RATED SWITCH TO EQUIPMENT.



AUTOMATIC TELEPHONE DIALER CONNECTION DIAGRAM
SCALE: N.T.S.



ONE-LINE DIAGRAM
SCALE: N.T.S.

APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT

Wilson for Peter Bilensky 9/14/07
COUNTY HEALTH OFFICER DATE

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License No. 10714, Expiration Date: 12/1/2007.

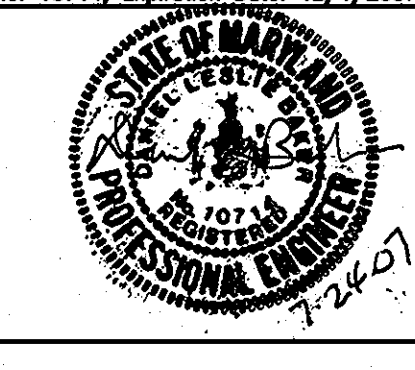
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Michael A. Fioranella 9-17-07
CHIEF, BUREAU OF UTILITIES DATE

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND

[Signature] 9/17/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

URS
URS CORP.
CONSULTING ENGINEERING AND PLANNING
1099 Whiterson Road
Linthicum, MD 21090
Phone: 410-855-6160 Fax: 410-855-6163



DESIGN: TAH	
DRAFT: TAH	
CHK: RRW	
DATE: 5/2/007	
BY: MB	REVISION #1
NO. 1	DATE: 4-28-11

SHARED SEPTIC SYSTEM

ONE-LINE DIAGRAM

600 SCALE MAP NO. 23 BLOCKS 21 & 22 AND MAP NO. 29 BLOCKS 3 & 4

RIVERWOOD - PHASE 2
A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'T' THRU 'Z', 'AA' AND 'BB' AND NON-BUILDABLE BULK PARCEL 'H' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S', AND 'U' TO ADD OR MODIFY FOREST CONSERVATION AREAS

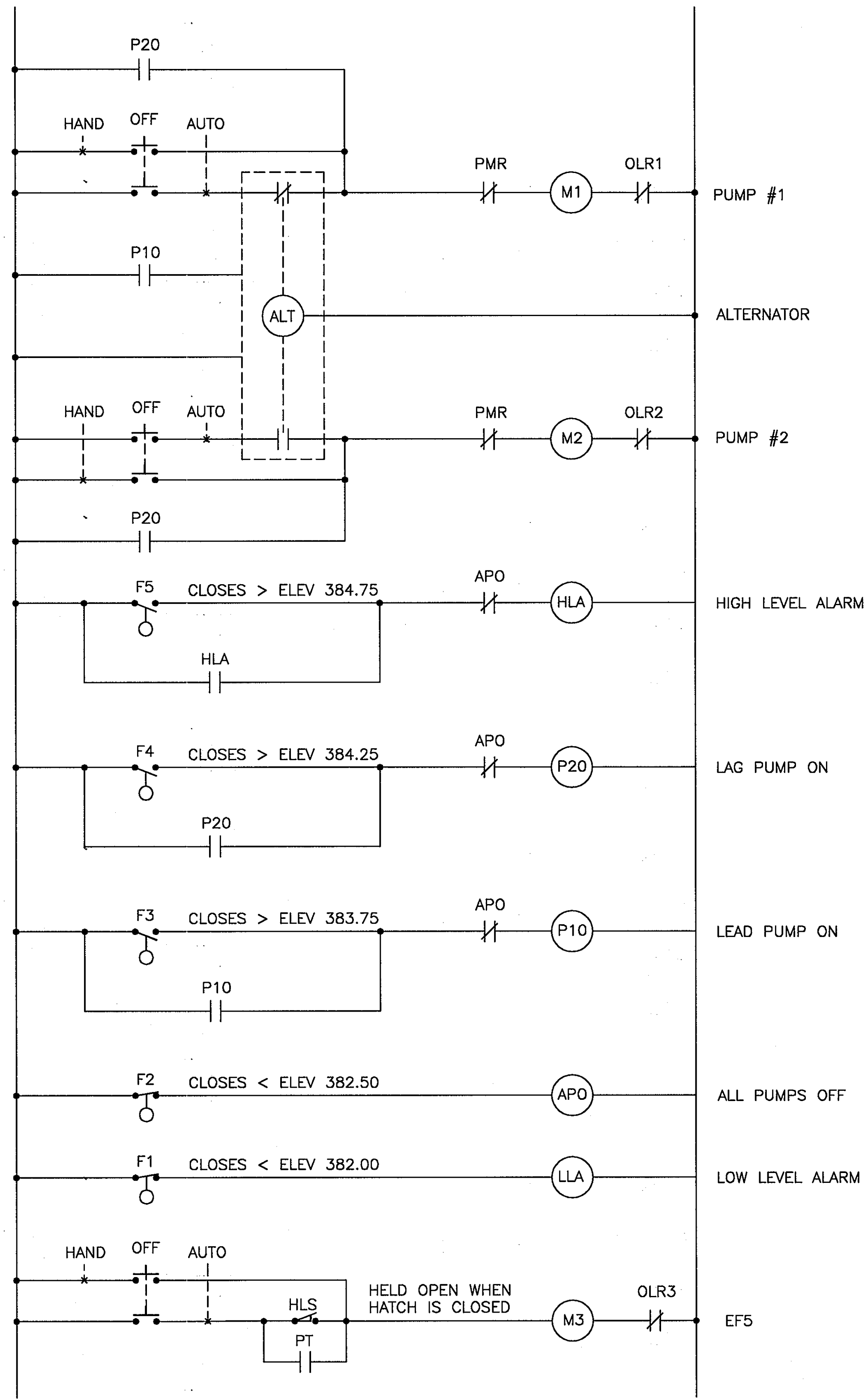
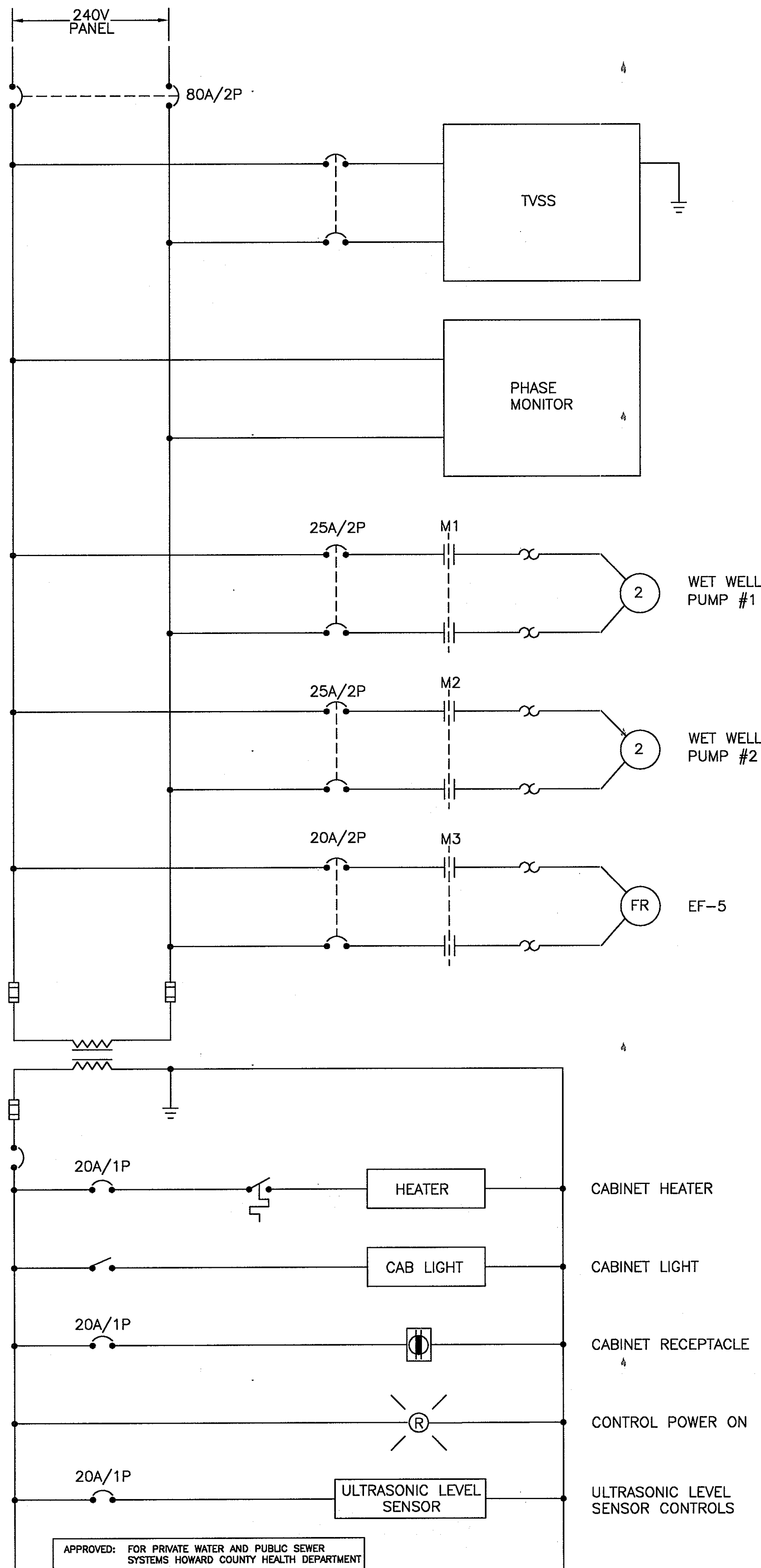
THIRD ELECTION DISTRICT

CONTRACT NO. 50-4287-D

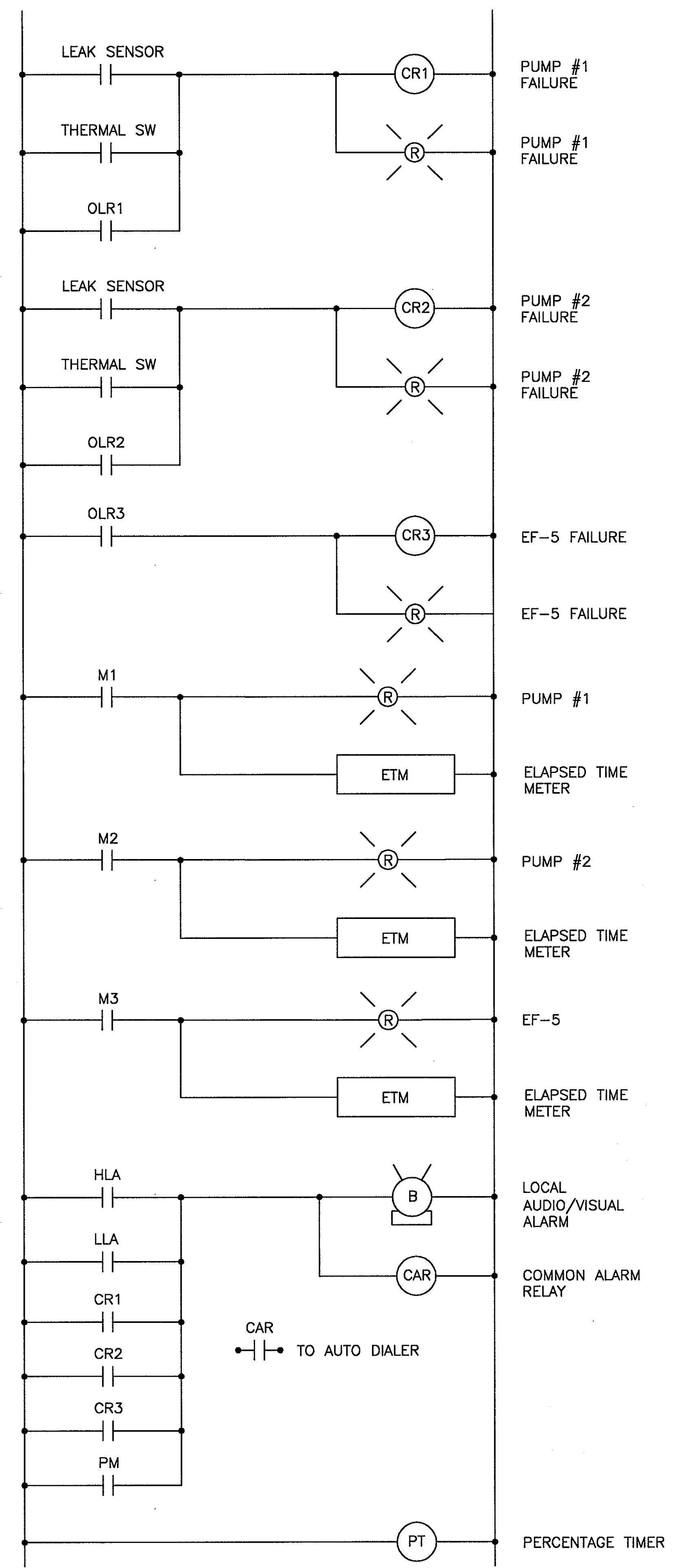
E4.1

SCALE: AS SHOWN

SHEET NO. 40 of 56



NOTE:
THE FLOAT CONTROL SYSTEM IS TO BACK UP THE ULTRASONIC LEVEL SENSOR CONTROL SYSTEM.



APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT

William for Peter Seilman 9/14/07
COUNTY HEALTH OFFICER DATE

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 10714, Expiration Date: 12/1/2007.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND



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BY	NO.	REVISIONS	DATE

SHARED SEPTIC SYSTEM

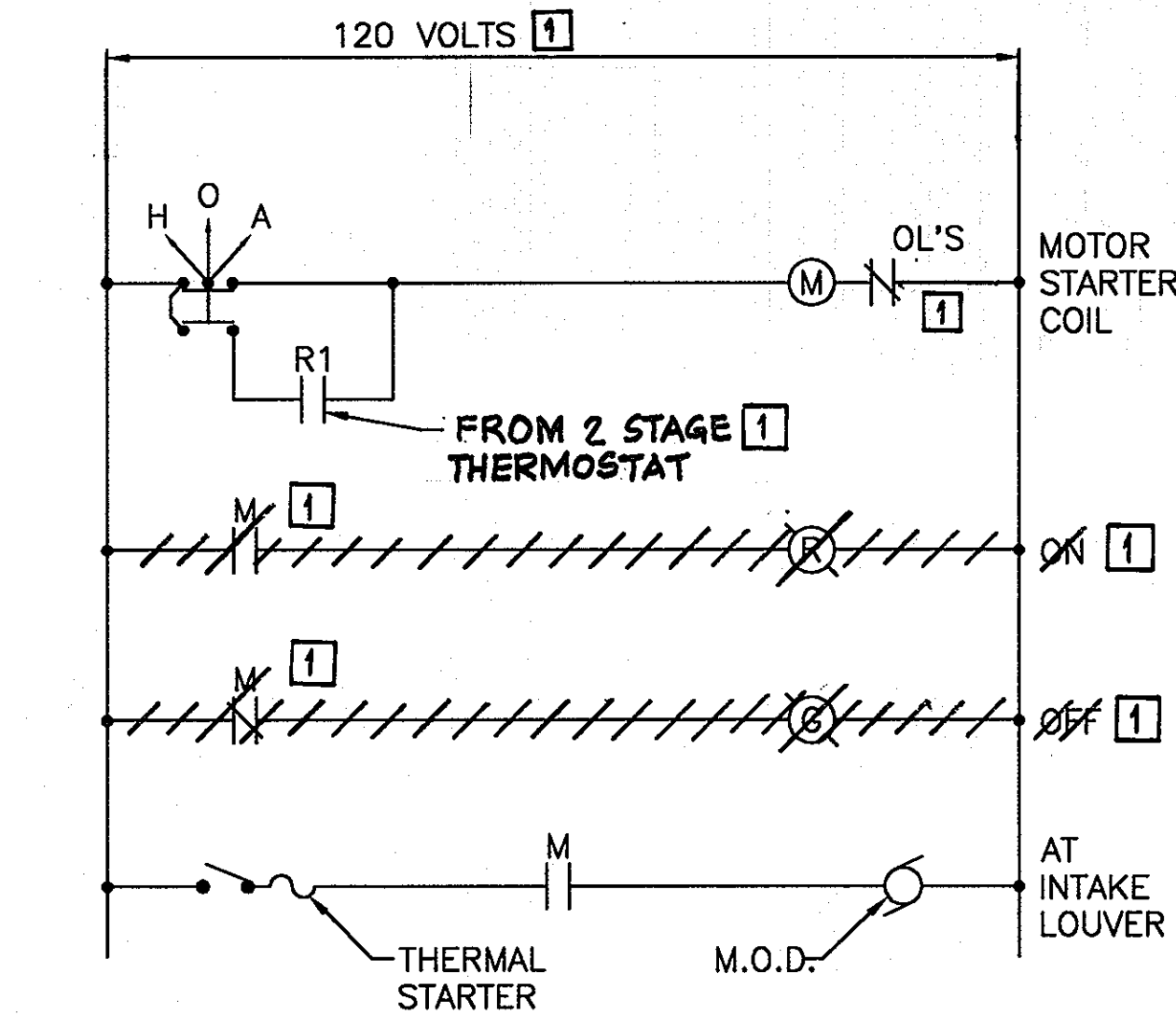
INFLUENT PUMPING STATION
CONTROL DIAGRAM

RIVERWOOD - PHASE 2
A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'T' THRU 'Z', 'AA' AND 'BB' AND NON-BUILDABLE BULK PARCEL 'H' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S', AND 'U' TO ADD OR MODIFY FOREST CONSERVATION AREAS
THIRD ELECTION DISTRICT
CONTRACT NO. 50-4287-D

E4.2

SCALE:
AS SHOWN

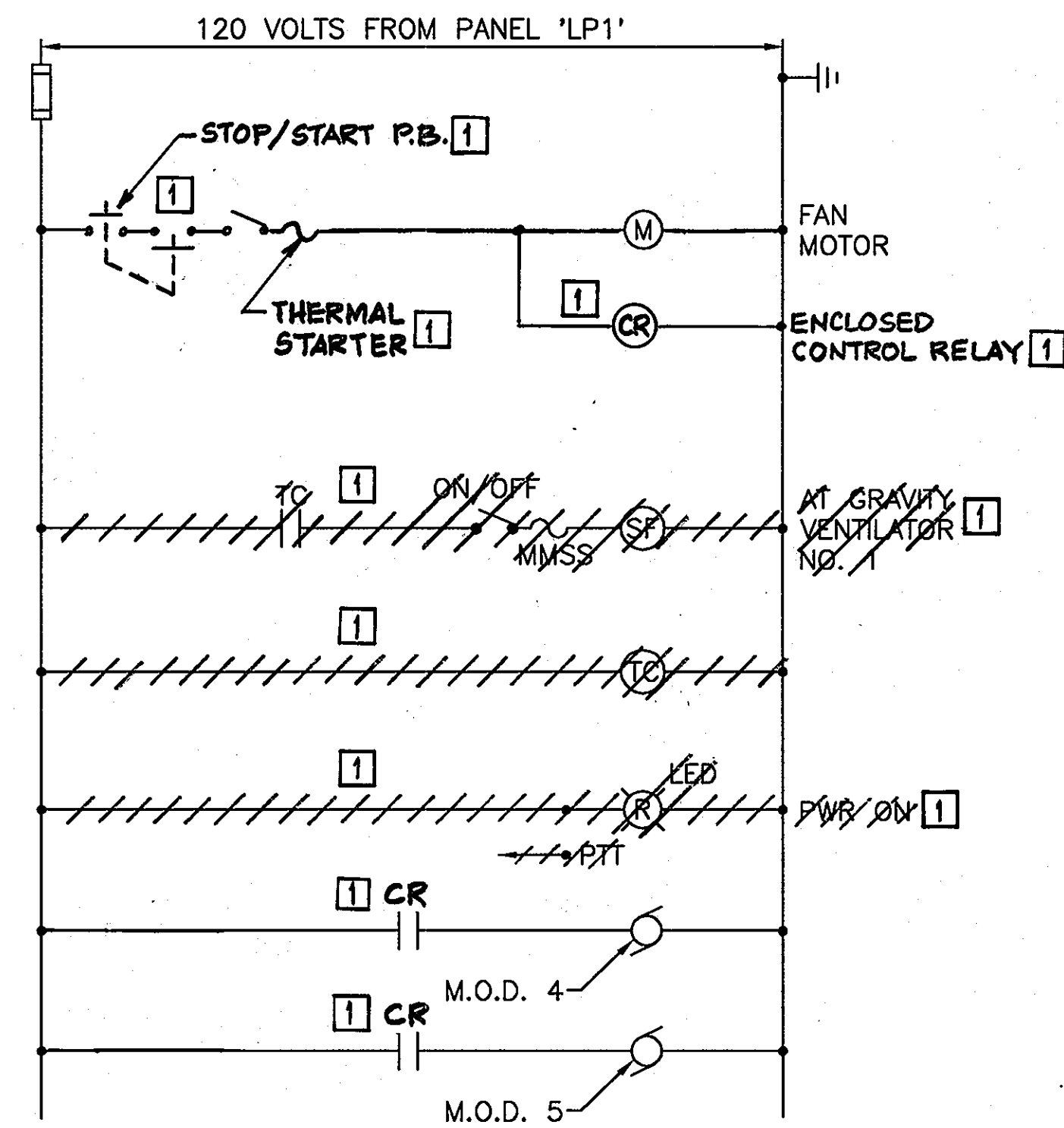
SHEET NO.
41 of 56



NOTE:
SEE MECHANICAL DRAWINGS FOR SEQUENCE OF OPERATION

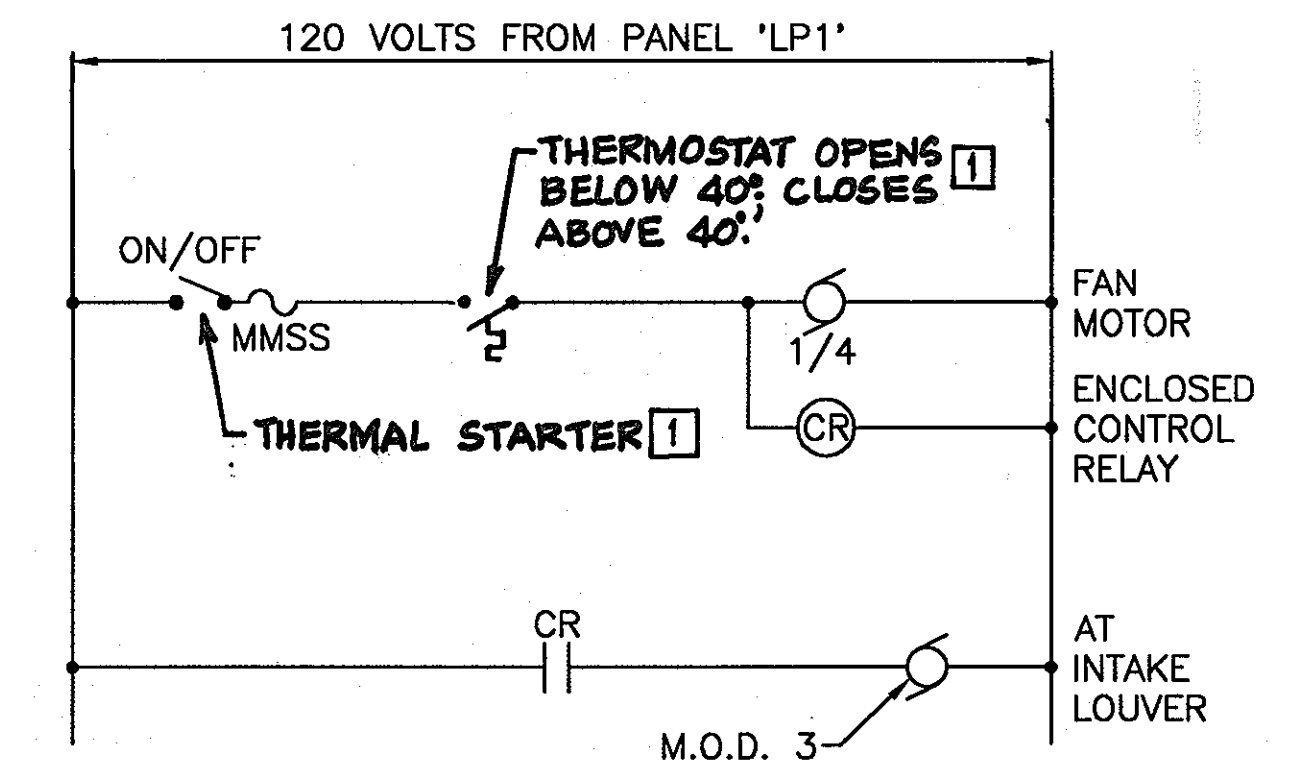
**EXHAUST FAN NO. 1 (PLANT AREA)
CONTROL DIAGRAM**

(TYP. FOR FAN NO. 2 CONTROL)
FAN 1 AND FAN 2 SHARE SAME 2 STAGE THERMOSTAT



NOTE:
SEE MECHANICAL DRAWINGS FOR SEQUENCE OF OPERATION

**SUPPLY FAN NO. 1 (LABORATORY)
CONTROL DIAGRAM**

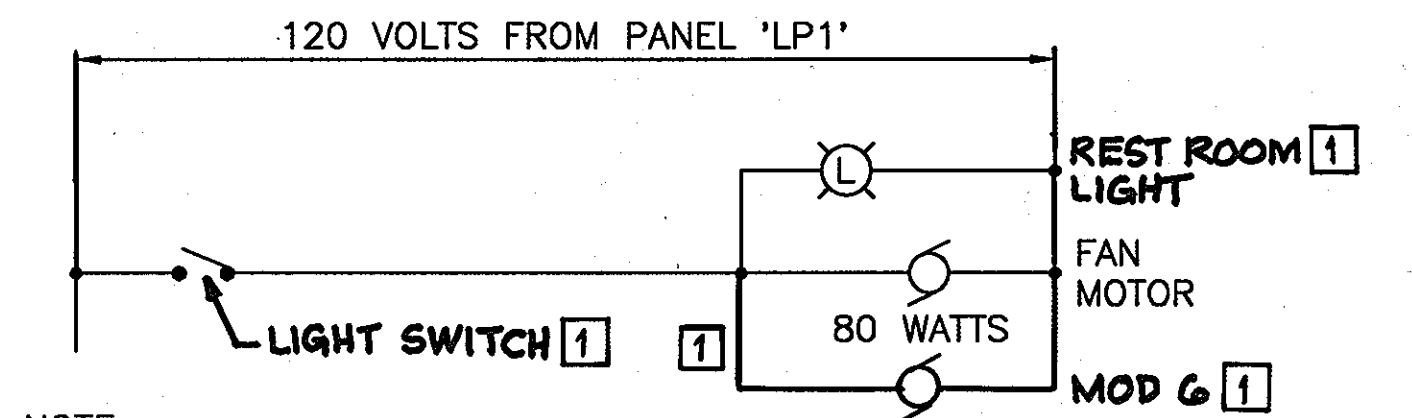


NOTE:
SEE MECHANICAL DRAWINGS FOR SEQUENCE OF OPERATION

**EXHAUST FAN NO. 3 (CHEMICAL ROOM)
CONTROL DIAGRAM**

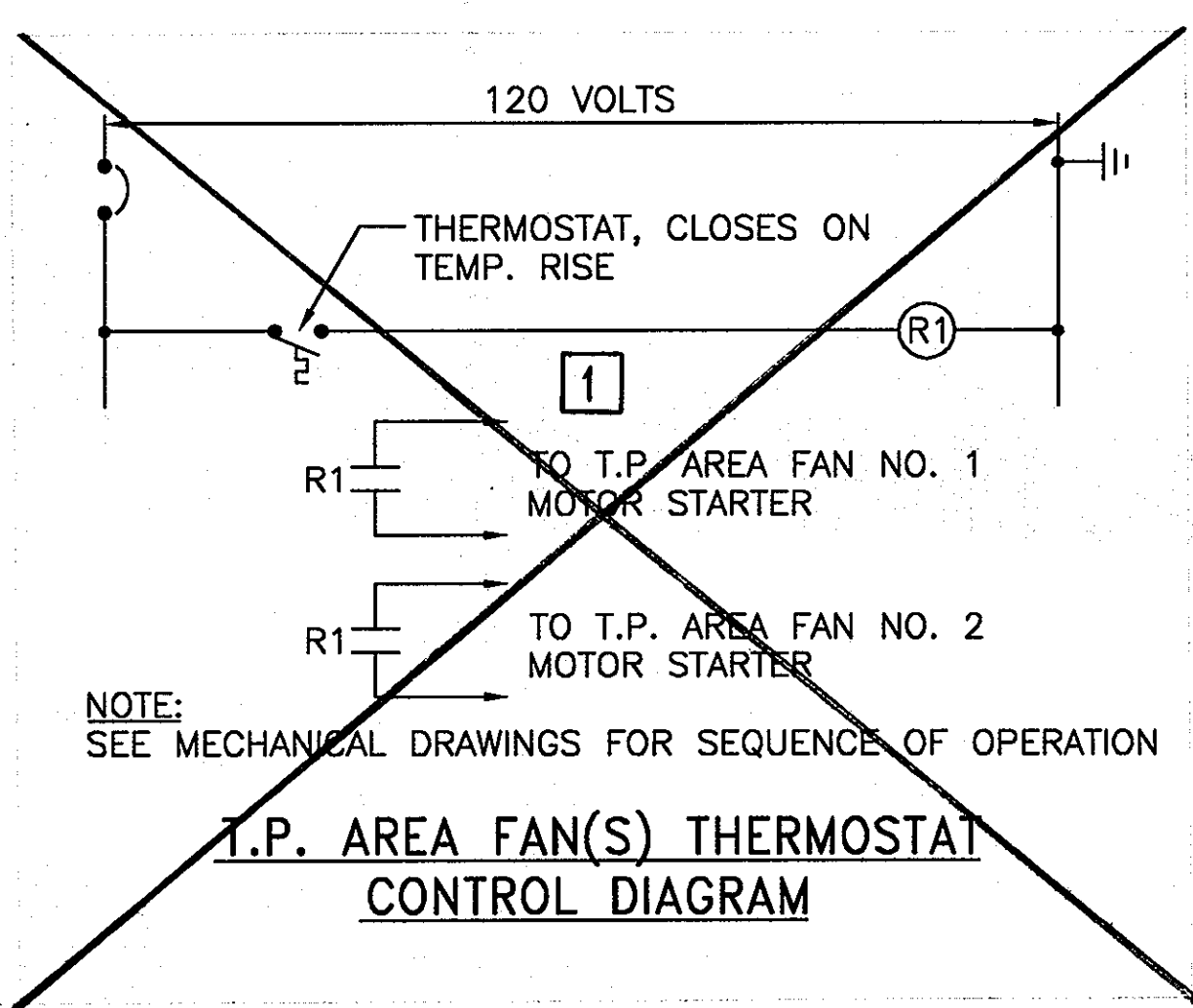
GENERAL NOTES:

- FOR THE PLC'S, PROVIDE LADDER LOGIC PRINTOUT, A DIGITAL COPY AND THE SOFTWARE PROGRAM WITH APPROPRIATE CABLES TO CONNECT TO A LAPTOP TO THE PLC FOR REPROGRAMMING.
- HOWARD COUNTY USES A MISSION CONTROL ALARM AND MONITORING SYSTEM. ALL ALARMS AND MONITORING POINTS NEED IDENTIFICATION FOR INCLUSION IN THE MISSION CONTROL SYSTEM.



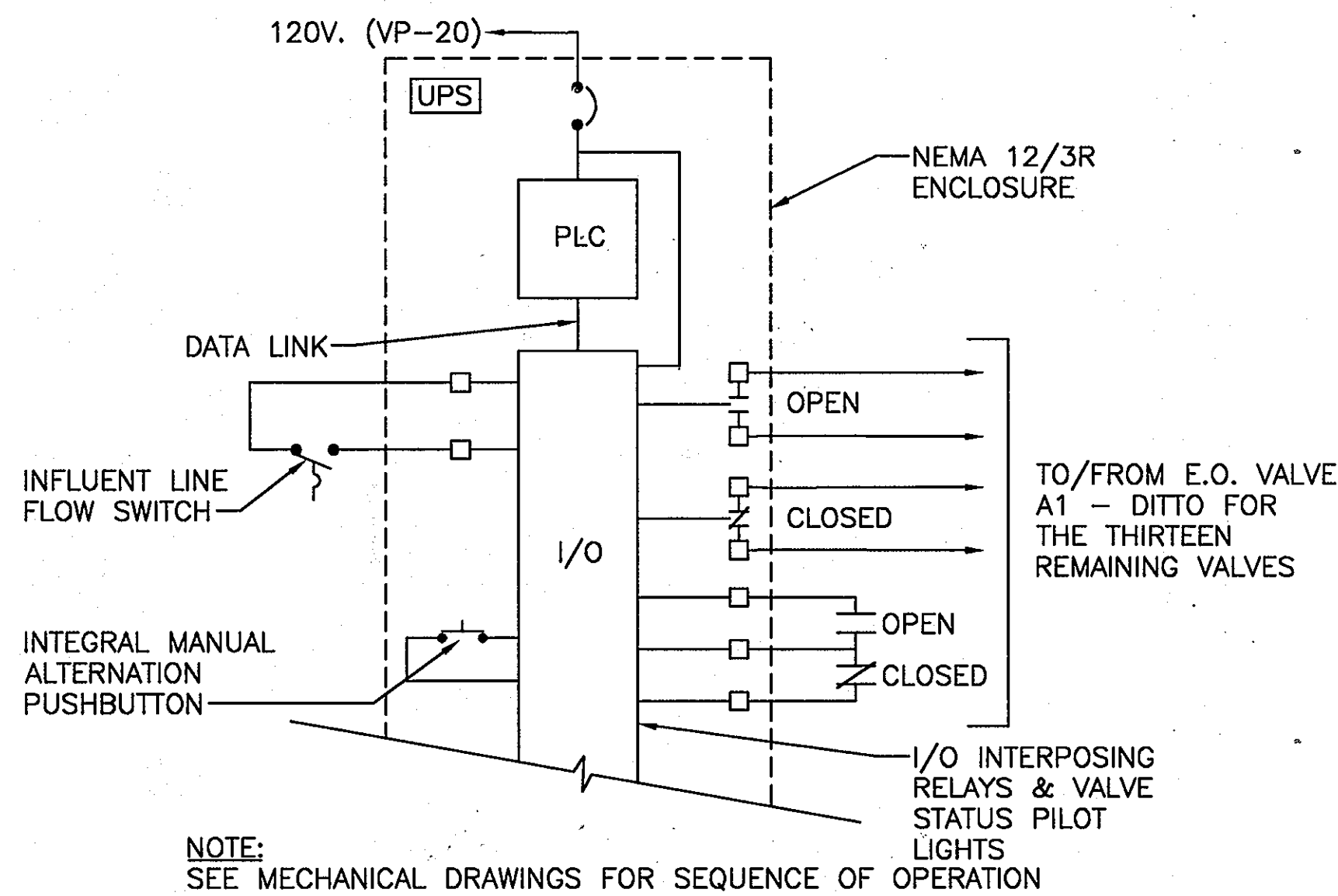
NOTE:
SEE MECHANICAL DRAWINGS FOR SEQUENCE OF OPERATION

**EXHAUST FAN NO. 4 (REST ROOM)
CONTROL DIAGRAM**



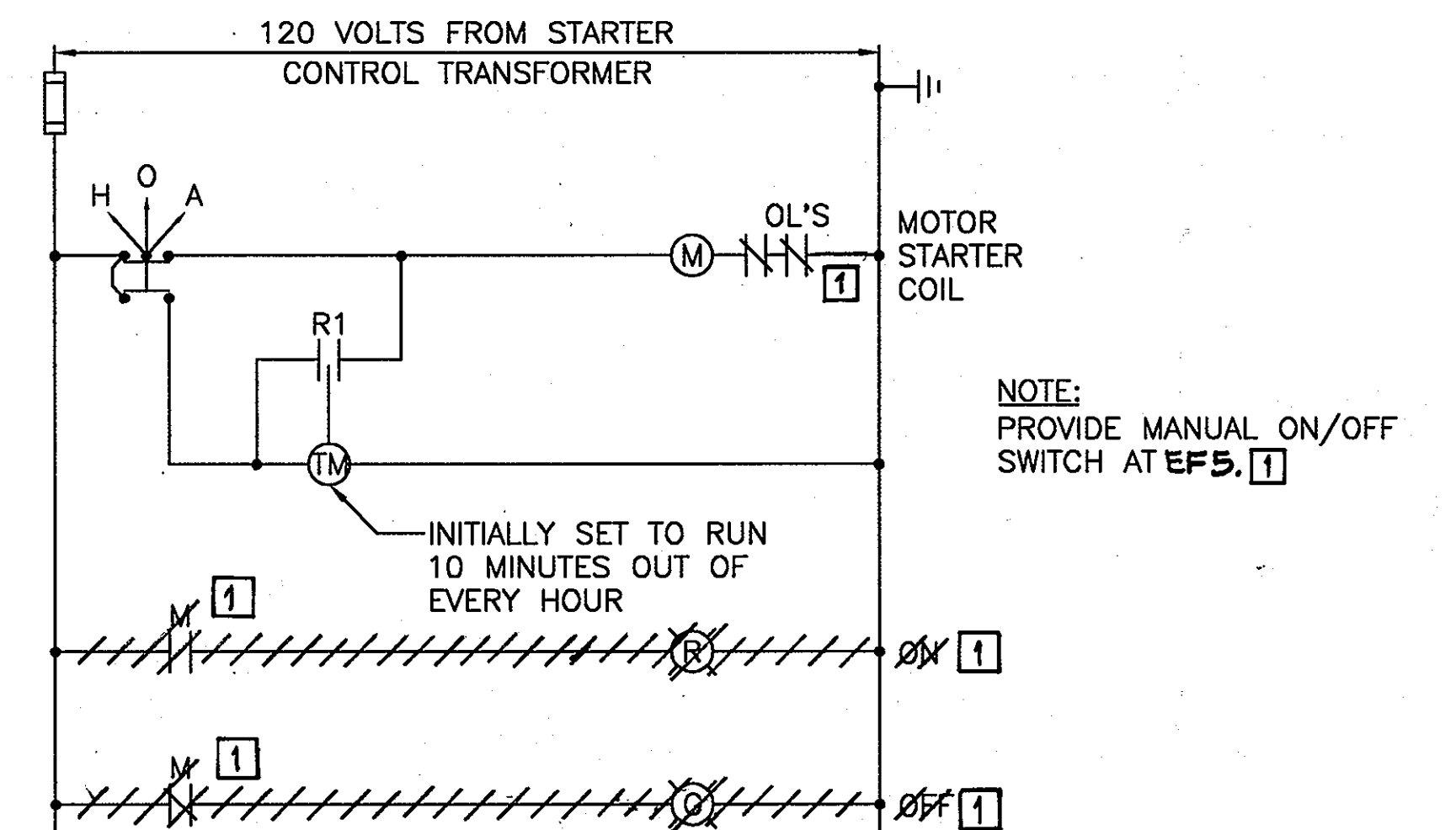
NOTE:
SEE MECHANICAL DRAWINGS FOR SEQUENCE OF OPERATION

**T.P. AREA FAN(S) THERMOSTAT
CONTROL DIAGRAM**



NOTE:
SEE MECHANICAL DRAWINGS FOR SEQUENCE OF OPERATION

**VALVE CONTROL PANEL "VCP"
CONNECTION DIAGRAM**



NOTE:
PROVIDE OVERSIZE STARTER ENCLOSURE TO ACCOMMODATE INSTALLATION OF PERCENTAGE TIMER.

**INFLUENT PUMP STATION ODOR CONTROL
FAN EF-5 CONTROL DIAGRAM**

APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT

Signature 9/11/07
COUNTY HEALTH OFFICER

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 10714, Expiration Date: 12/1/2007.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND



URS CORP.
CONSULTING ENGINEERING AND PLANNING
1099 Winterson Road
Linthicum, MD 21090
Phone: 410-855-6160 Fax: 410-855-6163



DESIGN: TAH
DRAFT: TAH
CHK: RRW
DATE: 5/2007

BY	NO.	REVISIONS	DATE
MPS	1	REVISION #1	4-28-11

SHARED SEPTIC SYSTEM

MISC. CONTRCL DIAGRAMS

RIVERWOOD - PHASE 2
A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'T' THRU 'Z', 'AA' AND 'BB' AND NON-BUILDABLE BULK PARCEL 'H' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S', AND 'U' TO ADD OR MODIFY FOREST CONSERVATION AREAS
THIRD ELECTION DISTRICT
CONTRACT NO. 50-4287-D

E4.3

SCALE:
AS SHOWN

SHEET NO.
42 of 56

CONTINUOUS SEQUENTIAL BATCH REACTOR EQUIPMENT CONNECTION SCHEDULE

CONNECTION DESIGNATION	LOAD DESCRIPTION	VOLTS	PHASE	LOAD INFORMATION						STARTER INFORMATION					DISCONNECT INFORMATION					CIRCUIT INFORMATION					CONNECTION NOTES	CONNECTION DESIGNATION									
				HP	KVA	AMPS	MCA	MOCP	EMERG. POWER REQ.	FURN. BY	INST. BY	NEMA SIZE	TYPE	STARTER DISCONNECT TYPE	TRIP OR FUSE SIZE	NEMA ENCL. TYPE	FURN. BY	INST. BY	TYPE	SWITCH RATING	POLE	FUSE OR TRIP RATING	NEMA ENCL. TYPE	CIRCUIT ID			CIRCUIT BRKR	TRIP P	BRANCH CIRCUIT	CIRCUIT	MIN. CND. SIZE	PHASE/NEUTRAL NO.	CND. SIZE		
AV1	AIR CONTROL VALVE #1	120	1	N/A	0.6	5	N/A	N/A	YES	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	CSBR1-1	20	1	2	12	12	3/4		AV1

LP1

BUS NUMBER: 1100 AMPERE RATING: 400 VOLTAGE (L-L): 240 PHASE: 1
 SERVED FROM: UTIL MAIN TYPE: MAIN BREAKER VOLTAGE (L-N): 120 WIRE: 3
 MOUNTING: SURFACE LUG OPTIONS: MIN. KAIC:

REMARKS:

CIRCUIT NO.	TRIP P	LOAD DESCRIPTION	CIRCUIT BRKR	TRIP P	LOAD KVA	PHASE/NEUTRAL	BRANCH CIRCUIT SIZE	CIRCUIT MIN. CND. SIZE	CONNECTION NOTES	CIRCUIT BRKR	TRIP P	LOAD DESCRIPTION	CIRCUIT BRKR	TRIP P	LOAD KVA	PHASE/NEUTRAL	BRANCH CIRCUIT SIZE	CIRCUIT MIN. CND. SIZE	CONNECTION NOTES	CIRCUIT BRKR	TRIP P	LOAD DESCRIPTION	CIRCUIT BRKR	TRIP P	LOAD KVA	PHASE/NEUTRAL	BRANCH CIRCUIT SIZE	CIRCUIT MIN. CND. SIZE	CONNECTION NOTES	CIRCUIT BRKR	TRIP P	LOAD DESCRIPTION	CIRCUIT BRKR	TRIP P	LOAD KVA	PHASE/NEUTRAL	BRANCH CIRCUIT SIZE	CIRCUIT MIN. CND. SIZE	CONNECTION NOTES	
1	20	AIR CONDITIONER	C	0.59	1	2	12	12	3/4		1	2	10	10	1	2.00	H						30	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	

NEC ART. 220 FEEDER SIZING FACTOR: 1.00 PHASE BALANCE (% OF 1 PHASE LOAD)
 A 102.6% B 97.2%
 BALANCED 1 PHASE NEC ART. 220 FEEDER SIZING LOAD (AMPS) x 1.02 = 365.4 A
 x LARGEST UNBALANCED PHASE %
 + RESERVED FUTURE CAPACITY: 20.0 A
 TOTAL UNBALANCED 1 PHASE NEC ART. 220 FEEDER SIZING LOAD: 385.4 A
 MIN. NEC ART. 220 REQUIRED OVERCURRENT PROTECTION: 400 A

* NON-CONCURRENT LOADS. LARGEST LOAD INCLUDED IN TOTAL. ** LARGEST MOTOR LOAD INCLUDED IN CATEGORIZED LOADS.

HVAC AND MECHANICAL EQUIPMENT CONNECTION SCHEDULE

CONNECTION DESIGNATION	LOAD DESCRIPTION	VOLTS	PHASE	LOAD INFORMATION						STARTER INFORMATION					DISCONNECT INFORMATION					CIRCUIT INFORMATION					CONNECTION NOTES	CONNECTION DESIGNATION										
				HP	KVA	AMPS	MCA	MOCP	EMERG. POWER REQ.	FURN. BY	INST. BY	NEMA SIZE	TYPE	STARTER DISCONNECT TYPE	TRIP OR FUSE SIZE	NEMA ENCL. TYPE	FURN. BY	INST. BY	TYPE	SWITCH RATING	POLE	FUSE OR TRIP RATING	NEMA ENCL. TYPE	CIRCUIT ID			CIRCUIT BRKR	TRIP P	BRANCH CIRCUIT	CIRCUIT	MIN. CND. SIZE	PHASE/NEUTRAL NO.	CND. SIZE			
AC1	AIR CONDITIONER	120	1	N/A	0.59	4.9	N/A	N/A	NO	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	LP1-1	20	1	1	2	12	12	3/4		AC1

LP2

BUS NUMBER: 1300 AMPERE RATING: 400 VOLTAGE (L-L): 240 PHASE: 1
 SERVED FROM: ATS MAIN TYPE: MAIN BREAKER VOLTAGE (L-N): 120 WIRE: 3
 MOUNTING: SURFACE LUG OPTIONS: MIN. KAIC:

REMARKS:

CIRCUIT NO.	TRIP P	LOAD DESCRIPTION	CIRCUIT BRKR	TRIP P	LOAD KVA	PHASE/NEUTRAL	BRANCH CIRCUIT SIZE	CIRCUIT MIN. CND. SIZE	CONNECTION NOTES	CIRCUIT BRKR	TRIP P	LOAD DESCRIPTION	CIRCUIT BRKR	TRIP P	LOAD KVA	PHASE/NEUTRAL	BRANCH CIRCUIT SIZE	CIRCUIT MIN. CND. SIZE	CONNECTION NOTES	CIRCUIT BRKR	TRIP P	LOAD DESCRIPTION	CIRCUIT BRKR	TRIP P	LOAD KVA	PHASE/NEUTRAL	BRANCH CIRCUIT SIZE	CIRCUIT MIN. CND. SIZE	CONNECTION NOTES	CIRCUIT BRKR	TRIP P	LOAD DESCRIPTION	CIRCUIT BRKR	TRIP P	LOAD KVA	PHASE/NEUTRAL	BRANCH CIRCUIT SIZE	CIRCUIT MIN. CND. SIZE	CONNECTION NOTES
1	200	CSBR1	X	10.52	1	3	3/0	6	2		1	2	12	12	3/4	0.50	D					20	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	

NEC ART. 220 FEEDER SIZING FACTOR: 1.00 PHASE BALANCE (% OF 1 PHASE LOAD)
 A 102.4% B 97.6%
 BALANCED 1 PHASE NEC ART. 220 FEEDER SIZING LOAD (AMPS) x 1.02 = 260.0 A
 x LARGEST UNBALANCED PHASE %
 + RESERVED FUTURE CAPACITY: 40.0 A
 TOTAL UNBALANCED 1 PHASE NEC ART. 220 FEEDER SIZING LOAD: 300.0 A
 MIN. NEC ART. 220 REQUIRED OVERCURRENT PROTECTION: 300 A

* NON-CONCURRENT LOADS. LARGEST LOAD INCLUDED IN TOTAL. ** LARGEST MOTOR LOAD INCLUDED IN CATEGORIZED LOADS.

APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT

John A. Peterson 9/14/07
 COUNTY HEALTH OFFICER

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
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 HOWARD COUNTY, MARYLAND

DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY, MARYLAND

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DESIGN: TAH
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DATE: 5/2007

NO.	REVISION #1	DATE
4-28-11		

SHARED SEPTIC SYSTEM

RIVERWOOD - PHASE 2

A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'A' THRU 'G' TO CREATE LOTS 43-77 NON-BUILDABLE PRESERVATION PARCELS 'T' THRU 'Z', 'AA' AND 'AB' AND NON-BUILDABLE BULK PARCELS 'H' AND 'I'. REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S', AND 'U' TO ADD OR MODIFY FOREST PRESERVATION AREAS

THIRD ELECTION DISTRICT

CONTRACT NO. 50-4287-D

E5.1

SCALE: AS SHOWN

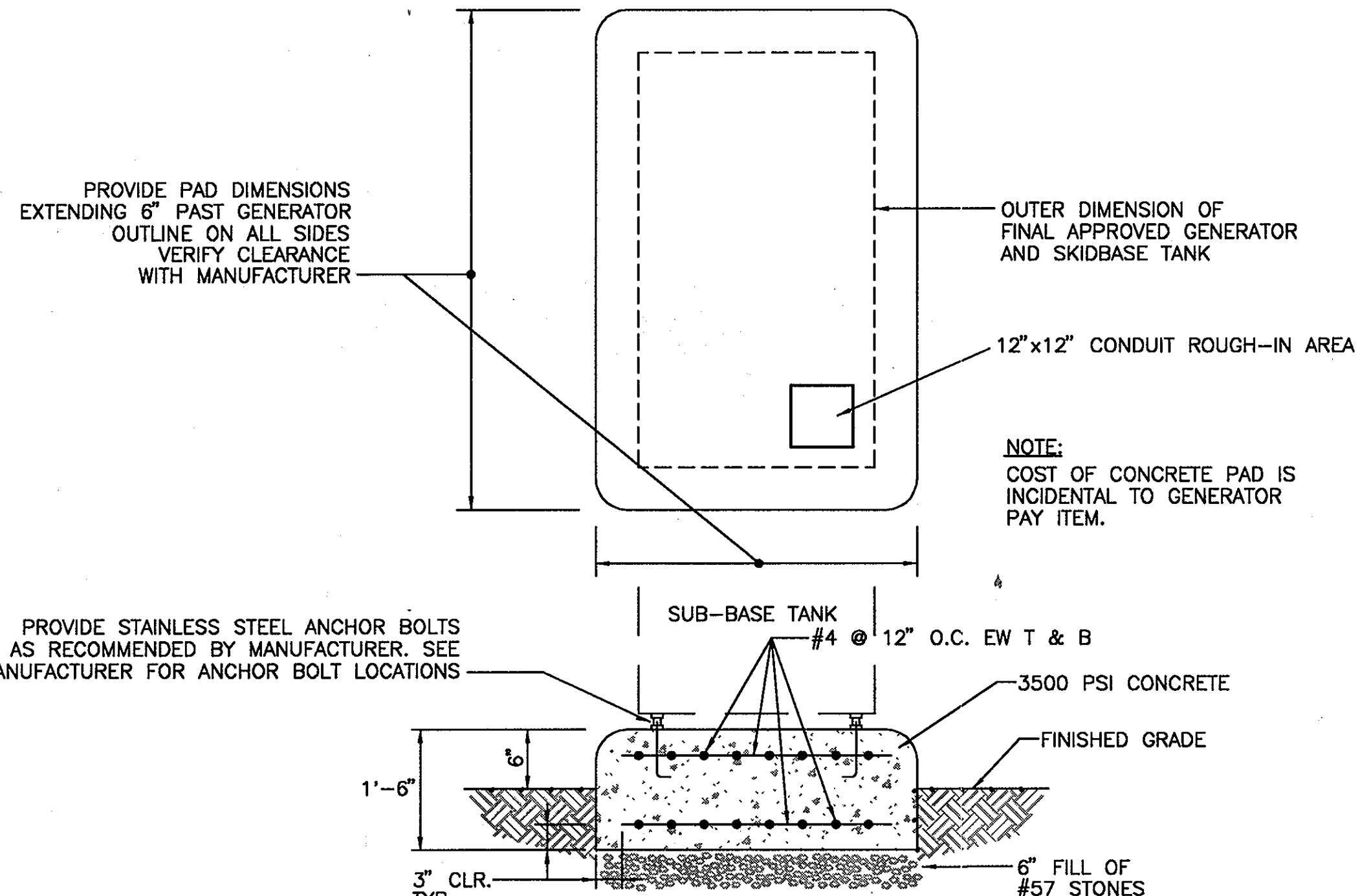
SHEET NO. 43 OF 56

Michael A. Davin 9-17-07
 CHIEF, BUREAU OF UTILITIES

[Signature] 9/14/07
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

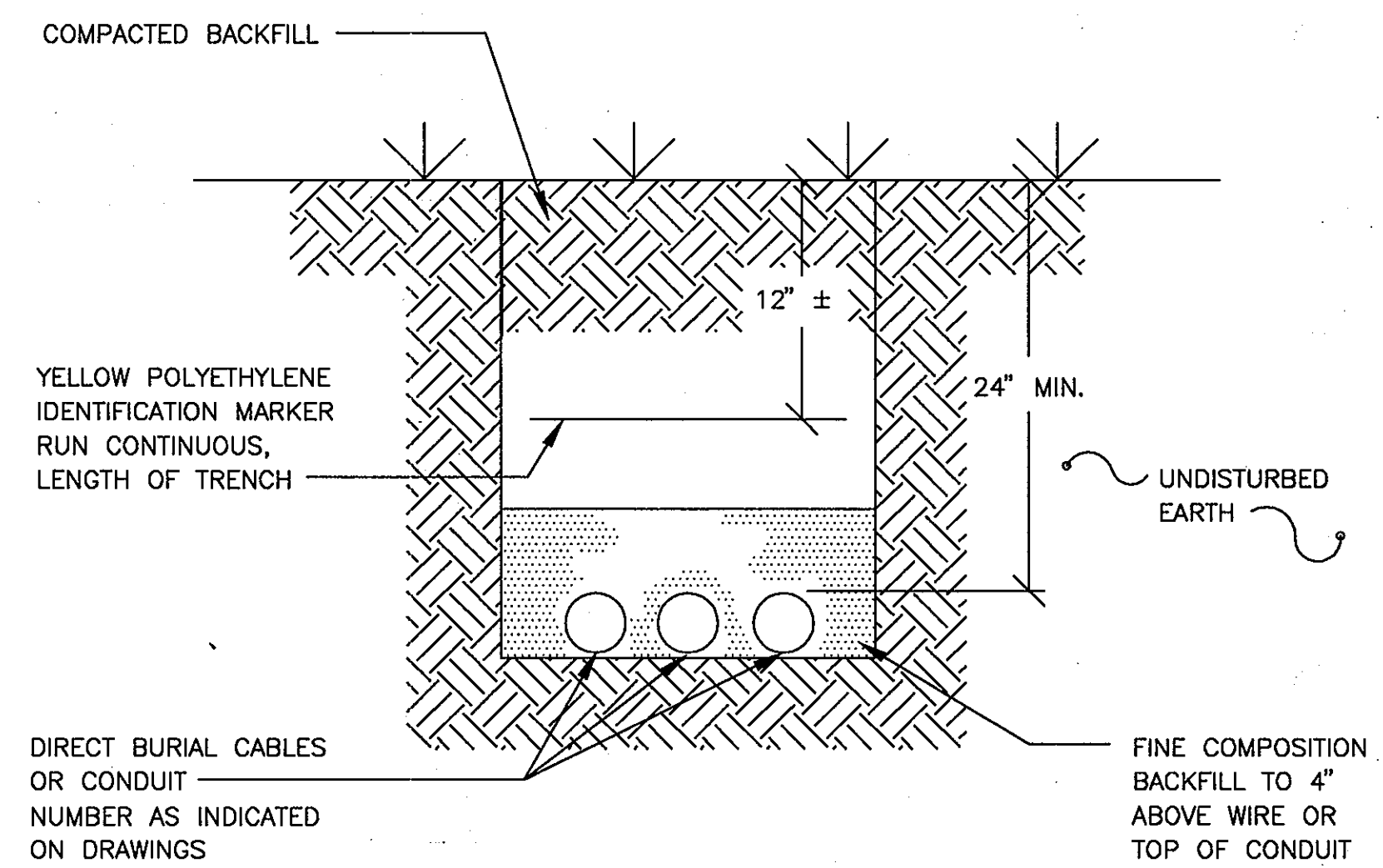
600 SCALE MAP NO. 23 BLOCKS 21 & 22 AND MAP NO. 29 BLOCKS 3 & 4

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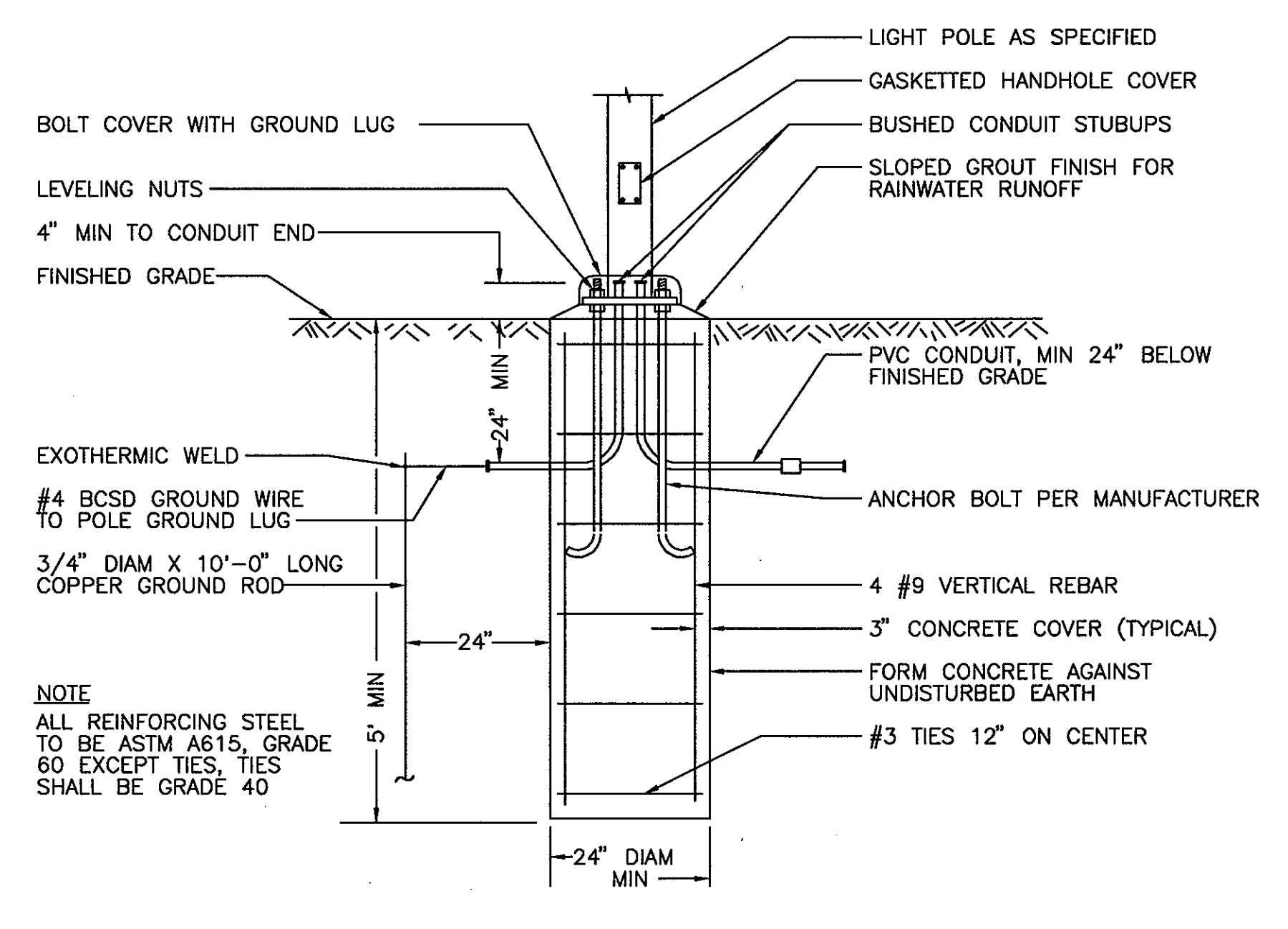


NOTES:
 1. CONTRACTOR TO VERIFY MINIMUM CLEARANCE REQ'D AROUND GENERATOR CABINET W/ MANUFACTURER
 2. DESIGN ASSUMES A MINIMUM ALLOWABLE SOIL BEARING PRESSURE OF 2 KSF. NOTIFY ENGINEER IF ALLOWABLE BEARING IS LESS THAN 2 KSF.

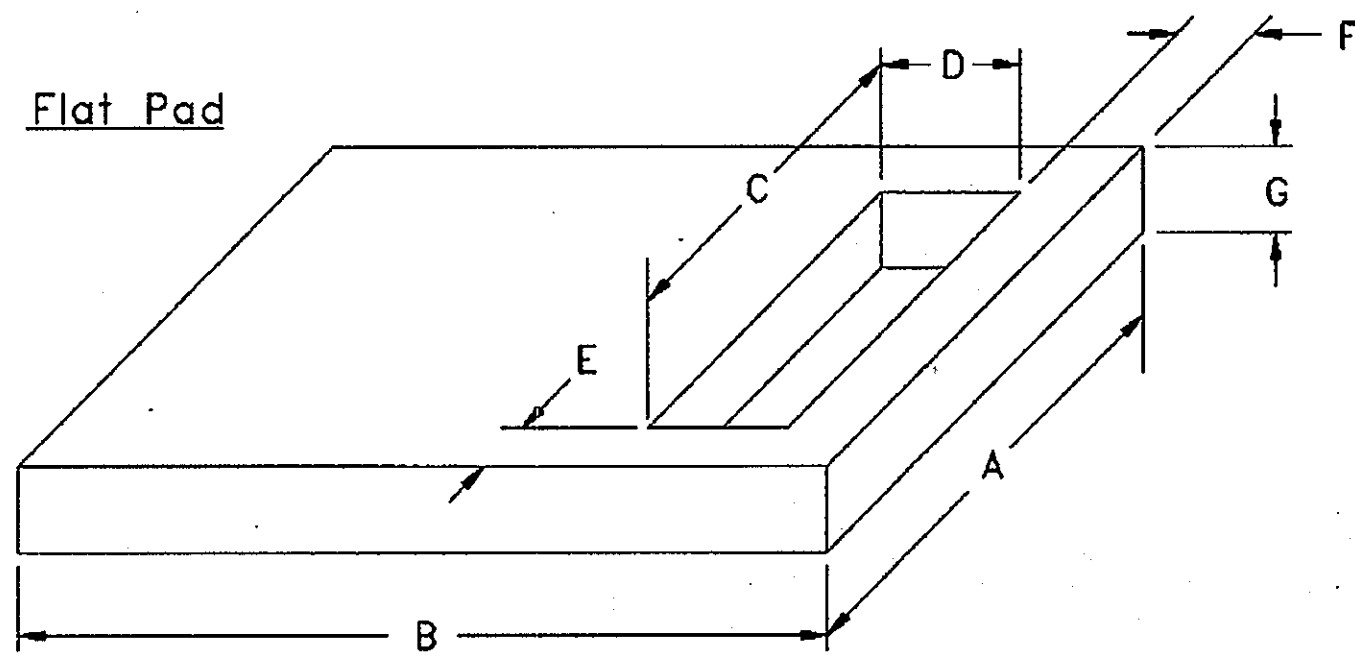
GENERATOR PAD DETAIL
 NOT TO SCALE



TYPICAL ELECTRICAL DUCTBANK DETAIL
 NOT TO SCALE



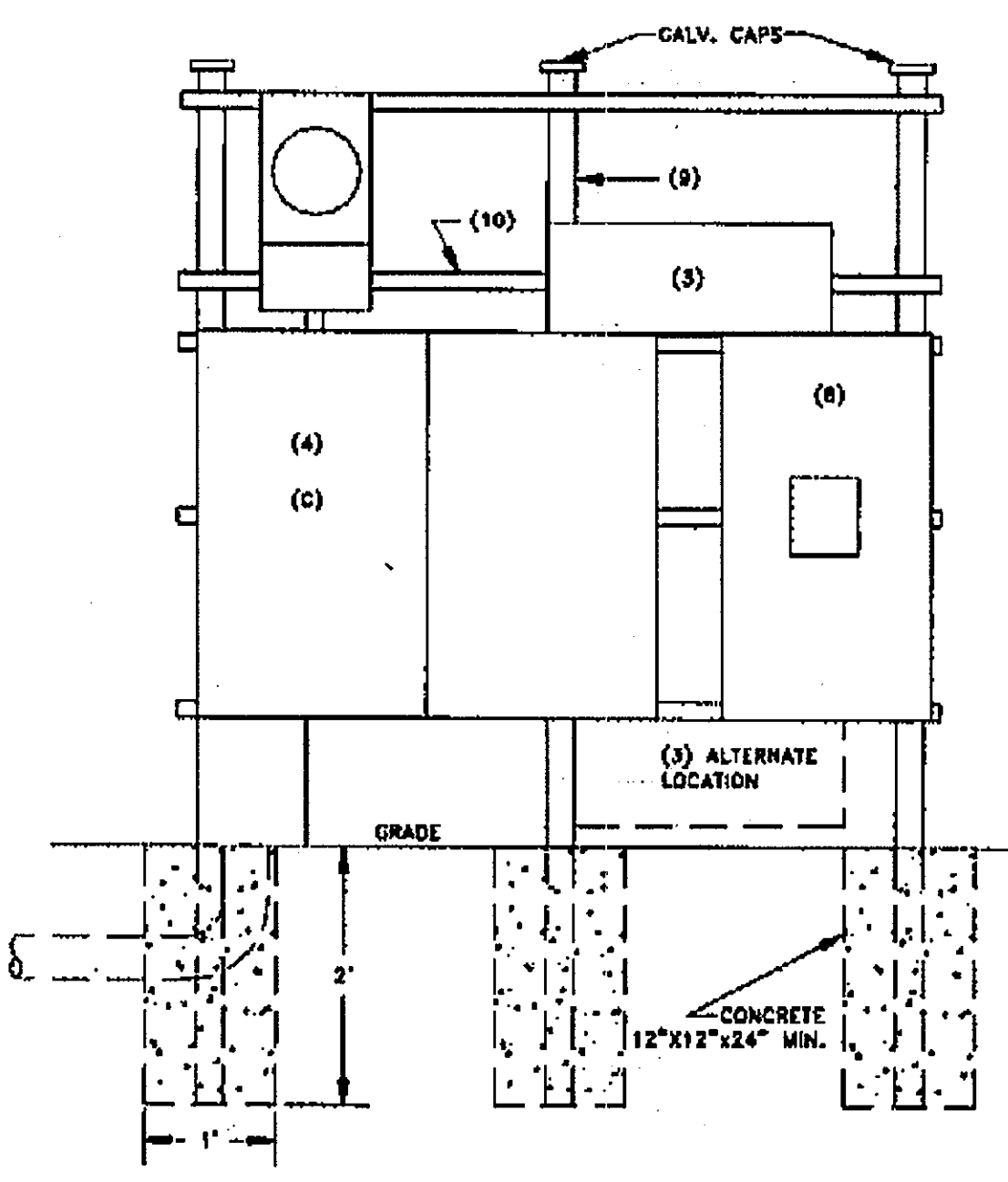
POLE BASE FLUSH MOUNTED
 NOT TO SCALE



A=42" B=42" C=27" D=12" E=8" F=6" G=4"
 BGE # 12-763

BGE TRANSFORMER PAD DETAIL
 NOT TO SCALE

OUTDOOR FREESTANDING



SERVICE CONDUCTORS:
 LINE AND LOAD SIDE OF C.T. CABINET - MIN. 2 SETS 1/0, MAX 5 SETS 500KCMIL.

CUSTOMER FURNISHES AND INSTALLS:
 (1) C.T. CABINET. SEE BGE'S GAS & ELECTRIC METERING MANUAL FOR DETAILS.
 (2) THREE-SIDED TROUGH, MINIMUM 12"x12", WITH 1" FLANGES TO BE CONSTRUCTED OF 14-GAUGE STEEL OR 10-GAUGE ALUMINUM TO ENCLOSE SERVICE CONDUCTORS. IF INSTALLED ON A COMBUSTIBLE SURFACE, A SHEET METAL PLATE AGAINST THE WALL IS REQUIRED. THE TROUGH MAY BE LOCATED AT EITHER LEFT OR RIGHT AS SHOWN.
 (3) MINIMUM 12"x12" TROUGH SECURED AND BONDED TO C.T. CABINET. LOAD WIRING FROM C.T. CABINET MAY BE OUT OF TOP OR BOTTOM, NEAR EITHER END, BUT SHALL BE ON OPPOSITE END FROM SUPPLY WIRING.
 (4) LOAD CONDUCTORS - LEAVE 60" OF EACH CONDUCTOR INSIDE C.T. CABINET.
 (5) SEE NOTES (N1), (N2), (N3), AND (N4).
 (6) HOLES IN C.T. CABINET FOR LINE AND LOAD WIRES TO BE MAXIMUM 10"x10".
 (7) CONCRETE PAD (4" THICK) TO PROVIDE INSECT/RODENT BARRIER (OUTDOOR ONLY).
 (8) DISCONNECTING MEANS.
 (9) 2" MINIMUM GALVANIZED STEEL PIPE.
 (10) 1-1/2" x 1-1/2" KINDORF CHANNEL.

COMPANY FURNISHES AND INSTALLS:
 (A) CURRENT TRANSFORMER RATED METER SOCKET.
 (B) WATT-HOUR METER.
 (C) CURRENT TRANSFORMERS (NOT SHOWN).
 (D) RACEWAY BETWEEN C.T. CABINET AND METER SOCKET (NOT MORE THAN 3").

NOTES:
 (N1) SERVICE RACEWAY. SEE BGE'S GAS & ELECTRIC METERING MANUAL FOR DETAILS.
 (N2) A MINIMUM CLEAR SPACE OF 48" IN FRONT OF C.T. CABINET IS REQUIRED.
 (N3) SPACE REQUIRED FOR C.T. RATED METER SOCKET.
 (N4) MINIMUM CLEAR SPACE OF 6" ON BOTH SIDES OF C.T. CABINET IS REQUIRED. IF METER IS TO BE INSTALLED ADJACENT TO THE CABINET, SEE (N3).

CSBR SERVICE METER AND C/T CABINET
 NOT TO SCALE

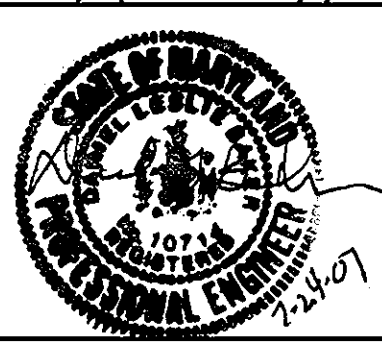
APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT

Signature
 COUNTY HEALTH OFFICER

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
 License No. 10714, Expiration Date: 12/1/2007.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND
 DEPARTMENT OF PLANNING AND ZONING HOWARD COUNTY, MARYLAND

URS
 URS CORP.
 CONSULTING ENGINEERING AND PLANNING
 1099 Winterson Road
 Linthicum, MD 21099
 Phone: 410-855-6160 Fax: 410-855-6163



DESIGN: TAH			
DRAFT: TAH			
CHK: RRW			
DATE: 5/2007	BY NO.	REVISIONS	DATE

SHARED SEPTIC SYSTEM
MISC. DETAILS

RIVERWOOD - PHASE 2
 A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'T' THRU 'Z', 'AA' AND 'BB' AND NON-BUILDABLE BULK PARCEL 'II' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S', AND 'U' TO ADD OR MODIFY FOREST CONSERVATION AREAS
 THIRD ELECTION DISTRICT
CONTRACT NO. 50-4287-D

E6.1
 SCALE: AS SHOWN
 SHEET NO. 44 of 56

Signature
 CHIEF, BUREAU OF UTILITIES
 DATE: 9-17-07

Signature
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE:

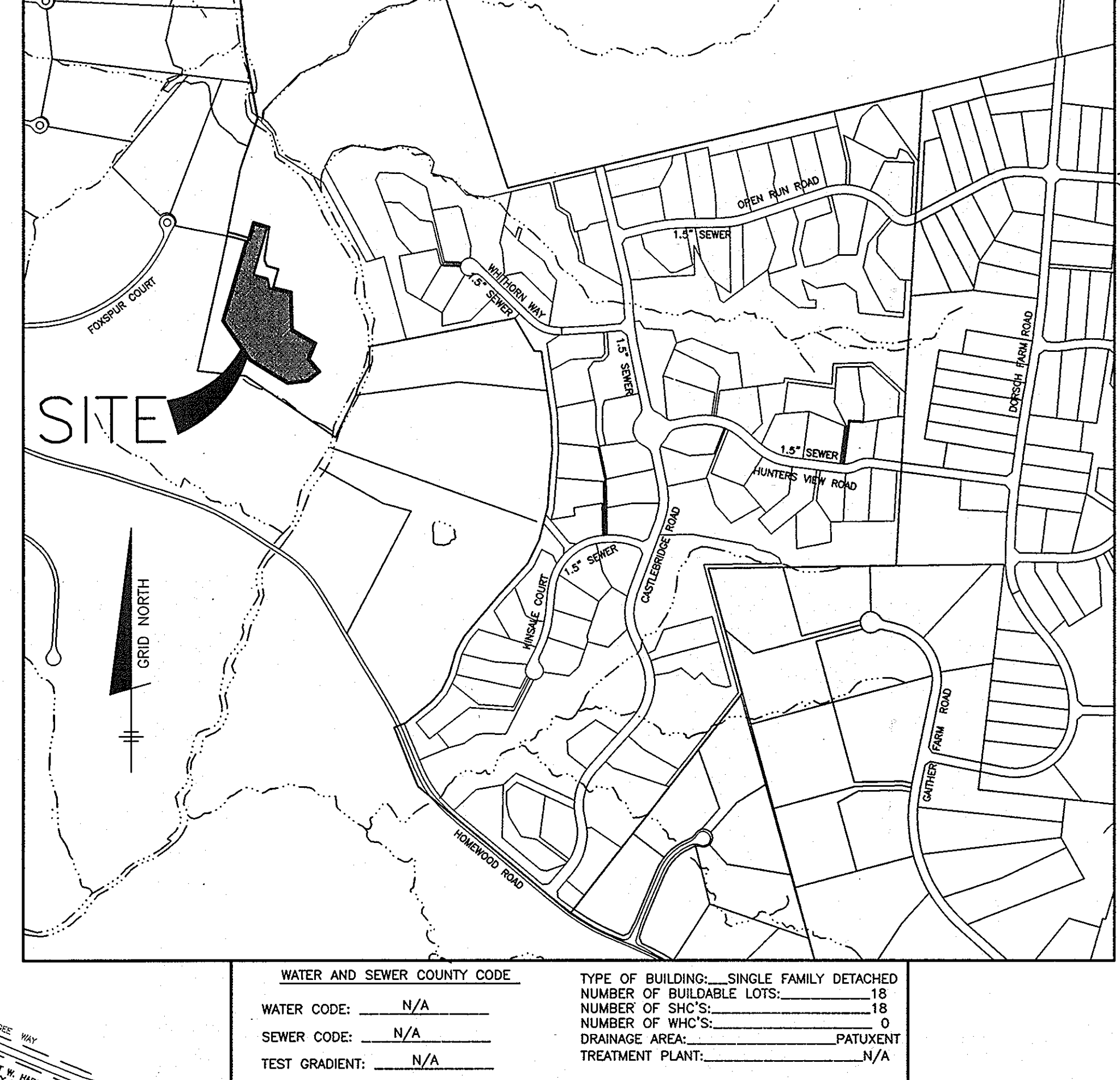
QUANTITIES				
ITEMS	QUANTITIES ESTIMATED	AS-BUILT		
		QUANTITIES	TYPE	MANUF./SUPPLIER
1.5" SDR 11 HDPEP TERMINAL FLUSHING CONNECTION	7,257 LF			
8" PVC SEWER	87 LF			
1.5" BLOWOFF	2 EA			
AIR RELEASE VALVE	1 EA			
VALVE BOX WITH CONDUCTING ROD	15 EA			
MANHOLE	1 EA			
TRANSITION MANHOLE	1 EA			
DUPLEX GRINDER PUMP	12 EA			
NAME OF UTILITY CONTRACTOR:				
SURVEY AND DRAFTING DIVISION AS-BUILT DATE:				

NOTES:

- WELLS ON THE LOTS SURROUNDING THE COMMON SHARED SEPTIC AREAS SHALL BE TESTED FOR BACKGROUND LEVELS OF CONTAMINANTS TO BE SPECIFIED BY THE DEPARTMENT OF PUBLIC WORKS PRIOR TO PUTTING THE SHARED SEPTIC SYSTEM IN SERVICE.
- THE BUILDER SHALL INSTALL BACKFLOW PREVENTER AND RELIEF VENT ON THE SEWER SERVICE AT THE HOUSE, AT THE TIME OF THE HOUSE CONSTRUCTION OR AS REQUIRED BY THE PLUMBING INSPECTOR.
- INSTALLATION AND START-UP OF THE PUBLICLY OWNED GRINDER PUMPS AND APPURTENANCES, AND THE 4" PVC SEWER HOUSE CONNECTIONS (SHO) SHALL BE THE RESPONSIBILITY OF THE DEVELOPER.
- ALL PRESSURE SEWER SHALL BE HDPE SDR 11 A 8 GAUGE TRACER WIRE SHALL BE WRAPPED AROUND OR ATTACHED TO THE PIPE.
- SEPTIC TANKS SHALL BE VACUUM OR WATER TESTED ON-SITE BY THE MANUFACTURER. SEPTIC TANK SHOP DRAWINGS FROM THE MANUFACTURER SHOULD BE SUBMITTED TO THE HOWARD COUNTY ENVIRONMENTAL HEALTH DEPARTMENT PRIOR TO ISSUANCE OF SHARED SEPTIC SYSTEM PERMIT.
- ALL PRESSURE SEWER IS TO BE TESTED ACCORDING TO THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS STANDARDS AND SPECIFICATIONS.
- THE CONTRACTOR SHALL NOTIFY HOWARD CO. HEALTH DEPARTMENT AT (410) 313-1771 AT LEAST FIVE (5) WORKING DAYS BEFORE ANY PRESSURE TEST OF PRESSURE SEWERS, AND ANY SEPTIC TANKS VACUUM OR WATER TESTING IS PERFORMED.
- THE DEVELOPER SHALL BE RESPONSIBLE FOR THE REQUIREMENTS AND METHOD OF INSTALLATION OF GRINDER PUMP AND ITS APPURTENANCES.
- OBSERVATION WELLS TO BE INSTALLED AFTER TRENCH INSTALLATION IS COMPLETED.
- LOTS WITH "CELLAR NOT SERVICED VIA GRAVITY" IS INDICATED, EJECTOR PUMPS LOCATED INSIDE THE BASEMENT ARE REQUIRED IN ORDER TO SERVICE THE CELLAR.
- PRIOR TO INSTALLATION, A PRECONSTRUCTION MEETING MUST BE SCHEDULED TO REVIEW THE INSTALLATION, THE ON-SITE SEWAGE DISPOSAL SYSTEM MUST BE PROFESSIONALLY STAFFED FOR THE MEETING. THE MEETING SHALL INCLUDE:
 - MICHAEL DAVIS
HOWARD COUNTY DEPARTMENT OF HEALTH
410-313-1771
 - BARRY CLOFFEY
MARYLAND DEPARTMENT OF THE ENVIRONMENT
410-537-4156
 - REBECCA KUGLE
DEPARTMENT OF PUBLIC WORKS, BUREAU OF UTILITIES
410-313-2723
 - ON-SITE DISPOSAL SYSTEM INSTALLATION CONTRACTOR.
 - GENERAL CONTRACTOR FOR THE PROJECT.
 - ENGINEER
- A MINIMUM OF FIVE (5) DAYS NOTICE MAY BE REQUIRED TO SCHEDULE THE MEETING.
- ANY CHANGES TO THE APPROVED PLAN MUST BE PRESENTED TO THE DEPARTMENT OF HEALTH, MARYLAND DEPARTMENT OF THE ENVIRONMENT AND THE DEPARTMENT OF PUBLIC WORKS BY THE ENGINEER.
- PRIOR TO WASTEWATER DISCHARGE TO THE ON-SITE SEWAGE DISPOSAL SYSTEM, THE ENGINEER MUST CERTIFY THAT THE SYSTEM HAS BEEN INSTALLED AS DESIGNED AND RECEIVE APPROVAL FOR DISCHARGE FROM THE DEPARTMENT OF HEALTH, DEPARTMENT OF PUBLIC WORKS AND MARYLAND DEPARTMENT OF THE ENVIRONMENT.
- PRIOR TO INSTALLATION OF ANY COMPONENT OF THE SYSTEM, PROPER PERMITS MUST BE OBTAINED FROM THE DEPARTMENT OF HEALTH, SEPTIC SYSTEM INSTALLATION PERMIT.
- WP-05-99 WAS APPROVED BY THE PLANNING DIRECTOR ON JUNE 29, 2005. WP-05-99 WAIVES THE REQUIREMENTS OF:
 - SECTION 16.116(a) - WHICH REQUIRES THAT GRADING, REMOVAL OF VEGETATIVE COVER AND TREES, PAVING AND NEW STRUCTURES SHALL NOT BE PERMITTED WITHIN 25 FEET OF A WETLAND, 50 FEET OF AN INTERMITTENT STREAM BANK OR 75 FEET OF A PERENNIAL STREAM BANK TO ALLOW A CROSSING OF THE MIDDLE PATUXENT RIVER IN THE VICINITY OF THE CUL-DE-SAC OF WHITWORTH WAY.
 - SECTION 16.116(b) - WHICH REQUIRES THAT GRADING, REMOVAL OF VEGETATIVE COVER AND TREES, PAVING AND NEW STRUCTURES SHALL NOT BE PERMITTED ON EXISTING STEEP SLOPES, WAIVING THIS SECTION WILL ALLOW THE SEWER LINE SERVING LOTS IN PHASE TWO IS TO BE CONSTRUCTED ON PARCEL F.
 - SECTION 16.115(c) - WHICH PLACES PROHIBITIONS ON THE USE OF FLOORPLAIN LAND, WAIVING THIS SECTION WILL ALLOW THE SEWER LINE SERVING LOTS IN PHASE TWO IS TO BE DIRECTIONALLY BORED UNDER THE MIDDLE PATUXENT RIVER.



QUANTITIES				
ITEMS	QUANTITIES ESTIMATED	AS-BUILT		
		QUANTITIES	TYPE	MANUF./SUPPLIER
1.5" SDR 11 HDPEP TERMINAL FLUSHING CONNECTION	7,257 LF			
8" PVC SEWER	87 LF			
1.5" BLOWOFF	2 EA			
AIR RELEASE VALVE	1 EA			
VALVE BOX WITH CONDUCTING ROD	15 EA			
MANHOLE	1 EA			
TRANSITION MANHOLE	1 EA			
DUPLEX GRINDER PUMP	12 EA			
NAME OF UTILITY CONTRACTOR:				
SURVEY AND DRAFTING DIVISION AS-BUILT DATE:				



WATER AND SEWER COUNTY CODE			
WATER CODE:	N/A	TYPE OF BUILDING: SINGLE FAMILY DETACHED	NUMBER OF BUILDABLE LOTS: 18
SEWER CODE:	N/A	NUMBER OF SHO'S:	18
TEST GRADIENT:	N/A	DRAINAGE AREA:	PATUXENT
		TREATMENT PLANT:	N/A

VICINITY MAP
SCALE: 1" = 600'

- ### GENERAL NOTES
- #### PART 1 - GENERAL
- 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.
 - ALL HORIZONTAL CONTROLS ARE BASED ON MARYLAND STATE COORDINATES (NORTH AMERICAN DATUM OF 1983 (NAD83)).
 - ALL VERTICAL CONTROLS ARE BASED ON U.S.G.S. DATA.
 - ALL PIPE ELEVATIONS SHOWN ARE INVERT ELEVATIONS.
 - CLEAR ALL UTILITIES BY A MINIMUM OF 12". CLEAR ALL POLES BY 2'-0" MINIMUM OR TUNNEL AS REQUIRED. THE OWNER HAS CONTACTED THE UTILITY COMPANIES AND HAS MADE ARRANGEMENTS FOR BRACING OF POLES AS SHOWN ON THE DRAWINGS. IN THE EVENT THE CONTRACTOR'S WORK REQUIRES THE BRACING OF ADDITIONAL POLES, ANY COST INCURRED BY THE OWNER FOR BRACING OF ADDITIONAL POLES OR DAMAGES SHALL BE DEDUCTED FROM MONEY OWED THE CONTRACTOR. THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY COMPANIES TO SCHEDULE THE BRACING OF THE POLES.
 - FOR DETAILS NOT SHOWN ON THE DRAWINGS, AND FOR MATERIALS AND CONSTRUCTION METHODS USE HOWARD COUNTY DESIGN MANUAL VOLUME IV, STANDARD SPECIFICATIONS AND DETAIL FOR CONSTRUCTION (LATEST EDITION). THE CONTRACTOR SHALL HAVE A COPY OF VOLUME IV ON THE JOB.
 - WHERE TEST PITS HAVE BEEN MADE OF EXISTING UTILITIES, THEY ARE NOTED BY THE SYMBOL [Symbol] AT THE LOCATION OF THE TEST PIT OR IS INCLUDED ON THE DRAWINGS. EXISTING UTILITIES IN THE VICINITY OF THE PROPOSED WORK FOR WHICH TEST PITS HAVE NOT BEEN DUG SHALL BE LOCATED BY THE CONTRACTOR TWO WEEKS IN ADVANCE OF CONSTRUCTION OPERATIONS AT HIS OWN EXPENSE.
 - CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES OR AGENCIES AT LEAST FIVE (5) WORKING DAYS BEFORE STARTING WORK SHOWN ON THESE PLANS:
 - STATE HIGHWAY ADMINISTRATION.....410-531-5533
 - BOE 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.
 - PLACEMENT REGULATION "MEN WORKING" AND WARNING SIGNS AS REQUIRED TO COMPLY WITH MARYLAND STATE HIGHWAY ADMINISTRATION MANUAL OF TRAFFIC CONTROL FOR HIGHWAY MAINTENANCE OPERATIONS.
 - THE CONTRACTOR SHALL NOTIFY THE BUREAU OF HIGHWAYS, HOWARD COUNTY, AT (410) 313-2450 AT LEAST FIVE (5) WORKING DAYS BEFORE ANY OPEN CUT OR ANY OTHER CONSTRUCTION OPERATIONS BEGINNING ON COUNTY ROADS FOR LAYING WATER/SEWER MAINS OR HOUSE CONNECTIONS. THE APPROVAL OF THESE DRAWINGS WILL CONSTITUTE COMPLIANCE WITH DPW REQUIREMENTS FOR SECTION 16.114(C) OF THE HOWARD COUNTY CODE.
- #### PART 3 - SEWER
- ALL PRESSURE SEWER MAINS SHALL BE 1.5" SDR 21 PVC OR 1.5" HDPEP SDR 11 UNLESS OTHERWISE NOTED.
 - ALL MANHOLES SHALL BE 4' - 0" INSIDE DIAMETER UNLESS OTHERWISE NOTED.
 - MANHOLES SHOWN WITH 12" AND 18" WALLS ARE FOR BRICK MANHOLES ONLY.
 - MANHOLES DESIGNATED W.T. IN PLAN AND PROFILE SHALL HAVE WATERPROOF FRAME AND COVER, STANDARD DETAIL 05.52. WHERE WATERIGHT MANHOLE FRAME AND COVER IS USED, SET TOP OF FRAME 1'-6" ABOVE FINISHED GRADE UNLESS OTHERWISE NOTED ON THE DRAWINGS.
 - HOUSE(S) WITH THE SYMBOL "C.N.S." INDICATES THAT CELLAR CANNOT BE SERVED.
 - THE CONTRACTOR SHALL JACK & BORE THE DRIVEWAYS FOR THE FORCE MAIN AS APPROVED ON THESE PLANS.

* ALSO KNOWN AS
RIVERWOOD PHASE 2
LOTS 43-45, 49, 64, 67-77
AND 79-82

DEVELOPER:
ELLOAK, LLC
P.O. BOX 417
ELLCOTT CITY, MD 21041
410-465-4244

PLAN VIEW
SCALE: 1" = 300'

**MAXIMUM NUMBER OF BEDROOMS FOR THESE 18 LOTS IS 73 TOTAL.
THIS IS EQUIVALENT TO 17 FOUR BEDROOM HOUSES AND 1 FIVE BEDROOM HOUSE.
**ALL SEWAGE GRINDER PUMPS ARE TO BE PUBLICLY OWNED AND MAINTAINED

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND

BENCHMARK
ENGINEERS & LAND SURVEYORS & PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE # SUITE 418
ELLCOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 FAX: 410-465-6644

DESIGN:	DAM	
DRAFT:	MAN	
CHK:	DAM	
DATE:	07, 2007	

NO.	REVISIONS	DATE
BEI 1	REVISE LOTS 63, 66, 46 AND 47	9-30-11

600 SCALE MAP NO. 23 BLOCKS 21 & 22 AND MAP NO. 29 BLOCKS 3 & 4

PLAN VIEW OF SHARED SEPTIC SYSTEM

RIVERWOOD - PHASE 2
A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'J', 'V' THRU '1', 'A' AND 'E' AND NON-BUILDABLE BULK PARCELS 'I', 'B', 'C', 'D', 'H' AND 'U'. REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'G', 'H', 'I', 'J' AND 'U' TO ADD OR MODIFY FOREST CONSERVATION AREAS
THIRD ELECTION DISTRICT

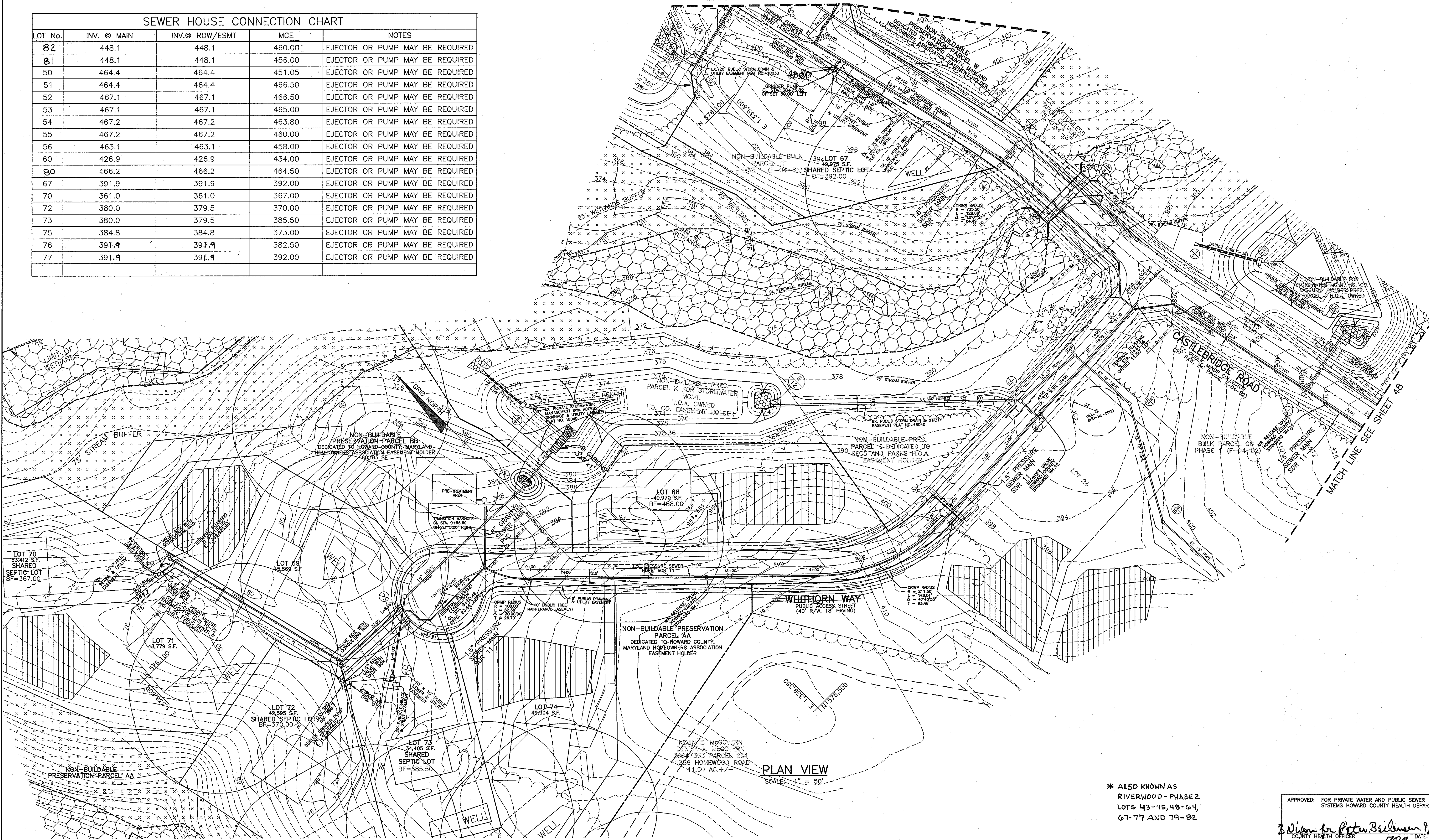
SCALE:
AS SHOWN

SHEET NO.
45 OF 56

CONTRACT NO. 50-4287-D

MATCH LINE SEE SHEET 47

SEWER HOUSE CONNECTION CHART				
LOT No.	INV. @ MAIN	INV. @ ROW/ESMT	MCE	NOTES
82	448.1	448.1	460.00	EJECTOR OR PUMP MAY BE REQUIRED
81	448.1	448.1	456.00	EJECTOR OR PUMP MAY BE REQUIRED
50	464.4	464.4	451.05	EJECTOR OR PUMP MAY BE REQUIRED
51	464.4	464.4	466.50	EJECTOR OR PUMP MAY BE REQUIRED
52	467.1	467.1	466.50	EJECTOR OR PUMP MAY BE REQUIRED
53	467.1	467.1	465.00	EJECTOR OR PUMP MAY BE REQUIRED
54	467.2	467.2	463.80	EJECTOR OR PUMP MAY BE REQUIRED
55	467.2	467.2	460.00	EJECTOR OR PUMP MAY BE REQUIRED
56	463.1	463.1	458.00	EJECTOR OR PUMP MAY BE REQUIRED
60	426.9	426.9	434.00	EJECTOR OR PUMP MAY BE REQUIRED
80	466.2	466.2	464.50	EJECTOR OR PUMP MAY BE REQUIRED
67	391.9	391.9	392.00	EJECTOR OR PUMP MAY BE REQUIRED
70	361.0	361.0	367.00	EJECTOR OR PUMP MAY BE REQUIRED
72	380.0	379.5	370.00	EJECTOR OR PUMP MAY BE REQUIRED
73	380.0	379.5	385.50	EJECTOR OR PUMP MAY BE REQUIRED
75	384.8	384.8	373.00	EJECTOR OR PUMP MAY BE REQUIRED
76	391.9	391.9	382.50	EJECTOR OR PUMP MAY BE REQUIRED
77	391.9	391.9	392.00	EJECTOR OR PUMP MAY BE REQUIRED



* ALSO KNOWN AS
RIVERWOOD - PHASE 2
LOTS 43-45, 48-64,
67-77 AND 79-82

APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT
William Peter Billman 9/14/07
COUNTY HEALTH OFFICER

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
Michael A. Ananika 9-17-07
CHIEF, BUREAU OF UTILITIES

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND
[Signature] 9/15/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION

BENCHMARK
ENGINEERS & LAND SURVEYORS & PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE & SUITE 418
ELLICOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 FAX: 410-465-6644

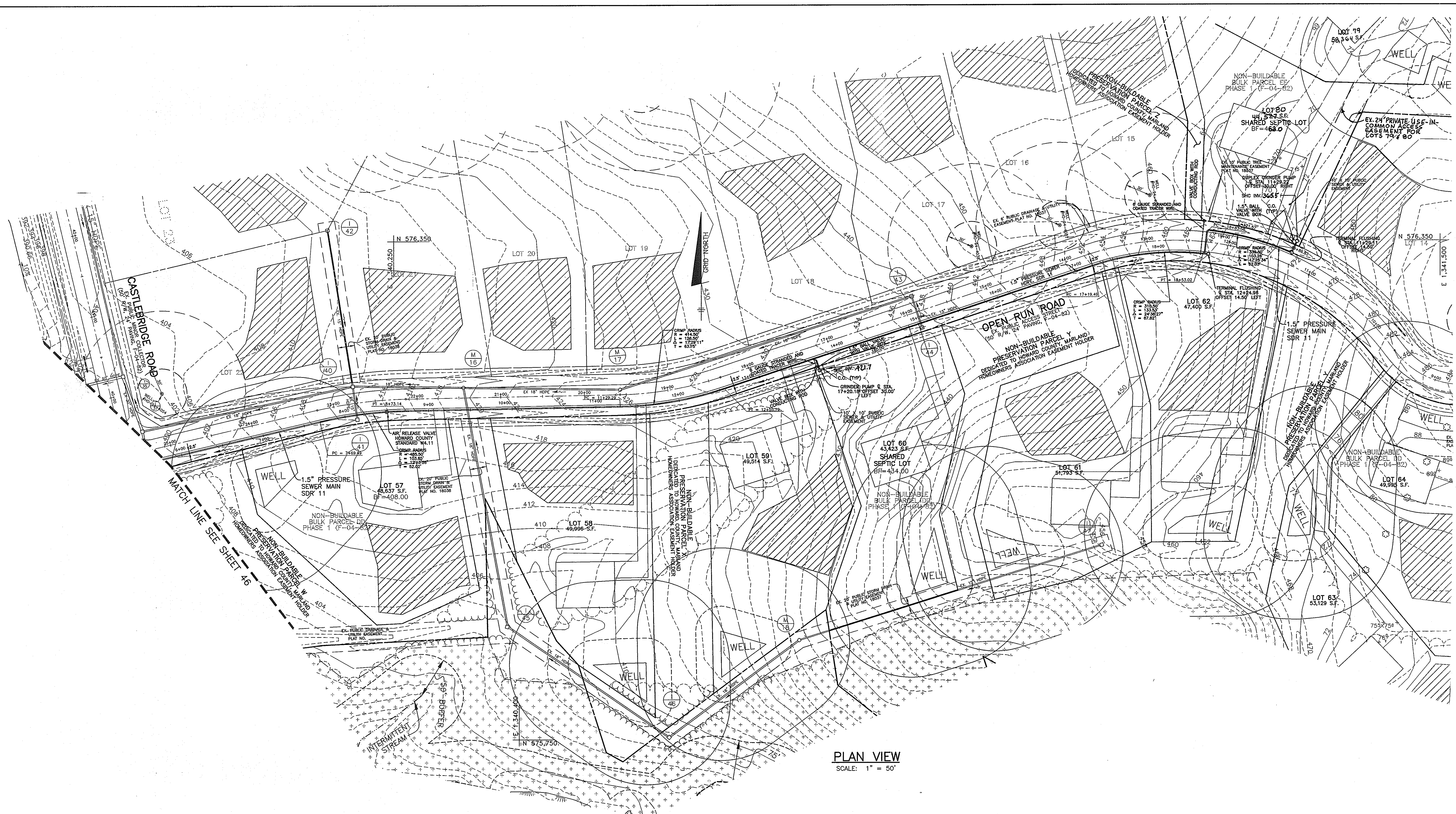
Professional Certificate & Approval certify that these documents were prepared or supervised by the undersigned and I am a duly licensed professional engineer for the State of Maryland, License No. 21443, Expired Date: 12-31-2007
Donald M. [Signature] 7/23/07

DESIGN:	DAM			
	DBT			
DRAFT:	MAN			
	DBT			
CHK:	DAM			
DATE:	07, 2007	BEI	1	REVISE LOT NOS IN CHART 9-30-11
BY	NO.			
				REVISIONS
				DATE

600 SCALE MAP NO. 23 BLOCKS 21 & 22 AND MAP NO. 29 BLOCKS 3 & 4

RIVERWOOD - PHASE 2
A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'V' THRU 'Z', 'AA' AND 'EE' AND NON-BUILDABLE BULK PARCEL 'II' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'I', 'R', 'S' AND 'U' TO ADD OR MODIFY FOREST CONSERVATION AREAS
THIRD ELECTION DISTRICT
CONTRACT NO. 50-4287-D

SCALE:
AS SHOWN
SHEET NO.
46 OF 56



PLAN VIEW
SCALE: 1" = 50'

* ALSO KNOWN AS
RIVERWOOD - PHASE 2
LOTS 43-45, 48-64,
67-77 AND 79-82

APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER
SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT
William Peter Beilman 9/14/07
COUNTY HEALTH OFFICER

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
Michael A. Swannell 9/17/07
CHIEF, BUREAU OF UTILITIES

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND
[Signature] 9/17/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION

BENCHMARK
ENGINEERS & LAND SURVEYORS & PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE & SUITE 418
ELICOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 FAX: 410-465-6844

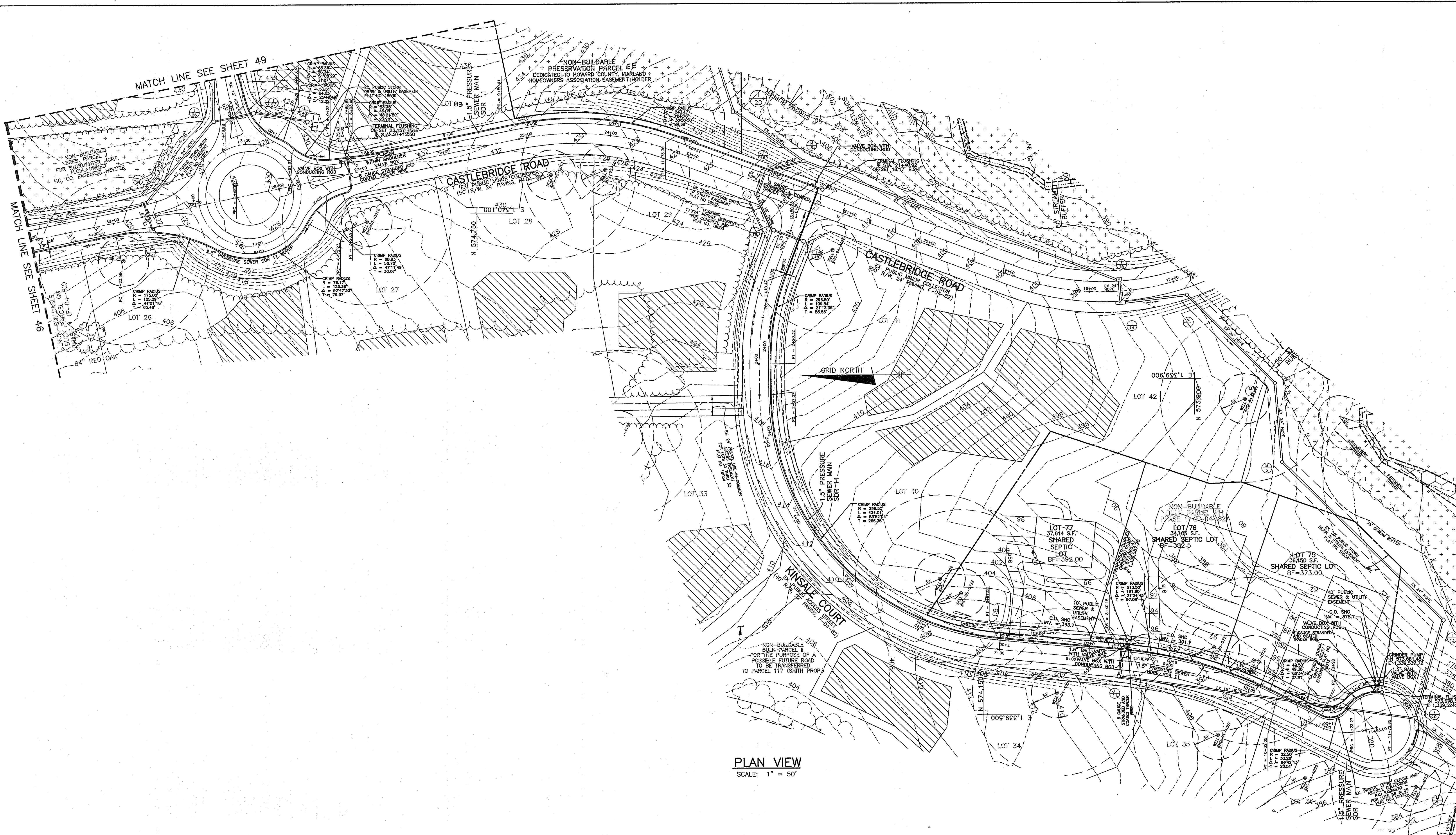
Professional Certification. I hereby certify that these documents were prepared or supervised by me or under my direct supervision and I am a duly licensed professional engineer or professional land surveyor in the State of Maryland, License No. 21445, Expired 06/30/08, 02/1/2009
[Signature] 7/27/07
PROFESSIONAL ENGINEER

DESIGN:	DAM			
	DBT			
DRAFT:	MAN			
	DBT			
CHK:	DAM			
DATE:	07, 2007	BY	NO.	REVISIONS
				REVISE LOTS 65 & 66 TO 79 & 80
				9-30-11

600 SCALE MAP NO. 23 BLOCKS 21 & 22 AND MAP NO. 29 BLOCKS 3 & 4

RIVERWOOD - PHASE 2
A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO
CREATE LOTS 43-77* NON-BUILDABLE PRESERVATION PARCELS 'I' THRU 'Z',
'AA' AND 'EE' AND NON-BUILDABLE BULK PARCEL 'II' AND A REVISION OF
PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S' AND
'U' TO ADD OR MODIFY FOREST CONSERVATION AREAS
THIRD ELECTION DISTRICT
CONTRACT NO. 50-4287-D

SCALE:
AS SHOWN
SHEET NO.
47 OF 56



PLAN VIEW
SCALE: 1" = 50'

* ALSO KNOWN AS
RIVERWOOD - PHASE 2
LOTS 43-45, 48-64,
67-77 AND 79-82

APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER
SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT
B. Wilson for Peter Beilman 9/14/07
COUNTY HEALTH OFFICER DATE:

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
Michael A. Bevilacqua 9-17-07
CHIEF, BUREAU OF UTILITIES DATE

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND
[Signature] 9/26/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

BENCHMARK
ENGINEERS • LAND SURVEYORS • PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE • SUITE 418
ELLCOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 FAX: 410-465-6644

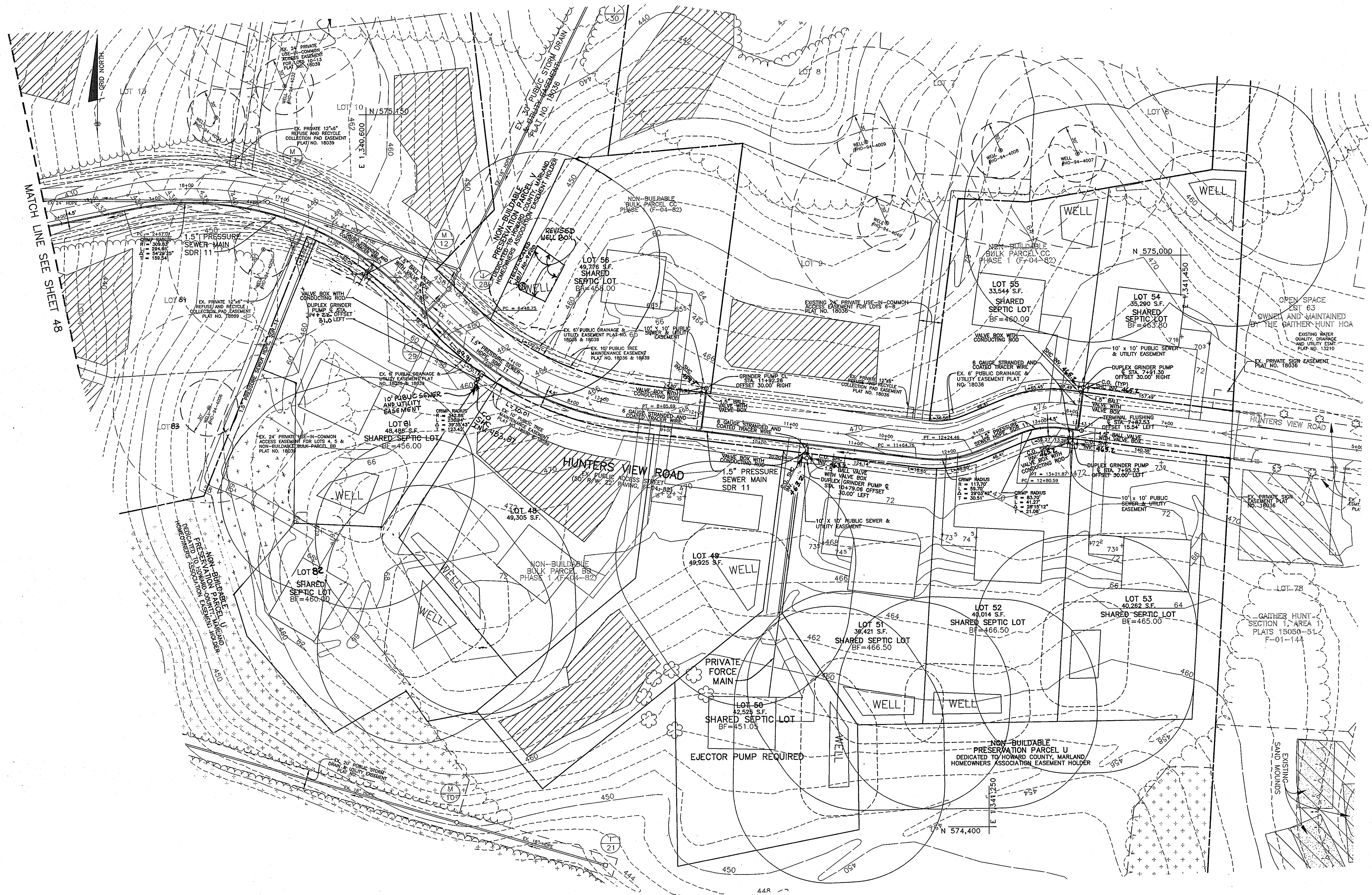
Professional Certification. I hereby certify that these documents were prepared or approved by me, or by a duly licensed professional engineer under the laws of the State of Maryland, License No. 21442, Expiration Date: 4-30-2009
Donald Macon 9/14/07

DESIGN:	DAM			
	DBT			
DRAFT:	MAN			
	DBT			
CHK:	DAM			
DATE:	07, 2007			
BY:	BEI	1	REVISE LOT 5 TO LOT 78	9-30-11
NO.				
REVISIONS				
DATE				

PLAN VIEW OF
SHARED SEPTIC SYSTEM
600 SCALE MAP NO. 23 BLOCKS 21 & 22 AND MAP NO. 29 BLOCKS 3 & 4

RIVERWOOD - PHASE 2
A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO
CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'I' THRU 'L',
'AA' AND 'EE' AND NON-BUILDABLE BULK PARCEL 'II' AND A REVISION OF
PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'D', 'E', 'F', 'G', 'H', 'I', 'J', 'K', 'L', 'M', 'N', 'O', 'P', 'Q', 'R', 'S' AND
'U' TO ADD OR MODIFY FOREST CONSERVATION AREAS
THIRD ELECTION DISTRICT
CONTRACT NO. 50-4287-D

SCALE:
AS SHOWN
SHEET NO.
48 OF 56



PLAN VIEW
SCALE: 1" = 50'

* ALSO KNOWN AS
RIVERWOOD PHASE 2
LOTS 43-45, 48-64, 67-77
AND 79-82

APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER
SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT
Adrian P. Steideman 9/14/07
COUNTY HEALTH OFFICER DATE

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
Michael A. Anagnostis 9/17/07
CHIEF, BUREAU OF UTILITIES DATE

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND
[Signature] 9/16/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

BENCHMARK
ENGINEERS • LAND SURVEYORS • PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE • SUITE 418
ELICOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 FAX: 410-465-6644

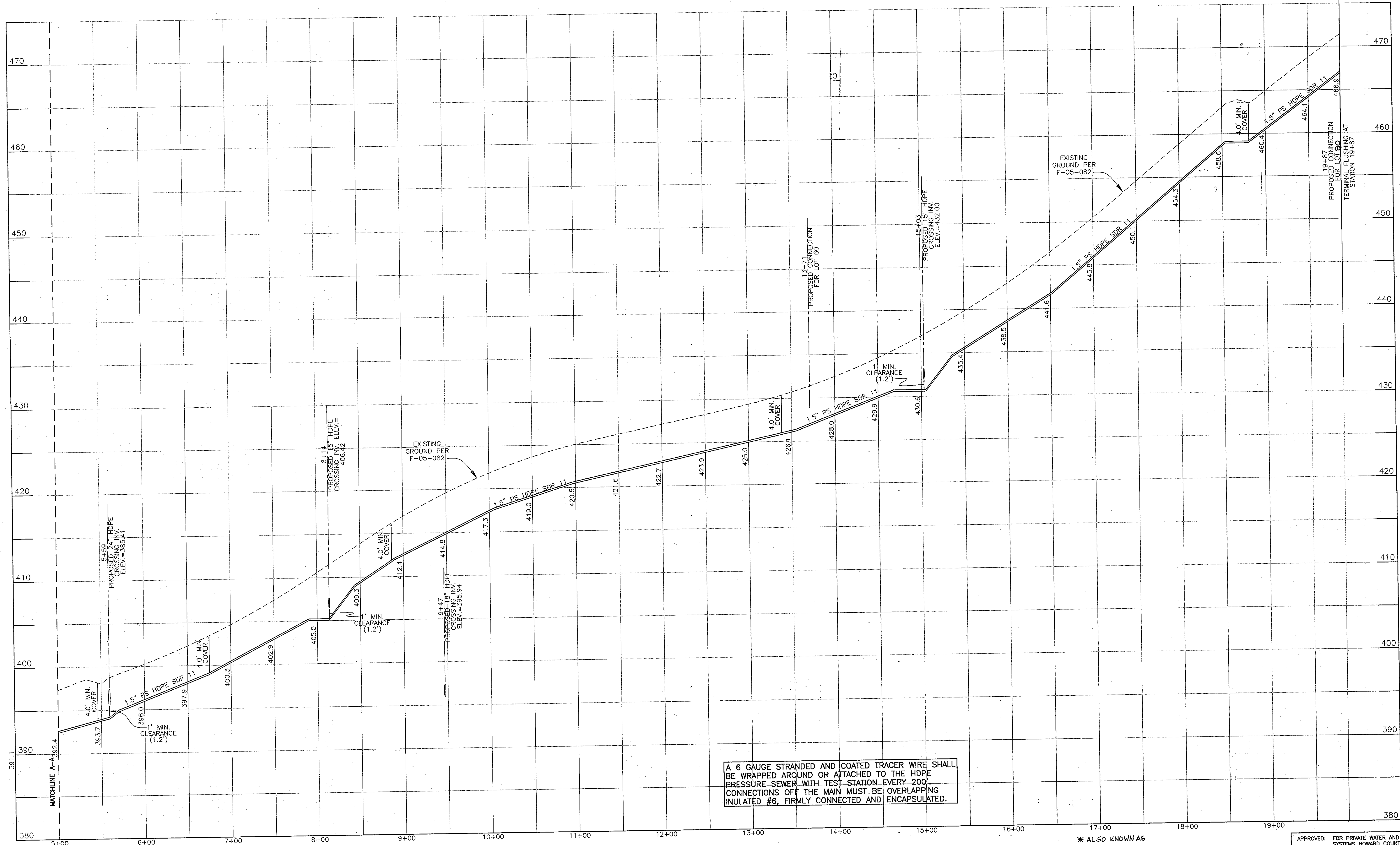
Professional Certification. I hereby certify that these documents were prepared or supervised by me and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 21443, Expiration Date: 12/31/2007.
[Signature] 7/23/07
PROFESSIONAL ENGINEER

DESIGN:	DAM	DBT	
DRAFT:	MAN	DBT	
CHK:	DAM		
DATE:	07, 2007		
BY:	NO.	REVISIONS	DATE
		1. REVISE WELL BOX ON LOT 56 ADJUST TITLE BLOCK	
		2. RELOCATE GP FOR LOTS 81 & 82	

600 SCALE MAP NO. 23 BLOCKS 21 & 22 AND MAP NO. 29 BLOCKS 3 & 4

RIVERWOOD - PHASE 2
A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO
CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'T', 'V' THRU 'Z',
'AA' AND 'EE' AND NON-BUILDABLE BULK PRESERVATION PARCEL 'II' AND A REVISION OF
PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S' AND
'U' TO ADD OR MODIFY FOREST CONSERVATION AREAS
THIRD ELECTION DISTRICT
CONTRACT NO. 50-4287-D

SCALE:
AS SHOWN
SHEET NO.
49 OF 56



PROFILE OF SEWER FORCE MAIN
CASTLEBRIDGE ROAD TO OPEN RUN ROAD
SCALE: 1"=50' HORIZ., 1"=5' VERT.

* ALSO KNOWN AS
RIVERWOOD PHASE 2
LOTS 43-45, 48-64, 67-77
AND 79-82.

APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER
SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT
Brian P. Peterson 9/14/07
COUNTY HEALTH OFFICER DATE

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
Michael A. Daniels 9-17-07
CHIEF, BUREAU OF UTILITIES DATE

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND
[Signature] 9/17/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

BENCHMARK
ENGINEERS • LAND SURVEYORS • PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE SUITE 418
ELLCOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 FAX: 410-465-6644

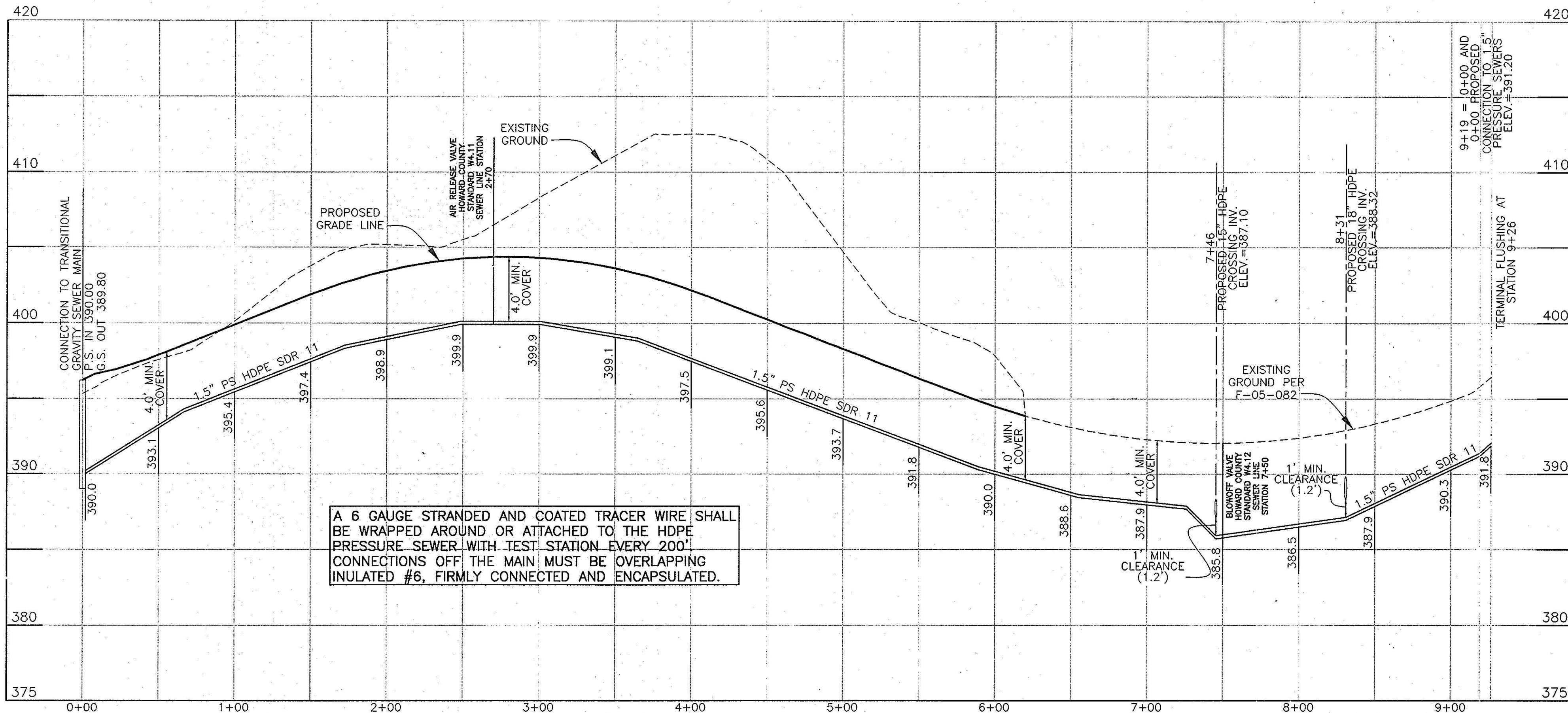
Professional Certification: I hereby certify that these documents were prepared or approved by me or under my direct supervision and I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 21443.
[Signature] 9/12/07
PROFESSIONAL ENGINEER

DESIGN:	DAM			
	DBT			
DRAFT:	MAN			
	DBT			
CHK:	DAM			
DATE:	07, 2007			
BY:	BEI			
NO.:	1			
REVISIONS:	REVISE LOT 66 TO LOT 80, REVISE TITLE BLOCK	9-30-11		

800 SCALE MAP NO. 23 BLOCKS 21 & 22 AND MAP NO. 29 BLOCKS 3 & 4

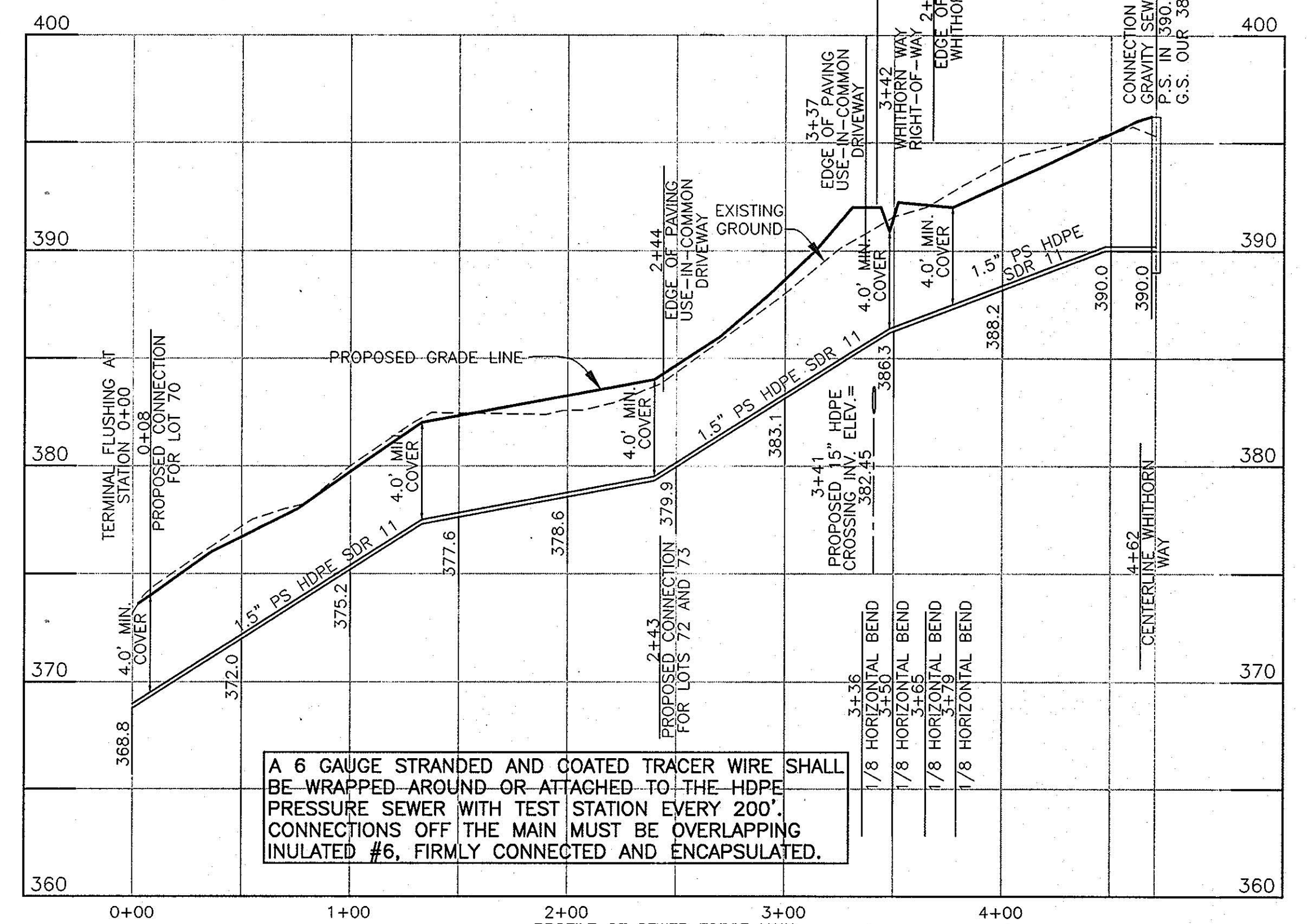
RIVERWOOD - PHASE 2
A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO
CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'V' THRU 'Z',
'AA' AND '4E' AND NON-BUILDABLE BULK PARCEL 'II' AND A REVISION OF
PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S' AND
'U' TO ADD OR MODIFY FOREST CONSERVATION AREAS
THIRD ELECTION DISTRICT
CONTRACT NO. 50-4287-D

SCALE:
AS SHOWN
SHEET NO.
51 OF 56



A 6 GAUGE STRANDED AND COATED TRACER WIRE SHALL BE WRAPPED AROUND OR ATTACHED TO THE HDPE PRESSURE SEWER WITH TEST STATION EVERY 200'. CONNECTIONS OFF THE MAIN MUST BE OVERLAPPING INULATED #6, FIRMLY CONNECTED AND ENCAPSULATED.

PROFILE OF SEWER FORCE MAIN
WHITHORN WAY TO CASTLEBRIDGE ROAD
SCALE: 1"=50' HORIZ., 1"=5' VERT.



A 6 GAUGE STRANDED AND COATED TRACER WIRE SHALL BE WRAPPED AROUND OR ATTACHED TO THE HDPE PRESSURE SEWER WITH TEST STATION EVERY 200'. CONNECTIONS OFF THE MAIN MUST BE OVERLAPPING INULATED #6, FIRMLY CONNECTED AND ENCAPSULATED.

PROFILE OF SEWER FORCE MAIN
WHITHORN WAY FOR LOTS 70, 72 AND 73
SCALE: 1"=50' HORIZ., 1"=5' VERT.

* ALSO KNOWN AS
RIVERWOOD PHASE 2
LOTS 43-45, 48-64,
67-77 AND 79-82

APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT
John P. ...
COUNTY HEALTH OFFICER
DATE: 9/11/11

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND
Michael ...
CHIEF, BUREAU OF UTILITIES
DATE: 9/11/11

BENCHMARK
ENGINEERS & LAND SURVEYORS & PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE & SUITE 418
ELLCOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 FAX: 410-465-6644

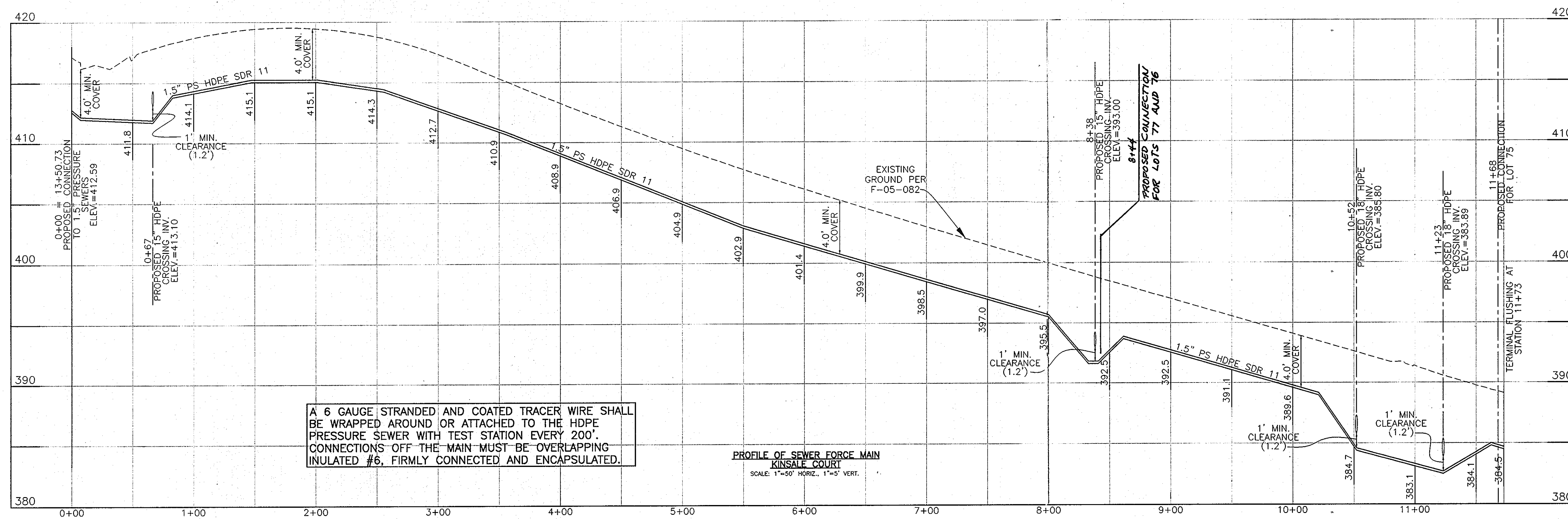
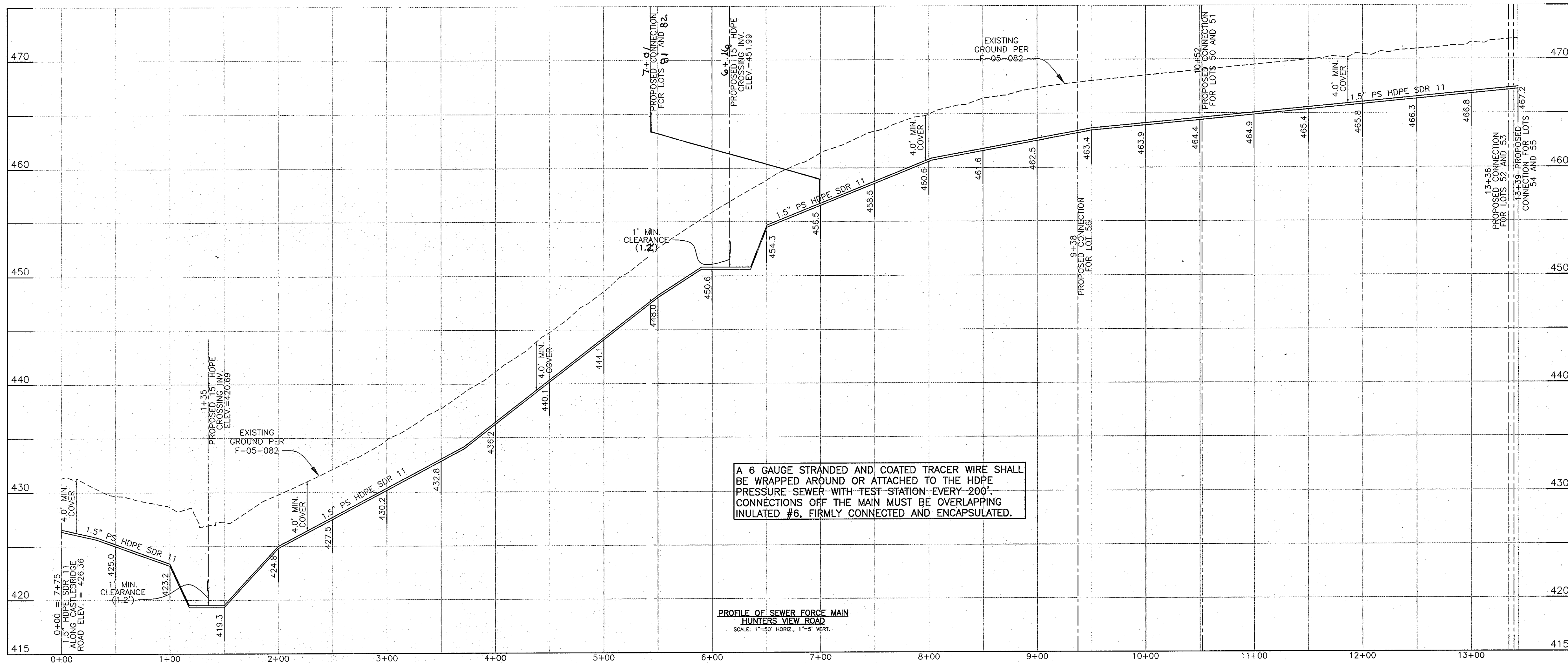
Professional Certification: I hereby certify that these documents were prepared or supervised by me or under my direct supervision and I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 21443, Expiration Date: 12/31/2011
Dorothy ...
PROFESSIONAL ENGINEER
DATE: 7/26/11

DESIGN:	DAM DBT		
DRAFT:	MAN DBT		
CHK:	DAM		
DATE:	07, 2007		
BY:	BE1	1	REVISE TITLE BLOCK
NO.:			
REVISIONS:			
DATE:			9-30-11

600 SCALE MAP NO. 23 BLOCKS 21 & 22 AND MAP NO. 29 BLOCKS 3-4-4

RIVERWOOD - PHASE 2
A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'T' THRU 'Z', 'AA' AND 'EE' AND NON-BUILDABLE BULK PARCEL 'II' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S' AND 'U' TO ADD OR MODIFY FOREST CONSERVATION AREAS
THIRD ELECTION DISTRICT
CONTRACT NO. 50-4287-D

SCALE:
AS SHOWN
SHEET NO.
52 OF 56



* ALSO KNOWN AS
 RIVERWOOD PHASE 2
 LOTS 43-45, 48-64,
 67-77 AND 79-82

APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT
Brian G. Peter Beldeman 9/17/07
 COUNTY HEALTH OFFICER DATE

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
Michael J. Swain 9-17-07
 CHIEF, BUREAU OF UTILITIES DATE

DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY, MARYLAND
[Signature] 9/17/07
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

BENCHMARK
 ENGINEERS & LAND SURVEYORS & PLANNERS
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 8480 BALTIMORE NATIONAL PIKE A SUITE 418
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 PHONE: 410-465-6105 FAX: 410-465-6644

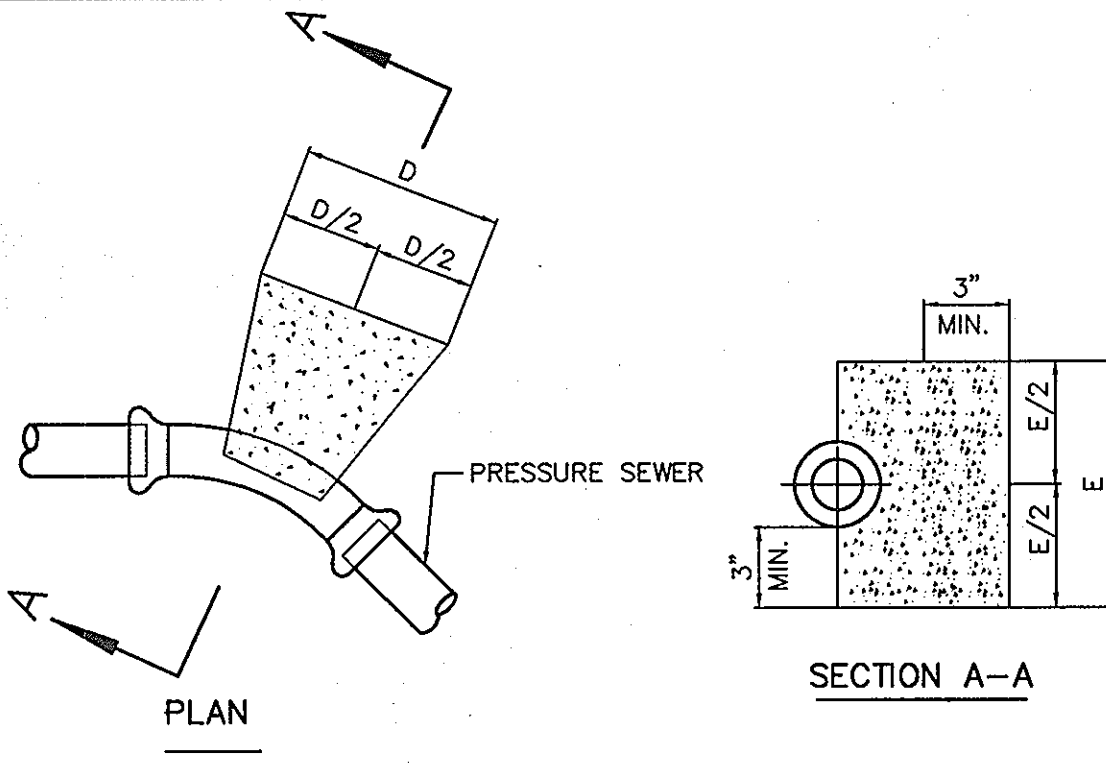
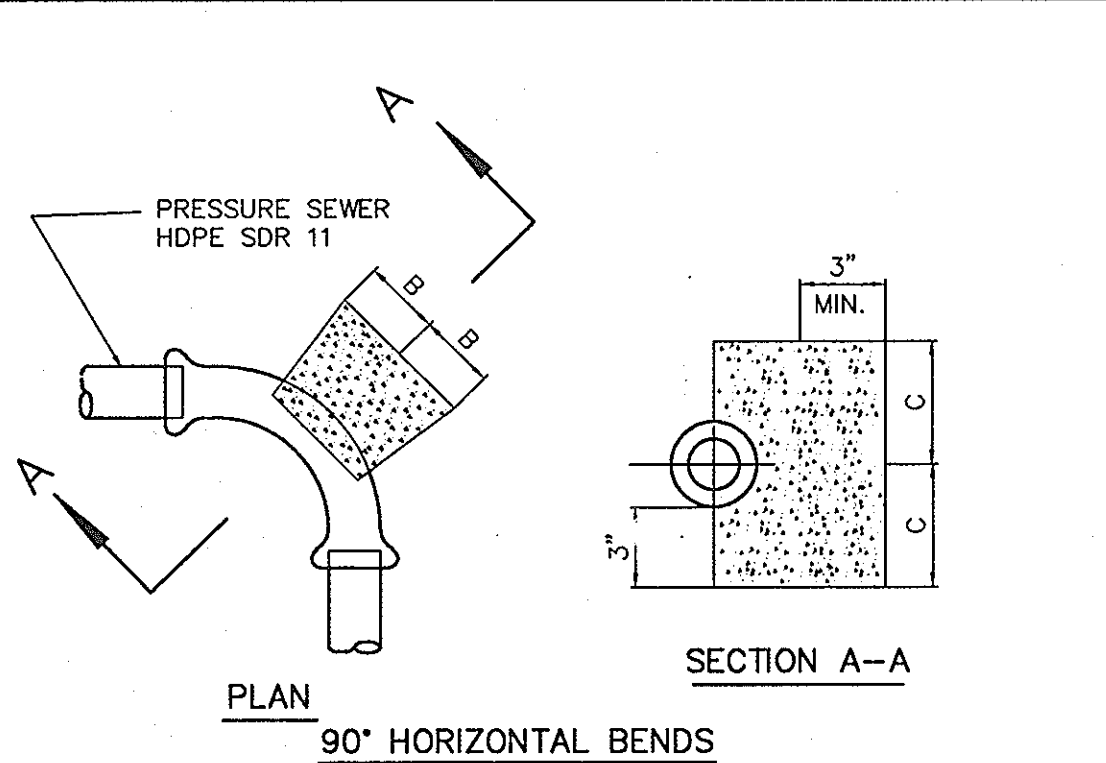
Professional Certification. I hereby certify that these documents were prepared or approved by me or under my direct supervision and I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 21443, Expiration Date: 12/31/2008
[Signature]
 PROFESSIONAL ENGINEER
 7/22/07

DESIGN:	DAM		
	DBT		
DRAFT:	MAN		
	DBT		
CHK:	DAM		
DATE:	07, 2007		
BY:	BET		
NO.	1		
REVISIONS	REVISE LOCATION OF PUMP FOR LOTS 43-47 UPDATE LOT NUMBERS & TITLE BLOCK 9-30-11		
DATE			

600 SCALE MAP NO. 23 BLOCKS 21 & 22 AND MAP NO. 29 BLOCKS 3 & 4

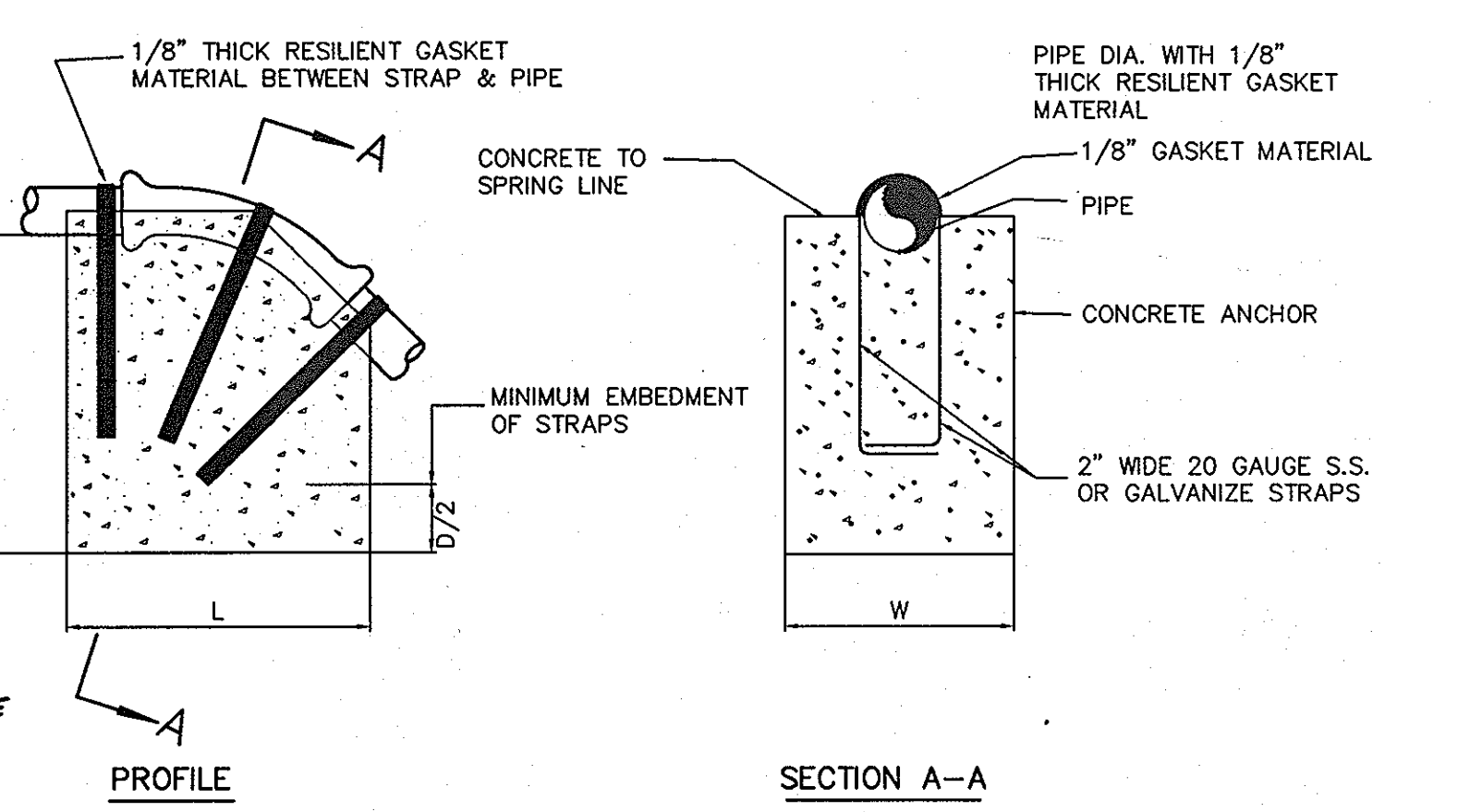
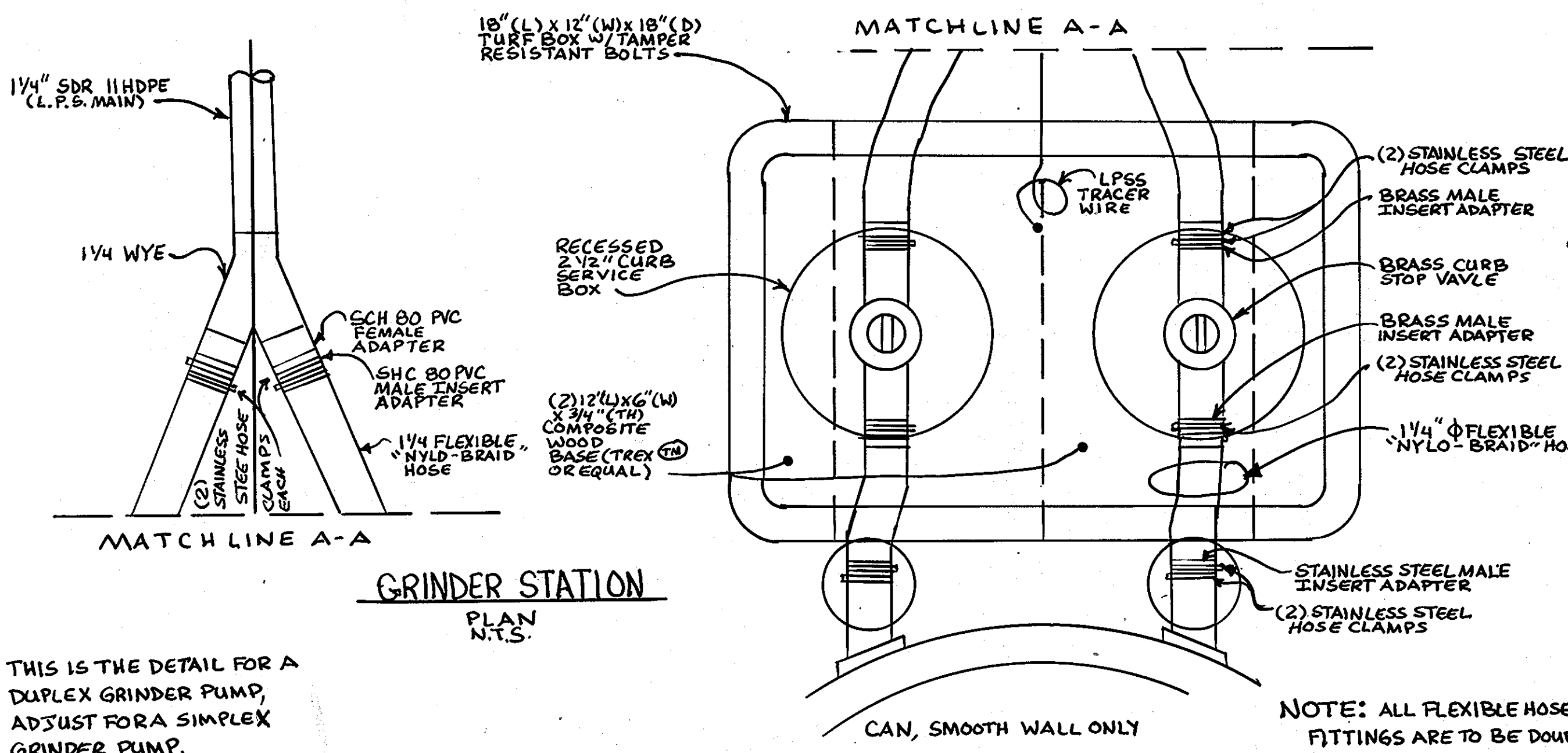
RIVERWOOD - PHASE 2
 A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'V' THRU 'Z', 'AA' AND 'EE' AND NON-BUILDABLE BULK PARCEL 'II' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S' AND 'U' TO ADD OR MODIFY FOREST CONSERVATION AREAS
 THIRD ELECTION DISTRICT
CONTRACT NO. 50-4287-D

SCALE:
 AS SHOWN
 SHEET NO.
 53 OF 56



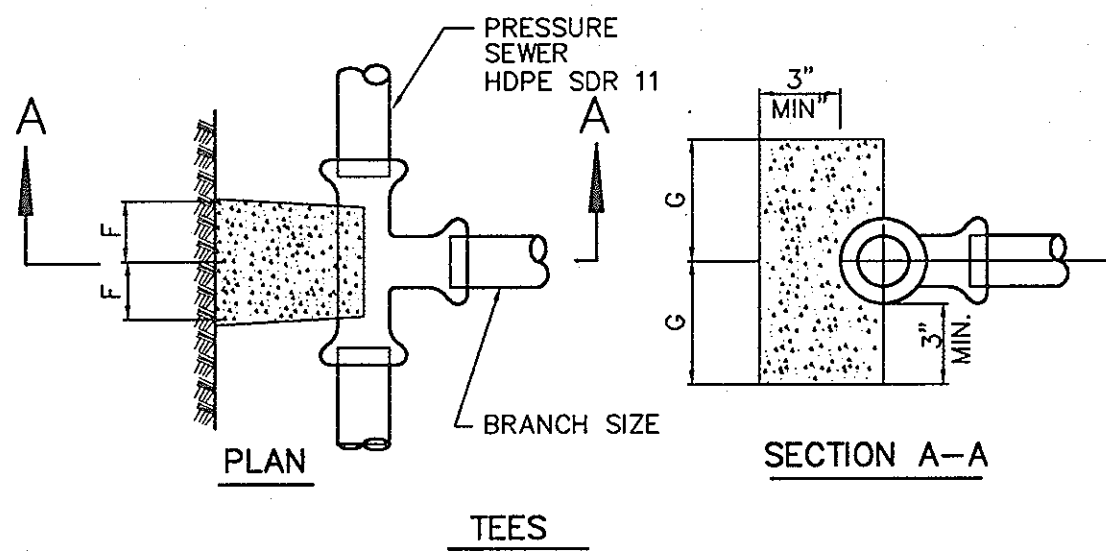
PIPE SIZE	B	C	D	E	F	G
1-1/4" & 1-1/2"	4"	4"	5"	5"	3"	3"
2"	5"	5"	7"	7"	5"	5"

- NOTES:
- f'c = 3000 psi @ 28 DAYS.
 - CARRY ALL BEARING SURFACE TO UNDISTURBED GROUND OR FIRM SUBGRADE.
 - BUTTRESS SIZED FOR 150 PSI.
 - DO NOT ENCASE JOINTS.

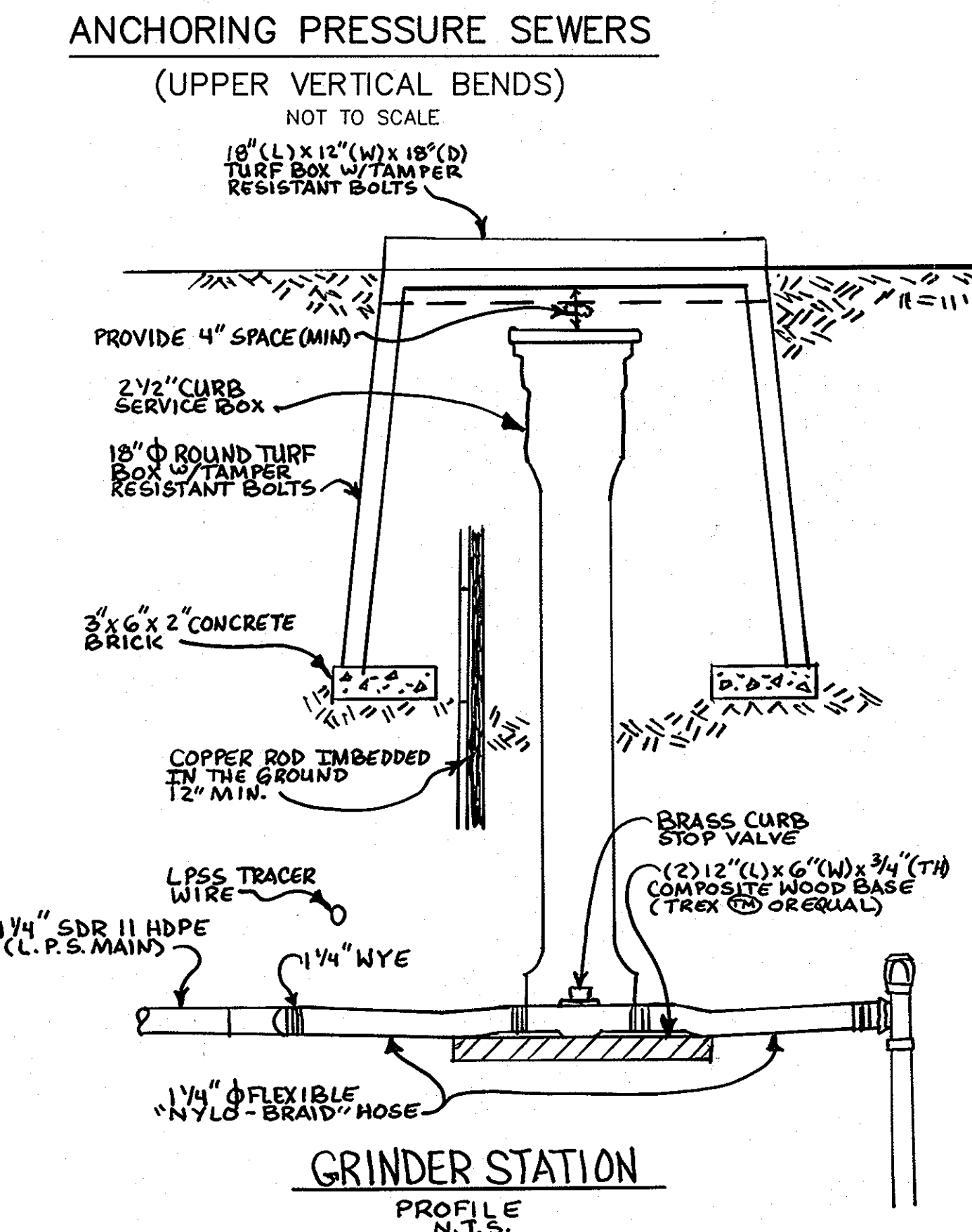
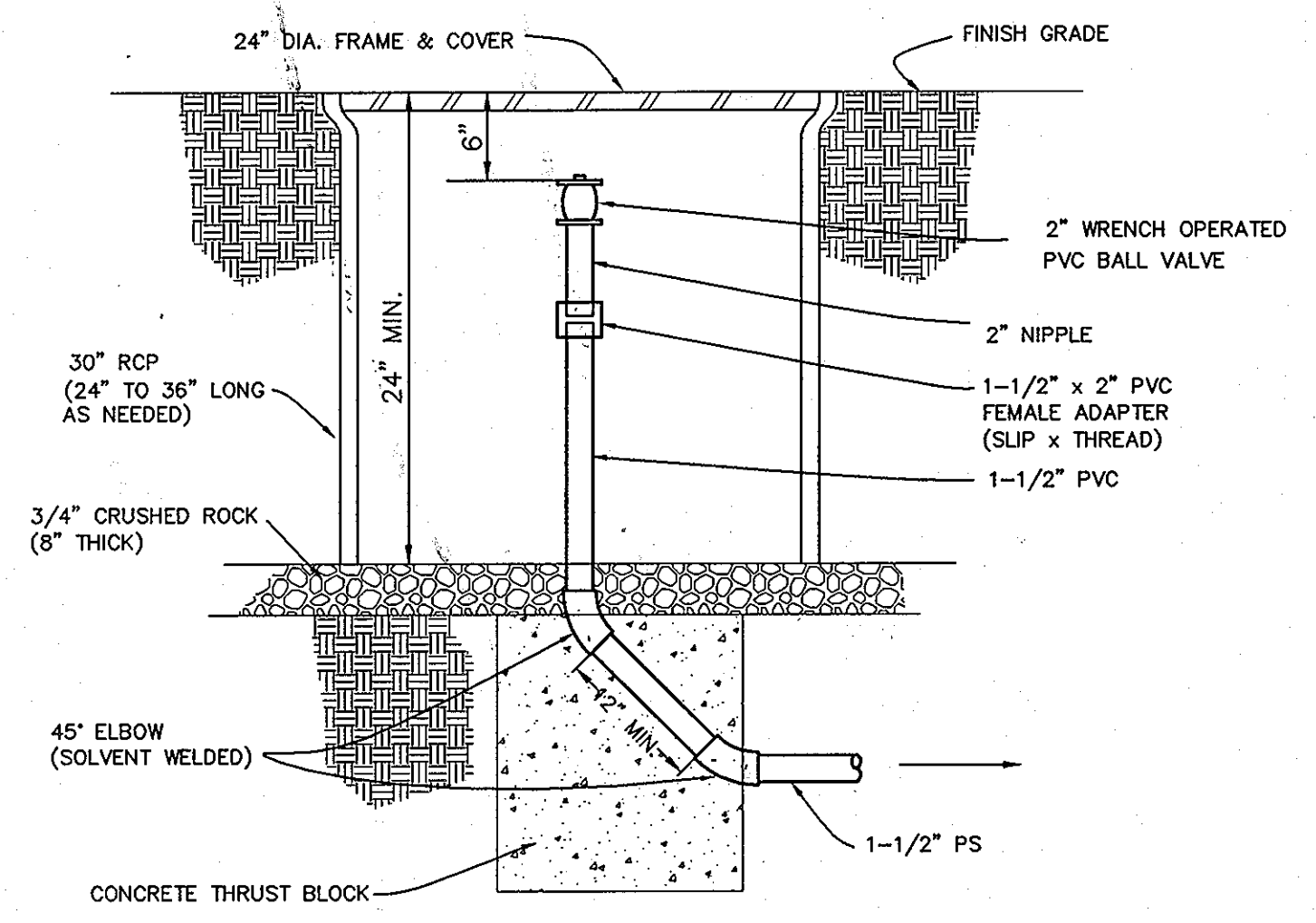
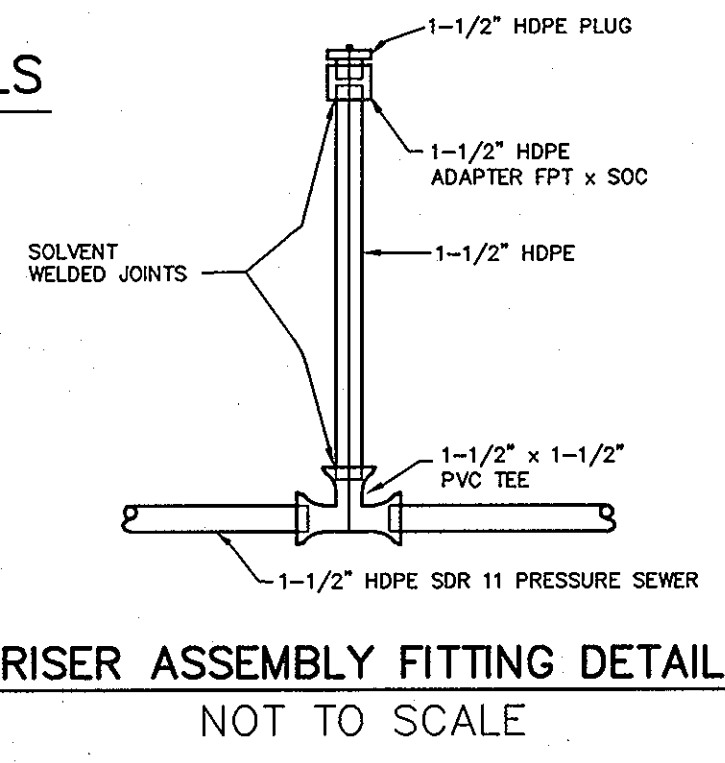
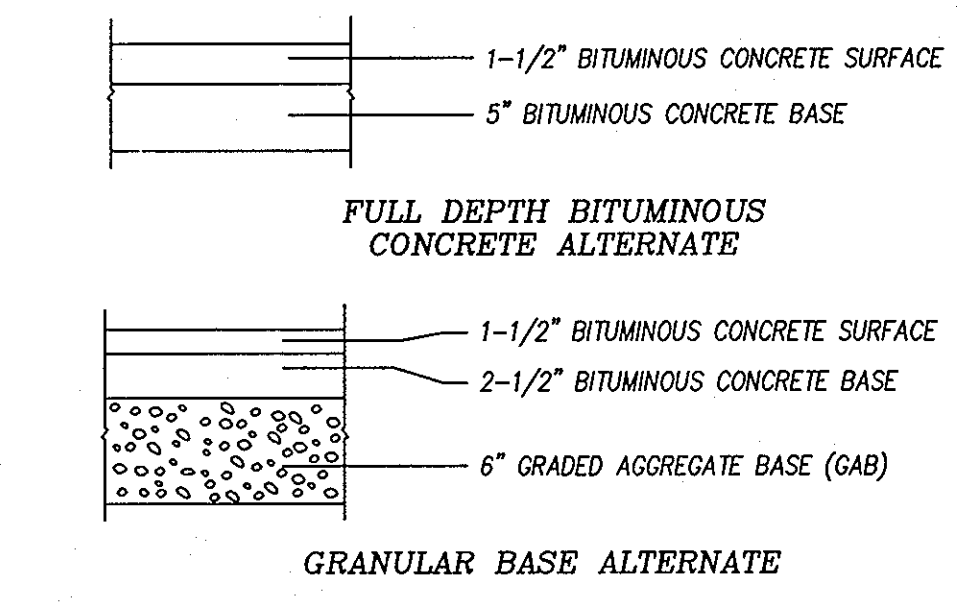


BEND		1-1/4"	1-1/2"
11-1/4"	L	12"	12"
	W	10"	10"
	D	10"	10"
22-1/2"	L	15"	15"
	W	15"	15"
	D	12"	12"
45"	L	20"	20"
	W	20"	20"
	D	12"	12"

- NOTES:
- PAINT EXPOSED GALVANIZE STRAPS WITH TWO(2) COATS OF BITUMINOUS PAINT.
 - f'c = 3000 psi AT 28 DAYS.
 - CARRY ALL BEARING SURFACE TO UNDISTURBED EARTH OR FIRM SUBGRADE.
 - CONCRETE ANCHORAGE DIMENSIONS ARE BASED ON TOTAL PRESSURE OF 150 PSI.

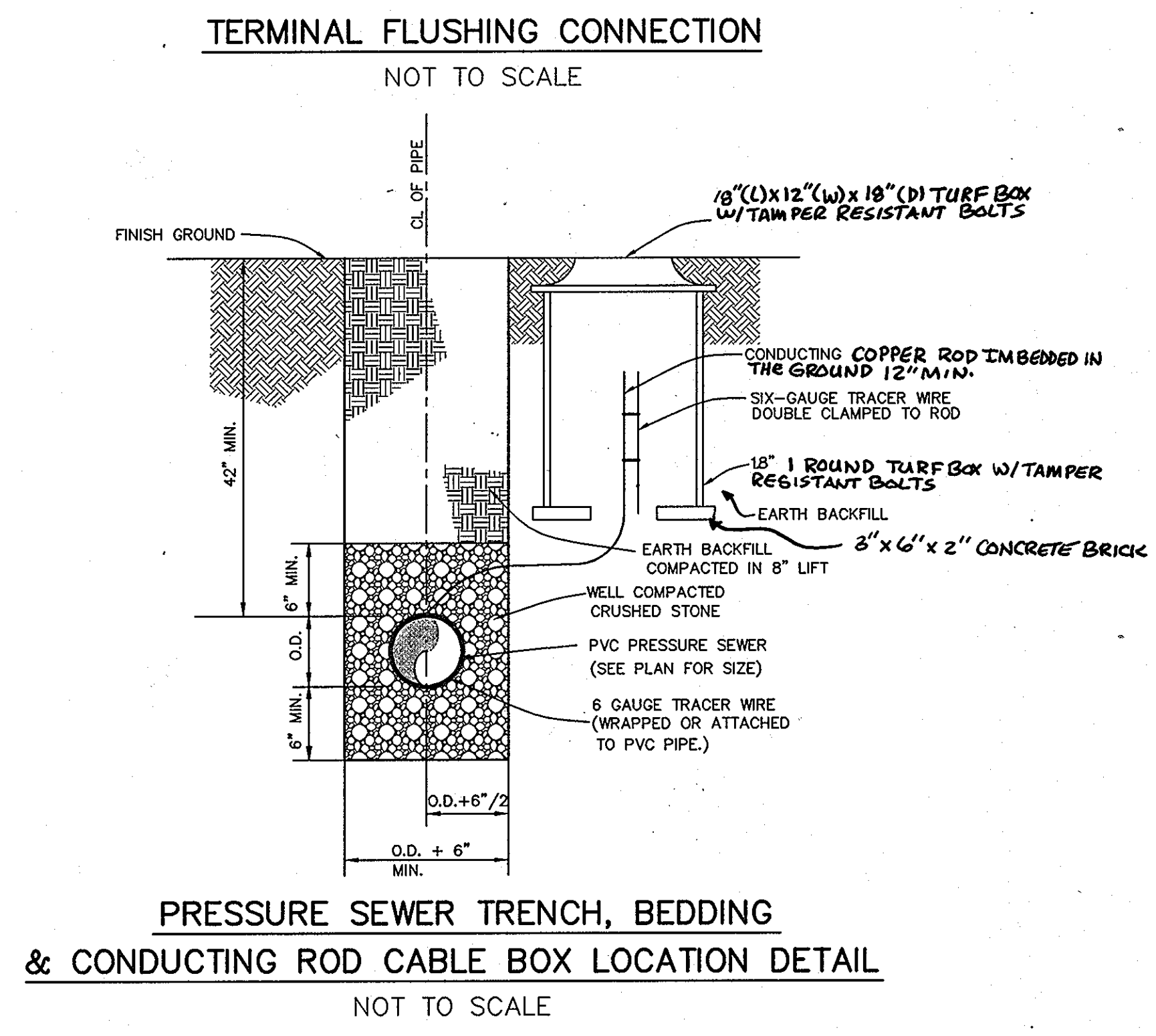
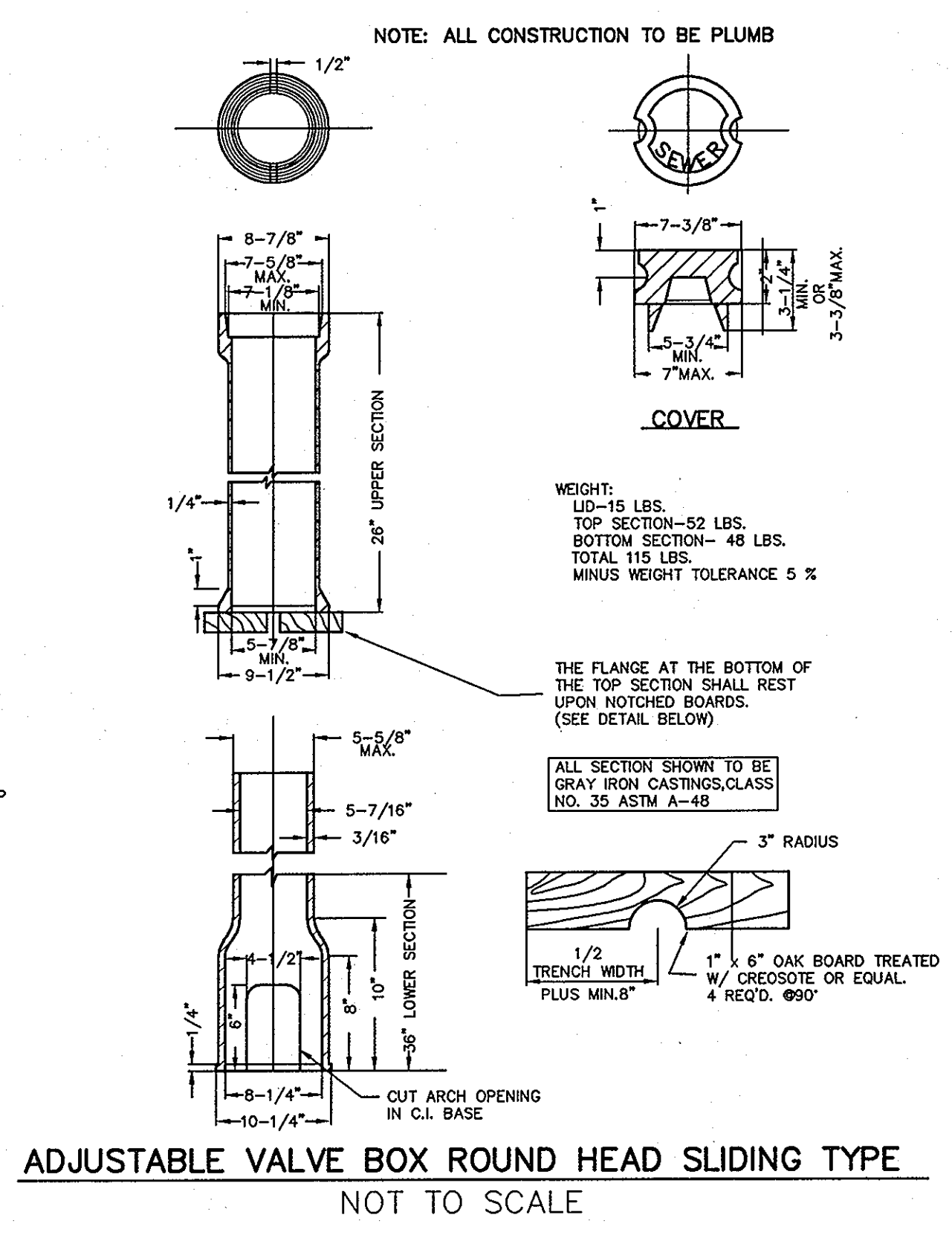
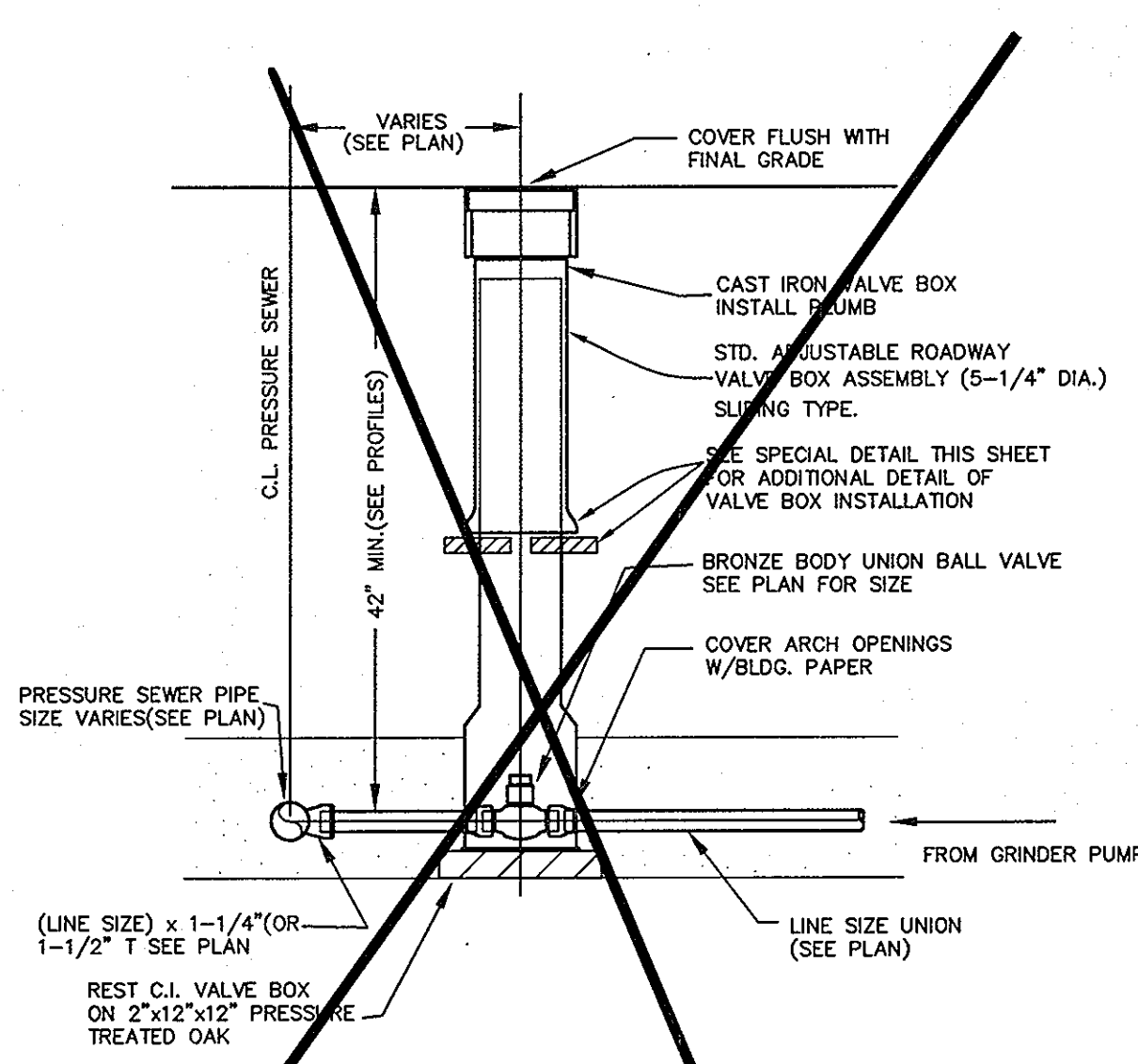


PRESSURE SEWER BLOCKING DETAILS NOT TO SCALE



- NOTES:
- ALL FLEXIBLE HOSE FITTINGS ARE TO BE DOUBLE BANNED WITH STAINLESS STEEL CLAMPS.
 - SEE HO. CO. STANDARD DETAIL E-1.01 FOR ELECTRIC SERVICE TO GRINDER PUMP.

PAVING SECTION P-2 NOT TO SCALE



* ALSO KNOWN AS RIVERWOOD PHASE II
LOTS 43-45, 48-64, 67-77 AND 79-82

APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT
B. Nelson for Peter Billemore 9/14/07
COUNTY HEALTH OFFICER DATE

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
Michael A. Duranville 9-17-07
CHIEF, BUREAU OF UTILITIES DATE

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND
[Signature] 9/12/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

BENCHMARK
ENGINEERS & LAND SURVEYORS & PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE & SUITE 418
ELLICOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 FAX: 410-465-6644

Professional Certification I hereby certify that these documents were prepared or approved by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 21443, Expiration Date: 12/31/2008
[Signature] 7/26/07

DESIGN:	DAM	DBT
DRAFT:	MAN	DBT
CHK:	DAM	
DATE:	07, 2007	
BY:	BET	
NO.:	1	
REVISIONS:	ADD DETAILS AND REVISE TITLE BLOCK	9-30-11

NOTES AND DETAILS
600 SCALE MAP NO. 23 BLOCKS 21 & 22 AND MAP NO. 29 BLOCKS 3 & 4

RIVERWOOD - PHASE 2
A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO CREATE LOTS 43-77 NON-BUILDABLE PRESERVATION PARCELS 'V' THRU 'Z', 'AA' AND 'EE' AND NON-BUILDABLE BULK PARCEL 'II' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'E', 'R', 'S' AND 'U' TO ADD OR MODIFY FOREST CONSERVATION AREAS THIRD ELECTION DISTRICT
CONTRACT NO. 50-4287-D

SCALE:
AS SHOWN
SHEET NO.
54 OF 56

SEDIMENT CONTROL NOTES

- A MINIMUM OF 24 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTION, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION. (313-1850).
- ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN ACCORDANCE WITH THE MOST CURRENT "MARYLAND STANDARDS AND SPECIFICATION FOR SOIL EROSION AND SEDIMENT CONTROL", REVISIONS THERE TO.
- 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, PERMITS SLOPES AND ALL SLOPES GREATER THAN 3:1; B) 14 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
- ALL SPOIL FROM THE TRENCHING IS TO BE PLACED ON THE UPHILL SIDE OF THE TRENCH.
- 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 (SEC. 51) SO2 (SEC. 54), TEMPORARY SEEDING (SEC. 52) AND MULCHING (SEC. 52). 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 PERMITS FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- SITE ANALYSIS:

TOTAL AREA OF SITE	289.85	ACRES
AREA DISTURBED	3.8	ACRES
AREA TO BE ROOFED OR PAVED	0.2	ACRES
AREA TO BE VEGETATIVELY STABILIZED	3.6	ACRES
TOTAL CUT	0	CY
TOTAL FILL	0	CY

 OFFSITE WASTE/BORROW AREA LOCATION: SEE NOTE #12
- 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 CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL DIVISION.
- 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 CAN BE BACK FILLED AND STABILIZED WITHIN ONE WORKING DAY, WHICHEVER IS SHORTER.
- WASTE WILL BE HAULED TO AN APPROVED WASTE DISPOSAL SITE, WITH A ACTIVE GRADING PERMIT.

TOPSOIL SPECIFICATIONS

- Topsoil salvaged from the existing site may be used provided that it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-SSS in cooperation with Maryland Agricultural Experiment Station.
- Topsoil Specifications - Soil to be used as topsoil must meet the following:
 - Topsoil shall be a loam, sandy loam, clay loam, silt loam, sandy clay loam, loamy sand. Other soils may be used if approved by an appropriate soil scientist and approved by the appropriate authority. Regardless, topsoil shall not be a result of containing texture subsides and shall be free of clumps, stones, logs, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1-1/2" in diameter.
 - Topsoil must be free of plants or plant parts such as Bermuda grass, quack grass, Johnson grass, nutcracker, poison ivy, thistle, or others as specified.
 - Where the subsoil is either highly acidic or composed of heavy clays, ground limestone shall be spread at the rate of 4-8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil. Lime shall be distributed uniformly over designated areas and worked into the soil in accordance with tillage operations as described in the following procedures.
- For sites having disturbed areas under 5 acres:
 - Place topsoil (if required) and apply soil amendments as specified in 2.0.0 Vegetative Stabilization - Section 1 - Vegetative Stabilization Methods and Materials.
- For sites having disturbed areas over 5 acres:
 - On soil meeting Topsoil specifications, obtain test results disclosing fertilizer and lime amendments required to bring the soil into compliance with the following:
 - pH for topsoil shall be between 6.0 and 7.5. If the tested soil demonstrates a pH of less than 6.0, sufficient lime shall be prescribed to raise the pH to 6.5 or higher.
 - Organic content or topsoil shall be not less than 1.5 percent by weight.
 - Topsoil having soluble salt content greater than 500 parts per million shall not be used.
 - No soil or seed shall be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phytotoxic materials.
 Note: Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate authority, may be used in lieu of natural topsoil.
 - Place topsoil (if required) and apply soil amendments as specified in 2.0.0 Vegetative Stabilization - Section 1 - Vegetative Stabilization Methods and Materials.
- Topsoil Application
 - When topsoiling, maintain needed erosion and sediment control practices such as diversions, grade stabilization structures, earth cuts, slope silt fence and sediment traps and basins.
 - Grades on the grade to be topsoiled, which have been previously established, shall be maintained, about 4" - 8" higher in elevation.
 - Topsoil shall be uniformly distributed in a 4" - 8" layer and lightly compacted to a minimum thickness of 4". Spreading shall be performed in such a manner that seeding or sodding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations shall be corrected in order to prevent the formation of depressions or water pockets.
 - Topsoil shall not be placed while the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.
- Alternative for Permanent Seeding - Instead of applying the full amounts of lime and commercial fertilizer, composted sludge and amendments may be applied as specified below:
 - Composted Sludge Material for use as a soil conditioner for sites having disturbed areas over 5 acres shall be tested to prescribe amendments and for sites having disturbed areas under 5 acres shall conform to the following requirements:
 - Composted sludge shall be supplied by, or originate from, a person or persons that are permitted (at the time of acquisition of the compost) by the Maryland Department of the Environment under COMAR 26.04.05.
 - Composted sludge shall contain at least 1 percent nitrogen, 1.5 percent phosphorus, and 0.2 percent potassium and have a pH of 7.0 to 8.0. If compost does not meet these requirements, the appropriate constituents must be added to meet the requirements prior to use.
 - Composted sludge shall be applied at a rate of 1 ton/1,000 square feet.
 - Composted sludge shall be amended with a potassium fertilizer applied at the rate of 4 lb/1,000 square feet, and 1/3 the normal lime application rate.

SEQUENCE OF CONSTRUCTION

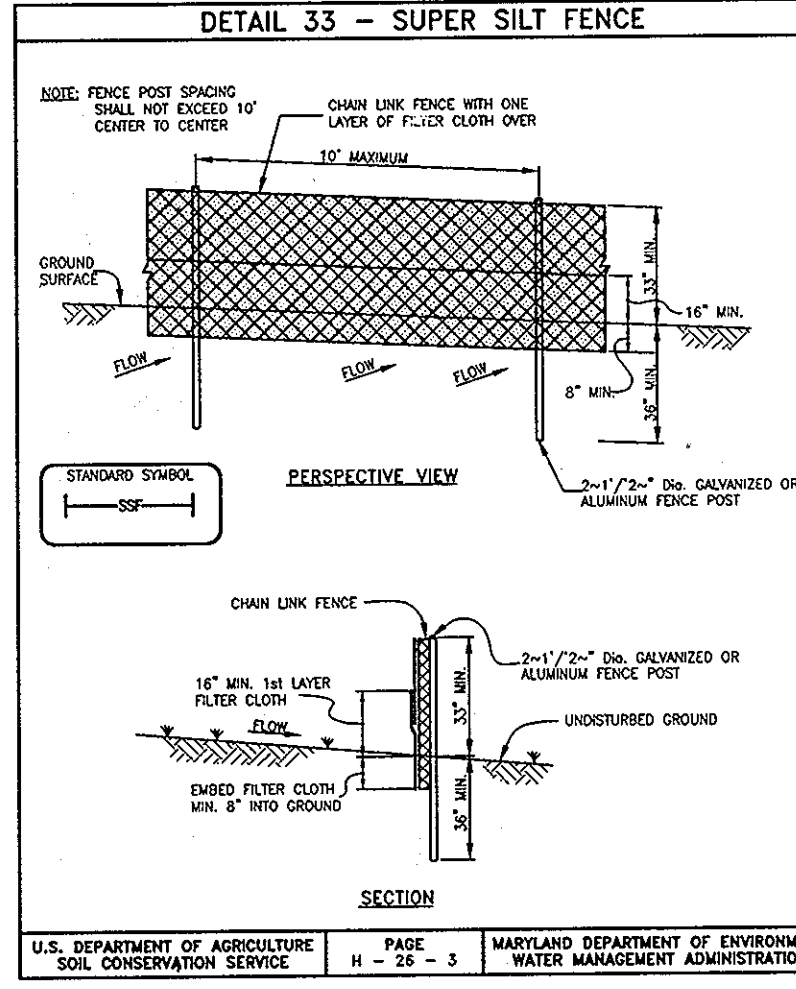
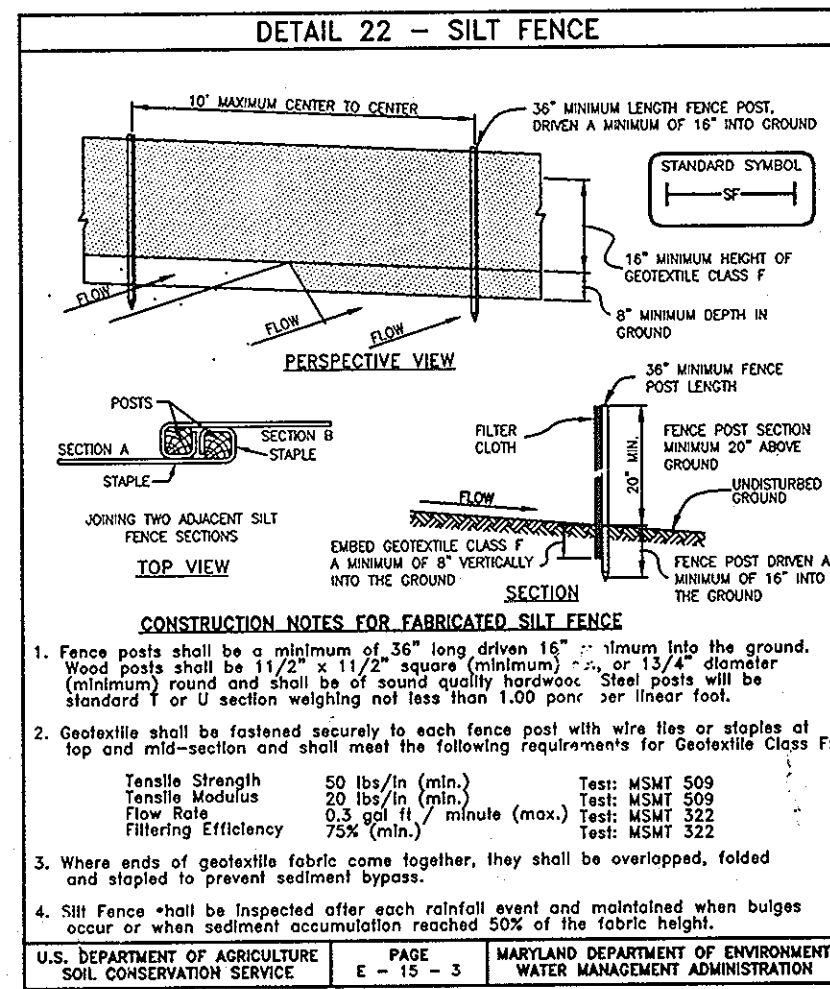
- DAY 1 APPLY FOR A GRADING PERMIT
 DAY 2 - 15 INSTALL SILT FENCE, SUPER SILT FENCE AND STABILIZED CONSTRUCTION ENTRANCE
 DAY 6 - 15 CLEAR AND GRUB AREA OF DISTURBANCE
 DAY 16 - 20 UPON APPROVAL OF THE SEDIMENT CONTROL INSPECTOR GRADE AND INSTALL ACCESS DRIVE AND COMMENCE CONSTRUCTION OF THE COMMUNITY SEPTIC SYSTEM AND FORCE MAIN
 DAY 21 - 25 STABILIZE THE DISTURBED AREAS IN ACCORDANCE WITH THE PERMANENT SEEDING NOTES.
 DAY 26 - 30 UPON APPROVAL OF THE SEDIMENT CONTROL INSPECTOR REMOVE REMAINING SEDIMENT CONTROL FEATURES AND STABILIZE DISTURBED AREAS IN ACCORDANCE WITH THE PERMANENT SEEDING NOTES.

TEMPORARY SEEDBED PREPARATIONS

APPLY TO GRADED OR CLEARED AREAS LIKELY TO BE REDISTURBED WHERE A SHORT-TERM VEGETATIVE COVER IS NEEDED.
 SEEDBED PREPARATION: LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.
 SOIL AMENDMENTS: APPLY 600 LBS PER ACRE 10-10-10 FERTILIZER (14 LBS/1000 SQ FT).
 SEEDING: FOR PERIOD MARCH 1 THROUGH APRIL 30 AND FROM AUGUST 15 THROUGH NOVEMBER 15, SEED WITH 2-1/2 BUSHELS PER ACRE OF ANNUAL RYE (3.2 LBS/1000 SQ FT). FOR THE PERIOD MAY 1 THROUGH AUGUST 14, SEED WITH 3 LBS PER ACRE OF WEEPING LOVEGRASS (0.7 LBS/1000 SQ FT). FOR THE PERIOD NOVEMBER 16 THROUGH FEBRUARY 28, PROTECT SITE BY APPLYING 2 TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING, OR USE SOD.
 MULCHING: APPLY 1-1/2 TO 2 TONS PER ACRE (70 TO 90 LBS/1000 SQ FT) OF UNROTTED SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GALLONS PER ACRE (5 GAL/1000 SQ FT) OF EMULSIFIED ASPHALT ON FLAT AREAS, ON SLOPES, 8 FT. OR HIGHER, USE 348 GALLONS PER ACRE (8 GAL/1000 SQ FT) FOR ANCHORING.
 REFER TO THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR RATE AND METHODS NOT COVERED.

PERMANENT SEEDBED PREPARATIONS

SEEDBED PREPARATION: LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.
 SOIL AMENDMENTS: IN LIEU OF SOIL TEST RECOMMENDATIONS, USE ONE OF THE FOLLOWING SCHEDULES:
 1. PREFERRED - APPLY 2 TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS/1000 SQ FT) AND 600 LBS PER ACRE 10-10-10 FERTILIZER (14 LBS/1000 SQ FT) BEFORE SEEDING. HARROW OR DISC INTO UPPER THREE INCHES OF SOIL. AT TIME OF SEEDING, APPLY 400 LBS PER ACRE 30-0-0 UREAFORM FERTILIZER (9 LBS/1000 SQ FT).
 2. ACCEPTABLE - APPLY 2 TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS/1000 SQ FT) AND 1000 LBS PER ACRE 10-10-10 FERTILIZER (23 LBS/1000 SQ FT) BEFORE SEEDING. HARROW OR DISC INTO UPPER THREE INCHES OF SOIL.
 SEEDING: FOR THE PERIODS MARCH 1 THROUGH APRIL 30 AND AUGUST 15 THROUGH OCTOBER 15, SEED WITH 60 LBS PER ACRE (1.4 LBS/1000 SQ FT) OF KENTUCKY 31 TALL FESCUE PER ACRE AND 2 LBS PER ACRE (0.5 LBS/1000 SQ FT) OF WEEPING LOVEGRASS. DURING THE PERIOD OF OCTOBER 16 THROUGH FEBRUARY 28, PROTECT SITE BY APPLYING 2 TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING. OPTION (2) USE SOD. OPTION (3) SEED WITH 60 LBS PER ACRE OF KENTUCKY 31 TALL FESCUE AND MULCH WITH 2 TONS PER ACRE OF WELL ANCHORED STRAW.
 MULCHING: APPLY 1-1/2 TO 2 TONS PER ACRE (70 TO 90 LBS/1000 SQ FT) OF UNROTTED SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GALLONS PER ACRE (5 GAL/1000 SQ FT) OF EMULSIFIED ASPHALT ON FLAT AREAS, ON SLOPES 8 FEET OR HIGHER, USE 348 GALLONS PER ACRE (8 GAL/1000 SQ FT) FOR ANCHORING.
 MAINTENANCE: INSPECT ALL SEEDING AREAS AND MAKE NEEDED REPAIRS, REPLACEMENTS AND RESEEDINGS.



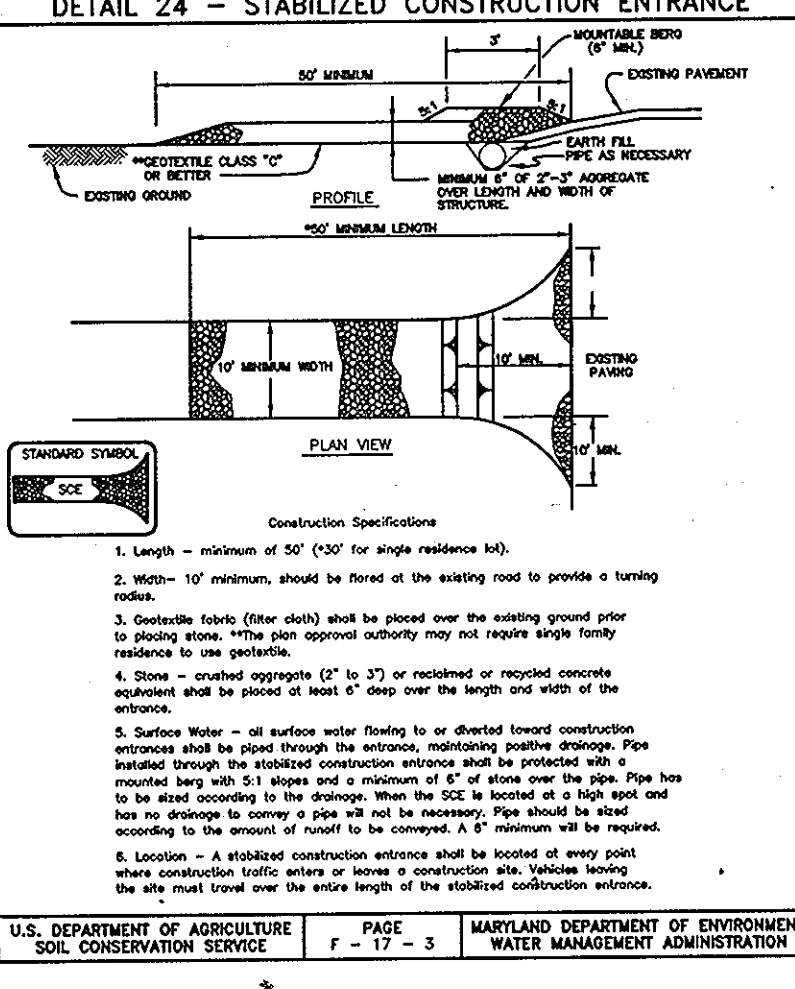
CONSTRUCTION SPECIFICATIONS

- 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 cross 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 8" and folded.
- Maintenance shall be performed as needed and all bulges 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	25 lbs/in (min.)	Test MSMT 509
Flow Rate	0.5 gpm/ft (min.)	Test MSMT 322
Filtering Efficiency	75% (min.)	Test MSMT 322

SUPER SILT FENCE DESIGN CRITERIA

Slope	Slope Steepness	Design Length (Maximum)	Silt Fence Length (Maximum)
0 - 10%	0 - 10:1	Unlimited	Unlimited
10 - 20%	10:1 - 5:1	200 feet	1,500 feet
20 - 33%	5:1 - 3:1	100 feet	1,000 feet
33 - 50%	3:1 - 2:1	100 feet	500 feet
50% +	2:1 +	50 feet	250 feet

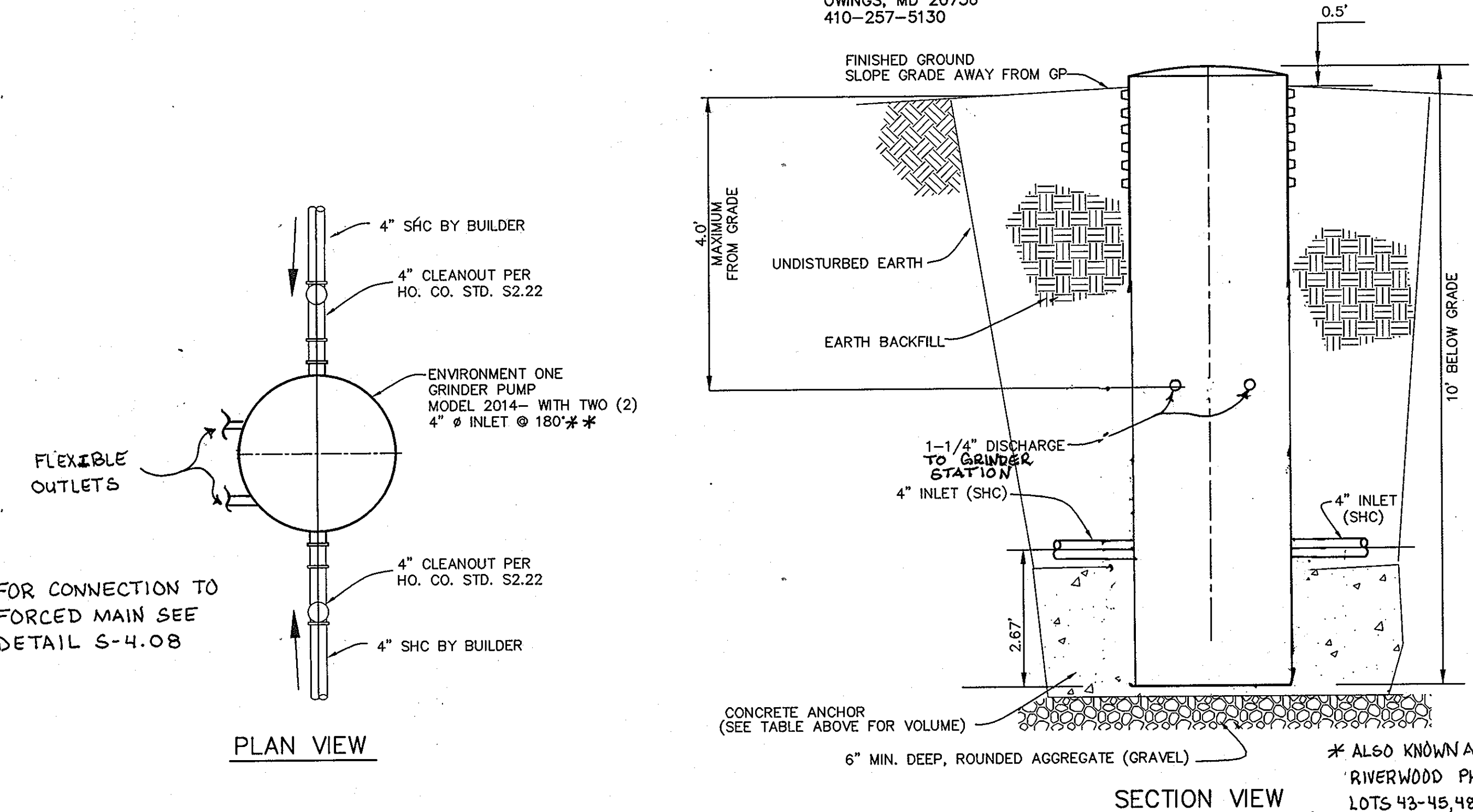


ENVIRONMENT ONE GRINDER PUMP DATA TABLE

LOTS	TOP ELEV.	BOTTOM ELEV.	DEPTH	INLET ELEV.	DISCHARGE ELEV.	CONC. ANCHOR VOLUME	REMARKS
81/82	461.2	461.2	10.00' (120")	453.07	457.2	35.7 C.F.	MODEL NO. 2014 (DUPLX)
50/51	470.5	460.5	10.00' (120")	463.17	466.5	35.7 C.F.	MODEL NO. 2014 (DUPLX)
52/53	472.5	462.5	10.00' (120")	465.17	468.5	35.7 C.F.	MODEL NO. 26 4 (DUPLX)
54/55	472.5	462.5	10.00' (120")	465.17	468.5	35.7 C.F.	MODEL NO. 2014 (DUPLX)
56	467.0	457.0	10.00' (120")	459.67	463.0	35.7 C.F.	MODEL NO. 2014
60	429.0	419.0	10.00' (120")	421.67	425.0	35.7 C.F.	MODEL NO. 2014
80	472.8	462.8	10.00' (120")	465.47	468.8	35.7 C.F.	MODEL NO. 2014
67	397.0	387.0	10.00' (120")	389.67	393.0	35.7 C.F.	MODEL NO. 2014
70	367.0	357.0	10.00' (120")	359.67	363.0	35.7 C.F.	MODEL NO. 2014
72/73	384.0	374.0	10.00' (120")	376.67	380.0	35.7 C.F.	MODEL NO. 2014 (DUPLX)
75	386.0	376.0	10.00' (120")	378.67	382.0	35.7 C.F.	MODEL NO. 2014
76/77	399.0	389.0	10.00' (120")	391.67	395.0	35.7 C.F.	MODEL NO. 2014 (DUPLX)

NOTE: SEE MANUFACTURER'S MANUAL FOR GRINDER PUMP INSTALLATION REQUIREMENT, PROCEDURE, AND ELECTRICAL CONNECTION.

- * * ACCEPTABLE ALTERNATE TO ENVIRONMENT ONE 2000 SERIES GRINDER PUMP:
- * * DELTA D1P 20-21 GRINDER PUMPS C/O FLUID SOLUTIONS, INC. TANEY TOWN, MARYLAND 410-756-9292
- * * VORTEX V-1000 GRINDER PUMP 1595 SKINNERS TURN ROAD OWINGS, MD 20736 410-257-5130



APPROVED: FOR PRIVATE WATER AND PUBLIC SEWER SYSTEMS HOWARD COUNTY HEALTH DEPARTMENT.

B. Wilson for Peter Bilewicz 9/14/07
 COUNTY HEALTH OFFICER
 ENGINEER'S CERTIFICATE

Donald Mason 6/13/07
 ENGINEER - DONALD A. MASON, P.E. # 21443
 DEVELOPER'S CERTIFICATE

Mark H. Marley member 6/13/07
 DEVELOPER
 THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD COUNTY CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SOIL EROSION AND SEDIMENT CONTROL.

Jim Mason 6/13/07
 USER - NATURAL RESOURCES CONSERVATION SERVICE
 THESE PLANS FOR SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD COUNTY CONSERVATION DISTRICT.

John R. Robertson 6/13/07
 HOWARD SCD

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND
 DEPARTMENT OF PLANNING AND ZONING HOWARD COUNTY, MARYLAND

Michael A. D'Annunzio 9-17-07
 CHIEF, BUREAU OF UTILITIES
 DATE

John H. ...
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE

BENCHMA 3K
 ENGINEERS • LAND SURVEYORS • PLANNERS
ENGINEERING, INC.
 8480 BALTIMORE NATIONAL PIKE • SUITE 418
 ELLICOTT CITY, MARYLAND 21104
 PHONE: 410-465-6105 FAX: 410-465-6644

Donald Mason 9/17/07
 PROFESSIONAL ENGINEER
 STATE OF MARYLAND

DESIGN:	DAM DBT		
DRAFT:	MAN DBT		
CHK:	DAM		
DATE:	06, 2007		
BY:	NO.		

ADJUST LOT NUMBERS IN TABLE + ELEVATIONS
 NOTE TO USE STRAIGHT WALLED CANS ONLY

NOTES AND DETAILS

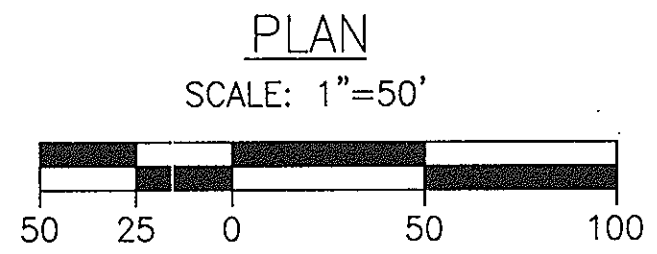
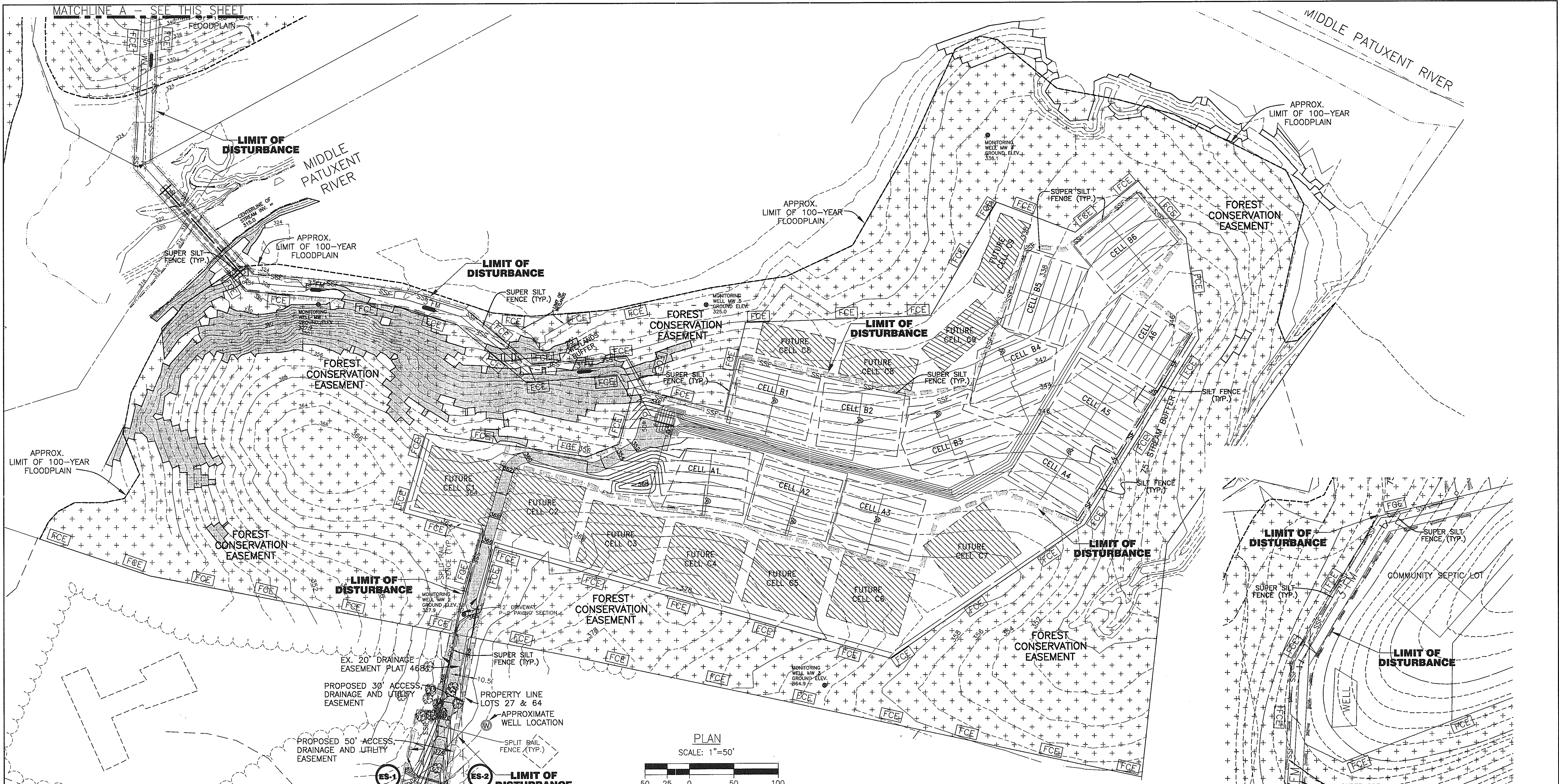
600 SCALE MAP NO. 23 BLOCKS 21 & 22 AND MAP NO. 29 BLOCKS 3 & 4

RIVERWOOD - PHASE 2

A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO CREATE LOTS 43-77, NON-BUILDABLE PRESERVATION PARCELS 'U' THRU 'Z', 'AA' AND 'EE' AND NON-BUILDABLE BULK PARCEL 'II' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'I', 'R', 'S' AND 'U' TO ADD OR MODIFY FOREST PRESERVATION AREAS THIRD ELECTION DISTRICT

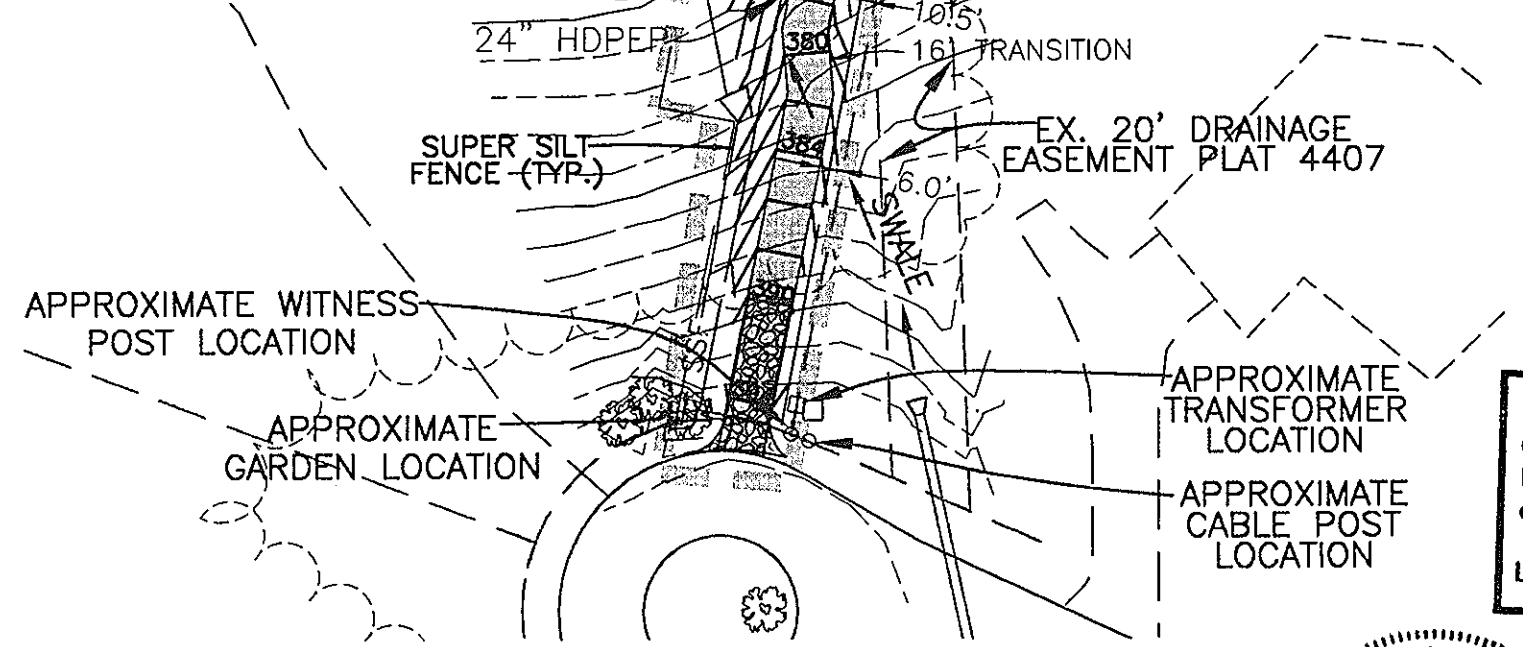
CONTRACT NO. 50-4287-D

SCALE: AS SHOWN
 SHEET NO. 55 OF 56



ENGINEER'S CERTIFICATE
 I HEREBY CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.
Donald A. Mason 12-14-11
 ENGINEER - DONALD A. MASON, P.E. # 21443 DATE

DEVELOPER'S CERTIFICATE
 I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. THIS ALSO AUTHORIZES PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.
Sally Kuyper 2-20-12
 DEVELOPER DATE



NOTE: ALL SPOIL FROM THE TRENCHING IS TO BE PLACED ON THE UPHILL SIDE OF THE TRENCH.

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
 License No. 21443 Expiration Date: 12-21-12

THESE PLANS HAVE BEEN REVIEWED BY THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SEDIMENT AND EROSION CONTROL.
 USDA - NATURAL RESOURCES CONSERVATION SERVICE DATE
John R. Robertson 12/15/11
 HOWARD SCD DATE

THIS PLAN IS FOR SEDIMENT CONTROL PURPOSES ONLY

DEVELOPER:
 ELJOAK, LLC
 P.O. BOX 417
 ELLICOTT CITY, MD 21041
 *ALSO KNOWN AS RIVERWOOD PHASE 2 LOTS 43-45, 48-64, 67-77 AND 79-82 410-465-4244

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
Sally Green 3/15/12
 CHIEF, BUREAU OF UTILITIES DATE

DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY, MARYLAND
William J. ... 3/15/12
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

BENCHMARK ENGINEERING, INC.
 ENGINEERS & LAND SURVEYORS & PLANNERS
 8480 BALTIMORE NATIONAL PIKE & SUITE 418
 ELLICOTT CITY, MARYLAND 21043
 PHONE: 410-465-6105 FAX: 410-465-6644
Donald A. Mason 12-14-11
 PROFESSIONAL ENGINEER

DESIGN:	DAM		
DRAFT:	DBT		
CHK:	DAM		
DATE:	06, 2007	BEI 1	REVISE TOPOGRAPHY AND FORCE MAIN LOCATION
		BY NO.	REVISIONS

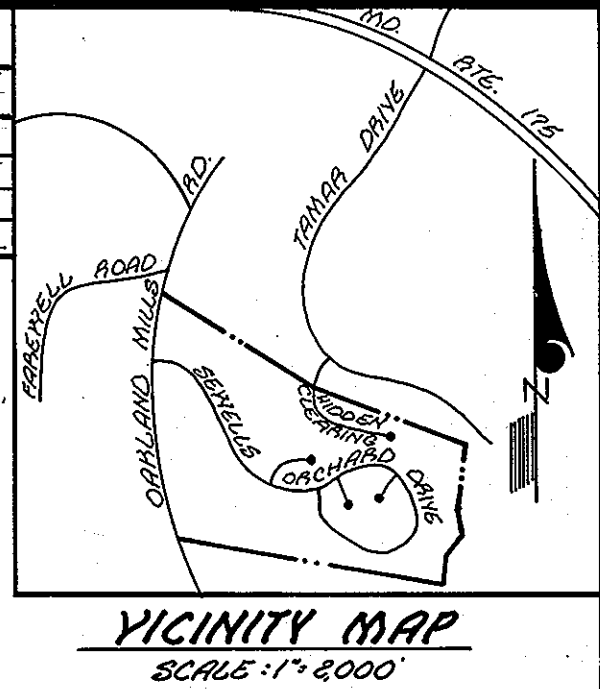
REPLACEMENT SHEET
 SEDIMENT AND
 EROSION CONTROL PLAN
 SHARED SEPTIC SYSTEM
 600 SCALE MAP NO. 23 BLOCKS 21 & 22 AND MAP NO. 29 BLOCKS 3 & 4

RIVERWOOD - PHASE 2
 A RESUBDIVISION OF NON-BUILDABLE BULK PARCELS 'AA' THRU 'GG' TO CREATE LOTS 43-77. NON-BUILDABLE PRESERVATION PARCELS 'I', 'IV' THRU 'G', 'IA' - 'IE' AND 'CC' AND NON-BUILDABLE BULK PARCEL 'II' AND A REVISION OF PHASE 1 PRESERVATION PARCELS 'A', 'B', 'C', 'E', 'F', 'R', 'S' AND 'U' TO ADD OR MODIFY FOREST CONSERVATION AREAS THIRD ELECTION DISTRICT
CONTRACT NO. 50-4287-D

SCALE:
 AS SHOWN
 SHEET NO.
 56 OF 56

COORDINATES		
NO.	NORTH	EAST
46	496378.00	848848.00
130	496889.89	848755.47
132	496908.17	849023.10
134	496878.94	849127.19
140	496707.42	849364.63
141	496711.38	849331.08
142	496632.79	849239.85
143	496583.91	849143.12
144	496577.23	849113.87
146	496564.96	849097.56
148	496629.95	849082.71
150	496625.97	849102.73
151	496632.66	849131.98
152	496670.67	849207.22
153	496749.27	849298.45
154	496783.01	849299.52
184	496587.06	848887.13
504	496455.00	849185.00
507	496641.22	849401.17
1015	496455.82	849143.66
1016	496538.68	849124.73
1020	496511.51	849005.80
1021	496428.64	849024.73
1037	496665.21	849011.22
1038	496750.21	849012.15
1042	496751.53	848992.16
1043	496666.53	848891.22
1048	496624.39	848994.77
1049	496625.33	848909.77
1053	496505.33	848848.46
1054	496504.40	848993.45
1091	496625.53	848890.71

DENSITY TABULATION							
SECTION	GROSS AREA	FLOODPLAIN	NET AREA	NO. OF D.U.'s ALLOWED/NET AREA	FLOODPLAIN LOT ADJUST.	TOTAL NO. OF D.U.'s PROPOSED	GROSS DENSITY PER ACRE
1	46.38	4.30	42.08	168.32	17.20	185.52	3.34
2/1	21.85	5.02	16.83	67.32	15.74	83.06	1.88
2/2	15.79	NONE	15.79	63.16	NONE	63.16	3.57
TOTALS	84.02	9.32	74.70	298.80	32.94	331.74	3.38



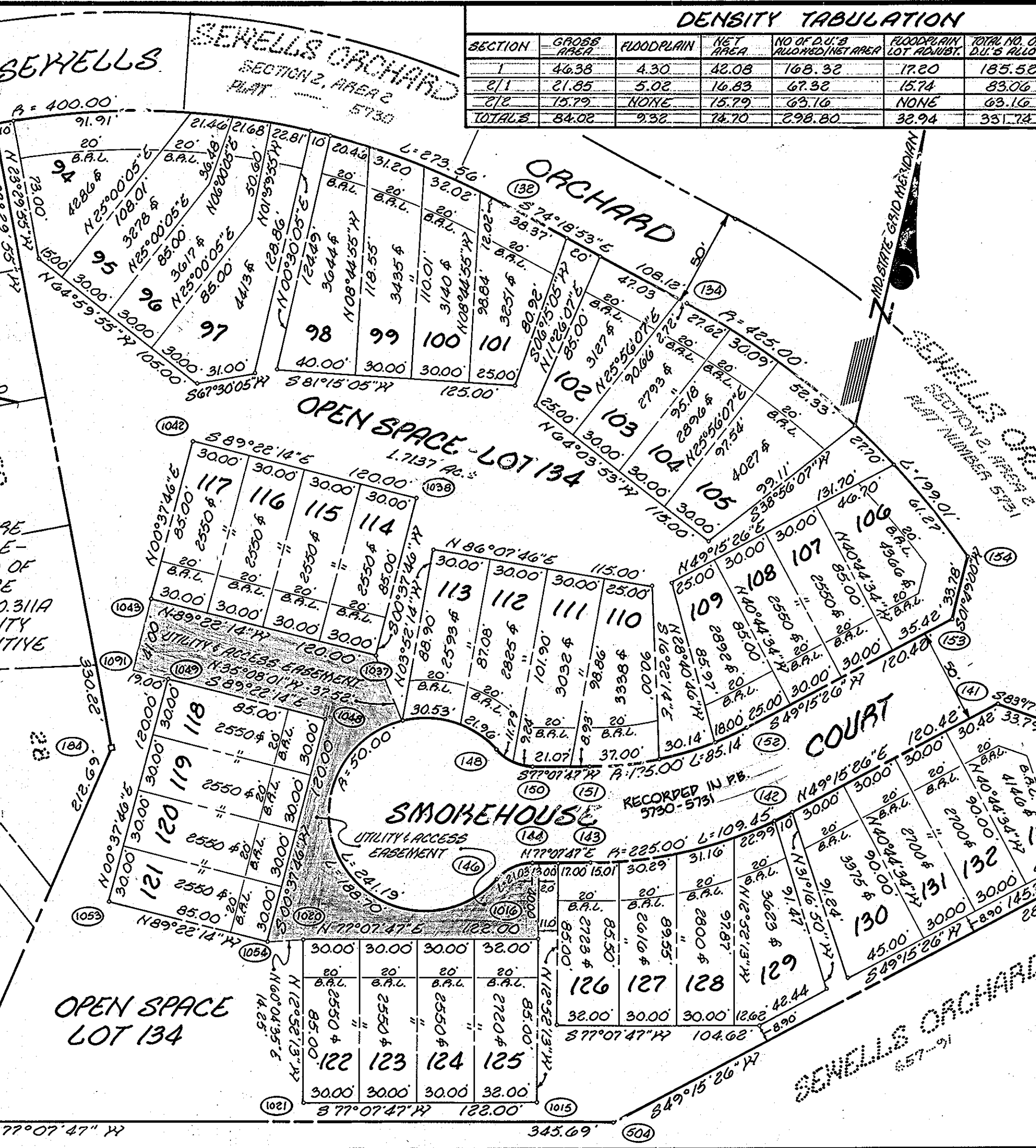
NOTE:
THE LOTS OR PARCELS SHOWN ON THIS PLAT ARE SUBJECT TO THE SUPPLEMENTAL SEWER IN AID OF CONSTRUCTION CHARGE CREATED BY SECTION 20.311A OF THE HOWARD COUNTY CODE AND TO EXECUTIVE ORDER NO. 72-9.

- NOTES:**
1. 4" x 4" x 36" CONCRETE MONUMENT INDICATED THIS: □
 2. COORDINATES SHOWN HEREON ARE BASED ON HOWARD COUNTY CONTROL STATION "SEWELLS"
 3. SUBJECT PROPERTY IS ZONED: R-3C PER OCTOBER 3, 1977 COMPREHENSIVE ZONING PLAN.
 4. DEED REFERENCE: 1225/481
 5. TAX MAP #36, PART OF PARCEL 247.
 6. SEE OFFICE OF PLANNING AND ZONING FILE NO. P-81-29, F-80-105, S-79-81-94, P-80-09, F-84-36, P-84-29
 7. FOR FLAG OR PIPE STEM LOTS, REFUSE COLLECTION, SNOW REMOVAL AND ROAD MAINTENANCE ARE PROVIDED TO THE JUNCTION OF THE FLAG OR PIPE STEM AND THE ROAD RIGHT-OF-WAY LINE AND NOT ONTO THE FLAG OR PIPE STEM DRIVEWAY.
 8. EXISTING 100 YEAR FLOOD PLAIN ELEVATIONS: 359.35
 9. DEED REFERENCE FOR MAINTENANCE OF OPEN SPACE PARCELS IS LIBERS 1225, FOLIO 486.

CURVE DATA						
NO.'S	RADIUS	Δ C. TRA	ARC	TAN.	CHORD	BEARING
130-132	400.00'	39°11'02"	273.56'	142.37'	268.26'	N86°05'36"E
134-154	485.00'	26°49'45"	199.01'	101.36'	197.22'	S60°53'53"E
140-507	425.00'	10°12'29"	75.72'	379.6'	75.62'	S28°33'47"E
142-143	225.00'	27°52'21"	109.45'	55.83'	108.38'	S63°11'37"W
144-146	250.00'	48°11'23"	21.03'	11.18'	20.41'	S53°02'06"W
146-148	50.00'	276°22'46"	24.19'	—	66.67'	N12°52'13"W
148-150	250.00'	48°11'23"	21.03'	11.18'	20.41'	S78°46'32"E
151-152	175.00'	27°52'21"	85.14'	43.43'	84.29'	N63°11'36"E

NOTE:
PLANS FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS HAVE BEEN APPROVED BY THE DEPARTMENT OF HEALTH AND MENTAL HYGIENE AND THESE FACILITIES WILL BE AVAILABLE TO ALL LOTS FOR SALE.

L. Earl King 3-28-84
L. EARL KING, REGISTERED SURVEYOR DATE



NOTE:
THIS SUBDIVISION IS SUBJECT TO SECTION 18.122 B OF THE HOWARD COUNTY CODE. PUBLIC WATER AND SEWER SERVICE HAS BEEN GRANTED UNDER THE TERMS AND PROVISIONS, THERE OF EFFECTIVE JANUARY 5, 1984, ON WHICH DATE DEVELOPER AGREEMENT NO. 22-1152-D WAS FILED AND ACCEPTED.

PLAT TABULATION	
1. TOTAL NUMBER OF LOTS AND/OR PARCELS TO BE RECORDED: 40 + 1 OPEN SPACE = 41	
2. TOTAL AREA OF LOTS AND/OR PARCELS AND OPEN SPACE = 4.5030 AC.±	
3. TOTAL AREA OF ROADWAYS TO BE RECORDED (ALL ROADWAYS PREVIOUSLY RECORDED) = 1.7137 AC.±	
4. TOTAL AREA OF OPEN SPACE = 1.7137 AC.±	
5. TOTAL AREA OF RESUBDIVISION TO BE RECORDED = 4.5030 AC.±	

OWNER/DEVELOPER
ORCHARD ASSOCIATES/B.T.P. REALTY, INC.
P.O. BOX 919
COLUMBIA, MARYLAND 21044

RECORDED AS PLAT 5851
ON 6-27, 1984, AMONG THE
LAND RECORDS OF HOWARD
COUNTY, MARYLAND.

AMENDED PLAT OF
LOTS 94 THRU 134
(A RESUBDIVISION OF LOTS 33 TO 72 & 91)
SEWELLS ORCHARD
SECTION 2 AREA 2 LOTS 94 THRU 134
TAX MAP 36 PART OF PARCEL 247
ELECTION DISTRICT NO. 6 SCALE: 1" = 50'
HOWARD COUNTY, MARYLAND SHEET 1 OF 1

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS IN CONFORMANCE WITH THE MASTER PLAN OF WATER AND SEWERAGE FOR HOWARD COUNTY.
John B. Grew 6-24-84
COUNTY HEALTH OFFICER DATE

OWNER'S CERTIFICATE
WE, ORCHARD ASSOCIATES, A MARYLAND PARTNERSHIP, OWNERS OF THE PROPERTY SHOWN AND DESCRIBED HEREON, HEREBY ADOPT THIS PLAN OF SUBDIVISION; AND IN CONSIDERATION OF THE APPROVAL OF THIS PLAT BY THE OFFICE OF PLANNING AND ZONING ESTABLISH THE MINIMUM BUILDING RESTRICTION LINES. ALL EASEMENTS OF RIGHTS-OF-WAY AFFECTING THE PROPERTY ARE INCLUDED IN THIS PLAN OF SUBDIVISION. WITNESS OUR HANDS THIS 28TH DAY OF MARCH 1984.
L. Earl King 3-28-84 *Ed. H. Harnell*
L. EARL KING - ORCHARD ASSOC./B.T.P. REALTY, INC. PARTNER

SURVEYOR'S CERTIFICATE
I HEREBY CERTIFY THAT THE FINAL PLAT SHOWN HEREON IS CORRECT; THAT IT IS A SUBDIVISION OF PART OF THE LAND OBTAINED BY ORCHARD ASSOCIATES, A MARYLAND PARTNERSHIP FROM SEWELLS ORCHARD ET AL., BY DEED DATED JANUARY 8, 1984, AND RECORDED AMONG THE LAND RECORDS OF HOWARD COUNTY IN LIBER 1225 FOLIO 481 AND THAT ALL MONUMENTS ARE IN PLACE OR WILL BE IN PLACE PRIOR TO THE ACCEPTANCE OF THE STREETS IN THE SUBDIVISION BY HOWARD COUNTY AS SHOWN, IN ACCORDANCE WITH THE ANNOTATED CODE OF MARYLAND, AS AMENDED.
D. Wayne Hadden 3/27/84
D. WAYNE HADDEN REGISTERED LAND SURVEYOR MARYLAND #10685

APPROVED: HOWARD COUNTY OFFICE OF PLANNING & ZONING ADMINISTRATION
Acting Donald Bendall 6-26-84
DIRECTOR DATE

APPROVED: FOR STORM DRAINAGE SYSTEMS AND PUBLIC ROADS, PUBLIC SEWERAGE AND WATER, HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.
Mike F. Nimmer 6-19-84
DIRECTOR DATE

EVANS, HAGAN & HOLDEFER, INC.
ENGINEERS, LAND PLANNERS & SURVEYORS
1052 WEST STREET / LAUREL, MD. 20707
(301) 725-0665 / 792-8086
D. Wayne Hadden
DATE MARCH, 1984 SCALE 1" = 50'